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Los Alamos
NATIONAL LABORATORY
EST. 1943

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Environmental Management
Los Alamos Field Office, MS A316
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(505) 665-5658/FAX (505) 606-2132

Date: SEP 29 2015
Refer To: ADESH-15-128
LAUR: on each SMA
Locates Action No.: N/A

Paulette Johnsey, Chief
Water Enforcement Branch (6EN-W)
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 - Submittal of Completion of Corrective Action Certification of No Exposure at LA-SMA-1 (Site 00-017); M-SMA-4 (Site 48-005); 2M-SMA-2.2 [Site 03-003(k)]; S-SMA-0.25 [Site 03-013(a)]; and W-SMA-1 [Site 16-017(j)-99]

Dear Ms. Johnsey:

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 (the Permit), 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 40 Code of Federal Regulations 122.22(b). Accordingly, the documentation for no exposure measures at the site monitoring areas (SMAs)/Sites listed in Table 1 is enclosed. As required in Part I, Section E.1(b), the documentation includes a signed certification statement with a description of a no exposure condition with as-built drawings. 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. A link to this certified document can be accessed at the following website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/index.php.

Table 1
List of Sites in This Submittal of Certification of Completion of Corrective Action

Site Number	Associated SMA Number	Watershed	Site Priority
00-017	LA-SMA-1	Los Alamos	Moderate
48-005	M-SMA-4	Pajarito	Moderate
03-003(k)	2M-SMA-2.2	Twomile	Moderate
03-013(a)	S-SMA-0.25	Sandia	High
16-017(j)-99	W-SMA-1	Water	Moderate

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,

Alison M. Dorries, Division Leader
Environmental Protection Division
Los Alamos National Laboratory

Sincerely,

Douglas E. Hintze, Manager
Environmental Management
Los Alamos Field Office

AD/DH/BR/SV:sm

Enclosures: One hard copy with electronic files – Completion of Corrective Action for Five Sites

Cy: (w/enc.)
Everett Spencer, EPA Region 6
Brent Larsen, EPA Region 6
Bruce Yurdin, NMED-SWQB, P. O. Box 5469, Santa Fe, NM 87502 (paper & electronic copy)
emla.docs@em.doe.gov, MS A316
Public Reading Room (EPRR)
ADESH Records

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David Rhodes, DOE-EM-LA
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Bruce Robinson, ADEP ER Program
Sam Loftin, ADESH-ENV-CP
Terrill Lemke, ADESH-ENV-CP
Mike Saladen, ADESH-ENV-CP
Alison Dorries, ADESH-ENV-DO
Michael Brandt, ADESH
Amy De Palma, PADOPS
Craig Leasure, PADOPS

Completion of Corrective Action at Site 00-017 in LA-SMA-1

September 29, 2015

NPDES PERMIT NO. NM0030759

LA-UR-15-26013

NPDES PERMIT NO. NM0030759 **LA-UR-15-26013**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**

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."

Environmental Programs
Environmental Remediation Program
Los Alamos National Laboratory

09/15/2015
Date

Environmental Management
U.S. Department of Energy

9-28-2015
Date

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**

Introduction

This certification documents the no exposure condition of Site 00-017 (referred to as Solid Waste Management Unit [SWMU] 00-017 under the New Mexico Environment Department [NMED] Compliance Order on Consent [Consent Order]) for completion of corrective action at site monitoring area (SMA) LA-SMA-1 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 00-017 is listed as a SWMU in the 1990 SWMU Report (LANL 1990) based on the historical management of industrial liquid waste.

Site 00-017 is associated SMA LA-SMA-1 and is listed as a Moderate Priority Site in Part I.E.4 (a) 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 LA-SMA-1 on August 19, 2011, that showed exceedances of the target action levels (TALs) for aluminum, copper, lead, and gross-alpha radioactvity. Following the installation of enhanced control measures at LA-SMA-1, a corrective action storm water sample was collected on September 13, 2013, that showed exceedances of TALs for aluminum, gross-alpha radioactivity, and polychlorinated biphenyls (PCBs). The LA-SMA-1 drainage area is located in the north-central portion of Los Alamos National Laboratory (the Laboratory) within Technical Area 00 (TA-00). A portion of Site 00-017, along with a portion of Site C-00-044, is located within the SMA drainage area (Figure 1). Site C-00-044 is not included in this certification.

The following sections describe the Site, provide documentation of no exposure, and provide the results of storm water monitoring and soil sampling. 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 that the results are consistent with no exposure conditions. Soil sampling results are evaluated to determine whether they indicate evidence of release from the Site.

Site Description

Two historical industrial activity areas are associated with Permitted Feature (PF) L003, LA-SMA-1: Sites 00-017 and C-00-044. SWMU 00-017 consists of former subsurface industrial waste line 167, former manhole ULR 33, and former industrial waste lines 170 and 171. These components were part of a larger radioactive liquid waste (RLW) conveyance system used by the Laboratory. Lines 170 and 171 are the only sections of waste line known to remain in Los Alamos townsite and are located in the subsurface beneath the Los Alamos Medical Center and the Health Research Laboratory northeast of LA-SMA-1. Former manhole ULR 33 was located next to the north side of Omega Road at the bottom of Los Alamos Canyon, south of LA-SMA-1. The location of former waste line 167 on the north wall of Los Alamos Canyon under the Omega Bridge is the only portion of Site 00-017 located within the LA-SMA-1 drainage area. Ten concrete anchors were used to secure the former 3-in. cast-iron waste line 167 to the north and south walls of Los Alamos Canyon, (five anchors on each side of the canyon). Former waste line 167 was removed before 1985 along with the uppermost concrete anchor on the north side of Los Alamos Canyon. The remaining four concrete anchors on the north canyon wall and five remaining anchors on the south canyon wall were left in place along with 3-ft sections of pipe encased in

each anchor (LANL 1986). Each 3-ft section of drainline encased within the concrete anchors was screened for gross-alpha radioactivity and decontaminated, each end of the drainline was sealed with a concrete plug, and the anchors were backfilled to 1 ft above the plugged waste line sections (Montoya 1985). Soil samples were collected between each anchor from the waste line trench and screened for gross-alpha, beta, and gamma activity. The gross-alpha radioactivity in all samples associated with former waste line 167 were found to be below the established industrial waste line removal guidlelines of 25 pCi/g; beta and gamma activities were at background levels (LANL 1999). The four remaining concrete achors used to secure the 3-ft-long sections of the 3-in. cast-iron waste line to the north wall of the canyon are located within LA-SMA-1 (Attachment 1). The industrial waste lines were installed to serve the entire Laboratory from its beginning in 1943. With an estimated total length of 39,000 ft, the underground industrial waste lines and associated sumps and pumps were used to transport RLW generated by various operations in former TA-01 to treatment facilities.The estimated operation period for the majority of these waste lines is from the 1950s to the 1970s. Phased decommissioning and removal of the waste lines began in 1964 and were completed in 1986. Wastes formerly managed within the former subsurface industrial waste line 167 located within LA-SMA-1 were not exposed to storm water.

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**

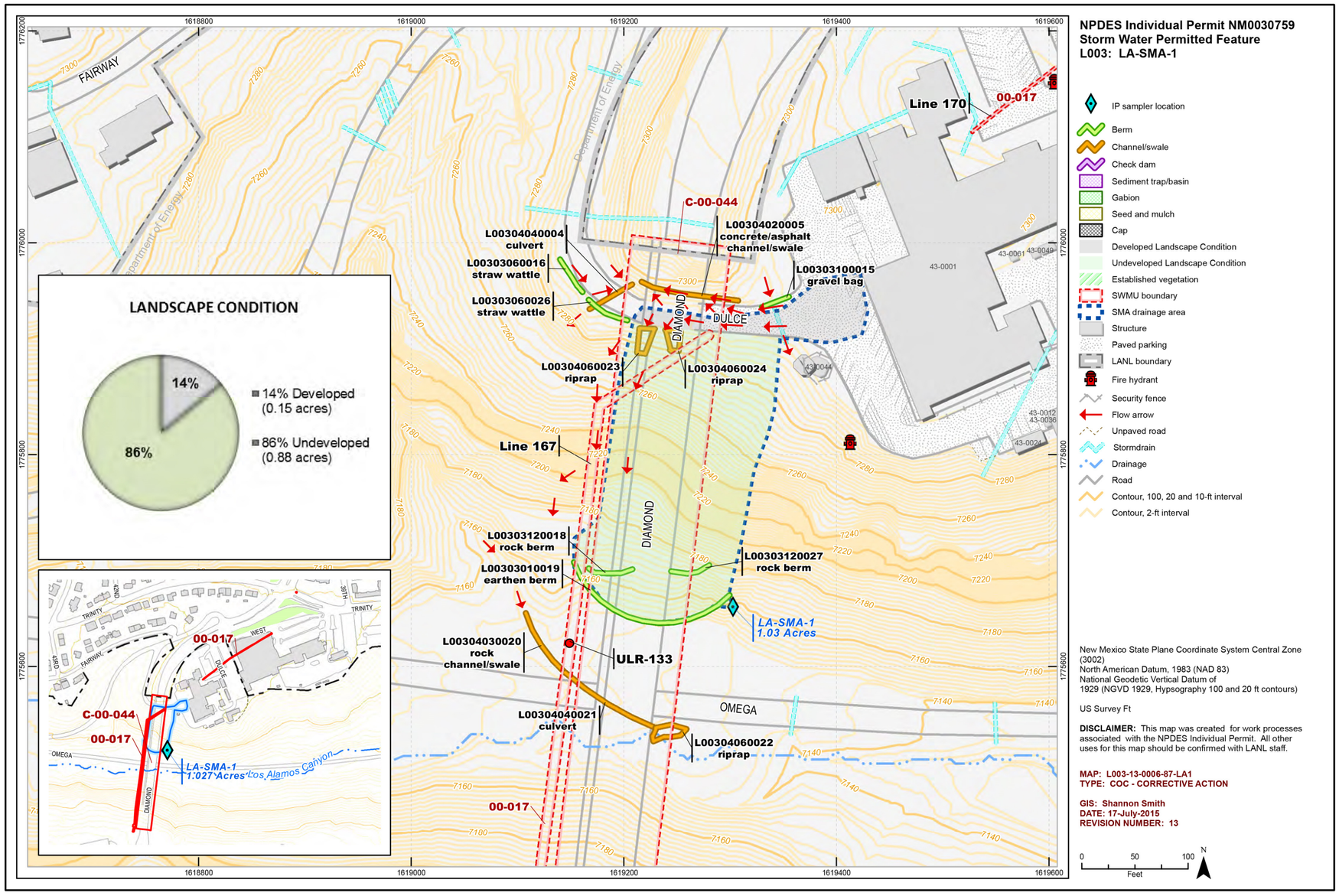


Figure 1 Location of Site 00-017 within LA-SMA-1

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Demonstration of No Exposure Conditions

A detailed review of historical information presented in the Site Description section above and sampling data for this Site discussed in the Storm Water Monitoring section below have determined that no release of industrial waste from former waste line 167 occurred that could be exposed to storm water, and no waste conveyed in former waste line 167 was exposed to storm water. Any industrial material previously associated with the Site 00-017 waste line 167 was contained within the subsurface line that was anchored to the north wall of Los Alamos Canyon in a trench excavated into the tuff between 2 ft and 15 ft below ground surface (bgs) (LANL 1986, p. 37). Use of the subsurface industrial liquid waste lines associated with Site 00-017 was discontinued in the 1970s; phased decommissioning and removal of the waste lines began in 1964 and were completed in 1986 (LANL 1986). Therefore, the subsurface condition of the lines, subsequent removal of all accessible portions of the lines, and isolation of remaining line segments within concrete anchors satisfy the requirements contained in Section E.2(c) of the Permit for control measures that totally eliminate exposure of pollutants to storm water.

Attachment 1, As-Built Conditions for Portions of Site 00-017 Located within LA-SMA-1, Engineering Drawing C-43943-144-d-0, shows the configuration of former subsurface waste line 167 and concrete anchors in Los Alamos Canyon at the time of removal. Attachment 2 presents 2014 photographs showing current conditions at locations along former waste line 167 on the north wall of Los Alamos Canyon.

Based on the historical information and current conditions described above, significant industrial materials historically associated with Site 00-017 are not exposed to storm water.

Storm Water Monitoring under the Permit

Site 00-017 is monitored within LA-SMA-1. Following the installation of baseline control measures, one baseline storm water sample was collected on August 19, 2011. Following the installation of enhanced control measures at LA-SMA-1, corrective action storm water samples were collected on September 13, 2013, and July 29, 2014. The analytical results from these samples are presented in Table 1 and yielded nine TAL exceedances.

TAL exceedances for monitoring location LA-SMA-1 were evaluated against the appropriate storm water background values, which consist of “Bandelier Tuff background” for undisturbed SMAs or “developed background” for SMAs in urban settings. Background values were determined using the recommendations provided in ProUCL 4.1, an EPA developed statistical software package (available at 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 from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 1 and 2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features and are labeled “Developed Background” in Figures 2 and 3.

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**

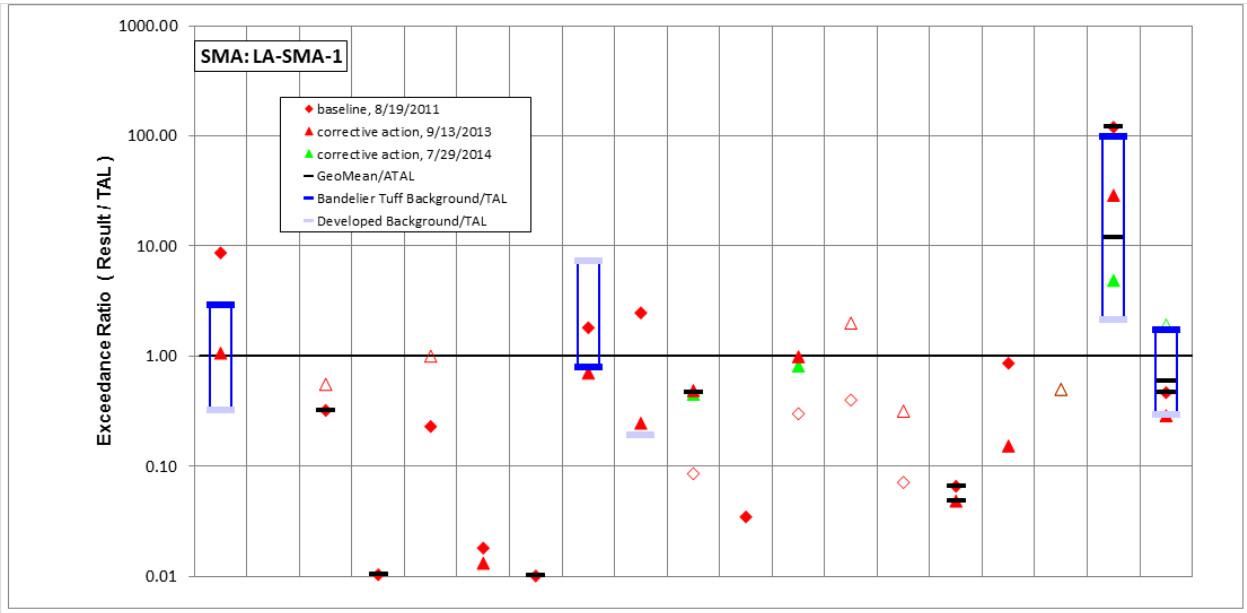
Table 1
TAL Exceedances in Storm Water Samples Collected at Site 00-017

Analyte	Result	TAL (MTAL or ATAL)	Exceedance Ratio	Date	Monitoring Phase
Aluminum	6510 µg/L	750 µg/L (MTAL)	8.7	8/19/2011	Baseline
Aluminum	800 µg/L	750 µg/L (MTAL)	1.1	9/13/2013	Corrective Action
Copper	7.8 µg/L	4.3 µg/L (MTAL)	1.8	8/19/2011	Baseline
Lead	42.1 µg/L	17 µg/L (MTAL)	2.5	8/19/2011	Baseline
Gross-alpha radioactivity	1800 pCi/L	15 pCi/g (ATAL)	120	8/19/2011	Baseline
Gross-alpha radioactivity	434 pCi/L	15 pCi/g (ATAL)	29	9/13/2013	Corrective Action
Gross-alpha radioactivity	73.3 pCi/L	15 pCi/g (ATAL)	4.9	7/29/2014	Corrective Action
PCBs	18 ng/L	0.64 ng/L (ATAL)	27	9/13/2013	Corrective Action
PCBs	31 ng/L	0.64 ng/L (ATAL)	48	7/29/2014	Corrective Action

Notes: MTAL = Maximum TAL; ATAL = average TAL; exceedance ratio = result/TAL.

