ERID-255573

2013 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory
NPDES Permit No. NM0030759
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Sandia/Mortandad Watershed

Receiving Waters:
Cañada del Buey, Mortandad Canyon, Sandia Canyon, and Ten Site Canyon

Volume 2

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Attachments

65.0 S-SMA-0.25: SWMUs 03-013(a) and 03-052(f)

65.1 Site Descriptions

Two historical industrial activity areas are associated with S001, S-SMA-0.25: Sites 03-013(a) and 03-052(f).

SWMU 03-013(a) is a former 1500-ft-long CMP storm drain that served floor drains in the basement of building 03-38 (maintenance shops). The storm drain ran underground around building 03-38, east along the south side of the Otowi Building (building 03-261) and connected to four other storm drains before daylighting 100 ft east of the Otowi Building where it became an open concrete and rock-lined ditch. The open drain continued past transportable office buildings (buildings 03-1616 and 03-1617) and passed beneath streets and sidewalks to a point northeast of the Oppenheimer Study Center (building 03-207) where it discharged to the SWMU 03-052(f) outfall. Most of the CMP associated with SWMU 03-013(a) was removed in 2004 to accommodate the construction of the NSSB (03-1400) and a new parking structure (03-1402) east of the Otowi Building. The excavated CMP was managed as nonhazardous/nonradioactive industrial waste. Inspection of the drainline trench showed no evidence of a release from the drainpipe. A new storm drain pipe was installed west of SWMU 03-052(f) to manage storm water runoff from the new parking structure. The new storm drain discharges to the SWMU 03-052(f) outfall.

No sampling was proposed for SWMU 03-013(a) in the approved Upper Sandia Canyon Aggregate Area work plan because it was removed to accommodate the NSSB and the new parking structure. It was proposed that site characterization and investigation be delayed until the D&D of building 03-1400 and structure 03-1402.

SWMU 03-052(f) is a former NPDES-permitted outfall (03A023) at TA-03 that received wastewater from floor drains, sinks, and water fountains in building 03-38 (a maintenance shop) until 1987 when the drains in building 03-38 were rerouted to the TA-03 sanitary sewer system. Stoddard solvent, dry acid, and caustic materials from the maintenance shop were discarded through sinks and floor drains to this outfall in 1968. Spent paint solvents and cutting oils contaminated with machined beryllium particles may also have been released to the floor drains during 1960s and 1970s. In addition, cooling water for welding torches was discharged directly to the drains. Two spills containing a wastewater and oil mixture from the former Syllac Building (former building 03-287) may have entered the drain system. One of the spills produced an oily sheen on the surface of the water at the outfall. A third spill occurred when approximately 15 gal. of diesel fuel was released from a ruptured truck fuel line into the utilities construction trench between buildings 03-1793 and 03-1794. The only discharge to the outfall since 1987 is storm water runoff from parking lots and the surrounding areas in the north-central portion of TA-03 including the SWMU 03-013(a) storm drain. Outfall 03A023 was removed from the NPDES permit on July 11, 1997.

SWMU 03-052(f) was included in the Supplemental Investigation Report for the Upper Sandia Canyon Aggregate Area, submitted to the NMED under the Consent Order on August 27, 2013. The Site meets industrial and construction worker risk levels and was recommended for a COC with controls. SWMU 03-052(f) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 65-1) 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.

65.2 Control Measures

Run-on contributions to this SMA are significant and difficult to control. A large storm system captures roof drains, roads, and parking areas from approximately 50% of TA-03. This run-on source also includes outfalls from the MSGP-permitted TA-03-38; a 40-in. and a 24-in. CMP discharge onto the SMA. These run-on sources are controlled but not diverted. Run-on associated with NM 501 is routed north of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 65-1).

Table 65-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00102040011	Established Vegetation		X	X		B
S00104060007	Rip Rap	X		X		CB
S00104060010	Rip Rap		X	X		B
S00107010008	Gabions		X		X	CB
S00107020003	Gabion Blanket		X	X		CB

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

A response to an alternative compliance request for this SMA is expected in 2014.

65.3 Storm Water Monitoring

SWMUs 03-013(a) and 03-052(f) are monitored within S-SMA-0.25. Following the installation of baseline control measures, a baseline storm water sample was collected on July 28, 2011, and August 15, 2011 (Figure 65-2 and 65-3). Analytical results from this sample yielded four TAL exceedances:

- Copper concentrations of 9.7 µg/L and 10.9 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 52.9 µg/L and 74.4 µg/L (MTAL is 42 µg/L),
- Gross-alpha activity of 28.1 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 50 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 03-013(a):

- Copper is not known to be associated with industrial materials historically managed at the Site. No data are available, and Consent Order sampling has been delayed until the D&D of building 03-1400 and structure 03-1402.
- Zinc is not known to be associated with industrial materials historically managed at the Site. No data are available, and Consent Order sampling has been delayed until the D&D of building 03-1400 and structure 03-1402.

- PCBs are not known to have been associated with industrial materials historically managed at the Site. No data are available, and Consent Order sampling has been delayed until the D&D of building 03-1400 and structure 03-1402.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at SWMU 03-013(a). No data are available, and Consent Order sampling has been delayed until the D&D of building 03-1400 and structure 03-1402. Any alpha-emitting radionuclides associated with the Site would be exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

SWMU 03-052(f):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 9 of 14 shallow Consent Order samples at a maximum concentration 2.1 times the tuff BV.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above BVs in 10 of 14 shallow Consent Order samples at a maximum concentration 3.1 times the soil BV.
- PCBs are known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order samples. Aroclor-1254 was detected in 10 of 14 samples at a concentration 0.11% of the residential SSL. Aroclor-1260 was detected in 11 of 14 samples at a maximum concentration 0.06% of the residential SSL.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at SWMU 03-052(f). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 isotopic plutonium, and isotopic uranium, which are alpha-emitting radionuclides. No alpha-emitting radionuclides were detected or detected above BVs/FVs. Any alpha-emitting radionuclides associated with the Site would be exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

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 65-2 and 65-3. 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 65-2 and 65-3.

Monitoring location S-SMA-0.25 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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 storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is between these two values.

The SMA sampler receives runoff from a large storm drain system that captures runoff from roof drains, roads, and parking areas from a 33-acre developed area consisting of approximately 50% of TA-03. The concentrations of copper, zinc, and gross-alpha radioactivity detected in the SMA samples are less than the developed area background UTLs, consistent with the Site not being the source of these TAL exceedances. The concentration of PCBs detected in the SMA sample is greater than the developed background UTL. Although the Site may contribute to the PCBs found in the SMA sample, the likely source of PCBs contributing to the TAL exceedance in the storm water at S-SMA-0.25 is urban "background" PCBs.

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

65.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-0.25 during the 2013 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activities conducted at the SMA are summarized below.

Table 65-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30824	5-8-2013
Storm Rain Event	BMP-33607	7-24-2013
Storm Rain Event	BMP-35558	9-24-2013
Annual Erosion Evaluation	COMP-36763	11-12-2013

No maintenance activities were conducted at S-SMA-0.25 in 2013.

65.5 Compliance Status

The Sites associated with S-SMA-0.25 are High Priority Sites. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 65-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-013(a)	Corrective Action Initiated	Alternative Compliance Requested	Requested 4-30-13
SWMU 03-052(f)	Corrective Action Initiated	Alternative Compliance Requested	Requested 4-30-13

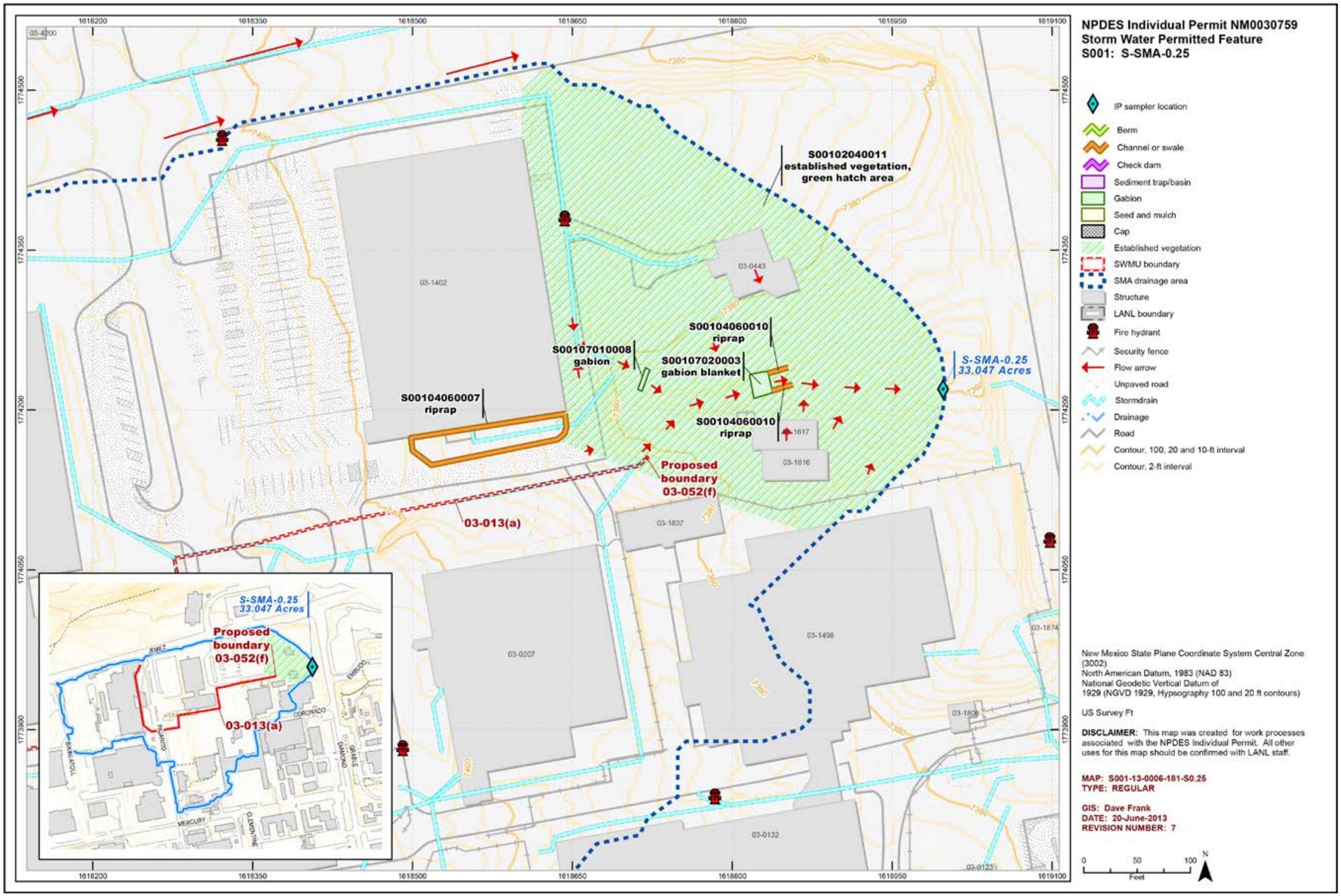
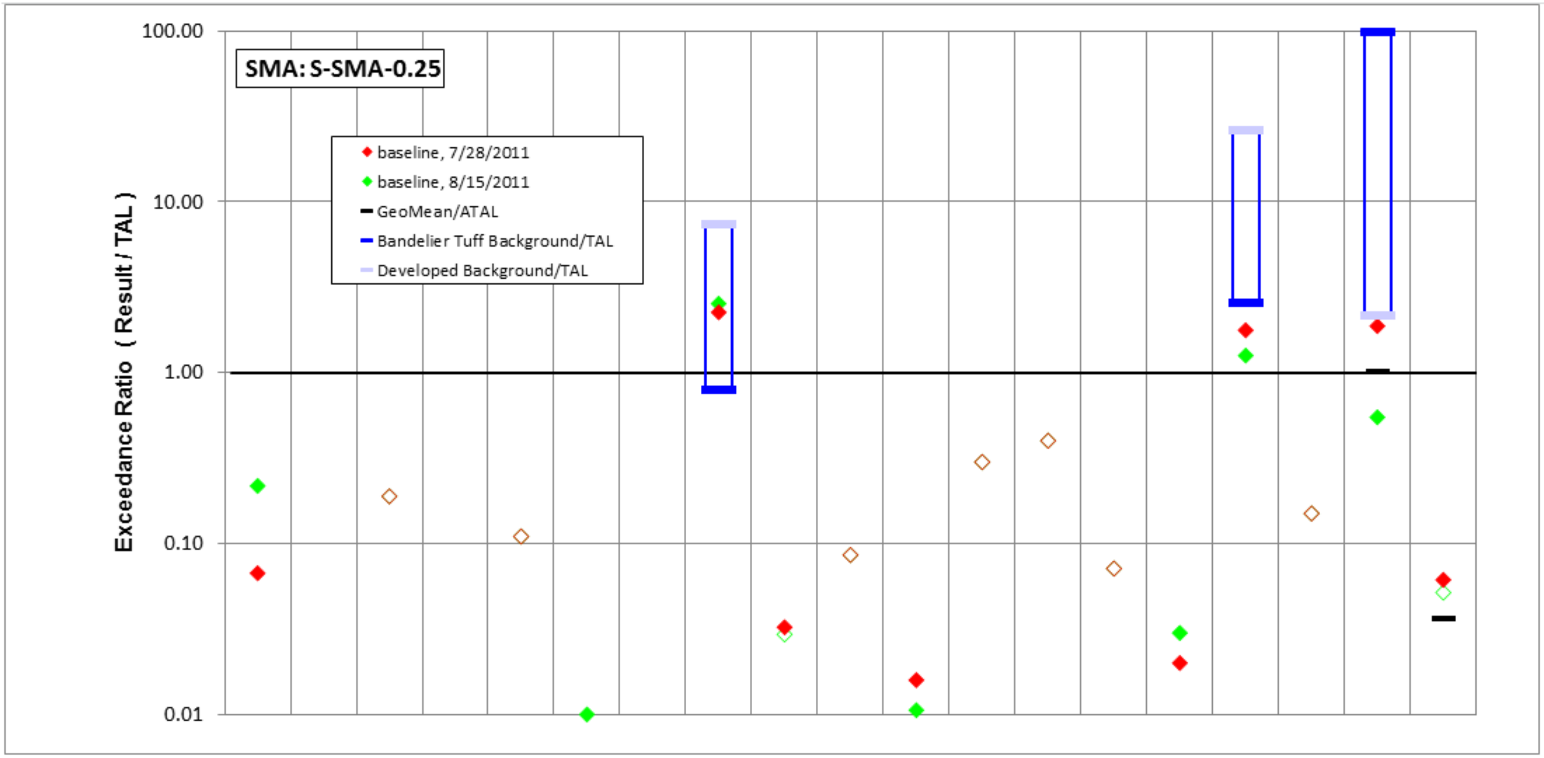


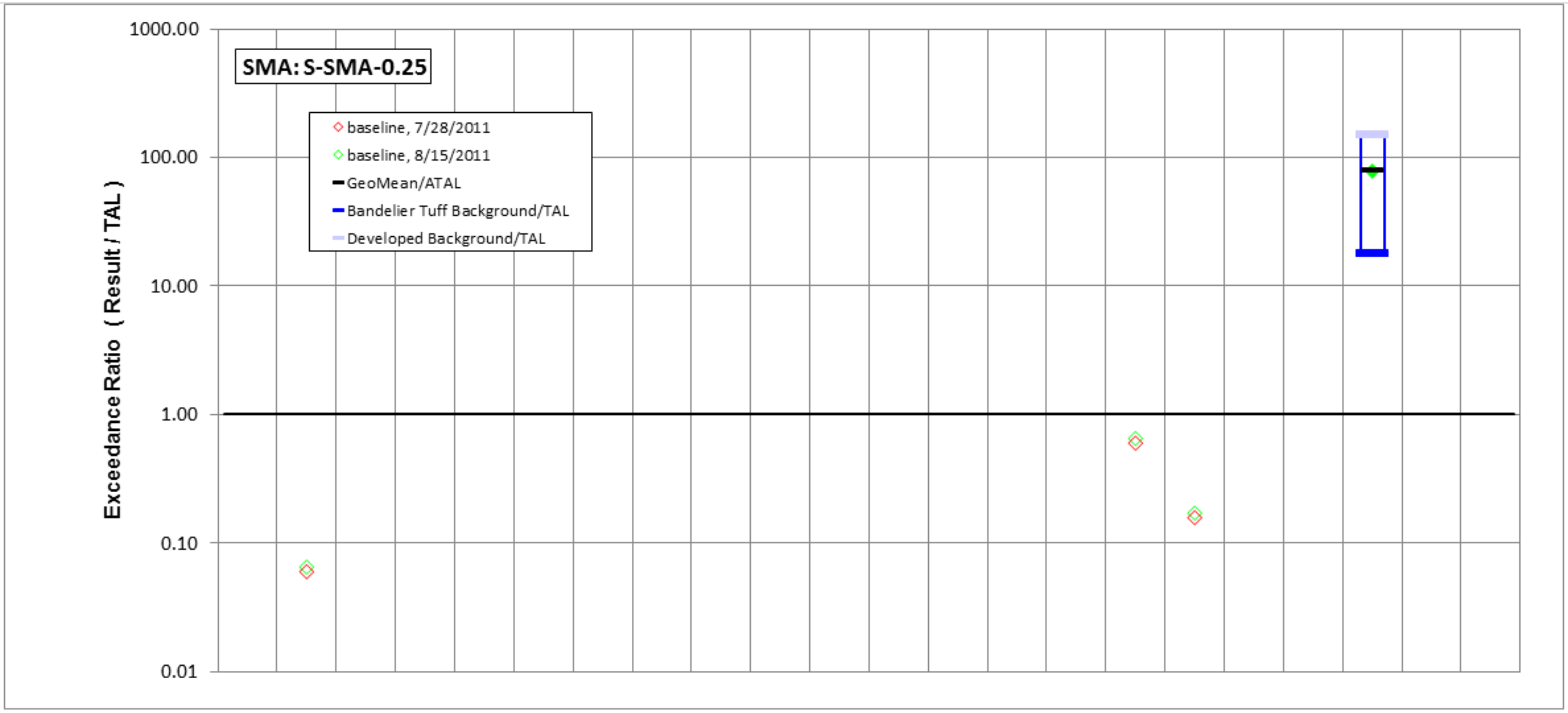
Figure 65-1 S-SMA-0.25 location map



	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
8/15/2011 result	163	*1*	*1.7*	26.2	*0.11*	2.1	1.2	**10.9**	*0.5*	*0.066*	1.8	*1.5*	*0.2*	*0.45*	3	**52.9**	*0.002*	8.22	*1.55*
result / TAL	0.22	*0.002*	*0.19*	0.0052	*0.11*	0.01	0.0012	**2.5**	*0.029*	*0.086*	0.011	*0.3*	*0.4*	*0.071*	0.03	**1.3**	*0.15*	0.55	*0.052*
7/28/2011 result	50.3	*1*	*1.7*	34.5	*0.11*	*2*	*1*	**9.7**	0.55	*0.066*	2.7	*1.5*	*0.2*	*0.45*	2	**74.4**	*0.002*	**28.1**	1.84
result / TAL	0.067	*0.002*	*0.19*	0.0069	*0.11*	*0.01*	*0.001*	**2.3**	0.032	*0.086*	0.016	*0.3*	*0.4*	*0.071*	0.02	**1.8**	*0.15*	**1.9**	0.061

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

Figure 65-2 Inorganic analytical results summary plot for S-SMA-0.25



	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	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/15/2011 result	-	*0.326*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.26*	*3.26*	-	-	**0.05**	-	-
result / TAL	-	*0.065*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.65*	*0.17*	-	-	**78**	-	-
7/28/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	-	-	-	-	-
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	-	-	-	-	-

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

Figure 65-3 Organic analytical results summary plot for S-SMA-0.25

66.0 S-SMA-1.1: SWMU 03-029

66.1 Site Descriptions

One historical industrial activity area is associated with S002, S-SMA-1.1: Site 03-029.

SWMU 03-029 was reportedly a 30- × 70-ft asphalt landfill located approximately 300 ft east of the former asphalt batch plant (former structure 03-073) near the rim of Sandia Canyon. The landfill reportedly received excess asphalt from the batch plant and was subsequently covered with sand. The fill raised and leveled the surface areas at the mesa rim. NMED issued a notice of violation to the Laboratory in November 1990 concerning pieces of asphalt and an oily sheen found in the Sandia Canyon watercourse. In early 1993, the Laboratory completed a corrective action next to SWMU 03-029 to remove the asphalt within the drainage to the south and on the associated slope, regrade the watercourse and slope to support vegetation, extend the drainage, and construct a concrete berm to prevent additional exposure of asphalt buried in the fill. Dense grass cover was established and maintained on all fill slopes and disturbed areas. Water samples collected from the storm drain indicated that oil, grease, or other chemicals typically associated with asphalt plant operations were not present indicating the effectiveness of the corrective action. The asphalt batch plant at TA-03 operated from 1953 to 1990.

In 2004, an ACA was proposed to complete the investigation and remediation of SWMU 03-029 to accommodate the Laboratory's security perimeter road project. In May 2005, GPR and electromagnetic surveys were conducted at SWMU 03-029. The results identified two possible locations for buried asphalt, which were further investigated by trenching. In July 2005, a total of 12 trenches were excavated to the top of bedrock, approximately 2.0–4.0 ft bgs and varied in length from 20 ft to greater than 100 ft. Buried asphalt was not encountered in any of the trenches, nor was any other type of waste encountered in the trenches. Because buried asphalt was not encountered, the remaining proposed ACA activities for SWMU 03-029 were not implemented.

SWMU 03-029 is included in the supplemental investigation report for the Upper Sandia Canyon Aggregate Area, submitted to NMED under the Consent Order on August 27, 2013, and is recommended for corrective action complete without controls in that report. SWMU 03-029 will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 66-1) 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.

66.2 Control Measures

This SMA is impacted by three culverts that capture storm water runoff from parking areas and roads. The SMA is also impacted by sheet flow run-on from the parking area south of building 03-0271. Planned controls are designed to fortify and increase sediment retention. A corrective action plan is being developed for this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 66-1).

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 66-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00203010018	Earthen Berm		X		X	EC
S00203090017	Curbing	X			X	EC
S00204040016	Culvert	X		X		EC
S00204060006	Rip Rap	X		X		CB
S00204060014	Rip Rap	X		X		EC
S00204060015	Rip Rap	X		X		EC
S00204060019	Rip Rap	X		X		EC
S00205020013	Sediment Basin		X		X	EC
S00206010008	Rock Check Dam	X			X	CB
S00207010003	Gabions		X		X	CB
S00207020005	Gabion Blanket	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

66.3 Storm Water Monitoring

SWMU 03-029 is monitored within S-SMA-1.1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2011, and September 4, 2011 (Figures 66-2 and 66-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentrations of 5.2 µg/L and 5.8 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 17.1 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 90 ng/L and 110 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 03-029:

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 2 of 6 shallow samples (i.e., less than 3 ft bgs) at a maximum concentration 2.8 times the soil BV but was not statistically different from background.

- PCBs are not known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order samples. Aroclor-1254 was detected in 5 of 6 samples at a concentration 2.6% of the residential SSL. Aroclor-1260 was detected in 5 of 6 samples at a maximum concentration 1.2% of the residential SSL.

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 66-2 and 66-3. 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 66-2 and 66-3.

Monitoring location S-SMA-1.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.


S-SMA-1.1, Rock Check Dam, S00206010008 (photo ID 17783-2)

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

The SMA sampler receives runoff primarily from developed areas (buildings, parking lots, roads, and a former salvage yard [SWMU 03-059]) as well as from landscape consisting of Bandelier Tuff sediment. The concentrations of copper detected in the SMA samples are less than the developed site UTL but are slightly above the undeveloped UTL, which is consistent with the land use in the S-SMA-1.1 drainage area. The concentrations of gross-alpha radioactivity detected in the SMA samples were below both background UTLs. These results, along with the low magnitude and frequency of copper detections in Consent Order samples and no known use of alpha-emitting radionuclides, are consistent with the Site not being the source of the TAL exceedances for copper and gross-alpha radioactivity. The concentrations of PCBs detected in the SMA samples exceeded the developed site UTL. The SMA sampler receives runoff from portions of SWMU 03-059 where PCBs were detected in numerous shallow Consent Order soil samples collected in 2009 at a maximum concentration 11 times the residential SSL. SWMU 03-059 is not on the IP.

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

66.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-1.1 during the 2013 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 66-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30922	5-8-2013
Storm Rain Event	BMP-33608	7-24-2013
Storm Rain Event	BMP-35559	9-24-2013
Annual Erosion Evaluation	COMP-36861	11-12-2013

No maintenance activities were conducted at S-SMA-1.1 in 2013.

66.5 Compliance Status

The Site associated with S-SMA-1.1 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 66-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-029	Enhanced Control Corrective Action Monitoring	Force Majeure Request	LANL, September 23, 2013, “Request for an Extension Due to Force Majeure under Part I.E.4(c) for Sites in Upper Sandia Canyon”


S-SMA-1.1, Rock Check Dam, S00206010008 (photo ID 29464-9)

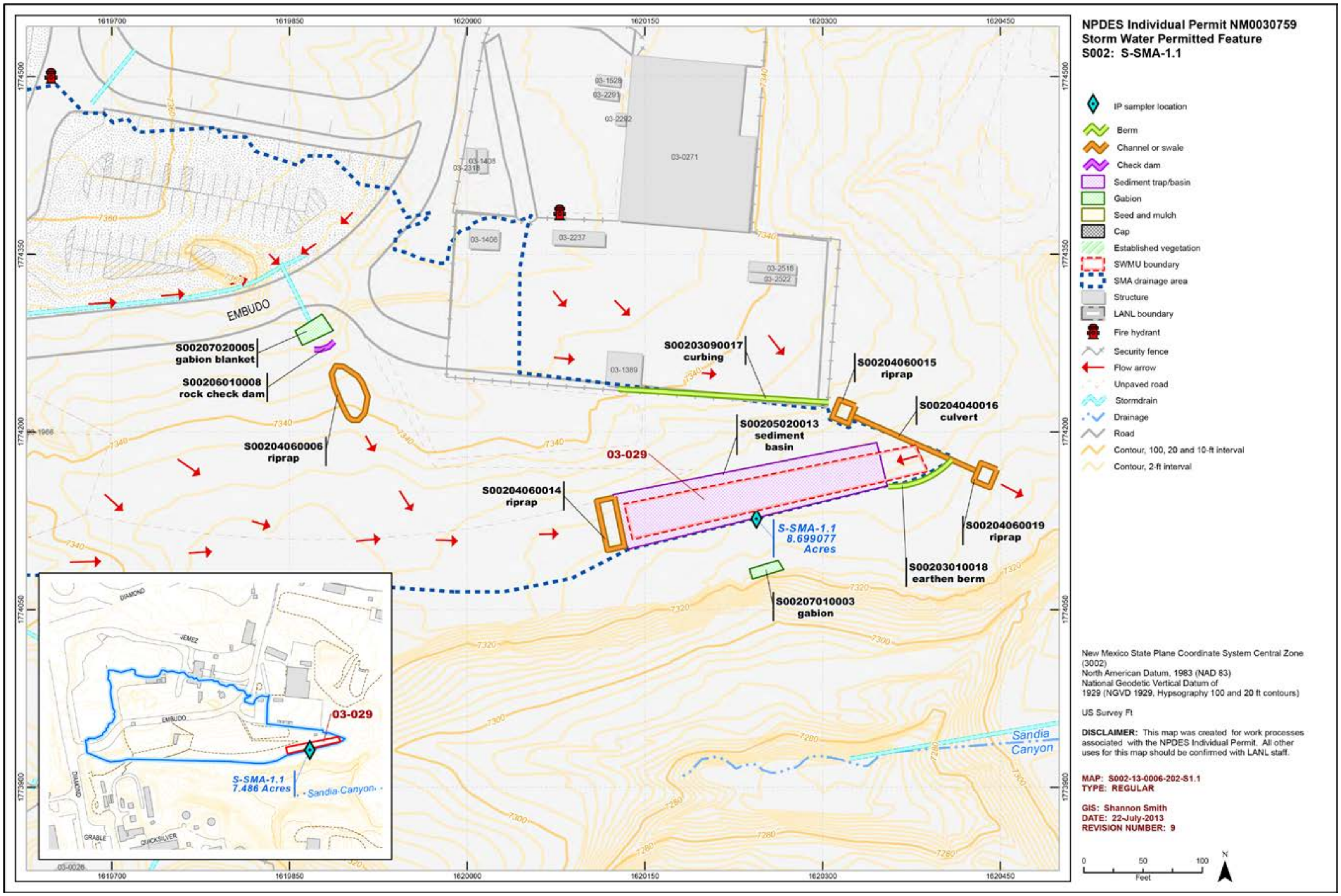
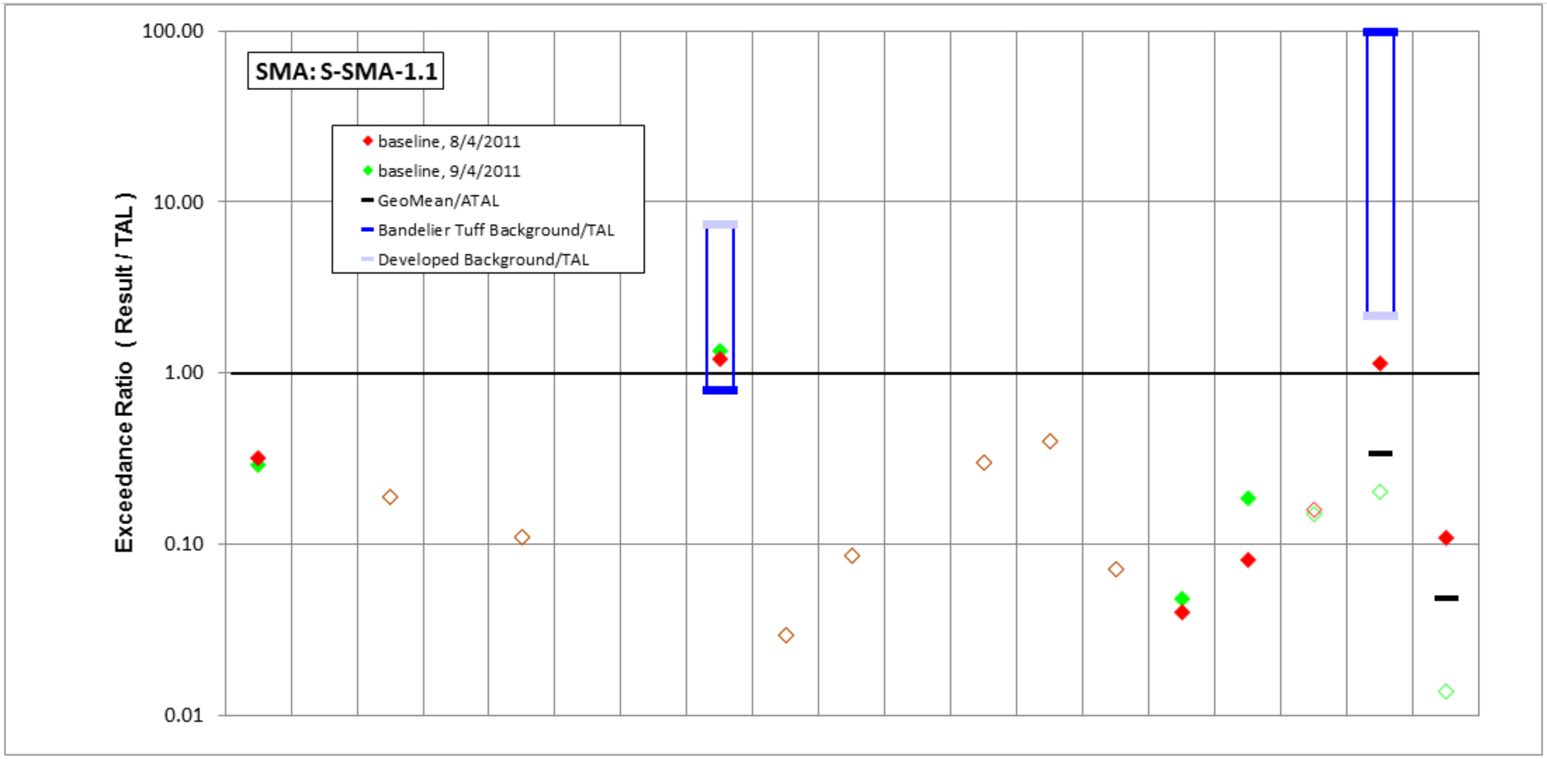


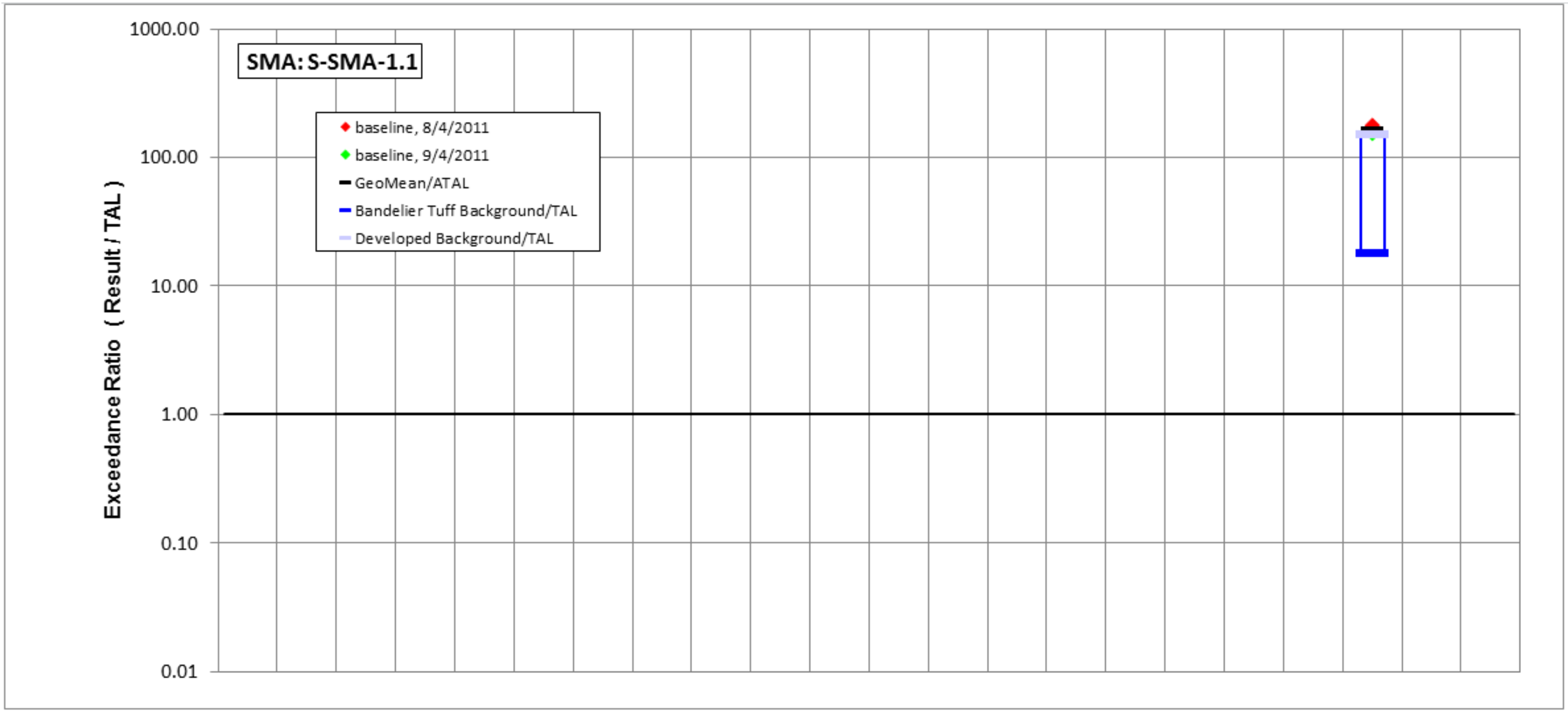
Figure 66-1 S-SMA-1.1 location map



	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
9/4/2011 result	218	1.1	*1.7*	*15*	*0.11*	*2*	2.4	**5.8**	*0.5*	*0.066*	0.84	*1.5*	*0.2*	*0.45*	4.8	7.8	*0.002*	*3.04*	*0.414*
result / TAL	0.29	0.0017	*0.19*	*0.003*	*0.11*	*0.01*	0.0024	**1.3**	*0.029*	*0.086*	0.0049	*0.3*	*0.4*	*0.071*	0.048	0.19	*0.15*	*0.2*	*0.014*
8/4/2011 result	239	*1*	*1.7*	18.8	*0.11*	*2*	1.9	**5.2**	*0.5*	*0.066*	1.1	*1.5*	*0.2*	*0.45*	4	3.4	*0.002*	**17.1**	3.27
result / TAL	0.32	*0.002*	*0.19*	0.0038	*0.11*	*0.01*	0.0019	**1.2**	*0.029*	*0.086*	0.0065	*0.3*	*0.4*	*0.071*	0.04	0.081	*0.16*	**1.1**	0.11

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

Figure 66-2 Inorganic analytical results summary plot for S-SMA-1.1



	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.099**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**150**	-	-
8/4/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.114**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**180**	-	-

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

Figure 66-3 Organic analytical results summary plot for S-SMA-1.1

67.0 S-SMA-2: SWMUs 03-012(b), 03-045(b), 03-045(c), and 03-056(c)

67.1 Site Descriptions

Four historical industrial activity areas are associated with S003, S-SMA-2: Sites 03-012(b), 03-045(b), 03-045(c), and 03-056(c).

SWMU 03-012(b) is the soil contamination associated with operational releases from the TA-03 power plant cooling towers, which is a current NPDES-permitted outfall (01A001). Discharge from a current NPDES-permitted outfall (13S) at the TA-46 Sanitary Wastewater Systems Consolidated plant is pumped to the TA-03 steam plant for reuse and discharges to the SWMUs 03-012(b)/03-045(b) outfall. The outfall received effluent from two cooling towers (structures 03-25 and 03-58) and also the chlorine building (03-24). Cooling tower 03-25 was demolished in 1990, but the concrete foundation remains. Storm water that collects in the concrete foundation of former cooling tower 03-25 also flows to this outfall from pipe valves that previously were connected to the cooling system. Cooling tower 03-58 remains but is inactive. From 1951 to 1985, the power plant used treated effluent water from the TA-03 WWTP as cooling tower liquids. Historically, chromates were used to treat the cooling-tower effluent. Outfall releases were investigated as part of SWMU 03-045(b) under the Consent Order.

The original IP Site narrative for Site 03-045(b) stated that Sites 03-012(b) and 03-045(b) are the same. The August 2013 supplemental investigation report for Upper Sandia Canyon Aggregate Area treats them separately: Site 03-012(b) addresses potential soil contamination associated with the historical operation of the cooling towers, and Site 03-045(b) is the outfall itself.

The outfall associated with Site 03-012(b) formerly received effluent from two power plant cooling towers (structures 03-25 and 03-58) and the chlorine building (structure 03-24). From 1951 until the mid-1970s, this cooling water contained chromate. The cooling tower (structure 03-25) was demolished in 1990, and a new cooling tower (structure 03-592) was constructed at the same location in 1998; the concrete foundation of structure 03-25 collected storm water that discharged to the outfall. The two cooling tower structures (03-58 and 03-592) currently operate during periodic testing of power plant equipment, and blowdown is discharged from the outfall. A sulfuric acid release to the SWMU 03-045(b) outfall from the power plant neutralization tank, structure 03-1381, occurred in May 1990. Low pH values were reported in a 2.5-mi section of the watercourse below the outfall. Soda ash was added along the watercourse to raise the pH. A subsequent survey detected no measurements below pH 6.9.

The Consent Order Phase I investigation has been completed for SWMUs 03-012(b), 03-045(b), and 03-045(c), and these Sites were included in the August 2013 supplemental investigation report for Upper Sandia Canyon Aggregate Area. SWMU 03-012(b) was recommended for corrective action complete without controls. A force majeure request was submitted to EPA on September 23, 2013, based upon the anticipated issuance by the NMED of a COC without controls. This Site was also included in the alternative compliance request for S-SMA-2 that was submitted to EPA in October 2013.

SWMU 03-045(b) is the NPDES-permitted outfall (Outfall 001) that currently receives treated sanitary effluent from the TA-46 SWSC plant and SERF as well as occasional discharges of power plant cooling tower blowdown. The NPDES permit number for the outfall was previously identified as EPA 01A001, but it is currently permitted as 001 on the 2013 NPDES authorization permit. The outfall is currently authorized to discharge power plant wastewater from cooling towers, boiler blowdown drains, demineralizer backwash, floor, and sink drains, and treated sanitary reuse to Sandia Canyon. The outfall discharges onto sand and gravel southeast of building 03-22 and into a small tributary of Sandia Canyon. The original IP Site narrative stated that Sites 03-012(b) and 03-045(b) are the same. However, the 1990

SWMU report, which originally identified these sites as SWMUs, describes SWMU 03-012(b) as former chilled water operational releases, including cooling tower drift loss and cooling water discharges to Sandia Canyon. SWMU 03-045(b) is described as the NPDES outfall for cooling towers 03-25 and 03-58. The August 2013 supplemental investigation report for Upper Sandia Canyon Aggregate Area, which was written in accordance with the Consent Order, also treats the SWMUs separately: SWMU 03-012(b) addresses potential soil contamination associated with operational releases from the TA-03 power plant cooling towers, and SWMU 03-045(b) is the permitted outfall itself.

Phase I Consent Order Phase investigations are complete for SWMU 03-045(b), and the Site was included in the August 2013 supplemental investigation report for Upper Sandia Canyon Aggregate Area. SWMU 03-045(b) was recommended for additional extent sampling. This Site was also included in the alternative compliance request for S-SMA-2 that was submitted to NMED in October 2013.

S-SMA-2, Seed and Wood Mulch, S00301010013 (photo ID 31607-4)

SWMU 03-045(c) is an NPDES-permitted outfall (EPA 03A027), located approximately 55 ft east of SWMU 03-045(b). SWMU 03-045(c) previously received effluent from a cooling tower (structure 03-285) that served the generators powering a Laboratory computer system. Cooling tower 03-285 was constructed in 1968, and SWMU 03-045(c) may have historically received chromate-treated water. Cooling tower 03-285 was taken out of service several years ago and demolished in 2012, and SWMU 03-045(c) now receives blowdown from the cooling towers at the Strategic Computing Complex (building 03-2327), which became operational in 2002. Outfall 03A027 is currently permitted for the discharge of cooling tower blowdown water and other wastewater from structures 03-285 and 03-2327.

The Consent Order Phase I investigation has been completed for SWMUs 03-012(b), 03-045(b), and 03-045(c), and these Sites were included in the August 2013 supplemental investigation report for Upper Sandia Canyon Aggregate Area. SWMU 03-045(c) was recommended for additional sampling to define extent. This Site was also included in the alternative compliance request for S-SMA-2.0 that was submitted to EPA in October 2013.

