TA-03

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Date: June 19, 2002
Refer to: ER2002-0408

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

SUBJECT: SUBMITTAL OF RESPONSE TO REQUEST FOR SUPPLEMENTAL INFORMATION (RSI) FOR THE VOLUNTARY CORRECTIVE ACTION (VCA) COMPLETION REPORT FOR POTENTIAL RELEASE SITE (PRS) 03-056(c)

Dear Mr. Young:

Enclosed are two copies of the Los Alamos National Laboratory (LANL) Environmental Restoration (ER) Project's Response to your RSI for the VCA Completion Report for PRS 03-056(c). The ER Project Office received the RSI on May 21, 2002.

If you have any questions, please contact Gabriela Lopez Escobedo at (505) 665-7352 or David Gregory at (505) 667-5808.

Sincerely,

David McInroy, Acting Program Manager
Environmental Restoration Project
Los Alamos National Laboratory

Sincerely,

Everett Trollinger, Project Manager
Department of Energy
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DM/ET/GLE/nr/vn

Enclosure: Response to RSI (ER2002-0407)

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Response to
Request for Supplemental Information (RSI)
for the Voluntary Corrective Action Completion Report
for Potential Release Site (PRS) 03-056(c)

INTRODUCTION

This document responds to a letter regarding "Request for Supplemental Information for VCA Completion Report for PRS 03-0-56(c)," dated May 17, 2002, from the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) to the Los Alamos National Laboratory (LANL) Environmental Restoration (ER) Project. To facilitate review of this response, NMED's comments are included verbatim below. The comments are divided into general and specific categories as presented in the letter. LANL's responses follow each NMED comment.

GENERAL COMMENTS

1. *The human health risk screening assessment adequately addresses the risk to future site users because the SALs used by LANL are for residential exposure. The PCBs (as Arochlor-1260) meet the EPA 1 mg/kg remediation criteria. Risk to construction workers that may result from the proposed construction of cooling towers was not addressed as part of the VCA Completion Report, but the PCB levels in the portion of the site to be used for contruction (the north area) are below the Arochlor-1260 soil screening level that would be generated using the NMED equations (this number would be greater than then 1 mg/kg EPA remediation goal). NMED concurs with LANL that the site does not pose unacceptable risk to human health.*

2. *The ecological screening risk assessment consisted of a comparison of contaminant concentrations to background and to LANL ESLs. Nickel, cobalt, and arsenic originally generated HQs above one for several receptors., However, additional sampling done by LANL and EPA in and near the area of elevated concentrations, showed much lower concentrations that did not exceed background concentrations for these metals. Therefore, NMED concurs that these metals should be dropped from further consideration.*

LANL Response

No response required for the general comments.

SPECIFIC COMMENTS

NMED Comment

1. ***Table 1.0-1, Chronology of ER Project Activities at PRS 3-056(c), page 2:***
   Please include the request and approval dates of contained-in determination for the waste generated at the site during the VCA activities. LANL sent a request for "no longer contained in" determination to NMED on November 21, 2000. NMED approved the request on December 6, 2000.

LANL Response

1. Table 1.0-1 has been revised to include the request for "No Longer-Contained-in Determination for Potential Release Site (PRS) 03-056(c)," submitted on November 21, 2000 (LANL 2000, 64630), and

the NMED approval of the request on December 6, 2000 (NMED-HWB 2000, 70136). Please see the shaded rows in revised Table 1.0-1 below.

Revised Table 1.0-1
Chronology of ER Project Activities at PRS 03-056(c)

