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Los Alamos National Laboratory

# Environmental Restoration

A Department of Energy Environmental Cleanup Program

## QUARTERLY TECHNICAL REPORT

### JULY-SEPTEMBER 1996

November 15, 1996



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## LIST OF ACRONYMS AND ABBREVIATIONS

DOE	US Department of Energy
DX	Dynamic Experimentation (Division)
DX-2	HE Science and Technology Group
EPA	US Environmental Protection Agency
ER	Environmental restoration
ESH	Environment, Safety, and Health (Division)
ESH-1	Health Physics Group
ESH-5	Industrial Hygiene and Safety Group
ESH-18	Water Quality and Hydrology Group
FY	Fiscal year
HE	High explosives
HSWA	Hazardous and Solid Waste Amendments
LANL	Los Alamos National Laboratory
MDA	Material disposal area
NMED	New Mexico Environment Department
NOD	Notice of deficiency
PCB	Polychlorinated biphenyl
PRS	Potential release site
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
SAL	Screening action level
TA	Technical area
UST	Underground storage tank
VCA	Voluntary corrective action

**QUARTERLY TECHNICAL REPORT  
JULY-SEPTEMBER 1996  
LOS ALAMOS NATIONAL LABORATORY  
ENVIRONMENTAL RESTORATION PROJECT**

**ALBUQUERQUE OPERATIONS OFFICE**

**CONTRACTOR: University of California**

**PROJECT MANAGER: Jorg Jansen**

**NUMBER OF POTENTIAL RELEASE SITES: Approximately 2,000**

**POTENTIAL WASTE: Radionuclides, High Explosives, Metals, Organics**

## **1.0 INTRODUCTION**

This quarterly report describes the technical status of activities in the Los Alamos National Laboratory (the Laboratory) Environmental Restoration (ER) Project. The activities are divided according to field units and then by the technical area (TA) where the specific activity is located. The Hazardous and Solid Waste Amendments (HSWA) portion of the Laboratory's Hazardous Waste Facility Permit (Module VIII, Section P, Task V, C) requires the submission of a technical progress report on a quarterly basis. This report, submitted to fulfill the permit's requirement, summarizes much of the field work performed this quarter in the ER Project.

## **2.0 FIELD UNITS**

**2.1 Field Unit 1 — Technical Areas 0, 1, 3, 10, 19, 21, 26, 30, 31, 32, 43, 45, 59, 60, 61, 64, 73, and 74 (Field Project Leader: Garry Allen)**

### **2.1.1 General Information for Field Unit 1**

The field unit concentrated on completing voluntary corrective actions (VCAs); fifteen potential release sites (PRSs) were addressed. VCA reports for field activities completed during the third and fourth quarters of the fiscal year (FY) were submitted to the US Department of Energy (DOE) this quarter. Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) planning and sampling activities continued throughout the summer.

RFI reports submitted to the New Mexico Environment Department (NMED), or in preparation, include

- RFI report for PRSs 0-028(a,b), submitted July 25, 1996
- RFI report for PRS 0-031(b), submitted August 14, 1996
- RFI report for PRSs 1-001(s,u) and 1-007(l), in preparation
- RFI report for PRS 21-002(b), submitted July 3, 1996
- RFI report for Material Disposal Area (MDA) V [PRS 21-018(a)], submitted August 18, 1996
- The consolidated RFI/VCA report for PRS 0-030(a), September 17, 1996
- The consolidated RFI/VCA report for PRSs 0-030(h,i,n,o,p), September 27, 1996
- The consolidated RFI/VCA report for PRSs 0-030(l,m) and 0-033, September 12, 1996
- The consolidated RFI/VCA report for PRSs 32-001, 32-002(a,b), 32-003, and 32-004, submitted September 30, 1996
- The consolidated RFI/VCA report for PRSs 73-004(a,b), 73-007, and C-73-005(a-f), submitted September 30, 1996

Interim action plans submitted to DOE include

- Interim action plan for PRSs 10-003(a-o), July 25, 1996
- Interim action plan for PRS 21-011(k), July 13, 1996
- Interim action plan for PRS 21-023(c), September 13, 1996
- Interim action plan for PRS 21-024(b), September 13, 1996

