Environmental
Restoration
University of California
Environmental Science and Waste Technology (E)
Environmental Restoration, MS M992
Los Alamos, New Mexico 87545
505-667-0808/FAX 505-665-4747

U.S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

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Date: October 21, 1999
Refer to: E/ER:99-297

Mr. John Kieling
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

SUBJECT: SUBMITTAL OF REVISED SAMPLING AND ANALYSIS APPROACH TO ADDRESS GENERAL COMMENT #6 OF THE RSI FOR THE VCM PLAN FOR CONSOLIDATED PRS 21-027(d)-99

Dear Mr. Kieling:

Pursuant to recent discussions between Environmental Restoration (ER) Project staff, Mr. John Young of your staff, and yourself, the Los Alamos National Laboratory (LANL) ER Project is submitting this letter and attached characterization fact sheet to address General Comment #6 of the Request for Supplemental Information (RSI) issued on July 27, 1999 for the Voluntary Corrective Measure (VCM) Plan for consolidated Potential Release Site (PRS) 21-027(d)-99. PRS 21-027(d)-99 is the site of the non-traditional in situ vitrification (NTISV) cold demonstration. After reviewing the analytical data from both pre and post-cold demonstration samples related to the diesel release, we believe the mesa top data advocate the preparation of a VCM Report. However, as General Comment #6 of the New Mexico Environment Department Hazardous and Radioactive Materials Bureau's (NMED-HRMB) RSI states, the outfall area of former PRS 21-027(d) has not been completely characterized.

The LANL ER Project is therefore proposing to collect additional samples from the outfall area to confirm that there was no release to the outfall from former PRS 21-027(d) or AOC C-21-028 (former diesel storage tank) and determine the nature and extent of any identified residual contamination. Proposed sample locations and the analytical suite were identified during a site visit with John Young of your staff and LANL ER Project staff on October 7, 1999, and are described in detail in the attached fact sheet. We anticipate collecting samples from the outfall area in November 1999 during pre-implementation activities for the NTISV hot demonstration and will submit a 10-day sample notification letter as soon as the sampling schedule is established. All analytical results and corresponding human health and ecological risk assessments will be provided to NMED-HRMB in the VCM Report for Consolidated PRS 21-027(d)-99. Additionally, the VCM Report will incorporate our responses to NMED-HRMB's RSI dated July 22, 1999.

We appreciate the time and effort you and your staff have provided toward completing the VCM of consolidated PRS 21-027(d)-99. If you have any questions, please contact Deba Daymon at (505) 667-9021 or Joe Mose at (505) 667-5808.

Sincerely,

Julie A. Canepa, Program Manager
LANL/ER

Sincerely,

Theodore J. Taylor, Program Manager
DOE/LAAO

JC/TT/PB/dm

Enclosure: Fact Sheet for Consolidated PRS 21-027(d)-99

Cy (w/enc.):
P. Bertino, E/ER, MS M992
M. Buksa, E/ET, MS M992
D. Daymon, EES-13, MS M992
J. Jones, E/ER, MS M992
J. Mose, LAAO, MS A316
C. Rodriguez, E/ER, MS M992
T. Taylor, LAAO, MS A316
W. Woodworth, DOE-AL, MS A906
J. Young, NMED-HRMB
S. Yanicak, NMED-AIP, MS J993
RPF, (ER Catalog # 19990145), MS M707
Tracker RM 604, MS M992

Cy (w/o enc.):
T. George, E/ER, MS M992
D. McInroy, E/ER, MS M992
J. Bearzi, NMED-HRMB
J. Parker, NMED-AIP
E/ER File, MS M992