Date	Activity (Reference)	Synopsis of Activity
November 1991	Site sampled (LANL 1993, 20947)	Environmental Management Group at the Laboratory samples the site, preceding a slope-stabilization project. PCBs are detected (maximum of 9600 ppm).
June 1993	RFI work plan (LANL 1993, 20947)	The "RFI Work Plan for OU 1114" was submitted to EPA; the work plan included a sampling and analysis plan for PRS 03-056(c).
August 1994	RFI sampling at site (LANL 1995, 52951)	PRS 03-056(c) sampled as part of Phase I RFI by ER Project. PCBs were detected from <1 to 9600 ppm; mercury and tetrachloroethene were also detected.
June 1, 1995	EC plan submitted (LANL 1995, 52951)	EC plan for PRS 03-056(c) submitted to EPA.
August 9, 1995	Received list of deficiencies from EPA (EPA 1995, 55740)	EPA commented on EC plan and submitted list of deficiencies; disagreed with the 10 ppm cleanup level proposed and required a more stringent cleanup level.
August 1995–March 1996	LANL executed corrective action at site	LANL conducted remedial activities (an EC): 1000 yd^3 of soil containing >10 ppm total PCBs removed from slopes and mesa top. LANL performed human health and ecological risk assessment to support the decision to leave <10 ppm PCBs on-site, and LANL responded to the notice of deficiency (NOD). LANL and the Department of Energy (DOE) engaged in discussions with the EPA about the cleanup level for the site.
April 1996	Status report (LANL 1996, 55746) submitted	LANL submitted status report to EPA and justified the 10 ppm cleanup level.
March 13, 1996	NOD received from NMED (NMED 1996, 54179)	NMED submitted NOD on status report; requested justification for 10 ppm cleanup level.
May 2, 1996	Response to NOD (LANL 1996, 54398) submitted	LANL submitted response to NOD with justification for cleanup level, with copies to EPA Region 6 TSCA.
November 6, 1996	Conference call	In a conference call with NMED and EPA Region 6 TSCA, ER Project personnel indicated that no further activity could be pursued until a regulatory decision was received on proposed cleanup level (i.e., response to the May 2, 1996, NOD response).
June 10, 1997	Correspondence sent to DOE from EPA	EPA Region 6 TSCA provided e-mail documenting the cleanup level established by the EPA Region 6 TSCA PCB program office for PRS 3-056(c). The cleanup level was established at less than 1 ppm.
September 1999	LANL submits VCA plan (LANL 1999, 64711)	VCA plan is submitted to NMED and EPA Region 6 TSCA for review and approval. Plan presents the approach for executing a cleanup at the site to meet the <1 ppm cleanup level.
August 2000	LANL makes application for risk based disposal approval (LANL 2000, 68684)	LANL prepared an application to EPA Region 6, requesting approval for disposal of <50 ppm PCB-contaminated soil as PCB remediation waste.
August 31, 2000	Approval of VCA plan (NMED 2000, 68683)	NMED approves VCA plan.
September 2000	VCA begins	VCA excavation activities begin at PRS 3-0565(c).

Date	Activity (Reference)	Synopsis of Activity
November 2000	EPA approves application (EPA 200, 68772)	EPA Region 6 approved the cleanup and disposal application, making it possible to dispose of most of the waste from the cleanup at an industrial landfill.
November, 2000	No Longer-Contained-in Determination Request (LANL 2000, 64630).	LANL submitted request for "No Longer-Contained-in Determination for Potential Release Site (PRS) 03-056(c)" to NMED.
December, 2000	NMED approves "No Longer-Contained in Determination" (NMED-HWB 2000, 70136)	NMED approved the request for "No Longer-Contained-in Determination for Potential Release Site (PRS) 03-056(c)".
March 2001	Excavation activities completed	Excavation activities that are part of the VCA are completed.
April 18, 2001	NMED/LANL meeting	Draft site restoration plan is presented and discussed with NMED at the monthly meeting between NMED Hazardous Waste Bureau (NMED HWB) and LANL. NMED agrees to proceeding with site restoration.
August 2001	Site restoration	Site restoration at PRS 3-056(c) is completed.

NMED Comment

2. ***Section 2.1, Summary of VCA Activities, page 5:***
   LANL Statement: *Based on January 2001 confirmatory sampling results, four areas of elevated (>1 ppm) PCBs were identified.*
   NMED Comment: *Clarify the statement that PCBs were detected above 1 ppm at more than four locations at the site. Four areas with elevated PCBs were identified for further cleanup and were later excavated. Confirmatory samples were collected after the excavation.*

LANL Response

2. The sampling conducted during January 2001 identified 15 areas with PCB concentrations greater than 1 ppm; however, only four of these areas required additional cleanup.

NMED Comment

3. ***Section 2.4.3.1, Inorganic Chemical Comparison with Background Levels, page 21:***
   LANL Statement: *Soil and sediment samples were not differentiated during confirmatory sampling*
   NMED Comment: *State which background values were used for comparison with samples (i.e., soil) and provide a rationale for not differentiating between soil and sediment samples.*

LANL Response

3. Three background value data sets were considered for the screening assessment for this site: the all-soil horizons (ALLH), the Tshirege Member of the Bandelier Tuff 3 (QBT3), and the sediment background value data set. The ALLH background values are representative of material sampled at the site because PRS 3-056(c) is located near the start of Sandia Canyon and at the base of a hill slope where soils and sediments are mixed. The LANL technical team decided that the ALLH background data set was the most appropriate for these undifferentiated soils/sediment deposits at the toe of the slope. The sediment background values are intended to be used for materials that are clearly categorized as sediments (i.e., that have been reworked, transported, and deposited in canyon bottoms by floods). Also, note that the QBT3 background values were used for tuff samples.

