LTSM007948

DOE/OR/21548-765
CONTRACT NO. DE-AC05-86OR21548

POST REMEDIAL ACTION REPORT FOR WP-471

WELDON SPRING SITE REMEDIAL ACTION PROJECT
WELDON SPRING, MISSOURI

MARCH 2000 **REV. 1**

RECORD

U.S. Department of Energy
Oak Ridge Operations Office
Weldon Spring Site Remedial Action Project

Prepared by MK-Ferguson Company and Jacobs Engineering Group

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MORRISON KNUDSEN CORPORATION **MK-FERGUSON GROUP** Weldon Spring Site Remedial Action Project Contract No. DE-AC05-86OR21548	Rev. No. 1
PLAN TITLE: Post Remedial Action Report for WP-471	

APPROVALS

Environmental Safety and Health Manager	3/30/00 Date
Data Administration Manager	3/30/00 Date
Engineering Manager	3-30-00 Date
Waste Maintenance Project Manager	3/30/00 Date
Project Quality Manager	3/31/00 Date
Deputy Project Director	4/3/00 Date

DOE/OR/21548-765

Weldon Spring Site Remedial Action Project

Post Remedial Action Report for WP-471

Revision 1

March 2000

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for the

U.S. DEPARTMENT OF ENERGY
Oak Ridge Operations Office
Under Contract DE-AC05-86OR21548

EXECUTIVE SUMMARY

Consolidation of sludge in Raffinate Pit 4, conducted as part of WP-471, allowed for remediation of contaminated areas within the northern portion of Raffinate Pit 4. Remediation activities included the excavation and consolidation of sludge to the southern half of the raffinate pit, construction of an intermediate dike, and removal of contaminated soils from the berms and bottom from the northern half of Pit 4.

The objective of this remedial action was to ensure that contaminated areas within the WP-471 work zone were remediated to meet the cleanup criteria standards stated in the *Record of Decision for the Remedial Action at the Chemical Plant Area of the Weldon Spring Site (ROD)*. Walkover surveys were conducted and confirmation samples were collected to ensure that remediation of the contaminated areas was completed. Confirmation soil sampling methodology was developed to ensure the adequate remediation of contaminants of concern (COCs).

Components of the remediation and confirmation sampling process included characterization data review, COC identification, confirmation plan development, contaminated soil excavation, radiological walkover surveys, confirmation soil sampling, field oversight, sample analysis, analytical data evaluation, disposition package development, quality assurance/quality control (QA/QC) review, summary of findings and conclusions, and post-remedial action report preparation.

The WP-471 area consisted of Remedial Unit (RU) RU13, which was further subdivided into confirmation units (CU). Each of the CUs was approximately 2,000 m^2 (0.5 acres) in size, as defined by the *Chemical Plant Area Cleanup Attainment Confirmation Plan*. This post-remedial action report summarizes the remediation of 17 CUs, i.e., CU143 through CU156 and CU159 through CU161, all of which were located within RU13. Remediation of four additional partial CUs from RU21 was added to the work package. Confirmation units CU253, CU254, CU263, and CU264 were partially remediated, with the remainder of the CUs to be confirmed under WP-437.

COC lists were developed for each CU using characterization soil sample results. COCs identified for RU13 included Radium-226 (Ra-226), Radium-228 (Ra-228), Thorium-230 (Th-230), Thorium-232 (Th-232), Uranium-238 (U-238), arsenic, and polynuclear aromatic hydrocarbons (PAHs). TNT was added to the confirmation sampling upon discovery of nitroaromatically contaminated soils.

Remedial activities for each CU included the excavation of a predetermined amount of contaminated soil, radiological walkover surveying, removal of additional soil if necessary, and confirmation soil sampling. Additional soil was excavated and confirmation samples were

collected until preliminary results indicated that remediation activities were completed and COC concentrations were below the cleanup standards The CU was then released for unrestricted use Once final analytical results were received, the data were compared to preliminary results to verify that the established cleanup standards were achieved. Independent verification was also conducted by ORISE.

A summary of final analytical results for WP-471 RU13 is presented below The table was generated using data sets compiled from all samples representing soils left in place

Summary of Analytical Results for RU13 in WP-471*

CONTAMINANT	NUMBER OF SAMPLES	SURFACE ALARA GOAL/ CRITERIA	RANGE OF CONCENTRATION	AVERAGE CONCENTRATION	NUMBER GREATER THAN ALARA
Arsenic (mg/kg)	69	45/75	2 20-20.0	7 64	0
PAH (mg/kg)	11	0.65/8	ND	N/A	0
TNT (mg/kg)	7	14/140	0 02-2 1	0 40	0
Ra-226 (pCi/g)	434	5 0/6.2	0 33-5 98	1 17	1
Ra-228 (pCi/g)	434	5 0/6 2	0 50-3 81	1 30	0
Combined Radium	434	5.0/6 2	1.09-7 07	2 48	5
Th-230 (pCi/g)	452	5 0/6.2	0 70-15.10	1 79	21
Th-232 (pCi/g)	434	5 0/6 2	0 51-3 94	1 34	0
U-238 (pCi/g)	432	30/120	1 07-69 0	2 02	1

* This table does not include the confirmation results from the four partial CUs remediated within RU21 These results will be included when the CUs are completely remediated under WP437

As indicated on the table, the RU13 average concentration for each COC is below the as low as reasonably achievable (ALARA) goal. COC averages were calculated for each of the 17 CUs located within RU13, and the conclusions are as follows Although some individual sample concentrations are above the ALARA goals, the average COC concentrations for each of the 17 CUs were below ALARA. In the CU where hot spots were present, all 100 m^2 averages were less than criteria. In addition, for the total number of samples collected, 50% or more concentrations for each COC were below the ALARA goal

Remedial activities were completed for RU13. Based on analytical results presented above, all 17 CUs were released in accordance with the cleanup standards stated in the *Chemical Plant Area Cleanup Attainment Confirmation Plan*

SUMMARY OF CHANGES

Revision 1 of the *Post Remedial Action Report for WP-471* corrects information in summary tables found in the Executive Summary and Section 7.

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1. INTRODUCTION

1.1 Purpose

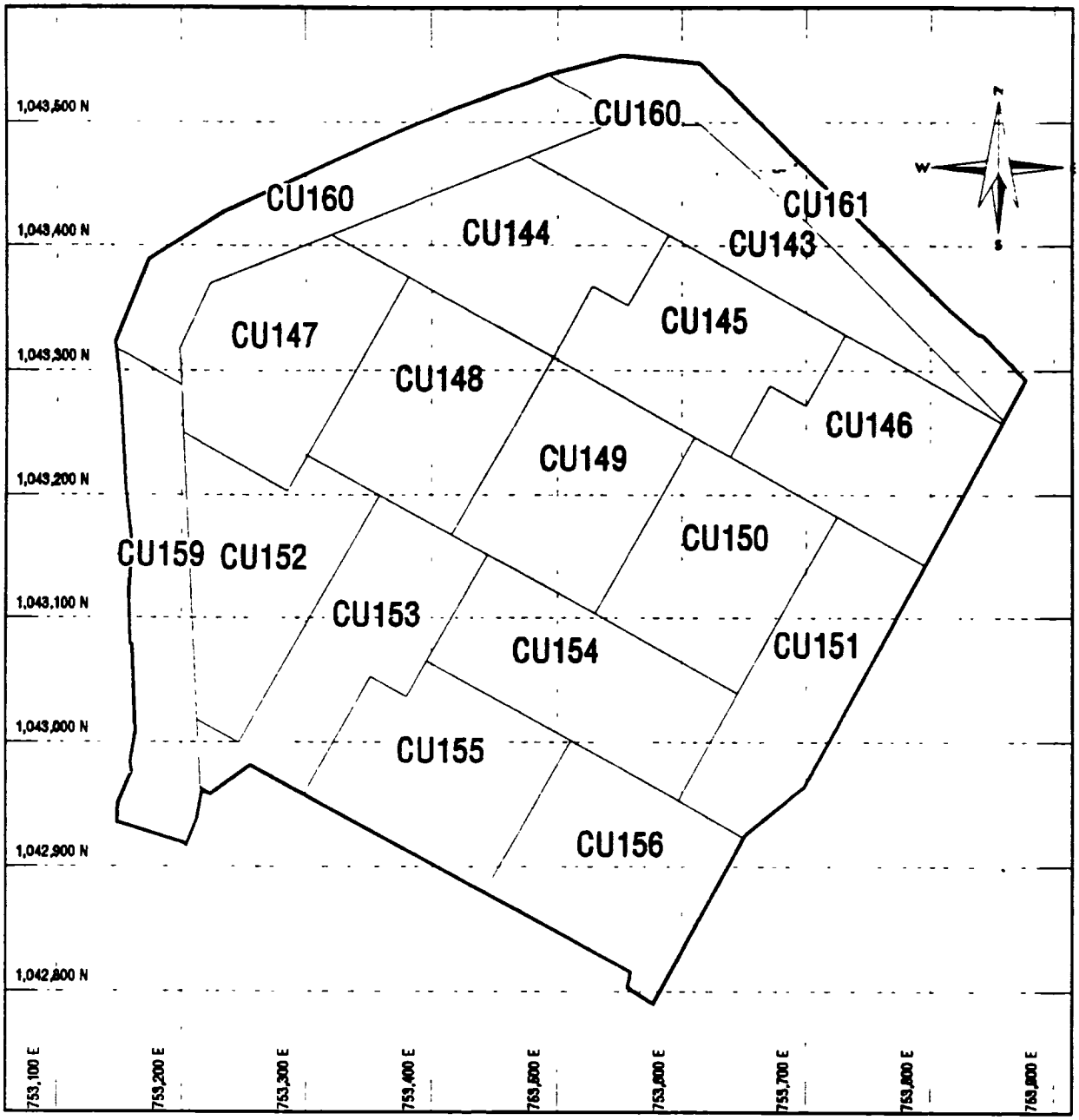
This report details field activities and sampling results for remediation of Remedial Unit (RU) 13 in the Work Package-471 area (WP-471) in the northern portion of Raffinate Pit 4 at the Weldon Spring Site Remedial Action Project (WSSRAP). WP-471 included the excavation and consolidation of sludge to the southern half of the raffinate pit, construction of an intermediate dike, and removal of contaminated soils from the berms and bottom from the northern portion. Figure 1-1 identifies RU13 and the WP-471 work zone.

Soil characterization results from the *Engineering Soil Sampling for the Weldon Spring Chemical Plant and Raffinate Pit Berms* (Ref. 1) and the *Engineering Soil Sampling Plan for Characterization of the Weldon Spring Raffinate Pits* (Ref. 2) determined that areas within the WP-471 area contained contaminant concentrations exceeding the as low as reasonably achievable (ALARA) goals and cleanup criteria established in the *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site* (ROD) (Ref. 3). Contaminants identified included U-238, Ra-226, Ra-228, Th-230, Th-232, Arsenic, and polynuclear aromatic hydrocarbons (PAHs).

In most cases, remediation was designed to attain surface ALARA goals. Six areas that contained deeper contamination with significant clean material above were designed to subsurface criteria. Figure 1-2 and Figure 1-3 detail the two excavation designs: surface ALARA and subsurface criteria (showing contamination remaining after excavating the first foot as contaminated) and highlights the six areas which exceeded ALARA, but were not excavated It was decided that designing to subsurface criteria was not contradictory to the ROD since all areas would remain greater than 6 in. below final grade. This ALARA decision was based upon the cost vs. benefit of excavating this material. Areas not targeted for remediation can be described by the associated characterization data (Ref. 12). This decision is detailed in a letter: *Contaminated Soil Excavation Plan Design WP-471 Raffinate Pit 4 Sludge Consolidation* found in Appendix E

1.2 Scope

This report describes the remedial activities and confirmation sampling conducted on radiological and chemically contaminated soils within RU13 of the WP-471 area Soil confirmation sampling was conducted in accordance with the *Confirmation Sampling Plan Details for Raffinate Pit 4 Sludge Consolidation (WP-471)*(Ref. 4). This plan was developed to ensure that the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5) objectives were accomplished, and additionally, to ensure that established remediation requirements of the ROD (Ref. 3) were met.



200 100 0 FEET

60 30 0 METERS

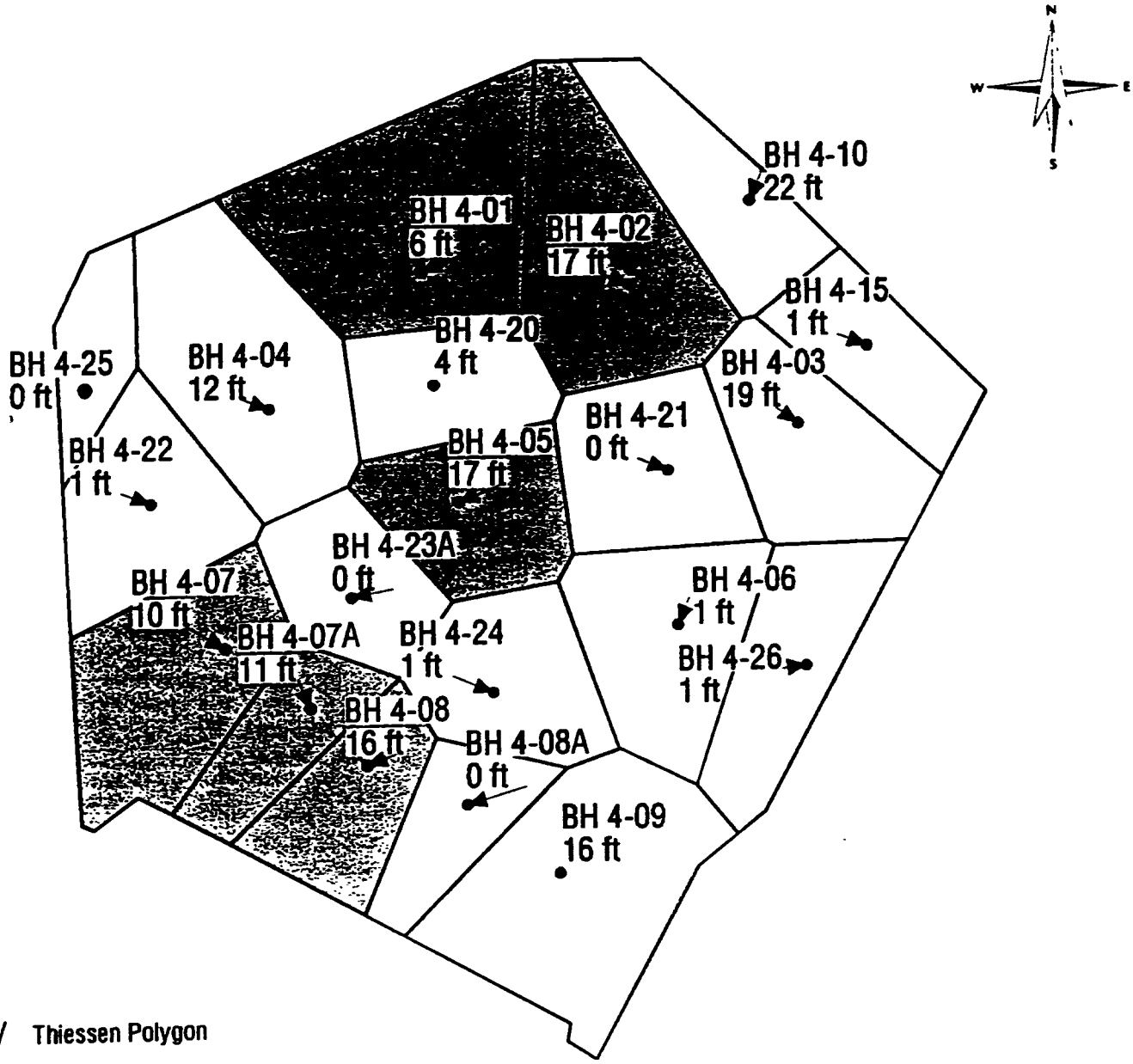
CU Boundaries

RU 013 Boundary

WP 471 Confirmation Units

Figure 1-1

REPORT NO: DOE/OR/21548-765		EXHIBIT NO: G/CP/203/0599	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 09-FEB-2000	



N Thiessen Polygon

● Depth (feet)

Shaded area which exeed ALARA, but not excavated.

* Contamination remaining after removal of first foot as contaminated

1200 600 0 1200 FEET

400 200 0 400 METERS

Depth to Contamination
Using ALARA Goal as the Cleanup Limit*

Figure: 1-2

REPORT NO: DOE/OR/21548-765		EXHIBIT NO: G/CP/202/0599	
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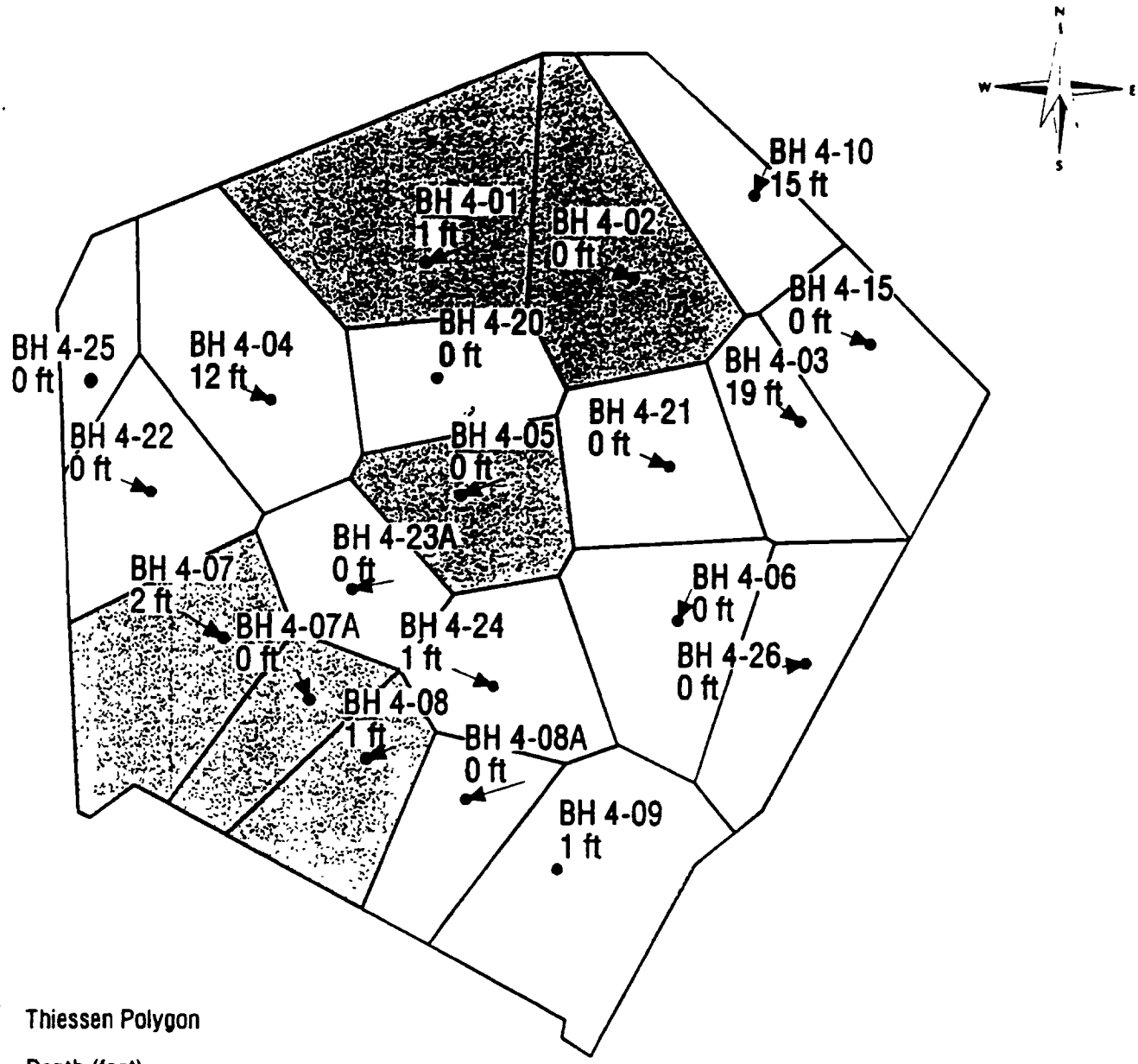


N Thiessen Polygon

● Depth (feet)

Shaded area which exeed ALARA, but not excavated.

* Contamination remaining after removal of first foot as contaminated

1200 600 0 1200 FEET

400 200 0 400 METERS

Depth to Contamination
Using Subsurface Criteria as the Cleanup Limit*

Figure: 1-3

REPORT NO: DOE/OR/21548-765		EXHIBIT NO: G/CP/204/0599	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 07-MAY-1999	

1.3 Remediation and Confirmation Process

This report details the activities conducted to remediate RU13 (CU143 - CU156, CU159 - CU161), and a small portion of RU21 (CU253, CU254, CU263, and CU264 – all partials. Additional information on RU21 can be found in the WP-437 Confirmation Plan [Ref. 10]) Remediation consisted of removal and consolidation of raffinate sludge, construction of an intermediate dike that separates the contaminated portion of Raffinate Pit 4 and the remediated portion of the pit, and excavation of the associated contaminated soils. Following the remediation activities, walkover surveys were conducted and confirmation samples were collected to ensure contaminated materials had been remediated.

The entire remediation and confirmation processes included characterization data review, COC identification, confirmation plan development, pre-excavation activities, soil excavation, radiological walkover surveys, confirmation sampling, oversight activities, sample analysis, analytical data review, quality assurance/quality control (QA/QC) review, completing disposition forms, summary of findings, and conclusions for the post-remedial action reports. The results of the remediation and confirmation process are detailed in the following sections.

2. PRE-REMEDIATION ACTIVITIES

2.1 Review of Characterization Data

Contaminants of concern (COC) were determined for each confirmation unit (CU) by reviewing results of characterization samples. The full process used for determining COCs is detailed in the *Confirmation Sampling Plan Details For Raffinate Pit 4 Sludge Consolidation (WP-471)* (Ref. 4). Radiological COCs identified for confirmation include: Radium-226 (Ra-226), Radium-228 (Ra-228), Thorium-230 (Th-230), Thorium-232 (Th-232), and Uranium-238 (U-238). Chemical COCs identified include polynuclear aromatic hydrocarbons (PAHs) and arsenic TNT contamination was later identified during remediation activities and added as a COC in CU143 and CU146. (See Section 5 1 for additional details.) The specific COC lists and the associated analytical results for each CU are presented in Section 5

This data was used to design excavation areas identified as "zones" in the specification Figure 2-1, Excavation Zones.

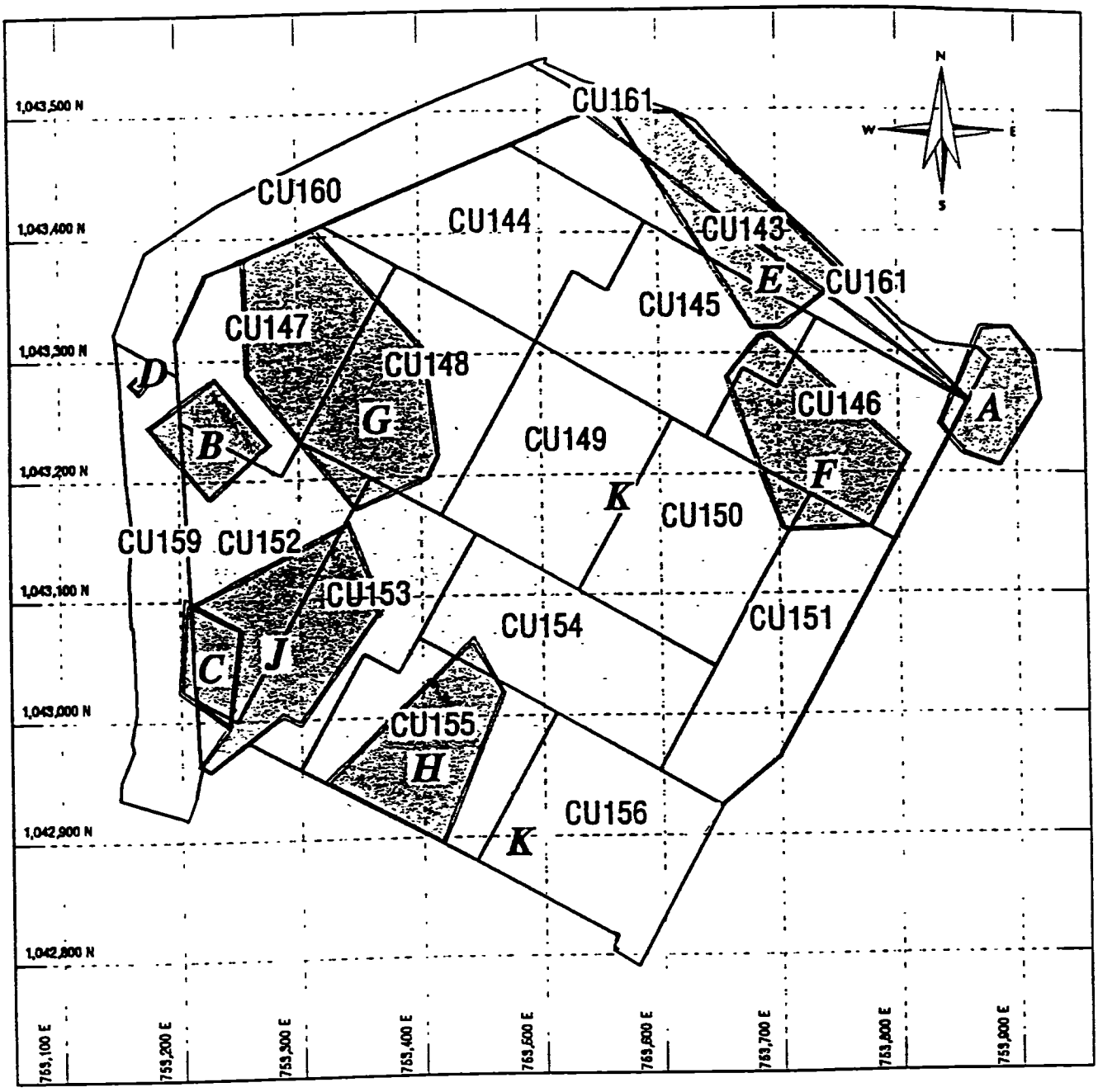
2.2 Data Quality Objectives

Data Quality Objectives (DQOs) were identified to specify and ensure quality data would support the decision making process throughout remedial activities, including the confirmation process. Confirmation DQOs were developed for sampling and analyzing soils during remediation and for subsequent data evaluation. The DQOs were designed to make statistically defensible decisions regarding attainment of cleanup standards. Sampling and analytical programs for the WP-471 area were designed in accordance with DQOs stated in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5).

CLEANUP STANDARDS

The objective of the U.S Department of Energy's (DOE) as low as reasonably achievable (ALARA) process is to reasonably reduce exposures and risks associated with residual contamination (Ref. 5). The *Chemical Plant Area ROD* (Ref 3) established two different sets of cleanup standards, risked-based cleanup criteria (cleanup criteria), and ALARA goals It is expected that contaminant levels remaining in the soil across the site after remediation will range between the cleanup criteria and the ALARA goals, reaching the goals in most cases (Ref 3) Remedial activities for RU13 were designed to remove soil where the COC concentration was present above ALARA goals except as discussed in Section 1 1 Table 2-1 summarizes the cleanup criteria and ALARA goals established in the ROD

Throughout remedial activities at RU13, COC concentrations were evaluated with the ALARA process. The COC concentration was first applied to the ALARA goal. If the COC



100 50 0 100 FEET

30 15 0 30 METERS

CU Boundaries

WP471 Excavation Area

Ex Area K

Ex Area
A, B, C, D,
E, F, G, H, J

WP 471 Excavation Zones

Figure 2-1

REPORT NO: DOE/OR/21548-765		EXHIBIT NO:	
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concentration was above the ALARA goal, the concentration was applied to the risked-based cleanup criteria. The two sets of cleanup standards were applied at two different stages of the cleanup confirmation process discussed below.

Table 2-1 Radionuclide and Chemical Contaminant Cleanup Standards

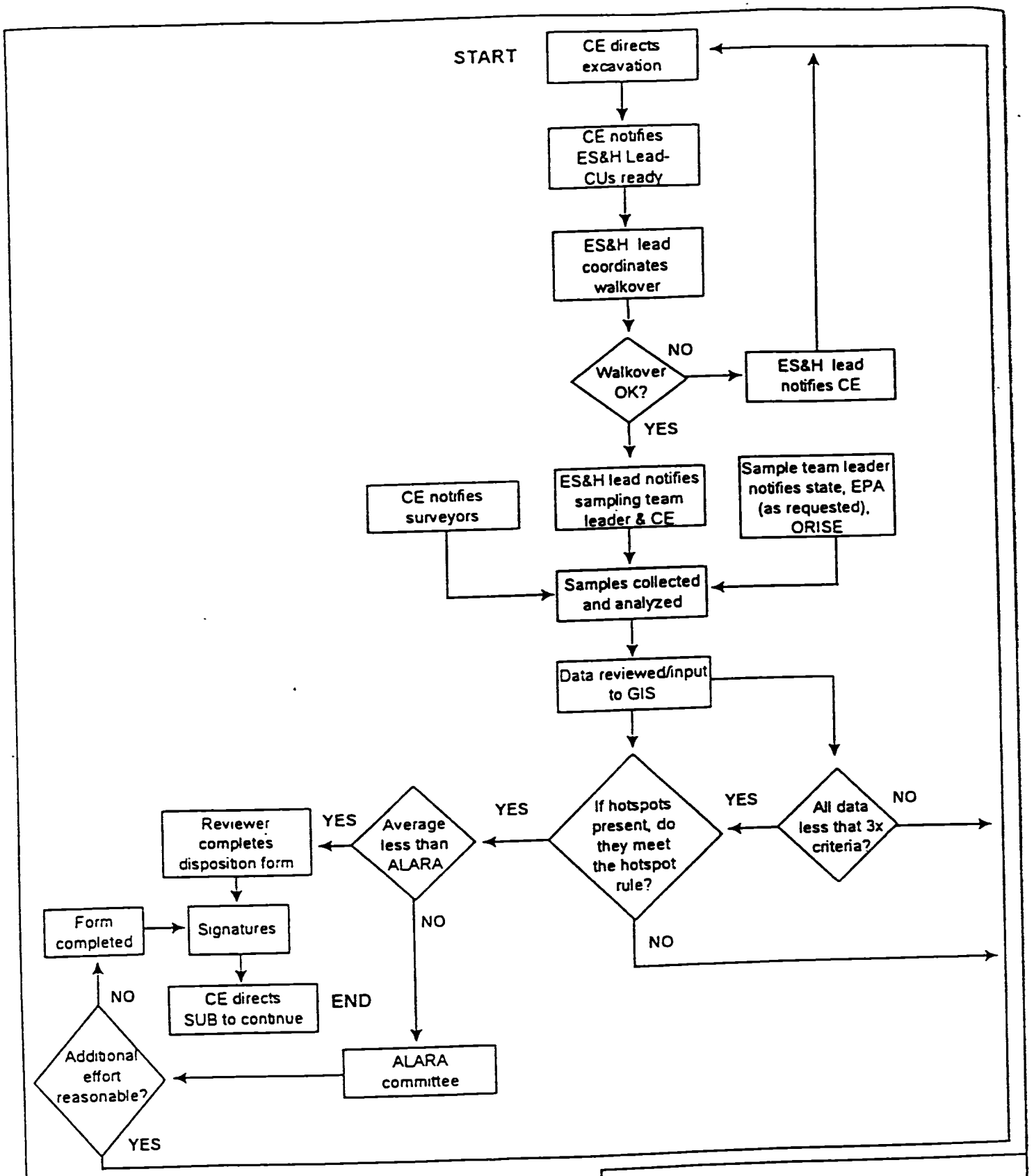
	SURFACE[c]		SUBSURFACE[d]	
RADIONUCLIDE (pCi/g)	ALARA	CRITERIA	ALARA	CRITERIA
Radium-226[a,b]	5.0	6 2	5 0	16.2
Radium-228[a,b]	5 0	6 2	5 0	16 2
Thorium-230[a]	5 0	6 2	5 0	16 2
Thorium-232[a]	5 0	6 2	5 0	16 2
Uranium-238	30 0	120	30	120
Chemical (mg/kg)				
Arsenic	45	75	75	750
Chromium (total)	90	110	110	1,110
Chromium (VI)	90	100	100	1,000
Lead	240	450	450	4,500
Thallium	16	20	20	200
PAHs[e]	0.44	5 6	5 6	56
PCBs[f]	0.65	8	8	80
TNT	14	140	140	1,400

(a) If both Th-230 and Ra-226, or both Th-232 and Ra-228, are present and not in secular equilibrium, the cleanup criterion applies for the radionuclide with the higher concentration.
(b) At locations where both Ra-226 and Ra-228 are present, the cleanup criterion of 6 2 pCi/g (including background) in the top 15 cm (6 in) of soil, and 16 2 pCi/g (including background) in each 15-cm (6-in) layer of soil more than 15 cm (6-in) below the surface, applies to the sum of the concentrations of these two radionuclides
(c) Values listed for surface soils apply to contamination within the upper 15 cm (6 in) of the soil column
(d) Values for subsurface apply to contamination in soils below 15 cm (6 in), unless otherwise noted
(e) Benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, and ideno(1,2,3-cd)pyrene
(f) Aroclor 1248, Aroclor 1254, Aroclor 1260

Source (Ref 3)

CONFIRMATION PROCESS

The confirmation process was used to determine, under the remedial guidelines, whether remediation activities had achieved the cleanup standards using the ALARA process Figure 2-2 shows the confirmation process for remedial activities. The decision making process was developed to specify how the data would be evaluated within the confirmation process To facilitate this data evaluation, the decision making process was implemented at two stages of the confirmation process



CLEANUP CONFIRMATION PROCESS

Figure 2-2

REPORT NO.: DOE/OR/21548-765	REPORT NO.: A/PI/007/0397	
ORIGINATOR: MGL	DRAWN BY: DLD	DATE: 10/3/97

First, the decision making process was applied to a specific sample location located within a given CU The decision making process was refined throughout the remedial activities at the WP-471 area to provide systematic steps to determine the need for further remediation of contaminated areas.

Second, the decision making process was applied to a CU as a whole and was specific to a group of sample locations. This was completed to meet project DQOs and the cleanup standards, and to evaluate whether a CU area had been remediated to the extent required by the ROD

DECISION MAKING PROCESS

The decision making process consisted of four steps that were used to determine whether a specific contaminated area (either sample location or a CU) would require further remediation The first three steps were applied to specific sample locations that had results greater than criteria The fourth step was applied to an entire CU, in instances where the preliminary analytical results indicated a COC concentration was above the ALARA goals. The four steps are discussed in detail below and will be referenced in the CU discussions presented in Section 5

If a given COC concentration (in a hot spot area of any given size) was above three times the cleanup criteria, the area was further remediated and resampled.

If a given COC concentration (in a hot spot area greater than 25 m^2 (270 ft^2) in size) ranged between criteria and three times criteria, the area was further remediated and resampled

If a given COC concentration (in a hot spot area less than 25 m^2 (270 ft^2) in size) was between the cleanup criteria and three times the cleanup criteria, the following formula was used to determine the acceptable concentration for the COC

$$\text{Maximum Concentration} = (\text{Cleanup Criteria}) \times (100/A)^{1/2}$$

Where A = area of hot spot in square meters (m^2)

If the COC sample concentration was above the maximum concentration, the area was further remediated and resampled. If the COC sample concentration was below the maximum concentration, the soil was left in place and no further remediation was conducted

The fourth step was applied to a specific COC concentration over the entire CU. If an average concentration of a COC within a CU was greater than ALARA and less than criteria, the issue went before the ALARA committee for a decision ruling Factors considered in the decision ruling included: the percentage of confirmation results to date that were less than, or greater than the ALARA goal, location, cost of further remediation, etc Based on these factors, the ALARA committee determined whether additional remediation was required

In accordance with the ROD, contaminant levels remaining in soils across the site after remediation are expected to range between the ALARA goal and cleanup criteria, reaching the goals in most cases.

3. REMEDIAL PROGRAM ACTIVITIES

After the initial excavations were completed, radiological walkover surveys were conducted to evaluate the need for additional excavation Walkover surveys were conducted using a 2 x 2 sodium iodide (NaI) scintillation detector. When radiological walkover surveys indicated no additional excavation was needed (i.e., no radioactivity levels exceeding 1 5 times the background level), confirmation soil samples were collected in the area

Confirmation results were then reviewed and additional excavation and confirmation sampling was conducted in hot spot areas, if necessary. Additional excavation and sampling continued until sample results indicated the cleanup standards were achieved After achieving cleanup standards, a Disposition Form was completed with preliminary analytical results The Disposition Form was reviewed and signed by project personnel. The CU was then released back to the subcontractor for final grading.

Contaminated materials removed during remediation activities were transported and staged at the Ash Pond storage area located in the northwest portion of the site These soils were then placed into the on-site disposal facility.

In addition, field dewatering was required for confirmation unit (CU) areas submerged by water through precipitation events. Water was sampled for total uranium prior to dewatering activities to determine its proper disposition After review of sample results, dewatering procedures were conducted using pumps to remove water from the excavations in accordance with the *Surface Water Management Plan* (Ref. 6) and site procedures

4. REMEDIAL ACTIVITIES

4.1 Field Activities

Field activities completed during remedial activities were conducted in accordance with procedures stated in the *Confirmation Sampling Plan Details for Raffinate Pit 4 Sludge Consolidation (WP-471)* (Ref. 4). Field activities were conducted to perform and document sampling objectives within the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5) while achieving the cleanup standards. All remedial action surveys, sampling, and data reviews were conducted and documented in accordance with Weldon Spring Site Remedial Action Project (WSSRAP) Environmental Safety and Health (ES&H) procedures.

4.2 Walkover Surveys

Radiological walkover surveys were conducted following excavation activities using a 2 x 2 sodium iodide (NaI) scintillation detector. Each confirmation unit (CU) was surveyed using radioactivity levels above 1.5 times the background concentrations (of gamma emitting radioactivity) as a general guideline. Radioactivity background readings were collected each day at the background sample location at the Weldon Spring site flagpole. The background reading was recorded in counts per minute (cpm) and used for walkover surveys conducted that day. In areas within close proximity to the raffinate pits, lead shielding was added to the detector's sides to reduce the interfering radiation levels given off by the raffinate pits. The bottom of the detector remained unshielded to give an adequate measurement of the surface directly beneath the detector. In cases when a shielded detector was used, the corresponding background reading was also taken with a shielded detector.

Field walkover surveys were conducted on a profile 1 m spaced grid system within each CU. Walkover surveys where no levels of radioactivity exceeded 1.5 x background levels were documented on a Walkover Survey Results Form or in the log books. Areas exceeding 1.5 times the background level were further excavated until survey results indicated no levels above 1.5 times background. Radiation Survey Forms WP-471 are presented in Appendix B. Information on the walkovers that were documented in logbooks can be found in the following WP-471 ES&H logbooks: 97-0013, 97-0021, 97-0026, 98-0001, and 98-0015.

4.3 Soil Sampling

After the walkovers were completed and documented, soil sampling was conducted within each CU as part of the confirmation process. This process includes several categories of soil samples such as predetermined confirmation samples, hot spot samples, and resamples.

Soil sample locations were chosen based upon a 10 m by 10 m (31 ft x 31 ft) grid Samples were collected at every node (grid intersection) and some center points The soil sampling locations are presented in Appendix A for each CU Node samples are denoted with an '-S' and center point samples are denoted with a '-C' Sample locations were relocated in the event the original location was not practical or safe. Sample locations that were moved more than 1.8 m (5 ft) were resurveyed. Samples with a '02' suffix are those representing a lower level of confirmations. These samples are detailed in Section 5.

If preliminary results from these confirmation samples indicated contaminants in the CU met the cleanup standards as presented in the *Attainment Plan*, no further remediation was required A Disposition Form was then completed and the CU released back to the subcontractor.

Alternatively, if the confirmation results indicated the cleanup standards were not met, additional walkover and/or sampling was conducted to delineate the area of contamination These hot spot samples were designated by the suffix '-HS ' If the hot spot sample results and/or walkover surveys determined that the area exceeded the hot spot rule (presented in Section 2 5), then additional excavation was required. Additional confirmation samples were then collected and designated with the suffix '-RS.' Once the cleanup standards were met, a Disposition Form was completed and the CU released back to the subcontractor The Disposition Forms for each CU are presented in Appendix C

4.4 Laboratory Activities

Laboratory activities were conducted in accordance with *Project Management Contractor Quality Assurance Program* (Ref 6) and *Environmental Quality Assurance Project Plan* (EQAjP) (Ref. 8).

Radiological soil samples were collected for Ra-226, Ra-228, Th-230, Th-232, and U-238 and analyzed by the on-site laboratory. Preliminary estimated Ra-226 results were used to release CUs. In addition, because Th-232 is in secular equilibrium with Ra-228, the concentrations are considered essentially the same. Th-232 concentrations were based upon Ra-228 values Both of these issues are further explained in interoffice correspondences (IOCs) included in Appendix E

Chemical soil samples were collected for PAHs, arsenic, and TNT All samples collected were analyzed by off-site laboratories using CLP methodologies

4.5 Verification Activities

The Oak Ridge Institute for Science and Education (ORISE) was contracted by the U.S. Department of Energy (DOE) to verify confirmation soil sampling in the chemical plant area of the Weldon Spring site. Verification activities included independent walkover radiological surveys and the collection and analysis of soil samples to verify proper disposition of CUs. Field verification activities were conducted in accordance with ORISE's *Final Survey Plan* (Ref. 9). A table summarizing ORISE hot spot information is presented in Appendix F.

4.5.1 Walkover Surveys

ORISE conducted independent walkover radiological surveys in areas that had been confirmed. Walkover surveys were conducted using a 1 x 1 sodium iodide (NaI) scintillation detector. Walkover surveys were conducted to verify field results obtained by WSSRAP personnel.

4.5.2 Soil Sampling

ORISE conducted independent collection and analyses of soil samples. Soil samples were collected at random locations and from areas identified by walkover surveys. Soil sampling was conducted to also verify proper disposition of the CUs.

4.5.3 Verification of WP471 Documentation

All ORISE verification and audit activities have been completed. A final verification report has been prepared by ORISE (Ref. 11). The ORISE report contains verification of walkover surveys and soil sampling results. The report also states that the remedial action objectives were achieved.

5. CONFIRMATION UNIT RESULTS SUMMARY

The following section includes the confirmation unit (CU) analytical results summary for the 21 CUs that are located within RU13 and portions of RU21 Each summary was generated from data collected during the remediation activities. Each summary includes the location of the CU, a list of contaminants of concern (COCs), a general discussion of the remedial activities. walkover survey results, a comparison of preliminary and final analytical results, hot spot summary if applicable, and the dates when the CU was released for unrestricted use.

Preliminary data are the initial results immediately available from the laboratory and are used to disposition CUs. Final data are the fully reviewed results of the last analyses performed For chemical analyses, the preliminary data and the final data usually remain the same, while radiological data usually vary slightly. This change is necessary because the analytical methods for some parameters require additional time following homogenization for the regrowth of daughter products.

Data collected from each CU following the excavation of contaminated soils are summarized in the following tables. These data do not include hot spot areas where further excavation was required. Rather, these tables have been compiled using data collected to ensure that the remediation of these contaminated soils was completed and represents soils that remain in place.

Hot spot data and additional information for each CU are contained in the following Appendixes. Sample Location Maps are presented in Appendix A Radiation Survey Forms WP-471 are presented in Appendix B Disposition Forms are presented in Appendix C, which uses preliminary results. Final analytical results are presented in Appendix D (including hot spot data collected prior to additional remediation). Inter-Office Correspondences are included in Appendix E. A summary table of Oak Ridge Institute for Science and Education (ORISE) hot spots is presented in Appendix F.

Apparent discrepancies may occur between the number of locations identified for each CU and the number of samples presented in the analytical summary tables (Section 5 1 through 5.21). This is because some locations were not sampled for all parameters

5.1 Confirmation Unit 143

Confirmation Unit 143 is located along the northern boundary of RU13 The COCs identified for CU143 included U-238, Th-230, Th-232, Ra-226, and Ra-228 The NaI field background readings collected for CU143 during confirmation activities ranged between 4,000 cpm and 4,500 cpm, using a shielded detector All of the final radioactivity levels were less than 1 5 times the background level

Confirmation soil samples were collected at the 29 designated locations (see Figure A-1, Appendix A). There were three variations from the sampling plan for this CU. First, in addition to the predetermined locations, ORISE identified three areas with elevated readings during their December 8, 1997 walkover survey. These areas were remediated, additional PMC walkover surveys were conducted, and the areas were resampled. The addition of these three samples makes a total of 32 actual sample locations. ORISE hot spots are detailed in Appendix F.

The second variation, all areas located within the bottom of Raffinate Pit 4 were initially scheduled to receive at least 6 in. of clean backfill. It was determined that a small portion of this CU would require additional material to be removed to meet the final grading plan. The cut material was excavated and then placed subsurface into excavation zones E and F. The five sample locations within the cut area were resampled (see '02' suffices on Figure A-1) and results compared to surface as low as reasonably achievable (ALARA) criteria for confirmation.

The third variation was the nitroaromatic contamination encountered during the additional excavation to reach final grade, as mentioned above. During this activity, two concrete slabs and soil with an unidentifiable odor were uncovered. Additional characterization was conducted and nitroaromatic contamination was identified. A review of historical ordnance operations drawings indicated that the tri-nitrating house of TNT production line 3 was situated in this vicinity. Based upon this information, TNT was added to the list of COCs for reconfirmation of this area.

Table 5-1 presents sample totals, and concentration ranges and averages for the preliminary and final analytical results.

In total, 37 sample results for radiological and five for TNT are identified in Table 5-1. This includes the 29 predetermined locations, the three ORISE determined locations, and the five locations within the cut area that were resampled. All five results were added into the table since all of the soil removed is still located subsurface within Raffinate Pit 4 and was not removed for permanent disposal in the cell.

Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). After the walkover survey, soil sampling and remediation activities were completed and disposition forms were reviewed and signed. A final release for Confirmation Unit 143 was issued on June 10, 1998. Throughout most of this CU, subsurface criteria were used to identify hot spots since this CU was going to receive more than 6 in. of clean backfill. In this portion, all results were less than subsurface criteria. The portion of this CU that would actually need to be cut for final grade was confirmed using surface cleanup levels. All COC averages were less than surface ALARA.

Table 5-1 Confirmation Unit 143 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
TNT (mg/kg)	5	0.02 - 2 10	0.52	0	5	0 02 - 2 10	0 52	0
Radium 226 (pCi/g)	37	1.32 - 3 95	2.02	0	37	0 64 - 2.96	1 33	0
Radium 228 (pCi/g)	37	0.52 - 2 27	1.29	0	37	0 50 - 3 38	1 46	0
Total Radium (pCi/g)	37	1 88 - 5 88	3 31	2	37	1 50 - 6 34	2 79	1
Thorium 230 (pCi/g)	37	0 83 - 15 41	2 46	5	37	0 83 - 15 0	2 41	4
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	37	1.24 - 5 55	2 02	0	37	1 23 - 5 75	2 10	0

5.2 Confirmation Unit 144

Confirmation Unit 144 is located in the northwestern portion of RU13 The COCs identified for CU144 included U-238, Th-230, Th-232, Ra-226, and Ra-228 During confirmation activities, the NaI field background reading collected for CU144 using a shielded detector was 4,000 cpm All final radioactivity levels were less than 1 5 times background level

Confirmation soil samples were collected at the 29 designated locations (see Figure A-2, Appendix A). The CU was released for additional excavation on November 18, 1997, due to the identification of nine hot spots above surface criteria, seven of which exceeded subsurface criteria In accordance with the *Confirmation Attainment Plan* (Ref 5), all hot spots were remediated (Note that the attainment plan requires that if there are more than five hot spots in any CU, all hot spots must be remediated.) These areas were then resampled and the CU was rereleased on December 4, 1997, using subsurface criteria for identification of hot spots Subsurface criteria were used since this CU would be receiving at least 6 in. of clean backfill to attain final grading

ORISE walked over this CU on December 8, 1997, and identified three elevated areas that required remediation. These areas were remediated, walked over, and sampled by the Project Management Contractor (PMC). The CU was rereleased on January 5, 1998 ORISE scanned

these areas again on January 28, 1998, and confirmed that the areas had been remediated. Results showed background levels.

Table 5-2 presents sample totals, and concentration ranges and averages for the preliminary and final analytical results. In a total, 32 sample results are identified in Table 5-2, which includes the 29 predetermined locations and the three ORISE designated locations. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). Subsurface criteria were used to identify hot spots since this CU would be needing more than 6 in. of clean backfill to attain final grade. All results were less than subsurface criteria and all COC averages were less than surface ALARA.

Table 5-2 Confirmation Unit 144 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	32	1.54 - 4.84	2.38	0	32	0.75 - 2.96	1.38	0
Radium 228 (pCi/g)	32	0.53 - 3.43	1 51	0	32	0.59 - 3.39	1.46	0
Total Radium (pCi/g)	32	2.30 - 7.81	3.89	3	32	1.70 - 6.34	2.84	2
Thorium 230 (pCi/g)	32	0.75 - 15.41	2.85	5	32	0.75 - 15 0	2 84	3
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	32	1.29 - 17 36	2 72	0	32	1.26 - 20.0	2.71	0

5.3 Confirmation Unit 145

Confirmation Unit 145 is located in the northern portion of RU13. The COCs identified for CU145 included U-238, Th-230, Th-232, Ra-226, and Ra-228. The NaI field background readings collected for CU145 during confirmation activities ranged between 4,000 cpm – 4,500 cpm, using a shielded detector. All of the final radioactivity levels were less than 1.5 times the background level.

The western portion of this CU was released for confirmation sampling first Confirmation soil samples were collected from 20 of the 30 designated locations (see Figure A-3, Appendix A). The partial CU was released for additional excavation on November 18, 1997, due to the identification of 11 hot spots above surface criteria, nine of which exceeded subsurface criteria. In accordance with the *Confirmation Attainment Plan* (Ref. 5), all hot spots were remediated. (Note that the attainment plan requires that if there are more than five hot spots in any CU, that all hot spots be remediated.) These areas were then resampled and the CU was re-released on December 4, 1997, using subsurface criteria for identification of hot spots Subsurface criteria were used since this CU would be receiving at least 6 in of clean backfill to attain final grading. The remainder of the CU was released on December 8, 1997

ORISE walked over this CU on December 8, 1997, and identified one elevated area that required remediation. This area was remediated, walked over, and sampled by the PMC The CU was re-released on January 5, 1998

Table 5-3 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. There are 31 sample results identified in Table 5-3, which includes the 30 predetermined locations and the one ORISE designated location Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref 5) Subsurface criteria were used to identify of hot spots since this CU would be receiving at least 6 in. of clean backfill to attain final grade All results were less than subsurface criteria and the COC averages were less than surface ALARA.

5.4 Confirmation Unit 146

Confirmation Unit 146 is located along the northeastern portion of RU13 The COCs identified for CU146 included U-238, Th-230, Th-232, Ra-226, and Ra-228. The NaI field background reading collected for CU146 during confirmation activities was 4,500 cpm, using a shielded detector All of the final radioactivity levels were less than 1 5 times background level

Confirmation soil samples were collected at the 28 designated locations (see Figure A-4, Appendix A). One Th-230 hot spot was identified. Additional sampling was conducted and it was found to meet the hot spot rule; therefore, no further excavation was necessary These additional samples are shown on Figure A-4 as SC-14618-S-H501 thru SC-14618-S-H504 The CU was released on December 11, 1997 It was later decided to remove the hot spot as an ALARA measure since it was easily accessible during removal of other hot spots in adjacent confirmation units. After remediation, the CU was re-released on January 5, 1998 Both of these releases were

Table 5-3 Confirmation Unit 145 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. Of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	31	0.78 - 2.61	1.86	0	31	0 64 - 1.48	1.02	0
Radium 228 (pCi/g)	31	0.57 - 1.62	1.21	0	31	0.59 - 1.63	1 28	0
Total Radium (pCi/g)	31	1.89 - 3.81	3.07	0	31	1.59 - 2.89	2.30	0
Thorium 230 (pCi/g)	31	0.31 - 15.41	1.66	1	31	0.70 - 15.0	1 75	1
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	31	1.22 - 8 09	2.06	0	31	1.23 - 7.41	1.95	0

based upon subsurface criteria for identification of hot spots. Subsurface criteria were used since this CU would be receiving at least 6 in. of clean backfill to attain final grading.

All areas located within the bottom of Raffinate Pit 4 were initially scheduled to receive at least 6 in. of clean backfill. It was then determined that a small portion of this CU would require additional material to be removed to meet the final grading plan. The cut material was excavated and then placed subsurface into excavation Zones E and F. The six sample locations within the cut area were resampled (see the samples with '02' suffices on Figure A-4) and results compared to surface ALARA/criteria standards for confirmation. During this additional excavation to reach final grade, an area contaminated with nitroaromatics was discovered. TNT was therefore added to the list of COCs for reconfirmation of this area. Refer to additional details presented in Section 5.1.

Table 5-4 presents sample totals, and concentration ranges and averages for the preliminary and final analytical results. There are 34 sample results identified in Table 5-4, which includes the 28 predetermined locations and the six locations within the cut area which were resampled. All six results were added into the table since all the soil removed is still located subsurface within Raffinate Pit 4 and was not removed for permanent disposal in the cell. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 146 was issued on June 10, 1998. Subsurface criteria were used to identify hot spots since this CU

would be receiving at least 6 in. of clean backfill to attain final grade All results were less than subsurface criteria and the COC averages were less than surface ALARA

Table 5-4 Confirmation Unit 146 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
TNT (mg/kg)	6	0.02 - 2 10	0.47	0	6	0 02 – 2 10	0 47	0
Radium 226 (pCi/g)	34	0.68 - 2 86	1 64	0	34	0 69 – 1 96	1 22	0
Radium 228 (pCi/g)	34	0 59 - 2 39	1.23	0	34	0 56 – 2 28	1 33	0
Total Radium (pCi/g)	34	1.68 - 4.77	2.87	0	34	1 65 – 4 24	2 55	0
Thorium 230 (pCi/g)	34	0 85 - 12 09	2 15	3	34	0 79 – 12 1	2 15	3
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	34	1.15 - 5 49	1 77	0	34	1 23 – 4 02	1 79	0

5.5 Confirmation Unit 147

Confirmation Unit 147 is located in the northwestern portion of RU13 The COCs identified for CU147 included U-238, Th-230, Th-232, Ra-226, Ra-228, Arsenic, and PAHs The NaI field background reading collected for CU147 during confirmation activities was 4,500 cpm, using a shielded detector All of the final radioactivity levels were less than 1 5 times background level

Confirmation soil samples were collected at 30 designated locations (see Figure A-5, Appendix A). All results were less than surface criteria and the averages were less than surface ALARA. ORISE walked over this CU on January 28, 1998, and found no areas with elevated readings. There was one variation to the sampling plan which involved the excavation of Zone G, see Figure 2-1. This zone had two discrete intervals of contamination identified and the original plan was to excavate all the soil as contaminated and confirm the bottom of the excavation Because this meant approximately 45,000 cu yd of clean material would be excavated as contaminated and placed into the disposal cell, and there was a need for clean soils to backfill the deep excavations in Zone E and Zone F, it was determined that the contamination intervals should be removed in lifts This meant that those CU147 sampling locations found within Zone G would

have two sets of confirmation numbers, both of which would be included in the summary. Because the clean interval located between the two contaminated intervals was removed and used as subsurface fill in Zones E and F, all results are included as representing soils that were left in place and not removed for final placement in the disposal cell.

Table 5-5 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. There are a total of 48 sample results identified in Table 5-5, which includes the 30 predetermined locations and the 18 locations within the cut area, which were resampled (reflected by the samples with '02' suffix on Figure A-5). All 18 results were added into the table since all the soil removed is still located subsurface within Raffinate Pit 4 and was not removed for permanent disposal in the cell. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 147 was issued on June 11, 1998. The average for all COCs was less than surface ALARA.

Table 5-5 Confirmation Unit 147 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Arsenic	6	3.7 - 8.9	6.7	0	6	3 65 - 8.90	6.79	0
PAHs	5	ND	NA	0	5	ND	NA	0
Radium 226 (pCi/g)	48	0.30 - 3.29	1.85	0	48	0.36 - 2.02	1.20	0
Radium 228 (pCi/g)	48	0.50 - 2.56	1.23	0	48	0.53 - 2.14	1.23	0
Total Radium (pCi/g)	48	0.87 - 5.44	3.08	1	48	1.34 - 4.16	2.43	0
Thorium 230 (pCi/g)	48	0.80 - 5.75	1.39	1	48	0.80 - 5.75	1.39	1
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	48	1 16 - 5 52	1.81	0	48	1 28 - 6 23	1.80	0

5.6 Confirmation Unit 148

Confirmation Unit 148 is located in the central portion of RU13. The COCs identified for CU148 included U-238, Th-230, Th-232, Ra-226, and Ra-228. The NaI field background

reading collected for CU148 during confirmation activities was 4,500 cpm, using a shielded detector All of the final radioactivity levels were less than 1.5 times background level

Confirmation soil samples were collected at the 30 designated locations (see Figure A-6, Appendix A). All results were less than subsurface criteria and the averages were less than ALARA ORISE walked over this CU on January 28, 1998, and found no areas with elevated readings. There was one variation to the sampling plan that involved the excavation of Zone G, see Figure 2-1. This zone had two discrete intervals of contamination identified and the original plan was to excavate all the soil as contaminated and confirm the bottom of the excavation Because this meant 45,000 cu yd of clean material would be excavated as contaminated and placed into the disposal cell and there was a need for clean soils to backfill the deep excavations in Zone E and Zone F, it was determined that the contamination intervals should be removed in lifts Thus, CU148 sampling locations found within Zone G would have two sets of confirmation numbers, both of which would be included in the summary. Because the clean interval located between the two contaminated intervals was removed and used as subsurface fill in Zones E and F, all results are included as representing soils that were left in place and not removed for final placement into the disposal cell.

Table 5-6 presents sample totals and concentration ranges and averages for preliminary and final analytical results. A total of 46 sample results are identified in Table 5-6, that includes the 30 predetermined locations and the 16 locations within the cut area which were resampled (refer to the samples with '02' suffix on Figure A-6) All 46 results were added into the table since all the soil removed is still located subsurface within Raffinate Pit 4 and was not removed for permanent disposal in the cell. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 148 was issued on June 03, 1998, using subsurface criteria to define hot spots Subsurface criteria were used since this CU would be receiving at least 6 in. of clean backfill to attain final grading The average for all COCs was less than surface ALARA

Table 5-6 Confirmation Unit 148 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	46	0.34 - 4.34	1.70	0	46	0.36 - 2.45	1.15	0
Radium 228 (pCi/g)	46	0.60 - 3.43	1.35	0	46	0.53 - 3.39	1.38	0
Total Radium (pCi/g)	46	1.86 - 7.77	2.05	1	46	1.34 - 5.84	2.53	1
Thorium 230 (pCi/g)	46	0.76 - 15.10	2.18	4	46	0.76 - 15.10	2.21	4
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	46	1.22 - 11.06	2 13	0	46	1 20 - 11.10	2.05	0

5.7 Confirmation Unit 149

Confirmation Unit 149 is located in the central portion of RU13. The COCs identified for CU149 included U-238, Th-230, Th-232, Ra-226, and Ra-228. Using a shielded detector, the NaI field background reading collected for CU149 during confirmation activities was 4,500 cpm. All final radioactivity levels were less than 1.5 times background level.

Confirmation soil samples were collected at the 30 designated locations (see Figure A-7, Appendix A). All results were less than subsurface criteria and the averages were less than ALARA. ORISE walked over this CU on January 29, 1998, and found no areas with elevated readings.

Table 5-7 presents sample totals and concentration ranges and averages for preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 149 was issued on June 08, 1998, using subsurface criteria to define hot spots. Subsurface criteria was used since this CU would be receiving at least 6 in of clean backfill to attain final grade. The average for all COCs was less than surface ALARA.

Table 5-7 Confirmation Unit 149 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	30	0.75 - 2 61	1 83	0	30	0 78 - 1 84	1 09	0
Radium 228 (pCi/g)	30	0.57 - 2 68	1 31	0	30	0 56 - 2 57	1 28	0
Total Radium (pCi/g)	30	1 66 - 4 81	3 14	0	30	1 42 - 4 41	2 37	0
Thorium 230 (pCi/g)	30	0 91 - 15 1	2.19	2	30	0 91 - 15 1	2 18	2
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	30	1 08 - 3 71	1.66	0	30	1 19 - 2 60	1 62	0

5.8 Confirmation Unit 150

Confirmation Unit 150 is located in the central portion of RU13 The COCs identified for CU150 included U-238, Th-230, Th-232, Ra-226, and Ra-228 Using a shielded detector, the NaI field background reading collected for CU150 during confirmation activities was 5,000 cpm All final radioactivity levels were less than 1 5 times background level

Confirmation soil samples were collected at the 30 designated locations (see Figure A-8, Appendix A) One Th-230 hot spot was identified and removed This hot spot was located at a border point with CU146. See Section 5.4 for hot spot details All results were less than subsurface criteria and the averages were less than ALARA ORISE walked over this CU on March 30, 1998, and found no areas with elevated readings.

Table 5-8 presents sample totals, and concentration ranges and averages for preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref 5) Subsurface criteria was used since this CU would be receiving at least 6 in. of clean backfill to attain final grading. The average for all COCs was less than surface ALARA Partial releases were done on December 17, 1997, January 5, 1998, and February 2, 1998 The complete CU was released on March 10, 1998 Subsurface criteria was used in this CU to determine hot spots since

this area received more than 6 in. of clean backfill. The average for all COCs was less than surface ALARA.

Table 5-8 Confirmation Unit 150 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	30	0 65 - 2 47	1.48	0	30	0.50 - 1.51	1 01	0
Radium 228 (pCi/g)	30	0.56 - 2.01	1.29	0	30	0 50 - 2 31	1 19	0
Total Radium (pCi/g)	30	1.21 - 3.71	2 77	0	30	1.09 - 3.41	2 20	0
Thorium 230 (pCi/g)	30	0 87 - 6.31	1 62	1	30	0.90 - 6.31	1.63	1
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	30	1.19 - 2.29	1.58	0	30	1.19 - 2.15	1 61	0

5.9 Confirmation Unit 151

Confirmation Unit 151 is located in the central portion of RU13. The COCs identified for CU151 included U-238, Th-230, Th-232, Ra-226, and Ra-228. Using a shielded detector, the NaI field background reading collected for CU151 during confirmation activities was 5,000 cpm. All final radioactivity levels were less than 1.5 times background level.

Confirmation soil samples were collected at the 28 designated locations (see Figure A-9, Appendix A). All results were less than subsurface criteria and the averages were less than surface ALARA. ORISE walked over this CU on March 30, 1998, and found no areas with elevated readings. Later, it was determined that a small portion of this CU would require additional material to be removed to meet the final grading plan. The cut material was excavated and then placed subsurface into Excavation Zones E and F. The 15 sample locations within the cut area were resampled (refer to the sample IDs with '02' suffix on Figure A-9) and results compared to surface ALARA/criteria standards for confirmation.

Table 5-9 presents sample totals and concentration ranges and averages for preliminary and final analytical results. Review of the final analytical results supports preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards

as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref 5) All results within the cut area were less than surface ALARA. Subsurface criteria were used for the remainder of the CU since it would be receiving at least 6 in of clean backfill to attain final grade The average for all COCs was less than surface ALARA The initial release for CU151 was June 11, 1998. The CU was released after reaching final grade on July 24, 1998

Table 5-9 Confirmation Unit 151 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	43	0.65 - 2 18	1 42	0	43	0 35 - 1 79	1 07	0
Radium 228 (pCi/g)	43	0 50 - 2 01	1 18	0	43	0 56 - 2 31	1 29	0
Total Radium (pCi/g)	43	1 17 - 3 66	2 60	0	43	1 58 - 3 47	2 36	0
Thorium 230 (pCi/g)	43	0 82 - 6 31	1.66	2	43	0 82 - 6 31	1.66	2
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	43	1 17 - 2 17	1 59	0	43	1 23 - 3 89	1 72	0

In total, 43 sample results are identified in Table 5-9, including the 28 predetermined locations and the 15 locations within the cut area that were resampled All 15 results were added into the table since all the soil removed is still located subsurface within Raffinate Pit 4 and was not removed for permanent disposal in the cell

5.10 Confirmation Unit 152

Confirmation Unit 152 is located along the southwestern portion of RU13 The COCs identified for CU152 included U-238, Th-230, Th-232, Ra-226, Ra-228, Arsenic, and PAHs Using a shielded detector, the NaI field background reading collected for CU152 during confirmation activities was 6,000 cpm. All final radioactivity levels were less than 1 5 times background level. ORISE did not conduct walkover surveys for this CU

Confirmation soil samples were collected at the 29 designated locations (see Figure A-10, Appendix A). All results were less than surface criteria and the averages were less than surface ALARA. There was one variation to the sampling plan which involved the excavation of Zone G,

see Figure 2-1. This zone had two discrete intervals of contamination identified and the original plan was to excavate all the soil as contaminated and confirm the bottom of the excavation. Since this meant approximately 45,000 cu yd of clean material would be excavated as contaminated and placed into the disposal cell, and there was a need for clean soils to backfill the deep excavations in Zone E and Zone F, it was determined that the contamination intervals should be removed in lifts. Thus, CU152 sampling locations found within Zone G would have two sets of confirmation numbers, both of which would be included in the summary. Because the clean interval located between the two contaminated intervals was removed and used as subsurface fill in Zones E and F, all results are included as representing soils that were left in place and not removed for final placement into the disposal cell.

Table 5-10 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. In total, 32 sample results are identified in Table 5-10, including the 29 predetermined locations and the three resample locations within Zone G that were resampled (refer to the sample IDs with '02' suffix on Figure A-10). All three resample results were added into the table since all soil removed is still located subsurface within Raffinate Pit 4 and was not removed for permanent disposal in the cell. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 152 was issued on June 10, 1998. All results were less than surface criteria and the COC averages were less than surface ALARA.

Table 5-10 Confirmation Unit 152 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Arsenic (mg/kg)	26	2.2 - 16.2	6.91	0	26	2.20 – 16 8	7.66	0
PAHs (mg/kg)	5	ND	NA	0	5	ND	NA	0
Radium 226 (pCi/g)	32	0.76 - 2.47	1.74	0	32	0 36 - 1.72	1.16	0
Radium 228 (pCi/g)	32	0.60 - 1.58	1.18	0	32	0 53 - 1.74	1.13	0
Total Radium (pCi/g)	32	1 38 - 3 76	2 92	0	32	1.36 - 3 04	2 29	0
Thorium 230 (pCi/g)	32	0 78 - 5.30	1 33	1	32	0.75 - 5.30	1.33	1

Table 5-10 Confirmation Unit 152 Analytical Results Summary (Continued)

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	32	1 17 - 5.52	1.82	0	32	1 20 - 6 23	1 79	0

5.11 Confirmation Unit 153

Confirmation Unit 153 is located in the southwestern portion of RU13 The COCs identified for CU153 included U-238, Th-230, Th-232, Ra-226, Ra-228, and Arsenic Using a shielded detector, the NaI field background reading collected for CU153 during confirmation activities was 6,000 cpm All final radioactivity levels were less than 1 5 times background level ORISE did not conduct walkover surveys for this CU

Confirmation soil samples were collected at the 27 of the 30 designated locations (see Figure A-11, Appendix A). This CU has a new southern boundary. The intermediate dike was built with potentially contaminated soil and then covered with clean material The toe of the dike extended into the southern portion of the confirmation unit The remainder of this CU will be included in WP-437 remediation and confirmation activities

Table 5-11 presents sample totals and concentration ranges and averages for preliminary and final analytical results Review of the final analytical results supports the preliminary results indicating remedial activities have been completed The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref 5) A final release for Confirmation Unit 153 was issued on June 11, 1998 Subsurface criteria was used for identification of hot spots since this CU would be receiving at least 6 in. of clean backfill to attain final grade. All results were less than subsurface criteria and the COC averages were less than surface ALARA.

Table 5-11 Confirmation Unit 153 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Arsenic (mg/kg)	6	3.0 - 10.6	8.07	0	17	2.95 - 20.0	10.60	0
Radium 226 (pCi/g)	27	0 75 - 6 29	1.78	1	27	0.70 - 3 86	1.20	0
Radium 228 (pCi/g)	27	0.55 - 2.68	1.30	0	27	0.62 - 2.57	1.32	0
Total Radium (pCi/g)	27	1.69 - 7.55	3.08	1	27	1.54 - 4 96	2.52	1
Thorium 230 (pCi/g)	27	0 85 - 15.1	2.25	2	27	0.85 - 15 1	2.25	2
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	27	1.17 - 2.61	1 60	0	27	1.07 - 5.20	1 67	0

5.12 Confirmation Unit 154

Confirmation Unit 154 is located in the central portion of RU13. The COCs identified for CU154 included U-238, Th-230, Th-232, Ra-226, and Ra-228. Using a shielded detector, the NaI field background reading collected for CU154 during confirmation activities was 6,000 cpm. All final radioactivity levels were less than 1.5 times background level.

Confirmation soil samples were collected at the 32 designated locations (see Figure A-12, Appendix A). All results were less than surface criteria and the averages were less than surface ALARA. ORISE walked over this CU on March 10, 1998, and found no areas with elevated readings.

Table 5-12 presents sample totals and concentration ranges and averages for preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). Subsurface criteria was used since this CU would be receiving at least 6 in. of clean backfill to attain final grade. The average for all COCs was less than surface ALARA.

A Partial release was done on March 10, 1998, and the complete CU was released on June 5, 1998. All results were less than surface ALARA; therefore, all averages for this CU were also below surface ALARA.

Table 5-12 Confirmation Unit 154 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	32	0 68 - 1.97	1 36	0	32	0 35 - 1 20	0 87	0
Radium 228 (pCi/g)	32	0 50 - 2 01	1 27	0	32	0 59 - 2 31	1 33	0
Total Radium (pCi/g)	32	1 19 - 3 79	2.63	0	32	1 19 - 3 49	2 20	0
Thorium 230 (pCi/g)	32	0 87 - 4.99	1.61	0	32	0 87 - 4 99	1 61	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	32	1 21 - 2.29	1 57	0	32	1 21 - 2 98	1 62	0

5.13 Confirmation Unit 155

Confirmation Unit 155 is located along the southern portion of RU13 The COCs identified for CU155 included U-238, Th-230, Th-232, Ra-226, and Ra-228 Using a shielded detector, the NaI field background reading collected for CU155 during confirmation activities was 6,000 cpm All final radioactivity levels were less than 1 5 times background level ORISE did not conduct walkover surveys for this CU

Confirmation soil samples were collected at 23 of the 29 designated locations (see Figure A-13, Appendix A). Note that this CU has a new southern boundary The intermediate dike was built with potentially contaminated soil and then covered with clean material The toe of the dike extended into the southern portion of the confirmation unit The remainder of this CU will be included in WP-437 remediation and confirmation activities

Table 5-13 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed The final results meet the

cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 155 was issued on June 10, 1998, using subsurface criteria to define hot spots. All results were less than surface ALARA and, therefore, all of the averages were also less than surface ALARA.

Table 5-13 Confirmation Unit 155 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	23	0.64 - 2.54	1.34	0	23	0.70 - 1 71	0 90	0
Radium 228 (pCi/g)	23	0.53 - 1.60	1.16	0	23	0.59 - 1 42	1.17	0
Total Radium (pCi/g)	23	1.69 - 3.92	2.50	0	23	1.40 - 2 41	2.07	0
Thorium 230 (pCi/g)	23	0.87 - 1.93	1.11	0	23	0.87 - 1.93	1.11	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	23	1.20 - 1.91	1.52	0	23	1.07 - 2.98	1.57	0

5.14 Confirmation Unit 156

Confirmation Unit 156 is located along the southern portion of RU13. The COCs identified for CU156 included U-238, Th-230, Th-232, Ra-226, and Ra-228. Using a shielded detector, the NaI field background reading collected for CU156 during confirmation activities was 6,000 cpm. All final radioactivity levels were less than 1.5 times background level. ORISE did not conduct walkover surveys for this CU.

Confirmation soil samples were collected at 24 of the 30 designated locations (see Figure A-14, Appendix A). Note that this CU has a new southern boundary. The intermediate dike was built with potentially contaminated soil and then covered with clean material The toe of the dike extended into the southern portion of the confirmation unit. The remainder of this CU will be included in WP-437 remediation and confirmation activities.

Table 5-14 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the

cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5) A final release for Confirmation Unit 156 was issued on June 10, 1998, using subsurface criteria to define hot spots. This CU was released using subsurface criteria to determine hot spots; therefore, there are results that exceed surface criteria that were not sampled as hot spots This CU utilized subsurface criteria since the area would receive more than 6 in of clean back fill All COC averages were less than ALARA.

Table 5-14 Confirmation Unit 156 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	24	0 68 - 3 11	1 48	0	24	0 35 - 1 77	0 96	0
Radium 228 (pCi/g)	24	0 50 - 2 33	1.28	0	24	0 59 - 2 52	1 33	0
Total Radium (pCi/g)	24	1 19 - 5 44	2 76	1	24	1 19 - 4 29	2 29	0
Thorium 230 (pCi/g)	24	0 87 - 11 96	2.16	2	24	0 87 - 11 96	2 16	2
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	24	1 17 - 4 68	1 83	0	24	1 22 - 3 06	1 76	0

5.15 Confirmation Unit 159

Confirmation Unit 159 is located along the western limits of RU13 The COCs identified for CU159 included U-238, Th-230, Th-232, Ra-226, Ra-228, Arsenic, and PAHs Using a shielded detector, the NaI field background reading collected for CU159 during confirmation activities was 4,800 cpm. All final radioactivity levels were less than 1 5 times background level ORISE conducted walkovers on September 16, 1998 No areas of elevated readings were identified.

Confirmation soil samples were collected from the 27 designated locations (see Figure A-15, Appendix A). There was one Th-230 hot spot identified by the soil sampling results Additional samples were collected around this hot spot and determined to meet the hot spot rule, therefore no additional excavation was required These additional samples are identified as SC-15903-S-H501 thru SC-15903-S-H507 on Figure A-15). The 100 m^2 average for Th-230 was

also below criteria. ORISE conducted a walkover of CU159 on September 16, 1997, and no hot spots were identified.

Additional contaminated soil was excavated at a lower elevation as detailed in the WP-471 specifications. These areas are identified as zones B, C, and D (Figure 2-1). Additional confirmation samples were collected after the excavations were completed. The zone locations and all confirmation results are included in the Disposition Form for CU159 (Appendix C).

Table 5-15 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref 5). A final release for Confirmation Unit 159 was issued on June 10, 1998. All results were less than surface criteria, with the exception of the one Th-230 hot spot. All COC averages were less than surface ALARA.

Table 5-15 Confirmation Unit 159 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Arsenic (mg/kg)	35	2.45-10.80	6.8	0	35	2 45-10.80	6 81	0
PAHs	3	ND	N/A	0	3	ND	NA	0
Radium 226 (pCi/g)	37	0.31-3.00	1.65	0	37	0.33-1.61	1.08	0
Radium 228 (pCi/g)	37	0.59-2.53	1 30	0	37	0.58-2.48	1.26	0
Total Radium (pCi/g)	37	1 13-5.53	2.95	0	37	1.31-4.09	2.34	0
Thorium 230 (pCi/g)	37	0 78-7.92	1.63	1	37	0 78-7.92	1.63	1
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	37	1.15-2.66	1.63	0	37	1.28-2.48	1 69	0

5.16 Confirmation Unit 160

Confirmation Unit 160 is located along the northwestern limits of RU13 The COCs identified for CU160 included U-238, Th-230, Th-232, Ra-226, and Ra-228 Using a shielded detector, the NaI field background reading collected for CU160 during confirmation activities was 4,800 cpm. All final radioactivity levels were less than 1.5 times background level

Confirmation soil samples were collected from the 33 designated locations (see Figure A-16, Appendix A). A Th-230 hot spot was identified at SC-16017-C Results of hot spot samples (SC-16017-C-H601 thru SC-16017-C-H507) indicated that additional excavation was required After remediation, additional confirmation samples were collected to confirm the area (SC-16017-C-R501 thru SC-16017-C-R505). ORISE conducted walkovers on September 16, 1998, and found no areas with elevated readings.

Table 5-16 presents sample totals, and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 160 was issued on January 5, 1998 All results were less than surface criteria and all COC averages were less than surface ALARA

Table 5-16 Confirmation Unit 160 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	33	1 32 - 4 86	2 09	0	33	0 76 - 5 98	1 45	1
Radium 228 (pCi/g)	33	0 59 - 2 62	1 33	0	33	0 63 - 2 78	1 39	0
Total Radium (pCi/g)	33	1 95 – 6 09	3.42	2	33	1 88 - 6 61	2 84	2
Thorium 230 (pCi/g)	37*	0 93 - 4 76	1.63	0	37	0 86 - 4 76	1 56	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	33	1 24 - 3 68	1 81	0	33	1 25 - 4 70	1 86	0

* There are 37 Thorium-230 samples due to the remediation of an area, which then required additional samples to be collected to verify the area remediated

5.17 Confirmation Unit 161

Confirmation Unit 161 is located along the northern limits of RU13. The COCs identified for CU161 included U-238, Th-230, Th-232, Ra-226, and Ra-228. Using a shielded detector, the NaI field background reading collected for CU161 during confirmation activities was 4,800 cpm. All final radioactivity levels were less than 1.5 times background level.

Confirmation soil samples were collected at 17 of the 21 designated locations (see Figure A-17, Appendix A). Note that this CU has a new northern boundary. The northern boundary was moved to the south to allow for the installation of a ditch required to carry runoff from an adjacent contaminated stockpile. This ditch would prevent possible contaminated water from entering a confirmed clean area. The remainder of this CU will be included in WP-437 remediation and confirmation activities.

ORISE conducted a walkover survey on September 16, 1997, and identified two areas with elevated readings. Both of these areas were north of the new CU boundary, but were remediated and resampled. Results can be found in Appendix D.

Table 5-17 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Twenty-one radium and thorium samples are identified in Table 5-17 due to the remediation of an area which then required additional samples to be collected to verify the area remediated. Review of the final analytical results supports preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). A final release for Confirmation Unit 161 was issued on November 25, 1997. All results were less than surface criteria and all COC averages were less than surface ALARA.

Table 5-17 Confirmation Unit 161 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	21	1.27 - 3.18	2.10	0	21	0.76-1.75	1.34	0
Radium 228 (pCi/g)	21	0.54 - 1.64	1.20	0	21	0.62-1.66	1.22	0
Total Radium (pCi/g)	21	1.99 - 4.50	3.30	0	21	1 45-3.40	2.56	0

Table 5-17 Confirmation Unit 161 Analytical Results Summary (Continued)

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Thorium 230 (pCi/g)	21	0 70 - 2.07	1.22	0	21	0 83-2 07	1 21	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	17	1.35 - 12.15	2.29	0	21	1.29-12 50	2 28	0

5.18 Confirmation Unit 253

Confirmation Unit 253 is located along the western boundary of RU21 The COCs identified for CU253 included U-238, Th-230, Th-232, Ra-226, and Ra-228. This CU was sampled as a partial, with the remaining portions to be confirmed under WP437 Using a shielded detector, the NaI background readings collected for CU253 during confirmation activities ranged between 4,000 cpm - 7,000 cpm. All final radioactivity levels were less than 1 5 times background level

Table 5-18 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5) After the walkover survey, soil sampling and remediation activities were completed, and Disposition Forms were reviewed and signed A final partial release for Confirmation Unit 253 was issued on July 14, 1998.

Table 5-18 Confirmation Unit 253 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	8	1 09 - 2.88	1.71	0	8	0.92 - 3 08	1 38	0
Radium 228 (pCi/g)	8	0 54 - 1 85	1 26	0	8	1 15 - 1 57	1 32	0

Table 5-18 Confirmation Unit 253 Analytical Results Summary (Continued)

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Total Radium (pCi/g)	8	2.13 - 4.03	2.97	0	8	2.19 - 4.43	2.70	0
Thorium 230 (pCi/g)	8	0 78 - 1.10	0.97	0	8	0 78 - 1.10	0.97	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	8	1.21 - 1.95	1.52	0	8	1.29 - 2.08	1 57	0

5.19 Confirmation Unit 254

Confirmation Unit 254 is located along the western boundary of RU21. The COCs identified for CU254 included U-238, Th-230, Th-232, Ra-226, and Ra-228. This CU was sampled as a partial, with the remaining portions to be confirmed under WP437. Using a shielded detector, the NaI background readings collected for CU254 during confirmation activities ranged between 4,000 cpm- 7,000 cpm. All final radioactivity levels were less than 1.5 times background level.

Table 5-19 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). After the walkover survey, soil sampling, and remediation activities were completed, Disposition Forms were reviewed and signed. A final partial release for Confirmation Unit 254 was issued on July 14, 1998.

Table 5-19 Confirmation Unit 254 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	11	0.65 - 2.09	1.53	0	11	0.84 - 1.46	1 06	0

Table 5-19 Confirmation Unit 254 Analytical Results Summary (Continued)

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 228 (pCi/g)	11	0 59 - 1 39	1 02	0	11	0 56 - 1 55	1 12	0
Total Radium (pCi/g)	11	1.23 - 3.22	2 55	0	11	1 55 - 2 78	2 18	0
Thorium 230 (pCi/g)	11	0.74 - 1 24	0 99	0	11	0 74 - 1 24	0 99	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	11	1 26 - 1.87	1.55	0	11	1 25 - 2 14	1 67	0

5.20 Confirmation Unit 263

Confirmation Unit 263 is located along the western boundary of RU21. The COCs identified for CU263 included U-238, Th-230, Th-232, Ra-226, and Ra-228. This CU was sampled as a partial, with the remaining portions to be confirmed under WP437. Using a shielded detector, the NaI background readings collected for CU263 during confirmation activities ranged between 4,000 cpm- 7,000 cpm. All final radioactivity levels were less than 1 5 times background level

Table 5-20 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5) After the walkover survey, soil sampling, and remediation activities were completed, Disposition Forms were reviewed and signed. A final partial release for Confirmation Unit 263 was issued on July 14, 1998.

Table 5-20 Confirmation Unit 263 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	15	1.16 - 2.72	1.83	0	15	0.83 - 1.59	1.22	0
Radium 228 (pCi/g)	15	0 51 - 1.60	1.30	0	15	0.57 - 1.81	1.25	0
Total Radium (pCi/g)	15	2.25 - 4 18	3.13	0	15	1.40 - 2.94	2 47	0
Thorium 230 (pCi/g)	15	0.69 - 1 32	1.01	0	15	0.69 - 1.32	1.01	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	15	1 30 - 3.50	1.71	0	15	1.30 - 4.94	1 95	0

5.21 Confirmation Unit 264

Confirmation Unit 264 is located along the southern boundary of RU21. The COCs identified for CU264 included U-238, Th-230, Th-232, Ra-226, and Ra-228. This CU was sampled as a partial, with the remaining portions to be confirmed under WP437. Using a shielded dtector, the NaI background readings collected for CU264 during confirmation activities ranged between 4,000 cpm and 7,000 cpm. All final radioactivity levels were less than 1.5 times background level.

Table 5-21 presents sample totals and concentration ranges and averages for the preliminary and final analytical results. Review of the final analytical results supports the preliminary results indicating remedial activities have been completed. The final results meet the cleanup standards as detailed in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5). After the walkover survey, soil sampling, and remediation activities were completed, Disposition Forms were reviewed and signed. A final partial release for Confirmation Unit 264 was issued on July 14, 1998.

Table 5-21 Confirmation Unit 264 Analytical Results Summary

Contaminant	Preliminary Results				Final Results			
	No. of Samples	Range	Average	No. Of Samples Above ALARA	No. of Samples	Range	Average	No. of Samples Above ALARA
Radium 226 (pCi/g)	9	1 27 - 2 72	2.08	0	9	0 91 - 1 60	1 30	0
Radium 228 (pCi/g)	9	0 85 - 1 60	1.21	0	9	0.54 - 1 56	1 08	0
Total Radium (pCi/g)	9	2 36 - 4.18	3.30	0	9	1 52 - 2 84	2 38	0
Thorium 230 (pCi/g)	9	1 06 - 1.58	1 30	0	9	1 06 - 1 58	1 30	0
Thorium 232 (pCi/g)	See Radium 228 Results				See Radium 228 Results			
Uranium 238 (pCi/g)	9	1.15 - 3.50	1.85	0	9	1 32 - 4 94	2 12	0

6. DATA EVALUATION

Data evaluation was performed on WP-471 final analytical data to determine whether data quality objectives developed for the Weldon Spring Site Remedial Action Project (WSSRAP) were met and to ensure overall data quality results were generated from these remedial activities. Data evaluation was performed in accordance with the *Project Management Contractor Quality Assurance Program* (QAP) (Ref. 7) and the *Environmental Quality Assurance Project Plan* (Ref. 8). The data evaluation process was completed by data verification, data review, data validation, and data management and reduction activities as stated in the *Chemical Plant Area Cleanup Attainment Confirmation Plan* (Ref. 5).

6.1 Data Verification

Data verification was conducted in accordance to ES&H 4.9.1, *Environmental Monitoring Data Verification*, to ensure that documentation and data were reported in compliance with established reporting requirements and standard operating procedures (SOPs), and to ensure that all analyses were performed. All analytical results received from the laboratory were reviewed to verify samples were properly handled according to WSSRAP protocol. The following factors were reviewed and evaluated: sample identification, chain-of custody, holding times, sample preservation requirements, Sample Analysis Request Forms, data reviews, laboratory tracking, data reporting requirements, and the database transfer.

6.2 Data Review

Data packages were reviewed to ensure the final data were properly identified, analyzed, reported, and met data quality requirements (DQRs). The data were also reviewed to check for inconsistencies with the field quality control (QC) samples. Final analytical results were also compared to the preliminary analytical results to identify any changes in data.

During confirmation of WP-471 areas, soil samples were obtained in accordance with the details provided in the sampling plan (Ref. 4). The plan indicates that quality control samples were to be taken at a frequency of 1 per 20 samples or 5%. The quality control samples collected during this event include duplicates, field replicates, secondary duplicates, matrix spikes/matrix spike duplicates, and equipment blanks.

Table 6-1 provides a summary of QC samples collected during WP-471 confirmation activities. With the exception of secondary duplicates, all of the QC samples met the 5% frequency requirement for both radiological and chemical samples. Although the frequency for chemical samples for secondary duplicates met the sampling plan requirements, the frequency for the radiological samples ranged between 4.3% and 4.8%, which is just below the 5% frequency requirement. Tables summarizing the analytical data are provided in Appendix G.

Table 6-1 Summary of QC Samples

Contaminant	Number of Samples	Number of QC Samples Required	MS	MD	DU	SD	FR	EB
U-238	538	27	N/A	N/A	31	26	30	29
Ra-226	543	27	N/A	N/A	31	26	30	29
Ra-228	543	27	N/A	N/A	31	26	30	29
Th-230	591	30	N/A	N/A	30	26	30	29
Th-232	538	27	N/A	N/A	N/A	23	N/A	27
Arsenic	96	5	7	N/A	6	7	7	7
PAHs	12	1	1	1	N/A	1	1	1

N/A Not Applicable for the analyte.

6.2.1 Duplicates/Secondary Duplicate/Field Replicates

Duplicate (DU) samples are aliquots taken from the parent sample at the laboratory Field replicates (FR) and secondary duplicates (SD) are both split in the field from the parent sample The field replicate is sent to the same laboratory as the parent, while the secondary duplicate is sent to a different laboratory. The FR, SD, and DU results are compared to the parent sample and the relative percent difference (RPD) is calculated for each. The recommended RPD for radiological and chemical parameters is less than or equal to 50% and 35%, respectively RPDs are not calculated when one or both of the results are non detects. If one or both of the results are less than five times the detection limit; the RPD value is considered of limited value due to higher tolerance limits near the analytical detection limit and, therefore, no further analysis is required In those cases where the RPDs are greater than the recommended limit, the data are further evaluated as discussed below

Average RPDs for the duplicates, field replicates, and secondary duplicates were well within the recommended limits. Field replicate RPDs ranged between 1% – 63% for radiological, 4% – 47% for arsenic, and were not calculated for PAHs since all results were non detects Duplicate RPDs ranged between 0% – 81% for radiological and 4% – 43% for arsenic Even though some of the RPDs exceed the recommended limits, the concentrations were less than five times the detection limits and, therefore, no further analysis was performed Secondary duplicates ranged between 0% – 124% for radiological and 6% – 71% for chemical There were 11 secondary duplicates that had RPDs greater than the recommended limits and also had concentrations greater than five times the detection limit. In general, the parent samples were always higher; therefore, any decisions made would have been conservative Table 6-2 present a summary of the results.

Table 6-2 Summary of Duplicate/Field Replicate/Secondary Duplicate Samples

Contaminant	Duplicates			Field Replicates			Secondary Duplicates		
	Average RPD	RPD Range	Percentage of samples meeting the accuracy requirements	Average RPD	RPD Range	Percentage of samples meeting the accuracy requirements	Average RPD	RPD Range	Percentage of samples meeting the accuracy requirements
Ra-226	9%	0 – 35%	100%	12%	1 – 44%	100%	33%	1 – 99%	77%
Ra-228	12%	1 – 44%	100%	13%	1 – 30%	100%	22%	0 – 76%	88%
Th-230	15%	2 – 81%	97%	18%	1 – 63%	97%	39%	1 – 124%	73%
Th-232	N/A	N/A	N/A	N/A	N/A	N/A	22%	0 – 85%	88%
U-238	32%	24 – 44%	100%	31%	3 – 59%	50%	39%	2 – 112%	75%
Arsenic	21%	4 – 43%	100%	26%	4 – 47%	100%	32%	6 – 71%	86%
PAHs	N/A	N/A	N/A	-	-	-	-	-	-

N/A Not applicable.
- All results were ND, therefore not comparable

6.2.2 Matrix Spike/Matrix Duplicate/Matrix Spike Duplicate

The matrix spike and matrix spike duplicate samples are sample aliquots treated the same as the parent sample, but spiked with a known amount of specified parameters The samples are then processed along with the parent sample and percent recoveries (REC) are calculated after analysis. These results determine the precision of the method in a given sample matrix In addition, the RPD between the matrix spike and matrix spike duplicate is calculated to determine the accuracy in a given sample matrix. The matrix spikes are done for all chemical analyses, while the matrix spike duplicates are only required for organics (i.e., PAHs)

The matrix duplicate is processed as the regular sample and the relative percent difference is calculated after analysis. This sample is used to determine the accuracy of the method in a given sample matrix and are not required for organics (i e , PAHs).

Percent recoveries for both PAHs and arsenic were within the acceptable range of 70% - 130%. The RPD was also calculated for the PAHs, with an average 8 35%, which is well within the recommended limit of 35% or less. Table 6-3 provides a summary of the matrix spike and matrix spike duplicate results.

Table 6-3 Summary Table for Matrix Spike/Matrix Spike Duplicates

Contaminant	Percent Recovery		Relative Percent Difference	
	Average	Range	Average	Range
PAHs - MS	94%	84 – 97%	8 35%	5 13 – 12 24%
PAHs – MD	94%	92 – 95%		
Arsenic – MS	99%	83 – 128%	N/A	N/A

6.2.3 Equipment Blanks

Equipment blanks (EB) are used to monitor the effectiveness of the process used to clean equipment prior to or in between sample collection.

With the exception of Ra-228, equipment blank sample results showed no signs of possible contamination. Approximately 50% of the equipment blank samples showed elevated levels (greater than five times the detection limit) of Ra-228 Since there were no suspect Ra-228 soil samples associated with the same time period, no further analysis was necessary Table 6-4 presents a summary of the equipment blanks.

Table 6-4 Equipment Blank Summary

Contaminant	Number of Samples	Concentration Ranges	Number of results above the DL
Ra-226	29	0 01 – 0.82	7
Ra-228	29	0.08 – 4.78	15
Th-230	29	0.02 – 0.72	20
Th-232	27	0.00 – 0.32	4
U-238	29	0 01 – 0.63	5
Arsenic	7	All results less than D.L.	0
PAHs	1	Less than D.L.	0

6.3 Data Validation

Data validation is performed on 10% of all analytical data generated from the confirmation sampling activities at the WSSRAP. Data validation was conducted in accordance with ES&H 4.9.2, *Environmental Monitoring Data Validation*. No data associated with RU13 were rejected during validation.

7. SUMMARY OF CLOSURE REPORT FINDINGS

The total Work Package (WP)-471 area consists of 21 confirmation units (CUs) contained within remedial unit (RU) RU13 and RU21. Detailed information regarding the remedial activities for each CU located within RU13 and RU21, including disposition forms, final data and walkover forms is presented in the Appendixes.

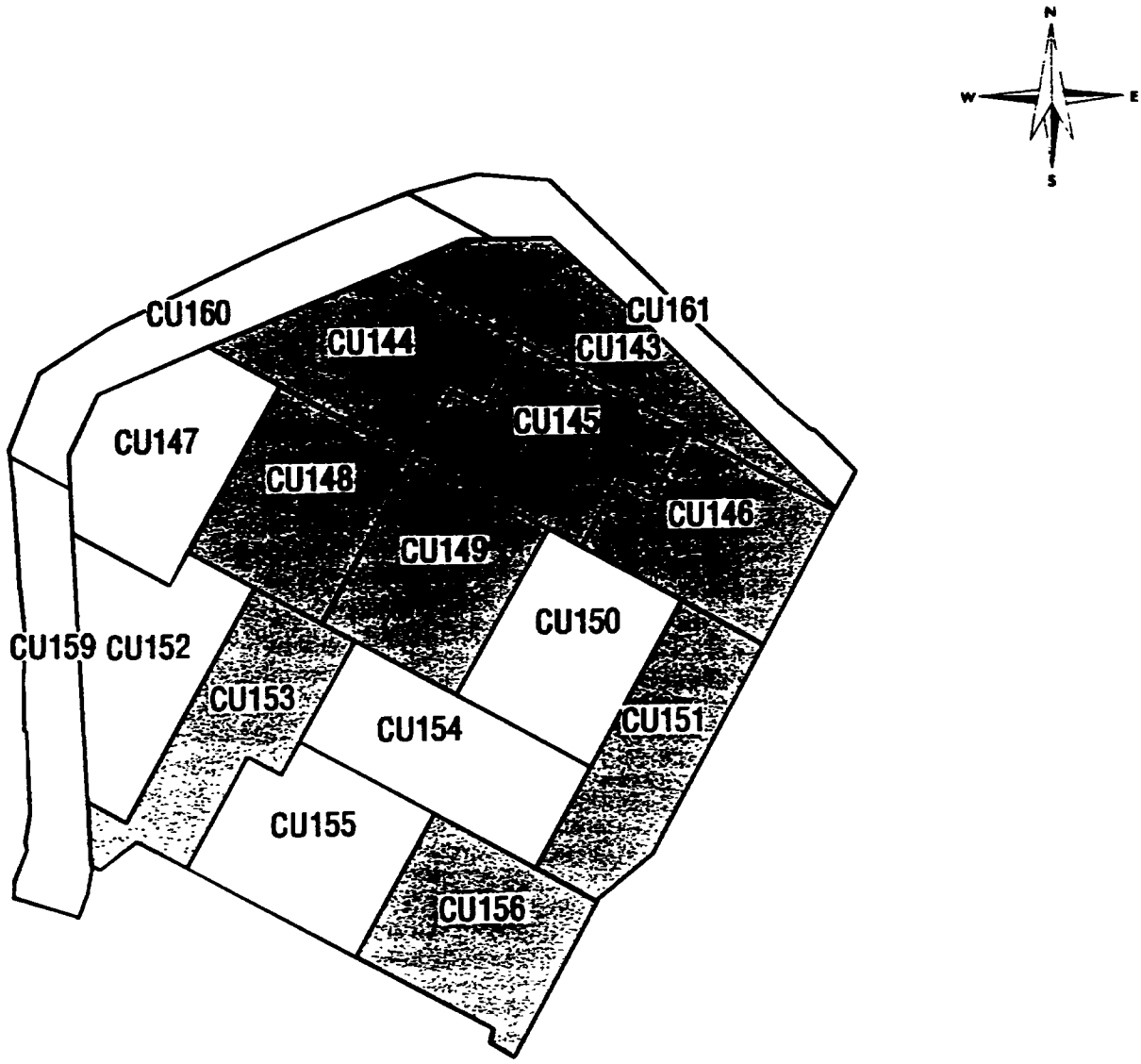
7.1 Confirmation Unit Dispositions

Upon completion of remedial activities, preliminary results were used to complete CU Disposition Forms in accordance with ES&H 1.2 1, *Soil Remediation Disposition Process* Disposition Forms were reviewed and signed by the designated project personnel Based on the preliminary results, each CU was released for unrestricted use A CU was released when all contaminants of concern (COC) concentrations located within a CU were in compliance with the *Record of Decision* (ROD) cleanup standards (Ref 3). Figure 7-1 shows which CUs were released using subsurface criteria for hot spot determination All 21 CUs were unconditionally released.

Four of the confirmation units released, CU253, CU254, CU263, and CU264, were partial releases The remainder of the CUs will be remediated and confirmed under WP437 These four CUs were not originally included in WP-471 and were added when additional clean material was required to attain final grade after remediation of the northern portion of the pit These CUs are located along the southwest berm of Raffinate Pit 4

7.2 Summary Of WP-471 Confirmation Results

Table 7-2 provides a summary of the total number of samples collected and analyzed for each contaminant during remedial activities conducted under WP-471 The number of detections that exceed as low as reasonably achievable (ALARA) and minimum, maximum, and average concentrations are also provided for each contaminant. The table was generated using data sets compiled from all samples that represented soils left in place. Data from all other samples, including remediated hot spot areas, are presented in Appendix D



CU Boundaries

CU released Using Subsurface Criteria

Note:
Portions of CU143 & CU151 were released using surface ALARA.

200 600 0 1200 FEET

400 200 0 400 METERS

Confirmation Units Released Using Subsurface Criteria For Hotspot Identification

Figure: 7-1

REPORT NO: DOE/OR/21548-765		EXHIBIT NO: G/CP/205/0599	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 07-MAY-1999	

Table 7-1 Summary Totals for RU13

CONTAMINANT	NUMBER OF SAMPLES	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	AVERAGE CONCENTRATION	SAMPLES GREATER THAN ALARA
Arsenic (mg/kg)	69	2.20	20.0	7 64	0
PAH (mg/kg)	11	ND	ND	N/A	0
Ra-226 (pCi/g)	434	0.33	5.98	1 17	1
Ra-228 (pCi/g)	434	0.50	3.81	1 30	0
Combined Radium	434	1.09	7 07	2 48	5
Th-230 (pCi/g)	452	0.70	15 1	1 79	21
Th-232 (pCi/g)	434	0.51	3 94	1 34	0
TNT	7	0.02	2 1	0 40	0
U-238 (pCi/g)	432	1 07	69 0	2 02	1

Note Results from the four partial CUs confirmed located within RU21 are not included in this table They will be included in the RU21 results table when the CUs are completed

Analytical results generated from remedial activities at RU13 indicate the average concentration of each COC over the entire RU13 area is below the ALARA goal. For each of the 21 CUs located within RU13, COC averages were also calculated and the conclusions are as follows Although some individual sample concentrations are above the ALARA goals, the average COC concentration for each of the 21 CUs was below ALARA All 100 m^2 averages were less than criteria.

7.3 Summary of Chemical Plant Confirmation Results

To meet the requirements of the *Record of Decision* (Ref. 3), more than 50% of the results for each parameter must be less than the ALARA goal Table 7-2 summarizes the cumulative results to date

Table 7-2 Summary Totals for Confirmation

CONTAMINANT	NUMBER OF SAMPLES	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	AVERAGE CONCENTRATION	SAMPLES GREATER THAN ALARA
Arsenic (mg/kg)	825	0.48	34.10	7.28	0
Chromium (mg/kg)	1,208	3.8	41.60	16.97	0
Lead (mg/kg)	951	2.40	817.00	16.68	2
PAH (mg/kg)	534	0.00	3.50	0.19	64
PCB (mg/kg)	1,336	0.00	6.00	0.04	18
Ra-226 (pCi/g)	2,036	0.33	9.43	1.33	2
Ra-228 (pCi/g)	1.847	0.30	6.60	1.26	2
Th-230 (pCi/g)	1,544	0.09	23.10	1.58	24
Th-232 (pCi/g)	1,847	0.31	6.77	1.30	2
Thallium (mg/kg)	209	0.12	4.80	0.93	0
TNT (mg/kg)	33	ND	34.00	2.03	2
Toluene (mg/kg)	4	0.00	3.40	0.85	0
U-238 (pCi/g)	3,410	0.39	228.00	3.86	41

Note This table contains summary results from confirmation sampling to date; including WP-399, WP-461, WP-253, WP-420, and WP-471. Results from the four partial CUs confirmed located within RU21 are not included in this table They will be included in the RU21 results table when the CUs are completed under WP-437.

7.4 Comparison of Standard Deviations

This section presents a comparison of the estimated standard deviations calculated following U.S. Environmental Protection Agency (EPA) guidance and presented in the *Attainment Plan*, (Ref. 5) with those deviations calculated using confirmation results. Since there were no existing remediation data available to calculate the standard deviation (sigma), the *Attainment Plan* estimated sigma using the range (assuming the average concentration remaining after remediation would not exceed cleanup criteria) divided by six. To determine whether the specified level of precision was obtained, a comparison was made between the estimated sigma and the calculated sigma using the RU13 results.

The comparison indicates that the specified level of precision (a false positive = 0.05 and a false negative = 0.20) has been obtained. With the exception of Th-230, all of the calculated sigmas are less than the estimated sigmas, indicating that the minimum specified precision was met. Table 7-3 presents the estimated sigma and calculated sigmas for each COC.

The calculated sigma for Th-230 (RU-013 and cumulative) exceeded the estimated sigma because there were hot spots left in place based upon subsurface criteria. The estimated standard deviation, recalculated for Th-230 using subsurface criteria, is 2.7. Both the Ru-013 and cumulative sigmas are less than the estimated subsurface sigma.

Table 7-3 Comparison of Standard Deviations

COC	ESTIMATED SIGMA [a]	RU13 SIGMA [b]	CUMULATIVE SIGMA [c]
Arsenic	12.5	3 43	3 46
Chromium	18.3	NS	4 90
Lead	75	NS	30.89
PAHs	0.93	N/A	0 47
PCBs	1.33	NS	0 31
TNT	23 3	0 76	6 41
Ra-226	1 03	0.43	0 35
Ra-228	1 03	0.38	0 36
Thallium	3 3	NS	1 01
Th-230	1 03	1.83	1 38
Th-232	1.03	0 38	0 36
U-238	20	3 48	9 08

Sigma estimated in the *Attainment Plan* (Ref 5).
Sigma calculated using only the WP-471 confirmation results
Sigma calculated using cumulative confirmation results (WP-399, WP-461, WP-420, WP-253, and WP-471)
Results from the four partial CUs confirmed located within RU21 are not included in this table with the WP-471 results. They will be included in the RU21 results table when the CUs are completed under WP-437
N/A - Not applicable because all results were zeros
NS – Not Sampled.

8. REFERENCES

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2. MK-Ferguson Company and Jacobs Engineering Group. *Remedial Investigation for the Chemical Plant Area of the Weldon Spring Site,* Rev. 0, 2 Vols. DOE/OR/21548-074. Prepared for the U.S. Department of Energy, Oak Ridge Field Office, Weldon Spring Site Remedial Action Project. St. Charles, MO. November 1992.

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11. MK-Ferguson Company and Jacobs Engineering Group *Confirmation Sampling Plan Details for the Disposal Cell Facility (WP-437).* Rev. 0 DOE/OR/21548-706 Prepared for the U.S Department of Energy, Oak Ridge Operations Office St Charles, MO January 1998

12. MK-Ferguson Company and Jacobs Engineering Group *Results of Engineering Soil Sampling for Weldon Spring Raffinate Pits 3 and 4.* Rev 0 DOE/OR/21548-761 Prepared for the U.S. Department of Energy, Oak Ridge Operations Office St Charles, MO January 1999

8.1 PROCEDURES

ES&H 1.2.1 *Soil Remediation Disposition Process*
ES&H 2.3.8 *Contamination Survey*
ES&H 2 5.1 *Radiological Soil Sampling*
ES&H 2.5.2 *In Situ Radiation Measurements*
ES&H 2.5 5 *Sample Preparation Procedure for Radiological Soil Samples*
ES&H 2.5.8 *Th-230 Determinations in Soils by the UNC Method*
ES&H 2.6.1 *Alpha Detector Calibration and Operational Check*
ES&H 2.6.2 *Calibration and Use of Ludlum Model 2220 Scalar and the Model 44-10-2 (2x2 NaI) Detector*
ES&H 2.6.3 *GM Detector Calibration, Operation, and Usage*
ES&H 2.6.4 *Ludlum Model 2000 Scalar and Model 43-10 Detector: Gross Alpha Measurement Operation and Calibration*
ES&H 2.6 9 *Instructions for Calibration and Operation of the High Purity* Germanium Detector
ES&H 4 1 3 *Sample Equipment Determination*

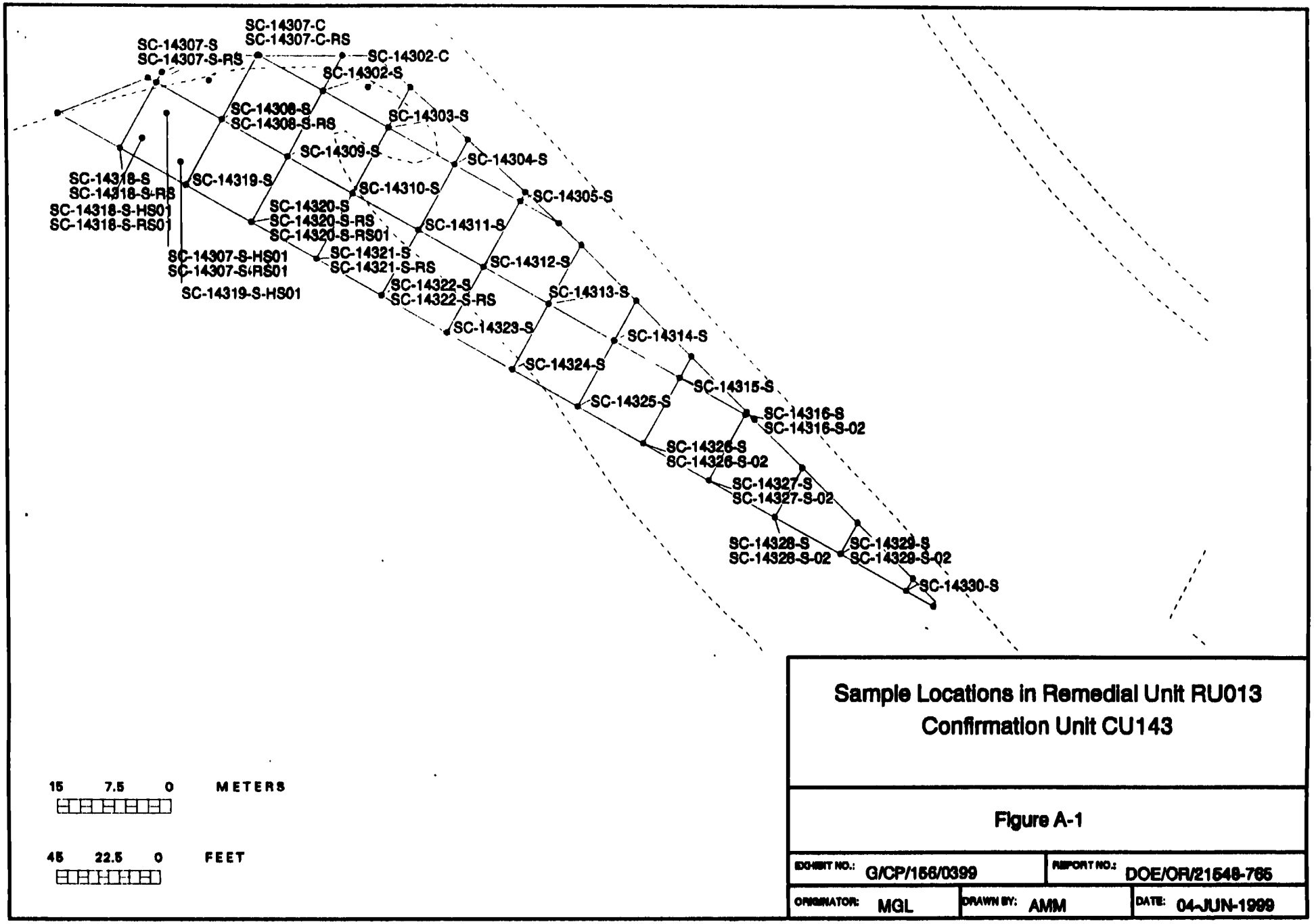
ES&H 4.4.1 *Numbering System for Environmental Samples*
ES&H 4.4.5 *Soil/Sediment*
ES&H 4.9.1 *Environmental Monitoring Data Verification*
ES&H 4.9.2 *Environmental Monitoring Data Validation*

8.2 ACRONYMS

AEC	Atomic Energy Commission
ALARA	as low as reasonably achievable
COC	contaminant of concern
CPM	counts per minute
CU	Confirmation Unit
dB	database
DER	duplicate error ratio
DNT	dinitrotoluene
DOE	Department of Energy
DQO	Data Quality Objectives
DQR	Data Quality Requirements
EPA	Environmental Protection Agency
EQAPjP	Environmental Quality Assurance Project Plan
ES&H	Environmental Safety and Health
EST	environmental sample tracking
FST	field sample tracking
GIS	Geographical Information System
ha	hectare
IOC	interoffice correspondence
km	kilometers
m	meter
NPL	National Priorities List
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PMC	Project Management Contractor
QA	quality assurance
QAP	Quality Assurance Plan
QC	quality control
Ra-226	Radium-226
Ra-228	Radium-228

REC	percent recovery
ROD	Record of Decision
RPD	relative percent difference
RU	remedial unit
SOP	standard operating procedure
Th-230	Thorium-230
Th-232	Thorium-232
TNT	trinitrotoluene
U-238	Uranium-238
WIZARD	Wizard database
WP	work package
WSSRAP	Weldon Spring Site Remedial Action Project

APPENDIX A
Sample Location Maps



Sample Locations in Remedial Unit RU013
Confirmation Unit CU143

Figure A-1

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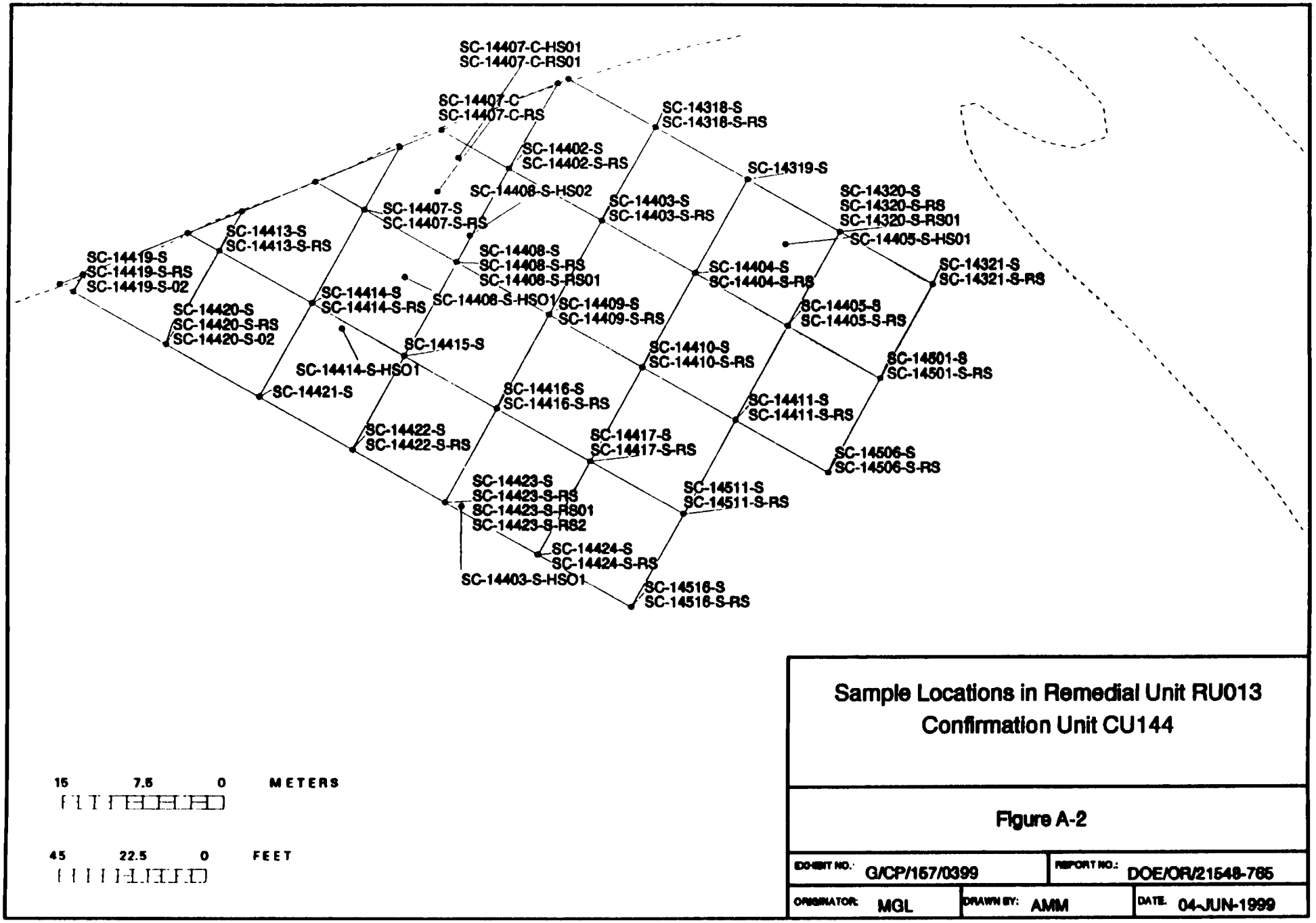

Sample Locations in Remedial Unit RU013
Confirmation Unit CU144

Figure A-2

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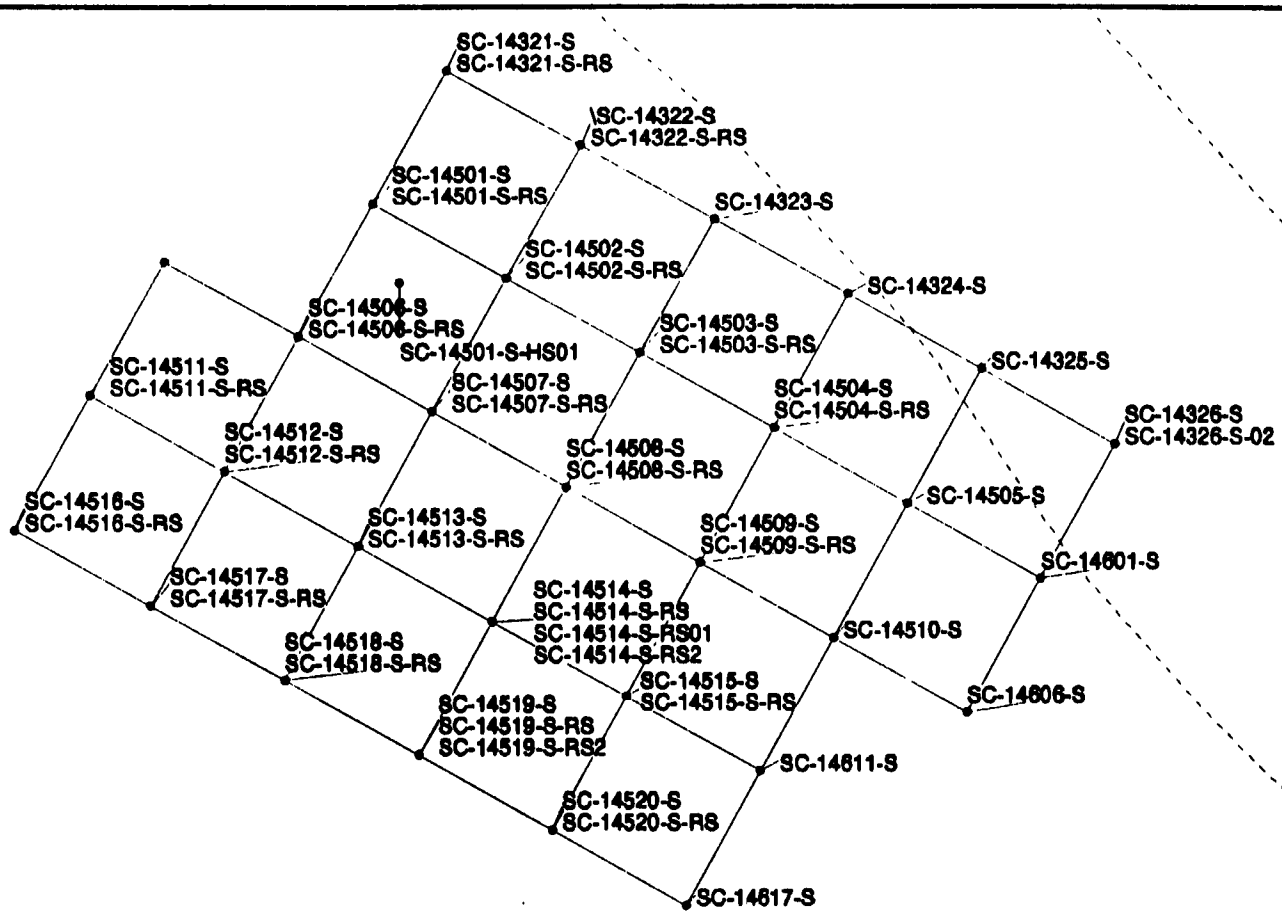

15 7.5 0 METERS

45 22.5 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU145

Figure A-3

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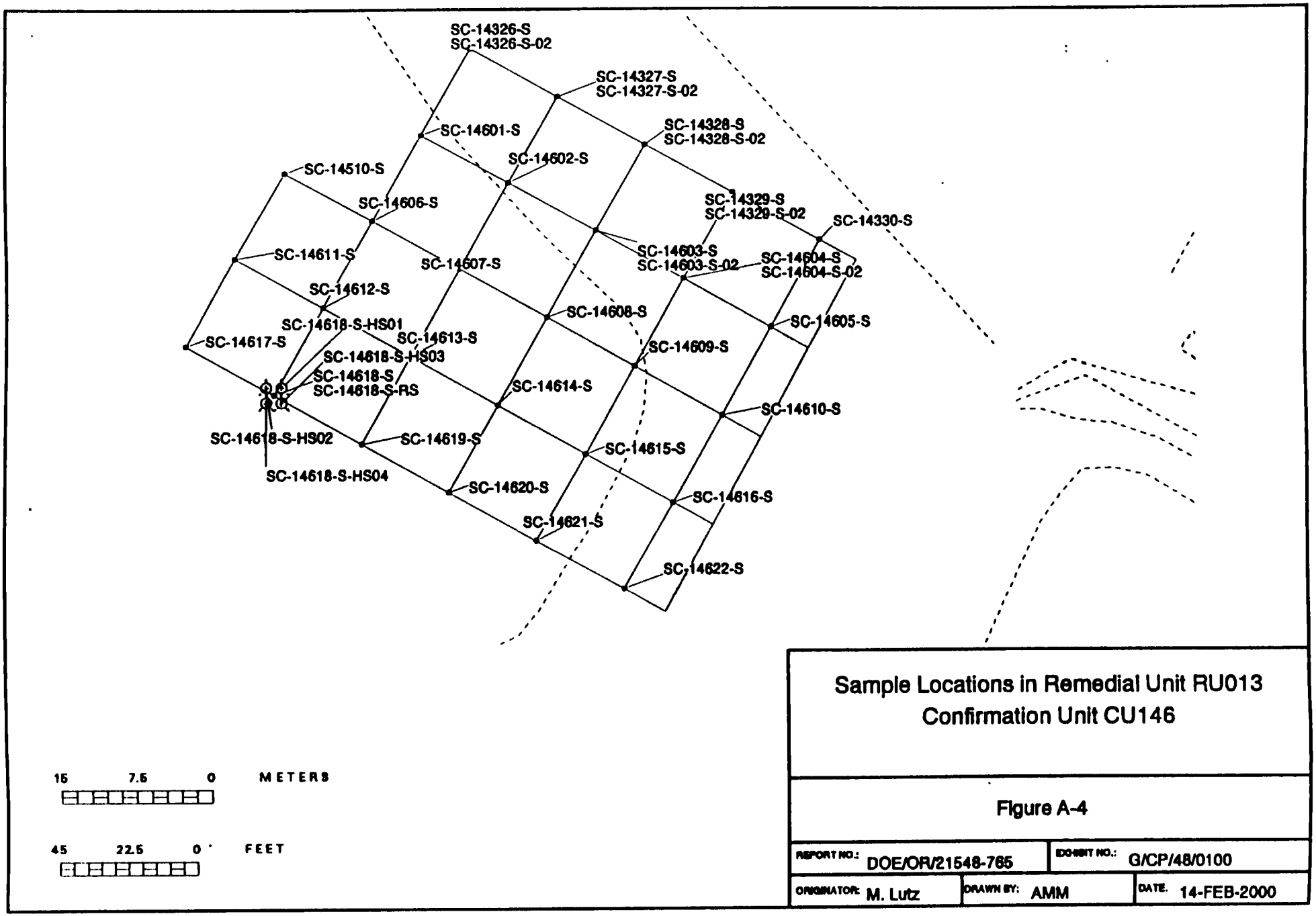
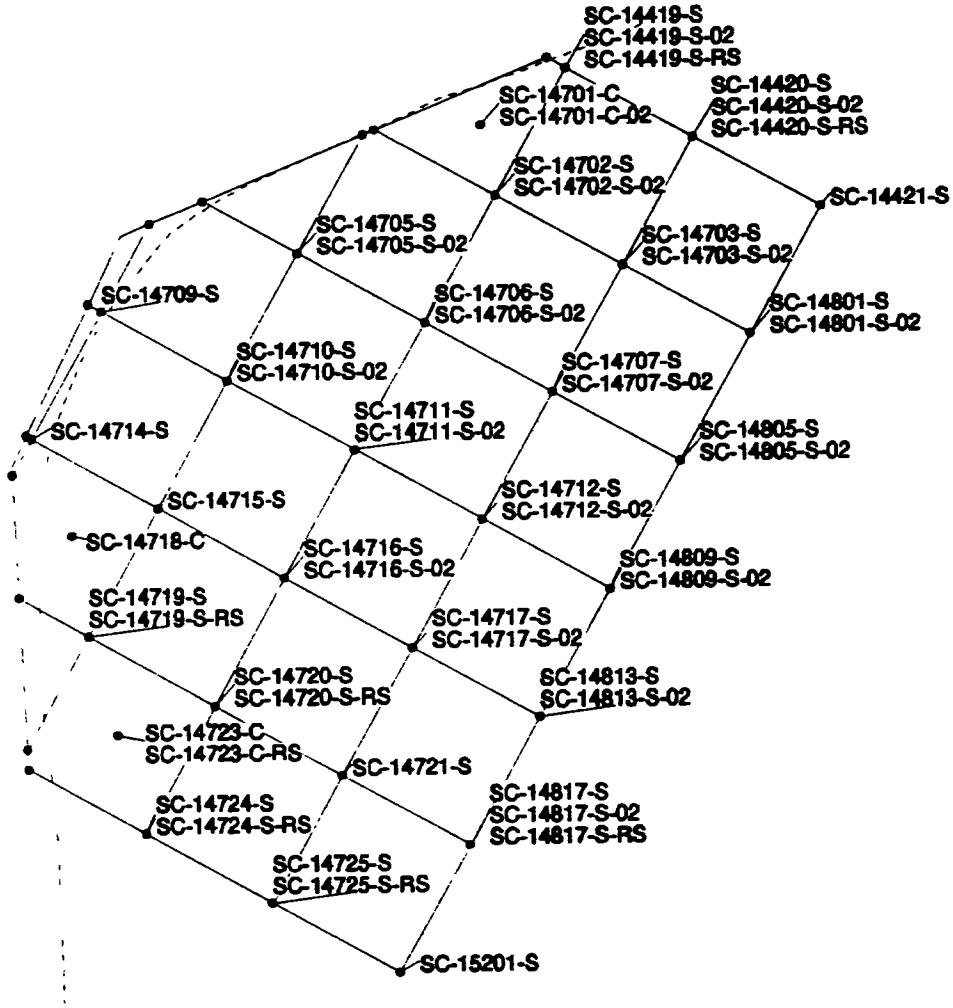


Sample Locations in Remedial Unit RU013
Confirmation Unit CU146

Figure A-4

REPORT NO.: DOE/OR/21548-765		EXHIBIT NO.: G/CP/48/0100	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 14-FEB-2000	



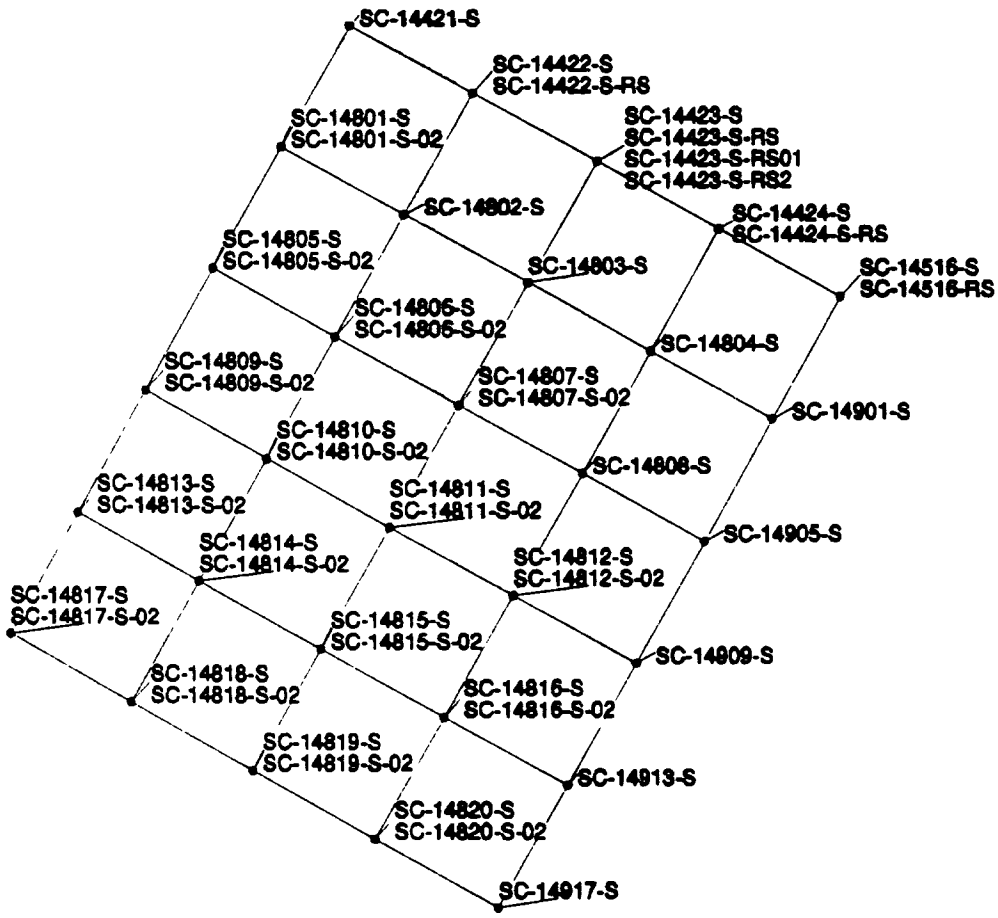
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU147

Figure A-5

EXHIBIT NO.: G/CP/160/0399		REPORT NO.: DOE/OR/21548-765	
DESIGNATOR: M. Lutz	DRAWN BY: AMM	DATE: 04-JUN-1999	



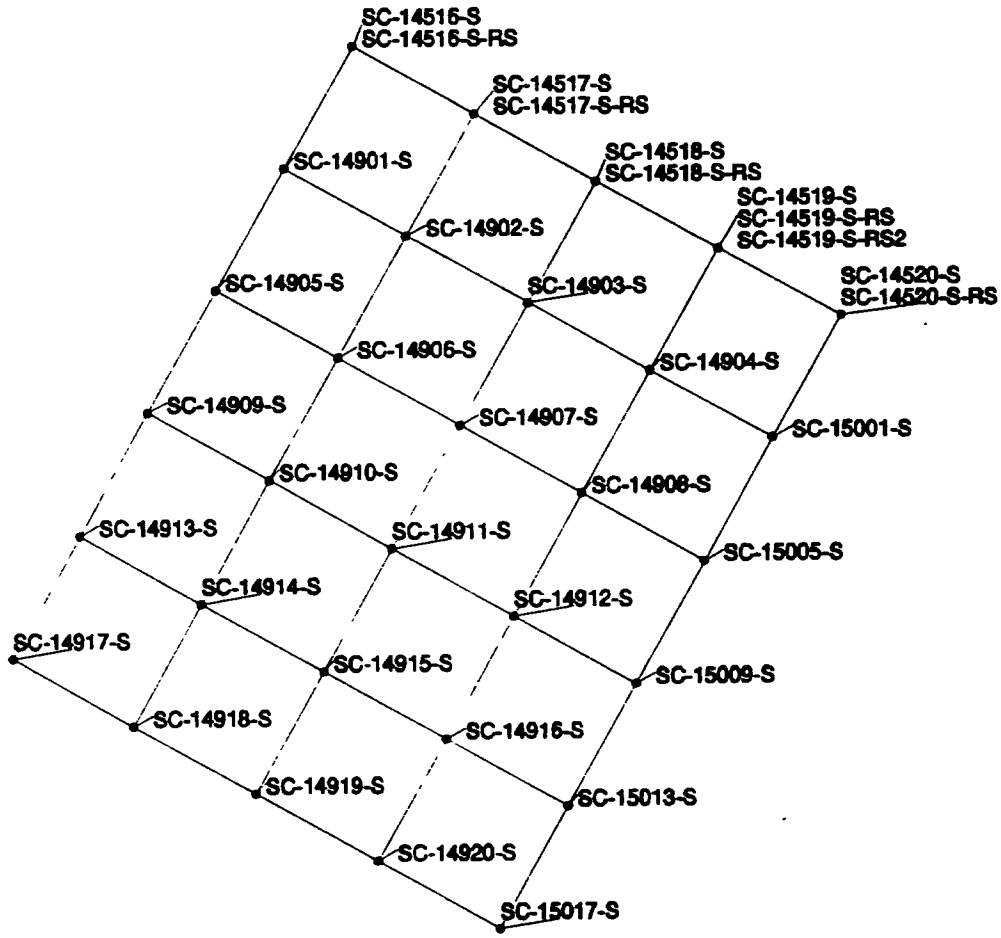
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU148

Figure A-6

DOCUMENT NO.: G/CP/161/0399	REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 04-JUN-1999



10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU149

Figure A-7

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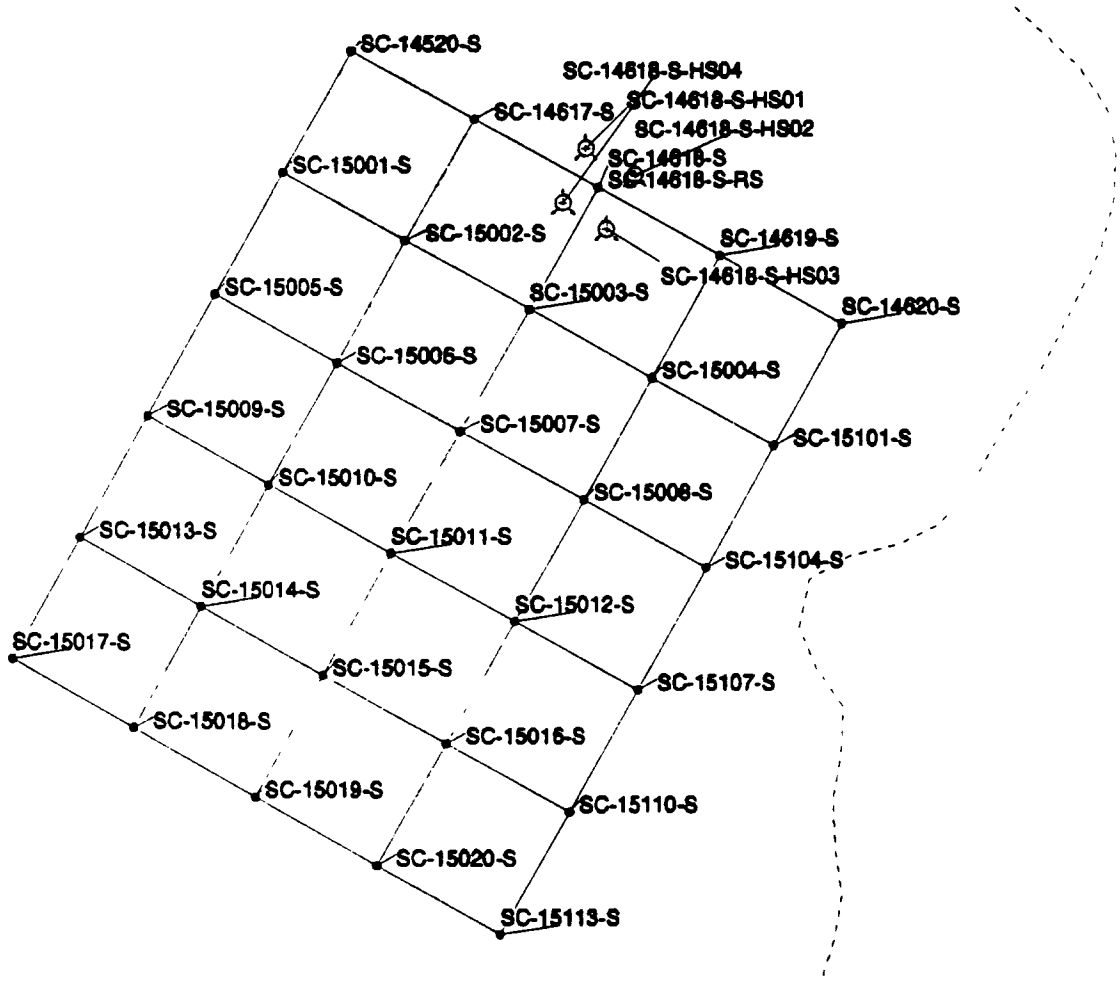

10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU150

Figure A-8

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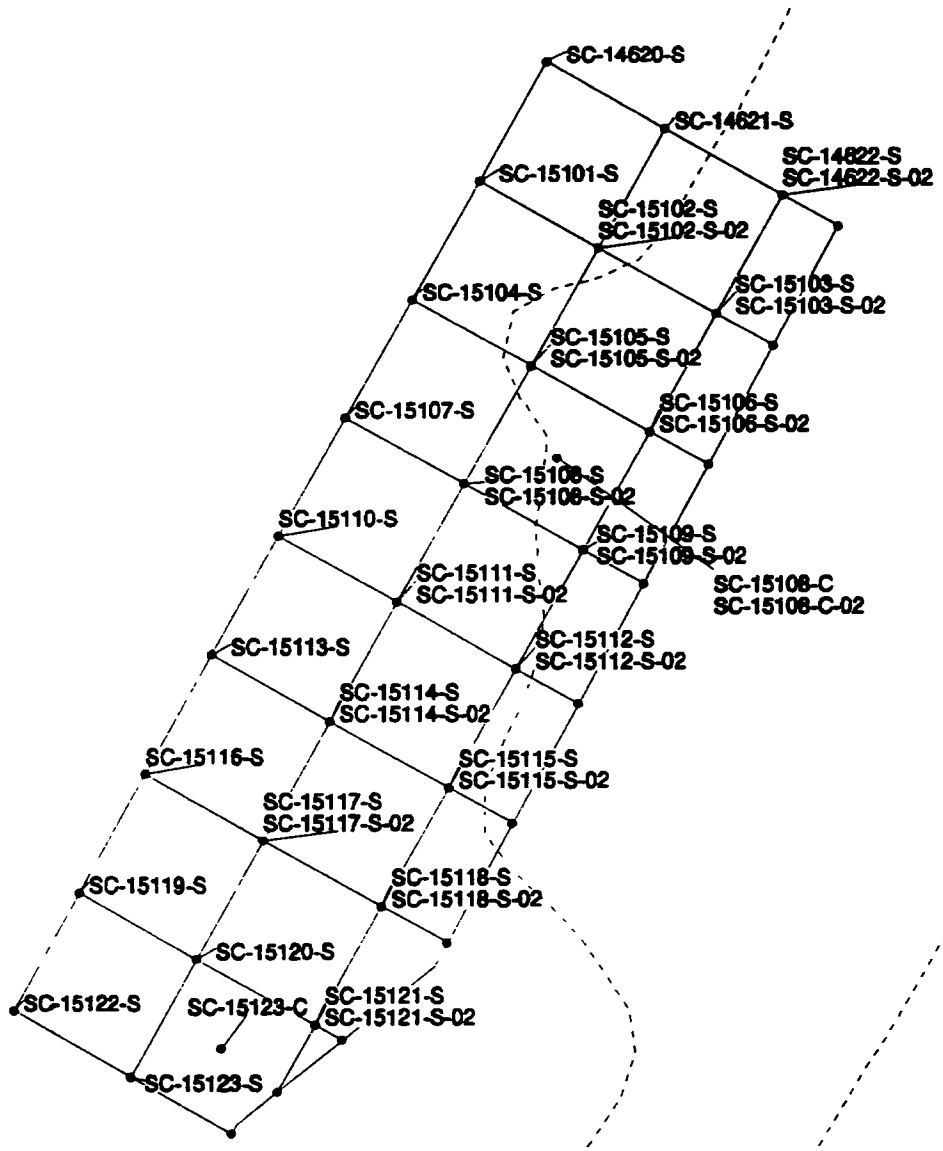
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 04-JUN-1999



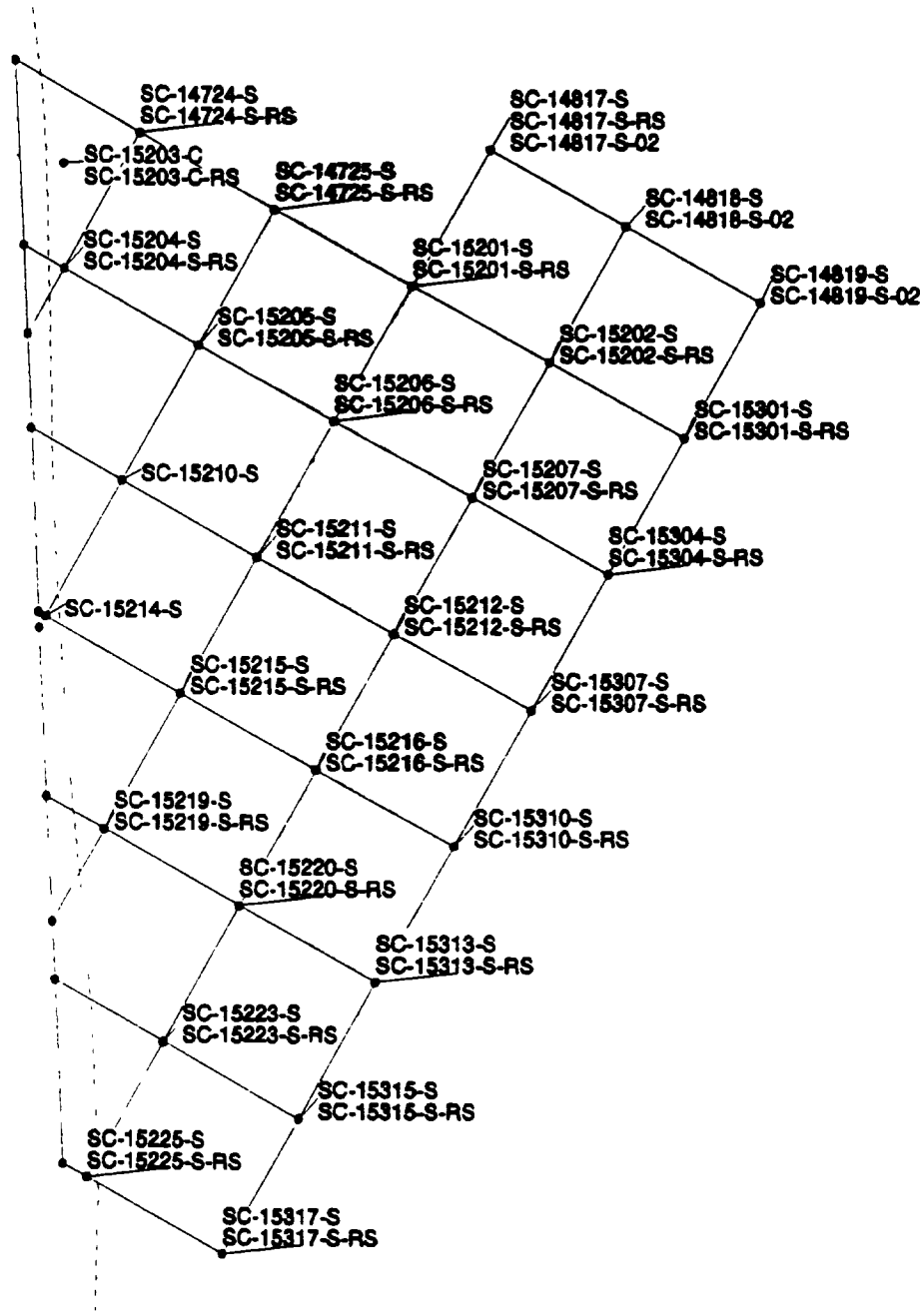
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU151

Figure A-9

EXHIBIT NO.: G/CP/164/0399		REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 04-JUN-1999	



