

**PROPOSAL FOR
NO FURTHER ACTION
ENVIRONMENTAL RESTORATION PROJECT
JANUARY 1997**

**SITE 86, FIRING SITE
OU 1335**

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Prepared for the
United States Department of Energy

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1.0 Introduction

1.1 ER Site 86, Firing Site

Sandia National Laboratories/New Mexico (SNL/NM) is proposing a no further action (NFA) decision based on confirmatory sampling for Environmental Restoration (ER) Site 86, Firing Site, Operable Unit (OU) 1335. ER Site 86 is listed in the Hazardous and Solid Waste Amendments (HSWA) Module IV (EPA August 1993) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518-1) (EPA August 1992).

1.2 SNL/NM Confirmatory Sampling NFA Process

This proposal for a determination of an NFA decision based on confirmatory sampling was prepared using the process presented in Section 4.5.3 of the SNL/NM Program Implementation Plan (PIP) (SNL/NM February 1995). Specifically, this proposal "must contain information demonstrating that there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMUs) at the facility that may pose a threat to human health or the environment" (as proposed in 40 CFR 264.514[a] [2]) (EPA July 1990). The HSWA Module IV contains the same requirements for an NFA demonstration:

"Based on the results of the RFI [RCRA Facility Investigation] and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS [corrective measures study] process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (EPA August 1993)."

If the available archival evidence is not considered convincing, SNL/NM performs confirmatory sampling to increase the weight of evidence and allow an informed decision on whether to proceed with the administrative-type NFA or to return to the site characterization program for additional data collection (SNL/NM February 1995).

The Environmental Protection Agency (EPA) acknowledged that the extent of sampling required may vary greatly, stating that:

"the agency does not intend this rule [the second codification of HSWA] to require extensive sampling and monitoring at every SWMU. . . . Sampling is generally required only in situations where there is insufficient evidence on which to make an initial release determination. . . . The actual extent of sampling will vary . . . depending on the amount and quality of existing information available (EPA December 1987)."

This request for an NFA decision for ER Site 86 is based primarily on analytical results of confirmatory soil samples collected both before and following a Voluntary Corrective Measure performed at the site. Concentrations of site-specific constituents of concern (COCs) detected in the soil samples were first compared to background 95th percentile or upper tolerance limit (UTL) concentrations of COCs found in SNL/NM soils (IT March 1996). If no SNL/NM or other relevant background limit was available for a particular COC, or if the COC concentration exceeded the SNL/NM or other relevant background limit, then the constituent concentration was compared to the proposed 40 CFR Part 264 Subpart S (Subpart S) or other relevant soil action level for the compound (EPA July 1990). If the COC concentration exceeded both the background limit and relevant action level for that compound, or if no background limit or action level has been determined or proposed for the constituent, then a risk assessment was performed. The highest concentration of the particular COC identified at the site was then compared to the derived risk assessment action level to determine if the COC concentration at the site poses a significant health risk.

A site is eligible for an NFA proposal if it meets one or more of the following criteria taken from the Environmental Restoration Document of Understanding (NMED November 1995):

- NFA Criterion 1: The site cannot be located or has been found not to exist, is a duplicate potential release site (PRS) or is located within and therefore, investigated as part of another PRS.
- NFA Criterion 2: The site has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.
- NFA Criterion 3: No release to the environment has occurred, nor is likely to occur in the future.
- NFA Criterion 4: There was a release, but the site was characterized and/or remediated under another authority which adequately addresses corrective action, and documentation, such as a closure letter, is available.
- NFA Criterion 5: The PRS has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

Review and analysis of the ER Site 86 soil sample analytical data indicate that concentrations of COCs at this site are less than (1) proposed Subpart S or other action levels, or (2) derived risk assessment action levels.

ER Site 86 is being proposed for an NFA decision based on confirmatory sampling data which demonstrates that hazardous waste or COCs that may have been released from this SWMU into the environment have been remediated and pose an acceptable level of risk under current and projected future land use (Criterion 5).

1.3 Local Setting

SNL/NM occupies 2,829 acres of land owned by the Department of Energy (DOE), with an additional 14,920 acres of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service (USFS), the State of New Mexico, and the Isleta Indian Reservation (Figure 1). SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other research and development activities since 1945 (DOE September 1987).

ER Site 86 is located near the southwest corner of Kirtland Air Force Base, north of Building 9927, approximately 2700 feet east of the Technical Area III east boundary (Figure 2). It is on land which is permitted to the Department of Energy from the Air Force. The site occupies about 1.6 acres and is essentially flat, with a slight slope to the west, at an average elevation of 5,470 feet above mean sea level (AMSL). The area is graded and clear of vegetation, however the surrounding area is covered by desert grasses and cacti.

The surficial geology at ER Site 86 is characterized by a veneer of aeolian sediments that are underlain by alluvial fan or alluvial deposits. Based on drilling records of similar deposits at KAFB, the alluvial materials are highly heterogeneous, composed primarily of medium to fine silty sands with frequent coarse sand, gravel, and cobble lenses. The alluvial deposits probably extend to the water-table. Vegetation consists predominantly of grasses including grama, muhly, dropseed, and galleta. Shrubs commonly associated with the grasslands include sand sage, winter fat, saltbrush, and rabbitbush. Cacti are common, and include cholla, pincushion, strawberry, and prickly pear.

The water-table elevation is approximately 5060 feet AMSL at this location, with a depth to groundwater of approximately 410 feet. Local groundwater flow is believed to be in a generally west to northwest direction. The nearest production well is KAFB-9, which is approximately three-quarters of a mile northeast of the site. The nearest groundwater monitor wells to the site are the group of wells installed around the Chemical Waste Landfill in the southeast corner of TA III. These wells are located approximately 0.5 miles southwest of ER Site 86 (SNL/NM March 1995).

2.0 History of the SWMU

2.1 Sources of Supporting Information

In preparing the NFA proposal for ER Site 86, available background information was reviewed to quantify potential releases and to select analytes for soil sampling. Background information was collected from SNL/NM interviews with employees familiar with site operational history. The

following sources of information, hierarchically listed with respect to assigned validity, were used to evaluate ER Site 86:

- * Confirmatory subsurface soil sampling conducted in May 1996;
- * Two preliminary survey reports, including data from radiation surveys, and one unexploded ordnance/high explosive survey;
- * Interviews with current and retired personnel familiar with the activities at ER Site 86 ;
- * Miscellaneous information sources including SNL/NM personnel correspondence (memorandums, letters, and notes regarding ER Site 86);
- * Photographs and field notes collected at the site by SNL/NM ER staff;
- * Historical aerial photographs;
- * The Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Report (DOE, Sept. 1987) and CEARP background records;
- * The RCRA Facility Assessment (RFA) report (EPA September 1987).

2.2 Previous Audits, Inspections, and Findings

Investigations conducted under the CEARP and RFA identified ER Site 86 as a Potential Release Site because depleted uranium may have been released in uncontrolled blast tests.

An Environmental Assessment (EA) was completed in 1992 and included ER Site 86.

An Unexploded Ordnance (UXO)/High Explosives (HE) visual surface survey was conducted by KAFB Explosive Ordnance Disposal personnel in March of 1994. No UXO/HE or ordnance debris was found during the survey (SNL/NM, Sept. 1994).

A surface gamma radiation survey was conducted by RUST Geotech, Inc. in March 1994. No elevated radiation levels were found in surface soils. However, a radiation survey was performed by SNL/NM Radiation Protection Operations and found some significant levels of radioactivity in some concrete blast shield blocks located at ER Site 86. The decontamination of these concrete blocks was the target of a housekeeping activity conducted by the SNL/NM Environmental Restoration Project in May 1996. The results of this action are summarized in Section 3.6.

2.3 Historical Operations

This site consists of one firing site, a range control station and instrumentation building (Building 9927), and auxiliary support facilities, all built in the early 1960s (Figure 3). The site was used for testing involving weapons systems components and explosives systems, and for conducting explosive technology research. The Firing Site is an area which measures 35 feet by 55 feet on the north side of Building 9927. Tests conducted at this site are currently limited to an explosive yield of less than 50 pounds of trinitrotoluene (TNT). Earlier tests may have involved up to 100 pounds of HE. An average test involved the detonation of an equivalent of 7 - 8 pounds of TNT. Concrete blast shield blocks were used to contain the blast forces during these tests. Between 140 and 150 tests were conducted annually during the 1980s. The site is still listed as an active site, although it has not been used for explosive tests

in several years. Most of the testing equipment has been removed and a considerable amount of effort would be needed to reactivate the facility for explosive work, according to the responsible organization.

The CEARP and the RFA mention that depleted uranium (DU) might have been dispersed during tests, however that information is in error as discussed in Section 3.1. The general types of testing conducted at this site are described below.

Explosively Driven Generator Tests

Explosively driven ferro-electric generator tests were the first type of testing conducted at ER Site 86. The tests involved less than 5 pounds of HE; the majority of these did not use more than a few ounces of HE. The generators may have been irradiated then exposed to explosive detonations to see if they remained operational. In this case, irradiated aluminum may have been dispersed.

Sabotage Test - Shipping Cask Tests

Tests were conducted from 1979 to 1981 to determine how much radioactive material would be released from a terrorist attack on a nuclear fuel rod shipping cask.

During the tests, a 1/4 scale simulated fuel rod shipping cask (measuring approximately 3 feet long) was placed inside a chamber (Figure 5). Inside the lead cask, DU, zirconium alloy, and stainless steel were used as the simulated fuel. An explosive device was placed outside the chamber and fired into the cask through a portal in the containment chamber, which penetrated the shipping cask. The HE combustion by-products were not contained. The DU and metals used inside the cask were contained, however, and were completely removed after the test. Sandia Health Physics surveyed and cleaned the chamber after the tests to ensure that no radioactive material remained.

Gravel Gerty Tests

The Gravel Gerty tests were conducted just north of Building 9927 to determine if a roof composed of wire mesh and covered with a thick layer of gravel could withstand an explosive detonation and still contain the radioactive material in the room under this roof system. The system was designed to prevent the dispersion of radioactive material if an accidental detonation of the explosives in a nuclear weapon were to occur during disassembly activities. A scale model of a Gravel Gerty was constructed and tested up to 4 times (Photo B). The rock layer, (orange in Photo B) which is the upper portion of the structure, was replaced after each test. The tests involved detonating a small explosive charge inside the chamber and monitoring the cask to determine if tracers inside the chamber were released to the outside of the chamber. DU may have been involved in the final test, after which the test structure was dismantled and removed.

Other tests

In another type of test, antimony oxide tracers, carbon black, and DU spheres were dispersed or vaporized with a small explosive charge. The DU tests were conducted in a metal, 6-foot diameter, spherical containment chamber that was located north of Building 9927 (Photo A). The chamber contained the materials which were detonated. The chamber was fitted with High Efficiency Particulate Air (HEPA) filters and sampling ports for monitoring. Following the DU test, the residues were removed from the chamber, then the chamber was cleaned with an acid solution.

There were also some explosive tests using a propellant designed for the gas fracturing of boreholes conducted at the firing site.

3.0 Evaluation of Relevant Evidence

3.1 Unit Characteristics

The explosive tests conducted at the firing site can be grouped into two categories: contained tests using radioactive materials, and uncontained tests without radioactive materials. All tests using radioactive materials were fully contained within pressure vessels, as described in Section 2.3. Tests without radioactive materials were generally not contained and may have dispersed metal fragments and HE residues.

Uncontained explosive tests may have released lead, beryllium, and barium. Sampling after the tests indicated that beryllium compounds broke into recoverable pieces and were not significantly dispersed to the atmosphere. Baratol, a type of explosive composed of TNT and barium nitrate, was used at the firing site and would have released barium nitrate as a combustion by-product. A 1985 interview indicated that a number of tests were performed with lead containers that were full of explosives. However, the individual who was interviewed was not identified and no other record of such tests could be found. Site supervisors do not think this type of test ever occurred at ER Site 86 and are certain they did not occur after 1969. Irradiated aluminum may have been dispersed from the explosive generator tests.

It is unlikely that DU was ever released from tests at the firing site. Interviews with site personnel indicate that no release occurred during their time at the site since 1969. Reference 73 is a set of notes taken from one interviewee during the CEARP which suggests that DU was released. This individual, however, in a recent re-interview, has indicated that this information was erroneous and that in fact, the DU was completely contained in the tests. It appears that the Reference 73 error was the basis for listing the site as potentially contaminated with DU. Confirmatory samples were collected and analyzed for elevated radiation levels and metals in the soil. Some of the concrete blast shield blocks, however, did contain some low levels of radioactivity and were the focus of a housekeeping activity. It is not known how the concrete blocks could have become contaminated, since all tests using radioactive materials were reported to have been contained within the pressure vessels and no releases to the environment were

detected. It is possible that shield blocks were contaminated at another SNL/NM site before being moved to Building 9927.

3.2 Operating Practices

Large pieces of metal fragments and explosives were generally picked up and burned or disposed of after a test. Any finely divided material may have been left scattered in the test area. After every test involving radioactive materials, SNL/NM Health Physics personnel screened the area for radioactive hazards.

3.3 Presence or Absence of Visual Evidence

There is no visual evidence that releases of hazardous materials occurred. There are small metal fragments, bits of wire, nails, etc., on the site, but there is no reason to assume that they are hazardous. The sampling is discussed in Section 3.4 and did not reveal any metal concentrations above background.

3.4 Assessment of Gaps in Information

Process knowledge and other available information helped identify the most likely COCs which may be found in soils at ER Site 86, and helped select the types of analyses performed on soil samples. While the history of past releases at the site is incomplete, analytical data from confirmatory soil samples and radioactive screening collected in May 1996 (discussed below) are sufficient to determine whether releases of COCs occurred at the site.

3.5 Confirmatory Sampling

Although the likelihood of hazardous waste releases at ER Site 86 was considered low, confirmatory soil sampling was conducted to determine whether COCs above background or detectable levels were released at this site. A series of soil samples were collected to determine possible contamination at the site at randomly selected locations (Figure 4).

The soil samples were collected using a decontaminated metal spade into a stainless steel mixing bowl, then stirred with the spade. A portion of the soil was then placed in 4-ounce glass sample containers using the spade, sealed with tape and placed in an ice-filled cooler at the site. Aqueous Field Blanks and Equipment Blanks were also collected at the site. The sample water was collected in 1 liter poly containers, sealed with tape and placed in the ice-filled cooler as well. The collection of samples was delivered to the SNL/NM Sample Management Office (SMO), who distributed the samples between the various labs and logged the samples in the sample tracking database.

35 sample splits from 20 individual locations were collected and delivered to the appropriate laboratories. Of the 35 splits, 7 were analyzed by a commercial offsite laboratory, maintaining the 20 percent offsite analysis for verification purposes. A summary of the types of samples, number of sample locations, sample depths and analytical requirements for confirmatory soil samples collected at this site is presented in Table 1.

Table 1
ER Site 86: Confirmatory Sampling Summary Table

Sampling Location	Analytical Parameters	Laboratory	Sampling Media	Sample Collection Date
86-GR-001-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-002-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-002-0-SS	Gamma Spectroscopy	Dept. 7715	Soil	8/1/95
86-GR-003-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-004-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-005-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-005-0-SS	Gamma Spectroscopy	Dept. 7715	Soil	8/1/95
86-GR-005-0-SS-02	TAL Metals	Lockheed	Soil	8/1/95
86-GR-006-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-007-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-008-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-009-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-010-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-010-0-SS	Gamma Spectroscopy	Dept. 7715	Soil	8/1/95
86-GR-010-0-SS-02	TAL Metals	Lockheed	Soil	8/1/95
86-GR-010-0-SSD	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-011-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-012-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-013-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-014-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-015-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-015-0-SS	Gamma Spectroscopy	Dept. 7715	Soil	8/1/95
86-GR-015-0-SS-02	TAL Metals	Lockheed	Soil	8/1/95
86-GR-016-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-017-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-018-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-019-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-020-0-SS	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-020-0-SS	Gamma Spectroscopy	Dept. 7715	Soil	8/1/95
86-GR-020-0-SS-02	TAL Metals	Lockheed	Soil	8/1/95
86-GR-020-0-SSD	ICP Metals for TAL	Dept. 7584	Soil	8/1/95
86-GR-020-EB	ICP Metals for TAL	Dept. 7584	Water	8/1/95
86-GR-020-FB	ICP Metals for TAL	Dept. 7584	Water	8/1/95
86-GR-020-EB	TAL Metals	Lockheed	Water	8/1/95
86-GR-020-FB	TAL Metals	Lockheed	Water	8/1/95

ER Site 86 samples were analyzed by Gamma Spectroscopy by the SNL Department 7713 Radiation Protection Sample Diagnostics Laboratory, by Inductively Coupled Plasma (ICP) for Target Analyte List (TAL) Metals (EPA Method 6010, modified for the target metals) by the onsite Department 7584 Chemistry Laboratory and for TAL Metals (EPA Method 6010/7000) by the offsite Lockheed Analytical Services of Las Vegas, Nevada. All samples were routed to the laboratories by the SNL/NM Sample Management Office. Routine SNL/NM chain-of-custody and sample documentation procedures were employed for all samples collected at this site.

Quality assurance/quality control (QA/QC) samples collected during this effort consisted of two sets of aqueous equipment rinsate samples, one for the onsite lab and one for the offsite lab, that were analyzed for the same constituents as the other confirmatory soil samples. Two sets of aqueous samples, one for each laboratory, were collected as field blanks as well. No significant concentrations of COCs were detected in the QA/QC samples.

All samples, with the exception of sample number 1334-54-018-S, were non-detect for all analytes in the analysis suite. The single detection was TNT, at 3 ppm. A summary of all analytes for the SNL/NM laboratories offsite commercial laboratory analyses is presented in Table 2 and the corresponding summary for all constituents detected by offsite commercial laboratory in these confirmatory samples is presented in Table 3. Complete soil sample analytical data packages are archived in the SNL/NM Environmental Operations Records Center and are readily available for review.