4. ***Table 2.4-2, Inorganic Chemicals with Concentrations or Detection Limits at or Exceeding BVs, page 23:***
   NMED Comment: *Silver was detected in two samples above BVs as shown in Table 2.4-1. Table 2.4-2 reports only one value for silver, include the detected value for the second silver sample (i.e. Sample ID RE03-01-0016) in the table.*

LANL Response

4. Silver was detected in two samples above background values (BVs). Table 2.4-2 has been revised to include the inadvertently omitted detection. Please see the shaded row in revised Table 2.4-2, below.

Revised Table 2.4-2
PRS 03-056(c)
Inorganic Chemicals with Concentrations or Detection Limits At or Exceeding BVs[a]

Analyte	Location ID	Sample ID	Sample Value (ppm)	BV (ppm)	Matrix	Depth (ft)
Arsenic	03-14361	RE03-01-0010	110 (J-)	8.17	Soil	0–0.5
Beryllium	03-14361	RE03-01-0010	2.9 (J-)	1.83	Soil	0–0.5
Cadmium	03-14361	RE03-01-0010	3.6	0.4	Soil	0–0.5
Chromium	03-14319	RE03-01-0008	37 (J-)	19.3	Soil	0–0.5
Cobalt	03-14361	RE03-01-0010	29 (J-)	8.64	Soil	0–0.5
Copper	03-14361	RE03-01-0010	15 (J-)	14.7	Soil	0–0.5
	03-14358	RE03-01-0016	15			0.5–1
Lead	03-14367	RE03-01-0093	23	22.3	Soil	0.5–1
	03-14361	RE03-01-0010	37(J+)			0–0.5
	03-14367	RE03-01-0018	42			0–0.5
	03-14344	RE03-01-0130	22.8	11.2	Qbt 3	0–0.25
Mercury	03-14358	RE03-01-0016	0.13 (J)	0.1	Soil	0.5–1
Nickel	03-14361	RE03-01-0010	30 (J-)	15.4	Soil	0–0.5
Silver	03-14358	RE03-01-0016	1.4 (J)	1	Soil	0.5–1
	03-14361	RE03-01-0010	2.2 (J-)			0–0.5
Zinc	03-14393	RE03-01-0003	77 (J-)	48.8	Soil	0–0.5
	03-14361	RE03-01-0010	69 (J-)			0–0.5
	03-14319	RE03-01-0008	55 (J-)			0–0.5
	03-14314	RE03-01-0002	52 (J-)			0–0.5
	03-14334	RE03-01-0009	52 (J-)			0–0.5
	03-14316	RE03-01-0005	49 (J-)			0–0.5

[a] Descriptions of the analytical methods used for this PRS can be found in Appendix C. Detection limits can be found in Appendix D.

NMED Comment

5. ***Table 2.4-3, PRS 3-056(c) Results of RFI Inorganic Data Review, page 24:***
   LANL Statement: *For cadmium soil samples, under column 4 (Rationale) "Retained as a COPC because detection limits in two samples were greater than soil BV."*
   NMED Comment: *Correct the rationale for retention of cadmium as a COPC to state that it was retained because one sample value was above BV. Correct the caption for the table, results are from a VCA not an RFI.*

LANL Response

5. Cadmium was retained because one sample value was above BVs. Please see the shaded row in revised Table 2.4-3, below, for the correct rationale.

Revised Table 2.4-3
PRS 03-056(c)
Results of VCA Inorganic Data Review

Analyte	Media	Result	Rationale
Aluminum	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Antimony	Soil	No data	Retained for qualitative evaluation; all antimony results were rejected (R-qualified) due to poor recovery and high potential for false-negative results; data qualified as R are not of sufficient quality to use in a quantitative risk assessment
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Arsenic	Soil	Retained	Retained as a COPC because one sample was detected at a concentration greater than the soil BV and range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Barium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Beryllium	Soil	Eliminated	Eliminated as a COPC because the one sample concentration greater than the soil BV was within the range of the soil background data
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Cadmium	Soil	Retained	Retained as a COPC because the detection limit for one sample is greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3BV
Calcium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV

Revised Table 2.4-3 (continued)