Interim action reports submitted to DOE, or in preparation, include

- Interim action report for PRS 1-001(s), submitted September 30, 1996
- Interim action report for TA-10 Shrapnel area, in preparation
- Interim action report for PRS 1-001(d), Hillside 138, in preparation

Notice of deficiency (NOD) responses in progress include

- NOD response for PRS 0-030(g)
- Response for Disapproval of the RFI work plan for Operable Unit 1114, Addendum 1

VCA plans and reports submitted to DOE include

- VCA plan for PRSs 0-030(b) and 0-033(b), July 12, 1996
- VCA report for PRSs 0-030 (b) and 0-033(b), September 28, 1996
- VCA report for PRS 1-003(d), September 16, 1996
- VCA report for PRS 21-029 ( DP Tank Farm), August 7, 1996
- VCA report for PRSs 32-002(a,b), 32-003, and 32-004, September 30, 1996

Sampling and analysis plans in preparation include

- The replan for MDA B (PRS 21-015)
- The subsurface sampling addendum for PRS 21-003

Other reports completed or in preparation include

- Internal report for MDA A, MDA B, MDA T, and MDA U
- TA-21, MDA B water balance study

## **2.1.2 Technical Area Activities**

### **2.1.2.1 TA-0**

The VCA at PRS 0-016 (processing of original berm material used as firing range backstop material) continued this quarter. The processed, clean soil was transported to TA-72. The fraction of processed soil that failed toxicity characteristic leaching procedure analyses for lead has been disposed at a permitted hazardous waste facility in Colorado, in accordance with regulations. The nonhazardous large-diameter debris is being used for industrial fill at TA-16. Approximately 1,200 cubic yards of processed berm material containing lead bullets and gravel remain on-site. The VCA plan called for this material to be recycled for lead content, but the lower than expected lead content (< 1%) has made the material unattractive for recycling in its current state. We are seeking proposals from various sources for technology that could further concentrate the lead content in the soil to make recycling an option, and/or other proposals to address this material.

We completed VCA field work at septic tank PRSs 0-030(h, n, o, and p). The septic tanks were removed and disposed at the county landfill. Soil below screening action levels (SALs) in the septic tanks was used as clean fill in the excavation. Soil classified as low-level radioactive waste was removed from PRS 0-030(h) for disposal at TA-54. All disposals were completed in accordance with regulations.

The decision regarding property access is still pending from the Sombrillo Nursing Facility's Board of Directors; therefore, intrusive activities at septic tank PRS 0-030(j) are delayed.

VCA activities at PRSs 0-030(b) and 0-033(b) were completed this quarter. Investigators detected levels of the pesticide chlordane greater than SAL in two samples from PRS 0-033(b). They collected additional samples from the area surrounding the PRS to ascertain that the

pesticide is ubiquitous in the area from prior spraying, rather than from the drain lines being excavated; the analytical results are pending.

Preparations for field work at the waste water treatment plants (PRSs 0-018(a and b) and 0-019) restarted in September. Field personnel began surface and shallow subsurface sampling within two of the sludge-drying beds at the Pueblo Canyon waste water plant. In addition, they collected surface samples from the sludge fill area at the eastern edge of the plant facility.

We began RFI field activities at DP Road Storage (PRS 0-027) in September. Field personnel cored through the concrete parking lot at eight locations and drilled and sampled at two locations.

#### **2.1.2.2 TA-1**

We received waste analytical reports for the interim action at PRS 1-001(s) for disposal documentation.

The removal of contaminated soil from the lower bench of Hillside 138 [PRS 1-001(d)] was completed as an interim action this quarter.

#### **2.1.2.3 TA-3**

We received a disapproval notice from NMED for the RFI Work Plan for Operable Unit 1114, Addendum 1, on September 4 and are seeking clarification of the notice.

A regulatory determination for a 10-ppm polychlorinated biphenyl (PCB) cleanup level is pending from the Toxic Substances Control Act branch of the Environmental Protection Agency (EPA); slope stabilization at TA-3, PRS 3-056(c) will not be implemented until the determination is made.