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**



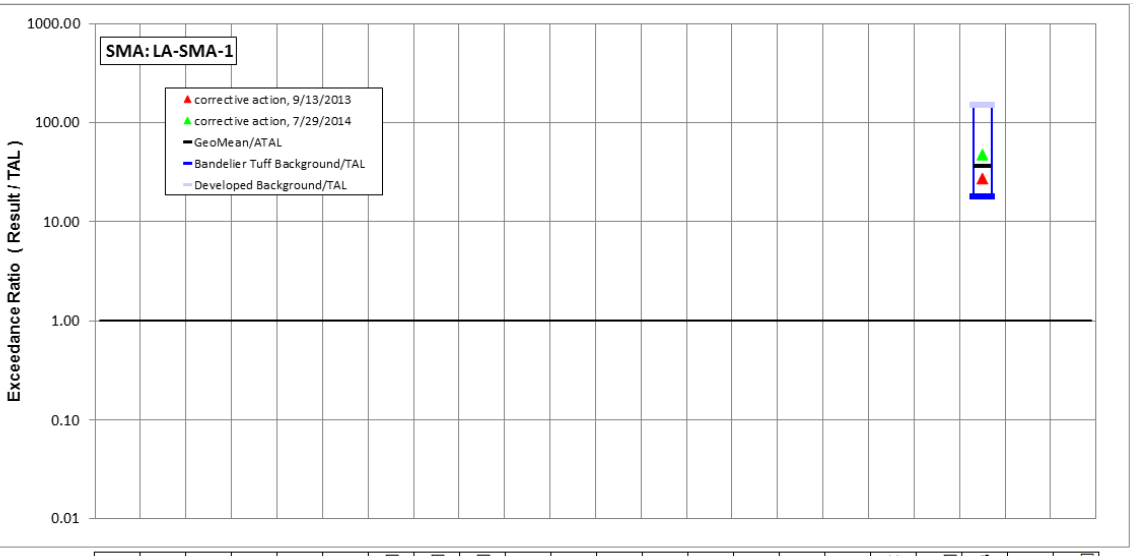
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	**Lead**	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	**Radium-226 and Radium-228**
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	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
7/29/2014 result	-	-	-	-	-	-	-	-	-	0.347	-	4.08	-	-	-	-	*0.005*	**73.3**	***57.9***
result / TAL	-	-	-	-	-	-	-	-	-	0.45	-	0.82	-	-	-	-	*0.5*	**4.9**	***1.9***
9/13/2013 result	**800**	*3*	*5*	19.3	*1*	2.77	2.18	3.03	4.19	0.376	1.36	4.94	***1***	*2*	4.85	6.43	*0.005*	**434**	8.65
result / TAL	**1.1**	*0.005*	*0.56*	0.0039	*1*	0.013	0.0022	0.7	0.25	0.49	0.008	0.99	***2***	*0.32*	0.048	0.15	*0.5*	**29**	0.29
8/19/2011 result	**6510**	*1*	2.9	51.8	0.23	3.8	10.1	**7.8**	**42.1**	*0.066*	5.9	*1.5*	*0.2*	*0.45*	6.6	36.2	-	**1800**	14
result / TAL	**8.7**	*0.002*	0.32	0.01	0.23	0.018	0.01	**1.8**	**2.5**	*0.086*	0.035	*0.3*	*0.4*	*0.071*	0.066	0.86	-	**120**	0.47

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 LA-SMA-1

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**



	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
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
7/29/2014 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.031**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**48**	-	-
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.018**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**27**	-	-
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 LA-SMA-1

LA-SMA-1 is a 1.03-acre watershed that consists of 14% developed areas and 86% undeveloped areas. Developed areas consist of 0.15 acres of pavement. Undeveloped areas consist of 0.33 acres of ponderosa woodland and 0.55 acres of bare soil, including outcrops of Bandelier Tuff. The SMA receives runoff from urban areas (paved roads) and from flow over undeveloped areas, including landscapes containing sediment derived from Bandelier Tuff. The concentration of aluminum and the gross-alpha radioactivity detected in 2013 and 2014 SMA confirmation samples are less than the UTLs for runoff from undeveloped areas and are above the UTLs for urban runoff. The concentrations of PCBs detected in the 2013 and 2014 SMA confirmation sample are less than the UTL for urban runoff and above the UTL for runoff from undeveloped areas (LANL 2015). Concentrations of aluminum and copper in the 2011 baseline sample exceeded the UTLs for runoff from both developed and undeveloped areas. Because there are no Site-related sources of aluminum or gross-alpha radioactivity, these elevated concentrations are likely associated with a high sediment concentration in the SMA sample, although no suspended sediment concentration data are available to confirm this. The concentration of copper in the 2011 baseline sample exceeded the UTL for runoff from undeveloped areas but was less than the UTL for runoff from developed areas. The concentration of lead in the 2011 baseline sample exceeded the UTL

for runoff from developed areas (there is no UTL for runoff from developed areas). Lead is known to be associated with Site C-00-044, which is also within LA-SMA-1.

The results of the SMA monitoring samples show that aluminum, copper, gross-alpha radioactivity, and PCBs concentrations are within the range of background. That is, the concentrations of these constituents are within the range expected if there were no contribution from Site-related industrial materials. Lead is known to be associated with Site C-00-044, also within the SMA drainage.

During the Consent Order investigation and Resource Conservation and Recovery Act facility investigation (RFI) activities conducted at the portions of Site 00-017, located within the LA-SMA-1, shallow subsurface and deeper subsurface samples were collected at locations along and beneath the bed of previously removed waste line 167. The shallow subsurface samples are representative of soil that could be eroded.

Aluminum and copper were not detected above background values in any of the shallow (i.e., less than 3 ft bgs) 1998 RFI or 2009 Consent Order soil, sediment, and tuff samples collected at the Site (LANL 1999; LANL 2010). Aluminum and copper are not known to be associated with industrial materials historically managed at the Site. Lead was detected above background values in shallow samples collected at the Site; however, lead is not known to be associated with industrial materials historically managed at the Site. Area of Concern (AOC) C-00-044 consists of surface contamination resulting from the historical use of lead-based paint on the Los Alamos Canyon Bridge (also known as Omega Bridge). Surface samples collected outside the LA-SMA-1 drainage area from locations on the north and south end of the bridge during investigation of SWMU 00-017 contained elevated lead concentrations. The lead could not reasonably be attributed to SWMU 00-017; however, AOC C-00-044 was identified as the source of lead. PCBs were not detected in any of the shallow 1998 RFI samples collected at the Site and are not known to be associated with industrial materials historically managed at the Site. Consent Order samples were not analyzed for PCBs. Alpha-emitting radionuclides were not detected in any of the shallow Consent Order or RFI samples collected at the Site, although they are known to have been present in the liquid waste conveyed by the SWMU 00-017 waste lines.

These soil sampling results are consistent with the determination that Site 00-017 is not a source of the TAL exceedance constituents and that Site 00-017 waste lines did not release significant industrial materials to the environment, and therefore, a no exposure condition exists.

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: L003 **LA-SMA-1** **Site: 00-017**

References

LANL (Los Alamos National Laboratory), September 1986. "Radioactive Liquid Waste Lines Removal Project at Los Alamos (1981–1986)," Los Alamos National Laboratory document LA-10821-MS, Los Alamos, New Mexico

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. I of IV (TA-0 through TA-9), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

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LANL (Los Alamos National Laboratory), February 2010. "Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-0422, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1, 2015. "2014 Update to the Site Discharge Pollution Prevention Plan, Revision 1, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2014, LA-UR-15-22152, Los Alamos/Pueblo Watershed, Receiving Waters: Pueblo Canyon, DP Canyon, and Los Alamos Canyon, Volume 1," Los Alamos National Laboratory, Los Alamos, New Mexico.

Montoya, G., 1985. "Line 167: Concrete Anchors Left in Place on South Side of Los Alamos Canyon," Los Alamos National Laboratory memorandum to A. Valentine (Radiation Protection Group) from G. Montoya (HSE-1), Los Alamos, New Mexico.

Attachment 1

As-Built Conditions for Portions of Site 00-017
Located within LA-SMA-1

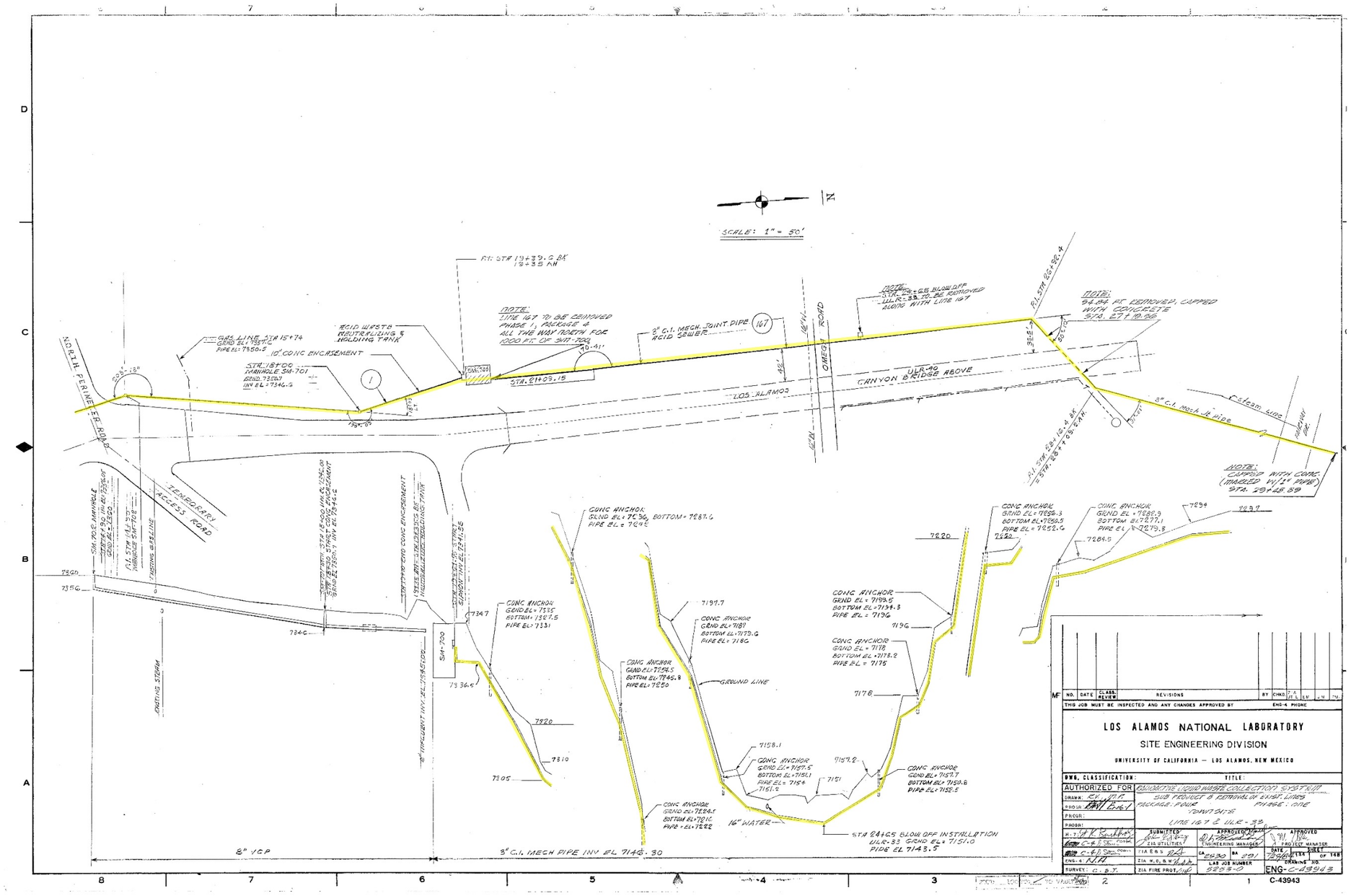


Figure 1 **Engineering drawing C-43943 showing the original configuration of Site 00-017 drainlines (original configuration of drainline highlighted)**

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Attachment 2

Photographs of Site 00-017



Photograph 1 View of concrete anchors for former waste line 167 on north wall of Los Alamos Canyon. Looking north up hillslope.



Photograph 2 **Closeup of remaining concrete anchor and former waste line 167 trench on north wall of Los Alamos Canyon. Looking north up hillslope.**



Photograph 3 View of location of former waste line 167 from bottom of Los Alamos Canyon. Looking north up hillslope.



Photograph 4 Former pavement cut across Omega Road at the bottom of Los Alamos Canyon from removal of waste line 167. Looking north.

Completion of Corrective Action at Site 48-005 in M-SMA-4

September 29, 2015

NPDES PERMIT NO. NM0030759

LA-UR-15-26014

NPDES PERMIT NO. NM0030759 **LA-UR-15-26014**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: M006 **M-SMA-4** **Site: 48-005**

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

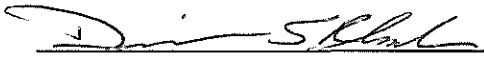
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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."



09/15/2015

Environmental Programs
Environmental Remediation Program
Los Alamos National Laboratory

Date



9-28-2015

Environmental Management
U.S. Department of Energy

Date

NPDES PERMIT NO. NM0030759 **LA-UR-15-26014**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: M006 **M-SMA-4** **Site: 48-005**

Introduction

This certification documents the no exposure condition of Site 48-005 (referred to as Solid Waste Management Unit [SWMU] 48-005 under the New Mexico Environment Department [NMED] Compliance Order on Consent [Consent Order]) for completion of corrective action at site monitoring area (SMA) M-SMA-4 under Part 1.E.2(c) of National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (hereafter, the Permit or IP), 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 48-005 is listed as a SWMU in the 1990 SWMU Report (LANL 1990) based on the historical management of radioactive liquid waste (RLW) and a 1982 release from a broken RLW main over a leaking water main, resulting in pooled water at the northwest corner of building 48-01. The line breaks were repaired and contaminated soil was removed. The subsurface RLW main was drained and decomissioned. Most of the inactive waste lines associated with Site 48-005 have been removed. Remaining portions of the Site 48-005 waste lines, all of which are inside the Technical Area 48 (TA-48) security fence and are located at depths of 10 ft to 11 ft below ground surface (bgs), were not removed because they lie beneath structures, roadways, or utilities.

Site 48-005 is associated with SMA M-SMA-4 and is listed as a Moderate Priority Site in Part I.E.4 (a) of the Permit. The requirement for corrective action in Part I.E.1 was triggered by analytical data from a baseline storm water sample collected from M-SMA-4 on August 19, 2011, that showed exceedances of the target action levels (TALs) for copper, polychlorinated biphenyls (PCBs), and radium-226 and radium-228. The M-SMA-4 drainage area is located in the north-central portion of Los Alamos National Laboratory (the Laboratory) within TA-48. A portion of Site 48-005, along with all of Sites 48-007(a) and 48-007(d) and portions of Sites 48-001 and 48-010, are located within the M-SMA-4 drainage area. Sites 48-001, 48-007(a), 48-007(d), and 48-010 are not included in this certification, and the Site 48-005 outfall is located within the M-SMA-3 drainage area (Figure 1).

The following sections describe the Site, provide documentation of no exposure, and provide the results of storm water monitoring and soil sampling. 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 that the results are consistent with no exposure conditions. Soil sampling results are evaluated to determine whether they indicate evidence of a release from the Site.

Site Description

Five historical industrial activity areas are associated with Permitted Feature (PF) M006, M-SMA-4: Sites 48-001, 48-005, 48-007(a), 48-007(d), and 48-010. Sites 48-007(a), 48-007(d), and 48-010 received certificates of completion (CoCs) from NMED on September 7, 2011. Completion of corrective actions under Part I.E.2(d) for Sites 48-007(a), 48-007(d), and 48-010 was certified on August 13, 2013. Site 48-001 will be recommended for corrective action complete status in the Upper Mortandad Canyon supplemental investigation report (SIR) and will be eligible for a CoC upon approval of the SIR by NMED. Because a CoC is not expected to be received by the compliance deadline, a request for alternative compliance for Site 48-001 was submitted to EPA on May 6, 2015. Sites 48-001, 48-007(a), 48-007(d), and 48-010 are not included in this no exposure certification.

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PF: M006 **M-SMA-4** **Site: 48-005**

SWMU 48-005 consists of inactive RLW lines and an associated outfall at TA-48. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the treatment plant at TA-45 (Consolidated Unit 45-001-00). Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were decommissioned but remained in place. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984 (LANL 1986). SWMU 48-005 contains the remaining portions of the waste lines 34, 36, and 38, all of which are inside the TA-48 security fence and inaccessible for removal. The remaining inactive waste lines are all 3-in.-diameter cast-iron pipe and consist of a 200-ft section of line 34 running westward from building 48-1, a 300-ft section of line 36 running southward from the north wing of building 48-1 to line 36, and a 50-ft section of line 38 running southward from building 48-1. These lines are located at depths of 10 ft to 11 ft and were not removed because they are beneath structures, roadways, or utilities. The remaining sections of lines 34 and 36 were surveyed during the line removal activities. Line 34 was found to have low levels of alpha activity, and line 36 had no detectable activity. The remaining portion of line 38 was not surveyed. SWMU 48-005 also includes an outfall on the edge of Mortandad Canyon [SWMU 48-007(c)], north of building 48-1 that was the discharge point of line 37. SWMU 48-007(c) is an IP- permitted Site within M-SMA-3. Line 37 was connected to sumps in the north basement of building 48-1 and was completely removed in 1981. The RLW previously managed within the subsurface waste lines in the M-SMA-4 drainage area was not exposed to storm water.

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PF: M006 **M-SMA-4** **Site: 48-005**

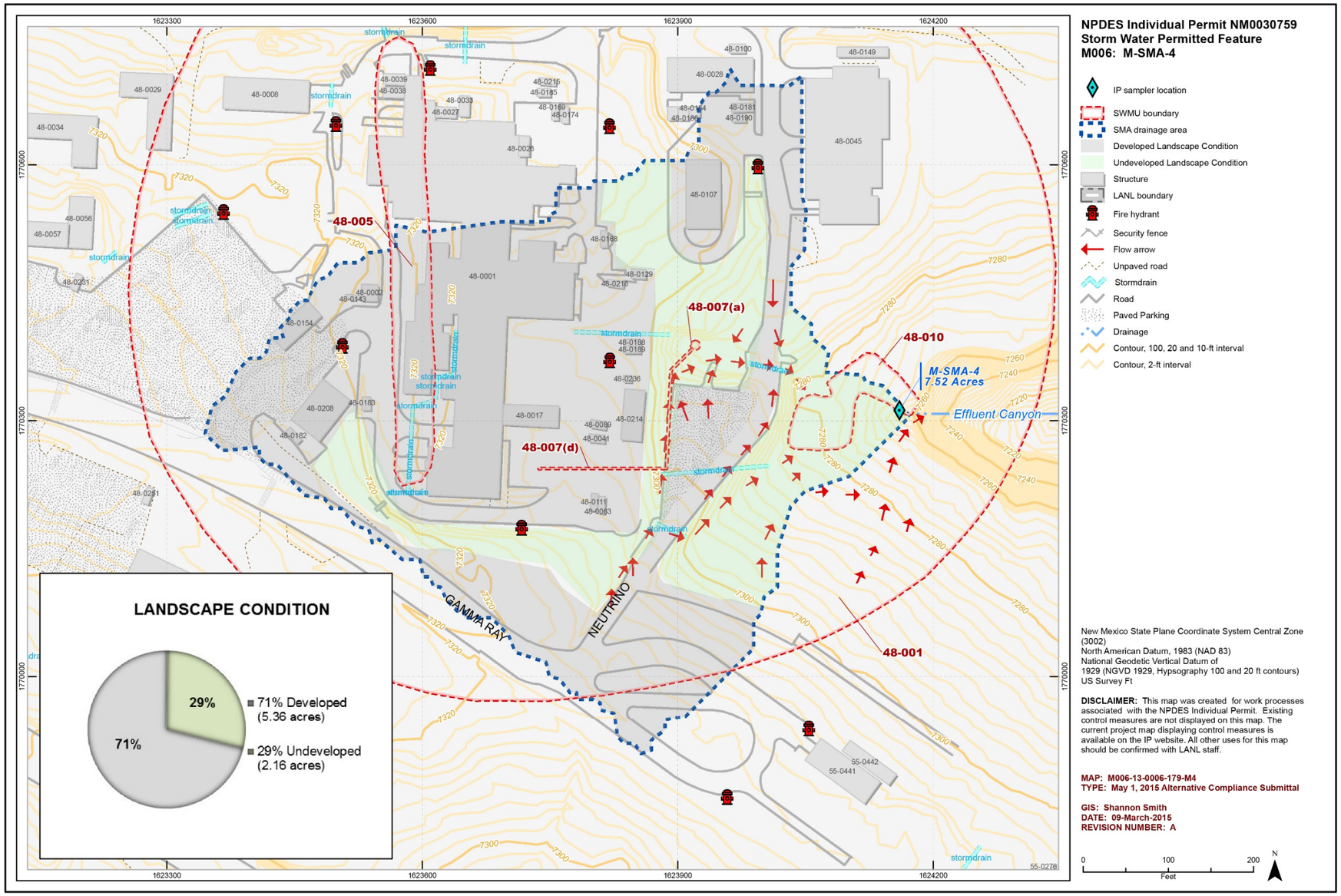


Figure 1 Location of Site 48-005 within M-SMA-4

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CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: M006 **M-SMA-4** **Site: 48-005**

Demonstration of No Exposure Conditions

Site 48-005 consists of segments of inactive subsurface RLW lines that were not accessible for removal during removal activities in 1981 and 1984 and an associated former outfall that is located in a different drainage area (M-SMA-3). The waste lines were installed belowgrade; any releases from the wastelines within the M-SMA-4 dranage area would have been to the subsurface (deeper than 3 ft bgs) and not exposed to storm water. The only known surface release (other than discharge from the outfall) occurred in March 1982 when a leak in the RLW line occurred above a leaking water main, resulting in surface ponding. This release occurred at the northwest corner of building 48-1, which is outside the M-SMA-4 drainage area and within M-SMA-3. This release area was remediated. There were never any industrial materials associated with Site 48-005 known to be exposed to storm water within the M-SMA-4 drainage. Use of the RLW lines was discontinued in 1965, the lines were decommissioned in 1967, and segments of the inactive lines outside the TA-48 security fence were removed in two campaigns conducted in 1981 and 1984 (Elder et al. 1986).

