



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

EMLA-2021-0031-02-001

November 10, 2020

Mr. Kevin Pierard
Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Response to the Notice of Disapproval, Periodic Monitoring Report for
2019 Vapor-Sampling Activities at Material Disposal Area C, Solid Waste
Management Unit 50-009, at Technical Area 50, August 2020

Dear Mr. Pierard:

The U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) are providing responses to the comments in New Mexico Environment Department's notice of disapproval for the "Periodic Monitoring Report for 2019 Vapor-Sampling Activities at Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50," dated September 9, 2020.

These comment responses are submitted in accordance with Section XXIII(E) of the June 2016 Compliance Order on Consent, as modified on February 27, 2017.

If you have any questions, please contact David Diehl at (505) 551-2496 (david.diehl@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Arturo Duran

Digitally signed by Arturo
Duran
Date: 2020.11.03 13:17:40
-07'00'

Arturo Q. Duran
Compliance and Permitting Manager
Environmental Management
Los Alamos Field Office

Enclosures:

1. Response to the Notice of Disapproval, Periodic Monitoring Report for 2019 Vapor-Sampling Activities at Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50, August 2020, Los Alamos National Laboratory, EPA ID #NM0890010515, LANL-20-048, Dated September 9, 2020 (EM2020-0513)

CC (letter and enclosure[s] emailed):

Laurie King, EPA Region 6, Dallas, TX
Raymond Martinez, San Ildefonso Pueblo, NM
Dino Chavarria, Santa Clara Pueblo, NM
Chris Catechis, NMED-DOE-OB
Steve Yanicak, NMED-DOE-OB
William Alexander, N3B
Emily Day, N3B
David Diehl, N3B
Michael Erickson, N3B
Erich Evered, N3B
Jeff Holland, N3B
John Hopkins, N3B
Kim Lebak, N3B
Joseph Legare, N3B
Dana Lindsay, N3B
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Pamela T. Maestas

From: Martinez, Cynthia, NMENV <cynthia.martinez1@state.nm.us>
Sent: Wednesday, November 11, 2020 10:25 AM
To: Pamela T. Maestas
Subject: RE: Submittal to NMED on 11/10/2020 of Response to NOD for MDA C Vapor PMR

Received

From: Pamela T. Maestas <pamela.maestas@em-la.doe.gov>
Sent: Tuesday, November 10, 2020 4:49 PM
To: Pierard, Kevin, NMENV <Kevin.Pierard@state.nm.us>
Cc: Dhawan, Neelam, NMENV <neelam.dhawan@state.nm.us>; Emily M. Day <Emily.Day@em-la.doe.gov>; Regulatory Documentation <RegDocs@EM-LA.DOE.GOV>; Martinez, Cynthia, NMENV <cynthia.martinez1@state.nm.us>; cheryl.rodriguez@em.doe.gov; John Hopkins <John.Hopkins@EM-LA.DOE.GOV>; David Diehl <David.Diehl@EM-LA.DOE.GOV>
Subject: [EXT] Submittal to NMED on 11/10/2020 of Response to NOD for MDA C Vapor PMR

Mr. Pierard,

Attached for submittal is a pdf of the following:

- Response to the Notice of Disapproval, Periodic Monitoring Report for 2019 Vapor Sampling Activities at Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50, August 2020 (EMLA-2021-0031-02-001)

Please acknowledge receipt of this submittal by responding to this email.

Let me know if you have any questions.

Thank you.

Pamela T. Maestas

Regulatory Documentation Manager

Newport News Nuclear BWXT-Los Alamos, LLC

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**Response to the Notice of Disapproval,
Periodic Monitoring Report for 2019 Vapor-Sampling Activities at Material Disposal Area C,
Solid Waste Management Unit 50-009, at Technical Area 50, August 2020,
Los Alamos National Laboratory, EPA ID #NM0890010515, LANL-20-048,
Dated September 9, 2020**

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office responses follow each NMED comment.

SPECIFIC COMMENTS

NMED Comment

1. Section 3.1 Tier I Groundwater Screening, Page 5:

DOE Statement: "Table 3.1-1 presents the calculated concentrations of contaminants in soil vapor corresponding to groundwater SLs (hereafter, Tier I SLs) for the Tier I screening. Table 3.1-2 presents the results of the Tier I screening for the first round of 2019 pore gas data. Two VOCs were identified that exceeded the Tier I SL. Table 3.1-3 presents the results of the Tier I screening for the second round of pore gas data. Four VOCs were identified that exceeded the Tier I SLs."

