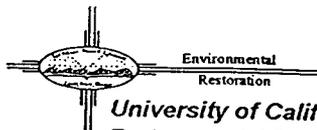


PERM  
TA 03

# Los Alamos National Laboratory

ENVIRONMENTAL RESTORATION



**University of California**  
Environmental Restoration, MS M992  
Los Alamos, New Mexico 87545  
505-667-0808/FAX 505-665-4747



**U. S. Department of Energy**  
Los Alamos Area Office, MS A316  
Los Alamos, New Mexico 87544  
505-665-7203  
FAX 505-665-4504



Date: April 19, 1996  
Refer to: EM/ER:96-220

Mr. Benito Garcia  
NMED-HRMB  
P.O. Box 26110  
Santa Fe, NM 87502

SUBJECT: FINAL ACCELERATED CLEANUP REPORTS 03-003(P)  
03-047(D)  
03-051(C)

Dear Mr. Garcia:

Enclosed are the final reports and Certifications of Completion for the voluntary corrective actions completed in Fiscal Year 1995. The reports with potential release sites (PRs) listed in the Hazardous and Solid Waste Amendments (HSWA) Module of the Los Alamos National Laboratory's Resource Conservation and Recovery Act operating permit contain our request for no further action (NFA). Upon your approval of these reports, we will submit a permit modification request for NFA of these PRs.

For PRs not listed in the HSWA Module, reports are included as informational copies for your records.

If you have any questions, please call David Bradbury at 505-665-6208.

Thank you for your timely attention to this matter.

Sincerely,

  
Jorg Jansen, Program Manager  
Environmental Restoration

Sincerely,

  
Theodore Taylor, Program Manager  
Los Alamos Area Office

JJ/TT/rfr



5476

April 19, 1996

- Enclosures: (1) Final Reports for HSWA: C-9-001, 6-007(f), 8-005, 16-016(b), 18-001(a), 19-002, 21-013(c), 21-013(d), 21-013(e), 21-024(d), 21-024(e), 21-024(h), 31-001, 33-016, 39-007(a), and 69-001  
(2) Final Reports for non-HSWA: C-0-036(a-d), C-0-041, C-10-001, C-21-027, C-36-001, 0-032, 1-001(f), 3-003(p), 3-022, 3-047(d), 3-051(c), 9-010(a-b), 16-011, 16-016(f), 20-003(c), 21-022(j), 39-002(c), 53-010, and 57-006  
(3) Certifications of Completion

Cy (w/enclosures):

- B. Driscoll, EPA, R.6, 6PD-N, (2 copies of HSWA)
- D. Griswold, ERD, AL, MS A906
- / J. Harry, EM/ER, MS M992
- B. Hoditschek, NMED-HRMB
- / R. Kern, NMED-HRMB
- N. Naraine, EM-453, DOE-HQ
- M. Shaner, P&PI, MS J591 (5 copies)
- N. Weber, Bureau Chief, NMED-AIP, MS J993
- J. White, ESH-19, MS K490
- S. Yanicak, NMED-AIP, MS J993
- RPF, MS M707

Cy (w/o enclosures):

- T. Baca, EM, MS J591
- D. Bradbury, EM/ER, MS M992
- T. Glatzmaier, DDEES/ER, MS M992
- D. McInroy, EM/ER, MS M992
- G. Rael, ERD, AL, MS A906
- W. Spurgeon, EM-453, DOE-HQ
- T. Taylor, LAAO, MS A316
- J. Vozella, LAAO, MS A316
- EM/ER File, MS M992

# Voluntary Corrective Action Completion Report for

## Potential Release Sites

03-003(p)

03-047(d)

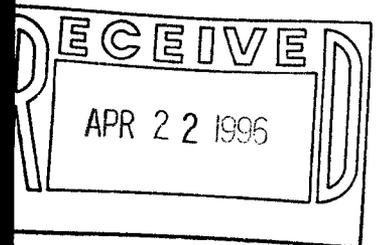
03-051(c)

Field Unit 1

Environmental  
Restoration  
Project

February 26, 1996  
Revision 1

A Department of Energy  
Environmental Cleanup Project



# Los Alamos

NATIONAL LABORATORY

LA-UR-96-431

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**FINAL REPORT**

**Voluntary Corrective Action Completion Report  
Potential Release Site 03-003(p)  
Transformer Storage Area**

**Environmental Restoration Project  
Field Unit 1  
Los Alamos National Laboratory**

**February 26, 1996**

**A Department of Energy  
Environmental Cleanup Project**

## Voluntary Corrective Action Completion Report Potential Release Site 03-003(p), Transformer Storage Area

### DESCRIPTION

Potential Release Site (PRS) 03-003(p) is located at Los Alamos National Laboratory's (Laboratory) Technical Area (TA) 3 in an unsecured area. The site is accessible to the public. It consists of an unpaved island within the asphalt parking lot east of building TA-03-142. The island is triangular with the sides measuring approximately 15 feet on the north and west, the southeast side is curved and measures approximately 23 feet. Within the island are two large Ponderosa pine trees.

Before the area was resurfaced in 1994 as a parking lot, the PRS had been a storage area for drums and miscellaneous equipment, including electrical capacitors and transformers that may have contained insulating oils with polychlorinated biphenyls (PCB). A Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) found levels of lead exceeding screening action levels (SAL) at depths between 0 to 6 inches. This site is not included in the Hazardous and Solid Waste Amendments Module of the Laboratory's RCRA Permit, EPA I.D. NM0890010515.

This study replaces the sampling that would have been performed for an RFI.

### CORRECTIVE ACTION

The cleanup followed the approved Voluntary Corrective Action (VCA), with the following deviations: The confirmatory sample size was increased from two to three samples, in order to meet the statistical criteria recommended by the EPA. A modified confirmatory sampling plan was implemented which added analyses for target analyte list (TAL) metals and eliminated toxicity characteristic leaching procedure metals. The TAL metal analysis was added to identify any potential contamination by total metals. The modified confirmatory sampling plan also eliminated analyses for gross alpha/beta/gamma radioactivity and gamma spectroscopy because field screening results showed that no radioactivity was present above background levels. Field screening also eliminated the need for analysis of volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), and total petroleum hydrocarbons (TPH). The waste characterization sampling was modified to add gamma spectroscopy analysis to allow a more complete characterization. Cleanup activities began on August 21 and ended on August 28, 1995.

The soil within the island was excavated using a backhoe and hand tools to a depth ranging from 3 inches at the base of the trees to 6 inches at a distance of 5 feet from the tree base and approximately 8 inches at the outer limit of the island. The area

around the RFI sample point that indicated lead, exceeding its screening action level (SAL), was excavated an additional 8 inches below the sample depth. Pieces of the old asphalt parking lot were uncovered during excavation. After the soil and asphalt were removed, field test kits confirmed that PCB levels were below PRG levels in the remaining soil. In addition, the site and wastes were field screened for gross alpha/beta/gamma radioactivity and volatile organic vapors using hand-held instruments. Field screening indicated that radioactivity and volatile organic vapors were not above background levels.

The excavated soil, asphalt, barrier fencing, and personal protective equipment were placed in three B-25 containers, approximately 10 yd<sup>3</sup> in total volume. These containers are appropriately labeled and are being stored at the site pending disposal. The waste will be transported to the appropriate disposal site following evaluation of the waste analyses and completion of the appropriate waste disposal documentation.

