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Date: AUG 28 2017
Refer To: ADESH-17-059
LAUR: 17-27177

Esteban Herrera, Chief
Water Enforcement Branch (6EN-WS)
Compliance Assurance and Enforcement Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Subject: NPDES Permit No. NM0030759 - Completion of Corrective Action for Site C-36-001 in PT-SMA-2.01

Dear Mr. Herrera:

These documents are being submitted in accordance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 for Los Alamos National Laboratory, issued to Los Alamos National Security, LLC, and the U.S. Department of Energy, effective November 1, 2010. Completion of corrective action is being certified to the U.S. Environmental Protection Agency as specified in Part I, Section E.2(c):

> Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site.

The certification that corrective action is complete was prepared in accordance with Title 40 Code of Federal Regulations Section 122.22(b). Accordingly, the documentation for no exposure measures at the Site is enclosed. As required in Part I, Section E.1(b), the documentation includes a signed certification with a description of a no exposure condition. Additionally, the Permittees will collect one sample and make the analytical results available via email notification and on the public website pursuant to Section I.7 of the Permit. This certified document can be accessed at the following website: http://www.lanl.gov/ and searching under the key words "Individual Permit" and clicking on the "Corrective Action" tab.

Table 1
Site in This Submittal of Certification of Completion of Corrective Action

Watershed	Site Priority	Site Number	Associated SMA Number	Permitted Feature
Potrillo	Moderate	C-36-001	PT-SMA-2.01	I004A

If you have any questions, please contact Terrill Lemke at (505) 665-2397 (tlemke@lanl.gov) or David Rhodes at (505) 665-5325 (david.rhodes@em.doe.gov).

Sincerely,

John C. Bretzke, Division Leader
Environmental Protection & Compliance
Los Alamos National Laboratory

Sincerely,

David S. Rhodes, Director
Office of Quality and Regulatory Compliance
Los Alamos Environmental Management Field Office

JB/DR/BR/SV:sm

Attachment: One hard copy with electronic file – Completion of Corrective Action for Site C-36-001 in PT-SMA-2.01 (EP2017-0121)

Cy: (w/att.)
Sarah Holcomb, NMED-SWQB, P. O. Box 5469, Santa Fe, NM 87502

Cy: (date-stamped letter and attachment emailed)
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Brent Larsen, EPA Region 6
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Craig Leasure, PADOPS

Completion of Corrective Action at Site C-36-001 in PT-SMA-2.01

August 28, 2017

NPDES PERMIT NO. NM0030759

LA-UR-17-27177

NPDES PERMIT NO. NM0030759 **LA-UR-17-27177**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A **PT-SMA-2.01** **Site: C-36-001**

The following certification of completion of corrective action was performed in accordance with NPDES Permit No NM0030759, Part I.E.1(b), which requires the Permittees (i.e., DOE and LANS) to submit "certified as-built drawings, that such measures have been properly installed to perform their function to totally eliminate exposure of pollutants to storm water" at a Site or Sites.

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

8/11/2017

Environmental Programs
Environmental Remediation Program
Los Alamos National Laboratory

Date

8-24-2017

Environmental Management
U.S. Department of Energy

Date

NPDES PERMIT NO. NM0030759 **LA-UR-17-27177**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A **PT-SMA-2.01** **Site: C-36-001**

Introduction

This certification documents the no exposure condition of Site C-36-001 [referred to as Area of Concern (AOC) C-36-001 under the New Mexico Environment Department (NMED) Compliance Order on Consent (Consent Order)] for completion of corrective action at site monitoring area (SMA) PT-SMA-2.01 under Part 1.E.2(c) of National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (hereafter, the Permit), issued by the U.S. Environmental Protection Agency (EPA) to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS), collectively, the Permittees. Site C-36-001, listed in Appendix C of the 1990 "Solid Waste Management Units Report" (LANL 1990, 007514), is a former steel containment vessel that provided secondary containment for explosives tests at Technical Area 36 (TA-36). The exact location of the former vessel is not known.

Site C-36-001 is associated with PT-SMA-2.01 and is listed as a Moderate Priority Site in Part I.E.4(b) of the Permit. The requirement for corrective action in Part I.E.1 was triggered by analytical data from a storm water sample collected from PT-SMA-2.01 on August 18, 2011, that showed an exceedance of the target action level (TAL) for gross alpha. The location of Site AOC C-36-001 is not known (Figure 1).

