Los Alamos National Laboratory

UNIVERSITY OF CALIFORNIA

Environmental Restoration

Environmental Restoration Project
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Los Alamos, New Mexico 87545
505-667-0808/FAX 505-665-4747

Date: May 1, 1997
Refer to: EM/ER:97-140

Mr. Ted Taylor
Los Alamos Area Office
US Department of Energy, MS A316
Los Alamos, NM 87544

SUBJECT: FINAL VCA PLAN FOR TAs 12, [redacted] and 39, PRSs 12-001(b), [redacted] AND 39-002(a) ACTIVITIES

Dear Ted:

Enclosed for your records please find two copies each of the final Voluntary Corrective Action (VCA) Plans for Technical Area (TA) 12, Potential Release Site (PRS) 12-001(b); TA-15, PRS 15-009(e); and TA-39, PRS 39-002(a) activities. These activities are planned for completion in Fiscal Year 1997. Informational copies of these VCA Plans are being distributed to the regulators.

Your Field Project Manager participated in developing and reviewing this plan. The VCA Checklist and Field Authorization Form have been completed and signed and are also included in the enclosed plan.

If you have any questions, please call Gene Gould at (505) 667-0402 or Mike Gilgosh at (505) 667-5794.

Sincerely,

Jorg Jansen, Program Manager
Environmental Restoration Project

JJ/rfr

Enclosures: (1) Final VCA Plans for TAs 12, 15, and 39, PRSs 12-001(b), 15-009(e), and 39-002(a)

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HSWA LANL 2/1085/144 12/67
2/1086/15
2/1132/39/39-002(a)

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Voluntary Corrective Action Plan for

Potential Release Site
39-002(a)
Storage Area

Field Unit 2

Environmental
Restoration
Project

April 1997

A Department of Energy
Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY

LA-UR-97-1464

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VOLUNTARY CORRECTIVE ACTION PLAN FOR POTENTIAL RELEASE SITE 39-002(a) - STORAGE AREA

1.0 INTRODUCTION

1.1 Site Type and Description

PRS 39-002(a) consists of three storage areas located in the vicinity of Building TA-39-2. Based on historical research and field surveys (LANL 1993, 1089; Environmental Restoration Project 1995, 1322), Area 1 was identified as having potential releases whereas Areas 2 and 3 showed no evidence of releases to the environment. The scope of this VCA is Area 1. Unless otherwise noted, references to PRS 39-002(a) in this plan refer to Area 1.

PRS 39-002(a) is a storage area located at the northwest corner of Building TA-39-2 (Figure 7.3-1). The area measures approximately 30 by 25 ft and consists of an earth surface with no protective roof. The site is bounded along the north, south, and east by TA-39 structures (Buildings TA-39-62, TA-39-2, and an elevated concrete walkway, respectively). The western boundary of the PRS is not clearly defined, but it is generally limited by a dirt road. The road is cut into a tuff embankment and is immediately adjacent to the site.

In 1993 and 1995, RFI sampling was conducted at the site. Because the sampling efforts were limited, the available data do not adequately define the nature and extent of the contamination. The extent of potential contamination is, however, limited by buildings, a raised concrete walkway, and the tuff embankment. The flat topography minimizes potential surface water migration from the site. Historical research indicates no reported release has occurred at the site.

1.1.1 Operational History

PRS 39-002(a) has been used as a loading ramp, RCRA hazardous waste satellite storage site, and nonhazardous storage area for the past 10 years (LANL 1993, 1089). Materials stored at the site include vehicles, solvents, and a low-level radioactive construction waste bin. There is no evidence, visible or documented, of any spills or leaks. Currently, office furniture, concrete blocks, and pallets are stored onsite. Chemicals of potential concern (COPCs) identified in the RFI work plan include acetone, ethanol, and radionuclides (depleted uranium).

1.1.2 COPCs and Rationale for Proposed Remedial Action

In 1993, a limited RFI sampling effort of the site was conducted. Two random locations were sampled and analyzed for total metals, total uranium, gamma spectroscopy, semivolatile organics (SVOCs), high explosives (HE), total petroleum hydrocarbons (TPHs), and polychlorinated biphenyls (PCBs). Soil samples were collected from approximately 0 to 6 in. A risk-based screening assessment was conducted using the 1993 analytical results. The assessment, which compared constituent concentrations to background levels, screening action levels (SALs), and cumulative effects as determined by a multiple chemical evaluation (MCE), identified six COPCs. In addition, polyaromatic hydrocarbons (PAHs), which are commonly associated with runoff from asphalt, were detected. The PAHs were not retained as COPCs because they are not believed to be associated with activities at this PRS. The source of the PAHs are most likely the asphalt ramp situated onsite and/or drainage from the composite roofs located on Buildings TA-39-2 and -62. The COPCs identified by the screening assessment include copper, lead, mercury, 1,3-dinitrobenzene, 1,3,5-trinitrobenzene, and PCBs. Because of the COPCs identified in the April 1995 RFI report (Environmental Restoration Project 1995, 1322), this PRS was recommended for expedited cleanup (EC).

As part of the preliminary EC field work, the site was more extensively sampled in 1995 for total metals and uranium using x-ray fluorescence (XRF) field measurements and laboratory analyses. The results of this effort did not substantiate the high concentrations of these analytes detected in 1993.

Therefore, proposed activities in this VCA include further site characterization to more clearly define the chemical nature and determine the spatial extent of the contamination. Analytical results will be used to determine if remediation is warranted and to define the boundaries of any cleanup action that is conducted. If the site is found to pose an unacceptable risk to human health, the site will be remediated to meet the cleanup criteria established for an industriak land-use scenario.

2.0 SITE CHARACTERIZATION

2.1 RFI Information/Other Decision Data

In 1993, RFI sampling was conducted within the southeast corner of PRS 39-002(a) (Figure 2.1-1). Random sample locations were selected based on current storage use. A total of five soil samples were collected from two locations at approximately 0 to 6 in. Two co-located samples were collected from location 39-1051 and three co-located samples were obtained from location 39-1053. Samples were analyzed for total metals, total uranium, gamma spectroscopy, SVOCs, HE, TPH, and PCBs.

FIMAD contains all of the analytical data collected at PRS 39-002(a). The reported values for detected chemicals were compared with the respective background upper tolerance levels (UTLs) and SALs. Data comparison tables of detected concentrations greater than background UTLs and SALs are provided in Annex 7.2. Based on a review of the sampling data, five inorganics, cadmium, copper, lead, mercury, and zinc were detected in the soil at concentrations above their background UTLs (see Table 7.2-1). All other inorganics were detected at concentrations below their respective background UTLs and are eliminated from further evaluation.

Lead was detected above its SAL of 400 mg/kg and is retained as a COPC (Table 7.2-1). The other inorganics were detected at concentrations less than their respective inorganics SALs and were submitted to an MCE (Table 7.2-4). The normalized sum from the MCE was 1.2, which resulted in copper and mercury being retained as COPCs. All other inorganics in the MCE were eliminated from further evaluation.

Uranium was detected above its background UTL but below its radionuclide SAL (Table 7.2-2). Cobalt-60 was also detected below its SAL in the soil at this PRS. Both radionuclides were submitted to an MCE. The normalized sum from the MCE was 0.5 (Table 7.2-4), which is below the target value of 1.0. Therefore, uranium and cobalt-60 were eliminated from further evaluation.

Several HE and SVOCs were detected in the soil (Table 7.2-3). PCBs were detected above the SAL of 1.0 and was retained as a COPC. All other detected noncarcinogenic organics were submitted to an MCE for further evaluation. Bis(2-ethylhexyl)phthalate was the only carcinogen and was eliminated from further evaluation. The normalized sum for the noncarcinogens was 1.2, which resulted in 1,3-dinitrobenzene and 1,3,5-trinitrobenzene being retained as COPCs. All other organics in the MCE were eliminated from further evaluation.

The results of the RFI screening assessment conducted on the 1993 sampling data were that copper, lead, mercury, 1,3-dinitrobenzene, 1,3,5-trinitrobenzene, and PCBs were retained as COPCs.