Based on a review of samples collected and analyzed for the screening assessment, antimony, lead, and PCBs were identified as chemicals of concern. To evaluate the confirmatory analytical data, the concentrations of analytes were compared statistically to their respective PRGs based on EPA guidance. In cases where the analytes are below their respective detection limits, no statistical analyses can be performed. Analysis of data indicated that antimony, lead, Aroclor-1248, Aroclor-1254, and Aroclor-1260 were present at more than one to two orders of magnitude less than their respective PRGs with a 95 percent confidence that the detectable residual contamination is below cleanup goals.

Confirmatory sampling was performed (Figure 1) to verify site cleanup. Analytical results and their comparison with the preliminary remediation goals (PRG) are presented in Table 1. All previously-obtained site characterization data, as well as VCA data, are available and will be provided upon request.

Confirmatory samples were collected on September 7, 1995. Three confirmatory surface soil samples spaced 12 feet apart were taken from the outer limits of the island. The confirmatory samples were analyzed for PCBs by SW-846 method 8080 and TAL metals by SW-846 method 6010 and 7471.

Site restoration included back filling the excavated area and reseeding by hand with native grasses.

## **REQUEST FOR DOE CONCURRENCE**

This report serves as the formal request for DOE concurrence to approve no further action for this PRS.

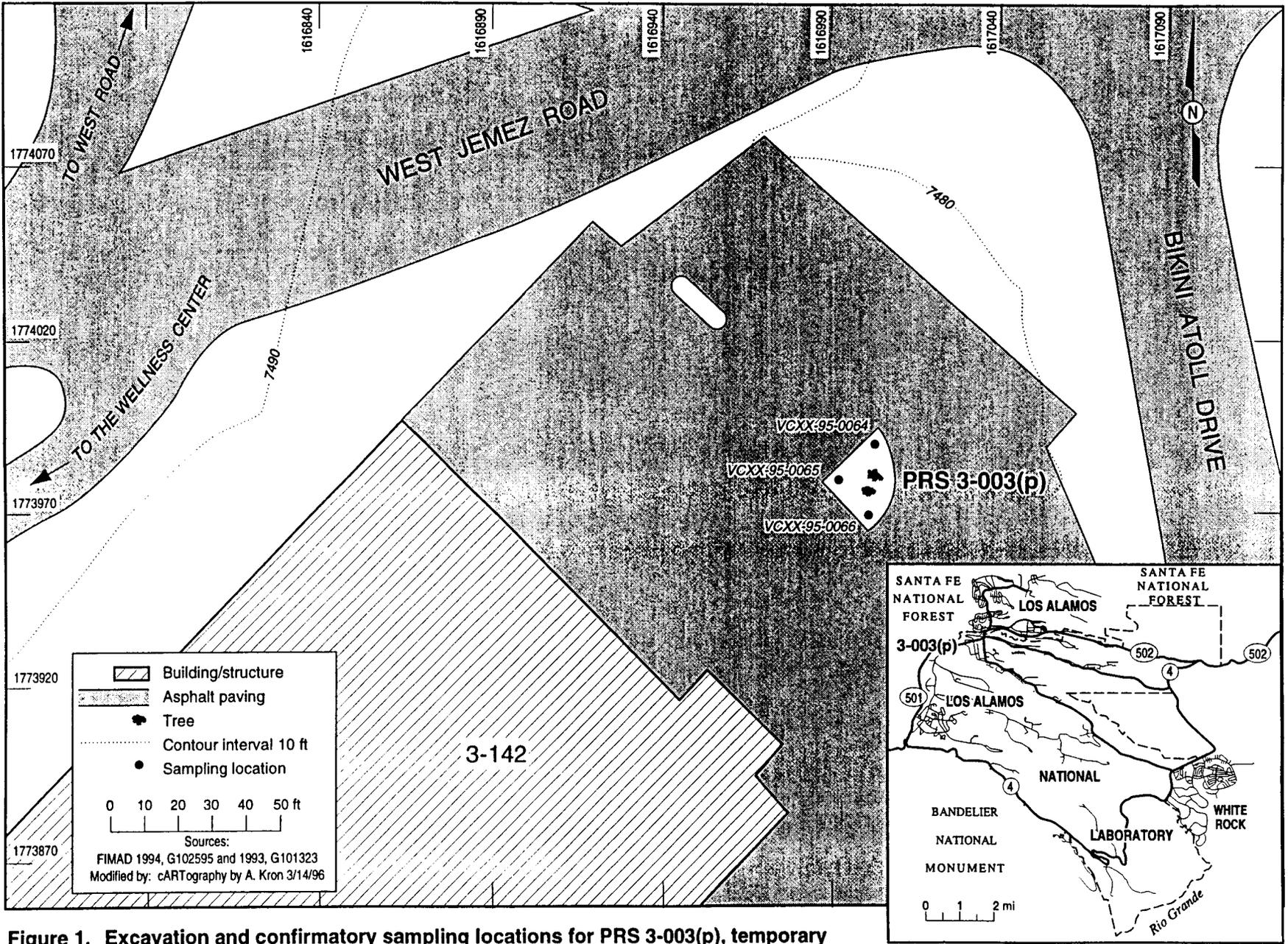


Figure 1. Excavation and confirmatory sampling locations for PRS 3-003(p), temporary storage area.

**TABLE 1. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-003(p), Transformer Storage Area**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background UTL	Units	Depth (In.)	Analysis Qualifier
Antimony*	03-09000	VCXX-95-0064	SOIL	0.258	0.943	2.5	mg/kg	0-6	J
Antimony*	03-09001	VCXX-95-0065	SOIL	0.218	0.980	2.5	mg/kg	0-6	J
Antimony*	03-09002	VCXX-95-0066	SOIL	0.657	0.951	2.5	mg/kg	0-6	J
95% UCL of Mean				0.787					
PRG				2.09E+02			mg/kg		
Aroclor-1016	03-09000	VCXX-95-0064	SOIL	0.41	0.41		mg/kg	0-6	U
Aroclor-1016	03-09002	VCXX-95-0066	SOIL	0.411	0.411		mg/kg	0-6	UJ
Aroclor-1016	03-09001	VCXX-95-0065	SOIL	0.0408	0.408		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				1.0E+01			mg/kg		
Aroclor-1221	03-09000	VCXX-95-0064	SOIL	0.41	0.41		mg/kg	0-6	U
Aroclor-1221	03-09002	VCXX-95-0066	SOIL	0.411	0.411		mg/kg	0-6	UJ
Aroclor-1221	03-09001	VCXX-95-0065	SOIL	0.0408	0.408		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				1.0E+01			mg/kg		
Aroclor-1232	03-09000	VCXX-95-0064	SOIL	0.41	0.41		mg/kg	0-6	U
Aroclor-1232	03-09001	VCXX-95-0065	SOIL	0.0408	0.408		mg/kg	0-6	U
Aroclor-1232	03-09002	VCXX-95-0066	SOIL	0.411	0.411		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				1.0E+01			mg/kg		
Aroclor-1242	03-09000	VCXX-95-0064	SOIL	0.41	0.41		mg/kg	0-6	U
Aroclor-1242	03-09001	VCXX-95-0065	SOIL	0.0408	0.408		mg/kg	0-6	U
Aroclor-1242	03-09002	VCXX-95-0066	SOIL	0.411	0.411		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				1.0E+01			mg/kg		
Aroclor-1248	03-09000	VCXX-95-0064	SOIL	1.64	0.41		mg/kg	0-6	
Aroclor-1248	03-09002	VCXX-95-0066	SOIL	2.07	0.411		mg/kg	0-6	J
Aroclor-1248	03-09001	VCXX-95-0065	SOIL	0.134	0.408		mg/kg	0-6	
95% UCL of Mean				2.99					
PRG				1.0E+01			mg/kg		
Aroclor-1254	03-09000	VCXX-95-0064	SOIL	0.731	0.328		mg/kg	0-6	
Aroclor-1254	03-09002	VCXX-95-0066	SOIL	1.01	0.329		mg/kg	0-6	
Aroclor-1254	03-09001	VCXX-95-0065	SOIL	0.136	0.0326		mg/kg	0-6	
95% UCL of Mean				1.37					
PRG				1.0E+01			mg/kg		

\* Contaminants in lab method blank, at or below estimated detection limit.