SWMU 03-056(c) is a former outdoor storage area located at TA-03 on the north side of a utilities shop, building 03-0223. The SWMU extends along the length of building 03-0223 to the south and is bounded by a security fence to the north. The outdoor storage area was used to store electrical equipment, capacitors, and transformers with PCB-containing dielectric fluids. Waste solvents used for cleaning electrical equipment were also stored at this location. The types of solvents used at the Site from 1967 to approximately 1981 are not known. Viking R30 (1,1,1-trichloroethane) was used from 1981 to 1990. Beginning in 1990 and continuing to 1992, a nonhazardous citrus-based solvent was used as a substitute for solvent-based cleaners. In addition, Transclene, which contains tetrachloroethene, may have been stored at the Site because it was used by an electrical equipment maintenance subcontractor to retrofill transformers in the field. It is believed that the maintenance crew disposed of all these waste materials at an approved waste-disposal facility. In 1991, the Site's facility manager placed approximately 1–2 ft of clean fill on the area occupying the former storage area to elevate it and to reroute run-on drainage away from this Site. In 1992, the storage area was decommissioned.

Two actions have been performed at SWMU 03-056(c) to remove historical PCB contamination. Approximately 1000 yd^3 of PCB-contaminated soil was removed from August to November 1995. The objective of the 1995 removal action was to remove all soil with PCB concentrations above 10 ppm.

An additional 2400 yd^3 of material was removed from September 2000 to March 2001. This second removal action was initiated through a VCA. PCB-contaminated soil was removed from the western and northern slope areas and the ephemeral slope drainage areas. Because of the Site's proximity to a watercourse, the PCB cleanup targets were less than 1 ppm of PCBs in soil in accordance with TSCA. The VCA plan was approved by NMED in 2002. The VCA also included placing clean backfill in excavated areas, stabilizing exposed backfill, seeding, stabilizing soil around trees, and installing a gabion apron to dissipate the energy of storm water running off the asphalt pad on the edge of the mesa. Following removal of PCB-contaminated soil and tuff, a total of 93 confirmation samples were collected from 83 locations and analyzed for PCBs. Twenty-one samples were also analyzed for metals and VOCs. Arsenic and tetrachloroethene were identified as COPCs because of detected concentrations greater than BVs and their respective risk-based SALs, but assessment of the residual risk at the Site after the VCA indicated no unacceptable risks to human receptors. The VCA report for SWMU 03-056(c) was approved by EPA in November 2001 and by NMED in September 2002.

NMED issued a COC with controls for SWMU 03-056(c) on February 18, 2011. In its certificate, NMED stated that the nature and extent of contamination were defined, confirmatory sample results indicated the Site met the EPA's PCB cleanup criterion, and the Site poses no potential unacceptable human health and ecological risks from PCBs or VOCs. The required controls were to institute and maintain a control on the Site by monitoring storm water discharge for potential off-site transport of residual PCB contamination. The basis for the required control under the Consent Order was the possibility that storm water discharge may mobilize residual contamination from the Site. NMED also indicated the storm water monitoring was currently implemented pursuant to the Individual Permit.

This Site was included in the alternative compliance request for S-SMA-2.0 that was submitted to NMED in October 2013. The Permittees proposed to install a catch basin and route storm water across the SWMU via a pipe to the canyon bottom. The objective of this proposal is to measurably improve storm water quality by reducing the contact of storm water with the residual PCB contamination at the Site and by minimizing erosion.

The project map (Figure 67-1) 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.

67.2 Control Measures

There are many potential run-on sources at this SMA, including culverts, paved roads, and parking lots, drainage from the roofs of the numerous buildings, and two NPDES outfalls from the power plant. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 67-1).

Table 67-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00301010013	Seed and Wood Mulch			X		EC
S00301010015	Seed and Wood Mulch			X		EC
S00302040022	Established Vegetation		X	X		B
S00304060005	Rip Rap	X		X		CB
S00304060009	Rip Rap	X		X		CB
S00304060010	Rip Rap	X		X		CB
S00304060011	Rip Rap	X		X		B
S00304060012	Rip Rap	X		X		EC
S00304060016	Rip Rap	X		X		EC
S00304060021	Rip Rap	X		X		EC
S00305040014	Gravel Infiltration Strip	X			X	EC
S00306010017	Rock Check Dam	X			X	EC
S00306010018	Rock Check Dam	X			X	EC
S00306010019	Rock Check Dam	X			X	EC
S00306010020	Rock Check Dam	X			X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

A response to an alternative compliance request for this SMA is expected in 2014.

67.3 Storm Water Monitoring

SWMUs 03-012(b), 03-045(b), 03-045(c), and 03-056(c) are monitored within S-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 28, 2011, and August 13, 2011 (Figures 67-2 and 67-3). Analytical results from this sample yielded four TAL exceedances:

- Copper concentrations of 5.8 µg/L and 8.3 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 62.6 µg/L (MTAL is 42 µg/L),
- Gross-alpha activity of 29 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 140 ng/L and 190 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at S-SMA-2, two corrective action storm water samples were collected on July 11, 2013 and August 1, 2013 (Figures 67-2 and 67-3). Analytical results from these corrective action monitoring samples yielded three TAL exceedances:

- Copper concentrations of 4.43 µg/L and 5.08 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 44.2 µg/L and 54 µg/L (MTAL is 42 µg/L), and
- PCB concentrations of 49 ng/L and 220 ng/L (ATAL is 0.6 ng/L).

Corrective action has resulted in a decrease in copper, zinc, and gross-alpha concentrations detected in storm water samples collected at S-SMA-2.

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 03-012(b):

- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above the soil BV in shallow (i.e., less than 3 ft bgs) soil samples collected before construction activities in 2002 and 2003. Copper was detected above BV in 2 of 42 shallow samples at a maximum concentration 1.8 times the soil BV.
- Zinc is not known to be associated with industrial materials historically managed at this Site. Zinc was detected above soil BV in shallow soil samples collected before construction activities in 2002 and 2003. Zinc was detected above BV in 13 of 42 shallow samples at a maximum concentration 3.0 times the soil BV.
- PCBs are not known to have been present at low concentrations in cooling tower blowdown historically discharged from this outfall. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow samples collected before construction activities in 2003. Aroclor-1254 was detected in 3 of 4 shallow samples at a maximum concentration 30% of the residential SSL. Aroclor-1260 was detected in 4 of 4 shallow samples at a maximum concentration 42% of the residential SSL.

Chromium is known to be associated with industrial materials historically managed at this Site, and total chromium was detected in a small number of shallow samples (i.e., 3 samples out of 47) above the maximum background concentration. It was determined in the supplemental investigation report that the nature and extent of contaminants have been defined and that chromium did not pose a potential unacceptable human health risk under the residential scenario or an unacceptable ecological risk. No Site-related organics were detected above residential screening levels.

SWMU 03-045(b):

- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was not detected above soil BV in shallow (i.e., less than 3 ft bgs) 2009 Consent Order samples.
- Zinc is not known to be associated with industrial materials historically managed at this Site. Zinc was detected above the soil BV in 1 of 2 shallow 2009 Consent Order samples at a maximum concentration 1.1 times the soil BV, which is less than the maximum background concentration.
- PCBs are not known to have been present at low concentrations in wastewater historically discharged from this outfall. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow 2009 Consent Order samples. Aroclor-1254 was detected in 2 of 2 shallow samples at a maximum concentration 7% of the residential SSL. Aroclor-1260 was detected in 2 of 2 shallow samples at a maximum concentration 5% of the residential SSL.

SWMU 03-045(c):

- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was not detected above soil BV in shallow (i.e., less than 3 ft bgs) Consent Order soil samples.

- Zinc is not known to be associated with industrial materials historically managed at this Site. Zinc was detected above soil BV in shallow Consent Order soil samples. Zinc was detected above BV in 1 of 2 shallow samples at a maximum concentration 1.03 times the soil BV, which is less than the maximum background concentration.
- PCBs are not known to have been associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 2 of 2 shallow samples at a maximum concentration 72% of the residential SSL. Aroclor-1260 was detected in 2 of 2 shallow samples at a maximum concentration 1.4 times the residential SSL.

The supplemental investigation report determined that the nature and extent of hexavalent chromium, benzo(a)pyrene, and Aroclor-1260 have not been defined, and further sampling is warranted. A revised Phase II investigation work plan will be developed based on the conclusions and recommendations presented in the supplemental investigation report. The revised Phase II investigation work plan will specify sampling locations, numbers of samples, and analytical suites required to define the extent of contamination for this Site. After the proposed Phase II sampling has been completed, the data will be used to confirm the extent of contamination has been defined and to complete human health and ecological risk-screening assessments for all remaining Sites. The results will be presented in a Phase II investigation report for the Upper Sandia Canyon Aggregate Area.

SWMU 03-056(c):

- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above the soil BV in shallow VCA confirmation samples. Copper was detected above BV in 2 of 21 shallow soil and tuff samples at a maximum concentration 1.02 times the soil BV, which is less than the maximum background concentration.
- Zinc is not known to be associated with industrial materials historically managed at this Site. Zinc was detected above the soil BV in shallow VCA confirmation samples. Zinc was detected above the soil BV in 6 of 21 shallow soil and tuff samples at a maximum concentration 1.6 times the soil BV.
- PCBs may have been associated with industrial materials historically managed at this Site. A PCB mixture (Aroclor-1260) was detected in 56 of 84 shallow VCA samples at a maximum concentration 1.8 times the residential SSL. Site-specific storm water run-on samples collected within the SMA also demonstrate that urban “background” PCBs contribute to the TAL exceedance.

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 67-2 and 67-3. 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 67-2 and 67-3.

Monitoring location S-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these two values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 and 2013 are less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 and 2013 are greater than both of these values.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

67.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-2 during the 2013 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 67-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
BMP Verification	BMP-31607	4-26-2013
Annual Erosion Evaluation	COMP-30923	5-8-2013
Storm Rain Event	BMP-33609	7-24-2013
Storm Rain Event	BMP-35560	9-24-2013
Annual Erosion Evaluation	COMP-36862	11-12-2013
TAL Exceedance	COMP-35300	9-5-2013

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

Table 67-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-32177	Clean out existing Rip Rap area S00304060010 of debris and weeds. Add rock as necessary. Small rock pile on east side of culvert utilized as rip rap material. Additional rock added throughout length of channel.	6-6-2013	29 day(s)	Maintenance conducted in timely manner.

67.5 Compliance Status

The Sites associated with S-SMA-2 are High Priority Sites. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 67-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-012(b)	Corrective Action Initiated	Force Majeure Request	September 23, 2013, Request for an Extension due to Force Majeure under Part I.E.4(c) for Sites in Upper Sandia Canyon
SWMU 03-045(b)	Corrective Action Initiated	Alternative Compliance Requested	Requested 4-30-13
SWMU 03-045(c)	Corrective Action Initiated	Alternative Compliance Requested	Requested 4-30-13
SWMU 03-056(c)	Corrective Action Initiated	Alternative Compliance Requested	Requested 4-30-13

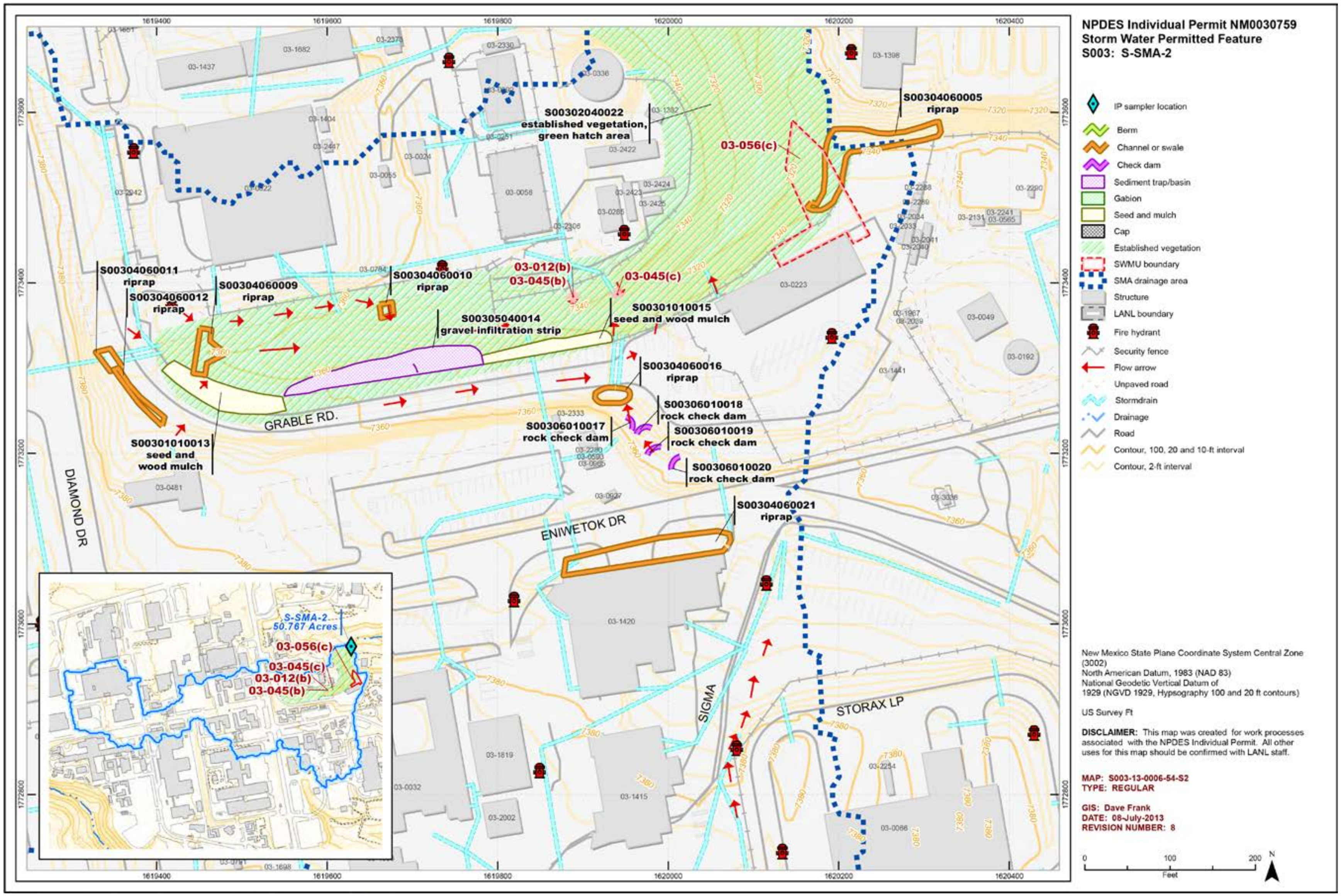
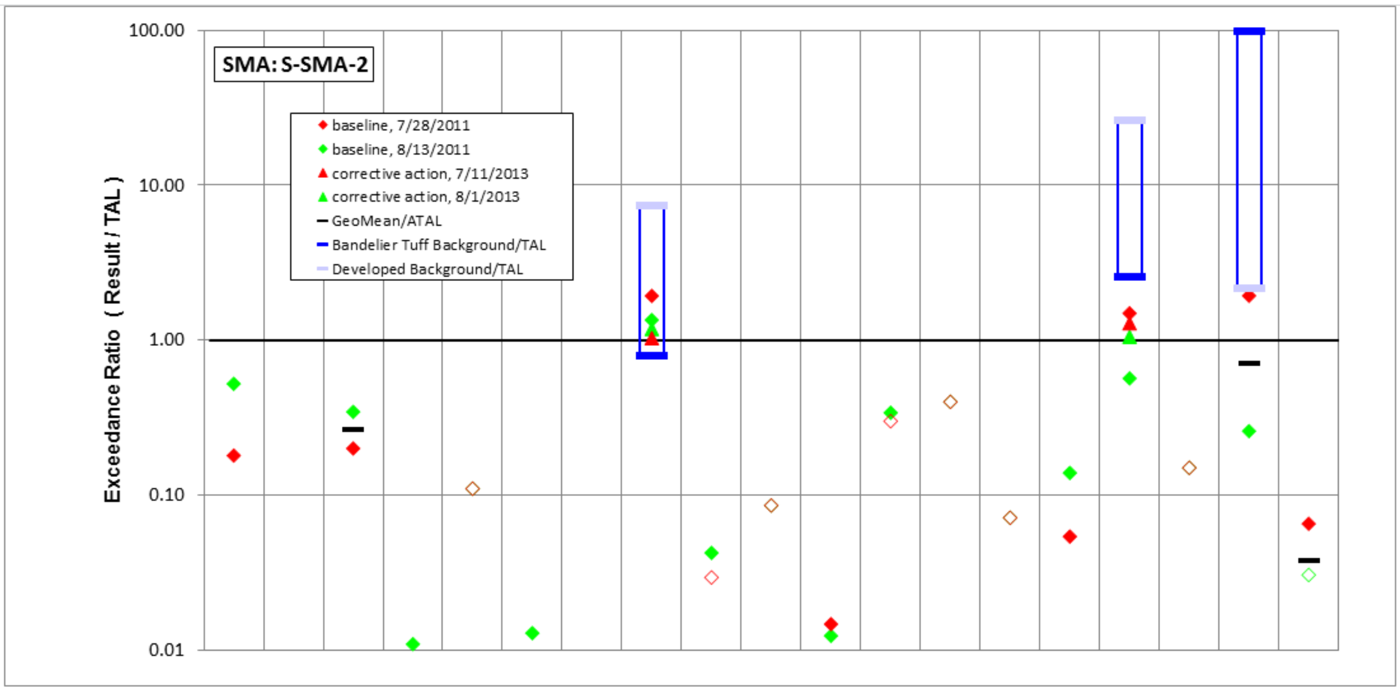


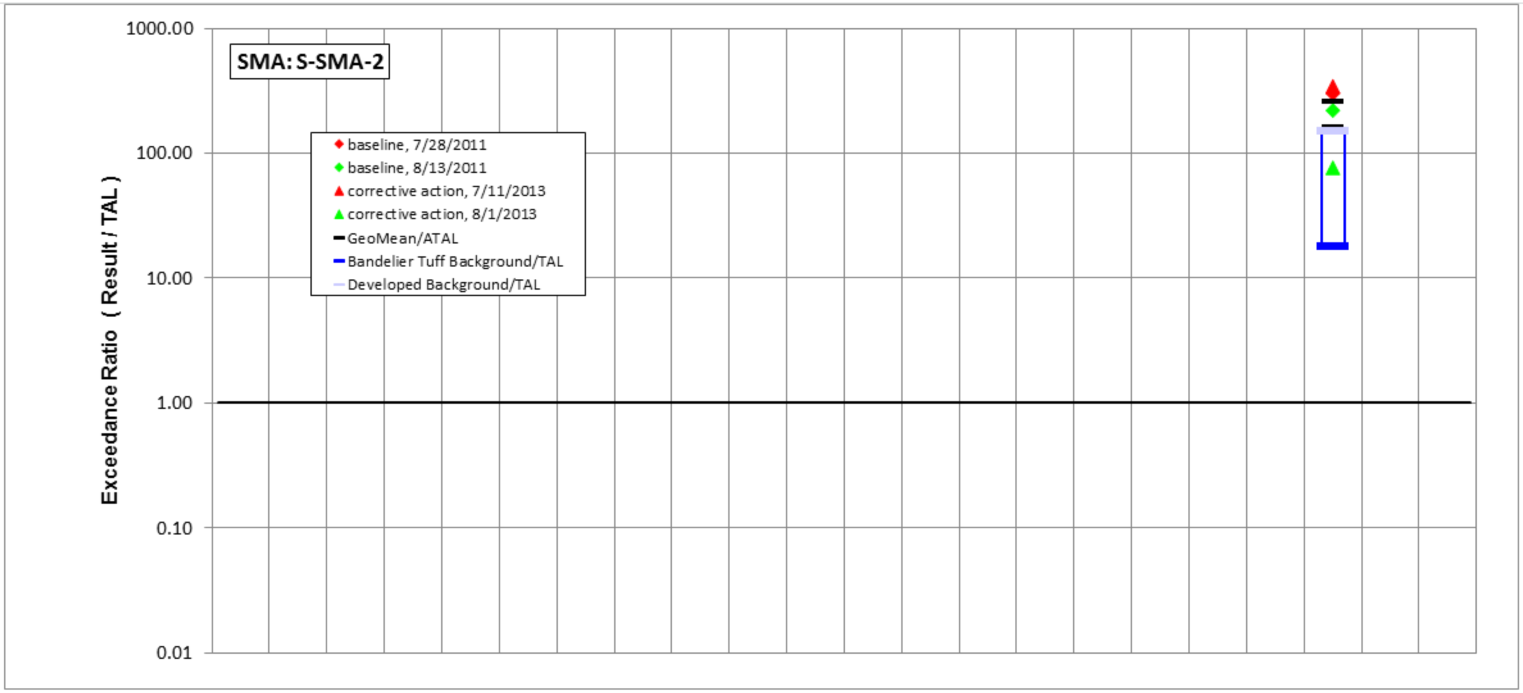
Figure 67-1 S-SMA-2 location map



	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	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
8/1/2013 result	-	-	-	-	-	-	-	**5.08**	-	-	-	-	-	-	-	**44.2**	-	-	-
result / TAL	-	-	-	-	-	-	-	**1.2**	-	-	-	-	-	-	-	**1.1**	-	-	-
7/11/2013 result	-	-	-	-	-	-	-	**4.43**	-	-	-	-	-	-	-	**54**	-	-	-
result / TAL	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	**1.3**	-	-	-
8/13/2011 result	392	1.4	3.1	54.6	*0.11*	2.7	1.8	**5.8**	0.72	*0.066*	2.1	1.7	*0.2*	*0.45*	13.9	23.8	*0.002*	3.88	*0.916*
result / TAL	0.52	0.0022	0.34	0.011	*0.11*	0.013	0.0018	**1.3**	0.042	*0.086*	0.012	0.34	*0.4*	*0.071*	0.14	0.57	*0.15*	0.26	*0.031*
7/28/2011 result	135	1.8	1.8	32	*0.11*	*2*	1.8	**8.3**	*0.5*	*0.066*	2.5	*1.5*	*0.2*	*0.45*	5.4	**62.6**	*0.002*	**29**	1.96
result / TAL	0.18	0.0028	0.2	0.0064	*0.11*	*0.01*	0.0018	**1.9**	*0.029*	*0.086*	0.015	*0.3*	*0.4*	*0.071*	0.054	**1.5**	*0.15*	**1.9**	0.065

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

Figure 67-2 Inorganic analytical results summary plot for S-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-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/1/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.049**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**77**	-	-
7/11/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.22**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**340**	-	-
8/13/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.141**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**220**	-	-
7/28/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.193**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**300**	-	-

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

Figure 67-3 Organic analytical results summary plot for S-SMA-2

68.0 S-SMA-2.01: AOC 03-052(b)

68.1 Site Descriptions

One historical industrial activity area is associated with S003A, S-SMA-2.01: Site 03-052(b).

AOC 03-052(b) consists of five storm water collection areas at TA-03 about 20 ft north and west of the Sigma Building (03-66). Surface runoff flows from the area around the north end of the Sigma Building to three storm water collection areas within the building fence, which channel storm water to two storm water collection areas north of the building 03-66 fence. The area to the northeast of building 03-66 discharges to a storm drain outlet just north of Eniwetok Drive, and the area to the northwest of building 03-66 flows to a single storm drain that discharges to a low-lying grassy area northwest of building 03-66.

This AOC was investigated with AOC 03-056(k), a container storage area and loading dock at building 03-66. Contaminants associated with AOC 03-056(k) may have been released into the AOC 03-052(b) storm drain system. The Laboratory conducted an RFI at this AOC in July 1997. The Consent Order Phase I investigation has been completed for AOC 03-052(b), and this Site was included in the August 2013 supplemental investigation report for Upper Sandia Canyon Aggregate Area. AOC 03-052(b) was recommended for corrective action complete without controls.

The project map (Figure 68-1) 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.

68.2 Control Measures

The run-on at this SMA is captured by two culvert inlets within the two eastern vegetative buffer strips. These inlets capture roof and pavement drainage and discharge to the culvert outlet at the fence line and onto a riprap. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 68-1).

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 68-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S003A02040009	Established Vegetation		X	X		B
S003A03010004	Earthen Berm	X			X	CB
S003A04060003	Rip Rap		X	X		CB
S003A05020006	Sediment Basin		X		X	EC
S003A05020007	Sediment Basin		X		X	EC
S003A05020008	Sediment Basin		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

68.3 Storm Water Monitoring

AOC 03-052(b) is monitored within S-SMA-2.01. Following the installation of baseline control measures, a baseline storm water sample was collected on August 5, 2011, and September 7, 2011 (Figures 68-2 and 68-3). Analytical results from this sample yielded two TAL exceedances:

- Copper concentrations of 10.7 µg/L and 10.9 µg/L (MTAL is 4.3 µg/L), and
- PCB concentrations of 380 ng/L and 1900 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at S-SMA-2.01, one corrective action storm water sample was collected on September 13, 2013 (Figures 68-2 and 68-3). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- PCB concentrations of 164 ng/L (ATAL is 0.6 ng/L).

Corrective action has resulted in a decrease in copper and PCB concentrations detected in storm water samples collected at S-SMA-2.01.

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 03-052(b):

- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow (i.e., less than 3 ft bgs) Consent Order soil samples. Aroclor-1254 was detected in 7 of 14 shallow samples at a maximum concentration 52% of the residential SSL. Aroclor-1260 was detected in 11 of 14 shallow samples at a maximum concentration 51% of the residential SSL. The highest PCB concentrations detected in shallow Consent Order samples at AOC 03-052(b) were from a sample collected in a storm water collection area upstream of the SMA sampler. The material sampled was covered with clean fill during implementation of enhanced controls and is no longer exposed to storm water. Other potential sources of PCBs include sludge-like material observed in a subsurface drain pipe that conveys storm water.


S-SMA-2.01, Sediment Basin,
S003A05020006, 007, 008 (photo ID 27766-5)

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 68-2 and 68-3. 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 68-2 and 68-3.

Monitoring location S-SMA-2.01 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 and 2013 are greater than both of these values.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

68.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-2.01 during the 2013 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 68-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30825	4-26-2013
Storm Rain Event	BMP-33615	7-25-2013
Storm Rain Event	BMP-35566	9-24-2013
Annual Erosion Evaluation	COMP-36764	11-21-2013
TAL Exceedance	COMP-37076	11-21-2013

No maintenance activities were conducted at S-SMA-2.01 in 2013.

68.5 Compliance Status

The Site associated with S-SMA-2.01 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 68-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 03-052(b)	Enhanced Control Corrective Action Monitoring	Force Majeure Request	LANL, September 23, 2013, "Request for an Extension due to Force Majeure under Part I.E.4(c) for Sites in Upper Sandia Canyon"

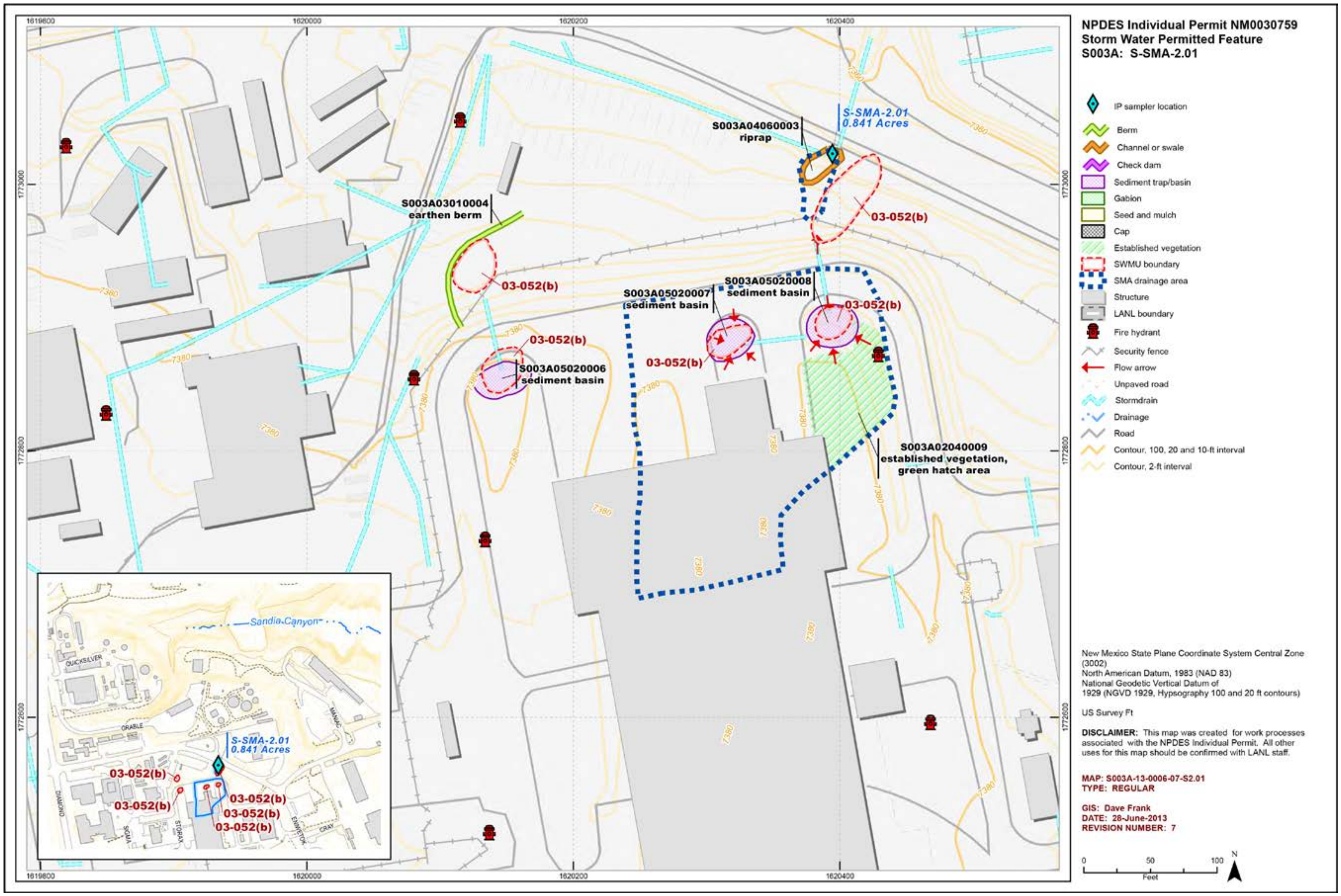
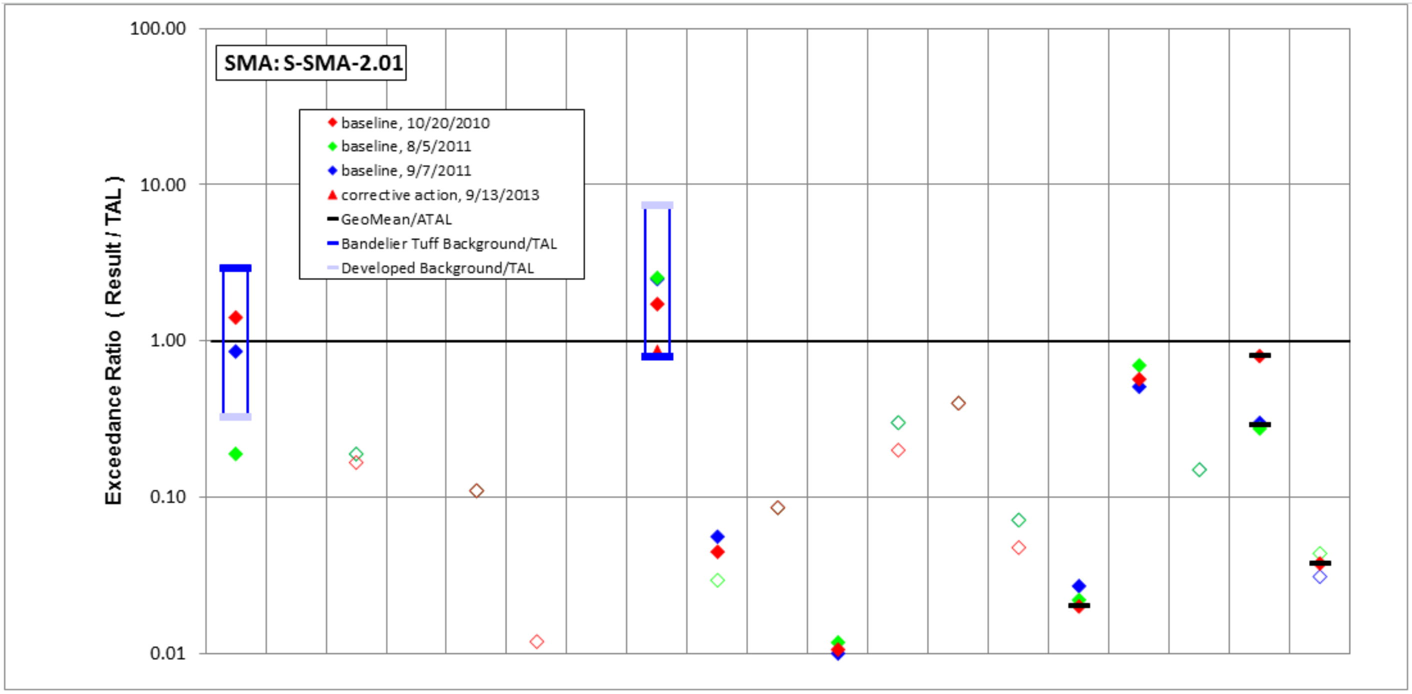


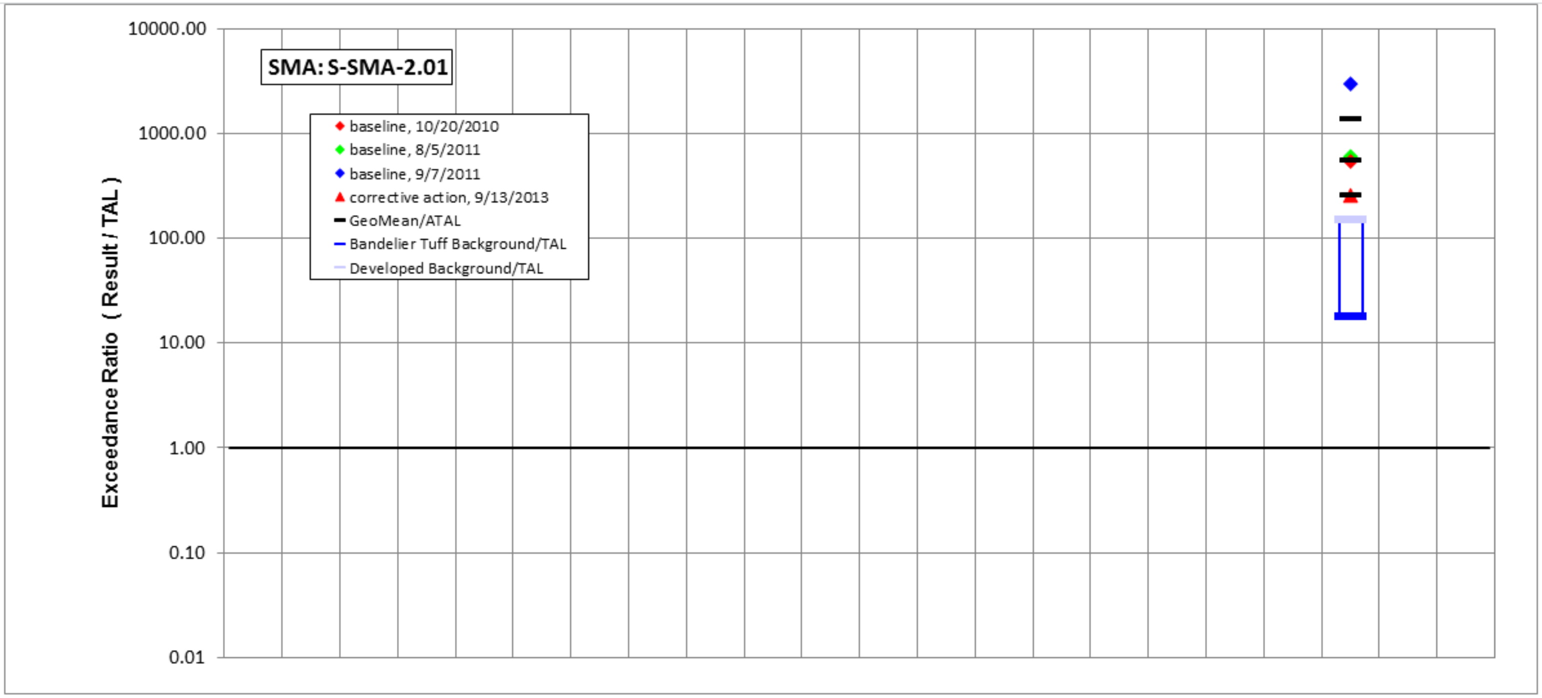
Figure 68-1 S-SMA-2.01 location map



	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
9/13/2013 result	-	-	-	-	-	-	-	3.66	-	-	-	-	-	-	-	-	-	-	-
result / TAL	-	-	-	-	-	-	-	0.85	-	-	-	-	-	-	-	-	-	-	-
9/7/2011 result	642	2	*1.7*	*15*	*0.11*	*2*	2.3	**10.7**	0.95	*0.066*	1.7	*1.5*	*0.2*	*0.45*	2.7	21.4	*0.002*	4.48	*0.931*
result / TAL	0.86	0.0031	*0.19*	*0.003*	*0.11*	*0.01*	0.0023	**2.5**	0.056	*0.086*	0.01	*0.3*	*0.4*	*0.071*	0.027	0.51	*0.15*	0.3	*0.031*
8/5/2011 result	142	3.7	*1.7*	16.6	*0.11*	*2*	*1*	**10.9**	*0.5*	*0.066*	2	*1.5*	*0.2*	*0.45*	2.2	29.3	*0.002*	4.13	*1.31*
result / TAL	0.19	0.0058	*0.19*	0.0033	*0.11*	*0.01*	*0.001*	**2.5**	*0.029*	*0.086*	0.012	*0.3*	*0.4*	*0.071*	0.022	0.7	*0.15*	0.28	*0.044*
10/20/2010 result	**1060**	*2.8*	*1.5*	*15*	*0.11*	*2.5*	2.8	**7.4**	0.76	*0.066*	1.8	*1*	*0.2*	*0.3*	2	23.9	-	12	1.13
result / TAL	**1.4**	*0.004*	*0.17*	*0.003*	*0.11*	*0.012*	0.0028	**1.7**	0.045	*0.086*	0.011	*0.2*	*0.4*	*0.048*	0.02	0.57	-	0.8	0.038

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

Figure 68-2 Inorganic analytical results summary plot for S-SMA-2.01



	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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.164**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**260**	-	-
9/7/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.9**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3000**	-	-
8/5/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.385**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**600**	-	-
10/20/2010 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.346**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**540**	-	-

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

Figure 68-3 Organic analytical results summary plot for S-SMA-2.01

69.0 S-SMA-2.8: AOC 03-014(c2)

69.1 Site Descriptions

One historical industrial activity area is associated with S004, S-SMA-2.8: Site 03-014(c2).

AOC 03-014(c2) is the inactive overflow outfall that previously received treated effluent from the former TA-03 WWTP from 1975 until the WWTP chlorination system [SWMU 03-014(j)] was constructed in 1985. An evaluation of the former WWTP blueprints during the 1994 RFI identified the location of the original treated effluent outfall approximately 20 to 30 ft west of the original AOC 03-014(c2) outfall. The outfall was located on the north side of the chlorination system pump pit (structure 03-166). Effluent for this outfall discharged as sheet flow onto a steep slope containing an erosion channel from storm water runoff. The channel eventually trends northeast into Sandia Canyon. Soil and sediment were occasionally cleaned out of the channel with a backhoe and piled onto the upslope channel bank. Following the construction of the chlorination system, the outfall was rerouted underground from the pump pit to the chlorination dosing and contact chamber where the final effluent discharged freely into Sandia Canyon from a flow measurement weir north of the contact chamber. This outfall was abandoned in 1988 or 1989, when the WWTP effluent was routed to a new outfall, AOC 03-014(b2).

AOC 03-014(c2) is included in the supplemental investigation report for the Upper Sandia Canyon Aggregate Area submitted to NMED under the Consent Order on August 27, 2013; the Site meets construction worker and industrial risk levels. However, additional sampling was proposed to define the vertical extent of Aroclor-1254 and Aroclor-1260 at one sampling location. AOC 03-014(c2) will likely be recommended for corrective action upon completion of the Phase II sampling recommended in the Upper Sandia Canyon Aggregate Area investigation report.

The project map (Figure 69-1) 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.

69.2 Control Measures

There is no evidence of culvert discharge from the culvert located below the fence on the steep hillside next to the abandoned outfall. There is no evidence of significant run-on from the bare sand area south of the fence where the former WWTP is located. The northern access road contributes some run-on to the northern most SWMU boundary located below, or north of, the pit. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 69-1).

Table 69-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00402040008	Established Vegetation		X	X		B
S00403010005	Earthen Berm		X		X	CB
S00403020004	Base Course Berm	X			X	CB
S00403060006	Straw Wattles		X		X	B
S00408040007	Metal Cap	X		X		B

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

69.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-2.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

69.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-2.8 during the 2013 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 69-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30924	4-26-2013
Storm Rain Event	BMP-33610	7-25-2013
Storm Rain Event	BMP-35561	9-24-2013
Annual Erosion Evaluation	COMP-36863	11-6-2013

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

Table 69-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31670	Pick up and remove insulation blankets. Comments: Insulation blanket was at site on 5-15-13 when we did site walk. On 5/16/13 blanket no longer on site. We conducted walk around to see if blanket had blown elsewhere. No blanket found.	5-16-2013	20 day(s)	Maintenance conducted in timely manner.