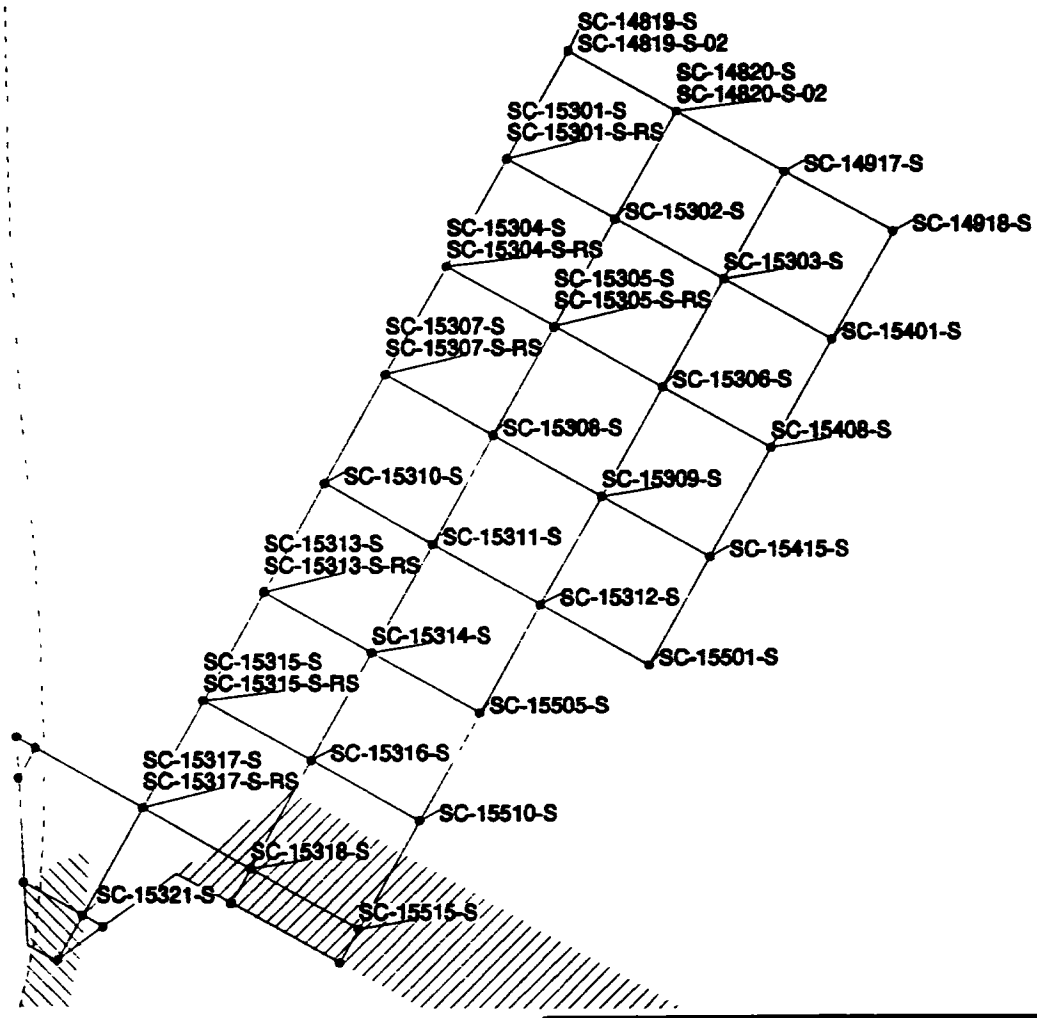
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU152

Figure A-10

DOSSIT NO.: G/CP/165/0399	REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 04-JUN-1999



Area to be confirmed under WP437

Partial CU Confirmed

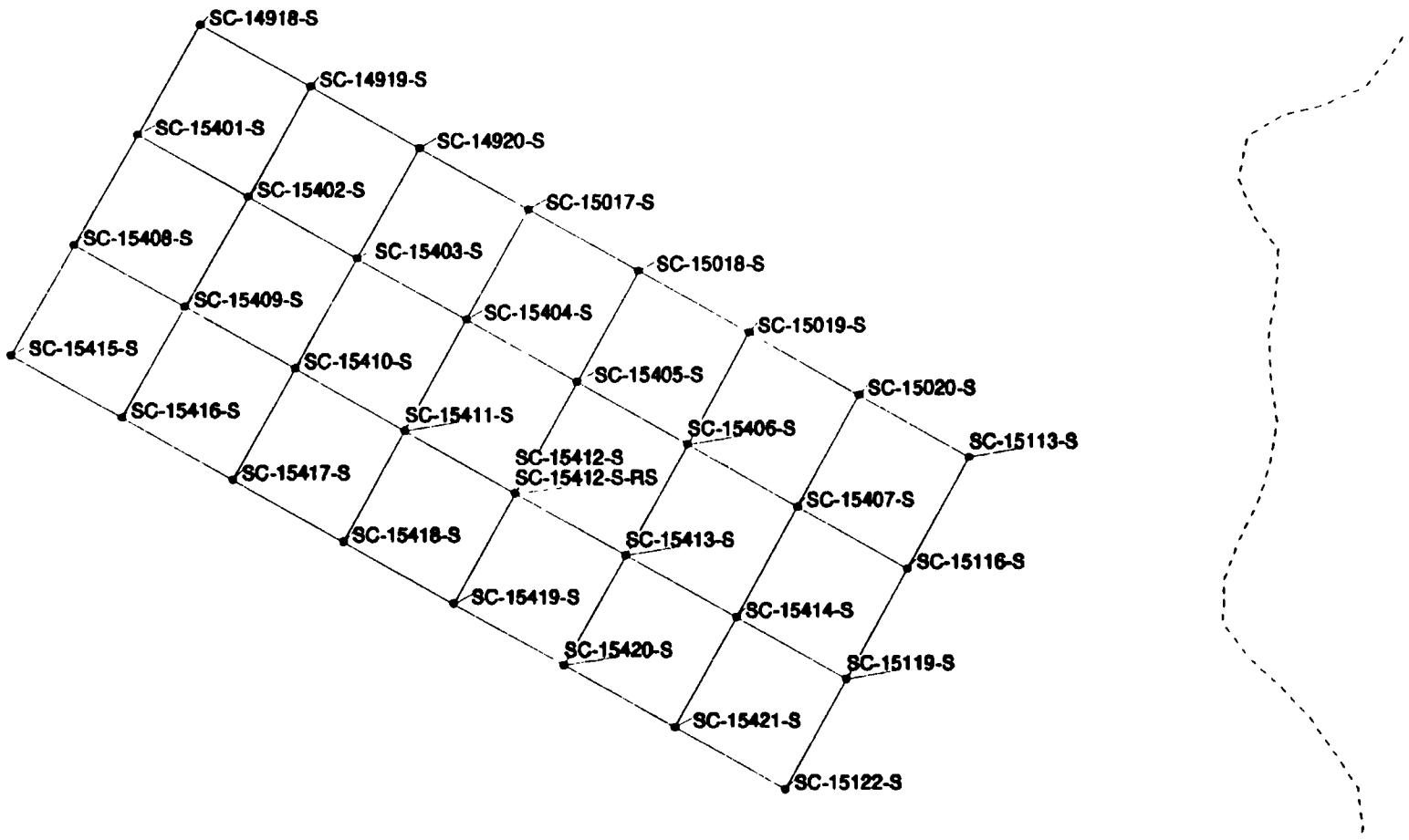
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU153

Figure A-11

EXHIBIT NO.: G/CP/166/0399	REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 04-JUN-1999



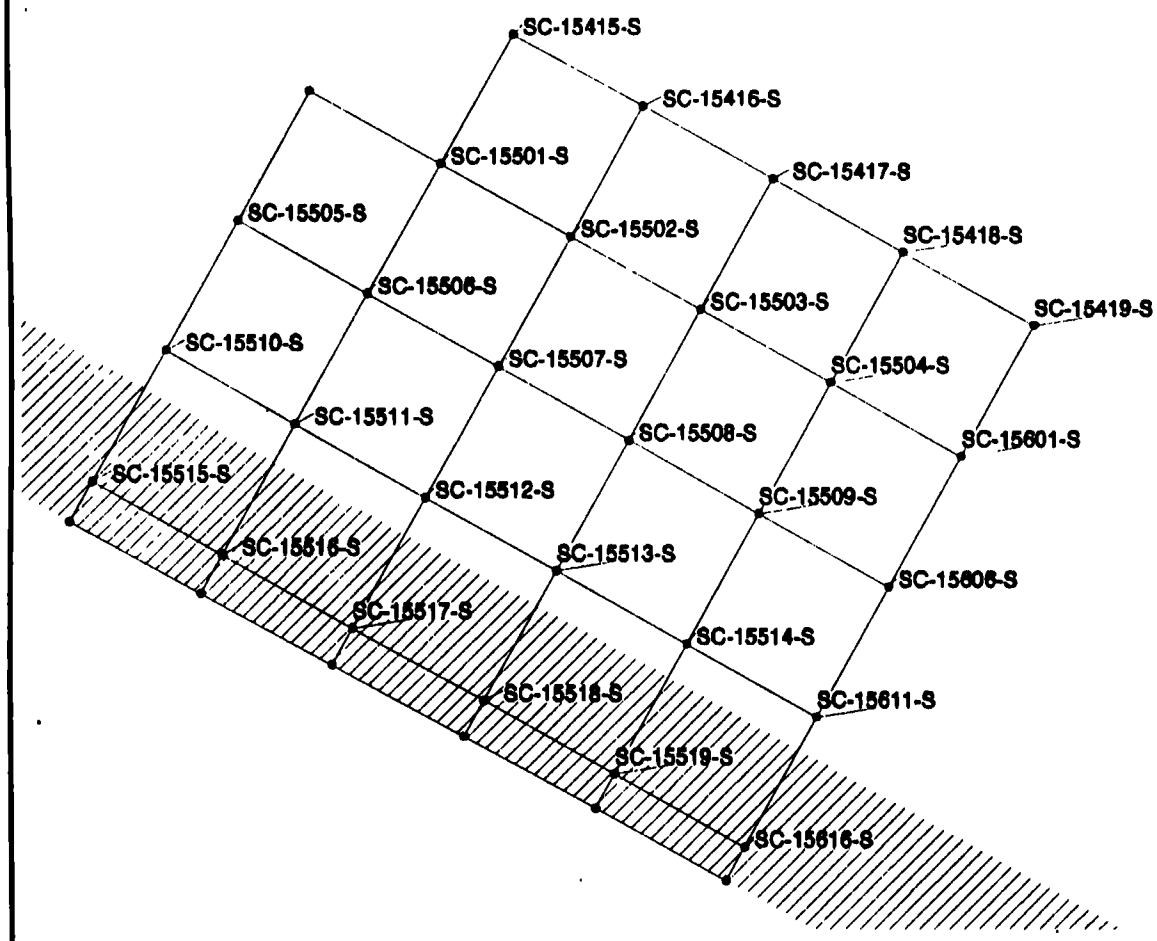
15 7.5 0 METERS

45 22.5 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU154

Figure A-12

EXHIBIT NO.: G/CP/167/0399		REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: MGL	DRAWN BY: AMM	DATE: 04-JUN-1999	



Area to be confirmed under WP437

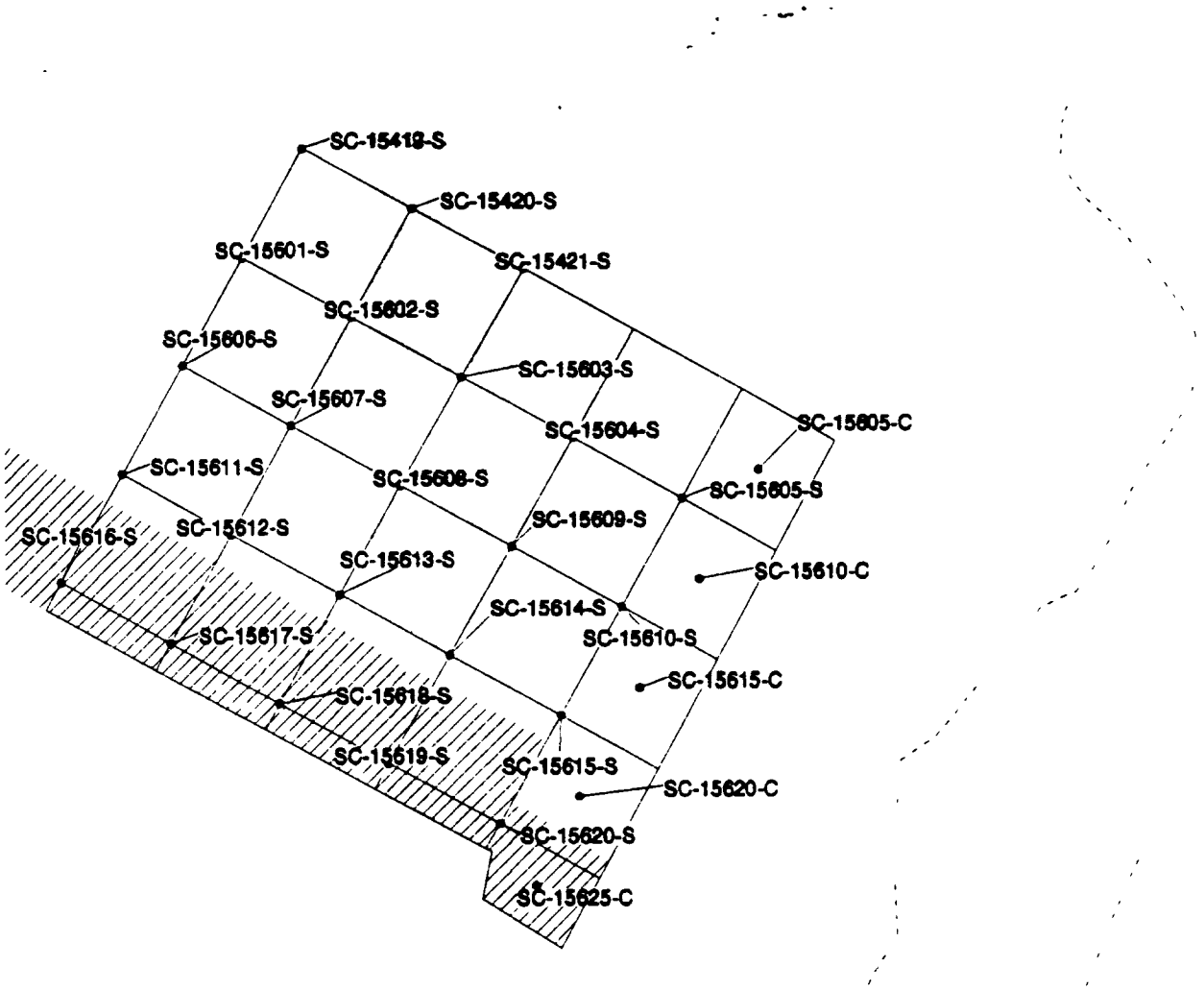
15 7.5 0 METERS

45 22.5 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU155

Figure A-13

EXHIBIT NO.: G/CP/168/0399		REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: MGL	DRAWN BY: AMM	DATE: 04-JUN-1999	



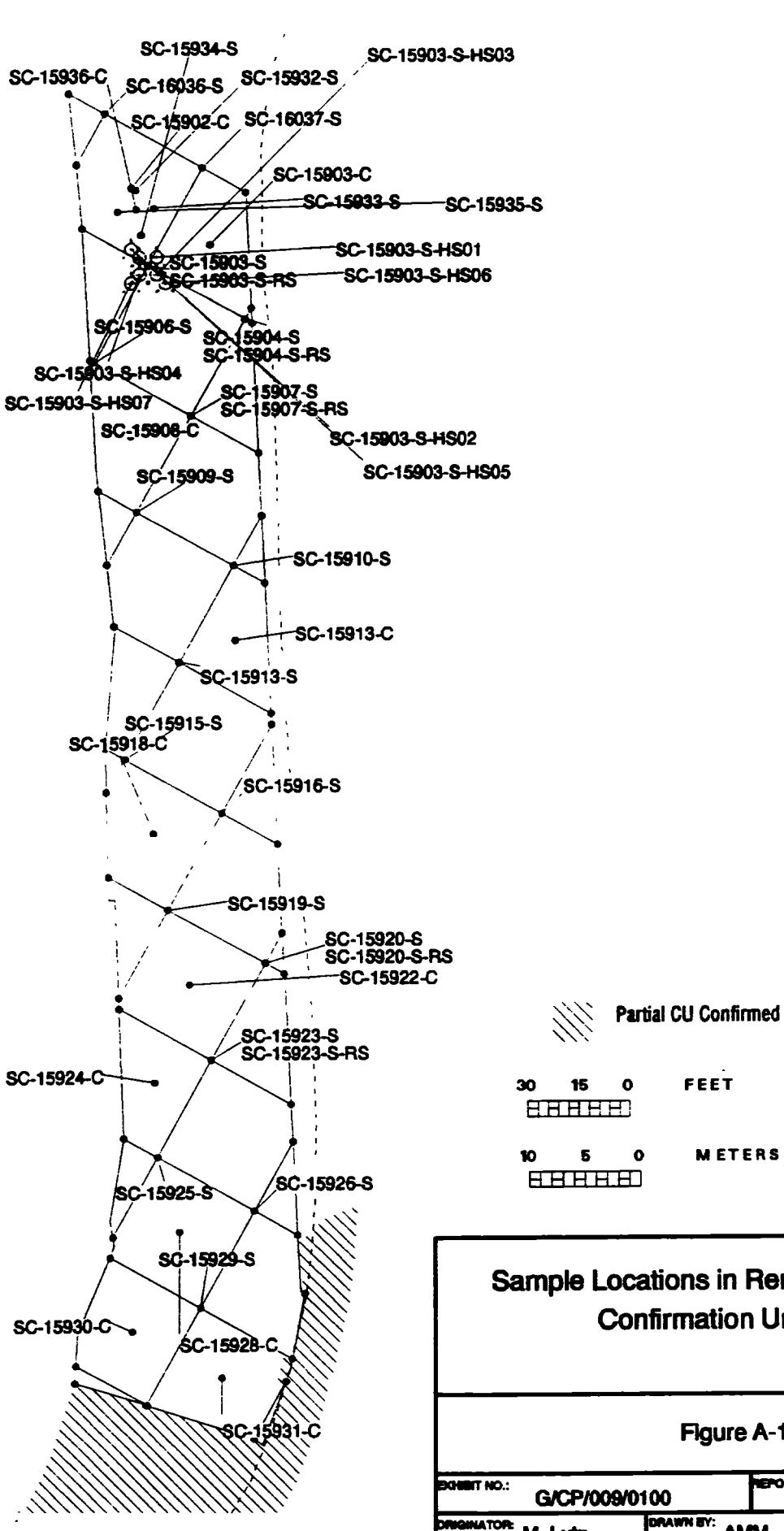
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU156

Figure A-14

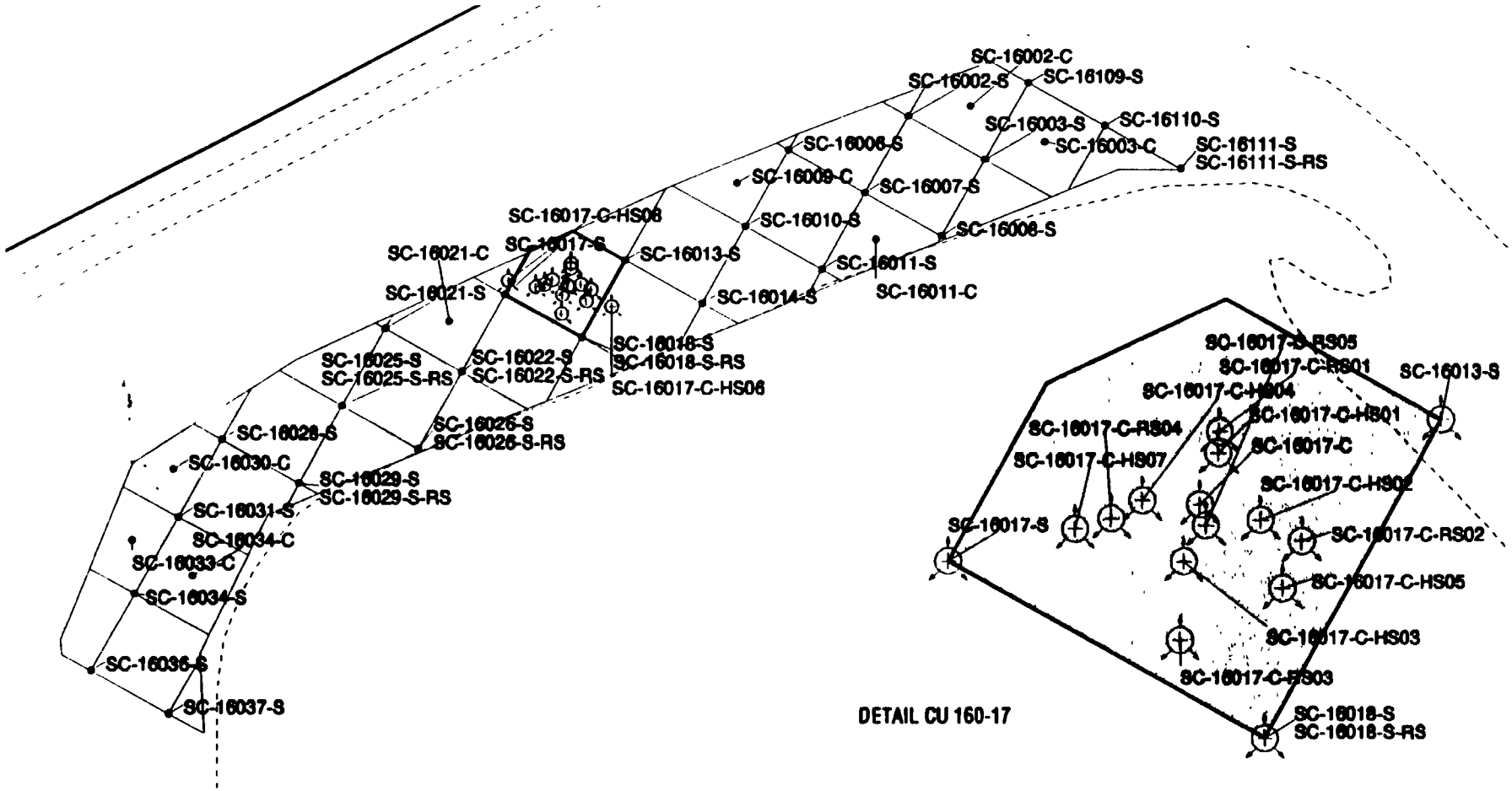
REPORT NO.: DOE/OR/21548-765		EXHIBIT NO.: G/CP/049/0100	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 14-FEB-2000	



Sample Locations in Remedial Unit RU013
Confirmation Unit CU159

Figure A-15

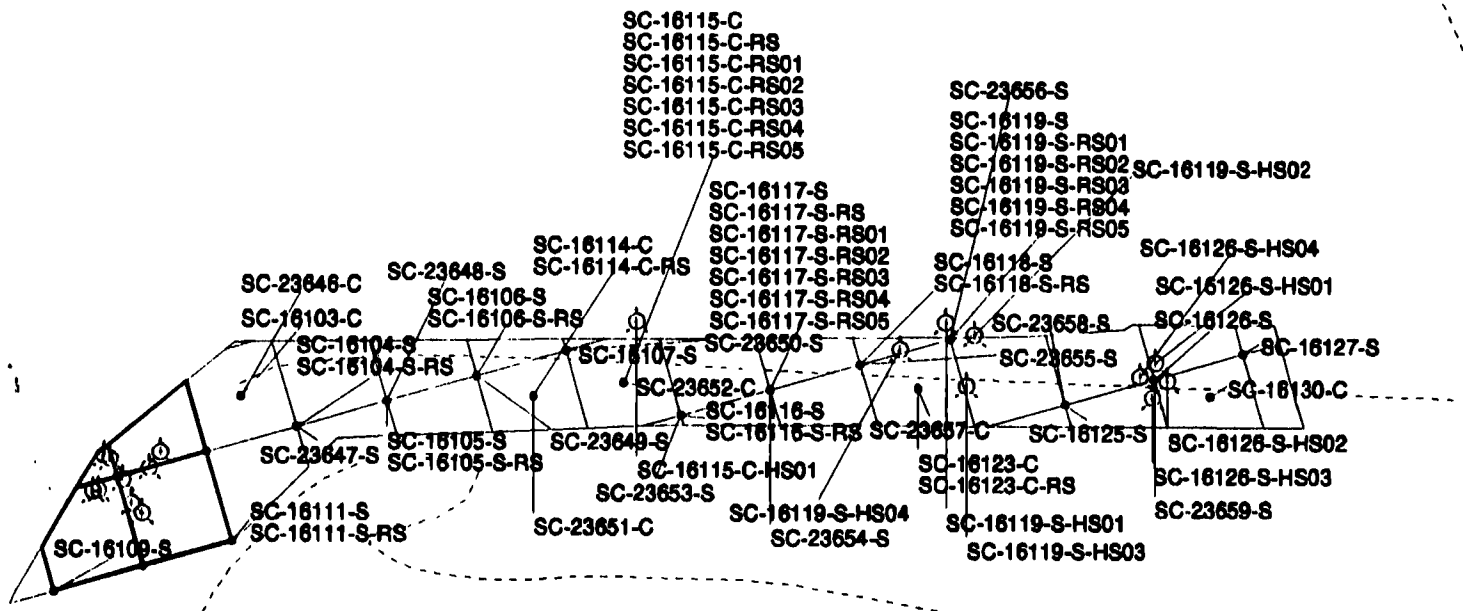
EXHIBIT NO.: G/CP/009/0100	REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 24-JAN-2000

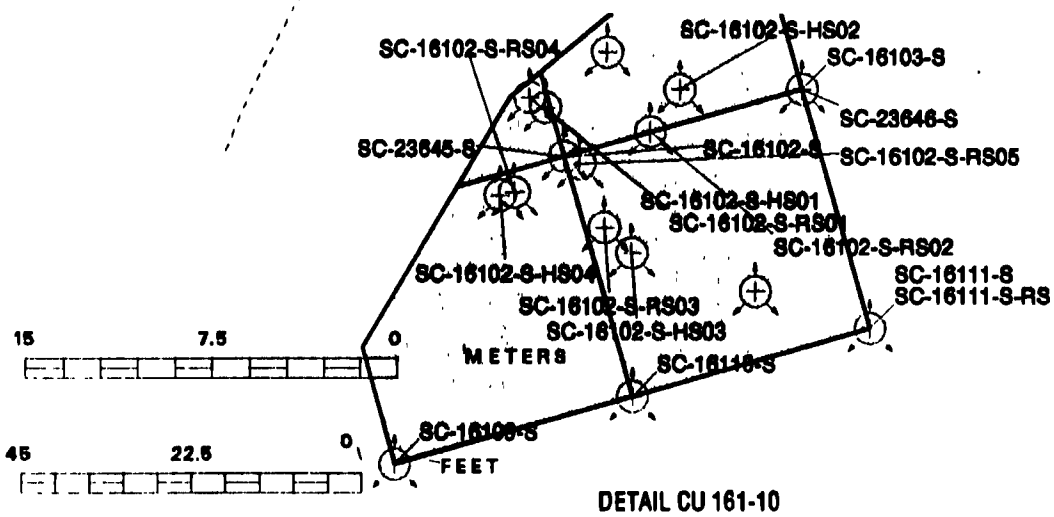


Sample Locations in Remedial Unit RU013
Confirmation Unit CU160

Figure A-16

REPORT NO.: DOE/OR/21548-765		EXHIBIT NO.: G/CP/48/0100	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 14-FEB-2000	



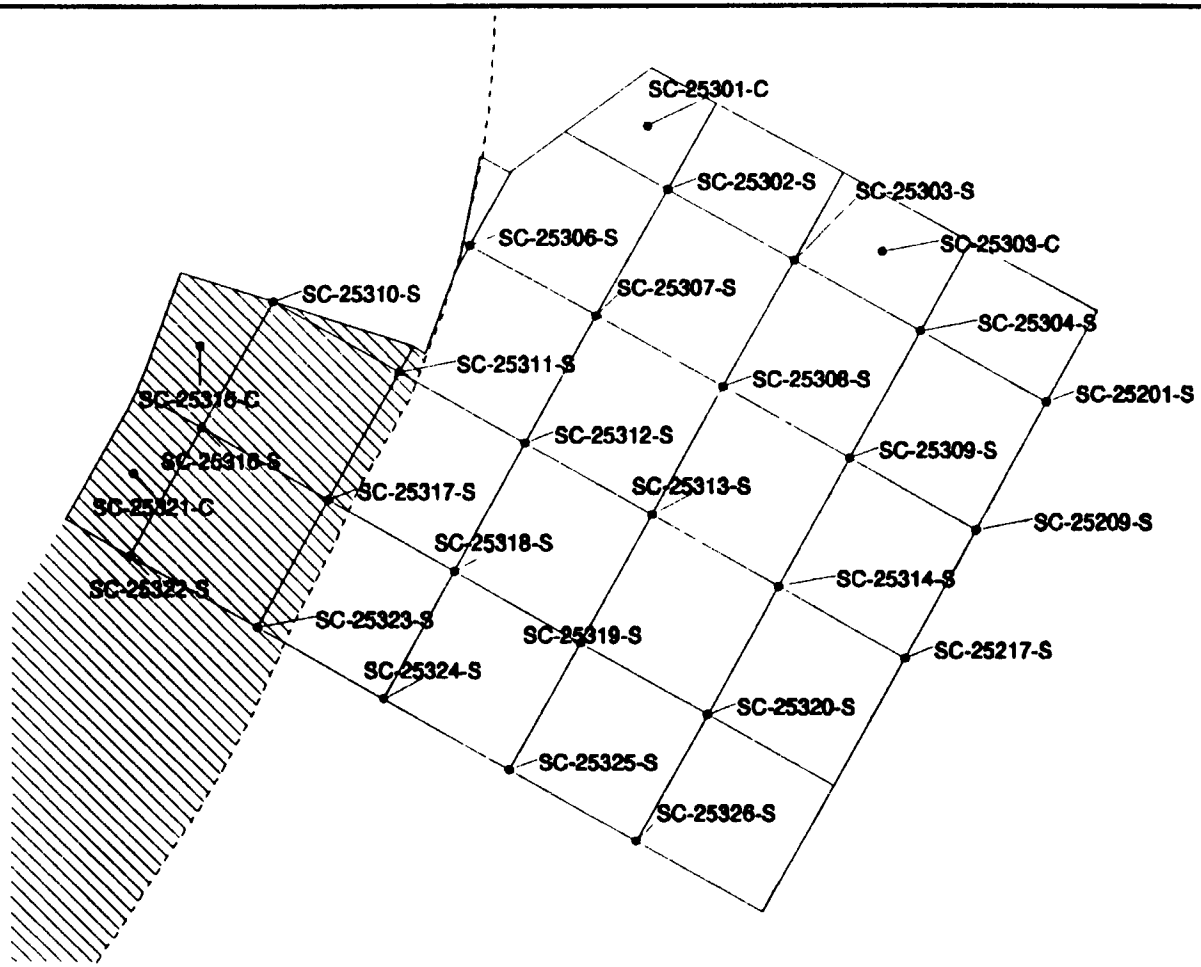


DETAIL CU 161-10

Sample Locations in Remedial Unit RU013
Confirmation Unit CU161

Figure A-17

REPORT NO.: DOE/OR/21548-765		EXHIBIT NO.: G/CP/49/0100	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 14-FEB-2000	



Partial CU Confirmed

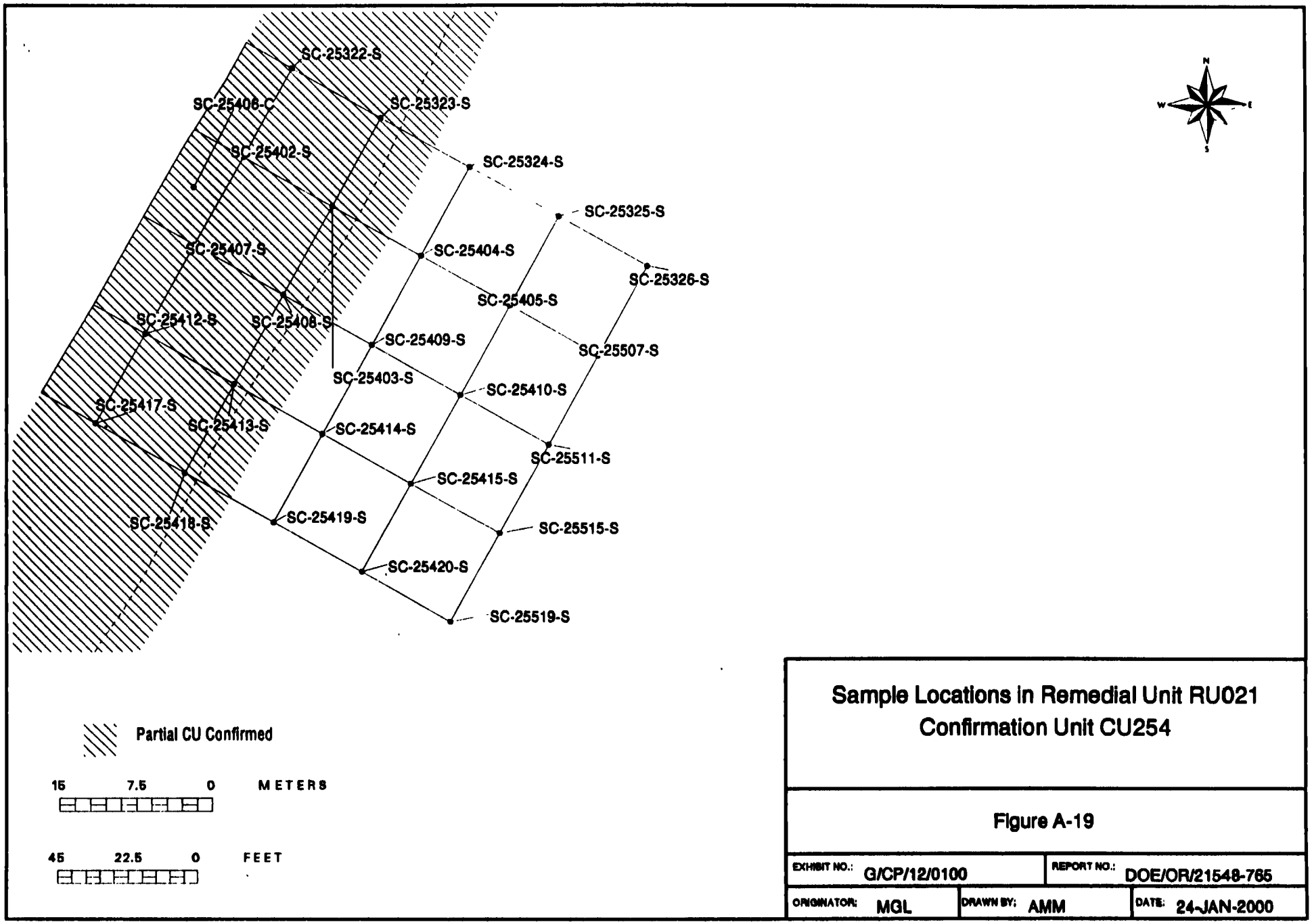
15 7.5 0 METERS

45 22.5 0 FEET

Sample Locations in Remedial Unit RU021
Confirmation Unit CU253

Figure A-18

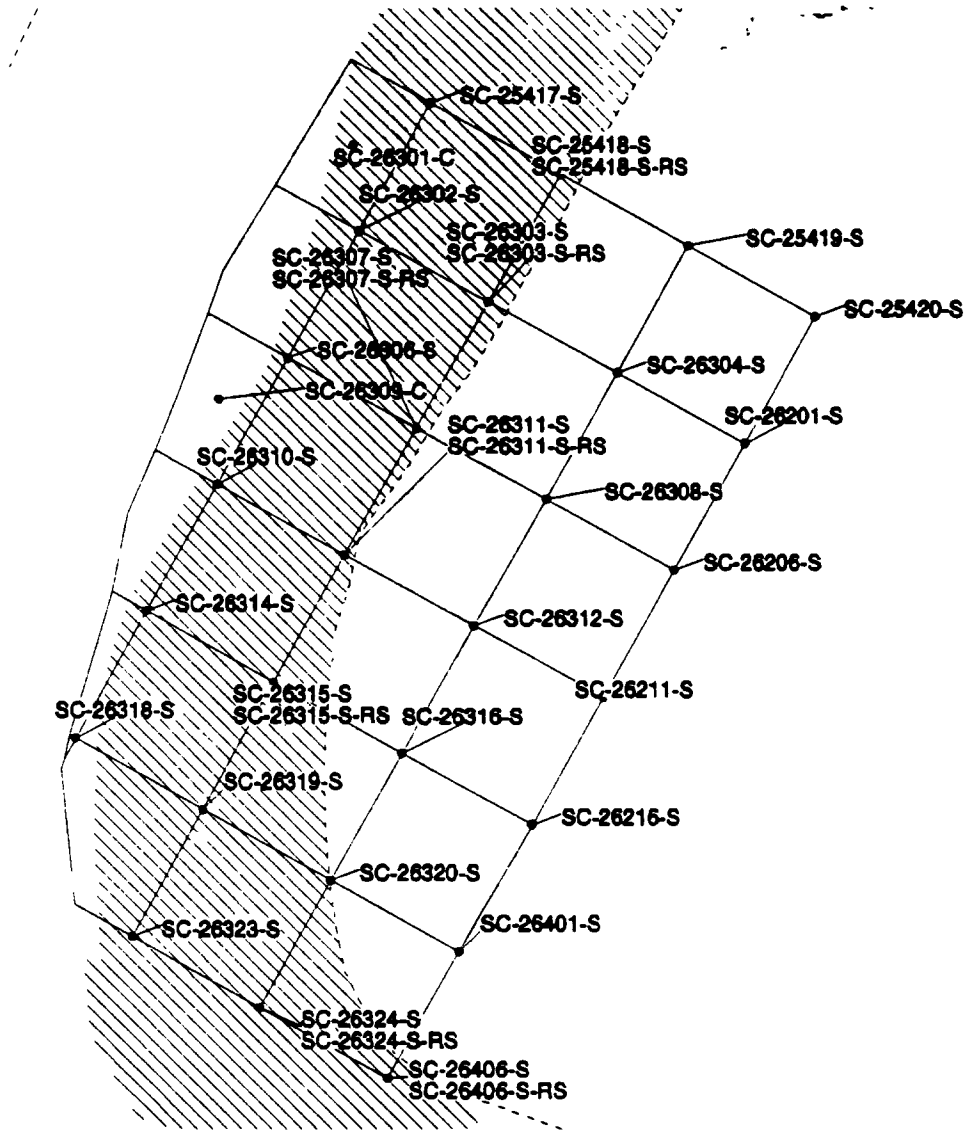
REPORT NO.: DOE/OR/21548-765		DOCUMENT NO. G/CP/48/0100	
ORIGINATOR. M. Lutz	DRAWN BY. AMM	DATE 14-FEB-2000	



Sample Locations in Remedial Unit RU021
Confirmation Unit CU254

Figure A-19

EXHIBIT NO.: G/CP/12/0100		REPORT NO.: DOE/OR/21548-765	
ORIGINATOR: MGL	DRAWN BY: AMM	DATE: 24-JAN-2000	



Partial CU Confirmed

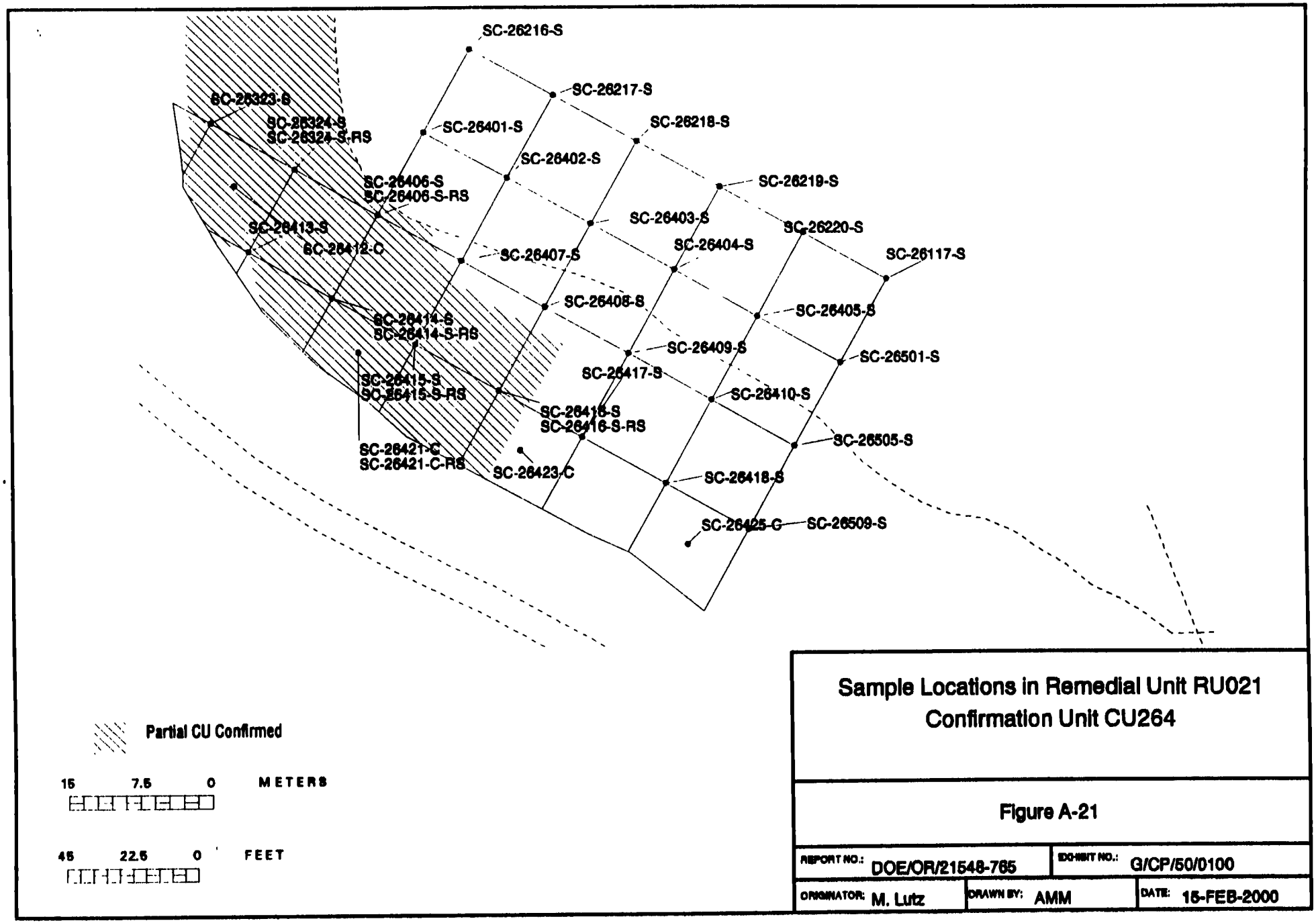
10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU021
Confirmation Unit CU263

Figure A-20

REPORT NO.: DOE/OR/21548-765		EXHIBIT NO.: G/CP/053/0100	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 14-FEB-2000	



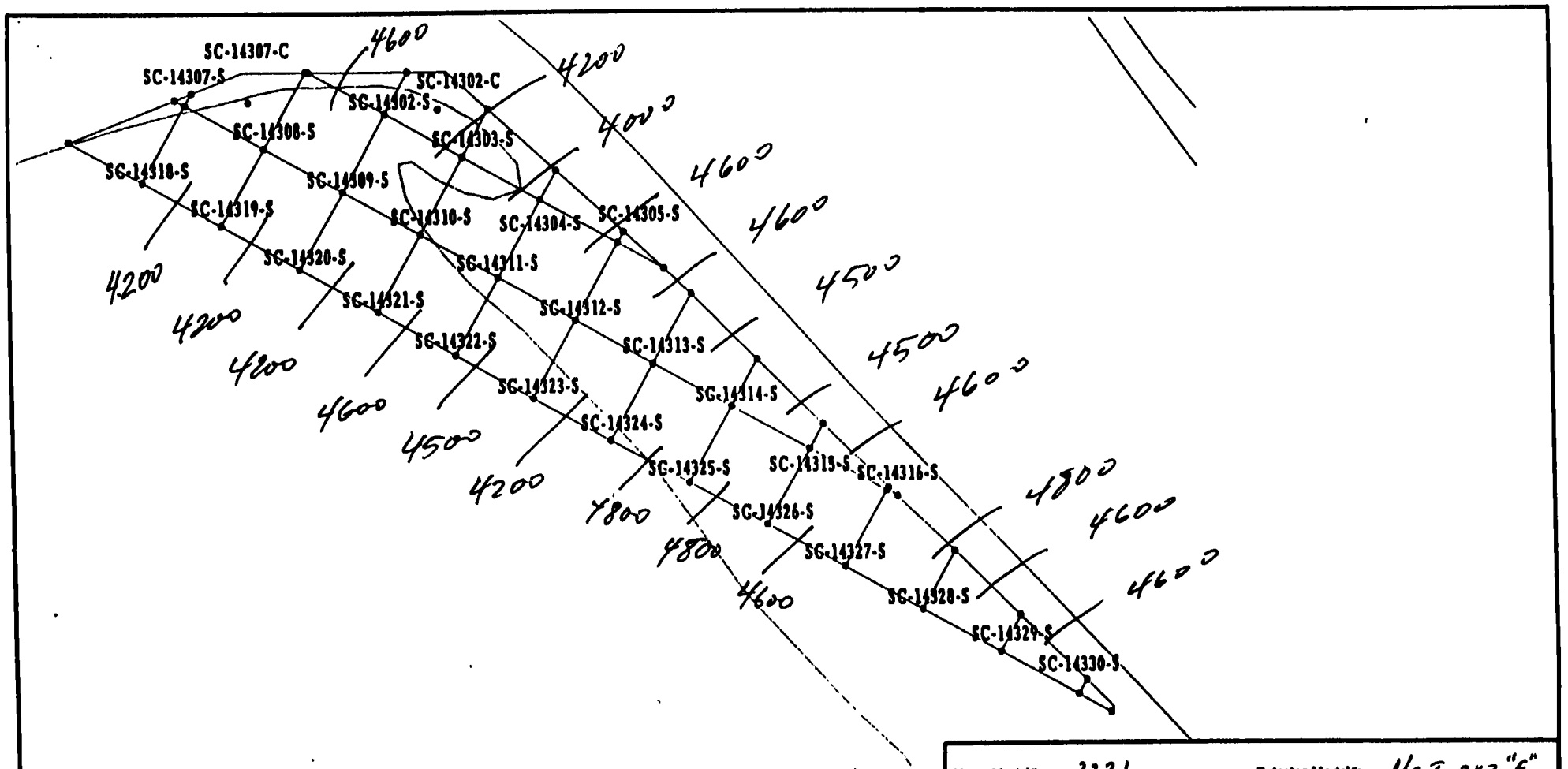
Sample Locations in Remedial Unit RU021
Confirmation Unit CU264

Figure A-21

REPORT NO.: DOE/OR/21548-765	EXHIBIT NO.: G/CP/50/0100	
ORIGINATOR: M. Lutz	DRAWN BY: AMM	DATE: 15-FEB-2000

APPENDIX B
Radiation Survey Forms WP-471

WP471 WALKOVER SURVEY FORM: RU013 CU143



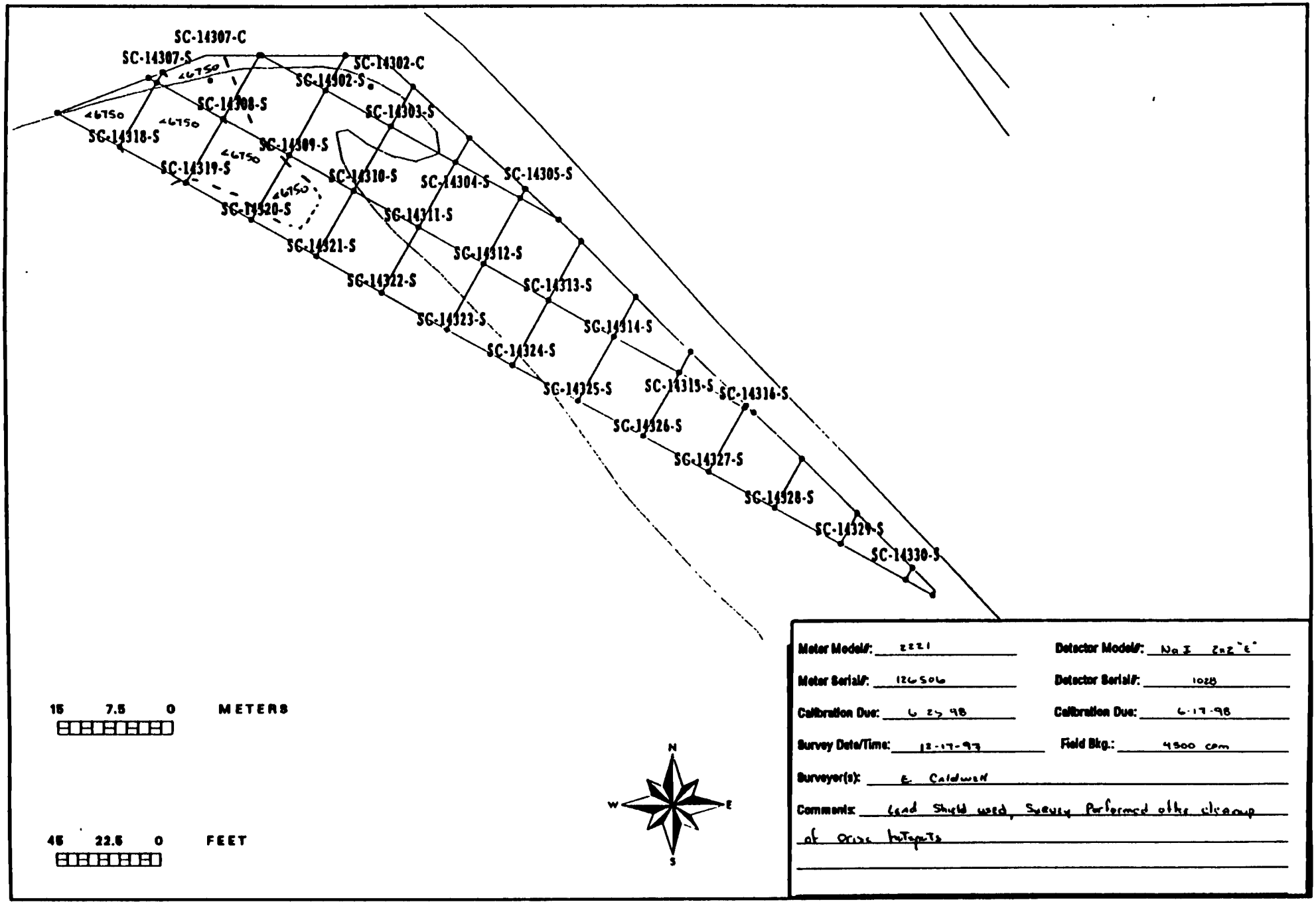
15 7.5 0 METERS

45 22.5 0 FEET

N
W E
S

Meter Model#:	2221	Detector Model#:	NaI 2x2"6"
Meter Serial#:	126506	Detector Serial#:	1028
Calibration Due:	6·25·98	Calibration Due:	6·17·98
Survey Date/Time:	11·4·97	Field Bkg.:	4000 cpm
Surveyor(s):	L. Hagoss		
Comments:	Lead shielding used		

WP471 WALKOVER SURVEY FORM: RU013 CU143



Meter Model#: 2221

Detector Model#: NaI 2x2 "E"

Meter Serial#: 126506

Detector Serial#: 1028

Calibration Due: 6 25 98

Calibration Due: 6-17-98

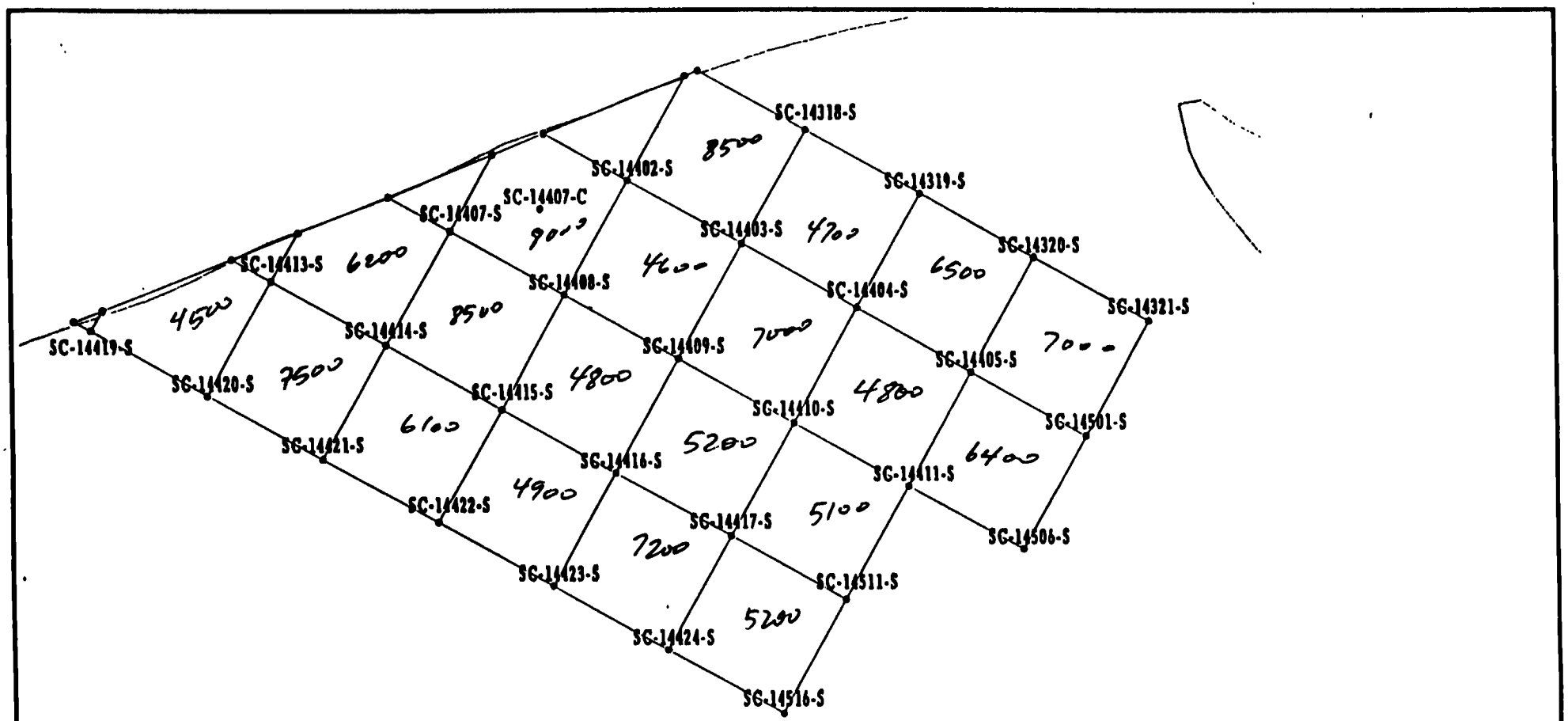
Survey Date/Time: 12-17-97

Field Bkg.: 4500 cpm

Surveyor(s): E. Caldwell

Comments: Lead Shield used, Survey Performed after cleanup of origin targets

WP471 WALKOVER SURVEY FORM: RU013 CU144



15 7.5 0 METERS

45 22.5 0 FEET

N
S

Meter Model#: 2221

Meter Serial#: 126506

Calibration Due: 6.25.98

Survey Date/Time: 11.4.97

Surveyor(s): L. Hagoss

Comments: Lead shielding used

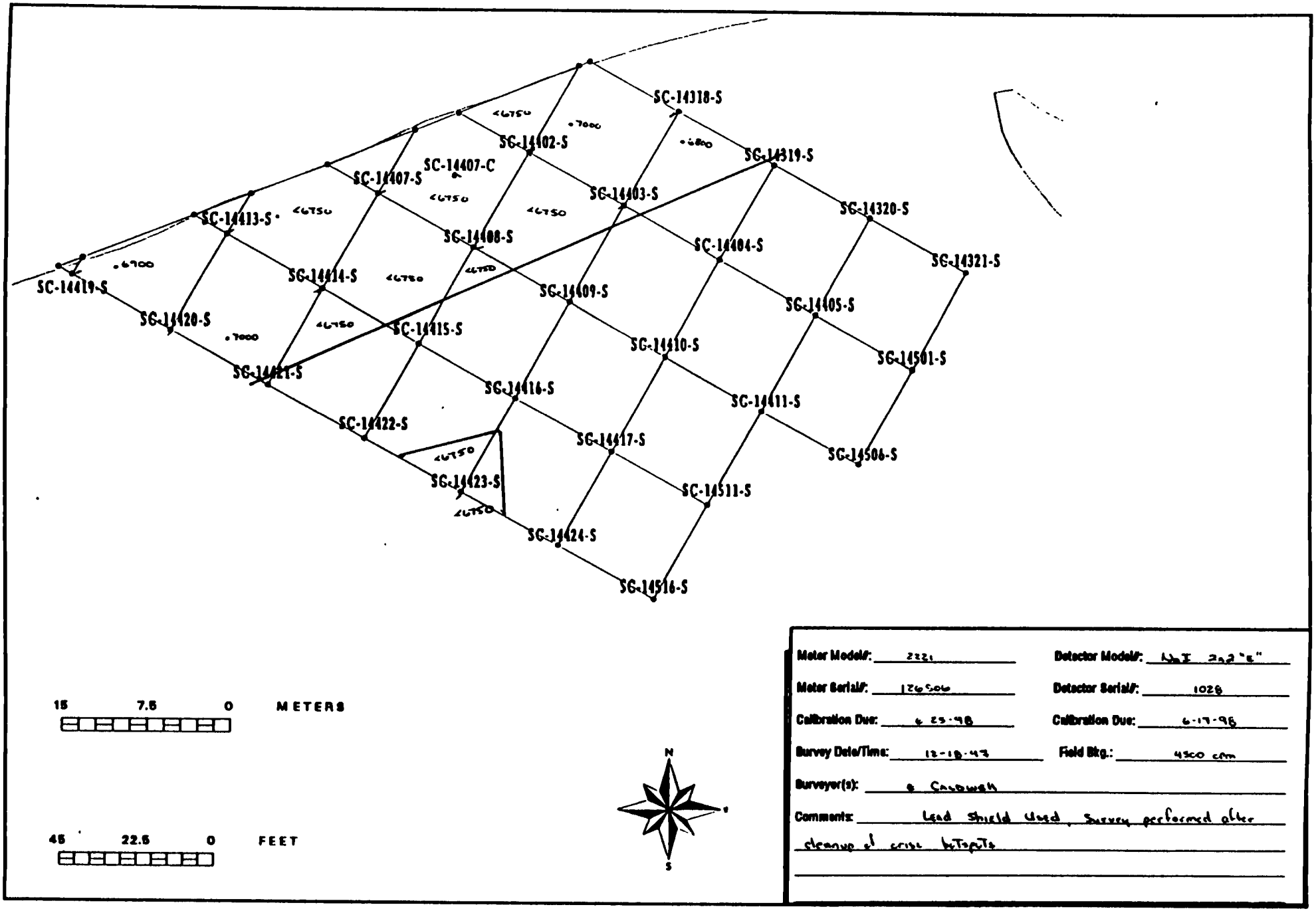
Detector Model#: NaI 2x2 "E"

Detector Serial#: 1028

Calibration Due: 6.17.98

Field Bkg.: 4,000 cpm

WP471 WALKOVER SURVEY FORM: RU013 CU144



Meter Model#: 2221

Detector Model#: NaI 2x2 "E"

Meter Serial#: 126506

Detector Serial#: 1028

Calibration Due: 6-25-98

Calibration Due: 6-17-98

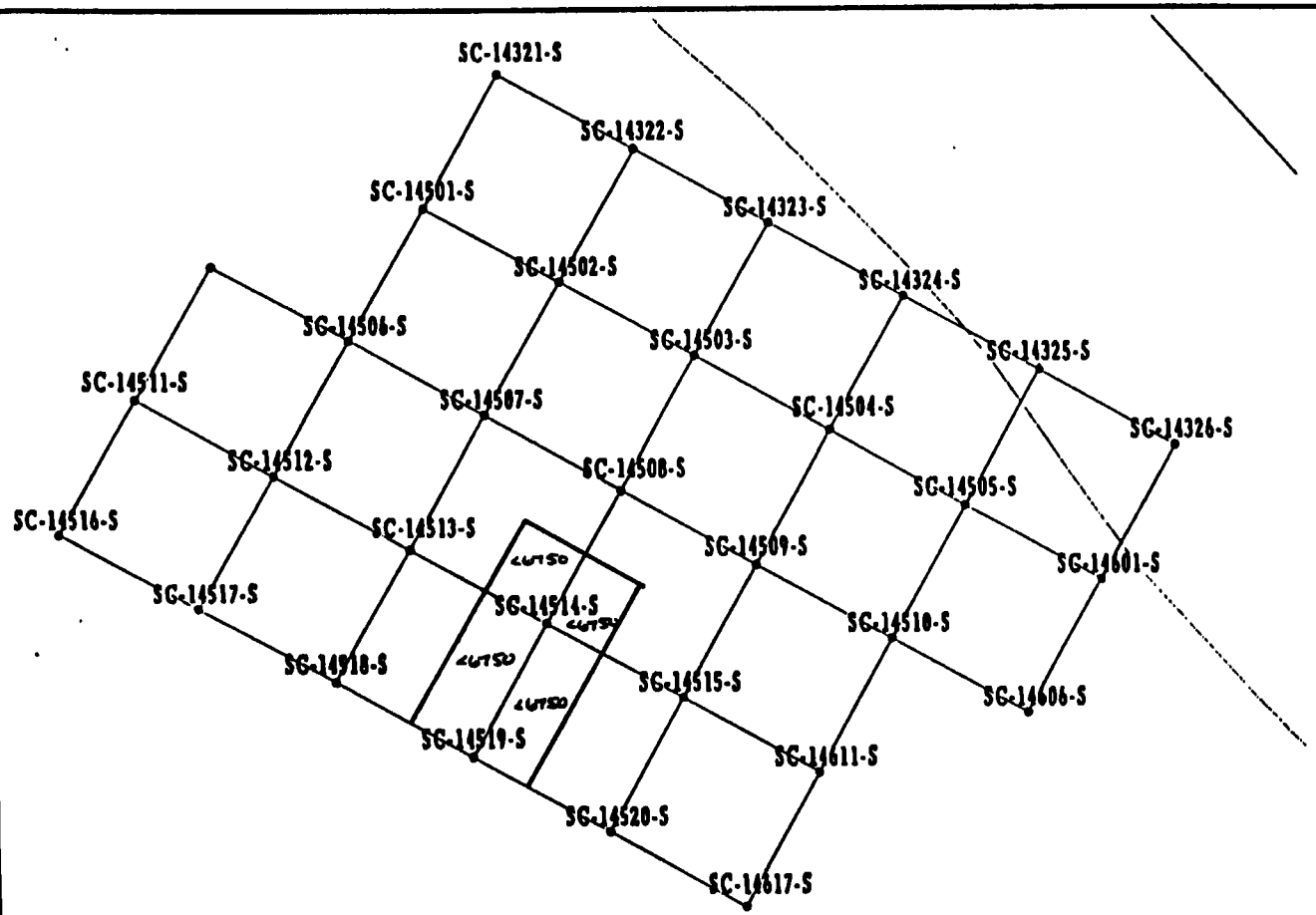
Survey Date/Time: 12-18-97

Field Bkg.: 4500 cpm

Surveyor(s): E Caldwell

Comments: Lead Shield Used, Survey performed after cleanup of crisc hotspots

WP471 WALKOVER SURVEY FORM: RU013 CU145



15 7.5 0 METERS

45 22.5 0 FEET

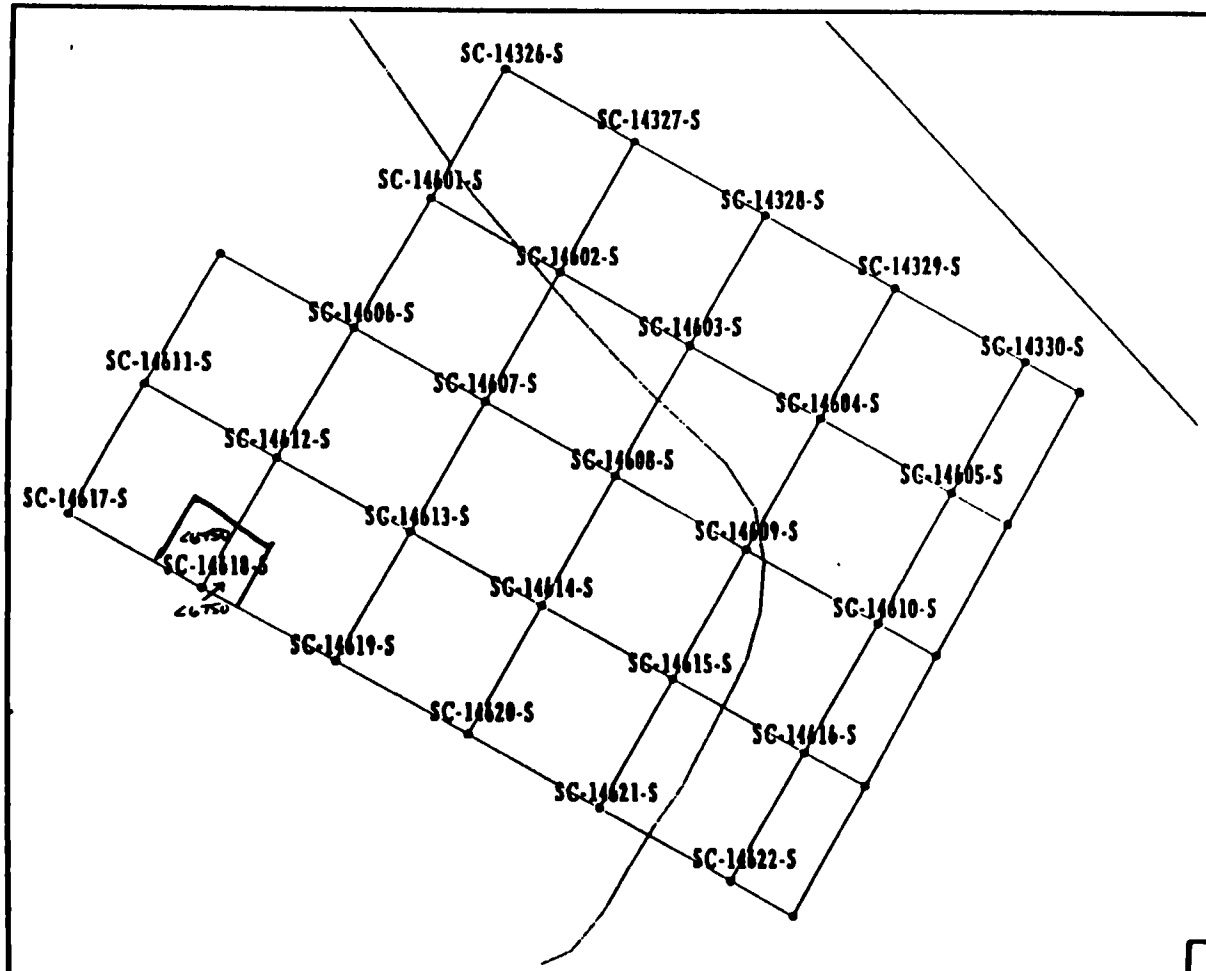
N

S

Meter Model#: 2221	Detector Model#: NaI 2x2 "6"
Meter Serial#: 126506	Detector Serial#: 1028
Calibration Due: 6-25-98	Calibration Due: 6-17-98
Survey Date/Time: 12-18-97	Field Bkg.: 4900 cpm
Surveyor(s): E. Caldwell	

Comments: Lead shield used. Survey performed after clearing of cruise hotspots

WP471 WALKOVER SURVEY FORM: RU013 CU146



15 7.5 0 METERS

45 22.5 0 FEET

N E S

Meter Model#: 2221 Detector Model#: NaI 2x2"6"

Meter Serial#: 126506 Detector Serial#: 1028

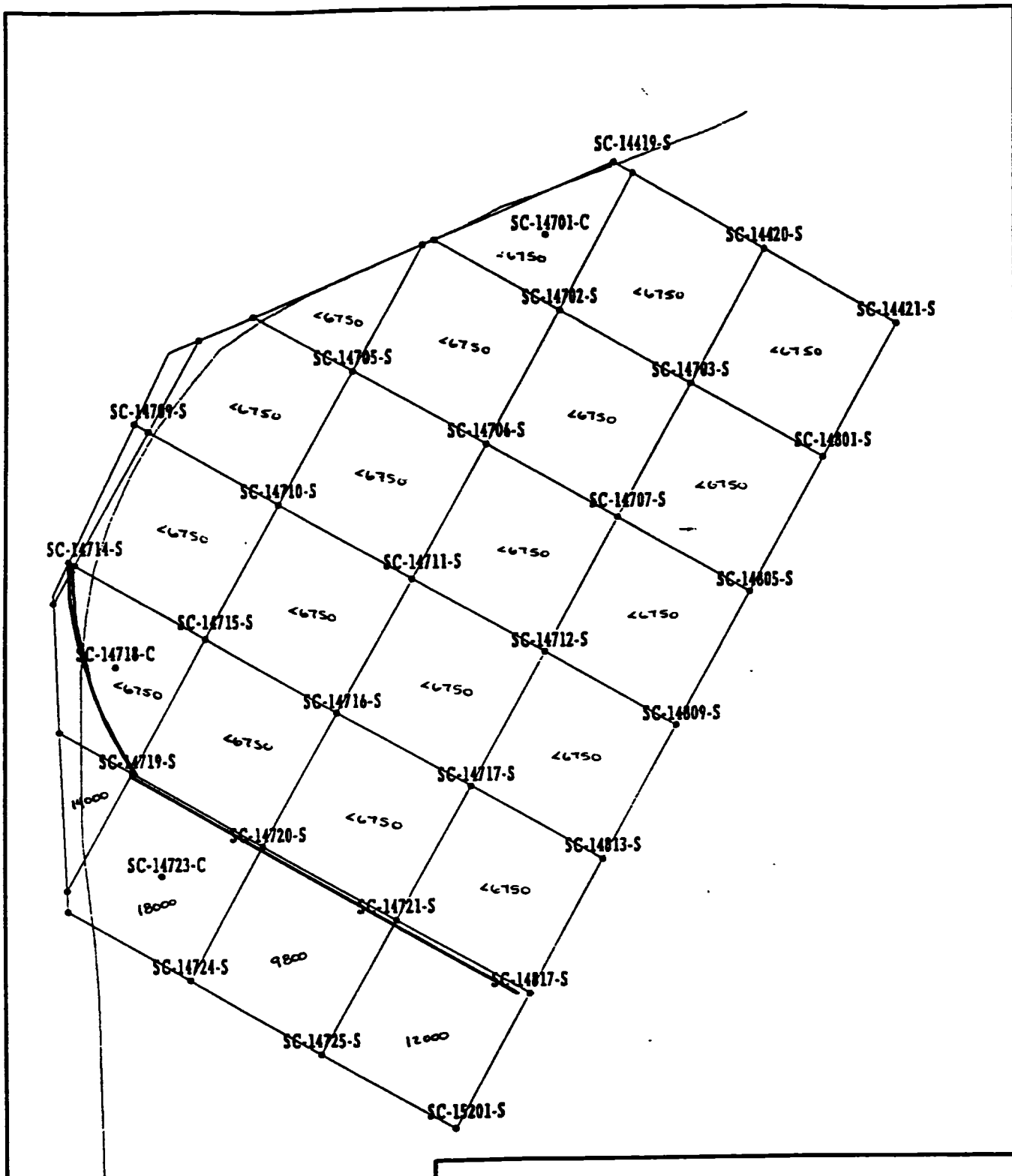
Calibration Due: 6-29-98 Calibration Due: 6-17-98

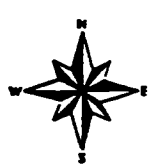
Survey Date/Time: 12-17-97 Field Bkg.: 4500 cpm

Surveyor(s): E. Cockrell

Comments: Lead Shield used. Only edge of area surveyed due to steep slopes of excavation. Area contaminated cleanup

WP471 WALKOVER SURVEY FORM: RU013 CU147





5 2.5 0 METERS

15 7.5 0 FEET

Meter Model#: 2221

Detector Model#: ADJ 2x2 "E"

Meter Serial#: 126506

Detector Serial#: 1028

Calibration Due: 6-25-98

Calibration Due: 6-17-98

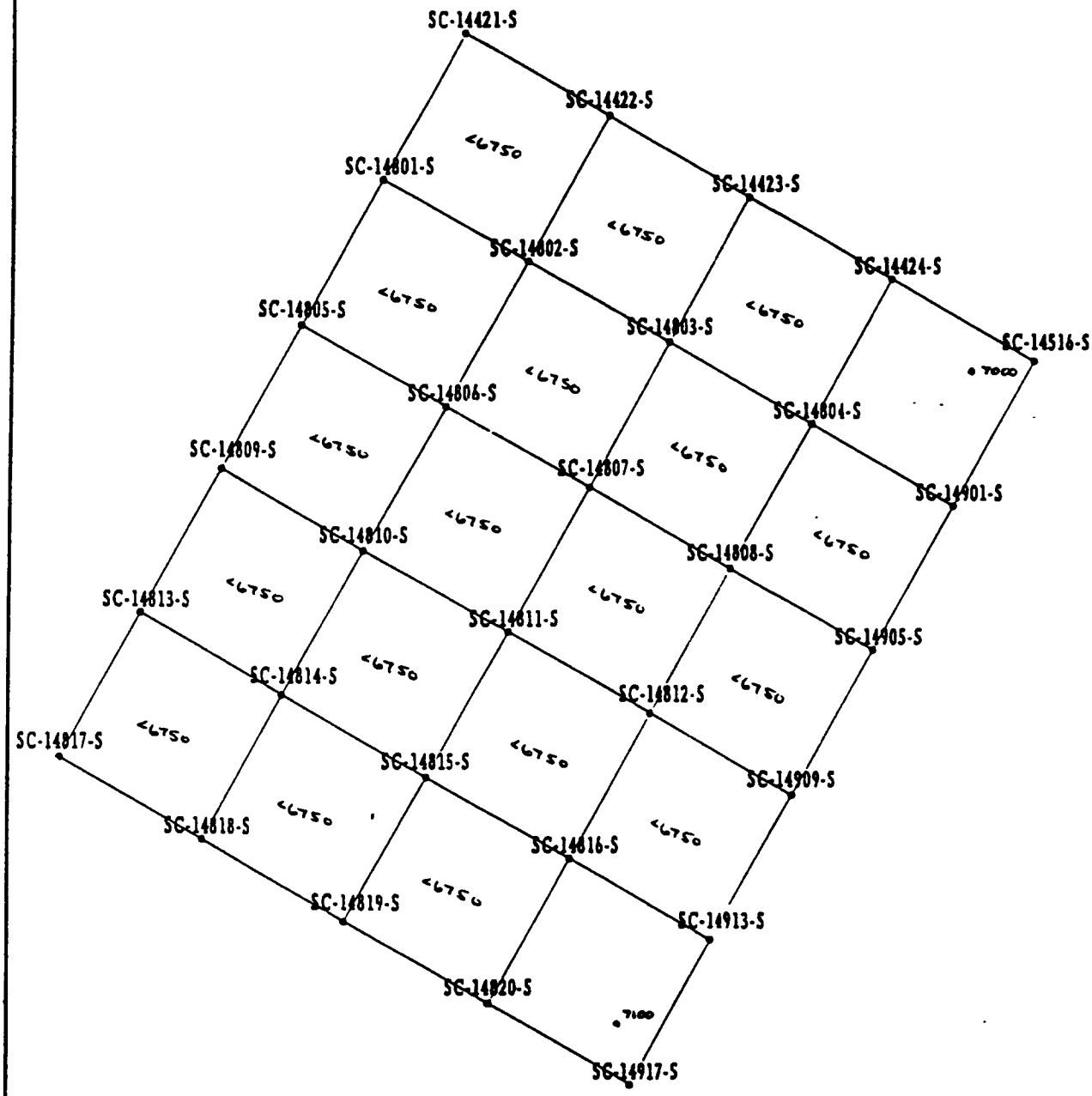
Survey Date/Time: 12-17-97

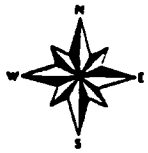
Field Bkg.: 9500 cpm

Surveyor(s): Z Alderson

Comments: Lead shield used, walkover prior to sampling
Area above solid bar released for sample

WP471 WALKOVER SURVEY FORM: RU013 CU148





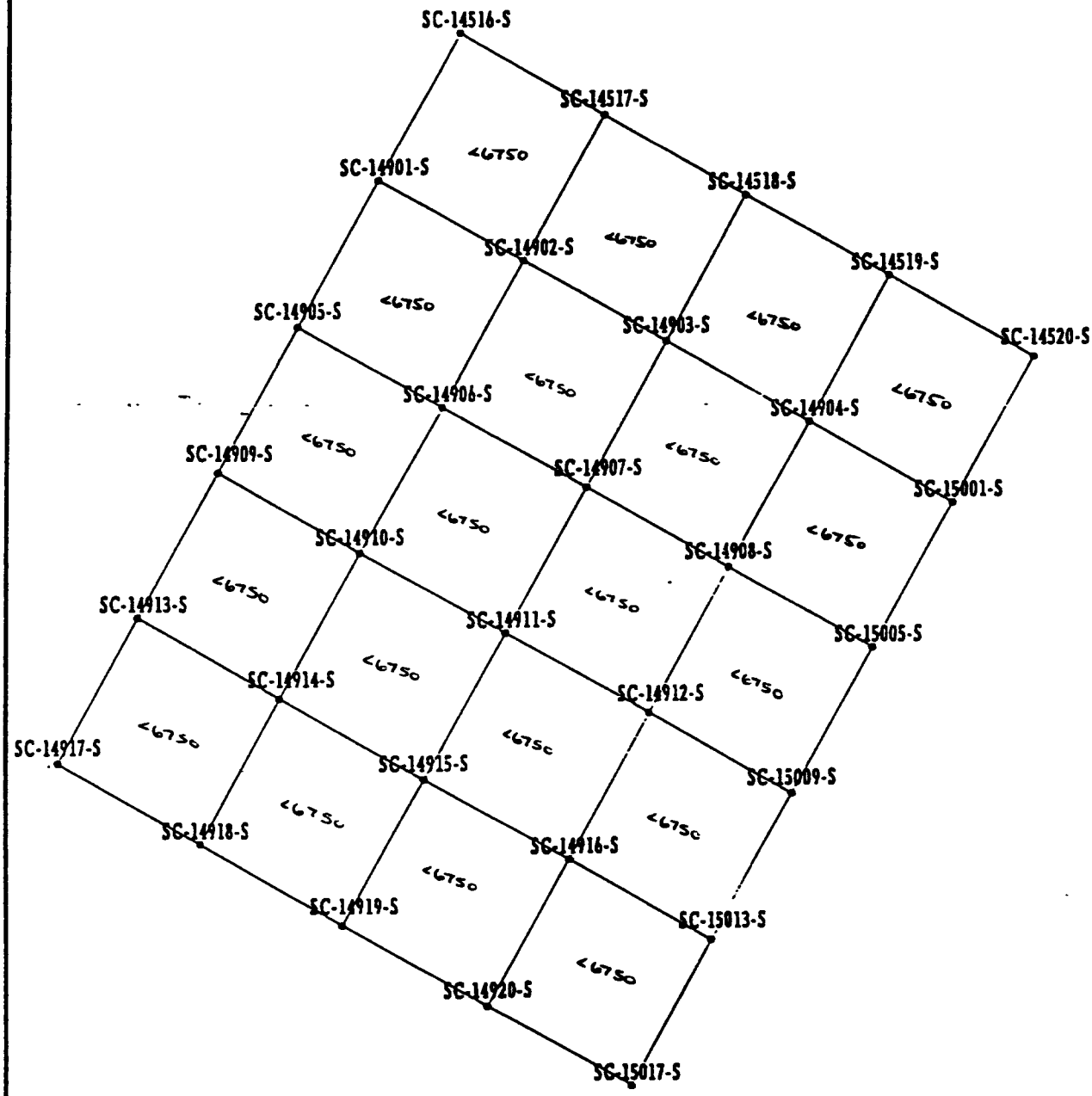
5 2.5 0 METERS

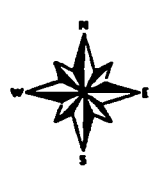
15 7.5 0 FEET

Meter Model#:	2221	Detector Model#:	NaI 2x2"c"
Meter Serial#:	124506	Detector Serial#:	1026
Calibration Due:	6-29-98	Calibration Due:	6-17-98
Survey Date/Time:	12-22-97	Field Bkg.:	4300 cpm
Surveyor(s):	R Alberson		

Comments: Lead Shield used. Survey performed prior to confirmation sampling

WP471 WALKOVER SURVEY FORM: RU013 CU149





5 2.5 0 METERS

15 7.5 0 FEET

Meter Model#: 2221

Detector Model#: NaI 2x2 "E"

Meter Serial#: 126306

Detector Serial#: 1028

Calibration Due: 6-25-98

Calibration Due: 6-17-98

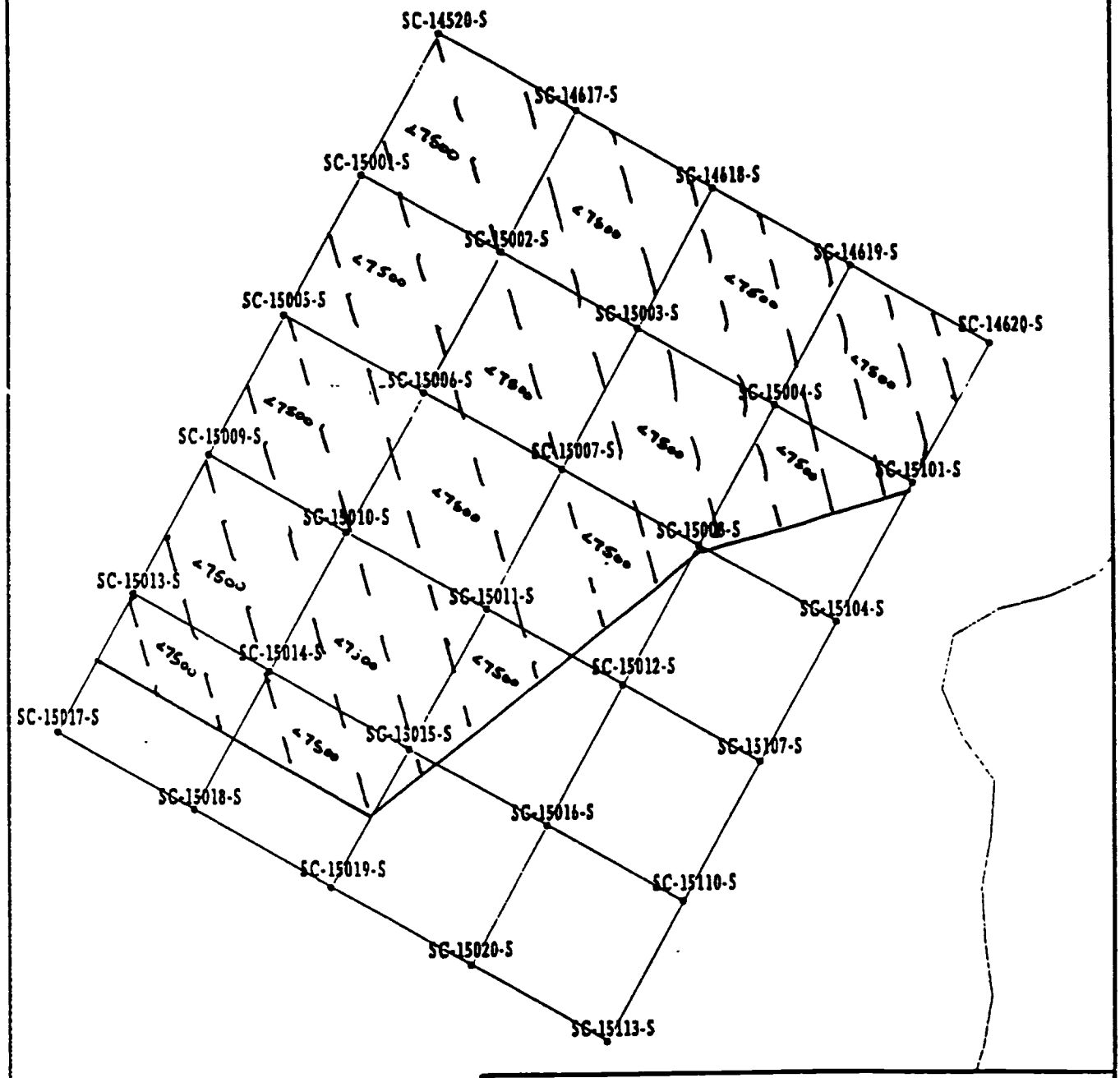
Survey Date/Time: 12-28-97

Field Bkg.: 4500 cpm

Surveyor(s): E. Caldwell

Comments: Lead shield used, Survey performed after 6" additional removal from last survey

WP471 WALKOVER SURVEY FORM: RU013 CU150



N
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5 2.5 0 METERS

15 7.5 0 FEET

Meter Model#: 2221

Meter Serial#: 106701

Calibration Due: 10-24-98

Survey Date/Time: 1000 1/22/98

Surveyor(s): Eric Caldwell / Rodney Alderson

Detector Model#: 44-10 "D"

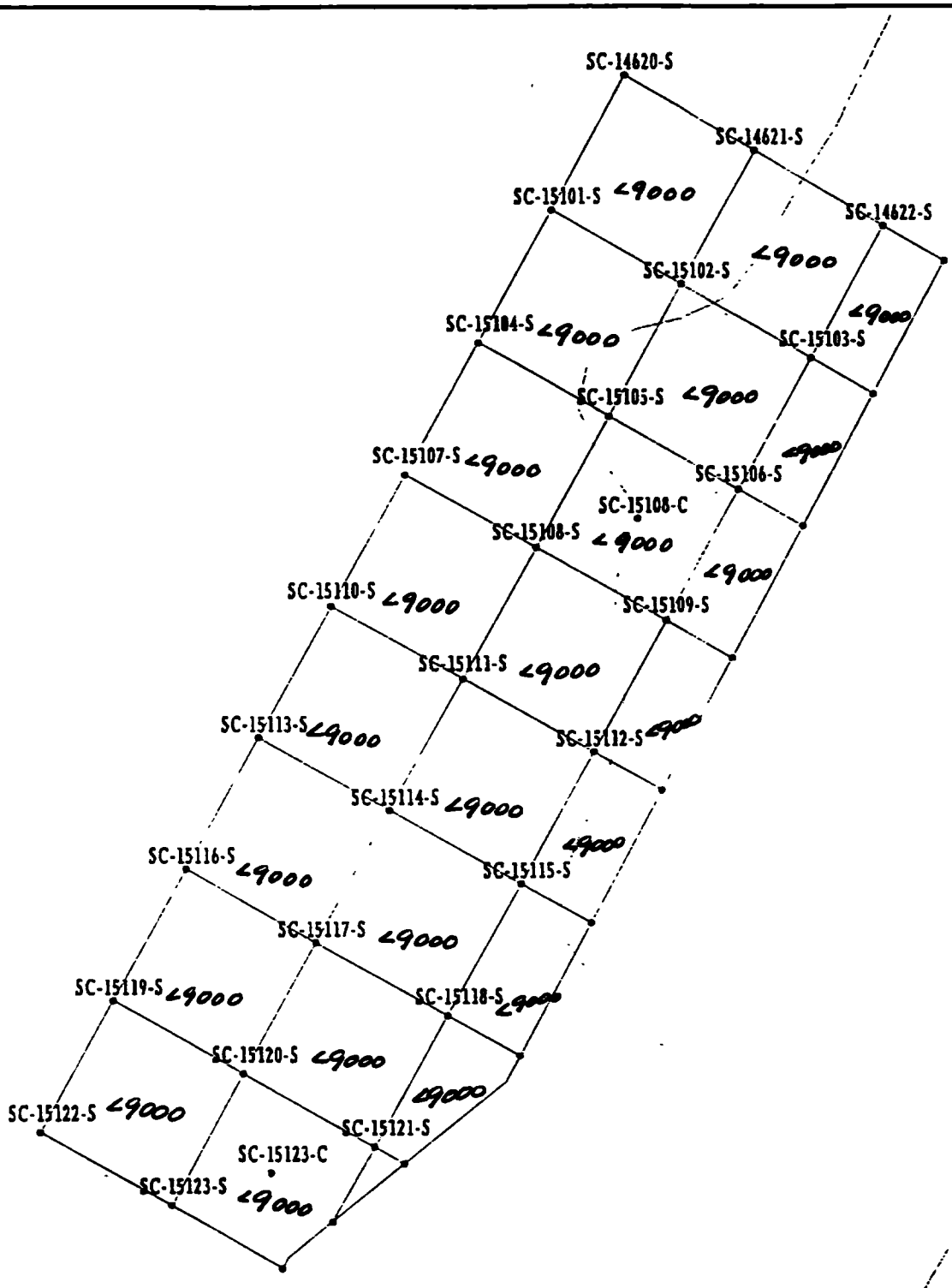
Detector Serial#: 035449

Calibration Due: 7-24-99

Field Bkg.: 5,000

Comments:

Radiation Survey Form WP471, RU013CU151



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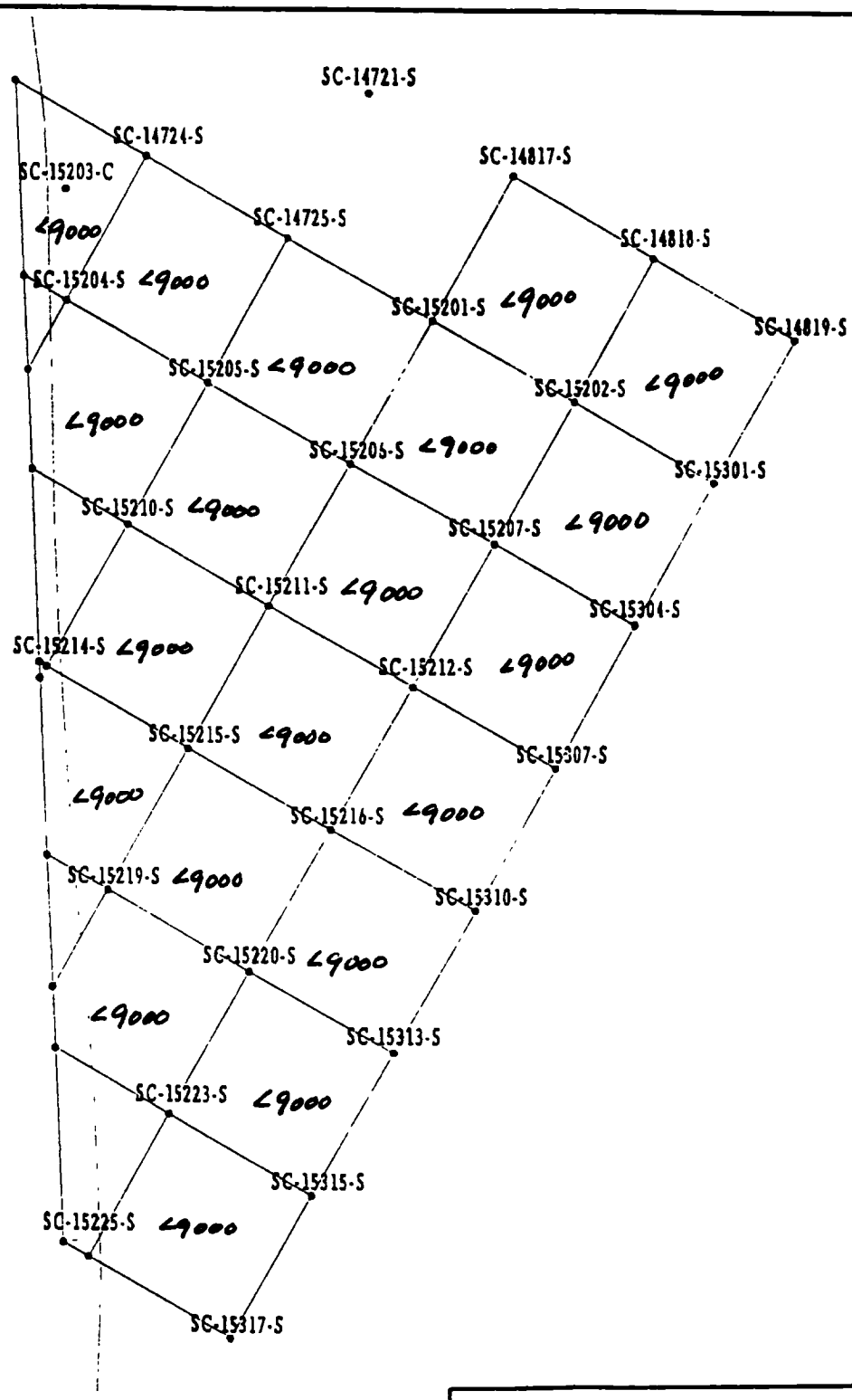
5 2.5 0 METERS

15 7.5 0 FEET

Meter Model#:	2221	Detector Model#:	NaI 2x2 "M"
Meter Serial#:	89626	Detector Serial#:	130764
Calibration Due:	11-20-98	Calibration Due:	6-18-98
Survey Date/Time:	5-28-98	Field Bkg.:	6000 cpm
Surveyor(s):	D. Lyerla		

Comments: Lead shield used. Survey performed prior to confirmation sampling.

Radiation Survey Form WP471, RU013CU152



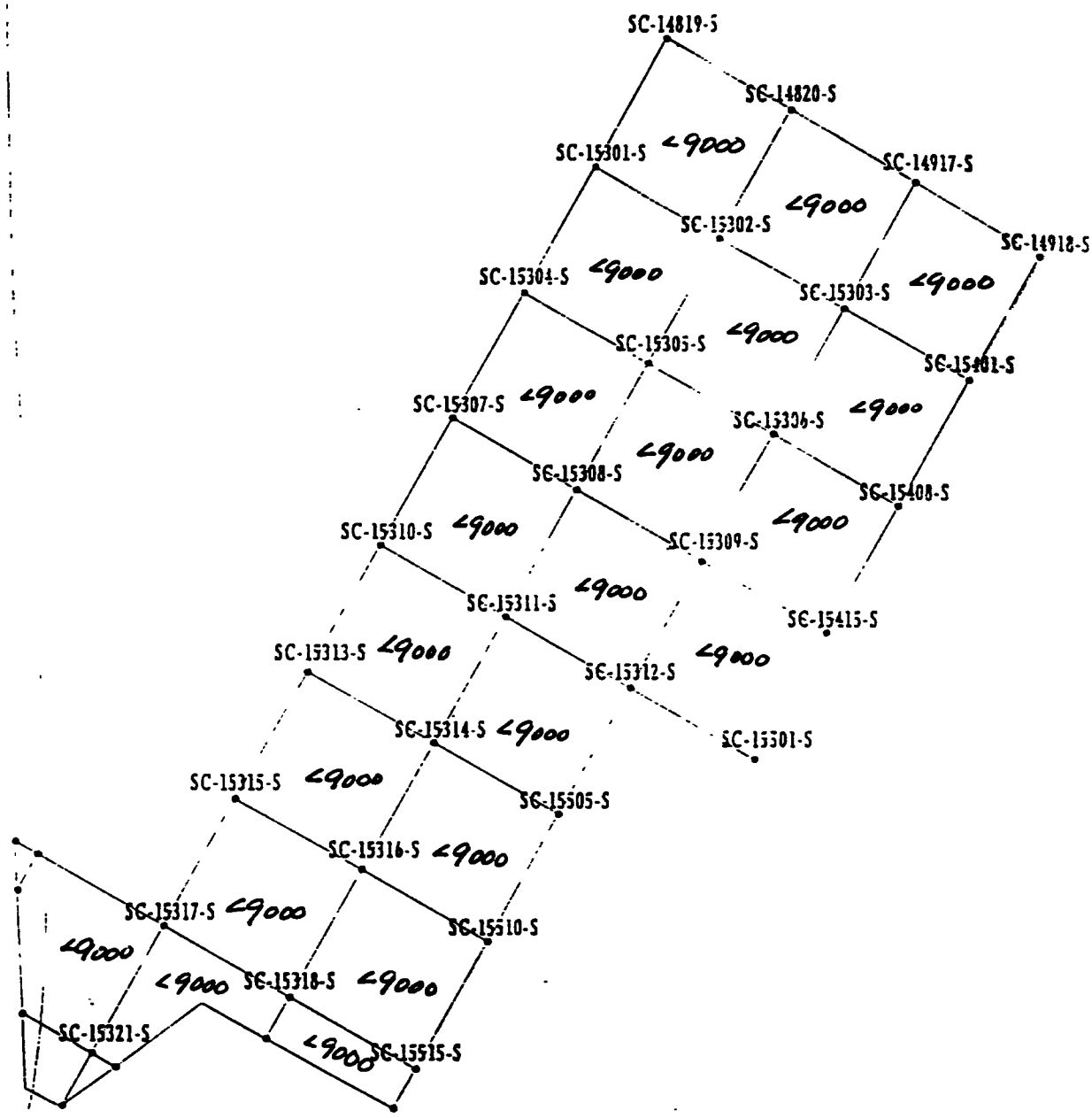
5 2.5 0 METERS

15 7.5 0 FEET

Meter Model#:	2221	Detector Model#:	NaI 2x2 "M"
Meter Serial#:	89626	Detector Serial#:	130764
Calibration Due:	11-20-98	Calibration Due:	6-18-98
Survey Date/Time:	5-28-98	Field Bkg.:	6000 cpm
Surveyor(s):	D. Lyerly		

Comments: Lead shield used. Survey performed prior to confirmation sampling.

Radiation Survey Form WP471, RU013CU153



5 2.5 0 METER

15 7.5 0 FEET

Meter Model#: 2221 Detector Model#: NaI 2x2

Meter Serial#: 89626 Detector Serial#: 130764

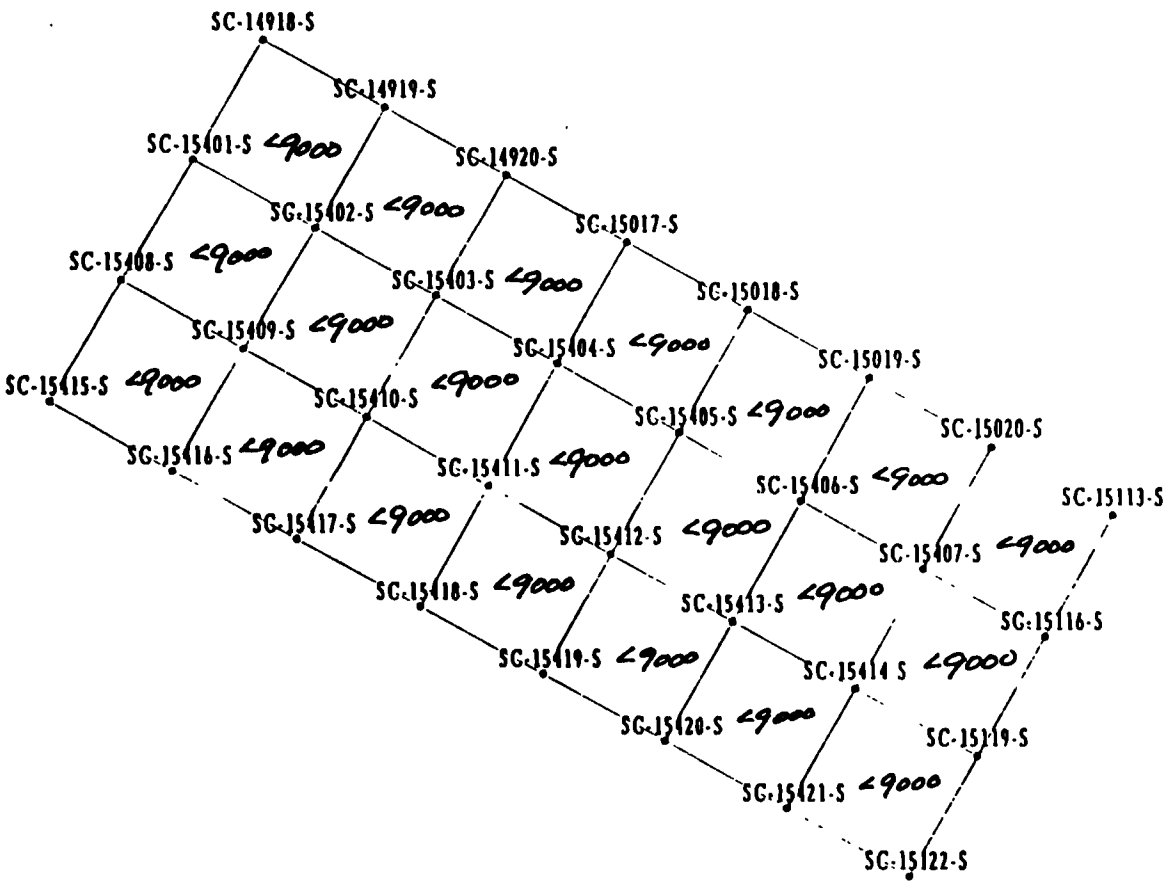
Calibration Due: 11-20-98 Calibration Due: 6-18-98

Survey Date/Time: 5-28-98 Field Bkg.: 6000 cpm

Surveyor(s): D. Lyerla

Comments: Lead shield used. Survey perfor prior to confirmation sampling.

Radiation Survey Form WP471, RU013CU154



15 7.5 0 METERS

45 22.5 0 FEET

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Meter Model#: 2221 Detector Model#: NaI 2x2 "M"

Meter Serial#: 89626 Detector Serial#: 130764

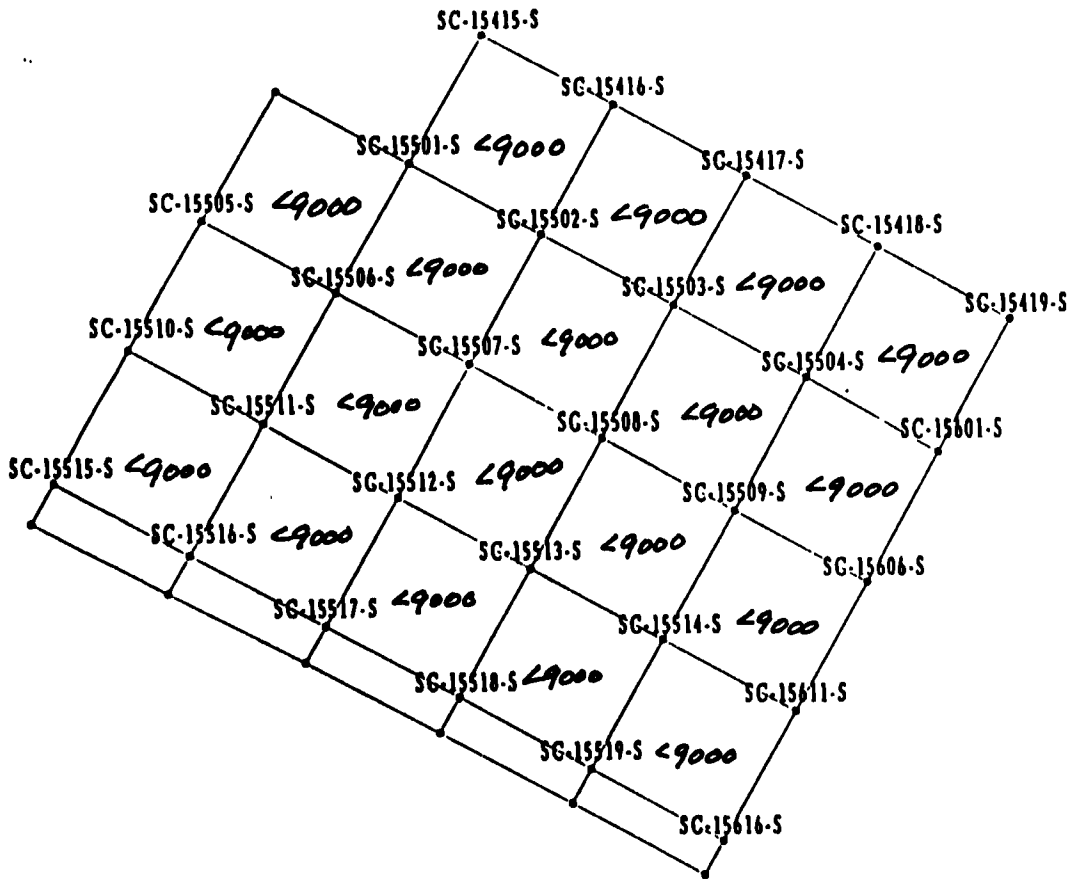
Calibration Due: 11-20-98 Calibration Due: 6-18-98

Survey Date/Time: 5-28-98 Field Bkg.: 6000 cpm

Surveyor(s): D. Lyerla

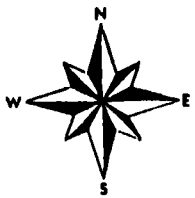
Comments: Lead shield used. Survey performed prior to confirmation sampling.

Radiation Survey Form WP471, RU013CU155



15 7.5 0 METERS

45 22.5 0 FEET



Meter Model#: 2221 Detector Model#: NaI 2x2 "M"

Meter Serial#: 89626 Detector Serial#: 130764

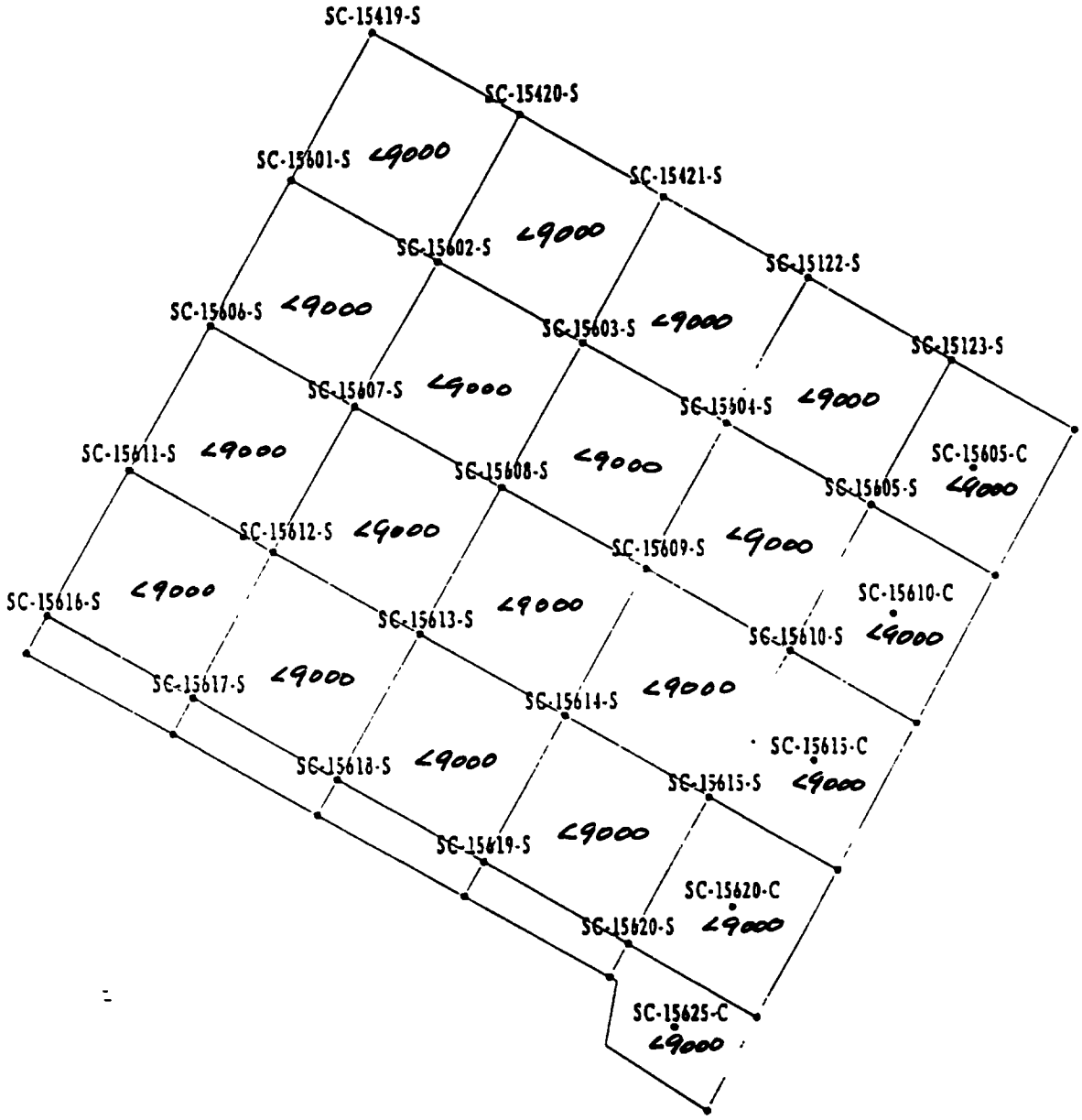
Calibration Due: 11-20-98 Calibration Due: 6-18-98

Survey Date/Time: 5-28-98 Field Bkg.: 6000 cpm

Surveyor(s): D. Lyerla

Comments: Lead shield used. Survey performed prior to confirmation sampling.

Radiation Survey Form WP471, RU013CU156



N

S

6 2.6 0 METERS

15 7.5 0 FEET

Meter Model#: 2221 Detector Model#: NaI 2x2 "M"

Meter Serial#: 89626 Detector Serial#: 130764

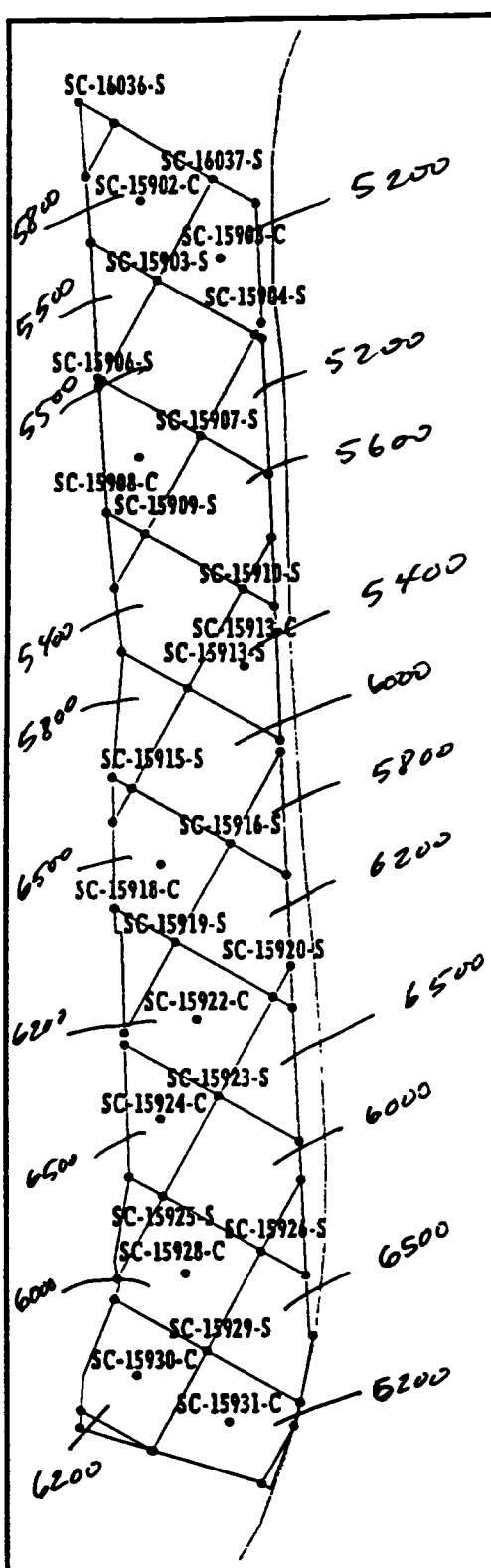
Calibration Due: 11-20-98 Calibration Due 6-18-98

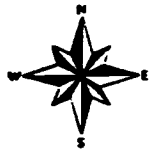
Survey Date/Time 5-28-98 Field Bkg 6000 cpm

Surveyor(s) D. Lyerla

Comments: Lead shield used. Survey performed prior to confirmation sampling.

WP471 WALKOVER SURVEY FORM: RU013 CU159





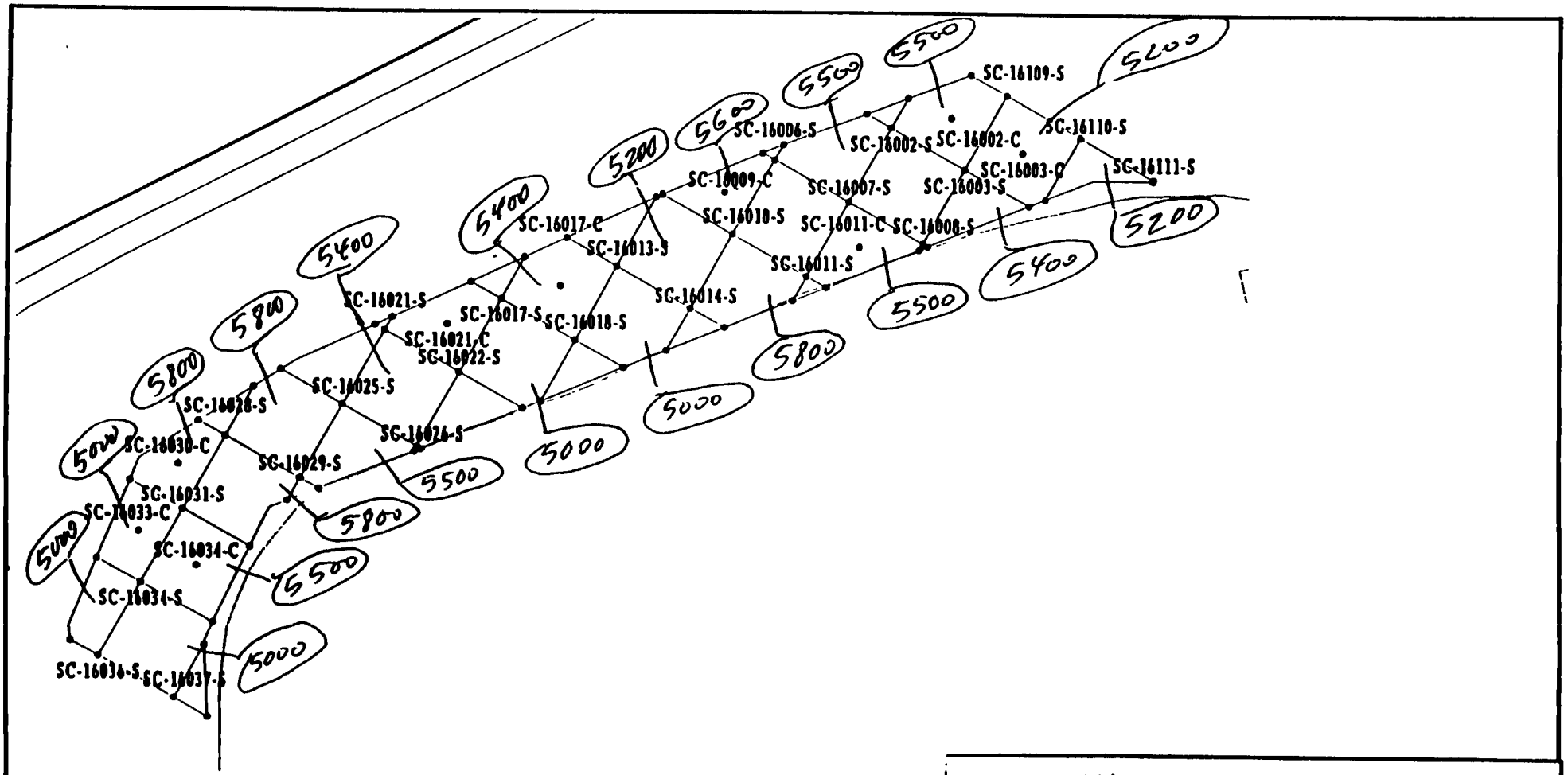
5 2.5 0 ME

7.5
15 0 FE

Meter Model#:	NaI 2x2 2221	Detector Model#:	4410
Meter Serial#:	"E"	Detector Serial#:	1028 (DOE)
Calibration Due:	6.25.98	Calibration Due:	6.17.98
Survey Date/Time:	10.29.97	Field Bkg.:	4800
Surveyor(s):	E. Caldwell, L. Hagoss		

Comments: lead shielding used during field walkovers

WP471 WALKOVER SURVEY FORM: RU013 CU160



15 7.5 0 METERS

45 22.5 0 FEET

N W E S

Meter Model#: 2221

Meter Serial#: "E" 126506

Calibration Due: 6·25·98

Survey Date/Time: 10·29·97

Surveyor(s): E. Caldwell, L. Hagoss

Comments: Lead shielding used during field walkovers

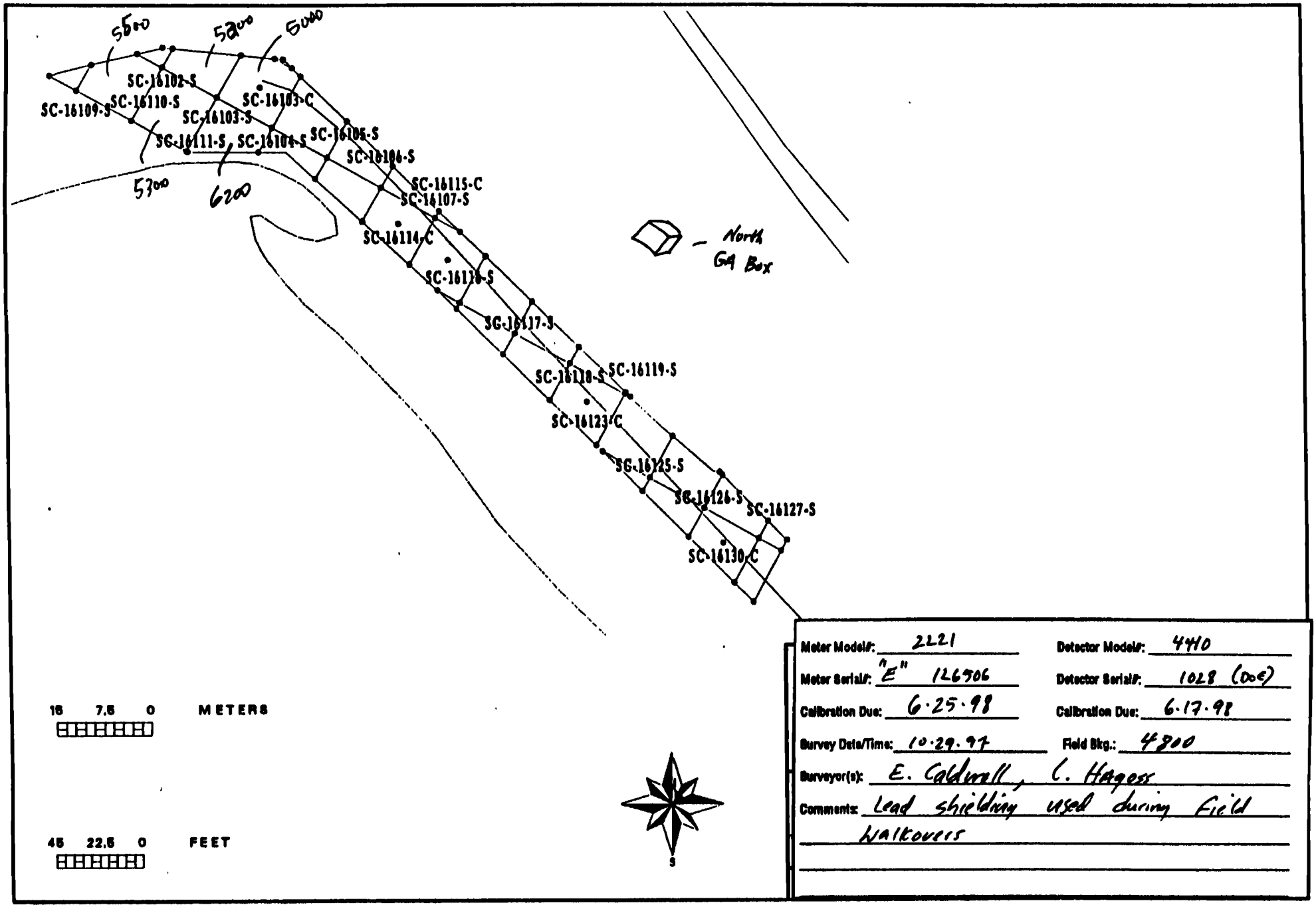
Detector Model#: 4410

Detector Serial#: 1028 (DOE)

Calibration Due: 6·17·98

Field Bkg.: 4800

WP471 WALKOVER SURVEY FORM: RU013 CU161



Meter Model#: 2221

Meter Serial#: "E" 126906

Calibration Due: 6·25·98

Survey Date/Time: 10·29·97

Surveyor(s): E. Caldwell, C. Hagess

Comments: Lead shielding used during Field Walkovers

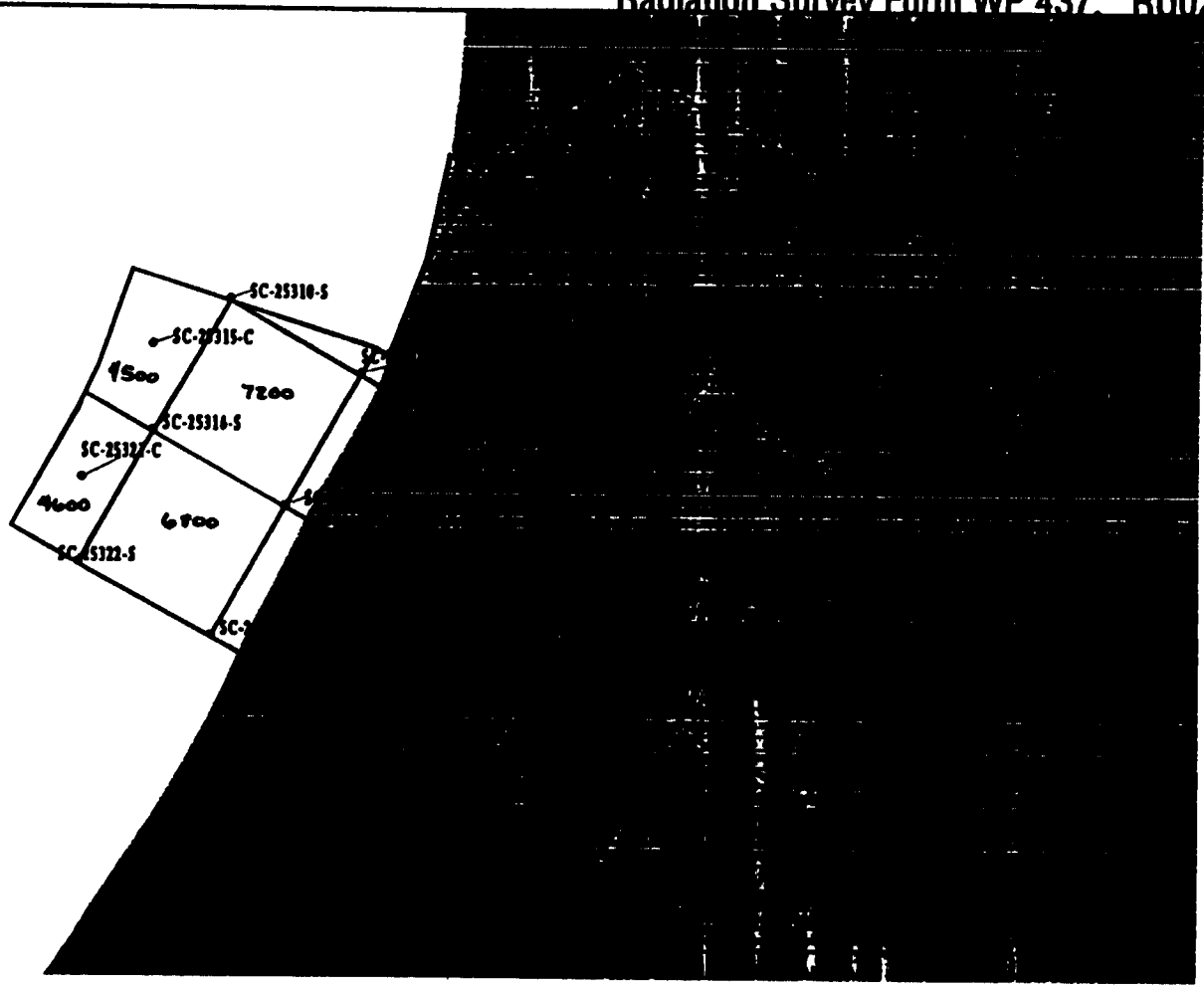
Detector Model#: 4410

Detector Serial#: 1028 (DOE)

Calibration Due: 6·17·98

Field Bkg.: 4800

Radiation Survey Form WP 437 RU021CU253



WSSRAP GIS

15 7.5 0 15 METERS

45 22.5 0 45 FEET

S

Meter Model#: 2221 Detector Model#: 44-10

Meter Serial#: 127247 Detector Serial#: 126402

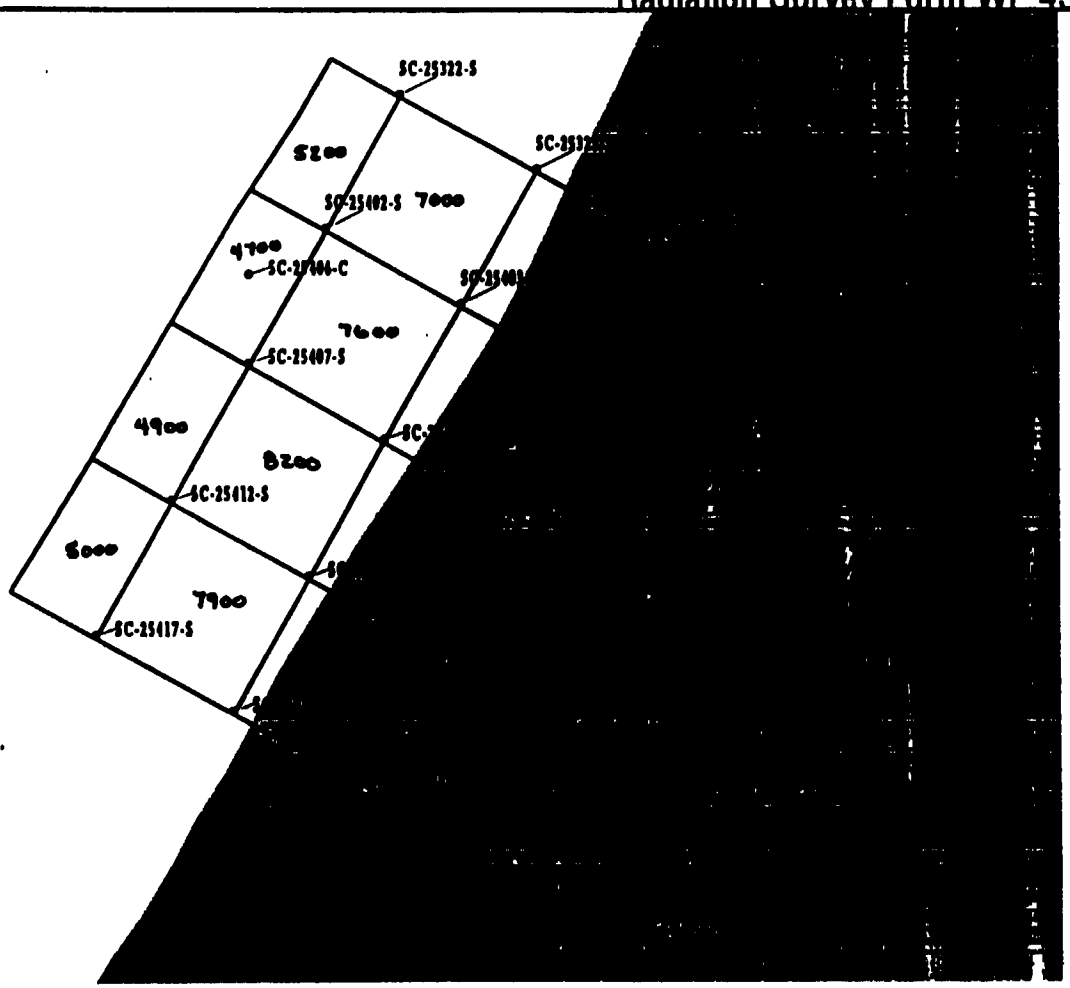
Calibration Due: 8-8-97 Calibration Due: 1-22-98

Survey Date/Time: 1400 7/8/98 Field Bkg.: 3000

Surveyor(s): R. Alderson

Comments: Background in Area of walkway 4000 - 7000 due to increase background radiation due to presence of sludge

Radiation Survey Form WP 437, RU021CU254



WSSRAP GIS

15 7.5 0 15 METERS

45 22.5 0 45 FEET

N E S

Meter Model#: 2221 Detector Model#: 44-10

Meter Serial#: 127247 Detector Serial#: 126402

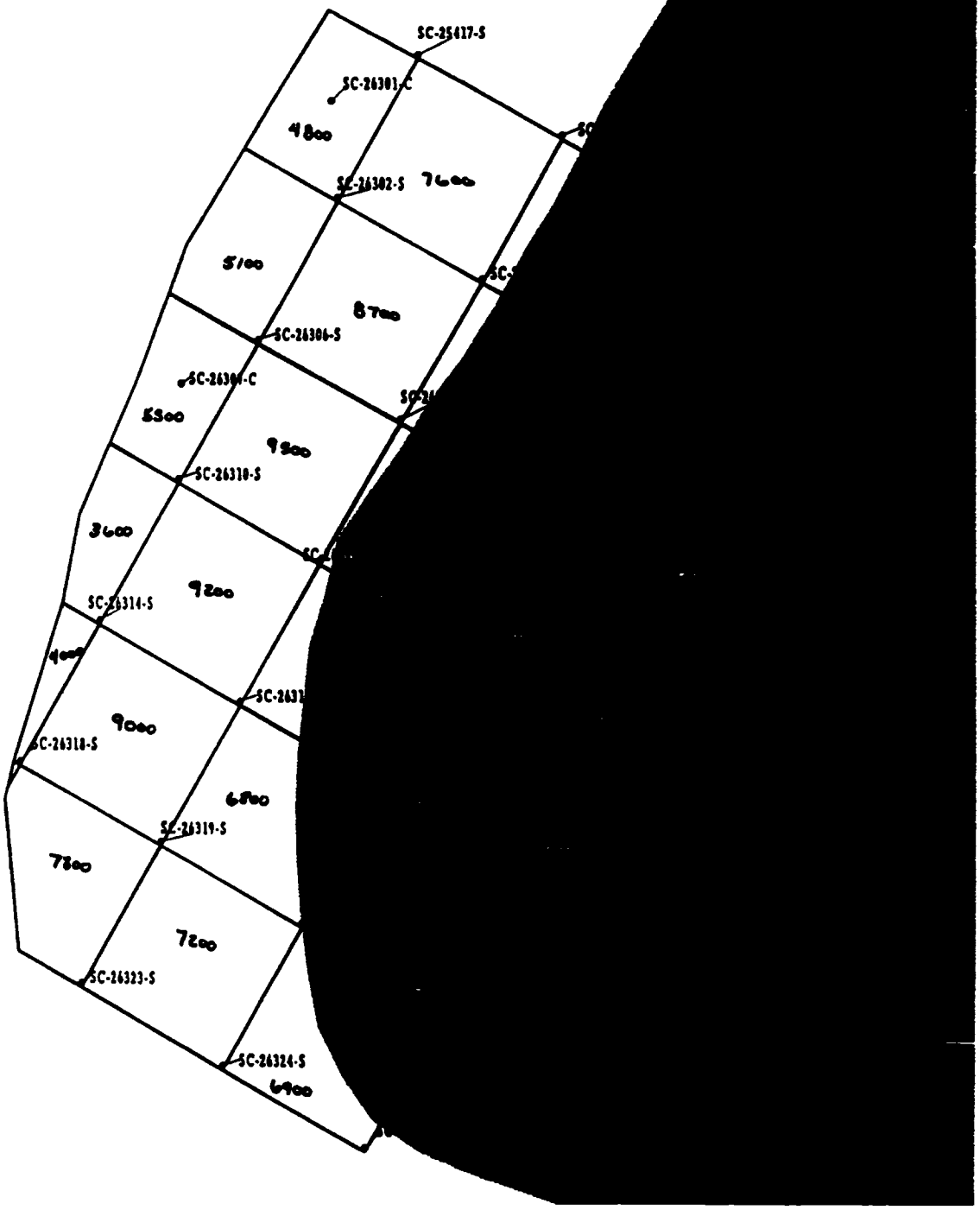
Calibration Due: 8-8-97 Calibration Due: 1-22-98

Survey Date/Time: 1400 7/8/98 Field Bkg.: 5000

Surveyor(s): R. Alderson

Comments: Increase background due to close proximity of sludge impoundment

Radiation Survey Form WP 437, RU021 CU263



WSSRAP GIS

15 7.5 0 METERS

45 22.5 0 FEET

N W E S

Meter Model#: 2221 Detector Model#: 44-10

Meter Serial#: 127247 Detector Serial#: 126402

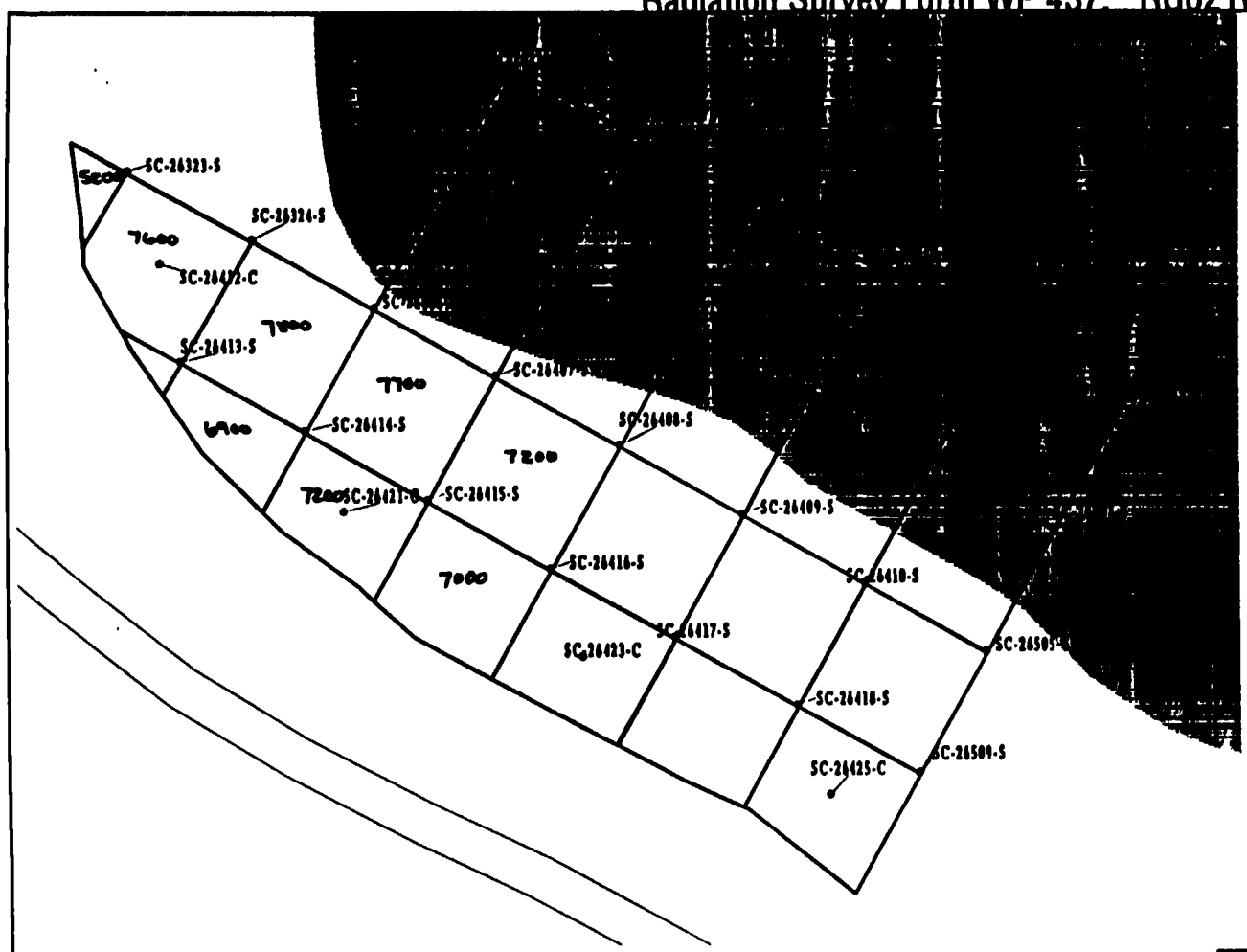
Calibration Due: 8-8-97 Calibration Due: 1-22-98

Survey Date/Time: 1400 7/8/98 Field Bkg.: 3000

Surveyor(s): R. Alderson

Comments: Increase background due to close proximity of sludge impoundment

Radiation Survey Form WP 437 RU021CU264



WSSRAP GIS

15 7.5 0 15 METERS

45 22.5 0 45 FEET

N E S

Meter Model#: 2221 Detector Model#: 44-10

Meter Serial#: 127247 Detector Serial#: 126402

Calibration Due: 8-8-98 Calibration Due: 1-22-98

Survey Date/Time: 1400 7/8/98 Field Bkg.: 3000

Surveyor(s): R. Alderson

Comments:

APPENDIX C
Disposition Forms

Note: CUs are dispositioned using preliminary results. Final results are presented in Appendix D.

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6-9-98 3. Review Form #: 98-023

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU143 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228 X TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes	___ No
8. All results below cleanup criteria? note: meeting subsurface criteria except in Zone K' where it meets surface criteria.	X Yes	___ No
9. Any results greater than 3X criteria?	___ Yes	X No
10. Hot spots present (less than 3X criteria)?	___ Yes	X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments This release includes the original confirmation event (results included on the CU143a results form as attached) & the second confirmation event (results included on the CU143b results form) after additional soil was removed from (continue below)

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 6/9/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: [signature] Date: 6/9/98

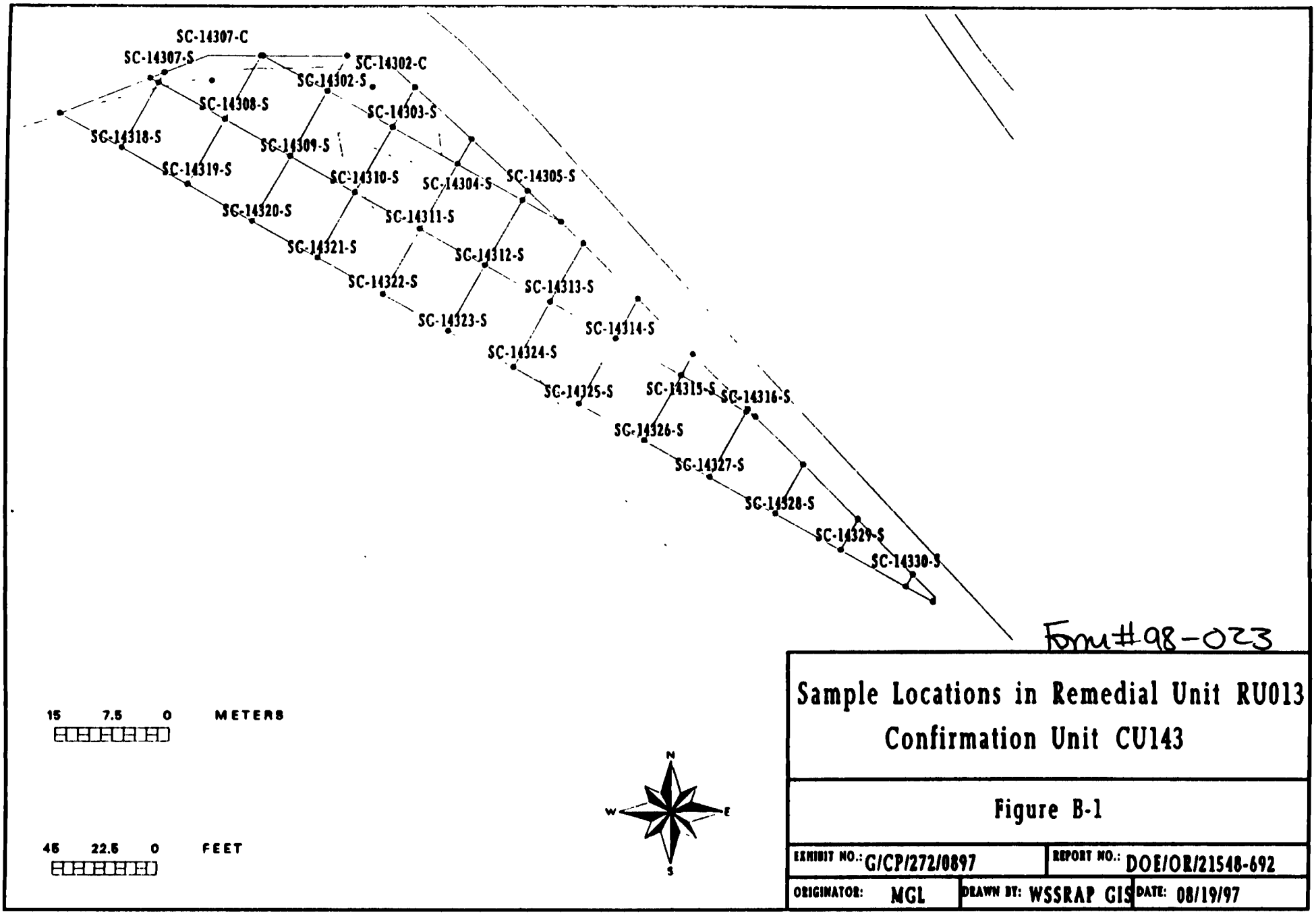
15. DOE Project Manager/Engineer: [signature] Date: 6/9/98

16. Project Manager: [signature] Date: 6/9/98

17. Construction Engineer: [signature] Date: 6-10-98

SEE ATTACHED RESULTS AND MAP

'Zone K' (see attached figure). TNT was added during the second event after indications of nitroaromatics during excavation.