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

**TABLE 1. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-003(p), Transformer Storage Area (continued)**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background UTL	Units	Depth (in.)	Analysis Qualifier
Aroclor-1260	03-09000	VCXX-95-0064	SOIL	0.41	0.41		mg/kg	0-6	U
Aroclor-1260	03-09001	VCXX-95-0065	SOIL	0.0548	0.0408		mg/kg	0-6	
Aroclor-1260	03-09002	VCXX-95-0066	SOIL	0.552	0.411		mg/kg	0-6	
95% UCL of Mean				0.77					
PRG				1.0E+01			mg/kg		
Total PCBs	03-09000	VCXX-95-0064	SOIL	2.37	0.3		mg/kg		
Total PCBs	03-09001	VCXX-95-0065	SOIL	3.13	0.04		mg/kg		
Total PCBs	03-09002	VCXX-95-0066	SOIL	0.82	0.04		mg/kg		
Total PCB 95% UCL of Mean				0.597					
PRG				1.0E+01			mg/kg		
Lead*	03-09000	VCXX-95-0064	SOIL	14.1	0.472	39	mg/kg	0-6	
Lead*	03-09001	VCXX-95-0065	SOIL	8.41	0.49	39	mg/kg	0-6	
Lead*	03-09002	VCXX-95-0066	SOIL	17.4	5.9	39	mg/kg	0-6	
95% UCL of Mean				21					
PRG				1.00E+03	MG/KG				

\* Contaminants in lab method blank, at or below estimated detection limit.

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

**CERTIFICATION OF COMPLETION**

I certify that all work pertaining to the voluntary corrective action (VCA) 03-003(p) has been completed in accordance with the Department of Energy-approved VCA plan and entitled **VCA Plan for Potential Release 03-003(p), Transformer Storage Area**. Based on my personal involvement or inquiry of the person or persons who managed this cleanup, a review of all data gathered, and a visit to the site, to the best of my knowledge and belief, all criteria of the plan have been met or exceeded. I believe that the completion of this VCA is protective to both human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

*Garry Allen*

\_\_\_\_\_  
Garry Allen  
Field Unit One Project Leader  
Environmental Restoration Project  
Los Alamos National Laboratory

*28 Sept 95*

\_\_\_\_\_  
Date Signed

**FINAL REPORT**

**Voluntary Corrective Action Completion Report  
Potential Release Site 03-047(d)  
Drum Storage Area**

**Environmental Restoration Project  
Field Unit 1  
Los Alamos National Laboratory**

**February 26, 1996**

**A Department of Energy  
Environmental Cleanup Project**

## Voluntary Corrective Action Completion Report Potential Release Site 03-047(d), Drum Storage Area

### DESCRIPTION

Potential Release Site (PRS) 03-047(d) is located at the Los Alamos National Laboratory's (Laboratory) Technical Area (TA) 3, adjacent to the east side of Building 22. The site is not accessible to the public. The former drum storage area covered an area of approximately 6 feet by 15 feet. The site is not listed in the Hazardous and Solid Waste Amendments module to the Laboratory's Resource Conservation and Recovery Act, EPA I.D. NM0890010515.

The drum storage area was active from approximately 1954 to 1989. The storage area was located on top of an asphalt pad. While it was active, stoddard solvent, motor oil, and waste oil were stored at the site. Drums in the storage area were held horizontally on metal stands, and collection pans were kept under the spigots that were used to dispense the contents. In 1987, a 6-inch asphalt berm was added to the existing asphalt pad to provide secondary containment. In 1989, the original asphalt pad was removed and disposed of at the Los Alamos County Landfill.

Prior to the Voluntary Corrective Action (VCA), the PRS was comprised of soil only, contrary to the description presented in the VCA Plan, which implied that the site was covered with another asphalt pad. Potentially contaminated soil was expected to be present at the location of the former asphalt pad, as well as along the eastern edge of the former pad.

This study replaces the sampling that would have been performed for an RFI.

### CORRECTIVE ACTION

The cleanup followed the approved VCA Plan, but with the following deviations: Because of the lack of preliminary site characterization data, screening samples were collected from the surface and subsurface soils prior to site cleanup. Screening sampling began on August 10, when three surface soil samples were collected and analyzed by CST-12 Mobile Laboratory for total petroleum hydrocarbons (TPH), volatile organic compounds (VOC), and polycyclic aromatic hydrocarbons (PAH). In addition, four subsurface screening samples were collected on August 24, 1995 and analyzed by the ERM Mobile Laboratory for metals, using the x-ray fluorescence technique, and for VOCs. The site was also field screened for alpha/beta/gamma radioactivity. No radioactivity was detected above background levels. The confirmatory sample size was increased from two to three samples in order to meet the statistical criteria recommended by the EPA.

Cleanup activities began on September 11, 1995 and ended that same day. A single, square-shaped area measuring approximately 20 feet by 20 feet was excavated. Soil was removed to a depth of 4 to 6 inches using a front end loader and hand tools. Excavated soil was field screened for gross alpha/beta/gamma radioactivity and volatile organic vapors using hand-held instruments. Based on field screening, no radioactivity nor VOCs were detected above background levels.

The soil was placed in appropriate, labeled containers, which are being stored at the site pending disposal. Approximately 6 yd<sup>3</sup> of soil were placed in two B-25 containers. Personal protective equipment (PPE) was placed in plastic bags and combined with the PPE generated at PRS 03-051(c), which was placed in one 55-gal drum. The waste PPE was combined due to the minimum amount generated and will be characterized based on a waste analysis of the soil. The waste will be transported to the appropriate disposal site following evaluation of the waste analyses and completion of the appropriate waste disposal documentation.

Based on screening results, a modified confirmatory sampling plan was implemented. Analysis for toxicity characteristic leaching procedure metals was eliminated and analysis for target analyte list (TAL) metals was added. The TAL metal analysis was added to identify any potential contamination by total metals.

Gross alpha/beta/gamma analyses and gamma spectroscopy were eliminated because field screening results showed that no radioactivity was present above background. TPH analysis was eliminated because any residual hydrocarbons would be detected by the VOC and SVOC analyses. Waste characterization sampling followed the VCA Plan with the following deviation: analyses for gross alpha/beta/gamma radioactivity were eliminated because any potential radioactive contamination should be detected by gamma spectroscopy and tritium analysis.