In 1995, XRF was conducted to further delineate the boundaries of the lead contamination. Soil samples were collected at 25 locations and at multiple depths (Figure 2.1-1). A single XRF location exhibited a high concentration of lead (2,000 ppm) (Table 7.2-5). Two samples—the high concentration XRF sample location and a seven-point composite sample—were collected and submitted for laboratory analysis for

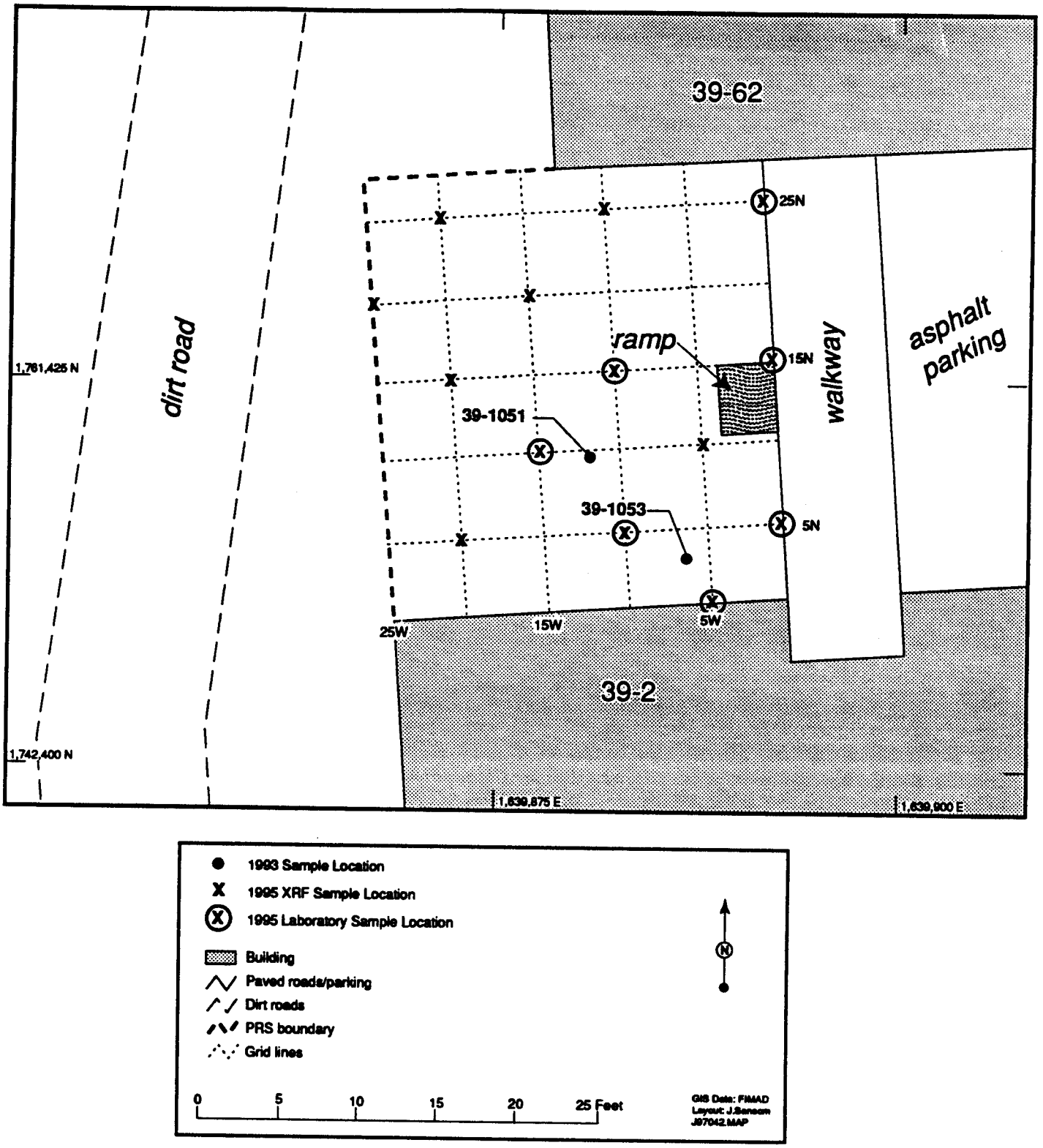

Figure 2.1-1. Former sample locations for PRS 39-002(a)

total metals, uranium, and toxicity characteristic leaching procedure (TCLP) metals. The analytical results from these samples did not substantiate the elevated lead or uranium concentrations reported from the 1993 sampling effort (Table 7.2-6).

2.2 Nature and Extent of Contamination

The nature and extent of contamination at PRS 39-002(a) is uncertain. Within the two sampled locations, significant variability was noted among co-located samples. Furthermore, the 1993 analytical results that showed elevated concentrations of metals were not confirmed in the 1995 sample effort. Previous sampling efforts were limited in spatial extent as well as in analyses. PRS 39-002(a) requires additional sampling to confirm the presence/absence of the contaminants detected in the 1993 sampling effort as well as to further characterize the nature and extent of COPCs.

To adequately characterize the site, the initial VCA field activities will include establishing a sampling grid (Figure 2.2-1). The site will be tri-sected creating nine sections measuring approximately 8 by 10 ft. Soil samples will be collected from the centers of each grid at a depth of 0 to 6 in. Three additional soil samples will be obtained at 12 to 18 in. below ground surface (bgs) from the following sections: the northwest corner; the eastern middle; and the south central. These samples will be sufficient to determine, with adequate statistical confidence, the need for remediation based on chemical concentrations, as well as to support a human health risk assessment of this PRS if one should be necessary. In addition to the statistical sampling plan, the 1993 sample locations will be resampled. Samples will be collected and submitted for laboratory analysis for metals, PCBs, VOCs, SVOCs, HE, TPH, and isotopic uranium. Section 9 contains the proposed sampling and analysis plan for these activities. If the screening assessment determines that COPCs are not present at sufficient concentrations to pose an unacceptable risk to human health, no further action (NFA) will be proposed for the site. If the screening assessment indicates that PRS 39-002(a) poses a threat to human health, remediation of the site will proceed.

3.0 PROPOSED REMEDY

3.1 Description of the Proposed Remedial Action

If corrective action is necessary, contaminated soil will be excavated to meet the site-specific preliminary remediation goals (PRGs) for an industrial, nonintrusive land-use scenario (Section 3.2). Initially, contaminated soil will be removed as determined by the preliminary grid sampling results. If analytical results from the grid sampling indicate cleanup criteria will not be achieved, additional soil will be excavated as needed. Any further excavation will be monitored using field equipment and laboratory analyses on expedited turnaround time to assure that cleanup criteria have been met without generating unnecessary waste.

Analytical results from the grid sampling and any necessary additional sample locations and/or depths will be statistically analyzed to confirm that cleanup criteria have been met. Additional samples will be analyzed for only the analytes driving the corrective action.

The remediation will be conducted in accordance with Spill Prevention Control and Countermeasures (SPCC) and Storm Water Pollution Plans (SWPP). These plans will be developed when the need for the corrective action has been established and will be available upon request.

3.2 Basis for Cleanup Levels

PRS 39-002(a) resides on DOE-owned land and is removed from public access roads. The anticipated future land use is expected to be exclusively for Laboratory operations (i.e., industrial land use only) (LANL 1994, 1171).

