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Title: 2012 Update to the SDPPP, Rev. 1 Los Alamos/Pueblo Watershed, Vol. 1

Author(s): Veenis, Steven J.

Intended for: EPA  
Report  
Environmental Programs

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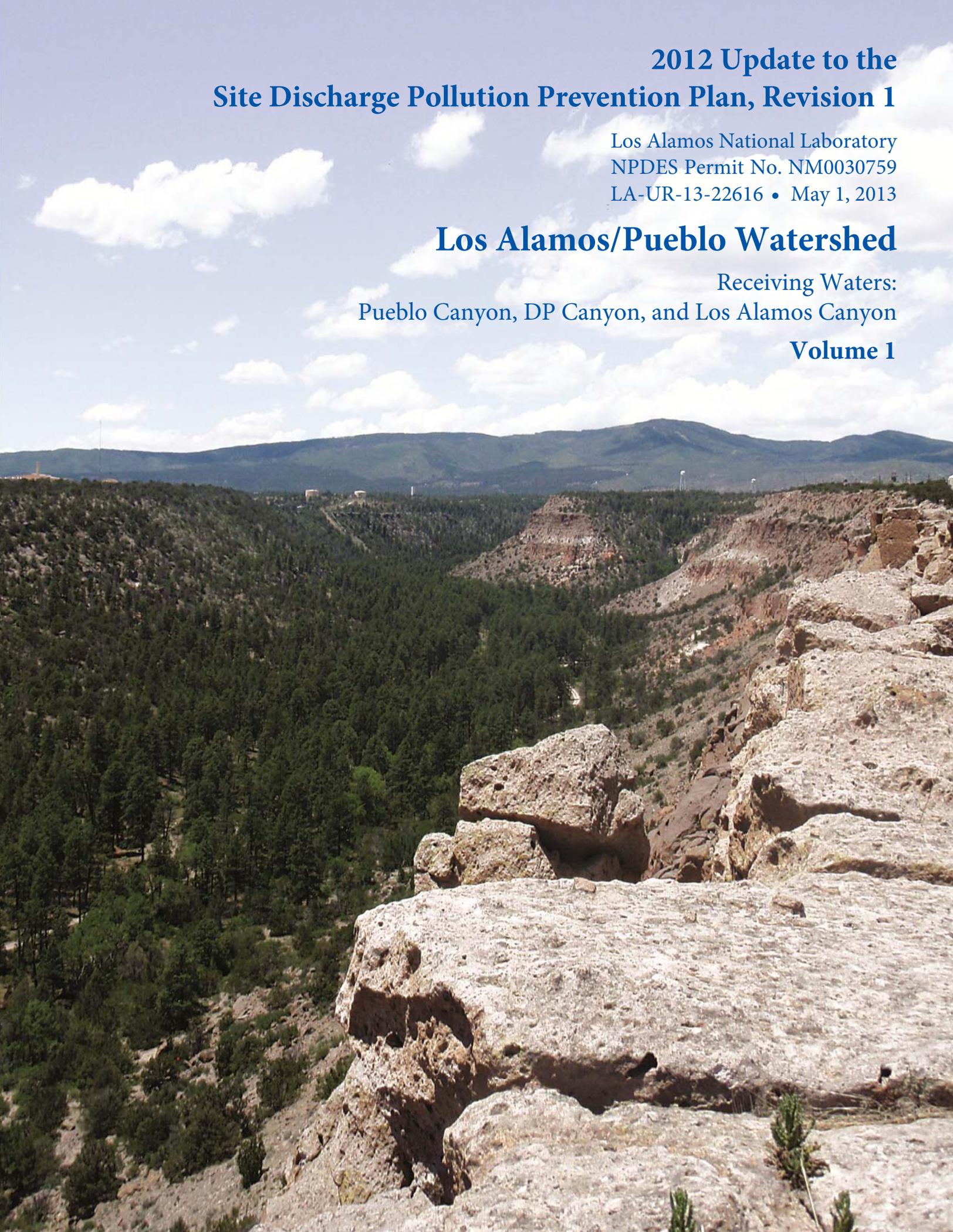
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# 2012 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory  
NPDES Permit No. NM0030759  
LA-UR-13-22616 • May 1, 2013

## Los Alamos/Pueblo Watershed

Receiving Waters:  
Pueblo Canyon, DP Canyon, and Los Alamos Canyon

**Volume 1**

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## 1.0 R-SMA-0.5: AOC C-00-020

### 1.1 Site Descriptions

One historical industrial activity area is associated with R001, R-SMA-0.5: Site C-00-020.

Area of Concern (AOC) C-00-020 is a suspected mortar impact area located along the north valley wall of Rendija Canyon on General Services Administration (GSA) and U.S. Forest Service (USFS) land. The 30-acre site also includes a tributary of Rendija Canyon. Most of the site lies within the Santa Fe National Forest, except for a small area on the southeastern edge that is private property. AOC C-00-020 was suspected to be a former mortar-impact area because of a “U.S. Property—No Trespassing” sign and a nearly illegible bilingual sign posted in the area. The signs no longer remain. Extensive archival searches have revealed no documentation regarding the use of this site as a munitions impact area. In addition, no field evidence of operations (e.g., munitions debris [MD], munitions and explosives of concern [MEC], unexploded ordnance [UXO], or impact scars) has ever been found at AOC C-00-020. Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) activities conducted in 1993 included conducting an ordnance sweep followed by a geophysical sweep. No ordnance, MD, MEC, or UXO was located. In addition, no ordnance was found during the 2007 investigation or during the 2009 ordnance survey. The site is located within an area burned by the 2000 Cerro Grande fire. The stream channel that runs through the center of the site has been widened by flooding. Currently, there are burned and live trees on the steep slopes next to the stream. Ordnance surveys at the site resulted in no findings except for scrap metal such as bailing wire. The complete absence of ordnance and explosives waste (OEW) confirmed that the site was never used as an ordnance-impact area. In accordance with the approved investigation work plan, no further investigation was conducted at AOC C-00-020. The New Mexico Environment Department (NMED) concurred with the conclusion that no additional ordnance surveys need to be conducted at this site and issued a corrective action complete without controls for AOC C-00-020 on May 16, 2012. No industrial materials were historically managed at this Site; therefore, no potential contaminants are associated with the Site.

The project map (Figure 1-1) is located at the end of this site monitoring area (SMA) update. Any future map updates will be posted on the National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (hereafter, the IP) website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 1.2 Control Measures

A large channel runs directly through the monitored area. Controls used at this SMA are primarily to stabilize and reduce sediment loading in the storm water discharge from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 1-1).

**Table 1-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
R00101010014	Seed and Mulch - Seed and Wood Mulch			X		B
R00101010015	Seed and Mulch - Seed and Wood Mulch			X		B
R00101010016	Seed and Mulch - Seed and Wood Mulch			X		B
R00102010001	Established Vegetation - Grasses and Shrubs			X		CB
R00102020002	Established Vegetation - Forested/Needle Cast			X		CB
R00103030006	Berms - Log		X		X	CB
R00103060010	Berms - Straw Wattles	X			X	B
R00103060011	Berms - Straw Wattles		X		X	B
R00103060012	Berms - Straw Wattles		X		X	B
R00103060013	Berms - Straw Wattles		X		X	B
R00103060017	Berms - Straw Wattles	X			X	B
R00103060018	Berms - Straw Wattles		X		X	B
R00103060019	Berms - Straw Wattles		X		X	B
R00103060020	Berms - Straw Wattles		X		X	B
R00103060021	Berms - Straw Wattles	X			X	B
R00103060022	Berms - Straw Wattles	X			X	B
R00103060023	Berms - Straw Wattles	X			X	B
R00103060024	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 1.3 Storm Water Monitoring

AOC C-00-020 is monitored within R-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on August 3, 2012 (Figures 1-2 and 1-3). On May 16, 2012, NMED issued a certificate of completion (COC) for AOC C-00-020. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at R-SMA-0.5. No further sampling is required for R-SMA-0.5 for the remainder of the IP.

### 1.4 Inspections and Maintenance

RG-NCOM recorded two storm events at R-SMA-0.5 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 1-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23441	05-09-2012
Storm Rain Event	BMP-26276	08-07-2012
Visual	COMP-27866	10-01-2012
Storm Rain Event	BMP-28601	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 1-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26487	Modified log berm R00103030006 with the installation of additional logs in front of existing berm, and the log berm was extended eastward.	08-23-2012	16 day(s)	Maintenance conducted as soon as practicable.
BMP-26488	Installed new straw wattle R00103060022 directly above existing wattle -0007, which was retired.	08-23-2012	16 day(s)	Maintenance conducted as soon as practicable.
BMP-26489	Installed new straw wattle R00103060023 directly above existing wattle -0008, which was retired.	08-23-2012	16 day(s)	Maintenance conducted as soon as practicable.
BMP-26490	Installed new straw wattle R00103060024 directly above existing wattle -0009, which was retired.	08-23-2012	16 day(s)	Maintenance conducted as soon as practicable.
BMP-26491	Installed new wattles R00103060017-0021 to prevent footpath erosion.	08-23-2012	16 day(s)	Maintenance conducted as soon as practicable.
BMP-26491	Installed seed and mulch R00101010015 and -0016 around areas of new wattles.	08-23-2012	16 day(s)	Maintenance conducted as soon as practicable.

### 1.5 Compliance Status

The Site associated with R-SMA-0.5 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 1-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC C-00-020	Baseline Monitoring	Corrective Action Complete	NMED, May 16, 2012, "Certificates of Completion One Solid Waste Management Unit and One Area of Concern in the Guaje/Barrancas/Rendija Canyons Aggregate Area"

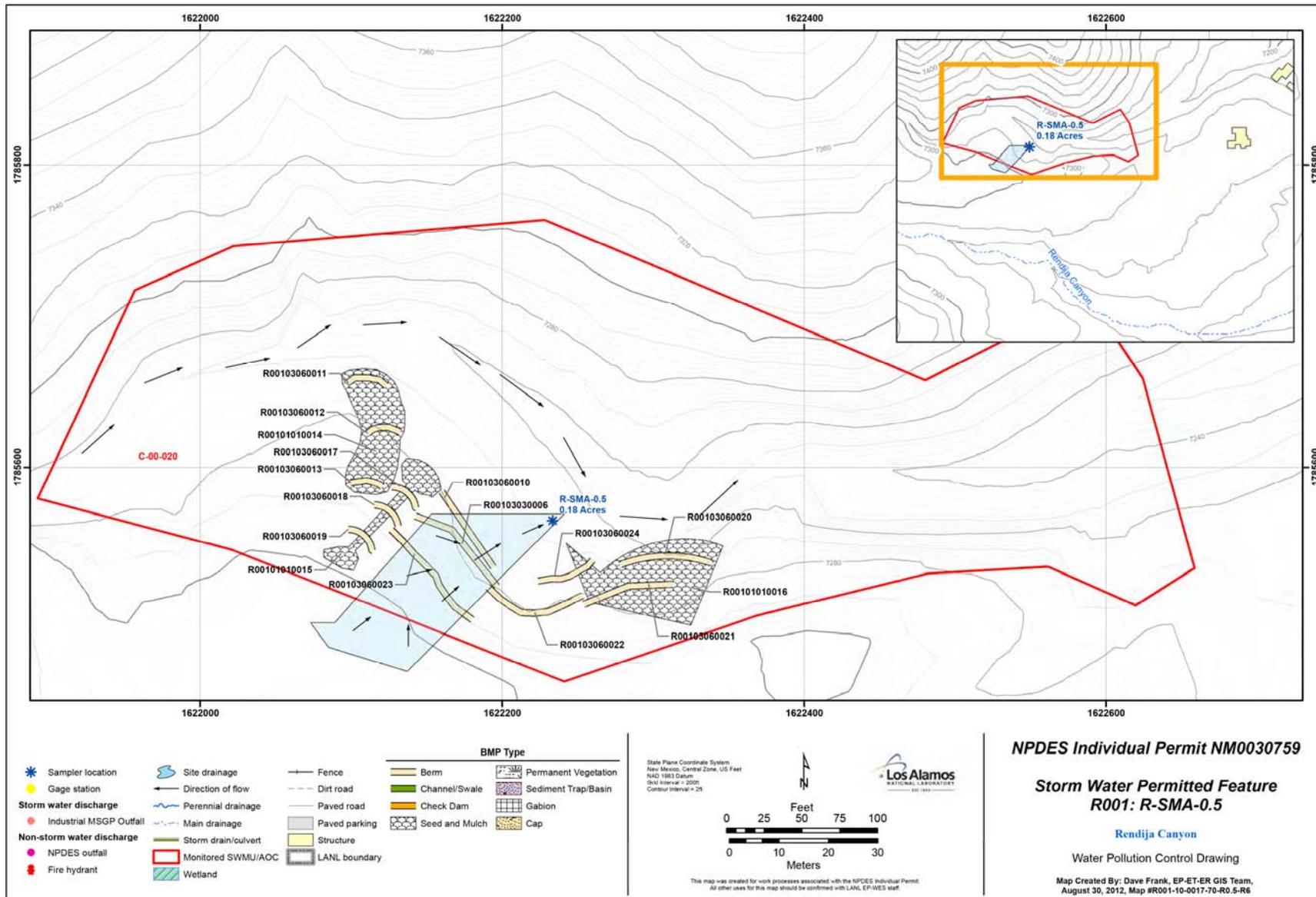
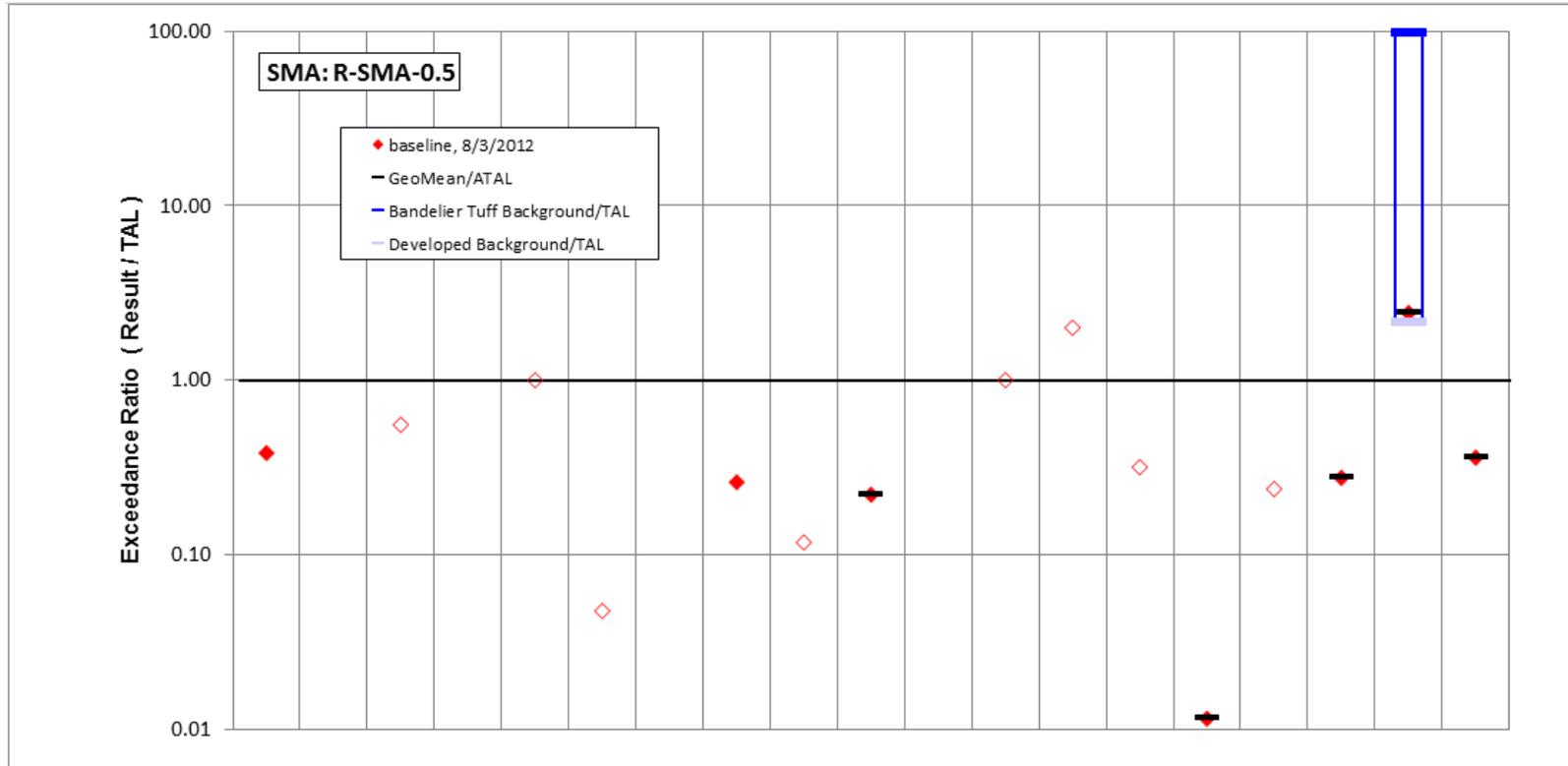


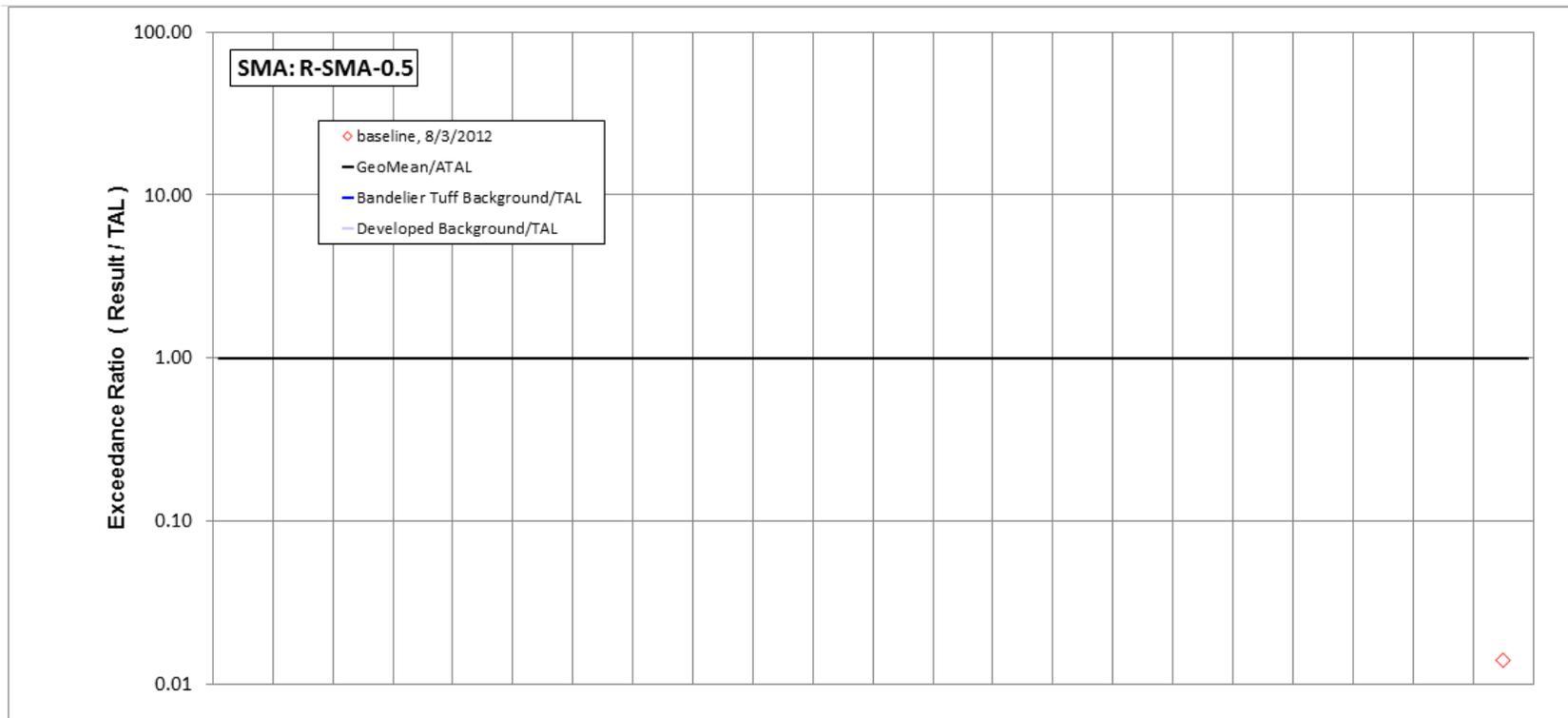
Figure 1-1 R-SMA-0.5 location map



	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
<b>8/3/2012 result</b>	287	3	5	17.4	1	10	2.66	1.12	2	0.17	0.75	5	1	2	1.15	10	0.0028	<b>36.5</b>	10.8
result / TAL	0.38	0.005	0.56	0.0035	1	0.048	0.0027	0.26	0.12	0.22	0.0044	1	2	0.32	0.012	0.24	0.28	2.4	0.36

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

Figure 1-2 Inorganic analytical results summary plot for R-SMA-0.5



	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	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/3/2012 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28	-	-	-	0.28
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-	-	0.014

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

Figure 1-3 Organic analytical results summary plot for R-SMA-0.5

## 2.0 R-SMA-1: AOC C-00-041

### 2.1 Site Descriptions

One historical industrial activity area is associated with R002, R-SMA-1: Site C-00-041.

AOC C-00-041 is the site of a former asphalt batch plant that was located in a 50-ft × 600-ft portion of a side slope and ephemeral stream drainage channel that flows into Rendija Canyon on USFS land. Aerial photographs indicate the asphalt plant operated from the late 1940s to 1958, and site history suggests the plant was removed sometime between 1958 and 1965. In 1969, after the plant had been removed, the land was transferred from the Atomic Energy Commission to USFS to manage as public land.

Currently, the site is undeveloped and is located in a grassy open meadow bisected south to north by an ephemeral stream. A hiking trail, Rendija Trail, is located to the east of AOC C-00-041, and the Guaje Pines Cemetery is located to the west. A voluntary corrective action (VCA) was implemented at

AOC C-00-041 in 1995 to remove asphalt from the stream channel and to break up and remove remaining concrete blocks. Decision-level data for AOC C-00-041 indicate the lateral and vertical extent of all detected chemicals are defined; all detected chemical concentrations were below residential soil screening levels (SSLs). Based on the human health risk-screening assessment results, no potential unacceptable risks or doses exist for the residential receptor and no potential ecological risk was found for any receptor. In November 2011, exposed asphalt and tar fragments were found and removed during the site inspection of



R-SMA-1, Gabions, R00207010001 (photo ID 13421-2)

AOC C-00-041. Asphalt or tar was removed only if it was visible at the surface and involved no excavation or significant soil disturbance. A total of four drums were filled with asphalt and tar and removed from AOC C-00-041. NMED is requiring Los Alamos National Laboratory (the Laboratory) to continue conducting biennial surveys at AOC C-00-041; the next survey report is due to NMED no later than December 31, 2013. The only potential contaminant associated with industrial materials historically managed at this Site is asphalt.

The project map (Figure 2-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 2.2 Control Measures

Run-on has been controlled by the placement of a gabion blanket and gabions below the culvert outlet at the Guaje Pines Cemetery roundabout. The culvert is located on the eastern side of the roundabout associated with the cemetery. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 2-1).

**Table 2-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
R00202010003	Established Vegetation - Grasses and Shrubs			X		CB
R00204060006	Channel/Swale - Riprap	X		X		CB
R00204060007	Channel/Swale - Riprap	X		X		CB
R00206010005	Check Dam - Rock		X		X	CB
R00207010001	Gabions - Gabions	X			X	CB
R00207010002	Gabions - Gabions	X			X	CB
R00207020004	Gabions - Gabion Blanket	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

Enhanced controls will be installed in the second quarter of 2013 part of corrective action.

### 2.3 Storm Water Monitoring

AOC C-00-041 is monitored within R-SMA-1. Following the installation of baseline control measures, baseline storm water samples were collected on July 2, 2011, and August 19, 2011 (Figure 2-2). Analytical results from these samples yielded three target action level (TAL) exceedances:

- Aluminum concentration of 2010 µg/L (maximum TAL [MTAL] is 750 µg/L),
- Zinc concentration of 45.3 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activities of 21.1 and 51.1 pCi/L (average TAL [ATAL] is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Compliance Order on Consent (Consent Order) investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC C-00-041:* The potential contaminant associated with industrial materials historically managed at this Site is asphalt.

- Aluminum—Aluminum was detected at a maximum concentration 1.2 times background value (BV) in Consent Order Samples collected from AOC C-00-041 in 2007.
- Zinc—Zinc was detected at a maximum concentration 1.5 times BV in Consent Order samples collected from AOC C-00-041 in 2007.
- Gross alpha—Samples collected during the 2007 investigation were not analyzed for alpha-emitting radionuclides because these constituents were not identified as chemicals of potential concern.

In summary, aluminum and zinc are not known to be associated with industrial material historically managed at this Site and both were detected only slightly above BVs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum and zinc above MTALs in storm water. Alpha-emitting isotopes are not known to be associated with industrial material historically managed at this

Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as upper tolerance limits (UTLs) using the approved U.S. Environmental Protection Agency (EPA) for calculating BVs. 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 2-2. 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 Figure 2-2.

Monitoring location R-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including zinc and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these two values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. The zinc result from 2011 is less than these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. One of the 2011 gross-alpha results is between these two values; the other is less than both of them.

All the analytical results for these samples are reported in the 2011 Annual Report.

## 2.4 Inspections and Maintenance

RG-NCOM recorded two storm events at R-SMA-1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 2-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22644	04-16-2012
Storm Rain Event	BMP-26277	08-13-2012
Storm Rain Event	BMP-28602	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 2-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22723	Augmented rock check dam R00206010005 with more native rock.	04-24-2012	8 day(s)	Maintenance conducted in timely manner.

**2.5 Compliance Status**

The Site associated with R-SMA-1 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 2-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC C-00-041	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-13-2011

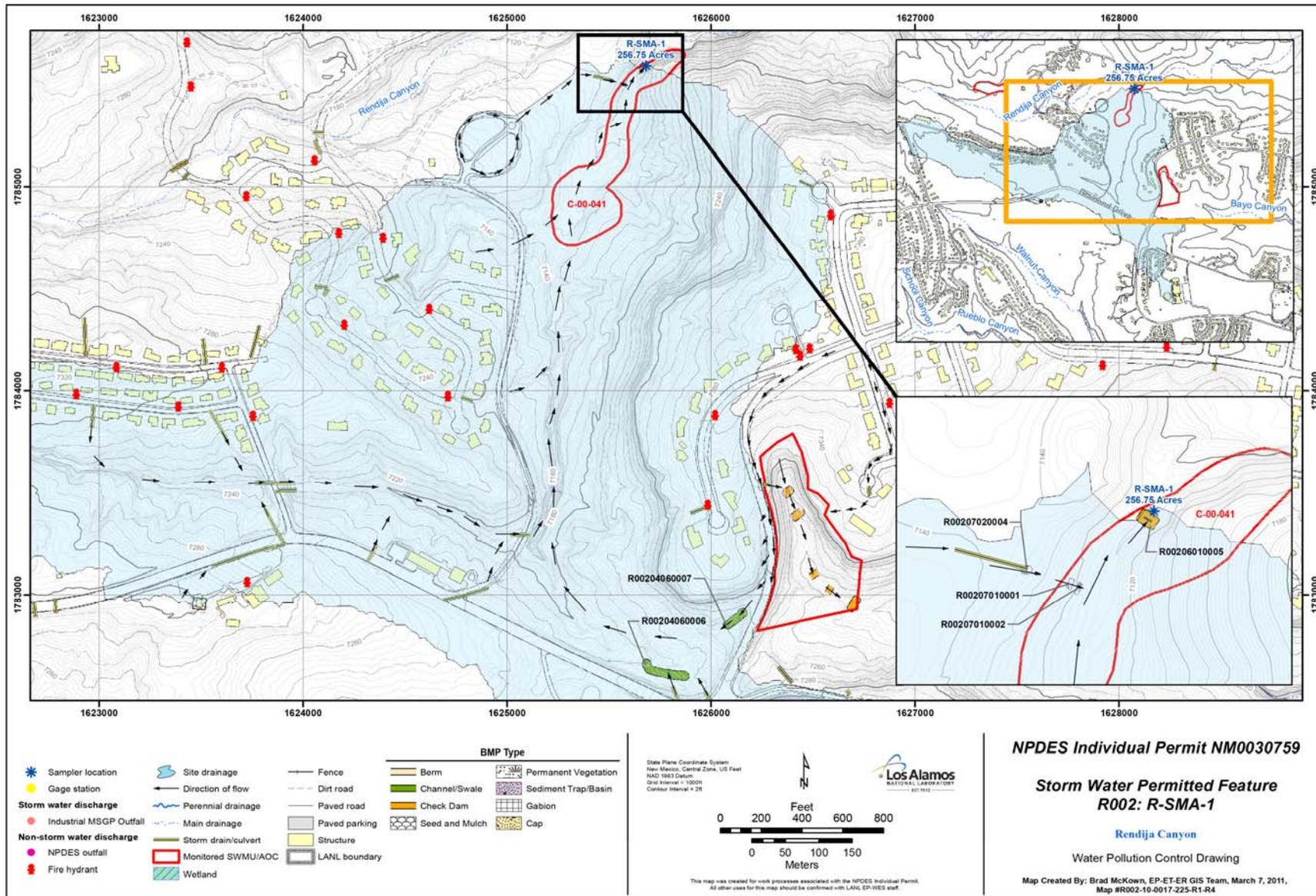
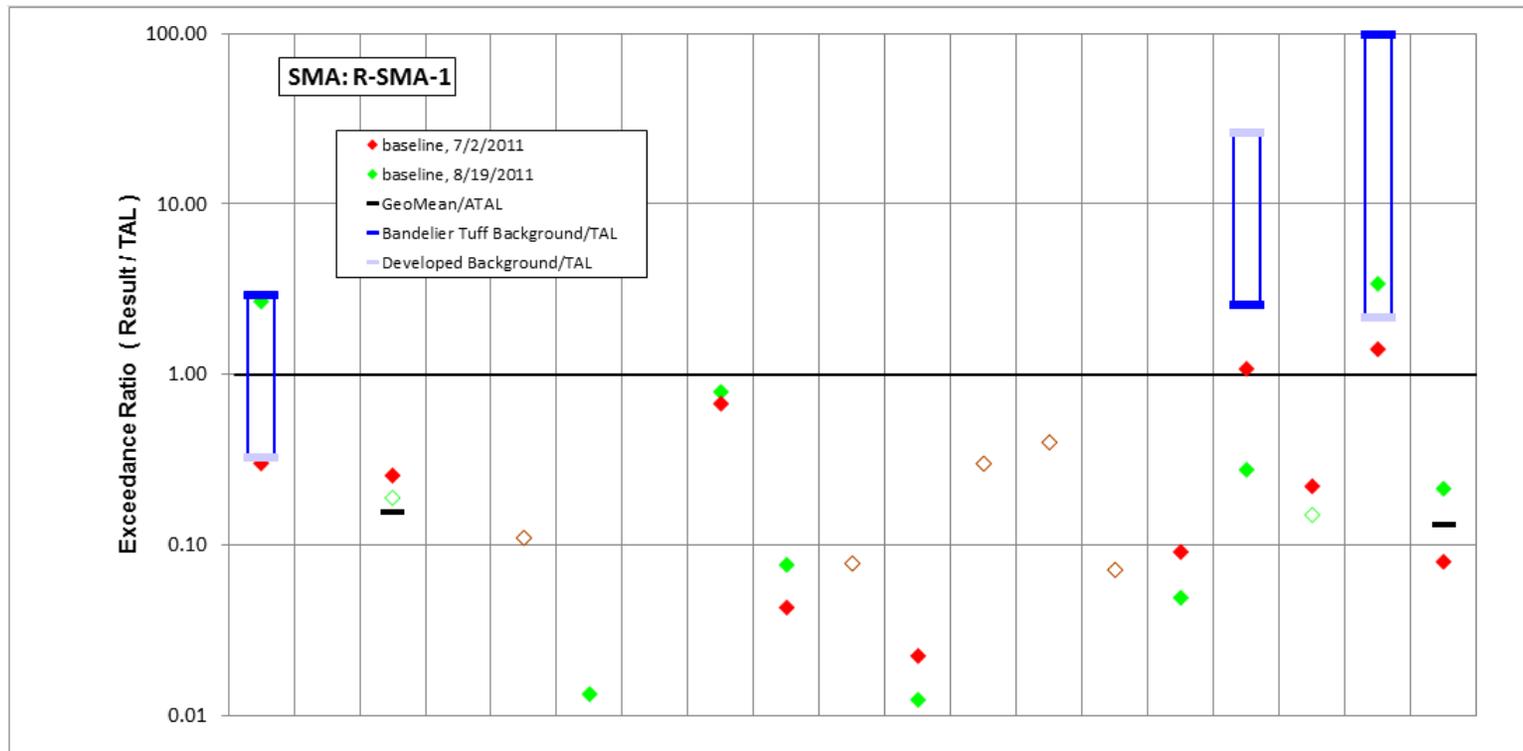


Figure 2-1 R-SMA-1 location map



	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
<b>8/19/2011 result</b>	<b>2010</b>	<i>1</i>	<i>1.7</i>	<i>19.1</i>	<i>0.11</i>	<i>2.8</i>	<i>2.9</i>	<i>3.4</i>	<i>1.3</i>	<i>0.06</i>	<i>2.1</i>	<i>1.5</i>	<i>0.2</i>	<i>0.45</i>	<i>4.9</i>	<i>11.6</i>	<i>0.002</i>	<b>51.1</b>	<i>6.42</i>
result / TAL	<b>2.7</b>	<i>0.002</i>	<i>0.19</i>	<i>0.0038</i>	<i>0.11</i>	<i>0.013</i>	<i>0.0029</i>	<i>0.79</i>	<i>0.076</i>	<i>0.078</i>	<i>0.012</i>	<i>0.3</i>	<i>0.4</i>	<i>0.071</i>	<i>0.049</i>	<i>0.28</i>	<i>0.15</i>	<b>3.4</b>	<i>0.21</i>
<b>7/2/2011 result</b>	<i>226</i>	<i>1</i>	<i>2.3</i>	<i>24.2</i>	<i>0.11</i>	<i>2</i>	<i>3.6</i>	<i>2.9</i>	<i>0.73</i>	<i>0.06</i>	<i>3.8</i>	<i>1.5</i>	<i>0.2</i>	<i>0.45</i>	<i>9.1</i>	<b>45.3</b>	<i>0.0022</i>	<b>21.1</b>	<i>2.39</i>
result / TAL	<i>0.3</i>	<i>0.002</i>	<i>0.26</i>	<i>0.0048</i>	<i>0.11</i>	<i>0.01</i>	<i>0.0036</i>	<i>0.67</i>	<i>0.043</i>	<i>0.078</i>	<i>0.022</i>	<i>0.3</i>	<i>0.4</i>	<i>0.071</i>	<i>0.091</i>	<b>1.1</b>	<i>0.22</i>	<b>1.4</b>	<i>0.08</i>

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

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

### 3.0 R-SMA-1.95: AOC 00-015

#### 3.1 Site Descriptions

One historical industrial activity area is associated with R003, R-SMA-1.95: Site 00-015.

AOC 00-015 is the Los Alamos Sportsmen’s Club, an active firing range located on GSA land leased from the U.S. Department of Energy (DOE) in Rendija Canyon. The area covers approximately 30 acres. The firing range consists of several small-arms ranges and has operated since 1966. Lead is expected to be present in earthen berms and on the surface of the ranges. Shattered clay projectiles are present on the skeet and trap ranges. Investigation of AOC 00-015 is deferred until activities at the site cease. Potential contaminants associated with industrial materials historically managed at this Site are metals.

The project map (Figure 3-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

#### 3.2 Control Measures

Run-on at the pistol range is managed and there is no impact to the Site. Berms associated with the Sportsmen’s Club activity reduce the small amount of runoff potential. Heavy vegetation in the area also helps mitigate runoff. The area is maintained by club membership, and the club also addresses any runoff issues. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 3-1).

**Table 3-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
R00302010001	Established Vegetation - Grasses and Shrubs			X		CB
R00303010006	Berms - Earthen		X		X	CB
R00303060005	Berms - Straw Wattles		X		X	CB
R00303060007	Berms - Straw Wattles		X		X	B
R00304010003	Channel/Swale - Earthen	X		X		CB
R00304040002	Channel/Swale - Culvert	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

Enhanced controls will be installed in the second quarter of 2013 part of corrective action.

#### 3.3 Storm Water Monitoring

AOC 00-015 is monitored within R-SMA-1.95. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figures 3-2 and 3-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 27.4 pCi/L (ATAL is 15 pCi/L).

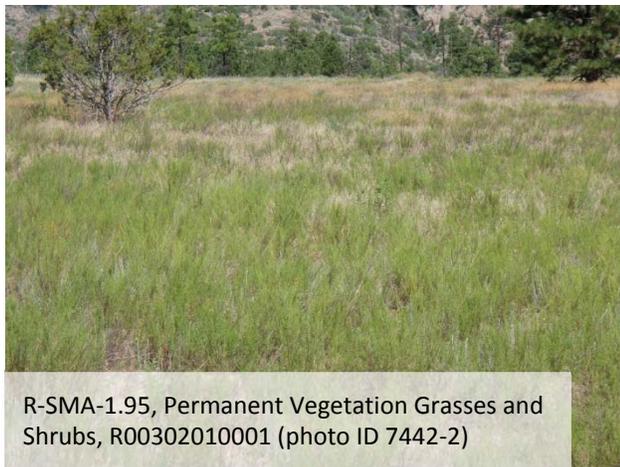
This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedance to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

**AOC 00-015:** Potential contaminants associated with industrial materials historically managed at this Site are metals.

- Gross alpha—Sampling has not been performed at AOC 00-015. The Site is the Los Alamos Sportsmen’s Club, an active firing range located on GSA land in Rendija Canyon and leased from DOE. The firing range consists of several small-arms ranges covering approximately 30 acres and has operated since 1966.

In summary, alpha-emitting isotopes are not known to be associated with industrial material historically managed at this Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 3-2 and 3-3. 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 3-2 and 3-3.



R-SMA-1.95 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared gross-alpha ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.

All the analytical results for these samples are reported in the 2011 Annual Report.

### 3.4 Inspections and Maintenance

RG038 recorded two storm events at R-SMA-1.95 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 3-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22061	03-27-2012
Annual Erosion Evaluation	COMP-23442	03-27-2012
Storm Rain Event	BMP-24985	07-11-2012
Storm Rain Event	BMP-28674	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 3-3 Maintenance during 2012**

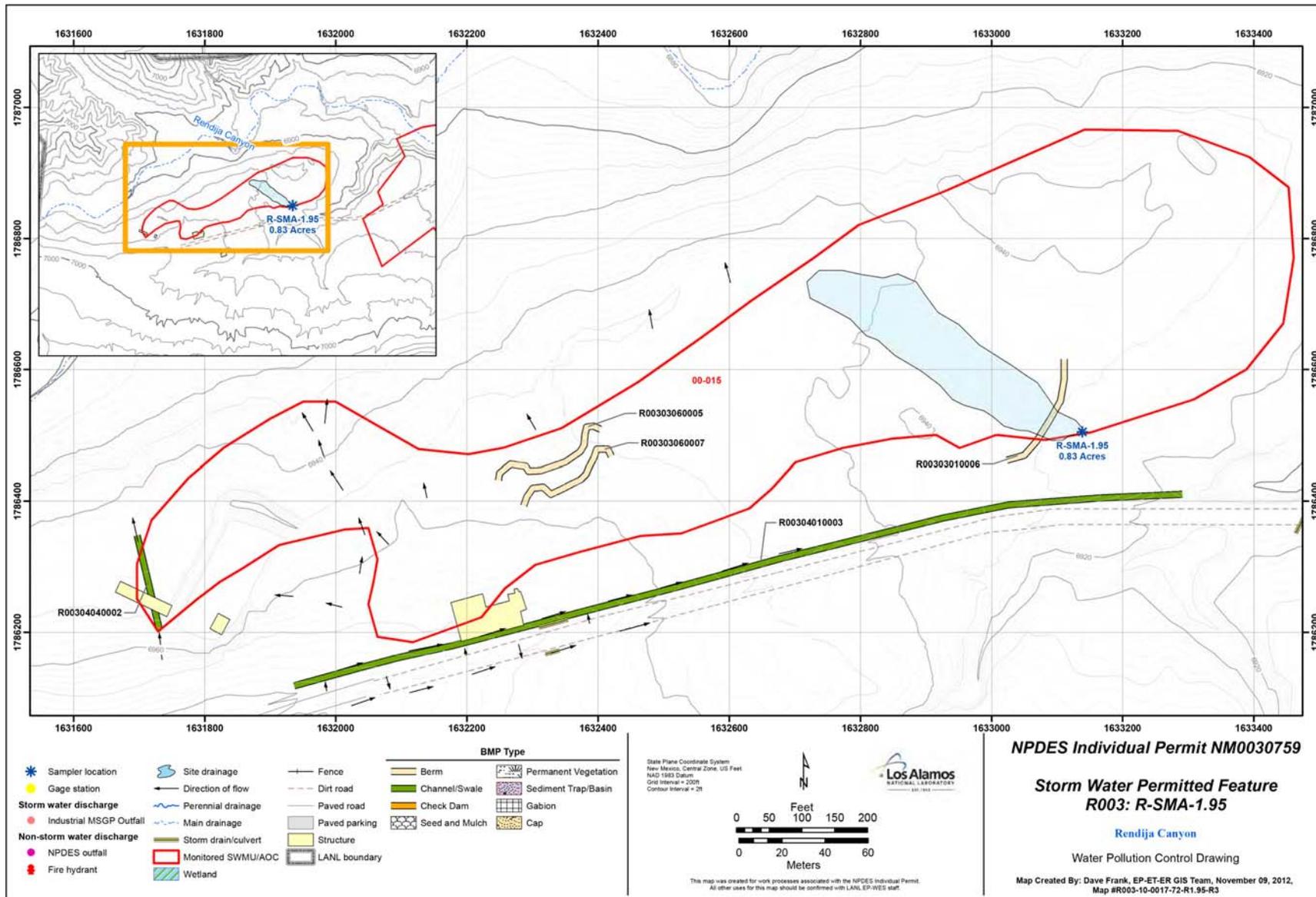
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29120	Installed new straw wattle R00303060007 in same location as wattle -0004, which was retired.	11-05-2012	14 day(s)	Maintenance conducted in timely manner.

### 3.5 Compliance Status

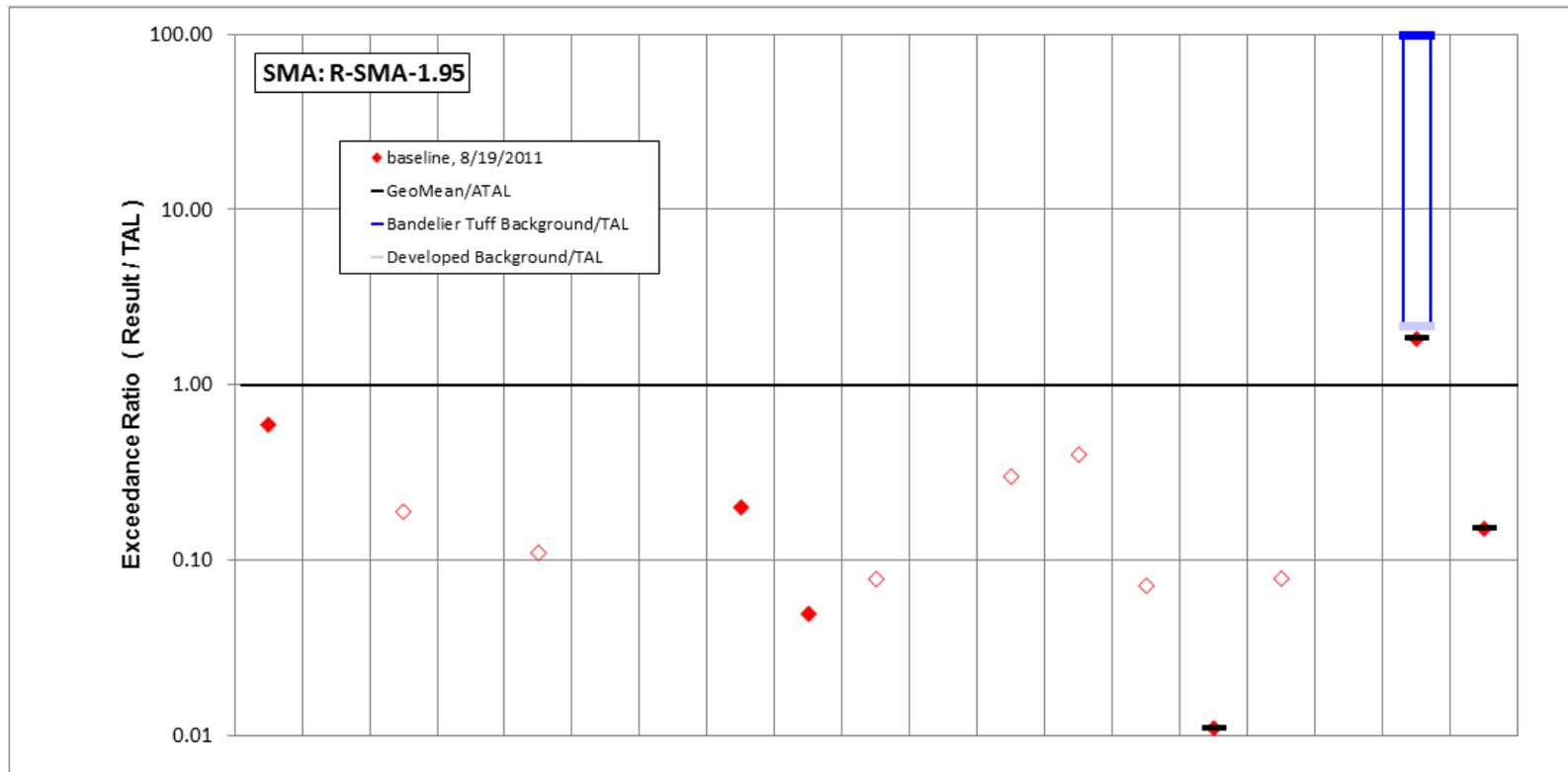
The Site associated with R-SMA-1.95 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 3-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 00-015	Baseline Monitoring	Corrective Action Initiated	Initiated 05-01-2012



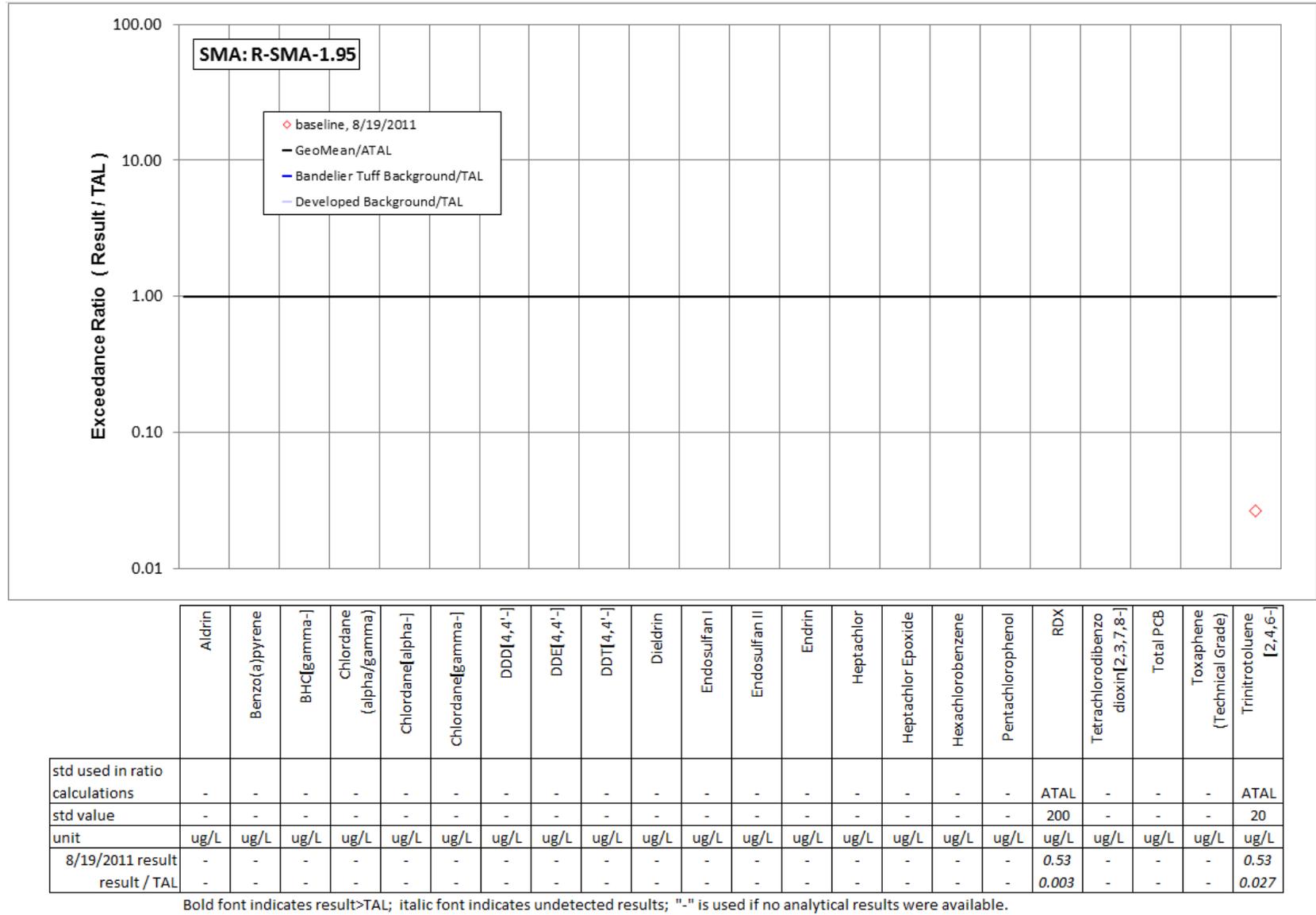
**Figure 3-1 R-SMA-1.95 location map**



	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
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	-	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
<b>8/19/2011 result</b>	<b>444</b>	<b>3.4</b>	<b>1.7</b>	<b>15</b>	<b>0.11</b>	<b>2</b>	<b>3</b>	<b>0.86</b>	<b>0.84</b>	<b>0.06</b>	<b>1</b>	<b>1.5</b>	<b>0.2</b>	<b>0.45</b>	<b>1.1</b>	<b>3.3</b>	-	<b>27.4</b>	<b>4.53</b>
result / TAL	0.59	0.0053	0.19	0.003	0.11	0.01	0.003	0.2	0.049	0.078	0.0059	0.3	0.4	0.071	0.011	0.079	-	<b>1.8</b>	0.15

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

Figure 3-2 Inorganic analytical results summary plot for R-SMA-1.95



**Figure 3-3 Organic analytical results summary plot for R-SMA-1.95**

**4.0 R-SMA-2.05: SWMU 00-011(c)**

**4.1 Site Descriptions**

One historical industrial activity area is associated with R004, R-SMA-2.05: Site 00-011(c).

Solid Waste Management Unit (SWMU) 00-011(c) is the location of a possible munitions impact area. The site is located on GSA and USFS land within a tributary of Rendija Canyon north of the Sportsmen’s Club small arms firing range ([SAFR] AOC 00-015). The area is approximately 9 acres. It was identified as a possible munitions impact area because of historical nearly illegible signage posted at the site in the 1940s. However, extensive archival searches have revealed no documentation regarding the use of this site as a munitions impact area. In addition, no field evidence of munitions operations (e.g., MD, MEC, UXO, or impact scars) has been found at SWMU 11-011(c). RFI activities conducted in 1993 included an ordnance sweep followed by a geophysical sweep. Scrap metal such as bailing wire and tin cans were found, but no ordnance, MD, MEC, or UXO was located. In addition, no ordnance was found during the 2007 investigation or during the 2009 ordnance survey. SWMU 00-011(c) is within the area burned by the 2000 Cerro Grande fire and is covered with numerous downed burned trees and low weeds and shrubs. Public hiking trails run through and around the perimeter of the site. Several archaeological sites are also present in the area of SWMU 00-011(c). Ordnance surveys at the site resulted in no findings; the complete absence of OEW confirmed that the site was never used as an ordnance impact area. In accordance with the approved investigation work plan, no further investigation was conducted at SWMU 00-011(c). NMED concurred with the conclusion that no additional ordnance surveys need to be conducted at this site and issued a corrective action complete without controls for SWMU 00-011(c) on May 16, 2012.

The project map (Figure 4-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**4.2 Control Measures**

No run-on sources are associated with this Permitted Feature other than natural overland flow. Similarly, runoff from this SMA is minimal; baseline controls have been installed to address any potential runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 4-1).

**Table 4-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
R00402020001	Established Vegetation - Forested/Needle Cast			X		CB
R00406030002	Check Dam - Juniper Bales		X		X	CB
R00406030003	Check Dam - Juniper Bales		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 4.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at R-SMA-2.05. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 4.4 Inspections and Maintenance

RG-NCOM recorded two storm events at R-SMA-2.05 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 4-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23443	04-16-2012
Storm Rain Event	BMP-26275	08-16-2012
Storm Rain Event	BMP-28600	10-22-2012

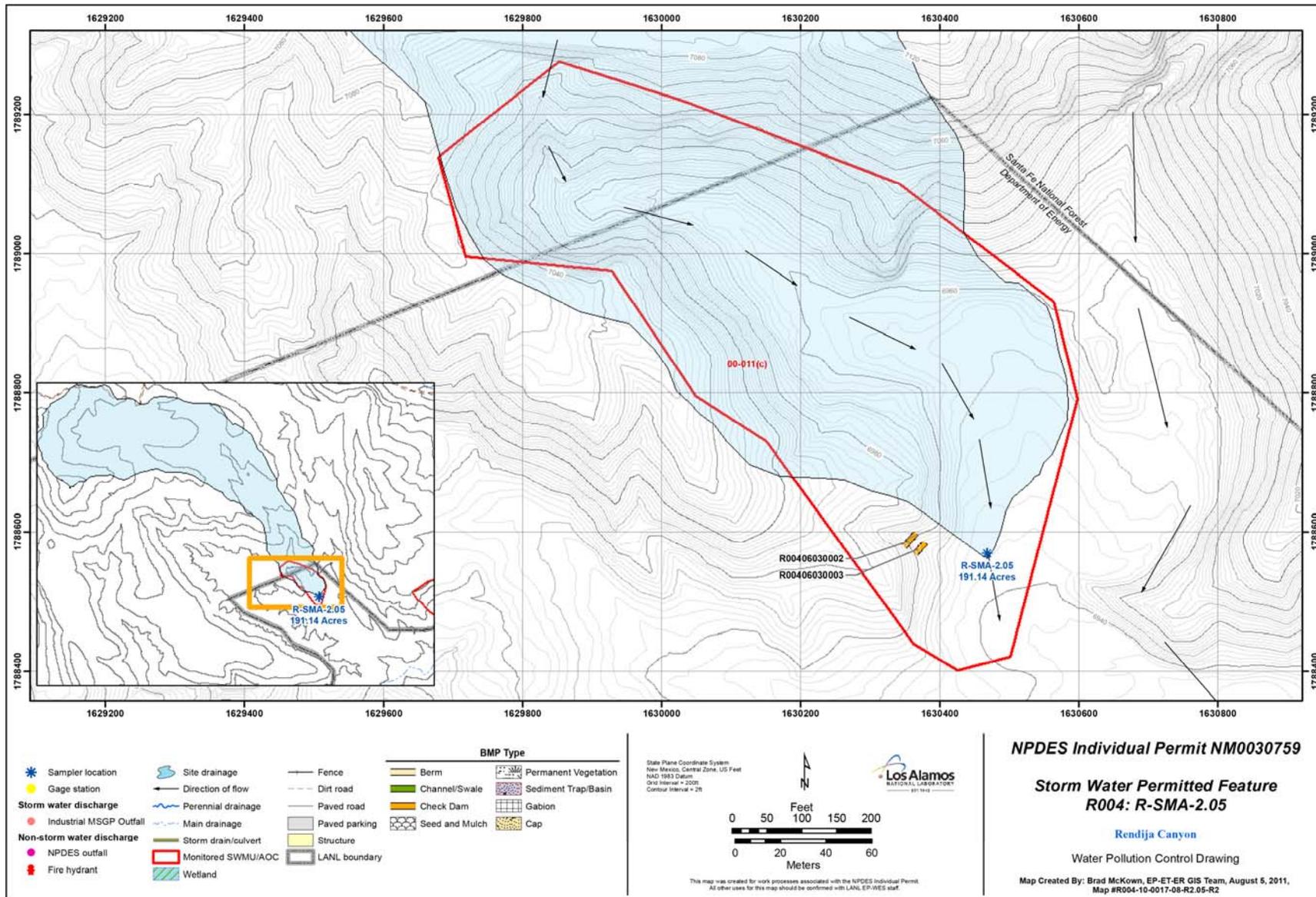
There were no maintenance activities conducted at R-SMA-2.05 in 2012.

### 4.5 Compliance Status

The Site associated with R-SMA-2.05 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 4-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-011(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, May 16, 2012, "Certificates of Completion One Solid Waste Management Unit and One Area of Concern in the Guaje/Barrancas/Rendija Canyons Aggregate Area"



**Figure 4-1 R-SMA-2.05 location map**

## **5.0 R-SMA-2.3: SWMU 00-011(e)**

### **5.1 Site Descriptions**

One historical industrial activity area is associated with R005, R-SMA-2.3: Site 00-011(e).

SWMU 00-011(e) is a former ammunition impact area located on USFS land in a tributary of Rendija Canyon known as Thirty-Seven Millimeter Canyon. The site was used from the mid- to late 1940s for training of U.S. Army personnel operating tanks firing 20-mm and 37-mm rounds. The impact area extends north along the tributary to the top of a cliff face and is approximately 15 acres.

SWMU 00-011(e) is located within a very steep natural amphitheater with numerous loose rocks and boulders. Vegetation at the site consists of thick weeds and small shrubs. The site is fenced with barbwire and posted with “Explosives No Trespassing” signs. Decision-level data for SWMU 00-011(e) indicate the lateral and vertical extent of all detected chemicals are defined; all detected chemical concentrations were below residential SSLs. Based on the human health risk-screening assessment results, no potential unacceptable risks or doses exist for the residential scenario at SWMU 00-011(e), and no potential ecological risk was found for any receptor. The 2009 ordnance survey resulted in the recovery and removal of several MD or MEC fragments in the form of 50-mm caliber armor-piercing shells scattered over the entire area. Some smaller-caliber shells were also found during the 2011 survey. Although no fragments of shells larger than 50-mm were found at the site, there is abundant evidence of impact to cliffs and boulders from larger munitions. In addition to the 37-mm shells that were documented to have been fired at the site, it is apparent from the impact scars that 76-mm shells were also used. Although the locations of the fragments could not be surveyed, no noticeable distribution pattern or area of significant MD concentration was found at SWMU 00-011(e). The fragments were removed, photographed, and retained by Emergency Response personnel or disposed of. The 2011 ordnance survey found no UXO at SWMU 00-011(e). Abundant scars and holes resulting from munitions impact are present in the cliff face and boulders at the site. NMED is requiring the Laboratory to continue conducting biennial surveys at SWMU 00-011(e); the next survey report is due to NMED no later than December 31, 2013.

The project map (Figure 5-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **5.2 Control Measures**

There are no run-on issues with this Permitted Feature. Runoff is minimal and is currently controlled with a juniper bale check dam. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 5-1).

**Table 5-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
R00502010001	Established Vegetation - Grasses and Shrubs			X		CB
R00502020002	Established Vegetation - Forested/Needle Cast			X		CB
R00506030003	Check Dam - Juniper Bales		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 5.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at R-SMA-2.3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 5.4 Inspections and Maintenance

RG038 recorded two storm events at R-SMA-2.3 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 5-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23444	04-16-2012
Storm Rain Event	BMP-24983	07-11-2012
Storm Rain Event	BMP-28672	10-22-2012

There were no maintenance activities conducted at R-SMA-2.3 in 2012.

### 5.5 Compliance Status

The Site associated with R-SMA-2.3 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 5-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-011(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

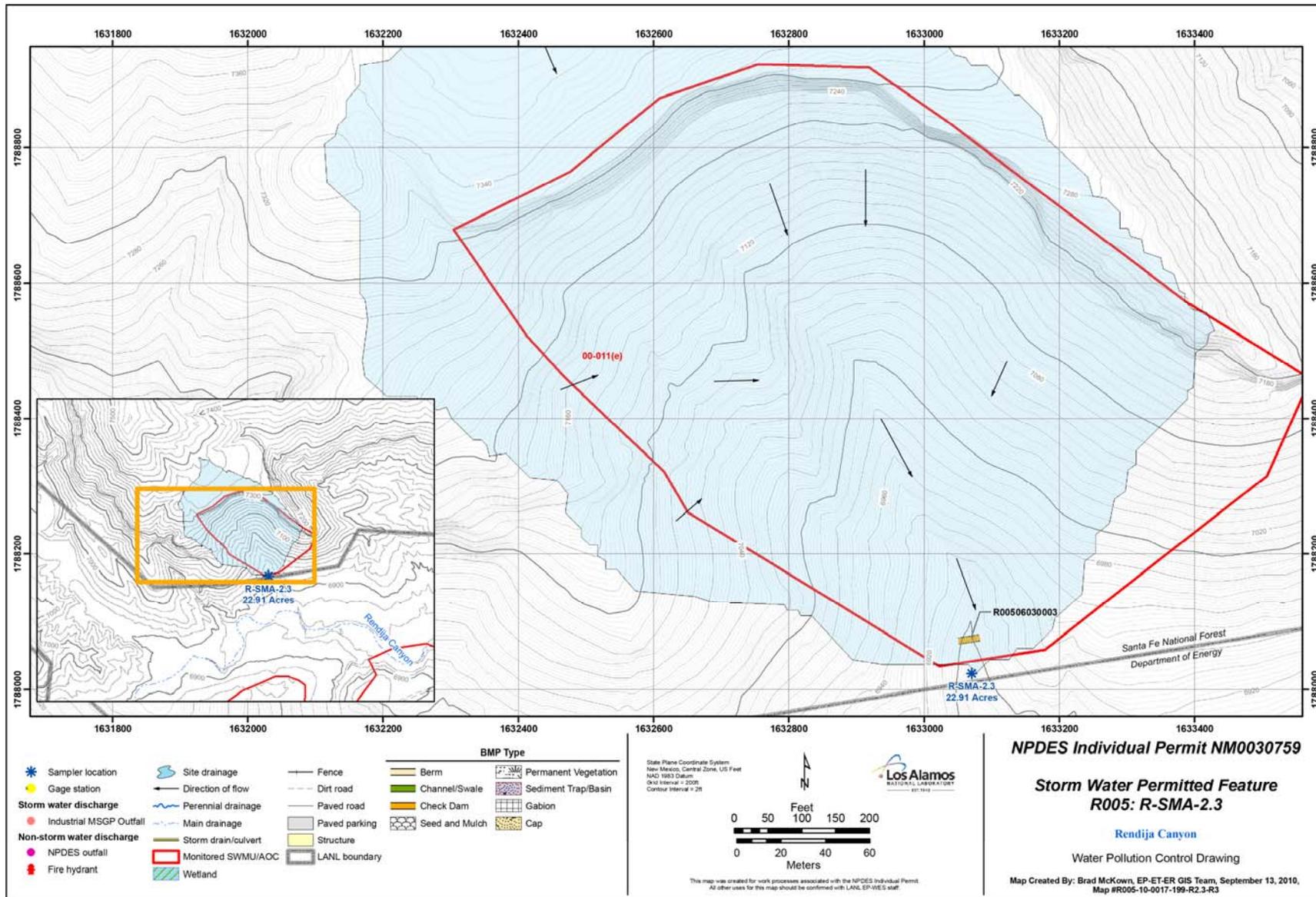


Figure 5-1 R-SMA-2.3 location map

## 6.0 R-SMA-2.5: SWMU 00-011(a)

### 6.1 Site Descriptions

One historical industrial activity area is associated with R006, R-SMA-2.5: Site 00-011(a).

SWMU 00-011(a) is a 29-acre former mortar impact area located on GSA land about 0.4 mi east of the Sportsmen’s Club SAFR (AOC 00-015) in Rendija Canyon. The site was a mortar impact area in the mid-1940s for 60-mm and 82-mm rounds; operations ceased in the late 1940s. SWMU 00-011(a) is located in a relatively flat open grassland with scattered shrubs and trees. The site is bisected east to west by Rendija Road (unpaved). On the north side of the road, the site has a gradual to steep slope to the ephemeral stream channel. The slope is covered by mulch consisting of downed trees that burned during the 2000 Cerro Grande fire. Although the site is fenced and posted with DOE “No Trespassing” signs, there is evidence the site is used for recreational activities such as dirt-biking and target practice. Decision-level data for SWMU 00-011(a) indicate the lateral and vertical extent of all detected chemicals are defined at SWMU 00-011(a). Only iron was detected slightly above the residential SSL; all other detected chemical concentrations were below residential SSLs. The 2009 ordnance survey of



R-SMA-2.5, Rock Check Dam, R00606010006 (photo ID 7598-1)

SWMU 00-011(a) resulted in the recovery and removal of several 60-mm and 81-mm shell fragments concentrated in the north-central portion of the site above the Rendija Canyon bottom. Most of these fragments were small (less than 3 in. in the longest dimension). The fragments were removed, photographed, and retained by Emergency Response personnel or disposed of. The 2011 ordnance survey found no UXO at SWMU 00-011(a). NMED is requiring the Laboratory to continue conducting biennial surveys at SWMU 00-011(a); the next survey report is due no later than December 31, 2013.

The project map (Figure 6-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 6.2 Control Measures

The gravel road cutting through the site directs run-on into the channel containing the sampler. Dirt paths throughout the Site resulting from years of recreational activity have modified the natural flow patterns and created ponding areas west of the sampler location. Jersey barriers have prevented access, which has allowed for revegetation from recreational impact across the Site. Los Alamos County is responsible for maintaining the area roads. The only discharge point south of Rendija Canyon road is the channel below the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 6-1).

**Table 6-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
R00602010001	Established Vegetation - Grasses and Shrubs			X		CB
R00602020002	Established Vegetation - Forested/Needle Cast			X		CB
R00604060004	Channel/Swale - Riprap	X		X		CB
R00606010003	Check Dam - Rock		X		X	CB
R00606010005	Check Dam - Rock	X			X	CB
R00606010006	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**6.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at R-SMA-2.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**6.4 Inspections and Maintenance**

RG038 recorded two storm events at R-SMA-2.5 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 6-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23445	05-09-2012
Storm Rain Event	BMP-24984	07-11-2012
Storm Rain Event	BMP-28673	10-22-2012

There were no maintenance activities conducted at R-SMA-2.5 in 2012.

**6.5 Compliance Status**

The Site associated with R-SMA-2.5 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 6-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-011(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

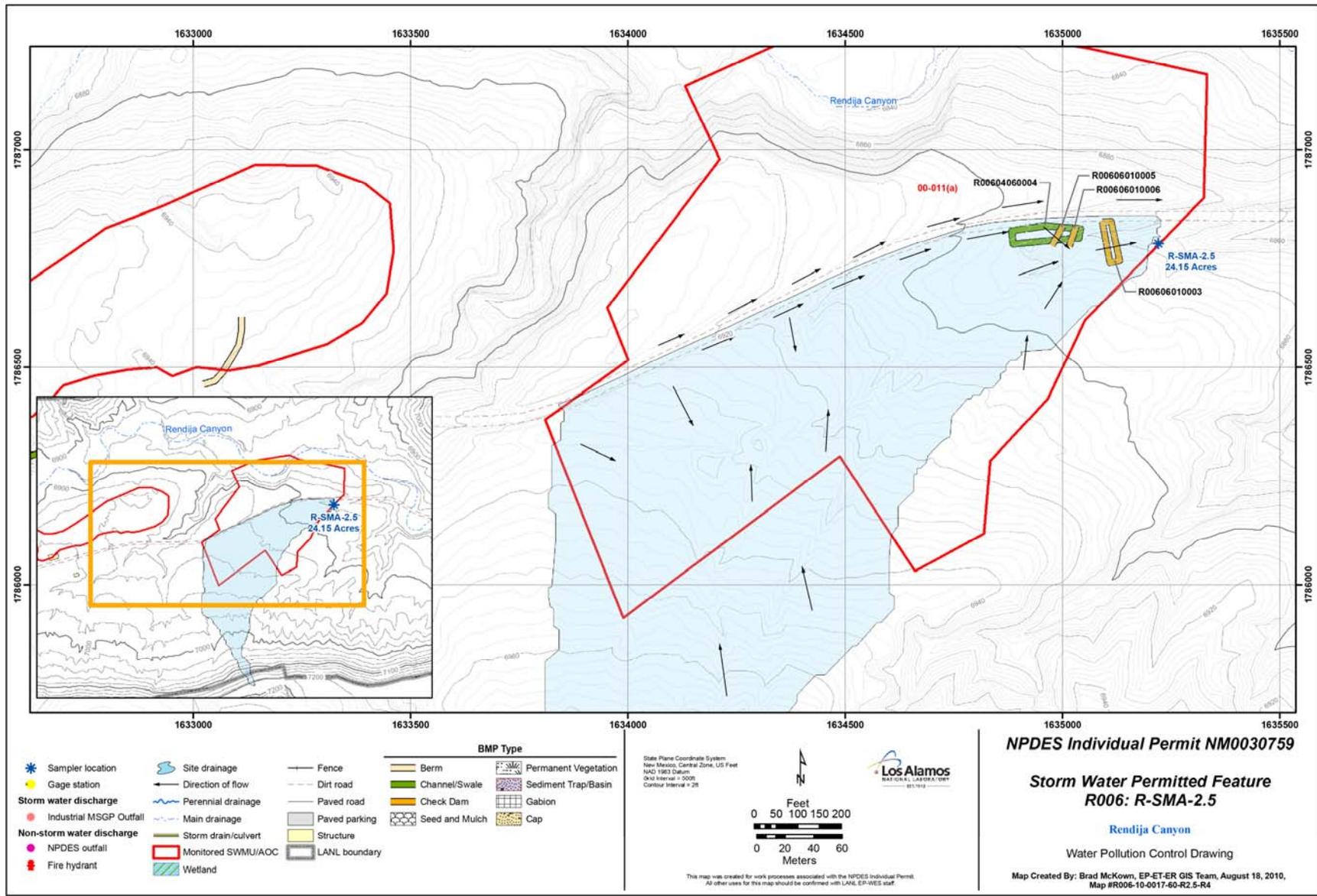


Figure 6-1 R-SMA-2.5 location map

## **7.0 B-SMA-0.5: SWMUs 10-001(a), 10-001(b), 10-001(c), 10-001(d), 10-004(a), and 10-004(b) and AOCs 10-008 and 10-009**

### **7.1 Site Descriptions**

Eight historical industrial activity areas are associated with B001, B-SMA-0.5: Sites 10-001(a), 10-001(b), 10-001(c), 10-001(d), 10-004(a), 10-004(b), 10-008, and 10-009.

SWMU 10-001(a) is a former firing site located near Bayo Canyon at former Technical Area 10 (TA-10). The firing site consisted of five structures: a battery building (power source), a fire control building, an electronics chamber, an x-unit chamber, and an inspection building. The SWMU 10-001(a) firing site was used in rotation with the SWMU 10-001(b–d) firing sites from 1943 to 1961 for experiments using high explosives (HE) in conjunction with nuclear weapons research. After a shot, residual material was moved to the SWMU 10-005 disposal pit located near the firing sites. Former TA-10 underwent extensive decontamination and decommissioning (D&D), including razing all structures, from 1960 to 1963. All excavations were backfilled and the site graded. All concrete structures associated with each firing site were demolished using dynamite. All explosives testing ceased in 1961. The site was released to Los Alamos County in 1967 but has remained under the administrative control of DOE. Bayo Canyon is currently open to the public and used for recreational activities. Because of the proximity and overlapping dispersion areas of each firing site and use of the disposal pit, source terms cannot be separated by SWMU or AOC. Decision-level data for SWMU 10-001(a) indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the Site for corrective action complete without controls and requested a COC from NMED in April 2008.

SWMU 10-001(b) is a former firing site located near Bayo Canyon at former TA-10. The firing site consisted of five structures: a battery building (power source), a fire control building, an electronics chamber, an x-unit chamber, and an inspection building. The SWMU 10-001(a) firing site was used in rotation with the SWMU 10-001(b–d) firing sites from 1943 to 1961 for experiments using HE in conjunction with nuclear weapons research. After a shot, residual material was moved to the SWMU 10-005 disposal pit located near the firing sites. Former TA-10 underwent extensive D&D, including razing all structures, from 1960 to 1963. All excavations were backfilled and the site graded. All concrete structures associated with each firing site were demolished using dynamite. All explosives testing ceased in 1961. The site was released to Los Alamos County in 1967 but has remained under the administrative control of DOE. Bayo Canyon is currently open to the public and used for recreational activities. Because of the proximity and overlapping dispersion areas of each firing site and use of the disposal pit, source terms cannot be separated by SWMU or AOC. Decision-level data for SWMU 10-001(b) indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the Site for corrective action complete without controls and requested a COC from NMED in April 2008.

SWMU 10-001(c) is a former firing site located near Bayo Canyon at former TA-10. The firing site consisted of five structures: a battery building (power source), a fire control building, an electronics chamber, an x-unit chamber, and an inspection building. The SWMU 10-001(a) firing site was used in rotation with the SWMU 10-001(b–d) firing sites from 1943 to 1961 for experiments using HE in conjunction with nuclear weapons research. After a shot, residual material was moved to the SWMU 10-005 disposal pit located near the firing sites. Former TA-10 underwent extensive D&D, including razing all structures, from 1960 to 1963. All excavations were backfilled and the site graded. All concrete structures associated with each firing site were demolished using dynamite. All explosives

testing ceased in 1961. The site was released to Los Alamos County in 1967 but has remained under the administrative control of DOE. Bayo Canyon is currently open to the public and used for recreational activities. Because the proximity and overlapping dispersion areas of each firing site and use of the disposal pit, source terms cannot be separated by SWMU or AOC. Decision-level data for SWMU 10-001(c) indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the site for corrective action complete without controls and requested a COC from NMED in April 2008.

SWMU 10-001(d) is a former firing site located near Bayo Canyon at former TA-10. The firing site consisted of five structures: a battery building (power source), a fire control building, an electronics chamber, an x-unit chamber, and an inspection building. The SWMU 10-001(a) firing site was used in rotation with the SWMU 10-001(b–d) firing sites from 1943 to 1961 for experiments using HE in conjunction with nuclear weapons research. After a shot, residual material was moved to the SWMU 10-005 disposal pit located near the firing sites. Former TA-10 underwent extensive D&D, including razing all structures, from 1960 to 1963. All excavations were backfilled and the site graded. All concrete structures associated with each firing site were demolished using dynamite. All explosives testing ceased in 1961. The site was released to Los Alamos County in 1967 but has remained under the administrative control of DOE. Bayo Canyon is currently open to the public and used for recreational activities. Because of the proximity and overlapping dispersion areas of each firing site and use of the disposal pit, source terms cannot be separated by SWMU or AOC. Decision-level data for SWMU 10-001(d) indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the Site for corrective action complete without controls and requested a COC from NMED in April 2008.



B-SMA-0.5, Permanent Vegetation Grasses and Shrubs, B00102010001 (photo ID 7411-2)

SWMU 10-004(a) was a former 1060-gal. septic tank (former structure 10-40) that discharged to a pit with associated lines and to an outfall located in a stream channel northeast of SWMU 10-002(a). The tank served the personnel building (former building 10-21) from 1949 to 1963 and was removed during the 1963 D&D activities. No information is available regarding the removal of the 4-in.-diameter tile drain or the soil surrounding the outfall; however, the 2007 geophysical survey did not identify subsurface anomalies, suggesting the buried pipe thought to be in the area was removed during previous D&D activities. Decision-level data for SWMU 10-004(a) indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the Site for corrective action complete without controls and requested a COC from NMED in April 2008.

SWMU 10-004(b) is a former reinforced-concrete sanitary septic tank that served the radiochemistry laboratory from 1944 to 1963. The tank was 4 ft × 10 ft × 4 ft deep, with a 540-gal. capacity. The tank handled sanitary waste but was suspected also to have received liquid wastes from the radiochemistry laboratory. Overflow from the tank drained through a 4-in. open-joint vitrified clay pipe (VCP) drainpipe to the stream channel. The tank was removed during D&D activities in 1963 and disposed of at TA-54, Material Disposal Area (MDA) G. The 2007 geophysical survey did not identify subsurface anomalies, suggesting that the buried pipe thought to be in the area was removed during previous D&D activities.

Decision-level data for SWMU 10-004(b) indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the Site for corrective action complete without controls and requested a COC from NMED in April 2008.

AOC 10-008 is a former satellite firing site located approximately 1400 ft northwest of the former primary firing sites [SWMUs 10-001(a–d)]. During the 1994 interim action (IA), shrapnel was found embedded in the northwestern sides of trees in this area (opposite the known primary firing sites). Former TA-10 underwent extensive D&D, including razing all structures, from 1960 to 1963. All excavations were backfilled and the site graded. All concrete structures associated with each firing site were demolished using dynamite. All explosives testing ceased in 1961. The site was released to Los Alamos County in 1967 but has remained under the administrative control of DOE. Bayo Canyon is currently open to the public and used for recreational activities. Because of the proximity and overlapping dispersion areas of each firing site and use of the disposal pit, source terms cannot be separated by SWMU or AOC. Decision-level data for SWMU 10-008 indicate the site poses no unacceptable risk to construction worker, industrial, or recreational receptors. The Laboratory recommended the Site for corrective action complete without controls and requested a COC from NMED in April 2008.

AOC 10-009 is a former landfill discovered during routine surface shrapnel characterization activities in Bayo Canyon. A small depression was noted that contained materials including asbestos siding, heavy-gauge and coaxial wire and cable, glass laboratory equipment, and other debris. A geophysical survey conducted in the area showed additional anomalies. The landfill area differed from the surrounding area; interviews conducted with former area workers confirmed that the area had been used for disposal. EPA was notified of a new AOC in May 1995. The site was fenced in 1995, pending further investigation and/or remediation. AOC C-10-001 is located within the fenced area that encompasses AOC 10-009 and consists of two former radioactive (strontium-90) soil contamination areas. Decision-level data indicate AOC 10-009 poses no unacceptable risk to residential receptors. The Laboratory recommended the site for corrective action complete without controls and requested a COC from NMED in April 2012.

The project map (Figure 7-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

## 7.2 Control Measures

Run-on contributions from area roads are minimal. There is concentrated run-on flow from the slope south of one of the Sites impacting the fenced area. Most of the run-on to this Permitted Feature originates in natural areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 7-1).

**Table 7-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
B00101010011	Seed and Mulch - Seed and Wood Mulch			X		B
B00102010001	Established Vegetation - Grasses and Shrubs			X		CB
B00102020002	Established Vegetation - Forested/Needle Cast			X		CB
B00103010006	Berms - Earthen	X			X	CB
B00103010007	Berms - Earthen		X		X	CB
B00103060010	Berms - Straw Wattles	X			X	B
B00104010005	Channel/Swale - Earthen	X		X		CB
B00104040003	Channel/Swale - Culvert	X		X		CB
B00104060009	Channel/Swale - Riprap	X		X		B
B00106010008	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 7.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at B-SMA-0.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 7.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at B-SMA-0.5 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 7-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23317	05-30-2012
Storm Rain Event	BMP-26280	08-13-2012
Storm Rain Event	BMP-27085	08-28-2012
Storm Rain Event	BMP-28079	10-01-2012
Storm Rain Event	BMP-28620	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 7-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26561	Installed riprap B00104060009 at culvert B00104040003 for inlet and outlet protection.	08-27-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-29284	Berm B00103010007 extended to east and rematted.	11-08-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-29285	New wattles B00103060010 and seed and mulch B00101010011 installed.	11-08-2012	15 day(s)	Maintenance conducted as soon as practicable.

**7.5 Compliance Status**

The Sites associated with B-SMA-0.5 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 7-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 10-001(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 10-001(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 10-001(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 10-001(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 10-004(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 10-004(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 10-008	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 10-009	Baseline Monitoring	Baseline Monitoring Extended	No Comment

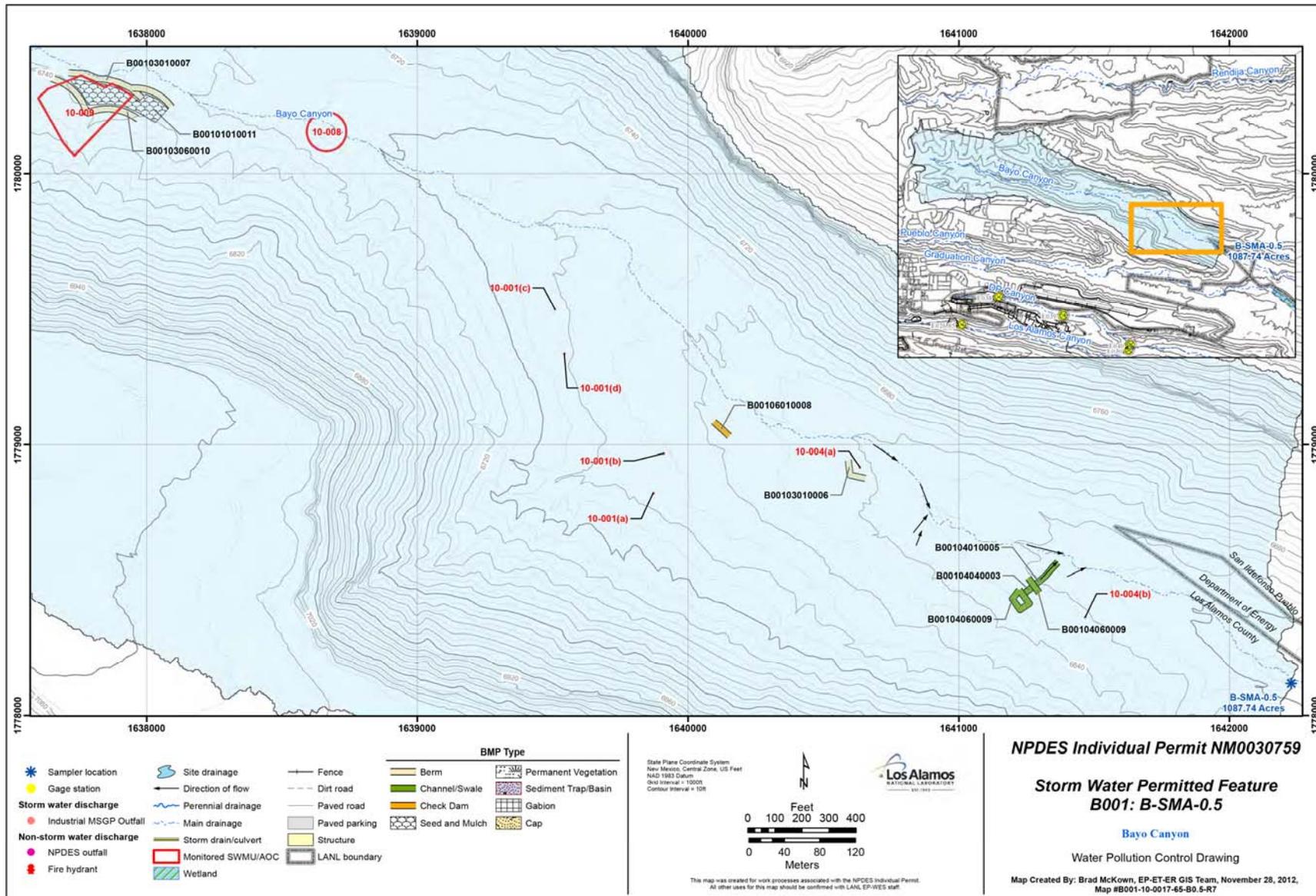


Figure 7-1 B-SMA-0.5 location map

## 8.0 B-SMA-1: SWMU 00-011(d)

### 8.1 Site Descriptions

One historical industrial activity area is associated with B002, B-SMA-1: Site 00-011(d).