Confirmatory sampling (Figure 2) was performed to verify site cleanup. Analytical results and comparison with the preliminary remediation goals (PRG) are presented in Table 2.

Because motor oil, stoddard solvent, waste oil, and asphalt were located at the site, indicator chemicals of potential concern (COPCs) were identified as beryllium, lead, benzo(a)pyrene, and the following VOCs: chloroform, carbon tetrachloride, benzene, 1,2-dibromoethane, 1,2-dichloroethane, and vinyl chloride. A review of field screening data for metals and volatile and semi-volatile organic compounds indicated that there were no metal concentrations above their respective background upper tolerance levels (UTLs) and no volatile organic compounds above their PRGs. However, the following polycyclic aromatic hydrocarbon (PAH): benzo(a)pyrene was identified above its respective PRG. Following remediation, analysis of the confirmatory data (Table 2) indicated that all of the COCs were present at between two times and two orders of magnitude less than their respective PRGs with a 95 percent confidence that the detectable residual contamination is below cleanup goals.

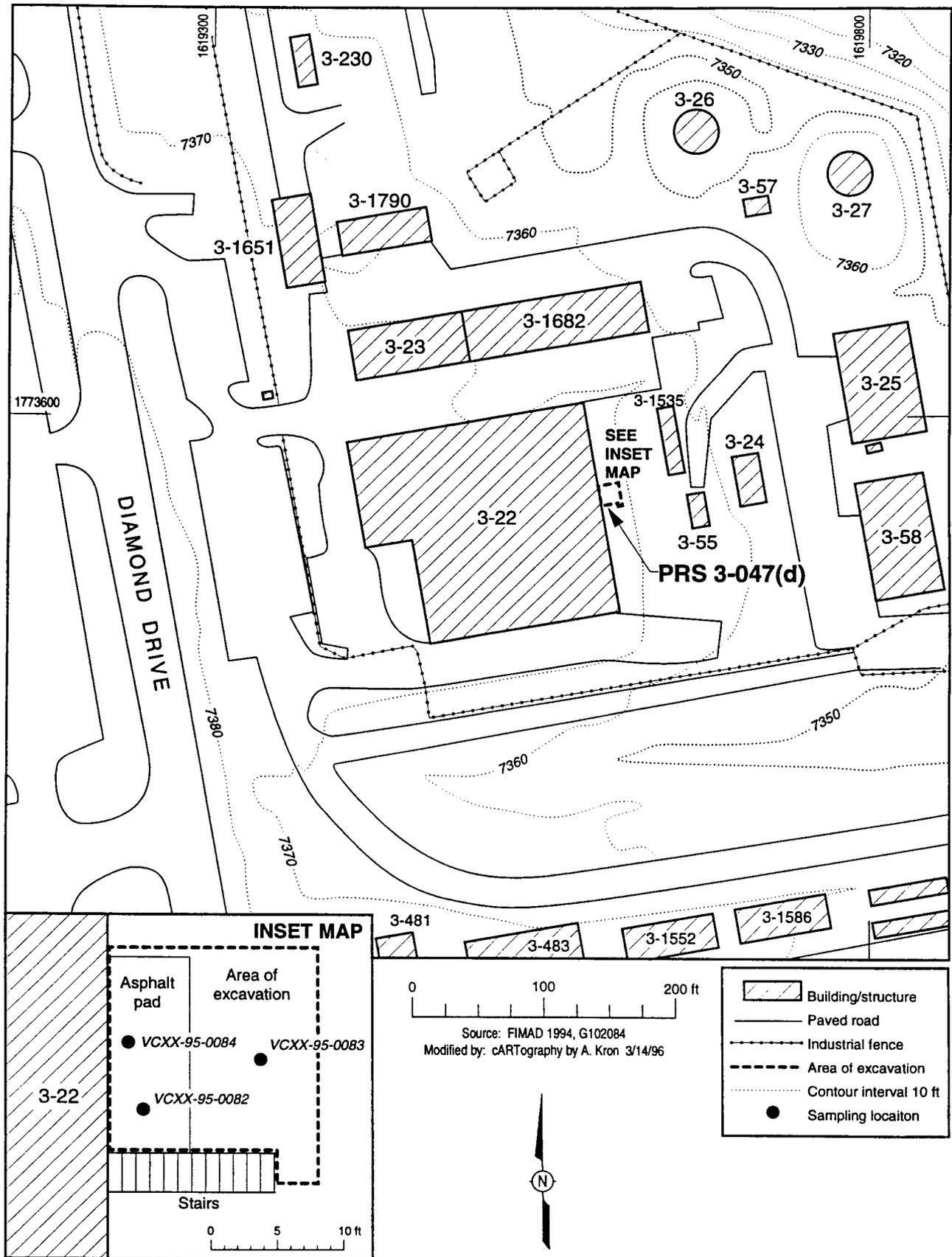


Figure 2. Excavation and confirmatory sampling locations for PRS 3-047(d), drum storage area.

**TABLE 2. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-047(d), Drum Storage Area**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background UTL	Units	Depth (In.)	Analysis Qualifier
Benzene	03-09010	VCXX-95-0084	SOIL	0.002	0.002		mg/kg	0-6	U
Benzene	03-09009	VCXX-95-0083	SOIL	0.002	0.002		mg/kg	0-6	U
Benzene	03-09008	VCXX-95-0082	SOIL	0.002	0.002		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				5.03E+02			mg/kg		
Chloroform	03-09008	VCXX-95-0082	SOIL	0.002	0.002		mg/kg	0-6	U
Chloroform	03-09010	VCXX-95-0084	SOIL	0.002	0.002		mg/kg	0-6	U
Chloroform	03-09009	VCXX-95-0083	SOIL	0.002	0.002		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				5.22E+03			mg/kg		
Carbon Tetrachloride	03-09010	VCXX-95-0084	SOIL	0.002	0.002		mg/kg	0-6	U
Carbon Tetrachloride	03-09009	VCXX-95-0083	SOIL	0.002	0.002		mg/kg	0-6	U
Carbon Tetrachloride	03-09008	VCXX-95-0082	SOIL	0.002	0.002		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				1.56E+02			mg/kg		
1,2-Dibromoethane	03-09010	VCXX-95-0084	SOIL	0.01	0.01		mg/kg	0-6	U
1,2-Dibromoethane	03-09009	VCXX-95-0083	SOIL	0.01	0.01		mg/kg	0-6	U
1,2-Dibromoethane	03-09008	VCXX-95-0082	SOIL	0.01	0.01		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				5.50E+00			mg/kg		
1,2-Dichloroethane	03-09010	VCXX-95-0084	SOIL	0.002	0.002		mg/kg	0-6	U
1,2-Dichloroethane	03-09009	VCXX-95-0083	SOIL	0.002	0.002		mg/kg	0-6	U
1,2-Dichloroethane	03-09008	VCXX-95-0082	SOIL	0.002	0.002		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				1.55E+02			mg/kg		
Vinyl chloride	03-09009	VCXX-95-0083	SOIL	0.002	0.002		mg/kg	0-6	U
Vinyl chloride	03-09008	VCXX-95-0082	SOIL	0.002	0.002		mg/kg	0-6	U
Vinyl chloride	03-09010	VCXX-95-0084	SOIL	0.002	0.002		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				8.00E+00			mg/kg		
Benzo(a)pyrene	03-09008	VCXX-95-0082	SOIL	21.9	13.2		mg/kg	0-6	J
Benzo(a)pyrene	03-09010	VCXX-95-0084	SOIL	10.1	12.9		mg/kg	0-6	J
Benzo(a)pyrene	03-09009	VCXX-95-0083	SOIL	13.3	13.3		mg/kg	0-6	UJ
95% UCL of Mean				23.4					
PRG				7.84E+01			mg/kg		