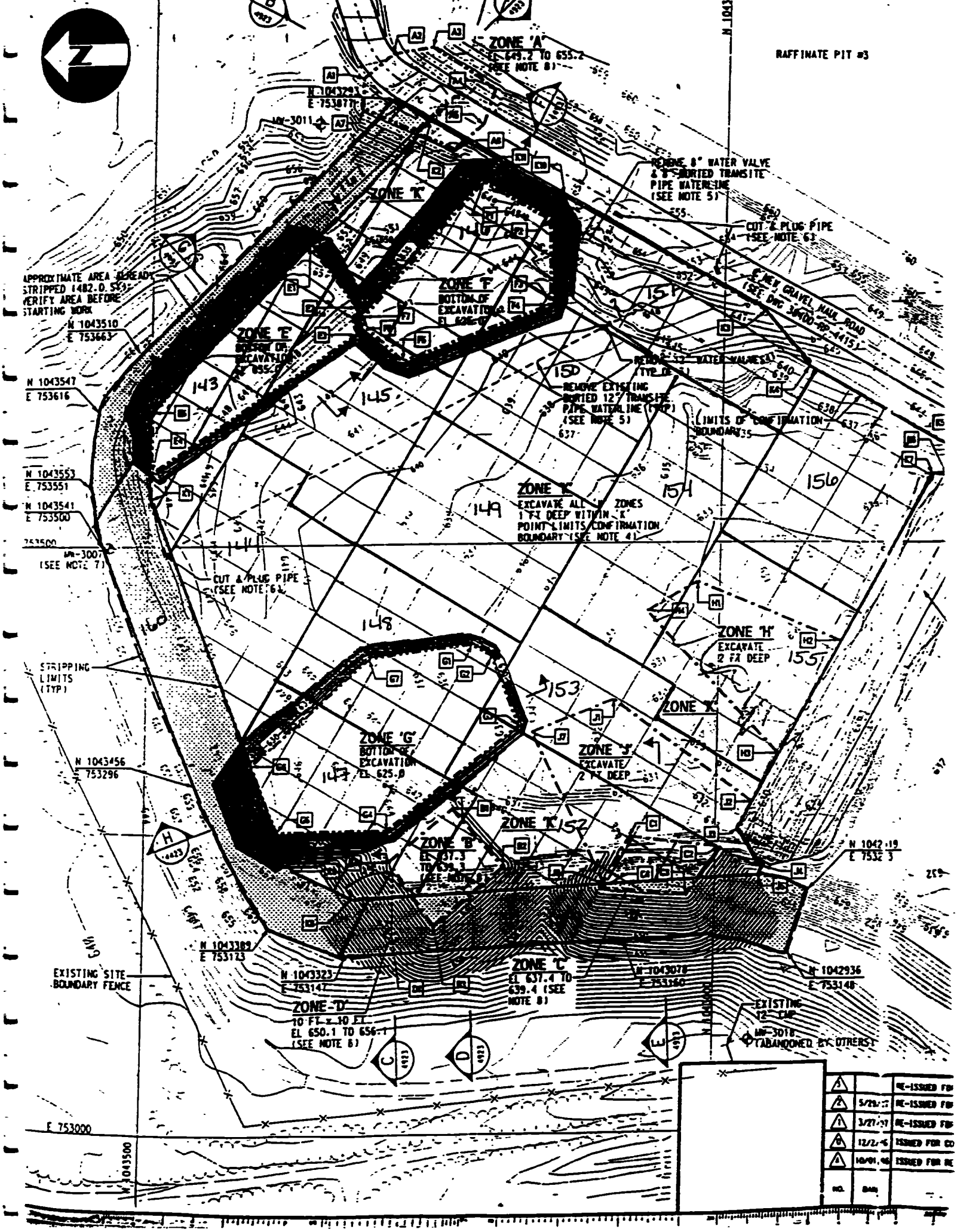


Form #98-023

Sample Locations in Remedial Unit RU013
Confirmation Unit CU143

Figure B-1

EXHIBIT NO.: G/CP/272/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	



RAFFINATE PIT #3
ZONE 'A'
EL 649.2 TO 655.2
(SEE NOTE 8)
N 1043293
E 753877
MW-3011
REMOVE 8" WATER VALVE
& 8" BURIED TRANSITE
PIPE WATERLINE
(SEE NOTE 5)
CUT & PLUG PIPE
(SEE NOTE 6)
ZONE 'K'
ZONE 'F'
BOTTOM OF
EXCAVATION
EL 626.0
APPROXIMATE AREA ALREADY
STRIPPED (482.0 SF)
VERIFY AREA BEFORE
STARTING WORK
N 1043510
E 753663
ZONE 'E'
BOTTOM OF
EXCAVATION
EL 655.0
NEW GRAVEL HAUL ROAD
(SEE DWG 38400-RP-4415)
REMOVE 12" WATER VALVES
(TYP OF 3)
REMOVE EXISTING
BURIED 12" TRANSITE
PIPE WATERLINE (TYP)
(SEE NOTE 5)
LIMITS OF CONFIRMATION
BOUNDARY
N 1043547
E 753616
N 1043553
E 753551
N 1043541
E 753500
MW-3007
(SEE NOTE 7)
ZONE 'K'
EXCAVATE ALL 'K' ZONES
1 FT DEEP WITHIN 'K'
POINT LIMITS CONFIRMATION
BOUNDARY (SEE NOTE 4)
CUT & PLUG PIPE
(SEE NOTE 6)
ZONE 'H'
EXCAVATE
2 FT DEEP
STRIPPING
LIMITS
(TYP)
ZONE 'K'
ZONE 'G'
BOTTOM OF
EXCAVATION
EL 625.0
ZONE 'J'
EXCAVATE
2 FT DEEP
N 1043456
E 753296
ZONE 'K'
ZONE 'B'
EL 637.3
TO 639.3
(SEE NOTE 8)
N 1042919
E 753213
N 1043389
E 753173
EXISTING SITE
BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO
639.4 (SEE
NOTE 8)
N 1043078
E 753160
N 1042936
E 753148
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1
(SEE NOTE 8)
EXISTING
12" CMP
MW-3018
(ABANDONED BY OTHERS)
E 753000
N 1043500
143
145
150
151
156
154
149
148
160
153
155
147
152
RE-ISSUED FOR
5/29/97
RE-ISSUED FOR
3/27/97
RE-ISSUED FOR
12/2/96
ISSUED FOR CO
10/01/96
ISSUED FOR RE
NO.
DATE

06/09/98

CU143 DATA REPORT - CU143a

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14307-S	4.28	2.23	PCI/G
URANIUM-238	SC-14302-S	1.35	2.70	PCI/G
URANIUM-238	SC-14308-S	2.92	3.12	PCI/G
URANIUM-238	SC-14303-S	1.68	3.36	PCI/G
URANIUM-238	SC-14318-S	1.39	2.78	PCI/G
URANIUM-238	SC-14309-S	1.40	2.79	PCI/G
URANIUM-238	SC-14304-S	1.25	2.49	PCI/G
URANIUM-238	SC-14319-S	3.20	3.13	PCI/G
URANIUM-238	SC-14310-S	1.32	2.65	PCI/G
URANIUM-238	SC-14305-S	1.89	3.78	PCI/G
URANIUM-238	SC-14320-S	1.91	3.99	PCI/G
URANIUM-238	SC-14311-S	1.82	3.63	PCI/G
URANIUM-238	SC-14312-S	1.29	2.58	PCI/G
URANIUM-238	SC-14322-S	5.55	2.64	PCI/G
URANIUM-238	SC-14313-S	1.83	3.65	PCI/G
URANIUM-238	SC-14323-S	1.24	2.48	PCI/G
URANIUM-238	SC-14314-S	1.32	2.64	PCI/G
URANIUM-238	SC-14324-S	1.91	3.81	PCI/G
URANIUM-238	SC-14315-S	1.84	3.68	PCI/G
URANIUM-238	SC-14325-S	2.27	1.64	PCI/G
URANIUM-238	SC-14326-S	1.99	3.97	PCI/G
URANIUM-238	SC-14307-C	2.02	4.04	PCI/G
URANIUM-238	SC-14302-C	1.69	3.37	PCI/G
URANIUM-238	SC-14321-S	4.89	1.87	PCI/G
URANIUM-238	SC-14316-S	1.88	3.75	PCI/G
URANIUM-238	SC-14327-S	1.92	3.83	PCI/G
URANIUM-238	SC-14328-S	1.46	2.91	PCI/G
URANIUM-238	SC-14329-S	1.57	3.13	PCI/G
URANIUM-238	SC-14330-S	1.30	2.59	PCI/G
URANIUM-238	SC-14307-S-RS01	2.42	4.83	PCI/G
URANIUM-238	SC-14318-S-RS01	1.52	3.04	PCI/G
URANIUM-238	SC-14320-S-RS01	2.09	4.17	PCI/G

Average of URANIUM-238 values is 2.08 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 5.55 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

06/09/98

CU143 DATA REPORT - CU143a

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14307-S	6.60	0.62	PCI/G
Thorium-230	SC-14302-S	0.88	0.62	PCI/G
Thorium-230	SC-14308-S	1.46	0.62	PCI/G
Thorium-230	SC-14303-S	1.07	0.62	PCI/G
Thorium-230	SC-14318-S	1.05	0.62	PCI/G
Thorium-230	SC-14309-S	2.86	0.62	PCI/G
Thorium-230	SC-14304-S	0.99	0.62	PCI/G
Thorium-230	SC-14319-S	5.95	0.62	PCI/G
Thorium-230	SC-14310-S	1.23	0.62	PCI/G
Thorium-230	SC-14305-S	0.96 MGL 11.5.98	0.62	PCI/G
Thorium-230	SC-14320-S	~~4.27~~ 12.92	0.62	PCI/G
Thorium-230	SC-14311-S	1.00	0.62	PCI/G
Thorium-230	SC-14312-S	1.18	0.62	PCI/G
Thorium-230	SC-14322-S	~~1.65~~ 1.02	0.62	PCI/G
Thorium-230	SC-14313-S	1.29	0.62	PCI/G
Thorium-230	SC-14323-S	0.95 MGL 11.5.98	0.62	PCI/G
Thorium-230	SC-14314-S	0.95	0.62	PCI/G
Thorium-230	SC-14324-S	0.83	0.62	PCI/G
Thorium-230	SC-14315-S	0.84	0.62	PCI/G
Thorium-230	SC-14325-S	1.07	0.62	PCI/G
Thorium-230	SC-14326-S	1.67	0.62	PCI/G
Thorium-230	SC-14307-C	3.29	0.62	PCI/G
Thorium-230	SC-14302-C	0.83	0.62	PCI/G
Thorium-230	SC-14321-S	15.41	0.62	PCI/G
Thorium-230	SC-14316-S	1.15	0.62	PCI/G
Thorium-230	SC-14327-S	1.52	0.62	PCI/G
Thorium-230	SC-14328-S	3.56	0.62	PCI/G
Thorium-230	SC-14329-S	2.73	0.62	PCI/G
Thorium-230	SC-14330-S	1.24	0.62	PCI/G
Thorium-230	SC-14307-S-RS01	5.37	0.62	PCI/G
Thorium-230	SC-14318-S-RS01	2.15	0.62	PCI/G
Thorium-230	SC-14320-S-RS01	1.78	0.62	PCI/G

Average of Thorium-230 values is ~~2.43~~ 2.68 MGL 11.5.98 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 15.41 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.36 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 2.33 pCi/g, which is below subsurface criteria of 16.2 pCi/g.

06/09/98

CU143 DATA REPORT - CU143a

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14307-S	2.11	0.31	PCI/G
RADIUM-226	SC-14302-S	1.59	0.21	PCI/G
RADIUM-226	SC-14308-S	2.36	0.44	PCI/G
RADIUM-226	SC-14303-S	1.36	0.35	PCI/G
RADIUM-226	SC-14318-S	2.04	0.28	PCI/G
RADIUM-226	SC-14309-S	2.43	0.28	PCI/G
RADIUM-226	SC-14304-S	1.57	0.26	PCI/G
RADIUM-226	SC-14319-S	3.22	0.28	PCI/G
RADIUM-226	SC-14310-S	1.48	0.20	PCI/G
RADIUM-226	SC-14305-S	2.04	0.37	PCI/G
RADIUM-226	SC-14320-S	2.13	0.35	PCI/G
RADIUM-226	SC-14311-S	1.32	0.24	PCI/G
RADIUM-226	SC-14312-S	1.45	0.25	PCI/G
RADIUM-226	SC-14322-S	1.63	0.36	PCI/G
RADIUM-226	SC-14313-S	1.68	0.23	PCI/G
RADIUM-226	SC-14323-S	1.32	0.23	PCI/G
RADIUM-226	SC-14314-S	1.45	0.27	PCI/G
RADIUM-226	SC-14324-S	1.48	0.33	PCI/G
RADIUM-226	SC-14315-S	2.22	0.28	PCI/G
RADIUM-226	SC-14325-S	1.52	0.20	PCI/G
RADIUM-226	SC-14326-S	1.82	0.40	PCI/G
RADIUM-226	SC-14307-C	2.41	0.38	PCI/G
RADIUM-226	SC-14302-C	1.63	0.39	PCI/G
RADIUM-226	SC-14326-S	1.82	0.40	PCI/G
RADIUM-226	SC-14321-S	2.22	0.31	PCI/G
RADIUM-226	SC-14316-S	2.27	0.36	PCI/G
RADIUM-226	SC-14327-S	1.79	0.37	PCI/G
RADIUM-226	SC-14328-S	2.86	0.27	PCI/G
RADIUM-226	SC-14329-S	2.59	0.26	PCI/G
RADIUM-226	SC-14330-S	1.86	0.27	PCI/G
RADIUM-226	SC-14307-S-RS01	3.95	0.42	PCI/G
RADIUM-226	SC-14318-S-RS01	3.13	0.29	PCI/G
RADIUM-226	SC-14320-S-RS01	2.54	0.41	PCI/G

Average of RADIUM-226 values is 2.05 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is ~~3.22~~ 3.95 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

MAK
11.5.98

06/09/98

CU143 DATA REPORT - CU143a

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14307-S	2.14	0.45	PCI/G
RADIUM-228	SC-14302-S	1.00	0.37	PCI/G
RADIUM-228	SC-14308-S	1.13	0.52	PCI/G
RADIUM-228	SC-14303-S	0.52	1.03	PCI/G
RADIUM-228	SC-14318-S	1.02	0.36	PCI/G
RADIUM-228	SC-14309-S	1.27	0.43	PCI/G
RADIUM-228	SC-14304-S	1.36	0.35	PCI/G
RADIUM-228	SC-14319-S	2.27	0.40	PCI/G
RADIUM-228	SC-14310-S	1.30	0.29	PCI/G
RADIUM-228	SC-14305-S	1.13	0.58	PCI/G
RADIUM-228	SC-14320-S	1.34	0.42	PCI/G
RADIUM-228	SC-14311-S	1.43	0.61	PCI/G
RADIUM-228	SC-14312-S	1.21	0.30	PCI/G
RADIUM-228	SC-14322-S	1.68	0.62	PCI/G
RADIUM-228	SC-14313-S	1.53	0.52	PCI/G
RADIUM-228	SC-14323-S	1.05	0.42	PCI/G
RADIUM-228	SC-14314-S	1.26	0.38	PCI/G
RADIUM-228	SC-14324-S	1.26	0.38	PCI/G
RADIUM-228	SC-14315-S	1.46	0.40	PCI/G
RADIUM-228	SC-14325-S	1.22	0.24	PCI/G
RADIUM-228	SC-14326-S	0.60	1.21	PCI/G
RADIUM-228	SC-14307-C	1.44	0.53	PCI/G
RADIUM-228	SC-14302-C	1.11	0.40	PCI/G
RADIUM-228	SC-14321-S	1.25	0.22	PCI/G
RADIUM-228	SC-14316-S	1.34	0.51	PCI/G
RADIUM-228	SC-14327-S	1.19	0.50	PCI/G
RADIUM-228	SC-14328-S	1.28	0.36	PCI/G
RADIUM-228	SC-14329-S	1.63	0.40	PCI/G
RADIUM-228	SC-14330-S	1.18	0.37	PCI/G
RADIUM-228	SC-14307-S-RS01	1.93	0.61	PCI/G
RADIUM-228	SC-14318-S-RS01	1.42	0.39	PCI/G
RADIUM-228	SC-14320-S-RS01	1.65	0.52	PCI/G

Average of RADIUM-228 values is 1.33 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.27 pCi/g, which is below subsurface criteria, 16.20 pCi/g

06/09/98

CU143 DATA REPORT - CU143b

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14307-S	4.28	2.23	PCI/G
URANIUM-238	SC-14302-S	1.35	2.70	PCI/G
URANIUM-238	SC-14308-S	2.92	3.12	PCI/G
URANIUM-238	SC-14303-S	1.68	3.36	PCI/G
URANIUM-238	SC-14318-S	1.39	2.78	PCI/G
URANIUM-238	SC-14309-S	1.40	2.79	PCI/G
URANIUM-238	SC-14304-S	1.25	2.49	PCI/G
URANIUM-238	SC-14319-S	3.20	3.13	PCI/G
URANIUM-238	SC-14310-S	1.32	2.65	PCI/G
URANIUM-238	SC-14305-S	1.89	3.78	PCI/G
URANIUM-238	SC-14320-S	1.91	3.99	PCI/G
URANIUM-238	SC-14311-S	1.82	3.63	PCI/G
URANIUM-238	SC-14312-S	1.29	2.58	PCI/G
URANIUM-238	SC-14322-S	5.55	2.64	PCI/G
URANIUM-238	SC-14313-S	1.83	3.65	PCI/G
URANIUM-238	SC-14323-S	1.24	2.48	PCI/G
URANIUM-238	SC-14314-S	1.32	2.64	PCI/G
URANIUM-238	SC-14324-S	1.91	3.81	PCI/G
URANIUM-238	SC-14315-S	1.84	3.68	PCI/G
URANIUM-238	SC-14325-S	2.27	1.64	PCI/G
URANIUM-238	SC-14326-S-02	1.30	2.59	PCI/G
URANIUM-238	SC-14307-C	2.02	4.04	PCI/G
URANIUM-238	SC-14302-C	1.69	3.37	PCI/G
URANIUM-238	SC-14321-S	4.89	1.87	PCI/G
URANIUM-238	SC-14316-S-02	1.98	3.95	PCI/G
URANIUM-238	SC-14327-S-02	1.84	3.68	PCI/G
URANIUM-238	SC-14328-S-02	1.33	2.65	PCI/G
URANIUM-238	SC-14329-S-02	1.76	3.52	PCI/G
URANIUM-238	SC-14330-S	1.30	2.59	PCI/G
URANIUM-238	SC-14307-S-RS01	2.42	4.83	PCI/G
URANIUM-238	SC-14318-S-RS01	1.52	3.04	PCI/G
URANIUM-238	SC-14320-S-RS01	2.09	4.17	PCI/G

Average of URANIUM-238 values is 2.06 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 5.55 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

06/09/98

CU143 DATA REPORT - CU143b

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14307-S	6.60	0.62	PCI/G
Thorium-230	SC-14302-S	0.88	0.62	PCI/G
Thorium-230	SC-14308-S	1.46	0.62	PCI/G
Thorium-230	SC-14303-S	1.07	0.62	PCI/G
Thorium-230	SC-14318-S	1.05	0.62	PCI/G
Thorium-230	SC-14309-S	2.86	0.62	PCI/G
Thorium-230	SC-14304-S	0.99	0.62	PCI/G
Thorium-230	SC-14319-S	5.95	0.62	PCI/G
Thorium-230	SC-14310-S	1.23	0.62	PCI/G
Thorium-230	SC-14305-S	0.96 MGL 11-5-98	0.62	PCI/G
Thorium-230	SC-14320-S	~~4.21~~ 12.92	0.62	PCI/G
Thorium-230	SC-14311-S	1.00	0.62	PCI/G
Thorium-230	SC-14312-S	1.18	0.62	PCI/G
Thorium-230	SC-14322-S	~~1.65~~ 1.02	0.62	PCI/G
Thorium-230	SC-14313-S	1.29 MGL 11-5-98	0.62	PCI/G
Thorium-230	SC-14323-S	0.95	0.62	PCI/G
Thorium-230	SC-14314-S	0.95	0.62	PCI/G
Thorium-230	SC-14324-S	0.83	0.62	PCI/G
Thorium-230	SC-14315-S	0.84	0.62	PCI/G
Thorium-230	SC-14325-S	1.07	0.62	PCI/G
Thorium-230	SC-14326-S-02	0.90	0.62	PCI/G
Thorium-230	SC-14307-C	3.29	0.62	PCI/G
Thorium-230	SC-14302-C	0.83	0.62	PCI/G
Thorium-230	SC-14321-S	15.41	0.62	PCI/G
Thorium-230	SC-14316-S-02	1.11	0.62	PCI/G
Thorium-230	SC-14327-S-02	1.00	0.62	PCI/G
Thorium-230	SC-14328-S-02	1.25	0.62	PCI/G
Thorium-230	SC-14329-S-02	1.15	0.62	PCI/G
Thorium-230	SC-14330-S	1.24	0.62	PCI/G
Thorium-230	SC-14307-S-RS01	5.37	0.62	PCI/G
Thorium-230	SC-14318-S-RS01	2.15	0.62	PCI/G
Thorium-230	SC-14320-S-RS01	1.78	0.62	PCI/G

Average of Thorium-230 values is ~~2.27~~ 2.52 MGL 11-5-98 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 15.41 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.34 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 2.33 pCi/g, which is below subsurface criteria of 16.2 pCi/g.

06/09/98

CU143 DATA REPORT - CU143b

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14307-S	2.11	0.31	PCI/G
RADIUM-226	SC-14302-S	1.59	0.21	PCI/G
RADIUM-226	SC-14308-S	2.36	0.44	PCI/G
RADIUM-226	SC-14303-S	1.36	0.35	PCI/G
RADIUM-226	SC-14318-S	2.04	0.28	PCI/G
RADIUM-226	SC-14309-S	2.43	0.28	PCI/G
RADIUM-226	SC-14304-S	1.57	0.26	PCI/G
RADIUM-226	SC-14319-S	3.22	0.28	PCI/G
RADIUM-226	SC-14310-S	1.48	0.20	PCI/G
RADIUM-226	SC-14305-S	2.04	0.37	PCI/G
RADIUM-226	SC-14320-S	2.13	0.35	PCI/G
RADIUM-226	SC-14311-S	1.32	0.24	PCI/G
RADIUM-226	SC-14312-S	1.45	0.25	PCI/G
RADIUM-226	SC-14322-S	1.63	0.36	PCI/G
RADIUM-226	SC-14313-S	1.68	0.23	PCI/G
RADIUM-226	SC-14323-S	1.32	0.23	PCI/G
RADIUM-226	SC-14314-S	1.45	0.27	PCI/G
RADIUM-226	SC-14324-S	1.48	0.33	PCI/G
RADIUM-226	SC-14315-S	2.22	0.28	PCI/G
RADIUM-226	SC-14325-S	1.52	0.20	PCI/G
RADIUM-226	SC-14326-S-02	1.45	0.22	PCI/G
RADIUM-226	SC-14307-C	2.41	0.38	PCI/G
RADIUM-226	SC-14302-C	1.63	0.39	PCI/G
RADIUM-226	SC-14321-S	2.22	0.31	PCI/G
RADIUM-226	SC-14316-S-02	2.16	0.40	PCI/G
RADIUM-226	SC-14327-S-02	1.70	0.44	PCI/G
RADIUM-226	SC-14328-S-02	1.57	0.22	PCI/G
RADIUM-226	SC-14329-S-02	2.16	0.32	PCI/G
RADIUM-226	SC-14330-S	1.86	0.27	PCI/G
RADIUM-226	SC-14307-S-RS01	3.95	0.42	PCI/G
RADIUM-226	SC-14318-S-RS01	3.13	0.29	PCI/G
RADIUM-226	SC-14320-S-RS01	2.54	0.41	PCI/G

Average of RADIUM-226 values is 1.97 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is ~~3.22~~ 3.95 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

MGL
11.5.98

06/09/98

CU143 DATA REPORT - CU143b

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14307-S	2.14	0.45	PCI/G
RADIUM-228	SC-14302-S	1.00	0.37	PCI/G
RADIUM-228	SC-14308-S	1.13	0.52	PCI/G
RADIUM-228	SC-14303-S	0.52	1.03	PCI/G
RADIUM-228	SC-14318-S	1.02	0.36	PCI/G
RADIUM-228	SC-14309-S	1.27	0.43	PCI/G
RADIUM-228	SC-14304-S	1.36	0.35	PCI/G
RADIUM-228	SC-14319-S	2.27	0.40	PCI/G
RADIUM-228	SC-14310-S	1.30	0.29	PCI/G
RADIUM-228	SC-14305-S	1.13	0.58	PCI/G
RADIUM-228	SC-14320-S	1.34	0.42	PCI/G
RADIUM-228	SC-14311-S	1.43	0.61	PCI/G
RADIUM-228	SC-14312-S	1.21	0.30	PCI/G
RADIUM-228	SC-14322-S	1.68	0.62	PCI/G
RADIUM-228	SC-14313-S	1.53	0.52	PCI/G
RADIUM-228	SC-14323-S	1.05	0.42	PCI/G
RADIUM-228	SC-14314-S	1.26	0.38	PCI/G
RADIUM-228	SC-14324-S	1.26	0.38	PCI/G
RADIUM-228	SC-14315-S	1.46	0.40	PCI/G
RADIUM-228	SC-14325-S	1.22	0.24	PCI/G
RADIUM-228	SC-14326-S-02	1.21	0.37	PCI/G
RADIUM-228	SC-14307-C	1.44	0.53	PCI/G
RADIUM-228	SC-14302-C	1.11	0.40	PCI/G
RADIUM-228	SC-14321-S	1.25	0.22	PCI/G
RADIUM-228	SC-14316-S-02	1.36	0.25	PCI/G
RADIUM-228	SC-14327-S-02	1.13	0.48	PCI/G
RADIUM-228	SC-14328-S-02	0.97	0.38	PCI/G
RADIUM-228	SC-14329-S-02	0.64	1.27	PCI/G
RADIUM-228	SC-14330-S	1.18	0.37	PCI/G
RADIUM-228	SC-14307-S-RS01	1.93	0.61	PCI/G
RADIUM-228	SC-14318-S-RS01	1.42	0.39	PCI/G
RADIUM-228	SC-14320-S-RS01	1.65	0.52	PCI/G

Average of RADIUM-228 values is 1.31 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.27 pCi/g, which is below subsurface criteria, 16.20 pCi/g

TNT

NUMBER OF TNT SAMPLES IN DATABASE FOR THIS CU IS: 5

TNT	SC-14316-S-02	0.018	0.0072	UG/G
TNT	SC-14326-S-02	0.023	0.0069	UG/G
TNT	SC-14327-S-02	0.075	0.0073	UG/G
TNT	SC-14328-S-02	0.360	0.0073	UG/G
TNT	SC-14329-S-02	2.1	0.0740	UG/G

Average of TNT values is 0.52 ug/g, which is below ALARA, 14 ug/g
Maximum single value is 2.1 ug/g, which is below criteria, 140 ug/g

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP 471 2. Date: 1/2/98 3. Review Form #: 98-005
4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU144 (map attached)
6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria? using subsurface criteria	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments This form replaces 97-037a. Additional excavation of hotspot areas identified during ORISE walkover was required.

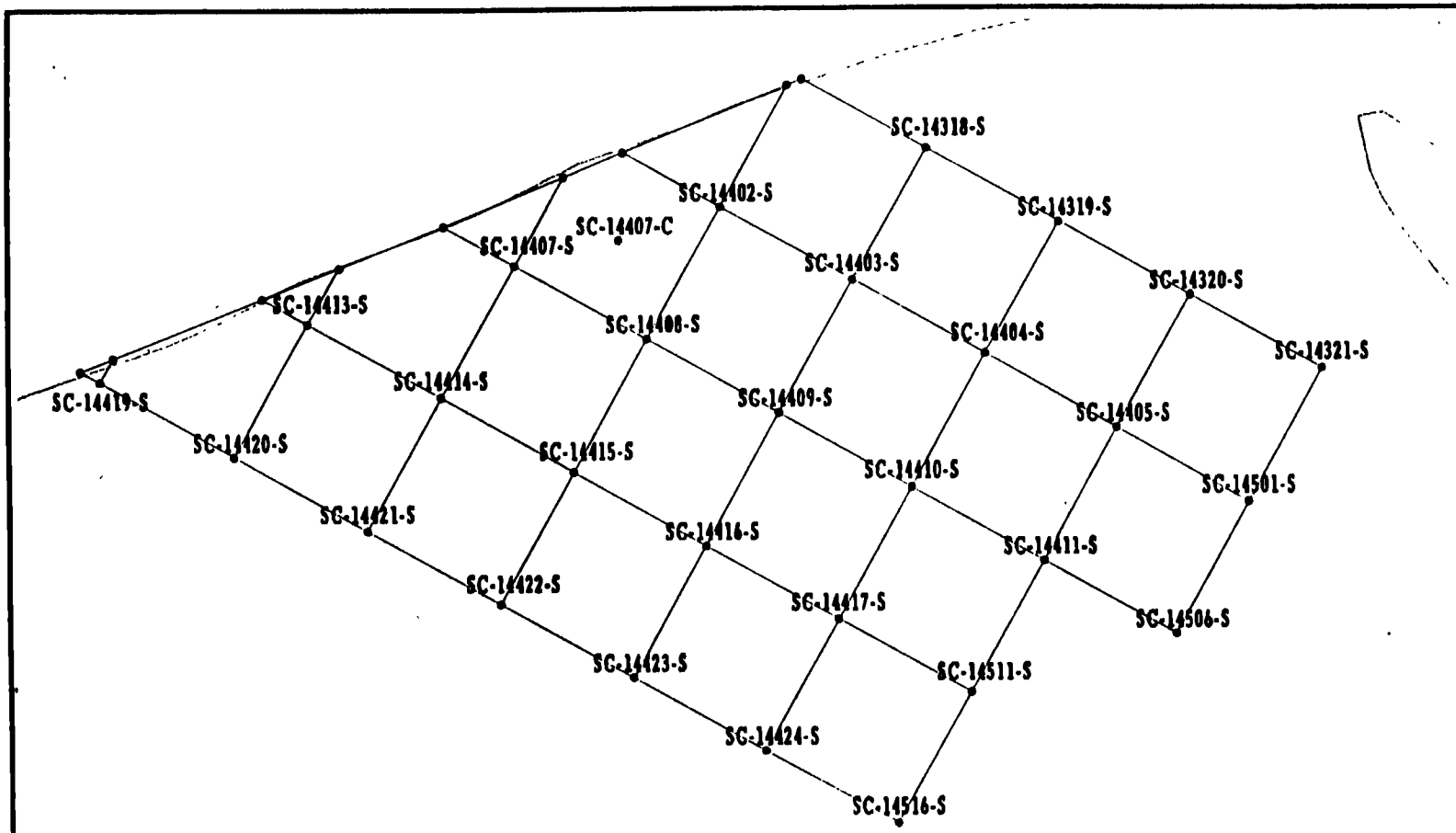
12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 1/2/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: [signature] Date: 1/5/98
15. DOE Project Manager/Engineer: Thomas C. Pauley Date: 1/5/98
16. Project Manager: Sheryl Hodges Date: 1/5/98
17. Construction Engineer: [signature] Date: 1/5/98

SEE ATTACHED RESULTS AND MAP



Form # 98-005

15 7.5 0 METERS

45 22.5 0 FEET

N
S

Sample Locations in Remedial Unit RU013
Confirmation Unit CU144

Figure B-2

EXHIBIT NO.: G/CP/273/0897	REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97

01/03/98

CU144 DATA REPORT

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14402-S	1.81	3.61	PCI/G
URANIUM-238	SC-14407-S	1.39	2.77	PCI/G
URANIUM-238	SC-14403-S	1.36	2.72	PCI/G
URANIUM-238	SC-14413-S	1.36	2.72	PCI/G
URANIUM-238	SC-14408-S	1.86	3.72	PCI/G
URANIUM-238	SC-14404-S	1.66	3.31	PCI/G
URANIUM-238	SC-14419-S	1.42	2.84	PCI/G
URANIUM-238	SC-14414-S	1.86	3.72	PCI/G
URANIUM-238	SC-14409-S	1.94	1.97	PCI/G
URANIUM-238	SC-14405-S	1.87	3.74	PCI/G
URANIUM-238	SC-14420-S	2.02	4.04	PCI/G
URANIUM-238	SC-14415-S	1.55	3.10	PCI/G
URANIUM-238	SC-14410-S	1.78	3.55	PCI/G
URANIUM-238	SC-14421-S	1.97	3.00	PCI/G
URANIUM-238	SC-14416-S	1.77	2.87	PCI/G
URANIUM-238	SC-14411-S	17.36	3.45	PCI/G
URANIUM-238	SC-14422-S	11.06	3.48	PCI/G
URANIUM-238	SC-14417-S	1.29	2.58	PCI/G
URANIUM-238	SC-14423-S	1.42	2.84	PCI/G
URANIUM-238	SC-14424-S	3.03	1.69	PCI/G
URANIUM-238	SC-14407-C	2.02	4.03	PCI/G
URANIUM-238	SC-14318-S	1.39	2.78	PCI/G
URANIUM-238	SC-14319-S	3.20	3.13	PCI/G
URANIUM-238	SC-14320-S	4.14	4.10	PCI/G
URANIUM-238	SC-14321-S	4.89	1.87	PCI/G
URANIUM-238	SC-14501-S	1.81	3.61	PCI/G
URANIUM-238	SC-14506-S	1.86	3.71	PCI/G
URANIUM-238	SC-14511-S	1.86	3.72	PCI/G
URANIUM-238	SC-14516-S	1.43	2.85	PCI/G
URANIUM-238	SC-14407-C-RS01	1.31	2.61	PCI/G
URANIUM-238	SC-14408-S-RS01	2.02	4.03	PCI/G
URANIUM-238	SC-14423-S-RS01	1.35	2.70	PCI/G

Average of URANIUM-238 values is 2.72 pCi/g, which is below ALARA, 30.00 pCi/g
Maximum single value is 17.36 pCi/g, which is below subsurface criteria, 120.00 pCi/g

CU144 DATA REPORT, CONTINUED

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14402-S	1.07	0.62	PCI/G
Thorium-230	SC-14407-S	1.16	0.62	PCI/G
Thorium-230	SC-14403-S	0.96	0.62	PCI/G
Thorium-230	SC-14413-S	1.19	0.62	PCI/G
Thorium-230	SC-14408-S	1.25	0.62	PCI/G
Thorium-230	SC-14404-S	6.93	0.62	PCI/G
Thorium-230	SC-14419-S	1.34	0.62	PCI/G
Thorium-230	SC-14414-S	1.17	0.62	PCI/G
Thorium-230	SC-14409-S	1.43	0.62	PCI/G
Thorium-230	SC-14405-S	0.75	0.62	PCI/G
Thorium-230	SC-14420-S	4.72	0.62	PCI/G
Thorium-230	SC-14415-S	2.91	0.62	PCI/G
Thorium-230	SC-14410-S	0.80	0.62	PCI/G
Thorium-230	SC-14421-S	1.84	0.62	PCI/G
Thorium-230	SC-14416-S	0.90	0.62	PCI/G
Thorium-230	SC-14411-S	1.02	0.62	PCI/G
Thorium-230	SC-14422-S	11.07	0.62	PCI/G
Thorium-230	SC-14417-S	0.75	0.62	PCI/G
Thorium-230	SC-14423-S	2.14	0.62	PCI/G
Thorium-230	SC-14424-S	2.34	0.62	PCI/G
Thorium-230	SC-14407-C	1.18	0.62	PCI/G
Thorium-230	SC-14318-S	1.05	0.62	PCI/G
Thorium-230	SC-14319-S	5.95	0.62	PCI/G
Thorium-230	SC-14320-S	12.92	0.62	PCI/G
Thorium-230	SC-14321-S	15.41	0.62	PCI/G
Thorium-230	SC-14501-S	0.88	0.62	PCI/G
Thorium-230	SC-14506-S	1.30	0.62	PCI/G
Thorium-230	SC-14511-S	0.90	0.62	PCI/G
Thorium-230	SC-14516-S	1.16	0.62	PCI/G
Thorium-230	SC-14407-C-RS01	1.50	0.62	PCI/G
Thorium-230	SC-14408-S-RS01	1.02	0.62	PCI/G
Thorium-230	SC-14423-S-RS01	2.19	0.62	PCI/G

Average of Thorium-230 values is 2.85 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 15.41 pCi/g, which is below subsurface CRITERIA, 16.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the TH232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.55 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 3.52 pCi/g, which is below subsurface Criteria of 16.2 pCi/g.

01/03/98

CU144 DATA REPORT, CONTINUED

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14402-S	2.43	0.32	PCI/G
RADIUM-226	SC-14407-S	2.43	0.32	PCI/G
RADIUM-226	SC-14403-S	1.88	0.25	PCI/G
RADIUM-226	SC-14413-S	2.45	0.26	PCI/G
RADIUM-226	SC-14408-S	2.22	0.29	PCI/G
RADIUM-226	SC-14404-S	2.88	0.38	PCI/G
RADIUM-226	SC-14419-S	2.20	0.27	PCI/G
RADIUM-226	SC-14414-S	2.36	0.44	PCI/G
RADIUM-226	SC-14409-S	2.07	0.27	PCI/G
RADIUM-226	SC-14405-S	1.77	0.25	PCI/G
RADIUM-226	SC-14420-S	2.32	0.28	PCI/G
RADIUM-226	SC-14415-S	2.38	0.27	PCI/G
RADIUM-226	SC-14410-S	1.82	0.30	PCI/G
RADIUM-226	SC-14421-S	1.82	0.40	PCI/G
RADIUM-226	SC-14416-S	1.54	0.31	PCI/G
RADIUM-226	SC-14411-S	1.82	0.25	PCI/G
RADIUM-226	SC-14422-S	4.34	0.34	PCI/G
RADIUM-226	SC-14417-S	1.86	0.28	PCI/G
RADIUM-226	SC-14423-S	2.16	0.26	PCI/G
RADIUM-226	SC-14424-S	2.22	0.25	PCI/G
RADIUM-226	SC-14407-C	2.09	0.34	PCI/G
RADIUM-226	SC-14318-S	2.04	0.28	PCI/G
RADIUM-226	SC-14319-S	3.22	0.28	PCI/G
RADIUM-226	SC-14320-S	4.84	0.63	PCI/G
RADIUM-226	SC-14321-S	2.22	0.31	PCI/G
RADIUM-226	SC-14501-S	1.88	0.32	PCI/G
RADIUM-226	SC-14506-S	2.34	0.36	PCI/G
RADIUM-226	SC-14511-S	2.34	0.30	PCI/G
RADIUM-226	SC-14516-S	2.61	0.29	PCI/G
RADIUM-226	SC-14407-C-RS01	2.81	0.31	PCI/G
RADIUM-226	SC-14408-S-RS01	2.41	0.32	PCI/G
RADIUM-226	SC-14423-S-RS01	2.29	0.28	PCI/G

Average of RADIUM-226 values is 2.38 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 4.84 pCi/g, which is below subsurface criteria, 16.20 pCi/g

01/03/98

CU144 DATA REPORT, CONTINUED

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 32

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14402-S	1.15	0.47	PCI/G
RADIUM-228	SC-14407-S	1.00	0.31	PCI/G
RADIUM-228	SC-14403-S	1.55	0.38	PCI/G
RADIUM-228	SC-14413-S	1.14	0.22	PCI/G
RADIUM-228	SC-14408-S	1.58	0.50	PCI/G
RADIUM-228	SC-14404-S	2.19	0.46	PCI/G
RADIUM-228	SC-14419-S	1.14	0.52	PCI/G
RADIUM-228	SC-14414-S	1.28	0.55	PCI/G
RADIUM-228	SC-14409-S	1.53	0.42	PCI/G
RADIUM-228	SC-14405-S	0.53	1.06	PCI/G
RADIUM-228	SC-14420-S	2.05	0.41	PCI/G
RADIUM-228	SC-14415-S	1.74	0.42	PCI/G
RADIUM-228	SC-14410-S	1.43	0.46	PCI/G
RADIUM-228	SC-14421-S	1.52	0.47	PCI/G
RADIUM-228	SC-14416-S	1.10	0.69	PCI/G
RADIUM-228	SC-14411-S	1.21	0.36	PCI/G
RADIUM-228	SC-14422-S	3.43	0.61	PCI/G
RADIUM-228	SC-14417-S	1.36	0.34	PCI/G
RADIUM-228	SC-14423-S	1.40	0.25	PCI/G
RADIUM-228	SC-14424-S	1.33	0.37	PCI/G
RADIUM-228	SC-14407-C	1.38	0.47	PCI/G
RADIUM-228	SC-14318-S	1.02	0.36	PCI/G
RADIUM-228	SC-14319-S	2.27	0.40	PCI/G
RADIUM-228	SC-14320-S	2.97	0.84	PCI/G
RADIUM-228	SC-14321-S	1.25	0.22	PCI/G
RADIUM-228	SC-14501-S	1.38	0.59	PCI/G
RADIUM-228	SC-14506-S	1.38	0.23	PCI/G
RADIUM-228	SC-14511-S	0.59	1.18	PCI/G
RADIUM-228	SC-14516-S	1.21	0.39	PCI/G
RADIUM-228	SC-14407-C-RS01	1.38	0.37	PCI/G
RADIUM-228	SC-14408-S-RS01	1.28	0.50	PCI/G
RADIUM-228	SC-14423-S-RS01	1.48	0.37	PCI/G

Average of RADIUM-228 values is 1.51 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 3.43 pCi/g, which is below subsurface criteria, 16.20 pCi/g

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP 471 2. Date: 01/02/98 3. Review Form #: 98-002

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU145 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria? using subsurface criteria	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments This form replaces 97-040 & reflects the excavation of an ORISE hotspot located near SC-14514-S.

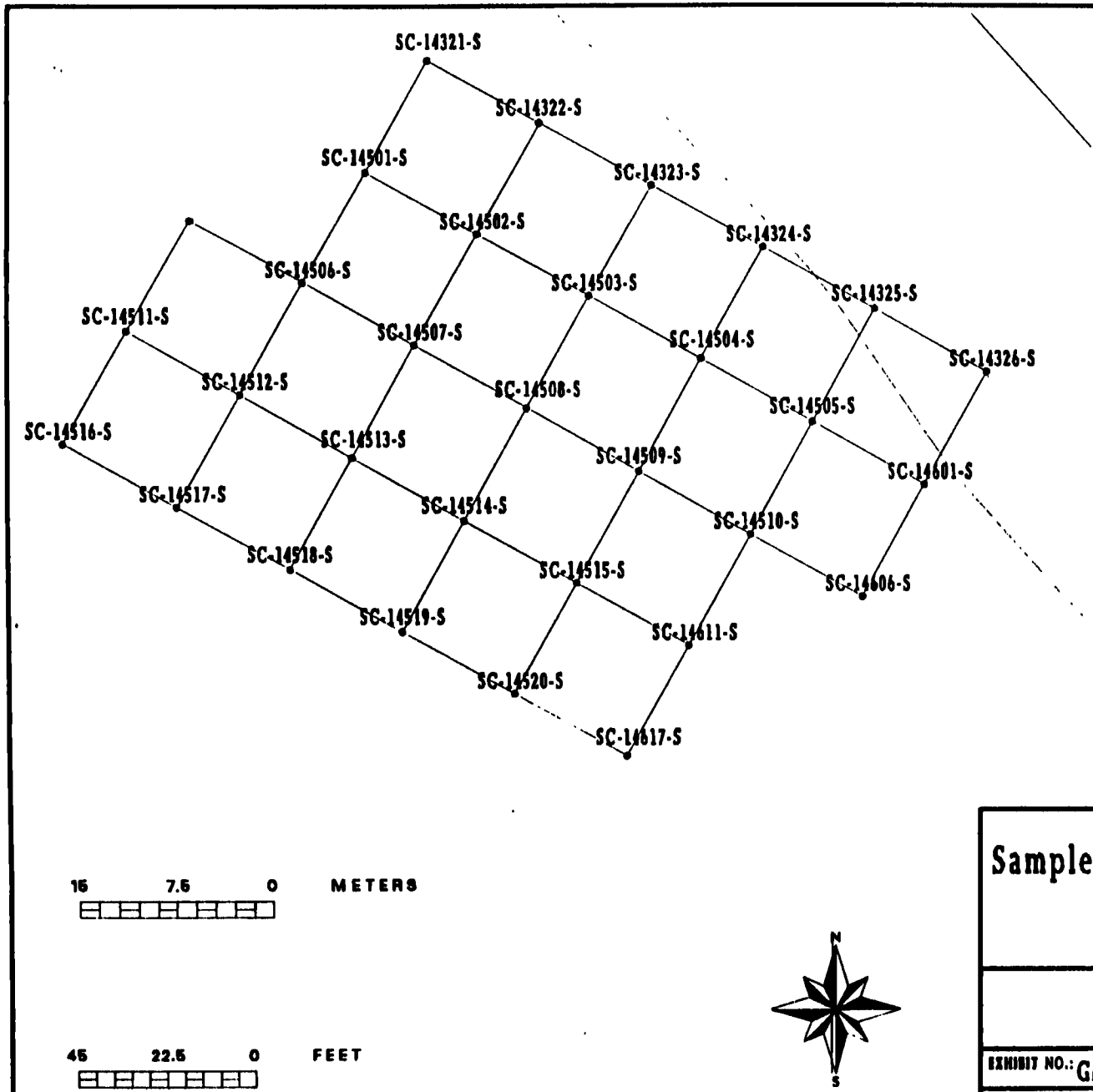
12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 01/02/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: [signature] Date: 1/5/98
15. DOE Project Manager/Engineer: [signature] Date: 1/2/98
16. Project Manager: Sheryl Hodge Date: 1/5/98
17. Construction Engineer: [signature] Date: 1/5/98

SEE ATTACHED RESULTS AND MAP



Sample Locations in Remedial Unit RU013 Confirmation Unit CU145

Figure B-3

EXHIBIT NO.: G/CP/274/0897		REPORT NO.: DOE/OR/21548-692
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97

01/02/98

CU145 DATA REPORT

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: ~~32~~ 31 MGL 11/5/98

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14501-S	1.81	3.61	PCI/G
URANIUM-238	SC-14502-S	1.36	2.72	PCI/G
URANIUM-238	SC-14506-S	1.86	3.71	PCI/G
URANIUM-238	SC-14503-S	1.92	3.83	PCI/G
URANIUM-238	SC-14511-S	1.86	3.72	PCI/G
URANIUM-238	SC-14507-S	1.28	2.56	PCI/G
URANIUM-238	SC-14504-S	8.09	3.06	PCI/G
URANIUM-238	SC-14512-S	1.39	2.78	PCI/G
URANIUM-238	SC-14508-S	1.90	3.79	PCI/G
URANIUM-238	SC-14516-S	1.43	2.85	PCI/G
URANIUM-238	SC-14513-S	1.76	3.51	PCI/G
URANIUM-238	SC-14509-S	1.39	2.78	PCI/G
URANIUM-238	SC-14517-S	1.86	3.72	PCI/G
URANIUM-238	SC-14514-S	1.80	3.60	PCI/G
URANIUM-238	SC-14514-S-RS01	1.87	3.74	PCI/G
URANIUM-238	SC-14518-S	1.28	2.55	PCI/G
URANIUM-238	SC-14515-S	1.84	3.67	PCI/G
URANIUM-238	SC-14519-S	1.32	2.63	PCI/G
URANIUM-238	SC-14520-S	1.78	2.15	PCI/G
URANIUM-238	SC-14321-S	4.89	1.87	PCI/G
URANIUM-238	SC-14322-S	1.80	3.60	PCI/G
URANIUM-238	SC-14323-S	1.24	2.48	PCI/G
URANIUM-238	SC-14324-S	1.91	3.81	PCI/G
URANIUM-238	SC-14325-S	2.27	1.64	PCI/G
URANIUM-238	SC-14326-S	1.99	3.97	PCI/G
~~URANIUM-238~~	~~SC-14411-S~~	~~17.36~~	~~3.45~~	~~PCI/G~~ MGL 11/5/98
URANIUM-238	SC-14519-S	2.08	4.15	PCI/G
URANIUM-238	SC-14505-S	1.22	1.75	PCI/G
URANIUM-238	SC-14510-S	1.80	3.60	PCI/G
URANIUM-238	SC-14601-S	1.82	3.63	PCI/G
URANIUM-238	SC-14606-S	1.58	3.15	PCI/G
URANIUM-238	SC-14611-S	1.63	3.25	PCI/G
URANIUM-238	SC-14517-S	1.86	3.71	PCI/G

Average of URANIUM-238 values is ~~2.48~~ 2.06 MGL 11/5/98 pCi/g, which is below ALARA, 30.00 pCi/g
Maximum single value is ~~17.36~~ 8.09 MGL 11/5/98 pCi/g, which is below subsurface criteria, 120.00 pCi/g

01/02/98

CU145 DATA REPORT, CONTINUED

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: ~~32~~31 MGK 11/5/98

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14501-S	0.88	0.62	PCI/G
Thorium-230	SC-14502-S	0.70	0.62	PCI/G
Thorium-230	SC-14506-S	1.30	0.62	PCI/G
Thorium-230	SC-14503-S	1.09	0.62	PCI/G
Thorium-230	SC-14511-S	0.90	0.62	PCI/G
Thorium-230	SC-14507-S	0.93	0.62	PCI/G
Thorium-230	SC-14504-S	1.24	0.62	PCI/G
Thorium-230	SC-14512-S	1.83	0.62	PCI/G
Thorium-230	SC-14508-S	0.72	0.62	PCI/G
Thorium-230	SC-14516-S	1.16	0.62	PCI/G
Thorium-230	SC-14513-S	0.90	0.62	PCI/G
Thorium-230	SC-14509-S	0.85	0.62	PCI/G
Thorium-230	SC-14517-S	2.99	0.62	PCI/G
Thorium-230	SC-14514-S	1.28	0.62	PCI/G
Thorium-230	SC-14514-S-RS01	1.00	0.62	PCI/G
Thorium-230	SC-14518-S	1.09	0.62	PCI/G
Thorium-230	SC-14515-S	0.31	0.62	PCI/G
Thorium-230	SC-14519-S	1.31	0.62	PCI/G
Thorium-230	SC-14520-S	1.28	0.62	PCI/G
Thorium-230	SC-14321-S	15.41	0.62	PCI/G
Thorium-230	SC-14322-S	1.02	0.62	PCI/G
Thorium-230	SC-14323-S	0.95	0.62	PCI/G
Thorium-230	SC-14324-S	0.83	0.62	PCI/G
Thorium-230	SC-14325-S	1.07	0.62	PCI/G
Thorium-230	SC-14326-S	1.67	0.62	PCI/G
~~Thorium-230~~	~~SC-14411-S~~	~~1.02~~	~~0.62~~	~~PCI/G~~ MGK 11/5/98
Thorium-230	SC-14505-S	0.70	0.62	PCI/G
Thorium-230	SC-14510-S	2.10	0.62	PCI/G
Thorium-230	SC-14601-S	0.99	0.62	PCI/G
Thorium-230	SC-14606-S	1.15	0.62	PCI/G
Thorium-230	SC-14611-S	1.16	0.62	PCI/G
Thorium-230	SC-14517-S	2.75	0.62	PCI/G

Average of Thorium-230 values is 1.6~~3~~4 pCi/g, which is below ALARA, 5.00 pCi/g MGK 11/5/98
Maximum single value is 15.41 pCi/g, which is below subsurface CRITERIA, 16.20 pCi/g

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the TH232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.24 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.66 pCi/g, which is below subsurface Criteria of 16.2 pCi/g.

01/02/98

CU145 DATA REPORT, CONTINUED

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: ~~32~~ 31 MGK 11/5/98

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14501-S	1.88	0.32	PCI/G
RADIUM-226	SC-14502-S	1.84	0.27	PCI/G
RADIUM-226	SC-14506-S	2.34	0.36	PCI/G
RADIUM-226	SC-14503-S	1.91	0.22	PCI/G
RADIUM-226	SC-14511-S	2.34	0.30	PCI/G
RADIUM-226	SC-14507-S	2.00	0.30	PCI/G
RADIUM-226	SC-14504-S	2.43	0.22	PCI/G
RADIUM-226	SC-14512-S	2.16	0.28	PCI/G
RADIUM-226	SC-14508-S	1.82	0.35	PCI/G
RADIUM-226	SC-14516-S	2.61	0.29	PCI/G
RADIUM-226	SC-14513-S	2.20	0.24	PCI/G
RADIUM-226	SC-14509-S	2.16	0.21	PCI/G
RADIUM-226	SC-14517-S	2.09	0.32	PCI/G
RADIUM-226	SC-14514-S	1.59	0.27	PCI/G
RADIUM-226	SC-14514-S-RS01	1.36	0.27	PCI/G
RADIUM-226	SC-14518-S	1.95	0.24	PCI/G
RADIUM-226	SC-14515-S	1.97	0.26	PCI/G
RADIUM-226	SC-14519-S	1.32	0.30	PCI/G
RADIUM-226	SC-14520-S	2.34	0.23	PCI/G
RADIUM-226	SC-14321-S	2.22	0.31	PCI/G
RADIUM-226	SC-14322-S	2.36	0.31	PCI/G
RADIUM-226	SC-14323-S	1.32	0.23	PCI/G
RADIUM-226	SC-14324-S	1.48	0.33	PCI/G
RADIUM-226	SC-14325-S	1.52	0.20	PCI/G
RADIUM-226	SC-14326-S	1.82	0.40	PCI/G
~~RADIUM-226~~	~~SC-14411-S~~	~~1.82~~	~~0.25~~	~~PCI/G~~ MGK 11/5/98
RADIUM-226	SC-14505-S	1.54	0.23	PCI/G
RADIUM-226	SC-14510-S	2.07	0.29	PCI/G
RADIUM-226	SC-14601-S	0.78	0.69	PCI/G
RADIUM-226	SC-14606-S	0.93	0.36	PCI/G
RADIUM-226	SC-14611-S	1.50	0.27	PCI/G
RADIUM-226	SC-14517-S	1.86	0.32	PCI/G

Average of RADIUM-226 values is 1.87 6 MGK 11/5/98 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.61 pCi/g, which is below subsurface criteria, 16.20 pCi/g

01/02/98

CU145 DATA REPORT, CONTINUED

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: ~~32~~ 31 MGK 11/5/98

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14501-S	1.38	0.59	PCI/G
RADIUM-228	SC-14502-S	1.46	0.35	PCI/G
RADIUM-228	SC-14506-S	1.38	0.23	PCI/G
RADIUM-228	SC-14503-S	1.33	0.44	PCI/G
RADIUM-228	SC-14511-S	0.59	1.18	PCI/G
RADIUM-228	SC-14507-S	1.29	0.35	PCI/G
RADIUM-228	SC-14504-S	1.32	0.37	PCI/G
RADIUM-228	SC-14512-S	1.49	0.50	PCI/G
RADIUM-228	SC-14508-S	1.17	0.54	PCI/G
RADIUM-228	SC-14516-S	1.21	0.39	PCI/G
RADIUM-228	SC-14513-S	1.08	0.51	PCI/G
RADIUM-228	SC-14509-S	1.37	0.26	PCI/G
RADIUM-228	SC-14517-S	1.27	0.45	PCI/G
RADIUM-228	SC-14514-S	1.41	0.46	PCI/G
RADIUM-228	SC-14514-S-RS01	1.59	0.34	PCI/G
RADIUM-228	SC-14518-S	1.13	0.45	PCI/G
RADIUM-228	SC-14515-S	1.21	0.46	PCI/G
RADIUM-228	SC-14519-S	1.31	0.37	PCI/G
RADIUM-228	SC-14520-S	1.29	0.44	PCI/G
RADIUM-228	SC-14321-S	1.25	0.22	PCI/G
RADIUM-228	SC-14322-S	0.57	1.14	PCI/G
RADIUM-228	SC-14323-S	1.05	0.42	PCI/G
RADIUM-228	SC-14324-S	1.26	0.38	PCI/G
RADIUM-228	SC-14325-S	1.22	0.24	PCI/G
RADIUM-228	SC-14326-S	0.60	1.21	PCI/G
~~RADIUM-228~~	~~SC-14411-S~~	~~1.21~~	~~0.36~~	~~PCI/G~~ MGK 11/5/98
RADIUM-228	SC-14505-S	1.29	0.39	PCI/G
RADIUM-228	SC-14510-S	0.59	1.17	PCI/G
RADIUM-228	SC-14601-S	1.30	0.48	PCI/G
RADIUM-228	SC-14606-S	0.96	0.41	PCI/G
RADIUM-228	SC-14611-S	1.40	0.47	PCI/G
RADIUM-228	SC-14517-S	1.62	0.28	PCI/G

Average of RADIUM-228 values is 1.21 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 1.62 pCi/g, which is below subsurface criteria, 16.20 pCi/g

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6·9·98 3. Review Form #: 98-024

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU146 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
X TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria? note: Using subsurface criteria except in Zone K' where it meets surface criteria	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments: This release includes the original confirmation event (results included on the CU146a results form as attached) & the second confirmation event (results included on the CU146b results form as attached) after additional soil was removed from 'Zone K'.

(Continued below)

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Mel [illegible] Date 6/9/98

SECTION II

CU is released for unrestricted use.

14. ES&H Manager: [illegible] Date: 6/9/98

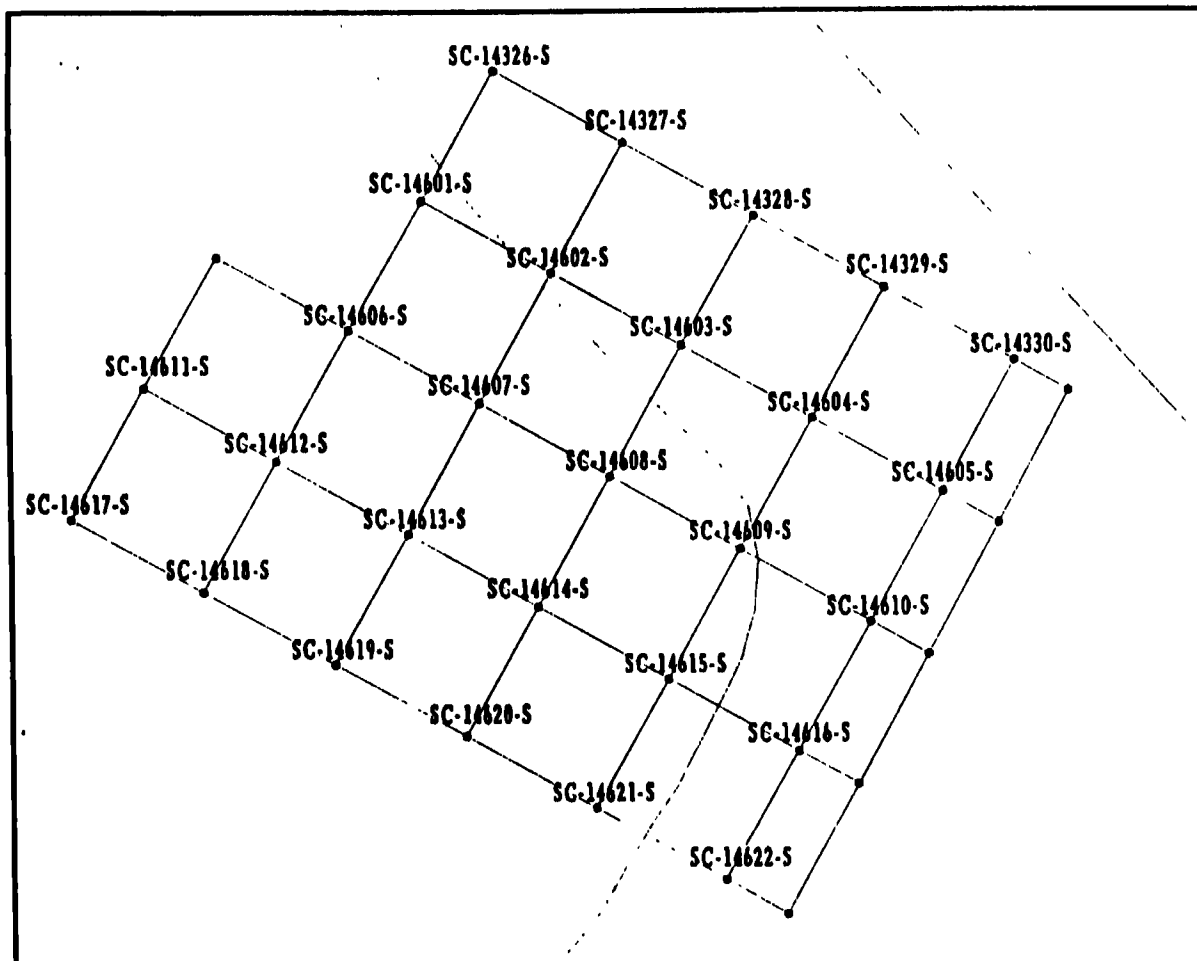
15. DOE Project Manager/Engineer: [illegible] Date: 6/9/98

16. Project Manager: Sheryl Hodges Date: 6/9/98

17. Construction Engineer: [illegible] Date: 6·10·98

SEE ATTACHED RESULTS AND MAP

TNT was added during the second event after indications of nitroaromatics during excavation.



15 7.5 0 METERS

45 22.5 0 FEET

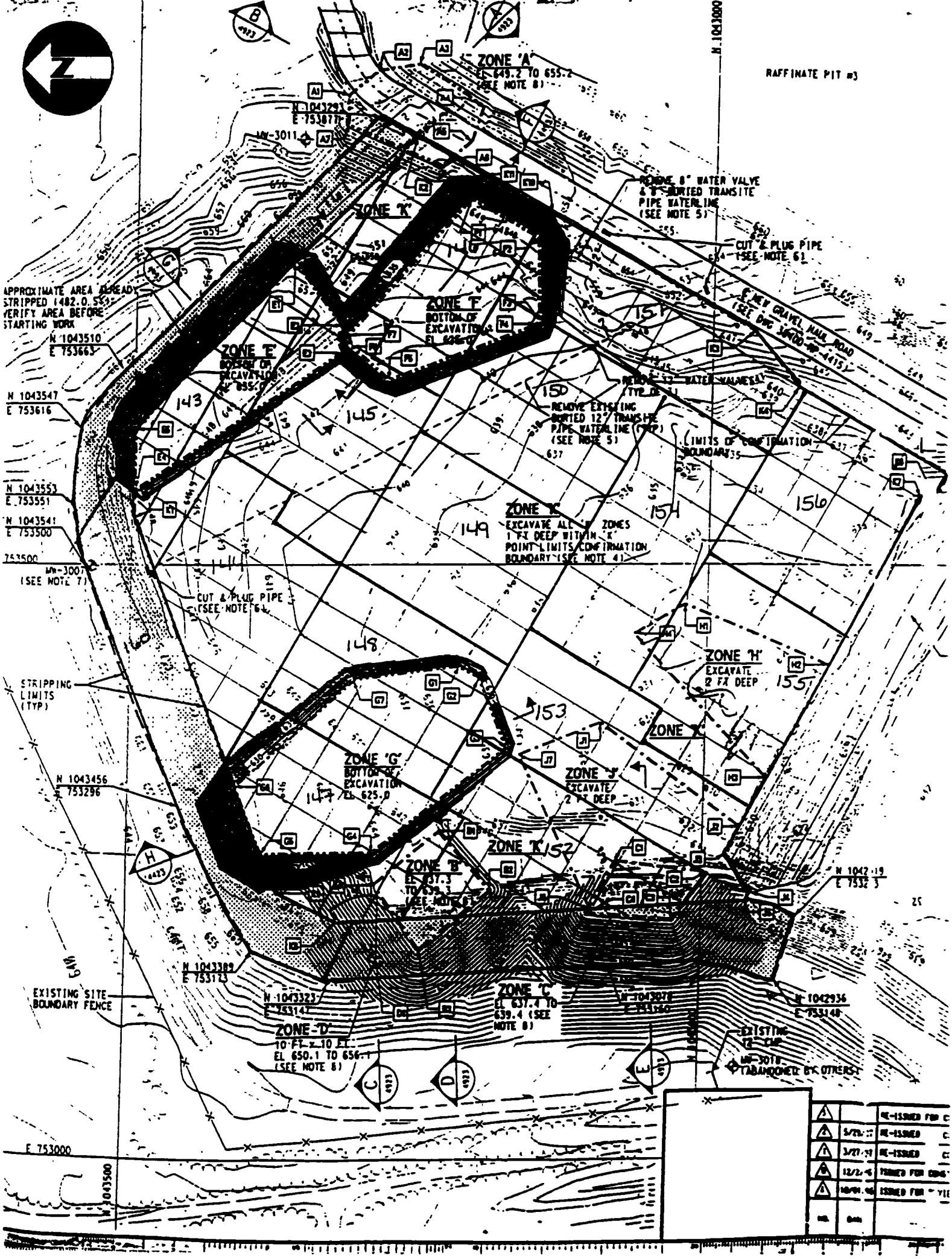
N
E
S

Form #98-024

Sample Locations in Remedial Unit RU013
Confirmation Unit CU146

Figure B-4

EXHIBIT NO.: G/CP/275/0897	REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97



RAFFINATE PIT #3
ZONE 'A'
EL 649.2 TO 655.2
(SEE NOTE 8)
N 1043293
E 753877
MW-3011
REMOVE 8" WATER VALVE & 8" BURIED TRANSITE PIPE WATERLINE (SEE NOTE 5)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'K'
ZONE 'F'
BOTTOM OF EXCAVATION
APPROXIMATE AREA ALREADY STRIPPED (482.0 S.F.) VERIFY AREA BEFORE STARTING WORK
N 1043510
E 753663
ZONE 'E'
BOTTOM OF EXCAVATION
N 1043547
E 753616
REMOVE 12" WATER VALVES (TYP OF 3)
REMOVE EXISTING BURIED 12" TRANSITE PIPE WATERLINE (TYP) (SEE NOTE 5)
LIMITS OF CONFIRMATION BOUNDARY
N 1043553
E 753551
N 1043541
E 753500
ZONE 'K'
EXCAVATE ALL 'K' ZONES 1 FT DEEP WITHIN 'K' POINT LIMITS CONFIRMATION BOUNDARY (SEE NOTE 4)
MW-3007 (SEE NOTE 7)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'H'
EXCAVATE 2 FT DEEP
STRIPPING LIMITS (TYP)
ZONE 'G'
BOTTOM OF EXCAVATION
EL 625.0
ZONE 'J'
EXCAVATE 2 FT DEEP
N 1043456
E 753296
ZONE 'K'
ZONE 'B'
EL 637.3 TO 639.3 (SEE NOTE 8)
N 1042919
E 753213
N 1043389
E 753173
EXISTING SITE BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO 639.4 (SEE NOTE 8)
N 1043078
E 753160
N 1042936
E 753148
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1
(SEE NOTE 8)
EXISTING 12" CMP
MW-3018 (ABANDONED BY OTHERS)
E 753000
N 1043500
N 1043000
143
145
149
150
151
152
153
154
155
156
147
148

06/09/98

CU146 DATA REPORT - CU146a

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14601-S	1.82	3.63	PCI/G
URANIUM-238	SC-14606-S	1.57	3.15	PCI/G
URANIUM-238	SC-14611-S	1.63	3.25	PCI/G
URANIUM-238	SC-14607-S	1.32	2.64	PCI/G
URANIUM-238	SC-14612-S	1.53	2.18	PCI/G
URANIUM-238	SC-14608-S	1.26	2.53	PCI/G
URANIUM-238	SC-14617-S	1.86	3.71	PCI/G
URANIUM-238	SC-14613-S	2.90	2.32	PCI/G
URANIUM-238	SC-14609-S	1.86	3.72	PCI/G
URANIUM-238	SC-14618-S	1.77	3.54	PCI/G
URANIUM-238	SC-14614-S	1.21	2.42	PCI/G
URANIUM-238	SC-14610-S	1.55	3.11	PCI/G
URANIUM-238	SC-14619-S	1.26	2.53	PCI/G
URANIUM-238	SC-14615-S	1.15	2.29	PCI/G
URANIUM-238	SC-14620-S	1.70	3.40	PCI/G
URANIUM-238	SC-14616-S	1.86	3.72	PCI/G
URANIUM-238	SC-14621-S	1.21	2.41	PCI/G
URANIUM-238	SC-14622-S	1.77	3.55	PCI/G
URANIUM-238	SC-14326-S	1.99	3.97	PCI/G
URANIUM-238	SC-14327-S	1.92	3.83	PCI/G
URANIUM-238	SC-14328-S	1.46	2.91	PCI/G
URANIUM-238	SC-14329-S	1.56	3.13	PCI/G
URANIUM-238	SC-14330-S	1.29	2.59	PCI/G
URANIUM-238	SC-14510-S	1.80	3.60	PCI/G
URANIUM-238	SC-14602-S	1.90	3.79	PCI/G
URANIUM-238	SC-14603-S	1.38	2.76	PCI/G
URANIUM-238	SC-14604-S	5.49	4.16	PCI/G
URANIUM-238	SC-14605-S	2.85	1.98	PCI/G

Average of URANIUM-238 values is 1.82 pCi/g, which is below ALARA, 30.00 pCi/g
Maximum single value is 5.49 pCi/g, which is below subsurface criteria, 120.00 pCi/g

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14601-S	0.99	0.62	PCI/G
Thorium-230	SC-14606-S	1.15	0.62	PCI/G
Thorium-230	SC-14611-S	1.16	0.62	PCI/G
Thorium-230	SC-14607-S	2.61	0.62	PCI/G
Thorium-230	SC-14612-S	1.01	0.62	PCI/G
Thorium-230	SC-14608-S	2.09	0.62	PCI/G
Thorium-230	SC-14617-S	2.75	0.62	PCI/G
Thorium-230	SC-14613-S	1.33	0.62	PCI/G
Thorium-230	SC-14609-S	1.46	0.62	PCI/G
Thorium-230	SC-14618-S	1.81	0.62	PCI/G
Thorium-230	SC-14614-S	12.09	0.62	PCI/G
Thorium-230	SC-14610-S	2.77	0.62	PCI/G
Thorium-230	SC-14619-S	1.26	0.62	PCI/G
Thorium-230	SC-14615-S	1.22	0.62	PCI/G
Thorium-230	SC-14620-S	1.12	0.62	PCI/G
Thorium-230	SC-14616-S	1.27	0.62	PCI/G
Thorium-230	SC-14621-S	2.51	0.62	PCI/G
Thorium-230	SC-14622-S	0.85	0.62	PCI/G
Thorium-230	SC-14326-S	1.67	0.62	PCI/G
Thorium-230	SC-14327-S	1.52	0.62	PCI/G
Thorium-230	SC-14328-S	3.56	0.62	PCI/G
Thorium-230	SC-14329-S	2.73	0.62	PCI/G
Thorium-230	SC-14330-S	1.24	0.62	PCI/G
Thorium-230	SC-14510-S	2.10	0.62	PCI/G
Thorium-230	SC-14602-S	0.85	0.62	PCI/G
Thorium-230	SC-14603-S	1.26	0.62	PCI/G
Thorium-230	SC-14604-S	6.96	0.62	PCI/G
Thorium-230	SC-14605-S	5.76	0.62	PCI/G

Average of Thorium-230 values is 2.39 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 12.09 pCi/g, which is below subsurface criteria, 16.20 pCi/g

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the TH232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.32 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.45 pCi/g, which is below subsurface Criteria of 16.2 pCi/g.

06/09/98

CU146 DATA REPORT - CU146a, CONTINUED

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14601-S	0.78	0.69	PCI/G
RADIUM-226	SC-14606-S	0.93	0.36	PCI/G
RADIUM-226	SC-14611-S	1.50	0.27	PCI/G
RADIUM-226	SC-14607-S	1.48	0.23	PCI/G
RADIUM-226	SC-14612-S	1.75	0.22	PCI/G
RADIUM-226	SC-14608-S	1.09	0.16	PCI/G
RADIUM-226	SC-14617-S	1.86	0.32	PCI/G
RADIUM-226	SC-14613-S	1.38	0.25	PCI/G
RADIUM-226	SC-14609-S	0.76	0.67	PCI/G
RADIUM-226	SC-14618-S	1.45	0.30	PCI/G
RADIUM-226	SC-14614-S	1.66	0.23	PCI/G
RADIUM-226	SC-14610-S	2.32	0.28	PCI/G
RADIUM-226	SC-14619-S	1.29	0.22	PCI/G
RADIUM-226	SC-14615-S	1.11	0.22	PCI/G
RADIUM-226	SC-14620-S	0.68	0.60	PCI/G
RADIUM-226	SC-14616-S	1.82	0.37	PCI/G
RADIUM-226	SC-14621-S	0.98	0.25	PCI/G
RADIUM-226	SC-14622-S	1.54	0.24	PCI/G
RADIUM-226	SC-14326-S	1.82	0.40	PCI/G
RADIUM-226	SC-14327-S	1.79	0.37	PCI/G
RADIUM-226	SC-14328-S	2.86	0.27	PCI/G
RADIUM-226	SC-14329-S	2.59	0.26	PCI/G
RADIUM-226	SC-14330-S	1.86	0.27	PCI/G
RADIUM-226	SC-14510-S	2.07	0.29	PCI/G
RADIUM-226	SC-14602-S	1.50	0.32	PCI/G
RADIUM-226	SC-14603-S	2.36	0.30	PCI/G
RADIUM-226	SC-14604-S	2.38	0.38	PCI/G
RADIUM-226	SC-14605-S	1.79	0.28	PCI/G

Average of RADIUM-226 values is 1.62 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.86 pCi/g, which is below subsurface criteria, 16.20 pCi/g

CU146 DATA REPORT - CU146a, CONTINUED

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14601-S	1.30	0.48	PCI/G
RADIUM-228	SC-14606-S	0.96	0.41	PCI/G
RADIUM-228	SC-14611-S	1.40	0.47	PCI/G
RADIUM-228	SC-14607-S	1.31	0.17	PCI/G
RADIUM-228	SC-14612-S	1.22	0.42	PCI/G
RADIUM-228	SC-14608-S	1.16	0.41	PCI/G
RADIUM-228	SC-14617-S	1.62	0.28	PCI/G
RADIUM-228	SC-14613-S	1.13	0.37	PCI/G
RADIUM-228	SC-14609-S	1.42	0.59	PCI/G
RADIUM-228	SC-14618-S	1.63	0.27	PCI/G
RADIUM-228	SC-14614-S	1.01	0.41	PCI/G
RADIUM-228	SC-14610-S	1.76	0.42	PCI/G
RADIUM-228	SC-14619-S	1.08	0.32	PCI/G
RADIUM-228	SC-14615-S	1.34	0.27	PCI/G
RADIUM-228	SC-14620-S	1.00	0.39	PCI/G
RADIUM-228	SC-14616-S	1.01	0.58	PCI/G
RADIUM-228	SC-14621-S	1.02	0.26	PCI/G
RADIUM-228	SC-14622-S	1.29	0.52	PCI/G
RADIUM-228	SC-14326-S	0.60	1.21	PCI/G
RADIUM-228	SC-14327-S	1.19	0.50	PCI/G
RADIUM-228	SC-14328-S	1.28	0.36	PCI/G
RADIUM-228	SC-14329-S	1.63	0.40	PCI/G
RADIUM-228	SC-14330-S	1.18	0.37	PCI/G
RADIUM-228	SC-14510-S	0.59	1.17	PCI/G
RADIUM-228	SC-14602-S	1.46	0.46	PCI/G
RADIUM-228	SC-14603-S	1.34	0.47	PCI/G
RADIUM-228	SC-14604-S	2.39	0.49	PCI/G
RADIUM-228	SC-14605-S	1.73	0.47	PCI/G

Average of RADIUM-228 values is 1.29 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.39 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

06/09/98

CU146 DATA REPORT - CU146b

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14601-S	1.82	3.63	PCI/G
URANIUM-238	SC-14606-S	1.57	3.15	PCI/G
URANIUM-238	SC-14611-S	1.63	3.25	PCI/G
URANIUM-238	SC-14607-S	1.32	2.64	PCI/G
URANIUM-238	SC-14612-S	1.53	2.18	PCI/G
URANIUM-238	SC-14608-S	1.26	2.53	PCI/G
URANIUM-238	SC-14617-S	1.86	3.71	PCI/G
URANIUM-238	SC-14613-S	2.90	2.32	PCI/G
URANIUM-238	SC-14609-S	1.86	3.72	PCI/G
URANIUM-238	SC-14618-S	1.77	3.54	PCI/G
URANIUM-238	SC-14614-S	1.21	2.42	PCI/G
URANIUM-238	SC-14610-S	1.55	3.11	PCI/G
URANIUM-238	SC-14619-S	1.26	2.53	PCI/G
URANIUM-238	SC-14615-S	1.15	2.29	PCI/G
URANIUM-238	SC-14620-S	1.70	3.40	PCI/G
URANIUM-238	SC-14616-S	1.86	3.72	PCI/G
URANIUM-238	SC-14621-S	1.21	2.41	PCI/G
URANIUM-238	SC-14622-S	1.77	3.55	PCI/G
URANIUM-238	SC-14326-S-02	1.30	2.59	PCI/G
URANIUM-238	SC-14327-S-02	1.84	3.68	PCI/G
URANIUM-238	SC-14328-S-02	1.33	2.65	PCI/G
URANIUM-238	SC-14329-S-02	1.76	3.52	PCI/G
URANIUM-238	SC-14330-S	1.29	2.59	PCI/G
URANIUM-238	SC-14510-S	1.80	3.60	PCI/G
URANIUM-238	SC-14602-S	1.90	3.79	PCI/G
URANIUM-238	SC-14603-S-02	1.36	2.72	PCI/G
URANIUM-238	SC-14604-S-02	1.79	3.57	PCI/G
URANIUM-238	SC-14605-S	2.85	1.98	PCI/G

Average of URANIUM-238 values is 1.66 pCi/g, which is below ALARA, 30.00 pCi/g
Maximum single value is 2.90 pCi/g, which is below subsurface criteria, 120.00 pCi/g

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14601-S	0.99	0.62	PCI/G
Thorium-230	SC-14606-S	1.15	0.62	PCI/G
Thorium-230	SC-14611-S	1.16	0.62	PCI/G
Thorium-230	SC-14607-S	2.61	0.62	PCI/G
Thorium-230	SC-14612-S	1.01	0.62	PCI/G
Thorium-230	SC-14608-S	2.09	0.62	PCI/G
Thorium-230	SC-14617-S	2.75	0.62	PCI/G
Thorium-230	SC-14613-S	1.33	0.62	PCI/G
Thorium-230	SC-14609-S	1.46	0.62	PCI/G
Thorium-230	SC-14618-S	1.81	0.62	PCI/G
Thorium-230	SC-14614-S	12.09	0.62	PCI/G
Thorium-230	SC-14610-S	2.77	0.62	PCI/G
Thorium-230	SC-14619-S	1.26	0.62	PCI/G
Thorium-230	SC-14615-S	1.22	0.62	PCI/G
Thorium-230	SC-14620-S	1.12	0.62	PCI/G
Thorium-230	SC-14616-S	1.27	0.62	PCI/G
Thorium-230	SC-14621-S	2.51	0.62	PCI/G
Thorium-230	SC-14622-S	0.85	0.62	PCI/G
Thorium-230	SC-14326-S-02	0.90	0.62	PCI/G
Thorium-230	SC-14327-S-02	1.00	0.62	PCI/G
Thorium-230	SC-14328-S-02	1.25	0.62	PCI/G
Thorium-230	SC-14329-S-02	1.15	0.62	PCI/G
Thorium-230	SC-14330-S	1.24	0.62	PCI/G
Thorium-230	SC-14510-S	2.10	0.62	PCI/G
Thorium-230	SC-14602-S	0.85	0.62	PCI/G
Thorium-230	SC-14603-S-02	1.10	0.62	PCI/G
Thorium-230	SC-14604-S-02	0.79	0.62	PCI/G
Thorium-230	SC-14605-S	5.76	0.62	PCI/G

Average of Thorium-230 values is 1.98 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 12.09 pCi/g, which is below subsurface criteria, 16.20 pCi/g

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the TH232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.23 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.38 pCi/g, which is below subsurface Criteria of 16.2 pCi/g.

CU146 DATA REPORT - CU146b, CONTINUED

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14601-S	0.78	0.69	PCI/G
RADIUM-226	SC-14606-S	0.93	0.36	PCI/G
RADIUM-226	SC-14611-S	1.50	0.27	PCI/G
RADIUM-226	SC-14607-S	1.48	0.23	PCI/G
RADIUM-226	SC-14612-S	1.75	0.22	PCI/G
RADIUM-226	SC-14608-S	1.09	0.16	PCI/G
RADIUM-226	SC-14617-S	1.86	0.32	PCI/G
RADIUM-226	SC-14613-S	1.38	0.25	PCI/G
RADIUM-226	SC-14609-S	0.76	0.67	PCI/G
RADIUM-226	SC-14618-S	1.45	0.30	PCI/G
RADIUM-226	SC-14614-S	1.66	0.23	PCI/G
RADIUM-226	SC-14610-S	2.32	0.28	PCI/G
RADIUM-226	SC-14619-S	1.29	0.22	PCI/G
RADIUM-226	SC-14615-S	1.11	0.22	PCI/G
RADIUM-226	SC-14620-S	0.68	0.60	PCI/G
RADIUM-226	SC-14616-S	1.82	0.37	PCI/G
RADIUM-226	SC-14621-S	0.98	0.25	PCI/G
RADIUM-226	SC-14622-S	1.54	0.24	PCI/G
RADIUM-226	SC-14326-S-02	1.45	0.22	PCI/G
RADIUM-226	SC-14327-S-02	1.70	0.44	PCI/G
RADIUM-226	SC-14328-S-02	1.57	0.22	PCI/G
RADIUM-226	SC-14329-S-02	2.16	0.32	PCI/G
RADIUM-226	SC-14330-S	1.86	0.27	PCI/G
RADIUM-226	SC-14510-S	2.07	0.29	PCI/G
RADIUM-226	SC-14602-S	1.50	0.32	PCI/G
RADIUM-226	SC-14603-S-02	1.68	0.27	PCI/G
RADIUM-226	SC-14604-S-02	1.77	0.29	PCI/G
RADIUM-226	SC-14605-S	1.79	0.28	PCI/G

Average of RADIUM-226 values is 1.50 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.32 pCi/g, which is below subsurface criteria, 16.20 pCi/g

CU146 DATA REPORT - CU146b, CONTINUED

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 28

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14601-S	1.30	0.48	PCI/G
RADIUM-228	SC-14606-S	0.96	0.41	PCI/G
RADIUM-228	SC-14611-S	1.40	0.47	PCI/G
RADIUM-228	SC-14607-S	1.31	0.17	PCI/G
RADIUM-228	SC-14612-S	1.22	0.42	PCI/G
RADIUM-228	SC-14608-S	1.16	0.41	PCI/G
RADIUM-228	SC-14617-S	1.62	0.28	PCI/G
RADIUM-228	SC-14613-S	1.13	0.37	PCI/G
RADIUM-228	SC-14609-S	1.42	0.59	PCI/G
RADIUM-228	SC-14618-S	1.63	0.27	PCI/G
RADIUM-228	SC-14614-S	1.01	0.41	PCI/G
RADIUM-228	SC-14610-S	1.76	0.42	PCI/G
RADIUM-228	SC-14619-S	1.08	0.32	PCI/G
RADIUM-228	SC-14615-S	1.34	0.27	PCI/G
RADIUM-228	SC-14620-S	1.00	0.39	PCI/G
RADIUM-228	SC-14616-S	1.01	0.58	PCI/G
RADIUM-228	SC-14621-S	1.02	0.26	PCI/G
RADIUM-228	SC-14622-S	1.29	0.52	PCI/G
RADIUM-228	SC-14326-S-02	1.21	0.37	PCI/G
RADIUM-228	SC-14327-S-02	1.13	0.48	PCI/G
RADIUM-228	SC-14328-S-02	0.97	0.38	PCI/G
RADIUM-228	SC-14329-S-02	0.64	1.27	PCI/G
RADIUM-228	SC-14330-S	1.18	0.37	PCI/G
RADIUM-228	SC-14510-S	0.59	1.17	PCI/G
RADIUM-228	SC-14602-S	1.46	0.46	PCI/G
RADIUM-228	SC-14603-S-02	1.19	0.40	PCI/G
RADIUM-228	SC-14604-S-02	0.65	1.29	PCI/G
RADIUM-228	SC-14605-S	1.73	0.47	PCI/G

Average of RADIUM-228 values is 1.20 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.76 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

TNT

NUMBER OF TNT SAMPLES IN DATABASE FOR THIS CU IS: 6

PARAMETER	LOCATION	CONC	DL	UNITS
TNT	SC-14326-S-02	0.023	0.0069	UG/G
TNT	SC-14327-S-02	0.075	0.0073	UG/G
TNT	SC-14328-S-02	0.360	0.0073	UG/G
TNT	SC-14329-S-02	2.100	0.0740	UG/G
TNT	SC-14603-S-02	0.120	0.0073	UG/G
TNT	SC-14604-S-02	0.120	0.0074	UG/G

Average of TNT values is 0.47 ug/g, which is below ALARA, 14 ug/g.
Maximum single value is 2.1 ug/g, which is below Criteria, 140 ug/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6/10/98 3. Review Form #: 98-028

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU147 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB X PAH X As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria?	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments: The release of this CU includes portions of Zone B and Zone G. Zone G initially had an interval of contaminated soil removed and the surface confirmed. The next interval was then removed & placed within Pit 4. The final interval was removed

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 6/10/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: [signature] Date: 6/10/98

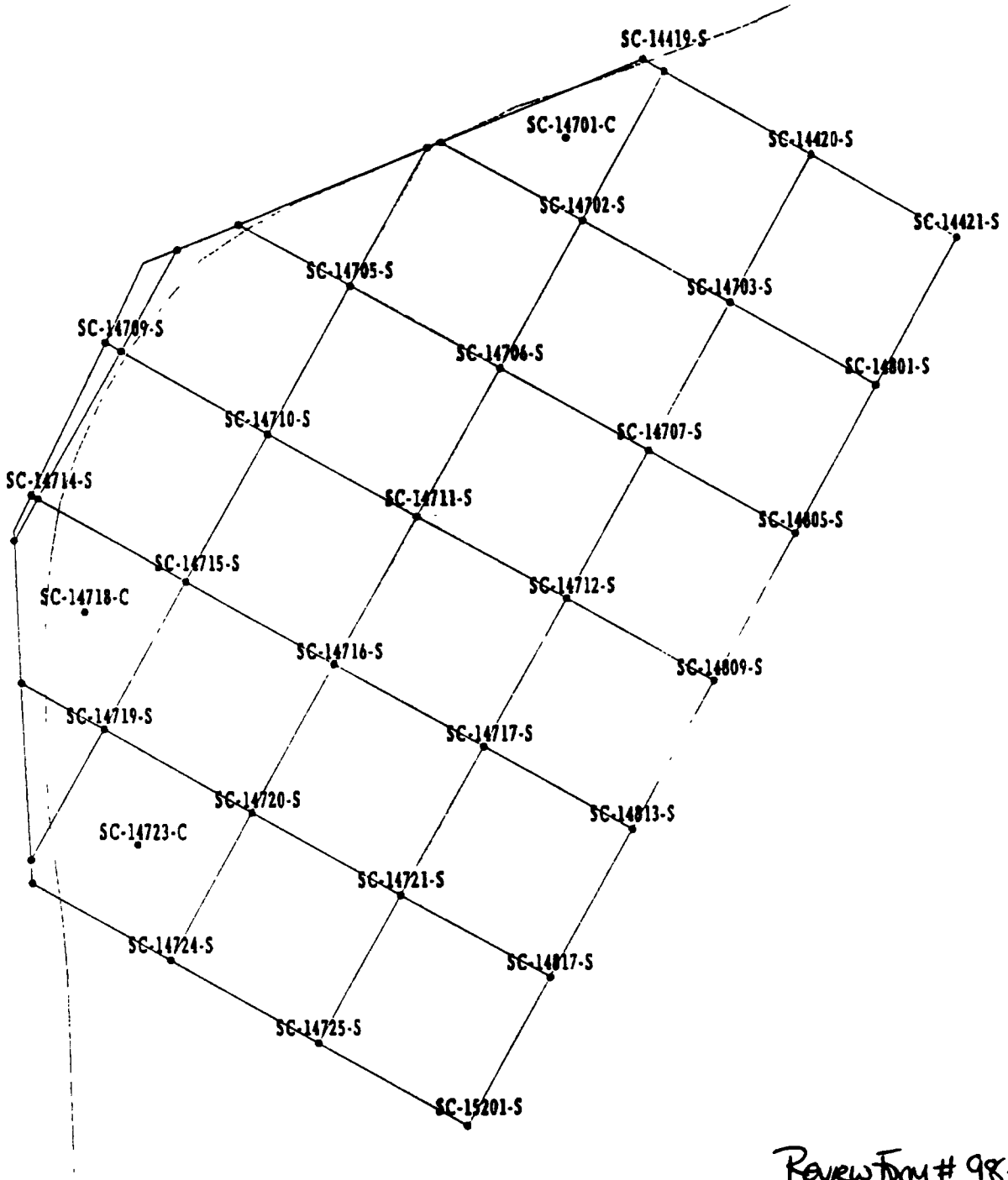
15. DOE Project Manager/Engineer: [signature] Date: 6/10/98

16. Project Manager: [signature] Date: 6/11/98

17. Construction Engineer: [signature] Date: 6.11.98

SEE ATTACHED RESULTS AND MAP

as contaminated and confirmed. The first confirmation event results are shown in CU147a Data report & for the second confirmatory event results can be found in CU147b Data report. Any areas not worked in Zone G will be the same in both reports.



Review Form # 98-028

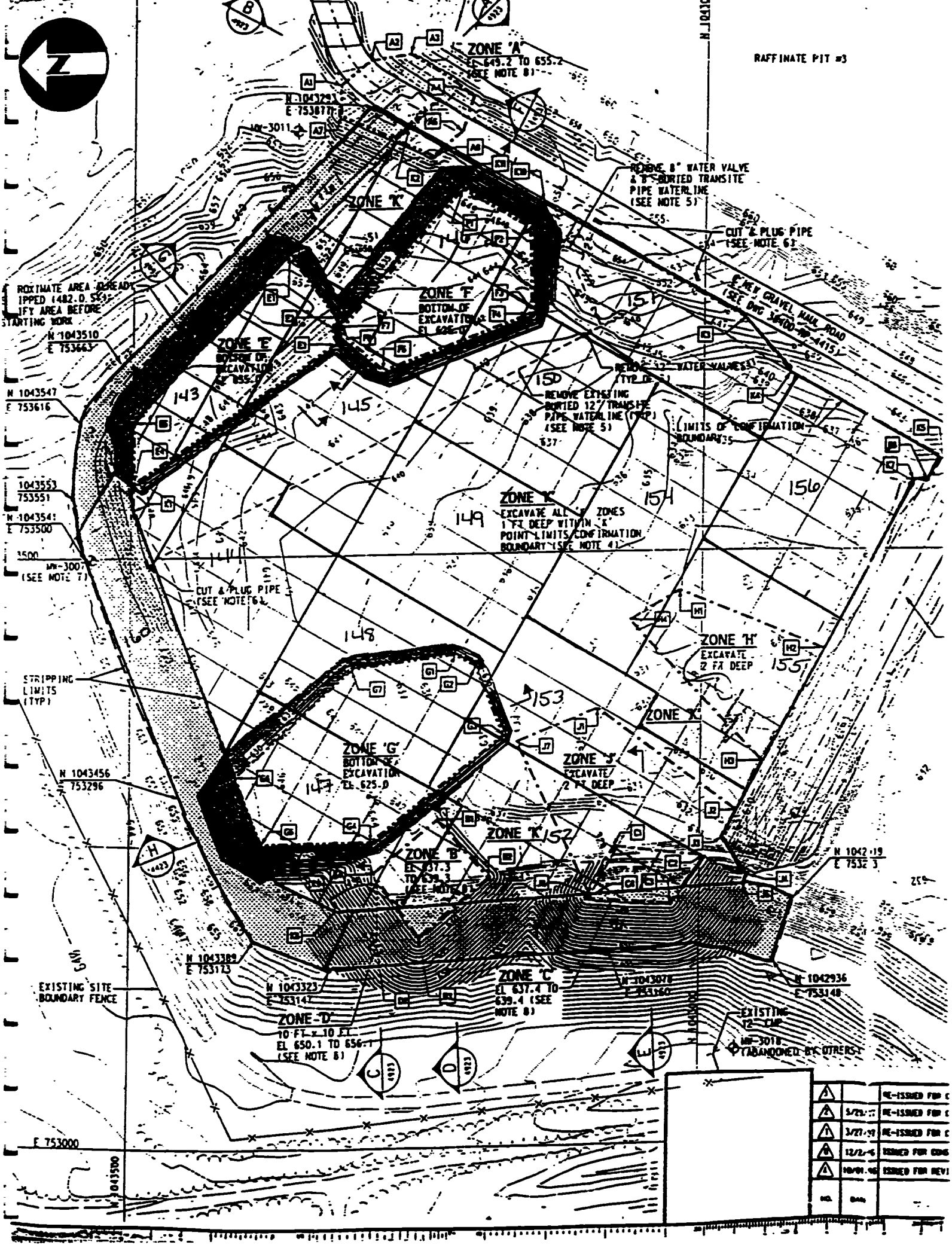
5 2.5 0 METERS

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013 Confirmation Unit CU147

Figure B-5

EXHIBIT NO.: G/CP/276/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	



RAFFINATE PIT #3
ZONE 'A'
EL 649.2 TO 655.2
(SEE NOTE 8)
N 1043293
E 753877
MW-3011
REMOVE 8" WATER VALVE & 8" BURIED TRANSITE PIPE WATERLINE (SEE NOTE 5)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'K'
ZONE 'F'
BOTTOM OF EXCAVATION EL 625.0
ROXIMATE AREA ALREADY IPPED (482.0 SQ.) IFY AREA BEFORE STARTING WORK
N 1043510
E 753663
ZONE 'E'
BOTTOM OF EXCAVATION EL 655.0
N 1043547
E 753616
REMOVE 12" WATER VALVES (TYP OF 5)
REMOVE EXISTING BURIED 12" TRANSITE PIPE WATERLINE (TYP) (SEE NOTE 5)
LIMITS OF CONFIRMATION BOUNDARY
ZONE 'K'
EXCAVATE ALL 'K' ZONES 1 FT DEEP WITHIN 'K' POINT LIMITS CONFIRMATION BOUNDARY (SEE NOTE 4)
1043553
753551
N 1043541
E 753500
MW-3007
(SEE NOTE 7)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'H'
EXCAVATE 2 FT DEEP
STRIPPING LIMITS (TYP)
ZONE 'G'
BOTTOM OF EXCAVATION EL 625.0
ZONE 'J'
EXCAVATE 2 FT DEEP
N 1043456
753296
ZONE 'K'
ZONE 'B'
EL 637.3 TO 639.3 (SEE NOTE 8)
N 1042919
E 753213
N 1043389
E 753173
EXISTING SITE BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO 639.4 (SEE NOTE 8)
N 1043078
E 753160
N 1042936
E 753148
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1
(SEE NOTE 8)
EXISTING 12" CMP
MW-3018
(ABANDONED BY OTHERS)
E 753000
N 1043500
143
145
146
147
148
149
150
151
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153
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NO.
DATE

06/10/98

CU147 DATA REPORT - cu147a

URANIUM-238

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14702-S	1.94	3.87	PCI/G
URANIUM-238	SC-14705-S	1.79	3.58	PCI/G
URANIUM-238	SC-14703-S	1.29	2.58	PCI/G
URANIUM-238	SC-14709-S	2.33	4.67	PCI/G
URANIUM-238	SC-14706-S	1.26	2.52	PCI/G
URANIUM-238	SC-14710-S	1.42	2.84	PCI/G
URANIUM-238	SC-14707-S	1.79	3.58	PCI/G
URANIUM-238	SC-14714-S	4.71	3.83	PCI/G
URANIUM-238	SC-14711-S	2.02	3.07	PCI/G
URANIUM-238	SC-14715-S	1.37	2.74	PCI/G
URANIUM-238	SC-14712-S	1.33	2.66	PCI/G
URANIUM-238	SC-14716-S	1.82	3.65	PCI/G
URANIUM-238	SC-14719-S-RS	1.76	3.52	PCI/G
URANIUM-238	SC-14717-S	1.33	2.67	PCI/G
URANIUM-238	SC-14720-S-RS	1.28	2.55	PCI/G
URANIUM-238	SC-14721-S	1.53	3.07	PCI/G
URANIUM-238	SC-14724-S-RS	1.31	2.62	PCI/G
URANIUM-238	SC-14725-S-RS	1.16	3.29	PCI/G
URANIUM-238	SC-14701-C	1.32	2.65	PCI/G
URANIUM-238	SC-14718-C	2.12	4.24	PCI/G
URANIUM-238	SC-14723-C-RS	1.64	3.28	PCI/G
URANIUM-238	SC-14419-S	1.42	2.84	PCI/G
URANIUM-238	SC-14420-S	2.02	4.04	PCI/G
URANIUM-238	SC-14421-S	1.97	3.00	PCI/G
URANIUM-238	SC-14801-S	1.75	3.51	PCI/G
URANIUM-238	SC-14805-S	1.31	2.62	PCI/G
URANIUM-238	SC-14809-S	2.53	2.12	PCI/G
URANIUM-238	SC-14813-S	1.73	2.00	PCI/G
URANIUM-238	SC-14817-S	5.52	2.62	PCI/G
URANIUM-238	SC-15201-S-RS	2.01	4.01	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of URANIUM-238 values is 1.90 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 5.52 pCi/g, which is below criteria, 120.00 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14702-S	2.07	0.62	PCI/G
Thorium-230	SC-14705-S	1.37	0.62	PCI/G
Thorium-230	SC-14703-S	1.14	0.62	PCI/G
Thorium-230	SC-14709-S	5.75	0.62	PCI/G
Thorium-230	SC-14706-S	1.36	0.62	PCI/G
Thorium-230	SC-14710-S	3.58	0.62	PCI/G
Thorium-230	SC-14707-S	0.89	0.62	PCI/G
Thorium-230	SC-14714-S	1.23	0.62	PCI/G
Thorium-230	SC-14711-S	1.38	0.62	PCI/G
Thorium-230	SC-14715-S	1.65	0.62	PCI/G
Thorium-230	SC-14712-S	1.39	0.62	PCI/G
Thorium-230	SC-14716-S	1.38	0.62	PCI/G
Thorium-230	SC-14719-S-RS	0.82	0.62	PCI/G
Thorium-230	SC-14717-S	1.05	0.62	PCI/G
Thorium-230	SC-14720-S-RS	0.89	0.62	PCI/G
Thorium-230	SC-14721-S	2.98	0.62	PCI/G
Thorium-230	SC-14724-S-RS	0.94	0.62	PCI/G
Thorium-230	SC-14725-S-RS	1.04	0.62	PCI/G
Thorium-230	SC-14701-C	1.37	0.62	PCI/G
Thorium-230	SC-14718-C	1.41	0.62	PCI/G
Thorium-230	SC-14723-C-RS	0.87	0.62	PCI/G
Thorium-230	SC-14419-S	1.34	0.62	PCI/G
Thorium-230	SC-14420-S	4.72	0.62	PCI/G
Thorium-230	SC-14421-S	1.84	0.62	PCI/G
Thorium-230	SC-14801-S	0.93	0.62	PCI/G
Thorium-230	SC-14805-S	1.08	0.62	PCI/G
Thorium-230	SC-14809-S	1.13	0.62	PCI/G
Thorium-230	SC-14813-S	1.11	0.62	PCI/G
Thorium-230	SC-14817-S	1.40	0.62	PCI/G
Thorium-230	SC-15201-S-RS	1.16	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of Thorium-230 values is 1.64 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 5.75 pCi/g, which is below criteria, 6.20 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.29 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 2.62 pCi/g, which is below criteria of 6.2 pCi/g.

RADIUM-226

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14702-S	2.66	0.41	PCI/G
RADIUM-226	SC-14705-S	2.38	0.32	PCI/G
RADIUM-226	SC-14703-S	2.41	0.29	PCI/G
RADIUM-226	SC-14709-S	2.88	0.44	PCI/G
RADIUM-226	SC-14706-S	2.61	0.26	PCI/G
RADIUM-226	SC-14710-S	2.50	0.29	PCI/G
RADIUM-226	SC-14707-S	1.68	0.36	PCI/G
RADIUM-226	SC-14714-S	1.88	0.33	PCI/G
RADIUM-226	SC-14711-S	2.50	0.31	PCI/G
RADIUM-226	SC-14715-S	2.41	0.31	PCI/G
RADIUM-226	SC-14712-S	2.11	0.30	PCI/G
RADIUM-226	SC-14716-S	3.29	0.31	PCI/G
RADIUM-226	SC-14719-S-RS	1.57	0.35	PCI/G
RADIUM-226	SC-14717-S	2.68	0.21	PCI/G
RADIUM-226	SC-14720-S-RS	1.07	0.22	PCI/G
RADIUM-226	SC-14721-S	2.59	0.32	PCI/G
RADIUM-226	SC-14724-S-RS	1.97	0.33	PCI/G
RADIUM-226	SC-14725-S-RS	1.32	0.35	PCI/G
RADIUM-226	SC-14701-C	3.09	0.31	PCI/G
RADIUM-226	SC-14718-C	2.97	0.35	PCI/G
RADIUM-226	SC-14723-C-RS	1.43	0.13	PCI/G
RADIUM-226	SC-14419-S	2.20	0.27	PCI/G
RADIUM-226	SC-14420-S	2.32	0.28	PCI/G
RADIUM-226	SC-14421-S	1.82	0.40	PCI/G
RADIUM-226	SC-14801-S	1.75	0.29	PCI/G
RADIUM-226	SC-14805-S	1.18	0.23	PCI/G
RADIUM-226	SC-14809-S	1.32	0.26	PCI/G
RADIUM-226	SC-14813-S	1.25	0.25	PCI/G
RADIUM-226	SC-14817-S	1.43	0.27	PCI/G
RADIUM-226	SC-15201-S-RS	2.18	0.33	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-226 values is 2.12 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 3.29 pCi/g, which is below criteria, 6.20 pCi/g.

CU147 DATA REPORT - CU147a, Continued

RADIUM-228

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14702-S	1.16	0.41	PCI/G
RADIUM-228	SC-14705-S	1.27	0.42	PCI/G
RADIUM-228	SC-14703-S	1.04	0.28	PCI/G
RADIUM-228	SC-14709-S	2.56	0.43	PCI/G
RADIUM-228	SC-14706-S	1.07	0.37	PCI/G
RADIUM-228	SC-14710-S	1.45	0.37	PCI/G
RADIUM-228	SC-14707-S	1.41	0.39	PCI/G
RADIUM-228	SC-14714-S	1.15	0.59	PCI/G
RADIUM-228	SC-14711-S	0.61	1.22	PCI/G
RADIUM-228	SC-14715-S	1.20	0.49	PCI/G
RADIUM-228	SC-14712-S	1.30	0.35	PCI/G
RADIUM-228	SC-14716-S	1.45	0.91	PCI/G
RADIUM-228	SC-14719-S-RS	1.29	0.60	PCI/G
RADIUM-228	SC-14717-S	1.21	0.35	PCI/G
RADIUM-228	SC-14720-S-RS	0.96	0.35	PCI/G
RADIUM-228	SC-14721-S	1.44	0.36	PCI/G
RADIUM-228	SC-14724-S-RS	1.53	0.31	PCI/G
RADIUM-228	SC-14725-S-RS	0.67	1.34	PCI/G
RADIUM-228	SC-14701-C	1.19	0.40	PCI/G
RADIUM-228	SC-14718-C	1.47	0.61	PCI/G
RADIUM-228	SC-14723-C-RS	0.50	1.00	PCI/G
RADIUM-228	SC-14419-S	1.14	0.52	PCI/G
RADIUM-228	SC-14420-S	2.05	0.41	PCI/G
RADIUM-228	SC-14421-S	1.52	0.47	PCI/G
RADIUM-228	SC-14801-S	1.33	0.68	PCI/G
RADIUM-228	SC-14805-S	1.19	0.36	PCI/G
RADIUM-228	SC-14809-S	1.21	0.28	PCI/G
RADIUM-228	SC-14813-S	1.16	0.35	PCI/G
RADIUM-228	SC-14817-S	1.10	0.33	PCI/G
RADIUM-228	SC-15201-S-RS	1.24	0.44	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-228 values is 1.26 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.56 pCi/g, which is below criteria, 6.20 pCi/g.

Arsenic

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Arsenic	SC-14719-S-RS	4.5	4.5	UG/G
Arsenic	SC-14720-S-RS	3.7	7.3	UG/G
Arsenic	SC-14723-C-RS	8.9	4.9	UG/G
Arsenic	SC-14724-S-RS	8.4	6.2	UG/G
Arsenic	SC-14725-S-RS	7.2	5.2	UG/G
Arsenic	SC-15201-S-RS	7.4		UG/G

NUMBER OF Arsenic SAMPLES IN DATABASE FOR THIS CU IS: 6
Average of Arsenic values is 6.7 UG/G, which is below ALARA, 45 UG/G.
Maximum single value is 8.9 UG/G, which is below criteria, 75 UG/G.

PAHs

PARAMETER	LOCATION	CONCENTRATION	UNITS
PAHs	SC-14719-S-RS	0	UG/G
PAHs	SC-14720-S-RS	0	UG/G
PAHs	SC-14723-C-RS	0	UG/G
PAHs	SC-14724-S-RS	0	UG/G
PAHs	SC-14725-S-RS	0	UG/G

NUMBER OF PAHs SAMPLES IN DATABASE FOR THIS CU IS: 5
Average of PAH values is 0 UG/G, which is below ALARA, 440 UG/KG.
Maximum single value is 0 UG/G, which is below criteria, 5600 UG/KG.

06/10/98

CU147 DATA REPORT - CU147b

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-14419-S-02	1.52	0.25	PCI/G
RADIUM-226	SC-14420-S-02	1.18	0.38	PCI/G
RADIUM-226	SC-14421-S	1.82	0.40	PCI/G
RADIUM-226	SC-14701-C-02	0.30	0.60	PCI/G
RADIUM-226	SC-14702-S-02	1.23	0.23	PCI/G
RADIUM-226	SC-14703-S-02	1.66	0.29	PCI/G
RADIUM-226	SC-14705-S-02	1.93	0.22	PCI/G
RADIUM-226	SC-14706-S-02	1.66	0.34	PCI/G
RADIUM-226	SC-14707-S-02	1.38	0.23	PCI/G
RADIUM-226	SC-14709-S	2.88	0.44	PCI/G
RADIUM-226	SC-14710-S-02	0.31	0.62	PCI/G
RADIUM-226	SC-14711-S-02	1.57	0.21	PCI/G
RADIUM-226	SC-14712-S-02	1.27	0.21	PCI/G
RADIUM-226	SC-14714-S	1.88	0.33	PCI/G
RADIUM-226	SC-14715-S	2.41	0.31	PCI/G
RADIUM-226	SC-14716-S-02	2.22	0.23	PCI/G
RADIUM-226	SC-14717-S-02	1.32	0.20	PCI/G
RADIUM-226	SC-14718-C	2.97	0.35	PCI/G
RADIUM-226	SC-14719-S-RS	1.57	0.35	PCI/G
RADIUM-226	SC-14720-S-RS	1.07	0.22	PCI/G
RADIUM-226	SC-14721-S	2.59	0.32	PCI/G
RADIUM-226	SC-14723-C-RS	1.43	0.13	PCI/G
RADIUM-226	SC-14724-S-RS	1.97	0.33	PCI/G
RADIUM-226	SC-14725-S-RS	1.32	0.35	PCI/G
RADIUM-226	SC-14801-S-02	1.09	0.31	PCI/G
RADIUM-226	SC-14805-S-02	1.61	0.25	PCI/G
RADIUM-226	SC-14809-S-02	1.66	0.24	PCI/G
RADIUM-226	SC-14813-S-02	2.07	0.37	PCI/G
RADIUM-226	SC-14817-S-02	1.41	0.21	PCI/G
RADIUM-226	SC-15201-S-RS	2.18	0.33	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-226 values is 1.65 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.97 pCi/g, which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-14419-S-02	1.34	0.35	PCI/G
RADIUM-228	SC-14420-S-02	0.58	1.16	PCI/G
RADIUM-228	SC-14421-S	1.52	0.47	PCI/G
RADIUM-228	SC-14701-C-02	0.57	1.13	PCI/G
RADIUM-228	SC-14702-S-02	1.45	0.42	PCI/G
RADIUM-228	SC-14703-S-02	0.52	1.03	PCI/G
RADIUM-228	SC-14705-S-02	1.46	0.41	PCI/G
RADIUM-228	SC-14706-S-02	1.46	0.41	PCI/G
RADIUM-228	SC-14707-S-02	1.37	0.23	PCI/G
RADIUM-228	SC-14709-S	2.56	0.43	PCI/G
RADIUM-228	SC-14710-S-02	0.89	0.55	PCI/G
RADIUM-228	SC-14711-S-02	1.16	0.40	PCI/G
RADIUM-228	SC-14712-S-02	1.28	0.64	PCI/G
RADIUM-228	SC-14714-S	1.15	0.59	PCI/G
RADIUM-228	SC-14715-S	1.20	0.49	PCI/G
RADIUM-228	SC-14716-S-02	1.24	0.56	PCI/G
RADIUM-228	SC-14717-S-02	1.63	0.35	PCI/G
RADIUM-228	SC-14718-C	1.47	0.61	PCI/G
RADIUM-228	SC-14719-S-RS	1.29	0.60	PCI/G
RADIUM-228	SC-14720-S-RS	0.96	0.35	PCI/G
RADIUM-228	SC-14721-S	1.44	0.36	PCI/G
RADIUM-228	SC-14723-C-RS	0.50	1.00	PCI/G
RADIUM-228	SC-14724-S-RS	1.53	0.31	PCI/G
RADIUM-228	SC-14725-S-RS	0.67	1.34	PCI/G
RADIUM-228	SC-14801-S-02	1.00	0.51	PCI/G
RADIUM-228	SC-14805-S-02	1.12	0.43	PCI/G
RADIUM-228	SC-14809-S-02	1.63	0.31	PCI/G
RADIUM-228	SC-14813-S-02	1.63	0.45	PCI/G
RADIUM-228	SC-14817-S-02	1.09	0.31	PCI/G
RADIUM-228	SC-15201-S-RS	1.24	0.44	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-228 values is 1.23 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.56 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-14419-S-02	0.82	0.62	PCI/G
Thorium-230	SC-14420-S-02	0.86	0.62	PCI/G
Thorium-230	SC-14421-S	1.84	0.62	PCI/G
Thorium-230	SC-14701-C-02	0.99	0.62	PCI/G
Thorium-230	SC-14702-S-02	0.90	0.62	PCI/G
Thorium-230	SC-14703-S-02	1.20	0.62	PCI/G
Thorium-230	SC-14705-S-02	0.91	0.62	PCI/G
Thorium-230	SC-14706-S-02	0.94	0.62	PCI/G
Thorium-230	SC-14707-S-02	0.89	0.62	PCI/G
Thorium-230	SC-14709-S	5.75	0.62	PCI/G
Thorium-230	SC-14710-S-02	0.90	0.62	PCI/G
Thorium-230	SC-14711-S-02	0.80	0.62	PCI/G
Thorium-230	SC-14712-S-02	0.85	0.62	PCI/G
Thorium-230	SC-14714-S	1.23	0.62	PCI/G
Thorium-230	SC-14715-S	1.65	0.62	PCI/G
Thorium-230	SC-14716-S-02	0.85	0.62	PCI/G
Thorium-230	SC-14717-S-02	1.09	0.62	PCI/G
Thorium-230	SC-14718-C	1.41	0.62	PCI/G
Thorium-230	SC-14719-S-RS	0.82	0.62	PCI/G
Thorium-230	SC-14720-S-RS	0.89	0.62	PCI/G
Thorium-230	SC-14721-S	2.98	0.62	PCI/G
Thorium-230	SC-14723-C-RS	0.87	0.62	PCI/G
Thorium-230	SC-14724-S-RS	0.94	0.62	PCI/G
Thorium-230	SC-14725-S-RS	1.04	0.62	PCI/G
Thorium-230	SC-14801-S-02	1.26	0.62	PCI/G
Thorium-230	SC-14805-S-02	0.91	0.62	PCI/G
Thorium-230	SC-14809-S-02	1.09	0.62	PCI/G
Thorium-230	SC-14813-S-02	1.29	0.62	PCI/G
Thorium-230	SC-14817-S-02	1.09	0.62	PCI/G
Thorium-230	SC-15201-S-RS	1.16	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of Thorium-230 values is 1.27 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 5.75 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.26 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.62 pCi/g, which is below surface criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-14419-S-02	1.31	2.61	PCI/G
URANIUM-238	SC-14420-S-02	1.79	3.57	PCI/G
URANIUM-238	SC-14421-S	1.97	3.00	PCI/G
URANIUM-238	SC-14701-C-02	1.82	3.63	PCI/G
URANIUM-238	SC-14702-S-02	1.33	2.65	PCI/G
URANIUM-238	SC-14703-S-02	1.69	3.37	PCI/G
URANIUM-238	SC-14705-S-02	1.34	2.68	PCI/G
URANIUM-238	SC-14706-S-02	1.86	3.72	PCI/G
URANIUM-238	SC-14707-S-02	1.22	2.44	PCI/G
URANIUM-238	SC-14709-S	2.34	4.67	PCI/G
URANIUM-238	SC-14710-S-02	1.75	3.49	PCI/G
URANIUM-238	SC-14711-S-02	1.63	1.78	PCI/G
URANIUM-238	SC-14712-S-02	1.87	3.74	PCI/G
URANIUM-238	SC-14714-S	4.71	3.83	PCI/G
URANIUM-238	SC-14715-S	1.37	2.74	PCI/G
URANIUM-238	SC-14716-S-02	2.01	4.02	PCI/G
URANIUM-238	SC-14717-S-02	1.37	2.73	PCI/G
URANIUM-238	SC-14718-C	2.12	4.24	PCI/G
URANIUM-238	SC-14719-S-RS	1.76	3.52	PCI/G
URANIUM-238	SC-14720-S-RS	1.28	2.55	PCI/G
URANIUM-238	SC-14721-S	1.54	3.07	PCI/G
URANIUM-238	SC-14723-C-RS	1.64	3.28	PCI/G
URANIUM-238	SC-14724-S-RS	1.31	2.62	PCI/G
URANIUM-238	SC-14725-S-RS	1.16	3.29	PCI/G
URANIUM-238	SC-14801-S-02	1.57	3.13	PCI/G
URANIUM-238	SC-14805-S-02	1.29	2.58	PCI/G
URANIUM-238	SC-14809-S-02	1.29	2.57	PCI/G
URANIUM-238	SC-14813-S-02	1.97	3.94	PCI/G
URANIUM-238	SC-14817-S-02	2.57	2.37	PCI/G
URANIUM-238	SC-15201-S-RS	2.01	4.01	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of URANIUM-238 values is 1.76 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 4.71 pCi/g, which is below criteria, 120.00 pCi/g.

Arsenic

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Arsenic	SC-14719-S-RS	4.5	4.5	UG/G
Arsenic	SC-14720-S-RS	3.7	7.3	UG/G
Arsenic	SC-14723-C-RS	8.9	4.9	UG/G
Arsenic	SC-14724-S-RS	8.4	6.2	UG/G
Arsenic	SC-14725-S-RS	7.2	5.2	UG/G
Arsenic	SC-15201-S-RS	7.4		UG/G

NUMBER OF Arsenic SAMPLES IN DATABASE FOR THIS CU IS: 6
Average of Arsenic values is 6.7 UG/G, which is below ALARA, 45 UG/G.
Maximum single value is 8.9 UG/G, which is below criteria, 75 UG/G.

PAHs

PARAMETER	LOCATION	CONCENTRATION	UNITS
PAHs	SC-14719-S-RS	0	UG/KG
PAHs	SC-14720-S-RS	0	UG/KG
PAHs	SC-14723-C-RS	0	UG/KG
PAHs	SC-14724-S-RS	0	UG/KG
PAHs	SC-14725-S-RS	0	UG/KG

NUMBER OF PAHs SAMPLES IN DATABASE FOR THIS CU IS: 5
Average of PAH values is 0 UG/KG, which is below ALARA, 440 UG/KG.
Maximum single value is 0 UG/KG, which is below criteria, 5600 UG/KG.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP-471 2. Date: 6·3·98 3. Review Form #: 98-019

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU148 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes	___ No
8. All results below cleanup criteria? using subsurface criteria	X Yes	___ No
9. Any results greater than 3X criteria?	___ Yes	X No
10. Hot spots present (less than 3X criteria)?	___ Yes	X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments Zone G (See attached figure) is partially located with CU148. Zone G had initially an interval of contaminated soil removed and the surface confirmed. The next interval was then removed and placed as fill within pit 4 and will

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

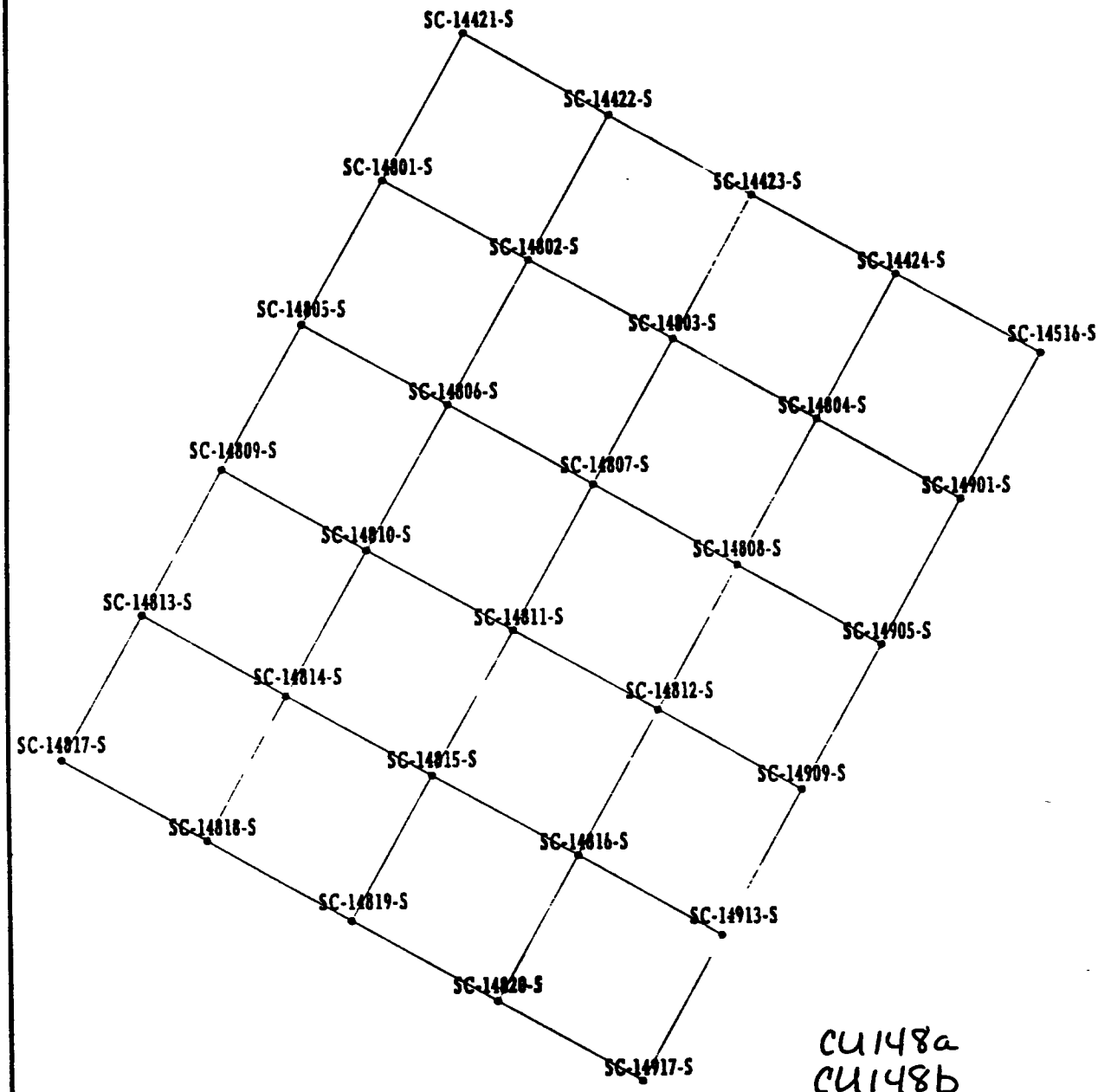
13. Reviewer: Melissa H Lietz Date 6/3/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: for DEH Date: 6/3/98
15. DOE Project Manager/Engineer: Date: 6/3/98
16. Project Manager: 6-3-98 Sheryl L. Hodges Date: 6/3/98
17. Construction Engineer: Date: 6·3·98

SEE ATTACHED RESULTS AND MAP

remain subsurface. The final interval was removed as contaminated and confirmed. The first confirmation event results are shown on the data report for CU148a (attached). The second confirmation event results are shown on the data report for CU148b (also attached). Those areas within CU148, but outside of the zone G were not so confirmed & therefore results are the same for CU148.



CU148a
CU148b
Form #98-019

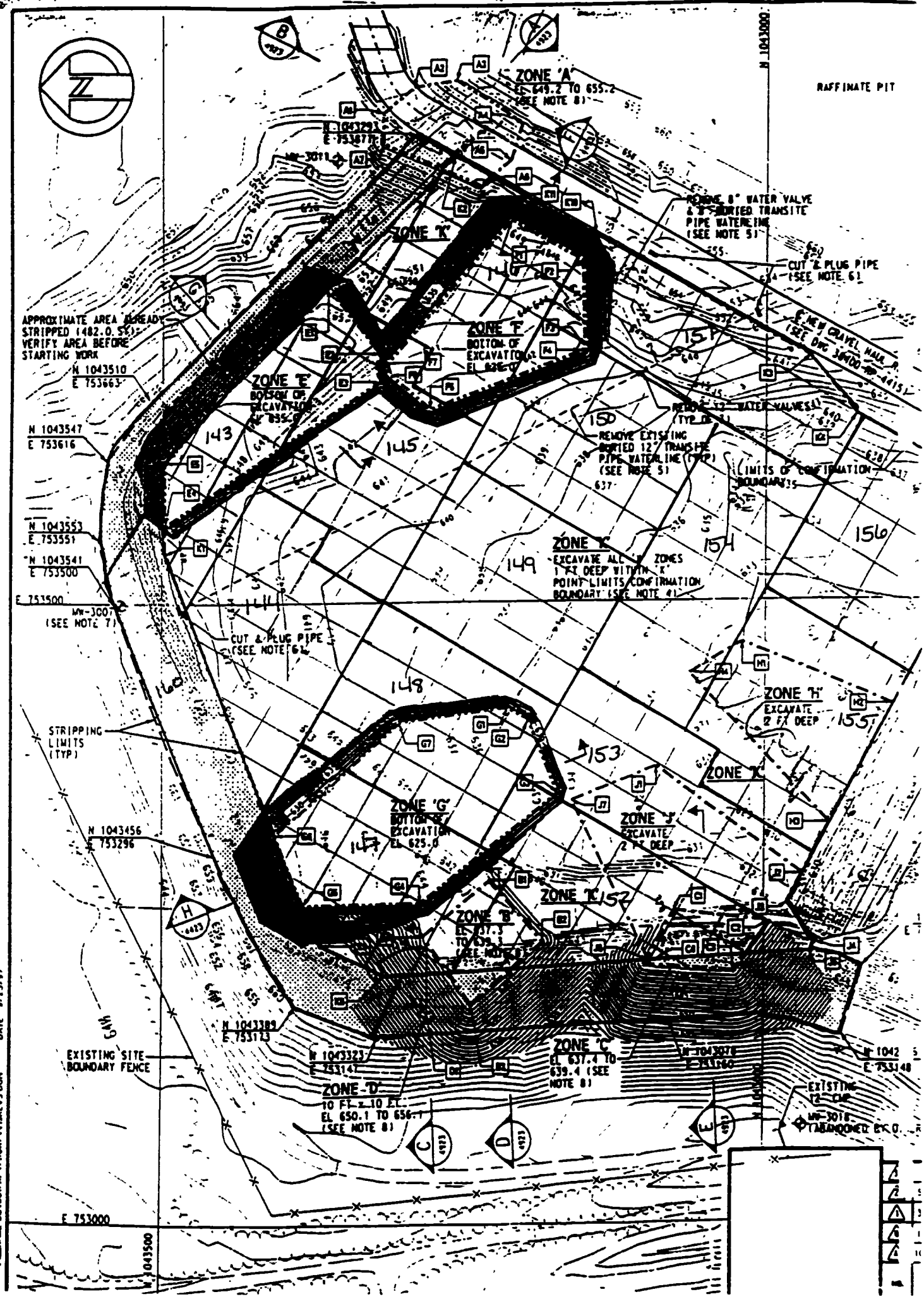
5 2.5 0 METERS

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013 Confirmation Unit CU148

Figure B-6

EXHIBIT NO.: G/CP/277/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	


RAFFINATE PIT
ZONE 'A'
EL 649.2 TO 655.2 (SEE NOTE 8)
N 1043293
E 753877
MW-3011
ZONE 'K'
REMOVE 8" WATER VALVE & 8" BURIED TRANSITE PIPE WATERLINE (SEE NOTE 5)
CUT & PLUG PIPE (SEE NOTE 6)
NEW GRAVEL HAUL ROAD (SEE DWG 38400-WP-4415)
APPROXIMATE AREA ALREADY STRIPPED (482.0 SY) VERIFY AREA BEFORE STARTING WORK
N 1043510
E 753663
ZONE 'F'
BOTTOM OF EXCAVATION EL 626.0
ZONE 'E'
BOTTOM OF EXCAVATION EL 635.0
REMOVE 12" WATER VALVES (TYP OF 3)
REMOVE EXISTING BURIED 12" TRANSITE PIPE WATERLINE (TYP) (SEE NOTE 5)
LIMITS OF CONFIRMATION BOUNDARY
N 1043547
E 753616
N 1043553
E 753551
N 1043541
E 753500
E 753500
MW-3007 (SEE NOTE 7)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'K'
EXCAVATE ALL IN ZONES 1 FT DEEP WITHIN 'K' POINT LIMITS CONFIRMATION BOUNDARY (SEE NOTE 4)
ZONE 'H'
EXCAVATE 2 FT DEEP
STRIPPING LIMITS (TYP)
ZONE 'G'
BOTTOM OF EXCAVATION EL 625.0
ZONE 'J'
EXCAVATE 2 FT DEEP
ZONE 'K'
ZONE 'B'
EL 637.3 TO 639.3 (SEE NOTE 8)
N 1043456
E 753296
N 1043389
E 753173
EXISTING SITE BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO 639.4 (SEE NOTE 8)
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1 (SEE NOTE 8)
EXISTING 12" CMP
MW-3018 (ABANDONED EKO)
E 753000
N 1043500
N 1043000
E 753148
FILENAME 38400/WP4/TCN/4418REV3.DGN
DATE 9/23/97

02/02/98

CU148 DATA REPORT - CU148a

URANIUM-238

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14801-S	1.75	3.51	PCI/G
URANIUM-238	SC-14802-S	2.46	2.77	PCI/G
URANIUM-238	SC-14805-S	1.31	2.62	PCI/G
URANIUM-238	SC-14803-S	5.15	3.05	PCI/G
URANIUM-238	SC-14806-S	1.71	3.42	PCI/G
URANIUM-238	SC-14804-S	2.01	4.02	PCI/G
URANIUM-238	SC-14809-S	2.53	2.12	PCI/G
URANIUM-238	SC-14807-S	1.33	2.66	PCI/G
URANIUM-238	SC-14810-S	1.79	3.58	PCI/G
URANIUM-238	SC-14808-S	1.98	3.95	PCI/G
URANIUM-238	SC-14813-S	1.73	2.00	PCI/G
URANIUM-238	SC-14811-S	1.21	2.42	PCI/G
URANIUM-238	SC-14814-S	1.61	3.23	PCI/G
URANIUM-238	SC-14812-S	1.71	3.42	PCI/G
URANIUM-238	SC-14815-S	1.25	2.50	PCI/G
URANIUM-238	SC-14818-S	1.61	3.23	PCI/G
URANIUM-238	SC-14816-S	1.69	3.37	PCI/G
URANIUM-238	SC-14817-S	5.52	2.62	PCI/G
URANIUM-238	SC-14819-S	1.28	2.56	PCI/G
URANIUM-238	SC-14820-S	1.28	2.56	PCI/G
URANIUM-238	SC-14901-S	1.90	3.79	PCI/G
URANIUM-238	SC-14905-S	3.71	1.83	PCI/G
URANIUM-238	SC-14909-S	1.83	3.67	PCI/G
URANIUM-238	SC-14913-S	1.28	2.57	PCI/G
URANIUM-238	SC-14917-S	2.60	5.21	PCI/G
URANIUM-238	SC-14421-S	1.97	3.00	PCI/G
URANIUM-238	SC-14422-S	11.06	3.48	PCI/G
URANIUM-238	SC-14423-S	1.42	2.84	PCI/G
URANIUM-238	SC-14424-S	3.03	1.69	PCI/G
URANIUM-238	SC-14516-S	1.43	2.85	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of URANIUM-238 values is 2.37 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 11.06 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14801-S	0.93	0.62	PCI/G
Thorium-230	SC-14802-S	1.30	0.62	PCI/G
Thorium-230	SC-14805-S	1.08	0.62	PCI/G
Thorium-230	SC-14803-S	12.13	0.62	PCI/G
Thorium-230	SC-14806-S	1.23	0.62	PCI/G
Thorium-230	SC-14804-S	3.20	0.62	PCI/G
Thorium-230	SC-14809-S	1.13	0.62	PCI/G
Thorium-230	SC-14807-S	1.00	0.62	PCI/G
Thorium-230	SC-14810-S	1.02	0.62	PCI/G
Thorium-230	SC-14808-S	2.30	0.62	PCI/G
Thorium-230	SC-14813-S	1.11	0.62	PCI/G
Thorium-230	SC-14811-S	1.14	0.62	PCI/G
Thorium-230	SC-14814-S	0.96	0.62	PCI/G
Thorium-230	SC-14812-S	1.06	0.62	PCI/G
Thorium-230	SC-14815-S	0.97	0.62	PCI/G
Thorium-230	SC-14818-S	0.76	0.62	PCI/G
Thorium-230	SC-14816-S	1.08	0.62	PCI/G
Thorium-230	SC-14817-S	1.40	0.62	PCI/G
Thorium-230	SC-14819-S	1.38	0.62	PCI/G
Thorium-230	SC-14820-S	1.42	0.62	PCI/G
Thorium-230	SC-14901-S	1.66	0.62	PCI/G
Thorium-230	SC-14905-S	6.67	0.62	PCI/G
Thorium-230	SC-14909-S	2.99	0.62	PCI/G
Thorium-230	SC-14913-S	1.77	0.62	PCI/G
Thorium-230	SC-14917-S	15.10	0.62	PCI/G
Thorium-230	SC-14421-S	1.84	0.62	PCI/G
Thorium-230	SC-14422-S	11.07	0.62	PCI/G
Thorium-230	SC-14423-S	2.14	0.62	PCI/G
Thorium-230	SC-14424-S	2.34	0.62	PCI/G
Thorium-230	SC-14516-S	1.16	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of Thorium-230 values is 2.78 pCi/g, which is Above ALARA, 5.00 pCi/g.
Maximum single value is 15.10 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

CU148 DATA REPORT, CONTINUED - CU148a

RADIUM-226

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14801-S	1.75	0.29	PCI/G
RADIUM-226	SC-14802-S	2.13	0.25	PCI/G
RADIUM-226	SC-14805-S	1.18	0.23	PCI/G
RADIUM-226	SC-14803-S	2.11	0.22	PCI/G
RADIUM-226	SC-14806-S	1.66	0.33	PCI/G
RADIUM-226	SC-14804-S	1.66	0.40	PCI/G
RADIUM-226	SC-14809-S	1.32	0.26	PCI/G
RADIUM-226	SC-14807-S	1.57	0.33	PCI/G
RADIUM-226	SC-14810-S	1.41	0.13	PCI/G
RADIUM-226	SC-14808-S	1.54	0.41	PCI/G
RADIUM-226	SC-14813-S	1.25	0.25	PCI/G
RADIUM-226	SC-14811-S	1.95	0.21	PCI/G
RADIUM-226	SC-14814-S	1.32	0.31	PCI/G
RADIUM-226	SC-14812-S	1.57	0.36	PCI/G
RADIUM-226	SC-14815-S	1.63	0.24	PCI/G
RADIUM-226	SC-14818-S	1.38	0.29	PCI/G
RADIUM-226	SC-14816-S	1.50	0.24	PCI/G
RADIUM-226	SC-14817-S	1.43	0.27	PCI/G
RADIUM-226	SC-14819-S	1.34	0.24	PCI/G
RADIUM-226	SC-14820-S	1.38	0.23	PCI/G
RADIUM-226	SC-14901-S	2.29	0.34	PCI/G
RADIUM-226	SC-14905-S	2.09	0.29	PCI/G
RADIUM-226	SC-14909-S	1.48	0.27	PCI/G
RADIUM-226	SC-14913-S	1.36	0.32	PCI/G
RADIUM-226	SC-14917-S	2.13	0.53	PCI/G
RADIUM-226	SC-14421-S	1.82	0.40	PCI/G
RADIUM-226	SC-14422-S	4.34	0.34	PCI/G
RADIUM-226	SC-14423-S	2.16	0.26	PCI/G
RADIUM-226	SC-14424-S	2.22	0.25	PCI/G
RADIUM-226	SC-14516-S	2.61	0.29	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-226 values is 1.79 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 4.34 pCi/g, which is below subsurface criteria, 16.20 pCi/g

RADIUM-228

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14801-S	1.33	0.68	PCI/G
RADIUM-228	SC-14802-S	1.04	0.38	PCI/G
RADIUM-228	SC-14805-S	1.19	0.36	PCI/G
RADIUM-228	SC-14803-S	2.46	0.65	PCI/G
RADIUM-228	SC-14806-S	1.21	0.55	PCI/G
RADIUM-228	SC-14804-S	1.36	0.59	PCI/G
RADIUM-228	SC-14809-S	1.21	0.28	PCI/G
RADIUM-228	SC-14807-S	1.36	0.42	PCI/G
RADIUM-228	SC-14810-S	1.35	0.52	PCI/G
RADIUM-228	SC-14808-S	1.15	0.45	PCI/G
RADIUM-228	SC-14813-S	1.16	0.35	PCI/G
RADIUM-228	SC-14811-S	1.27	0.35	PCI/G
RADIUM-228	SC-14814-S	1.14	0.71	PCI/G
RADIUM-228	SC-14812-S	1.16	0.48	PCI/G
RADIUM-228	SC-14815-S	0.95	0.34	PCI/G
RADIUM-228	SC-14818-S	1.02	0.65	PCI/G
RADIUM-228	SC-14816-S	0.84	0.46	PCI/G
RADIUM-228	SC-14817-S	1.10	0.33	PCI/G
RADIUM-228	SC-14819-S	1.13	0.31	PCI/G
RADIUM-228	SC-14820-S	1.12	0.37	PCI/G
RADIUM-228	SC-14901-S	1.10	0.52	PCI/G
RADIUM-228	SC-14905-S	1.72	0.38	PCI/G
RADIUM-228	SC-14909-S	0.98	0.43	PCI/G
RADIUM-228	SC-14913-S	1.32	0.39	PCI/G
RADIUM-228	SC-14917-S	2.68	0.61	PCI/G
RADIUM-228	SC-14421-S	1.52	0.47	PCI/G
RADIUM-228	SC-14422-S	3.43	0.61	PCI/G
RADIUM-228	SC-14423-S	1.40	0.25	PCI/G
RADIUM-228	SC-14424-S	1.33	0.37	PCI/G
RADIUM-228	SC-14516-S	1.21	0.39	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-228 values is 1.38 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 3.43 pCi/g, which is below subsurface criteria, 16.20 pCi/g

CU148 DATA REPORT, CONTINUED - CU148a

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.41 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 3.52 pCi/g, which is below surface subsurface criteria of 16.2 pCi/g.

