Neleigh — Action? OKH 9/3

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

AUG 30 1993

William Honker, Chief
RCRA Permits Branch
Hazardous Waste Management Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

0492 Report

Dear Mr. Honker:

Enclosed are two copies of the Environmental Restoration Quarterly Technical Report for April-June 1993 for the Los Alamos National Laboratory.

If you have questions, please call me at (505) 665-5027, or ask your staff to call Ted Taylor of my staff at (505) 665-7203.

Sincerely,

Joseph C. Vozella, Chief
Environment, Safety and Health Branch

Enclosure

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8062

CERTIFICATION AUG 30 1993

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Document Titles:

LANL Quarterly Technical Report, April–June, Fiscal Year 1993

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LA-UR-93-2776

Los Alamos National Laboratory

Environmental Restoration

A Department of Energy environmental cleanup program

QUARTERLY TECHNICAL REPORT

APRIL—JUNE

FISCAL YEAR 1993

August 26, 1993

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LIST OF ACRONYMS AND ABBREVIATIONS

ADS	Activity data sheet
DOE	US Department of Energy
DT	Deep test hole
EM	Environmental Management (Division)
EM-8	Environmental Protection Group
EM-9	Environmental Chemistry Group
EM-13	Environmental Restoration Group
EPA	US Environmental Protection Agency
ER	Environmental restoration
FIMAD	Facility for Information Management, Analysis, and Display
FY	Fiscal year
HSWA	Hazardous and Solid Waste Amendments
ICPES	Inductively coupled plasma emission spectroscopy
LANL	Los Alamos National Laboratory
MDA	Material Disposal Area
MWDF	Mixed Waste Disposal Facility
NEPA	National Environmental Policy Act
NESHAP	National emissions standards for hazardous air pollutants
NMED	New Mexico Environment Department
OU	Operable unit
PCB	Polychlorinated biphenyl
PRS	Potential release site
pCi/g	Picocuries per gram
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
SAL	Screening action level
SIMAD	System for Information Management, Analysis, and Display
SWMU	Solid waste management unit
TA	Technical area

QUARTERLY TECHNICAL REPORT
APRIL–JUNE
FISCAL YEAR 1993
LOS ALAMOS NATIONAL LABORATORY
ENVIRONMENTAL RESTORATION PROGRAM

ALBUQUERQUE OPERATIONS OFFICE

CONTRACTOR: University of California

DIVISION LEADER: Thomas Gunderson

PROGRAM MANAGER: Robert Vocke

NUMBER OF POTENTIAL RELEASE SITES (sampling sites): Approximately 1,700, of which approximately 1,100 are solid waste management units

SUSPECT WASTE: Radionuclides, High Explosives, Metals, Solvents, Organics

1.0 INTRODUCTION

This quarterly report describes the technical status of activities in the Los Alamos National Laboratory (the Laboratory) Environmental Restoration (ER) Program. Each activity is identified by an activity data sheet (ADS) number, a brief title describing the activity or the technical area (TA) where the activity is located, and the name of the project leader. The Hazardous and Solid Waste Amendments (HSWA) portion of the facility operating permit (Section P, Task III, c) requires the submission of a technical progress report on a quarterly basis. This report, submitted to fulfill the permit's requirement, summarizes the work performed and the results of sampling and analysis in the ER Program.

2.0 ACTIVITY DATA SHEETS

2.1 ADS 1049—Canyons (Project Leader: Everett Springer)

The objective of this activity is to conduct a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and any needed corrective measures studies for the Canyons operable unit at Los Alamos. Tasks include managing the ADS, preparing an RFI work plan, conducting the RFI, preparing any needed corrective measures study plans, and conducting any needed studies. RFI work plans for OUs 1114 and 1082 were reviewed, and comments from RFI work plans for OUs 1082 and 1157 were resolved. Personnel participated in a workshop on project control. Baseline revision for FY94 is under way.

2.2 ADS 1066—NEPA (Project Leader: David Kraig)

Progress continued on completing the necessary National Environmental Policy Act (NEPA) documentation for the Mixed Waste Disposal Facility (MWDF). The Environmental Protection Group (EM-8) worked on an environmental assessment for the MWDF, primarily in the area of impact assessment. Cultural resource surveys revealed more than 20 archaeological sites in the original and expanded western area; testing at the site indicated that the proposed trenching locations are acceptable. The final report for the biological resource surveys and data analyses was nearly finished. Personnel have completed the goshawk survey and have begun preparing a final report.

2.3 ADS 1067—RCRA Mixed Waste Disposal Facility (Project Leader: Bob Gillis)

The Title I design of the MWDF was initiated on April 1, 1993. By the end of June, the design neared 30% completion, and preparations were under way for the 30% design review. Design efforts focused on monitoring and alarm system information for the Title I facility design being performed by the architect/engineer. The decision was made to complete a separate Part B RCRA permit application for the MWDF because the completion date for the Title I design would have delayed the submission of the overall Laboratory-site application.

Site characterization activities for Pajarito Mesa have continued. Initial biological and archeological surveys show that no areas will be adversely affected by the MWDF. Trenching and a seismic reflection survey were initiated in June to investigate the possible occurrence of seismic fault zones near the proposed MWDF site. Personnel continue to prepare an environmental assessment.

2.4 ADS 1071—TAs-0, -19, -26, -73, -74 (Project Leader: Jim Aldrich)

RFI activities conducted at OU 1071 included readiness reviews and the following field work. The geophysics team conducted surveys and located potential ordnance explosive waste points at Area of Concern C-0-020 and solid waste management unit (SWMU) 0-011(c). The explosives ordnance disposal team found no ordnance fragments. In an ordnance sweep of SWMU 0-011(a), an unexploded mortar round was found and detonated. Work began at SWMU 0-030(g), a septic tank at the old Catholic Church; samples of sludge from the tank indicate that the tank contains radioactive and hazardous wastes. An assessment of the former small arms range west of Guaje Pines Cemetery was also completed, and it revealed that the soil can be cleaned to meet the Environmental Protection Agency (EPA) and New Mexico Environment Department (NMED) standards.

2.5 ADS 1078—TA-1 (Project Leader: Carl Newton)

An RFI is being conducted for OU 1078, which consists of TA-1. RFI activities for this quarter consisted primarily of administrative activities. Additional archival searches were conducted to support proposals for no further action, and the proposals were submitted to the EPA for five mesa-top SWMUs. Interviews were held with former TA-1 workers who had knowledge of former operating practices. Facility for Information Management, Analysis, and Display (FIMAD) maps were generated with additional Phase I hillside sample locations identified, and a draft data validation procedure was prepared. OU 1078 personnel continued the compilation and preliminary validation of Phase I hillside analytical results and the preparation of graphics of these results for the July 1993 ER Program public meetings. The following documents were prepared and submitted to the EPA: a draft surface-soil and water sampling and analysis plan for contaminated hillside locations in TA-1, and a draft sampling and analysis plan for a screening assessment of the D-Building area in TA-1 to be compared with the compositing approach proposed in the March 15, 1993, Mesa-Top Sampling and Analysis Plan. Other activities included the preparation of a baseline cost proposal for delays in planned mesa-top sampling activities, the preparation of a draft health and safety plan for surface and subsurface sampling, and the preparation and revision of standard operating procedures for subsurface sampling. Additional field work, which was planned for this quarter, is pending approvals.

2.6 ADS 1079—TAs-10, -31, -32, -45 (Project Leader: Garry Allen)

The objective of ADS 1079 is to conduct an RFI and any necessary corrective measures studies and corrective measures implementation for formerly utilized TAs 10, 31, 32, and 45. The primary focus for ADS 1079 during this quarter has been to prepare for subsurface sampling at TA-45. In preparation for the required readiness review, personnel addressed the Site-Specific Safety Plan, various NEPA documents, arrangements to deal with national emission standards for hazardous air pollutants (NESHAP) issues, access agreements with the County of Los Alamos, excavation permits, waste management plans, etc. The readiness review was completed in mid-May, and all significant discrepancies were resolved by mid-June. Site preparation for subsurface sampling activities was completed; all interested parties were notified regarding the sampling schedule.

Although not all of the data have cleared the data validation process in EM-9, preliminary data review began for the surface samples taken at TA-45 last summer. OU 1079 personnel resolved a few problems with missing samples, mismatched samples, and samples with strange units. Almost half of the approximately 4,600 individual data entries obtained so far have no screening action levels (SALs) established. Of the 47 data entries above SALs, 43 are for arsenic, which has a SAL below local background levels. The remaining 4 data entries that exceed their respective SALs consist of one each of the following: benzo[a]pyrene, beryllium, ^{137}Cs, and ^{239}Pu.

A new baseline schedule, which better reflects the RFI work plan activities planned for FY93, was developed for submission to the baseline control process.