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

**TABLE 2. Summary of Confirmatory Analytical Results and Data Comparison,  
Potential Release Site 03-047(d), Drum Storage Area (continued)**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background UTL	Units	Depth (In.)	Analysis Qualifier
Beryllium*	03-09008	VCXX-95-0082	SOIL	0.417	0.496	3.31	mg/kg	0-6	J
Beryllium*	03-09010	VCXX-95-0084	SOIL	0.354	0.498	3.31	mg/kg	0-6	J
Beryllium*	03-09009	VCXX-95-0083	SOIL	0.545	0.496	3.31	mg/kg	0-6	
95% UCL of Mean				0.571					
PRG				1.24E+02			mg/kg		
Lead	03-09008	VCXX-95-0082	SOIL	21.7	0.496	39	mg/kg	0-6	
Lead	03-09010	VCXX-95-0084	SOIL	391	0.498	39	mg/kg	0-6	
Lead	03-09009	VCXX-95-0083	SOIL	13	0.496	39	mg/kg	0-6	
95% UCL of Mean				435					
PRG				1.00E+03			mg/kg		

\* Contaminants in lab method blank, at or below estimated detection limit.

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

Three confirmatory samples were collected on September 13, 1995, as indicated on Figure 2. Two samples were collected under former location of the asphalt pad, and one was collected from the approximate center of the excavated area, east of the asphalt pad. Confirmatory samples were analyzed for the COPCs not eliminated by screening; polychlorinated biphenyls by SW-846 method 8080, TAL metals by SW-846 method 6010 and 7471, VOCs by SW-846 method 8240, and SVOCs by SW-846 method 8270. The confirmatory results are shown in Table 2.

Site restoration included backfilling and compaction of the excavated area with soil, and the application of seed to revegetate the area.

### **REQUEST FOR DOE CONCURRENCE**

This report serves as the formal request for DOE concurrence to approve no further action for this PRS.

**CERTIFICATION OF COMPLETION**

I certify that all work pertaining to the voluntary corrective action (VCA) 03-047(d) has been completed in accordance with the Department of Energy-approved VCA plan and entitled **VCA Plan for Potential Release Site 03-047(d), Drum Storage Area**. Based on my personal involvement or inquiry of the person or persons who managed this cleanup, a review of all data gathered, and a visit to the site, to the best of my knowledge and belief, all criteria of the plan have been met or exceeded. I believe that the completion of this VCA is protective to both human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

*GR Allen*

\_\_\_\_\_  
Garry Allen  
Field Unit One Project Leader  
Environmental Restoration Project  
Los Alamos National Laboratory

*28 Sept 95*

\_\_\_\_\_  
Date Signed

**FINAL REPORT**

**Voluntary Corrective Action Completion Report  
Potential Release Site 03-051(c)  
Vacuum Pump Exhaust Area**

**Environmental Restoration Project  
Field Unit 1  
Los Alamos National Laboratory**

**February 26, 1996**

**A Department of Energy  
Environmental Cleanup Project**

**Voluntary Corrective Action Completion Report  
Potential Release Site 03-051(c),  
Vacuum Pump Exhaust Area**

**DESCRIPTION**

Potential Release Site (PRS) 03-051(c) is located at the Los Alamos National Laboratory's (Laboratory) Technical Area (TA) 3, in a secured area, and is adjacent to the east side of Building 141. The site is not accessible to the public. The site served as a vacuum pump exhaust area for Building 141. The site is not listed in the Hazardous and Solid Waste Amendments module to the Laboratory's Resource Conservation and Recovery Act, EPA I.D. NM0890010515.

Prior to the Voluntary Corrective Action (VCA), obvious oil exhaust stains were present on the asphalt surface and on the concrete foundation.

No preliminary sampling data were available prior to the VCA. The VCA was expected to generate soil, asphalt, and concrete waste contaminated with oil, metals, volatile organic compounds (VOC), and semi-volatile organic compounds (SVOC).

This study replaces the sampling that would have been performed for an RFI.

**CORRECTIVE ACTION**

The cleanup followed the approved VCA Plan but with the following deviations: Verification screening sampling began on August 15, 1995, when surface soil samples were collected and analyzed by the CST-12 Mobile Laboratory for VOCs, polycyclic aromatic hydrocarbons (PAH), gross rad, TPH, and XRF metals. Swipe samples, which were submitted for total petroleum hydrocarbon (TPH) analysis, were obtained by swabbing the concrete building foundation surface. The first set of XRF samples indicated elevated levels of thallium. Two more samples were taken on September 7, after additional excavation was completed. Those XRF samples indicated thallium was not above its respective PRG.

A modified confirmatory sampling plan was implemented, which increased the confirmatory sample size from two to four (two samples for each of the two discrete areas), in order to meet the statistical criteria recommended by the EPA. The modified confirmatory sampling added analyses for pesticides because thallium was detected above its PRG during the verification screening and thallium could be a component of pesticides. In addition, the confirmatory sampling added analyses for target analyte list (TAL) metals and eliminated analyses for toxicity characteristic leaching procedure metals to identify any potential contamination by total metals.

Analysis for VOCs was eliminated because verification screening results indicated VOCs were not detected above their respective PRGs. The CST-12 Mobile Laboratory's detection limits are below the PRG's, and the VOCs were all non-detects. Analyses for gross alpha/beta/gamma radioactivity and gamma spectroscopy were eliminated because field screening results showed that radioactivity was below background levels. Waste characterization sampling followed the VCA Plan with the following deviations: analyses for gross alpha/beta/gamma radioactivity were eliminated because any potential radioactive contamination should be detected by gamma spectroscopy and tritium analysis. Asphalt will be characterized based on an analysis of the soil.

Another deviation related to the proper identification of the location of the area of cleanup. According to the VCA Plan, the area of contamination was described as being contained within the parameters of the metal shed and extending to the chip seal surface just outside. Upon initial inspection of the interior of the shed, it was discovered that what appeared to be an oil leak from the pump exhausts was actually a leak originating from a cracked head in the fire suppression system. The building manager for TA-3-141 was present at the inspection and confirmed that the leak consisted of a glycol-based anti-freeze which is injected into the fire suppression system to prevent freezing, because the system is external and not insulated. This matter was redirected as a building maintenance function and was eliminated as part of the cleanup. The two other locations identified as being the result of oil pump exhaust staining (Figure 3) were excavated during the VCA. During the site cleanup, visual identification of stained soils was used to guide the cleanup and to locate the area requiring cleanup.