06/02/98

CU148 DATA REPORT - CU148b

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-14421-S	1.82	0.40	PCI/G
RADIUM-226	SC-14422-S	4.34	0.34	PCI/G
RADIUM-226	SC-14423-S	2.29	0.28	PCI/G
RADIUM-226	SG-14424-S	2.22	0.25	PCI/G
RADIUM-226	SC-14516-S	2.61	0.29	PCI/G
RADIUM-226	SC-14801-S-02	1.09	0.31	PCI/G
RADIUM-226	SC-14802-S	2.13	0.25	PCI/G
RADIUM-226	SC-14803-S	2.11	0.22	PCI/G
RADIUM-226	SC-14804-S	1.66	0.40	PCI/G
RADIUM-226	SC-14805-S-02	1.61	0.25	PCI/G
RADIUM-226	SC-14806-S-02	1.84	0.23	PCI/G
RADIUM-226	SC-14807-S-02	1.70	0.24	PCI/G
RADIUM-226	SC-14808-S	1.54	0.41	PCI/G
RADIUM-226	SC-14809-S-02	1.66	0.24	PCI/G
RADIUM-226	SC-14810-S-02	1.59	0.28	PCI/G
RADIUM-226	SC-14811-S-02	1.48	0.24	PCI/G
RADIUM-226	SC-14812-S-02	0.34	0.68	PCI/G
RADIUM-226	SC-14813-S-02	2.07	0.37	PCI/G
RADIUM-226	SC-14814-S-02	1.57	0.33	PCI/G
RADIUM-226	SC-14815-S-02	1.43	0.29	PCI/G
RADIUM-226	SC-14816-S-02	1.41	0.41	PCI/G
RADIUM-226	SC-14817-S-02	1.41	0.21	PCI/G
RADIUM-226	SC-14818-S-02	2.32	0.30	PCI/G
RADIUM-226	SC-14819-S-02	2.20	0.28	PCI/G
RADIUM-226	SC-14820-S-02	2.41	0.28	PCI/G
RADIUM-226	SC-14901-S	2.29	0.34	PCI/G
RADIUM-226	SC-14905-S	2.09	0.29	PCI/G
RADIUM-226	SC-14909-S	1.48	0.27	PCI/G
RADIUM-226	SC-14913-S	1.36	0.32	PCI/G
RADIUM-226	SC-14917-S	2.13	0.53	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-226 values is 1.87 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 4.34 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-14421-S	1.52	0.47	PCI/G
RADIUM-228	SC-14422-S	3.43	0.61	PCI/G
RADIUM-228	SC-14423-S	1.48	0.37	PCI/G
RADIUM-228	SC-14424-S	1.33	0.37	PCI/G
RADIUM-228	SC-14516-S	1.21	0.39	PCI/G
RADIUM-228	SC-14801-S-02	1.00	0.51	PCI/G
RADIUM-228	SC-14802-S	1.04	0.38	PCI/G
RADIUM-228	SC-14803-S	2.46	0.65	PCI/G
RADIUM-228	SC-14804-S	1.36	0.59	PCI/G
RADIUM-228	SC-14805-S-02	1.12	0.43	PCI/G
RADIUM-228	SC-14806-S-02	1.28	0.47	PCI/G
RADIUM-228	SC-14807-S-02	1.42	0.42	PCI/G
RADIUM-228	SC-14808-S	1.15	0.45	PCI/G
RADIUM-228	SC-14809-S-02	1.63	0.31	PCI/G
RADIUM-228	SC-14810-S-02	1.57	0.43	PCI/G
RADIUM-228	SC-14811-S-02	1.52	0.40	PCI/G
RADIUM-228	SC-14812-S-02	1.52	0.49	PCI/G
RADIUM-228	SC-14813-S-02	1.63	0.45	PCI/G
RADIUM-228	SC-14814-S-02	1.09	0.49	PCI/G
RADIUM-228	SC-14815-S-02	1.72	0.42	PCI/G
RADIUM-228	SC-14816-S-02	0.62	1.24	PCI/G
RADIUM-228	SC-14817-S-02	1.09	0.31	PCI/G
RADIUM-228	SC-14818-S-02	0.60	1.20	PCI/G
RADIUM-228	SC-14819-S-02	1.45	0.35	PCI/G
RADIUM-228	SC-14820-S-02	1.60	0.36	PCI/G
RADIUM-228	SC-14901-S	1.10	0.52	PCI/G
RADIUM-228	SC-14905-S	1.72	0.38	PCI/G
RADIUM-228	SC-14909-S	0.98	0.43	PCI/G
RADIUM-228	SC-14913-S	1.32	0.39	PCI/G
RADIUM-228	SC-14917-S	2.68	0.61	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-228 values is 1.45 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 3.43 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-14421-S	1.84	0.62	PCI/G
Thorium-230	SC-14422-S	11.07	0.62	PCI/G
Thorium-230	SC-14423-S	2.19	0.62	PCI/G
Thorium-230	SC-14424-S	2.34	0.62	PCI/G
Thorium-230	SC-14516-S	1.16	0.62	PCI/G
Thorium-230	SC-14801-S-02	1.26	0.62	PCI/G
Thorium-230	SC-14802-S	1.30	0.62	PCI/G
Thorium-230	SC-14803-S	12.13	0.62	PCI/G
Thorium-230	SC-14804-S	3.20	0.62	PCI/G
Thorium-230	SC-14805-S-02	0.91	0.62	PCI/G
Thorium-230	SC-14806-S-02	0.97	0.62	PCI/G
Thorium-230	SC-14807-S-02	1.18	0.62	PCI/G
Thorium-230	SC-14808-S	2.30	0.62	PCI/G
Thorium-230	SC-14809-S-02	1.09	0.62	PCI/G
Thorium-230	SC-14810-S-02	1.04	0.62	PCI/G
Thorium-230	SC-14811-S-02	1.05	0.62	PCI/G
Thorium-230	SC-14812-S-02	1.18	0.62	PCI/G
Thorium-230	SC-14813-S-02	1.29	0.62	PCI/G
Thorium-230	SC-14814-S-02	0.98	0.62	PCI/G
Thorium-230	SC-14815-S-02	1.01	0.62	PCI/G
Thorium-230	SC-14816-S-02	0.94	0.62	PCI/G
Thorium-230	SC-14817-S-02	1.09	0.62	PCI/G
Thorium-230	SC-14818-S-02	0.78	0.62	PCI/G
Thorium-230	SC-14819-S-02	1.16	0.62	PCI/G
Thorium-230	SC-14820-S-02	0.85	0.62	PCI/G
Thorium-230	SC-14901-S	1.66	0.62	PCI/G
Thorium-230	SC-14905-S	6.67	0.62	PCI/G
Thorium-230	SC-14909-S	2.99	0.62	PCI/G
Thorium-230	SC-14913-S	1.77	0.62	PCI/G
Thorium-230	SC-14917-S	15.10	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of Thorium-230 values is 2.75 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 15.10 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-14421-S	1.97	3.00	PCI/G
URANIUM-238	SC-14422-S	11.06	3.48	PCI/G
URANIUM-238	SC-14423-S	1.35	2.70	PCI/G
URANIUM-238	SC-14424-S	3.03	1.69	PCI/G
URANIUM-238	SC-14516-S	1.43	2.85	PCI/G
URANIUM-238	SC-14801-S-02	1.57	3.13	PCI/G
URANIUM-238	SC-14802-S	2.46	2.77	PCI/G
URANIUM-238	SC-14803-S	5.15	3.05	PCI/G
URANIUM-238	SC-14804-S	2.01	4.02	PCI/G
URANIUM-238	SC-14805-S-02	1.29	2.58	PCI/G
URANIUM-238	SC-14806-S-02	1.22	2.44	PCI/G
URANIUM-238	SC-14807-S-02	1.74	3.48	PCI/G
URANIUM-238	SC-14808-S	1.98	3.95	PCI/G
URANIUM-238	SC-14809-S-02	1.29	2.57	PCI/G
URANIUM-238	SC-14810-S-02	1.65	3.29	PCI/G
URANIUM-238	SC-14811-S-02	1.33	2.65	PCI/G
URANIUM-238	SC-14812-S-02	1.89	3.78	PCI/G
URANIUM-238	SC-14813-S-02	1.97	3.94	PCI/G
URANIUM-238	SC-14814-S-02	1.96	3.91	PCI/G
URANIUM-238	SC-14815-S-02	1.33	2.66	PCI/G
URANIUM-238	SC-14816-S-02	2.43	2.98	PCI/G
URANIUM-238	SC-14817-S-02	2.57	2.37	PCI/G
URANIUM-238	SC-14818-S-02	1.78	3.55	PCI/G
URANIUM-238	SC-14819-S-02	1.43	2.86	PCI/G
URANIUM-238	SC-14820-S-02	1.49	2.97	PCI/G
URANIUM-238	SC-14901-S	1.90	3.79	PCI/G
URANIUM-238	SC-14905-S	3.71	1.83	PCI/G
URANIUM-238	SC-14909-S	1.84	3.67	PCI/G
URANIUM-238	SC-14913-S	1.29	2.57	PCI/G
URANIUM-238	SC-14917-S	2.61	5.21	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of URANIUM-238 values is 2.29 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 11.06 pCi/g, which is below subsurface criteria 120.00 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.49 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 3.52 pCi/g, which is below subsurface criteria of 16.20 pCi/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WO-471 2. Date: 1/6/98 3. Review Form #: 98-006

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU149 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria? using subsurface criteria	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Melvin A Lutz Date 1/6/98

SECTION II *CU is released for unrestricted use.*

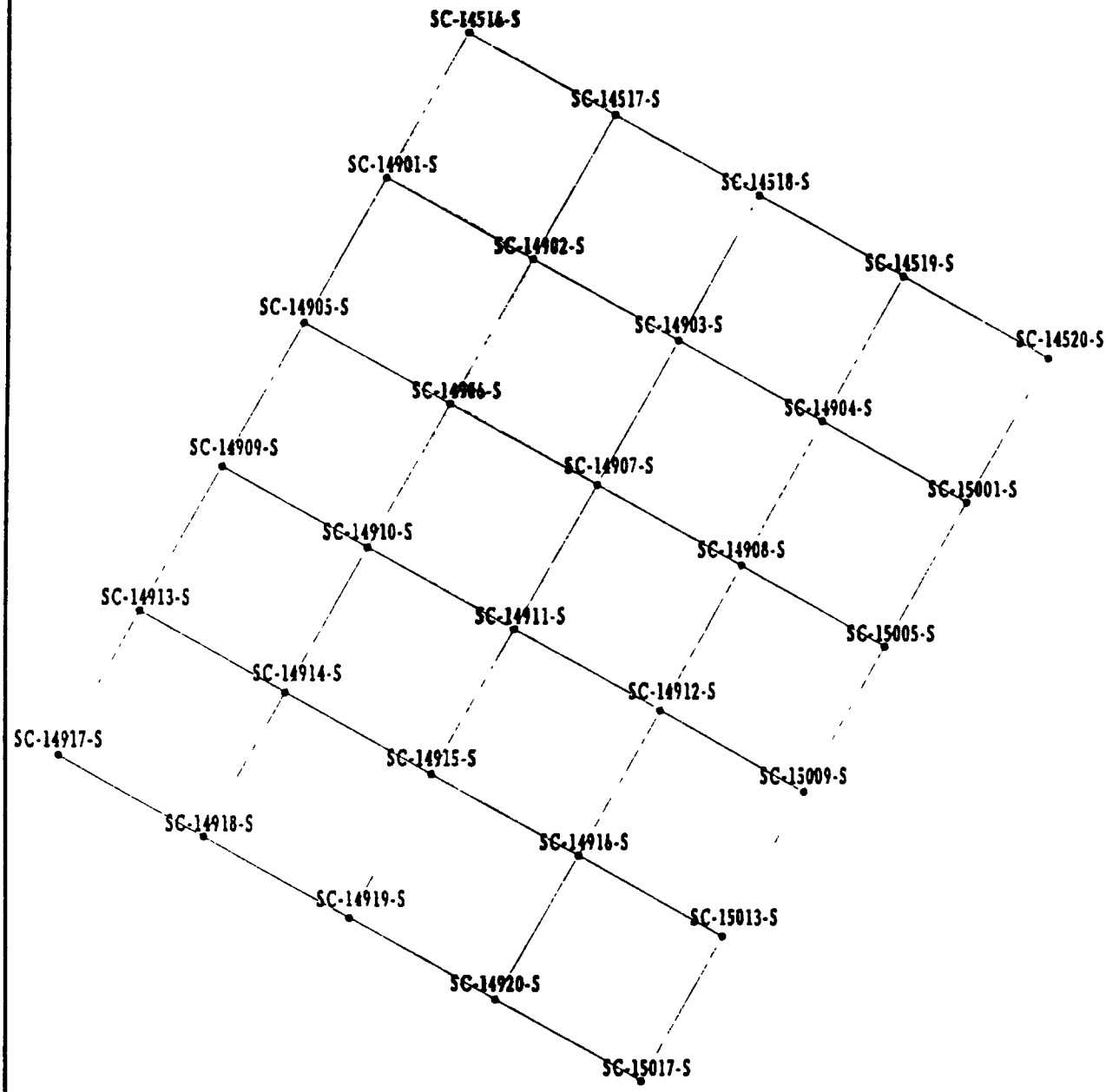
14. ES&H Manager: [signature] Date: 1/7/98

15. DOE Project Manager/Engineer: Thomas C. Pauling Date: 1/7/98

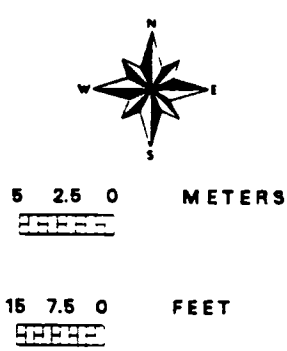
16. Project Manager: Sheryl Hodges Date: 1/8/98

17. Construction Engineer: [signature] Date: 1/7/98

SEE ATTACHED RESULTS AND MAP



Form #98-006



Sample Locations in Remedial Unit RU013
Confirmation Unit CU149

Figure B-7

EXHIBIT NO.: G/CP/278/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	

01/06/98

CU149 DATA REPORT

URANIUM-238

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-14901-S	1.90	3.79	PCI/G
URANIUM-238	SC-14902-S	1.77	3.55	PCI/G
URANIUM-238	SC-14905-S	3.71	1.83	PCI/G
URANIUM-238	SC-14903-S	1.32	2.64	PCI/G
URANIUM-238	SC-14906-S	1.28	2.56	PCI/G
URANIUM-238	SC-14904-S	1.80	3.61	PCI/G
URANIUM-238	SC-14909-S	1.83	3.67	PCI/G
URANIUM-238	SC-14907-S	1.84	3.68	PCI/G
URANIUM-238	SC-14910-S	1.64	3.28	PCI/G
URANIUM-238	SC-14908-S	1.63	2.34	PCI/G
URANIUM-238	SC-14913-S	1.28	2.57	PCI/G
URANIUM-238	SC-14911-S	1.32	2.64	PCI/G
URANIUM-238	SC-14914-S	1.30	2.60	PCI/G
URANIUM-238	SC-14915-S	1.85	3.70	PCI/G
URANIUM-238	SC-14912-S	1.86	3.72	PCI/G
URANIUM-238	SC-14917-S	2.60	5.21	PCI/G
URANIUM-238	SC-14918-S	1.85	3.71	PCI/G
URANIUM-238	SC-14916-S	1.25	2.51	PCI/G
URANIUM-238	SC-14919-S	1.27	2.54	PCI/G
URANIUM-238	SC-14920-S	1.86	3.72	PCI/G
URANIUM-238	SC-15001-S	1.40	2.79	PCI/G
URANIUM-238	SC-15005-S	1.84	3.68	PCI/G
URANIUM-238	SC-15009-S	1.35	2.71	PCI/G
URANIUM-238	SC-15013-S	1.71	3.42	PCI/G
URANIUM-238	SC-15017-S	1.34	2.68	PCI/G
URANIUM-238	SC-14516-S	1.43	2.85	PCI/G
URANIUM-238	SC-14517-S	1.86	3.72	PCI/G
URANIUM-238	SC-14518-S	1.28	2.55	PCI/G
URANIUM-238	SC-14519-S	1.32	2.63	PCI/G
URANIUM-238	SC-14520-S	1.08	2.15	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of URANIUM-238 values is 1.66 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 3.71 pCi/g, which is below criteria, 120.00 pCi/g.

CU149 DATA REPORT, CONTINUED

THORIUM-230

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-14901-S	1.66	0.62	PCI/G
Thorium-230	SC-14902-S	1.16	0.62	PCI/G
Thorium-230	SC-14905-S	6.67	0.62	PCI/G
Thorium-230	SC-14903-S	1.26	0.62	PCI/G
Thorium-230	SC-14906-S	1.38	0.62	PCI/G
Thorium-230	SC-14904-S	1.46	0.62	PCI/G
Thorium-230	SC-14909-S	2.99	0.62	PCI/G
Thorium-230	SC-14907-S	1.46	0.62	PCI/G
Thorium-230	SC-14910-S	1.30	0.62	PCI/G
Thorium-230	SC-14908-S	2.31	0.62	PCI/G
Thorium-230	SC-14913-S	1.77	0.62	PCI/G
Thorium-230	SC-14914-S	1.14	0.62	PCI/G
Thorium-230	SC-14915-S	0.91	0.62	PCI/G
Thorium-230	SC-14911-S	1.10	0.62	PCI/G
Thorium-230	SC-14912-S	1.27	0.62	PCI/G
Thorium-230	SC-14917-S	15.10	0.62	PCI/G
Thorium-230	SC-14918-S	1.51	0.62	PCI/G
Thorium-230	SC-14916-S	1.20	0.62	PCI/G
Thorium-230	SC-14919-S	0.99	0.62	PCI/G
Thorium-230	SC-14920-S	1.33	0.62	PCI/G
Thorium-230	SC-15001-S	1.20	0.62	PCI/G
Thorium-230	SC-15005-S	2.57	0.62	PCI/G
Thorium-230	SC-15009-S	1.74	0.62	PCI/G
Thorium-230	SC-15013-S	1.22	0.62	PCI/G
Thorium-230	SC-15017-S	2.93	0.62	PCI/G
Thorium-230	SC-14516-S	1.16	0.62	PCI/G
Thorium-230	SC-14517-S	2.99	0.62	PCI/G
Thorium-230	SC-14518-S	1.09	0.62	PCI/G
Thorium-230	SC-14519-S	1.31	0.62	PCI/G
Thorium-230	SC-14520-S	1.28	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of Thorium-230 values is 2.19 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 15.10 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.34 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 2.75 pCi/g, which is below subsurface criteria of 16.2 pCi/g.

CU149 DATA REPORT, CONTINUED

RADIUM-226

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-14901-S	2.29	0.34	PCI/G
RADIUM-226	SC-14902-S	2.13	0.37	PCI/G
RADIUM-226	SC-14905-S	2.09	0.29	PCI/G
RADIUM-226	SC-14903-S	1.91	0.30	PCI/G
RADIUM-226	SC-14906-S	2.13	0.20	PCI/G
RADIUM-226	SC-14904-S	0.84	0.74	PCI/G
RADIUM-226	SC-14909-S	1.48	0.27	PCI/G
RADIUM-226	SC-14907-S	2.22	0.30	PCI/G
RADIUM-226	SC-14910-S	1.09	0.20	PCI/G
RADIUM-226	SC-14908-S	2.20	0.27	PCI/G
RADIUM-226	SC-14913-S	1.36	0.32	PCI/G
RADIUM-226	SC-14911-S	2.02	0.24	PCI/G
RADIUM-226	SC-14914-S	1.57	0.22	PCI/G
RADIUM-226	SC-14915-S	1.48	0.41	PCI/G
RADIUM-226	SC-14912-S	2.45	0.30	PCI/G
RADIUM-226	SC-14917-S	2.13	0.53	PCI/G
RADIUM-226	SC-14918-S	0.75	0.66	PCI/G
RADIUM-226	SC-14916-S	1.52	0.24	PCI/G
RADIUM-226	SC-14919-S	1.50	0.27	PCI/G
RADIUM-226	SC-14920-S	1.57	0.20	PCI/G
RADIUM-226	SC-15001-S	2.47	0.24	PCI/G
RADIUM-226	SC-15005-S	2.32	0.36	PCI/G
RADIUM-226	SC-15009-S	1.79	0.23	PCI/G
RADIUM-226	SC-15013-S	1.16	0.35	PCI/G
RADIUM-226	SC-15017-S	1.97	0.28	PCI/G
RADIUM-226	SC-14516-S	2.61	0.29	PCI/G
RADIUM-226	SC-14517-S	2.09	0.32	PCI/G
RADIUM-226	SC-14518-S	1.95	0.24	PCI/G
RADIUM-226	SC-14519-S	1.32	0.30	PCI/G
RADIUM-226	SC-14520-S	2.34	0.23	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-226 values is 1.83 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.61 pCi/g, which is below subsurface criteria, 16.20 pCi/g

01/06/98

CU149 DATA REPORT, CONTINUED

RADIUM-228

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-14901-S	1.10	0.52	PCI/G
RADIUM-228	SC-14902-S	1.61	0.46	PCI/G
RADIUM-228	SC-14905-S	1.72	0.38	PCI/G
RADIUM-228	SC-14903-S	1.04	0.42	PCI/G
RADIUM-228	SC-14906-S	1.23	0.30	PCI/G
RADIUM-228	SC-14904-S	1.25	0.44	PCI/G
RADIUM-228	SC-14909-S	0.98	0.43	PCI/G
RADIUM-228	SC-14907-S	1.28	0.41	PCI/G
RADIUM-228	SC-14910-S	0.57	1.15	PCI/G
RADIUM-228	SC-14908-S	1.32	0.42	PCI/G
RADIUM-228	SC-14913-S	1.32	0.39	PCI/G
RADIUM-228	SC-14911-S	1.22	0.32	PCI/G
RADIUM-228	SC-14914-S	1.08	0.40	PCI/G
RADIUM-228	SC-14915-S	1.27	0.57	PCI/G
RADIUM-228	SC-14912-S	1.40	0.60	PCI/G
RADIUM-228	SC-14917-S	2.68	0.61	PCI/G
RADIUM-228	SC-14918-S	1.73	0.40	PCI/G
RADIUM-228	SC-14916-S	0.94	0.48	PCI/G
RADIUM-228	SC-14919-S	1.11	0.38	PCI/G
RADIUM-228	SC-14920-S	1.51	0.48	PCI/G
RADIUM-228	SC-15001-S	1.24	0.43	PCI/G
RADIUM-228	SC-15005-S	1.36	0.51	PCI/G
RADIUM-228	SC-15009-S	1.28	0.35	PCI/G
RADIUM-228	SC-15013-S	1.08	0.61	PCI/G
RADIUM-228	SC-15017-S	1.56	0.38	PCI/G
RADIUM-228	SC-14516-S	1.21	0.39	PCI/G
RADIUM-228	SC-14517-S	1.27	0.45	PCI/G
RADIUM-228	SC-14518-S	1.13	0.45	PCI/G
RADIUM-228	SC-14519-S	1.31	0.37	PCI/G
RADIUM-228	SC-14520-S	1.29	0.44	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-228 values is 1.31pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.68 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 3.9.98 3. Review Form #: 98-010

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU150 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes	___ No
8. All results below cleanup criteria?	X Yes	___ No
9. Any results greater than 3X criteria?	___ Yes	X No
10. Hot spots present (less than 3X criteria)?	___ Yes	X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Melissa H. Lietz Date 3/9/98

SECTION II *CU is released for unrestricted use.*

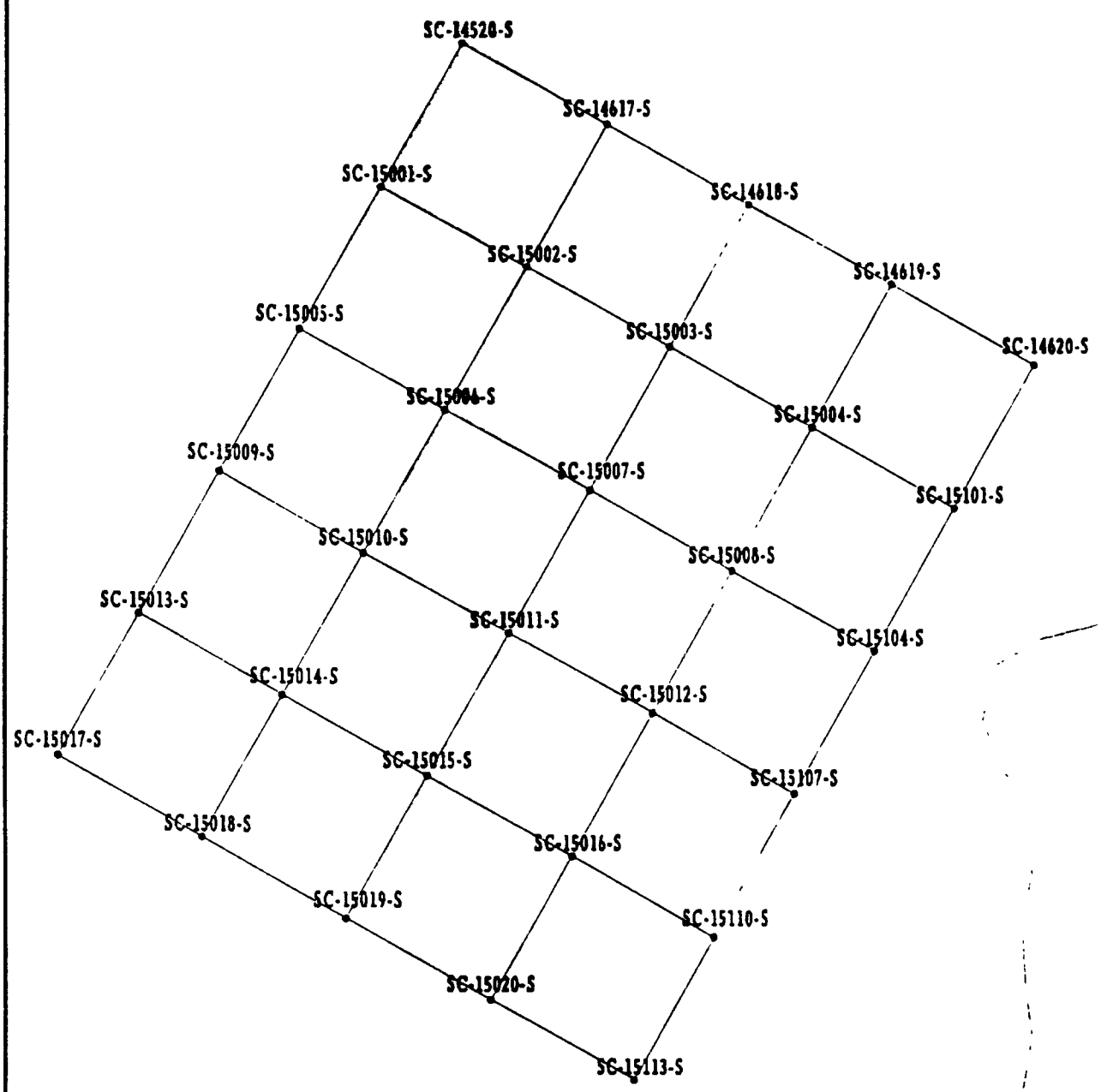
14. ES&H Manager: [signature] Date: 3/9/98

15. DOE Project Manager/Engineer: Thomas C. Parling Date: 3/9/98

16. Project Manager: Sheryl Hodges Date: 3/9/98

17. Construction Engineer: [signature] Date: 3/10/98

SEE ATTACHED RESULTS AND MAP



Form #98-010

5 2.5 0 METERS

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013 Confirmation Unit CU150

Figure B-8

EXHIBIT NO.: G/CP/279/0897		REPORT NO: DOE/OR/21548-692	
DESIGNATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	

03/09/98

CU150 DATA REPORT

URANIUM-238

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-15001-S	1.40	2.79	PCI/G
URANIUM-238	SC-15002-S	1.29	2.58	PCI/G
URANIUM-238	SC-15005-S	1.84	3.68	PCI/G
URANIUM-238	SC-15003-S	1.75	3.49	PCI/G
URANIUM-238	SC-15006-S	1.19	2.37	PCI/G
URANIUM-238	SC-15004-S	1.72	3.43	PCI/G
URANIUM-238	SC-15009-S	1.35	2.71	PCI/G
URANIUM-238	SC-15007-S	1.85	3.70	PCI/G
URANIUM-238	SC-15010-S	1.90	2.17	PCI/G
URANIUM-238	SC-15008-S	1.30	2.61	PCI/G
URANIUM-238	SC-15013-S	1.71	3.42	PCI/G
URANIUM-238	SC-15011-S	1.23	2.46	PCI/G
URANIUM-238	SC-15014-S	1.26	2.53	PCI/G
URANIUM-238	SC-15012-S	1.60	3.20	PCI/G
URANIUM-238	SC-15017-S	1.34	2.68	PCI/G
URANIUM-238	SC-15015-S	1.66	3.31	PCI/G
URANIUM-238	SC-15018-S	1.23	2.45	PCI/G
URANIUM-238	SC-15016-S	1.29	2.59	PCI/G
URANIUM-238	SC-15019-S	1.30	2.61	PCI/G
URANIUM-238	SC-15020-S	2.29	2.68	PCI/G
URANIUM-238	SC-14520-S	1.78	2.15	PCI/G
URANIUM-238	SC-14617-S	1.85	3.71	PCI/G
URANIUM-238	SC-14618-S	1.77	3.54	PCI/G
URANIUM-238	SC-14619-S	1.26	2.53	PCI/G
URANIUM-238	SC-14620-S	1.70	3.40	PCI/G
URANIUM-238	SC-15101-S	1.33	2.66	PCI/G
URANIUM-238	SC-15104-S	1.99	3.98	PCI/G
URANIUM-238	SC-15107-S	2.17	4.33	PCI/G
URANIUM-238	SC-15110-S	1.66	3.31	PCI/G
URANIUM-238	SC-15113-S	1.42	2.84	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of URANIUM-238 values is 1.58 pCi/g, which is below ALARA, 30.00 pCi/g
Maximum single value is 2.29pCi/g, which is below subsurface criteria, 120.00 pCi/g

CU150 DATA REPORT, Continued

THORIUM-230

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-15001-S	1.20	0.62	PCI/G
Thorium-230	SC-15002-S	1.17	0.62	PCI/G
Thorium-230	SC-15005-S	2.57	0.62	PCI/G
Thorium-230	SC-15003-S	1.14	0.62	PCI/G
Thorium-230	SC-15006-S	1.05	0.62	PCI/G
Thorium-230	SC-15004-S	0.87	0.62	PCI/G
Thorium-230	SC-15009-S	1.74	0.62	PCI/G
Thorium-230	SC-15007-S	0.91	0.62	PCI/G
Thorium-230	SC-15010-S	1.25	0.62	PCI/G
Thorium-230	SC-15008-S	1.07	0.62	PCI/G
Thorium-230	SC-15013-S	1.22	0.62	PCI/G
Thorium-230	SC-15011-S	1.01	0.62	PCI/G
Thorium-230	SC-15014-S	0.93	0.62	PCI/G
Thorium-230	SC-15012-S	0.91	0.62	PCI/G
Thorium-230	SC-15017-S	2.93	0.62	PCI/G
Thorium-230	SC-15015-S	1.11	0.62	PCI/G
Thorium-230	SC-15018-S	1.12	0.62	PCI/G
Thorium-230	SC-15016-S	1.80	0.62	PCI/G
Thorium-230	SC-15019-S	1.59	0.62	PCI/G
Thorium-230	SC-15020-S	3.00	0.62	PCI/G
Thorium-230	SC-14520-S	1.28	0.62	PCI/G
Thorium-230	SC-14617-S	2.75	0.62	PCI/G
Thorium-230	SC-14618-S	1.81	0.62	PCI/G
Thorium-230	SC-14619-S	1.26	0.62	PCI/G
Thorium-230	SC-14620-S	1.12	0.62	PCI/G
Thorium-230	SC-15101-S	0.91	0.62	PCI/G
Thorium-230	SC-15104-S	2.00	0.62	PCI/G
Thorium-230	SC-15107-S	6.31	0.62	PCI/G
Thorium-230	SC-15110-S	0.90	0.62	PCI/G
Thorium-230	SC-15113-S	1.78	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of Thorium-230 values is 1.62 pCi/g, which is Below ALARA, 5.00 pCi/g
Maximum single value is 6.31pCi/g, which is below subsurface criteria, 16.20 pCi/g

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.32 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 6.47 pCi/g, which is below subsurface criteria of 16.2 pCi/g.

03/09/98

CU150 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-15001-S	2.47	0.24	PCI/G
RADIUM-226	SC-15002-S	2.04	0.17	PCI/G
RADIUM-226	SC-15005-S	2.32	0.36	PCI/G
RADIUM-226	SC-15003-S	1.41	0.27	PCI/G
RADIUM-226	SC-15006-S	1.45	0.23	PCI/G
RADIUM-226	SC-15004-S	0.68	0.60	PCI/G
RADIUM-226	SC-15009-S	1.79	0.23	PCI/G
RADIUM-226	SC-15007-S	0.76	0.67	PCI/G
RADIUM-226	SC-15010-S	1.61	0.27	PCI/G
RADIUM-226	SC-15008-S	1.70	0.21	PCI/G
RADIUM-226	SC-15013-S	1.16	0.35	PCI/G
RADIUM-226	SC-15011-S	1.34	0.23	PCI/G
RADIUM-226	SC-15014-S	1.04	0.24	PCI/G
RADIUM-226	SC-15012-S	0.68	0.60	PCI/G
RADIUM-226	SC-15017-S	1.97	0.28	PCI/G
RADIUM-226	SC-15015-S	0.72	0.63	PCI/G
RADIUM-226	SC-15018-S	1.54	0.22	PCI/G
RADIUM-226	SC-15016-S	1.36	0.26	PCI/G
RADIUM-226	SC-15019-S	1.25	0.23	PCI/G
RADIUM-226	SC-15020-S	1.61	0.34	PCI/G
RADIUM-226	SC-14520-S	2.34	0.23	PCI/G
RADIUM-226	SC-14617-S	1.86	0.32	PCI/G
RADIUM-226	SC-14618-S	1.45	0.30	PCI/G
RADIUM-226	SC-14619-S	1.29	0.22	PCI/G
RADIUM-226	SC-14620-S	0.68	0.60	PCI/G
RADIUM-226	SC-15101-S	1.77	0.18	PCI/G
RADIUM-226	SC-15104-S	1.79	0.27	PCI/G
RADIUM-226	SC-15107-S	2.18	0.34	PCI/G
RADIUM-226	SC-15110-S	0.65	0.57	PCI/G
RADIUM-226	SC-15113-S	1.57	0.30	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-226 values is 1.48 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.47 pCi/g, which is below subsurface criteria, 16.20 pCi/g

03/09/98

CU150 DATA REPORT

RADIUM-228

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-15001-S	1.24	0.43	PCI/G
RADIUM-228	SC-15002-S	1.36	0.28	PCI/G
RADIUM-228	SC-15005-S	1.36	0.51	PCI/G
RADIUM-228	SC-15003-S	1.16	0.33	PCI/G
RADIUM-228	SC-15006-S	1.34	0.33	PCI/G
RADIUM-228	SC-15004-S	1.41	0.43	PCI/G
RADIUM-228	SC-15009-S	1.28	0.35	PCI/G
RADIUM-228	SC-15007-S	1.18	0.36	PCI/G
RADIUM-228	SC-15010-S	1.45	0.33	PCI/G
RADIUM-228	SC-15008-S	0.85	0.39	PCI/G
RADIUM-228	SC-15013-S	1.08	0.61	PCI/G
RADIUM-228	SC-15011-S	1.21	0.35	PCI/G
RADIUM-228	SC-15014-S	1.20	0.32	PCI/G
RADIUM-228	SC-15012-S	1.09	0.51	PCI/G
RADIUM-228	SC-15017-S	1.56	0.38	PCI/G
RADIUM-228	SC-15015-S	1.43	0.53	PCI/G
RADIUM-228	SC-15018-S	1.22	0.38	PCI/G
RADIUM-228	SC-15016-S	1.17	0.35	PCI/G
RADIUM-228	SC-15019-S	0.98	0.32	PCI/G
RADIUM-228	SC-15020-S	1.46	0.42	PCI/G
RADIUM-228	SC-14520-S	1.29	0.44	PCI/G
RADIUM-228	SC-14617-S	1.62	0.28	PCI/G
RADIUM-228	SC-14618-S	1.63	0.27	PCI/G
RADIUM-228	SC-14619-S	1.08	0.32	PCI/G
RADIUM-228	SC-14620-S	1.00	0.39	PCI/G
RADIUM-228	SC-15101-S	1.33	0.37	PCI/G
RADIUM-228	SC-15104-S	1.66	0.58	PCI/G
RADIUM-228	SC-15107-S	1.48	0.24	PCI/G
RADIUM-228	SC-15110-S	0.56	1.11	PCI/G
RADIUM-228	SC-15113-S	2.01	0.46	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 30
Average of RADIUM-228 values is 1.29 pCi/g, which is below ALARA, 5.00 pCi/g
Maximum single value is 2.01 pCi/g, which is below subsurface criteria, 16.20 pCi/g

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 7.22.98 3. Review Form #: 98-032

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU151 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria? subsurface criteria	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments This release includes the original confirmation event (results included on the CU151a results form - attached) & the second confirmation event (results included on the CU151b results form - attached) after additional was excavated to reach final grade. (Continued

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 7/22/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: [signature] Date: 7/23/98

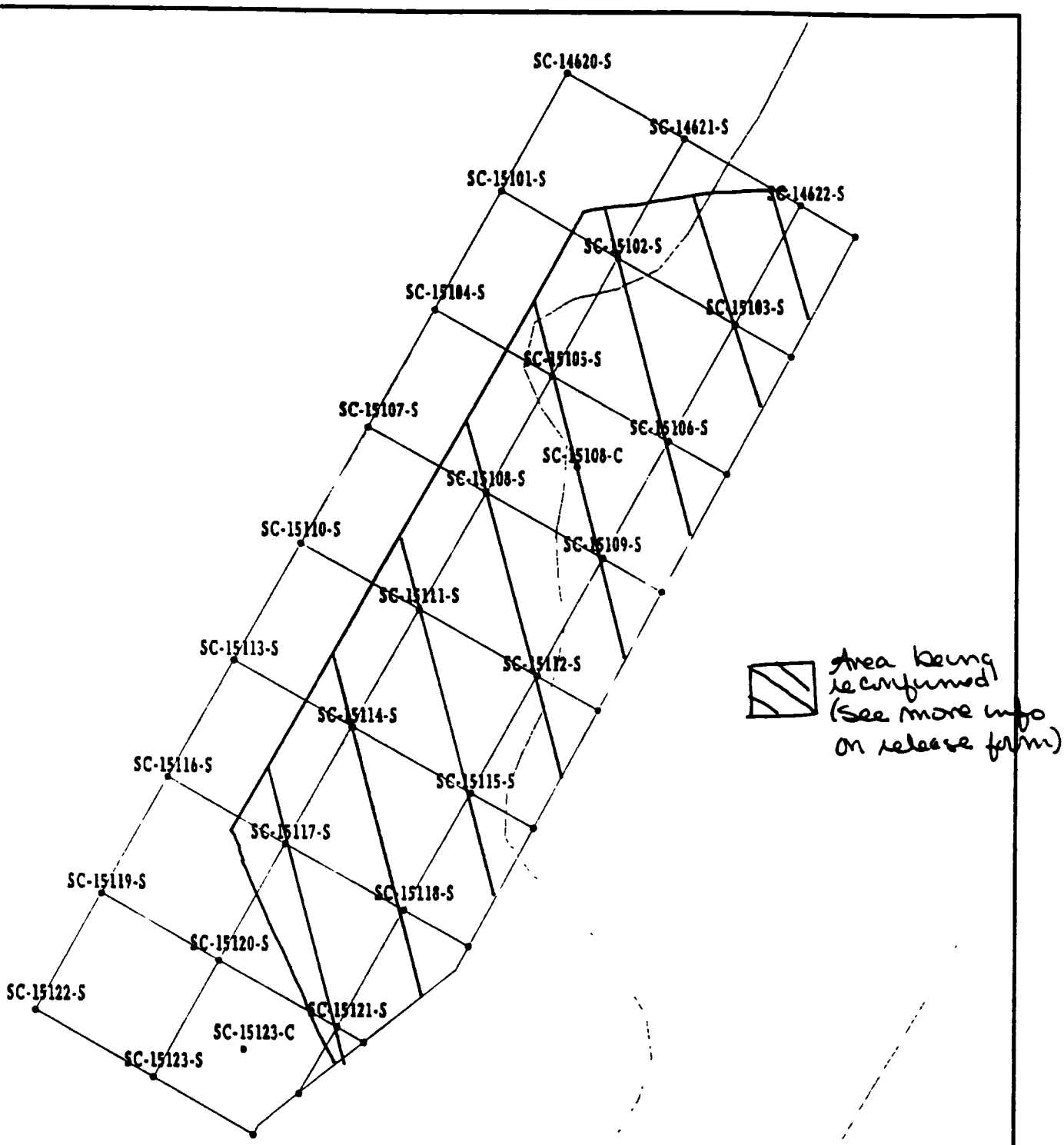
15. DOE Project Manager/Engineer: [signature] Date: 7/23/98

16. Project Manager: Glen Schmidt for SH Date: 7-24-98

17. Construction Engineer: [signature] Date: 7.23.98

SEE ATTACHED RESULTS AND MAP

Area which was excavated to reach final grade - all result were less than Surface ALARA.



Form #98-

5 2.5 0 METERS

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013
Confirmation Unit CU151

Figure B-9

EXHIBIT NO.: G/CP/280/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	

07/22/98

CU151a DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
RADIUM-226	SC-14620-S	0.68	0.60	PCI/G
RADIUM-226	SC-14621-S	0.98	0.25	PCI/G
RADIUM-226	SC-14622-S	1.54	0.24	PCI/G
RADIUM-226	SC-15101-S	1.77	0.18	PCI/G
RADIUM-226	SC-15102-S	1.50	0.28	PCI/G
RADIUM-226	SC-15103-S	1.68	0.24	PCI/G
RADIUM-226	SC-15104-S	1.79	0.27	PCI/G
RADIUM-226	SC-15105-S	1.27	0.29	PCI/G
RADIUM-226	SC-15106-S	1.70	0.22	PCI/G
RADIUM-226	SC-15107-S	2.18	0.34	PCI/G
RADIUM-226	SC-15108-C	1.68	0.31	PCI/G
RADIUM-226	SC-15108-S	1.68	0.20	PCI/G
RADIUM-226	SC-15109-S	1.36	0.21	PCI/G
RADIUM-226	SC-15110-S	0.65	0.57	PCI/G
RADIUM-226	SC-15111-S	0.68	0.60	PCI/G
RADIUM-226	SC-15112-S	1.11	0.27	PCI/G
RADIUM-226	SC-15113-S	1.57	0.30	PCI/G
RADIUM-226	SC-15114-S	1.66	0.33	PCI/G
RADIUM-226	SC-15115-S	2.11	0.30	PCI/G
RADIUM-226	SC-15116-S	1.07	0.27	PCI/G
RADIUM-226	SC-15117-S	1.11	0.34	PCI/G
RADIUM-226	SC-15118-S	1.66	0.29	PCI/G
RADIUM-226	SC-15119-S	1.43	0.26	PCI/G
RADIUM-226	SC-15120-S	1.66	0.33	PCI/G
RADIUM-226	SC-15121-S	1.59	0.29	PCI/G
RADIUM-226	SC-15122-S	0.69	0.61	PCI/G
RADIUM-226	SC-15123-C	1.50	0.27	PCI/G
RADIUM-226	SC-15123-S	1.20	0.26	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of RADIUM-226 values is 1.41 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.18 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
RADIUM-228	SC-14620-S	1.00	0.39	PCI/G
RADIUM-228	SC-14621-S	1.02	0.26	PCI/G
RADIUM-228	SC-14622-S	1.29	0.52	PCI/G
RADIUM-228	SC-15101-S	1.33	0.37	PCI/G
RADIUM-228	SC-15102-S	1.36	0.35	PCI/G
RADIUM-228	SC-15103-S	1.06	0.58	PCI/G
RADIUM-228	SC-15104-S	1.66	0.58	PCI/G
RADIUM-228	SC-15105-S	1.24	0.41	PCI/G
RADIUM-228	SC-15106-S	1.32	0.36	PCI/G
RADIUM-228	SC-15107-S	1.48	0.24	PCI/G
RADIUM-228	SC-15108-C	1.29	0.37	PCI/G
RADIUM-228	SC-15108-S	1.50	0.25	PCI/G
RADIUM-228	SC-15109-S	1.18	0.37	PCI/G
RADIUM-228	SC-15110-S	0.56	1.11	PCI/G
RADIUM-228	SC-15111-S	1.60	0.40	PCI/G
RADIUM-228	SC-15112-S	1.25	0.37	PCI/G
RADIUM-228	SC-15113-S	2.01	0.46	PCI/G
RADIUM-228	SC-15114-S	1.05	0.50	PCI/G
RADIUM-228	SC-15115-S	1.74	0.26	PCI/G
RADIUM-228	SC-15116-S	1.25	0.45	PCI/G
RADIUM-228	SC-15117-S	0.53	1.06	PCI/G
RADIUM-228	SC-15118-S	1.37	0.36	PCI/G
RADIUM-228	SC-15119-S	1.04	0.45	PCI/G
RADIUM-228	SC-15120-S	1.22	0.65	PCI/G
RADIUM-228	SC-15121-S	1.27	0.39	PCI/G
RADIUM-228	SC-15122-S	0.50	1.00	PCI/G
RADIUM-228	SC-15123-C	1.35	0.25	PCI/G
RADIUM-228	SC-15123-S	1.16	0.45	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of RADIUM-228 values is 1.24 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.01 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
Thorium-230	SC-14620-S	1.12	0.62	PCI/G
Thorium-230	SC-14621-S	2.51	0.62	PCI/G
Thorium-230	SC-14622-S	0.85	0.62	PCI/G
Thorium-230	SC-15101-S	0.91	0.62	PCI/G
Thorium-230	SC-15102-S	1.54	0.62	PCI/G
Thorium-230	SC-15103-S	0.92	0.62	PCI/G
Thorium-230	SC-15104-S	2.00	0.62	PCI/G
Thorium-230	SC-15105-S	1.83	0.62	PCI/G
Thorium-230	SC-15106-S	1.79	0.62	PCI/G
Thorium-230	SC-15107-S	6.31	0.62	PCI/G
Thorium-230	SC-15108-C	1.60	0.62	PCI/G
Thorium-230	SC-15108-S	2.38	0.62	PCI/G
Thorium-230	SC-15109-S	2.00	0.62	PCI/G
Thorium-230	SC-15110-S	0.90	0.62	PCI/G
Thorium-230	SC-15111-S	1.88	0.62	PCI/G
Thorium-230	SC-15112-S	1.16	0.62	PCI/G
Thorium-230	SC-15113-S	1.78	0.62	PCI/G
Thorium-230	SC-15114-S	0.95	0.62	PCI/G
Thorium-230	SC-15115-S	5.74	0.62	PCI/G
Thorium-230	SC-15116-S	1.15	0.62	PCI/G
Thorium-230	SC-15117-S	1.31	0.62	PCI/G
Thorium-230	SC-15118-S	1.21	0.62	PCI/G
Thorium-230	SC-15119-S	1.31	0.62	PCI/G
Thorium-230	SC-15120-S	1.69	0.62	PCI/G
Thorium-230	SC-15121-S	2.19	0.62	PCI/G
Thorium-230	SC-15122-S	0.94	0.62	PCI/G
Thorium-230	SC-15123-C	1.72	0.62	PCI/G
Thorium-230	SC-15123-S	2.21	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of Thorium-230 values is 1.85 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 6.31 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.27 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.06 pCi/g, which is below subsurface criteria of 16.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
URANIUM-238	SC-14620-S	1.70	3.40	PCI/G
URANIUM-238	SC-14621-S	1.21	2.41	PCI/G
URANIUM-238	SC-14622-S	1.78	3.55	PCI/G
URANIUM-238	SC-15101-S	1.33	2.66	PCI/G
URANIUM-238	SC-15102-S	1.28	2.55	PCI/G
URANIUM-238	SC-15103-S	1.73	3.45	PCI/G
URANIUM-238	SC-15104-S	1.99	3.98	PCI/G
URANIUM-238	SC-15105-S	1.33	2.65	PCI/G
URANIUM-238	SC-15106-S	1.26	2.52	PCI/G
URANIUM-238	SC-15107-S	2.17	4.33	PCI/G
URANIUM-238	SC-15108-C	1.81	3.61	PCI/G
URANIUM-238	SC-15108-S	1.38	2.76	PCI/G
URANIUM-238	SC-15109-S	1.27	2.54	PCI/G
URANIUM-238	SC-15110-S	1.66	3.31	PCI/G
URANIUM-238	SC-15111-S	2.01	4.01	PCI/G
URANIUM-238	SC-15112-S	1.32	2.63	PCI/G
URANIUM-238	SC-15113-S	1.42	2.84	PCI/G
URANIUM-238	SC-15114-S	1.85	3.70	PCI/G
URANIUM-238	SC-15115-S	1.54	3.07	PCI/G
URANIUM-238	SC-15116-S	1.89	3.78	PCI/G
URANIUM-238	SC-15117-S	1.68	3.36	PCI/G
URANIUM-238	SC-15118-S	1.21	2.41	PCI/G
URANIUM-238	SC-15119-S	1.31	2.62	PCI/G
URANIUM-238	SC-15120-S	1.86	3.72	PCI/G
URANIUM-238	SC-15121-S	1.35	2.70	PCI/G
URANIUM-238	SC-15122-S	1.80	3.60	PCI/G
URANIUM-238	SC-15123-C	2.01	4.01	PCI/G
URANIUM-238	SC-15123-S	1.42	2.84	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of URANIUM-238 values is 1.59 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 2.17 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

07/22/98

CU151b DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
RADIUM-226	SC-14620-S	0.68	0.60	PCI/G
RADIUM-226	SC-14621-S	0.98	0.25	PCI/G
RADIUM-226	SC-14622-S-02	2.07	0.29	PCI/G
RADIUM-226	SC-15101-S	1.77	0.18	PCI/G
RADIUM-226	SC-15102-S-02	1.57	0.25	PCI/G
RADIUM-226	SC-15103-S-02	0.81	0.71	PCI/G
RADIUM-226	SC-15104-S	1.79	0.27	PCI/G
RADIUM-226	SC-15105-S-02	1.23	0.24	PCI/G
RADIUM-226	SC-15106-S-02	1.50	0.37	PCI/G
RADIUM-226	SC-15107-S	2.18	0.34	PCI/G
RADIUM-226	SC-15108-C-02	1.38	0.24	PCI/G
RADIUM-226	SC-15108-S-02	1.23	0.24	PCI/G
RADIUM-226	SC-15109-S-02	1.57	0.23	PCI/G
RADIUM-226	SC-15110-S	0.65	0.57	PCI/G
RADIUM-226	SC-15111-S-02	1.20	0.33	PCI/G
RADIUM-226	SC-15112-S-02	2.04	0.22	PCI/G
RADIUM-226	SC-15113-S	1.57	0.30	PCI/G
RADIUM-226	SC-15114-S-02	1.38	0.23	PCI/G
RADIUM-226	SC-15115-S-02	1.86	0.26	PCI/G
RADIUM-226	SC-15116-S	1.07	0.27	PCI/G
RADIUM-226	SC-15117-S-02	0.67	0.59	PCI/G
RADIUM-226	SC-15118-S-02	1.43	0.21	PCI/G
RADIUM-226	SC-15119-S	1.43	0.26	PCI/G
RADIUM-226	SC-15120-S	1.66	0.33	PCI/G
RADIUM-226	SC-15121-S-02	1.66	0.36	PCI/G
RADIUM-226	SC-15122-S	0.69	0.61	PCI/G
RADIUM-226	SC-15123-C	1.50	0.27	PCI/G
RADIUM-226	SC-15123-S	1.20	0.26	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of RADIUM-226 values is 1.38 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.18 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
RADIUM-228	SC-14620-S	1.00	0.39	PCI/G
RADIUM-228	SC-14621-S	1.02	0.26	PCI/G
RADIUM-228	SC-14622-S-02	1.30	0.40	PCI/G
RADIUM-228	SC-15101-S	1.33	0.37	PCI/G
RADIUM-228	SC-15102-S-02	1.31	0.30	PCI/G
RADIUM-228	SC-15103-S-02	1.30	0.51	PCI/G
RADIUM-228	SC-15104-S	1.66	0.58	PCI/G
RADIUM-228	SC-15105-S-02	0.91	0.42	PCI/G
RADIUM-228	SC-15106-S-02	1.14	0.49	PCI/G
RADIUM-228	SC-15107-S	1.48	0.24	PCI/G
RADIUM-228	SC-15108-C-02	1.42	0.38	PCI/G
RADIUM-228	SC-15108-S-02	1.25	0.64	PCI/G
RADIUM-228	SC-15109-S-02	1.07	0.40	PCI/G
RADIUM-228	SC-15110-S	0.56	1.11	PCI/G
RADIUM-228	SC-15111-S-02	0.97	0.48	PCI/G
RADIUM-228	SC-15112-S-02	0.60	1.19	PCI/G
RADIUM-228	SC-15113-S	2.01	0.46	PCI/G
RADIUM-228	SC-15114-S-02	0.98	0.27	PCI/G
RADIUM-228	SC-15115-S-02	1.10	0.32	PCI/G
RADIUM-228	SC-15116-S	1.25	0.45	PCI/G
RADIUM-228	SC-15117-S-02	0.50	0.99	PCI/G
RADIUM-228	SC-15118-S-02	1.16	0.46	PCI/G
RADIUM-228	SC-15119-S	1.04	0.45	PCI/G
RADIUM-228	SC-15120-S	1.22	0.65	PCI/G
RADIUM-228	SC-15121-S-02	1.21	0.51	PCI/G
RADIUM-228	SC-15122-S	0.50	1.00	PCI/G
RADIUM-228	SC-15123-C	1.35	0.25	PCI/G
RADIUM-228	SC-15123-S	1.16	0.45	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of RADIUM-228 values is 1.14 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.01 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
Thorium-230	SC-14620-S	1.12	0.62	PCI/G
Thorium-230	SC-14621-S	2.51	0.62	PCI/G
Thorium-230	SC-14622-S-02	1.09	0.62	PCI/G
Thorium-230	SC-15101-S	0.91	0.62	PCI/G
Thorium-230	SC-15102-S-02	0.82	0.62	PCI/G
Thorium-230	SC-15103-S-02	0.90	0.62	PCI/G
Thorium-230	SC-15104-S	2.00	0.62	PCI/G
Thorium-230	SC-15105-S-02	1.09	0.62	PCI/G
Thorium-230	SC-15106-S-02	3.81	0.62	PCI/G
Thorium-230	SC-15107-S	6.31	0.62	PCI/G
Thorium-230	SC-15108-C-02	0.82	0.62	PCI/G
Thorium-230	SC-15108-S-02	0.92	0.62	PCI/G
Thorium-230	SC-15109-S-02	2.79	0.62	PCI/G
Thorium-230	SC-15110-S	0.90	0.62	PCI/G
Thorium-230	SC-15111-S-02	0.91	0.62	PCI/G
Thorium-230	SC-15112-S-02	0.96	0.62	PCI/G
Thorium-230	SC-15113-S	1.78	0.62	PCI/G
Thorium-230	SC-15114-S-02	0.92	0.62	PCI/G
Thorium-230	SC-15115-S-02	1.03	0.62	PCI/G
Thorium-230	SC-15116-S	1.15	0.62	PCI/G
Thorium-230	SC-15117-S-02	0.95	0.62	PCI/G
Thorium-230	SC-15118-S-02	1.00	0.62	PCI/G
Thorium-230	SC-15119-S	1.31	0.62	PCI/G
Thorium-230	SC-15120-S	1.69	0.62	PCI/G
Thorium-230	SC-15121-S-02	1.67	0.62	PCI/G
Thorium-230	SC-15122-S	0.94	0.62	PCI/G
Thorium-230	SC-15123-C	1.72	0.62	PCI/G
Thorium-230	SC-15123-S	2.21	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of Thorium-230 values is 1.58 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 6.31 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.17 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.06 pCi/g, which is below subsurface criteria of 16.20 pCi/g.

CU151b DATA REPORT, continued

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DL	UNITS
URANIUM-238	SC-14620-S	1.70	3.40	PCI/G
URANIUM-238	SC-14621-S	1.21	2.41	PCI/G
URANIUM-238	SC-14622-S-02	1.83	3.65	PCI/G
URANIUM-238	SC-15101-S	1.33	2.66	PCI/G
URANIUM-238	SC-15102-S-02	1.19	2.37	PCI/G
URANIUM-238	SC-15103-S-02	1.87	3.74	PCI/G
URANIUM-238	SC-15104-S	1.99	3.98	PCI/G
URANIUM-238	SC-15105-S-02	1.29	2.58	PCI/G
URANIUM-238	SC-15106-S-02	1.90	3.79	PCI/G
URANIUM-238	SC-15107-S	2.17	4.33	PCI/G
URANIUM-238	SC-15108-C-02	1.82	2.64	PCI/G
URANIUM-238	SC-15108-S-02	1.84	3.67	PCI/G
URANIUM-238	SC-15109-S-02	1.27	2.54	PCI/G
URANIUM-238	SC-15110-S	1.66	3.31	PCI/G
URANIUM-238	SC-15111-S-02	1.82	3.64	PCI/G
URANIUM-238	SC-15112-S-02	1.86	3.72	PCI/G
URANIUM-238	SC-15113-S	1.42	2.84	PCI/G
URANIUM-238	SC-15114-S-02	1.34	2.68	PCI/G
URANIUM-238	SC-15115-S-02	1.34	2.68	PCI/G
URANIUM-238	SC-15116-S	1.89	3.78	PCI/G
URANIUM-238	SC-15117-S-02	1.58	3.16	PCI/G
URANIUM-238	SC-15118-S-02	1.17	2.34	PCI/G
URANIUM-238	SC-15119-S	1.31	2.62	PCI/G
URANIUM-238	SC-15120-S	1.86	3.72	PCI/G
URANIUM-238	SC-15121-S-02	1.93	3.86	PCI/G
URANIUM-238	SC-15122-S	1.80	3.60	PCI/G
URANIUM-238	SC-15123-C	2.01	4.01	PCI/G
URANIUM-238	SC-15123-S	1.42	2.84	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 28
Average of URANIUM-238 values is 1.64 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 2.17 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6·8·98 3. Review Form #: 98-021

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU152 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB X PAH X As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria?	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments The release of this CU includes portions of Zone B, Zone C, and Zone G (See attached figures). Zone G initially had an interval of contaminated soil removed and the surface confirmed. The next interval was then removed and placed within Pit 4.

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Melissa A Lutz Date 6/8/98

SECTION II *CU is released for unrestricted use.*

14. ES&H Manager: [signature] Date: 6/8/98

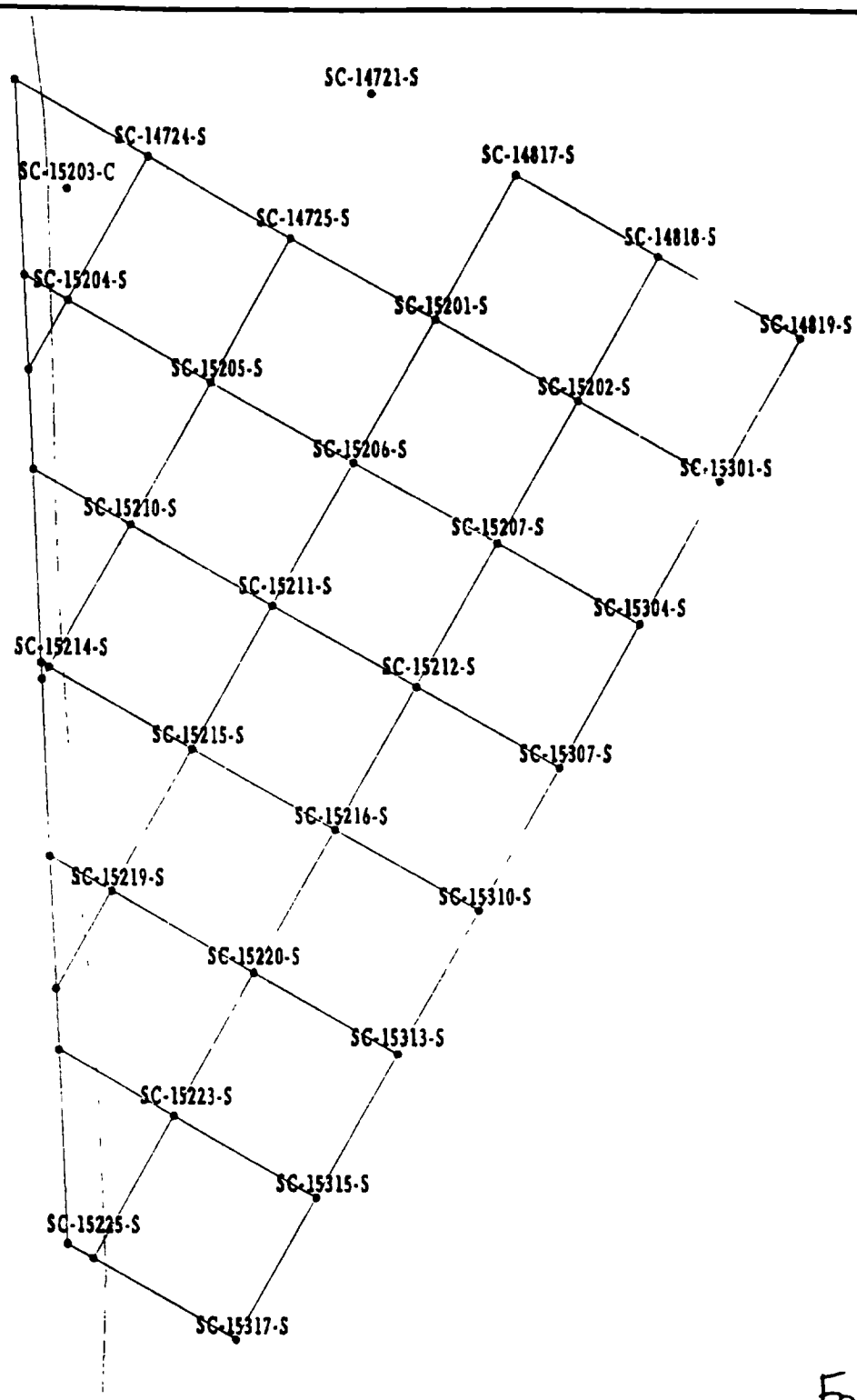
15. DOE Project Manager/Engineer: Thomas C. Oakley Date: 6/9/98

16. Project Manager: Sheryl Hodges Date: 6/9/98

17. Construction Engineer: [signature] Date: 6·10·98

SEE ATTACHED RESULTS AND MAP

The final interval was removed as contaminated and confirmed. The first confirmation (initial contaminated excavation) results are shown on ~~figure~~ the data report for CU152a (attached). The second confirmation round results are shown on the data report for CU152b (also attached). Those areas within CU152 but outside of Zone G, were not included in this "two level" approach therefore



Form #98-021

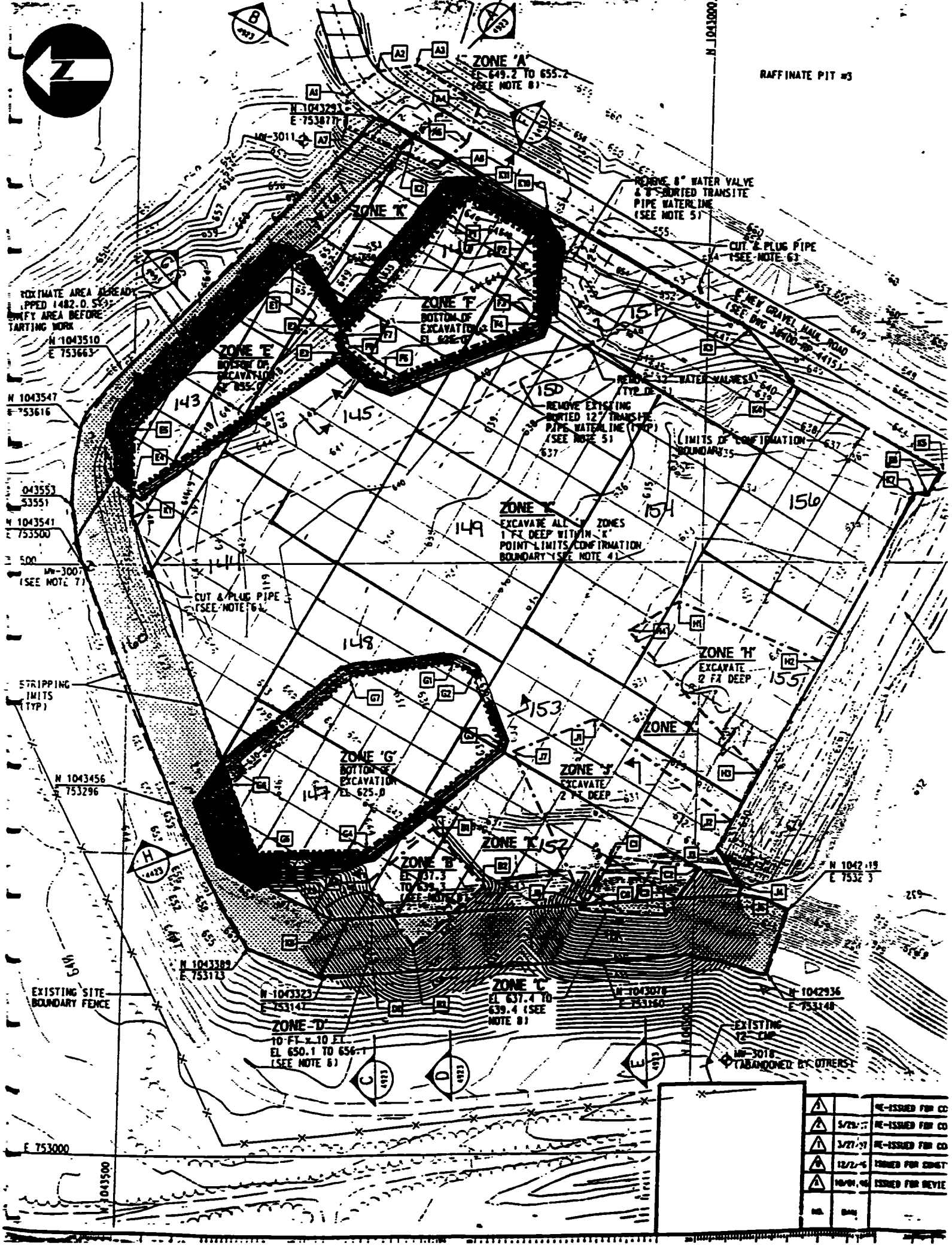
6 2.5 0 METERS

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013 Confirmation Unit CU152

Figure B-10

EXHIBIT NO.: G/CP/281/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	


RAFFINATE PIT #3
ZONE 'A'
EL 649.2 TO 655.2 (SEE NOTE 8)
N 1043293
E 753877
MW-3011
ZONE 'K'
REMOVE 8" WATER VALVE & 8" BURIED TRANSITE PIPE WATERLINE (SEE NOTE 5)
CUT & PLUG PIPE (SEE NOTE 6)
NEW GRAVEL HAUL ROAD (SEE DWG 36400-RP-4115)
ZONE 'F'
BOTTOM OF EXCAVATION
ZONE 'E'
BOTTOM OF EXCAVATION
N 1043510
E 753663
N 1043547
E 753616
REMOVE 12" WATER VALVES (TYP OF 5)
REMOVE EXISTING BURIED 12" TRANSITE PIPE WATERLINE (TYP) (SEE NOTE 5)
LIMITS OF CONFIRMATION BOUNDARY
ZONE 'I'
EXCAVATE ALL ZONES 1 FT DEEP WITHIN 'K' POINT LIMITS CONFIRMATION BOUNDARY (SEE NOTE 4)
N 1043541
E 753500
MW-3007 (SEE NOTE 7)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'H'
EXCAVATE 2 FT DEEP
STRIPPING LIMITS (TYP)
ZONE 'G'
BOTTOM OF EXCAVATION
EL 625.0
ZONE 'J'
EXCAVATE 2 FT DEEP
ZONE 'K'
ZONE 'B'
EL 637.3 TO 639.3 (SEE NOTE 8)
N 1043456
E 753296
N 1042919
E 753213
N 1043389
E 753173
EXISTING SITE BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO 639.4 (SEE NOTE 8)
N 1043078
E 753160
N 1042936
E 753148
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1 (SEE NOTE 8)
EXISTING 12" CMP
MW-3018 (ABANDONED BY OTHERS)
E 753000
N 1043500
N 1043000
RE-ISSUED FOR CO
RE-ISSUED FOR CO
RE-ISSUED FOR CO
ISSUED FOR CONST
ISSUED FOR REVIE

06/05/98

CU152 DATA REPORT - CU152a

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-14724-S-RS	1.97	0.33	PCI/G
RADIUM-226	SC-14725-S-RS	1.32	0.35	PCI/G
RADIUM-226	SC-14817-S-RS	1.43	0.27	PCI/G
RADIUM-226	SC-14818-S	1.38	0.29	PCI/G
RADIUM-226	SC-14819-S	1.34	0.24	PCI/G
RADIUM-226	SC-15201-S-RS	2.18	0.33	PCI/G
RADIUM-226	SC-15202-S-RS	1.48	0.23	PCI/G
RADIUM-226	SC-15203-C-RS	1.79	0.37	PCI/G
RADIUM-226	SC-15204-S-RS	1.73	0.29	PCI/G
RADIUM-226	SC-15205-S-RS	2.22	0.24	PCI/G
RADIUM-226	SC-15206-S-RS	2.45	0.21	PCI/G
RADIUM-226	SC-15207-S-RS	1.48	0.26	PCI/G
RADIUM-226	SC-15210-S	2.47	0.30	PCI/G
RADIUM-226	SC-15211-S-RS	0.83	0.73	PCI/G
RADIUM-226	SC-15212-S-RS	1.48	0.23	PCI/G
RADIUM-226	SC-15214-S	2.27	0.32	PCI/G
RADIUM-226	SC-15215-S-RS	1.43	0.36	PCI/G
RADIUM-226	SC-15216-S-RS	1.97	0.25	PCI/G
RADIUM-226	SC-15219-S-RS	0.76	0.67	PCI/G
RADIUM-226	SC-15220-S-RS	1.70	0.36	PCI/G
RADIUM-226	SC-15223-S-RS	2.29	0.31	PCI/G
RADIUM-226	SC-15225-S-RS	0.95	0.28	PCI/G
RADIUM-226	SC-15301-S-RS	1.41	0.19	PCI/G
RADIUM-226	SC-15304-S-RS	1.48	0.30	PCI/G
RADIUM-226	SC-15307-S-RS	1.88	0.24	PCI/G
RADIUM-226	SC-15310-S-RS	1.77	0.28	PCI/G
RADIUM-226	SC-15313-S-RS	2.04	0.24	PCI/G
RADIUM-226	SC-15315-S-RS	2.22	0.31	PCI/G
RADIUM-226	SC-15317-S-RS	1.88	0.26	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of RADIUM-226 values is 1.71 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.47 pCi/g, which is below criteria, 6.20 pCi/g.

06/05/98

CU152 DATA REPORT, continued - CU152a

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-14724-S-RS	1.53	0.31	PCI/G
RADIUM-228	SC-14725-S-RS	0.67	1.34	PCI/G
RADIUM-228	SC-14817-S-RS	1.10	0.33	PCI/G
RADIUM-228	SC-14818-S	1.02	0.65	PCI/G
RADIUM-228	SC-14819-S	1.13	0.31	PCI/G
RADIUM-228	SC-15201-S-RS	1.24	0.44	PCI/G
RADIUM-228	SC-15202-S-RS	1.14	0.33	PCI/G
RADIUM-228	SC-15203-C-RS	1.49	0.44	PCI/G
RADIUM-228	SC-15204-S-RS	1.07	0.25	PCI/G
RADIUM-228	SC-15205-S-RS	1.04	0.30	PCI/G
RADIUM-228	SC-15206-S-RS	1.19	0.52	PCI/G
RADIUM-228	SC-15207-S-RS	1.19	0.26	PCI/G
RADIUM-228	SC-15210-S	1.29	0.37	PCI/G
RADIUM-228	SC-15211-S-RS	1.27	0.53	PCI/G
RADIUM-228	SC-15212-S-RS	1.12	0.43	PCI/G
RADIUM-228	SC-15214-S	1.29	0.47	PCI/G
RADIUM-228	SC-15215-S-RS	1.11	0.66	PCI/G
RADIUM-228	SC-15216-S-RS	1.23	0.44	PCI/G
RADIUM-228	SC-15219-S-RS	1.22	0.25	PCI/G
RADIUM-228	SC-15220-S-RS	0.93	0.62	PCI/G
RADIUM-228	SC-15223-S-RS	1.29	0.56	PCI/G
RADIUM-228	SC-15225-S-RS	1.15	0.52	PCI/G
RADIUM-228	SC-15301-S-RS	1.21	0.35	PCI/G
RADIUM-228	SC-15304-S-RS	1.58	0.34	PCI/G
RADIUM-228	SC-15307-S-RS	1.42	0.38	PCI/G
RADIUM-228	SC-15310-S-RS	1.32	0.45	PCI/G
RADIUM-228	SC-15313-S-RS	1.20	0.40	PCI/G
RADIUM-228	SC-15315-S-RS	1.18	0.38	PCI/G
RADIUM-228	SC-15317-S-RS	1.00	0.39	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of RADIUM-228 values is 1.19 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.58 pCi/g, which is below criteria, 6.20 pCi/g.

CU152 DATA REPORT, continued - CU152a

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-14724-S-RS	0.94	0.62	PCI/G
Thorium-230	SC-14725-S-RS	1.04	0.62	PCI/G
Thorium-230	SC-14817-S-RS	1.40	0.62	PCI/G
Thorium-230	SC-14818-S	0.76	0.62	PCI/G
Thorium-230	SC-14819-S	1.38	0.62	PCI/G
Thorium-230	SC-15201-S-RS	1.16	0.62	PCI/G
Thorium-230	SC-15202-S-RS	1.19	0.62	PCI/G
Thorium-230	SC-15203-C-RS	0.90	0.62	PCI/G
Thorium-230	SC-15204-S-RS	0.90	0.62	PCI/G
Thorium-230	SC-15205-S-RS	0.97	0.62	PCI/G
Thorium-230	SC-15206-S-RS	0.75	0.62	PCI/G
Thorium-230	SC-15207-S-RS	1.00	0.62	PCI/G
Thorium-230	SC-15210-S	1.32	0.62	PCI/G
Thorium-230	SC-15211-S-RS	0.99	0.62	PCI/G
Thorium-230	SC-15212-S-RS	1.07	0.62	PCI/G
Thorium-230	SC-15214-S	1.42	0.62	PCI/G
Thorium-230	SC-15215-S-RS	1.10	0.62	PCI/G
Thorium-230	SC-15216-S-RS	1.15	0.62	PCI/G
Thorium-230	SC-15219-S-RS	1.00	0.62	PCI/G
Thorium-230	SC-15220-S-RS	1.25	0.62	PCI/G
Thorium-230	SC-15223-S-RS	1.31	0.62	PCI/G
Thorium-230	SC-15225-S-RS	1.73	0.62	PCI/G
Thorium-230	SC-15301-S-RS	0.97	0.62	PCI/G
Thorium-230	SC-15304-S-RS	0.91	0.62	PCI/G
Thorium-230	SC-15307-S-RS	1.13	0.62	PCI/G
Thorium-230	SC-15310-S-RS	2.61	0.62	PCI/G
Thorium-230	SC-15313-S-RS	1.38	0.62	PCI/G
Thorium-230	SC-15315-S-RS	5.30	0.62	PCI/G
Thorium-230	SC-15317-S-RS	2.29	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of Thorium-230 values is 1.36 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 5.30 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.22 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.62 pCi/g, which is below surface criteria of 6.20 pCi/g.

06/05/98

CU152 DATA REPORT, continued - CU152a

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-14724-S-RS	1.31	2.62	PCI/G
URANIUM-238	SC-14725-S-RS	1.65	3.29	PCI/G
URANIUM-238	SC-14817-S-RS	5.52	2.62	PCI/G
URANIUM-238	SC-14818-S	1.62	3.23	PCI/G
URANIUM-238	SC-14819-S	1.28	2.56	PCI/G
URANIUM-238	SC-15201-S-RS	2.01	4.01	PCI/G
URANIUM-238	SC-15202-S-RS	1.26	2.51	PCI/G
URANIUM-238	SC-15203-C-RS	1.80	3.60	PCI/G
URANIUM-238	SC-15204-S-RS	1.96	3.91	PCI/G
URANIUM-238	SC-15205-S-RS	1.32	2.64	PCI/G
URANIUM-238	SC-15206-S-RS	1.93	3.86	PCI/G
URANIUM-238	SC-15207-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15210-S	1.44	2.87	PCI/G
URANIUM-238	SC-15211-S-RS	1.89	3.77	PCI/G
URANIUM-238	SC-15212-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15214-S	1.89	3.77	PCI/G
URANIUM-238	SC-15215-S-RS	1.92	3.83	PCI/G
URANIUM-238	SC-15216-S-RS	1.32	2.64	PCI/G
URANIUM-238	SC-15219-S-RS	1.86	3.72	PCI/G
URANIUM-238	SC-15220-S-RS	1.91	3.82	PCI/G
URANIUM-238	SC-15223-S-RS	2.67	2.02	PCI/G
URANIUM-238	SC-15225-S-RS	1.84	3.68	PCI/G
URANIUM-238	SC-15301-S-RS	1.17	2.33	PCI/G
URANIUM-238	SC-15304-S-RS	1.89	3.78	PCI/G
URANIUM-238	SC-15307-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15310-S-RS	2.14	4.27	PCI/G
URANIUM-238	SC-15313-S-RS	1.40	2.80	PCI/G
URANIUM-238	SC-15315-S-RS	1.53	3.06	PCI/G
URANIUM-238	SC-15317-S-RS	2.10	2.23	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of URANIUM-238 values is 1.81 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 5.52 pCi/g, which is below criteria, 120.00 pCi/g.

CU152 DATA REPORT, continued - CU152a

Arsenic

LOCATION	PARAMETER	CONC	UNITS
SC-14724-S-RS	ARSENIC	8.4	MG/KG
SC-14725-S-RS	ARSENIC	7.2	MG/KG
SC-15201-S-RS	ARSENIC	7.4	MG/KG
SC-15202-S-RS	ARSENIC	3.9	MG/KG
SC-15203-C-RS	ARSENIC	2.2	MG/KG
SC-15204-S-RS	ARSENIC	8.1	MG/KG
SC-15205-S-RS	ARSENIC	2.5	MG/KG
SC-15206-S-RS	ARSENIC	5.3	MG/KG
SC-15207-S-RS	ARSENIC	6.6	MG/KG
SC-15210-S	ARSENIC	7.6	MG/KG
SC-15211-S-RS	ARSENIC	6.6	MG/KG
SC-15212-S-RS	ARSENIC	7.0	MG/KG
SC-15214-S	ARSENIC	7.4	MG/KG
SC-15215-S-RS	ARSENIC	5.4	MG/KG
SC-15216-S-RS	ARSENIC	4.3	MG/KG
SC-15219-S-RS	ARSENIC	3.0	MG/KG
SC-15220-S-RS	ARSENIC	3.1	MG/KG
SC-15223-S-RS	ARSENIC	16.2	MG/KG
SC-15225-S-RS	ARSENIC	6.7	MG/KG
SC-15301-S-RS	ARSENIC	14	MG/KG
SC-15304-S-RS	ARSENIC	8.0	MG/KG
SC-15307-S-RS	ARSENIC	14	MG/KG
SC-15310-S-RS	ARSENIC	5.8	MG/KG
SC-15313-S-RS	ARSENIC	7.1	MG/KG
SC-15315-S-RS	ARSENIC	8.8	MG/KG
SC-15317-S-RS	ARSENIC	3.0	MG/KG

NUMBER OF ARSENIC SAMPLES IN DATABASE FOR THIS CU IS: 26
Average of ARSENIC values is 6.91 MG/KG, which is below ALARA, 45.00 MG/KG.
Maximum single value is 16.2 MG/KG, which is below criteria, 75.00 MG/KG.

PAH

LOCATION	PARAMETER	CONC	UNITS
SC-15203-C-RS	PAH	0	UG/KG
SC-15204-S-RS	PAH	0	UG/KG
SC-15205-S-RS	PAH	0	UG/KG
SC-14724-S	PAH	0	UG/KG
SC-14725-S	PAH	0	UG/KG

NUMBER OF PAH SAMPLES IN DATABASE FOR THIS CU IS: 5
Average of PAH values is 0 UG/KG, which is below ALARA, 440 UG/KG.
Maximum single value is 0 UG/KG, which is below criteria, 5600 UG/KG.

06/05/98

CU152 DATA REPORT - CU152b

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-14724-S-RS	1.97	0.33	PCI/G
RADIUM-226	SC-14725-S-RS	1.32	0.35	PCI/G
RADIUM-226	SC-14817-S-02	1.41	0.21	PCI/G
RADIUM-226	SC-14818-S-02	2.32	0.30	PCI/G
RADIUM-226	SC-14819-S-02	2.20	0.28	PCI/G
RADIUM-226	SC-15201-S-RS	2.18	0.33	PCI/G
RADIUM-226	SC-15202-S-RS	1.48	0.23	PCI/G
RADIUM-226	SC-15203-C-RS	1.79	0.37	PCI/G
RADIUM-226	SC-15204-S-RS	1.73	0.29	PCI/G
RADIUM-226	SC-15205-S-RS	2.22	0.24	PCI/G
RADIUM-226	SC-15206-S-RS	2.45	0.21	PCI/G
RADIUM-226	SC-15207-S-RS	1.48	0.26	PCI/G
RADIUM-226	SC-15210-S	2.47	0.30	PCI/G
RADIUM-226	SC-15211-S-RS	0.83	0.73	PCI/G
RADIUM-226	SC-15212-S-RS	1.48	0.23	PCI/G
RADIUM-226	SC-15214-S	2.27	0.32	PCI/G
RADIUM-226	SC-15215-S-RS	1.43	0.36	PCI/G
RADIUM-226	SC-15216-S-RS	1.97	0.25	PCI/G
RADIUM-226	SC-15219-S-RS	0.76	0.67	PCI/G
RADIUM-226	SC-15220-S-RS	1.70	0.36	PCI/G
RADIUM-226	SC-15223-S-RS	2.29	0.31	PCI/G
RADIUM-226	SC-15225-S-RS	0.95	0.28	PCI/G
RADIUM-226	SC-15301-S-RS	1.41	0.19	PCI/G
RADIUM-226	SC-15304-S-RS	1.48	0.30	PCI/G
RADIUM-226	SC-15307-S-RS	1.88	0.24	PCI/G
RADIUM-226	SC-15310-S-RS	1.77	0.28	PCI/G
RADIUM-226	SC-15313-S-RS	2.04	0.24	PCI/G
RADIUM-226	SC-15315-S-RS	2.22	0.31	PCI/G
RADIUM-226	SC-15317-S-RS	1.88	0.26	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of RADIUM-226 values is 1.77 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.47 pCi/g, which is below criteria, 6.20 pCi/g.

06/05/98

CU152 DATA REPORT, continued - CU152b

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-14724-S-RS	1.53	0.31	PCI/G
RADIUM-228	SC-14725-S-RS	0.67	1.34	PCI/G
RADIUM-228	SC-14817-S-02	1.09	0.31	PCI/G
RADIUM-228	SC-14818-S-02	0.60	1.20	PCI/G
RADIUM-228	SC-14819-S-02	1.45	0.35	PCI/G
RADIUM-228	SC-15201-S-RS	1.24	0.44	PCI/G
RADIUM-228	SC-15202-S-RS	1.14	0.33	PCI/G
RADIUM-228	SC-15203-C-RS	1.49	0.44	PCI/G
RADIUM-228	SC-15204-S-RS	1.07	0.25	PCI/G
RADIUM-228	SC-15205-S-RS	1.04	0.30	PCI/G
RADIUM-228	SC-15206-S-RS	1.19	0.52	PCI/G
RADIUM-228	SC-15207-S-RS	1.19	0.26	PCI/G
RADIUM-228	SC-15210-S	1.29	0.37	PCI/G
RADIUM-228	SC-15211-S-RS	1.27	0.53	PCI/G
RADIUM-228	SC-15212-S-RS	1.12	0.43	PCI/G
RADIUM-228	SC-15214-S	1.29	0.47	PCI/G
RADIUM-228	SC-15215-S-RS	1.11	0.66	PCI/G
RADIUM-228	SC-15216-S-RS	1.23	0.44	PCI/G
RADIUM-228	SC-15219-S-RS	1.22	0.25	PCI/G
RADIUM-228	SC-15220-S-RS	0.93	0.62	PCI/G
RADIUM-228	SC-15223-S-RS	1.29	0.56	PCI/G
RADIUM-228	SC-15225-S-RS	1.15	0.52	PCI/G
RADIUM-228	SC-15301-S-RS	1.21	0.35	PCI/G
RADIUM-228	SC-15304-S-RS	1.58	0.34	PCI/G
RADIUM-228	SC-15307-S-RS	1.42	0.38	PCI/G
RADIUM-228	SC-15310-S-RS	1.32	0.45	PCI/G
RADIUM-228	SC-15313-S-RS	1.20	0.40	PCI/G
RADIUM-228	SC-15315-S-RS	1.18	0.38	PCI/G
RADIUM-228	SC-15317-S-RS	1.00	0.39	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of RADIUM-228 values is 1.19 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.58 pCi/g, which is below criteria, 6.20 pCi/g.

CU152 DATA REPORT, continued - CU152b

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-14724-S-RS	0.94	0.62	PCI/G
Thorium-230	SC-14725-S-RS	1.04	0.62	PCI/G
Thorium-230	SC-14817-S-02	1.09	0.62	PCI/G
Thorium-230	SC-14818-S-02	0.78	0.62	PCI/G
Thorium-230	SC-14819-S-02	1.16	0.62	PCI/G
Thorium-230	SC-15201-S-RS	1.16	0.62	PCI/G
Thorium-230	SC-15202-S-RS	1.19	0.62	PCI/G
Thorium-230	SC-15203-C-RS	0.90	0.62	PCI/G
Thorium-230	SC-15204-S-RS	0.90	0.62	PCI/G
Thorium-230	SC-15205-S-RS	0.97	0.62	PCI/G
Thorium-230	SC-15206-S-RS	0.75	0.62	PCI/G
Thorium-230	SC-15207-S-RS	1.00	0.62	PCI/G
Thorium-230	SC-15210-S	1.32	0.62	PCI/G
Thorium-230	SC-15211-S-RS	0.99	0.62	PCI/G
Thorium-230	SC-15212-S-RS	1.07	0.62	PCI/G
Thorium-230	SC-15214-S	1.42	0.62	PCI/G
Thorium-230	SC-15215-S-RS	1.10	0.62	PCI/G
Thorium-230	SC-15216-S-RS	1.15	0.62	PCI/G
Thorium-230	SC-15219-S-RS	1.00	0.62	PCI/G
Thorium-230	SC-15220-S-RS	1.25	0.62	PCI/G
Thorium-230	SC-15223-S-RS	1.31	0.62	PCI/G
Thorium-230	SC-15225-S-RS	1.73	0.62	PCI/G
Thorium-230	SC-15301-S-RS	0.97	0.62	PCI/G
Thorium-230	SC-15304-S-RS	0.91	0.62	PCI/G
Thorium-230	SC-15307-S-RS	1.13	0.62	PCI/G
Thorium-230	SC-15310-S-RS	2.61	0.62	PCI/G
Thorium-230	SC-15313-S-RS	1.38	0.62	PCI/G
Thorium-230	SC-15315-S-RS	5.30	0.62	PCI/G
Thorium-230	SC-15317-S-RS	2.29	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of Thorium-230 values is 1.34 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 5.30 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.22 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.62 pCi/g, which is below surface criteria of 6.20 pCi/g.

06/05/98

CU152 DATA REPORT, continued - CU152b

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-14724-S-RS	1.31	2.62	PCI/G
URANIUM-238	SC-14725-S-RS	1.65	3.29	PCI/G
URANIUM-238	SC-14817-S-02	2.57	2.37	PCI/G
URANIUM-238	SC-14818-S-02	1.78	3.55	PCI/G
URANIUM-238	SC-14819-S-02	1.43	2.86	PCI/G
URANIUM-238	SC-15201-S-RS	2.01	4.01	PCI/G
URANIUM-238	SC-15202-S-RS	1.26	2.51	PCI/G
URANIUM-238	SC-15203-C-RS	1.80	3.60	PCI/G
URANIUM-238	SC-15204-S-RS	1.96	3.91	PCI/G
URANIUM-238	SC-15205-S-RS	1.32	2.64	PCI/G
URANIUM-238	SC-15206-S-RS	1.93	3.86	PCI/G
URANIUM-238	SC-15207-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15210-S	1.44	2.87	PCI/G
URANIUM-238	SC-15211-S-RS	1.89	3.77	PCI/G
URANIUM-238	SC-15212-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15214-S	1.89	3.77	PCI/G
URANIUM-238	SC-15215-S-RS	1.92	3.83	PCI/G
URANIUM-238	SC-15216-S-RS	1.32	2.64	PCI/G
URANIUM-238	SC-15219-S-RS	1.86	3.72	PCI/G
URANIUM-238	SC-15220-S-RS	1.91	3.82	PCI/G
URANIUM-238	SC-15223-S-RS	2.67	2.02	PCI/G
URANIUM-238	SC-15225-S-RS	1.84	3.68	PCI/G
URANIUM-238	SC-15301-S-RS	1.17	2.33	PCI/G
URANIUM-238	SC-15304-S-RS	1.89	3.78	PCI/G
URANIUM-238	SC-15307-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15310-S-RS	2.14	4.27	PCI/G
URANIUM-238	SC-15313-S-RS	1.40	2.80	PCI/G
URANIUM-238	SC-15315-S-RS	1.53	3.06	PCI/G
URANIUM-238	SC-15317-S-RS	2.10	2.23	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 29
Average of URANIUM-238 values is 1.72 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 2.67 pCi/g, which is below criteria, 120.00 pCi/g.

06/05/98

CU152 DATA REPORT, continued - CU152b

Arsenic

LOCATION	PARAMETER	CONC	UNITS
SC-14724-S-RS	ARSENIC	8.4	MG/KG
SC-14725-S-RS	ARSENIC	7.2	MG/KG
SC-15201-S-RS	ARSENIC	7.4	MG/KG
SC-15202-S-RS	ARSENIC	3.9	MG/KG
SC-15203-C-RS	ARSENIC	2.2	MG/KG
SC-15204-S-RS	ARSENIC	8.1	MG/KG
SC-15205-S-RS	ARSENIC	2.5	MG/KG
SC-15206-S-RS	ARSENIC	5.3	MG/KG
SC-15207-S-RS	ARSENIC	6.6	MG/KG
SC-15210-S	ARSENIC	7.6	MG/KG
SC-15211-S-RS	ARSENIC	6.6	MG/KG
SC-15212-S-RS	ARSENIC	7.0	MG/KG
SC-15214-S	ARSENIC	7.4	MG/KG
SC-15215-S-RS	ARSENIC	5.4	MG/KG
SC-15216-S-RS	ARSENIC	4.3	MG/KG
SC-15219-S-RS	ARSENIC	3.0	MG/KG
SC-15220-S-RS	ARSENIC	3.1	MG/KG
SC-15223-S-RS	ARSENIC	16.2	MG/KG
SC-15225-S-RS	ARSENIC	6.7	MG/KG
SC-15301-S-RS	ARSENIC	14	MG/KG
SC-15304-S-RS	ARSENIC	8.0	MG/KG
SC-15307-S-RS	ARSENIC	14	MG/KG
SC-15310-S-RS	ARSENIC	5.8	MG/KG
SC-15313-S-RS	ARSENIC	7.1	MG/KG
SC-15315-S-RS	ARSENIC	8.8	MG/KG
SC-15317-S-RS	ARSENIC	3.0	MG/KG

NUMBER OF ARSENIC SAMPLES IN DATABASE FOR THIS CU IS: 26
Average of ARSENIC values is 6.91 MG/KG, which is below ALARA, 45.00 MG/KG.
Maximum single value is 16.2 MG/KG, which is below criteria, 75.00 MG/KG.

PAH

LOCATION	PARAMETER	CONC	UNITS
SC-15203-C-RS	PAH	0	UG/KG
SC-15204-S-RS	PAH	0	UG/KG
SC-15205-S-RS	PAH	0	UG/KG
SC-14724-S	PAH	0	UG/KG
SC-14725-S	PAH	0	UG/KG

NUMBER OF PAH SAMPLES IN DATABASE FOR THIS CU IS: 5
Average of PAH values is 0 UG/KG, which is below ALARA, 440 UG/KG.
Maximum single value is 0 UG/KG, which is below criteria, 5600 UG/KG.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6/10/98 3. Review Form #: 98-029

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU153 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH X As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes	___ No
8. All results below cleanup criteria? using subsurface criteria	X Yes	___ No
9. Any results greater than 3X criteria?	___ Yes	X No
10. Hot spots present (less than 3X criteria)?	___ Yes	X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments Note new southern boundary.

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 6/10/98

SECTION II *CU is released for unrestricted use.*

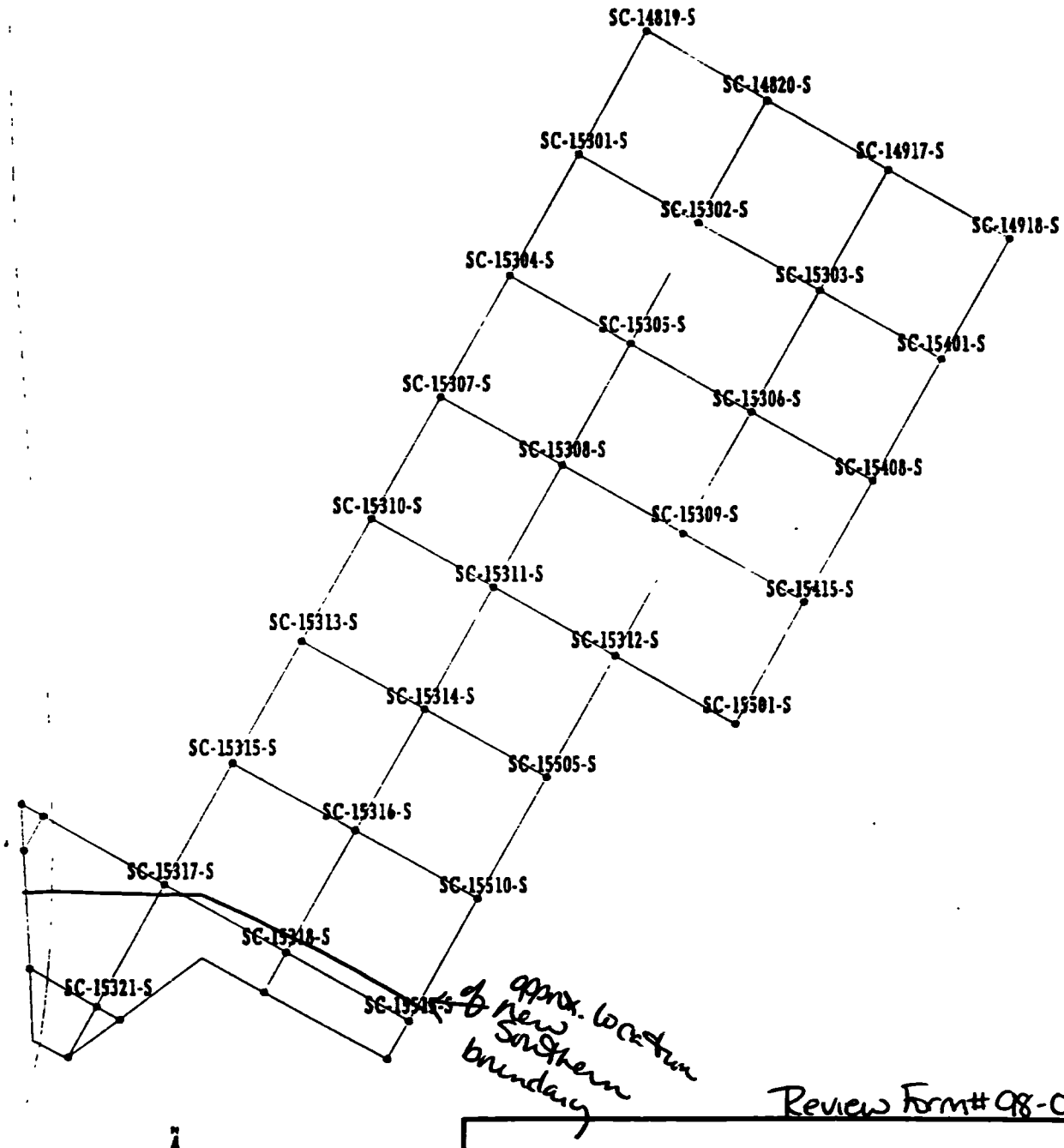
14. ES&H Manager: [signature] Date: 6/10/98

15. DOE Project Manager/Engineer: [signature] Date: 6/10/98

16. Project Manager: [signature] Date: 6/11/98

17. Construction Engineer: [signature] Date: 6-11-98

SEE ATTACHED RESULTS AND MAP



Review Form# 98-029

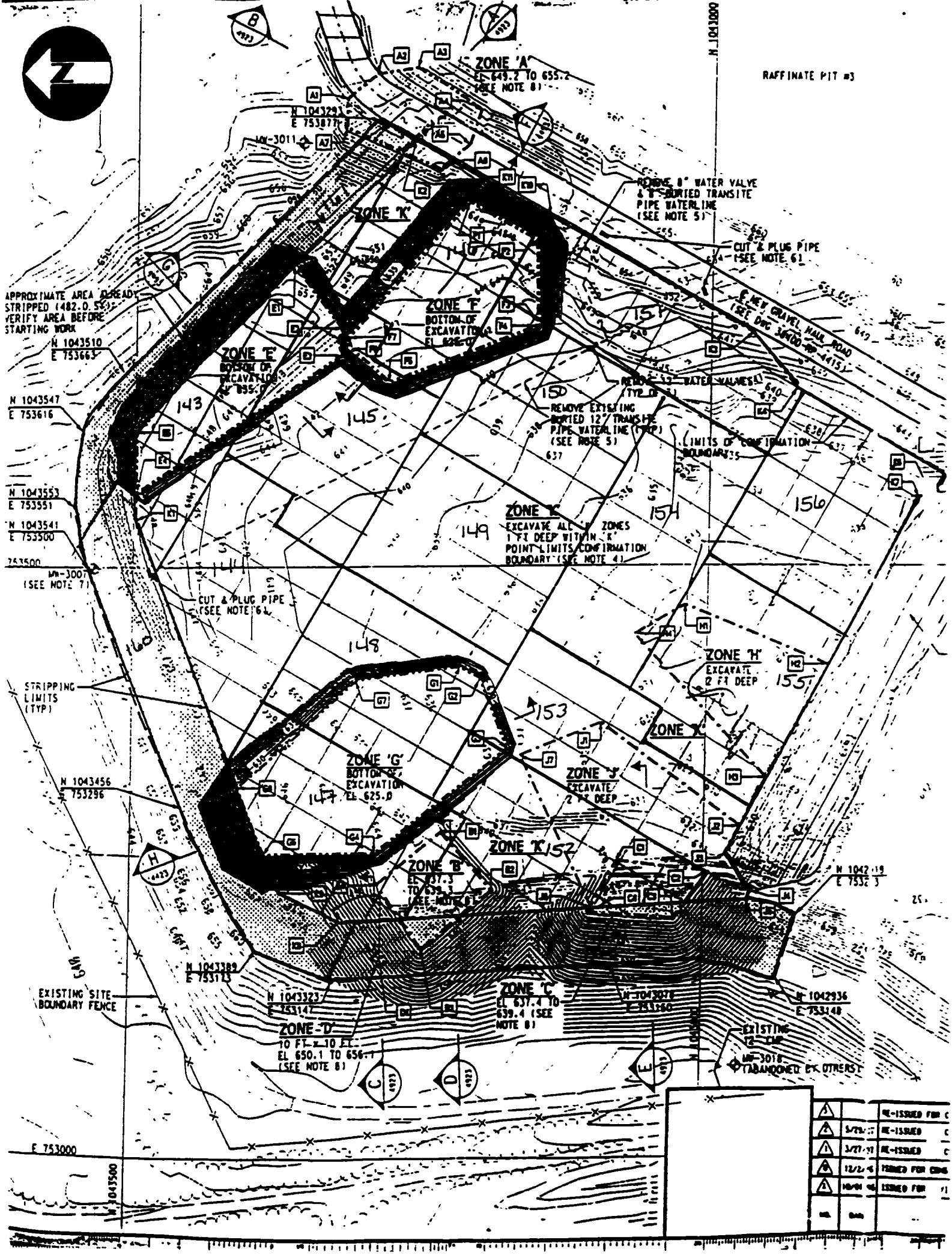
5 2.5 0 METER

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013 Confirmation Unit CU153

Figure B-11

EXHIBIT NO.: G/CP/282/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	


RAFFINATE PIT #3
ZONE 'A'
EL 649.2 TO 655.2
(SEE NOTE 8)
N 1043293
E 753877
MW-3011
ZONE 'K'
REMOVE 8" WATER VALVE & 8" BURIED TRANSITE PIPE WATERLINE (SEE NOTE 5)
CUT & PLUG PIPE (SEE NOTE 6)
NEW GRAVEL HAUL ROAD (SEE DWG 36400-MP-4415)
APPROXIMATE AREA ALREADY STRIPPED (482.0 SQ.) VERIFY AREA BEFORE STARTING WORK
N 1043510
E 753663
ZONE 'F'
BOTTOM OF EXCAVATION EL 626.0
ZONE 'E'
BOTTOM OF EXCAVATION EL 635.0
N 1043547
E 753616
REMOVE 32" WATER VALVES (TYP OF 5)
REMOVE EXISTING BURIED 12" TRANSITE PIPE WATERLINE (TYP) (SEE NOTE 5)
LIMITS OF CONFIRMATION BOUNDARY
N 1043553
E 753551
N 1043541
E 753500
ZONE 'K'
EXCAVATE ALL 'K' ZONES 1 FT DEEP WITHIN 'K' POINT LIMITS CONFIRMATION BOUNDARY (SEE NOTE 4)
MW-3007 (SEE NOTE 7)
CUT & PLUG PIPE (SEE NOTE 6)
ZONE 'H'
EXCAVATE 2 FT DEEP
STRIPPING LIMITS (TYP)
ZONE 'G'
BOTTOM OF EXCAVATION EL 625.0
ZONE 'J'
EXCAVATE 2 FT DEEP
ZONE 'K'
N 1043456
E 753296
ZONE 'B'
EL 637.3 TO 639.3 (SEE NOTE 8)
N 1042919
E 753253
N 1043389
E 753113
EXISTING SITE BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO 639.4 (SEE NOTE 8)
N 1043078
E 753260
N 1042936
E 753148
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1
(SEE NOTE 8)
EXISTING 12" CMP
MW-3018
ABANDONED BY OTHERS
E 753000
N 1043500
N 1043000

06/10/98

CU153 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-14819-S-02	2.20	0.28	PCI/G
RADIUM-226	SC-14820-S-02	2.41	0.28	PCI/G
RADIUM-226	SC-14917-S	2.13	0.53	PCI/G
RADIUM-226	SC-14918-S	0.75	0.66	PCI/G
RADIUM-226	SC-15301-S-RS	1.41	0.19	PCI/G
RADIUM-226	SC-15302-S	2.16	0.28	PCI/G
RADIUM-226	SC-15303-S	1.70	0.39	PCI/G
RADIUM-226	SC-15304-S-RS	1.48	0.30	PCI/G
RADIUM-226	SC-15305-S-RS	1.66	0.20	PCI/G
RADIUM-226	SC-15306-S	2.02	0.30	PCI/G
RADIUM-226	SC-15307-S-RS	1.88	0.24	PCI/G
RADIUM-226	SC-15308-S	0.78	0.69	PCI/G
RADIUM-226	SC-15309-S	1.66	0.23	PCI/G
RADIUM-226	SC-15310-S-RS	1.77	0.28	PCI/G
RADIUM-226	SC-15311-S	6.29	0.43	PCI/G
RADIUM-226	SC-15312-S	1.38	0.26	PCI/G
RADIUM-226	SC-15313-S-RS	2.04	0.24	PCI/G
RADIUM-226	SC-15314-S	1.73	0.25	PCI/G
RADIUM-226	SC-15315-S-RS	2.22	0.31	PCI/G
RADIUM-226	SC-15316-S	1.45	0.24	PCI/G
RADIUM-226	SC-15317-S-RS	1.71	0.26	PCI/G
RADIUM-226	SC-15401-S	0.77	0.68	PCI/G
RADIUM-226	SC-15408-S	1.63	0.17	PCI/G
RADIUM-226	SC-15415-S	0.75	0.66	PCI/G
RADIUM-226	SC-15501-S	1.82	0.23	PCI/G
RADIUM-226	SC-15505-S	0.64	0.56	PCI/G
RADIUM-226	SC-15510-S	1.63	0.28	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 27
Average of RADIUM-226 values is 1.78 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 6.29 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-14819-S-02	1.45	0.35	PCI/G
RADIUM-228	SC-14820-S-02	1.60	0.36	PCI/G
RADIUM-228	SC-14917-S	2.68	0.61	PCI/G
RADIUM-228	SC-14918-S	1.73	0.40	PCI/G
RADIUM-228	SC-15301-S-RS	1.21	0.35	PCI/G
RADIUM-228	SC-15302-S	1.36	0.35	PCI/G
RADIUM-228	SC-15303-S	1.13	0.60	PCI/G
RADIUM-228	SC-15304-S-RS	1.58	0.34	PCI/G
RADIUM-228	SC-15305-S-RS	0.97	0.48	PCI/G
RADIUM-228	SC-15306-S	1.45	0.33	PCI/G
RADIUM-228	SC-15307-S-RS	1.42	0.38	PCI/G
RADIUM-228	SC-15308-S	1.15	0.57	PCI/G
RADIUM-228	SC-15309-S	1.13	0.41	PCI/G
RADIUM-228	SC-15310-S-RS	1.32	0.45	PCI/G
RADIUM-228	SC-15311-S	1.26	0.42	PCI/G
RADIUM-228	SC-15312-S	1.19	0.38	PCI/G
RADIUM-228	SC-15313-S-RS	1.20	0.40	PCI/G
RADIUM-228	SC-15314-S	0.55	1.09	PCI/G
RADIUM-228	SC-15315-S-RS	1.18	0.38	PCI/G
RADIUM-228	SC-15316-S	1.42	0.35	PCI/G
RADIUM-228	SC-15317-S-RS	1.27	0.39	PCI/G
RADIUM-228	SC-15401-S	1.41	0.67	PCI/G
RADIUM-228	SC-15408-S	1.29	0.36	PCI/G
RADIUM-228	SC-15415-S	1.26	0.35	PCI/G
RADIUM-228	SC-15501-S	0.97	0.27	PCI/G
RADIUM-228	SC-15505-S	1.05	0.43	PCI/G
RADIUM-228	SC-15510-S	0.99	0.37	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 27
Average of RADIUM-228 values is 1.30 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.68 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-14819-S-02	1.16	0.62	PCI/G
Thorium-230	SC-14820-S-02	0.85	0.62	PCI/G
Thorium-230	SC-14917-S	15.10	0.62	PCI/G
Thorium-230	SC-14918-S	1.51	0.62	PCI/G
Thorium-230	SC-15301-S-RS	0.97	0.62	PCI/G
Thorium-230	SC-15302-S	3.29	0.62	PCI/G
Thorium-230	SC-15303-S	3.35	0.62	PCI/G
Thorium-230	SC-15304-S-RS	0.91	0.62	PCI/G
Thorium-230	SC-15305-S-RS	1.15	0.62	PCI/G
Thorium-230	SC-15306-S	2.88	0.62	PCI/G
Thorium-230	SC-15307-S-RS	1.13	0.62	PCI/G
Thorium-230	SC-15308-S	1.18	0.62	PCI/G
Thorium-230	SC-15309-S	0.98	0.62	PCI/G
Thorium-230	SC-15310-S-RS	2.61	0.62	PCI/G
Thorium-230	SC-15311-S	0.89	0.62	PCI/G
Thorium-230	SC-15312-S	0.95	0.62	PCI/G
Thorium-230	SC-15313-S-RS	1.38	0.62	PCI/G
Thorium-230	SC-15314-S	1.28	0.62	PCI/G
Thorium-230	SC-15315-S-RS	5.3	0.62	PCI/G
Thorium-230	SC-15316-S	3.35	0.62	PCI/G
Thorium-230	SC-15317-S-RS	2.75	0.62	PCI/G
Thorium-230	SC-15401-S	2.22	0.62	PCI/G
Thorium-230	SC-15408-S	1.5	0.62	PCI/G
Thorium-230	SC-15415-S	0.87	0.62	PCI/G
Thorium-230	SC-15501-S	1.2	0.62	PCI/G
Thorium-230	SC-15505-S	1.15	0.62	PCI/G
Thorium-230	SC-15510-S	0.93	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 27
Average of Thorium-230 values is 2.25 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 15.10 pCi/g, which is above subsurface criteria, 16.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.33 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.75 pCi/g, which is below subsurface criteria of 16.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-14819-S-02	1.43	2.86	PCI/G
URANIUM-238	SC-14820-S-02	1.49	2.97	PCI/G
URANIUM-238	SC-14917-S	2.61	5.21	PCI/G
URANIUM-238	SC-14918-S	1.86	3.71	PCI/G
URANIUM-238	SC-15301-S-RS	1.17	2.33	PCI/G
URANIUM-238	SC-15302-S	1.32	2.64	PCI/G
URANIUM-238	SC-15303-S	1.86	3.71	PCI/G
URANIUM-238	SC-15304-S-RS	1.89	3.78	PCI/G
URANIUM-238	SC-15305-S-RS	1.59	2.36	PCI/G
URANIUM-238	SC-15306-S	1.32	2.64	PCI/G
URANIUM-238	SC-15307-S-RS	1.27	2.54	PCI/G
URANIUM-238	SC-15308-S	1.63	3.25	PCI/G
URANIUM-238	SC-15309-S	1.21	2.42	PCI/G
URANIUM-238	SC-15310-S-RS	2.14	4.27	PCI/G
URANIUM-238	SC-15311-S	1.92	3.83	PCI/G
URANIUM-238	SC-15312-S	1.32	2.64	PCI/G
URANIUM-238	SC-15313-S-RS	1.40	2.80	PCI/G
URANIUM-238	SC-15314-S	1.74	3.48	PCI/G
URANIUM-238	SC-15315-S-RS	1.53	3.06	PCI/G
URANIUM-238	SC-15316-S	1.40	2.79	PCI/G
URANIUM-238	SC-15317-S-RS	1.78	2.23	PCI/G
URANIUM-238	SC-15401-S	1.86	3.72	PCI/G
URANIUM-238	SC-15408-S	1.37	2.73	PCI/G
URANIUM-238	SC-15415-S	1.79	3.58	PCI/G
URANIUM-238	SC-15501-S	1.23	2.46	PCI/G
URANIUM-238	SC-15505-S	1.63	3.25	PCI/G
URANIUM-238	SC-15510-S	1.42	2.83	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 27
Average of URANIUM-238 values is 1.60 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 2.61 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

ARSENIC

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Arsenic	SC-15301-S	9.5	0.34	UG/G
Arsenic	SC-15307-S	9.2	2.3	UG/G
Arsenic	SC-15310-S	7.6	2.3	UG/G
Arsenic	SC-15313-S	8.5	2.3	UG/G
Arsenic	SC-15315-S	10.6	2.4	UG/G
Arsenic	SC-15317-S-RS	3.0	6.0	UG/G

NUMBER OF Arsenic SAMPLES IN DATABASE FOR THIS CU IS: 6
Average of Arsenic values is 8.07 ug/g, which is below ALARA, 45.00 ug/g.
Maximum single value is 10.60 ug/g, which is below criteria, 75 ug/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6·4·98 3. Review Form #: 98-020

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU154 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___TNT ___PCB ___PAH ___As ___Cr ___Pb ___Tl

7. Results average below ALARA goal(s)?	X Yes	___No
8. All results below cleanup criteria?	X Yes	___No
9. Any results greater than 3X criteria?	___Yes	X No
10. Hot spots present (less than 3X criteria)?	___Yes	X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___Yes ___No
			___Yes ___No
			___Yes ___No

11. Comments

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Melissa A. Lutz Date 6/4/98

SECTION II *CU is released for unrestricted use.*

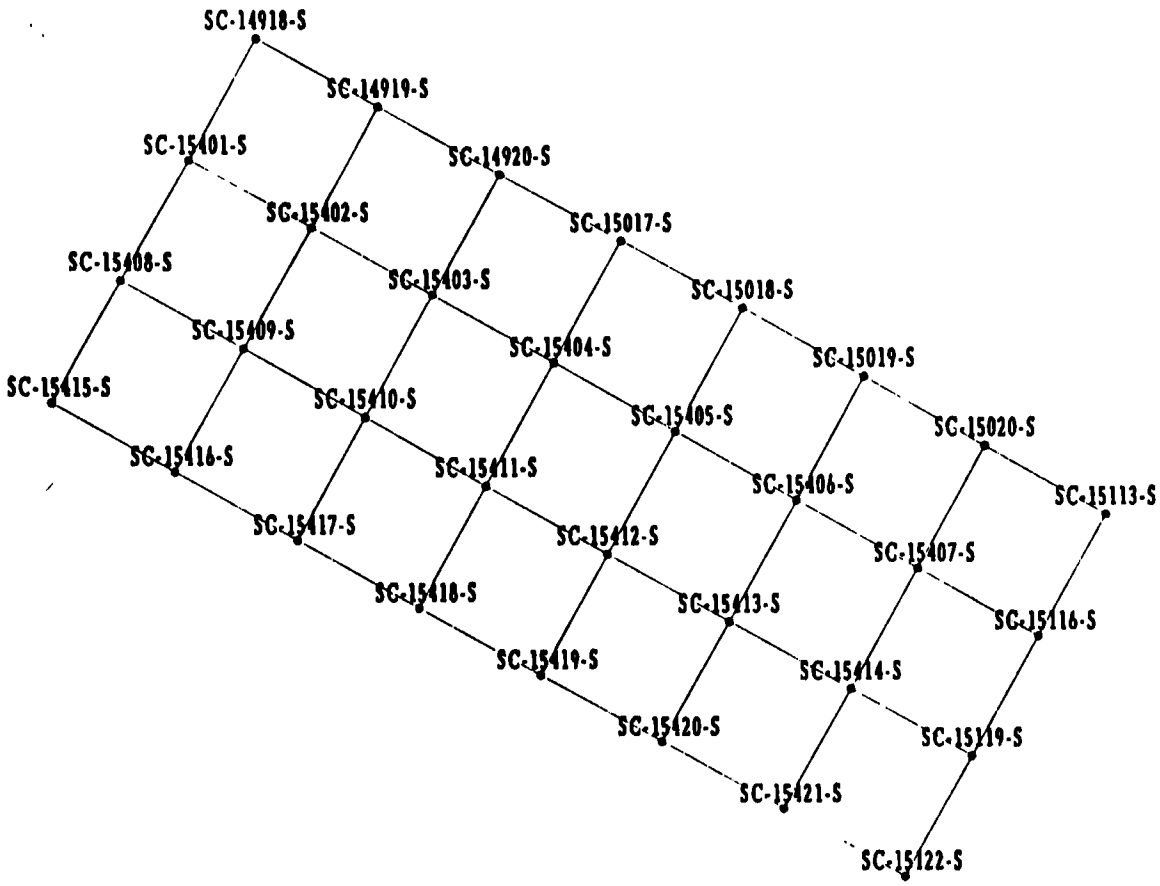
14. ES&H Manager: [signature] Date: 6/4/98

15. DOE Project Manager/Engineer: [signature] Date: 6/4/98

16. Project Manager: Sherry Hodges Date: 6/5/98

17. Construction Engineer: [signature] Date: 6/5/98

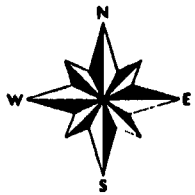
SEE ATTACHED RESULTS AND MAP



Form #98-020

15 7.5 0 METERS

45 22.5 0 FEET



Sample Locations in Remedial Unit RU013
Confirmation Unit CU154

Figure B-12

EXHIBIT NO.: G/CP/283/0897	REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-14918-S	0.75	0.66	PCI/G
RADIUM-226	SC-14919-S	1.50	0.27	PCI/G
RADIUM-226	SC-14920-S	1.57	0.20	PCI/G
RADIUM-226	SC-15017-S	1.97	0.28	PCI/G
RADIUM-226	SC-15018-S	1.54	0.22	PCI/G
RADIUM-226	SC-15019-S	1.25	0.23	PCI/G
RADIUM-226	SC-15020-S	1.61	0.34	PCI/G
RADIUM-226	SC-15113-S	1.57	0.30	PCI/G
RADIUM-226	SC-15116-S	1.07	0.27	PCI/G
RADIUM-226	SC-15119-S	1.43	0.26	PCI/G
RADIUM-226	SC-15122-S	0.69	0.61	PCI/G
RADIUM-226	SC-15401-S	0.77	0.68	PCI/G
RADIUM-226	SC-15402-S	1.50	0.31	PCI/G
RADIUM-226	SC-15403-S	1.88	0.30	PCI/G
RADIUM-226	SC-15404-S	1.66	0.25	PCI/G
RADIUM-226	SC-15405-S	1.43	0.29	PCI/G
RADIUM-226	SC-15406-S	1.59	0.22	PCI/G
RADIUM-226	SC-15407-S	0.76	0.67	PCI/G
RADIUM-226	SC-15408-S	1.63	0.17	PCI/G
RADIUM-226	SC-15409-S	1.91	0.27	PCI/G
RADIUM-226	SC-15410-S	1.34	0.27	PCI/G
RADIUM-226	SC-15411-S	1.48	0.29	PCI/G
RADIUM-226	SC-15412-S-RS	1.52	0.27	PCI/G
RADIUM-226	SC-15413-S	1.91	0.28	PCI/G
RADIUM-226	SC-15414-S	1.57	0.21	PCI/G
RADIUM-226	SC-15415-S	0.75	0.66	PCI/G
RADIUM-226	SC-15416-S	1.20	0.24	PCI/G
RADIUM-226	SC-15417-S	0.74	0.65	PCI/G
RADIUM-226	SC-15418-S	1.52	0.27	PCI/G
RADIUM-226	SC-15419-S	0.68	0.60	PCI/G
RADIUM-226	SC-15420-S	1.34	0.23	PCI/G
RADIUM-226	SC-15421-S	1.38	0.29	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 32
Average of RADIUM-226 values is 1.36 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.97 pCi/g, which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-14918-S	1.73	0.40	PCI/G
RADIUM-228	SC-14919-S	1.11	0.38	PCI/G
RADIUM-228	SC-14920-S	1.51	0.48	PCI/G
RADIUM-228	SC-15017-S	1.56	0.38	PCI/G
RADIUM-228	SC-15018-S	1.22	0.38	PCI/G
RADIUM-228	SC-15019-S	0.98	0.32	PCI/G
RADIUM-228	SC-15020-S	1.46	0.42	PCI/G
RADIUM-228	SC-15113-S	2.01	0.46	PCI/G
RADIUM-228	SC-15116-S	1.25	0.45	PCI/G
RADIUM-228	SC-15119-S	1.04	0.45	PCI/G
RADIUM-228	SC-15122-S	0.50	1.00	PCI/G
RADIUM-228	SC-15401-S	1.41	0.67	PCI/G
RADIUM-228	SC-15402-S	1.33	0.38	PCI/G
RADIUM-228	SC-15403-S	1.37	0.49	PCI/G
RADIUM-228	SC-15404-S	1.19	0.32	PCI/G
RADIUM-228	SC-15405-S	1.24	0.52	PCI/G
RADIUM-228	SC-15406-S	1.24	0.40	PCI/G
RADIUM-228	SC-15407-S	0.54	1.07	PCI/G
RADIUM-228	SC-15408-S	1.29	0.36	PCI/G
RADIUM-228	SC-15409-S	1.48	0.41	PCI/G
RADIUM-228	SC-15410-S	1.24	0.34	PCI/G
RADIUM-228	SC-15411-S	1.46	0.50	PCI/G
RADIUM-228	SC-15412-S-RS	1.18	0.43	PCI/G
RADIUM-228	SC-15413-S	1.88	0.47	PCI/G
RADIUM-228	SC-15414-S	1.16	0.42	PCI/G
RADIUM-228	SC-15415-S	1.26	0.35	PCI/G
RADIUM-228	SC-15416-S	1.07	0.37	PCI/G
RADIUM-228	SC-15417-S	1.14	0.58	PCI/G
RADIUM-228	SC-15418-S	1.08	0.32	PCI/G
RADIUM-228	SC-15419-S	1.26	0.52	PCI/G
RADIUM-228	SC-15420-S	1.41	0.34	PCI/G
RADIUM-228	SC-15421-S	1.12	0.53	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 32
Average of RADIUM-228 values is 1.27 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.01 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-14918-S	1.51	0.62	PCI/G
Thorium-230	SC-14919-S	0.99	0.62	PCI/G
Thorium-230	SC-14920-S	1.33	0.62	PCI/G
Thorium-230	SC-15017-S	2.93	0.62	PCI/G
Thorium-230	SC-15018-S	1.12	0.62	PCI/G
Thorium-230	SC-15019-S	1.59	0.62	PCI/G
Thorium-230	SC-15020-S	3.00	0.62	PCI/G
Thorium-230	SC-15113-S	1.78	0.62	PCI/G
Thorium-230	SC-15116-S	1.15	0.62	PCI/G
Thorium-230	SC-15119-S	1.31	0.62	PCI/G
Thorium-230	SC-15122-S	0.94	0.62	PCI/G
Thorium-230	SC-15401-S	2.22	0.62	PCI/G
Thorium-230	SC-15402-S	1.85	0.62	PCI/G
Thorium-230	SC-15403-S	2.74	0.62	PCI/G
Thorium-230	SC-15404-S	1.14	0.62	PCI/G
Thorium-230	SC-15405-S	1.37	0.62	PCI/G
Thorium-230	SC-15406-S	1.03	0.62	PCI/G
Thorium-230	SC-15407-S	2.38	0.62	PCI/G
Thorium-230	SC-15408-S	1.50	0.62	PCI/G
Thorium-230	SC-15409-S	1.61	0.62	PCI/G
Thorium-230	SC-15410-S	1.27	0.62	PCI/G
Thorium-230	SC-15411-S	2.02	0.62	PCI/G
Thorium-230	SC-15412-S-RS	1.36	0.62	PCI/G
Thorium-230	SC-15413-S	4.99	0.62	PCI/G
Thorium-230	SC-15414-S	0.98	0.62	PCI/G
Thorium-230	SC-15415-S	0.87	0.62	PCI/G
Thorium-230	SC-15416-S	1.00	0.62	PCI/G
Thorium-230	SC-15417-S	1.08	0.62	PCI/G
Thorium-230	SC-15418-S	1.26	0.62	PCI/G
Thorium-230	SC-15419-S	1.14	0.62	PCI/G
Thorium-230	SC-15420-S	1.22	0.62	PCI/G
Thorium-230	SC-15421-S	0.89	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 32
Average of Thorium-230 values is 1.61 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 4.99 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.30 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.06 pCi/g, which is below surface criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-14918-S	1.86	3.71	PCI/G
URANIUM-238	SC-14919-S	1.27	2.54	PCI/G
URANIUM-238	SC-14920-S	1.86	3.72	PCI/G
URANIUM-238	SC-15017-S	1.34	2.68	PCI/G
URANIUM-238	SC-15018-S	1.23	2.45	PCI/G
URANIUM-238	SC-15019-S	1.31	2.61	PCI/G
URANIUM-238	SC-15020-S	2.29	2.68	PCI/G
URANIUM-238	SC-15113-S	1.42	2.84	PCI/G
URANIUM-238	SC-15116-S	1.89	3.78	PCI/G
URANIUM-238	SC-15119-S	1.31	2.62	PCI/G
URANIUM-238	SC-15122-S	1.80	3.60	PCI/G
URANIUM-238	SC-15401-S	1.86	3.72	PCI/G
URANIUM-238	SC-15402-S	1.34	2.67	PCI/G
URANIUM-238	SC-15403-S	1.92	3.83	PCI/G
URANIUM-238	SC-15404-S	1.26	2.52	PCI/G
URANIUM-238	SC-15405-S	1.81	3.61	PCI/G
URANIUM-238	SC-15406-S	1.32	2.63	PCI/G
URANIUM-238	SC-15407-S	1.89	3.77	PCI/G
URANIUM-238	SC-15408-S	1.37	2.73	PCI/G
URANIUM-238	SC-15409-S	1.82	3.64	PCI/G
URANIUM-238	SC-15410-S	1.29	2.57	PCI/G
URANIUM-238	SC-15411-S	1.80	3.60	PCI/G
URANIUM-238	SC-15412-S-RS	1.74	3.48	PCI/G
URANIUM-238	SC-15413-S	1.49	2.98	PCI/G
URANIUM-238	SC-15414-S	1.26	2.52	PCI/G
URANIUM-238	SC-15415-S	1.79	3.58	PCI/G
URANIUM-238	SC-15416-S	1.21	2.42	PCI/G
URANIUM-238	SC-15417-S	1.83	3.65	PCI/G
URANIUM-238	SC-15418-S	1.27	2.54	PCI/G
URANIUM-238	SC-15419-S	1.70	3.39	PCI/G
URANIUM-238	SC-15420-S	1.22	2.44	PCI/G
URANIUM-238	SC-15421-S	1.52	3.03	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 32
Average of URANIUM-238 values is 1.57 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 2.29 pCi/g, which is below criteria, 120.00 pCi/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6.9.98 3. Review Form #: 98-025

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU155 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___TNT ___PCB ___PAH ___As ___Cr ___Pb ___Tl

7. Results average below ALARA goal(s)?	X Yes	___No
8. All results below cleanup criteria?	X Yes	___No
9. Any results greater than 3X criteria?	___Yes	X No
10. Hot spots present (less than 3X criteria)?	___Yes	X No

Parameter	Size	Concentration	Complies with Plan?
N/A			___Yes ___No
			___Yes ___No
			___Yes ___No

11. Comments Note: revised southern boundary - see attached figure.

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 6/9/98

SECTION II *CU is released for unrestricted use.*

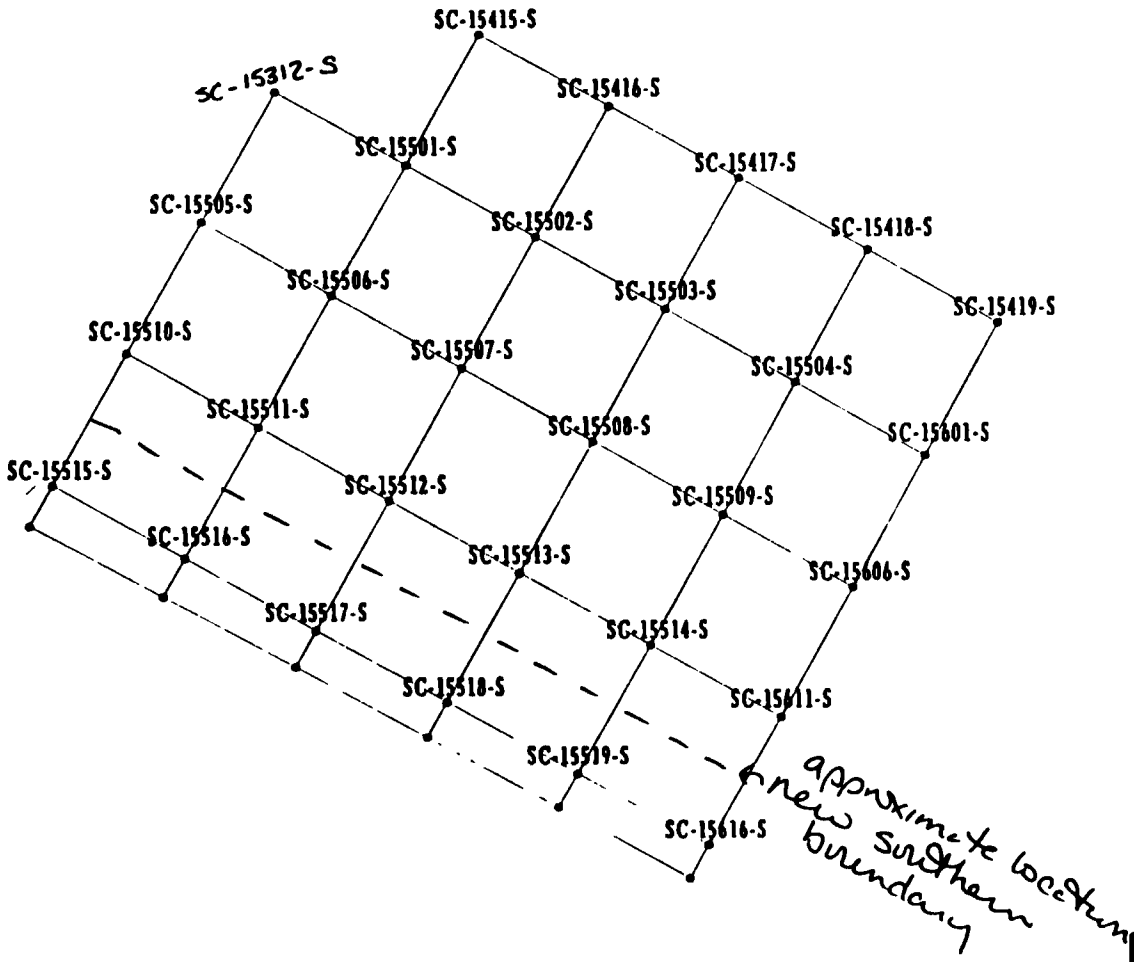
14. ES&H Manager: [signature] Date: 6/9/98

15. DOE Project Manager/Engineer: [signature] Date: 6/9/98

16. Project Manager: Sheryl Hodges Date: 6/9/98

17. Construction Engineer: [signature] Date: 6.10.98

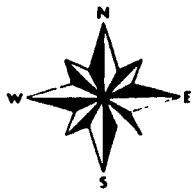
SEE ATTACHED RESULTS AND MAP



Review Form #98-025

15 7.5 0 METERS

45 22.5 0 FEET



Sample Locations in Remedial Unit RU013
Confirmation Unit CU155

Figure B-13

EXHIBIT NO.: G/CP/284/0897	REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97

06/09/98

CU155 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-15415-S	0.75	0.66	PCI/G
RADIUM-226	SC-15416-S	1.20	0.24	PCI/G
RADIUM-226	SC-15417-S	0.74	0.65	PCI/G
RADIUM-226	SC-15418-S	1.52	0.27	PCI/G
RADIUM-226	SC-15419-S	0.68	0.60	PCI/G
RADIUM-226	SC-15501-S	1.82	0.23	PCI/G
RADIUM-226	SC-15502-S	2.54	0.30	PCI/G
RADIUM-226	SC-15503-S	1.38	0.28	PCI/G
RADIUM-226	SC-15504-S	1.63	0.29	PCI/G
RADIUM-226	SC-15505-S	0.64	0.56	PCI/G
RADIUM-226	SC-15506-S	1.43	0.24	PCI/G
RADIUM-226	SC-15507-S	0.76	0.67	PCI/G
RADIUM-226	SC-15508-S	1.04	0.24	PCI/G
RADIUM-226	SC-15509-S	1.63	0.32	PCI/G
RADIUM-226	SC-15510-S	1.63	0.28	PCI/G
RADIUM-226	SC-15511-S	1.52	0.28	PCI/G
RADIUM-226	SC-15512-S	1.50	0.38	PCI/G
RADIUM-226	SC-15513-S	1.50	0.23	PCI/G
RADIUM-226	SC-15514-S	1.04	0.24	PCI/G
RADIUM-226	SC-15601-S	1.61	0.29	PCI/G
RADIUM-226	SC-15606-S	1.52	0.24	PCI/G
RADIUM-226	SC-15611-S	1.34	0.23	PCI/G
RADIUM-226	SC-15312-S	1.38	0.26	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 23
Average of RADIUM-226 values is 1.34 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.54 pCi/g, which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-15415-S	1.26	0.35	PCI/G
RADIUM-228	SC-15416-S	1.07	0.37	PCI/G
RADIUM-228	SC-15417-S	1.14	0.58	PCI/G
RADIUM-228	SC-15418-S	1.08	0.32	PCI/G
RADIUM-228	SC-15419-S	1.[illegible]	0.52	PCI/G
RADIUM-228	SC-15501-S	0.[illegible]	0.27	PCI/G
RADIUM-228	SC-15502-S	1.[illegible]	0.70	PCI/G
RADIUM-228	SC-15503-S	1.18	0.38	PCI/G
RADIUM-228	SC-15504-S	1.20	0.53	PCI/G
RADIUM-228	SC-15505-S	1.05	0.43	PCI/G
RADIUM-228	SC-15506-S	1.31	0.31	PCI/G
RADIUM-228	SC-15507-S	1.60	0.32	PCI/G
RADIUM-228	SC-15508-S	1.22	0.33	PCI/G
RADIUM-228	SC-15509-S	0.55	1.10	PCI/G
RADIUM-228	SC-15510-S	0.99	0.37	PCI/G
RADIUM-228	SC-15511-S	1.40	0.40	PCI/G
RADIUM-228	SC-15512-S	0.53	1.06	PCI/G
RADIUM-228	SC-15513-S	1.30	0.46	PCI/G
RADIUM-228	SC-15514-S	1.19	0.34	PCI/G
RADIUM-228	SC-15601-S	1.36	0.47	PCI/G
RADIUM-228	SC-15606-S	1.23	0.34	PCI/G
RADIUM-228	SC-15611-S	1.28	0.35	PCI/G
RADIUM-228	SC-15312-S	1.19	0.38	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 23
Average of RADIUM-228 values is 1.16 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.60 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-15415-S	0.87	0.62	PCI/G
Thorium-230	SC-15416-S	1.00	0.62	PCI/G
Thorium-230	SC-15417-S	1.08	0.62	PCI/G
Thorium-230	SC-15418-S	1.26	0.62	PCI/G
Thorium-230	SC-15419-S	1.14	0.62	PCI/G
Thorium-230	SC-15501-S	1.20	0.62	PCI/G
Thorium-230	SC-15502-S	1.16	0.62	PCI/G
Thorium-230	SC-15503-S	0.99	0.62	PCI/G
Thorium-230	SC-15504-S	1.17	0.62	PCI/G
Thorium-230	SC-15505-S	1.15	0.62	PCI/G
Thorium-230	SC-15506-S	0.95	0.62	PCI/G
Thorium-230	SC-15507-S	1.06	0.62	PCI/G
Thorium-230	SC-15508-S	0.94	0.62	PCI/G
Thorium-230	SC-15509-S	1.04	0.62	PCI/G
Thorium-230	SC-15510-S	0.93	0.62	PCI/G
Thorium-230	SC-15511-S	1.38	0.62	PCI/G
Thorium-230	SC-15512-S	1.03	0.62	PCI/G
Thorium-230	SC-15513-S	1.93	0.62	PCI/G
Thorium-230	SC-15514-S	1.32	0.62	PCI/G
Thorium-230	SC-15601-S	1.18	0.62	PCI/G
Thorium-230	SC-15606-S	1.05	0.62	PCI/G
Thorium-230	SC-15611-S	0.89	0.62	PCI/G
Thorium-230	SC-15312-S	0.95	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 23
Average of Thorium-230 values is 1.11 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.93 pCi/g, which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.19 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.64 pCi/g, which is below surface criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-15415-S	1.79	3.58	PCI/G
URANIUM-238	SC-15416-S	1.21	2.42	PCI/G
URANIUM-238	SC-15417-S	1.83	3.65	PCI/G
URANIUM-238	SC-15418-S	1.27	2.54	PCI/G
URANIUM-238	SC-15419-S	1.70	3.39	PCI/G
URANIUM-238	SC-15501-S	1.23	2.46	PCI/G
URANIUM-238	SC-15502-S	1.90	3.79	PCI/G
URANIUM-238	SC-15503-S	1.20	2.40	PCI/G
URANIUM-238	SC-15504-S	1.76	3.51	PCI/G
URANIUM-238	SC-15505-S	1.63	3.25	PCI/G
URANIUM-238	SC-15506-S	1.26	2.51	PCI/G
URANIUM-238	SC-15507-S	1.71	3.42	PCI/G
URANIUM-238	SC-15508-S	1.31	2.62	PCI/G
URANIUM-238	SC-15509-S	1.82	3.64	PCI/G
URANIUM-238	SC-15510-S	1.42	2.83	PCI/G
URANIUM-238	SC-15511-S	1.36	2.72	PCI/G
URANIUM-238	SC-15512-S	1.79	3.57	PCI/G
URANIUM-238	SC-15513-S	1.91	3.82	PCI/G
URANIUM-238	SC-15514-S	1.25	2.49	PCI/G
URANIUM-238	SC-15601-S	1.76	3.51	PCI/G
URANIUM-238	SC-15606-S	1.35	2.69	PCI/G
URANIUM-238	SC-15611-S	1.33	2.66	PCI/G
URANIUM-238	SC-15312-S	1.32	2.64	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 23
Average of URANIUM-238 values is 1.52 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 1.91 pCi/g, which is below criteria, 120.00 pCi/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6-9-98 3. Review Form #: 98-026

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU150 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria? using subsurface criteria	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
NA			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments Note: Revised southern boundary - see attached figure.

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [signature] Date 6/9/98

SECTION II *CU is released for unrestricted use.*

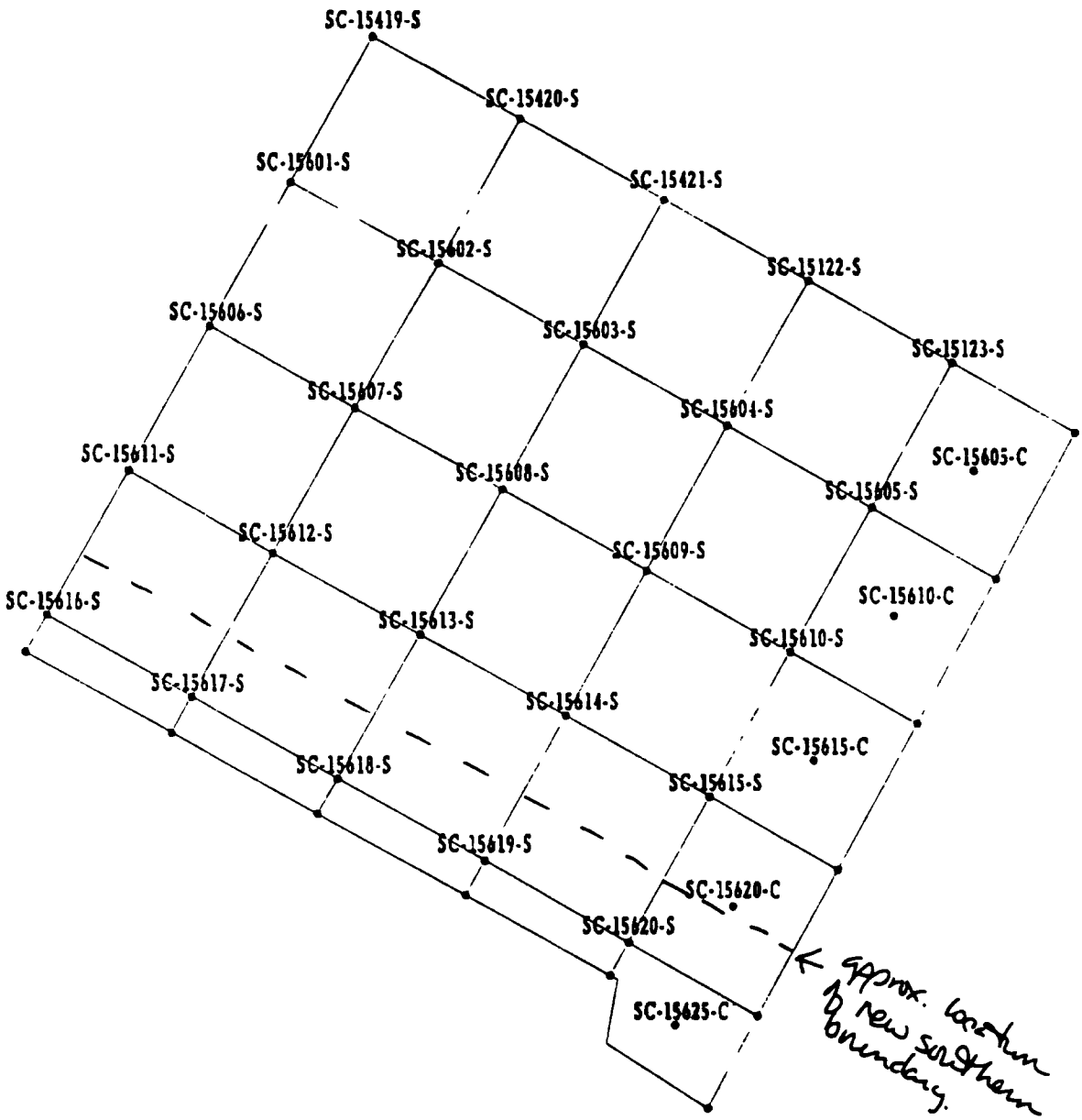
14. ES&H Manager: [signature] Date: 6/9/98

15. DOE Project Manager/Engineer: Thomas C Pauling Date: 6/9/98

16. Project Manager: Sherry Hodges Date: 6/9/98

17. Construction Engineer: [signature] Date: 6-10-98

SEE ATTACHED RESULTS AND MAP



Review Form #98-026

5 2.5 0 METERS

15 7.5 0 FEET

Sample Locations in Remedial Unit RU013 Confirmation Unit CU156

Figure B-14

EXHIBIT NO.: G/CP/285/0897		REPORT NO.: DOE/OR/21548-692	
DESIGNATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	

06/09/98

CU156 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-15122-S	0.69	0.61	PCI/G
RADIUM-226	SC-15123-S	1.20	0.26	PCI/G
RADIUM-226	SC-15419-S	0.68	0.60	PCI/G
RADIUM-226	SC-15420-S	1.34	0.23	PCI/G
RADIUM-226	SC-15421-S	1.38	0.29	PCI/G
RADIUM-226	SC-15601-S	1.61	0.29	PCI/G
RADIUM-226	SC-15602-S	1.34	0.23	PCI/G
RADIUM-226	SC-15603-S	1.00	0.32	PCI/G
RADIUM-226	SC-15604-S	1.82	0.27	PCI/G
RADIUM-226	SC-15605-C	1.43	0.35	PCI/G
RADIUM-226	SC-15605-S	1.16	0.22	PCI/G
RADIUM-226	SC-15606-S	1.52	0.24	PCI/G
RADIUM-226	SC-15607-S	1.61	0.31	PCI/G
RADIUM-226	SC-15608-S	1.23	0.27	PCI/G
RADIUM-226	SC-15609-S	1.59	0.33	PCI/G
RADIUM-226	SC-15610-C	2.07	0.28	PCI/G
RADIUM-226	SC-15610-S	2.25	0.31	PCI/G
RADIUM-226	SC-15611-S	1.34	0.23	PCI/G
RADIUM-226	SC-15612-S	1.52	0.26	PCI/G
RADIUM-226	SC-15613-S	1.66	0.24	PCI/G
RADIUM-226	SC-15614-S	1.02	0.29	PCI/G
RADIUM-226	SC-15615-C	1.16	0.24	PCI/G
RADIUM-226	SC-15615-S	3.11	0.31	PCI/G
RADIUM-226	SC-15620-C	1.77	0.32	PCI/G

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 24
Average of RADIUM-226 values is 1.48 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 3.11 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-15122-S	0.50	1.00	PCI/G
RADIUM-228	SC-15123-S	1.16	0.45	PCI/G
RADIUM-228	SC-15419-S	1.26	0.52	PCI/G
RADIUM-228	SC-15420-S	1.41	0.34	PCI/G
RADIUM-228	SC-15421-S	1.12	0.53	PCI/G
RADIUM-228	SC-15601-S	1.36	0.47	PCI/G
RADIUM-228	SC-15602-S	1.21	0.36	PCI/G
RADIUM-228	SC-15603-S	1.10	0.52	PCI/G
RADIUM-228	SC-15604-S	1.60	0.45	PCI/G
RADIUM-228	SC-15605-C	0.55	1.10	PCI/G
RADIUM-228	SC-15605-S	1.35	0.33	PCI/G
RADIUM-228	SC-15606-S	1.23	0.34	PCI/G
RADIUM-228	SC-15607-S	1.12	0.50	PCI/G
RADIUM-228	SC-15608-S	1.10	0.37	PCI/G
RADIUM-228	SC-15609-S	1.10	0.45	PCI/G
RADIUM-228	SC-15610-C	1.42	0.37	PCI/G
RADIUM-228	SC-15610-S	1.41	0.80	PCI/G
RADIUM-228	SC-15611-S	1.28	0.35	PCI/G
RADIUM-228	SC-15612-S	1.30	0.62	PCI/G
RADIUM-228	SC-15613-S	1.30	0.32	PCI/G
RADIUM-228	SC-15614-S	1.41	0.36	PCI/G
RADIUM-228	SC-15615-C	1.44	0.38	PCI/G
RADIUM-228	SC-15615-S	2.33	0.66	PCI/G
RADIUM-228	SC-15620-C	1.73	0.41	PCI/G

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 24
Average of RADIUM-228 values is 1.28 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.33 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

CU156 DATA REPORT

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Thorium-230	SC-15122-S	0.94	0.62	PCI/G
Thorium-230	SC-15123-S	2.21	0.62	PCI/G
Thorium-230	SC-15419-S	1.14	0.62	PCI/G
Thorium-230	SC-15420-S	1.22	0.62	PCI/G
Thorium-230	SC-15421-S	0.89	0.62	PCI/G
Thorium-230	SC-15601-S	1.18	0.62	PCI/G
Thorium-230	SC-15602-S	1.42	0.62	PCI/G
Thorium-230	SC-15603-S	1.16	0.62	PCI/G
Thorium-230	SC-15604-S	4.05	0.62	PCI/G
Thorium-230	SC-15605-C	1.58	0.62	PCI/G
Thorium-230	SC-15605-S	1.08	0.62	PCI/G
Thorium-230	SC-15606-S	1.05	0.62	PCI/G
Thorium-230	SC-15607-S	0.95	0.62	PCI/G
Thorium-230	SC-15608-S	0.94	0.62	PCI/G
Thorium-230	SC-15609-S	1.05	0.62	PCI/G
Thorium-230	SC-15610-C	3.91	0.62	PCI/G
Thorium-230	SC-15610-S	3.39	0.62	PCI/G
Thorium-230	SC-15611-S	0.89	0.62	PCI/G
Thorium-230	SC-15612-S	1.45	0.62	PCI/G
Thorium-230	SC-15613-S	0.87	0.62	PCI/G
Thorium-230	SC-15614-S	1.51	0.62	PCI/G
Thorium-230	SC-15615-C	1.39	0.62	PCI/G
Thorium-230	SC-15615-S	11.96	0.62	PCI/G
Thorium-230	SC-15620-C	5.62	0.62	PCI/G

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 24
Average of Thorium-230 values is 2.16 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 11.96 pCi/g, which is below subsurface Criteria, 16.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.31 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 2.39 pCi/g, which is below subsurface criteria of 16.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-15122-S	1.80	3.60	PCI/G
URANIUM-238	SC-15123-S	1.42	2.84	PCI/G
URANIUM-238	SC-15419-S	1.70	3.39	PCI/G
URANIUM-238	SC-15420-S	1.22	2.44	PCI/G
URANIUM-238	SC-15421-S	1.52	3.03	PCI/G
URANIUM-238	SC-15601-S	1.76	3.51	PCI/G
URANIUM-238	SC-15602-S	1.25	2.49	PCI/G
URANIUM-238	SC-15603-S	1.84	3.67	PCI/G
URANIUM-238	SC-15604-S	2.98	1.90	PCI/G
URANIUM-238	SC-15605-C	1.72	3.43	PCI/G
URANIUM-238	SC-15605-S	1.28	2.55	PCI/G
URANIUM-238	SC-15606-S	1.35	2.69	PCI/G
URANIUM-238	SC-15607-S	1.80	3.60	PCI/G
URANIUM-238	SC-15608-S	1.24	2.48	PCI/G
URANIUM-238	SC-15609-S	1.69	3.37	PCI/G
URANIUM-238	SC-15610-C	1.99	2.63	PCI/G
URANIUM-238	SC-15610-S	2.08	4.16	PCI/G
URANIUM-238	SC-15611-S	1.33	2.66	PCI/G
URANIUM-238	SC-15612-S	1.17	2.39	PCI/G
URANIUM-238	SC-15613-S	1.21	2.42	PCI/G
URANIUM-238	SC-15614-S	1.84	3.68	PCI/G
URANIUM-238	SC-15615-C	1.38	2.75	PCI/G
URANIUM-238	SC-15615-S	3.65	4.14	PCI/G
URANIUM-238	SC-15620-C	4.68	2.14	PCI/G

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 24
Average of URANIUM-238 values is 1.83 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 4.68 pCi/g, which is below subsurface criteria, 120.00 pCi/g.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 6.8.98 3. Review Form #: 98-022

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU159 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB X PAH X As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria?	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)? See CU159a report	X Yes ~~X~~ No

Parameter	Size	Concentration	Complies with Plan?
Th-230	<25m²		X Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments Release of this CU includes the original confirmation event (results attached as CU159a Data Report) and confirmation after removal of Zones B, C, + D (results attached as CU159b Data Report).

