LANL TA-01 1996

Interim Action Report for a Potential Release Site at TA-1

1-001(s)

Western Sanitary Waste Line
Locations 9, 10, 11, and 1A

Field Unit 1

Environmental
Restoration
Project

September 1996

A Department of Energy
Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY

LA-UR-96-3352

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1.0 INTRODUCTION

Potential Release Sites (PRSs) 1-001(s) and 1-001(u) comprise the Western Sanitary Waste Line (WSWL), which routed liquid sanitary waste from former buildings at Technical Area (TA) 1 to a septic tank located in TA-0. Thirteen locations along the WSWL were considered physically accessible for field investigation when the sampling and analysis plan was prepared (Figure 1-1) (LANL 1993, 09-0529). The sampling and analysis plan prepared for the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of these PRSs included removal of portions of the system pipes and manholes at locations 1A and 13 (LANL 1993, 09-0529). This report describes the interim action activities at these PRS 1-001(s) locations, which are numbered 9, 10, 11, and 1A.

PRS 1-001(s), the main portion of the WSWL, routed liquid sanitary waste from nine former TA-1 buildings to septic tank PRS 0-030(g). PRS 1-001(s) is located south of Trinity Drive, extending westward from the current location of the Los Alamos Inn (location 13) to the Timber Ridge Condominiums complex (location 1A). From location 1A, the WSWL extends northward and connected to the former septic tank PRS 0-030(g), which discharged into Acid Canyon. Knowledge of operations conducted in TA-1 buildings and results from recent investigations indicate that inorganic and radioactive constituents were discharged into at least a portion of the WSWL. While there is no evidence that these constituents were inadvertently released from the WSWL, it is possible that releases may have occurred in areas where future excavation is possible. Because of the possibility of exposure to potential contamination through future excavation, interim action activities were proposed at Locations 9, 10, 11, and 1A (LANL 1996, 09-0528). These activities consisted of:

1) removing and disposing of vitrified clay pipe (VCP) and associated structures (e.g., manholes);

2) collecting confirmation samples from materials underlying VCP sections to evaluate potential releases to the surrounding soil; and

3) collecting samples from materials within VCP sections to provide additional RFI characterization data for the WSWL, PRSs 1-001(s).

Completion of the field activities and the resulting analytical data indicate that the potential for release and migration of inorganic and radioactive constituents has been eliminated at locations 9, 10, 11, and 1A. Consequently, the risk of exposure to potential contamination through future excavation at this site has also been eliminated.

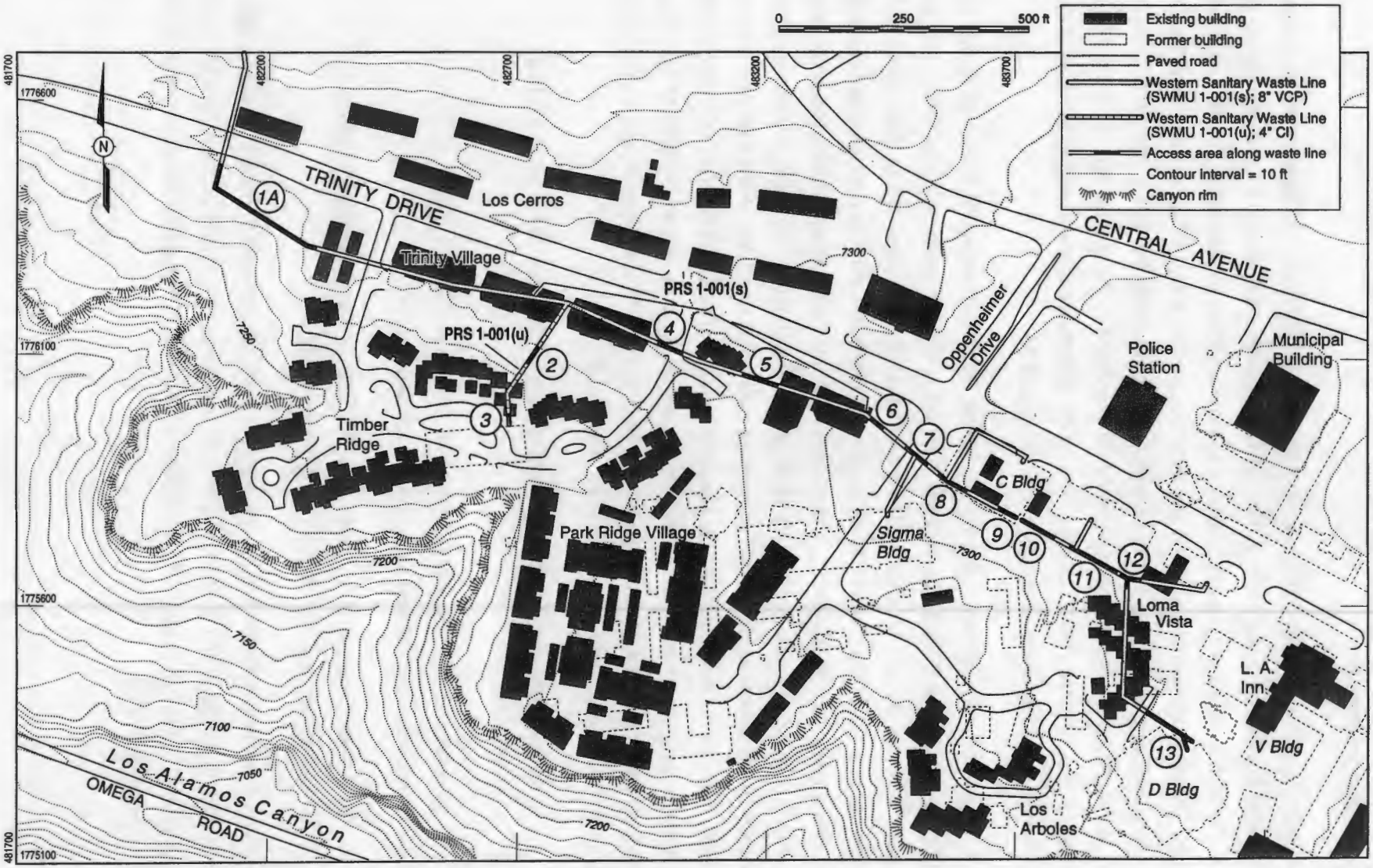

Fig. 1-1. Location of the Western Sanitary Waste Line.

2.0 INTERIM ACTION

The excavation and removal activities at locations 9, 10, 11, and 1A were conducted in accordance with the interim action plan (LANL 1996, 09-0528). In addition, all field work was performed in accordance with applicable Environmental Restoration (ER) Project Standard Operating Procedures (SOPs), site-specific plans (including the Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Implementation Plan, Site-Specific Health and Safety Plan, and Waste Characterization Strategy Form), and federal, state, and local regulations.

Approximately 250 ft of the WSWL were removed from locations 9, 10, and 11, which are located on the property currently occupied by the former Hot Shots Restaurant (west lot) and the adjacent vacant lot (east lot) (Figure 2-1). An additional 12 ft of the WSWL was removed from location 1A, which is located immediately west of the Timber Ridge Condominiums (Figure 2-2). Eleven days were required for completion of field activities, which included site preparation, excavation and removal of VCP sections, sample collection, and backfilling. A photographic log of the site and field activities is presented in Annex A.