SWMU 00-011(d) is a bazooka firing area located largely on Los Alamos County land, except for a small section on private property. The area is in a small north-trending tributary of Bayo Canyon northeast of the intersection of San Ildefonso Road and Diamond Drive in the Los Alamos townsite. The approximately 6-acre area was used in the mid-1940s as a target area for 2.36-in. bazooka rounds; operations ceased in the late 1940s. SWMU 00-011(d) is located near a hiking trail at the head of Bayo Canyon. A north-south trending drainage channel bisects SWMU 00 011(d), and a cliff is located on the eastern edge of the site. The southern section of the site is open and grassy with some shrubs and trees; the northern section of the site is forested with pine trees. The site is only partially fenced and is open to the public. Decision-level data for SWMU 00-011(d) indicate the lateral and vertical extent of all detected chemicals are defined; all detected chemical concentrations were below residential SSLs. The 2009 ordnance survey resulted in the recovery and removal of two 2.38-in. expended rocket mortars with fin assemblies, one copper slug from a 2.36-in. rocket shaped-charge liner, and several pieces of MD or MEC. Most of the MD and MEC was found at the base of the cliff in the area, which is consistent



B-SMA-1, Rock Check Dam, B00206010006 (photo ID 7412-5)

with the documented history of this site of firing 2.36-in. bazooka rounds into the cliff face at SWMU 00-011(d). The fragments were removed, photographed, and retained by Emergency Response personnel or disposed of. The 2011 ordnance survey found no UXO at SWMU 00-011(d). Abundant scars and holes resulting from munitions impact are present in the cliff face at SWMU 00-011(d). NMED is requiring the Laboratory to continue conducting biennial surveys at SWMU 00-011(d); the next survey report is due no later than December 31, 2013.

The project map (Figure 8-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 8.2 Control Measures

There is significant run-on to the SMA from urban areas on the east and west sides. This run-on source is from engineered controls associated with paved roads and parking areas. There is also a small contribution from residences to the west. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 8-1).

**Table 8-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
B00202010001	Established Vegetation - Grasses and Shrubs			X		CB
B00202020002	Established Vegetation - Forested/Needle Cast			X		CB
B00206010003	Check Dam - Rock	X			X	CB
B00206010004	Check Dam - Rock	X			X	CB
B00206010005	Check Dam - Rock		X		X	CB
B00206010006	Check Dam - Rock		X		X	CB
B00206010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 8.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at B-SMA-1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 8.4 Inspections and Maintenance

RG055.5 recorded one storm event at B-SMA-1 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 8-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23318	05-31-2012
Storm Rain Event	BMP-28679	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 8-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23979	Added rock and built up rock check dam B00206010003.	06-12-2012	12 day(s)	Maintenance conducted in timely manner.

### 8.5 Compliance Status

The Site associated with B-SMA-1 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 8-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-011(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

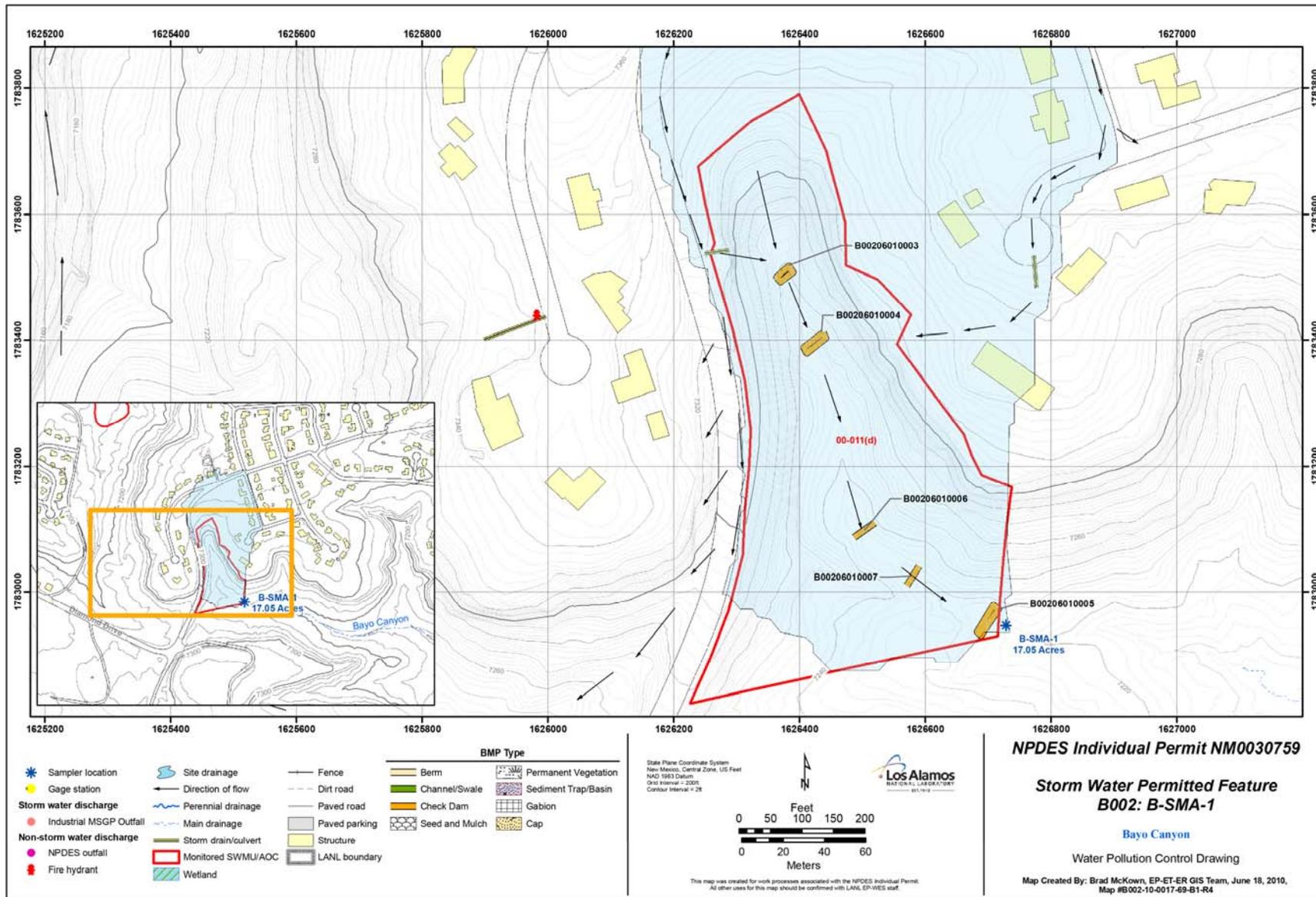


Figure 8-1 B-SMA-1 location map

## 9.0 ACID-SMA-1.05: SWMU 00-030(g)

### 9.1 Site Descriptions

One historical industrial activity area is associated with P001, ACID-SMA-1.05: Site 00-030(g).

SWMU 00-030(g) was the septic system and outfall located at the old Catholic Church (3200 Canyon Road) in an area now covered by a paved parking lot for recently constructed apartments. The septic system was installed in the early 1940s and received wastes from TA-01. The former septic tank (structure 6) consisted of reinforced concrete and measured 32 ft long × 22 ft wide × 6.5 ft deep. A center baffle separated the tank into east and west chambers. Drainage from the septic system discharged through an outfall to Acid Canyon in an area owned by Los Alamos County. The septic system ceased operating when the central wastewater treatment plant (WWTP) came online in 1947 and was subsequently removed in 1993. An intact inlet line was not discovered, however, and it was assumed the line had been removed previously during the installation of the gas pipeline that crosses the site. Decision-level data indicate the former SWMU 00-030(g) septic tank location poses no unacceptable risk to residential receptors and the former outfall location and drainage poses no unacceptable risk to recreational receptors. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

The project map (Figure 9-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 9.2 Control Measures

Potential sources of run-on to this Permitted Feature include Canyon Road, which runs east to west, north of the SMA. Additional run-on may originate in the parking areas around the Canyon Village apartments. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 9-1).

**Table 9-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00103010005	Berms - Earthen		X		X	CB
P00103090003	Berms - Curbing	X			X	CB
P00104040004	Channel/Swale - Culvert	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 9.3 Storm Water Monitoring

SWMU 00-030(g) is monitored within ACID-SMA-1.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figures 9-2 and 9-3). Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for ACID-SMA-1.05 and the associated SWMU 00-030(g) because all applicable sampling results are below

the applicable MTAL or ATAL. No further sampling is required for ACID-SMA-1.05 for the remaining period of the IP.

#### 9.4 Inspections and Maintenance

RG055.5 recorded one storm event at ACID-SMA-1.05 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 9-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23313	05-31-2012
Storm Rain Event	BMP-28678	10-19-2012

There were no maintenance activities conducted at ACID-SMA-1.05 in 2012.

#### 9.5 Compliance Status

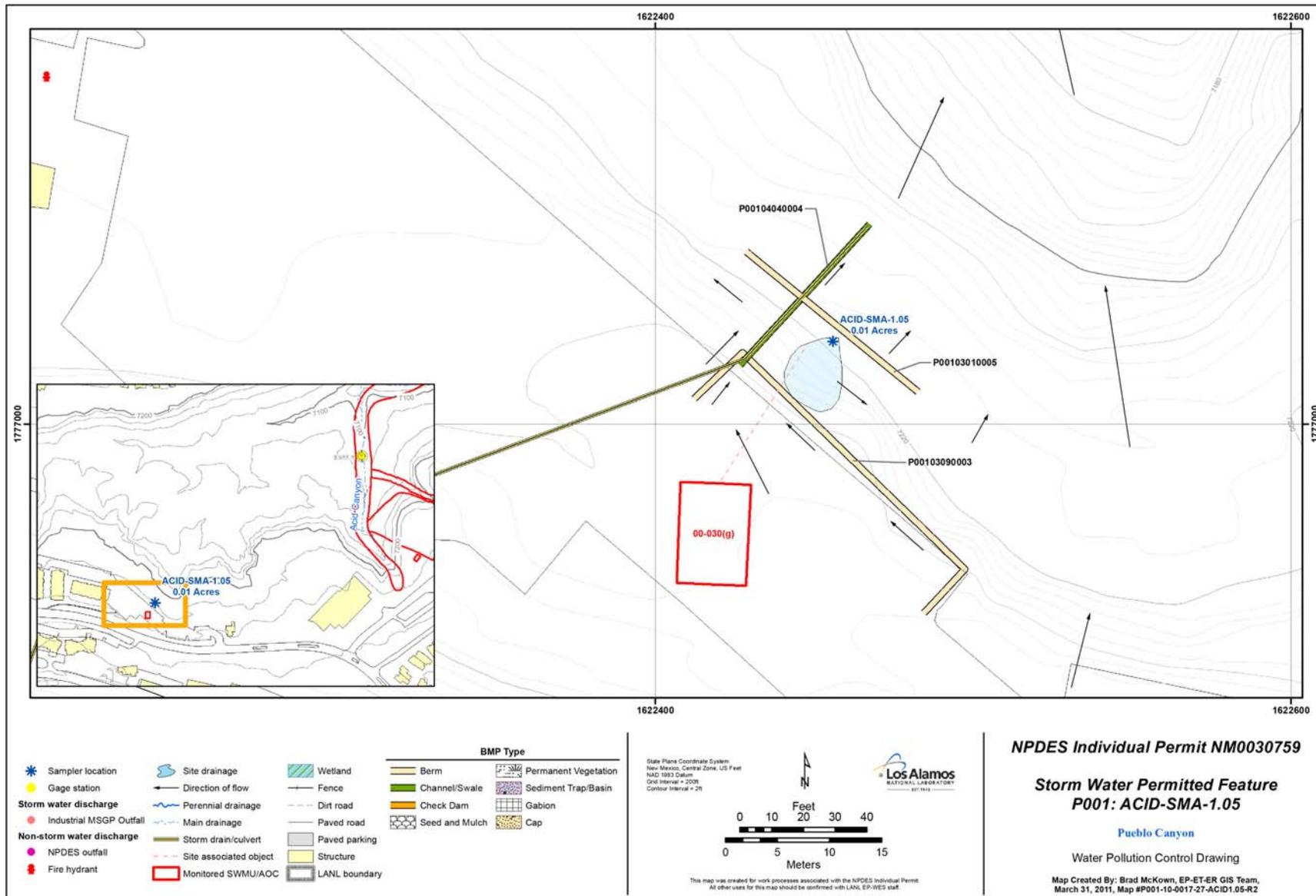
The Site associated with ACID-SMA-1.05 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 9-3 Compliance Status during 2012**

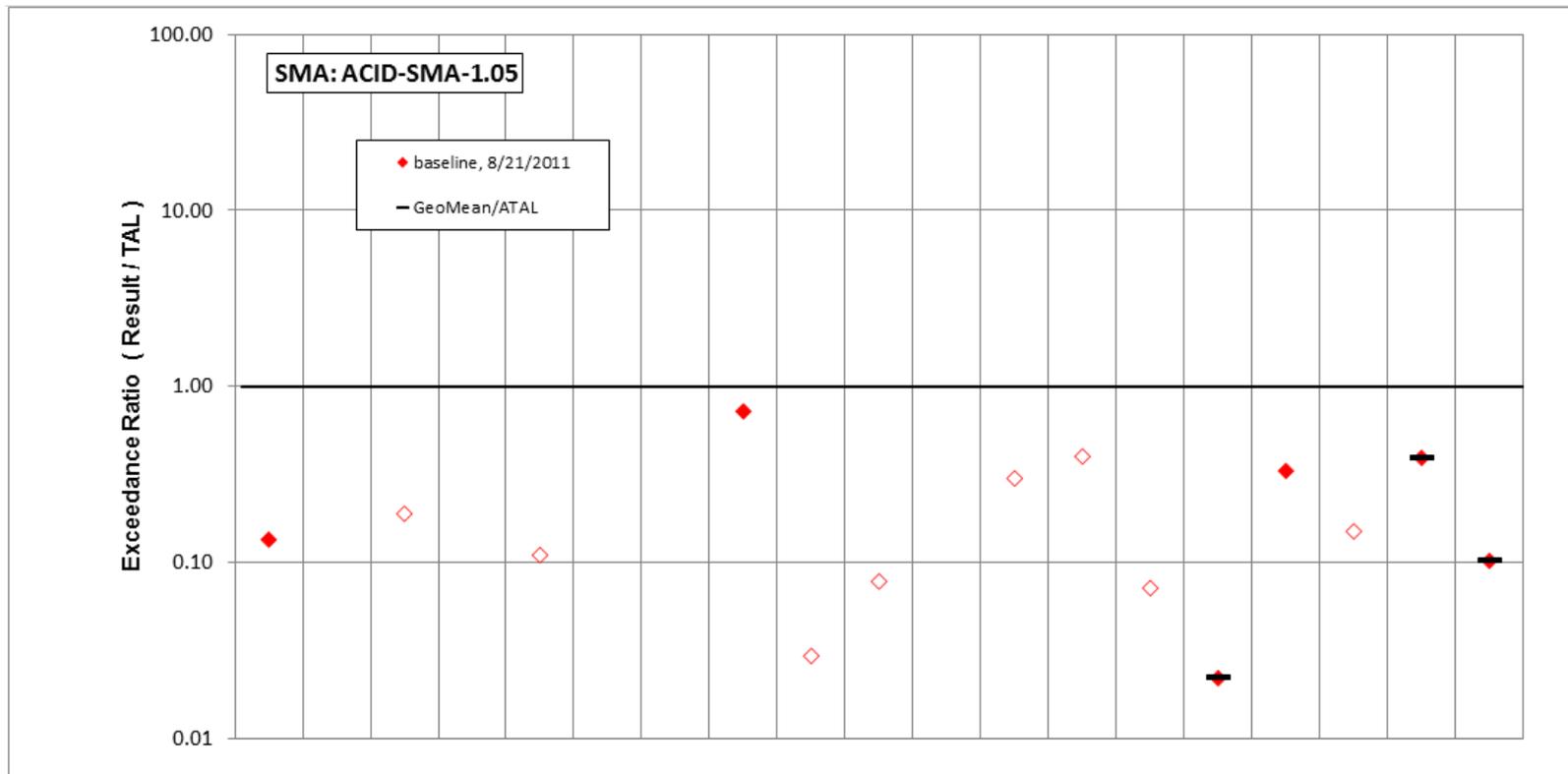
Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-030(g)	Baseline Confirmation Complete	Baseline Confirmation Complete	No Comment



ACID-SMA-1.05, Earthen Berm, P00103010005 (photo ID 7409-2)



**Figure 9-1 ACID-SMA-1.05 location map**



	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
8/21/2011 result	101	1	1.7	20.9	0.11	2	2.6	3.1	0.5	0.06	1.4	1.5	0.2	0.45	2.2	13.9	0.002	5.89	3.06
result / TAL	0.13	0.002	0.19	0.0042	0.11	0.01	0.0026	0.72	0.029	0.078	0.0082	0.3	0.4	0.071	0.022	0.33	0.15	0.39	0.1

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

Figure 9-2 Inorganic analytical results summary plot for ACID-SMA-1.05

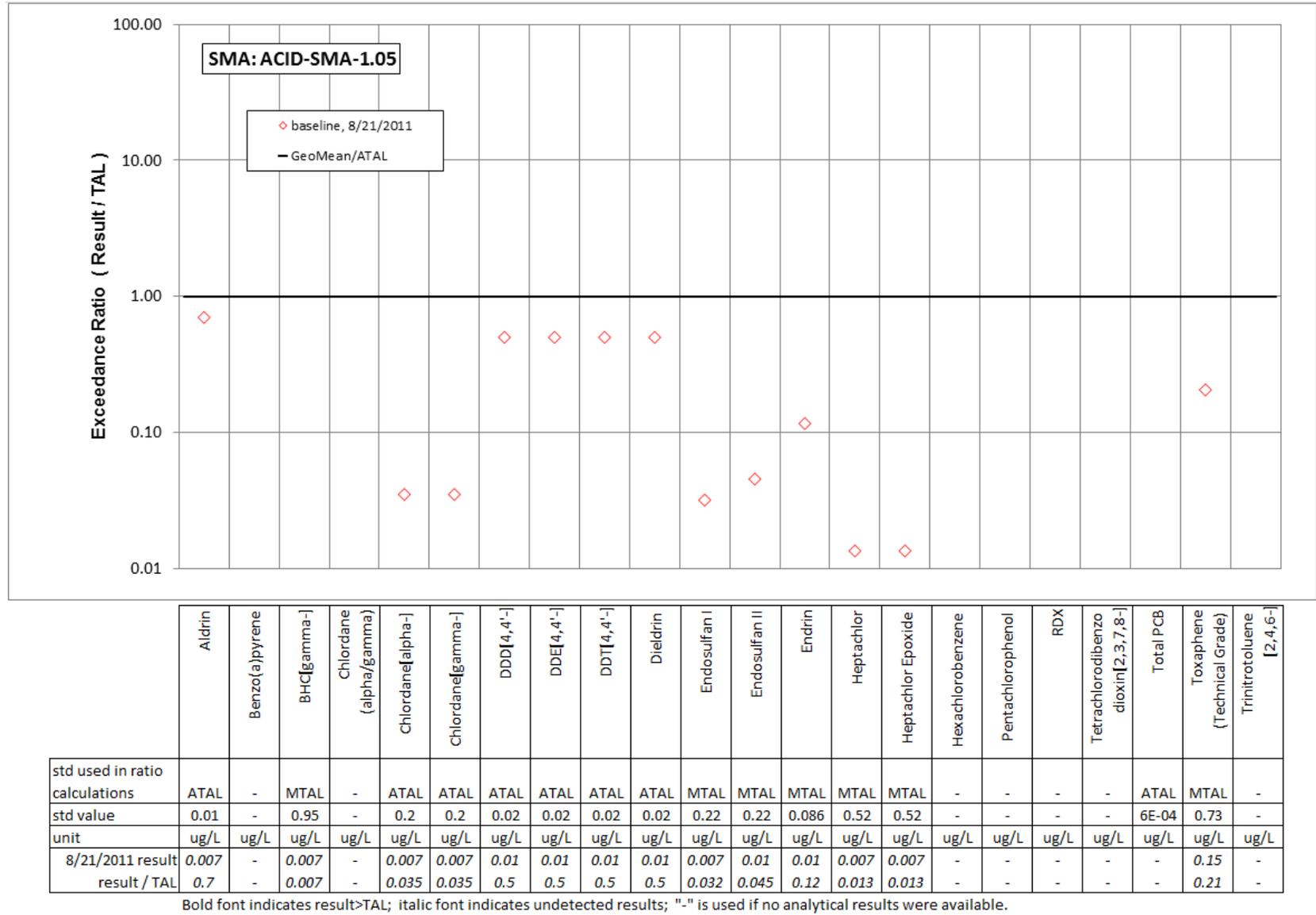


Figure 9-3 Organic analytical results summary plot for ACID-SMA-1.05

## 10.0 ACID-SMA-2: SWMUs 01-002(b)-00, 45-001, 45-002, and 45-004

### 10.1 Site Descriptions

Four historical industrial activity areas are associated with P002, ACID-SMA-2: Sites 01-002(b)-00, 45-001, 45-002, and 45-004.

SWMU 01-002(b)-00 was created in 2000 when SWMU 01-002 was divided into the drainline portion [SWMU 01-002(a)-00] and an outfall portion [SWMU 01-002(b)-00]. SWMU 01-002(b)-00 consists of a former industrial waste line outfall and its drainage into Acid Canyon. The outfall was located in former TA-45 at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon. From 1943 to 1951, this outfall was used to discharge untreated radioactive liquid waste (RLW) generated in laboratories and research facilities in former TA-01. Discharges of untreated RLW ceased when the TA-45 RLW treatment plant (SWMU 45-001) began to operate in 1951. Between 1943 and 1951, approximately 4,800,000 gal. of untreated wastewater was discharged annually from SWMU 01-002(b)-00. D&D of TA-45 began in October 1966 and included the removal of the SWMU 01-002(b)-00 outlet drainline, an associated weir box, tuff around the outfall, and tuff from the canyon wall below the outfall. Wastes generated during these activities were disposed of at TA-54. In September 1967, the TA-45 property was transferred to Los Alamos County. SWMU 01-002(b)-00 was remediated during a 2001 IA. The entire drainage below the former outfall was remediated and then sampled. Risk-assessment results indicate SWMU 01-002(b)-00 poses no unacceptable risk to recreational receptors and poses no risk to ecological receptors. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

SWMU 45-001 consists of a former RLW treatment plant and associated outfalls. The former TA-45 RLW treatment plant (building 45-2) was the first facility of its kind at the Laboratory. It was located near what is now the intersection of Canyon Road and Central Avenue in the Los Alamos townsite. The treatment plant began operation in 1951 and operated until 1961. The plant initially received RLW only from TA-01. As Laboratory operations expanded, RLW from TA-03, TA-43, and TA-48 were also sent to the TA-45 RLW treatment plant. The capacity of the plant was originally 90 gal. per min but was expanded to 145 gal. per min in 1957. The treatment plant included neutralization and storage tanks, flocculation tanks, sedimentation basins, vacuum filters, and granular-media filters. Effluent from the plant discharged to Acid Canyon through outfalls located near the canyon rim, northeast of SWMU 01-002(b)-00. One outfall was used to discharge treated wastewater and the other was connected to floor drains in building 45-2. Operation of the treatment plant ceased after the new Radioactive Liquid Waste Treatment facility (RLWTF) was constructed in TA-50. D&D of the TA-45 RLW treatment plant began in October 1966 and included demolition and removal of the plant equipment, structures, and waste lines and excavation of contaminated soil. Portions of the walls of Acid Canyon below the outfalls were also decontaminated. In September 1967, the TA-45 property was transferred to Los Alamos County. Risk-assessment results indicate SWMU 45-001 poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC without controls for SWMU 45-001 in February 2013. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

SWMU 45-002 consists of a former vehicle decontamination facility (former building 45-1) that was used to decontaminate vehicles and large equipment, including filters from the Sigma Building, trash dumpsters, and wing tanks from airplanes. SWMU 45-002 was located approximately 40 ft south of the TA-45 RLW treatment plant (SWMU 45-001). The decontamination facility began operation in 1952. Vehicles and other equipment were decontaminated by steam-cleaning. This facility operated

infrequently, approximately once per month. SWMU 45-002 was decommissioned in 1966, along with the other facilities in former TA-45. In September 1967, the TA-45 property was transferred to Los Alamos County. Risk-assessment results indicate SWMU 45-002 poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC without controls for SWMU 45-002 in February 2013. Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

SWMU 45-004 consists of a sanitary sewer outfall that was associated with the sanitary sewer system constructed in 1947 to serve the Los Alamos townsite. This sewer system included a sanitary sewer lift station (structure 45-3) and sanitary sewer manholes (structures 45-5 and 45-6). SWMU 45-004 served as an outfall for emergency bypass of the lift station. D&D of the TA-45 RLW treatment plant began in October 1966 and included the demolition and removal of the plant equipment, structures, and waste lines, including the SWMU 45-004 drainline and outfall. In September 1967, the TA-45 property was transferred to Los Alamos County. Risk-assessment results indicate SWMU 45-004 poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC without controls for SWMU 45-004 in February 2013. Potential contaminants associated with industrial materials historically managed at this Site are low concentrations of metals and organic chemicals associated with domestic sewage.

The project map (Figure 10-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 45-001 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 10-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

## 10.2 Control Measures

Check dams are dissipating velocity from urban run-on. A berm in the northern area of the storage yard operated by Los Alamos County serves to control runoff from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 10-1).

**Table 10-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00202020006	Established Vegetation - Forested/Needle Cast			X		CB
P00203010004	Berms - Earthen		X		X	CB
P00203060015	Berms - Straw Wattles	X			X	B
P00203060016	Berms - Straw Wattles	X			X	B
P00203060017	Berms - Straw Wattles	X			X	B
P00206010002	Check Dam - Rock	X			X	CB
P00206010013	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 10.3 Storm Water Monitoring

SWMUs 01-002(b)-00, 45-001, 45-002, and 45-004 are monitored within ACID-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figures 10-2 and 10-3). Analytical results from this sample yielded three TAL exceedances:

- Aluminum concentration of 789 µg/L (MTAL is 750 µg/L),
- Gross-alpha activity of 40.5 pCi/L (ATAL is 15 pCi/L), and
- Polychlorinated biphenyl (PCB) concentration of 80 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 01-002(b)-00:* Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

- Consent Order sampling has not been performed at SWMU 01-002(b)-00. Samples were collected at the Site as part of an IA completed in 2001.
- Aluminum—Aluminum was not detected above BV in the IA confirmation samples.
- PCBs—PCBs were detected at a maximum concentration 65% of the residential SSL in IA confirmation samples collected above the ACID-SMA-2 sampler location.
- Gross alpha—Alpha-emitting radionuclides americium-241, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 were detected at maximum activities of 130 times, 418 times, 5100 times, 3.6 times, 3.2 times, and 1.6 times fallout values (FVs)/BVs, respectively, in IA confirmation samples collected above the ACID-SMA-2 sampler location.

In summary, PCBs are not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above BV and PCBs were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL or PCBs above ATAL in storm water. Americium, uranium, and plutonium, which have alpha-emitting isotopes, are known to be associated with industrial materials historically managed at this Site and several isotopes were detected substantially above BVs/FVs. Americium, uranium, and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 45-001:* Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

- Aluminum—Aluminum was not detected above BV in samples collected from SWMU 45-001 during the 2006 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 7% of the residential SSL in Consent Order samples.

- Gross alpha—Consent Order samples were not analyzed for alpha-emitting radionuclides because the nature and extent of contamination for these constituents were defined by previous RFI samples collected in 1994. Alpha-emitting radionuclides americium-241, plutonium-238, and plutonium-239 were detected at maximum activities of 1.4 times, 3.2 times, and 237 times FVs/BVs, respectively, in 1994 RFI samples.

In summary, PCBs are not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above BV, and PCBs were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL and PCBs above ATAL in storm water. Americium and plutonium, which have alpha-emitting isotopes, are known to be associated with industrial materials historically managed at this Site and were detected above FVs, with plutonium-239 detected substantially above FV. Americium and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.



**SWMU 45-002:** Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

- Aluminum—Aluminum was not detected above BV in samples collected from SWMU 45-002 during the 2006 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 7% of the residential SSL in Consent Order samples.
- Gross alpha—Consent Order samples were not analyzed for alpha-emitting radionuclides because the nature and extent of contamination for these constituents were defined by previous RFI samples collected in 1994. Alpha-emitting radionuclides americium-241, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 were detected at maximum activities of 1.2 times, 2.3 times, 12 times, 6.2 times, 4.2 times, and 8.1 times FVs/BVs, respectively, in 1994 RFI samples.

In summary, PCBs are not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above BV, and PCBs were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL and PCBs above ATAL in storm water. Americium, uranium, and plutonium, which have alpha-emitting isotopes, are known to be associated with industrial materials historically managed at this Site and were detected above BVs/FVs. Americium, uranium, and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 45-004*: Potential contaminants associated with industrial materials historically managed at this Site are low concentrations of metals and organic chemicals associated with domestic sewage.

- Aluminum—Aluminum was not detected above BV in samples collected from SWMU 45-004 during the 2006 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 7% of the residential SSL in Consent Order samples.
- Gross alpha—Consent Order samples were not analyzed for alpha-emitting radionuclides because the nature and extent of contamination for these constituents were defined by previous RFI samples collected in 1994. Plutonium and uranium isotopes were not detected above BVs/FVs in RFI samples.

In summary, PCBs are not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above BV and PCBs were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL and PCBs above ATAL in storm water. Alpha-emitting isotopes are not known to be associated with industrial materials historically managed at this Site and were not detected above BVs/FVs. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 10-2 and 10-3. 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 10-2 and 10-3.

Monitoring location ACID-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.
- PCBs—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is between these values.

All the analytical results for these samples are reported in the 2011 Annual Report.

## 10.4 Inspections and Maintenance

RG055.5 recorded one storm event at ACID-SMA-2 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 10-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20158	03-28-2012
Annual Erosion Evaluation	COMP-23314	03-28-2012
Storm Rain Event	BMP-28680	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 10-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28680	Needle cast and leaves removed from behind rock check dams P00206010002 and -0013.	10-19-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-29098	Repaired earthen berm P00203010004.	11-01-2012	13 day(s)	Maintenance conducted in timely manner.

## 10.5 Compliance Status

The Sites associated with ACID-SMA-2 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 10-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-002(b)-00	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-03-2011
SWMU 45-001	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-03-2011
SWMU 45-002	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-03-2011
SWMU 45-004	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-03-2011

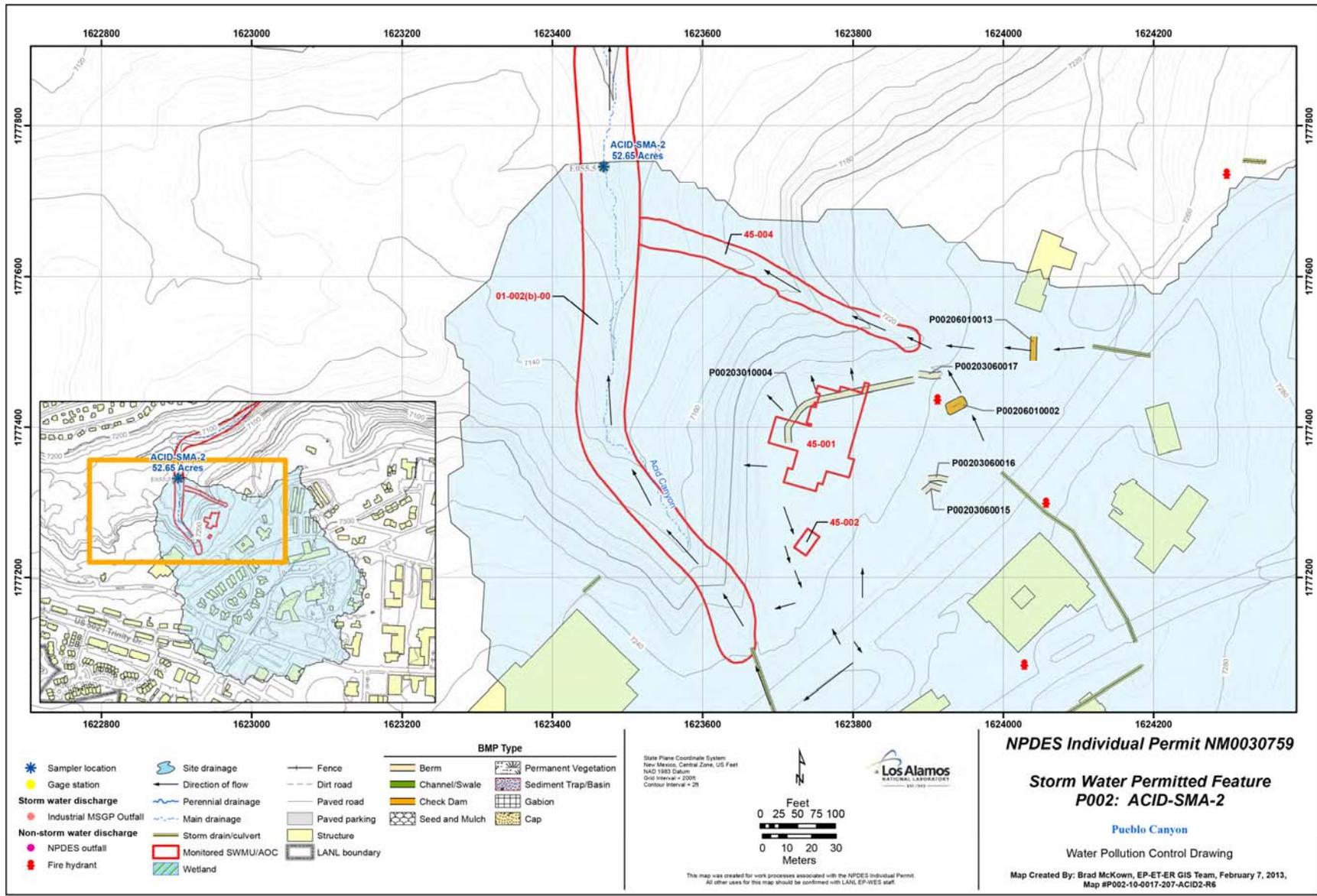
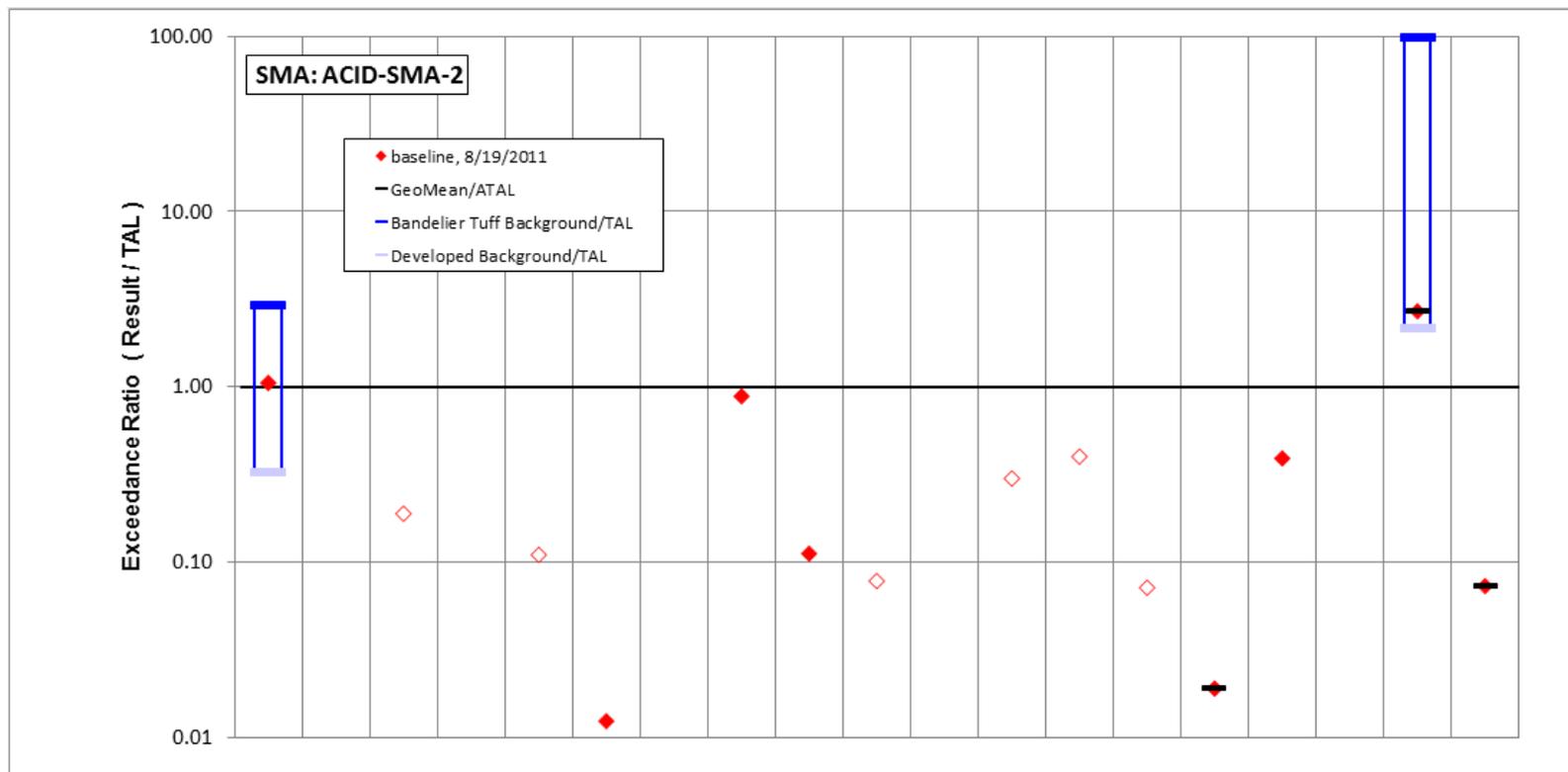


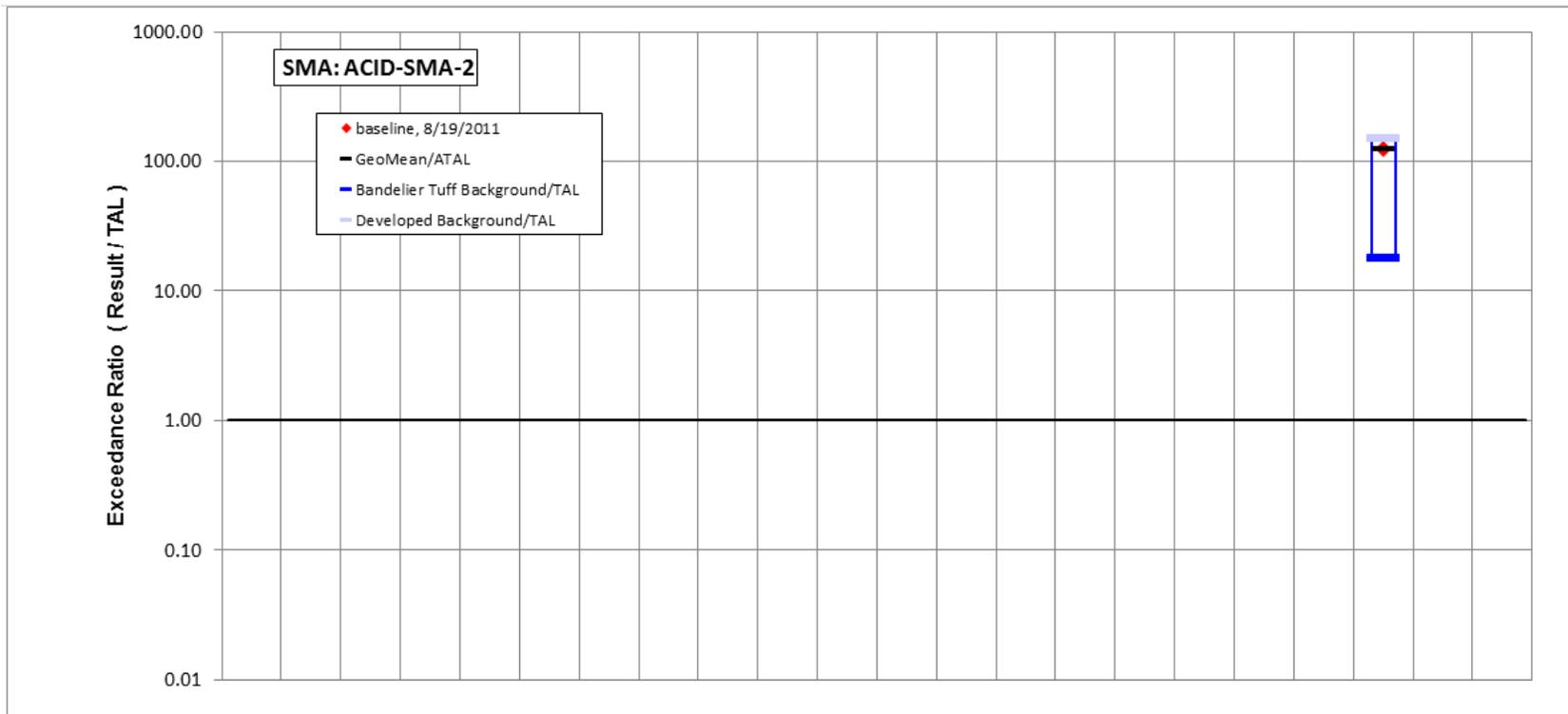
Figure 10-1 ACID-SMA-2 location map



	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
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	-	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
<b>8/19/2011 result</b>	<b>789</b>	<i>1</i>	<i>1.7</i>	<i>15</i>	<i>0.11</i>	<i>2.6</i>	<i>1.6</i>	<i>3.8</i>	<i>1.9</i>	<i>0.06</i>	<i>1.2</i>	<i>1.5</i>	<i>0.2</i>	<i>0.45</i>	<i>1.9</i>	<i>16.4</i>	-	<b>40.5</b>	<i>2.19</i>
result / TAL	<b>1.1</b>	<i>0.002</i>	<i>0.19</i>	<i>0.003</i>	<i>0.11</i>	<i>0.012</i>	<i>0.0016</i>	<i>0.88</i>	<i>0.11</i>	<i>0.078</i>	<i>0.0071</i>	<i>0.3</i>	<i>0.4</i>	<i>0.071</i>	<i>0.019</i>	<i>0.39</i>	-	<b>2.7</b>	<i>0.073</i>

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

Figure 10-2 Inorganic analytical results summary plot for ACID-SMA-2



	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-]	<b>Total PCB</b>	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
<b>8/19/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.08</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>120</b>	-	-

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

Figure 10-3 Organic analytical results summary plot for ACID-SMA-2

## 11.0 ACID-SMA-2.01: AOC 00-030(f)

### 11.1 Site Descriptions

One historical industrial activity area is associated with P002A, ACID-SMA-2.01: Site 00-030(f).

AOC 00-030(f) is a former septic system that consisted of two septic tanks located on private property south of Canyon Road and north of Rose Street, slightly northeast of the United Church school building. On a 1943 engineering drawing, the tanks are labeled “Septic Tank No. 2.” The system was tied to sewer lines in the “Apartment Area” and handled sanitary waste from a school, a post exchange, and some of the original Ranch School buildings but did not handle waste from TA-01 operations. The septic system ceased operating when the central WWTP came online in 1947. Portions of the tanks were previously removed; however, tank remnants remain under a sidewalk and existing retaining wall; the outfall was not located. Decision-level data for AOC 00-030(f) indicate AOC 00-030(f) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC without controls for AOC 00-030(f) in December 2008. However, since the outfall location was identified in 2009, additional sampling was conducted at AOC 00-030(f) in 2010. Risk-assessment results indicate AOC 00-030(f) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. The Laboratory requested a COC without controls for AOC 00-030(f) from NMED in October 2010.

The project map (Figure 11-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 11.2 Control Measures

There is the potential for run-on contributions from the adjacent developed and paved areas at this SMA. Existing controls are in place to divert run-on around the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 11-1).

**Table 11-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P002A02010001	Established Vegetation - Grasses and Shrubs			X		CB
P002A03010004	Berms - Earthen	X			X	CB
P002A03060006	Berms - Straw Wattles		X		X	B
P002A04060002	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 11.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at ACID-SMA-2.01. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

#### 11.4 Inspections and Maintenance

RG055.5 recorded one storm event at ACID-SMA-2.01 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 11-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23315	05-31-2012
Storm Rain Event	BMP-28677	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 11-3 Maintenance during 2012**

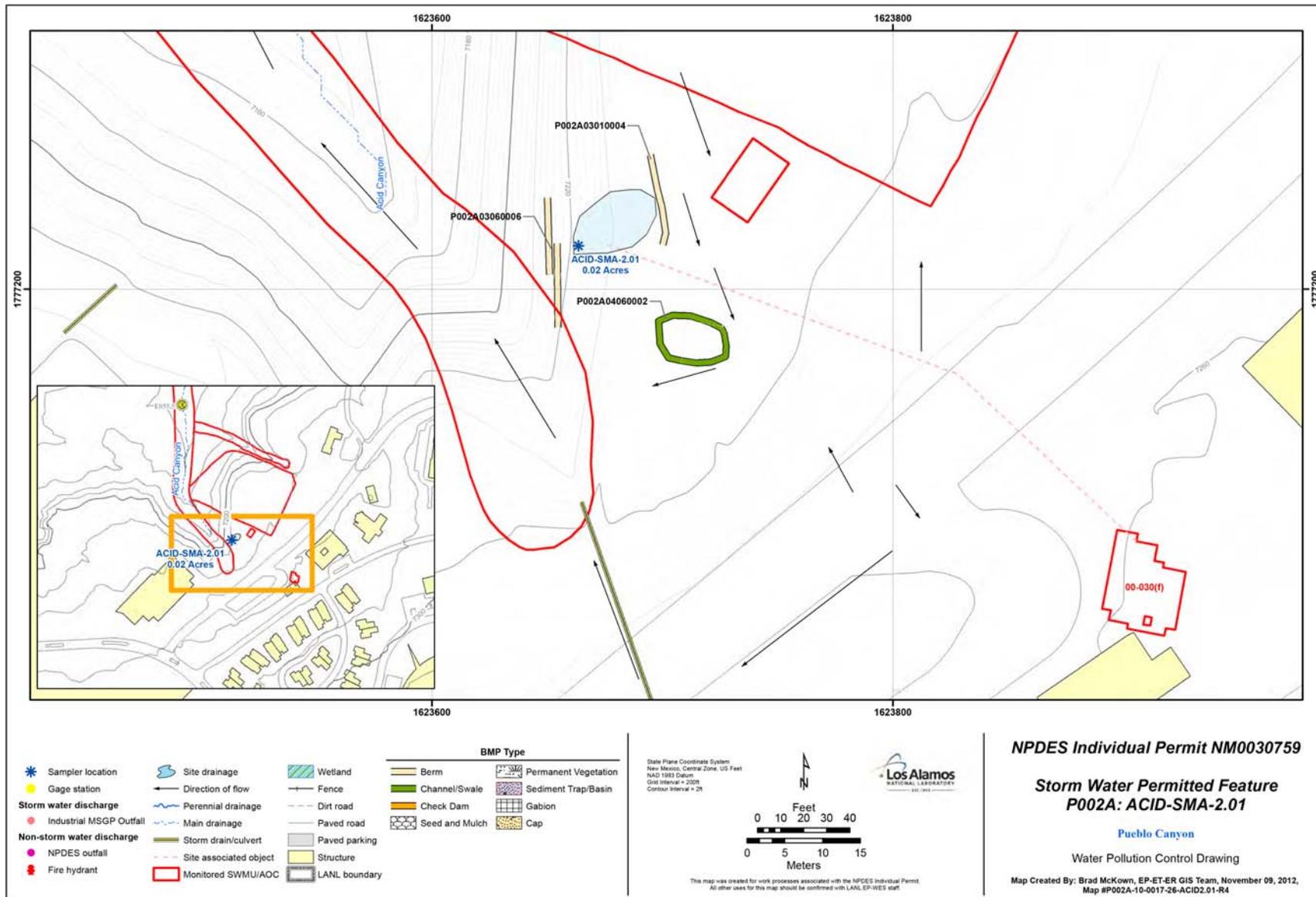
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29090	Install new straw wattle in same location as wattle -0005. Wattle -0005 will be retired when work is completed.	11-01-2012	13 day(s)	Maintenance conducted in timely manner.

#### 11.5 Compliance Status

The Site associated with ACID-SMA-2.01 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 11-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 00-030(f)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 11-1 ACID-SMA-2.01 location map**

## **12.0 ACID-SMA-2.1: SWMU 01-002(b)-00**

### **12.1 Site Descriptions**

One historical industrial activity area is associated with P003, ACID-SMA-2.1: Site 01-002(b)-00.

SWMU 01-002(b)-00 was created in 2000 when SWMU 01-002 was divided into the drainline portion [SWMU 01-002(a)-00] and an outfall portion [SWMU 01-002(b)-00]. SWMU 01-002(b)-00 consists of a former industrial waste line outfall and its drainage into Acid Canyon. The outfall was located in former TA-45 at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon. From 1943 to 1951, this outfall was used to discharge untreated RLW generated in laboratories and research facilities in former TA-01. Discharges of untreated RLW ceased when the TA-45 RLW treatment plant (SWMU 45-001) began operation in 1951. Between 1943 and 1951, approximately 4,800,000 gal. of untreated wastewater was discharged annually from SWMU 01-002(b)-00. D&D of TA-45 began in October 1966 and included removing the SWMU 01-002(b)-00 outlet drainline, an associated weir box, tuff around the outfall, and tuff from the canyon wall below the outfall. Wastes generated during these activities were disposed of at TA-54. In September 1967, the TA-45 property was transferred to Los Alamos County. SWMU 01-002(b)-00 was remediated during a 2001 IA. The entire drainage below the former outfall was remediated and then sampled. Risk-assessment results indicate SWMU 01-002(b)-00 poses no unacceptable risk to recreational receptors and poses no risk to ecological receptors. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

The project map (Figure 12-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **12.2 Control Measures**

There is potential for significant run-on to this SMA from urban areas within and around the Site. Run-on could originate on paved roads, parking areas, and roof top drains that are located primarily in the southern portion of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 12-1).

**Table 12-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00302010001	Established Vegetation - Grasses and Shrubs			X		CB
P00302020014	Established Vegetation - Forested/Needle Cast			X		CB
P00302030012	Established Vegetation - Vegetative Buffer Strip		X	X	X	CB
P00303010002	Berms - Earthen	X			X	CB
P00303010009	Berms - Earthen	X			X	CB
P00303060016	Berms - Straw Wattles	X			X	B
P00303060017	Berms - Straw Wattles	X			X	B
P00303060018	Berms - Straw Wattles	X			X	B
P00304060011	Channel/Swale - Riprap	X		X		CB
P00306010004	Check Dam - Rock	X			X	CB
P00306010015	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 12.3 Storm Water Monitoring

SWMU 01-002(b)-00 is monitored within ACID-SMA-2.1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 3, 2012 (Figures 12-2 and 12-3). Analytical results from this sample yielded two TAL exceedances:

- Gross-alpha activity of 24.8 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 20 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 01-002(b)-00*: Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

- Consent Order sampling has not been performed at SWMU 01-002(b)-00. Samples were collected at the Site as part of an IA completed in 2001.
- PCBs—PCBs were detected at a maximum concentration 5.5 times the residential SSL in IA confirmation samples collected between the ACID-SMA-2 and ACID-SMA-2.1 sampler locations.
- Alpha-emitting radionuclides americium-241, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 were detected at maximum activities of 2200 times, 620 times, 4100 times, 3.0 times, 1.3 times, and 1.5 times FVs/BVs, respectively, in IA confirmation samples collected between the ACID-SMA-2 and ACID-SMA-2.1 sampler locations.

PCBs are not known to be associated with industrial materials historically managed at the Site but were detected substantially above the residential SSL. The also Site receives runoff from other potential sources. Based on site history and previous sampling results, the Site may be a source of PCBs above ATAL in storm water. Americium, uranium, and plutonium, which have alpha-emitting isotopes, are known to be associated with industrial materials historically managed at this Site and were detected above BVs/FVs. Americium and plutonium isotopes were substantially above FVs. Americium, uranium, and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 12-2 and 12-3. 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 12-2 and 12-3.

Monitoring location ACID-SMA-2.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L and gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2012 gross-alpha result is less than both of these two values.
- PCBs—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2012 is between these values.

All the analytical results for these samples are reported in the 2012 Annual Report.

#### 12.4 Inspections and Maintenance

RG055.5 recorded one storm event at ACID-SMA-2.1 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 12-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23316	03-28-2012
Visual	COMP-27867	09-28-2012
Storm Rain Event	BMP-28681	10-25-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 12-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28337	Installed new straw wattle P00203060016 in same location as wattle -0005, which was retired.	10-11-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-28337	Installed new straw wattle P00203060017 in same location as wattle -0006, which was retired.	10-11-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-28337	Installed new straw wattle P00203060018 approximately 5 ft east of wattle -0007, which was retired, from debris pile covering west end of old wattle.	10-11-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-28270	Repaired berm P00303010009 by building up and extending as needed, also reseeded and matted. Dirt was added along entire length to build up height then compacted with motorized tamper. Berm was extended approximately 3 ft southeast.	10-17-2012	19 day(s)	Maintenance conducted as soon as practicable.

**12.5 Compliance Status**

The Sites associated with ACID-SMA-2.1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 12-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-002(b)-00	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-07-2012

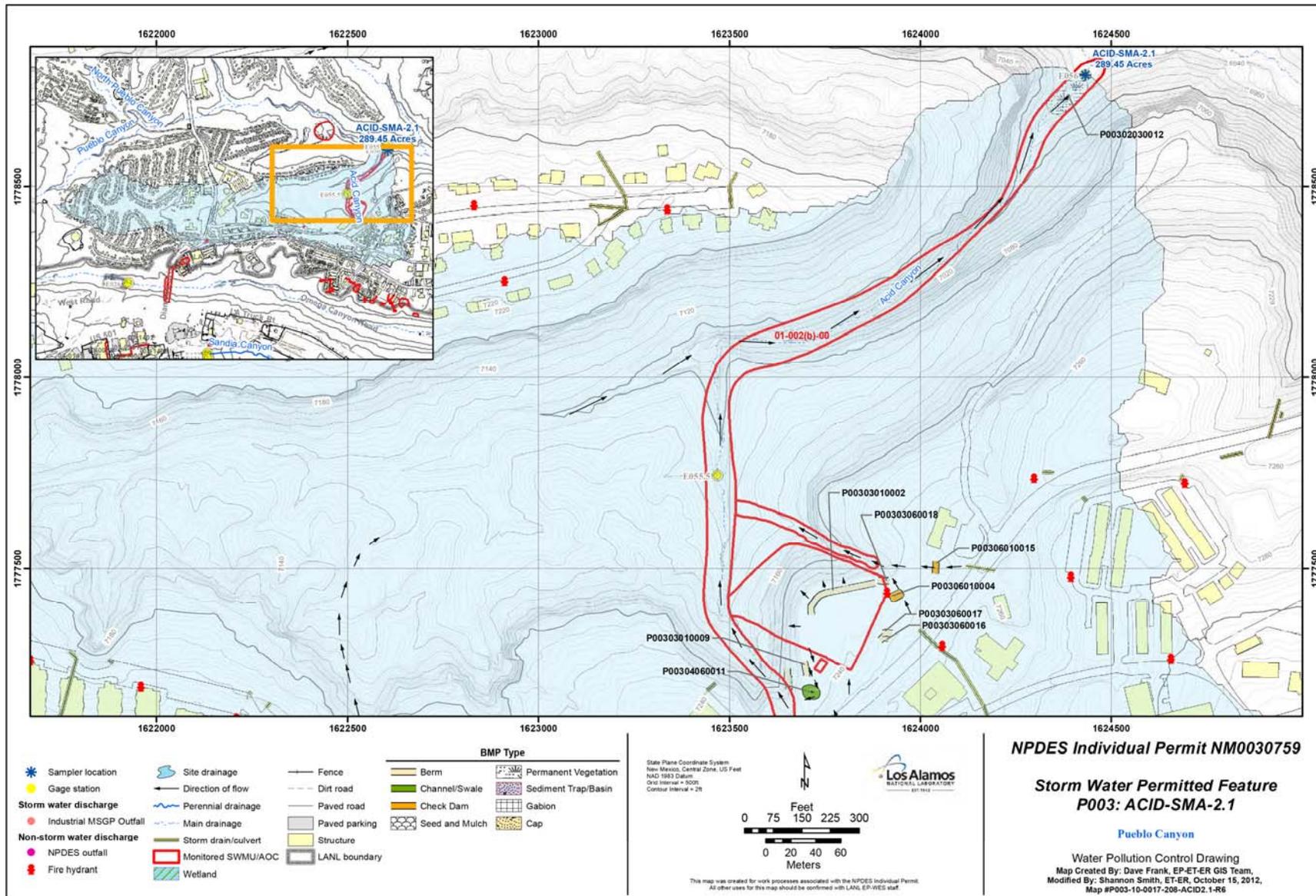
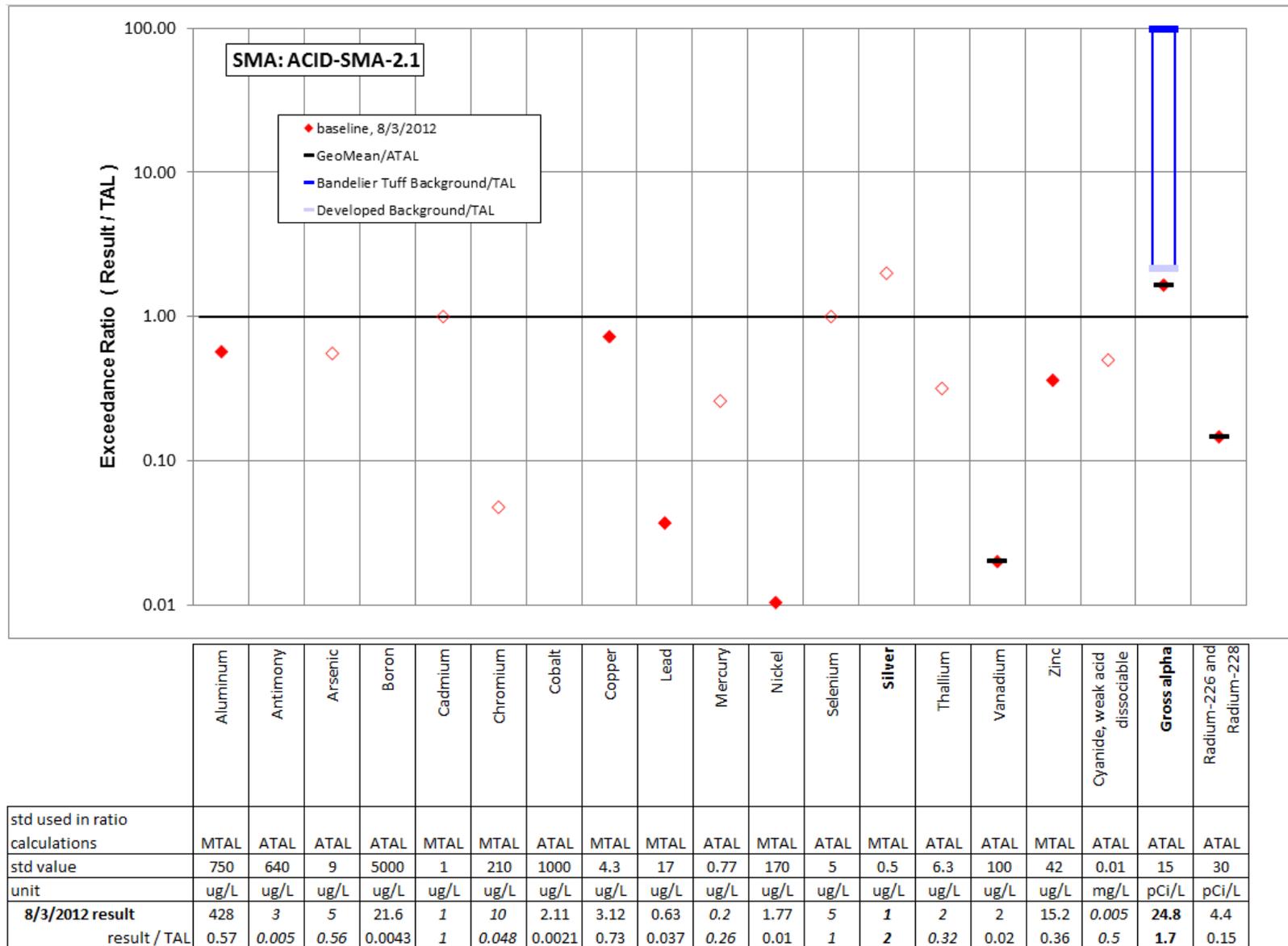
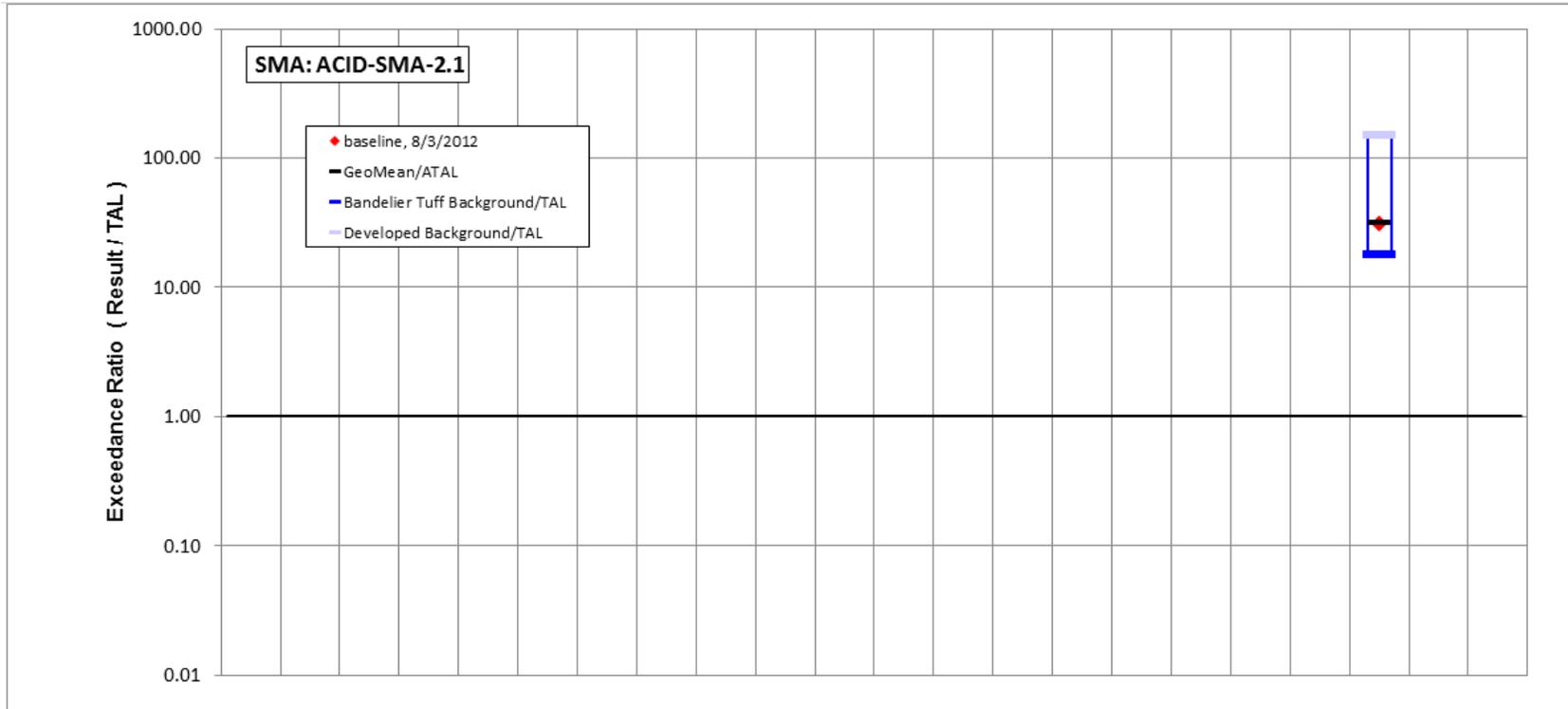


Figure 12-1 ACID-SMA-2.1 location map



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

Figure 12-2 Inorganic analytical results summary plot for ACID-SMA-2.1



	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-]	<b>Total PCB</b>	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
<b>8/3/2012 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.02</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>31</b>	-	-

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

Figure 12-3 Organic analytical results summary plot for ACID-SMA-2.1

### 13.0 P-SMA-0.3: AOC 00-018(b)

#### 13.1 Site Descriptions

One historical industrial activity area is associated with P004, P-SMA-0.3: Site 00-018(b).

AOC 00-018(b) is the former Bayo Canyon WWTP that was located at the intersection of Pueblo and Bayo Canyons. It began operating in 1963 and was upgraded in 1966. The plant treated the sanitary waste stream that previously was routed to the former central WWTP (SWMU 00-019) and sanitary waste from residences on Barranca Mesa. Most wastes treated at the plant were from businesses, eastern Los Alamos residences, and Barranca Mesa residences. After the Pueblo Canyon WWTP was decommissioned in 1992, the remaining northern and western Los Alamos residential sanitary waste streams were routed to the Bayo Canyon WWTP. This plant was the primary supplier of effluent for irrigation at the Los Alamos golf course and recreational ball fields from 1992 until it was decommissioned in 2009. The Bayo WWTP was demolished by Los Alamos County in 2009 and 2010. Risk-assessment results indicate AOC 00-018(b) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC without controls for AOC 00-018(b) in January 2011.

The project map (Figure 13-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

#### 13.2 Control Measures

Most of the potential run-on to the Permitted feature would originate on the undeveloped land surrounding the SMA. The run-on is controlled through the use of a culvert that diverts run-on away from the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 13-1).

**Table 13-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00402010001	Established Vegetation - Grasses and Shrubs			X		CB
P00403010002	Berms - Earthen	X			X	CB
P00403010006	Berms - Earthen		X		X	CB
P00403010007	Berms - Earthen	X			X	CB
P00404040003	Channel/Swale - Culvert	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

#### 13.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at P-SMA-0.3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 13.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at P-SMA-0.3 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 13-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23435	06-01-2012
Storm Rain Event	BMP-26283	08-08-2012
Storm Rain Event	BMP-27088	08-28-2012
Storm Rain Event	BMP-28082	10-01-2012
Storm Rain Event	BMP-28625	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 13-3 Maintenance during 2012**

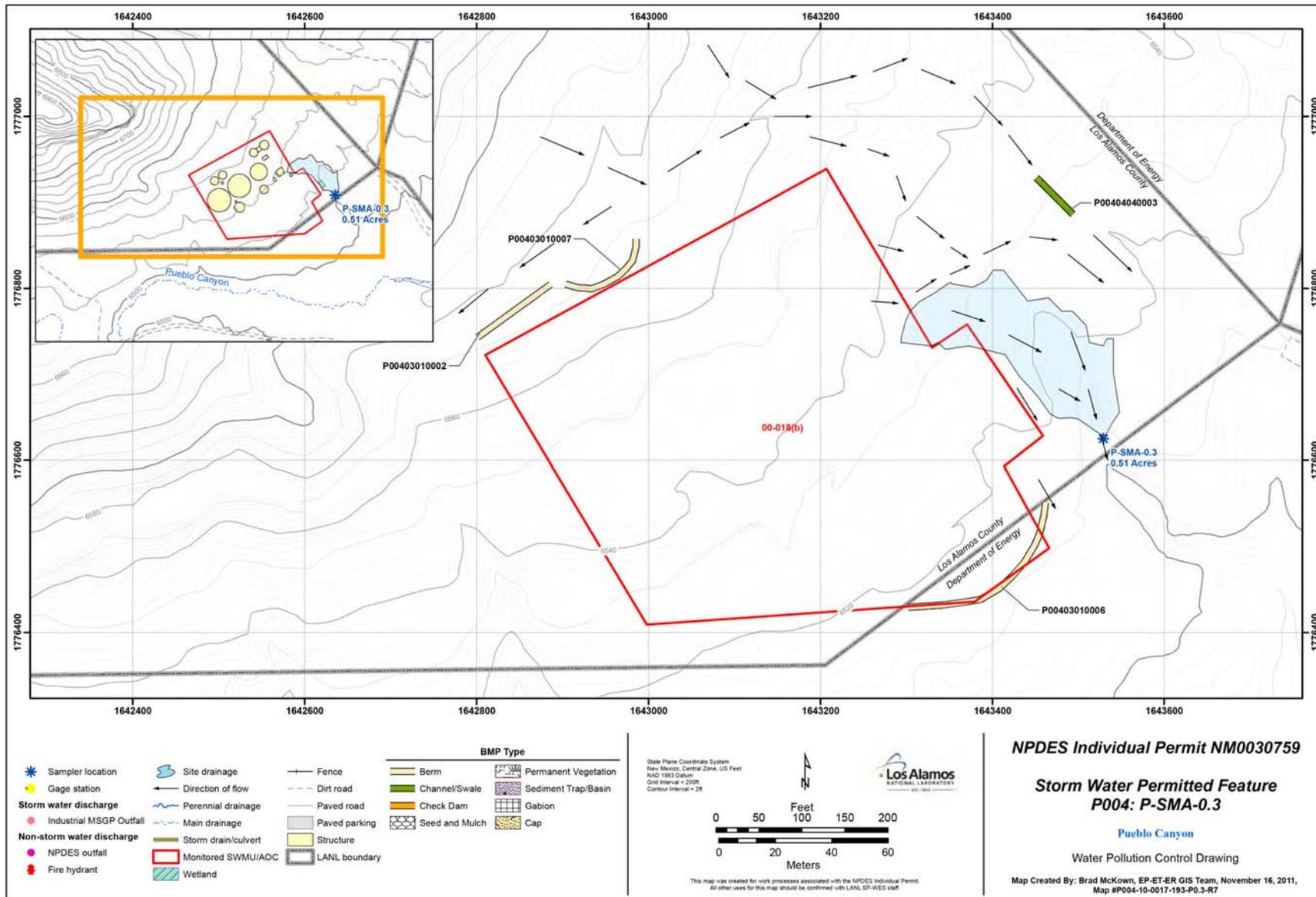
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-24188	Installed wattles as backup control for earthen berm P00403010002, pending excavation permit to repair.	06-14-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-24748	Repaired earthen berm P00403010002.	07-19-2012	48 day(s)	Maintenance conducted as soon as practicable.

### 13.5 Compliance Status

The Site associated with P-SMA-0.3 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 13-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 00-018(b)	Baseline Monitoring	Baseline Monitoring Extended	NMED, January 14, 2011, "Certificate of Completion Pueblo Canyon Aggregate Area Area of Concern (AOC) 00-018(b) Los Alamos National Laboratory"



**Figure 13-1 P-SMA-0.3 location map**

## 14.0 P-SMA-1: SWMUs 73-001(a) and 73-004(d)

### 14.1 Site Descriptions

Two historical industrial activity areas are associated with P005, P-SMA-1: Sites 73-001(a) and 73-004(d).

SWMU 73-001(a) is a former municipal landfill located at TA-73, north of the runway at the Los Alamos County Airport. Use of the landfill began in 1943, and wastes were disposed of in a natural hanging valley on the south rim of Pueblo Canyon. As more capacity was required, trenches were excavated into the tuff. A hot-mix asphalt batch plant operated in the vicinity of the landfill from the mid-1940s until 1954. Ash and burn residues from an incinerator (SWMU 73-002) were also deposited in the landfill.

Los Alamos County operated the landfill from 1965 until it closed in 1973. Between 1984 and 1986, the western portion of the landfill was excavated and moved to the debris disposal pit [SWMU 73-001(d)] to allow for the construction of the hangars and tie-down areas at the airport. Clean fill was used to backfill



P-SMA-1, Rip Rap, P00504060013 (photo ID 8653-10)

the excavated area. No additional investigations are planned for SWMU 73-001(a). Risk-assessment results indicate no potential unacceptable risk to recreational and ecological receptors.

SWMU 73-004(d) is a former septic system located east of the present airport terminal building at TA-73. Installed in the early 1970s, the septic system served the landfill office and was located approximately 20 ft northeast of the building. A 4-in.-diameter VCP connected the building's toilet to the septic tank. The building and septic tank were removed as part of the decommissioning operation in the early 1970s. No additional

investigations are planned for SWMU 73-004(d). Risk-assessment results indicate no potential unacceptable risk to recreational and ecological receptors.

The project map (Figure 14-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 73-001(a) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 14-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### 14.2 Control Measures

Minimal run-on is generated from the airport runway itself. The most significant run-on source is the culvert outlet that captures runoff (airport) from the five grated pad drains. Run-on to the SMA is generated from the paved areas, hanger roof tops, and pads associated with the airport. This run-on has the potential to erode the slope below the discharge point at the head of the primary drainage channel above the sampler. Vegetated buffer strips, riprap, and berms are used together to control this run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 14-1).

**Table 14-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00501060020	Seed and Mulch - Erosion Control Blankets			X		B
P00502010001	Established Vegetation - Grasses and Shrubs			X		CB
P00502030014	Established Vegetation - Vegetative Buffer Strip		X	X		CB
P00502030015	Established Vegetation - Vegetative Buffer Strip	X		X		CB
P00503010018	Berms - Earthen		X		X	B
P00503010019	Berms - Earthen		X		X	B
P00503060021	Berms - Straw Wattles		X		X	B
P00503060022	Berms - Straw Wattles		X		X	B
P00503060025	Berms - Straw Wattles		X		X	B
P00503060030	Berms - Straw Wattles		X		X	B
P00503060031	Berms - Straw Wattles		X		X	B
P00503060033	Berms - Straw Wattles		X		X	B
P00503060034	Berms - Straw Wattles		X		X	B
P00503060035	Berms - Straw Wattles		X		X	B
P00503060036	Berms - Straw Wattles		X		X	B
P00503060037	Berms - Straw Wattles		X		X	B
P00503060038	Berms - Straw Wattles		X		X	B
P00503060039	Berms - Straw Wattles		X		X	B
P00503080003	Berms - Retaining Wall		X		X	CB
P00503120017	Berms - Rock		X		X	B
P00504020005	Channel/Swale - Concrete/Asphalt		X	X		CB
P00504020009	Channel/Swale - Concrete/Asphalt	X		X		CB
P00504040004	Channel/Swale - Culvert	X		X		CB
P00504040016	Channel/Swale - Culvert	X		X		CB
P00504060002	Channel/Swale - Riprap		X	X		CB
P00504060013	Channel/Swale - Riprap		X	X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 14.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at P-SMA-1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 14.4 Inspections and Maintenance

RG038 recorded two storm events at P-SMA-1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 14-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23436	05-30-2012
Storm Rain Event	BMP-24979	07-20-2012
Storm Rain Event	BMP-28668	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 14-3 Maintenance during 2012**

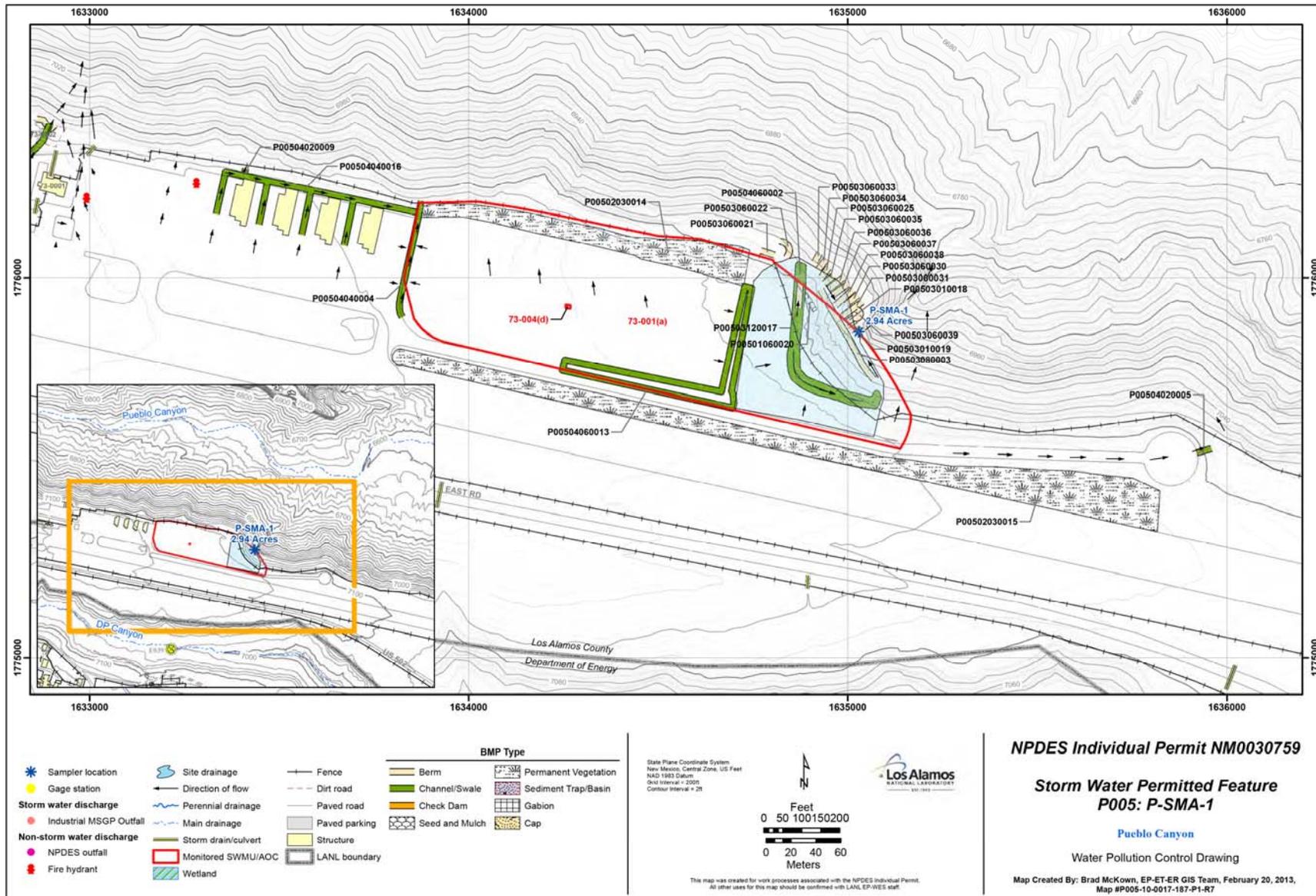
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29304	Added straw wattle P00503060039 to the end of berm P00503010018.	10-31-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-29307	Installed new straw wattle P00503060035 in same location as wattle -0026, which was retired.	10-31-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-29308	Installed new straw wattle P00503060036 in same location as wattle -0027, which was retired.	10-31-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-29309	Installed new straw wattle P00503060037 in same location as wattle -0028, which was retired.	10-31-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-29310	Installed new straw wattle P00503060038 in same location as wattle -0029, which was retired.	10-31-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-29303	Added riprap to erosion control blanket P00501060020.	11-06-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-29305	Installed new straw wattle P00503060033 in same location as wattle -0023, which was retired.	11-06-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-29306	Installed new straw wattle P00503060034 in same location as wattle -0024, which was retired.	11-06-2012	13 day(s)	Maintenance conducted in timely manner.

### 14.5 Compliance Status

The Sites associated with P-SMA-1 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 14-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 73-001(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 73-004(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



**Figure 14-1 P-SMA-1 location map**

## **15.0 P-SMA-2: SWMUs 73-002 and 73-006**

### **15.1 Site Descriptions**

Two historical industrial activity areas are associated with P006, P-SMA-2: Sites 73-002, and 73-006.

SWMU 73-002 consists of an inactive incinerator (structure 73-2) and a former associated ash pile located at TA-73, west of the Los Alamos Airport terminal and on the south rim of Pueblo Canyon. The incinerator was housed in the two-story concrete building, 73-2, and a 6-ft-diameter stack was located on the north side of the building. The incinerator was originally used to destroy classified documents from the Laboratory; however, this practice was discontinued after a short period because combustion was incomplete. The incinerator was then used to burn municipal trash. Ash and debris were deposited over the edge of the mesa, which resulted in an ash pile that was approximately 150 ft wide by 160 ft long and up to 8 ft deep. Incinerator operations ceased in 1973, and the incinerator equipment and stack were removed. The ash pile and the associated incinerator debris were removed in 2007. Building 73-2 remains in place. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm SWMU 73-002 does not pose a potential unacceptable risk to residential receptors. NMED issued a COC with controls in August 2007.

SWMU 73-006 consists of two cast iron drainlines that discharged to Pueblo Canyon from the incinerator building (structure 73-2) located west of the airport terminal building at TA-73. The west drainline originated from two floor drains within the west side of the building. The east drainline originated from drains located on the east side of the building. The drainlines discharged directly onto the ash pile (SWMU 73-002). All floor drains have been plugged. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm that SWMU 73-006 does not pose a potential unacceptable risk to residential receptors. NMED issued a COC with controls in August 2007.

The project map (Figure 15-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **15.2 Control Measures**

Control measures at PF P006 are primarily designed to divert run-on from the larger paved area south of the outfall onto hillsides to the east and western portion of the permitted area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 15-1).

**Table 15-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00602010007	Established Vegetation - Grasses and Shrubs			X		CB
P00603020009	Berms - Base Course	X			X	CB
P00603020010	Berms - Base Course	X			X	CB
P00603120008	Berms - Rock		X		X	CB
P00604010001	Channel/Swale - Earthen	X		X		CB
P00604020006	Channel/Swale - Concrete/Asphalt	X		X		CB
P00604060002	Channel/Swale - Riprap	X		X		CB
P00604060003	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 15.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at P-SMA-2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 15.4 Inspections and Maintenance

RG038 recorded two storm events at P-SMA-2 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 15-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23437	05-30-2012
Storm Rain Event	BMP-24980	07-18-2012
Storm Rain Event	BMP-28669	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 15-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-24980	Relocated some rock to middle of channel that was bare for riprap P00604060002. Sediment and needle cast removed from riprap P00604060003.	07-18-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-25773	Added riprap to channel/swale P00604010001 as needed to deter further scouring.	08-02-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-28669	Raprap in channel/swale P00604010001 was rearranged to avoid high spots impeding flow.	10-24-2012	0 day(s)	Maintenance conducted upon inspection.

### 15.5 Compliance Status

The Sites associated with P-SMA-2 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 15-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 73-002	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, 2007, "Approval of the Consolidated Unit 73-002-99 and Corrective Action of Solid Waste Management Unit 73-002, at Technical Area 73"
SWMU 73-006	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, 2007, "Approval of the Consolidated Unit 73-002-99 and Corrective Action of Solid Waste Management Unit 73-002, at Technical Area 73"

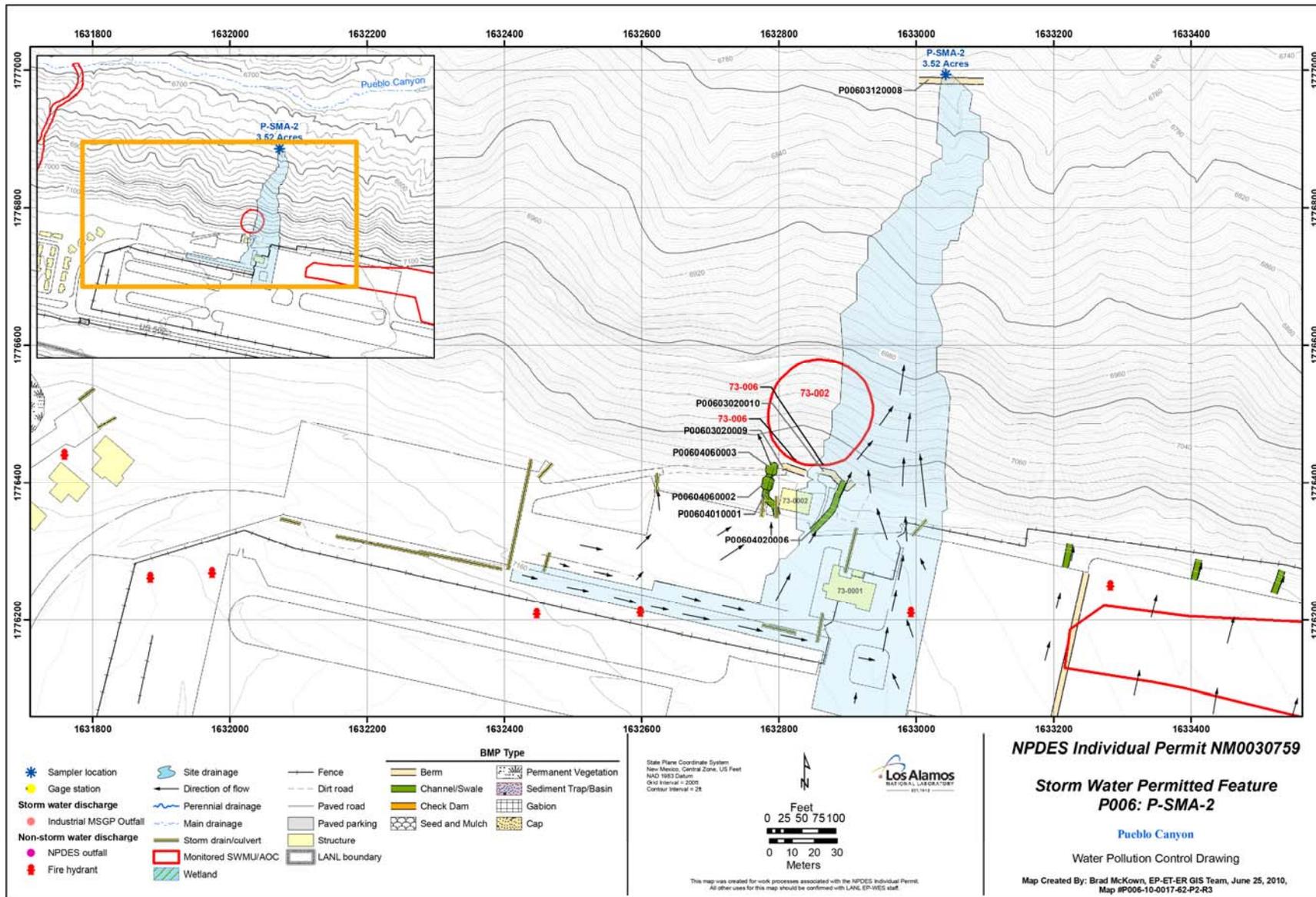


Figure 15-1 P-SMA-2 location map

## 16.0 P-SMA-2.15: SWMU 31-001

### 16.1 Site Descriptions

One historical industrial activity area is associated with P007, P-SMA-2.15: Site 31-001.