Analyte	Media	Result	Rationale
Chromium, total	Soil	Eliminated	Eliminated as a COPC because one sample concentration greater than the soil BV was within the range of the soil background data
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 2,3,4 BV
Cobalt	Soil	Retained	Retained as a COPC because one sample concentration was greater than the soil BV and range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 2,3,4 BV
Copper	Soil	Eliminated	Eliminated as a COPC because the two sample concentrations greater than the soil BV were within the range of the soil background data
	Qbt 3	Eliminated	Eliminated as a COPC because the one sample concentration greater than the Qbt 2,3,4 BV was within the range of the Qbt 2,3,4 background data
Iron	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Lead	Soil	Retained	Retained as a COPC because three sample values greater than the soil BV were also greater than the range of the soil background data
	Qbt 3	Retained	Retained as a COPC because one sample value greater than the Qbt 2,3,4 BV was also greater than the range of the tuff background data
Magnesium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Manganese	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Mercury	Soil	Retained	Retained as a COPC because the detection limit in 1 sample value was greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than Qbt 3 BV
Nickel	Soil	Retained	Retained as a COPC because 1 sample greater than the soil BV was also greater than the soil range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than Qbt 3 BV
Potassium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Selenium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Silver	Soil	Retained	Retained as a COPC because two values were greater than the soil BV and the range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV

Revised Table 2.4-3 (continued)

Analyte	Media	Result	Rationale
Sodium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Thallium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Vanadium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Zinc	Soil	Retained	Retained as a COPC because 6 sample values were greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV

NMED Comment

6. ***Figure 2.4-3, page 27:***
   NMED Comment: *Include information for the confirmatory sample taken at sample location ID 03-14337 in the Figure 2.4-3. Include concentrations of detected inorganic and organic chemicals, if any, for this sample, in the figure.*

LANL Response

6. Please see revised Figure 2.4-3 on the last page of this response. It has been updated to include the missing information.

NMED Comment

7. ***Table 2.5-1, page 43:***
   NMED Comment: *Based on NMED "Technical Background Document of Soil Screening Levels," Volume I, December 18, 2000, SALs for cobalt and trichloroethane[1,1,1-] should be 4500 ppm and 510 ppm respectively. Provide the source of SAL of 160 ppm for isopropyltoluene[4-]. Please provide the reference for "Human Health Medium-Specific Screening Levels (EPA 2000, 68410) in Section 5.0.*

LANL Response

7. According to the NMED guidance cited, the SAL for cobalt is 4500 ppm and the SAL for trichloroethane[1,1,1-] is 510 ppm. LANL has re-evaluated these two constituents with the correct SALs and has determined that there is no impact on the results of the human health screening assessment.

   Neither standard EPA nor NMED information sources provide a SAL for isopropyltoluene[4-]. LANL's "Human Health Risk-Based Screening Methodology" (LANL 2002, 72639) states that the SAL for isopropyltoluene[4-] should be based on surrogate toxicity data, and the associated SAL, for

isopropylbenzene. Therefore, the SAL of 160 ppm for isopropylbenzene, as reported in "Human Health Medium-Specific Screening Levels" (MSSLs) (EPA 2000, 68410), was used in the VCA completion report. Please note that EPA lists *isopropylbenzene* as *cumene* (CAS no. 98-82-8) in its MSSL spreadsheets.

The appropriate reference for "Human Health Medium-Specific Screening Levels" is as follows:

> EPA (US Environmental Protection Agency), February 2000. "Human Health Medium-Specific Screening Levels," EPA Region 6 Multimedia Planning and Permitting Division. (EPA 2000, 68410)

NMED Comment

8. ***Section 2.5.1.1(b), Human Health Screening Evaluation, page 44:***
LANL Statement: *"The total cancer risk is approximately 6 in 100,000, or $6x10^{-5}$, if the anomalous detection of arsenic is included in the calculation, but only 2 in 100,000 ($2x10^{-5}$) if the anomalous data are excluded."*
NMED Comment: *Clarify the discrepancy between the above statement and the statement on page 47, third paragraph: "Therefore, when more restrictive data are used, the potential additive risk is approximately 2 in 1 million, which is below NMED's acceptable level".*

LANL Response

8. The statement on page 44 refers to differences in additive cancer risk estimates from inclusion/exclusion of the anomalous arsenic detection only; that is, additive cancer risk estimates from Aroclor-1260, arsenic, benzene, and tetrachloroethene are approximately 6×10^{-5}. If the anomalous detection of arsenic (the only detection above background) is excluded from this sum, and if the next highest concentration of arsenic (5.9 ppm, from location ID 03-14367, sample ID RE03-01-0018) is included in the sum, the risk estimate drops to 2×10^{-5}. These numbers are shown in the table below.