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Melvin H Lutz Date 6/9/98

SECTION II *CU is released for unrestricted use.*

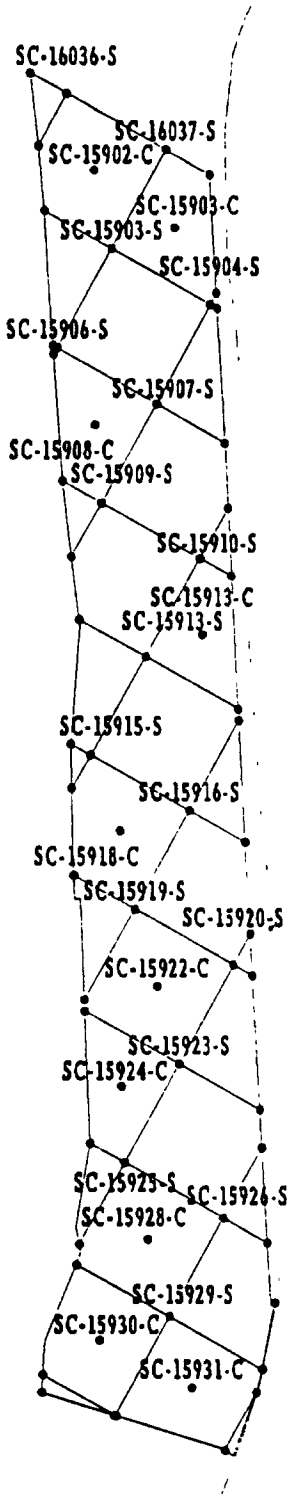
14. ES&H Manager: [signature] Date: 6/9/98

15. DOE Project Manager/Engineer: Thomas C. Pauling Date: 6/9/98

16. Project Manager: Sherryl Hodges Date: 6/9/98

17. Construction Engineer: [signature] Date: 6.10.98

SEE ATTACHED RESULTS AND MAP



5 2.5 0 M E

7.5

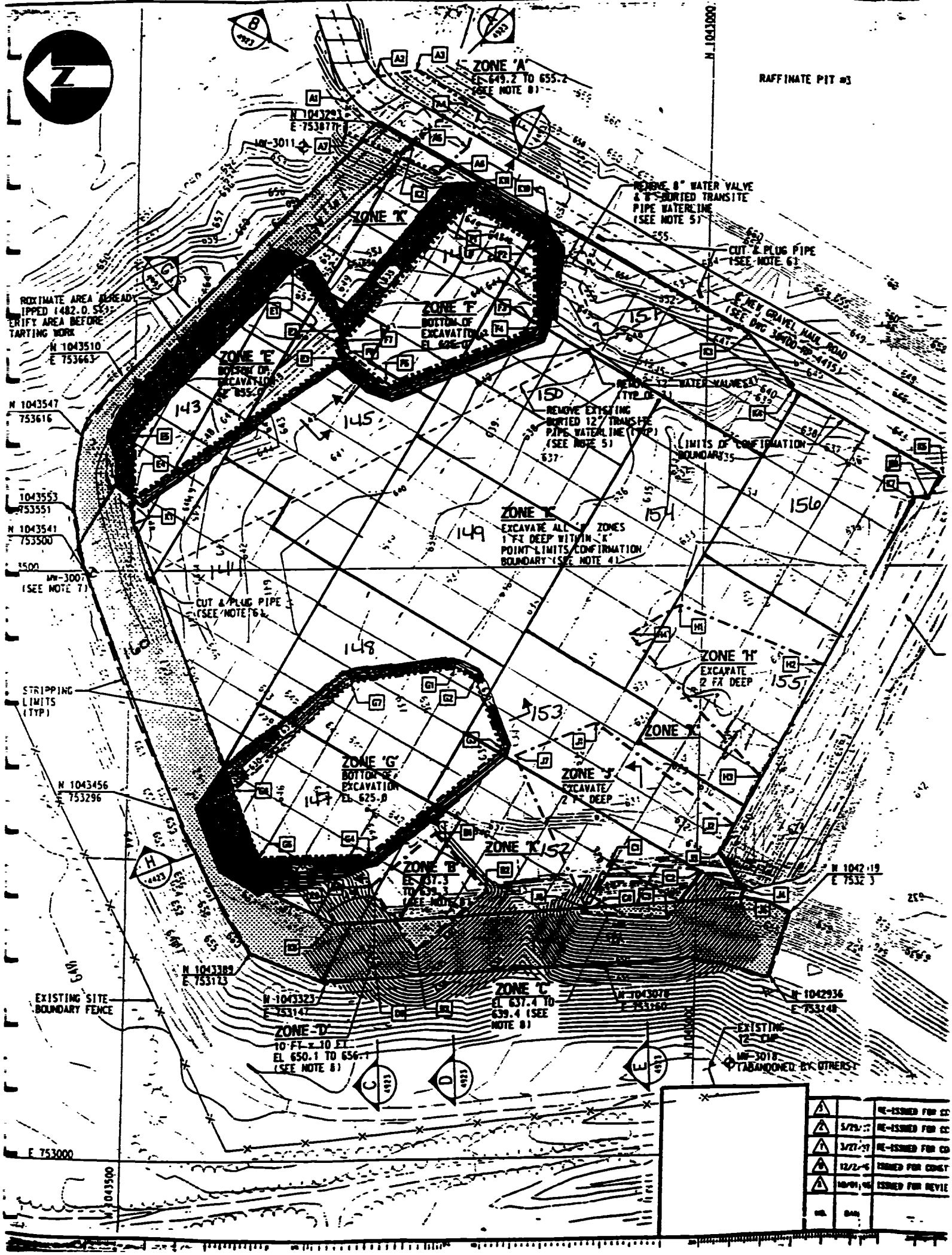
15 0 F E

Form # 98-022

Sample Locations in Remedial Unit RU013 Confirmation Unit CU159

Figure B-15

EXHIBIT NO.: G/CP/286/0897		REPORT NO: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97	



RAFFINATE PIT #3
ZONE 'A'
EL 649.2 TO 655.2
(SEE NOTE 8)
N 1043293
E 753877
MW-3011
REMOVE 8" WATER VALVE
& 8" BURIED TRANSITE
PIPE WATERLINE
(SEE NOTE 5)
CUT & PLUG PIPE
(SEE NOTE 6)
ZONE 'K'
ZONE 'F'
BOTTOM OF
EXCAVATION
EL 625.0
ZONE 'E'
BOTTOM OF
EXCAVATION
EL 655.0
ROXIMATE AREA ALREADY
IPPED (482.0 SY)
ERIFY AREA BEFORE
TARTING WORK
N 1043510
E 753663
N 1043547
753616
N 1043553
753551
N 1043541
753500
MW-3007
(SEE NOTE 7)
REMOVE 12" WATER VALVES
(TYP OF 3)
REMOVE EXISTING
BURIED 12" TRANSITE
PIPE WATERLINE (TYP)
(SEE NOTE 5)
LIMITS OF CONFIRMATION
BOUNDARY
ZONE 'K'
EXCAVATE ALL 'K' ZONES
1 FT DEEP WITHIN 'K'
POINT LIMITS CONFIRMATION
BOUNDARY (SEE NOTE 4)
CUT & PLUG PIPE
(SEE NOTE 6)
ZONE 'H'
EXCAVATE
2 FT DEEP
STRIPPING
LIMITS
(TYP)
ZONE 'G'
BOTTOM OF
EXCAVATION
EL 625.0
ZONE 'J'
EXCAVATE
2 FT DEEP
ZONE 'K'
ZONE 'B'
EL 637.3
TO 639.3
(SEE NOTE 8)
N 1043456
753296
N 1043389
E 753173
EXISTING SITE
BOUNDARY FENCE
N 1043323
E 753147
ZONE 'C'
EL 637.4 TO
639.4 (SEE
NOTE 8)
N 1043078
E 753160
N 1042936
E 753148
ZONE 'D'
10 FT x 10 FT
EL 650.1 TO 656.1
(SEE NOTE 8)
EXISTING
12" CMP
MW-3018
(ABANDONED BY OTHERS)
E 753000
N 1043500
N 1043000
143
145
150
151
149
154
156
148
153
155
147
152
RE-ISSUED FOR CC
RE-ISSUED FOR CC
RE-ISSUED FOR CO
ISSUED FOR CONST
ISSUED FOR REVIE

06/09/98

CU159 DATA REPORT - CU159a

Arsenic

Number of Arsenic samples in database for this CU: 25

Parameter	Location	Conc	DL	Units
Arsenic	SC-15902-C	9.07	0.832	ug/g
Arsenic	SC-15903-C	8.26	0.808	ug/g
Arsenic	SC-15903-S	8.02	0.804	ug/g
Arsenic	SC-15904-S	5.71	0.820	ug/g
Arsenic	SC-15906-S	7.08	0.808	ug/g
Arsenic	SC-15907-S	8.39	0.804	ug/g
Arsenic	SC-15908-C	7.23	0.804	ug/g
Arsenic	SC-15909-S	4.66	0.824	ug/g
Arsenic	SC-15910-S	6.38	0.864	ug/g
Arsenic	SC-15913-C	7.59	0.804	ug/g
Arsenic	SC-15913-S	5.39	0.808	ug/g
Arsenic	SC-15915-S	6.93	0.872	ug/g
Arsenic	SC-15916-S	7.21	0.820	ug/g
Arsenic	SC-15918-C	6.90	0.792	ug/g
Arsenic	SC-15919-S	6 90	0.772	ug/g
Arsenic	SC-15920-S	7.55	0.780	ug/g
Arsenic	SC-15922-C	7.07	0.860	ug/g
Arsenic	SC-15923-S	7.89	0.824	ug/g
Arsenic	SC-15924-C	6.64	0.816	ug/g
Arsenic	SC-15925-S	6.69	0.824	ug/g
Arsenic	SC-15926-S	7.09	0.852	ug/g
Arsenic	SC-15928-C	7.17	0.780	ug/g
Arsenic	SC-15929-S	7.08	0.820	ug/g
Arsenic	SC-15930-C	8.64	0.796	ug/g
Arsenic	SC-15931-C	7.39	0.820	ug/g

Average of Arsenic values is 7.157 ug/g, which is below the ALARA Goal of 45 ug/g.
Maximum single value is 9.07 ug/g, which is below Criteria of 75 ug/g.

06/09/98

CU159 DATA REPORT - CU159a

Uranium-238

Number of U-238 samples in database for this CU: 27

Parameter	Location	Conc	DL	Units
U-238	SC-15902-C	2.04	4.07	pCi/g
U-238	SC-15903-C	1.91	3.81	pCi/g
U-238	SC-15903-S	1.71	3.41	pCi/g
U-238	SC-15904-S	1.51	3.02	pCi/g
U-238	SC-15906-S	1.74	3.48	pCi/g
U-238	SC-15907-S	1.39	2.77	pCi/g
U-238	SC-15908-C	1.77	3.54	pCi/g
U-238	SC-15909-S	1.81	3.61	pCi/g
U-238	SC-15910-S	1.93	3.86	pCi/g
U-238	SC-15913-C	1.86	3.71	pCi/g
U-238	SC-15913-S	1.31	2.61	pCi/g
U-238	SC-15915-S	1.29	2.57	pCi/g
U-238	SC-15916-S	1.84	3.67	pCi/g
U-238	SC-15918-C	1.30	2.60	pCi/g
U-238	SC-15919-S	1.35	2.69	pCi/g
U-238	SC-15920-S	1.34	2.67	pCi/g
U-238	SC-15922-C	2.27	4.53	pCi/g
U-238	SC-15923-S	1.25	2.49	pCi/g
U-238	SC-15924-C	1.72	3.43	pCi/g
U-238	SC-15925-S	1.40	2.79	pCi/g
U-238	SC-15926-S	2.66	2.37	pCi/g
U-238	SC-15928-C	1.15	2.30	pCi/g
U-238	SC-15929-S	1.73	3.46	pCi/g
U-238	SC-15930-C	1.37	2.74	pCi/g
U-238	SC-15931-C	1.36	2.72	pCi/g
U-238	SC-16036-S	1.79	3.57	pCi/g
U-238	SC-16037-S	1.33	2.66	pCi/g

Average of U-238 values is 1.63 pCi/g, which is below the ALARA Goal of 30 pCi/g.
Maximum single value is 2.66 pCi/g, which is below Criteria of 120 pCi/g.

06/09/98

CU159 DATA REPORT - CU159a

Radium-226

Number of Ra-226 samples in database for this CU: 27

Parameter	Location	Conc	DL	Units
Ra-226	SC-15902-C	1.95	0.36	pCi/g
Ra-226	SC-15903-C	2.25	0.29	pCi/g
Ra-226	SC-15903-S	3.00	0.37	pCi/g
Ra-226	SC-15904-S	2.27	0.27	pCi/g
Ra-226	SC-15906-S	1.57	0.25	pCi/g
Ra-226	SC-15907-S	1.43	0.23	pCi/g
Ra-226	SC-15908-C	1.36	0.33	pCi/g
Ra-226	SC-15909-S	1.11	0.25	pCi/g
Ra-226	SC-15910-S	1.70	0.33	pCi/g
Ra-226	SC-15913-C	1.68	0.20	pCi/g
Ra-226	SC-15913-S	1.50	0.22	pCi/g
Ra-226	SC-15915-S	1.82	0.28	pCi/g
Ra-226	SC-15916-S	0.37	0.73	pCi/g
Ra-226	SC-15918-C	1.50	0.25	pCi/g
Ra-226	SC-15919-S	1.52	0.21	pCi/g
Ra-226	SC-15920-S	1.23	0.23	pCi/g
Ra-226	SC-15922-C	2.79	0.40	pCi/g
Ra-226	SC-15923-S	1.16	0.28	pCi/g
Ra-226	SC-15924-C	1.93	0.33	pCi/g
Ra-226	SC-15925-S	1.61	0.33	pCi/g
Ra-226	SC-15926-S	0.31	0.62	pCi/g
Ra-226	SC-15928-C	1.52	0.17	pCi/g
Ra-226	SC-15929-S	1.68	0.25	pCi/g
Ra-226	SC-15930-C	1.73	0.26	pCi/g
Ra-226	SC-15931-C	1.43	0.25	pCi/g
Ra-226	SC-16036-S	1.59	0.26	pCi/g
Ra-226	SC-16037-S	1.36	0.23	pCi/g

Average of Ra-226 values is 1.61 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 3.0 pCi/g, which is below Criteria of 6.2 pCi/g.

06/09/98

CU159 DATA REPORT - CU159a

Radium-228

Number of Ra-228 samples in database for this CU: 27

Parameter	Location	Conc	DL	Units
Ra-228	SC-15902-C	1.71	0.55	pCi/g
Ra-228	SC-15903-C	1.62	0.53	pCi/g
Ra-228	SC-15903-S	2.53	0.45	pCi/g
Ra-228	SC-15904-S	1.32	0.39	pCi/g
Ra-228	SC-15906-S	1.57	0.53	pCi/g
Ra-228	SC-15907-S	1.56	0.36	pCi/g
Ra-228	SC-15908-C	1.51	0.49	pCi/g
Ra-228	SC-15909-S	1.28	0.54	pCi/g
Ra-228	SC-15910-S	1.34	0.55	pCi/g
Ra-228	SC-15913-C	1.39	0.58	pCi/g
Ra-228	SC-15913-S	1.16	0.38	pCi/g
Ra-228	SC-15915-S	1.08	0.36	pCi/g
Ra-228	SC-15916-S	1.43	0.34	pCi/g
Ra-228	SC-15918-C	1.27	0.35	pCi/g
Ra-228	SC-15919-S	1.28	0.41	pCi/g
Ra-228	SC-15920-S	1.28	0.28	pCi/g
Ra-228	SC-15922-C	1.78	0.60	pCi/g
Ra-228	SC-15923-S	1.03	0.36	pCi/g
Ra-228	SC-15924-C	1.64	0.40	pCi/g
Ra-228	SC-15925-S	1.36	0.43	pCi/g
Ra-228	SC-15926-S	0.82	0.73	pCi/g
Ra-228	SC-15928-C	1.08	0.32	pCi/g
Ra-228	SC-15929-S	0.62	1.24	pCi/g
Ra-228	SC-15930-C	1.38	0.28	pCi/g
Ra-228	SC-15931-C	1.16	0.32	pCi/g
Ra-228	SC-16036-S	0.59	1.17	pCi/g
Ra-228	SC-16037-S	1.16	0.42	pCi/g

Average of Ra-228 values is 1.33 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 2.53 pCi/g, which is below Criteria of 6.2 pCi/g.

CU159 DATA REPORT - CU159a

Thorium-230

Number of Th-230 samples in database for this CU: 27

Parameter	Location	Conc	DL	Units
Th-230	SC-15902-C	4.25	0.62	pCi/g
Th-230	SC-15903-C	3.96	0.62	pCi/g
Th-230	SC-15903-S	7.92	0.62	pCi/g
Th-230	SC-15904-S	1.13	0.62	pCi/g
Th-230	SC-15906-S	1.50	0.62	pCi/g
Th-230	SC-15907-S	2.01	0.62	pCi/g
Th-230	SC-15908-C	1.55	0.62	pCi/g
Th-230	SC-15909-S	0.96	0.62	pCi/g
Th-230	SC-15910-S	1.05	0.62	pCi/g
Th-230	SC-15913-C	1.01	0.62	pCi/g
Th-230	SC-15913-S	1.63	0.62	pCi/g
Th-230	SC-15915-S	1.18	0.62	pCi/g
Th-230	SC-15916-S	1.28	0.62	pCi/g
Th-230	SC-15918-C	1.27	0.62	pCi/g
Th-230	SC-15919-S	1.78	0.62	pCi/g
Th-230	SC-15920-S	0.92	0.62	pCi/g
Th-230	SC-15922-C	5.23	0.62	pCi/g
Th-230	SC-15923-S	0.96	0.62	pCi/g
Th-230	SC-15924-C	1.02	0.62	pCi/g
Th-230	SC-15925-S	2.11	0.62	pCi/g
Th-230	SC-15926-S	0.98	0.62	pCi/g
Th-230	SC-15928-C	0.96	0.62	pCi/g
Th-230	SC-15929-S	1.03	0.62	pCi/g
Th-230	SC-15930-C	0.98	0.62	pCi/g
Th-230	SC-15931-C	0.91	0.62	pCi/g
Th-230	SC-16036-S	0.99	0.62	pCi/g
Th-230	SC-16037-S	0.95	0.62	pCi/g

Average of Th-230 values is 1.834 pCi/g, which is below the ALARA Goal of 5 pCi/g. Maximum single value is 7.92 pCi/g, which EXCEEDS Criteria of 6.2 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentrations times 1.025. This gives an average Thorium-232 value of 1.36 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 2.59 pCi/g, which is below criteria of 6.2 pCi/g.

06/09/98

CU159 DATA REPORT - CU159a

Th-230 Hot spot sample results:

Sample ID	Conc	DL	Units
SC-15903-S-HS01	11.86	0.62	pCi/g
SC-15903-S-HS02	0.91	0.62	pCi/g
SC-15903-S-HS03	3.30	0.62	pCi/g
SC-15903-S-HS04	1.48	0.62	pCi/g
SC-15903-S-HS05	1.80	0.62	pCi/g
SC-15903-S-HS06	3.08	0.62	pCi/g
SC-15903-S-HS07	2.81	0.62	pCi/g

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CU159 DATA REPORT - CU159b

Arsenic

Number of Arsenic samples in database for this CU: 30

Parameter	Location	Conc	DL	Units	
Arsenic	SC-15902-C	9.07	0.832	ug/g	
Arsenic	SC-15903-C	8.26	0.808	ug/g	
Arsenic	SC-15903-S	7.20	4.800	ug/g	Zone B
Arsenic	SC-15904-S	8.90	4.300	ug/g	Zone B
Arsenic	SC-15906-S	7.08	0.808	ug/g	
Arsenic	SC-15907-S	2.80	5.600	ug/g	Zone B
Arsenic	SC-15908-C	7.23	0.804	ug/g	
Arsenic	SC-15909-S	4.66	0.824	ug/g	
Arsenic	SC-15910-S	6.38	0.864	ug/g	
Arsenic	SC-15913-C	7.59	0.804	ug/g	
Arsenic	SC-15913-S	5.39	0.808	ug/g	
Arsenic	SC-15915-S	6.93	0.872	ug/g	
Arsenic	SC-15916-S	7.21	0.820	ug/g	
Arsenic	SC-15918-C	6.90	0.792	ug/g	
Arsenic	SC-15919-S	6.90	0.772	ug/g	
Arsenic	SC-15920-S	2.65	5.300	ug/g	Zone C
Arsenic	SC-15922-C	7.07	0.860	ug/g	
Arsenic	SC-15923-S	2.45	4.900	ug/g	Zone C
Arsenic	SC-15924-C	6.64	0.816	ug/g	
Arsenic	SC-15925-S	6.69	0.824	ug/g	
Arsenic	SC-15926-S	7.09	0.852	ug/g	
Arsenic	SC-15928-C	7.17	0.780	ug/g	
Arsenic	SC-15929-S	7.08	0.820	ug/g	
Arsenic	SC-15930-C	8.64	0.796	ug/g	
Arsenic	SC-15931-C	7.39	0.820	ug/g	
Arsenic	SC-15932-S	4.00	0.440	ug/g	Zone D
Arsenic	SC-15933-S	6.90	0.480	ug/g	Zone D
Arsenic	SC-15934-S	10.8	0.440	ug/g	Zone D
Arsenic	SC-15935-S	5.20	0.470	ug/g	Zone D
Arsenic	SC-15936-C	8.10	0.420	ug/g	Zone D

Average of Arsenic values is 6.68 ug/g, which is below the ALARA Goal of 45 ug/g.
Maximum single value is 10.8 ug/g, which is below Criteria of 75 ug/g.

06/09/98

CU159 DATA REPORT - CU159b

Uranium-238

Number of U-238 samples in database for this CU: 32

Parameter	Location	Conc	DL	Units	
U-238	SC-15902-C	2.04	4.07	pCi/g	
U-238	SC-15903-C	1.91	3.81	pCi/g	
U-238	SC-15903-S	1.93	3.86	pCi/g	Zone B
U-238	SC-15904-S	1.61	2.21	pCi/g	Zone B
U-238	SC-15906-S	1.74	3.48	pCi/g	
U-238	SC-15907-S	1.70	3.40	pCi/g	Zone B
U-238	SC-15908-C	1.77	3.54	pCi/g	
U-238	SC-15909-S	1.81	3.61	pCi/g	
U-238	SC-15910-S	1.93	3.86	pCi/g	
U-238	SC-15913-C	1.86	3.71	pCi/g	
U-238	SC-15913-S	1.31	2.61	pCi/g	
U-238	SC-15915-S	1.29	2.57	pCi/g	
U-238	SC-15916-S	1.84	3.67	pCi/g	
U-238	SC-15918-C	1.30	2.60	pCi/g	
U-238	SC-15919-S	1.35	2.69	pCi/g	
U-238	SC-15920-S	1.95	1.69	pCi/g	Zone C
U-238	SC-15922-C	2.27	4.53	pCi/g	
U-238	SC-15923-S	1.24	2.48	pCi/g	Zone C
U-238	SC-15924-C	1.72	3.43	pCi/g	
U-238	SC-15925-S	1.40	2.79	pCi/g	
U-238	SC-15926-S	2.66	2.37	pCi/g	
U-238	SC-15928-C	1.15	2.30	pCi/g	
U-238	SC-15929-S	1.73	3.46	pCi/g	
U-238	SC-15930-C	1.37	2.74	pCi/g	
U-238	SC-15931-C	1.36	2.72	pCi/g	
U-238	SC-16036-S	1.79	3.57	pCi/g	
U-238	SC-16037-S	1.33	2.66	pCi/g	
U-238	SC-15932-S	1.91	3.82	pCi/g	Zone D
U-238	SC-15933-S	1.39	2.77	pCi/g	Zone D
U-238	SC-15934-S	1.72	3.43	pCi/g	Zone D
U-238	SC-15935-S	1.67	3.34	pCi/g	Zone D
U-238	SC-15936-C	1.27	2.54	pCi/g	Zone D

Average of U-238 values is 1.67 pCi/g, which is below the ALARA Goal of 30 pCi/g.
Maximum single value is 2.66 pCi/g, which is below Criteria of 120 pCi/g.

06/09/98

CU159 DATA REPORT - CU159b

Radium-226

Number of Ra-226 samples in database for this CU: 32

Parameter	Location	Conc	DL	Units	
Ra-226	SC-15902-C	1.95	0.36	pCi/g	
Ra-226	SC-15903-C	2.25	0.29	pCi/g	
Ra-226	SC-15903-S	2.20	0.31	pCi/g	Zone B
Ra-226	SC-15904-S	1.97	0.19	pCi/g	Zone B
Ra-226	SC-15906-S	1.57	0.25	pCi/g	
Ra-226	SC-15907-S	1.95	0.20	pCi/g	Zone B
Ra-226	SC-15908-C	1.36	0.33	pCi/g	
Ra-226	SC-15909-S	1.11	0.25	pCi/g	
Ra-226	SC-15910-S	1.70	0.33	pCi/g	
Ra-226	SC-15913-C	1.68	0.20	pCi/g	
Ra-226	SC-15913-S	1.50	0.22	pCi/g	
Ra-226	SC-15915-S	1.82	0.28	pCi/g	
Ra-226	SC-15916-S	0.37	0.73	pCi/g	
Ra-226	SC-15918-C	1.50	0.25	pCi/g	
Ra-226	SC-15919-S	1.52	0.21	pCi/g	
Ra-226	SC-15920-S	2.16	0.25	pCi/g	Zone C
Ra-226	SC-15922-C	2.79	0.40	pCi/g	
Ra-226	SC-15923-S	1.73	0.24	pCi/g	Zone C
Ra-226	SC-15924-C	1.93	0.33	pCi/g	
Ra-226	SC-15925-S	1.61	0.33	pCi/g	
Ra-226	SC-15926-S	0.31	0.62	pCi/g	
Ra-226	SC-15928-C	1.52	0.17	pCi/g	
Ra-226	SC-15929-S	1.68	0.25	pCi/g	
Ra-226	SC-15930-C	1.73	0.26	pCi/g	
Ra-226	SC-15931-C	1.43	0.25	pCi/g	
Ra-226	SC-16036-S	1.59	0.26	pCi/g	
Ra-226	SC-16037-S	1.36	0.23	pCi/g	
Ra-226	SC-15932-S	0.78	0.69	pCi/g	Zone D
Ra-226	SC-15933-S	1.75	0.24	pCi/g	Zone D
Ra-226	SC-15934-S	1.59	0.32	pCi/g	Zone D
Ra-226	SC-15935-S	1.41	0.33	pCi/g	Zone D
Ra-226	SC-15936-C	2.00	0.28	pCi/g	Zone D

Average of Ra-226 values is 1.62 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 2.79 pCi/g, which is below Criteria of 6.2 pCi/g.

06/09/98

CU159 DATA REPORT - CU159b

Radium-228

Number of Ra-228 samples in database for this CU: 32

Parameter	Location	Conc	DL	Units	Comment
Ra-228	SC-15902-C	1.71	0.55	pCi/g	
Ra-228	SC-15903-C	1.62	0.53	pCi/g	
Ra-228	SC-15903-S	1.46	0.65	pCi/g	Zone B
Ra-228	SC-15904-S	1.24	0.34	pCi/g	Zone B
Ra-228	SC-15906-S	1.57	0.53	pCi/g	
Ra-228	SC-15907-S	1.49	0.41	pCi/g	Zone B
Ra-228	SC-15908-C	1.51	0.49	pCi/g	
Ra-228	SC-15909-S	1.28	0.54	pCi/g	
Ra-228	SC-15910-S	1.34	0.55	pCi/g	
Ra-228	SC-15913-C	1.39	0.58	pCi/g	
Ra-228	SC-15913-S	1.16	0.38	pCi/g	
Ra-228	SC-15915-S	1.08	0.36	pCi/g	
Ra-228	SC-15916-S	1.43	0.34	pCi/g	
Ra-228	SC-15918-C	1.27	0.35	pCi/g	
Ra-228	SC-15919-S	1.28	0.41	pCi/g	
Ra-228	SC-15920-S	1.05	0.52	pCi/g	Zone C
Ra-228	SC-15922-C	1.78	0.60	pCi/g	
Ra-228	SC-15923-S	1.17	0.34	pCi/g	Zone C
Ra-228	SC-15924-C	1.64	0.40	pCi/g	
Ra-228	SC-15925-S	1.36	0.43	pCi/g	
Ra-228	SC-15926-S	0.82	0.73	pCi/g	
Ra-228	SC-15928-C	1.08	0.32	pCi/g	
Ra-228	SC-15929-S	0.62	1.24	pCi/g	
Ra-228	SC-15930-C	1.38	0.28	pCi/g	
Ra-228	SC-15931-C	1.16	0.32	pCi/g	
Ra-228	SC-16036-S	0.59	1.17	pCi/g	
Ra-228	SC-16037-S	1.16	0.42	pCi/g	
Ra-228	SC-15932-S	0.77	0.53	pCi/g	Zone D
Ra-228	SC-15933-S	1.22	0.36	pCi/g	Zone D
Ra-228	SC-15934-S	1.38	0.58	pCi/g	Zone D
Ra-228	SC-15935-S	1.36	0.53	pCi/g	Zone D
Ra-228	SC-15936-C	1.11	0.37	pCi/g	Zone D

Average of Ra-228 values is 1.27 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 1.78 pCi/g, which is below Criteria of 6.2 pCi/g.

CU159 DATA REPORT - CU159b

Thorium-230

Number of Th-230 samples in database for this CU: 32

Parameter	Location	Conc	DL	Units	Comment
Th-230	SC-15902-C	4.25	0.62	pCi/g	
Th-230	SC-15903-C	3.96	0.62	pCi/g	
Th-230	SC-15903-S	1.11	0.62	pCi/g	Zone B
Th-230	SC-15904-S	1.00	0.62	pCi/g	Zone B
Th-230	SC-15906-S	1.50	0.62	pCi/g	
Th-230	SC-15907-S	1.01	0.62	pCi/g	Zone B
Th-230	SC-15908-C	1.55	0.62	pCi/g	
Th-230	SC-15909-S	0.96	0.62	pCi/g	
Th-230	SC-15910-S	1.05	0.62	pCi/g	
Th-230	SC-15913-C	1.01	0.62	pCi/g	
Th-230	SC-15913-S	1.63	0.62	pCi/g	
Th-230	SC-15915-S	1.18	0.62	pCi/g	
Th-230	SC-15916-S	1.28	0.62	pCi/g	
Th-230	SC-15918-C	1.27	0.62	pCi/g	
Th-230	SC-15919-S	1.78	0.62	pCi/g	
Th-230	SC-15920-S	1.07	0.62	pCi/g	Zone C
Th-230	SC-15922-C	5.23	0.62	pCi/g	~~Zone C~~ MGL
Th-230	SC-15923-S	1.42	0.62	pCi/g	Zone C
Th-230	SC-15924-C	1.02	0.62	pCi/g	
Th-230	SC-15925-S	2.11	0.62	pCi/g	
Th-230	SC-15926-S	0.98	0.62	pCi/g	
Th-230	SC-15928-C	0.96	0.62	pCi/g	
Th-230	SC-15929-S	1.03	0.62	pCi/g	
Th-230	SC-15930-C	0.98	0.62	pCi/g	
Th-230	SC-15931-C	0.91	0.62	pCi/g	
Th-230	SC-16036-S	0.99	0.62	pCi/g	
Th-230	SC-16037-S	0.95	0.62	pCi/g	
Th-230	SC-15932-S	0.78	0.62	pCi/g	Zone D
Th-230	SC-15933-S	0.89	0.62	pCi/g	Zone D
Th-230	SC-15934-S	0.98	0.62	pCi/g	Zone D
Th-230	SC-15935-S	1.45	0.62	pCi/g	Zone D
Th-230	SC-15936-C	0.93	0.62	pCi/g	Zone D

Average of Th-230 values is 1.48 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 5.23 pCi/g, which is below Criteria of 6.2 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentrations times 1.025. This gives an average Thorium-232 value of 1.30 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 1.82 pCi/g, which is below criteria of 6.2 pCi/g.

PAHs

Number of PAH samples in database for this CU: 3

Parameter	Location	Conc	Units	Comments
PAHs	SC-15903-S	0	UG/KG	Zone B
PAHs	SC-15904-S	0	UG/KG	Zone B
PAHs	SC-15907-S	0	UG/KG	Zone B

Average of PAH values is 0 ug/kg, which is below the ALARA Goal of 650 ug/kg.
Maximum single value is 0 ug/kg, which is below Criteria of 8000 ug/kg.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP471 2. Date: 1/2/98 3. Review Form #: 98-003

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU160 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes ___ No
8. All results below cleanup criteria?	X Yes ___ No
9. Any results greater than 3X criteria?	___ Yes X No
10. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments Portions of CU160 had to be reconfirmed due to contaminated soil removal in adjacent CUs entering into CU160 (due to sloping the excavations). This form replaces 97-035a.

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: Melissa H Lutz Date 1/2/98

SECTION II *CU is released for unrestricted use.*

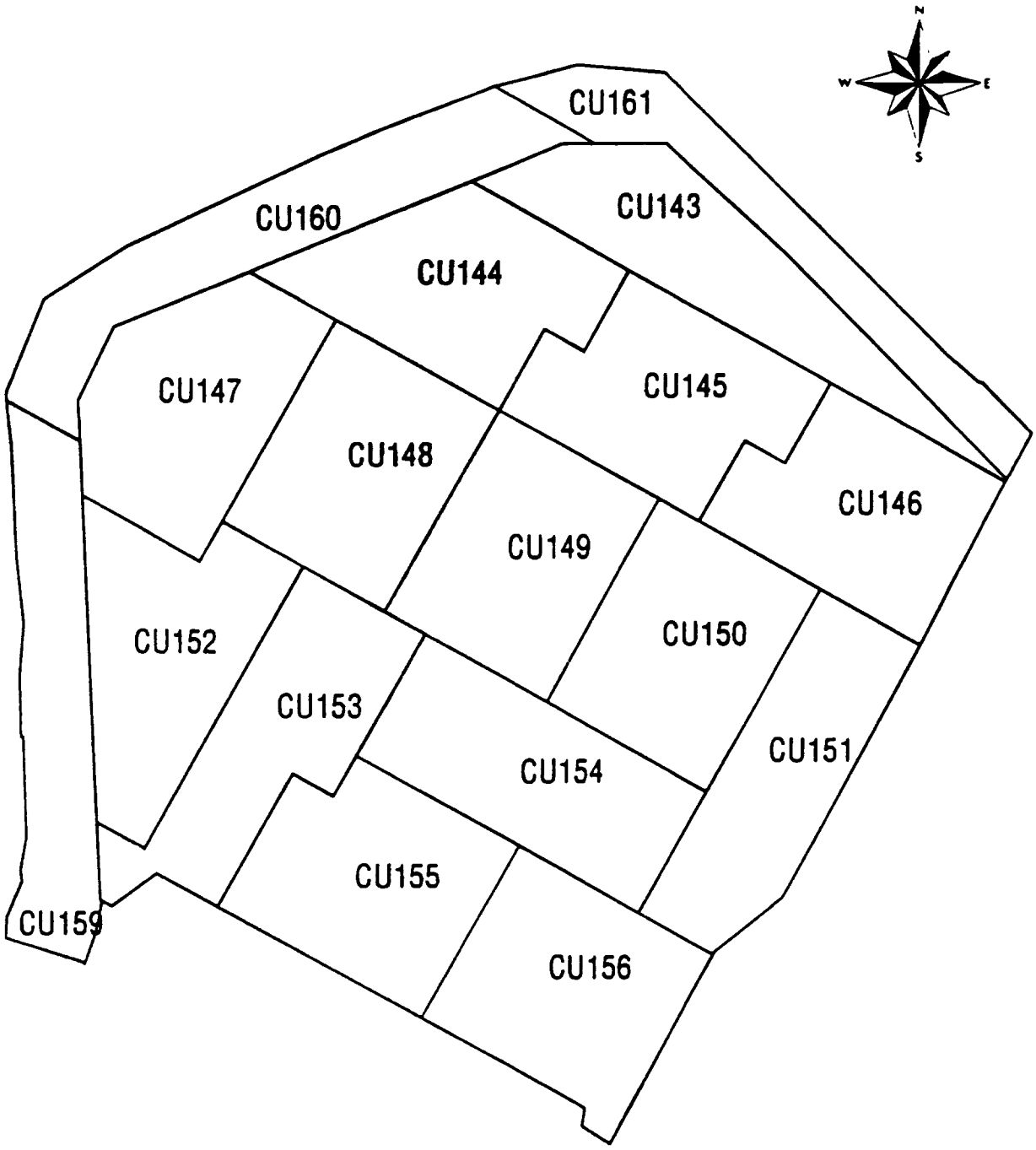
14. ES&H Manager: DE Hoffman Date: 1/5/98

15. DOE Project Manager/Engineer: Thomas C. Pauling Date: 1/2/98

16. Project Manager: Sheryl Hodges Date: 1/5/98

17. Construction Engineer: Glen A. Fonach Date: 1/5/98

SEE ATTACHED RESULTS AND MAP



Form #98-003

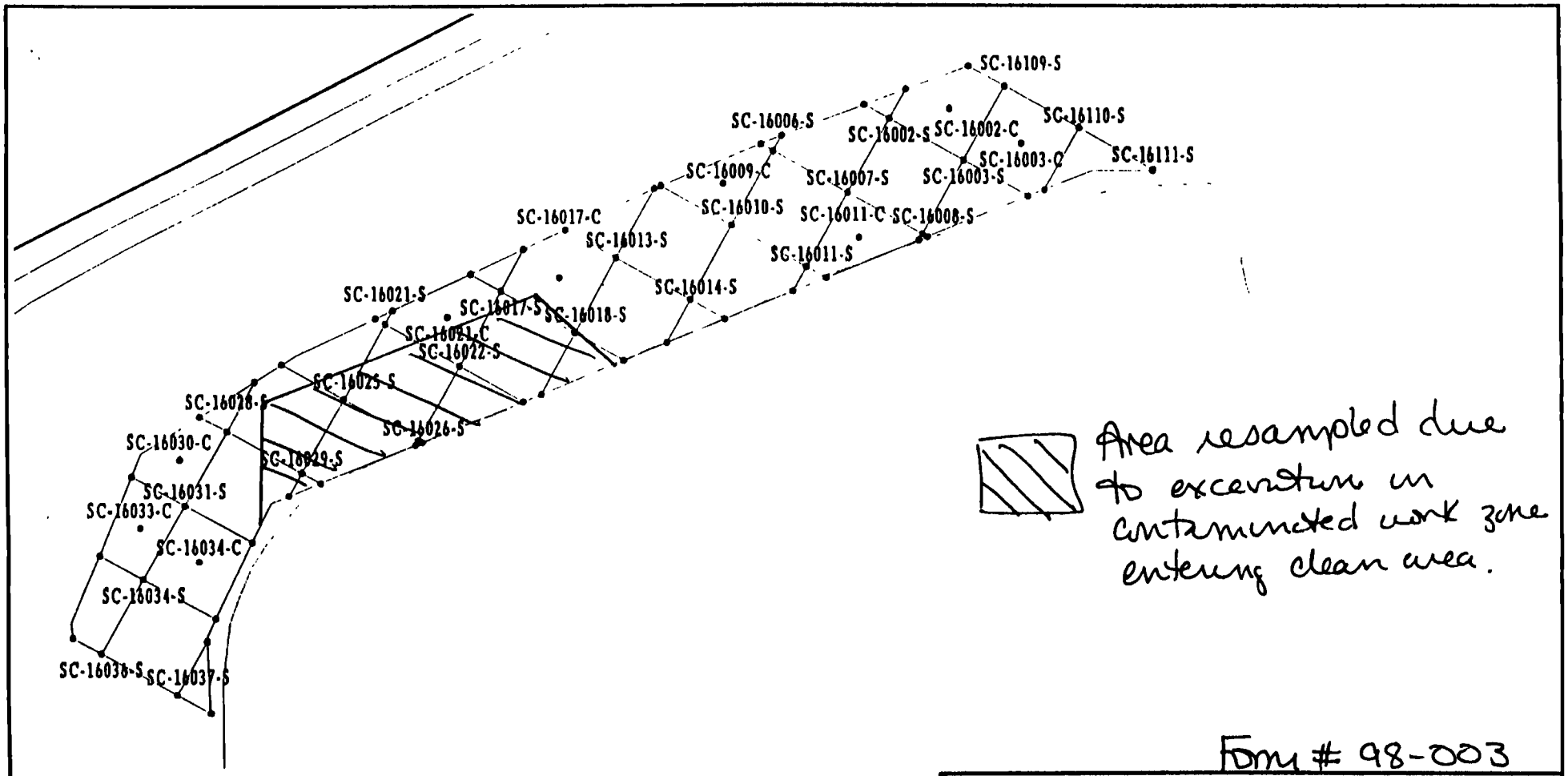
25 12.5 0 25 METERS

100 50 0 100 FEET

Confirmation Units for WP-471 (RU13)

Figure: 3-1

REPORT NO.: DOE/OR/21548-692		EXHIBIT NO.: G/CP/254/0797	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 07/29/97	



Form # 98-003

Sample Locations in Remedial Unit RU013
Confirmation Unit CU160

Figure B-16

EXHIBIT NO.: G/CP/287/0897	REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 08/19/97

Uranium-238

Number of U-238 samples in database for this CU: 33

Parameter	Location	Conc	DL	Units
U-238	SC-16002-C	2.09	4.18	pCi/g
U-238	SC-16002-S	1.86	3.71	pCi/g
U-238	SC-16003-C	1.56	3.11	pCi/g
U-238	SC-16003-S	1.26	2.52	pCi/g
U-238	SC-16006-S	1.85	3.70	pCi/g
U-238	SC-16007-S	1.80	3.60	pCi/g
U-238	SC-16008-S	1.47	2.94	pCi/g
U-238	SC-16009-C	1.76	3.52	pCi/g
U-238	SC-16010-S	1.69	3.37	pCi/g
U-238	SC-16011-C	1.91	3.81	pCi/g
U-238	SC-16011-S	2.92	3.49	pCi/g
U-238	SC-16013-S	1.54	3.08	pCi/g
U-238	SC-16014-S	2.06	4.11	pCi/g
U-238	SC-16017-C	3.68	3.44	pCi/g
U-238	SC-16017-S	2.51	2.37	pCi/g
U-238	SC-16018-S	1.30	2.60	pCi/g
U-238	SC-16021-C	1.96	3.91	pCi/g
U-238	SC-16021-S	1.29	2.57	pCi/g
U-238	SC-16022-S	1.93	3.85	pCi/g
U-238	SC-16025-S	1.63	1.76	pCi/g
U-238	SC-16026-S	1.40	2.80	pCi/g
U-238	SC-16028-S	1.97	3.93	pCi/g
U-238	SC-16029-S	1.94	3.87	pCi/g
U-238	SC-16030-C	1.28	2.55	pCi/g
U-238	SC-16031-S	1.75	3.49	pCi/g
U-238	SC-16033-C	1.24	2.47	pCi/g
U-238	SC-16034-C	1.73	3.46	pCi/g
U-238	SC-16034-S	2.39	3.33	pCi/g
U-238	SC-16036-S	1.79	3.57	pCi/g
U-238	SC-16037-S	1.33	2.66	pCi/g
U-238	SC-16109-S	1.35	2.69	pCi/g
U-238	SC-16110-S	1.79	3.57	pCi/g
U-238	SC-16111-S	1.71	2.66	pCi/g

Average of U-238 values is 1.81 pCi/g, which is below the ALARA Goal of 30 pCi/g.
Maximum single value is 3.68 pCi/g, which is below Criteria of 120 pCi/g.

Radium-226

Number of Ra-226 samples in database for this CU: 33

Parameter	Location	Conc	DL	Units
Ra-226	SC-16002-C	1.50	0.37	pCi/g
Ra-226	SC-16002-S	1.68	0.22	pCi/g
Ra-226	SC-16003-C	1.52	0.21	pCi/g
Ra-226	SC-16003-S	2.20	0.23	pCi/g
Ra-226	SC-16006-S	2.13	0.39	pCi/g
Ra-226	SC-16007-S	1.88	0.40	pCi/g
Ra-226	SC-16008-S	2.47	0.24	pCi/g
Ra-226	SC-16009-C	1.84	0.34	pCi/g
Ra-226	SC-16010-S	4.86	0.27	pCi/g
Ra-226	SC-16011-C	2.50	0.39	pCi/g
Ra-226	SC-16011-S	2.68	0.38	pCi/g
Ra-226	SC-16013-S	2.04	0.31	pCi/g
Ra-226	SC-16014-S	1.84	0.41	pCi/g
Ra-226	SC-16017-C	3.47	0.37	pCi/g
Ra-226	SC-16017-S	2.54	0.24	pCi/g
Ra-226	SC-16018-S	2.38	0.32	pCi/g
Ra-226	SC-16021-C	1.97	0.29	pCi/g
Ra-226	SC-16021-S	2.02	0.21	pCi/g
Ra-226	SC-16022-S	2.61	0.32	pCi/g
Ra-226	SC-16025-S	2.25	0.21	pCi/g
Ra-226	SC-16026-S	2.38	0.19	pCi/g
Ra-226	SC-16028-S	1.86	0.36	pCi/g
Ra-226	SC-16029-S	2.18	0.23	pCi/g
Ra-226	SC-16030-C	1.32	0.23	pCi/g
Ra-226	SC-16031-S	1.82	0.32	pCi/g
Ra-226	SC-16033-C	1.61	0.24	pCi/g
Ra-226	SC-16034-C	1.73	0.29	pCi/g
Ra-226	SC-16034-S	1.66	0.31	pCi/g
Ra-226	SC-16036-S	1.59	0.26	pCi/g
Ra-226	SC-16037-S	1.36	0.23	pCi/g
Ra-226	SC-16109-S	1.43	0.32	pCi/g
Ra-226	SC-16110-S	1.50	0.30	pCi/g
Ra-226	SC-16111-S	2.09	0.34	pCi/g

Average of Ra-226 values is 2.09 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 4.86 pCi/g, which is below Criteria of 6.2 pCi/g.

Radium-228

Number of Ra-228 samples in database for this CU: 33

Parameter	Location	Conc	DL	Units
Ra-228	SC-16002-C	1.79	0.33	pCi/g
Ra-228	SC-16002-S	1.68	0.56	pCi/g
Ra-228	SC-16003-C	1.79	0.33	pCi/g
Ra-228	SC-16003-S	1.11	0.32	pCi/g
Ra-228	SC-16006-S	1.09	0.61	pCi/g
Ra-228	SC-16007-S	1.37	0.44	pCi/g
Ra-228	SC-16008-S	1.41	0.42	pCi/g
Ra-228	SC-16009-C	1.37	0.26	pCi/g
Ra-228	SC-16010-S	1.12	0.38	pCi/g
Ra-228	SC-16011-C	1.43	0.43	pCi/g
Ra-228	SC-16011-S	1.32	0.73	pCi/g
Ra-228	SC-16013-S	1.43	0.37	pCi/g
Ra-228	SC-16014-S	1.37	0.51	pCi/g
Ra-228	SC-16017-C	2.62	0.46	pCi/g
Ra-228	SC-16017-S	1.29	0.47	pCi/g
Ra-228	SC-16018-S	1.04	0.36	pCi/g
Ra-228	SC-16021-C	1.12	0.54	pCi/g
Ra-228	SC-16021-S	1.12	0.41	pCi/g
Ra-228	SC-16022-S	1.58	0.45	pCi/g
Ra-228	SC-16025-S	1.10	0.38	pCi/g
Ra-228	SC-16026-S	1.18	0.40	pCi/g
Ra-228	SC-16028-S	1.43	0.31	pCi/g
Ra-228	SC-16029-S	1.10	0.39	pCi/g
Ra-228	SC-16030-C	1.29	0.36	pCi/g
Ra-228	SC-16031-S	1.01	0.42	pCi/g
Ra-228	SC-16033-C	1.09	0.28	pCi/g
Ra-228	SC-16034-C	1.34	0.58	pCi/g
Ra-228	SC-16034-S	1.31	0.33	pCi/g
Ra-228	SC-16036-S	0.59	1.17	pCi/g
Ra-228	SC-16037-S	1.16	0.42	pCi/g
Ra-228	SC-16109-S	1.44	0.37	pCi/g
Ra-228	SC-16110-S	1.45	0.26	pCi/g
Ra-228	SC-16111-S	1.36	0.40	pCi/g

Average of Ra-228 values is 1.33 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 2.62 pCi/g, which is below Criteria of 6.2 pCi/g.

Thorium-230

Number of Th-230 samples in database for this CU: 37

Parameter	Location	Conc	DL	Units
Th-230	SC-16002-C	4.76	0.62	pCi/g
Th-230	SC-16002-S	1.65	0.62	pCi/g
Th-230	SC-16003-S	0.93	0.62	pCi/g
Th-230	SC-16003-C	3.35	0.62	pCi/g
Th-230	SC-16006-S	1.12	0.62	pCi/g
Th-230	SC-16007-S	1.16	0.62	pCi/g
Th-230	SC-16008-S	1.64	0.62	pCi/g
Th-230	SC-16009-C	1.22	0.62	pCi/g
Th-230	SC-16010-S	1.19	0.62	pCi/g
Th-230	SC-16011-C	2.70	0.62	pCi/g
Th-230	SC-16011-S	3.70	0.62	pCi/g
Th-230	SC-16013-S	3.78	0.62	pCi/g
Th-230	SC-16014-S	1.28	0.62	pCi/g
Th-230	SC-16017-C-RS01	1.29	0.62	pCi/g
Th-230	SC-16017-C-RS02	1.43	0.62	pCi/g
Th-230	SC-16017-C-RS03	1.04	0.62	pCi/g
Th-230	SC-16017-C-RS04	0.98	0.62	pCi/g
Th-230	SC-16017-C-RS05	1.03	0.62	pCi/g
Th-230	SC-16017-S	2.17	0.62	pCi/g
Th-230	SC-16018-S	1.15	0.62	pCi/g
Th-230	SC-16021-C	1.14	0.62	pCi/g
Th-230	SC-16021-S	1.04	0.62	pCi/g
Th-230	SC-16022-S	1.14	0.62	pCi/g
Th-230	SC-16025-S	1.99	0.62	pCi/g
Th-230	SC-16026-S	1.36	0.62	pCi/g
Th-230	SC-16028-S	1.46	0.62	pCi/g
Th-230	SC-16029-S	1.24	0.62	pCi/g
Th-230	SC-16030-C	1.05	0.62	pCi/g
Th-230	SC-16031-S	1.29	0.62	pCi/g
Th-230	SC-16033-C	1.08	0.62	pCi/g
Th-230	SC-16034-C	1.20	0.62	pCi/g
Th-230	SC-16034-S	1.17	0.62	pCi/g
Th-230	SC-16036-S	0.99	0.62	pCi/g
Th-230	SC-16037-S	0.95	0.62	pCi/g
Th-230	SC-16109-S	1.30	0.62	pCi/g
Th-230	SC-16110-S	1.04	0.62	pCi/g
Th-230	SC-16111-S	3.47	0.62	pCi/g

Average of Th-230 values is 1.63 pCi/g, which is below the ALARA Goal of 5 pCi/g.
Maximum single value is 4.76 pCi/g, which is below Criteria of 6.2 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentrations times 1.025. This gives an average Thorium-232 value of 1.36 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 2.69 pCi/g, which is below criteria of 6.2 pCi/g.

Th-230 Hot spot results:

Sample ID	Conc.	DL	Units
SC-16017-C-HS01	1.12	0.62	pCi/g
SC-16017-C-HS02	2.36	0.62	pCi/g
SC-16017-C-HS03*	21.19	0.62	pCi/g
SC-16017-C-HS04	1.39	0.62	pCi/g
SC-16017-C-HS05	2.32	0.62	pCi/g
SC-16017-C-HS06	1.07	0.62	pCi/g
SC-16017-C-HS07	1.09	0.62	pCi/g
SC-16017-C-HS08	0.94	0.62	pCi/g

* Exceeds three times criteria.

Weldon Spring Site Remedial Action Project
7295 Highway 94 South, St. Charles, Missouri, 63304

ES&H 1.2.1.1, Rev. 2, 11/96

SOIL CONFIRMATION REMEDIATION DISPOSITION FORM

SECTION I

1. Work Package Number: WP 471 2. Date: 11/25/97 3. Review Form #: 97-038

4. Remediation Unit Number: RU013 5. Confirmation Unit Number: CU161 (map attached)

6. Contaminants of Concern: X U-238 X Th-230 X Th-232 X Ra-226 X Ra-228
___ TNT ___ PCB ___ PAH ___ As ___ Cr ___ Pb ___ Tl

7. Results average below ALARA goal(s)?	X Yes	___ No
8. All results below cleanup criteria?	X Yes	___ No
9. Any results greater than 3X criteria?	___ Yes	X No
10. Hot spots present (less than 3X criteria)?	___ Yes	X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

11. Comments This replaces the partial release Form No. 97-003.

12. Reviewer Disposition Recommendation:
X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

13. Reviewer: [illegible] Date 11/25/97

SECTION II *CU is released for unrestricted use.*

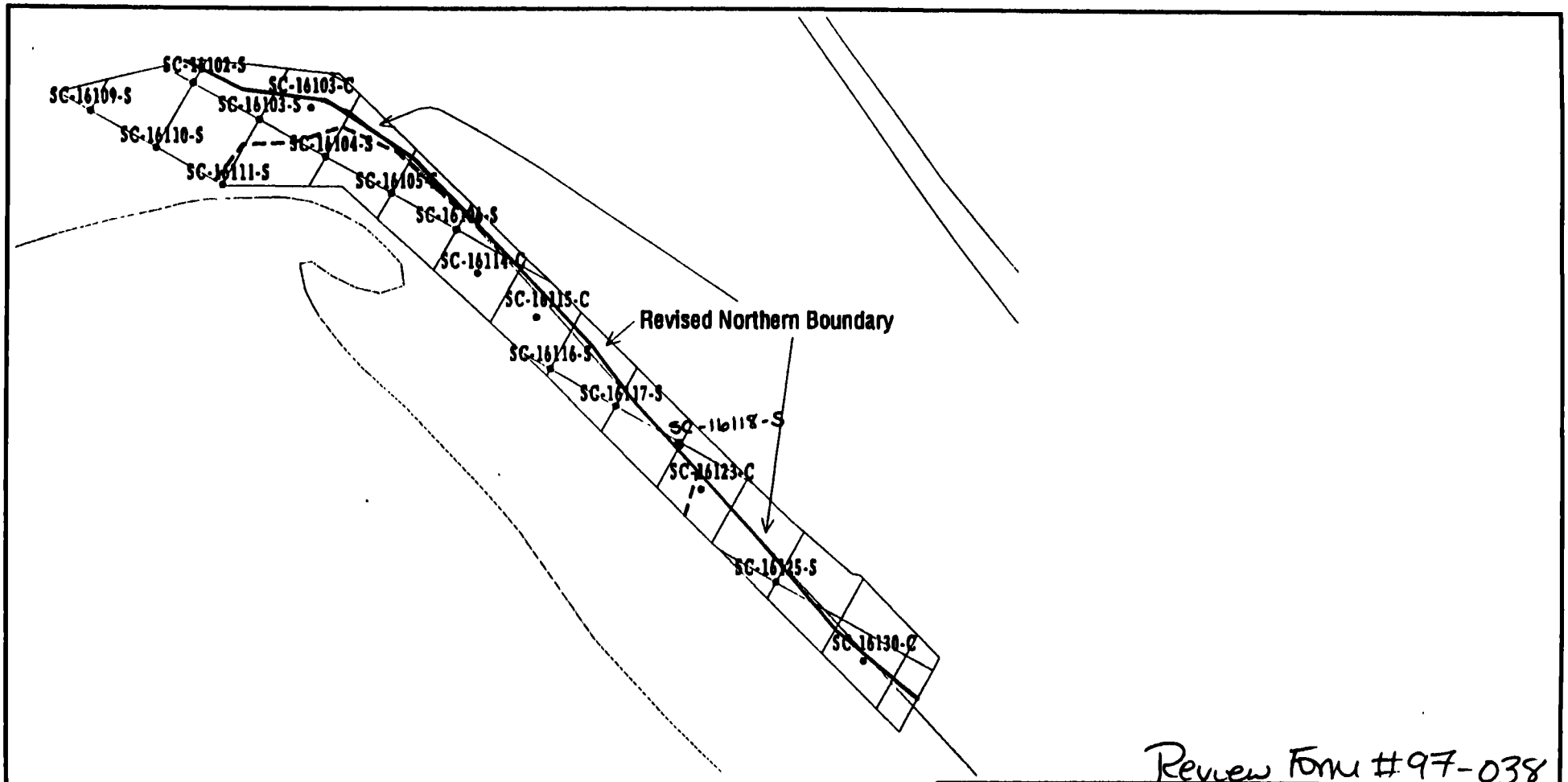
14. ES&H Manager: [illegible] Date: 11/25/97

15. DOE Project Manager/Engineer: [illegible] Date: 11/25/97

16. Project Manager: Sheryl Hodges Date: 11/25/97

17. Construction Engineer: [illegible] Date: 11-25-97

SEE ATTACHED RESULTS AND MAP



Review Form #97-038

15 7.5 0 METERS

45 22.5 0 FEET

Note: dashed line show approx. re excavation limits & locations resampled.

N
W E
S

Sample Locations in Remedial Unit RU013
Confirmation Unit CU161

Figure

EXHIBIT NO.: G/CP/---/0897		REPORT NO.: DOE/OR/21548-692	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 10/29/97	

11/24/97

CU161 DATA REPORT

URANIUM-238

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 17

PARAMETER	LOCATION	CONC	DL	UNITS
URANIUM-238	SC-16102-S	12.15	4.81	PCI/G
URANIUM-238	SC-16109-S	1.35	2.69	PCI/G
URANIUM-238	SC-16103-S	1.95	3.90	PCI/G
URANIUM-238	SC-16110-S	1.79	3.57	PCI/G
URANIUM-238	SC-16104-S	1.91	3.82	PCI/G
URANIUM-238	SC-16111-S	1.35	2.70	PCI/G
URANIUM-238	SC-16105-S	1.44	2.87	PCI/G
URANIUM-238	SC-16106-S	1.96	3.91	PCI/G
URANIUM-238	SC-16116-S	1.94	3.87	PCI/G
URANIUM-238	SC-16117-S	1.36	2.72	PCI/G
URANIUM-238	SC-16118-S	1.95	3.90	PCI/G
URANIUM-238	SC-16125-S	1.36	2.72	PCI/G
URANIUM-238	SC-16103-C	1.38	2.75	PCI/G
URANIUM-238	SC-16114-C	1.84	3.68	PCI/G
URANIUM-238	SC-16115-C	1.36	2.71	PCI/G
URANIUM-238	SC-16123-C	1.82	2.05	PCI/G
URANIUM-238	SC-16130-C	2.03	4.06	PCI/G

Average of URANIUM-238 values is 2.29 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 12.15 pCi/g, which is below Subsurface Criteria, 120.00 pCi/g.

11/24/97

CU161 DATA REPORT, CONTINUED

THORIUM-230

NUMBER OF Thorium-230 SAMPLES IN DATABASE FOR THIS CU IS: 21

PARAMETER	LOCATION	CONC	DL	UNITS
Thorium-230	SC-16102-S-RS01	0.98	0.62	PCI/G
Thorium-230	SC-16102-S-RS02	1.13	0.62	PCI/G
Thorium-230	SC-16102-S-RS03	0.94	0.62	PCI/G
Thorium-230	SC-16102-S-RS04	1.69	0.62	PCI/G
Thorium-230	SC-16102-S-RS05	1.45	0.62	PCI/G
Thorium-230	SC-16109-S	1.30	0.62	PCI/G
Thorium-230	SC-16103-S	2.07	0.62	PCI/G
Thorium-230	SC-16110-S	1.04	0.62	PCI/G
Thorium-230	SC-16104-S	0.83	0.62	PCI/G
Thorium-230	SC-16111-S	1.09	0.62	PCI/G
Thorium-230	SC-16105-S	1.52	0.62	PCI/G
Thorium-230	SC-16106-S	1.55	0.62	PCI/G
Thorium-230	SC-16116-S	0.94	0.62	PCI/G
Thorium-230	SC-16117-S	1.06	0.62	PCI/G
Thorium-230	SC-16118-S	0.84	0.62	PCI/G
Thorium-230	SC-16125-S	1.27	0.62	PCI/G
Thorium-230	SC-16103-C	1.20	0.62	PCI/G
Thorium-230	SC-16114-C	0.93	0.62	PCI/G
Thorium-230	SC-16115-C	0.70	0.62	PCI/G
Thorium-230	SC-16123-C	1.36	0.62	PCI/G
Thorium-230	SC-16130-C	1.70	0.62	PCI/G

Average of Thorium-230 values is 1.22 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.07 pCi/g, which is below Subsurface Criteria, 16.20 pCi/g.

Thorium-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Radium-228 concentration times 1.025. This gives an average Thorium-232 value of 1.23 pCi/g, which is below the ALARA goal of 5.0 pCi/g. The maximum calculated single value is 1.68 pCi/g, which is below subsurface criteria of 16.2 pCi/g.

11/24/97

CU161 DATA REPORT, CONTINUED

RADIUM-226

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 21

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-226	SC-16102-S-RS01	1.63	0.34	PCI/G
RADIUM-226	SC-16102-S-RS02	1.27	0.28	PCI/G
RADIUM-226	SC-16102-S-RS03	1.45	0.31	PCI/G
RADIUM-226	SC-16102-S-RS04	1.61	0.25	PCI/G
RADIUM-226	SC-16102-S-RS05	1.36	0.35	PCI/G
RADIUM-226	SC-16109-S	1.43	0.32	PCI/G
RADIUM-226	SC-16103-S	2.09	0.34	PCI/G
RADIUM-226	SC-16110-S	1.50	0.30	PCI/G
RADIUM-226	SC-16104-S	1.95	0.33	PCI/G
RADIUM-226	SC-16111-S	2.04	0.34	PCI/G
RADIUM-226	SC-16105-S	2.66	0.26	PCI/G
RADIUM-226	SC-16106-S	2.36	0.31	PCI/G
RADIUM-226	SC-16116-S	2.25	0.37	PCI/G
RADIUM-226	SC-16117-S	2.72	0.26	PCI/G
RADIUM-226	SC-16118-S	2.27	0.34	PCI/G
RADIUM-226	SC-16125-S	2.29	0.29	PCI/G
RADIUM-226	SC-16103-C	2.22	0.28	PCI/G
RADIUM-226	SC-16114-C	2.29	0.49	PCI/G
RADIUM-226	SC-16115-C	2.72	0.26	PCI/G
RADIUM-226	SC-16123-C	2.72	0.31	PCI/G
RADIUM-226	SC-16130-C	3.18	0.21	PCI/G

Average of RADIUM-226 values is 2.1 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 3.18 pCi/g, which is below criteria, 16.20 pCi/g.

11/24/97

CU161 DATA REPORT, CONTINUED

RADIUM-228

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 21

PARAMETER	LOCATION	CONC	DL	UNITS
RADIUM-228	SC-16102-S-RS01	1.58	0.44	PCI/G
RADIUM-228	SC-16102-S-RS02	0.97	0.35	PCI/G
RADIUM-228	SC-16102-S-RS03	0.54	1.07	PCI/G
RADIUM-228	SC-16102-S-RS04	1.30	0.40	PCI/G
RADIUM-228	SC-16102-S-RS05	0.64	1.28	PCI/G
RADIUM-228	SC-16109-S	1.44	0.37	PCI/G
RADIUM-228	SC-16103-S	1.64	0.41	PCI/G
RADIUM-228	SC-16110-S	1.45	0.26	PCI/G
RADIUM-228	SC-16104-S	1.27	0.53	PCI/G
RADIUM-228	SC-16111-S	1.25	0.40	PCI/G
RADIUM-228	SC-16105-S	1.49	0.35	PCI/G
RADIUM-228	SC-16106-S	1.14	0.50	PCI/G
RADIUM-228	SC-16116-S	1.29	0.47	PCI/G
RADIUM-228	SC-16117-S	1.37	0.38	PCI/G
RADIUM-228	SC-16118-S	1.26	0.42	PCI/G
RADIUM-228	SC-16125-S	1.05	0.55	PCI/G
RADIUM-228	SC-16103-C	1.19	0.35	PCI/G
RADIUM-228	SC-16114-C	0.58	1.15	PCI/G
RADIUM-228	SC-16115-C	1.27	0.35	PCI/G
RADIUM-228	SC-16123-C	1.13	0.34	PCI/G
RADIUM-228	SC-16130-C	1.32	0.61	PCI/G

Average of RADIUM-228 values is 1.2 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.64 pCi/g, which is below subsurface criteria, 16.20 pCi/g.

PARTIAL CONFIRMATION UNIT RELEASE FORM

ES&H-1.2 1. Rev. 3. 01 98

SECTION I

1. Work Package Number: WP471 2. Date: 7·13·98 3. Review Form No.: 98-027P

4. Remediation Unit Number: RU021 5. CU Number (see attached map for partial CU location): CU253

6. Contaminants of Concern: X U238 X Th230 X Th232 X Ra226 X Ra228 ___ TNT
___ Tl ___ PCB ___ PAH ___ As ___ Cr ___ Pb

7. Number of Locations Sampled: 8 8. Total Number of Locations within CU: 31

9. Results average below ALARA goal(s)?	X Yes ___ No
10. All results below cleanup criteria?	X Yes ___ No
11. Any results greater than 3X criteria?	___ Yes X No
12. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

13. Comments The remainder of this CU will be confirmed under WP437 activities. Excavation of soil after confirmation will not exceed the 65D elevation under WP471.

14. Reviewer Disposition Recommendation:

X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

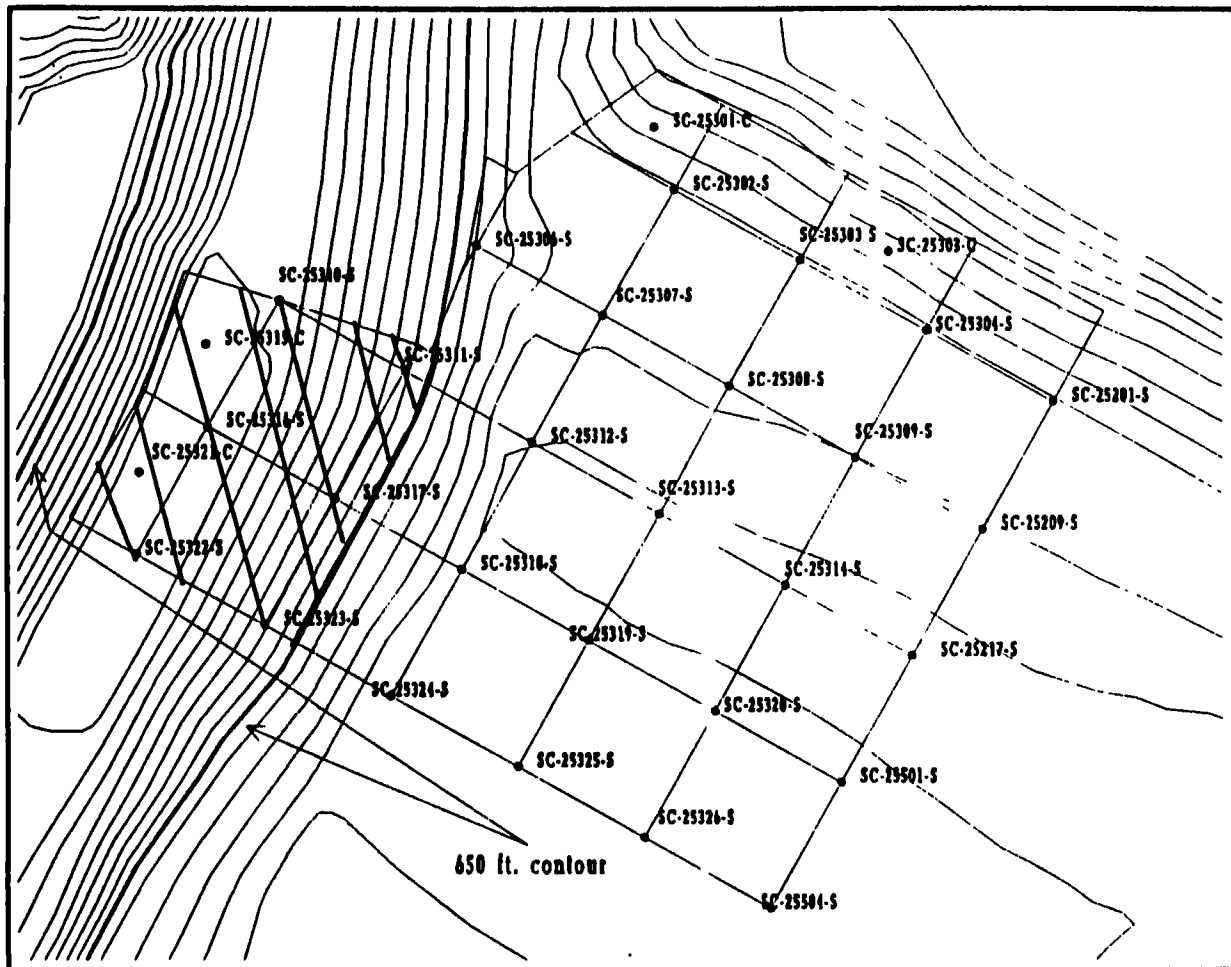
15. Reviewer: Melissa A Lutz Date 7/13/98

SECTION II

ALARA Committee Chairman: [signature] Date: 7/13/98

Project Manager: Sheryl Hodges Date: 7/13/98

Construction Engineer: Glen A. Smith Date: 7/14/98



Partial area being released under WP471.

Remainder of CU to be Confirmed under WP437 activities.

Review Form #98-027P

10 5 0 METERS

30 15 0 FEET

N W E S

Sample Locations in Remedial Unit RU021
Confirmation Unit CU253

Figure B-999

EXHIBIT NO.:	REPORT NO.:	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 07/06/98

07/13/98

CU253 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-25310-S	1.59	0.36	pCi/g
RADIUM-226	SC-25311-S	1.54	0.26	pCi/g
RADIUM-226	SC-25315-C	1.91	0.34	pCi/g
RADIUM-226	SC-25316-S	1.09	0.30	pCi/g
RADIUM-226	SC-25317-S	2.88	0.34	pCi/g
RADIUM-226	SC-25321-C	1.45	0.33	pCi/g
RADIUM-226	SC-25322-S	2.09	0.33	pCi/g
RADIUM-226	SC-25323-S	1.09	0.18	pCi/g

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 8
Average of RADIUM-226 values is 1.71 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.88 pCi/g which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-25310-S	1.85	0.25	pCi/g
RADIUM-228	SC-25311-S	1.31	0.34	pCi/g
RADIUM-228	SC-25315-C	1.48	0.44	pCi/g
RADIUM-228	SC-25316-S	1.04	0.42	pCi/g
RADIUM-228	SC-25317-S	1.15	0.25	pCi/g
RADIUM-228	SC-25321-C	1.50	0.34	pCi/g
RADIUM-228	SC-25322-S	0.54	1.07	pCi/g
RADIUM-228	SC-25323-S	1.23	0.29	pCi/g

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 8
Average of RADIUM-228 values is 1.26 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.85 pCi/g which is below criteria, 6.20 pCi/g.

TOTAL RADIUM

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Radium	SC-25310-S	3.44	0.36	pCi/g
Radium	SC-25311-S	2.85	0.34	pCi/g
Radium	SC-25315-C	3.39	0.44	pCi/g
Radium	SC-25316-S	2.13	0.42	pCi/g
Radium	SC-25317-S	4.03	0.34	pCi/g
Radium	SC-25321-C	2.95	0.34	pCi/g
Radium	SC-25322-S	2.63	1.07	pCi/g
Radium	SC-25323-S	2.32	0.29	pCi/g

NUMBER OF TOTAL RADIUM SAMPLES IN DATABASE FOR THIS CU IS: 8
Average of Radium values is 2.97 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 4.03 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
THORIUM-230	SC-25310-S	1.07	0.62	pCi/g
THORIUM-230	SC-25311-S	0.94	0.62	pCi/g
THORIUM-230	SC-25315-C	1.06	0.62	pCi/g
THORIUM-230	SC-25316-S	0.78	0.62	pCi/g
THORIUM-230	SC-25317-S	1.10	0.62	pCi/g
THORIUM-230	SC-25321-C	0.89	0.62	pCi/g
THORIUM-230	SC-25322-S	1.00	0.62	pCi/g
THORIUM-230	SC-25323-S	0.88	0.62	pCi/g

NUMBER OF THORIUM-230 SAMPLES IN DATABASE FOR THIS CU IS: 8
Average of THORIUM-230 values is 0.97 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.10 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.29 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.90 pCi/g, which is below surface criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-25310-S	1.82	3.64	pCi/g
URANIUM-238	SC-25311-S	1.25	2.49	pCi/g
URANIUM-238	SC-25315-C	1.86	3.71	pCi/g
URANIUM-238	SC-25316-S	1.21	2.42	pCi/g
URANIUM-238	SC-25317-S	1.95	3.89	pCi/g
URANIUM-238	SC-25321-C	1.26	2.51	pCi/g
URANIUM-238	SC-25322-S	1.48	2.90	pCi/g
URANIUM-238	SC-25323-S	1.30	2.59	pCi/g

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 8
Average of URANIUM-238 values is 1.52 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 1.95 pCi/g which is below criteria, 120.00 pCi/g.

PARTIAL CONFIRMATION UNIT RELEASE FORM

ES&H-1.2.1. Rev. 3. 0 98

SECTION I

1. Work Package Number: WP471 2. Date: 7.13.98 3. Review Form No.: 98-028P

4. Remediation Unit Number: RU021 5. CU Number (see attached map for partial CU location): CU254

6. Contaminants of Concern: X U238 X Th230 X Th232 X Ra226 X Ra228 ___ TNT
___ Tl ___ PCB ___ PAH ___ As ___ Cr ___ Pb

7. Number of Locations Sampled: 11 8. Total Number of Locations within CU: 26

9. Results average below ALARA goal(s)?	X Yes ___ No
10. All results below cleanup criteria?	X Yes ___ No
11. Any results greater than 3X criteria?	___ Yes X No
12. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

13. Comments The remainder of this CU will be confirmed under WP437 activities. Excavation of soil after confirmation will not exceed the 650 elevation under WP47

14. Reviewer Disposition Recommendation:

X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

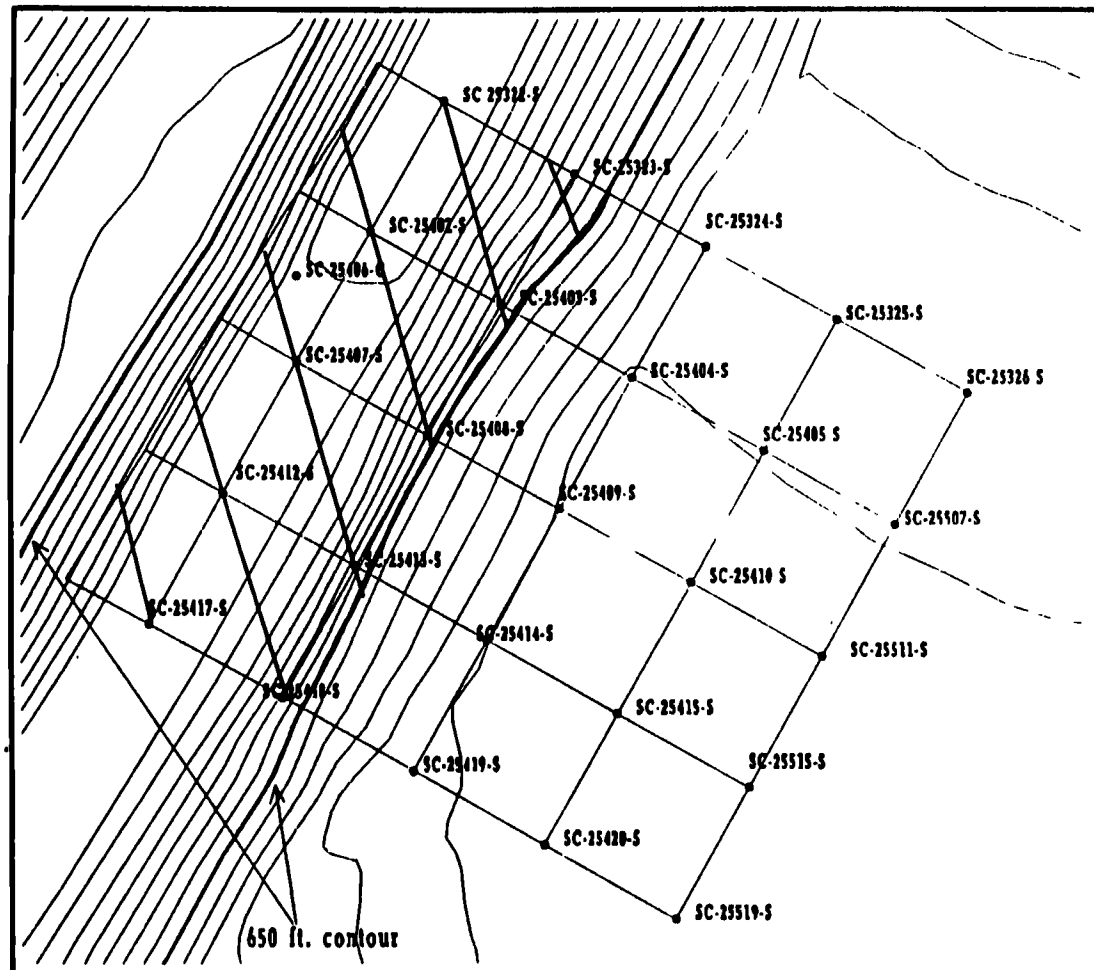
15. Reviewer: Melissa A Lutz Date 7/13/98

SECTION II

ALARA Committee Chairman: [signature] Date: 7/13/98

Project Manager: Sheryl Hodges Date: 7/13/98

Construction Engineer: Glen A. Tonach Date: 7/14/98



Partial area being released under WP471.

Remainder of CU scheduled to be confirmed under WP437 activities

Review Form #98-028P

10 5 0 METERS

30 15 0 FEET

N W E S

Sample Locations in Remedial Unit RU021
Confirmation Unit CU254

Figure B-999

EXHIBIT NO.:	REPORT NO.:	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 07/06/98

07/13/98

CU254 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-25322-S	2.09	0.33	pCi/g
RADIUM-226	SC-25323-S	1.09	0.18	pCi/g
RADIUM-226	SC-25402-S	1.45	0.31	pCi/g
RADIUM-226	SC-25403-S	2.04	0.27	pCi/g
RADIUM-226	SC-25406-C	1.79	0.28	pCi/g
RADIUM-226	SC-25407-S	1.29	0.19	pCi/g
RADIUM-226	SC-25408-S	0.65	0.57	pCi/g
RADIUM-226	SC-25412-S	1.77	0.24	pCi/g
RADIUM-226	SC-25413-S	1.54	0.32	pCi/g
RADIUM-226	SC-25417-S	1.32	0.27	pCi/g
RADIUM-226	SC-25418-S	1.77	0.33	pCi/g

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 11
Average of RADIUM-226 values is 1.53 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.09 pCi/g which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-25322-S	0.54	1.07	pCi/g
RADIUM-228	SC-25323-S	1.23	0.29	pCi/g
RADIUM-228	SC-25402-S	1.39	0.27	pCi/g
RADIUM-228	SC-25403-S	1.18	0.37	pCi/g
RADIUM-228	SC-25406-C	0.71	0.40	pCi/g
RADIUM-228	SC-25407-S	1.29	0.35	pCi/g
RADIUM-228	SC-25408-S	0.59	1.17	pCi/g
RADIUM-228	SC-25412-S	1.03	0.36	pCi/g
RADIUM-228	SC-25413-S	0.60	1.20	pCi/g
RADIUM-228	SC-25417-S	1.35	0.36	pCi/g
RADIUM-228	SC-25418-S	1.36	0.25	pCi/g

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 11
Average of RADIUM-228 values is 1.02 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.39 pCi/g which is below criteria, 6.20 pCi/g.

TOTAL RADIUM

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Radium	SC-25322-S	2.62	1.07	pCi/g
Radium	SC-25323-S	2.32	0.29	pCi/g
Radium	SC-25402-S	2.84	0.31	pCi/g
Radium	SC-25403-S	3.22	0.37	pCi/g
Radium	SC-25406-C	2.50	0.40	pCi/g
Radium	SC-25407-S	2.58	0.35	pCi/g
Radium	SC-25408-S	1.23	1.17	pCi/g
Radium	SC-25412-S	2.80	0.36	pCi/g
Radium	SC-25413-S	2.14	1.20	pCi/g
Radium	SC-25417-S	2.67	0.36	pCi/g
Radium	SC-25418-S	3.13	0.33	pCi/g

NUMBER OF TOTAL RADIUM SAMPLES IN DATABASE FOR THIS CU IS: 11
Average of Radium values is 2.55 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 3.22 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
THORIUM-230	SC-25322-S	1.00	0.62	pCi/g
THORIUM-230	SC-25323-S	0.88	0.62	pCi/g
THORIUM-230	SC-25402-S	0.84	0.62	pCi/g
THORIUM-230	SC-25403-S	1.07	0.62	pCi/g
THORIUM-230	SC-25406-C	1.15	0.62	pCi/g
THORIUM-230	SC-25407-S	1.02	0.62	pCi/g
THORIUM-230	SC-25408-S	1.24	0.62	pCi/g
THORIUM-230	SC-25412-S	0.74	0.62	pCi/g
THORIUM-230	SC-25413-S	1.08	0.62	pCi/g
THORIUM-230	SC-25417-S	0.97	0.62	pCi/g
THORIUM-230	SC-25418-S	0.88	0.62	pCi/g

NUMBER OF THORIUM-230 SAMPLES IN DATABASE FOR THIS CU IS: 11
Average of THORIUM-230 values is 0.99 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.24 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.05 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.42 pCi/g, which is below surface criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-25322-S	1.48	2.90	pCi/g
URANIUM-238	SC-25323-S	1.30	2.59	pCi/g
URANIUM-238	SC-25402-S	1.87	3.74	pCi/g
URANIUM-238	SC-25403-S	1.33	2.65	pCi/g
URANIUM-238	SC-25406-C	1.83	3.65	pCi/g
URANIUM-238	SC-25407-S	1.26	2.52	pCi/g
URANIUM-238	SC-25408-S	1.70	3.40	pCi/g
URANIUM-238	SC-25412-S	1.30	2.59	pCi/g
URANIUM-238	SC-25413-S	1.82	3.64	pCi/g
URANIUM-238	SC-25417-S	1.34	2.67	pCi/g
URANIUM-238	SC-25418-S	1.83	3.65	pCi/g

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 11
Average of URANIUM-238 values is 1.55 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 1.87 pCi/g which is below criteria, 120.00 pCi/g.

PARTIAL CONFIRMATION UNIT RELEASE FORM

ES&H-1.2.1, Rev. 3, 0 /98

SECTION I

1. Work Package Number: WP471 2. Date: 7.13.98 3. Review Form No.: 98-029

4. Remediation Unit Number: RU021 5. CU Number (see attached map for partial CU location): CU263

6. Contaminants of Concern: X U238 X Th230 X Th232 X Ra226 X Ra228 ___ TNT
___ Tl ___ PCB ___ PAH ___ As ___ Cr ___ Pb

7. Number of Locations Sampled: 15 8. Total Number of Locations within CU: 29

9. Results average below ALARA goal(s)?	X Yes ___ No
10. All results below cleanup criteria?	X Yes ___ No
11. Any results greater than 3X criteria?	___ Yes X No
12. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

13. Comments The remainder of this CU will be confirmed under WP437 activities. Excavation of soil after confirmation will not exceed the 650 elevation under WP471.

14. Reviewer Disposition Recommendation:

X Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

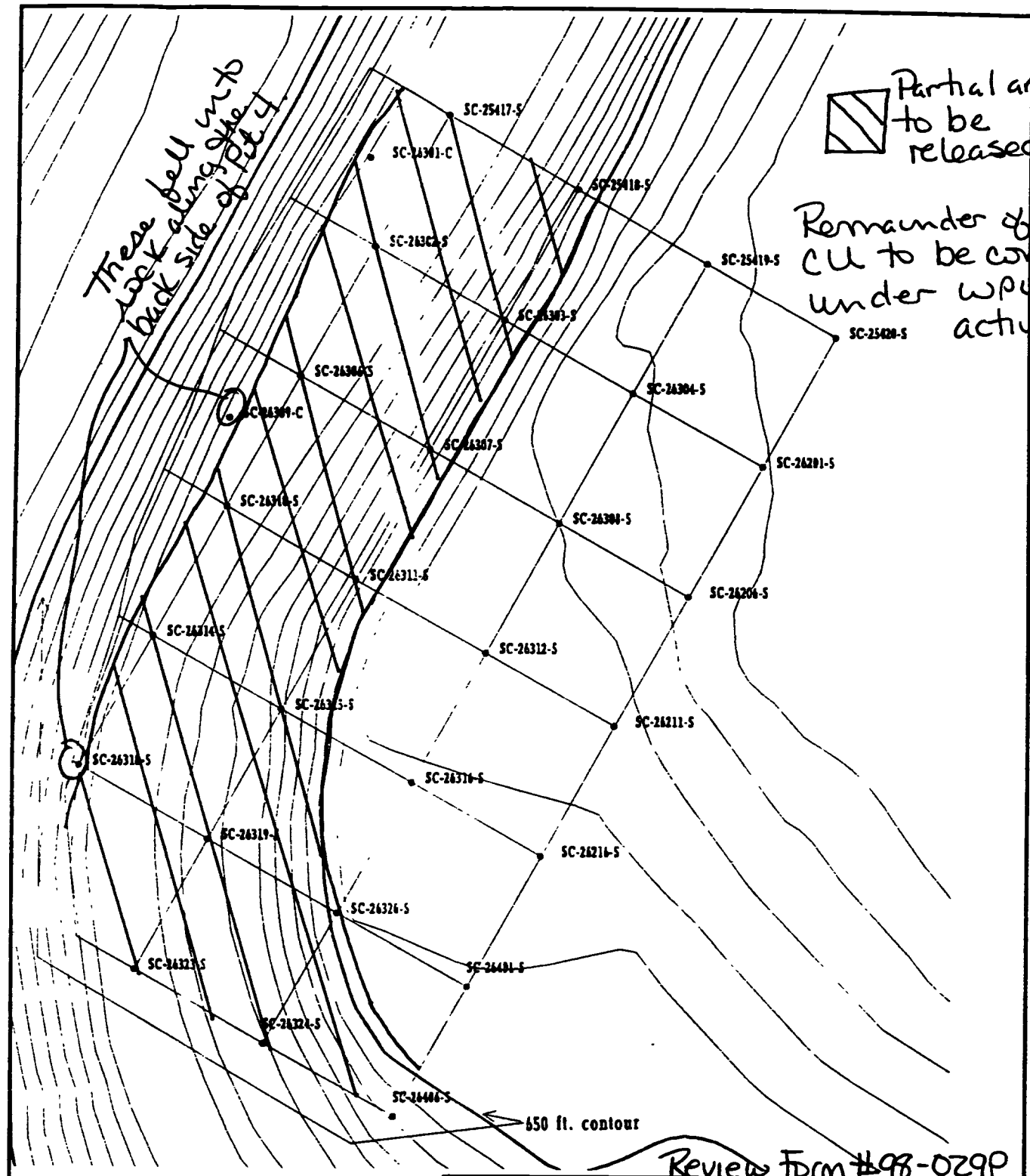
15. Reviewer: Melissa A Hutz Date 7/13/98

SECTION II

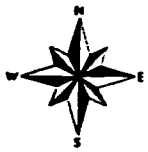
ALARA Committee Chairman: [signature] Date: 7/13/98

Project Manager: Sheryl Hodges Date: 7/13/98

Construction Engineer: John A. Sorach Date: 7/14/98



Review Form #98-0299



10 5 0 METERS

30 15 0 FEET

Sample Locations in Remedial Unit RU021
Confirmation Unit CU263

Figure B-999

EXHIBIT NO.: G/CP/999/1297		REPORT NO.: DOE/OR/21548-706	
ORIGINATOR: MGL	DRAWN BY: LGB	DATE: 07/06/98	

07/13/98

CU263 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-25417-S	1.32	0.27	pCi/g
RADIUM-226	SC-25418-S	1.77	0.33	pCi/g
RADIUM-226	SC-26301-C	1.73	0.26	pCi/g
RADIUM-226	SC-26302-S	1.75	0.36	pCi/g
RADIUM-226	SC-26303-S	1.95	0.22	pCi/g
RADIUM-226	SC-26306-S	1.38	0.28	pCi/g
RADIUM-226	SC-26307-S	1.54	0.28	pCi/g
RADIUM-226	SC-26310-S	1.16	0.35	pCi/g
RADIUM-226	SC-26311-S	1.82	0.22	pCi/g
RADIUM-226	SC-26314-S	1.43	0.32	pCi/g
RADIUM-226	SC-26315-S	2.20	0.27	pCi/g
RADIUM-226	SC-26319-S	2.22	0.30	pCi/g
RADIUM-226	SC-26323-S	2.72	0.24	pCi/g
RADIUM-226	SC-26324-S	2.41	0.30	pCi/g
RADIUM-226	SC-26406-S	2.07	0.23	pCi/g

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 15
Average of RADIUM-226 values is 1.83 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.72 pCi/g which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-25417-S	1.35	0.36	pCi/g
RADIUM-228	SC-25418-S	1.36	0.25	pCi/g
RADIUM-228	SC-26301-C	1.24	0.37	pCi/g
RADIUM-228	SC-26302-S	0.51	1.01	pCi/g
RADIUM-228	SC-26303-S	1.40	0.41	pCi/g
RADIUM-228	SC-26306-S	1.34	0.39	pCi/g
RADIUM-228	SC-26307-S	1.43	0.40	pCi/g
RADIUM-228	SC-26310-S	1.52	0.63	pCi/g
RADIUM-228	SC-26311-S	1.12	0.35	pCi/g
RADIUM-228	SC-26314-S	1.29	0.38	pCi/g
RADIUM-228	SC-26315-S	1.10	0.31	pCi/g
RADIUM-228	SC-26319-S	1.53	0.54	pCi/g
RADIUM-228	SC-26323-S	1.46	0.36	pCi/g
RADIUM-228	SC-26324-S	1.60	0.64	pCi/g
RADIUM-228	SC-26406-S	1.25	0.43	pCi/g

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 15
Average of RADIUM-228 values is 1.30 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.60 pCi/g which is below criteria, 6.20 pCi/g.

TOTAL RADIUM

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Radium	SC-25417-S	2.67	0.36	pCi/g
Radium	SC-25418-S	3.13	0.33	pCi/g
Radium	SC-26301-C	2.97	0.37	pCi/g
Radium	SC-26302-S	2.25	1.01	pCi/g
Radium	SC-26303-S	3.35	0.41	pCi/g
Radium	SC-26306-S	2.72	0.39	pCi/g
Radium	SC-26307-S	2.97	0.40	pCi/g
Radium	SC-26310-S	2.68	0.63	pCi/g
Radium	SC-26311-S	2.94	0.35	pCi/g
Radium	SC-26314-S	2.72	0.38	pCi/g
Radium	SC-26315-S	3.30	0.31	pCi/g
Radium	SC-26319-S	3.75	0.54	pCi/g
Radium	SC-26323-S	4.18	0.36	pCi/g
Radium	SC-26324-S	4.01	0.64	pCi/g
Radium	SC-26406-S	3.32	0.43	pCi/g

NUMBER OF TOTAL RADIUM SAMPLES IN DATABASE FOR THIS CU IS: 15
Average of Radium values is 3.13 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 4.18 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
THORIUM-230	SC-25417-S	0.97	0.62	pCi/g
THORIUM-230	SC-25418-S	0.88	0.62	pCi/g
THORIUM-230	SC-26302-S	0.91	0.62	pCi/g
THORIUM-230	SC-26303-S	0.87	0.62	pCi/g
THORIUM-230	SC-26306-S	0.95	0.62	pCi/g
THORIUM-230	SC-26307-S	1.07	0.62	pCi/g
THORIUM-230	SC-26310-S	0.69	0.62	pCi/g
THORIUM-230	SC-26311-S	0.95	0.62	pCi/g
THORIUM-230	SC-26314-S	0.94	0.62	pCi/g
THORIUM-230	SC-26315-S	1.20	0.62	pCi/g
THORIUM-230	SC-26319-S	1.32	0.62	pCi/g
THORIUM-230	SC-26323-S	1.10	0.62	pCi/g
THORIUM-230	SC-26324-S	1.21	0.62	pCi/g
THORIUM-230	SC-26406-S	1.06	0.62	pCi/g

NUMBER OF THORIUM-230 SAMPLES IN DATABASE FOR THIS CU IS: 14
Average of THORIUM-230 values is 1.01 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.32 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations. The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated November 20, 1995). This gives an average Thorium-232 value of 1.33 pCi/g, which is below ALARA of 5.00 pCi/g. The maximum calculated single value is 1.64 pCi/g, which is below surface criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-25417-S	1.34	2.67	pCi/g
URANIUM-238	SC-25418-S	1.83	3.65	pCi/g
URANIUM-238	SC-26301-C	1.34	2.68	pCi/g
URANIUM-238	SC-26302-S	1.72	3.43	pCi/g
URANIUM-238	SC-26303-S	1.34	2.68	pCi/g
URANIUM-238	SC-26306-S	1.73	3.46	pCi/g
URANIUM-238	SC-26307-S	1.30	2.60	pCi/g
URANIUM-238	SC-26310-S	1.82	3.64	pCi/g
URANIUM-238	SC-26311-S	1.42	2.83	pCi/g
URANIUM-238	SC-26314-S	1.86	3.71	pCi/g
URANIUM-238	SC-26315-S	1.37	2.74	pCi/g
URANIUM-238	SC-26319-S	1.84	3.68	pCi/g
URANIUM-238	SC-26323-S	1.46	2.92	pCi/g
URANIUM-238	SC-26324-S	1.82	3.64	pCi/g
URANIUM-238	SC-26406-S	3.5	2.78	pCi/g

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 15
Average of URANIUM-238 values is 1.71 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 3.50 pCi/g which is below criteria, 120.00 pCi/g.

PARTIAL CONFIRMATION UNIT RELEASE FORM

ES&H-1.2.1, Rev. 3, 01/98

SECTION I

1. Work Package Number: WP471 2. Date: 7.13.98 3. Review Form No.: 98-030P

4. Remediation Unit Number: R4021 5. CU Number (see attached map for partial CU location): CU264

6. Contaminants of Concern: X U238 X Th230 X Th232 X Ra226 X Ra228 ___ TNT
___ Tl ___ PCB ___ PAH ___ As ___ Cr ___ Pb

7. Number of Locations Sampled: 9 8. Total Number of Locations within CU: 31

9. Results average below ALARA goal(s)?	X Yes ___ No
10. All results below cleanup criteria?	X Yes ___ No
11. Any results greater than 3X criteria?	___ Yes X No
12. Hot spots present (less than 3X criteria)?	___ Yes X No

Parameter	Size	Concentration	Complies with Plan?
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

13. Comments The remainder of this CU will be confirmed under WP437 activities. Excavation will not exceed 650 elevation under WP471.

14. Reviewer Disposition Recommendation:

___ Release for Unrestricted Use (Section II)
___ Additional Excavation Required (Section IV)
___ ALARA Committee Required (Section III)

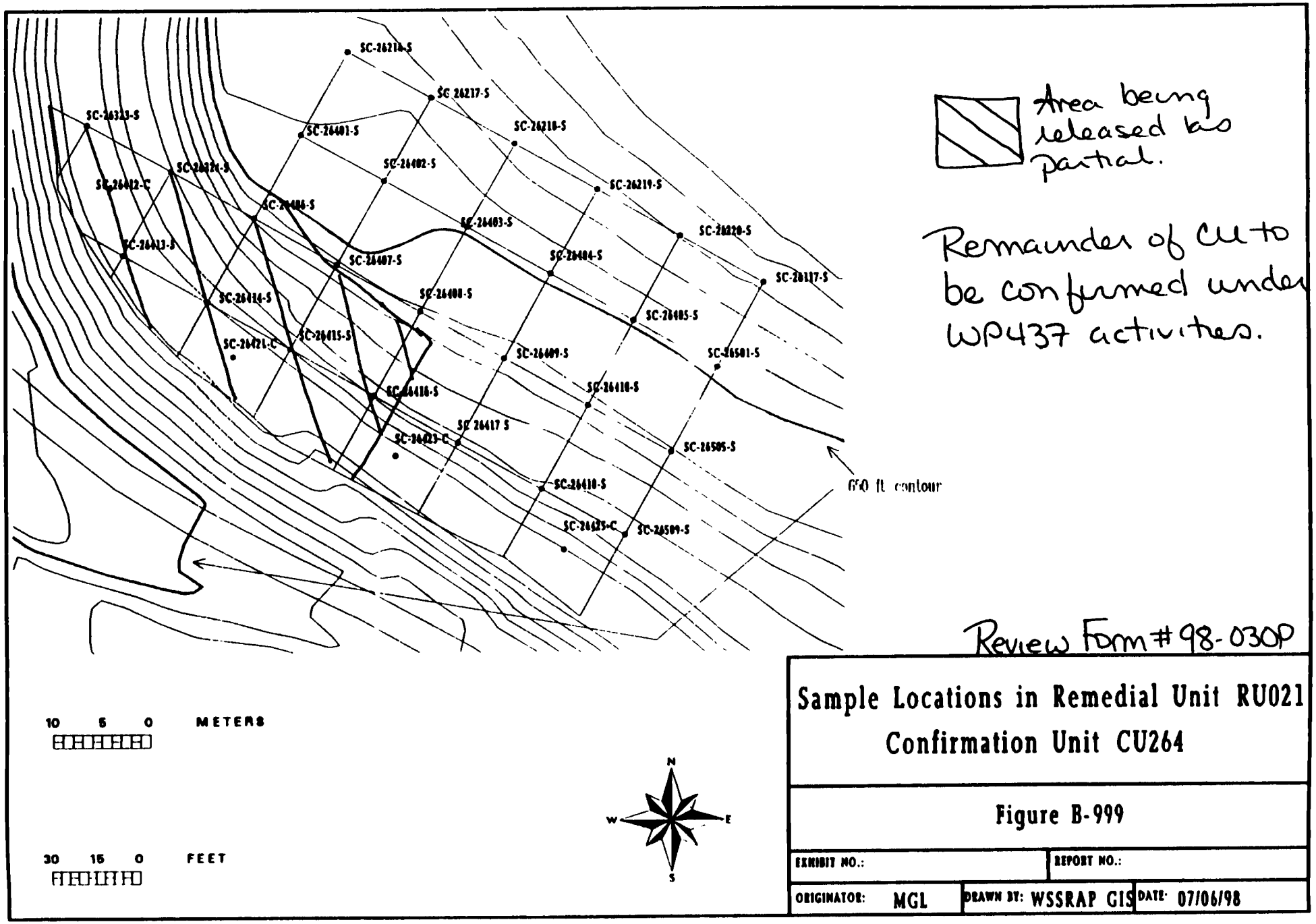
15. Reviewer: [signature] Date 7/13/98

SECTION II

ALARA Committee Chairman: [signature] Date: 7/13/98

Project Manager: Sheryl Hodges Date: 7/13/98

Construction Engineer: [signature] Date: 7/14/98



Sample Locations in Remedial Unit RU021
Confirmation Unit CU264

Figure B-999

EXHIBIT NO.:		REPORT NO.:	
ORIGINATOR: MGL	DRAWN BY: WSSRAP GIS	DATE: 07/06/98	

07/13/98

CU264 DATA REPORT

RADIUM-226

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-226	SC-26323-S	2.72	0.24	pCi/g
RADIUM-226	SC-26324-S	2.41	0.30	pCi/g
RADIUM-226	SC-26406-S	2.07	0.23	pCi/g
RADIUM-226	SC-26412-C	2.09	0.19	pCi/g
RADIUM-226	SC-26413-S	1.88	0.20	pCi/g
RADIUM-226	SC-26414-S	2.36	0.34	pCi/g
RADIUM-226	SC-26415-S	2.07	0.27	pCi/g
RADIUM-226	SC-26416-S	1.27	0.22	pCi/g
RADIUM-226	SC-26421-C	1.88	0.19	pCi/g

NUMBER OF RADIUM-226 SAMPLES IN DATABASE FOR THIS CU IS: 9
Average of RADIUM-226 values is 2.08 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 2.72 pCi/g which is below criteria, 6.20 pCi/g.

RADIUM-228

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
RADIUM-228	SC-26323-S	1.46	0.36	pCi/g
RADIUM-228	SC-26324-S	1.60	0.64	pCi/g
RADIUM-228	SC-26406-S	1.25	0.43	pCi/g
RADIUM-228	SC-26412-C	1.37	0.46	pCi/g
RADIUM-228	SC-26413-S	0.85	0.35	pCi/g
RADIUM-228	SC-26414-S	1.23	0.60	pCi/g
RADIUM-228	SC-26415-S	1.19	0.37	pCi/g
RADIUM-228	SC-26416-S	1.09	0.60	pCi/g
RADIUM-228	SC-26421-C	0.89	0.27	pCi/g

NUMBER OF RADIUM-228 SAMPLES IN DATABASE FOR THIS CU IS: 9
Average of RADIUM-228 values is 1.21 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.60 pCi/g which is below criteria, 6.20 pCi/g.

TOTAL RADIUM

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
Radium	SC-26323-S	4.18	0.36	pCi/g
Radium	SC-26324-S	4.01	0.64	pCi/g
Radium	SC-26406-S	3.32	0.43	pCi/g
Radium	SC-26412-C	3.46	0.46	pCi/g
Radium	SC-26413-S	2.73	0.35	pCi/g
Radium	SC-26414-S	3.59	0.60	pCi/g
Radium	SC-26415-S	3.26	0.37	pCi/g
Radium	SC-26416-S	2.36	0.60	pCi/g
Radium	SC-26421-C	2.77	0.27	pCi/g

NUMBER OF TOTAL RADIUM SAMPLES IN DATABASE FOR THIS CU IS: 9
Average of Radium values is 3.30 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 4.18 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-230

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
THORIUM-230	SC-26323-S	1.10	0.62	pCi/g
THORIUM-230	SC-26324-S	1.21	0.62	pCi/g
THORIUM-230	SC-26406-S	1.06	0.62	pCi/g
THORIUM-230	SC-26412-C	1.58	0.62	pCi/g
THORIUM-230	SC-26413-S	1.54	0.62	pCi/g
THORIUM-230	SC-26414-S	1.30	0.62	pCi/g
THORIUM-230	SC-26415-S	1.22	0.62	pCi/g
THORIUM-230	SC-26416-S	1.34	0.62	pCi/g
THORIUM-230	SC-26421-C	1.31	0.62	pCi/g

NUMBER OF THORIUM-230 SAMPLES IN DATABASE FOR THIS CU IS: 9
Average of THORIUM-230 values is 1.30 pCi/g, which is below ALARA, 5.00 pCi/g.
Maximum single value is 1.58 pCi/g which is below criteria, 6.20 pCi/g.

THORIUM-232

Thorium-232 cleanup attainment is determined by using the Radium-228 concentrations The Thorium-232 activity concentration equals the Ra-228 concentration times 1.025 (as detailed in the Th232 Determination for Site Confirmation Samples IOC dated Novembe: 20, 1995). This gives an average Thorium-232 value of 1.24 pCi/g, which is below ALARA f 5.00 pCi/g. The maximum calculated single value is 1.64 pCi/g, which is below surfa e criteria of 6.20 pCi/g.

URANIUM-238

PARAMETER	LOCATION	CONCENTRATION	DETECTION_LIMIT	UNITS
URANIUM-238	SC-26323-S	1.46	2.92	pCi/g
URANIUM-238	SC-26324-S	1.82	3.64	pCi/g
URANIUM-238	SC-26406-S	3.50	2.78	pCi/g
URANIUM-238	SC-26412-C	1.81	3.61	pCi/g
URANIUM-238	SC-26413-S	1.77	2.20	pCi/g
URANIUM-238	SC-26414-S	1.99	3.98	pCi/g
URANIUM-238	SC-26415-S	1.39	2.78	pCi/g
URANIUM-238	SC-26416-S	1.76	3.52	pCi/g
URANIUM-238	SC-26421-C	1.15	2.30	pCi/g

NUMBER OF URANIUM-238 SAMPLES IN DATABASE FOR THIS CU IS: 9
Average of URANIUM-238 values is 1.85 pCi/g, which is below ALARA, 30.00 pCi/g.
Maximum single value is 3.50 pCi/g which is below criteria, 120.00 pCi/g.

APPENDIX D
Final Data

Appendix D
WP-471 Confirmation Results

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14302-C	11/19/97	RADIUM-226	0.9300	0.28	PCI/G	WP0359.0
SC-14302-C	11/19/97	RADIUM-228	1.3500	0.52	PCI/G	WP0359.0
SC-14302-C	11/19/97	THORIUM-230	0.8300	0.62	PCI/G	WP0359.0
SC-14302-C	11/19/97	URANIUM-238	1.9300	3.86	PCI/G	WP0359.0
SC-14302-S	11/19/97	RADIUM-226	0.9300	0.24	PCI/G	WP0359.0
SC-14302-S	11/19/97	RADIUM-228	1.3700	0.40	PCI/G	WP0359.0
SC-14302-S	11/19/97	THORIUM-230	0.8800	0.62	PCI/G	WP0359.0
SC-14302-S	11/19/97	URANIUM-238	1.3200	2.64	PCI/G	WP0359.0
SC-14303-S	11/19/97	RADIUM-226	1.0000	0.34	PCI/G	WP0359.0
SC-14303-S	11/19/97	RADIUM-228	0.5000	1.00	PCI/G	WP0359.0
SC-14303-S	11/19/97	THORIUM-230	1.0700	0.62	PCI/G	WP0359.0
SC-14303-S	11/19/97	URANIUM-238	1.8100	3.61	PCI/G	WP0359.0
SC-14304-S	11/19/97	RADIUM-226	0.8200	0.21	PCI/G	WP0359.0
SC-14304-S	11/19/97	RADIUM-228	1.3600	0.39	PCI/G	WP0359.0
SC-14304-S	11/19/97	THORIUM-230	0.9900	0.62	PCI/G	WP0359.0
SC-14304-S	11/19/97	URANIUM-238	1.2500	2.50	PCI/G	WP0359.0
SC-14305-S	11/19/97	RADIUM-226	1.2000	0.45	PCI/G	WP0359.0
SC-14305-S	11/19/97	RADIUM-228	1.3900	0.44	PCI/G	WP0359.0
SC-14305-S	11/19/97	THORIUM-230	0.9600	0.62	PCI/G	WP0359.0
SC-14305-S	11/19/97	URANIUM-238	1.9600	3.91	PCI/G	WP0359.0
SC-14307-C	11/10/97	RADIUM-226	1.6200	0.32	PCI/G	WP0352.0
SC-14307-C	11/10/97	RADIUM-228	1.4200	0.41	PCI/G	WP0352.0
SC-14307-C	11/10/97	THORIUM-230	2.7800	0.62	PCI/G	WP0352.0
SC-14307-C	11/10/97	URANIUM-238	1.5200	3.03	PCI/G	WP0352.0
SC-14307-C-RS	12/18/97	RADIUM-226	1.7100	0.40	PCI/G	WP0378.0
SC-14307-C-RS	12/18/97	RADIUM-228	1.3400	0.57	PCI/G	WP0378.0
SC-14307-C-RS	12/18/97	THORIUM-230	3.2900	0.62	PCI/G	WP0378.0
SC-14307-C-RS	12/18/97	URANIUM-238	2.1600	4.32	PCI/G	WP0378.0
SC-14307-S	11/10/97	RADIUM-226	1.6300	0.24	PCI/G	WP0352.0
SC-14307-S	11/10/97	RADIUM-228	1.7300	0.42	PCI/G	WP0352.0
SC-14307-S	11/10/97	THORIUM-230	2.4800	0.62	PCI/G	WP0352.0
SC-14307-S	11/10/97	URANIUM-238	1.5400	3.08	PCI/G	WP0352.0
SC-14307-S-HS01	12/9/97	RADIUM-226	8.2800	0.91	PCI/G	WP0376.0
SC-14307-S-HS01	12/9/97	RADIUM-228	11.7000	1.46	PCI/G	WP0376.0
SC-14307-S-HS01	12/9/97	THORIUM-230	38.8000	0.62	PCI/G	WP0376.0
SC-14307-S-HS01	12/9/97	URANIUM-238	14.1000	7.96	PCI/G	WP0376.0
SC-14307-S-RS	12/18/97	RADIUM-226	1.9700	0.29	PCI/G	WP0378.0
SC-14307-S-RS	12/18/97	RADIUM-228	2.3000	0.48	PCI/G	WP0378.0
SC-14307-S-RS	12/18/97	THORIUM-230	6.6000	0.62	PCI/G	WP0378.0
SC-14307-S-RS	12/18/97	URANIUM-238	4.0200	2.13	PCI/G	WP0378.0
SC-14307-S-RS01	12/23/97	RADIUM-226	1.9300	0.45	PCI/G	WP0380.0
SC-14307-S-RS01	12/23/97	RADIUM-228	2.1600	0.59	PCI/G	WP0380.0
SC-14307-S-RS01	12/23/97	THORIUM-230	5.3700	0.62	PCI/G	WP0380.0
SC-14307-S-RS01	12/23/97	URANIUM-238	2.6600	3.11	PCI/G	WP0380.0
SC-14308-S	11/10/97	RADIUM-226	2.3700	0.32	PCI/G	WP0352.0
SC-14308-S	11/10/97	RADIUM-228	1.8300	0.38	PCI/G	WP0352.0
SC-14308-S	11/10/97	THORIUM-230	7.5600	0.62	PCI/G	WP0352.0
SC-14308-S	11/10/97	URANIUM-238	4.7000	2.25	PCI/G	WP0352.0
SC-14308-S-RS	12/18/97	RADIUM-226	1.5200	0.39	PCI/G	WP0378.0
SC-14308-S-RS	12/18/97	RADIUM-228	1.2300	0.56	PCI/G	WP0378.0
SC-14308-S-RS	12/18/97	THORIUM-230	1.4600	0.62	PCI/G	WP0378.0
SC-14308-S-RS	12/18/97	URANIUM-238	4.9700	3.27	PCI/G	WP0378.0
SC-14309-S	11/10/97	RADIUM-226	1.4200	0.24	PCI/G	WP0352.0
SC-14309-S	11/10/97	RADIUM-228	1.6500	0.44	PCI/G	WP0352.0
SC-14309-S	11/10/97	THORIUM-230	2.8600	0.62	PCI/G	WP0352.0

Appendix D
WP-471 Confirmation Results

SC-14309-S	11/10/97	URANIUM-238	1.5200	3.03	PCI/G	WP0352 0
SC-14310-S	11/19/97	RADIUM-226	0.9900	0.27	PCI/G	WP0359 0
SC-14310-S	11/19/97	RADIUM-228	1.1100	0.32	PCI/G	WP0359 0
SC-14310-S	11/19/97	THORIUM-230	1.2300	0 62	PCI/G	WP0359 0
SC-14310-S	11/19/97	URANIUM-238	1.2900	2.58	PCI/G	WP0359 0
SC-14311-S	11/19/97	RADIUM-226	0 9300	0.35	PCI/G	WP0359.0
SC-14311-S	11/19/97	RADIUM-228	1.2700	0.44	PCI/G	WP0359 0
SC-14311-S	11/19/97	THORIUM-230	1.0000	0.62	PCI/G	WP0359.0
SC-14311-S	11/19/97	URANIUM-238	1.7400	3.48	PCI/G	WP0359 0
SC-14312-S	11/19/97	RADIUM-226	0.9100	0 26	PCI/G	WP0359.0
SC-14312-S	11/19/97	RADIUM-228	1.2900	0.49	PCI/G	WP0359 0
SC-14312-S	11/19/97	THORIUM-230	1.1800	0.62	PCI/G	WP0359 0
SC-14312-S	11/19/97	URANIUM-238	1.2300	2 46	PCI/G	WP0359 0
SC-14313-S	11/19/97	RADIUM-226	0 7000	0.37	PCI/G	WP0359 0
SC-14313-S	11/19/97	RADIUM-228	1.4000	0.21	PCI/G	WP0359 0
SC-14313-S	11/19/97	THORIUM-230	1 2900	0.62	PCI/G	WP0359.0
SC-14313-S	11/19/97	URANIUM-238	1.8700	3.74	PCI/G	WP0359 0
SC-14314-S	11/19/97	RADIUM-226	0.9400	0.27	PCI/G	WP0359 0
SC-14314-S	11/19/97	RADIUM-228	1.2600	0 36	PCI/G	WP0359 0
SC-14314-S	11/19/97	THORIUM-230	0.9500	0 62	PCI/G	WP0359 0
SC-14314-S	11/19/97	URANIUM-238	1.2300	2.46	PCI/G	WP0359.0
SC-14315-S	11/19/97	RADIUM-226	1 2400	0.32	PCI/G	WP0359.0
SC-14315-S	11/19/97	RADIUM-228	1.1300	0.40	PCI/G	WP0359 0
SC-14315-S	11/19/97	THORIUM-230	0.8400	0 62	PCI/G	WP0359 0
SC-14315-S	11/19/97	URANIUM-238	1.9900	3 98	PCI/G	WP0359 0
SC-14316-S	11/26/97	RADIUM-226	1 7100	0 38	PCI/G	WP0369 0
SC-14316-S	11/26/97	RADIUM-228	1.3600	0.16	PCI/G	WP0369 0
SC-14316-S	11/26/97	THORIUM-230	1 1500	0 62	PCI/G	WP0369 0
SC-14316-S	11/26/97	URANIUM-238	1.9700	3.93	PCI/G	WP0369 0
SC-14316-S-02	5/27/98	2,4,6-TRINITROTOLUENE	0 0180	0.0072	UG/G	QT2302 0
SC-14316-S-02	5/27/98	RADIUM-226	1.9000	0 45	PCI/G	WP0444 0
SC-14316-S-02	5/27/98	RADIUM-228	1.3900	0.67	PCI/G	WP0444 0
SC-14316-S-02	5/27/98	THORIUM-230	1 1100	0.62	PCI/G	WP0444 0
SC-14316-S-02	5/27/98	URANIUM-238	2 2400	4.48	PCI/G	WP0444 0
SC-14318-S	11/10/97	RADIUM-226	1.4600	0 30	PCI/G	WP0352 0
SC-14318-S	11/10/97	RADIUM-228	1.0200	0.37	PCI/G	WP0352 0
SC-14318-S	11/10/97	THORIUM-230	1.3800	0 62	PCI/G	WP0352 0
SC-14318-S	11/10/97	URANIUM-238	1.9700	2 11	PCI/G	WP0352 0
SC-14318-S-HS01	12/9/97	RADIUM-226	4 3300	0 47	PCI/G	WP0376 0
SC-14318-S-HS01	12/9/97	RADIUM-228	6.7700	0.68	PCI/G	WP0376 0
SC-14318-S-HS01	12/9/97	THORIUM-230	23.1000	0 62	PCI/G	WP0376 0
SC-14318-S-HS01	12/9/97	URANIUM-238	5.7300	4.27	PCI/G	WP0376 0
SC-14318-S-RS	12/18/97	RADIUM-226	1.2900	0.28	PCI/G	WP0378 0
SC-14318-S-RS	12/18/97	RADIUM-228	1.4700	0 40	PCI/G	WP0378.0
SC-14318-S-RS	12/18/97	THORIUM-230	1 0500	0 62	PCI/G	WP0378 0
SC-14318-S-RS	12/18/97	URANIUM-238	1.9600	1.62	PCI/G	WP0378 0
SC-14318-S-RS01	12/23/97	RADIUM-226	1.7200	0.33	PCI/G	WP0380 0
SC-14318-S-RS01	12/23/97	RADIUM-228	1.5200	0.37	PCI/G	WP0380 0
SC-14318-S-RS01	12/23/97	THORIUM-230	2.1500	0.62	PCI/G	WP0380 0
SC-14318-S-RS01	12/23/97	URANIUM-238	1.4700	2.94	PCI/G	WP0380 0
SC-14319-S	11/10/97	RADIUM-226	1.8500	0.33	PCI/G	WP0352 0
SC-14319-S	11/10/97	RADIUM-228	2.0600	0.50	PCI/G	WP0352 0
SC-14319-S	11/10/97	THORIUM-230	4.4900	0.62	PCI/G	WP0352 0
SC-14319-S	11/10/97	URANIUM-238	2.5700	3.21	PCI/G	WP0352 0
SC-14319-S-HS01	12/9/97	RADIUM-226	1.9900	0.42	PCI/G	WP0376 0
SC-14319-S-HS01	12/9/97	RADIUM-228	2.2800	0 70	PCI/G	WP0376 0

Appendix D
WP-471 Confirmation Results

SC-14319-S-HS01	12/9/97	THORIUM-230	4.3800	0.62	PCI/G	WP0376.0
SC-14319-S-HS01	12/9/97	URANIUM-238	2.3200	4.64	PCI/G	WP0376.0
SC-14320-S	11/10/97	RADIUM-226	1.4400	0.29	PCI/G	WP0352.0
SC-14320-S	11/10/97	RADIUM-228	1.7800	0.37	PCI/G	WP0352.0
SC-14320-S	11/10/97	THORIUM-230	4.2100	0.62	PCI/G	WP0352.0
SC-14320-S	11/10/97	URANIUM-238	2.9100	2.90	PCI/G	WP0352.0
SC-14320-S-RS	11/25/97	RADIUM-226	2.9600	0.40	PCI/G	WP0368.0
SC-14320-S-RS	11/25/97	RADIUM-228	3.3800	0.86	PCI/G	WP0368.0
SC-14320-S-RS	11/25/97	THORIUM-230	12.9000	0.62	PCI/G	WP0368.0
SC-14320-S-RS	11/25/97	URANIUM-238	5.7500	3.88	PCI/G	WP0368.0
SC-14320-S-RS01	12/23/97	RADIUM-226	1.5100	0.44	PCI/G	WP0380 0
SC-14320-S-RS01	12/23/97	RADIUM-228	1.4900	0.35	PCI/G	WP0380.0
SC-14320-S-RS01	12/23/97	THORIUM-230	1.7800	0.62	PCI/G	WP0380.0
SC-14320-S-RS01	12/23/97	URANIUM-238	1.9100	3.82	PCI/G	WP0380.0
SC-14321-S	11/10/97	RADIUM-226	2.3400	0.42	PCI/G	WP0352.0
SC-14321-S	11/10/97	RADIUM-228	2.7800	0.43	PCI/G	WP0352.0
SC-14321-S	11/10/97	THORIUM-230	17.0000	0.62	PCI/G	WP0352.0
SC-14321-S	11/10/97	URANIUM-238	6.5700	3.28	PCI/G	WP0352.0
SC-14321-S-RS	11/25/97	RADIUM-226	1.1500	0.22	PCI/G	WP0368.0
SC-14321-S-RS	11/25/97	RADIUM-228	1.6300	0.26	PCI/G	WP0368.0
SC-14321-S-RS	11/25/97	THORIUM-230	15.0000	0.62	PCI/G	WP0368.0
SC-14321-S-RS	11/25/97	URANIUM-238	5.2700	2.28	PCI/G	WP0368.0
SC-14322-S	11/10/97	RADIUM-226	1.2200	0.26	PCI/G	WP0352.0
SC-14322-S	11/10/97	RADIUM-228	1.2900	0.35	PCI/G	WP0352.0
SC-14322-S	11/10/97	THORIUM-230	1.6500	0.62	PCI/G	WP0352.0
SC-14322-S	11/10/97	URANIUM-238	3.7400	2.27	PCI/G	WP0352.0
SC-14322-S-RS	11/25/97	RADIUM-226	0.9100	0.36	PCI/G	WP0368.0
SC-14322-S-RS	11/25/97	RADIUM-228	1.6300	0.57	PCI/G	WP0368.0
SC-14322-S-RS	11/25/97	THORIUM-230	1.0200	0.62	PCI/G	WP0368.0
SC-14322-S-RS	11/25/97	URANIUM-238	1.7600	3.52	PCI/G	WP0368.0
SC-14323-S	11/19/97	RADIUM-226	0.9200	0.32	PCI/G	WP0359.0
SC-14323-S	11/19/97	RADIUM-228	1.1100	0.37	PCI/G	WP0359.0
SC-14323-S	11/19/97	THORIUM-230	0.9500	0.62	PCI/G	WP0359.0
SC-14323-S	11/19/97	URANIUM-238	1.3200	2.64	PCI/G	WP0359 0
SC-14324-S	11/19/97	RADIUM-226	0.6400	0.43	PCI/G	WP0359.0
SC-14324-S	11/19/97	RADIUM-228	1.4300	0.40	PCI/G	WP0359.0
SC-14324-S	11/19/97	THORIUM-230	0.8300	0.62	PCI/G	WP0359.0
SC-14324-S	11/19/97	URANIUM-238	1.8400	3.68	PCI/G	WP0359.0
SC-14325-S	11/19/97	RADIUM-226	0.9800	0.21	PCI/G	WP0359.0
SC-14325-S	11/19/97	RADIUM-228	1.2300	0.43	PCI/G	WP0359.0
SC-14325-S	11/19/97	THORIUM-230	1.0700	0.62	PCI/G	WP0359.0
SC-14325-S	11/19/97	URANIUM-238	1.2700	2.54	PCI/G	WP0359.0
SC-14326-S	11/19/97	RADIUM-226	1.4200	0.26	PCI/G	WP0359.0
SC-14326-S	11/19/97	RADIUM-228	1.2100	0.32	PCI/G	WP0359.0
SC-14326-S	11/19/97	THORIUM-230	1.6700	0.62	PCI/G	WP0359.0
SC-14326-S	11/19/97	URANIUM-238	1.4700	2.93	PCI/G	WP0359.0
SC-14326-S-02	5/27/98	2,4,6-TRINITROTOLUENE	0.0230	0.0069	UG/G	QT2302.0
SC-14326-S-02	5/27/98	RADIUM-226	1.2800	0.22	PCI/G	WP0444.0
SC-14326-S-02	5/27/98	RADIUM-228	1.2700	0.43	PCI/G	WP0444.0
SC-14326-S-02	5/27/98	THORIUM-230	0.9000	0.62	PCI/G	WP0444.0
SC-14326-S-02	5/27/98	URANIUM-238	1.4200	2.84	PCI/G	WP0444.0
SC-14327-S	11/26/97	RADIUM-226	1.4300	0.42	PCI/G	WP0369.0
SC-14327-S	11/26/97	RADIUM-228	1.0100	0.66	PCI/G	WP0369.0
SC-14327-S	11/26/97	THORIUM-230	1.5200	0.62	PCI/G	WP0369.0
SC-14327-S	11/26/97	URANIUM-238	2.0500	4.10	PCI/G	WP0369.0
SC-14327-S-02	5/27/98	2,4,6-TRINITROTOLUENE	0.0750	0.0073	UG/G	QT2302.0

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SC-14327-S-02	5/27/98	RADIUM-226	1 1400	0.33	PCI/G	WP0444 0
SC-14327-S-02	5/27/98	RADIUM-228	1 2700	0 61	PCI/G	WP0444 0
SC-14327-S-02	5/27/98	THORIUM-230	1.0000	0.62	PCI/G	WP0444 0
SC-14327-S-02	5/27/98	URANIUM-238	1.8700	3.74	PCI/G	WP0444 0
SC-14328-S	11/26/97	RADIUM-226	1.5900	0.28	PCI/G	WP0369 0
SC-14328-S	11/26/97	RADIUM-228	1.3900	0.46	PCI/G	WP0369 0
SC-14328-S	11/26/97	THORIUM-230	3 5600	0.62	PCI/G	WP0369 0
SC-14328-S	11/26/97	URANIUM-238	1.5600	3 12	PCI/G	WP0369 0
SC-14328-S-02	5/27/98	2,4,6-TRINITROTOLUENE	0 3600	0 0073	UG/G	QT2302.0
SC-14328-S-02	5/27/98	RADIUM-226	1.2600	0.29	PCI/G	WP0444.0
SC-14328-S-02	5/27/98	RADIUM-228	1.5500	0.38	PCI/G	WP0444 0
SC-14328-S-02	5/27/98	THORIUM-230	1 2500	0.62	PCI/G	WP0444 0
SC-14328-S-02	5/27/98	URANIUM-238	1.3600	2.71	PCI/G	WP0444.0
SC-14329-S	11/26/97	RADIUM-226	1.6800	0.27	PCI/G	WP0369 0
SC-14329-S	11/26/97	RADIUM-228	1.6600	0 51	PCI/G	WP0369 0
SC-14329-S	11/26/97	THORIUM-230	2.7300	0.62	PCI/G	WP0369 0
SC-14329-S	11/26/97	URANIUM-238	2 2500	2.48	PCI/G	WP0369 0
SC-14329-S-02	5/27/98	2,4,6-TRINITROTOLUENE	2.1000	0 074	UG/G	QT2302 0
SC-14329-S-02	5/27/98	RADIUM-226	1.3200	0 42	PCI/G	WP0444 0
SC-14329-S-02	5/27/98	RADIUM-228	1.6000	0 55	PCI/G	WP0444 0
SC-14329-S-02	5/27/98	THORIUM-230	1 1500	0.62	PCI/G	WP0444.0
SC-14329-S-02	5/27/98	URANIUM-238	2.0100	4.01	PCI/G	WP0444 0
SC-14330-S	11/26/97	RADIUM-226	1.4600	0.30	PCI/G	WP0369 0
SC-14330-S	11/26/97	RADIUM-228	1.2000	0 46	PCI/G	WP0369 0
SC-14330-S	11/26/97	THORIUM-230	1 2400	0 62	PCI/G	WP0369 0
SC-14330-S	11/26/97	URANIUM-238	1.4200	2 83	PCI/G	WP0369 0
SC-14402-S	11/10/97	RADIUM-226	1 4300	0.29	PCI/G	WP0352 0
SC-14402-S	11/10/97	RADIUM-228	1.2800	0 46	PCI/G	WP0352 0
SC-14402-S	11/10/97	THORIUM-230	1 3200	0 62	PCI/G	WP0352 0
SC-14402-S	11/10/97	URANIUM-238	1 4400	2.88	PCI/G	WP0352 0
SC-14402-S-RS	12/18/97	RADIUM-226	1 4800	0 27	PCI/G	WP0378 0
SC-14402-S-RS	12/18/97	RADIUM-228	1 2000	0.61	PCI/G	WP0378 0
SC-14402-S-RS	12/18/97	THORIUM-230	1 0700	0.62	PCI/G	WP0378 0
SC-14402-S-RS	12/18/97	URANIUM-238	1.9200	3.83	PCI/G	WP0378 0
SC-14403-S	11/10/97	RADIUM-226	2 1500	0 38	PCI/G	WP0352 0
SC-14403-S	11/10/97	RADIUM-228	2.3700	0 44	PCI/G	WP0352 0
SC-14403-S	11/10/97	THORIUM-230	5 1000	0 62	PCI/G	WP0352 0
SC-14403-S	11/10/97	URANIUM-238	4 1700	3 06	PCI/G	WP0352 0
SC-14403-S-RS	12/18/97	RADIUM-226	1 2700	0 30	PCI/G	WP0378 0
SC-14403-S-RS	12/18/97	RADIUM-228	1 4000	0 46	PCI/G	WP0378 0
SC-14403-S-RS	12/18/97	THORIUM-230	0 9600	0.62	PCI/G	WP0378 0
SC-14403-S-RS	12/18/97	URANIUM-238	1.3600	2.72	PCI/G	WP0378.0
SC-14404-S	11/10/97	RADIUM-226	2.7100	0.36	PCI/G	WP0352 0
SC-14404-S	11/10/97	RADIUM-228	3 6500	0.46	PCI/G	WP0352 0
SC-14404-S	11/10/97	THORIUM-230	15.9000	0.62	PCI/G	WP0352.0
SC-14404-S	11/10/97	URANIUM-238	6 8500	2.64	PCI/G	WP0352 0
SC-14404-S-RS	11/25/97	RADIUM-226	1 4500	0.24	PCI/G	WP0368 0
SC-14404-S-RS	11/25/97	RADIUM-228	2 1700	0 45	PCI/G	WP0368 0
SC-14404-S-RS	11/25/97	THORIUM-230	6.9300	0.62	PCI/G	WP0368 0
SC-14404-S-RS	11/25/97	URANIUM-238	1.5800	3.16	PCI/G	WP0368.0
SC-14405-S	11/10/97	RADIUM-226	2.1300	0.38	PCI/G	WP0352 0
SC-14405-S	11/10/97	RADIUM-228	3 0800	0.46	PCI/G	WP0352 0
SC-14405-S	11/10/97	THORIUM-230	21 7000	0.62	PCI/G	WP0352 0
SC-14405-S	11/10/97	URANIUM-238	5 7300	3 49	PCI/G	WP0352 0
SC-14405-S-HS01	12/9/97	RADIUM-226	3 2600	0 38	PCI/G	WP0376 0
SC-14405-S-HS01	12/9/97	RADIUM-228	3 8100	0 60	PCI/G	WP0376 0

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SC-14405-S-HS01	12/9/97	THORIUM-230	9.3600	0.62	PCI/G	WP0376.0
SC-14405-S-HS01	12/9/97	URANIUM-238	5.0800	3.00	PCI/G	WP0376.0
SC-14405-S-RS	11/25/97	RADIUM-226	0.8000	0.28	PCI/G	WP0368.0
SC-14405-S-RS	11/25/97	RADIUM-228	1.3400	0.45	PCI/G	WP0368.0
SC-14405-S-RS	11/25/97	THORIUM-230	0.7500	0.62	PCI/G	WP0368.0
SC-14405-S-RS	11/25/97	URANIUM-238	1.7000	3.39	PCI/G	WP0368.0
SC-14407-C	11/10/97	RADIUM-226	1.4900	0.24	PCI/G	WP0352.0
SC-14407-C	11/10/97	RADIUM-228	1.5900	0.36	PCI/G	WP0352.0
SC-14407-C	11/10/97	THORIUM-230	1.3400	0.62	PCI/G	WP0352.0
SC-14407-C	11/10/97	URANIUM-238	1.4500	2.89	PCI/G	WP0352.0
SC-14407-C-HS01	12/9/97	RADIUM-226	6.4000	0.60	PCI/G	WP0376.0
SC-14407-C-HS01	12/9/97	RADIUM-228	13.0000	1.06	PCI/G	WP0376.0
SC-14407-C-HS01	12/9/97	THORIUM-230	34.4000	0.62	PCI/G	WP0376.0
SC-14407-C-HS01	12/9/97	URANIUM-238	21.7000	4.99	PCI/G	WP0376.0
SC-14407-C-RS	12/18/97	RADIUM-226	1.4500	0.32	PCI/G	WP0378.0
SC-14407-C-RS	12/18/97	RADIUM-228	0.6600	1.32	PCI/G	WP0378.0
SC-14407-C-RS	12/18/97	THORIUM-230	1.1800	0.62	PCI/G	WP0378.0
SC-14407-C-RS	12/18/97	URANIUM-238	1.9500	3.89	PCI/G	WP0378.0
SC-14407-C-RS01	12/23/97	RADIUM-226	1.4600	0.32	PCI/G	WP0380.0
SC-14407-C-RS01	12/23/97	RADIUM-228	1.0500	0.44	PCI/G	WP0380.0
SC-14407-C-RS01	12/23/97	THORIUM-230	1.5000	0.62	PCI/G	WP0380.0
SC-14407-C-RS01	12/23/97	URANIUM-238	1.4100	2.82	PCI/G	WP0380.0
SC-14407-S	11/10/97	RADIUM-226	1.6300	0.29	PCI/G	WP0352.0
SC-14407-S	11/10/97	RADIUM-228	1.0900	0.53	PCI/G	WP0352.0
SC-14407-S	11/10/97	THORIUM-230	1.5600	0.62	PCI/G	WP0352.0
SC-14407-S	11/10/97	URANIUM-238	1.4600	2.92	PCI/G	WP0352.0
SC-14407-S-RS	12/18/97	RADIUM-226	1.4200	0.32	PCI/G	WP0378.0
SC-14407-S-RS	12/18/97	RADIUM-228	1.4700	0.39	PCI/G	WP0378.0
SC-14407-S-RS	12/18/97	THORIUM-230	1.1600	0.62	PCI/G	WP0378.0
SC-14407-S-RS	12/18/97	URANIUM-238	1.5700	2.47	PCI/G	WP0378.0
SC-14408-S	11/10/97	RADIUM-226	1.8600	0.33	PCI/G	WP0352.0
SC-14408-S	11/10/97	RADIUM-228	1.5800	0.37	PCI/G	WP0352.0
SC-14408-S	11/10/97	THORIUM-230	2.2100	0.62	PCI/G	WP0352.0
SC-14408-S	11/10/97	URANIUM-238	1.6500	3.30	PCI/G	WP0352.0
SC-14408-S-HS01	12/9/97	RADIUM-226	22.4000	0.87	PCI/G	WP0376.0
SC-14408-S-HS01	12/9/97	RADIUM-228	44.8000	1.24	PCI/G	WP0376.0
SC-14408-S-HS01	12/9/97	THORIUM-230	74.1000	0.62	PCI/G	WP0376.0
SC-14408-S-HS01	12/9/97	URANIUM-238	4.4300	8.86	PCI/G	WP0376.0
SC-14408-S-HS02	12/9/97	RADIUM-226	4.1800	0.63	PCI/G	WP0376.0
SC-14408-S-HS02	12/9/97	RADIUM-228	3.6700	0.81	PCI/G	WP0376.0
SC-14408-S-HS02	12/9/97	THORIUM-230	6.4900	0.62	PCI/G	WP0376.0
SC-14408-S-HS02	12/9/97	URANIUM-238	7.1900	4.69	PCI/G	WP0376.0
SC-14408-S-RS	12/18/97	RADIUM-226	1.4800	0.23	PCI/G	WP0378.0
SC-14408-S-RS	12/18/97	RADIUM-228	1.4000	0.49	PCI/G	WP0378.0
SC-14408-S-RS	12/18/97	THORIUM-230	1.2500	0.62	PCI/G	WP0378.0
SC-14408-S-RS	12/18/97	URANIUM-238	2.0000	3.99	PCI/G	WP0378.0
SC-14408-S-RS01	12/23/97	RADIUM-226	1.4000	0.33	PCI/G	WP0380.0
SC-14408-S-RS01	12/23/97	RADIUM-228	1.1700	0.45	PCI/G	WP0380.0
SC-14408-S-RS01	12/23/97	THORIUM-230	1.0200	0.62	PCI/G	WP0380.0
SC-14408-S-RS01	12/23/97	URANIUM-238	2.0100	4.02	PCI/G	WP0380.0
SC-14409-S	11/10/97	RADIUM-226	1.9400	0.50	PCI/G	WP0353.0
SC-14409-S	11/10/97	RADIUM-228	2.7600	0.80	PCI/G	WP0353.0
SC-14409-S	11/10/97	THORIUM-230	8.9000	0.62	PCI/G	WP0353.0
SC-14409-S	11/10/97	URANIUM-238	2.6700	5.34	PCI/G	WP0353.0
SC-14409-S-RS	11/25/97	RADIUM-226	1.0000	0.28	PCI/G	WP0368.0
SC-14409-S-RS	11/25/97	RADIUM-228	1.3000	0.34	PCI/G	WP0368.0

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SC-14409-S-RS	11/25/97	THORIUM-230	1.4300	0.62	PCI/G	WP0368.0
SC-14409-S-RS	11/25/97	URANIUM-238	1 4400	2 88	PCI/G	WP0368.0
SC-14410-S	11/10/97	RADIUM-226	2 8900	0.43	PCI/G	WP0353.0
SC-14410-S	11/10/97	RADIUM-228	4 4600	0.68	PCI/G	WP0353.0
SC-14410-S	11/10/97	THORIUM-230	24.1000	0.62	PCI/G	WP0353 0
SC-14410-S	11/10/97	URANIUM-238	5.8600	4.18	PCI/G	WP0353 0
SC-14410-S-RS	11/25/97	RADIUM-226	0.7500	0.39	PCI/G	WP0368 0
SC-14410-S-RS	11/25/97	RADIUM-228	1.0400	0.69	PCI/G	WP0368.0
SC-14410-S-RS	11/25/97	THORIUM-230	0.8000	0.62	PCI/G	WP0368.0
SC-14410-S-RS	11/25/97	URANIUM-238	1.8400	3.67	PCI/G	WP0368.0
SC-14411-S	11/10/97	RADIUM-226	2.5200	0.66	PCI/G	WP0353 0
SC-14411-S	11/10/97	RADIUM-228	4.6900	0.99	PCI/G	WP0353.0
SC-14411-S	11/10/97	THORIUM-230	30.9000	0.62	PCI/G	WP0353.0
SC-14411-S	11/10/97	URANIUM-238	16.5000	6.10	PCI/G	WP0353.0
SC-14411-S-RS	11/25/97	RADIUM-226	1.1100	0.21	PCI/G	WP0368 0
SC-14411-S-RS	11/25/97	RADIUM-228	1.5300	0.41	PCI/G	WP0368.0
SC-14411-S-RS	11/25/97	THORIUM-230	1.0200	0.62	PCI/G	WP0368 0
SC-14411-S-RS	11/25/97	URANIUM-238	20.0000	3.38	PCI/G	WP0368 0
SC-14413-S	11/10/97	RADIUM-226	1.6100	0.34	PCI/G	WP0353 0
SC-14413-S	11/10/97	RADIUM-228	1.4700	0.54	PCI/G	WP0353 0
SC-14413-S	11/10/97	THORIUM-230	1.6500	0.62	PCI/G	WP0353.0
SC-14413-S	11/10/97	URANIUM-238	1.5200	3 04	PCI/G	WP0353 0
SC-14413-S-RS	12/18/97	RADIUM-226	1.6300	0.29	PCI/G	WP0378.0
SC-14413-S-RS	12/18/97	RADIUM-228	1.3100	0.38	PCI/G	WP0378 0
SC-14413-S-RS	12/18/97	THORIUM-230	1.1900	0.62	PCI/G	WP0378 0
SC-14413-S-RS	12/18/97	URANIUM-238	1.3700	2 74	PCI/G	WP0378 0
SC-14414-S	11/10/97	RADIUM-226	1.2600	0.39	PCI/G	WP0353 0
SC-14414-S	11/10/97	RADIUM-228	0.6000	1.20	PCI/G	WP0353 0
SC-14414-S	11/10/97	THORIUM-230	1.0700	0.62	PCI/G	WP0353 0
SC-14414-S	11/10/97	URANIUM-238	1.9500	3.90	PCI/G	WP0353.0
SC-14414-S-HS01	12/9/97	RADIUM-226	3.6400	0 40	PCI/G	WP0376 0
SC-14414-S-HS01	12/9/97	RADIUM-228	3 7900	0.61	PCI/G	WP0376 0
SC-14414-S-HS01	12/9/97	THORIUM-230	11.2000	0.62	PCI/G	WP0376 0
SC-14414-S-HS01	12/9/97	URANIUM-238	6 0300	4.08	PCI/G	WP0376 0
SC-14414-S-RS	12/18/97	RADIUM-226	1.4200	0.36	PCI/G	WP0378 0
SC-14414-S-RS	12/18/97	RADIUM-228	0.5900	1.18	PCI/G	WP0378 0
SC-14414-S-RS	12/18/97	THORIUM-230	1.1700	0.62	PCI/G	WP0378 0
SC-14414-S-RS	12/18/97	URANIUM-238	1.9400	3 87	PCI/G	WP0378 0
SC-14415-S	11/10/97	RADIUM-226	1.6400	0.34	PCI/G	WP0353 0
SC-14415-S	11/10/97	RADIUM-228	1.6000	0.38	PCI/G	WP0353.0
SC-14415-S	11/10/97	THORIUM-230	2.9100	0.62	PCI/G	WP0353.0
SC-14415-S	11/10/97	URANIUM-238	1.5600	3.11	PCI/G	WP0353.0
SC-14416-S	11/10/97	RADIUM-226	1.3300	0.27	PCI/G	WP0352.0
SC-14416-S	11/10/97	RADIUM-228	1.6800	0.33	PCI/G	WP0352.0
SC-14416-S	11/10/97	THORIUM-230	3.2200	0.62	PCI/G	WP0352.0
SC-14416-S	11/10/97	URANIUM-238	1.5000	3.00	PCI/G	WP0352.0
SC-14416-S-RS	11/25/97	RADIUM-226	0.8500	0.34	PCI/G	WP0368.0
SC-14416-S-RS	11/25/97	RADIUM-228	1.5100	0.39	PCI/G	WP0368.0
SC-14416-S-RS	11/25/97	THORIUM-230	0.9000	0.62	PCI/G	WP0368.0
SC-14416-S-RS	11/25/97	URANIUM-238	2.9700	2.30	PCI/G	WP0368.0
SC-14417-S	11/10/97	RADIUM-226	1.0100	0.26	PCI/G	WP0352.0
SC-14417-S	11/10/97	RADIUM-228	1 3000	0.42	PCI/G	WP0352.0
SC-14417-S	11/10/97	THORIUM-230	1 1200	0.62	PCI/G	WP0352 0
SC-14417-S	11/10/97	URANIUM-238	1 3400	2.68	PCI/G	WP0352.0
SC-14417-S-RS	11/25/97	RADIUM-226	0 9600	0.28	PCI/G	WP0368 0
SC-14417-S-RS	11/25/97	RADIUM-228	1 2600	0 43	PCI/G	WP0368.0