SWMU 31-001 consists of a former septic system located in former TA-31. This septic system consisted of a septic tank (structure 00-7), two sanitary sewer manholes (structures 00-41 and 00-42), associated waste lines, and an outfall. The SWMU 31-001 septic system served former building 31-7, which was constructed in 1949 and served as the main warehouse at TA-31. The septic tank (structure 00-7) was constructed of reinforced concrete and was 4 ft x 3 ft x several feet high. This septic tank was located aboveground on a small bench above the rim of Pueblo Canyon, north of building 31-7, and the outfall from the tank discharged into Pueblo Canyon. The septic tank was constructed in 1949, operated until 1954, and was removed in 1988. The waste line from building 31-7 to the septic tank was approximately 600 ft long and included the two manholes (structures 00-41 and 00-42). The waste line was not encountered when the septic tank was removed in 1988. Former TA-31 was located in what is now the eastern residential area of Los Alamos, just west of the Los Alamos Airport. TA-31 served as the receiving area for all truck shipments to the Laboratory from 1945 to 1954. Risk-assessment results indicate SWMU 31-001 poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. The Laboratory requested a COC without controls for SWMU 31-001 from NMED in October 2010.

The project map (Figure 16-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 16.2 Control Measures

Drainage from roads above is minimal because of the curbing and residential lawns. The two areas where the underground culvert daylight on the vegetated right of way are lined with rock and not eroding. The culvert that daylight at the canyon edge has riprap that is currently functioning. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 16-1).

**Table 16-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00702010001	Established Vegetation - Grasses and Shrubs			X		CB
P00702030002	Established Vegetation - Vegetative Buffer Strip	X		X		CB
P00704060003	Channel/Swale - Riprap	X		X		CB
P00704060006	Channel/Swale - Riprap		X	X		CB
P00706010004	Check Dam - Rock	X			X	CB
P00706010005	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 16.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at P-SMA-2.15. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 16.4 Inspections and Maintenance

RG038 recorded two storm events at P-SMA-2.15 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 16-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23438	06-01-2012
Storm Rain Event	BMP-24981	07-18-2012
Storm Rain Event	BMP-28670	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 16-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23952	Added more rock and built up rock check dam P00706010004.	06-11-2012	10 day(s)	Maintenance conducted in timely manner.
BMP-24981	Some leaves and needle cast cleared from behind rock check dam P00706010004.	07-18-2012	0 day(s)	Maintenance conducted upon inspection.

### 16.5 Compliance Status

The Site associated with P-SMA-2.15 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 16-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 31-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment

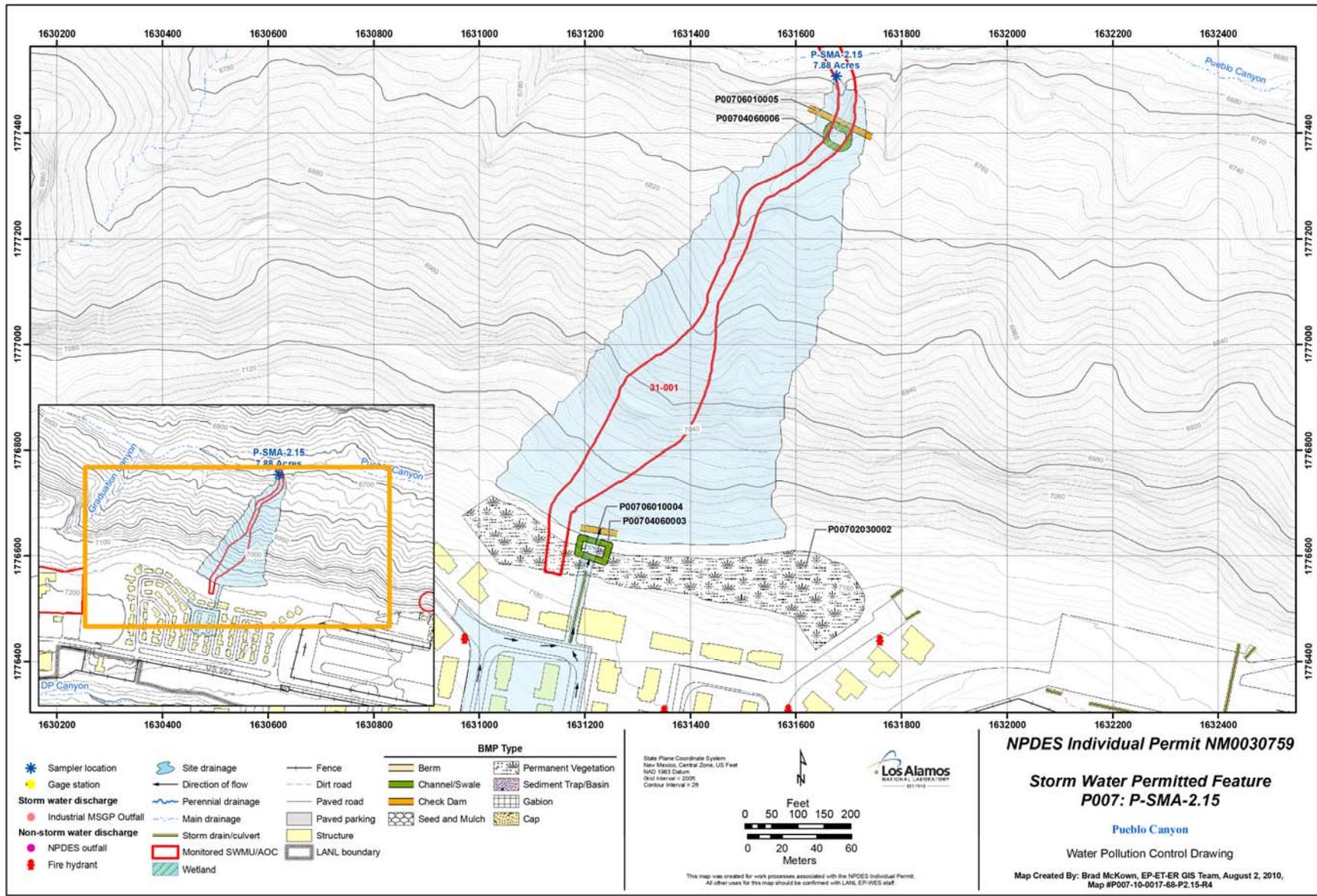


Figure 16-1 P-SMA-2.15 location map

## 17.0 P-SMA-2.2: SWMU 00-019

### 17.1 Site Descriptions

One historical industrial activity area is associated with P008, P-SMA-2.2: Site 00-019.

SWMU 00-019 is the former Central Wastewater Treatment Plant (CWWTP), which was first installed to replace a series of septic tanks serving the original Laboratory facilities and some residential areas of the Los Alamos townsite. The CWWTP operated from 1947 to 1961. The SWMU is located in the eastern part of the Los Alamos townsite, at the current location of the Sombrillo assisted-living facility, at the north edge of Townsite Mesa above Graduation Canyon, a hanging tributary canyon of Pueblo Canyon. Former CWWTP components comprising SWMU 00-019 are a primary settling tank, sludge digestion tank, final settling tank, trickling filter, chlorine contact tank, clarifier, pump house, two sludge-drying beds, two outfall areas, former manholes, and associated underground piping. CWWTP operations were confined to the mesa top, but two outfalls from the CWWTP discharged onto the canyon slope above Graduation Canyon.

The western outfall pipe was an 8-in.-diameter VCP with a concrete discharge apron. The western outfall accommodated overflow from the inlet manhole and potentially discharged untreated sewage in case of over-capacity flow events at the plant. The eastern outfall is located 170 ft east of the western outfall and was a 12-in.-diameter VCP with an exposed section of galvanized steel pipe at the discharge point. The eastern outfall initially discharged treated waste from the final settling tank and later received overflow from the chlorine contact tank after the treatment plant was renovated to provide disinfection to allow use of effluent as supplemental irrigation water for the Los Alamos golf course. Treated effluent was also piped to TA-03 for use as cooling tower makeup water. A second 6-in.-diameter VCP also discharged to the eastern outfall. This pipe led from floor drains in the pump house. The eastern outfall potentially discharged untreated and/or partially treated waste and/or sludge from the pump house in case of leaks or pipe breaks in the pump house.

In 1967, both the site and CWWTP were transferred intact, but out of service, to Los Alamos County ownership. Although Los Alamos County never operated the plant as a WWTP, it used the site for various activities and removed portions of the treatment plant structures over time. Los Alamos County used the mesa top after the ownership transfer for various maintenance-related activities. Most notably, Los Alamos County used the mesa top to house the Roads and Grounds Headquarters and a storage area. As a result, the mesa top was heavily reworked by the county over more than 30 yr of ownership. During the VCA conducted at the site in 1999 and 2000, remaining process pipelines were removed and samples were collected throughout the site. Following completion of the VCA, construction began on the assisted-living facility, which was completed in 2004. Data from samples collected during the VCA indicated the nature and extent of contamination were defined, and the site posed no unacceptable risk under current and expected future land use (residential for the mesa-top portion of the site and recreational for the hillside portion). The VCA report recommended NFA for SWMU 00-019 and was approved by NMED in May 2002. Recently, NMED has required



P-SMA-2.2, Rock Check Dam, P00806010019(photo ID 17160-1)

additional investigations associated with potential releases to Graduation Canyon, including those from SWMU 00-019. Storm water and sediment sampling results from the drainage downgradient of SWMU 00-091 will be reported to NMED.

The project map (Figure 17-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

## 17.2 Control Measures

Run-on contributions to this SMA are from roof drains on the north side of the Sombrillo facility, paved areas to the channel east of the center, and paved run-on to the access road north of Sombrillo. Most of the discharge is captured along the road to Graduation Canyon north of Sombrillo and on the bench below the channel east of Sombrillo. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 17-1).

**Table 17-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00802010002	Established Vegetation - Grasses and Shrubs			X		CB
P00803020012	Berms - Base Course	X			X	CB
P00803060023	Berms - Straw Wattles		X		X	B
P00803130014	Berms - S-Fence		X		X	CB
P00803130015	Berms - S-Fence		X		X	CB
P00803130016	Berms - S-Fence		X		X	CB
P00803130024	Berms - S-Fence		X		X	B
P00804020005	Channel/Swale - Concrete/Asphalt		X	X		CB
P00804060001	Channel/Swale - Riprap	X		X		CB
P00804060006	Channel/Swale - Riprap		X	X		CB
P00804080017	Channel/Swale - Turf Reinforcement Matting	X		X		CB
P00806010018	Check Dam - Rock	X			X	CB
P00806010019	Check Dam - Rock	X			X	CB
P00806010020	Check Dam - Rock	X			X	CB
P00806010021	Check Dam - Rock	X			X	CB
P00806010022	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 17.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at P-SMA-2.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 17.4 Inspections and Maintenance

RG038 recorded two storm events at P-SMA-2.2 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 17-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23439	05-30-2012
Storm Rain Event	BMP-24982	07-16-2012
Storm Rain Event	BMP-28671	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 17-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28671	Repaired S-fence P00803130014.	10-24-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-29288	Added more rock to riprap P00804060001.	10-30-2012	6 day(s)	Maintenance conducted in timely manner.
BMP-29289	Extend S-fence P00803130024 to the east.	11-01-2012	8 day(s)	Maintenance conducted in timely manner.

### 17.5 Compliance Status

The Site associated with P-SMA-2.2 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 17-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-019	Baseline Monitoring	Baseline Monitoring Extended	No Comment

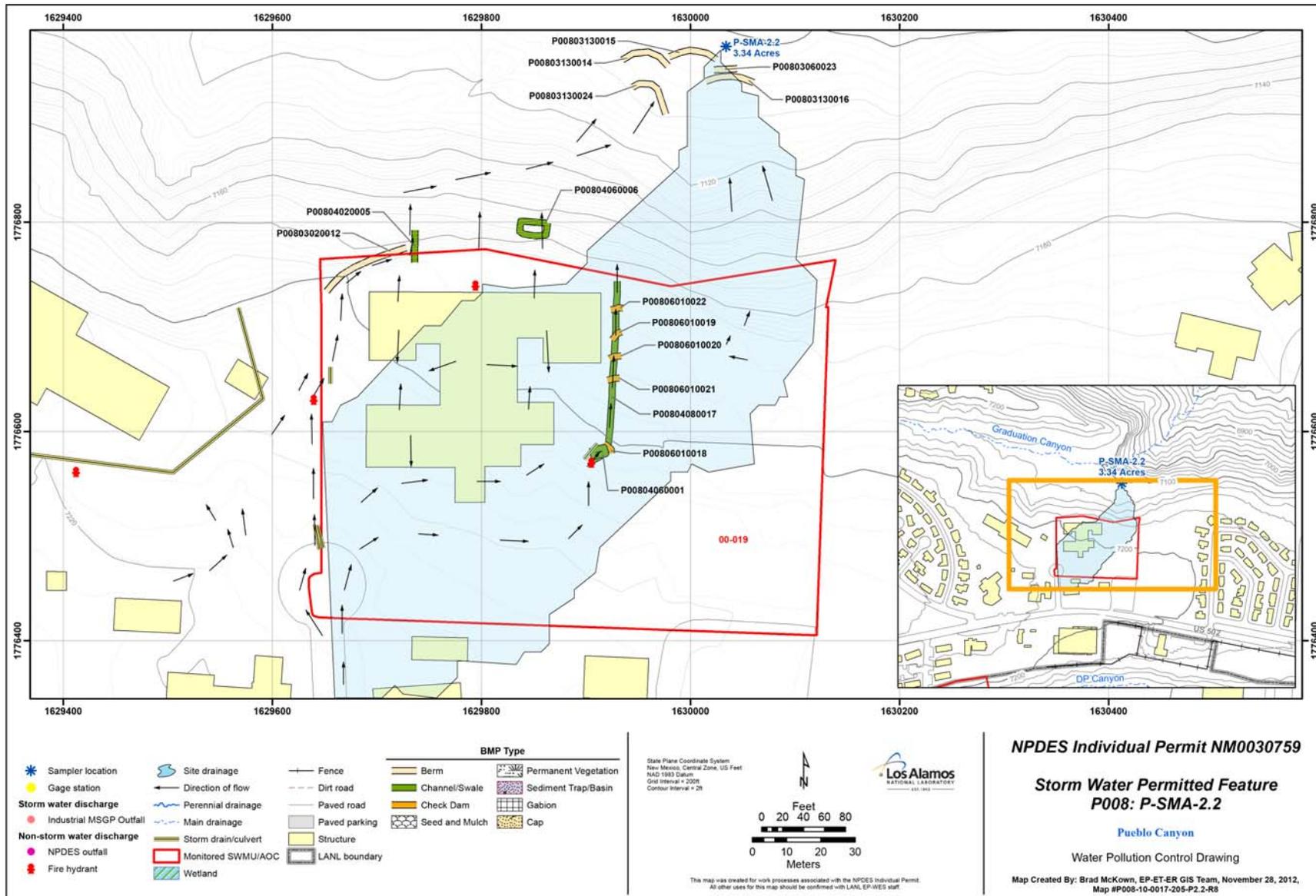


Figure 17-1 P-SMA-2.2 location map

## **18.0 P-SMA-3.05: SWMU 00-018(a)**

### **18.1 Site Descriptions**

One historical industrial activity area is associated with P009, P-SMA-3.05: Site 00-018(a).

SWMU 00-018(a) is the decommissioned Pueblo Canyon WWTP and sludge bed, located at the end of Olive Street in Pueblo Canyon on Los Alamos County property. The plant, which was built between 1946 and 1948, began operating in 1951 and received waste from the Health Research Laboratory (HRL) at TA-43 until 1981 and from Los Alamos business and residential customers until 1991. From 1981 to 1991, the plant received only sanitary waste from Los Alamos businesses and residences. It was the primary supplier of irrigation for the Los Alamos golf course and recreational ball fields [Consolidated Unit 00-028(a)-00]. Originally, the Zia Company operated the plant for the Atomic Energy Commission. In the early 1960s, the site was transferred to Los Alamos County, at which time the county assumed control of the facility. Los Alamos County decommissioned the WWTP in 1992. The HRL generated chemical and radioactive wastes, but Laboratory policy required radioactive wastes generated at the HRL to be managed as such and not to be discharged to the drains. Before 1990, liquid wastes containing phosphorus-32 were permitted in the HRL sanitary waste streams. However, the half-life of phosphorus-32 is 14.3 d, and it would have decayed shortly after it was deposited. Most HRL chemical wastes were salt buffers and cell-culture media and laboratory quantities of organic chemicals. After the plant was decommissioned in 1992, sludge in the plant’s digester was transferred to sludge-drying beds. The sludge was sampled in 1996 and was removed by Los Alamos County. The site is currently accessible to the public for recreational activities. The final D&D of the WWTP was completed in 2008. Risk-assessment results indicate SWMU 00-018(a) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. The Laboratory requested a COC without controls for SWMU 00-018(a) from NMED in October 2010.

The project map (Figure 18-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **18.2 Control Measures**

Urban and natural drainage run-on are concerns at this Permitted Feature. The significant run-on is a result of channel flow and the culvert directing water to the SWMU. The only runoff discharge from the area is a result of the channel/culvert run-on. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 18-1).

**Table 18-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
P00901010011	Seed and Mulch - Seed and Wood Mulch			X		B
P00902010001	Established Vegetation - Grasses and Shrubs			X		CB
P00903010008	Berms - Earthen		X		X	CB
P00903010009	Berms - Earthen		X		X	CB
P00903010010	Berms - Earthen		X		X	B
P00903020007	Berms - Base Course		X		X	CB
P00904050005	Channel/Swale - Water Bar	X		X		CB
P00904050006	Channel/Swale - Water Bar	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**18.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at P-SMA-3.05. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**18.4 Inspections and Maintenance**

RG055.5 recorded one storm event at P-SMA-3.05 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 18-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23440	05-31-2012
Storm Rain Event	BMP-28675	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 18-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29091	Built up earthen berm P00903010008, applied new seed and matting.	10-29-2012	10 day(s)	Maintenance conducted in timely manner.
BMP-29092	Built up earthen berm P00903010009, applied new seed and matting.	10-29-2012	10 day(s)	Maintenance conducted in timely manner.

**18.5 Compliance Status**

The Site associated with P-SMA-3.05 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 18-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-018(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

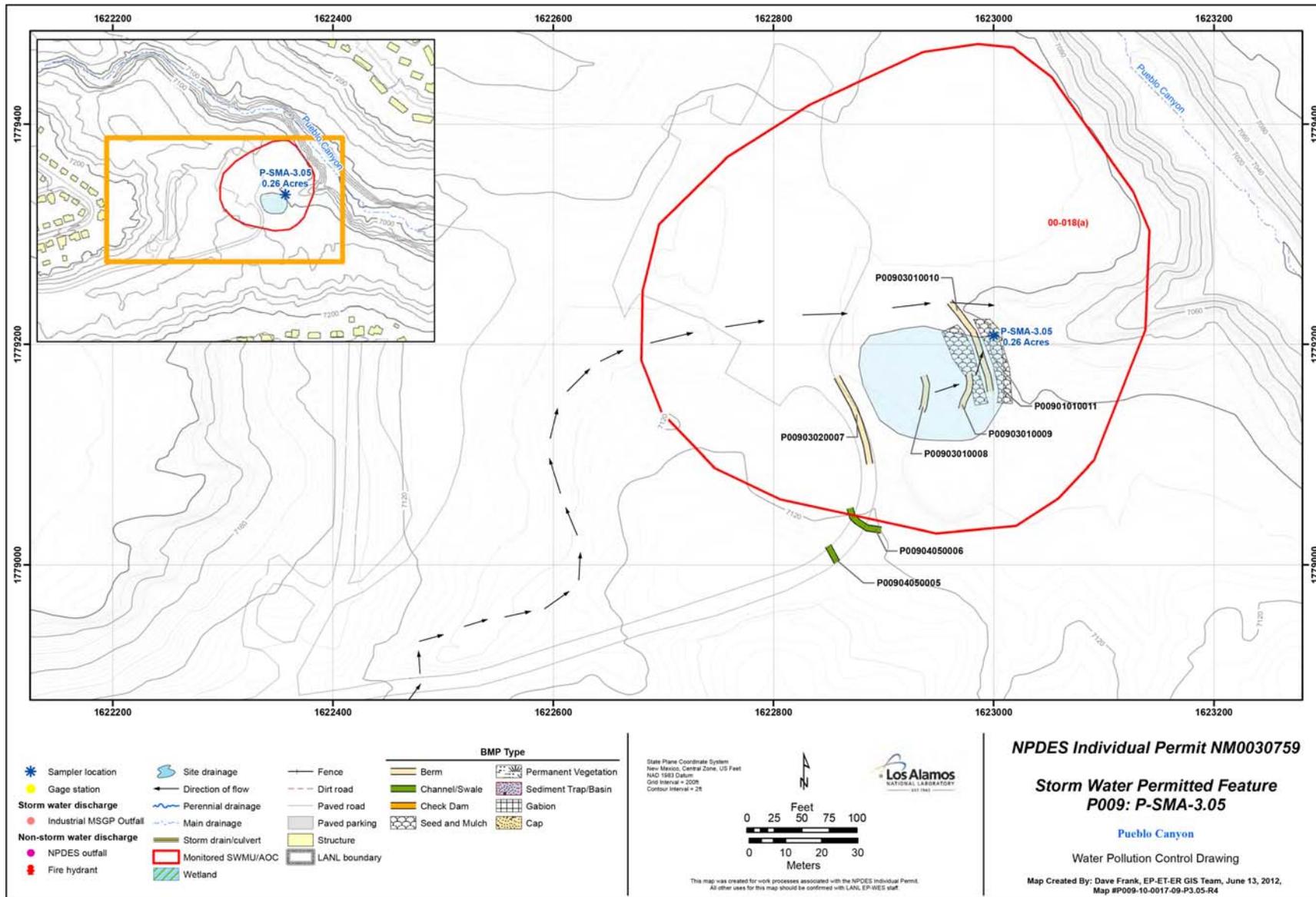


Figure 18-1 P-SMA-3.05 location map

## 19.0 LA-SMA-0.85: SWMU 03-055(c)

### 19.1 Site Descriptions

One historical industrial activity area is associated with L001, LA-SMA-0.85: Site 03-055(c).

SWMU 03-055(c) consists of an outfall located northeast of the fire station (building 03-41). SWMU 03-055(c) channels storm water toward Los Alamos Canyon through a galvanized corrugated metal pipe (CMP). Previously, the storm drain was connected to building floor drains, but currently it collects and channels only storm water runoff from parking lots located in the northern portion of TA-03. The site is currently an undeveloped wooded area on DOE property. Decision-level data indicate SWMU 03-055(c) poses no unacceptable risk to residential receptors, and the former outfall location and drainage poses no unacceptable risk to recreational receptors. Potential contaminants associated with industrial materials historically managed at this Site are petroleum products.

The project map (Figure 19-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 03-055(c) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 19-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### 19.2 Control Measures

The curb along the northern portion of the parking area prevents parking lot run-on to the SMA. The channel banks are elevated, thus preventing run-on from the east and west. Existing culverts are the primary run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 19-1).

Enhanced controls were installed and certified on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 19-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00102010003	Established Vegetation - Grasses and Shrubs			X		CB
L00102030007	Established Vegetation - Vegetative Buffer Strip		X	X		CB
L00103010008	Berms - Earthen		X		X	EC
L00103090006	Berms - Curbing	X			X	CB
L00107010004	Gabions - Gabions		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 19.3 Storm Water Monitoring

SWMU 03-055(c) is monitored within LA-SMA-0.85. Following the installation of baseline control measures, two baseline storm water samples were collected on July 30, 2011, and August 14, 2011 (Figure 19-2). Analytical results from these samples yielded four TAL exceedances:

- Aluminum concentrations of 1310 and 4170 µg/L (MTAL is 750 µg/L),
- Copper concentrations of 18.9 and 47.1 µg/L (MTAL is 4.3 µg/L),
- Lead concentration of 17.7 µg/L (MTAL is 17 µg/L), and
- Zinc concentrations of 55.7 and 186 µg/L (MTAL is 42 µg/L).

Following the installation of enhanced control measures at LA-SMA-0.85, a corrective action storm water sample was collected on November 9, 2012 (Figure 19.3). Analytical results from this corrective action monitoring sample yielded three TAL exceedances:

- Copper concentration of 26.4 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 56.1 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activity of 22.9 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in aluminum, copper, and lead concentrations detected in storm water samples collected at LA-SMA-0.85.

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 03-055(c)*: Potential contaminants associated with industrial materials historically managed at this Site are petroleum products.

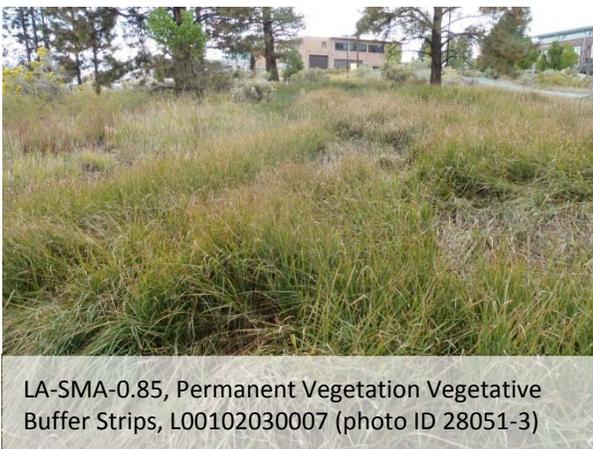
- Aluminum—Aluminum was not detected above BV in samples collected from SWMU 03-055(c) during the 2008–2009 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 1.4 times BV in samples collected during the 2006 Consent Order investigation.
- Lead—Lead was detected at a maximum concentration 8.8 times BV in samples collected during the 2006 Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 4.6 times BV in samples collected during the 2006 Consent Order investigation.
- Gross alpha—Americium-241, plutonium-238, plutonium-239, uranium-234, uranium-235/236, and uranium-238, which are alpha-emitters, were not detected above BVs/FVs in Consent Order samples, with the exception of plutonium-239, which was detected at a maximum activity of 1.3 times FV.

In summary, aluminum, copper, lead, zinc, and alpha-emitting radionuclides are not known to be associated with industrial materials managed at the Site, and aluminum was not detected above BV. Copper, lead, and zinc were detected above BVs, but the Site receives urban runoff from parking lots and paved areas, and this may be the source of the constituents detected above BVs. Plutonium-239 was detected slightly above FV but is excluded from the definition of adjusted gross-alpha radioactivity. Based on site history and previous sampling results, the Site is an unlikely source of aluminum, copper, lead, and zinc above MTALs and adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 19-2 and 19-3. 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 19-2 and 19-3.

Monitoring location LA-SMA-0.85 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- **Copper**—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from the 2012 corrective action sample is between these two values.
- **Zinc**—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. The zinc result from the 2012 corrective action sample is less than both of these values.
- **Gross alpha**—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The gross-alpha result from the 2012 corrective action sample is less than both of these values.



LA-SMA-0.85, Permanent Vegetative Buffer Strips, L00102030007 (photo ID 28051-3)

All the analytical results for these samples are reported in the 2011 and 2012 Annual Reports.

The monitoring station was relocated on September 27, 2012, and is situated approximately 50 ft north of original sampler location and downstream of the newly installed enhanced control. The new location of the sampler is positioned below all enhanced controls and will provide a more representative sample of storm water discharge from SWMU 03-055(c). Sampler coordinates and SMA drainage area are updated in Attachment 4.

## 19.4 Inspections and Maintenance

RG121.9 recorded two storm events at LA-SMA-0.85 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 19-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22633	04-19-2012
Storm Rain Event	BMP-25239	07-25-2012
Construction	COMP-27120	08-14-2012
Construction	COMP-27121	08-17-2012
Construction	COMP-27122	08-22-2012
Construction	COMP-27127	08-28-2012
Construction	COMP-27469	09-04-2012
Construction	COMP-27470	09-11-2012
Construction	COMP-27854	09-17-2012
Construction	COMP-28009	09-21-2012
Enhanced Control Measure Verification	BMP-28051	09-27-2012
Construction	COMP-28049	09-27-2012
Storm Rain Event	BMP-28696	10-25-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 19-3 Maintenance during 2012**

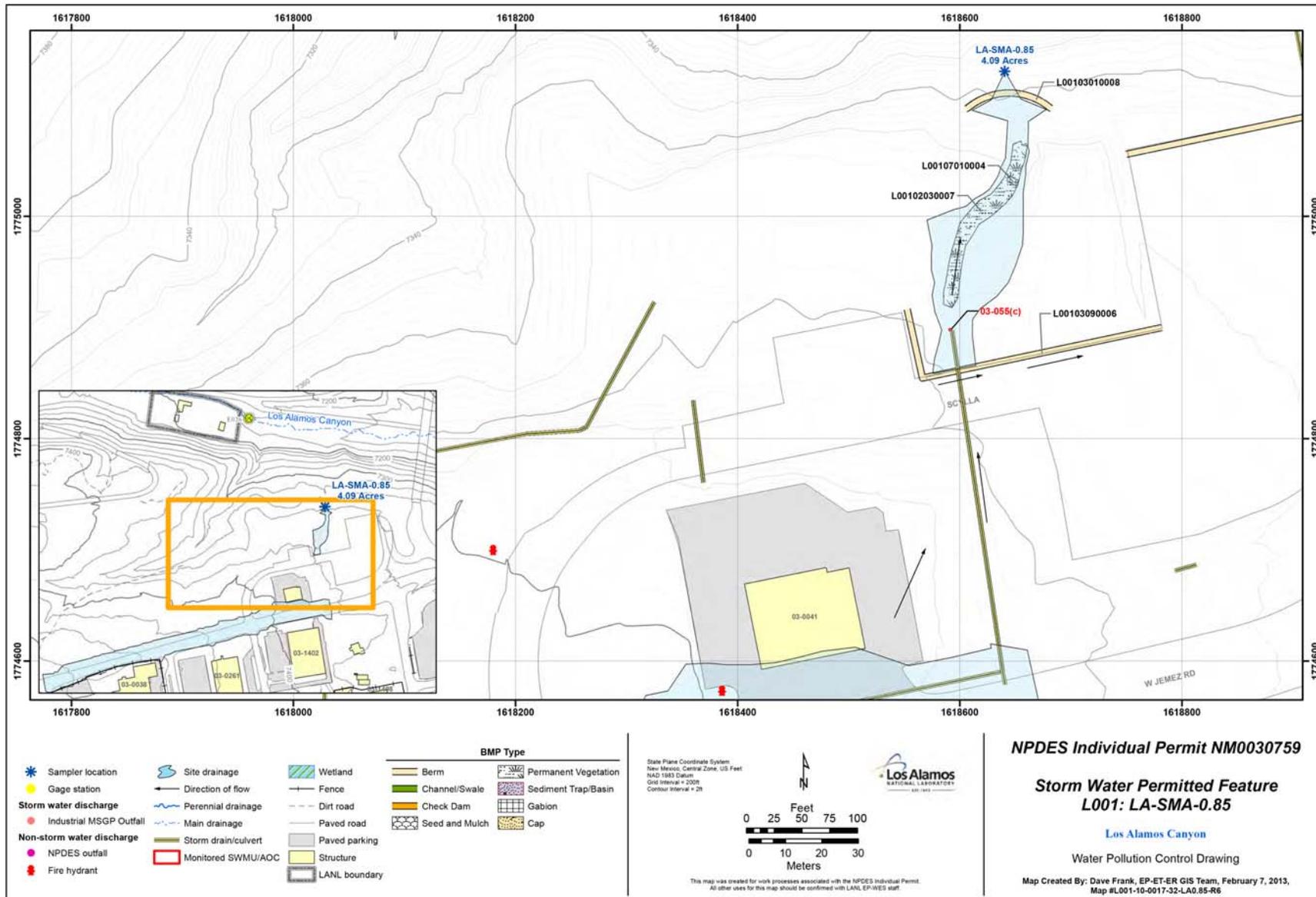
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
COMP-27120	Controls in place, no action recommended by inspector.	08-14-2012	0 day(s)	Maintenance conducted upon inspection.
COMP-27121	Controls in place, no action recommended by inspector.	08-17-2012	0 day(s)	Maintenance conducted upon inspection.
COMP-27122	Controls in place, no action recommended by inspector.	08-22-2012	0 day(s)	Maintenance conducted upon inspection.
COMP-27127	Controls in place, no action recommended by inspector.	08-28-2012	0 day(s)	Maintenance conducted upon inspection.

### 19.5 Compliance Status

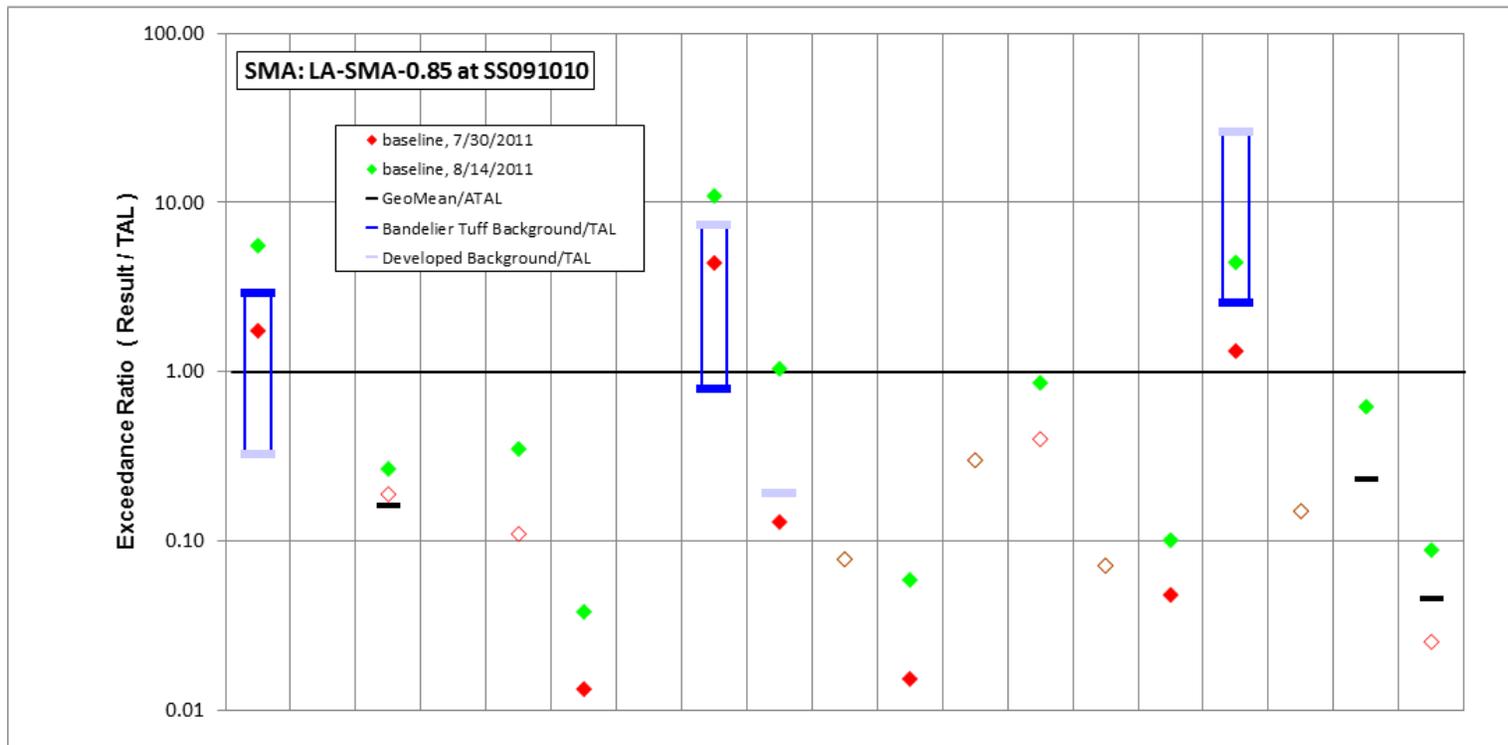
The Site associated with LA-SMA-0.85 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 19-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-055(c)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 10-23-2012



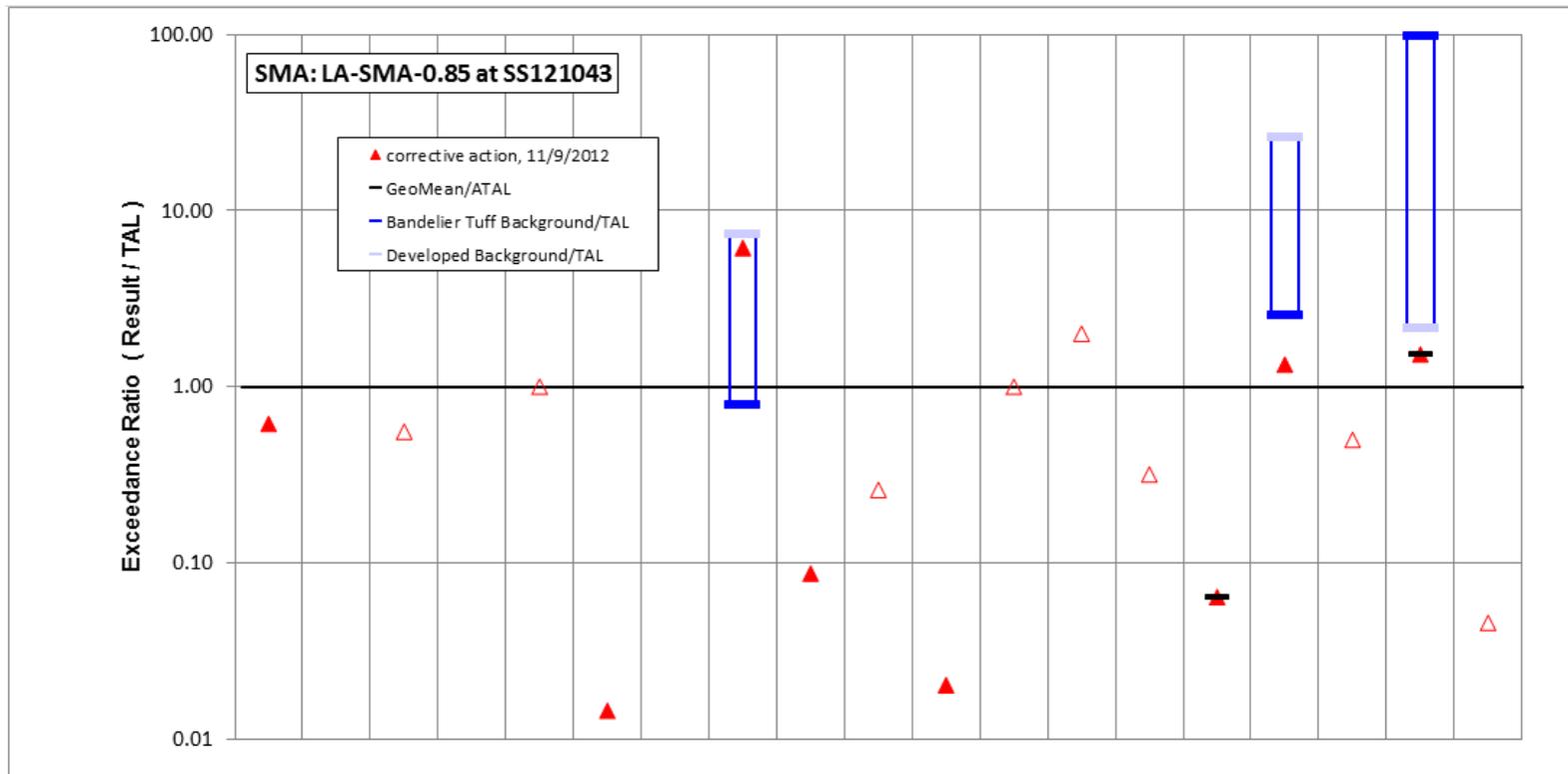
**Figure 19-1 LA-SMA-0.85 location map**



	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
<b>8/14/2011 result</b>	<b>4170</b>	<i>1</i>	2.4	49.6	0.35	8	3.8	<b>47.1</b>	<b>17.7</b>	<i>0.06</i>	10	1.5	0.43	0.45	10.1	<b>186</b>	<i>0.002</i>	9.32	2.65
result / TAL	<b>5.6</b>	<i>0.002</i>	0.27	0.0099	0.35	0.038	0.0038	<b>11</b>	<b>1</b>	<i>0.078</i>	0.059	0.3	0.86	<i>0.071</i>	0.1	<b>4.4</b>	<i>0.15</i>	0.62	0.088
<b>7/30/2011 result</b>	<b>1310</b>	<i>1</i>	1.7	22.3	0.11	2.8	1.4	<b>18.9</b>	2.2	<i>0.06</i>	2.6	1.5	0.2	0.45	4.8	<b>55.7</b>	<i>0.002</i>	0.12	0.76
result / TAL	<b>1.7</b>	<i>0.002</i>	0.19	0.0045	0.11	0.013	0.0014	<b>4.4</b>	0.13	<i>0.078</i>	0.015	0.3	0.4	<i>0.071</i>	0.048	<b>1.3</b>	<i>0.15</i>	0.008	0.025

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

Figure 19-2 Inorganic analytical results summary plot for LA-SMA-0.85 at SS091010



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	<b>Silver</b>	Thallium	Vanadium	<b>Zinc</b>	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>11/9/2012 result</b>	462	1.28	5	28.4	1	3.04	1.73	<b>26.4</b>	1.48	0.2	3.44	5	<b>1</b>	2	6.4	<b>56.1</b>	0.005	<b>22.9</b>	1.37
result / TAL	0.62	0.002	0.56	0.0057	1	0.014	0.0017	<b>6.1</b>	0.087	0.26	0.02	1	<b>2</b>	0.32	0.064	<b>1.3</b>	0.5	<b>1.5</b>	0.046

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

Figure 19-3 Inorganic analytical results summary plot for LA-SMA-0.85 at SS121043

## 20.0 LA-SMA-0.9: SWMU 00-017 and AOC C-00-044

### 20.1 Site Descriptions

Two historical industrial activity areas are associated with L002, LA-SMA-0.9: Sites 00-017 and C-00-044.

SWMU 00-017 consists of former industrial waste line 167, a former manhole (unassigned land release [ULR]) 33, and former industrial waste lines 170 and 171. The industrial waste lines were installed to serve the entire Laboratory from its inception 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 waste generated by various operations 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 various removal projects were completed through 1986. Former line 167 and former manhole ULR-33 were removed before 1985, except for the anchors and sections of pipe encased in anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former line 167 and former manhole ULR-33 under the Omega Bridge remains undeveloped. Nine concrete anchors and 3-ft-long sections of pipe encased in each of the anchors remain at the site. Decision-level data for SWMU 00-017 were below residential SSLs, except for lead detected in one sample at a concentration slightly above the residential SSL, but well below the construction worker SSL. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

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). The bridge was constructed in 1951 and is located in both TA-00 and TA-03. This AOC was identified in 1999 during RFI activities. Surface samples collected 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, an inactive underground industrial waste line. During further research and interviews of Los Alamos County and Laboratory maintenance staff, it was discovered that lead paint chips were deposited beneath the bridge on the north and south slopes of Los Alamos Canyon as a result of periodic bridge maintenance activities, including scraping and chipping old paint before new paint was applied. Lead was detected above residential SSLs in samples collected at AOC C-00-044 in 2011; several sample locations overlapped SWMU 00-017. AOC C-00-044 will be investigated further and remediated to remove lead contaminated soil. The only potential contaminant associated with industrial materials historically managed at this Site is lead.

The project map (Figure 20-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.



LA-SMA-0.9, Permanent Vegetation Grasses and Shrubs, L00202010001 (photo ID 10562-4)

The Site boundary for SWMU 00-017 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 20-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

## 20.2 Control Measures

The western portion of the bridge is curbed. There is no evidence of run-on impact from the bridge. There is minimal run-on because of engineered controls, specifically, curbs, drop inlets, and grading. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 20-1).

**Table 20-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00201060019	Seed and Mulch - Erosion Control Blankets			X		B
L00202010001	Established Vegetation - Grasses and Shrubs			X		CB
L00203010013	Berms - Earthen		X		X	B
L00203010014	Berms - Earthen		X		X	B
L00203010015	Berms - Earthen		X		X	B
L00203010016	Berms - Earthen		X		X	B
L00203010017	Berms - Earthen		X		X	B
L00203010018	Berms - Earthen		X		X	B
L00203090002	Berms - Curbing	X			X	CB
L00203090003	Berms - Curbing	X			X	CB
L00204040004	Channel/Swale - Culvert	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

## 20.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-0.9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

## 20.4 Inspections and Maintenance

RG121.9 recorded two storm events at LA-SMA-0.9 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 20-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23365	05-22-2012
Storm Rain Event	BMP-25237	07-18-2012
Storm Rain Event	BMP-28694	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 20-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28694	Cleared sediment at culvert L00204040004 inlet.	10-19-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-28694	Cleared sediment from curbing L00203090002.	10-19-2012	0 day(s)	Maintenance conducted upon inspection.

### 20.5 Compliance Status

The Sites associated with LA-SMA-0.9 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 20-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-017	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC C-00-044	Baseline Monitoring	Baseline Monitoring Extended	No Comment

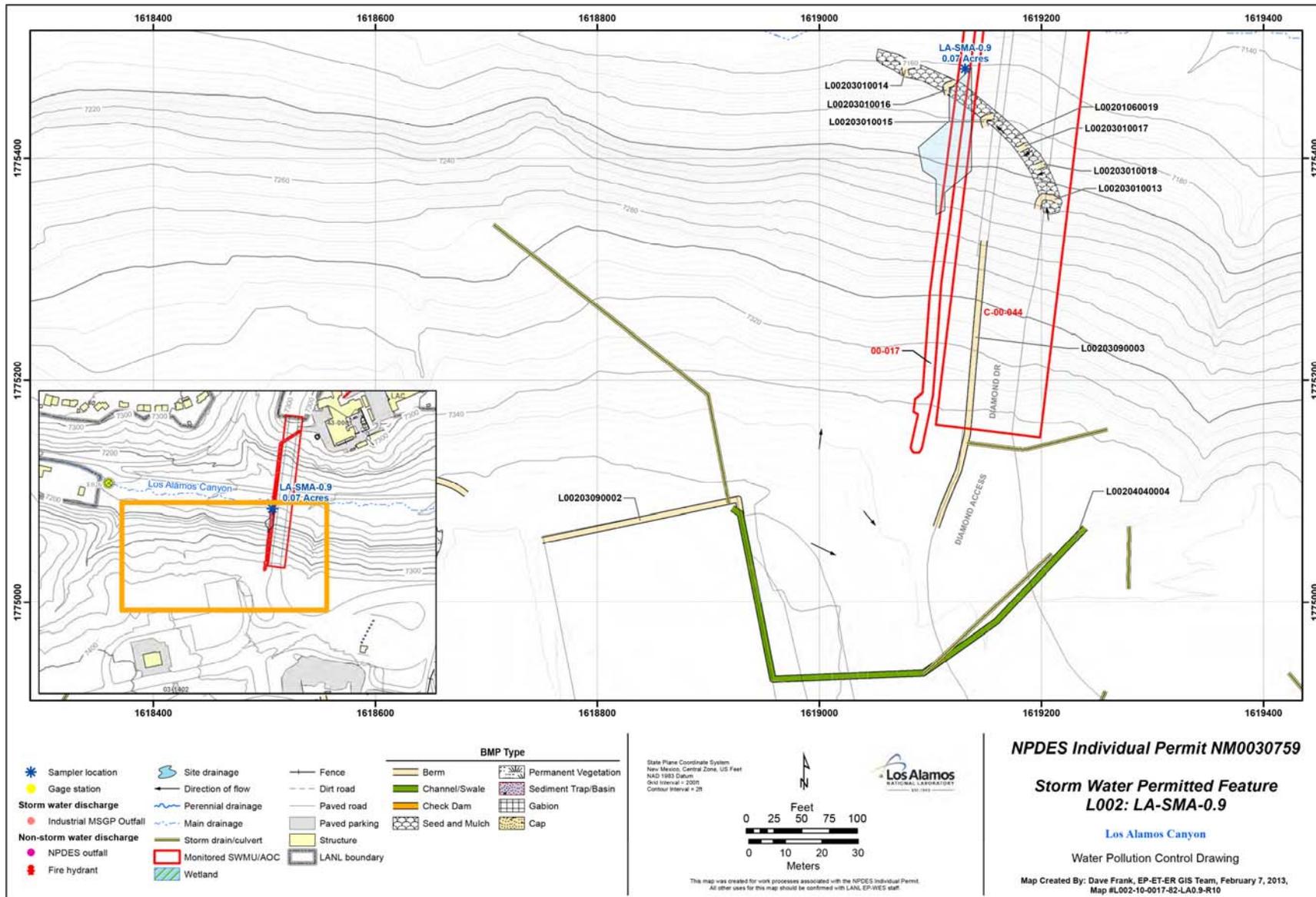


Figure 20-1 LA-SMA-0.9 location map

## **21.0 LA-SMA-1: SWMU 00-017 and AOC C-00-044**

### **21.1 Site Descriptions**

Two historical industrial activity areas are associated with L003, LA-SMA-1: Sites 00-017, and C-00-044.

SWMU 00-017 consists of former industrial waste line 167, a former manhole (ULR-33), and former industrial waste lines 170 and 171. 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 waste generated by various operations 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 various removal projects were completed through 1986. Former line 167 and former manhole ULR-33 were removed before 1985, except for the anchors and sections of pipe encased in anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former line 167 and former manhole ULR-33 under the Omega Bridge remains undeveloped. Nine concrete anchors and 3-ft-long sections of pipe encased in each of the anchors remain at the site. Decision-level data for SWMU 00-017 were below residential SSLs, except for lead detected in one sample at a concentration slightly above the residential SSL, but well below the construction worker SSL. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

AOC C-00-044 consists of surface contamination resulting from the historical use of lead-based paint on the Omega Bridge. The bridge was constructed in 1951 and is located in both TA-00 and TA-03. This AOC was identified in 1999 during RFI activities. Surface samples collected 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, an inactive underground industrial waste line. During further research and interviews of Los Alamos County and Laboratory maintenance staff, it was discovered that lead paint chips were deposited beneath the bridge on the north and south slopes of Los Alamos Canyon as a result of periodic bridge maintenance activities, including scraping and chipping old paint before new paint was applied. Lead was detected above residential SSLs in samples collected at AOC C-00-044 in 2011; several sampling locations overlapped SWMU 00-017. AOC C-00-044 will be investigated further and remediated to remove lead contaminated soil. The only potential contaminant associated with industrial materials historically managed at this Site is lead.

The project map (Figure 21-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 00-017 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 21-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### **21.2 Control Measures**

Wattles, check dams, and other controls are in place, including the two culverts and an asphalt swale, controlling run-on to the Permitted Feature. In addition, curbing on the Omega Bridge above the Site

directs run-on away from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 21-1).

Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 21-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00302010003	Established Vegetation - Grasses and Shrubs			X		CB
L00303010019	Berms - Earthen		X		X	EC
L00303060016	Berms - Straw Wattles	X			X	B
L00303060017	Berms - Straw Wattles	X			X	B
L00303100015	Berms - Gravel Bags	X			X	B
L00303120018	Berms - Rock		X		X	B
L00304020005	Channel/Swale - Concrete/Asphalt	X		X		CB
L00304030020	Channel/Swale - Rock	X		X		EC
L00304040004	Channel/Swale - Culvert	X		X		CB
L00304040021	Channel/Swale - Culvert	X		X		EC
L00304060022	Channel/Swale - Riprap	X		X		EC
L00304060023	Channel/Swale - Riprap	X		X		B
L00304060024	Channel/Swale - Riprap	X		X		B
L00306010014	Check Dam - Rock		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 21.3 Storm Water Monitoring

SWMU 00-017 and AOC C-00-044 are monitored within LA-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figure 21-2).

Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 6510 µg/L (MTAL is 750 µg/L),
- Copper concentration of 7.8 µg/L (MTAL is 4.3 µg/L),
- Lead concentration of 42.1 µg/L (MTAL is 17 µg/L), and
- Gross-alpha activity of 1800 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

**SWMU 00-017:** Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

- Aluminum—Aluminum was not detected above BV in samples collected from SWMU 00-017 during the 2008–2009 Consent Order investigation but was detected at a maximum concentration 2.9 times BV in 1998 RFI soil samples.
- Copper—Copper was not detected above BV in samples collected from SWMU 00-017 during the 2008–2009 Consent Order investigation but was detected at a maximum concentration 2.2 times BV in 1998 RFI soil samples.
- Lead—Lead was detected above BV in Consent Order and RFI soil samples with a maximum concentration 23 times BV.
- Gross Alpha—Americium-241, plutonium-238, plutonium-239, and uranium-235/236 were detected at maximum activities 270 times, 7.2 times, 240 times, and 1.9 times BVs/FVs, respectively, in Consent Order and RFI samples.



In summary, aluminum, copper, and lead are not known to have been associated with industrial materials historically managed at the Site. Aluminum and copper were detected above BVs. Lead was detected at higher concentrations with respect to BV, but the source of lead is believed to be adjacent Site C-00-044. Based on site history and previous sampling results, the Site is an unlikely source of aluminum, copper, and lead above MTALs in storm water. The Site is an unlikely source of adjusted gross alpha above ATAL in storm water. Americium, plutonium, and uranium, which have alpha-emitting isotopes, are known to be

associated with industrial materials historically managed at this Site. Americium-241 and plutonium-239 were detected substantially above FVs. Americium, plutonium, and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site.

**AOC C-00-044:** The only potential contaminant associated with industrial materials historically managed at this Site is lead.

- Consent Order sampling has not been performed at AOC C-00-044. No investigations were conducted at AOC C-00-044 before the Consent Order went into effect in 2005.

In summary, aluminum, copper, and alpha-emitting radionuclides are not known to be associated with industrial material managed at the Site. Based on site history, the Site is an unlikely source of aluminum and copper above MTALs and adjusted gross alpha above ATAL in storm water. Lead is known to be associated with industrial materials previously managed at the Site. Based on site history, the Site is a likely source of lead above MTAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 21-2. 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 Figure 21-2.

Monitoring location LA-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum, copper and lead are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is greater than both of these values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Lead—The lead UTL from undisturbed Bandelier Tuff storm water run-on was not calculated because the number of detected values was not sufficient to permit calculation of the UTL value in the baseline metals background study. The lead UTL from developed urban landscape background storm water is 3.3 µg/L. The lead result from 2011 is greater than the developed urban landscape value.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is greater than both of these values.

All the analytical results for these samples are reported in the 2012 Annual Report.

The monitoring station was relocated on November 5, 2012, and is situated approximately 75 ft east of the original sampler location, downstream of the newly installed enhanced controls. The new location of the sampler is positioned below all enhanced controls and will provide more representative samples of storm water discharge from SWMU 00-017 and AOC C-00-044. Sampler coordinates and SMA drainage area are updated in Attachment 4.

#### 21.4 Inspections and Maintenance

RG121.9 recorded two storm events at LA-SMA-1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 21-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22634	04-18-2012
Storm Rain Event	BMP-25238	07-18-2012
Construction	COMP-28143	10-04-2012
Construction	COMP-28467	10-11-2012
Construction	COMP-28598	10-17-2012
Storm Rain Event	BMP-28695	10-19-2012
Construction	COMP-29134	10-24-2012
Construction	COMP-29290	10-29-2012
Enhanced Control Measure Verification	BMP-28469	10-29-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 21-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25238	Associated gravel bags L00303100015 with LA-SMA-1. Removed rock check dam label L00306010004 from map; this control is associated only with LA-SMA-1.1 (L00406010004).	07-18-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-25774	Install new wattle L00303060016 directly above existing wattle -0006, which was retired.	07-26-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-25775	Installed new wattle L00303060017 directly above existing wattle -0007, which was retired.	07-26-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-25776	Installed new rock berm L00303120018 directly below existing rock berm -0012, which was retired.	08-02-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-29099	Installed riprap L00304060023 southeast of wattle -0017 and northeast of wattle -0014.	10-31-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-29099	Installed riprap L00304060024 southeast of wattle -0017 and northeast of wattle -0014.	10-31-2012	12 day(s)	Maintenance conducted in timely manner.

### 21.5 Compliance Status

The Sites associated with LA-SMA-1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 21-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-017	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012
AOC C-00-044	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012

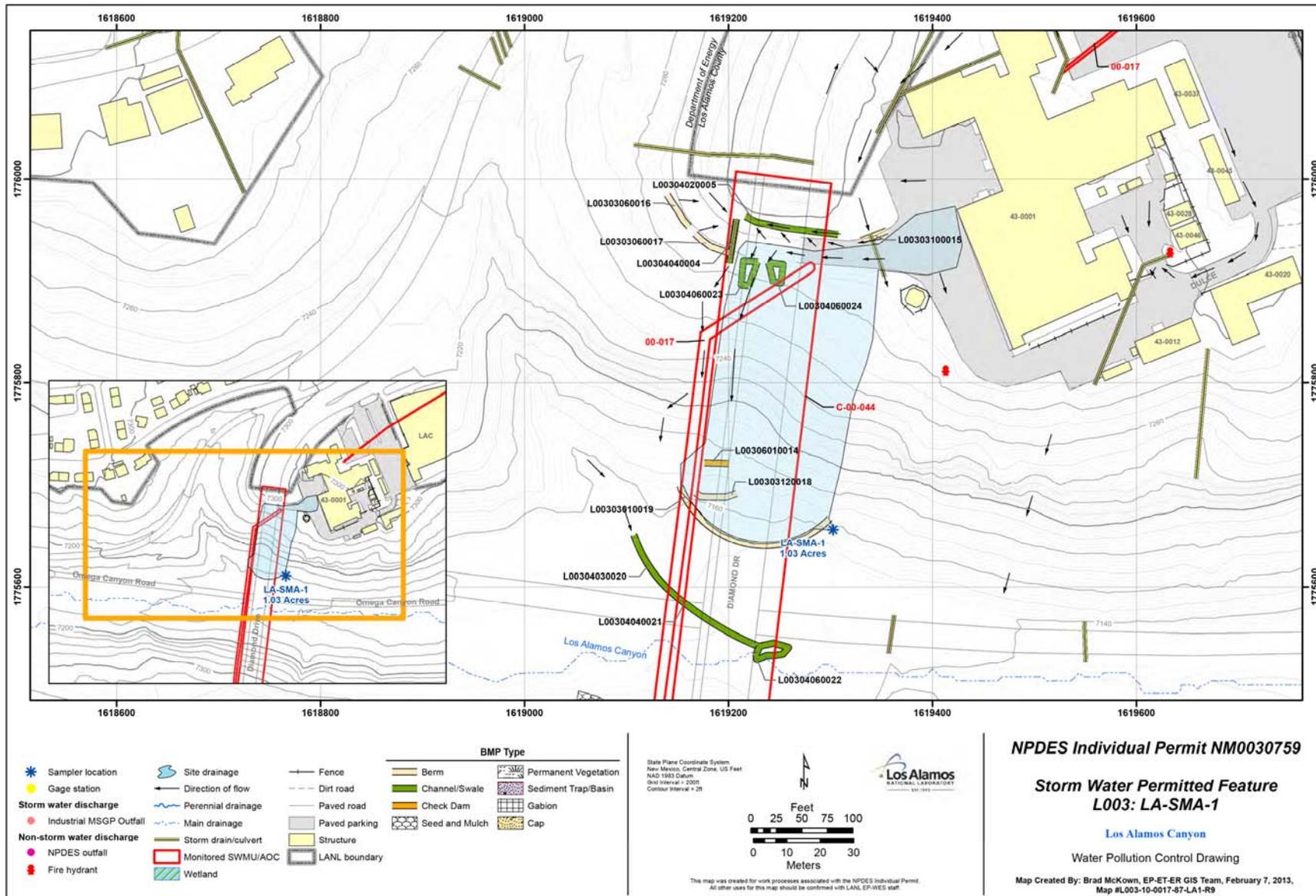
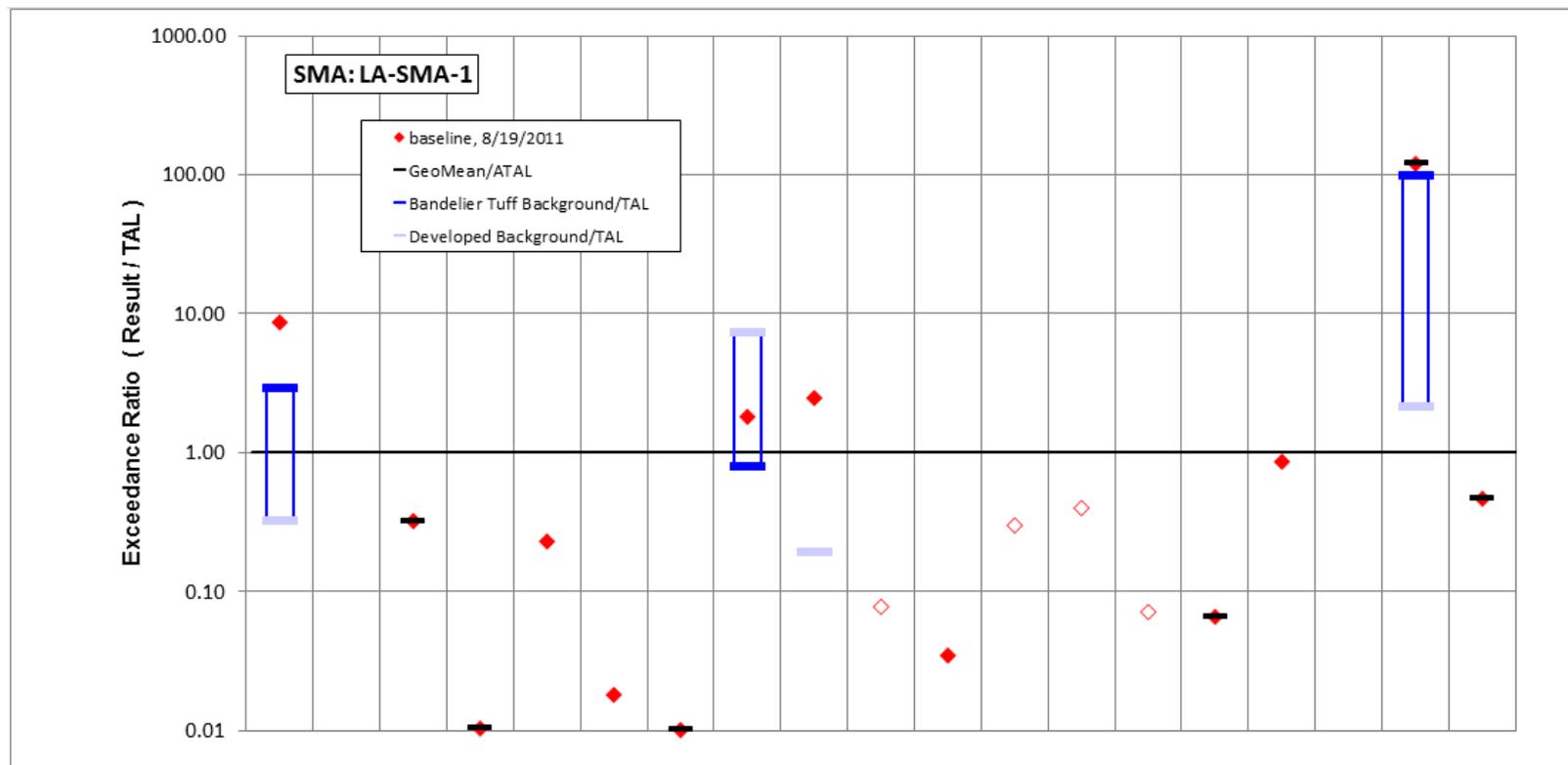


Figure 21-1 LA-SMA-1 location map



	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
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	-	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	<b>6510</b>	<i>1</i>	2.9	51.8	0.23	3.8	10.1	<b>7.8</b>	<b>42.1</b>	<i>0.06</i>	5.9	1.5	0.2	0.45	6.6	36.2	-	<b>1800</b>	14
result / TAL	<b>8.7</b>	<i>0.002</i>	0.32	0.01	0.23	0.018	0.01	<b>1.8</b>	<b>2.5</b>	<i>0.078</i>	0.035	0.3	0.4	0.071	0.066	0.86	-	<b>120</b>	0.47

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

Figure 21-2 Inorganic analytical results summary plot for LA-SMA-1

## 22.0 LA-SMA-1.1: AOC 43-001(b2)

### 22.1 Site Descriptions

One historical industrial activity area is associated with L004, LA-SMA-1.1: Site 43-001(b2).

AOC 43-001(b2) consists of a storm-drain outfall that was permitted in the mid- to late 1970s under the Laboratory’s NPDES permit as Outfall 03A040. The outfall was removed from the Laboratory’s NPDES permit on January 11, 1999. The outfall received effluent from six floor drains in the subbasement at the HRL (building 43-1), blowdown from the evaporative cooler, and storm water from 13 roof drains on the west side of the HRL. These wastewaters were discharged west of the HRL through a 130-ft-long, 12-in.-diameter CMP to Los Alamos Canyon. The outfall may have historically discharged radioactively contaminated water and/or once-through and treated cooling water. No historical quantitative information is available about possible residual contamination as a result of the discharges from this outfall. Currently, the outfall is located on the undeveloped slope west of the HRL. Risk-assessment results indicate AOC 43-001(b2) poses no unacceptable risk to recreational receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2010. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

The project map (Figure 22-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 22.2 Control Measures

A vegetative buffer strip is in place to control run-on at this Permitted Feature. Curbing along the eastern side of Diamond Drive diverts run-on from the road away from the SMA to a culvert drop inlet, which discharges flow at the southern edge of the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 22-1).

**Table 22-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00402010001	Established Vegetation - Grasses and Shrubs			X		CB
L00404060003	Channel/Swale - Riprap		X	X		CB
L00404060005	Channel/Swale - Riprap	X		X		B
L00406010004	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 22.3 Storm Water Monitoring

AOC 43-001(b2) is monitored within LA-SMA-1.1. Following the installation of baseline control measures, two baseline storm water samples were collected on July 28, 2011, and August 19, 2011 (Figure 22-2). Following the installation of enhanced control measures at LA-SMA-1.1, a corrective action storm water sample was collected on September 28, 2012. On September 10, 2010, NMED issued a COC

for AOC 43-001(b2). This site is now certified as corrective action complete and monitoring of storm water discharges has ceased at LA-SMA-1.1. No further sampling is required for LA-SMA-1.1 for the remaining period of the IP.

## 22.4 Inspections and Maintenance

RG121.9 recorded two storm events at LA-SMA-1.1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 22-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23366	05-24-2012
Storm Rain Event	BMP-25240	07-25-2012
Storm Rain Event	BMP-28697	10-25-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 22-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23664	Removed and disposed of silt dike material in channel.	06-04-2012	11 day(s)	Maintenance conducted in timely manner.
BMP-23663	Built up and extended rock check dam L00406010004.	06-05-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-28697	Gravel bags are associated with LA- SMA-1, not LA-SMA-1.1.	10-25-2012	0 day(s)	Maintenance conducted upon inspection.

## 22.5 Compliance Status

The Site associated with LA-SMA-1.1 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 22-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 43-001(b2)	Corrective Action Initiated	Corrective Action Complete	NMED, September 10, 2010, "Certificates of Completion Upper Los Alamos Canyon Aggregate Area Los Alamos National Laboratory"

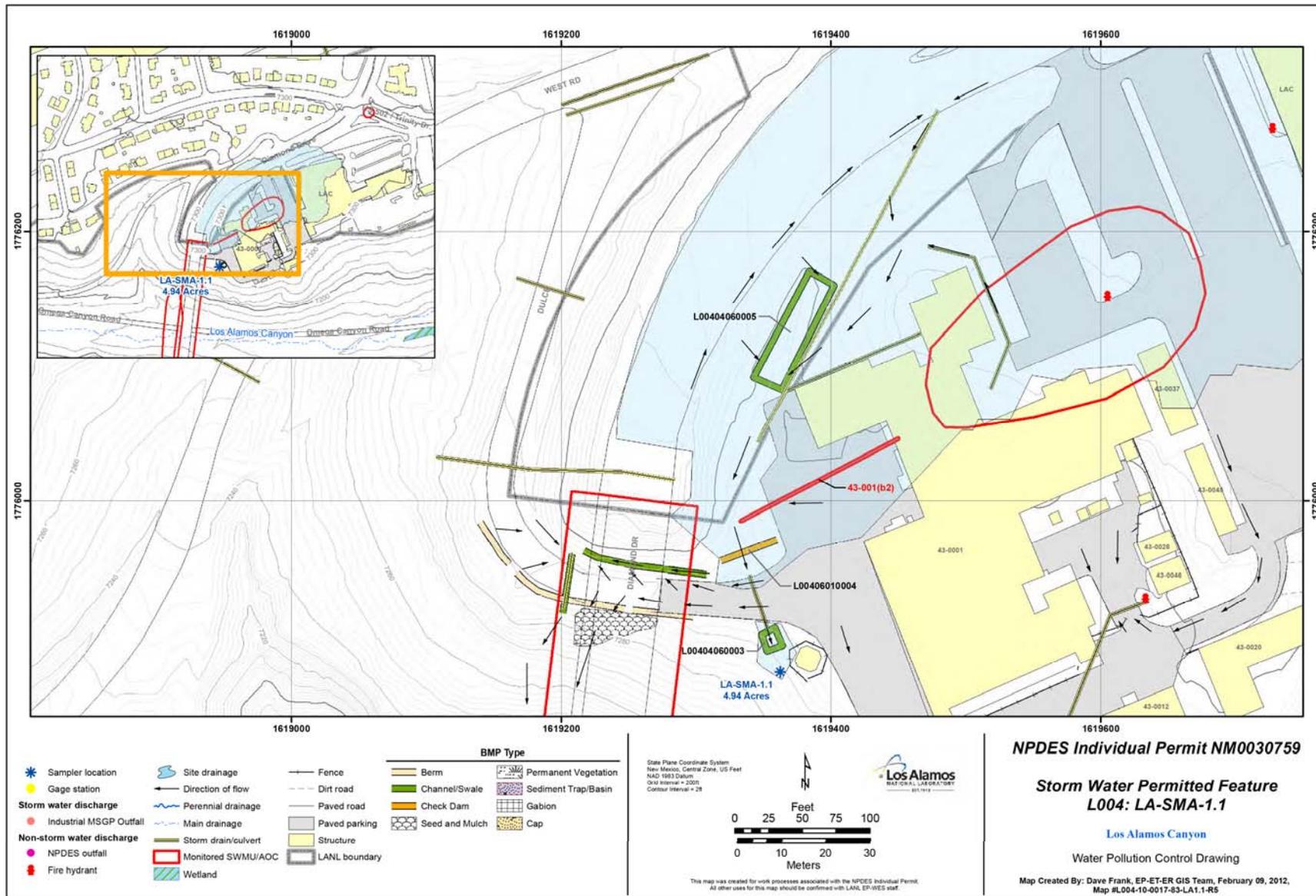
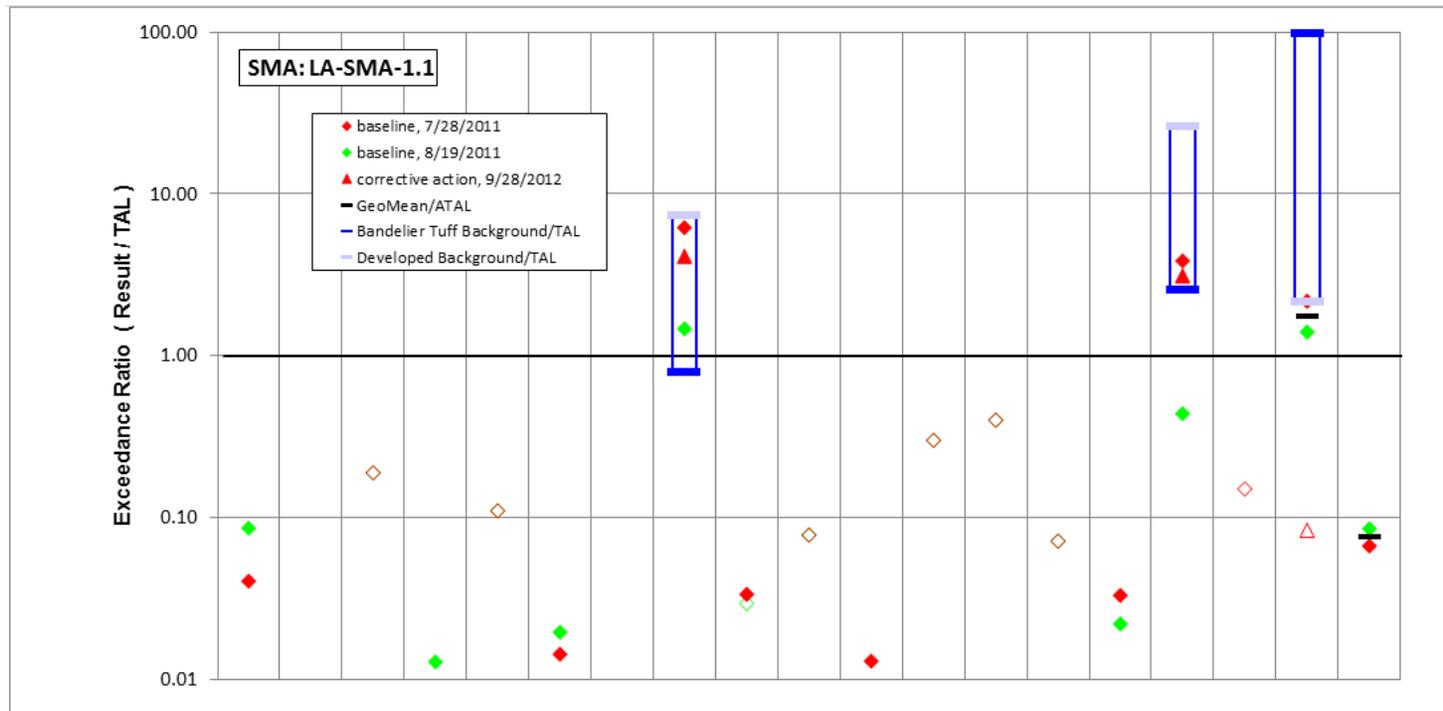


Figure 22-1 LA-SMA-1.1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	<b>Zinc</b>	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>9/28/2012 result</b>	-	-	-	-	-	-	-	<b>17.7</b>	-	-	-	-	-	-	-	<b>131</b>	-	<b>1.25</b>	-
result / TAL	-	-	-	-	-	-	-	<b>4.1</b>	-	-	-	-	-	-	-	<b>3.1</b>	-	<b>0.083</b>	-
<b>8/19/2011 result</b>	64.5	1	1.7	64.1	0.11	4.1	1.8	<b>6.3</b>	0.5	<i>0.06</i>	1.6	1.5	0.2	0.45	2.2	18.4	-	<b>21</b>	2.56
result / TAL	0.086	0.002	0.19	0.013	0.11	0.02	0.0018	<b>1.5</b>	<i>0.029</i>	<i>0.078</i>	0.0094	0.3	0.4	0.071	0.022	0.44	-	<b>1.4</b>	0.085
<b>7/28/2011 result</b>	30.3	1	1.7	16	0.11	3	1.2	<b>26.6</b>	0.57	<i>0.06</i>	2.2	1.5	0.2	0.45	3.3	<b>162</b>	<i>0.002</i>	<b>32.6</b>	2
result / TAL	0.04	0.002	0.19	0.0032	0.11	0.014	0.0012	<b>6.2</b>	0.034	<i>0.078</i>	0.013	0.3	0.4	0.071	0.033	<b>3.9</b>	0.15	<b>2.2</b>	0.067

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

Figure 22-2 Inorganic analytical results summary plot for LA-SMA-1.1

## 23.0 LA-SMA-1.25: AOC C-43-001

### 23.1 Site Descriptions

One historical industrial activity area is associated with L005, LA-SMA-1.25: Site C-43-001.

AOC C-43-001 is a storm-drain outfall that flows into Los Alamos Canyon. It collects runoff from the HRL (building 43-1) loading dock and also functions as the overflow from the lift station (structure 43-10). The overflow line is an 8-in.-diameter VCP that extends 130 ft south from structure 43-10 to a manhole. A 12-in.-diameter CMP, which receives discharge from two storm drains and any effluent from the overflow, flows southwest for 160 ft and drains into the canyon south of the HRL. The sanitary waste lines for the HRL [SWMU 43-001(a1) and AOC 43-001(a2)] may have become clogged at some time, causing an overflow. Any sanitary waste carried through the sewer lines could have discharged into the storm drains. Although no documentation was found to confirm any routine releases into the storm drains, the outfall may have received radioactive nonsanitary cooling water. Sampling performed during 2011 to define the lateral extent of lead identified lead substantially above the industrial SSL. AOC C-43-001 will be investigated further and remediated to remove lead-contaminated soil. Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

The project map (Figure 23-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 23.2 Control Measures

Run-on enters the Permitted Feature via Dulce Road and paved areas around building 43-0001 at the northern end of the SMA. A roof drain from the building also contributes to the run-on. A culvert running under the paved area north and east of the area day lights near the west side of building 43-0024 and also contributes run-on to this Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 23-1).

Enhanced controls were installed and certified on September 20, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 23-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00502020005	Established Vegetation - Forested/Needle Cast			X		CB
L00503010007	Berms - Earthen		X		X	EC
L00503020001	Berms - Base Course	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 23.3 Storm Water Monitoring

AOC C-43-001 is monitored within LA-SMA-1.25. Following the installation of baseline control measures, two baseline storm water samples were collected on July 30, 2011, and August 28, 2011 (Figure 23-2). Analytical results from these samples yielded two TAL exceedances:

- Copper concentrations of 13.8 and 33.3 µg/L (MTAL is 4.3 µg/L), and
- Zinc concentrations of 109 and 112 µg/L (MTAL is 42 µg/L).

Following the installation of enhanced control measures at LA-SMA-1.25, two corrective action storm water samples were collected on September 10, 2012, and October 12, 2012 (Figure 23.2). Analytical results from these corrective action monitoring samples yielded two TAL exceedances:

- Copper concentrations of 7.31 and 25 µg/L (MTAL is 4.3 µg/L), and
- Zinc concentrations of 53.2 and 111 µg/L (MTAL is 42 µg/L).

Corrective action has resulted in a slight decrease in copper and zinc concentrations detected in storm water samples collected at LA-SMA-1.25.

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC C-43-001:* Potential contaminants associated with industrial materials historically managed at this Site are low concentrations of metals, organic chemicals, and radionuclides in sanitary wastewater effluent.

- Copper—Copper was detected at a maximum concentration 4.6 times BV in soil samples collected during the 2008–2009 Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 2.4 times BV in soil samples collected during the 2008–2009 Consent Order investigation.



LA-SMA-1.25, Permanent Vegetation Forested/Needle Cast, L00502020005 (photo ID 24790-3)

In summary, copper and zinc may be associated with sanitary wastewater managed at the Site and were detected above BVs. Thus, the Site may be a source of copper and zinc above MTALs in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 23-2. 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 Figure 23-2.

Monitoring location LA-SMA-1.25 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from

Bandelier Tuff. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. One of the copper results from the 2012 corrective action sample is between these two values, and the other is greater than both of them.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. One of the zinc results from the 2012 corrective action sample is between these two values, and the other is less than both of them.

All the analytical results for these samples are reported in the 2011 and 2012 Annual Report.

### 23.4 Inspections and Maintenance

RG121.9 recorded two storm events at LA-SMA-1.25 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 23-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23367	05-24-2012
Construction	COMP-24789	07-11-2012
Enhanced Control Measure Verification	BMP-24790	07-11-2012
Storm Rain Event	BMP-25241	07-25-2012
Storm Rain Event	BMP-28698	10-25-2012
Construction	COMP-30329	12-06-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 23-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25241	Incorrect map revision used on inspection BMP-25241. Updates for CCN-25352 done 7/12/12 after production of rain event inspection BMP-25241.	07-25-2012	0 day(s)	Maintenance conducted upon inspection.

### 23.5 Compliance Status

The Site associated with LA-SMA-1.25 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 23-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC C-43-001	Corrective Action Initiated	Enhanced Control Monitoring Complete	Initiated 11-15-2012

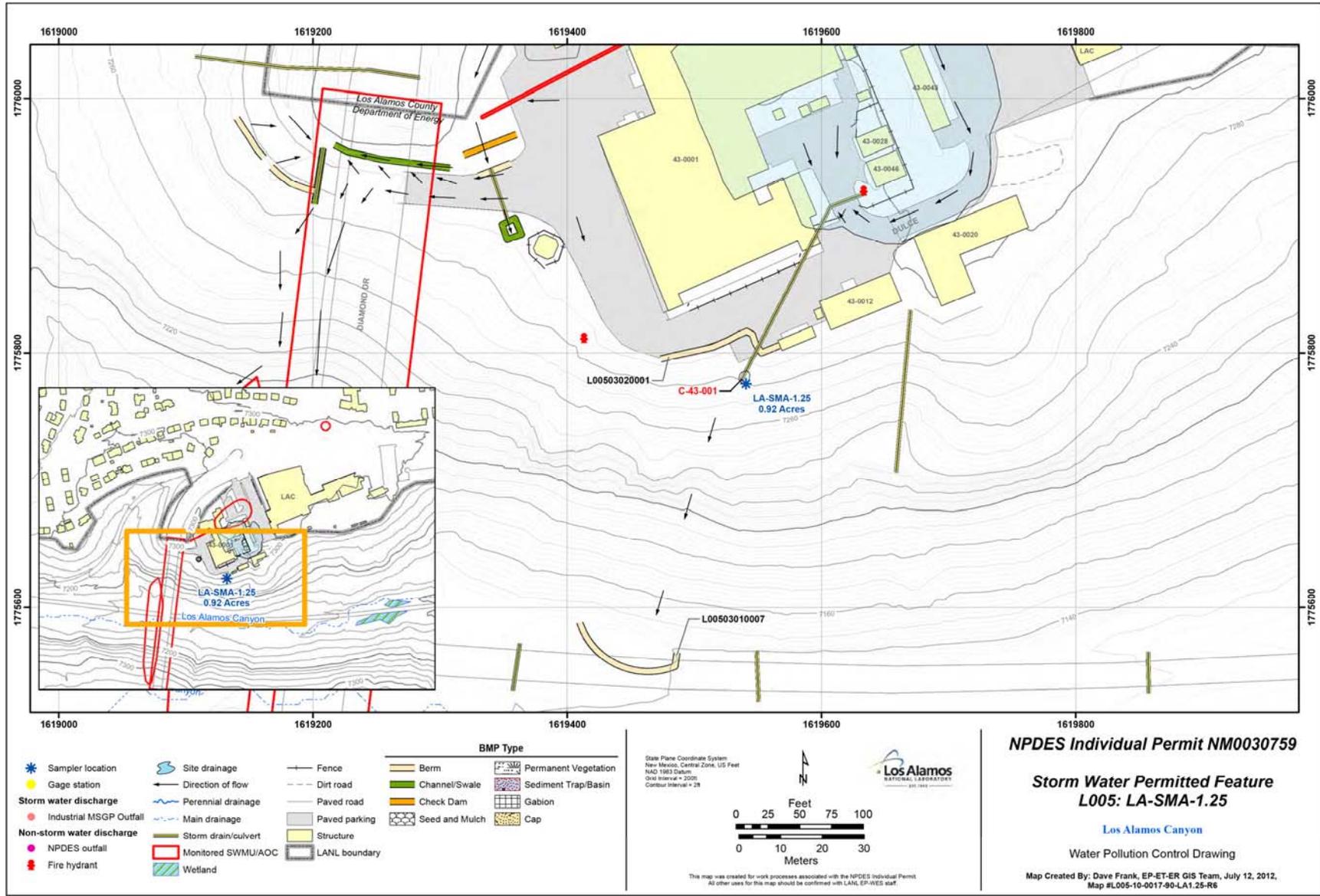
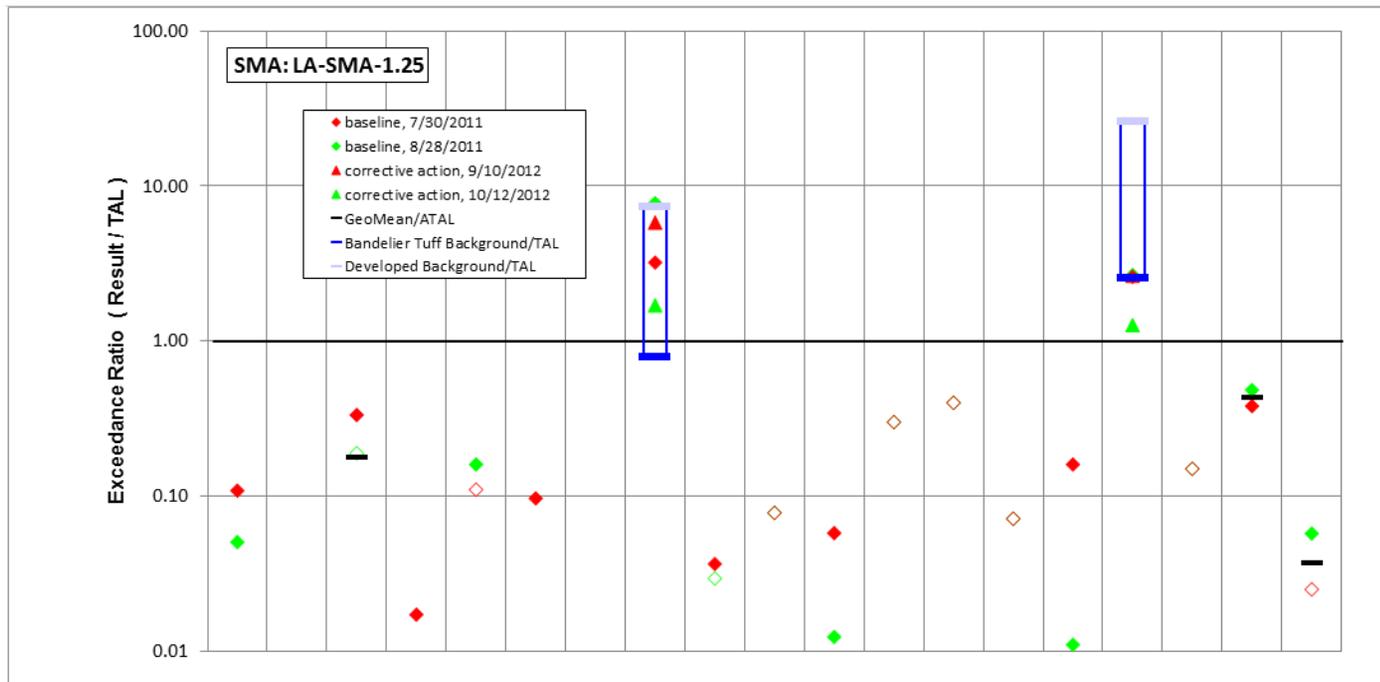


Figure 23-1 LA-SMA-1.25 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	<b>Zinc</b>	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
<b>10/12/2012 result</b>	-	-	-	-	-	-	-	<b>7.31</b>	-	-	-	-	-	-	-	<b>53.2</b>	-	-	-
result / TAL	-	-	-	-	-	-	-	<b>1.7</b>	-	-	-	-	-	-	-	<b>1.3</b>	-	-	-
<b>9/10/2012 result</b>	-	-	-	-	-	-	-	<b>25</b>	-	-	-	-	-	-	-	<b>111</b>	-	-	-
result / TAL	-	-	-	-	-	-	-	<b>5.8</b>	-	-	-	-	-	-	-	<b>2.6</b>	-	-	-
<b>8/28/2011 result</b>	37.9	1	1.7	15.6	0.16	2	1	<b>33.3</b>	0.5	0.06	2.1	1.5	0.2	0.45	1.1	<b>112</b>	0.002	7.25	1.72
result / TAL	0.051	0.002	0.19	0.0031	0.16	0.01	0.001	<b>7.7</b>	0.029	0.078	0.012	0.3	0.4	0.071	0.011	<b>2.7</b>	0.15	0.48	0.057
<b>7/30/2011 result</b>	81.3	2.7	3	86	0.11	20.3	3.8	<b>13.8</b>	0.62	0.06	9.8	1.5	0.2	0.45	16	<b>109</b>	0.002	5.71	0.75
result / TAL	0.11	0.0042	0.33	0.017	0.11	0.097	0.0038	<b>3.2</b>	0.036	0.078	0.058	0.3	0.4	0.071	0.16	<b>2.6</b>	0.15	0.38	0.025

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

Figure 23-2 Inorganic analytical results summary plot for LA-SMA-1.25

## 24.0 LA-SMA-2.1: SWMU 01-001(f)

### 24.1 Site Descriptions

One historical industrial activity area is associated with L006, LA-SMA-2.1: Site 01-001(f).