2.1 Locate and Expose

A series of north-south trending exploratory trenches were excavated using a trackhoe on the paved portion of the west lot (behind the former Hot Shots Restaurant). These trenches were excavated to locate the pipeline and to evaluate the procedures necessary to expose and remove the pipe. The locations of exploratory trenches were determined based on historical site maps and the results of a geophysical survey conducted in May 1996. Underground structures initially encountered included an intact asphalt road bed and concrete curb and sidewalk at approximately 5 ft below ground surface (bgs), and an abandoned, east-west trending, cast iron water pipeline at approximately 10 ft bgs. The east-west trending WSWL, composed of 3-ft long sections of 8-in. inside-diameter VCP, was located at a depth of approximately 10 ft bgs on the west lot.

2.2 Excavate and Remove

A north-south trending trench was excavated on the east lot to locate the pipeline and to evaluate the possibility of safely entering the trench without additional safety equipment. Due to the additional fill material on the east lot, the pipeline was located at a depth of approximately 12 ft bgs. After evaluating the condition of the excavation and the instability of the crushed tuff fill material, it was determined that sloping or benching the material to allow for safe entry into the excavation was impractical due to safety concerns and the limited space available. The use of shoring and a trench box were also evaluated, but eventually eliminated from further consideration due to costs, limited availability, and safety concerns. As a result, narrow trenches were excavated to expose the pipeline, and sections were removed using the trackhoe bucket.

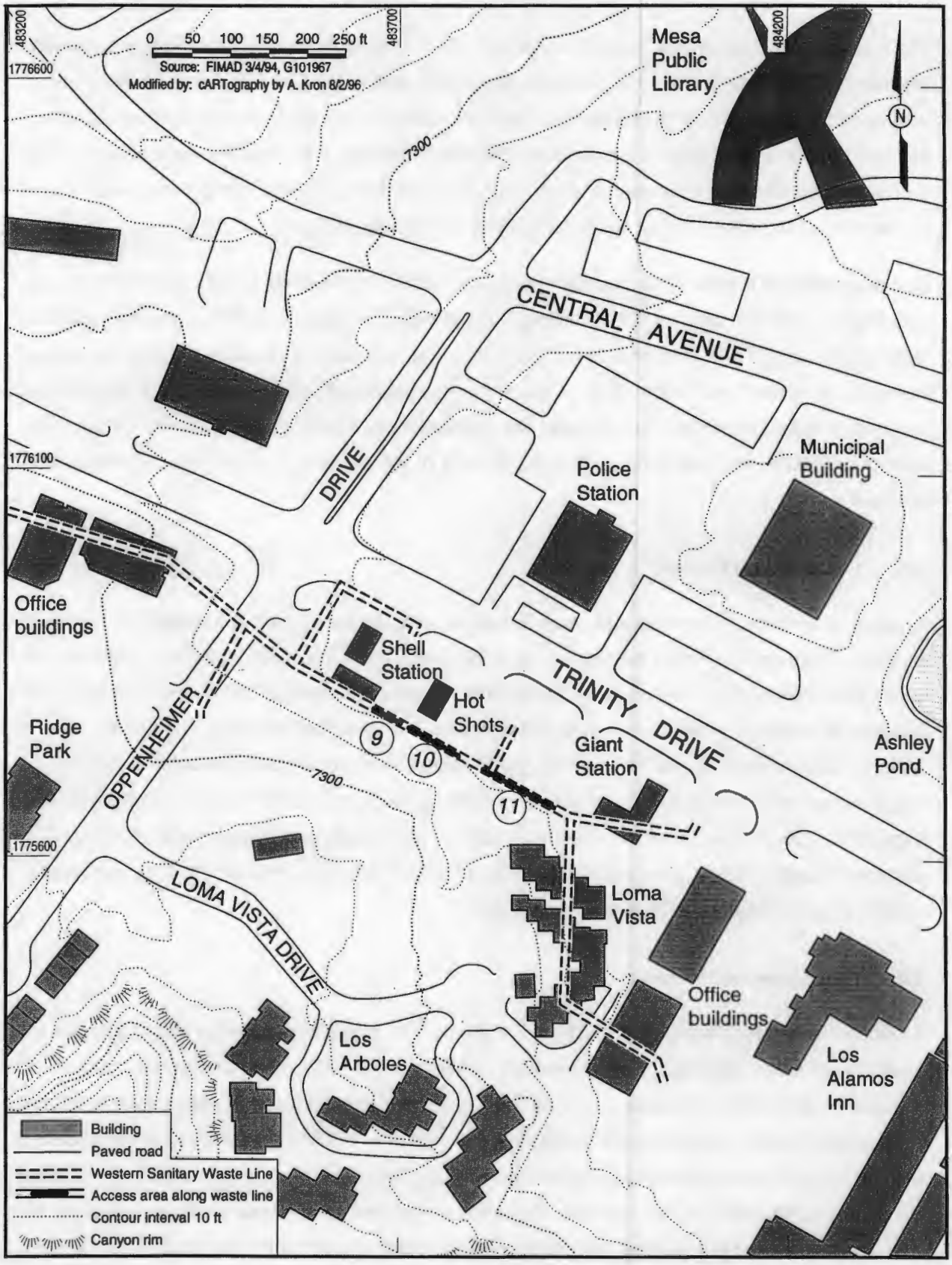

Fig. 2-1. Location of the Western Sanitary Waste Line at locations 9, 10, and 11.