The locations of the SWMU 48-005 waste lines are within the M-SMA-3 boundary (northern portion of SWMU) and M-SMA-4 (southern portion of SWMU). The subsurface condition of the inactive RLW lines, subsequent removal of accessible portions of the lines, and absence of surface releases within the M-SMA-4 drainage area satisfy the requirements for control measures that totally eliminate exposure of pollutants to storm water contained in Section E.2(c) of the Permit. Any industrial material previously associated with the Site 48-005 subsurface RLW lines within the M-SMA-4 drainage area was contained within the subsurface lines and was not exposed to storm water. The location of line 37, which was the only line having a surface expression (i.e., the outfall), is entirely within the M-SMA-3 drainage area. The outfall, SWMU 48-007(c), is an IP-permitted Site located in M-SMA-3. The 1982 release from line 36 to the surface also occurred within the M-SMA-3 drainage area.

Attachment 1, As-Built Conditions for Site 48-005, documents the no exposure conditions including the locations and elevations of the waste lines. The highlighted area of the drawing shows the location of the drainlines associated with Site 48-005. Attachment 2 presents an excerpt from Elder et al. (1986) documenting conditions following the 1981 to 1984 removal activities. As noted in Attachment 2, remaining waste line segments within the M-SMA-4 drainage area, lines 34, 36 and 38, are located beneath structures, roadways, or utilities at depths of 10 ft to 11 ft bgs and, therefore, not exposed to storm water. Attachment 3 presents 2014 photographs showing current conditions at former locations along the segments of the Site 48-005 subsurface RLW lines located within the M-SMA-4 drainage area.

In summary, based on the historical activities and current conditions described above, significant industrial materials historically associated with the portion of Site 48-005 located within the M-SMA-4 drainage area are not exposed to storm water.

Storm Water Monitoring under the Permit

Storm water runoff from the area above the Site 48-005 inactive RLW lines is monitored within M-SMA-4. Following the installation of baseline control measures, one baseline storm water sample was collected on August 19, 2011. The analytical results from this sample are presented in Table 1 and yielded three TAL exceedances:

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CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: M006 **M-SMA-4** **Site: 48-005**

Table 1
TAL Exceedances in Storm Water Samples Collected at Site 48-005

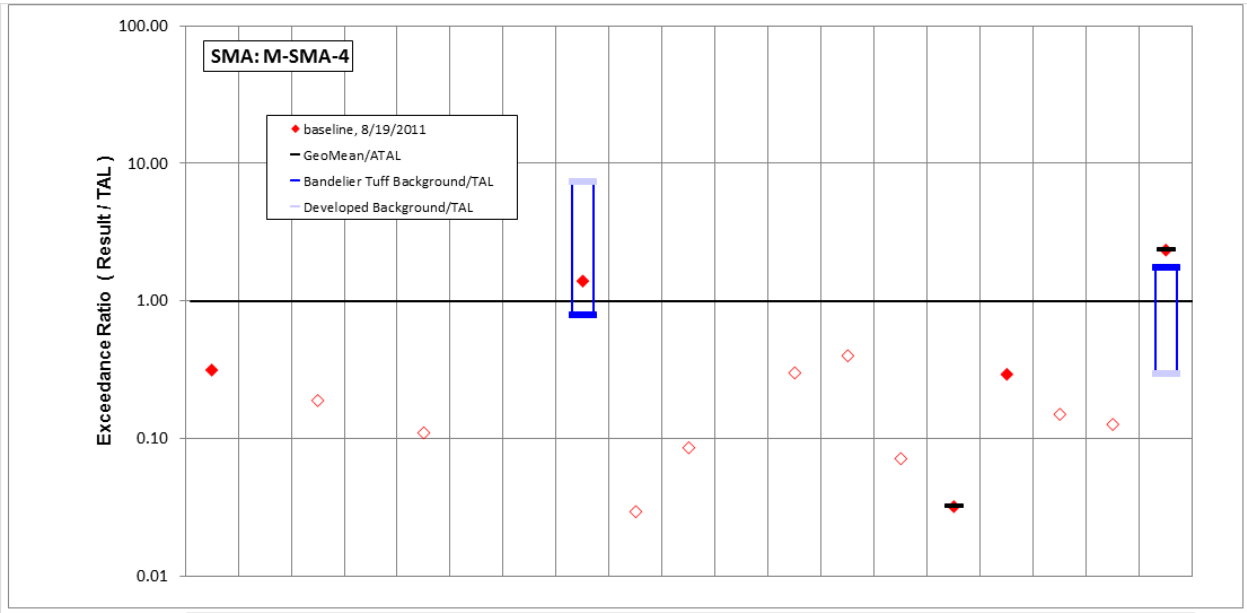
Analyte	Result	TAL (MTAL or ATAL)	Exceedance Ratio	Date	Monitoring Phase
Copper	6 µg/L	4.3 µg/L (MTAL)	1.4	8/19/2011	Baseline
Radium-226 and Radium-228	70.3 pCi/L	30 pCi/L (ATAL)	2.3	8/19/2011	Baseline
PCBs	58 ng/L	0.6 ng/L (ATAL)	90	8/19/2011	Baseline

Notes: MTAL = Maximum TAL; ATAL = average TAL; exceedance ratio = result/TAL.

TAL exceedances for monitoring location M-SMA-4 were evaluated against the appropriate storm water background values, which consist of “Bandelier Tuff background” for undisturbed SMAs or “developed background” for SMAs in urban settings. Background values are expressed determined using the recommendations provided in ProUCL 4.1, an EPA developed statistical software package (available at 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 1 and 2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 2 and 3.

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PF: M006 **M-SMA-4** **Site: 48-005**



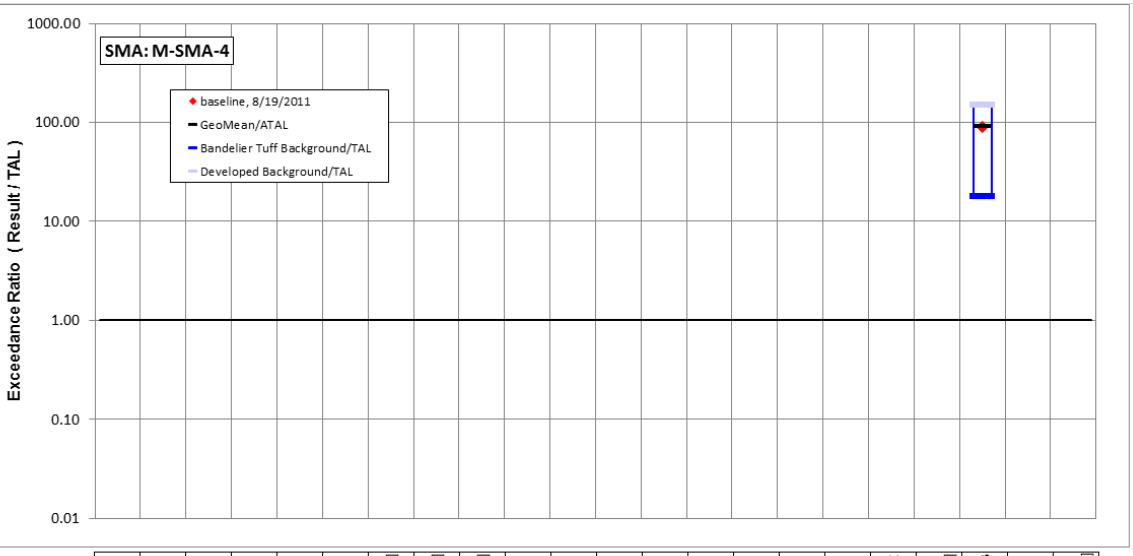
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	**Radium-226 and Radium-228**
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	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
8/19/2011 result	236	*1*	*1.7*	18.5	*0.11*	*2*	2.3	**6**	*0.5*	*0.066*	0.96	*1.5*	*0.2*	*0.45*	3.2	12.3	*0.002*	*1.9*	**70.3**
result / TAL	0.31	*0.002*	*0.19*	0.0037	*0.11*	*0.01*	0.0023	**1.4**	*0.029*	*0.086*	0.0056	*0.3*	*0.4*	*0.071*	0.032	0.29	*0.15*	*0.13*	**2.3**

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 M-SMA-4

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PF: M006 **M-SMA-4** **Site: 48-005**



	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
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
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.058**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**	-	-

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 M-SMA-4

M-SMA-4 is a 7.52-acre watershed that consists of 71% developed areas and 29% undeveloped areas. Developed areas consist of 5.36 acres of pavement and buildings. Undeveloped areas consist of 1.3 acres of sparse grass and 0.86 acres of ponderosa woodland. The SMA sampler receives runoff primarily from developed areas (buildings, parking lots, roads) with some contribution from flow over undeveloped areas. Based on comparison with background UTLs, the concentrations of copper and PCBs detected in the 2011 SMA baseline sample are consistent with what would be expected for runoff from a developed area, such as the M-SMA-4 drainage area (LANL 2015). The radium detected in the 2011 SMA baseline sample does not appear to be naturally occurring, but available Consent Order data and site information do not clearly indicate a potential source. Because of the nature of activities conducted at TA-48 (i.e., radiochemistry operations), the radium could be associated with sources at TA-48, such as past operational releases to the surface. Consent Order and other investigation samples have not been analyzed for radium isotopes and cannot be used to identify potential sources. Given the absence of surface releases from Site 48-005 within the M-SMA-4 drainage area, Site 48-005 is not a potential source of radium.

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PF: M006 **M-SMA-4** **Site: 48-005**

The results of the SMA monitoring sample show that copper and PCBs are within the range of background. That is, the concentrations of these constituents are within the range expected if there were no contribution from Site-related industrial materials. Radium appears to be related to a source other than Site 48-005.

RFI and Consent Order soil sampling data are available for Site 48-005 but are not useful for evaluating contributions of Site runoff to TAL exceedances (LANL 1995; LANL 2010) because samples collected during Consent Order investigation and RFI activities at the portions of Site 48-005, located within the M-SMA-4 drainage area, were collected from the deeper subsurface (3 ft bgs or greater) at locations along the inactive waste lines. No samples were collected from the surface or from depths shallow enough (i.e., 3 ft bgs or shallower) to be exposed through erosion.

References

Elder, J.C., E.J. Cox, D.P. Hohner, and A.M. Valentine, September 1986. “Radioactive Liquid Waste Lines Removal Project at Los Alamos (1981–1986),” Los Alamos National Laboratory report LA-10821-MS, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), November 1990. “Solid Waste Management Units Report,” Vol. III of IV (TA-26 through TA-50), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), September 1995. “RFI Report for Potential Release Sites 48-001, 48-002(e), 48-003, 48-005, 48-007(a), 48-007(b),p 48-007(c), 48-007(d), 48-007(f), 48-010,” Los Alamos National Laboratory document LA-UR-95-3328, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), April 2010. “Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1,” Los Alamos National Laboratory document LA-UR-10-2046, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1, 2015. “2014 Update to the Site Discharge Pollution Prevention Plan, Revision 1, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2015, LA-UR-15-22148, Sandia/Mortandad Watershed, Receiving Waters: Canada del Buey, Mortandad Canyon, Sandia Canyon, and Ten Site Canyon, Volume 2,” Los Alamos National Laboratory, Los Alamos, New Mexico.

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: M006 **M-SMA-4** **Site: 48-005**

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Attachment 1

As-Built Conditions for Portions of Site 48-005

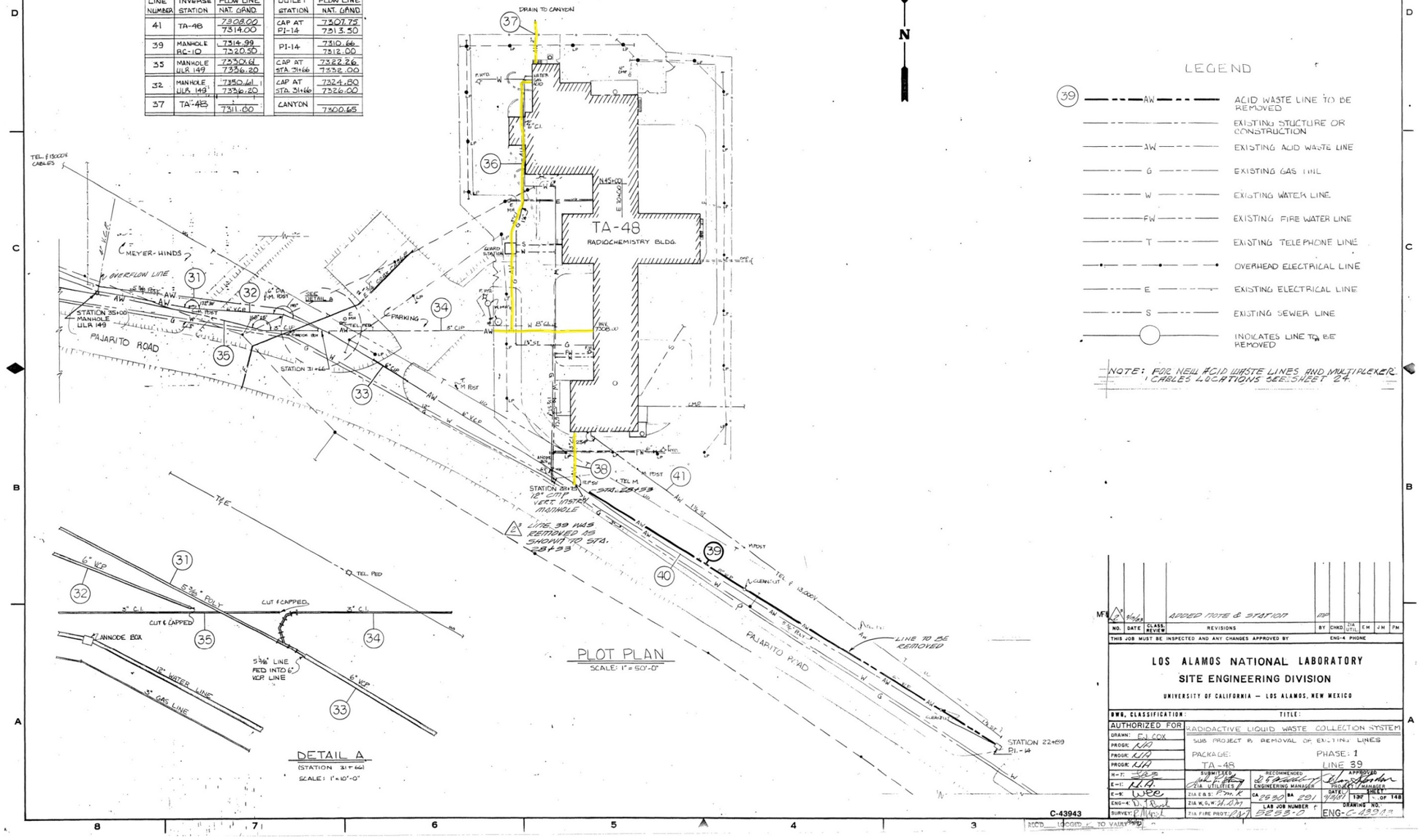


Figure 1 Engineering drawing C-43943 showing configuration of waste lines associated with Site 48-005 (original configuration of drainline highlighted)