Analyte	Exposure Point Concentration (ppm)	Exposure Point Concentration (ppm)
Aroclor-1260	0.62	0.62
Arsenic	21.1[a]	5.9[b]
Benzene	0.012	0.012
Tetrachloroethene	23 (in tuff)	23 (in tuff)
Additive Cancer Risk	6×10^{-5}	2×10^{-5}

[a] UCL^{95} calculated, including uncharacteristic detection of 110 mg/kg
[b] Highest detection of arsenic, disregarding detection of 110 mg/kg

The statement on page 47 refers to differences in cancer risk for tetrachloroethene specifically, if the single positive result in tuff (23 ppm) is not considered and if the single detection in soil (0.008 ppm) is used instead. (Note that, on page 47 of the text, *0.007 ppm* for tetrachloroethene is a typographical error; it should read *0.008 ppm.*)

Analyte	Exposure Point Concentration (ppm)	Exposure Point Concentration (ppm)
Tetrachloroethene	23	0.008
Cancer risk	5×10^{-6}	1×10^{-9}

The risk estimate for tetrachloroethene is negligible if the detection limit of 0.008 is used as the exposure point concentration. Nevertheless, the additive cancer risk remains approximately 2×10^{-5} because it is predominated by the risk of approximately 1.5×10^{-5} from 5.9 ppm arsenic. Therefore, the last sentence in paragraph 3 on page. 47 should be revised to read as follows: "Therefore, when more restrictive data are used, the potential additive risk is approximately 2×10^{-5}, which is on the order of NMED's acceptable risk level.

NMED Comment

9. ***Section 2.5.1.2, Ecological, page 47:***
NMED Comment: *Hazard Quotients (HQs) from comparison with LANL ESLs for PCBs indicate risk in magnitude 3-8 for avian receptors. These HQs are dismissed on the basis of the assumption used in the assessment that the site is 100% of the species' range. Potentially, the use of an appropriate adjustment factor for the home range of these avian species could reduce these HQs to below one, but nothing was done as part of this assessment to demonstrate this assertion is true. The site is located in habitat for threatened and endangered species (spotted owl) for which the bird receptor species (kestrel) serve as surrogate, which lends even more importance to further investigation of these HQs. Consideration of issues such as home range size and bioavailability need to be included in the calculations and evidence should be presented to support the mitigating effects of these considerations and to demonstrate their impact on the HQ values. LANL should perform an ecological risk assessment for the site since it failed the ecological screening assessment.*

LANL Response

9. The VCA completion report's assessment did not include a consideration of the area use factor (AUF) for wildlife species. The AUF is calculated as the ratio of an animal's home range to the area of a PRS (the maximum AUF is 1 if the home range is less than the area of the PRS). The HQs for end receptors have been recalculated and are shwon in Table 1. The table also shows the difference that the AUF makes to receptors with large home ranges. The AUF-adjusted HQ values are less than 1 for all but four screening receptors: (1) deer mouse, (2) vagrant shrew, (3) robin (omnivore), and (4) robin (invertevore). Thus, consideration of AUF reduces the estimated potential for adverse ecological effects and, most importantly, reduces the HQ for the kestrel—the carnivore that serves as surrogate for the threatened and endangered Mexican spotted owl. It is also important to recognize that the PRS is considered *potential* habitat for the Mexican spotted owl; none of these owls currently inhabit this part of LANL property. The only known nesting site for the Mexican spotted owl is located in Cañon de Valle, approximately 3 km southwest of PRS 3-056(c).

Table 1
HQ Analysis for Aroclor-1260

Analyte	Receptor	ESL FY2001 (mg/kg)[a]	95UCL (mg/kg)[b]	HQ	Home Range (ha)	PRS Area (ha)	AUF	HQ, AUF-Adjusted
Aroclor-1260	Desert cottontail	1.2	0.541	0.45	1.5	0.55	0.37	0.16
	Deer mouse	0.15	0.541	3.6	0.075	0.55	1.00	3.6
	Vagrant shrew	0.075	0.541	7.2	0.39	0.55	1.00	7.2
	Red fox	0.37	0.541	1.5	699	0.55	0.0008	<0.01
	Robin (herbivore)	1.2	0.541	0.45	0.42	0.55	1.00	0.45
	Robin (omnivore)	0.096	0.541	5.6	0.42	0.55	1.00	5.6
	Robin (invertevore)	0.05	0.541	11	0.42	0.55	1.00	11
	Kestrel	0.2	0.541	2.7	13.1	0.55	0.04	0.11
	Kestrel (carnivore)	0.19	0.541	2.9	366[c]	0.55	0.0015	<0.01