69.5 Compliance Status

The Site associated with S-SMA-2.8 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 69-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 03-014(c2)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

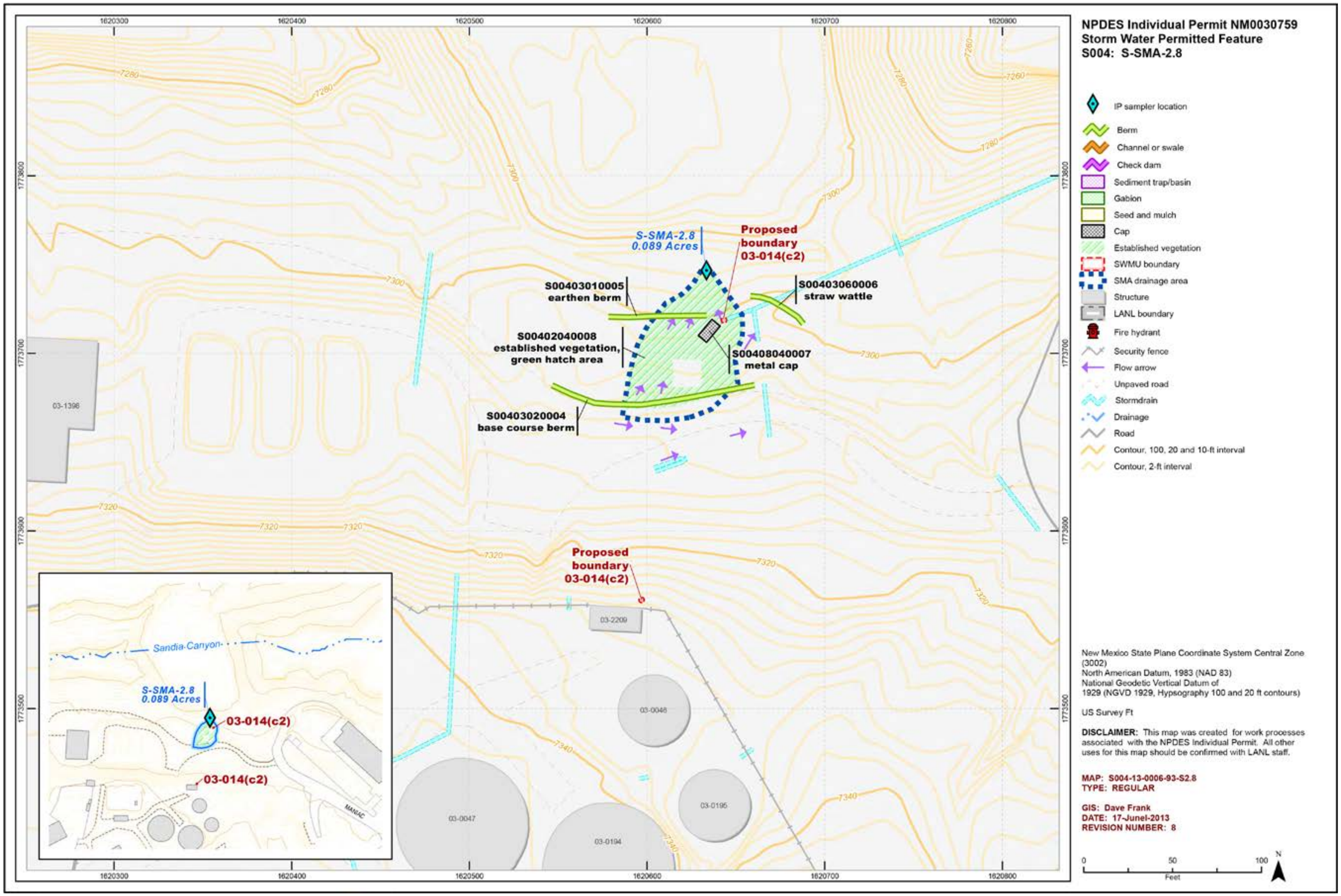


Figure 69-1 S-SMA-2.8 location map

70.0 S-SMA-3.51: SWMU 03-009(i)

70.1 Site Descriptions

One historical industrial activity area is associated with S005, S-SMA-3.51: Site 03-009(i).

SWMU 03-009(i) consists of an inactive surface disposal area located on the east side of the liquid and compressed gas facility (building 03-170). This site consists primarily of clean fill from TA-03 construction sites with construction debris, including crushed tuff, pieces of concrete, and asphalt mixed in with some of the fill material. The original IP Site narrative incorrectly stated that the Site ceased to be used as a disposal area in 1980; the 1990 SWMU Report did not specify dates of operation. Aerial photographs from 1979 and 1986 show the Site was not used before 1980 and was still being used for fill placement in 1986. Site visits in the early 1990s confirmed that fill was periodically being placed at the Site. The date fill placement ceased is not known, but the Site is currently inactive.

SWMU 03-009(i) is included in the supplemental investigation report for the Upper Sandia Canyon Aggregate Area, submitted to NMED under the Consent Order on August 27, 2013; the Site meets residential risk levels and is recommended for corrective action complete in that report. SWMU 03-009(i) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 70-1) 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.

70.2 Control Measures

Paved areas to the south of this SMA have the potential to contribute run-on. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 70-1).

Table 70-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00502040013	Established Vegetation		X	X		B
S00503010005	Earthen Berm		X		X	CB
S00506010007	Rock Check Dam	X			X	CB
S00506010008	Rock Check Dam	X			X	CB
S00506010009	Rock Check Dam	X			X	CB
S00506010010	Rock Check Dam	X			X	CB
S00506010012	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

70.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.51. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

70.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-3.51 during the 2013 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 70-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30826	4-26-2013
Storm Rain Event	BMP-33612	7-25-2013
Storm Rain Event	BMP-35563	9-24-2013
Annual Erosion Evaluation	COMP-36765	11-6-2013

No maintenance activities were conducted at S-SMA-3.51 in 2013.

70.5 Compliance Status

The Site associated with S-SMA-3.51 is a High Priority Site. The High Priority Site deadline for the certification of corrective action at this SMA is now 1 yr from the date of any observed TAL exceedance.

Table 70-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-009(i)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

S-SMA-3.51, Rock Check Dam, S00506010012 (photo ID 10890-1)

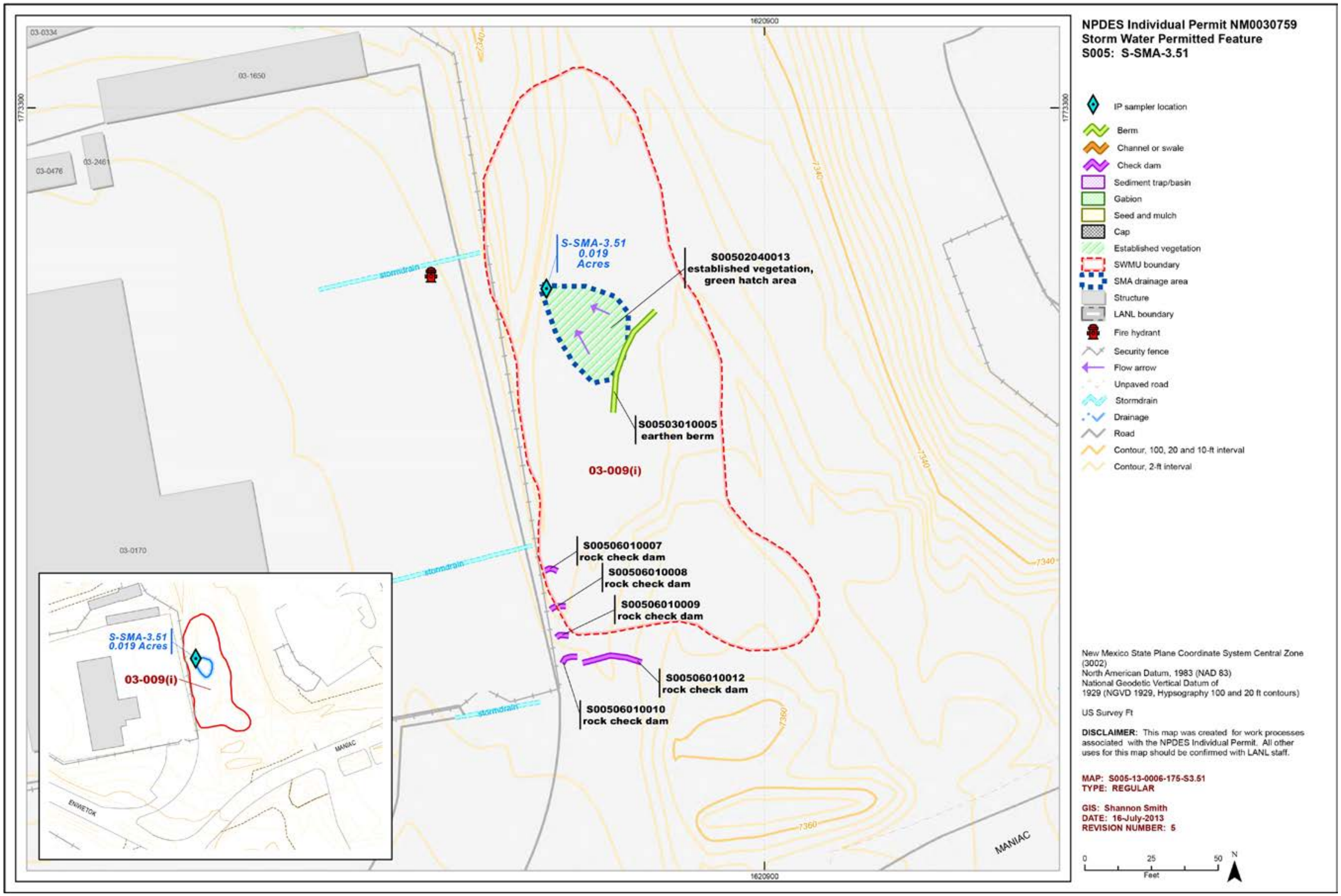


Figure 70-1 S-SMA-3.51 location map

71.0 S-SMA-3.52: SWMU 03-021

71.1 Site Descriptions

One historical industrial activity area is associated with S005A, S-SMA-3.52: Site 03-021.

SWMU 03-021 is a former NPDES-permitted outfall (EPA 04A094) and associated daylight channel located approximately 60 ft north of the north exterior wall of the liquid and compressed gas facility (building 03-170). From 1964 to 1976, the outfall discharged caustic wash and rinse water from compressed-gas-cylinder cleaning operations. The cylinders were washed and stripped of paint using a caustic soda solution before they were repainted. They were screened for radioactive contamination and cleaned of any exterior oil, dirt, and grease before they were brought to building 03-170. Washing and stripping were done in a below-floor-grade pit in the northern part of building 03-170. A 2-in.-diameter iron outfall pipe in an open exterior ditch carried the caustic wash and rinse water from the pit. The end of the outfall pipe discharged into a northeast-trending surface ditch that continued about 180 ft to the main north-south drainage ditch. This outfall was not used after 1976, when the compressed gas suppliers assumed cylinder washing and painting responsibilities. The outfall was buried when 5 to 10 ft of fill material was placed over the former outfall area and graded during Site preparation activities for the construction of building 03-1650, the compressed-gas cylinder storage shed in 1985. The outfall was removed from the NPDES permit in 1997.

SWMU 03-021 is included in the Supplemental Investigation Report for the Upper Sandia Canyon Aggregate Area, submitted to NMED under the Consent Order on August 27, 2013; the Site meets residential risk levels and is recommended for corrective action complete in the report. SWMU 03-021 will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 71-1) 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.

71.2 Control Measures

This SMA has the potential of run-on from the paved areas to the south and west. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 71-1).

Table 71-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S005A02040005	Established Vegetation		X	X		B
S005A03010004	Earthen Berm	X			X	B
S005A03060003	Straw Wattles		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

71.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.52. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

71.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-3.52 during the 2013 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 71-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30827	4-26-2013
Storm Rain Event	BMP-33613	7-25-2013
Storm Rain Event	BMP-35564	9-24-2013
Annual Erosion Evaluation	COMP-36766	11-6-2013

No maintenance activities were conducted at S-SMA-3.52 in 2013.

71.5 Compliance Status

The Site associated with S-SMA-3.52 is a High Priority Site. The High Priority Site deadline for the certification of corrective action at this SMA is now 1 yr from the date of any observed TAL exceedance.

Table 71-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-021	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

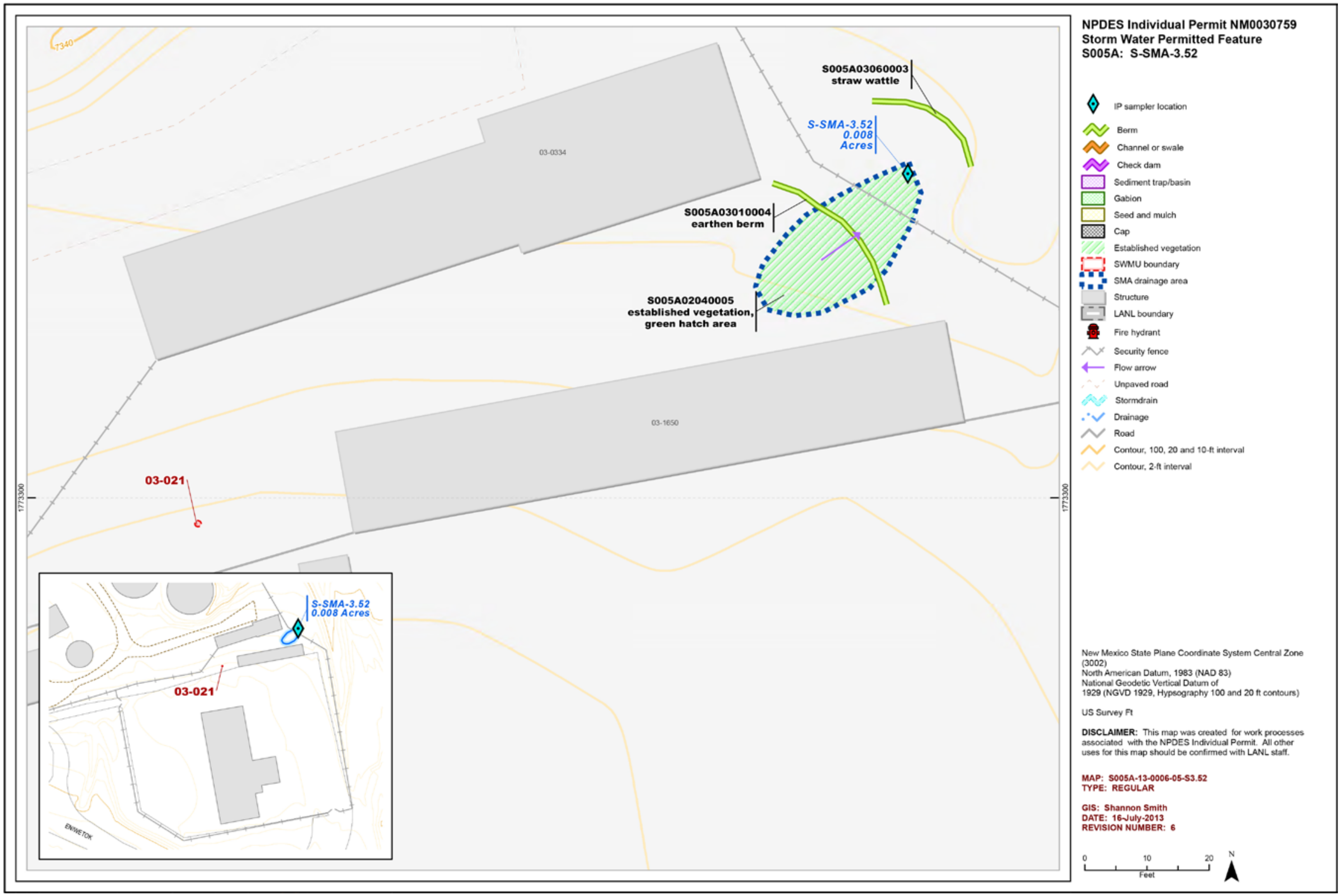


Figure 71-1 S-SMA-3.52 location map

72.0 S-SMA-3.53: AOC 03-014(b2)

72.1 Site Descriptions

One historical industrial activity area is associated with S005B, S-SMA-3.53: Site 03-014(b2).

AOC 03-014(b2) is the former NPDES-permitted outfall (SSS01S) for the former TA-03 WWTP. The outfall received treated effluent from the WWTP via a 1.5-ft-diameter × 300-ft-long CMP. The outfall discharged to a rocky outcrop at the edge of Sandia Canyon. Outfall SSS01S was permitted for the discharge of treated wastewater and was removed from the NPDES permit in 1994. AOC 03-014(b2) received effluent from the former TA-03 WWTP from 1989 to 1992 when the WWTP was decommissioned. Permitted discharges from Outfall SSS01S [AOC 03-014(b2)] were monitored three times per month; radioactive constituents were the only exceedances observed from 1989 to 1992.

Outfall SSS01S [AOC 03-014(b2)] then received treated effluent from the WWTP at TA-46 from 1992 to 1998; the outfall is no longer on the Laboratory's NPDES permit and has received only storm water runoff since 1998.

AOC 03-014(b2) is included in the Supplemental Investigation Report for the Upper Sandia Canyon Aggregate Area submitted to NMED under the Consent Order on August 27, 2013, and is recommended for corrective action complete without controls in that report. AOC 03-014(b2) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 72-1) 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.

72.2 Control Measures

This SMA has the potential of run-on from the paved areas to the south. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 72-1).

Table 72-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S005B01010010	Seed and Wood Mulch			X		B
S005B02040009	Established Vegetation		X	X		B
S005B03120005	Rock Berm		X		X	CB
S005B04040007	Culvert	X		X		EC
S005B04060006	Rip Rap	X		X		EC
S005B06010003	Rock Check Dam	X			X	CB
S005B06010004	Rock Check Dam	X			X	CB
S005B08030008	Concrete/Asphalt Cap		X	X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

72.3 Storm Water Monitoring

AOC 03-014(b2) is monitored within S-SMA-3.53. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2011 (Figures 72-2 and 72-3). Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 1490 µg/L (MTAL is 750 µg/L),
- Copper concentration of 9.6 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 62.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 700 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 03-014(b2):

- Aluminum is not known to be associated with industrial materials historically managed at the Site and was not detected above BVs in Consent Order samples collected at the Site.
- Copper is not known to be associated with industrial materials historically managed at the Site and was not detected above BVs in Consent Order samples collected at the Site.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order samples. Aroclor-1254 was detected in 5 of 10 samples at a concentration 6% of the residential SSL. Aroclor-1260 was detected in 5 of 10 samples at a maximum concentration 2.3% of the residential SSL.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at SWMU 03-014(b2). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. No alpha-emitting radionuclides were detected above BVs/FVs. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

These results, along with the lack of aluminum, copper and alpha-emitting radionuclide detections in Consent Order samples, are consistent with the Site not being the source of these TAL exceedances. The low magnitude and frequency of PCB detections in Consent Order samples, along with the fact that the SMA receives runoff from developed area within TA-03 of the Laboratory are also consistent with the Site not being the source of this TAL exceedance.

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 72-2 and 72-3. 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 72-2 and 72-3.

Monitoring location S-SMA-3.53 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 consisting of Bandelier Tuff sediment were compared with aluminum, copper, and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper and aluminum are associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43; the result from 2011 is greater than this value.
- Gross alpha—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.
- PCB—The PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is greater than this value.

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

72.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-3.53 during the 2013 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 72-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30828	4-26-2013
Storm Rain Event	BMP-33614	7-25-2013
Storm Rain Event	BMP-35565	9-24-2013
Annual Erosion Evaluation	COMP-36767	11-6-2013

Table 72-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31668	Install seed and green waste mulch to disturbed area as marked on attached map.	5-1-2013	20 day(s)	Maintenance conducted in timely manner.

72.5 Compliance Status

The Site associated with S-SMA-3.53 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 72-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 03-014(b2)	Corrective Action Initiated	Force Majeure Request	LANL, September 23, 2013, “Request for an Extension Due to Force Majeure under Part I.E.4(c) for Sites in Upper Sandia Canyon”

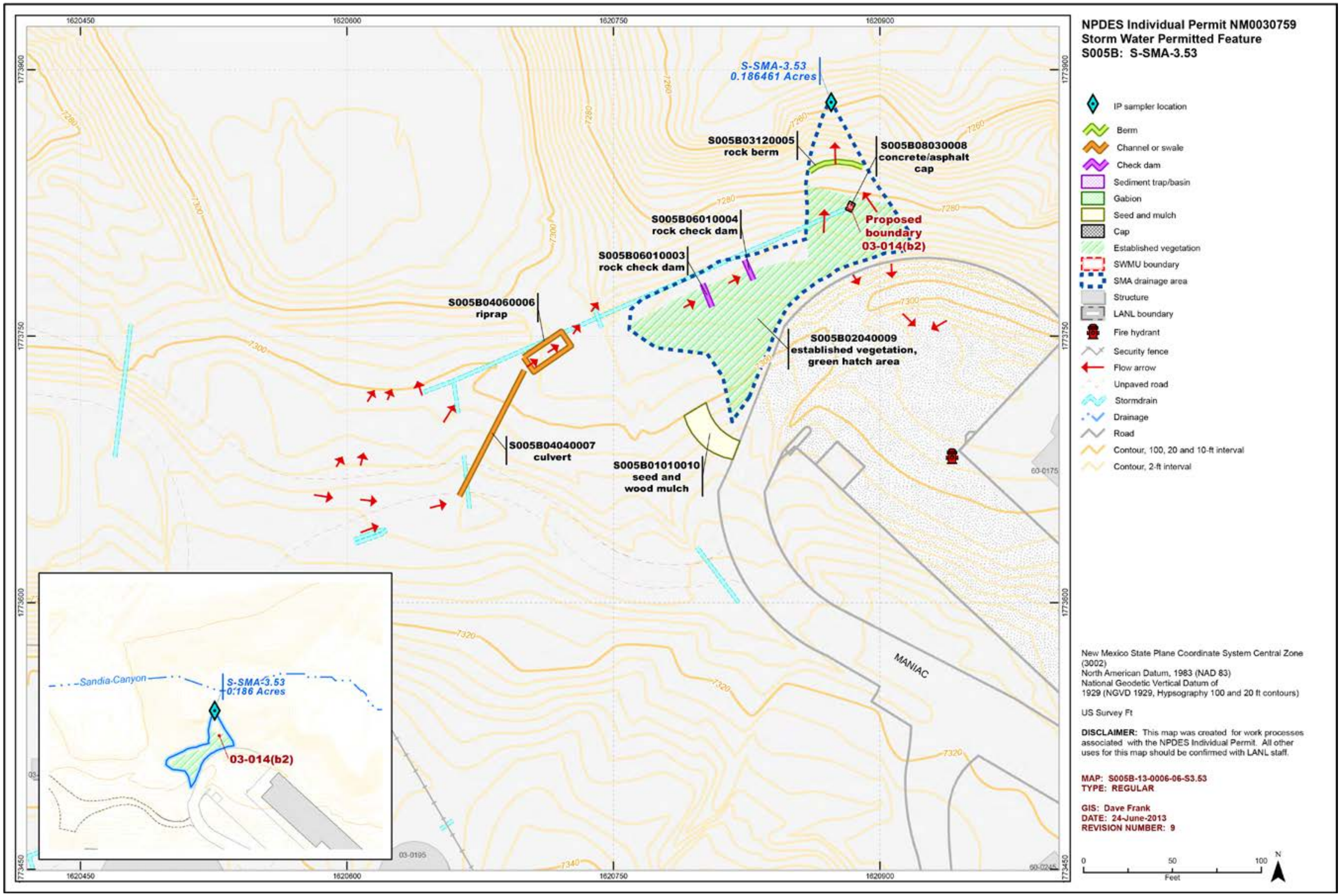
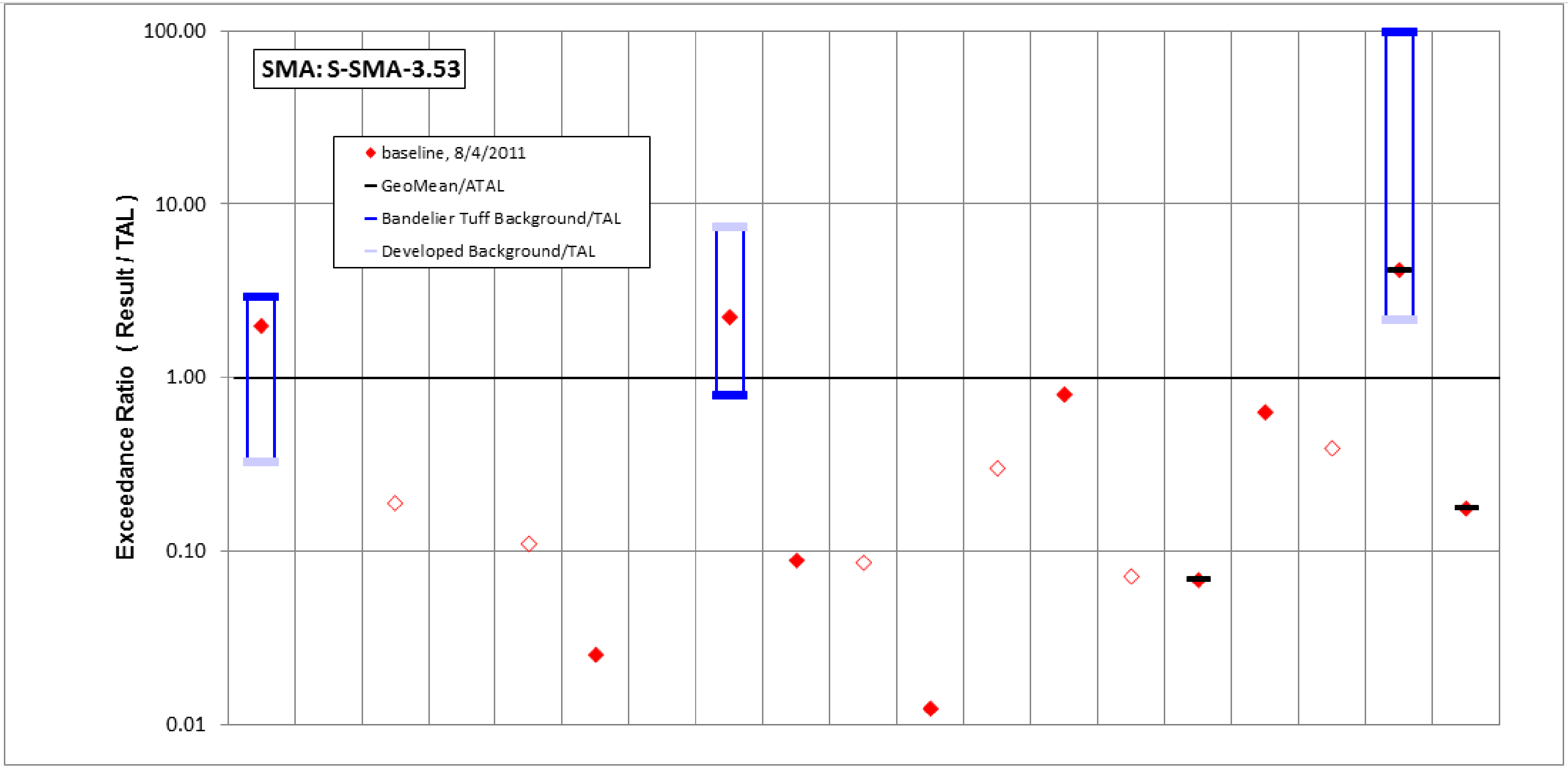


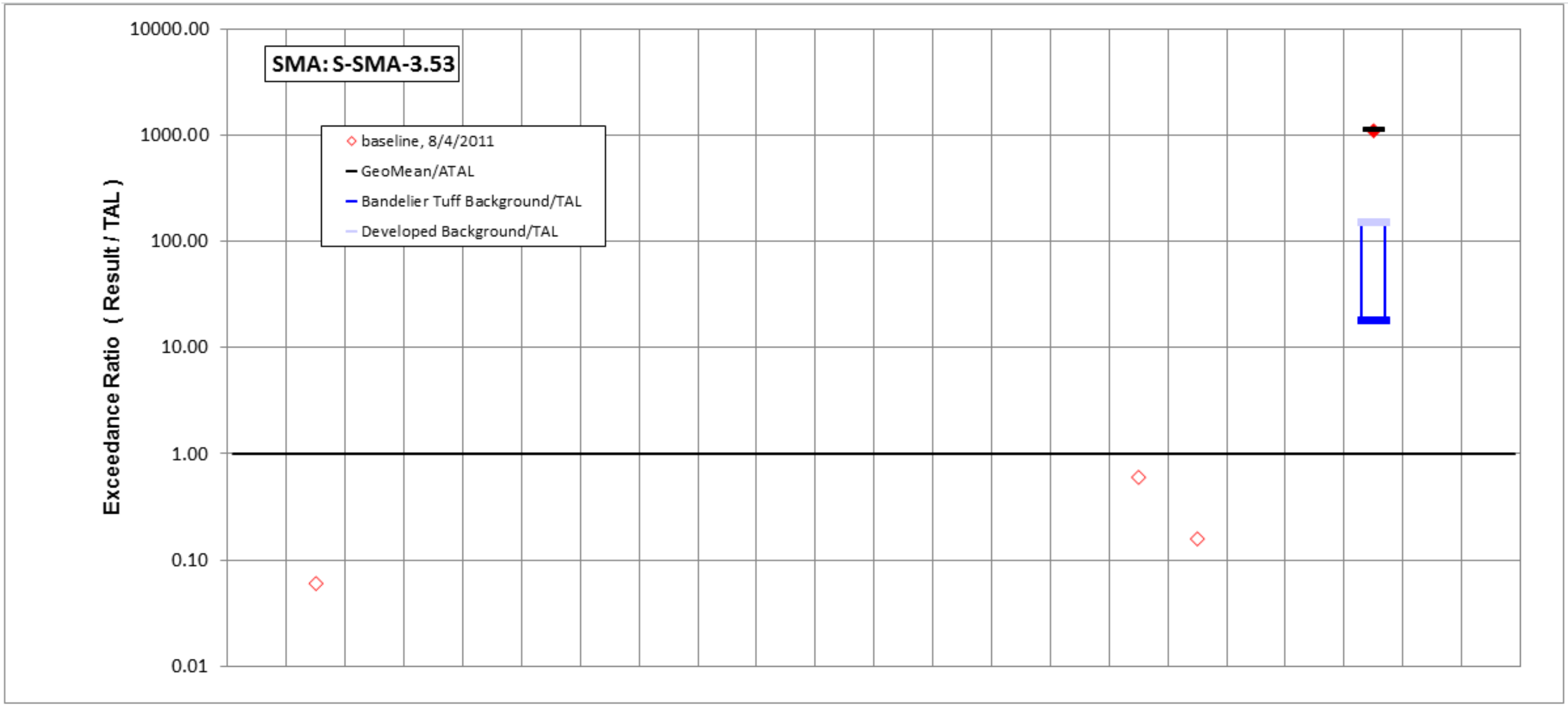
Figure 72-1 S-SMA-3.53 location map



	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
8/4/2011 result	**1490**	*1*	*1.7*	23.2	*0.11*	5.3	4.1	**9.6**	1.5	*0.066*	2.1	*1.5*	0.4	*0.45*	6.8	26.5	*0.004*	**62.5**	5.28
result / TAL	**2**	*0.002*	*0.19*	0.0046	*0.11*	0.025	0.0041	**2.2**	0.088	*0.086*	0.012	*0.3*	0.8	*0.071*	0.068	0.63	*0.39*	**4.2**	0.18

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

Figure 72-2 Inorganic analytical results summary plot for S-SMA-3.53



	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	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/4/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	-	-	**0.702**	-	-
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	-	-	**1100**	-	-

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

Figure 72-3 Organic analytical results summary plot for S-SMA-3.53

73.0 S-SMA-3.6: SWMU 60-007(b)

73.1 Site Descriptions

One historical industrial activity area is associated with S006, S-SMA-3.6: Site 60-007(b).

SWMU 60-007(b) consists of a storm drainage ditch at TA-60 that starts approximately 600 ft from a paved area directly north of the motor pool building (building 60-0001) and extends to the bottom of Sandia Canyon. Two parking lots located east of building 60-0001 drain to a ditch that eventually joins the SWMU 60-007(b) drainage ditch. Other former sources of potential contamination to the ditch are a steam-cleaning pad, a used-oil storage tank, and an oil/water separator. In addition, equipment that used PCB-containing oil was stored on an asphalt area east of building 60-0001. In 1986, the user group removed stained soil from the ditch down to bedrock.

SWMU 60-007(b) is included in the supplemental investigation report for the Upper Sandia Canyon Aggregate Area submitted to NMED under the Consent Order on August 27, 2013, and the report recommends corrective action complete without controls for the Site. SWMU 60-007(b) will be eligible for a COC upon NMED's approval of the report.

The project map (Figure 73-1) 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.

73.2 Control Measures

Run-on sources at this SMA include the dirt access road along the southern portion of the SWMU boundary; the asphalt parking area east of building 60-0002; the parking area and road between buildings 60-0001 and 60-0002 that discharges to a culvert and to the channel flowing onto the SWMU; the heavy equipment storage area east of 60-0001 that discharges to the on-site culvert; and the road and parking area between building 60-0001 and building 60-0085 that discharges to the on-site channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 73-1).

S-SMA-3.6, Earthen Berm, S00603010019 (photo ID 28140-2)

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 73-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00602040021	Established Vegetation		X	X		B
S00603010019	Earthen Berm	X			X	EC
S00603010020	Earthen Berm	X			X	EC
S00603100030	Gravel Bags	X			X	B
S00604060002	Rip Rap	X		X		CB
S00604060010	Rip Rap		X	X		CB
S00604060011	Rip Rap	X		X		CB
S00604060028	Rip Rap	X		X		B
S00604060029	Rip Rap	X		X		B
S00606010001	Rock Check Dam		X		X	CB
S00606010012	Rock Check Dam		X		X	CB
S00606010013	Rock Check Dam		X		X	CB
S00606010014	Rock Check Dam		X		X	CB
S00606010015	Rock Check Dam	X			X	CB
S00606010016	Rock Check Dam	X			X	EC
S00606010017	Rock Check Dam		X		X	EC
S00606010018	Rock Check Dam		X		X	EC
S00606010022	Rock Check Dam		X		X	B
S00606010023	Rock Check Dam		X		X	B
S00607010007	Gabions	X			X	CB
S00607010008	Gabions	X			X	CB
S00607010026	Gabions	X		X		B
S00607020024	Gabion Blanket	X		X		B
S00607020025	Gabion Blanket	X		X		B

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

73.3 Storm Water Monitoring

SWMU 60-007(b) is monitored within S-SMA-3.6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 28, 2011, and August 13, 2011 (Figures 73-2 and 73-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentrations of 10.9 µg/L and 40.5 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 70.7 µg/L and 147 µg/L (MTAL is 42 µg/L), and
- PCB concentrations of 2 ng/L and 20 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at S-SMA-3.6, corrective action storm water samples were collected on June 14, 2013 and July 2, 2013 (Figures 73-2 and 73-3). Analytical results from this corrective action monitoring sample yielded three TAL exceedances:

- Copper concentrations of 15.4 µg/L and 20.8 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 108 µg/L and 135 µg/L (MTAL is 42 µg/L), and
- PCB concentrations of 2 ng/L and 7 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 60-007(b):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 2 of 20 shallow samples (i.e., less than 3 ft bgs) with a maximum concentration 2.6 times the soil BV, but the copper results were not statistically different than background.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above soil and tuff BVs in 7 of 20 shallow samples with a maximum concentration 2.7 times the soil BV.
- PCBs are known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order samples. Aroclor-1254 was detected in 1 of 20 samples at a concentration 0.3% of the residential SSL. Aroclor-1260 was detected in 2 of 20 samples at a maximum concentration 0.2% of the residential SSL.


S-SMA-3.6, Rock Check Dam, S006060010014 (photo ID 7451-2)

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 73-2 and 73-3. 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 73-2 and 73-3.

Monitoring location S-SMA-3.6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and zinc 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.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. Both copper results from 2013 are between these values. One copper result from 2011 is greater than both of these values the other result is between them.

- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. One zinc result from 2013 is less than both of these values and the other result is between them. One zinc result from 2011 is less than both of these values and the other result is between them.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. Both PCB results from 2013 are less than both of these values. One PCB result from 2011 is less than both of these values and the other result is between them.

The low magnitude and frequency of copper, zinc, and PCB detections in Consent Order samples, are consistent with the Site not being the source of TAL exceedances. In addition, the concentrations of copper and zinc in baseline monitoring samples are similar to those in enhanced control confirmation samples. The average PCB concentration is slightly less for the confirmation samples, but one of the baseline results was less than both confirmation results.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

73.4 Inspections and Maintenance

RG121.9 recorded three storm events at S-SMA-3.6 during the 2013 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 73-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30925	4-26-2013
Storm Rain Event	BMP-33611	7-25-2013
Storm Rain Event	BMP-35562	9-24-2013
Annual Erosion Evaluation	COMP-36864	11-7-2013
TAL Exceedance	COMP-35301	9-5-2013

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

Table 73-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34330	Remove trash/debris from rip rap Asset ID S00604060010.	8-7-2013	13 day(s)	Maintenance conducted in timely manner.
BMP-34543	Rip Rap [S00604060002] Add large angular rip rap below culvert outlet at rip rap -0002 to reinforce bank. Rock Check Dam [S00606010013] Add angular rock to build up height and extend both ends. Rock Check Dam [S00606010014] Add angular rock to build up height and extend both ends. Rip Rap [S00604060028] Modify rip rap area by extending north end of rolling dip across dirt access road to discharge flow away from SMA. Line with angular rock.	12-24-2013	152 day(s)	Maintenance conducted as soon as practicable.

73.5 Compliance Status

The Site associated with S-SMA-3.6 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 73-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 60-007(b)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated after 2nd TAL exceedance	2nd initiation on 8-13-13

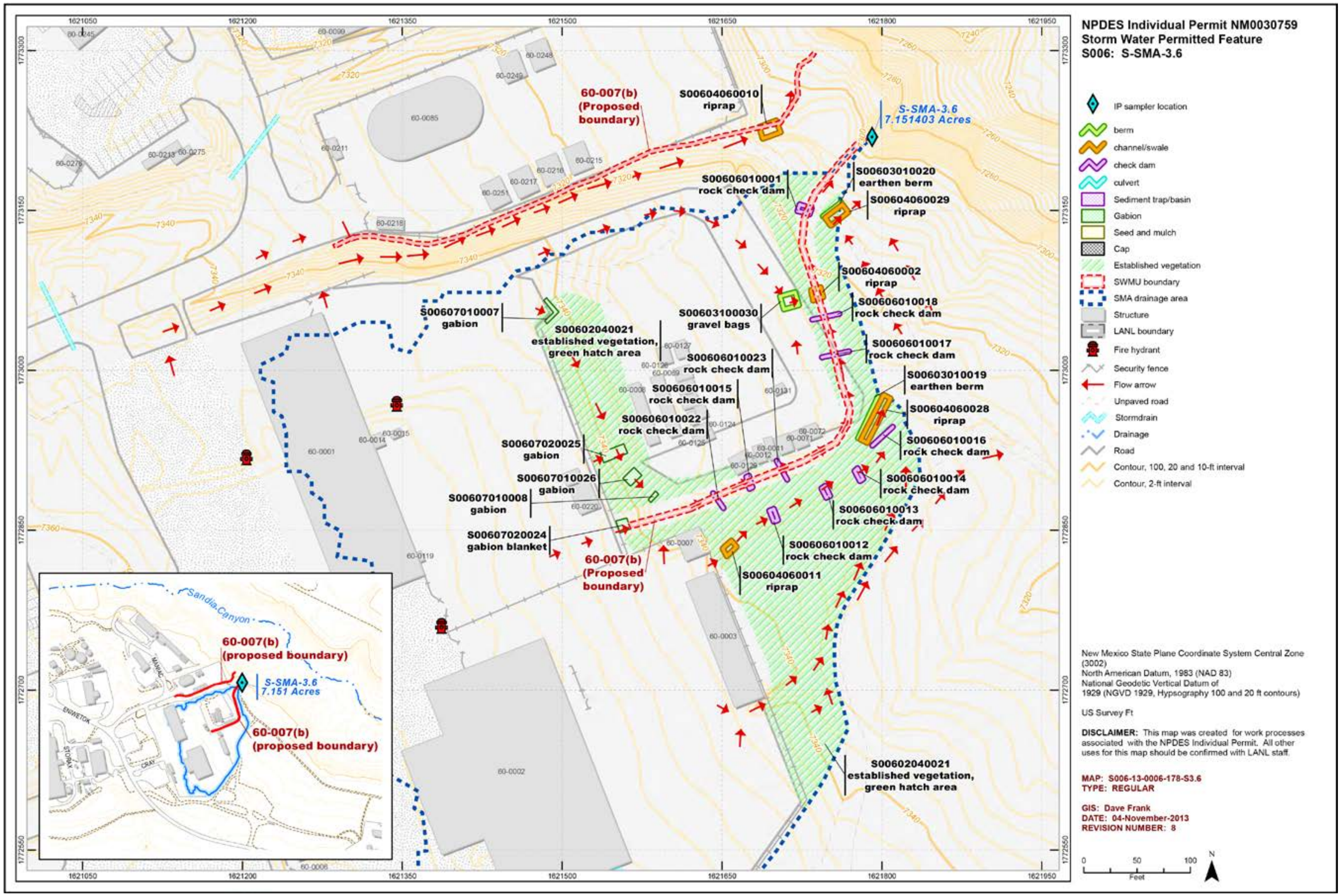
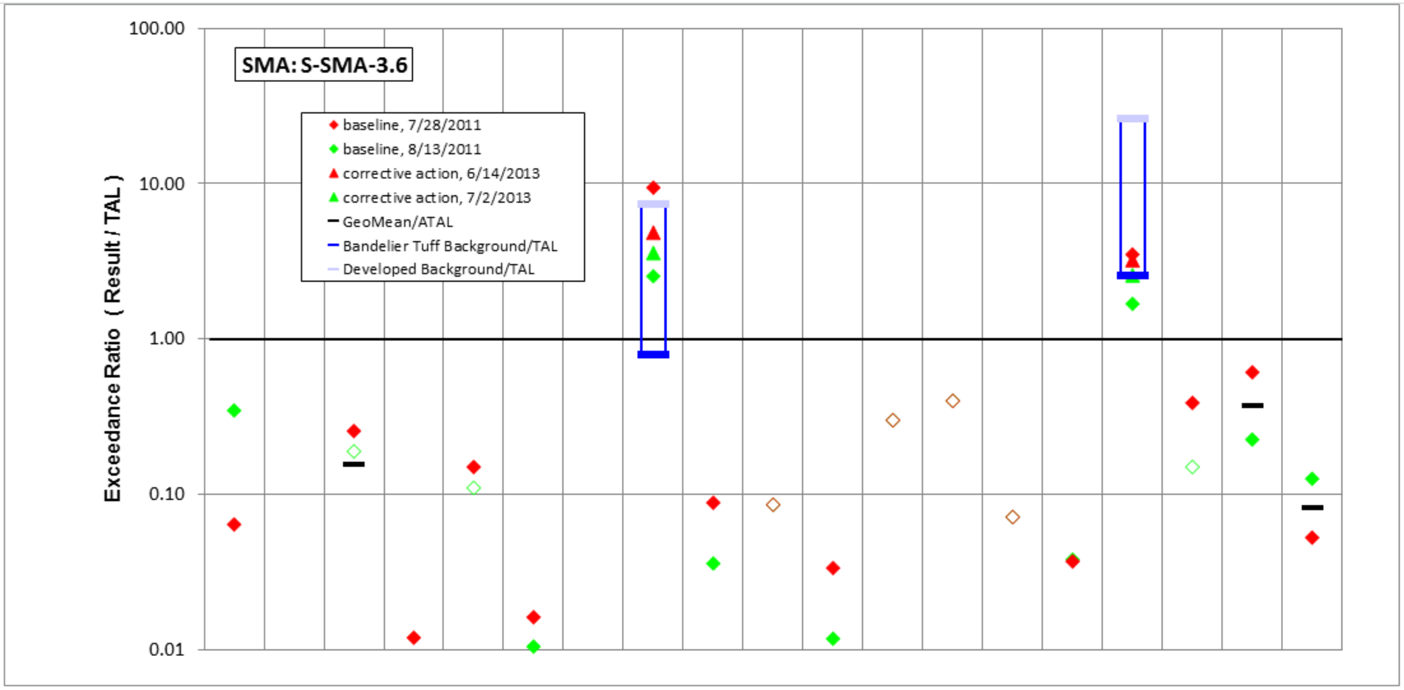


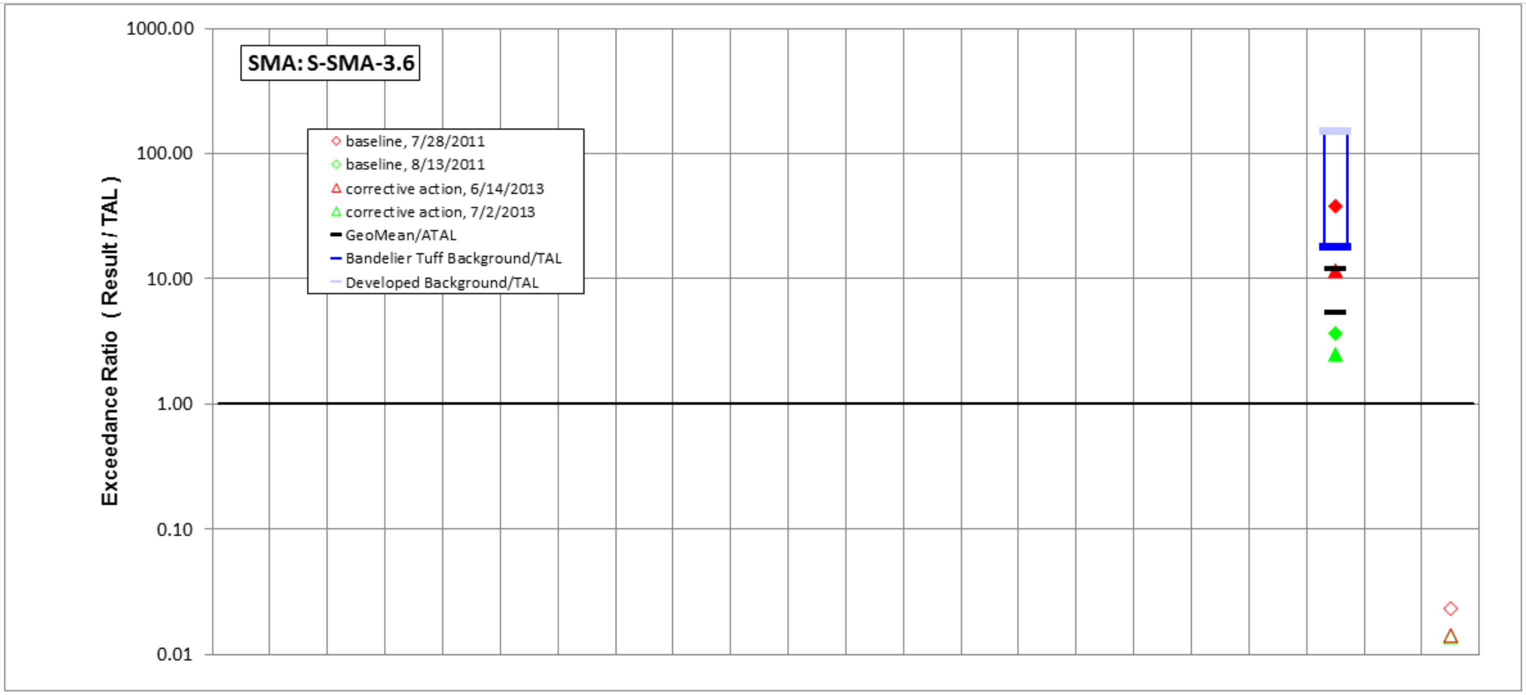
Figure 73-1 S-SMA-3.6 location map



	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
7/2/2013 result	-	-	-	-	-	-	-	**15.4**	-	-	-	-	-	-	-	**108**	-	-	-
result / TAL	-	-	-	-	-	-	-	**3.6**	-	-	-	-	-	-	-	**2.6**	-	-	-
6/14/2013 result	-	-	-	-	-	-	-	**20.8**	-	-	-	-	-	-	-	**135**	-	-	-
result / TAL	-	-	-	-	-	-	-	**4.8**	-	-	-	-	-	-	-	**3.2**	-	-	-
8/13/2011 result	260	*1*	*1.7*	28.5	*0.11*	2.2	1.1	**10.9**	0.61	*0.066*	2	*1.5*	*0.2*	*0.45*	3.8	**70.7**	*0.002*	3.38	3.78
result / TAL	0.35	*0.002*	*0.19*	0.0057	*0.11*	0.01	0.0011	**2.5**	0.036	*0.086*	0.012	*0.3*	*0.4*	*0.071*	0.038	**1.7**	*0.15*	0.23	0.13
7/28/2011 result	48	1.2	2.3	59.7	0.15	3.4	1.6	**40.5**	1.5	*0.066*	5.7	*1.5*	*0.2*	*0.45*	3.7	**147**	0.0039	9.16	1.58
result / TAL	0.064	0.0019	0.26	0.012	0.15	0.016	0.0016	**9.4**	0.088	*0.086*	0.034	*0.3*	*0.4*	*0.071*	0.037	**3.5**	0.39	0.61	0.053

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

Figure 73-2 Inorganic analytical results summary plot for S-SMA-3.6



	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	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	6E-04	-	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
7/2/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.278*	-	**0.002**	-	*0.278*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	**2.5**	-	*0.014*
6/14/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.284*	-	**0.007**	-	*0.284*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	**12**	-	*0.014*
8/13/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	**0.002**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	**3.7**	-	-
7/28/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.466*	-	**0.024**	-	*0.466*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	**38**	-	*0.023*

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

Figure 73-3 Organic analytical results summary plot for S-SMA-3.6

74.0 S-SMA-3.7: AOC 53-012(e)

74.1 Site Descriptions

One historical industrial activity area is associated with S007, S-SMA-3.7: Site 53-012(e).