The following sections describe the Site, provide documentation of no exposure conditions, and provide the results of storm water monitoring. The Site description and supporting information document that no exposure conditions are met at the Site. The results of storm water monitoring are evaluated and compared with appropriate background values to confirm the results are consistent with no exposure conditions.

Site Description

AOC C-36-001 is a former containment vessel that provided secondary containment for explosives tests at TA-36. The containment vessel was manufactured in 1970 and located at the PHERMEX test facility at TA-15. The containment vessel was later relocated to the I-J Firing Site and placed south of building 36-55 where it remained until 1983 when it was removed (LANL 2009, 106657.8). The containment vessel consisted of a 19.5-ton steel sphere that was 12 ft in diameter. An explosive device was placed and detonated in a primary containment vessel which, in turn, was placed inside the AOC C-36-001 secondary containment vessel (LANL 2009, 106657.8). The explosion gases were vented through a filtration system that captured particulates and did not allow a release of the test material (Kelkar 1992, 012468; LANL 1993, 015313). The interior of the containment vessel was contaminated from the tests, but the exterior remained uncontaminated. Plutonium remained in the filtration system and was disposed of at TA-54 as radioactive waste (LANL 1996, 053779).

A voluntary corrective action (VCA) implemented at AOC C-36-001 in 1994 involved decontamination of the interior of the vessel and disposal of the vessel. The vessel was taken from TA-36 to building 15-233 for initial decontamination and was subsequently taken to the decontamination facility at TA-50 for further decontamination. It was then returned to TA-15 pending acceptance for disposal at TA-54, Area G. In October 1994, the containment vessel was disposed of at Material Disposal Area G at TA-54. No confirmation samples were collected during the VCA (LANL 2011, 208336). Investigation of both the firing sites where the vessel was used (PHERMEX and I-J) is deferred per Appendix A of the Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site (LANL 2011, 208336).

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CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A **PT-SMA-2.01** **Site: C-36-001**

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CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A PT-SMA-2.01 Site: C-36-001