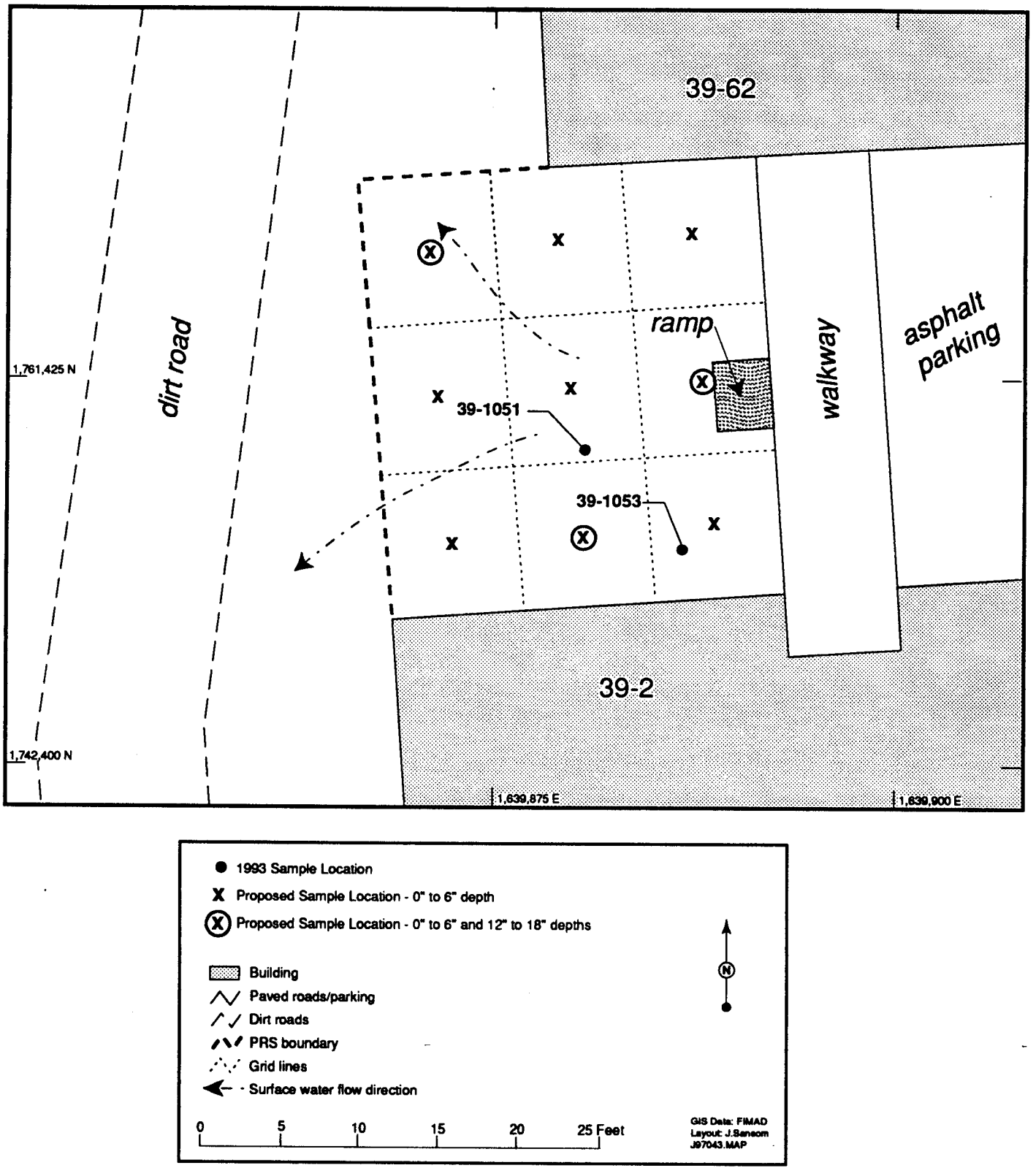

Figure 2.2-1. Proposed sample locations for PRS 39-002(a)

PRGs were calculated for the COPCs retained by the human health screening assessment from the 1993 RFI report based on the expected land use at the site. The PRGs are Environmental Protection Agency (EPA) Region 9 industrial values and were calculated using modified EPA equations and input parameters presented in Annex 7.1. The derivation of human health risk-based cleanup levels for this VCA is based on an industrial exposure scenario for a generic worker. These default exposure parameters assume an exposure frequency of 250 days per year and a duration of 25 years. Exposure routes considered in the calculations of the PRGs include incidental ingestion, dermal contact, and inhalation of contaminated soil.

The PRGs for the COPCs retained at this site are presented in Table 3.2-1. The PRGs for carcinogens, except for PCBs, were derived assuming an acceptable level of risk of 1E-06 and for noncarcinogens a hazard index of 1.0. The recommended PCB cleanup levels of 1.0 to 10 mg/kg are presented in EPA's "Guidance on Remedial Actions for Superfund Sites with PCB Contamination" and correspond to cancer risk levels of 1E-05 to 1E-04, respectively. With this approach, the residual risk remaining at the site following remediation should be within the acceptable risk range of 1E-04 to 1E-06 for carcinogens and less than a hazard index of one for noncarcinogens. The equations and assumptions used in the calculation of the PRGs are presented in Annex 7.1

The PRG for lead in soil is 1,000 ppm and has been adopted by the Laboratory for an industrial exposure scenario based on information obtained from EPA Region 6 (Neleigh 1995, ER ID No. 55515). This soil PRG considers the fetal effects when a pregnant worker is exposed. Under the industrial/commercial exposure scenario, a pregnant female adult worker is the reasonable maximum exposed individual.

Analytical results from the 1997 sampling effort will be used to calculate a 95% upper confidence limit (UCL) of the mean for each COPC identified. The 95% UCL will be used to compare the site data to the respective PRGs. If the 95% UCL for an analyte exceeds its PRG, additional remediation may be warranted. In addition, a multiple chemical PRG risk analysis will be conducted if two or more confirmatory chemical concentrations are at or below their respective PRGs. The cumulative hazard index for the noncarcinogens is determined by adding together the fractional contribution (95% UCL of

TABLE 3.2-1

PRGS FOR PRS 39-002(a)

COPCs	PRGs[1] (mg/kg)	Rationale
Copper	63,000	Noncarcinogen; based on hazard index of 1
Lead	1,000	Noncarcinogen; based on EPA Region 6 guidance[2]
Mercury	510	Noncarcinogen; based on hazard index of 1
PCBs	1.0 to 10	Carcinogen; based EPA guidance[3] and a risk range of 1E-05 to 1E-04
1,3-Dinitrobenzene	68	Noncarcinogen; based on hazard index of 1
1,3,5-Trinitrobenzene	34	Noncarcinogen; based on hazard index of 1

[1]Based on an industrial scenario
[2]Neleigh 1995, ER ID No. 55515
[3]EPA 1990, 1143

mean/PRG) for each chemical and comparing it against the target hazard index of one. The carcinogenic multiple chemical PRG risk analysis is performed by adding together the fractional contribution (95% UCL of mean PRG) for each chemical and comparing it against a cancer risk level of 1E-06. If the cleanup objectives have not been met (i.e., cancer risk exceeds the risk range of 10^{-4} to 10^{-6} or a hazard index greater than 1.0) and even though all chemicals are present below their respective PRGs, the site will be evaluated further.

3.3 Site Restoration

The site will be backfilled to its original grade with clean fill obtained from the Laboratory maintenance contractor. Backfilling of the site will not be conducted until sample results confirm that the site meets the PRGs.

4.0 WASTE MANAGEMENT

4.1 Estimated Types and Volumes of Waste

Approximately 2 cubic feet of nonradioactive/nonhazardous waste will be generated during the preliminary grid sampling. If remediation of the PRS is necessary, the grid sampling results will be used to characterize the soil before excavation proceeds. If necessary, aliquots of the excavated soil will be collected during field work, composited, and submitted for laboratory analyses to complete waste characterization criteria. Using the following conservative assumptions, an estimated 40 cubic yards may be excavated and initially classified as mixed waste:

- The grid sampling results indicate the site requires remediation.
- The 1993 analytical results are reproducible and consistent throughout the site. These results include levels of total uranium above background, which, although they do not pose a risk to human health, would be considered low-level radioactive waste upon excavation. Only low levels of PCBs are detected and will be approved as non-TSCA regulated.
- The area has been used for solvent storage. Because sampling for VOCs has not been conducted, a preliminary assumption that VOCs exist will be made for waste management purposes.
- Contaminated soil is assumed to include the entire site (30 by 25 ft) and can be remediated by excavation to 1.5 ft bgs (depth of deepest preliminary grid sample).
- The expansion (fluff factor) of the excavated soil is approximately 15%.

A nominal amount of decontamination fluids (less than 50 gallons) will be generated. The water will be characterized from the analytical data describing the excavated soil. Table 4.1-1 shows the estimated waste and volumes based on the above assumptions.

4.2 Method of Management and Disposal

Solid waste (PPE and sampling supplies) generated during the grid sampling will be screened for radioactivity, decontaminated, and disposed of as nonradioactive/nonhazardous waste. If materials are radioactive and/or cannot be decontaminated, they will be retained onsite in a labeled drum and characterized based on the analytical results of the soil samples. Decontamination water generated during the sampling (less than 5 gallons) will returned to the site. Management and disposal of these wastes will be conducted in accordance with the waste characterization strategy form. If remediation of

TABLE 4.1-1

ESTIMATED WASTE TYPES AND VOLUMES

Item	Waste Type	Anticipated Volume
Sampling waste/PPE	Solid-nonhaz/nonrad	<1 yd^3
Contaminated soils*	Solid-potential mixed	40 yd^3
Decontamination water*	Liquid-potential mixed	50 gallons

*Assumes remediation required.

the site is necessary, various treatment and disposal options are available for the excavated soil depending on the RCRA constituents present, volumes generated, and associated costs. There is no record of PCB-containing materials having been stored or spilled at this PRS. A variance for non-TSCA regulated PCBs may be requested if the sampling confirms the presence of low-level PCBs. Table 4.2-1 outlines possible waste disposal options based on probable classifications of the waste. Based on field screening for radionuclides, metals, and volatile organics, high concentrations of depleted uranium and organics (RCRA F-listed solvents) are not anticipated. However, these contaminants were included in Table 4.2-1 to show viable potential disposal options for the waste in the unlikely event that contamination is encountered.

TABLE 4.2-1

DISPOSAL OPTIONS OF POTENTIAL REMEDIATION WASTE FROM PRS 39-002(a)

Classification of Waste	Regulated Constituent	Storage Options	Treatment and Disposal Options
Low-level radioactive	Depleted uranium	Onsite	Disposal at TA-54, Area G
Mixed waste	Depleted uranium, characteristic levels of lead	Onsite <90 days RCRA storage area	Onsite treatment for lead using Portland cement. Disposal at TA 54, Area G as low-level radioactive waste.
Mixed waste	Depleted uranium, low levels of solvents (<50 ppm), with or without lead	Onsite <90 days RCRA site storage area	Onsite or offsite stabilization. Disposal at mixed waste facility as Envirocare of Utah.
Hazardous waste	Characteristic levels of lead	Onsite <90 days RCRA storage area	Treatment of the lead using Portland cement. Disposal at solid waste landfill.
Hazardous waste	Solvents below LDR* levels	Onsite <90 days RCRA storage area	Disposal at an offsite RCRA TSD facility.

