



DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

EMLA-23-BF143-2-1

April 6, 2023

Mr. Rick Shean
Acting Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303



Dear Mr. Shean:

Subject: Request for Certificate of Completion for Solid Waste Management Unit 00-019 in the Pueblo Canyon Aggregate Area

- Reference(s):**
1. Los Alamos National Laboratory, September 2001. "Voluntary Corrective Action Completion Report for Potential Release Site 0-019 (former Central Waste Water Treatment Plant)," Los Alamos National Laboratory document LA-UR-01-4140, Los Alamos, New Mexico
 2. New Mexico Environment Department letter, J.E. Young to E. Trollinger, "Approval of the Voluntary Corrective Action Completion Report for Potential Release Site 0-019," dated May 28, 2002
 3. New Mexico Environment Department letter, C. Lundstrom to R. Erickson and G.P. Nanos, "Approval of Class III Permit Modification to Remove Seven (7) Solid Waste Management Units from the Department of Energy/Los Alamos National Laboratory RCRA Permit NM0890010515," dated August 6, 2003
 4. Los Alamos National Laboratory, April 2004. "Los Alamos and Pueblo Canyons Investigation Report," Los Alamos National Laboratory document LA-UR-04-2714, Los Alamos, New Mexico
 5. New Mexico Environment Department letter, J.P. Bearzi to D. Gregory and G.P. Nanos, "Approval as Modified, Los Alamos and Pueblo Canyons Investigation Report," dated May 11, 2005
 6. New Mexico Environment Department letter, J.E. Kieling to G.J. Rael and M.J. Graham, "Approval with Modifications, 2011 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project," dated June 3, 2011
 7. Los Alamos National Laboratory, September 2012. "Stormwater Performance Monitoring in the Los Alamos/Pueblo Watershed during 2011, Revision 1," Los Alamos National Laboratory document LA-UR-12-24822, Los Alamos, New Mexico
 8. Los Alamos National Laboratory, March 2013. "Storm Water Performance Monitoring in the Los Alamos/Pueblo Watershed during 2012," Los Alamos National Laboratory document LA-UR-13-22113, Los Alamos, New Mexico
 9. Los Alamos National Laboratory, June 2013. "2013 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project, Revision 1," Los Alamos National Laboratory document LA-UR-13-24419, Los Alamos, New Mexico
 10. New Mexico Environment Department letter, J.E. Kieling to P. Maggiore and J.D. Mousseau, "Approval, 2013 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project, Revision 1," dated July 19, 2013

11. Los Alamos National Laboratory, December 2005. "Los Alamos and Pueblo Canyons Supplemental Investigation Report," Los Alamos National Laboratory document LA UR-05-0230, Los Alamos, New Mexico
12. New Mexico Environment Department letter, J.P. Bearzi to D. Gregory and D. McInroy, "Approval with Direction, Los Alamos and Pueblo Canyons Supplemental Investigation Report," dated August 30, 2007

In accordance with Section XXI of the 2016 Compliance Order on Consent (Consent Order), the U.S. Department of Energy (DOE) is requesting a certificate of completion without controls for the following solid waste management unit (SWMU) within the Pueblo Canyon Aggregate Area, which fall under the Consent Order's Historical Sites Completion Campaign:

- SWMU 00-019, Former Wastewater Treatment Plant, Central

SWMU 00-019 was previously recommended for no further action in the "Voluntary Corrective Action Completion Report for Potential Release Site 0-019" (hereafter the VCA report) (Reference 1). The VCA report substantiated that the nature and extent of contamination had been defined at the site. Because SWMU 00-019 consists of mesa-top and hillside components, the VCA report evaluated risk for those two areas separately, based on differing current and foreseeable future land use (residential for the mesa-top component and recreational for the hillside component). The VCA report substantiated that the mesa-top portion of the site did not pose an unacceptable human health risk or dose under the residential scenario and the hillside portion of the site did not pose an unacceptable human health risk or dose under the recreational scenario. The VCA report also substantiated that the site did not pose an unacceptable risk to ecological receptors. The New Mexico Environment Department (NMED) approved the VCA report in its May 28, 2002, letter, "Approval of Voluntary Corrective Action Completion Report for Potential Release Site 0-019" (Reference 2).

On the basis of the VCA approval, Los Alamos National Laboratory (LANL or the Laboratory) requested a modification to Module VIII of the Laboratory's Hazardous Waste Facility Permit (Permit) to remove SWMU 00-019. The permit modification request also included eight other SWMUs for which investigation or VCA reports had been approved by NMED. NMED's August 6, 2003, letter, "Approval of Class III Permit Modification to Remove Seven (7) Solid Waste Management Units from the Department of Energy/Los Alamos National Laboratory RCRA Permit," denied the request for SWMU 00-019 and one other SWMU, but approved requests for seven other SWMUs (Reference 3). In denying the request, NMED stated it would not approve the permit modification request for SWMU 00-019 at that time because contamination from the site may have migrated to the canyons over time. NMED further stated it would not remove SWMU 00-019 from the Permit until the extent of contamination downstream had been characterized and any associated risks addressed.