#### **2.1.2.4 TA-21**

Field unit personnel drafted the field implementation plan for the subsurface Phase I investigation of PRS 21-003. The site has surface contamination containing radionuclides above background levels, PCBs greater than 500 ppm, and detectable levels of toluene. The plan addresses sampling subsurface soil to determine the extent of contamination and for future waste stream segregation and waste minimization.

Bechtel Nevada performed an *in situ* gamma spectroscopy survey at outfall PRS 21-011(k) in August. Bechtel employees walked DP canyon taking gamma measurements from the townsite to mid-canyon (approximately 1.5 mi) and up from the confluence of DP and Los Alamos Canyons (approximately 400 yd); the terrain was too rough in places to traverse with equipment. In the past, PRS 21-011(k) contributed cesium, plutonium, and strontium-90 contamination to DP Canyon.

The field implementation for the interim action at PRS 21-011(k) was performed in accordance with the sampling and analysis plan. Field personnel erected barriers for storm water control. Soil from PRS 21-011(k) with radioactivity levels > 100,000 cpm was transported to Area G, in accordance with regulations; by the end of September, most, but not all, of the contaminated soil had been delivered. This work is expected to be finished by the end of October.

We collected storm water samples at outfall PRS 21-024(i) to ascertain if contaminants from the site are being mobilized during rain events. The samples were analyzed for radiological constituents; the analytical results are pending.

Preparations continue for the subsurface investigation readiness review at TA-21 MDA T [PRSs 21-016(a-c), and 21-028(a)]. Field work is scheduled to start in November.

Members of the field team sampled the three absorption beds at MDA V [PRS 21-018(a)]. The absorption beds, filled with cobbles covered with gravel and earth, were used continuously from

1945 to 1961 for the disposal of waste water from the DP radionuclide laundry facility. During the Phase I RFI conducted in 1994, six boreholes were drilled, five within the absorption beds at 5-ft intervals to 75-ft depth and one outside the beds to 225 ft. Core drilling usually does not provide good samples in cobble sections, because of the size of the cobbles; therefore, investigators sampled those sections again this quarter. Significant radionuclide values were obtained (maximum Pu-239/240 concentrations at 9,110 pCi/g). As a result of these findings, remedial action is recommended for the cobbles. Based on a human health risk assessment, MDA V was recommended for no further action in the RFI report submitted August 18 for RCRA constituents. We are awaiting DOE comments on the RFI report.

#### **2.1.2.5 TA-73**

Excavation and sampling of septic tanks, PRSs 73-004(a and b), were performed in July.

Analytical data reports for PRS 73-002 and outfall drainage samples indicate metal concentrations in the ash debris from the Phase I RFI; therefore, we will prepare a Phase II sampling plan for this PRS.

### **2.2 Field Unit 2 — Technical Areas 12, 14, 15, 18, 20, 27, 36, 39, 53, 65, 67, 68, 71, and 72 (Field Project Leader: Gene Gould)**

#### **2.2.1 General Information for Field Unit 2**

Members of the field team met with Dynamic Experimentation (DX) Division personnel to discuss questions, concerns, and comments on a new standard operating procedure for ER operations in high-explosive areas. The team also began attending that division's weekly shot-scheduling meeting.

A storm water pollution prevention plan was resubmitted to the Water Quality and Hydrology Group (ESH-18) for approval.

#### **2.2.2 Technical Area Activities**

##### **2.2.2.1 TA-12**

The field team wrote the VCA completion report for PRS 12-001(a), an inactive firing site, and submitted it to DOE. Approximately 0.5 cubic yard of low-level radioactive waste was removed from the less-than-90-day storage area and transported to TA-54, in accordance with regulations.

##### **2.2.2.2 TA-14**

The field team completed a VCA at PRS 14-001(f), the bullet test facility. The team plugged a 4-in. sump drain at the bottom of the concrete sump with quick-drying cement. They conducted a radiological survey in the cylindrical steel tube and the sump. The radiation was removed from the sump, but fixed radiation was detected on the steel cylinder. After discussing the radiation problem with the HE Science and Technology Group (DX-2) and Health Physics Operations Group (ESH-1), the team painted the fixed radiation locations to identify the areas of contamination. DX-2 assumed the responsibility for attaching a sign to the bullet test facility indicating fixed radiation. Fifteen cubic yards of low-level radioactive waste were removed and transported to TA-54. A VCA completion report was written and submitted to DOE.