Table 2. Summary of Metals in Onsite Confirmatory Samples Collected at ER Site 86 - Firing Site

Sample Location	Element	Concentration (mg/L)										Unit of Measure	
		Cadmium	Beryllium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	
86-CB-0-0-SD	Antimony	ND	0.77	NA	ND	NA	0.4	ND	NA	1	0.04	NA	mg/L
86-GR-001-0-SS	Arsenic	ND	76	ND	ND	ND	21	ND	ND	ND	ND	11	19
86-GR-002-0-SS	Barium	ND	75	ND	ND	ND	20	ND	ND	ND	ND	16	20
86-GR-003-0-SS	Boron	ND	84	ND	ND	ND	320	17	ND	ND	ND	13	21
86-GR-004-0-SS	Cadmium	ND	60	ND	ND	ND	350	ND	ND	ND	ND	ND	ND
86-GR-005-0-SS	Beryllium	ND	37	ND	ND	ND	61	ND	ND	ND	ND	11	mg/kg
86-GR-006-0-SS	Chromium	ND	110	ND	ND	ND	25	21	ND	ND	ND	ND	20
86-GR-007-0-SS	Cobalt	ND	55	ND	ND	ND	23	11	ND	ND	ND	ND	19
86-GR-008-0-SS	Copper	ND	65	ND	ND	ND	79	100	ND	ND	ND	ND	23
86-GR-009-0-SS	Lead	ND	77	ND	ND	ND	23	23	ND	ND	ND	ND	19
86-GR-010-0-SS	Mercury	ND	69	ND	ND	ND	210	ND	ND	ND	ND	ND	17
86-GR-010-0-SS	Nickel	ND	69	ND	ND	ND	220	12	ND	ND	ND	ND	20
86-GR-013-0-SS	Selenium	ND	68	ND	ND	ND	21	14	ND	ND	ND	ND	18
86-GR-014-0-SS	Silver	ND	70	ND	ND	ND	7500	20	ND	ND	ND	ND	23
86-GR-015-0-SS	Zinc	ND	70	ND	ND	ND	20	ND	ND	ND	ND	ND	16
86-GR-016-0-SS	Antimony	ND	90	ND	ND	ND	20	ND	ND	ND	ND	ND	29
86-GR-017-0-SS	Chromium	ND	58	ND	ND	ND	52	33	ND	ND	ND	ND	19
86-GR-018-0-SS	Cobalt	ND	86	ND	ND	ND	26	ND	ND	ND	ND	14	22
86-GR-019-0-SS	Copper	ND	91	ND	ND	ND	20	ND	ND	ND	ND	11	17
86-GR-020-0-EB	Lead	ND	81	ND	ND	ND	20	13	ND	ND	ND	ND	18
86-GR-020-0-FB	Mercury	ND	96	ND	ND	ND	20	ND	ND	ND	ND	ND	17
86-GR-020-0-SS	Nickel	ND	72	ND	ND	ND	21	ND	ND	ND	ND	12	18
86-GR-020-0-SS	Selenium	ND	55	ND	ND	ND	0.2	ND	ND	ND	ND	ND	ND
86-GR-020-0-SS	Silver	ND	90	ND	ND	ND	20	ND	ND	ND	ND	11	23
86-GR-020-0-SS	Zinc	ND	98	ND	ND	ND	20	14	ND	ND	ND	ND	13
86-GR-020-0-SSD	Antimony	ND	ND	ND	ND	ND	20	14	ND	ND	ND	ND	24

Table 2. Summary of Metals in Onsite Confirmatory Samples Collected at ER Site 86 - Firing Site (Continued)

Description	Antimony	Boron	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc	Unit of Measure
Laboratory Reporting Limit For Soil	10	50	10	3.4	10	10	20	10	0.2	4	50	10	10	10	mg/kg
Laboratory Reporting Limit For Water	0.1	0.5	0.1	0.034	0.1	0.01	0.05	0.2	0.1	0.0006	0.04	0.5	0.1	0.1	mg/L
Number of SNL/NM Background Soil Sample Analyses *	1370	437	400	887	502	538	216	319	395	471	1016	2134	539	243	NA
SNL/NM Soil Background Range *	0.05 - 44.9	0.015 - 9.7	0.086 - 0.232	0.10 - 1.6	0.1 - 7.1	0.004 - 240	0.5 - 7.8	0.44 - 44	0.10 - 104	0.5 - 0.68	0.10 - 70.2	0.037 - 17.2	0.0015 - 4.0	0.5 - 31.5	ng/kg
SNL/NM Soil Background UTL or 95th Percentile *	< 1	5.6	130	0.65	1.6	17.3	5.2	15.4	21.4	0.31	11.5	< 1	2	20.4	62
Proposed Subpart S Action Level For Soil	30	20	6000	0.2	80	80,000	NA	NA	400	20	2000	400	600	20,000	mg/kg

Notes:

EB = Equipment rinsate blank

mg/kg = milligrams per kilogram

mg/L - milligrams per liter

NA = Not applicable

ND = Not detected

UTL = Upper Tolerance Limit

* IT March 1996

Table 3. Summary of Metals in Offsite Confirmatory Samples Collected at ER Site 86 - Firing Site

Sample Location	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Cobalt	Lead	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc	Unit of Measure
86-GR-005-0-SS-02	ND	ND	49	ND	ND	8.6	ND	130	9.7	ND	ND	ND	ND	15	21	mg/kg
86-GR-010-0-SS-02	ND	2.4	78	ND	ND	10	ND	18	19	ND	ND	ND	ND	20	29	mg/kg
86-GR-015-0-SS-02	ND	2.7	110	ND	ND	12	ND	120	34	ND	ND	ND	ND	25	35	mg/kg
86-GR-020-0-SS-02	ND	3.5	100	ND	ND	13	ND	23	15	ND	9.5	ND	ND	26	35	mg/kg
86-GR-020-0-SS-02D	ND	3.4	110	ND	ND	13	ND	20	16	ND	10	ND	ND	25	35	mg/kg
Laboratory Reporting Limit For Soil	12	2	40	1	1	2	10	5.1	0.61	0.1	8.1	1	2	10	4	mg/kg
Number of SNL/NM Background Soil Sample Analyses *	1370	437	400	887	502	538	216	319	395	471	1016	2134	539	243	854	NA
SNL/NM Soil Background Range *	0.05 - 44.9	0.015 - 9.7	0.086 - 0.232	0.10 - 1.6	0.1 - 7.1	0.004 - 240	0.5 - 7.8	0.5 - 44	0.0005 - 104	0.10 - 0.68	0.037 - 70.2	0.0015 - 17.2	0.5 - 4.0	0.5 - 31.5	0.5 - 230	mg/kg
SNL/NM Soil Background UTL or 95th Percentile *	< 1	5.6	130	0.65	1.6	17.3	5.2	15.4	21.4	0.31	11.5	< 1	2	20.4	62	mg/kg
Proposed Subpart S Action Level For Soil	30	20	6000	0.2	80	80,000	NA	NA	400	20	2000	400	400	600	20,000	mg/kg

Notes:

EB = Equipment rinsate blank

mg/kg = milligrams per kilogram

mg/L - milligrams per liter

NA = Not applicable

ND = Not detected

UTL = Upper Tolerance Limit

* JT March 1996

3.6 ER Site 86 Housekeeping Activity

The ER Site 86 Housekeeping Activity was a remedial activity which removed radioactive materials from two of the concrete blast shield blocks at the site. The setting consisted of a U-shaped set of four concrete shield blocks, with a pile of sand contained within the U-shaped portion of the blocks. The pile of sand was probably stacked sandbags at one time, but the bag material had significantly deteriorated, leaving a pile of sand with intermixed shredded burlap behind.

During the site investigation, it was deemed likely that the concrete blocks could be contaminated with radioactive material. To verify and quantify the contamination on the blocks, the sand was removed from the concrete block enclosure and screened by Radiation Protection Operations (RPO) personnel for radioactive contamination. It was determined that the sand was not contaminated. Following the removal of the sand, RPO personnel determined that areas on the concrete blocks were radioactively contaminated. On February 23, 1996, RPO preliminary screening was performed using a handheld Eberline HP-260 Geiger-Mueller probe (Photo D). Following this screening, swipe samples were also collected from various locations on the concrete blocks and analyzed by RPO. These areas were identified and targeted for the housekeeping activity (Figure 7).

The contaminated concrete was removed by chipping the radioactive areas off of the blocks with a pneumatic chisel, then collected and disposed of properly (Photo E). Continuous air monitoring was performed during the chipping activities using a SK2 Breathing Zone Pump (Photo F). RPO screened the air filter for radioactive contamination and detected no measurable airborne releases. The concrete shield blocks were then surveyed using an Eberline HP-260 Geiger-Mueller probe by RPO personnel (Photo G). Where radiation above background levels was still detected, more concrete was chipped off to remove the remaining contaminated material. This cycle continued until no more radiation was detected on the concrete blocks. At this point, swipe samples were collected and analyzed by SNL/NM RPO personnel to confirm that the blocks did not contain any radioactive material above background (Figure 8). A sample of the contaminated concrete chippings was delivered to the offsite Quanterra - St. Louis analytical laboratory for analysis. The results of this analysis appear in Appendix A.7.

3.7 Rationale for Pursuing a Confirmatory Sampling NFA Decision

The confirmatory soil sampling did not identify any residual COCs indicating past releases that could pose a threat to human health or the environment. Also, the gamma spectroscopy semi-qualitative screening of composite soil samples did not indicate the presence of radioactive contamination in soil. The concrete shield blocks, which did contain some radioactive materials, were the focus of the housekeeping activity (Section 3.6) where the radioactive concrete was removed and disposed of properly.

4.0 Conclusion

Sample analytical results generated from this confirmatory sampling investigation have shown that significant concentrations of COCs are not present in soils at ER Site 86, and that additional investigations are unwarranted and unnecessary. Based on archival information and chemical and radiological analytical results of soil samples collected in the soil and from the decontaminated concrete shield blocks, SNL/NM has demonstrated that the potential release site has been characterized or remediated in accordance with current applicable state or federal regulations (Criterion 5 of Section 1.2). The site does not pose a threat to human health or the environment; therefore, ER Site 86 is recommended for an NFA determination.

5.0 References

5.1 ER Site 86 References

Sandia National Laboratories/New Mexico (SNL/NM), May 1996, Field Log #155, Pages 116 - 138, 05/2/96 - 5/20/96, Field notes of housekeeping activities at ER Site 86 - Firing Site.

5.2 Other References

Department of Energy (DOE), Albuquerque Operations Office, Environmental Safety and Health Division, Environmental Program Branch, September 1987, draft "Comprehensive Environmental Assessment and Response Program (CEARP) Phase 1: Installation Assessment, Sandia National Laboratories, Albuquerque", Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico.

IT Corporation (IT), March 1996, "Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program", IT Corporation, Albuquerque, New Mexico.

New Mexico Environment Department (NMED), November 1995, "Environmental Restoration Document of Understanding", Santa Fe, New Mexico, November 16, 1995.

Sandia National Laboratories/New Mexico (SNL/NM), February 1995, "Program Implementation Plan for Albuquerque Potential Release Sites", Sandia National Laboratories Environmental Restoration Program, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 1995, "Site-Wide Hydrogeologic Characterization Project, Calendar Year 1994 Annual Report", Sandia National Laboratories Environmental Restoration Project, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 1996, "RCRA Facility Investigation Work Plan for Operable Unit 1335 Southwest Test Area", Sandia National Laboratories Environmental Restoration Project, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), December 1987, "Hazardous Waste; Codification Rule for 1984 RCRA Amendments; Final Rule", *Federal Register*, Vol. 52, Title 40, Parts 144, 264, 265, 270, and 27, Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), July 1990, "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities, Proposed Rule," *Federal Register*, Vol. 55, Title 40, Parts 264, 265, 270, and 271.

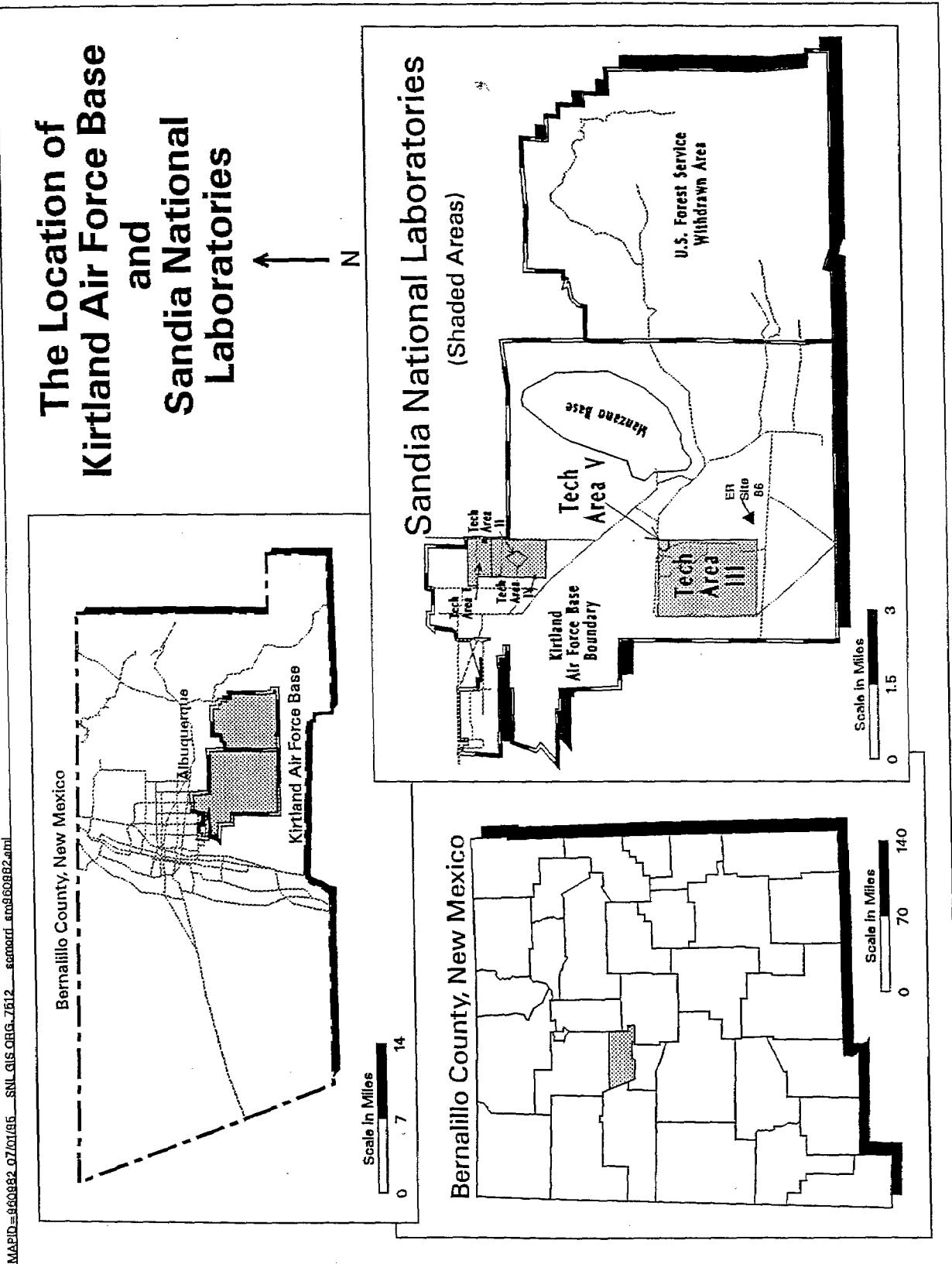
U.S. Environmental Protection Agency (EPA), August 1992, "Hazardous Waste Management Facility Permit No. NM5890110518," EPA Region VI, issued to Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), August 1993, "Module IV of RCRA Permit No. NM 5890110518," EPA Region VI, issued to Sandia National Laboratories, Albuquerque, New Mexico.