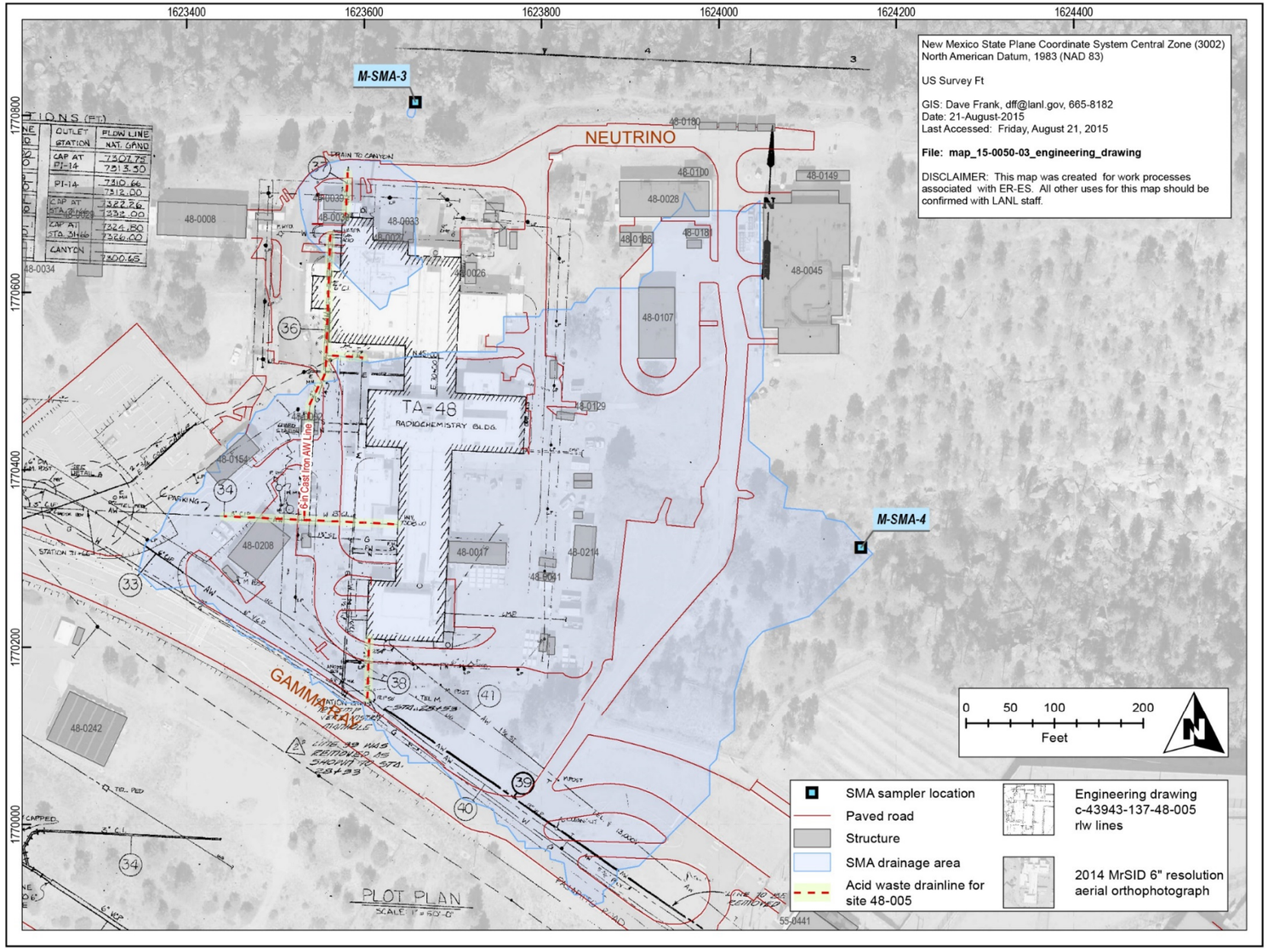


Figure 2 **Orthorectified engineering drawing C-43943 showing SMA boundaries**

Attachment 2

Excerpt from Elder et al.
Documenting As-Left Conditions for Waste Lines

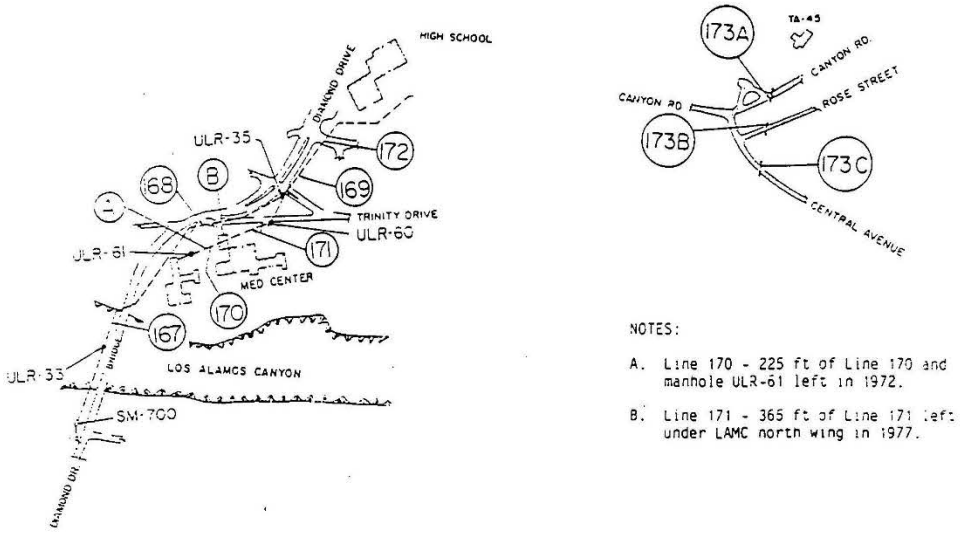


Fig. 11. Simplified diagram of Townsite lines.

E. TA-48/55 (Work Packages I.5 and II.3, and Line 34)

1. Description of Work. Contaminated waste lines were removed from the vicinity of TA-48 and TA-55 in 1981 and 1984. The lines and their major features are summarized in Table VIII. Line routings are shown in simplified form in Figure 12 and on drawing ENG-C-43943, sheets 23 through 28, 54.

2. As-Left Conditions. Lines 32, 35, 37, 39, and 41 were completely removed with the TA-48 work in 1981. Lines 33 and 40 were removed in 1984. The removal of Line 43 in the TA-55 area was begun in August of 1984 and finished in April of 1985. Approximately 100 ft of Line 34, 330 ft of Line 36, and 50 ft of Line 38 were left inside the security fence at TA-48. These lines ran under roadways, the guard station, sidewalks, and existing utilities (see memo Cox to Valentine, April 25, 1985). A 4-ft section of Line 43 was left in place

TABLE VIII

TA-48/55 LINES SUMMARY

LINE NO.	DESCRIPTION	REMOVED LENGTH (ft)	DIAM. (in)	RANGE OF DEPTH (ft)	TYPE[a]	AS-LEFT CONDITION
32	Line from MH-ULR-149 to its termination approximately 335 ft to the east (earlier connection with Line 33).	335	6		VCP	Completely removed in 1981. Removed MH-ULR-149 (see Special Topics).
33	Line from Line 31 junction near TA-48 (Station 31 + 66) to junction with Line 40 at MH-RC-10 (Station 28 + 75).	290	6	7	VCP, CIP	Completely removed in 1984.
34	Line from TA-48 (RC Bldg) to junction with Line 33 (Station 31 + 66).	200	3	3-7	CIP	Partially removed in 1984. Remaining 100 ft was left inside the security fence at TA-48 (see As-Left Conditions).
35	Line from MH-ULR-149 west of TA-48 to its termination approximately 150 ft to the east.	150	3		CIP	Completely removed in 1981.
36	Line from north wing of RC Building to Line 34.	0	3		CIP	A 330-ft section was left inside the security fence (see As-Left Conditions).
37	Line from north end of TA-48 northward to canyon outfall.	56	2		CIP	Completely removed in 1981.
38	Line from TA-48 (RC Building) to MH-RC-10.	6	3	7	CIP	A 50-ft section left in place (see As-Left Conditions).
39	Line from a vertical culvert at the former location of MH-RC-10 to MH-ULR-1016.	505	8		VCP	Completely removed in 1981.
40	Line parallel to Line 39 from MH-RC-10 to MH-ULR-1016.	459	5	6	PVC	Completely removed in 1984.
41	Line from south side of TA-48 to termination approximately 630 ft to the southeast.	630	1-1/2		SS	Completely removed in 1981.
42	Line from TA-48 to TA-50 (old line).	---	---	---	---	For record only. Completely removed with TA-55 construction project (see Special Topics).
43	Line from MH-ULR-1016 west of TA-55 to east side of Pecos Drive.	1762	6-8	3-4	CIP	A 4-ft section left in place south of TA-55 (see As-Left Conditions).

[a]Type symbols are defined in Table IV.

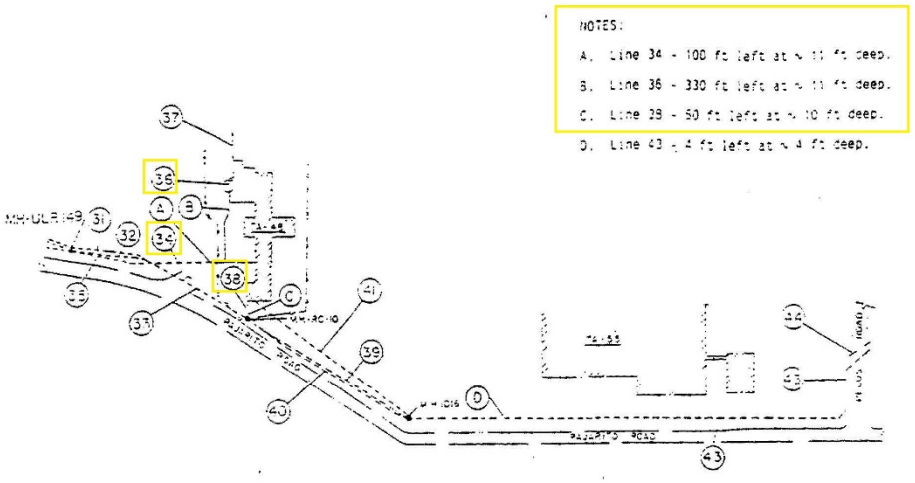


Fig. 12. Simplified diagram of TA-48/55 lines.

at station 2 + 80 (under Pecos Road) because it passed over a water main and under a gas main encased in concrete (see memo Cox to Garde August 28, 1984). The line was decontaminated by hand and both ends were sealed with concrete.

3. Special Topics. Manhole ULR-149 west of TA-48 was removed in 1981. Manhole ULR-1016 between TA-48 and Pecos Road was removed in 1984. A section of Line 42 originally believed to be in place under Pecos Road was searched for by trenching but was not found; it is believed to have been removed along with the rest of Line 42 during TA-55 site preparation.

F. SM-700 and Lines 1 and 23 to Manhole SM-703 (Work Package II.2)

1. Description of Work. SM-700 was the central collection point for contaminated liquid waste from TA-3 (CMR, Sigma, and a few other buildings). Its pumping capacity then transferred the waste by Line 23 to MH-SM-736 near the intersection of

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Attachment 3

Photographs of Site 48-005 within M-SMA-4



Photograph 1 Sign showing location of inactive subsurface waste line 38, Site 48-005 inside building 48-001 security fence



Photograph 2 Exterior west wall of building 48-01 and vault for inactive waste line 34



Photograph 3 Inactive waste line 36 in basement of building 48-01



Photograph 4 Inactive waste line 34 in basement of building 48-01

Completion of Corrective Action at Site 03-003(k) in 2M-SMA-2.2

September 29, 2015

NPDES PERMIT NO. NM0030759

LA-UR-15-26031

NPDES PERMIT NO. NM0030759 **LA-UR-15-26031**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: E013 **2M-SMA-2.2** **Site: 03-003(k)**

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

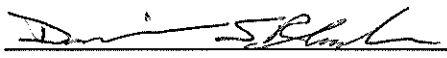
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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."



09/15/2015

Environmental Programs
Environmental Remediation Program
Los Alamos National Laboratory

Date



9-28-2015

Environmental Management
U.S. Department of Energy

Date

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: E013 **2M-SMA-2.2** **Site: 03-003(k)**

Introduction

This certification documents the no exposure condition of Site 03-003(k) [referred to as Area of Concern (AOC) 03-003(k) under the New Mexico Environment Department (NMED) Compliance Order on Consent (Consent Order)] for completion of corrective action at site monitoring area (SMA) 2M-SMA-2.2 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. Based on the historical management of polychlorinated biphenyls (PCBs), Site 03-003(k) is listed in the 1990 SWMU Report (LANL 1990) as an area of potential soil contamination associated with the location of a former non-PCB transformer (less than 50 ppm PCB), reportedly staged on the east side of building 03-0316. The Site no longer exists, and transformers are no longer staged east of building 03-0316.

Site 03-003(k) is associated with 2M-SMA-2.2 and is listed as a Moderate Priority Site in Part I.E.4(a) of the Permit. The requirement for corrective action in Part I.E.1 was triggered by analytical data from storm water samples collected from 2M-SMA-2.2 on August 13, 2011, and September 4, 2011, that showed exceedances of the target action levels (TALs) for copper, zinc, and PCBs. The 2M-SMA-2.2 drainage area is located in the central portion of Los Alamos National Laboratory (the Laboratory) within Technical Area 03 (TA-03). Site 03-003(k) is located entirely within the SMA drainage area (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 that the results are consistent with no exposure conditions.

Site Description

One historical industrial activity area is associated with Permitted Feature (PF) E013, 2M-SMA-2.2: Site 03-003(k). AOC 03-003(k) was identified in the 1990 Resource Conservation and Recovery Act (RCRA) facility assessment as an active electrical equipment storage area east of building 03-316 (LANL 1990). Information of the site history is provided in unpublished working files compiled during the preparation of the 1993 Operable Unit (OU) 1114 RCRA facility investigation (RFI) work plan (Attachment 1). In 1987, a leaking non-PCB (i.e., less than 50 ppm PCB) transformer was observed at this location. Interviews with facility staff during preparation of OU 1114 RFI work plan indicated that electrical equipment used in building 03-0316 generally did not contain PCBs, and the probability of PCB contamination in the storage area east of the building was low (Attachment 1). The transformer associated with AOC 03-003(k) contained less than 50 ppm PCBs and was therefore regulated under the Toxic Substances Control Act (TSCA) as non-PCB (LANL 1995). According to historical research conducted during the preparation of the OU 1114 RFI work plan, the area where the transformer was stored was graded and paved over in 1988 (Attachment 1). Transformers throughout the Laboratory were removed in 1988 during implementation of the DOE/Albuquerque Operations Office Environmental Restoration and Waste Management Five-Year Plan. Reportedly, for all transformers removed during this action, “no stains were visible after the transformer was removed, the area was considered free of contamination” (LANL 1995).

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PF: E013 **2M-SMA-2.2** **Site: 03-003(k)**

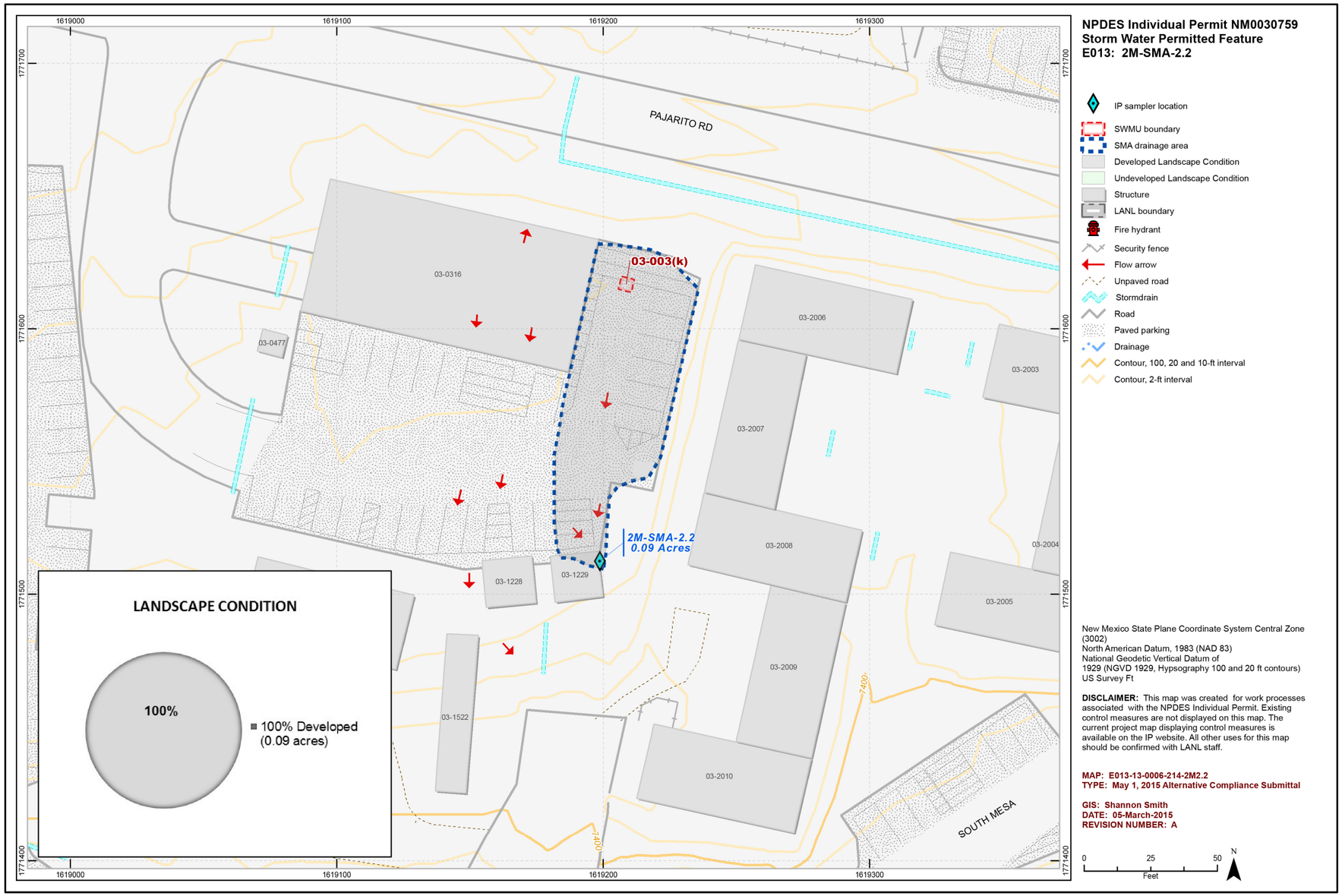


Figure 1 Location of Site 03-003(k) within 2M-SMA-2.2

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PF: E013 **2M-SMA-2.2** **Site: 03-003(k)**

Demonstration of No Exposure Conditions

Significant material associated with industrial activities at Site 03-003(k) consists of dielectric oil in the transformers staged at the Site. This oil may have contained PCBs. A detailed review of historical information for this Site has determined that any PCBs released to soil at this Site are not exposed to storm water. The area where the transformer was stored was reportedly removed in 1988 and the area was graded and paved over (Attachment 1). Furthermore, this transformer was regulated under TSCA as a non-PCB transformer, and historical interviews with facility staff indicated a low probability of PCB usage or release.

The area along the east side of building 03-0316 where Site 03-003(k) is located is currently a paved parking area. Attachment 2 is an aerial orthophotograph showing the current site conditions, including the paved parking area at the east end of building 03-0316. Attachment 2 also shows the asphalt sealant that was applied around the area of Site 03-003(k) and the location of an enhanced control. Attachment 3 is a recent photograph of the east side of building 03-0316 taken at ground level. As shown in the photographs, there is no evidence of the historical transformer staging area. The current conditions are consistent with the historical records that describe the area as being graded and paved over after the transformer had been removed in 1988 (Attachment 1).

Based on the historical activities and current conditions described above, significant materials historically associated with Site 03-003(k) are not exposed to storm water.

Storm Water Monitoring under the Permit

Site 03-003(k) is monitored within 2M-SMA-2.2. Following the installation of baseline control measures, baseline storm water samples were collected on August 13, 2011, and September 4, 2011. Analytical results from these samples yielded TAL exceedances for three constituents.

Table 1
TAL Exceedances in Storm Water Samples Collected at Site 03-003(k)

Analyte	Result	TAL (MTAL or ATAL)	Exceedance Ratio	Date	Monitoring Phase
Copper	16.4 µg/L	4.3 µg/L (MTAL)	3.8	8/13/2011	Baseline
Copper	10.1 µg/L	4.3 µg/L (MTAL)	2.3	9/4/2011	Baseline
Zinc	97.2 µg/L	42 pCi/L (MTAL)	2.3	8/13/2011	Baseline
Zinc	90.1 µg/L	42 pCi/L (MTAL)	2.1	9/4/2011	Baseline
PCBs	7 ng/L	0.6 ng/L (ATAL)	11.7	8/13/2011	Baseline
PCBs	10 ng/L	0.6 ng/L (ATAL)	16.7	9/4/2011	Baseline

Notes: MTAL = Maximum TAL; ATAL = average TAL; exceedance ratio = result/TAL.

TAL exceedances for monitoring location 2M-SMA-2.2 were evaluated against the appropriate storm water background values, which consist of “Bandelier Tuff background” for undisturbed SMAs or “developed background” for SMAs in urban settings. 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 1 and 2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 2 and 3.