2.7 ADS 1082—TAs-11, -13, -16, -24, -25, -28, -37 (Project Leader: Brad Martin)

The comments received from the formal Department of Energy (DOE), the internal Classification Office, and the Legal Counsel reviews of the draft RFI work plan for OU 1082 were resolved and incorporated. The revised draft of the work plan was submitted to the ER Program Office for delivery to the EPA. Personnel continued to develop the second RFI process for the next 160 potential release sites (PRSs) in OU 1082. A strategy for the submission of a closure plan for Material Disposal Area (MDA) P was developed during this quarter and was presented to the NMED in May 1993.

2.8 ADS 1085—TAs-12, -14, -67 (Project Leader: Calvin Martell)

The background, description, and history have been written for the PRSs in TA-12. The conceptual exposure model, the nature and extent of contamination, and the potential pathways and exposure routes have been provided by the risk assessment personnel. The remediation decisions and investigation objectives and the data needs are almost completed. The data quality objectives for TA-12 have been substantially completed, and those for TA-14 are under way and will be finished soon. Additional field work has been carried out for TA-14 PRSs, particularly at the west end where the sites of former buildings have been identified.

2.9 ADS 1086—TA-15 (Project Leader: Caroline Mason)

Comments that were received from the formal DOE review of the draft RFI work plan for OU 1086 were incorporated. Replies to the value engineering comments were also incorporated and resubmitted to Argonne National Laboratory for their approval. All of the Laboratory records of comment resolution have been obtained.

2.10 ADS 1093—TA-18 (Project Leader: Gene Gould)

The final draft of the RFI work plan for OU 1093 was forwarded to the EPA and NMED on May 14, 1993, according to schedule. All work plan comments have been satisfactorily resolved, and comment resolution forms have been signed by the appropriate reviewers. A contract was negotiated with the US Geological Survey to perform streamflow measurements in Pajarito and Three-Mile canyons. Weirs will be installed in the canyons upstream from TA-18 and supplied with recorders for continuous streamflow measurement. Occasional streamflow measurements will be performed using portable flow meters to evaluate water loss and gain in the channel up- and downstream from the gaging stations. The first of these measurements took place in June 1993. The streamflow measurements will be used to evaluate interactions between streamflow and the shallow alluvial groundwater body in Pajarito Canyon. An OU 1093 fact sheet and poster presentation were prepared in coordination with the Public Affairs Office for the July ER Program meeting and open house.

2.11 ADS 1098—TAs-2, -41 (Project Leader: Patrick Longmire)

During this quarter, the technical team submitted the final draft of the RFI work plan for OU 1098 to the EPA. Technical issues continue to include alluvial groundwater contamination found within Laboratory boundaries. During the second quarter of FY93, the levels of strontium-90, cesium-137, and tritium exceeded drinking water standards for the Laboratory. The source of tritium was from a break in a weld seam within the primary cooling water system for the inactive Omega West Reactor at TA-2. The most

recent data for tritium, which were collected and analyzed by the Environmental Management Division, are provided in Table 2-1; the groundwater standard for tritium is 20,000 picocuries per liter (pCi/L). Additional characterization wells were proposed in the RFI work plan to identify source terms and contaminant distributions in the subsurface. Risk assessment is another important issue in the RFI work plan, and efforts were being made with ERM-Golder and several groups in the Laboratory to coordinate risk assessment activities. Field work has been scheduled tentatively for the spring of 1994.

TABLE 2-1

TRITIUM ACTIVITIES IN ALLUVIAL GROUNDWATER, LOS ALAMOS CANYON

	Characterization Well			
Date	**LAO-0.7**	**LAO-R1**	**LAO-R2**	**LAO-1**
4/1/93	200*	9500	12400	9300
4/2/93	400	9400	11400	11700
4/5/93	300	8600		8500
4/7/93	300	8200		7300
4/12/93	400	7400		6900
4/15/93	200	6800		6300

*units in pCi/L.

2.12 ADS 1100—TA-53 (Project Leader: Gene Gould)

The archival data review has been completed. Chapters 2 and 5 of the RFI work plan for OU 1100 have been drafted.

2.13 ADS 1106—TA-21 (Project Leader: P. G. Eller)

Activities conducted during the third quarter of FY93 included the following: the first RFI Phase Report for the TA-21 operable unit was submitted during June, and a baseline change proposal was prepared and submitted for approval within the ER Program to allow a formal change to the TA-21 RFI schedule. Data management and data validation activities continued for the first and second rounds of surface grid sampling, outfall investigations, and filter-building investigations. Sampling of DP Spring was initiated in May, and monthly water samples were collected in June as well.

2.13.1 Administrative Activities

2.13.1.1 Third Quarter Activities

During the third quarter of FY93, administrative support continued for the preparation of the RFI Phase Report 1A for the TA-21 operable unit, which was submitted to the EPA in June 1993, as scheduled; for data management and data validation activities that continued for analytical results from earlier field work; and for cost estimation and scheduling of activities for late FY93, including preparation of a baseline change proposal.

2.13.1.2 Delay of Scheduled Activities

As reported in the "ER Quarterly Report, October–December, Fiscal Year 1993," funding limitations continue to delay the schedule for the initial vadose zone investigations and the investigations at a liquid waste disposal area, PRS 21-018; NESHAP compliance issues have delayed subsurface investigations at outfall locations. No additional activities have been delayed in the past quarter. As part of the baseline change evaluation conducted during the quarter, some of the delayed activities have been rescheduled earlier than was previously expected.

2.13.1.3 Progress Against Schedule

Figure 2-1 illustrates current progress through June 30, 1993, against the schedule for the TA-21 OU RFI. These figures are based on those given in the addendum to the RFI work plan for TA-21 (LANL 1991, 0689), representing the RFI schedule approved by the EPA. Progress is indicated as incomplete for one field work task (Chapter 15 of the work plan), representing the noncompletion of the subsurface investigations at the outfalls. Sample analyses and data assessment and report preparation tasks are behind schedule because of delays in receiving analytical results. Half of the phase report concluding the Sequence 2 investigations is shown as complete, representing the splitting of that task.

2.13.1.4 Schedule Revision

The slow return of analytical results for samples collected in the summer and fall of 1992 delayed the data validation, data assessment, and report preparation activities associated with portions of the first RFI Phase Report. Available information was reported in the RFI Phase Report 1A, which was submitted in June 1993. The delayed portion is planned to be reported in an RFI Phase Report 1B, to be submitted in December 1993.

In the past quarter we have assessed the impact of delays mentioned in Section 2.13.1.2, the funding available, the budget associated with the delayed tasks, and the priorities for addressing the work that has been delayed. Personnel have begun preparing a revised schedule that accounts for the delays and reschedules the TA-21 RFI to best facilitate the progress of the work.

2.13.2 Field Work

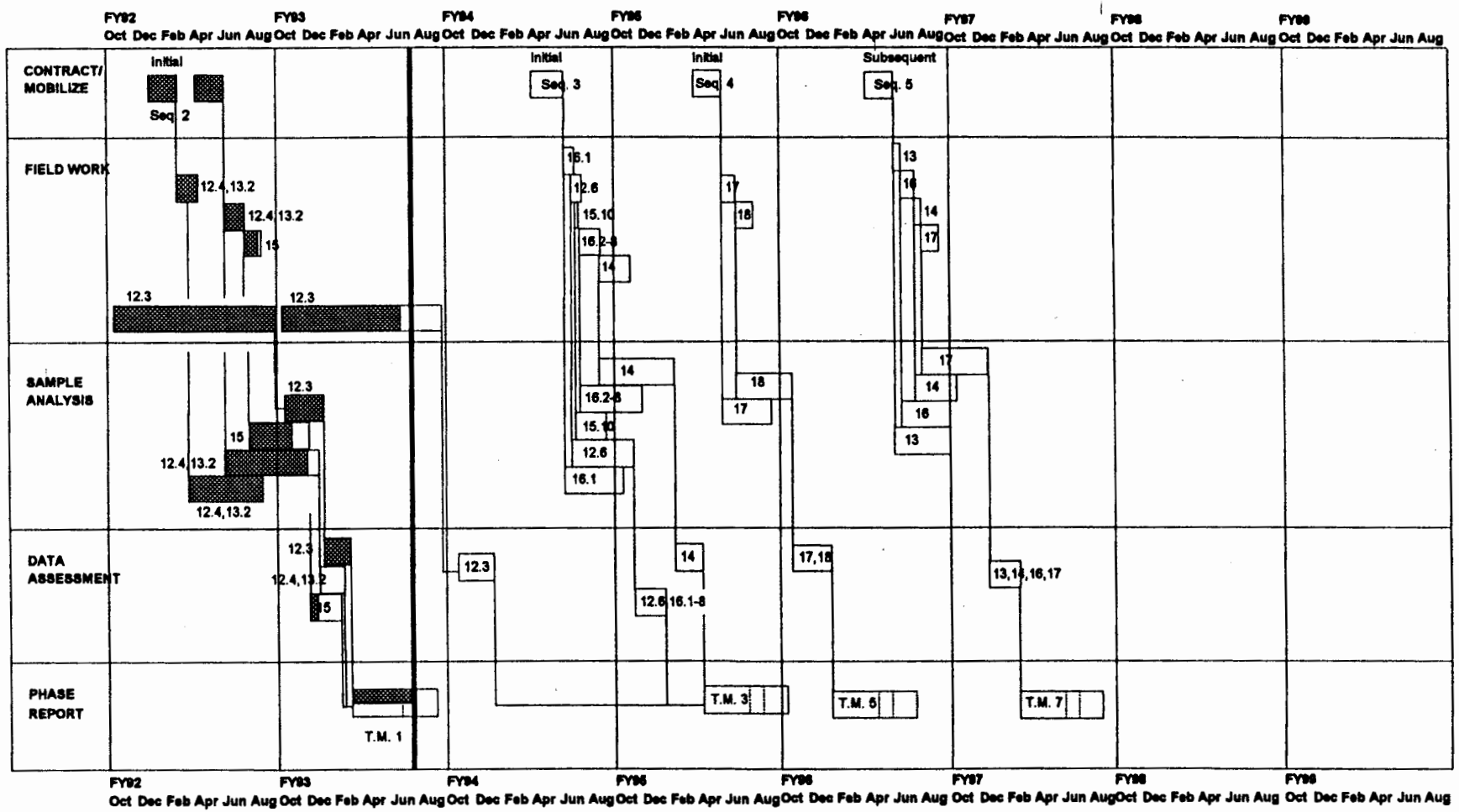
2.13.2.1 Mesa-Wide Surface Grid Sampling