Excavation activities began on August 11, 1995, generally followed the approved VCA plan. From August 11 to August 15, 1995, two sites were identified as exhibiting evidence of staining from several vacuum pump exhausts. One area, adjacent to the east side of Building 141 and north of a concrete pad, measured approximately 6 feet by 6 feet. This area was excavated to a depth of 18 to 24 inches with the use of a backhoe and shovels. The second area, located at the northeast corner of the building, measured approximately 10 feet by 15 feet and was excavated to a depth of 12 inches using a backhoe and shovels. Asphalt and soil were removed from both areas until non-stained soil was reached. The asphalt and soil removed from the site were field-screened for alpha/beta/gamma radioactivity and volatile organic vapors using hand-held instruments. Field screening did not indicate the presence of radioactivity or volatile organic vapors above background levels.

After receipt and analysis of the verification samples, cleanup activities resumed on September 7, 1995 to remove another 2 - 3 inches of soil from both locations, which contained residual contamination from the metal thallium.

The waste was placed in appropriate, labeled containers, which are being stored at the site, pending disposal. Approximately 0.75 yd<sup>3</sup> of asphalt were placed in three 55-gallon drums. Approximately 6 yd<sup>3</sup> of asphalt mixed with soil were placed in two B-25

containers. The personal protective equipment was placed in plastic bags which were placed in one 55-gallon drum. The waste will be transported to the appropriate disposal site following evaluation of the waste analyses and completion of the appropriate waste disposal documentation.

Chemicals of potential concern (COPCs) for site cleanup are associated with processes where vacuum pumps were used including small amounts of metals from equipment wear. Thus indicator COPCs at this PRS are beryllium, lead, benzo(a)pyrene, and the following VOCs: chloroform, carbon tetrachloride, benzene, 1,2-dibromoethane, 1,2-dichloroethane, and vinyl chloride. However, the verification sampling data analysis confirmed that the VOCs were not detected above their respective PRGs and were not detected above the detection limits of the CST-12 mobile laboratory. On that basis, VOC analysis was not included in the confirmatory sampling analysis.

Confirmatory sampling (Figure 3) was performed to verify site cleanup. Analytical results and comparison with the preliminary remediation goals (PRG) are presented in Table 3. All previously-obtained site characterization data, as well as VCA data, are available and will be provided upon request.

To evaluate the confirmatory analytical data, the concentrations of analytes were compared statistically to their respective PRGs based on EPA guidance. In cases where the analytes are below their respective detection limits, no statistical analyses can be performed. Analysis of confirmatory data indicated that pesticides, beryllium, lead, and thallium were not detected above their respective PRGs with a 95 percent confidence that the detectable residual contamination is below PRGs.

A total of four confirmatory samples were collected on September 12, 1995. Two samples were collected from the larger excavation and two samples were collected from the smaller excavation. These samples were collected from the north and south borders at the base of the excavation. Samples were analyzed for pesticides by SW-846 method 8080, TAL metals by SW-846 method 6010 and 7471, and SVOCs by SW-846 method 8270.

Site restoration included backfill of the excavated areas with soil and gravel as well as compaction of the fill materials. The area will be repaved, at the direction and request of the facility manager, upon approval from the LANL EM/ER Project Office.

## **REQUEST FOR DOE CONCURRENCE**

This report serves as the formal request for DOE concurrence to approve no further action for this PRS.

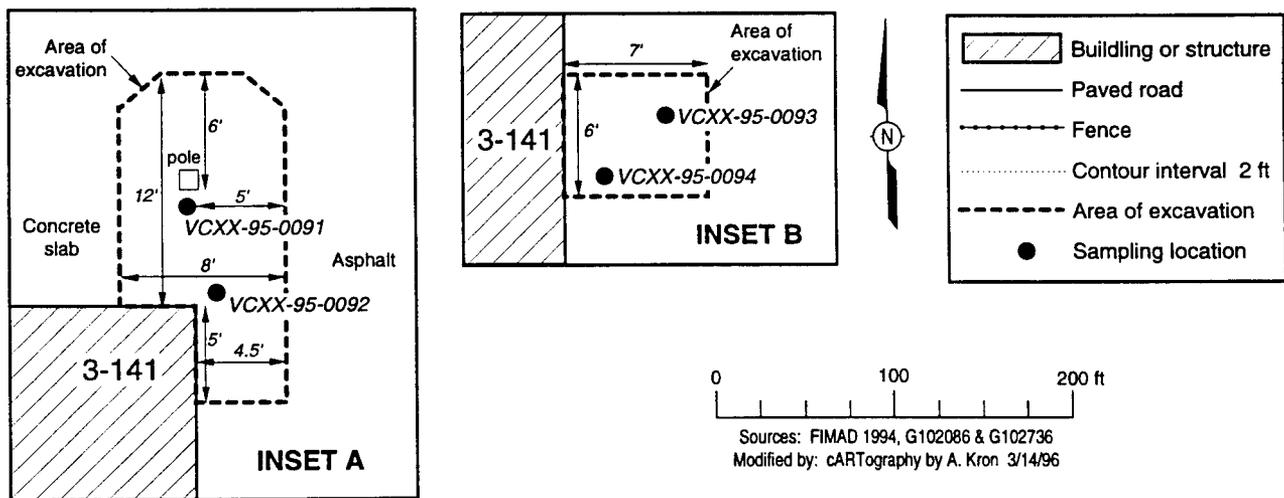
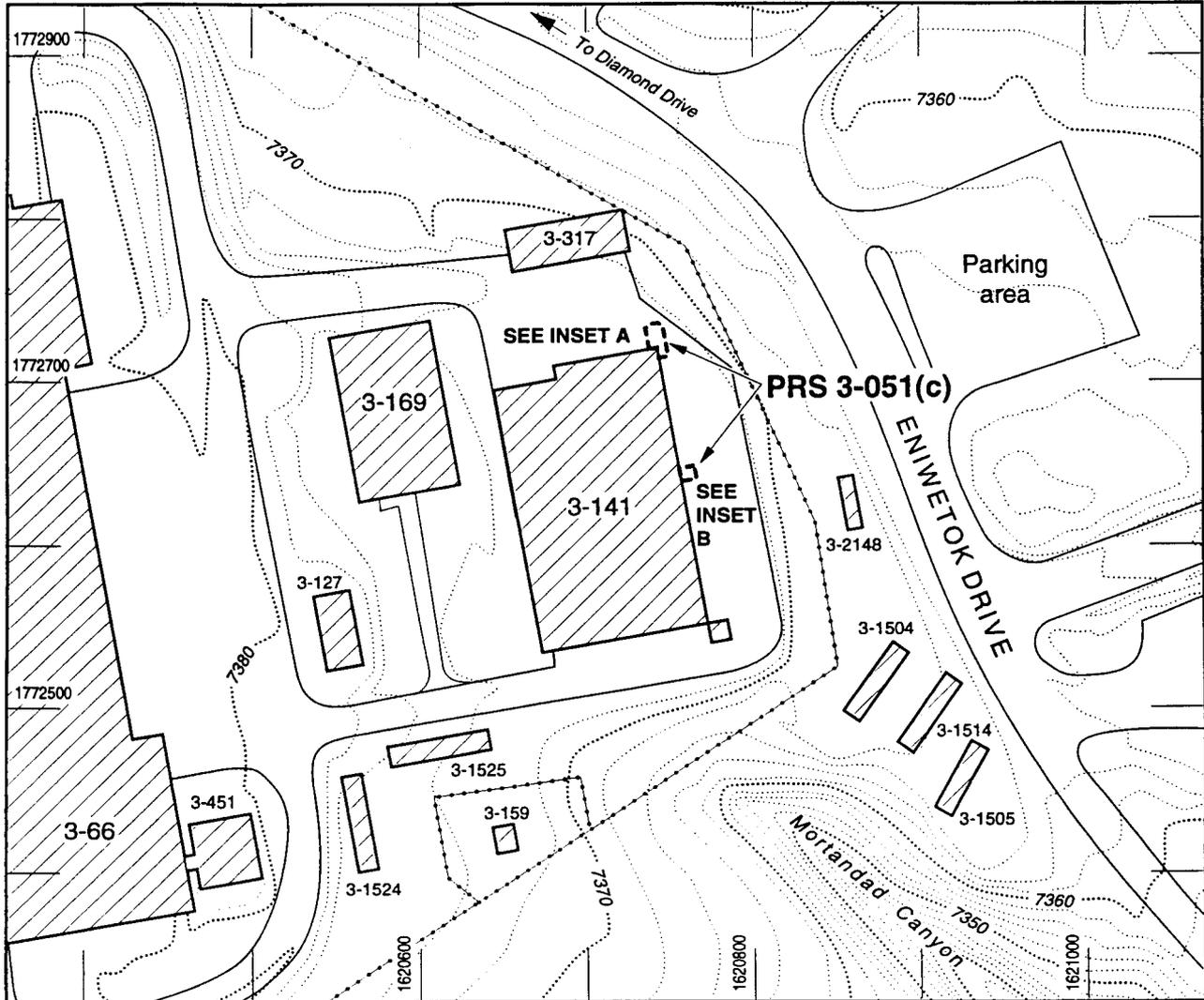