Appendix A.1

ER Site 86: Figures

Figure 1



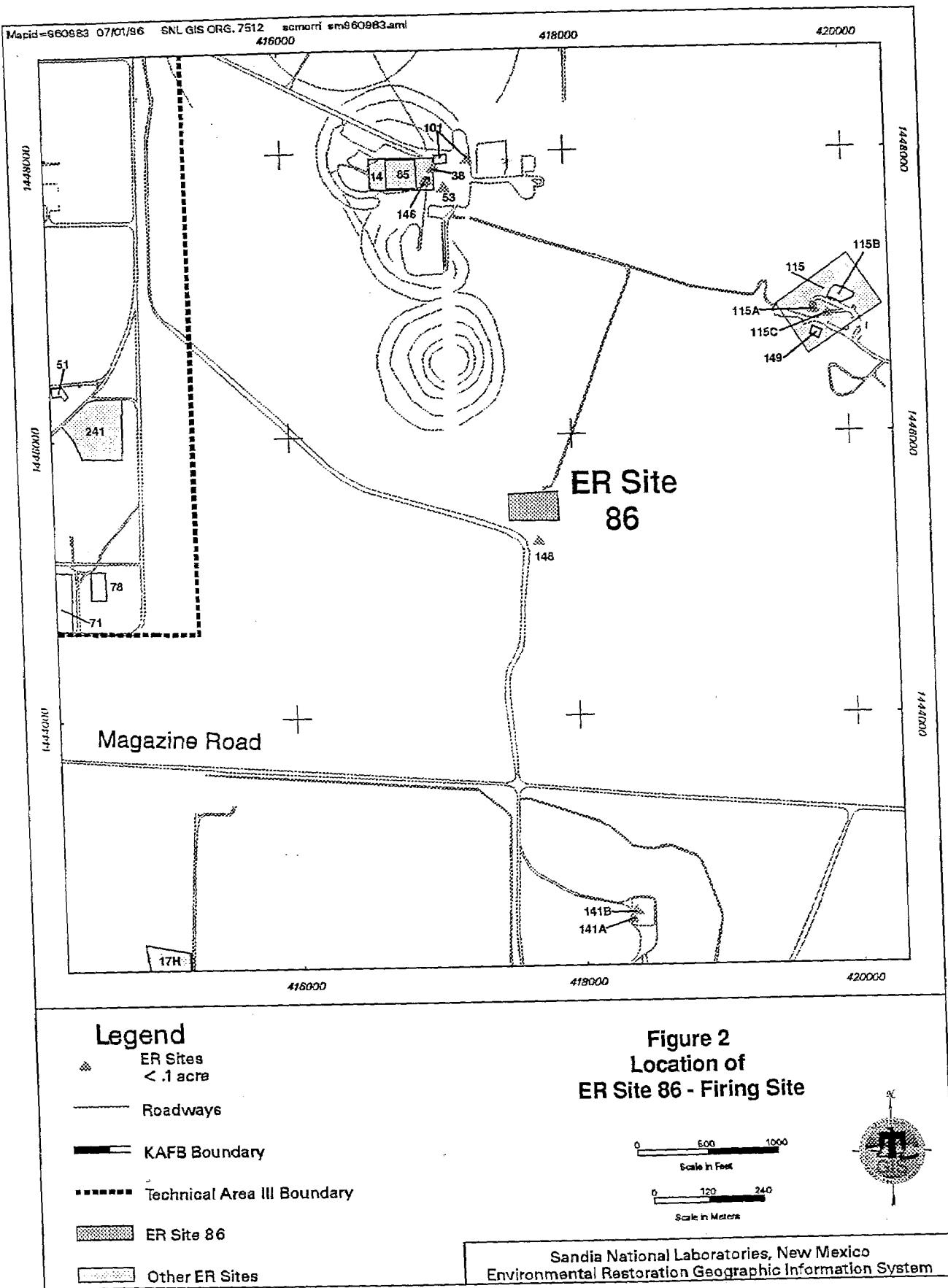


Figure 2
Location of
ER Site 86 - Firing Site

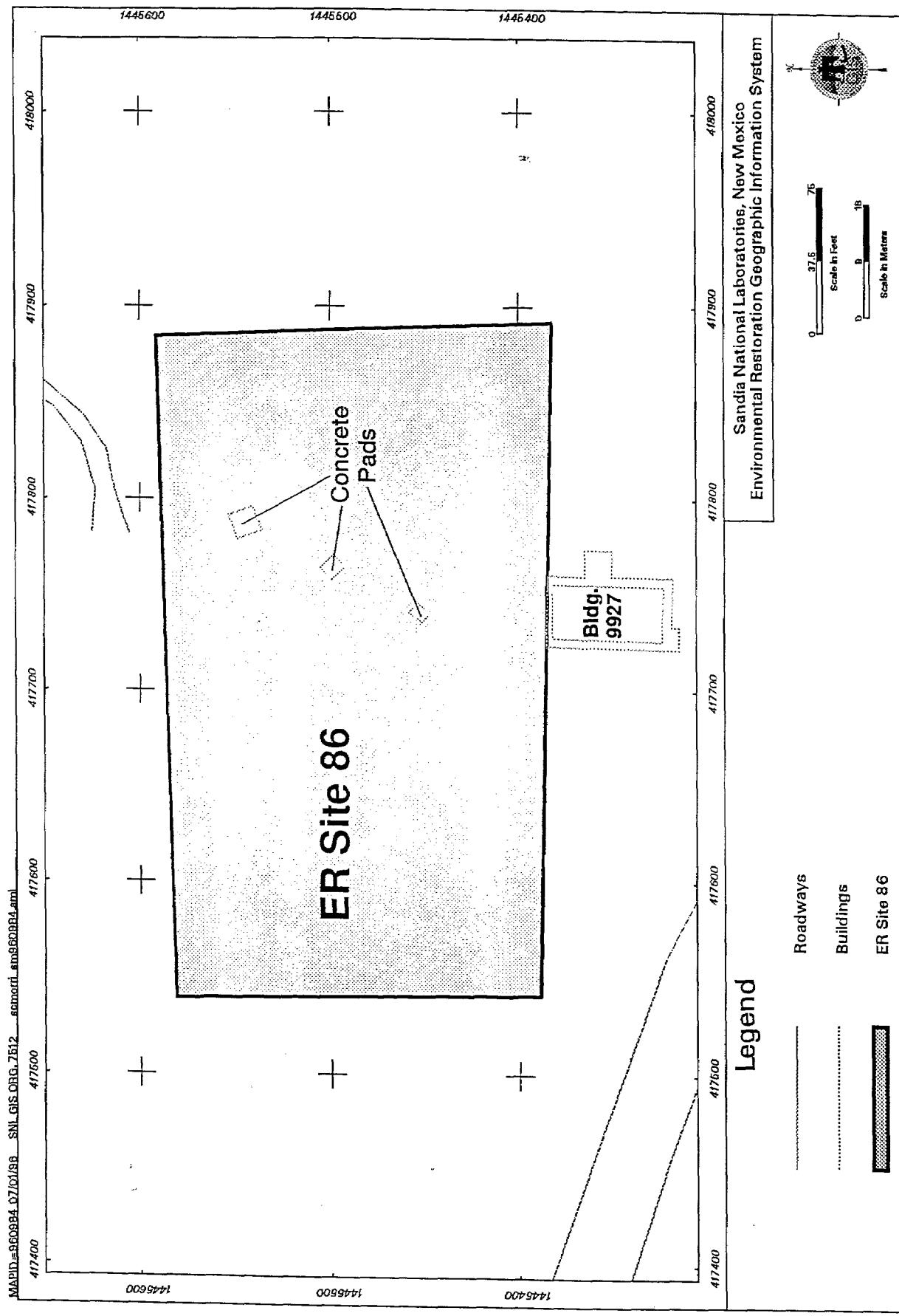


Figure 3 - Site Map for ER Site 86 - Firing Site

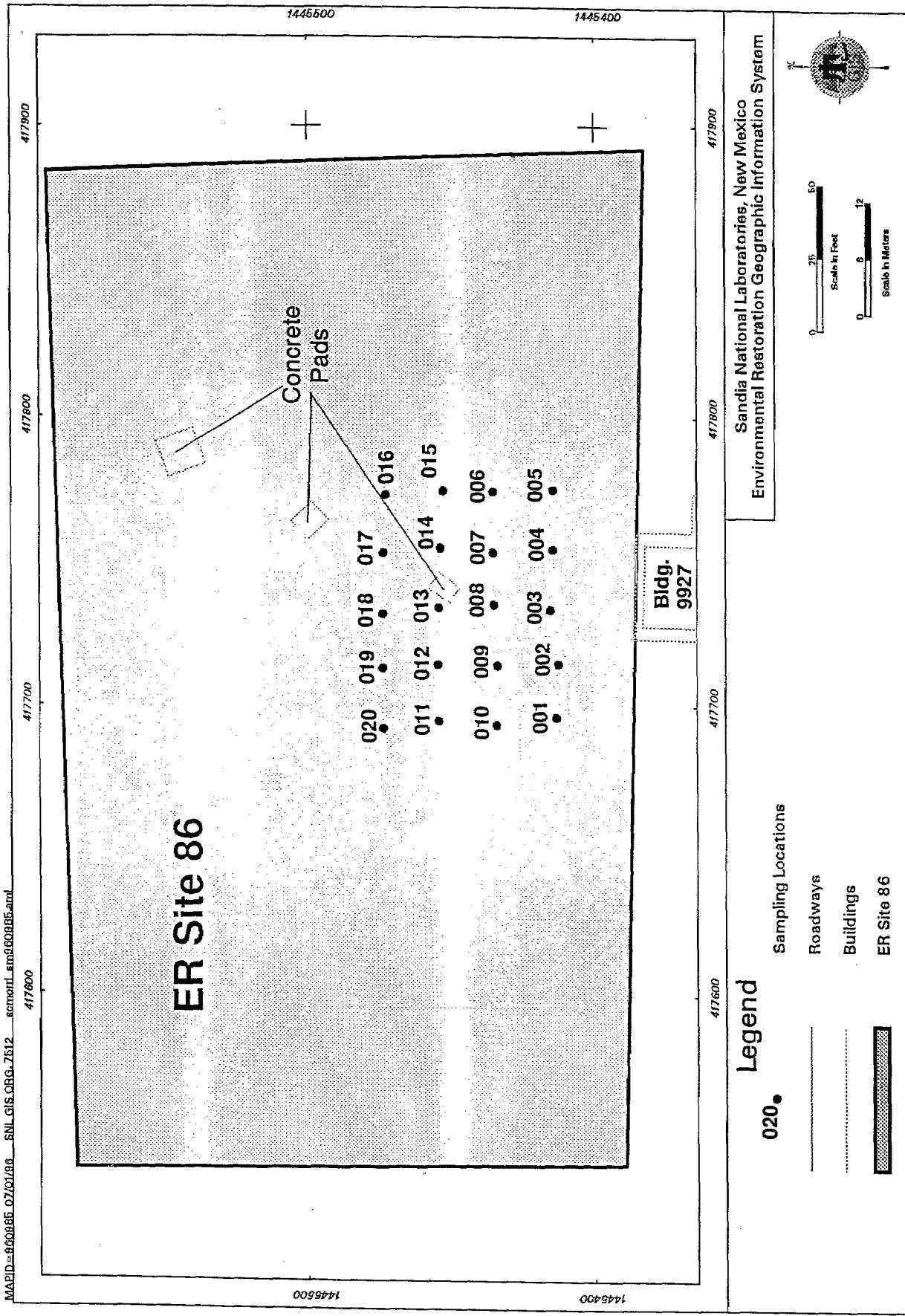
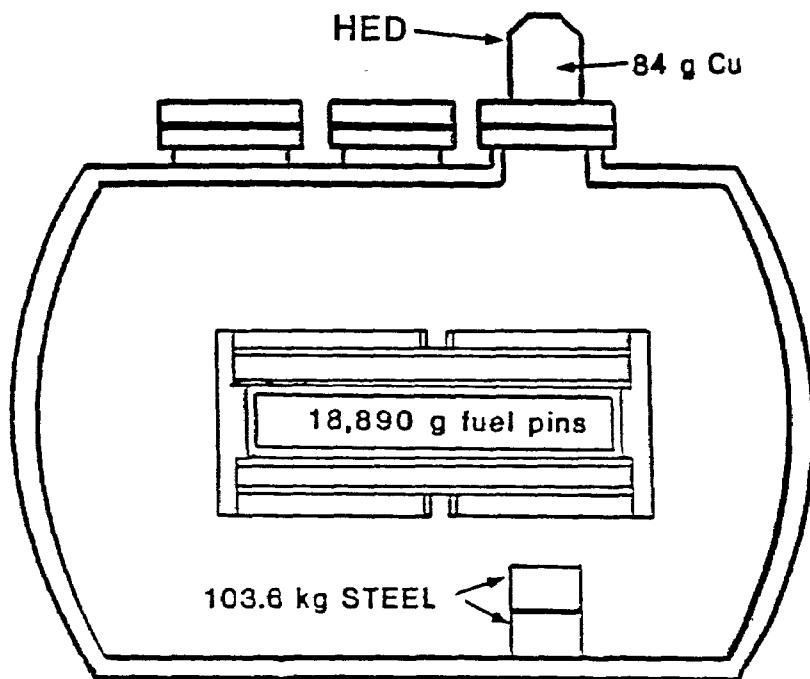


Figure 4 - Sampling Locations at ER Site 86 - Firing Site

QUARTER SCALE TEST (DRY)

SURROGATE FUEL/CASK



BEFORE EVENT

CASK wt. = 316.04 kg

18,890 g fuel pins \rightarrow 15,347.4 g UO₂ + 3,548.8 g Zr-4

Figure 5. Diagram of Quarter Scale Shipping Fuel Cask

Figure 7. Pre - Housekeeping Activity Concrete Block Survey Locations

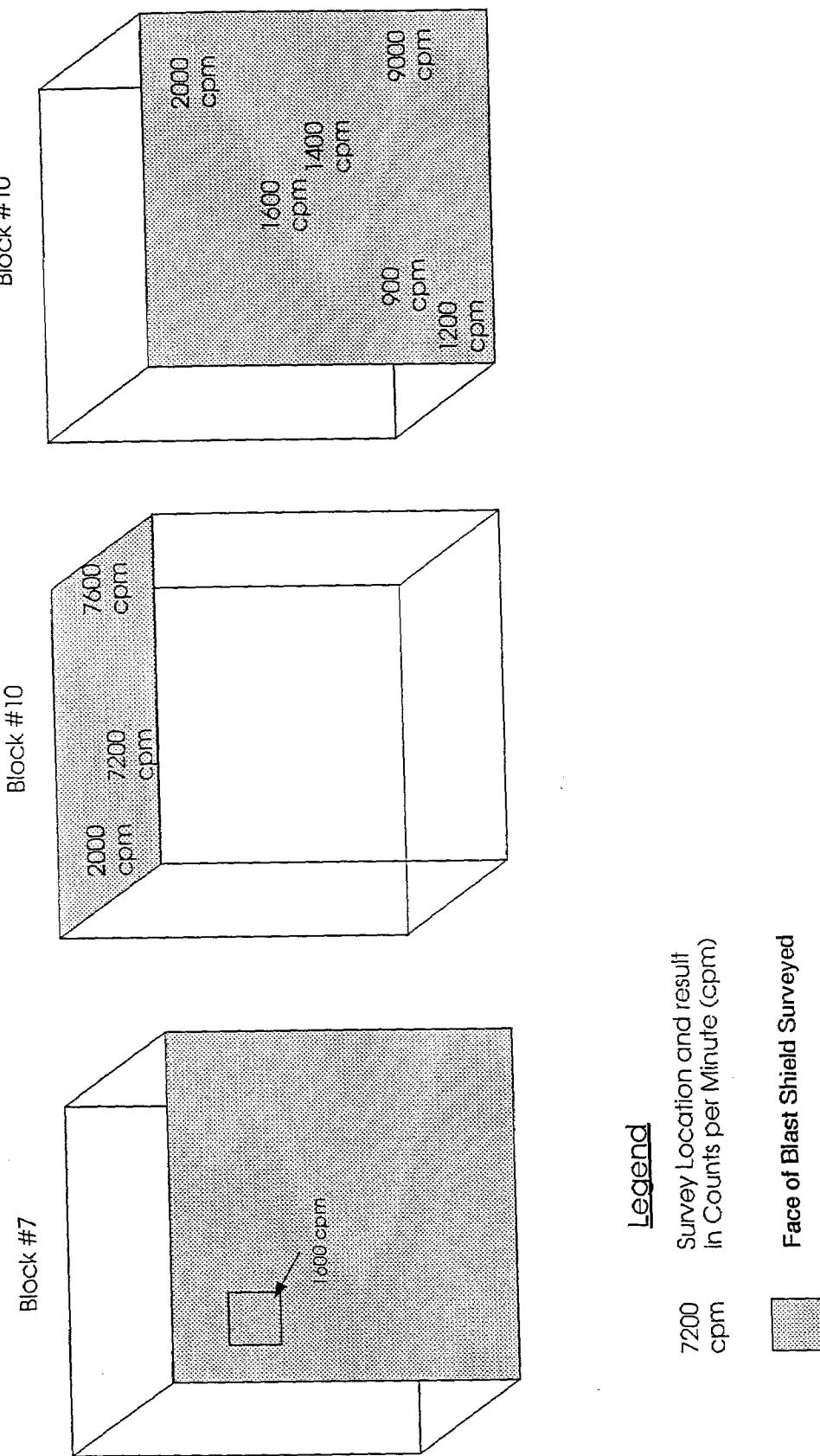
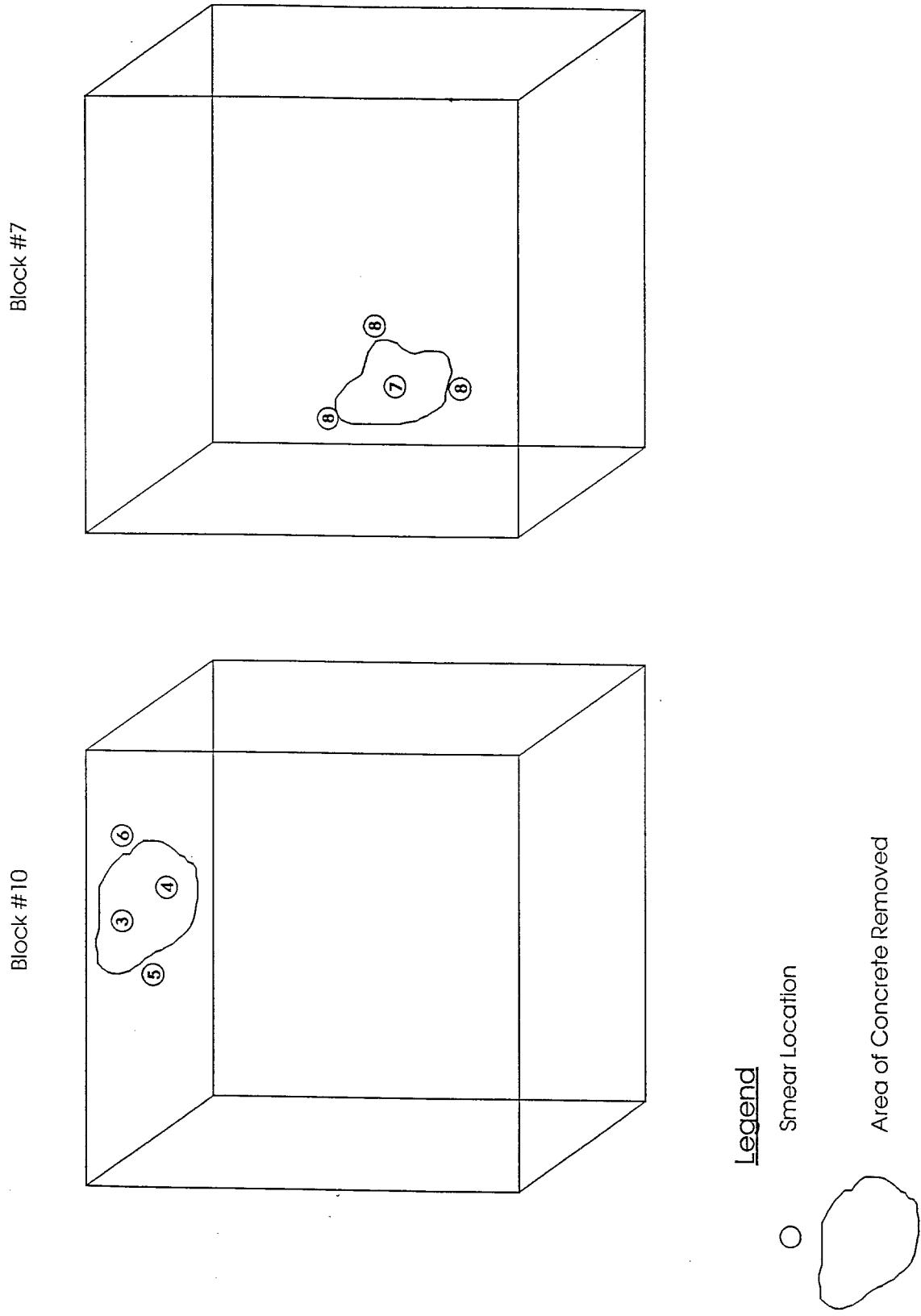


Figure 8. Post - Housekeeping Activity Concrete Block Swipe Locations



Appendix A.2

ER Site 86: Photos



Photo A. Firing Site (Building 9927). ER Site 86 Test Facility.

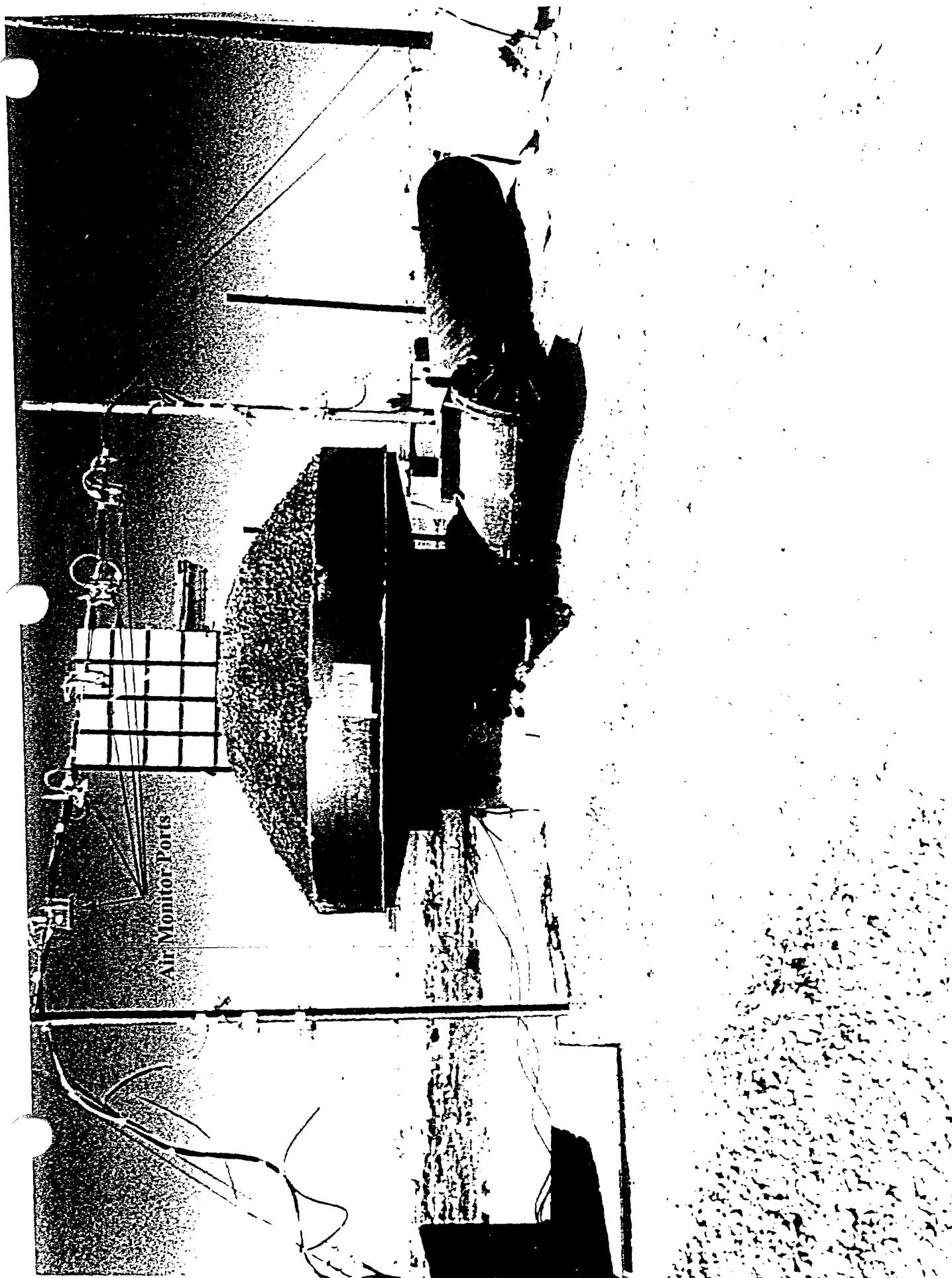


Photo B. Gravel Garry Test Structure.



Photo C. Sabotage Test - Shipping Cask Test.



Photo D. Screening of radioactively contaminated concrete blast shield.



Photo E. Chipping the radioactively contaminated concrete from the blast shield.

Photo F. Air monitoring during chipping operations.