The investigations reported in this section are those described in the RFI work plan in Section 12.4, Surface Grid Sampling Plan, and in Chapter 13, Surface Soil Contamination from Airborne Emissions. Analytical laboratory results for samples from the second round of surface-soil grid sampling, started in June 1992 and completed in July 1992, continued to be delivered during the third quarter of FY93. Data validation activities for these results began during the first quarter of FY93. Table 2-2 summarizes the percentage of analysis results returned for the first and second rounds of sampling. Data assessment and interpretation will be conducted for the entire mesa-wide grid sampling data set when both rounds are complete and validated.

2.13.2.2 Outfall Investigations

The investigations reported in this section are those described in the RFI work plan in Chapter 15, Outfalls Description and Sampling Plan (Sections 15.2 through 15.9). As described in Section 2.13.1.2 of this report, subsurface investigation activities were postponed as a result of NESHAP compliance issues.

Analytical laboratory results for samples from the outfall investigations continued to be received during the third quarter of FY93. Data validation activities for these results began in the first quarter of FY93. Table 2-3 summarizes the percentage of analysis results returned for the samples submitted. Data assessment



Completed

Notes: Field work task 15 was not completed due to postponement of drilling.

Sample analysis tasks 12.4, 13.2 and 15 are not on schedule due to postponement of drilling and slow return of laboratory results.

Figure 2-1. TA-21 OU RFI progress: near-surface investigations (6/30/93).

TABLE 2-2

PERCENTAGE OF SURFACE GRID SAMPLE RESULTS RETURNED FROM ANALYTICAL LABORATORY

	Round 1 Samples				Round 2 Samples			
Analysis Requested	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD
Americium-241	136	136	100%	100%	145	141	97%	51%
Gamma Spectroscopy	244	244	100%	0%	269	269	100%	0%
Plutonium-238	244	244	100%	100%	269	268	99.6%	49%
Plutonium-239	244	244	100%	100%	269	268	99.6%	49%
Strontium-90	244	244	100%	100%	269	248	92%	49%
Thorium-228	27	27	100%	100%	20	20	100%	40%
Thorium-230	27	27	100%	100%	20	20	100%	40%
Thorium-232	27	27	100%	100%	20	20	100%	35%
Tritium	244	244	100%	100%	269	269	100%	100%
Uranium-234	27	27	100%	100%	20	19	95%	35%
Uranium-235	27	27	100%	100%	20	19	95%	35%
Uranium-238	27	27	100%	100%	20	19	95%	35%
Uranium (total)	244	244	100%	100%	269	269	100%	100%
Metals (SW-6010) Ag	256	255	100%	99.6%	282	282	100%	94%
Metals (SW-6010) As	256	256	100%	99.6%	282	282	100%	94%
Metals (SW-6010) Se	256	256	100%	99.6%	282	282	100%	94%
Metals (SW-6010) ICPES*	256	256	100%	100%	282	282	100%	94%
Semivolatiles (SW-8270)	100	100	100%	99.6%	81	81	100%	98%

*ICPES = Inductively coupled plasma emission spectroscopy.

TABLE 2-3

PERCENTAGE OF OUTFALL SAMPLE RESULTS RETURNED FROM ANALYTICAL LABORATORY

	Outfall Samples			
Analysis Requested	**Number of Samples Submitted**	**Number of Sample Results Received**	**Percentage of Data Received**	**Percentage of Data on FIMAD**
Americium-241	202	184	91%	46%
Gamma Spectroscopy	202	201	99.5%	0%
Plutonium-238	202	201	99.5%	47%
Plutonium-239	202	201	99.5%	47%
Strontium-90	202	174	86%	47%
Thorium-228	98	89	91%	48%
Thorium-230	98	89	91%	48%
Thorium-232	98	88	90%	44%
Tritium	202	202	100%	98%
Uranium (total)	202	201	99.5%	97%
Metals (SW-6010) Ag	213	213	100%	46%
Metals (SW-6010) As	213	213	100%	46%
Metals (SW-6010) Se	213	213	100%	46%
Metals (SW-6010) ICPES	213	213	100%	46%
Semivolatiles (SW-8270)	215	213	99%	97%
Volatiles (SW 8240)	224	217	97%	71%

and interpretation will be conducted for the outfall investigations when this data set is complete and validated. This work will be reported in RFI Phase Report 1B in December 1993.

A subset of the outfall data was selected as a formal test of the data validation process. The data selected were for five of the outfalls, three of which were noted to have some elevated radioactive contaminants present. Table 2-4 summarizes the completeness of the validated data set against the RFI sampling plan. The data are not all available and verified at the FIMAD at this time; the data are expected to be available for reporting in the next ER quarterly technical report.

2.13.2.3 Filter Building Investigations

The investigations reported in this section are those described in the RFI work plan in Chapter 13, Surface Contamination from Airborne Emissions Description and Sampling Plan, in the subsections on filter buildings. The investigations address the areas where two former filter buildings (TA-21-12 and TA-21-153) once stood.

Analytical laboratory results for samples from the filter building investigations that were conducted in 1992 continued to be received during the third quarter of FY93. Data validation activities for these results began in the first quarter of FY93. Table 2-5 summarizes the percentage of analysis results returned for the samples submitted. Data assessment and interpretation will be conducted for the filter building investigations when this data set is complete and validated.

TABLE 2-4

COMPLETENESS OF VALIDATED DATA SET FOR FIVE OUTFALL PRSs

Analysis Requested	PRS 21-011(k)		PRS 21-023(c)		PRS 21-024(a)		PRS 21-024(i)		PRS 21-024(b)	
	Number of Samples Planned	Number of Validated Sample Results	Number of Samples Planned	Number of Validated Sample Results	Number of Samples Planned	Number of Validated Sample Results	Number of Samples Planned	Number of Validated Sample Results	Number of Samples Planned	Number of Validated Sample Results
Americium-241	5	5	7	1*	20	19*	6	0*	10	9*
Gamma Spectroscopy	5	5	7	7	20	20	6	6	10	9*
Plutonium-238	5	5	7	4*	20	19*	6	6	10	9*
Plutonium-239	5	5	7	4*	20	19*	6	6	10	9*
Strontium-90	5	5	7	4*	20	19*	6	6	10	9*
Thorium-228							6	0*	9	9
Thorium-230							6	0*	9	9
Thorium-232							6	0*	9	9
Tritium	5	5	7	7	20	20	6	6	10	9*
Uranium (total)	5	0*	7	4*	20	20	6	0*	10	9*
Metals (SW-6010) Ag	5	5	8	8	21	21	6	6	10	9*
Metals (SW-6010) As	5	5	8	8	21	21	6	6	10	9*
Metals (SW-6010) Se	5	5	8	8	21	21	6	6	10	9*
Metals (SW-6010) ICPES	5	5	8	8	21	21	6	6	10	9*
Semivolatiles (SW-8270)	5	5	8	7*	21	21	6	6	10	9*
Volatiles (SW 8240)	5	1**	8	8	22	22	6	6	11	11

* Analysis results were not available at time of validation. Validation for the missing samples can be completed in the future.
** Sample analysis was not done. No results are available for validation.

