

## DEPARTMENT OF ENERGY

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

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

DEC 1 7 2018

Dear Mr. Kieling:

Subject: Request for Certificates of Completion for Four Solid Waste Management Units in the Lower Mortandad/Cedro Canyons Aggregate Area

In accordance with Section XXI of the Compliance Order on Consent (the Consent Order), the U.S. Department of Energy (DOE) is requesting certificates of completion without controls for the following solid waste management units (SWMUs) within the Lower Mortandad/Cedro Canyons Aggregate Area:

- SWMU 05-003, Former Calibration Chamber
- SWMU 05-004, Former Septic Tank
- SWMU 05-005(b), Former Outfall
- SWMU 05-006(c), Area of Potential Soil Contamination

SWMUs 05-003, 05-004, 05-005(b), and 05-006(c) were recommended for corrective action complete without controls in the "Investigation Report for Lower Mortandad/Cedro Canyons Aggregate Area," Revision 1 (hereafter the IR) (Los Alamos National Laboratory [LANL] document LA-UR-12-23970, August 2012). The IR confirms that the nature and extent of contamination have been defined for the four sites. In addition, the IR demonstrates that SWMUs 05-003, 05-004, 05-005(b), and 05-006(c) pose no unacceptable risk or dose to human health under the industrial scenario, which is the current and reasonably foreseeable future land use, and no unacceptable risk or dose to human health under the residential scenario. The IR also demonstrates that the sites pose no potential risk to ecological receptors.

The IR was approved with modifications by the New Mexico Environment Department's (NMED's) "Approval with Modifications, Investigation Report for Lower Mortandad/Cedro Canyons Aggregate Area," dated September 10, 2012. In the approval with modifications, NMED requested DOE and Los Alamos National Security, LLC (LANS) conduct and submit a human health risk assessment that considers a construction worker scenario in the event of future development of the sites within Technical Area 5.

DOE and LANS interpreted NMED's approval with modifications as requiring construction worker risk to be evaluated only in the event that future development of the sites actually occurred. Since no future development of these sites was envisioned, DOE and LANS submitted a request for certificates of completion without controls for these sites based on current and future industrial land use. The request for certificates of completion was submitted to NMED on June 15, 2015 (ADESH-15-087). NMED responded to the request for certificates of completion on October 28, 2015, and provided clarification that the construction worker risk assessment referred to in the approval with modifications would be required in order for NMED to evaluate whether these sites qualify for corrective action complete under the Consent Order.

To satisfy NMED's request, DOE evaluated human health risk for the construction worker scenario for SWMUs 05-003, 05-004, 05-005(b), and 05-006(c). Because the residential and construction worker scenarios both consider exposure in the depth interval 0 ft to 10 ft below ground surface, the chemicals of potential concern (COPCs) and exposure point concentrations presented in the IR for the residential scenario (Appendix I; Tables I-2.2-1, I-2.2-4, I-2.2-7, and I-2.2-10) were used for the construction worker scenario. Dioxin and furan congeners are COPCs for SWMUs 05-005(b) and 05-006(c). The 2,3,7,8-tetrachlorodibenzo-p-dioxin equivalent concentrations presented in the IR for the residential scenario (Appendix I, Tables I-4.2-14 and I-4.2-22) were used to calculate risk from dioxin and furan congeners. The results of the human-health screening evaluations for the construction worker scenario for SWMUs 05-003, 05-004, 05-005(b), and 05-006(c) are presented in Enclosure 1 to this letter and summarized below.

No carcinogenic or radionuclide COPCs were identified for SWMU 05-003 for the construction worker scenario. The construction worker hazard index (HI) is 0.008 (Enclosure 1, Table 1), which is less than the NMED target HI of 1.