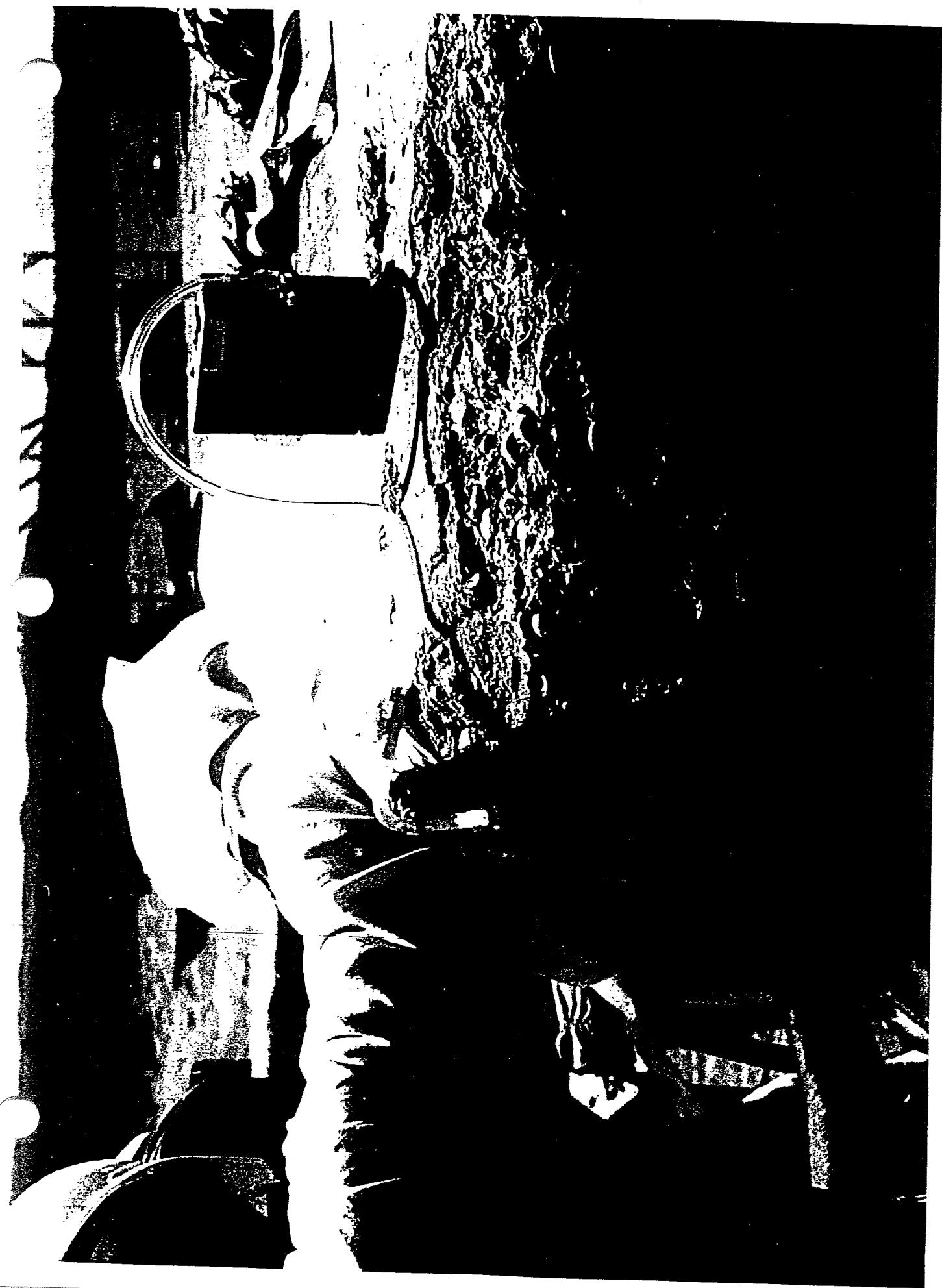




Photo G. Radiation screening after chipping activity.

Appendix A.3

ER Site 86: Tables

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	ALUMINUM	86-GR-001-0-SS	4400	ppm	20	J
		86-GR-002-0-SS	3600	ppm	20	J
		86-GR-003-0-SS	5400	ppm	20	J
		86-GR-004-0-SS	3400	ppm	20	J
		86-GR-005-0-SS	2000	ppm	20	
		86-GR-006-0-SS	4500	ppm	20	J
		86-GR-007-0-SS	3300	ppm	20	J
		86-GR-008-0-SS	4900	ppm	20	J
		86-GR-009-0-SS	4100	ppm	20	J
		86-GR-010-0-SS	4200	ppm	20	J
		86-GR-010-0-SSD	3900	ppm	20	J
		86-GR-011-0-SS	4600	ppm	20	J
		86-GR-012-0-SS	3500	ppm	20	J
		86-GR-013-0-SS	5200	ppm	20	J
		86-GR-014-0-SS	3000	ppm	20	J
		86-GR-015-0-SS	5700	ppm	20	J
		86-GR-016-0-SS	4800	ppm	20	J
		86-GR-017-0-SS	4200	ppm	20	J
		86-GR-018-0-SS	5100	ppm	20	J
		86-GR-019-0-SS	3900	ppm	20	J
		86-GR-020-0-EB	13	ppm	0.2	J
		86-GR-020-0-FB	14	ppm	0.2	J
		86-GR-020-0-SS	5700	ppm	20	J
		86-GR-020-0-SS	6600	ppm	20	J
		86-GR-020-0-SSD	6300	ppm	20	J
	ANTIMONY	86-GR-001-0-SS	10	ppm	10	ND
		86-GR-002-0-SS	10	ppm	10	ND
		86-GR-003-0-SS	10	ppm	10	ND
		86-GR-004-0-SS	10	ppm	10	ND
		86-GR-005-0-SS	10	ppm	10	ND
		86-GR-006-0-SS	10	ppm	10	ND
		86-GR-007-0-SS	10	ppm	10	ND
		86-GR-008-0-SS	10	ppm	10	ND
		86-GR-009-0-SS	10	ppm	10	ND
		86-GR-010-0-SS	10	ppm	10	ND
		86-GR-010-0-SSD	10	ppm	10	ND
		86-GR-011-0-SS	10	ppm	10	ND
		86-GR-012-0-SS	10	ppm	10	ND
		86-GR-013-0-SS	10	ppm	10	ND
		86-GR-014-0-SS	10	ppm	10	ND
		86-GR-015-0-SS	10	ppm	10	ND
		86-GR-016-0-SS	10	ppm	10	ND
		86-GR-017-0-SS	10	ppm	10	ND
		86-GR-018-0-SS	10	ppm	10	ND
		86-GR-019-0-SS	10	ppm	10	ND
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	10	ppm	10	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	ANTIMONY	86-GR-020-0-SS	55	ppm	10	
		86-GR-020-0-SSD	10	ppm	10	ND
	ARSENIC	86-GR-001-0-SS	50	ppm	50	ND
		86-GR-002-0-SS	50	ppm	50	ND
		86-GR-003-0-SS	50	ppm	50	ND
		86-GR-004-0-SS	50	ppm	50	ND
		86-GR-005-0-SS	50	ppm	50	ND
		86-GR-006-0-SS	50	ppm	50	ND
		86-GR-007-0-SS	50	ppm	50	ND
		86-GR-008-0-SS	50	ppm	50	ND
		86-GR-009-0-SS	50	ppm	50	ND
		86-GR-010-0-SS	50	ppm	50	ND
		86-GR-010-0-SSD	50	ppm	50	ND
		86-GR-011-0-SS	50	ppm	50	ND
		86-GR-012-0-SS	50	ppm	50	ND
		86-GR-013-0-SS	50	ppm	50	ND
		86-GR-014-0-SS	50	ppm	50	ND
		86-GR-015-0-SS	50	ppm	50	ND
		86-GR-016-0-SS	50	ppm	50	ND
		86-GR-017-0-SS	50	ppm	50	ND
		86-GR-018-0-SS	50	ppm	50	ND
		86-GR-019-0-SS	50	ppm	50	ND
		86-GR-020-0-EB	0.5	ppm	0.5	ND
		86-GR-020-0-FB	0.5	ppm	0.5	ND
		86-GR-020-0-SS	50	ppm	50	ND
		86-GR-020-0-SSD	50	ppm	50	ND
	BARIUM	86-GR-001-0-SS	76	ppm	10	
		86-GR-002-0-SS	75	ppm	10	
		86-GR-003-0-SS	84	ppm	10	
		86-GR-004-0-SS	60	ppm	10	
		86-GR-005-0-SS	37	ppm	10	J
		86-GR-006-0-SS	110	ppm	10	
		86-GR-007-0-SS	55	ppm	10	
		86-GR-008-0-SS	65	ppm	10	
		86-GR-009-0-SS	77	ppm	10	
		86-GR-010-0-SS	69	ppm	10	
		86-GR-010-0-SSD	68	ppm	10	
		86-GR-011-0-SS	70	ppm	10	
		86-GR-012-0-SS	70	ppm	10	
		86-GR-013-0-SS	90	ppm	10	
		86-GR-014-0-SS	58	ppm	10	
		86-GR-015-0-SS	86	ppm	10	
		86-GR-016-0-SS	91	ppm	10	
		86-GR-017-0-SS	81	ppm	10	
		86-GR-018-0-SS	96	ppm	10	
		86-GR-019-0-SS	72	ppm	10	
		86-GR-020-0-EB	0	ppm	0.1	
		86-GR-020-0-FB	0	ppm	0.1	

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	BARIUM	86-GR-020-0-SS	87	ppm	10	
		86-GR-020-0-SS	90	ppm	10	
		86-GR-020-0-SSD	98	ppm	10	
	BERYLLIUM	86-GR-001-0-SS	3.4	ppm	3.4	ND
		86-GR-002-0-SS	3.4	ppm	3.4	ND
		86-GR-003-0-SS	3.4	ppm	3.4	ND
		86-GR-004-0-SS	3.4	ppm	3.4	ND
		86-GR-005-0-SS	3.4	ppm	3.4	ND
		86-GR-006-0-SS	3.4	ppm	3.4	ND
		86-GR-007-0-SS	3.4	ppm	3.4	ND
		86-GR-008-0-SS	3.4	ppm	3.4	ND
		86-GR-009-0-SS	3.4	ppm	3.4	ND
		86-GR-010-0-SS	3.4	ppm	3.4	ND
		86-GR-010-0-SSD	3.4	ppm	3.4	ND
		86-GR-011-0-SS	3.4	ppm	3.4	ND
		86-GR-012-0-SS	3.4	ppm	3.4	ND
		86-GR-013-0-SS	3.4	ppm	3.4	ND
		86-GR-014-0-SS	3.4	ppm	3.4	ND
		86-GR-015-0-SS	3.4	ppm	3.4	ND
		86-GR-016-0-SS	3.4	ppm	3.4	ND
		86-GR-017-0-SS	3.4	ppm	3.4	ND
		86-GR-018-0-SS	3.4	ppm	3.4	ND
		86-GR-019-0-SS	3.4	ppm	3.4	ND
		86-GR-020-0-EB	0.034	ppm	0.034	ND
		86-GR-020-0-FB	0.034	ppm	0.034	ND
		86-GR-020-0-SS	3.4	ppm	3.4	ND
		86-GR-020-0-SSD	3.4	ppm	3.4	ND
	CADMIUM	86-GR-001-0-SS	10	ppm	10	ND
		86-GR-002-0-SS	10	ppm	10	ND
		86-GR-003-0-SS	10	ppm	10	ND
		86-GR-004-0-SS	10	ppm	10	ND
		86-GR-005-0-SS	10	ppm	10	ND
		86-GR-006-0-SS	10	ppm	10	ND
		86-GR-007-0-SS	10	ppm	10	ND
		86-GR-008-0-SS	10	ppm	10	ND
		86-GR-009-0-SS	10	ppm	10	ND
		86-GR-010-0-SS	10	ppm	10	ND
		86-GR-010-0-SSD	10	ppm	10	ND
		86-GR-011-0-SS	10	ppm	10	ND
		86-GR-012-0-SS	10	ppm	10	ND
		86-GR-013-0-SS	10	ppm	10	ND
		86-GR-014-0-SS	10	ppm	10	ND
		86-GR-015-0-SS	10	ppm	10	ND
		86-GR-016-0-SS	10	ppm	10	ND
		86-GR-017-0-SS	10	ppm	10	ND
		86-GR-018-0-SS	10	ppm	10	ND
		86-GR-019-0-SS	10	ppm	10	ND
		86-GR-020-0-EB	0.1	ppm	0.1	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	CADMIUM	86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	10	ppm	10	ND
		86-GR-020-0-SSD	10	ppm	10	ND
	CALCIUM	86-GR-001-0-SS	12000	ppm	20	
		86-GR-002-0-SS	26000	ppm	20	
		86-GR-003-0-SS	17000	ppm	20	
		86-GR-004-0-SS	10000	ppm	20	
		86-GR-005-0-SS	12000	ppm	20	
		86-GR-006-0-SS	33000	ppm	20	
		86-GR-007-0-SS	11000	ppm	20	
		86-GR-008-0-SS	11000	ppm	20	
		86-GR-009-0-SS	48000	ppm	20	
		86-GR-010-0-SS	12000	ppm	20	
		86-GR-010-0-SS	13000	ppm	20	
		86-GR-010-0-SSD	22000	ppm	20	
		86-GR-011-0-SS	18000	ppm	20	
		86-GR-012-0-SS	22000	ppm	20	
		86-GR-013-0-SS	13000	ppm	20	
		86-GR-014-0-SS	16000	ppm	20	
		86-GR-015-0-SS	11000	ppm	20	
		86-GR-016-0-SS	15000	ppm	20	
		86-GR-017-0-SS	16000	ppm	20	
		86-GR-018-0-SS	15000	ppm	20	
		86-GR-019-0-SS	14000	ppm	20	
		86-GR-020-0-EB	680	ppm	0.2	
		86-GR-020-0-FB	200	ppm	0.2	
		86-GR-020-0-SS	15000	ppm	20	
		86-GR-020-0-SS	20000	ppm	20	
		86-GR-020-0-SSD	30000	ppm	20	
CHROMIUM	CHROMIUM	86-GR-001-0-SS	10	ppm	10	ND
		86-GR-002-0-SS	10	ppm	10	ND
		86-GR-003-0-SS	10	ppm	10	ND
		86-GR-004-0-SS	10	ppm	10	ND
		86-GR-005-0-SS	10	ppm	10	ND
		86-GR-006-0-SS	10	ppm	10	ND
		86-GR-007-0-SS	10	ppm	10	ND
		86-GR-008-0-SS	10	ppm	10	ND
		86-GR-009-0-SS	10	ppm	10	ND
		86-GR-010-0-SS	10	ppm	10	ND
		86-GR-010-0-SSD	10	ppm	10	ND
		86-GR-011-0-SS	10	ppm	10	ND
		86-GR-012-0-SS	10	ppm	10	ND
		86-GR-013-0-SS	10	ppm	10	ND
		86-GR-014-0-SS	10	ppm	10	ND
		86-GR-015-0-SS	10	ppm	10	ND
		86-GR-016-0-SS	10	ppm	10	ND
		86-GR-017-0-SS	10	ppm	10	ND
		86-GR-018-0-SS	10	ppm	10	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	CHROMIUM	86-GR-019-0-SS	10	ppm	10	ND
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	10	ppm	10	ND
		86-GR-020-0-SSD	10	ppm	10	ND
	COBALT	86-GR-001-0-SS	10	ppm	10	ND
		86-GR-002-0-SS	10	ppm	10	ND
		86-GR-003-0-SS	10	ppm	10	ND
		86-GR-004-0-SS	10	ppm	10	ND
		86-GR-005-0-SS	10	ppm	10	ND
		86-GR-006-0-SS	10	ppm	10	ND
		86-GR-007-0-SS	10	ppm	10	ND
		86-GR-008-0-SS	10	ppm	10	ND
		86-GR-009-0-SS	10	ppm	10	ND
		86-GR-010-0-SS	10	ppm	10	ND
		86-GR-010-0-SSD	10	ppm	10	ND
		86-GR-011-0-SS	10	ppm	10	ND
		86-GR-012-0-SS	10	ppm	10	ND
		86-GR-013-0-SS	10	ppm	10	ND
		86-GR-014-0-SS	10	ppm	10	ND
		86-GR-015-0-SS	10	ppm	10	ND
		86-GR-016-0-SS	10	ppm	10	ND
		86-GR-017-0-SS	10	ppm	10	ND
		86-GR-018-0-SS	10	ppm	10	ND
		86-GR-019-0-SS	10	ppm	10	ND
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	10	ppm	10	ND
		86-GR-020-0-SSD	10	ppm	10	ND
	COPPER	86-GR-001-0-SS	21	ppm	20	J
		86-GR-002-0-SS	20	ppm	20	ND
		86-GR-003-0-SS	320	ppm	20	
		86-GR-004-0-SS	350	ppm	20	
		86-GR-005-0-SS	61	ppm	20	
		86-GR-006-0-SS	25	ppm	20	J
		86-GR-007-0-SS	23	ppm	20	J
		86-GR-008-0-SS	79	ppm	20	
		86-GR-009-0-SS	23	ppm	20	J
		86-GR-010-0-SS	210	ppm	20	
		86-GR-010-0-SS	220	ppm	20	
		86-GR-010-0-SSD	21	ppm	20	J
		86-GR-011-0-SS	7500	ppm	20	J
		86-GR-012-0-SS	20	ppm	20	ND
		86-GR-013-0-SS	20	ppm	20	ND
		86-GR-014-0-SS	52	ppm	20	
		86-GR-015-0-SS	26	ppm	20	J
		86-GR-016-0-SS	20	ppm	20	ND
		86-GR-017-0-SS	20	ppm	20	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	COPPER	86-GR-018-0-SS	20	ppm	20	ND
		86-GR-019-0-SS	21	ppm	20	J
		86-GR-020-0-EB	0.2	ppm	0.2	ND
		86-GR-020-0-FB	0.2	ppm	0.2	ND
		86-GR-020-0-SS	20	ppm	20	ND
		86-GR-020-0-SSD	20	ppm	20	ND
	IRON	86-GR-001-0-SS	6600	ppm	5	J
		86-GR-002-0-SS	7400	ppm	5	J
		86-GR-003-0-SS	7400	ppm	5	J
		86-GR-004-0-SS	5800	ppm	5	J
		86-GR-005-0-SS	3200	ppm	5	J
		86-GR-006-0-SS	6200	ppm	5	J
		86-GR-007-0-SS	5200	ppm	5	J
		86-GR-008-0-SS	7300	ppm	5	J
		86-GR-009-0-SS	7200	ppm	5	J
		86-GR-010-0-SS	6300	ppm	5	J
		86-GR-010-0-SSD	6400	ppm	5	J
		86-GR-011-0-SS	5800	ppm	5	J
		86-GR-012-0-SS	7200	ppm	5	J
		86-GR-013-0-SS	5200	ppm	5	J
LEAD	LEAD	86-GR-014-0-SS	15000	ppm	5	J
		86-GR-015-0-SS	5100	ppm	5	J
		86-GR-016-0-SS	7500	ppm	5	J
		86-GR-017-0-SS	6100	ppm	5	J
		86-GR-018-0-SS	5900	ppm	5	J
		86-GR-019-0-SS	6900	ppm	5	J
		86-GR-020-0-EB	5900	ppm	5	J
		86-GR-020-0-FB	30	ppm	0.05	ND
		86-GR-020-0-SS	7700	ppm	0.05	ND
		86-GR-020-0-SS	8100	ppm	0.05	ND
		86-GR-020-0-SSD	7900	ppm	0.05	ND
		86-GR-001-0-SS	10	ppm	10	J
		86-GR-002-0-SS	10	ppm	10	ND
		86-GR-003-0-SS	17	ppm	10	J