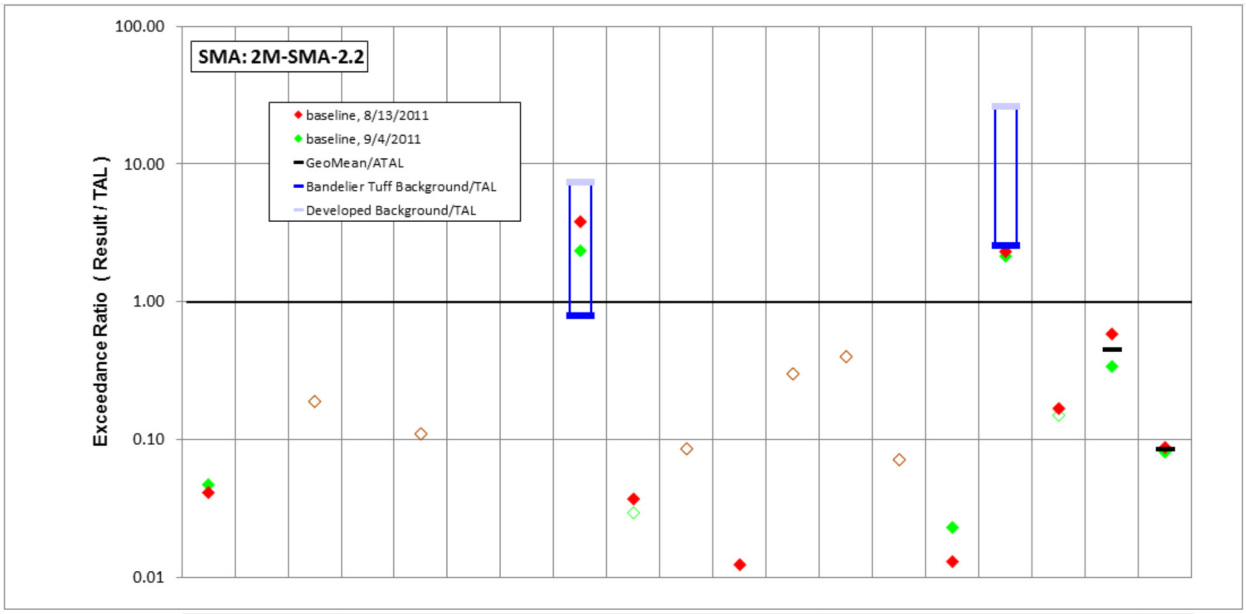
The SMA receives storm water run-on from 100% developed environments consisting of a paved parking area and the concentrations of copper, zinc, and PCBs in the SMA samples are all below the UTLs for runoff from developed areas. The only significant material known to have been associated with industrial activities at the Site is PCBs. Concentrations of PCBs in storm water are below the UTLs for developed and undeveloped areas, indicating PCBs are lower than concentrations typically found in urban locations and are not indicative of a spill or release (in which case PCB concentrations would most likely be greater than the developed area UTL). Copper and zinc are not known to be significant materials associated with the Site, and their concentrations in storm water are within the range of expected background for industrially developed areas, such as 2M-SMA-2.2 drainage area.

The results of the SMA monitoring samples show that copper, zinc, and PCBs are within the range of developed background. That is, the concentrations of these constituents are within the range expected if there were no contribution from Site-related industrial materials.

Consent Order soil sampling for Site 03-003(k) has not been conducted and is planned as part of the investigation work plan for Twomile Canyon Aggregate Area (LANL 2010).

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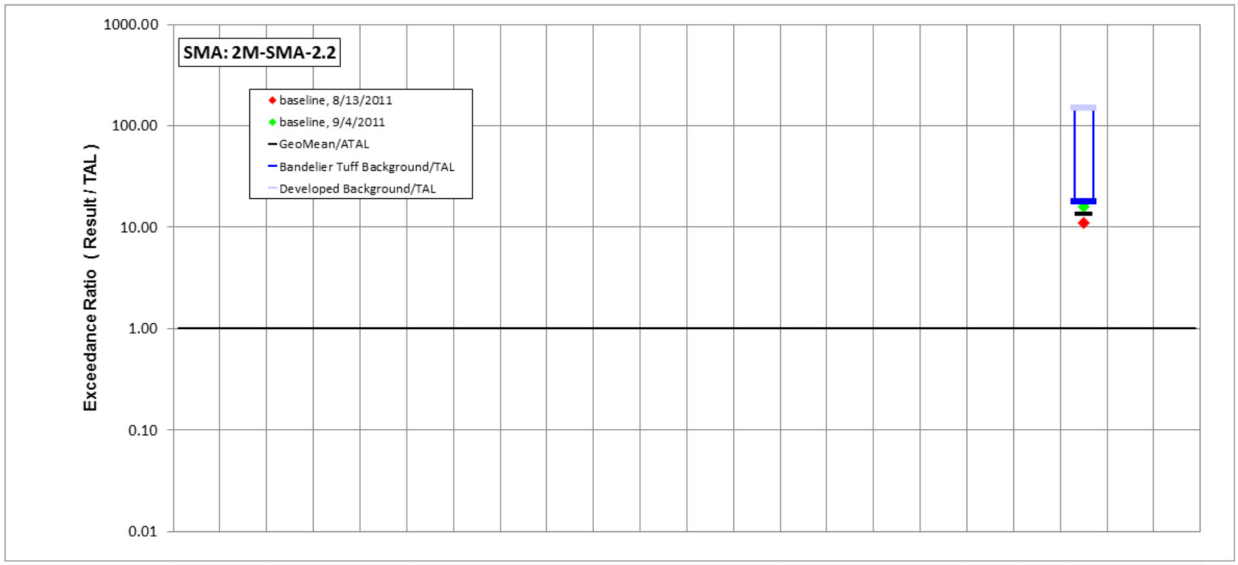
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	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
9/4/2011 result	35.3	*1*	*1.7*	*15*	*0.11*	*2*	2	**10.1**	*0.5*	*0.066*	1.2	*1.5*	*0.2*	*0.45*	2.3	**90.1**	*0.002*	5.09	2.43
result / TAL	0.047	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.002	**2.3**	*0.029*	*0.086*	0.0071	*0.3*	*0.4*	*0.071*	0.023	**2.1**	*0.15*	0.34	0.081
8/13/2011 result	30.9	*1*	*1.7*	19.3	*0.11*	*2*	2.1	**16.4**	0.63	*0.066*	2.1	*1.5*	*0.2*	*0.45*	1.3	**97.2**	0.0017	8.76	2.63
result / TAL	0.041	*0.002*	*0.19*	0.0039	*0.11*	*0.01*	0.0021	**3.8**	0.037	*0.086*	0.012	*0.3*	*0.4*	*0.071*	0.013	**2.3**	0.17	0.58	0.088

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 2 Inorganic analytical results summary plot for 2M-SMA-2.2

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PF: E013 **2M-SMA-2.2** **Site: 03-003(k)**



	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
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
9/4/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**16**	-	-
8/13/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.007**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**11**	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 3 Organic analytical results summary plot for 2M-SMA-2.2

References

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. I of IV (TA-0 through TA-09), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. p

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1114, Addendum 1," Los Alamos National Laboratory document LA-UR-95-731, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 2010. "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-2899, Los Alamos, New Mexico.

Attachment 1

OU 1114 RFI Work Plan Working File
Information Related to Site 03-003(k)

REG. TSCA SWMU # 3-003(k) Aggregate Code: Waste Oil OU- 1114

Polaroids: Fimad Map: In RFI WP: Yes, 2 Descriptor: PCB? containing capacitors and

Bldg. or Structure # TA-3-316 New # Direction: East Sheet No. 5 Map Grid E 4

Bld. Mngr. William Waganaar, P-1 Location Notes TA-3-316 is the Relativis Electronic Beam Bldg.

Revised By: Sobo 1/27/93 SPW

Bld. Mngr. Phone # 7-1883

Alt Bld Mngr Terry Langham, P-1

Alt Bld Mngr Phone # 5-3041

SWMU Report Source Description: East of the building, soil stains ??? (what is east of the building the SWMU report does not say, assuming equipment containing PCB oil). The capacitors, transformers and other electrical equipment contained oil, some containing PCBs. Many of the drums in these areas were unmarked.

Documentation on the decommissioning of inactive container storage areas including the removal of soil has not been obtained. Visible soil contamination from leaks and spills is apparent at all of the sites, with the exception of the storage area south of TA-3-40.

NFA Ranking: High, step 4 Era: ? - 1988 Status: Decommissioned

PCOC: PCBs?

ENG. Drawings:

Archival Information

Physical Description

Dimensions:

Distance from nearest structure:

Topography of surrounding area:

Specific physical characteristics:

Note Drainage from SWMU:

Historical Use:

Reference source:

Date of Interview

Person's position:

Phone #

Tenure:

Reference List: ***Reference Document #***

(1114) Worksheet

History of SWMU:

History of SWMU:

Start at the beginning and go to the end. Remember to write a reference to include facts given.

This SWMU is a transformer that was stored on the east side of the High Voltage Test Facility. In 1987, it was found to be leaking by the ER recon team. The transformer was included on **Pan Am's non-PCB transformer inventory list as blue label, <50 ppm.** (3-000018,Task 21-1202)

In memo 3-000736, Terry Langham, Asst. Bldg. Man. for 316, stated that although the building had numerous capacitors and power supplies, almost none of the equipment contained PCBs. Therefore, he believes there is a very low probability that any of the oil stains were PCB contaminated.

In 1988, two transportables were constructed to the east of SM-316. The area in which the transformer was stored was subsequently graded and paved over. The extent of oil contamination and position of the oil contaminated soil is now unknown.

Since the soil SAL at that time was <50 ppm and the oil contamination does not seem to be a threat due to asphalt paving, this SWMU should be recommended for NFA.

ICF KAISER ENGINEERS
TELECON RECORD

JOB NO.: 93069-004-00
DOC. NO.: 3F-003

PREPARED BY: C. TIMM
DATE: 8/11/92

ORIGINATOR: C. TIMM

TELECOM DATE: 8/11/92

PARTICIPANTS: Terry Langham
Chris Timm

DISTRIBUTION:
Participants
Reading File
Task File

TITLE: SWMUs 3-013g, OU 1114

Following is the understanding of items discussed and decisions reached during this teleconference. It shall be assumed that this understanding is correct unless notice to the contrary is brought to ICF Kaiser Engineers' attention within seven (7) calendar days from receipt of this telecon record.

Terry indicated that the dumpster that used to be at the NE corner of TA-3-316 (HVTF) had been there from at least 1978 until 1988, it was removed during the construction of bldgs. 3-2003 thru 3-2010 and the paving of the area. Prior to 1988, the dumpster sat on bare ground. Terry also indicated that while there were numerous capacitors and power supplies in TA-3-31d, very few of power supplies and almost none of the capacitors contained PCB's. Therefore, he believes it is a very low probability that any of the oil stairs around the dumpster, were PCB contaminated. Also, during construction, the entire area was graded and paved so those stained areas are 1) mixed with clean soil and 2) probably under pavement or a building now.

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Attachment 2

As-Built Conditions 2014 Aerial Photograph



Figure 1 2014 aerial photograph showing the location of the former Site 03-003(k)

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Attachment 3

As-Built Conditions 2015 Site Photograph



Photograph 1 Former location of Site 03-003(k), view looking south

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Completion of Corrective Action at Site 03-013(a) in S-SMA-0.25

September 29, 2015

NPDES PERMIT NO. NM0030759

LA-UR-15-26034

NPDES PERMIT NO. NM0030759 **LA-UR-15-26034**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: S001 **S-SMA-0.25** **Site: 03-013(a)**

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.

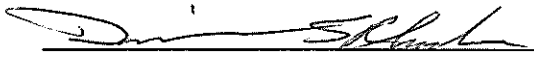
CERTIFICATION STATEMENT OF AUTHORIZATION

"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."



09/15/2015
Date

Environmental Programs
Environmental Remediation Program
Los Alamos National Laboratory



9-28-2015
Date

Environmental Management
U.S. Department of Energy

NPDES PERMIT NO. NM0030759 **LA-UR-15-26034**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: S001 **S-SMA-0.25** **Site: 03-013(a)**

Introduction

This certification documents the no exposure condition of Site 03-013(a) (referred to as Solid Waste Management Unit [SWMU] 03-013(a) under the New Mexico Environment Department [NMED] Compliance Order on Consent [Consent Order]) for completion of corrective action at site monitoring area (SMA) S-SMA-0.25 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 03-013(a) is listed as a SWMU in the 1990 SWMU Report (LANL 1990) based on the potential historical release of industrial waste, including Stoddard solvent, drycid (a scale remover), and caustic materials, to a former 1500-ft-long corrugated metal pipe (CMP) storm drain that discharged to the Site 03-052(f) outfall.

Site 03-013(a) is associated with S-SMA-0.25 and is listed as a High Priority Site in Part I.E.4(a) of the Permit. The requirement for corrective action in Part I.E.1 was triggered by analytical data from storm water samples collected from S-SMA-0.25 on July 28, 2011, and August 15, 2011, that showed exceedances of the target action levels (TALs) for copper, zinc, polychlorinated biphenyls (PCBs), and gross-alpha radioactivity. The S-SMA-0.25 drainage area is located in the northwestern portion of Los Alamos National Laboratory (the Laboratory) within Technical Area 03 (TA-03). Site 03-013(a) is located entirely within the SMA drainage area (Figure 1).

On April 30, 2013, the Permittees submitted a request for alternative compliance to EPA Region 6 for S-SMA 0.25 (LANL 2013). The request was based on a determination by the Permittees that one Site within S-SMA-0.25, Site 03-013(a), could achieve completion of corrective action only through the alternative compliance process defined in Part I.E.3 of the Permit. EPA responded to the alternative compliance request on March 27, 2014 (EPA 2014), noting “If a site is under a building or parking lot and does not have exposure to storm water, it may be in compliance with the completion of corrective action under Part.I.E.2.” The Permittees understood EPA’s response to refer to Site 03-013(a), a former underground storm drain, and is proceeding to certify Site 03-013(a) under Part 1.E.2.(c) as no exposure under this document.

The following sections describe the Site, provide documentation of no exposure, and provide the results of storm water monitoring and soil sampling. 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 that the results are consistent with no exposure conditions.

Site Description

Two historical industrial activity areas are associated with Permitted Feature (PF) S001, S-SMA-0.25, Site 03-013(a) and Site 03-052(f) (LANL 2015). Site 03-052(f) is not included in this certificaton. Site 03-013(a) is a former 1500-ft-long CMP storm drain that received storm water from the northern portion of TA-03 and was also connected to floor drains in building 03-38 (maintenance shops). The floor drains were rerouted to the TA-03 sanitary sewer system in 1987 and subsequently plugged with concrete when the TA-03 wastewater treatment plant was decommissioned in 1992 (LANL 2010). The

storm drain ran underground around building 03-38, east along the south side of the Otowi Building (building 03-261), and connected to four other storm drains before daylighting 100 ft east of the Otowi Building where it became an open concrete and rock-lined ditch. The open concrete and rock-lined ditch was 2 ft to 3 ft belowgrade. The open drain continued past transportable office buildings (buildings 03-1616 and 03-1617) and passed beneath streets and sidewalks to a point northeast of the Oppenheimer Study Center (building 03-207) where it discharged to the Site 03-052(f) outfall. Most of the CMP and all of the open concrete and rock-lined ditch associated with Site 03-013(a) were removed in 2004 to accommodate the construction of the National Security Sciences Building (03-1400) and a new parking structure (03-1402). The excavated CMP was managed as nonhazardous/nonradioactive industrial waste (see the waste profile form in Attachment 1). Inspection of the drainline trench showed no evidence of a release from the drainpipe. A new subsurface storm drain pipe was installed west of Site 03-052(f) to manage storm water runoff from the new parking structure. The new storm drain discharges to the SWMU 03-052(f) outfall (LANL 2010). Any release of historical significant industrial materials from the 03-013(a) storm drain is investigated and reported under activities associated with SWMU 03-052(f).

Demonstration of No Exposure Conditions

A detailed review of historical information and current site conditions has determined that the Site 03-013(a) storm drain was removed in 2004, and any significant industrial materials historically associated with Site 03-013(a) are not exposed to storm water. Significant industrial materals associated with Site 03-013(a) include solvents and metal cleaners used in the maintenance shops in building 03-0038. These materials were historically discharged to floor drains connected to the Site 03-013(a) storm drain. These floor drains were rerouted to the sanitary sewer system in 1987 and plugged with concrete in 1992 (LANL 2010). As a result, there could not have been any release of industrial materials to Site 03-013(a) after 1987. Most of the 03-013(a) drainline and all of the rock-lined ditch were removed in 2004. Inspection of the drainline trench during removal showed no evidence of a release from the drainline to the subsurface surrounding soils (LANL 2008). There was no evidence of residual hazardous materials in the CMP that was removed, and it was managed as nonhazardous/nonradioactive industrial waste (LANL 2010). Therefore, removal of all accessible portions of the storm drain and the subsurface condition of the remaining storm drain section left in place satisfy the requirements for control measures that totally eliminate exposure of pollutants to storm water contained in Section E.2(c) of the Permit.

Figure 1 in Attachment 1shows the original Site 03-013(a) drainline. Figures 2 and 3 in Attachment 1 shows the current configuration of the Site 03-013(a) storm drain system. Also included in the attachment is a copy of the 2004 Laboratory waste profile form (pp. 1–2) for the excavated storm drain indicating the removed CMP was managed as nonhazardous, nonradioactive solid waste. Attachment 2 presents 2015 photographs showing current conditions at Site 03-013(a). Photographs 1 and 2 show the plugged floor drains in building 03-0038 that discharged to the Site storm drain. Photograph 3 shows one of the new drop inlets for storm water along the new Site 03-013(a) storm drain, and Photograph 4 shows the west end of the Site 03-013(a) drainline where it discharges to Site 03-052(f).