*LDR = land disposal requirements

5.0 DESCRIPTION OF CONFIRMATORY/VERIFICATION SAMPLING

The grid sampling will provide information regarding the area and depth of soil to be to be removed. Should this sampling not identify the boundaries of the contamination, additional samples will collected following excavation to assure that calculated PRGs have been met. These additional samples will be analyzed for only those constituents driving the remediation.

6.0 ESTIMATED TIME TO COMPLETE THE ACTION AND UNCERTAINTIES

Preliminary VCA sampling is anticipated to occur in April 1997. Results from the effort will determine if the site requires remediation or if the site is proposed for NFA. If excavation is required, the anticipated schedule of remediation activities will begin in August 1997.

ANNEX 7.1

RISK-BASED CLEANUP LEVEL ASSUMPTIONS AND CALCULATIONS

Equation 7.1: Combined Exposures to Noncarcinogenic Contaminants in Industrial Soil

$$C(mg/kg) = \frac{THQ \times BW_a \times AT_n}{EF_o \times ED_o[(\frac{1}{RfD_o} \times \frac{IRS_o}{10^6 mg/kg}) + (\frac{1}{RfD_o} \times \frac{SA_a \times AF \times ABS}{10^6 mg/kg}) + (\frac{1}{RfD_1} \times \frac{IRA_a}{VF_s^a})]}$$

Where:

Symbol	Definition (units)	Default	Reference
RfDo	Reference dose oral (mg/kg-d)-1	—	IRIS, HEAST, or NCEA
RfDi	Reference dose inhaled (mg/kg-d)	—	IRIS, HEAST, or NCEA
THQ	Target hazard quotient	1	—
BWa	Body weight, adult (kg)	70	RAGS (Part A, EPA 1989 (EPA/5401-89/002
ATn	Averaging time - noncarcinogens (days)	ED*365	
SAa	25% surface area, adult (cm^2/day)	5,000	Dermal Assessment, EPA 1992 (EPA/600/ 8-91/011B)
AF	Adherence factor (mg/cm^2/day)	0.2	Dermal Assessment, EPA 1992 (EPA/600/ 8-9/011B)
ABS	Skin absorption (unitless):		
	- organics	0.1	PEA, Cal-EPA (DTSC, 1994)
	- inorganics	0.01	PEA, Cal-EPA (DTSC, 1994)
IRAa	Inhalation rate - adult (m^3/day)	20	Exposure Factors, EPA 1991 (OSWER No. 9285.6-03)
IRSc	Soil ingestion - occupational (mg/day)	50	Exposure Factors, EPA 1991 (OSWER No. 9285.6-03)

EFo	Exposure frequency - occupational (d/y)	250	Exposure Factors, EPA 1991 (OSWER No. 9285.6-03)
EDc	Exposure duration - occupational (years)	25	Exposure Factors, EPA 1991 (OSWER No. 9285.6-03)
PEF	Particulate emission factor (m^3/kg)	See below*	Soil Screening Guidance (EPA 1996 a,b)
VFs	Volatilization factor for (m^3/kg)	See below*	Soil Screening Guidance (EPA 1996 a,b)

*Use VF_F for volatile chemicals (defined as having a Henry's Law Constant [atm-m^3/mol] greater than 10^{-5} and a molecular weight less than 200 grams/mol) or PEF for non-volatile chemicals.

ANNEX 7.2

RFI ANALYTICAL RESULTS

All analytical data are available on FIMAD. If FIMAD is not accessible, data will be provided upon request. These data are also available in an OU 1132 RFI report dated April 1995 (Environmental Restoration Project 1995, 1322).

TABLE 7.2-1

INORGANIC CHEMICALS WITH CONCENTRATIONS AT OR ABOVE BACKGROUND SCREENING VALUES FOR PRS 39-002(a)

Sample ID	Location ID	Depth (in.)	Cadmium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Zinc (mg/kg)
SAL	N/A	N/A	38	2,800	400	23	23,000
Soil UTL	N/A	N/A	2.7	15.5	23.3	0.1	50.8
AAA3602	39-1051	0-6	<0.4	31	32	1.0	59
AAA3603	39-1051	0-6	4.1	750	4,700	2.0	290
AAA3605	39-1053	0-6	3.3	990	7,000	3.0	510
AAA3606	39-1053	0-6	4.1	370	1,600	1.0	440
AAA3607	39-1053	0-6	3.1	680	2,700	1.0	210

N/A = Not Applicable
Boxes with darken borders indicate concentrations greater than background UTLs; darkened boxes indicate concentrations greater than SALs.

TABLE 7.2-2

RADIONUCLIDES WITH CONCENTRATIONS AT OR ABOVE BACKGROUND SCREENING VALUES FOR PRS 39-002(a)

Sample ID	Location ID	Depth (in.)	Uranium (mg/kg)	Cobalt-60 (pCi/g)
SAL	N/A	N/A	130	1.1
Soil UTL	N/A	N/A	5.45	Not available
AAA3602	39-1051	0-6	2.7	0.15
AAA3603	39-1051	0-6	12.2	<0.1
AAA3605	39-1053	0-6	15	0.16
AAA3606	39-1053	0-6	40	0.14
AAA3607	39-1053	0-6	14	<0.1

N/A = Not Applicable
Boxes with darken borders indicate concentrations greater than background UTLs.

TABLE 7.2-3

DETECTED ORGANIC CHEMICALS FOR PRS 39-002(a)

Sample ID	Location ID	Depth (in.)	Bis(2-ethylhexyl)-phthalate (mg/kg)	Di-n-butyl phthalate (mg/kg)	2,4-Dimethyl-phenol (mg/kg)	1,3-Dinitro-benzene (mg/kg)	2,4-Dinitro-toluene (mg/kg)	4-Methyl-phenol (mg/kg)
SAL	N/A	N/A	32	6,500	1,300	6.5	130	330
AAA3602	39-1051	0-6	ND	ND	ND	ND	ND	ND
AAA3603	39-1051	0-6	ND	ND	ND	0.25	0.2(J)	ND
AAA3605	39-1053	0-6	0.38	12.6	0.06	1.1	0.5	0.1
AAA3606	39-1053	0-6	ND	5.4	ND	1.2	0.9(J)	ND
AAA3607	39-1053	0-6	0.36	12.1	ND	1.6	0.6(J)	ND

Sample ID	Location ID	Depth (in.)	PCB (mg/kg)	o-Nitro-toluene (mg/kg)	p-Nitro-toluene (mg/kg)	Phenol (mg/kg)	TETRYL* (mg/kg)	1,3,5-Trinitro-benzene (mg/kg)
SAL	N/A	N/A	1.0	650	640	39,000	650	3.3
AAA3602	39-1051	0-6	<1.0	ND	ND	ND	ND	ND
AAA3603	39-1051	0-6	1.6	1.9	3.2	ND	2.0	ND
AAA3605	39-1053	0-6	1.1	1.6	ND	0.06	ND	0.95
AAA3606	39-1053	0-6	1.2	ND	5.4	ND	ND	ND
AAA3607	39-1053	0-6	<1.0	ND	ND	ND	ND	ND

Darkened boxes indicate concentrations greater than SAL.
N/A = not applicable
ND = not detected
*TETRYL is a synonym for the high explosive tetryl(methyl-2,4,6-trinitrophenylnitramine).

TABLE 7.2-4

MULTIPLE CHEMICAL EVALUATION FOR SOIL SAMPLES FROM PRS 39-002(a)

Chemical	Location ID	Sample ID	Maximum Sample Values	Soil SAL	Normalized Values
Noncarcinogenic Effects (mg/kg)					
Cadmium	39-1051	AAA3603	4.1	38	0.11
Copper	39-1053	AAA3605	990	2,800	0.35
Mercury	39-1053	AAA3605	3	23	0.13
Zinc	39-1053	AAA3605	510	23,000	0.02
Di-n-butyl phthalate	39-1053	AAA3605	12.6	6,500	0.002
2,4-Dimethyl-phenol	39-1053	AAA3605	0.06	1,300	0.00
1,3-Dinitro-benzene	39-1053	AAA3607	1.6	6.5	0.25
2,4-Dinitro-toluene	39-1053	AAA3606	0.9	130	0.007
4-Methylphenol	39-1053	AAA3605	0.1	330	0.00
o-Nitrotoluene	39-1051	AAA3603	1.9	650	0.003
p-Nitrotoluene	39-1053	AAA3606	5.4	650	0.008
Phenol	39-1053	AAA3605	0.06	39,000	0.00
1,3,5-Trinitro-benzene	39-1053	AAA3605	1.0	3.3	0.3
TETRYL	39-1051	AAA3603	2.0	650	0.003
				Total	1.2
Radionuclide Effects					
Cobalt-60	39-1053	AAA3605	0.16	1.1	0.15
Uranium	39-1053	AAA3602	40	130	0.31
				Total	0.5

Analytes in bold print are retained as COPCs.