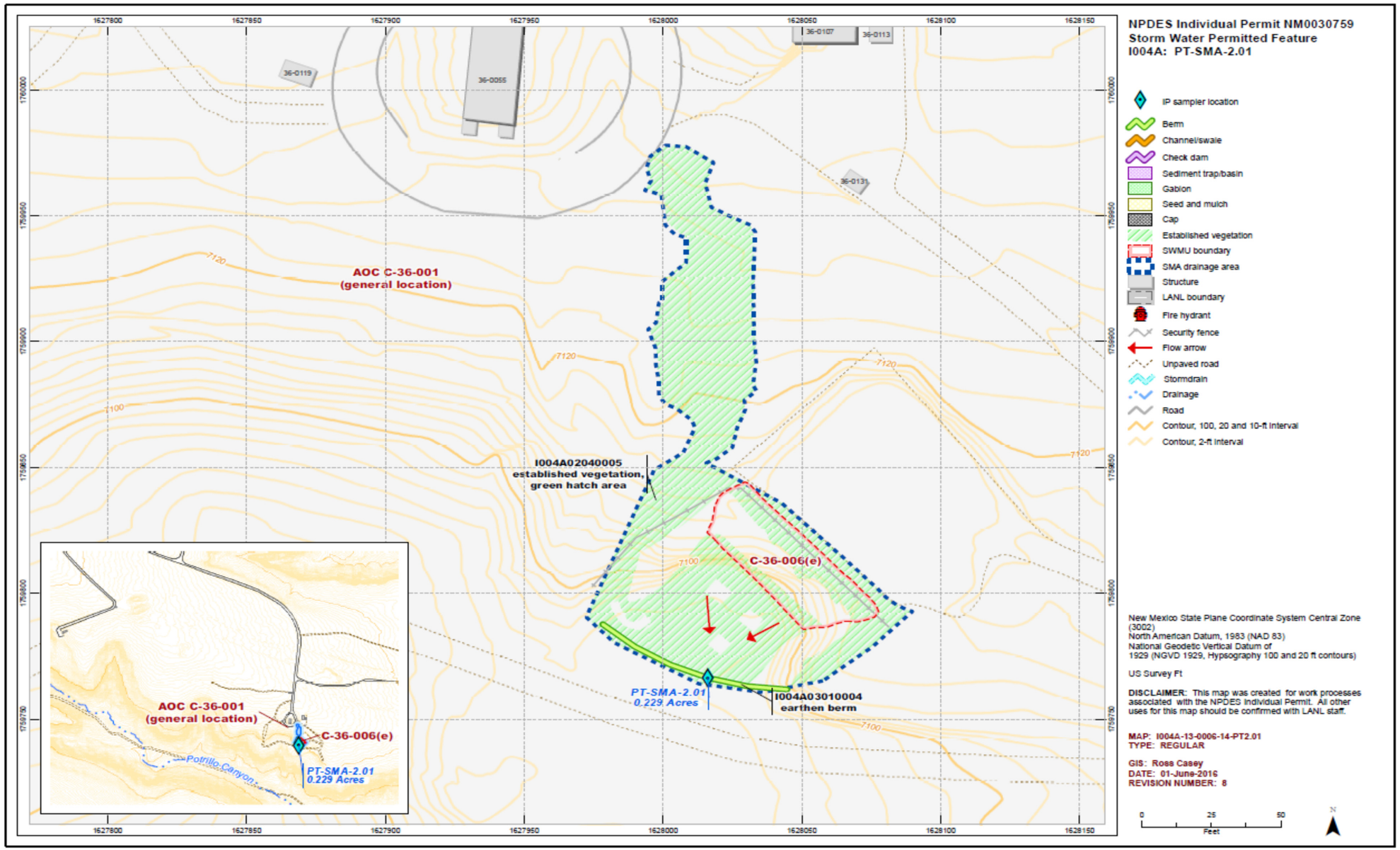

Figure 1 Location of Site C-36-001 at PT-SMA-2.01

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CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A **PT-SMA-2.01** **Site: C-36-001**

Demonstration of No Exposure Conditions

Materials associated with industrial activities at Site C-36-001 consist of high explosives, plutonium isotopes, metals, and unknown constituents. A detailed review of historical information in Attachment 1 determined that industrial materials used at this Site were not exposed to storm water. As-built drawing are not available for this Site, and documentation included in Attachment 1 supports the no exposure conditions at the Site. Activities involving industrial materials were conducted only inside the sealed vessel. The vessel had a filter that did not allow release of the test material (LANL 1993, 015313). The interior of the vessel was contaminated from the tests, but the exterior remained uncontaminated (LANL 1996, 053779).

Based on the historical activities, materials historically associated with Site C-36-001 have not been exposed to storm water.

Storm Water Monitoring under the Permit

Site C-36-001 is monitored within PT-SMA-2.01. Following the installation of baseline control measures, a baseline (IP_BL) storm water sample was collected on August 18, 2011. Analytical results from this sample yielded a TAL exceedance for gross alpha. The Site continues to be monitored, but to date, no sample has been collected. The location of this sampler was found to be representative during the Sampling Implementation Plan field review with NMED.

Table 1
TAL Exceedances in Storm Water Samples Collected at Site C-36-001

Analyte	Results	Maximum TAL	Exceedance Ratio	Date	Monitoring Phase
Gross alpha	295 pCi/L	15 pCi/L (ATAL)	19.7	8/18/2011	Baseline

Note: ATAL = Average TAL.

The gross-alpha result for monitoring location PT-SMA-2.01 was evaluated against the appropriate storm water background value, which for this SMA consists of “Bandelier Tuff background” (undisturbed SMA). Background values are determined using the recommendations provided in ProUCL 4.1, an EPA-developed statistical software package (http://www.epa.gov/nerlesd1/databases/datahome.htm). Background values are equal to the 95% upper tolerance limits (UTLs) of the background data sets. There is a 95% probability that 95% of the background population is less than the UTL. Thus, concentrations less than the UTL are deemed to be representative of background. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 2 and 3.

The SMA receives storm water run-on from 100% undeveloped environments. The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L (LANL 2013, 239557). The IP_BL gross-alpha maximum activity result (295 pCi/L) is less than this value. Therefore, the undeveloped landscape is the likely source of the gross alpha in storm water.