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: S001 **S-SMA-0.25** **Site: 03-013(a)**

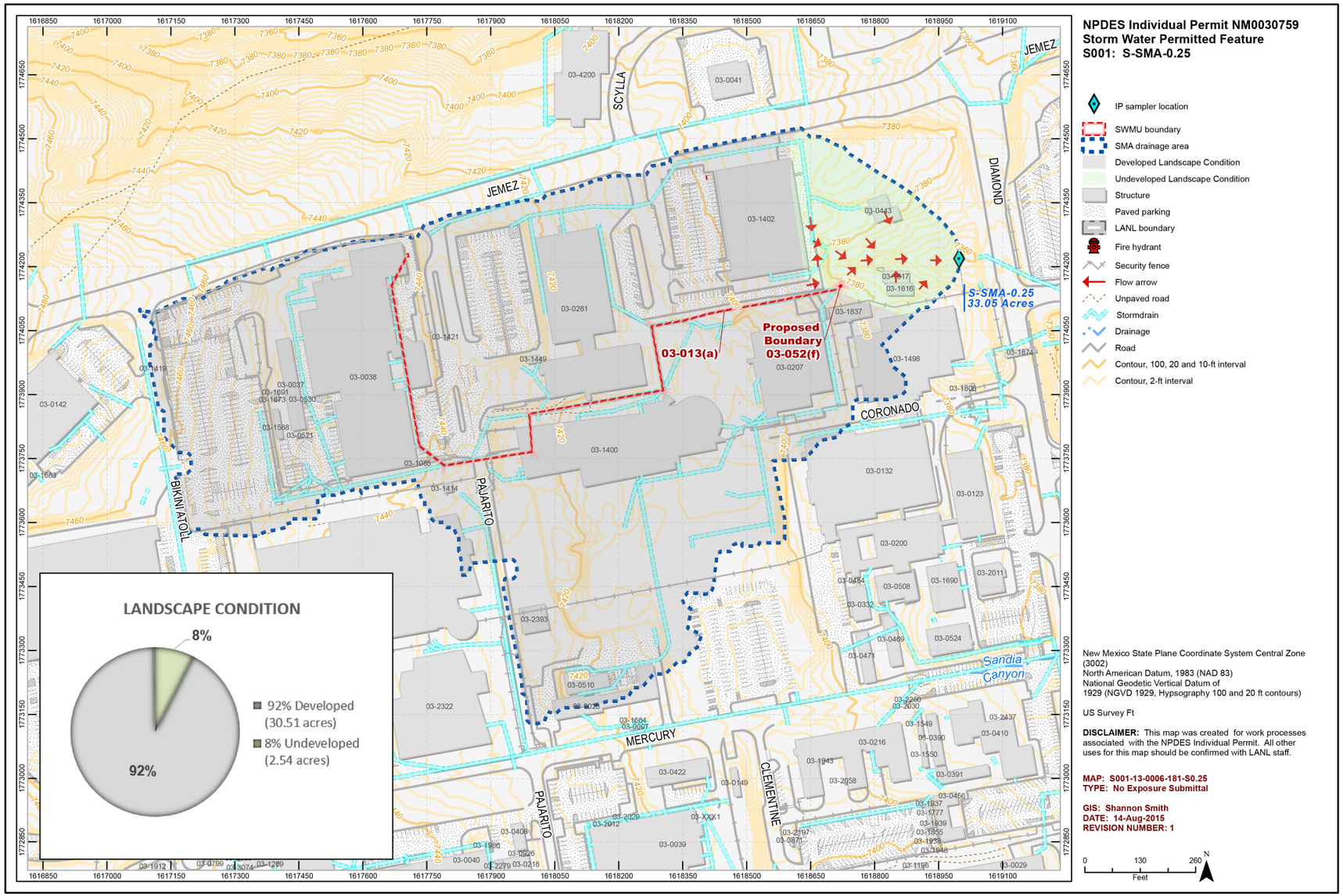


Figure 1 Location of Site 03-013(a) within S-SMA-0.25

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LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: S001 **S-SMA-0.25** **Site: 03-013(a)**

Storm Water Monitoring under the Permit

SWMU 03-013(a) is monitored within S-SMA-0.25. Following the installation of baseline control measures, 2 baseline storm water samples were collected: 1 on July 28, 2011, and 1 on August 15, 2011. These baseline confirmation samples showed exceedances of TALs for copper, zinc, PCBs, and gross-alpha radioactivity. Following the installation of enhanced controls at S-SMA-0.25 in 2014, a corrective action storm water monitoring sample collected on July 15, 2014, exceeded TALs for copper, zinc, and PCBs. A second corrective action storm water monitoring sample collected on August 22, 2014, exceeded TALs for copper and PCBs. Analytical results from these samples yielded 11 TAL exceedances:

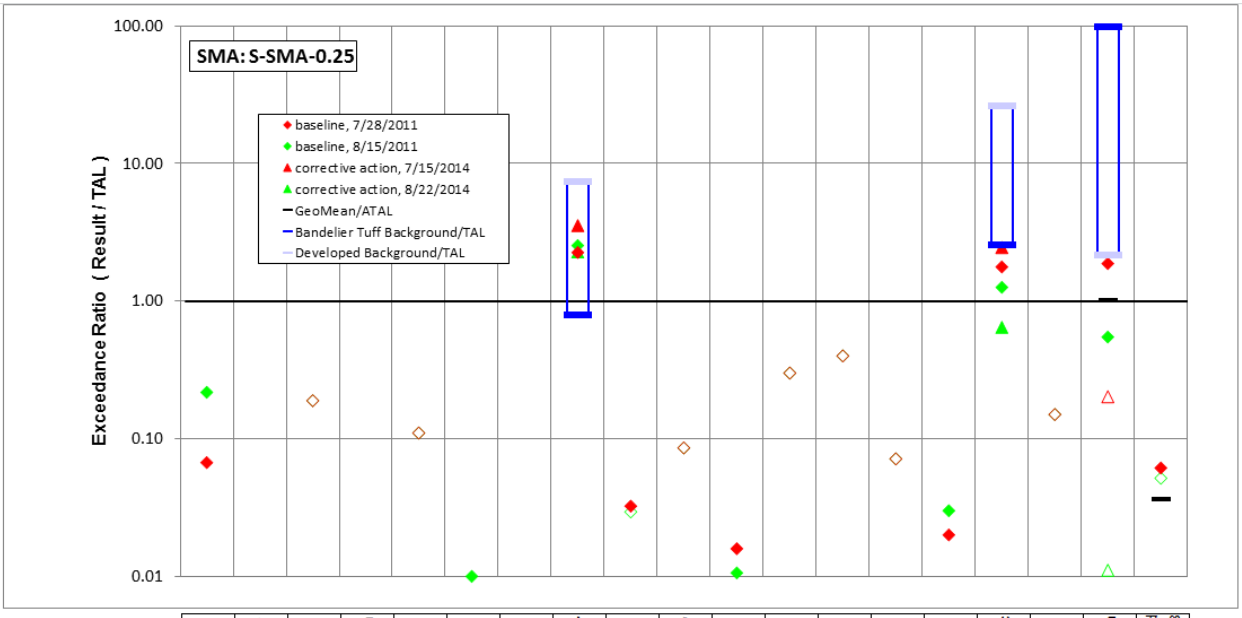
Table 1
TAL Exceedances in Storm Water Samples Collected at Site 03-013(a)

Analyte	Result	TAL (MTAL or ATAL)	Exceedance Ratio	Date	Monitoring Phase
Copper	9.7 µg/L	4.3 µg/L	2.3	7/28/2011	Baseline
Copper	10.9 µg/L	4.3 µg/L	2.5	8/15/2011	Baseline
Copper	15.2 µg/L	4.3 µg/L	3.5	7/15/2014	Corrective Action
Copper	9.79 µg/L	4.3 µg/L	2.3	8/22/2014	Corrective Action
Zinc	74.4 µg/L	42 µg/L	1.8	7/28/2011	Baseline
Zinc	52.9 µg/L	42 µg/L	1.3	8/15/2011	Baseline
Zinc	103 µg/L	42 µg/L	2.5	7/15/2014	Corrective Action
PCBs	50.2 ng/L	0.64 ng/L	78.4	8/15/2011	Baseline
PCBs	42 ng/L	0.64 ng/L	65	7/15/2014	Corrective Action
PCBs	4 ng/L	0.64 ng/L	6.2	8/22/2014	Corrective Action
Gross-alpha radioactivity	28.1 pCi/L	15 pCi/L	1.9	7/28/2011	Baseline

Notes: MTAL = Maximum TAL; ATAL = average TAL; Exceedance Ratio = Result/TAL.

TAL exceedances for monitoring location S-SMA-0.25 were evaluated against the appropriate storm water background values, which consist of “Bandelier Tuff background” for undisturbed SMAs or “developed background” for SMAs in urban settings. Background values are determined using the recommendations provided in ProUCL 4.1, an EPA developed statistical software package (available at 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 (LANL 2015). 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 1 and 2. UTLs developed for urban settings were derived from runoff from

developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 2 and 3.



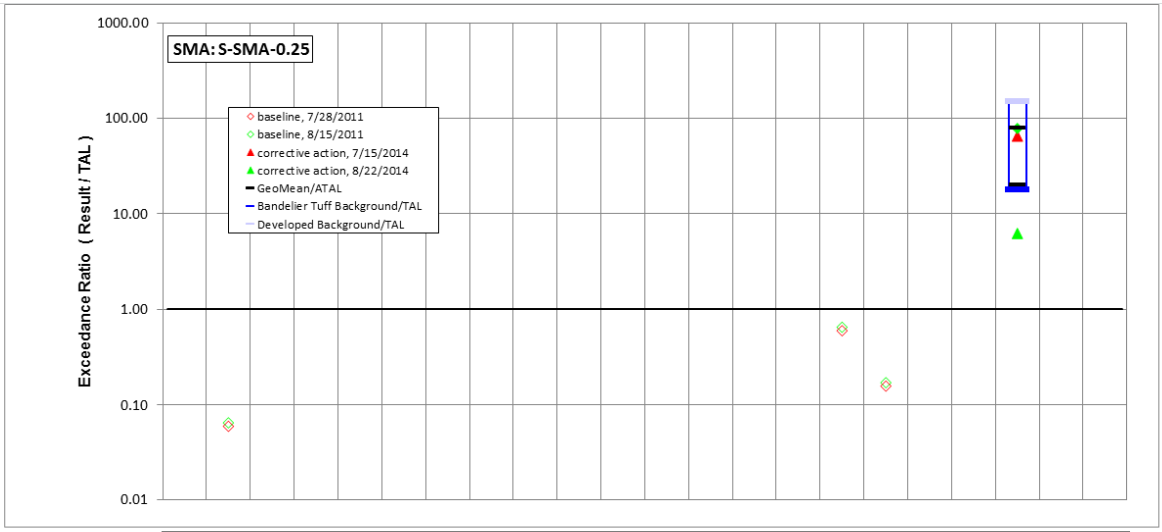
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	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
8/22/2014 result	-	-	-	-	-	-	-	**9.79**	-	-	-	-	-	-	-	27.1	-	*0.166*	-
result / TAL	-	-	-	-	-	-	-	**2.3**	-	-	-	-	-	-	-	0.65	-	*0.011*	-
7/15/2014 result	-	-	-	-	-	-	-	**15.2**	-	-	-	-	-	-	-	**103**	-	*3.03*	-
result / TAL	-	-	-	-	-	-	-	**3.5**	-	-	-	-	-	-	-	**2.5**	-	*0.2*	-
8/15/2011 result	163	*1*	*1.7*	26.2	*0.11*	2.1	1.2	**10.9**	*0.5*	*0.066*	1.8	*1.5*	*0.2*	*0.45*	3	**52.9**	*0.002*	8.22	*1.55*
result / TAL	0.22	*0.002*	*0.19*	0.0052	*0.11*	0.01	0.0012	**2.5**	*0.029*	*0.086*	0.011	*0.3*	*0.4*	*0.071*	0.03	**1.3**	*0.15*	0.55	*0.052*
7/28/2011 result	50.3	*1*	*1.7*	34.5	*0.11*	*2*	*1*	**9.7**	0.55	*0.066*	2.7	*1.5*	*0.2*	*0.45*	2	**74.4**	*0.002*	**28.1**	1.84
result / TAL	0.067	*0.002*	*0.19*	0.0069	*0.11*	*0.01*	*0.001*	**2.3**	0.032	*0.086*	0.016	*0.3*	*0.4*	*0.071*	0.02	**1.8**	*0.15*	**1.9**	0.061

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 S-SMA-0.25

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: S001 **S-SMA-0.25** **Site: 03-013(a)**



	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	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
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
8/22/2014 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.004**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6.2**	-	-
7/15/2014 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.042**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**65**	-	-
8/15/2011 result	-	*0.326*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.26*	*3.26*	-	-	**0.05**	-	-
result / TAL	-	*0.065*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.65*	*0.17*	-	-	**78**	-	-
7/28/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	-	-	-	-	-
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	-	-	-	-	-

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 S-SMA-0.25

S-SMA-0.25 is a 33.05-acre watershed that consists of 92% developed areas and 8% undeveloped areas. Developed areas consist of 30.5 acres of pavement and undeveloped areas consist of 2.54 acres of ponderosa woodland. Monitoring location S-SMA-0.25 receives runoff primarily from developed areas and from flow over undeveloped areas, including landscapes containing sediment derived from Bandelier Tuff. The concentrations of copper, zinc, PCBs, and gross-alpha radioactivity detected in the SMA samples are less than the developed area background UTLs, providing further evidence that industrial materials containing these constituents are not exposed to storm water at this Site (LANL 2015).

The results of the SMA monitoring samples show that copper, zinc, PCBs, and gross-alpha radioactivity are within the range of background. That is, the concentrations of these constituents are within the range expected if there were no contribution from Site-related industrial materials.

Consent Order soil sampling for Site 03-013(a) is delayed until the future decontamination and decommissioning of building 03-1400 and structure 03-1402 (LANL 2010).

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: S001 **S-SMA-0.25** **Site: 03-013(a)**

References

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. 1 of IV (TA-00 through TA-09), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), March 2008. "Historical Investigation Report for Upper Sandia Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-08-1851, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), October 2010. "Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-6410, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1, 2015. "2014 Update to the Site Discharge Pollution Prevention Plan, Revision 1, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2015, LA-UR-15-22148, Sandia/Mortandad Watershed, Receiving Waters: Canada del Buey, Mortandad Canyon, Sandia Canyon, and Ten Site Canyon, Volume 2," Los Alamos National Laboratory, Los Alamos, New Mexico.

Attachment 1

As-Built Conditions for Site 03-013(a)
Located within S-SMA-0.25

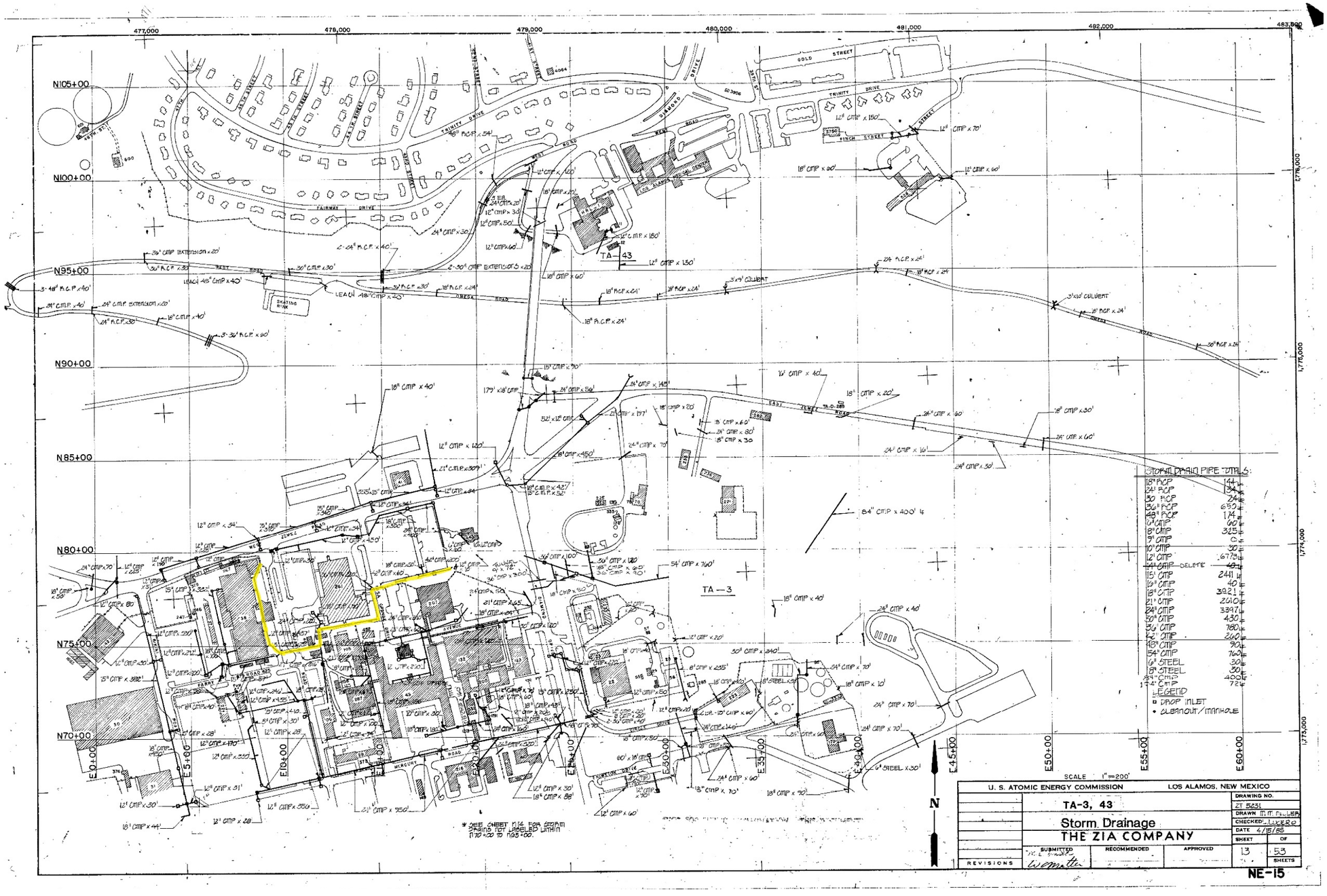


Figure 1 Engineering drawing ZT-5231 showing original Site 03-013(a) boundaries (original configuration of drainline highlighted)

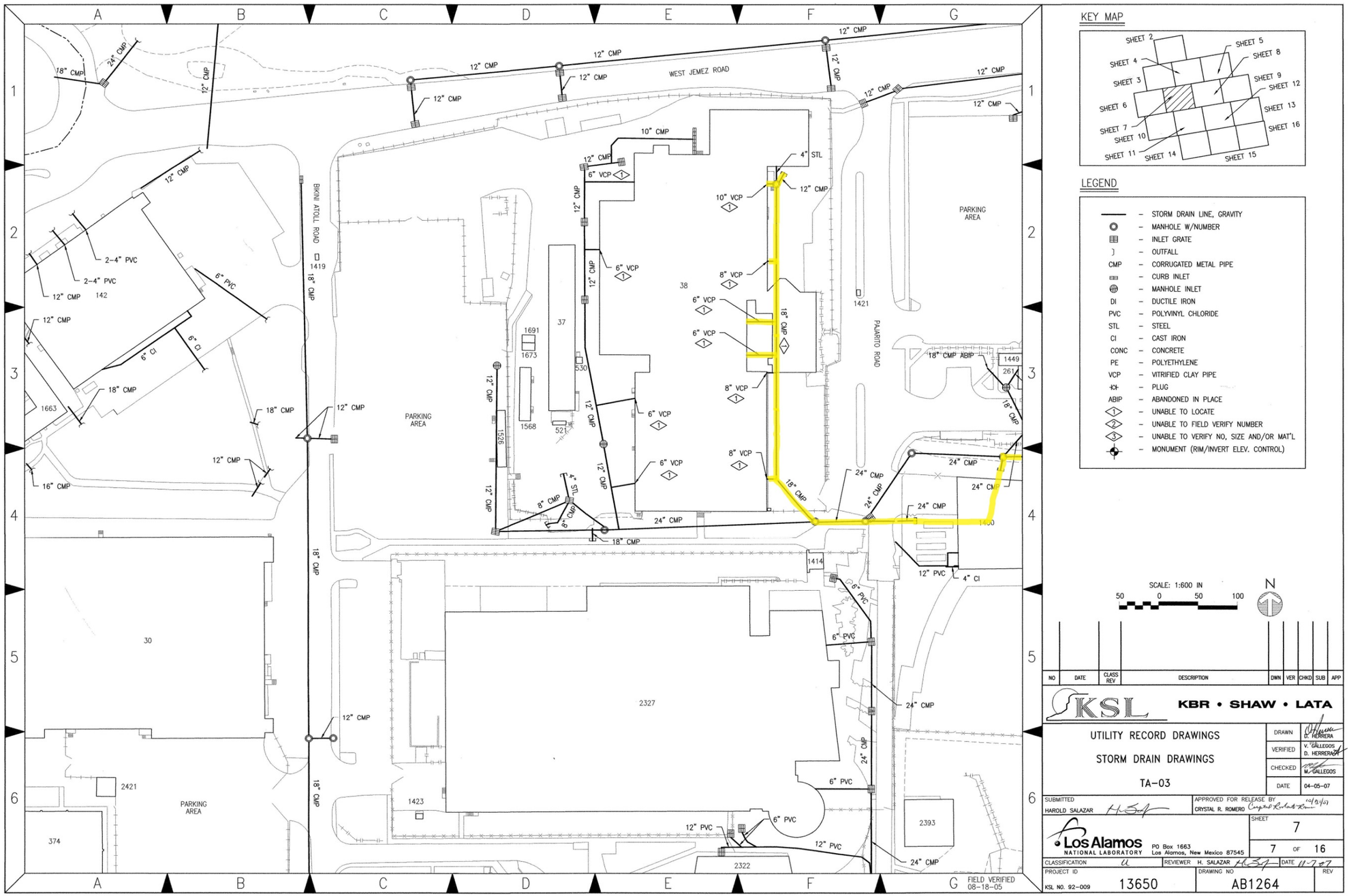


Figure 2 Engineering drawing AB1264, Sheet 7, showing the current Site 03-013(a) configuration (original configuration of drainline highlighted)