Figure 3. Excavation and confirmatory sampling locations for PRR 3-051(c), vacuum pump exhaust area.

**TABLE 3. Summary of Confirmatory Analytical Results and Data Comparison,  
Potential Release Site 03-051(c), Vacuum Pump Exhaust Area**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background Level	Units	Depth (In.)	Analysis Qualifier
Benzo(a)pyrene	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Benzo(a)pyrene	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Benzo(a)pyrene	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Benzo(a)pyrene	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				7.84E+01			mg/kg		
Beryllium*	03-09012	VCXX-95-0091	SOIL	0.566	0.470	3.31	mg/kg	0-6	
Beryllium*	03-09013	VCXX-95-0092	SOIL	0.874	0.477	3.31	mg/kg	0-6	
Beryllium*	03-09015	VCXX-95-0094	SOIL	0.796	0.470	3.31	mg/kg	0-6	
Beryllium*	03-09014	VCXX-95-0093	SOIL	0.471	0.468	3.31	mg/kg	0-6	
95% UCL of Mean				8.77E-01					
PRG				1.24E+02			mg/kg		
Lead*	03-09012	VCXX-95-0091	SOIL	18.3	0.470	39	mg/kg	0-6	
Lead*	03-09015	VCXX-95-0094	SOIL	18.4	0.470	39	mg/kg	0-6	
Lead*	03-09014	VCXX-95-0093	SOIL	17.9	0.468	39	mg/kg	0-6	
Lead*	03-09013	VCXX-95-0092	SOIL	199	0.477	39	mg/kg	0-6	
95% UCL of Mean				1.60E+02					
PRG				1.00E+03			mg/kg		
Aldrin	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Aldrin	03-09014	VCXX-95-0093	SOIL	0.0164	0.0164		mg/kg	0-6	UJ
Aldrin	03-09015	VCXX-95-0094	SOIL	0.0162	0.0162		mg/kg	0-6	UJ
Aldrin	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Aldrin	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Aldrin	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Aldrin	03-09013	VCXX-95-0092	SOIL	0.0162	0.0162		mg/kg	0-6	UJ
Aldrin	03-09012	VCXX-95-0091	SOIL	0.000821	0.000821		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				1.57E+01			mg/kg		
alpha-BHC	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
alpha-BHC	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
alpha-BHC	03-09015	VCXX-95-0094	SOIL	0.0162	0.0162		mg/kg	0-6	UJ
alpha-BHC	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
alpha-BHC	03-09014	VCXX-95-0093	SOIL	0.0164	0.0164		mg/kg	0-6	UJ
alpha-BHC	03-09013	VCXX-95-0092	SOIL	0.0162	0.0162		mg/kg	0-6	UJ
alpha-BHC	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
alpha-BHC	03-09012	VCXX-95-0091	SOIL	0.000821	0.000821		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				8.77E+01			mg/kg		

\* Contaminants in lab method blank, at or below estimated detection limit.

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

**TABLE 3. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-051(c), Vacuum Pump Exhaust Area (continued)**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background Level	Units	Depth (In.)	Analysis Qualifier
beta-BHC	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
beta-BHC	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
beta-BHC	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
beta-BHC	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
beta-BHC	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
beta-BHC	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
beta-BHC	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
beta-BHC	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				3.07E+02			mg/kg		
delta-BHC	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
delta-BHC	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
delta-BHC	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
delta-BHC	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
delta-BHC	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
delta-BHC	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
delta-BHC	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
delta-BHC	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				NA					
Dieldrin	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Dieldrin	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
Dieldrin	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
Dieldrin	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Dieldrin	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Dieldrin	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
Dieldrin	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
Dieldrin	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				2.61E+01			mg/kg		
Endosulfan I	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Endosulfan I	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Endosulfan I	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Endosulfan I	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
Endosulfan I	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
Endosulfan I	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
Endosulfan I	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Endosulfan I	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				3.13E+03			mg/kg		

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

**TABLE 3. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-051(c), Vacuum Pump Exhaust Area (continued)**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background Level	Units	Depth (in.)	Analysis Qualifier
Endosulfan II	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Endosulfan II	03-09012	VCXX-95-0091	SOIL	0.00328	0.00328		mg/kg	0-6	U
Endosulfan II	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Endosulfan II	03-09015	VCXX-95-0094	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
Endosulfan II	03-09014	VCXX-95-0093	SOIL	0.0656	0.0656		mg/kg	0-6	UJ
Endosulfan II	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Endosulfan II	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Endosulfan II	03-09013	VCXX-95-0092	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				3.13E+03			mg/kg		
Endosulfan sulfate	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Endosulfan sulfate	03-09013	VCXX-95-0092	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
Endosulfan sulfate	03-09014	VCXX-95-0093	SOIL	0.0656	0.0656		mg/kg	0-6	UJ
Endosulfan sulfate	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Endosulfan sulfate	03-09015	VCXX-95-0094	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
Endosulfan sulfate	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Endosulfan sulfate	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Endosulfan sulfate	03-09012	VCXX-95-0091	SOIL	0.00328	0.00328		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				3.13E+03			mg/kg		
Endrin	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
Endrin	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Endrin	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Endrin	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Endrin	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
Endrin	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Endrin	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
Endrin	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				1.57E+02			mg/kg		
Endrin aldehyde	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Endrin aldehyde	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Endrin aldehyde	03-09015	VCXX-95-0094	SOIL	0.0812	0.0812		mg/kg	0-6	UJ
Endrin aldehyde	03-09014	VCXX-95-0093	SOIL	0.0819	0.0819		mg/kg	0-6	UJ
Endrin aldehyde	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Endrin aldehyde	03-09013	VCXX-95-0092	SOIL	0.0811	0.0811		mg/kg	0-6	UJ
Endrin aldehyde	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Endrin aldehyde	03-09012	VCXX-95-0091	SOIL	0.0041	0.0041		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				NA					