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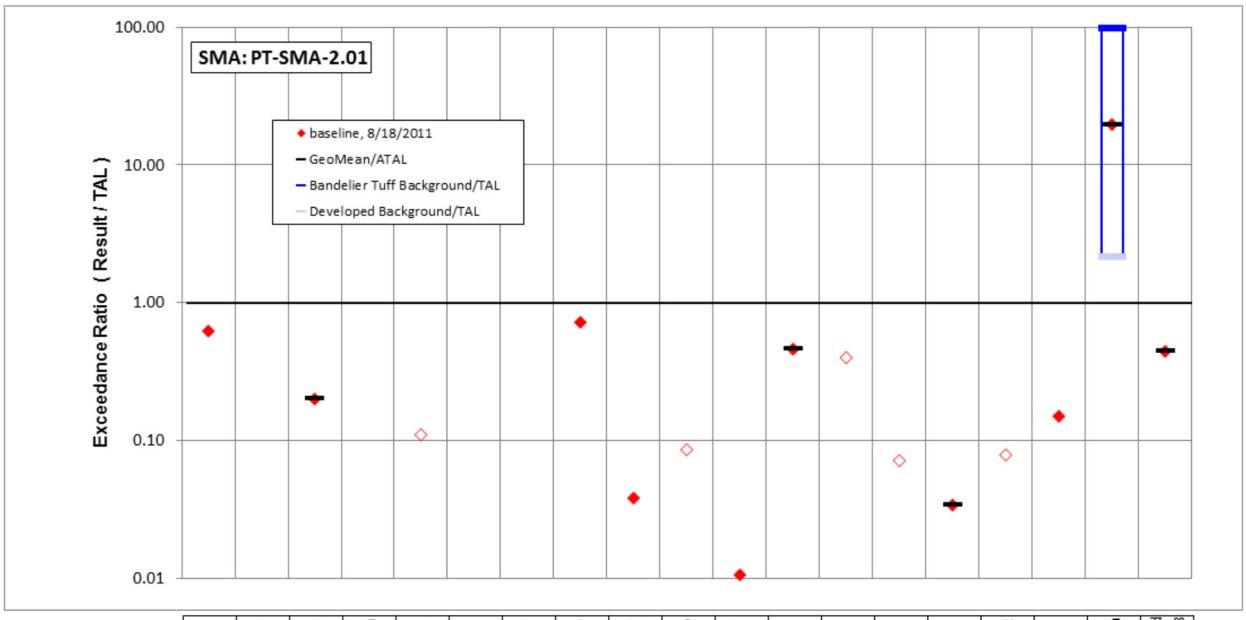
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A **PT-SMA-2.01** **Site: C-36-001**

The results of the SMA monitoring indicate gross alpha is within the range of undeveloped background. That is, the gross-alpha activity is within the range expected if there was no contribution from Site-related industrial materials. Other constituents known to have been associated with Site activities (e.g., high explosives) were not detected in the storm water sample, providing further evidence there was no contribution from Site-related industrial materials.



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/18/2011 result	467	1.8	1.8	16.6	*0.11*	*2*	3.5	3.1	0.65	*0.066*	1.8	2.3	*0.2*	*0.45*	3.4	*3.3*	0.0015	**295**	13.3
result / TAL	0.62	0.0028	0.2	0.0033	*0.11*	*0.01*	0.0035	0.72	0.038	*0.086*	0.011	0.46	*0.4*	*0.071*	0.034	*0.079*	0.15	**20**	0.44

Bold font indicates result>TAL/MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 2 Inorganic analytical results summary plot for PT-SMA-2.01