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	LEAD	86-GR-015-0-SS	10	ppm	10	ND
		86-GR-016-0-SS	10	ppm	10	ND
		86-GR-017-0-SS	13	ppm	10	J
		86-GR-018-0-SS	10	ppm	10	ND
		86-GR-019-0-SS	10	ppm	10	ND
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	10	ppm	10	J
		86-GR-020-0-SS	14	ppm	10	J
		86-GR-020-0-SSD	14	ppm	10	J
	MAGNESIUM	86-GR-001-0-SS	2100	ppm	10	
		86-GR-002-0-SS	3700	ppm	10	
		86-GR-003-0-SS	2400	ppm	10	
		86-GR-004-0-SS	1600	ppm	10	
		86-GR-005-0-SS	1100	ppm	10	
		86-GR-006-0-SS	2100	ppm	10	
		86-GR-007-0-SS	1600	ppm	10	
		86-GR-008-0-SS	2000	ppm	10	
		86-GR-009-0-SS	2000	ppm	10	
		86-GR-010-0-SS	1900	ppm	10	
		86-GR-010-0-SSD	2000	ppm	10	
		86-GR-011-0-SS	2100	ppm	10	
		86-GR-012-0-SS	1800	ppm	10	
		86-GR-013-0-SS	2100	ppm	10	
		86-GR-014-0-SS	1600	ppm	10	
		86-GR-015-0-SS	2100	ppm	10	
		86-GR-016-0-SS	2100	ppm	10	
		86-GR-017-0-SS	1900	ppm	10	
		86-GR-018-0-SS	2200	ppm	10	
		86-GR-019-0-SS	2000	ppm	10	
		86-GR-020-0-EB	86	ppm	0.1	
		86-GR-020-0-FB	38	ppm	0.1	J
		86-GR-020-0-SS	2300	ppm	10	
		86-GR-020-0-SS	2600	ppm	10	
		86-GR-020-0-SSD	2600	ppm	10	
	MANGANESE	86-GR-001-0-SS	160	ppm	10	
		86-GR-002-0-SS	210	ppm	10	
		86-GR-003-0-SS	170	ppm	10	
		86-GR-004-0-SS	130	ppm	10	
		86-GR-005-0-SS	160	ppm	10	
		86-GR-006-0-SS	160	ppm	10	
		86-GR-007-0-SS	140	ppm	10	
		86-GR-008-0-SS	190	ppm	10	
		86-GR-009-0-SS	260	ppm	10	
		86-GR-010-0-SS	140	ppm	10	
		86-GR-010-0-SSD	150	ppm	10	
		86-GR-011-0-SS	170	ppm	10	
		86-GR-012-0-SS	150	ppm	10	

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	MANGANESE	86-GR-013-0-SS	140	ppm	10	
		86-GR-014-0-SS	130	ppm	10	
		86-GR-015-0-SS	140	ppm	10	
		86-GR-016-0-SS	130	ppm	10	
		86-GR-017-0-SS	120	ppm	10	
		86-GR-018-0-SS	130	ppm	10	
		86-GR-019-0-SS	140	ppm	10	
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	160	ppm	10	
		86-GR-020-0-SS	180	ppm	10	
		86-GR-020-0-SSD	210	ppm	10	
	MERCURY	86-GR-001-0-SS	0.2	ppm	0.2	ND
		86-GR-002-0-SS	0.2	ppm	0.2	ND
		86-GR-003-0-SS	0.2	ppm	0.2	ND
		86-GR-004-0-SS	0.2	ppm	0.2	ND
		86-GR-005-0-SS	0.2	ppm	0.2	ND
		86-GR-006-0-SS	0.2	ppm	0.2	ND
		86-GR-007-0-SS	0.2	ppm	0.2	ND
		86-GR-008-0-SS	0.2	ppm	0.2	ND
		86-GR-009-0-SS	0.07	ppm	0.2	
		86-GR-010-0-SS	0.2	ppm	0.2	ND
		86-GR-010-0-SSD	0.2	ppm	0.2	ND
		86-GR-011-0-SS	0.2	ppm	0.2	ND
		86-GR-012-0-SS	0.2	ppm	0.2	ND
		86-GR-013-0-SS	0.2	ppm	0.2	ND
		86-GR-014-0-SS	0.2	ppm	0.2	ND
		86-GR-015-0-SS	0.2	ppm	0.2	ND
		86-GR-016-0-SS	0.2	ppm	0.2	ND
		86-GR-017-0-SS	0.2	ppm	0.2	ND
		86-GR-018-0-SS	0.2	ppm	0.2	ND
		86-GR-019-0-SS	0.2	ppm	0.2	ND
		86-GR-020-0-EB	100000000	ppm	0.0006	NT
		86-GR-020-0-FB	100000000	ppm	0.0006	NT
		86-GR-020-0-SS	0.2	ppm	0.2	ND
		86-GR-020-0-SSD	0.2	ppm	0.2	ND
	NICKEL	86-GR-001-0-SS	4	ppm	4	ND
		86-GR-002-0-SS	4	ppm	4	ND
		86-GR-003-0-SS	4	ppm	4	ND
		86-GR-004-0-SS	4	ppm	4	ND
		86-GR-005-0-SS	4	ppm	4	ND
		86-GR-006-0-SS	4	ppm	4	ND
		86-GR-007-0-SS	4	ppm	4	ND
		86-GR-008-0-SS	4	ppm	4	ND
		86-GR-009-0-SS	4	ppm	4	ND
		86-GR-010-0-SS	4	ppm	4	ND
		86-GR-010-0-SSD	4	ppm	4	ND
		86-GR-011-0-SS	4	ppm	4	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	NICKEL	86-GR-012-0-SS	4	ppm	4	ND
		86-GR-013-0-SS	4	ppm	4	ND
		86-GR-014-0-SS	4	ppm	4	ND
		86-GR-015-0-SS	4	ppm	4	ND
		86-GR-016-0-SS	4	ppm	4	ND
		86-GR-017-0-SS	4	ppm	4	ND
		86-GR-018-0-SS	4	ppm	4	ND
		86-GR-019-0-SS	4	ppm	4	ND
		86-GR-020-0-EB	0.04	ppm	0.04	ND
		86-GR-020-0-FB	0.04	ppm	0.04	ND
		86-GR-020-0-SS	4	ppm	4	ND
		86-GR-020-0-SSD	4	ppm	4	ND
	SELENIUM	86-GR-001-0-SS	50	ppm	50	ND
		86-GR-002-0-SS	50	ppm	50	ND
		86-GR-003-0-SS	50	ppm	50	ND
		86-GR-004-0-SS	50	ppm	50	ND
		86-GR-005-0-SS	50	ppm	50	ND
		86-GR-006-0-SS	50	ppm	50	ND
		86-GR-007-0-SS	50	ppm	50	ND
		86-GR-008-0-SS	50	ppm	50	ND
		86-GR-009-0-SS	50	ppm	50	ND
		86-GR-010-0-SS	50	ppm	50	ND
		86-GR-010-0-SSD	50	ppm	50	ND
		86-GR-011-0-SS	50	ppm	50	ND
		86-GR-012-0-SS	50	ppm	50	ND
		86-GR-013-0-SS	50	ppm	50	ND
		86-GR-014-0-SS	50	ppm	50	ND
		86-GR-015-0-SS	50	ppm	50	ND
		86-GR-016-0-SS	50	ppm	50	ND
		86-GR-017-0-SS	50	ppm	50	ND
		86-GR-018-0-SS	50	ppm	50	ND
		86-GR-019-0-SS	50	ppm	50	ND
		86-GR-020-0-EB	0.5	ppm	0.5	ND
		86-GR-020-0-FB	0.5	ppm	0.5	ND
		86-GR-020-0-SS	50	ppm	50	ND
		86-GR-020-0-SSD	50	ppm	50	ND
	SILVER	86-GR-001-0-SS	10	ppm	10	ND
		86-GR-002-0-SS	10	ppm	10	ND
		86-GR-003-0-SS	10	ppm	10	ND
		86-GR-004-0-SS	10	ppm	10	ND
		86-GR-005-0-SS	10	ppm	10	ND
		86-GR-006-0-SS	10	ppm	10	ND
		86-GR-007-0-SS	10	ppm	10	ND
		86-GR-008-0-SS	10	ppm	10	ND
		86-GR-009-0-SS	10	ppm	10	ND
		86-GR-010-0-SS	10	ppm	10	ND
		86-GR-010-0-SSD	10	ppm	10	ND
		86-GR-011-0-SS	10	ppm	10	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	SILVER	86-GR-012-0-SS	10	ppm	10	ND
		86-GR-013-0-SS	10	ppm	10	ND
		86-GR-014-0-SS	10	ppm	10	ND
		86-GR-015-0-SS	10	ppm	10	ND
		86-GR-016-0-SS	10	ppm	10	ND
		86-GR-017-0-SS	10	ppm	10	ND
		86-GR-018-0-SS	10	ppm	10	ND
		86-GR-019-0-SS	10	ppm	10	ND
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	10	ppm	10	ND
		86-GR-020-0-SSD	10	ppm	10	ND
	THALLIUM	86-GR-001-0-SS	200	ppm	200	ND
		86-GR-002-0-SS	200	ppm	200	ND
		86-GR-003-0-SS	200	ppm	200	ND
		86-GR-004-0-SS	200	ppm	200	ND
		86-GR-005-0-SS	200	ppm	200	ND
		86-GR-006-0-SS	200	ppm	200	ND
		86-GR-007-0-SS	200	ppm	200	ND
		86-GR-008-0-SS	200	ppm	200	ND
		86-GR-009-0-SS	200	ppm	200	ND
		86-GR-010-0-SS	200	ppm	200	ND
		86-GR-010-0-SSD	200	ppm	200	ND
		86-GR-011-0-SS	200	ppm	200	ND
		86-GR-012-0-SS	200	ppm	200	ND
		86-GR-013-0-SS	200	ppm	200	ND
		86-GR-014-0-SS	200	ppm	200	ND
		86-GR-015-0-SS	200	ppm	200	ND
		86-GR-016-0-SS	200	ppm	200	ND
		86-GR-017-0-SS	200	ppm	200	ND
		86-GR-018-0-SS	200	ppm	200	ND
		86-GR-019-0-SS	200	ppm	200	ND
		86-GR-020-0-EB	2	ppm	2	ND
		86-GR-020-0-FB	2	ppm	2	ND
		86-GR-020-0-SS	200	ppm	200	ND
		86-GR-020-0-SSD	200	ppm	200	ND
	VANADIUM	86-GR-001-0-SS	11	ppm	10	J
		86-GR-002-0-SS	16	ppm	10	J
		86-GR-003-0-SS	13	ppm	10	J
		86-GR-004-0-SS	10	ppm	10	J
		86-GR-005-0-SS	10	ppm	10	ND
		86-GR-006-0-SS	10	ppm	10	J
		86-GR-007-0-SS	10	ppm	10	ND
		86-GR-008-0-SS	10	ppm	10	ND
		86-GR-009-0-SS	10	ppm	10	ND
		86-GR-010-0-SS	10	ppm	10	ND
		86-GR-010-0-SSD	10	ppm	10	ND
		86-GR-011-0-SS	10	ppm	10	J

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
6010 Modified	VANADIUM	86-GR-012-0-SS	10	ppm	10	ND
		86-GR-013-0-SS	10	ppm	10	ND
		86-GR-014-0-SS	10	ppm	10	ND
		86-GR-015-0-SS	14	ppm	10	J
		86-GR-016-0-SS	11	ppm	10	J
		86-GR-017-0-SS	10	ppm	10	ND
		86-GR-018-0-SS	10	ppm	10	ND
		86-GR-019-0-SS	12	ppm	10	J
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	11	ppm	10	J
		86-GR-020-0-SS	13	ppm	10	J
		86-GR-020-0-SSD	10	ppm	10	ND
	ZINC	86-GR-001-0-SS	19	ppm	10	J
		86-GR-002-0-SS	20	ppm	10	J
		86-GR-003-0-SS	21	ppm	10	J
		86-GR-004-0-SS	20	ppm	10	J
		86-GR-005-0-SS	11	ppm	10	J
		86-GR-006-0-SS	20	ppm	10	J
		86-GR-007-0-SS	19	ppm	10	J
		86-GR-008-0-SS	23	ppm	10	J
		86-GR-009-0-SS	19	ppm	10	J
		86-GR-010-0-SS	17	ppm	10	J
		86-GR-010-0-SS	20	ppm	10	J
		86-GR-010-0-SSD	18	ppm	10	J
		86-GR-011-0-SS	23	ppm	10	J
		86-GR-012-0-SS	16	ppm	10	J
		86-GR-013-0-SS	29	ppm	10	J
		86-GR-014-0-SS	19	ppm	10	J
		86-GR-015-0-SS	22	ppm	10	J
		86-GR-016-0-SS	17	ppm	10	J
		86-GR-017-0-SS	18	ppm	10	J
		86-GR-018-0-SS	17	ppm	10	J
		86-GR-019-0-SS	18	ppm	10	J
		86-GR-020-0-EB	0.1	ppm	0.1	ND
		86-GR-020-0-FB	0.1	ppm	0.1	ND
		86-GR-020-0-SS	23	ppm	10	J
		86-GR-020-0-SSD	24	ppm	10	J
EPA-SW846-6010	ALUMINUM	86-GR-005-0-SS-02	4600	mg/kg	5.8	
		86-GR-010-0-SS-02	8000	mg/kg	5.8	
		86-GR-015-0-SS-02	8700	mg/kg	5.8	
		86-GR-020-0-SS-02	13000	mg/kg	5.8	
		86-GR-020-0-SS-02D	13000	mg/kg	5.8	
		86-GR-020-EB	0.2	mg/L	0.029	ND
		86-GR-020-EB	2.077	mg/L	0.029	
		86-GR-020-EB	2.092	mg/L	0.029	
		86-GR-020-FB	0.42	mg/L	0.029	
	ANTIMONY	86-GR-005-0-SS-02	12	mg/kg	0.6	N

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
EPA-SW846-6010	ANTIMONY	86-GR-005-0-SS-02	12	mg/kg	0.6	ND
		86-GR-010-0-SS-02	12	mg/kg	0.6	N
		86-GR-010-0-SS-02	12	mg/kg	0.6	ND
		86-GR-015-0-SS-02	12	mg/kg	0.6	N
		86-GR-015-0-SS-02	12	mg/kg	0.6	ND
		86-GR-020-0-SS-02	12	mg/kg	0.6	N
		86-GR-020-0-SS-02	12	mg/kg	0.6	ND
		86-GR-020-0-SS-02D	12	mg/kg	0.6	N
		86-GR-020-0-SS-02D	12	mg/kg	0.6	ND
		86-GR-020-EB	0.06	mg/L	0.058	ND
		86-GR-020-EB	2.087	mg/L	0.058	
		86-GR-020-EB	2.174	mg/L	0.058	
		86-GR-020-FB	0.06	mg/L	0.058	ND
	ARSENIC	86-GR-005-0-SS-02	2	mg/kg	0.4	ND
		86-GR-010-0-SS-02	2.4	mg/kg	0.4	
		86-GR-015-0-SS-02	2.7	mg/kg	0.4	
		86-GR-020-0-SS-02	3.5	mg/kg	0.4	
		86-GR-020-0-SS-02D	3.4	mg/kg	0.4	
	BARIUM	86-GR-005-0-SS-02	49	mg/kg	4.2	
		86-GR-010-0-SS-02	78	mg/kg	4.2	
		86-GR-015-0-SS-02	110	mg/kg	4.2	
		86-GR-020-0-SS-02	100	mg/kg	4.2	
		86-GR-020-0-SS-02D	110	mg/kg	4.2	
		86-GR-020-EB	0.2	mg/L	0.021	ND
		86-GR-020-EB	2.123	mg/L	0.021	
		86-GR-020-EB	2.151	mg/L	0.021	
		86-GR-020-FB	0.2	mg/L	0.021	ND
	BERYLLIUM	86-GR-005-0-SS-02	0.99	mg/kg	0.2	ND
		86-GR-010-0-SS-02	1	mg/kg	0.2	ND
		86-GR-015-0-SS-02	1	mg/kg	0.2	ND
		86-GR-020-0-SS-02	1	mg/kg	0.2	ND
		86-GR-020-0-SS-02D	0.99	mg/kg	0.2	ND
		86-GR-020-EB	0.005	mg/L	0.001	ND
		86-GR-020-EB	0.0482	mg/L	0.001	
		86-GR-020-EB	0.0487	mg/L	0.001	
		86-GR-020-FB	0.005	mg/L	0.001	ND
	CADMIUM	86-GR-005-0-SS-02	0.99	mg/kg	1	N
		86-GR-005-0-SS-02	0.99	mg/kg	1	ND
		86-GR-010-0-SS-02	1	mg/kg	1	N
		86-GR-010-0-SS-02	1	mg/kg	1	ND
		86-GR-015-0-SS-02	1	mg/kg	1	N
		86-GR-015-0-SS-02	1	mg/kg	1	ND
		86-GR-020-0-SS-02	1	mg/kg	1	N
		86-GR-020-0-SS-02	1	mg/kg	1	ND
		86-GR-020-0-SS-02D	0.99	mg/kg	1	N
		86-GR-020-0-SS-02D	0.99	mg/kg	1	ND
		86-GR-020-EB	0.005	mg/L	0.005	ND
		86-GR-020-EB	0.0516	mg/L	0.005	

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
EPA-SW846-6010	CADMIUM	86-GR-020-EB	0.0548	mg/L	0.005	
		86-GR-020-FB	0.005	mg/L	0.005	ND
	CALCIUM	86-GR-005-0-SS-02	9900	mg/kg	6.4	
		86-GR-010-0-SS-02	20000	mg/kg	6.4	
		86-GR-015-0-SS-02	13000	mg/kg	6.4	
		86-GR-020-0-SS-02	18000	mg/kg	6.4	
		86-GR-020-0-SS-02D	18000	mg/kg	6.4	
		86-GR-020-EB	5	mg/L	0.012	ND
		86-GR-020-FB	5	mg/L	0.012	ND
	CHROMIUM	86-GR-005-0-SS-02	8.6	mg/kg	0.6	
		86-GR-010-0-SS-02	10	mg/kg	0.6	
		86-GR-015-0-SS-02	12	mg/kg	0.6	
		86-GR-020-0-SS-02	13	mg/kg	0.6	
		86-GR-020-0-SS-02D	13	mg/kg	0.6	
		86-GR-020-EB	0.01	mg/L	0.003	ND
		86-GR-020-EB	0.2161	mg/L	0.003	
		86-GR-020-EB	0.2165	mg/L	0.003	
		86-GR-020-FB	0.01	mg/L	0.003	ND
		COBALT	9.9	mg/kg	1.2	ND
		86-GR-010-0-SS-02	10	mg/kg	1.2	ND
		86-GR-015-0-SS-02	10	mg/kg	1.2	ND
		86-GR-020-0-SS-02	10	mg/kg	1.2	ND
		86-GR-020-0-SS-02D	9.9	mg/kg	1.2	ND
		86-GR-020-EB	0.05	mg/L	0.006	ND
		86-GR-020-EB	0.525	mg/L	0.006	
		86-GR-020-EB	0.5295	mg/L	0.006	
		86-GR-020-FB	0.05	mg/L	0.006	ND
	COPPER	86-GR-005-0-SS-02	130	mg/kg	0.6	
		86-GR-010-0-SS-02	18	mg/kg	0.6	
		86-GR-015-0-SS-02	120	mg/kg	0.6	
		86-GR-020-0-SS-02	23	mg/kg	0.6	
		86-GR-020-0-SS-02D	20	mg/kg	0.6	
		86-GR-020-EB	0.025	mg/L	0.003	ND
		86-GR-020-EB	0.266	mg/L	0.003	
		86-GR-020-EB	0.268	mg/L	0.003	
		86-GR-020-FB	0.025	mg/L	0.003	ND
		IRON	7500	mg/kg	2.4	
		86-GR-010-0-SS-02	10000	mg/kg	2.4	
		86-GR-015-0-SS-02	12000	mg/kg	2.4	
		86-GR-020-0-SS-02	13000	mg/kg	2.4	
		86-GR-020-0-SS-02D	13000	mg/kg	2.4	
		86-GR-020-EB	0.1	mg/L	0.056	ND
		86-GR-020-EB	1.117	mg/L	0.056	
		86-GR-020-EB	1.13	mg/L	0.056	
		86-GR-020-FB	0.1	mg/L	0.056	ND
	LEAD	86-GR-005-0-SS-02	9.7	mg/kg	0.4	
		86-GR-010-0-SS-02	19	mg/kg	0.4	
		86-GR-015-0-SS-02	34	mg/kg	0.4	