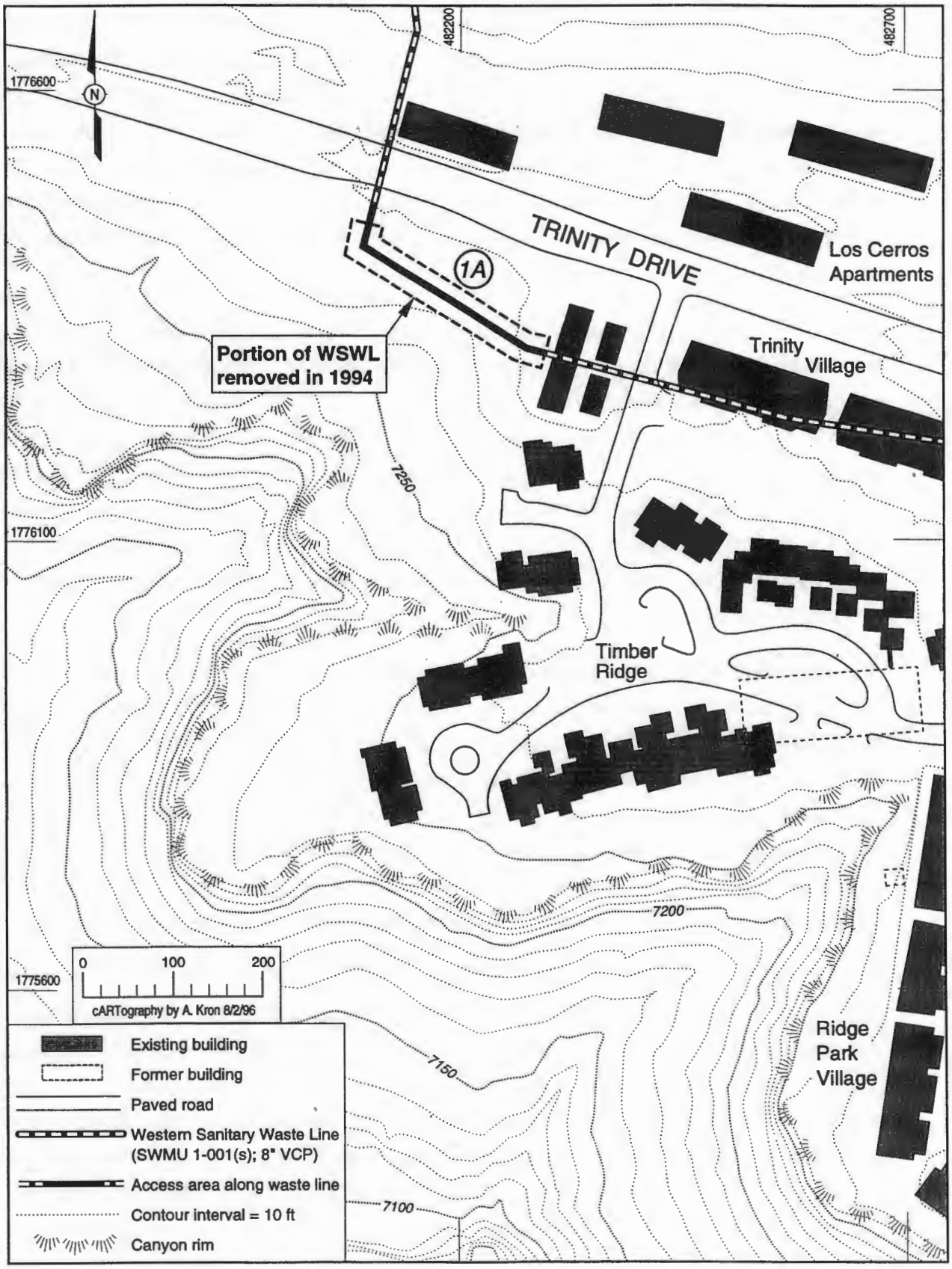

Fig. 2-2. Location of the Western Sanitary Waste Line at location 1A.

On the east lot, four trenches (1, 2, 3, and 8) were excavated at 5- to 8-ft wide and 12- to 13-ft deep to allow for safe removal of VCP and sample collection (Figure 2-3). Sampling activities are described in Section 3.0. Several Los Alamos County utility lines were encountered near the eastern property line while excavating trench 8. An unmarked active sewer line was encountered and damaged during excavation activities; however, Los Alamos County personnel quickly repaired the line. Due to the presence of the unmarked sewer line and an adjacent utility corridor, it is unlikely that the WSWL will be inadvertently exposed in this area. Therefore, excavation and removal activities were discontinued approximately 10 ft west of the eastern property line.

On the paved west lot, four trenches (4 through 7) were excavated. These trenches were typically 5- to 8-ft wide and 10- to 12-ft deep (Figure 2-3). The subsurface material on the west lot was slightly more compacted and stable to a depth of 6 to 8 ft bgs than that on the east lot. However, below this depth the fill material was again unconsolidated and caved easily. A brick and masonry manhole (manhole 59) was exposed approximately 25 ft southeast of the southeast corner of the former Hot Shots building. The manhole, which had been backfilled at a previous date, was directly beneath an active natural gas line. Los Alamos County personnel quickly closed-off the gas line. Due to the presence of an underground electrical cable near the western property line, the excavation and pipeline removal was terminated approximately 5 ft east of the property line.

Field activities at location 1A were a continuation of excavation and removal activities that occurred in July 1994 (Figure 2-4). The remainder of the accessible portion of the WSWL at location 1A started near the former location of manhole 52 (removed in 1994) and extended northward toward Trinity Drive. Several east-west cross trenches were excavated to locate the north-trending pipe, and VCP fragments were located at approximately 5 ft bgs. Fragments extended approximately 12 ft northward, and ceased 6 ft south of the active east-west trending sanitary sewer line. Approximately 12 ft of VCP fragments were exposed at 5 ft bgs using a backhoe. The trench walls were benched to allow entry of personnel into the trench for removal and sampling activities. Sampling activities are described in Section 3.0.

Intact sections of VCP, fragments of VCP, and manhole pieces recovered during field activities at all locations were field screened for radioactive contamination using a Ludlum 139™ with a 43-4 air proportional probe to detect gross alpha radiation, and a Ludlum 2™ with a 44-40 Geiger-Mueller probe to detect gross beta/gamma radiation. No elevated radiation readings were detected on the exterior surfaces of VCP sections, fragments, or manhole pieces. At locations 9, 10, and 11, results for alpha radiation from VCP and manhole interior surfaces typically ranged between no detectable activity and 250 counts per minute (cpm), while results for beta/gamma radiation ranged between no detectable activity and 400 cpm. At location 1A, results for alpha radiation from VCP interior surfaces consistently

measured 100 cpm, while beta/gamma radiation consistently measured no detectable activity. After field screening was completed, intact VCP sections were double-wrapped with 6-mil plastic sheeting and VCP fragments and manhole pieces were placed in doubled 5-mil plastic bags. For tracking purposes, plastic sheeting and bags containing VCP sections, VCP fragments, and manhole pieces were labeled, secured with duct tape, and placed in B-25 boxes for storage and disposal.

2.3 Site Restoration

Because any liquid releases that may have occurred from the WSWL would likely contain elevated levels of both radiological constituents and metals, radiological field-screening methods were also used prior to backfilling trenches to determine whether releases had occurred from the WSWL. A Ludlum 2221™ with a 43-1 zinc sulfide scintillation probe was used to detect gross alpha radiation in the soils underlying the WSWL. Screening samples were collected from the bottom of trenches at a minimum 10-ft spacing and placed in aluminum pans to air dry. The 43-1 probe was placed directly on the screening sample and counted for five minutes. The level at which samples were considered contaminated was set at three times the standard deviation above site background levels. The radiological contamination criteria were not exceeded during excavation and removal activities, indicating that no contamination releases (including metals contamination) occurred from the WSWL at locations 9, 10, 11, and 1A.

Once field screening determined that no contamination existed in the underlying soils; all trenches were backfilled with the excavated material. On the east lot, the trackhoe bucket was used to routinely press on a lift of backfilled material to provide compaction. Although no formal subsurface compaction activities were conducted on the east lot, the majority of excavated material was successfully returned to the trench indicating that the material was returned to near pre-excavation conditions. A vibrating roller was also used on the affected portions of the east lot to compact surface material. On the west lot, excavated material was backfilled in small lifts and compacted with hand-operated compaction tools. A vibrating roller was used to provide final compaction prior to paving the damaged sections of the parking lot. Lastly, compaction at location 1A consisted of repeatedly driving the backhoe over the area of excavation.