### **2.2.2.3 TA-15**

The field team completed a VCA at PRS 15-004(b), an inactive firing site. Four locations at the site had elevated levels of lead. The lead-contaminated soil was excavated to a maximum of 3 ft below the surface and placed in twelve 55-gallon drums. After reviewing the waste characterization results, all of the twelve drums were managed as low-level radioactive waste since uranium was used historically at the site and no leachable lead was detected. A VCA completion report was written and submitted to DOE.

### **2.2.2.4 TA-18**

An interim action for five PRSs was completed in accordance with a DOE-approved interim action plan. The field team removed the contents of a holding tank [PRS 18-003(a)] and four septic tanks [PRSs 18-003(b, c, d, and g)] and placed the material in 55-gallon drums. The liquid from some of the tanks was taken to the TA-50 Radioactive Liquid Waste Treatment Facility. The interior of each tank was pressure-rinsed to remove residual contamination, the rinse water was pumped into drums, and the drums were transferred to TA-54, Area L, for temporary storage pending shipment to off-site treatment/disposal facilities. An interim action completion report was written and submitted to DOE.

An abandoned underground storage tank (UST) (PRS 18-008) was discovered during excavation for a new gas line at TA-18. Attempts to locate the tank had been unsuccessful before and during the RFI. The tank was removed as a VCA in accordance with the procedures stipulated by the New Mexico UST regulations. There was no evidence that the tank had leaked. The excavation was backfilled after a soil sample was collected for analysis for petroleum hydrocarbons. Because of ambiguous results from the analysis, investigators collected four additional samples from below the former tank. The data did not indicate that a release had occurred; therefore, no further action is recommended. A VCA completion report was written and submitted to DOE.

### **2.2.2.5 TA-36**

The field team conducted a VCA at an inactive septic tank [PRS 36-003(b)] located at IJ Firing Site at TA-36. They pumped the contents of the tank into 55-gallon drums, and pressure-rinsed the septic tank with water. The rinse water was pumped into drums, and the tank was filled with flow-crete. The waste was temporarily stored at the site, pending solidification and disposal at TA-54, Area G, as low-level radioactive waste. A VCA completion report was written and submitted to DOE.

### **2.2.2.6 TA-39**

All analytical data associated with the 1995 and 1996 field activities were validated; background data sets were developed; and the data were subjected to a risk-based screening assessment.

The team wrote Chapters 1 through 4 and parts of Chapter 5 of the TA-39 RFI report that was due October 31 but will be submitted at a later date once an ecological risk assessment is complete.

### **2.2.2.7 TA-53**

The surface impoundments [PRS 53-002(a)] were re-visited, and additional sandbags were placed on the covers to prevent them from blowing off. Personnel finalized the interim action report for this effort and completed a preliminary risk assessment for the surface impoundments.

## **2.3 Field Unit 3 — Technical Areas 11, 13, 16, 24, 25, 28, 33, 37, 46, and 70 (Field Project Leader: Roy Michelotti)**

### **2.3.1 Technical Area Activities**

#### **2.3.1.1 TA-16**

The field unit submitted the RFI report for PRSs 16-003(k) and 16-021(c) to the regulators. This report included an appendix containing results derived from FY96 hydrogeologic studies at TA-16. The following documents were delivered to DOE: a rough draft of the RFI report for the additional 37 PRSs sampled in FY95; one accelerated cleanup plan for TA-16; and VCA reports for 13 PRSs where cleanups were completed this quarter (including all PRSs at the 90s Line). Investigators discovered a new PRS, a previously unidentified underground storage tank, and reported it to the regulators.

#### **2.3.1.2 TA-33**

The pilot study at PRS 33-007(c) was converted into a VCA; a VCA plan for this activity was completed. The field team completed final cleanups for two PRSs [33-007(c) and 33-010(b)] and submitted the reports to DOE. Field work continued at several other PRSs; data for this field campaign are beginning to arrive from the analytical laboratories. An interim action shrapnel pickup in Bandelier National Monument was completed.