TABLE 2-5

PERCENTAGE OF FILTER BUILDING SAMPLE RESULTS RETURNED FROM ANALYTICAL LABORATORY

	Filter Building Samples–Near-Surface				Filter Building Samples–Subsurface			
Analysis Requested	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD
Americium-241	18	18	100%	70%	7	2	29%	0%
Gamma Spectroscopy	35	35	100%	0%	11	11	100%	0%
Plutonium-238	35	35	100%	56%	11	11	100%	0%
Plutonium-239	35	35	100%	56%	11	11	100%	0%
Strontium-90	35	35	100%	56%	11	2	18%	0%
Thorium-228	1	1	100%	100%				
Thorium-230	1	1	100%	100%				
Thorium-232	1	1	100%	0%				
Tritium	35	35	100%	76%	11	2	18%	0%
Uranium-234	1	0	0%	0%				
Uranium-235	1	0	0%	0%				
Uranium-238	1	0	0%	0%				
Uranium (total)	35	35	100%	79%	11	2	18%	0%
Metals (SW-6010) Ag	42	42	100%	25%	13	13	100%	0%
Metals (SW-6010) As	42	42	100%	25%	13	13	100%	0%
Metals (SW-6010) Se	42	42	100%	25%	13	13	100%	0%
Metals (SW-6010) ICPES	42	42	100%	25%	13	13	100%	0%
Semivolatiles (SW-8270)	42	42	100%	93%	13	12	92%	0%
Volatiles (SW 8240)	47	47	100%	62%	15	15	100%	0%

2.13.2.4 Geomorphologic Studies

As part of the TA-21 mesa-top characterization, geologic studies were scheduled throughout FY92 and FY93. The studies are described in Section 12.3, Geomorphologic Sampling Plan, of the RFI work plan for TA-21. Most of the planned studies have been completed and were reported in the RFI Phase Report 1A. Progress on the remaining studies is reported here.

A study of fracture-filling minerals constitutes the remaining on-going investigation from the suite of geomorphologic studies described in the work plan. Samples of near-surface fracture-filling materials were collected for mineralogic analysis to investigate the origin, age, and chemical nature of the filling material. Fracture fill material is important in near-surface water and vapor movement through fractures because it provides a barrier to potential contaminant migration.

2.13.2.5 Seeps and Springs Investigations

Investigations are described in the RFI work plan for TA-21 in Section 12.6, Transient Groundwater Emergence Sampling Plan, to address seeps and springs around DP Mesa, which may serve as intermittent migration pathways for water-borne contaminants. At the time the work plan was written, DP Spring, which is a perennial spring issuing from the north wall of lower DP Canyon, was the only spring known to be in the area. The investigations described in the work plan include attempts to locate additional springs or seasonal seeps (Section 12.6 of the work plan) and specific sampling plans for DP Spring (Section 12.6.1.1 of the work plan).

2.13.2.5.1 Identification of Additional Seeps and Springs

No new springs or seeps were found during a three-day field reconnaissance at TA-21 on May 24 and June 1 and 2, 1993. Three traverses were walked, as described below. No new sampling locations for emergent groundwater have been identified.

Traverse 1. The first traverse covered the north wall of the small hanging canyon to the south of MDA B and MDA V (BV Canyon). It started on the wide bench developed on Tshirege Member Unit 2 below MDA V and proceeded west up BV Canyon. The traverse ended at the head of BV Canyon where a 10-in. drainage pipe enters the canyon from the area west of MDA B. There was no evidence of seeps or springs in the stream channel or on the canyon walls.

Standing water was found in one small pool (1 ft by 2 ft) in the stream bottom, about 6 ft short of the shear drop into Los Alamos Canyon. Although the stream bed is dry elsewhere, there are areas of moist alluvium in the eastern part of BV Canyon. The moisture and pool are likely the result of surface run-off from recent spring thunder showers and do not represent the emergence of groundwater as seeps or springs.

Traverse 2. The second traverse was conducted on the north wall of Los Alamos Canyon. The traverse started at the west end of OU 1106 below the west end of MDA B. It followed the base of the canyon wall (above the sloping colluvial deposits) eastward to the intersection of Los Alamos and DP Canyons, then rounded the east end of DP Mesa and proceeded west along the south wall of DP Canyon to DP Spring. At DP Spring, the traverse dropped into the stream channel of DP Canyon and returned eastward to the confluence with Los Alamos Canyon. From the confluence, the traverse went westward in Los Alamos Canyon to the origin of the traverse at the west end of OU 1106. On the return, the traverse was along the base of the talus slopes near the canyon floor. No new seeps or springs were identified on this traverse.

At the time of the reconnaissance, the stream in Los Alamos Canyon had surface flow throughout the length of its course next to TA-21. DP Spring was flowing at 2–4 gal. per minute, and the associated seeps in the north wall of the amphitheater below the spring were active. With the exception of short

stretches of intermittent surface water flow, almost the entire length of lower DP Canyon was dry. The surface flow and pools are likely related to the shallow alluvial system in the canyon bottom and do not represent the emergence of groundwater as seeps or springs.

Traverse 3. The third traverse started at the head (west end) of DP Canyon, near the intersection of Trinity Drive and DP Road. The traverse followed the canyon floor eastward to DP Spring and then turned westward up the small tributary canyon, which in the past received effluent from the TA-21 Sewage Treatment Plant (STP Canyon). No new seeps or springs were found on this traverse.

The head of DP Canyon receives water from a culvert coming from the north under Trinity Drive. This surface run-off infiltrates into the alluvium within 200 yd of the culvert. Below that point in the canyon, water is present only as intermittent pools and short stretches of intermittent surface flow. Surface flow is more common in the area just west of DP Spring where the stream channel begins to cut into the resistant tuffs of Tshirege Member Unit 2. Again, the surface flow and pools are likely related to the shallow alluvial system in the canyon bottom and do not represent the emergence of groundwater as seeps or springs.

STP Canyon, a small tributary canyon that joins DP Canyon just above DP Spring, contained no running water. There is one standing pool (1 ft in diameter) just above the abrupt drop into DP Canyon. The pool is likely the result of surface run-off from recent spring thunder showers and does not represent the emergence of groundwater as a seep or spring.

2.13.2.5.2 DP Spring Investigation

The interest in DP Spring arises primarily from the slightly elevated tritium concentrations found in the water; its association with DP Canyon; and its unknown hydrologic connections, which potentially could allow it to be a migration pathway for contaminants released from TA-21 PRSs. A fluorescein tracer experiment was conducted in June 1991 to determine if there were a hydrologic connection between DP Spring and the drainage entering DP Canyon from the TA-21 Sewage Treatment Plant. This study was reported in the "ER Quarterly Report, April–June, Fiscal Year 1992." The hydrologic connection was not confirmed by the experiment, and the study was inconclusive in addressing a potential connection between the spring and the main drainage of DP Canyon. The potential for such a connection, however, was supported by the geomorphologic study of DP Canyon recently reported in Section 5.3.3, DP Spring, in the RFI Phase Report 1A.

The work plan requires monthly sampling and analysis of water from DP Spring for a year and continued sampling quarterly thereafter. In recent correspondence with the EPA, it was agreed that the monthly sampling in the first year would be conducted only during the months when winter ice and snow do not make access to the spring hazardous; that subsequent sampling would be on a quarterly basis weather permitting; and that certain specified changes to the analyte suite can be made based on the early results from the investigation.

Monthly sampling of DP Spring started in May 1993. A summary of the status of the monthly sample results is given in Table 2-6.

2.14 ADS 1111—TAs-6, -7, -22, -40, -58, -62 (Project Leader: Cheryl K. Rofer)

The comments from the formal internal, informal DOE, and value engineering reviews of the draft of the RFI work plan for OU 1111 were resolved and incorporated. The work plan was submitted for formal DOE review, and comments have been received. Pilot studies on landfill covers continue to show large amounts of water moving laterally through lower levels of the soil during snowmelt. Personnel have begun analyzing the data. An additional plot under a denser tree canopy has been planned; plots have also been set up to compare water balances in soil beneath a thin gravel mulch and in a comparable unmulched plot. The gravel mulches appear to have the potential to stabilize soil inexpensively. Samples of altered and unaltered tuff from PRS 22-015(c), the plating bath outflow, continue to be examined for their mineralogical composition to help determine the nature and degree of contamination and possible