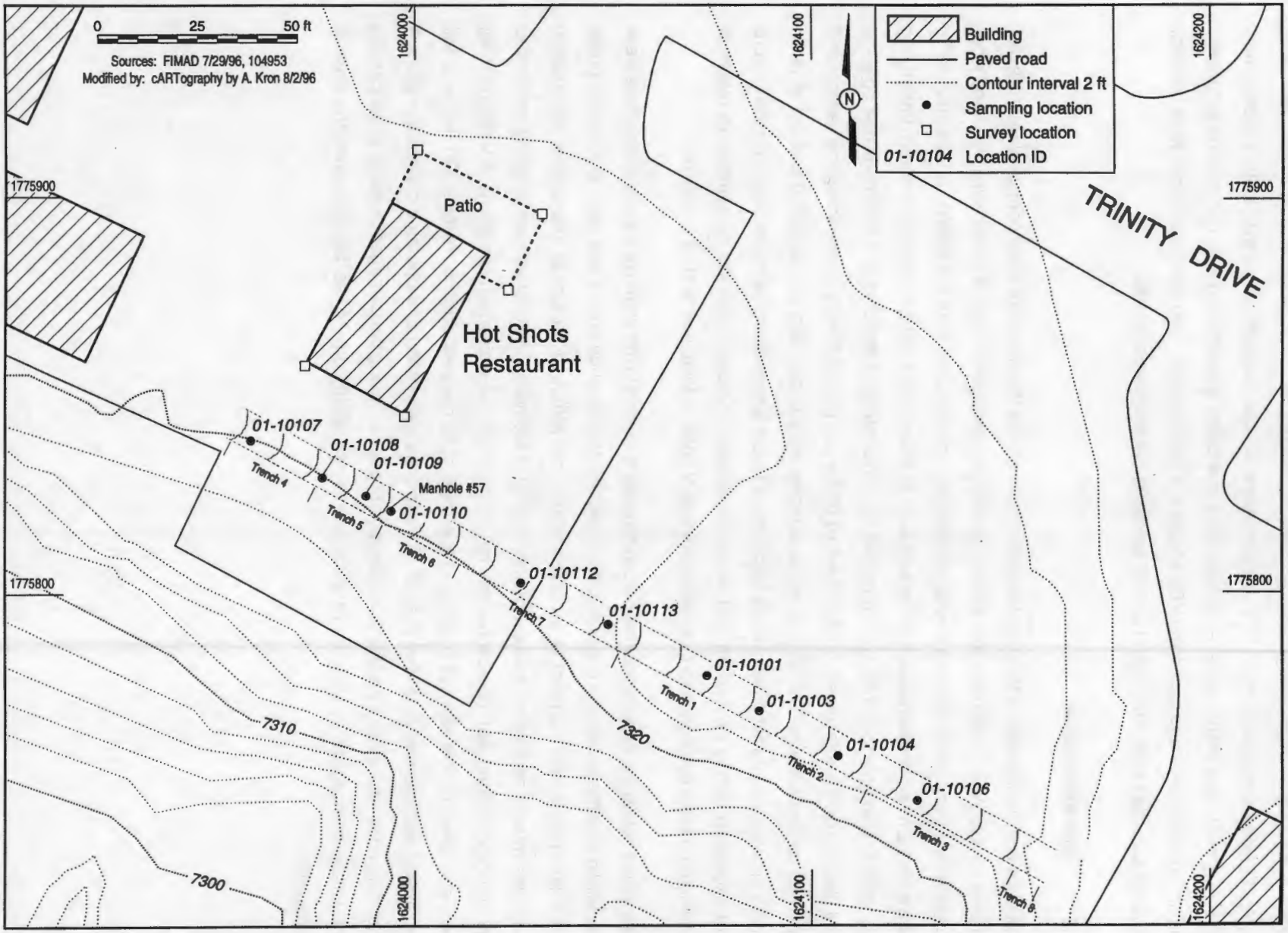

Fig. 2-3. Confirmation sampling locations for Western Sanitary Waste Line locations 9, 10, and 11.

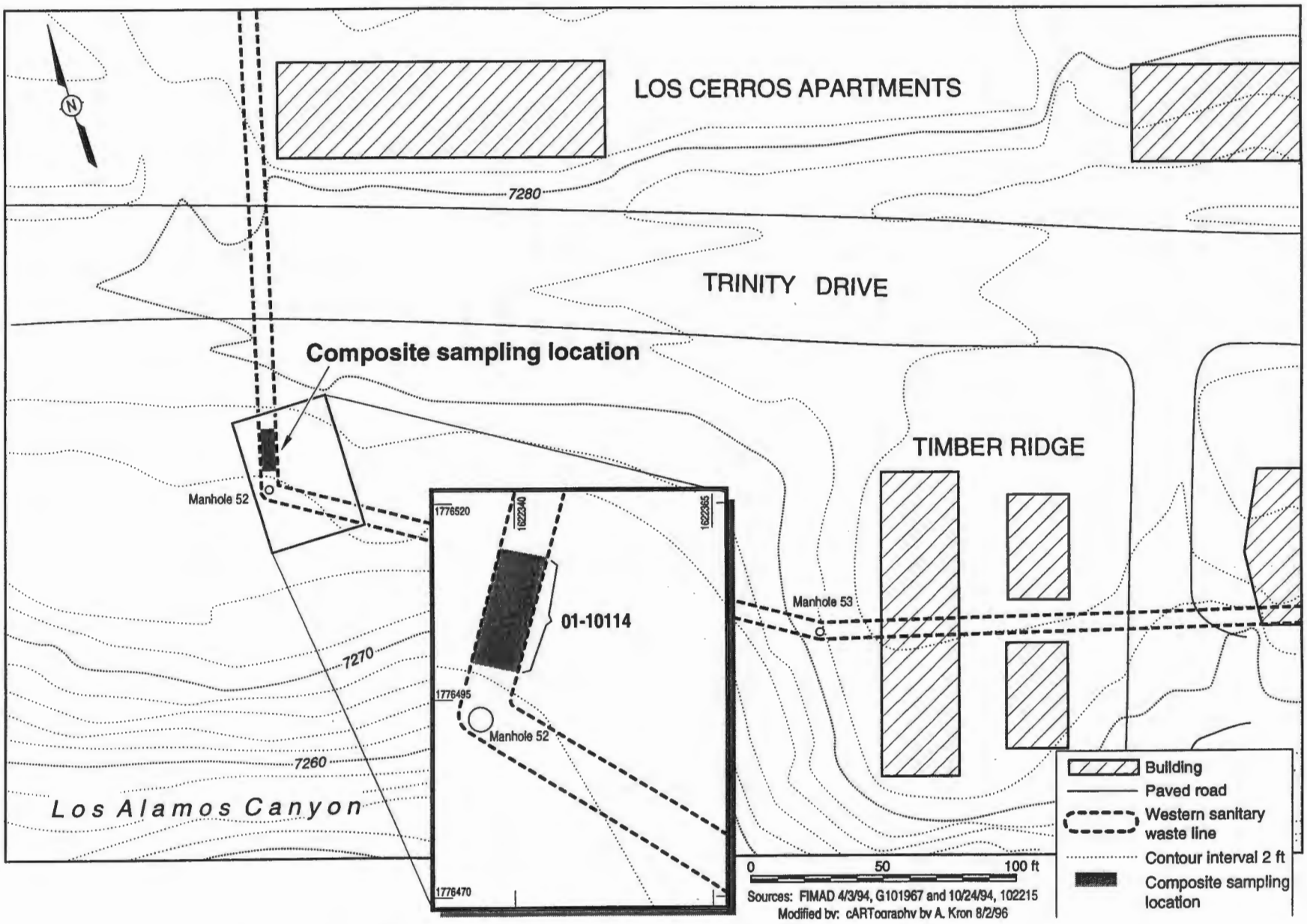

Fig. 2-4. Composite confirmation sampling location for Western Sanitary Waste Line location 1A.

3.0 MONITORING AND CONFIRMATORY SAMPLING

Confirmation samples were collected from materials underlying VCP sections to evaluate releases to the surrounding soil. Characterization samples were collected from materials contained within VCP sections to provide additional RFI data for the entire WSWL. Eleven confirmation samples (and one duplicate sample) were collected from soils directly beneath the pipeline immediately following removal of VCP sections. Typically, confirmation samples were collected at 20- to 25-ft intervals. At locations 9, 10, and 11, confirmation samples were collected directly from the trackhoe bucket as personnel were unable to safely enter the excavated trenches. At location 1A, where the trench was much shallower, confirmation samples were collected directly from the bottom of the trench by field personnel. Five characterization samples were collected from pipeline contents, where available. In general, VCP sections were free of accumulated material, but on rare occasions enough volume existed to collect a discrete sample or a composite sample from adjacent pipeline sections. All samples were collected in accordance with LANL-ER-SOP-06.09, R.0 "Spade and Scoop Method for Collection of Soil Samples" (LANL, 0875). Table 3-1 provides a summary of all samples collected from locations 9, 10, 11, and 1A.