AOC 53-012(e) consists of an inactive drainline and former NPDES-permitted outfall (03A114) associated with the TA-53 equipment test laboratory (building 53-2). The drainline runs southwest under an asphalt parking lot approximately 110 ft from the southwest corner of building 53-2 and then changes direction, running northwest approximately 100 ft to the associated outfall near the edge of Sandia Canyon. The drainline received discharges from 12 trench drains, 2 sink drains, and a floor drain in building 53-2. The primary source of wastewater was blowdown from the building 53-2 cooling tower, which was discharged to one of the trench drains. Historically, chemicals added to the cooling water included sodium molybdate and hydroxyethylidene diphosphonic acid as corrosion inhibitors; 1-bromo-3-chloro-5,5-dimethylhydantoin as a microbicide; and sodium bisulfite as an oxygen scavenger. The trench drains also received equipment-flushing and floor-washing wastewater. Discharges to this outfall began in approximately 1968, when building 53-2 went into service. Discharges ceased in 1992, and the outfall was removed from the NPDES permit on July 11, 1995. The drainline remains in place, but the outfall has been plugged.

Phase I Consent Order sampling is complete for AOC 53-012(e). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs. AOC 53-012(e) will be recommended for corrective action complete in the supplemental investigation report for Lower Sandia Canyon Aggregate Area, to be submitted to NMED in 2015. AOC 53-012(e) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 74-1) 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.

74.2 Control Measures

There is the potential for run-on at this SMA from the paved areas to the northeast. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 74-1).

Table 74-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00702040006	Established Vegetation		X	X		B
S00703120004	Rock Berm	X			X	CB
S00703120005	Rock Berm		X		X	CB
S00704030003	Rock Channel/Swale	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

74.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

74.4 Inspections and Maintenance

RG203 recorded five storm events at S-SMA-3.7 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 74-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30829	4-26-2013
Storm Rain Event	BMP-33017	7-3-2013
Storm Rain Event	BMP-34259	8-1-2013
Storm Rain Event	BMP-35435	9-24-2013
Annual Erosion Evaluation	COMP-36768	11-14-2013

No maintenance activities were conducted at S-SMA-3.7 in 2013.

74.5 Compliance Status

The Site associated with S-SMA-3.7 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 74-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 53-012(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

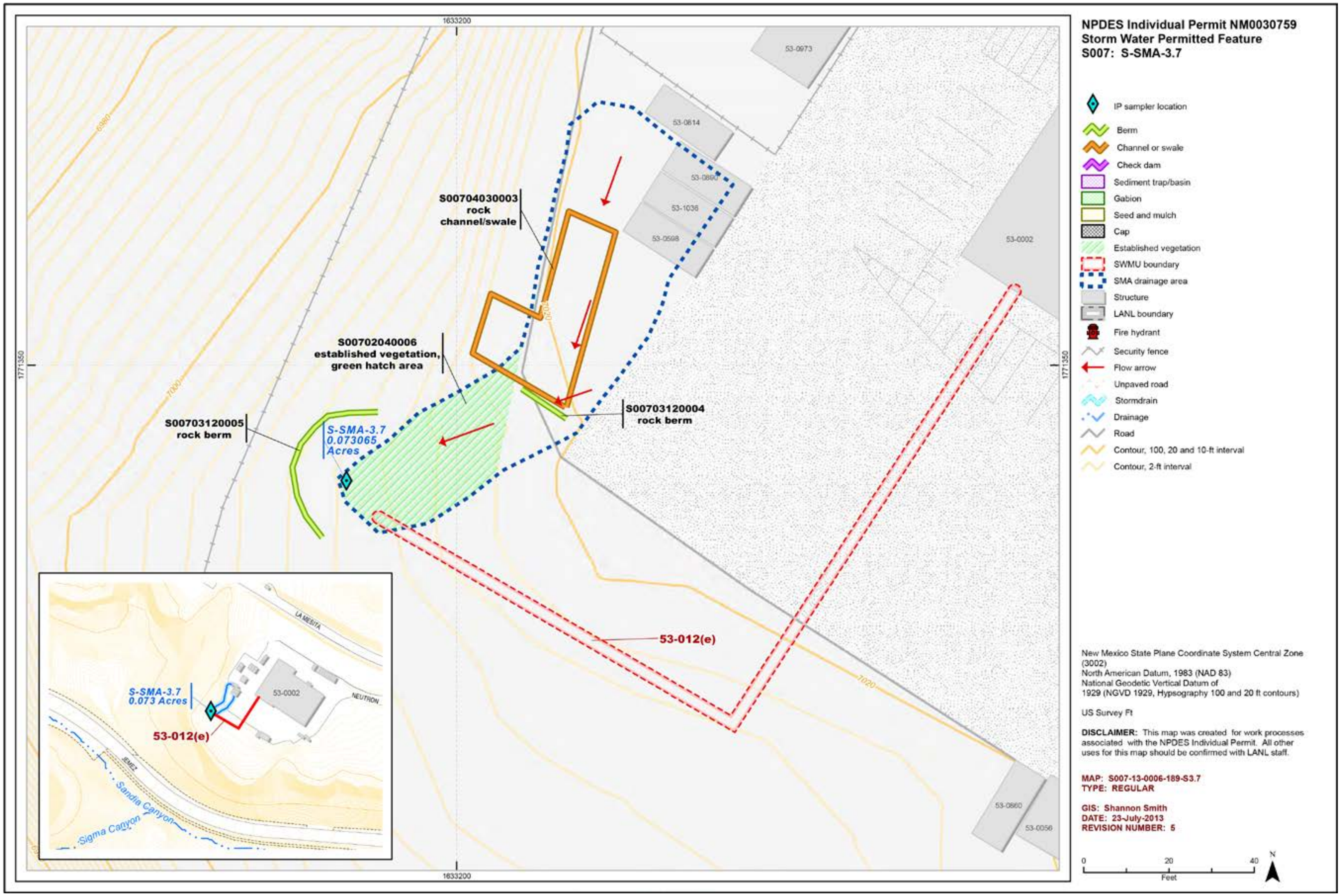


Figure 74-1 S-SMA-3.7 location map

75.0 S-SMA-3.71: SWMU 53-001(a)

75.1 Site Descriptions

One historical industrial activity area is associated with S008, S-SMA-3.71: Site 53-001(a).

SWMU 53-001(a) is an outdoor storage area located on the north side of the TA-53 equipment test laboratory (building 53-2). This storage area consists of a covered concrete pad that currently serves as a drum storage area for building 53-2. This area was also formerly used as an SAA. Non-PCB dielectric oil is currently stored on the concrete pad. The pad is surrounded by a concrete curb to provide secondary containment. A drain valve located in the northwest corner of the curbed area was previously used to release accumulated rainwater but is now plugged. The storage area is believed to have been first used in 1968 when operations at building 53-2 began. A 1989 photograph of the area shows the Site to look much as it does today. In 1992, the Site was no longer used as an SAA. A Laboratory listing of waste-accumulation areas dated April 1993 notes the SAA on the north side of building 53-2 was removed. The Site was inspected in 1993; no evidence of staining or releases was noted.

Phase I Consent Order sampling is complete for SWMU 53-001(a). All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs, except two detections of Aroclor-1254 and one detection of Aroclor-1260; detected concentrations of these PCB mixtures are below construction worker and industrial SSLs. SWMU 53-001(a) will be recommended for corrective action complete in the supplemental investigation Report for Lower Sandia Canyon Aggregate Area, to be submitted to NMED in 2015. SWMU 53-001(a) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 75-1) 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.

75.2 Control Measures

Run-on from the paved area east of the SWMU is minimal. Most of the flow generated by the paved area east of the SMA travels south of the SWMU boundary and impacts the southernmost asphalt swale. Some run-on from the hill slope north of the gabion structure flows south and over or through the gabions onto the paved area north of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 75-1).

Table 75-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00802040015	Established Vegetation		X	X		B
S00803010013	Earthen Berm	X			X	B
S00803010014	Earthen Berm		X		X	B
S00804020002	Concrete/Asphalt Channel/Swale		X	X		CB
S00806010008	Rock Check Dam		X		X	CB
S00806010009	Rock Check Dam		X		X	CB
S00806010010	Rock Check Dam		X		X	CB
S00806010011	Rock Check Dam		X		X	CB
S00807010001	Gabions	X			X	CB

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

75.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.71. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

75.4 Inspections and Maintenance

RG203 recorded five storm events at S-SMA-3.71 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 75-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30830	4-26-2013
Storm Rain Event	BMP-33018	7-3-2013
Storm Rain Event	BMP-34260	8-1-2013
Storm Rain Event	BMP-35436	9-24-2013
Annual Erosion Evaluation	COMP-36769	11-14-2013

No maintenance activities were conducted at S-SMA-3.71 in 2013.

75.5 Compliance Status

The Site associated with S-SMA-3.71 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 75-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 53-001(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

S-SMA-3.71, Rock Check Dam, S00806010008 (photo ID 8515-2)

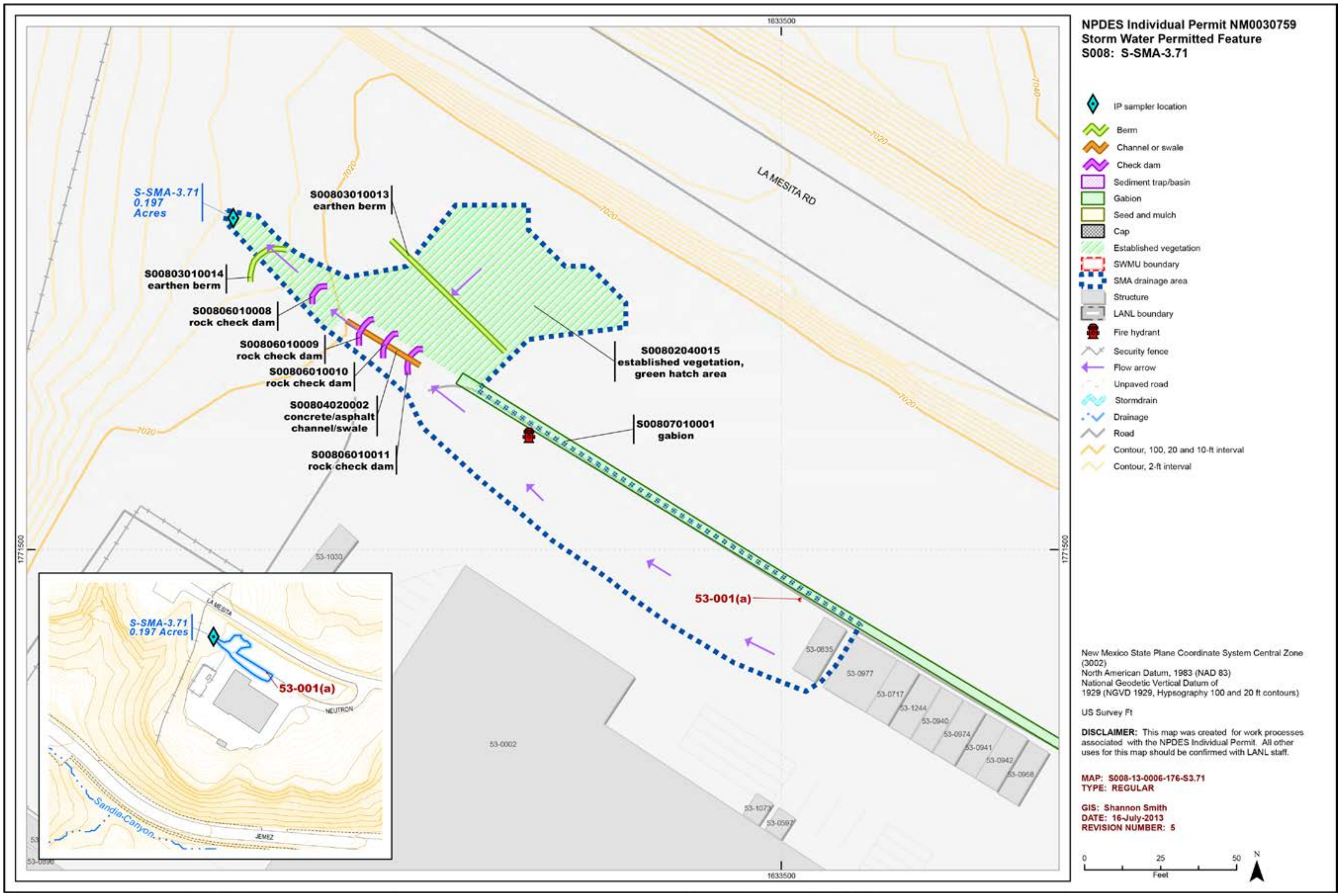


Figure 75-1 S-SMA-3.71 location map

76.0 S-SMA-3.72: SWMU 53-001(b)

76.1 Site Descriptions

One historical industrial activity area is associated with S009, S-SMA-3.72: Site 53-001(b).

SWMU 53-001(b) is an outdoor storage area located on a concrete pad that rests on the asphalt parking lot on the south side of the TA-53 equipment test laboratory (building 53-2). Before 1990, this area consisted of drum racks used to store drums of products and wastes associated with maintenance activities conducted in building 53-2. Wastes included spent trichloroethene, Freon, other solvents, and acidic waste. Engineering drawings show the storage area was constructed in 1971. A photograph taken in 1989 shows the storage area contained drums, some of which were product and some of which were marked with hazardous waste labels. There is no visible evidence of staining, spills, or leakages in the photograph. In 1990, the drum racks were removed and replaced with four lockable flammable-material storage cabinets. The Site was inspected during preparation of the RFI work plan in 1993, and again no evidence of staining or releases was noted. The Laboratory's current waste-site database indicates this storage location also contained a less-than-90-d storage area that was removed in 1998. The Site currently contains flammable-material storage cabinets, which are used for product storage but not for waste storage.

Phase I Consent Order sampling is complete for SWMU 53-001(b). All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 53-001(b) will be recommended for corrective action complete in the supplemental investigation report for Lower Sandia Canyon Aggregate Area, to be submitted to NMED in 2015. SWMU 53-001(b) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 76-1) 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.

76.2 Control Measures

Roof drains are the primary run-on source to the Permitted Feature, along with the impervious paved area south of building 53-0002. The roof drains are positioned to the east and west of the SWMU and do not impact the concrete pad or former drum storage area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 76-1).

Table 76-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00902040011	Established Vegetation		X	X		B
S00903010009	Earthen Berm	X			X	B
S00903010010	Earthen Berm		X		X	B
S00903120003	Rock Berm	X			X	CB
S00906010005	Rock Check Dam		X		X	CB
S00906010006	Rock Check Dam		X		X	CB
S00906010007	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

76.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.72. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

76.4 Inspections and Maintenance

RG203 recorded five storm events at S-SMA-3.72 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 76-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30831	4-26-2013
Storm Rain Event	BMP-33019	7-3-2013
Storm Rain Event	BMP-34261	8-1-2013
Storm Rain Event	BMP-35437	9-24-2013
Annual Erosion Evaluation	COMP-36770	11-14-2013

No maintenance activities were conducted at S-SMA-3.72 in 2013.

76.5 Compliance Status

The Site associated with S-SMA-3.72 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 76-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 53-001(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

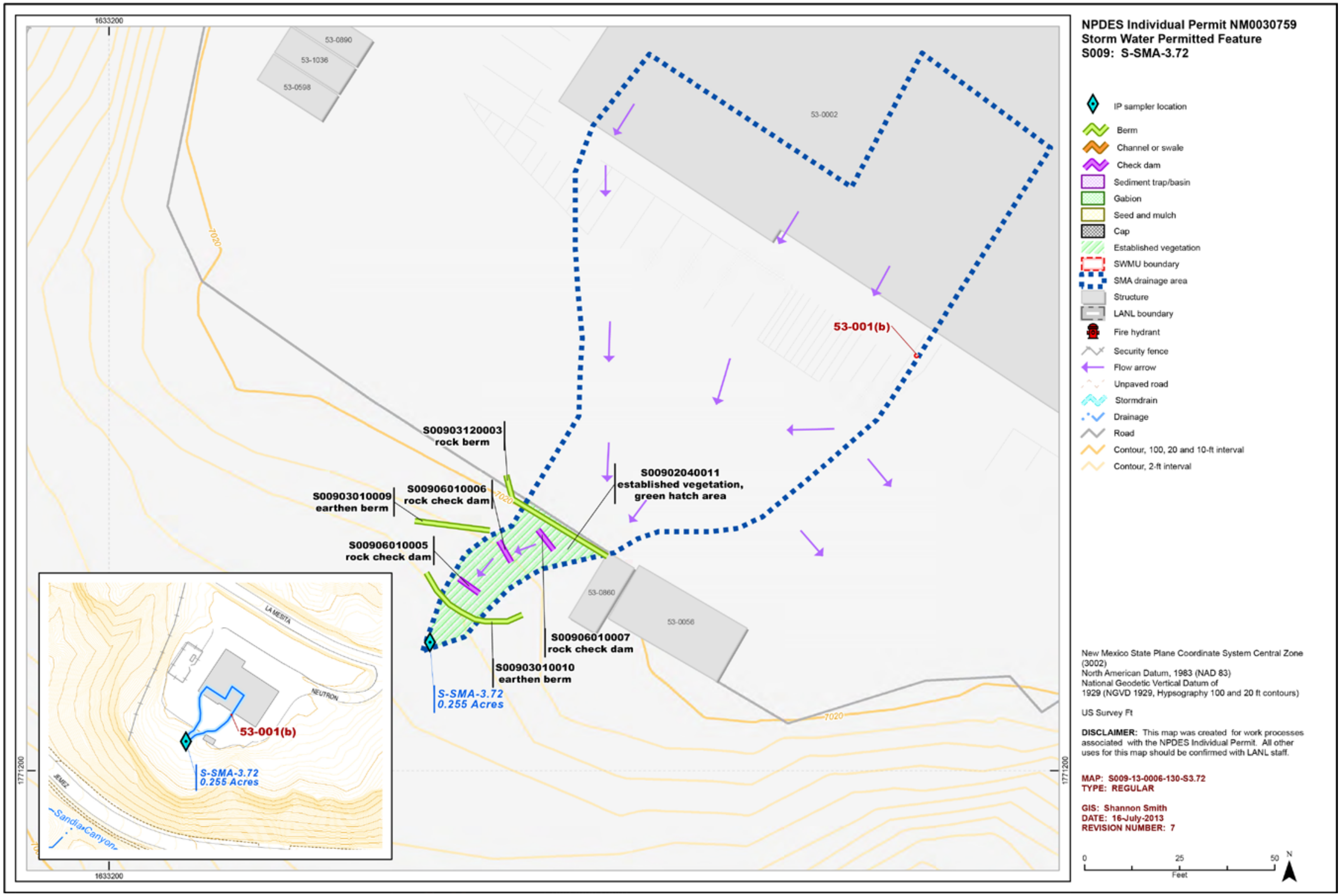


Figure 76-1 S-SMA-3.72 location map

77.0 S-SMA-3.95: SWMU 20-002(a)

77.1 Site Descriptions

One historical industrial activity area is associated with S010, S-SMA-3.95: Site 20-002(a).

SWMU 20-002(a) is the location of a former firing pit (former structure 20-6) used from 1945 to 1948 to conduct initiator tests. The firing pit was located on the far west end of former TA-20, south of East Jemez Road. The steel-lined pit was constructed following the failure of the Dumbo, a steel vessel designed to contain the firing test shot debris. The firing pit had interior dimensions of 14 ft 8 in. × 14 ft 8 in. × 12 ft deep. The walls and floor of the pit consisted of 0.75-in.-thick steel plate backed by 12- × 12-in. timbers. The pit was covered by a steel framework overlain by a mat of 0.25-in.-diameter steel rods spaced 1 in. apart. According to a 1947 report, the framework and mat, presumably installed to contain shot debris, failed after the first few shots. The Laboratory facility engineering records indicate the pit was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon notes one "cage" was excavated and the "interior checked negative after clearing." The SWMU 20-002(a) firing pit is presumed to be the "cage" referred to in the memorandum.

Uranium-234 and uranium-238 were not detected above BVs in 18 shallow Consent Order tuff samples. Uranium-235/236 was detected above the tuff BV in 2 of 18 shallow Consent Order samples at a maximum activity 1.07 times tuff BV.

The project map (Figure 77-1) 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.

77.2 Control Measures

The northwestern edge of the SMA contains a drop inlet that directs storm water across the area. The canyon drainage runs through the bottom of the SMA and should be monitored for any undercutting of the Site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 77-1).

Table 77-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01002040007	Established Vegetation		X	X		B
S01003060006	Straw Wattles		X		X	B
S01003060008	Straw Wattles	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and certification are being planned for the end of 2014 as part of corrective action.

77.3 Storm Water Monitoring

SWMU 20-002(a) is monitored within S-SMA-3.95. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 77-2 and 77-3). Analytical results from this sample yielded TAL exceedance:

- Gross-alpha activities of 15.4 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 20-002(a):

- Uranium isotopes were not known to have been associated with industrial materials historically managed at this Site. Shallow (i.e., less than 3 ft bgs) samples collected during the 2010 Consent Order investigation were not analyzed for gross-alpha radioactivity. Consent Order samples were analyzed for uranium isotopes, which are alpha-emitting radionuclides. These isotopes are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 77-2 and 77-3. 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 77-2 and 77-3.

Monitoring location S-SMA-3.95receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. 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, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

77.4 Inspections and Maintenance

RG203 recorded five storm events at S-SMA-3.95 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 77-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30832	5-2-2013
Storm Rain Event	BMP-33021	7-2-2013
Storm Rain Event	BMP-34263	8-1-2013
Storm Rain Event	BMP-35439	9-24-2013
Annual Erosion Evaluation	COMP-36771	11-20-2013
TAL Exceedance	COMP-36887	11-20-2013

No maintenance activities were conducted at S-SMA-3.95 in 2013.

77.5 Compliance Status

The Site associated with S-SMA-3.95 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 77-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 20-002(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

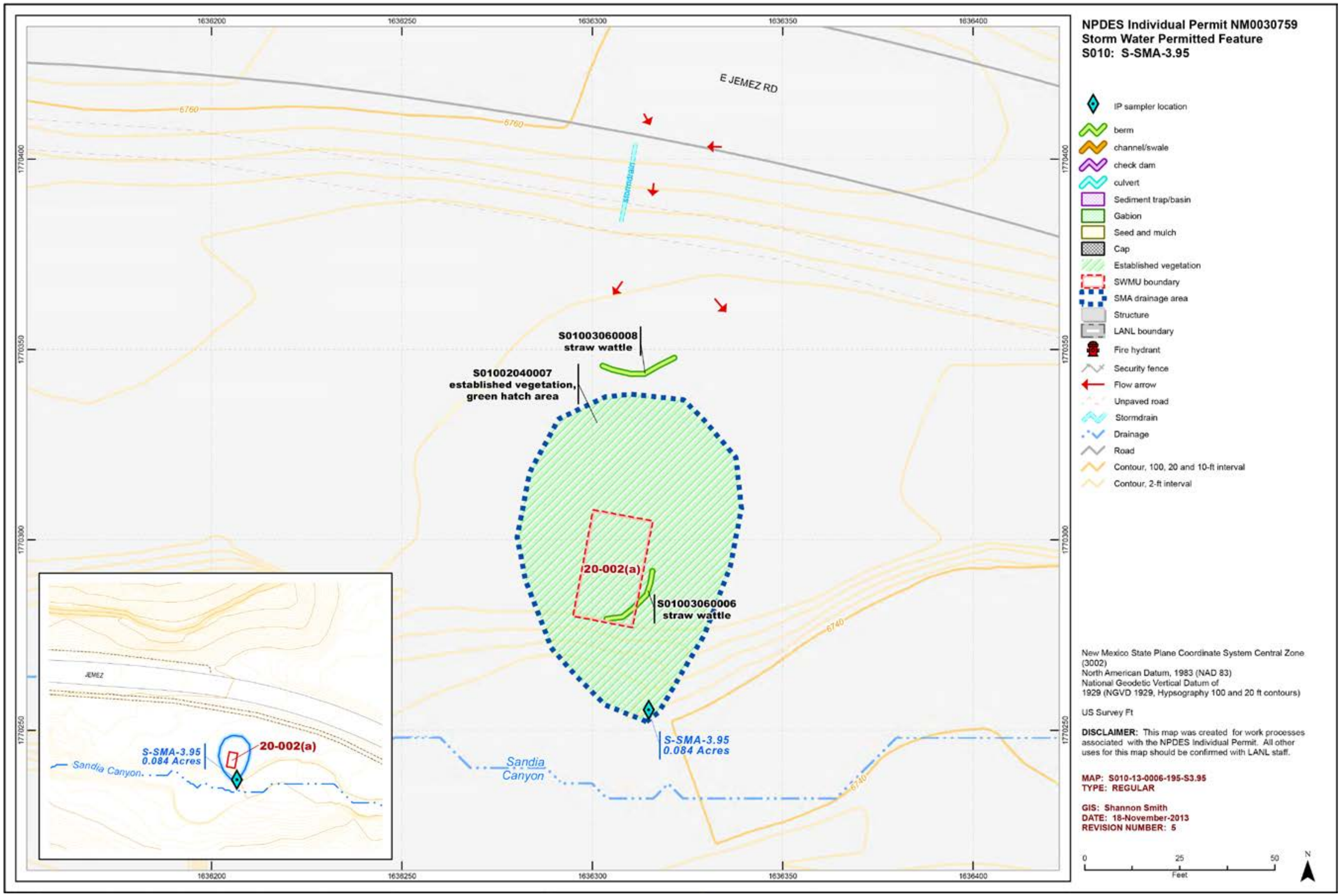
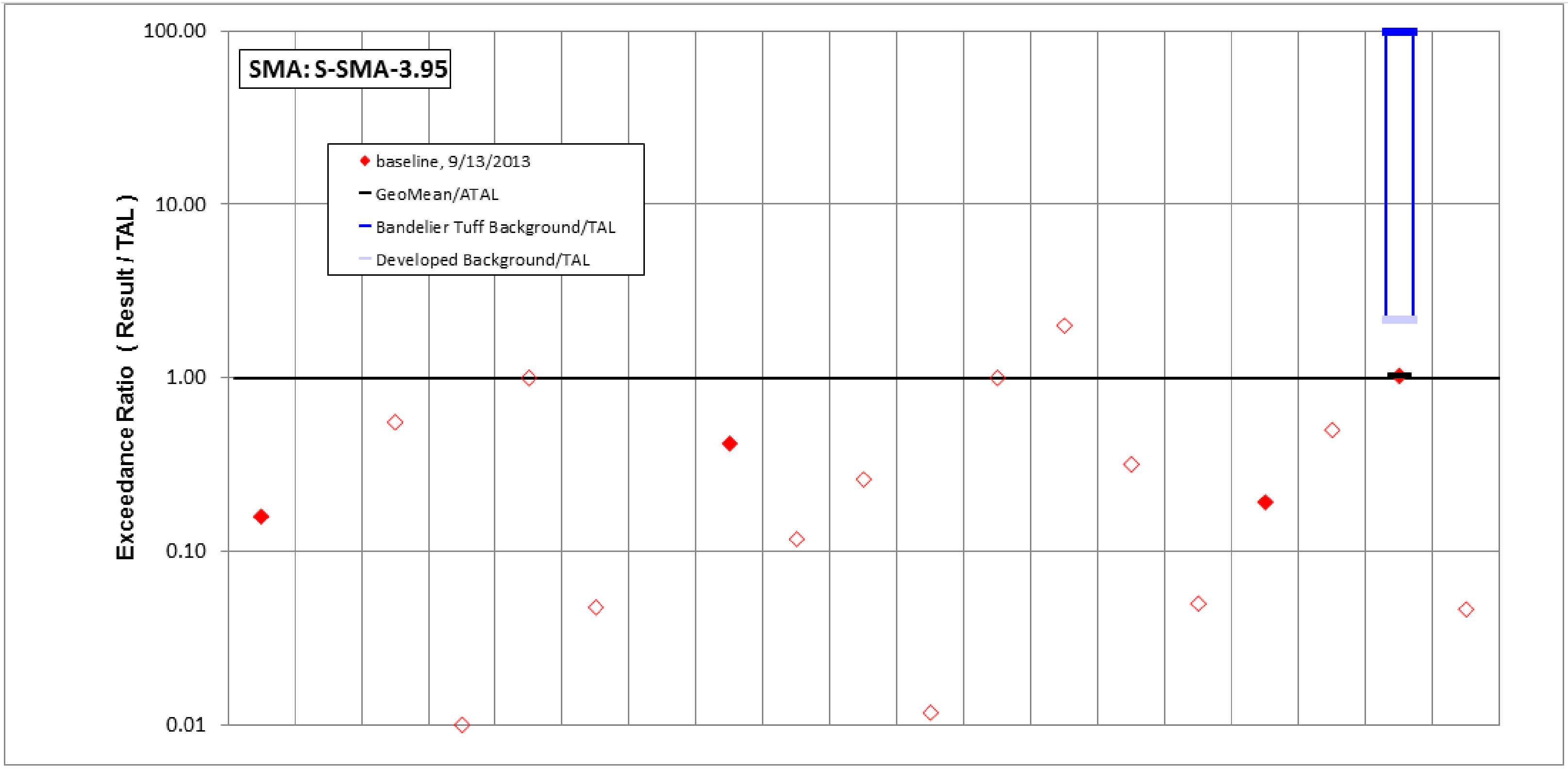


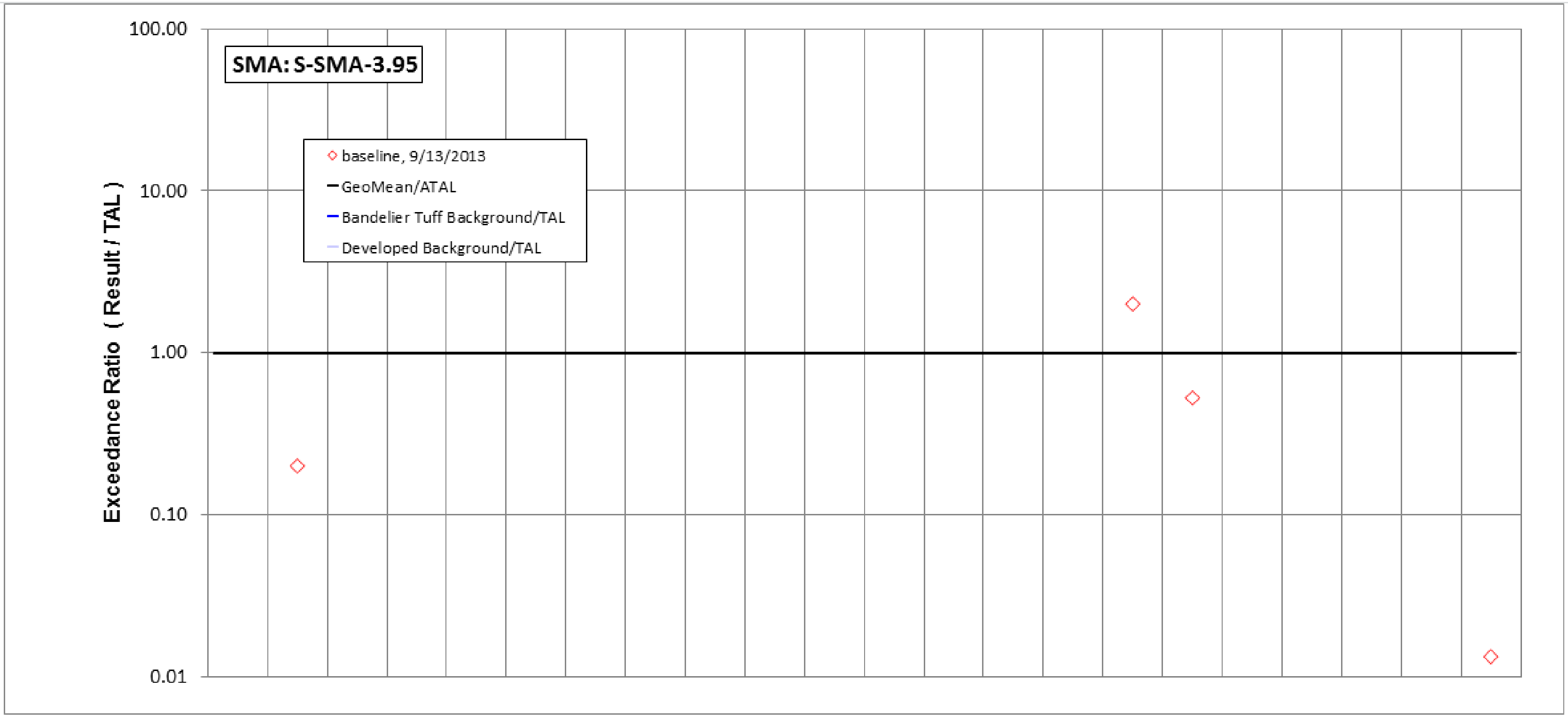
Figure 77-1 **S-SMA-3.95 location map**



	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	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	119	*3*	*5*	*50*	*1*	*10*	1.37	1.8	*2*	*0.2*	*2*	*5*	***1***	*2*	*5*	8.07	*0.005*	**15.4**	*1.39*
result / TAL	0.16	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0014	0.42	*0.12*	*0.26*	*0.012*	*1*	***2***	*0.32*	*0.05*	0.19	*0.5*	**1**	*0.046*

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

Figure 77-2 Inorganic analytical results summary plot for S-SMA-3.95



	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	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	*1*	-	-	-	-	-	-	-	-	-	-	-	-	-	**10**	*10*	*0.266*	-	-	-	*0.266*
result / TAL	-	*0.2*	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**	*0.53*	*0.001*	-	-	-	*0.013*

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

Figure 77-3 Organic analytical results summary plot for S-SMA-3.95

78.0 S-SMA-4.1: AOC 53-014

78.1 Site Descriptions

One historical industrial activity area is associated with S011, S-SMA-4.1: Site 53-014.

AOC 53-014, a lead spill site, is located at a paved storage area in TA 53 west of building 53-18. Lead shot was spilled on the paved surface, and storm water washed the lead into an asphalt-lined channel that joins a drainage below an NPDES-permitted outfall (03A113). The lead shot was observed at a number of locations in the channel but not below a large catchment approximately 50 ft below the canyon rim. This Site was not originally identified in the 1990 SWMU report but was discovered only after the 1994 RFI work plan for OU 1100 had been prepared.

A VCA was conducted at this Site in 1997 to remove the lead shot that had spilled. Shallow (0 to 0.5 ft bgs) VCA confirmation samples were collected in the drainage but were not analyzed for PCBs because PCBs are not known to have been used at the Site. No additional sampling was required under the Consent Order. The Site received a COC without controls in July 2013. Certification of completion of corrective action under the IP was submitted to EPA on August 21, 2013.

The project map (Figure 78-1) 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.

78.2 Control Measures

Run-on from paved areas at this SMA is currently managed by a berm. A paved area next to the western side of the SMA provides some contribution. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 78-1).

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 78-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01101010007	Seed and Wood Mulch			X		EC
S01103060010	Straw Wattles		X		X	B
S01103060011	Straw Wattles		X		X	B
S01103090005	Curbing	X			X	EC
S01103120008	Rock Berm		X		X	EC
S01104020006	Concrete/Asphalt Channel/Swale	X		X		EC
S01108030009	Concrete/Asphalt Cap	X		X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

78.3 Storm Water Monitoring

AOC 53-014 is monitored within S-SMA-4.1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 2, 2011, and September 1, 2011 (Figures 78-2 and 78-3). Analytical results from this sample yielded one TAL exceedances:

- PCB concentrations of 1 ng/L and 4 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at S-SMA-4.1, one corrective action storm water sample was collected on September 13, 2013 (Figure 78-3). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- PCB concentrations of 2 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 53-014:

- PCBs are not known to have been associated with industrial materials historically managed at the Site.

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 78-2 and 78-3. 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 78-2 and 78-3.

Monitoring location S-SMA-4.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 and 2013 are both less than these two values.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

78.4 Inspections and Maintenance

RG-TA-53 recorded six storm events at S-SMA-4.1 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 78-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30833	4-26-2013
Storm Rain Event	BMP-34155	8-1-2013
Storm Rain Event	BMP-35518	9-24-2013
Storm Rain Event	BMP-37123	11-14-2013
Annual Erosion Evaluation	COMP-36772	11-14-2013
TAL Exceedance	COMP-37077	11-14-2013

No maintenance activities were conducted at S-SMA-4.1 in 2013.

78.5 Compliance Status

The Site associated with S-SMA-4.1 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 78-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 53-014	Enhanced Control Corrective Action Monitoring	Corrective Action Complete	July 31, 2013, “Certificates of Completion for One Solid Waste Management Unit and Two Areas of Concern in the Lower Sandia Canyon Aggregate Area.”