TABLE 2-6

STATUS OF DP SPRING MONTHLY WATER SAMPLES

Analysis Requested	May 1993				June 1993			
	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentag of Data on FIMAD
Radiological								
Gross Alpha	2	0	0%	0%	1	0	0%	0%
Gross Beta	2	0	0%	0%	1	0	0%	0%
Radium-226	2	0	0%	0%	1	0	0%	0%
Thorium-230	2	0	0%	0%	1	0	0%	0%
Cesium-137	2	0	0%	0%	1	0	0%	0%
Strontium-90	2	0	0%	0%	1	0	0%	0%
Isotopic Uranium	2	0	0%	0%	1	0	0%	0%
Isotopic Plutonium	2	0	0%	0%	1	0	0%	0%
Metals (SW-6010)								
Metals (SW-6010) Ag	2	0	0%	0%	1	0	0%	0%
Metals (SW-6010) As	2	0	0%	0%	1	0	0%	0%
Metals (SW-6010) Se	2	0	0%	0%	1	0	0%	0%
Metals (SW-6010) ICPES	2	0	0%	0%	1	0	0%	0%
Other Minor and Trace Constituents*								
Boron	2	0	0%	0%	1	0	0%	0%
Bromide	2	0	0%	0%	1	0	0%	0%
Chlorate	2	0	0%	0%	1	0	0%	0%
Cyanide	2	0	0%	0%	1	0	0%	0%
Mercury	2	0	0%	0%	1	0	0%	0%
Other Major Cations*								
Ammonium	2	0	0%	0%	1	0	0%	0%

TABLE 2-6 (continued)

Analysis Requested	May 1993				June 1993			
	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD	Number of Samples Submitted	Number of Sample Results Received	Percentage of Data Received	Percentage of Data on FIMAD
Major Anions								
Chloride	2	0	0%	0%	1	0	0%	0%
Sulfate	2	0	0%	0%	1	0	0%	0%
Fluoride	2	0	0%	0%	1	0	0%	0%
Nitrate	2	0	0%	0%	1	0	0%	0%
Nitrite	2	0	0%	0%	1	0	0%	0%
Phosphate	2	0	0%	0%	1	0	0%	0%
Environmental Isotopes								
Hydrogen/Deuterium	2	0	0%	0%	1	0	0%	0%
Oxygen-16/Oxygen-18	2	0	0%	0%	1	0	0%	0%
Tritium (Low-level)	2	0	0%	0%	1	0	0%	0%
Other Analyses								
Silica	2	0	0%	0%	1	0	0%	0%
Dissolved Organic Carbon	2	0	0%	0%	1	0	0%	0%
Semivolatiles (SW-8270)	2	0	0%	0%	1	0	0%	0%
Volatiles (SW 8240)	2	0	0%	0%	2	0	0%	0%

*Other analytes that would be included in this category have been included under "Metals (SW-6010)".

remediation schemes. Chromium, manganese, copper, and iron have been found in the altered minerals. There is some indication that the metals are concentrated in particular minerals.

2.15 ADS 1114—TAs-3, -30, -59, -60, -61, -64 (Project Leader: Ed Griggs)

The comments received from the formal DOE, the internal Classification Office, and the Legal Counsel reviews of the draft RFI work plan for OU 1114 were resolved and incorporated, and the final draft was submitted to the ER Program Office for delivery to the EPA. Personnel continue to prepare the archival data for the analysis and delineation of the 103 PRSs in OU 1114 that are to be addressed in the second RFI work plan. Sample monitoring of PRS 3-010(a), the mercury spill at TA-3-30, was completed May 17, 1993, in preparation for voluntary corrective action. The samples were submitted to a contract analytical laboratory.

2.16 ADS 1122—TAs-33, -70 (Project Leader: Roy Michelotti)

ICF Kaiser Engineers, Inc. initiated and completed all sampling-related activities at the main site and Area 6 at TA-33. Surface samples were taken and delivered to the Environmental Chemistry Group (EM-9) for distribution for fixed-laboratory analyses. One hot spot could not be sampled because a respirator-fitted sampling person trained to meet requirements of 29 CFR 1910.120 was not available. A new operable unit project leader was appointed, has been trained according to 29 CFR 1910.120, and has begun familiarizing himself with OU 1122. The following activities have been initiated: scheduling of drilling operations for subsurface sampling at MDA K; development of proposals to the Environmental Restoration Group (EM-13) to simplify field paperwork using existing data base information; interaction with EM-9 concerning sample tracking and data validation; and interaction with the FIMAD personnel concerning data transmittal and display.

2.17 ADS 1127—TA-35, TSL-125 (Project Leader: Dave McInroy)

An amended Closure Certification Report was delivered to the NMED on April 22, 1993. The report included the sampling results of the December 1992 sampling in Ten-Site Canyon. The NMED has requested a meeting to discuss the analytical results and risk assessment presented in the closure report.

2.18 ADS 1129—TAs-4, -5, -35, -42, -48, -52, -55, -63, -66 (Project Leader: Allyn Pratt)

The notice of deficiency from the EPA for the RFI work plan for OU 1129 (LANL 1992, 0785) was received June 22, 1993, and the comment resolution process has begun. Initial development of a sample coordination data base application has been completed; its purposes are to determine the number and type of sample jars needed for the TA-48 characterization and required by EM-9/Sample Coordination Facility and to produce the bar-coded forms and labels for the samples. Readiness review activities were finalized for the TA-48 site characterization scheduled to begin July 12, 1993; personnel have begun testing the field equipment and have begun the final coordination with EM-9's mobile laboratories and with the drilling subcontractor. Members of the OU 1129 team also participated in the DOE Technology Information Exchange conference in Knoxville, Tennessee, where team members presented information on the use of quick-turn-around analytical results to guide decisions on PRS characterizations.

The on-site investigation at the former location of NMED-registered underground storage tanks (TA-35-188-TSL-1 and TA-35-188-TSL-2 was completed May 12, 1993. In accordance with the NMED Underground Storage Tank Bureau regulations, the purposes of this on-site investigation were to determine whether surface- or groundwater had been impacted and to determine the vertical and horizontal extent of total petroleum hydrocarbon contamination in and around the former tank pit. In addition, reconnaissance data revealing potential polychlorinated biphenyl (PCB) contamination were used to help derive a final sampling and analysis plan for PRS 35-14(f), which is adjacent to the former tank pit location. The location of these former tanks is shown in Figure 2-2.

Six boreholes were drilled to a minimum of 20 ft to provide additional information and sampling data to supplement work that initially took place during March and August of 1991. Two boreholes were drilled into the former tank pit to determine the vertical extent of contamination, and four boreholes were drilled to bound the tank pit and to determine the extent of horizontal contamination. Samples were taken at 5-ft

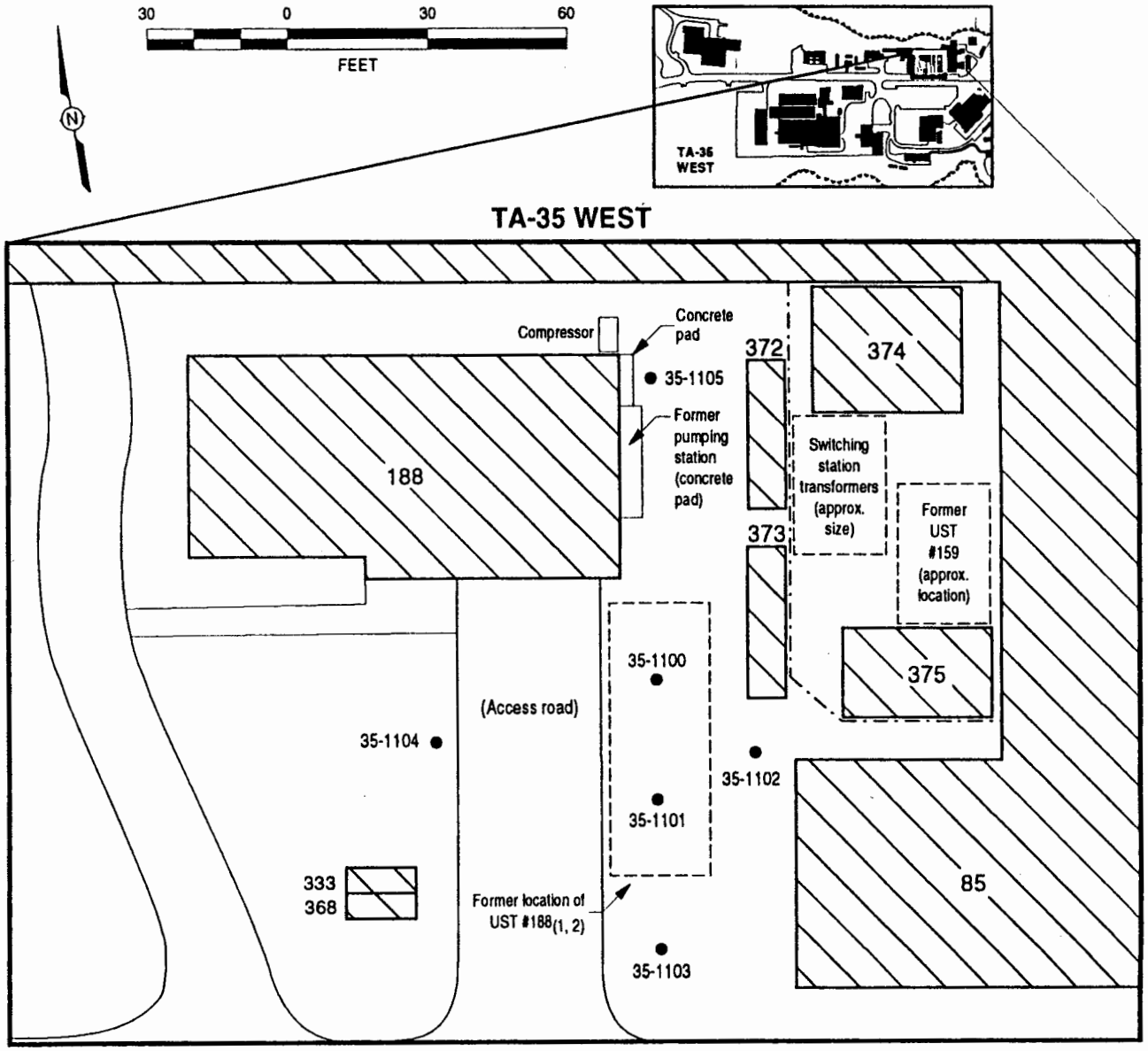


Figure 2-2. Site investigation for former underground storage tanks TA-35-TSL-188 (1 & 2).