All confirmation and characterization samples were submitted to the mobile radiological analytical laboratory (MRAL) for analysis of gross alpha, beta, and gamma radiation to address transportation requirements, and to the mobile chemical analytical laboratory (MCAL) for x-ray fluorescence (XRF) analysis to assist with backfilling decisions. However, XRF results were not received in a timely manner so backfilling decisions were based on the radiological field screening method described above in Section 2.2. After MRAL and MCAL screening, all samples were submitted to a fixed laboratory for analysis of isotopic plutonium and isotopic uranium using alpha spectroscopy, cesium-137 using gamma spectroscopy, target analyte list (TAL) metals using EPA SW-846 Methods 6010, 6020, and 7470, and semivolatile organic compounds (SVOCs) using EPA SW-846 Method 8270. Analytical results showing detected constituents, along with upper tolerance limits (UTLs) and screening action levels (SALs), are presented in Annex B. These analytical data will be used with the analytical data obtained from previous WSWL investigations to conduct complete screening and risk assessments; the results of these assessments will be presented in detail in the RFI Report for TA-1, Aggregates N and P, PRSs 1-001(s), 1-001(u), and 1-007(l).

In general, the analytical results from the samples collected during the interim action activities are consistent with the analytical results obtained from previous WSWL investigations. These results indicate the following.

- Elevated levels of metals, SVOCs, and radioactive constituents were present in materials found within the VCP at locations 9, 10, 11, and 1A.

- Elevated concentrations of metals, SVOCs, and/or radioactive constituents are not associated with materials surrounding the WSWL at locations 9, 10, 11, and 1A, indicating that no significant releases have occurred.

TABLE 3-1

SUMMARY OF SAMPLES COLLECTED FROM LOCATIONS 9, 10, 11, AND 1A

SAMPLE ID	LOCATION ID	SAMPLE DESCRIPTION	LOCATION DESCRIPTION
0101-96-0021	01-10101	Confirmation	Trench 1
0101-96-0022	01-10102	Inside pipe	Trench 1
0101-96-0023	01-10103	Confirmation	Trench 1
0101-96-0024	01-10104	Confirmation	Trench 2
0101-96-0025	01-10105	Inside pipe	Trench 3
0101-96-0026	01-10106	Confirmation	Trench 3
0101-96-0027[a]	01-10107	Confirmation	Trench 4
0101-96-0028	01-10108	Confirmation	Trench 4
0101-96-0029	01-10109	Confirmation	Trench 5
0101-96-0030	01-10110	Confirmation	Manhole 59
0101-96-0031[a]	01-10111	Inside pipe	Trench 6
0101-96-0032[a]	01-10114	Confirmation	Trench 9
0101-96-0033	01-10113	Confirmation	Trench 7
0101-96-0034	01-10116	Inside pipe	Trench 7
0101-96-0035	01-10112	Confirmation	Trench 7
0101-96-0036[a]	01-10115	Inside pipe	Trench 9
0101-96-0221	01-10107	Duplicate (0101-96-0027)	Trench 4

[a] Composite sample.

4.0 INSPECTION AND MAINTENANCE

The interim action at PRS 1-001(s), locations 9, 10, 11, and 1A, requires no additional post-field activities, maintenance, or inspections.

5.0 WASTE MANAGEMENT

A secured waste staging area was established on-site at the back of the Hot Shots property to temporarily store wastes generated during interim action activities. All VCP, sections of the brick and masonry manhole, personal protective equipment (PPE), and miscellaneous solid waste were placed into B-25 boxes. A total of approximately 10 yds^3 of waste material was generated and stored in four B-25 boxes.

Characterization of the wastes was based on the analytical results of representative samples collected from approximately 10% of the VCP sections. Seven samples of VCP and interior sediment were collected and submitted for fixed lab analysis of isotopic plutonium and isotopic uranium using alpha spectroscopy, cesium-137 using gamma spectroscopy, and metals using Toxicity Characteristic Leaching Procedure (TCLP). Results from these waste characterization samples indicate the presence of low levels of plutonium, americium, uranium, and metals. Because the metals results are below regulatory thresholds for hazardous waste, the waste stream is classified and will be disposed of as low-level waste (LLW) at TA-54, Area G.

6.0 SCHEDULE AND COST

Interim action field activities began June 6, 1996, two days later than scheduled (June 4, 1996). However, interim action field activities required only 11 days to complete rather than the scheduled 15 days.

The initial cost estimated to complete the interim action activities was $97 500. While actual costs are not yet available, the approximate costs (with breakdown) are as presented in Table 6-1.

TABLE 6-1

APPROXIMATE COSTS OF THE PRS 1-001(s) INTERIM ACTION[a]

PRE-FIELD ACTIVITIES	
Field preparation/readiness review	$10,400
Subtotal	$10,400
FIELD ACTIVITIES	
Field team	$17,800
Geodetic surveys	$900
Excavation/pipeline removal	$22,000
Waste disposal	$2,100
Subtotal	$42,800
ANALYTICAL COSTS	
MRAL (assume shared cost)	$2,500
MCAL (assume shared cost)	$2,500
Verification samples	$20,000
Waste characterization samples	$10,000
Subtotal	$35,000
POST-FIELD ACTIVITIES	
Interim action report	$4,000
Subtotal	$4,000
TOTAL ESTIMATED COST	**$92,200**

[a] Costs were estimated when actual costs were not available.

7.0 REFERENCES

LANL (Los Alamos National Laboratory), August 1993. "RCRA Facility Investigation Operable Unit (TA-1) Western Sanitary Waste Line Sampling Plan for FY93," Environmental Restoration Project, Los Alamos National Laboratory, Los Alamos, New Mexico. **(LANL 1993, 09-0529)**

LANL (Los Alamos National Laboratory), June 1996. "Interim Action Plan for Potential Release Site 1-001(s), Western Sanitary Waste Line Locations 9, 10, 11, and 1A," Environmental Restoration Project, Los Alamos National Laboratory Report LA-UR-96-2273, Los Alamos, New Mexico. **(LANL 1996, 09-0528)**

LANL (Los Alamos National Laboratory). "Los Alamos National Laboratory Environmental Restoration Program Standard Operating Procedures," Los Alamos National Laboratory report, Los Alamos, New Mexico. **(LANL, 0875)**