#### **2.3.1.3 TA-46**

An accelerated cleanup plan for PRS 46-003(h) was completed, field work was done, and the final report was written and submitted to DOE. Autosamplers were installed to sample surface runoff in Cañada del Buey. Preparation for the FY97 field campaign was begun.

## **2.4 Field Unit 4 — Technical Areas 2, 4, 5, 35, 41, 42, 48, 52, 55, 63, and 66 and Canyons (Field Project Leader: Allyn Pratt)**

### **2.4.1 General Information for Field Unit 4**

Field Unit 4 supported the ER Project Office by providing information for various reports, including PRS descriptions for the HSWA permit modification and waste projections for the Site-Wide Environmental Impact Statement. We also conducted field trips with Agreement in Principle personnel to identify remaining well locations in Los Alamos Canyon and Pueblo Canyon; participated in health and safety audits performed by the Industrial Hygiene and Safety Group (ESH-5) and DOE personnel; coordinated, with Bechtel Nevada, a gamma screening survey of Mortandad Canyon, which was funded by DOE to perform some radiation measurements at the Laboratory; and contributed to the first draft of the hydrogeologic work plan for the Ground Water Management Protection Plan. A draft report outlining lessons learned to date from the pilot study in Los Alamos and Pueblo Canyons was completed; the report is being modified for release in early FY97.

### **2.4.2 Technical Area Activities**

#### **2.4.2.1 Canyons**

The field unit completed the final draft of the Core Document for Operable Unit 1049: Canyons Investigations on July 15. The document is ready for review and reconciliation against the Laboratory-wide hydrogeological work plan before submittal to NMED.

A draft of Chapter 3 for the Mortandad Canyon work plan was completed.

Field Unit 4 personnel completed the following work on the Canyons pilot study:

- Obtained National Environmental Policy Act approval and site access for two new wells, LLAO-2 and LLAO-4, and performed radiological surveys for these wells. The wells were drilled; both wells encountered perched alluvial water in lower Los Alamos Canyon.
- Installed alluvial characterization wells LLAO-1, LLAO-2, LLAO-5, and LAO-1.6, and began installing LLAO-4. LLAO-5 and LAO-1.6 were developed, purged, and sampled.
- Prepared well summary reports. Draft well summary reports for LLAO-1, LLAO-5, and LAO-1.6 were written and are being reviewed. The well summary report for POI-4 has been finalized.
- Collected limited suite sediment samples from pilot study reaches P-1, P-4, and LA-2.
- Coordinated with Air Quality Group (ESH-17) personnel to redesign the air-monitoring stations in the four pilot study reaches.
- Finalized geophysical field work and presented findings to the ER Project Office and the Water Quality and Hydrology Group (ESH-18) personnel.

#### **2.4.2.2 TA-2 and TA-41**

The field unit completed the RFI report for PRSs 2-004(a through f), 2-008(b), and 2-012 and submitted the final report to NMED on September 27.

Personnel continued the environment, safety, and health (ESH) identification process for PRS C-2-001, which was identified earlier this fiscal year.

Characterization activities were carried out at TA-2. Investigators performed radiological surveys and collected samples at PRS C-2-001 to determine if a cleanup should be performed. No immediate risks were identified; therefore, the site will be evaluated during the RFI process. Investigators also collected samples at PRS 2-005 (near the cooling tower) for internal chromium speciation analyses.

Other activities included profiling 19 drums of waste associated with investigations at TA-2 and TA-41 and preparing data sets for soil-screening at TA-2 PRSs and for baseline ground-water samples.

#### **2.4.2.3 TA-35**

Work continued on RFI reports for TA-35 this quarter: the RFI report for PRSs 35-004(a, g, h, and m), 35-009(e), 35-014(g1 and g2), and 35-016(b, j, n, and q), submitted to NMED on July 3; and the RFI report for PRSs 35-016(a, c, d, m, and p) and C-35-007, submitted to the DOE.

Characterization activities were carried out at TA-35. Investigators collected samples at PRS 35-003 (Building TA-35-7) to determine, for Department of Transportation shipping purposes, the level of radionuclides in the soil and to determine the appropriate contract laboratory to analyze characterization samples. Personnel also collected three soil samples from beneath the tanks at PRSs 35-003(a, b, and c) and submitted the samples for radionuclide, volatile organic compound, and semivolatile organic compound analyses.