The total excess cancer risk for SWMU 05-004 for the construction worker scenario is  $4 \times 10^{-7}$  (Enclosure 1, Table 2), which is less than the NMED target risk level of  $1 \times 10^{-5}$ . The construction worker HI is 0.04 (Enclosure 1, Table 3), which is less than the NMED target HI of 1. The total dose for the construction worker scenario is 0.1 mrem/yr (Enclosure 1, Table 4), which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The total excess cancer risk for SWMU 05-005(b) for the construction worker scenario is  $3 \times 10^{-7}$  (Enclosure 1, Table 5), which is less than the NMED target risk level of  $1 \times 10^{-5}$ . The construction worker HI is 0.1 (Enclosure 1, Table 6), which is less than the NMED target HI of 1. The total dose for the construction worker scenario is 0.01 mrem/yr (Enclosure 1, Table 7), which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The total excess cancer risk for SWMU 05-006(c) for the construction worker scenario is  $7 \times 10^{-7}$  (Enclosure 1, Table 8), which is less than the NMED target risk level of  $1 \times 10^{-5}$ . The construction worker HI is 0.4 (Enclosure 1, Table 9), which is less than the NMED target HI of 1. The total dose for the construction worker scenario is 0.009 mrem/yr (Enclosure 1, Table 10), which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the results presented in Enclosure 1, as well as the results of the approved IR, neither site controls nor additional future actions under the Consent Order are necessary for these sites. Therefore, DOE requests certificates of completion without controls for SWMUs 05-003, 05-004, 05-005(b), and 05-006(c).

If you have any questions, please contact Kent Rich at (505) 551-2962 (kent.rich@emla.doe.gov) or Cheryl Rodriguez at (505) 665-5330 (cheryl.rodriguez@em.doe.gov).

Sincerely,

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Arturo Q. Duran Designated Agency Manager Environmental Management Los Alamos Field Office

Enclosures:

1. Construction Worker Risk Screening Evaluation Results for Solid Waste Management Units 05-003, 05-004, 05-005(b), and 05-006(c)

cc (letter and enclosure[s] emailed): L. King, EPA Region 6, Dallas, TX S. Yanicak, NMED B. Bowlby, N3B E. Day, N3B M. Erickson, N3B E. Evered, N3B J. Legare, N3B F. Lockhart, N3B N. Lombardo, N3B K. Rich, N3B A. Duran, EM-LA D. Nickless, EM-LA D. Rhodes, EM-LA C. Rodriguez, EM-LA emla.docs@em.doe.gov N3B Records Public Reading Room (EPRR) PRS Website

EM-LA-40AD-00365

### **ENCLOSURE 1**

### Construction Worker Risk Screening Evaluation Results for Solid Waste Management Units 05-003, 05-004, 05-005(b), and 05-006(c)

#### Table 1

**Construction Worker Noncarcinogenic Screening Evaluation for SWMU 05-003** 

СОРС	EPC (mg/kg)	Construction Worker SSL (mg/kg)*	Hazard Quotient
Antimony	1.03	142	7.25E-03
Selenium	1.05	1750	6.00E-04
		Hazard Index	0.008

Notes: COPC = Chemical of potential concern; EPC = Exposure point concentration; SSL = Soil screening level.

\* SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

 Table 2

 Construction Worker Carcinogenic Screening Evaluation for SWMU 05-004

		Construction Worker SSL	
COPC	EPC (mg/kg)	(mg/kg)*	Excess Cancer Risk
Cadmium	0.144	3610	3.99E-10
Benzo(a)anthracene	1.61	240	6.71E-08
Benzo(a)pyrene	1.55	173	8.96E-08
Benzo(b)fluoranthene	3.04	240	1.27E-07
Benzo(k)fluoranthene	0.899	2310	3.89E-09
Chrysene	3.13	23,100	1.35E-09
Dibenz(a,h)anthracene	0.188	24	7.83E-08
Indeno(1,2,3-cd)pyrene	0.74	240	3.08E-08
Methylene chloride	0.00236	89,300	2.64E-13
		Total Excess Cancer Risk	4E-07

\* SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

EPC **Construction Worker SSL** COPC Hazard Quotient (mg/kg) (mg/kg)<sup>a</sup> 0.505 142 3.56E-03 Antimony 0.144 2.00E-03 Cadmium 72.1 Copper 4.41 14,200 3.10E-04 Lead 12 800 1.50E-02 Nitrate 20.3 566.000 3.58E-05 5.81E-06 Perchlorate 0.00144 248 Selenium 0.406 1750 2.32E-04 0.0852 Acenaphthene 15,100 5.64E-06 7530<sup>b</sup> Acenaphthylene 0.0242 3.21E-06 0.334 Anthracene 75,300 4.44E-06 Benzo(a)pyrene 1.55 106 1.46E-02 Benzo(g,h,i)perylene 0.769 7530<sup>b</sup> 1.02E-04 Benzoic acid 0.61 1,080,000<sup>c</sup> 5.65E-07 Diethylphthalate 0.0824 215,000 3.83E-07 Fluoranthene 3.42 10,000 3.42E-04 Fluorene 0.11 10,000 1.10E-05 0.0793 1760<sup>c</sup> Hexanone[2-] 4.51E-05 2710<sup>d</sup> Isopropyltoluene[4-] 0.000429 1.58E-07 Methylene chloride 0.00236 1200 1.97E-06 Methylnaphthalene[2-] 0.0152 1000 1.52E-05 2.89E-06 Naphthalene 0.0145 5020 Phenanthrene 1.42 7530 1.89E-04 2.64 7530 **Pvrene** 3.51E-04 3.47E-08 Styrene 0.00035 10,100 **Hazard Index** 0.04

 Table 3

 Construction Worker Noncarcinogenic Screening Evaluation for SWMU 05-004

<sup>a</sup> SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017) unless otherwise noted.

<sup>b</sup> Pyrene used as a surrogate based on structural similarity.

<sup>c</sup> SSL calculated using toxicity value from Environmental Protection Agency regional screening tables (<u>https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables</u>) and equation and parameters from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

<sup>d</sup> Isopropylbenzene used as surrogate based on structural similarity.

# Table 4 Construction Worker Radionuclide Screening Evaluation for SWMU 05-004

COPC	EPC (pCi/g)	Construction Worker SAL (pCi/g)*	Dose (mrem/yr)
Plutonium-239/240	0.098	200	1.23E-02
Uranium-234	1.35	1000	3.36E-02
Uranium-235/236	0.0747	130	1.44E-02
Uranium-238	1.37	470	7.28E-02
		Total Dose	0.1

Note: SAL = Screening action level.

\* SALs from Los Alamos National Laboratory Derivation and Use of Radionuclide Screening Action Levels, Revision 4 (September 2015).

Construction Worker Carcinogenic Screening Evaluation for SWMU 05-005(b)				
COPC	EPC (mg/kg)	Construction Worker SSL (mg/kg) <sup>a</sup>	Excess Cancer Risk	
Cadmium	0.544	3610	1.51E-09	
Chromium	11.9	468 <sup>b</sup>	2.54E-07	
Nickel	6.99	25,000	2.80E-09	
Bis(2-ethylhexyl)phthalate	0.29	13,400	2.16E-10	
TCDD[2,3,7,8-] <sup>c</sup>	2.30E-07	0.00172	1.34E-09	
		Total Excess Cancer Risk	3E-07	

Table 5

<sup>a</sup> SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

<sup>b</sup> SSL for total chromium.

<sup>c</sup> TCDD[2,3,7,8-] = 2,3,7,8-tetrachlorodibenzo-p-dioxin.

 Table 6

 Construction Worker Noncarcinogenic Screening Evaluation for SWMU 05-005(b)