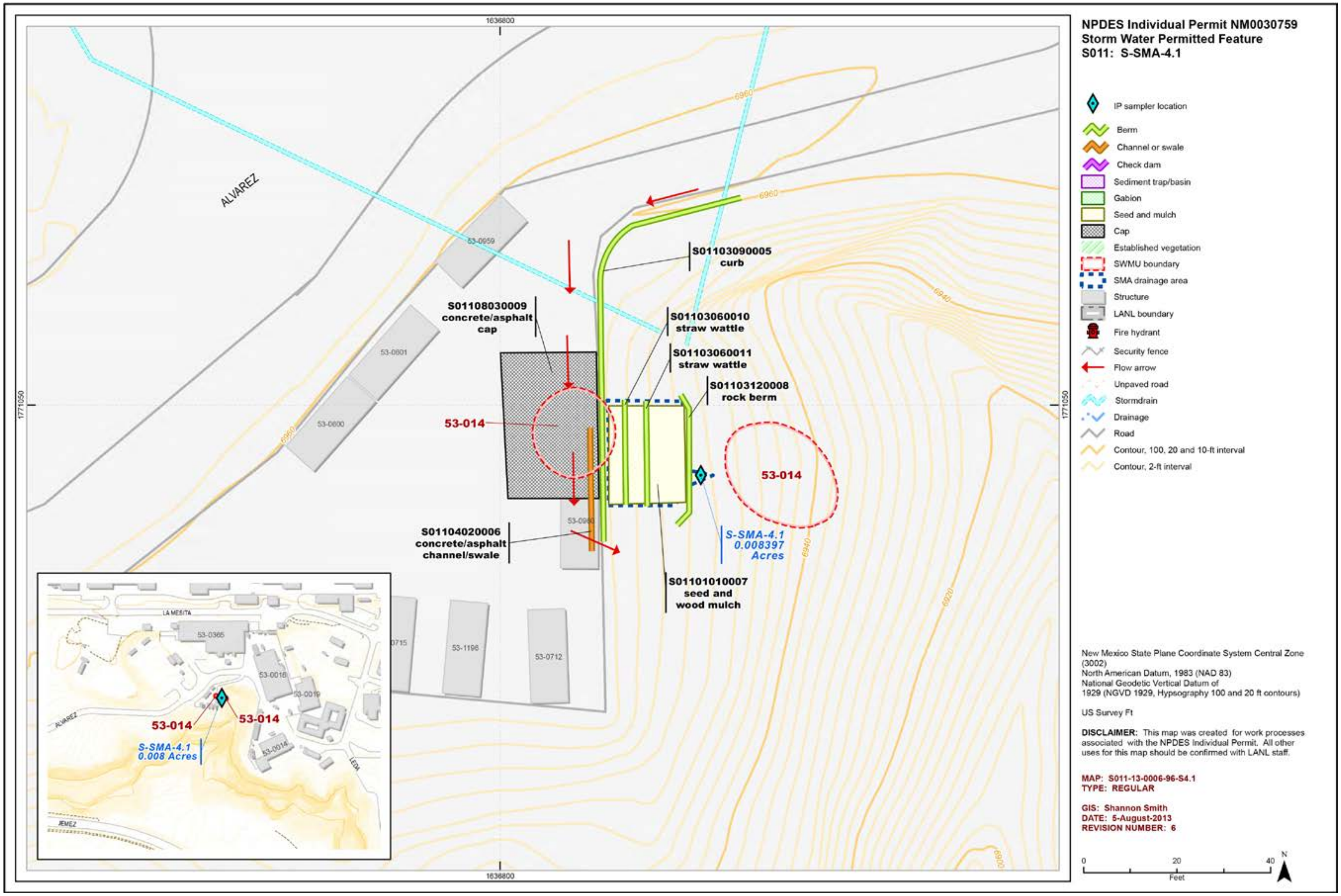
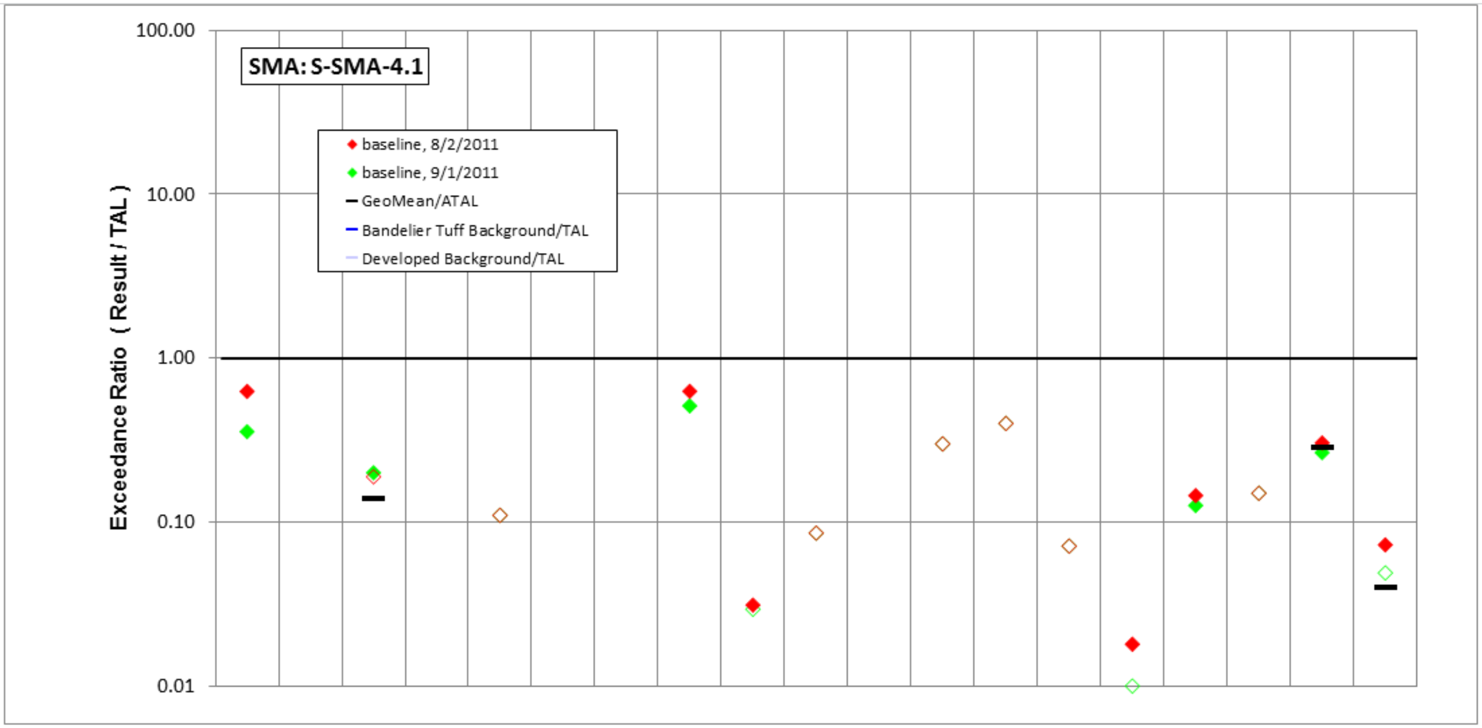


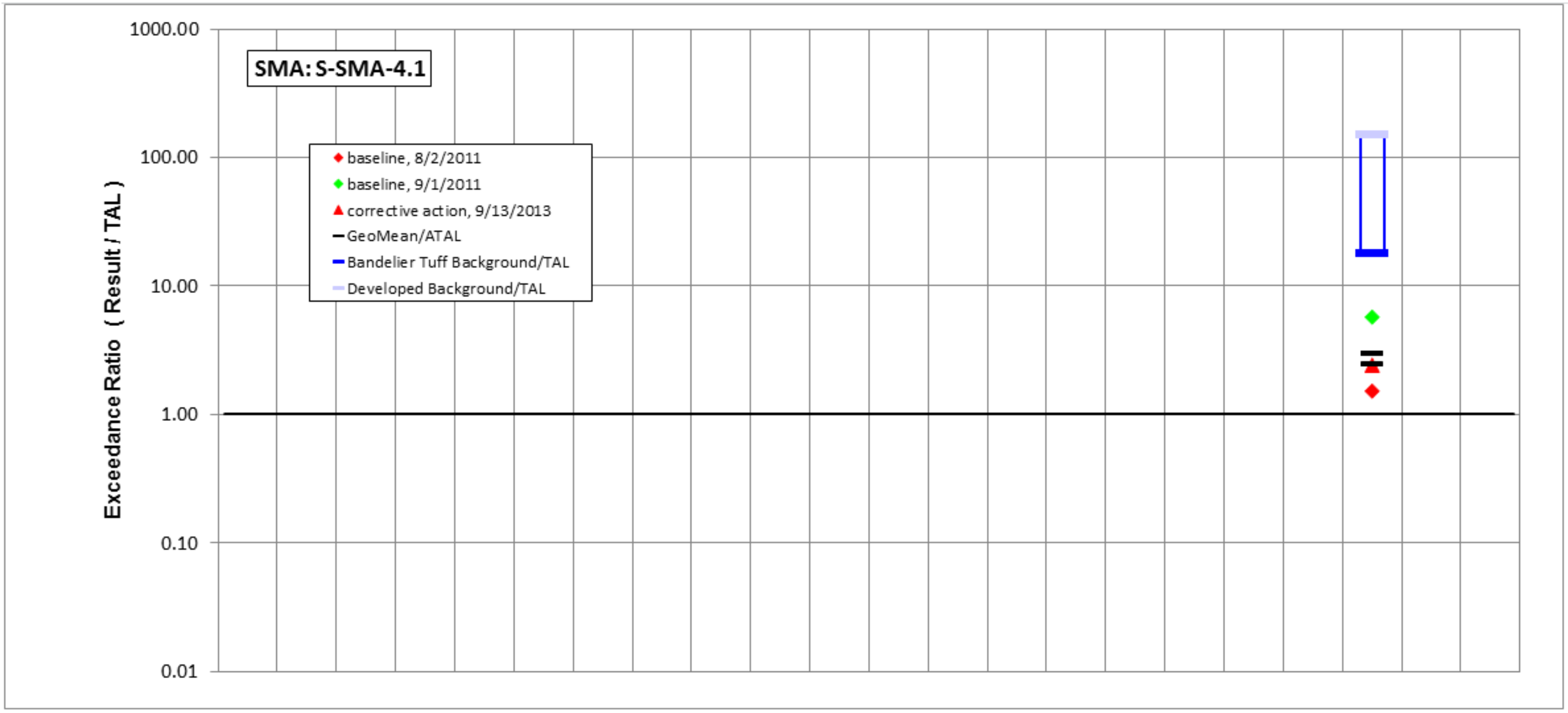
Figure 78-1 S-SMA-4.1 location map



	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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/1/2011 result	267	*1*	1.8	*15*	*0.11*	*2*	2.1	2.2	0.5	*0.066*	*0.5*	*1.5*	*0.2*	*0.45*	*1*	5.3	*0.002*	3.98	*1.47*
result / TAL	0.36	*0.002*	0.2	*0.003*	*0.11*	*0.01*	0.0021	0.51	0.029	*0.086*	*0.003*	*0.3*	*0.4*	*0.071*	*0.01*	0.13	*0.15*	0.27	*0.049*
8/2/2011 result	470	*1*	*1.7*	*15*	*0.11*	*2*	1.9	2.7	0.53	*0.066*	1.3	*1.5*	*0.2*	*0.45*	1.8	6.1	*0.002*	4.56	2.18
result / TAL	0.63	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0019	0.63	0.031	*0.086*	0.0076	*0.3*	*0.4*	*0.071*	0.018	0.15	*0.15*	0.3	0.073

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

Figure 78-2 Inorganic analytical results summary plot for S-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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.002**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.4**	-	-
9/1/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.004**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.7**	-	-
8/2/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1E-03**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.5**	-	-

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

Figure 78-3 Organic analytical results summary plot for S-SMA-4.1

79.0 S-SMA-4.5: SWMU 20-002(d)

79.1 Site Descriptions

One historical industrial activity area is associated with S012, S-SMA-4.5: Site 20-002(d).

SWMU 20-002(d) is a former firing point located near a former manhole (structure 20-3) in the central part of former TA-20. Fewer than 10 implosion shots were fired near structure 20-3. One of these shots, containing 500 lb of Composition B (unspecified HE compounds), did not detonate completely. A 1962 Laboratory memorandum describes two cleanup efforts related to this incident: one conducted immediately after the incident and a second that was part of the 1948 Sandia Canyon cleanup conducted before the construction of East Jemez Road. Other historical documents indicate small pieces of HE were found and removed from this Site at various times, including in July 1966, July 1967, and June 1969. No HE was found during subsequent inspections conducted in April 1971, May 1973, and June 1975.

Phase I Consent Order sampling is complete for SWMU 20-002(d). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs. SWMU 20-002(d) will be recommended for corrective action complete in the supplemental investigation report for Lower Sandia Canyon Aggregate Area to be submitted to NMED in 2015. SWMU 20-002(d) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 79-1) 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.

79.2 Control Measures

There is minimal potential for run-on impact from the truck route. The primary source of potential run-on is sheet flow from the unpaved access road used for well access and sheet flow generated at the vegetated area south of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 79-1).

Table 79-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01202040007	Established Vegetation		X	X		B
S01203010005	Earthen Berm		X		X	CB
S01203060008	Straw Wattles	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

79.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-4.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

79.4 Inspections and Maintenance

RG203 recorded five storm events at S-SMA-4.5 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 79-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30834	5-2-2013
Storm Rain Event	BMP-33020	7-2-2013
Storm Rain Event	BMP-34262	8-1-2013
Storm Rain Event	BMP-35438	9-24-2013
Annual Erosion Evaluation	COMP-36773	11-13-2013

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

Table 79-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31796	Replace or repair matting on berm S01203010005.	5-13-2013	11day(s)	Maintenance conducted in timely manner.
BMP-36891	Install new straw wattles directly above existing wattle -0006. Wattle -0006 will be retired when work is completed.	11-7-2013	43 day(s)	Maintenance conducted as soon as practicable.

79.5 Compliance Status

The Site associated with S-SMA-4.5 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 79-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 20-002(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

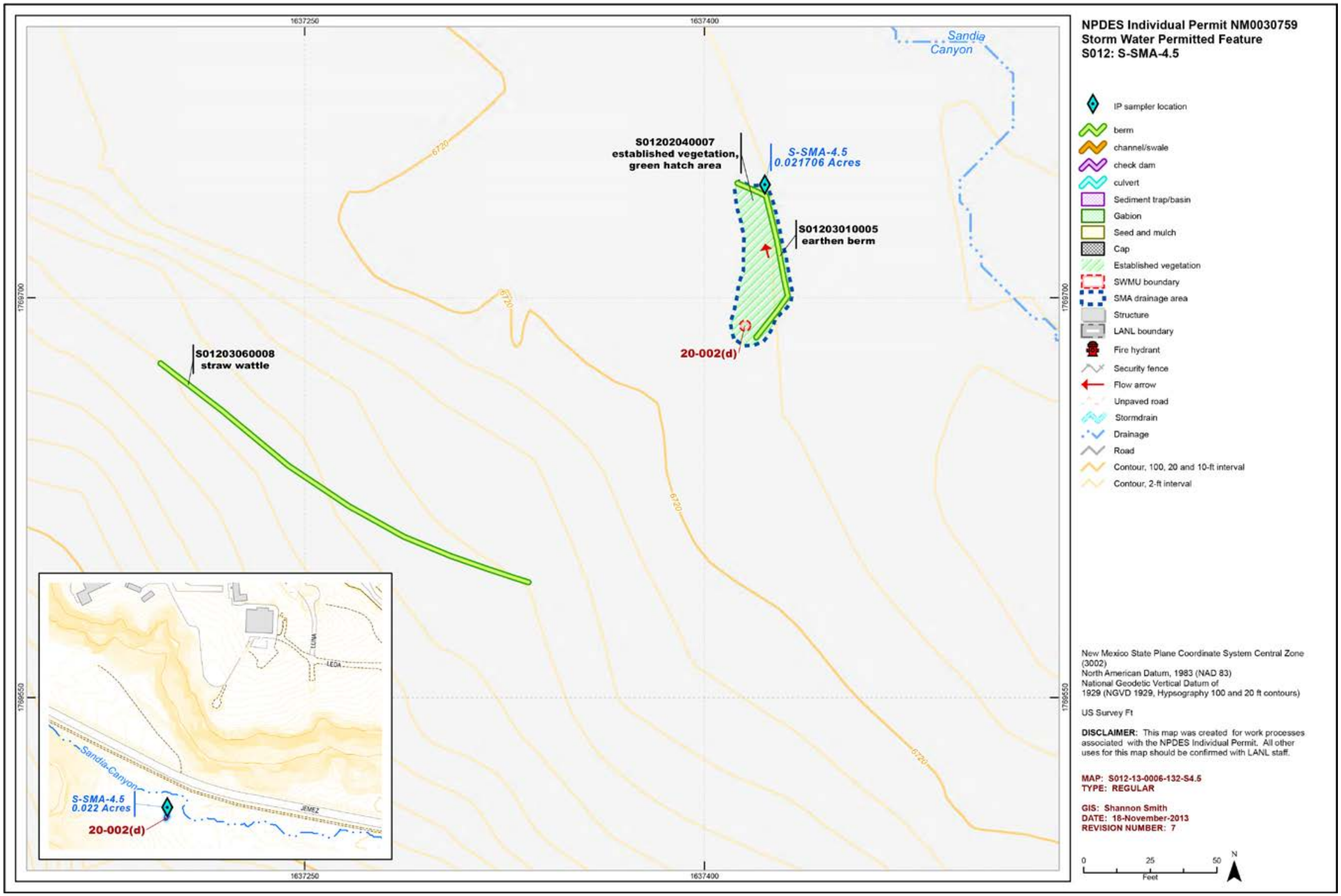


Figure 79-1 S-SMA-4.5 location map

80.0 S-SMA-5: SWMU 20-002(c)

80.1 Site Descriptions

One historical industrial activity area is associated with S013, S-SMA-5: Site 20-002(c).

SWMU 20-002(c) is a former firing point located near the southern edge of TA-53 close to the boundary of TA-72. This firing point was used for tests with explosive charges of up to 50 lb. The firing point is depicted in engineering drawing ENG-C 1778, Revision 1, as a pad bordered on three sides by an earthen berm. Engineering records show that the structure associated with this firing point (structure 20-9) was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon notes seven “shot areas” were excavated and the “ground checked negative after removal”. It is likely that the SWMU 20-002(c) firing point is one of the seven shot areas. The north side of this Site is currently covered by the road embankment for East Jemez Road.

Phase I Consent Order sampling is complete for SWMU 20-002(c). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs. SWMU 20-002(c) will be recommended for corrective action complete in the supplemental investigation report for Lower Sandia Canyon Aggregate Area, to be submitted to NMED in 2015. SWMU 20-002(c) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 80-1) 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.

80.2 Control Measures

There is the potential for run-on to this SMA from the paved road, East Jemez Road. The receiving waters are approximately 10 to 20 ft south of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 80-1).

Table 80-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01302040007	Established Vegetation		X	X		B
S01303010006	Earthen Berm		X		X	CB
S01304060003	Rip Rap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

80.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

80.4 Inspections and Maintenance

RG-TA-53 recorded six storm events at S-SMA-5 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 80-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30835	5-2-2013
Storm Rain Event	BMP-34156	8-1-2013
Storm Rain Event	BMP-35519	9-24-2013
Storm Rain Event	BMP-37124	11-13-2013
Annual Erosion Evaluation	COMP-36774	11-13-2013

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

Table 80-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31794	Remove silt dikes. Remove any rebar from wattles.	5-14-2013	12 day(s)	Maintenance conducted in timely manner.

80.5 Compliance Status

The Site associated with S-SMA-5 is a High Priority Site. The High Priority Site deadline for the certification of corrective action at this SMA is now 1 yr from the date of any observed TAL exceedance.

Table 80-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 20-002(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

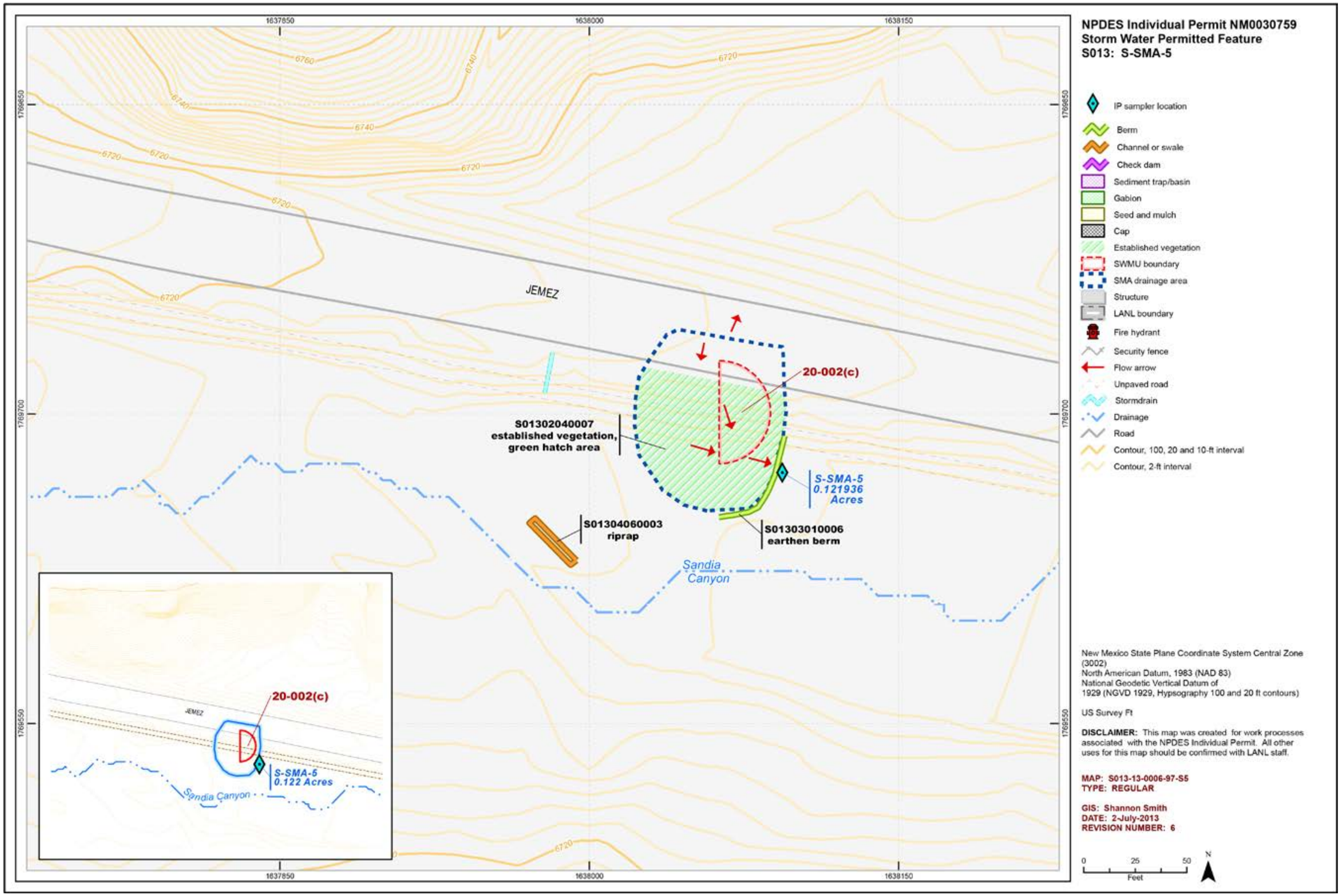


Figure 80-1 S-SMA-5 location map

81.0 S-SMA-5.2: AOC 20-003(c)

81.1 Site Descriptions

One historical industrial activity area is associated with S014, S-SMA-5.2: Site 20-003(c).

AOC 20-003(c) is the site of a former U.S. Navy gun mount located approximately 90 ft north of East Jemez Road in Sandia Canyon. The former gun site was used between 1945 and 1948. A 10- × 10-ft concrete pad with a steel-plate surface (former structure 20-16) was used as a mount for the gun. Engineering drawing ENG-C 1778 shows a 30-ft-long earth-bermed timber-frame bin filled with tamped earth (former structure 20-10) located near the gun and on the slope at the toe of the canyon wall. At the end nearest the gun, the timber frame was 12 ft wide and 10 ft high, and at the far end it was 20 ft wide and 5 ft high. The gun was fired into the earth-filled bin so the projectile could be recovered. The Laboratory engineering records show that in April 1948 structures 20-10 and 20-16 were removed and that structure 20-28, a conduit manhole, was left in place. The disposition of the soil that filled the frame is not known. During the 1995 VCA conducted at AOC 20-003(c), the top 4 ft of the 6-ft-thick concrete pad, conduits, manhole (former structure 20-28), and miscellaneous metal debris were removed. The remaining portion of the concrete pad that was not removed was covered with 5–6 ft of clean fill.

Phase I Consent Order sampling is complete for AOC 20-003(c). All detected inorganic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs. AOC 20-003(c) will be recommended for corrective action complete in the supplemental investigation report for Lower Sandia Canyon Aggregate Area to be submitted to NMED in 2015. AOC 20-003(c) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 81-1) 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.

81.2 Control Measures

Control measures on the mesa top at this SMA are managing the culvert run-on contribution from the storm water discharges from the paved areas on the mesa above. The rock check dam along the eastern side of the SMA helps 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 81-1).

Table 81-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01402040016	Established Vegetation		X	X		B
S01403060014	Straw Wattles		X		X	B
S01403060015	Straw Wattles		X		X	B
S01404060011	Rip Rap	X		X		CB
S01406010006	Rock Check Dam	X			X	CB
S01406010007	Rock Check Dam	X			X	CB
S01406010008	Rock Check Dam	X			X	CB
S01406010009	Rock Check Dam	X			X	CB
S01406010010	Rock Check Dam	X			X	CB
S01406010012	Rock Check Dam		X		X	CB

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

81.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-5.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

81.4 Inspections and Maintenance

RG-TA-53 recorded six storm events at S-SMA-5.2 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 81-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30836	5-2-2013
Storm Rain Event	BMP-34157	8-1-2013
Storm Rain Event	BMP-35520	9-24-2013
Storm Rain Event	BMP-37125	11-13-2013
Annual Erosion Evaluation	COMP-36775	11-13-2013

No maintenance activities were conducted at S-SMA-5.2 in 2013.

81.5 Compliance Status

The Site associated with S-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 81-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 20-003(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

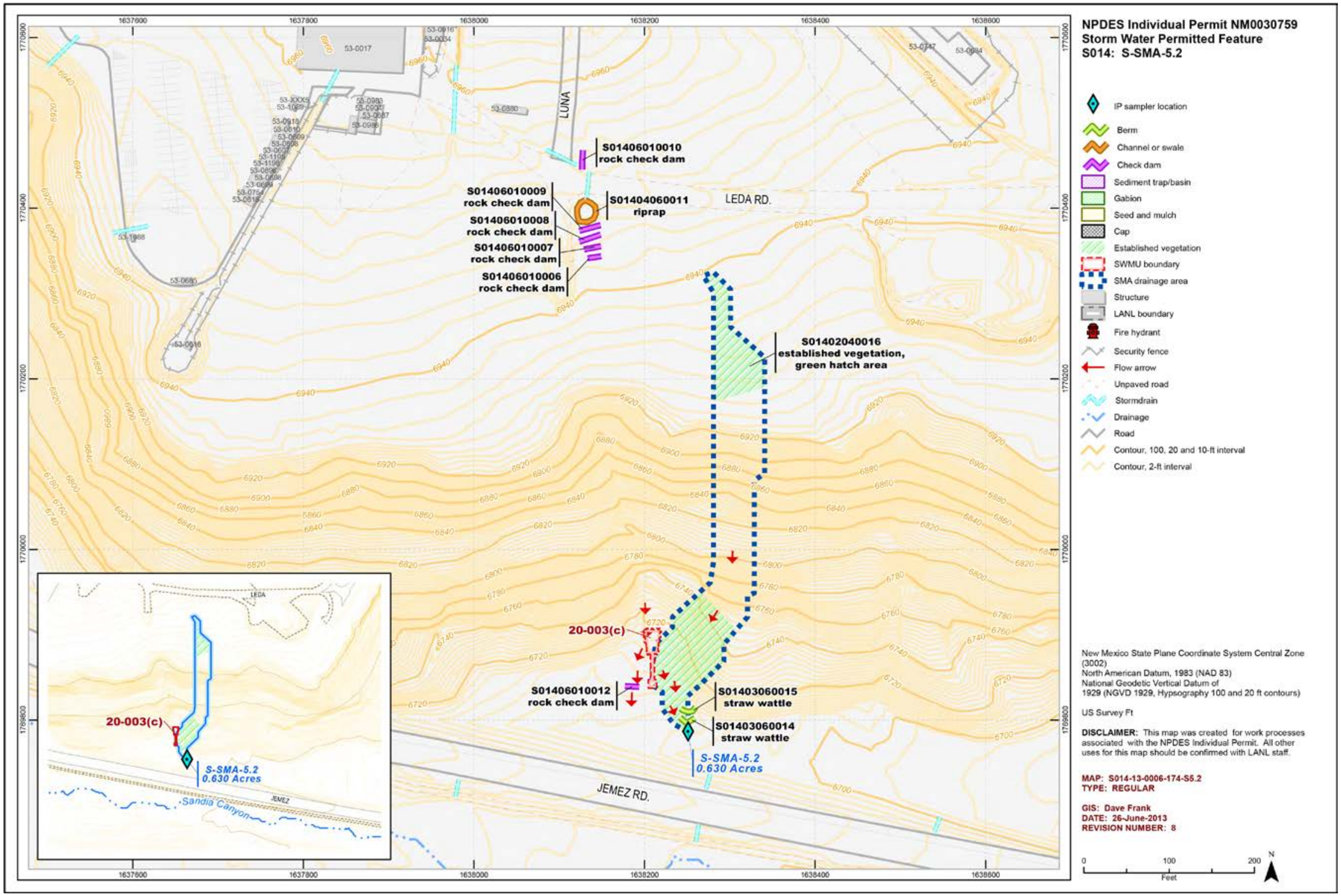


Figure 81-1 **S-SMA-5.2 location map**

82.0 S-SMA-5.5: SWMU 20-005

82.1 Site Descriptions

One historical industrial activity area is associated with S015, S-SMA-5.5: Site 20-005.

SWMU 20-005 is a former septic system (septic tank and drainlines) located south of East Jemez Road in the central portion of the aggregate area. The system served a toilet, restroom sink, and darkroom sink in former building 20-1. The system was constructed in 1945 and it operated until 1948. Engineering drawings show the tank (structure 20-27) as having 6-in.-thick concrete walls with interior dimensions of 3 × 6 × 5 ft high and a capacity of 540 gal. The discharge point of the tank is not known. The septic system could not be located during a 1985 program the Laboratory conducted to remove existing structures from Sandia Canyon. A pit-like depression was noted in the tuff in the area where the tank was believed to have been located. According to the 1985 report, excavation surrounding the area of the “pit” identified no evidence of the tank or associated drainlines. During the 1995 Phase I RFI conducted at SWMU 20-005, a geophysical survey was conducted to locate the tank. Survey data indicated no subsurface anomalies, confirming the septic tank had been removed.

Phase I Consent Order sampling is complete for SWMU 20-005. All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 20-005 will be recommended for corrective action complete in the supplemental investigation report for Lower Sandia Canyon Aggregate Area, to be submitted to NMED in 2015. SWMU 20-005 will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 82-1) 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.

82.2 Control Measures

There is minimal potential for run-on impacts at this SMA. Potential run-on in the form of sheet flow may be generated in the vegetated area north of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 82-1).

Table 82-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01502040005	Established Vegetation		X	X		B
S01503010004	Earthen Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

82.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at S-SMA-5.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

82.4 Inspections and Maintenance

RG-TA-53 recorded six storm events at S-SMA-5.5 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 82-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30837	5-2-2013
Storm Rain Event	BMP-34158	8-1-2013
Storm Rain Event	BMP-35521	9-24-2013
Storm Rain Event	BMP-37126	11-13-2013
Annual Erosion Evaluation	COMP-36776	11-13-2013

Table 82-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37296	Reseed and remat berm S01503010004.	12-6-2013	23 day(s)	Maintenance conducted in timely manner.

82.5 Compliance Status

The Site associated with S-SMA-5.5 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 82-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 20-005	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment


S-SMA-5.5, Earthen Berm, S01503010004 (photo ID 13343-1)

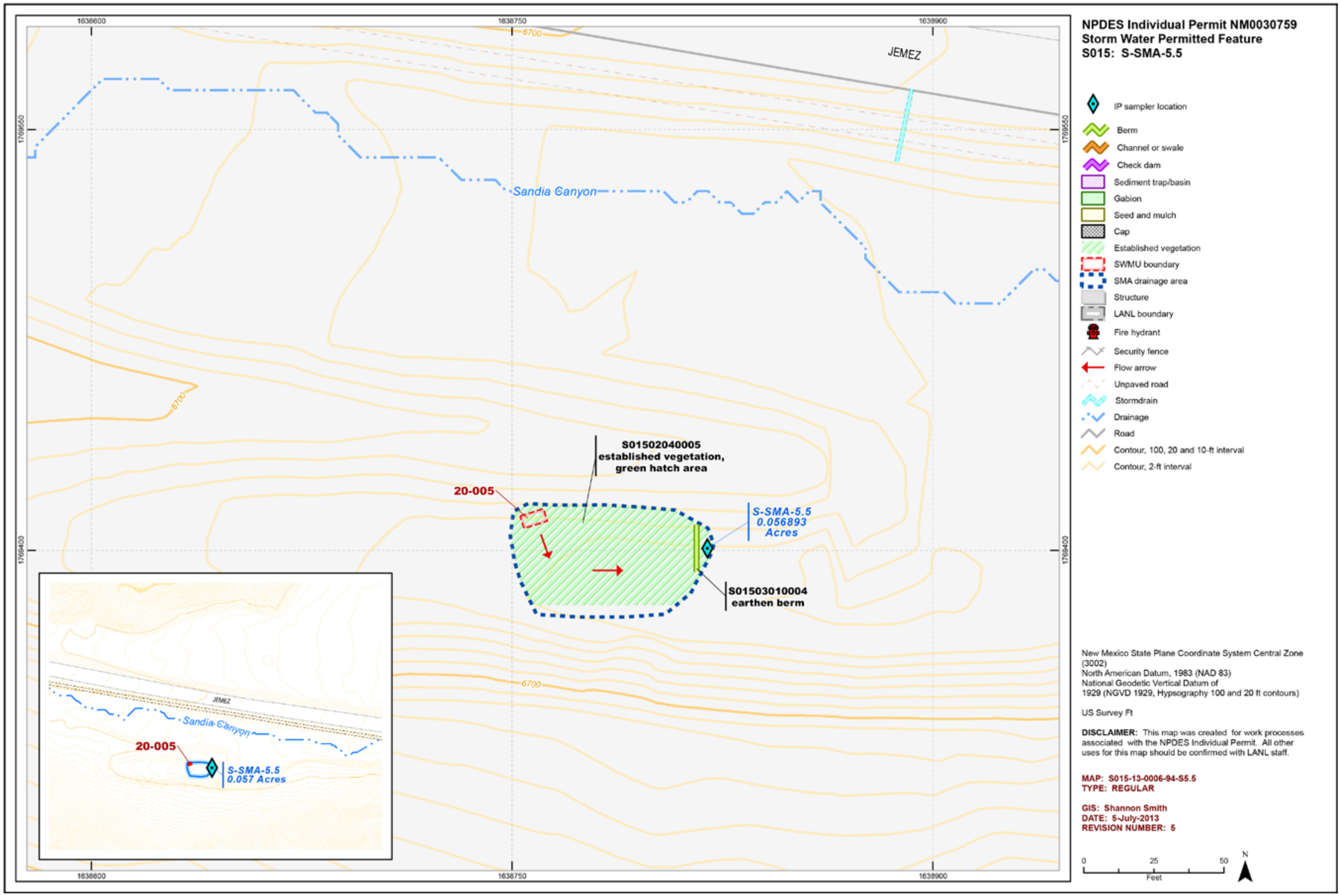


Figure 82-1 S-SMA-5.5 location map

83.0 S-SMA-6: AOC 72-001

83.1 Site Descriptions

One historical industrial activity area is associated with S016, S-SMA-6: Site 72-001.

AOC 72-001 is an active small-arms firing and training range used by the Laboratory's security force and has operated as a firing range since 1966. The firing range is located in Sandia Canyon at the east end of TA-72. The site includes a 175- × 250-ft pistol firing range surrounded by earthen berms and an adjacent 50-m firing range (Range 3) to the north. The drainage channel and flood plain of Sandia Canyon run between the pistol range and the 50-m range.

Investigations under the Consent Order were not performed at AOC 72-001 in 2010 as part of the Upper Sandia Canyon Aggregate Area investigation; delayed investigation was proposed for AOC 72-001 because this Site is still an active small-arms firing range.

A permit modification request was submitted to EPA Region 6 in November 2013. The request proposes to modify the IP pursuant to 40 CFR §122.62 (a)(2), by deleting monitoring requirements for aluminum, cyanide, PCBs, gross-alpha radioactivity, and radium-226 and radium-228 activity at AOC 72-001. The basis of this request is that no materials containing these constituents have ever been used at this Site.

The project map (Figure 83-1) 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.

83.2 Control Measures

Potential run-on at this SMA originates at the CMPs discharging urban flow onto the SMA. There is also potential for flow from the Sandia Canyon main channel onto 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 83-1).

Table 83-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01602040012	Established Vegetation		X	X		B
S01603010006	Earthen Berm	X			X	CB
S01603010008	Earthen Berm		X		X	CB
S01603010009	Earthen Berm		X		X	CB
S01603140010	Coir Log		X		X	CB
S01603140011	Coir Log		X		X	CB
S01604060004	Rip Rap	X		X		CB
S01606010005	Rock Check Dam	X			X	CB
S01606010007	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

83.3 Storm Water Monitoring

AOC 72-001 is monitored within S-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 30, 2011, and August 19, 2011 (Figures 83-2 and 83-3). Analytical results from this sample yielded five TAL exceedances:

- Aluminum concentration of 1470 µg/L (MTAL is 750 µg/L),
- Copper concentrations of 6.1 µg/L and 8.6 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activities of 867 pCi/L and 6140 pCi/L (ATAL is 15 pCi/L),
- Radium-226 and radium-228 activity of 44.3 pCi/L (ATAL is 30 pCi/L), and
- PCB concentrations of 1050 ng/L and 4590 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 72-001:

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the sediment BV in 7 shallow (i.e., less than 3 ft bgs) RFI samples.

- Copper is associated with industrial materials historically managed at the Site. Some of the ammunition used at the firing range consists of copper-jacketed bullets, and a copper-wash solution is periodically used to lubricate ammunition before firing. Copper was not detected above the sediment BV in seven shallow RFI samples.

- PCBs are not known to be associated with industrial materials historically managed at the Site. RFI soil samples were not analyzed for PCBs.

- Cyanide is not known to be associated with industrial materials historically managed at the Site. RFI soil samples were not analyzed for total cyanide.

- Alpha-emitting radionuclides including radium-226 and radium-228 are not associated with industrial materials historically managed at the Site. RFI soil samples were not analyzed for alpha-emitting radionuclides.

Based on the Site history and RFI and Sandia Canyon Consent Order sampling results, the Site is an unlikely source of the TAL exceedances.


S-SMA-6, Rock Check Dam, S01606010005 (photo ID 8506-3)

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 83-2 and 83-3. 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 83-2 and 83-3.

Monitoring location S-SMA-6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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 storm water containing sediments derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are both between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. One of the 2011 gross-alpha results is greater than both of these values, and the other result is between them.
- Radium-226 and radium-228—The radium-226 and radium-228 activity UTLs from developed urban landscape storm water run-on and for storm water containing sediments derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of the UTL values in the baseline metals background study. Thus, comparison to background storm water activity of radium-226 and radium-228 could not be made.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are both greater than these two values.

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

83.4 Inspections and Maintenance

RG-TA-53 recorded six storm events at S-SMA-6 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 83-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30838	5-8-2013
Storm Rain Event	BMP-34159	8-7-2013
Storm Rain Event	BMP-35522	9-26-2013
Storm Rain Event	BMP-37127	11-18-2013
Annual Erosion Evaluation	COMP-36777	11-18-2013

No maintenance activities were conducted at S-SMA-6 in 2013.