SWMU 01-001(f) is the former location of septic tank 140 (former structure 01-140), its associated inlet and outlet drainlines, and outfall in former TA-01. Septic tank 140 was constructed in 1945 of reinforced concrete and measured 3 ft × 6 ft × 5 ft deep. The septic tank was located west of former Building K-1 (01-98) and served former Buildings HT (01-29) and FP (01-20). The septic system outfall discharged into Los Alamos Canyon to an area later designated as Hillside 140, which is situated in TA-43 downslope from former TA-01. Heat-treating and machining of natural and enriched uranium were performed in the former buildings that were tied to the former septic system. The heat treatment and machining operations likely resulted in discharges of radioactive waste to the tank and outfall, and the machining operations were the likely source of the PCBs detected in the SWMU 01-001(f) outfall and drainage below, although the use of these compounds was not documented in historical records. Building FP was a foundry for nonradioactive and nonferrous metals and was not radiologically contaminated. The septic system ceased to be used in 1965, and the septic tank and drainlines were removed in 1975/1976. Currently, the entire mesa-top area of SWMU 01-001(f) is developed, and the locations of the former drainlines are under the pavement and buildings of Ridge Park Village. The location of the former septic tank is partially covered by a building. The outfall location and the drainage into which it discharged are on undeveloped land owned by DOE. Interim measures were implemented within the SWMU 01-001(f) outfall and the drainage below the outfall in 2010 and 2011 to reduce the inventory of contaminants present and to mitigate contaminant migration, primarily PCBs and radionuclides to Los Alamos Canyon. Based on the confirmation sampling data, additional removal and stabilization activities and confirmation sampling will be implemented at SWMU 01-001(f).

The project map (Figure 24-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 24.2 Control Measures

The area is bordered on the east by a cement retaining wall, which contains any potential run-on to the SMA from Ridge Park Village. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 24-1).

**Table 24-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00601060009	Seed and Mulch - Erosion Control Blankets			X		B
L00602020004	Established Vegetation - Forested/Needle Cast			X		CB
L00603030007	Berms - Log		X		X	CB
L00603080002	Berms - Retaining Wall	X			X	CB
L00604010010	Channel/Swale - Earthen	X		X		B
L00604060006	Channel/Swale - Riprap		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 24.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-2.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 24.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-2.1 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 24-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23370	05-24-2012
Storm Rain Event	BMP-28687	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 24-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23665	Installed new erosion control blanket L00601060009 over existing erosion control blanket -0008, which was retired.	06-05-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-23666	Removed and disposed of plastic in channel below sampler.	06-05-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-28687	Culvert is present on current GIS data files. Culvert present and no deficiencies found at annual erosion inspection COMP-23370, on 5/24/12.	10-19-2012	0 day(s)	Maintenance conducted upon inspection.

### 24.5 Compliance Status

The Site associated with LA-SMA-2.1 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 24-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-001(f)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

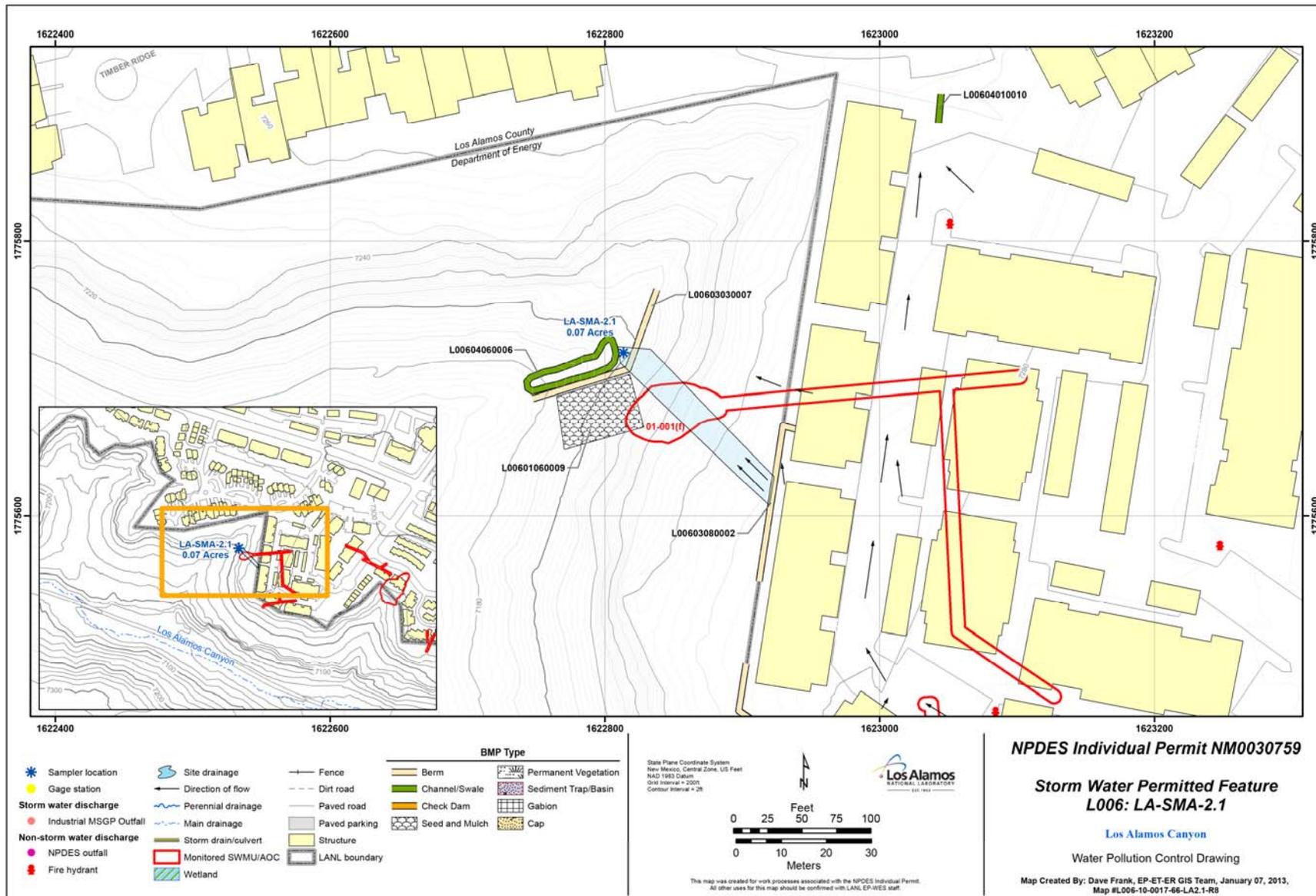


Figure 24-1 LA-SMA-2.1 location map

## 25.0 LA-SMA-2.3: SWMU 01-001(b)

### 25.1 Site Descriptions

One historical industrial activity area is associated with L007, LA-SMA-2.3: Site 01-001(b).

SWMU 01-001(b) is the former location of septic tank 135 (former structure 01-135), its associated inlet and outlet drainlines, and outfall in former TA-01. Septic tank 135 was constructed in 1950 of reinforced concrete and measured 7 ft × 3.5 ft × 5 ft deep. The septic tank served former Buildings FP and M-1 through a single sanitary waste line and discharged to Los Alamos Canyon. The septic tank and drainlines were removed during the 1974–1976 radiological survey. Building FP, a wood-frame and steel building 40 ft × 122 ft × 20 ft high and constructed in 1945, was a foundry for nonradioactive and nonferrous metals. The building was found to be free of radioactive contamination before it was removed. Building M-1 measured 70 ft × 32 ft with a concrete floor and was completed in 1950 to machine lithium and later to machine uranium-238. The building superstructure was determined to be free of contamination in 1964, but the floor drains were suspected to be radioactively contaminated. The drains were removed and disposed of in an unspecified area. Risk-assessment results indicate SWMU 01-001(b) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2010. Potential contaminants associated with industrial materials historically managed at this Site are metals and uranium.

The project map (Figure 25-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 25.2 Control Measures

Grading and sloping is diverting run-on from all paved areas associated with parking and access to the condominiums. The concrete retaining wall is south of the condominiums and effectively controls run-on from these areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 25-1).

**Table 25-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00702010001	Established Vegetation - Grasses and Shrubs			X		CB
L00703060004	Berms - Straw Wattles		X		X	CB
L00703060005	Berms - Straw Wattles	X			X	B
L00703080002	Berms - Retaining Wall	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 25.3 Storm Water Monitoring

SWMU 01-001(b) is monitored within LA-SMA-2.3. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 25-2). On September 10, 2010, NMED issued a COC for SWMU 01-001(b). This Site is now certified as corrective action complete and monitoring of storm water discharges has ceased at LA-SMA-2.3. No further sampling is required for LA-SMA-2.3 for the remaining period of the IP.

### 25.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-2.3 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 25-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22062	03-28-2012
Annual Erosion Evaluation	COMP-23371	03-28-2012
Storm Rain Event	BMP-28682	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 25-3 Maintenance during 2012**

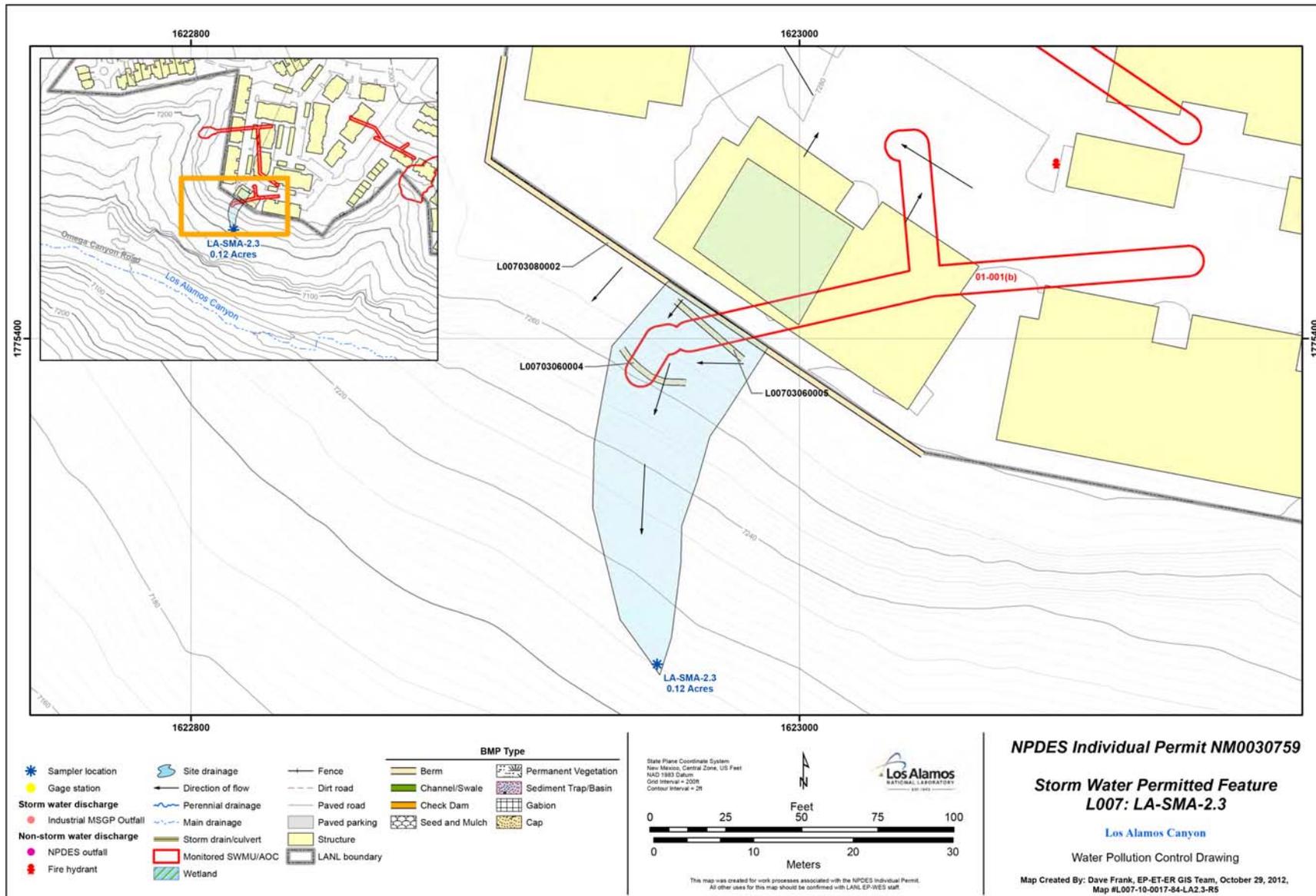
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29094	Install new straw wattles L00703060005 in same location as wattles -0003, which were retired.	10-24-2012	5 day(s)	Maintenance conducted in timely manner.

### 25.5 Compliance Status

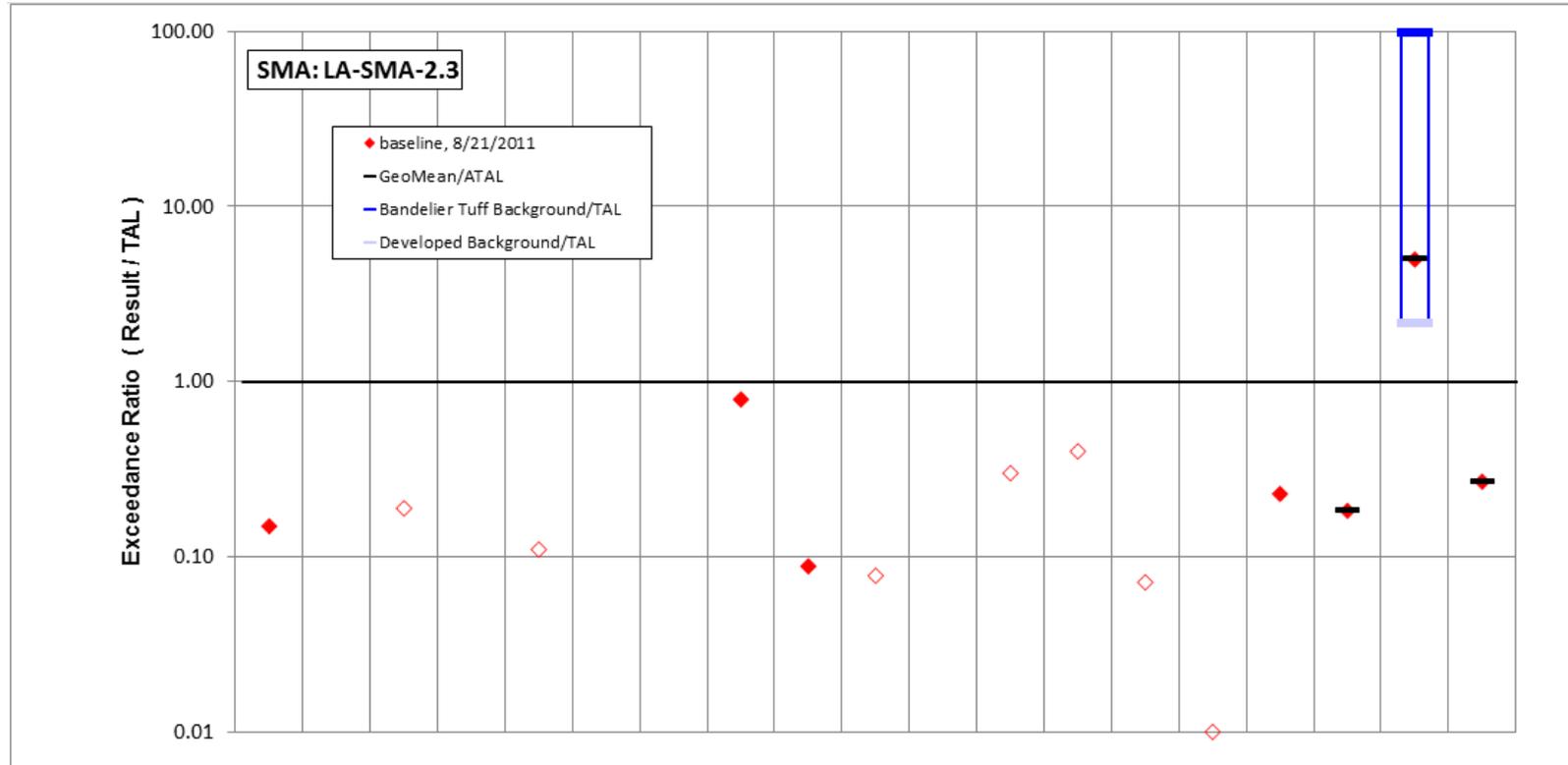
The Site associated with LA-SMA-2.3 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 25-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-001(b)	Baseline Monitoring Extended	Corrective Action Complete	NMED, September 10, 2010, "Certificates of Completion Upper Los Alamos Canyon Aggregate Area Los Alamos National Laboratory"



**Figure 25-1 LA-SMA-2.3 location map**



	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
8/21/2011 result	112	1	1.7	17	0.11	2	1.4	3.4	1.5	0.06	1.4	1.5	0.2	0.45	1	9.6	0.0018	<b>74.7</b>	8.05
result / TAL	0.15	0.002	0.19	0.0034	0.11	0.01	0.0014	0.79	0.088	0.078	0.0082	0.3	0.4	0.071	0.01	0.23	0.18	5	0.27

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

Figure 25-2 Inorganic analytical results summary plot for LA-SMA-2.3

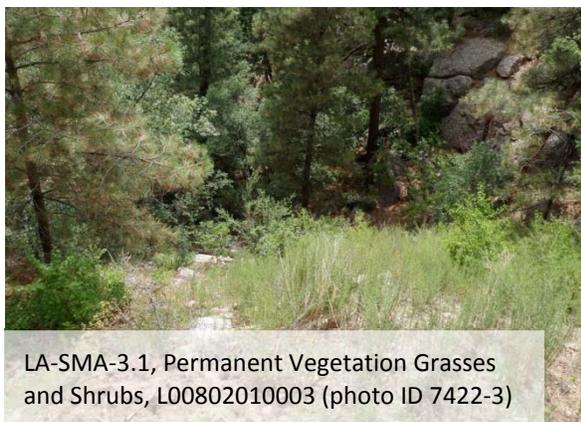
## 26.0 LA-SMA-3.1: SWMUs 01-001(e) and 01-003(a)

### 26.1 Site Descriptions

Two historical industrial activity areas are associated with L008, LA-SMA-3.1: Sites 01-001(e) and 01-003(a).

SWMU 01-001(e) is the former location of septic tank 139 (structure 01-139), its associated inlet and outlet drainlines, and outfall in former TA-01. The tank outfall discharged southeast of the buildings at the head of Bailey’s Bridge Canyon. Septic tank 139 was constructed in 1944 of reinforced concrete and measured 3 ft × 36 ft × 5 ft deep and served the D-5 Sigma vault, I Building, and Delta Building. The tank was decommissioned and left in place in 1965. However, the tank was not found during the 1974–1976 radiological sampling of TA-01. The D-5 Sigma vault was used to store plutonium-239 and uranium-235. Radiological soil sampling (1974–1976) near the former D-5 Sigma vault showed minimal radiologic contamination, and no more contaminated soil was removed. I Building was used to store and machine beryllium between 1947 and 1958. Delta Building was used as a meeting place and as a laboratory in which fission-product tracers were used. Currently, the septic tank location is on private property under Oppenheimer Drive, residential buildings and adjacent yards, driveways, and sidewalks. Risk-assessment results indicate SWMU 01-001(e) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2010.

SWMU 01-003(a), also known as Bailey’s Bridge landfill, was a surface disposal area located at the head of Bailey’s Bridge Canyon, a tributary to Los Alamos Canyon. The area was used between 1959 and 1978 for the disposal of debris from the demolition of former TA-01 structures. Debris included broken-up concrete walls and flooring from the former Sigma Building, the D-5 vault, HT, Warehouse 19, and the sheet metal shop. Only debris with activity less than 2500 counts per minute of surface alpha contamination was disposed of in this landfill. After TA-01 demolition activities were completed, the debris was covered with 4 ft of earthen fill. Additional fill was deposited over the landfill when the area was developed for residential housing in the 1980s; the Bailey’s Bridge no longer exists. The mesa-top portion of the SWMU is under pavement and a series of townhouses. The area downslope of the landfill is undeveloped DOE land. Sampling and remediation activities were implemented at the site in 2008 and 2009 to remove soil with PCBs and lead exceeding residential SSLs. Based on the confirmation sampling data, additional removal and stabilization activities and confirmation sampling will be implemented at SWMU 01-003(a).



LA-SMA-3.1, Permanent Vegetation Grasses and Shrubs, L00802010003 (photo ID 7422-3)

The project map (Figure 26-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 26.2 Control Measures

The only potential run-on source is from a small rock lined channel on the eastern side of the SMA that does not appear to flow. The rock channel drains from area lawns. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 26-1).

**Table 26-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00802010003	Established Vegetation - Grasses and Shrubs			X		CB
L00802020006	Established Vegetation - Forested/Needle Cast			X		CB
L00802030005	Established Vegetation - Vegetative Buffer Strip		X	X	X	CB
L00804040004	Channel/Swale - Culvert	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 26.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-3.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 26.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-3.1 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 26-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-21838	02-23-2012
Annual Erosion Evaluation	COMP-23372	05-22-2012
Storm Rain Event	BMP-28683	10-19-2012

There were no maintenance activities conducted at LA-SMA-3.1 in 2012.

### 26.5 Compliance Status

The Sites associated with LA-SMA-3.1 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 26-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-001(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, September 10, 2010, "Certificates of Completion Upper Los Alamos Canyon Aggregate Area Los Alamos National Laboratory"
SWMU 01-003(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

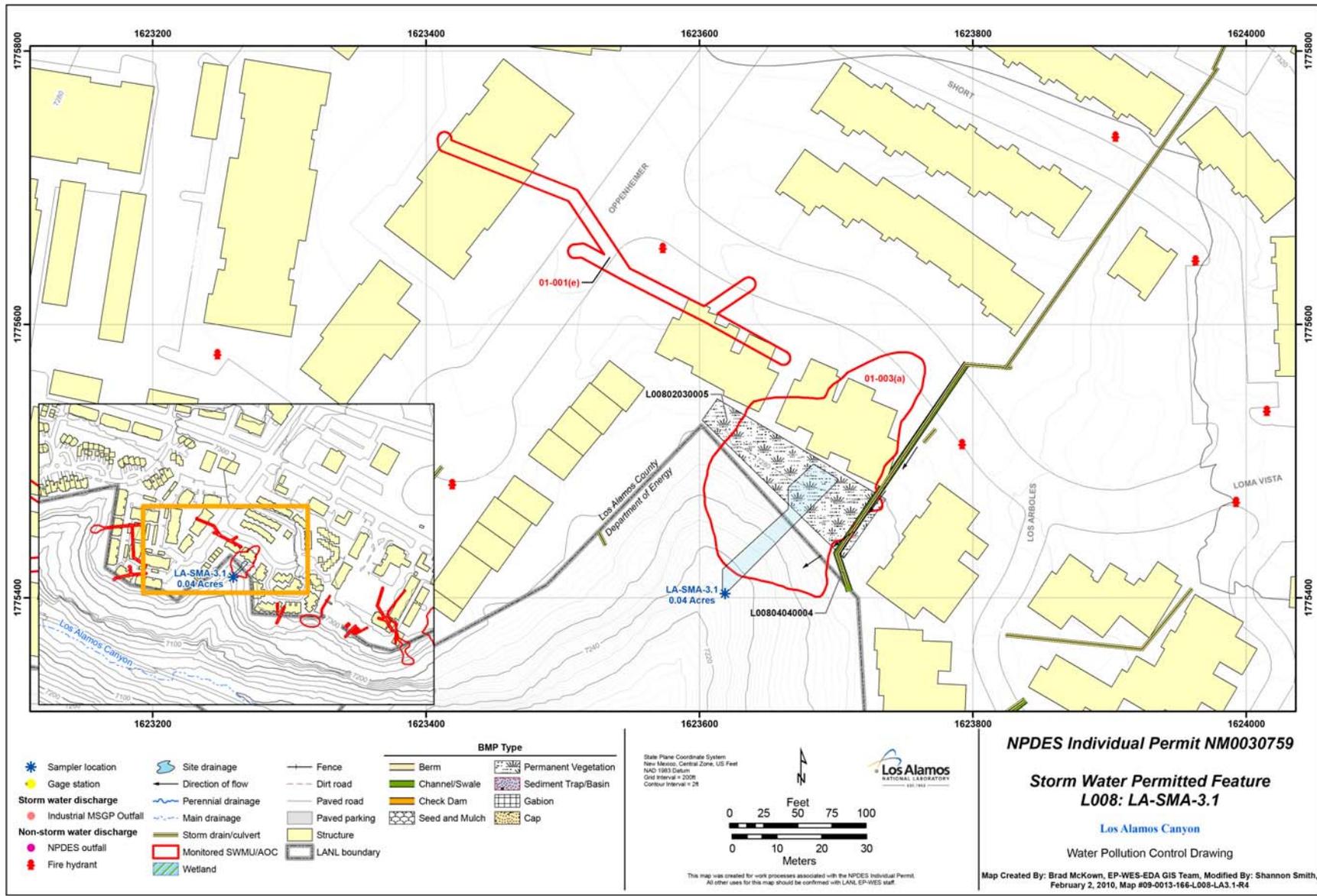


Figure 26-1 LA-SMA-3.1 location map

## **27.0 LA-SMA-3.9: SWMUs 01-001(g) and 01-006(a)**

### **27.1 Site Descriptions**

Two historical industrial activity areas are associated with L009, LA-SMA-3.9: Sites 01-001(g) and 01-006(a).

SWMU 01-001(g) is the former location of septic tank 141 (structure 01-141), its associated inlet and outlet drainlines, and outfall in former TA-01. The tank measured 3 ft × 6 ft × 5 ft deep and was installed in 1943. The tank was located south of Building X (01-79) near the edge of Los Alamos Canyon and served Building X, where radioactive targets were tested. The tank received sanitary waste from Building X through one sanitary waste line. The outfall discharged over the rim of the canyon. The septic tank, outlet line, and about 151 ft of the inlet line were removed in 1975. At that time, structure 01-141, its surrounding soil, and the sludge in the structure tested free of radioactive contamination. Currently, the location of the former inlet pipeline is on private property under a condominium building, and the outfall location is on undeveloped land owned by DOE. Sampling and remediation activities were implemented at the site in 2008–2009 to remove soil with plutonium-239/240 exceeding the residential screening action level (SAL). Based on the confirmation sampling data, additional removal and stabilization activities and confirmation sampling will be implemented at SWMU 01-001(g).

SWMU 01-006(a) is the former drainline and outfall that served a cooling tower (former structure 01-80) at former TA-01. The drainline and outfall were located on the east side of the cooling tower and south of Building X (former structure 01-79) near the north rim of Los Alamos Canyon. Currently, the location of the former pipeline is under a building of the Los Arboles condominiums. Although no documentation was found on the removal of the drainline, it may have been removed during the construction of the residential building. The drainline was not found to be in place during the 2008–2009 investigation activities. Decision-level data for SWMU 01-006(a) indicate the nature and extent of contamination are defined. SWMUs 01-006(a) and 01-001(g) are in close proximity and have a common downgradient drainage area; therefore, a COC will not be requested for SWMU 01-006(a) until remediation and confirmation sampling results indicate SWMU 01-006(a) poses no potential unacceptable risk to human health and the environment.

The project map (Figure 27-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **27.2 Control Measures**

The culvert northwest of the Permitted Feature prevents run-on to the SMA from the road north of the condominiums. There is no run-on from lawns and no impact from the road and related paved areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 27-1).

**Table 27-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L00902010001	Established Vegetation - Grasses and Shrubs			X		CB
L00903060004	Berms - Straw Wattles		X		X	B
L00904040002	Channel/Swale - Culvert	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 27.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-3.9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 27.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-3.9 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 27-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-21840	02-23-2012
Annual Erosion Evaluation	COMP-23373	05-22-2012
Storm Rain Event	BMP-28684	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 27-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23637	Installed new wattle L00903060004 just above existing wattle -0003, which was retired.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.

### 27.5 Compliance Status

The Sites associated with LA-SMA-3.9 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 27-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-001(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 01-006(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

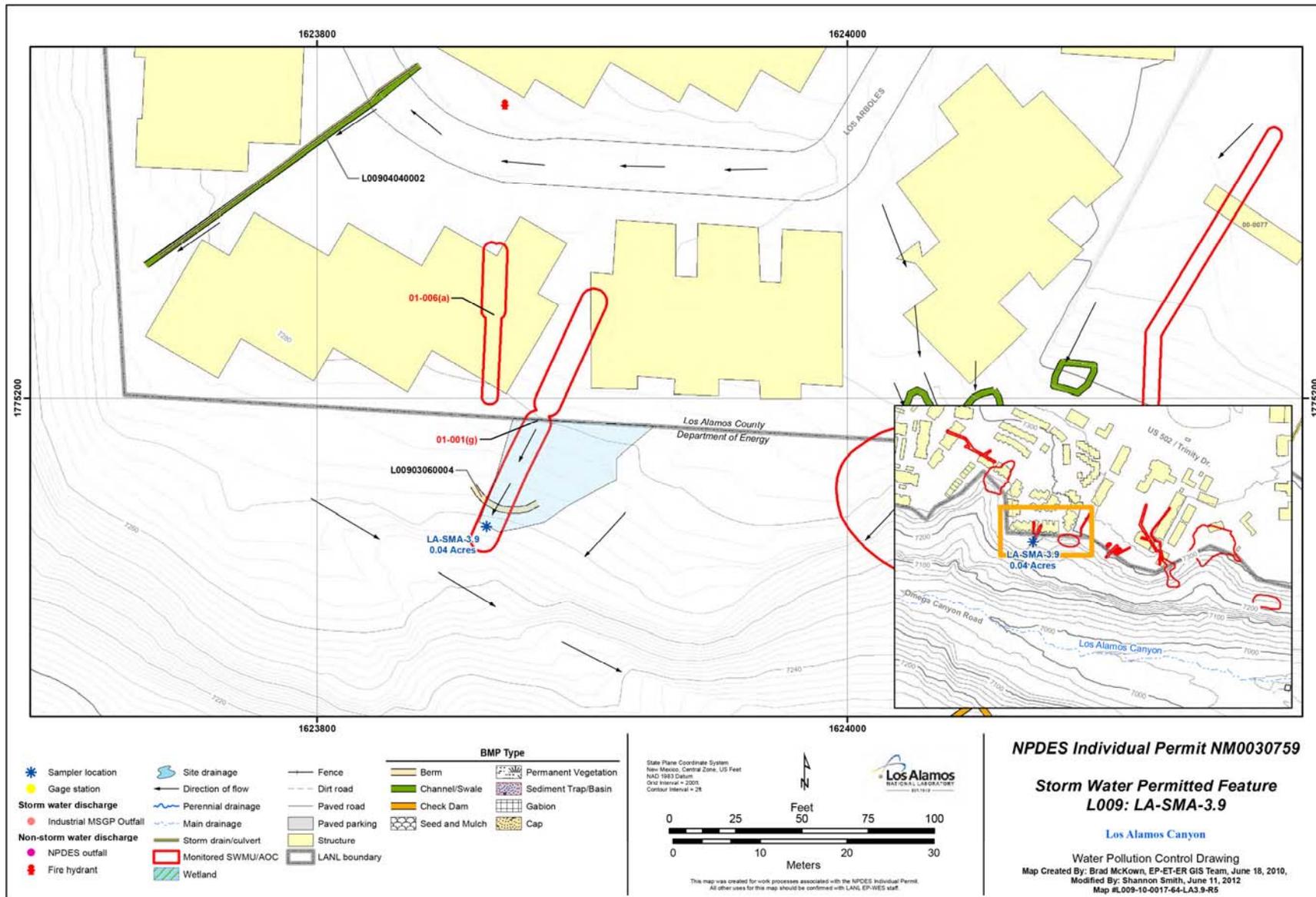


Figure 27-1 LA-SMA-3.9 location map

## 28.0 LA-SMA-4.1: SWMU 01-006(b) and AOC 01-003(b)

### 28.1 Site Descriptions

Two historical industrial activity areas are associated with L010, LA-SMA-4.1: Sites 01-003(b) and 01-006(b).

SWMU 01-006(b) is the former drainline and outfall that served Building D (01-6), which was primarily used to process plutonium. The drainline exited the southwest side of the building and extended southwest and then south before discharging into Los Alamos Canyon. The types and quantities of wastewater handled by this drainline are not known. During the demolition of Buildings D (01-6) and D-2 (01-8) and removal of contaminated soil beneath the buildings and the surrounding areas, all drainlines were removed along with areas of elevated radioactivity. Currently, the area is undeveloped and privately owned; the area downgradient of the outfall is on undeveloped DOE property. Decision-level data for SWMU 01-006(b) indicate the nature and extent of contamination are defined, and detected contaminant concentrations are below residential SSLs and/or screening action levels (SALs). Potential contaminants associated with industrial materials historically managed at this Site are radionuclides, including plutonium isotopes.

AOC 01-003(b) was a surface disposal area for construction debris reported to be below the north rim of Los Alamos Canyon, approximately 450 ft east of Bailey Bridge Canyon. The exact location of the surface disposal area is not obvious. Sampling performed in 2011 to define the lateral extent of lead identified lead substantially above the industrial SSL. SWMU 01-003(b) will be investigated further and remediated to remove contaminated soil. Potential contaminants associated with industrial materials historically managed at this Site are metals and other construction debris.

The project map (Figure 28-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 28.2 Control Measures

Run-on contributions associated with the southwest corner of the parking area at Los Alamos Inn are present at this SMA. Additional run-on to the SMA may originate from a storm culvert located behind the eastern side of the condominiums. This run-on contribution is controlled but not diverted. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 28-1).

**Table 28-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01002010002	Established Vegetation - Grasses and Shrubs			X		CB
L01004060004	Channel/Swale - Riprap	X		X		CB
L01004060005	Channel/Swale - Riprap	X		X		CB
L01004060007	Channel/Swale - Riprap	X		X		CB
L01006010009	Check Dam - Rock		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 28.3 Storm Water Monitoring

AOC 01-003(b) and SWMU 01-006(b) are monitored within LA-SMA-4.1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 19, 2011, and September 4, 2011 (Figures 28-2 and 28-3). Analytical results from these samples yielded three TAL exceedances:

- Copper concentrations of 5.3 and 6.7 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 111 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 8 and 60 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 01-003(b):* Potential contaminants associated with industrial materials historically managed at this Site are metals and other construction debris.

- Copper—Copper was detected at a maximum concentration 2.5 times BV in soil samples collected during the 2008–2009 Consent Order investigation
- Gross alpha—plutonium-238 and plutonium-239/240 were detected at a maximum activity that was 31 times FV in soil samples collected during the 2008–2009 Consent Order investigation.
- PCBs—Consent Order samples were not analyzed for PCBs because they were not identified as chemicals of potential concern.

In summary, copper may have been associated with industrial materials historically managed at the Site and was detected 2.5 times BV. PCBs are not known to be associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides plutonium-238 and plutonium-239/240 were detected above FVs and are not known to be associated with industrial materials historically managed at this Site. In addition, plutonium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is may be a source of copper above MTAL but is an unlikely source of PCBs and adjusted gross alpha above ATALs in storm water.

*SWMU 01-006(b):* Potential contaminants associated with industrial materials historically managed at this Site are radionuclides including plutonium isotopes.

- Copper—Copper was detected at a maximum concentration 1.01 times BV in soil samples collected during the 2008–2009 Consent Order investigation.
- PCBs—PCBs were detected in soil samples collected during the 2008–2009 Consent Order investigation, but detected concentrations were below estimated quantitation limits.
- Gross alpha—Americium-241 and plutonium-239/240 were detected at maximum activities of 1184 and 19,000 times FVs, respectively, in samples collected during the 2008–2009 Consent Order investigation.

In summary, copper is not known to be associated with industrial materials historically managed at the Site and was detected only slightly above BV. PCBs are not known to be associated with industrial materials historically managed at the Site and detected PCB concentrations were below estimated quantitation limits. Alpha-emitting radionuclides americium-241 and plutonium-239/240 are known to be associated with industrial materials historically managed at this Site and were detected above FVs. However, americium and plutonium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and PCBs and adjusted gross alpha above ATALs in storm water.



LA-SMA-4.1, Rip Rap,  
L001004060005 (photo ID 7424-1)

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 28-2 and 29-3. 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 28-2 and 28-3.

Monitoring location LA-SMA-4.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L and gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.
- PCBs—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. One of the PCB results from 2011 is between these two values and the other is less than both of them.

All the analytical results for these samples are reported in the 2011 Annual Report.

## 28.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-4.1 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 28-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-21806	02-08-2012
Construction	COMP-21831	02-15-2012
Annual Erosion Evaluation	COMP-23374	05-09-2012
Storm Rain Event	BMP-28685	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 28-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28685	Follow up maintenance BMP-29095 canceled due to scheduled engineered enhanced control installation.	10-19-2012	0 day(s)	Maintenance conducted upon inspection.

## 28.5 Compliance Status

The Sites associated with LA-SMA-4.1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 28-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 01-003(b)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-08-2011
SWMU 01-006(b)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-08-2011

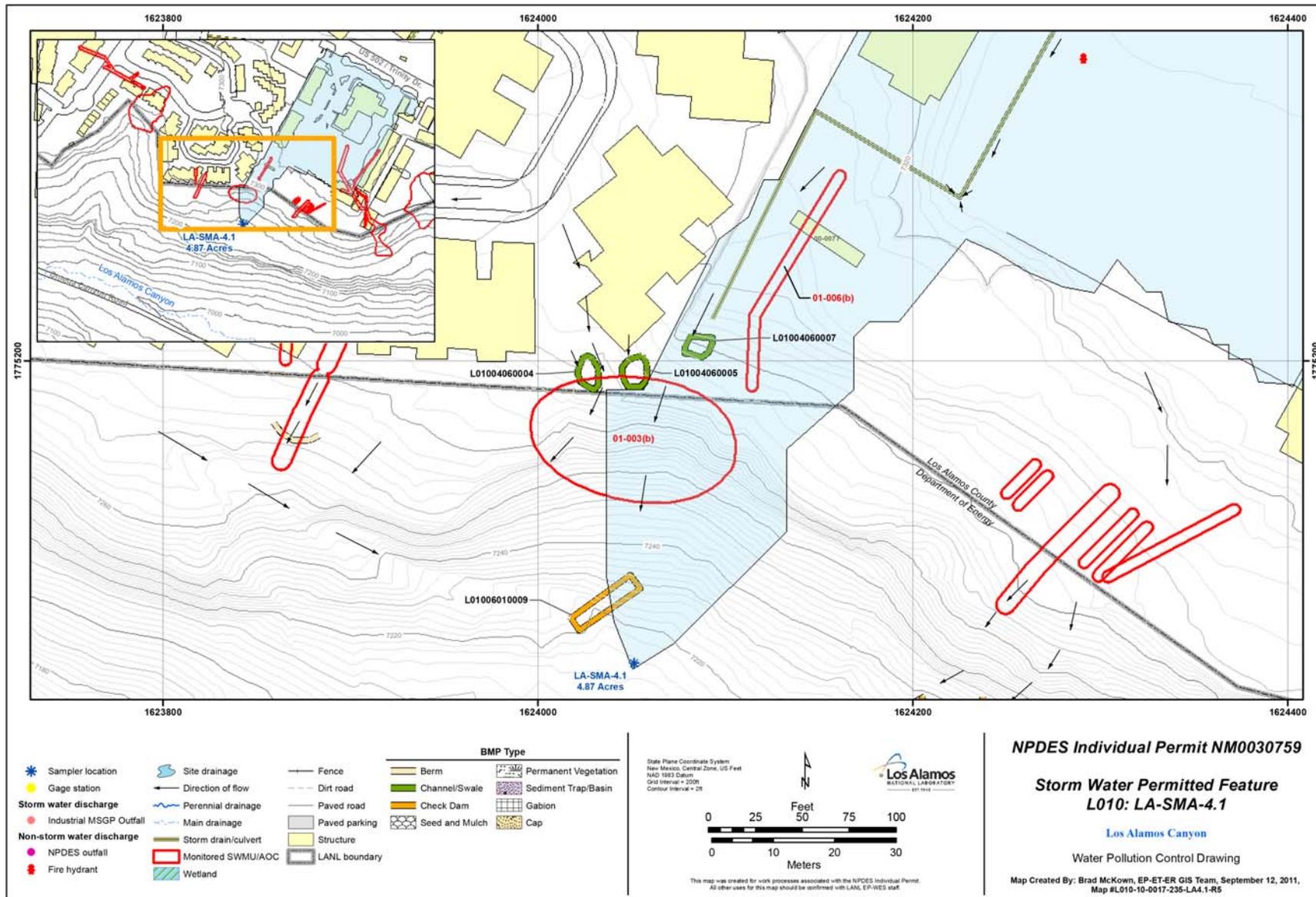
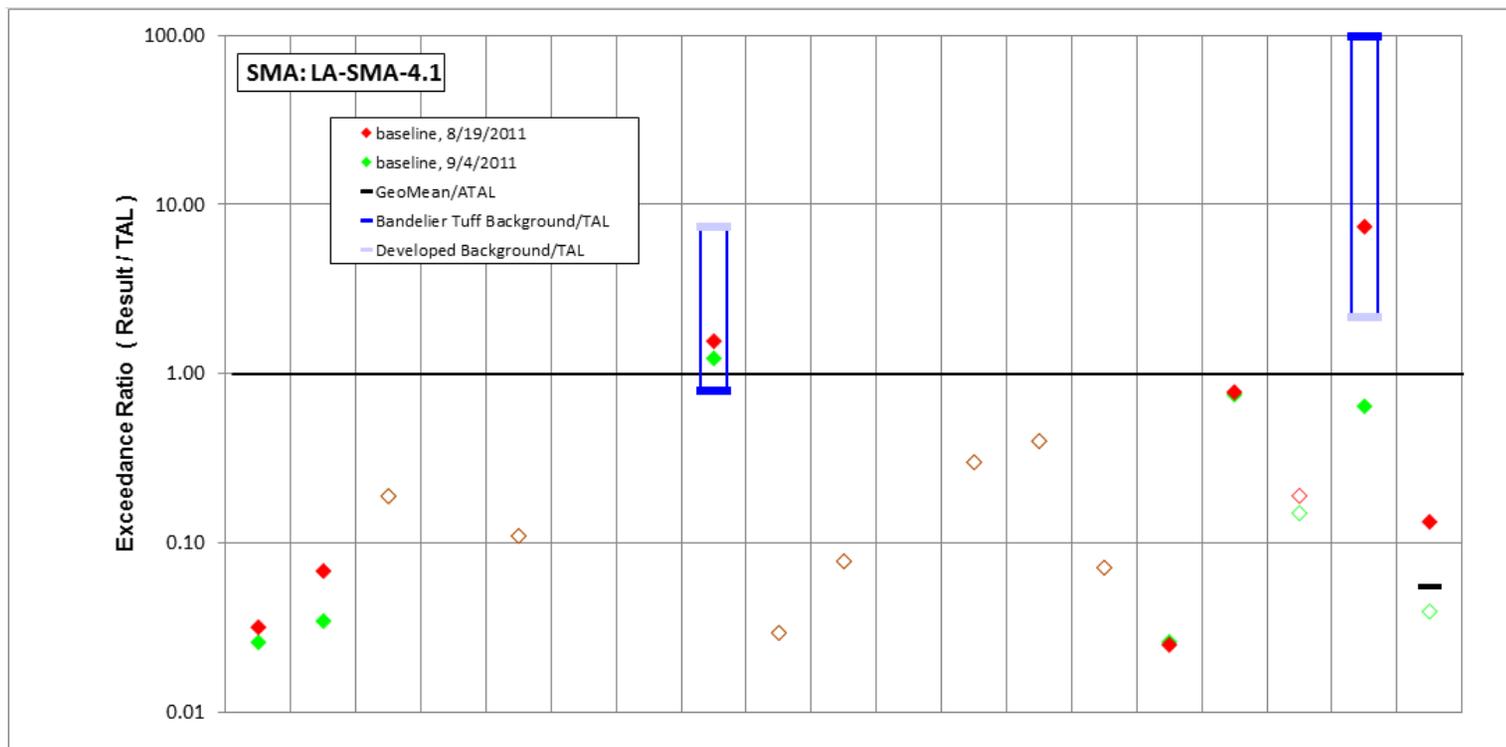


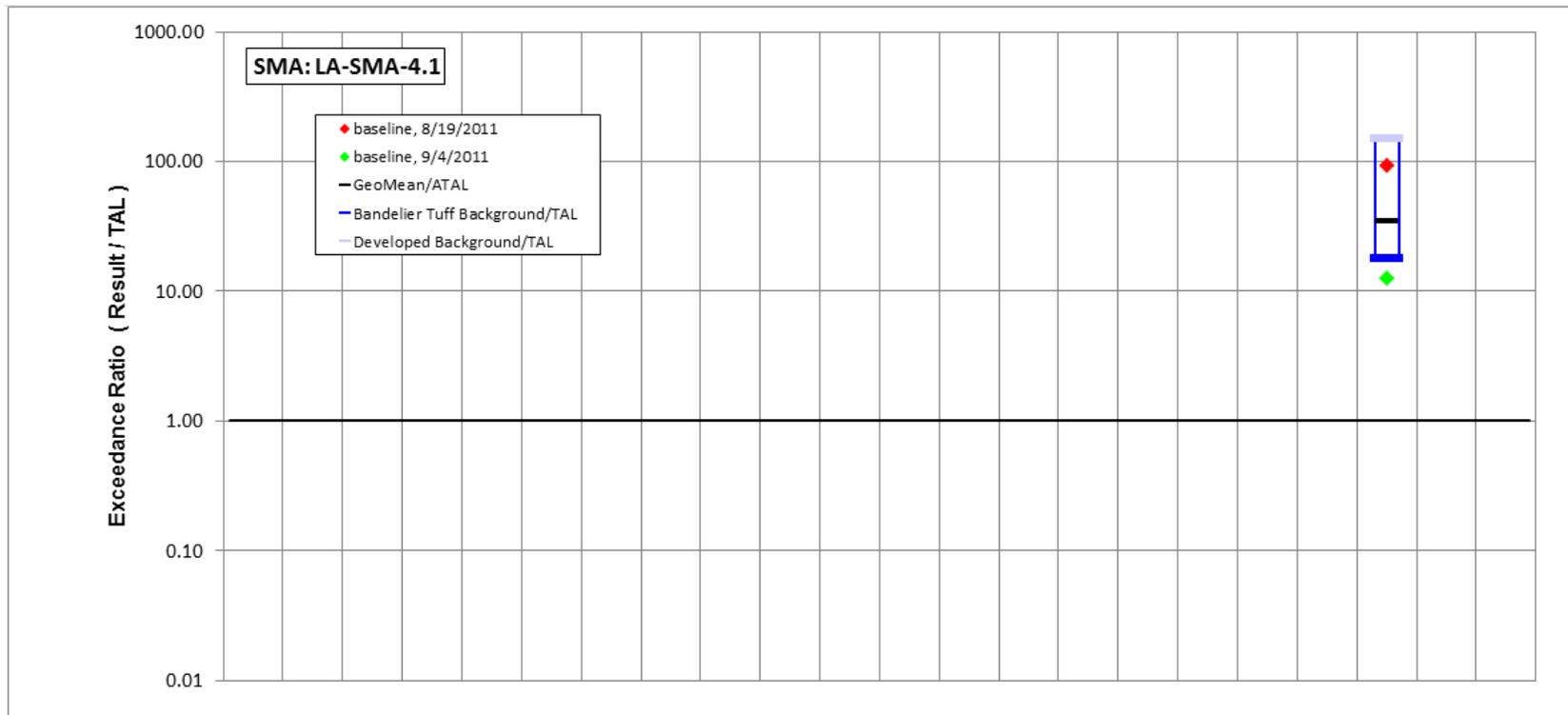
Figure 28-1 LA-SMA-4.1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>9/4/2011 result</b>	19.4	22.1	1.7	15	<i>0.11</i>	2	2.1	<b>5.3</b>	0.5	<i>0.06</i>	0.61	1.5	0.2	0.45	2.6	31.6	<i>0.002</i>	9.63	1.18
result / TAL	0.026	0.035	0.19	0.003	0.11	0.01	0.0021	<b>1.2</b>	0.029	0.078	0.0036	0.3	0.4	0.071	0.026	0.75	0.15	0.64	0.039
<b>8/19/2011 result</b>	23.8	43.7	1.7	16.2	<i>0.11</i>	2	2.6	<b>6.7</b>	0.5	<i>0.06</i>	1.2	1.5	0.2	0.45	2.5	32.7	<i>0.002</i>	<b>111</b>	4
result / TAL	0.032	0.068	0.19	0.0032	0.11	0.01	0.0026	<b>1.6</b>	0.029	0.078	0.0071	0.3	0.4	0.071	0.025	0.78	0.19	<b>7.4</b>	0.13

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

**Figure 28-2 Inorganic analytical results summary plot for LA-SMA-4.1**



	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.008</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>13</b>	-	-
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.06</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>94</b>	-	-

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

Figure 28-3 Organic analytical results summary plot for LA-SMA-4.1

## **29.0 LA-SMA-4.2: SWMUs 01-001(c), 01-006(c), and 01-006(d)**

### **29.1 Site Descriptions**

Three historical industrial activity areas are associated with L011, LA-SMA-4.2: Sites 01-001(c), 01-006(c), and 01-006(d).

SWMU 01-001(c) is the former location of septic tank 137 (structure 01-137), its associated inlet and outlet drainlines, and outfall in former TA-01. The septic tank was installed in 1945 and served Building D-2, which operated as a laundry for radioactively contaminated clothing and recyclable equipment. It was converted to an electronics shop after laundry operations were relocated to TA-21. Septic tank 01-137 was located and investigated as a potential source of plutonium contamination in the runoff area below the septic tank outfall pipe. Septic tank 01-137 and its outfall pipe were subsequently removed and disposed of at MDA G at TA-54. Low levels of radiological activity were detected in the sidewalls of the septic tank excavation. Soil was removed from the excavation until gross-alpha activity levels were below 25 pCi/g. Clean soil was used to backfill the excavation. Risk-assessment results indicate SWMU 01-001(c) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2010.

SWMU 01-006(c) is the former drainline and outfall that served Building D-2 (former building 01-8). The SWMU 01-006(c) drainlines exited the southwest side of the building and discharged directly onto Hillside 137. From 1943 to 1945, Building D-2 served as the laundry facility for radioactively contaminated clothing and recyclable equipment for all of TA-01. The laundry facility was moved to TA-21 in 1945. During the 1974–1976 radiological survey of former TA-01, contaminated soil was excavated in the areas of former Buildings D and D-2. Two drainlines at the southwest end of the building were encountered during the excavation activities and were removed; the excavated areas were backfilled with clean fill. Decision-level data for SWMU 01-006(c) indicate the nature and extent of contamination are defined and detected contaminant concentrations are below residential SSLs and/or SALs.

SWMU 01-006(d) is the former drainline and outfall that served Building D-3 and discharged to Los Alamos Canyon at the former TA-01. The outfall is located on Hillside 137 in the same area as the former SWMU 01-006(c) drainline. Activities conducted at Building D-3 included counting radioactive filter papers from Building H-1. During the D&D of Buildings D and D-2, all drainlines were removed along with areas of elevated radioactivity. Because the main portion of the drainline from Building D-3 was located in close proximity to Building D-2, this drainline was likely removed during the excavation of contaminated soils beneath and around Buildings D and D-2. Clean soil was used to backfill the excavations. Currently, the area is undeveloped and privately owned. Clean soil was used to backfill the excavation. Risk-assessment results indicate SWMU 01-006(d) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2010.

The project map (Figure 29-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

## 29.2 Control Measures

There is no evidence of concentrated flow and minimal evidence of run-on at this Permitted Feature. Water bars are installed along the unpaved access road to control any potential run-on to the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 29-1).

**Table 29-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01102010001	Established Vegetation - Grasses and Shrubs			X		CB
L01104050003	Channel/Swale - Water Bar	X		X		CB
L01104050004	Channel/Swale - Water Bar	X		X		CB
L01104050006	Channel/Swale - Water Bar	X		X		CB
L01104050007	Channel/Swale - Water Bar	X		X		CB
L01106010002	Check Dam - Rock		X		X	CB
L01106010005	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

## 29.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-4.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

## 29.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-4.2 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 29-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23375	05-09-2012
Storm Rain Event	BMP-28686	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 29-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28686	Built up rock check dams L01106010002 and -0005 with native rock.	10-19-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-29096	Repaired water bar L01104050003 by building up.	11-01-2012	13 day(s)	Maintenance conducted in timely manner.

**29.5 Compliance Status**

The Sites associated with LA-SMA-4.2 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 29-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-001(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, September 10, 2010, "Certificates of Completion Upper Los Alamos Canyon Aggregate Area Los Alamos National Laboratory"
SWMU 01-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 01-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, September 10, 2010, "Certificates of Completion Upper Los Alamos Canyon Aggregate Area Los Alamos National Laboratory"

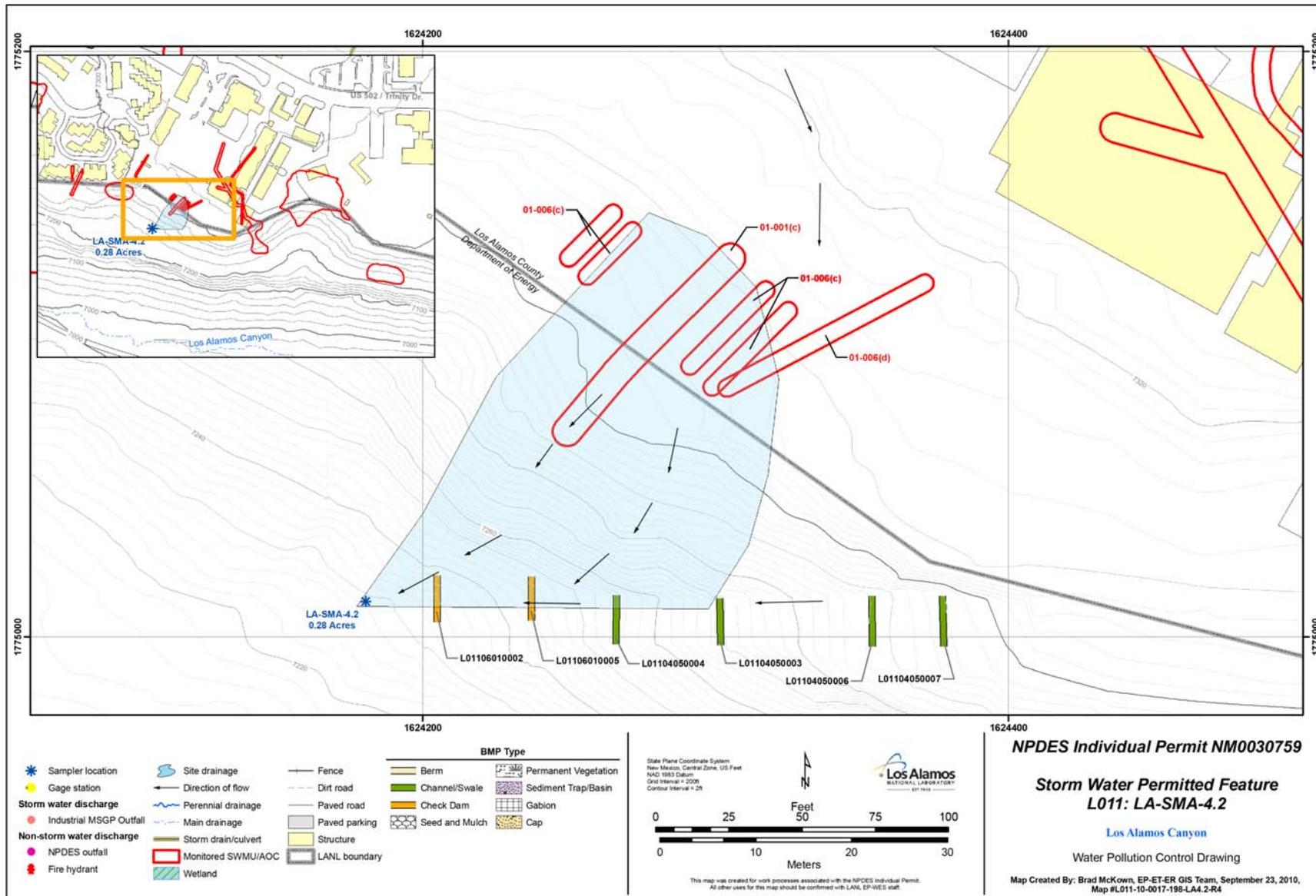


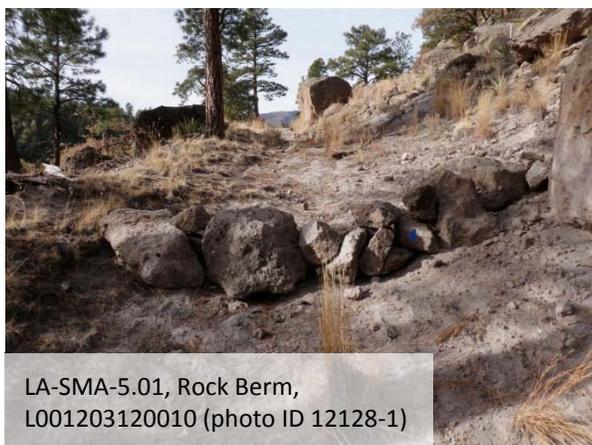
Figure 29-1 LA-SMA-4.2 location map

## 30.0 LA-SMA-5.01: SWMUs 01-001(d) and 01-006(h)

### 30.1 Site Descriptions

Two historical industrial activity areas are associated with L012, LA-SMA-5.01: Sites 01-001(d) and 01-006(h).

SWMU 01-001(d) is the former location of septic tank 138 (structure 01-138), its associated inlet and outlet drainlines, and outfall in former TA-01. The septic was constructed of reinforced concrete, measured 3 ft × 6 ft × 5 ft deep and was located southeast of Building Y (former building 01-81). The septic tank was installed in 1943 and served Buildings K (former building 01-40), V (former building 01-70), and Y. Building K was a chemical stock room that contained a mercury still. Building V housed the original TA-01 uranium and beryllium machine shop. Dry-grinding of boron was also conducted in Building V. Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The buildings were connected to septic tank 138 by a sanitary waste line. The outfall was located east of Building Y and discharged over the rim of Los Alamos Canyon. This outfall area is known as Hillside 138. The septic tank was abandoned in place in 1956 and was removed in 1975 or 1976. Currently, the location of the former pipelines and former septic tank is privately owned and commercially developed with buildings and an asphalt parking lot. The outfall is located on undeveloped land owned by DOE. SWMU 01-001(d) overlaps the footprint of SWMU 01-006(h); the two SWMUs sites share the same



LA-SMA-5.01, Rock Berm, L001203120010 (photo ID 12128-1)

hillside area. Sampling and remediation activities were implemented at the site in 2008–2009 to remove soil with mercury exceeding the residential SLL and plutonium-239/240 exceeding the residential SAL. Based on the confirmation sampling data, additional removal and stabilization activities and confirmation sampling will be implemented at SWMU 01-001(d).

SWMU 01-006(h) is the former drainline and outfall that served the northwest side of Building R (former building 01-50) and the east side of Building Y (former building 01-81). The outfall was located 25 ft

south of Building Y on the north rim of Los Alamos Canyon, immediately west of Hillside 138. Building R housed model, glass, carpentry, and plumbing shops. Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. Currently, SWMU 01-006(h) is located under commercial buildings. SWMU 01-006(h) overlaps the footprint of SWMU 01-001(d), and the two sites share the same hillside area. Sampling and remediation activities were implemented at the site in 2008–2009 to remove soil with mercury exceeding the residential SSL. Based on the confirmation sampling data, additional removal and stabilization activities and confirmation sampling will be implemented at SWMU 01-006(h).

The project map (Figure 30-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 30.2 Control Measures

Paved areas and roof top drainage in the headwaters of this SMA provide a source for significant run-on contribution. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 30-1).

**Table 30-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01202010001	Established Vegetation - Grasses and Shrubs			X		CB
L01203010004	Berms - Earthen		X		X	CB
L01203010007	Berms - Earthen	X			X	CB
L01203060011	Berms - Straw Wattles	X			X	B
L01203120010	Berms - Rock	X			X	CB
L01204050008	Channel/Swale - Water Bar	X		X		CB
L01204050009	Channel/Swale - Water Bar	X		X		CB
L01204060006	Channel/Swale - Riprap		X	X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 30.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.01. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 30.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-5.01 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 30-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-21845	02-29-2012
Annual Erosion Evaluation	COMP-23376	05-09-2012
Storm Rain Event	BMP-28689	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 30-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29093	Installed new straw wattles L01203060011 in same location as - 0002, which was retired.	10-24-2012	5 day(s)	Maintenance conducted in timely manner.

**30.5 Compliance Status**

The Sites associated with LA-SMA-5.01 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 30-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-001(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 01-006(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

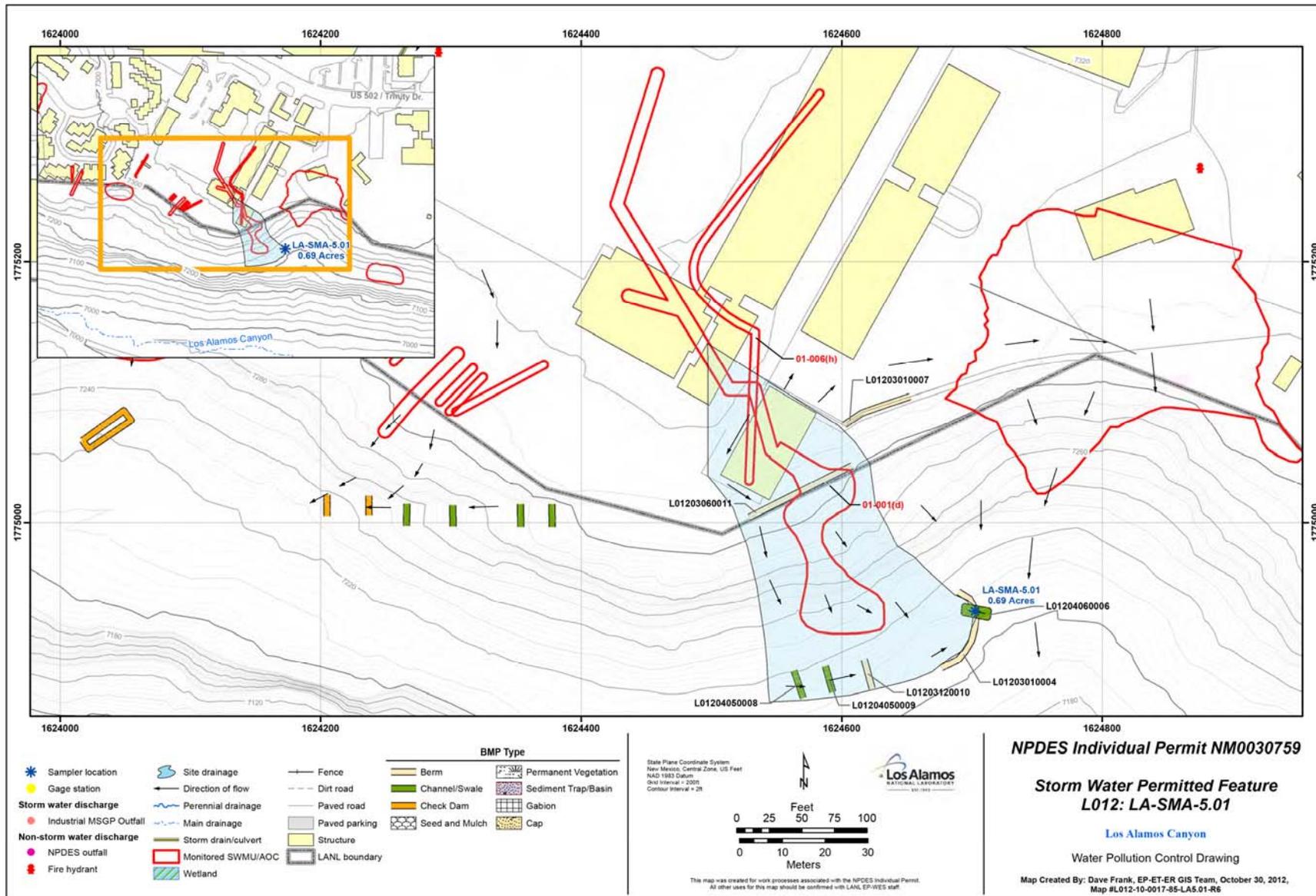


Figure 30-1 LA-SMA-5.01 location map

## 31.0 LA-SMA-5.02: SWMU 01-003(e)

### 31.1 Site Descriptions

One historical industrial activity area is associated with L012A, LA-SMA-5.02: Site 01-003(e).

SWMU 01-003(e) was a surface disposal area on the mesa top and partly on the Los Alamos Canyon hillside where demolition debris from former TA-01 was placed in the 1950s. Review of historical aerial photographs from the 1950s and 1960s indicates that when the buildings in the eastern portion of former TA-01 underwent D&D in the 1950s, debris from the 1940's era buildings was placed at the head of the canyon, and some of the debris was pushed down the hillside. Review of historical aerial photographs from the mid-1970s shows that additional fill was placed over the top of the mesa-top portion of the debris during the development of the former Los Alamos Inn, adjacent professional buildings, and associated parking lots. The mesa-top portion of SWMU 01-003(e) is currently paved with asphalt and the professional buildings remain in place. Surface debris on the hillside of SWMU 01-003(e) consists primarily of concrete construction debris but also include utility boxes, piping, and other miscellaneous debris. Risk-assessment results indicate SWMU 01-003(e) poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2010. Potential contaminants associated with industrial materials historically managed at this Site are metals.

The project map (Figure 31-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 31.2 Control Measures

Paved areas in the headwaters of this SMA provide a source for significant run-on contribution. The storm drain located on the south side of the parking area contributes run-on to the SMA from the impervious areas in the northern portion of the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 31-1).

**Table 31-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L012A02010001	Established Vegetation - Grasses and Shrubs			X		CB
L012A03010002	Berms - Earthen	X			X	CB
L012A03060005	Berms - Straw Wattles		X		X	CB
L012A03060006	Berms - Straw Wattles		X		X	CB
L012A03060010	Berms - Straw Wattles		X		X	B
L012A03060011	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 31.3 Storm Water Monitoring

SWMU 01-003(e) is monitored within LA-SMA-5.02. Following the installation of baseline control measures, a baseline storm water sample was collected on August 3, 2011, and August 19, 2011 (Figures 31-2 and 31-3). On September 10, 2010, NMED issued a COC for SWMU 01-003(e). This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at LA-SMA-5.02. No further sampling is required for LA-SMA-5.02 for the remainder of the IP.

### 31.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-5.02 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 31-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual Inspection	COMP-21616	03-27-2012
Annual Erosion Evaluation	COMP-23377	03-27-2012
Storm Rain Event	BMP-28690	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 31-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22449	Replaced wattle -0008 with new wattle L012A03060010, wattle -0008 was retired.	04-20-2012	24 day(s)	Maintenance conducted as soon as practicable.
BMP-22451	Replaced wattle -0009 with new wattle L012A03060011, wattle -009 was retired.	04-20-2012	24 day(s)	Maintenance conducted as soon as practicable.
BMP-22447	Re-staked wattle L012A03060005.	04-20-2012	24 day(s)	Maintenance conducted as soon as practicable.
BMP-22448	Re-staked wattle L012A03060006.	04-20-2012	24 day(s)	Maintenance conducted as soon as practicable.

### 31.5 Compliance Status

The Site associated with LA-SMA-5.02 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 31-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-003(e)	Corrective Action Initiated	Corrective Action Complete	NMED, September 10, 2010, "Certificates of Completion Upper Los Alamos Canyon Aggregate Area Los Alamos National Laboratory"

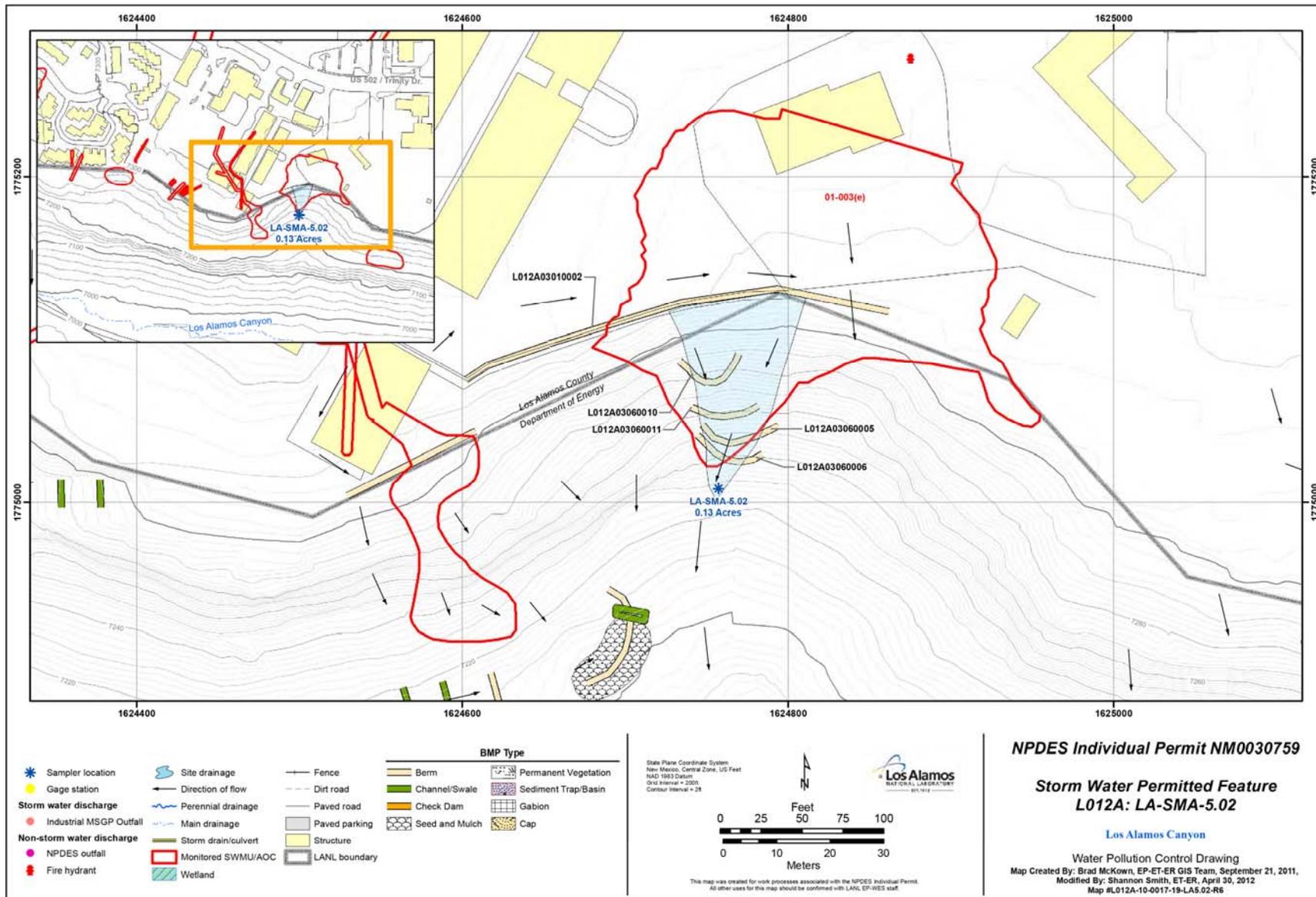
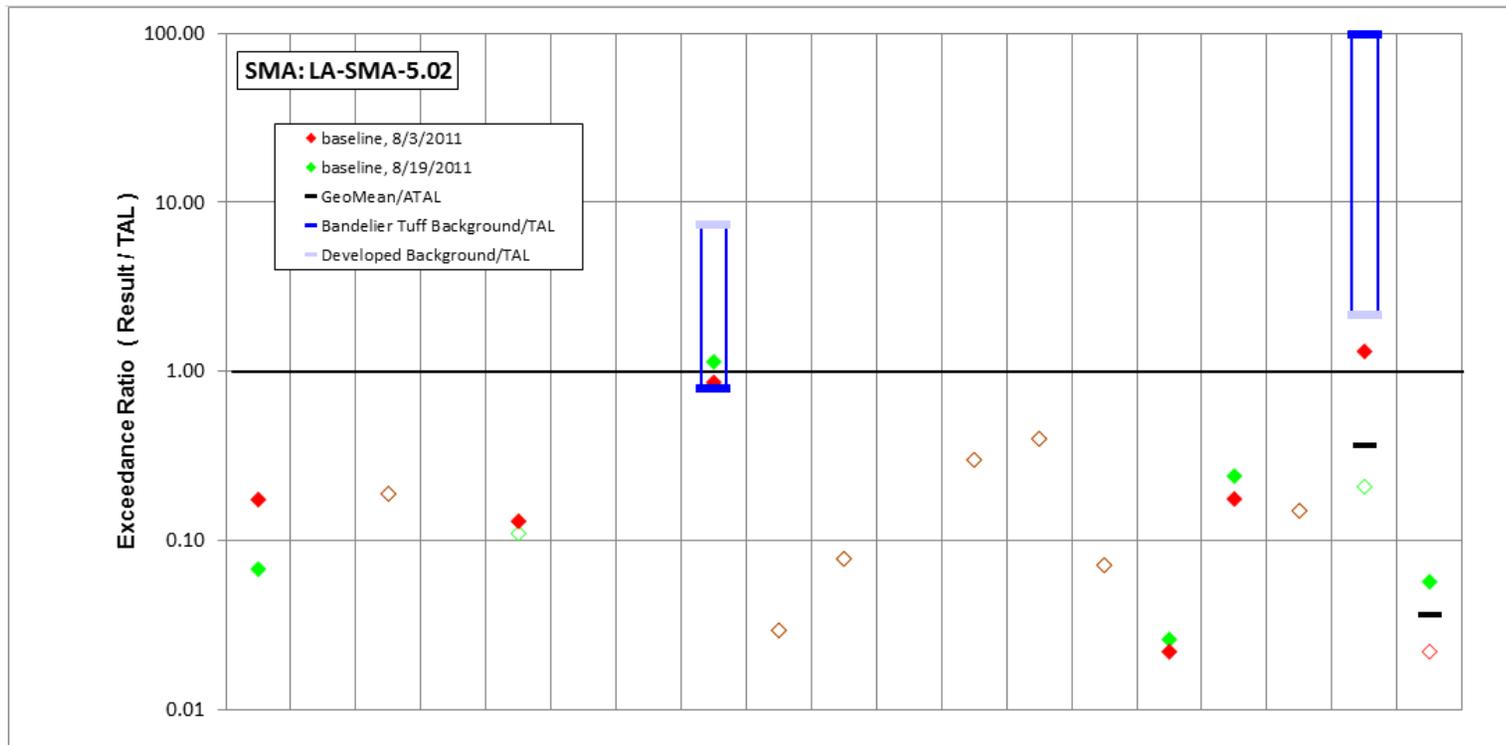


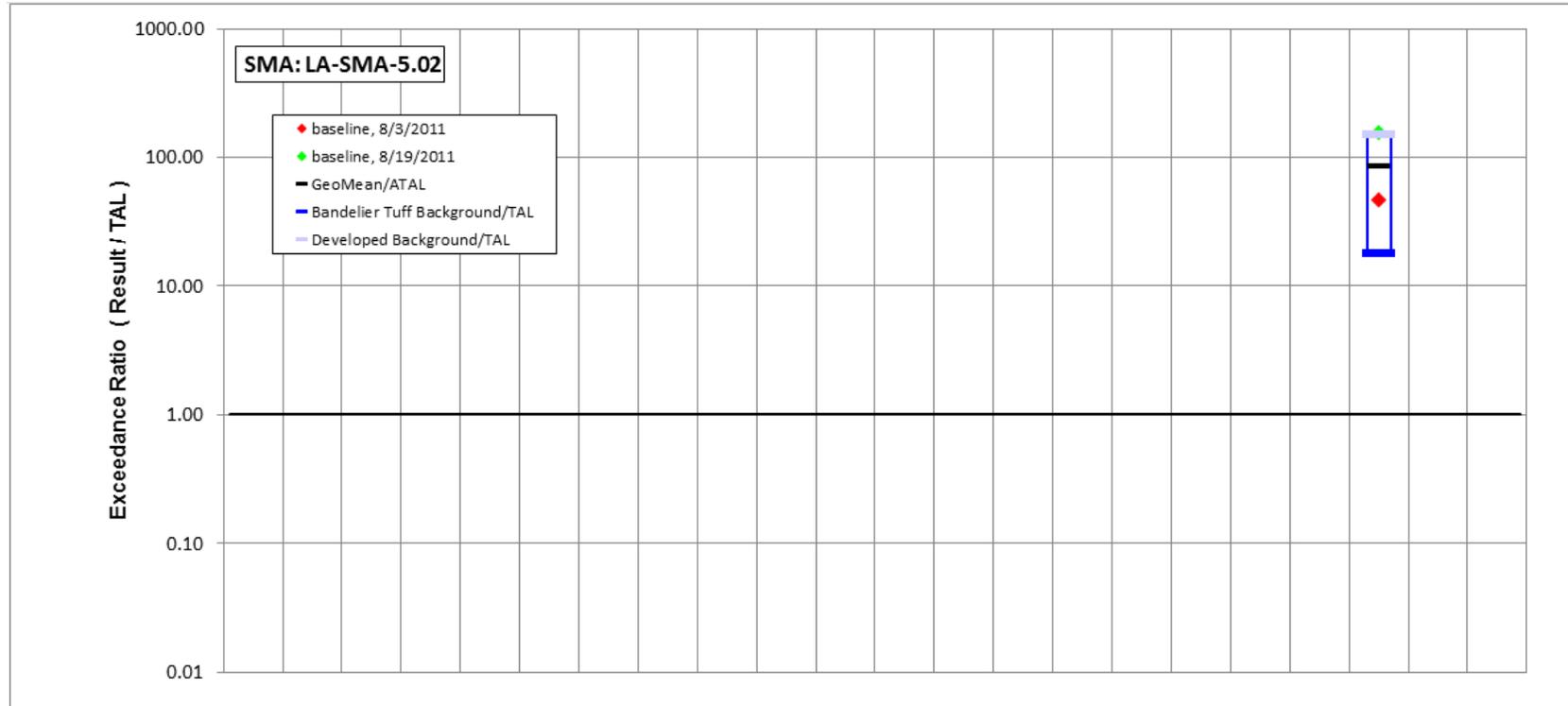
Figure 31-1 LA-SMA-5.02 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>8/19/2011 result</b>	50.8	<i>1</i>	1.7	29.6	<i>0.11</i>	2	2.6	<b>4.9</b>	0.5	<i>0.06</i>	1.3	1.5	0.2	0.45	2.6	10.1	0.002	3.12	1.71
result / TAL	0.068	0.002	0.19	0.0059	0.11	0.01	0.0026	<b>1.1</b>	0.029	0.078	0.0076	0.3	0.4	0.071	0.026	0.24	0.15	0.21	0.057
<b>8/3/2011 result</b>	131	<i>1</i>	1.7	15.3	0.13	2	1.3	3.7	0.5	<i>0.06</i>	1	1.5	0.2	0.45	2.2	7.4	0.002	<b>19.7</b>	0.66
result / TAL	0.17	0.002	0.19	0.0031	0.13	0.01	0.0013	0.86	0.029	0.078	0.0059	0.3	0.4	0.071	0.022	0.18	0.15	<b>1.3</b>	0.022

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

Figure 31-2 Inorganic analytical results summary plot for LA-SMA-5.02



	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-]	<b>Total PCB</b>	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
<b>8/19/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.1</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>160</b>	-	-
<b>8/3/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.03</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>47</b>	-	-

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

Figure 31-3 Organic analytical results summary plot for LA-SMA-5.02

## 32.0 LA-SMA-5.2: SWMU 01-003(d)

### 32.1 Site Descriptions

One historical industrial activity area is associated with L013, LA-SMA-5.2: Site 01-003(d).

SWMU 01-003(d), also known as Can Dump Site, was a surface disposal area used to dispose of empty solvent and paint cans during the operations of the Zia Company (paint, carpentry, furniture repair, and sign shops and warehouses). No radioactive materials were handled in these warehouses because they were located outside the TA-01 security fence. Disposal operations likely ceased during the mid- to late 1950s, when most of the TA-01 building were demolished. All cans and debris were removed from the site during a 1995 VCA. SWMU 01-003(d) is located on an undeveloped hillside of Los Alamos Canyon just south of the current Qwest building. Currently, the site is located on undeveloped DOE land. Sampling data from the 2010 Phase II investigation showed antimony detected above the residential SSL. Therefore, soil will be removed and additional sampling performed at SWMU 01-003(d).