ANNEX A PHOTOGRAPHIC LOG

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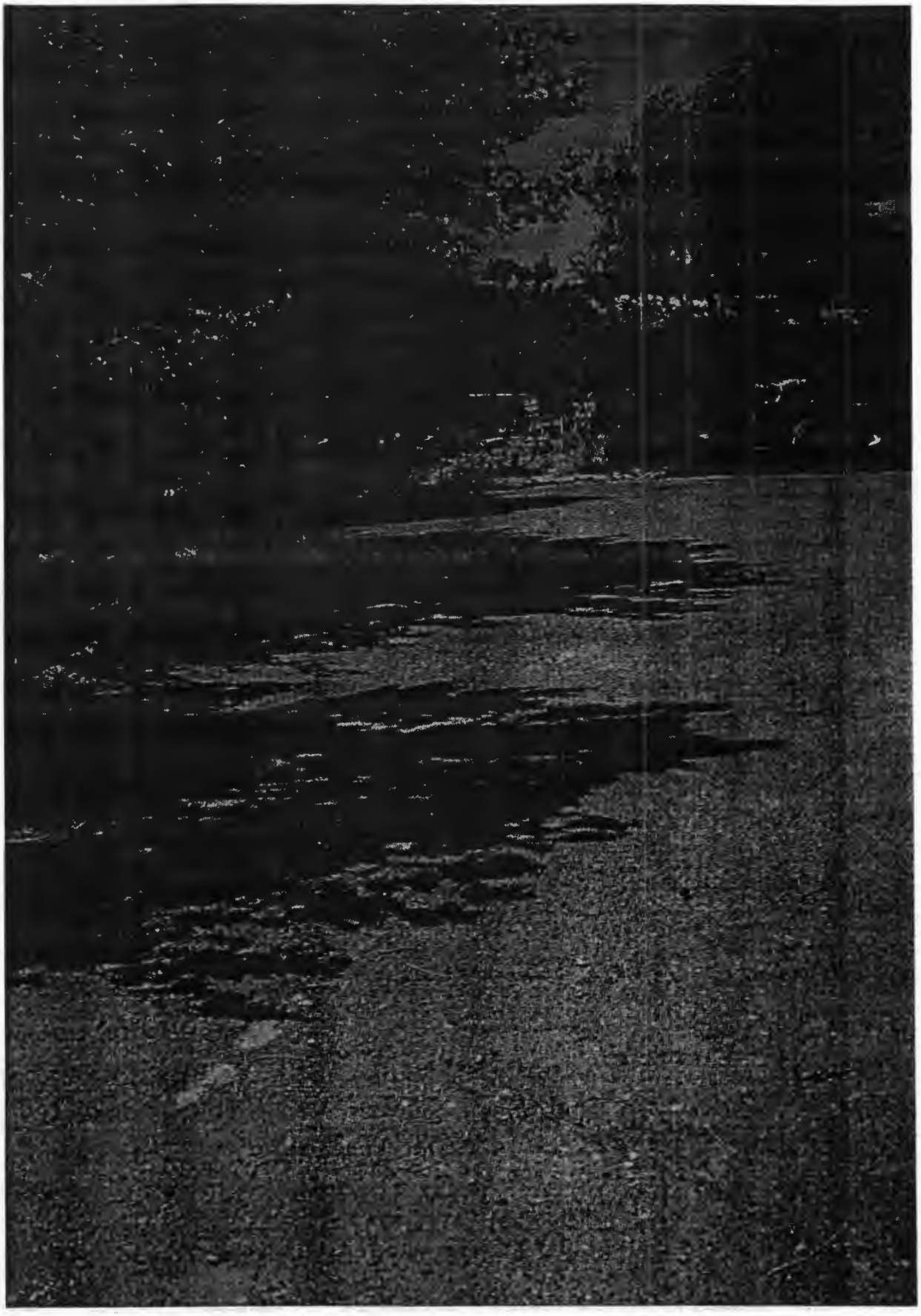
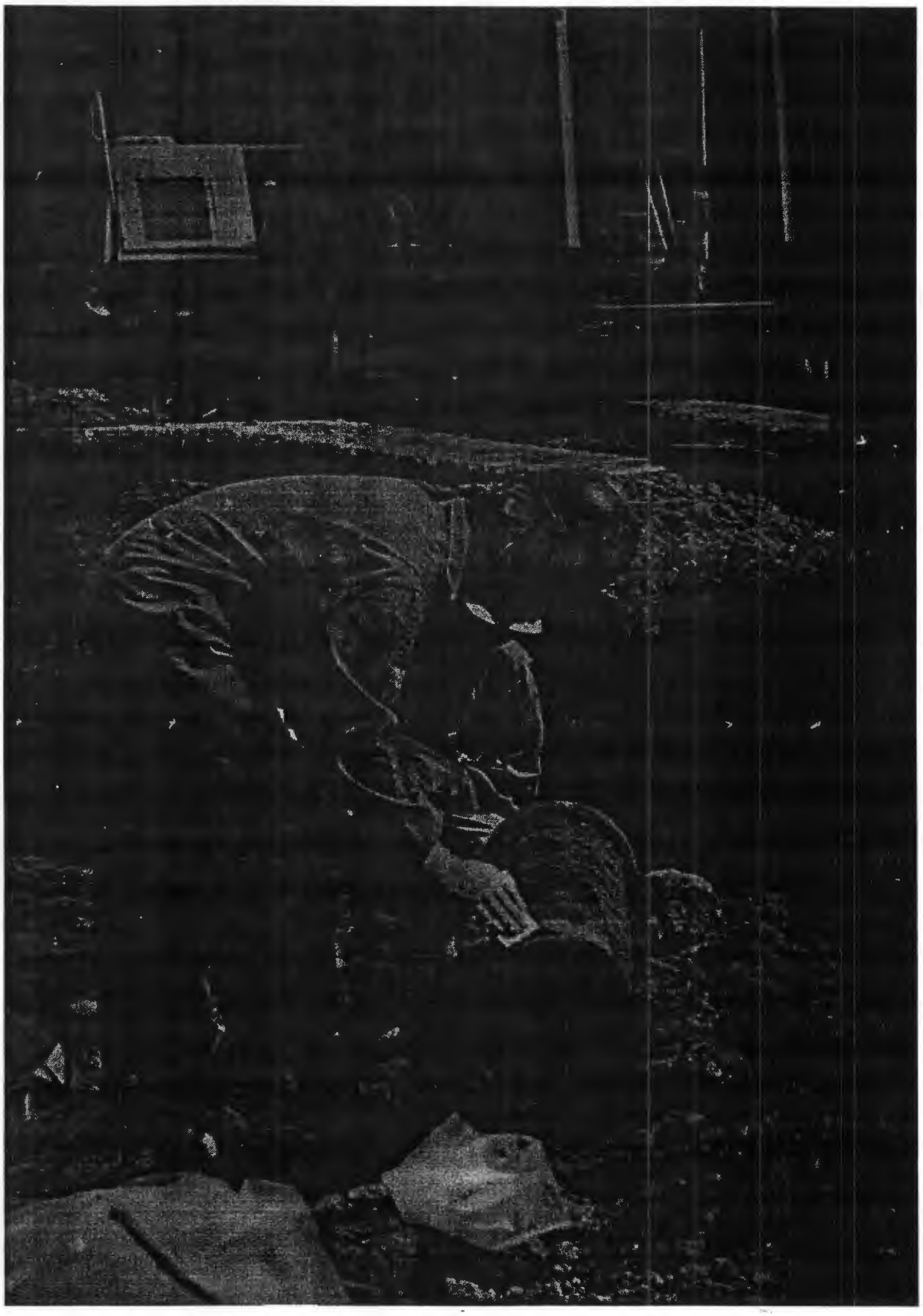
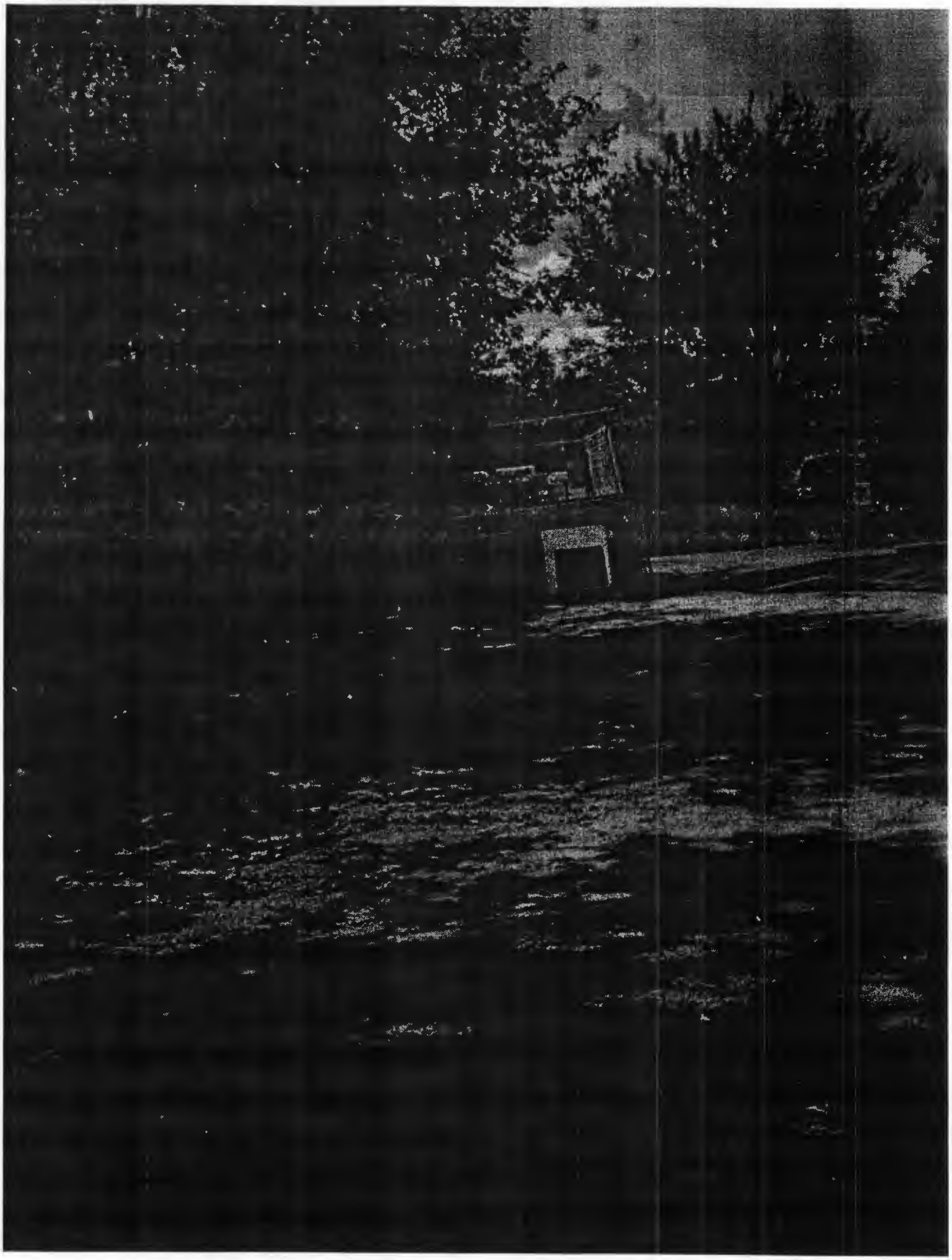