TA-35 personnel completed the field work for VCAs at PRS 35-014(f) and PRS 35-018(a) and for the interim action for PRSs 35-003(d, l, and q). VCA and interim action completion reports submitted this quarter included the following:

- VCA completion report for PRS 35-009(a), submitted to DOE September 16
- VCA completion report for PRS 35-009(b, c, and d), submitted to NMED July 23
- VCA completion report for PRS 35-014(f), submitted to DOE September 26
- VCA completion report for PRS 35-018(a), submitted to DOE September 24
- Interim action completion report for PRS 35-003(d, l, and q), submitted to DOE September 23

Waste management activities at TA-35 included characterizing, profiling, and disposing of all waste generated from PRSs 35-014(f) and 35-018(a) in accordance with regulations.

#### **2.4.2.4 TA-48**

Field unit personnel began preparing a response to the NMED "Request for Additional Information - RFI Report TA-48," which is due October 21, 1996.

### **2.5 Field Unit 5 — Technical Areas 6, 7, 8, 9, 22, 23, 40, 49, 54, 57, 58, 62, and 69 (Field Project Leader: Don Krier)**

#### **2.5.1 General Information for Field Unit 5**

Field work and preparation of RFI reports were suspended for the duration of this quarter for budgetary reasons. However, the Expedited Cleanup Report for PRS 9-013 (MDA M) was completed and provided to DOE/Los Alamos Area Office for review. The remainder of the effort this quarter comprised baseline scheduling and task estimating activities for the FY97 Baseline Change Proposal. Field work, sampling and analyses, and preparation of RFI reports will resume in October.

### **3.0 CLOSURES AND REGULATORY COMPLIANCE — (Project Leader: David McInroy)**

#### **3.1 TA-16 MDA P Landfill**

NMED written approval of the closure plan for MDA P is still pending. The selection process continued for a contractor to perform the closure. An evaluation team was assembled and bids were evaluated for the closure. Premobilization tasks continued. Construction of the segregation pad was completed, and construction of the decontamination pad began. Repairs to the Cañon de Valle access road have been completed.

Additional background sampling to define the surface- and ground-water baseline concentrations at MDA P continued.

#### **3.2 TA-35 TSL 85 Surface Impoundment**

Personnel collected verification samples for the surface impoundment in July and performed a risk assessment using the analytical data. The results of the risk assessment determined that the hazard indices for all areas and scenarios were less than the value of 1. However, the aggregate risks for the adult and child residential scenarios for the UST and piping area and the spill path area were determined to be greater than the threshold of  $1.0 \times 10^{-6}$ . The aggregate risks for the residential scenarios in the impoundment area were less than  $1.0 \times 10^{-6}$ . As specified in the NMED-Approved Closure Plan, a realistic exposure assessment was performed. The aggregate risk for all of the realistic, site-specific industrial scenarios were less than  $1.0 \times 10^{-6}$ . Therefore, the risk assessment results indicate that the site does not pose a significant risk to human health and

the environment, and thus, clean closure was demonstrated. A closure report was written and submitted to NMED on September 30, 1996.

### **3.3 TA-53 Surface Impoundments**

The original due date for the revised closure plan for the northern impoundments [PRS 53-002(a)] has been suspended, pending agreement on the future land use scenario that will be used for risk assessment.

In July, NMED notified the Laboratory that a closure plan must be developed for the southern impoundment [PRS 53-002(b)], with a due date of late January 1997, or a Part B Application for a RCRA Permit must be submitted. Negotiations between the Laboratory and NMED continued concerning whether this surface impoundment should be regulated under RCRA.

During August, field personnel placed a geotextile liner over the dry sludge in the two northern impoundments to prevent resuspension and air dispersion of contamination in particulates. Sandbags held the liner in place. The southern impoundment was in operation during this period, and there was little or no potential for release of particulates. Inspection of the liner in early September revealed that the fabric of the sandbags had disintegrated, and the liner had been blown around by the wind but was still within the impoundments. Personnel repositioned the liner and secured it with additional sandbags; periodic inspections continue to ensure the integrity of the liner.