intervals, where applicable, and taken for analysis to the EM-9 on-site mobile laboratory. The only analytical value above the 100-parts-per-million (ppm) total petroleum hydrocarbon cutoff was recorded in borehole 35-1100 at the soil-tuff contact in the former tank pit. The PCB sampling was all below detection limits. Table 2-7 provides the analytical results.

The analytical data, cross sections, geological logs, and sample collection logs were provided to EM-8 for incorporation into the final closure report to the NMED on underground storage tanks TA 35-188-TSL-1 and TA 35-188-TSL-2.

2.19 ADS 1130—TAs-36, -68, -71 (Project Leader: Gene Gould)

The final draft of the RFI work plan for OU 1130 was forwarded to the EPA and NMED on June 4, 1993, according to schedule. All work plan comments have been satisfactorily resolved, and comment resolution forms have been signed by the appropriate reviewers. An OU 1130 fact sheet was prepared in coordination with the Public Affairs Office for the July ER Program meeting and open house.

2.20 ADS 1132—TA-39 (Project Leader: Gene Gould)

The final draft of the RFI work plan for OU 1132 was forwarded to the EPA and NMED on June 18, 1993, according to schedule. Comment resolution forms have been forwarded to the appropriate reviewers for signature. An OU 1132 fact sheet was prepared in coordination with the Public Affairs Office for the July ER Program meeting and open house. A pilot study on erosion and run-off processes has been undertaken. This study will allow for better prediction of contaminant transport on the Pajarito Plateau.

2.21 ADS 1135—TA-40 (Project Leader: Dave McInroy)

An amendment to the closure plan for the TA-40 Scrap Detonation Site was written to address contamination that was unexpectedly discovered. The amended closure plan was delivered to the NMED on May 19, 1993, the same day the State sent a notice of violation requesting the amendment. The Laboratory was asked by the State's Hazardous and Radioactive Materials Bureau to ignore the notice. Closure activities have stopped until the plan is commented on or approved by the NMED.

2.22 ADS 1136—TA-43 (Project Leader: Calvin Martell)

A draft of Chapter 2 of the RFI work plan for OU 1136 has been completed, and drafts of chapters 5 and 6 are almost complete. A fact sheet has been prepared.

2.23 ADS 1140—TA-46 (Project Leader: Roy Michelotti)

The draft of the RFI work plan for OU 1140 was submitted to the DOE and NMED for review, and comments were received. Informal comment resolution has been initiated with the DOE. Several meetings with personnel from the Facilities Engineering Division were held to discuss projects that are planned at TA-46 for FY93. Several out-of-compliance drain systems, which are PRSs, are proposed to be rerouted and brought into compliance.

2.24 ADS 1144—TA-49 (Project Leader: Ines Triay)

Soil sampling was performed at 62 sites in Area 2, and 9 baseline samples were collected at the boundaries of OU 1144. All samples were screened for alpha, beta, and gamma contamination; the results were below detection limits. A total of 39 samples, including field replicates, from Area 2 were submitted to EM-9 for analysis. The baseline samples and the baseline field replicates were also sent for analysis. The soil samples will be analyzed for uranium, plutonium, gross alpha and beta activity, gamma emitters, and RCRA metals. EM-8 resurveyed the benchmarks; the corrected coordinates for the sample locations have been submitted to the FIMAD and are now in the data base.

TABLE 2-7

TA-35 UNDERGROUND STORAGE TANK INVESTIGATION

Total Petroleum Hydrocarbon Analytical Results

OU1129 SAMPLE #	EM-9 BARCODE	CONC (ppm)
35-1100-1	AAA2387	81.30
35-1100-2	AAA2388	2.53
35-1100-3	AAA2389	497.47
35-1100-4	AAA2390	65.90
35-1100-5	AAA2417	14.04
35-1101-1	AAA2391	18.84
35-1101-2	AAA2392	23.36
35-1101-3	AAA2393	13.86
35-1101-4	AAA2394	ND
35-1101-4D	AAA2395	ND
35-1101-5	AAA2422	ND
35-1102-1	AAA2396	1.50
35-1102-2	AAA2397	0.00
35-1102-3	AAA2398	4.60
35-1102-4	AAA2399	ND
35-1103-1	AAA2400	4.40
35-1103-2	AAA2401	2.79
35-1103-3	AAA2402	9.02
35-1103-4	AAA2403	13.93
35-1103-4D	AAA2404	11.46
35-1104-1	AAA2405	5.65
35-1104-2	AAA2406	3.10
35-1104-3	AAA2407	7.33
35-1104-4	AAA2408	2.96
35-1105-1	AAA2409	ND
35-1105-2	AAA2410	ND
35-1105-3	AAA2411	7.29
35-1105-4	AAA2412	8.79
35-1BB	AAA2413	1.62
35-1ERB	AAA2415	9.65
35-2BB	AAA2414	33.25
35-2ERB	AAA2416	16.92

CONC=concentration.
ND=Non-Detect; Detection Limit=0.5 µg/sample.
EPA Method 418.1 Modified for soils.

Polychlorinated Biphenyl Analytical Results

OU1129 SAMPLE #	EM-9 BARCODE	TYPE OF PCB FOR WHICH ANALYZED		
		Ar1242 (ppm)	Ar1254 (ppm)	Ar1260 (ppm)
35-1100-1	AAA2387	ND	ND	ND
35-1100-2	AAA2388	ND	ND	ND
35-1100-3	AAA2389	ND	ND	ND
35-1100-4	AAA2390	ND	ND	ND
35-1100-5	AAA2417	ND	ND	ND
35-1101-1	AAA2391	ND	ND	ND
35-1101-2	AAA2392	ND	ND	ND
35-1101-3	AAA2393	ND	ND	ND
35-1101-4	AAA2394	ND	ND	ND
35-1101-4D	AAA2395	ND	ND	ND
35-1101-5	AAA2422	ND	ND	ND
35-1102-1	AAA2396	ND	ND	ND
35-1102-2	AAA2397	ND	ND	ND
35-1102-3	AAA2398	ND	ND	ND
35-1102-4	AAA2399	ND	ND	ND
35-1103-1	AAA2400	ND	ND	ND
35-1103-2	AAA2401	ND	ND	ND
35-1103-3	AAA2402	ND	ND	ND
35-1103-4	AAA2403	ND	ND	ND
35-1103-4D	AAA2404	ND	ND	ND
35-1104-1	AAA2405	ND	ND	ND
35-1104-2	AAA2406	ND	ND	ND
35-1104-3	AAA2407	ND	ND	ND
35-1104-4	AAA2408	ND	ND	ND
35-1105-1	AAA2409	ND	ND	ND
35-1105-2	AAA2410	ND	ND	ND
35-1105-3	AAA2411	ND	ND	ND
35-1105-4	AAA2412	ND	ND	ND
35-1BB	AAA2413	ND	ND	ND
35-1ERB	AAA2415	ND	ND	ND
35-2BB	AAA2414	ND	ND	ND
35-2ERB	AAA2416	ND	ND	ND

Ar=Arochlor.
ND=Non-Detect; Detection Limit=0.05ppm.
EPA Method 8080 Modified for pesticides and PCBs.