[a] Source: ECORISK database (LANL 2000, 67823).
[b] Based on revised calculation of exposure point concentrations, see Tables 2 and 3.
[c] Home range for spotted owl (Gallegos et al. 1996, 57915), because the kestrel with a flesh diet serves as a surrogate for this species.

Tables 2 and 3 show the results of recalculating the Aroclor-1260 UCL without data from 9 sample locations (03-14314, 03-14313, 01-14311, 03-14315, 03-14322, 03-14325, 03-14316, 03-14308, 03-14324) that are now under 4 ft of fill and asphalt. These locations have been omitted in the recalculation because they are not available for exposure to wildlife or humans.

Table 2
Results of the Shapiro-Wilk Distributional Test

Analyte	Normal p-value	Lognormal p-value	Distribution
Aroclor-1260*	<0.0001	0.0002	Neither

* Results indicate that neither normal nor lognormal model is appropriate; therefore, results from the nonparametric bootstrap will be used for the UCL calculation.

Table 3
Summary of UCL Calculations

Analyte	Normal UCL (mg/kg)	Lognormal UCL (mg/kg)	Bootstrap UCL (mg/kg)	Count of Non-detects	Count of Samples	Maximum Non-detect (mg/kg)
Aroclor-1260	0.533	0.652	**0.541**	26	75	0.052

The bold number in Table 3 is the UCL that was chosen based on the distribution of the data.

The VCA completion report assessment used ESLs that were available in FY2001. Since the report was initially published, revised ESLs have been published (September 2001 and March 2002). The values for Aroclor-1260 were revised in these two versions of the ECORISK Database (LANL 2002, 72802). The Aroclor-1260 ESLs have changed because toxicity studies were published for this PCB mixture. Previously, the Aroclor-1260 toxicity values were based on Aroclor-1254 serving as surrogate. The Aroclor-1260 ESL for mammals is based on the rat, whereas the Aroclor-1254 toxicity

value is based on the mink. Minks are known to be more sensitive to PCBs than other mammals (Moore et al., 1999, 73158), but the rat is more ecologically relevant to the types of mammals included among the screening receptors or those likely to be present at PRS 3-056(c). The ESLs have also changed for six other COPCs listed in the completion report's Table 2.5-4, but none of the other changes affected the HQ calculation or COPEC identification. (The following final soil ESLs changed between FY00 and FY01/02: arsenic increased from 0.59 mg/kg to 0.83 mg/kg; lead decreased from 76 mg/kg to 55 mg/kg; acetone increased from 1.8 mg/kg to 3.8 mg/kg; benzene decreased from 65 mg/kg to 55 mg/kg; toluene decreased from 71 mg/kg to 70 mg/kg; 1,1,1-trichloroethane decreased from 2800 mg/kg to 2500 mg/kg. Most of these changes are due to an updated bioaccumulation model in the FY01/02 ESL calculations.)

Table 4 presents the HQ values for the wildlife receptors based on the FY02 LANL ESLs and on a revised calculation of the exposure point concentration for Aroclor-1260.

Table 4
HQ Analysis for Aroclor-1260 Using FY02 LANL ESLs

Analyte	Receptor	ESL FY2002 (mg/kg)[a]	95UCL (mg/kg)[b]	HQ	Home Range (ha)	PRS Area (ha)	AUF	HQ, AUF-Adjusted
Aroclor-1260	Desert cottontail	660	0.541	<0.01	1.5	0.55	0.37	<0.01
	Deer mouse	10	0.541	0.05	0.075	0.55	1.00	0.05
	Vagrant shrew	5	0.541	0.11	0.39	0.55	1.00	0.11
	Red fox	32	0.541	0.02	699	0.55	0.0008	<0.01
	Robin (herbivore)	15	0.541	0.04	0.42	0.55	1.00	0.04
	Robin (omnivore)	0.86	0.541	0.63	0.42	0.55	1.00	0.63
	Robin (invertevore)	0.44	0.541	1.2	0.42	0.55	1.00	1.2
	Kestrel	1.8	0.541	0.30	13.1	0.55	0.04	0.01
	Kestrel (carnivore)	2.2	0.541	0.25	366[c]	0.55	0.0015	<0.01

[a] Source: ECORISK database (LANL 2002, 72802).
[b] Based on revised calculation of exposure point concentrations, see Tables 2 and 3.
[c] Home range for spotted owl (Gallegos et al. 1996, 57915), because the kestrel with a flesh diet serves as a surrogate for this species.