TABLE 7.2-5

1995 TA-39 XRF LEAD SCREENING
PRS 39-002(a)

Grid Location	Depth (in.)	Lead (ppm)
0N, 5W	3	ND
	6	ND
5N, 0W	0	299
	3	166
	6	6.7
	10	ND
5N, 10W	3	ND
	6	ND
	10	ND
5N, 20W	3	ND
	6	ND
	10	ND
10N, 5W	3	42
	6	ND
	10	ND
10N, 15W	3	ND
	6	ND
	10	ND
10N, 25W	3	ND
	6	ND
15N, 10W	6	181
	10	ND
15N, 20W	3	ND
	6	ND
18N, 0W	3	31
	6	2026/1904
	10	ND
20N, 15W	3	ND
	6	ND
20N, 25W	3	ND
	6	ND
25N, 0W	3	144
	6	ND
25N, 10W	3	3.8
	6	ND
25N, 20W	3	ND
	6	ND

TABLE 7.2-6
PRS 39-002(a)/1995
SOIL SAMPLE ANALYTICAL RESULTS

Total Metals	Sample ID				TCLP Metals	Sample ID		
Analysis (ppm)	ECXX-95-0312	ECXX-95-0313	Background UTL	SAL	Analysis (ppm)	RCRA Waste Toxicity Characteristics (ug/L)	ECXX-95-0312	ECXX-95-0313
Aluminum	2,720	2,110	38,700	77,000	Arsenic	5,000	ND	ND
Antimony	ND	ND	1	31	Barium	100,000	1.7	1.9
Arsenic	ND	ND	7.82	N/A	Cadmium	1,000	ND	ND
Barium	47.8	38.8	3.15	5,300	Chromium	5,000	ND	ND
Beryllium	ND	ND	1.95	N/A	Lead	5,000	ND	ND
Cadmium	ND	ND	2.7	38	Mercury	200	ND	ND
Calcium	3,140*	1,540*	6,120	N/A	Selenium	1,000	ND	ND
Chromium	5.6	3.0	19.3	210	Silver	5,200	ND	ND
Cobalt	ND	ND	19.2	4,600				
Copper	131	52.7	18.5	2,800				
Iron	5,200	4,860	21,300	N/A				
Lead	36	34.7	23.3	400				
Magnesium	772	502	4,610	N/A				
Manganese	226	246	714	3,200				
Mercury	1.7	0.14	0.1	23				
Nickel	ND	ND	15.2	1,500				
Potassium	831	725	3,410	N/A				
Selenium	ND	ND	1.7	380				
Silver	ND	ND	N/A	380				
Sodium	136	ND	9.5	N/A				
Thallium	ND	ND	1	5.4				
Total uranium	4.31	3.0	5.45	230				
Vanadium	7.4	6.5	41.9	540				
Zinc	105	62.6	50.8	23,000				

*Analyte is found in the associated blank as well as in the sample.
ND Not detected.
N/A Not available.

ANNEX 7.3

SITE MAP

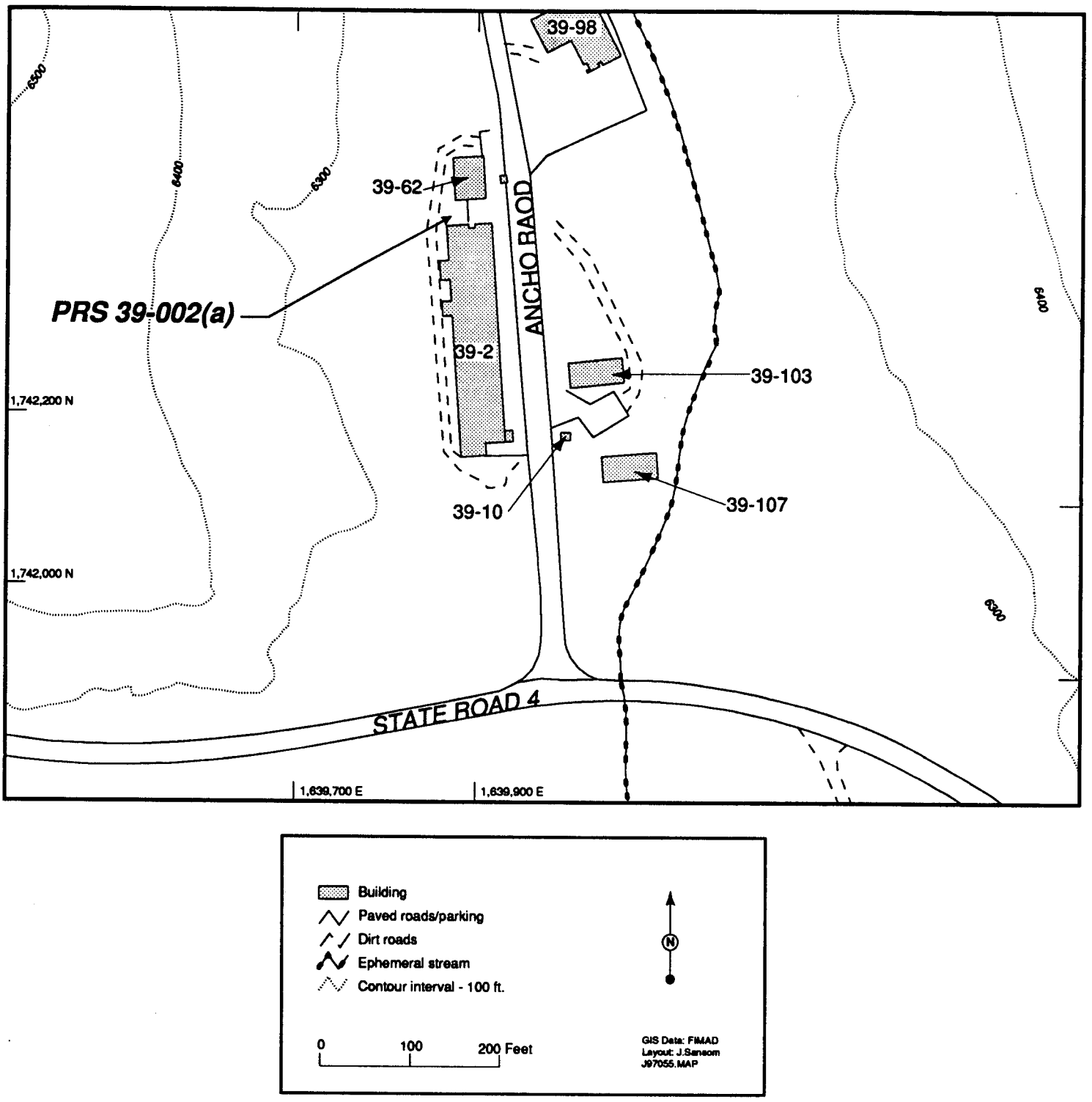

Figure 7.3-1. PRS 39-002(a) site overview

ANNEX 7.4

IMPLEMENTATION SOPS

See Environmental Restoration Standard Operating Procedures, Volumes I and II, November 17, 1993, Los Alamos National Laboratory.

ANNEX 7.5

QUALITY ASSURANCE PLAN

The sampling plan presented in Section 9 is consistent with the requirements of the Quality Program Plan and Quality Assurance Project Plan for Environmental Restoration, February 1995 revision, Los Alamos National Laboratory.

ANNEX 7.6

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Prior to initiation of any work, a completed Site-Specific Health and Safety Plan (SSHASP) will be approved by LANL representatives.

The SSHASP will be developed for the Environmental Restoration (ER) Project at LANL to comply with applicable federal and state occupational health and safety (HS) requirements, including those of the US Department of Energy (DOE). The DOE requires the Laboratory to comply with the federal Occupational Safety and Health Administration (OSHA) requirements, even though operations at the Laboratory are not subject to the jurisdiction of OSHA. The ER Project has developed a generic Health and Safety Plan, the ER Project Health and Safety Plan (HASP), which establishes HS information and requirements applicable to ER field operations projectwide. The SSHASP establishes site-specific HS information and requirements applicable to the scope of work described in Section 2.