83.5 Compliance Status

The Site associated with S-SMA-6 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 83-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 72-001	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-02-2011

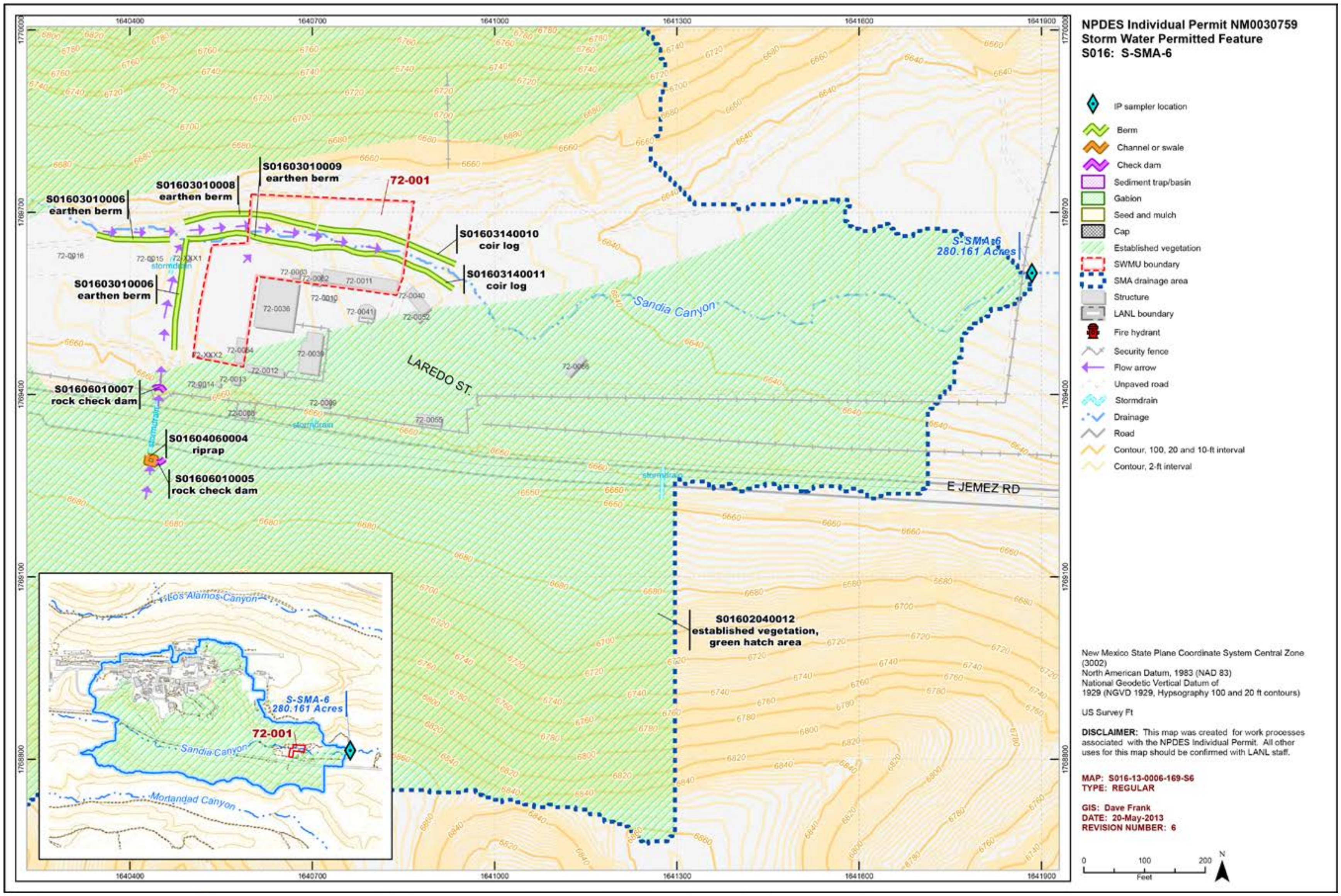
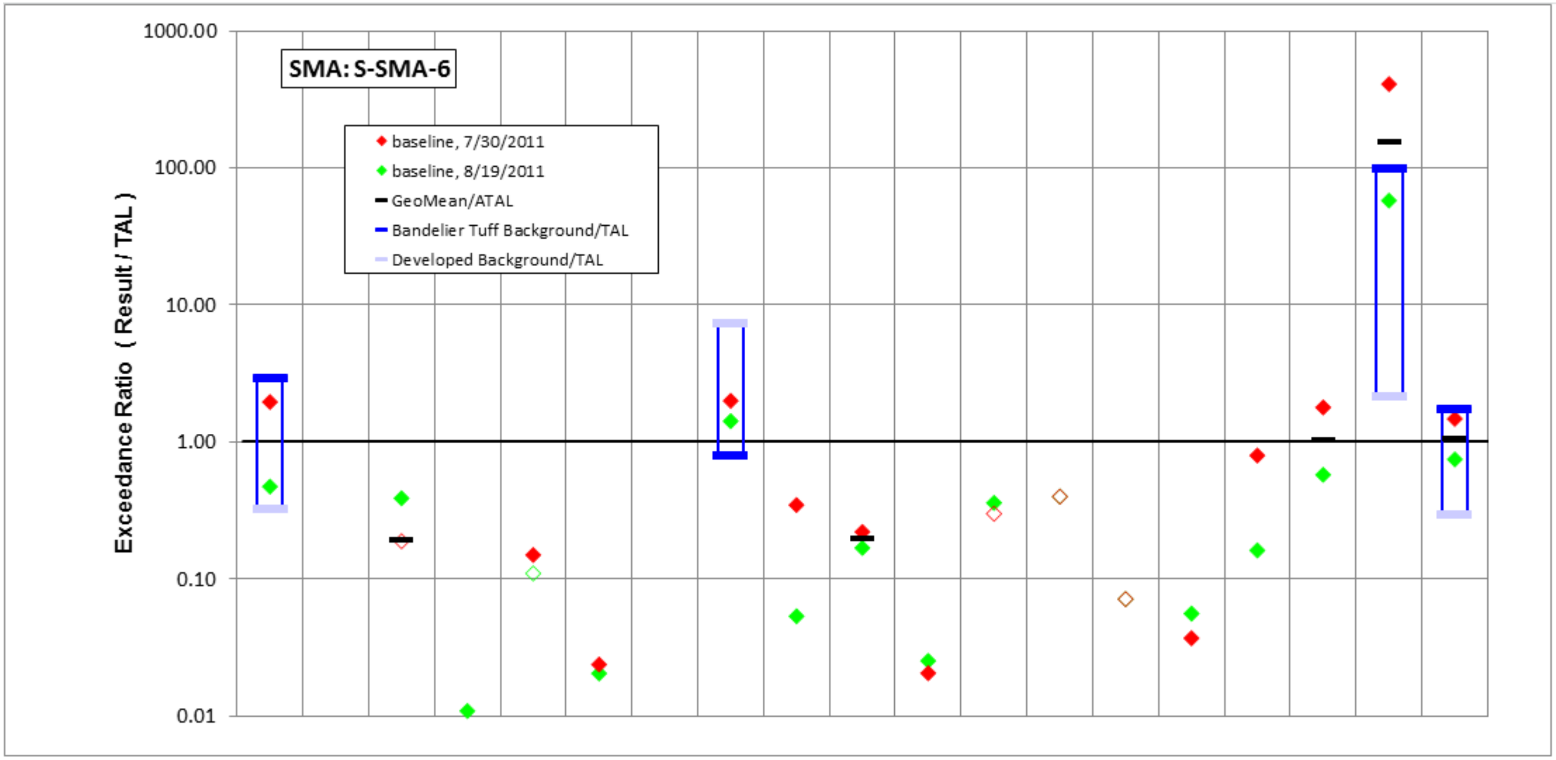


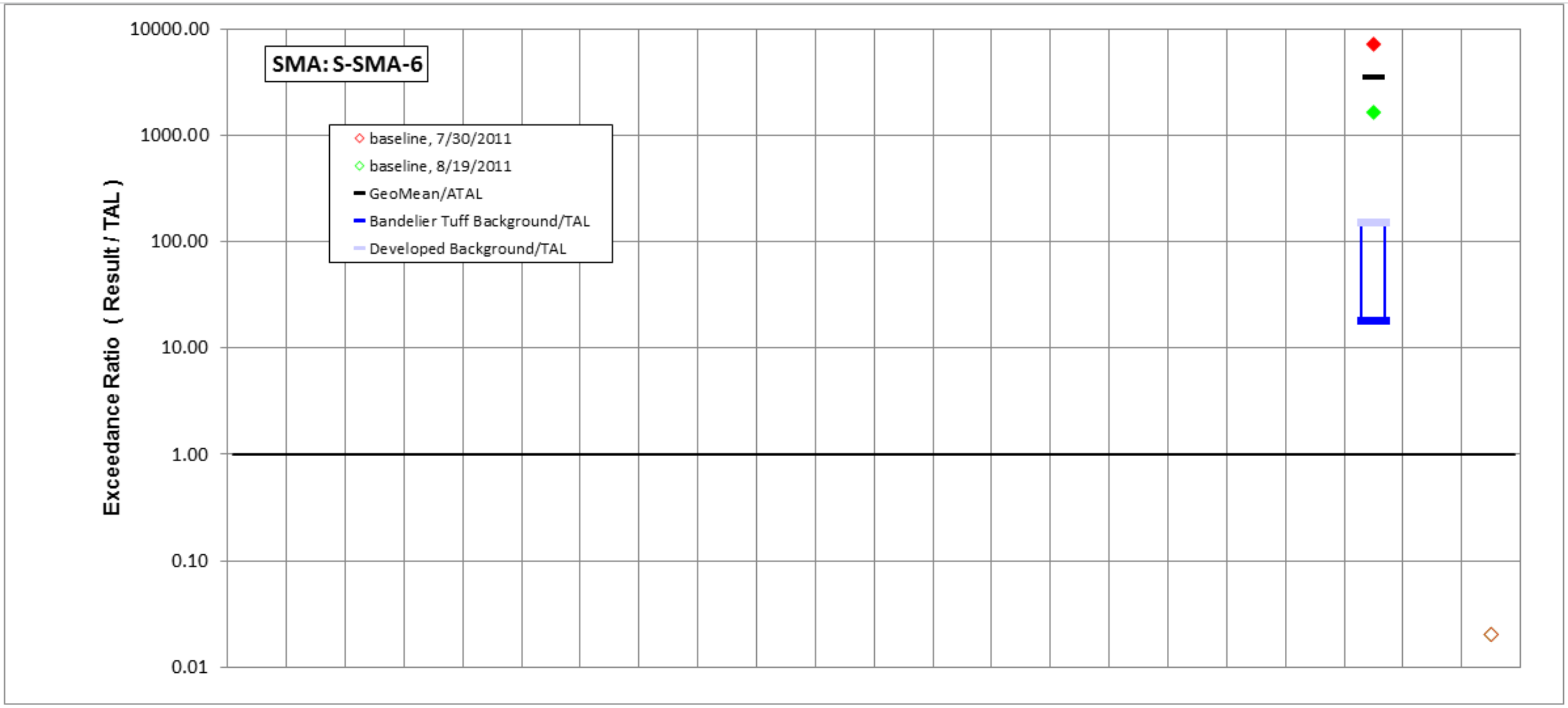
Figure 83-1 S-SMA-6 location map



	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
8/19/2011 result	355	1.9	3.5	54.5	*0.11*	4.3	3.9	**6.1**	0.91	0.13	4.3	1.8	*0.2*	*0.45*	5.6	6.8	0.0058	**867**	22.4
result / TAL	0.47	0.003	0.39	0.011	*0.11*	0.02	0.0039	**1.4**	0.054	0.17	0.025	0.36	*0.4*	*0.071*	0.056	0.16	0.58	**58**	0.75
7/30/2011 result	**1470**	2.5	*1.7*	22.7	0.15	5	3.6	**8.6**	5.9	0.17	3.5	*1.5*	*0.2*	*0.45*	3.7	33.5	**0.0179**	**6140**	**44.3**
result / TAL	**2**	0.0039	*0.19*	0.0045	0.15	0.024	0.0036	**2**	0.35	0.22	0.021	*0.3*	*0.4*	*0.071*	0.037	0.8	**1.8**	**410**	**1.5**

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

Figure 83-2 Inorganic analytical results summary plot for S-SMA-6



	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	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	6E-04	-	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
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	**1.05**	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	**1600**	-	*0.02*
7/30/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	**4.59**	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	**7200**	-	*0.02*

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

Figure 83-3 Organic analytical results summary plot for S-SMA-6

84.0 CDB-SMA-0.15: SWMU 04-003(a) and AOC 04-004

84.1 Site Descriptions

Two historical industrial activity areas are associated with C001, CDB-SMA-0.15: Sites 04-003(a) and 04-004.

SWMU 04-003(a) is a former outfall that was located approximately 15 ft southeast of former building 04-7 at former TA-04 (now TA-52). Former building 04-7 operated from 1948 to 1955 and housed a darkroom and photoprocessing laboratory that discharged to the outfall. Discharges to the outfall flowed to a trench southeast of former building 04-7 that eventually discharged into Cañada del Buey. Portions of the trench have since been covered by buildings 52-114 and 52-115 and an asphalt parking lot. Beta activity was detected in the darkroom in 1955, and portions of the floor were removed to remediate the contamination. Building 04-7 underwent D&D in 1956.

Phase I Consent Order sampling is complete for SWMU 04-003(a). All detected constituent concentrations were below residential SSLs and SALs, except for one detect ion of a single PAH, which was below the industrial SSL. Nature and extent will be reevaluated under the supplemental investigation report for Upper Cañada del Buey Aggregate Area, scheduled to be submitted to NMED in 2014. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC under the Consent Order upon approval of the report.

AOC 04-004 is an area of potential soil contamination associated with the footprint of former building 04-7 at former TA-04 (now TA-52). Former building 04-7 operated from 1948 to 1955 and was used to develop film from 1948 to 1955. The former building housed a darkroom and photoprocessing laboratory and discharged to an outfall [SWMU 04-003(a)]. Building 04-7 underwent D&D in 1956.

Phase I Consent Order sampling is complete for AOC 04-004. All detected constituent concentrations were below residential SSLs and SALs, except for one detect of cobalt, which was below the industrial SSL. Nature and extent will be reevaluated under the supplemental investigation report for Upper Cañada del Buey Aggregate Area, scheduled to be submitted to NMED in 2014. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC under the Consent Order upon approval of the report.

The project map (Figure 84-1) 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.

84.2 Control Measures

Run-on enters this SMA from the paved road, Puye Road, paralleling the northern boundary. There is also run-on from the paved access road on the western side of the SMA. Most of the run-on flows across the area via natural drainage channels. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 84-1).

Table 84-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00102040015	Established Vegetation		X	X		B
C00103010013	Earthen Berm		X		X	B
C00103060016	Straw Wattles	X			X	B
C00103060017	Straw Wattles	X			X	B
C00103060018	Straw Wattles	X			X	B
C00103120009	Rock Berm	X			X	CB
C00106030003	Juniper Bales	X			X	CB
C00106030005	Juniper Bales		X		X	CB
C00106030006	Juniper Bales		X		X	CB
C00106030007	Juniper Bales		X		X	CB

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

84.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-0.15. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

84.4 Inspections and Maintenance

RG200.5 recorded six storm events at CDB-SMA-0.15 during the 2013 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 84-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30697	5-2-2013
Storm Rain Event	BMP-32987	7-3-2013
Storm Rain Event	BMP-33616	7-23-2013
Storm Rain Event	BMP-34223	8-2-2013
Storm Rain Event	BMP-35745	9-25-2013
Annual Erosion Evaluation	COMP-36636	12-4-2013

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

Table 84-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36939	Install at least 3 wattles. Hand rake rills and gullies in area. Apply seed.	11-14-2013	50 day(s)	Maintenance conducted as soon as practicable.

84.5 Compliance Status

The Sites associated with CDB-SMA-0.15 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 84-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 04-003(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 04-004	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

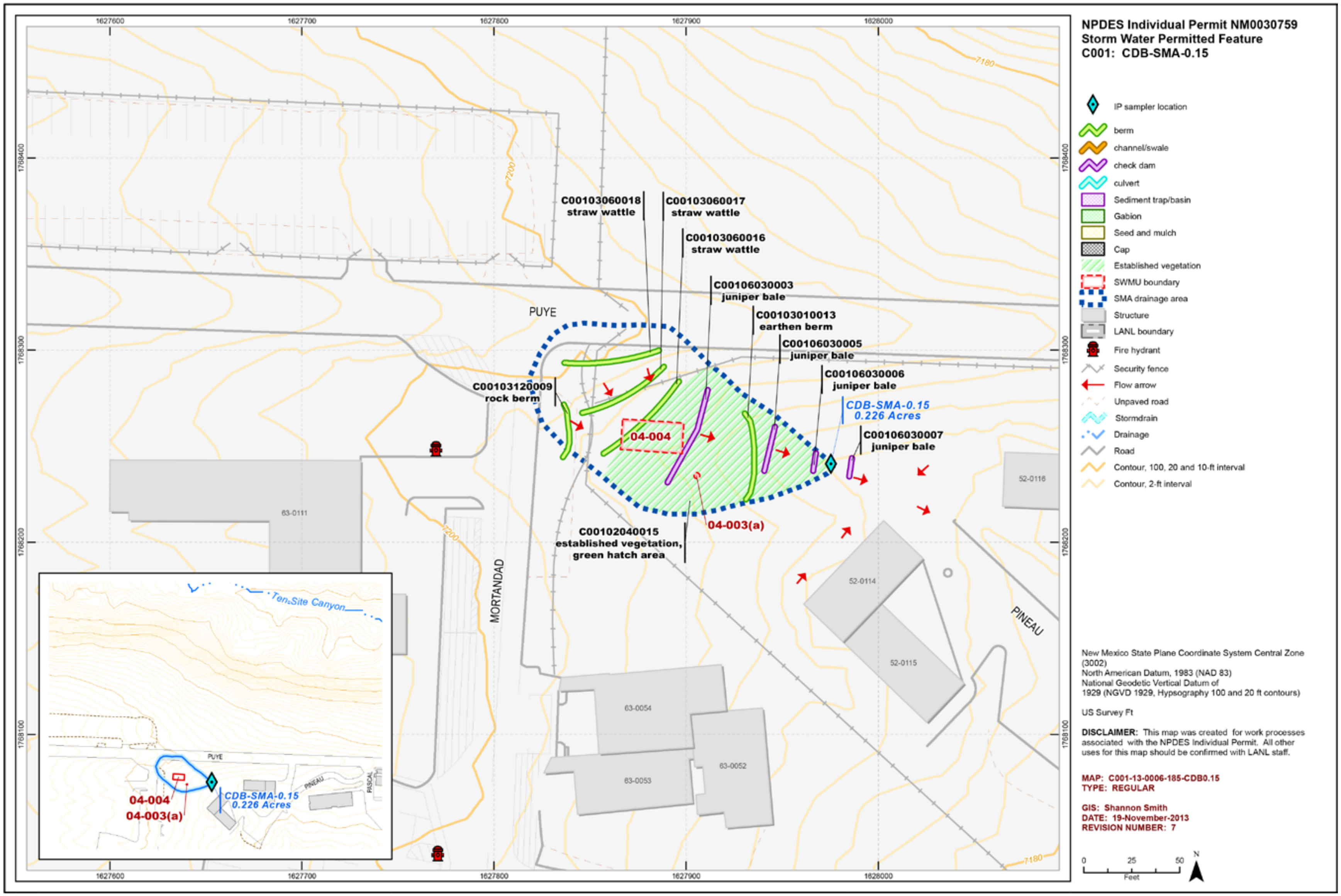


Figure 84-1 CDB-SMA-0.15 location map

85.0 CDB-SMA-0.25: SWMU 46-004(c2) and AOC 46-004(e2)

85.1 Site Descriptions

Two historical industrial activity areas are associated with C002, CDB-SMA-0.25: Sites 46-004(c2) and 46-004(e2).

SWMU 46-004(c2) is a former NPDES-permitted outfall from an industrial drainline in building 46-1 at TA-46. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium-polishing area in support of the Rover Program. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged effluent from floor drains in the north equipment room of building 46-1 to a ditch approximately 50 ft northwest of building 46-1. From the ditch, the effluent flowed to a storm drain culvert that discharged into Cañada del Buey. In 1997, the floor drains that discharged to the SWMU 46-004(c2) outfall either were removed from service or were rerouted to the TA-46 sanitary WWTP. The outfall was removed from the NPDES permit effective March 10, 1998.

Reevaluation of nature and extent will be completed under the supplemental investigation report for Upper Cañada del Buey Aggregate Area, scheduled to be submitted to NMED in 2014. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC under the Consent Order upon approval of the report.

AOC 46-004(e2) is the outfall from roof, floor, and sink drains in building 46-42 at TA 46. The outfall consists of a 4-in.-diameter pipe located approximately 50 ft northeast of building 46-42 at the head of a drainage ditch associated with SWMU 46-006(a). The outfall is located approximately 3 ft below the level of the asphalt pavement. Building 46-42 was constructed as an equipment checkout facility and contains electronics and robotics laboratories. Much of the effluent historically discharged from the outfall was blowdown and condensate. Hazardous materials might have been handled in historical machining operations, and solvents may be used in conjunction with the laboratories. In the mid-1990s, the floor and sink drains that discharged to this outfall either were removed from service or were rerouted to the sanitary sewer system. The outfall currently receives storm water only from building 46-42 roof drains.

The project map (Figure 85-1) 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.

85.2 Control Measures

The potential contributions to run-on at this SMA mainly originate on the paved and unpaved areas at the southern end of the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 85-1).

Enhanced controls were installed and certified on July 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 85-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00202040019	Established Vegetation		X	X		B
C00203010013	Earthen Berm		X		X	CB
C00203010017	Earthen Berm		X		X	EC
C00203010018	Earthen Berm		X		X	EC
C00204060009	Rip Rap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

85.3 Storm Water Monitoring

SWMU 46-004(c2) and AOC 46-004(e2) are monitored within CDB-SMA-0.25. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figures 85-2 and 85-3). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 2310 µg/L (MTAL is 750 µg/L),
- Copper concentration of 11.2 µg/L (MTAL is 4.3 µg/L), and
- PCB concentration of 6 ng/L (ATAL is 0.6 ng/L.

Following the installation of enhanced control measures at CDB-SMA-0.25, corrective action storm water samples were collected on July 26, 2013, and September 10, 2013 (Figures 85-2 and 85-3). Analytical results from this corrective action monitoring sample yielded two TAL exceedances:

- Copper concentrations of 15.2 µg/L and 15.2 µg/L (MTAL is 4.3 µg/L), and
- PCB concentration of 3 ng/L and 5 ng/L (ATAL is 0.6 ng/L).

Corrective action has resulted in a decrease in aluminum concentrations detected in storm water samples collected at CDB-SMA-0.25.

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.

SWMU 46-004(c2):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in shallow (i.e., less than 3 ft bgs) soil and tuff samples collected during the 2010 Consent Order investigation at the Site. Copper was detected above BV in 5 of 22 shallow samples with a maximum concentration 3.1 times the soil BV.

- PCBs are not known to have been associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 12 of 22 shallow samples with a maximum concentration 12% of the residential SSL. Aroclor-1260 was detected in 13 of 22 shallow samples with a maximum concentration 4% of the residential SSL.

AOC 46-004(e2):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil and tuff BVs in shallow samples collected during the 2010 Consent Order investigation at the Site. Copper was detected above BV in 4 of 6 shallow samples with a maximum concentration 21 times the tuff BV.
- PCBs are not known to have been associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 5 of 6 shallow samples with a maximum concentration 10% of the residential SSL. Aroclor-1260 was detected in 5 of 6 shallow samples with a maximum concentration 4% of the residential SSL.

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 85-2 and 85-3. 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 85-2 and 85-3.

Monitoring location CDB-SMA-0.25 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper are associated with building materials, parking lots, and automobiles. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 and 2013 are less than both of these values.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

85.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-0.25 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 85-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30698	5-2-2013
Storm Rain Event	BMP-33255	7-17-2013
Storm Rain Event	BMP-34170	8-6-2013
Storm Rain Event	BMP-35583	9-26-2013
Annual Erosion Evaluation	COMP-36637	11-20-2013
TAL Exceedance	COMP-35285	9-18-2013

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

Table 85-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31792	Remove rebar from all wattles.	5-9-2013	7 day(s)	Maintenance conducted in timely manner.
BMP-33876	Remove trash and debris from rip rap C00204060009.	7-19-2013	2 day(s)	Maintenance conducted in timely manner.

85.5 Compliance Status

The Sites associated with CDB-SMA-0.25 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 85-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-004(c2)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated after 2nd TAL exceedance	2nd initiation on 10-22-13
AOC 46-004(e2)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated after 2nd TAL exceedance	2nd initiation on 10-22-13

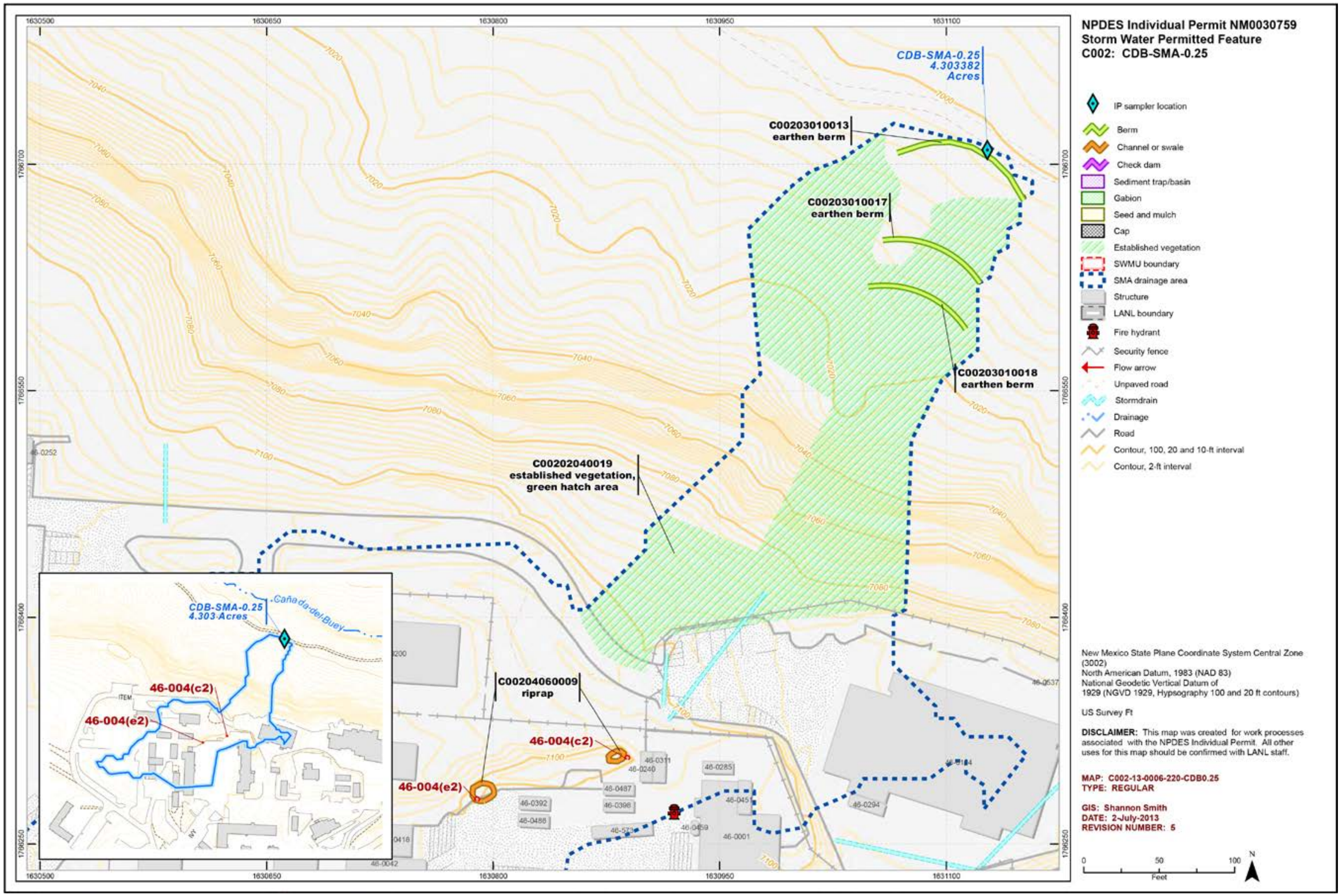
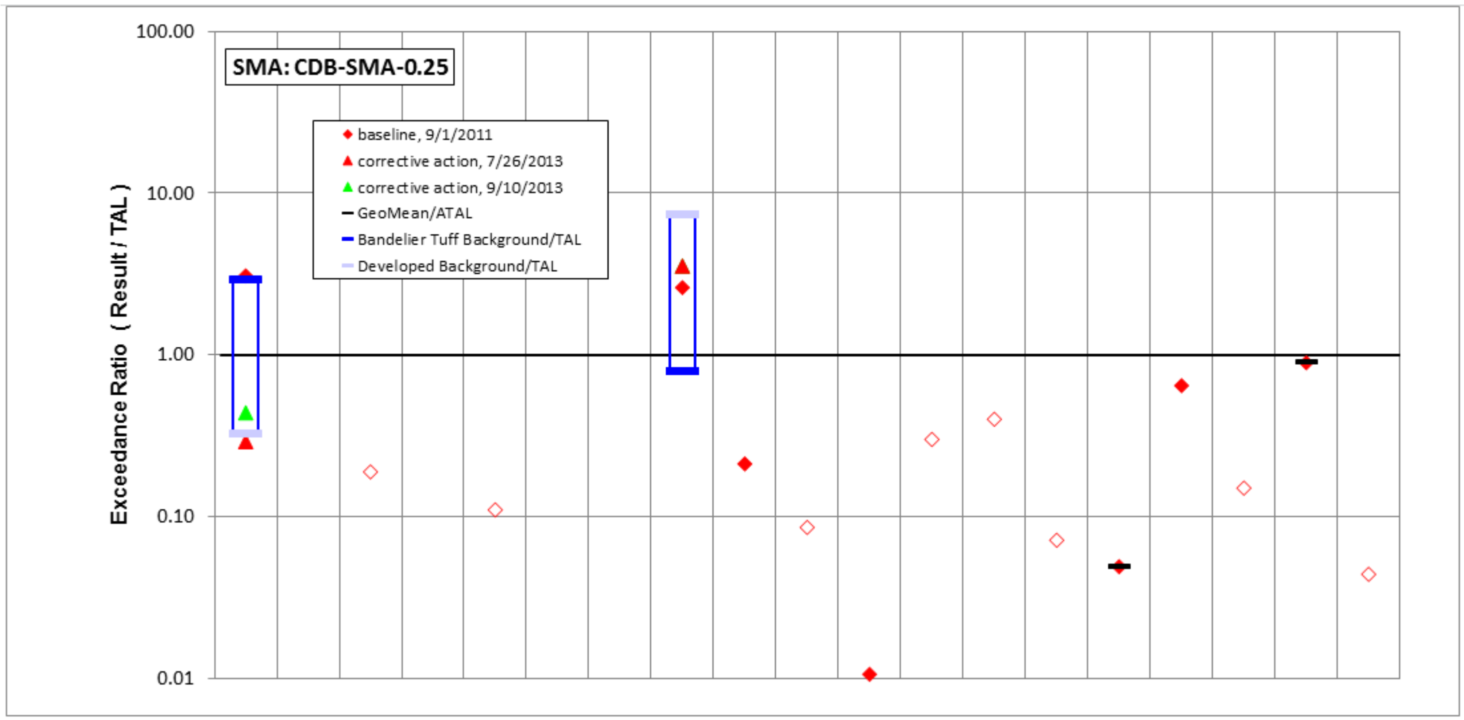


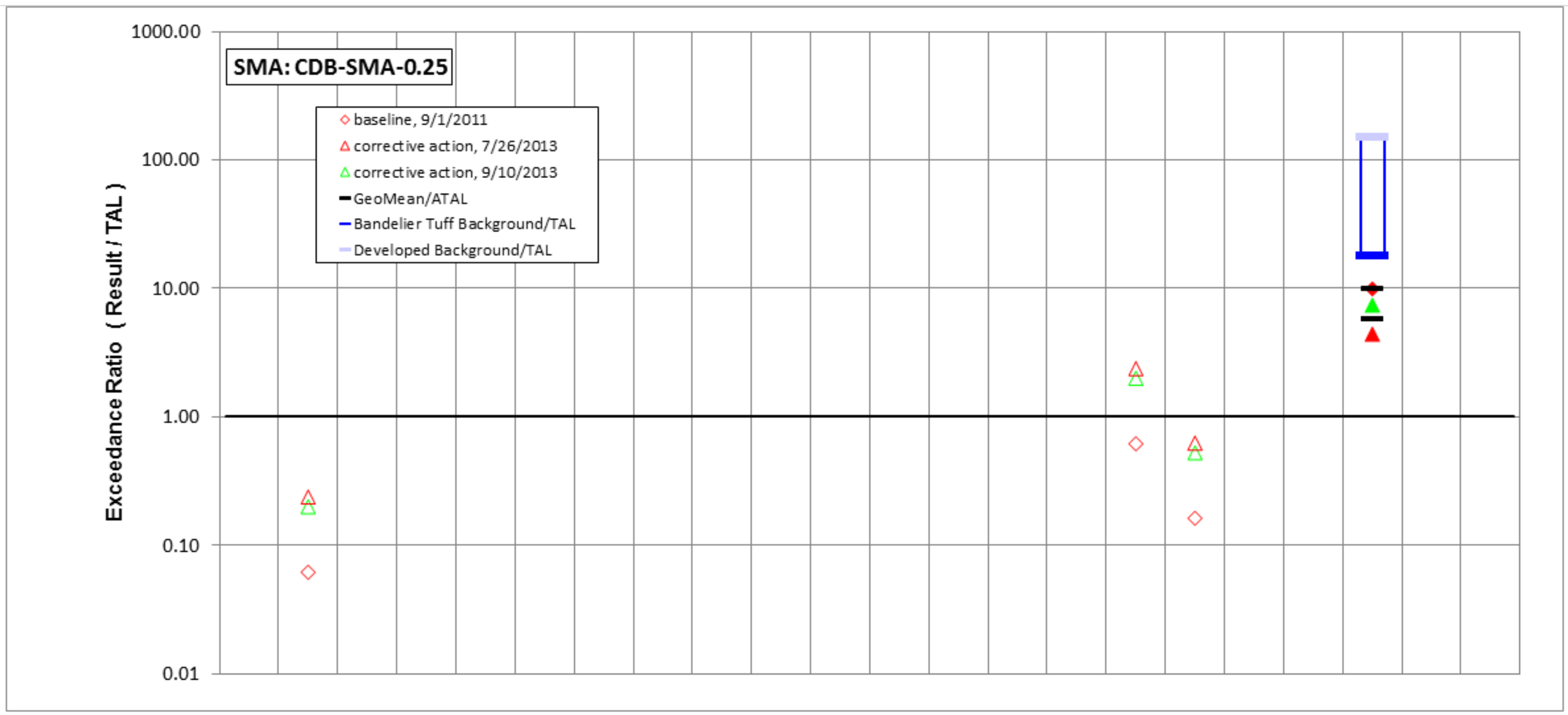
Figure 85-1 CDB-SMA-0.25 location map



	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
9/10/2013 result	329	-	-	-	-	-	-	**15.2**	-	-	-	-	-	-	-	-	-	-	-
result / TAL	0.44	-	-	-	-	-	-	**3.5**	-	-	-	-	-	-	-	-	-	-	-
7/26/2013 result	218	-	-	-	-	-	-	**15.2**	-	-	-	-	-	-	-	-	-	-	-
result / TAL	0.29	-	-	-	-	-	-	**3.5**	-	-	-	-	-	-	-	-	-	-	-
9/1/2011 result	**2310**	3.8	*1.7*	16.6	*0.11*	*2*	2.5	**11.2**	3.6	*0.066*	1.8	*1.5*	*0.2*	*0.45*	4.9	27.1	*0.002*	13.4	*1.32*
result / TAL	**3.1**	0.0059	*0.19*	0.0033	*0.11*	*0.01*	0.0025	**2.6**	0.21	*0.086*	0.011	*0.3*	*0.4*	*0.071*	0.049	0.65	*0.15*	0.89	*0.044*

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

Figure 85-2 Inorganic analytical results summary plot for CDB-SMA-0.25



	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	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/10/2013 result	-	*1*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10***	*10*	-	-	**0.005**	-	-
result / TAL	-	*0.2*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2***	*0.53*	-	-	**7.4**	-	-
7/26/2013 result	-	*1.19*	-	-	-	-	-	-	-	-	-	-	-	-	-	***11.9***	*11.9*	-	-	**0.003**	-	-
result / TAL	-	*0.24*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.4***	*0.63*	-	-	**4.4**	-	-
9/1/2011 result	-	*0.309*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.09*	*3.09*	-	-	**0.006**	-	-
result / TAL	-	*0.062*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.62*	*0.16*	-	-	**9.9**	-	-

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

Figure 85-3 Organic analytical results summary plot for CDB-SMA-0.25

86.0 CDB-SMA-0.55: SWMUs 46-004(g), 46-004(m), 46-004(s), and 46-006(f)

86.1 Site Descriptions

Four historical industrial activity areas are associated with C003, CDB-SMA-0.55: Sites 46-004(g), 46-004(m), 46-004(s), and 46-006(f).

SWMU 46-004(g) consists of an area of potential surface soil contamination associated with radionuclide exhaust emissions from stacks on building 46-1 and an inactive outfall from an industrial drainline in building 46-1 at TA 46. Work in building 46-1 that generated exhaust emissions involved the baking and high-temperature testing of fuel rods. The outfall component of SWMU 46-004(g) consists of an inactive 12-in.-diameter VCP industrial drain that received effluent from floor drains and roof drains within the central portion of building 46-1 and discharged into Cañada del Buey north of building 46-154. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium polishing area. In 1996 and 1997, the floor drains that discharged to this outfall were either removed from service or were rerouted to the TA-46 WWTP. Roof drains from building 46-1 that discharged to this outfall were rerouted to the storm water drain system in 1996.

SWMU 46-004(g) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-004(m) consists of a former NPDES-permitted outfall (04A013), located approximately 60 ft north of building 46-30. The outfall protrudes from a 10-ft-deep bank on the hillside north of building 46-30. The outfall discharged effluent from an industrial drainline in building 46-30 to a ditch at the foot of the bank. The ditch channeled wastewater to a storm drain culvert that discharges into Cañada del Buey. Engineering drawings show this industrial drainline received effluent from the roof drains, laboratory sinks, and floor drains in building 46-30. Building 46-30 was constructed as a hydraulics laboratory and contained a high-bay area with a crane, an actuator test area, and a small machine shop. In December 1995, the outfall was removed from the NPDES permit. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-30 ceased.

The Cerro Grande fire of 2000 burned moderately to severely in the vicinity of this SWMU. As a result of the fire, the vegetative ground cover and canopy were mostly destroyed. Wattles were installed on slopes within the drainages, and rock check dams were placed in the main drainages to dissipate storm water run-on from upslope locations. The lower portion of the sloped area was hand raked, reseeded with native grasses, and mulched with straw. The upper portion of the sloped area was hydromulched from above. An earthen base-course berm was installed along the fire road at the toe of the slope to provide additional protection from sediment migration.

NMED issued a COC without controls under the Consent Order for this Site in July 2013.

SWMU 46-004(s) consists of an outfall located approximately 20 ft south of building 46-1 at TA-46. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged to a drainage ditch (SWMU 46-007) on the south side of building 46-1. The drainage ditch leads to a storm drain culvert that discharges into Cañada del Buey. The outfall received effluent from floor and roof drains of the south high bay in building 46-1. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium polishing area. In 1995, all floor drains in the south high bay of building 46-1 either were plugged or were rerouted to the SWSC plant. Currently, roof drains from the south high bay discharge to the storm drainage system and/or daylight near building 46-1, and the building has been deactivated.

The Cerro Grande fire of 2000 burned moderately to severely in the vicinity of this SWMU. As a result of the fire, the vegetative ground cover and canopy were mostly destroyed. Wattles were installed on slopes within the drainages, and rock check dams were placed in the main drainages to dissipate storm water run-on from upslope locations. The lower portion of the sloped area was hand raked, re-seeded with native grasses, and mulched with straw. The upper portion of the sloped area was hydromulched from above. An earthen base-course berm was installed along the fire road at the toe of the slope to provide additional protection from sediment migration.

SWMU 46-006(f) consists of a former storage shed (former building 46-36) that was located approximately 50 ft east of building 46-1. The 20- × 30-ft metal storage shed was constructed in 1955; the floor of the storage shed was paved and situated approximately 6 to 8 in. belowgrade. The area around the former storage shed was also used as a storage area as well as a staging area for equipment and materials awaiting disposal, and an unloading area for new equipment. Stored materials may have included oils (possibly containing PCBs), alkali metals, asbestos-containing products, beryllium alloys, potassium dichromate, lead bricks, lead shot, and mercury. Because the floor of building 46-36 was belowgrade, flooding of the storage shed occurred during significant precipitation events. The surrounding area slopes north to a storm drain culvert that discharges into Cañada del Buey.

The RFI report recommended NFA for SWMU 46-006(f) because no contaminants are present in concentrations that pose a potential unacceptable risk under current and projected land use. The shed and foundation were removed in 2013; waste characterization sampling data from the building foundation showed no detected PCBs. SWMU 46-004(f) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

The project map (Figure 86-1) 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.

86.2 Control Measures

Most of the run-on to this SMA originates from the paved areas in the southern portion of the SMA. Planned controls are to fortify runoff controls in this area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 86-1).

Table 86-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00302040021	Established Vegetation		X	X		B
C00303010011	Earthen Berm		X		X	CB
C00306010006	Rock Check Dam	X			X	CB
C00306010013	Rock Check Dam	X			X	CB
C00306010015	Rock Check Dam	X			X	CB
C00306010016	Rock Check Dam	X			X	CB
C00306010017	Rock Check Dam	X			X	CB
C00306010018	Rock Check Dam	X			X	CB
C00306010019	Rock Check Dam	X			X	CB
C00306010020	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

86.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-0.55. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

SWMUs 46-004(g), 46-004(m), 46-004(s), and 46-006(f) are monitored within CDB-SMA-0.55. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 86-2 and 86-3). Analytical results from this sample yielded two TAL exceedances:

- Copper concentration of 16.3 µg/L (MTAL is 4.3 µg/L), and
- PCB concentration of 0.7 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 46-004(g):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BVs in 7 of 16 shallow (i.e., less than 3 ft bgs) 2010 Consent Order soil and tuff samples at a maximum concentration 13 times the soil BV.

- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 6 of 16 shallow samples and Aroclor-1260 was detected in 3 of 16 shallow samples with maximum concentrations 10.7% and 0.96% of the residential SSLs, respectively.

SWMU 46-004(m):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BVs in 3 of 20 shallow 2010 Consent Order soil and tuff samples at a maximum concentration 1.7 times the tuff BV.
- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 7 of 20 shallow samples, and Aroclor-1260 was detected in 2 of 20 shallow samples with maximum concentrations 1.7% and 0.3% of the residential SSLs, respectively.

SWMU 46-004(s):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BVs in 2 of 4 shallow 2010 Consent Order soil and tuff samples at a maximum concentration 40 times the tuff BV.
- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 2 of 4 shallow samples and Aroclor-1260 was detected in 1 of 4 shallow samples with maximum concentrations 3% and 0.6% of the residential SSLs, respectively.

SWMU 46-006(f):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was not detected above soil or tuff BVs in any of the 8 shallow 2010 Consent Order soil and tuff samples.
- PCBs are not known to be associated with industrial materials historically managed at this Site. One PCB mixture (Aroclor-1254) was detected in 1 of 8 shallow samples at a maximum concentration 6.5% of the residential SSL.

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 86-2 and 86-3. 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 86-2 and 86-3.

Monitoring location CDB-SMA-0.55 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.

- 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 2013 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 2013 is less than both of these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

86.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-0.55 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 86-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30699	5-2-2013
Storm Rain Event	BMP-33256	7-17-2013
Storm Rain Event	BMP-34171	8-6-2013
Storm Rain Event	BMP-35584	9-26-2013
Annual Erosion Evaluation	COMP-36638	11-14-2013
TAL Exceedance	COMP-36875	11-14-2013

No maintenance activities were conducted at CDB-SMA-0.55 in 2013.