СОРС	EPC (ma/ka)	Construction Worker SSL (mɑ/kɑ)ª	Hazard Quotient
Antimony	0.834	142	5.87E-03
Cadmium	0.544	72.1	7.55E-03
Chromium	11.9	134 <sup>b</sup>	8.88E-02
Copper	2.59	14,200	1.82E-04
Lead	10.4	800	1.30E-02
Nickel	6.99	753	9.28E-03
Perchlorate	0.00107	248	4.31E-06
Selenium	1.07	1750	6.11E-04
Acenaphthene	0.0444	15,100	2.94E-06
Benzoic acid	0.538	1,080,000 <sup>c</sup>	4.98E-07
Bis(2-ethylhexyl)phthalate	0.29	5380	5.39E-05
Di-n-butylphthalate	0.0774	26,900	2.88E-06
Fluoranthene	0.0116	10,000	1.16E-06
Isopropyltoluene[4-]	0.000748	2710 <sup>d</sup>	2.76E-07
TCDD[2,3,7,8-]	2.30E-07	0.000226	1.02E-03
Toluene	0.000326	14,000	2.33E-08
		Hazard Index	0.1

<sup>a</sup> SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017) unless otherwise noted.

<sup>b</sup> SSL for total chromium.

<sup>c</sup> SSL calculated using toxicity value from Environmental Protection Agency regional screening tables (<u>https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables</u>) and equation and parameters from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

<sup>d</sup> Isopropylbenzene used as surrogate based on structural similarity.

Table 7
Construction Worker Radionuclide Screening Evaluation for SWMU 05-005(b)

СОРС	EPC (pCi/g)	Construction Worker SAL (pCi/g)*	Dose (mrem/yr)
Plutonium-238	0.0225	230	2.45E-03
Plutonium-239/240	0.0282	200	3.53E-03
Uranium-235/236	0.0428	130	8.23E-03
		Total Dose	0.01

\* SALs from Los Alamos National Laboratory Derivation and Use of Radionuclide Screening Action Levels, Revision 4 (September 2015).

 Table 8

 Construction Worker Carcinogenic Screening Evaluation for SWMU 05-006(c)

COPC	EPC (mg/kg)	Construction Worker SSL (mg/kg) <sup>a</sup>	Excess Cancer Risk
Chromium	32.4	468 <sup>b</sup>	6.91E-07
Nickel	17.2	25,000	6.88E-09
Aroclor-1260	0.0018	85.3	2.11E-10
Methylene chloride	0.00275	89,300	3.08E-13
TCDD[2,3,7,8-]	1.86E-07	0.00172	1.08E-09
		Total Excess Cancer Risk	7E-07

<sup>a</sup> SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

<sup>b</sup> SSL for total chromium.

СОРС	EPC (mg/kg)	Construction Worker SSL (mg/kg) <sup>a</sup>	Hazard Quotient
Antimony	0.794	142	5.59E-03
Chromium	32.4	134 <sup>b</sup>	2.41E-01
Copper	56.2	14,200	3.96E-03
Lead	80.8	800	1.01E-01
Nickel	17.2	753	2.28E-02
Selenium	1.1	1750	6.29E-04
Silver	0.287	1770	1.62E-04
Acetone	0.00203	241,000	8.42E-09
Isopropyltoluene[4-]	0.00145	2710 <sup>c</sup>	5.35E-07
Methylene chloride	0.00275	1200	2.29E-06
TCDD[2,3,7,8-]	1.86E-07	0.000226	8.25E-04
Toluene	0.00101	14,000	7.21E-08
Trimethylbenzene[1,2,4-]	0.000461	329 <sup>d</sup>	1.40E-06
		Hazard Index	0.4

 Table 9

 Construction Worker Noncarcinogenic Screening Evaluation for SWMU 05-006(c)

<sup>a</sup> SSLs from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017) unless otherwise noted.

<sup>b</sup> SSL for total chromium.

<sup>c</sup> Isopropylbenzene used as surrogate based on structural similarity.

<sup>d</sup> SSL calculated using toxicity value from Environmental Protection Agency regional screening tables (<u>https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables</u>) and equation and parameters from New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation (March 2017).

# Table 10 Construction Worker Radionuclide Screening Evaluation for SWMU 05-006(c)

COPC	EPC (pCi/g)	Construction Worker SAL (pCi/g)*	Dose (mrem/yr)
Uranium-235/236	0.0483	130	9.29E-03
		Total Dose	0.009

\* SALs from Los Alamos National Laboratory Derivation and Use of Radionuclide Screening Action Levels, Revision 4 (September 2015).