Characterization Fact Sheet for Consolidated PRS 21-027(d)-99

Operational History

Consolidated Potential Release Site (PRS) 21-027(d)-99 consists of former Area of Concern (AOC) C-21-028 and Solid Waste Management Unit (SWMU) 21-027(d). C-21-028 is the former location of a 12,788-gallon aboveground diesel fuel storage tank (structure TA-21-47). The tank was installed in 1945 on a 9-inch thick concrete slab. The slab was equipped with a 4-inch vitrified clay pipe (VCP) drainline, which discharged storm water to the south toward the rim of Los Alamos Canyon. A reinforced concrete containment wall was constructed around the tank in 1948 and a 4-inch steel drainline replaced the VCP drainline. The new storm water drainline extended from the concrete containment and was routed around the new building (TA-21-33) toward the rim of Los Alamos Canyon. The new drainline and outfall are designated as PRS 21-027(d). Historic records conflict over the use of the tank. The tank was installed to serve the boiler in the former DP Laundry (TA-21-20). The boiler was reportedly diesel powered; however, former employees stated and photographs show that the DP Laundry was tied to the DP Steam Plant. Therefore, the diesel tank and boiler may have provided power when the structure was built and remained in place as a source of backup power to the laundry. There are no records of the tank being serviced (i.e., filled with fuel). The tank was removed in 1960 and the 4-inch steel drainline was removed in 1965 when the DP laundry was decommissioned in 1965.

AOC C-21-028 was proposed for no further action (NFA) to the Department of Energy (DOE), in the March 1995 Request for Permit Modification (LA-UR-95-767). The Resource Conservation and Recovery Act Facility Investigation (RFI) of PRS 21-027(d) was completed in 1992 and the site was proposed for NFA in the 1994 RFI Report. In 1995, EPA Region 6 determined that PRS 21-027(d) was suitable for NFA and a Class III Permit Modification; however, the PRS remains on Table A of Module VIII of the Laboratory's Hazardous Waste Facility Permit.

Release History

There are no documented releases associated with consolidated PRS 21-027(d)-99. However, analytical results from baseline samples collected on January 29, 1999, from the proposed location of the demonstration pit for the non-traditional insitu vitrification (NTISV) cold test showed low levels of petroleum hydrocarbons. Subsequent test trenching of the area during the first week of March 1999, showed stained tuff exhibiting a strong diesel odor (Letter Documenting Discovery of Former AOC, Canepa and Taylor 1999, EM/ER:99-051). An undocumented release of diesel fuel from former AOC C-21-028 is believed to be the source of the residual petroleum hydrocarbon contamination. Waste characterization results showed total petroleum hydrocarbons (TPH) in the diesel range, to be present at concentrations ranging from 13 to 540 ppm. The approximate 75 cubic yards not replaced in the demonstration pit were disposed off site as a New Mexico Special Waste. A detailed description of the NTISV cold test and voluntary corrective measure (VCM) for consolidated PRS 21-027(d)-99 was provided to the New Mexico Environment Department Hazardous and Radioactive Materials Bureau (NMED-HRMB) in the "Voluntary Corrective Measure Plan for Consolidated PRS 21-027(d)-99, LA-UR-99-1613 (Canepa and Taylor 1999, EM/ER:99-079).

Chemicals of Potential Concern (COPCs)

The only COPC known to be associated with consolidated PRS 21-027(d)-99 is TPH (diesel range). Other analytes detected at low levels during the 1992 RFI and reported in the 1194 RFI Report include americium-241, plutonium-239, and cadmium. However, the source of these additional contaminants is suspected to be related to either historic processes at TA-21 or one of the proximate PRSs including 21-023(c) – septic tank and outfall, 21-009 – waste laboratory, 21-015 – MDA B, and 21-018(a) – MDA V. Cadmium, tritium and uranium concentrations detected in this outfall area were within TA-21 mesa-wide baseline values ("Phase Report 1C, TA-21 Operable Unit RCRA Facility Investigation Outfalls Investigation, February 28, 1994," LA-UR-94-228). Cadmium was within the range of Laboratory-wide background concentration for soils (LANL 1998, ER ID 59730).

Implementation of the TA-21 RFI Work Plan Sampling and Analysis Plan

The 1992 RFI of PRS 21-027(d) consisted of a radiological field survey and the collection of surface soil samples from six locations in accordance with the RFI Work Plan for TA-21, Volume II, Section 15.2 (TA-21 Operable Unit RFI Work Plan, LA-UR-962). The analytical suite for the six samples included: gamma spectrometry, tritium, total uranium, isotopic plutonium, strontium-90, VOCs, SVOCs, and metals. The only suspected chemicals of potential concern (COPCs) identified in the RFI work plan were VOCs and SVOCs from petroleum products (diesel fuel) from the storage tank (former AOC C-21-028). The additional analytes were included because of the proximity to the outfall from PRS 21-023(c), the septic tank and outfall that served the waste laboratory (PRS 21-009, Bldg. 21-033). The TA-21 OU RFI Phase Report 1C, submitted to EPA in February 1994 reported only cadmium, americium-241 and plutonium-239/240 were elevated in the three upgradient samples. No organics were detected.