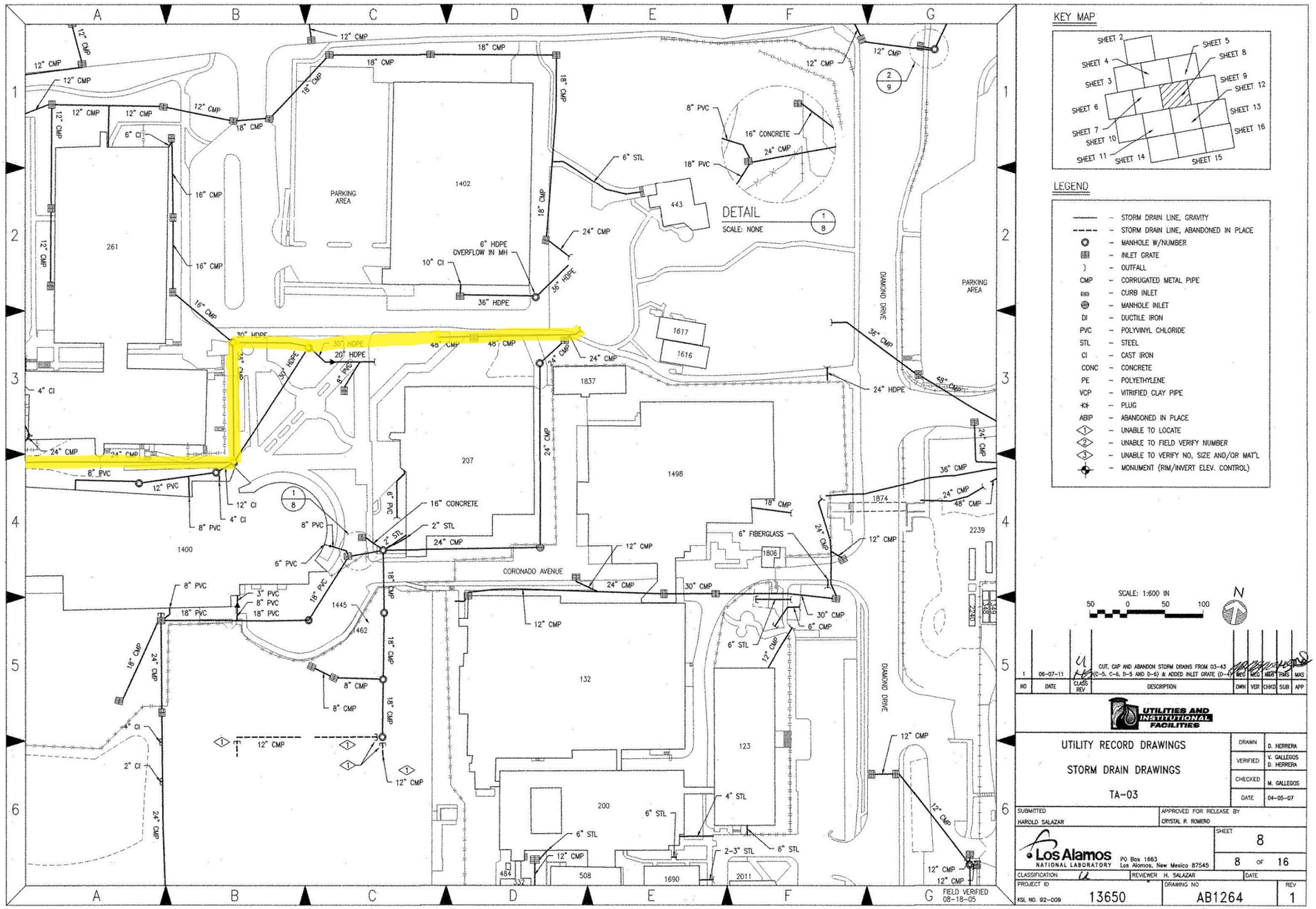


Figure 3 Engineering drawing AB1264, Sheet 8, showing the current Site 03-013(a) configuration (original configuration of drainline highlighted) (continued)

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2

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM
WPF #: 37347

01-Apr-2004 11:01 AM (Version: 1.1) p.1

Generator :	HOTH, EDWARD JAMES	MS :	K718	PH :	6656002	Z#:	095092
WMC :	TRUJILLO, LEONARD	MS :	J979	PH :	6723656	Z#:	100587
Contact :							
RCRA Rev :	CORIZ, MICHELLE	MS :	J595	PH :	54000	Z#:	120950
Status :	ACTIVE	Activation Date :	31-Mar-2004		Expiration Date:		31-Mar-2005
Group :	FWO-UI	TA :	03	Bldg :	000000	Room:	0

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same and the generator remains the same. Should your waste or generator change, please submit a new WPF to FWO-SWO Customer Service, and attach a copy of the WPF which is being replaced.

Waste Accumu : **None of the Above Site ID#**
Method of Char : **Analysis/Documents Attached**
Chemical/Physical Analysis **Number: 6023-6030**
Acceptable Knowledge Documentation **Number: RFI REPO**

Waste Type : **Process Waste/Spent Chemical/Other**
Waste Classes: RCA Waste - **Not RCA Waste**
RAD Waste - **Non-rad**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Construction/Upgrades**

Waste Matrix : **Solid**

Matrix Type : **Homogeneous**

Waste/Proc Desc : NO WCSF NEEDED; THIS IS NOT AN ER-PROGRAM RRES-RS PROJECT. CORRUGATED METAL PIPE STORM DRAIN LINE REMOVED FROM CONSTRUCTION SITE OF NSSB AT TA-3.

Ignitability : **Not ignitable**

Corrosivity : **Non-aqueous**

Reactivity : **Non-reactive**

Boiling Point : **Not applicable**

Toxicity Characteristic Metals :

Contaminant	Method	Limit	Min	Max	Unit
LEAD	**TOTA**	**Y**			**PPM**
MERCURY	**TOTA**	**Y**			**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants :

CAS NO	Constituent	MIN	MAX	UOM
	CORRUGATED METAL	**98**	**100**	**%**
	SOIL	**0**	**2**	**%**

Additional Information: NO HERBICIDES/PESTICIDES USED.

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **NON-RAD**

Page 1 of the waste profile form for CMP storm drain removed from Site 03-013(a)

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM
WPF #: 37347
01-Apr-2004 11:01 AM (Version: 1.0) p. 2

RCRA Category : **NON HAZARDOUS**

Secondary Info : **N/A**

Waste Classification : **SOLID WASTE**

Waste Acceptances :
EPA Hazardous Waste Code : **N/A**

Page 2 of waste profice form for CMP storm drain removed from Site 03-013(a)

Attachment 2

Photographs of Site 03-013(a) within S-SMA-0.25

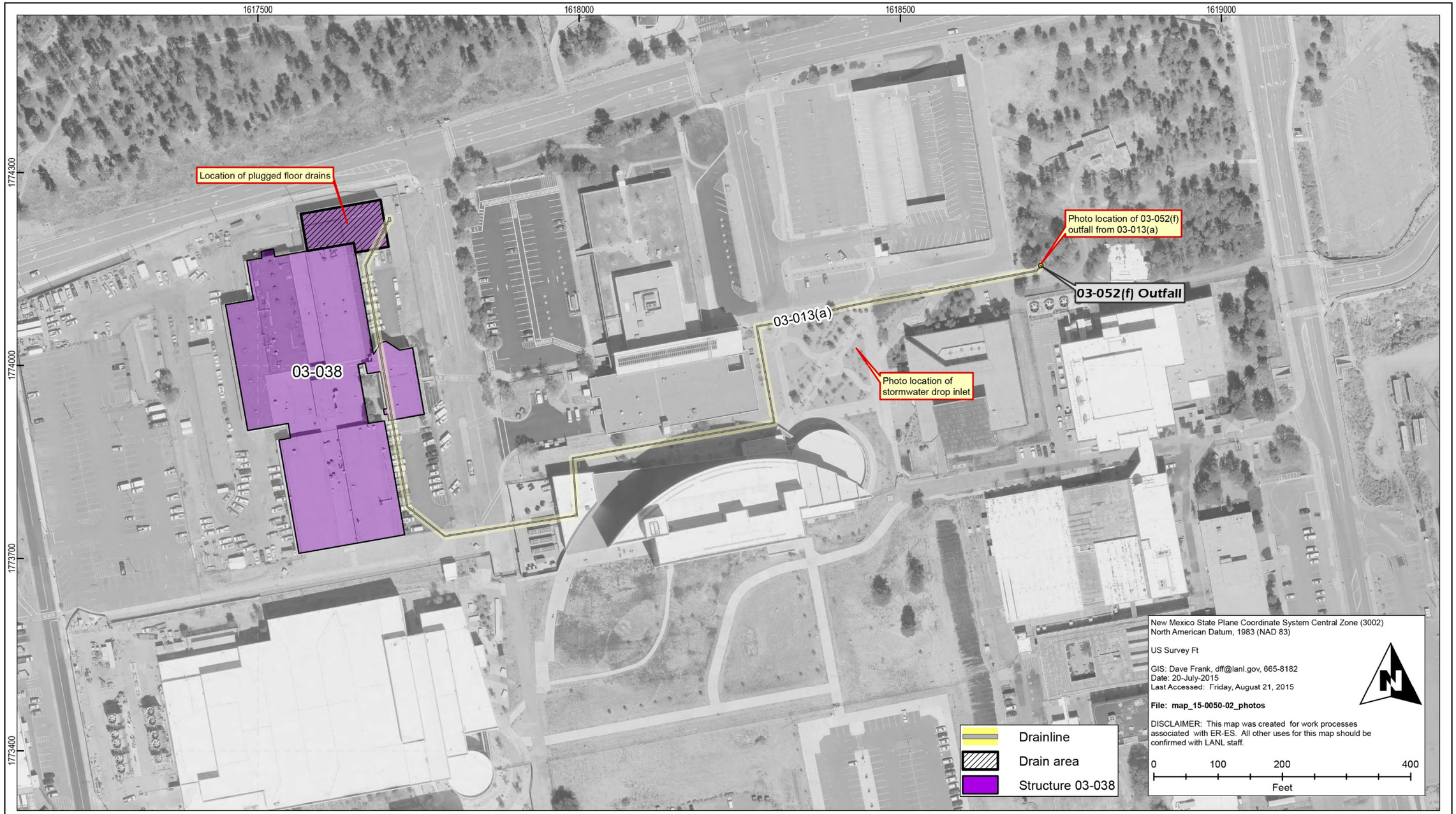


Figure 1 Orthophotograph and locations of photographs





Photographs 1 and 2 Floor drains in the building 03-0038 metal fabrication shop plugged in 1992



Photograph 3 Drop inlet for storm water runoff into the new Site 03-013(a) storm drain west of outfall area



Photograph 4 Site 03-052(f) outfall from Site 03-013(a)

Completion of Corrective Action at Site 16-017(j)-99 in W-SMA-1

September 29, 2015

NPDES PERMIT NO. NM0030759

LA-UR-15-26035

NPDES PERMIT NO. NM0030759 **LA-UR-15-26035**

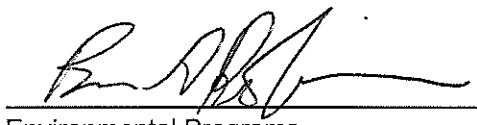
LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

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

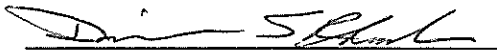
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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."



09/15/2015

Environmental Programs
Environmental Remediation Program
Los Alamos National Laboratory

Date



9-28-2015

Environmental Management
U.S. Department of Energy

Date

NPDES PERMIT NO. NM0030759 **LA-UR-15-26035**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

Introduction

This certification documents the no exposure condition of Site 16-017(j)-99 [referred to as Solid Waste Management Unit (SWMU) 16-017(j)-99 under the New Mexico Environment Department (NMED) Compliance Order on Consent (Consent Order)] for completion of corrective action at site monitoring area (SMA) W-SMA-1 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. This Site was originally designated as part of SWMU 16-017, a group of 24 structures in central Technical Area 16 (TA-16), in the 1990 SWMU Report (LANL 1990) based on the historical management of high explosives (HE). In 1999, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure, all former HE-processing buildings or magazines. Site 16-017(j)-99 is one of these single structures: a former HE magazine (former structure 16-63). The Site no longer exists, and the magazine was decommissioned and demolished in 1998.

Site 16-017(j)-99 is associated with W-SMA-1 and is listed as a Moderate Priority Site in Part I.E.4(a) of the Permit. The requirement for corrective action in Part I.E.1 was triggered by analytical data from storm water samples collected from W-SMA-1 on August 3, 2011, and September 9, 2011, that showed exceedances of the target action levels (TALs) for copper and gross-alpha radioactivity. Following the installation of enhanced controls at W-SMA-1, consisting of earthen berms, rock check dams, and a rock cap in 2013 to control storm water runoff and mitigate sediment migration, a corrective action storm water monitoring sample collected on September 12, 2013, exceeded TALs for aluminum and gross-alpha radioactivity. A corrective action storm water monitoring sample collected on July 19, 2014, exceeded TALs for aluminum and copper (LANL 2015). The W-SMA-1 drainage area (Figure 1) is located in the southwestern portion of Los Alamos National Laboratory (the Laboratory) within TA-16. Site 16-017(j)-99 and Sites 16-026(c2), and 16-026(v) are monitored within the drainage area. However, Sites 16-026(c2) and 16-026(v) are not included in this certification.

The following sections describe the Site, provide documentation of no exposure, and provide the results of storm water monitoring and soil sampling. 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 the appropriate background values to confirm that the results are consistent with no exposure conditions.

Site Description

Three historical industrial activity areas are associated with Permitted Feature (PF) W001, W-SMA-1: Sites 16-017(j)-99, 16-026(v), and 16-026(c2). SWMU 16-017(j)-99 is a former HE magazine (structure 16-63) at TA-16. The magazine was a 24 ft × 26 ft × 9 ft wood-framed structure on a concrete slab surrounded by an earthen berm on three sides and the top. The magazine was constructed in 1945 and removed in 1998 (LANL 1998). Site 16-017(j)-99, located outside the S-Site HE-controlled area, is currently a gravel-covered parking area.

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

Demonstration of No Exposure Conditions

A detailed review of historical information and current site conditions has determined that no release of potential industrial waste occurred from the former Site 16-017(j)-99 storage magazine. The Site 16-017(j)-99 magazine (former structure 16-63) was decommissioned and removed in 1998 (LANL 1998). Decommissioning activities included field screening of structure 16-63 and removal and disposal of all building components and earthen barricades, including the concrete foundation. The excavation from the concrete foundation was backfilled; the site was graded for natural drainage and reseeded using native grasses (LANL 1998). In addition to removing all industrial materials from the Site when structure 16-63 was removed, enhanced controls consisting of geotextile and 8 in. of base course were placed directly over the Site (LANL 2015). These enhanced controls were installed as a compliance measure activity and did not further the existing no exposure condition of the Site resulting from 1998 excavation and removal activities. Therefore, the total removal of structure 16-63 and surrounding soils in 1998 satisfies the requirements contained in Section E.2(c) of the Permit for control measures that totally eliminate exposure of pollutants to storm water.

Attachment 1, Figure 1 shows a side-by-side aerial photograph depicting the original configuration of the Site 16-017(j)-99 HE storage magazine in 1991 before demolition (the image on the left), and the current condition (a 2014 aerial photograph) of former structure 16-63 at TA-16 following demolition (the image on the right). In addition, Attachment 1 contains site photographs of the Site before and after demolition. Attachment 2 presents 2015 photographs showing the current conditions at Site 16-017(j)-99.

Based on the historical activities and current conditions described above, significant industrial materials historically associated with Site 16-017(j)-99 located within the W-SMA-1 drainage area are not exposed to storm water.