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
EPA-SW846-6010	LEAD	86-GR-020-0-SS-02	15	mg/kg	0.4	
		86-GR-020-0-SS-02D	16	mg/kg	0.4	
	MAGNESIUM	86-GR-005-0-SS-02	1700	mg/kg	10	
		86-GR-010-0-SS-02	2800	mg/kg	10	
		86-GR-015-0-SS-02	2600	mg/kg	10	
		86-GR-020-0-SS-02	3500	mg/kg	10	
		86-GR-020-0-SS-02D	3800	mg/kg	10	
		86-GR-020-EB	5	mg/L	0.05	ND
		86-GR-020-FB	5	mg/L	0.05	ND
	MANGANESE	86-GR-005-0-SS-02	150	mg/kg	0.4	N
		86-GR-010-0-SS-02	180	mg/kg	0.4	N
		86-GR-015-0-SS-02	210	mg/kg	0.4	N
		86-GR-020-0-SS-02	200	mg/kg	0.4	N
		86-GR-020-0-SS-02D	200	mg/kg	0.4	N
		86-GR-020-EB	0.015	mg/L	0.002	ND
		86-GR-020-EB	0.5359	mg/L	0.002	
		86-GR-020-EB	0.5393	mg/L	0.002	
		86-GR-020-FB	0.015	mg/L	0.002	ND
	NICKEL	86-GR-005-0-SS-02	7.9	mg/kg	3	ND
		86-GR-010-0-SS-02	8	mg/kg	3	ND
		86-GR-015-0-SS-02	8.1	mg/kg	3	ND
		86-GR-020-0-SS-02	9.5	mg/kg	3	
		86-GR-020-0-SS-02D	10	mg/kg	3	
		86-GR-020-EB	0.04	mg/L	0.015	ND
		86-GR-020-EB	0.5381	mg/L	0.015	
		86-GR-020-EB	0.542	mg/L	0.015	
		86-GR-020-FB	0.04	mg/L	0.015	ND
	POTASSIUM	86-GR-005-0-SS-02	1200	mg/kg	120	
		86-GR-010-0-SS-02	1800	mg/kg	120	
		86-GR-015-0-SS-02	1700	mg/kg	120	
		86-GR-020-0-SS-02	2500	mg/kg	120	
		86-GR-020-0-SS-02D	2500	mg/kg	120	
		86-GR-020-EB	5	mg/L	0.6	ND
		86-GR-020-FB	5	mg/L	0.6	ND
	SELENIUM	86-GR-005-0-SS-02	0.99	mg/kg	0.6	ND
		86-GR-010-0-SS-02	1	mg/kg	0.6	ND
		86-GR-015-0-SS-02	1	mg/kg	0.6	ND
		86-GR-020-0-SS-02	1	mg/kg	0.6	ND
		86-GR-020-0-SS-02D	0.99	mg/kg	0.6	ND
	SILVER	86-GR-005-0-SS-02	2	mg/kg	0.8	ND
		86-GR-010-0-SS-02	2	mg/kg	0.8	ND
		86-GR-015-0-SS-02	2	mg/kg	0.8	ND
		86-GR-020-0-SS-02	2	mg/kg	0.8	ND
		86-GR-020-0-SS-02D	2	mg/kg	0.8	ND
		86-GR-020-EB	0.01	mg/L	0.004	ND
		86-GR-020-EB	0.0522	mg/L	0.004	
		86-GR-020-EB	0.0537	mg/L	0.004	
		86-GR-020-FB	0.01	mg/L	0.004	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
EPA-SW846-6010	SODIUM	86-GR-005-0-SS-02	990	mg/kg	14	ND
		86-GR-010-0-SS-02	1000	mg/kg	14	ND
		86-GR-015-0-SS-02	1000	mg/kg	14	ND
		86-GR-020-0-SS-02	1000	mg/kg	14	ND
		86-GR-020-0-SS-02D	990	mg/kg	14	ND
		86-GR-020-EB	5	mg/L	0.07	ND
		86-GR-020-FB	5	mg/L	0.07	ND
		86-GR-005-0-SS-02	2	mg/kg	0.4	ND
		86-GR-010-0-SS-02	2	mg/kg	0.4	ND
		86-GR-015-0-SS-02	2	mg/kg	0.4	ND
		86-GR-020-0-SS-02	2	mg/kg	0.4	ND
		86-GR-020-0-SS-02D	2	mg/kg	0.4	ND
EPA-SW846-6010	THALLIUM	86-GR-005-0-SS-02	15	mg/kg	0.8	
		86-GR-010-0-SS-02	20	mg/kg	0.8	
		86-GR-015-0-SS-02	25	mg/kg	0.8	
		86-GR-020-0-SS-02	26	mg/kg	0.8	
		86-GR-020-0-SS-02D	25	mg/kg	0.8	
		86-GR-020-EB	0.05	mg/L	0.004	ND
		86-GR-020-FB	0.5373	mg/L	0.004	
		86-GR-020-EB	0.5425	mg/L	0.004	
		86-GR-020-FB	0.05	mg/L	0.004	ND
		ZINC	21	mg/kg	0.8	
EPA-SW846-7060	ARSENIC	86-GR-010-0-SS-02	29	mg/kg	0.8	
		86-GR-015-0-SS-02	35	mg/kg	0.8	
		86-GR-020-0-SS-02	35	mg/kg	0.8	
		86-GR-020-0-SS-02D	35	mg/kg	0.8	
		86-GR-020-EB	0.02	mg/L	0.004	ND
		86-GR-020-FB	0.5507	mg/L	0.004	
		86-GR-020-EB	0.5515	mg/L	0.004	
		86-GR-020-FB	0.056	mg/L	0.004	
		86-GR-020-EB	0.01	mg/L	0.002	ND
		86-GR-020-FB	0.0366	mg/L	0.002	
EPA-SW846-7421	LEAD	86-GR-020-FB	0.0389	mg/L	0.002	
		86-GR-020-FB	0.01	mg/L	0.002	ND
		86-GR-020-EB	0.0189	mg/L	0.002	
		86-GR-020-EB	0.02002	mg/L	0.002	
EPA-SW846-7470	MERCURY	86-GR-020-FB	0.003	mg/L	0.002	ND
		86-GR-020-EB	0.0002	mg/L	0.0002	
		86-GR-020-EB	0.00118	mg/L	0.0002	
		86-GR-020-EB	0.0012	mg/L	0.0002	
EPA-SW846-7471	MERCURY	86-GR-020-FB	0.0002	mg/L	0.0002	ND
		86-GR-020-FB	0.096	mg/kg	0.1	ND
		86-GR-010-0-SS-02	0.1	mg/kg	0.1	ND
		86-GR-015-0-SS-02	0.1	mg/kg	0.1	ND
		86-GR-020-0-SS-02	0.1	mg/kg	0.1	ND
EPA-SW846-7740	SELENIUM	86-GR-020-0-SS-02D	0.1	mg/kg	0.1	ND
		86-GR-020-EB	0.005	mg/L	0.003	ND

Table A.3 - ER Site 86: Results of Confirmatory Soil Samples at the Firing Site

Test Method	Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
EPA-SW846-7740	SELENIUM	86-GR-020-EB	0.00917	mg/L	0.003	
		86-GR-020-EB	0.01001	mg/L	0.003	
		86-GR-020-FB	0.005	mg/L	0.003	ND
EPA-SW846-7840	THALLIUM	86-GR-020-EB	0.01	mg/L	0.002	ND
		86-GR-020-EB	*0.05342	mg/L	0.002	
		86-GR-020-EB	0.05396	mg/L	0.002	
		86-GR-020-FB	0.01	mg/L	0.002	ND

Notes:

EB = Equipment rinsate blank

FB = Field blank

J = Result is detected below the reporting limit or is an estimated concentration.

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

NA = Not applicable

ND = Not detected

Table A.4.1 - Results of Pre-Housekeeping Activity Rad Screening at the Concrete Blast Shields - ER Site 86

Location	Swipe ID #	CPM	Bkg. CPM	DPM	T/R/F	mrem/hr	Distance
Block 1	1	80	80	ND	T	<.02	Contact
Block 1	2	80	80	ND	T	<.02	Contact
Block 1	3	80	80	ND	T	<.02	Contact
Block 1	4	80	80	ND	T	<.02	Contact
Block 1	5	80	80	ND	T	<.02	Contact
Block 1	6	80	80	ND	T	<.02	Contact
Block 2	7	80	80	ND	T	<.02	Contact
Block 2	8	80	80	ND	T	<.02	Contact
Block 2	9	80	80	ND	T	<.02	Contact
Block 2	10	80	80	ND	T	<.02	Contact
Block 2	11	80	80	ND	T	<.02	Contact
Block 2	12	80	80	ND	T	<.02	Contact
Block 3	13	80	80	ND	T	<.02	Contact
Block 3	14	80	80	ND	T	<.02	Contact
Block 3	15	80	80	ND	T	<.02	Contact
Block 3	16	80	80	ND	T	<.02	Contact
Block 3	17	80	80	ND	T	<.02	Contact
Block 3	18	80	80	ND	T	<.02	Contact
Block 4	19	80	80	ND	T	<.02	Contact
Block 4	20	80	80	ND	T	<.02	Contact
Block 4	21	80	80	ND	T	<.02	Contact
Block 4	22	80	80	ND	T	<.02	Contact
Block 4	23	80	80	ND	T	<.02	Contact
Block 4	24	80	80	ND	T	<.02	Contact
Block 5	25	80	80	ND	T	<.02	Contact
Block 5	26	80	80	ND	T	<.02	Contact
Block 5	27	80	80	ND	T	<.02	Contact
Block 5	28	80	80	ND	T	<.02	Contact
Block 5	29	80	80	ND	T	<.02	Contact
Block 5	30	80	80	ND	T	<.02	Contact
Block 6	31	80	80	ND	T	<.02	Contact
Block 6	32	80	80	ND	T	<.02	Contact
Block 6	33	80	80	ND	T	<.02	Contact
Block 6	34	80	80	ND	T	<.02	Contact
Block 6	35	80	80	ND	T	<.02	Contact
Block 6	36	80	80	ND	T	<.02	Contact
Block 7	37	80	80	ND	T	<.02	Contact
Block 7	38	80	80	ND	T	<.02	Contact
Block 7	39	80	80	ND	T	<.02	Contact
Block 7	40	80	80	ND	T	<.02	Contact
Block 7	41	80	80	ND	T	<.02	Contact
Block 7-Side	42	1600	80	38000	T	<.02	Contact
Block 8	43	80	80	ND	T	<.02	Contact
Block 8	44	80	80	ND	T	<.02	Contact
Block 8	45	80	80	ND	T	<.02	Contact
Block 8	46	80	80	ND	T	<.02	Contact
Block 8	47	80	80	ND	T	<.02	Contact
Block 8	48	80	80	ND	T	<.02	Contact

Table A.4.1 - Results of Pre-Housekeeping Activity Rad Screening at the Concrete Blast Shields - ER Site 86

Location	Swipe ID #	CPM	Bkg. CPM	DPM	T/R/F	mrem/hr	Distance
Block 9	49	80	80	ND	T	<.02	Contact
Block 9	50	80	80	ND	T	<.02	Contact
Block 9	51	80	80	ND	T	<.02	Contact
Block 9	52	80	80	ND	T	<.02	Contact
Block 9	53	80	80	ND	T	<.02	Contact
Block 9	54	80	80	ND	T	<.02	Contact
Block 10	55	80	80	ND	T	<.02	Contact
Block 10	56	80	80	ND	T	<.02	Contact
Block 10	57	80	80	ND	T	<.02	Contact
Block 10	58	80	80	ND	T	<.02	Contact
Block 10	59	80	80	ND	T	<.02	Contact
Block 10	60	80	80	ND	T	<.02	Contact
Block 10-Side	61	7200	80	178000	T	<.02	Contact
Block 10-Side	62	9000	80	22000	T	<.02	Contact

Table A.4.2 - Results of Pre-Housekeeping Activity Rad Swipe Screening at the Concrete Blast Shields - ER Site
86

Location	Swipe ID #	Alpha Activity			Beta Activity			Count	Alpha Time	Beta CPM	Time Complt		
		DPM	Flags	MDA	DPM	Flags	MDA						
Block 1	1	1.64	2.75	<MDA	11.75	9.81	5.33	<AL	15.4	1	0.75	5.35	10:59
Block 1	2	-0.62	2.65	<MDA	10.69	-3.02	1.99	<MDA	15.19	1	-0.25	-1.65	11:00
Block 1	3	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:01
Block 1	4	-0.62	2.65	<MDA	10.69	-3.02	1.99	<MDA	15.19	1	-0.25	-1.65	11:02
Block 1	5	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.1	1	-0.25	1.35	11:04
Block 1	6	0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:05
Block 2	7	1.93	2.69	<MDA	11.17	2.35	3.79	<MDA	15.41	1	0.75	1.35	11:06
Block 2	8	-0.73	2.72	<MDA	11.49	6.31	4.62	<AL	15.18	1	-0.25	3.35	11:07
Block 2	9	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25	1.25	11:08
Block 2	10	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:10
Block 2	11	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:11
Block 2	12	-0.68	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:12
Block 3	13	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:13
Block 3	14	1.97	2.65	<MDA	10.84	-1.39	2.73	<MDA	15.41	1	0.75	-0.65	11:14
Block 3	15	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:15
Block 3	16	-0.62	2.65	<MDA	10.69	-3.02	1.99	<MDA	15.19	1	-0.25	-1.86	11:16
Block 3	17	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:18
Block 3	18	-0.62	2.65	<MDA	10.69	-3.02	1.99	<MDA	15.19	1	-0.25	-1.65	11:19
Block 4	19	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:20
Block 4	20	1.91	2.71	<MDA	11.32	4.21	4.23	<MDA	15.41	1	0.75	2.35	11:21
Block 4	21	-0.62	2.65	<MDA	10.69	-3.02	1.99	<MDA	15.1	1	-0.25	-1.65	11:22
Block 4	22	-0.71	2.71	<MDA	11.34	4.44	4.23	<MDA	15.18	1	-0.25	2.35	11:24
Block 4	23	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:25
Block 4	24	-0.64	2.65	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:26
Block 5	25	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:27
Block 5	26	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:28
Block 5	27	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:29
Block 5	28	-0.71	2.71	<MDA	11.34	4.44	4.23	<MDA	15.18	1	-0.25	2.35	11:31
Block 5	29	1.95	2.68	<MDA	11.01	0.48	3.3	<MDA	15.41	1	0.75	0.35	11:32
Block 5	30	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:33
Block 6	31	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:34
Block 6	32	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:35
Block 6	33	0.64	2.66	<MDA	10.86	-1.1	2.73	<MDA	15.19	1	-0.25	-0.65	11:36
Block 6	34	-0.71	2.71	<MDA	11.34	4.44	4.23	<MDA	15.18	1	-0.25	2.35	11:37
Block 6	35	1.95	2.68	<MDA	11.01	0.48	3.3	<MDA	15.41	1	0.75	0.35	11:39
Block 6	36	1.95	2.68	<MDA	11.01	0.48	3.3	<MDA	15.41	1	0.75	0.35	11:40
Block 7	37	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:41
Block 7	38	-0.59	2.65	<MDA	10.51	-4.89	1.99	<MDA	15.19	1	-0.25	-2.65	11:42
Block 7	39	-0.62	2.65	<MDA	10.69	-3.02	1.99	<MDA	15.19	1	-0.25	-1.65	11:43
Block 7	40	1.93	2.69	<MDA	11.17	2.35	3.79	<MDA	15.41	1	0.75	1.35	11:45
Block 7	41	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:46
Block 7-Side	42	-0.71	2.71	<MDA	11.34	4.44	4.23	<MDA	15.18	1	-0.25	2.35	11:47
Block 8	43	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:48
Block 8	44	-0.71	2.71	<MDA	11.34	4.44	4.23	<MDA	15.18	1	-0.25	2.35	11:49
Block 8	45	-0.75	2.74	<MDA	11.64	8.17	4.99	<AL	15.18	1	-0.25	4.35	11:50
Block 8	46	-0.75	2.74	<MDA	11.64	8.17	4.99	<AL	15.18	1	-0.25	4.35	11:52
Block 8	47	-0.73	2.72	<MDA	11.49	6.31	4.62	<AL	15.18	1	-0.25	3.35	11:53

Table A.4.2 - Results of Pre-Housekeeping Activity Rad Swipe Screening at the Concrete Blast Shields - ER Site

Location	Swipe ID #	Alpha Activity				Beta Activity				Count Time	Alpha CPM	Beta CPM	Time Compt
		DPM		Flags	MDA	DPM		Flags	MDA				
Block 8	48	-0.71	2.71	<MDA	11.34	4.44	4.23	<MDA	15.18	1	-0.25	2.35	11:54
Block 9	49	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	11:55
Block 9	50	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25	1.35	11:56
Block 9	51	0.61	2.66	<MDA	10.85	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:57
Block 9	52	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	11:59
Block 9	53	1.97	2.66	<MDA	10.84	-1.39	2.73	<MDA	15.41	1	0.75	-0.65	12:00
Block 9	54	-0.56	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	12:01
Block 10	55	1.88	2.72	<MDA	11.47	6.08	4.62	<AL	15.41	1	0.75	3.35	12:02
Block 10	56	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	12:03
Block 10	57	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25	1.35	12:04
Block 10	58	1.91	2.71	<MDA	11.32	4.21	4.23	<MDA	15.41	1	0.75	2.35	12:06
Block 10	59	-0.75	2.74	<MDA	11.64	8.17	4.99	<AL	15.16	1	-0.25	4.35	12:07
Block 10	60	1.95	2.68	<MDA	11.01	0.48	3.3	<MDA	15.41	1	0.75	0.35	12:08
Block 10-Side	61	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	12:09
Block 10-Side	62	2	2.65	<MDA	10.67	-3.25	1.99	<MDA	15.41	1	0.75	-1.65	12:10

Table A.5.1 - Results of Post-Housekeeping Activity Rad Screening at the Concrete Blast Shields - ER Site 86

Location	Swipe ID #	CPM	Bkg. CPM	DPM	T/R/F	mrem/hr	Distance
Sample # 020825-03	1	80	80	ND	T	<.02	Contact
Sample # 020825-02	2	80	80	ND	T	<.02	Contact
Block 10 - Top	3	80	80	ND	T	<.02	Contact
Block 10 - Top	4	80	80	ND	T	<.02	Contact
Block 10 - Top	5	80	80	ND	T	<.02	Contact
Block 10 - Top	6	80	80	ND	T	<.02	Contact
Block 7 - Side	7	80	80	ND	T	<.02	Contact
Block 7 - Side	8	80	80	ND	T	<.02	Contact

Table A.5.2 - Results of Post-Housekeeping Activity Rad Swipe - Concrete Blast Shield #7 - ER Site 86

Location	Swipe ID #	Alpha Activity			Beta Activity			Count Time	Alpha CPM	Beta CPM	Time Compl.		
		DPM		Flags	MDA	DPM		Flags	MDA				
Block 7	1	4.38	3.83	<AL	12.16	15.18	6.24	<AL	15.62	1	1.75	8.35	16:20
Block 7	2	1.95	2.68	<MDA	11.01	0.48	3.3	<MDA	15.41	1	0.75	0.35	16:21
Block 7	3	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	16:22
Block 7	4	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	16:23
Block 7	5	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	16:24
Block 7	6	-0.59	2.65	<MDA	10.51	-4.89	1.99	<MDA	15.19	1	-0.25	-2.65	16:25

Table A.5.3 - Results of Post-Housekeeping Activity Rad Swipes - Concrete Blast Shield #10 - ER Site 86 - Phase

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Location	Swipe ID #	Alpha Activity			Beta Activity			Count	Alpha Time	Beta Time	Time Complt
		DPM		Flags	MDA	DPM		Flags	MDA		
Block 10	1	1.93	2.69	<MDA	11.17	2.35	3.79	<MDA	15.41	1	0.75
Block 10	2	-0.73	2.72	<MDA	11.49	6.31	4.62	<AL	15.18	1	-0.25
Block 10	3	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25
Block 10	4	1.93	2.69	<MDA	11.17	2.35	3.79	<MDA	15.41	1	0.75
Block 10	5	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25
Block 10	6	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25

Table A.5.4. - Results of Post-Housekeeping Activity Rad Swipes - Concrete Blast Shield #10 - ER Site 86 - Phase II