Implementation of the NTISV Cold Test/Voluntary Corrective Measure

Before initiating the NTISV cold demonstration, four boreholes were drilled south, east, and southeast of the observed petroleum hydrocarbon contamination to determine nature and extent of the residual hydrocarbon contamination. One additional borehole was drilled west of the cold test excavation. Analytical results showed the greatest concentration of TPH (diesel range) at 3,300 ppm at the soil/tuff interface at a depth of 7.5 to 8 feet below ground surface (bgs) in the borehole adjacent to the southeast corner of the cold test excavation. The TPH concentration in the sample collected from the bottom of the same borehole was 5.7 ppm in the 23.5 to 24 ft bgs interval. TPH was not detected in any of the other boreholes. Some VOCs and SVOCs were also detected at low levels in the southeast corner of the cold test excavation. Details of this subsurface investigation will be detailed in the VCM report.

The NTISV cold demonstration was implemented between April 16 and April 24, 1999. In accordance with discussions held at the site during the week of May 24, 1999 between NMED-HRMB staff and LANL ER Project personnel, three boreholes were drilled adjacent to the southwest corner of the cold test pit and two boreholes were drilled adjacent to the southeast corner of the cold test pit. Results showed a maximum TPH level of 1700 ppm at a depth of 18 feet bgs in the borehole closest to the southeast corner of the cold test pit. However, TPH was not detected above or below a depth of 20 feet bgs or in any other post-melt boreholes. No SVOCs or VOCs were detected in any of the post-melt samples. Based on the results from the pre- and post- cold test boreholes, nature and extent of TPH contamination has been determined on the mesa top for consolidated PRS 21-027(d)-99. These analytical data and the results of human and ecological risk screening assessments will be provided to NMED-HRMB in the VCM Report for consolidated PRS 21-027(d)-99.

Completion of Characterization of the PRS 21-027(d)-99 Outfall

To ensure site characterization is complete for consolidated PRS 21-027(d)-99, an additional six surface soil and/or sediment samples will be collected from the outfall area (former PRS 21-027(d)). Two of the original RFI sample locations will be resampled to confirm that there is no residual TPH. In addition two locations near the bottom of the outfall area, one near the middle, and one location just outside the outfall area to the northwest will be sampled. These sample locations were identified during a site visit with NMED-HRMB and LANL ER Project staff on October 7, 1999. Samples will be collected from two of the original 1992 RFI sample locations to confirm that there is no residual TPH and to reconfirm the presence of the radionuclides and inorganics. The single sample location adjacent to and outside of the outfall will be collected to confirm nature and extent of TPH contamination and to document levels of radionuclides that may "typically" be found around TA-21 or to determine the presence of contamination from proximate PRSs (e.g., MDA B). The sample from the approximate middle of the outfall will help support determination of nature and extent. The two sample locations identified near the bottom of the outfall area will ensure nature and extent of any residual contamination from consolidated PRS 21-027(d)-99 has been determined. During the October 7, 1999 site visit, the two bottom sample locations were determined to be just above the point where contaminants from the adjacent PRS 21-023(c) could have entered the outfall area of former PRS 21-027(d). However, these two sample locations are within sediment pockets increasing the likelihood of any residual contamination from the surrounding area to be concentrated. Previous and proposed sample locations are shown on Figure 1.

The analytical suite for this investigation includes TPH (diesel range), americium-241, and plutonium-239. This analytical suite was agreed to during the site visit with NMED-HRMB and LANL ER Project staff on October 7, 1999. Although no VOCs or SVOCs were detected during the 1992 RFI, each sample will be analyzed for TPH to ensure nature and extent of any residual contamination from the former diesel tank is defined. Analytical data will; be presented and assessed in the VCM Report for consolidated PRS 21-027(d)-99.