86.5 Compliance Status

The Sites associated with CDB-SMA-0.55 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 86-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-004(g)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 46-004(m)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 46-004(s)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 46-006(f)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

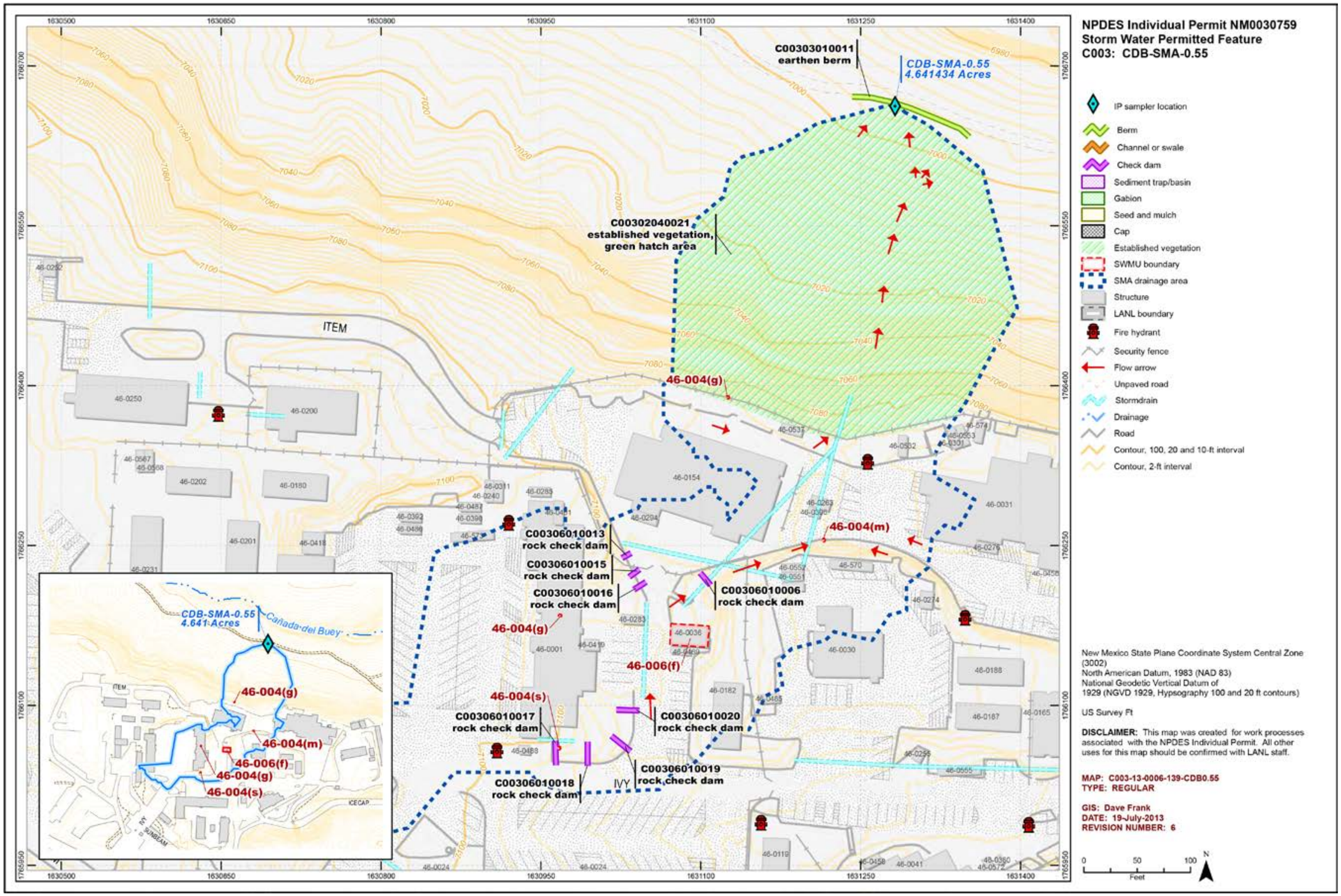
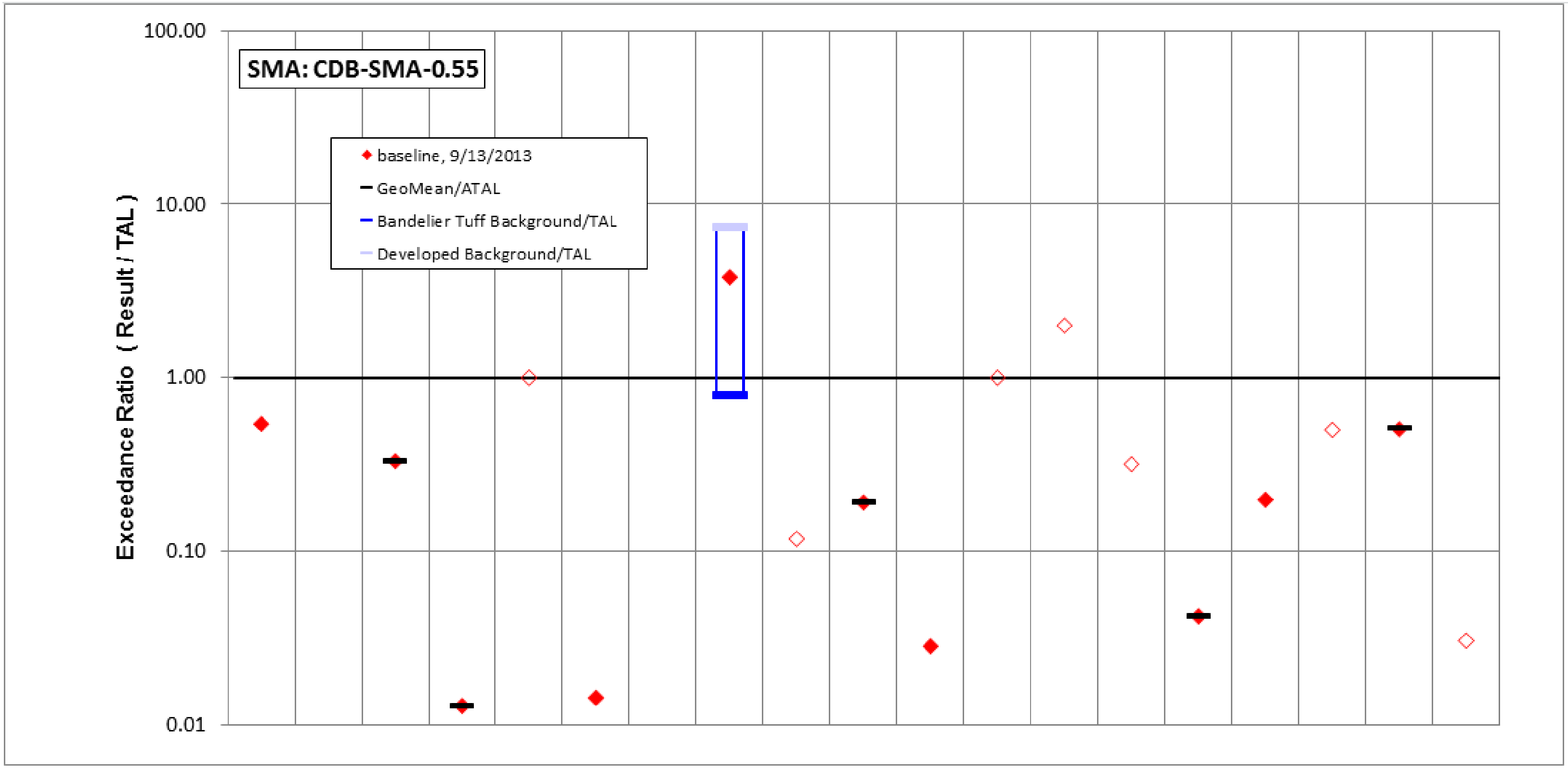


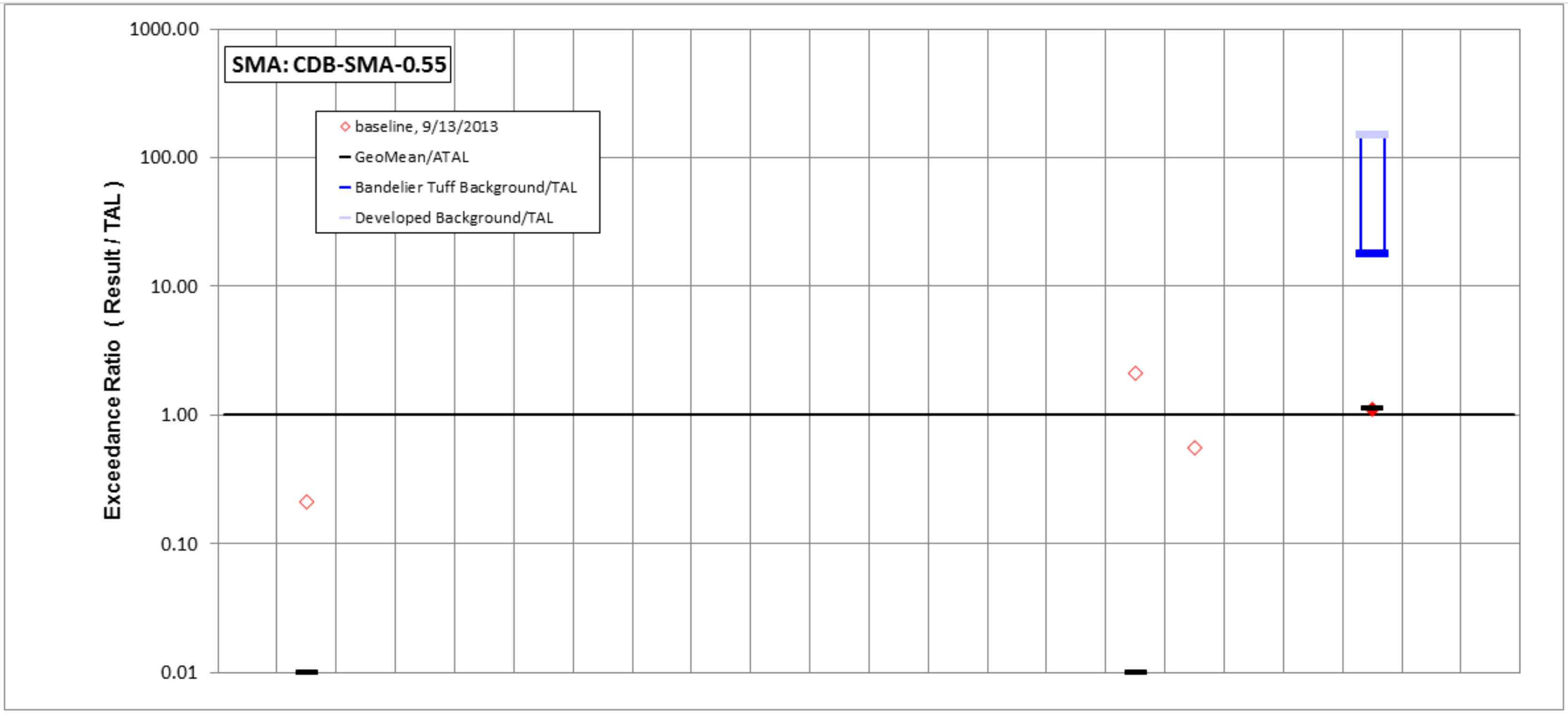
Figure 86-1 CDB-SMA-0.55 location map



	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
9/13/2013 result	406	1.34	2.97	64.1	*1*	3	*5*	**16.3**	*2*	0.147	4.81	*5*	***1***	*2*	4.21	8.31	*0.005*	7.57	*0.915*
result / TAL	0.54	0.0021	0.33	0.013	*1*	0.014	*0.005*	**3.8**	*0.12*	0.19	0.028	*1*	***2***	*0.32*	0.042	0.2	*0.5*	0.5	*0.031*

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

Figure 86-2 Inorganic analytical results summary plot for CDB-SMA-0.55



	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	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	*1.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10.6***	*10.6*	-	-	**7E-04**	-	-
result / TAL	-	*0.21*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.1***	*0.56*	-	-	**1.1**	-	-

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

Figure 86-3 Organic analytical results summary plot for CDB-SMA-0.55

87.0 CDB-SMA-1: SWMUs 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), and 46-009(a) and AOC C-46-001

87.1 Site Descriptions

Eight historical industrial activity areas are associated with C004, CDB-SMA-1: Sites 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), 46-009(a), and C-46-001.

SWMU 46-003(c) is a former septic system approximately 80 ft southeast of building 46-76 at TA-46. The septic system consisted of a septic tank (structure 46-49), a distribution box (structure 46-50), associated drainline, a drain field, and an outfall located southeast of building 46-76 beneath an asphalt road outside the security fence at TA-46. This septic system was installed in 1956 and served the restroom facilities, floor drains, roof drains, sinks, and acid sinks in building 46-24, which housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. In 1958, an acid dry well located in room B22 of building 46-24 was connected into the SWMU 46-003(c) system but drained to the septic tank for less than 1 yr. The drain field associated with this septic system was removed from service sometime before 1968, and septic tank 46-49 was rerouted to the drain field associated with SWMU 46-003(f). In the 1970s, sanitary waste drainlines that previously discharged to septic tank 46-49 were rerouted to the SWMU 46-002 surface impoundment system, and septic tank 46-49 was reportedly removed from service, emptied, filled with gravel, and left in place. No evidence of the septic tank was found during the geophysical survey conducted during the 2010 investigation, confirming the tank had been removed.

SWMU 46-003(c) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-004(d2) consists of an area of potential soil contamination associated with exhaust emissions from stacks on building 46-24 at TA-46. Building 46-24 housed laboratories and offices. In 1960 and 1961, experiments conducted in building 46-24 used, and may have released, beryllium and beryllium oxide. Stack emissions associated with SWMU 46-004(d2) were characterized as part of Consolidated Unit 46-004(d2)-99, which consists of SWMUs 46-004(g) and 46-004(h) and AOCs C-46-002 and C-46-003 as well as SWMU 46-004(d2).

SWMU 46-004(d2) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-004(f) is a former outfall from an industrial drainline that served rooms 101 through 134 in building 46-24 at TA-46. The outfall consists of a 6-in.-diameter VCP that received discharges from a sump, acid sink, several floor and sink drains, and noncontact cooling water. The outfall pipe discharged to a drain approximately 50 ft east of building 46-24. This drain is part of a network of drains that discharged to SWSC Canyon at former NPDES-permitted Outfall 04A018. Building 46-24 housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. All discharges to the outfall from building 46-24 ceased before the outfall was removed from the NPDES permit in December 1995.

SWMU 46-004(f) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-004(t) consists of potential soil contamination associated with former laboratory stack emissions from building 46-24 in the early 1960s. In 1960 and 1961, experiments conducted in building 46-24 used beryllium and beryllium oxide.

SWMU 46-004(t) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-004(w) is a former NPDES-permitted outfall located approximately 70 ft south of building 46-24 at TA-46. The outfall is a 2-in.-diameter cast-iron pipe that discharged to a drain south of building 46-24, near the northeast corner of a laser laboratory (building 46-76). The outfall served a sink drain in building 46-59. SWMU 46-004(w) also received effluent from the SWMU 46-004(r) outfall and was part of a network of drains that discharged to SWSC Canyon at former NPDES-permitted outfall 04A018. Building 46-59 was used for hydraulic and structural testing of components in support of the Rover Program. All discharges to the outfall from building 46-59 ceased before the outfall was removed from the NPDES permit in December 1995.

SWMU 46-004(w) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-008(g) is a former unpaved storage area located south of a laser laboratory building (structure 46-76) at TA-46. In 1990, 20 drums containing dielectric oil were reported to be stored directly on the ground at this location. The Site is a level area bisected by a drainage channel that flows east into a tributary of Cañada del Buey through a storm drain culvert. Dielectric oil was used in laser experiments; the dielectric oil had not been analyzed for PCBs.

Phase I Consent Order investigations are complete for SWMU 46-008(g); the Site meets residential risk levels. SWMU 46-008(g) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

SWMU 46-009(a) is an inactive surface disposal area located at the head of a tributary of Cañada del Buey near the southeastern corner of TA-46. The surface disposal area covers approximately 5000 yd^2, extending from the canyon rim to the floor of SWSC Canyon. The disposal area contains a variety of construction materials, including asphalt, concrete, plywood, and pipe. The dates material was disposed of at the Site are not known. Aerial photographs of TA-46 taken in 1958 show the presence of the surface disposal area.

SWMU 46-009(a) is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

AOC C-46-001 is the location of a one-time spill of mercury in the vicinity of building 46-75 at TA-46. On July 22, 1975, 250–500 g (0.55–1.1 lb) of mercury spilled on the ground near building 46-75. The spill was cleaned up shortly after it occurred. The memorandum documenting the spill does not provide the precise location of where the spill occurred at building 46-75; however, aerial photos show the entire area surrounding building 46-75 was paved at the time of the spill.

AOC C-46-001 is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Upper Cañada del Buey Aggregate Area.

The project map (Figure 87-1) 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.

87.2 Control Measures

Most of the run-on contributions to the SMA originate from the paved areas in the developed portion of the SMA. An engineered storm water system routes water through most of the SWMUs. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 87-1).

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 87-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00402040015	Established Vegetation		X	X		B
C00403010014	Earthen Berm		X		X	EC
C00404060006	Rip Rap	X		X		CB
C00404060008	Rip Rap		X		X	CB
C00404060009	Rip Rap	X			X	CB
C00406010004	Rock Check Dam		X		X	CB
C00406010010	Rock Check Dam	X			X	CB
C00406010011	Rock Check Dam	X			X	CB
C00406010012	Rock Check Dam	X			X	CB
C00406010013	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

87.3 Storm Water Monitoring

SWMUs 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), and 46-009(a) and AOC C-46-001 are monitored within CDB-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figures 87-2 and 87-3). Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 1120 µg/L (MTAL is 750 µg/L),
- Copper concentration of 8 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 15.2 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 23 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at CDB-SMA-1, a corrective action storm water sample was collected on September 13, 2013 (Figures 87-2 and 87-3). Analytical results from this corrective action monitoring sample yielded two TAL exceedances:

- Gross-alpha activity of 71.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 72 ng/L (ATAL is 0.6 ng/L).

Corrective action has resulted in a decrease in aluminum and copper concentrations detected in storm water samples collected at CDB-SMA-1.

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 46-003(c):

- PCBs are not known to be associated with industrial materials historically managed at this Site. PCBs were not detected in shallow Consent Order samples collected at SWMU 46-003(c).
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-003(c). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241, plutonium, and uranium isotopes, which are alpha-emitting radionuclides. No radionuclides were detected in shallow Consent Order samples collected at SWMU 46-003(c). Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

SWMU 46-004(d2):

- PCBs are not known to be associated with industrial materials historically managed at this Site. Three PCB mixtures (Aroclor-1242, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1242 and Aroclor-1254 were each detected in 1 of 8 shallow samples at concentrations 8.6% and 18% of the residential SSLs. Aroclor-1260 was detected in 3 of 8 shallow samples at a maximum concentration 3.4% of the residential SSL.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-004(d2). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241, plutonium, thorium, and uranium isotopes, which are alpha-emitting radionuclides. No radionuclides were detected in the shallow samples. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

SWMU 46-004(f):

- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 3 of 8 shallow samples, and Aroclor-1260 was detected in 4 of 8 shallow samples with maximum concentrations 5% and 2% of the residential SSLs, respectively.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-004(f). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241, plutonium, and uranium isotopes, which are alpha-emitting radionuclides. No radionuclides were detected or detected above BVs/FVs in Consent Order samples collected at SWMU 46-004(f). Any alpha-emitting

radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

SWMU 46-004(t):

- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 12 of 14 shallow samples and Aroclor-1260 was detected in 11 of 14 shallow samples with maximum concentrations 4.4% and 4.8% of the residential SSLs, respectively.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-004(t). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241, plutonium, and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed background values.

SWMU 46-004(w):

- PCBs are not known to be associated with industrial materials historically managed at this Site. PCBs were not detected in the Consent Order samples collected at SWMU 46-004(w).
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-004(w). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. No radionuclides were detected in the Consent Order samples collected at SWMU 46-004(w). Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.


CDB-SMA-1, Rip Rap, C00404060009 (photo ID 11025-9)

SWMU 46-008(g):

- PCBs may have been associated with industrial materials historically managed at this Site. Three PCB mixtures (Aroclor-1242, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1242 was detected in 1 of 14 shallow samples at concentration 5% of the SSL. Aroclor-1254 and Aroclor-1260 were each detected in 6 of 14 shallow samples at maximum concentrations 95% and 30% of the residential SSLs, respectively
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-008(g). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. No alpha-emitting radionuclides were detected in shallow Consent Order samples collected at SWMU 46-008(g). Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

SWMU 46-009(a):

- PCBs are not known to be associated with industrial materials historically managed at this Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 and Aroclor-1260 were each detected in 6 and 10 of 20 shallow samples at maximum concentrations 3% and 1%, respectively, of the residential SSLs, respectively
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 46-009(a). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. No alpha-emitting radionuclides were detected in shallow Consent Order samples collected at SWMU 46-009(a). Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. In addition, the gross-alpha TAL exceedance is below the Bandelier Tuff and developed BVs.

AOC C-46-001:

- PCBs are not known to be associated with industrial materials historically managed at this Site. Consent Order samples collected at AOC C-46-001 were not analyzed for PCBs because they are not known to be associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at AOC C-46-001. Consent Order samples were not analyzed for gross-alpha radioactivity or for alpha-emitting radionuclides because they are not known to be associated with industrial materials historically managed at this Site.

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 87-2 and 87-3. 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 87-2 and 87-3.

Monitoring location CDB-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values, and the 2013 gross-alpha result is between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 and 2013 are between these two values.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

87.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-1 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 87-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30700	5-2-2013
Storm Rain Event	BMP-33254	7-17-2013
Storm Rain Event	BMP-34169	8-2-2013
Storm Rain Event	BMP-35582	9-26-2013
Annual Erosion Evaluation	COMP-36639	11-14-2013
TAL Exceedance	COMP-37088	11-14-2013

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

Table 87-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-30417	Remove rain gutters from channel below rock check dam -0013. Remove trash from culvert inlet above rip rap -0009	2-19-2013	173 day(s)	Maintenance conducted as soon as practicable.
BMP-31798	Remove trash and debris from rip rap C00404060009.	5-8-2013	6 day(s)	Maintenance conducted in timely manner.

87.5 Compliance Status

The Sites associated with CDB-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 87-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-003(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(d2)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(f)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(t)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(w)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-008(g)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-009(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
AOC C-46-001	Corrective Action Complete	Corrective Action Complete	NMED, July 13, 2012, “Approval of Request for Certificates of Completion for Six Solid Waste Management Units and One Area of Concern in the Upper Cañada del Buey Aggregate Area, Los Alamos National Laboratory”

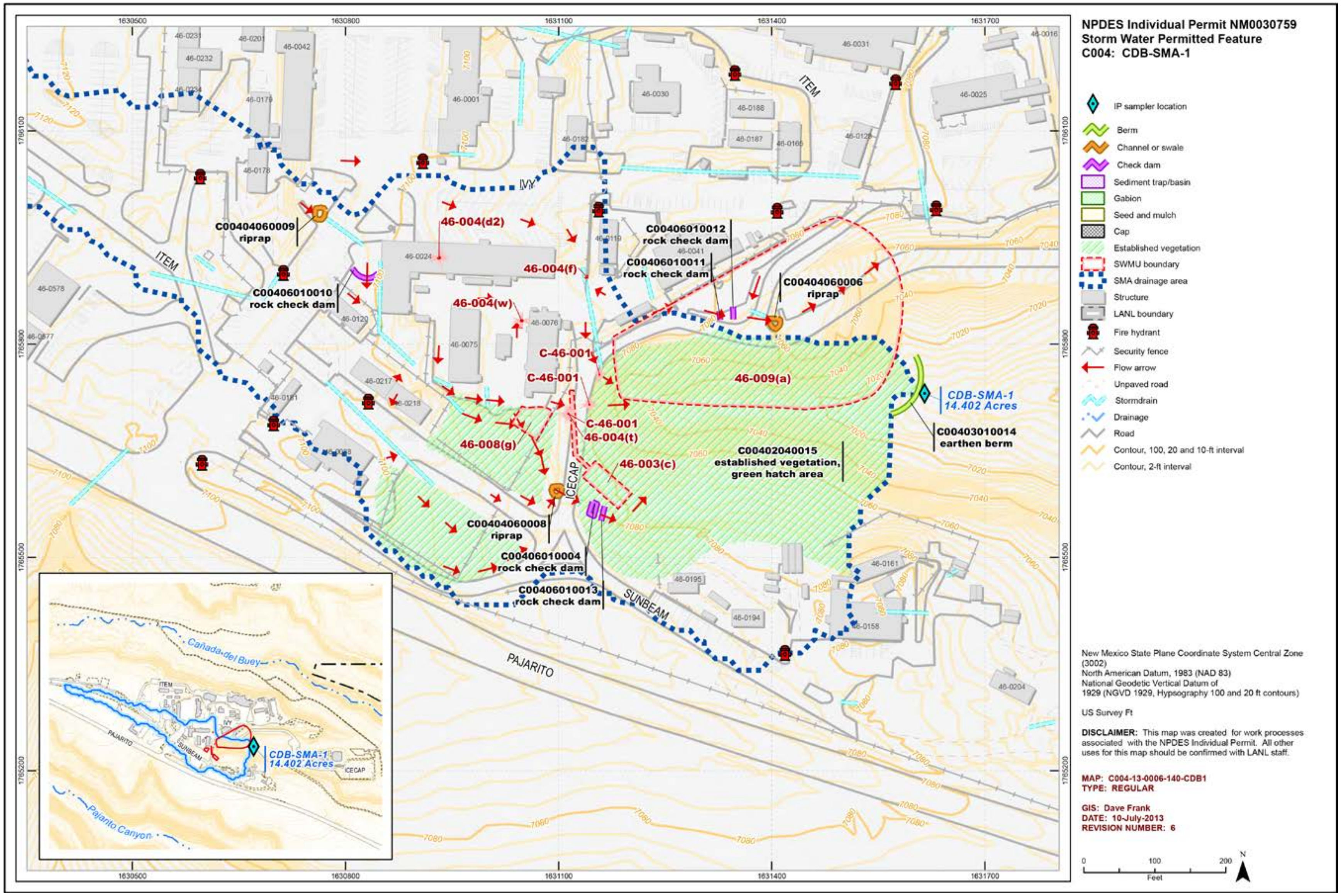
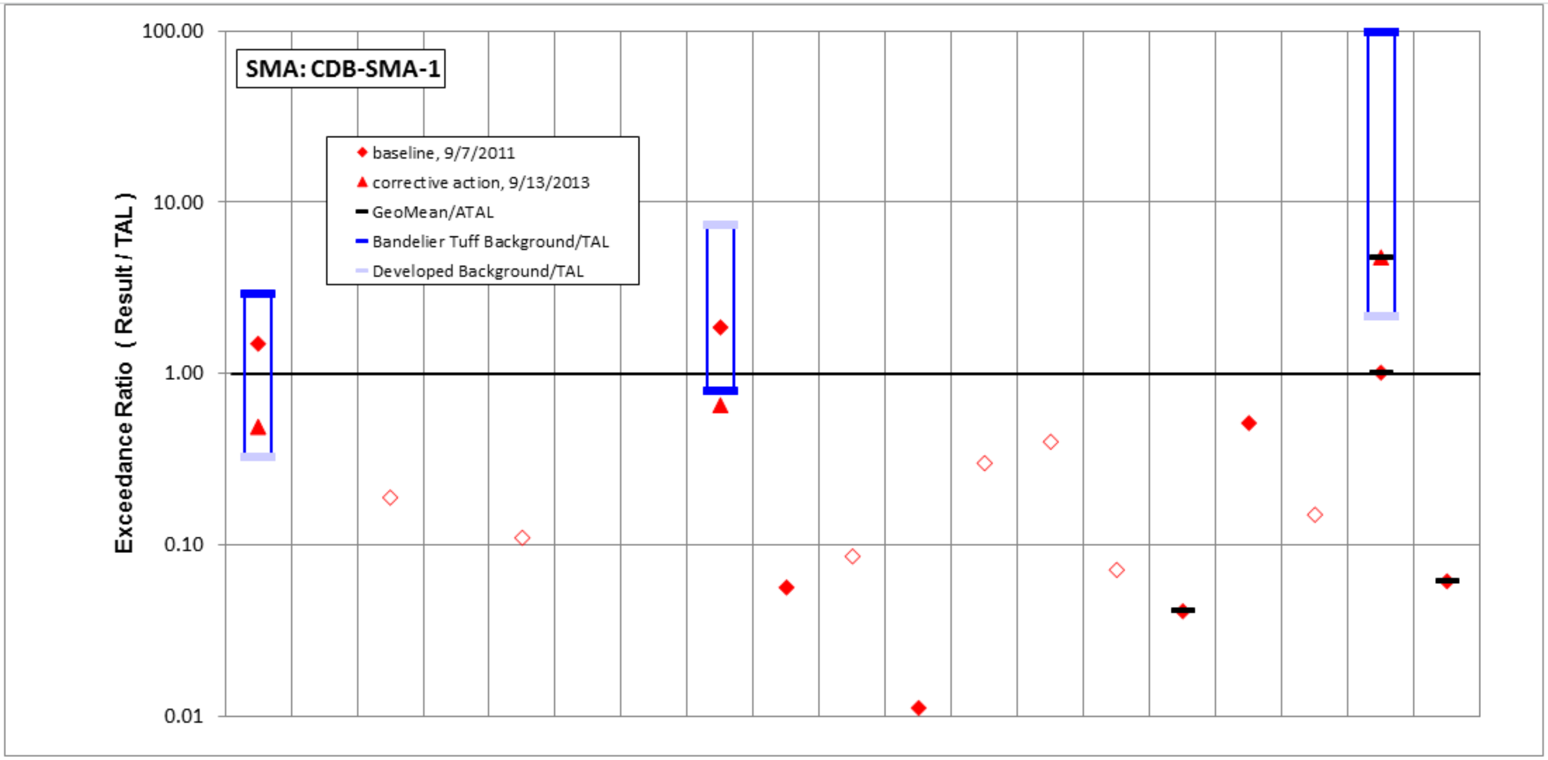


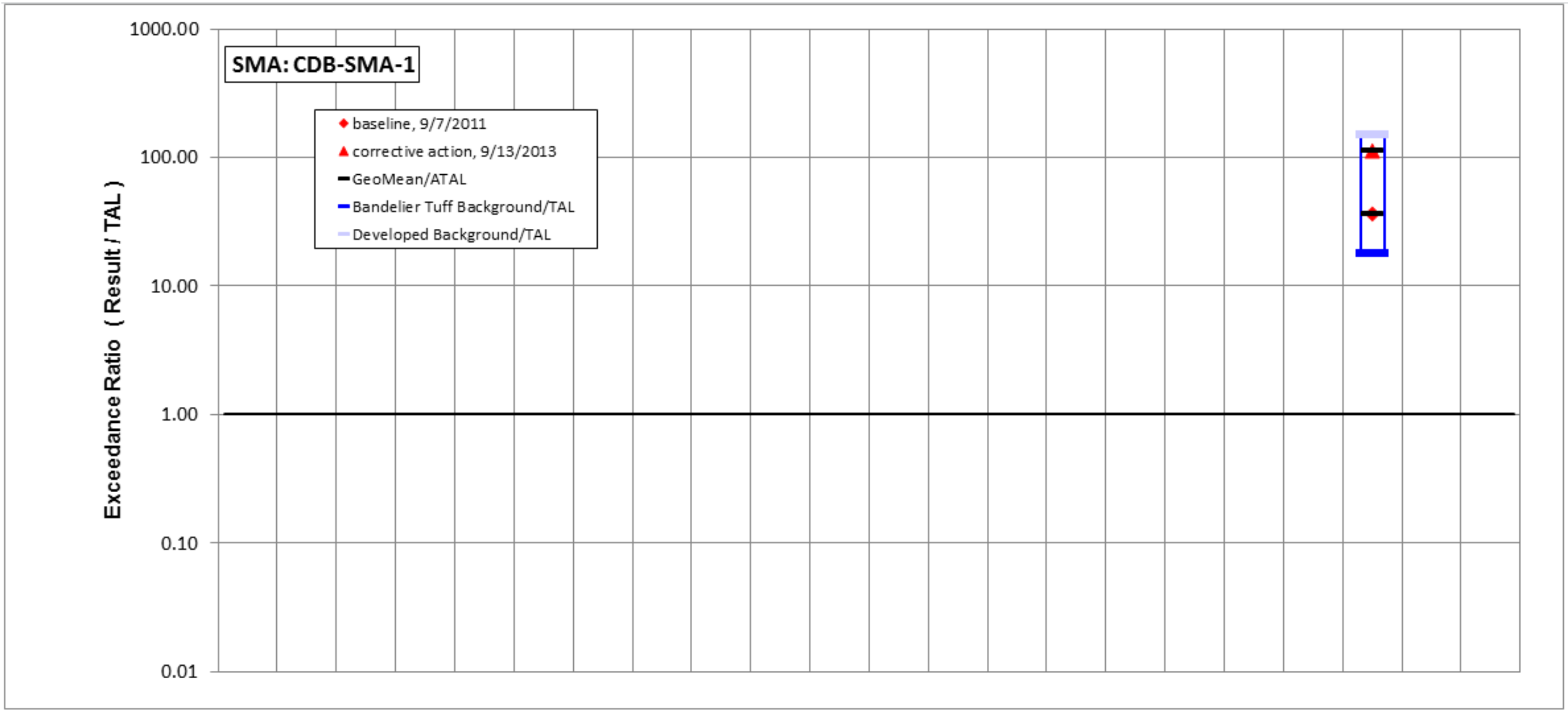
Figure 87-1 CDB-SMA-1 location map



	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
9/13/2013 result	367	-	-	-	-	-	-	2.81	-	-	-	-	-	-	-	-	-	**71.5**	-
result / TAL	0.49	-	-	-	-	-	-	0.65	-	-	-	-	-	-	-	-	-	**4.8**	-
9/7/2011 result	**1120**	*1*	*1.7*	28.4	*0.11*	*2*	3.5	**8**	0.96	*0.066*	1.9	*1.5*	*0.2*	*0.45*	4.1	21.6	*0.002*	**15.2**	1.84
result / TAL	**1.5**	*0.002*	*0.19*	0.0057	*0.11*	*0.01*	0.0035	**1.9**	0.056	*0.086*	0.011	*0.3*	*0.4*	*0.071*	0.041	0.51	*0.15*	**1**	0.061

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

Figure 87-2 Inorganic analytical results summary plot for CDB-SMA-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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.072**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**110**	-	-
9/7/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.023**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**36**	-	-

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

Figure 87-3 Organic analytical results summary plot for CDB-SMA-1

88.0 CDB-SMA-1.15: SWMUs 46-004(b), 46-004(y), 46-004(z), and 46-006(d)

88.1 Site Descriptions

Four historical industrial activity areas are associated with C005, CDB-SMA-1.15: Sites 46-004(b), 46-004(y), 46-004(z), and 46-006(d).

SWMU 46-004(b) is a former alkali-metal cleaning tank (structure 46-81) at TA-46. The tank measured approximately 4 × 8 × 6 ft tall and was located on asphalt pavement within 20 ft of the northwest corner of building 46-31, within the boundary of the SWMU 46-006(d). The tank was of steel construction with an outlet plumbed to the SWMU 46-004(c) dry well. The tank was used in the late 1950s and early 1960s to douse laboratory equipment from cesium-plasma diode experiments before the equipment was reused or disposed of. Butanol or kerosene was used on the equipment to dissolve naturally occurring alkali isotopes of cesium and lithium. The tank was removed in 1973. The 1990 SWMU report incorrectly described the tank as being constructed of concrete.

Phase I Consent Order sampling is complete for SWMU 46-004(b). All detected constituents in Consent Order samples were below residential SSLs. SWMU 46-004(b) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(b) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-004(y) is a former NPDES-permitted outfall (03A043) located approximately 40 ft north of building 46-31 at TA-46. This outfall consisted of a 6-in.-diameter cast-iron pipe that received blowdown from a cooling tower in building 46-31 and effluent from the building's floor drains, roof drains, and laboratory sinks. The outfall pipe discharged into Cañada del Buey. The outfall pipe to the canyon was removed before 1996, the roof drains were rerouted to new storm drains that discharge to the north side of building 46-31, and all floor and sink drains discharging to this outfall were rerouted to the SWSC plant. In July 1996, the outfall was removed from the NPDES permit.

Phase I Consent Order sampling is complete for SWMU 46-004(y). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(y) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(y) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-004(z) is an outfall located approximately 60 ft northwest of building 46-31 at TA-46. This outfall consists of a 6-in.-diameter cast-iron pipe that receives storm water discharge from two roof drains at building 46-31 and discharges into Cañada del Buey. Previously, the outfall also served the floor drains for rooms 160 through 172 of building 46-31. The floor drains leading to this outfall were rerouted to the SWSC plant sometime before 1993.

Phase I Consent Order sampling is complete for SWMU 46-004(z). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(z) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(z) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A in building 45-31 also discharged to this SWMU. During a 1986 site visit, 55-gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the Site. SWMUs 46-004(a,b,c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive runoff from SWMU 46-006(d).

Phase I Consent Order sampling is complete for SWMU 46-006(d). All detected constituents in Consent Order samples were below residential SSLs and SALs, except mercury and Aroclor-1254, which were each detected above residential SSLs but below industrial SSLs at one sampling location. SWMU 46-006(d) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-006(d) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 88-1) 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.

88.2 Control Measures

Most of the potential run-on to this SMA originates in the paved areas and roof drains in the developed area 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 88-1).

Table 88-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00502040011	Established Vegetation		X	X		B
C00503010006	Earthen Berm		X		X	CB
C00504060007	Rip Rap	X		X		CB
C00504060008	Rip Rap	X		X		CB

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

88.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.15. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

88.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-1.15 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 88-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30701	5-2-2013
Storm Rain Event	BMP-33257	7-17-2013
Storm Rain Event	BMP-34172	8-6-2013
Storm Rain Event	BMP-35585	9-26-2013
Annual Erosion Evaluation	COMP-36640	11-20-2013

No maintenance activities were conducted at CDB-SMA-1.15 in 2013.

88.5 Compliance Status

The Sites associated with CDB-SMA-1.15 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 88-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-004(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(y)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(z)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

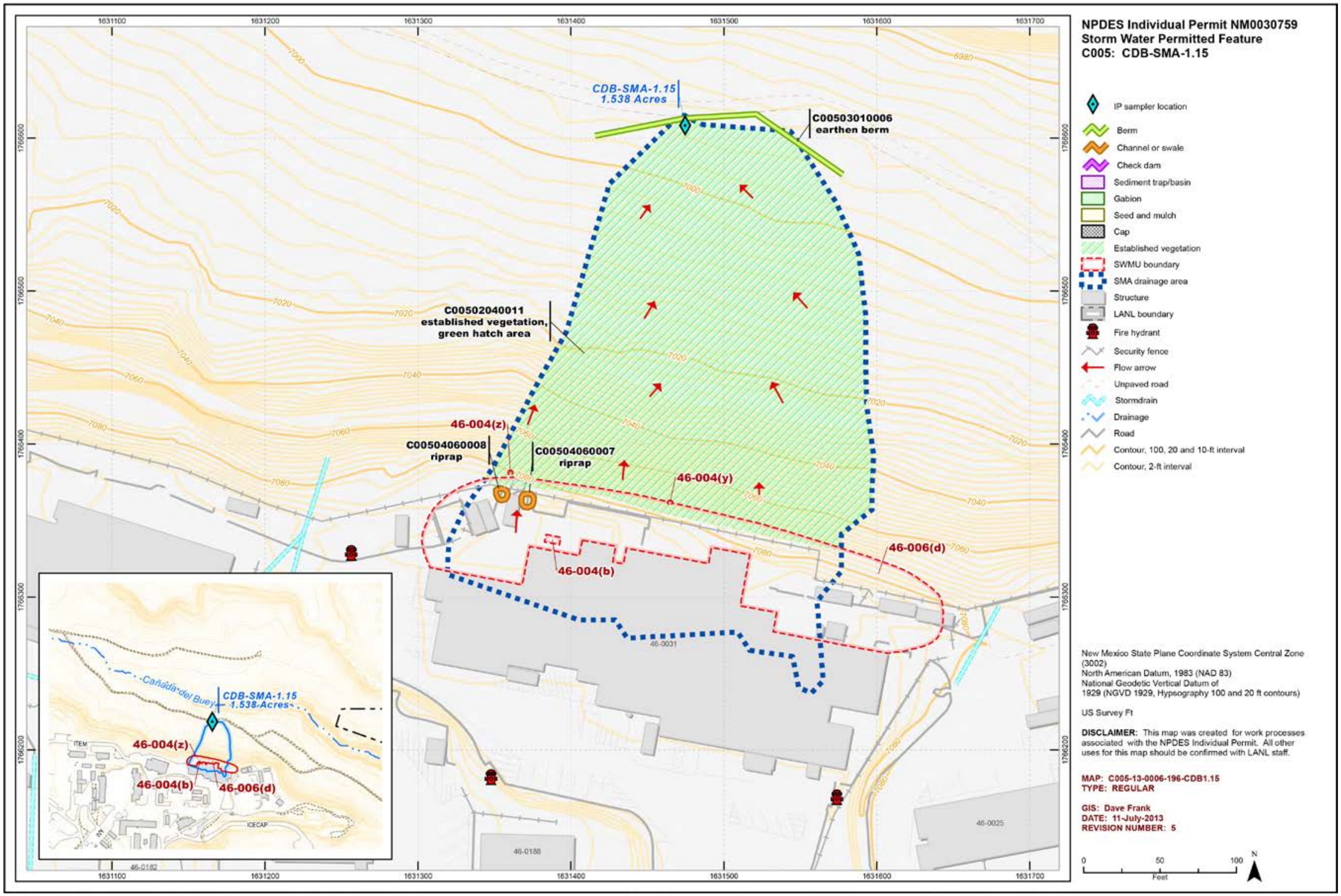


Figure 88-1 CDB-SMA-1.15 location map

89.0 CDB-SMA-1.35: SWMUs 46-004(a2), 46-004(u), 46-004(v), 46-004(x), 46-006(d), and 46-008(f)

89.1 Site Descriptions

Six historical industrial activity areas are associated with C006, CDB-SMA-1.35: Sites 46-004(a2), 46-004(u), 46-004(v), 46-004(x), 46-006(d), and 46-008(f).

SWMU 46-004(a2) is a former outfall on the east side of building 46-31 at TA-46. The outfall discharged to a shallow ditch on the east side of building 46-31, which traversed approximately 50 ft north to a storm drain culvert discharging into Cañada del Buey. The outfall received effluent from a 6-in.-diameter industrial drainline that was historically plumbed to the sinks and drains in rooms 101, 103, and 105 of building 46-31. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31. By 1994, the outfall pipe was plugged, and all drains leading to the outfall were either removed from service or rerouted to the SWSC plant.

Phase I Consent Order sampling is complete for SWMU 46-004(a2). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(a2) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(a2) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-004(u) is a former outfall located approximately 10 ft north of former building 46-87 at TA-46. The outfall consisted of an 8-in.-diameter cast-iron pipe that discharged into Cañada del Buey. This pipe was the overflow pipe for a concrete wet well located in former building 46-87. The wet well was designed as a holding pit for deionized water and historically received effluent from a closed-loop cooling water system serving buildings 46-16, 46-25, and 46-31. The wet well also received effluent from sink drains in building 46-25, which was a battery storage facility also used for small-scale painting activities in support of the Rover Program. Building 46-87 was the pump house for an adjacent cooling tower (former building 46-86) that housed two wet well systems and mechanical equipment associated with the cooling tower. Building 46-87 also stored water-treatment chemicals. Building 46-87 underwent D&D in December 2001. By the early 1990s, the outfall had been plugged, and effluent discharged to the wet well was periodically pumped out and disposed of at the SWSC plant. By 1998, the building 46-25 drains that discharged to the wet well were removed from service.

Phase I Consent Order sampling is complete for SWMU 46-004(u). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(u) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(u) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-004(v) is a former outfall that was located approximately 20 ft north of former building 46-87 at TA-46. The outfall consists of a 6-in.-diameter cast-iron pipe that discharged effluent from the roof and floor drains of former building 46-87 into Cañada del Buey. Building 46-87 was the pump house for an adjacent cooling tower (former building 46-86) that housed two wet well systems and mechanical equipment associated with the cooling tower. This building was also used to store water-treatment chemicals. By the early 1990s, the floor drains in former building 46-87 had been plugged, and the outfall was receiving only discharges from the roof drains. Building 46-87 underwent D&D in December 2001.

Phase I Consent Order sampling is complete for SWMU 46-004(v). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(v) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(v) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-004(x) is an outfall located approximately 30 ft north of building 46-31 at TA-46. The outfall consists of a 6-in.-diameter pipe that receives effluent from roof drains in building 46-31. The outfall pipe extends approximately 1 ft beyond the steep canyon slope and discharges to a 1- to 2-ft-wide drainage that stretches to the toe of the slope of Cañada del Buey. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31.

Phase I Consent Order sampling is complete for SWMU 46-004(x). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(x) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(x) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A in building 45-31 also discharged to this SWMU. During a 1986 site visit, 55-gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the Site. SWMUs 46-004(a,b,c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive runoff from SWMU 46-006(d).

Phase I Consent Order sampling is complete for SWMU 46-006(d). All detected constituents in Consent Order samples were below residential SSLs and SALs, except mercury and Aroclor-1254, which were each detected above residential SSLs but below industrial SSLs at one sampling location. SWMU 46-006(d) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-006(d) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-008(f) is a paved storage area located next to the southeast corner of building 46-31 at TA-46. During a 1986 site visit, four drums of oil, which could have been product or waste oil, were observed at this location. The storage area has not been used since 1992.