The project map (Figure 32-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 32.2 Control Measures

The paved area, owned by Los Alamos County, to the north of the Permitted Feature is sloped to the east, diverting run-on away from the SMA to a natural channel that discharges into Los Alamos Canyon. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 32-1).

**Table 32-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01302010001	Established Vegetation - Grasses and Shrubs			X		CB
L01306010003	Check Dam - Rock		X		X	B
L01306010004	Check Dam - Rock		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 32.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 32.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-5.2 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 32-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23378	05-22-2012
Storm Rain Event	BMP-28688	10-23-2012

There were no maintenance activities conducted at LA-SMA-5.2 in 2012.

**32.5 Compliance Status**

The Site associated with LA-SMA-5.2 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 32-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 01-003(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

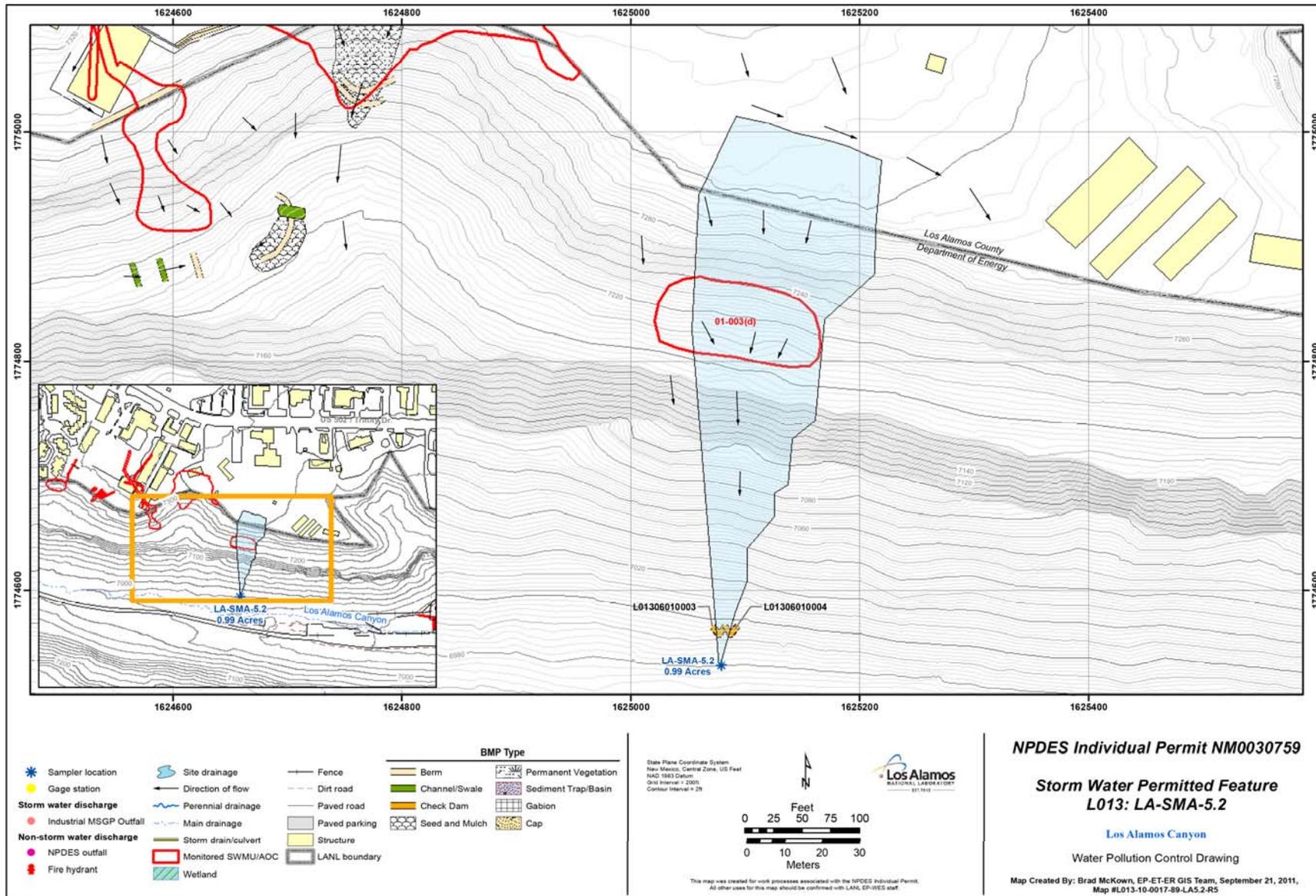


Figure 32-1 LA-SMA-5.2 location map

### 33.0 LA-SMA-5.31: SWMU 41-002(c)

#### 33.1 Site Descriptions

One historical industrial activity area is associated with L015, LA-SMA-5.31: Site 41-002(c).

SWMU 41-002(c) is a sludge drying bed and is one component of a small sanitary sewage treatment plant at TA-41. The plant received sewage from TA-02 from the mid-1970s until 1987. After 1987, wastes were pumped to TA-03 for treatment until 1992 and then to TA-46 after that. The TA-41 treatment plant was retained as a standby unit in case the lift pump failed. Investigation of SWMU 41-002(c) is delayed because building 41-4 is an active facility. Therefore, no sampling is expected to be done at SWMU 41-002(c) until building 41-4 undergoes D&D. Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

The project map (Figure 33-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

#### 33.2 Control Measures

Run-on flows onto the Permitted Feature via a natural channel discharging from paved areas on the mesa top above the Site. A rock check dam diverts this run-on source around the managed area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 33-1).

Enhanced controls were installed and certified on August 27, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 33-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01502010001	Established Vegetation - Grasses and Shrubs			X		CB
L01503010012	Berms - Earthen	X			X	B
L01503120010	Berms - Rock	X			X	EC
L01503120011	Berms - Rock		X		X	EC
L01504040014	Channel/Swale - Culvert			X		B
L01504060013	Channel/Swale - Riprap	X		X		B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 33.3 Storm Water Monitoring

SWMU 41-002(c) is monitored within LA-SMA-5.31. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figure 35-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentration of 5.5 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 86 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 41-002(c)*: Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

- Consent Order sampling has not been performed at this Site.
- Copper—Copper was not detected above BV in the 1995 Phase I RFI samples.
- Gross alpha—Plutonium-239/240 was detected at a maximum activity of 3.3 times FV in 1995 Phase RFI samples.

In summary, Copper is not known to be associated with industrial materials historically managed at the Site. Plutonium-239/240, which is an alpha-emitting radionuclide, is not known to be associated with industrial materials historically managed at this Site, although it was detected slightly above FV. In addition, plutonium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 35-2. 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 Figure 35-2.

Monitoring location LA-SMA-5.31 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

### 33.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.31 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 33-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21617	03-26-2012
Annual Erosion Evaluation	COMP-23379	03-26-2012
Construction	COMP-24803	07-12-2012
Enhanced Control Measure Verification	BMP-24791	07-12-2012
Storm Rain Event	BMP-24965	07-17-2012
Storm Rain Event	BMP-28654	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 33-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28654	Installed 3 wattles for temporary controls.	10-23-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-29160	Added rock to build up and extend rock berm L01503120011.	11-05-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-29161	Added straw wattle to same location as existing wattle directly above sampler location.	11-06-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-29161	Added seed and mulch in areas between Site and rock berm, and rock berm and new wattle.	11-06-2012	14 day(s)	Maintenance conducted in timely manner.

### 33.5 Compliance Status

The Site associated with LA-SMA-5.31 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 33-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 41-002(c)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-27-2012

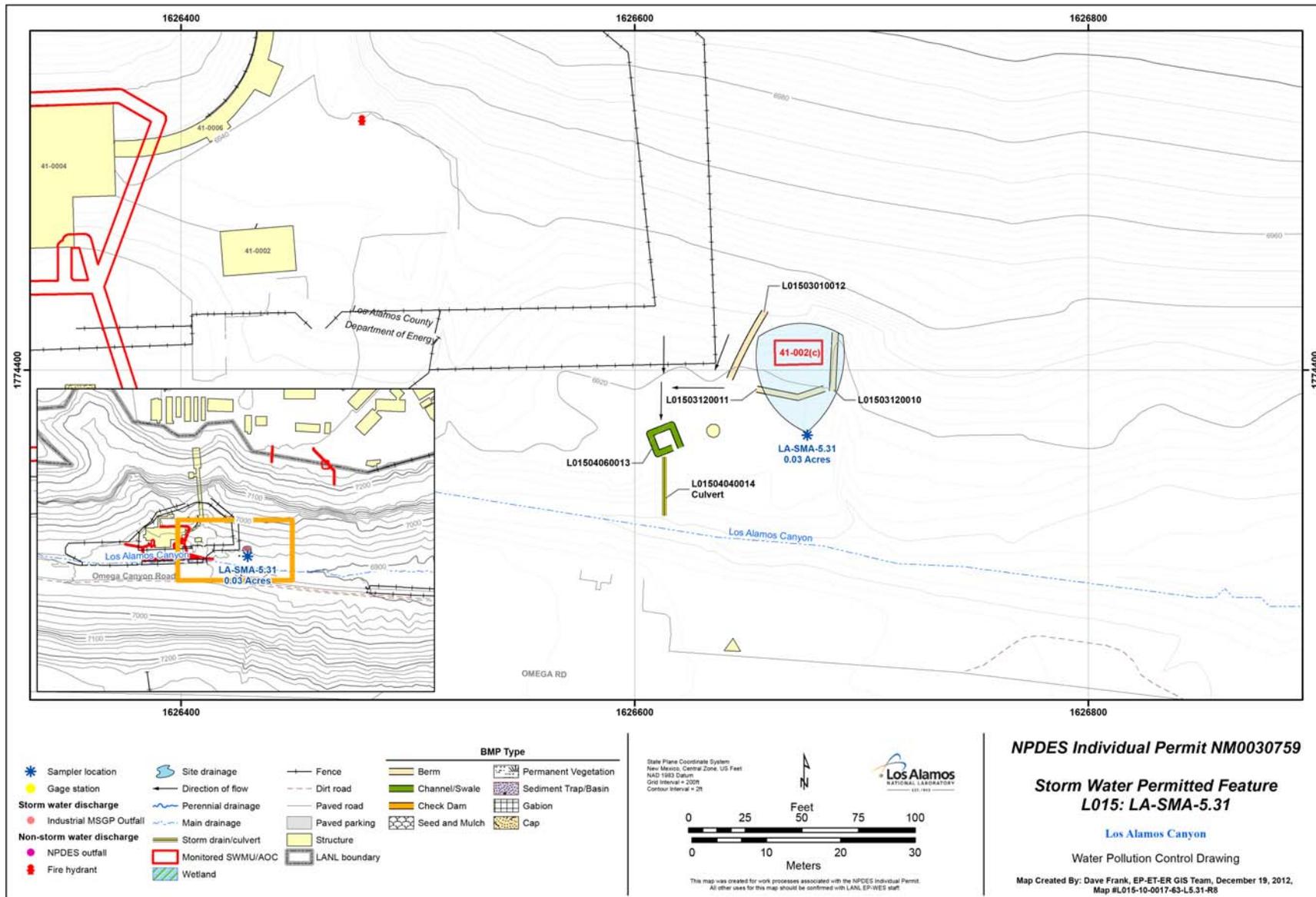
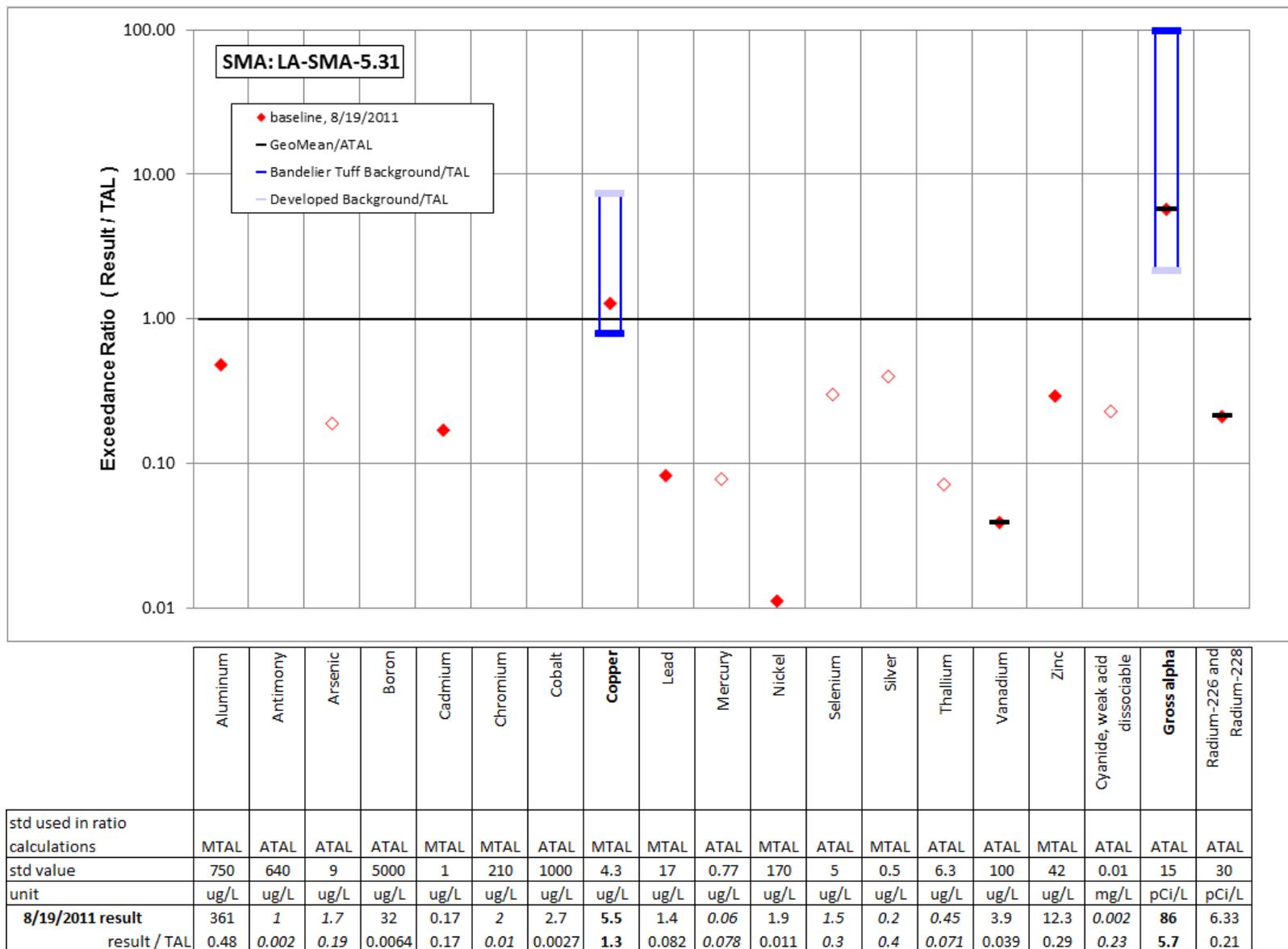


Figure 33-1 LA-SMA-5.31 location map



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

Figure 33-2 Inorganic analytical results summary plot for LA-SMA-5.31

## 34.0 LA-SMA-5.33: AOC 32-004

### 34.1 Site Descriptions

One historical industrial activity area is associated with L016, LA-SMA-5.33: Site 32-004.

AOC 32-004 consists of a former drainline and outfall that served former building 32-03 and discharged to Los Alamos Canyon. Building 32-03 was an office building and contained a vault room where a radioactive source was stored. The drainline at AOC 32-004 led directly to an outfall at the edge of the mesa without passing through a septic tank. Building 32-03 was removed when TA-32 was decommissioned in 1954. During the 1996 Phase II RFI and VCA conducted at AOC 32-004, the 37.5-ft section of the drainline located on Los Alamos County property was removed. Because the drainline was found not to be contaminated, the portion of the drainline located on DOE property was left in place and grouted at both ends. Risk-assessment results indicate SWMU 32-004 poses no unacceptable risk to industrial/commercial receptors and poses no risk to ecological receptors. NMED issued a COC with controls in December 2012. No industrial materials were historically managed at this Site; therefore, no potential contaminants are associated with the Site.

The project map (Figure 34-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 34.2 Control Measures

The historical industrial activity area is an existing drainline and the majority of Site is belowgrade. Wattles have been placed north of the area to reduce run-on from the mesa above. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 34-1).

Enhanced controls were installed and certified on August 27, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 34-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01601030010	Seed and Mulch - Hydromulch			X		EC
L01601040013	Seed and Mulch - Seeding			X		EC
L01602020004	Established Vegetation - Forested/Needle Cast			X		CB
L01603010009	Berms - Earthen	X			X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 34.3 Storm Water Monitoring

AOC 32-004 is monitored within LA-SMA-5.33. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 34-2). On December 28, 2012, NMED issued a COC for SWMU 01-003(e). This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at LA-SMA-5.33. No further sampling is required for LA-SMA-5.33 for the remaining period of the IP.

### 34.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.33 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 34-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22063	03-28-2012
Annual Erosion Evaluation	COMP-23380	03-28-2012
Enhanced Control Measure Verification.	BMP-23204	05-21-2012
Storm Rain Event	BMP-24966	07-16-2012
Storm Rain Event	BMP-28655	10-18-2012

There were no maintenance activities conducted at LA-SMA-5.33 in 2012.

### 34.5 Compliance Status

The Site associated with LA-SMA-5.33 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 34-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 32-004	Baseline Monitoring	Corrective Action Complete	NMED, December 28, 2012, "Certificates of Completion Two Solid Waste Management Units and One Area of Concern in the Upper Los Alamos Canyon Aggregate Area"

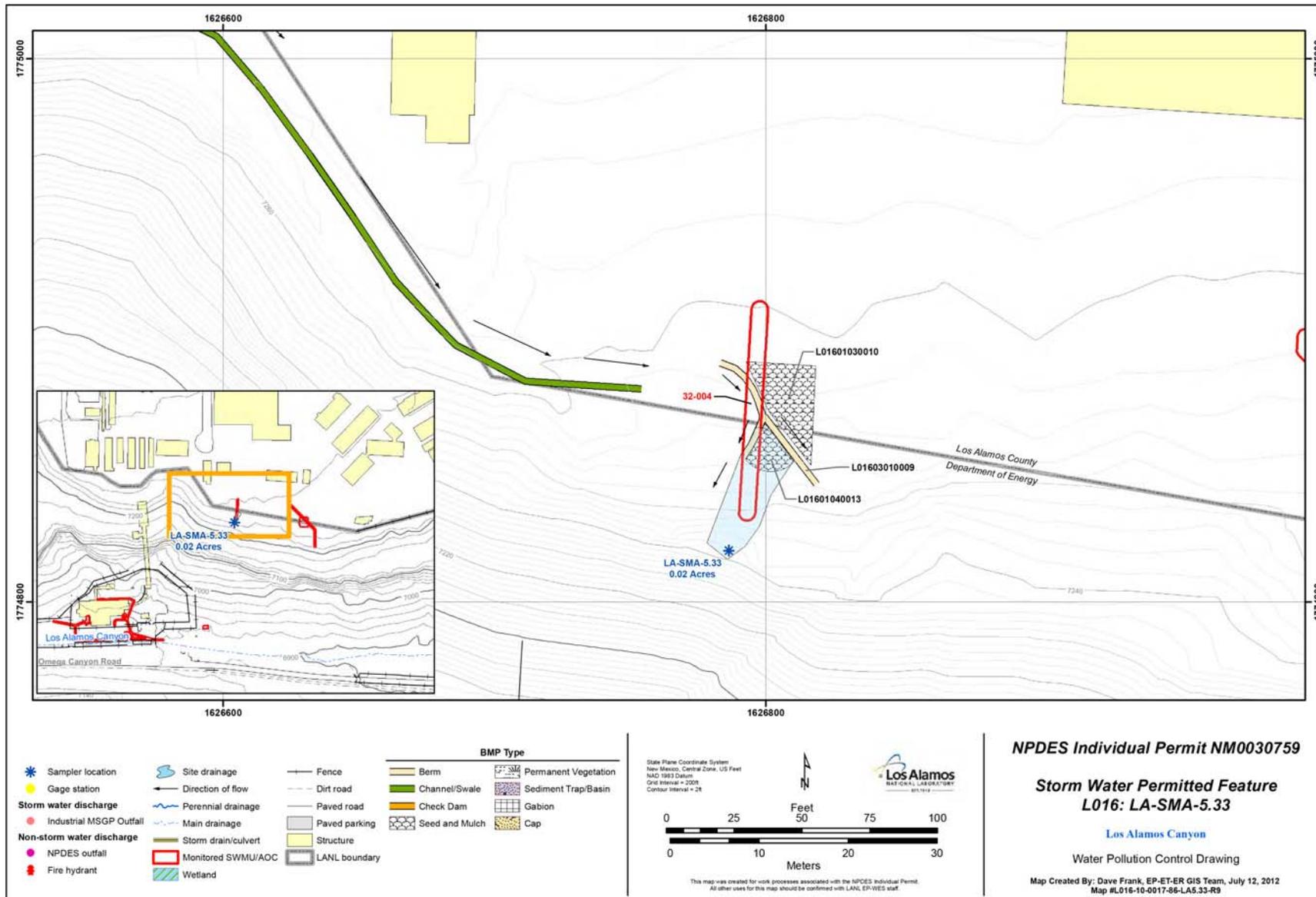
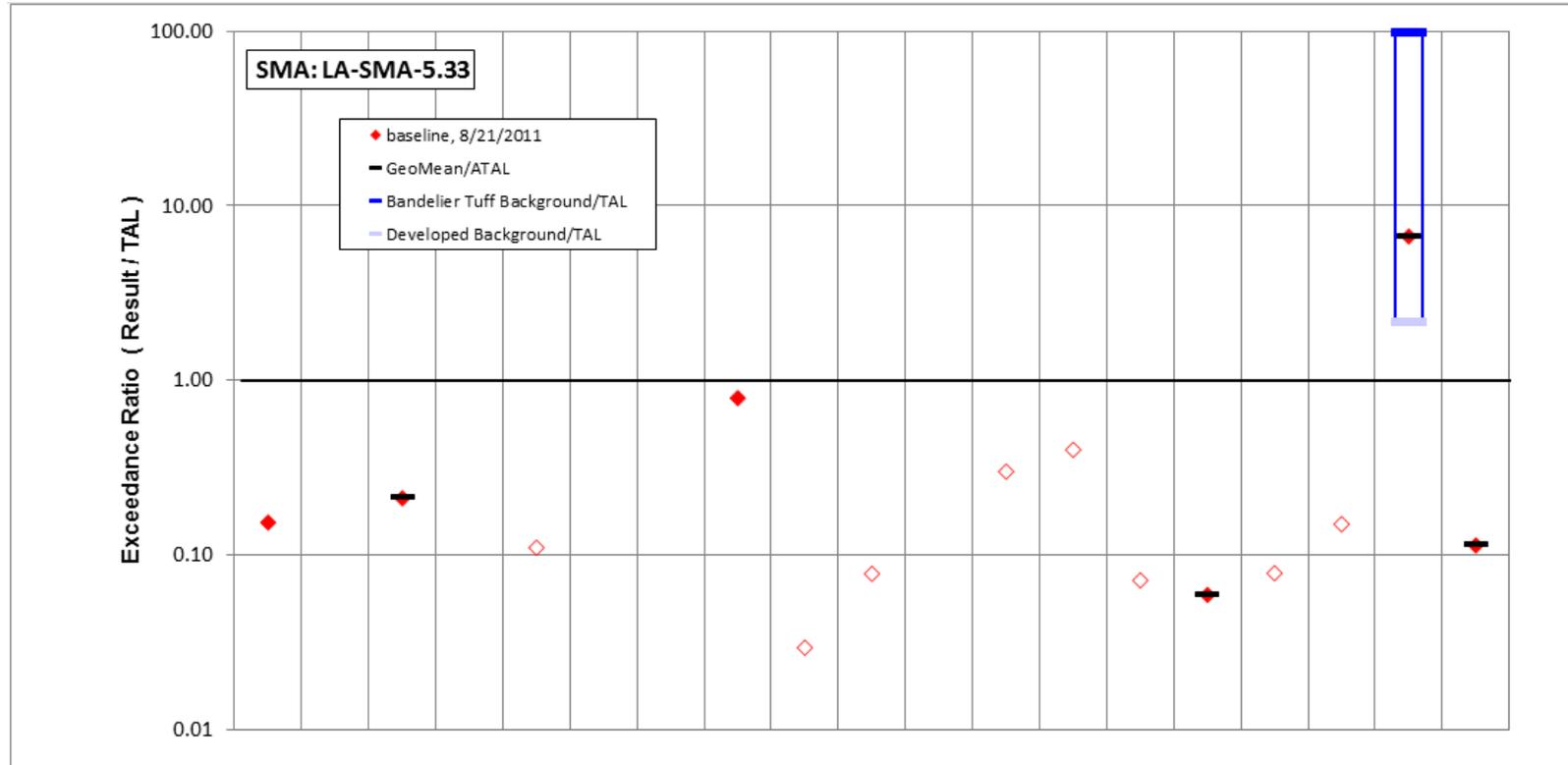


Figure 34-1 LA-SMA-5.33 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>8/21/2011 result</b>	115	<i>1</i>	1.9	21.8	<i>0.11</i>	2	2.2	3.4	<i>0.5</i>	<i>0.06</i>	1.2	1.5	0.2	0.45	5.9	3.3	0.002	<b>100</b>	3.4
result / TAL	0.15	<i>0.002</i>	0.21	0.0044	<i>0.11</i>	0.01	0.0022	0.79	<i>0.029</i>	<i>0.078</i>	0.0071	0.3	0.4	0.071	0.059	0.079	0.15	<b>6.7</b>	0.11

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

Figure 34-2 Inorganic analytical results summary plot for LA-SMA-5.33

## 35.0 LA-SMA-5.35: AOC C-41-004

### 35.1 Site Descriptions

One historical industrial activity area is associated with L014, LA-SMA-5.35: Site C-41-004.

AOC C-41-004 is the storm drain system surrounding laboratory building 41-4. The drain system has seven storm drainage catch basins/manholes (structures 41-22 through 41-28). Although there are no indications of contaminant releases to the system, operational tritium releases from the emission stacks located between buildings 41-4 and 41-30 (office building) may have introduced surface contamination into the storm drain system. Investigation of AOC C-41-004 is delayed because building 41-4 is an active facility. Therefore, no sampling is expected to be done at AOC C-41-004 until building 41-4 undergoes D&D. The potential contaminant associated with industrial materials historically managed at this Site is tritium.

The project map (Figure 35-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 35.2 Control Measures

An asphalt swale and curbing route storm water from the mesa top to a discharge point east of the SMA. Inlet protection serves to reduce sediment loading at the drop inlets to the storm drain system. Riprap serves as outlet protection for storm water discharge from the storm drain system. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 35-1).

Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 35-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01408030010	Cap - Asphalt	X		X		EC
L01408030014	Cap - Asphalt		X	X		EC
L01408040011	Cap - Metal	X		X		EC
L01408040012	Cap - Metal	X		X		EC
L01408040013	Cap - Metal	X		X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 35.3 Storm Water Monitoring

AOC C-41-004 is monitored within LA-SMA-5.35. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2011, and September 7, 2011 (Figure 37-2). Analytical results from these samples yielded two TAL exceedances:

- Copper concentration of 5.9 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 874 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC C-41-004:* The potential contaminant associated with industrial materials historically managed at this Site is tritium.

- Consent Order sampling has not been performed at this Site.
- Copper—Samples collected during the 1995 RFI were not analyzed for inorganic chemicals because these constituents were not identified as chemicals of potential concern.
- Gross alpha—Total uranium was detected above BV, and plutonium-239/240 was detected above FV in samples collected during the 1995 RFI.

In summary, copper is not known to be associated with industrial materials historically managed at the Site. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above BV. Americium-241, which is an alpha-emitting radionuclide, is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above FV. In addition, americium and uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of copper above MTAL and adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 37-2. 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 Figure 37-2.

Monitoring location LA-SMA-5.35 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

### 35.4 Inspections and Maintenance

RG055.5 recorded one storm event at LA-SMA-5.35 during the 2012 season. This rain event triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 35-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21618	03-28-2012
Annual Erosion Evaluation	COMP-23381	03-28-2012
Enhanced Control Measure Verification	BMP-26804	08-21-2012
Storm Rain Event	BMP-28676	10-23-2012

There were no maintenance activities conducted at LA-SMA-5.35 in 2012.

### 35.5 Compliance Status

The Site associated with LA-SMA-5.35 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 35-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC C-41-004	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012

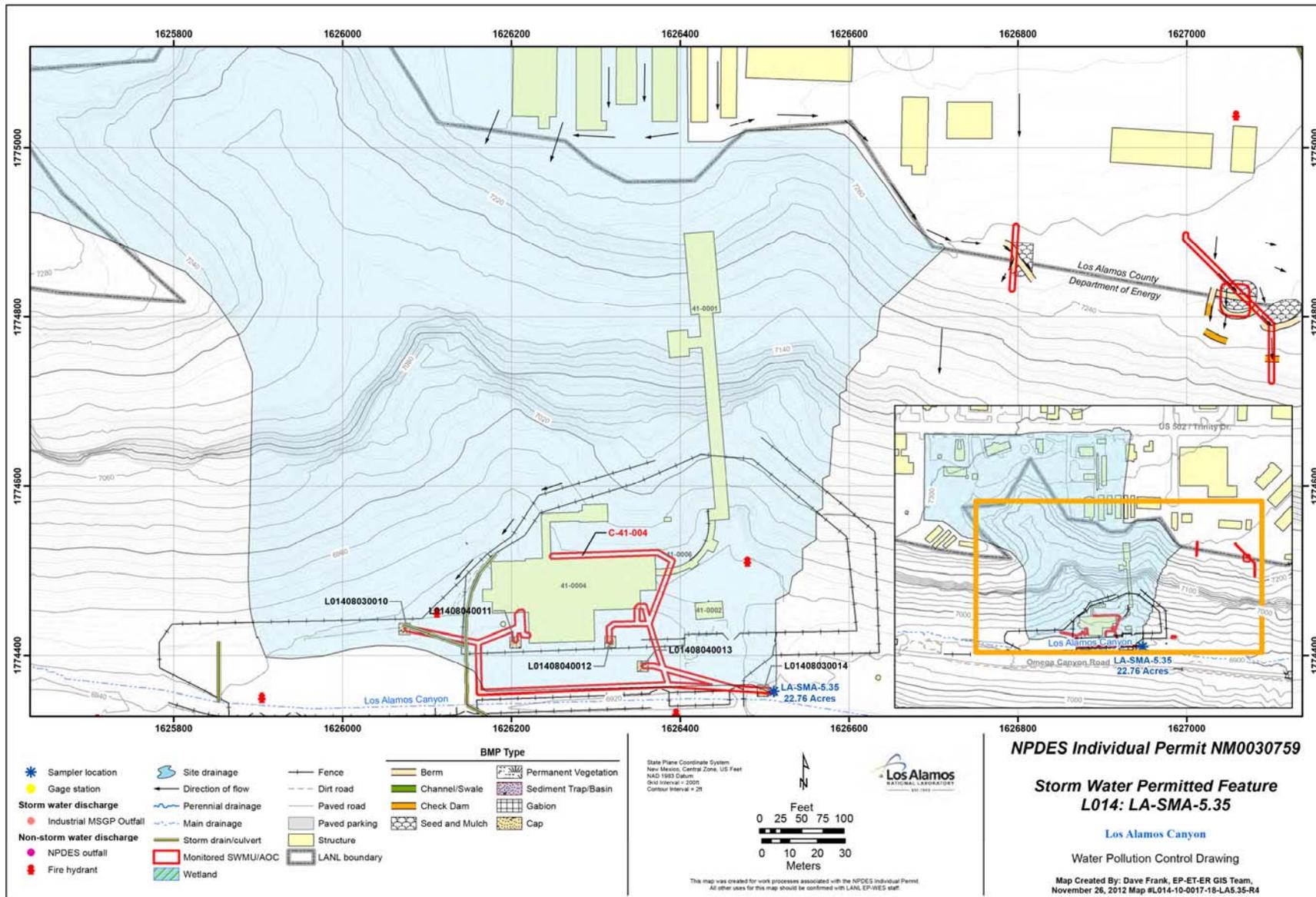
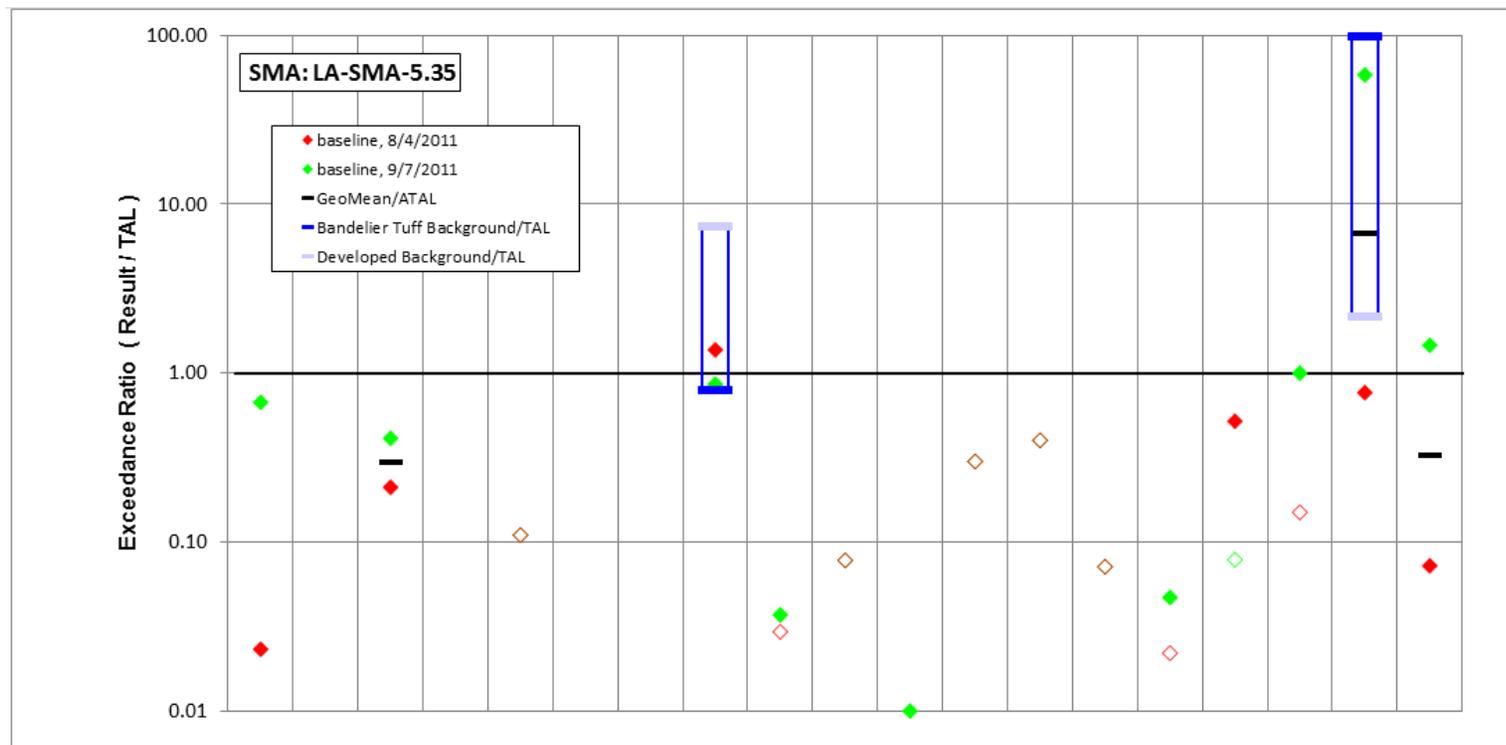


Figure 35-1 LA-SMA-5.35 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	<b>Radium-226 and Radium-228</b>
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
<b>9/7/2011 result</b>	504	<i>1</i>	3.7	22.9	<i>0.11</i>	2	3.5	3.7	0.63	<i>0.06</i>	1.7	1.5	0.2	0.45	4.7	3.3	0.01	<b>874</b>	<b>43.9</b>
result / TAL	0.67	<i>0.002</i>	0.41	0.0046	<i>0.11</i>	<i>0.01</i>	0.0035	0.86	0.037	<i>0.078</i>	0.01	0.3	0.4	0.071	0.047	0.079	1	<b>58</b>	<b>1.5</b>
<b>8/4/2011 result</b>	17.4	<i>1</i>	1.9	15	<i>0.11</i>	2	1	5.9	0.5	0.06	0.64	1.5	0.2	0.45	2.2	21.8	0.002	11.5	2.17
result / TAL	0.023	<i>0.002</i>	0.21	<i>0.003</i>	<i>0.11</i>	<i>0.01</i>	<i>0.001</i>	<b>1.4</b>	<i>0.029</i>	<i>0.078</i>	0.0038	0.3	0.4	0.071	0.022	0.52	0.15	0.77	0.072

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

**Figure 35-2 Inorganic analytical results summary plot for LA-SMA-5.35**

## **36.0 LA-SMA-5.361: SWMU 32-002(b)**

### **36.1 Site Descriptions**

One historical industrial activity area is associated with L017, LA-SMA-5.361: Site 32-002(b).

SWMU 32-002(b) is a former septic system that served former buildings 32-01 and 32-02. The septic system was installed directly northwest and slightly upgradient of the SWMU 32-002(a) septic tank, near the edge of Los Alamos Canyon. This system was installed when the SWMU 32-002(a) septic system could no longer meet the usage requirement of the laboratory (building 32-01), and it consisted of a reinforced concrete tank (former structure 32-08) measuring 9 ft × 5 ft × 6 ft with an outlet drainline that discharged to an outfall at the edge of Los Alamos Canyon. The influent line from the SWMU 32-002(a) septic system was diverted to the SWMU 32-002(b) septic system, which also received effluent from former building 32-02, the medical research annex. The outfall of SWMU 32-002(b) was located at the edge of Los Alamos Canyon, approximately 15 ft southwest of the SWMU 32-002(a) outfall. The septic tank was removed in 1988, and the influent drainline was removed in 1996. Research activities in former building 32-01 involved radionuclides. Inorganic and organic chemicals may also have been used. Because no industrial waste line served former TA-32, it is possible chemical and radioactive wastes may have been disposed of in sinks and drains connected to the septic system at SWMU 32-002(b).

Former SWMU 32-002(b) was split into two new SWMUs [32-002(b1) and 32-002(b2)] in December 2012 to expedite completion of corrective actions on the portion of the site owned by the Los Alamos School Board. SWMU 32-002(b1) consists of the portion of what is now former SWMU 32-002(b) that is located on property owned by the Los Alamos School Board. The portion of former SWMU 32-002(b) located on DOE property has been designated new SWMU 32-002(b2). These two new SWMUs were created through a Class 1 permit modification submitted to NMED on December 18, 2012.

Decision-level data for new SWMU 32-002(b1) indicate the nature and extent are defined, the site poses no potential unacceptable risk to industrial receptors, and the site poses no potential risk to ecological receptors. NMED issued a COC with controls for new SWMU 32-002(b1) in December 2012.

Decision-level data for new SWMU 32-002(b2) indicate the presence of elevated mercury concentrations at sampling locations on the bench below the former septic tank outfall, resulting in a potential ecological risk for the earthworm as well as concentrations in excess of the residential soil SSL. These sampling locations, which are on DOE property, were resampled in 2011 to confirm the presence of mercury at elevated levels. Sampling results indicate additional sampling and remediation activities will be needed on the DOE-owned portion of the site [SWMU 32-002(b2)]. Corrective actions at SWMU 32-002(b2) will be completed at a later date and reported in the Phase II investigation report for the Upper Los Alamos Canyon Aggregate Area.

The project map (Figure 36-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 36.2 Control Measures

Run-on enters the SMA from areas north of the Permitted Feature via a natural channel flowing southeast through the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 36-1).

**Table 36-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01701010008	Seed and Mulch - Seed and Wood Mulch			X		CB
L01702010001	Established Vegetation - Grasses and Shrubs			X		CB
L01703010002	Berms - Earthen	X			X	CB
L01706010009	Check Dam - Rock		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 36.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.361. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 36.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.361 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 36-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23382	05-22-2012
Storm Rain Event	BMP-24957	07-16-2012
Storm Rain Event	BMP-28646	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 36-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25494	Re-seeded and matted berm L01703010002.	07-25-2012	9 day(s)	Maintenance conducted in timely manner.

### 36.5 Compliance Status

The Site associated with LA-SMA-5.361 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 36-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 32-002(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

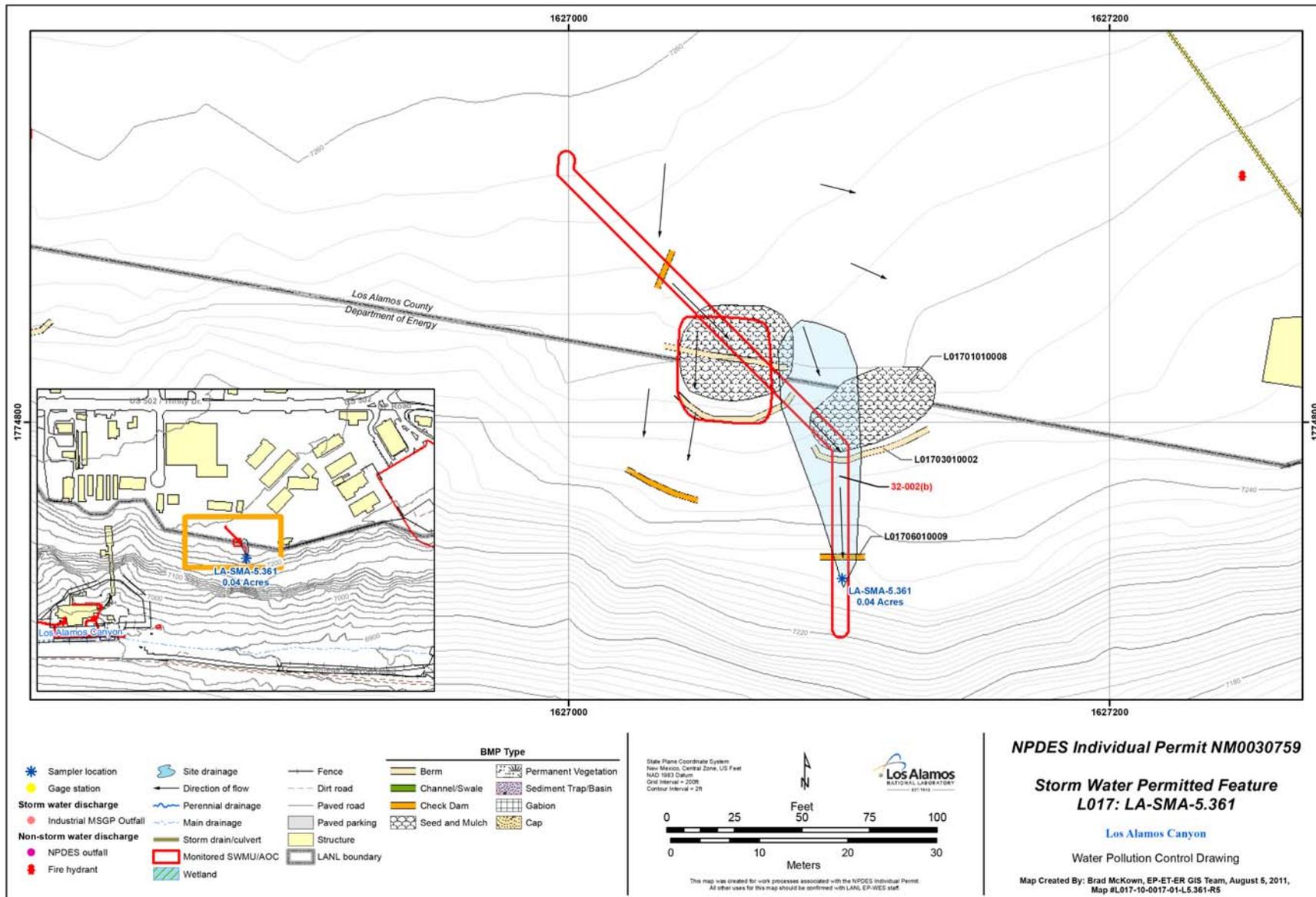


Figure 36-1 LA-SMA-5.361 location map

## 37.0 LA-SMA-5.362: AOC 32-003

### 37.1 Site Descriptions

One historical industrial activity area is associated with L017A, LA-SMA-5.362: Site 32-003.

AOC 32-003 is the former location of a transformer station (structure 32-10), which consisted of three transformers on a wooden platform suspended on poles approximately 20 ft off the ground. AOC 32-003 was discovered northwest of the SWMU 32-002(b) septic tank and directly south of former building 32-01 during the 1993 Phase I RFI at former TA-32. The pile of wood debris at this location was initially thought to be the location of the SWMU 32-002(a) septic tank. During the 1996 Phase II RFI and VCA conducted at AOC 32-003, PCB-contaminated soil was removed and confirmation samples were collected to confirm the PCB cleanup goal had been met. Decision-level data from the 2008 investigation indicated PCB concentrations exceeded the residential and industrial SSLs at one location, warranting limited soil removal. PCB-contaminated soils were removed from this sampling location, and confirmation samples were collected to verify cleanup during the 2010 Phase II investigation. Risk-assessment results indicate SWMU 32-003 poses no unacceptable risk to residential receptors and poses no risk to ecological receptors. NMED issued a COC without controls in December 2012.

The project map (Figure 37-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 37.2 Control Measures

Run-on enters the SMA from areas north of the Permitted Feature via a natural channel flowing southeast through the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 37-1).

**Table 37-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L017A01010007	Seed and Mulch - Seed and Wood Mulch			X		CB
L017A02010001	Established Vegetation - Grasses and Shrubs			X		CB
L017A03010005	Berms - Earthen		X		X	CB
L017A03010008	Berms - Earthen	X			X	CB
L017A03120009	Berms - Rock	X			X	B
L017A06010006	Check Dam - Rock		X		X	CB
L017A06030002	Check Dam - Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 37.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.362. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 37.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.362 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 37-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23383	05-22-2012
Storm Rain Event	BMP-24958	07-16-2012
Storm Rain Event	BMP-28647	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 37-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25493	Repaired berm L017A03010005.	07-25-2012	9 day(s)	Maintenance conducted in timely manner.

### 37.5 Compliance Status

The Site associated with LA-SMA-5.362 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 37-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 32-003	Baseline Monitoring	Baseline Monitoring Extended	NMED, December 20, 2012, "Certificate of Completion One Area of Concern in the Upper Los Alamos Canyon Aggregate Area"



LA-SMA-5.362, Earthen Berm, L0017A03010008 (photo ID 13417-2)

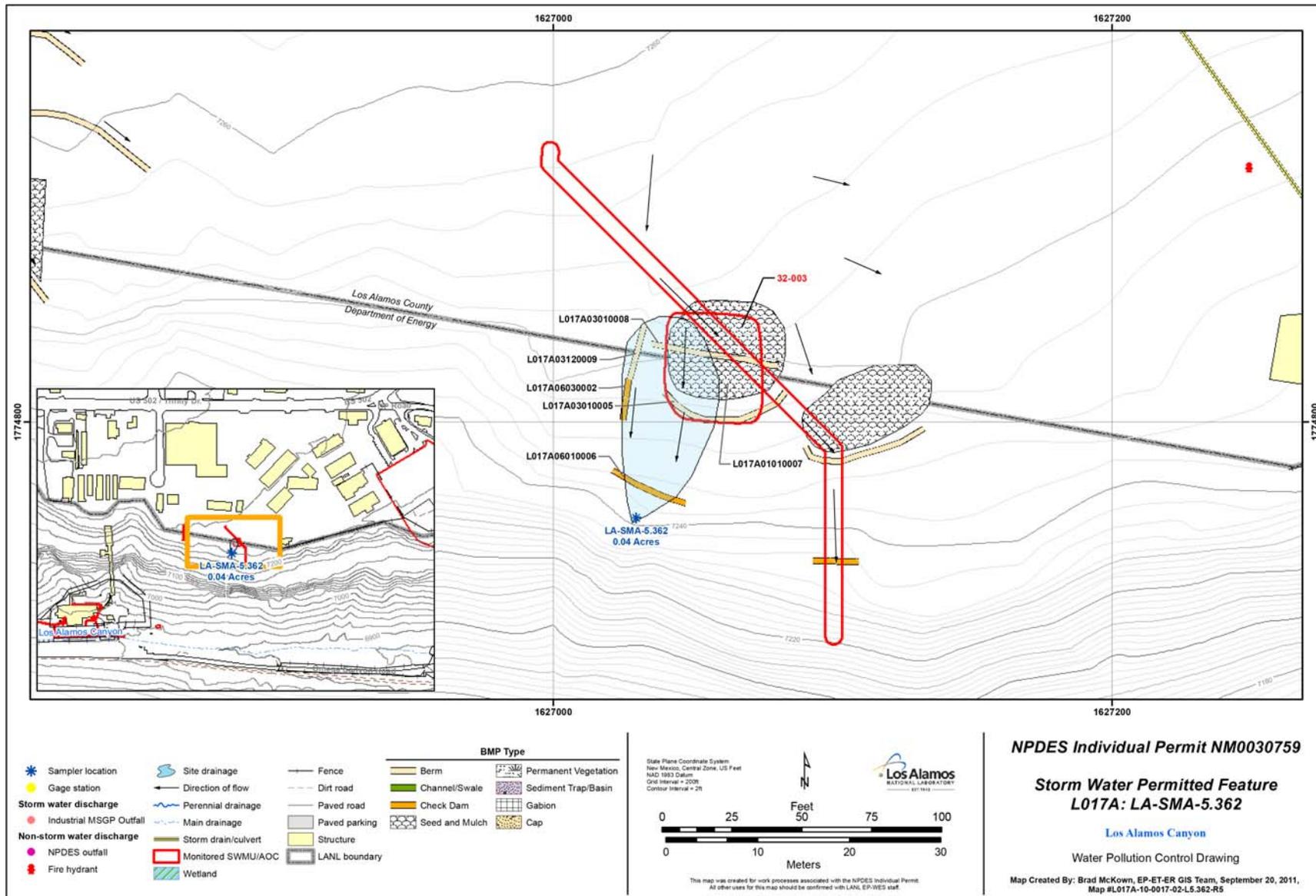


Figure 37-1 LA-SMA-5.362 location map

**38.0 LA-SMA-5.51: SWMUs 02-005, 02-006(b), 02-008(a), and 02-009(b) and AOCs 02-003(a), 02-003(e), 02-004(a), 02-006(c), 02-006(d), 02-006(e), 02-011(a), 02-011(b), 02-011(c), and 02-011(d)**

**38.1 Site Descriptions**

Fourteen historical industrial activity areas are associated with L018, LA-SMA-5.51: Sites 02-003(a), 02-003(e), 02-004(a), 02-005, 02-006(b), 02-006(c), 02-006(d), 02-006(e), 02-008(a), 02-009(b), 02-011(a), 02-011(b), 02-011(c), and 02-011(d).

SWMU 02-005 consists of an area of soil potentially affected by the airborne drift of potassium dichromate used to inhibit corrosion in the Omega West Reactor (OWR) cooling tower (structure 02-049) located at TA-02. The cooling tower was installed and became operational in 1957. It was constructed with aluminum heat exchangers that were prone to corrosion. Potassium dichromate was added to the circulating water to inhibit corrosion of the heat exchangers. In 1975, stainless-steel heat exchangers were installed to eliminate the use of potassium dichromate.

The cooling tower operated until the OWR was shut down in 1993. In 1995, all liquid was drained from the system. In 2000, the cooling tower structure and associated equipment were removed and disposed of at TA-54. In 2003, the remaining buried pipes and drains were removed. Decision-level data show SWMU 02-5 does not pose potential unacceptable risks for residential receptors.

SWMU 02-006(b) is a former acid waste line located at TA-02. The waste line carried effluent from several laboratory rooms in the center of the OWR Building (02-001) south to a discharge point into Los Alamos Creek. The waste line was installed during the initial construction of building 02-001 in 1946 (engineering drawing C-1703). The acid waste line was reportedly taken out of service in the 1960s; however, no record of its removal is available. According to the Omega West decommissioning report, all lines and connections associated with SWMU 02-006(b) were removed and disposed of during the 2003 D&D. Decision-level data show SWMU 02-006(b) does not pose potential unacceptable risks for residential receptors.

SWMU 02-008(a) is a former NPDES-permitted outfall (EPA 03A020) located at TA-02. The outfall discharged cooling water from the OWR cooling tower (structure 02-049). The cooling tower became operational in 1957. Use of potassium dichromate to control corrosion of aluminum heat exchangers began in 1959. The aluminum heat exchangers were replaced by stainless steel ones in 1975, thus eliminating the use of potassium dichromate. In 1993, the shutdown of the OWR placed the cooling tower on standby status, and in 1995, all liquid waste was drained from the system. In 2000, the cooling tower structure and associated equipment were decommissioned and removed. In 2003, the remaining buried pipes and drains were removed and disposed of. The outfall (EPA 03A020) was removed from the Laboratory's NPDES permit in July 1999. Decision-level data show SWMU 02-008(a) does not pose potential unacceptable risks for residential receptors.

SWMU 02-009(b) is an area of radioactive soil contamination located north of the former stack-gas valve house (structure 02-019) and the east bridge at TA-02. This area was used for truck staging during the D&D of the Water Boiler Reactor (WBR). A survey of the area at the time of D&D identified detectable beta/gamma activity. A small amount of soil was removed from the site and disposed of as part of the D&D activities. Decision-level data show AOC 02-009(b) does not pose potential unacceptable risks for recreational receptors.

AOC 02-003(a) was the site of the former stack-gas valve house (structure 02-019) and associated stainless-steel gaseous effluent vent lines (lines 117 and 118) located at TA-02. This system was

associated with the WBR, a homogeneous liquid-fueled reactor fueled by enriched uranyl-salt compound. The stack-gas valve house and effluent vent lines system were installed in 1944 and received off-gas from the WBR.

The stack-gas valve house was primarily aboveground and was constructed of reinforced concrete, 11 ft × 9 ft × 10 ft high, with 18-in.-thick walls. From 1944 to 1948, gaseous effluent entered the stack-gas valve house from line 117 and was directed via line 118 to the southeast. Line 118 was used as a temporary gas vent until July 1948 when the condensate trap and line 119 [AOC 02-003(b)] became operational. Line 118 was left in place from 1948 until it was removed in 1985. Line 117 and the stack-gas valve house remained in used until 1974 when they became inactive and were removed and disposed of during D&D efforts in 1985. Decision-level data indicate SWMU 02-003(a) does not pose a potential unacceptable risk to recreational receptors.

AOC 02-003(e) is the location of a former 800-L stainless-steel holding tank (structure 02-062) installed in approximately 1944, and associated with operation of the WBR. The holding tank was next to the stack-gas valve house [structure 02-019 and AOC 02-003(a)] and was designed to collect WBR cooling water in the event of a cooling coil breach.

The WBR holding tank was installed in approximately 1944 and remained on standby until 1974 when the WBR was placed in safe-shutdown mode. The holding tank was removed and disposed of during D&D activities in 1985. During D&D, the tank showed no sign of having been used. However, reports of a “surge tank” overflowing indicate the original tank may have been replaced during its active life. Decision-level data show SWMU 02-003(e) does not pose potential unacceptable risks for recreational receptors.

AOC 02-004(a) is the former OWR building (02-001). The building housed the OWR, the OWR fuel-handling area, the OWR cooling-liquid recirculating piping, OWR gaseous effluent vent line, the OWR material storage area, and the WBR. To facilitate descriptions, AOC 02-004(a) is grouped into the following areas:

- OWR, fuel-handling area, cooling-liquid recirculating piping, and gaseous effluent vent line
- OWR material storage area
- WBR

### **Omega West Reactor, Fuel-Handling Area, Cooling-Liquid Recirculating Piping, and Gaseous Effluent Vent Line**

A 25-kW fast-neutron research reactor, Clementine, was located in the western third of building 02-001. The reactor was self-contained and operated from 1946 to 1953. Clementine was the precursor to the OWR and was dismantled in 1954.

The OWR was built above the former Clementine site in the western third of building 02-001. The OWR was an 8-mW water-cooled tank-type research reactor fueled by solid enriched uranium. The OWR was put online in 1956 and operated until it was put on standby status in 1993. The reactor remained inactive until it was decommissioned, removed, and disposed of in 2003.

The OWR operated with a recirculating cooling-liquid system that consisted of a series of closed-loop pipes in a 100-ft-long corridor that extended from the OWR west to the reactor equipment building [02-044, AOC 02-004(f)]. The water was routed through pumps, filters, and chillers in the reactor equipment building and back to the reactor. The cooling tower (structure 02-049) was added in 1959 to supplement the building 02-044 chillers in this closed system. The recirculating system was active from

1956 to 1993, when it was put on standby status during the OWR shutdown. Off-gas from the OWR was routed through the gaseous effluent vent line, which teed off of the piping corridor between the OWR and OWR equipment building (02-044), as shown in engineering drawing C-10473, to a connection into line 119 on the east side of TA-02, where the effluent continued up to the mesa-top stack [structure 02-009, SWMU 02-006(a)].

### **Omega West Reactor Material Storage Area**

Operation of the OWR included the temporary storage of material (isotope columns, through-put port metal sleeves, etc.) that had become activated during contact in the reactor neutron flux field. The contaminated material was stored next to the guard quarters (building 02-004), located south of the reactor, awaiting final disposition. The material storage area may have been used as early as 1958, when the OWR Building was originally constructed and was removed in 2000.

### **Water Boiler Reactor**

The WBR was the name used for a series of three small research reactors, low power (LOPO), high power (HYPO), and super power (SUPO), located in the eastern third of the OWR Building (02-001). The reactors, each progressively stronger in power output, were filled with liquid fuel and surrounded by neutron-reflecting blocks sitting on a graphite base. The LOPO reactor became functional in May 1944 and was dismantled, removed, and disposed of in September 1944. The HYPO reactor became operational in December 1944 and was later upgraded to SUPO, which became operational in 1951. The SUPO was decommissioned, removed, and disposed of in 1990.

The reactors were surrounded by a 15-ft × 15-ft × 11-ft concrete shield. A shallow sand pit and a utility trench beneath the reactor collected liquids and condensate from reactor gases and transported them to support structures on the east side of building 02-001. External structures and underground piping associated with the gaseous effluent vent line system were removed and disposed of in 1986. Six concrete structures were dismantled, and 435 ft of contaminated underground piping was removed and disposed of during D&D activities. Cesium-137 contamination was found in the OWR Building (02-001) near the sand pit and the utility trench during D&D activities. The soil was removed and disposed of during the D&D. Decision-level data show AOC 02-004(a) does not pose potential unacceptable risks for residential receptors.

AOC 02-006(c) is a former sanitary waste line located at TA-02. The waste line extended from the office area restrooms in the OWR Building (02-001) to a septic tank (structure 02-043, SWMU 02-007). The AOC 02-006(c) drainline was incorrectly identified in the 1990 SWMU Report as a drainline that was connected to the chemical room and several OWR laboratories in building 02-001. A closer review of engineering drawings C-1703 and C-1750 shows the drainline connected to the septic tank that served the office (i.e., central portion) of the OWR Building, 02-001. As indicated in engineering drawing C-1750, the line was separate from the OWR acid waste line [AOC 02-006(b)] that connected to the chemical laboratories. Decision-level data show SWMU 02-006(c) does not pose potential unacceptable risks for recreational receptors.

AOC 02-006(d) is a duplicate of AOC 02-006(c). In the 1990 SWMU Report, AOC 02-006(d) is described as the drainline that served the OWR Building (02-001) reactor control room air conditioner, sink, backflow preventer valve, and drinking water fountain and discharged to Los Alamos Creek. AOC 02-006(c) is described as the drainline that served the chemical room and several laboratories in the building and also discharged to Los Alamos Creek. Engineering drawings C-1750 and C-1703 and the 2003 D&D records demonstrate that a single drainline served the laboratories and the control room air

conditioner, sink, backflow preventer valve, and drinking water fountain was connected to a septic tank (structure 02-043, SWMU 02-007) rather than discharging to Los Alamos Creek. Decision-level data show AOC 02-006(c) does not pose potential unacceptable risks for recreational receptors.

AOC 02-006(e) is a former sump (structure 02-026) and associated drainline located at TA-02. The sump and drainline received effluent from the OWR Building (02-001) reactor room. The sump and drainline were connected to floor drains in the main reactor room and became operational in 1944. The sump outfall overflow discharged directly to Los Alamos Creek. In 1990, a second collection sump (structure 02-082) was connected to the AOC 02-006(e) drainline and is shown on engineering drawing C-45924.

According to the Middle Los Alamos Canyon Aggregate Area historical investigation report and investigation work plan, a drainline from the sump 02-082 was connected directly to the AOC 02-004(e) acid pit (structure 02-053); however, engineering drawings do not show a drainline connecting the two structures. Sumps 02-026 and 02-082 and the drainline remained in place



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until they were removed and disposed of during D&D activities in 2003. Decision-level data show AOC 02-006(e) does not pose potential unacceptable risks for residential receptors.

AOC 02-011(a) consists of 11 drain segments and associated outfall areas across TA-02. These individual segments drain either directly or indirectly to Los Alamos Creek. The AOC 02-011(a) storm drains date approximately from the time of construction of the reactor building in 1944. The drains near the operational areas of the reactor received effluent until the 2003 D&D of the OWR facility, although the reactor was inactive from 1993 to 2003. Several of the drains were removed in either the 2000 or 2003 D&D activities; however, five of the drains, or some portion of the drains, remain in place.

The storm drain segments consist of the following:

- An approximately 50-ft-long concrete storm drain (also described as a concrete flume), located northwest of the OWR Building that drained into a drop inlet/catch basin (structure 02-36), as shown in engineering drawing R-5102, sheet 2 of 2. Available information indicates that the drain handled only storm water.
- A 24-in.-diameter, 8-ft-long underground CMP between catch basin 02-036 and catch basin 02-027, as shown in engineering drawing R-5102, sheet 2 of 2. Available information indicates the drain handled only storm water.
- An 85 ft-long concrete storm drain (e.g., concrete flume) located northwest of the OWR Building (02-001) that drained into catch basin 02-027, as shown in engineering drawing R-5102, sheet 2 of 2. The drain was reportedly used periodically for discharge of water from the fuel transfer pit.
- A 15-in.-diameter, 15-ft-long concrete storm drain west of the OWR Building that drained into catch basin 02-028, as shown in engineering drawing R-5102, sheet 2 of 2. Available information indicates that the drain handled only storm water.

- A 24-in.-diameter, 30-ft-long concrete storm drain between catch basins 02-027 and 02-028, as shown in engineering drawing R-5102, sheet 2 of 2. This drain may have handled the fuel transfer pit water coming from the concrete flume, with associated contaminated aluminum shards.
- A 30-in.-diameter, 75-ft-long CMP between a catch basin (structure 02-028) and Los Alamos Creek, as shown in engineering drawing R-5102, sheet 2 of 2. This drain may have handled the fuel transfer pit water coming from the concrete flume, with associated contaminated aluminum shards.
- A 6-in.-diameter, 18-ft-long pipe between OWR Building and the salvage basin (structure 02-026) and Los Alamos Creek.
- An 18-in.-diameter, 75-ft-long CMP between the OWR Building catch basin (unnumbered structure within building 02-001) and Los Alamos Creek, as shown in engineering drawing C-1699. There is no information that this drain handled anything but storm water runoff.
- A 3-in.-diameter, 75-ft-long pipe between the OWR Building and the outfall to Los Alamos Creek. Wastewater system design memoranda indicate that floor drains from the eastern side of the WBR area drained to this outfall before 1990.
- A 12-in.-diameter, 30-ft-long storm drain northeast of the OWR Building that discharged to Los Alamos Creek through a series of concrete ditches and CMP along the east side of the OWR Building, as shown in engineering drawing C-1718. The total length of the drain and ditches to Los Alamos Creek is approximately 130 ft. The drains and concrete ditches remained in place until they were removed during D&D activities in 2003. There is no information that this drain handled anything but storm water.
- A 4-in.-diameter, 95-ft-long pipe between the OWR Building and Los Alamos Creek.

Based on the results of the Phase II investigation, the extent of contamination has not been defined at AOC 02-011(a). This site will be investigated further as part of a Phase III investigation.

AOC 02-011(b) consists of two former drains and associated potential soil contamination affiliated with former building 02-19, the stack-gas valve house. One drain was a 9-ft-long × 15-in.-diameter CMP between former building 02-19 and a former drainage basin (structure 02-35), and the second drain was a 9-ft-long × 24-in.-diameter CMP from former structure 02-35 that drained outside the east fence. Potential contaminants at the drains would have come from operations of the Clementine reactor (no associated SWMUs or AOCs) and from the former WBR. The drains were removed, but the year they were removed is not known. Decision-level data show AOC 02-011(b) does not pose potential unacceptable risks for recreational receptors.

AOC 02-011(c) is a former storm drain at TA-02 associated with the OWR equipment building [02-044, AOC 02-004(f)]. The drainline was a 4-in.-diameter VCP that was approximately 12 ft long and drained to the surface west of the west fence. The drainline was installed in 1954, as shown in engineering drawing C-14930; it was removed and disposed of in 2003.

The OWR equipment building operated from 1954 to 1993. The AOC 02-011(c) storm drain and outfall area collected and discharged storm water from the vicinity of the building from 1954 to 2003. In 2003, the storm drain piping was decommissioned, removed, and disposed of during D&D activities. Decision-level data show AOC 02-011(c) does not pose potential unacceptable risks for residential receptors.

AOC 02-011(d) is a former NPDES-permitted outfall that discharged effluent from the reactor facility equipment building [AOC 02-004(f)], building 02-44. Discharge was composed of primary cooling water from an ion-exchange system. Primary cooling water was circulated in the ion-exchange system to remove contaminants. Periodically, flushing clean city water through the system would regenerate the ion-exchangers. Before 1963, effluent discharged directly to Los Alamos Creek. From 1963 to 1968, the effluent was held in three 1200-gal. storage tanks [AOCs 02-004(b–d)] until short-lived radionuclides decayed or were diluted to a safe level before being discharged to the creek. After 1968, the effluent transferred to the three 1200-gal. tanks was transported to TA-50 for disposal. From 1957 to 1963, periodic sampling of the groundwater and creek water from monitoring points below the site showed no detectable increase in activity levels. AOC 02-011(d) was removed from the NPDES-permit effective July 11, 1995. This outfall’s location was incorrectly identified in the RFI work plan as discharging from AOC 02-011(c), west of building 02-44. The correct location is south of building 02-44. Decision-level data show AOC 02-011(d) does not pose potential unacceptable risks for recreational receptors.

The project map (Figure 38-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundaries for SWMUs 02-006(b), 02-008(a), and 02-009(b) and AOCs 02-003(a), 02-003(e), 02-004(a), 02-006(c), 02-006(d), 02-006(e), 02-011(a), 02-011(b), 02-011(c), and 02-011(d) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 38-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### 38.2 Control Measures

Potential run-on may enter this Permitted Feature via the dirt access road or from the slope above, to the north. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 38-1).

**Table 38-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01802010002	Established Vegetation - Grasses and Shrubs			X		CB
L01802020005	Established Vegetation - Forested/Needle Cast			X		CB
L01803010006	Berms - Earthen	X			X	CB
L01803010007	Berms - Earthen		X		X	CB
L01803010008	Berms - Earthen		X		X	CB
L01807010003	Gabions - Gabions		X	X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 38.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA SMA-5.51. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 38.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.51 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 38-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22688	04-18-2012
Storm Rain Event	BMP-24953	07-10-2012
Storm Rain Event	BMP-28642	10-23-2012

There were no maintenance activities conducted at LA-SMA-5.51 in 2012.

### 38.5 Compliance Status

The Sites associated with LA-SMA-5.51 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 38-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 02-003(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-003(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-004(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 02-005	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 02-006(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-006(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-006(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-006(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 02-008(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 02-009(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-011(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-011(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-011(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-011(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

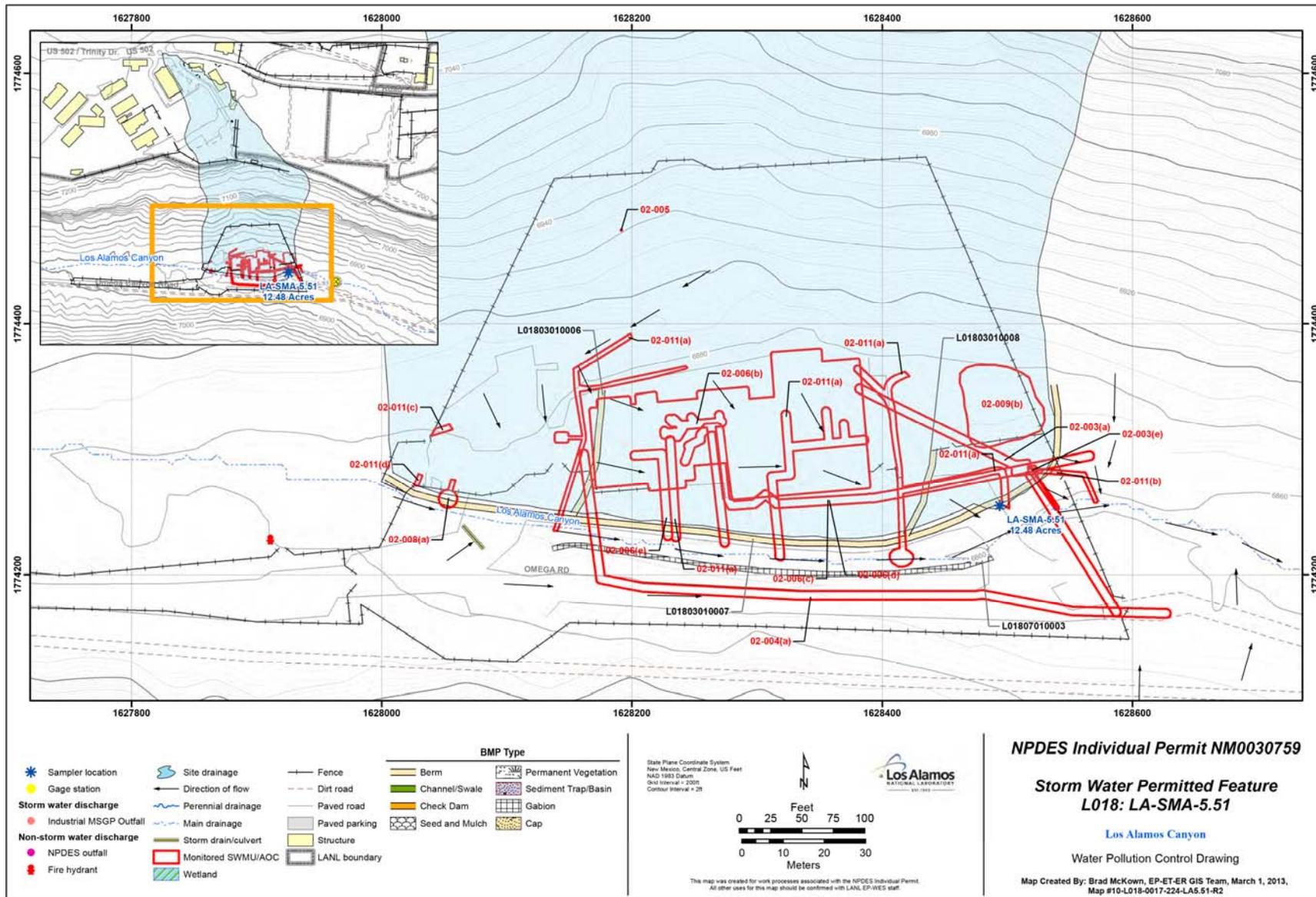


Figure 38-1 LA-SMA-5.51 location map

## **39.0 LA-SMA-5.52: SWMU 02-007 and AOCs 02-003(b) and 02-008(c)**

### **39.1 Site Descriptions**

Three historical industrial activity areas are associated with L018A, LA-SMA-5.52: Sites 02-003(b), 02-007, and 02-008(c).

SWMU 02-007 is a former septic tank (structure 02-043) and outfall located at TA-02. The septic tank was constructed of reinforced concrete and measured 13 ft long × 8 ft wide × 6 ft deep. The septic tank, which received effluent from laboratory sink drains in the OWR facility (building 02-001), was installed in 1944. In 1947, the chemical waste shack (building 02-003, AOC 02-010) was connected to the septic system and remained connected until the chemical waste shack was decommissioned in 1971. Overflow from the tank discharged to Los Alamos Creek through a 6-in.-diameter VCP. However, the exact location of the outfall discharge is not known. The septic tank, overflow outfall, and surrounding soils were removed and disposed of in 1986. Decision-level data show SWMU 02-007 does not pose potential unacceptable risks for residential receptors.

AOC 02-003(b) consists of a former condensate trap (structure 02-048) and a portion of an associated stainless-steel line (line 119) located at TA-02. The condensate trap was a concrete manhole superstructure with a small-diameter standpipe. The trap was located at the lowest point of line 119 between the stack-gas valve house [AOC 02-003(a), structure 02-019] and the delay tanks [AOC 02-003(c), structure 02-131].

Line 119 consisted of an approximately 78-ft-long east-west trending pipe section that ran from the stack-gas valve house (structure 02-019) to the condensate trap and a 205-ft-long north-south trending section that ran from the condensate trap to the delay tanks. Line 119 continued southward from the delay tanks, and that portion of the line is addressed as AOC 02-003(d). The condensate trap and the portion of line 119 between the valve house and the delay tanks were in use until 1974 and remained inactive until they were removed and disposed of during D&D activities performed in 1985. Decision-level data show SWMU 02-003(b) does not pose potential unacceptable risks for residential receptors.

AOC 02-008(c) is the location of two former outfall discharge points and associated drainpipes located at TA-02. In 1985, the easternmost drainpipe was installed to discharge groundwater seepage from the OWR Building 02-001 basement sump to Los Alamos Creek. In 1988, this drainpipe was plugged, left in place, and replaced with drainpipe that was installed approximately 100 ft west of the original drainpipe location. The second drainpipe also discharged groundwater seepage from the OWR basement sump to Los Alamos Creek. Both drainpipes were removed and disposed of during D&D activities in 2003. Decision-level data show AOC 02-008(c) does not pose potential unacceptable risks for recreational receptors.

The project map (Figure 39-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundaries for SWMU 02-007, and AOCs 02-003(b) and 02-008(c) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 39-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### 39.2 Control Measures

Potential run-on may enter this Permitted Feature via the dirt access road or from the slope above, to the north. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 39-1).

**Table 39-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L018A01010006	Seed and Mulch - Seed and Wood Mulch			X		CB
L018A02020001	Established Vegetation - Forested/Needle Cast			X		CB
L018A03010003	Berms - Earthen	X			X	CB
L018A03010004	Berms - Earthen		X		X	CB
L018A04060005	Channel/Swale - Riprap	X		X		CB
L018A06010002	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 39.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.52. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 39.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.52 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 39-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22689	04-18-2012
Storm Rain Event	BMP-24954	07-10-2012
Storm Rain Event	BMP-28643	10-23-2012

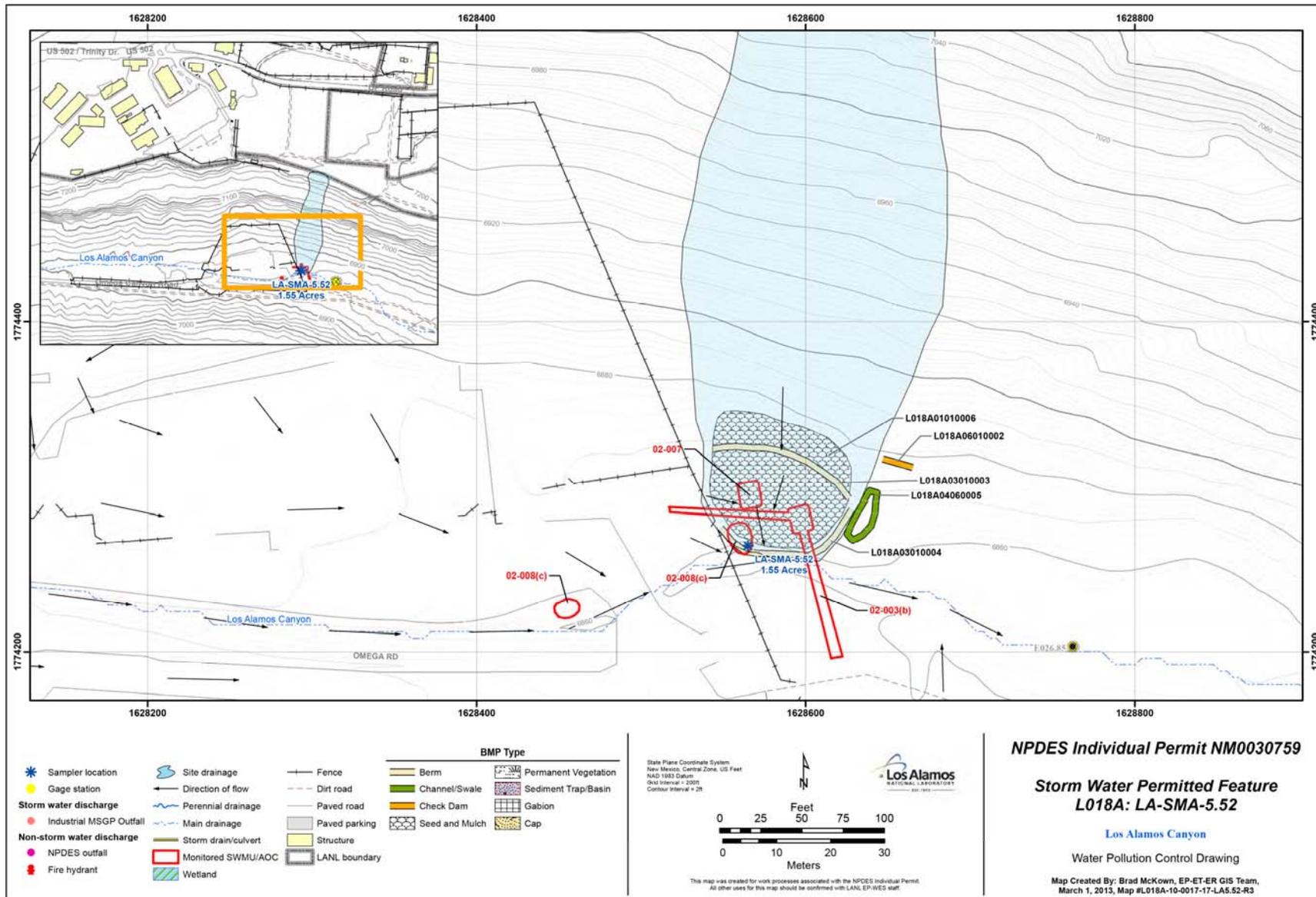
There were no maintenance activities conducted at LA-SMA-5.52 in 2012.

### 39.5 Compliance Status

The Sites associated with LA-SMA-5.52 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 39-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 02-003(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 02-007	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 02-008(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 39-1 LA-SMA-5.52 location map**

**40.0 LA-SMA-5.53: SWMU 02-009(a)**

**40.1 Site Descriptions**

One historical industrial activity area is associated with L018B, LA-SMA-5.53: Site 02-009(a).

SWMU 02-009(a) is an area of radioactive soil contamination at TA-02 located south of the southeastern fence corner behind building 02-050. A survey of the area at the time of the WBR D&D identified above-background levels of radioactivity. A small amount of soil was removed from the site and was disposed of as part of the D&D activities. Decision-level data show SWMU 02-009(a) does not pose potential unacceptable risks for residential receptors.

The project map (Figure 40-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 02-009(a) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change reduced effectiveness of the control measures. The updated Site boundary is shown on the project map (Figure 40-1), and the Site physical characteristic information listed in Attachment 4 has been updated. Control measure modifications planned to address the boundary changes are shown with dashed lines in Figure 40-1. Construction will begin this spring when the soil surface is no longer frozen. The SMA boundary or sampler location was not affected by the Site boundary change.

**40.2 Control Measures**

Potential run-on may enter this Permitted Feature via the unpaved access road or from the slope above, to the south. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 40-1).

**Table 40-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L018B01010003	Seed and Mulch - Seed and Wood Mulch			X		CB
L018B02020001	Established Vegetation - Forested/Needle Cast			X		CB
L018B03010002	Berms - Earthen		X		X	CB
L018B03060004	Berms - Straw Wattles	X			X	CB
L018B03060005	Berms - Straw Wattles	X			X	CB
L018B03060006	Berms - Straw Wattles	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**40.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.53. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**40.4 Inspections and Maintenance**

RG038 recorded two storm events at LA-SMA-5.53 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 40-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22690	04-18-2012
Storm Rain Event	BMP-24955	07-10-2012
Storm Rain Event	BMP-28644	10-23-2012

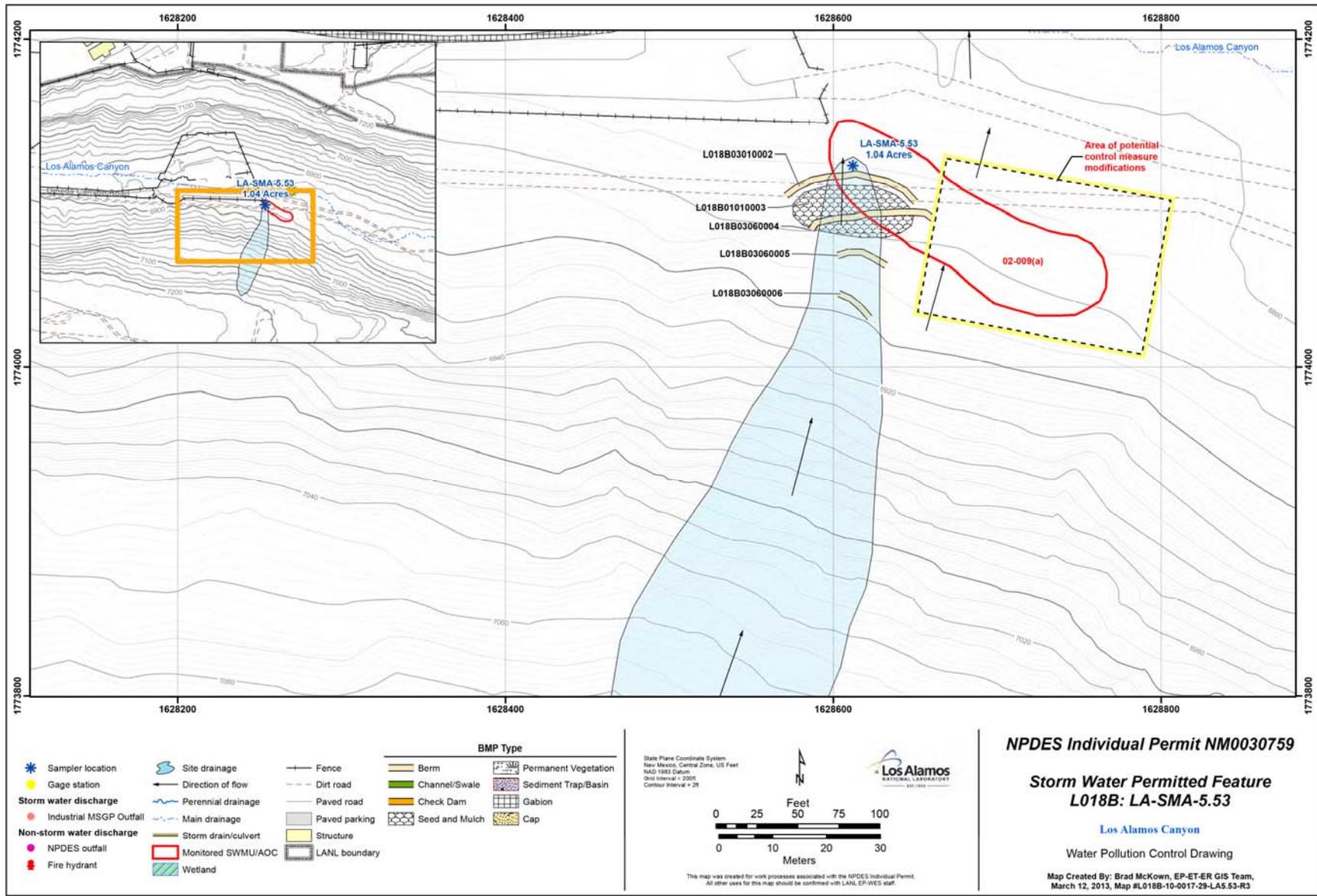
There were no maintenance activities conducted at LA-SMA-5.53 in 2012.

**40.5 Compliance Status**

The Site associated with LA-SMA-5.53 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 40-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 02-009(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 40-1 LA-SMA-5.53 location map**

## 41.0 LA-SMA-5.54: SWMU 02-009(c)

### 41.1 Site Descriptions

One historical industrial activity area is associated with L018C, LA-SMA-5.54: Site 02-009(c).