PRS 1-001(s) Sanitary Wasteline - Before Interim Action

PRS 1-001(s) - Trackhoe excavation of septic lines near "Hot Shots"



PRS 1-001(s) - Rad screening of removed septics lines before disposal



PRS 1-001(s) Sanitary Wasteline - After Interim Action

TABLE B-1

RESULTS OF CONFIRMATION SAMPLING FOR ORGANIC CONSTITUENTS AT PRS 1-001(s)

LOCATION ID	SAMPLE ID	1,4-DICHLOROBENZENE (mg/kg)	BIS(2-ETHYLHEXYL)PHTHALATE (mg/kg)	CHRYSENE (mg/kg)	DI-N-BUTYLPHTHALATE (mg/kg)
SAL[a]	N/A	7.4	32	24	n/a
CONFIRMATION:					
01-10101	0101-96-0021	0.19(U)	0.19(U)	0.19(U)	0.19(U)
01-10103	0101-96-0023	0.19(U)	0.19(U)	0.19(U)	0.19(U)
01-10104	0101-96-0024	0.19(U)	0.19(U)	0.19(U)	0.19(U)
01-10107	0101-96-0027	0.19(U)	0.19(U)	0.19(U)	0.19(U)
01-10109	0101-96-0029	0.19(U)	0.19(U)	0.19(U)	0.19(U)
01-10110	0101-96-0030	0.38(U)	0.38(U)	0.38(U)	0.38(U)
01-10114	0101-96-0032	0.18(U)	0.18(U)	0.18(U)	0.18(U)
01-10113	0101-96-0033	0.37(U)	0.37(U)	0.37(U)	0.37(U)
01-10112	0101-96-0035	0.19(U)	0.19(U)	0.19(U)	0.19(U)
01-10107	0101-96-0221	0.2(U)	0.2(U)	0.2(U)	0.2(U)
INSIDE PIPE:					
01-10102	0101-96-0022	2.2	1.1(U)	1.1(U)	1.5
01-10105	0101-96-0025	2.7	1.1(U)	1.1(U)	1.1(U)
01-10111	0101-96-0031	3.1	1.2(U)	1.3	1.2(U)
01-10116	0101-96-0034	4	1.3(U)	1.3(U)	1.3(U)
01-10115	0101-96-0036	0.19(U)	0.31	0.19(U)	0.19(U)

[a] See LANL (Los Alamos National Laboratory), in preparation. "Technical Approach to RFI Reports," A. M. Dorries (Ed.), Los Alamos National Laboratory Report, Los Alamos, New Mexico. (LANL in preparation, 1281) .
[b] Will be provided with the final.

TABLE B-2

RESULTS OF CONFIRMATION SAMPLING FOR METALS AT PRS 1-001(s)