Location	Swipe ID #	Alpha Activity			Beta Activity			Count	Alpha CPM	Beta CPM	Time Comptd		
		DPM	Flags	MDA	DPM	Flags	MDA						
Block 10	1	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25	1.35	15:14
Block 10	2	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	15:15
Block 10	3	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25	1.35	15:17
Block 10	4	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	15:18
Block 10	5	1.93	2.69	<MDA	11.17	2.35	3.79	<MDA	15.41	1	0.75	1.35	15:19
Block 10	6	-0.64	2.66	<MDA	10.86	-1.16	2.73	<MDA	15.19	1	-0.25	-0.65	15:20
Block 10	7	-0.68	2.69	<MDA	11.19	2.58	3.79	<MDA	15.18	1	-0.25	1.35	15:21
Block 10	8	-0.66	2.68	<MDA	11.03	0.71	3.3	<MDA	15.18	1	-0.25	0.35	15:22

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
86-GR-005-0-SS-01	ACTINIUM-227	2.22	pCi/g	2.22	U
	ACTINIUM-228	0.488	pCi/g	0.152	
	AMERICIUM-241	0.755	pCi/g	0.755	U
	ANTIMONY-122	0.123	pCi/g	0.123	U
	ANTIMONY-124	0.0436	pCi/g	0.0436	U
	ANTIMONY-125	0.101	pCi/g	0.101	U
	BARIUM-133	0.0774	pCi/g	0.0774	U
	BARIUM-140	0.167	pCi/g	0.167	U
	BERYLLIUM-7	0.33	pCi/g	0.33	U
	BISMUTH-212	0.776	pCi/g	0.477	
	BISMUTH-214	0.441	pCi/g	0.0778	
	CADMIUM-109	1.68	pCi/g	1.68	U
	CADMIUM-115	0.233	pCi/g	0.233	U
	CERIUM-139	0.0411	pCi/g	0.0411	U
	CERIUM-141	0.077	pCi/g	0.077	U
	CERIUM-144	0.318	pCi/g	0.318	U
	CESIUM-134	0.0646	pCi/g	0.0646	U
	CESIUM-137	0.0506	pCi/g	0.0506	U
	CHROMIUM-51	0.344	pCi/g	0.344	U
	COBALT-56	0.0488	pCi/g	0.0488	U
	COBALT-57	0.041	pCi/g	0.041	U
	COBALT-58	0.0428	pCi/g	0.0428	U
	COBALT-60	0.0454	pCi/g	0.0454	U
	COPPER-64	770	pCi/g	770	U
	EUROPIUM-152	0.327	pCi/g	0.327	U
	EUROPIUM-154	0.237	pCi/g	0.237	U
	EUROPIUM-155	0.182	pCi/g	0.182	U
	GANDOLINIUM-153	0.141	pCi/g	0.141	U
	INDIUM-115M	18600	pCi/g	18600	U
	IODINE-131	0.0517	pCi/g	0.0517	U
	IRIDIUM-192	0.0382	pCi/g	0.0382	U
	IRON-59	0.102	pCi/g	0.102	U
	LANTHANUM-140	0.181	pCi/g	0.181	U
	LEAD-210	1.03	pCi/g	1.03	U
	LEAD-211	0.792	pCi/g	0.792	U
	LEAD-212	0.394	pCi/g	0.0742	
	LEAD-214	0.527	pCi/g	0.128	
	MANGANESE-54	0.0457	pCi/g	0.0457	U
	MANGANESE-56	9.6E+07	pCi/g	95500000	U
	MERCURY-203	0.041	pCi/g	0.041	U
	MOLYBDENUM-99	0.795	pCi/g	0.795	U
	NEODYMIUM-147	0.303	pCi/g	0.303	U
	NEPTUNIUM-237	0.493	pCi/g	0.493	U
	NICKEL-57	0.322	pCi/g	0.322	U
	NIOBIUM-95	0.389	pCi/g	0.389	U
86-GR-005-0-SS-01	PLUTONIUM-239	382	pCi/g	382	U
	POTASSIUM-40	16.4	pCi/g	0.452	
	PROTACTINIUM	0.0803	pCi/g	0.0803	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	PROTACTINIUM-231	1.39	pCi/g	1.39	U
	RADIUM-223	0.294	pCi/g	0.294	U
	RADIUM-224	0.629	pCi/g	0.566	
	RADIUM-226	0.859	pCi/g	1.11	
	RADIUM-228	0.421	pCi/g	0.191	
	RADON-219	0.365	pCi/g	0.365	U
	RUTHENIUM-103	0.0415	pCi/g	0.0415	U
	RUTHENIUM-106	0.395	pCi/g	0.395	U
	SCANDIUM-46	0.0755	pCi/g	0.0755	U
	SILVER-110	0.0425	pCi/g	0.0425	U
	SODIUM-22	0.0631	pCi/g	0.0631	U
	SODIUM-24	1.93	pCi/g	1.93	U
	STRONTIUM-85	0.0499	pCi/g	0.0499	U
	TANTALUM-182	0.221	pCi/g	0.221	U
	TANTALUM-183	1.03	pCi/g	1.03	U
	TELLURIUM-132	0.0726	pCi/g	0.0726	U
	THALLIUM-201	0.47	pCi/g	0.47	U
	THALLIUM-207	18.9	pCi/g	18.9	U
	THALLIUM-208	0.445	pCi/g	0.11	
	THORIUM-227	0.453	pCi/g	0.453	U
	THORIUM-228	1	pCi/g	1	U
	THORIUM-229	0.363	pCi/g	0.363	U
	THORIUM-231	0.769	pCi/g	0.769	U
	THORIUM-232	0.532	pCi/g	0.344	
	THORIUM-234	0.993	pCi/g	0.993	U
	URANIUM-234	16.3	pCi/g	16.3	U
	URANIUM-235	0.316	pCi/g	0.316	U
	URANIUM-238	4.44	pCi/g	4.44	U
	VANADIUM-48	0.0526	pCi/g	0.0526	U
	XENON-133, -133M	0.471	pCi/g	0.471	U
	YTTRIUM-88	0.0353	pCi/g	0.0353	U
	ZINC-65	0.145	pCi/g	0.145	U
	ZIRCONIUM-95	0.0833	pCi/g	0.0833	U
86-GR-010-0-SS-01	ACTINIUM-227	2.57	pCi/g	2.57	U
	ACTINIUM-228	0.555	pCi/g	0.178	
	AMERICIUM-241	0.812	pCi/g	0.812	U
	ANTIMONY-122	0.136	pCi/g	0.136	U
	ANTIMONY-124	0.0475	pCi/g	0.0475	U
	ANTIMONY-125	0.118	pCi/g	0.118	U
	BARIUM-133	0.0873	pCi/g	0.0873	U
	BARIUM-140	0.185	pCi/g	0.185	U
	BERYLLIUM-7	0.346	pCi/g	0.346	U
86-GR-010-0-SS-01	BISMUTH-212	0.862	pCi/g	0.53	
	BISMUTH-214	0.502	pCi/g	0.0842	
	CADMNIUM-109	1.76	pCi/g	1.76	U
	CADMNIUM-115	0.256	pCi/g	0.256	U
	CERIUM-139	0.044	pCi/g	0.044	U
	CERIUM-141	0.0826	pCi/g	0.0826	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	CERIUM-144	0.349	pCi/g	0.349	U
	CESIUM-134	0.0705	pCi/g	0.0705	U
	CESIUM-137	0.0558	pCi/g	0.0558	U
	CHROMIUM-51	0.36	pCi/g	0.36	U
	COBALT-56	0.0534	pCi/g	0.0534	U
	COBALT-57	0.0445	pCi/g	0.0445	U
	COBALT-58	0.0464	pCi/g	0.0464	U
	COBALT-60	0.0522	pCi/g	0.0522	U
	COPPER-64	996	pCi/g	996	U
	EUROPIUM-152	0.367	pCi/g	0.367	U
	EUROPIUM-154	0.261	pCi/g	0.261	U
	EUROPIUM-155	0.205	pCi/g	0.205	U
	GANDOLINIUM-153	0.158	pCi/g	0.158	U
	INDIUM-115M	24100	pCi/g	24100	U
	IODINE-131	0.0551	pCi/g	0.0551	U
	IRIDIUM-192	0.0416	pCi/g	0.0416	U
	IRON-59	0.116	pCi/g	0.116	U
	LANTHANUM-140	0.203	pCi/g	0.203	U
	LEAD-210	1.17	pCi/g	1.17	U
	LEAD-211	0.884	pCi/g	0.884	U
	LEAD-212	0.617	pCi/g	0.0598	
	LEAD-214	0.561	pCi/g	0.0857	
	MANGANESE-54	0.0504	pCi/g	0.0504	U
	MERCURY-203	0.0446	pCi/g	0.0446	U
	MOLYBDENUM-99	0.796	pCi/g	0.796	U
	NEODYMIUM-147	0.356	pCi/g	0.356	U
	NEPTUNIUM-237	0.534	pCi/g	0.534	U
	NICKEL-57	0.327	pCi/g	0.327	U
	NIOBIUM-95	0.432	pCi/g	0.432	U
	PLUTONIUM-239	401	pCi/g	401	U
	POTASSIUM-40	16.4	pCi/g	0.417	
	PROTACTINIUM	0.0847	pCi/g	0.0847	U
	PROTACTINIUM-231	1.55	pCi/g	1.55	U
	RADIUM-223	0.328	pCi/g	0.328	U
	RADIUM-224	1.42	pCi/g	1.42	U
	RADIUM-226	0.782	pCi/g	0.758	
	RADIUM-228	0.358	pCi/g	0.235	
	RADON-219	0.395	pCi/g	0.395	U
	RUTHENIUM-103	0.0412	pCi/g	0.0412	U
86-GR-010-0-SS-01	RUTHENIUM-106	0.408	pCi/g	0.408	U
	SCANDIUM-46	0.0739	pCi/g	0.0739	U
	SILVER-110	0.0513	pCi/g	0.0513	U
	SODIUM-22	0.0589	pCi/g	0.0589	U
	SODIUM-24	1.95	pCi/g	1.95	U
	STRONTIUM-85	0.0521	pCi/g	0.0521	U
	TANTALUM-182	0.216	pCi/g	0.216	U
	TANTALUM-183	1.11	pCi/g	1.11	U
	TELLURIUM-132	0.0787	pCi/g	0.0787	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	THALLIUM-201	0.501	pCi/g	0.501	U
	THALLIUM-207	19.5	pCi/g	19.5	U
	THALLIUM-208	0.531	pCi/g	0.0995	
	THORIUM-227	0.501	pCi/g	0.501	U
	THORIUM-228	0.465	pCi/g	0.838	
	THORIUM-229	0.409	pCi/g	0.409	U
	THORIUM-231	0.848	pCi/g	0.848	U
	THORIUM-232	0.4	pCi/g	0.378	
	THORIUM-234	1.08	pCi/g	1.08	U
	URANIUM-234	15.8	pCi/g	15.8	U
	URANIUM-235	0.344	pCi/g	0.344	U
	URANIUM-238	4.74	pCi/g	4.74	U
	VANADIUM-48	0.0545	pCi/g	0.0545	U
	XENON-133, -133M	0.53	pCi/g	0.53	U
	YTTRIUM-88	0.0453	pCi/g	0.0453	U
	ZINC-65	0.139	pCi/g	0.139	U
	ZIRCONIUM-95	0.0902	pCi/g	0.0902	U
86-GR-015-0-SS-01	ACTINIUM-227	2.49	pCi/g	2.49	U
	ACTINIUM-228	0.665	pCi/g	0.131	
	AMERICIUM-241	0.796	pCi/g	0.796	U
	ANTIMONY-122	0.136	pCi/g	0.136	U
	ANTIMONY-124	0.0465	pCi/g	0.0465	U
	ANTIMONY-125	0.111	pCi/g	0.111	U
	BARIUM-133	0.0831	pCi/g	0.0831	U
	BARIUM-140	0.18	pCi/g	0.18	U
	BERYLLIUM-7	0.355	pCi/g	0.355	U
	BISMUTH-212	0.606	pCi/g	0.427	
	BISMUTH-214	0.477	pCi/g	0.0761	
	CADMIUM-109	0.764	pCi/g	0.764	U
	CADMIUM-115	0.248	pCi/g	0.248	U
	CERIUM-139	0.0454	pCi/g	0.0454	U
	CERIUM-141	0.082	pCi/g	0.082	U
	CERIUM-144	0.337	pCi/g	0.337	U
	CESIUM-134	0.0689	pCi/g	0.0689	U
	CESIUM-137	0.0504	pCi/g	0.0504	U
	CHROMIUM-51	0.364	pCi/g	0.364	U
86-GR-015-0-SS-01	COBALT-56	0.0503	pCi/g	0.0503	U
	COBALT-57	0.043	pCi/g	0.043	U
	COBALT-58	0.0497	pCi/g	0.0497	U
	COBALT-60	0.0504	pCi/g	0.0504	U
	COPPER-64	786	pCi/g	786	U
	EUROPIUM-152	0.337	pCi/g	0.337	U
	EUROPIUM-154	0.239	pCi/g	0.239	U
	EUROPIUM-155	0.197	pCi/g	0.197	U
	GANDOLINIUM-153	0.148	pCi/g	0.148	U
	INDIUM-115M	20700	pCi/g	20700	U
	IODINE-131	0.0504	pCi/g	0.0504	U
	IRIDIUM-192	0.0419	pCi/g	0.0419	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	IRON-59	0.1	pCi/g	0.1	U
	LANTHANUM-140	0.191	pCi/g	0.191	U
	LEAD-210	1.08	pCi/g	1.08	U
	LEAD-211	0.837	pCi/g	0.837	U
	LEAD-212	0.555	pCi/g	0.0614	
	LEAD-214	0.512	pCi/g	0.0769	
	MANGANESE-54	0.0477	pCi/g	0.0477	U
	MERCURY-203	0.0429	pCi/g	0.0429	U
	MOLYBDENUM-99	0.784	pCi/g	0.784	U
	NEODYMIUM-147	0.329	pCi/g	0.329	U
	NEPTUNIUM-237	0.503	pCi/g	0.503	U
	NICKEL-57	0.341	pCi/g	0.341	U
	NIOBIUM-95	0.408	pCi/g	0.408	U
	PLUTONIUM-239	339	pCi/g	339	U
	POTASSIUM-40	15.5	pCi/g	0.293	
	PROTACTINIUM	0.0855	pCi/g	0.0855	U
	PROTACTINIUM-231	1.51	pCi/g	1.51	U
	RADIUM-223	0.302	pCi/g	0.302	U
	RADIUM-224	0.5	pCi/g	0.654	
	RADIUM-226	0.49	pCi/g	1.04	
	RADIUM-228	0.683	pCi/g	0.192	
	RADON-219	0.39	pCi/g	0.39	U
	RUTHENIUM-103	0.039	pCi/g	0.039	U
	RUTHENIUM-106	0.398	pCi/g	0.398	U
	SCANDIUM-46	0.0771	pCi/g	0.0771	U
	SILVER-110	0.0446	pCi/g	0.0446	U
	SODIUM-22	0.0632	pCi/g	0.0632	U
	SODIUM-24	1.83	pCi/g	1.83	U
	STRONTIUM-85	0.0514	pCi/g	0.0514	U
	TANTALUM-182	0.229	pCi/g	0.229	U
	TANTALUM-183	1.08	pCi/g	1.08	U
	TELLURIUM-132	0.074	pCi/g	0.074	U
	THALLIUM-201	0.477	pCi/g	0.477	U
86-GR-015-0-SS-01	THALLIUM-207	18.9	pCi/g	18.9	U
	THALLIUM-208	0.571	pCi/g	0.118	
	THORIUM-227	0.478	pCi/g	0.478	U
	THORIUM-228	1.09	pCi/g	1.09	U
	THORIUM-229	0.38	pCi/g	0.38	U
	THORIUM-231	0.775	pCi/g	0.775	U
	THORIUM-232	0.593	pCi/g	0.305	
	THORIUM-234	1.02	pCi/g	1.02	U
	URANIUM-234	16.4	pCi/g	16.4	U
	URANIUM-235	0.339	pCi/g	0.339	U
	URANIUM-238	4.56	pCi/g	4.56	U
	VANADIUM-48	0.056	pCi/g	0.056	U
	XENON-133, -133M	0.5	pCi/g	0.5	U
	YTTRIUM-88	0.0396	pCi/g	0.0396	U
	ZINC-65	0.15	pCi/g	0.15	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	ZIRCONIUM-95	0.0868	pCi/g	0.0868	U
86-GR-020-0-SS-01	ACTINIUM-227	2.75	pCi/g	2.75	U
	ACTINIUM-228	0.33	pCi/g	0.33	U
	AMERICIUM-241	0.894	pCi/g	0.894	U
	ANTIMONY-122	0.139	pCi/g	0.139	U
	ANTIMONY-124	0.0489	pCi/g	0.0489	U
	ANTIMONY-125	0.122	pCi/g	0.122	U
	BARIUM-133	0.0947	pCi/g	0.0947	U
	BARIUM-140	0.187	pCi/g	0.187	U
	BERYLLIUM-7	0.408	pCi/g	0.408	U
	BISMUTH-212	0.987	pCi/g	0.688	
	BISMUTH-214	0.564	pCi/g	0.0967	
	CADMIUM-109	1.93	pCi/g	1.93	U
	CADMIUM-115	0.272	pCi/g	0.272	U
	CERIUM-139	0.0477	pCi/g	0.0477	U
	CERIUM-141	0.0885	pCi/g	0.0885	U
	CERIUM-144	0.39	pCi/g	0.39	U
	CESIUM-134	0.0778	pCi/g	0.0778	U
	CESIUM-137	0.0596	pCi/g	0.0596	U
	CHROMIUM-51	0.368	pCi/g	0.368	U
	COBALT-56	0.0563	pCi/g	0.0563	U
	COBALT-57	0.0481	pCi/g	0.0481	U
	COBALT-58	0.0493	pCi/g	0.0493	U
	COBALT-60	0.0535	pCi/g	0.0535	U
	COPPER-64	790	pCi/g	790	U
	EUROPIUM-152	0.389	pCi/g	0.389	U
	EUROPIUM-154	0.286	pCi/g	0.286	U
	EUROPIUM-155	0.238	pCi/g	0.238	U
	GANDOLINIUM-153	0.174	pCi/g	0.174	U
	INDIUM-115M	19900	pCi/g	19900	U
86-GR-020-0-SS-01	IODINE-131	0.0586	pCi/g	0.0586	U
	IRIDIUM-192	0.0432	pCi/g	0.0432	U
	IRON-59	0.117	pCi/g	0.117	U
	LANTHANUM-140	0.256	pCi/g	0.256	U
	LEAD-210	1.32	pCi/g	1.32	U
	LEAD-211	0.963	pCi/g	0.963	U
	LEAD-212	0.705	pCi/g	0.0696	
	LEAD-214	0.596	pCi/g	0.141	
	MANGANESE-54	0.0566	pCi/g	0.0566	U
	MANGANESE-56	9.3E+07	pCi/g	93300000	U
	MERCURY-203	0.0501	pCi/g	0.0501	U
	MOLYBDENUM-99	0.906	pCi/g	0.906	U
	NEODYMIUM-147	0.372	pCi/g	0.372	U
	NEPTUNIUM-237	0.557	pCi/g	0.557	U
	NICKEL-57	0.385	pCi/g	0.385	U
	NIOBIUM-95	0.482	pCi/g	0.482	U
	PLUTONIUM-239	443	pCi/g	443	U
	POTASSIUM-40	16.3	pCi/g	0.601	