The characterization of potential canyon contamination referenced in NMED's August 6, 2003, letter was performed and documented in the "Los Alamos and Pueblo Canyons Investigation Report (IR)" (Reference 4). The IR identified SWMU 00-019 as a potential source of contamination to Graduation Canyon (a tributary to Pueblo Canyon). The investigation documented in the IR included sampling in Pueblo Canyon reach P-1E upstream of the confluence with Graduation Canyon and in Pueblo Canyon reach P-2W downstream of the confluence. The sampling results indicated that concentrations of inorganic and organic chemicals and radionuclides from reach P-2W were equivalent or lower than concentrations in samples from reach P-1E. Based on these results, Graduation Canyon did not appear to be a significant contributor to contamination in Pueblo Canyon. The IR was approved by NMED in its May 11, 2005, letter, "Approval as Modified, Los Alamos and Pueblo Canyons Investigation Report" (Reference 5).

The need for additional characterization of potential contamination in Graduation Canyon below SWMU 00-019 was specified in NMED's June 3, 2011, letter, "Approval with Modifications, 2011 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project" (Reference 6). Specifically, the approval with modifications stated that NMED and LANL stormwater data collected from 2006 to 2010 in Graduation Canyon below SWMU 00-019 indicate that this tributary to Pueblo Canyon is a source of polychlorinated biphenyls (PCBs). The approval with modifications required LANL to install an automatic stormwater monitoring device in Graduation Canyon at an appropriate location upstream from the confluence with Pueblo Canyon. The sampler was installed and samples were collected during 2011 and 2012. The sample results were included in the 2011 and 2012 stormwater performance monitoring reports submitted to NMED in 2012 and 2013 (Reference 7, Reference 8). The "2013 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project, Revision 1," (Reference 9) (2013 monitoring plan) noted that the PCB results from the sampling location in Graduation Canyon below SWMU 00-019 were consistently below the upper tolerance limit for PCBs in urban runoff, which is the primary source of stormwater received by Graduation Canyon. As a result, the 2013 monitoring plan recommended discontinuing monitoring in Graduation Canyon. The 2013 monitoring plan was approved by NMED's July 19, 2013, letter, "Approval, 2013 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project, Revision 1," (Reference 10) and stormwater monitoring in Graduation Canyon below SWMU 00-019 has been discontinued.

Based on the results from the IR sampling and the stormwater monitoring in Graduation Canyon, potential releases from SWMU 00-019 to downstream canyon systems have been characterized, as specified in NMED's August 6, 2003, letter (Reference 3).

The human health risk evaluations in the IR (Reference 4) were refined in the 2005 supplement to the IR (Reference 11). These risk evaluations showed no unacceptable human-health risk in reach P-2W based on the recreational (trail user and extended backyard), construction worker, and residential scenarios. Therefore, based on the results of the IR and supplement, there are no unacceptable risks in the canyon downstream of SWMU 00-019. The supplemental IR was approved in NMED's letter "Approval with Direction, Los Alamos and Pueblo Canyons Supplemental Investigation," dated August 30, 2007 (Reference 12).


The human-health risk assessments performed during the timeframe of the VCA report (Reference 1) did not evaluate vapor intrusion into buildings. NMED now requires vapor intrusion to be evaluated if residential land use is a possibility. Because the current land use of the mesa-top portion of SWMU 00-019 is residential and residential structures are present on the site, the vapor-intrusion pathway was evaluated. This evaluation is presented in Enclosure 1.

Based on the results of the approved VCA report (Reference 1, Reference 2) and the evaluation in Enclosure 1, the mesa-top portion of SWMU 00-019 poses no unacceptable human-health risk or dose under the residential scenario, the hillside portion of SWMU 00-019 poses no unacceptable human-health risk under the recreational scenario, and the entire site poses no unacceptable risk to ecological receptors. Based on the results of the IR and supplement (Reference 4, Reference 11), as well as stormwater monitoring performed in Graduation Canyon, the nature and extent of releases from the site into downstream canyons have been characterized and do not pose an unacceptable risk. Although the hillside portion of the site may pose a potential human-health risk under the residential scenario, the topography effectively prevents use of the hillside for residential purposes. As a result, no institutional and/or physical controls would be required under the Consent Order to prevent residential use of the site. Therefore, SWMU 00-019 is appropriate for a Certificate of Completion without Controls under Section XXI.D of the Consent Order.