SWMU 02-009(c) is an area of alpha-, beta-, and gamma-emitting radioactively contaminated soil at TA-02 located south of the condensate trap [structure 02-048, AOC 02-003(b)]. Radioactive soil contamination was identified at this area during the 1985–1986 D&D activities associated with the removal of the condensate trap. During these D&D activities, two sections of contaminated 6-in.-diameter VCP, one 34 ft long and one 20 ft long, were uncovered lying parallel to the septic tank overflow pipe at the condensate trap. The pipes were approximately 5 ft below and to either side of the septic tank overflow pipe. The pipes were present at depths of 3–8 ft below ground surface (bgs). All structures (pipes) and adjacent soils down to the saturated zone were removed and disposed of during 1985–1986 D&D activities. Decision-level data show SWMU 02-009(c) does not pose potential unacceptable risks for recreational receptors.

The project map (Figure 41-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 02-009(c) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change may result in a minor sampler relocation within the drainage to collect a more representative sample. In this case, the sampler location will be updated using a hand-held global positioning system before the 2013 sampling season begins. The updated sampler location information will be included in the Status Report (January 1–June 30, 2013) published on the IP website and will be incorporated in the next SDPPP update.

### 41.2 Control Measures

Potential run-on may enter this Permitted Feature from the undeveloped slope south of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 41-1).

**Table 41-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L018C02020001	Established Vegetation - Forested/Needle Cast			X		CB
L018C03010002	Berms - Earthen	X			X	CB
L018C03060003	Berms - Straw Wattles		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 41.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.54. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 41.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.54 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 41-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22635	04-18-2012
Storm Rain Event	BMP-24956	07-10-2012
Storm Rain Event	BMP-28645	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 41-3 Maintenance during 2012**

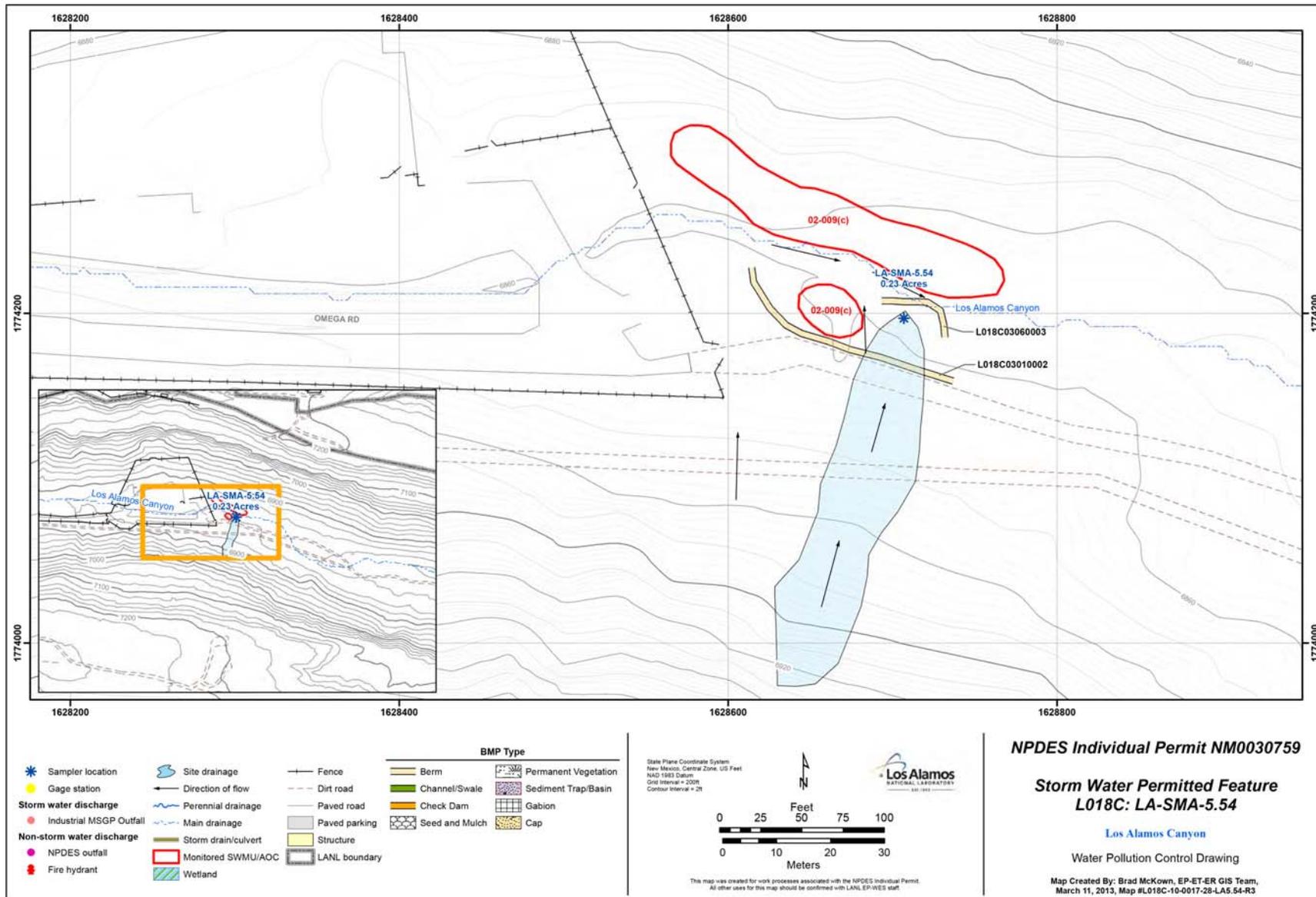
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23206	Repaired berm L018C03010002.	05-17-2012	230 day(s)	Maintenance conducted as soon as practicable.

### 41.5 Compliance Status

The Site associated with LA-SMA-5.54 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 41-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 02-009(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 41-1 LA-SMA-5.54 location map**

## **42.0 LA-SMA-5.91: SWMUs 21-021, 21-023(c), and 21-027(d) and AOC 21-009**

### **42.1 Site Descriptions**

Four historical industrial activity areas are associated with L019, LA-SMA-5.91: Sites 21-009, 21-021, 21-023(c), and 21-027(d).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-023(c) is a former septic system (tank, inlet and outlet drainlines, and an outfall) that served the former waste treatment laboratory in building 21-33 (SWMU 21-009). The septic tank (former structure 21-62) was constructed of reinforced concrete and measured 3.5 ft wide × 7 ft long × 5.8 ft deep. The inlet and outlet drainlines were 4-in. VCP; the outlet line discharged 40 ft southwest of the septic tank, approximately 30 ft from the south-facing edge of BV Canyon. The septic system began operation in 1948. The septic tank was removed in 1965 and disposed of at MDA G at TA-54. All remaining piping was removed and the site fully characterized between 2005 and 2007. Risk-assessment results showed no potential unacceptable risk to residential and ecological receptors; no further investigation is required. NMED issued a COC with controls in June 2011. Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

SWMU 21-027(d) consists of the former drainline and outfall for the secondary containment around a former aboveground fuel tank (AOC C-21-028). The concrete secondary containment structure was built around the tank in 1948 to contain any potential releases from the tank. A sump was constructed in the center of the south side of the containment, and a drainline was installed in the drainage ditch from the tank containment. The first segment of the drainline (approximately 5 ft) from the sump to a gate valve just outside the containment wall was a 4-in. steel pipe. At the gate valve, the drainline changed to a VCP. When the wastewater treatment laboratory (AOC 21-009, structure 21-33) was built, the drainage ditch was rerouted around the building, and south toward the rim of DP Mesa. The new drainline was then installed below ground surface. The outfall for the drainline began near the mesa edge and continued down the hillside toward BV Canyon. The storage tank and concrete containment were removed in 1960, and the drainline was removed in March 1965. The DP Site Aggregate Area investigation work plan indicated that the investigation of SWMU 21-027(d) was complete, and no additional investigations were required. The SWMU 21-027(d) outfall and drainage were characterized between 2005 and 2007 as part of the investigation and remediation of MDA V and related sites. Risk-assessment results showed no potential unacceptable risk to residential and ecological receptors. The site will be recommended for a COC without controls. Potential contaminants associated with industrial materials historically managed at this Site are petroleum products.

AOC 21-009 is a former waste treatment laboratory (building 21-33) that was built in 1948 and operated until 1965. The laboratory building was a 16-ft × 48-ft wood-frame structure with a 12-ft ceiling and a wooden floor built on concrete pillars. Building components and laboratory furniture are known to have been contaminated with plutonium dust. Perchloric acid was used in laboratory and may have contaminated the exhaust hoods. Wastewater from the laboratory discharged to septic tank 21-62, which discharged to an outfall at the rim of Los Alamos Canyon. This outfall and septic tank are designated as AOC 21-023(c). Building 21-33 underwent D&D in 1965. Decision-level data indicate AOC 21-009 does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls. Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

The project map (Figure 42-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 42.2 Control Measures

Potential run-on to this Permitted Feature originates from the paved access road south of MDA B as well as from large paved areas north and east of the SMA. Berms along the southern portion of SWMUs 21-018(a) and 21-013(b) also control runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 42-1).

**Table 42-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L01902010006	Established Vegetation - Grasses and Shrubs			X		CB
L01905020015	Sediment Traps and Basins - Sediment Basin	X			X	EC
L01906020013	Check Dam - Log		X		X	EC
L01906020014	Check Dam - Log		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 42.3 Storm Water Monitoring

AOC 21-009 and SWMUs 21-021, 21-023(c), and 21-027(d) are monitored within LA-SMA-5.91. Following the installation of baseline control measures, a baseline storm water sample was collected on September 7, 2011 (Figure 44-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 92.6 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

**AOC 21-009:** Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

- Gross-alpha—Americium-241 and plutonium 239/240 were detected at maximum detected activities of 8.3 times and 7.8 times FVs, respectively, in Consent Order samples collected at AOC 21-009.

In summary, americium-241 and plutonium-239/240, which are alpha-emitting isotopes, are known to be associated with industrial material historically managed at this Site and were detected above FVs. Americium and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

**SWMU 21-021:** Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

- Consent Order sampling has not been performed at SWMU 21-021.
- Gross-alpha—Americium-241, plutonium-238, and plutonium-239 were detected at maximum activities of 270 times, 810 times, and 760 times FVs, respectively, in RFI samples collected in 1992. Uranium was detected above BV in RFI samples collected in 1992.



LA-SMA-5.91, Permanent Vegetation Grasses and Shrubs, L01902010006 (photo ID 30409-3)

In summary, alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Americium-241 and plutonium-239, which are alpha-emitting isotopes, were detected substantially above FVs and uranium, which has alpha-emitting isotopes, was detected above BV. Americium, plutonium, and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling

results, the Site is an unlikely source of adjusted gross alpha above ATAL.

**SWMU 21-023(c):** Potential contaminants associated with industrial materials historically managed at this Site are metals, organic chemicals, and radionuclides.

- Gross alpha—Americium-241, plutonium-238, plutonium 239/240, uranium-234, uranium-235, and uranium-238 were detected at maximum activities of 1213 times, 4.3 times, 534 times, 2.5 times, 1.9 times, and 2.5 times BVs/FVs, respectively, in Consent Order and RFI surface and near-surface samples collected from SWMU 21-023(c).

In summary, americium-241, plutonium-238, and plutonium-239/240, which are alpha-emitting isotopes, are known to be associated with industrial material historically managed at this site and were detected substantially above BVs/FVs. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above BV. Americium, plutonium isotopes, and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. NMED issued a COC with controls, indicating no unacceptable risk to human health or the environment and no requirements for further investigation. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 21-027(d)*: Potential contaminants associated with industrial materials historically managed at this Site are petroleum products.

The boundary of SWMU 21-027(d) is within the boundary of SWMU 21-023(c). The Consent Order investigation results for SWMU 21-023(c), therefore, were also used to characterize SWMU 21-027(d), and the site analytical summary and conclusion related to storm water presented above for SWMU 21-023(c) also apply to SWMU 21-027(d).

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 44-2. 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 Figure 44-2.

Monitoring location LA-SMA-5.91 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **42.4 Inspections and Maintenance**

RG038 recorded two storm events at LA-SMA-5.91 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 42-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21619	03-26-2012
Annual Erosion Evaluation	COMP-23384	03-26-2012
Storm Rain Event	BMP-24974	07-16-2012
Storm Rain Event	BMP-28663	10-18-2012
Enhanced Control Measure Verification	BMP-30409	12-13-2012

There were no maintenance activities conducted at LA-SMA-5.91 in 2012.

**42.5 Compliance Status**

The Sites associated with LA-SMA-5.91 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 42-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 21-009	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011
SWMU 21-021	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011
SWMU 21-023(c)	Corrective Action Initiated	Corrective Action Complete	NMED, June 3, 2011, "Certificates of Completion Material Disposal Area V, Technical Area 21 Los Alamos National Laboratory"
SWMU 21-027(d)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011

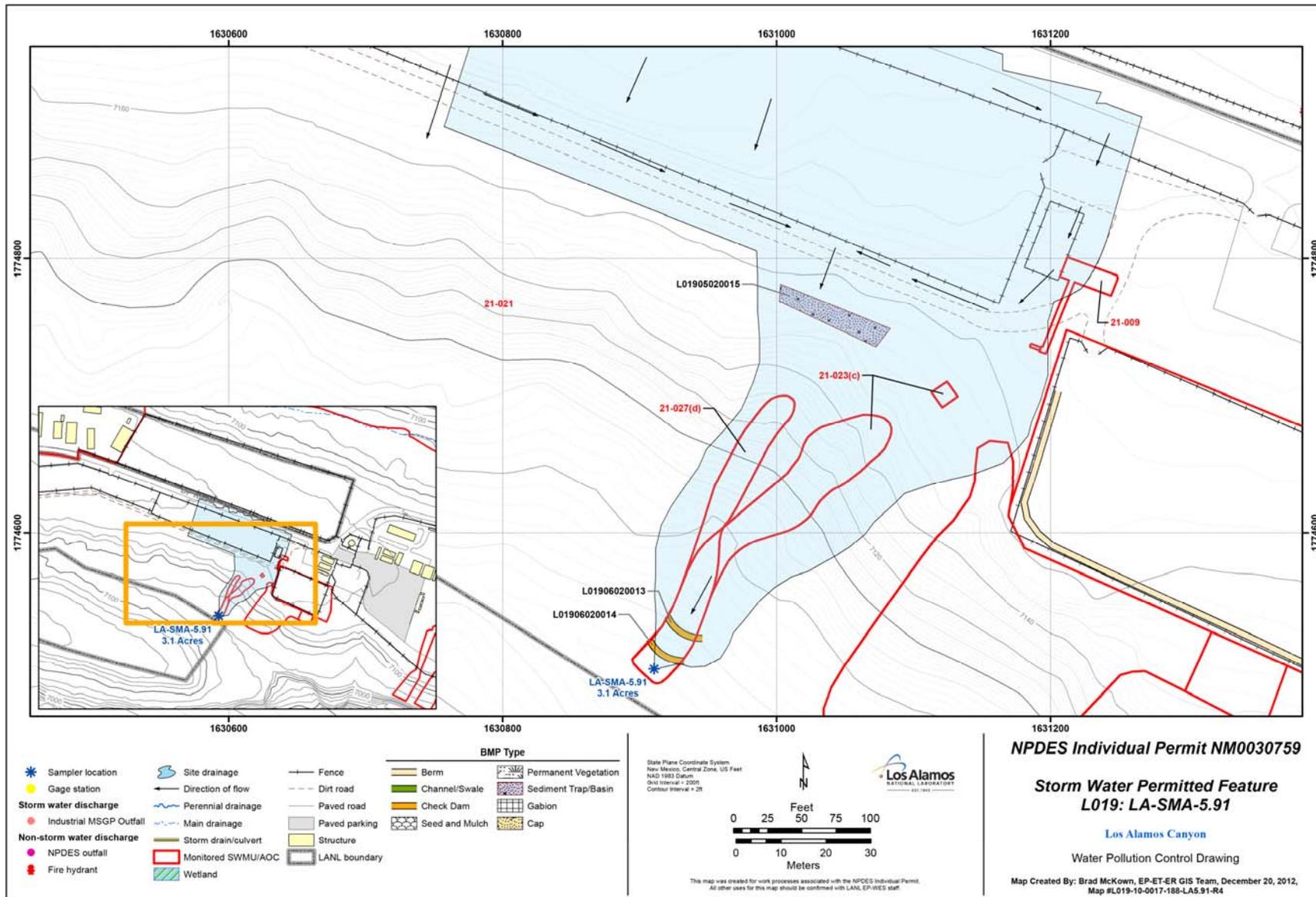
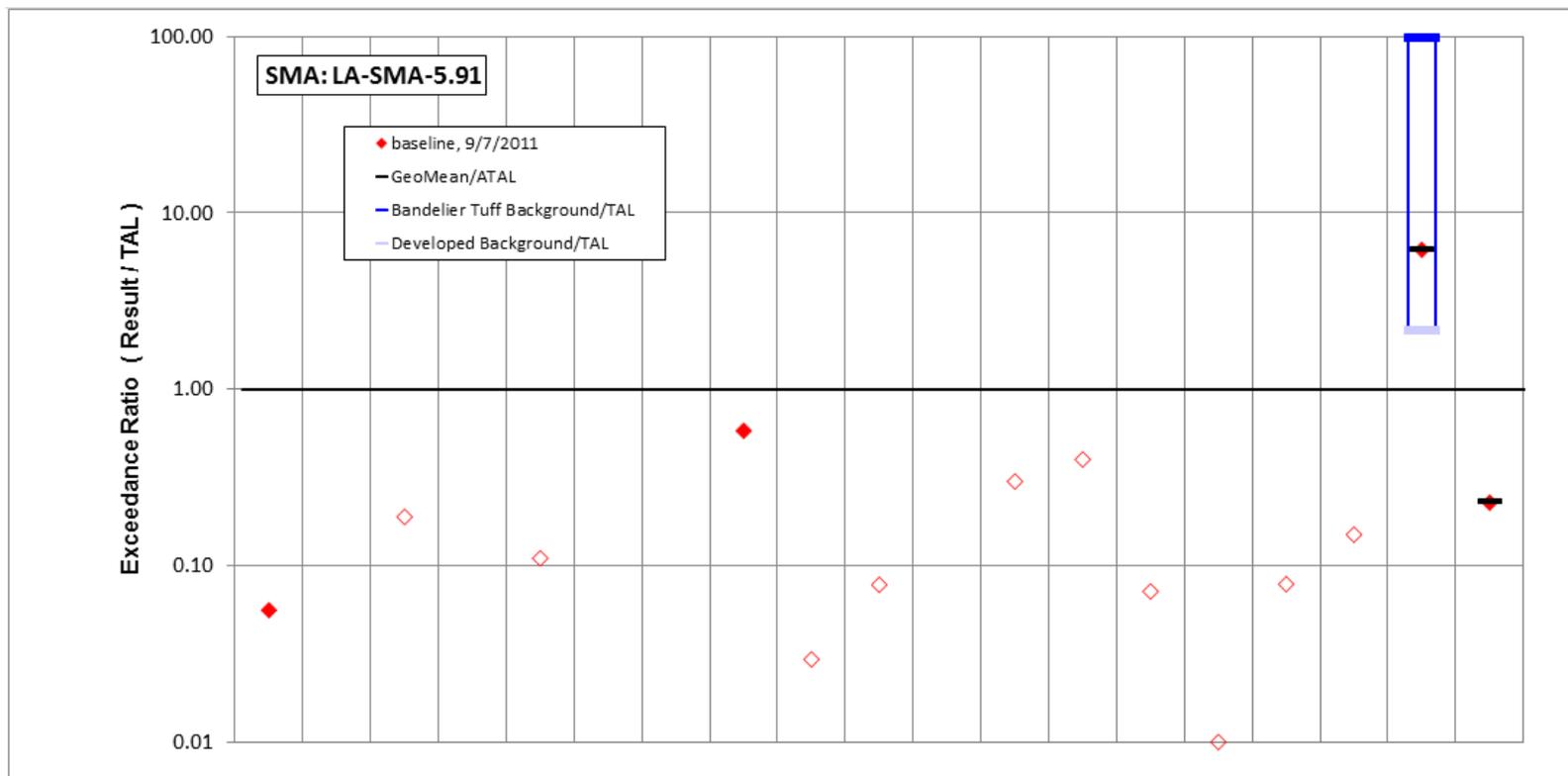


Figure 42-1 LA-SMA-5.91 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>9/7/2011 result</b>	41.9	<i>1</i>	1.7	27.1	<i>0.11</i>	2	2.9	2.5	<i>0.5</i>	<i>0.06</i>	1.3	1.5	0.2	0.45	1	3.3	<i>0.002</i>	<b>92.6</b>	6.83
result / TAL	0.056	<i>0.002</i>	0.19	0.0054	<i>0.11</i>	0.01	0.0029	0.58	<i>0.029</i>	<i>0.078</i>	0.0076	0.3	0.4	0.071	0.01	0.079	0.15	<b>6.2</b>	0.23

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

Figure 42-2 Inorganic analytical results summary plot for LA-SMA-5.91

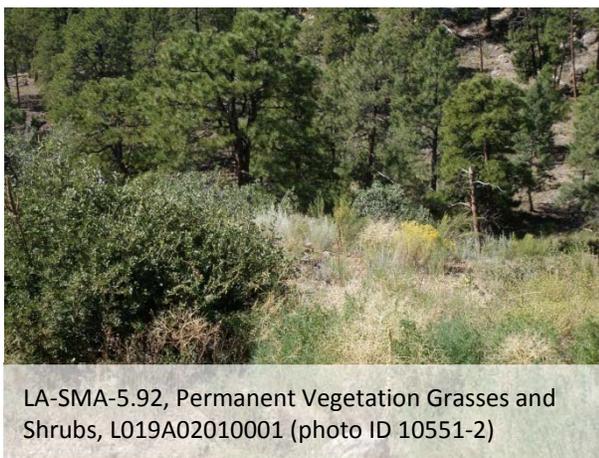
## 43.0 LA-SMA-5.92: SWMUs 21-013(b), 21-018(a), and 21-021 and AOC 21-013(g)

### 43.1 Site Descriptions

Four historical industrial activity areas are associated with L019A, LA-SMA-5.92: Sites 21-013(b), 21-013(g), 21-018(a), and 21-021.

SWMU 21-013(b) is the former location of a surface disposal area on the southern edge of DP Mesa, southwest of former MDA V. This area contained concrete building debris from the 1965 demolition of a waste treatment laboratory (former building 21-33). A contamination survey of the building interior before demolition showed that various surfaces were contaminated with plutonium dust. It is not known if other materials were disposed of at SWMU 21-013(b). All debris was removed in 2005. Decision-level data for the site indicate no risk to residential receptors; NMED issued a COC for the site in June 2011.

SWMU 21-018(a) is MDA V, the former location of three interconnected liquid waste absorption beds on an approximately 1-acre site immediately south of the former DP laundry facility [SWMU 21-018(b), former building 21-20]. The cobble- and gravel-filled absorption beds with dimensions of 25 ft wide × 220 ft long × 5 ft to 6 ft deep were constructed to receive radioactive liquid waste from the former laundry facility and were designed to enhance liquid infiltration into the tuff. The average discharge rate to MDA V was 6000 gal. to 8000 gal. per day. Discharged wastewater flowed into pit 1, which overflowed into pit 2 and then into pit 3. The absorption beds were used continuously from 1945 to 1961 and remained on stand-by status until September 1963, when they were permanently removed from service. Historical evidence shows the beds were underdesigned for the volume of wastewater discharged, resulting in overflows into adjacent drainages and into BV Canyon, a tributary of Los Alamos Canyon. All absorption bed material, associated piping, and contaminated soil/tuff were removed and the site fully characterized between 2005 and 2007. Risk-assessment results showed no potential unacceptable risk to residential and ecological receptors; no further investigation is required. NMED issued a COC with controls in June 2011.



LA-SMA-5.92, Permanent Vegetation Grasses and Shrubs, L019A02010001 (photo ID 10551-2)

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and from drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete, and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

AOC 21-013(g) is the former location of a surface disposal area south of MDA V on the south-facing slope leading into BV Canyon. The site consisted of miscellaneous building debris, the origin of which is

not known. All debris was removed and the site was investigated between 2005 and 2007. Decision-level data for the site indicate no risk to residential or ecological receptors; no further investigation is required. NMED issued a COC with controls for the site in June 2011.

The project map (Figure 43-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 43.2 Control Measures

Potential run-on to this Permitted Feature originates from the base course access road south of MDA B traversing the area, as well as from large paved areas north of the SMA. Berms along the southern portion of SWMUs 21-018(a) and 21-013(b) also control runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 43-1).

**Table 43-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L019A02010001	Established Vegetation - Grasses and Shrubs			X		CB
L019A03010005	Berms - Earthen	X	X		X	CB
L019A03030003	Berms - Log		X		X	CB
L019A05020006	Sediment Traps and Basins - Sediment Basin		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 43.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-5.92. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 43.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-5.92 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 43-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23385	05-24-2012
Storm Rain Event	BMP-24975	07-16-2012
Storm Rain Event	BMP-28664	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 43-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29049	Built up low spot in earthen berm L019A03010005 with more earth, reseeded and matted as necessary.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.

### 43.5 Compliance Status

The Sites associated with LA-SMA-5.92 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 43-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-013(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, June 3, 2011, "Certificates of Completion Material Disposal Area V, Technical Area 21 Los Alamos National Laboratory"
AOC 21-013(g)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, June 3, 2011, "Certificates of Completion Material Disposal Area V, Technical Area 21 Los Alamos National Laboratory"
SWMU 21-018(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	NMED, June 3, 2011, "Certificates of Completion Material Disposal Area V, Technical Area 21 Los Alamos National Laboratory"
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment

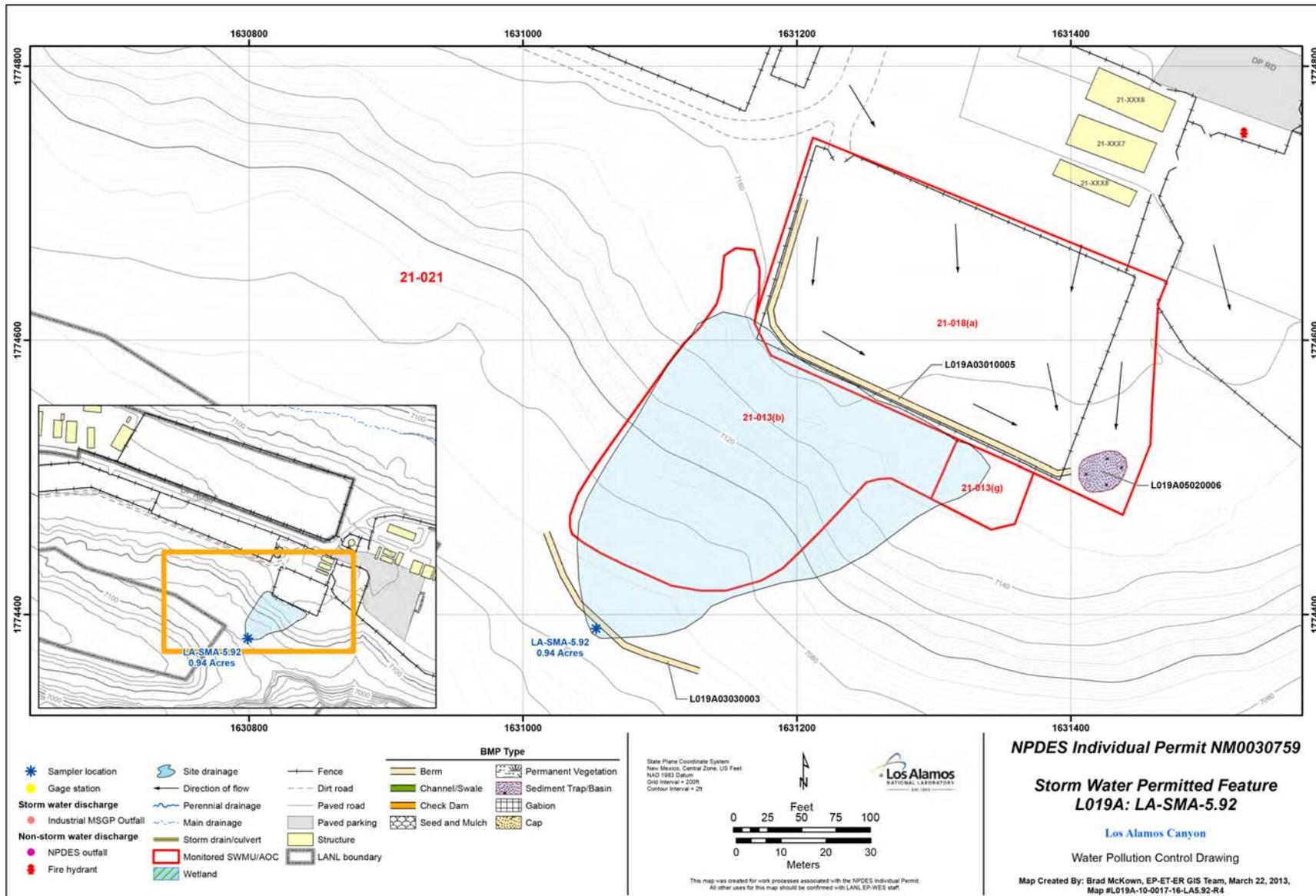


Figure 43-1 LA-SMA-5.92 location map

## **44.0 LA-SMA-6.25: SWMUs 21-021, 21-024(d), and 21-027(c)**

### **44.1 Site Descriptions**

Three historical industrial activity areas are associated with L020, LA-SMA-6.25: Sites 21-021, 21-024(d), and 21-027(c).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(d) is the former location of a septic system that routed sewage from building 21-01, an office building through a septic tank (structure 21-106) to the surface on the south rim of DP Mesa above Los Alamos Canyon. The septic system was constructed in 1945 at the same time building 21-01 was built. The septic system consisted of a reinforced concrete septic tank that measured 17.5 ft × 9.5 ft × 8.83 ft deep with 6-in.-diameter VCP inlet and outlet drainlines. The septic system was decommissioned in the early 1960s. The septic tank was subsequently filled with pea gravel, and inlet and outlet lines were grouted with concrete and left in place in 1995. The septic tank and all remaining inlet and outlet drainlines were removed in 2007. Decision-level data indicate the nature and extent of contamination are not defined. Additional sampling will be conducted at SWMU 21-024(d) during the DP Aggregate Area Phase III investigation.

SWMU 21-027(c) consists of a former drainline and outfall that discharged 50 ft inside the south TA-21 perimeter fence to a broad, gently sloping area on the south rim of DP Mesa toward Los Alamos Canyon. Building 21-6 was constructed in 1945 as a cafeteria and machine shop. A 4-in. VCP drainline exited the southeast corner of the building and discharged sanitary wastewater to the SWMU 21-027(c) outfall. Building 21-6 was removed in 1966; however, the drainline was left in place. The entire drainline was removed in 2007. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm SWMU 21-027(c) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 44-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **44.2 Control Measures**

The asphalt berm at the northern end of the Site is directing run-on from the paved area away from the Sites. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 44-1).

**Table 44-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02002010003	Established Vegetation - Grasses and Shrubs			X		CB
L02003040002	Berms - Asphalt	X			X	CB
L02003060006	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 44.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.25. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 44.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.25 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 44-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23386	05-22-2012
Storm Rain Event	BMP-24967	07-12-2012
Storm Rain Event	BMP-28656	10-23-2012

There were no maintenance activities conducted at LA-SMA-6.25 in 2012.

### 44.5 Compliance Status

The Sites associated with LA-SMA-6.25 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 44-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 21-027(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

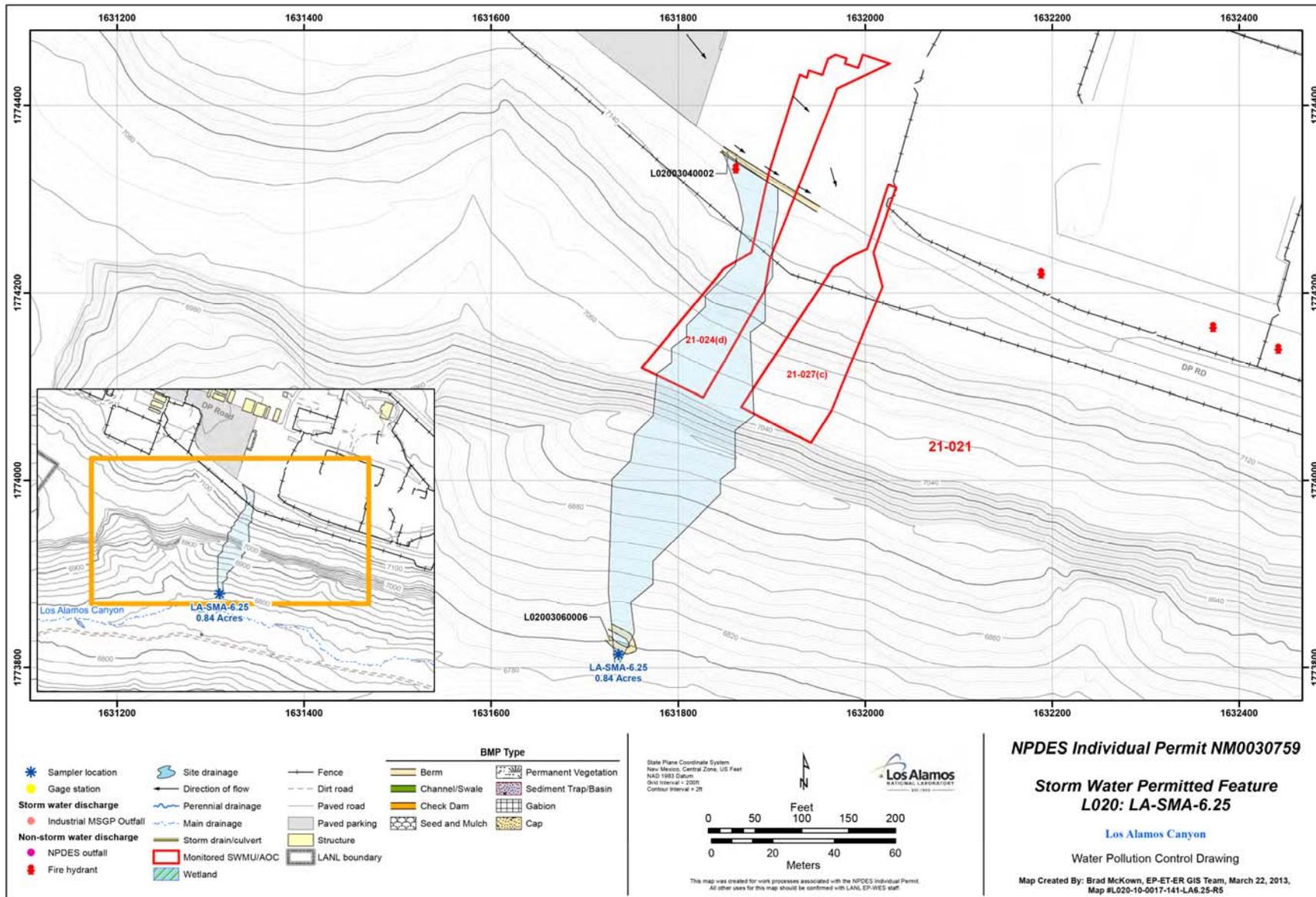


Figure 44-1 LA-SMA-6.25 location map

## 45.0 LA-SMA-6.27: SWMUs 21-021 and 21-027(c)

### 45.1 Site Descriptions

Two historical industrial activity areas are associated with L021, LA-SMA-6.27: Sites 21-021 and 21-027(c).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-027(c) consists of a former drainline and outfall that discharged 50 ft inside the south TA-21 perimeter fence to a broad, gently sloping area on the south rim of DP Mesa toward Los Alamos Canyon. Building 21-6 was constructed in 1945 as a cafeteria and machine shop. A 4-in. VCP drainline exited the southeast corner of the building and discharged sanitary wastewater to the SWMU 21-027(c) outfall. Building 21-6 was removed in 1966; however, the drainline was left in place. The entire drainline was removed in 2007. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm that SWMU 24-027(c) does not pose a potential unacceptable risk to residential receptors. The Site will be recommended for a COC without controls.

The project map (Figure 45-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 45.2 Control Measures

The run-on from paved areas to the north is managed with controls that serve to reduce the sediment and velocity of contributions from these areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 45-1).

**Table 45-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02102010004	Established Vegetation - Grasses and Shrubs			X		CB
L02103040001	Berms - Asphalt	X			X	CB
L02103060009	Berms - Straw Wattles		X		X	B
L02103060010	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 45.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.27. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 45.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.27 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 45-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23387	05-22-2012
Storm Rain Event	BMP-24968	07-12-2012
Storm Rain Event	BMP-28657	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 45-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25463	Installed new straw wattle L02103060010 just above existing wattle -0008, which was retired.	07-24-2012	12 day(s)	Maintenance conducted in timely manner.

### 45.5 Compliance Status

The Sites associated with LA-SMA-6.27 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 45-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-027(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

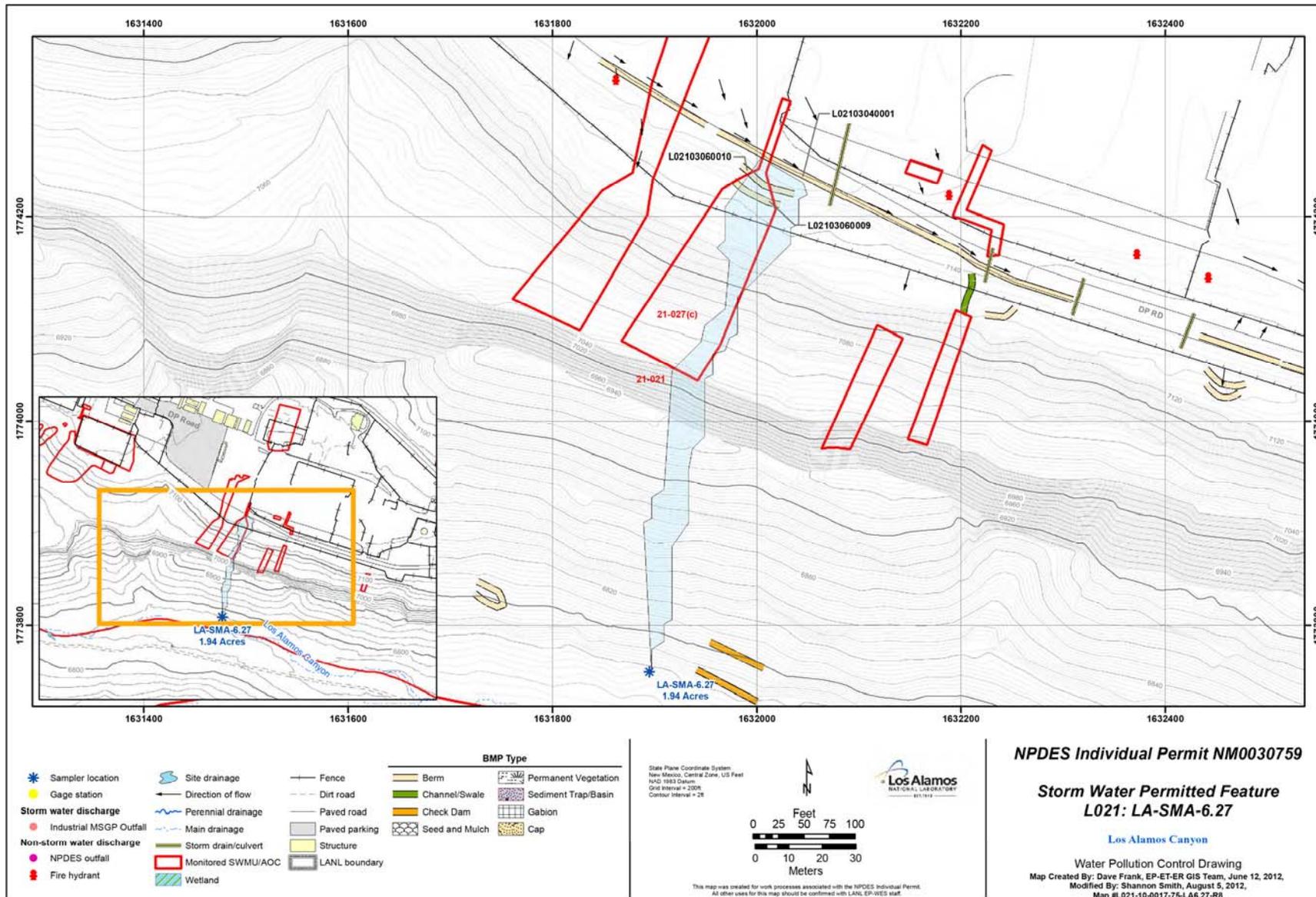


Figure 45-1 LA-SMA-6.27 location map

## 46.0 LA-SMA-6.3: SWMU 21-006(b)

### 46.1 Site Descriptions

One historical industrial activity area is associated with L022, LA-SMA-6.3: Site 21-006(b).

SWMU 21-006(b) was a seepage pit (former structure 21-202), drainline, and outfall installed during the construction of building 21-2 in 1945. Waste from the extraction process that was part of the original TA-21 plutonium purification process was discharged to a 3-in. cast iron drainline that exited the southeast side of building 21-2 and extended 160 ft to the south to the seepage pit. A 2-in. cast-iron outlet line exited the sump and extended approximately 100 ft to the south to an outfall approximately 8 ft above the surface of a bench below the mesa top. It is not known when the seepage pit ceased to be used. The seepage pit was consisted of a brick manhole placed within a trench. The seepage pit and piping were removed during the 2006–2007 DP Site Aggregate Area investigation. The section of the drainline that lies beneath the road was left in place because the road is active and continues to service DP East. SWMU 21-006(b), along with SWMUs 21-006(a), 21-006(c), and 21-006(d), comprise Consolidated Unit 21-006(c)-99. Decision-level data from the Phase II investigation for Consolidated Unit 21-006(c)-99: vertical extent of americium-241 and lateral extent of tritium still not defined. Decision-level data indicate SWMU 21-006(b) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 46-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 46.2 Control Measures

An asphalt berm located on the southern edge of DP Road controls run-on from the paved areas in the headwaters of this SMA. Because of the development in the headwaters of the Permitted Feature, run-on controls are crucial to the successful management of storm water at this site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 46-1).

**Table 46-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02202010003	Established Vegetation - Grasses and Shrubs			X		CB
L02203040005	Berms - Asphalt	X			X	CB
L02206010001	Check Dam - Rock		X		X	CB
L02206010004	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 46.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 46.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.3 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 46-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23388	05-22-2012
Storm Rain Event	BMP-24969	07-12-2012
Storm Rain Event	BMP-28658	10-23-2012

There were no maintenance activities conducted at LA-SMA-6.3 in 2012.

### 46.5 Compliance Status

The Site associated with LA-SMA-6.3 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 46-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-006(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



LA-SMA-6.3, Rock Check Dam, L02206010004 (photo ID 8655-1)

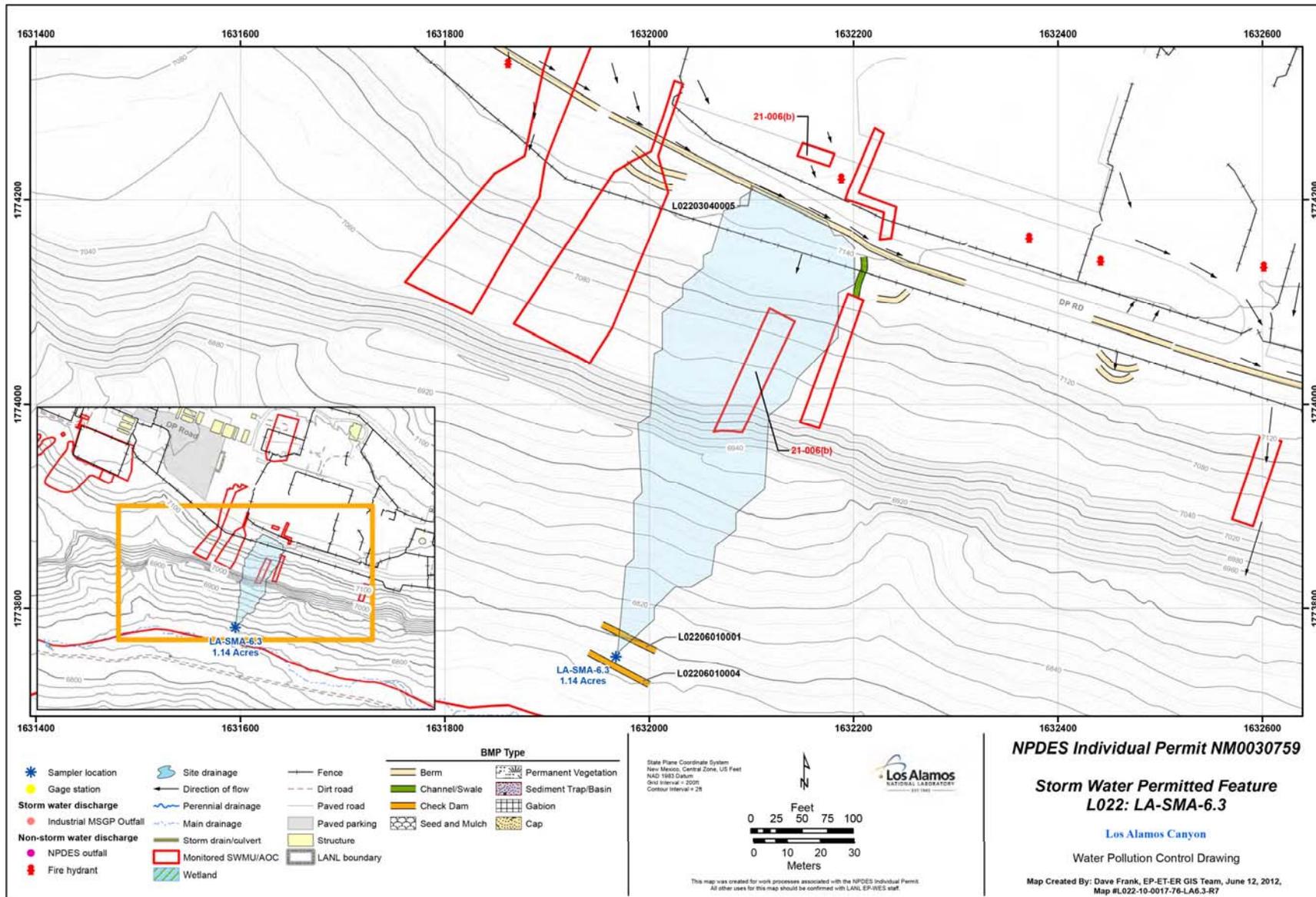


Figure 46-1 LA-SMA-6.3 location map

## **47.0 LA-SMA-6.31: SWMU 21-027(a)**

### **47.1 Site Descriptions**

One historical industrial activity area is associated with L022A, LA-SMA-6.31: Site 21-027(a).

SWMU 21-027(a) consists of former drainlines that received effluent from floor drains in building 21-3, surface-drainage system, and a former outfall at the south of DP Canyon that discharged to Los Alamos Canyon. Building 21-3 was constructed in 1945 as part of original DP West plutonium facilities. A 4-in.-diameter VCP ran beneath a paved area south of building 21-3 for approximately 30 ft and emptied into a storm drain. A 12-in.-diameter culvert ran from the storm drain underground for approximately 50 ft, emptying onto the ground at a ponding area on the southwest corner of the footprint of a former cooling tower (AOC C-21-027, structure 21-143). From the cooling tower footprint, runoff flowed in an unlined ditch to a 24-in.-diameter CMP culvert that carried runoff beneath the south TA-21 perimeter road to the mesa edge. The CMP extended approximately 3 ft over the mesa edge into Los Alamos. In 1994 and 1995, building 21-3, including all building drains and the drainlines beneath the building, and the cooling tower were removed during TA-21 D&D activities. The 4-in.-diameter pipe beneath the paved area was left in place, as was the storm drain, which collected runoff from nearby parking lots. During the 2007 DP Site Aggregate Area investigation, remaining drainlines were removed along with the top foot of soil at the former ponding area. The section of drainline beneath the TA-21 perimeter road was left in place because the road is active and continues to service DP East. Decision-level data indicate the nature and extent of contamination are not defined. Additional sampling and remediation will be conducted at SWMU 21-027(a) during the DP Aggregate Area Phase III investigation.

The project map (Figure 47-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 21-027(a) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 47-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### **47.2 Control Measures**

Run-on and runoff controls are in place. The SMA is stabilized and run-on to the area is conveyed to the mesa edge via a rock-lined channel. The asphalt berm diverts flow to the east of the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 47-1).

**Table 47-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L022A02010001	Established Vegetation - Grasses and Shrubs			X		CB
L022A03040002	Berms - Asphalt	X			X	CB
L022A03060007	Berms - Straw Wattles		X		X	B
L022A04030003	Channel/Swale - Rock	X		X		CB
L022A06010005	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 47.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.31. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 47.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.31 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 47-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23389	05-22-2012
Storm Rain Event	BMP-24973	07-12-2012
Storm Rain Event	BMP-28662	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 47-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25464	Installed new straw wattle L022A03060007 above existing wattle -0006, which was retired.	07-24-2012	12 day(s)	Maintenance conducted in timely manner.

**47.5 Compliance Status**

The Site associated with LA-SMA-6.31 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 47-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-027(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

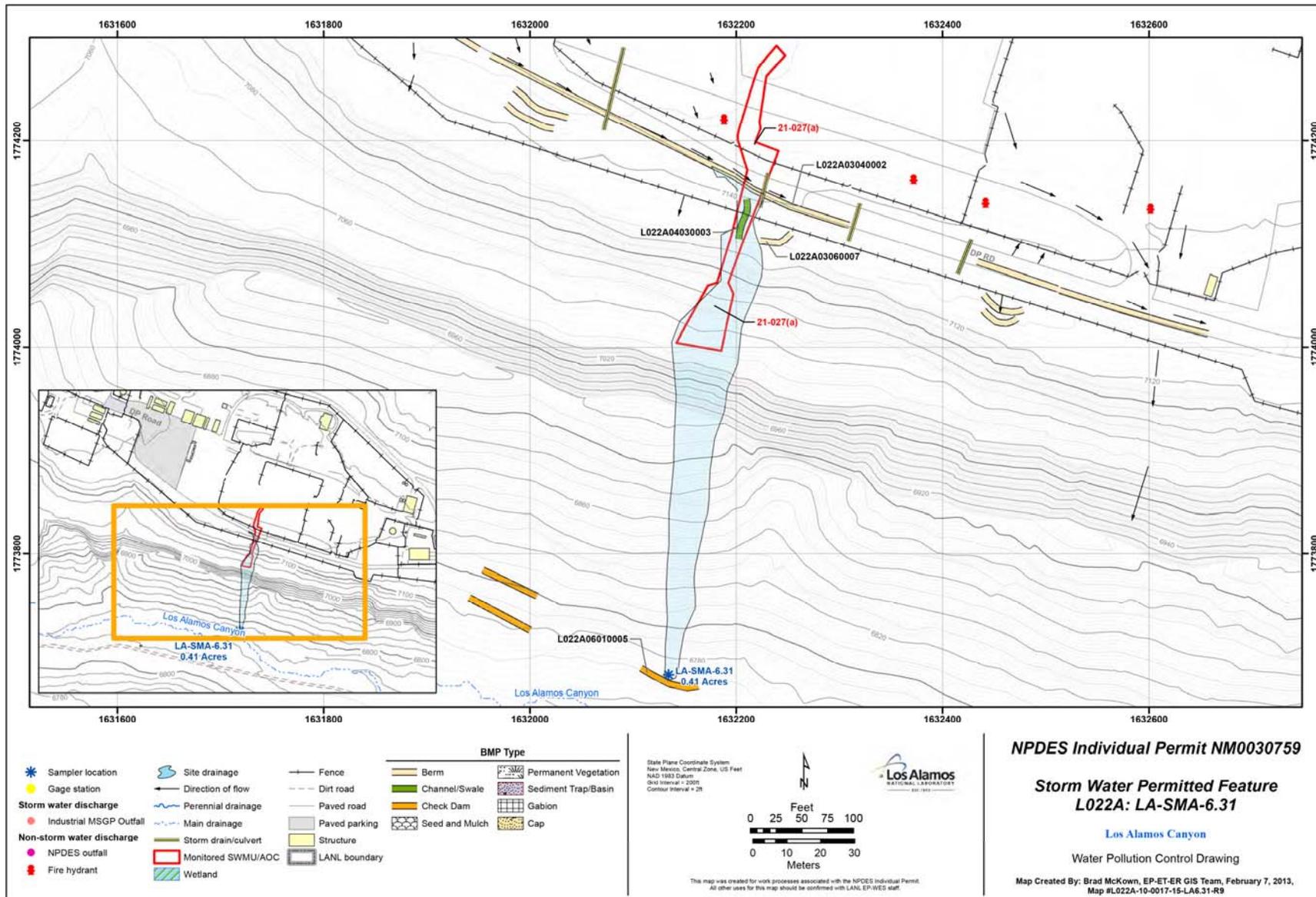


Figure 47-1 LA-SMA-6.31 location map

## 48.0 LA-SMA-6.32: SWMU 21-021

### 48.1 Site Descriptions

One historical industrial activity area is associated with L023, LA-SMA-6.32: Site 21-021.

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 48-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 48.2 Control Measures

DP Road, located near the northern boundary of the Permitted Feature, is crowned to the north away from the mesa edge. A berm along the southern edge of DP Road is managing potential run-on to the site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 48-1).

**Table 48-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02302010001	Established Vegetation - Grasses and Shrubs			X		CB
L02303040002	Berms - Asphalt	X			X	CB
L02303060003	Berms - Straw Wattles		X		X	CB
L02303060005	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 48.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.32. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

#### 48.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.32 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 48-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23390	05-22-2012
Storm Rain Event	BMP-24970	07-12-2012
Storm Rain Event	BMP-28659	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 48-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23653	Installed new wattle L02303060005 just above existing wattle -0004, which was retired.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.

#### 48.5 Compliance Status

The Sites associated with LA-SMA-6.32 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 48-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment

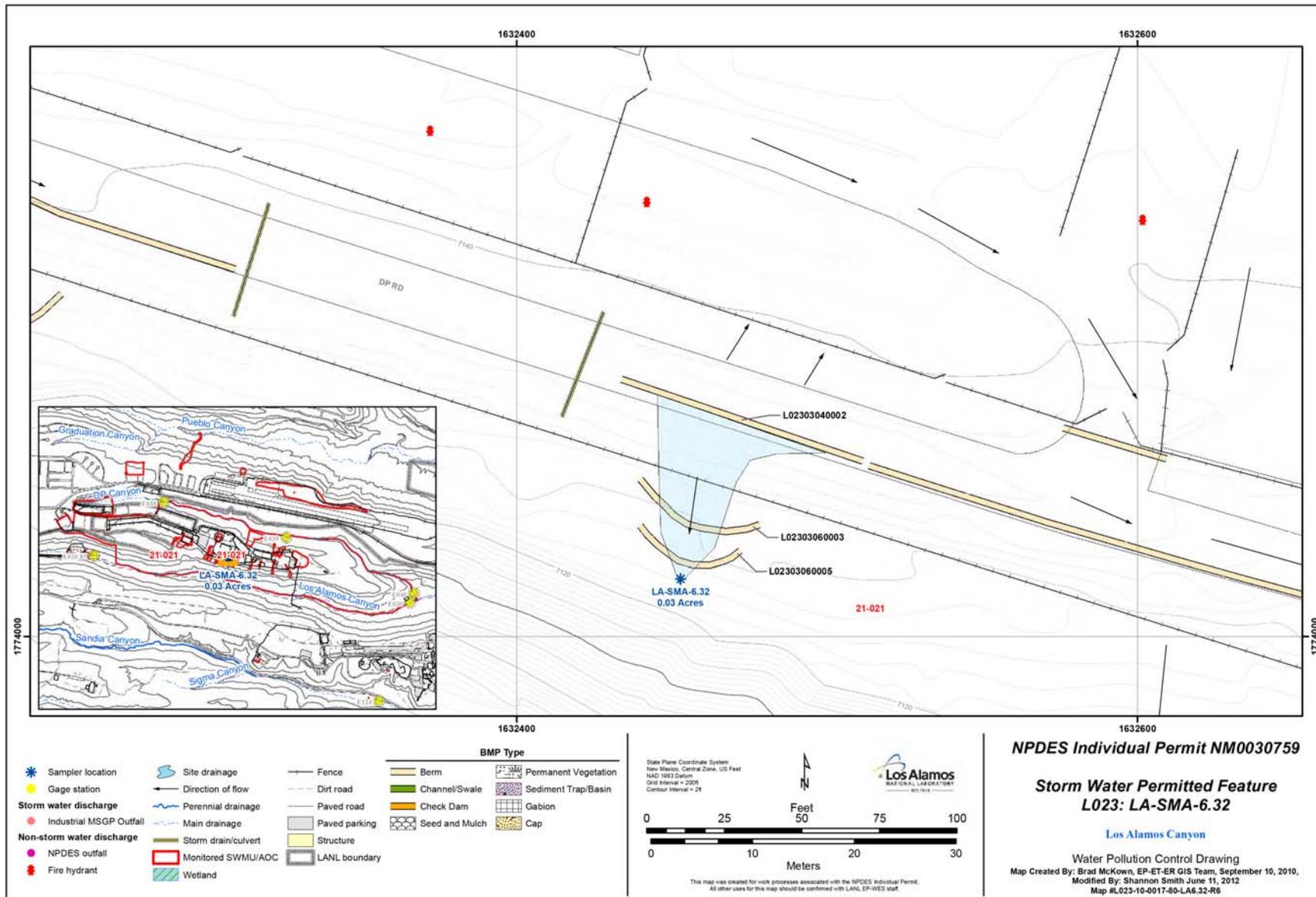


Figure 48-1 LA-SMA-6.32 location map

## 49.0 LA-SMA-6.34: SWMUs 21-021 and 21-022(h)

### 49.1 Site Descriptions

Two historical industrial activity areas are associated with L024, LA-SMA-6.34: Sites 21-021 and 21-022(h).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.



LA-SMA-6.34, Rock Check Dam, L02406010005 (photo ID 7433-1)

SWMU 21-022(h) is the former location of a sump (structure 21-202), outlet drainline, and a formerly permitted outfall. Structure 21-202 was constructed in 1962 from 36-in. CMP. The sump received industrial wastewater and discharges from basement floor drains and roof drains in the plutonium fuel service building (21-150). The outlet drainline from the sump consisted of a 24-in.-diameter pipe that discharged to Los Alamos Canyon. As of May 1991, the outfall discharged only treated cooling water. Quantitative information about effluent discharged through structure 21-202

is not available. The SWMU sump (structure 21-202) and associated piping were removed in 2007. The section of the drainline that lies beneath the road was left in place because the road is active and continues to service DP East. Decision-level data indicate the nature and extent of contamination are not defined. Additional sampling and remediation will be conducted at SWMU 21-022(h) during the DP Aggregate Area Phase III investigation.

The project map (Figure 49-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 49.2 Control Measures

Berms located on the northern and southern sides of DP Road effectively control run-on from the impervious areas north of the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 49-1).

**Table 49-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02402010001	Established Vegetation - Grasses and Shrubs			X		CB
L02403040003	Berms - Asphalt	X			X	CB
L02406010005	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 49.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.34. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 49.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.34 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 49-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23391	05-22-2012
Storm Rain Event	BMP-24971	07-12-2012
Storm Rain Event	BMP-28660	10-23-2012

There were no maintenance activities conducted at LA-SMA-6.34 in 2012.

### 49.5 Compliance Status

The Sites associated with LA-SMA-6.34 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 49-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-022(h)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

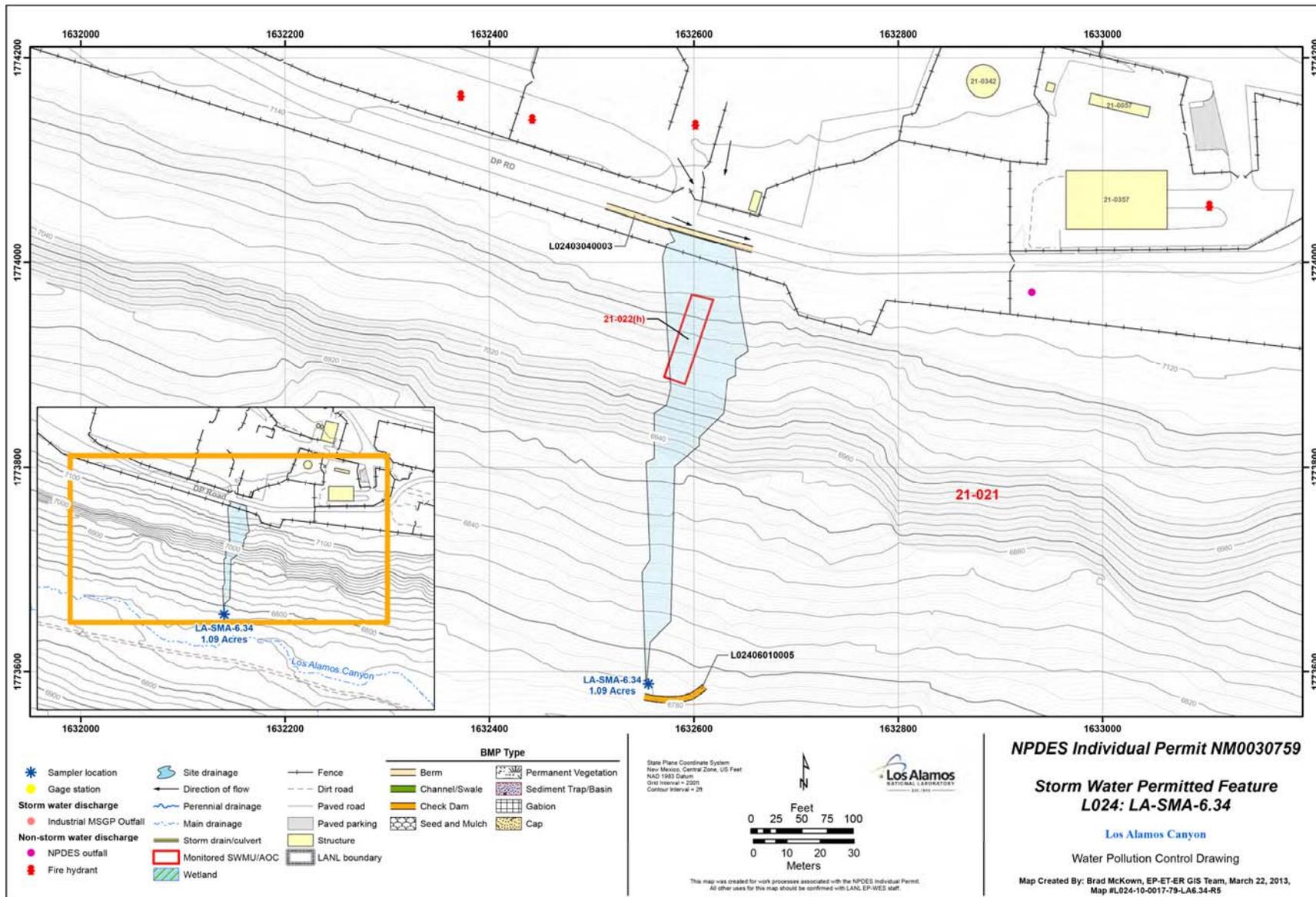


Figure 49-1 LA-SMA-6.34 location map

## **50.0 LA-SMA-6.36: SWMUs 21-021 and 21-024(a)**

### **50.1 Site Descriptions**

Two historical industrial activity areas are associated with L025, LA-SMA-6.36: Sites 21-021 and 21-024(a).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(a) is the former location of a septic system that routed sewage from the old steam plant (building 21-009) through a septic tank (structure 21-53) to the surface on the south rim of DP Mesa above Los Alamos Canyon. The septic system was constructed in 1945 at the same time the TA-21 steam plant (21-009) was built. The septic system consisted of a reinforced concrete septic tank that measured 9 ft × 5.75 ft × 7.25 ft deep, a 6-in.-diameter VCP inlet line, and a 4- or 6-in.-diameter VCP outlet line. The septic system was decommissioned in 1966. The septic tank and inlet and outlet drainlines were removed in 2007. The section of the drainline that lies beneath the road was left in place because the road is active and continues to service DP East. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm that SWMU 24-024(a) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 50-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **50.2 Control Measures**

The Permitted Feature is flat with minimal run-on, which is effectively controlled by the vegetative buffer south of DP Road. The curb south of the building 21-0356 is diverting run-on to a culvert and away from the monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 50-1).

**Table 50-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02502010002	Established Vegetation - Grasses and Shrubs			X		CB
L02503010008	Berms - Earthen		X		X	CB
L02503010009	Berms - Earthen	X			X	CB
L02503090004	Berms - Curbing	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**50.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.36. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**50.4 Inspections and Maintenance**

RG038 recorded two storm events at LA-SMA-6.36 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 50-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23392	05-22-2012
Storm Rain Event	BMP-24972	07-12-2012
Storm Rain Event	BMP-28661	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 50-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29047	Reseeded and matted berm L02503010008.	11-01-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-29048	Reseeded and matted berm L02503010009.	11-01-2012	14 day(s)	Maintenance conducted in timely manner.

**50.5 Compliance Status**

The Sites associated with LA-SMA-6.36 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 50-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

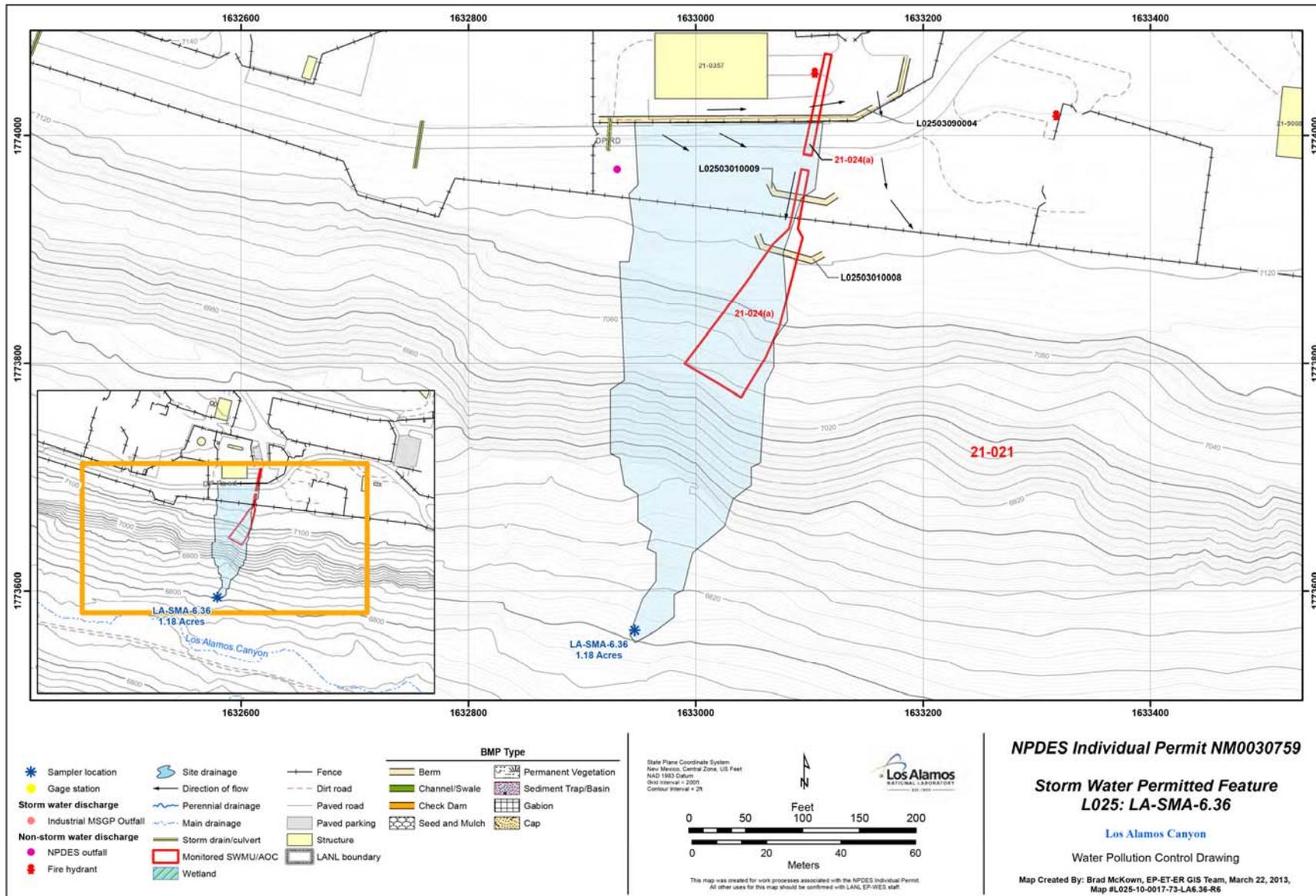


Figure 50-1 LA-SMA-6.36 location map

## **51.0 LA-SMA-6.38: SWMUs 21-021 and 21-024(c)**

### **51.1 Site Descriptions**

Two historical industrial activity areas are associated with L026, LA-SMA-6.38: Sites 21-021 and 21-024(c).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(c) is the former locations of a septic system that routed sewage from buildings 21-54 and 21-61) through a septic tank (structure 21-56) to the surface on the south rim of DP Mesa above Los Alamos Canyon. The septic system was constructed in 1945 at the same time the TA-21 building 21-54 (a machine shop and warehouse) and building 21-61 (a PCB container storage area) were built. The septic system consisted of a reinforced concrete septic tank that measured 4 ft long × 8 ft wide × approximately 5 ft deep with 4-in.-diameter VCP inlet and outlet drainlines. The septic system was decommissioned in 1966. The septic tank and inlet and outlet drainlines were removed in 2006 along with PCB-contaminated soil and tuff. Additional PCB-contaminated soil and tuff were removed in 2009. Decision-level data indicate the nature and extent of contamination are not defined. Additional sampling will be conducted at SWMU 21-024(c) during the DP Aggregate Area Phase III investigation.

The project map (Figure 51-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **51.2 Control Measures**

Run-on enters this Permitted Feature from a graveled storage area above the SMA. Run-on flows through sparse vegetation, then over the edge of the mesa. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 51-1).

**Table 51-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02602010001	Established Vegetation - Grasses and Shrubs			X		CB
L02603060004	Berms - Straw Wattles		X		X	CB
L02603060009	Berms - Straw Wattles	X			X	B
L02603060010	Berms - Straw Wattles	X			X	B
L02604060006	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 51.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.38. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 51.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.38 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 51-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23393	05-22-2012
Storm Rain Event	BMP-24976	07-12-2012
Storm Rain Event	BMP-28665	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 51-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23635	Installed new wattle L02603060009 just above existing wattle-0005, which was retired.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-23636	Installed new wattle L02603060010 just above existing wattle-0008, which was retired.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.

**51.5 Compliance Status**

The Sites associated with LA-SMA-6.38 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 51-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

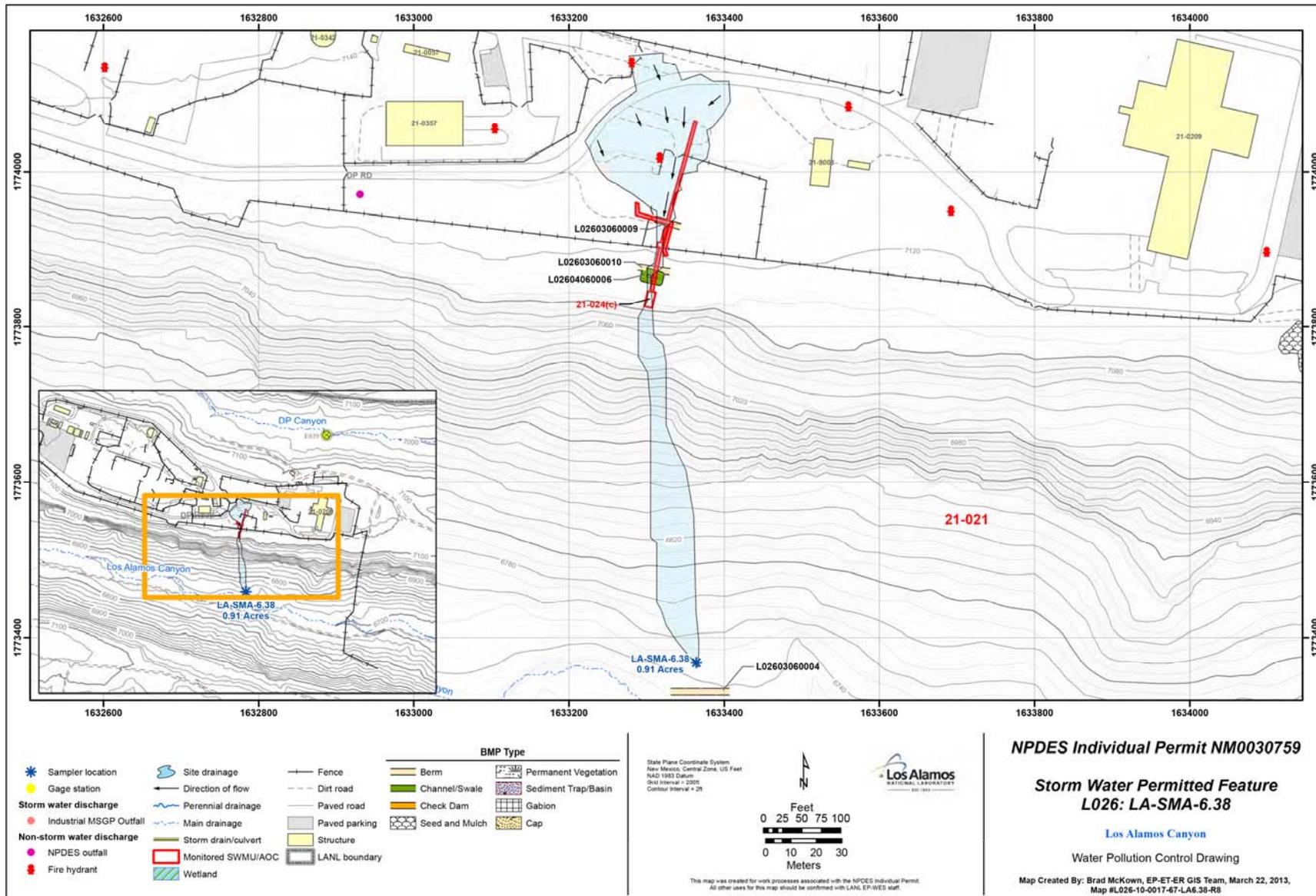


Figure 51-1 LA-SMA-6.38 location map

## 52.0 LA-SMA-6.395: SWMUs 21-021 and 21-024(j)

### 52.1 Site Descriptions

Two historical industrial activity areas are associated with L027, LA-SMA-6.395: Sites 21-021, and 21-024(j).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(j) is the former location of a septic system that routed sewage from building 21-155, a warehouse/laboratory through a septic tank (structure 21-94) to the surface on the south rim of DP Mesa above Los Alamos Canyon. The septic system was constructed in 1961 and consisted of a reinforced concrete septic tank that measured 5 ft × 3 ft × 6 ft deep with 4-in.-diameter VCP inlet and outlet drainlines. The septic tank was located off the southwest corner of building 21-155 near the south edge of the perimeter road. The septic system was decommissioned in 1966; the septic tank was filled with dirt and left in place. The septic tank and inlet and outlet drainlines were removed in 2007. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm that SWMU 21-024(j) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 52-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 52.2 Control Measures

Run-on controls are in place to direct run-on from DP Mesa road to the channel east and away from the monitored area. There is no sign of concentrated runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 52-1).

**Table 52-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02702010001	Established Vegetation - Grasses and Shrubs			X		CB
L02703010004	Berms - Earthen		X		X	CB
L02703010005	Berms - Earthen	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 52.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.395. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 52.4 Inspections and Maintenance

RG038 recorded two storm events at LA-SMA-6.395 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 52-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23394	05-22-2012
Storm Rain Event	BMP-24978	07-12-2012
Storm Rain Event	BMP-28667	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 52-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29050	Reseeded and matted berm L02703010004.	11-01-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-29051	Reseeded and matted berm L02703010005.	11-01-2012	14 day(s)	Maintenance conducted in timely manner.

### 52.5 Compliance Status

The Sites associated with LA-SMA-6.395 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 52-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(j)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

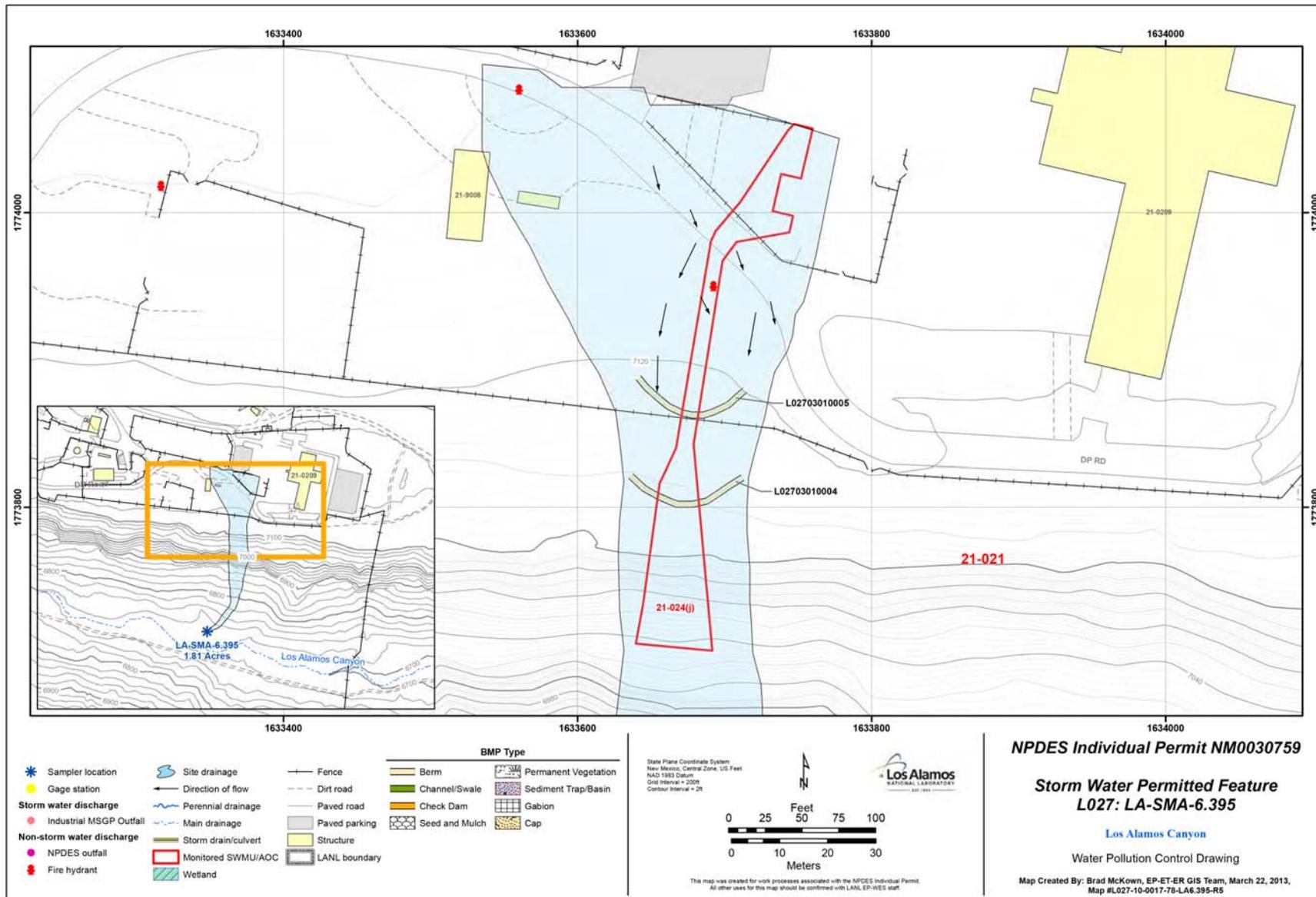


Figure 52-1 LA-SMA-6.395 location map

## 53.0 LA-SMA-6.5: SWMUs 21-021 and 21-024(i)

### 53.1 Site Descriptions

Two historical industrial activity areas are associated with L028, LA-SMA-6.5: Sites 21-021 and 21-024(i).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(i) is the former location of a septic system that routed sewage from building 21-152, a polonium-processing and high-temperature laboratory through a septic tank (structure 21-181) to the surface in a broad open area with a gentle slope extending approximately 30 ft to the southeastern edge of DP Mesa above Los Alamos Canyon. Blowdown pipelines from former cooling towers (structures 21-166 and 21-167) were also connected to the sump. The septic system was constructed in 1945 at the same time building 21-152 was built. The septic system consisted of a reinforced concrete septic tank that measured 6 ft × 10 ft × 8 ft deep, with 6-in.-diameter VCP inlet and outlet drainlines. Building 21-209, a high-temperature chemistry building, was constructed in 1965 and was tied into the SWMU 21-024(i) septic system. Building 21-209 was located on top of the inlet lines from building 21-152, structures 21-166 and 21-167, leading to the decommissioning of the SWMU 21-024(i) septic system in 1965. New blowdown lines from structures 21-166 and 21-167 were connected to the SWMU 21-024(k) septic system.

The portion of the inlet line between the septic tank and the building 21-152 fence line, the sump and septic tank, the outlet line, and contaminated soil and tuff at the outfall were removed in 2001 as part of an IA. The remaining portion of the inlet line was removed in 2007. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm SWMU 24-024(i) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 53-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 53.2 Control Measures

This Permitted Feature has potential run-on from a paved parking lot north of the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 53-1).

**Table 53-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02801010007	Seed and Mulch - Seed and Wood Mulch			X		B
L02802010001	Established Vegetation - Grasses and Shrubs			X		CB
L02803010004	Berms - Earthen	X			X	CB
L02803010006	Berms - Earthen	X			X	CB
L02806010002	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**53.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-6.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**53.4 Inspections and Maintenance**

RG038 recorded two storm events at LA-SMA-6.5 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 53-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23395	05-22-2012
Storm Rain Event	BMP-24977	07-12-2012
Storm Rain Event	BMP-28666	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 53-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23638	Built up rock check dam L02806010002 and added a spillway.	05-30-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-23639	Built up, reseeded, and matted berm L02803010004.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-23640	Built up, reseeded, and matted berms L02803010006.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-23641	Added seed and mulch L02801010007 throughout the area between berm -0006 and check dam -0002.	06-04-2012	13 day(s)	Maintenance conducted in timely manner.

**53.5 Compliance Status**

The Site, SWMU 21-024(i), associated with LA-SMA-6.5 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 53-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(i)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

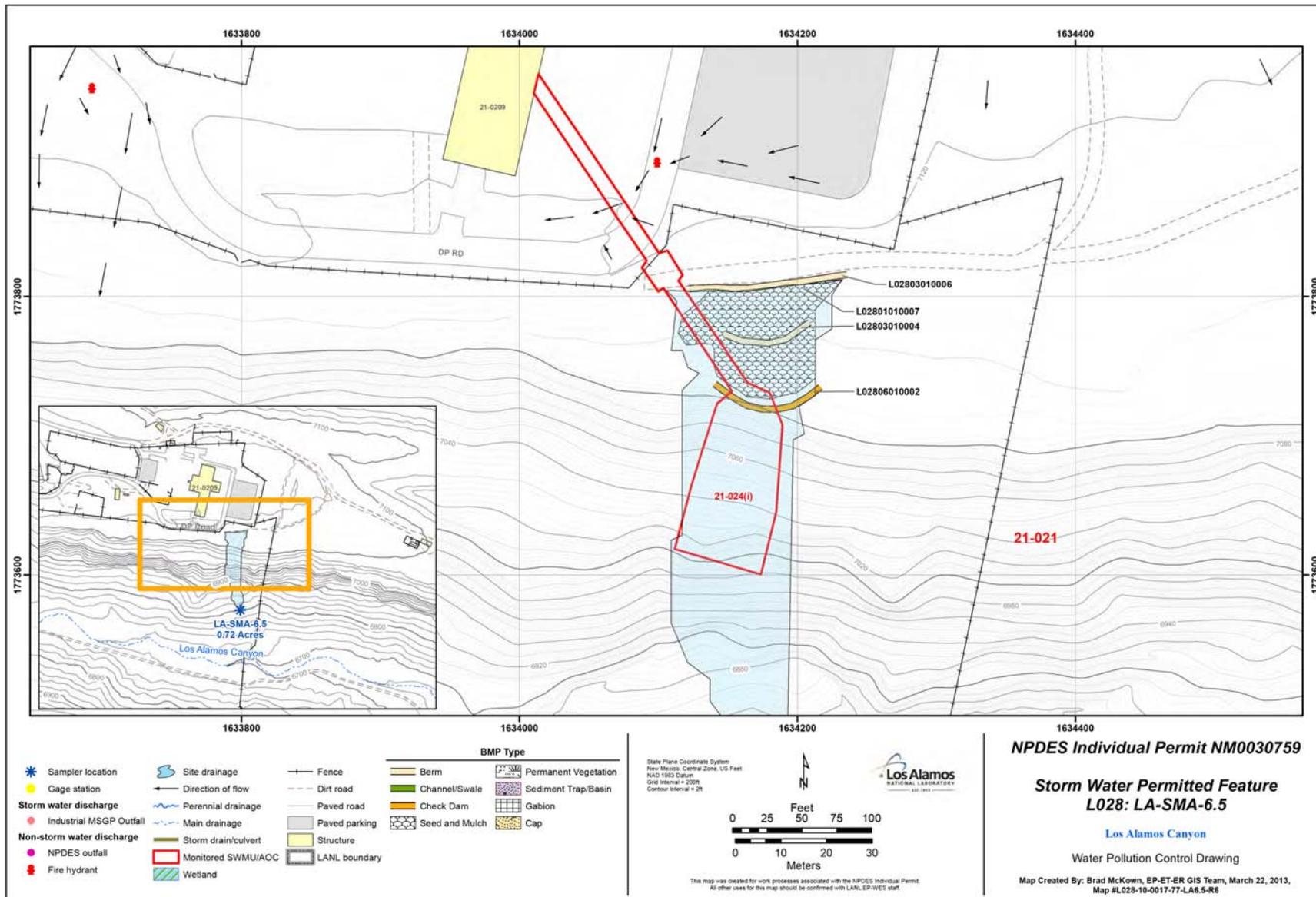


Figure 53-1 LA-SMA-6.5 location map

## 54.0 LA-SMA-9: SWMUs 26-001, 26-002(a), 26-002(b), and 26-003

### 54.1 Site Descriptions

Four historical industrial activity areas are associated with L029, LA-SMA-9: Sites 26-001, 26-002(a), 26-002(b), and 26-003.