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SC-14417-S-RS	11/25/97	THORIUM-230	0.7500	0.62	PCI/G	WP0368.0
SC-14417-S-RS	11/25/97	URANIUM-238	1.2600	2.52	PCI/G	WP0368.0
SC-14419-S	11/10/97	RADIUM-226	1.7600	0.35	PCI/G	WP0352.0
SC-14419-S	11/10/97	RADIUM-228	1.8700	0.52	PCI/G	WP0352.0
SC-14419-S	11/10/97	THORIUM-230	5.3500	0.62	PCI/G	WP0352.0
SC-14419-S	11/10/97	URANIUM-238	4.4500	2.12	PCI/G	WP0352.0
SC-14419-S-02	5/27/98	RADIUM-226	1.0500	0.18	PCI/G	WP0444.0
SC-14419-S-02	5/27/98	RADIUM-228	1.4800	0.23	PCI/G	WP0444.0
SC-14419-S-02	5/27/98	THORIUM-230	0.8200	0.62	PCI/G	WP0444.0
SC-14419-S-02	5/27/98	URANIUM-238	1.3500	2.70	PCI/G	WP0444.0
SC-14419-S-RS	12/18/97	RADIUM-226	1.4300	0.33	PCI/G	WP0378.0
SC-14419-S-RS	12/18/97	RADIUM-228	1.0800	0.43	PCI/G	WP0378.0
SC-14419-S-RS	12/18/97	THORIUM-230	1.3400	0.62	PCI/G	WP0378.0
SC-14419-S-RS	12/18/97	URANIUM-238	1.4200	2.84	PCI/G	WP0378.0
SC-14420-S	11/10/97	RADIUM-226	3.1700	0.40	PCI/G	WP0352.0
SC-14420-S	11/10/97	RADIUM-228	1.8600	0.60	PCI/G	WP0352.0
SC-14420-S	11/10/97	THORIUM-230	4.4300	0.62	PCI/G	WP0352.0
SC-14420-S	11/10/97	URANIUM-238	3.7500	2.52	PCI/G	WP0352 0
SC-14420-S-02	5/27/98	RADIUM-226	0.7800	0.33	PCI/G	WP0444.0
SC-14420-S-02	5/27/98	RADIUM-228	1.2600	0.58	PCI/G	WP0444.0
SC-14420-S-02	5/27/98	THORIUM-230	0.8600	0.62	PCI/G	WP0444.0
SC-14420-S-02	5/27/98	URANIUM-238	1.7800	3.55	PCI/G	WP0444.0
SC-14420-S-RS	12/18/97	RADIUM-226	1.5600	0.50	PCI/G	WP0378.0
SC-14420-S-RS	12/18/97	RADIUM-228	1.6000	0.67	PCI/G	WP0378.0
SC-14420-S-RS	12/18/97	THORIUM-230	4.7200	0.62	PCI/G	WP0378.0
SC-14420-S-RS	12/18/97	URANIUM-238	2.1200	4.23	PCI/G	WP0378.0
SC-14421-S	11/10/97	RADIUM-226	1.3800	0.25	PCI/G	WP0352.0
SC-14421-S	11/10/97	RADIUM-228	1.3600	0.32	PCI/G	WP0352.0
SC-14421-S	11/10/97	THORIUM-230	1.8400	0.62	PCI/G	WP0352.0
SC-14421-S	11/10/97	URANIUM-238	1.4600	2.91	PCI/G	WP0352.0
SC-14422-S	11/10/97	RADIUM-226	1.8500	0.35	PCI/G	WP0352.0
SC-14422-S	11/10/97	RADIUM-228	2.0100	0.48	PCI/G	WP0352.0
SC-14422-S	11/10/97	THORIUM-230	4.5100	0.62	PCI/G	WP0352.0
SC-14422-S	11/10/97	URANIUM-238	5.6400	2.68	PCI/G	WP0352.0
SC-14422-S-RS	11/25/97	RADIUM-226	2.4500	0.36	PCI/G	WP0368.0
SC-14422-S-RS	11/25/97	RADIUM-228	3.3900	0.64	PCI/G	WP0368.0
SC-14422-S-RS	11/25/97	THORIUM-230	12.4000	0.62	PCI/G	WP0368.0
SC-14422-S-RS	11/25/97	URANIUM-238	11.1000	3.97	PCI/G	WP0368.0
SC-14423-S	11/10/97	RADIUM-226	5.9700	0.53	PCI/G	WP0352.0
SC-14423-S	11/10/97	RADIUM-228	10.6000	0.86	PCI/G	WP0352.0
SC-14423-S	11/10/97	THORIUM-230	108.0000	0.62	PCI/G	WP0352.0
SC-14423-S	11/10/97	URANIUM-238	16.0000	6.48	PCI/G	WP0352.0
SC-14423-S-HS01	12/9/97	RADIUM-226	3.7700	0.32	PCI/G	WP0376.0
SC-14423-S-HS01	12/9/97	RADIUM-228	6.8300	0.49	PCI/G	WP0376.0
SC-14423-S-HS01	12/9/97	THORIUM-230	52.3000	0.62	PCI/G	WP0376.0
SC-14423-S-HS01	12/9/97	URANIUM-238	14.2000	3.26	PCI/G	WP0376.0
SC-14423-S-RS	11/25/97	RADIUM-226	1.2900	0.27	PCI/G	WP0368.0
SC-14423-S-RS	11/25/97	RADIUM-228	1.2700	0.41	PCI/G	WP0368.0
SC-14423-S-RS	11/25/97	THORIUM-230	1.1800	0.62	PCI/G	WP0368.0
SC-14423-S-RS	11/25/97	URANIUM-238	1.9200	3.83	PCI/G	WP0368.0
SC-14423-S-RS01	12/23/97	RADIUM-226	1.2900	0.32	PCI/G	WP0380.0
SC-14423-S-RS01	12/23/97	RADIUM-228	1.4500	0.34	PCI/G	WP0380.0
SC-14423-S-RS01	12/23/97	THORIUM-230	2.1900	0.62	PCI/G	WP0380.0
SC-14423-S-RS01	12/23/97	URANIUM-238	1.4300	2.86	PCI/G	WP0380.0
SC-14423-S-RS2	12/18/97	RADIUM-226	1.5800	0.26	PCI/G	WP0378.0
SC-14423-S-RS2	12/18/97	RADIUM-228	1.0800	0.43	PCI/G	WP0378.0

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SC-14423-S-RS2	12/18/97	THORIUM-230	2.1400	0 62	PCI/G	WP0378 0
SC-14423-S-RS2	12/18/97	URANIUM-238	1 4000	2.79	PCI/G	WP0378 0
SC-14424-S	11/10/97	RADIUM-226	2.3700	0.35	PCI/G	WP0352 0
SC-14424-S	11/10/97	RADIUM-228	3.3100	0.58	PCI/G	WP0352 0
SC-14424-S	11/10/97	THORIUM-230	24.9000	0 62	PCI/G	WP0352 0
SC-14424-S	11/10/97	URANIUM-238	5.8600	2.84	PCI/G	WP0352 0
SC-14424-S-RS	11/25/97	RADIUM-226	1 2900	0.25	PCI/G	WP0368 0
SC-14424-S-RS	11/25/97	RADIUM-228	1.4900	0.35	PCI/G	WP0368 0
SC-14424-S-RS	11/25/97	THORIUM-230	2.5200	0.62	PCI/G	WP0368.0
SC-14424-S-RS	11/25/97	URANIUM-238	1 4000	2.79	PCI/G	WP0368 0
SC-14501-S	11/10/97	RADIUM-226	1 4200	0.46	PCI/G	WP0353 0
SC-14501-S	11/10/97	RADIUM-228	1.8200	0.70	PCI/G	WP0353.0
SC-14501-S	11/10/97	THORIUM-230	7.1700	0.62	PCI/G	WP0353.0
SC-14501-S	11/10/97	URANIUM-238	2.7600	2.85	PCI/G	WP0353.0
SC-14501-S-HS01	12/9/97	RADIUM-226	1.3800	0.34	PCI/G	WP0376 0
SC-14501-S-HS01	12/9/97	RADIUM-228	1.2300	0.39	PCI/G	WP0376 0
SC-14501-S-HS01	12/9/97	THORIUM-230	0.8100	0.62	PCI/G	WP0376 0
SC-14501-S-HS01	12/9/97	URANIUM-238	69 0000	5.43	PCI/G	WP0376 0
SC-14501-S-RS	11/25/97	RADIUM-226	0 7500	0.29	PCI/G	WP0368 0
SC-14501-S-RS	11/25/97	RADIUM-228	0.9500	0.45	PCI/G	WP0368 0
SC-14501-S-RS	11/25/97	THORIUM-230	0.8000	0.62	PCI/G	WP0368 0
SC-14501-S-RS	11/25/97	URANIUM-238	1.6400	3.28	PCI/G	WP0368 0
SC-14502-S	11/10/97	RADIUM-226	2 7000	0.44	PCI/G	WP0353 0
SC-14502-S	11/10/97	RADIUM-228	4 0100	0 62	PCI/G	WP0353 0
SC-14502-S	11/10/97	THORIUM-230	28.8000	0.62	PCI/G	WP0353 0
SC-14502-S	11/10/97	URANIUM-238	7 8300	4.20	PCI/G	WP0353 0
SC-14502-S-RS	11/25/97	RADIUM-226	1 0000	0.24	PCI/G	WP0368 0
SC-14502-S-RS	11/25/97	RADIUM-228	1 4600	0.29	PCI/G	WP0368 0
SC-14502-S-RS	11/25/97	THORIUM-230	1 0900	0 62	PCI/G	WP0368 0
SC-14502-S-RS	11/25/97	URANIUM-238	1 3100	2.61	PCI/G	WP0368 0
SC-14503-S	11/10/97	RADIUM-226	1 7800	0 45	PCI/G	WP0353 0
SC-14503-S	11/10/97	RADIUM-228	2 0300	0 70	PCI/G	WP0353 0
SC-14503-S	11/10/97	THORIUM-230	12 6000	0 62	PCI/G	WP0353 0
SC-14503-S	11/10/97	URANIUM-238	2 5500	5.10	PCI/G	WP0353 0
SC-14503-S-RS	11/25/97	RADIUM-226	0.8100	0.49	PCI/G	WP0368 0
SC-14503-S-RS	11/25/97	RADIUM-228	1 2200	0 53	PCI/G	WP0368 0
SC-14503-S-RS	11/25/97	THORIUM-230	1 1000	0.62	PCI/G	WP0368 0
SC-14503-S-RS	11/25/97	URANIUM-238	1.9900	3.98	PCI/G	WP0368 0
SC-14504-S	11/10/97	RADIUM-226	0 9300	0 31	PCI/G	WP0353 0
SC-14504-S	11/10/97	RADIUM-228	1.2800	0.38	PCI/G	WP0353 0
SC-14504-S	11/10/97	THORIUM-230	1 1900	0.62	PCI/G	WP0353 0
SC-14504-S	11/10/97	URANIUM-238	6.9700	2.53	PCI/G	WP0353 0
SC-14504-S-RS	11/25/97	RADIUM-226	1 0500	0.31	PCI/G	WP0368 0
SC-14504-S-RS	11/25/97	RADIUM-228	1.5300	0.45	PCI/G	WP0368 0
SC-14504-S-RS	11/25/97	THORIUM-230	3 9300	0.62	PCI/G	WP0368 0
SC-14504-S-RS	11/25/97	URANIUM-238	7 4100	2.48	PCI/G	WP0368 0
SC-14505-S	12/2/97	RADIUM-226	0 9800	0.35	PCI/G	WP0369 0
SC-14505-S	12/2/97	RADIUM-228	1.3900	0.44	PCI/G	WP0369 0
SC-14505-S	12/2/97	THORIUM-230	0 7000	0.62	PCI/G	WP0369 0
SC-14505-S	12/2/97	URANIUM-238	1.7700	3.54	PCI/G	WP0369 0
SC-14506-S	11/10/97	RADIUM-226	2.3200	0.39	PCI/G	WP0353 0
SC-14506-S	11/10/97	RADIUM-228	3.9900	0.65	PCI/G	WP0353 0
SC-14506-S	11/10/97	THORIUM-230	30.3000	0.62	PCI/G	WP0353 0
SC-14506-S	11/10/97	URANIUM-238	9 7600	5.13	PCI/G	WP0353 0
SC-14506-S-RS	11/25/97	RADIUM-226	1 1800	0.41	PCI/G	WP0368 0
SC-14506-S-RS	11/25/97	RADIUM-228	1 2000	0.21	PCI/G	WP0368 0

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SC-14506-S-RS	11/25/97	THORIUM-230	1.3000	0.62	PCI/G	WP0368.0
SC-14506-S-RS	11/25/97	URANIUM-238	1.9900	3.98	PCI/G	WP0368.0
SC-14507-S	11/10/97	RADIUM-226	2.0100	0.36	PCI/G	WP0353.0
SC-14507-S	11/10/97	RADIUM-228	3.5500	0.50	PCI/G	WP0353.0
SC-14507-S	11/10/97	THORIUM-230	23.0000	0.62	PCI/G	WP0353.0
SC-14507-S	11/10/97	URANIUM-238	11.2000	2.97	PCI/G	WP0353.0
SC-14507-S-RS	11/25/97	RADIUM-226	1.0000	0.32	PCI/G	WP0368.0
SC-14507-S-RS	11/25/97	RADIUM-228	1.1900	0.46	PCI/G	WP0368.0
SC-14507-S-RS	11/25/97	THORIUM-230	0.9300	0.62	PCI/G	WP0368.0
SC-14507-S-RS	11/25/97	URANIUM-238	1.3600	2.71	PCI/G	WP0368.0
SC-14508-S	11/10/97	RADIUM-226	2.2100	0.40	PCI/G	WP0353.0
SC-14508-S	11/10/97	RADIUM-228	3.3600	0.60	PCI/G	WP0353.0
SC-14508-S	11/10/97	THORIUM-230	22.8000	0.62	PCI/G	WP0353.0
SC-14508-S	11/10/97	URANIUM-238	10.4000	4.34	PCI/G	WP0353.0
SC-14508-S-RS	11/25/97	RADIUM-226	0.9100	0.30	PCI/G	WP0368.0
SC-14508-S-RS	11/25/97	RADIUM-228	1.1700	0.66	PCI/G	WP0368.0
SC-14508-S-RS	11/25/97	THORIUM-230	0.7200	0.62	PCI/G	WP0368.0
SC-14508-S-RS	11/25/97	URANIUM-238	1.7800	3.55	PCI/G	WP0368.0
SC-14509-S	11/10/97	RADIUM-226	1.0200	0.26	PCI/G	WP0353.0
SC-14509-S	11/10/97	RADIUM-228	1.4600	0.41	PCI/G	WP0353.0
SC-14509-S	11/10/97	THORIUM-230	2.7700	0.62	PCI/G	WP0353.0
SC-14509-S	11/10/97	URANIUM-238	1.8600	1.99	PCI/G	WP0353.0
SC-14509-S-RS	11/25/97	RADIUM-226	0.9200	0.23	PCI/G	WP0368.0
SC-14509-S-RS	11/25/97	RADIUM-228	1.3000	0.33	PCI/G	WP0368.0
SC-14509-S-RS	11/25/97	THORIUM-230	0.8600	0.62	PCI/G	WP0368.0
SC-14509-S-RS	11/25/97	URANIUM-238	1.2300	2.45	PCI/G	WP0368.0
SC-14510-S	11/26/97	RADIUM-226	1.1900	0.25	PCI/G	WP0369.0
SC-14510-S	11/26/97	RADIUM-228	1.2200	0.39	PCI/G	WP0369.0
SC-14510-S	11/26/97	THORIUM-230	1.4700	0.62	PCI/G	WP0369.0
SC-14510-S	11/26/97	URANIUM-238	1.3400	2.68	PCI/G	WP0369.0
SC-14511-S	11/10/97	RADIUM-226	1.0000	0.22	PCI/G	WP0353.0
SC-14511-S	11/10/97	RADIUM-228	1.7000	0.67	PCI/G	WP0353.0
SC-14511-S	11/10/97	THORIUM-230	4.2200	0.62	PCI/G	WP0353.0
SC-14511-S	11/10/97	URANIUM-238	2.0300	4.06	PCI/G	WP0353.0
SC-14511-S-RS	11/25/97	RADIUM-226	1.1100	0.38	PCI/G	WP0368.0
SC-14511-S-RS	11/25/97	RADIUM-228	1.2700	0.40	PCI/G	WP0368.0
SC-14511-S-RS	11/25/97	THORIUM-230	1.0500	0.62	PCI/G	WP0368.0
SC-14511-S-RS	11/25/97	URANIUM-238	1.9100	3.81	PCI/G	WP0368.0
SC-14512-S	11/10/97	RADIUM-226	1.0700	0.28	PCI/G	WP0353.0
SC-14512-S	11/10/97	RADIUM-228	1.4700	0.36	PCI/G	WP0353.0
SC-14512-S	11/10/97	THORIUM-230	1.0900	0.62	PCI/G	WP0353.0
SC-14512-S	11/10/97	URANIUM-238	1.3100	2.61	PCI/G	WP0353.0
SC-14512-S-RS	11/25/97	RADIUM-226	0.9700	0.27	PCI/G	WP0368.0
SC-14512-S-RS	11/25/97	RADIUM-228	1.2400	0.52	PCI/G	WP0368.0
SC-14512-S-RS	11/25/97	THORIUM-230	1.8300	0.62	PCI/G	WP0368.0
SC-14512-S-RS	11/25/97	URANIUM-238	1.3900	2.77	PCI/G	WP0368.0
SC-14513-S	11/10/97	RADIUM-226	0.9600	0.29	PCI/G	WP0353.0
SC-14513-S	11/10/97	RADIUM-228	1.5700	0.53	PCI/G	WP0353.0
SC-14513-S	11/10/97	THORIUM-230	2.2100	0.62	PCI/G	WP0353.0
SC-14513-S	11/10/97	URANIUM-238	1.9100	3.82	PCI/G	WP0353.0
SC-14513-S-RS	11/25/97	RADIUM-226	0.9600	0.34	PCI/G	WP0368.0
SC-14513-S-RS	11/25/97	RADIUM-228	1.4900	0.40	PCI/G	WP0368.0
SC-14513-S-RS	11/25/97	THORIUM-230	0.9000	0.62	PCI/G	WP0368.0
SC-14513-S-RS	11/25/97	URANIUM-238	1.7700	3.54	PCI/G	WP0368.0
SC-14514-S	11/10/97	RADIUM-226	1.9600	0.30	PCI/G	WP0353.0
SC-14514-S	11/10/97	RADIUM-228	2.9800	0.50	PCI/G	WP0353.0

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SC-14514-S	11/10/97	THORIUM-230	18 7000	0.62	PCI/G	WP0353 0
SC-14514-S	11/10/97	URANIUM-238	5.3300	3 77	PCI/G	WP0353 0
SC-14514-S-HS01	12/9/97	RADIUM-226	7 8800	0 38	PCI/G	WP0376.0
SC-14514-S-HS01	12/9/97	RADIUM-228	9.3200	0.63	PCI/G	WP0376 0
SC-14514-S-HS01	12/9/97	THORIUM-230	55.5000	0 62	PCI/G	WP0376 0
SC-14514-S-HS01	12/9/97	URANIUM-238	12.8000	2 92	PCI/G	WP0376 0
SC-14514-S-RS	11/25/97	RADIUM-226	1.2400	0.30	PCI/G	WP0368.0
SC-14514-S-RS	11/25/97	RADIUM-228	1.3000	0 34	PCI/G	WP0368 0
SC-14514-S-RS	11/25/97	THORIUM-230	1.2800	0.62	PCI/G	WP0368 0
SC-14514-S-RS	11/25/97	URANIUM-238	1.3600	2 71	PCI/G	WP0368 0
SC-14514-S-RS01	12/23/97	RADIUM-226	0 8900	0.34	PCI/G	WP0380.0
SC-14514-S-RS01	12/23/97	RADIUM-228	1.2800	0.59	PCI/G	WP0380.0
SC-14514-S-RS01	12/23/97	THORIUM-230	1.0000	0.62	PCI/G	WP0380.0
SC-14514-S-RS01	12/23/97	URANIUM-238	1.8100	3 61	PCI/G	WP0380.0
SC-14514-S-RS2	12/18/97	RADIUM-226	1 0000	0 37	PCI/G	WP0378.0
SC-14514-S-RS2	12/18/97	RADIUM-228	0.5900	1.18	PCI/G	WP0378.0
SC-14514-S-RS2	12/18/97	THORIUM-230	1 2800	0.62	PCI/G	WP0378.0
SC-14514-S-RS2	12/18/97	URANIUM-238	1.8900	3 78	PCI/G	WP0378 0
SC-14515-S	11/10/97	RADIUM-226	2.4000	0 45	PCI/G	WP0353 0
SC-14515-S	11/10/97	RADIUM-228	3.8000	0.63	PCI/G	WP0353 0
SC-14515-S	11/10/97	THORIUM-230	27 4000	0.62	PCI/G	WP0353.0
SC-14515-S	11/10/97	URANIUM-238	6.9000	5.42	PCI/G	WP0353.0
SC-14515-S-RS	11/25/97	RADIUM-226	0.9400	0.25	PCI/G	WP0368.0
SC-14515-S-RS	11/25/97	RADIUM-228	1 1800	0 47	PCI/G	WP0368.0
SC-14515-S-RS	11/25/97	THORIUM-230	0.9100	0.62	PCI/G	WP0368 0
SC-14515-S-RS	11/25/97	URANIUM-238	1.9400	3.87	PCI/G	WP0368 0
SC-14516-S	11/10/97	RADIUM-226	1.0800	0 30	PCI/G	WP0353.0
SC-14516-S	11/10/97	RADIUM-228	1.7800	0 40	PCI/G	WP0353 0
SC-14516-S	11/10/97	THORIUM-230	5 7000	0 62	PCI/G	WP0353 0
SC-14516-S	11/10/97	URANIUM-238	1.5300	3 06	PCI/G	WP0353.0
SC-14516-S-RS	11/25/97	RADIUM-226	1 3300	0 24	PCI/G	WP0368 0
SC-14516-S-RS	11/25/97	RADIUM-228	1.1600	0.32	PCI/G	WP0368 0
SC-14516-S-RS	11/25/97	THORIUM-230	1.1600	0.62	PCI/G	WP0368 0
SC-14516-S-RS	11/25/97	URANIUM-238	1 4000	2.79	PCI/G	WP0368 0
SC-14517-S	11/10/97	RADIUM-226	1.7400	0.51	PCI/G	WP0353 0
SC-14517-S	11/10/97	RADIUM-228	3 1300	0 78	PCI/G	WP0353 0
SC-14517-S	11/10/97	THORIUM-230	17 7000	0.62	PCI/G	WP0353 0
SC-14517-S	11/10/97	URANIUM-238	5 8100	3 74	PCI/G	WP0353 0
SC-14517-S-RS	11/25/97	RADIUM-226	0.9100	0 40	PCI/G	WP0368 0
SC-14517-S-RS	11/25/97	RADIUM-228	1 3400	0 52	PCI/G	WP0368 0
SC-14517-S-RS	11/25/97	THORIUM-230	2.9900	0 62	PCI/G	WP0368 0
SC-14517-S-RS	11/25/97	URANIUM-238	2.0200	4 04	PCI/G	WP0368 0
SC-14518-S	11/10/97	RADIUM-226	1 2400	0.26	PCI/G	WP0353 0
SC-14518-S	11/10/97	RADIUM-228	2 1700	0.45	PCI/G	WP0353 0
SC-14518-S	11/10/97	THORIUM-230	10.1000	0.62	PCI/G	WP0353 0
SC-14518-S	11/10/97	URANIUM-238	1.6600	3.31	PCI/G	WP0353 0
SC-14518-S-RS	11/25/97	RADIUM-226	1.0600	0.25	PCI/G	WP0368 0
SC-14518-S-RS	11/25/97	RADIUM-228	1.1800	0.38	PCI/G	WP0368 0
SC-14518-S-RS	11/25/97	THORIUM-230	1.0900	0.62	PCI/G	WP0368 0
SC-14518-S-RS	11/25/97	URANIUM-238	1.4200	2.06	PCI/G	WP0368.0
SC-14519-S	11/10/97	RADIUM-226	1.8400	0.53	PCI/G	WP0353 0
SC-14519-S	11/10/97	RADIUM-228	4.8400	0.83	PCI/G	WP0353 0
SC-14519-S	11/10/97	THORIUM-230	22 3000	0.62	PCI/G	WP0353 0
SC-14519-S	11/10/97	URANIUM-238	8 5100	5.36	PCI/G	WP0353 0
SC-14519-S-RS	11/25/97	RADIUM-226	1 1500	0.30	PCI/G	WP0368 0
SC-14519-S-RS	11/25/97	RADIUM-228	1 7200	0 71	PCI/G	WP0368 0

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SC-14519-S-RS	11/25/97	THORIUM-230	3.4300	0.62	PCI/G	WP0368.0
SC-14519-S-RS	11/25/97	URANIUM-238	2.0800	4.15	PCI/G	WP0368.0
SC-14519-S-RS2	12/18/97	RADIUM-226	1.0400	0.36	PCI/G	WP0378.0
SC-14519-S-RS2	12/18/97	RADIUM-228	1.1400	0.38	PCI/G	WP0378.0
SC-14519-S-RS2	12/18/97	THORIUM-230	1.3100	0.62	PCI/G	WP0378.0
SC-14519-S-RS2	12/18/97	URANIUM-238	1.4100	2.81	PCI/G	WP0378.0
SC-14520-S	11/10/97	RADIUM-226	1.0700	0.27	PCI/G	WP0353.0
SC-14520-S	11/10/97	RADIUM-228	2.1800	0.44	PCI/G	WP0353.0
SC-14520-S	11/10/97	THORIUM-230	5.7900	0.62	PCI/G	WP0353.0
SC-14520-S	11/10/97	URANIUM-238	1.6400	3.28	PCI/G	WP0353.0
SC-14520-S-RS	11/25/97	RADIUM-226	1.4800	0.25	PCI/G	WP0368.0
SC-14520-S-RS	11/25/97	RADIUM-228	1.4100	0.33	PCI/G	WP0368.0
SC-14520-S-RS	11/25/97	THORIUM-230	1.2800	0.62	PCI/G	WP0368.0
SC-14520-S-RS	11/25/97	URANIUM-238	1.4300	2.86	PCI/G	WP0368.0
SC-14601-S	11/26/97	RADIUM-226	1.0300	0.38	PCI/G	WP0369.0
SC-14601-S	11/26/97	RADIUM-228	1.4500	0.50	PCI/G	WP0369.0
SC-14601-S	11/26/97	THORIUM-230	0.9900	0.62	PCI/G	WP0369.0
SC-14601-S	11/26/97	URANIUM-238	1.9600	3.91	PCI/G	WP0369.0
SC-14602-S	12/5/97	RADIUM-226	1.4500	0.38	PCI/G	WP0374.0
SC-14602-S	12/5/97	RADIUM-228	1.1700	0.35	PCI/G	WP0374.0
SC-14602-S	12/5/97	THORIUM-230	0.8500	0.62	PCI/G	WP0374.0
SC-14602-S	12/5/97	URANIUM-238	2.0500	4.10	PCI/G	WP0374.0
SC-14603-S	12/5/97	RADIUM-226	1.4500	0.32	PCI/G	WP0374.0
SC-14603-S	12/5/97	RADIUM-228	1.3700	0.29	PCI/G	WP0374.0
SC-14603-S	12/5/97	THORIUM-230	1.6600	0.62	PCI/G	WP0374.0
SC-14603-S	12/5/97	URANIUM-238	1.6500	1.84	PCI/G	WP0374.0
SC-14603-S-02	5/27/98	2,4,6-TRINITROTOLUENE	0.1200	0.0073	UG/G	QT2302.0
SC-14603-S-02	5/27/98	RADIUM-226	1.2000	0.22	PCI/G	WP0444.0
SC-14603-S-02	5/27/98	RADIUM-228	1.4400	0.42	PCI/G	WP0444.0
SC-14603-S-02	5/27/98	THORIUM-230	1.1000	0.62	PCI/G	WP0444.0
SC-14603-S-02	5/27/98	URANIUM-238	1.4200	2.84	PCI/G	WP0444.0
SC-14604-S	12/5/97	RADIUM-226	1.9600	0.39	PCI/G	WP0374.0
SC-14604-S	12/5/97	RADIUM-228	2.2800	0.76	PCI/G	WP0374.0
SC-14604-S	12/5/97	THORIUM-230	6.9600	0.62	PCI/G	WP0374.0
SC-14604-S	12/5/97	URANIUM-238	2.6700	5.33	PCI/G	WP0374.0
SC-14604-S-02	5/27/98	2,4,6-TRINITROTOLUENE	0.1200	0.0074	UG/G	QT2302.0
SC-14604-S-02	5/27/98	RADIUM-226	0.9800	0.38	PCI/G	WP0444.0
SC-14604-S-02	5/27/98	RADIUM-228	1.4500	0.47	PCI/G	WP0444.0
SC-14604-S-02	5/27/98	THORIUM-230	0.7900	0.62	PCI/G	WP0444.0
SC-14604-S-02	5/27/98	URANIUM-238	2.0500	4.10	PCI/G	WP0444.0
SC-14605-S	12/5/97	RADIUM-226	1.3300	0.38	PCI/G	WP0374.0
SC-14605-S	12/5/97	RADIUM-228	1.9200	0.45	PCI/G	WP0374.0
SC-14605-S	12/5/97	THORIUM-230	5.7600	0.62	PCI/G	WP0374.0
SC-14605-S	12/5/97	URANIUM-238	4.0200	2.29	PCI/G	WP0374.0
SC-14606-S	11/26/97	RADIUM-226	0.8700	0.25	PCI/G	WP0369.0
SC-14606-S	11/26/97	RADIUM-228	1.5300	0.37	PCI/G	WP0369.0
SC-14606-S	11/26/97	THORIUM-230	1.1500	0.62	PCI/G	WP0369.0
SC-14606-S	11/26/97	URANIUM-238	1.5800	3.15	PCI/G	WP0369.0
SC-14607-S	11/26/97	RADIUM-226	1.1600	0.26	PCI/G	WP0369.0
SC-14607-S	11/26/97	RADIUM-228	1.2500	0.33	PCI/G	WP0369.0
SC-14607-S	11/26/97	THORIUM-230	2.6100	0.62	PCI/G	WP0369.0
SC-14607-S	11/26/97	URANIUM-238	2.1900	1.89	PCI/G	WP0369.0
SC-14608-S	11/26/97	RADIUM-226	0.6900	0.30	PCI/G	WP0369.0
SC-14608-S	11/26/97	RADIUM-228	1.1700	0.40	PCI/G	WP0369.0
SC-14608-S	11/26/97	THORIUM-230	2.0900	0.62	PCI/G	WP0369.0
SC-14608-S	11/26/97	URANIUM-238	1.3000	2.60	PCI/G	WP0369.0

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SC-14609-S	11/26/97	RADIUM-226	1.0200	0.38	PCI/G	WP0369 0
SC-14609-S	11/26/97	RADIUM-228	1 3700	0.57	PCI/G	WP0369.0
SC-14609-S	11/26/97	THORIUM-230	1.4600	0.62	PCI/G	WP0369.0
SC-14609-S	11/26/97	URANIUM-238	1 9300	3.85	PCI/G	WP0369.0
SC-14610-S	11/26/97	RADIUM-226	1 3100	0.32	PCI/G	WP0369.0
SC-14610-S	11/26/97	RADIUM-228	1 8400	0.44	PCI/G	WP0369.0
SC-14610-S	11/26/97	THORIUM-230	2.7700	0.62	PCI/G	WP0369 0
SC-14610-S	11/26/97	URANIUM-238	1.6100	3.21	PCI/G	WP0369 0
SC-14611-S	11/26/97	RADIUM-226	1.1400	0.13	PCI/G	WP0369 0
SC-14611-S	11/26/97	RADIUM-228	1.0500	0.40	PCI/G	WP0369.0
SC-14611-S	11/26/97	THORIUM-230	1 1600	0.62	PCI/G	WP0369 0
SC-14611-S	11/26/97	URANIUM-238	1.9500	3.89	PCI/G	WP0369.0
SC-14612-S	11/26/97	RADIUM-226	0.9300	0.35	PCI/G	WP0369.0
SC-14612-S	11/26/97	RADIUM-228	1.2200	0.35	PCI/G	WP0369.0
SC-14612-S	11/26/97	THORIUM-230	1.0100	0 62	PCI/G	WP0369 0
SC-14612-S	11/26/97	URANIUM-238	1 3700	2.74	PCI/G	WP0369 0
SC-14613-S	11/26/97	RADIUM-226	1.1500	0.30	PCI/G	WP0369 0
SC-14613-S	11/26/97	RADIUM-228	1 1200	0.52	PCI/G	WP0369 0
SC-14613-S	11/26/97	THORIUM-230	1 3300	0.62	PCI/G	WP0369 0
SC-14613-S	11/26/97	URANIUM-238	1.8900	3 77	PCI/G	WP0369 0
SC-14614-S	11/26/97	RADIUM-226	1.1600	0.23	PCI/G	WP0369 0
SC-14614-S	11/26/97	RADIUM-228	1 1000	0.40	PCI/G	WP0369.0
SC-14614-S	11/26/97	THORIUM-230	12.1000	0.62	PCI/G	WP0369 0
SC-14614-S	11/26/97	URANIUM-238	1 3100	2.61	PCI/G	WP0369 0
SC-14615-S	11/26/97	RADIUM-226	0 8800	0.22	PCI/G	WP0369 0
SC-14615-S	11/26/97	RADIUM-228	1.1200	0.32	PCI/G	WP0369.0
SC-14615-S	11/26/97	THORIUM-230	1.2200	0.62	PCI/G	WP0369 0
SC-14615-S	11/26/97	URANIUM-238	1 2400	2 47	PCI/G	WP0369 0
SC-14616-S	11/26/97	RADIUM-226	1.3100	0.39	PCI/G	WP0369 0
SC-14616-S	11/26/97	RADIUM-228	0 6200	1.23	PCI/G	WP0369 0
SC-14616-S	11/26/97	THORIUM-230	1 2700	0 62	PCI/G	WP0369 0
SC-14616-S	11/26/97	URANIUM-238	1.8700	3.74	PCI/G	WP0369 0
SC-14617-S	11/26/97	RADIUM-226	1 1200	0 40	PCI/G	WP0369.0
SC-14617-S	11/26/97	RADIUM-228	1.4800	0.71	PCI/G	WP0369.0
SC-14617-S	11/26/97	THORIUM-230	2.7500	0.62	PCI/G	WP0369.0
SC-14617-S	11/26/97	URANIUM-238	1 9900	3 97	PCI/G	WP0369 0
SC-14618-S	11/26/97	RADIUM-226	2 4400	0.39	PCI/G	WP0369 0
SC-14618-S	11/26/97	RADIUM-228	3 7300	0.41	PCI/G	WP0369 0
SC-14618-S	11/26/97	THORIUM-230	25 3000	0.62	PCI/G	WP0369 0
SC-14618-S	11/26/97	URANIUM-238	6 0300	3 43	PCI/G	WP0369 0
SC-14618-S-HS01	12/8/97	THORIUM-230	1.2700	0.62	PCI/G	WP0375 0
SC-14618-S-HS02	12/8/97	THORIUM-230	1.1200	0.62	PCI/G	WP0375 0
SC-14618-S-HS03	12/8/97	THORIUM-230	1 4200	0.62	PCI/G	WP0375 0
SC-14618-S-HS04	12/8/97	THORIUM-230	0.9600	0.62	PCI/G	WP0375.0
SC-14618-S-RS	12/18/97	RADIUM-226	1.1900	0.38	PCI/G	WP0378 0
SC-14618-S-RS	12/18/97	RADIUM-228	1 6400	0.45	PCI/G	WP0378.0
SC-14618-S-RS	12/18/97	THORIUM-230	1.8100	0.62	PCI/G	WP0378 0
SC-14618-S-RS	12/18/97	URANIUM-238	1.8200	3.63	PCI/G	WP0378 0
SC-14619-S	11/26/97	RADIUM-226	1 4800	0.28	PCI/G	WP0369 0
SC-14619-S	11/26/97	RADIUM-228	0.9100	0.41	PCI/G	WP0369.0
SC-14619-S	11/26/97	THORIUM-230	1.2600	0.62	PCI/G	WP0369 0
SC-14619-S	11/26/97	URANIUM-238	1.2900	2.57	PCI/G	WP0369 0
SC-14620-S	11/26/97	RADIUM-226	1.0800	0.30	PCI/G	WP0369 0
SC-14620-S	11/26/97	RADIUM-228	0.5600	1.13	PCI/G	WP0369 0
SC-14620-S	11/26/97	THORIUM-230	1 1200	0.62	PCI/G	WP0369 0
SC-14620-S	11/26/97	URANIUM-238	1.8200	3.63	PCI/G	WP0369 0

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SC-14621-S	11/26/97	RADIUM-226	0.8800	0.19	PCI/G	WP0369.0
SC-14621-S	11/26/97	RADIUM-228	1.2500	0.35	PCI/G	WP0369.0
SC-14621-S	11/26/97	THORIUM-230	2.5100	0.62	PCI/G	WP0369.0
SC-14621-S	11/26/97	URANIUM-238	1.2300	2.46	PCI/G	WP0369.0
SC-14622-S	11/26/97	RADIUM-226	1.0400	0.32	PCI/G	WP0369.0
SC-14622-S	11/26/97	RADIUM-228	1.4900	0.43	PCI/G	WP0369.0
SC-14622-S	11/26/97	THORIUM-230	0.8500	0.62	PCI/G	WP0369.0
SC-14622-S	11/26/97	URANIUM-238	1.8900	3.77	PCI/G	WP0369.0
SC-14622-S-02	7/20/98	RADIUM-226	1.3200	0.42	PCI/G	WP0468.0
SC-14622-S-02	7/20/98	RADIUM-228	1.2800	0.24	PCI/G	WP0468.0
SC-14622-S-02	7/20/98	THORIUM-230	1.0900	0.62	PCI/G	WP0468.0
SC-14622-S-02	7/20/98	URANIUM-238	2.0400	4.07	PCI/G	WP0468.0
SC-14701-C	12/23/97	RADIUM-226	1.4800	0.29	PCI/G	WP0380.0
SC-14701-C	12/23/97	RADIUM-228	1.0600	0.41	PCI/G	WP0380.0
SC-14701-C	12/23/97	THORIUM-230	1.3700	0.62	PCI/G	WP0380.0
SC-14701-C	12/23/97	URANIUM-238	1.4000	2.80	PCI/G	WP0380.0
SC-14701-C-02	5/27/98	RADIUM-226	0.8900	0.28	PCI/G	WP0444.0
SC-14701-C-02	5/27/98	RADIUM-228	1.6100	0.58	PCI/G	WP0444.0
SC-14701-C-02	5/27/98	THORIUM-230	0.9900	0.62	PCI/G	WP0444.0
SC-14701-C-02	5/27/98	URANIUM-238	1.9100	3.81	PCI/G	WP0444.0
SC-14702-S	12/23/97	RADIUM-226	1.3300	0.37	PCI/G	WP0380.0
SC-14702-S	12/23/97	RADIUM-228	0.6100	1.22	PCI/G	WP0380.0
SC-14702-S	12/23/97	THORIUM-230	2.0700	0.62	PCI/G	WP0380.0
SC-14702-S	12/23/97	URANIUM-238	2.0700	2.62	PCI/G	WP0380.0
SC-14702-S-02	5/27/98	RADIUM-226	1.0200	0.29	PCI/G	WP0444.0
SC-14702-S-02	5/27/98	RADIUM-228	1.4300	0.32	PCI/G	WP0444.0
SC-14702-S-02	5/27/98	THORIUM-230	0.9000	0.62	PCI/G	WP0444.0
SC-14702-S-02	5/27/98	URANIUM-238	1.3600	2.72	PCI/G	WP0444.0
SC-14703-S	12/23/97	RADIUM-226	1.3300	0.30	PCI/G	WP0380.0
SC-14703-S	12/23/97	RADIUM-228	1.2000	0.35	PCI/G	WP0380.0
SC-14703-S	12/23/97	THORIUM-230	1.1400	0.62	PCI/G	WP0380.0
SC-14703-S	12/23/97	URANIUM-238	1.4000	2.79	PCI/G	WP0380 0
SC-14703-S-02	5/27/98	RADIUM-226	1.4400	0.39	PCI/G	WP0444.0
SC-14703-S-02	5/27/98	RADIUM-228	1.5400	0.55	PCI/G	WP0444.0
SC-14703-S-02	5/27/98	THORIUM-230	1.2000	0.62	PCI/G	WP0444.0
SC-14703-S-02	5/27/98	URANIUM-238	1.8400	3.67	PCI/G	WP0444.0
SC-14705-S	12/23/97	RADIUM-226	1.1500	0.33	PCI/G	WP0380.0
SC-14705-S	12/23/97	RADIUM-228	0.5300	1.06	PCI/G	WP0380.0
SC-14705-S	12/23/97	THORIUM-230	1.3700	0.62	PCI/G	WP0380.0
SC-14705-S	12/23/97	URANIUM-238	1.9100	3.81	PCI/G	WP0380 0
SC-14705-S-02	5/27/98	RADIUM-226	1.1100	0.21	PCI/G	WP0444.0
SC-14705-S-02	5/27/98	RADIUM-228	1.7000	0.08	PCI/G	WP0444.0
SC-14705-S-02	5/27/98	THORIUM-230	0.9100	0.62	PCI/G	WP0444.0
SC-14705-S-02	5/27/98	URANIUM-238	1.3900	2.78	PCI/G	WP0444.0
SC-14706-S	12/23/97	RADIUM-226	1.2800	0.26	PCI/G	WP0380.0
SC-14706-S	12/23/97	RADIUM-228	1.0800	0.40	PCI/G	WP0380.0
SC-14706-S	12/23/97	THORIUM-230	1.3600	0.62	PCI/G	WP0380.0
SC-14706-S	12/23/97	URANIUM-238	1.2700	2.55	PCI/G	WP0380.0
SC-14706-S-02	5/27/98	RADIUM-226	1.0900	0.38	PCI/G	WP0444.0
SC-14706-S-02	5/27/98	RADIUM-228	1.2900	0.45	PCI/G	WP0444.0
SC-14706-S-02	5/27/98	THORIUM-230	0.9400	0.62	PCI/G	WP0444.0
SC-14706-S-02	5/27/98	URANIUM-238	1.9400	3.87	PCI/G	WP0444.0
SC-14707-S	12/23/97	RADIUM-226	1.1300	0.33	PCI/G	WP0380.0
SC-14707-S	12/23/97	RADIUM-228	0.5900	1.18	PCI/G	WP0380.0
SC-14707-S	12/23/97	THORIUM-230	0.8900	0.62	PCI/G	WP0380.0
SC-14707-S	12/23/97	URANIUM-238	1.8000	3.60	PCI/G	WP0380.0

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SC-14707-S-02	5/27/98	RADIUM-226	1.2000	0.27	PCI/G	WP0444.0
SC-14707-S-02	5/27/98	RADIUM-228	1 3500	0.38	PCI/G	WP0444 0
SC-14707-S-02	5/27/98	THORIUM-230	0 8900	0.62	PCI/G	WP0444 0
SC-14707-S-02	5/27/98	URANIUM-238	1 2900	2.57	PCI/G	WP0444 0
SC-14709-S	12/23/97	RADIUM-226	2.0200	0.45	PCI/G	WP0380.0
SC-14709-S	12/23/97	RADIUM-228	2.1400	0.69	PCI/G	WP0380 0
SC-14709-S	12/23/97	THORIUM-230	5 7500	0.62	PCI/G	WP0380 0
SC-14709-S	12/23/97	URANIUM-238	2.4200	4.83	PCI/G	WP0380 0
SC-14710-S	12/23/97	RADIUM-226	1.4200	0.26	PCI/G	WP0380.0
SC-14710-S	12/23/97	RADIUM-228	1.5000	0.36	PCI/G	WP0380.0
SC-14710-S	12/23/97	THORIUM-230	3.5800	0.62	PCI/G	WP0380.0
SC-14710-S	12/23/97	URANIUM-238	1.4000	2.80	PCI/G	WP0380 0
SC-14710-S-02	5/27/98	RADIUM-226	0.9700	0.18	PCI/G	WP0444 0
SC-14710-S-02	5/27/98	RADIUM-228	1.2800	0.45	PCI/G	WP0444 0
SC-14710-S-02	5/27/98	THORIUM-230	0 9000	0.62	PCI/G	WP0444.0
SC-14710-S-02	5/27/98	URANIUM-238	1.9000	2.83	PCI/G	WP0444 0
SC-14711-S	12/23/97	RADIUM-226	1.2900	0.37	PCI/G	WP0380 0
SC-14711-S	12/23/97	RADIUM-228	1.3300	0.63	PCI/G	WP0380.0
SC-14711-S	12/23/97	THORIUM-230	1.3800	0.62	PCI/G	WP0380.0
SC-14711-S	12/23/97	URANIUM-238	1.9200	3.83	PCI/G	WP0380 0
SC-14711-S-02	5/27/98	RADIUM-226	0.8000	0.24	PCI/G	WP0444 0
SC-14711-S-02	5/27/98	RADIUM-228	1.0300	0.36	PCI/G	WP0444 0
SC-14711-S-02	5/27/98	THORIUM-230	0.8000	0.62	PCI/G	WP0444 0
SC-14711-S-02	5/27/98	URANIUM-238	1 4600	2.91	PCI/G	WP0444 0
SC-14712-S	12/23/97	RADIUM-226	1 3400	0.31	PCI/G	WP0380 0
SC-14712-S	12/23/97	RADIUM-228	1 2300	0.33	PCI/G	WP0380.0
SC-14712-S	12/23/97	THORIUM-230	1 3900	0.62	PCI/G	WP0380 0
SC-14712-S	12/23/97	URANIUM-238	1 4200	2.84	PCI/G	WP0380 0
SC-14712-S-02	5/27/98	RADIUM-226	1 1900	0.33	PCI/G	WP0444 0
SC-14712-S-02	5/27/98	RADIUM-228	1.5000	0.49	PCI/G	WP0444 0
SC-14712-S-02	5/27/98	THORIUM-230	0.8500	0.62	PCI/G	WP0444 0
SC-14712-S-02	5/27/98	URANIUM-238	2.0200	4.04	PCI/G	WP0444 0
SC-14714-S	12/23/97	RADIUM-226	1.3400	0.38	PCI/G	WP0380 0
SC-14714-S	12/23/97	RADIUM-228	0.5900	1 18	PCI/G	WP0380 0
SC-14714-S	12/23/97	THORIUM-230	1.2300	0 62	PCI/G	WP0380 0
SC-14714-S	12/23/97	URANIUM-238	2 5700	5.14	PCI/G	WP0380 0
SC-14715-S	12/23/97	RADIUM-226	1 2900	0 25	PCI/G	WP0380 0
SC-14715-S	12/23/97	RADIUM-228	0 9200	0 47	PCI/G	WP0380 0
SC-14715-S	12/23/97	THORIUM-230	1 6500	0 62	PCI/G	WP0380 0
SC-14715-S	12/23/97	URANIUM-238	1.3900	2 78	PCI/G	WP0380 0
SC-14716-S	12/23/97	RADIUM-226	1 4900	0.31	PCI/G	WP0380 0
SC-14716-S	12/23/97	RADIUM-228	1 4300	0.50	PCI/G	WP0380 0
SC-14716-S	12/23/97	THORIUM-230	1.3800	0 62	PCI/G	WP0380 0
SC-14716-S	12/23/97	URANIUM-238	2 0400	4.08	PCI/G	WP0380.0
SC-14716-S-02	5/27/98	RADIUM-226	1 2000	0.28	PCI/G	WP0444.0
SC-14716-S-02	5/27/98	RADIUM-228	1.3000	0.39	PCI/G	WP0444.0
SC-14716-S-02	5/27/98	THORIUM-230	0.8500	0 62	PCI/G	WP0444.0
SC-14716-S-02	5/27/98	URANIUM-238	1.4100	2.82	PCI/G	WP0444.0
SC-14717-S	12/23/97	RADIUM-226	1.1900	0.26	PCI/G	WP0380.0
SC-14717-S	12/23/97	RADIUM-228	1 3000	0.39	PCI/G	WP0380 0
SC-14717-S	12/23/97	THORIUM-230	1 0500	0.62	PCI/G	WP0380 0
SC-14717-S	12/23/97	URANIUM-238	1 3800	2.75	PCI/G	WP0380 0
SC-14717-S-02	5/27/98	RADIUM-226	1.1900	0 26	PCI/G	WP0444 0
SC-14717-S-02	5/27/98	RADIUM-228	1.5500	0 39	PCI/G	WP0444 0
SC-14717-S-02	5/27/98	THORIUM-230	1 0900	0 62	PCI/G	WP0444 0
SC-14717-S-02	5/27/98	URANIUM-238	1 3500	2 69	PCI/G	WP0444 0

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SC-14718-C	2/27/98	RADIUM-226	1.5200	0.44	PCI/G	WP0423.0
SC-14718-C	2/27/98	RADIUM-228	1.5100	0.59	PCI/G	WP0423.0
SC-14718-C	2/27/98	THORIUM-230	1.4100	0.62	PCI/G	WP0423.0
SC-14718-C	2/27/98	URANIUM-238	2.0800	4.15	PCI/G	WP0423.0
SC-14719-S	2/27/98	RADIUM-226	1.5000	0.29	PCI/G	WP0423.0
SC-14719-S	2/27/98	RADIUM-228	1.4500	0.40	PCI/G	WP0423.0
SC-14719-S	2/27/98	THORIUM-230	1.2300	0.62	PCI/G	WP0423.0
SC-14719-S	2/27/98	URANIUM-238	1.5300	3.06	PCI/G	WP0423.0
SC-14719-S-RS	5/26/98	ARSENIC	4.5000	4.50	UG/G	WS2170.0
SC-14719-S-RS	5/26/98	BENZO(A)ANTHRACENE	6.0000	11	UG/KG	WS2170.0
SC-14719-S-RS	5/26/98	BENZO(A)PYRENE	9.0000	18	UG/KG	WS2170.0
SC-14719-S-RS	5/26/98	BENZO(B)FLUORANTHENE	7.0000	14	UG/KG	WS2170.0
SC-14719-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7.0000	13	UG/KG	WS2170.0
SC-14719-S-RS	5/26/98	CHRYSENE	60.0000	120	UG/KG	WS2170.0
SC-14719-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	17.0000	34	UG/KG	WS2170.0
SC-14719-S-RS	5/26/98	RADIUM-226	1.2000	0.40	PCI/G	WP0443.0
SC-14719-S-RS	5/26/98	RADIUM-228	1.2200	0.54	PCI/G	WP0443.0
SC-14719-S-RS	5/26/98	THORIUM-230	0.8200	0.62	PCI/G	WP0443.0
SC-14719-S-RS	5/26/98	URANIUM-238	2.8200	2.59	PCI/G	WP0443.0
SC-14720-S	12/23/97	RADIUM-226	1.3300	0.44	PCI/G	WP0380 0
SC-14720-S	12/23/97	RADIUM-228	1.0000	0.54	PCI/G	WP0380.0
SC-14720-S	12/23/97	THORIUM-230	1.5900	0.62	PCI/G	WP0380.0
SC-14720-S	12/23/97	URANIUM-238	2.0200	4.03	PCI/G	WP0380.0
SC-14720-S-RS	5/26/98	ARSENIC	3.6500	7.30	UG/G	WS2170.0
SC-14720-S-RS	5/26/98	BENZO(A)ANTHRACENE	7.0000	14	UG/KG	WS2170.0
SC-14720-S-RS	5/26/98	BENZO(A)PYRENE	12.0000	23	UG/KG	WS2170.0
SC-14720-S-RS	5/26/98	BENZO(B)FLUORANTHENE	9.0000	18	UG/KG	WS2170.0
SC-14720-S-RS	5/26/98	BENZO(K)FLUORANTHENE	9.0000	17	UG/KG	WS2170.0
SC-14720-S-RS	5/26/98	CHRYSENE	75.0000	150	UG/KG	WS2170.0
SC-14720-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	22.0000	44	UG/KG	WS2170.0
SC-14720-S-RS	5/26/98	RADIUM-226	0.9700	0.23	PCI/G	WP0443.0
SC-14720-S-RS	5/26/98	RADIUM-228	1.1400	0.43	PCI/G	WP0443.0
SC-14720-S-RS	5/26/98	THORIUM-230	0.8900	0.62	PCI/G	WP0443.0
SC-14720-S-RS	5/26/98	URANIUM-238	1.3100	2.61	PCI/G	WP0443.0
SC-14721-S	12/23/97	RADIUM-226	1.7400	0.29	PCI/G	WP0380.0
SC-14721-S	12/23/97	RADIUM-228	1.5100	0.37	PCI/G	WP0380.0
SC-14721-S	12/23/97	THORIUM-230	2.9800	0.62	PCI/G	WP0380.0
SC-14721-S	12/23/97	URANIUM-238	1.4400	2.88	PCI/G	WP0380.0
SC-14723-C	2/27/98	RADIUM-226	1.5500	0.34	PCI/G	WP0423.0
SC-14723-C	2/27/98	RADIUM-228	1.3800	0.57	PCI/G	WP0423.0
SC-14723-C	2/27/98	THORIUM-230	1.5800	0.62	PCI/G	WP0423.0
SC-14723-C	2/27/98	URANIUM-238	1.9600	3.91	PCI/G	WP0423.0
SC-14723-C-RS	5/26/98	ARSENIC	8.9000	4.90	UG/G	WS2170.0
SC-14723-C-RS	5/26/98	BENZO(A)ANTHRACENE	7.0000	13	UG/KG	WS2170.0
SC-14723-C-RS	5/26/98	BENZO(A)PYRENE	11.0000	21	UG/KG	WS2170.0
SC-14723-C-RS	5/26/98	BENZO(B)FLUORANTHENE	9.0000	17	UG/KG	WS2170.0
SC-14723-C-RS	5/26/98	BENZO(K)FLUORANTHENE	8.0000	15	UG/KG	WS2170.0
SC-14723-C-RS	5/26/98	CHRYSENE	70.0000	140	UG/KG	WS2170.0
SC-14723-C-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	21.0000	41	UG/KG	WS2170.0
SC-14723-C-RS	5/26/98	RADIUM-226	1.1100	0.33	PCI/G	WP0443.0
SC-14723-C-RS	5/26/98	RADIUM-228	0.5300	1.05	PCI/G	WP0443.0
SC-14723-C-RS	5/26/98	THORIUM-230	0.8700	0.62	PCI/G	WP0443.0
SC-14723-C-RS	5/26/98	URANIUM-238	1.8700	3.74	PCI/G	WP0443.0
SC-14724-S	2/27/98	RADIUM-226	1.3300	0.26	PCI/G	WP0423.0
SC-14724-S	2/27/98	RADIUM-228	1.3500	0.38	PCI/G	WP0423.0
SC-14724-S	2/27/98	THORIUM-230	1.7800	0.62	PCI/G	WP0423.0

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SC-14724-S	2/27/98	URANIUM-238	1 3500	2.70	PCI/G	WP0423 0
SC-14724-S-RS	5/26/98	ARSENIC	8.4000	6.20	UG/G	WS2170 0
SC-14724-S-RS	5/26/98	BENZO(A)ANTHRACENE	6 0000	12	UG/KG	WS2170.0
SC-14724-S-RS	5/26/98	BENZO(A)PYRENE	10.0000	19	UG/KG	WS2170 0
SC-14724-S-RS	5/26/98	BENZO(B)FLUORANTHENE	8 0000	15	UG/KG	WS2170.0
SC-14724-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7.0000	14	UG/KG	WS2170.0
SC-14724-S-RS	5/26/98	CHRYSENE	65.0000	130	UG/KG	WS2170 0
SC-14724-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	19.0000	37	UG/KG	WS2170 0
SC-14724-S-RS	5/26/98	RADIUM-226	1.4100	0.23	PCI/G	WP0443.0
SC-14724-S-RS	5/26/98	RADIUM-228	1.3900	0.42	PCI/G	WP0443 0
SC-14724-S-RS	5/26/98	THORIUM-230	0.9400	0.62	PCI/G	WP0443 0
SC-14724-S-RS	5/26/98	URANIUM-238	1.3300	2.66	PCI/G	WP0443.0
SC-14725-S	2/27/98	RADIUM-226	1.5400	0.32	PCI/G	WP0423.0
SC-14725-S	2/27/98	RADIUM-228	0.5800	1.16	PCI/G	WP0423.0
SC-14725-S	2/27/98	THORIUM-230	2.0500	0.62	PCI/G	WP0423 0
SC-14725-S	2/27/98	URANIUM-238	1.8300	3.65	PCI/G	WP0423 0
SC-14725-S-RS	5/26/98	ARSENIC	7 2000	5.20	UG/G	WS2170 0
SC-14725-S-RS	5/26/98	BENZO(A)ANTHRACENE	7 0000	13	UG/KG	WS2170 0
SC-14725-S-RS	5/26/98	BENZO(A)PYRENE	11.0000	22	UG/KG	WS2170 0
SC-14725-S-RS	5/26/98	BENZO(B)FLUORANTHENE	9.0000	18	UG/KG	WS2170 0
SC-14725-S-RS	5/26/98	BENZO(K)FLUORANTHENE	8.0000	16	UG/KG	WS2170 0
SC-14725-S-RS	5/26/98	CHRYSENE	75.0000	150	UG/KG	WS2170 0
SC-14725-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	22 0000	43	UG/KG	WS2170.0
SC-14725-S-RS	5/26/98	RADIUM-226	1.0500	0.30	PCI/G	WP0443 0
SC-14725-S-RS	5/26/98	RADIUM-228	0.5500	1.09	PCI/G	WP0443.0
SC-14725-S-RS	5/26/98	THORIUM-230	1.0400	0.62	PCI/G	WP0443 0
SC-14725-S-RS	5/26/98	URANIUM-238	1 9300	3 86	PCI/G	WP0443 0
SC-14801-S	12/23/97	RADIUM-226	0.7400	0.31	PCI/G	WP0380 0
SC-14801-S	12/23/97	RADIUM-228	1.1400	0.52	PCI/G	WP0380 0
SC-14801-S	12/23/97	THORIUM-230	0 9300	0 62	PCI/G	WP0380.0
SC-14801-S	12/23/97	URANIUM-238	1 7400	3 48	PCI/G	WP0380 0
SC-14801-S-02	5/27/98	RADIUM-226	1 3800	0.31	PCI/G	WP0444 0
SC-14801-S-02	5/27/98	RADIUM-228	1.2200	0.30	PCI/G	WP0444 0
SC-14801-S-02	5/27/98	THORIUM-230	1 2600	0 62	PCI/G	WP0444 0
SC-14801-S-02	5/27/98	URANIUM-238	1 8200	3 64	PCI/G	WP0444 0
SC-14802-S	12/23/97	RADIUM-226	1 0400	0.27	PCI/G	WP0380 0
SC-14802-S	12/23/97	RADIUM-228	1.3100	0.37	PCI/G	WP0380 0
SC-14802-S	12/23/97	THORIUM-230	1.3000	0.62	PCI/G	WP0380.0
SC-14802-S	12/23/97	URANIUM-238	2 6100	2 46	PCI/G	WP0380 0
SC-14803-S	12/23/97	RADIUM-226	1 9500	0.27	PCI/G	WP0380 0
SC-14803-S	12/23/97	RADIUM-228	2 5000	0.49	PCI/G	WP0380.0
SC-14803-S	12/23/97	THORIUM-230	12 1000	0.62	PCI/G	WP0380.0
SC-14803-S	12/23/97	URANIUM-238	5.4000	3.07	PCI/G	WP0380.0
SC-14804-S	12/23/97	RADIUM-226	1.3300	0.37	PCI/G	WP0380.0
SC-14804-S	12/23/97	RADIUM-228	1.4100	0.73	PCI/G	WP0380.0
SC-14804-S	12/23/97	THORIUM-230	3.2000	0.62	PCI/G	WP0380.0
SC-14804-S	12/23/97	URANIUM-238	1.9900	3.98	PCI/G	WP0380.0
SC-14805-S	12/23/97	RADIUM-226	0.9100	0.25	PCI/G	WP0380.0
SC-14805-S	12/23/97	RADIUM-228	1.1500	0.37	PCI/G	WP0380 0
SC-14805-S	12/23/97	THORIUM-230	1 0800	0.62	PCI/G	WP0380 0
SC-14805-S	12/23/97	URANIUM-238	1.3100	2.61	PCI/G	WP0380 0
SC-14805-S-02	5/27/98	RADIUM-226	1 1200	0.25	PCI/G	WP0444 0
SC-14805-S-02	5/27/98	RADIUM-228	1 3100	0 35	PCI/G	WP0444.0
SC-14805-S-02	5/27/98	THORIUM-230	0 9100	0 62	PCI/G	WP0444 0
SC-14805-S-02	5/27/98	URANIUM-238	1 3300	2.66	PCI/G	WP0444 0
SC-14806-S	12/23/97	RADIUM-226	1 0000	0 40	PCI/G	WP0380 0

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SC-14806-S	12/23/97	RADIUM-228	1.4600	0.53	PCI/G	WP0380.0
SC-14806-S	12/23/97	THORIUM-230	1.2300	0.62	PCI/G	WP0380.0
SC-14806-S	12/23/97	URANIUM-238	1.7900	3.57	PCI/G	WP0380.0
SC-14806-S-02	5/27/98	RADIUM-226	1.1800	0.25	PCI/G	WP0444.0
SC-14806-S-02	5/27/98	RADIUM-228	1.5600	0.28	PCI/G	WP0444.0
SC-14806-S-02	5/27/98	THORIUM-230	0.9700	0.62	PCI/G	WP0444.0
SC-14806-S-02	5/27/98	URANIUM-238	1.3200	2.64	PCI/G	WP0444.0
SC-14807-S	12/23/97	RADIUM-226	0.7600	0.29	PCI/G	WP0380.0
SC-14807-S	12/23/97	RADIUM-228	1.3300	0.39	PCI/G	WP0380.0
SC-14807-S	12/23/97	THORIUM-230	1.0000	0.62	PCI/G	WP0380.0
SC-14807-S	12/23/97	URANIUM-238	1.2500	2.51	PCI/G	WP0380.0
SC-14807-S-02	5/27/98	RADIUM-226	1.2400	0.30	PCI/G	WP0444.0
SC-14807-S-02	5/27/98	RADIUM-228	0.6000	1.20	PCI/G	WP0444.0
SC-14807-S-02	5/27/98	THORIUM-230	1.1800	0.62	PCI/G	WP0444.0
SC-14807-S-02	5/27/98	URANIUM-238	1.9000	3.79	PCI/G	WP0444.0
SC-14808-S	12/23/97	RADIUM-226	1.0600	0.38	PCI/G	WP0380.0
SC-14808-S	12/23/97	RADIUM-228	1.3800	0.64	PCI/G	WP0380.0
SC-14808-S	12/23/97	THORIUM-230	2.3000	0.62	PCI/G	WP0380.0
SC-14808-S	12/23/97	URANIUM-238	1.9700	3.94	PCI/G	WP0380.0
SC-14809-S	12/23/97	RADIUM-226	0.9600	0.22	PCI/G	WP0380.0
SC-14809-S	12/23/97	RADIUM-228	1.1400	0.37	PCI/G	WP0380.0
SC-14809-S	12/23/97	THORIUM-230	1.1300	0.62	PCI/G	WP0380.0
SC-14809-S	12/23/97	URANIUM-238	1.3800	2.76	PCI/G	WP0380.0
SC-14809-S-02	5/27/98	RADIUM-226	1.1800	0.28	PCI/G	WP0444.0
SC-14809-S-02	5/27/98	RADIUM-228	1.5000	0.33	PCI/G	WP0444.0
SC-14809-S-02	5/27/98	THORIUM-230	1.0900	0.62	PCI/G	WP0444.0
SC-14809-S-02	5/27/98	URANIUM-238	1.4000	2.79	PCI/G	WP0444.0
SC-14810-S	12/23/97	RADIUM-226	0.8900	0.33	PCI/G	WP0380.0
SC-14810-S	12/23/97	RADIUM-228	1.3500	0.41	PCI/G	WP0380.0
SC-14810-S	12/23/97	THORIUM-230	1.0200	0.62	PCI/G	WP0380.0
SC-14810-S	12/23/97	URANIUM-238	1.7300	3.45	PCI/G	WP0380.0
SC-14810-S-02	5/27/98	RADIUM-226	1.2900	0.36	PCI/G	WP0444.0
SC-14810-S-02	5/27/98	RADIUM-228	1.6800	0.63	PCI/G	WP0444.0
SC-14810-S-02	5/27/98	THORIUM-230	1.0400	0.62	PCI/G	WP0444.0
SC-14810-S-02	5/27/98	URANIUM-238	1.8000	2.00	PCI/G	WP0444.0
SC-14811-S	12/23/97	RADIUM-226	0.7700	0.26	PCI/G	WP0380.0
SC-14811-S	12/23/97	RADIUM-228	1.2100	0.44	PCI/G	WP0380.0
SC-14811-S	12/23/97	THORIUM-230	1.1400	0.62	PCI/G	WP0380.0
SC-14811-S	12/23/97	URANIUM-238	1.2600	2.52	PCI/G	WP0380.0
SC-14811-S-02	5/27/98	RADIUM-226	1.2200	0.25	PCI/G	WP0444.0
SC-14811-S-02	5/27/98	RADIUM-228	1.4100	0.48	PCI/G	WP0444.0
SC-14811-S-02	5/27/98	THORIUM-230	1.0500	0.62	PCI/G	WP0444.0
SC-14811-S-02	5/27/98	URANIUM-238	1.3800	2.75	PCI/G	WP0444.0
SC-14812-S	12/23/97	RADIUM-226	0.8600	0.28	PCI/G	WP0380.0
SC-14812-S	12/23/97	RADIUM-228	1.3500	0.49	PCI/G	WP0380.0
SC-14812-S	12/23/97	THORIUM-230	1.0600	0.62	PCI/G	WP0380.0
SC-14812-S	12/23/97	URANIUM-238	1.6900	3.37	PCI/G	WP0380.0
SC-14812-S-02	5/27/98	RADIUM-226	1.1800	0.36	PCI/G	WP0444.0
SC-14812-S-02	5/27/98	RADIUM-228	1.4400	0.45	PCI/G	WP0444.0
SC-14812-S-02	5/27/98	THORIUM-230	1.1800	0.62	PCI/G	WP0444.0
SC-14812-S-02	5/27/98	URANIUM-238	1.9700	3.94	PCI/G	WP0444.0
SC-14813-S	12/23/97	RADIUM-226	0.7600	0.19	PCI/G	WP0380.0
SC-14813-S	12/23/97	RADIUM-228	1.1200	0.54	PCI/G	WP0380.0
SC-14813-S	12/23/97	THORIUM-230	1.1100	0.62	PCI/G	WP0380.0
SC-14813-S	12/23/97	URANIUM-238	2.1700	1.92	PCI/G	WP0380.0
SC-14813-S-02	5/27/98	RADIUM-226	1.4700	0.35	PCI/G	WP0444.0

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SC-14813-S-02	5/27/98	RADIUM-228	1 3700	0.66	PCI/G	WP0444 0
SC-14813-S-02	5/27/98	THORIUM-230	1 2900	0.62	PCI/G	WP0444 0
SC-14813-S-02	5/27/98	URANIUM-238	2.0600	4.11	PCI/G	WP0444 0
SC-14814-S	12/23/97	RADIUM-226	0.7800	0.34	PCI/G	WP0380 0
SC-14814-S	12/23/97	RADIUM-228	0.9600	0.50	PCI/G	WP0380.0
SC-14814-S	12/23/97	THORIUM-230	0 9600	0.62	PCI/G	WP0380.0
SC-14814-S	12/23/97	URANIUM-238	1.7900	3.57	PCI/G	WP0380 0
SC-14814-S-02	5/27/98	RADIUM-226	1.2600	0.37	PCI/G	WP0444 0
SC-14814-S-02	5/27/98	RADIUM-228	1.7900	0.51	PCI/G	WP0444.0
SC-14814-S-02	5/27/98	THORIUM-230	0.9800	0.62	PCI/G	WP0444.0
SC-14814-S-02	5/27/98	URANIUM-238	2 0200	4.03	PCI/G	WP0444 0
SC-14815-S	12/23/97	RADIUM-226	0.8800	0.27	PCI/G	WP0380.0
SC-14815-S	12/23/97	RADIUM-228	1.2500	0.31	PCI/G	WP0380.0
SC-14815-S	12/23/97	THORIUM-230	0 9700	0.62	PCI/G	WP0380.0
SC-14815-S	12/23/97	URANIUM-238	1 3200	2.64	PCI/G	WP0380.0
SC-14815-S-02	5/27/98	RADIUM-226	1 3200	0.25	PCI/G	WP0444 0
SC-14815-S-02	5/27/98	RADIUM-228	1.6400	0.43	PCI/G	WP0444.0
SC-14815-S-02	5/27/98	THORIUM-230	1.0100	0.62	PCI/G	WP0444.0
SC-14815-S-02	5/27/98	URANIUM-238	1 4000	2.80	PCI/G	WP0444 0
SC-14816-S	12/23/97	RADIUM-226	0 5600	0.33	PCI/G	WP0380 0
SC-14816-S	12/23/97	RADIUM-228	1 1500	0.57	PCI/G	WP0380 0
SC-14816-S	12/23/97	THORIUM-230	1 0800	0.62	PCI/G	WP0380 0
SC-14816-S	12/23/97	URANIUM-238	1.6000	3.20	PCI/G	WP0380 0
SC-14816-S-02	5/27/98	RADIUM-226	1.3500	0.30	PCI/G	WP0444 0
SC-14816-S-02	5/27/98	RADIUM-228	1.6000	0 56	PCI/G	WP0444.0
SC-14816-S-02	5/27/98	THORIUM-230	0 9400	0.62	PCI/G	WP0444 0
SC-14816-S-02	5/27/98	URANIUM-238	1 9500	3.90	PCI/G	WP0444 0
SC-14817-S	12/23/97	RADIUM-226	2 9000	0.36	PCI/G	WP0380 0
SC-14817-S	12/23/97	RADIUM-228	3.1500	0 55	PCI/G	WP0380 0
SC-14817-S	12/23/97	THORIUM-230	16 5000	0.62	PCI/G	WP0380 0
SC-14817-S	12/23/97	URANIUM-238	5 1000	3.31	PCI/G	WP0380 0
SC-14817-S-02	5/27/98	RADIUM-226	0.3600	0 71	PCI/G	WP0444 0
SC-14817-S-02	5/27/98	RADIUM-228	0 9800	0 54	PCI/G	WP0444 0
SC-14817-S-02	5/27/98	THORIUM-230	1.0900	0 62	PCI/G	WP0444 0
SC-14817-S-02	5/27/98	URANIUM-238	1 9700	3.93	PCI/G	WP0444.0
SC-14817-S-RS	1/28/98	RADIUM-226	0 9800	0.39	PCI/G	WP0398 0
SC-14817-S-RS	1/28/98	RADIUM-228	0.5700	1 15	PCI/G	WP0398 0
SC-14817-S-RS	1/28/98	THORIUM-230	1 4000	0.62	PCI/G	WP0398 0
SC-14817-S-RS	1/28/98	URANIUM-238	6 2300	3 52	PCI/G	WP0398 0
SC-14818-S	12/23/97	RADIUM-226	0 8300	0 29	PCI/G	WP0380 0
SC-14818-S	12/23/97	RADIUM-228	0.5300	1.06	PCI/G	WP0380 0
SC-14818-S	12/23/97	THORIUM-230	0.7600	0.62	PCI/G	WP0380 0
SC-14818-S	12/23/97	URANIUM-238	1.8100	3.61	PCI/G	WP0380 0
SC-14818-S-02	5/27/98	RADIUM-226	1.1700	0 28	PCI/G	WP0444.0
SC-14818-S-02	5/27/98	RADIUM-228	1 6200	0.49	PCI/G	WP0444 0
SC-14818-S-02	5/27/98	THORIUM-230	0.7800	0.62	PCI/G	WP0444 0
SC-14818-S-02	5/27/98	URANIUM-238	1.4400	2.88	PCI/G	WP0444.0
SC-14819-S	12/23/97	RADIUM-226	0 7900	0.28	PCI/G	WP0380 0
SC-14819-S	12/23/97	RADIUM-228	1 1700	0.41	PCI/G	WP0380 0
SC-14819-S	12/23/97	THORIUM-230	1.3800	0.62	PCI/G	WP0380.0
SC-14819-S	12/23/97	URANIUM-238	1.2000	2.40	PCI/G	WP0380.0
SC-14819-S-02	5/27/98	RADIUM-226	1 3900	0 28	PCI/G	WP0444 0
SC-14819-S-02	5/27/98	RADIUM-228	1 2800	0 58	PCI/G	WP0444 0
SC-14819-S-02	5/27/98	THORIUM-230	1 1600	0.62	PCI/G	WP0444 0
SC-14819-S-02	5/27/98	URANIUM-238	1 8900	3.77	PCI/G	WP0444 0
SC-14820-S	12/23/97	RADIUM-226	0 8900	0.27	PCI/G	WP0380 0

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SC-14820-S	12/23/97	RADIUM-228	1.1400	0.36	PCI/G	WP0380.0
SC-14820-S	12/23/97	THORIUM-230	1.4200	0.62	PCI/G	WP0380.0
SC-14820-S	12/23/97	URANIUM-238	1.3500	2.70	PCI/G	WP0380.0
SC-14820-S-02	5/27/98	RADIUM-226	1.3600	0.23	PCI/G	WP0444.0
SC-14820-S-02	5/27/98	RADIUM-228	1.6100	0.37	PCI/G	WP0444.0
SC-14820-S-02	5/27/98	THORIUM-230	0.8500	0.62	PCI/G	WP0444.0
SC-14820-S-02	5/27/98	URANIUM-238	1.3300	2.65	PCI/G	WP0444.0
SC-14901-S	12/23/97	RADIUM-226	1.3100	0.36	PCI/G	WP0380.0
SC-14901-S	12/23/97	RADIUM-228	1.0900	0.81	PCI/G	WP0380.0
SC-14901-S	12/23/97	THORIUM-230	1.6600	0.62	PCI/G	WP0380.0
SC-14901-S	12/23/97	URANIUM-238	1.8500	3.70	PCI/G	WP0380.0
SC-14902-S	12/31/97	RADIUM-226	1.0200	0.26	PCI/G	WP0381.0
SC-14902-S	12/31/97	RADIUM-228	0.9400	0.41	PCI/G	WP0381.0
SC-14902-S	12/31/97	THORIUM-230	1.1600	0.62	PCI/G	WP0381.0
SC-14902-S	12/31/97	URANIUM-238	1.8400	3.68	PCI/G	WP0381.0
SC-14903-S	12/31/97	RADIUM-226	1.0900	0.24	PCI/G	WP0381.0
SC-14903-S	12/31/97	RADIUM-228	1.4200	0.32	PCI/G	WP0381.0
SC-14903-S	12/31/97	THORIUM-230	1.2600	0.62	PCI/G	WP0381.0
SC-14903-S	12/31/97	URANIUM-238	1.3800	2.76	PCI/G	WP0381.0
SC-14904-S	12/31/97	RADIUM-226	1.1500	0.31	PCI/G	WP0381.0
SC-14904-S	12/31/97	RADIUM-228	1.2800	0.63	PCI/G	WP0381.0
SC-14904-S	12/31/97	THORIUM-230	1.4600	0.62	PCI/G	WP0381.0
SC-14904-S	12/31/97	URANIUM-238	1.8600	3.72	PCI/G	WP0381.0
SC-14905-S	12/23/97	RADIUM-226	1.5000	0.29	PCI/G	WP0380.0
SC-14905-S	12/23/97	RADIUM-228	1.5900	0.38	PCI/G	WP0380.0
SC-14905-S	12/23/97	THORIUM-230	6.6700	0.62	PCI/G	WP0380.0
SC-14905-S	12/23/97	URANIUM-238	1.5100	3.01	PCI/G	WP0380.0
SC-14906-S	12/31/97	RADIUM-226	0.9400	0.27	PCI/G	WP0381 0
SC-14906-S	12/31/97	RADIUM-228	1.2500	0.27	PCI/G	WP0381.0
SC-14906-S	12/31/97	THORIUM-230	1.3800	0.62	PCI/G	WP0381.0
SC-14906-S	12/31/97	URANIUM-238	1.3500	2.70	PCI/G	WP0381.0
SC-14907-S	12/31/97	RADIUM-226	1.0600	0.46	PCI/G	WP0381.0
SC-14907-S	12/31/97	RADIUM-228	1.2700	0.45	PCI/G	WP0381.0
SC-14907-S	12/31/97	THORIUM-230	1.4600	0.62	PCI/G	WP0381.0
SC-14907-S	12/31/97	URANIUM-238	1.8700	3.74	PCI/G	WP0381.0
SC-14908-S	12/31/97	RADIUM-226	1.3500	0.23	PCI/G	WP0381.0
SC-14908-S	12/31/97	RADIUM-228	1.1900	0.39	PCI/G	WP0381.0
SC-14908-S	12/31/97	THORIUM-230	2.3100	0.62	PCI/G	WP0381.0
SC-14908-S	12/31/97	URANIUM-238	1.4000	2.79	PCI/G	WP0381.0
SC-14909-S	12/23/97	RADIUM-226	1.1000	0.29	PCI/G	WP0380.0
SC-14909-S	12/23/97	RADIUM-228	1.1700	0.14	PCI/G	WP0380.0
SC-14909-S	12/23/97	THORIUM-230	2.9900	0.62	PCI/G	WP0380.0
SC-14909-S	12/23/97	URANIUM-238	1.8100	3.61	PCI/G	WP0380.0
SC-14910-S	12/31/97	RADIUM-226	0.9700	0.32	PCI/G	WP0381.0
SC-14910-S	12/31/97	RADIUM-228	0.9000	0.45	PCI/G	WP0381.0
SC-14910-S	12/31/97	THORIUM-230	1.3000	0.62	PCI/G	WP0381.0
SC-14910-S	12/31/97	URANIUM-238	1.7000	3.40	PCI/G	WP0381.0
SC-14911-S	12/31/97	RADIUM-226	1.1500	0.23	PCI/G	WP0381.0
SC-14911-S	12/31/97	RADIUM-228	0.9600	0.44	PCI/G	WP0381.0
SC-14911-S	12/31/97	THORIUM-230	1.1000	0.62	PCI/G	WP0381.0
SC-14911-S	12/31/97	URANIUM-238	1.1900	2.37	PCI/G	WP0381.0
SC-14912-S	12/31/97	RADIUM-226	1.0800	0.23	PCI/G	WP0381.0
SC-14912-S	12/31/97	RADIUM-228	1.2800	0.49	PCI/G	WP0381.0
SC-14912-S	12/31/97	THORIUM-230	1.2700	0.62	PCI/G	WP0381.0
SC-14912-S	12/31/97	URANIUM-238	1.8400	3.68	PCI/G	WP0381.0
SC-14913-S	12/23/97	RADIUM-226	0.8400	0.18	PCI/G	WP0380.0

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SC-14913-S	12/23/97	RADIUM-228	1 3700	0.30	PCI/G	WP0380.0
SC-14913-S	12/23/97	THORIUM-230	1.7700	0.62	PCI/G	WP0380.0
SC-14913-S	12/23/97	URANIUM-238	1.3500	2.69	PCI/G	WP0380.0
SC-14914-S	12/31/97	RADIUM-226	0.8000	0.28	PCI/G	WP0381.0
SC-14914-S	12/31/97	RADIUM-228	1.1000	0.47	PCI/G	WP0381.0
SC-14914-S	12/31/97	THORIUM-230	1.1400	0.62	PCI/G	WP0381.0
SC-14914-S	12/31/97	URANIUM-238	1.2600	2.53	PCI/G	WP0381.0
SC-14915-S	12/31/97	RADIUM-226	0.7800	0.31	PCI/G	WP0381.0
SC-14915-S	12/31/97	RADIUM-228	1.4700	0 36	PCI/G	WP0381.0
SC-14915-S	12/31/97	THORIUM-230	0.9100	0 62	PCI/G	WP0381 0
SC-14915-S	12/31/97	URANIUM-238	1.8100	3.61	PCI/G	WP0381.0
SC-14916-S	12/31/97	RADIUM-226	0.9000	0.24	PCI/G	WP0381.0
SC-14916-S	12/31/97	RADIUM-228	1.3800	0.33	PCI/G	WP0381.0
SC-14916-S	12/31/97	THORIUM-230	1.2000	0.62	PCI/G	WP0381 0
SC-14916-S	12/31/97	URANIUM-238	1 2900	2.57	PCI/G	WP0381 0
SC-14917-S	12/23/97	RADIUM-226	1 8400	0.50	PCI/G	WP0380 0
SC-14917-S	12/23/97	RADIUM-228	2.5700	0 62	PCI/G	WP0380.0
SC-14917-S	12/23/97	THORIUM-230	15.1000	0.62	PCI/G	WP0380 0
SC-14917-S	12/23/97	URANIUM-238	2 6000	5.20	PCI/G	WP0380 0
SC-14918-S	12/31/97	RADIUM-226	0.8900	0.25	PCI/G	WP0381.0
SC-14918-S	12/31/97	RADIUM-228	1.6300	0.47	PCI/G	WP0381.0
SC-14918-S	12/31/97	THORIUM-230	1 5100	0 62	PCI/G	WP0381.0
SC-14918-S	12/31/97	URANIUM-238	2 0200	4.04	PCI/G	WP0381 0
SC-14919-S	12/31/97	RADIUM-226	0 7800	0.30	PCI/G	WP0381 0
SC-14919-S	12/31/97	RADIUM-228	1.2800	0 35	PCI/G	WP0381 0
SC-14919-S	12/31/97	THORIUM-230	0.9900	0 62	PCI/G	WP0381.0
SC-14919-S	12/31/97	URANIUM-238	1.2400	2 48	PCI/G	WP0381 0
SC-14920-S	12/31/97	RADIUM-226	0.8300	0.36	PCI/G	WP0381 0
SC-14920-S	12/31/97	RADIUM-228	1 1700	0 47	PCI/G	WP0381.0
SC-14920-S	12/31/97	THORIUM-230	1.3300	0 62	PCI/G	WP0381 0
SC-14920-S	12/31/97	URANIUM-238	1 7900	3 57	PCI/G	WP0381 0
SC-15001-S	12/31/97	RADIUM-226	1 5100	0 29	PCI/G	WP0381 0
SC-15001-S	12/31/97	RADIUM-228	1 0500	0 47	PCI/G	WP0381 0
SC-15001-S	12/31/97	THORIUM-230	1 2000	0.62	PCI/G	WP0381 0
SC-15001-S	12/31/97	URANIUM-238	1 4000	2.80	PCI/G	WP0381 0
SC-15002-S	1/26/98	RADIUM-226	1.2400	0.33	PCI/G	WP0395 0
SC-15002-S	1/26/98	RADIUM-228	0 9300	0.47	PCI/G	WP0395 0
SC-15002-S	1/26/98	THORIUM-230	1 1700	0 62	PCI/G	WP0395 0
SC-15002-S	1/26/98	URANIUM-238	1 4200	2.83	PCI/G	WP0395 0
SC-15003-S	1/26/98	RADIUM-226	0.9300	0.31	PCI/G	WP0395 0
SC-15003-S	1/26/98	RADIUM-228	0 5000	1.00	PCI/G	WP0395 0
SC-15003-S	1/26/98	THORIUM-230	1.1400	0.62	PCI/G	WP0395 0
SC-15003-S	1/26/98	URANIUM-238	1.8400	3.67	PCI/G	WP0395 0
SC-15004-S	12/5/97	RADIUM-226	1.0300	0.31	PCI/G	WP0374.0
SC-15004-S	12/5/97	RADIUM-228	1.0500	0 46	PCI/G	WP0374.0
SC-15004-S	12/5/97	THORIUM-230	1.1500	0 62	PCI/G	WP0374 0
SC-15004-S	12/5/97	URANIUM-238	1.9000	3 79	PCI/G	WP0374.0
SC-15005-S	12/31/97	RADIUM-226	1.2000	0 39	PCI/G	WP0381 0
SC-15005-S	12/31/97	RADIUM-228	1.4300	0.45	PCI/G	WP0381.0
SC-15005-S	12/31/97	THORIUM-230	2.5700	0.62	PCI/G	WP0381.0
SC-15005-S	12/31/97	URANIUM-238	2.0800	4.16	PCI/G	WP0381.0
SC-15006-S	1/26/98	RADIUM-226	0.9100	0.24	PCI/G	WP0395 0
SC-15006-S	1/26/98	RADIUM-228	1 1700	0.41	PCI/G	WP0395.0
SC-15006-S	1/26/98	THORIUM-230	1.0500	0.62	PCI/G	WP0395 0
SC-15006-S	1/26/98	URANIUM-238	1.2700	2.55	PCI/G	WP0395 0
SC-15007-S	1/26/98	RADIUM-226	0.9700	0.38	PCI/G	WP0395 0

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SC-15007-S	1/26/98	RADIUM-228	1.1700	0.59	PCI/G	WP0395.0
SC-15007-S	1/26/98	THORIUM-230	0.9100	0.62	PCI/G	WP0395.0
SC-15007-S	1/26/98	URANIUM-238	1.9300	3.85	PCI/G	WP0395.0
SC-15008-S	1/26/98	RADIUM-226	0.9000	0.27	PCI/G	WP0395.0
SC-15008-S	1/26/98	RADIUM-228	1.3500	0.42	PCI/G	WP0395.0
SC-15008-S	1/26/98	THORIUM-230	1.0700	0.62	PCI/G	WP0395.0
SC-15008-S	1/26/98	URANIUM-238	1.3300	2.65	PCI/G	WP0395.0
SC-15009-S	12/31/97	RADIUM-226	0.9600	0.25	PCI/G	WP0381.0
SC-15009-S	12/31/97	RADIUM-228	1.3100	0.34	PCI/G	WP0381.0
SC-15009-S	12/31/97	THORIUM-230	1.7400	0.62	PCI/G	WP0381.0
SC-15009-S	12/31/97	URANIUM-238	1.2900	2.58	PCI/G	WP0381.0
SC-15010-S	1/26/98	RADIUM-226	0.8600	0.32	PCI/G	WP0395.0
SC-15010-S	1/26/98	RADIUM-228	0.8600	0.47	PCI/G	WP0395.0
SC-15010-S	1/26/98	THORIUM-230	1.2500	0.62	PCI/G	WP0395.0
SC-15010-S	1/26/98	URANIUM-238	1.7900	3.58	PCI/G	WP0395.0
SC-15011-S	1/26/98	RADIUM-226	0.6600	0.28	PCI/G	WP0395.0
SC-15011-S	1/26/98	RADIUM-228	1.2200	0.35	PCI/G	WP0395.0
SC-15011-S	1/26/98	THORIUM-230	1.0100	0.62	PCI/G	WP0395.0
SC-15011-S	1/26/98	URANIUM-238	1.3100	2.61	PCI/G	WP0395.0
SC-15012-S	3/4/98	RADIUM-226	0.5600	0.30	PCI/G	WP0425.0
SC-15012-S	3/4/98	RADIUM-228	0.5300	1.06	PCI/G	WP0425.0
SC-15012-S	3/4/98	THORIUM-230	0.9100	0.62	PCI/G	WP0425.0
SC-15012-S	3/4/98	URANIUM-238	1.6700	3.34	PCI/G	WP0425.0
SC-15013-S	12/31/97	RADIUM-226	0.8600	0.22	PCI/G	WP0381.0
SC-15013-S	12/31/97	RADIUM-228	0.5600	1.12	PCI/G	WP0381.0
SC-15013-S	12/31/97	THORIUM-230	1.2200	0.62	PCI/G	WP0381.0
SC-15013-S	12/31/97	URANIUM-238	1.8300	3.65	PCI/G	WP0381.0
SC-15014-S	1/26/98	RADIUM-226	0.5000	0.23	PCI/G	WP0395.0
SC-15014-S	1/26/98	RADIUM-228	1.0900	0.39	PCI/G	WP0395.0
SC-15014-S	1/26/98	THORIUM-230	0.9300	0.62	PCI/G	WP0395.0
SC-15014-S	1/26/98	URANIUM-238	1.1900	2.38	PCI/G	WP0395.0
SC-15015-S	1/26/98	RADIUM-226	1.0200	0.34	PCI/G	WP0395.0
SC-15015-S	1/26/98	RADIUM-228	1.3500	0.51	PCI/G	WP0395.0
SC-15015-S	1/26/98	THORIUM-230	1.1100	0.62	PCI/G	WP0395.0
SC-15015-S	1/26/98	URANIUM-238	1.7400	3.48	PCI/G	WP0395.0
SC-15016-S	3/4/98	RADIUM-226	0.8400	0.30	PCI/G	WP0425 0
SC-15016-S	3/4/98	RADIUM-228	1.1700	0.40	PCI/G	WP0425.0
SC-15016-S	3/4/98	THORIUM-230	1.8000	0.62	PCI/G	WP0425.0
SC-15016-S	3/4/98	URANIUM-238	1.3700	2.74	PCI/G	WP0425.0
SC-15017-S	12/31/97	RADIUM-226	0.9200	0.33	PCI/G	WP0381.0
SC-15017-S	12/31/97	RADIUM-228	1.4900	0.35	PCI/G	WP0381.0
SC-15017-S	12/31/97	THORIUM-230	2.9300	0.62	PCI/G	WP0381.0
SC-15017-S	12/31/97	URANIUM-238	1.3600	2.71	PCI/G	WP0381.0
SC-15018-S	2/27/98	RADIUM-226	0.8100	0.31	PCI/G	WP0423.0
SC-15018-S	2/27/98	RADIUM-228	1.1100	0.35	PCI/G	WP0423.0
SC-15018-S	2/27/98	THORIUM-230	1.1200	0.62	PCI/G	WP0423.0
SC-15018-S	2/27/98	URANIUM-238	1.2500	2.51	PCI/G	WP0423.0
SC-15019-S	2/27/98	RADIUM-226	0.8100	0.24	PCI/G	WP0423.0
SC-15019-S	2/27/98	RADIUM-228	1.2100	0.30	PCI/G	WP0423.0
SC-15019-S	2/27/98	THORIUM-230	1.5900	0.62	PCI/G	WP0423.0
SC-15019-S	2/27/98	URANIUM-238	1.3100	2.62	PCI/G	WP0423.0
SC-15020-S	3/4/98	RADIUM-226	1.1400	0.28	PCI/G	WP0425.0
SC-15020-S	3/4/98	RADIUM-228	1.4000	0.48	PCI/G	WP0425.0
SC-15020-S	3/4/98	THORIUM-230	3.0000	0.62	PCI/G	WP0425.0
SC-15020-S	3/4/98	URANIUM-238	1.9200	3.83	PCI/G	WP0425.0
SC-15101-S	11/26/97	RADIUM-226	1.0600	0.27	PCI/G	WP0369.0

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SC-15101-S	11/26/97	RADIUM-228	1 2300	0 38	PCI/G	WP0369.0
SC-15101-S	11/26/97	THORIUM-230	0.9100	0 62	PCI/G	WP0369 0
SC-15101-S	11/26/97	URANIUM-238	1 3100	2 61	PCI/G	WP0369 0
SC-15102-S	3/4/98	RADIUM-226	1 3400	0 20	PCI/G	WP0425 0
SC-15102-S	3/4/98	RADIUM-228	1 5200	0 45	PCI/G	WP0425 0
SC-15102-S	3/4/98	THORIUM-230	1.5400	0 62	PCI/G	WP0425.0
SC-15102-S	3/4/98	URANIUM-238	1.3400	2.68	PCI/G	WP0425.0
SC-15102-S-02	7/20/98	RADIUM-226	1.1200	0 19	PCI/G	WP0468 0
SC-15102-S-02	7/20/98	RADIUM-228	1 0700	0.34	PCI/G	WP0468 0
SC-15102-S-02	7/20/98	THORIUM-230	0 8200	0 62	PCI/G	WP0468 0
SC-15102-S-02	7/20/98	URANIUM-238	1.3800	2 75	PCI/G	WP0468 0
SC-15103-S	6/2/98	RADIUM-226	1.1800	0 26	PCI/G	WP0447 0
SC-15103-S	6/2/98	RADIUM-228	1.4600	0.30	PCI/G	WP0447.0
SC-15103-S	6/2/98	THORIUM-230	0 9200	0.62	PCI/G	WP0447.0
SC-15103-S	6/2/98	URANIUM-238	1.7900	3 58	PCI/G	WP0447 0
SC-15103-S-02	7/20/98	RADIUM-226	1.0500	0 28	PCI/G	WP0468 0
SC-15103-S-02	7/20/98	RADIUM-228	1.5000	0 56	PCI/G	WP0468.0
SC-15103-S-02	7/20/98	THORIUM-230	0.9000	0.62	PCI/G	WP0468 0
SC-15103-S-02	7/20/98	URANIUM-238	1.9300	3 86	PCI/G	WP0468 0
SC-15104-S	3/4/98	RADIUM-226	1 0900	0.39	PCI/G	WP0425 0
SC-15104-S	3/4/98	RADIUM-228	1 6700	0.57	PCI/G	WP0425 0
SC-15104-S	3/4/98	THORIUM-230	2 0000	0.62	PCI/G	WP0425 0
SC-15104-S	3/4/98	URANIUM-238	2 1000	4.20	PCI/G	WP0425 0
SC-15105-S	3/4/98	RADIUM-226	0.9600	0.27	PCI/G	WP0425 0
SC-15105-S	3/4/98	RADIUM-228	1.4400	0.43	PCI/G	WP0425 0
SC-15105-S	3/4/98	THORIUM-230	1 8300	0 62	PCI/G	WP0425.0
SC-15105-S	3/4/98	URANIUM-238	1 3500	2.69	PCI/G	WP0425 0
SC-15105-S-02	7/20/98	RADIUM-226	1 2100	0.22	PCI/G	WP0468 0
SC-15105-S-02	7/20/98	RADIUM-228	1 4300	0.08	PCI/G	WP0468 0
SC-15105-S-02	7/20/98	THORIUM-230	1 0900	0 62	PCI/G	WP0468 0
SC-15105-S-02	7/20/98	URANIUM-238	1 3200	2 64	PCI/G	WP0468 0
SC-15106-S	6/1/98	RADIUM-226	1 1600	0 25	PCI/G	WP0447 0
SC-15106-S	6/1/98	RADIUM-228	1 2900	0 40	PCI/G	WP0447 0
SC-15106-S	6/1/98	THORIUM-230	1 7900	0.62	PCI/G	WP0447.0
SC-15106-S	6/1/98	URANIUM-238	1 3700	2.74	PCI/G	WP0447 0
SC-15106-S-02	7/20/98	RADIUM-226	1 1800	0 33	PCI/G	WP0468 0
SC-15106-S-02	7/20/98	RADIUM-228	1 2600	0 51	PCI/G	WP0468 0
SC-15106-S-02	7/20/98	THORIUM-230	3 8100	0.62	PCI/G	WP0468 0
SC-15106-S-02	7/20/98	URANIUM-238	1 9500	3 90	PCI/G	WP0468 0
SC-15107-S	3/4/98	RADIUM-226	1 2900	0.40	PCI/G	WP0425 0
SC-15107-S	3/4/98	RADIUM-228	1.6400	0.59	PCI/G	WP0425 0
SC-15107-S	3/4/98	THORIUM-230	6 3100	0.62	PCI/G	WP0425 0
SC-15107-S	3/4/98	URANIUM-238	2 1500	4.30	PCI/G	WP0425.0
SC-15108-C	6/1/98	RADIUM-226	1.3600	0.40	PCI/G	WP0447 0
SC-15108-C	6/1/98	RADIUM-228	1.3500	0.56	PCI/G	WP0447 0
SC-15108-C	6/1/98	THORIUM-230	1.6000	0.62	PCI/G	WP0447 0
SC-15108-C	6/1/98	URANIUM-238	2.0200	4.03	PCI/G	WP0447 0
SC-15108-C-02	7/20/98	RADIUM-226	1.0400	0.29	PCI/G	WP0468.0
SC-15108-C-02	7/20/98	RADIUM-228	1.3000	0.38	PCI/G	WP0468.0
SC-15108-C-02	7/20/98	THORIUM-230	0.8200	0.62	PCI/G	WP0468 0
SC-15108-C-02	7/20/98	URANIUM-238	1.3100	2.61	PCI/G	WP0468.0
SC-15108-S	3/4/98	RADIUM-226	1 0800	0 24	PCI/G	WP0425 0
SC-15108-S	3/4/98	RADIUM-228	1 1600	0 39	PCI/G	WP0425.0
SC-15108-S	3/4/98	THORIUM-230	2 3800	0.62	PCI/G	WP0425.0
SC-15108-S	3/4/98	URANIUM-238	1 3900	2 78	PCI/G	WP0425.0
SC-15108-S-02	7/20/98	RADIUM-226	0 9700	0 35	PCI/G	WP0468 0

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SC-15108-S-02	7/20/98	RADIUM-228	1.1300	0.55	PCI/G	WP0468.0
SC-15108-S-02	7/20/98	THORIUM-230	0.9200	0.62	PCI/G	WP0468.0
SC-15108-S-02	7/20/98	URANIUM-238	1.8300	3.65	PCI/G	WP0468.0
SC-15109-S	6/1/98	RADIUM-226	1.1200	0.25	PCI/G	WP0447.0
SC-15109-S	6/1/98	RADIUM-228	1.1600	0.41	PCI/G	WP0447.0
SC-15109-S	6/1/98	THORIUM-230	2.0000	0.62	PCI/G	WP0447.0
SC-15109-S	6/1/98	URANIUM-238	1.2700	2.54	PCI/G	WP0447.0
SC-15109-S-02	7/20/98	RADIUM-226	1.2300	0.23	PCI/G	WP0468.0
SC-15109-S-02	7/20/98	RADIUM-228	1.4000	0.34	PCI/G	WP0468.0
SC-15109-S-02	7/20/98	THORIUM-230	2.7900	0.62	PCI/G	WP0468.0
SC-15109-S-02	7/20/98	URANIUM-238	1.3900	2.78	PCI/G	WP0468.0
SC-15110-S	3/4/98	RADIUM-226	0.8500	0.32	PCI/G	WP0425.0
SC-15110-S	3/4/98	RADIUM-228	0.9800	0.64	PCI/G	WP0425.0
SC-15110-S	3/4/98	THORIUM-230	0.9000	0.62	PCI/G	WP0425.0
SC-15110-S	3/4/98	URANIUM-238	1.7100	3.42	PCI/G	WP0425.0
SC-15111-S	6/1/98	RADIUM-226	1.1800	0.27	PCI/G	WP0447.0
SC-15111-S	6/1/98	RADIUM-228	0.5900	1.17	PCI/G	WP0447.0
SC-15111-S	6/1/98	THORIUM-230	1.8800	0.62	PCI/G	WP0447.0
SC-15111-S	6/1/98	URANIUM-238	1.9500	3.89	PCI/G	WP0447.0
SC-15111-S-02	7/20/98	RADIUM-226	1.0600	0.39	PCI/G	WP0468.0
SC-15111-S-02	7/20/98	RADIUM-228	1.2800	0.46	PCI/G	WP0468.0
SC-15111-S-02	7/20/98	THORIUM-230	0.9100	0.62	PCI/G	WP0468.0
SC-15111-S-02	7/20/98	URANIUM-238	1.9000	3.79	PCI/G	WP0468.0
SC-15112-S	6/1/98	RADIUM-226	0.9900	0.28	PCI/G	WP0447.0
SC-15112-S	6/1/98	RADIUM-228	1.2800	0.35	PCI/G	WP0447.0
SC-15112-S	6/1/98	THORIUM-230	1.1600	0.62	PCI/G	WP0447.0
SC-15112-S	6/1/98	URANIUM-238	1.3900	2.78	PCI/G	WP0447.0
SC-15112-S-02	7/20/98	RADIUM-226	0.9600	0.34	PCI/G	WP0468.0
SC-15112-S-02	7/20/98	RADIUM-228	1.5100	0.57	PCI/G	WP0468.0
SC-15112-S-02	7/20/98	THORIUM-230	0.9600	0.62	PCI/G	WP0468.0
SC-15112-S-02	7/20/98	URANIUM-238	1.7200	3.43	PCI/G	WP0468.0
SC-15113-S	3/4/98	RADIUM-226	1.1000	0.27	PCI/G	WP0425.0
SC-15113-S	3/4/98	RADIUM-228	2.3100	0.39	PCI/G	WP0425.0
SC-15113-S	3/4/98	THORIUM-230	1.7800	0.62	PCI/G	WP0425.0
SC-15113-S	3/4/98	URANIUM-238	1.5200	3.03	PCI/G	WP0425.0
SC-15114-S	6/1/98	RADIUM-226	1.0000	0.26	PCI/G	WP0447.0
SC-15114-S	6/1/98	RADIUM-228	0.5800	1.16	PCI/G	WP0447.0
SC-15114-S	6/1/98	THORIUM-230	0.9500	0.62	PCI/G	WP0447.0
SC-15114-S	6/1/98	URANIUM-238	1.7300	3.46	PCI/G	WP0447.0
SC-15114-S-02	7/20/98	RADIUM-226	1.1000	0.22	PCI/G	WP0468.0
SC-15114-S-02	7/20/98	RADIUM-228	1.1800	0.34	PCI/G	WP0468.0
SC-15114-S-02	7/20/98	THORIUM-230	0.9200	0.62	PCI/G	WP0468.0
SC-15114-S-02	7/20/98	URANIUM-238	1.3700	2.74	PCI/G	WP0468.0
SC-15115-S	6/1/98	RADIUM-226	1.7900	0.30	PCI/G	WP0447.0
SC-15115-S	6/1/98	RADIUM-228	1.6800	0.45	PCI/G	WP0447.0
SC-15115-S	6/1/98	THORIUM-230	5.7400	0.62	PCI/G	WP0447.0
SC-15115-S	6/1/98	URANIUM-238	3.8900	2.00	PCI/G	WP0447.0
SC-15115-S-02	7/20/98	RADIUM-226	0.9800	0.33	PCI/G	WP0468.0
SC-15115-S-02	7/20/98	RADIUM-228	1.2100	0.44	PCI/G	WP0468.0
SC-15115-S-02	7/20/98	THORIUM-230	1.0300	0.62	PCI/G	WP0468.0
SC-15115-S-02	7/20/98	URANIUM-238	1.7700	3.54	PCI/G	WP0468.0
SC-15116-S	5/29/98	RADIUM-226	0.8200	0.32	PCI/G	WP0446.0
SC-15116-S	5/29/98	RADIUM-228	1.2400	0.59	PCI/G	WP0446.0
SC-15116-S	5/29/98	THORIUM-230	1.1500	0.62	PCI/G	WP0446.0
SC-15116-S	5/29/98	URANIUM-238	1.8900	3.78	PCI/G	WP0446.0
SC-15117-S	6/1/98	RADIUM-226	0.7600	0.31	PCI/G	WP0447.0

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SC-15117-S	6/1/98	RADIUM-228	1.0900	0.34	PCI/G	WP0447 0
SC-15117-S	6/1/98	THORIUM-230	1.3100	0.62	PCI/G	WP0447 0
SC-15117-S	6/1/98	URANIUM-238	1 8000	3.60	PCI/G	WP0447.0
SC-15117-S-02	7/20/98	RADIUM-226	0.7700	0.29	PCI/G	WP0468 0
SC-15117-S-02	7/20/98	RADIUM-228	0.9700	0.39	PCI/G	WP0468 0
SC-15117-S-02	7/20/98	THORIUM-230	0 9500	0.62	PCI/G	WP0468 0
SC-15117-S-02	7/20/98	URANIUM-238	1.2300	2.46	PCI/G	WP0468 0
SC-15118-S	6/1/98	RADIUM-226	0.8700	0.28	PCI/G	WP0447.0
SC-15118-S	6/1/98	RADIUM-228	1.4800	0.45	PCI/G	WP0447.0
SC-15118-S	6/1/98	THORIUM-230	1.2100	0.62	PCI/G	WP0447.0
SC-15118-S	6/1/98	URANIUM-238	1.3900	2.77	PCI/G	WP0447.0
SC-15118-S-02	7/20/98	RADIUM-226	1.2600	0.29	PCI/G	WP0468.0
SC-15118-S-02	7/20/98	RADIUM-228	1.2300	0.48	PCI/G	WP0468.0
SC-15118-S-02	7/20/98	THORIUM-230	1 0000	0.62	PCI/G	WP0468 0
SC-15118-S-02	7/20/98	URANIUM-238	1.9000	3.79	PCI/G	WP0468 0
SC-15119-S	5/29/98	RADIUM-226	0.9700	0.27	PCI/G	WP0446 0
SC-15119-S	5/29/98	RADIUM-228	0.9300	0.35	PCI/G	WP0446 0
SC-15119-S	5/29/98	THORIUM-230	1 3100	0.62	PCI/G	WP0446 0
SC-15119-S	5/29/98	URANIUM-238	1 3300	2.65	PCI/G	WP0446 0
SC-15120-S	6/1/98	RADIUM-226	0.9800	0.36	PCI/G	WP0447 0
SC-15120-S	6/1/98	RADIUM-228	1.3800	0.46	PCI/G	WP0447.0
SC-15120-S	6/1/98	THORIUM-230	1 6900	0.62	PCI/G	WP0447.0
SC-15120-S	6/1/98	URANIUM-238	1.8800	3.75	PCI/G	WP0447.0
SC-15121-S	6/1/98	RADIUM-226	1.2900	0.24	PCI/G	WP0447 0
SC-15121-S	6/1/98	RADIUM-228	1 4900	0.33	PCI/G	WP0447 0
SC-15121-S	6/1/98	THORIUM-230	2 1900	0.62	PCI/G	WP0447 0
SC-15121-S	6/1/98	URANIUM-238	2.3400	1.80	PCI/G	WP0447 0
SC-15121-S-02	7/20/98	RADIUM-226	1.2600	0.28	PCI/G	WP0468 0
SC-15121-S-02	7/20/98	RADIUM-228	1 5300	0.32	PCI/G	WP0468 0
SC-15121-S-02	7/20/98	THORIUM-230	1.6700	0.62	PCI/G	WP0468 0
SC-15121-S-02	7/20/98	URANIUM-238	1 3700	2.73	PCI/G	WP0468 0
SC-15122-S	5/29/98	RADIUM-226	0 3500	0.69	PCI/G	WP0446 0
SC-15122-S	5/29/98	RADIUM-228	1.3400	0.60	PCI/G	WP0446 0
SC-15122-S	5/29/98	THORIUM-230	0 9400	0 62	PCI/G	WP0446 0
SC-15122-S	5/29/98	URANIUM-238	1 7000	3 39	PCI/G	WP0446.0
SC-15123-C	6/1/98	RADIUM-226	0.8700	0.29	PCI/G	WP0447 0
SC-15123-C	6/1/98	RADIUM-228	1 5400	0.62	PCI/G	WP0447.0
SC-15123-C	6/1/98	THORIUM-230	1 7200	0 62	PCI/G	WP0447 0
SC-15123-C	6/1/98	URANIUM-238	2.0300	4 06	PCI/G	WP0447 0
SC-15123-S	6/1/98	RADIUM-226	1 0100	0 28	PCI/G	WP0447 0
SC-15123-S	6/1/98	RADIUM-228	1.1700	0.44	PCI/G	WP0447 0
SC-15123-S	6/1/98	THORIUM-230	2.2100	0.62	PCI/G	WP0447 0
SC-15123-S	6/1/98	URANIUM-238	1.9300	1.72	PCI/G	WP0447 0
SC-15201-S	2/27/98	ARSENIC	7.7000	0.36	UG/G	QT2220 0
SC-15201-S	2/27/98	RADIUM-226	1.2000	0.39	PCI/G	WP0423.0
SC-15201-S	2/27/98	RADIUM-228	0.7300	1.45	PCI/G	WP0423 0
SC-15201-S	2/27/98	THORIUM-230	2.1700	0.62	PCI/G	WP0423.0
SC-15201-S	2/27/98	URANIUM-238	2 4400	4.88	PCI/G	WP0423.0
SC-15201-S-RS	5/29/98	ARSENIC	8 1000	0.80	UG/G	SW0035.0
SC-15201-S-RS	5/29/98	RADIUM-226	1.3000	0.40	PCI/G	WP0445.0
SC-15201-S-RS	5/29/98	RADIUM-228	1.7400	0.45	PCI/G	WP0445.0
SC-15201-S-RS	5/29/98	THORIUM-230	1 1600	0.62	PCI/G	WP0445 0
SC-15201-S-RS	5/29/98	URANIUM-238	2 0200	4.04	PCI/G	WP0445 0
SC-15202-S	2/27/98	ARSENIC	10 0000	0.34	UG/G	QT2220 0
SC-15202-S	2/27/98	RADIUM-226	1 1200	0.33	PCI/G	WP0423 0
SC-15202-S	2/27/98	RADIUM-228	1 1400	0 40	PCI/G	WP0423 0

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SC-15202-S	2/27/98	THORIUM-230	1.8700	0.62	PCI/G	WP0423.0
SC-15202-S	2/27/98	URANIUM-238	1.4100	2.82	PCI/G	WP0423.0
SC-15202-S-RS	5/29/98	ARSENIC	4.8000	0.76	UG/G	SW0035.0
SC-15202-S-RS	5/29/98	RADIUM-226	0.9400	0.25	PCI/G	WP0445.0
SC-15202-S-RS	5/29/98	RADIUM-228	1.3000	0.34	PCI/G	WP0445.0
SC-15202-S-RS	5/29/98	THORIUM-230	1.1900	0.62	PCI/G	WP0445.0
SC-15202-S-RS	5/29/98	URANIUM-238	1.3200	2.64	PCI/G	WP0445.0
SC-15203-C	2/27/98	ARSENIC	6.8000	0.33	UG/G	QT2220.0
SC-15203-C	2/27/98	RADIUM-226	1.4900	0.40	PCI/G	WP0423.0
SC-15203-C	2/27/98	RADIUM-228	1.1700	0.61	PCI/G	WP0423.0
SC-15203-C	2/27/98	THORIUM-230	1.2700	0.62	PCI/G	WP0423.0
SC-15203-C	2/27/98	URANIUM-238	1.9700	3.93	PCI/G	WP0423.0
SC-15203-C-RS	5/26/98	ARSENIC	2.2000	4.40	UG/G	WS2170.0
SC-15203-C-RS	5/26/98	BENZO(A)ANTHRACENE	6.0000	11	UG/KG	WS2170.0
SC-15203-C-RS	5/26/98	BENZO(A)PYRENE	10.0000	19	UG/KG	WS2170.0
SC-15203-C-RS	5/26/98	BENZO(B)FLUORANTHENE	8.0000	15	UG/KG	WS2170.0
SC-15203-C-RS	5/26/98	BENZO(K)FLUORANTHENE	7.0000	14	UG/KG	WS2170.0
SC-15203-C-RS	5/26/98	CHRYSENE	60.0000	120	UG/KG	WS2170.0
SC-15203-C-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	18.0000	36	UG/KG	WS2170.0
SC-15203-C-RS	5/26/98	RADIUM-226	1.3300	0.25	PCI/G	WP0443.0
SC-15203-C-RS	5/26/98	RADIUM-228	1.3100	0.40	PCI/G	WP0443.0
SC-15203-C-RS	5/26/98	THORIUM-230	0.9000	0.62	PCI/G	WP0443.0
SC-15203-C-RS	5/26/98	URANIUM-238	1.4000	2.79	PCI/G	WP0443.0
SC-15204-S	2/27/98	ARSENIC	10.5000	0.34	UG/G	QT2220.0
SC-15204-S	2/27/98	RADIUM-226	1.5300	0.26	PCI/G	WP0423.0
SC-15204-S	2/27/98	RADIUM-228	1.3600	0.35	PCI/G	WP0423.0
SC-15204-S	2/27/98	THORIUM-230	1.1500	0.62	PCI/G	WP0423.0
SC-15204-S	2/27/98	URANIUM-238	1.3300	2.66	PCI/G	WP0423.0
SC-15204-S-RS	5/26/98	ARSENIC	8.1000	6.00	UG/G	WS2170.0
SC-15204-S-RS	5/26/98	BENZO(A)ANTHRACENE	6.0000	11	UG/KG	WS2170.0
SC-15204-S-RS	5/26/98	BENZO(A)PYRENE	10.0000	19	UG/KG	WS2170.0
SC-15204-S-RS	5/26/98	BENZO(B)FLUORANTHENE	8.0000	15	UG/KG	WS2170.0
SC-15204-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7.0000	14	UG/KG	WS2170.0
SC-15204-S-RS	5/26/98	CHRYSENE	65.0000	130	UG/KG	WS2170.0
SC-15204-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	18.0000	36	UG/KG	WS2170.0
SC-15204-S-RS	5/26/98	RADIUM-226	1.0900	0.30	PCI/G	WP0443.0
SC-15204-S-RS	5/26/98	RADIUM-228	0.8000	0.53	PCI/G	WP0443.0
SC-15204-S-RS	5/26/98	THORIUM-230	0.9000	0.62	PCI/G	WP0443 0
SC-15204-S-RS	5/26/98	URANIUM-238	2.3000	2.48	PCI/G	WP0443.0
SC-15205-S	2/27/98	ARSENIC	5.7000	0.33	UG/G	QT2220.0
SC-15205-S	2/27/98	RADIUM-226	1.4600	0.42	PCI/G	WP0423.0
SC-15205-S	2/27/98	RADIUM-228	1.3800	0.45	PCI/G	WP0423.0
SC-15205-S	2/27/98	THORIUM-230	0.9200	0.62	PCI/G	WP0423.0
SC-15205-S	2/27/98	URANIUM-238	2.0300	4.06	PCI/G	WP0423.0
SC-15205-S-RS	5/26/98	ARSENIC	2.5000	5.00	UG/G	WS2170.0
SC-15205-S-RS	5/26/98	BENZO(A)ANTHRACENE	5.0000	10	UG/KG	WS2170.0
SC-15205-S-RS	5/26/98	BENZO(A)PYRENE	9.0000	18	UG/KG	WS2170.0
SC-15205-S-RS	5/26/98	BENZO(B)FLUORANTHENE	7.0000	14	UG/KG	WS2170.0
SC-15205-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7.0000	13	UG/KG	WS2170.0
SC-15205-S-RS	5/26/98	CHRYSENE	60.0000	120	UG/KG	WS2170.0
SC-15205-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	17.0000	34	UG/KG	WS2170.0
SC-15205-S-RS	5/26/98	RADIUM-226	1.3600	0.24	PCI/G	WP0443.0
SC-15205-S-RS	5/26/98	RADIUM-228	1.0700	0.41	PCI/G	WP0443.0
SC-15205-S-RS	5/26/98	THORIUM-230	0.9700	0.62	PCI/G	WP0443.0
SC-15205-S-RS	5/26/98	URANIUM-238	1.3100	2.61	PCI/G	WP0443.0
SC-15206-S	2/27/98	ARSENIC	5.2000	0.33	UG/G	QT2220.0

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SC-15206-S	2/27/98	RADIUM-226	1 3400	0.26	PCI/G	WP0423 0
SC-15206-S	2/27/98	RADIUM-228	0.9600	0 43	PCI/G	WP0423 0
SC-15206-S	2/27/98	THORIUM-230	1.0400	0.62	PCI/G	WP0423 0
SC-15206-S	2/27/98	URANIUM-238	1 4000	2.79	PCI/G	WP0423.0
SC-15206-S-RS	5/29/98	ARSENIC	6 4000	0.81	UG/G	SW0035 0
SC-15206-S-RS	5/29/98	RADIUM-226	0.9800	0.46	PCI/G	WP0445.0
SC-15206-S-RS	5/29/98	RADIUM-228	0 5700	1.15	PCI/G	WP0445 0
SC-15206-S-RS	5/29/98	THORIUM-230	0.7500	0.62	PCI/G	WP0445 0
SC-15206-S-RS	5/29/98	URANIUM-238	1.9100	3.82	PCI/G	WP0445 0
SC-15207-S	2/27/98	ARSENIC	9.4000	0.33	UG/G	QT2220 0
SC-15207-S	2/27/98	RADIUM-226	1.1500	0.36	PCI/G	WP0423 0
SC-15207-S	2/27/98	RADIUM-228	1.3200	0.45	PCI/G	WP0423 0
SC-15207-S	2/27/98	THORIUM-230	1.7900	0.62	PCI/G	WP0423 0
SC-15207-S	2/27/98	URANIUM-238	1.7800	3.55	PCI/G	WP0423 0
SC-15207-S-RS	5/29/98	ARSENIC	7.8000	0.69	UG/G	SW0035 0
SC-15207-S-RS	5/29/98	RADIUM-226	1.1000	0.27	PCI/G	WP0445.0
SC-15207-S-RS	5/29/98	RADIUM-228	1.2900	0.31	PCI/G	WP0445 0
SC-15207-S-RS	5/29/98	THORIUM-230	1.0000	0.62	PCI/G	WP0445 0
SC-15207-S-RS	5/29/98	URANIUM-238	1 3900	2.77	PCI/G	WP0445 0
SC-15210-S	2/27/98	ARSENIC	10.6000	0.34	UG/G	QT2220 0
SC-15210-S	2/27/98	RADIUM-226	1 7200	0.33	PCI/G	WP0423 0
SC-15210-S	2/27/98	RADIUM-228	1 2500	0 35	PCI/G	WP0423 0
SC-15210-S	2/27/98	THORIUM-230	1.3200	0.62	PCI/G	WP0423 0
SC-15210-S	2/27/98	URANIUM-238	1.4500	2.89	PCI/G	WP0423 0
SC-15211-S	2/27/98	ARSENIC	7.6000	0 33	UG/G	QT2220 0
SC-15211-S	2/27/98	RADIUM-226	1 6300	0 36	PCI/G	WP0423 0
SC-15211-S	2/27/98	RADIUM-228	1 1100	0 57	PCI/G	WP0423 0
SC-15211-S	2/27/98	THORIUM-230	1 1100	0 62	PCI/G	WP0423 0
SC-15211-S	2/27/98	URANIUM-238	2 0500	4 10	PCI/G	WP0423 0
SC-15211-S-RS	5/29/98	ARSENIC	7 3000	0.79	UG/G	SW0035 0
SC-15211-S-RS	5/29/98	RADIUM-226	1 3200	0 41	PCI/G	WP0445 0
SC-15211-S-RS	5/29/98	RADIUM-228	1.1800	0 60	PCI/G	WP0445 0
SC-15211-S-RS	5/29/98	THORIUM-230	0 9900	0.62	PCI/G	WP0445 0
SC-15211-S-RS	5/29/98	URANIUM-238	1 9700	3.94	PCI/G	WP0445 0
SC-15212-S	2/27/98	ARSENIC	11.5000	0.34	UG/G	QT2220 0
SC-15212-S	2/27/98	RADIUM-226	1 1100	0.24	PCI/G	WP0423 0
SC-15212-S	2/27/98	RADIUM-228	1 2400	0.51	PCI/G	WP0423 0
SC-15212-S	2/27/98	THORIUM-230	1 0500	0.62	PCI/G	WP0423 0
SC-15212-S	2/27/98	URANIUM-238	1 3800	2 75	PCI/G	WP0423 0
SC-15212-S-RS	5/29/98	ARSENIC	8 8000	0 71	UG/G	SW0035 0
SC-15212-S-RS	5/29/98	RADIUM-226	1.0000	0 21	PCI/G	WP0445 0
SC-15212-S-RS	5/29/98	RADIUM-228	1.3500	0.40	PCI/G	WP0445 0
SC-15212-S-RS	5/29/98	THORIUM-230	1.0700	0.62	PCI/G	WP0445 0
SC-15212-S-RS	5/29/98	URANIUM-238	1.2900	2 57	PCI/G	WP0445.0
SC-15214-S	2/27/98	ARSENIC	7.4000	0.34	UG/G	QT2220 0
SC-15214-S	2/27/98	RADIUM-226	1.1200	0.30	PCI/G	WP0423.0
SC-15214-S	2/27/98	RADIUM-228	1.2100	0 66	PCI/G	WP0423 0
SC-15214-S	2/27/98	THORIUM-230	1.4200	0.62	PCI/G	WP0423 0
SC-15214-S	2/27/98	URANIUM-238	1 7400	3.48	PCI/G	WP0423 0
SC-15215-S	2/27/98	ARSENIC	8.1000	0.33	UG/G	QT2220.0
SC-15215-S	2/27/98	RADIUM-226	1.6800	0.30	PCI/G	WP0423 0
SC-15215-S	2/27/98	RADIUM-228	1 1800	0.39	PCI/G	WP0423 0
SC-15215-S	2/27/98	THORIUM-230	1 3300	0.62	PCI/G	WP0423 0
SC-15215-S	2/27/98	URANIUM-238	1 4500	2.89	PCI/G	WP0423 0
SC-15215-S-RS	5/29/98	ARSENIC	6.2000	0.82	UG/G	SW0035 0
SC-15215-S-RS	5/29/98	RADIUM-226	1 3600	0.36	PCI/G	WP0445 0

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SC-15215-S-RS	5/29/98	RADIUM-228	0.6800	1.36	PCI/G	WP0445.0
SC-15215-S-RS	5/29/98	THORIUM-230	1.1000	0.62	PCI/G	WP0445.0
SC-15215-S-RS	5/29/98	URANIUM-238	1.9500	3.90	PCI/G	WP0445.0
SC-15216-S	2/27/98	ARSENIC	4.8000	0.32	UG/G	QT2220.0
SC-15216-S	2/27/98	RADIUM-226	1.3100	0.35	PCI/G	WP0423.0
SC-15216-S	2/27/98	RADIUM-228	1.5400	0.62	PCI/G	WP0423.0
SC-15216-S	2/27/98	THORIUM-230	1.6200	0.62	PCI/G	WP0423.0
SC-15216-S	2/27/98	URANIUM-238	1.8900	3.77	PCI/G	WP0423.0
SC-15216-S-RS	5/29/98	ARSENIC	4.9000	0.70	UG/G	SW0035.0
SC-15216-S-RS	5/29/98	RADIUM-226	1.3800	0.23	PCI/G	WP0445.0
SC-15216-S-RS	5/29/98	RADIUM-228	1.0000	0.43	PCI/G	WP0445.0
SC-15216-S-RS	5/29/98	THORIUM-230	1.1500	0.62	PCI/G	WP0445.0
SC-15216-S-RS	5/29/98	URANIUM-238	1.3500	2.69	PCI/G	WP0445.0
SC-15219-S	3/30/98	ARSENIC	6.2000	2.3	UG/G	QT2244.0
SC-15219-S	3/30/98	RADIUM-226	1.1900	0.32	PCI/G	WP0433.0
SC-15219-S	3/30/98	RADIUM-228	1.2400	0.45	PCI/G	WP0433.0
SC-15219-S	3/30/98	THORIUM-230	1.4900	0.62	PCI/G	WP0433.0
SC-15219-S	3/30/98	URANIUM-238	1.8400	3.67	PCI/G	WP0433.0
SC-15219-S-RS	5/26/98	ARSENIC	2.9500	5.90	UG/G	WS2170.0
SC-15219-S-RS	5/26/98	RADIUM-226	1.1300	0.30	PCI/G	WP0443.0
SC-15219-S-RS	5/26/98	RADIUM-228	1.2400	0.46	PCI/G	WP0443.0
SC-15219-S-RS	5/26/98	THORIUM-230	1.0000	0.62	PCI/G	WP0443.0
SC-15219-S-RS	5/26/98	URANIUM-238	1.8400	3.67	PCI/G	WP0443.0
SC-15220-S	3/30/98	ARSENIC	5.2000	2.2	UG/G	QT2244.0
SC-15220-S	3/30/98	RADIUM-226	1.3000	0.27	PCI/G	WP0433.0
SC-15220-S	3/30/98	RADIUM-228	1.1700	0.36	PCI/G	WP0433.0
SC-15220-S	3/30/98	THORIUM-230	0.8800	0.62	PCI/G	WP0433.0
SC-15220-S	3/30/98	URANIUM-238	1.3200	2.64	PCI/G	WP0433.0
SC-15220-S-RS	5/29/98	ARSENIC	3.6000	0.76	UG/G	SW0035.0
SC-15220-S-RS	5/29/98	RADIUM-226	1.3600	0.42	PCI/G	WP0445.0
SC-15220-S-RS	5/29/98	RADIUM-228	0.6100	1.22	PCI/G	WP0445.0
SC-15220-S-RS	5/29/98	THORIUM-230	1.2500	0.62	PCI/G	WP0445.0
SC-15220-S-RS	5/29/98	URANIUM-238	1.9300	3.85	PCI/G	WP0445.0
SC-15223-S	3/30/98	ARSENIC	10.7000	2.4	UG/G	QT2244.0
SC-15223-S	3/30/98	RADIUM-226	2.3300	0.46	PCI/G	WP0433.0
SC-15223-S	3/30/98	RADIUM-228	1.8400	0.66	PCI/G	WP0433.0
SC-15223-S	3/30/98	THORIUM-230	6.0500	0.62	PCI/G	WP0433.0
SC-15223-S	3/30/98	URANIUM-238	2.3900	4.78	PCI/G	WP0433.0
SC-15223-S-RS	5/26/98	ARSENIC	16.2000	5.00	UG/G	WS2170.0
SC-15223-S-RS	5/26/98	RADIUM-226	1.4700	0.32	PCI/G	WP0443.0
SC-15223-S-RS	5/26/98	RADIUM-228	1.2600	0.44	PCI/G	WP0443.0
SC-15223-S-RS	5/26/98	THORIUM-230	1.3100	0.62	PCI/G	WP0443.0
SC-15223-S-RS	5/26/98	URANIUM-238	1.4500	2.89	PCI/G	WP0443.0
SC-15225-S	3/30/98	ARSENIC	8.8000	2.3	UG/G	QT2244.0
SC-15225-S	3/30/98	RADIUM-226	1.0300	0.25	PCI/G	WP0433.0
SC-15225-S	3/30/98	RADIUM-228	1.4000	0.42	PCI/G	WP0433.0
SC-15225-S	3/30/98	THORIUM-230	1.1000	0.62	PCI/G	WP0433.0
SC-15225-S	3/30/98	URANIUM-238	1.3500	2.69	PCI/G	WP0433.0
SC-15225-S-RS	5/26/98	ARSENIC	5.9000	5.70	UG/G	WS2170.0
SC-15225-S-RS	5/26/98	RADIUM-226	0.9300	0.33	PCI/G	WP0443.0
SC-15225-S-RS	5/26/98	RADIUM-228	1.1100	0.44	PCI/G	WP0443.0
SC-15225-S-RS	5/26/98	THORIUM-230	1.7300	0.62	PCI/G	WP0443.0
SC-15225-S-RS	5/26/98	URANIUM-238	1.6500	2.78	PCI/G	WP0443.0
SC-15301-S	1/27/98	ARSENIC	9.5000	0.34	UG/G	QT2186.0
SC-15301-S	1/27/98	RADIUM-226	0.6600	0.22	PCI/G	WP0398.0
SC-15301-S	1/27/98	RADIUM-228	0.9800	0.40	PCI/G	WP0398.0

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SC-15301-S	1/27/98	THORIUM-230	1.2600	0 62	PCI/G	WP0398 0
SC-15301-S	1/27/98	URANIUM-238	1.3200	2 64	PCI/G	WP0398.0
SC-15301-S-RS	5/29/98	ARSENIC	16.2000	0.70	UG/G	SW0035 0
SC-15301-S-RS	5/29/98	RADIUM-226	0.7100	0 26	PCI/G	WP0445 0
SC-15301-S-RS	5/29/98	RADIUM-228	0.8300	0 17	PCI/G	WP0445 0
SC-15301-S-RS	5/29/98	THORIUM-230	0 9700	0.62	PCI/G	WP0445 0
SC-15301-S-RS	5/29/98	URANIUM-238	1.6500	3 29	PCI/G	WP0445 0
SC-15302-S	2/27/98	ARSENIC	10.0000	0.33	UG/G	QT2220 0
SC-15302-S	2/27/98	RADIUM-226	1.1100	0.28	PCI/G	WP0423.0
SC-15302-S	2/27/98	RADIUM-228	1.3500	0.38	PCI/G	WP0423.0
SC-15302-S	2/27/98	THORIUM-230	3.2900	0.62	PCI/G	WP0423.0
SC-15302-S	2/27/98	URANIUM-238	1.4500	2.89	PCI/G	WP0423.0
SC-15303-S	2/27/98	ARSENIC	9.3000	0.38	UG/G	QT2220 0
SC-15303-S	2/27/98	RADIUM-226	1 0600	0 30	PCI/G	WP0423 0
SC-15303-S	2/27/98	RADIUM-228	1.5000	0.46	PCI/G	WP0423 0
SC-15303-S	2/27/98	THORIUM-230	3 3500	0 62	PCI/G	WP0423.0
SC-15303-S	2/27/98	URANIUM-238	1 9100	3.82	PCI/G	WP0423 0
SC-15304-S	2/27/98	ARSENIC	10.1000	0.32	UG/G	QT2220.0
SC-15304-S	2/27/98	RADIUM-226	0 8000	0.25	PCI/G	WP0423 0
SC-15304-S	2/27/98	RADIUM-228	1.1500	0.33	PCI/G	WP0423 0
SC-15304-S	2/27/98	THORIUM-230	1 5500	0.62	PCI/G	WP0423 0
SC-15304-S	2/27/98	URANIUM-238	1.2700	2.55	PCI/G	WP0423 0
SC-15304-S-RS	5/29/98	ARSENIC	9 0000	0.66	UG/G	SW0035 0
SC-15304-S-RS	5/29/98	RADIUM-226	0 8300	0.22	PCI/G	WP0445 0
SC-15304-S-RS	5/29/98	RADIUM-228	1.3100	0 32	PCI/G	WP0445 0
SC-15304-S-RS	5/29/98	THORIUM-230	0 9100	0.62	PCI/G	WP0445 0
SC-15304-S-RS	5/29/98	URANIUM-238	1 3100	2 62	PCI/G	WP0445 0
SC-15305-S	2/27/98	ARSENIC	9.8000	0 31	UG/G	QT2220 0
SC-15305-S	2/27/98	RADIUM-226	1 3600	0.40	PCI/G	WP0423 0
SC-15305-S	2/27/98	RADIUM-228	1 8100	0.56	PCI/G	WP0423 0
SC-15305-S	2/27/98	THORIUM-230	2 5900	0.62	PCI/G	WP0423 0
SC-15305-S	2/27/98	URANIUM-238	2 1300	4.26	PCI/G	WP0423 0
SC-15305-S-RS	5/29/98	ARSENIC	9 6000	0 66	UG/G	SW0035 0
SC-15305-S-RS	5/29/98	RADIUM-226	0 9700	0.23	PCI/G	WP0446 0
SC-15305-S-RS	5/29/98	RADIUM-228	1 1500	0 41	PCI/G	WP0446 0
SC-15305-S-RS	5/29/98	THORIUM-230	1 1500	0.62	PCI/G	WP0446 0
SC-15305-S-RS	5/29/98	URANIUM-238	1.2700	2 55	PCI/G	WP0446 0
SC-15306-S	2/27/98	ARSENIC	8 9000	0.33	UG/G	QT2220 0
SC-15306-S	2/27/98	RADIUM-226	1 2600	0.27	PCI/G	WP0423 0
SC-15306-S	2/27/98	RADIUM-228	1 4100	0 36	PCI/G	WP0423 0
SC-15306-S	2/27/98	THORIUM-230	2 8800	0.62	PCI/G	WP0423 0
SC-15306-S	2/27/98	URANIUM-238	1 4300	2.85	PCI/G	WP0423 0
SC-15307-S	3/30/98	ARSENIC	9 2000	2.3	UG/G	QT2244 0
SC-15307-S	3/30/98	RADIUM-226	0.8100	0.30	PCI/G	WP0433 0
SC-15307-S	3/30/98	RADIUM-228	1.2700	0.36	PCI/G	WP0433 0
SC-15307-S	3/30/98	THORIUM-230	1 0800	0.62	PCI/G	WP0433 0
SC-15307-S	3/30/98	URANIUM-238	1 7300	3.46	PCI/G	WP0433 0
SC-15307-S-RS	5/29/98	ARSENIC	16 8000	0.68	UG/G	SW0035 0
SC-15307-S-RS	5/29/98	RADIUM-226	1 1300	0 32	PCI/G	WP0445 0
SC-15307-S-RS	5/29/98	RADIUM-228	1.5100	0.32	PCI/G	WP0445.0
SC-15307-S-RS	5/29/98	THORIUM-230	1 1300	0.62	PCI/G	WP0445 0
SC-15307-S-RS	5/29/98	URANIUM-238	1 9600	3 91	PCI/G	WP0445.0
SC-15308-S	5/29/98	ARSENIC	15 9000	0 67	UG/G	SW0035 0
SC-15308-S	5/29/98	RADIUM-226	0 8600	0 37	PCI/G	WP0446 0
SC-15308-S	5/29/98	RADIUM-228	1 1100	0 44	PCI/G	WP0446 0
SC-15308-S	5/29/98	THORIUM-230	1.1800	0 62	PCI/G	WP0446 0

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SC-15308-S	5/29/98	URANIUM-238	1.7300	3.46	PCI/G	WP0446.0
SC-15309-S	5/29/98	ARSENIC	10.3000	0.72	UG/G	SW0035.0
SC-15309-S	5/29/98	RADIUM-226	0.9200	0.25	PCI/G	WP0446.0
SC-15309-S	5/29/98	RADIUM-228	1.0200	0.53	PCI/G	WP0446.0
SC-15309-S	5/29/98	THORIUM-230	0.9800	0.62	PCI/G	WP0446.0
SC-15309-S	5/29/98	URANIUM-238	1.3000	2.60	PCI/G	WP0446.0
SC-15310-S	3/30/98	ARSENIC	7.6000	2.3	UG/G	QT2244.0
SC-15310-S	3/30/98	RADIUM-226	1.0500	0.22	PCI/G	WP0433.0
SC-15310-S	3/30/98	RADIUM-228	1.1400	0.39	PCI/G	WP0433.0
SC-15310-S	3/30/98	THORIUM-230	1.0400	0.62	PCI/G	WP0433.0
SC-15310-S	3/30/98	URANIUM-238	1.3700	2.74	PCI/G	WP0433.0
SC-15310-S-RS	5/29/98	ARSENIC	7.0000	0.66	UG/G	SW0035.0
SC-15310-S-RS	5/29/98	RADIUM-226	1.3200	0.24	PCI/G	WP0445.0
SC-15310-S-RS	5/29/98	RADIUM-228	1.3400	0.38	PCI/G	WP0445.0
SC-15310-S-RS	5/29/98	THORIUM-230	2.6100	0.62	PCI/G	WP0445.0
SC-15310-S-RS	5/29/98	URANIUM-238	1.4100	2.82	PCI/G	WP0445.0
SC-15311-S	5/29/98	ARSENIC	20.0000	0.63	UG/G	SW0035.0
SC-15311-S	5/29/98	RADIUM-226	3.8600	0.40	PCI/G	WP0446.0
SC-15311-S	5/29/98	RADIUM-228	1.1000	0.61	PCI/G	WP0446.0
SC-15311-S	5/29/98	THORIUM-230	0.8900	0.62	PCI/G	WP0446.0
SC-15311-S	5/29/98	URANIUM-238	2.1500	4.29	PCI/G	WP0446.0
SC-15312-S	5/29/98	ARSENIC	11.2000	0.51	UG/G	SW0035.0
SC-15312-S	5/29/98	RADIUM-226	1.0200	0.23	PCI/G	WP0446.0
SC-15312-S	5/29/98	RADIUM-228	1.0800	0.31	PCI/G	WP0446.0
SC-15312-S	5/29/98	THORIUM-230	0.9500	0.62	PCI/G	WP0446.0
SC-15312-S	5/29/98	URANIUM-238	1.3400	2.67	PCI/G	WP0446.0
SC-15313-S	3/30/98	ARSENIC	8.5000	2.3	UG/G	QT2244.0
SC-15313-S	3/30/98	RADIUM-226	1.3000	0.30	PCI/G	WP0433.0
SC-15313-S	3/30/98	RADIUM-228	1.3800	0.25	PCI/G	WP0433.0
SC-15313-S	3/30/98	THORIUM-230	1.1000	0.62	PCI/G	WP0433.0
SC-15313-S	3/30/98	URANIUM-238	1.7700	3.54	PCI/G	WP0433.0
SC-15313-S-RS	5/29/98	ARSENIC	8.1000	0.55	UG/G	SW0035.0
SC-15313-S-RS	5/29/98	RADIUM-226	1.0900	0.37	PCI/G	WP0445.0
SC-15313-S-RS	5/29/98	RADIUM-228	1.6000	0.45	PCI/G	WP0445.0
SC-15313-S-RS	5/29/98	THORIUM-230	1.3800	0.62	PCI/G	WP0445.0
SC-15313-S-RS	5/29/98	URANIUM-238	1.9900	3.98	PCI/G	WP0445.0
SC-15314-S	5/29/98	ARSENIC	7.5000	0.56	UG/G	SW0035.0
SC-15314-S	5/29/98	RADIUM-226	1.0800	0.33	PCI/G	WP0446.0
SC-15314-S	5/29/98	RADIUM-228	0.6200	1.24	PCI/G	WP0446.0
SC-15314-S	5/29/98	THORIUM-230	1.2800	0.62	PCI/G	WP0446.0
SC-15314-S	5/29/98	URANIUM-238	1.8000	3.60	PCI/G	WP0446.0
SC-15315-S	3/30/98	ARSENIC	10.6000	2.4	UG/G	QT2244.0
SC-15315-S	3/30/98	RADIUM-226	1.1400	0.28	PCI/G	WP0433.0
SC-15315-S	3/30/98	RADIUM-228	1.3000	0.41	PCI/G	WP0433.0
SC-15315-S	3/30/98	THORIUM-230	1.1700	0.62	PCI/G	WP0433.0
SC-15315-S	3/30/98	URANIUM-238	1.3500	2.70	PCI/G	WP0433.0
SC-15315-S-RS	5/29/98	ARSENIC	9.7000	0.52	UG/G	SW0035.0
SC-15315-S-RS	5/29/98	RADIUM-226	1.6100	0.30	PCI/G	WP0445.0
SC-15315-S-RS	5/29/98	RADIUM-228	1.2500	0.43	PCI/G	WP0445.0
SC-15315-S-RS	5/29/98	THORIUM-230	5.3000	0.62	PCI/G	WP0445.0
SC-15315-S-RS	5/29/98	URANIUM-238	1.4800	2.96	PCI/G	WP0445.0
SC-15316-S	5/29/98	ARSENIC	7.8000	0.60	UG/G	SW0035.0
SC-15316-S	5/29/98	RADIUM-226	1.1000	0.32	PCI/G	WP0446.0
SC-15316-S	5/29/98	RADIUM-228	1.5500	0.33	PCI/G	WP0446.0
SC-15316-S	5/29/98	THORIUM-230	3.3500	0.62	PCI/G	WP0446.0
SC-15316-S	5/29/98	URANIUM-238	1.9400	2.05	PCI/G	WP0446.0