The analysis using FY02 ESLs calculates HQ values for avian receptors in the range of 0.3 to 1.2, which further supports the elimination of Aroclor-1260 as a COPEC. Consideration of AUFs for the kestrel or the kestrel (carnivore) further lowers the HQ values for Aroclor-1260, as illustrated by the AUF-adjusted HQ values presented in Table 4.

Therefore, even after considering the AUF and the revised ESLs, Aroclor-1260 remains eliminated from further consideration as a COPEC.

NMED Comment

10. ***Table 2.5-4, Comparison of Exposure Point Concentrations with Final ESLs, page 52:***
NMED Comment: *Based on Table 2.5-3, the final ESL for nickel and trichloroethane[1,1,1-] should be 20 ppm and 1000 ppm respectively.*

LANL Response

10. The final ESLs for nickel and trichloroethane[1,1,1-] in the report's Table 2.5-4 were in error. The correct final ESL value for nickel is 20 ppm as noted in the NMED comment. The correct trichloroethane[1,1,1-] ESL for the kestrel is *na,* or not available. The correct trichloroethane[1,1,1-] ESL for the red fox is 730,000 ppm. The final trichloroethane[1,1,1-] ESL in Table 2.5-4 remains correct at 2800 ppm. This response is based on the ESLs available in the FY2000 version of the ECORISK database (either April 2000 or September 2000).

NMED Comment

11. ***Appendix F, Risk Assessment Calculations:***
NMED Comment: *The scooping checklist in Appendix F (page F-1) states that 4 ppm of PCBs remain in the stream channel, but no such sample results are indicated in figure 2.4-4. Are there additional PCB sample results from the channel that should have been included in the calculations of the exposure concentration for the ecological risk assessment?*
Additionally, the argument is presented in the Appendix F checklist for the ecological risk assessment that there is no potential for migration and no pathway to receptors from remaining contamination under the controls installed as part of the remediation. This argument relies on the assertion in Appendix F that all remaining PCB contamination is immobilized in tuff, but the sample results in appendix E text show that these results actually are in soil, so this argument is not valid. The VCA Completion Report also asserts that there is no potential for migration and no pathway to receptors due to the effectiveness of engineering controls to prevent erosion and channel runoff water. To remain effective, these controls require maintenance, this issue is not addressed in the VCA Completion Report, please provide information as to how these controls will be maintained effectively.

LANL Response

11. The statement in Appendix F is in error. The maximum concentration of 4 ppm remaining is on the mesa top in an area that is now located under fill and asphalt. The maximum remaining concentration near the stream channel is 1.9 ppm. No additional sample results from the channel should have been included in the calculations.

    The engineering controls require maintenance to remain effective. LANL amended the Storm Water Pollution Prevention Plan (SWPPP) for PRS 03-056(c) in November of 2001 to reflect the current site status. The engineered structural controls that were implemented at the site include

    - backfilling and recountouring of the excavated area directly northeast of Building 03-223 (the area was then covered with asphalt);
    - constructing an asphalt berm that surrounds the new parking area northeast of 03-223 and directs surface water flow to a gabion apron;
    - backfilling other excavated slope areas with topsoil and reseeding them with native seed mix;
    - seeding the west slope into the Sandia Canyon tributary and the north slope into Sandia Canyon with native seed mix and covering the areas with jute matting;
    - placing river rock riprap at the toe of the west and north slope; and
    - installing straw bale check dams within two ephemeral drainages above the main channel.

The following maintenance activities are required by the SWPPP: general site walk-around inspections on a quarterly basis and after 0.5-in. rain events, and follow-up maintenance of controls. The SWPPP will remain in effect until the entire site has been stabilized.