ER participants are responsible for conducting work in accordance with applicable regulations. The term "ER participants" refers to anyone performing ER work, including Laboratory personnel, subcontractors to the Laboratory and their lower-tier contractors, consultants, and agents. In some cases within this document, the Laboratory has chosen to invoke OSHA and Laboratory requirements that ordinarily may not apply to ER field operations (e.g., OSHA's general industry standards in Part 1910 of Title 29 of the Code of Federal Regulations [29 CRF 1910]). These choices were made on a case-by-case basis to maintain consistency with LANL's as low as reasonably achievable (ALARA) policy and to clarify the Laboratory's expectations with regard to interpretable requirements of the multiple agencies governing ER work. Where there is concern that implementation of work orders or HS requirements would conflict with contact terms, or that they could unreasonably compromise the safety or health of an individual or the environment, such concerns should immediately be brought to the attention of the Contract Administrator and the Field Unit HS Representative. Failure to comply with terms of HS plans may constitute cause to stop an activity or to issue a stop work order, as specified in Section 3.4.2 of the HASP, without cost or penalty to the Laboratory.

This SSHASP shall be reviewed and approved in accordance with Section 1.2 of the HASP. When this SSHASP has been approved, revisions will be tracked using a SSHASP modification form (Appendix B of the HASP) per Section 1.3 of the HASP. Modifications to this SSHASP may result in a change to the terms or scope of a subcontract. Completion of a SSHASP modification form is <u>not</u> the means for modifying the scope or terms of the project contract. To modify a contract, the Subcontractor shall notify the Contract Administrator and Field Unit HS Representative under the changes clause and shall not make the change until a change order has been mutually agreed upon by all parties, or unless unilateral direction is given by the Contract Administrator.

ANNEX 7.7

WASTE MANAGEMENT CHECKLIST

Los Alamos
NATIONAL LABORATORY
memorandum

To/MS: Memo To The File
From/MS: T.E. Gene Gould, EES-15, MS G787
Phone/FAX: 5-4348/5-1976
Date: February 19, 1997

Earth and Environmental Science Division
EES-15, Environmental Science Group
Los Alamos, New Mexico 87545

SUBJECT: CHARACTERIZATION STRATEGY FORM

Based on my review of available information and my professional judgment, it is not necessary to sample for tritium because it is not a potential contaminant at PRS 39-002(a).

TEG/nar

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
All Waste Types or Wastestreams: PPE/sampling equipment and decon. liquids		
Completed By: J. W. Heyser	Date: March 4, 1997	
FPL: T. E. Gene Gould	WMC: Jeff Bingham, EES-15	
Type of Activity (site investigation, EC, etc.): Additional Phase 1 site characterization		
Description of the Activity (e.g., drilling, surface sampling, excavation and recontouring, soil washing, etc.) Surface soil samples at depths of 0 to 6 inches and 18 to 24 inches will be collected using a hand auger. The purpose of the sampling is to determine if the site should be remediated. Two earlier Phase I sampling efforts produced inconsistent results that this third sampling effort should reconcile. The only waste that will be generated by this activity will be personal protective equipment (PPE)/sampling equipment and decontamination liquids. The coveralls and gloves should not come in direct contact with contaminated soil because a scoop will be used to transfer the soil to the to sample containers. Only the boots will directly touch the soil and they will be decontaminated.		
Acceptable Knowledge Site Description, Site History, and Historical Waste Generating Processes or Activities: (Include dates for site history): PRS 39-002(a) consists of a storage site located outside of the northwest corner of TA-39-2 on an earth/gravel surface with no protective roof. The area has been used as a storage area for about 10 years. At the time that the RFI Work Plan for OU 1132 (June 1993) was written, it was used to store a 30-gal. drum containing small quantities of solvents and adhesives along with rags and paper wipes contaminated with solvents or adhesives. Solvents stored at this site include acetone and ethanol. There is no evidence, visible or documented, of any spills or leaks at this site. For about one year (1992-1993), a metal dumpster was temporarily located near this storage area. This dumpster received low-level radioactive metal debris from the remodeling of a vault where radioactive materials (DU) had been stored for use in experiments. Currently, the area is used as a vehicle parking and loading area. Previous Investigation Analytical Results: (Report the analytical methods and results above background levels) In 1993, samples of soil were collected by the ER Project from two locations at this site during a Phase I site investigation. The five samples were analyzed for total metals, total uranium, gamma spectroscopy, semi-volatile organic compounds (SVOCs), high explosives (HE), total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCBs). The only metal that exceeded the toxicity characteristic screening levels was lead. Lead was above the TC screening level in four samples: 4,700 ppm, 7,000 ppm, 2,700 ppm, and 1,600 ppm. HE constituents were present at very low concentrations. PCBs were detected at a maximum concentration of 1.6 ppm. TPHs were detected at a maximum level of 134 ppm. The total uranium concentrations in all five samples ranged from 2.7 ppm to 40 ppm. These concentrations exceed the site-wide background concentration of 5.71 ppm. In August 1995, additional site characterization was conducted by the ER Project to determine the amount of soil that should be excavated as well as to provide a preliminary assessment of the nature of the excavated soil. The site was field screened for lead using an XRF. The XRF results showed that the lead contamination is very unevenly distributed. The location which displayed the highest concentration of lead using the XRF was sampled and submitted for laboratory analysis for TAL metals, TCLP metals, and total uranium. In addition, a composite sample was collected from the general area delineated for excavation and analyzed for TAL metals, TCLP metals, and total uranium. This time total uranium results (4.31 & 3.0 mg/kg)were slightly below the LANL site-wide background level.. Also the concentrations of lead based on the TAL metal analysis (34.7 and 36 mg/kg) were significantly below the cleanup level of 1,000 ppm average while the concentrations of lead based on the TCLP analysis were not detectable. This suggests that the lead may occur as isolated particles, perhaps as fragments from lead shot or lead solder, although neither visible lead particles or stained soil spots were observed.		

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
OU 1132/FU 2	PRS 39-002(a)	Storage area

Specific Waste Type: PPE/sampling equipment

Waste Description Description of Waste Type, Potential Contaminants, Volume Estimate, and Waste Packaging:

Waste Type: PPE/sampling equipment
Contaminants: Lead, spilled solvent residues from drips and small leaks, and uranium isotopes
Volume Estimate: One 55-gal. drum
Waste Packaging: The items will be segregated as either visibly contaminated or visibly uncontaminated and placed in separate sealed plastic bags in a sealed 55-gal. drum.

Characterization Strategy

Description of Strategy: If possible, the PPE/sampling equipment/waste management equipment will be decontaminated before disposal. Before decontamination, the items will be field screened for gross alpha, gross beta, and gross gamma radiation in accordance with LANL-ER-SOP-10.07, "Field Monitoring for Surface and Volume Radioactivity Levels." Gross alpha radiation will be screened using an Alpha Ludlum Model 139 or Ludlum Model 12 with an air proportional probe; gross beta/gamma radiation will be screened using an ESP-1 with HP-260 or a Model 12 with 44-9, or equivalent. Following decontamination, the waste will be inspected to determine if there is any visible contamination. If it is not visibly contaminated and does not have readings above background radioactivity, it will be placed in plastic bags, segregated by PRS, and disposed of as non-hazardous waste and non-radioactive waste after the Waste Profile Form has been approved. If the items are not decontaminated or if decontamination is not effective, the contaminated items will be segregated. The segregated items will be placed in sealed plastic bags labeled with the PRS number, and placed in a 55-gal. drum. If the visibly contaminated items are radioactive based on field screening, then they will initially be managed as low level radioactive waste. If the visibly contaminated items are not radioactive based on field screening, then they will initially be segregated and managed as non-RCRA waste. The final RCRA status of the visibly contaminated items will be based on the highest concentration of each contaminant found in the associated soil multiplied by a dilution factor of 0.01. The final status of the radioactive items will be based on the radiological analyses of the soil. The soil samples will be analyzed for VOCs, SVOCs, PCBs, HE, TPH, TAL metals, and isotopic uranium

Waste Sampling*: (If sampling will be used, indicate how many grab or composite samples will be collected per container or volume of waste and whether the waste is considered homogeneous or heterogeneous.)
These items will not be sampled directly but will be characterized as described above.

* Grab sampling is appropriate for wastes that are fairly homogeneous, such as liquid wastes.
* Composite sampling is appropriate for wastes that are heterogeneous, such as soil, sediment, and debris.