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SC-15317-S	3/30/98	ARSENIC	8.6000	2 2	UG/G	QT2244.0
SC-15317-S	3/30/98	RADIUM-226	1 7900	0 28	PCI/G	WP0433 0
SC-15317-S	3/30/98	RADIUM-228	1.6000	0 34	PCI/G	WP0433 0
SC-15317-S	3/30/98	THORIUM-230	8 4900	0.62	PCI/G	WP0433 0
SC-15317-S	3/30/98	URANIUM-238	1.6300	2 96	PCI/G	WP0433 0
SC-15317-S-RS	5/26/98	ARSENIC	2 9500	5.90	UG/G	WS2170 0
SC-15317-S-RS	5/26/98	RADIUM-226	1 5600	0.23	PCI/G	WP0443.0
SC-15317-S-RS	5/26/98	RADIUM-228	1 2200	0.46	PCI/G	WP0443 0
SC-15317-S-RS	5/26/98	THORIUM-230	2.2900	0.62	PCI/G	WP0443.0
SC-15317-S-RS	5/26/98	URANIUM-238	1.3700	2.74	PCI/G	WP0443 0
SC-15321-S	3/30/98	ARSENIC	9 9000	2.3	UG/G	QT2244 0
SC-15321-S	3/30/98	RADIUM-226	2.2300	0.27	PCI/G	WP0433.0
SC-15321-S	3/30/98	RADIUM-228	3.8400	0.39	PCI/G	WP0433.0
SC-15321-S	3/30/98	THORIUM-230	18.9000	0.62	PCI/G	WP0433 0
SC-15321-S	3/30/98	URANIUM-238	5 2000	1.92	PCI/G	WP0433.0
SC-15401-S	2/27/98	RADIUM-226	1.0900	0 41	PCI/G	WP0423.0
SC-15401-S	2/27/98	RADIUM-228	1 4300	0 57	PCI/G	WP0423 0
SC-15401-S	2/27/98	THORIUM-230	2 2200	0.62	PCI/G	WP0423 0
SC-15401-S	2/27/98	URANIUM-238	1 9800	3 95	PCI/G	WP0423 0
SC-15402-S	2/27/98	RADIUM-226	0 8900	0.34	PCI/G	WP0423 0
SC-15402-S	2/27/98	RADIUM-228	1 4300	0 38	PCI/G	WP0423 0
SC-15402-S	2/27/98	THORIUM-230	1 8500	0 62	PCI/G	WP0423 0
SC-15402-S	2/27/98	URANIUM-238	1 4300	2.86	PCI/G	WP0423 0
SC-15403-S	2/27/98	RADIUM-226	1.0800	0.34	PCI/G	WP0423 0
SC-15403-S	2/27/98	RADIUM-228	1 4800	0 46	PCI/G	WP0423 0
SC-15403-S	2/27/98	THORIUM-230	2 7400	0 62	PCI/G	WP0423 0
SC-15403-S	2/27/98	URANIUM-238	1.8600	3.72	PCI/G	WP0423 0
SC-15404-S	2/27/98	RADIUM-226	0 7700	0.24	PCI/G	WP0423 0
SC-15404-S	2/27/98	RADIUM-228	1 1300	0.40	PCI/G	WP0423 0
SC-15404-S	2/27/98	THORIUM-230	1 1400	0.62	PCI/G	WP0423 0
SC-15404-S	2/27/98	URANIUM-238	1.3800	2 75	PCI/G	WP0423 0
SC-15405-S	2/27/98	RADIUM-226	0.8300	0 32	PCI/G	WP0423 0
SC-15405-S	2/27/98	RADIUM-228	1.1500	0 31	PCI/G	WP0423 0
SC-15405-S	2/27/98	THORIUM-230	1.3700	0 62	PCI/G	WP0423 0
SC-15405-S	2/27/98	URANIUM-238	1 7600	3 51	PCI/G	WP0423 0
SC-15406-S	2/27/98	RADIUM-226	0.8500	0.26	PCI/G	WP0423.0
SC-15406-S	2/27/98	RADIUM-228	1.2000	0 38	PCI/G	WP0423 0
SC-15406-S	2/27/98	THORIUM-230	1 0300	0 62	PCI/G	WP0423 0
SC-15406-S	2/27/98	URANIUM-238	1 3400	2 68	PCI/G	WP0423 0
SC-15407-S	3/4/98	RADIUM-226	0 9000	0 35	PCI/G	WP0425 0
SC-15407-S	3/4/98	RADIUM-228	1 4100	0 60	PCI/G	WP0425 0
SC-15407-S	3/4/98	THORIUM-230	2.3800	0.62	PCI/G	WP0425 0
SC-15407-S	3/4/98	URANIUM-238	1 8600	3.71	PCI/G	WP0425 0
SC-15408-S	3/4/98	RADIUM-226	0 9600	0.29	PCI/G	WP0425 0
SC-15408-S	3/4/98	RADIUM-228	1.3200	0.38	PCI/G	WP0425.0
SC-15408-S	3/4/98	THORIUM-230	1.5000	0.62	PCI/G	WP0425.0
SC-15408-S	3/4/98	URANIUM-238	1 2900	2.58	PCI/G	WP0425 0
SC-15409-S	3/4/98	RADIUM-226	0 9200	0.28	PCI/G	WP0425 0
SC-15409-S	3/4/98	RADIUM-228	1.2900	0 41	PCI/G	WP0425 0
SC-15409-S	3/4/98	THORIUM-230	1.6100	0.62	PCI/G	WP0425 0
SC-15409-S	3/4/98	URANIUM-238	1.9600	3.91	PCI/G	WP0425 0
SC-15410-S	3/4/98	RADIUM-226	0 8300	0.26	PCI/G	WP0425 0
SC-15410-S	3/4/98	RADIUM-228	1 1700	0.39	PCI/G	WP0425 0
SC-15410-S	3/4/98	THORIUM-230	1 2700	0.62	PCI/G	WP0425 0
SC-15410-S	3/4/98	URANIUM-238	1.2100	2 42	PCI/G	WP0425 0
SC-15411-S	3/4/98	RADIUM-226	0 6800	0 39	PCI/G	WP0425 0

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SC-15411-S	3/4/98	RADIUM-228	1.4400	0.61	PCI/G	WP0425.0
SC-15411-S	3/4/98	THORIUM-230	2.0200	0.62	PCI/G	WP0425.0
SC-15411-S	3/4/98	URANIUM-238	1.8400	3.68	PCI/G	WP0425.0
SC-15412-S	3/4/98	RADIUM-226	0.9800	0.21	PCI/G	WP0425.0
SC-15412-S	3/4/98	RADIUM-228	1.3400	0.39	PCI/G	WP0425.0
SC-15412-S	3/4/98	THORIUM-230	1.4500	0.62	PCI/G	WP0425.0
SC-15412-S	3/4/98	URANIUM-238	1.4000	2.79	PCI/G	WP0425.0
SC-15412-S-RS	5/29/98	RADIUM-226	0.9400	0.35	PCI/G	WP0446.0
SC-15412-S-RS	5/29/98	RADIUM-228	1.2800	0.25	PCI/G	WP0446.0
SC-15412-S-RS	5/29/98	THORIUM-230	1.3600	0.62	PCI/G	WP0446.0
SC-15412-S-RS	5/29/98	URANIUM-238	1.8600	3.72	PCI/G	WP0446.0
SC-15413-S	5/29/98	RADIUM-226	1.2000	0.24	PCI/G	WP0446.0
SC-15413-S	5/29/98	RADIUM-228	2.2900	0.49	PCI/G	WP0446.0
SC-15413-S	5/29/98	THORIUM-230	4.9900	0.62	PCI/G	WP0446.0
SC-15413-S	5/29/98	URANIUM-238	1.5700	3.13	PCI/G	WP0446.0
SC-15414-S	5/29/98	RADIUM-226	0.9300	0.30	PCI/G	WP0446.0
SC-15414-S	5/29/98	RADIUM-228	1.4100	0.32	PCI/G	WP0446.0
SC-15414-S	5/29/98	THORIUM-230	0.9800	0.62	PCI/G	WP0446.0
SC-15414-S	5/29/98	URANIUM-238	1.2500	2.51	PCI/G	WP0446.0
SC-15415-S	5/29/98	RADIUM-226	0.7700	0.31	PCI/G	WP0446.0
SC-15415-S	5/29/98	RADIUM-228	1.3500	0.47	PCI/G	WP0446.0
SC-15415-S	5/29/98	THORIUM-230	0.8700	0.62	PCI/G	WP0446.0
SC-15415-S	5/29/98	URANIUM-238	2.9800	2.02	PCI/G	WP0446.0
SC-15416-S	5/29/98	RADIUM-226	0.7400	0.24	PCI/G	WP0446 0
SC-15416-S	5/29/98	RADIUM-228	1.3400	0.37	PCI/G	WP0446.0
SC-15416-S	5/29/98	THORIUM-230	1.0000	0.62	PCI/G	WP0446.0
SC-15416-S	5/29/98	URANIUM-238	1.2700	2.54	PCI/G	WP0446.0
SC-15417-S	5/29/98	RADIUM-226	0.8700	0.23	PCI/G	WP0446.0
SC-15417-S	5/29/98	RADIUM-228	1.1100	0.44	PCI/G	WP0446.0
SC-15417-S	5/29/98	THORIUM-230	1.0800	0.62	PCI/G	WP0446.0
SC-15417-S	5/29/98	URANIUM-238	1.7000	3.40	PCI/G	WP0446.0
SC-15418-S	5/29/98	RADIUM-226	0.9300	0.30	PCI/G	WP0446.0
SC-15418-S	5/29/98	RADIUM-228	1.3100	0.35	PCI/G	WP0446.0
SC-15418-S	5/29/98	THORIUM-230	1.2600	0.62	PCI/G	WP0446.0
SC-15418-S	5/29/98	URANIUM-238	1.3000	2.59	PCI/G	WP0446.0
SC-15419-S	5/29/98	RADIUM-226	0.7000	0.37	PCI/G	WP0446.0
SC-15419-S	5/29/98	RADIUM-228	1.2000	0.51	PCI/G	WP0446.0
SC-15419-S	5/29/98	THORIUM-230	1.1400	0.62	PCI/G	WP0446.0
SC-15419-S	5/29/98	URANIUM-238	1.7300	3.45	PCI/G	WP0446.0
SC-15420-S	5/29/98	RADIUM-226	0.8600	0.24	PCI/G	WP0446.0
SC-15420-S	5/29/98	RADIUM-228	1.1400	0.42	PCI/G	WP0446.0
SC-15420-S	5/29/98	THORIUM-230	1.2200	0.62	PCI/G	WP0446.0
SC-15420-S	5/29/98	URANIUM-238	1.2600	2.53	PCI/G	WP0446.0
SC-15421-S	5/29/98	RADIUM-226	0.6000	0.39	PCI/G	WP0446.0
SC-15421-S	5/29/98	RADIUM-228	0.5900	1.17	PCI/G	WP0446.0
SC-15421-S	5/29/98	THORIUM-230	0.8900	0.62	PCI/G	WP0446.0
SC-15421-S	5/29/98	URANIUM-238	1.6900	3.37	PCI/G	WP0446.0
SC-15501-S	5/29/98	RADIUM-226	1.0300	0.32	PCI/G	WP0446.0
SC-15501-S	5/29/98	RADIUM-228	1.2200	0.44	PCI/G	WP0446.0
SC-15501-S	5/29/98	THORIUM-230	1.2000	0.62	PCI/G	WP0446.0
SC-15501-S	5/29/98	URANIUM-238	1.2900	2.57	PCI/G	WP0446.0
SC-15502-S	6/1/98	RADIUM-226	1.7100	0.28	PCI/G	WP0447.0
SC-15502-S	6/1/98	RADIUM-228	0.6500	1.30	PCI/G	WP0447.0
SC-15502-S	6/1/98	THORIUM-230	1.1600	0.62	PCI/G	WP0447.0
SC-15502-S	6/1/98	URANIUM-238	1.8400	3.68	PCI/G	WP0447.0
SC-15503-S	6/1/98	RADIUM-226	0.7000	0.23	PCI/G	WP0447.0

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SC-15503-S	6/1/98	RADIUM-228	1 2200	0.33	PCI/G	WP0447 0
SC-15503-S	6/1/98	THORIUM-230	0.9900	0.62	PCI/G	WP0447.0
SC-15503-S	6/1/98	URANIUM-238	1.3100	2.61	PCI/G	WP0447 0
SC-15504-S	6/1/98	RADIUM-226	0 8700	0 36	PCI/G	WP0447 0
SC-15504-S	6/1/98	RADIUM-228	1 3600	0 43	PCI/G	WP0447.0
SC-15504-S	6/1/98	THORIUM-230	1 1700	0.62	PCI/G	WP0447 0
SC-15504-S	6/1/98	URANIUM-238	1.8200	3.64	PCI/G	WP0447 0
SC-15505-S	5/29/98	RADIUM-226	0.7000	0.28	PCI/G	WP0446.0
SC-15505-S	5/29/98	RADIUM-228	1.0800	0.54	PCI/G	WP0446.0
SC-15505-S	5/29/98	THORIUM-230	1.1500	0.62	PCI/G	WP0446.0
SC-15505-S	5/29/98	URANIUM-238	1.0700	2.30	PCI/G	WP0446.0
SC-15506-S	6/1/98	RADIUM-226	0.8500	0.26	PCI/G	WP0447.0
SC-15506-S	6/1/98	RADIUM-228	1.2700	0.33	PCI/G	WP0447.0
SC-15506-S	6/1/98	THORIUM-230	0 9500	0 62	PCI/G	WP0447 0
SC-15506-S	6/1/98	URANIUM-238	1.3500	2.70	PCI/G	WP0447 0
SC-15507-S	6/1/98	RADIUM-226	0.8100	0 31	PCI/G	WP0447 0
SC-15507-S	6/1/98	RADIUM-228	0.5900	1.18	PCI/G	WP0447 0
SC-15507-S	6/1/98	THORIUM-230	1 0600	0.62	PCI/G	WP0447.0
SC-15507-S	6/1/98	URANIUM-238	1.7400	3.48	PCI/G	WP0447 0
SC-15508-S	6/1/98	RADIUM-226	0.9300	0.16	PCI/G	WP0447 0
SC-15508-S	6/1/98	RADIUM-228	1 4200	0.32	PCI/G	WP0447 0
SC-15508-S	6/1/98	THORIUM-230	0 9400	0.62	PCI/G	WP0447 0
SC-15508-S	6/1/98	URANIUM-238	1 3400	2.68	PCI/G	WP0447 0
SC-15509-S	6/1/98	RADIUM-226	0 7400	0 31	PCI/G	WP0447 0
SC-15509-S	6/1/98	RADIUM-228	0 8900	0 62	PCI/G	WP0447 0
SC-15509-S	6/1/98	THORIUM-230	1 0400	0 62	PCI/G	WP0447 0
SC-15509-S	6/1/98	URANIUM-238	1 8900	3.77	PCI/G	WP0447 0
SC-15510-S	5/29/98	RADIUM-226	0 8600	0 30	PCI/G	WP0446 0
SC-15510-S	5/29/98	RADIUM-228	1.1800	0.43	PCI/G	WP0446 0
SC-15510-S	5/29/98	THORIUM-230	0 9300	0.62	PCI/G	WP0446 0
SC-15510-S	5/29/98	URANIUM-238	1 3300	2.65	PCI/G	WP0446 0
SC-15511-S	6/1/98	RADIUM-226	1.0000	0.29	PCI/G	WP0447 0
SC-15511-S	6/1/98	RADIUM-228	1 4100	0.32	PCI/G	WP0447 0
SC-15511-S	6/1/98	THORIUM-230	1 3800	0 62	PCI/G	WP0447 0
SC-15511-S	6/1/98	URANIUM-238	1 4300	2.85	PCI/G	WP0447 0
SC-15512-S	6/1/98	RADIUM-226	0 8800	0 26	PCI/G	WP0447 0
SC-15512-S	6/1/98	RADIUM-228	1.2100	0.80	PCI/G	WP0447 0
SC-15512-S	6/1/98	THORIUM-230	1.0300	0.62	PCI/G	WP0447 0
SC-15512-S	6/1/98	URANIUM-238	1 7600	3.52	PCI/G	WP0447 0
SC-15513-S	6/1/98	RADIUM-226	0.8300	0.27	PCI/G	WP0447 0
SC-15513-S	6/1/98	RADIUM-228	1.2000	0.62	PCI/G	WP0447.0
SC-15513-S	6/1/98	THORIUM-230	1.9300	0.62	PCI/G	WP0447.0
SC-15513-S	6/1/98	URANIUM-238	1.9500	3.90	PCI/G	WP0447 0
SC-15514-S	6/1/98	RADIUM-226	0 8500	0 22	PCI/G	WP0447 0
SC-15514-S	6/1/98	RADIUM-228	1 1700	0.30	PCI/G	WP0447 0
SC-15514-S	6/1/98	THORIUM-230	1.3200	0.62	PCI/G	WP0447 0
SC-15514-S	6/1/98	URANIUM-238	1.2700	2.55	PCI/G	WP0447.0
SC-15601-S	6/1/98	RADIUM-226	1.1000	0.37	PCI/G	WP0447 0
SC-15601-S	6/1/98	RADIUM-228	1.2200	0.58	PCI/G	WP0447 0
SC-15601-S	6/1/98	THORIUM-230	1.1800	0.62	PCI/G	WP0447 0
SC-15601-S	6/1/98	URANIUM-238	1.6900	3.37	PCI/G	WP0447 0
SC-15602-S	6/1/98	RADIUM-226	0 9300	0.24	PCI/G	WP0447 0
SC-15602-S	6/1/98	RADIUM-228	1 0200	0.33	PCI/G	WP0447 0
SC-15602-S	6/1/98	THORIUM-230	1 4200	0 62	PCI/G	WP0447 0
SC-15602-S	6/1/98	URANIUM-238	1 2200	2 44	PCI/G	WP0447 0
SC-15603-S	6/1/98	RADIUM-226	0 9800	0.24	PCI/G	WP0447 0

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SC-15603-S	6/1/98	RADIUM-228	0.6000	1.20	PCI/G	WP0447.0
SC-15603-S	6/1/98	THORIUM-230	1.1600	0.62	PCI/G	WP0447.0
SC-15603-S	6/1/98	URANIUM-238	1.8000	3.60	PCI/G	WP0447.0
SC-15604-S	6/1/98	RADIUM-226	1.2200	0.28	PCI/G	WP0447.0
SC-15604-S	6/1/98	RADIUM-228	1.6800	0.42	PCI/G	WP0447.0
SC-15604-S	6/1/98	THORIUM-230	4.0500	0.62	PCI/G	WP0447.0
SC-15604-S	6/1/98	URANIUM-238	3.0600	1.98	PCI/G	WP0447.0
SC-15605-C	6/1/98	RADIUM-226	0.9500	0.34	PCI/G	WP0447.0
SC-15605-C	6/1/98	RADIUM-228	1.1000	0.45	PCI/G	WP0447.0
SC-15605-C	6/1/98	THORIUM-230	1.5800	0.62	PCI/G	WP0447.0
SC-15605-C	6/1/98	URANIUM-238	1.8200	3.63	PCI/G	WP0447.0
SC-15605-S	6/1/98	RADIUM-226	1.0000	0.20	PCI/G	WP0447.0
SC-15605-S	6/1/98	RADIUM-228	1.2100	0.24	PCI/G	WP0447.0
SC-15605-S	6/1/98	THORIUM-230	1.0800	0.62	PCI/G	WP0447.0
SC-15605-S	6/1/98	URANIUM-238	1.2900	2.58	PCI/G	WP0447.0
SC-15606-S	6/1/98	RADIUM-226	1.0600	0.26	PCI/G	WP0447.0
SC-15606-S	6/1/98	RADIUM-228	1.1900	0.29	PCI/G	WP0447.0
SC-15606-S	6/1/98	THORIUM-230	1.0500	0.62	PCI/G	WP0447.0
SC-15606-S	6/1/98	URANIUM-238	1.3200	2.64	PCI/G	WP0447.0
SC-15607-S	6/1/98	RADIUM-226	0.8300	0.29	PCI/G	WP0447.0
SC-15607-S	6/1/98	RADIUM-228	1.3100	0.55	PCI/G	WP0447.0
SC-15607-S	6/1/98	THORIUM-230	0.9500	0.62	PCI/G	WP0447.0
SC-15607-S	6/1/98	URANIUM-238	1.7200	3.43	PCI/G	WP0447.0
SC-15608-S	6/1/98	RADIUM-226	0.8000	0.29	PCI/G	WP0447.0
SC-15608-S	6/1/98	RADIUM-228	1.3000	0.52	PCI/G	WP0447.0
SC-15608-S	6/1/98	THORIUM-230	0.9400	0.62	PCI/G	WP0447.0
SC-15608-S	6/1/98	URANIUM-238	1.3000	2.60	PCI/G	WP0447.0
SC-15609-S	6/1/98	RADIUM-226	0.8500	0.38	PCI/G	WP0447.0
SC-15609-S	6/1/98	RADIUM-228	1.5600	0.25	PCI/G	WP0447.0
SC-15609-S	6/1/98	THORIUM-230	1.0500	0.62	PCI/G	WP0447.0
SC-15609-S	6/1/98	URANIUM-238	1.8900	3.78	PCI/G	WP0447.0
SC-15610-C	6/1/98	RADIUM-226	1.2200	0.20	PCI/G	WP0447.0
SC-15610-C	6/1/98	RADIUM-228	1.9300	0.35	PCI/G	WP0447.0
SC-15610-C	6/1/98	THORIUM-230	3.9100	0.62	PCI/G	WP0447.0
SC-15610-C	6/1/98	URANIUM-238	1.5500	3.09	PCI/G	WP0447.0
SC-15610-S	6/1/98	RADIUM-226	1.3300	0.33	PCI/G	WP0447.0
SC-15610-S	6/1/98	RADIUM-228	1.9400	0.49	PCI/G	WP0447.0
SC-15610-S	6/1/98	THORIUM-230	3.3900	0.62	PCI/G	WP0447.0
SC-15610-S	6/1/98	URANIUM-238	2.1200	4.24	PCI/G	WP0447.0
SC-15611-S	6/1/98	RADIUM-226	0.7200	0.28	PCI/G	WP0447.0
SC-15611-S	6/1/98	RADIUM-228	1.2800	0.36	PCI/G	WP0447.0
SC-15611-S	6/1/98	THORIUM-230	0.8900	0.62	PCI/G	WP0447.0
SC-15611-S	6/1/98	URANIUM-238	1.3300	2.66	PCI/G	WP0447.0
SC-15612-S	6/1/98	RADIUM-226	0.8700	0.32	PCI/G	WP0447.0
SC-15612-S	6/1/98	RADIUM-228	0.6000	1.20	PCI/G	WP0447.0
SC-15612-S	6/1/98	THORIUM-230	1.4500	0.62	PCI/G	WP0447.0
SC-15612-S	6/1/98	URANIUM-238	1.9700	3.94	PCI/G	WP0447.0
SC-15613-S	6/1/98	RADIUM-226	0.8900	0.27	PCI/G	WP0447.0
SC-15613-S	6/1/98	RADIUM-228	1.3900	0.43	PCI/G	WP0447.0
SC-15613-S	6/1/98	THORIUM-230	0.8700	0.62	PCI/G	WP0447.0
SC-15613-S	6/1/98	URANIUM-238	1.3700	2.74	PCI/G	WP0447.0
SC-15614-S	6/1/98	RADIUM-226	0.8700	0.43	PCI/G	WP0447.0
SC-15614-S	6/1/98	RADIUM-228	1.2000	0.51	PCI/G	WP0447.0
SC-15614-S	6/1/98	THORIUM-230	1.5100	0.62	PCI/G	WP0447.0
SC-15614-S	6/1/98	URANIUM-238	1.8400	3.68	PCI/G	WP0447.0
SC-15615-C	6/1/98	RADIUM-226	1.0900	0.23	PCI/G	WP0447.0

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SC-15615-C	6/1/98	RADIUM-228	1.4200	0.40	PCI/G	WP0447 0
SC-15615-C	6/1/98	THORIUM-230	1 3900	0.62	PCI/G	WP0447 0
SC-15615-C	6/1/98	URANIUM-238	1 4000	2.80	PCI/G	WP0447.0
SC-15615-S	6/1/98	RADIUM-226	1 7700	0 43	PCI/G	WP0447 0
SC-15615-S	6/1/98	RADIUM-228	2.5200	0.68	PCI/G	WP0447 0
SC-15615-S	6/1/98	THORIUM-230	12.0000	0.62	PCI/G	WP0447 0
SC-15615-S	6/1/98	URANIUM-238	2.6900	5.37	PCI/G	WP0447.0
SC-15620-C	6/1/98	RADIUM-226	1.1000	0.31	PCI/G	WP0447 0
SC-15620-C	6/1/98	RADIUM-228	2.0800	0.46	PCI/G	WP0447.0
SC-15620-C	6/1/98	THORIUM-230	5.6200	0.62	PCI/G	WP0447 0
SC-15620-C	6/1/98	URANIUM-238	2.7000	2.45	PCI/G	WP0447 0
SC-15902-C	9/10/97	ARSENIC	9.1000	0 52	UG/G	GE2150 0
SC-15902-C	9/10/97	RADIUM-226	1 1400	0.31	PCI/G	WP0325 0
SC-15902-C	9/10/97	RADIUM-228	1.9000	0.62	PCI/G	WP0325 0
SC-15902-C	9/10/97	THORIUM-230	4.2500	0.62	PCI/G	WP0325.0
SC-15902-C	9/10/97	URANIUM-238	2 0600	4 11	PCI/G	WP0325.0
SC-15903-C	9/10/97	ARSENIC	8.3000	0 51	UG/G	GE2150 0
SC-15903-C	9/10/97	RADIUM-226	1 4200	0.40	PCI/G	WP0325 0
SC-15903-C	9/10/97	RADIUM-228	1.6800	0 44	PCI/G	WP0325 0
SC-15903-C	9/10/97	THORIUM-230	3.9600	0.62	PCI/G	WP0325 0
SC-15903-C	9/10/97	URANIUM-238	1.7500	2.28	PCI/G	WP0325 0
SC-15903-S	9/10/97	ARSENIC	8.0000	0.50	UG/G	GE2150 0
SC-15903-S	9/10/97	RADIUM-226	1.6100	0.37	PCI/G	WP0325 0
SC-15903-S	9/10/97	RADIUM-228	2 4800	0 76	PCI/G	WP0325 0
SC-15903-S	9/10/97	THORIUM-230	7.9200	0 62	PCI/G	WP0325 0
SC-15903-S	9/10/97	URANIUM-238	2 4800	4.96	PCI/G	WP0325 0
SC-15903-S-HS01	9/16/97	THORIUM-230	11 9000	0 62	PCI/G	WP0326 0
SC-15903-S-HS02	9/16/97	THORIUM-230	0 9100	0.62	PCI/G	WP0326 0
SC-15903-S-HS03	9/16/97	THORIUM-230	3 3000	0 62	PCI/G	WP0326 0
SC-15903-S-HS04	9/16/97	THORIUM-230	1 4800	0.62	PCI/G	WP0326 0
SC-15903-S-HS05	9/23/97	THORIUM-230	1 8000	0.62	PCI/G	WP0327 0
SC-15903-S-HS06	9/23/97	THORIUM-230	3.0800	0.62	PCI/G	WP0327 0
SC-15903-S-HS07	9/23/97	THORIUM-230	2 8100	0.62	PCI/G	WP0327 0
SC-15903-S-RS	5/26/98	ARSENIC	7.2000	4 80	UG/G	WS2170 0
SC-15903-S-RS	5/26/98	BENZO(A)ANTHRACENE	6.0000	11	UG/KG	WS2170 0
SC-15903-S-RS	5/26/98	BENZO(A)PYRENE	9 0000	18	UG/KG	WS2170 0
SC-15903-S-RS	5/26/98	BENZO(B)FLUORANTHENE	8 0000	15	UG/KG	WS2170 0
SC-15903-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7 0000	13	UG/KG	WS2170 0
SC-15903-S-RS	5/26/98	CHRYSENE	60 0000	120	UG/KG	WS2170 0
SC-15903-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	18 0000	36	UG/KG	WS2170 0
SC-15903-S-RS	5/26/98	RADIUM-226	1.3200	0.33	PCI/G	WP0443 0
SC-15903-S-RS	5/26/98	RADIUM-228	1.2100	0.53	PCI/G	WP0443 0
SC-15903-S-RS	5/26/98	THORIUM-230	1.1100	0.62	PCI/G	WP0443 0
SC-15903-S-RS	5/26/98	URANIUM-238	1.7500	3.49	PCI/G	WP0443 0
SC-15904-S	9/10/97	ARSENIC	5 7000	0.51	UG/G	GE2150 0
SC-15904-S	9/10/97	RADIUM-226	1.3800	0.27	PCI/G	WP0325 0
SC-15904-S	9/10/97	RADIUM-228	1.1900	0 43	PCI/G	WP0325 0
SC-15904-S	9/10/97	THORIUM-230	1.1300	0.62	PCI/G	WP0325 0
SC-15904-S	9/10/97	URANIUM-238	2.3000	1.83	PCI/G	WP0325 0
SC-15904-S-RS	5/26/98	ARSENIC	8.9000	4.30	UG/G	WS2170 0
SC-15904-S-RS	5/26/98	BENZO(A)ANTHRACENE	5 0000	10	UG/KG	WS2170 0
SC-15904-S-RS	5/26/98	BENZO(A)PYRENE	9 0000	18	UG/KG	WS2170 0
SC-15904-S-RS	5/26/98	BENZO(B)FLUORANTHENE	7.0000	14	UG/KG	WS2170.0
SC-15904-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7 0000	13	UG/KG	WS2170 0
SC-15904-S-RS	5/26/98	CHRYSENE	60.0000	120	UG/KG	WS2170 0
SC-15904-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	17.0000	34	UG/KG	WS2170 0

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SC-15904-S-RS	5/26/98	RADIUM-226	1.1900	0.30	PCI/G	WP0443.0
SC-15904-S-RS	5/26/98	RADIUM-228	1.0600	0.36	PCI/G	WP0443.0
SC-15904-S-RS	5/26/98	THORIUM-230	1.0000	0.62	PCI/G	WP0443.0
SC-15904-S-RS	5/26/98	URANIUM-238	1.3600	2.72	PCI/G	WP0443.0
SC-15906-S	9/10/97	ARSENIC	7.1000	0.50	UG/G	GE2150.0
SC-15906-S	9/10/97	RADIUM-226	1.0700	0.39	PCI/G	WP0325.0
SC-15906-S	9/10/97	RADIUM-228	1.6200	0.35	PCI/G	WP0325.0
SC-15906-S	9/10/97	THORIUM-230	1.5000	0.62	PCI/G	WP0325.0
SC-15906-S	9/10/97	URANIUM-238	2.0500	2.57	PCI/G	WP0325.0
SC-15907-S	9/10/97	ARSENIC	8.4000	0.50	UG/G	GE2150.0
SC-15907-S	9/10/97	RADIUM-226	1.0900	0.23	PCI/G	WP0325.0
SC-15907-S	9/10/97	RADIUM-228	1.5400	0.38	PCI/G	WP0325.0
SC-15907-S	9/10/97	THORIUM-230	2.0100	0.62	PCI/G	WP0325.0
SC-15907-S	9/10/97	URANIUM-238	1.3300	2.65	PCI/G	WP0325.0
SC-15907-S-RS	5/26/98	ARSENIC	2.8000	5.60	UG/G	WS2170.0
SC-15907-S-RS	5/26/98	BENZO(A)ANTHRACENE	6.0000	11	UG/KG	WS2170.0
SC-15907-S-RS	5/26/98	BENZO(A)PYRENE	9.0000	18	UG/KG	WS2170.0
SC-15907-S-RS	5/26/98	BENZO(B)FLUORANTHENE	8.0000	15	UG/KG	WS2170.0
SC-15907-S-RS	5/26/98	BENZO(K)FLUORANTHENE	7.0000	13	UG/KG	WS2170.0
SC-15907-S-RS	5/26/98	CHRYSENE	60.0000	120	UG/KG	WS2170.0
SC-15907-S-RS	5/26/98	INDENO(1,2,3-CD)PYRENE	18.0000	35	UG/KG	WS2170.0
SC-15907-S-RS	5/26/98	RADIUM-226	1.2200	0.25	PCI/G	WP0443.0
SC-15907-S-RS	5/26/98	RADIUM-228	1.2700	0.45	PCI/G	WP0443.0
SC-15907-S-RS	5/26/98	THORIUM-230	1.0100	0.62	PCI/G	WP0443.0
SC-15907-S-RS	5/26/98	URANIUM-238	1.8800	3.75	PCI/G	WP0443.0
SC-15908-C	9/10/97	ARSENIC	7.2000	0.50	UG/G	GE2150.0
SC-15908-C	9/10/97	RADIUM-226	0.9300	0.28	PCI/G	WP0325.0
SC-15908-C	9/10/97	RADIUM-228	1.1800	0.48	PCI/G	WP0325.0
SC-15908-C	9/10/97	THORIUM-230	1.5500	0.62	PCI/G	WP0325.0
SC-15908-C	9/10/97	URANIUM-238	1.9100	3.81	PCI/G	WP0325.0
SC-15909-S	9/10/97	ARSENIC	4.7000	0.52	UG/G	GE2150.0
SC-15909-S	9/10/97	RADIUM-226	1.0700	0.27	PCI/G	WP0325.0
SC-15909-S	9/10/97	RADIUM-228	1.1500	0.36	PCI/G	WP0325.0
SC-15909-S	9/10/97	THORIUM-230	0.9600	0.62	PCI/G	WP0325.0
SC-15909-S	9/10/97	URANIUM-238	1.3400	2.67	PCI/G	WP0325.0
SC-15910-S	9/10/97	ARSENIC	6.4000	0.54	UG/G	GE2150.0
SC-15910-S	9/10/97	RADIUM-226	1.2900	0.28	PCI/G	WP0325.0
SC-15910-S	9/10/97	RADIUM-228	1.4100	0.37	PCI/G	WP0325.0
SC-15910-S	9/10/97	THORIUM-230	1.0500	0.62	PCI/G	WP0325.0
SC-15910-S	9/10/97	URANIUM-238	1.9900	3.97	PCI/G	WP0325.0
SC-15913-C	9/10/97	ARSENIC	7.6000	0.50	UG/G	GE2150.0
SC-15913-C	9/10/97	RADIUM-226	0.9100	0.35	PCI/G	WP0325.0
SC-15913-C	9/10/97	RADIUM-228	1.6900	0.47	PCI/G	WP0325.0
SC-15913-C	9/10/97	THORIUM-230	1.0100	0.62	PCI/G	WP0325.0
SC-15913-C	9/10/97	URANIUM-238	1.8500	3.70	PCI/G	WP0325.0
SC-15913-S	9/10/97	ARSENIC	5.4000	0.51	UG/G	GE2150.0
SC-15913-S	9/10/97	RADIUM-226	1.1500	0.28	PCI/G	WP0325.0
SC-15913-S	9/10/97	RADIUM-228	1.3800	0.35	PCI/G	WP0325.0
SC-15913-S	9/10/97	THORIUM-230	1.6300	0.62	PCI/G	WP0325.0
SC-15913-S	9/10/97	URANIUM-238	1.3300	2.66	PCI/G	WP0325.0
SC-15915-S	9/10/97	ARSENIC	6.9000	0.54	UG/G	GE2150.0
SC-15915-S	9/10/97	RADIUM-226	1.2000	0.35	PCI/G	WP0325.0
SC-15915-S	9/10/97	RADIUM-228	1.1600	0.57	PCI/G	WP0325.0
SC-15915-S	9/10/97	THORIUM-230	1.1800	0.62	PCI/G	WP0325.0
SC-15915-S	9/10/97	URANIUM-238	1.9400	3.87	PCI/G	WP0325.0
SC-15916-S	9/10/97	ARSENIC	7.2000	0.51	UG/G	GE2150.0

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SC-15916-S	9/10/97	RADIUM-226	1.2000	0 29	PCI/G	WP0325 0
SC-15916-S	9/10/97	RADIUM-228	1 1100	0.49	PCI/G	WP0325 0
SC-15916-S	9/10/97	THORIUM-230	1 2800	0.62	PCI/G	WP0325 0
SC-15916-S	9/10/97	URANIUM-238	1.8200	3.64	PCI/G	WP0325.0
SC-15918-C	9/10/97	ARSENIC	6.9000	0.50	UG/G	GE2150.0
SC-15918-C	9/10/97	RADIUM-226	1.0000	0.29	PCI/G	WP0325 0
SC-15918-C	9/10/97	RADIUM-228	1.2300	0.43	PCI/G	WP0325.0
SC-15918-C	9/10/97	THORIUM-230	1.2700	0.62	PCI/G	WP0325.0
SC-15918-C	9/10/97	URANIUM-238	1.5800	3.15	PCI/G	WP0325.0
SC-15919-S	9/10/97	ARSENIC	6.9000	0.48	UG/G	GE2150.0
SC-15919-S	9/10/97	RADIUM-226	1 1100	0.23	PCI/G	WP0325 0
SC-15919-S	9/10/97	RADIUM-228	1 1800	0.33	PCI/G	WP0325.0
SC-15919-S	9/10/97	THORIUM-230	1.7800	0.62	PCI/G	WP0325 0
SC-15919-S	9/10/97	URANIUM-238	1.3900	2 78	PCI/G	WP0325 0
SC-15920-S	9/10/97	ARSENIC	7.6000	0.49	UG/G	GE2150 0
SC-15920-S	9/10/97	RADIUM-226	0 6800	0.33	PCI/G	WP0325.0
SC-15920-S	9/10/97	RADIUM-228	1 1200	0 57	PCI/G	WP0325 0
SC-15920-S	9/10/97	THORIUM-230	0.9200	0.62	PCI/G	WP0325.0
SC-15920-S	9/10/97	URANIUM-238	1.7600	3.52	PCI/G	WP0325.0
SC-15920-S-RS	5/26/98	ARSENIC	2 6500	5 30	UG/G	WS2170 0
SC-15920-S-RS	5/26/98	RADIUM-226	1.3800	0 31	PCI/G	WP0443 0
SC-15920-S-RS	5/26/98	RADIUM-228	1 3200	0.37	PCI/G	WP0443 0
SC-15920-S-RS	5/26/98	THORIUM-230	1 0700	0.62	PCI/G	WP0443 0
SC-15920-S-RS	5/26/98	URANIUM-238	1.3300	2 65	PCI/G	WP0443 0
SC-15922-C	9/10/97	ARSENIC	7 1000	0 54	UG/G	GE2150.0
SC-15922-C	9/10/97	RADIUM-226	0 7100	0 31	PCI/G	WP0325 0
SC-15922-C	9/10/97	RADIUM-228	0.6000	1.19	PCI/G	WP0325 0
SC-15922-C	9/10/97	THORIUM-230	5.2300	0.62	PCI/G	WP0325 0
SC-15922-C	9/10/97	URANIUM-238	1.8000	3.60	PCI/G	WP0325.0
SC-15923-S	9/10/97	ARSENIC	7.9000	0.52	UG/G	GE2150 0
SC-15923-S	9/10/97	RADIUM-226	0.9500	0.24	PCI/G	WP0325 0
SC-15923-S	9/10/97	RADIUM-228	1 1300	0.42	PCI/G	WP0325 0
SC-15923-S	9/10/97	THORIUM-230	0.9600	0 62	PCI/G	WP0325 0
SC-15923-S	9/10/97	URANIUM-238	1 4900	1.84	PCI/G	WP0325 0
SC-15923-S-RS	5/26/98	ARSENIC	2.4500	4 90	UG/G	WS2170 0
SC-15923-S-RS	5/26/98	RADIUM-226	1.0700	0.27	PCI/G	WP0443 0
SC-15923-S-RS	5/26/98	RADIUM-228	1.2900	0.30	PCI/G	WP0443 0
SC-15923-S-RS	5/26/98	THORIUM-230	1 4200	0.62	PCI/G	WP0443 0
SC-15923-S-RS	5/26/98	URANIUM-238	1 3800	2 75	PCI/G	WP0443 0
SC-15924-C	9/10/97	ARSENIC	6 7000	0 51	UG/G	GE2150.0
SC-15924-C	9/10/97	RADIUM-226	0.9800	0.46	PCI/G	WP0325 0
SC-15924-C	9/10/97	RADIUM-228	1.1400	0.59	PCI/G	WP0325.0
SC-15924-C	9/10/97	THORIUM-230	1.0200	0.62	PCI/G	WP0325.0
SC-15924-C	9/10/97	URANIUM-238	1.8800	3.75	PCI/G	WP0325 0
SC-15925-S	9/10/97	ARSENIC	6.7000	0.52	UG/G	GE2150.0
SC-15925-S	9/10/97	RADIUM-226	1 1500	0.22	PCI/G	WP0325.0
SC-15925-S	9/10/97	RADIUM-228	1.2000	0.45	PCI/G	WP0325.0
SC-15925-S	9/10/97	THORIUM-230	2.1100	0.62	PCI/G	WP0325 0
SC-15925-S	9/10/97	URANIUM-238	1.4400	2.88	PCI/G	WP0325 0
SC-15926-S	9/10/97	ARSENIC	7.1000	0.53	UG/G	GE2150 0
SC-15926-S	9/10/97	RADIUM-226	1 0500	0.38	PCI/G	WP0325 0
SC-15926-S	9/10/97	RADIUM-228	1 1800	0.39	PCI/G	WP0325 0
SC-15926-S	9/10/97	THORIUM-230	0.9800	0.62	PCI/G	WP0325 0
SC-15926-S	9/10/97	URANIUM-238	1 8400	3.68	PCI/G	WP0325 0
SC-15928-C	9/10/97	ARSENIC	7.2000	0.49	UG/G	GE2150 0
SC-15928-C	9/10/97	RADIUM-226	0.9000	0.26	PCI/G	WP0325 0

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SC-15928-C	9/10/97	RADIUM-228	1.0600	0.38	PCI/G	WP0325.0
SC-15928-C	9/10/97	THORIUM-230	0.9600	0.62	PCI/G	WP0325.0
SC-15928-C	9/10/97	URANIUM-238	1.2800	2.56	PCI/G	WP0325.0
SC-15929-S	9/10/97	ARSENIC	7.1000	0.51	UG/G	GE2150.0
SC-15929-S	9/10/97	RADIUM-226	0.9200	0.20	PCI/G	WP0325.0
SC-15929-S	9/10/97	RADIUM-228	1.3200	0.41	PCI/G	WP0325.0
SC-15929-S	9/10/97	THORIUM-230	1.0300	0.62	PCI/G	WP0325.0
SC-15929-S	9/10/97	URANIUM-238	1.8400	3.68	PCI/G	WP0325.0
SC-15930-C	9/10/97	ARSENIC	8.6000	0.49	UG/G	GE2150.0
SC-15930-C	9/10/97	RADIUM-226	1.2000	0.29	PCI/G	WP0325.0
SC-15930-C	9/10/97	RADIUM-228	1.4800	0.40	PCI/G	WP0325.0
SC-15930-C	9/10/97	THORIUM-230	0.9800	0.62	PCI/G	WP0325.0
SC-15930-C	9/10/97	URANIUM-238	1.3100	2.61	PCI/G	WP0325.0
SC-15931-C	9/10/97	ARSENIC	7.4000	0.51	UG/G	GE2150.0
SC-15931-C	9/10/97	RADIUM-226	0.3300	0.65	PCI/G	WP0325.0
SC-15931-C	9/10/97	RADIUM-228	1.3400	0.49	PCI/G	WP0325.0
SC-15931-C	9/10/97	THORIUM-230	0.9100	0.62	PCI/G	WP0325.0
SC-15931-C	9/10/97	URANIUM-238	1.6700	3.33	PCI/G	WP0325.0
SC-15932-S	5/20/98	ARSENIC	4.0000	0.44	UG/G	QT2299.0
SC-15932-S	5/20/98	RADIUM-226	1.0000	0.31	PCI/G	WP0442.0
SC-15932-S	5/20/98	RADIUM-228	0.5900	1.17	PCI/G	WP0442.0
SC-15932-S	5/20/98	THORIUM-230	0.7800	0.62	PCI/G	WP0442.0
SC-15932-S	5/20/98	URANIUM-238	1.9500	3.90	PCI/G	WP0442.0
SC-15933-S	5/20/98	ARSENIC	6.9000	0.48	UG/G	QT2299.0
SC-15933-S	5/20/98	RADIUM-226	1.1600	0.32	PCI/G	WP0442.0
SC-15933-S	5/20/98	RADIUM-228	1.2000	0.32	PCI/G	WP0442.0
SC-15933-S	5/20/98	THORIUM-230	0.8900	0.62	PCI/G	WP0442.0
SC-15933-S	5/20/98	URANIUM-238	1.4200	2.83	PCI/G	WP0442.0
SC-15934-S	5/20/98	ARSENIC	10.8000	0.44	UG/G	QT2299.0
SC-15934-S	5/20/98	RADIUM-226	1.0900	0.31	PCI/G	WP0442.0
SC-15934-S	5/20/98	RADIUM-228	1.2400	0.56	PCI/G	WP0442.0
SC-15934-S	5/20/98	THORIUM-230	0.9800	0.62	PCI/G	WP0442.0
SC-15934-S	5/20/98	URANIUM-238	1.7000	3.40	PCI/G	WP0442.0
SC-15935-S	5/20/98	ARSENIC	5.2000	0.47	UG/G	QT2299.0
SC-15935-S	5/20/98	RADIUM-226	1.0700	0.28	PCI/G	WP0442.0
SC-15935-S	5/20/98	RADIUM-228	1.0500	0.36	PCI/G	WP0442.0
SC-15935-S	5/20/98	THORIUM-230	1.4500	0.62	PCI/G	WP0442.0
SC-15935-S	5/20/98	URANIUM-238	1.3900	2.78	PCI/G	WP0442.0
SC-15936-C	5/20/98	ARSENIC	8.1000	0.42	UG/G	QT2299.0
SC-15936-C	5/20/98	RADIUM-226	1.1300	0.37	PCI/G	WP0442.0
SC-15936-C	5/20/98	RADIUM-228	0.5800	1.16	PCI/G	WP0442.0
SC-15936-C	5/20/98	THORIUM-230	0.9300	0.62	PCI/G	WP0442.0
SC-15936-C	5/20/98	URANIUM-238	2.0100	4.02	PCI/G	WP0442.0
SC-16002-C	9/9/97	RADIUM-226	1.2000	0.34	PCI/G	WP0323.0
SC-16002-C	9/9/97	RADIUM-228	1.4300	0.72	PCI/G	WP0323.0
SC-16002-C	9/9/97	THORIUM-230	4.7600	0.62	PCI/G	WP0323.0
SC-16002-C	9/9/97	URANIUM-238	2.1100	4.21	PCI/G	WP0323.0
SC-16002-S	9/9/97	RADIUM-226	1.1600	0.24	PCI/G	WP0323.0
SC-16002-S	9/9/97	RADIUM-228	1.5200	0.37	PCI/G	WP0323.0
SC-16002-S	9/9/97	THORIUM-230	1.6500	0.62	PCI/G	WP0323.0
SC-16002-S	9/9/97	URANIUM-238	1.4500	2.89	PCI/G	WP0323.0
SC-16003-C	9/9/97	RADIUM-226	1.1800	0.44	PCI/G	WP0323.0
SC-16003-C	9/9/97	RADIUM-228	1.9200	0.44	PCI/G	WP0323.0
SC-16003-C	9/9/97	THORIUM-230	3.3500	0.62	PCI/G	WP0323.0
SC-16003-C	9/9/97	URANIUM-238	2.1700	4.34	PCI/G	WP0323.0
SC-16003-S	9/9/97	RADIUM-226	1.1600	0.32	PCI/G	WP0323.0

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SC-16003-S	9/9/97	RADIUM-228	1 2500	0 37	PCI/G	WP0323 0
SC-16003-S	9/9/97	THORIUM-230	0 9300	0.62	PCI/G	WP0323.0
SC-16003-S	9/9/97	URANIUM-238	1 4100	2.81	PCI/G	WP0323.0
SC-16006-S	9/9/97	RADIUM-226	1.3300	0.42	PCI/G	WP0323 0
SC-16006-S	9/9/97	RADIUM-228	1.4200	0.48	PCI/G	WP0323.0
SC-16006-S	9/9/97	THORIUM-230	1.1200	0.62	PCI/G	WP0323 0
SC-16006-S	9/9/97	URANIUM-238	2.0300	4.06	PCI/G	WP0323 0
SC-16007-S	9/9/97	RADIUM-226	1.3400	0 30	PCI/G	WP0323 0
SC-16007-S	9/9/97	RADIUM-228	1.6200	0.46	PCI/G	WP0323 0
SC-16007-S	9/9/97	THORIUM-230	1.1600	0.62	PCI/G	WP0323.0
SC-16007-S	9/9/97	URANIUM-238	1.3300	2.65	PCI/G	WP0323 0
SC-16008-S	9/9/97	RADIUM-226	1.8900	0 37	PCI/G	WP0323 0
SC-16008-S	9/9/97	RADIUM-228	1 5200	0.44	PCI/G	WP0323 0
SC-16008-S	9/9/97	THORIUM-230	1 6400	0.62	PCI/G	WP0323 0
SC-16008-S	9/9/97	URANIUM-238	2 1400	4.28	PCI/G	WP0323.0
SC-16009-C	9/9/97	RADIUM-226	1.2400	0.30	PCI/G	WP0323 0
SC-16009-C	9/9/97	RADIUM-228	1.1200	0.43	PCI/G	WP0323 0
SC-16009-C	9/9/97	THORIUM-230	1.2200	0 62	PCI/G	WP0323 0
SC-16009-C	9/9/97	URANIUM-238	1.9600	1 92	PCI/G	WP0323 0
SC-16010-S	9/9/97	RADIUM-226	5 9800	0.38	PCI/G	WP0323 0
SC-16010-S	9/9/97	RADIUM-228	0.6300	1.26	PCI/G	WP0323.0
SC-16010-S	9/9/97	THORIUM-230	1.1900	0.62	PCI/G	WP0323.0
SC-16010-S	9/9/97	URANIUM-238	2 2500	4.63	PCI/G	WP0323 0
SC-16011-C	9/9/97	RADIUM-226	1 4800	0.30	PCI/G	WP0323 0
SC-16011-C	9/9/97	RADIUM-228	1 3400	0.49	PCI/G	WP0323 0
SC-16011-C	9/9/97	THORIUM-230	2 7000	0 62	PCI/G	WP0323 0
SC-16011-C	9/9/97	URANIUM-238	1 5300	3 05	PCI/G	WP0323 0
SC-16011-S	9/9/97	RADIUM-226	1 4700	0 37	PCI/G	WP0323 0
SC-16011-S	9/9/97	RADIUM-228	1 7500	0 60	PCI/G	WP0323 0
SC-16011-S	9/9/97	THORIUM-230	3 7000	0.62	PCI/G	WP0323 0
SC-16011-S	9/9/97	URANIUM-238	3 4600	3.34	PCI/G	WP0323 0
SC-16013-S	9/9/97	RADIUM-226	1 6300	0.28	PCI/G	WP0323 0
SC-16013-S	9/9/97	RADIUM-228	1 4400	0 50	PCI/G	WP0323 0
SC-16013-S	9/9/97	THORIUM-230	3 7800	0 62	PCI/G	WP0323 0
SC-16013-S	9/9/97	URANIUM-238	1 5600	3.11	PCI/G	WP0323 0
SC-16014-S	9/9/97	RADIUM-226	1 4800	0.13	PCI/G	WP0323 0
SC-16014-S	9/9/97	RADIUM-228	1 2100	0.47	PCI/G	WP0323 0
SC-16014-S	9/9/97	THORIUM-230	1 2800	0.62	PCI/G	WP0323.0
SC-16014-S	9/9/97	URANIUM-238	2 7000	2.94	PCI/G	WP0323 0
SC-16017-C	9/9/97	RADIUM-226	2 5500	0.30	PCI/G	WP0323 0
SC-16017-C	9/9/97	RADIUM-228	2 7800	0.58	PCI/G	WP0323 0
SC-16017-C	9/9/97	THORIUM-230	18 5000	0.62	PCI/G	WP0323 0
SC-16017-C	9/9/97	URANIUM-238	4 7000	3 07	PCI/G	WP0323 0
SC-16017-C-HS01	9/23/97	THORIUM-230	1 1200	0 62	PCI/G	WP0327.0
SC-16017-C-HS02	9/23/97	THORIUM-230	2 3600	0 62	PCI/G	WP0327 0
SC-16017-C-HS03	9/23/97	THORIUM-230	21 2000	0.62	PCI/G	WP0327 0
SC-16017-C-HS04	9/23/97	THORIUM-230	1.3900	0 62	PCI/G	WP0327 0
SC-16017-C-HS05	9/25/97	THORIUM-230	2.3200	0.62	PCI/G	WP0328 0
SC-16017-C-HS06	9/25/97	THORIUM-230	1.0700	0.62	PCI/G	WP0328.0
SC-16017-C-HS07	9/25/97	THORIUM-230	1.0900	0.62	PCI/G	WP0328 0
SC-16017-C-HS08	9/25/97	THORIUM-230	0 9400	0.62	PCI/G	WP0328 0
SC-16017-C-RS01	10/21/97	THORIUM-230	1 2900	0.62	PCI/G	WP0342 0
SC-16017-C-RS02	10/21/97	THORIUM-230	1.4300	0 62	PCI/G	WP0342 0
SC-16017-C-RS03	10/21/97	THORIUM-230	1.0400	0 62	PCI/G	WP0342 0
SC-16017-C-RS04	10/21/97	THORIUM-230	0.9800	0 62	PCI/G	WP0342 0
SC-16017-C-RS05	10/21/97	THORIUM-230	1.0300	0.62	PCI/G	WP0342 0

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SC-16017-S	9/9/97	RADIUM-226	1.5000	0.36	PCI/G	WP0323.0
SC-16017-S	9/9/97	RADIUM-228	1.6200	0.75	PCI/G	WP0323.0
SC-16017-S	9/9/97	THORIUM-230	2.1700	0.62	PCI/G	WP0323.0
SC-16017-S	9/9/97	URANIUM-238	1.9600	3.91	PCI/G	WP0323.0
SC-16018-S	9/9/97	RADIUM-226	1.2200	0.23	PCI/G	WP0323.0
SC-16018-S	9/9/97	RADIUM-228	1.4600	0.43	PCI/G	WP0323.0
SC-16018-S	9/9/97	THORIUM-230	0.8000	0.62	PCI/G	WP0323.0
SC-16018-S	9/9/97	URANIUM-238	1.3500	2.69	PCI/G	WP0323.0
SC-16018-S-RS	12/23/97	RADIUM-226	1.1900	0.22	PCI/G	WP0380.0
SC-16018-S-RS	12/23/97	RADIUM-228	1.3300	0.37	PCI/G	WP0380.0
SC-16018-S-RS	12/23/97	THORIUM-230	1.1500	0.62	PCI/G	WP0380.0
SC-16018-S-RS	12/23/97	URANIUM-238	1.4000	2.79	PCI/G	WP0380.0
SC-16021-C	9/9/97	RADIUM-226	1.4200	0.34	PCI/G	WP0323.0
SC-16021-C	9/9/97	RADIUM-228	1.2300	0.54	PCI/G	WP0323.0
SC-16021-C	9/9/97	THORIUM-230	1.1400	0.62	PCI/G	WP0323.0
SC-16021-C	9/9/97	URANIUM-238	1.7900	3.58	PCI/G	WP0323.0
SC-16021-S	9/9/97	RADIUM-226	1.5800	0.32	PCI/G	WP0323.0
SC-16021-S	9/9/97	RADIUM-228	1.4600	0.38	PCI/G	WP0323.0
SC-16021-S	9/9/97	THORIUM-230	1.0400	0.62	PCI/G	WP0323.0
SC-16021-S	9/9/97	URANIUM-238	1.3900	2.78	PCI/G	WP0323.0
SC-16022-S	9/9/97	RADIUM-226	1.5300	0.46	PCI/G	WP0323.0
SC-16022-S	9/9/97	RADIUM-228	1.0600	0.60	PCI/G	WP0323.0
SC-16022-S	9/9/97	THORIUM-230	1.2000	0.62	PCI/G	WP0323.0
SC-16022-S	9/9/97	URANIUM-238	2.0100	4.01	PCI/G	WP0323.0
SC-16022-S-RS	12/23/97	RADIUM-226	1.2600	0.38	PCI/G	WP0380.0
SC-16022-S-RS	12/23/97	RADIUM-228	1.4000	0.38	PCI/G	WP0380.0
SC-16022-S-RS	12/23/97	THORIUM-230	1.1400	0.62	PCI/G	WP0380.0
SC-16022-S-RS	12/23/97	URANIUM-238	1.9600	3.91	PCI/G	WP0380.0
SC-16025-S	9/9/97	RADIUM-226	1.2900	0.28	PCI/G	WP0323.0
SC-16025-S	9/9/97	RADIUM-228	0.8700	0.35	PCI/G	WP0323.0
SC-16025-S	9/9/97	THORIUM-230	1.2200	0.62	PCI/G	WP0323.0
SC-16025-S	9/9/97	URANIUM-238	1.2900	2.58	PCI/G	WP0323.0
SC-16025-S-RS	12/23/97	RADIUM-226	1.3000	0.22	PCI/G	WP0380.0
SC-16025-S-RS	12/23/97	RADIUM-228	1.4300	0.40	PCI/G	WP0380.0
SC-16025-S-RS	12/23/97	THORIUM-230	1.9900	0.62	PCI/G	WP0380.0
SC-16025-S-RS	12/23/97	URANIUM-238	1.3400	2.68	PCI/G	WP0380.0
SC-16026-S	9/9/97	RADIUM-226	1.3400	0.20	PCI/G	WP0323.0
SC-16026-S	9/9/97	RADIUM-228	0.6000	1.19	PCI/G	WP0323.0
SC-16026-S	9/9/97	THORIUM-230	0.9500	0.62	PCI/G	WP0323.0
SC-16026-S	9/9/97	URANIUM-238	1.8600	3.71	PCI/G	WP0323.0
SC-16026-S-RS	12/23/97	RADIUM-226	1.5300	0.32	PCI/G	WP0380.0
SC-16026-S-RS	12/23/97	RADIUM-228	1.0800	0.38	PCI/G	WP0380.0
SC-16026-S-RS	12/23/97	THORIUM-230	1.3600	0.62	PCI/G	WP0380.0
SC-16026-S-RS	12/23/97	URANIUM-238	1.4100	2.03	PCI/G	WP0380.0
SC-16028-S	9/9/97	RADIUM-226	1.3800	0.30	PCI/G	WP0323.0
SC-16028-S	9/9/97	RADIUM-228	1.3200	0.38	PCI/G	WP0323.0
SC-16028-S	9/9/97	THORIUM-230	1.4600	0.62	PCI/G	WP0323.0
SC-16028-S	9/9/97	URANIUM-238	1.3700	2.73	PCI/G	WP0323.0
SC-16029-S	9/9/97	RADIUM-226	1.6700	0.32	PCI/G	WP0323.0
SC-16029-S	9/9/97	RADIUM-228	1.6300	0.63	PCI/G	WP0323.0
SC-16029-S	9/9/97	THORIUM-230	1.5400	0.62	PCI/G	WP0323.0
SC-16029-S	9/9/97	URANIUM-238	2.0800	4.15	PCI/G	WP0323.0
SC-16029-S-RS	12/23/97	RADIUM-226	1.1600	0.34	PCI/G	WP0380.0
SC-16029-S-RS	12/23/97	RADIUM-228	1.5900	0.54	PCI/G	WP0380.0
SC-16029-S-RS	12/23/97	THORIUM-230	1.2400	0.62	PCI/G	WP0380.0
SC-16029-S-RS	12/23/97	URANIUM-238	1.9600	3.91	PCI/G	WP0380.0

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SC-16030-C	9/9/97	RADIUM-226	0 9600	0 29	PCI/G	WP0323 0
SC-16030-C	9/9/97	RADIUM-228	1.1800	0 40	PCI/G	WP0323 0
SC-16030-C	9/9/97	THORIUM-230	1.0500	0.62	PCI/G	WP0323 0
SC-16030-C	9/9/97	URANIUM-238	1.2500	2.50	PCI/G	WP0323 0
SC-16031-S	9/9/97	RADIUM-226	1 0400	0.40	PCI/G	WP0323 0
SC-16031-S	9/9/97	RADIUM-228	1 0700	0 48	PCI/G	WP0323 0
SC-16031-S	9/9/97	THORIUM-230	1.2900	0 62	PCI/G	WP0323 0
SC-16031-S	9/9/97	URANIUM-238	1.9900	3.97	PCI/G	WP0323 0
SC-16033-C	9/9/97	RADIUM-226	1.2000	0.36	PCI/G	WP0324.0
SC-16033-C	9/9/97	RADIUM-228	1.2800	0.43	PCI/G	WP0324.0
SC-16033-C	9/9/97	THORIUM-230	1.0800	0.62	PCI/G	WP0324.0
SC-16033-C	9/9/97	URANIUM-238	1.8200	3.64	PCI/G	WP0324.0
SC-16034-C	9/9/97	RADIUM-226	1.2400	0.28	PCI/G	WP0324.0
SC-16034-C	9/9/97	RADIUM-228	1.4200	0.32	PCI/G	WP0324.0
SC-16034-C	9/9/97	THORIUM-230	1.2000	0 62	PCI/G	WP0324 0
SC-16034-C	9/9/97	URANIUM-238	1.4000	2.79	PCI/G	WP0324 0
SC-16034-S	9/9/97	RADIUM-226	1 1200	0.36	PCI/G	WP0324 0
SC-16034-S	9/9/97	RADIUM-228	1 3800	0.46	PCI/G	WP0324 0
SC-16034-S	9/9/97	THORIUM-230	1 1700	0.62	PCI/G	WP0324 0
SC-16034-S	9/9/97	URANIUM-238	1.8300	3 65	PCI/G	WP0324 0
SC-16036-S	9/9/97	RADIUM-226	0 8500	0.25	PCI/G	WP0324 0
SC-16036-S	9/9/97	RADIUM-228	1 2600	0.32	PCI/G	WP0324 0
SC-16036-S	9/9/97	THORIUM-230	0 9900	0.62	PCI/G	WP0324 0
SC-16036-S	9/9/97	URANIUM-238	1.3200	2 64	PCI/G	WP0324 0
SC-16037-S	9/9/97	RADIUM-226	0 8700	0.40	PCI/G	WP0324 0
SC-16037-S	9/9/97	RADIUM-228	1 2100	0.38	PCI/G	WP0324.0
SC-16037-S	9/9/97	THORIUM-230	0 9500	0 62	PCI/G	WP0324.0
SC-16037-S	9/9/97	URANIUM-238	1.8400	3.67	PCI/G	WP0324.0
SC-16102-S	9/9/97	RADIUM-226	2.9200	0.68	PCI/G	WP0324 0
SC-16102-S	9/9/97	RADIUM-228	5 1600	0 99	PCI/G	WP0324 0
SC-16102-S	9/9/97	THORIUM-230	50.6000	0.62	PCI/G	WP0324 0
SC-16102-S	9/9/97	URANIUM-238	12.5000	5.28	PCI/G	WP0324 0
SC-16102-S-HS01	9/25/97	THORIUM-230	1 7600	0.62	PCI/G	WP0328 0
SC-16102-S-HS02	9/25/97	THORIUM-230	3.2000	0.62	PCI/G	WP0328 0
SC-16102-S-HS03	9/25/97	THORIUM-230	2 6500	0.62	PCI/G	WP0328 0
SC-16102-S-HS04	9/25/97	THORIUM-230	5 4500	0 62	PCI/G	WP0328 0
SC-16102-S-RS01	10/21/97	RADIUM-226	0 8300	0 43	PCI/G	WP0342 0
SC-16102-S-RS01	10/21/97	RADIUM-228	0 6200	1.23	PCI/G	WP0342 0
SC-16102-S-RS01	10/21/97	THORIUM-230	0.9800	0 62	PCI/G	WP0342 0
SC-16102-S-RS02	10/21/97	RADIUM-226	0 9900	0.25	PCI/G	WP0342 0
SC-16102-S-RS02	10/21/97	RADIUM-228	1.4300	0.38	PCI/G	WP0342 0
SC-16102-S-RS02	10/21/97	THORIUM-230	1 1300	0.62	PCI/G	WP0342 0
SC-16102-S-RS03	10/21/97	RADIUM-226	0.9800	0.33	PCI/G	WP0342 0
SC-16102-S-RS03	10/21/97	RADIUM-228	0.9800	0.45	PCI/G	WP0342 0
SC-16102-S-RS03	10/21/97	THORIUM-230	0.9400	0 62	PCI/G	WP0342 0
SC-16102-S-RS04	10/21/97	RADIUM-226	1.0700	0.23	PCI/G	WP0342 0
SC-16102-S-RS04	10/21/97	RADIUM-228	1.3300	0 32	PCI/G	WP0342 0
SC-16102-S-RS04	10/21/97	THORIUM-230	1 6900	0.62	PCI/G	WP0342 0
SC-16102-S-RS05	10/21/97	RADIUM-226	1.0500	0.38	PCI/G	WP0342.0
SC-16102-S-RS05	10/21/97	RADIUM-228	1.0800	0.69	PCI/G	WP0342 0
SC-16102-S-RS05	10/21/97	THORIUM-230	1 4500	0.62	PCI/G	WP0342 0
SC-16103-C	9/9/97	RADIUM-226	1 7100	0.31	PCI/G	WP0324 0
SC-16103-C	9/9/97	RADIUM-228	1 1800	0.40	PCI/G	WP0324 0
SC-16103-C	9/9/97	THORIUM-230	1.2000	0.62	PCI/G	WP0324 0
SC-16103-C	9/9/97	URANIUM-238	1.5000	3.00	PCI/G	WP0324 0
SC-16103-S	9/9/97	RADIUM-226	1 5400	0.37	PCI/G	WP0324 0

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SC-16103-S	9/9/97	RADIUM-228	1.3700	0.55	PCI/G	WP0324.0
SC-16103-S	9/9/97	THORIUM-230	2.0700	0.62	PCI/G	WP0324.0
SC-16103-S	9/9/97	URANIUM-238	2.1700	4.35	PCI/G	WP0324.0
SC-16104-S	9/9/97	RADIUM-226	1.3600	0.27	PCI/G	WP0324.0
SC-16104-S	9/9/97	RADIUM-228	1.2400	0.44	PCI/G	WP0324.0
SC-16104-S	9/9/97	THORIUM-230	1.1600	0.62	PCI/G	WP0324.0
SC-16104-S	9/9/97	URANIUM-238	1.4000	2.79	PCI/G	WP0324.0
SC-16104-S-RS	11/19/97	RADIUM-226	1.4300	0.21	PCI/G	WP0359.0
SC-16104-S-RS	11/19/97	RADIUM-228	1.1600	0.21	PCI/G	WP0359.0
SC-16104-S-RS	11/19/97	THORIUM-230	0.8300	0.62	PCI/G	WP0359.0
SC-16104-S-RS	11/19/97	URANIUM-238	1.9700	3.94	PCI/G	WP0359.0
SC-16105-S	9/9/97	RADIUM-226	1.3600	0.43	PCI/G	WP0324.0
SC-16105-S	9/9/97	RADIUM-228	0.5400	1.07	PCI/G	WP0324.0
SC-16105-S	9/9/97	THORIUM-230	1.2900	0.62	PCI/G	WP0324.0
SC-16105-S	9/9/97	URANIUM-238	1.9000	3.79	PCI/G	WP0324.0
SC-16105-S-RS	11/19/97	RADIUM-226	1.6600	0.32	PCI/G	WP0359.0
SC-16105-S-RS	11/19/97	RADIUM-228	1.1000	0.47	PCI/G	WP0359.0
SC-16105-S-RS	11/19/97	THORIUM-230	1.0900	0.62	PCI/G	WP0359.0
SC-16105-S-RS	11/19/97	URANIUM-238	1.4000	2.79	PCI/G	WP0359.0
SC-16106-S	9/9/97	RADIUM-226	1.6700	0.29	PCI/G	WP0324.0
SC-16106-S	9/9/97	RADIUM-228	1.4700	0.39	PCI/G	WP0324.0
SC-16106-S	9/9/97	THORIUM-230	2.2800	0.62	PCI/G	WP0324.0
SC-16106-S	9/9/97	URANIUM-238	1.9900	2.60	PCI/G	WP0324.0
SC-16106-S-RS	11/19/97	RADIUM-226	1.5300	0.45	PCI/G	WP0359.0
SC-16106-S-RS	11/19/97	RADIUM-228	1.3200	0.48	PCI/G	WP0359.0
SC-16106-S-RS	11/19/97	THORIUM-230	1.3600	0.62	PCI/G	WP0359.0
SC-16106-S-RS	11/19/97	URANIUM-238	1.9100	3.82	PCI/G	WP0359.0
SC-16107-S	9/9/97	RADIUM-226	1.5700	0.35	PCI/G	WP0324.0
SC-16107-S	9/9/97	RADIUM-228	1.5000	0.59	PCI/G	WP0324.0
SC-16107-S	9/9/97	THORIUM-230	1.4500	0.62	PCI/G	WP0324.0
SC-16107-S	9/9/97	URANIUM-238	2.0100	4.01	PCI/G	WP0324.0
SC-16109-S	9/9/97	RADIUM-226	1.0900	0.31	PCI/G	WP0324.0
SC-16109-S	9/9/97	RADIUM-228	1.4100	0.46	PCI/G	WP0324.0
SC-16109-S	9/9/97	THORIUM-230	1.3000	0.62	PCI/G	WP0324.0
SC-16109-S	9/9/97	URANIUM-238	1.4200	2.84	PCI/G	WP0324.0
SC-16110-S	9/9/97	RADIUM-226	0.7600	0.32	PCI/G	WP0324.0
SC-16110-S	9/9/97	RADIUM-228	1.1200	0.40	PCI/G	WP0324.0
SC-16110-S	9/9/97	THORIUM-230	1.0400	0.62	PCI/G	WP0324.0
SC-16110-S	9/9/97	URANIUM-238	1.7800	3.55	PCI/G	WP0324.0
SC-16111-S	9/9/97	RADIUM-226	1.7200	0.26	PCI/G	WP0324.0
SC-16111-S	9/9/97	RADIUM-228	1.5400	0.41	PCI/G	WP0324.0
SC-16111-S	9/9/97	THORIUM-230	3.4700	0.62	PCI/G	WP0324.0
SC-16111-S	9/9/97	URANIUM-238	1.4800	2.96	PCI/G	WP0324.0
SC-16111-S-RS	11/19/97	RADIUM-226	1.2200	0.27	PCI/G	WP0359.0
SC-16111-S-RS	11/19/97	RADIUM-228	1.1400	0.43	PCI/G	WP0359.0
SC-16111-S-RS	11/19/97	THORIUM-230	0.8600	0.62	PCI/G	WP0359.0
SC-16111-S-RS	11/19/97	URANIUM-238	1.2900	1.90	PCI/G	WP0359.0
SC-16114-C	9/9/97	RADIUM-226	1.5100	0.30	PCI/G	WP0324.0
SC-16114-C	9/9/97	RADIUM-228	0.5800	1.16	PCI/G	WP0324.0
SC-16114-C	9/9/97	THORIUM-230	1.3600	0.62	PCI/G	WP0324.0
SC-16114-C	9/9/97	URANIUM-238	1.9300	3.86	PCI/G	WP0324.0
SC-16114-C-RS	11/19/97	RADIUM-226	1.3400	0.33	PCI/G	WP0359.0
SC-16114-C-RS	11/19/97	RADIUM-228	1.0300	0.50	PCI/G	WP0359.0
SC-16114-C-RS	11/19/97	THORIUM-230	1.0600	0.62	PCI/G	WP0359.0
SC-16114-C-RS	11/19/97	URANIUM-238	1.8800	3.75	PCI/G	WP0359.0
SC-16115-C	9/9/97	RADIUM-226	1.5600	0.26	PCI/G	WP0324.0

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SC-16115-C	9/9/97	RADIUM-228	1 2800	0.45	PCI/G	WP0324.0
SC-16115-C	9/9/97	THORIUM-230	1 1000	0.62	PCI/G	WP0324 0
SC-16115-C	9/9/97	URANIUM-238	1.3400	2.67	PCI/G	WP0324 0
SC-16115-C-HS01	9/16/97	RADIUM-226	1 9600	0.29	PCI/G	WP0326 0
SC-16115-C-HS01	9/16/97	RADIUM-228	1.4400	0 40	PCI/G	WP0326 0
SC-16115-C-HS01	9/16/97	THORIUM-230	5.0600	0 62	PCI/G	WP0326 0
SC-16115-C-HS01	9/16/97	URANIUM-238	8.2600	3.18	PCI/G	WP0326 0
SC-16115-C-RS	11/19/97	RADIUM-226	1 5000	0.22	PCI/G	WP0359 0
SC-16115-C-RS	11/19/97	RADIUM-228	1.5400	0.43	PCI/G	WP0359 0
SC-16115-C-RS	11/19/97	THORIUM-230	1 0100	0.62	PCI/G	WP0359.0
SC-16115-C-RS	11/19/97	URANIUM-238	1.4000	2.79	PCI/G	WP0359 0
SC-16115-C-RS01	10/21/97	THORIUM-230	2.0800	0.62	PCI/G	WP0342.0
SC-16115-C-RS02	10/21/97	THORIUM-230	4 7500	0.62	PCI/G	WP0342 0
SC-16115-C-RS03	10/21/97	THORIUM-230	1.2800	0.62	PCI/G	WP0342 0
SC-16115-C-RS04	10/21/97	THORIUM-230	1 1200	0.62	PCI/G	WP0342 0
SC-16115-C-RS05	10/21/97	THORIUM-230	1.2300	0.62	PCI/G	WP0342.0
SC-16116-S	9/9/97	RADIUM-226	1.3900	0.40	PCI/G	WP0324 0
SC-16116-S	9/9/97	RADIUM-228	1 4100	0.23	PCI/G	WP0324 0
SC-16116-S	9/9/97	THORIUM-230	1 7900	0.62	PCI/G	WP0324 0
SC-16116-S	9/9/97	URANIUM-238	2.1200	4.24	PCI/G	WP0324 0
SC-16116-S-RS	11/19/97	RADIUM-226	1.7400	0 27	PCI/G	WP0359 0
SC-16116-S-RS	11/19/97	RADIUM-228	1 6600	0.51	PCI/G	WP0359 0
SC-16116-S-RS	11/19/97	THORIUM-230	0.9200	0.62	PCI/G	WP0359 0
SC-16116-S-RS	11/19/97	URANIUM-238	2.0600	4 11	PCI/G	WP0359.0
SC-16117-S	9/9/97	RADIUM-226	1 5200	0 24	PCI/G	WP0324 0
SC-16117-S	9/9/97	RADIUM-228	1 2700	0.37	PCI/G	WP0324 0
SC-16117-S	9/9/97	THORIUM-230	1 0000	0.62	PCI/G	WP0324 0
SC-16117-S	9/9/97	URANIUM-238	1 3700	2.74	PCI/G	WP0324 0
SC-16117-S-RS	11/19/97	RADIUM-226	1 7500	0 29	PCI/G	WP0359 0
SC-16117-S-RS	11/19/97	RADIUM-228	1.1200	0.38	PCI/G	WP0359 0
SC-16117-S-RS	11/19/97	THORIUM-230	1 0600	0 62	PCI/G	WP0359 0
SC-16117-S-RS	11/19/97	URANIUM-238	1 4000	2 80	PCI/G	WP0359 0
SC-16117-S-RS01	10/21/97	THORIUM-230	4 0700	0 62	PCI/G	WP0342 0
SC-16117-S-RS02	10/21/97	THORIUM-230	1 1400	0.62	PCI/G	WP0342 0
SC-16117-S-RS03	10/21/97	THORIUM-230	1 6600	0.62	PCI/G	WP0342 0
SC-16117-S-RS04	10/21/97	THORIUM-230	1 5400	0.62	PCI/G	WP0342.0
SC-16117-S-RS05	10/21/97	THORIUM-230	1 6900	0.62	PCI/G	WP0342 0
SC-16118-S	9/9/97	RADIUM-226	1 4500	0 31	PCI/G	WP0324 0
SC-16118-S	9/9/97	RADIUM-228	1.5200	0 61	PCI/G	WP0324 0
SC-16118-S	9/9/97	THORIUM-230	2 6400	0 62	PCI/G	WP0324 0
SC-16118-S	9/9/97	URANIUM-238	2.2500	4.50	PCI/G	WP0324 0
SC-16118-S-RS	11/19/97	RADIUM-226	1.4800	0.41	PCI/G	WP0359 0
SC-16118-S-RS	11/19/97	RADIUM-228	1.1000	0 46	PCI/G	WP0359.0
SC-16118-S-RS	11/19/97	THORIUM-230	1 0300	0.62	PCI/G	WP0359.0
SC-16118-S-RS	11/19/97	URANIUM-238	1.9100	3.82	PCI/G	WP0359.0
SC-16119-S	9/9/97	RADIUM-226	2.9500	0 43	PCI/G	WP0324 0
SC-16119-S	9/9/97	RADIUM-228	5.2200	0.59	PCI/G	WP0324.0
SC-16119-S	9/9/97	THORIUM-230	25.0000	0.62	PCI/G	WP0324 0
SC-16119-S	9/9/97	URANIUM-238	6.2700	3.45	PCI/G	WP0324.0
SC-16119-S-HS01	9/25/97	THORIUM-230	5.0700	0.62	PCI/G	WP0328.0
SC-16119-S-HS02	9/25/97	THORIUM-230	5 3800	0.62	PCI/G	WP0328.0
SC-16119-S-HS03	9/25/97	THORIUM-230	1.0200	0.62	PCI/G	WP0328.0
SC-16119-S-HS04	9/25/97	THORIUM-230	2.4400	0.62	PCI/G	WP0328.0
SC-16119-S-RS01	10/21/97	RADIUM-226	1.7200	0 29	PCI/G	WP0342 0
SC-16119-S-RS01	10/21/97	RADIUM-228	1.4200	0.40	PCI/G	WP0342 0
SC-16119-S-RS01	10/21/97	THORIUM-230	2 9500	0 62	PCI/G	WP0342 0

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SC-16119-S-RS02	10/21/97	RADIUM-226	1.6100	0.33	PCI/G	WP0342.0
SC-16119-S-RS02	10/21/97	RADIUM-228	1.4700	0.69	PCI/G	WP0342.0
SC-16119-S-RS02	10/21/97	THORIUM-230	2.8300	0.62	PCI/G	WP0342.0
SC-16119-S-RS03	10/21/97	RADIUM-226	2.0300	0.35	PCI/G	WP0342.0
SC-16119-S-RS03	10/21/97	RADIUM-228	1.1400	0.41	PCI/G	WP0342.0
SC-16119-S-RS03	10/21/97	THORIUM-230	2.7700	0.62	PCI/G	WP0342.0
SC-16119-S-RS04	10/21/97	RADIUM-226	1.7900	0.26	PCI/G	WP0342.0
SC-16119-S-RS04	10/21/97	RADIUM-228	1.7200	0.48	PCI/G	WP0342.0
SC-16119-S-RS04	10/21/97	THORIUM-230	2.2400	0.62	PCI/G	WP0342.0
SC-16119-S-RS05	10/21/97	RADIUM-226	1.5600	0.32	PCI/G	WP0342.0
SC-16119-S-RS05	10/21/97	RADIUM-228	1.6700	0.60	PCI/G	WP0342.0
SC-16119-S-RS05	10/21/97	THORIUM-230	1.9000	0.62	PCI/G	WP0342.0
SC-16123-C	9/9/97	RADIUM-226	1.3400	0.32	PCI/G	WP0324.0
SC-16123-C	9/9/97	RADIUM-228	1.4300	0.50	PCI/G	WP0324.0
SC-16123-C	9/9/97	THORIUM-230	1.0200	0.62	PCI/G	WP0324.0
SC-16123-C	9/9/97	URANIUM-238	2.0700	4.13	PCI/G	WP0324.0
SC-16123-C-RS	11/19/97	RADIUM-226	1.3900	0.29	PCI/G	WP0359.0
SC-16123-C-RS	11/19/97	RADIUM-228	1.2500	0.38	PCI/G	WP0359.0
SC-16123-C-RS	11/19/97	THORIUM-230	1.3600	0.62	PCI/G	WP0359.0
SC-16123-C-RS	11/19/97	URANIUM-238	1.3700	2.73	PCI/G	WP0359.0
SC-16125-S	9/9/97	RADIUM-226	1.3900	0.30	PCI/G	WP0324.0
SC-16125-S	9/9/97	RADIUM-228	1.2300	0.46	PCI/G	WP0324.0
SC-16125-S	9/9/97	THORIUM-230	1.2700	0.62	PCI/G	WP0324.0
SC-16125-S	9/9/97	URANIUM-238	1.4000	2.79	PCI/G	WP0324.0
SC-16126-S	9/9/97	RADIUM-226	2.4100	0.49	PCI/G	WP0324.0
SC-16126-S	9/9/97	RADIUM-228	2.0900	0.67	PCI/G	WP0324.0
SC-16126-S	9/9/97	THORIUM-230	15.8000	0.62	PCI/G	WP0324.0
SC-16126-S	9/9/97	URANIUM-238	2.3900	4.78	PCI/G	WP0324.0
SC-16126-S-HS01	9/23/97	THORIUM-230	5.2300	0.62	PCI/G	WP0327.0
SC-16126-S-HS02	9/23/97	THORIUM-230	3.0000	0.62	PCI/G	WP0327.0
SC-16126-S-HS03	9/23/97	THORIUM-230	1.5900	0.62	PCI/G	WP0327.0
SC-16126-S-HS04	9/23/97	THORIUM-230	4.5100	0.62	PCI/G	WP0327.0
SC-16127-S	9/9/97	RADIUM-226	1.5500	0.38	PCI/G	WP0324.0
SC-16127-S	9/9/97	RADIUM-228	1.5900	0.44	PCI/G	WP0324.0
SC-16127-S	9/9/97	THORIUM-230	1.3200	0.62	PCI/G	WP0324.0
SC-16127-S	9/9/97	URANIUM-238	2.2600	4.51	PCI/G	WP0324.0
SC-16130-C	9/9/97	RADIUM-226	1.6600	0.27	PCI/G	WP0324.0
SC-16130-C	9/9/97	RADIUM-228	1.4000	0.41	PCI/G	WP0324.0
SC-16130-C	9/9/97	THORIUM-230	1.7000	0.62	PCI/G	WP0324.0
SC-16130-C	9/9/97	URANIUM-238	1.4600	2.91	PCI/G	WP0324.0
SC-25310-S	7/8/98	RADIUM-226	1.2100	0.43	PCI/G	WP0457.0
SC-25310-S	7/8/98	RADIUM-228	1.5700	0.42	PCI/G	WP0457.0
SC-25310-S	7/8/98	THORIUM-230	1.0700	0.62	PCI/G	WP0457.0
SC-25310-S	7/8/98	URANIUM-238	1.4000	2.95	PCI/G	WP0457.0
SC-25311-S	7/8/98	RADIUM-226	1.0900	0.22	PCI/G	WP0457.0
SC-25311-S	7/8/98	RADIUM-228	1.2200	0.44	PCI/G	WP0457.0
SC-25311-S	7/8/98	THORIUM-230	0.9400	0.62	PCI/G	WP0457.0
SC-25311-S	7/8/98	URANIUM-238	1.3000	2.60	PCI/G	WP0457.0
SC-25315-C	7/8/98	RADIUM-226	1.0900	0.23	PCI/G	WP0457.0
SC-25315-C	7/8/98	RADIUM-228	1.2200	0.51	PCI/G	WP0457.0
SC-25315-C	7/8/98	THORIUM-230	1.0600	0.62	PCI/G	WP0457.0
SC-25315-C	7/8/98	URANIUM-238	1.8100	3.61	PCI/G	WP0457.0
SC-25316-S	7/8/98	RADIUM-226	0.9200	0.23	PCI/G	WP0457.0
SC-25316-S	7/8/98	RADIUM-228	1.2700	0.37	PCI/G	WP0457.0
SC-25316-S	7/8/98	THORIUM-230	0.7800	0.62	PCI/G	WP0457.0
SC-25316-S	7/8/98	URANIUM-238	1.2900	2.58	PCI/G	WP0457.0

Appendix D
WP-471 Confirmation Results

SC-25317-S	7/8/98	RADIUM-226	3 0800	0 52	PCI/G	WP0457 0
SC-25317-S	7/8/98	RADIUM-228	1.3500	0.64	PCI/G	WP0457.0
SC-25317-S	7/8/98	THORIUM-230	1.1000	0.62	PCI/G	WP0457 0
SC-25317-S	7/8/98	URANIUM-238	2.0800	4 15	PCI/G	WP0457 0
SC-25321-C	7/8/98	RADIUM-226	1 1000	0.25	PCI/G	WP0457 0
SC-25321-C	7/8/98	RADIUM-228	1.4300	0.36	PCI/G	WP0457.0
SC-25321-C	7/8/98	THORIUM-230	0.8900	0.62	PCI/G	WP0457.0
SC-25321-C	7/8/98	URANIUM-238	1.4000	2.80	PCI/G	WP0457 0
SC-25322-S	7/8/98	RADIUM-226	1.4600	0.33	PCI/G	WP0457.0
SC-25322-S	7/8/98	RADIUM-228	1.3200	0.46	PCI/G	WP0457 0
SC-25322-S	7/8/98	THORIUM-230	1.0000	0.62	PCI/G	WP0457.0
SC-25322-S	7/8/98	URANIUM-238	1.9300	3.85	PCI/G	WP0457 0
SC-25323-S	7/8/98	RADIUM-226	1.1200	0.26	PCI/G	WP0457.0
SC-25323-S	7/8/98	RADIUM-228	1 1500	0.36	PCI/G	WP0457 0
SC-25323-S	7/8/98	THORIUM-230	0 8800	0.62	PCI/G	WP0457 0
SC-25323-S	7/8/98	URANIUM-238	1.3800	2 76	PCI/G	WP0457.0
SC-25402-S	7/8/98	RADIUM-226	0.9800	0 30	PCI/G	WP0457 0
SC-25402-S	7/8/98	RADIUM-228	1 5500	0 53	PCI/G	WP0457 0
SC-25402-S	7/8/98	THORIUM-230	0 8400	0 62	PCI/G	WP0457 0
SC-25402-S	7/8/98	URANIUM-238	1 8300	3.65	PCI/G	WP0457 0
SC-25403-S	7/8/98	RADIUM-226	1.2500	0.24	PCI/G	WP0457 0
SC-25403-S	7/8/98	RADIUM-228	1 4200	0 40	PCI/G	WP0457 0
SC-25403-S	7/8/98	THORIUM-230	1.0700	0.62	PCI/G	WP0457 0
SC-25403-S	7/8/98	URANIUM-238	1 3800	2.75	PCI/G	WP0457 0
SC-25406-C	7/8/98	RADIUM-226	1 0600	0.39	PCI/G	WP0457 0
SC-25406-C	7/8/98	RADIUM-228	0 9900	0.46	PCI/G	WP0457 0
SC-25406-C	7/8/98	THORIUM-230	1 1500	0 62	PCI/G	WP0457 0
SC-25406-C	7/8/98	URANIUM-238	2 1400	4.28	PCI/G	WP0457 0
SC-25407-S	7/8/98	RADIUM-226	0 8600	0 24	PCI/G	WP0457 0
SC-25407-S	7/8/98	RADIUM-228	1 1600	0.39	PCI/G	WP0457 0
SC-25407-S	7/8/98	THORIUM-230	1 0200	0.62	PCI/G	WP0457 0
SC-25407-S	7/8/98	URANIUM-238	1 2500	2.50	PCI/G	WP0457 0
SC-25408-S	7/8/98	RADIUM-226	0 9900	0.41	PCI/G	WP0457 0
SC-25408-S	7/8/98	RADIUM-228	0 5600	1.13	PCI/G	WP0457 0
SC-25408-S	7/8/98	THORIUM-230	1 2400	0.62	PCI/G	WP0457 0
SC-25408-S	7/8/98	URANIUM-238	1 7900	3 58	PCI/G	WP0457 0
SC-25412-S	7/8/98	RADIUM-226	1.0600	0 24	PCI/G	WP0457 0
SC-25412-S	7/8/98	RADIUM-228	1.2400	0.36	PCI/G	WP0457 0
SC-25412-S	7/8/98	THORIUM-230	0 7400	0 62	PCI/G	WP0457 0
SC-25412-S	7/8/98	URANIUM-238	1.3300	2.66	PCI/G	WP0457 0
SC-25413-S	7/8/98	RADIUM-226	0.8400	0.38	PCI/G	WP0457 0
SC-25413-S	7/8/98	RADIUM-228	1.2500	0.14	PCI/G	WP0457.0
SC-25413-S	7/8/98	THORIUM-230	1.0800	0.62	PCI/G	WP0457 0
SC-25413-S	7/8/98	URANIUM-238	1 8700	3.74	PCI/G	WP0457.0
SC-25417-S	7/8/98	RADIUM-226	0 9100	0.23	PCI/G	WP0457.0
SC-25417-S	7/8/98	RADIUM-228	1.0800	0.43	PCI/G	WP0457 0
SC-25417-S	7/8/98	THORIUM-230	0 9700	0.62	PCI/G	WP0457 0
SC-25417-S	7/8/98	URANIUM-238	1 3800	2.75	PCI/G	WP0457 0
SC-25418-S	7/8/98	RADIUM-226	1.1700	0.42	PCI/G	WP0457 0
SC-25418-S	7/8/98	RADIUM-228	0.5900	1.18	PCI/G	WP0457 0
SC-25418-S	7/8/98	THORIUM-230	0 8800	0.62	PCI/G	WP0457.0
SC-25418-S	7/8/98	URANIUM-238	2 0400	4 08	PCI/G	WP0457 0
SC-26301-C	7/8/98	RADIUM-226	1 2400	0.31	PCI/G	WP0457 0
SC-26301-C	7/8/98	RADIUM-228	1 1700	0.37	PCI/G	WP0457 0
SC-26301-C	7/8/98	THORIUM-230	0.9200	0.62	PCI/G	WP0457 0
SC-26301-C	7/8/98	URANIUM-238	1 3000	2.60	PCI/G	WP0457 0

Appendix D
WP-471 Confirmation Results

SC-26302-S	7/8/98	RADIUM-226	1.0800	0.33	PCI/G	WP0457.0
SC-26302-S	7/8/98	RADIUM-228	1.2600	0.30	PCI/G	WP0457.0
SC-26302-S	7/8/98	THORIUM-230	0.9100	0.62	PCI/G	WP0457.0
SC-26302-S	7/8/98	URANIUM-238	1.9000	3.79	PCI/G	WP0457.0
SC-26303-S	7/8/98	RADIUM-226	1.2700	0.25	PCI/G	WP0457.0
SC-26303-S	7/8/98	RADIUM-228	1.3500	0.35	PCI/G	WP0457.0
SC-26303-S	7/8/98	THORIUM-230	0.8700	0.62	PCI/G	WP0457.0
SC-26303-S	7/8/98	URANIUM-238	1.4000	2.79	PCI/G	WP0457.0
SC-26306-S	7/8/98	RADIUM-226	0.8900	0.42	PCI/G	WP0457.0
SC-26306-S	7/8/98	RADIUM-228	1.2100	0.65	PCI/G	WP0457.0
SC-26306-S	7/8/98	THORIUM-230	0.9500	0.62	PCI/G	WP0457.0
SC-26306-S	7/8/98	URANIUM-238	1.8100	3.61	PCI/G	WP0457.0
SC-26307-S	7/8/98	RADIUM-226	1.4000	0.31	PCI/G	WP0457.0
SC-26307-S	7/8/98	RADIUM-228	1.4100	0.32	PCI/G	WP0457.0
SC-26307-S	7/8/98	THORIUM-230	1.0700	0.62	PCI/G	WP0457.0
SC-26307-S	7/8/98	URANIUM-238	1.3600	2.71	PCI/G	WP0457.0
SC-26310-S	7/8/98	RADIUM-226	0.9000	0.29	PCI/G	WP0457.0
SC-26310-S	7/8/98	RADIUM-228	1.8100	0.50	PCI/G	WP0457.0
SC-26310-S	7/8/98	THORIUM-230	0.6900	0.62	PCI/G	WP0457.0
SC-26310-S	7/8/98	URANIUM-238	1.9100	3.82	PCI/G	WP0457.0
SC-26311-S	7/8/98	RADIUM-226	1.1300	0.26	PCI/G	WP0457.0
SC-26311-S	7/8/98	RADIUM-228	1.4700	0.34	PCI/G	WP0457.0
SC-26311-S	7/8/98	THORIUM-230	0.9500	0.62	PCI/G	WP0457.0
SC-26311-S	7/8/98	URANIUM-238	2.1200	1.64	PCI/G	WP0457.0
SC-26314-S	7/8/98	RADIUM-226	0.8300	0.41	PCI/G	WP0457.0
SC-26314-S	7/8/98	RADIUM-228	0.5700	1.14	PCI/G	WP0457.0
SC-26314-S	7/8/98	THORIUM-230	0.9400	0.62	PCI/G	WP0457.0
SC-26314-S	7/8/98	URANIUM-238	1.6600	3.31	PCI/G	WP0457.0
SC-26315-S	7/8/98	RADIUM-226	1.5800	0.39	PCI/G	WP0457.0
SC-26315-S	7/8/98	RADIUM-228	1.3200	0.57	PCI/G	WP0457.0
SC-26315-S	7/8/98	THORIUM-230	1.2000	0.62	PCI/G	WP0457.0
SC-26315-S	7/8/98	URANIUM-238	1.7600	3.52	PCI/G	WP0457.0
SC-26319-S	7/8/98	RADIUM-226	1.5900	0.29	PCI/G	WP0457.0
SC-26319-S	7/8/98	RADIUM-228	1.3500	0.42	PCI/G	WP0457.0
SC-26319-S	7/8/98	THORIUM-230	1.3200	0.62	PCI/G	WP0457.0
SC-26319-S	7/8/98	URANIUM-238	1.5600	2.05	PCI/G	WP0457.0
SC-26323-S	7/8/98	RADIUM-226	1.5200	0.40	PCI/G	WP0457.0
SC-26323-S	7/8/98	RADIUM-228	1.3200	0.51	PCI/G	WP0457.0
SC-26323-S	7/8/98	THORIUM-230	1.1000	0.62	PCI/G	WP0457.0
SC-26323-S	7/8/98	URANIUM-238	1.9300	3.86	PCI/G	WP0457.0
SC-26324-S	7/8/98	RADIUM-226	1.5400	0.24	PCI/G	WP0457.0
SC-26324-S	7/8/98	RADIUM-228	1.2300	0.42	PCI/G	WP0457.0
SC-26324-S	7/8/98	THORIUM-230	1.2100	0.62	PCI/G	WP0457.0
SC-26324-S	7/8/98	URANIUM-238	2.2400	2.02	PCI/G	WP0457.0
SC-26406-S	7/8/98	RADIUM-226	1.2300	0.39	PCI/G	WP0457.0
SC-26406-S	7/8/98	RADIUM-228	1.5600	0.55	PCI/G	WP0457.0
SC-26406-S	7/8/98	THORIUM-230	1.0600	0.62	PCI/G	WP0457.0
SC-26406-S	7/8/98	URANIUM-238	4.9400	3.84	PCI/G	WP0457.0
SC-26412-C	7/9/98	RADIUM-226	0.9100	0.39	PCI/G	WP0459.0
SC-26412-C	7/9/98	RADIUM-228	0.6100	1.21	PCI/G	WP0459.0
SC-26412-C	7/9/98	THORIUM-230	1.5800	0.62	PCI/G	WP0459.0
SC-26412-C	7/9/98	URANIUM-238	1.9500	3.90	PCI/G	WP0459.0
SC-26413-S	7/9/98	RADIUM-226	1.2600	0.31	PCI/G	WP0459.0
SC-26413-S	7/9/98	RADIUM-228	1.1200	0.38	PCI/G	WP0459.0
SC-26413-S	7/9/98	THORIUM-230	1.5400	0.62	PCI/G	WP0459.0
SC-26413-S	7/9/98	URANIUM-238	1.3600	2.72	PCI/G	WP0459.0

Appendix D
WP-471 Confirmation Results

SC-26414-S	7/9/98	RADIUM-226	1.6000	0.42	PCI/G	WP0459 0
SC-26414-S	7/9/98	RADIUM-228	1 0800	0 72	PCI/G	WP0459 0
SC-26414-S	7/9/98	THORIUM-230	1.3000	0.62	PCI/G	WP0459 0
SC-26414-S	7/9/98	URANIUM-238	2 0100	4.01	PCI/G	WP0459 0
SC-26415-S	7/9/98	RADIUM-226	1.4300	0.27	PCI/G	WP0459 0
SC-26415-S	7/9/98	RADIUM-228	1 1800	0 47	PCI/G	WP0459 0
SC-26415-S	7/9/98	THORIUM-230	1 2200	0.62	PCI/G	WP0459 0
SC-26415-S	7/9/98	URANIUM-238	1.5000	3.00	PCI/G	WP0459 0
SC-26416-S	7/9/98	RADIUM-226	1.1100	0.27	PCI/G	WP0459 0
SC-26416-S	7/9/98	RADIUM-228	1 1100	0.37	PCI/G	WP0459 0
SC-26416-S	7/9/98	THORIUM-230	1.3400	0 62	PCI/G	WP0459 0
SC-26416-S	7/9/98	URANIUM-238	1.3200	2.64	PCI/G	WP0459 0
SC-26421-C	7/9/98	RADIUM-226	1.0600	0.27	PCI/G	WP0459.0
SC-26421-C	7/9/98	RADIUM-228	0.5400	1 07	PCI/G	WP0459 0
SC-26421-C	7/9/98	THORIUM-230	1.3100	0.62	PCI/G	WP0459 0
SC-26421-C	7/9/98	URANIUM-238	1.8600	3.72	PCI/G	WP0459 0

APPENDIX E
Interoffice Correspondence

REV·39

DOCUMENT CONTROL SYSTEM - CORRESPONDENCE FILE

WELDON SPRING SITE REMEDIAL ACTION PROJECT
MK-FERGUSON CO., INC. WO 3589 (314) 441-8086
7295 Highway 94 South
St. Charles, MO 63303

Document Number: 73440

▸▸Document Type: LR-MKFW-DOEL

Originators DCN:

▸▸SUBJECT CONTAMINATED SOIL EXCAVATION PLAN DESIGN
WP471 RAFFINATE PIT 4 SLUDGE CONSOLIDATION

▸AUTHOR DOUG STEFFEN ▸▸TO STEVE McCRACKEN ▸▸DATE 10·30·92

▸SUBJECT CODE/WORK PACKAGE NUMBER 4/2000/471

REFERENCED DOCUMENT(S)

ACTION ITEM TRACKING

INITIATE ACTION ITEM

INDIVIDUAL ASSIGNED TO ACTION DEPARTMENT

ACTION REQUIRED

DUE DATE / / ACTION ITEM LOG NUMBER

CLOSE ACTION ITEM

ACTION ITEM LOG NUMBER INITIATING DOCUMENT DIN

COMPLETION DATE APPROVAL

COMMENTS

DISTRIBUTION	ATTACH W	ATTACH W/O	APPRVL. ROUTE ORDER	INITIAL
D.E STEFFEN		✓	6	DS
K.M GREENWELL	✓		5	KG
S D WARREN	✓		4	SDW
J A. COONEY	✓			
D.K MURANO				
P.D CATE				
D E HOFFMAN				
C.L. SPRINGMEIER				
C.R BOWERS				
G E. MCKAY				
D.S HIXSON				
M MITCHELL				
M.R. LEWIS				
C R. SAVAGE				
D.C. WIGTON				
J E WILLIAMS	✓			

DISTRIBUTION	ATTACH W	ATTACH W/O	APPRVL. ROUTE ORDER	INITIAL
J.M. DELANEY	✓			
S D. ANDERSON				
G L VALETT	✓			
C BRANCHFIELD				
M.L WESELY	✓			
K.R. WARBRITTON				
S.L. HODGES	✓		3	SLH
J HEITKAMP				
J. SAULNIER	✓			
E. HERSCHELMAN	✓			
D. HALL	✓			
G. TONAK	✓			
D. REPPOND (MK-SF)	✓			
DOCUMENT CONTROL				
CORRESPONDENCE FILE				
WORK PACKAGE FILE				
TECH EDITOR			2	
ORIGINATOR: S. HODGES			1	SLH

DISTRIBUTION	W	W/O
DOE		
S H MCCRACKEN		✓
G A NEWTOWN		
P S THOMPSON	✓	
J.E. ENRIGHT		
K.A REED		
T C. PAULING	✓	
K.V. COUTROS	✓	
A D PICKETT-SMITH		
M.B. BALLEW	✓	
S. RICHARDSON		
Y. DEYO		
W.R. OWEN		
J MARTIN		

ENGINEERS
AND
CONSTRUCTORS

MORRISON KNUDSEN CORPORATION
MK- FERGUSON GROUP
WELDON SPRING SITE REMEDIAL ACTION PROJECT
7295 HIGHWAY 94 SOUTH
ST. CHARLES, MISSOURI 63304
PHONE: (314) 441-8086

73440

OCTOBER 30, 1997

U.S. Department of Energy
Weldon Spring Site
Remedial Action Project
ATTN: Mr. Stephen H. McCracken
Project Manager
7295 Highway 94 South
St. Charles, MO 63304

SUBJECT: Contract No. DE-AC05-86OR21548
CONTAMINATED SOIL EXCAVATION PLAN DESIGN
WP471 RAFFINATE PIT 4 SLUDGE CONSOLIDATION

Dear Mr. McCracken:

Part of the scope of the subject work package was characterization of the section of Raffinate Pit 4 north of the intermediate dike followed by contaminated soil removal based on excavation plans developed by the PMC. These excavation plans were developed to meet the Record of Decision (ROD) subsurface criteria cleanup standards. Previous site contaminated soil excavations have been designed to ALARA goals. At a September 2, 1997, meeting of the ALARA committee, the decision was made to consider design to subsurface criteria rather than subsurface ALARA goals (ALARA Committee Meeting Minutes, September 2, 1997). The intent of the ROD will be met because all remaining soil will meet confirmation requirements. The following is provided as information supporting this decision.

Twenty characterization boreholes were drilled in the bottom of Raffinate Pit 4 north of the intermediate dike (Appendix A). Discrete samples were collected at one foot intervals. Soils were analyzed for all the ROD parameters for the first round of sampling. The last six boreholes were sampled for radiological parameters only because no chemical contaminants were detected at depth in previous samples. Based on these analyses, the primary contaminants are Thorium-230 (Th-230) and total radium. Two Uranium-238 hits and one arsenic hit above criteria were also detected at the existing surface. Boreholes were sampled to

depths greater than the deepest contaminated interval except in boreholes 4-08 and 4-10 where contamination was detected in the interval just above auger refusal. Following receipt of the results, the area was divided into polygons by taking one-half the distance between adjoining boreholes, thus representing the area of influence about each sample location.

During plan development, the soil volume requiring excavation was evaluated using both subsurface ALARA standards and subsurface criteria standards. Preliminary volume estimates indicated that approximately 80,200 cy would require excavation if subsurface ALARA standards were used; using subsurface criteria, approximately 35,300 cy would be removed. Due to the significant delta in soil removal and the resulting economic considerations, an agreement was reached with the ALARA committee to design to subsurface criteria standards.

Some key points concerning the excavation plans (Appendix B) are:

1. There are three deep excavations [19 ft (4-03), 15 ft (4-10), and 12 ft (4-04)]. One area (4-07) requires excavation of 2 ft. The remaining area within the confirmation boundaries will have 1 ft of soil removed.

2. Soil will be stockpiled at the Ash Pond Storage Area (APSA) and subsequently placed in the disposal cell.

3. In keeping with the ALARA philosophy, for the three deeper excavations where removal is driven by contamination at depth, the soil at higher elevations will be removed and taken to storage in the APSA. This soil was removed even if it did not exceed subsurface criteria. Some 1 ft intervals exceeded subsurface ALARA but not subsurface criteria. Other intervals did not exceed subsurface ALARA.

4. Contaminant levels remaining in soil using this approach will range between the cleanup subsurface criteria and the ALARA goals, reaching the goals in most cases.

Following removal to excavation cut lines, the resulting excavation surface will be confirmed. Confirmation sampling will be performed per the site procedure used previously. Based on characterization data, it is estimated that 85% of the surface area will be less than subsurface ALARA with two areas (4-01 and 4-07), or 15%, potentially exceeding subsurface ALARA but still less than subsurface criteria. These percentages are based on using the area of each polygon and assessing whether the resulting excavation surface will exceed subsurface ALARA for any parameter

concentration. At depths below this surface, soil with ROD parameters between subsurface ALARA and subsurface criteria wi exist (Appendix C). The north section of Raffinate Pit 4 will backfilled to design grade so that the resulting excavated sur will be a minimum 6 in. below grade.

The PMC feels that this design approach will provide economic savings while meeting the intent of the ROD. If you have questions or comments, please contact Sheryl Hodges at ext. 29

Sincerely,

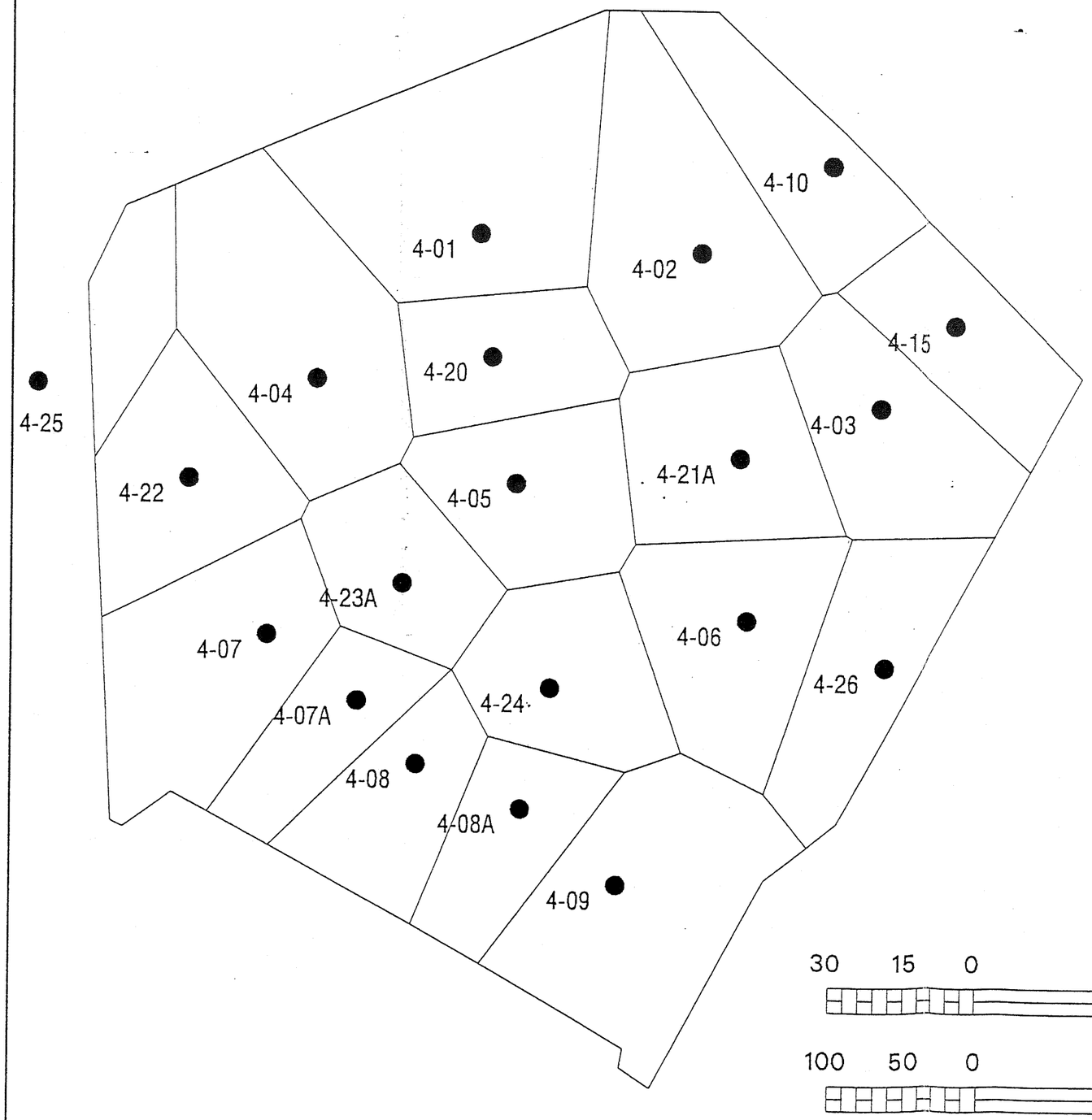
Douglas E. Steffen

DES/slh/slh

CC: Pamela Thompson

Enclosures: As Stated

APPENDIX A



BOREHOLE-ID	AREA OF INFLUENCE (sq. ft.)	DEPTH OF EXCAVATION (ft.)
4-01	27249	1
4-02	21620	1
4-03	15578	19
4-04	23686	12
4-05	13700	1
4-06	16528	1
4-07	19425	2
4-07A	9460	1
4-08	11385	1
4-08A	10468	1
4-09	23836	1
4-10	13344	15
4-15	11713	1
4-20	11511	1
4-21A	14971	1
4-22	14895	1
4-23A	11135	1
4-24	13540	1
4-25	6772	0
4-26	14211	1

N
W E
S

LEGEND

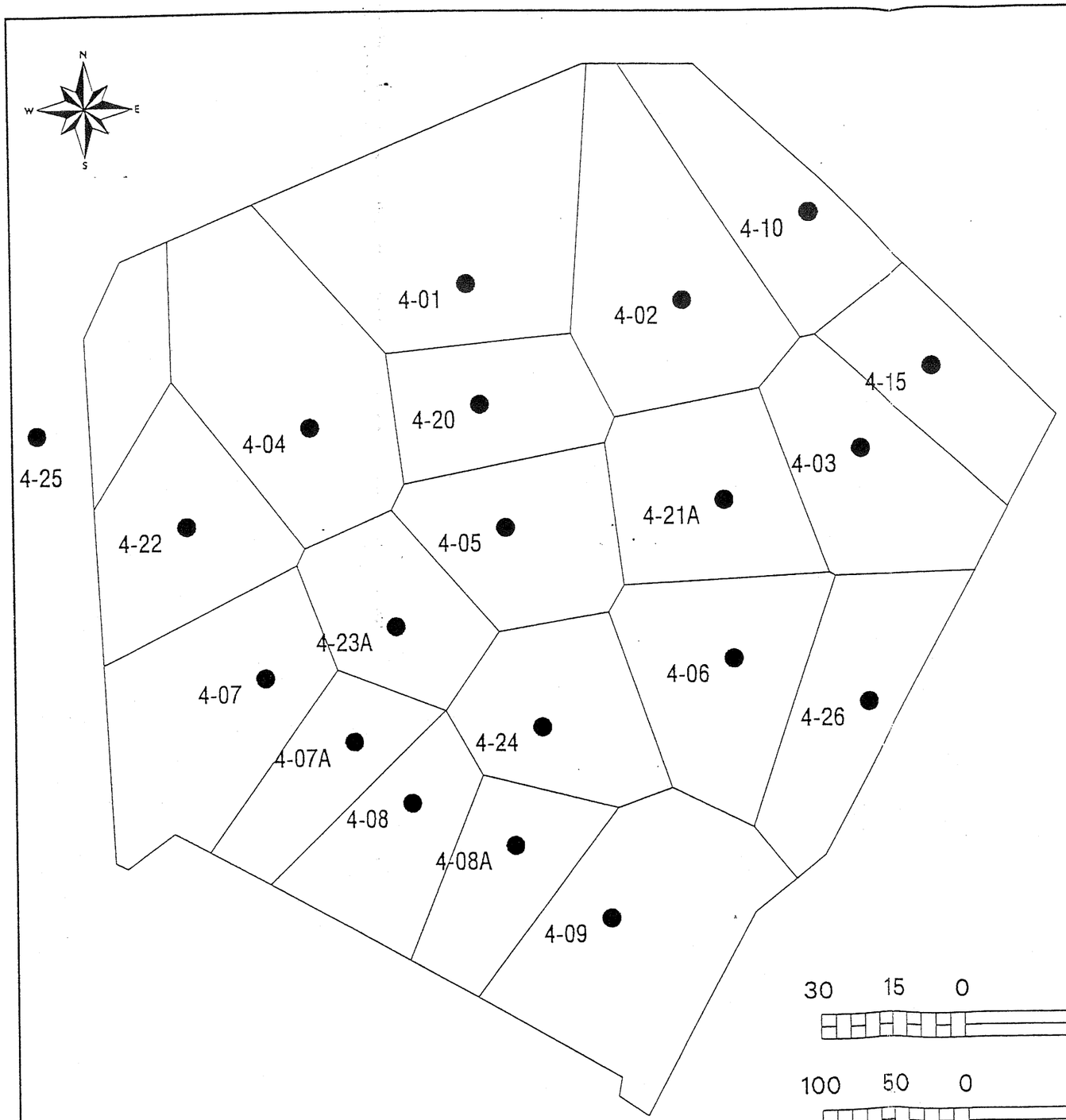
BOREHOLE-ID

30 15 0 30 METERS

100 50 0 100 FEET

DEPTH OF EXCAVATION
USING SUBSURFACE CRITERIA
AS CLEANUP STANDARD

REPORT NO.: DOE/OR/21548-
EXHIBIT NO.:
ORIGINATOR: EJH
DRAWN BY: WSSRAP GIS
DATE: 10/24/97

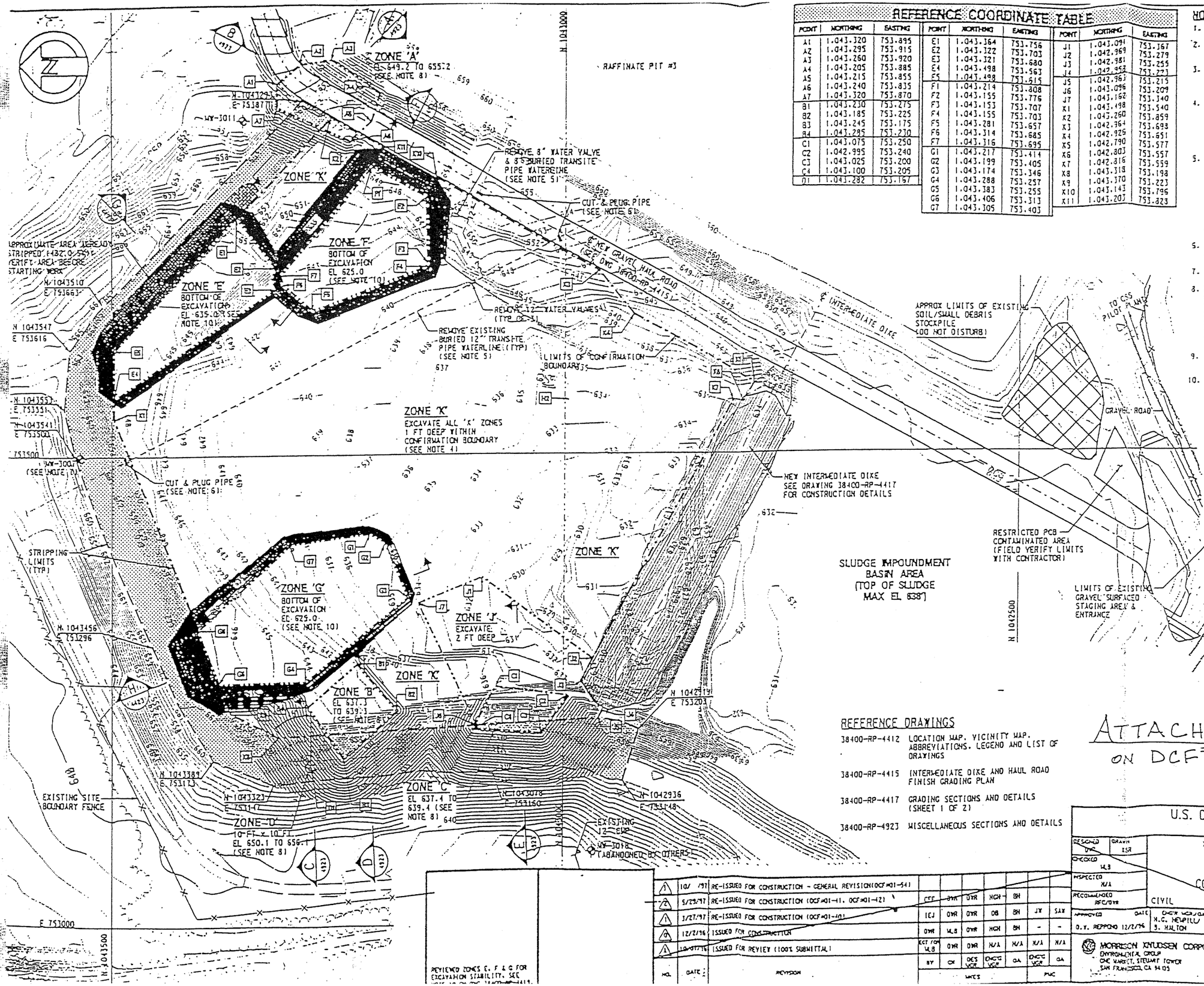


Borehole-ID	Depth Interval (ft.) Below Excavated Surface	Ra (Total) (pCi/g)	Th-230 (pCi/g)	Th-232 (pCi/g)
4-01	0-1	-	8.21	-
	1-2	11.10	-	-
	2-3	5.18	-	-
	3-4	5.25	-	-
	4-5	5.02	-	-
4-02	5-6	-	-	6.25
4-05	1-2	5.24	-	-
	2-3	5.06	-	-
	3-4	5.08	-	-
4-07	0-1	5.20	6.77	-
	7-8	9.10	-	-
4-07A	1-2	5.00	-	-
	7-8	5.84	-	-
	8-9	12.05	8.41	-
	9-10	-	6.30	-
4-08	4-5	6.48	-	-
	8-9	5.36	6.18	-
	9-10	5.30	-	-
	12-13	6.54	-	-
	13-14	6.57	-	-
	14-15	6.87	-	-
4-10	6-7	-	6.82	-
4-20	2-3	-	9.09	-

DEPTH INTERVALS
WITH CONTAMINANTS ABOVE ALARA GC
BELOW EXCAVATED SURFACE

REPORT NO.: DOE/OR/21548-	EXHIBIT NO.:	
ORIGINATOR: DCH	DRAWN BY: WSSRAP GIS	DATE: 10/24

73440



REFERENCE COORDINATE TABLE

POINT	NORTHING	EASTING	POINT	NORTHING	EASTING	POINT	NORTHING	EASTING
A1	1,043,320	753,895	E1	1,043,364	753,756	J1	1,043,091	753,167
A2	1,043,295	753,915	E2	1,043,322	753,703	J2	1,042,969	753,279
A3	1,043,260	753,920	E3	1,043,321	753,680	J3	1,042,981	753,255
A4	1,043,205	753,885	E4	1,043,498	753,563	J4	1,042,953	753,273
A5	1,043,215	753,855	E5	1,043,498	753,615	J5	1,042,963	753,215
A6	1,043,240	753,835	F1	1,043,214	753,808	J6	1,043,096	753,209
A7	1,043,320	753,870	F2	1,043,155	753,776	J7	1,043,162	753,340
B1	1,043,230	753,275	F3	1,043,153	753,707	K1	1,043,498	753,540
B2	1,043,185	753,225	F4	1,043,155	753,703	K2	1,043,260	753,859
B3	1,043,245	753,175	F5	1,043,281	753,657	K3	1,042,964	753,693
B4	1,043,285	753,230	F6	1,043,314	753,685	K4	1,042,929	753,651
C1	1,043,075	753,250	F7	1,043,316	753,695	K5	1,042,790	753,577
C2	1,042,995	753,240	G1	1,043,217	753,414	K6	1,042,803	753,557
C3	1,043,025	753,200	G2	1,043,199	753,405	K7	1,042,816	753,559
C4	1,043,100	753,205	G3	1,043,174	753,346	K8	1,043,318	753,198
D1	1,043,282	753,167	G4	1,043,288	753,257	K9	1,043,370	753,223
			G5	1,043,383	753,255	K10	1,043,143	753,796
			G6	1,043,406	753,313	K11	1,043,203	753,823
			G7	1,043,305	753,403			

NOTES

1. SEE DRAWING NO 38400-RP-4412 FOR GENERAL NOTES.
2. SUBCONTRACTOR SHALL OBTAIN CONTRACTOR'S APPROVAL BEFORE STARTING EXCAVATION WORK.
3. ALL STRIPPED MATERIAL AND ALL EXCESS CONTAMINATED BOTTOM SOIL SHALL BE STOCKPILED AT ASH POND STORAGE AREA.
4. BOTTOM CONTOURS REPRESENT EXISTING CLAY ELEVATIONS AFTER SLUDGE REMOVAL. SUBCONTRACTOR SHALL EXCAVATE TO REMOVE CONTAMINATED SOIL AS SHOWN. ALL SOIL WITHIN THE LIMITS OF THE CONFIRMATION BOUNDARY SHALL BE TREATED AS CONTAMINATED SOIL.
5. SUBCONTRACTOR SHALL LOCATE AND REMOVE BURIED TRANSITE WATERLINE AND ASSOCIATED VALVES WITHIN RAFFINATE PIT AS SHOWN. WATERLINE HAS APPROXIMATELY 3 FEET SOIL COVER. HANDLE AND DISPOSE OF PIPING MATERIALS AND CONTAMINATED EXCAVATED SOILS IN ACCORDANCE WITH THE SPECIFICATIONS. PIPE LOCATION SHOWN IS APPROXIMATE. SUBCONTRACTOR SHALL REMOVE PIPE IN CONJUNCTION WITH SOIL EXCAVATION WORK AND SEQUENCING TO AVOID CROSS CONTAMINATION.
6. SUBCONTRACTOR SHALL PLUG END OF REMAINING BURIED PIPE BY FILLING THE LAST 12 INCHES OF PIPE WITH CONCRETE.
7. SUBCONTRACTOR SHALL PROTECT EXISTING MONITORING WELL.
8. REMOVE OVERLYING UNCONTAMINATED SOIL TO EXPOSE CONTAMINATED ZONES A, B, C & D. REMOVE CONTAMINATED SOIL WITHIN THE ZONE BOUNDARY SHOWN AND BETWEEN THE GIVEN ELEVATIONS EXCEPT AS INDICATED. DISPOSE OF CONTAMINATED SOIL AT ASH POND STORAGE AREA. NOTIFY CONTRACTOR FOR CONFIRMATION SAMPLING AFTER REMOVAL OF CONTAMINATED SOIL.
9. EMBANKMENT CUT SLOPES ON ZONES E, F & G ARE 1H:1V.
10. In zones E, F & G, excavation sloped greater than 20 feet high may become unstable. Excavated sloped shall be inspected daily and determined to be safe by the Contractor prior to any personnel entering the excavation. in zone F, limit traffic on haul road next to excavation and avoid disturbing intercepter trench.

REFERENCE DRAWINGS

38400-RP-4412 LOCATION MAP, VICINITY MAP, ABBREVIATIONS, LEGEND AND LIST OF DRAWINGS

38400-RP-4415 INTERMEDIATE DIKE AND HAUL ROAD FINISH GRADING PLAN

38400-RP-4417 GRADING SECTIONS AND DETAILS (SHEET 1 OF 2)

38400-RP-4923 MISCELLANEOUS SECTIONS AND DETAILS

ATTACHMENT 'A'
ON DCF #01-54

SET I.D.

QUALITY LEVEL 2
WKES NO. 3840-A:EN-0-01-3595-03

NO.	DATE	REVISION	CFF	DWR	DWR	HGH	BH		
1	10/ /97	RE-ISSUED FOR CONSTRUCTION - GENERAL REVISION(DCF#01-54)							
2	5/23/97	RE-ISSUED FOR CONSTRUCTION (DCF#01-41, DCF#01-42)	IEJ	DWR	DWR	DB	BH	JX	SAX
1	3/27/97	RE-ISSUED FOR CONSTRUCTION (DCF#01-40)	DWR	WLB	DWR	HGH	BH	-	-
0	12/2/96	ISSUED FOR CONSTRUCTION	ECT/DM WLB	DWR	DWR	N/A	N/A	N/A	N/A
1	10/07/96	ISSUED FOR REVIEW (100% SUBMITTAL)	BY	CK	DCS VCR	CHK'G VCR	QA	CHK'G VCR	QA
			WKES					PMC	

U.S. DEPARTMENT OF ENERGY
OAK RIDGE, TENNESSEE

YELOCN SPRING SITE REMEDIAL ACTION PROJECT
YELOCN SPRING, MISSOURI
RAFFINATE PIT NO. 4 SLUDGE CONSOLIDATION

CONTAMINATED SOIL EXCAVATION PLAN

CIVIL

YP 471

DESIGNED DWC | DRAWN ISR | CHECKED WLB | INSPECTED N/A | RECOMMENDED RFC/DYR

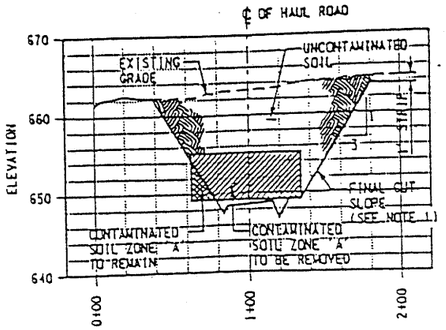
APPROVED O.V. REPPOND 12/2/96 DATE | CHK'G VCR/QA VCR. N.C. HEWITLU, S. HALTON 12/2/96 DATE | PMC CHK'G VCR. J.E. WILLIAMS 12/17/96 DATE | PMC QA VCR. SAM VORTHY FOR PDC 12/17/96 DATE

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL GROUP
ONE MARKET, STEUART TOWER
SAN FRANCISCO, CA 94105

PROJECT NO. DE-AC05-86OR21548

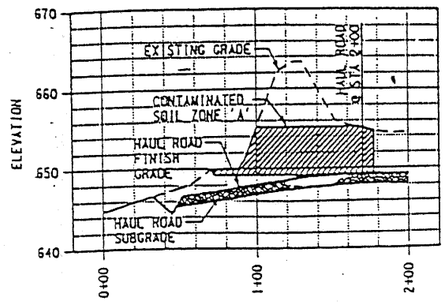
DRAWING NO. 38400-RP-4419 REV. 2

73440



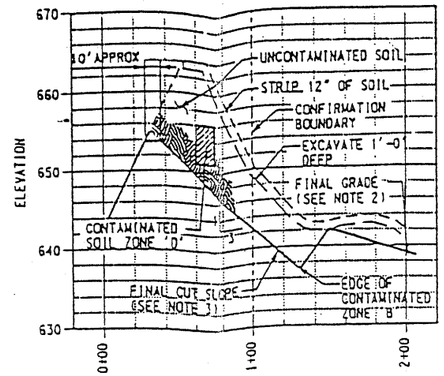
CONTAMINATED ZONE 'A'

SECTION A 4419



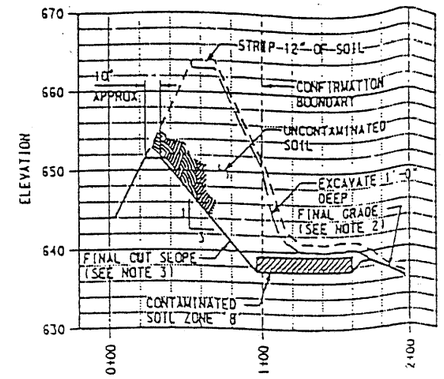
CONTAMINATED ZONE 'A'

SECTION B 4419



CONTAMINATED ZONE 'D'

SECTION C 4419



CONTAMINATED ZONE 'B'

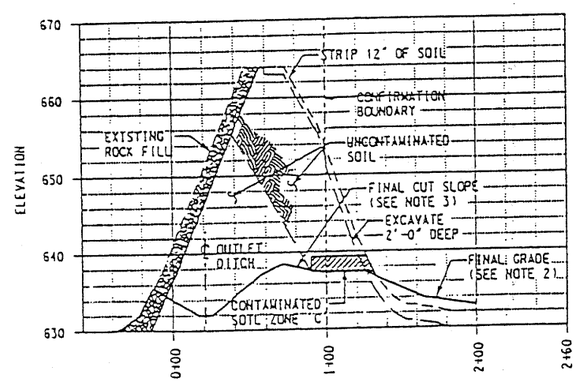
SECTION D 4419

NOTES

1. SEE DRAWING 38400-RP-4415 FOR THE HAUL ROAD FINISH GRADING PLAN.
2. SEE DRAWING 38400-RP-4420 FOR PIT BOTTOM FINAL GRADING PLAN.
3. FINAL CUT SLOPES FOR ZONES A, B, C, & D SHALL BE 3H:1V, MAXIMUM.

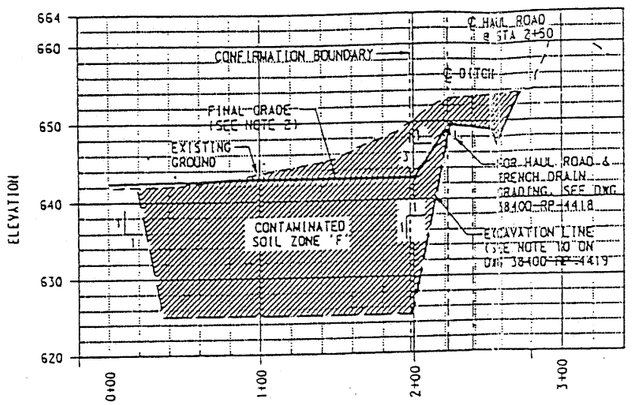
REFERENCE DRAWINGS

38400-RP-4415	INTERMEDIATE DIKE AND HAUL ROAD FINISH GRADING PLAN
38400-RP-4418	GRADING SECTIONS AND DETAILS (SHEET 2 OF 2)
38400-RP-4419	CONTAMINATED SOIL EXCAVATION PLAN
38400-RP-4420	PIT BOTTOM FINAL GRADING PLAN AND SECTIONS



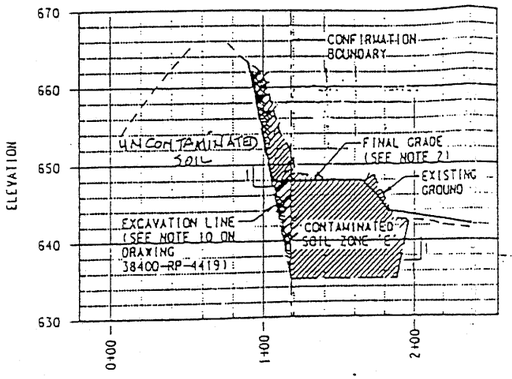
CONTAMINATED ZONE 'C'

SECTION E 4419



CONTAMINATED ZONE 'F'

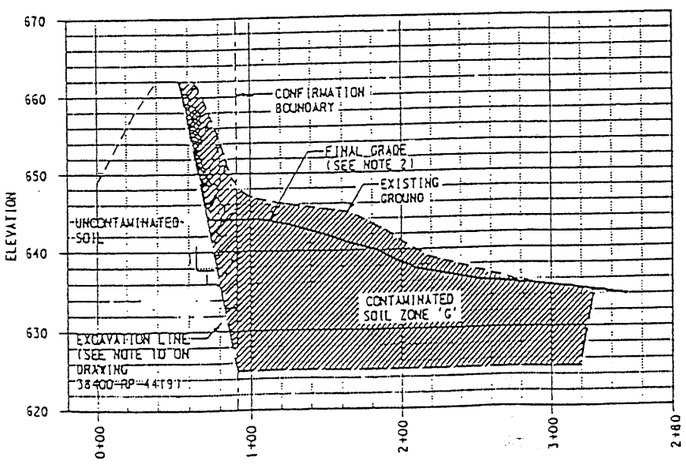
SECTION F 4419



CONTAMINATED ZONE 'E'

SECTION G 4419

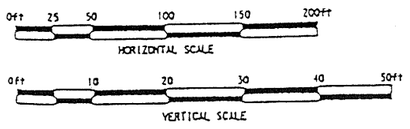
ATTACHMENT 'B'
ON DCF #01-54



CONTAMINATED ZONE 'G'

SECTION H 4419

GRAPHIC SCALES



QUALITY LEVEL 2
WKES DOCUMENT NO. 3840-R:EN-0-01-5153-01

U.S. DEPARTMENT OF ENERGY
OAK RIDGE, TENNESSEE

DESIGNED JK	DRAWN LTR
CHECKED DWR	
PROJECTED NONE	
RECOMMENDED DWR/MLB FOR AW	CIVIL

YELDON SPRING SITE REMEDIAL ACTION PROJECT
YELDON SPRING, MISSOURI
RAFFINATE PIT NO.4 SLUDGE CONSOLIDATION

MISCELLANEOUS SECTIONS AND DETAILS

XP471

APPROVED	DATE	CHECK MGR/QA MGR.	DATE	PMC CHECK MGR.	DATE	PMC QA MGR.	DATE
D.Y. REPPOND	5/23/97	B. HALTON / H.G. HEUPEL	5/30/97 / 5/30/97	D. D. SURRETT FOR J.V.	5/23/97	S.L. VORTKT	5/23/97

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL GROUP
ONE MARKET, STEUART TOWER
SAN FRANCISCO, CA 94105

PROJECT NO. DE-AC05-86OR21548

DRAWING NO. 38400-RP-4923 REV. 1

NO.	DATE	REVISION	BY	CK	DES MGR	CHECK MGR	QA	CHECK MGR	QA
3									
2									
1	10/ '97	RE-ISSUED FOR CONSTRUCTION - GENERAL REVISION (DCF#01-54)	OFF	DWR	DWR	HGH	BH	-	-
0	5/23/97	ISSUED FOR CONSTRUCTION	OFF	DWR	DWR	K/A	K/A	K/A	K/A
	4/22/97	ISSUED FOR REVIEW (DCF#01-42)							

REVIEWED ZONES E, F & G FOR

FILENAME G:/38400/RP/DGN/38401923.DGN DATE 10/9/97

APPENDIX C

MORRISON KNUDSEN CORPORATION

MK-FERGUSON GROUP

INTER-OFFICE CORRESPONDENCE

DATE: November 17, 1995

TO: ALARA Committee

FROM: Michelle French/Richard Machado

SUBJECT: **RA-226 DETERMINATION FOR SITE CONFIRMATION SAMPLES**

Background

The issue surrounding Ra-226 analysis via gamma spectroscopy arises due to the fact that the Ra-226 soil concentration is determined by using the following energy peaks: 295 keV and 352 keV for Pb-214; and 609 keV, 1120 keV, and 1764 keV for Bi-214. These radionuclides are both short-lived daughters of Rn-222. The drying and grinding processes are known to drive off Rn-222 that is trapped in the soil pores and moisture held in the soil. In order to quantitatively identify Ra-226 using gamma spectroscopy, Rn-222 and its short-lived progeny must be allowed to grow into secular equilibrium following such sample preparation techniques. The following alternatives were evaluated for estimating the Ra-226 concentration in soil given gamma spectroscopy analysis within five working days of sample collection.

Alternative 1

Send all samples requiring Ra-226 analysis to an offsite laboratory. At offsite facilities, Ra-226 is typically analyzed through alpha spectroscopy which does not rely on the Ra-222 daughter products to provide a quantitative result. The minimum turnaround time that can be provided for alpha spectroscopy analysis for Ra-226 is four days. At one and two day turnaround times, the method for analysis is modified to use Gas Flow Proportional Counting for total alpha counting yielding a total radium number with no separation of isotopic contributions. Given the four day turnaround time and an estimate of 750 samples (WP-253 and WP-420), the total analytical costs will be $95,250.

The major disadvantage in this approach is the tight schedule involved with sample collection, packaging, shipping, data receipt, data review, and ALARA committee action. It may be impossible to accomplish this within five working days given the four day turnaround requirement.

Alternative 2

As stated above, the drying and grinding processes are known to drive off radon that is trapped in the soil matrix. However, the amount of radon removed from these processes is not quantified. If you were to assume that all the radon is removed during these processes and the time of final preparation was recorded, a correction factor can be applied based upon the secular equilibrium condition equation. For example, the following table summarizes the ratio of activity of Rn-222 to the activity of Ra-226.

A(Rn-222)/A(Ra-226)	Time Post Canning (Days)
0.167	1
0.306	2
0.422	3
0.665	6
0.807	9
0.888	12
0.935	15
0.963	18
0.978	21
0.987	24
0.993	27
0.996	30

Thus, if the samples were counted three days post canning, a correction factor of 0.422 would be used to determine the estimated final Ra-226 concentration. Given this approach, any concentration determined three days post preparation would be divided by 0.422 to arrive at the final concentration. For a 5 pCi/g ALARA goal, any result above 2.1 pCi/g would be rejected.

The major limitation with this approach is the assumption that the drying and grinding processes remove 100% of the radon. Samples that have been analyzed within one day of preparation have never yielded results much below expected background concentrations (0.8-1.0 pCi/g).

Thus, the use of a correction factor on the order of 0.167 could result in a very conservative approach for estimating the final Ra-226 soil concentration in background soils (in fact all samples analyzed one day after canning would equal or exceed 5 pCi/g).

Alternative 3

All samples that are collected to support confirmation can be analyzed as wet samples to virtually eliminate the radon removal that occurs during sample preparation. However, there are numerous considerations, such as sample homogeneity, particle size, moisture content variability, etc., that can produce error in such analyses. If the samples are analyzed wet, they would also be prepared and analyzed to provide final concentrations for each radionuclide of interest for the sample. This dry evaluation would require an analysis within the confirmation cleanup turnaround period and a second analysis within 20-30 days later to finalize Ra-226 concentrations to an acceptable quality level. This approach would involve three analyses of every sample. The initial wet analysis can be used to estimate the final Ra-226 concentration. However, this estimate must be made on a case by case basis through moisture corrections, etc.

The major limitation for this approach is the reduction in lab productivity as an extra canning effort would be needed to generate a wet and a dry sample for each sample and count time for each sample would increase by a factor of three.

Alternative 4

Over the last several months, the onsite radiological laboratory has been recounting samples that were analyzed during the months of April - September 1995. These reanalyses were done in order to support final analyses of SE Drainage and Quarry characterization samples. The graph on the attached page illustrates a portion of the recount results versus the initial results. The graph includes those samples that had initial Ra-226 results < 5 pCi/g. As illustrated, the background - 2.2 pCi/g sample range had 100% of all sample recounts fall less than 5 pCi/g. For those in the range of 2.2 - 3.2 pCi/g, the likelihood of exceeding 5 pCi/g was approximately 50%. All of the samples with initial results greater than 3.2 pCi/g had final Ra-226 results > 5 pCi/g.

This information can be used to establish a criteria about which samples can be said to meet the ALARA goal of 5 pCi/g within the five working day turnaround window.

Given the current study findings, it is recommended that any sample with an initial Ra-226 result > 2.2 pCi/g be expected to exceed the ALARA goal of 5 pCi/g. In addition, the estimated final Ra-226 soil concentration should be found by multiplying the initial result by 2.27 (2.2 pCi/g x 2.27 = 5 pCi/g). This correction factor is very close to the maximum increase from initial results to recount results (e.g., 2.56) in the background to 2.2 pCi/g concentration range. The average increase from initial results to recount results for this range was 1.51. However, use of a value closer to the maximum value affords less risk in exceeding expected confirmation goals. The laboratory will work to refine these numbers to further minimize the risk as they continue to recount samples collected over the last few months. The major limitation with this alternative is the potential to over excavate, increasing disposal costs.

Alternative 5

This alternative involves a combination of alternatives 3 and 4. Samples that do not have elevated direct survey results via a 2x2 NaI or a 44-9 survey should be prepared and evaluated in accordance with alternative 4. Samples that do have above background survey results will be analyzed wet and evaluated accordingly to determine the estimated final Ra-226 concentration. The sample will then be prepared and analyzed a second time to provide quality level data for the other radionuclides of interest. In addition, each prepared sample would be analyzed within 30 days after preparation to finalize the Ra-226 concentration to an acceptable quality level.

The major limitation with this approach is the loss in productivity as a result of the double canning needs and increased count times for a portion of the samples.

Recommendation

The Onsite Radiological Laboratory recommends the use of alternative 4. This alternative minimizes risk of failing to meet expected cleanup ALARA goals and provides for maximum efficiency/productivity within the laboratory. The second favorable alternative is number 5. This alternative would increase the workload in the laboratory, but would further reduce the risk of over excavation and failure to meet desired cleanup objectives.

In all of the above alternatives, the estimated final Ra-226 concentration will be used in conjunction with the measured Ra-228 concentration as follows to determine if the mixture rule for the ALARA goals as described in the Record of Decision is achieved.

$$\frac{\text{Est. Final Ra-226 (pCi/g)}}{5\ \text{pCi/g}} + \frac{\text{Ra-228 (pCi/g)}}{5\ \text{pCi/g}} = \text{Mixture Ratio}$$

If mixture ratio <= 1, then the sample meets cleanup confirmation design. If mixture ratio > 1, then the sample must be considered by the ALARA committee.