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	PROTACTINIUM	0.0961	pCi/g	0.0961	U
	PROTACTINIUM-231	1.73	pCi/g	1.73	U
	RADIUM-223	0.34	pCi/g	0.34	U
	RADIUM-224	1.58	pCi/g	1.58	U
	RADIUM-226	1.49	¹⁹⁰ pCi/g	1.15	
	RADIUM-228	0.583	pCi/g	0.271	
	RADON-219	0.417	pCi/g	0.417	U
	RUTHENIUM-103	0.0459	pCi/g	0.0459	U
	RUTHENIUM-106	0.449	pCi/g	0.449	U
	SCANDIUM-46	0.0884	pCi/g	0.0884	U
	SILVER-110	0.0541	pCi/g	0.0541	U
	SODIUM-22	0.0681	pCi/g	0.0681	U
	SODIUM-24	2.1	pCi/g	2.1	U
	STRONTIUM-85	0.0615	pCi/g	0.0615	U
	TANTALUM-182	0.256	pCi/g	0.256	U
	TANTALUM-183	1.21	pCi/g	1.21	U
	TELLURIUM-132	0.0839	pCi/g	0.0839	U
	THALLIUM-201	0.56	pCi/g	0.56	U
	THALLIUM-207	21.2	pCi/g	21.2	U
	THALLIUM-208	0.658	pCi/g	0.127	
	THORIUM-227	0.566	pCi/g	0.566	U
	THORIUM-228	1.24	pCi/g	1.24	U
	THORIUM-229	0.433	pCi/g	0.433	U
	THORIUM-231	0.892	pCi/g	0.892	U
	THORIUM-232	0.557	pCi/g	0.214	
	THORIUM-234	1.19	pCi/g	1.19	U
	URANIUM-234	17.7	pCi/g	17.7	U
86-GR-020-0-SS-01	URANIUM-235	0.37	pCi/g	0.37	U
	URANIUM-238	5.53	pCi/g	5.53	U
	VANADIUM-48	0.0629	pCi/g	0.0629	U
	XENON-133, -133M	0.561	pCi/g	0.561	U
	YTTRIUM-88	0.038	pCi/g	0.038	U
	ZINC-65	0.175	pCi/g	0.175	U
	ZIRCONIUM-95	0.0866	pCi/g	0.0866	U
86-GR-020-0-FB	ACTINIUM-227	1.12	pCi/mL	1.12	U
	ACTINIUM-228	0.0813	pCi/mL	0.0813	U
	AMERICIUM-241	0.287	pCi/mL	0.287	U
	ANTIMONY-122	0.0999	pCi/mL	0.0999	U
	ANTIMONY-124	0.0246	pCi/mL	0.0246	U
	ANTIMONY-125	0.05	pCi/mL	0.05	U
	BARIUM-133	0.0241	pCi/mL	0.0241	U
	BARIUM-140	0.0851	pCi/mL	0.0851	U
	BERYLLIUM-7	0.166	pCi/mL	0.166	U
	BISMUTH-212	0.256	pCi/mL	0.256	U
	BISMUTH-214	0.0486	pCi/mL	0.0486	U
	CADMIUM-109	0.597	pCi/mL	0.597	U
	CADMIUM-115	0.166	pCi/mL	0.166	U
	CERIUM-139	0.0192	pCi/mL	0.0192	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	CERIUM-141	0.0357	pCi/mL	0.0357	U
	CERIUM-144	0.146	pCi/mL	0.146	U
	CESIUM-134	0.0241	pCi/mL	0.0241	U
	CESIUM-137	0.0195	pCi/mL	0.0195	U
	CHROMIUM-51	0.177	pCi/mL	0.177	U
	COBALT-56	0.0305	pCi/mL	0.0305	U
	COBALT-57	0.0193	pCi/mL	0.0193	U
	COBALT-58	0.02	pCi/mL	0.02	U
	COBALT-60	0.0211	pCi/mL	0.0211	U
	COPPER-64	3520	pCi/mL	3520	U
	EUROPIUM-152	0.194	pCi/mL	0.194	U
	EUROPIUM-154	0.0917	pCi/mL	0.0917	U
	EUROPIUM-155	0.0863	pCi/mL	0.0863	U
	GANDOLINIUM-153	0.0592	pCi/mL	0.0592	U
	INDIUM-115M	5270000	pCi/mL	5270000	U
	IODINE-131	0.0281	pCi/mL	0.0281	U
	IRIDIUM-192	0.0193	pCi/mL	0.0193	U
	IRON-59	0.0424	pCi/mL	0.0424	U
	LANTHANUM-140	0.194	pCi/mL	0.194	U
	LEAD-210	0.572	pCi/mL	0.572	U
	LEAD-211	0.375	pCi/mL	0.375	U
	LEAD-212	0.0346	pCi/mL	0.0346	U
	LEAD-214	0.0408	pCi/mL	0.0408	U
	MANGANESE-54	0.0223	pCi/mL	0.0223	U
86-GR-020-0-FB	MERCURY-203	0.0188	pCi/mL	0.0188	U
	MOLYBDENUM-99	0.561	pCi/mL	0.561	U
	NEODYMIUM-147	0.171	pCi/mL	0.171	U
	NEPTUNIUM-237	0.175	pCi/mL	0.175	U
	NICKEL-67	0.328	pCi/mL	0.328	U
	NIOBIUM-95	0.157	pCi/mL	0.157	U
	PLUTONIUM-239	163	pCi/mL	163	U
	POTASSIUM-40	0.274	pCi/mL	0.274	U
	PROTACTINIUM	0.0392	pCi/mL	0.0392	U
	PROTACTINIUM-231	0.589	pCi/mL	0.589	U
	RADIUM-223	0.122	pCi/mL	0.122	U
	RADIUM-224	0.396	pCi/mL	0.396	U
	RADIUM-226	0.413	pCi/mL	0.413	U
	RADIUM-228	0.119	pCi/mL	0.119	U
	RADON-219	0.156	pCi/mL	0.156	U
	RUTHENIUM-103	0.0212	pCi/mL	0.0212	U
	RUTHENIUM-106	0.185	pCi/mL	0.185	U
	SCANDIUM-46	0.0256	pCi/mL	0.0256	U
	SILVER-110	0.0191	pCi/mL	0.0191	U
	SODIUM-22	0.022	pCi/mL	0.022	U
	SODIUM-24	6.52	pCi/mL	6.52	U
	STRONTIUM-85	0.0286	pCi/mL	0.0286	U
	TANTALUM-182	0.0764	pCi/mL	0.0764	U
	TANTALUM-183	0.498	pCi/mL	0.498	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	TELLURIUM-132	0.0478	pCi/mL	0.0478	U
	THALLIUM-201	0.244	pCi/mL	0.244	U
	THALLIUM-207	8.1	pCi/mL	8.1	U
	THALLIUM-208	0.0601	pCi/mL	0.0601	U
	THORIUM-227	0.127	pCi/mL	0.127	U
	THORIUM-228	0.425	pCi/mL	0.425	U
	THORIUM-229	0.155	pCi/mL	0.155	U
	THORIUM-231	0.278	pCi/mL	0.278	U
	THORIUM-232	0.127	pCi/mL	0.127	U
	THORIUM-234	0.367	pCi/mL	0.367	U
	URANIUM-234	6.57	pCi/mL	6.57	U
	URANIUM-235	0.148	pCi/mL	0.148	U
	URANIUM-238	1.66	pCi/mL	1.66	U
	VANADIUM-48	0.0239	pCi/mL	0.0239	U
	XENON-133, -133M	0.298	pCi/mL	0.298	U
	YTTRIUM-88	0.0218	pCi/mL	0.0218	U
	ZINC-65	0.0464	pCi/mL	0.0464	U
	ZIRCONIUM-95	0.0375	pCi/mL	0.0375	U
86-GR-020-0-R	ACTINIUM-227	1.06	pCi/mL	1.06	U
	ACTINIUM-228	0.0745	pCi/mL	0.0745	U
	AMERICIUM-241	0.256	pCi/mL	0.256	U
86-GR-020-0-R	ANTIMONY-122	0.0589	pCi/mL	0.0589	U
	ANTIMONY-124	0.0236	pCi/mL	0.0236	U
	ANTIMONY-125	0.0514	pCi/mL	0.0514	U
	BARIUM-133	0.0261	pCi/mL	0.0261	U
	BARIUM-140	0.0761	pCi/mL	0.0761	U
	BERYLLIUM-7	0.153	pCi/mL	0.153	U
	BISMUTH-212	0.302	pCi/mL	0.302	U
	BISMUTH-214	0.0487	pCi/mL	0.0487	U
	CADMIUM-109	0.55	pCi/mL	0.55	U
	CADMIUM-115	0.0777	pCi/mL	0.0777	U
	CERIUM-139	0.0186	pCi/mL	0.0186	U
	CERIUM-141	0.0343	pCi/mL	0.0343	U
	CERIUM-144	0.144	pCi/mL	0.144	U
	CESIUM-134	0.024	pCi/mL	0.024	U
	CESIUM-137	0.024	pCi/mL	0.024	U
	CHROMIUM-51	0.156	pCi/mL	0.156	U
	COBALT-56	0.03	pCi/mL	0.03	U
	COBALT-57	0.0186	pCi/mL	0.0186	U
	COBALT-58	0.0227	pCi/mL	0.0227	U
	COBALT-60	0.0199	pCi/mL	0.0199	U
	COPPER-64	233	pCi/mL	233	U
	EUROPIUM-152	0.193	pCi/mL	0.193	U
	EUROPIUM-154	0.1	pCi/mL	0.1	U
	EUROPIUM-155	0.0783	pCi/mL	0.0783	U
	GANDOLINIUM-153	0.0612	pCi/mL	0.0612	U
	INDIUM-115M	2280	pCi/mL	2280	U
	IODINE-131	0.0245	pCi/mL	0.0245	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	IRIDIUM-192	0.0189	pCi/mL	0.0189	U
	IRON-59	0.0416	pCi/mL	0.0416	U
	LANTHANUM-140	0.0808	pCi/mL	0.0808	U
	LEAD-210	0.58	pCi/mL	0.58	U
	LEAD-211	0.393	pCi/mL	0.393	U
	LEAD-212	0.0323	pCi/mL	0.0323	U
	LEAD-214	0.0454	pCi/mL	0.0454	U
	MANGANESE-54	0.0201	pCi/mL	0.0201	U
	MANGANESE-56	8750000	pCi/mL	8750000	U
	MERCURY-203	0.0175	pCi/mL	0.0175	U
	MOLYBDENUM-99	0.344	pCi/mL	0.344	U
	NEODYMIUM-147	0.151	pCi/mL	0.151	U
	NEPTUNIUM-237	0.16	pCi/mL	0.16	U
	NICKEL-57	0.106	pCi/mL	0.106	U
	NIOBIUM-95	0.0981	pCi/mL	0.0981	U
	PLUTONIUM-239	165	pCi/mL	165	U
	POTASSIUM-40	0.296	pCi/mL	0.296	U
	PROTACTINIUM	0.0398	pCi/mL	0.0398	U
86-GR-020-0-R	PROTACTINIUM-231	0.616	pCi/mL	0.616	U
	RADIUM-223	0.102	pCi/mL	0.102	U
	RADIUM-224	0.435	pCi/mL	0.435	U
	RADIUM-226	0.431	pCi/mL	0.431	U
	RADIUM-228	0.119	pCi/mL	0.119	U
	RADON-219	0.157	pCi/mL	0.157	U
	RUTHENIUM-103	0.02	pCi/mL	0.02	U
	RUTHENIUM-106	0.195	pCi/mL	0.195	U
	SCANDIUM-46	0.0241	pCi/mL	0.0241	U
	SILVER-110	0.0217	pCi/mL	0.0217	U
	SODIUM-22	0.0218	pCi/mL	0.0218	U
	SODIUM-24	0.548	pCi/mL	0.548	U
	STRONTIUM-85	0.0297	pCi/mL	0.0297	U
	TANTALUM-182	0.0698	pCi/mL	0.0698	U
	TANTALUM-183	0.336	pCi/mL	0.336	U
	TELLURIUM-132	0.0299	pCi/mL	0.0299	U
	THALLIUM-201	0.152	pCi/mL	0.152	U
	THALLIUM-207	8.7	pCi/mL	8.7	U
	THALLIUM-208	0.0574	pCi/mL	0.0574	U
	THORIUM-227	0.119	pCi/mL	0.119	U
	THORIUM-228	0.444	pCi/mL	0.444	U
	THORIUM-229	0.163	pCi/mL	0.163	U
	THORIUM-231	0.272	pCi/mL	0.272	U
	THORIUM-232	0.118	pCi/mL	0.118	U
	THORIUM-234	0.375	pCi/mL	0.375	U
	URANIUM-234	7.09	pCi/mL	7.09	U
	URANIUM-235	0.146	pCi/mL	0.146	U
	URANIUM-238	1.52	pCi/mL	1.52	U
	VANADIUM-48	0.0225	pCi/mL	0.0225	U
	XENON-133, -133M	0.16	pCi/mL	0.16	U

Appendix A.6 - ER Site 86: Gamma Spectroscopy Screening Results for Confirmatory Soil Samples

Sample ID	Analyte	Result	Units	Detection Limits	Qualifier
	YTTRIUM-88	0.0224	pCi/mL	0.0224	U
	ZINC-65	0.0468	pCi/mL	0.0468	U
	ZIRCONIUM-95	0.0357	pCi/mL	0.0357	U

Notes:

pCi/g = Pico Curies per Gram

pCi/mL = Pico Curies per Milliliter

U = Nondetect

Table A.7 - ER Site 86: Gamma Spectroscopy Screening Results for Post-Housekeeping Activities at the Concrete Blast Shields

Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
ACTINIUM-228	86-CB-0-0-SD	0.553	pCi/g	0.0732	
AMERICIUM-241	86-CB-0-0-SD	0.664	pCi/g	0.664	ND
ANTIMONY-122	86-CB-0-0-SD	0.0228	pCi/g	0.0228	ND
ANTIMONY-124	86-CB-0-0-SD	0.029	pCi/g	0.029	ND
ANTIMONY-125	86-CB-0-0-SD	0.078	pCi/g	0.078	ND
BARIUM-133	86-CB-0-0-SD	0.0563	pCi/g	0.0563	ND
BERYLLIUM-7	86-CB-0-0-SD	0.228	pCi/g	0.228	ND
BISMUTH-212	86-CB-0-0-SD	0.565	pCi/g	0.246	
BISMUTH-214	86-CB-0-0-SD	0.587	pCi/g	0.0422	
CADMIUM-109	86-CB-0-0-SD	1.23	pCi/g	1.23	ND
CADMIUM-115	86-CB-0-0-SD	0.0799	pCi/g	0.0799	ND
CERIUM-139	86-CB-0-0-SD	0.0312	pCi/g	0.0312	ND
CERIUM-141	86-CB-0-0-SD	0.0581	pCi/g	0.0581	ND
CERIUM-144	86-CB-0-0-SD	0.245	pCi/g	0.245	ND
CESIUM-134	86-CB-0-0-SD	0.0461	pCi/g	0.0461	ND
CESIUM-137	86-CB-0-0-SD	0.0326	pCi/g	0.0326	ND
CHROMIUM-51	86-CB-0-0-SD	0.215	pCi/g	0.215	ND
COBALT-56	86-CB-0-0-SD	0.0218	pCi/g	0.0218	ND
COBALT-57	86-CB-0-0-SD	0.0334	pCi/g	0.0334	ND
COBALT-58	86-CB-0-0-SD	0.0291	pCi/g	0.0291	ND
COBALT-60	86-CB-0-0-SD	0.0319	pCi/g	0.0319	ND
EUROPIUM-152	86-CB-0-0-SD	0.216	pCi/g	0.216	ND
EUROPIUM-154	86-CB-0-0-SD	0.157	pCi/g	0.157	ND
EUROPIUM-155	86-CB-0-0-SD	0.151	pCi/g	0.151	ND
GANDOLINIUM-153	86-CB-0-0-SD	0.147	pCi/g	0.147	ND
IODINE-131	86-CB-0-0-SD	0.0273	pCi/g	0.0273	ND
IRIDIUM-192	86-CB-0-0-SD	0.0254	pCi/g	0.0254	ND
IRON-59	86-CB-0-0-SD	0.0613	pCi/g	0.0613	ND
LEAD-211	86-CB-0-0-SD	0.823	pCi/g	0.823	ND
LEAD-212	86-CB-0-0-SD	0.527	pCi/g	0.0358	
LEAD-214	86-CB-0-0-SD	0.64	pCi/g	0.0397	
MANGANESE-52	86-CB-0-0-SD	0.0316	pCi/g	0.0316	ND
MANGANESE-54	86-CB-0-0-SD	0.0304	pCi/g	0.0304	ND
MERCURY-203	86-CB-0-0-SD	0.0263	pCi/g	0.0263	ND
MOLYBDENUM-99	86-CB-0-0-SD	0.343	pCi/g	0.343	ND
NEODYMIUM-147	86-CB-0-0-SD	0.19	pCi/g	0.19	ND
NEPTUNIUM-237	86-CB-0-0-SD	0.359	pCi/g	0.359	ND
NICKEL-57	86-CB-0-0-SD	0.0383	pCi/g	0.0383	ND
NIOBIUM-95	86-CB-0-0-SD	0.174	pCi/g	0.174	ND
PLUTONIUM-239	86-CB-0-0-SD	456	pCi/g	456	ND
POTASSIUM-40	86-CB-0-0-SD	14.6	pCi/g	0.215	
PROTACTINIUM	86-CB-0-0-SD	0.0539	pCi/g	0.0539	ND
PROTACTINIUM-231	86-CB-0-0-SD	1.35	pCi/g	1.35	ND
RADIUM-223	86-CB-0-0-SD	0.25	pCi/g	0.25	ND
RADIUM-224	86-CB-0-0-SD	0.597	pCi/g	0.0463	
RADIUM-226	86-CB-0-0-SD	7.23	pCi/g	0.53	
RADIUM-228	86-CB-0-0-SD	0.5	pCi/g	0.123	
RADON-219	86-CB-0-0-SD	0.178	pCi/g	0.358	

Table A.7 - ER Site 86: Gamma Spectroscopy Screening Results for Post-Housekeeping Activities at the Concrete Blast Shields

Analyte	Sample ID	Result	Units	Detection Limits	Qualifier
RUTHENIUM-103	86-CB-0-0-SD	0.0255	pCi/g	0.0255	ND
RUTHENIUM-106	86-CB-0-0-SD	0.256	pCi/g	0.256	ND
SILVER-110	86-CB-0-0-SD	0.0287	pCi/g	0.0287	ND
SODIUM-22	86-CB-0-0-SD	0.0381	pCi/g	0.0381	ND
SODIUM-24	86-CB-0-0-SD	0.104	pCi/g	0.104	ND
STRONTIUM-85	86-CB-0-0-SD	0.0329	pCi/g	0.0329	ND
TANTALUM-182	86-CB-0-0-SD	0.135	pCi/g	0.135	ND
TANTALUM-183	86-CB-0-0-SD	0.661	pCi/g	0.661	ND
TECHNETIUM-99	86-CB-0-0-SD	0.725	pCi/g	0.725	ND
THALLIUM-201	86-CB-0-0-SD	0.247	pCi/g	0.247	ND
THALLIUM-207	86-CB-0-0-SD	12.4	pCi/g	12.4	ND
THALLIUM-208	86-CB-0-0-SD	0.428	pCi/g	0.0571	
THORIUM-227	86-CB-0-0-SD	0.301	pCi/g	0.301	ND
THORIUM-228	86-CB-0-0-SD	0.444	pCi/g	0.433	
THORIUM-229	86-CB-0-0-SD	0.342	pCi/g	0.342	ND
THORIUM-231	86-CB-0-0-SD	3.54	pCi/g	3.54	ND
THORIUM-232	86-CB-0-0-SD	0.477	pCi/g	0.123	
THORIUM-234	86-CB-0-0-SD	23.5	pCi/g	0.701	
URANIUM-235	86-CB-0-0-SD	0.372	pCi/g	0.155	
URANIUM-238	86-CB-0-0-SD	29.6	pCi/g	3.42	
XENON-133, -133M	86-CB-0-0-SD	0.228	pCi/g	0.228	ND
YTTRIUM-88	86-CB-0-0-SD	0.026	pCi/g	0.026	ND
ZINC-65	86-CB-0-0-SD	0.09	pCi/g	0.09	ND
ZIRCONIUM-95	86-CB-0-0-SD	0.0537	pCi/g	0.0537	ND

Notes:

pCi/g = Picocuries per gram

ND = Not detected