Storm Water Monitoring under the Permit

SWMU 16-017(j)-99 is monitored within W-SMA-1. Following the installation of baseline control measures, baseline storm water samples collected on August 3, 2011, and September 9, 2011, showed TAL exceedances for aluminum and gross-alpha radioactivity. Analytical results from these samples yielded three TAL exceedances:

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LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

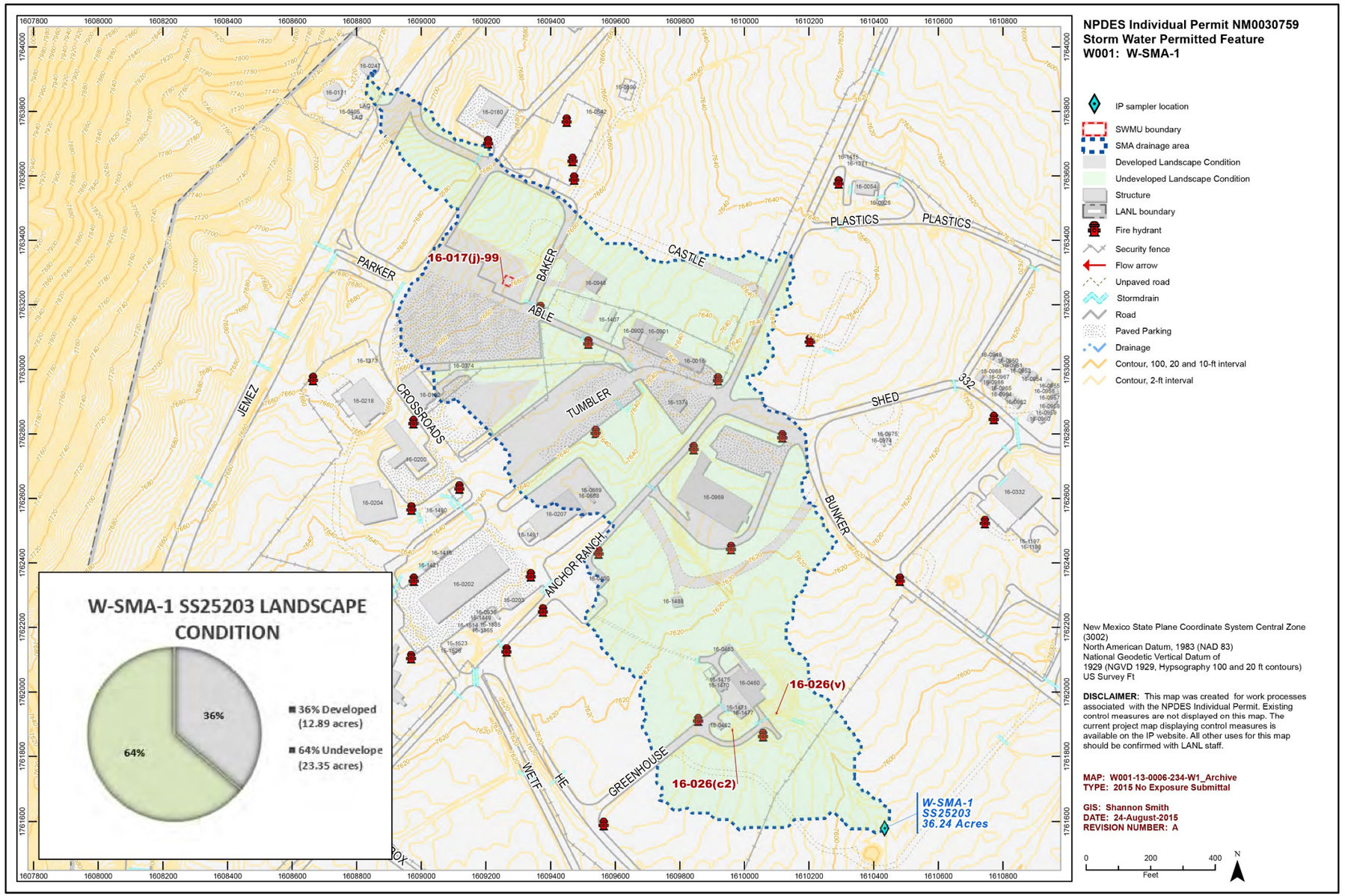


Figure 1 Location of Site 16-017(j)-99 within W-SMA-1

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LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

Table 1
TAL Exceedances in Storm Water Samples Collected at Site 16-017(j)-99

Analyte	Result	TAL (MTAL or ATAL)	Exceedance Ratio	Date	Monitoring Phase
Aluminum	918 µg/L	750 µg/L	1.1	8/3/2011	Baseline
Aluminum	1410 µg/L	750 µg/L	1.9	9/9/2011	Baseline
Gross-alpha radioactivity	50.7 pCi/L	15 pCi/L	3.4	8/3/2011	Baseline

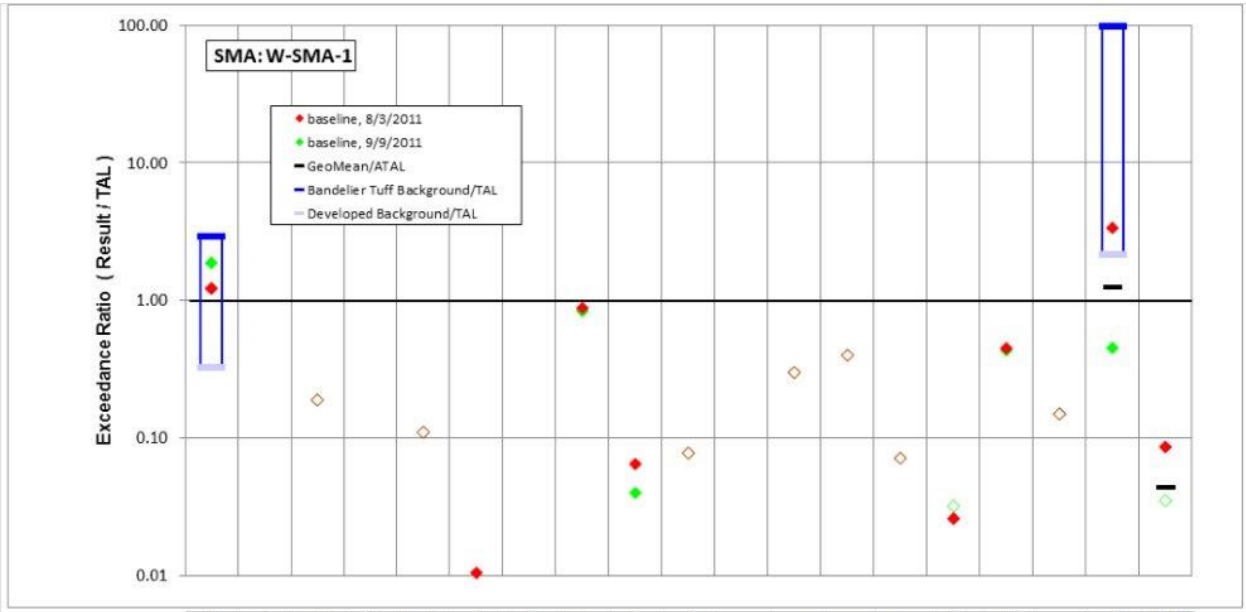
Notes: MTAL = Maximum TAL; ATAL = average TAL; exceedance ratio = result/TAL.

TAL exceedances for monitoring location W-SMA-1 were evaluated against the appropriate storm water background values, which consist of “Bandelier Tuff background” for undisturbed SMAs or “developed background” for SMAs in urban settings. Background values are expressed determined using the recommendations provided in ProUCL 4.1, an EPA developed statistical software package (available at 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 Figure 1. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 2.

W-SMA-1 is a 5.91-acre watershed that consists of 22% developed areas and 78% undeveloped areas. Developed areas consist of 1.27 acres of pavement and buildings. Undeveloped areas consist of 3.22 acres of ponderosa woodland and 1.41 acres of sparse grassland. The SMA receives runoff from urban areas and from flow over undeveloped areas, including landscapes containing sediment derived from Bandelier Tuff. The concentrations of aluminum detected in the SMA samples were above the background value for runoff from urban areas and below the background value for runoff from undeveloped areas. The concentrations of copper detected in the SMA samples were slightly above the background value for runoff from undeveloped areas and below the background value for runoff from urban areas. The gross-alpha radioactivity in the SMA samples was below the background value for undeveloped areas. The gross-alpha radioactivity in one of the two SMA samples was above the background value for runoff urban areas (LANL 2015).

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	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	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	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
9/9/2011 result	**1410**	*1*	*1.7*	*15*	*0.11*	*2*	3.7	3.6	0.68	*0.06*	1.6	*1.5*	*0.2*	*0.45*	*3.2*	18.2	*0.002*	6.78	*1.05*
result / TAL	**1.9**	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0037	0.84	0.04	*0.078*	0.0094	*0.3*	*0.4*	*0.071*	*0.032*	0.43	*0.15*	0.45	*0.035*
8/3/2011 result	**918**	*1*	*1.7*	*15*	*0.11*	2.2	2.4	3.8	1.1	*0.06*	1.6	*1.5*	*0.2*	*0.45*	2.6	18.9	*0.002*	**50.7**	2.59
result / TAL	**1.2**	*0.002*	*0.19*	*0.003*	*0.11*	0.01	0.0024	0.88	0.065	*0.078*	0.0094	*0.3*	*0.4*	*0.071*	0.026	0.45	*0.15*	**3.4**	0.086

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 2 Inorganic analytical results summary plot for W-SMA-1

The results of the SMA monitoring samples show that aluminum and gross-alpha radioactivity were within the range of background. That is, the concentrations of these constituents are within the range expected if there were no contribution from Site-related industrial materials.

Aluminum, copper, and alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Consent Order investigations have not been performed at SWMU 16-017(j)-99 but will be conducted as part of the investigation of Upper Water Canyon Aggregate Area (LANL 2011). No decision-level data are available for this Site (LANL 2011).

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PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

References

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LANL (Los Alamos National Laboratory), September 1998. "Decommissioning Completion Report for High-Explosive Facilities at Technical Area 16 (Buildings 27, 10, 13, and 63)," RFI Work Plan for Operable Unit 1082, Addendum 1," Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), January 2011. "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-0135, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1, 2015. "2014 Update to the Site Discharge Pollution Prevention Plan, Revision 1, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2015, LA-UR-15-22150, Water/Cañon de Valle Watershed, Receiving Waters: Cañon de Valle, Potrillo Canyon, Water Canyon, and Fence Canyon Volume 4," Los Alamos National Laboratory, Los Alamos, New Mexico.

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PF: W001 **W-SMA-1** **Site: 16-017(j)-99**

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Attachment 1

As-Built Conditions for Site 16-017(j)-99
Located within W-SMA-1

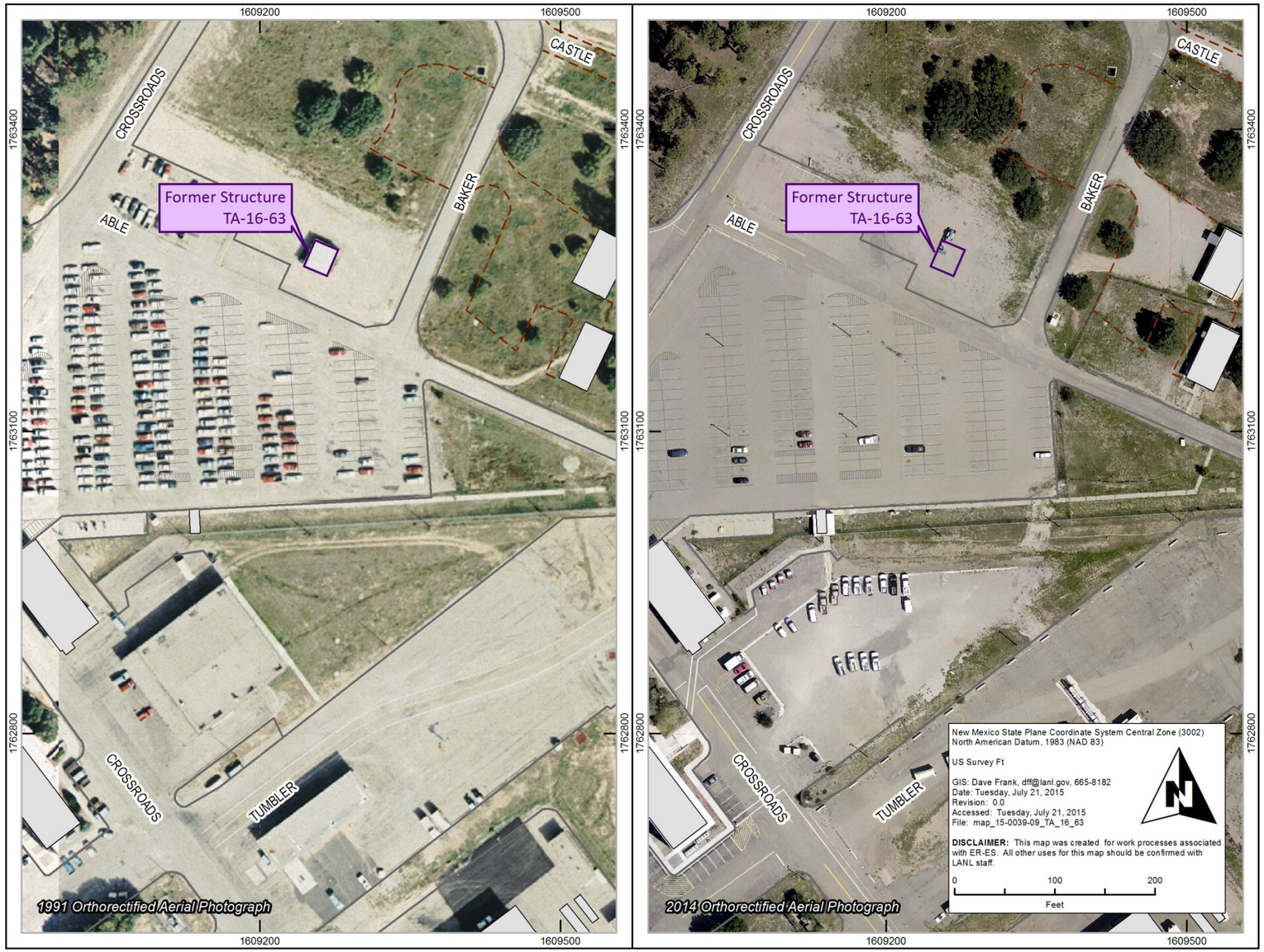


Figure 1 **Aerial photogrpahs deplicting the original configuration (left photograph) of site 16-017 (j)-99 and the current condition (right photograph)**

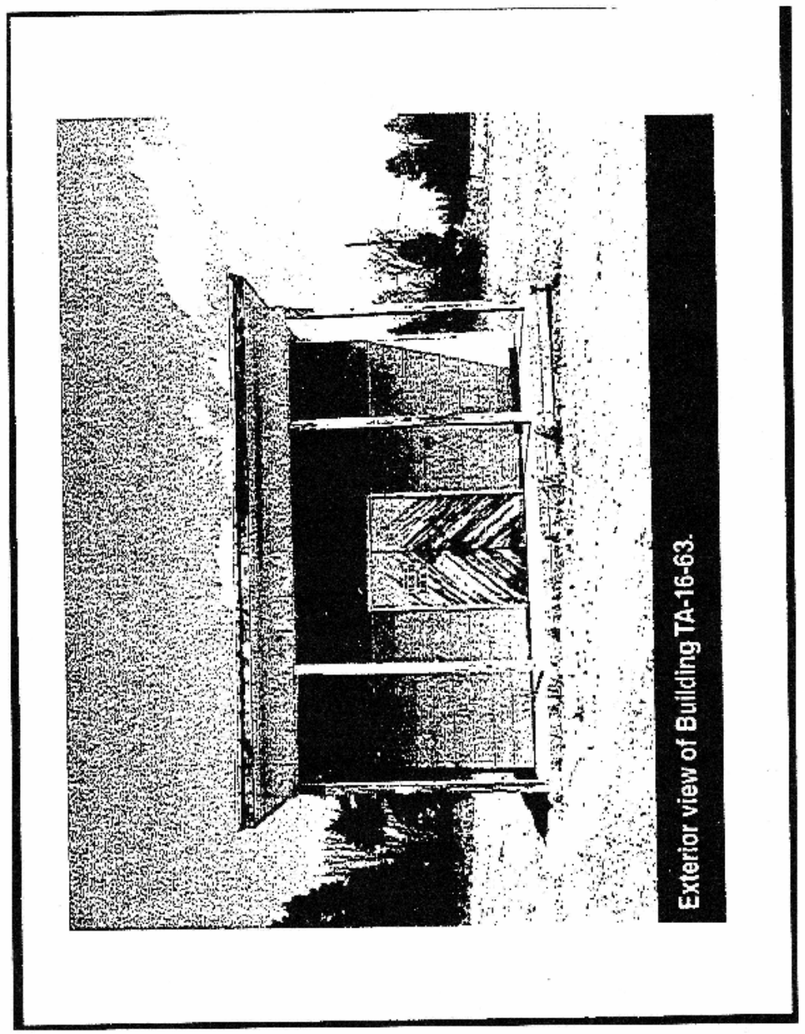


Figure 2 Copy of 1998 photograph of Site 16-017(j)-99 (former structure 16-63) before demolition restoration

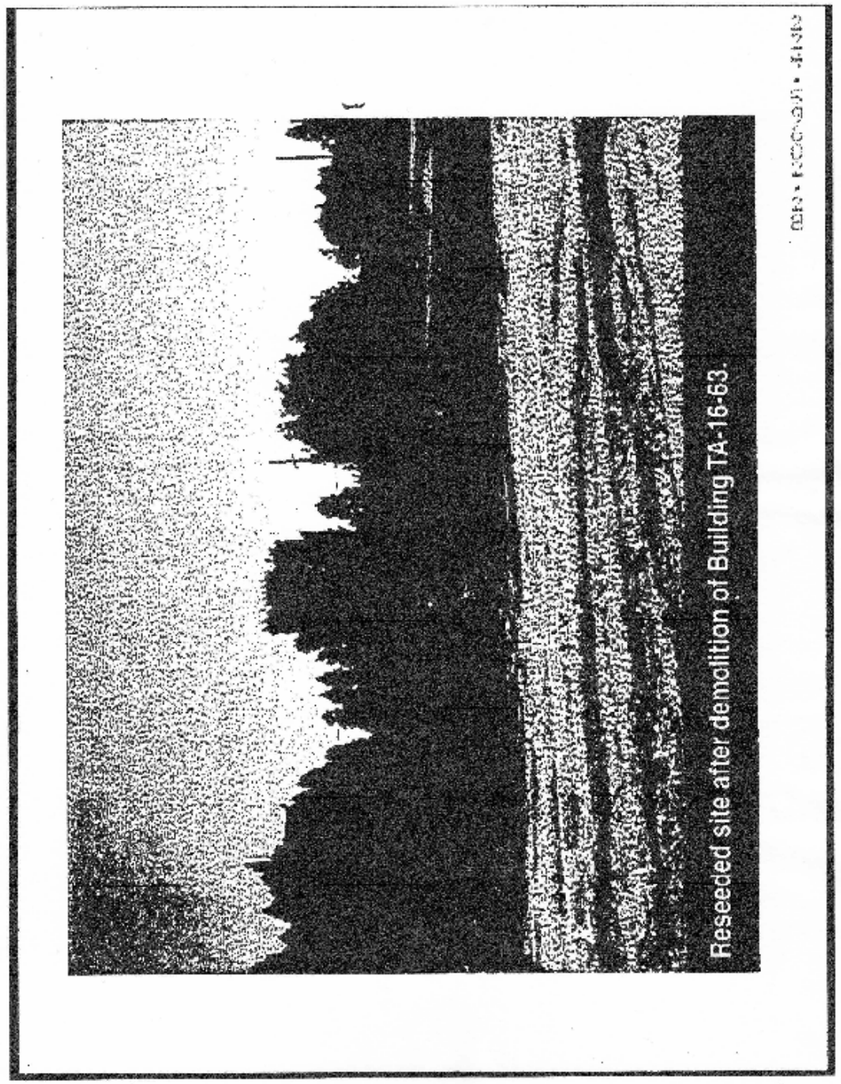


Figure 3 Copy of 1998 photograph of Site 16-017(j)-99 (former structure 16-63) after demolition and site restoration

Attachment 2

Photographs of Site 16-017(j)-99



Photograph 1 Current conditions of Site 16-017(j)-99



Photograph 2 Current view of Site 16-017(j)-99 looking north