If the assessment of the data indicates a release occurred in the outfall area and a need for additional information, NMED-HRMB will be contacted and additional sample locations proposed.

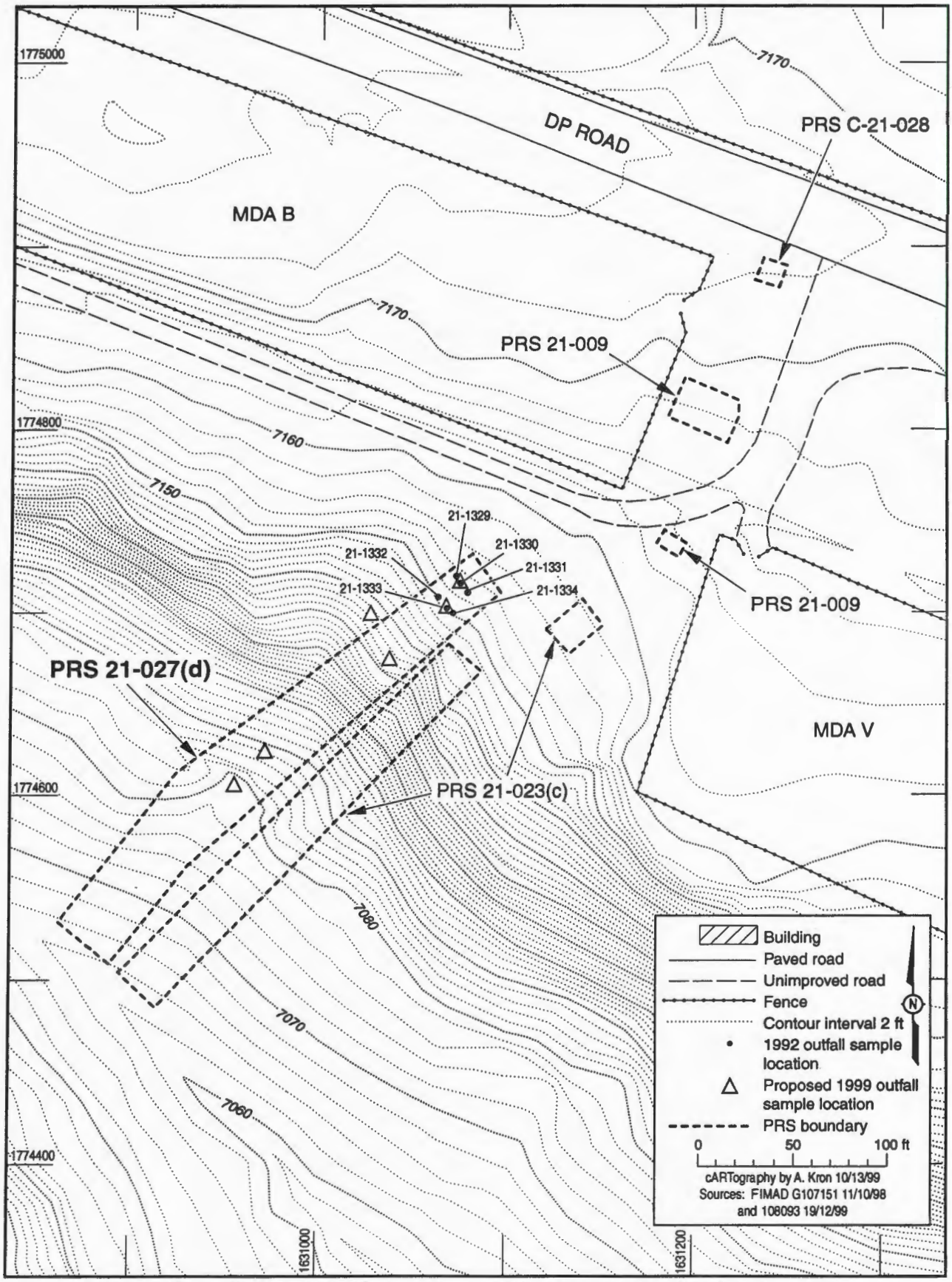

Figure 1. Consolidated PRS 21-027(d)-99 previous and proposed sampling locations.