- a. NMED Comment:** Please correct Table 3.1-1 to show the correct Tier I Pore-gas Concentrations Corresponding to Groundwater Standard for acetone, cis 1,2-dichloroethene and trans 1,2-dichloroethene. Acetone is listed with a Tier I SL (screening Level) of 20,300 $\mu\text{g}/\text{m}^3$ instead of 19,700 $\mu\text{g}/\text{m}^3$ and dichloroethene[trans-1,2-] is listed with a Tier I SL of 16,700 $\mu\text{g}/\text{m}^3$ instead of 38,300 $\mu\text{g}/\text{m}^3$. Also correct the Groundwater Screening Level for dichloroethene[cis-1,2-], which is listed twice on the table. Please list dichloroethene[cis-1,2-] only once with the correct New Mexico Water Quality Control Commission (NMWQCC) standard (70 $\mu\text{g}/\text{L}$), Tier I SL (11,700 $\mu\text{g}/\text{m}^3$) and Henry's constant (0.167).
- b. NMED Comment:** NMED Comment: Please correct Table 3.1-2 to show the correct Tier I Screening Level Calculated Concentrations in Pore Gas Corresponding to Groundwater Standard for dichloro-1,1,2,2-tetrafluoroethane [1,2-]. Tables 3.1-1, 3.1-3 and 3.2-2 indicate this to be "na" for this compound.

DOE Response

- 1.a. The dimensionless Henry's law constant (0.00144) and groundwater screening level (14,100 $\mu\text{g}/\text{L}$) for acetone are the values contained in the June 2019 NMED soil screening guidance (NMED 2019, 700550). These values result in a Tier I screening level (SL) of 20,300 $\mu\text{g}/\text{m}^3$. No revision to the Tier I SL for acetone is needed.

The dimensionless Henry's law constant (0.167) for trans-1,2-dichloroethene is the value contained in the June 2019 NMED soil screening guidance (NMED 2019, 700550) and the groundwater screening level (100 µg/L) is the New Mexico Water Quality Control Commission standard. These values result in a Tier I SL of 16,700 µg/m³. No revision to the Tier I SL for trans-1,2-dichloroethene is needed.

The dimensionless Henry's law constant and groundwater screening levels for cis-1,2-dichloroethene, and the resulting Tier I SL, will be corrected in Table 3.1-1. The second occurrence of cis-1,2-dichloroethene will be deleted from Table 3.1-1.

- 1.b. Dichloro-1,1,2,2-tetrafluoroethane[1,2-] is not listed in the NMED soil screening guidance (NMED 2019, 700550) or U.S. Environmental Protection Agency (EPA) regional screening tables (<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>). Therefore, data are not available with which to calculate a Tier I SL. The value for dichloro-1,1,2,2-tetrafluoroethane[1,2-] in Table 3.1-2 will be revised to "na."

NMED Comment

2. Section 5.1 2019 Pore-Gas Results, Page 6.

DOE Statement: "VOC analytical data from the second and first sampling rounds, respectively, are presented in Tables 5.1-1 and 5.1-2."

- a. **NMED Comment:** Please correct Table 5.1-1 to show only one Groundwater Tier I SL for propanol [2-]. The Tier 1 SL for propanol [2-] is listed with both "na" and 136 µg/m³ in this table. Tables 3.1-1, 3.1-2 and 3.1-3 indicate the Tier I SL for this compound is 136 µg/m³. Please review and correct as needed, all tables for the listed screening levels, standards, and detections for each compound in the revised report.
- b. **NMED Comment:** Please correct Table 5.1-2 with respect to the trichloroethene detections for Field Sample ID MD50-19-166043 for borehole 50-24822 at the 142-foot depth; for Sample ID MD50-19-166099 for borehole 50-603472 at the 146-foot depth; and for Sample ID MD50-19-166058 for borehole 50-603063 at the 228-foot depth. Intellus indicates these detections should be 20,407.9 µg/m³, 10,741 µg/m³ and 22,556 µg/m³, respectively.

DOE Response

- 2.a. The Tier I SLs presented in Tables 5.1-1 and 5.1-2 were reviewed and will be revised, as needed. In Table 5.1-1, the Tier I SL for 2-propanol presented as "na" will be revised to "136 µg/m³."
- 2.b. Table 5.1-2 will be revised to correct the results for trichloroethene as indicated in NMED's comment.

NMED Comment

3. Section 5.3 Evaluation of VOC Pore-Gas Data as Related to Hypothetical Groundwater Contamination, Page 7

DOE Statement: "Table 3.1-2 shows the two VOCs that exceeded Tier I SLs in the first sampling round, and Table 3.1-3 shows the four VOCs that exceeded Tier I SLs in the second sampling round. These VOCs are methylene chloride, trichloroethane[1,1,2-] and TCE. Because some groundwater SLs were exceeded, further screening was performed using the concentrations from the deepest pore-gas sample (i.e., the sample collected closest to the regional aquifer). The deepest sample, in

which all three VOCs were detected, was collected from borehole location 50-613184 at a depth interval of 664.5 ft. The results of this screening show that all concentrations from the deep sample resulted in concentrations below the Tier I groundwater SL."