References

EPA (Environmental Protection Agency), February 2000. "Human Health Medium-Specific Screening Levels," EPA Region 6 Multimedia Planning and Permitting Division. (EPA 2000, 68410)

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LANL (Los Alamos National Laboratory), November 2000. "Request for No-Longer-Contained-In Determination for Potential Release Site (PRS) 03-056(c)," Los Alamos National Laboratory and Department of Energy letter, dated November 21, 2000 (ER2000-0687), from Julie Canepa, Project Manager, ER Project, Los Alamos National Laboratory, and Theodore Taylor, Project Manager, Department of Energy, Los Alamos Area Office, to John Young, LANL Corrective Action Project Leader, Permits Management Program, New Mexico Environment Department, Hazardous Waste Bureau. (LANL 2000, 64630)

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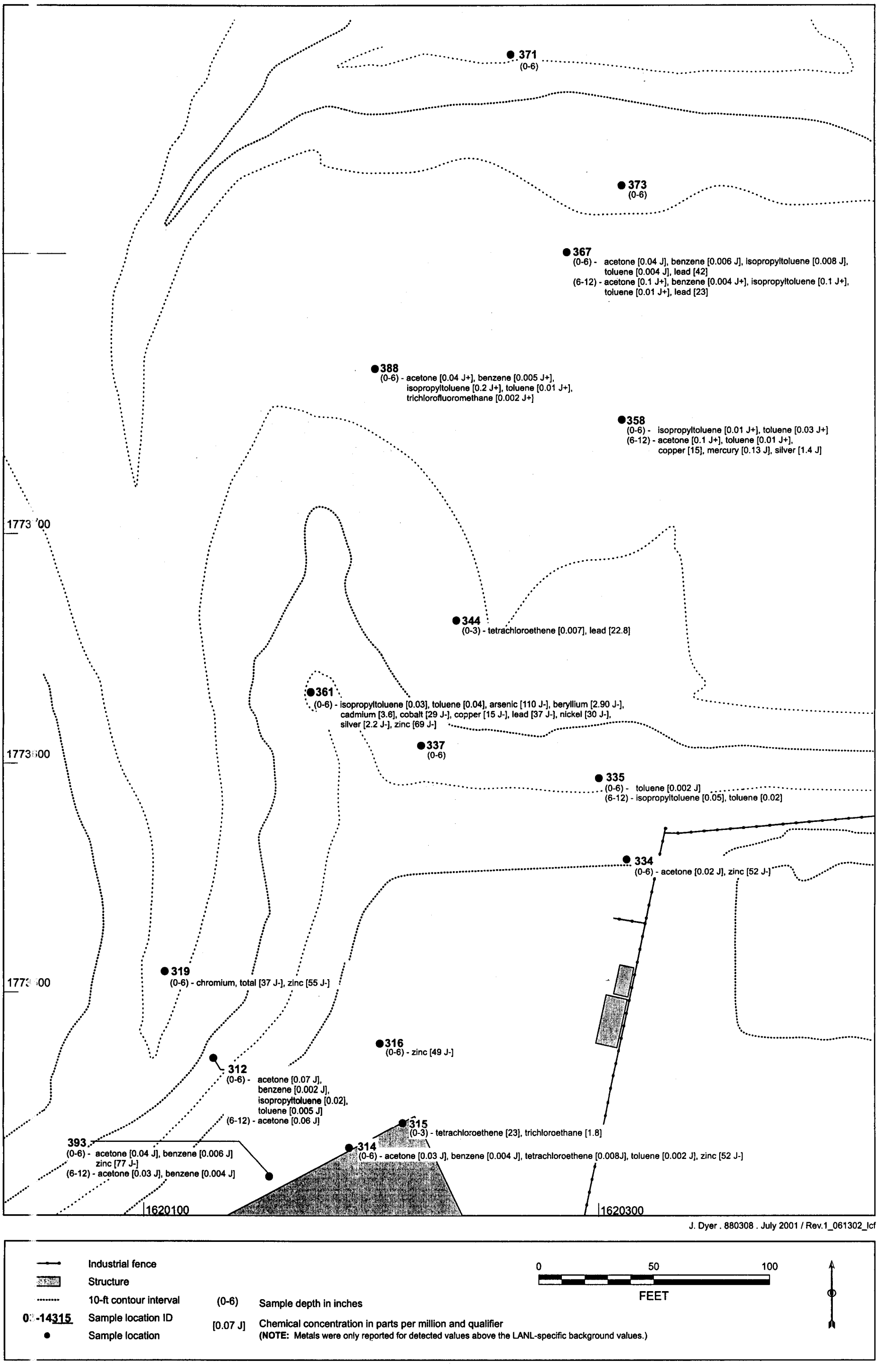

Revised Figure 2.4-3. Confirmatory sampling locations and detected inorganic and organic chemical concentrations at PRS 03-056(c)