LOCATION ID	SAMPLE ID	ALUMINUM (mg/kg)	ANTIMONY (mg/kg)	ARSENIC (mg/kg)	BARIUM (mg/kg)	BERYLLIUM (mg/kg)	CALCIUM (mg/kg)	CADMIUM (mg/kg)	COBALT (mg/kg)	CHROMIUM (mg/kg)	COPPER (mg/kg)	IRON (mg/kg)	LEAD (mg/kg)	MAGNESIUM (mg/kg)	MANGANESE (mg/kg)	MERCURY (mg/kg)	NICKEL (mg/kg)	POTASSIUM (mg/kg)	SILVER (mg/kg)	SODIUM (mg/kg)	SELENIUM (mg/kg)	THALLIUM (mg/kg)	VANADIUM (mg/kg)	ZINC (mg/kg)
UTL[a]	N/A	38 700	1	7.82	315	1.95	6 120	2.7	19.2	19.3	15.5	21 300	23.3	4 610	714	0.1	15.2	3 410	n/a	915	1.7	1	41.9	50.8
SAL[a]	N/A	77 000	31	n/a	5 300	n/a	n/a	38	4 600	211	2 800	n/a	400	n/a	n/a	23	1 500	n/a	380	n/a	380	5.4	540	23 000
CONFIRMATION:																								
01-10101	0101-96-0021	14 000	12(UJ)	1.9	130	1.1	2 000	0.58(U)	1.6	3.8	4.8	5 800	8.7	1 200	110	0.12	5.9	1 200	2.3(U)	150	1.2(UJ)	1.5(UJ)	6.7	23
01-10103	0101-96-0023	16 000	11(UJ)	1.5	66	1.1	2 400	2.8(U)	1.8	6.3	6	8 300	9.2	1 700	110	0.21	6.3	1 800	11(U)	170	1.1(UJ)	1.4(UJ)	10	26
01-10104	0101-96-0024	8 200	11(UJ)	1.4	72	0.84	2 500	0.57(U)	3	4.3	21	6 800	14	1 100	170	1.5	5.7	1 300	2.3(U)	110	1.1(UJ)	1.4(UJ)	9.2	29
01-10106	0101-96-0026	7 600	11(UJ)	6.9	67	0.93	2 400	0.57(U)	5.1	4.5	5.1	6 900	15	1 400	390	0.11(U)	8.6	1 400	2.3(U)	180	1.1(UJ)	1.4(UJ)	10	45
01-10107	0101-96-0027	9 900	12(R)	2.2	83	0.72	1 700	0.58(U)	2.6(J)	5.3(J)	10(J)	8 400	16	1 300	230	0.26(J)	5.6	1 000	2.3(U)	160	1.2(U)	1.5	11	48
01-10108	0101-96-0028	7 800	11(R)	2.7	58	0.61	1 400	0.57(U)	2.5(J)	5(J)	16(J)	8 200	16	950	260	0.5(J)	2.8	950	2.3(U)	150	1.1(U)	1.4	11	43
01-10109	0101-96-0029	14 000	11(R)	2.3	66	0.8	2 300	0.57(U)	3(J)	7.5(J)	9.4(J)	11 000	15	1 700	250	0.22(J)	5.3	1 500	2.3(U)	240	1.1(U)	1.4	15	48
01-10110	0101-96-0030	3 900	11(UJ)	1.6	41	0.56(J-)	12 000	0.56(U)	1.6(J-)	4.1(J-)	29(J-)	5 800	14	780	210	0.48(J-)	4.6	560	2.2(UJ)	160	1.3(U)	1.4(U)	7.6	89
01-10114	0101-96-0032	6 800	11(UJ)	2.3	110	0.71	2 100	3.8	4.1	6.8	100	8 700	56(J+)	1 100	200	3.4	11	870	2.2(U)	140	0.22(UJ)	1.4(UJ)	13	72
01-10113	0101-96-0033	3 800	11(UJ)	0.97	43	0.56	1 300	0.56(U)	1.1(UJ)	2(J-)	2.8(J-)	4 600	5.8	490	160	0.11(U)	3.8(J-)	600	2.2(UJ)	130	1.1(U)	1.4	5.4	21
01-10112	0101-96-0035	5 200	12(UJ)	1.7	48	0.63(J-)	2 400	0.61(U)	1.7(J-)	2.8(J-)	15(J-)	5 900	10	840	170	0.68	6.6(J-)	720	2.4(UJ)	210	1.2(U)	1.5	7.3	56
01-10107	0101-96-0221	7 100	11(R)	2.3	56	0.62	2 100	0.57(U)	2.2(J)	4(J)	29(J)	6 700	20	990	220	0.21(J)	4.3	820	2.3(U)	160	1.1(U)	1.4	8.4	45
INSIDE PIPE:																								
01-10102	0101-96-0022	5 800	18(J-)	23	290	2.7(U)	6 300	12	6.7	130	1 800	130 000	2 700	2 400	230	240	35	580	16	240	1.1(UJ)	1.4(UJ)	59	1 200
01-10105	0101-96-0025	4 400	54(UJ)	81	300	2.7(U)	23 000	120	9.1	120	5 100	110 000	4 000	2 800	310	730	190	420	69	380	1.1(UJ)	1.3(UJ)	45	7 500
01-10111	0101-96-0031	4 100	63(UJ)	71	150	3.1(UJ)	5 900	15	7.4(J-)	190(J-)	4 500	210 000	830	1 100	260	86	35(J-)	390	13(U)	250	1.3(U)	1.6	140	1 300
01-10116	0101-96-0034	5 600	57(UJ)	18	360	2.9	11 000	24	11(J-)	150(J-)	4 300(J-)	140 000	3 800	3 000	470	0.84	110(J-)	760	110(J-)	360	1.1	1.4	62	2 000
01-10115	0101-96-0036	11 000	11(UJ)	18	140	0.89	3 400	190	9.9	19	4 100	12 000	1 600(J+)	1 600	220	26	240	1 100	21(UJ)	170	0.22(U)	1.4(UJ)	18	810

[a] See LANL (Los Alamos National Laboratory), in preparation. "Technical Approach to RFI Reports," A. M. Dorries (Ed.), Los Alamos National Laboratory Report, Los Alamos, New Mexico. (LANL in preparation, 1281) .

TABLE B-3

RESULTS OF CONFIRMATION SAMPLING FOR RADIONUCLIDES AT PRS 1-001(s)

LOCATION ID	SAMPLE ID	AMERICIUM-241 (pCi/g)	CESIUM-137 (pCi/g)	PLUTONIUM-238 (pCi/g)	PLUTONIUM 239/240 (pCi/g)	URANIUM-234 (pCi/g)	URANIUM 235/236 (pCi/g)	URANIUM-238 (pCi/g)
UTL[a]	N/A	0.336	1.7	0.104	0.092	1.94	0.084	1.82
SAL[a]	N/A	22	5.1	27	24	13	10	67
CONFIRMATION:								
01-10101	0101-96-0021	–0.038(U)[a]	0.014(U)[a]	0[a]	0.109[a]	1.23[a]	0.07[a]	1.19[a]
01-10103	0101-96-0023	–0.021(U)	0.018(U)	0.007	0.444	1.25	0.05	1.31
01-10104	0101-96-0024	0.139(U)[a]	0.037(U)	0.01[a]	0.69[a]	1.12[a]	0.08[a]	1.18[a]
01-10106	0101-96-0026	–0.079(U)	–0.007(U)	–0.005(U)	0.02	0.82	0.03	0.78
01-10107	0101-96-0027	0.195(U)[a]	–0.007(U)[a]	–0.011(U)	1.2(J)	2.89	0.15	2.74
01-10108	0101-96-0028	0.178	–0.003(U)	0.025	1.66(J)	1.57	0.07	0.85
01-10109	0101-96-0029	0.094	0.017(U)	0.009	2.86(J)	1.5	0.04	1.54
01-10110	0101-96-0030	1.13	0.14(U)	0.04[a]	4.33[a]	1.77[a]	0.08[a]	1.11[a]
01-10114	0101-96-0032	202(J)	0.02(U)	0.07[a]	10.1[a]	13.4[a]	0.48[a]	5.47[a]
01-10113	0101-96-0033	–0.048(U)	–0.009(U)	0	0.14	0.74	0.04	0.77
01-10112	0101-96-0035	0.15(U)	–0.014(U)	0.03	3.09	1.19	0.05	0.75
01-10107	0101-96-0221	0.143(U)	0.023(U)	0.01(U)[a]	0.91(J)[a]	3.33[a]	0.15[a]	3.51[a]
INSIDE PIPE:								
01-10102	0101-96-0022	3.26[a]	5.9[a]	0.401[a]	89[a]	36[a]	1.47[a]	5.35[a]
01-10105	0101-96-0025	21.5	4.67	11.7	1515	510	16.7	34.9
01-10111	0101-96-0031	87.6	5.25	1.14	228	162	6.5	13.3
01-10116	0101-96-0034	15.5	2.5	2.2[a]	503[a]	229	7.7	13.8
01-10115	0101-96-0036	0.272	0.471	0.03[a]	3.28	145	5.01	89

[a] See LANL (Los Alamos National Laboratory), in preparation. "Technical Approach to RFI Reports," A. M. Dorries (Ed.), Los Alamos National Laboratory Report, Los Alamos, New Mexico. (LANL in preparation, 1281).

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