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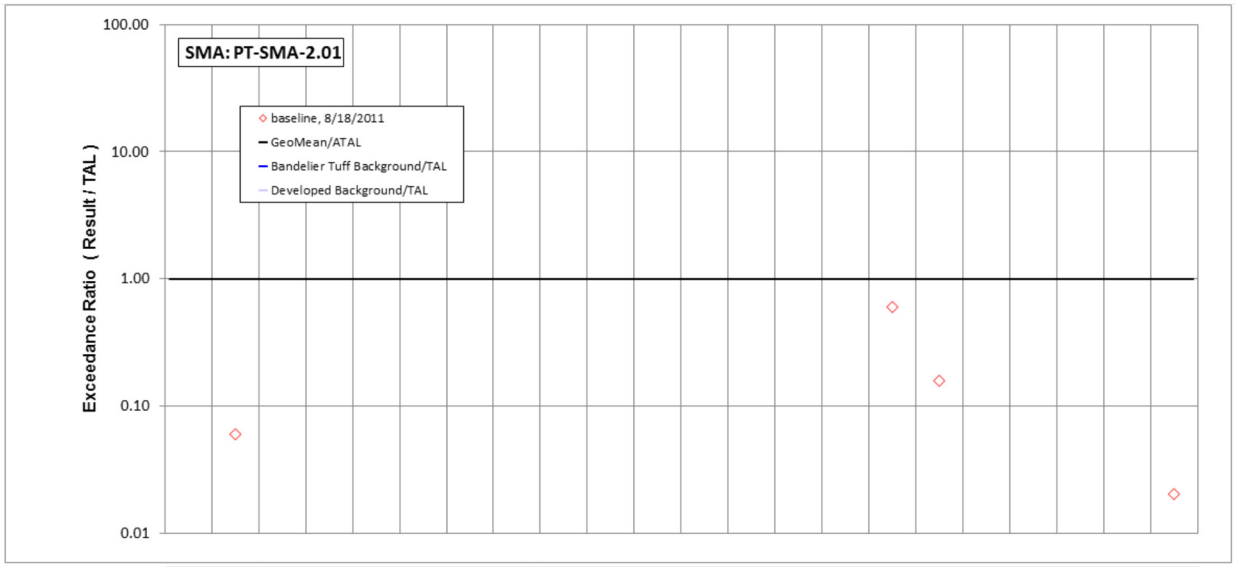
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: I004A **PT-SMA-2.01** **Site: C-36-001**



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	MQL	-	-	-	-	-	-	-	-	-	-	-	-	-	MQL	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/18/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	*0.406*	-	-	-	*0.406*
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	*0.002*	-	-	-	*0.02*

Bold font indicates result>TAL/MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 3 Organic analytical results summary plot for PT-SMA-2.01

References

Kelkar, S., June 26, 1992. "Meeting with Richard (Dick) H. Warnes," Los Alamos National Laboratory memorandum to LANL-ER file and OU 1130 file from S. Kelkar (EES-4), Los Alamos, New Mexico. (Kelkar 1992, 012468)

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. IV of IV (TA-51 through TA-74), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 007514)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1130," Los Alamos National Laboratory document LA-UR-93-1152, Los Alamos, New Mexico. (LANL 1993, 015313)

LANL (Los Alamos National Laboratory), January 1996. "Voluntary Corrective Action Completion Report for Potential Release Site C-36-001, Test Containment Vessel, Revision 1," Los Alamos National Laboratory document LA-UR-96-276, Los Alamos, New Mexico. (LANL 1996, 053779)

LANL (Los Alamos National Laboratory), July 2009. "Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-09-4327, Los Alamos, New Mexico. (LANL 2009, 106657.8)

LANL (Los Alamos National Laboratory), November 2011. "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-6217, Los Alamos, New Mexico. (LANL 2011, 208336)

LANL (Los Alamos National Laboratory), April 2013. "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico," Los Alamos National Laboratory document LA-UR-13-22841, Los Alamos, New Mexico. (LANL 2013, 239557)

Attachment 1

Documentation of No Exposure Condition at PT-SMA-2.01

radius of 15 ft, is located about 75 ft northeast of the old control building. The hazard radius for I-J site is 5,000 ft (LANL 1990, 13-0094). Figure 5-7 shows the details of I-J firing site, its hazard area, and the topography of the area surrounding the site.

The construction of this firing site began in 1948, and it was ready for use by 1949 or 1950. This firing site was part of TA-15 until about 1981, when TA-36 was enlarged to include I-J (McDougall 1949, 13-0071).