MLF/RM/pr

Attachment

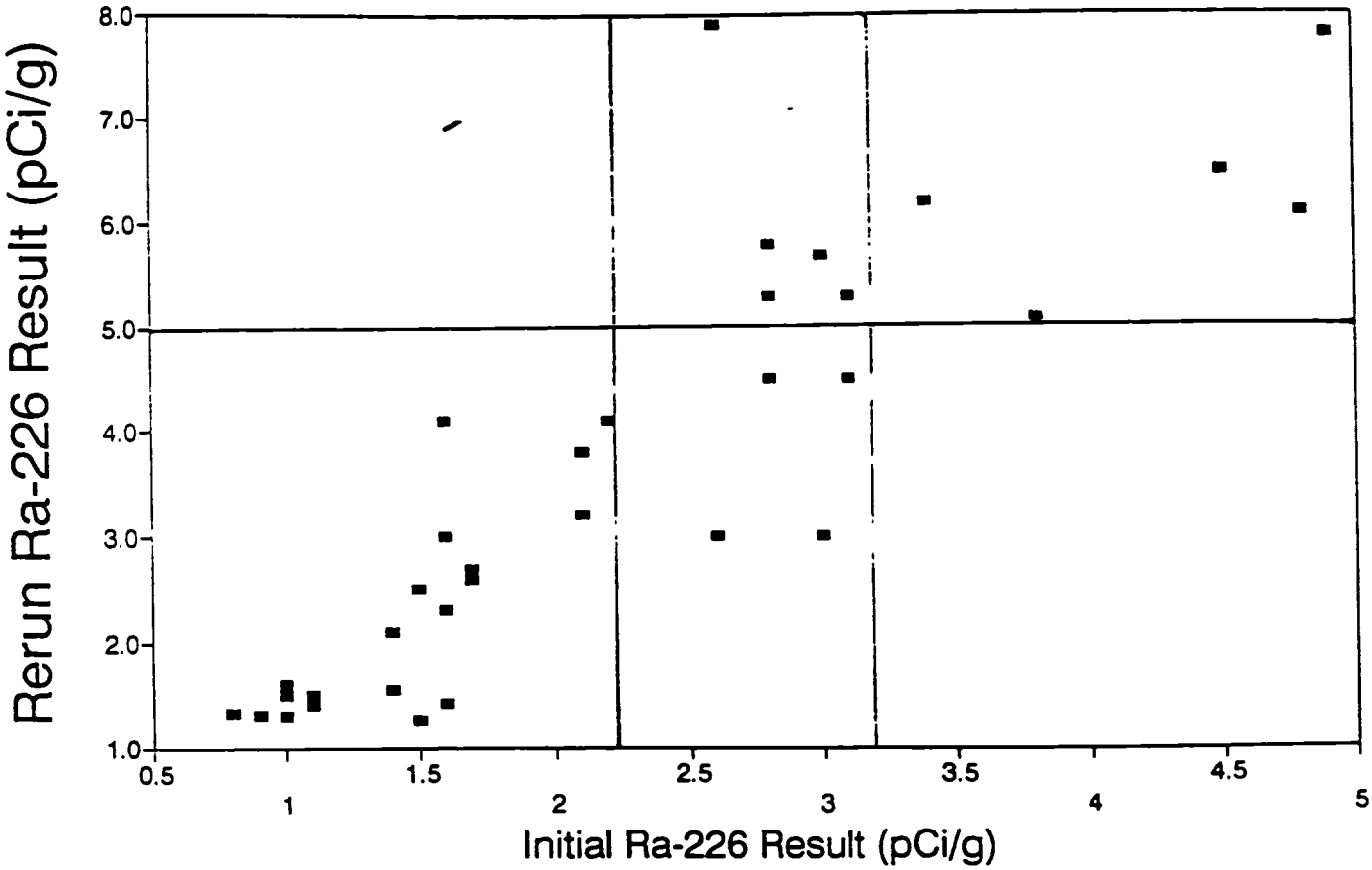
Distribution:

Ken Meyer	Alternates:	Marj Wesley
Steve Warren		Jack Cooney
Ken Greenwell		Dan Hoffman
Jim Meier		

cc: Melissa Lutz

Ra226 Concentration Range

Background - 5.0 pCi/g



MORRISON KNUDSEN CORPORATION

MK-FERGUSON GROUP

INTER-OFFICE CORRESPONDENCE

DATE: November 20, 1995

TO: ALARA Committee

FROM: Richard Machado/Michelle French MF

SUBJECT: TH232 DETERMINATION FOR SITE CONFIRMATION SAMPLES

Th232 can occur in two forms at the site: (1) naturally and (2) processed to purify Th232. Both of these forms are subject to the same transformation equation. Given a Th232 half life of 1.39 x 10^{10} years and a Ra228 half life of 5.75 years, a condition known as secular equilibrium occurs. Secular equilibrium occurs when the half life of the parent is very much greater than that of the daughter. If an initially pure parent (Th232) is formed, its radioactive transformation will result in accumulation of the daughter (Ra228). Since the daughter (Ra228) decays very much faster than the parent (Th232), a point is soon reached at which the amount of parent (Th232) present is equal to that of the daughter (Ra228).

The equation that represents this condition of secular equilibrium is:

$$Q_B = Q_A (1 - e^{-\lambda_B t})$$

where Q_A=parent (Th232) activity, Q_B=daughter (Ra228) activity, t=time since placement of material, and λ_B=decay constant for daughter (Ra228). Therefore, the fraction of daughter activity to parent activity

$$\left(\frac{A(RA\text{-}228)}{A(Th\text{-}232)}\right)$$

present at the WSSRAP in 1995 can be calculated.

Assume that production ceased at the site on January 1, 1965, and that all Th232 was produced on that very last day (t=30.9 years). Given a half life for Ra228 of 5.75 years, the decay constant would equal

$$(\lambda_B = 0.121\ Y^{-1})$$

11-35-9

Given this information, the ratio of Ra228 activity to Th232 activity can be calculated as follows:

$$\frac{Q_B}{Q_A} = \frac{A\,(Ra\text{-}228)}{A\,(Th\text{-}232)} = 1 - e^{-\lambda_B t}$$

$$\frac{A\,(Ra228)}{A\,(Th232)} = 1 - e^{-(0.121Y^{-1})\,(30.9Y)} = 1 - 0.024 = 0.976$$

$$\therefore \frac{A\,(Ra\text{-}228)}{A\,(Th\text{-}232)} = 0.976 \quad or \quad A\,(Th\text{-}232) = 1.025\,A\,(Ra\text{-}228)$$

This representation will be true for both naturally occurring Th232 and processed Th232. The other situation to be addressed includes the circumstance when Ra228 and associated decay products were placed as a waste material after purification of Th232. In this situation, the amount of Ra228 present will be much greater than the Th232 present. This information is illustrated in a previous assessment of the ratio of Ra228 concentrations to that of Th232 in raffinate pit wastes. The average ratio was reported as 7.02 in the *Concentration Ratios of Radionuclides* in the U238, U235, and Th232 *Decay Series* (DOE/OR/21548-250), indicating that the average activity concentration for Th232 is 0.14 of the activity concentration for Ra228.

The Record of Decision states that if Th232 and Ra228 are present and not in secular equilibrium, the cleanup criteria apply for the radionuclide with the higher concentration. Thus, for determination of successful cleanup, the use of a Ra-228 ALARA goal of 4.88 pCi/g and a criteria of 6.05 pCi/g will result in removing Th232 to within 5 pCi/g (ALARA) and 6.2 pCi/g (criteria), respectively.

Given this practice, it is recommended that the on-site radiological analyses for Ra-228 concentrations in soil be used to determine attainment of Th-232 cleanup. It is also recommended that 2% of the samples (1 of every 50) that are independently analyzed via an off-site facility be used as a quality check for all radionuclides of interest (U238, Th230, Th232, Ra228, and Ra226). In addition, these numbers should be summarized in post remediation reports for each work package to support the decision to use Ra228 to determine successful cleanup of Th232.

RM/MF/jn

<u>Distribution</u>: ALARA Committee

Steve Warren	Alternates:	Marj Wesley
Ken Meyer		Jack Cooney
Ken Greenwell		Dan Hoffman
Jim Meier		Melissa Lutz

MORRISON KNUDSEN CORPORATION

MK-FERGUSON GROUP

INTER-OFFICE CORRESPONDENCE

DATE: April 30, 1996

TO: File

FROM: Craig Kish, TDY-Denver CK

SUBJECT: USE OF SUBSURFACE CRITERIA LIMITS FOR BACKFILLED CONFIRMATION UNITS

Jim Meier and Craig Kish posed to Steve Warren the issue of whether subsurface criteria, which are less restrictive than surface criteria limits, can be used to determine,if a confirmation unit that will be backfilled has met the criteria limits for final disposition. While Section 3.2.3.1, page 15, of the *Chemical Plant Area Cleanup Attainment Confirmation Plan*, Rev. 3, December 1995, states that "[subsurface contaminant ALARA goals will be sued in areas designated to receive at least 15 cm (6 in.) of clean backfill for final grading purposes[.], Steve Warren confirmed that the intent is to apply both subsurface ALARA goals and subsurface cleanup criteria limits when dispositioning a confirmation unit (emphasis added.)

Therefore, the subsurface cleanup criteria will be used in all backfilled confirmation units to determine if hot spots are present. The subsurface criteria will hence be used to determine when to further excavate the hot spots that are less than three times the criteria and less than 25 square meters using the relationship; excavation is required if the maximum concentration exceeds the cleanup criteria multiplied by the value of the square root of 100 divided by the area of the hot spot (the areal extent over the cleanup criteria). This also changes the value used to determine those areas more than three times the cleanup criteria that are automatically further excavated.

If a confirmation unit will only be partially backfilled, then the confirmation unit should be divided so that the confirmation unit can be dispositioned using the appropriate ALARA goal and cleanup criteria value for each section.

CK/jn

cc: File
Melissa Lutz
Jim Meier
Mike Quinonez
Steve Warren

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APPENDIX F
ORISE Hot Spot Report Table

Appendix F

Table F-1 ORISE Hotspot Table

WSSRAP-ID	CU#	Contaminant (Concentration - pCi/g)	Location Description [a]	ORISE Readings	Remediated	PMC Results after Remediation	Comments
SC-14307-S-HS01	143	Th230 (38.8 pCi/g) Total Ra (19.98 pCi/g)	South of SC-14307-S	9 – 10K cpm (7K - Bkgd)	Y	All results less than criteria.	-
SC-14318-S-HS01	143	Th230 (23.1 pCi/g) Total Ra (11.1 pCi/g)	10' North and 4' East of SC-14318-S	9 – 10K cpm (7K – Bkgd)	Y	All results less than ALARA.	-
SC-14319-S-HS01	143	All results less than ALARA	8' West of SC-14319-S	9 – 10 K cpm (7K – Bkgd)	N	No additional remediation required.	-
SC-14320-S-RS01	143	Th230 (86.4 pCi/g) [b] Total Ra (20.5 pCi/g)	Northeast of SC-14320-S	16k cpm	Y	All results less than ALARA.	-
SC-14405-S-HS01	144	Th230 (9.36 pCi/g) Total Ra (7.07 pCi/g)	6' North and 6' East of SC-14405-S	12K cpm (7K – Bkgd)	Y	N/A	Area did not require remediation, but was remediated by default when surrounding contamination from other locations was removed
SC-14407-C-HS01	144	Th230 (34.4 pCi/g) Total Ra (19.4 pCi/g)	10' North of SC-14407-C	14K cpm (6-7K – Bkgd)	Y	All results less than ALARA.	-
SC-14408-S-HS01	144	Th230 (74.1 pCi/g) Total Ra (67.2 pCi/g)	18' Southwest of SC-14408-S	30K cpm (6-7K – Bkgd)	Y	All results less than ALARA.	-
SC-14408-S-HS02	144	Th230 (6.49 pCi/g) Total Ra (7.85 pCi/g)	10' North of SC-14408-S	12K cpm (6-7K – Bkgd)	Y	N/A	Results met subsurface criteria and therefore did not require remediation. This area was remediated by default when surrounding contamination from other locations was removed.
SC-14414-S-HS01	144	Th230 (11.2 pCi/g) Total Ra (7.43 pCi/g)	20' Northeast of SC-14414-S	14K cpm (6-7K – Bkgd)	Y	N/A	Results met subsurface criteria and therefore did not require remediation. This area was remediated by default when surrounding contamination from other locations was removed.
SC-14423-S-HS01	144	Th230 (52.3 pCi/g) Total Ra (10.6 pCi/g)	5' Southeast of SC-14423-S	14K cpm (6-7K – Bkgd)	Y	All results less than ALARA.	-
SC-14501-S-HS01	145	Th230 (0.81 pCi/g) Total Ra (2.61 pCi/g) U238 (69.0 pCi/g)	15'West and 15' South of SC-14501-S	7-8K cpm (6-7K – Bkgd)	N	N/A	-
SC-14514-S-HS01	145	Th230 (55.5 pCi/g) Total Ra (17.2 pCi/g)	South of SC-14514-S	N/A	Y	All results less than ALARA.	-
SC-16115-C-HS01	161	All results less than Criteria, but remediated before results received.	Northeast of SC-16115-C	N/A	Y	All results less than ALARA.	This hotspot fell outside of the CU boundary and work zone boundary. Information included to show that the area was addressed.

(a) See Figures in Appendix A for maps.

(b) ORISE sample results collected prior to remediation. PMC did not sample and remediated based upon walkover results.

Appendix F
Hotspot Calculations

SC-14307-S-HS01

$$\text{Max Conc.} = (\text{Criteria})(100/A)^{1/2}$$

$$38.78 = (16.2)(100/A)^{1/2}$$

$$2.39 = (100/A)^{1/2}$$

$$5.71 = 100/A$$

$$A = 17.5\ m^2$$

SC-14318-S-HS01

$$\text{Max Conc.} = (\text{Criteria})(100/A)^{1/2}$$

$$23.11 = (16.2)(100/A)^{1/2}$$

$$1.43 = (100/A)^{1/2}$$

$$2.04 = 100/A$$

$$A = 49\ m^2 \rightarrow 25\ m^2$$

SC-14407-C-HS01

$$\text{Max Conc.} = (\text{Criteria})(100/A)^{1/2}$$

$$34.38 = (16.2)(100/A)^{1/2}$$

$$2.12 = (100/A)^{1/2}$$

$$4.5 = 100/A$$

$$A = 22.2\ m^2$$

APPENDIX G
QA/QC Comparison to Analytical Data

Appendix G-1
WP-471
QC Confirmation Results

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14309-S-DU	11/10/97	RADIUM-226	1.49	0.23	PCI/G	WP0352.0
SC-14309-S-DU	11/10/97	RADIUM-228	1.43	0.43	PCI/G	WP0352.0
SC-14309-S-DU	11/10/97	THORIUM-230	2.30	0.62	PCI/G	WP0352.0
SC-14309-S-DU	11/10/97	URANIUM-238	1.56	3.11	PCI/G	WP0352.0
SC-14309-S-EB	11/10/97	RADIUM-226	0.19	0.339	PCI/L	TU0101.0
SC-14309-S-EB	11/10/97	RADIUM-228	0.11	1.45	PCI/L	TU0101.0
SC-14309-S-EB	11/10/97	THORIUM-230	0.65	0.280	PCI/L	TU0101.0
SC-14309-S-EB	11/10/97	THORIUM-232	0.16	0.324	PCI/L	TU0101.0
SC-14309-S-EB	11/10/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14309-S-FR	11/10/97	RADIUM-226	1.81	0.24	PCI/G	WP0352.0
SC-14309-S-FR	11/10/97	RADIUM-228	1.39	0.38	PCI/G	WP0352.0
SC-14309-S-FR	11/10/97	THORIUM-230	3.49	0.62	PCI/G	WP0352.0
SC-14309-S-FR	11/10/97	URANIUM-238	1.48	2.95	PCI/G	WP0352.0
SC-14309-S-SD	11/10/97	RADIUM-226	1.14	0.145	PCI/G	TU0101.0
SC-14309-S-SD	11/10/97	RADIUM-228	1.24	0.286	PCI/G	TU0101.0
SC-14309-S-SD	11/10/97	THORIUM-230	2.89	0.209	PCI/G	TU0101.0
SC-14309-S-SD	11/10/97	THORIUM-232	1.31	0.244	PCI/G	TU0101.0
SC-14309-S-SD	11/10/97	URANIUM-238	2.88	1.56	PCI/G	TU0101.0
SC-14313-S-DU	11/19/97	RADIUM-226	0.86	0.24	PCI/G	WP0359.0
SC-14313-S-DU	11/19/97	RADIUM-228	1.26	0.38	PCI/G	WP0359.0
SC-14313-S-DU	11/19/97	THORIUM-230	1.49	0.62	PCI/G	WP0359.0
SC-14313-S-DU	11/19/97	URANIUM-238	1.27	2.55	PCI/G	WP0359.0
SC-14313-S-EB	11/19/97	RADIUM-226	0.25	0.370	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	RADIUM-228	1.30	1.21	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	THORIUM-230	0.57	0.261	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	THORIUM-232	0.06	0.261	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14313-S-FR	11/19/97	RADIUM-226	0.57	0.37	PCI/G	WP0359.0
SC-14313-S-FR	11/19/97	RADIUM-228	1.46	0.53	PCI/G	WP0359.0
SC-14313-S-FR	11/19/97	THORIUM-230	1.34	0.62	PCI/G	WP0359.0
SC-14313-S-FR	11/19/97	URANIUM-238	2.01	4.01	PCI/G	WP0359.0
SC-14320-S-RS-DU	11/25/97	RADIUM-226	2.61	0.61	PCI/G	WP0368.0
SC-14320-S-RS-DU	11/25/97	RADIUM-228	3.50	0.80	PCI/G	WP0368.0
SC-14320-S-RS-DU	11/25/97	URANIUM-238	3.04	6.07	PCI/G	WP0368.0
SC-14320-S-RS-EB	11/25/97	RADIUM-226	0.13	0.231	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	RADIUM-228	0.74	1.35	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	THORIUM-230	0.32	0.214	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	THORIUM-232	0.13	0.214	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14320-S-RS-FR	11/25/97	RADIUM-226	3.30	0.48	PCI/G	WP0368.0
SC-14320-S-RS-FR	11/25/97	RADIUM-228	4.36	0.61	PCI/G	WP0368.0
SC-14320-S-RS-FR	11/25/97	THORIUM-230	15.20	0.62	PCI/G	WP0368.0
SC-14320-S-RS-FR	11/25/97	URANIUM-238	2.28	4.56	PCI/G	WP0368.0
SC-14320-S-RS-SD	11/25/97	RADIUM-226	1.06	0.161	PCI/G	TU0101.0
SC-14320-S-RS-SD	11/25/97	RADIUM-228	1.51	0.211	PCI/G	TU0101.0
SC-14320-S-RS-SD	11/25/97	THORIUM-230	3.04	0.240	PCI/G	TU0101.0
SC-14320-S-RS-SD	11/25/97	URANIUM-238	1.63	6.68	PCI/G	TU0101.0
SC-14424-S-DU	11/10/97	RADIUM-226	2.40	0.34	PCI/G	WP0352.0
SC-14424-S-DU	11/10/97	RADIUM-228	3.12	0.59	PCI/G	WP0352.0
SC-14424-S-DU	11/10/97	THORIUM-230	18.20	0.62	PCI/G	WP0352.0
SC-14424-S-DU	11/10/97	URANIUM-238	4.43	3.12	PCI/G	WP0352.0
SC-14424-S-EB	11/10/97	RADIUM-226	0.10	0.391	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	RADIUM-228	0.32	1.47	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	THORIUM-230	0.45	0.312	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	THORIUM-232	0.03	0.258	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14424-S-FR	11/10/97	RADIUM-226	2.16	0.35	PCI/G	WP0352.0

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SC-14424-S-FR	11/10/97	RADIUM-228	2.88	0.62	PCI/G	WP0352 0
SC-14424-S-FR	11/10/97	THORIUM-230	23.30	0.62	PCI/G	WP0352 0
SC-14424-S-FR	11/10/97	URANIUM-238	3.18	3.57	PCI/G	WP0352 0
SC-14424-S-SD	11/10/97	RADIUM-226	2 46	0.201	PCI/G	TU0101 0
SC-14424-S-SD	11/10/97	RADIUM-228	3.71	0.369	PCI/G	TU0101 0
SC-14424-S-SD	11/10/97	THORIUM-230	15.00	0.0981	PCI/G	TU0101 0
SC-14424-S-SD	11/10/97	THORIUM-232	2 76	0 0979	PCI/G	TU0101.0
SC-14424-S-SD	11/10/97	URANIUM-238	8.95	6.69	PCI/G	TU0101.0
SC-14510-S-DU	11/26/97	RADIUM-226	1.19	0.27	PCI/G	WP0369.0
SC-14510-S-DU	11/26/97	RADIUM-228	1.57	0.35	PCI/G	WP0369 0
SC-14510-S-DU	11/26/97	THORIUM-230	1.25	0 62	PCI/G	WP0369.0
SC-14510-S-DU	11/26/97	URANIUM-238	1.33	2.66	PCI/G	WP0369 0
SC-14510-S-EB	11/26/97	RADIUM-226	0.09	0.304	PCI/L	TU0101 0
SC-14510-S-EB	11/26/97	RADIUM-228	0.44	1.15	PCI/L	TU0101.0
SC-14510-S-EB	11/26/97	THORIUM-230	0 53	0.298	PCI/L	TU0101.0
SC-14510-S-EB	11/26/97	THORIUM-232	0.04	0 297	PCI/L	TU0101.0
SC-14510-S-EB	11/26/97	URANIUM, TOTAL	0.13	0.0203	PCI/L	TU0101.0
SC-14510-S-FR	11/26/97	RADIUM-226	1 13	0.29	PCI/G	WP0369 0
SC-14510-S-FR	11/26/97	RADIUM-228	1.24	0.41	PCI/G	WP0369 0
SC-14510-S-FR	11/26/97	THORIUM-230	1.40	0.62	PCI/G	WP0369 0
SC-14510-S-FR	11/26/97	URANIUM-238	1 41	2.82	PCI/G	WP0369.0
SC-14510-S-SD	11/26/97	RADIUM-226	0.96	0.131	PCI/G	TU0101 0
SC-14510-S-SD	11/26/97	RADIUM-228	1 13	0.278	PCI/G	TU0101 0
SC-14510-S-SD	11/26/97	THORIUM-230	1 77	0.248	PCI/G	TU0101 0
SC-14510-S-SD	11/26/97	THORIUM-232	1 60	0 290	PCI/G	TU0101 0
SC-14510-S-SD	11/26/97	URANIUM-238	0.90	1.80	PCI/G	TU0101 0
SC-14515-S-DU	11/10/97	RADIUM-226	1.92	0.54	PCI/G	WP0353 0
SC-14515-S-DU	11/10/97	RADIUM-228	3.38	0.69	PCI/G	WP0353 0
SC-14515-S-DU	11/10/97	THORIUM-230	25.90	0 62	PCI/G	WP0353 0
SC-14515-S-DU	11/10/97	URANIUM-238	8 82	3.78	PCI/G	WP0353 0
SC-14515-S-EB	11/10/97	RADIUM-226	0 16	0.275	PCI/L	TU0101 0
SC-14515-S-EB	11/10/97	RADIUM-228	0 34	1 45	PCI/L	TU0101 0
SC-14515-S-EB	11/10/97	THORIUM-230	0 72	0 313	PCI/L	TU0101 0
SC-14515-S-EB	11/10/97	THORIUM-232	0 14	0 129	PCI/L	TU0101 0
SC-14515-S-EB	11/10/97	URANIUM, TOTAL	0 01	0.0203	PCI/L	TU0101 0
SC-14515-S-FR	11/10/97	RADIUM-226	2.25	0.32	PCI/G	WP0353 0
SC-14515-S-FR	11/10/97	RADIUM-228	3.27	0 46	PCI/G	WP0353 0
SC-14515-S-FR	11/10/97	THORIUM-230	22.30	0.62	PCI/G	WP0353 0
SC-14515-S-FR	11/10/97	URANIUM-238	7.10	3.45	PCI/G	WP0353 0
SC-14515-S-SD	11/10/97	RADIUM-226	1 16	0.166	PCI/G	TU0101 0
SC-14515-S-SD	11/10/97	RADIUM-228	2.34	0 244	PCI/G	TU0101 0
SC-14515-S-SD	11/10/97	THORIUM-230	14.30	0.141	PCI/G	TU0101 0
SC-14515-S-SD	11/10/97	THORIUM-232	1.80	0.199	PCI/G	TU0101.0
SC-14515-S-SD	11/10/97	URANIUM-238	6.77	7.84	PCI/G	TU0101 0
SC-14520-S-RS-DU	11/25/97	RADIUM-226	1.44	0.23	PCI/G	WP0368 0
SC-14520-S-RS-DU	11/25/97	RADIUM-228	0.90	0 45	PCI/G	WP0368 0
SC-14520-S-RS-DU	11/25/97	THORIUM-230	1.03	0.62	PCI/G	WP0368 0
SC-14520-S-RS-DU	11/25/97	URANIUM-238	1.37	2 74	PCI/G	WP0368.0
SC-14610-S-DU	11/26/97	RADIUM-226	1.33	0.32	PCI/G	WP0369 0
SC-14610-S-DU	11/26/97	RADIUM-228	1.55	0.42	PCI/G	WP0369.0
SC-14610-S-DU	11/26/97	THORIUM-230	1.17	0.62	PCI/G	WP0369.0
SC-14610-S-DU	11/26/97	URANIUM-238	1.47	2.94	PCI/G	WP0369 0
SC-14610-S-EB	11/26/97	RADIUM-226	0.14	0.366	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	RADIUM-228	0 25	1.37	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	THORIUM-230	0 48	0.348	PCI/L	TU0101 0
SC-14610-S-EB	11/26/97	THORIUM-232	0.32	0.288	PCI/L	TU0101 0
SC-14610-S-EB	11/26/97	URANIUM, TOTAL	0 01	0.0203	PCI/L	TU0101 0
SC-14610-S-FR	11/26/97	RADIUM-226	1 67	0 33	PCI/G	WP0369 0

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QC Confirmation Results

SC-14610-S-FR	11/26/97	RADIUM-228	0.72	1.43	PCI/G	WP0369.0
SC-14610-S-FR	11/26/97	THORIUM-230	3.38	0.62	PCI/G	WP0369.0
SC-14610-S-FR	11/26/97	URANIUM-238	2.68	3.08	PCI/G	WP0369.0
SC-14610-S-SD	11/26/97	RADIUM-226	1.25	0.173	PCI/G	TU0101.0
SC-14610-S-SD	11/26/97	RADIUM-228	1.98	0.316	PCI/G	TU0101.0
SC-14610-S-SD	11/26/97	THORIUM-230	5.76	0.0912	PCI/G	TU0101.0
SC-14610-S-SD	11/26/97	THORIUM-232	1.56	0.0777	PCI/G	TU0101.0
SC-14610-S-SD	11/26/97	URANIUM-238	2.95	1.96	PCI/G	TU0101.0
SC-14701-C-DU	12/23/97	RADIUM-226	1.38	0.18	PCI/G	WP0380.0
SC-14701-C-DU	12/23/97	RADIUM-228	1.20	0.39	PCI/G	WP0380.0
SC-14701-C-DU	12/23/97	THORIUM-230	1.28	0.62	PCI/G	WP0380.0
SC-14701-C-DU	12/23/97	URANIUM-238	1.40	2.79	PCI/G	WP0380.0
SC-14701-C-EB	12/23/97	RADIUM-226	0.08	0.281	PCI/L	TU0156.0
SC-14701-C-EB	12/23/97	RADIUM-228	0.17	2.43	PCI/L	TU0156.0
SC-14701-C-EB	12/23/97	THORIUM-230	0.30	0.199	PCI/L	TU0156.0
SC-14701-C-EB	12/23/97	THORIUM-232	0.04	0.199	PCI/L	TU0156.0
SC-14701-C-EB	12/23/97	URANIUM, TOTAL	0.24	0.0203	PCI/L	TU0156.0
SC-14701-C-FR	12/23/97	RADIUM-226	1.19	0.23	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	RADIUM-228	1.39	0.57	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	THORIUM-230	1.14	0.62	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	URANIUM-238	1.98	3.95	PCI/G	WP0380.0
SC-14701-C-SD	12/23/97	RADIUM-226	1.03	0.138	PCI/G	TU0156.0
SC-14701-C-SD	12/23/97	RADIUM-228	0.85	0.253	PCI/G	TU0156.0
SC-14701-C-SD	12/23/97	THORIUM-230	2.11	0.0828	PCI/G	TU0156.0
SC-14701-C-SD	12/23/97	URANIUM-238	2.14	1.45	PCI/G	TU0156.0
SC-14724-S-RS-DU	5/26/98	ARSENIC	5.40	6.20	UG/G	WS2170.0
SC-14724-S-RS-DU	5/26/98	RADIUM-226	1.41	0.29	PCI/G	WP0443.0
SC-14724-S-RS-DU	5/26/98	RADIUM-228	1.42	0.25	PCI/G	WP0443.0
SC-14724-S-RS-DU	5/26/98	THORIUM-230	0.89	0.62	PCI/G	WP0443.0
SC-14724-S-RS-DU	5/26/98	URANIUM-238	1.37	2.74	PCI/G	WP0443.0
SC-14724-S-RS-EB	5/26/98	ARSENIC	1.00	1.9	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	BENZO(A)ANTHRACENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	BENZO(A)PYRENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	BENZO(B)FLUORANTHENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	BENZO(K)FLUORANTHENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	CHRYSENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	INDENO(1,2,3-CD)PYRENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	RADIUM-226	0.04	0.083	PCI/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	RADIUM-228	0.31	0.302	PCI/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	THORIUM-230	0.20	0.113	PCI/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	THORIUM-232	0.05	0.097	PCI/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2301.0
SC-14724-S-RS-FR	5/26/98	ARSENIC	5.70	5.30	UG/G	WS2170.0
SC-14724-S-RS-FR	5/26/98	BENZO(A)ANTHRACENE	6.00	11	UG/KG	WS2170.0
SC-14724-S-RS-FR	5/26/98	BENZO(A)PYRENE	10.00	19	UG/KG	WS2170.0
SC-14724-S-RS-FR	5/26/98	BENZO(B)FLUORANTHENE	8.00	15	UG/KG	WS2170.0
SC-14724-S-RS-FR	5/26/98	BENZO(K)FLUORANTHENE	7.00	14	UG/KG	WS2170.0
SC-14724-S-RS-FR	5/26/98	CHRYSENE	60.00	120	UG/KG	WS2170.0
SC-14724-S-RS-FR	5/26/98	INDENO(1,2,3-CD)PYRENE	18.00	36	UG/KG	WS2170.0
SC-14724-S-RS-FR	5/26/98	RADIUM-226	1.31	0.37	PCI/G	WP0443.0
SC-14724-S-RS-FR	5/26/98	RADIUM-228	1.55	0.39	PCI/G	WP0443.0
SC-14724-S-RS-FR	5/26/98	THORIUM-230	0.93	0.62	PCI/G	WP0443.0
SC-14724-S-RS-FR	5/26/98	URANIUM-238	1.85	2.31	PCI/G	WP0443.0
SC-14724-S-RS-MD	5/26/98	BENZO(A)ANTHRACENE	80.00	12	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	BENZO(A)PYRENE	140.00	19	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	BENZO(B)FLUORANTHENE	110.00	15	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	BENZO(K)FLUORANTHENE	100.00	14	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	CHRYSENE	910.00	130	UG/KG	WS2170.0

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SC-14724-S-RS-MD	5/26/98	INDENO(1,2,3-CD)PYRENE	260.00	37	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	ARSENIC	457.00	6.20	UG/G	WS2170.0
SC-14724-S-RS-MS	5/26/98	BENZO(A)ANTHRACENE	74.00	12	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(A)PYRENE	130.00	19	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(B)FLUORANTHENE	100.00	15	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(K)FLUORANTHENE	95.00	14	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	CHRYSENE	840.00	130	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	INDENO(1,2,3-CD)PYRENE	230.00	37	UG/KG	WS2170 0
SC-14724-S-RS-SD	5/26/98	ARSENIC	7.90	0.48	UG/G	QT2301 0
SC-14724-S-RS-SD	5/26/98	BENZO(A)ANTHRACENE	22.00	44	UG/KG	QT2301.0
SC-14724-S-RS-SD	5/26/98	BENZO(A)PYRENE	22.00	44	UG/KG	QT2301.0
SC-14724-S-RS-SD	5/26/98	BENZO(B)FLUORANTHENE	22 00	44	UG/KG	QT2301.0
SC-14724-S-RS-SD	5/26/98	BENZO(K)FLUORANTHENE	22.00	44	UG/KG	QT2301.0
SC-14724-S-RS-SD	5/26/98	CHRYSENE	22.00	44	UG/KG	QT2301.0
SC-14724-S-RS-SD	5/26/98	INDENO(1,2,3-CD)PYRENE	22.00	44	UG/KG	QT2301 0
SC-14724-S-RS-SD	5/26/98	RADIUM-226	1.88	2 07	PCI/G	QT2301.0
SC-14724-S-RS-SD	5/26/98	RADIUM-228	0 82	1.16	PCI/G	QT2301.0
SC-14724-S-RS-SD	5/26/98	THORIUM-230	1.58	0.100	PCI/G	QT2301.0
SC-14724-S-RS-SD	5/26/98	THORIUM-232	1.37	0.082	PCI/G	QT2301 0
SC-14724-S-RS-SD	5/26/98	URANIUM-238	1.82	1.96	PCI/G	QT2301 0
SC-14801-S-DU	12/23/97	RADIUM-226	0.33	0 65	PCI/G	WP0380.0
SC-14801-S-DU	12/23/97	RADIUM-228	1.30	0.24	PCI/G	WP0380 0
SC-14801-S-DU	12/23/97	THORIUM-230	0.84	0 62	PCI/G	WP0380 0
SC-14801-S-DU	12/23/97	URANIUM-238	1.75	3 49	PCI/G	WP0380 0
SC-14801-S-EB	12/23/97	RADIUM-226	0.28	0 516	PCI/L	TU0156 0
SC-14801-S-EB	12/23/97	RADIUM-228	1.29	3 15	PCI/L	TU0156 0
SC-14801-S-EB	12/23/97	THORIUM-230	0.36	0.0984	PCI/L	TU0156 0
SC-14801-S-EB	12/23/97	THORIUM-232	0 11	0.219	PCI/L	TU0156 0
SC-14801-S-EB	12/23/97	URANIUM, TOTAL	0.01	0 0203	PCI/L	TU0156 0
SC-14801-S-FR	12/23/97	RADIUM-226	0 71	0 26	PCI/G	WP0380 0
SC-14801-S-FR	12/23/97	RADIUM-228	1 01	0 41	PCI/G	WP0380 0
SC-14801-S-FR	12/23/97	THORIUM-230	0.92	0.62	PCI/G	WP0380 0
SC-14801-S-FR	12/23/97	URANIUM-238	1.33	2.65	PCI/G	WP0380 0
SC-14801-S-SD	12/23/97	RADIUM-226	0.64	0.179	PCI/G	TU0156 0
SC-14801-S-SD	12/23/97	RADIUM-228	1.32	0.289	PCI/G	TU0156 0
SC-14801-S-SD	12/23/97	THORIUM-230	1.44	0.0543	PCI/G	TU0156 0
SC-14801-S-SD	12/23/97	URANIUM-238	2 56	1 89	PCI/G	TU0156 0
SC-14815-S-02-DU	5/27/98	RADIUM-226	1.38	0.22	PCI/G	WP0444 0
SC-14815-S-02-DU	5/27/98	RADIUM-228	1 56	0 26	PCI/G	WP0444 0
SC-14815-S-02-DU	5/27/98	THORIUM-230	1.08	0.62	PCI/G	WP0444 0
SC-14815-S-02-DU	5/27/98	URANIUM-238	1.39	2 78	PCI/G	WP0444.0
SC-14815-S-02-EB	5/27/98	RADIUM-226	0.01	0 079	PCI/L	QT2301 0
SC-14815-S-02-EB	5/27/98	RADIUM-228	0 48	0.303	PCI/L	QT2301 0
SC-14815-S-02-EB	5/27/98	THORIUM-230	0 05	0.084	PCI/L	QT2301 0
SC-14815-S-02-EB	5/27/98	THORIUM-232	0.04	0.021	PCI/L	QT2301 0
SC-14815-S-02-EB	5/27/98	URANIUM, TOTAL	0 34	0.677	PCI/L	QT2301 0
SC-14815-S-02-FR	5/27/98	RADIUM-226	1 34	0.25	PCI/G	WP0444 0
SC-14815-S-02-FR	5/27/98	RADIUM-228	1.61	0 48	PCI/G	WP0444 0
SC-14815-S-02-FR	5/27/98	THORIUM-230	0.91	0 62	PCI/G	WP0444 0
SC-14815-S-02-FR	5/27/98	URANIUM-238	1.36	2.71	PCI/G	WP0444 0
SC-14815-S-02-SD	5/27/98	RADIUM-226	3 13	2.05	PCI/G	QT2301 0
SC-14815-S-02-SD	5/27/98	RADIUM-228	0.87	1.06	PCI/G	QT2301 0
SC-14815-S-02-SD	5/27/98	THORIUM-230	1 76	0.174	PCI/G	QT2301 0
SC-14815-S-02-SD	5/27/98	THORIUM-232	1.48	0.083	PCI/G	QT2301 0
SC-14815-S-02-SD	5/27/98	URANIUM-238	1.17	1 64	PCI/G	QT2301.0
SC-14910-S-DU	12/31/97	RADIUM-226	0.85	0 30	PCI/G	WP0381.0
SC-14910-S-DU	12/31/97	RADIUM-228	1.38	0 44	PCI/G	WP0381.0
SC-14910-S-DU	12/31/97	THORIUM-230	1 19	0 62	PCI/G	WP0381 0

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SC-14910-S-DU	12/31/97	URANIUM-238	1.71	3.42	PCI/G	WP0381.0
SC-14910-S-EB	12/31/97	RADIUM-226	0.27	0.218	PCI/L	TU0156.0
SC-14910-S-EB	12/31/97	RADIUM-228	0.41	2.18	PCI/L	TU0156.0
SC-14910-S-EB	12/31/97	THORIUM-230	0.17	0.188	PCI/L	TU0156.0
SC-14910-S-EB	12/31/97	THORIUM-232	0.10	0.187	PCI/L	TU0156.0
SC-14910-S-EB	12/31/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0156.0
SC-14910-S-FR	12/31/97	RADIUM-226	0.73	0.23	PCI/G	WP0381.0
SC-14910-S-FR	12/31/97	RADIUM-228	0.93	0.37	PCI/G	WP0381.0
SC-14910-S-FR	12/31/97	THORIUM-230	1.03	0.62	PCI/G	WP0381.0
SC-14910-S-FR	12/31/97	URANIUM-238	1.31	2.61	PCI/G	WP0381.0
SC-14910-S-SD	12/31/97	RADIUM-226	0.74	0.174	PCI/G	TU0156.0
SC-14910-S-SD	12/31/97	RADIUM-228	1.39	0.333	PCI/G	TU0156.0
SC-14910-S-SD	12/31/97	THORIUM-230	1.41	0.102	PCI/G	TU0156.0
SC-14910-S-SD	12/31/97	THORIUM-232	0.92	0.102	PCI/G	TU0156.0
SC-14910-S-SD	12/31/97	URANIUM-238	0.70	1.83	PCI/G	TU0156.0
SC-15002-S-DU	1/26/98	RADIUM-226	1.17	0.32	PCI/G	WP0395.0
SC-15002-S-DU	1/26/98	RADIUM-228	1.11	0.38	PCI/G	WP0395.0
SC-15002-S-DU	1/26/98	THORIUM-230	1.26	0.62	PCI/G	WP0395.0
SC-15002-S-DU	1/26/98	URANIUM-238	1.35	2.70	PCI/G	WP0395.0
SC-15002-S-EB	1/26/98	RADIUM-226	0.07	0.070	PCI/L	ES2044.0
SC-15002-S-EB	1/26/98	RADIUM-228	0.41	1.97	PCI/L	ES2044.0
SC-15002-S-EB	1/26/98	THORIUM-230	0.36	0.133	PCI/L	ES2044.0
SC-15002-S-EB	1/26/98	THORIUM-232	0.03	0.0516	PCI/L	ES2044.0
SC-15002-S-EB	1/26/98	URANIUM, TOTAL	0.04	0.0752	PCI/L	ES2044.0
SC-15002-S-FR	1/26/98	RADIUM-226	0.99	0.35	PCI/G	WP0395.0
SC-15002-S-FR	1/26/98	RADIUM-228	0.63	1.26	PCI/G	WP0395.0
SC-15002-S-FR	1/26/98	THORIUM-230	1.40	0.62	PCI/G	WP0395.0
SC-15002-S-FR	1/26/98	URANIUM-238	1.84	3.68	PCI/G	WP0395.0
SC-15002-S-SD	1/26/98	RADIUM-226	0.88	0.121	PCI/G	ES2044.0
SC-15002-S-SD	1/26/98	RADIUM-228	1.10	0.236	PCI/G	ES2044.0
SC-15002-S-SD	1/26/98	THORIUM-230	0.41	0.0420	PCI/G	ES2044.0
SC-15002-S-SD	1/26/98	THORIUM-232	0.38	0.0199	PCI/G	ES2044.0
SC-15002-S-SD	1/26/98	URANIUM-238	0.40	0.0219	PCI/G	ES2044.0
SC-15111-S-02-DU	7/20/98	RADIUM-226	1.18	0.21	PCI/G	WP0468.0
SC-15111-S-02-DU	7/20/98	RADIUM-228	1.32	0.44	PCI/G	WP0468.0
SC-15111-S-02-DU	7/20/98	THORIUM-230	1.09	0.62	PCI/G	WP0468.0
SC-15111-S-02-DU	7/20/98	URANIUM-238	1.90	3.79	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	RADIUM-226	1.05	0.26	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	RADIUM-228	1.36	0.22	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	THORIUM-230	1.08	0.62	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	URANIUM-238	1.21	2.42	PCI/G	WP0468.0
SC-15120-S-DU	6/1/98	RADIUM-226	0.96	0.38	PCI/G	WP0447.0
SC-15120-S-DU	6/1/98	RADIUM-228	1.36	0.43	PCI/G	WP0447.0
SC-15120-S-DU	6/1/98	THORIUM-230	1.62	0.62	PCI/G	WP0447.0
SC-15120-S-DU	6/1/98	URANIUM-238	2.00	3.99	PCI/G	WP0447.0
SC-15120-S-EB	6/1/98	RADIUM-226	0.33	0.264	PCI/L	GE2171.0
SC-15120-S-EB	6/1/98	RADIUM-228	2.78	0.793	PCI/L	GE2171.0
SC-15120-S-EB	6/1/98	THORIUM-230	0.03	0.0242	PCI/L	GE2171.0
SC-15120-S-EB	6/1/98	THORIUM-232	0.00	0.0095	PCI/L	GE2171.0
SC-15120-S-EB	6/1/98	URANIUM, TOTAL	0.03	0.0646	PCI/L	GE2171.0
SC-15120-S-FR	6/1/98	RADIUM-226	0.99	0.27	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	RADIUM-228	1.21	0.37	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	THORIUM-230	1.12	0.62	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	URANIUM-238	1.89	1.81	PCI/G	WP0447.0
SC-15120-S-SD	6/1/98	RADIUM-226	0.68	.0605	PCI/G	GE2171.0
SC-15120-S-SD	6/1/98	RADIUM-228	1.14	.123	PCI/G	GE2171.0
SC-15120-S-SD	6/1/98	THORIUM-230	1.09	.0741	PCI/G	GE2171.0
SC-15120-S-SD	6/1/98	THORIUM-232	1.25	.0902	PCI/G	GE2171.0

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SC-15120-S-SD	6/1/98	URANIUM-238	0 50	.998	PCI/G	GE2171 0
SC-15210-S-DU	2/27/98	ARSENIC	8.90	0.34	UG/G	QT2220 0
SC-15210-S-DU	2/27/98	RADIUM-226	1.57	0.26	PCI/G	WP0423.0
SC-15210-S-DU	2/27/98	RADIUM-228	1.30	0 36	PCI/G	WP0423.0
SC-15210-S-DU	2/27/98	THORIUM-230	1.12	0.62	PCI/G	WP0423 0
SC-15210-S-DU	2/27/98	URANIUM-238	1.45	2.89	PCI/G	WP0423.0
SC-15210-S-EB	2/27/98	ARSENIC	2.00	4.00	UG/L	ES2044.0
SC-15210-S-EB	2/27/98	RADIUM-226	0.02	0.079	PCI/L	ES2044 0
SC-15210-S-EB	2/27/98	RADIUM-228	0 73	1.45	PCI/L	ES2044.0
SC-15210-S-EB	2/27/98	THORIUM-230	0.33	0.165	PCI/L	ES2044.0
SC-15210-S-EB	2/27/98	THORIUM-232	0.03	0.0646	PCI/L	ES2044 0
SC-15210-S-EB	2/27/98	URANIUM, TOTAL	0.04	0 0752	PCI/L	ES2044 0
SC-15210-S-FR	2/27/98	ARSENIC	9 10	0.34	UG/G	QT2220.0
SC-15210-S-FR	2/27/98	RADIUM-226	1.49	0.38	PCI/G	WP0423 0
SC-15210-S-FR	2/27/98	RADIUM-228	1.53	0.51	PCI/G	WP0423 0
SC-15210-S-FR	2/27/98	THORIUM-230	1.16	0.62	PCI/G	WP0423 0
SC-15210-S-FR	2/27/98	URANIUM-238	2.11	4.22	PCI/G	WP0423 0
SC-15210-S-MS	2/27/98	ARSENIC	540 00	0.34	UG/G	QT2220.0
SC-15210-S-SD	2/27/98	ARSENIC	5.07	0 473	UG/G	ES2044 0
SC-15210-S-SD	2/27/98	RADIUM-226	0.92	0 156	PCI/G	ES2044 0
SC-15210-S-SD	2/27/98	RADIUM-228	1.27	0.250	PCI/G	ES2044 0
SC-15210-S-SD	2/27/98	THORIUM-230	0 70	0.0472	PCI/G	ES2044 0
SC-15210-S-SD	2/27/98	THORIUM-232	0.61	0.0218	PCI/G	ES2044 0
SC-15210-S-SD	2/27/98	URANIUM-238	0.95	0.0224	PCI/G	ES2044.0
SC-15215-S-RS-DU	5/29/98	RADIUM-226	1.20	0.36	PCI/G	WP0445 0
SC-15215-S-RS-DU	5/29/98	RADIUM-228	1.16	0.60	PCI/G	WP0445 0
SC-15215-S-RS-DU	5/29/98	THORIUM-230	1 12	0.62	PCI/G	WP0445 0
SC-15215-S-RS-DU	5/29/98	URANIUM-238	1 95	3.90	PCI/G	WP0445.0
SC-15215-S-RS-EB	5/29/98	ARSENIC	2 00	4 0	UG/L	GE2171 0
SC-15215-S-RS-EB	5/29/98	RADIUM-226	0.82	0 322	PCI/L	GE2171 0
SC-15215-S-RS-EB	5/29/98	RADIUM-228	1 84	0.663	PCI/L	GE2171 0
SC-15215-S-RS-EB	5/29/98	THORIUM-230	0 05	0.0274	PCI/L	GE2171 0
SC-15215-S-RS-EB	5/29/98	THORIUM-232	0 01	0 0219	PCI/L	GE2171 0
SC-15215-S-RS-EB	5/29/98	URANIUM, TOTAL	0 03	0 0646	PCI/L	GE2171 0
SC-15215-S-RS-FR	5/29/98	ARSENIC	7.00	0 83	UG/G	SW0035 0
SC-15215-S-RS-FR	5/29/98	RADIUM-226	1.27	0.22	PCI/G	WP0445 0
SC-15215-S-RS-FR	5/29/98	RADIUM-228	1.04	0 43	PCI/G	WP0445 0
SC-15215-S-RS-FR	5/29/98	THORIUM-230	1.05	0.62	PCI/G	WP0445 0
SC-15215-S-RS-FR	5/29/98	URANIUM-238	1 39	2.77	PCI/G	WP0445 0
SC-15215-S-RS-MD	5/29/98	ARSENIC	15 00	0 82	UG/G	SW0035 0
SC-15215-S-RS-MS	5/29/98	ARSENIC	16 80	0 82	UG/G	SW0035.0
SC-15215-S-RS-SD	5/29/98	ARSENIC	7 60	0 755	UG/G	GE2171 0
SC-15215-S-RS-SD	5/29/98	RADIUM-226	1.14	065	PCI/G	GE2171 0
SC-15215-S-RS-SD	5/29/98	RADIUM-228	1.30	13	PCI/G	GE2171 0
SC-15215-S-RS-SD	5/29/98	THORIUM-230	1.39	.0792	PCI/G	GE2171 0
SC-15215-S-RS-SD	5/29/98	THORIUM-232	1.07	.0377	PCI/G	GE2171 0
SC-15215-S-RS-SD	5/29/98	URANIUM-238	1.82	1 4	PCI/G	GE2171 0
SC-15310-S-DU	3/30/98	ARSENIC	7 10	2 3	UG/G	QT2244 0
SC-15310-S-DU	3/30/98	RADIUM-226	0 91	0.30	PCI/G	WP0433.0
SC-15310-S-DU	3/30/98	RADIUM-228	1 17	0.37	PCI/G	WP0433.0
SC-15310-S-DU	3/30/98	THORIUM-230	1.08	0.62	PCI/G	WP0433 0
SC-15310-S-DU	3/30/98	URANIUM-238	1.37	2.73	PCI/G	WP0433.0
SC-15310-S-EB	3/30/98	ARSENIC	1.60	3 1	UG/L	GE2157 0
SC-15310-S-EB	3/30/98	RADIUM-226	0.12	0.284	PCI/L	GE2157 0
SC-15310-S-EB	3/30/98	RADIUM-228	2 62	0.739	PCI/L	GE2157 0
SC-15310-S-EB	3/30/98	THORIUM-230	0 05	0.109	PCI/L	GE2157.0
SC-15310-S-EB	3/30/98	THORIUM-232	0 05	0.0932	PCI/L	GE2157 0
SC-15310-S-EB	3/30/98	URANIUM, TOTAL	0 03	0.0643	PCI/L	GE2157 0

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SC-15310-S-FR	3/30/98	ARSENIC	7.30	2.3	UG/G	QT2244.0
SC-15310-S-FR	3/30/98	RADIUM-226	1.02	0.37	PCI/G	WP0433.0
SC-15310-S-FR	3/30/98	RADIUM-228	0.54	1.07	PCI/G	WP0433.0
SC-15310-S-FR	3/30/98	THORIUM-230	1.28	0.62	PCI/G	WP0433.0
SC-15310-S-FR	3/30/98	URANIUM-238	1.74	2.82	PCI/G	WP0433.0
SC-15310-S-MS	3/30/98	ARSENIC	484.00	2.3	UG/G	QT2244.0
SC-15310-S-SD	3/30/98	ARSENIC	5.00	0.697	UG/G	GE2157.0
SC-15310-S-SD	3/30/98	RADIUM-226	0.84	0.0435	PCI/G	GE2157.0
SC-15310-S-SD	3/30/98	RADIUM-228	1.15	0.0670	PCI/G	GE2157.0
SC-15310-S-SD	3/30/98	THORIUM-230	0.81	0.0549	PCI/G	GE2157.0
SC-15310-S-SD	3/30/98	THORIUM-232	0.86	0.0842	PCI/G	GE2157.0
SC-15310-S-SD	3/30/98	URANIUM-238	1.30	0.730	PCI/G	GE2157.0
SC-15317-S-RS-DU	5/26/98	ARSENIC	5.90	5.90	UG/G	WS2170.0
SC-15317-S-RS-DU	5/26/98	RADIUM-226	1.51	0.35	PCI/G	WP0443.0
SC-15317-S-RS-DU	5/26/98	RADIUM-228	1.36	0.48	PCI/G	WP0443.0
SC-15317-S-RS-DU	5/26/98	THORIUM-230	2.38	0.62	PCI/G	WP0443.0
SC-15317-S-RS-DU	5/26/98	URANIUM-238	1.36	2.72	PCI/G	WP0443.0
SC-15317-S-RS-EB	5/26/98	ARSENIC	1.00	1.9	UG/L	QT2301.0
SC-15317-S-RS-EB	5/26/98	RADIUM-226	0.18	0.116	PCI/L	QT2301.0
SC-15317-S-RS-EB	5/26/98	RADIUM-228	0.08	0.304	PCI/L	QT2301.0
SC-15317-S-RS-EB	5/26/98	THORIUM-230	0.13	0.196	PCI/L	QT2301.0
SC-15317-S-RS-EB	5/26/98	THORIUM-232	0.06	0.080	PCI/L	QT2301.0
SC-15317-S-RS-EB	5/26/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2301.0
SC-15317-S-RS-FR	5/26/98	ARSENIC	5.30	4.20	UG/G	WS2170.0
SC-15317-S-RS-FR	5/26/98	RADIUM-226	1.41	0.24	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	RADIUM-228	1.41	0.34	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	THORIUM-230	3.57	0.62	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	URANIUM-238	1.38	2.76	PCI/G	WP0443.0
SC-15317-S-RS-MS	5/26/98	ARSENIC	494.00	5.90	UG/G	WS2170.0
SC-15317-S-RS-SD	5/26/98	ARSENIC	7.80	0.46	UG/G	QT2301.0
SC-15317-S-RS-SD	5/26/98	RADIUM-226	2.14	4.28	PCI/G	QT2301.0
SC-15317-S-RS-SD	5/26/98	RADIUM-228	1.32	1.55	PCI/G	QT2301.0
SC-15317-S-RS-SD	5/26/98	THORIUM-230	1.85	0.077	PCI/G	QT2301.0
SC-15317-S-RS-SD	5/26/98	THORIUM-232	1.00	0.030	PCI/G	QT2301.0
SC-15317-S-RS-SD	5/26/98	URANIUM-238	1.11	2.78	PCI/G	QT2301.0
SC-15410-S-DU	3/4/98	RADIUM-226	0.85	0.24	PCI/G	WP0425.0
SC-15410-S-DU	3/4/98	RADIUM-228	1.33	0.39	PCI/G	WP0425.0
SC-15410-S-DU	3/4/98	THORIUM-230	1.10	0.62	PCI/G	WP0425.0
SC-15410-S-DU	3/4/98	URANIUM-238	1.32	2.64	PCI/G	WP0425.0
SC-15410-S-EB	3/4/98	RADIUM-226	0.05	0.066	PCI/L	QT2224.0
SC-15410-S-EB	3/4/98	RADIUM-228	0.13	0.266	PCI/L	QT2224.0
SC-15410-S-EB	3/4/98	THORIUM-230	0.10	0.102	PCI/L	QT2224.0
SC-15410-S-EB	3/4/98	THORIUM-232	0.02	0.021	PCI/L	QT2224.0
SC-15410-S-EB	3/4/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2224.0
SC-15410-S-FR	3/4/98	RADIUM-226	0.78	0.29	PCI/G	WP0425.0
SC-15410-S-FR	3/4/98	RADIUM-228	0.67	1.34	PCI/G	WP0425.0
SC-15410-S-FR	3/4/98	THORIUM-230	1.30	0.62	PCI/G	WP0425.0
SC-15410-S-FR	3/4/98	URANIUM-238	1.86	3.71	PCI/G	WP0425.0
SC-15410-S-SD	3/4/98	RADIUM-226	1.09	3.33	PCI/G	QT2224.0
SC-15410-S-SD	3/4/98	RADIUM-228	1.54	1.61	PCI/G	QT2224.0
SC-15410-S-SD	3/4/98	THORIUM-230	1.11	0.037	PCI/G	QT2224.0
SC-15410-S-SD	3/4/98	THORIUM-232	1.72	0.014	PCI/G	QT2224.0
SC-15410-S-SD	3/4/98	URANIUM-238	1.28	2.16	PCI/G	QT2224.0
SC-15420-S-DU	5/29/98	RADIUM-226	0.86	0.23	PCI/G	WP0446.0
SC-15420-S-DU	5/29/98	RADIUM-228	1.15	0.32	PCI/G	WP0446.0
SC-15420-S-DU	5/29/98	THORIUM-230	1.46	0.62	PCI/G	WP0446.0
SC-15420-S-DU	5/29/98	URANIUM-238	1.34	2.68	PCI/G	WP0446.0
SC-15420-S-EB	5/29/98	RADIUM-226	0.11	0.215	PCI/L	GE2171.0

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SC-15420-S-EB	5/29/98	RADIUM-228	1.95	0 762	PCI/L	GE2171.0
SC-15420-S-EB	5/29/98	THORIUM-230	0.02	0.0357	PCI/L	GE2171 0
SC-15420-S-EB	5/29/98	THORIUM-232	0.00	0.00968	PCI/L	GE2171 0
SC-15420-S-EB	5/29/98	URANIUM, TOTAL	0.14	0.0646	PCI/L	GE2171.0
SC-15420-S-FR	5/29/98	RADIUM-226	0.77	0.33	PCI/G	WP0446.0
SC-15420-S-FR	5/29/98	RADIUM-228	0.61	1.21	PCI/G	WP0446 0
SC-15420-S-FR	5/29/98	THORIUM-230	1.23	0.62	PCI/G	WP0446.0
SC-15420-S-FR	5/29/98	URANIUM-238	1.78	3 55	PCI/G	WP0446.0
SC-15420-S-SD	5/29/98	RADIUM-226	0.73	.0549	PCI/G	GE2171.0
SC-15420-S-SD	5/29/98	RADIUM-228	1.30	.129	PCI/G	GE2171.0
SC-15420-S-SD	5/29/98	THORIUM-230	1.46	.0601	PCI/G	GE2171 0
SC-15420-S-SD	5/29/98	THORIUM-232	1.49	.126	PCI/G	GE2171 0
SC-15420-S-SD	5/29/98	URANIUM-238	1.11	1.05	PCI/G	GE2171 0
SC-15510-S-DU	5/29/98	RADIUM-226	0 97	0.28	PCI/G	WP0446.0
SC-15510-S-DU	5/29/98	RADIUM-228	1.38	0 41	PCI/G	WP0446.0
SC-15510-S-DU	5/29/98	THORIUM-230	1.24	0 62	PCI/G	WP0446 0
SC-15510-S-DU	5/29/98	URANIUM-238	1.31	2.61	PCI/G	WP0446 0
SC-15510-S-EB	5/29/98	RADIUM-226	0 18	0.362	PCI/L	GE2171 0
SC-15510-S-EB	5/29/98	RADIUM-228	1.59	0 797	PCI/L	GE2171.0
SC-15510-S-EB	5/29/98	THORIUM-230	0 04	0.00719	PCI/L	GE2171 0
SC-15510-S-EB	5/29/98	THORIUM-232	0 01	0.0265	PCI/L	GE2171 0
SC-15510-S-EB	5/29/98	URANIUM, TOTAL	0.03	0 0646	PCI/L	GE2171 0
SC-15510-S-FR	5/29/98	RADIUM-226	0 90	0 31	PCI/G	WP0446 0
SC-15510-S-FR	5/29/98	RADIUM-228	1 07	0 49	PCI/G	WP0446 0
SC-15510-S-FR	5/29/98	THORIUM-230	1.09	0.62	PCI/G	WP0446 0
SC-15510-S-FR	5/29/98	URANIUM-238	1.93	3 86	PCI/G	WP0446 0
SC-15510-S-SD	5/29/98	RADIUM-226	0.94	0654	PCI/G	GE2171 0
SC-15510-S-SD	5/29/98	RADIUM-228	1.08	129	PCI/G	GE2171 0
SC-15510-S-SD	5/29/98	THORIUM-230	1.32	137	PCI/G	GE2171 0
SC-15510-S-SD	5/29/98	THORIUM-232	1.42	19	PCI/G	GE2171 0
SC-15510-S-SD	5/29/98	URANIUM-238	1.40	1.27	PCI/G	GE2171 0
SC-15605-S-DU	6/1/98	RADIUM-226	0.89	0.25	PCI/G	WP0447 0
SC-15605-S-DU	6/1/98	RADIUM-228	0 96	0 43	PCI/G	WP0447 0
SC-15605-S-DU	6/1/98	THORIUM-230	0 99	0.62	PCI/G	WP0447 0
SC-15605-S-DU	6/1/98	URANIUM-238	1 36	2 71	PCI/G	WP0447 0
SC-15605-S-EB	6/1/98	RADIUM-226	0 16	0.323	PCI/L	GE2171.0
SC-15605-S-EB	6/1/98	RADIUM-228	2.78	0 773	PCI/L	GE2171 0
SC-15605-S-EB	6/1/98	THORIUM-230	0 03	0 0235	PCI/L	GE2171 0
SC-15605-S-EB	6/1/98	THORIUM-232	0.03	0 0092	PCI/L	GE2171 0
SC-15605-S-EB	6/1/98	URANIUM, TOTAL	0 03	0.0646	PCI/L	GE2171 0
SC-15605-S-FR	6/1/98	RADIUM-226	0 79	0 38	PCI/G	WP0447.0
SC-15605-S-FR	6/1/98	RADIUM-228	1 34	0 62	PCI/G	WP0447.0
SC-15605-S-FR	6/1/98	THORIUM-230	1.26	0 62	PCI/G	WP0447 0
SC-15605-S-FR	6/1/98	URANIUM-238	1.84	3.68	PCI/G	WP0447.0
SC-15605-S-SD	6/1/98	RADIUM-226	0.60	.0573	PCI/G	GE2171 0
SC-15605-S-SD	6/1/98	RADIUM-228	1.21	103	PCI/G	GE2171 0
SC-15605-S-SD	6/1/98	THORIUM-230	1 10	.104	PCI/G	GE2171 0
SC-15605-S-SD	6/1/98	THORIUM-232	1 46	104	PCI/G	GE2171.0
SC-15605-S-SD	6/1/98	URANIUM-238	0 51	1.02	PCI/G	GE2171 0
SC-15610-S-DU	6/1/98	RADIUM-226	1.26	0 31	PCI/G	WP0447.0
SC-15610-S-DU	6/1/98	RADIUM-228	1.85	0.65	PCI/G	WP0447 0
SC-15610-S-DU	6/1/98	THORIUM-230	3.50	0.62	PCI/G	WP0447 0
SC-15610-S-DU	6/1/98	URANIUM-238	2 17	4.33	PCI/G	WP0447 0
SC-15610-S-EB	6/1/98	RADIUM-226	0.34	0 312	PCI/L	GE2171 0
SC-15610-S-EB	6/1/98	RADIUM-228	2 89	0 957	PCI/L	GE2171 0
SC-15610-S-EB	6/1/98	THORIUM-230	0.03	0 01	PCI/L	GE2171 0
SC-15610-S-EB	6/1/98	THORIUM-232	0 01	0.01	PCI/L	GE2171 0
SC-15610-S-EB	6/1/98	URANIUM, TOTAL	0 07	0 0646	PCI/L	GE2171 0

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SC-15610-S-FR	6/1/98	RADIUM-226	1.37	0.28	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	RADIUM-228	1.72	0.40	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	THORIUM-230	3.87	0.62	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	URANIUM-238	2.41	1.96	PCI/G	WP0447.0
SC-15610-S-SD	6/1/98	RADIUM-226	0.96	.0698	PCI/G	GE2171.0
SC-15610-S-SD	6/1/98	RADIUM-228	1.67	.117	PCI/G	GE2171.0
SC-15610-S-SD	6/1/98	THORIUM-230	6.73	.0863	PCI/G	GE2171.0
SC-15610-S-SD	6/1/98	THORIUM-232	2.20	.0863	PCI/G	GE2171.0
SC-15610-S-SD	6/1/98	URANIUM-238	1.76	1.33	PCI/G	GE2171.0
SC-15802-S-DU	6/30/97	URANIUM-238	1.93	3.85	PCI/G	WP0305.0
SC-15802-S-EB	6/30/97	URANIUM, TOTAL	0.40	0.7	PCI/L	OR0024.0
SC-15802-S-FR	6/30/97	2,4,6-TRINITROTOLUENE	0.05	0.10	UG/G	MX0152.0
SC-15802-S-FR	6/30/97	URANIUM-238	2.81	2.10	PCI/G	WP0305.0
SC-15802-S-MD	6/30/97	2,4,6-TRINITROTOLUENE	5.35	0.10	UG/G	MX0152.0
SC-15802-S-MS	6/30/97	2,4,6-TRINITROTOLUENE	5.13	0.10	UG/G	MX0152.0
SC-15802-S-SD	6/30/97	2,4,6-TRINITROTOLUENE	0.12	0.23	UG/G	WS2042.0
SC-15910-S-DU	9/10/97	ARSENIC	6.13	0.53	UG/G	GE2150.0
SC-15910-S-DU	9/10/97	RADIUM-226	1.44	0.23	PCI/G	WP0325.0
SC-15910-S-DU	9/10/97	RADIUM-228	1.52	0.57	PCI/G	WP0325.0
SC-15910-S-DU	9/10/97	THORIUM-230	1.13	0.62	PCI/G	WP0325.0
SC-15910-S-DU	9/10/97	URANIUM-238	1.79	3.58	PCI/G	WP0325.0
SC-15910-S-EB	9/10/97	ARSENIC	1.30	2.5	UG/L	GE2152.0
SC-15910-S-EB	9/10/97	RADIUM-226	0.03	0.402	PCI/L	GE2152.0
SC-15910-S-EB	9/10/97	RADIUM-228	2.97	0.758	PCI/L	GE2152.0
SC-15910-S-EB	9/10/97	THORIUM-230	0.06	0.0679	PCI/L	GE2152.0
SC-15910-S-EB	9/10/97	THORIUM-232	0.03	0.0532	PCI/L	GE2152.0
SC-15910-S-EB	9/10/97	URANIUM, TOTAL	0.63	0.0643	PCI/L	GE2152.0
SC-15910-S-FR	9/10/97	ARSENIC	9.70	0.57	UG/G	GE2150.0
SC-15910-S-FR	9/10/97	RADIUM-226	1.23	0.28	PCI/G	WP0325.0
SC-15910-S-FR	9/10/97	RADIUM-228	1.27	0.39	PCI/G	WP0325.0
SC-15910-S-FR	9/10/97	THORIUM-230	0.94	0.62	PCI/G	WP0325.0
SC-15910-S-FR	9/10/97	URANIUM-238	1.38	2.75	PCI/G	WP0325.0
SC-15910-S-MS	9/10/97	ARSENIC	365.00	0.52	UG/G	GE2150.0
SC-15910-S-SD	9/10/97	ARSENIC	4.10	0.589	UG/G	GE2152.0
SC-15910-S-SD	9/10/97	RADIUM-226	1.08	0.0713	PCI/G	GE2152.0
SC-15910-S-SD	9/10/97	RADIUM-228	1.28	0.143	PCI/G	GE2152.0
SC-15910-S-SD	9/10/97	THORIUM-230	1.42	0.155	PCI/G	GE2152.0
SC-15910-S-SD	9/10/97	THORIUM-232	1.35	0.155	PCI/G	GE2152.0
SC-15910-S-SD	9/10/97	URANIUM-238	2.09	1.26	PCI/G	GE2152.0
SC-15915-S-DU	9/10/97	ARSENIC	5.74	0.54	UG/G	GE2150.0
SC-15915-S-DU	9/10/97	RADIUM-226	1.34	0.23	PCI/G	WP0325.0
SC-15915-S-DU	9/10/97	RADIUM-228	1.18	0.41	PCI/G	WP0325.0
SC-15915-S-DU	9/10/97	THORIUM-230	1.14	0.62	PCI/G	WP0325.0
SC-15915-S-DU	9/10/97	URANIUM-238	1.39	2.78	PCI/G	WP0325.0
SC-15915-S-EB	9/10/97	ARSENIC	1.30	2.5	UG/L	GE2152.0
SC-15915-S-EB	9/10/97	RADIUM-226	0.16	0.374	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	RADIUM-228	3.08	0.811	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	THORIUM-230	0.06	0.0393	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	THORIUM-232	0.03	0.0561	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	URANIUM, TOTAL	0.03	0.0643	PCI/L	GE2152.0
SC-15915-S-FR	9/10/97	ARSENIC	5.30	0.54	UG/G	GE2150.0
SC-15915-S-FR	9/10/97	RADIUM-226	1.40	0.34	PCI/G	WP0325.0
SC-15915-S-FR	9/10/97	RADIUM-228	1.34	0.45	PCI/G	WP0325.0
SC-15915-S-FR	9/10/97	THORIUM-230	1.29	0.62	PCI/G	WP0325.0
SC-15915-S-FR	9/10/97	URANIUM-238	1.41	2.82	PCI/G	WP0325.0
SC-15915-S-MS	9/10/97	ARSENIC	355.00	0.52	UG/G	GE2150.0
SC-15915-S-SD	9/10/97	ARSENIC	5.20	0.549	UG/G	GE2152.0
SC-15915-S-SD	9/10/97	RADIUM-226	1.21	0.0752	PCI/G	GE2152.0

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SC-15915-S-SD	9/10/97	RADIUM-228	1.38	0.166	PCI/G	GE2152.0
SC-15915-S-SD	9/10/97	THORIUM-230	1 96	0.119	PCI/G	GE2152 0
SC-15915-S-SD	9/10/97	THORIUM-232	1 14	0.119	PCI/G	GE2152 0
SC-15915-S-SD	9/10/97	URANIUM-238	1.72	1.34	PCI/G	GE2152.0
SC-16010-S-DU	9/9/97	RADIUM-226	5.37	0.31	PCI/G	WP0323 0
SC-16010-S-DU	9/9/97	RADIUM-228	1.39	0.60	PCI/G	WP0323.0
SC-16010-S-DU	9/9/97	THORIUM-230	1.15	0.62	PCI/G	WP0323 0
SC-16010-S-DU	9/9/97	URANIUM-238	3.51	2.99	PCI/G	WP0323.0
SC-16010-S-EB	9/9/97	RADIUM-226	0.42	0.455	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	RADIUM-228	4.78	0.994	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	THORIUM-230	0.10	0.0610	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	THORIUM-232	0.04	0.0603	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	URANIUM, TOTAL	0.03	0.0643	PCI/L	GE2152.0
SC-16010-S-FR	9/9/97	RADIUM-226	6.27	0 71	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	RADIUM-228	1.89	0.52	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	THORIUM-230	2.28	0 62	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	URANIUM-238	2.58	5.16	PCI/G	WP0323.0
SC-16010-S-SD	9/9/97	RADIUM-226	2.02	0.0776	PCI/G	GE2152.0
SC-16010-S-SD	9/9/97	RADIUM-228	1.25	0 171	PCI/G	GE2152 0
SC-16010-S-SD	9/9/97	THORIUM-230	1.42	0.222	PCI/G	GE2152 0
SC-16010-S-SD	9/9/97	THORIUM-232	0.53	0.136	PCI/G	GE2152 0
SC-16010-S-SD	9/9/97	URANIUM-238	1.67	1 55	PCI/G	GE2152.0
SC-16110-S-DU	9/9/97	RADIUM-226	1.08	0.29	PCI/G	WP0324.0
SC-16110-S-DU	9/9/97	RADIUM-228	1.39	0 33	PCI/G	WP0324.0
SC-16110-S-DU	9/9/97	THORIUM-230	1.02	0.62	PCI/G	WP0324 0
SC-16110-S-DU	9/9/97	URANIUM-238	1.33	2.65	PCI/G	WP0324.0
SC-16110-S-EB	9/9/97	RADIUM-226	0.22	0.445	PCI/L	GE2152 0
SC-16110-S-EB	9/9/97	RADIUM-228	3.70	0.846	PCI/L	GE2152.0
SC-16110-S-EB	9/9/97	THORIUM-230	0.07	0.0606	PCI/L	GE2152 0
SC-16110-S-EB	9/9/97	THORIUM-232	0.01	0.0606	PCI/L	GE2152 0
SC-16110-S-EB	9/9/97	URANIUM, TOTAL	0.02	0.0643	PCI/L	GE2152 0
SC-16110-S-FR	9/9/97	RADIUM-226	1.19	0 30	PCI/G	WP0324 0
SC-16110-S-FR	9/9/97	RADIUM-228	1.13	0 51	PCI/G	WP0324.0
SC-16110-S-FR	9/9/97	THORIUM-230	0.90	0 62	PCI/G	WP0324.0
SC-16110-S-FR	9/9/97	URANIUM-238	1.86	3 71	PCI/G	WP0324.0
SC-16110-S-SD	9/9/97	RADIUM-226	0.82	0.0484	PCI/G	GE2152.0
SC-16110-S-SD	9/9/97	RADIUM-228	1 33	0.0824	PCI/G	GE2152 0
SC-16110-S-SD	9/9/97	THORIUM-230	0.91	0.266	PCI/G	GE2152 0
SC-16110-S-SD	9/9/97	THORIUM-232	1.33	0.181	PCI/G	GE2152 0
SC-16110-S-SD	9/9/97	URANIUM-238	1.65	0.676	PCI/G	GE2152.0
SC-25310-S-DU	7/8/98	RADIUM-226	1.52	0 39	PCI/G	WP0457.0
SC-25310-S-DU	7/8/98	RADIUM-228	1.51	0 42	PCI/G	WP0457.0
SC-25310-S-DU	7/8/98	THORIUM-230	1.12	0.62	PCI/G	WP0457.0
SC-25310-S-DU	7/8/98	URANIUM-238	2.03	4.06	PCI/G	WP0457 0
SC-25310-S-FR	7/8/98	RADIUM-226	1.35	0.30	PCI/G	WP0457.0
SC-25310-S-FR	7/8/98	RADIUM-228	1.16	0.40	PCI/G	WP0457 0
SC-25310-S-FR	7/8/98	THORIUM-230	1.22	0.62	PCI/G	WP0457.0
SC-25310-S-FR	7/8/98	URANIUM-238	1 45	2.90	PCI/G	WP0457 0
SC-26310-S-DU	7/8/98	RADIUM-226	0.94	0.33	PCI/G	WP0457 0
SC-26310-S-DU	7/8/98	RADIUM-228	1.49	0.46	PCI/G	WP0457 0
SC-26310-S-DU	7/8/98	THORIUM-230	1.08	0.62	PCI/G	WP0457 0
SC-26310-S-DU	7/8/98	URANIUM-238	2.01	4.02	PCI/G	WP0457.0
SC-26310-S-FR	7/8/98	RADIUM-226	1.06	0.24	PCI/G	WP0457.0
SC-26310-S-FR	7/8/98	RADIUM-228	1.35	0 30	PCI/G	WP0457.0
SC-26310-S-FR	7/8/98	THORIUM-230	0.91	0 62	PCI/G	WP0457 0
SC-26310-S-FR	7/8/98	URANIUM-238	1.34	2.68	PCI/G	WP0457 0
SC-25310-S-EB	7/8/98	RADIUM-226	0.19	0.124	PCI/L	QT2343 0
SG-25310-S-EB	7/8/98	RADIUM-228	0 37	0.336	PCI/L	QT2343.1

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QC Confirmation Results

SC-25310-S-EB	7/8/98	THORIUM-230	0.07	0.077	PCI/L	QT2343.2
SC-25310-S-EB	7/8/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2343.3
SC-26310-S-EB	7/8/98	RADIUM-226	0.03	0.125	PCI/L	QT2343.4
SC-26310-S-EB	7/8/98	RADIUM-228	0.46	0.465	PCI/L	QT2343.5
SC-26310-S-EB	7/8/98	THORIUM-230	0.04	0.099	PCI/L	QT2343.6
SC-26310-S-EB	7/8/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2343.7

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Equipment Blank Result

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14724-S-RS-EB	5/26/98	ARSENIC	1.00	1.9	UG/L	QT2301.0
SC-15210-S-EB	2/27/98	ARSENIC	2.00	4.00	UG/L	ES2044 0
SC-15215-S-RS-EB	5/29/98	ARSENIC	2.00	4.0	UG/L	GE2171 0
SC-15310-S-EB	3/30/98	ARSENIC	1.60	3 1	UG/L	GE2157 0
SC-15317-S-RS-EB	5/26/98	ARSENIC	1.00	1.9	UG/L	QT2301 0
SC-15910-S-EB	9/10/97	ARSENIC	1 30	2 5	UG/L	GE2152 0
SC-15915-S-EB	9/10/97	ARSENIC	1.30	2 5	UG/L	GE2152.0

7 records

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14724-S-RS-EB	5/26/98	BENZO(A)ANTHRACENE	2 50	5 0	UG/L	QT2301 0
SC-14724-S-RS-EB	5/26/98	BENZO(A)PYRENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	BENZO(B)FLUORANTHENE	2.50	5.0	UG/L	QT2301.0
SC-14724-S-RS-EB	5/26/98	BENZO(K)FLUORANTHENE	2 50	5 0	UG/L	QT2301 0
SC-14724-S-RS-EB	5/26/98	CHRYSENE	2 50	5 0	UG/L	QT2301 0
SC-14724-S-RS-EB	5/26/98	INDENO(1,2,3-CD)PYRENE	2.50	5 0	UG/L	QT2301 0

6 records

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Equipment Blank Result

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14309-S-EB	11/10/97	RADIUM-226	0.19	0.339	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	RADIUM-226	0.25	0.370	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	RADIUM-226	0.13	0.231	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	RADIUM-226	0.10	0.391	PCI/L	TU0101.0
SC-14510-S-EB	11/26/97	RADIUM-226	0.09	0.304	PCI/L	TU0101.0
SC-14515-S-EB	11/10/97	RADIUM-226	0.16	0.275	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	RADIUM-226	0.14	0.366	PCI/L	TU0101.0
SC-14701-C-EB	12/23/97	RADIUM-226	0.08	0.281	PCI/L	TU0156.0
SC-14724-S-RS-EB	5/26/98	RADIUM-226	0.04	0.083	PCI/L	QT2301.0
SC-14801-S-EB	12/23/97	RADIUM-226	0.28	0.516	PCI/L	TU0156.0
SC-14815-S-02-EB	5/27/98	RADIUM-226	0.01	0.079	PCI/L	QT2301.0
SC-14910-S-EB	12/31/97	RADIUM-226	0.27	0.218	PCI/L	TU0156.0
SC-15002-S-EB	1/26/98	RADIUM-226	0.07	0.070	PCI/L	ES2044.0
SC-15120-S-EB	6/1/98	RADIUM-226	0.33	0.264	PCI/L	GE2171.0
SC-15210-S-EB	2/27/98	RADIUM-226	0.02	0.079	PCI/L	ES2044.0
SC-15215-S-RS-EB	5/29/98	RADIUM-226	0.82	0.322	PCI/L	GE2171.0
SC-15310-S-EB	3/30/98	RADIUM-226	0.12	0.284	PCI/L	GE2157.0
SC-15317-S-RS-EB	5/26/98	RADIUM-226	0.18	0.116	PCI/L	QT2301.0
SC-15410-S-EB	3/4/98	RADIUM-226	0.05	0.066	PCI/L	QT2224.0
SC-15420-S-EB	5/29/98	RADIUM-226	0.11	0.215	PCI/L	GE2171.0
SC-15510-S-EB	5/29/98	RADIUM-226	0.18	0.362	PCI/L	GE2171.0
SC-15605-S-EB	6/1/98	RADIUM-226	0.16	0.323	PCI/L	GE2171.0
SC-15610-S-EB	6/1/98	RADIUM-226	0.34	0.312	PCI/L	GE2171.0
SC-15910-S-EB	9/10/97	RADIUM-226	0.03	0.402	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	RADIUM-226	0.16	0.374	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	RADIUM-226	0.42	0.455	PCI/L	GE2152.0
SC-16110-S-EB	9/9/97	RADIUM-226	0.22	0.445	PCI/L	GE2152.0
SC-25310-S-EB	7/8/98	RADIUM-226	0.19	0.124	PCI/L	QT2343.0
SC-26310-S-EB	7/8/98	RADIUM-226	0.03	0.125	PCI/L	QT2343.4

29 records

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Equipment Blank Result

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14309-S-EB	11/10/97	RADIUM-228	0 11	1 45	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	RADIUM-228	1.30	1.21	PCI/L	TU0101 0
SC-14320-S-RS-EB	11/25/97	RADIUM-228	0 74	1.35	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	RADIUM-228	0.32	1 47	PCI/L	TU0101 0
SC-14510-S-EB	11/26/97	RADIUM-228	0.44	1.15	PCI/L	TU0101 0
SC-14515-S-EB	11/10/97	RADIUM-228	0.34	1.45	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	RADIUM-228	0.25	1.37	PCI/L	TU0101.0
SC-14701-C-EB	12/23/97	RADIUM-228	0.17	2.43	PCI/L	TU0156.0
SC-14724-S-RS-EB	5/26/98	RADIUM-228	0.31	0.302	PCI/L	QT2301 0
SC-14801-S-EB	12/23/97	RADIUM-228	1.29	3.15	PCI/L	TU0156.0
SC-14815-S-02-EB	5/27/98	RADIUM-228	0.48	0.303	PCI/L	QT2301.0
SC-14910-S-EB	12/31/97	RADIUM-228	0.41	2 18	PCI/L	TU0156.0
SC-15002-S-EB	1/26/98	RADIUM-228	0.41	1.97	PCI/L	ES2044 0
SC-15120-S-EB	6/1/98	RADIUM-228	2.78	0.793	PCI/L	GE2171.0
SC-15210-S-EB	2/27/98	RADIUM-228	0 73	1 45	PCI/L	ES2044.0
SC-15215-S-RS-EB	5/29/98	RADIUM-228	1.84	0.663	PCI/L	GE2171 0
SC-15310-S-EB	3/30/98	RADIUM-228	2.62	0.739	PCI/L	GE2157 0
SC-15317-S-RS-EB	5/26/98	RADIUM-228	0 08	0 304	PCI/L	QT2301.0
SC-15410-S-EB	3/4/98	RADIUM-228	0 13	0.266	PCI/L	QT2224 0
SC-15420-S-EB	5/29/98	RADIUM-228	1.95	0 762	PCI/L	GE2171 0
SC-15510-S-EB	5/29/98	RADIUM-228	1.59	0 797	PCI/L	GE2171 0
SC-15605-S-EB	6/1/98	RADIUM-228	2 78	0 773	PCI/L	GE2171 0
SC-15610-S-EB	6/1/98	RADIUM-228	2 89	0.957	PCI/L	GE2171 0
SC-15910-S-EB	9/10/97	RADIUM-228	2 97	0 758	PCI/L	GE2152 0
SC-15915-S-EB	9/10/97	RADIUM-228	3.08	0.811	PCI/L	GE2152 0
SC-16010-S-EB	9/9/97	RADIUM-228	4 78	0.994	PCI/L	GE2152 0
SC-16110-S-EB	9/9/97	RADIUM-228	3 70	0 846	PCI/L	GE2152 0
SC-25310-S-EB	7/8/98	RADIUM-228	0.37	0.336	PCI/L	QT2343 1
SC-26310-S-EB	7/8/98	RADIUM-228	0 46	0 465	PCI/L	QT2343 5

29 records

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Equipment Blank Result

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14309-S-EB	11/10/97	THORIUM-230	0.65	0.280	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	THORIUM-230	0.57	0.261	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	THORIUM-230	0.32	0.214	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	THORIUM-230	0.45	0.312	PCI/L	TU0101.0
SC-14510-S-EB	11/26/97	THORIUM-230	0.53	0.298	PCI/L	TU0101.0
SC-14515-S-EB	11/10/97	THORIUM-230	0.72	0.313	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	THORIUM-230	0.48	0.348	PCI/L	TU0101.0
SC-14701-C-EB	12/23/97	THORIUM-230	0.30	0.199	PCI/L	TU0156.0
SC-14724-S-RS-EB	5/26/98	THORIUM-230	0.20	0.113	PCI/L	QT2301.0
SC-14801-S-EB	12/23/97	THORIUM-230	0.36	0.0984	PCI/L	TU0156.0
SC-14815-S-02-EB	5/27/98	THORIUM-230	0.05	0.084	PCI/L	QT2301.0
SC-14910-S-EB	12/31/97	THORIUM-230	0.17	0.188	PCI/L	TU0156.0
SC-15002-S-EB	1/26/98	THORIUM-230	0.36	0.133	PCI/L	ES2044.0
SC-15120-S-EB	6/1/98	THORIUM-230	0.03	0.0242	PCI/L	GE2171.0
SC-15210-S-EB	2/27/98	THORIUM-230	0.33	0.165	PCI/L	ES2044.0
SC-15215-S-RS-EB	5/29/98	THORIUM-230	0.05	0.0274	PCI/L	GE2171.0
SC-15310-S-EB	3/30/98	THORIUM-230	0.05	0.109	PCI/L	GE2157.0
SC-15317-S-RS-EB	5/26/98	THORIUM-230	0.13	0.196	PCI/L	QT2301.0
SC-15410-S-EB	3/4/98	THORIUM-230	0.10	0.102	PCI/L	QT2224.0
SC-15420-S-EB	5/29/98	THORIUM-230	0.02	0.0357	PCI/L	GE2171.0
SC-15510-S-EB	5/29/98	THORIUM-230	0.04	0.00719	PCI/L	GE2171.0
SC-15605-S-EB	6/1/98	THORIUM-230	0.03	0.0235	PCI/L	GE2171.0
SC-15610-S-EB	6/1/98	THORIUM-230	0.03	0.01	PCI/L	GE2171.0
SC-15910-S-EB	9/10/97	THORIUM-230	0.06	0.0679	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	THORIUM-230	0.06	0.0393	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	THORIUM-230	0.10	0.0610	PCI/L	GE2152.0
SC-16110-S-EB	9/9/97	THORIUM-230	0.07	0.0606	PCI/L	GE2152.0
SC-25310-S-EB	7/8/98	THORIUM-230	0.07	0.077	PCI/L	QT2343.2
SC-26310-S-EB	7/8/98	THORIUM-230	0.04	0.099	PCI/L	QT2343.6

29 records

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Equipment Blank Result

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14309-S-EB	11/10/97	THORIUM-232	0.16	0.324	PCI/L	TU0101 0
SC-14313-S-EB	11/19/97	THORIUM-232	0.06	0.261	PCI/L	TU0101 0
SC-14320-S-RS-EB	11/25/97	THORIUM-232	0 13	0.214	PCI/L	TU0101 0
SC-14424-S-EB	11/10/97	THORIUM-232	0.03	0.258	PCI/L	TU0101 0
SC-14510-S-EB	11/26/97	THORIUM-232	0.04	0.297	PCI/L	TU0101.0
SC-14515-S-EB	11/10/97	THORIUM-232	0.14	0.129	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	THORIUM-232	0.32	0.288	PCI/L	TU0101.0
SC-14701-C-EB	12/23/97	THORIUM-232	0.04	0.199	PCI/L	TU0156 0
SC-14724-S-RS-EB	5/26/98	THORIUM-232	0.05	0.097	PCI/L	QT2301.0
SC-14801-S-EB	12/23/97	THORIUM-232	0.11	0.219	PCI/L	TU0156 0
SC-14815-S-02-EB	5/27/98	THORIUM-232	0.04	0.021	PCI/L	QT2301 0
SC-14910-S-EB	12/31/97	THORIUM-232	0.10	0.187	PCI/L	TU0156.0
SC-15002-S-EB	1/26/98	THORIUM-232	0 03	0.0516	PCI/L	ES2044.0
SC-15120-S-EB	6/1/98	THORIUM-232	0.00	0.0095	PCI/L	GE2171 0
SC-15210-S-EB	2/27/98	THORIUM-232	0.03	0.0646	PCI/L	ES2044 0
SC-15215-S-RS-EB	5/29/98	THORIUM-232	0.01	0 0219	PCI/L	GE2171 0
SC-15310-S-EB	3/30/98	THORIUM-232	0.05	0 0932	PCI/L	GE2157 0
SC-15317-S-RS-EB	5/26/98	THORIUM-232	0.06	0.080	PCI/L	QT2301 0
SC-15410-S-EB	3/4/98	THORIUM-232	0.02	0.021	PCI/L	QT2224 0
SC-15420-S-EB	5/29/98	THORIUM-232	0.00	0.00968	PCI/L	GE2171 0
SC-15510-S-EB	5/29/98	THORIUM-232	0.01	0 0265	PCI/L	GE2171 0
SC-15605-S-EB	6/1/98	THORIUM-232	0.03	0.0092	PCI/L	GE2171 0
SC-15610-S-EB	6/1/98	THORIUM-232	0.01	0 01	PCI/L	GE2171 0
SC-15910-S-EB	9/10/97	THORIUM-232	0.03	0 0532	PCI/L	GE2152 0
SC-15915-S-EB	9/10/97	THORIUM-232	0.03	0.0561	PCI/L	GE2152 0
SC-16010-S-EB	9/9/97	THORIUM-232	0.04	0 0803	PCI/L	GE2152 0
SC-16110-S-EB	9/9/97	THORIUM-232	0 01	0 0606	PCI/L	GE2152 0

27 records

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Equipment Blank Result

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	DL	UNITS	LAB_REQU
SC-14309-S-EB	11/10/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14313-S-EB	11/19/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14320-S-RS-EB	11/25/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14424-S-EB	11/10/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14510-S-EB	11/26/97	URANIUM, TOTAL	0.13	0.0203	PCI/L	TU0101.0
SC-14515-S-EB	11/10/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14610-S-EB	11/26/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0101.0
SC-14701-C-EB	12/23/97	URANIUM, TOTAL	0.24	0.0203	PCI/L	TU0156.0
SC-14724-S-RS-EB	5/26/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2301.0
SC-14801-S-EB	12/23/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0156.0
SC-14815-S-02-EB	5/27/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2301.0
SC-14910-S-EB	12/31/97	URANIUM, TOTAL	0.01	0.0203	PCI/L	TU0156.0
SC-15002-S-EB	1/26/98	URANIUM, TOTAL	0.04	0.0752	PCI/L	ES2044.0
SC-15120-S-EB	6/1/98	URANIUM, TOTAL	0.03	0.0646	PCI/L	GE2171.0
SC-15210-S-EB	2/27/98	URANIUM, TOTAL	0.04	0.0752	PCI/L	ES2044.0
SC-15215-S-RS-EB	5/29/98	URANIUM, TOTAL	0.03	0.0646	PCI/L	GE2171.0
SC-15310-S-EB	3/30/98	URANIUM, TOTAL	0.03	0.0643	PCI/L	GE2157.0
SC-15317-S-RS-EB	5/26/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2301.0
SC-15410-S-EB	3/4/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2224.0
SC-15420-S-EB	5/29/98	URANIUM, TOTAL	0.14	0.0646	PCI/L	GE2171.0
SC-15510-S-EB	5/29/98	URANIUM, TOTAL	0.03	0.0646	PCI/L	GE2171.0
SC-15605-S-EB	6/1/98	URANIUM, TOTAL	0.03	0.0646	PCI/L	GE2171.0
SC-15610-S-EB	6/1/98	URANIUM, TOTAL	0.07	0.0646	PCI/L	GE2171.0
SC-15802-S-EB	6/30/97	URANIUM, TOTAL	0.40	0.7	PCI/L	OR0024.0
SC-15910-S-EB	9/10/97	URANIUM, TOTAL	0.63	0.0643	PCI/L	GE2152.0
SC-15915-S-EB	9/10/97	URANIUM, TOTAL	0.03	0.0643	PCI/L	GE2152.0
SC-16010-S-EB	9/9/97	URANIUM, TOTAL	0.03	0.0643	PCI/L	GE2152.0
SC-16110-S-EB	9/9/97	URANIUM, TOTAL	0.02	0.0643	PCI/L	GE2152.0
SC-25310-S-EB	7/8/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2343.3
SC-26310-S-EB	7/8/98	URANIUM, TOTAL	0.34	0.677	PCI/L	QT2343.7

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MS/MD Results

WSSRAP_ID	DATE_SAM	PARAMETER	CONC	REC	DL	UNITS	LAB_REQU
SC-14724-S-RS-MD	5/26/98	BENZO(A)ANTHRACENE	80.00	95%	12	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(A)ANTHRACENE	74.00	95%	12	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	BENZO(A)PYRENE	140.00	92%	19	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	BENZO(A)PYRENE	130 00	95%	19	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	BENZO(B)FLUORANTHENE	110.00	94%	15	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	BENZO(B)FLUORANTHENE	100.00	96%	15	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	BENZO(K)FLUORANTHENE	100.00	94%	14	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	BENZO(K)FLUORANTHENE	95.00	94%	14	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	CHRYSENE	910.00	94%	130	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	CHRYSENE	840.00	97%	130	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	INDENO(1,2,3-CD)PYRENE	260.00	93%	37	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	INDENO(1,2,3-CD)PYRENE	230.00	84%	37	UG/KG	WS2170 0
WSSRAP_ID	DATE_SAM	PARAMETER	CONC	REC	DL	UNITS	LAB_REQU
SC-14724-S-RS-MS	5/26/98	ARSENIC	457.00	98%	6.20	UG/G	WS2170.0
SC-15210-S-MS	2/27/98	ARSENIC	540.00	101%	0.34	UG/G	QT2220.0
SC-15215-S-RS-MS	5/29/98	ARSENIC	16.80	128%	0.82	UG/G	SW0035.0
SC-15310-S-MS	3/30/98	ARSENIC	484.00	97%	2 3	UG/G	QT2244.0
SC-15317-S-RS-MS	5/26/98	ARSENIC	494.00	99%	5.90	UG/G	WS2170.0
SC-15910-S-MS	9/10/97	ARSENIC	365.00	87%	0.52	UG/G	GE2150.0
SC-15915-S-MS	9/10/97	ARSENIC	355.00	83%	0 52	UG/G	GE2150 0

Appendix G-4
WP-471
DU/FR/SD Results

WSSRAP_ID	DATE_SAM	PARAMETER	Parent CONC	CONC	RPD	DL	UNITS	LAB_REQU
SC-14309-S-DU	11/10/97	RADIUM-226	1.42	1.49	5%	0.23	PCI/G	WP0352.0
SC-14309-S-FR	11/10/97	RADIUM-226	1.42	1.81	24%	0.24	PCI/G	WP0352.0
SC-14309-S-SD	11/10/97	RADIUM-226	1.42	1.14	22%	0.145	PCI/G	TU0101.0
SC-14313-S-DU	11/19/97	RADIUM-226	0.70	0.86	21%	0.24	PCI/G	WP0359.0
SC-14313-S-FR	11/19/97	RADIUM-226	0.70	0.57	20%	0.37	PCI/G	WP0359.0
SC-14320-S-RS-DU	11/25/97	RADIUM-226	2.96	2.61	13%	0.61	PCI/G	WP0368.0
SC-14320-S-RS-FR	11/25/97	RADIUM-226	2.96	3.30	11%	0.48	PCI/G	WP0368.0
SC-14320-S-RS-SD	11/25/97	RADIUM-226	2.96	1.06	95%	0.161	PCI/G	TU0101.0
SC-14424-S-DU	11/10/97	RADIUM-226	2.37	2.40	1%	0.34	PCI/G	WP0352.0
SC-14424-S-FR	11/10/97	RADIUM-226	2.37	2.16	9%	0.35	PCI/G	WP0352.0
SC-14424-S-SD	11/10/97	RADIUM-226	2.37	2.46	4%	0.201	PCI/G	TU0101.0
SC-14510-S-DU	11/26/97	RADIUM-226	1.19	1.19	0%	0.27	PCI/G	WP0369.0
SC-14510-S-FR	11/26/97	RADIUM-226	1.19	1.13	5%	0.29	PCI/G	WP0369.0
SC-14510-S-SD	11/26/97	RADIUM-226	1.19	0.96	21%	0.131	PCI/G	TU0101.0
SC-14515-S-DU	11/10/97	RADIUM-226	2.40	1.92	22%	0.54	PCI/G	WP0353.0
SC-14515-S-FR	11/10/97	RADIUM-226	2.40	2.25	6%	0.32	PCI/G	WP0353.0
SC-14515-S-SD	11/10/97	RADIUM-226	2.40	1.16	70%	0.166	PCI/G	TU0101.0
SC-14520-S-RS-DU	11/25/97	RADIUM-226	1.48	1.44	3%	0.23	PCI/G	WP0368.0
SC-14610-S-DU	11/26/97	RADIUM-226	1.31	1.33	2%	0.32	PCI/G	WP0369.0
SC-14610-S-FR	11/26/97	RADIUM-226	1.31	1.67	24%	0.33	PCI/G	WP0369.0
SC-14610-S-SD	11/26/97	RADIUM-226	1.31	1.25	5%	0.173	PCI/G	TU0101.0
SC-14701-C-DU	12/23/97	RADIUM-226	1.48	1.38	7%	0.18	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	RADIUM-226	1 48	1.19	22%	0.23	PCI/G	WP0380.0
SC-14701-C-SD	12/23/97	RADIUM-226	1.48	1.03	36%	0.138	PCI/G	TU0156.0
SC-14724-S-RS-DU	5/26/98	RADIUM-226	1.41	1.41	0%	0.29	PCI/G	WP0443.0
SC-14724-S-RS-FR	5/26/98	RADIUM-226	1.41	1.31	7%	0.37	PCI/G	WP0443.0
SC-14724-S-RS-SD	5/26/98	RADIUM-226	1.41	1.88	29%	2.07	PCI/G	QT2301.0
SC-14801-S-DU	12/23/97	RADIUM-226	0.74	0.33	77%	0.65	PCI/G	WP0380.0
SC-14801-S-FR	12/23/97	RADIUM-226	0.74	0.71	4%	0.26	PCI/G	WP0380.0
SC-14801-S-SD	12/23/97	RADIUM-226	0.74	0.64	14%	0.179	PCI/G	TU0156.0
SC-14815-S-02-DU	5/27/98	RADIUM-226	1.32	1.38	4%	0.22	PCI/G	WP0444.0
SC-14815-S-02-FR	5/27/98	RADIUM-226	1.32	1.34	2%	0.25	PCI/G	WP0444.0
SC-14815-S-02-SD	5/27/98	RADIUM-226	1.32	3.13	81%	2.05	PCI/G	QT2301.0
SC-14910-S-DU	12/31/97	RADIUM-226	0.97	0.85	13%	0.30	PCI/G	WP0381.0
SC-14910-S-FR	12/31/97	RADIUM-226	0.97	0.73	28%	0.23	PCI/G	WP0381.0
SC-14910-S-SD	12/31/97	RADIUM-226	0.97	0.74	27%	0.174	PCI/G	TU0156.0
SC-15002-S-DU	1/26/98	RADIUM-226	1.24	1.17	6%	0.32	PCI/G	WP0395.0
SC-15002-S-FR	1/26/98	RADIUM-226	1.24	0.99	22%	0.35	PCI/G	WP0395.0
SC-15002-S-SD	1/26/98	RADIUM-226	1.24	0.88	34%	0.121	PCI/G	ES2044.0
SC-15111-S-02-DU	7/20/98	RADIUM-226	1.06	1.18	11%	0.21	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	RADIUM-226	1.06	1.05	1%	0.26	PCI/G	WP0468.0
SC-15120-S-DU	6/1/98	RADIUM-226	0.98	0.96	2%	0.38	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	RADIUM-226	0.98	0.99	1%	0.27	PCI/G	WP0447.0
SC-15120-S-SD	6/1/98	RADIUM-226	0.98	0.68	36%	.0605	PCI/G	GE2171.0
SC-15210-S-DU	2/27/98	RADIUM-226	1.72	1.57	9%	0.26	PCI/G	WP0423.0
SC-15210-S-FR	2/27/98	RADIUM-226	1.72	1.49	14%	0.38	PCI/G	WP0423.0
SC-15210-S-SD	2/27/98	RADIUM-226	1.72	0.92	60%	0.156	PCI/G	ES2044.0
SC-15215-S-RS-DU	5/29/98	RADIUM-226	1.36	1.20	13%	0.36	PCI/G	WP0445.0
SC-15215-S-RS-FR	5/29/98	RADIUM-226	1.36	1.27	7%	0.22	PCI/G	WP0445.0
SC-15215-S-RS-SD	5/29/98	RADIUM-226	1.36	1.14	18%	.065	PCI/G	GE2171.0
SC-15310-S-DU	3/30/98	RADIUM-226	1.05	0.91	14%	0.30	PCI/G	WP0433.0
SC-15310-S-FR	3/30/98	RADIUM-226	1.05	1.02	3%	0.37	PCI/G	WP0433.0
SC-15310-S-SD	3/30/98	RADIUM-226	1.05	0.84	23%	0.0435	PCI/G	GE2157.0
SC-15317-S-RS-DU	5/26/98	RADIUM-226	1.56	1.51	3%	0.35	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	RADIUM-226	1.56	1.41	10%	0.24	PCI/G	WP0443.0
SC-15317-S-RS-SD	5/26/98	RADIUM-226	1.56	2.14	31%	4.28	PCI/G	QT2301.0
SC-15410-S-DU	3/4/98	RADIUM-226	0.83	0.85	2%	0.24	PCI/G	WP0425.0

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DU/FR/SD Results

SC-15410-S-FR	3/4/98	RADIUM-226	0.83	0.78	6%	0.29	PCI/G	WP0425 0
SC-15410-S-SD	3/4/98	RADIUM-226	0.83	1.09	27%	3.33	PCI/G	QT2224 0
SC-15420-S-DU	5/29/98	RADIUM-226	0.86	0.86	0%	0.23	PCI/G	WP0446 0
SC-15420-S-FR	5/29/98	RADIUM-226	0.86	0.77	11%	0.33	PCI/G	WP0446.0
SC-15420-S-SD	5/29/98	RADIUM-226	0.86	0.73	17%	.0549	PCI/G	GE2171 0
SC-15510-S-DU	5/29/98	RADIUM-226	0.86	0.97	12%	0.28	PCI/G	WP0446 0
SC-15510-S-FR	5/29/98	RADIUM-226	0.86	0.90	5%	0.31	PCI/G	WP0446 0
SC-15510-S-SD	5/29/98	RADIUM-226	0.86	0.94	9%	.0654	PCI/G	GE2171.0
SC-15605-S-DU	6/1/98	RADIUM-226	1.00	0.89	12%	0.25	PCI/G	WP0447.0
SC-15605-S-FR	6/1/98	RADIUM-226	1.00	0.79	23%	0.38	PCI/G	WP0447.0
SC-15605-S-SD	6/1/98	RADIUM-226	1.00	0.60	51%	.0573	PCI/G	GE2171.0
SC-15610-S-DU	6/1/98	RADIUM-226	1.33	1.26	5%	0.31	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	RADIUM-226	1.33	1.37	3%	0.28	PCI/G	WP0447.0
SC-15610-S-SD	6/1/98	RADIUM-226	1.33	0.96	32%	.0698	PCI/G	GE2171.0
SC-15910-S-DU	9/10/97	RADIUM-226	1.29	1.44	11%	0.23	PCI/G	WP0325 0
SC-15910-S-FR	9/10/97	RADIUM-226	1.29	1.23	5%	0.28	PCI/G	WP0325.0
SC-15910-S-SD	9/10/97	RADIUM-226	1.29	1.08	18%	0.0713	PCI/G	GE2152.0
SC-15915-S-DU	9/10/97	RADIUM-226	1.20	1.34	11%	0.23	PCI/G	WP0325 0
SC-15915-S-FR	9/10/97	RADIUM-226	1.20	1.40	15%	0.34	PCI/G	WP0325 0
SC-15915-S-SD	9/10/97	RADIUM-226	1.20	1.21	1%	0.0752	PCI/G	GE2152.0
SC-16010-S-DU	9/9/97	RADIUM-226	5.98	5.37	11%	0.31	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	RADIUM-226	5.98	6 27	5%	0.71	PCI/G	WP0323 0
SC-16010-S-SD	9/9/97	RADIUM-226	5.98	2.02	99%	0.0776	PCI/G	GE2152 0
SC-16110-S-DU	9/9/97	RADIUM-226	0.76	1 08	35%	0.29	PCI/G	WP0324 0
SC-16110-S-FR	9/9/97	RADIUM-226	0.76	1 19	44%	0.30	PCI/G	WP0324 0
SC-16110-S-SD	9/9/97	RADIUM-226	0.76	0.82	7%	0.0484	PCI/G	GE2152 0
SC-25310-S-DU	7/8/98	RADIUM-226	1.21	1.52	23%	0 39	PCI/G	WP0457 0
SC-25310-S-FR	7/8/98	RADIUM-226	1.21	1.35	11%	0.30	PCI/G	WP0457 0
SC-26310-S-DU	7/8/98	RADIUM-226	0.90	0.94	4%	0 33	PCI/G	WP0457 0
SC-26310-S-FR	7/8/98	RADIUM-226	0.90	1.06	16%	0.24	PCI/G	WP0457.0
SC-14309-S-DU	11/10/97	RADIUM-228	1.65	1.43	14%	0 43	PCI/G	WP0352 0
SC-14309-S-FR	11/10/97	RADIUM-228	1.65	1.39	17%	0 38	PCI/G	WP0352 0
SC-14309-S-SD	11/10/97	RADIUM-228	1.65	1.24	28%	0.286	PCI/G	TU0101.0
SC-14313-S-DU	11/19/97	RADIUM-228	1.40	1.26	11%	0 38	PCI/G	WP0359 0
SC-14313-S-FR	11/19/97	RADIUM-228	1 40	1.46	4%	0.53	PCI/G	WP0359 0
SC-14320-S-RS-DU	11/25/97	RADIUM-228	3.38	3.50	3%	0.80	PCI/G	WP0368 0
SC-14320-S-RS-FR	11/25/97	RADIUM-228	3.38	4.36	25%	0 61	PCI/G	WP0368 0
SC-14320-S-RS-SD	11/25/97	RADIUM-228	3.38	1.51	76%	0.211	PCI/G	TU0101 0
SC-14424-S-DU	11/10/97	RADIUM-228	3.31	3 12	6%	0.59	PCI/G	WP0352 0
SC-14424-S-FR	11/10/97	RADIUM-228	3 31	2.88	14%	0.62	PCI/G	WP0352 0
SC-14424-S-SD	11/10/97	RADIUM-228	3 31	3 71	11%	0.369	PCI/G	TU0101 0
SC-14510-S-DU	11/26/97	RADIUM-228	1.22	1 57	25%	0.35	PCI/G	WP0369.0
SC-14510-S-FR	11/26/97	RADIUM-228	1.22	1.24	2%	0.41	PCI/G	WP0369 0
SC-14510-S-SD	11/26/97	RADIUM-228	1 22	1.13	8%	0.278	PCI/G	TU0101.0
SC-14515-S-DU	11/10/97	RADIUM-228	3.80	3.38	12%	0.69	PCI/G	WP0353 0
SC-14515-S-FR	11/10/97	RADIUM-228	3.80	3.27	15%	0.46	PCI/G	WP0353.0
SC-14515-S-SD	11/10/97	RADIUM-228	3.80	2.34	48%	0.244	PCI/G	TU0101.0
SC-14520-S-RS-DU	11/25/97	RADIUM-228	1.41	0.90	44%	0.45	PCI/G	WP0368.0
SC-14610-S-DU	11/26/97	RADIUM-228	1.84	1.55	17%	0.42	PCI/G	WP0369.0
SC-14610-S-FR	11/26/97	RADIUM-228	1.84	0.72	88%	1.43	PCI/G	WP0369.0
SC-14610-S-SD	11/26/97	RADIUM-228	1.84	1.98	7%	0.316	PCI/G	TU0101.0
SC-14701-C-DU	12/23/97	RADIUM-228	1.06	1.20	12%	0.39	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	RADIUM-228	1.06	1.39	27%	0.57	PCI/G	WP0380.0
SC-14701-C-SD	12/23/97	RADIUM-228	1.06	0.85	22%	0.253	PCI/G	TU0156.0
SC-14724-S-RS-DU	5/26/98	RADIUM-228	1.39	1.42	2%	0 25	PCI/G	WP0443 0
SC-14724-S-RS-FR	5/26/98	RADIUM-228	1.39	1.55	11%	0 39	PCI/G	WP0443.0
SC-14724-S-RS-SD	5/26/98	RADIUM-228	1.39	0.82	51%	1 16	PCI/G	QT2301.0
SC-14801-S-DU	12/23/97	RADIUM-228	1.14	1.30	13%	0 24	PCI/G	WP0380 0

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DU/FR/SD Results

SC-14801-S-FR	12/23/97	RADIUM-228	1.14	1.01	12%	0.41	PCI/G	WP0380.0
SC-14801-S-SD	12/23/97	RADIUM-228	1.14	1.32	15%	0.289	PCI/G	TU0156.0
SC-14815-S-02-DU	5/27/98	RADIUM-228	1.64	1.56	5%	0.26	PCI/G	WP0444.0
SC-14815-S-02-FR	5/27/98	RADIUM-228	1.64	1.61	2%	0.48	PCI/G	WP0444.0
SC-14815-S-02-SD	5/27/98	RADIUM-228	1.64	0.87	61%	1.06	PCI/G	QT2301.0
SC-14910-S-DU	12/31/97	RADIUM-228	0.90	1.38	42%	0.44	PCI/G	WP0381.0
SC-14910-S-FR	12/31/97	RADIUM-228	0.90	0.93	3%	0.37	PCI/G	WP0381.0
SC-14910-S-SD	12/31/97	RADIUM-228	0.90	1.39	43%	0.333	PCI/G	TU0156.0
SC-15002-S-DU	1/26/98	RADIUM-228	0.93	1.11	18%	0.38	PCI/G	WP0395.0
SC-15002-S-FR	1/26/98	RADIUM-228	0.93	0.63	38%	1.26	PCI/G	WP0395.0
SC-15002-S-SD	1/26/98	RADIUM-228	0.93	1.10	17%	0.236	PCI/G	ES2044.0
SC-15111-S-02-DU	7/20/98	RADIUM-228	1.28	1.32	3%	0.44	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	RADIUM-228	1.28	1.36	6%	0.22	PCI/G	WP0468.0
SC-15120-S-DU	6/1/98	RADIUM-228	1.38	1.36	1%	0.43	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	RADIUM-228	1.38	1.21	13%	0.37	PCI/G	WP0447.0
SC-15120-S-SD	6/1/98	RADIUM-228	1.38	1.14	19%	.123	PCI/G	GE2171.0
SC-15210-S-DU	2/27/98	RADIUM-228	1.25	1.30	4%	0.36	PCI/G	WP0423.0
SC-15210-S-FR	2/27/98	RADIUM-228	1.25	1.53	20%	0.51	PCI/G	WP0423.0
SC-15210-S-SD	2/27/98	RADIUM-228	1.25	1.27	2%	0.250	PCI/G	ES2044.0
SC-15215-S-RS-DU	5/29/98	RADIUM-228	0.68	1.16	52%	0.60	PCI/G	WP0445.0
SC-15215-S-RS-FR	5/29/98	RADIUM-228	0.68	1.04	42%	0.43	PCI/G	WP0445.0
SC-15215-S-RS-SD	5/29/98	RADIUM-228	0.68	1.30	63%	.13	PCI/G	GE2171.0
SC-15310-S-DU	3/30/98	RADIUM-228	1.14	1.17	3%	0.37	PCI/G	WP0433.0
SC-15310-S-FR	3/30/98	RADIUM-228	1.14	0.54	71%	1.07	PCI/G	WP0433.0
SC-15310-S-SD	3/30/98	RADIUM-228	1.14	1.15	1%	0.0870	PCI/G	GE2157.0
SC-15317-S-RS-DU	5/26/98	RADIUM-228	1.22	1.36	11%	0.48	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	RADIUM-228	1.22	1.41	14%	0.34	PCI/G	WP0443.0
SC-15317-S-RS-SD	5/26/98	RADIUM-228	1.22	1.32	8%	1.55	PCI/G	QT2301.0
SC-15410-S-DU	3/4/98	RADIUM-228	1.17	1.33	13%	0.39	PCI/G	WP0425.0
SC-15410-S-FR	3/4/98	RADIUM-228	1.17	0.67	54%	1.34	PCI/G	WP0425.0
SC-15410-S-SD	3/4/98	RADIUM-228	1.17	1.54	27%	1.61	PCI/G	QT2224.0
SC-15420-S-DU	5/29/98	RADIUM-228	1.14	1.15	1%	0.32	PCI/G	WP0446.0
SC-15420-S-FR	5/29/98	RADIUM-228	1.14	0.61	61%	1.21	PCI/G	WP0446.0
SC-15420-S-SD	5/29/98	RADIUM-228	1.14	1.30	13%	.129	PCI/G	GE2171.0
SC-15510-S-DU	5/29/98	RADIUM-228	1.18	1.38	16%	0.41	PCI/G	WP0446.0
SC-15510-S-FR	5/29/98	RADIUM-228	1.18	1.07	10%	0.49	PCI/G	WP0446.0
SC-15510-S-SD	5/29/98	RADIUM-228	1.18	1.08	9%	.129	PCI/G	GE2171.0
SC-15605-S-DU	6/1/98	RADIUM-228	1.21	0.96	23%	0.43	PCI/G	WP0447.0
SC-15605-S-FR	6/1/98	RADIUM-228	1.21	1.34	10%	0.62	PCI/G	WP0447.0
SC-15605-S-SD	6/1/98	RADIUM-228	1.21	1.21	0%	.103	PCI/G	GE2171.0
SC-15610-S-DU	6/1/98	RADIUM-228	1.94	1.85	5%	0.65	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	RADIUM-228	1.94	1.72	12%	0.40	PCI/G	WP0447.0
SC-15610-S-SD	6/1/98	RADIUM-228	1.94	1.67	15%	.117	PCI/G	GE2171.0
SC-15910-S-DU	9/10/97	RADIUM-228	1.41	1.52	8%	0.57	PCI/G	WP0325.0
SC-15910-S-FR	9/10/97	RADIUM-228	1.41	1.27	10%	0.39	PCI/G	WP0325.0
SC-15910-S-SD	9/10/97	RADIUM-228	1.41	1.28	10%	0.143	PCI/G	GE2152.0
SC-15915-S-DU	9/10/97	RADIUM-228	1.16	1.18	2%	0.41	PCI/G	WP0325.0
SC-15915-S-FR	9/10/97	RADIUM-228	1.16	1.34	14%	0.45	PCI/G	WP0325.0
SC-15915-S-SD	9/10/97	RADIUM-228	1.16	1.38	17%	0.166	PCI/G	GE2152.0
SC-16010-S-DU	9/9/97	RADIUM-228	0.63	1.39	75%	0.60	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	RADIUM-228	0.63	1.89	100%	0.52	PCI/G	WP0323.0
SC-16010-S-SD	9/9/97	RADIUM-228	0.63	1.25	66%	0.171	PCI/G	GE2152.0
SC-16110-S-DU	9/9/97	RADIUM-228	1.12	1.39	22%	0.33	PCI/G	WP0324.0
SC-16110-S-FR	9/9/97	RADIUM-228	1.12	1.13	1%	0.51	PCI/G	WP0324.0
SC-16110-S-SD	9/9/97	RADIUM-228	1.12	1.33	17%	0.0824	PCI/G	GE2152.0
SC-25310-S-DU	7/8/98	RADIUM-228	1.57	1.51	4%	0.42	PCI/G	WP0457.0
SC-25310-S-FR	7/8/98	RADIUM-228	1.57	1.16	30%	0.40	PCI/G	WP0457.0
SC-26310-S-DU	7/8/98	RADIUM-228	1.81	1.49	19%	0.46	PCI/G	WP0457.0

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DU/FR/SD Results

SC-26310-S-FR	7/8/98	RADIUM-226	1.81	1.35	29%	0.30	PCI/G	WP0457.0
SC-14309-S-DU	11/10/97	THORIUM-230	2.86	2.30	22%	0.62	PCI/G	WP0352.0
SC-14309-S-FR	11/10/97	THORIUM-230	2.86	3.49	20%	0.62	PCI/G	WP0352.0
SC-14309-S-SD	11/10/97	THORIUM-230	2.86	2.89	1%	0.209	PCI/G	TU0101.0
SC-14313-S-DU	11/19/97	THORIUM-230	1.29	1.49	14%	0.62	PCI/G	WP0359.0
SC-14313-S-FR	11/19/97	THORIUM-230	1.29	1.34	4%	0.62	PCI/G	WP0359.0
SC-14320-S-RS-FR	11/25/97	THORIUM-230	12.90	15.20	16%	0.62	PCI/G	WP0368.0
SC-14320-S-RS-SD	11/25/97	THORIUM-230	12.90	3.04	124%	0.240	PCI/G	TU0101.0
SC-14424-S-DU	11/10/97	THORIUM-230	24.90	18.20	31%	0.62	PCI/G	WP0352 0
SC-14424-S-FR	11/10/97	THORIUM-230	24.90	23.30	7%	0.62	PCI/G	WP0352 0
SC-14424-S-SD	11/10/97	THORIUM-230	24.90	15.00	50%	0.0981	PCI/G	TU0101.0
SC-14510-S-DU	11/26/97	THORIUM-230	1.47	1.25	16%	0.62	PCI/G	WP0369.0
SC-14510-S-FR	11/26/97	THORIUM-230	1.47	1.40	5%	0.62	PCI/G	WP0369.0
SC-14510-S-SD	11/26/97	THORIUM-230	1.47	1.77	19%	0.248	PCI/G	TU0101.0
SC-14515-S-DU	11/10/97	THORIUM-230	27.40	25.90	6%	0.62	PCI/G	WP0353.0
SC-14515-S-FR	11/10/97	THORIUM-230	27.40	22.30	21%	0.62	PCI/G	WP0353 0
SC-14515-S-SD	11/10/97	THORIUM-230	27.40	14.30	63%	0.141	PCI/G	TU0101 0
SC-14520-S-RS-DU	11/25/97	THORIUM-230	1.28	1.03	22%	0.62	PCI/G	WP0368.0
SC-14610-S-DU	11/26/97	THORIUM-230	2 77	1.17	81%	0.62	PCI/G	WP0369.0
SC-14610-S-FR	11/26/97	THORIUM-230	2.77	3.38	20%	0.62	PCI/G	WP0369.0
SC-14610-S-SD	11/26/97	THORIUM-230	2.77	5.76	70%	0.0912	PCI/G	TU0101.0
SC-14701-C-DU	12/23/97	THORIUM-230	1.37	1.28	7%	0.62	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	THORIUM-230	1 37	1.14	18%	0.62	PCI/G	WP0380 0
SC-14701-C-SD	12/23/97	THORIUM-230	1.37	2.11	43%	0.0828	PCI/G	TU0156.0
SC-14724-S-RS-DU	5/26/98	THORIUM-230	1.39	0.89	44%	0.62	PCI/G	WP0443 0
SC-14724-S-RS-FR	5/26/98	THORIUM-230	1.39	0 93	40%	0.62	PCI/G	WP0443 0
SC-14724-S-RS-SD	5/26/98	THORIUM-230	1.39	1.58	13%	0.100	PCI/G	QT2301.0
SC-14801-S-DU	12/23/97	THORIUM-230	0.93	0 84	10%	0.62	PCI/G	WP0380 0
SC-14801-S-FR	12/23/97	THORIUM-230	0 93	0.92	1%	0 62	PCI/G	WP0380 0
SC-14801-S-SD	12/23/97	THORIUM-230	0.93	1.44	43%	0 0543	PCI/G	TU0156 0
SC-14815-S-02-DU	5/27/98	THORIUM-230	1.01	1.08	7%	0 62	PCI/G	WP0444 0
SC-14815-S-02-FR	5/27/98	THORIUM-230	1.01	0.91	10%	0.62	PCI/G	WP0444 0
SC-14815-S-02-SD	5/27/98	THORIUM-230	1.01	1.76	54%	0 174	PCI/G	QT2301 0
SC-14910-S-DU	12/31/97	THORIUM-230	1.30	1.19	9%	0.62	PCI/G	WP0381 0
SC-14910-S-FR	12/31/97	THORIUM-230	1.30	1.03	23%	0 62	PCI/G	WP0381.0
SC-14910-S-SD	12/31/97	THORIUM-230	1.30	1.41	8%	0 102	PCI/G	TU0156.0
SC-15002-S-DU	1/26/98	THORIUM-230	1.17	1.26	7%	0.62	PCI/G	WP0395 0
SC-15002-S-FR	1/26/98	THORIUM-230	1.17	1.40	18%	0.62	PCI/G	WP0395 0
SC-15002-S-SD	1/26/98	THORIUM-230	1.17	0.41	96%	0.0420	PCI/G	ES2044.0
SC-15111-S-02-DU	7/20/98	THORIUM-230	0 91	1.09	18%	0 62	PCI/G	WP0468 0
SC-15111-S-02-FR	7/20/98	THORIUM-230	0.91	1.08	17%	0.62	PCI/G	WP0468 0
SC-15120-S-DU	6/1/98	THORIUM-230	1.69	1 62	4%	0.62	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	THORIUM-230	1.69	1.12	41%	0.62	PCI/G	WP0447.0
SC-15120-S-SD	6/1/98	THORIUM-230	1.69	1.09	43%	.0741	PCI/G	GE2171.0
SC-15210-S-DU	2/27/98	THORIUM-230	1 32	1.12	16%	0.62	PCI/G	WP0423.0
SC-15210-S-FR	2/27/98	THORIUM-230	1.32	1.16	13%	0.62	PCI/G	WP0423 0
SC-15210-S-SD	2/27/98	THORIUM-230	1.32	0.70	61%	0.0472	PCI/G	ES2044.0
SC-15215-S-RS-DU	5/29/98	THORIUM-230	1.10	1.12	2%	0.62	PCI/G	WP0445 0
SC-15215-S-RS-FR	5/29/98	THORIUM-230	1.10	1.05	5%	0.62	PCI/G	WP0445 0
SC-15215-S-RS-SD	5/29/98	THORIUM-230	1 10	1.39	23%	.0792	PCI/G	GE2171 0
SC-15310-S-DU	3/30/98	THORIUM-230	1.04	1.08	4%	0.62	PCI/G	WP0433.0
SC-15310-S-FR	3/30/98	THORIUM-230	1.04	1.28	21%	0.62	PCI/G	WP0433.0
SC-15310-S-SD	3/30/98	THORIUM-230	1.04	0.81	25%	0.0549	PCI/G	GE2157.0
SC-15317-S-RS-DU	5/26/98	THORIUM-230	2.29	2.38	4%	0.62	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	THORIUM-230	2 29	3 57	44%	0.62	PCI/G	WP0443 0
SC-15317-S-RS-SD	5/26/98	THORIUM-230	2 29	1.85	21%	0.077	PCI/G	QT2301.0
SC-15410-S-DU	3/4/98	THORIUM-230	1.27	1.10	14%	0.62	PCI/G	WP0425.0
SC-15410-S-FR	3/4/98	THORIUM-230	1.27	1.30	2%	0.62	PCI/G	WP0425 0

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DU/FR/SD Results

SC-15410-S-SD	3/4/98	THORIUM-230	1.27	1.11	13%	0.037	PCI/G	QT2224.0
SC-15420-S-DU	5/29/98	THORIUM-230	1.22	1.46	18%	0.62	PCI/G	WP0446.0
SC-15420-S-FR	5/29/98	THORIUM-230	1.22	1.23	1%	0.62	PCI/G	WP0446.0
SC-15420-S-SD	5/29/98	THORIUM-230	1.22	1.46	18%	.0601	PCI/G	GE2171.0
SC-15510-S-DU	5/29/98	THORIUM-230	0.93	1.24	29%	0.62	PCI/G	WP0446.0
SC-15510-S-FR	5/29/98	THORIUM-230	0.93	1.09	16%	0.62	PCI/G	WP0446.0
SC-15510-S-SD	5/29/98	THORIUM-230	0.93	1.32	35%	.137	PCI/G	GE2171.0
SC-15605-S-DU	6/1/98	THORIUM-230	1.08	0.99	9%	0.62	PCI/G	WP0447.0
SC-15605-S-FR	6/1/98	THORIUM-230	1.08	1.26	15%	0.62	PCI/G	WP0447.0
SC-15605-S-SD	6/1/98	THORIUM-230	1.08	1.10	2%	.104	PCI/G	GE2171.0
SC-15610-S-DU	6/1/98	THORIUM-230	3.39	3.50	3%	0.62	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	THORIUM-230	3.39	3.87	13%	0.62	PCI/G	WP0447.0
SC-15610-S-SD	6/1/98	THORIUM-230	3.39	6.73	66%	.0863	PCI/G	GE2171.0
SC-15910-S-DU	9/10/97	THORIUM-230	1.05	1.13	7%	0.62	PCI/G	WP0325.0
SC-15910-S-FR	9/10/97	THORIUM-230	1.05	0.94	11%	0.62	PCI/G	WP0325.0
SC-15910-S-SD	9/10/97	THORIUM-230	1.05	1.42	30%	0.155	PCI/G	GE2152.0
SC-15915-S-DU	9/10/97	THORIUM-230	1.18	1.14	3%	0.62	PCI/G	WP0325.0
SC-15915-S-FR	9/10/97	THORIUM-230	1.18	1.29	9%	0.62	PCI/G	WP0325.0
SC-15915-S-SD	9/10/97	THORIUM-230	1.18	1.96	50%	0.119	PCI/G	GE2152.0
SC-16010-S-DU	9/9/97	THORIUM-230	1.19	1.15	3%	0.62	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	THORIUM-230	1.19	2.28	63%	0.62	PCI/G	WP0323.0
SC-16010-S-SD	9/9/97	THORIUM-230	1.19	1.42	18%	0.222	PCI/G	GE2152.0
SC-16110-S-DU	9/9/97	THORIUM-230	1.04	1.02	2%	0.62	PCI/G	WP0324.0
SC-16110-S-FR	9/9/97	THORIUM-230	1.04	0.90	14%	0.62	PCI/G	WP0324.0
SC-16110-S-SD	9/9/97	THORIUM-230	1.04	0.91	14%	0.266	PCI/G	GE2152.0
SC-25310-S-DU	7/8/98	THORIUM-230	1.07	1.12	5%	0.62	PCI/G	WP0457.0
SC-25310-S-FR	7/8/98	THORIUM-230	1.07	1.22	13%	0.62	PCI/G	WP0457.0
SC-26310-S-DU	7/8/98	THORIUM-230	0.69	1.08	44%	0.62	PCI/G	WP0457.0
SC-26310-S-FR	7/8/98	THORIUM-230	0.69	0.91	28%	0.62	PCI/G	WP0457.0
SC-14309-S-DU	11/10/97	URANIUM-238	ND	ND	N/A	3.11	PCI/G	WP0352.0
SC-14309-S-FR	11/10/97	URANIUM-238	ND	ND	N/A	2.95	PCI/G	WP0352.0
SC-14309-S-SD	11/10/97	URANIUM-238	ND	2.88	N/A	1.56	PCI/G	TU0101.0
SC-14313-S-DU	11/19/97	URANIUM-238	ND	ND	N/A	2.55	PCI/G	WP0359.0
SC-14313-S-FR	11/19/97	URANIUM-238	ND	ND	N/A	4.01	PCI/G	WP0359.0
SC-14320-S-RS-DU	11/25/97	URANIUM-238	5.75	ND	N/A	6.07	PCI/G	WP0368.0
SC-14320-S-RS-FR	11/25/97	URANIUM-238	5.75	ND	N/A	4.56	PCI/G	WP0368.0
SC-14320-S-RS-SD	11/25/97	URANIUM-238	5.75	1.63	112%	6.68	PCI/G	TU0101.0
SC-14424-S-DU	11/10/97	URANIUM-238	5.86	4.43	28%	3.12	PCI/G	WP0352.0
SC-14424-S-FR	11/10/97	URANIUM-238	5.86	3.18	59%	3.57	PCI/G	WP0352.0
SC-14424-S-SD	11/10/97	URANIUM-238	5.86	8.95	42%	6.69	PCI/G	TU0101.0
SC-14510-S-DU	11/26/97	URANIUM-238	ND	ND	N/A	2.66	PCI/G	WP0369.0
SC-14510-S-FR	11/26/97	URANIUM-238	ND	ND	N/A	2.82	PCI/G	WP0369.0
SC-14510-S-SD	11/26/97	URANIUM-238	ND	ND	N/A	1.80	PCI/G	TU0101.0
SC-14515-S-DU	11/10/97	URANIUM-238	6.90	8.82	24%	3.78	PCI/G	WP0353.0
SC-14515-S-FR	11/10/97	URANIUM-238	6.90	7.10	3%	3.45	PCI/G	WP0353.0
SC-14515-S-SD	11/10/97	URANIUM-238	6.90	6.77	2%	7.84	PCI/G	TU0101.0
SC-14520-S-RS-DU	11/25/97	URANIUM-238	ND	ND	N/A	2.74	PCI/G	WP0368.0
SC-14610-S-DU	11/26/97	URANIUM-238	ND	ND	N/A	2.94	PCI/G	WP0369.0
SC-14610-S-FR	11/26/97	URANIUM-238	ND	2.68	N/A	3.08	PCI/G	WP0369.0
SC-14610-S-SD	11/26/97	URANIUM-238	ND	2.95	N/A	1.96	PCI/G	TU0101.0
SC-14701-C-DU	12/23/97	URANIUM-238	ND	ND	N/A	2.79	PCI/G	WP0380.0
SC-14701-C-FR	12/23/97	URANIUM-238	ND	ND	N/A	3.95	PCI/G	WP0380.0
SC-14701-C-SD	12/23/97	URANIUM-238	ND	2.14	N/A	1.45	PCI/G	TU0156.0
SC-14724-S-RS-DU	5/26/98	URANIUM-238	ND	ND	N/A	2.74	PCI/G	WP0443.0
SC-14724-S-RS-FR	5/26/98	URANIUM-238	ND	1.85	N/A	2.31	PCI/G	WP0443.0
SC-14724-S-RS-SD	5/26/98	URANIUM-238	ND	1.82	N/A	1.96	PCI/G	QT2301.0
SC-14801-S-DU	12/23/97	URANIUM-238	ND	ND	N/A	3.49	PCI/G	WP0380.0
SC-14801-S-FR	12/23/97	URANIUM-238	ND	ND	N/A	2.65	PCI/G	WP0380.0

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DU/FR/SD Results

SC-14801-S-SD	12/23/97	URANIUM-238	ND	2.56	N/A	1.89	PCI/G	TU0156 0
SC-14815-S-02-DU	5/27/98	URANIUM-238	ND	ND	N/A	2.78	PCI/G	WP0444 0
SC-14815-S-02-FR	5/27/98	URANIUM-238	ND	ND	N/A	2 71	PCI/G	WP0444.0
SC-14815-S-02-SD	5/27/98	URANIUM-238	ND	1.17	N/A	1.64	PCI/G	QT2301 0
SC-14910-S-DU	12/31/97	URANIUM-238	ND	ND	N/A	3 42	PCI/G	WP0381 0
SC-14910-S-FR	12/31/97	URANIUM-238	ND	ND	N/A	2.61	PCI/G	WP0381 0
SC-14910-S-SD	12/31/97	URANIUM-238	ND	0.70	N/A	1.83	PCI/G	TU0156 0
SC-15002-S-DU	1/26/98	URANIUM-238	ND	ND	N/A	2.70	PCI/G	WP0395 0
SC-15002-S-FR	1/26/98	URANIUM-238	ND	ND	N/A	3.68	PCI/G	WP0395.0
SC-15002-S-SD	1/26/98	URANIUM-238	ND	0.40	N/A	0.0219	PCI/G	ES2044 0
SC-15111-S-02-DU	7/20/98	URANIUM-238	ND	ND	N/A	3.79	PCI/G	WP0468.0
SC-15111-S-02-FR	7/20/98	URANIUM-238	ND	ND	N/A	2 42	PCI/G	WP0468 0
SC-15120-S-DU	6/1/98	URANIUM-238	ND	ND	N/A	3.99	PCI/G	WP0447.0
SC-15120-S-FR	6/1/98	URANIUM-238	ND	1.89	N/A	1.81	PCI/G	WP0447.0
SC-15120-S-SD	6/1/98	URANIUM-238	ND	ND	N/A	.998	PCI/G	GE2171.0
SC-15210-S-DU	2/27/98	URANIUM-238	ND	ND	N/A	2.89	PCI/G	WP0423 0
SC-15210-S-FR	2/27/98	URANIUM-238	ND	ND	N/A	4.22	PCI/G	WP0423 0
SC-15210-S-SD	2/27/98	URANIUM-238	ND	0.95	N/A	0 0224	PCI/G	ES2044 0
SC-15215-S-RS-DU	5/29/98	URANIUM-238	ND	ND	N/A	3.90	PCI/G	WP0445 0
SC-15215-S-RS-FR	5/29/98	URANIUM-238	ND	ND	N/A	2.77	PCI/G	WP0445 0
SC-15215-S-RS-SD	5/29/98	URANIUM-238	ND	1.82	N/A	1.4	PCI/G	GE2171 0
SC-15310-S-DU	3/30/98	URANIUM-238	ND	ND	N/A	2 73	PCI/G	WP0433 0
SC-15310-S-FR	3/30/98	URANIUM-238	ND	1.74	N/A	2.82	PCI/G	WP0433.0
SC-15310-S-SD	3/30/98	URANIUM-238	ND	1.30	N/A	0 730	PCI/G	GE2157 0
SC-15317-S-RS-DU	5/26/98	URANIUM-238	ND	ND	N/A	2 72	PCI/G	WP0443.0
SC-15317-S-RS-FR	5/26/98	URANIUM-238	ND	ND	N/A	2.76	PCI/G	WP0443 0
SC-15317-S-RS-SD	5/26/98	URANIUM-238	ND	1.11	N/A	2.78	PCI/G	QT2301 0
SC-15410-S-DU	3/4/98	URANIUM-238	ND	ND	N/A	2 64	PCI/G	WP0425 0
SC-15410-S-FR	3/4/98	URANIUM-238	ND	ND	N/A	3 71	PCI/G	WP0425 0
SC-15410-S-SD	3/4/98	URANIUM-238	ND	1.28	N/A	2 16	PCI/G	QT2224.0
SC-15420-S-DU	5/29/98	URANIUM-238	ND	ND	N/A	2.68	PCI/G	WP0446 0
SC-15420-S-FR	5/29/98	URANIUM-238	ND	ND	N/A	3 55	PCI/G	WP0446 0
SC-15420-S-SD	5/29/98	URANIUM-238	ND	1.11	N/A	1 05	PCI/G	GE2171 0
SC-15510-S-DU	5/29/98	URANIUM-238	ND	ND	N/A	2 61	PCI/G	WP0446 0
SC-15510-S-FR	5/29/98	URANIUM-238	ND	ND	N/A	3 86	PCI/G	WP0446 0
SC-15510-S-SD	5/29/98	URANIUM-238	ND	1.40	N/A	1 27	PCI/G	GE2171 0
SC-15605-S-DU	6/1/98	URANIUM-238	ND	ND	N/A	2 71	PCI/G	WP0447 0
SC-15605-S-FR	6/1/98	URANIUM-238	ND	ND	N/A	3.68	PCI/G	WP0447.0
SC-15605-S-SD	6/1/98	URANIUM-238	ND	ND	N/A	1.02	PCI/G	GE2171 0
SC-15610-S-DU	6/1/98	URANIUM-238	ND	ND	N/A	4 33	PCI/G	WP0447.0
SC-15610-S-FR	6/1/98	URANIUM-238	ND	2 41	N/A	1.96	PCI/G	WP0447 0
SC-15610-S-SD	6/1/98	URANIUM-238	ND	1 76	N/A	1.33	PCI/G	GE2171.0
SC-15802-S-DU	6/30/97	URANIUM-238	ND	ND	N/A	3 85	PCI/G	WP0305 0
SC-15802-S-FR	6/30/97	URANIUM-238	ND	2.81	N/A	2.10	PCI/G	WP0305 0
SC-15910-S-DU	9/10/97	URANIUM-238	ND	ND	N/A	3.58	PCI/G	WP0325 0
SC-15910-S-FR	9/10/97	URANIUM-238	ND	ND	N/A	2.75	PCI/G	WP0325 0
SC-15910-S-SD	9/10/97	URANIUM-238	ND	2.09	N/A	1.26	PCI/G	GE2152.0
SC-15915-S-DU	9/10/97	URANIUM-238	ND	ND	N/A	2.78	PCI/G	WP0325 0
SC-15915-S-FR	9/10/97	URANIUM-238	ND	ND	N/A	2.82	PCI/G	WP0325 0
SC-15915-S-SD	9/10/97	URANIUM-238	ND	1.72	N/A	1.34	PCI/G	GE2152.0
SC-16010-S-DU	9/9/97	URANIUM-238	2.25	3.51	44%	2.99	PCI/G	WP0323.0
SC-16010-S-FR	9/9/97	URANIUM-238	2.25	ND	N/A	5.16	PCI/G	WP0323.0
SC-16010-S-SD	9/9/97	URANIUM-238	2.25	1.67	30%	1.55	PCI/G	GE2152 0
SC-16110-S-DU	9/9/97	URANIUM-238	ND	ND	N/A	2 65	PCI/G	WP0324.0
SC-16110-S-FR	9/9/97	URANIUM-238	ND	ND	N/A	3 71	PCI/G	WP0324 0
SC-16110-S-SD	9/9/97	URANIUM-238	ND	1.65	N/A	0.676	PCI/G	GE2152 0
SC-25310-S-DU	7/8/98	URANIUM-238	1.40	ND	N/A	4.06	PCI/G	WP0457 0
SC-25310-S-FR	7/8/98	URANIUM-238	1.40	ND	N/A	2.90	PCI/G	WP0457.0

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DU/FR/SD Results

SC-26310-S-DU	7/8/98	URANIUM-238	ND	ND	N/A	4.02	PCI/G	WP0457.0
SC-26310-S-FR	7/8/98	URANIUM-238	ND	ND	N/A	2.68	PCI/G	WP0457.0

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DU/FR/SD Results

SC-15802-S-FR	6/30/97	2,4,6-TRINITROTOLUENE	ND	N/A	0 10	UG/G	MX0152 0
SC-15802-S-MD	6/30/97	2,4,6-TRINITROTOLUENE	5.35		0 10	UG/G	MX0152 0
SC-15802-S-MS	6/30/97	2,4,6-TRINITROTOLUENE	5.13		0 10	UG/G	MX0152 0
SC-15802-S-SD	6/30/97	2,4,6-TRINITROTOLUENE	ND	N/A	0.23	UG/G	WS2042.0
SC-14724-S-RS-DU	5/26/98	ARSENIC	5.40		6.20	UG/G	WS2170.0
SC-14724-S-RS-FR	5/26/98	ARSENIC	5 70		5.30	UG/G	WS2170.0
SC-14724-S-RS-MS	5/26/98	ARSENIC	457.00		6.20	UG/G	WS2170.0
SC-14724-S-RS-SD	5/26/98	ARSENIC	7.90		0 48	UG/G	QT2301 0
SC-15210-S-DU	2/27/98	ARSENIC	8.90		0.34	UG/G	QT2220.0
SC-15210-S-FR	2/27/98	ARSENIC	9.10		0.34	UG/G	QT2220.0
SC-15210-S-MS	2/27/98	ARSENIC	540.00		0 34	UG/G	QT2220 0
SC-15210-S-SD	2/27/98	ARSENIC	5.07		0.473	UG/G	ES2044 0
SC-15215-S-RS-FR	5/29/98	ARSENIC	7.00		0.83	UG/G	SW0035 0
SC-15215-S-RS-MD	5/29/98	ARSENIC	15.00		0.82	UG/G	SW0035 0
SC-15215-S-RS-MS	5/29/98	ARSENIC	16.80		0.82	UG/G	SW0035.0
SC-15215-S-RS-SD	5/29/98	ARSENIC	7 60		0.755	UG/G	GE2171.0
SC-15310-S-DU	3/30/98	ARSENIC	7.10		2.3	UG/G	QT2244 0
SC-15310-S-FR	3/30/98	ARSENIC	7 30		2.3	UG/G	QT2244 0
SC-15310-S-MS	3/30/98	ARSENIC	484.00		2.3	UG/G	QT2244 0
SC-15310-S-SD	3/30/98	ARSENIC	5.00		0.697	UG/G	GE2157.0
SC-15317-S-RS-DU	5/26/98	ARSENIC	5 90		5.90	UG/G	WS2170 0
SC-15317-S-RS-FR	5/26/98	ARSENIC	5.30		4.20	UG/G	WS2170 0
SC-15317-S-RS-MS	5/26/98	ARSENIC	494.00		5.90	UG/G	WS2170 0
SC-15317-S-RS-SD	5/26/98	ARSENIC	7 80		0 46	UG/G	QT2301 0
SC-15910-S-DU	9/10/97	ARSENIC	6 13		0 53	UG/G	GE2150 0
SC-15910-S-FR	9/10/97	ARSENIC	9.70		0.57	UG/G	GE2150 0
SC-15910-S-MS	9/10/97	ARSENIC	365 00		0 52	UG/G	GE2150 0
SC-15910-S-SD	9/10/97	ARSENIC	4.10		0.589	UG/G	GE2152 0
SC-15915-S-DU	9/10/97	ARSENIC	5 74		0 54	UG/G	GE2150 0
SC-15915-S-FR	9/10/97	ARSENIC	5 30		0.54	UG/G	GE2150 0
SC-15915-S-MS	9/10/97	ARSENIC	355 00		0 52	UG/G	GE2150 0
SC-15915-S-SD	9/10/97	ARSENIC	5 20		0 549	UG/G	GE2152.0
SC-14724-S-RS-FR	5/26/98	BENZO(A)ANTHRACENE	ND	N/A	11	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	BENZO(A)ANTHRACENE	80.00		12	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(A)ANTHRACENE	74.00		12	UG/KG	WS2170 0
SC-14724-S-RS-SD	5/26/98	BENZO(A)ANTHRACENE	ND	N/A	44	UG/KG	QT2301 0
SC-14724-S-RS-FR	5/26/98	BENZO(A)PYRENE	ND	N/A	19	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	BENZO(A)PYRENE	140 00		19	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(A)PYRENE	130 00		19	UG/KG	WS2170 0
SC-14724-S-RS-SD	5/26/98	BENZO(A)PYRENE	ND	N/A	44	UG/KG	QT2301.0
SC-14724-S-RS-FR	5/26/98	BENZO(B)FLUORANTHENE	ND	N/A	15	UG/KG	WS2170.0
SC-14724-S-RS-MD	5/26/98	BENZO(B)FLUORANTHENE	110.00		15	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	BENZO(B)FLUORANTHENE	100.00		15	UG/KG	WS2170 0
SC-14724-S-RS-SD	5/26/98	BENZO(B)FLUORANTHENE	ND	N/A	44	UG/KG	QT2301 0
SC-14724-S-RS-FR	5/26/98	BENZO(K)FLUORANTHENE	ND	N/A	14	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	BENZO(K)FLUORANTHENE	100 00		14	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	BENZO(K)FLUORANTHENE	95.00		14	UG/KG	WS2170.0
SC-14724-S-RS-SD	5/26/98	BENZO(K)FLUORANTHENE	ND	N/A	44	UG/KG	QT2301.0
SC-14724-S-RS-FR	5/26/98	CHRYSENE	ND	N/A	120	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	CHRYSENE	910.00		130	UG/KG	WS2170.0
SC-14724-S-RS-MS	5/26/98	CHRYSENE	840.00		130	UG/KG	WS2170.0
SC-14724-S-RS-SD	5/26/98	CHRYSENE	ND	N/A	44	UG/KG	QT2301.0
SC-14724-S-RS-FR	5/26/98	INDENO(1,2,3-CD)PYRENE	ND	N/A	36	UG/KG	WS2170 0
SC-14724-S-RS-MD	5/26/98	INDENO(1,2,3-CD)PYRENE	260.00		37	UG/KG	WS2170 0
SC-14724-S-RS-MS	5/26/98	INDENO(1,2,3-CD)PYRENE	230.00		37	UG/KG	WS2170 0
SC-14724-S-RS-SD	5/26/98	INDENO(1,2,3-CD)PYRENE	ND	N/A	44	UG/KG	QT2301.0