SWMU 26-001, a surface disposal area containing debris from a five-room concrete storage vault (structure 26-1), is located within TA-73 on the south-facing slope of Los Alamos Canyon. The vault was constructed in 1946 to store radioactive materials; however, the type and quantity of radioactive materials is not known. The vault was later used for storing HE. The vault was decommissioned and dismantled in 1966. Before it was decommissioned, some components of the vault, including shelving, drainlines, the sump, and ductwork, were removed and disposed of at MDA C. The remaining structure was bulldozed onto the south-facing slope of Los Alamos Canyon. In the 1970s, most of the vault debris rested on the bench below the mesa top; however, some debris may have fallen as far as the canyon floor. The debris on the ledge was covered with approximately 3 ft of soil. Based on the results of the Phase II investigation, the extent of contamination has not been defined at SWMU 26-001. This site will be investigated further as part of a Phase III investigation.

SWMU 26-002(a) is a former acid sump system located at within TA-73 and situated on the south rim of Los Alamos Canyon. Installed in 1948, the sump system consisted of a 6-in. VCP floor drain that discharged to a collection sump located outside the concrete storage vault (structure 26-1). The sump discharged to an outfall [SWMU 26-002(b)] that drained to Los Alamos Canyon. The sump was decommissioned and removed in 1966. Based on the results of the Phase II investigation, the extent of contamination has not been defined at SWMU 26-002(a). This site will be investigated further as part of a Phase III investigation.



LA-SMA-9, Earthen Berm, L02903010014 (photo ID 12942-1)

SWMU 26-002(b) is a former drainline located at within TA-73 and situated on the south rim of Los Alamos Canyon. The 4-in. VCP drainline served the equipment room of the former concrete storage vault (structure 26-1) and discharged directly to Los Alamos Canyon. The drainline was removed in 1966. Based on the results of the Phase II investigation, the extent of contamination has not been defined at SWMU 26-001. This site will be investigated further as part of a Phase III investigation.

SWMU 26-003 is a sanitary septic system that served a restroom in the former concrete storage vault (structure 26-1) at former TA-26. Installed in 1948, the septic system consisted of 4-in. VCP drainline connected to a 250-gal. steel septic tank. The septic tank may have been removed at the same time as the sump [SWMU 26-002(a)]; however, there is no documentation of the removal. Based on the results of the Phase II investigation, the extent of contamination has not been defined at SWMU 26-001. This site will be investigated further as part of a Phase III investigation.

The project map (Figure 54-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

## 54.2 Control Measures

Berms and vegetation are used to address some of the run-on to this Permitted Feature. Existing controls augment these best management practices to provide for longer term, more sustainable control of the run-on sources. Runoff discharged over the edge of the mesa into the canyon is minimized by the concrete retaining wall. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 54-1).

**Table 54-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L02902010001	Established Vegetation - Grasses and Shrubs			X		CB
L02903010012	Berms - Earthen		X		X	CB
L02903010013	Berms - Earthen		X		X	CB
L02903010014	Berms - Earthen		X		X	CB
L02903080005	Berms - Retaining Wall	X			X	CB
L02904050009	Channel/Swale - Water Bar	X		X		CB
L02904050010	Channel/Swale - Water Bar	X		X		CB
L02904050011	Channel/Swale - Water Bar	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

## 54.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

## 54.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at LA-SMA-9 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 54-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23396	05-22-2012
Storm Rain Event	BMP-26282	08-07-2012
Storm Rain Event	BMP-27087	08-28-2012
Storm Rain Event	BMP-28081	10-01-2012
Storm Rain Event	BMP-28622	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 54-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26407	Repaired berm L02903010012 by reseeding and matting.	08-16-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-26408	Repaired berm L02903010013 by building up low spots, reseeding and matting.	08-16-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-26409	Repair berm L02903010014 by building up low spots, reseeding and matting.	08-16-2012	9 day(s)	Maintenance conducted in timely manner.

**54.5 Compliance Status**

The Sites associated with LA-SMA-9 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 54-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 26-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 26-002(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 26-002(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 26-003	Baseline Monitoring	Baseline Monitoring Extended	No Comment

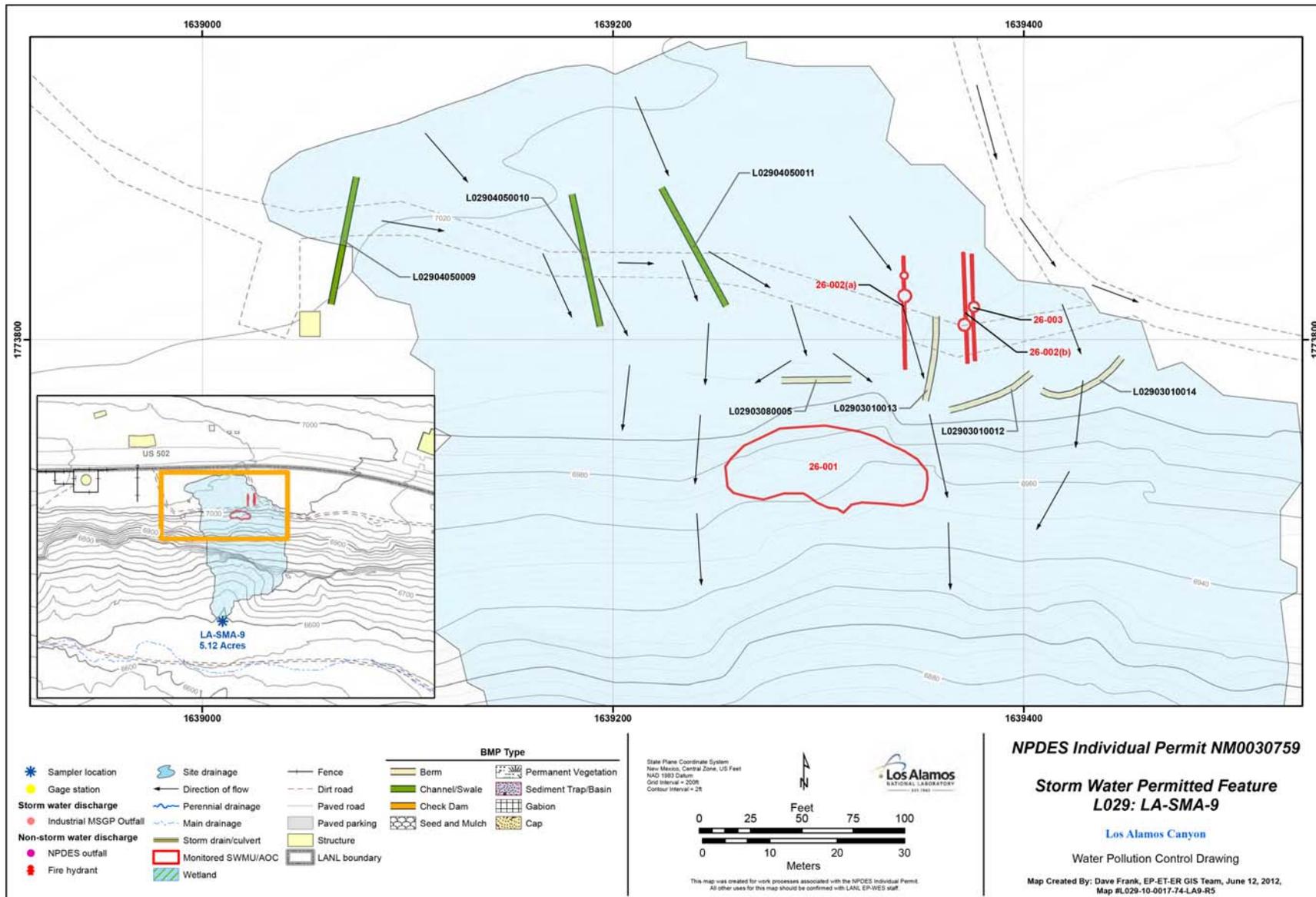


Figure 54-1 LA-SMA-9 location map

## **55.0 LA-SMA-10.11: SWMU 53-002(a)**

### **55.1 Site Descriptions**

One historical industrial activity area is associated with L030, LA-SMA-10.11: Site 53-002(a).

SWMU 53-002(a) consists of two inactive surface impoundments, known as the NE and NW impoundments, that were constructed in 1969. Each measured 210 ft × 210 ft × 6 ft deep with a capacity of 1.6 million gal. The dikes making up the sidewalls of the impoundments were constructed of compacted tuff lined with 4 to 6 in. of gunite. The bottom of each impoundments was lined with 4 in. of bentonite clay. These impoundments were originally constructed to contain all sanitary, industrial, and radioactive wastewater generated at TA-53 with no discharge. However, wastewater flows exceeded the evaporative capacity of the NE and NW impoundments, and it became necessary to discharge wastewater from the impoundments to an unlined drainage channel leading to Los Alamos Canyon. Discharges occurred on a batch basis through an NPDES-permitted outfall. The impoundments also had an emergency overflow that discharged to the south of the impoundments, near a tributary to Sandia Canyon. Beginning in 1989, all radioactive wastewaters from TA-53 were discharged to a third impoundment [SWMU 53-002(b)]. The NE and NW impoundments continued to receive all sanitary and industrial wastewaters until 1993, when the impoundments were taken out of service. The remaining wastewater in the impoundments was then allowed to evaporate.

The SWMU 53-002(a) surface impoundments were originally included as treatment, storage, and disposal (TSD) units in the Laboratory's 1991 RCRA Part A permit application for mixed waste. The Laboratory had intended to close these units under RCRA interim status and submitted a closure plan to NMED in 1994. Since 1994, the Laboratory has conducted investigations to determine the source of hazardous materials detected in the impoundments. Based on these investigations and sample results, the contents of the impoundments were determined not to be hazardous waste. As a result, in 1997, NMED changed the status of the impoundments from TSD units to corrective action units. The sludge and liners were removed from the two SWMU 53-002(a) impoundments during an IA conducted in 2002. Risk-assessment results indicate SWMU 53-002(a) poses no unacceptable risk to industrial receptors and poses no risk to ecological receptors. NMED issued a COC with controls in September 2006.

The project map (Figure 55-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **55.2 Control Measures**

There are no significant run-on sources at this SMA. Runoff is controlled with riprap at the former emergency overflow. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 55-1).

**Table 55-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L03004060003	Channel/Swale - Riprap		X	X		CB
L03004060009	Channel/Swale - Riprap		X	X		CB
L03006010001	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 55.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at LA-SMA-10.11. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 55.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at LA-SMA-10.11 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 55-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23368	05-29-2012
Storm Rain Event	BMP-26278	08-08-2012
Storm Rain Event	BMP-27083	08-29-2012
Storm Rain Event	BMP-28077	10-03-2012
Storm Rain Event	BMP-28606	10-19-2012

There were no maintenance activities conducted at LA-SMA-10.11 in 2012.

### 55.5 Compliance Status

The Site associated with LA-SMA-10.11 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 55-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 53-002(a)	Baseline Monitoring	Baseline Monitoring Extended	NMED, 2006, "Certificates of Completion for Solid Waste Management Units 53-002(a) and 53-002(b), Technical Area 53"

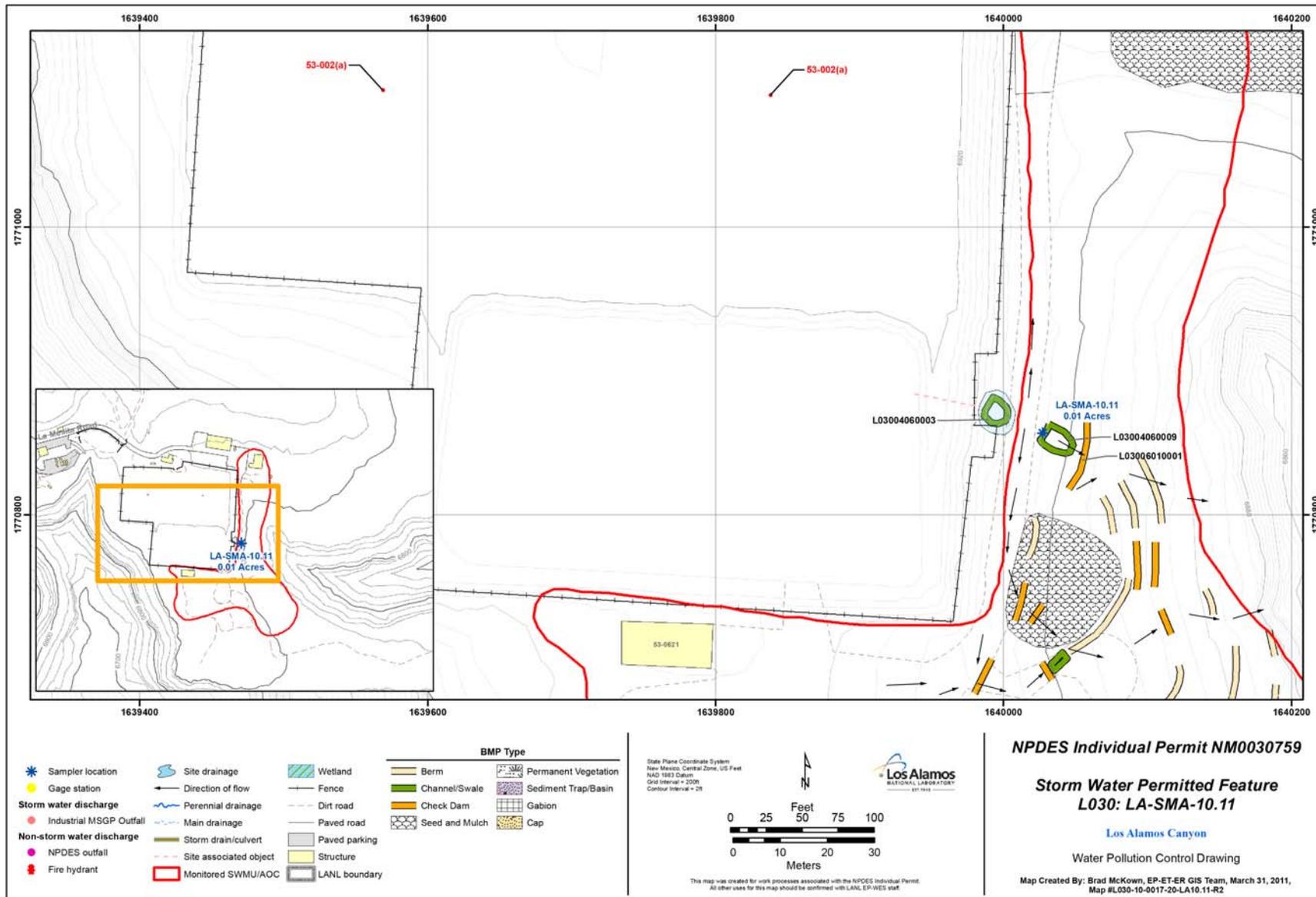


Figure 55-1 LA-SMA-10.11 location map

## **56.0 LA-SMA-10.12: AOC 53-008**

### **56.1 Site Descriptions**

One historical industrial activity area is associated with L030A, LA-SMA-10.12: Site 53-008.

AOC 53-008 is an unpaved open area (referred to as a "Boneyard") used to store used materials and equipment associated with experiments conducted at TA-53. This storage area, approximately 3 to 4 acres in size, is irregularly shaped and located north, east, and south of the former TA-53 surface impoundments [Consolidated Unit 53-002(a)-99]. Most of the storage area is vegetated with grasses, shrubs, and juniper trees; several dirt trails also run through it. Materials shown to be present at the site in 1989 photographs include vacuum pumps, metal ducting, concrete shielding blocks, empty overpack drums, and drums containing steel bearings. This site was inspected in September 1993 during preparation of the RFI work plan and was found to contain shielding blocks (magnetite concrete and steel), concrete, steel, other metallic debris, and other miscellaneous items. No hazardous materials or chemicals were observed, with the exception of lead stored in a shed (structure 53-621) at the south end of the site. This area has been used for storage from approximately 1972 to the present; currently, much of the material that was previously stored at the site has been removed. Decision-level data for AOC 53-008 indicate the extent of contamination is not defined; detected contaminant concentrations were below residential SSLs and SALs. A Phase II investigation work plan for the lower Sandia Canyon Aggregate Area, which will propose additional extent sampling for AOC 53-008, is currently due to NMED on March 26, 2014. Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

The project map (Figure 56-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **56.2 Control Measures**

Near the southern portion of the SMA, runoff from bare areas and the unpaved access road flows west to east and ultimately to a natural channel that discharges towards the receiving waters. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 56-1).

Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 56-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
L030A02010031	Established Vegetation - Grasses and Shrubs			X		EC
L030A03010025	Berms - Earthen		X		X	B
L030A03010026	Berms - Earthen	X			X	EC
L030A03010027	Berms - Earthen		X		X	EC
L030A03060028	Berms - Straw Wattles	X			X	EC
L030A03060029	Berms - Straw Wattles		X		X	EC
L030A03120005	Berms - Rock	X			X	CB
L030A03120006	Berms - Rock	X			X	CB
L030A03120009	Berms - Rock		X		X	CB
L030A03120012	Berms - Rock	X			X	CB
L030A03120015	Berms - Rock		X		X	CB
L030A03120016	Berms - Rock		X		X	CB
L030A03120017	Berms - Rock	X			X	CB
L030A03120019	Berms - Rock	X			X	CB
L030A03120020	Berms - Rock		X		X	CB
L030A03120021	Berms - Rock		X		X	CB
L030A03120030	Berms - Rock		X		X	EC
L030A04060007	Channel/Swale - Riprap		X	X		CB
L030A06010001	Check Dam - Rock	X			X	CB
L030A06010002	Check Dam - Rock	X			X	CB
L030A06010003	Check Dam - Rock		X		X	CB
L030A06010008	Check Dam - Rock	X			X	CB
L030A06010011	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 56.3 Storm Water Monitoring

AOC 53-008 is monitored within LA-SMA-10.12. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 56-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 23 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

**AOC 53-008:** Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

- Gross alpha—Plutonium-239/240 and uranium-235/236 were detected at maximum activities of 1.3 times FV and 1.2 times BV, respectively, in samples collected during the 2010 Consent Order investigation.

In summary, uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site, and uranium isotopes were detected only slightly above BVs. The other detected alpha-emitting radionuclide, plutonium-239/240 is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above FV. In addition, uranium and plutonium isotopes are excluded from the definition of adjusted gross-alpha radioactivity.



LA-SMA-10.12, Earthen Berm, L030A03010026 (photo ID 29457-1)

No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 56-2. 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 Figure 56-2.

LA-SMA-10.12 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from undisturbed background locations on Bandelier Tuff were compared to gross-alpha ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The undisturbed background UTL for gross-alpha is 1490 pCi/L; the result from 2011 is less than this value.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **56.4 Inspections and Maintenance**

RG-TA-53 recorded four storm events at LA-SMA-10.12 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 56-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22064	03-26-2012
Annual Erosion Evaluation	COMP-23369	03-26-2012
Storm Rain Event	BMP-26279	08-08-2012
Storm Rain Event	BMP-27084	08-29-2012
Storm Rain Event	BMP-28078	10-03-2012
Storm Rain Event	BMP-28607	10-19-2012
Construction	COMP-29439	11-07-2012
Construction	COMP-29624	11-13-2012
Enhanced Control Measure Verification	BMP-29457	11-19-2012
Construction	COMP-29802	11-20-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 56-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26406	Modified rock berm L030A03120021 by extending end to the northwest approximately 3–4 ft.	08-15-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-27084	Restacked rock on rock berm L030A03120017.	08-29-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-27214	Repair riprap -0007 by adding rock.	09-04-2012	6 day(s)	Maintenance conducted in timely manner.
BMP-27215	Repair rock check dam-0011 by building up and extending.	09-04-2012	6 day(s)	Maintenance conducted in timely manner.

### 56.5 Compliance Status

The Site associated with LA-SMA-10.12 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 56-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 53-008	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 11-30-2012

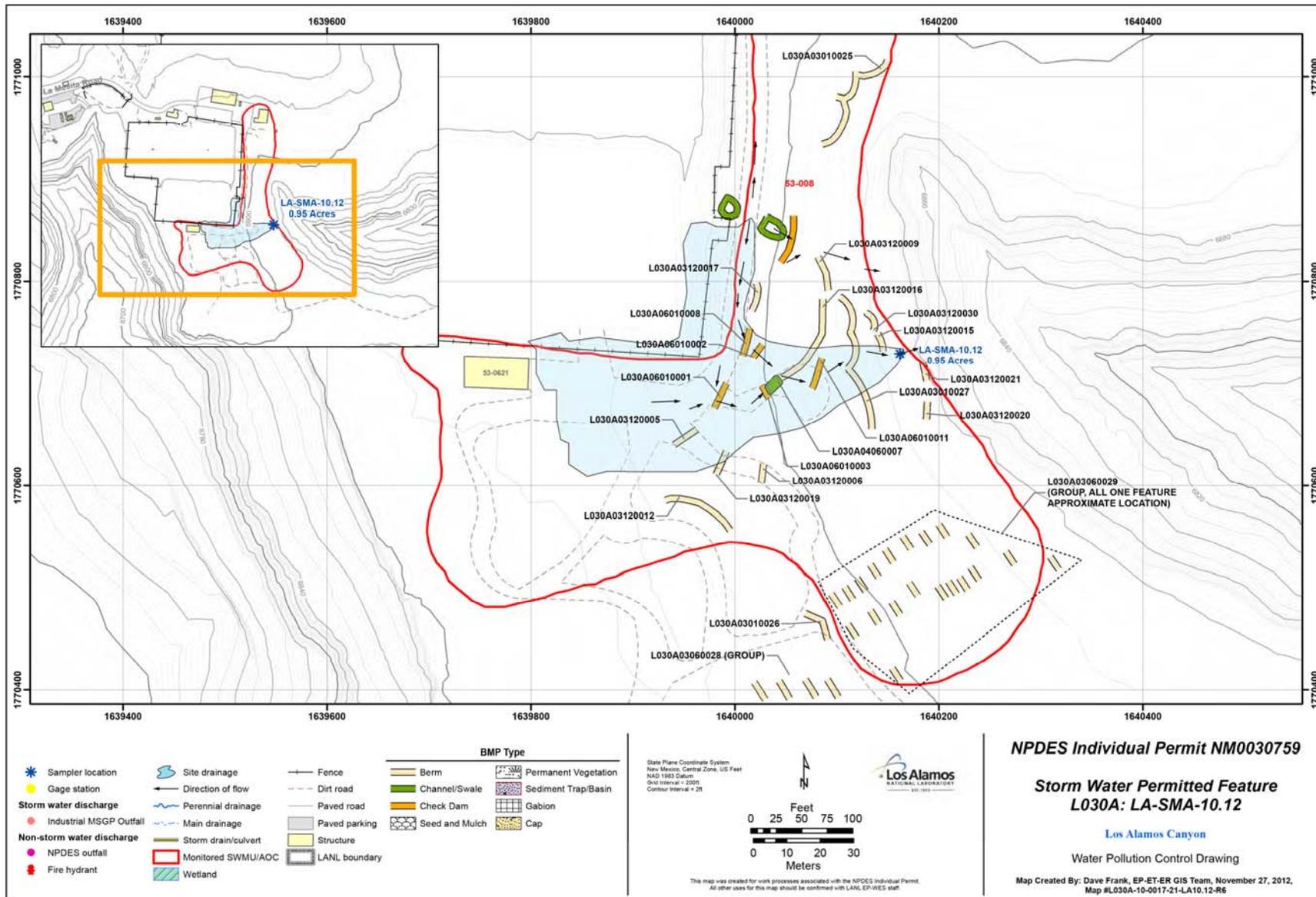
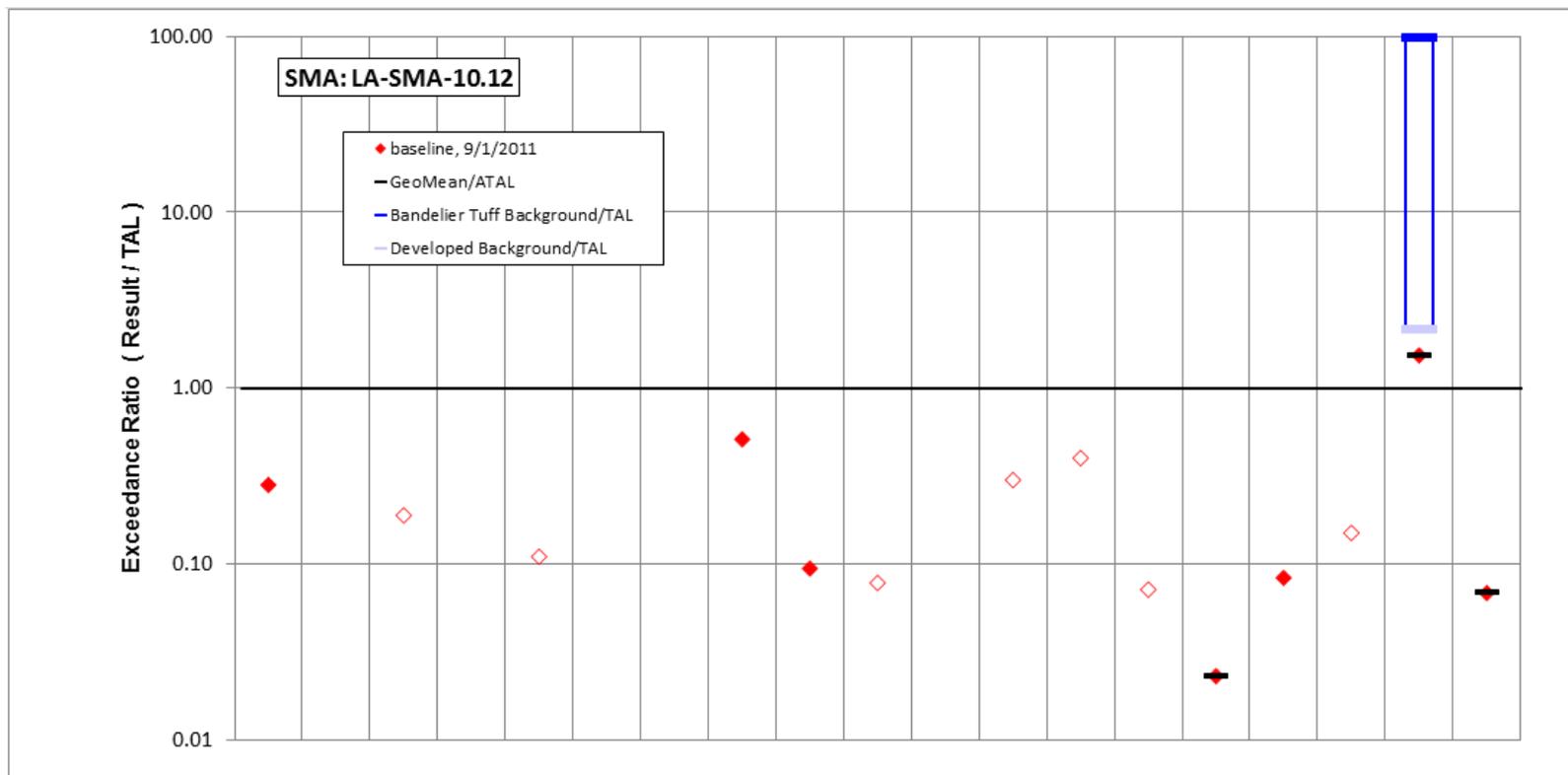


Figure 56-1 LA-SMA-10.12 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	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
<b>9/1/2011 result</b>	211	1	1.7	32	0.11	2	4.7	2.2	1.6	0.06	1.3	1.5	0.2	0.45	2.3	3.5	0.002	<b>23</b>	2.05
result / TAL	0.28	0.002	0.19	0.0064	0.11	0.01	0.0047	0.51	0.094	0.078	0.0076	0.3	0.4	0.071	0.023	0.083	0.15	<b>1.5</b>	0.068

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

Figure 56-2 Inorganic analytical results summary plot for LA-SMA-10.12

## 57.0 DP-SMA-0.3: SWMU 21-029

### 57.1 Site Descriptions

One historical industrial activity area is associated with D001, DP-SMA-0.3: Site 21-029.

SWMU 21-029 consists of a former petroleum fueling station also known as the DP Tank Farm. From January 1946 to February 1985, DP Tank Farm was the primary fueling station supporting Laboratory operations. Structures at the site included 15 underground fuel storage tanks, fill ports, valve boxes, the East and West Fill Stations, access roads, and a large earthen berm on the north side of the site extending from just east of the West Fill Station to the east end of the site. In 1988, the site was decommissioned, and all major structures were removed. A diesel fuel seep area is located in the western part of the DP Canyon stream channel approximately 120 ft north of the former West Fill Station. Another diesel fuel seep area is located in the eastern part of the DP Canyon stream channel, approximately 450 ft northeast of the Los Alamos County Fire Station and training facility. A VCA was implemented at the site in 1996 to support land transfer. A total of 1720 yd<sup>3</sup> of petroleum-contaminated soil was excavated and removed from the site. In 1998, NMED issued a compliance order requiring further characterization of the site. Additional sampling was conducted at the site in 2000 and 2001. Based on the results of this sampling, the Phase II RFI report recommended no further action. The Phase II RFI report was approved by NMED in January 2002. Potential contaminants associated with industrial materials historically managed at this Site are petroleum products.

The project map (Figure 57-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 57.2 Control Measures

There are a number of run-on sources from adjacent areas to this SMA. Run-on from DP Road travels east along the access drive north of the southern fence boundary. Run-on from DP Road also enters the site at the access point on the western portion of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 57-1).

Enhanced control measures were installed and verified on October 30, 2012, as part of corrective action.

**Table 57-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00102010015	Established Vegetation - Grasses and Shrubs			X		B
D00102020005	Established Vegetation - Forested/Needle Cast			X		CB
D00103010014	Berms - Earthen	X			X	B
D00103010022	Berms - Earthen	X			X	EC
D00103010023	Berms - Earthen		X		X	EC
D00103020011	Berms - Base Course		X		X	CB
D00103120013	Berms - Rock		X		X	CB
D00103120020	Berms - Rock	X			X	EC
D00103120021	Berms - Rock		X		X	EC
D00106010008	Check Dam - Rock		X		X	CB
D00106010009	Check Dam - Rock		X		X	CB
D00106010016	Check Dam - Rock	X			X	EC
D00106010017	Check Dam - Rock	X			X	EC
D00106010018	Check Dam - Rock		X		X	EC
D00106010019	Check Dam - Rock		X		X	EC
D00106010024	Check Dam - Rock	X			X	EC
D00107010001	Gabions - Gabions		X		X	CB
D00107020006	Gabions - Gabion Blanket	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 57.3 Storm Water Monitoring

SWMU 21-029 is monitored within DP-SMA-0.3. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figure 57-2). Analytical results from this sample yielded two TAL exceedances:

- Gross-alpha activity of 65.5 pCi/L (ATAL is 15 pCi/L), and
- Radium-226 and radium-228 activity of 68.3 pCi/L (ATAL is 30 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 21-029*: Potential contaminants associated with industrial materials historically managed at this Site are petroleum products.

- Consent Order sampling has not been performed at this Site.
- Gross alpha—Samples were collected at the Site during a 1994 RFI, 1996 VCA, and 2000 Phase II RFI. These samples were not analyzed for alpha-emitting radionuclides or radium, with the exception of 2 deep borehole samples from the Phase II RFI that were analyzed for americium-241 and uranium-235. Americium-241 and uranium-235 were not detected in the samples collected.

In summary, alpha-emitting radionuclides, radium-226, and radium-228 are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha or radium-226 and radium-228 above ATALs in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 57-2. 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 Figure 57-2.

Monitoring location DP-SMA-0.3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.
- Radium—The radium-226 and radium-228 activity UTLs from developed urban landscape storm water run-on and from background storm water containing sediment derived from Bandelier Tuff were not calculated because the number of detected values was not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, a comparison to background storm water UTL values cannot be made.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **57.4 Inspections and Maintenance**

RG038 recorded two storm events at DP-SMA-0.3 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 57-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22065	03-23-2012
Annual Erosion Evaluation	COMP-23356	03-23-2012
Storm Rain Event	BMP-24959	07-16-2012
Storm Rain Event	BMP-28648	10-17-2012
Enhanced Control Measure Verification	BMP-29300	10-30-2012
Construction	COMP-29298	10-30-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 57-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22337	Built up berm D00103020011 and reshaped spillway.	04-18-2012	26 day(s)	Maintenance conducted as soon as practicable.
BMP-22338	Built up rock check dam D00106010009 and extended ends.	04-18-2012	26 day(s)	Maintenance conducted as soon as practicable.
BMP-24959	Reshaped rock check dam D00106010008.	07-16-2012	0 day(s)	Maintenance conducted upon inspection.

### 57.5 Compliance Status

The Site associated with DP-SMA-0.3 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 57-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-029	Baseline Monitoring	Corrective Action Initiated	Initiated 05-01-2012

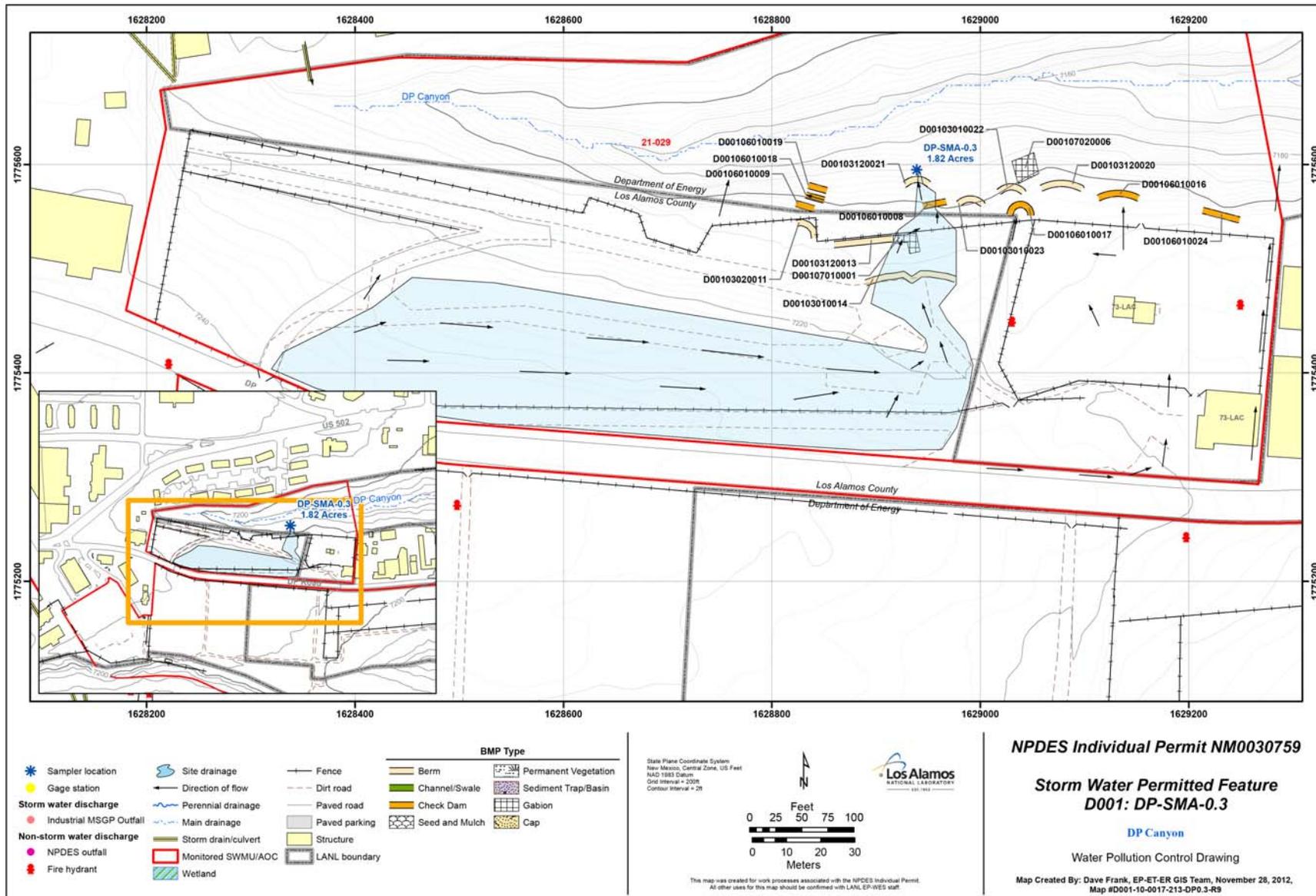
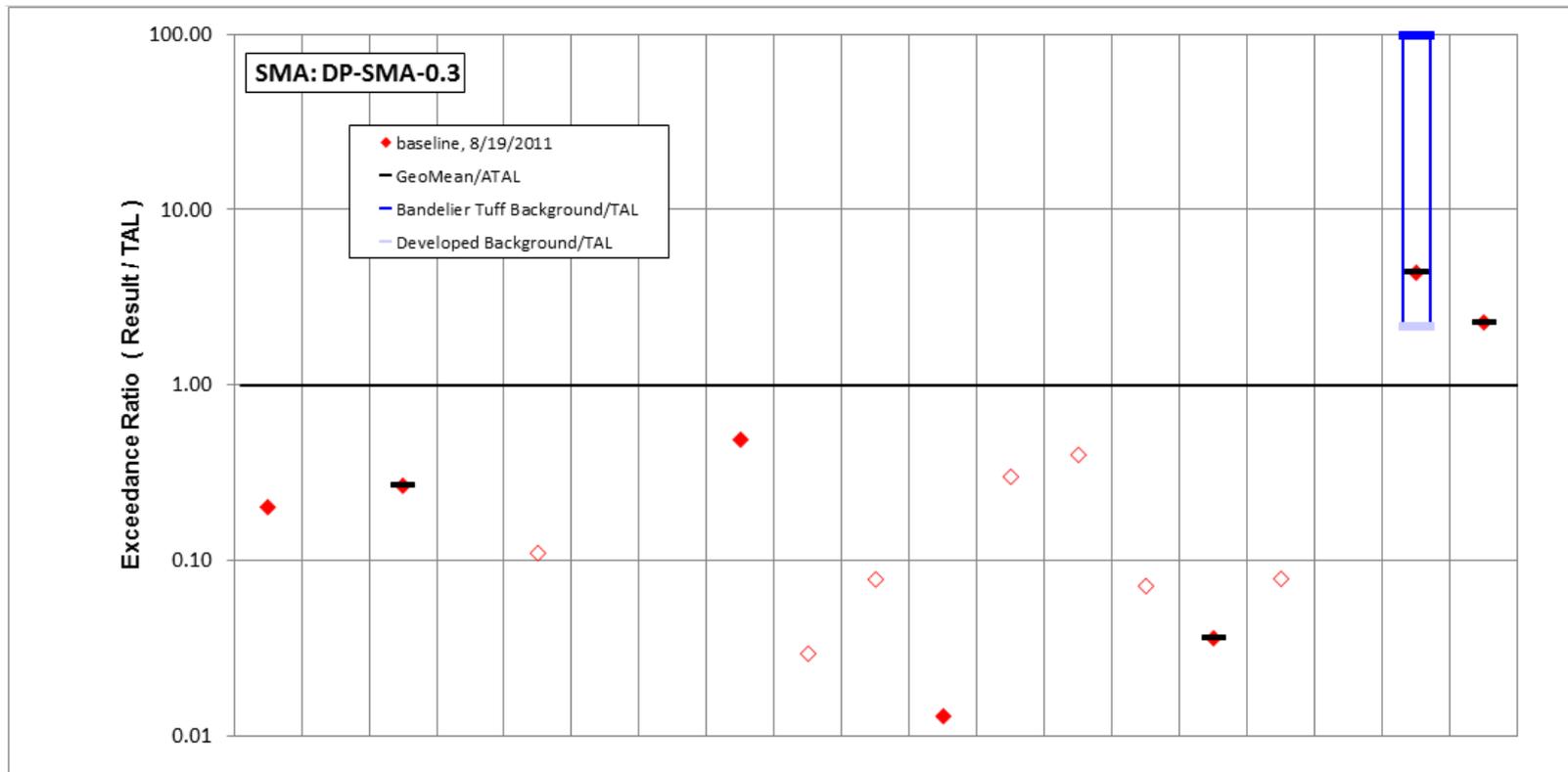


Figure 57-1 DP-SMA-0.3 location map



	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
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	-	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
<b>8/19/2011 result</b>	151	<i>1</i>	2.4	30.7	<i>0.11</i>	2	2.7	2.1	<i>0.5</i>	<i>0.06</i>	2.2	1.5	0.2	0.45	3.6	3.3	-	65.5	68.3
result / TAL	0.2	<i>0.002</i>	0.27	0.0061	<i>0.11</i>	<i>0.01</i>	0.0027	0.49	<i>0.029</i>	<i>0.078</i>	0.013	0.3	0.4	0.071	0.036	0.079	-	<b>4.4</b>	<b>2.3</b>

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

Figure 57-2 Inorganic analytical results summary plot for DP-SMA-0.3

## 58.0 DP-SMA-0.4: SWMU 21-021

### 58.1 Site Descriptions

One historical industrial activity area is associated with D002, DP-SMA-0.4: Site 21-021.

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 58-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 58.2 Control Measures

Storm water controls around this SMA divert water away from the monitored area. The paved area in the headwaters of the SMA is controlled with a vegetated swale. The area around the monitoring station is heavily vegetated, effectively mitigating runoff from the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 58-1).

**Table 58-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00202010001	Established Vegetation - Grasses and Shrubs			X		CB
D00203060005	Berms - Straw Wattles	X			X	CB
D00203060008	Berms - Straw Wattles		X		X	B
D00204040003	Channel/Swale - Culvert	X		X		CB
D00204060006	Channel/Swale - Rip Rap	X			X	CB
D00206030004	Check Dam - Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 58.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at DP-SMA-0.4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

#### 58.4 Inspections and Maintenance

RG038 recorded two storm events at DP-SMA-0.4 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 58-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23357	05-22-2012
Storm Rain Event	BMP-24960	07-17-2012
Storm Rain Event	BMP-28649	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 58-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25568	Extended area of riprap D00204060006 to the east.	07-30-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-28917	Installed new straw wattle D00203060008 in same location as existing wattle -0007, which was retired.	10-24-2012	7 day(s)	Maintenance conducted in timely manner.

#### 58.5 Compliance Status

The Sites associated with DP-SMA-0.4 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 58-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment



DP-SMA-0.4, Culvert, D00204040003 (photo ID 7413-2)

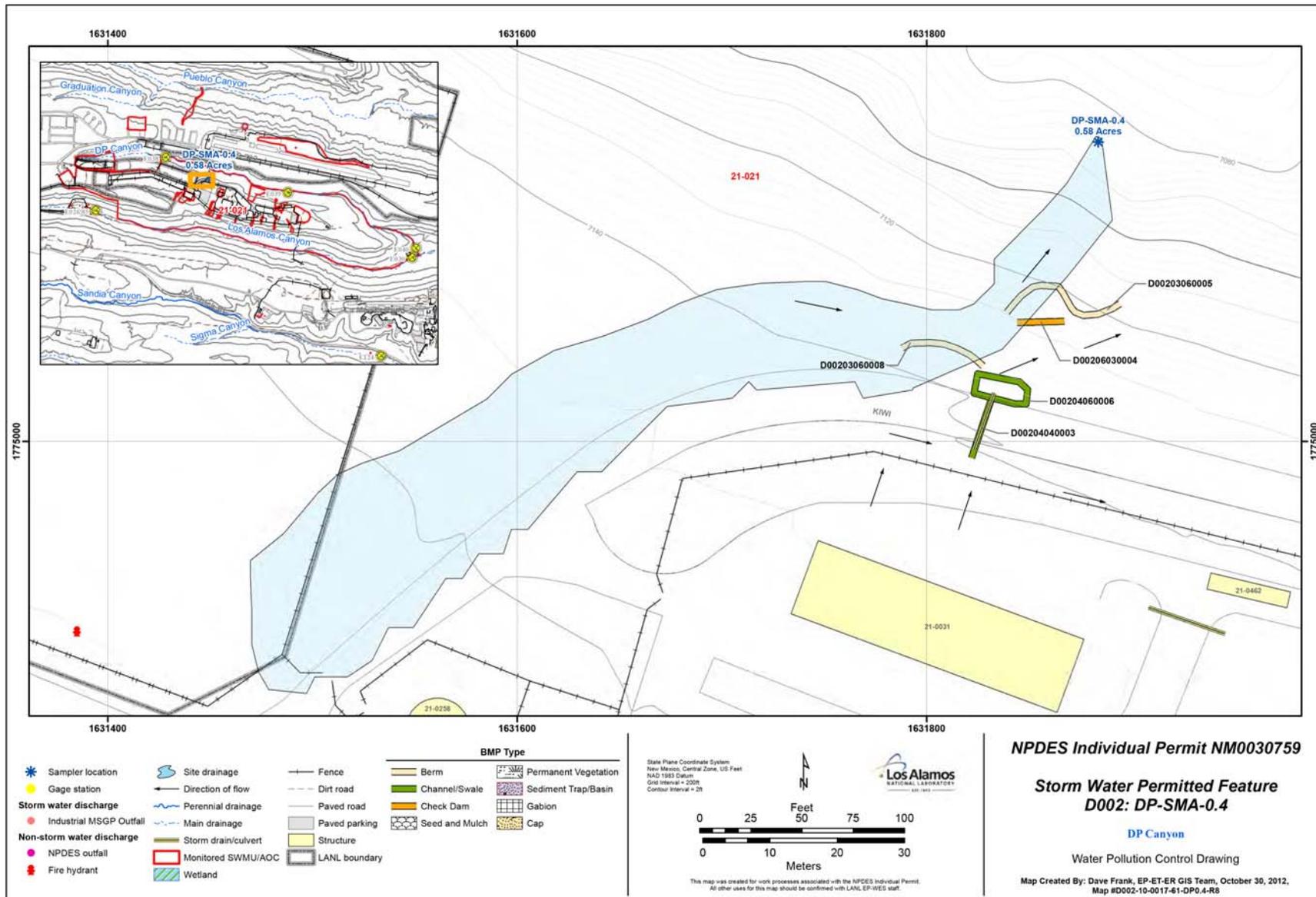


Figure 58-1 DP-SMA-0.4 location map

**59.0 DP-SMA-0.6: SWMUs 21-021 and 21-024(I)**

**59.1 Site Descriptions**

Two historical industrial activity areas are associated with D003, DP-SMA-0.6: Sites 21-021 and 21-024(I).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(I) is the location of a former outfall that received liquid waste from the floor drain of the building 21-21 mechanical room. The 3-in. cast-iron drainline ran north from building 21-21 to the outfall near the south rim of DP Canyon. During the 2007 DP Site Aggregate Area investigation, the drainline was removed and the contaminated oil and sediment were excavated from the outfall area to a depth of approximately 3 ft bgs. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm that SWMU 21-024(I) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 59-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**59.2 Control Measures**

Run-on to the Site is controlled by culverts and swales along the access road west of former building 21-021, a channel west of the Site, and curbed perimeter along the fence surrounding the foundation of the former building 21-021. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 59-1).

**Table 59-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00303010013	Berms - Earthen		X		X	CB
D00303010014	Berms - Earthen		X		X	CB
D00303020011	Berms - Base Course	X			X	CB
D00304010004	Channel/Swale - Earthen	X		X		CB
D00304040005	Channel/Swale - Culvert	X		X		CB
D00305020010	Sediment Traps and Basins - Sediment Basin		X		X	CB
D00308020012	Cap - Rock			X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 59.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at DP-SMA-0.6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 59.4 Inspections and Maintenance

RG038 recorded two storm events at DP-SMA-0.6 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 59-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23358	05-22-2012
Storm Rain Event	BMP-24961	07-17-2012
Storm Rain Event	BMP-28650	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 59-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-24961	FOD contacted with request to repair culverts.	07-17-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-28925	Re-seeded and matted berm D00303010013.	10-29-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-28926	Re-seeded and matted berm D00303010014.	10-29-2012	12 day(s)	Maintenance conducted in timely manner.

### 59.5 Compliance Status

The Sites associated with DP-SMA-0.6 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 59-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(I)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

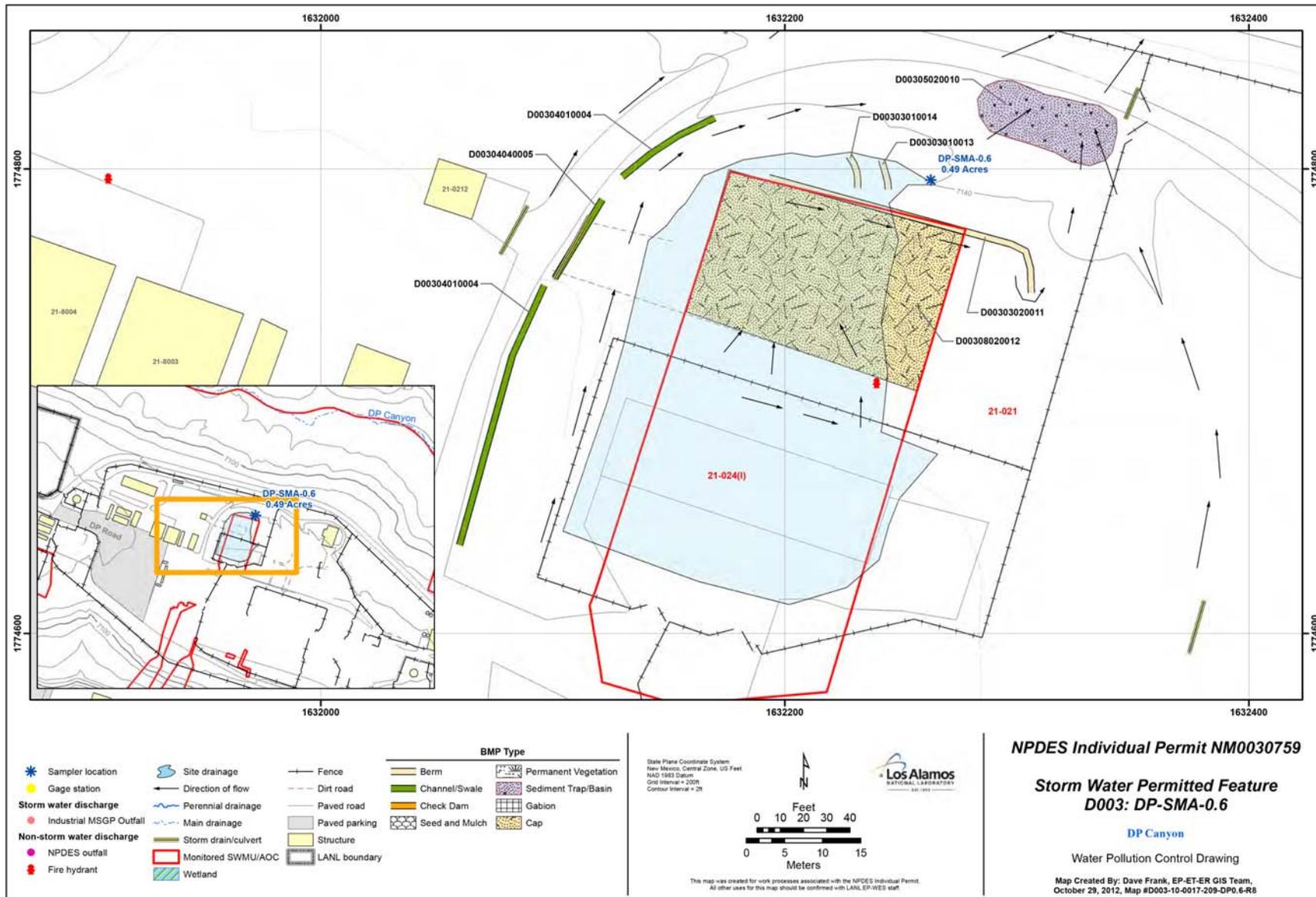


Figure 59-1 DP-SMA-0.6 location map

## 60.0 DP-SMA-1: SWMUs 21-011(k) and 21-021

### 60.1 Site Descriptions

Two historical industrial activity areas are associated with D004, DP-SMA-1: Sites 21-011(k), and 21-021. SWMU 21-011(k) consists of the former NPDES-permitted outfall for treated industrial wastewater from the former wastewater treatment plants (buildings 21-37 and 21-257) and the former drainline. The drainline carried treated wastewater from two holding tanks (structures 21-112 and 21-113) to an outfall on the north-facing slope of DP Canyon. Wastewater discharged to the outfall consisted of treated plutonium extraction process effluents and potentially contained a variety of radioactive and chemical constituents. The discharge point was the end of a 4-in. cast-iron pipe located approximately 55 ft north of the TA-21 perimeter road. A gently sloping, rocky surface extends from the former outfall approximately 30 ft north to the canyon rim, where there is a steep drop into DP Canyon. Discharges of treated industrial wastewater to the outfall were discontinued in July 1986. In January 2001, approximately 55 gal. of partially tritiated wastewater was unintentionally released from holding tank 21-113 through the SWMU 21-011(k) outfall and infiltrated the ground within 50 ft of the outfall. The drainline was plugged later that month. In 1996, an IA was implemented on the hillside below SWMU 21-011(k) to remove radioactively contaminated soil and sediment and install storm water control measures. In 2002–2003, a voluntary corrective measure was implemented to remove the outfall drainline back to tanks 21-112 and 21-113 and all contaminated soil, tuff, and sediment on the hillside and in the drainage below the former outfall until confirmation sampling results indicated no risk to recreational receptors. Excavated portion of the hillside were backfilled with clean fill, regraded, and



DP-SMA-1, Permanent Vegetation Grasses and Shrubs, D00402010003 (photo ID 8656-1)

and reseeded, and storm water controls were installed. Decision-level data indicate SWMU 21-011(k) does not pose a potential unacceptable risk to recreational receptors. The site will be recommended for a COC with controls.

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in

drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 60-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 21-011(k) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 60-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

### 60.2 Control Measures

Run-on originates on the paved access road and to a lesser extent, on the unpaved access road. Run-on controls function primarily to divert storm water from these areas around the monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 60-1).

**Table 60-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00402010003	Established Vegetation - Grasses and Shrubs			X		CB
D00403010002	Berms - Earthen	X			X	CB
D00403010011	Berms - Earthen		X		X	B
D00403020014	Berms - Base Course	X			X	B
D00403060013	Berms - Straw Wattles	X			X	B
D00403120009	Berms - Rock		X		X	CB
D00403120012	Berms - Rock		X		X	B
D00404060004	Channel/Swale - Rip Rap	X		X		CB
D00406030006	Check Dam - Juniper Bales		X		X	CB
D00406030007	Check Dam - Juniper Bales		X		X	CB
D00406030008	Check Dam - Juniper Bales		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 60.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at DP-SMA-1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 60.4 Inspections and Maintenance

RG038 recorded two storm events at DP-SMA-1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 60-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23359	05-22-2012
Storm Rain Event	BMP-24962	07-16-2012
Storm Rain Event	BMP-28651	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 60-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28920	Repaired earthen berm D00403010002 by building up low spots, reseeded and matted as necessary.	10-25-2012	8 day(s)	Maintenance conducted in timely manner.

### 60.5 Compliance Status

The Sites associated with DP-SMA-1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 60-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-011(k)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment

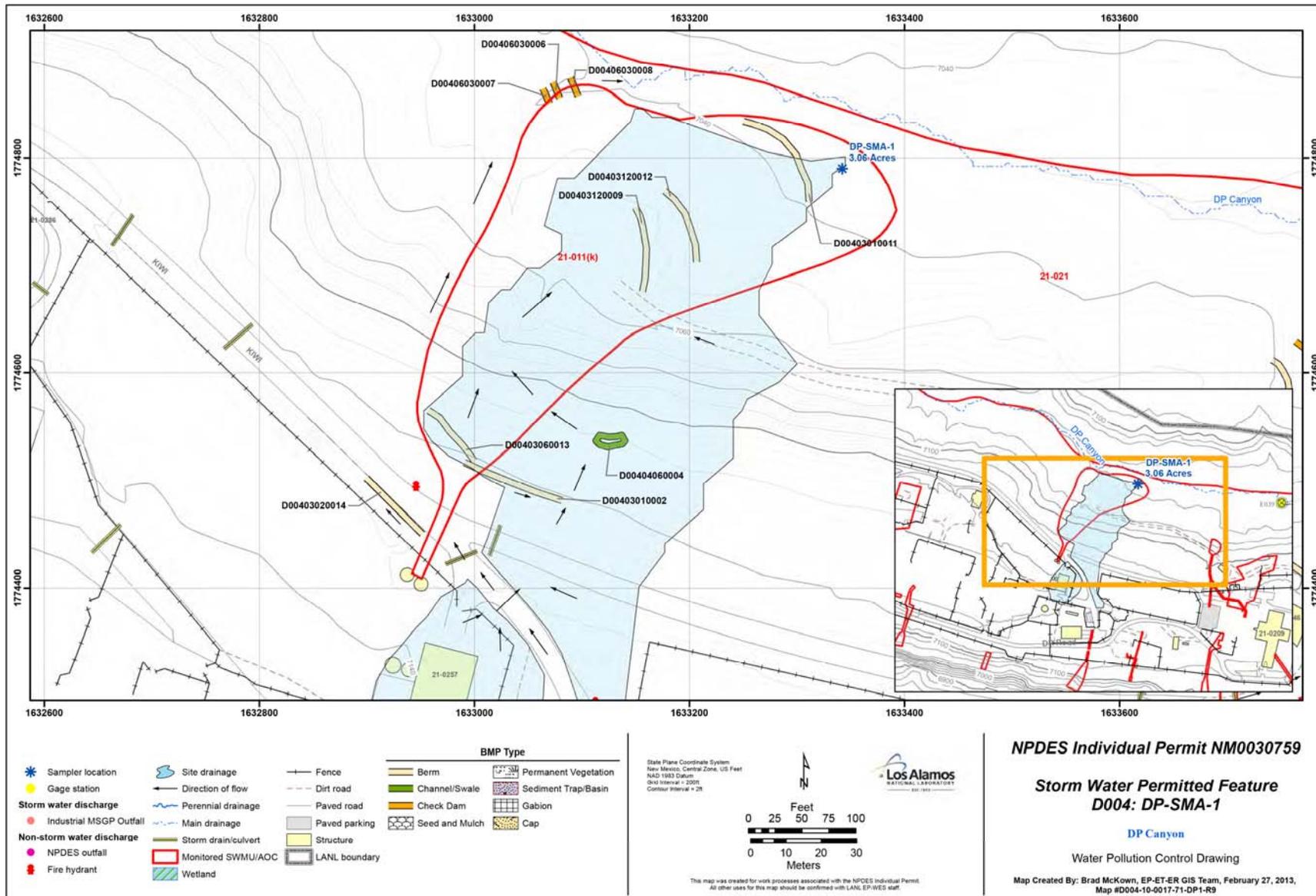


Figure 60-1 DP-SMA-1 location map

## 61.0 DP-SMA-2: SWMUs 21-021 and 21-024(h)

### 61.1 Site Descriptions

Two historical industrial activity areas are associated with D005, DP-SMA-2: Sites 21-021, and 21-024(h).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 21-024(h) is the former location of a septic system that routed sewage from building 21-151, an administrative building and shop, through a sump (structure 21-175) and then through a septic tank (structure 21-163) to the surface on the north rim of DP Mesa above DP Canyon. The septic system was constructed in 1945 at the same time



DP-SMA-2, Permanent Vegetation Grasses and Shrubs, D00502010001 (photo ID 7414-4)

building 21-151 was built. The septic system consisted of a reinforced concrete septic tank that measured 11.33 ft × 6.33 ft × 8.67 ft deep, with 6-in.-diameter VCP inlet and outlet drainlines. Building 21-151 was removed in the early 1960s, and building 21-152, a polonium-processing and high-temperature laboratory, was subsequently tied into the SWMU 21-024(h) septic tank in 1965. The septic system was decommissioned in 1966; the septic tank was filled with pea gravel and the inlet and outlet lines were grouted with concrete and left in place in 1996. The septic tank and inlet and outlet drainlines were removed in 2007. Decision-level data indicate the nature and extent of contamination are defined, and risk-screening assessment results confirm SWMU 24-024(h) does not pose a potential unacceptable risk to residential receptors. The site will be recommended for a COC without controls.

The project map (Figure 61-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 61.2 Control Measures

An unpaved road borders the southern portion of the SMA. Berms along the edge of the road are used to control run-on to the SMA. Check dams are in place to control runoff from this area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 61-1).

**Table 61-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00502010001	Established Vegetation - Grasses and Shrubs			X		CB
D00502020002	Established Vegetation - Forested/Needle Cast			X		CB
D00503010011	Berms - Earthen		X		X	B
D00503020003	Berms - Base Course	X			X	CB
D00506030007	Check Dam - Juniper Bales		X		X	CB
D00506030009	Check Dam - Juniper Bales		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**61.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at DP-SMA-2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**61.4 Inspections and Maintenance**

RG038 recorded two storm events at DP-SMA-2 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 61-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23360	05-22-2012
Storm Rain Event	BMP-24963	07-16-2012
Storm Rain Event	BMP-28652	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 61-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25491	Repaired low spots in base course berm D00503020003.	07-30-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-28918	Repaired base course berm D00503020003 by building up low spots.	10-29-2012	12 day(s)	Maintenance conducted in timely manner.

**61.5 Compliance Status**

The Sites associated with DP-SMA-2 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 61-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 21-024(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

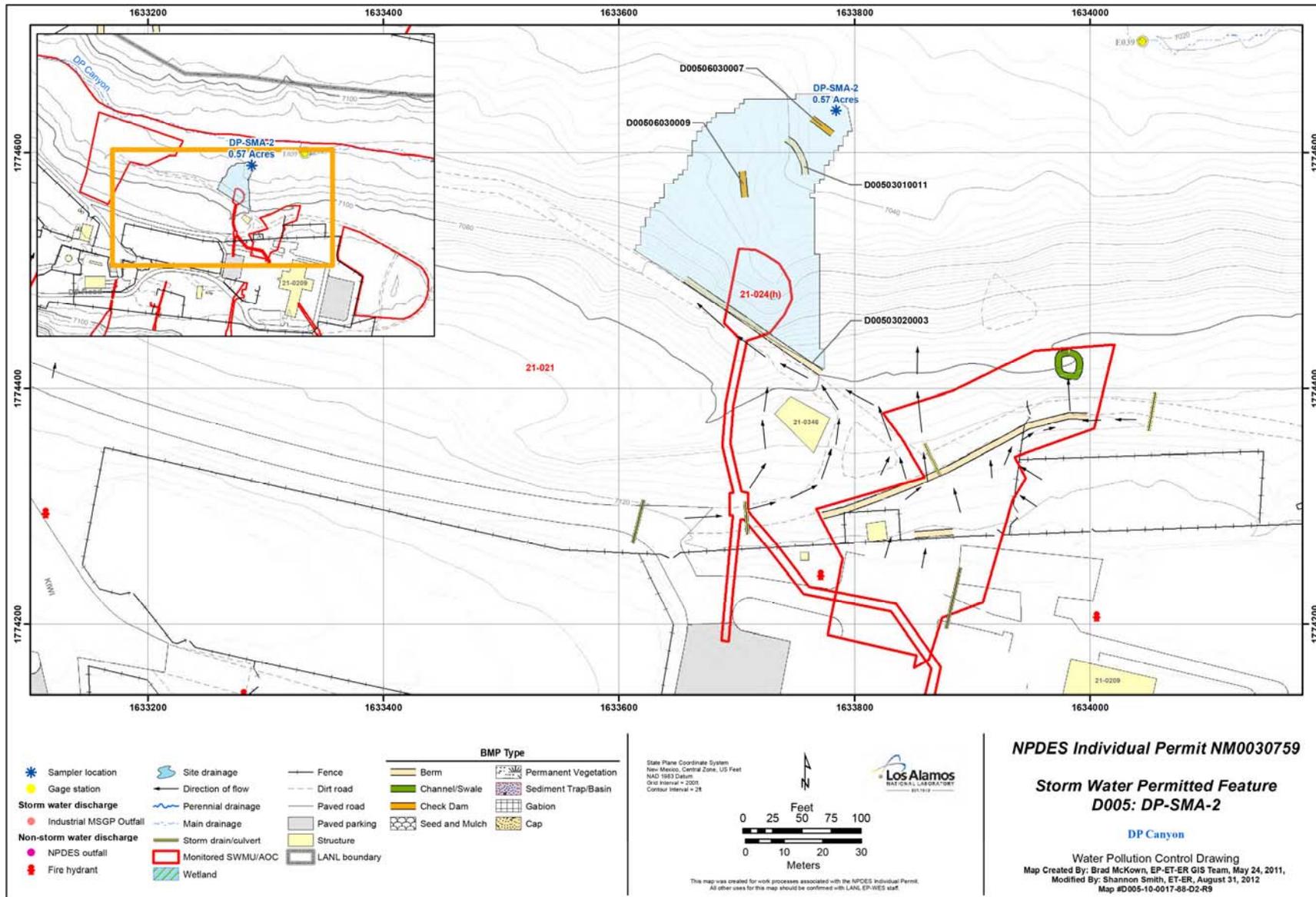


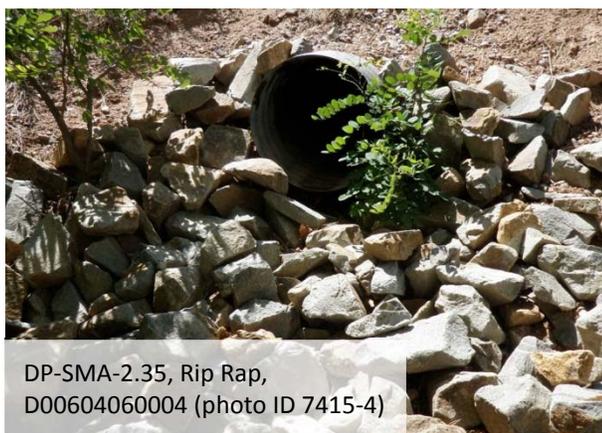
Figure 61-1 DP-SMA-2 location map

## 62.0 DP-SMA-2.35: SWMUs 21-021 and 21-024(n)

### 62.1 Site Descriptions

Two historical industrial activity areas are associated with D006, DP-SMA-2.35: Sites 21-021, and 21-024(n).

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.



DP-SMA-2.35, Rip Rap, D00604060004 (photo ID 7415-4)

SWMU 21-024(n) originally consisted of a CMP that exited building 21-155 and an outfall on the north edge of DP Canyon. Building 21-155 was constructed in 1949 and housed a warehouse and laboratory. Three additional drainlines originating from building 21-155 (or next to building 21-155) that followed a parallel path to, and west of, the SWMU 21-024(n) drainline were found in engineering drawings and during site visits in the early 1990s and were subsequently added to SWMU 21-024(n). Each of the parallel drainlines discharged to the same hillside as the

SWMU 21-024(n) outfall. Discharges from each drainline flowed downslope to a ditch on the south side of the TA-21 perimeter road. From the ditch, the path of the effluent flowed to one of two culverts (one to the east and one to the west) that crossed under the perimeter road and emptied onto the ground surface that sloped toward DP Canyon. All four drainlines were removed in 2007. Decision-level data indicate the nature and extent of contamination are not defined. Additional sampling will be conducted at SWMU 21-024(n) during the DP Aggregate Area Phase III investigation.

The project map (Figure 62-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 62.2 Control Measures

Run-on contributions from structures and paved areas have the potential to influence storm water discharges from this SMA. Baseline controls are installed to address run-on from building 21-0213 at the fence north of building 21-0213. Runoff controls below the gravel/paved pad south of the access road are installed to better manage runoff from this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 62-1).

**Table 62-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00602010001	Established Vegetation - Grasses and Shrubs			X		CB
D00603020002	Berms - Base Course		X		X	CB
D00603060006	Berms - Straw Wattles	X			X	B
D00604060004	Channel/Swale - Riprap		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 62.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at DP-SMA-2.35. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 62.4 Inspections and Maintenance

RG038 recorded two storm events at DP-SMA-2.35 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 62-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23361	05-22-2012
Storm Rain Event	BMP-24952	07-16-2012
Storm Rain Event	BMP-28641	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 62-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25490	Replaced straw wattle -0005 with new wattle D00603060006; wattle -0005 was retired.	07-25-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-28919	Repaired base course berm D00603020002 by building up and extending western end.	10-29-2012	12 day(s)	Maintenance conducted in timely manner.

**62.5 Compliance Status**

The Sites associated with DP-SMA-2.35 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 62-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 21-024(n)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

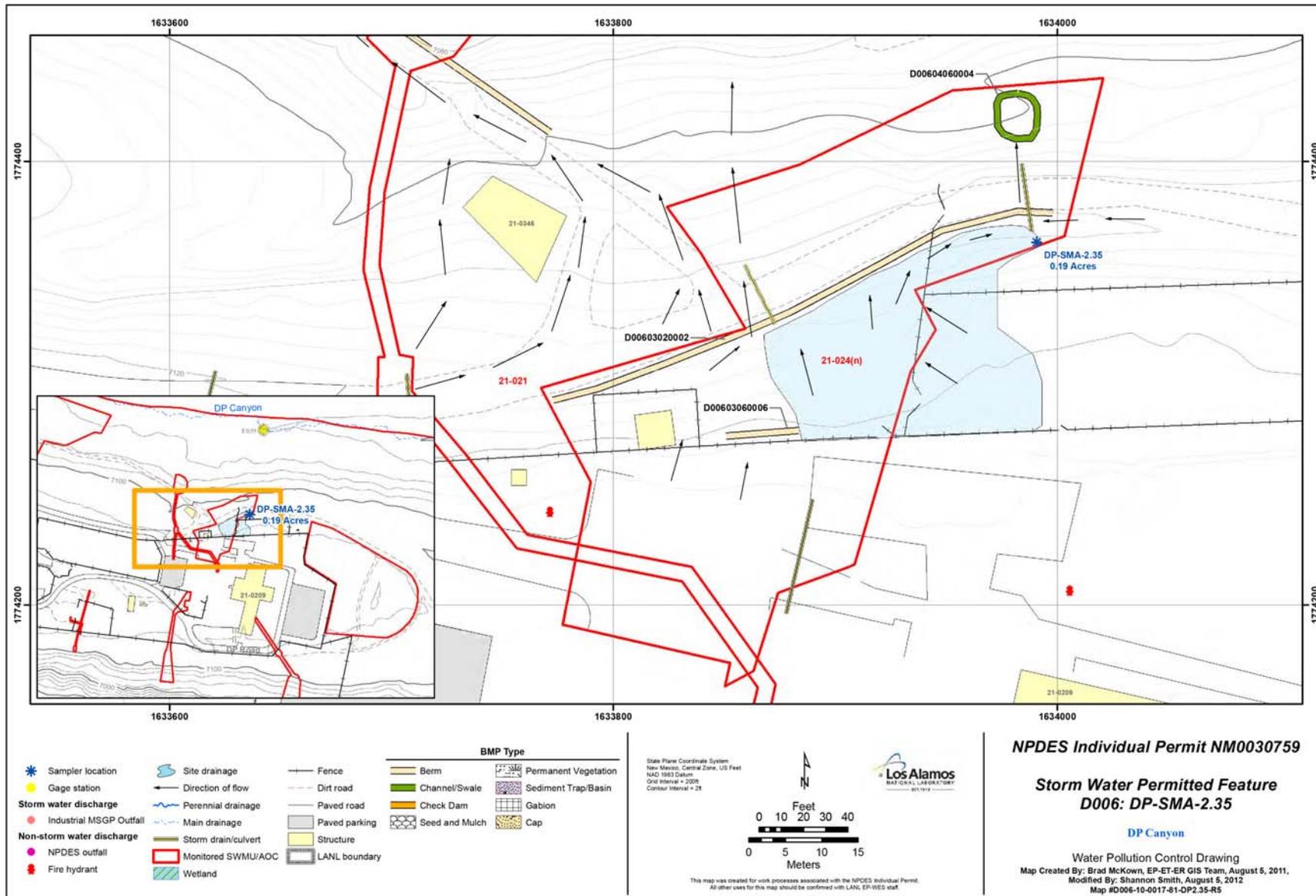


Figure 62-1 DP-SMA-2.35 location map

## **63.0 DP-SMA-3: SWMUs 21-013(c) and 21-021**

### **63.1 Site Descriptions**

Two historical industrial activity areas are associated with D007, DP-SMA-3: Sites 21-013(c), and 21-021. SWMU 21-013(c) is the former location of a surface disposal area located at the eastern end of DP Mesa. The site consisted of only construction debris, including piles of fill, asphalt, and concrete; an excavated trench; an earthen berm that contained scattered concrete, asphalt, and metal debris; and four large concrete pylons. Other surface debris included glass, scrap metal, wood, cans, paper, and plastic. It is not known when the materials were disposed of at this site. During the 1995 VCA implemented at SWMU 21-013(c), all debris was removed. Decision-level data for the site indicate no risk to residential receptors. The site will be recommended for a COC without controls. Potential contaminants associated with industrial materials historically managed at this Site are metals and asphalt.

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 63-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **63.2 Control Measures**

The area is elevated reducing the impact from run-on from surrounding areas. The Site is partially vegetated, and there is no significant runoff at this Permitted Feature. Existing controls are in place to reduce the sediment loading and velocity of storm water discharge from this area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 63-1).

Enhanced controls were installed and certified on September 20, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 63-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00702010001	Established Vegetation - Grasses and Shrubs			X		CB
D00703010016	Berms - Earthen		X		X	EC
D00703010017	Berms - Earthen		X		X	EC
D00703010018	Berms - Earthen		X		X	EC
D00703010019	Berms - Earthen		X		X	EC
D00703010020	Berms - Earthen		X		X	EC
D00703010021	Berms - Earthen		X		X	EC
D00703010022	Berms - Earthen		X		X	EC
D00703120015	Berms - Rock		X		X	CB
D00706010008	Check Dam - Rock		X		X	CB
D00706010009	Check Dam - Rock		X		X	CB
D00706010010	Check Dam - Rock		X		X	CB
D00706010011	Check Dam - Rock		X		X	CB
D00706010012	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 63.3 Storm Water Monitoring

SWMUs 21-013(c) and 21-021 are monitored within DP-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2011 (Figure 63-2). Analytical results from this sample yielded three TAL exceedances:

- Aluminum concentration of 1870 µg/L (MTAL is 750 µg/L),
- Copper concentration of 5.5 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 174 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 21-013(c):* Potential contaminants associated with industrial materials historically managed at this Site are metals and asphalt.

- Aluminum—Aluminum was detected at a maximum concentration 1.2 times BV in samples collected from SWMU 21-013(c) during the 2006 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 1.3 times BV in samples collected from SWMU 21-013(c) during the 2006 Consent Order investigation.

- Gross alpha—Uranium was detected at a maximum concentration 3.1 times BV in samples collected from SWMU 21-013(c) during the 2006 Consent Order investigation. Americium-241 and plutonium-239 were detected at maximum activities of 6.6 times and 13 times FVs, respectively, in samples collected during the 2006 Consent Order investigation.

In summary, aluminum and copper may have been associated with industrial materials historically managed at the Site, but these materials have been removed and aluminum and copper were detected only slightly above BVs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Americium-241 and plutonium-239, which are alpha-emitting isotopes, were detected above FVs and uranium, which has alpha-emitting isotopes, was detected above BV. Americium, plutonium, and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL.

*SWMU 21-021:* Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

- Consent Order sampling has not been performed at this Site.
- Aluminum—Aluminum was detected at a maximum concentration 2.9 times BV in RFI samples collected in 1992.
- Copper—Copper was detected at a maximum concentration 3.9 times BV in RFI samples collected in 1992.
- Gross alpha—Uranium was detected at a maximum concentration 7.8 times BV in RFI sample collected in 1992. Americium-241, plutonium-238, and plutonium-239 were detected at maximum activities of 270 times, 810 times, and 760 times FVs, respectively, in RFI samples collected in 1992.

In summary, aluminum and copper are not known to have been associated with industrial materials historically managed at the Site but were detected above BVs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Americium-241 and plutonium-239, which are alpha-emitting isotopes, were detected substantially above FVs and uranium, which has alpha-emitting isotopes, was detected above BVs. Americium, plutonium, and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL.



DP-SMA-3, Rock Berm,  
D00703120015 (photo ID 23657-9)

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. 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 63-2. 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 Figure 63-2.

Potential influence of background material on storm water TAL exceedances include the following: monitoring location DP-SMA-3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these two values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

The monitoring station was relocated on July 18, 2012, and is situated approximately 500 ft south and east of the original sampler location, downstream of the newly installed enhanced controls. The new location of the sampler is positioned below all enhanced controls and will provide more representative samples of storm water discharge from SWMUs 21-013(c) and 21-021. Sampler coordinates and SMA drainage area are updated in Attachment 4.

#### **63.4 Inspections and Maintenance**

RG038 recorded two storm events at DP-SMA-3 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 63-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23362	05-15-2012
Construction	COMP-23616	05-22-2012
Construction	COMP-23656	05-29-2012
Construction	COMP-23961	06-04-2012
Enhanced Control Measure Verification	BMP-23657	06-07-2012
Storm Rain Event	BMP-24964	07-12-2012
Storm Rain Event	BMP-28653	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 63-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-24964	Reshaped rock check dams D00706010010, -0011, and -0012. Cleared pine needles from rock check dam D00706010011.	07-12-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-28921	Modified rock check dam D00706010008 by adding rock to build up and extend.	10-31-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-28922	Modified rock check dam D00706010009 by adding rock to build up and extend.	10-31-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-28923	Modified rock berm D00703120015 by adding rock to build up and extend.	10-31-2012	14 day(s)	Maintenance conducted in timely manner.

### 63.5 Compliance Status

The Sites associated with DP-SMA-3 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 63-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-013(c)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-30-2012
SWMU 21-021	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-30-2012

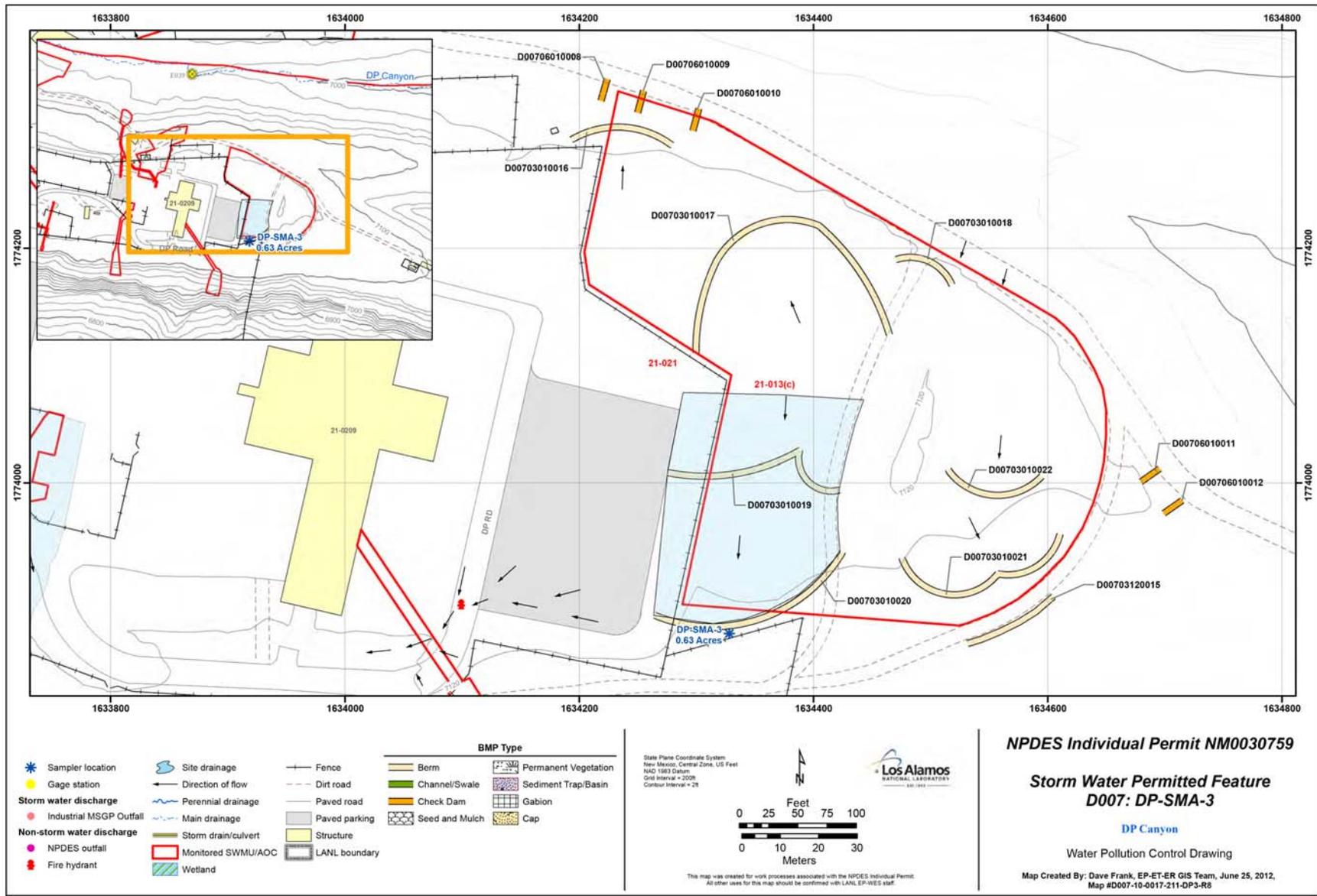
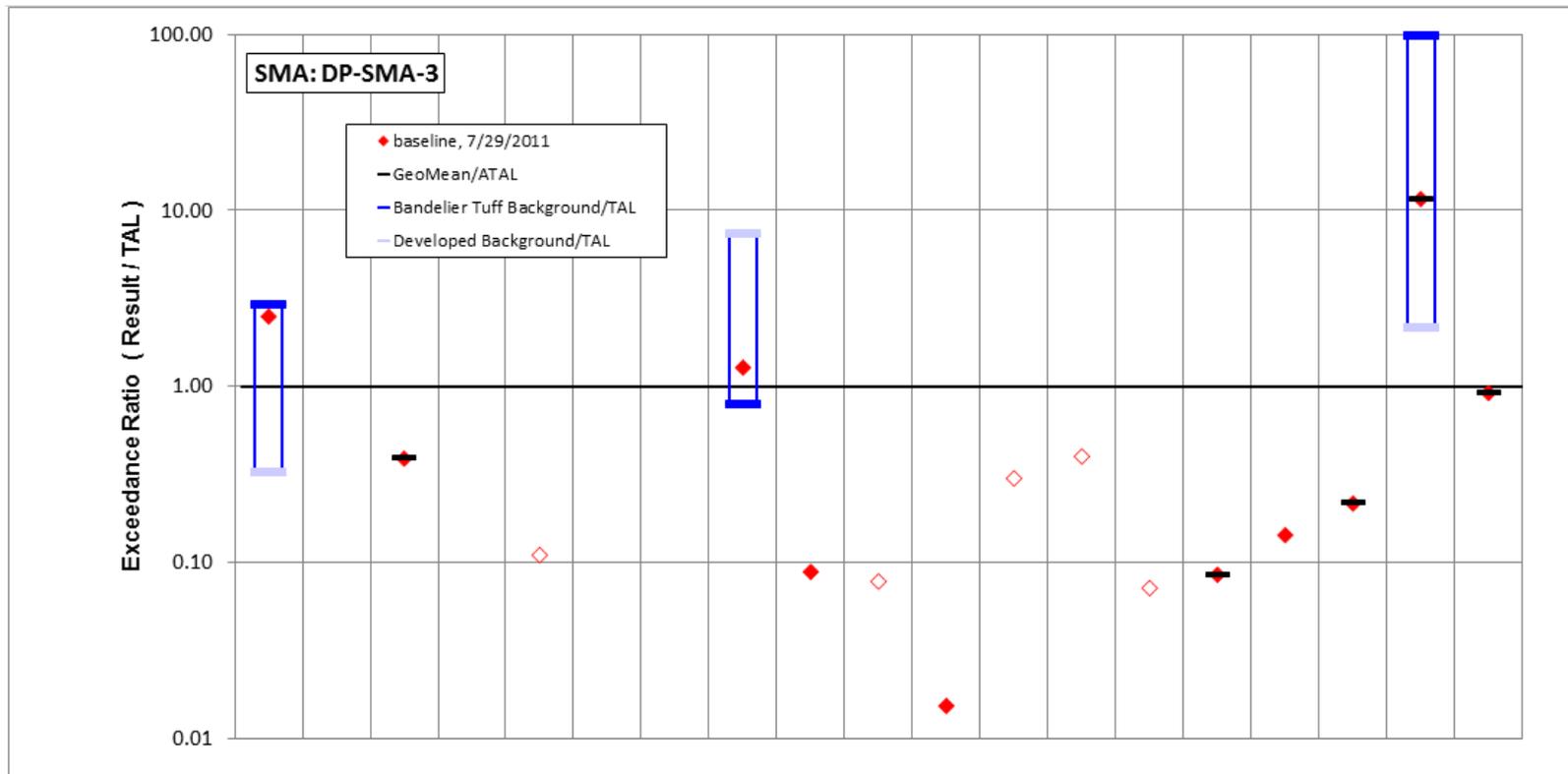


Figure 63-1 DP-SMA-3 location map



	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
7/29/2011 result	<b>1870</b>	<i>1</i>	3.5	24.9	<i>0.11</i>	2	2.7	<b>5.5</b>	1.5	<i>0.06</i>	2.6	1.5	0.2	0.45	8.5	6	0.0022	<b>174</b>	27.5
result / TAL	<b>2.5</b>	<i>0.002</i>	0.39	0.005	<i>0.11</i>	<i>0.01</i>	0.0027	<b>1.3</b>	0.088	<i>0.078</i>	0.015	0.3	0.4	0.071	0.085	0.14	0.22	<b>12</b>	0.92

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

**Figure 63-2 Inorganic analytical results summary plot for DP-SMA-3**

## 64.0 DP-SMA-4: SWMU 21-021

### 64.1 Site Descriptions

One historical industrial activity area is associated with D008, DP-SMA-4: Site 21-021.