Results from the analyses of the water in the Area 2 corehole CH-2 were received from EM-9 (see Table 2-8). The chemical content of the corehole CH-2 water was plotted and compared with aquifer waters from deep test hole (DT)-5, DT-9, and DT-10 (Environmental Protection Group 1992, 0740); with surface water from Water Canyon near Beta Hole (Environmental Protection Group 1992, 0740); and with the average composition of rain water in New Mexico (Borland and Beal 1989, 0966). Figures 2-3 and 2-4 indicate that the water in corehole CH-2 is likely to be the result of the infiltration of rain water into the asphalt pad covering Area 2. Both CH-2 water and rain water have extremely low silica content. In May, corehole CH-2 was emptied, and the water and sediments that were collected have been sent for analysis. A transducer has been placed in the corehole and is on-line as part of the EM-8 surveillance system to monitor any change in water level.

In other activities, a supplemental work plan for the drilling operations at TA-49 was written and is under internal review, and a representative of the NMED was given a tour and a briefing on several PRSs at TA-49.

2.25 ADS 1147—TA-50 (Project Leader: Cheryl K. Rofer)

The RFI work plan for OU 1147 was approved by the EPA on April 6, 1993. No comments on the work plan have been received from the NMED. A readiness review was held April 30, 1993, for surface soil sampling and augering to a 3-ft depth. Sampling started May 19, 1993. Most of the sampling has been completed for Aggregate 5, possible fallout from operations at TA-50 [PRSs 50-006(c), 50-007, and 50-008]; Aggregate 6, Ten-Site Canyon [PRS 50-006(a)] and Mortandad Canyon [PRS 50-006(d)]; and MDA C (PRS 50-009). Of the 381 samples that were collected, 205 have been sent to EM-9 for analysis, and 176 are in the screening process.

2.26 ADS 1148—TAs-51, -54 (Project Leader: Don Neeper)

The objective of ADS 1148 is to conduct an RFI of TAs 51 and 54, with concurrent voluntary corrective action to retract the organic vapor plume at TA-54, Area L. Trailers were obtained for field storage and for a field laboratory. The new pore gas monitoring and analysis plan was revised, and the plan, which includes a mass flow controller and automatic sampling, will be tested before it is used in the field. Statements of work have been submitted for technical contracts to Quadrel Services, Inc. for passive sampling of the surface flux of organic compounds; to Daniel Stephens and Associates for analysis of the hydrogeologic properties of core samples; and to Science and Engineering Associates, Inc. for completion and testing of new monitor wells. OU 1148 personnel also prepared a written response to an Independent Cost Estimates audit and a detailed response to the EPA notice of deficiency on the RFI work plan for OU 1148 (LANL 1992, 0788).

2.27 ADS 1154—TA-57 (Project Leader: Tracy Glatzmaier)

All archival information pertaining to OU 1154 has been obtained from the Records Processing Facility and the Hot Dry Rock project records. The records have been reviewed to obtain background information and to help determine whether contaminants of concern are present at the site. Interviews with personnel who have worked at the site are ongoing. Personnel have begun writing the draft RFI work plan for OU 1154. Emphasis has been placed on the history and background of the site as well as on the environmental settings chapter.

2.28 ADS 1157—TAs-8, -9, -23, -69 (Project Leader: Tracy Glatzmaier)

The comments received from the formal review of the draft RFI work plan for OU 1157, including the DOE, EM-13, and EM-8 reviews, were incorporated into the work plan, as appropriate. The final draft will be ready for submittal to the EPA in July 1993, as scheduled. Scheduling of the ADS for the FY94 baseline continues.

TABLE 2-8

WATER ANALYSIS OF COREHOLE CH-2

Inorganic Constituent Analysis of Sample 92.35458[a] (12/23/92)

Inorganic Constituent	Concentration (ppm)[b]
Na	31.7 ± 3.2
Sulfate	15.3 ± 1.5
K	5.97 ± 0.6
Ca	4.4 ± 0.4
Fe	3.8 ± 0.4
Al	2.02 ± 0.2
Cl	1.85 ± 0.5
Pb	1.07 ± 0.1
Mg	0.81 ± 0.08
F	0.64 ± 0.1
Nitrate	0.25 ± 0.04
Cu	0.09 ± 0.02
Mn	0.07 ± 0.01
Sr	0.06 ± 0.01
Ba	0.024 ± 0.003
B	0.02 ± 0.01
Cd	0.019 ± 0.002
SiO_2	below DL[c]

Organic and Radioactive Constituents Analysis

Date Sample Collected Sample ID	12/23/92 92.35458	12/23/92 92.35460	1/5/93 93.00089	1/14/93 93.00682
Organic Constituent	**Concentration (ppb)[d]**	**Concentration (ppb)**	**Concentration (ppb)**	**Concentration (ppb)**
methylene chloride	150	15	59	73
toluene	15	NA[e]	15	18
trichlorotrifloroethane	7.5	NA	NA	NA

Radioactive Constituent	Concentration (pCi/L)
^3H	800

a. EM-8 sample numbers were used.
b. ppm = parts per million.
c. DL = detection limit.
d. ppb = parts per billion.
e. N/A = not available.

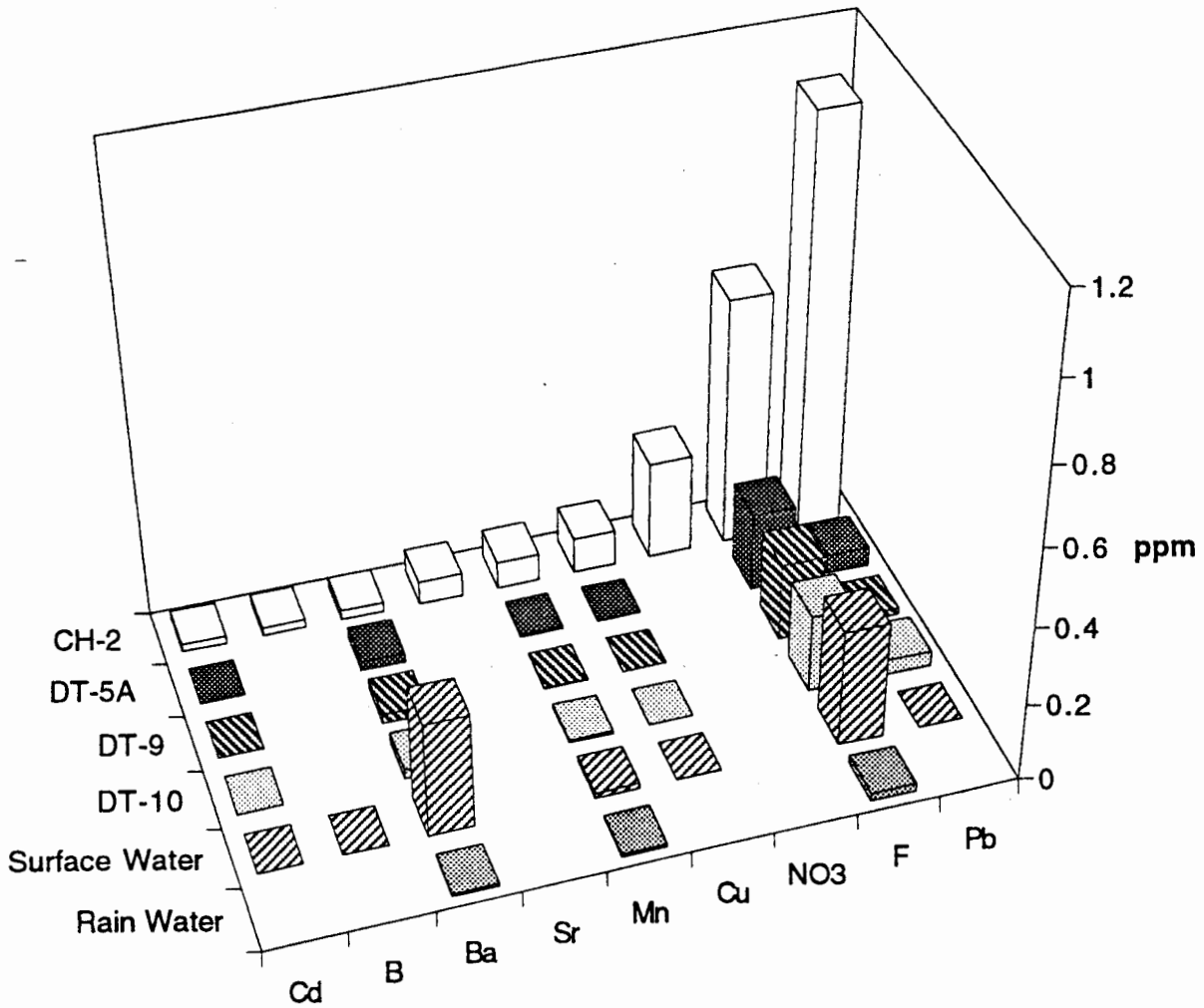


Figure 2-4. Corehole CH-2 water vs. other waters (minor constituents).