At I-J firing site, shots of up to 500 lb explosives were fired. The explosives used included boracitol, baratol, TNT, Composition B, cyclotol, 9404, and nitromethane. Solid explosives shots were aimed downward, and liquid explosives shots were aimed upward. The liquid explosives included benzene-ring compounds, n-hexane, cyclohexane, nitrogen oxide, nitroglycerin, nitromethane and TNT (Henke and Van Marter 1993, 13-0093; Kelkar 1992, 13-0060). Some shots were fired into iron, copper, and lead targets. Other metals used in shots included aluminum, antimony, various steels, lithium-magnesium alloys, and lithium hydride (Kelkar 1992, 13-0060). In addition, hydrocarbons, argon, benzene, small amounts of mercury, cadmium, and beryllium were used (DOE 1986, 13-0042; Kelkar 1992, 13-0004; Kelkar 1992, 13-0055).

In the early years, depleted uranium was also in heavy use at this site. However, all of the shots fired at this site using radioactive materials were fired in fully containing vessels, with any releases being captured by the environ-efficiency filters. One such vessel, after being decontaminated, was brought back to I-J site, where it still remains (DOE 1986, 13-0042; Martin 1972, 13-0070; Kelkar 1992, 13-0060; Kelkar 1992, 13-0058). This vessel was listed as solid waste management unit (SWMU) C-36-001 in the 1990 SWMU report (LANL 1990, 0145). Section 5.8 of this work plan provides further information on PRS C-36-001. The 1990 SWMU report identified an additional PRS, which it referred to as SWMU 15-006(e), within the bounds of I-J site: in the late 1980s, approximately 138 lb of depleted uranium, in the form of bullets, was used in projectiles that were fired into the cliff face (LANL 1990, 0145; Kelkar 1992, 13-0058; Kelkar 1992, 13-0056). This projectile-testing site, now renamed PRS C-36-006(e) (see Figure 5-5), together with the rest of I-J site, is now part of TA-36.

Voluntary Correction Action Completion Record
Potential Release Site C-36-001
Test Containment Vessel

DESCRIPTION

Potential Release Site (PRS) C-36-001 was a safety vessel that provided secondary containment for explosives tests. The vessel was manufactured by Melco Steel Inc. in 1970 and placed at the PHERMEX test facility at Technical Area (TA)-15. Later the vessel was moved to the I-J Firing Site near TA-36-55, where it was used until a sturdier vessel was required and built in 1983. The unused vessel remained at I-J Firing Site until it was removed in 1994. This PRS is not included in the Hazardous and Solid Waste Amendments module to the Los Alamos National Laboratory Resource Conservation and Recovery Act Permit, EPA ID NM0890010515.

The C-36-001 secondary containment vessel consisted of a 19.5 ton, 12-ft diameter steel sphere. An explosive device would be placed and detonated within a primary containment vessel (from 3 to 6 ft in diameter) placed inside the C-36-001 vessel. The explosion gases were vented through a filtration system that captured the particulates and did not allow the release of the test materials. The interior of the vessel was contaminated resulting from these tests, but the exterior remained uncontaminated.

Both the Comprehensive Environmental Assessment and Response Program Report of 1987 and the Solid Waste Management Unit Report of 1990 noted that plutonium remained in the filtration system. The filtration system is not part of PRS C-36-001 and has been disposed of at TA-54 as radioactive waste.

PRS C-36-001 was decontaminated during the effort to prepare the vessel for the disposal. The Waste Profile Form (WPF) indicates that the vessel remained contaminated with alpha activity <2 nCi/g, which the Department of Transportation does not regulate for transportation purposes. Additionally, the Radioactive Waste Disposal Request (RWDR) indicates that remaining contamination on the vessel is TRU waste with activity of $4.25\ 10^{-7}$ Ci (+/- 50 %). Appendix A presents copies of the WPF and the RWDR.

The vessel is contaminated at low levels based on the above information, but the vessel needed to be controlled to prevent inadvertant exposure to humans or the environment in the future.

CORRECTIVE ACTION

A voluntary corrective action (VCA) plan had not been prepared before the vessel was decontaminated and taken to TA-54, Area G.

The vessel was taken from TA-36 to TA-15-233 for initial decontamination. Subsequently the vessel was sent to the decontamination facility at TA-50 for further removal of radioactivity. The vessel was successfully decontaminated as the remaining level of radioactive contamination in the vessel is very low.

The vessel returned to a site near TA-15-285 awaiting acceptance for disposal at TA-54, Area G. On October 18, 1994, the vessel was taken to TA-54 where it was placed in Pit 38 at Area G. The vessel is being filled with radioactive waste and will be covered after it has been filled.