- a. **NMED Comment:** Table 3.1-3 indicates 2-propanol was detected above the Tier I SL. Please include 2-propanol in the second sentence.
- b. **NMED Comment:** Section IV in Appendix E of the 2016 Compliance Order on Consent (CO) provides NMED's general expectations and guidance for the presentation of subsurface vapor monitoring analytical data in Periodic Monitoring Reports (PMRs). Section IV)6 of the CO requires map and cross-sectional views in figures that show the analytical data of each contaminant detected in excess of the Tier I SLs during the current sampling events. The Report includes Figures D-1.0-2 and D-5.0-1 to illustrate the volatile organic compound (VOC) plume in map and cross-sectional view, however, these figures are from the 2012 CME and represent modeled TCE distributions from 2011 data. The Report does not contain figures that depict the January/February 2019 (first sampling round) and 2020 (second sampling round) results. In the revised report and subsequent PMRs, include map and cross-sectional figures of the distributions of individual contaminant (not total VOCs) concentrations detected above the Tier I SL at more than one location. At a minimum, isoconcentration maps and cross-sections like Figures D-3.0-1 through D-3.0-8 from the 2012 CME must be included in the revised report to depict the TCE distributions in the various strata detected during each recent sampling round.

DOE Response

- 3.a. Section 5.3 will be revised to include 2-propanol with the list of VOCs exceeding Tier I SLs.
- 3.b. The report will be updated to include isoconcentration maps and cross-section Figures D-3.0-1 through D-3.0-8. These figures will be updated to depict the trichloroethylene (TCE) distributions from both recent sampling rounds (2019 results).

NMED Comment

4. Section D-1.0 Introduction, Appendix D, Page D-1

DOE Statement: "All plots showing TCE concentration versus depth also include a red dashed vertical line that is the Tier I groundwater screening level of 2000 $\mu\text{g}/\text{m}^3$. This same screening level for TCE is shown as a horizontal red dashed line on all histograms."

NMED Comment: The Tier I SL for TCE as provided on Tables 3.1-1, 3.1-2, 3.1-3, 5.1-1, 5.1-2 and 5.2-1 and as calculated in Section 3.0 using Henry's Law is 2020 $\mu\text{g}/\text{m}^3$ not 2000 $\mu\text{g}/\text{m}^3$. In the revision, please update all the histograms, time plots and notes in Figures D-2.0-1 through D-2.1-16, Figures D-3.0-1 through D-3.0-25, and Figures 4.0-1 through 4.0-18 to reflect the correct Tier I SL or provide an explanation why 2000 $\mu\text{g}/\text{m}^3$ is used instead of the calculated value. There are numerous inconsistencies of various Tier I SLs throughout the Report (see Comments Nos. 1 and 2) that make the Report difficult to follow. In the Report revision and all subsequent PMRs, please be consistent with each constituent Tier I SL throughout the Report and among all tables and figures. Also, in the figures requested in Comment No. 3, use the same Tier I SL as is used throughout the revised Report.

DOE Response

4. The Tier I SLs referenced throughout the report were reviewed for consistency with Table 3.1-1 and will be revised as needed.

The Tier I SL for TCE referenced in section D-1.0 will be revised to 2020 $\mu\text{g}/\text{m}^3$ for consistency with Table 3.1-1. The text at the end of the second paragraph of section D-1.0 will be revised as follows: "All plots showing trichloroethylene (TCE) concentration also include a dashed red line that is the Tier I groundwater screening level of 2020 $\mu\text{g}/\text{m}^3$. On the TCE versus depth plots, this is a vertical dashed red line; on the histograms of TCE and total VOC, this is a horizontal red dashed line." Revised text in section D-2.2 (to be added, see DOE Response 5) uses the correct Tier 1 screening value for TCE: "Values of TCE in the deepest port are well below the Tier I screening level of 2020 $\mu\text{g}/\text{m}^3$."

All TCE versus depth plots (e.g., Figure D-2.0-1) and histograms of TCE and total VOCs (e.g., Figure D-2.0-2) will be revised to remove text describing the red dashed line.

The following figures will show the 2020 $\mu\text{g}/\text{m}^3$ redline:

- Figures D-2.0-1 through D-2.0-16
- Figures D-3.0-1 through D-3.0-25
- Figures D-4.-0-1 through D-4.0-18

NMED Comment

5. Section D-2.0 Plume Core Borehole Data, Appendix D, Page D-2

NMED Comment: In the Report revision, include a narrative for Boreholes 50-603470, 50-603471, and 50-613183, or provide an explanation in the narrative why these borings are not discussed.