If you have any questions, please contact Christian Maupin at (505) 695-4281 (christian.maupin@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

**ARTURO
DURAN**

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Arturo Q. Duran
Compliance and Permitting Manager
U.S. Department of Energy
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Enclosure(s):

1. Two hard copies with electronic files – Evaluation of Vapor Intrusion Pathway at Solid Waste Management Unit Solid Waste Management Unit 00-019 (EM2023-0139)

cc (letter and enclosure[s] emailed):

Laurie King, EPA Region 6, Dallas, TX
Raymond Martinez, San Ildefonso Pueblo, NM
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Enclosure 1

*Evaluation of Vapor-Intrusion Pathway at
Solid Waste Management Unit 00-019*

Enclosure 1

Evaluation of Vapor-Intrusion Pathway at Solid Waste Management Unit 00-019

New Mexico Environment Department's (NMED's) "Risk Assessment Guidance for Site Investigations and Remediation" (NMED 2022, 702484) allows the evaluation to be qualitative for a potentially complete vapor-intrusion pathway if the following criteria are met:

- Volatile and toxic compounds are minimally detected.
- Concentrations are below NMED's vapor-intrusion screening levels for soil-gas and/or groundwater and no suspected source(s) for volatile and toxic compounds exist.
- Concentrations are decreasing with depth (for soil).

The vapor-intrusion pathway was evaluated for volatile and toxic organic chemicals detected at Solid Waste Management Unit (SWMU) 00-019. Volatile and toxic chemicals include those that have a Henry's law constant of approximately 1×10^{-5} atm-m³/mol or greater, a molecular weight of approximately 200 g/mol or less, and known to pose a potential cancer risk or noncancerous hazard through the inhalation pathway (NMED 2022, 702484).

Based on consideration of the above criteria, the vapor-intrusion pathway was evaluated qualitatively. Because only bulk soil data are available for this site, the vapor-intrusion screening levels are not applicable for the evaluation. The qualitative evaluation considers the magnitude, frequency, and vertical distribution of detections, as well as the site status with respect to contaminant sources.

SWMU 00-019 is the former central wastewater treatment plant (CWWTP), which was first installed to replace a series of septic tanks serving original Los Alamos National Laboratory (Laboratory) facilities and some residential areas of the Los Alamos townsite in former Technical Area 00 (TA-00). The Laboratory operated the CWWTP from 1947 to 1961. Former CWWTP components included a primary settling tank, sludge digestion tank, final settling tank, trickling filter, chlorine contact tank, clarifier, pump house, two sludge drying beds, two outfall areas, manholes, and associated underground piping. The CWWTP ceased operating and was initially decommissioned in 1961. In 1967, the site was transferred intact, but out of service, to Los Alamos County (LAC). LAC used the mesa-top portion of the site for various maintenance-related activities, primarily to house the LAC roads and grounds headquarters and a storage area. Removal of CWWTP structures was largely completed by 1991. Construction of a senior citizen assisted-living facility was completed in 2004 over the mesa-top portion of the site.

During the voluntary corrective action (VCA), a total of 73 samples from 36 locations at the mesa-top portion of SWMU 00-019 were analyzed for organic chemicals. Sample locations and results are presented in the VCA report (LANL 2001, 240519, Table 2.4-9 and Figure 2.4-4). Sampling locations on the hillside portion of SWMU 00-019 are not suitable for placement of a residential structure and samples from these locations were not used in the vapor-intrusion evaluation. Two chemicals that meet the above criteria for volatile and toxic chemicals [benzo(a)anthracene and 4-methyl-2-pentanone] were detected in samples from mesa-top locations at SWMU 00-019.

Benzo(a)anthracene was detected in 20 of 73 samples with a maximum concentration of 0.99 mg/kg. Three-fourths of the results were less than 0.1 mg/kg. The maximum concentration was detected at location 00-10301 at a depth of 8.0 to 9.0 ft below ground surface (bgs) and concentrations decreased with depth at this location. Concentrations increased with depth at 4 locations, but all detected concentrations at these locations were below estimated quantitation limits (EQLs).

Methyl-2-pentanone[4-] was detected in 1 of 73 samples at a concentration of 0.013 mg/kg. Methyl-2-pentanone[4-] was detected at location 00-10336 at a depth of 6.5 to 8.5 ft bgs, which was the deepest sample at that location, and was not detected in 28 samples from other locations at depths greater than 8.5 ft bgs.

The above evaluations indicate that volatile and toxic chemicals were minimally detected with concentrations decreasing with depth or below EQLs over the mesa-top portion of the site. The site description does not indicate that the site was a source of volatile and toxic chemicals. Such chemicals would only be present at de minimis concentrations in sanitary wastewater treated at the site and would not have been added during the CWWTP treatment process. In addition, all structures related to the former CWWTP have been removed. Therefore, no sources of volatile and toxic chemicals are present. The vapor-intrusion pathway is potentially complete based on NMED guidance (NMED 2022, 702484), but no additional evaluation is necessary.

References

LANL (Los Alamos National Laboratory), September 2001. "Voluntary Corrective Action Completion Report for Potential Release Site 0-019 (former Central Waste Water Treatment Plant)," Los Alamos National Laboratory document LA-UR-01-4140, Los Alamos, New Mexico. (LANL 2001, 240519)

NMED (New Mexico Environment Department), November 2022. "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," Hazardous Waste Bureau and Ground Water Quality Bureau, Santa Fe, New Mexico. (NMED 2022, 702484)