SWMU 21-021 consists of soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m<sup>2</sup>. Radionuclides were known to have been released from stacks throughout TA-21. In 1992, surface samples were collected from 363 locations throughout TA-21 and in drainages around TA-21 and submitted for analysis of radionuclides. Sampling data showed americium-241 and plutonium-239 detected above BVs/FVs. There is no documentation of nonradioactive chemical releases associated with SWMU 21-021. The DP Site Aggregate Area investigation work plan indicated the investigation of SWMU 21-021 was complete and no additional investigations were required. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, a request for a COC is not expected to be made until investigation of all other TA-21 sites is complete. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 64-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 64.2 Control Measures

Run-on from the unpaved access road follows a natural drainage channel west of the SMA and does not impact the monitoring area. Vegetation is thick and storm water flow is largely overland. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 64-1).

**Table 64-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
D00801010002	Seed and Mulch - Seed and Wood Mulch			X		CB
D00802010001	Established Vegetation - Grasses and Shrubs			X		CB
D00802020004	Established Vegetation - Forested/Needle Cast			X		CB
D00803010006	Berms - Earthen	X			X	CB
D00803010007	Berms - Earthen		X		X	CB
D00806010008	Check Dam - Rock	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 64.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at DP-SMA-4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 64.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at DP-SMA-4 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 64-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23363	05-22-2012
Storm Rain Event	BMP-26281	08-07-2012
Storm Rain Event	BMP-27086	08-28-2012
Storm Rain Event	BMP-28080	10-01-2012
Storm Rain Event	BMP-28621	10-17-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 64-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27185	Built up low spots, reseeded, and rematted berm D00803010006.	09-06-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-27186	Built up low spots, reseeded, and rematted berm D00803010007.	09-06-2012	9 day(s)	Maintenance conducted in timely manner.

### 64.5 Compliance Status

The Sites associated with DP-SMA-4 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 64-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 21-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment

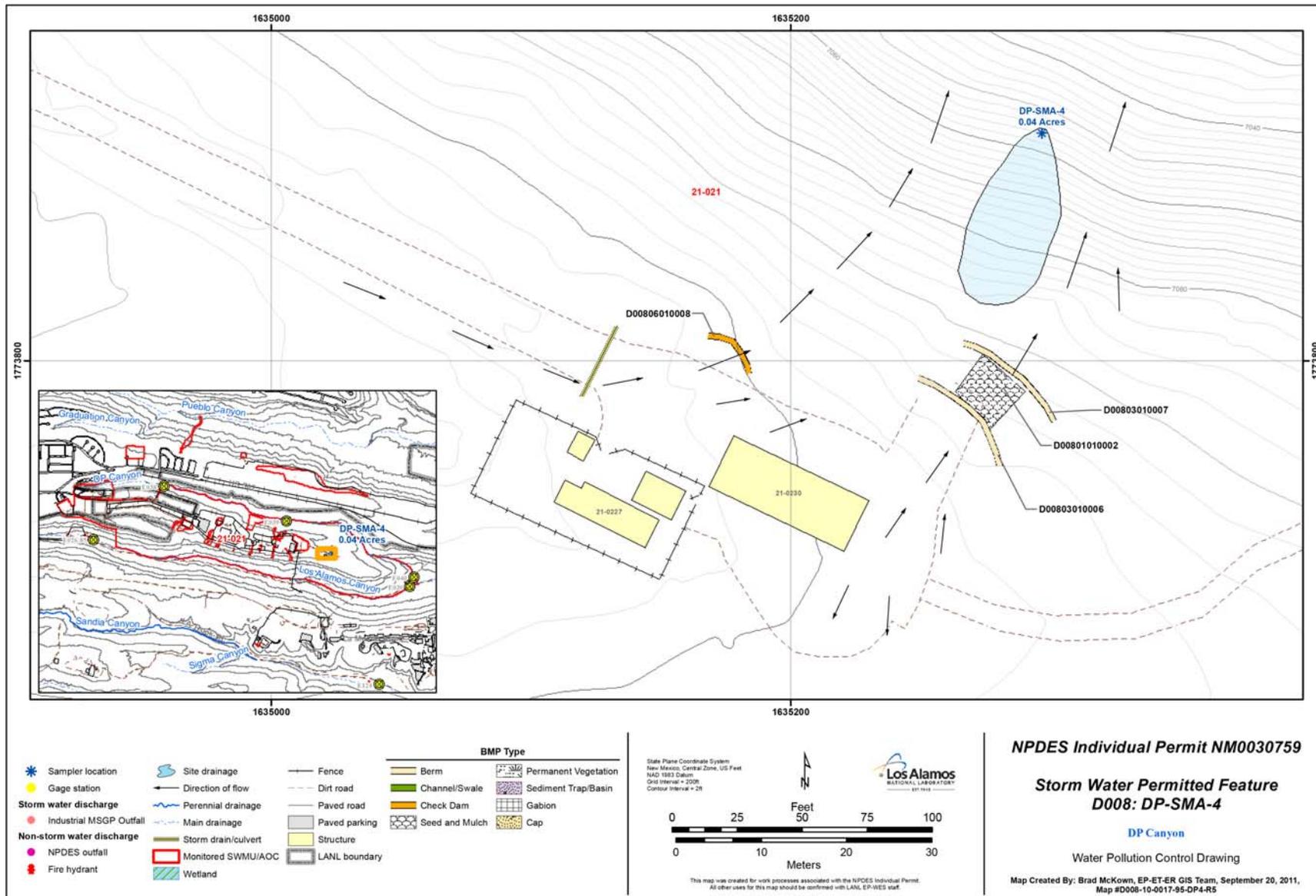


Figure 64-1 DP-SMA-4 location map

## Attachment 1 Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.201	04-17-2012	LA-SMA-5.02	Retire Control - Lifecycle Expired Control ID: L012A-01-01-0007	T	CCN - 22727
V1.202	04-16-2012	LA-SMA-6.395	Retire Control - Lifecycle Expired Control ID: L027-01-01-0006	T	CCN - 22703
V1.203	04-30-2012	LA-SMA-6.395	Map Revision (R4)	T	CCN - 22703
V1.204	05-16-2012	R-SMA-0.5	Certificate of Completion Issued for Certificates of Completion, One Solid Waste Management Unit and One Area of Concern in the Guaje/Barranca/Rendija Canyons Aggregate Area, EPA ID #NM0890010515, HWB-LANL-12-008	D	ERID-520388
V1.205	05-16-2012	R-SMA-2.05	Certificate of Completion Issued for Certificate of Completion Issued RE: Certificates of Completion, One Solid Waste Management Unit and One Area of Concern in the Guaje/Barranca/Rendija Canyons Aggregate Area, EPA ID #NM0890010515, HWB-LANL-12-008	D	ERID-520388
V1.205	05-16-2012	R-SMA-2.05	Certificate of Completion Issued for Certificate of Completion Issued RE: Certificates of Completion, One Solid Waste Management Unit and One Area of Concern in the Guaje/Barranca/Rendija Canyons Aggregate Area, EPA ID #NM0890010515, HWB-LANL-12-008	D	ERID-520388
V1.206	05-16-2012		Add Reference Document Certificate of Completion Issued for Certificates of Completion, One Solid Waste Management Unit and One Area of Concern in the Guaje/Barranca/Rendija Canyons Aggregate Area, EPA ID #NM0890010515, HWB-LANL-12-008	D	ERID-520388
V1.207	05-22-2012	DP-SMA-1	Retire Control - Lifecycle Expired Control ID: D004-01-01-0010	T	CCN - 23647
V1.208	05-29-2012	DP-SMA-1	Map Revision (R8)	T	CCN - 23647
V1.209	05-09-2012	LA-SMA-5.01	Retire Control - Lifecycle Expired Control ID: L012-01-01-0005	T	CCN - 23624
V1.210	05-29-2012	LA-SMA-5.01	Map Revision (R5)	T	CCN - 23624
V1.211	03-28-2012	ACID-SMA-2	Retire Control - Lifecycle Expired Control ID: P002-01-01-0014	T	CCN - 23612
V1.212	05-29-2012	ACID-SMA-2	Map Revision (R4)	T	CCN - 23612

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.213	03-28-2012	ACID-SMA-2.1	Retire Control - Lifecycle Expired Control ID: P003-01-01-0016	T	CCN - 23608
V1.214	05-29-2012	ACID-SMA-2.1	Map Revision (R5)	T	CCN - 23608
V1.215	05-22-2012	DP-SMA-0.4	Retire Control - Lifecycle Expired Control ID: D002-04-04-0002	T	CCN - 23646
V1.216	05-29-2012	DP-SMA-0.4	Map Revision (R6)	T	CCN - 23646
V1.217	05-24-2012	LA-SMA-1.25	Retire Control - Lifecycle Expired Control ID: L005-07-01-0002	T	CCN - 23662
V1.218	06-12-2012	LA-SMA-1.25	Map Revision (R5)	T	CCN - 23662
V1.219	04-18-2012	LA-SMA-1	Retire Control - Lifecycle Expired Control ID: L003-01-01-0009	T	CCN - 23115
V1.220	04-18-2012	LA-SMA-1	Retire Control - Lifecycle Expired Control ID: L003-03-06-0013	T	CCN - 23115
V1.221	05-15-2012	LA-SMA-1	New Control - Routine/Replacement Control ID: L003-03-10-0015	T	CCN - 23115
V1.222	06-13-2012	LA-SMA-1	Map Revision (R6)	T	CCN - 23115
V1.223	05-22-2012	LA-SMA-0.9	Retire Control - Lifecycle Expired Control ID: L002-03-10-0010	T	CCN - 23649
V1.224	06-12-2012	LA-SMA-0.9	Map Revision (R9)	T	CCN - 23649
V1.225	05-22-2012	LA-SMA-6.27	Retire Control - Lifecycle Expired Control ID: L021-01-01-0003	T	CCN - 23650
V1.226	06-12-2012	LA-SMA-6.27	Map Revision (R7)	T	CCN - 23650
V1.227	05-22-2012	LA-SMA-6.3	Retire Control - Lifecycle Expired Control ID: L022-01-01-0007	T	CCN - 23651
V1.228	06-12-2012	LA-SMA-6.3	Map Revision (R7)	T	CCN - 23651
V1.229	05-22-2012	LA-SMA-6.34	Retire Control - Damaged and/or Replaced Control ID: L024-03-04-0004	T	CCN - 23654
V1.230	06-12-2012	LA-SMA-6.34	Map Revision (R4)	T	CCN - 23654
V1.231	05-22-2012	LA-SMA-9	Retire Control - Lifecycle Expired Control ID: L029-01-01-0006	T	CCN - 23655
V1.232	05-22-2012	LA-SMA-9	Retire Control - Lifecycle Expired Control ID: L029-01-01-0007	T	CCN - 23655
V1.233	05-22-2012	LA-SMA-9	Retire Control - Lifecycle Expired Control ID: L029-01-01-0008	T	CCN - 23655
V1.234	06-12-2012	LA-SMA-9	Map Revision (R5)	T	CCN - 23655
V1.235	05-23-2012	P-SMA-3.05	New Control - Augment Existing Control ID: P009-01-01-0011	T	CCN - 23957
V1.236	06-13-2012	P-SMA-3.05	Map Revision (R4)	T	CCN - 23957

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.237	06-04-2012	LA-SMA-6.5	Retire Control - Lifecycle Expired Control ID: L028-01-01-0005	T	CCN - 23994
V1.238	06-04-2012	LA-SMA-6.5	New Control - Routine/Replacement Control ID: L028-01-01-0007	T	CCN - 23994
V1.239	06-06-2012	LA-SMA-6.5	Map Revision (R5)	T	CCN - 23994
V1.240	06-05-2012	LA-SMA-2.1	Retire Control - Damaged and/or Replaced Control ID: L006-01-06-0008	T	CCN - 24168
V1.241	06-05-2012	LA-SMA-2.1	New Control - Routine/Replacement Control ID: L006-01-06-0009	T	CCN - 24168
V1.242	06-12-2012	LA-SMA-2.1	Map Revision (R7)	T	CCN - 24168
V1.243	07-25-2012	DP-SMA-2.35	Retire Control - Damaged and/or Replaced Control ID: D006-03-06-0005	T	CCN - 26018
V1.244	07-25-2012	DP-SMA-2.35	New Control - Routine/Replacement Control ID: D006-03-06-0006	T	CCN - 26018
V1.245	08-05-2012	DP-SMA-2.35	Map Revision (R5)	T	CCN - 26018
V1.246	07-23-2012	LA-SMA-6.31	Retire Control - Damaged and/or Replaced Control ID: L022A-03-06-0006	T	CCN - 26055
V1.247	07-23-2012	LA-SMA-6.31	New Control - Routine/Replacement Control ID: L022A-03-06-0007	T	CCN - 26055
V1.248	08-05-2012	LA-SMA-6.31	Map Revision (R8)	T	CCN - 26055
V1.249	07-23-2012	LA-SMA-6.27	Retire Control - Damaged and/or Replaced Control ID: L021-03-06-0008	T	CCN - 26056
V1.250	07-23-2012	LA-SMA-6.27	New Control - Routine/Replacement Control ID: L021-03-06-0010	T	CCN - 26056
V1.251	08-05-2012	LA-SMA-6.27	Map Revision (R8)	T	CCN - 26056
V1.252	07-17-2012	DP-SMA-0.6	Map Revision (R7)	T	CCN - 25591
V1.253	08-06-2012	DP-SMA-0.4	Map Revision (R7)	T	CCN - 26074
V1.254	07-26-2012	LA-SMA-1	Retire Control - Damaged and/or Replaced Control ID: L003-03-06-0006	T	CCN - 24706
V1.255	07-26-2012	LA-SMA-1	Retire Control - Damaged and/or Replaced Control ID: L003-03-06-0007	T	CCN - 24706
V1.256	07-26-2012	LA-SMA-1	New Control - Routine/Replacement Control ID: L003-03-06-0016	T	CCN - 24706
V1.257	07-26-2012	LA-SMA-1	New Control - Routine/Replacement Control ID: L003-03-06-0017	T	CCN - 24706
V1.258	08-02-2012	LA-SMA-1	Retire Control - Damaged and/or Replaced Control ID: L003-03-12-0012	T	CCN - 24706
V1.259	08-02-2012	LA-SMA-1	New Control - Routine/Replacement Control ID: L003-03-12-0018	T	CCN - 24706

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V1.260	08-07-2012	LA-SMA-1	Map Revision (R7)	T	CCN - 24706
V1.261	06-07-2012	DP-SMA-3	Retire Control - Damaged and/or Replaced Control ID: D007-03-02-0014	T	CCN - 23623
V1.262	06-07-2012	DP-SMA-3	Retire Control - Damaged and/or Replaced Control ID: D007-06-01-0013	T	CCN - 23623
V1.263	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0016	T	CCN - 23623
V1.264	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0017	T	CCN - 23623
V1.265	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0018	T	CCN - 23623
V1.266	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0019	T	CCN - 23623
V1.267	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0020	T	CCN - 23623
V1.268	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0021	T	CCN - 23623
V1.269	06-07-2012	DP-SMA-3	New Control - Corrective Action Control ID: D007-03-01-0022	T	CCN - 23623
V1.270	06-11-2012	DP-SMA-3	Map Revision (R7)	T	CCN - 23623
V1.271	07-16-2012	DP-SMA-3	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 23623
V1.272	07-16-2012	DP-SMA-3	SMA Boundary Modification	T	CCN - 23623
V1.273	06-25-2012	DP-SMA-3	Map Revision (R8)	T	CCN - 23623
V1.274	07-11-2012	LA-SMA-1.25	Retire Control - Damaged and/or Replaced Control ID: L005-03-12-0006	T	CCN - 25352
V1.275	07-11-2012	LA-SMA-1.25	New Control - Corrective Action Control ID: L005-03-01-0007	T	CCN - 25352
V1.276	07-12-2012	LA-SMA-1.25	Map Revision (R6)	T	CCN - 25352
V1.277	05-21-2012	LA-SMA-5.33	Retire Control - Damaged and/or Replaced Control ID: L016-03-10-0005	T	CCN - 23615
V1.278	05-21-2012	LA-SMA-5.33	SMA Boundary Modification	T	CCN - 23615
V1.279	05-21-2012	LA-SMA-5.33	New Control - Corrective Action Control ID: L016-01-04-0013	T	CCN - 23615
V1.280	05-22-2012	LA-SMA-5.33	Map Revision (R8)	T	CCN - 23615
V1.281	07-05-2012	LA-SMA-5.33	Retire Control - Damaged and/or Replaced Control ID: L016-03-04-0011	T	CCN - 23615
V1.282	07-05-2012	LA-SMA-5.33	Retire Control - Damaged and/or Replaced Control ID: L016-03-04-0012	T	CCN - 23615
V1.283	07-12-2012	LA-SMA-5.31	Retire Control - Damaged and/or Replaced Control ID: L015-03-06-0007	T	CCN - 25462

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.284	07-12-2012	LA-SMA-5.31	Retire Control - Damaged and/or Replaced Control ID: L015-03-06-0008	T	CCN - 25462
V1.285	07-12-2012	LA-SMA-5.31	Retire Control - Damaged and/or Replaced Control ID: L015-03-06-0009	T	CCN - 25462
V1.286	07-12-2012	LA-SMA-5.31	Retire Control - Damaged and/or Replaced Control ID: L015-06-01-0002	T	CCN - 25462
V1.287	07-12-2012	LA-SMA-5.31	New Control - Corrective Action Control ID: L015-03-12-0010	T	CCN - 25462
V1.288	07-12-2012	LA-SMA-5.31	New Control - Corrective Action Control ID: L015-03-12-0011	T	CCN - 25462
V1.289	07-18-2012	LA-SMA-5.31	SMA Boundary Modification	T	CCN - 25462
V1.290	07-18-2012	LA-SMA-5.31	Map Revision (R6)	T	CCN - 25462
V1.291	05-22-2012	DP-SMA-2	Retire Control - Lifecycle Expired Control ID: D005-01-01-0010	T	CCN - 23648
V1.292	08-31-2012	DP-SMA-2	Map Revision (R9)	T	CCN - 23648
V1.293	08-27-2012	B-SMA-0.5	New Control - Routine/Replacement Control ID: B001-04-06-0009	T	CCN - 27126
V1.294	08-29-2012	B-SMA-0.5	Map Revision (R5)	T	CCN - 27126
V1.295	08-23-2012	R-SMA-0.5	Retire Control - Damaged and/or Replaced Control ID: R001-03-06-0007	T	CCN - 26968
V1.296	08-23-2012	R-SMA-0.5	Retire Control - Damaged and/or Replaced Control ID: R001-03-06-0008	T	CCN - 26968
V1.297	08-23-2012	R-SMA-0.5	Retire Control - Damaged and/or Replaced Control ID: R001-03-06-0009	T	CCN - 26968
V1.298	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-01-01-0015	T	CCN - 26968
V1.299	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-01-01-0016	T	CCN - 26968
V1.300	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0017	T	CCN - 26968
V1.301	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0018	T	CCN - 26968
V1.302	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0019	T	CCN - 26968
V1.303	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0020	T	CCN - 26968
V1.304	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0021	T	CCN - 26968
V1.305	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0022	T	CCN - 26968
V1.306	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0023	T	CCN - 26968
V1.307	08-23-2012	R-SMA-0.5	New Control - Routine/Replacement Control ID: R001-03-06-0024	T	CCN - 26968

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.308	08-30-2012	R-SMA-0.5	Map Revision (R6)	T	CCN - 26968
V1.309	08-21-2012	LA-SMA-5.35	Retire Control - Damaged and/or Replaced Control ID: L014-03-10-0003	T	CCN - 26847
V1.310	08-21-2012	LA-SMA-5.35	Retire Control - Damaged and/or Replaced Control ID: L014-04-02-0001	T	CCN - 26847
V1.311	08-21-2012	LA-SMA-5.35	Retire Control - Damaged and/or Replaced Control ID: L014-03-10-0006	T	CCN - 26847
V1.312	08-21-2012	LA-SMA-5.35	New Control - Corrective Action Control ID: L014-08-03-0010	T	CCN - 26847
V1.313	08-21-2012	LA-SMA-5.35	New Control - Corrective Action Control ID: L014-08-04-0011	T	CCN - 26847
V1.314	08-21-2012	LA-SMA-5.35	New Control - Corrective Action Control ID: L014-08-04-0012	T	CCN - 26847
V1.315	08-21-2012	LA-SMA-5.35	New Control - Corrective Action Control ID: L014-08-04-0013	T	CCN - 26847
V1.316	08-22-2012	LA-SMA-5.35	Map Revision (R3)	T	CCN - 26847
V1.317	06-04-2012	LA-SMA-6.38	Retire Control - Damaged and/or Replaced Control ID: L026-03-06-0005	T	CCN - 23995
V1.318	06-04-2012	LA-SMA-6.38	Retire Control - Damaged and/or Replaced Control ID: L026-03-06-0008	T	CCN - 23995
V1.319	06-04-2012	LA-SMA-6.38	New Control - Routine/Replacement Control ID: L026-03-06-0009	T	CCN - 23995
V1.320	06-04-2012	LA-SMA-6.38	New Control - Routine/Replacement Control ID: L026-03-06-0010	T	CCN - 23995
V1.321	06-11-2012	LA-SMA-6.38	Map Revision (R7)	T	CCN - 23995
V1.322	06-04-2012	LA-SMA-6.32	Retire Control - Damaged and/or Replaced Control ID: L023-03-06-0004	T	CCN - 23997
V1.323	06-04-2012	LA-SMA-6.32	New Control - Routine/Replacement Control ID: L023-03-06-0005	T	CCN - 23997
V1.324	06-11-2012	LA-SMA-6.32	Map Revision (R6)	T	CCN - 23997
V1.325	06-04-2012	LA-SMA-3.9	Retire Control - Damaged and/or Replaced Control ID: L009-03-06-0003	T	CCN - 23996
V1.326	06-04-2012	LA-SMA-3.9	New Control - Routine/Replacement Control ID: L009-03-06-0004	T	CCN - 23996
V1.327	06-11-2012	LA-SMA-3.9	Map Revision (R5)	T	CCN - 23996
V1.328	09-27-2012	LA-SMA-0.85	New Control - Corrective Action Control ID: L001-03-01-0008	T	CCN - 28054
V1.329	09-28-2012	LA-SMA-0.85	Map Revision (R5)	T	CCN - 28054
V1.330	09-27-2012	LA-SMA-0.85	SMA Boundary Modification	T	CCN - 28054
V1.331	09-27-2012	LA-SMA-0.85	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 28054

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.332	09-28-2012	ACID-SMA-2	Retire Control - Damaged and/or Replaced Control ID: P002-03-06-0009	T	CCN - 28296
V1.333	09-28-2012	ACID-SMA-2	Retire Control - Damaged and/or Replaced Control ID: P002-03-06-0010	T	CCN - 28296
V1.334	09-28-2012	ACID-SMA-2	Retire Control - Damaged and/or Replaced Control ID: P002-03-06-0011	T	CCN - 28296
V1.335	10-11-2012	ACID-SMA-2	New Control - Routine/Replacement Control ID: P002-03-06-0015	T	CCN - 28296
V1.336	10-11-2012	ACID-SMA-2	New Control - Routine/Replacement Control ID: P002-03-06-0016	T	CCN - 28296
V1.337	10-11-2012	ACID-SMA-2	New Control - Routine/Replacement Control ID: P002-03-06-0017	T	CCN - 28296
V1.338	10-15-2012	ACID-SMA-2	Map Revision (R5)	T	CCN - 28296
V1.339	09-28-2012	ACID-SMA-2.1	Retire Control - Lifecycle Expired Control ID: P003-01-06-0010	T	CCN - 28231
V1.340	09-28-2012	ACID-SMA-2.1	Retire Control - Damaged and/or Replaced Control ID: P003-03-06-0005	T	CCN - 28231
V1.341	09-28-2012	ACID-SMA-2.1	Retire Control - Damaged and/or Replaced Control ID: P003-03-06-0006	T	CCN - 28231
V1.342	09-28-2012	ACID-SMA-2.1	Retire Control - Damaged and/or Replaced Control ID: P003-03-06-0007	T	CCN - 28231
V1.343	10-11-2012	ACID-SMA-2.1	New Control - Routine/Replacement Control ID: P003-03-06-0016	T	CCN - 28231
V1.344	10-11-2012	ACID-SMA-2.1	New Control - Routine/Replacement Control ID: P003-03-06-0017	T	CCN - 28231
V1.345	10-11-2012	ACID-SMA-2.1	New Control - Routine/Replacement Control ID: P003-03-06-0018	T	CCN - 28231
V1.346	10-15-2012	ACID-SMA-2.1	Map Revision (R6)	T	CCN - 28231
V1.347	09-28-2012	ACID-SMA-2.01	Retire Control - Lifecycle Expired Control ID: P002A-01-06-0003	T	CCN - 28297
V1.348	10-04-2012	ACID-SMA-2.01	Map Revision (R3)	T	CCN - 28297
V1.349	10-17-2012	R-SMA-2.5	Change to SDPPP - Updated Site description for SWMU 00-011(a)	T	
V1.350	10-17-2012	R-SMA-2.05	Change to SDPPP - Updated Site description for SWMU 00-011(c)	T	
V1.351	10-17-2012	B-SMA-1	Change to SDPPP - Updated Site description for SWMU 00-011(d)	T	
V1.352	10-17-2012	R-SMA-2.3	Change to SDPPP - Updated Site description for SWMU 00-011(e)	T	
V1.353	10-17-2012	R-SMA-1.95	Change to SDPPP - Updated Site description for AOC 00-015	T	
V1.354	10-17-2012	LA-SMA-4.2	Change to SDPPP - Updated Site description for SWMU 01-006(c)	T	
V1.355	10-18-2012	LA-SMA-5.361	Change to SDPPP - Updated Site description for SWMU 32-002(b)	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.356	10-18-2012	R-SMA-0.5	Change to SDPPP - Updated Site description for AOC C-00-020	T	
V1.357	10-18-2012	R-SMA-1	Change to SDPPP - Updated Site description of AOC C-00-041	T	
V1.358	10-24-2012	DP-SMA-0.4	Retire Control - Damaged and/or Replaced Control ID: D002-03-06-0007	T	CCN - 29279
V1.359	10-24-2012	DP-SMA-0.4	New Control - Routine/Replacement Control ID: D002-03-06-0008	T	CCN - 29279
V1.360	10-30-2012	DP-SMA-0.4	Map Revision (R8)	T	CCN - 29279
V1.361	10-24-2012	LA-SMA-5.01	Retire Control - Damaged and/or Replaced Control ID: L012-03-06-0002	T	CCN - 29280
V1.362	10-24-2012	LA-SMA-5.01	New Control - Routine/Replacement Control ID: L012-03-06-0011	T	CCN - 29280
V1.363	10-30-2012	LA-SMA-5.01	Map Revision (R6)	T	CCN - 29280
V1.364	10-24-2012	LA-SMA-2.3	Retire Control - Damaged and/or Replaced Control ID: L007-03-06-0003	T	CCN - 29281
V1.365	10-24-2012	LA-SMA-2.3	New Control - Routine/Replacement Control ID: L007-03-06-0005	T	CCN - 29281
V1.366	10-30-2012	LA-SMA-2.3	Map Revision (R5)	T	CCN - 29281
V1.367	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-06-01-0016	T	CCN - 29312
V1.368	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-06-01-0017	T	CCN - 29312
V1.369	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-06-01-0018	T	CCN - 29312
V1.370	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-06-01-0019	T	CCN - 29312
V1.371	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-03-12-0020	T	CCN - 29312
V1.372	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-03-12-0021	T	CCN - 29312
V1.373	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-03-01-0022	T	CCN - 29312
V1.374	10-30-2012	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-03-01-0023	T	CCN - 29312
V1.375	10-30-2012	DP-SMA-0.3	Retire Control - Damaged and/or Replaced Control ID: D001-03-02-0012	T	CCN - 29312
V1.376	10-31-2012	DP-SMA-0.3	Map Revision (R8)	T	CCN - 29312
V1.377	10-17-2012	DP-SMA-0.6	Retire Control - Lifecycle Expired Control ID: D003-01-06-0015	T	CCN - 28927
V1.378	10-29-2012	DP-SMA-0.6	Map Revision (R8)	T	CCN - 28927
V1.379	10-29-2012	LA-SMA-1	New Control - Corrective Action Control ID: L003-03-01-0019	T	CCN - 29311

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.380	10-29-2012	LA-SMA-1	New Control - Corrective Action Control ID: L003-04-03-0020	T	CCN - 29311
V1.381	10-29-2012	LA-SMA-1	New Control - Corrective Action Control ID: L003-04-04-0021	T	CCN - 29311
V1.382	10-29-2012	LA-SMA-1	New Control - Corrective Action Control ID: L003-04-06-0022	T	CCN - 29311
V1.383	10-31-2012	LA-SMA-1	New Control - Augment Existing Control ID: L003-04-06-0023	T	CCN - 29311
V1.384	10-31-2012	LA-SMA-1	New Control - Augment Existing Control ID: L003-04-06-0024	T	CCN - 29311
V1.385	11-05-2012	LA-SMA-1	Map Revision (R8)	T	CCN - 29311
V1.386	11-05-2012	LA-SMA-1	Minor Sampler Adjustment, Updated Coordinates in Attachment D	T	CCN - 29311
V1.387	11-05-2012	LA-SMA-1	SMA Boundary Modification	T	CCN - 29311
V1.388	11-05-2012	R-SMA-1.95	Retire Control - Damaged and/or Replaced Control ID: R003-03-06-0004	T	CCN - 29471
V1.389	11-05-2012	R-SMA-1.95	New Control - Routine/Replacement Control ID: R003-03-06-0007	T	CCN - 29471
V1.390	11-09-2012	R-SMA-1.95	Map Revision (R3)	T	CCN - 29471
V1.391	11-01-2012	ACID-SMA-2.01	Retire Control - Damaged and/or Replaced Control ID: P002A-03-06-0005	T	CCN - 29470
V1.392	11-01-2012	ACID-SMA-2.01	New Control - Routine/Replacement Control ID: P002A-03-06-0006	T	CCN - 29470
V1.393	11-09-2012	ACID-SMA-2.01	Map Revision (R4)	T	CCN - 29470
V1.394	11-26-2012		Add Reference Document Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, Los Alamos/Pueblo Watershed, Receiving Waters: Rendija Canyon, Bayo Canyon, Pueblo Canyon, DP Canyon, Los Alamos Canyon, Volume 1	D	ERID-215105
V1.395	11-26-2012		Add Reference Document Site discharge pollution prevention plan for Los Alamos National Laboratory NPDES permit no. NM0030759, November 15, 2010 Volume 1 Los Alamos/Pueblo Watershed	D	LA-UR-11-01551
V1.396	11-30-2012	P-SMA-2.2	Map Revision (R8)	T	CCN - 29690
V1.397	12-03-2012	B-SMA-0.5	New Control - Augment Existing Control ID: B001-03-06-0010	T	CCN - 29691
V1.398	12-03-2012	B-SMA-0.5	New Control - Augment Existing Control ID: B001-01-01-0011	T	CCN - 29691

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V1.399	12-03-2012	B-SMA-0.5	Map Revision (R6)	T	CCN - 29691
V1.400	12-06-2012	P-SMA-1	Retire Control - Damaged and/or Replaced Control ID: P005-03-06-0023	T	CCN - 29480
V1.401	12-06-2012	P-SMA-1	Retire Control - Damaged and/or Replaced Control ID: P005-03-06-0024	T	CCN - 29480
V1.402	12-06-2012	P-SMA-1	Retire Control - Damaged and/or Replaced Control ID: P005-03-06-0026	T	CCN - 29480
V1.403	12-06-2012	P-SMA-1	Retire Control - Damaged and/or Replaced Control ID: P005-03-06-0027	T	CCN - 29480
V1.404	12-06-2012	P-SMA-1	Retire Control - Damaged and/or Replaced Control ID: P005-03-06-0028	T	CCN - 29480
V1.405	12-06-2012	P-SMA-1	Retire Control - Damaged and/or Replaced Control ID: P005-03-06-0029	T	CCN - 29480
V1.406	12-06-2012	P-SMA-1	New Control - Routine/Replacement Control ID: P005-03-06-0033	T	CCN - 29480
V1.407	12-06-2012	P-SMA-1	New Control - Routine/Replacement Control ID: P005-03-06-0034	T	CCN - 29480
V1.408	12-06-2012	P-SMA-1	New Control - Routine/Replacement Control ID: P005-03-06-0035	T	CCN - 29480
V1.409	12-06-2012	P-SMA-1	New Control - Routine/Replacement Control ID: P005-03-06-0036	T	CCN - 29480
V1.410	12-06-2012	P-SMA-1	New Control - Routine/Replacement Control ID: P005-03-06-0037	T	CCN - 29480
V1.411	12-06-2012	P-SMA-1	New Control - Routine/Replacement Control ID: P005-03-06-0038	T	CCN - 29480
V1.412	12-06-2012	P-SMA-1	New Control - Augment Existing Control ID: P005-03-06-0039	T	CCN - 29480
V1.413	12-06-2012	P-SMA-1	Map Revision (R6)	T	CCN - 29480
V1.414	12-07-2012	1.0 Background	Change to SDPPP - Updated hyperlink to public website.	T	
V1.416	12-07-2012	1.0 Background	Change to SDPPP - Removed sentence referencing hyperlink to procedures on public website	T	
V1.417	12-07-2012	1.0 Background	Change to SDPPP - Replaced second and third sentences in second paragraph with, "These procedures reside on the public website and apply to the work activities described in this section."	T	
V1.419	12-07-2012	1.0 Background	Change to SDPPP - Replaced second bullet with "SOP-5220, EX-ID/PR-ID Project Reviews for the FFCA Project and Individual Permit, describes the process for proactively identifying and managing proposed construction projects that may influence SMAs."	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.420	12-07-2012	1.0 Background	Change to SDPPP - Replaced second and third sentences in second paragraph with "These procedures reside on the public website and apply to the work activities described in this section."	T	
V1.422	12-07-2012	R-SMA-2.3	Change to SDPPP - Updated second sentence with 2012 post storm inspection data	T	
V1.423	12-07-2012	R-SMA-2.3	Change to SDPPP - For SMAs that have sampled, updated second sentence with 2012 post storm inspection data	T	
V1.424	12-07-2012	R-SMA-2.3	Change to SDPPP - Changed (2)s to (1)s for all suites in table and removed paragraph under table for SMAs remaining in baseline sampling	T	
V1.425	12-07-2012	R-SMA-2.3	Change to SDPPP - For SMAs remaining in baseline sampling, replaced second and third sentences with "Initial confirmation sampling will continue as provided above until one confirmation sample is collected from this SMA."	T	
V1.426	12-10-2012	Attachment 1: Amendments	Change to SDPPP - Suppressed the R1 amendments and only have FY12 amendments in the table.	T	
V1.427	12-10-2012	1.0 Background	Add New Procedure	T	
V1.429	12-10-2012	Appendix A: Acronyms	Change to SDPPP - Added: Certified Inspector of Sediment and Erosion Control (CISEC) and Certified Professional in Erosion and Sediment Control (CPESC)	T	
V1.430	12-20-2012	LA-SMA-5.31	New Control - Augment Existing Control ID: L015-03-01-0012	T	CCN - 29946
V1.431	12-20-2012	LA-SMA-5.31	New Control - Augment Existing Control ID: L015-04-06-0013	T	CCN - 29946
V1.432	12-20-2012	LA-SMA-5.31	New Control - Augment Existing Control ID: L015-04-04-0014	T	CCN - 29946
V1.433	12-20-2012	LA-SMA-5.31	Map Revision (R7)	T	CCN - 29946
V1.434	12-20-2012	LA-SMA-5.31	Map Revision (R8)	T	CCN - 29946
V1.435	12-26-2012	LA-SMA-5.35	New Control - Corrective Action Control ID: L014-08-03-0014	T	CCN - 26847
V1.436	12-26-2012	LA-SMA-5.35	Map Revision (R4)	T	CCN - 26847

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V1.437	01-08-2013	LA-SMA-2.1	Retire Control - Damaged and/or Replaced Control ID: L006-04-04-0003	T	CCN - 30430
V1.438	01-08-2013	LA-SMA-2.1	New Control - Routine/Replacement Control ID: L006-04-01-0010	T	CCN - 30430
V1.439	01-08-2013	LA-SMA-2.1	Map Revision (R8)	T	CCN - 30430
V1.440	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-03-12-0013	T	CCN - 29926
V1.441	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-03-12-0014	T	CCN - 29926
V1.442	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-03-12-0022	T	CCN - 29926
V1.443	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-03-12-0023	T	
V1.444	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-01-02-0018	T	CCN - 29926
V1.445	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-01-01-0024	T	CCN - 29926
V1.446	01-09-2013	LA-SMA-10.12	Retire Control - Damaged and/or Replaced Control ID: L030A-06-01-0004	T	CCN - 29926
V1.447	01-09-2013	LA-SMA-10.12	New Control - Corrective Action Control ID: L030A-03-01-0026	T	CCN - 29926
V1.448	01-09-2013	LA-SMA-10.12	New Control - Corrective Action Control ID: L030A-03-01-0027	T	CCN - 29926
V1.449	01-09-2013	LA-SMA-10.12	New Control - Corrective Action Control ID: L030A-03-06-0028	T	CCN - 29926
V1.450	01-09-2013	LA-SMA-10.12	New Control - Corrective Action Control ID: L030A-03-06-0029	T	CCN - 29926
V1.451	01-09-2013	LA-SMA-10.12	New Control - Corrective Action Control ID: L030A-03-12-0030	T	CCN - 29926
V1.452	01-09-2013	LA-SMA-10.12	New Control - Corrective Action Control ID: L030A-02-01-0031	T	CCN - 29926
V1.453	01-09-2013	LA-SMA-10.12	Map Revision (R6)	T	CCN - 29926
V1.454	01-11-2013	LA-SMA-5.91	Retire Control - Damaged and/or Replaced Control ID: L019-01-06-0012	T	CCN - 30415
V1.455	01-11-2013	LA-SMA-5.91	Retire Control - Damaged and/or Replaced Control ID: L019-05-02-0001	T	CCN - 30415

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.456	01-11-2013	LA-SMA-5.91	New Control - Corrective Action Control ID: L019-06-02-0013	T	CCN - 30415
V1.457	01-11-2013	LA-SMA-5.91	New Control - Corrective Action Control ID: L019-06-02-0014	T	CCN - 30415
V1.458	01-11-2013	LA-SMA-5.91	New Control - Corrective Action Control ID: L019-05-02-0015	T	CCN - 30415
V1.459	01-11-2013	LA-SMA-5.91	Map Revision (R4)	T	CCN - 30415
V1.460	01-11-2013	LA-SMA-5.91	SMA Boundary Modification	T	CCN - 30415
V1.461	02-11-2013	LA-SMA-0.85	Site Boundary Modification	T	CCN - 30537
V1.462	02-11-2013	LA-SMA-0.85	Map Revision (R6)	T	CCN - 30537
V1.463	02-11-2013	LA-SMA-6.31	Site Boundary Modification	T	CCN - 30366
V1.464	02-11-2013	LA-SMA-6.31	Map Revision (R9)	T	CCN - 30366
V1.465	02-11-2013	LA-SMA-0.9	Site Boundary Modification	T	CCN - 30538
V1.466	02-11-2013	LA-SMA-0.9	Map Revision (R10)	T	CCN - 30538
V1.467	02-12-2013	ACID-SMA-2	Site Boundary Modification	T	CCN - 30362
V1.468	02-12-2013	ACID-SMA-2	Map Revision (R6)	T	CCN - 30362
V1.469	02-12-2013	LA-SMA-1	Site Boundary Modification	T	CCN - 30539
V1.470	02-12-2013	LA-SMA-1	Map Revision (R9)	T	CCN - 30539
V1.471	02-12-2013	DP-SMA-0.3	New Control - Corrective Action Control ID: D001-06-01-0024	T	CCN - 29312
V1.472	02-12-2013	DP-SMA-0.3	Map Revision (R9)	T	CCN - 29312
V1.473	02-20-2013	LA-SMA-0.85	Retire Control - Damaged and/or Replaced Control ID: L001-07-01-0001	T	CCN - 30578
V1.474	02-20-2013	LA-SMA-0.85	Retire Control - Damaged and/or Replaced Control ID: L001-07-01-0005	T	CCN - 30578
V1.475	02-22-2013	P-SMA-1	Site Boundary Modification	T	CCN - 30559
V1.476	02-22-2013	P-SMA-1	Map Revision (R7)	T	CCN - 30559
V1.477	02-27-2013	DP-SMA-1	Site Boundary Modification	T	CCN - 30365
V1.478	02-27-2013	DP-SMA-1	Map Revision (R9)	T	CCN - 30365
V1.479	03-04-2013	LA-SMA-5.52	Site Boundary Modification	T	CCN - 30541

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V1.480	03-04-2013	LA-SMA-5.52	Site Boundary Modification	T	CCN - 30541
V1.481	03-04-2013	LA-SMA-5.52	Site Boundary Modification	T	CCN - 30541
V1.482	03-04-2013	LA-SMA-5.52	Map Revision (R3)	T	CCN - 30541
V1.483	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.484	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.485	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.486	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.487	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.488	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.489	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.490	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.491	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.492	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.493	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.494	03-05-2013	LA-SMA-5.51	Site Boundary Modification	T	CCN - 30540
V1.495	03-05-2013	LA-SMA-5.51	Map Revision (R2)	T	CCN - 30540
V1.496	03-14-2013	LA-SMA-5.54	Site Boundary Modification	T	CCN - 30656
V1.497	03-14-2013	LA-SMA-5.54	Map Revision (R3)	T	CCN - 30656
V1.498	03-14-2013	LA-SMA-5.53	Site Boundary Modification	T	CCN - 30659
V1.499	03-14-2013	LA-SMA-5.53	Map Revision (R3)	T	CCN - 30659
V1.500	03-25-2013	LA-SMA-6.5	Map Revision (R6)	T	CCN - 30934
V1.501	03-25-2013	LA-SMA-6.34	Map Revision (R5)	T	CCN - 30931
V1.502	03-25-2013	B-SMA-0.5	Map Revision (R7)	T	CCN - 30927
V1.503	03-25-2013	LA-SMA-6.395	Map Revision (R5)	T	CCN - 30932

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.504	03-25-2013	LA-SMA-6.25	Map Revision (R5)	T	CCN - 30933
V1.505	03-25-2013	LA-SMA-5.92	Map Revision (R4)	T	CCN - 30928
V1.506	03-25-2013	LA-SMA-6.38	Map Revision (R8)	T	CCN - 30929
V1.507	03-25-2013	LA-SMA-6.36	Map Revision (R6)	T	CCN - 30930
V1.508	04-02-2013	R-SMA-0.5	Change to SDPPP - Updated Site description for AOC C-00-020	T	
V1.509	04-02-2013	R-SMA-1	Change to SDPPP - Updated Site description for AOC C-00-041	T	
V1.510	04-02-2013	R-SMA-1.95	Change to SDPPP - Updated Site description for AOC C-00-041	T	
V1.511	04-02-2013	R-SMA-2.05	Change to SDPPP - Updated Site description for SWMU 00-011(c)	T	
V1.512	04-02-2013	R-SMA-2.3	Change to SDPPP - Updated Site description for SWMU 00-011(e)	T	
V1.513	04-02-2013	R-SMA-2.5	Change to SDPPP - Updated Site description for SWMU 00-011(a)	T	
V1.514	04-02-2013	B-SMA-0.5	Change to SDPPP - Updated Site description for SWMUs 10-001(a), 10-001(b), 10-001(c), 10-001(d), 10-004(a), and 10-004(b) and AOCs 10-008 and 10-009	T	
V1.515	04-02-2013	ACID-SMA-1.05	Change to SDPPP - Updated Site description for SWMU 00-030(g)	T	
V1.516	04-02-2013	ACID-SMA-2	Change to SDPPP - Updated Site description for SWMU SWMUs 01-002(b)-00, 45-001, 45-002, and 45-004	T	
V1.517	04-02-2013	ACID-SMA-2.01	Change to SDPPP - Updated Site description for AOC 00-030(f)	T	
V1.518	04-02-2013	ACID-SMA-2.1	Change to SDPPP - Updated Site description for SWMU 01-002(b)-00	T	
V1.519	04-02-2013	P-SMA-0.3	Change to SDPPP - Updated Site description for AOC 00-018(b)	T	
V1.520	04-02-2013	P-SMA-1	Change to SDPPP - Updated Site description for SWMUs 73-001(a) and 73-004(d)	T	
V1.521	04-02-2013	P-SMA-2	Change to SDPPP - Updated Site description for SWMUs 73-002 and 73-006	T	
V1.522	04-02-2013	P-SMA-2.15	Change to SDPPP - Updated Site description for SWMU 31-001	T	
V1.523	04-02-2013	P-SMA-2.2	Change to SDPPP - Updated Site description for SWMU 00-019	T	

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V1.524	04-02-2013	P-SMA-3.05	Change to SDPPP - Updated Site description for SWMU 00-018(a)	T	
V1.525	04-02-2013	LA-SMA-0.85	Change to SDPPP - Updated Site description for SWMU 03-055(c)	T	
V1.526	04-02-2013	LA-SMA-0.9	Change to SDPPP - Updated Site description for SWMU 00-017 and AOC C-00-044	T	
V1.527	04-02-2013	LA-SMA-1	Change to SDPPP - Updated Site description for SWMU 00-017 and AOC C-00-044	T	
V1.528	04-02-2013	LA-SMA-1.25	Change to SDPPP - Updated Site description for AOC C-43-001	T	
V1.529	04-02-2013	LA-SMA-2.1	Change to SDPPP - Updated Site description for SWMU 01-001(f)	T	
V1.530	04-02-2013	LA-SMA-2.3	Change to SDPPP - Updated Site description for SWMU 01-001(b)	T	
V1.531	04-02-2013	LA-SMA-3.1	Change to SDPPP - Updated Site description for SWMUs 01-001(e) and 01-003(a)	T	
V1.532	04-02-2013	LA-SMA-3.9	Change to SDPPP - Updated Site description for SWMUs 01-001(g) and 01-006(a)	T	
V1.533	04-02-2013	LA-SMA-4.1	Change to SDPPP - Updated Site description for SWMU 01-006(b) and AOC 01-003(b)	T	
V1.534	04-02-2013	LA-SMA-4.2	Change to SDPPP - Updated Site description for SWMUs 01-001(c), 01-006(c), and 01-006(d)	T	
V1.535	04-02-2013	LA-SMA-5.01	Change to SDPPP - Updated Site description for SWMUs 01-001(d) and 01-006(h)	T	
V1.536	04-02-2013	LA-SMA-5.02	Change to SDPPP - Updated Site description for SWMU 01-003(e)	T	
V1.537	04-02-2013	LA-SMA-5.2	Change to SDPPP - Updated Site description for SWMU 01-003(d)	T	
V1.538	04-02-2013	LA-SMA-5.31	Change to SDPPP - Updated Site description for SWMU 41-002(c)	T	
V1.539	04-02-2013	LA-SMA-5.33	Change to SDPPP - Updated Site description for AOC 32-004	T	
V1.540	04-02-2013	LA-SMA-5.35	Change to SDPPP - Updated Site description for AOC C-41-004	T	
V1.541	04-02-2013	LA-SMA-5.361	Change to SDPPP - Updated Site description for SWMU 32-002(b)	T	
V1.542	04-02-2013	LA-SMA-5.362	Change to SDPPP - Updated Site description for AOC 32-003	T	

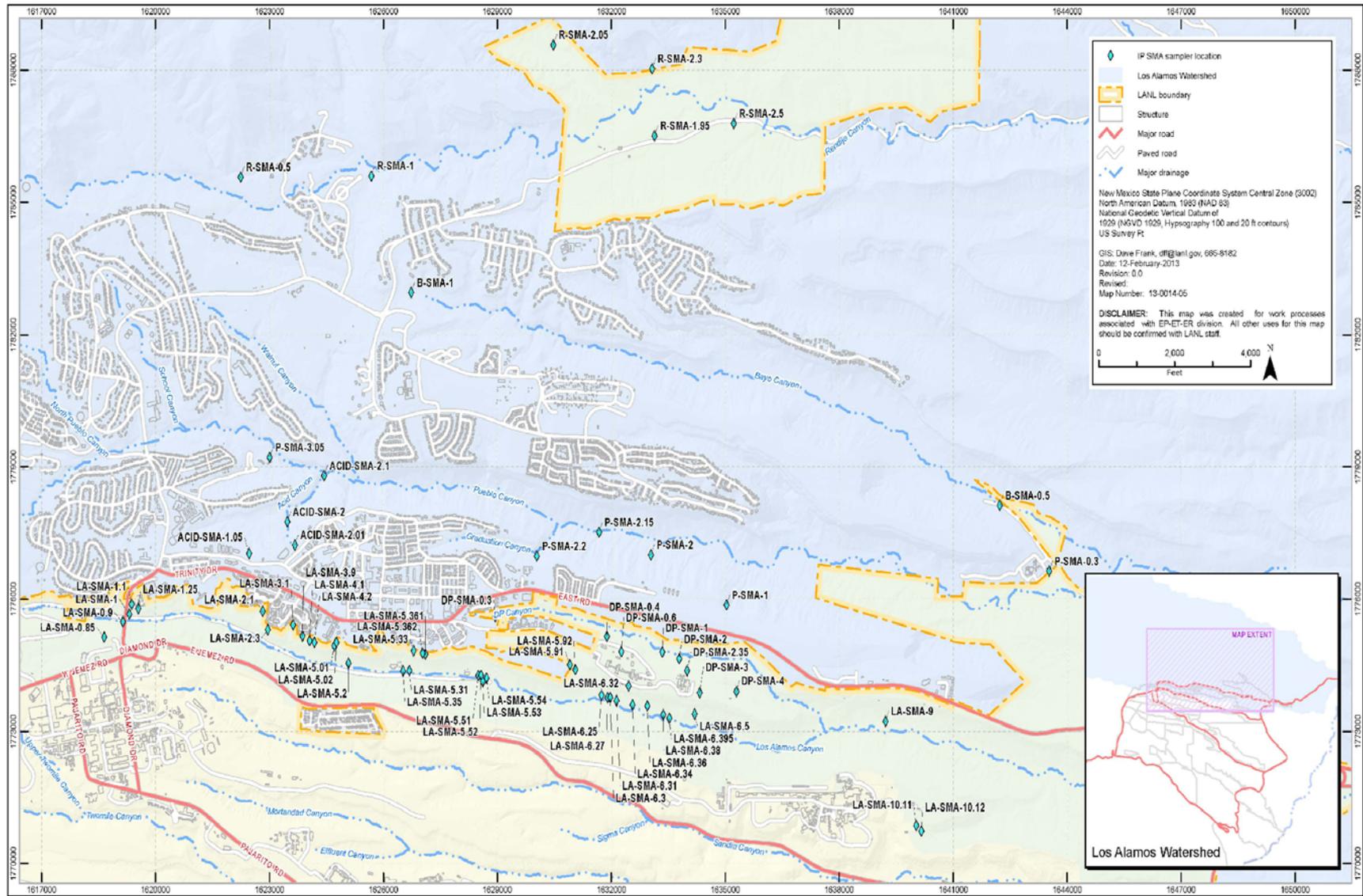
**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.543	04-02-2013	LA-SMA-5.51	Change to SDPPP - Updated Site description for SWMUs 02-005, 02-006(b), 02-008(a), and 02-009(b) and AOCs 02-003(a), 02-003(e), 02-004(a), 02-006(c), 02-006(d), 02-006(e), 02-011(a), 02-011(b), 02-011(c), and 02-011(d)	T	
V1.544	04-02-2013	LA-SMA-5.52	Change to SDPPP - Updated Site description for SWMU 02-007 and AOCs 02-003(b) and 02-008(c)	T	
V1.545	04-02-2013	LA-SMA-5.53	Change to SDPPP - Updated Site description for SWMU 02-009(a)	T	
V1.546	04-02-2013	LA-SMA-5.54	Change to SDPPP - Updated Site description for SWMU 02-009(c)	T	
V1.547	04-02-2013	LA-SMA-5.91	Change to SDPPP - Updated Site description for SWMUs 21-021, 21-023(c), and 21-027(d) and AOC 21-009	T	
V1.548	04-02-2013	LA-SMA-5.92	Change to SDPPP - Updated Site description for SWMUs 21-013(b), 21-018(a), and 21-021 and AOC 21-013(g)	T	
V1.549	04-02-2013	LA-SMA-6.25	Change to SDPPP - Updated Site description for SWMUs 21-021, 21-024(d), and 21-027(c)	T	
V1.550	04-02-2013	LA-SMA-6.27	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-027(c)	T	
V1.551	04-02-2013	LA-SMA-6.3	Change to SDPPP - Updated Site description for SWMU 21-006(b)	T	
V1.552	04-02-2013	LA-SMA-6.31	Change to SDPPP - Updated Site description for SWMU 21-027(a)	T	
V1.553	04-02-2013	LA-SMA-6.32	Change to SDPPP - Updated Site description for SWMU 21-021.	T	
V1.554	04-02-2013	LA-SMA-6.34	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-022(h)	T	
V1.555	04-02-2013	LA-SMA-6.36	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(a)	T	
V1.556	04-02-2013	LA-SMA-6.38	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(c)	T	
V1.557	04-02-2013	LA-SMA-6.395	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(j)	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V1.558	04-02-2013	LA-SMA-6.5	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(i)	T	
V1.559	04-02-2013	LA-SMA-9	Change to SDPPP - Updated Site description for SWMUs 26-001, 26-002(a), 26-002(b), and 26-003	T	
V1.560	04-02-2013	LA-SMA-10.11	Change to SDPPP - Updated Site description for SWMU 53-002(a)	T	
V1.561	04-02-2013	LA-SMA-10.12	Change to SDPPP - Updated Site description for AOC 53-008	T	
V1.562	04-02-2013	DP-SMA-0.3	Change to SDPPP - Updated Site description for SWMU 21-029	T	
V1.563	04-02-2013	DP-SMA-0.4	Change to SDPPP - Updated Site description for SWMU 21-021	T	
V1.564	04-02-2013	DP-SMA-0.6	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(l)	T	
V1.565	04-02-2013	DP-SMA-1	Change to SDPPP - Updated Site description for SWMUs 21-011(k) and 21-021	T	
V1.566	04-02-2013	DP-SMA-2	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(h)	T	
V1.567	04-02-2013	DP-SMA-2.35	Change to SDPPP - Updated Site description for SWMUs 21-021 and 21-024(n)	T	
V1.568	04-02-2013	DP-SMA-3	Change to SDPPP - Updated Site description for SWMUs 21-013(c) and 21-021	T	
V1.569	04-02-2013	DP-SMA-4	Change to SDPPP - Updated Site description for SWMU 21-021	T	
V1.570	04-17-2012	LA-SMA-5.02	Retire Control - Lifecycle Expired Control ID: L012A-01-01-0008	T	CCN - 22727
V1.571	04-17-2012	LA-SMA-5.02	Retire Control - Lifecycle Expired Control ID: L012A-01-01-0009	T	CCN - 22727
V1.572	04-20-2012	LA-SMA-5.02	New Control - Routine/Replacement Control ID: L012A-03-06-0010	T	CCN - 22727
V1.573	04-20-2012	LA-SMA-5.02	New Control - Routine/Replacement Control ID: L012A-03-06-0011	T	CCN - 22727
V1.574	04-30-2012	LA-SMA-5.02	Map Revision (R6)	T	CCN - 22727

# Attachment 2 Vicinity Map



## Attachment 3 Precipitation Network

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG-NCOM	May 13, 2012	0.22	0.08	180
	June 28, 2012	0.02	0.02	0
	July 02, 2012	0.12	0.05	60
	July 03, 2012	0.09	0.06	60
	July 04, 2012	0.03	0.02	60
	July 07, 2012	0.16	0.15	60
	July 11, 2012	0.17	0.1	60
	July 21, 2012	0.13	0.1	60
	July 24, 2012	0.02	0.01	60
	August 02, 2012	0.16	0.08	120
	August 03, 2012	1.02	0.73	120
	August 05, 2012	0.16	0.13	60
	August 16, 2012	0.11	0.11	60
	August 20, 2012	0.08	0.04	60
	August 22, 2012	0.07	0.04	60
	August 24, 2012	0.02	0.01	60
	September 10, 2012	0.11	0.07	60
	September 28, 2012	0.17	0.19	120
October 12, 2012	0.85	0.35	180	
RG-TA-53	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.2	0.08	120
	July 02, 2012	0.03	0.02	60
	July 03, 2012	0.06	0.05	60
	July 03, 2012	0.11	0.05	60
	July 07, 2012	0.12	0.1	60
	July 21, 2012	0.21	0.18	60
	July 25, 2012	0.06	0.06	60
	August 02, 2012	0.25	0.07	120
	August 05, 2012	0.45	0.39	120
	August 16, 2012	0.16	0.16	60
	August 20, 2012	0.13	0.06	60
	August 22, 2012	0.3	0.14	120
	August 24, 2012	0.65	0.5	120
	August 26, 2012	0.03	0.03	60
September 10, 2012	0.03	0.02	60	

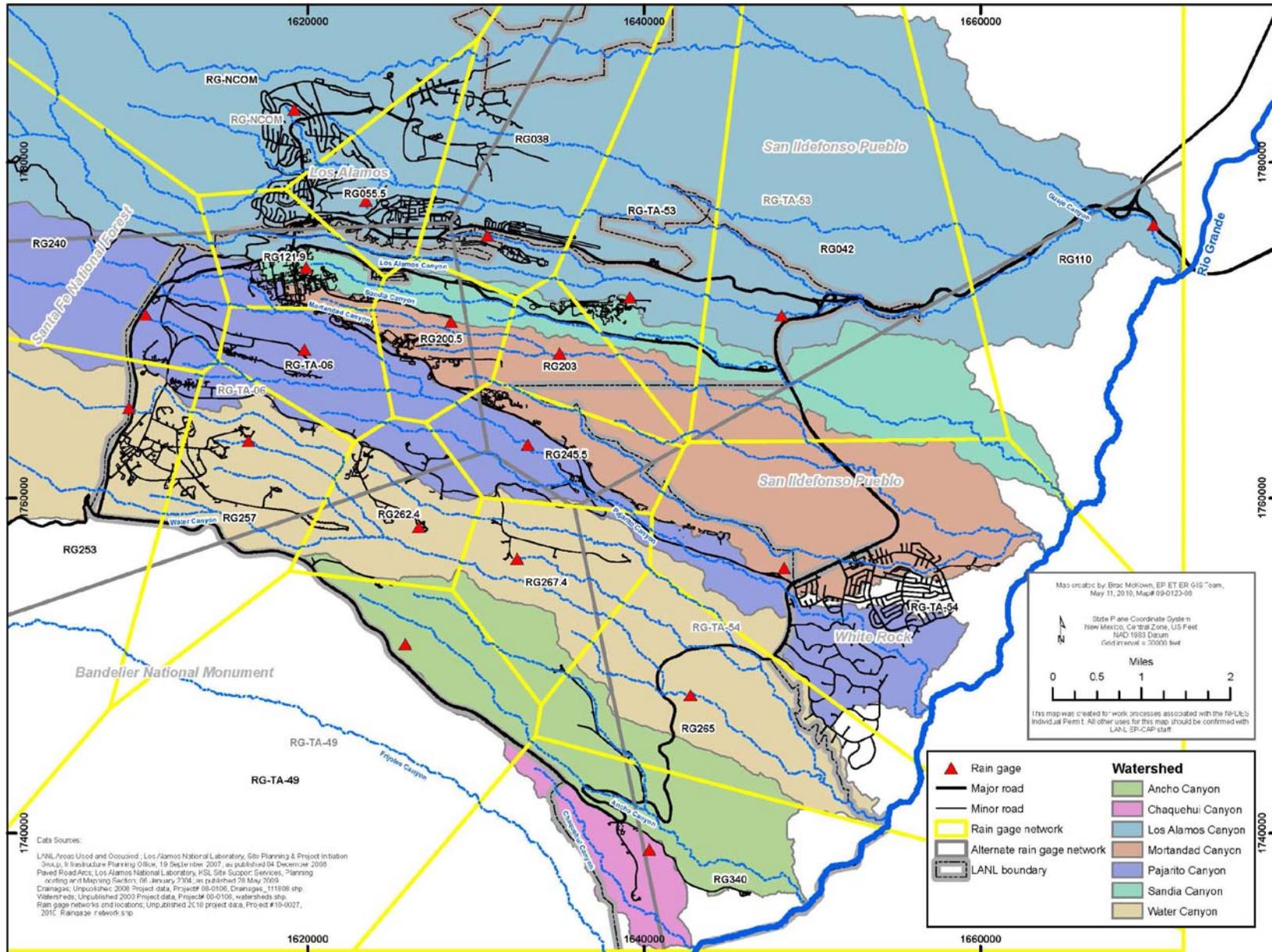
**Attachment 3, Precipitation Network (continued)**

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG-TA-53	September 27, 2012	0.36	0.35	60
	September 28, 2012	0.21	0.13	60
	October 12, 2012	0.56	0.29	180
RGR-GT0A3-853	May 13, 2012	0.25	0.12	60
	June 28, 2012	0.01	0.01	0
	July 02, 2012	0.03	0.01	0
	July 03, 2012	0.14	0.11	60
	July 04, 2012	0.02	0.02	0
	July 07, 2012	0.27	0.27	60
	July 10, 2012	0.02	0.01	0
	July 11, 2012	0.07	0.06	0
	July 21, 2012	0.05	0.05	0
	July 25, 2012	0.13	0.12	0
	August 02, 2012	0.33	0.09	60
	August 03, 2012	0.01	0.01	0
	August 05, 2012	0.16	0.12	60
	August 16, 2012	0.11	0.05	60
	August 20, 2012	0.1	0.04	60
	August 22, 2012	0.07	0.03	60
	August 24, 2012	0.15	0.09	60
	September 10, 2012	0.08	0.07	0
	September 27, 2012	0.13	0.12	0
	September 28, 2012	0.08	0.06	60
October 12, 2012	1.15	0.42	300	
RG055.5	May 13, 2012	0.25	0.09	60
	June 28, 2012	0.1	0.08	60
	July 02, 2012	0.13	0.06	60
	July 03, 2012	0.21	0.08	60
	July 04, 2012	0.06	0.04	0
	July 07, 2012	0.27	0.24	60
	July 10, 2012	0.01	0.01	0
	July 11, 2012	0.13	0.11	60
	July 13, 2012	0.01	0.01	0
	July 21, 2012	0.07	0.04	0
	July 24, 2012	0.03	0.02	0
	July 25, 2012	0.03	0.03	0

**Attachment 3, Precipitation Network (continued)**

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG055.5	August 02, 2012	0.38	0.21	120
	August 03, 2012	0.16	0.13	60
	August 05, 2012	0.17	0.14	60
	August 16, 2012	0.18	0.11	60
	August 20, 2012	0.2	0.07	60
	August 22, 2012	0.08	0.04	60
	August 24, 2012	0.07	0.04	0
	September 10, 2012	0.18	0.16	60
	September 27, 2012	0.02	0.01	0
	September 28, 2012	0.16	0.13	60
October 12, 2012	1.09	0.27	300	
RG121.9	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.25	0.08	120
	June 28, 2012	0.14	0.11	60
	July 02, 2012	0.18	0.08	60
	July 03, 2012	0.13	0.09	60
	July 04, 2012	0.11	0.07	60
	July 07, 2012	0.16	0.14	60
	July 10, 2012	0.01	0.01	0
	July 11, 2012	0.44	0.41	60
	July 13, 2012	0.01	0.01	0
	July 21, 2012	0.07	0.03	0
	July 24, 2012	0.05	0.02	0
	July 25, 2012	0.12	0.11	0
	August 02, 2012	0.23	0.11	60
	August 03, 2012	0.09	0.07	0
	August 05, 2012	0.05	0.02	0
	August 16, 2012	0.23	0.17	60
	August 20, 2012	0.26	0.14	60
	August 22, 2012	0.08	0.04	60
	August 24, 2012	0.03	0.02	0
September 10, 2012	0.27	0.21	60	
September 27, 2012	0.03	0.02	0	
September 28, 2012	0.22	0.19	60	
October 12, 2012	1.07	0.26	240	

### Attachment 3, Precipitation Network (continued)



## Attachment 4 Physical Characteristics

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Rendija	R001	R-SMA-0.5	1622233 (35.9074)	1785564 (-106.3114)	7,904.02	C-00-020	5,713.50
Rendija	R002	R-SMA-1	1625681 (35.907483)	1785593 (-106.299767)	11,184,193.74	C-00-041	167,622.33
Rendija	R003	R-SMA-1.95	1633138 (35.91)	1786505 (-106.274583)	36,350.91	00-015	36,258.48
Rendija	R004	R-SMA-2.05	1630468 (35.915667)	1788570 (-106.2836)	8,326,059.38	00-011(c)	315,501.23
Rendija	R005	R-SMA-2.3	1633071 (35.914167)	1788024 (-106.2748)	997,811.95	00-011(e)	589,347.70
Rendija	R006	R-SMA-2.5	1635220 (35.910767)	1786786 (-106.26755)	1,051,999.79	00-011(a)	555,288.30
Bayo	B001	B-SMA-0.5	1642229 (35.886967)	1778118 (-106.243883)	47,382,063.07	10-001(a) 10-001(b) 10-001(c) 10-001(d) 10-004(a) 10-004(b) 10-008 10-009	0.67 0.67 0.67 0.67 0.67 0.67 16,469.47 53,761.21
Bayo	B002	B-SMA-1	1626728 (35.900217)	1782948 (-106.296217)	742,668.92	00-011(d)	257,355.99
Pueblo	P001	ACID-SMA-1.05	1622456 (35.88395)	1777026 (-106.310633)	329.31	00-030(g)	0.00
Pueblo	P002	ACID-SMA-2 <sup>1</sup>	1623468 (35.885917)	1777746 (-106.307217)	2,293,481.12	01-002(b)-00 45-001 45-002 45-004	44,098.36 10,282.41 597.17 11,705.58
Pueblo	P002A	ACID-SMA-2.01	1623664 (35.884483)	1777219 (-106.30655)	745.92	00-030(f)	0.00
Pueblo	P003	ACID-SMA-2.1	1624432 (35.8888)	1778791 (-106.303967)	12,608,570.36	01-002(b)-00	138,431.18
Pueblo	P004	P-SMA-0.3	1643529 (35.88285)	1776625 (-106.2395)	22,304.54	00-018(b)	1,466.59
Pueblo	P005	P-SMA-1 <sup>1</sup>	1635623 (35.8807451)	1776527 (-106.2681854)	127,851.00	73-001(a) 73-004(d)	115,216.90 0.00
Pueblo	P006	P-SMA-2	1633043 (35.883867)	1776993 (-106.2749)	153,330.93	73-002 73-006	6,229.99 0.73
Pueblo	P007	P-SMA-2.15	1631676 (35.885283)	1777508 (-106.279517)	343,412.62	31-001	60,660.85
Pueblo	P008	P-SMA-2.2	1630034 (35.8838)	1776968 (-106.28505)	145,593.67	00-019	109,333.89

**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Pueblo	P009	P-SMA-3.05	1623000 (35.889933)	1779208 (-106.3088)	11,355.80	00-018(a)	11,355.80
Los Alamos	L001	LA-SMA-0.85 <sup>1,2</sup>	1618640.7612 (35.87873)	1775130.3545 (-106.323509)	178,057.31	03-055(c)	0.77
Los Alamos	L002	LA-SMA-0.9 <sup>1</sup>	1619131 (35.8797)	1775480 (-106.32185)	3,088.01	00-017 C-00-044	1,032.47 86.97
Los Alamos	L003	LA-SMA-1 <sup>1,2</sup>	1619302.8048 (35.880176)	1775656.20354 (-106.321275)	44,719.90	00-017 C-00-044	1,486.60 25,900.73
Los Alamos	L004	LA-SMA-1.1	1619362 (35.880767)	1775873 (-106.321067)	215,092.44	43-001(b2)	266.22
Los Alamos	L005	LA-SMA-1.25	1619552 (35.8805039)	1775784 (-106.3204729)	40,101.00	C-43-001	0.77
Los Alamos	L006	LA-SMA-2.1	1622814 (35.88035)	1775719 (-106.309417)	2,939.96	01-001(f)	813.10
Los Alamos	L007	LA-SMA-2.3	1622953 (35.879183)	1775293 (-106.30895)	5,248.82	01-001(b)	482.13
Los Alamos	L008	LA-SMA-3.1	1623619 (35.879483)	1775403 (-106.3067)	1,726.20	01-001(e) 01-003(a)	0.00 1,562.95
Los Alamos	L009	LA-SMA-3.9	1623864 (35.8788)	1775152 (-106.305883)	1,629.06	01-001(g) 01-006(a)	439.90 0.00
Los Alamos	L010	LA-SMA-4.1	1624051 (35.878483)	1775039 (-106.30525)	211,995.73	01-003(b) 01-006(b)	3,766.35 775.51
Los Alamos	L011	LA-SMA-4.2	1624181 (35.878417)	1775012 (-106.3048)	12,042.67	01-001(c) 01-006(c) 01-006(d)	847.56 463.40 124.55
Los Alamos	L012	LA-SMA-5.01	1624703 (35.8782)	1774932 (-106.30305)	29,869.76	01-001(d) 01-006(h)	6,529.24 512.99
Los Alamos	L012A	LA-SMA-5.02	1624757 (35.878417)	1775009 (-106.302867)	5,676.41	01-003(e)	5,271.56
Los Alamos	L013	LA-SMA-5.2	1625079 (35.8771)	1774535 (-106.301783)	42,935.07	01-003(d)	6,860.00
Los Alamos	L015	LA-SMA-5.31 <sup>1</sup>	1626676 (35.87665)	1774371 (-106.296383)	270,158.18	41-002(c)	162.95
Los Alamos	L016	LA-SMA-5.33 <sup>1</sup>	1626786 (35.877883)	1774819 (-106.296017)	1,035.74	32-004	202.62
Los Alamos	L014	LA-SMA-5.35	1626511 (35.876617)	1774357 (-106.296933)	991,479.07	C-41-004	5,515.26
Los Alamos	L017	LA-SMA-5.361	1627101 (35.877683)	1774742 (-106.29495)	1,896.99	32-002(b)	469.31
Los Alamos	L017A	LA-SMA-5.362	1627030 (35.877733)	1774766 (-106.295183)	1,938.38	32-003	566.30

**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Los Alamos	L018	LA-SMA-5.51 <sup>1</sup>	1628494 (35.87635)	1774255 (-106.29025)	532,039.20	02-003(a) 02-003(e) 02-004(a) 02-005 02-006(b) 02-006(c) 02-006(d) 02-006(e) 02-008(a) 02-009(b) 02-011(a) 02-011(b) 02-011(c) 02-011(d)	1,219.90 47.61 18,836.00 0.77 1,164.89 2,614.65 2,614.65 549.82 67.02 3,405.27 4,846.61 80.98 69.30 30.82
Los Alamos	L018A	LA-SMA-5.52 <sup>1</sup>	1628565 (35.876367)	1774264 (-106.29)	67,659.19	02-003(b) 02-007 02-008(c)	559.70 199.10 196.61
Los Alamos	L018B	LA-SMA-5.53 <sup>1</sup>	1628612 (35.875983)	1774123 (-106.28985)	45,134.04	02-009(a)	626.98
Los Alamos	L018C	LA-SMA-5.54 <sup>1</sup>	1628707 (35.876183)	1774197 (-106.289533)	9,901.95	02-009(c)	0.00
Los Alamos	L019	LA-SMA-5.91 <sup>1</sup>	1630910.622 (35.877)	1774500.899 (-106.282)	135,189.13	21-009 21-021 21-023(c) 21-027(d)	422.04 131,978.85 7,239.92 4,530.48
Los Alamos	L019A	LA-SMA-5.92	1631053 (35.876717)	1774390 (-106.281617)	40,952.69	21-013(b) 21-013(g) 21-018(a) 21-021	30,910.98 1,085.18 754.38 40,952.69
Los Alamos	L020	LA-SMA-6.25	1631736 (35.875133)	1773814 (-106.2793)	36,694.83	21-021 21-024(d) 21-027(c)	35,158.12 9,126.66 166.22
Los Alamos	L021	LA-SMA-6.27	1631895 (35.874967)	1773755 (-106.278767)	84,336.82	21-021 21-027(c)	16,225.68 5,570.05
Los Alamos	L022	LA-SMA-6.3	1631968 (35.874967)	1773753 (-106.278517)	49,510.74	21-006(b)	3,334.27
Los Alamos	L022A	LA-SMA-6.31 <sup>1</sup>	1632134 (35.874767)	1773683 (-106.27795)	41,520.65	21-027(a)	3,415.95
Los Alamos	L023	LA-SMA-6.32	1632453 (35.8757)	1774019 (-106.276883)	1,306.64	21-021	1,306.64
Los Alamos	L024	LA-SMA-6.34	1632556 (35.874517)	1773588 (-106.276533)	47,523.59	21-021 21-022(h)	18,514.86 1,806.06
Los Alamos	L025	LA-SMA-6.36	1632946 (35.87445)	1773565 (-106.275217)	51,271.33	21-021 21-024(a)	51,271.33 6,256.19
Los Alamos	L026	LA-SMA-6.38	1633364 (35.873917)	1773368 (-106.2738)	29,336.27	21-021 21-024(c)	39,652.88 830.51

**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Los Alamos	L027	LA-SMA-6.395	1633522 (35.8737)	1773291 (-106.273267)	78,216.16	21-021 21-024(j)	78,216.16 8,407.95
Los Alamos	L028	LA-SMA-6.5	1634193 (35.87395)	1773382 (-106.271017)	41,930.68	21-021 21-024(i)	31,435.91 8,168.18
Los Alamos	L029	LA-SMA-9	1639218 (35.8735)	1773218 (-106.25405)	223,211.70	26-001 26-002(a) 26-002(b) 26-003	2,954.44 89.00 74.90 59.77
Los Alamos	L030	LA-SMA-10.11	1640027 (35.867017)	1770857 (-106.251317)	614.30	53-002(a)	0.00
Los Alamos	L030A	LA-SMA-10.12	1640162 (35.866667)	1770729 (-106.250867)	41,262.29	53-008	0.00
DP	D001	DP-SMA-0.3	1628939 (35.880017)	1775595 (-106.28875)	79,157.60	21-029	79,157.60
DP	D002	DP-SMA-0.4	1631884 (35.878783)	1775146 (-106.2788)	25,403.38	21-021	25,403.38
DP	D003	DP-SMA-0.6	1632263 (35.877833)	1774795 (-106.277533)	21,298.08	21-021 21-024(l)	21,298.08 16,304.05
DP	D004	DP-SMA-1 <sup>1</sup>	1633342 (35.877817)	1774790 (-106.273883)	133,285.91	21-011(k) 21-021	52,573.57 133,285.91
DP	D005	DP-SMA-2	1633784 (35.8774)	1774636 (-106.272383)	24,659.43	21-021 21-024(h)	24,490.29 2,787.74
DP	D006	DP-SMA-2.35	1633991 (35.87665)	1774364 (-106.2717)	8,394.88	21-021 21-024(n)	8,394.88 4,902.18
DP	D007	DP-SMA-3 <sup>1,2</sup>	1634328.0838 (35.875291)	1773871.22614 (-106.270552)	27,407.95	21-013(c) 21-021	20,503.80 27,410.07
DP	D008	DP-SMA-4	1635297 (35.875333)	1773888 (-106.267283)	2,059.25	21-021	1,777.41

<sup>1</sup> Site boundary revised.  
<sup>2</sup> Minor sampler movement.

## Attachment 5 Sampling Requirements and Plan

### Sampling and Analysis Requirements

Sampling Conditions	Analytical Suite									
	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Copper	PCBs	High Explosives	Dioxins/ Furans	SVOCs
Analytical method	EPA 900.0	EPA 903.0 EPA 904.1	SM 4500 CN-I	EPA:200.7 EPA:200.8	EPA:200.7 EPA:200.8 EPA:245.2	EPA:200.8	EPA 1668A	SW8321	EPA 1613B	EPA 625
Order code	SW-IP- Gross Alpha	SW-Ra226/ Ra-228	SW-IP- Cyanide	SW-Metals- Dissolved	SW-Metals- Total	SW-IP-Cu F	SW-PCB- 1668A-PQL	SW-HEXP-8330	SW-IP-D/ F-1613B	SW-SVOC-625
Field prep code	UF	UF	UF	F	UF	F	UF	UF	UF	UF
Preservation	HNO <sub>3</sub>	HNO <sub>3</sub>	NaOH, Ice	HNO <sub>3</sub>	HNO <sub>3</sub>	HNO <sub>3</sub>	Ice	Ice	Ice	Ice, store some analytes in dark
Holding time (days)	180	180	14	180	180	180	365	7	365	7
Preferred volume (L)	2	2	1	0.5	0.5	0.5	3	2.5	2	3
Minimum volume required (L)	1	2	0.5	0.25	0.25	0.25	1	0.77	1	1
Shipping container	Poly	Poly	Poly	Poly	Poly	Poly	Glass	Glass	Glass	Amber glass

UF: Unfiltered.

F: Filtered.

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Copper	PCBs	High Explosives	Dioxins/ Furans	SVOCs
R-SMA-0.5	1	SS082701	CACompD										
R-SMA-1	2	SS00	CAI										
R-SMA-1.95	3	SS092701	CAI										
R-SMA-2.05	4	SS092702	MEx	X	X	X	X	X			X		
R-SMA-2.3	5	SS082704	MEx	X	X	X	X	X			X		
R-SMA-2.5	6	SS082705	MEx	X	X	X	X	X			X		
B-SMA-0.5	7	SS100302	MEx	X	X	X	X	X					
B-SMA-1	8	SS080301	MEx	X	X	X	X	X			X		
ACID-SMA-1.05	9	SS090102	BCComp										
ACID-SMA-2	10	SS100105	CAI										
ACID-SMA-2.01	11	SS090101	MEx	X	X	X	X	X		X			
ACID-SMA-2.1	12	SS100104	CAI										
P-SMA-0.3	13	SS080801	MEx	X	X	X	X	X					
P-SMA-1	14	SS080802	MEx	X	X	X	X	X					
P-SMA-2	15	SS057	MEx	X	X	X	X	X				X	
P-SMA-2.15	16	SS080803	MEx	X	X	X	X	X		X			
P-SMA-2.2	17	SS0575	MEx	X	X	X	X	X		X			
P-SMA-3.05	18	SS090802	MEx	X	X	X	X	X		X			
LA-SMA-0.85	19	SS121043	CAM5	X	X	X	X	X					
LA-SMA-0.9	20	SS081002	MEx	X	X	X	X	X		X			
LA-SMA-1	21	SS121044	CAM5	X	X	X	X	X		X			

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Copper	PCBs	High Explosives	Dioxins/ Furans	SVOCs
LA-SMA-1.1	22	SS081004	CACompD										
LA-SMA-1.25	23	SS091011	CAI2										
LA-SMA-2.1	24	SS081005	MEx	X	X	X	X	X		X			
LA-SMA-2.3	25	SS081024	CACompD										
LA-SMA-3.1	26	SS101034	MEx	X	X	X	X	X		X			
LA-SMA-3.9	27	SS081026	MEx	X	X	X	X	X					
LA-SMA-4.1	28	SS101035	CAI										
LA-SMA-4.2	29	SS091009	MEx	X	X	X	X	X		X			
LA-SMA-5.01	30	SS091012	MEx	X	X	X	X	X		X			
LA-SMA-5.02	31	SS091013	CACompD										
LA-SMA-5.2	32	SS026805	MEx	X	X	X	X	X					
LA-SMA-5.31	33	SS081012	CAM5	X					X				
LA-SMA-5.33	34	SS081013	CACompD										
LA-SMA-5.35	35	SS091014	CAM5	X					X				
LA-SMA-5.361	36	SS091022	MEx	X	X	X	X	X					
LA-SMA-5.362	37	SS101036	MEx	X	X	X	X	X		X			
LA-SMA-5.51	38	SS091015	MEx	X	X	X	X	X		X			
LA-SMA-5.52	39	SS091016	MEx	X	X	X	X	X		X			
LA-SMA-5.53	40	SS091017	MEx	X	X	X	X	X		X			
LA-SMA-5.54	41	SS091018	MEx	X	X	X	X	X		X			
LA-SMA-5.91	42	SS091019	CAI										
LA-SMA-5.92	43	SS091020	MEx	X	X	X	X	X					

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Copper	PCBs	High Explosives	Dioxins/ Furans	SVOCs
LA-SMA-6.25	44	SS081015	MEx	X	X	X	X	X					
LA-SMA-6.27	45	SS081016	MEx	X	X	X	X	X					
LA-SMA-6.3	46	SS028	MEx	X	X	X	X	X					X
LA-SMA-6.31	47	SS081033	MEx	X	X	X	X	X					X
LA-SMA-6.32	48	SS081017	MEx	X	X	X	X	X					
LA-SMA-6.34	49	SS081018	MEx	X	X	X	X	X					
LA-SMA-6.36	50	SS081019	MEx	X	X	X	X	X					
LA-SMA-6.38	51	SS081020	MEx	X	X	X	X	X					
LA-SMA-6.395	52	SS091002	MEx	X	X	X	X	X					
LA-SMA-6.5	53	SS0287	MEx	X	X	X	X	X		X			X
LA-SMA-9	54	SS0304	MEx	X	X	X	X	X					
LA-SMA-10.11	55	SS091001	MEx	X	X	X	X	X					
LA-SMA-10.12	56	SS091021	CAM5	X		X							
DP-SMA-0.3	57	SS0375	CAI										
DP-SMA-0.4	58	SS081901	MEx	X	X	X	X	X					
DP-SMA-0.6	59	SS081902	MEx	X	X	X	X	X					
DP-SMA-1	60	SS0385	MEx	X	X	X	X	X		X			
DP-SMA-2	61	SS0387	MEx	X	X	X	X	X					
DP-SMA-2.35	62	SS091901	MEx	X	X	X	X	X					

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Copper	PCBs	High Explosives	Dioxins/ Furans	SVOCs
DP-SMA-3	63	SS121907	CAM5	X	X	X	X	X					
DP-SMA-4	64	SS081905	MEx	X	X	X	X	X					

CACompD = The Site has achieved RCRA “corrective action complete” status or a certificate of completion under NMED’s Compliance Order on Consent.

CAI = Corrective Action Initiated: A sample was collected during baseline confirmation monitoring, and analytical results show at least one pollutant concentration is above TAL, resulting in initiation of corrective action.

MEx = Extended Baseline Monitoring: One confirmation monitoring sample is collected to determine if corrective action is required.

BCComp = Baseline Confirmation Complete: All confirmation monitoring results for all pollutants of concern at the SMA are at or below TALs, and corrective action is not required at the Sites. No further sampling is required.

CAM5 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples are collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the Permit.

CAI2 = Enhanced control corrective action monitoring has exceeded a target action level. A path to completion of corrective action is being planned.