Analytical Strategy

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Volatile Organic Constituents	SW 846, 8240	Yes			X
Semivolatile Constituents	SW 846, 8270	Yes			X
Organic Pesticides		No		X	
Organic Herbicides		No		X	

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
Specific Waste Type: PPE and sampling equipment		

Analytical Strategy					
Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Pesticides and PCBs		No		X	
PCBs	SW 846, 8080	Yes			X
Total Metals	SW 846, 6010	Yes			X
Total Cyanide		No		X	
Other Inorganic Constit. (specify)		No		X	
High Explosive Constituents	SW 846, 8330	Yes			X
Asbestos		No		X	
TPH	SW 846, 8010	Yes			X
TCLP Metals		Yes		X	
TCLP Organics		No		X	
TCLP Pesticides and Herbicides		No		X	
Gross Alpha	Field Screen	Yes	X		
Gross Beta	"	Yes	X		
Gross Gamma	"	Yes	X		
Tritium[1]		No		X	
Gamma Spectroscopy		Yes		X	
Isotopic Plutonium		No		X	
Total Plutonium		No		X	
Isotopic Uranium	HASL 300	Yes			X
Total Uranium		Yes		X	
Strontium-90		No		X	
Americium-241		No		X	

[1] If tritium is not expected, attach a statement signed by the FPL stating that, based on a review of the available information and professional judgment, it is not necessary to sample for tritium at this site.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
Specific Waste Type: PPE and sampling equipment		

Preliminary RCRA Determination

Based on available information, indicate the waste and whether it could potentially be any of the wastes as defined in 40 CFR 261. List the F-, D-, K-, P-, or U- category and number.

In Phase I sampling, lead was above the TC screening level in several samples, however, subsequent sampling did not substantiate these results. HE constituents were present at very low levels so the sampling waste is not expected to exhibit the RCRA toxic characteristic of reactivity. Visibly contaminated items generated during site characterization will be initially managed as low level radioactive or non-hazardous waste depending on the radiological results of the field screening. A final RCRA determination for the visibly contaminated items will be made based on the analytical results of the associated soil samples. Visibly uncontaminated items will be managed as non-hazardous or radioactive waste depending on the radiological results of the field screening.

Preliminary RCRA Status

__X__ Non-RCRA: (No 90-Day Storage Requirement)

Describe how waste will be stored/handled:

Visibly contaminated and uncontaminated items generated during site characterization will be managed as non-RCRA waste. These wastes will be stored onsite in a secure area until a final RCRA determination is made based on the soil results and a Waste Profile Form is approved.

_____ RCRA: (90-Day Storage Requirement)

Preliminary Determination for Radioactivity

Based on available information, indicate the amount and type of radiation contamination expected in the waste.

Total uranium was present in the soil at levels slightly above the LANL background level. Therefore, the wastes with elevated radiological screening results will be initially classified as low-level radioactive waste. A final determination will be based on the associated soil sample results.

Preliminary Radioactivity Status

__X__ Material is not radioactive

Describe how waste will be stored/handled

Visibly uncontaminated items that are non-radioactive based on field screening will be managed as non-radioactive waste. They will be stored in sealed labeled bags inside a sealed drum..

__X__ Material is radioactive

Describe the controlled area, labeling, and protection against inadvertent contamination. Items that are radioactive based on field screening will be managed as low level radioactive waste and will be stored in sealed and labeled bags inside a drum located in a radioactive materials storage area

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
Specific Waste Type: Decontamination liquids		

Waste Description

Description of Waste Type, Potential Contaminants, Volume Estimate, and Waste Packaging:

Waste Type: Decontamination liquids consisting of Alconox® detergent, tap water and distilled water . Small amounts of Fantastik® may also be used.
Contaminants: Lead, solvent residues from drips and small spills, and uranium isotopes.
Volume Estimate: A total volume of five gallons or less.
Waste Packaging: The liquids will be returned to the site per the NOI from NMED (12/20/95)

Characterization Strategy

Description of Strategy:

The liquids will not be directly sampled, but will be returned to the PRS surface in accordance with the Notice of Intent (NOI) that was granted to the ER Project on December 20, 1995 by NMED (See Marcy Levitt, NMED, letter to Steve Rae, ESH-18). This NOI allows the ER Project to discharge decontamination liquids that were generated as a result of surface sampling back to the PRS as long as the discharge does not generate leachate that migrates into ground the water.

Waste Sampling*: (If sampling will be used, indicate how many grab or composite samples will be collected per container or volume of waste and whether the waste is considered homogeneous or heterogeneous.)
The liquids will not be sampled directly.

* Grab sampling is appropriate for wastes that are fairly homogeneous, such as liquid wastes.
* Composite sampling is appropriate for wastes that are heterogeneous, such as soil, sediment, and debris.

Analytical Strategy

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Volatile Organic Constituents		Yes		X	
Semivolatile Constituents		Yes		X	
Organic Pesticides		No		X	
Organic Herbicides		No		X	
Pesticides and PCBs		No		X	
PCBs		Yes		X	

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
Specific Waste Type: Decontamination liquids		

Analytical Strategy (Continued)

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Total Metals		Yes		X	
Total Cyanide		No		X	
Other Inorganic Constit. (specify)		No		X	
High Explosive Constituents		Yes		X	
Asbestos		No		X	
TPH		Yes		X	
TCLP Metals		Yes		X	
TCLP Organics		No		X	
TCLP Pesticides and Herbicides		No		X	
Gross Alpha		Yes		X	
Gross Beta		Yes		X	
Gross Gamma		Yes		X	
Tritium[2]		No		X	
Gamma Spect.		Yes		X	
Isotopic Plutonium		No		X	
Total Plutonium		No		X	
Isotopic Uranium		Yes		X	
Total Uranium		Yes		X	
Strontium-90		No		X	
Americium-241		No		X	

[2] If tritium is not expected, attach a statement signed by the FPL stating that, based on a review of the available information and professional judgment, it is not necessary to sample for tritium at this site.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
Specific Waste Type: Decontamination liquids		

Preliminary RCRA Determination

Based on available information, indicate the waste and whether it could potentially be any of the wastes as defined in 40 CFR 261. List the F-, D-, K-, P-, or U- category and number.

These wastes will be managed as non-hazardous wastes and the liquids will be returned to the PRS per the requirements of the NOI issued by NMED (12/20/95).

Preliminary RCRA Status

__X__ Non-RCRA: (No 90-Day Storage Requirement)

Describe how waste will be stored/handled: The liquids will be managed as non-hazardous waste and will be returned to the site.

_____RCRA: (90-Day Storage Requirement)

Waste will be stored/handled in accordance with 20 NMAC Generator Requirements

Preliminary Determination for Radioactivity

Based on available information, indicate the amount and type of radiation contamination expected in the waste.

Total uranium was present in the soil at levels slightly above LANL background in the first Phase I samples and slightly below background in the second Phase I samples. However, the liquids will be returned to the PRS under the NOI issued by NMED.

Preliminary Radioactivity Status

__X__ Material is not radioactive

Describe how waste will be stored/handled. The liquids will be returned to the PRS. The decontamination liquids will be stored in a sealed container until they are returned to the PRS.

_____Material is radioactive

Describe the controlled area, labeling, and protection against inadvertent contamination.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
1132/FU2	PRS 39-002(a)	Storage area
Waste Types or Wastestreams: PPE/sampling equipment and decon. liquids		

Signatures:

Field Team Leader _____

Field Team Waste Management Coordinator _____ 3-14-97

Waste Management Representative _____ 3/5/97

ANNEX 7.8

VCA CHECKLIST AND FIELD WORK AUTHORIZATION FORM

Voluntary Corrective Action (VCA)
Checklist and Fieldwork Authorization Form

PRS No. 39-002(a) **HSWA or AOC**

No	COPC(s) defined.
No	Nature and extent defined or field screening method available to guide where not defined.
Yes	Remedy is obvious.
√	Time for removal is less than 6 months.
√	Remedy is final.
√	Land use assumptions straightforward.
√	Treatment, Storage, Disposal Facilities are available for waste type and volume.
√	Cleanup cost is reasonable for the planned action, and meets accelerated decision logic criterion for decision to proceed with VCA.

Explain criteria not checked above: Plan includes the sampling necessary to further define nature and extent of contaminants and the proposed remedy should remediation be warranted.

Through reviewing the above criteria associated with this site, I believe that a VCA is the appropriate Accelerated Cleanup approach.

FPL _____ Date 3/24/97

FPC _____ Date 4/23/97

The undersigned have reviewed the final plan and believe that it fully satisfies the appropriate Accelerated Cleanup approach.

FPL _____ Date 3/24/97

FPC _____ Date 4/23/97

Through reviewing the VCA Plan, for site(s) **39-002(a)**, and believing that the above criteria have been met, I authorize the fieldwork to proceed.

DOE ER Program Manager _____ Date 4/23/97

EM/ER:96-134

ANNEX 7.9

COST ESTIMATE

Table 7.9-1 shows the cost estimates for the various activities at PRS 39-002(a). The activities and costs have been segregated to show cost estimates for the proposed preliminary sampling, the site remediation (if remediation is necessary), incorporating the assumptions outlined in the preceding sections, and the final post-fieldwork activities.