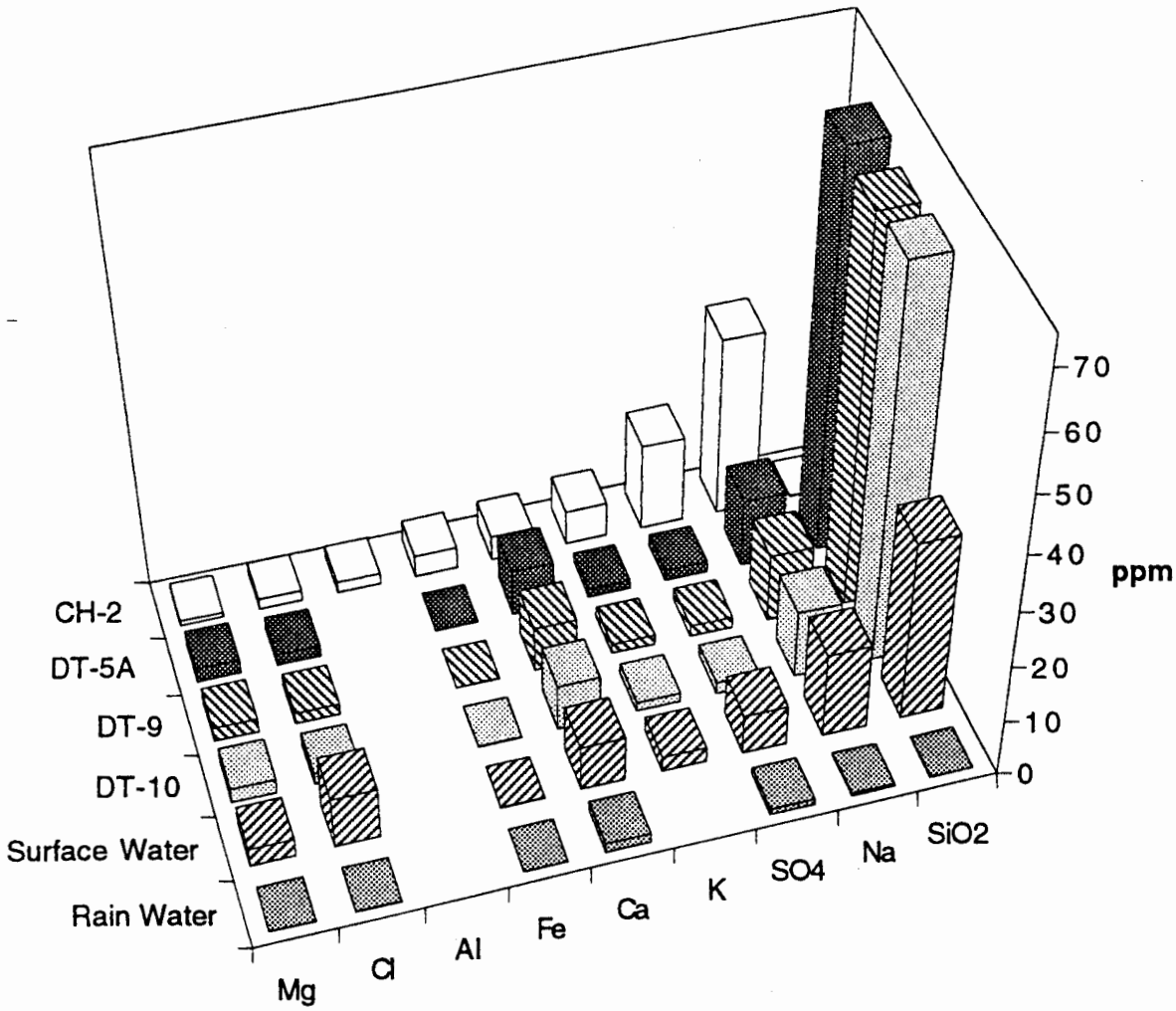


Figure 2-3. Corehole CH-2 water vs. other waters (major constituents).

2.29 ADS 2105—Technical Programmatic Support

2.29.1 Assessment Technical Teams

The following technical teams contributed to the ER Program: Decision Analysis, Ecological Risk Assessment, Environmental Evaluation, Human Health Risk, and Statistics/Data Quality Objectives. The teams developed a list of technical assumptions consistent with the Laboratory ER approach for submission to the Interagency Task Force, which includes the DOE, the EPA Region 6, the NMED, the Laboratory, and Sandia National Laboratories. The development of a Bayesian statistical method for designing sampling and analysis plans in support of screening assessments and the development of methods to present Laboratory background data for radionuclides and metals have begun. Calculations were finalized to support OU 1106 on-site decision making; the calculations use a model that incorporates a public access scenario and estimates levels for hot spots at which fencing would be prudent. In other activities, the application of the PRS Ranking System has been initiated at OU 1140; Appendix K (Baseline Risk Assessment Methodology) and a new appendix (National Resource Damage Assessment and Ecological Risk Assessment) were completed for Revision 3 of the Installation Work Plan; and work has begun with Colorado State University to develop the ecological risk modeling approach to be implemented at the Laboratory. The Biological and Floodplain/Wetland Assessments reports for the MWDF and for nine OUs have been completed; archaeological field studies have begun at several OUs.

2.29.2 Earth Sciences Technical Teams

The Earth Sciences Technical Team continued support and participation in geologic characterization activities at TA-21, the MWDF, and TA-33. The team also helped with permitting, siting, and logistics arrangements for the fault-locating trenches at the MWDF. Preparations for seismic reflection experiments at the MWDF were accomplished this quarter, too. Preliminary results were distributed in an informal report of studies of geologic materials to determine natural backgrounds. As a result of these studies, the team began to address the issues of analysis techniques and comparability of data. In other activities this quarter, the second Environmental Restoration Quarterly Technical Session was organized and held, and three geologic tours of the Pajarito Plateau were given. These tours continue to be a worthwhile introduction to the concepts and controversies of the geohydrology of the Pajarito Plateau. In addition, the Earth Sciences Technical Team participated in a field trip organized by the NMED. This field trip provided a valuable opportunity to compare units and information being developed by the technical team with what the NMED probably will regard as the standard. The Earth Sciences Technical Team also reviewed the first phase report for TA-21.

2.29.3 Facility for Information Management, Analysis, and Display/Records Processing Facility

During this quarter, the development work at the FIMAD consisted of the following activities. Networking activities included the installation of Transparent Local Area Network Service to the Records Processing Facility and the Community Reading Room and the installation of a T-1 line to the DOE/Los Alamos Area Office. A new Hewlett-Packard cluster has been installed on the network to support the System for Information Management, Analysis, and Display (SIMAD) development and the Synchronize calendar software. The User's Guide for the SIMAD product has been completed, as well as the enhancement of the SIMAD prototype product. The following production work at the FIMAD was completed. Approximately 200 new maps and 750 copies of existing maps have been generated, and the distribution of 1" = 100'- and 1" = 400'-scale orthophotos was completed. Archiving of the 2' and 10' digital contour data onto optical disc and the upgrade and networking of all Macintosh computers at EM-13 was completed.

The Records Processing Facility began re-engineering the internal work-flow and began streamlining the process for handling incoming documents. This new process will not affect the submittal of documents but will expedite the retrieval of information and, therefore, will allow for quicker response to customer requests. The re-engineering also will allow for a smoother migration into the TOPIC Document/Image Management System. Progress on the Administrative Record Index system is evolving with communication from operable unit project leaders, the Community Reading Room, and the FIMAD. The initial draft document that outlines the phases of the Administrative Record process is complete. A

member of the staff is reviewing the Public Reading Room's inventory of documents to establish an index system that will integrate with the Records Processing Facility and the Administrative Record Index system. Another employee is representing EM-13 on the Information Data Exchange (INDEX) team for developing Laboratory-wide standards and recommendations for an on-line document retrieval system.

2.30 ADS 2107—Management (Program Manager: Robert Vocke)

Routine programmatic management activities continued. Monthly meetings with the EPA, NMED, and Agreement in Principle Program were attended, and the FY95 draft Five-Year Plan was completed.

2.31 ADS 2110—Mobile Field Laboratories and Sample Coordination (Project Leader: John Miglio)

The Sample Coordination Facility staff performed the following activities during this quarter. Personnel reviewed an RFI work plan, reviewed data packages from contractor laboratories, received instruction for the transportation of hazardous material, and established temporary analytical chemistry contracts for summer sampling activities. Personnel also began receiving ER Program samples, helped define the required explosives analyses, helped the Design Engineering Division establish a position on the transportation of explosive samples from S-Site, and helped the Explosives Technology Group prepare for FY94 analyses.

Data management activities included entering data from contract and EM-9 laboratories onto the Laboratory Information Management System and sending reports to the appropriate operable unit project leaders. The analytical data were then transferred to the FIMAD.

Progress with the mobile analytical laboratories included completing the award for the second mobile radiological laboratory in early April and completing the design for the platforms for the third and fourth mobile radiological laboratories.

3.0 REFERENCES

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