DOE Response

5. The following text will be added to Section D-2.0, Appendix D.

D-2.2 Borehole 50-603470

Borehole 50-603470, located at the southeast corner of Pit 5 (Figure D-1.0-1), is in the core of the VOC plume, with some of the highest concentrations found at the site. Figure D-2.0-7 shows that concentrations of TCE reach a maximum in the borehole between 200–300 ft bgs. At this depth range, concentrations have dropped from over 80,000 $\mu\text{g}/\text{m}^3$ in 2011 to approximately 50,000 $\mu\text{g}/\text{m}^3$ in the most recent sampling rounds. Total VOCs in this borehole (Figures D-2.0-8 to 2.0-10) show a decrease with time at both 83 and 278 ft bgs, while at 650 ft bgs there is a tentative trend towards higher values of total VOCs. At this deepest port, the ratios of TCE/total VOCs are quite low through time, consistent with deep values throughout the plume and also consistent with ratios found in borehole 50-603061. Values of TCE in the deepest port are well below the Tier I SL of 2020 $\mu\text{g}/\text{m}^3$.

D-2.3 Boreholes 50-603471 and 50-613183

Borehole 50-603471 is centrally located in the core of the plume between Pit 4 and Pit 5 (Figure D-1.0-1). This borehole also shows the highest concentrations between 200–300 ft bgs, with a value of TCE over 100,000 $\mu\text{g}/\text{m}^3$ in 2011 (Figure D-2.0-11). Subsequent measurements show a trend toward lower peak values of TCE, with the latest measurements on order of 50,000 $\mu\text{g}/\text{m}^3$ TCE.

Total VOCs in the high-concentration region (288 ft bgs) of this borehole are also trending downward through time, with high ratios of TCE/total VOCs that are consistent with the bulk of observations at all but the deepest depths and borehole 603061 (Figure D-2.0-12). At the deepest port (450 ft bgs), there is a clear trend toward both lower TCE and total VOC concentrations with time (Figure D-2.0-13). Borehole 50-613183 is located within 10 ft of borehole 50-603471 and serves as an extension to greater depths. Concentrations of TCE at borehole 50-613183 (Figure D-2.0-14) appear to be nearly stable through time at 642.5 ft bgs, while increases in concentrations are seen at 550 ft bgs. Ratios of TCE/total VOCs are lower in both ports of borehole 50-613183, with very little TCE present in the deepest 642.5-ft port (Figures D-2.0-15 and D-2.0-16).

NMED Comment

6. Section D-3.4 Borehole 50-603467, Appendix D, Page D-3

DOE Statement: "January 2020 data look suspicious as they are not following previous data trends."

NMED Comment: In the Report revision, please include a narrative that provides evidence that the data is suspect, such as issues identified by the data validation (Appendix C) or the reasons provided in Section D-5.0 on page D-5 that explain a previous anomalous dataset at borehole 50-24822 (Figure D-3.0-1). As is, this statement is purely speculative. A statement that the data is anomalous with respect to previous trends would suffice if there are no known reasons for the change in the time series concentration with depth plots.

DOE Response

6. The text will be revised accordingly to remove the word suspicious. The text will read as follows:

D-3.4 Borehole 50-603467

Borehole 50-603467 shows concentration reduction with time. January 2020 data are anomalous because they are not following previous data trends and there is no known reason for the changes. Borehole 50-603467 will continue to be monitored semiannually and results will be reported in the annual periodic report.

NMED Comment

7. Section D-5.0 Plume Trends, Appendix D, Page D-5

DOE Statement: "Changes in plume concentrations through time from 2011 to 2020 support a conceptual model of VOC migration from higher concentration areas directly under the source region towards lower concentration regions around the edge of the plume both laterally and vertically. These regions have been circled in red in Figure 0-5.0-1."

In Figure 0-5.0-1, the deepest ports {450-650 ft bgs} show very low TCE as a percent of the total VOC."

NMED Comment: Figure D-S.0-1 is from the 2012 CME. An updated figure should be included to provide a visual comparison with the figure from the 2012 CME. See Comment No. 3.

DOE Response

7. A new figure will be generated with the most recent TCE data and compared with the existing figure that was pulled from the 2012 corrective measures evaluation (CME).

REFERENCE

NMED (New Mexico Environment Department), June 19, 2019. "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," February 2019 (Revision 2, 6/19/19), Hazardous Waste Bureau and Ground Water Quality Bureau, Santa Fe, New Mexico. (NMED 2019, 700550)