TABLE 7.9-1

COST ESTIMATE

Activity	Estimated Cost
Pre-field activities (includes review of previous analytical and data validation, preparation of statistical sampling plan, necessary training, permits and pre-field meetings).	$ 24,000
Field activities (includes soil sampling, land surveying of sample locations)	$ 17,000
Sampling analysis	$ 30,000
Data validation	$ 5,000
Total Estimated Cost	$ 76,000
Cost Estimate for Remediation Activities	
Pre-remediation activities (includes obtaining equipment, determining COPCs and PRGs)	$ 13,000
VCA cleanup (excavation and site restoration)	$ 45,000
Waste management	$300,000
Verification sampling and analysis	$ 19,000
Total Estimated Cost	$377,000
Cost Estimate for Post-Fieldwork Activities	
Records management and final VCA report	$ 14,000

8.0 REFERENCES

Environmental Restoration Project, April 1995. "RFI Report for Potential Release Sites 39-002(a-f), 39-005, 39-006(a), 39-007(a) (d) (located in former Operable Unit 1132), Field Unit 2," Los Alamos National Laboratory Report LA-UR-95-1069, ER ID No. 46190, Los Alamos, New Mexico. (Environmental Restoration Project 1995, 1322)

EPA (US Environmental Protection Agency), August 1990. "Guidance on Remedial Actions for Superfund Sites with PCB Contamination," EPA540/G-90/007, Office of Emergency and Remedial Response, Washington, DC. (EPA 1990, 1143)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1132," Los Alamos National Laboratory Report LA-UR-93-768, Los Alamos, New Mexico. (LANL 1993, 1089)

LANL (Los Alamos National Laboratory) 1994. "Site Development Plan, Annual Update 1994," Los Alamos National Laboratory Publication, LALP-94-21, Los Alamos, New Mexico. (LANL 1994, 1171)

Neleigh, D., August 9, 1995. "Class 3 Permit Modification, Six Expedited Cleanups, Los Alamos National Laboratory, NM0890010515," United States Environmental Protection Agency letter to T. J. Taylor, ER ID No. 55515, Los Alamos, New Mexico. (Neleigh 1995, ER ID No. 55515)

9.0 SAMPLING AND ANALYSIS PLAN

9.1 Data Needs and Data Quality Objectives

Analytical results from the 1993 RFI sampling effort indicate elevated levels of organics, inorganics, high explosives (HE), and uranium. Only two locations in the southeastern corner of the potential release site (PRS) were sampled. Volatile organic compounds (VOCs) are a chemical of potential concern (COPC) for the site. However, sampling for these COPCs has not been conducted. The data quality objectives for the proposed sampling effort are as follows:

1. Confirm the presence/absence of constituents detected in the 1993 sampling effort at sample locations and across the site by establishing a sampling grid.

2. Determine the extent, if any, of VOC contamination.

3. Provide adequate analytical information on the nature and extent contaminants to determine the need and extent of soil remediation.

4. Provide adequate analytical results so that, if remediation is necessary, waste classifications of the soil can be established before excavation.

These objectives will be met by continuing the Phase I sampling effort.

9.2 Sampling and Analysis Plan Implementation

Preliminary field activities will include screening the area to define potential hazards and health and safety conditions for onsite workers. A portable field instrument will be used for detecting alpha-, beta-, and gamma-emitters, and a portable field organic vapor analyzer will be used for detecting VOCs. All surface sample locations will be screened for HE using a field spot-test kit.

Following the initial field screening, the sampling grid will be located and measured. The PRS will be trisected into nine sections—each measuring approximately 8 by 10 ft.

Locations of the 1993 sample locations will be identified using the site location survey points. Sampling will proceed using a hand auger in accordance LANL-ER-SOP 6.1. Soil samples will be collected from the center of each grid at a depth of approximately 0 to 6 in. The northwest corner, eastern middle section, and central southern section will be also be sampled at a depth of 12 to 18 in. Additional sample locations include the two 1993 sample locations.

Sampling equipment will be decontaminated after each use in accordance with LANL-ER-SOP-1.08. Field screening and monitoring will be conducted during all sampling activities. Documentation of sampling activities will be conducted according procedures outlined in LANL-ER-SOP 1.04.

QC samples to be submitted include the following: performance evaluation samples for total metals and PCBs, and two duplicate samples (complete analyte suite). One equipment rinsate will be collected during sampling activities and analyzed for all analyses. Laboratory QC analysis will include appropriate blanks and matrix spike/matrix spike duplicate samples.

Samples will be submitted to the Sample Management Office (SMO) under chain of custody procedures (LANL-ER-QAPjP-7, LANL-ER-SOP-1.02 through 1.04). Samples will be analyzed offsite as indicated in Table 9-1. Analyses will be performed in accordance with EPA SW 846 methods. Data will be tracked

TABLE 9-1

OU 1132 FIELD SAMPLING PLAN - PRS 39-002(a)

											Analysis									
Sample Number	PRS	Location ID	Sample Method	SOP No.	Location	Matrix	QA/QC Type	Depth (in.)	Collection Date	COC No.	VOA GCMSN	SEMIN	PCB	Mercury	METTALS	HE	ISOU	TPH	RV GROSSAB	RV GROSSG
0239-97-0001	39-002(a)	39-1491	Hand Auger	6.1	Northwest	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0002	39-002(a)	39-1492	Hand Auger	6.1	Northcentral	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0003	39-002(a)	39-1493	Hand Auger	6.1	Northeast	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0004	39-002(a)	39-1494	Hand Auger	6.1	Western Middle	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0005	39-002(a)	39-1495	Hand Auger	6.1	Central Middle	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0006	39-002(a)	39-1496	Hand Auger	6.1	Eastern Middle	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0007	39-002(a)	39-1497	Hand Auger	6.1	Southwest	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0008	39-002(a)	39-1498	Hand Auger	6.1	Southcentral	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0009	39-002(a)	39-1499	Hand Auger	6.1	Southeast	Subsurface soil		6			1	1	1	1	1	1	1	1	1	1
0239-97-0010	39-002(a)	39-1491	Hand Auger	6.1	Northwest	Subsurface soil		12-18			1	1	1	1	1	1	1	1	1	1
0239-97-0011	39-002(a)	39-1496	Hand Auger	6.1	Eastern Middle	Subsurface soil		12-18			1	1	1	1	1	1	1	1	1	1
0239-97-0012	39-002(a)	39-1498	Hand Auger	6.1	Southcentral	Subsurface soil		12-18			1	1	1	1	1	1	1	1	1	1
0239-97-0013	39-002(a)	39-1500	Hand Auger	6.1	1993 sample location	Subsurface soil		6-8			1	1	1	1	1	1	1	1	1	1
0239-97-0014	39-002(a)	39-1501	Hand Auger	6.1	1993 sample location	Subsurface soil		6-8			1	1	1	1	1	1	1	1	1	1
QA/QC Samples																				
0239-97-0015	39-002(a)	TBD	Hand Auger	6.1	TBD	Subsurface soil	Dup	TBD			1	1	1	1	1	1	1	1	1	1
0239-97-0016	39-002(a)	TBD	Hand Auger	6.1	TBD	Subsurface soil	Dup	TBD			1	1	1	1	1	1	1	1	1	1
0239-97-0017	39-002(a)	NA	NA	NA	Performance Eval. Sample	Performance Eval. Sample	PE	NA						1	1					
0239-97-0018	39-002(a)	NA	NA	NA	Performance Eval. Sample	Performance Eval. Sample	PE	NA						1	1					
0239-97-0019	39-002(a)	NA	NA	NA	Performance Eval. Sample	Performance Eval. Sample	PE	NA					1							
0239-97-0020	39-002(a)	NA	NA	NA	Performance Eval. Sample	Performance Eval. Sample	PE	NA					1							
0239-97-0021	39-002(a)	NA	Beaker		TBD	Rinsate	EB	NA			1	1	1	1	1	1	1	1	1	1
										Total	19	19	21	21	21	19	19	19	19	19

TBD - to be determined
NA - not applicable
EB - equipment blank
PE - performance evaluation

using a standard field electronic database system. Sample results will be requested for a standard turnaround time of 30 days.

9.3 Data Assessment

Data will be tracked, verified, and validated by standard SMO procedures. The validated data will be used to determine if remediation is required. Data will be compared to background values, screening action levels (SALs), and multiple constituent effects to determine COPCs present at the site. For those COPCs retained from the data assessment, preliminary remediation goals (PRGs) will be calculated based on an industrial land-use scenario.

9.4 Waste Management

Sampling supplies and personal protective equipment (PPE) will be screened for radioactivity, decontaminated, and visually inspected for contamination. Waste that shows no evidence of contamination will be managed as nonradioactive/nonhazardous waste. Materials that cannot be decontaminated will be retained onsite in a satellite storage area and characterized based on the results from the soil samples. Decontamination liquids (less than 5 gallons) will be returned to the site. The management and disposal of the waste will be conducted in accordance with the Waste Characterization Strategy Form.