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.  
 J = The analytical result is an estimated quantity.  
 UTL = Upper Tolerance Limit

**TABLE 3. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-051(c), Vacuum Pump Exhaust Area (continued)**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background Level	Units	Depth (In.)	Analysis Qualifier
Heptachlor	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
Heptachlor	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
Heptachlor	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Heptachlor	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
Heptachlor	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Heptachlor	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Heptachlor	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
Heptachlor	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
95% UCL of Mean PRG				ND					
				1.23E+02			mg/kg		
Heptachlor epoxide	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
Heptachlor epoxide	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
Heptachlor epoxide	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
Heptachlor epoxide	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
Heptachlor epoxide	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
Heptachlor epoxide	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
Heptachlor epoxide	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
Heptachlor epoxide	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
95% UCL of Mean PRG				ND					
				6.78E+00			mg/kg		
Methoxychlor	03-09012	VCXX-95-0091	SOIL	0.0164	0.0164		mg/kg	0-6	U
Methoxychlor	03-09015	VCXX-95-0094	SOIL	0.325	0.325		mg/kg	0-6	UJ
Methoxychlor	03-09014	VCXX-95-0093	SOIL	0.328	0.328		mg/kg	0-6	UJ
Methoxychlor	03-09013	VCXX-95-0092	SOIL	0.324	0.324		mg/kg	0-6	UJ
95% UCL of Mean PRG				ND					
				2.61E+03			mg/kg		
Toxaphene	03-09012	VCXX-95-0091	SOIL	0.0328	0.0328		mg/kg	0-6	U
Toxaphene	03-09015	VCXX-95-0094	SOIL	0.649	0.649		mg/kg	0-6	UJ
Toxaphene	03-09014	VCXX-95-0093	SOIL	0.656	0.656		mg/kg	0-6	UJ
Toxaphene	03-09013	VCXX-95-0092	SOIL	0.649	0.649		mg/kg	0-6	UJ
95% UCL of Mean PRG				ND					
				5.02E+02			mg/kg		
4,4'-DDD	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
4,4'-DDD	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
4,4'-DDD	03-09015	VCXX-95-0094	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
4,4'-DDD	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
4,4'-DDD	03-09014	VCXX-95-0093	SOIL	0.0656	0.0656		mg/kg	0-6	UJ
4,4'-DDD	03-09013	VCXX-95-0092	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
4,4'-DDD	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
4,4'-DDD	03-09012	VCXX-95-0091	SOIL	0.00328	0.00328		mg/kg	0-6	U
95% UCL of Mean PRG				ND					
				2.38E+03			mg/kg		

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

**TABLE 3. Summary of Confirmatory Analytical Results and Data Comparison, Potential Release Site 03-051(c), Vacuum Pump Exhaust Area (continued)**

Analyte	Loc ID	Sample ID	Matrix	Sample Value	Detection Limit	Background Level	Units	Depth (In.)	Analysis Qualifier
4,4'-DDE	03-09012	VCXX-95-0091	SOIL	0.00164	0.00164		mg/kg	0-6	U
4,4'-DDE	03-09015	VCXX-95-0094	SOIL	0.0325	0.0325		mg/kg	0-6	UJ
4,4'-DDE	03-09013	VCXX-95-0092	SOIL	0.0324	0.0324		mg/kg	0-6	UJ
4,4'-DDE	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
4,4'-DDE	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
4,4'-DDE	03-09014	VCXX-95-0093	SOIL	0.0328	0.0328		mg/kg	0-6	UJ
4,4'-DDE	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
4,4'-DDE	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				1.68E+03			mg/kg		
4,4'-DDT	03-09012	VCXX-95-0091	SOIL	0.00328	0.00328		mg/kg	0-6	U
4,4'-DDT	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
4,4'-DDT	03-09015	VCXX-95-0094	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
4,4'-DDT	03-09014	VCXX-95-0093	SOIL	0.0656	0.0656		mg/kg	0-6	UJ
4,4'-DDT	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
4,4'-DDT	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
4,4'-DDT	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
4,4'-DDT	03-09013	VCXX-95-0092	SOIL	0.0649	0.0649		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				2.61E+02			mg/kg		
Chlordane	03-09012	VCXX-95-0091	SOIL	0.00821	0.00821		mg/kg	0-6	U
Chlordane	03-09014	VCXX-95-0093	SOIL	0.164	0.164		mg/kg	0-6	UJ
Chlordane	03-09015	VCXX-95-0094	SOIL	0.162	0.162		mg/kg	0-6	UJ
Chlordane	03-09013	VCXX-95-0092	SOIL	0.162	0.162		mg/kg	0-6	UJ
95% UCL of Mean				ND					
PRG				3.13E+01			mg/kg		
gamma-BHC	03-09012	VCXX-95-0091	SOIL	0.000821	0.000821		mg/kg	0-6	U
gamma-BHC	03-09015	VCXX-95-0094	SOIL	0.0162	0.0162		mg/kg	0-6	UJ
gamma-BHC	03-09015	VCXX-95-0094	SOIL	3.31	3.31		mg/kg	0-6	U
gamma-BHC	03-09014	VCXX-95-0093	SOIL	0.0164	0.0164		mg/kg	0-6	UJ
gamma-BHC	03-09012	VCXX-95-0091	SOIL	3.31	3.31		mg/kg	0-6	UJ
gamma-BHC	03-09013	VCXX-95-0092	SOIL	0.0162	0.0162		mg/kg	0-6	UJ
gamma-BHC	03-09014	VCXX-95-0093	SOIL	3.3	3.3		mg/kg	0-6	U
gamma-BHC	03-09013	VCXX-95-0092	SOIL	3.31	3.31		mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				1.57E+02			mg/kg		
Thallium*	03-09012	VCXX-95-0091	SOIL	0.941	0.941	0.9	mg/kg	0-6	U
Thallium*	03-09015	VCXX-95-0094	SOIL	2.35	2.35	0.9	mg/kg	0-6	U
Thallium*	03-09014	VCXX-95-0093	SOIL	2.34	2.34	0.9	mg/kg	0-6	U
Thallium*	03-09013	VCXX-95-0092	SOIL	0.953	0.953	0.9	mg/kg	0-6	U
95% UCL of Mean				ND					
PRG				5.25E+01			mg/kg		

\* Contaminants in lab method blank, at or below estimated detection limit.

U = Material analyzed for but not detected. Analytical result reported less than the sample quantitation limit.

J = The analytical result is an estimated quantity.

UTL = Upper Tolerance Limit

## CERTIFICATION OF COMPLETION

I certify that all work pertaining to the voluntary corrective action (VCA) 03-051(c) has been completed in accordance with the Department of Energy-approved VCA plan and entitled **VCA Plan for Potential Release Site 03-051(c), Vacuum Pump Exhaust Area**. Based on my personal involvement or inquiry of the person or persons who managed this cleanup, a review of all data gathered, and a visit to the site, to the best of my knowledge and belief, all criteria of the plan have been met or exceeded. I believe that the completion of this VCA is protective to both human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



\_\_\_\_\_  
Garry Allen  
Field Unit One Project Leader  
Environmental Restoration Project  
Los Alamos National Laboratory

28 Sept 95  
Date Signed