Phase I Consent Order sampling is complete for SWMU 46-008(f). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-008(f) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-008(f) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 89-1) 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.

89.2 Control Measures

Potential run-on to the SMA originates from the paved, developed area along 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 89-1).

Table 89-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00602040010	Established Vegetation		X	X		B
C00603010006	Earthen Berm		X		X	CB
C00604060009	Rip Rap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

89.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.35. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

89.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-1.35 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 89-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30702	5-2-2013
Storm Rain Event	BMP-33258	7-17-2013
Storm Rain Event	BMP-34173	8-6-2013
Storm Rain Event	BMP-35586	9-26-2013
Annual Erosion Evaluation	COMP-36641	11-20-2013

No maintenance activities were conducted at CDB-SMA-1.35 in 2013.

89.5 Compliance Status

The Sites associated with CDB-SMA-1.35 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 89-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-004(a2)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(u)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(v)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(x)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-008(f)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

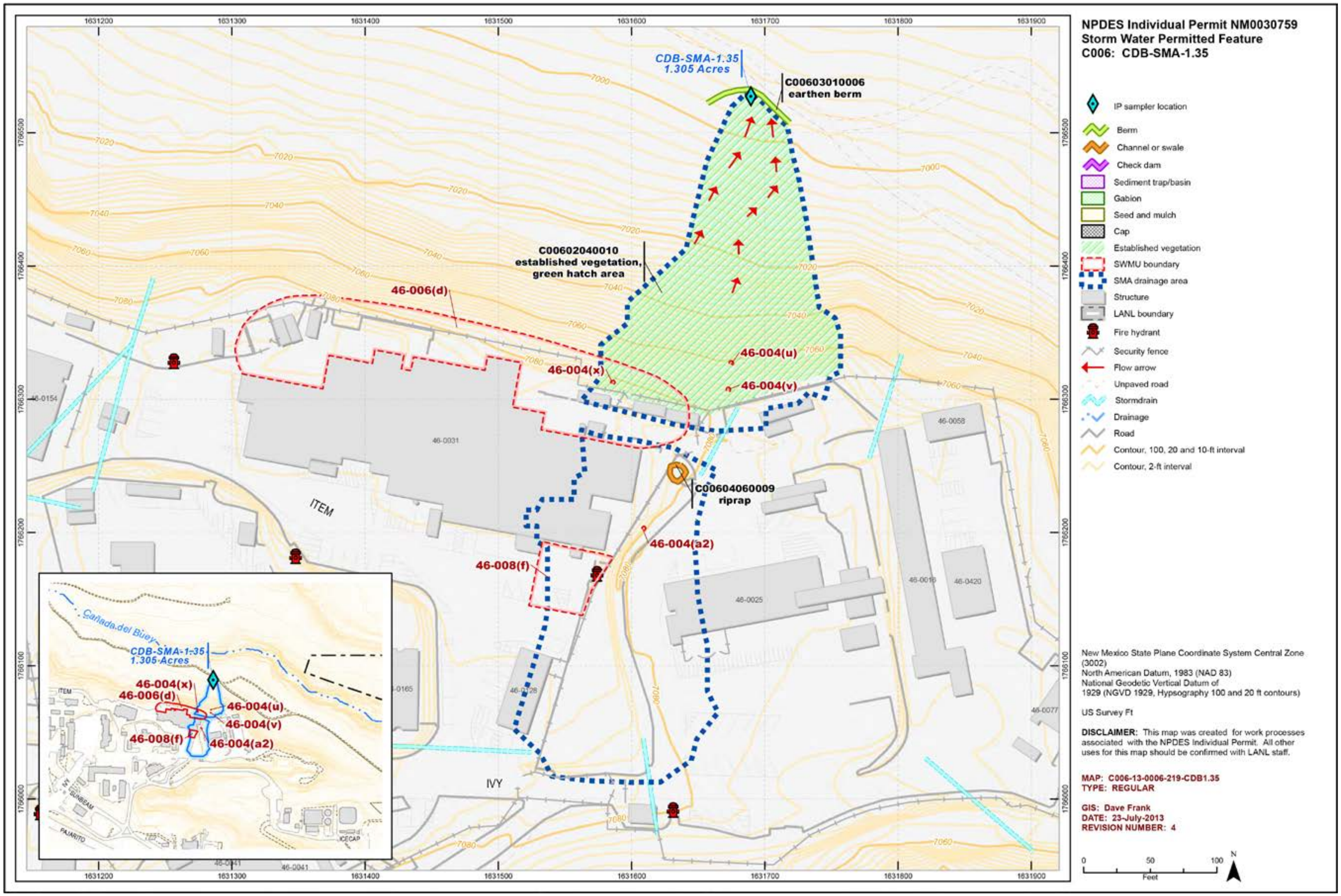


Figure 89-1 CDB-SMA-1.35 location map

90.0 CDB-SMA-1.54: SWMUs 46-004(h), 46-004(q), and 46-006(d)

90.1 Site Descriptions

Three historical industrial activity areas are associated with C007, CDB-SMA-1.54: Sites 46-004(h), 46-004(q), and 46-006(d).

SWMU 46-004(h) consists of an area of potential soil contamination associated with exhaust emissions from stacks on building 46-16 and inactive outfall from an industrial drainline in building 46-16 at TA-46. Work in building 46-16 that generated exhaust emissions involved experiments conducted with uranium-loaded graphite and tests of uranium fuel rods as part of the Rover Program between the late 1950s and early 1970s. The outfall component of SWMU 46-004(h) consists of an inactive 6-in.-diameter cast-iron pipe that received effluent from building floor drains and discharged to an outfall north of building 46-16 into Cañada del Buey. In 1995, floor drains that discharged to this outfall either were removed from service or were rerouted to the SWSC plant.

Phase I Consent Order sampling is complete for SWMU 46-004(h). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 46-004(h) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-004(h) will be eligible for a COC upon approval of the report by NMED.

SWMU 46-004(q) is an inactive outfall located approximately 40 ft north of building 46-58 at TA-46. The outfall consists of a 6-in.-diameter cast-iron pipe that discharged into Cañada del Buey. The source of the discharge to the outfall is not known.

Phase I Consent Order sampling is complete for SWMU 46-004(q). All detected constituents in Consent Order samples were below residential SSLs and SALs, except mercury, which was detected above the residential and industrial SSLs in two samples from one sampling location. Mercury-contaminated soil above industrial SSLs will be removed during the Phase II Upper Cañada del Buey Aggregate investigation. SWMU 46-004(q) will then be recommended for corrective action complete in the future Phase II investigation report. SWMU 46-004(q) will be eligible for a COC upon approval of the Phase II report by NMED.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A in building 45-31 also discharged to this SWMU. During a 1986 site visit, 55-gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the Site. SWMUs 46-004(a,b,c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive runoff from SWMU 46-006(d).

Phase I Consent Order sampling is complete for SWMU 46-006(d). All detected constituents in Consent Order samples were below residential SSLs and SALs, except for mercury and Aroclor-1254, which were each detected above residential SSLs but below industrial SSLs at one sampling location.
SWMU 46-006(d) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-006(d) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 90-1) 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.

90.2 Control Measures

Most of the run-on contributions from the paved and developed areas near building 46-0016 are diverted to the east away from the SMA. There is potential run-on from the unpaved access road crossing the northern area of the SMA. Existing controls serve to mitigate both run-on and runoff from this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 90-1).

Table 90-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00702040020	Established Vegetation		X	X		B
C00703010007	Earthen Berm		X		X	CB
C00703010008	Earthen Berm		X		X	CB
C00703010009	Earthen Berm	X			X	CB
C00703010019	Earthen Berm		X		X	B
C00704050014	Water Bar			X		CB
C00704060006	Rip Rap		X	X		CB
C00706020015	Log Check Dam		X		X	CB
C00706020016	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

90.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.54. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

90.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-1.54 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 90-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30703	5-2-2013
Storm Rain Event	BMP-33261	7-17-2013
Storm Rain Event	BMP-34176	8-6-2013
Storm Rain Event	BMP-35589	9-26-2013
Annual Erosion Evaluation	COMP-36642	11-20-2013

No maintenance activities were conducted at CDB-SMA-1.54 in 2013.

90.5 Compliance Status

The Sites associated with CDB-SMA-1.54 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 90-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-004(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(q)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

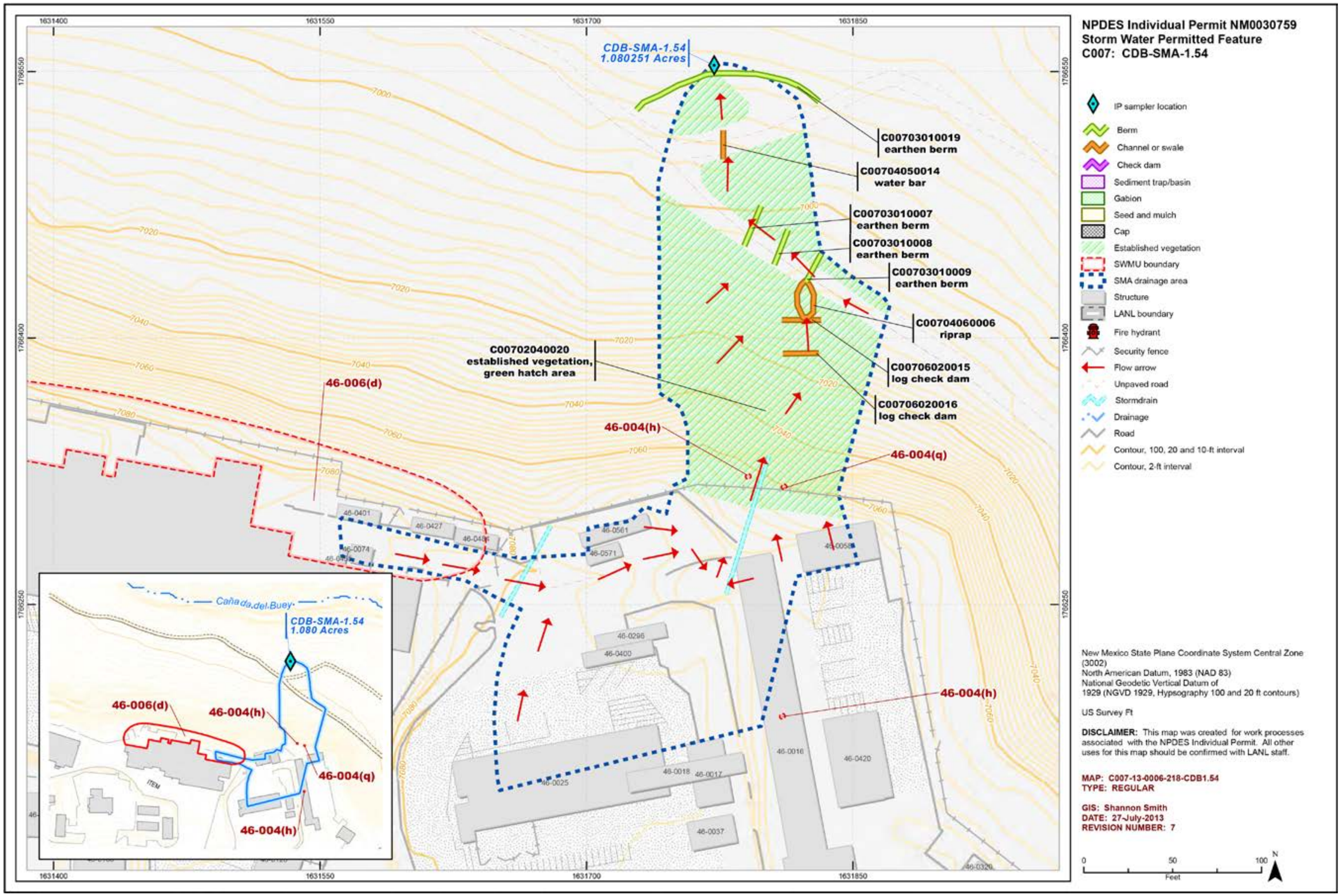


Figure 90-1 CDB-SMA-1.54 location map

91.0 CDB-SMA-1.55: SWMU 46-003(e)

91.1 Site Descriptions

One historical industrial activity area is associated with C008, CDB-SMA-1.55: Site 46-003(e).

SWMU 46-003(e) is a former septic system consisting of a septic tank (structure 46-66), a siphon tank (structure 46-67), a distribution box (structure 46-68), and a drain field located approximately 20 ft east of building 46-58 outside the TA-46 perimeter fence. Septic tank 46-66 was installed in 1960 and served the restroom facility, shower, water cooler, janitorial sink, and mechanical room floor drain in building 46-58, which contained office space, a laboratory, a machine shop, and an equipment room. The septic system was removed from service from approximately 1972 to 1973, and its drainline was rerouted to the SWMU 46-002 surface impoundment system. Septic tank 46-66 was reportedly emptied, filled, and left in place. During the 2010 investigation, the SWMU 46-003(e) septic tank was discovered to contain sludge and a water layer. This waste was likely placed in the septic tank after the system was removed from service because the inlet and outlet lines were plugged. The water layer, sludge, and septic tank were removed and managed as LLW during the 2010 Consent Order investigation, and the tank was cleaned and filled with gravel. During the preparation of the 1993 RFI work plan, a concrete distribution box was found on the ground surface in Cañada del Buey near the location of SWMU 46-003(e). The box was determined to be the SWMU 46-003(e) septic system distribution box, presumably moved to that location during the early 1970s construction of the SWMU 46-002 surface impoundment system. Swipe samples collected and analyzed for radioactivity at the time of discovery detected no radioactivity above instrument background. No indications of staining or sediment deposits were observed on the box; the distribution box was subsequently removed.

Phase I Consent Order sampling is complete for SWMU 46-003(e). All detected constituents in Consent Order samples were below residential SSLs. SWMU 46-003(e) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-003(e) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 91-1) 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.

91.2 Control Measures

The primary run-on source for this SMA is from roof drains associated with building 46-0016 and paved area around the building. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 91-1).

Table 91-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00802040012	Established Vegetation		X	X		B
C00803010010	Earthen Berm		X		X	CB
C00803120009	Rock Berm	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

91.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.55. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

91.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-1.55 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 91-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30704	5-2-2013
Storm Rain Event	BMP-33259	7-17-2013
Storm Rain Event	BMP-34174	8-2-2013
Storm Rain Event	BMP-35587	9-24-2013
Annual Erosion Evaluation	COMP-36643	11-21-2013

No maintenance activities were conducted at CDB-SMA-1.55 in 2013.

91.5 Compliance Status

The Site associated with CDB-SMA-1.55 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 91-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-003(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

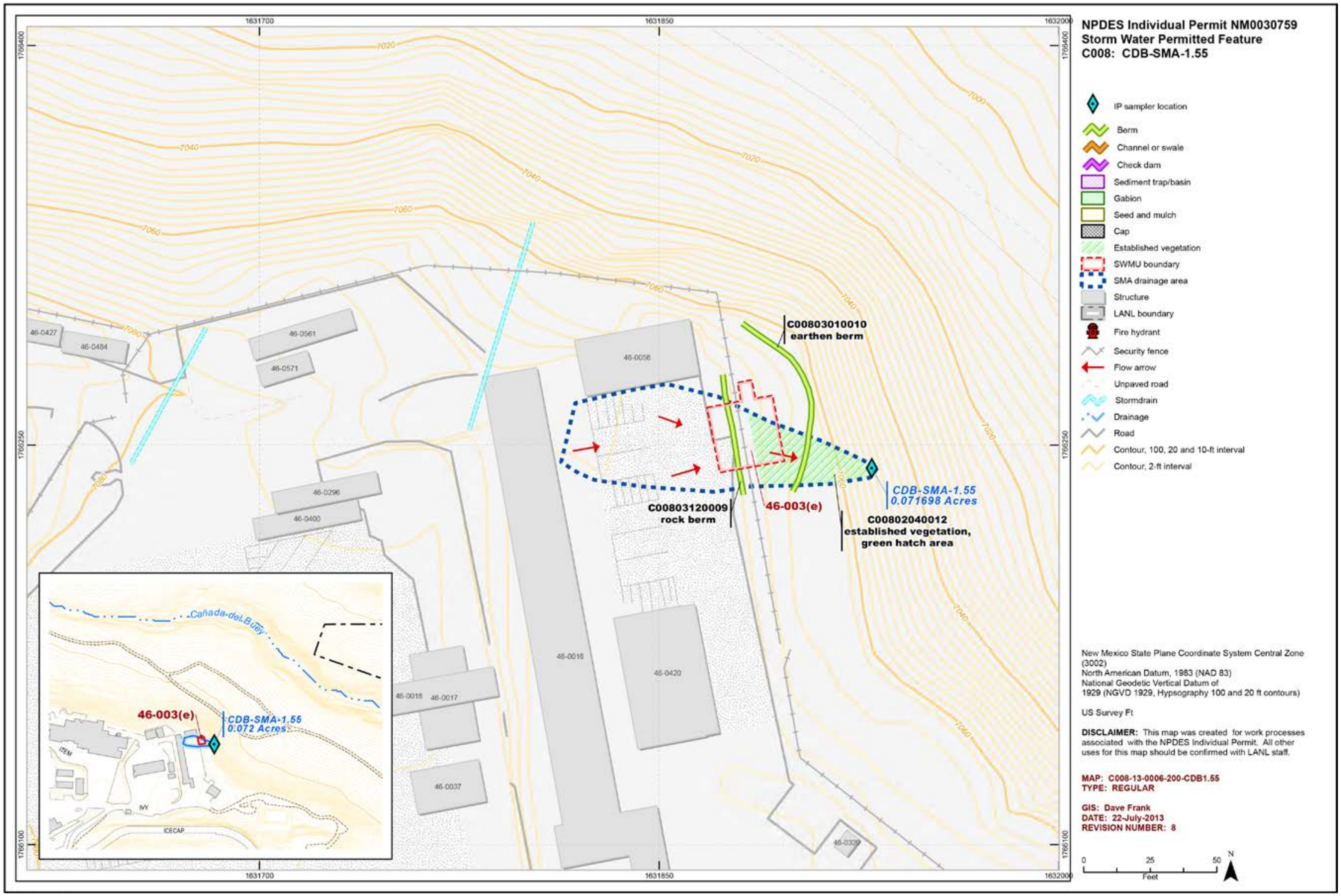


Figure 91-1 CDB-SMA-1.55 location map

92.0 CDB-SMA-1.65: SWMU 46-003(b)

92.1 Site Descriptions

One historical industrial activity area is associated with C009, CDB-SMA-1.65: Site 46-003(b).

SWMU 46-003(b) is a former septic system that was located approximately 60 ft southwest of building 46-77 at TA-46. The septic system consisted of a septic tank (structure 46-22), a distribution box (structure 46-29), associated drainlines, and drain field located approximately 50 ft south of building 46-77 at TA-46. This septic system was installed in 1956 and served the restroom facilities in building 46-17, which housed a generator that charged batteries for the Rover Program. The septic system was removed from service in 1973, and drainlines that discharged to SWMU 46-003(b) were rerouted to the SWMU 46-002 surface impoundment system. Septic tank 46-22 was reportedly emptied, backfilled, and left in place. The drainlines that previously served this septic system were rerouted to the SWSC plant in the early 1990s and are currently active. No evidence of the septic tank was found during the geophysical survey conducted during the 2010 investigation, indicating the tank has been removed.

Phase I Consent Order sampling is complete for SWMU 46-003(b). All detected constituents in Consent Order samples were below residential SSLs. SWMU 46-003(b) will be recommended for corrective action complete in the supplemental investigation report for Upper Cañada del Buey Aggregate Area, to be submitted to NMED in 2014. SWMU 46-003(b) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 92-1) 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.

92.2 Control Measures

Paved areas to the north and northwest are the potential source of run-on at this Permitted Feature. Run-on from the paved areas is diverted and controlled by the channel and riprap at the southeast corner of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 92-1).

Table 92-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00903010004	Earthen Berm		X		X	B
C00904010002	Earthen Channel/Swale	X		X		CB
C00904060001	Rip Rap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

92.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.65. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

92.4 Inspections and Maintenance

RG245.5 recorded five storm events at CDB-SMA-1.65 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 92-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30706	5-2-2013
Storm Rain Event	BMP-33260	7-17-2013
Storm Rain Event	BMP-34175	8-2-2013
Storm Rain Event	BMP-35588	9-24-2013
Annual Erosion Evaluation	COMP-36645	11-21-2013

No maintenance activities were conducted at CDB-SMA-1.65 in 2013.

92.5 Compliance Status

The Site associated with CDB-SMA-1.65 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 92-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 46-003(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

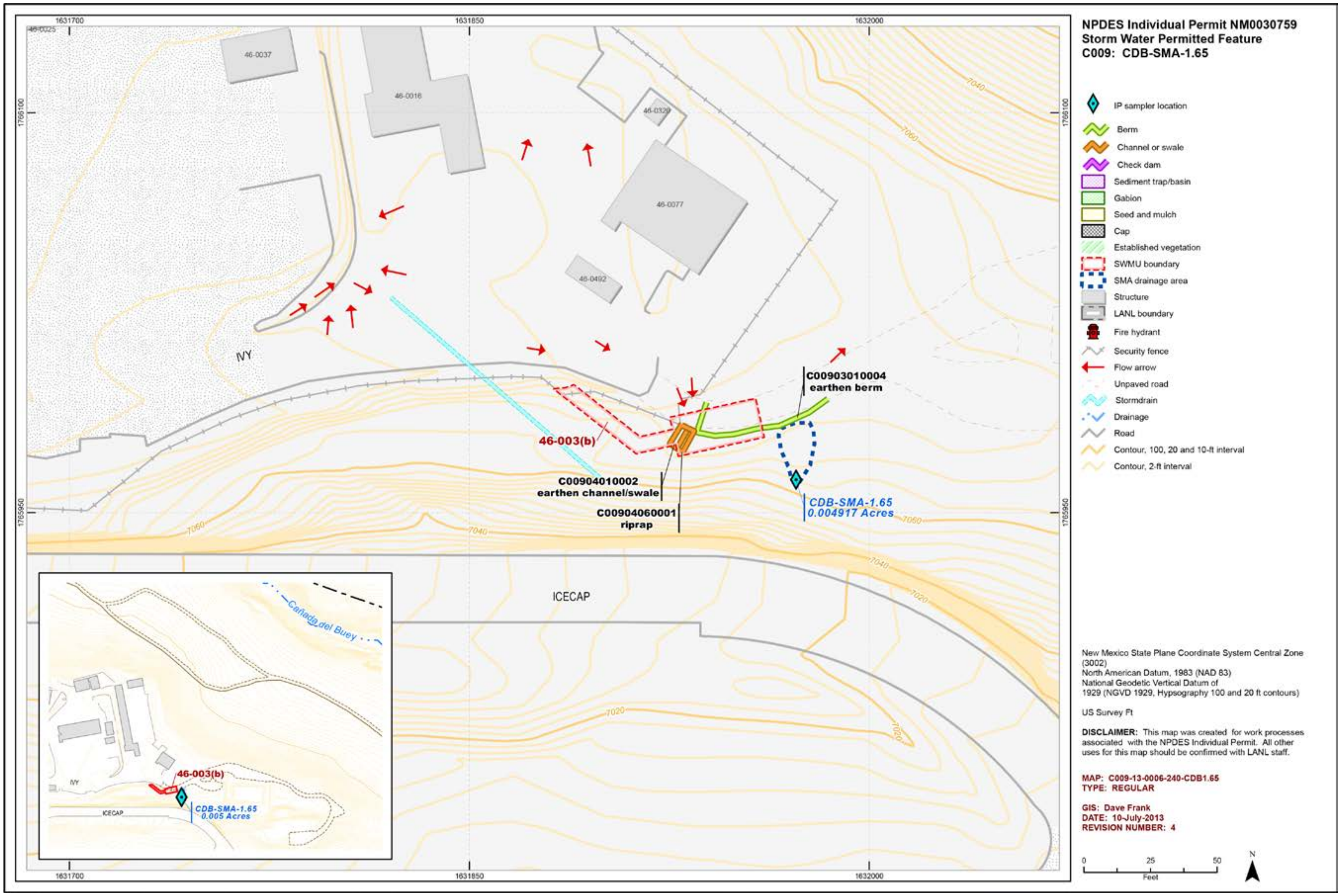


Figure 92-1 CDB-SMA-1.65 location map

93.0 CDB-SMA-4: SWMUs 54-017, 54-018, and 54-020

93.1 Site Descriptions

Three historical industrial activity areas are associated with C010, CDB-SMA-4: Sites 54-017, 54-018, and 54-020.

SWMU 54-017, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. These pits were operational between 1959 and 1980 and received radioactive, mixed, and TRU-contaminated wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd^3 to 56,759 yd^3. When filled, the pits were covered with consolidated crushed tuff and topsoil, and reseeded with native grasses. All the SWMU 54-017 pits within CDB-SMA-4 currently have a minimum of 3 ft of soil cover over the buried wastes and have been covered with asphalt.

The portions of the three Sites within CDB-SMA-4 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to both Sites. Before the Consent Order went into effect in 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination from historical operational activities at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

SWMU 54-018, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of disposal pits 25 through 33 and 35 through 37. Although no longer in use, pits 29 and 37, are considered a regulated unit until RCRA closure is certified and approved by NMED. Pits 25 through 28 and 30 through 36 were operational between 1979 and 1980 and received radioactive, mixed, and TRU waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, glove boxes, asbestos, and laboratory waste. The volumes ranged from 20,957 yd^3 to 59,930 yd^3. Pit 29 operated until 1986. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. When filled, the pits were covered with at least 3 ft of consolidated crushed tuff and topsoil and reseeded with native grasses; several of the pits were subsequently covered with asphalt.

The portions of the three Sites within CDB-SMA-4 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to both Sites. Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at

MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination from historical operational activities at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

SWMU 54-020, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of disposal shafts C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196. These shafts operated between 1970 and the early 1990s. Only shaft 124, although no longer in use, is considered active until RCRA closure is certified and approved by NMED. The shafts contain one or a combination of the following waste types: PCB residues, LLW, and hazardous and mixed waste. The shafts range in size from 1 ft to 8 ft in diameter and 25 ft to 65 ft in depth and are located throughout the eastern portion of Area G. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome.

The portions of the three Sites within CDB-SMA-4 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to both Sites. Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination from historical operational activities at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

The project map (Figure 93-1) 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.

93.2 Control Measures

There is the potential for run-on contribution from paved areas on the east and west sides of the project area. Runoff is possible from the paved roads and the paved areas around the existing structures. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 93-1).

Table 93-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C01002040012	Established Vegetation		X	X		B
C01004020005	Concrete/Asphalt Channel/Swale		X	X		CB
C01004060007	Rip Rap		X	X		CB
C01005010004	Sediment Trap		X		X	CB
C01006010006	Rock Check Dam		X		X	CB
C01006010008	Rock Check Dam	X			X	CB
C01006010009	Rock Check Dam	X			X	CB
C01006010010	Rock Check Dam	X			X	CB
C01006010011	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for this SMA in 2014.

93.3 Storm Water Monitoring

SWMUs 54-017, 54-018, and 54-020 are is monitored within CDB-SMA-4. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figures 93-2 and 93-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 8.14 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 54.8 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 4 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 54-017:

- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

SWMU 54-018:

- Copper is known to be associated with industrial materials managed at this Site. Copper was not detected above soil or sediment BVs in 140 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.

- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

SWMU 54-020:

- Copper is known to be associated with industrial materials managed at this Site. Copper was not detected above soil or sediment BVs in 140 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

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 93-2 and 93-3. 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 93-2 and 93-3.

Monitoring location CDB-SMA-4 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. PCBs and metals including copper are associated with building materials, parking lots, and automobiles. 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 2013 is between these two 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 2013 gross-alpha result is between these 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 2013 is less than both of these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

93.4 Inspections and Maintenance

RG-TA-54 recorded 12 storm events at CDB-SMA-4 during the 2013 season. These rain events triggered 6 post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 93-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30705	5-16-2013
Storm Rain Event	BMP-32978	7-11-2013
Storm Rain Event	BMP-33428	7-24-2013
Storm Rain Event	BMP-34160	8-8-2013
Storm Rain Event	BMP-34778	8-22-2013
Storm Rain Event	BMP-35523	9-26-2013
Storm Rain Event	BMP-37128	11-13-2013
Annual Erosion Evaluation	COMP-36644	11-13-2013
TAL Exceedance	COMP-35286	9-18-2013

No maintenance activities were conducted at CDB-SMA-4 in 2013.

93.5 Compliance Status

The Sites associated with CDB-SMA-4 are High Priority Sites. The High Priority Site deadline for the certification of corrective action is now 1 yr from the date of an observed TAL exceedance, which for CDB-SMA-4 is August 27, 2014.

Table 93-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 54-017	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-27-13
SWMU 54-018	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-27-13
SWMU 54-020	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-27-13

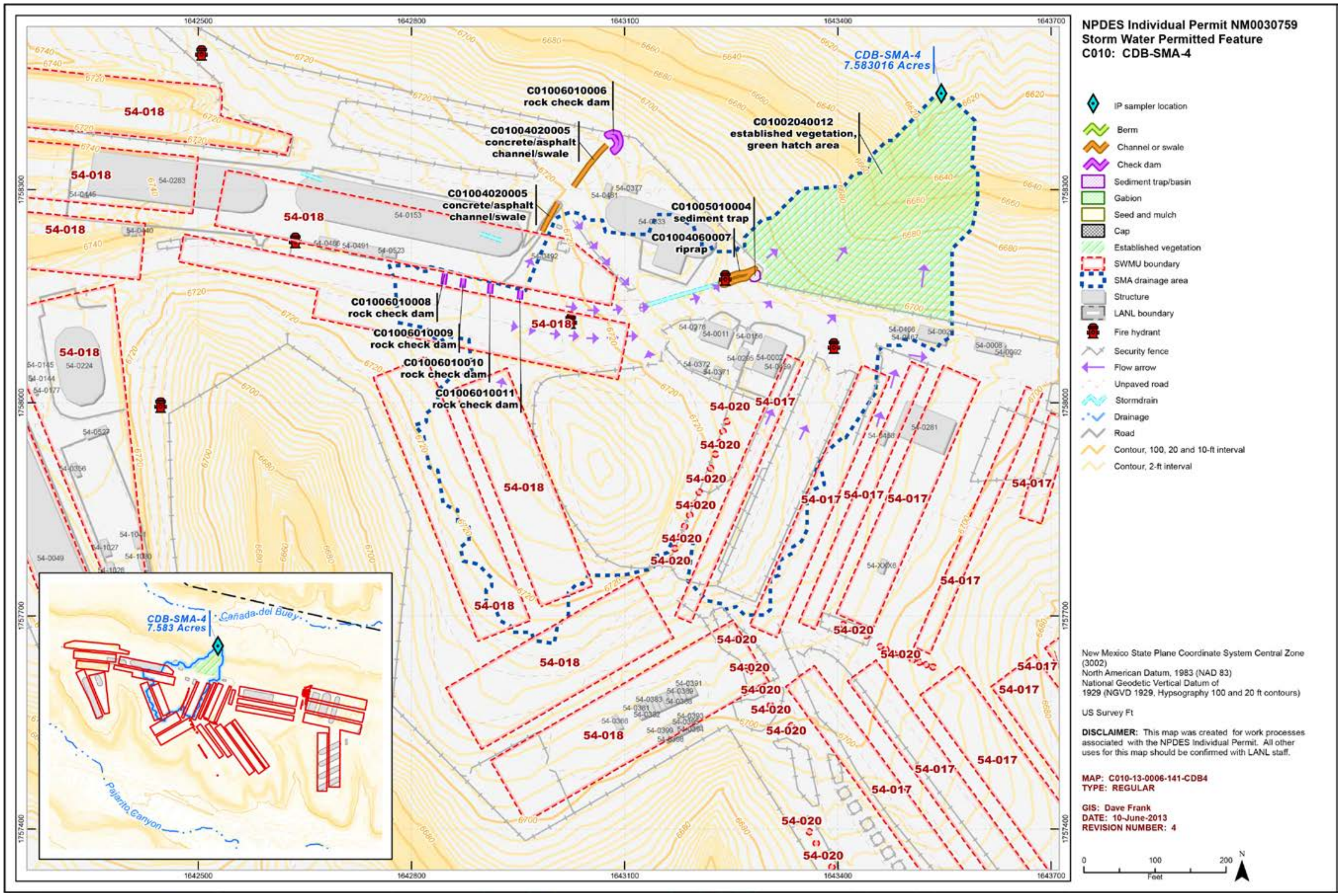
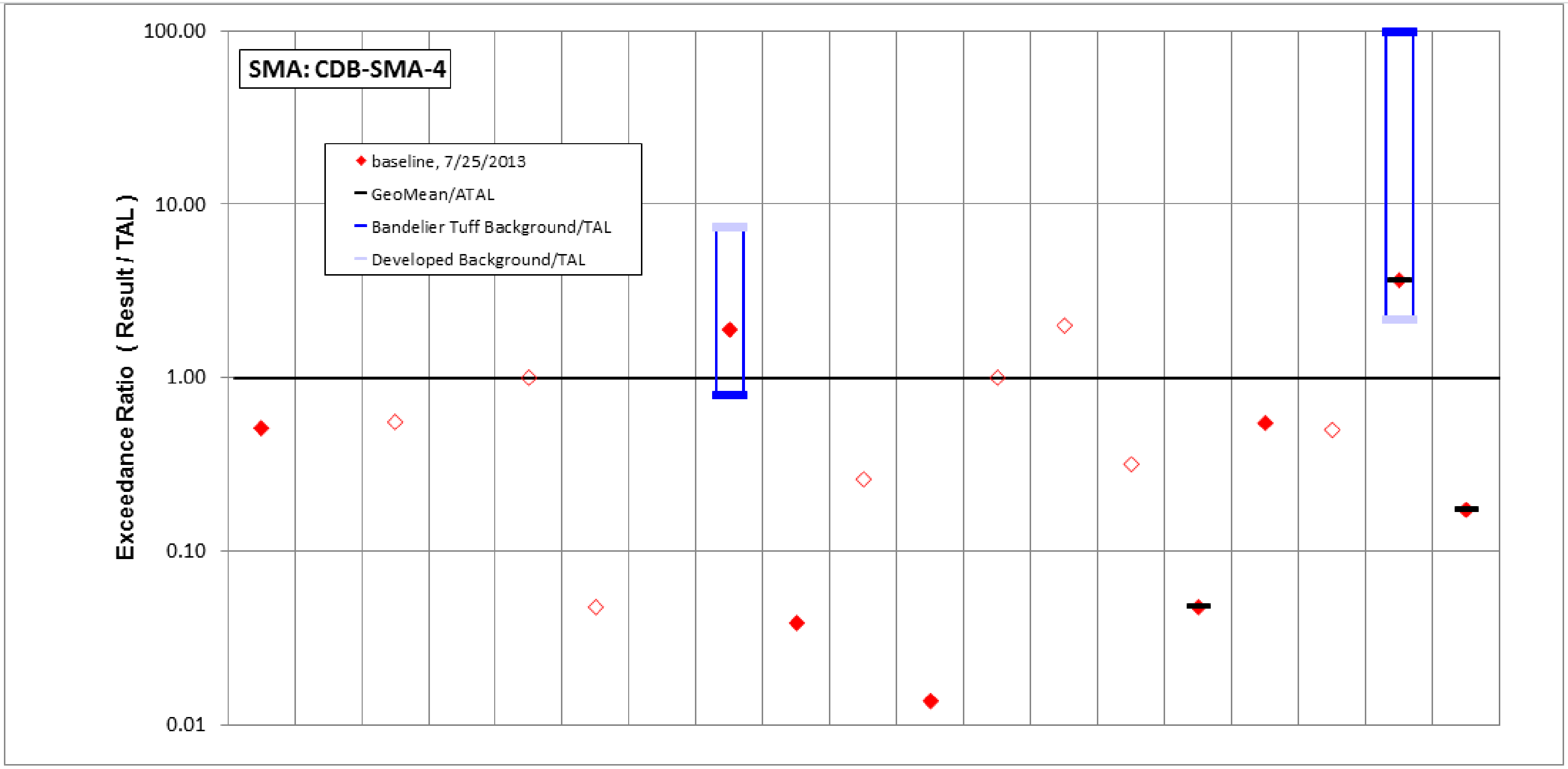


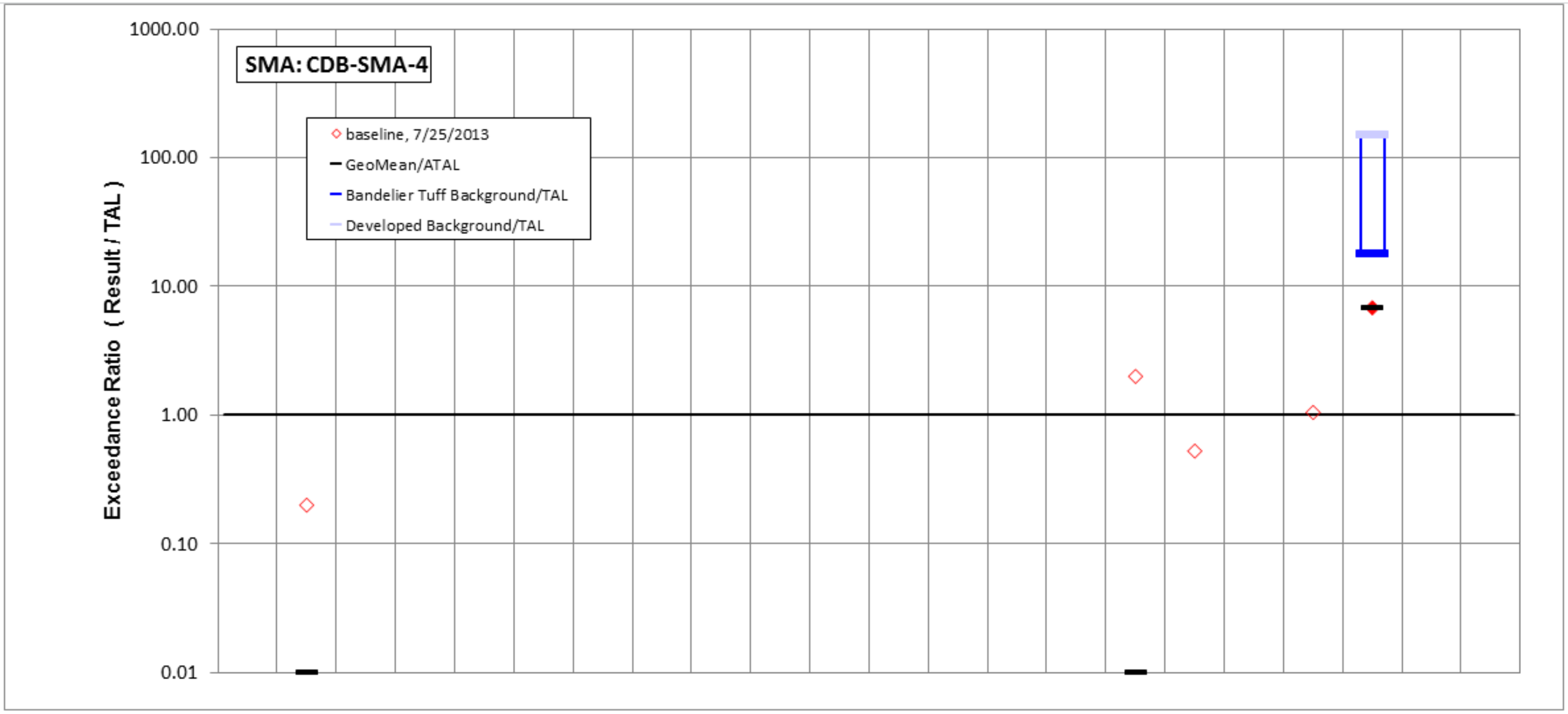
Figure 93-1 CDB-SMA-4 location map



	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
7/25/2013 result	384	5.64	*5*	38	*1*	*10*	4.62	**8.14**	0.656	*0.2*	2.33	*5*	***1***	*2*	4.76	23	*0.005*	**54.8**	5.19
result / TAL	0.51	0.0088	*0.56*	0.0076	*1*	*0.048*	0.0046	**1.9**	0.039	*0.26*	0.014	*1*	***2***	*0.32*	0.048	0.55	*0.5*	**3.7**	0.17

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

Figure 93-2 Inorganic analytical results summary plot for CDB-SMA-4



	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	MTAL	-	ATAL	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	1E-05	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/25/2013 result	-	*1*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10***	*10*	-	***1E-05***	**0.004**	-	-
result / TAL	-	*0.2*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2***	*0.53*	-	***1***	**6.8**	-	-

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

Figure 93-3 Organic analytical results summary plot for CDB-SMA-4

94.0 M-SMA-1: SWMUs 03-050(a) and 03-054(e)

94.1 Site Descriptions

Two historical industrial activity areas are associated with M001, M-SMA-1: Sites 03-050(a) and 03-054(e).

SWMU 03-050(a) is an area of potential soil contamination associated with the exhaust emissions from 24 active stacks on the roof of building 03-29. Building 03-29, the CMR facility, was constructed in 1961 and houses an irradiated-fuel examination facility and analytical chemistry operations that involve handling radioactive materials containing uranium, plutonium, iodine, mixed-fission products, and tritium. The original IP Site narrative erroneously stated that the CMR building was constructed in 1952. High-efficiency particulate air, Aerosolve 95, and charcoal filters are used to remove radioactive particulates from stack effluent gas.

No Consent Order investigation, RFI, or other environmental investigations have been performed at SWMU 03-050(a).

SWMU 03-054(e) is an outfall located in upper Mortandad Canyon. The outfall typically discharges a steady, low-volume flow of effluent that originates from several sources at the CMR building. These sources include drainage from roofs over the west wing, where towers vent filtered exhaust, and surface water runoff from the asphalt area around the building. SWMU 03-054(e) received effluent from an unintentional one-time release in 1974 from an industrial waste manhole (AOC C-03-006). The overflow resulted from a plug in the industrial waste line and was estimated to be between 500 gal. and 1000 gal. of RLW. The overflow spilled to the surrounding paved area, traveled north along Diamond Drive, flowed into the storm sewer through a storm drain grate, and ultimately discharged into Upper Mortandad Canyon through the SWMU 03054(e) outfall. A small dam was built in the streambed at the base of the canyon to contain the effluent. Subsequent cleanup action, based on residual radioactive contamination cleanup levels of 25 pCi/g, removed approximately 142 ft^3 of contaminated soil from Mortandad Canyon.

The project map (Figure 94-1) 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.

94.2 Control Measures

Run-on at this Permitted Feature is significant. The run-on originates on the numerous paved areas, roads and parking lots in the area as well as from roof drainage from area buildings. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 94-1).

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 94-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00102040009	Established Vegetation		X	X		B
M00107010001	Gabions	X			X	CB
M00107010006	Gabions		X		X	CB
M00107010008	Gabions		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

94.3 Storm Water Monitoring

SWMUs 03-050(a) and 03-054(e) are monitored within M-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011, and September 7, 2011 (Figures 94-2 and 94-3). Analytical results from this sample yielded two TAL exceedances:

- Gross-alpha activities of 18.1 pCi/L and 35 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 28 ng/L and 75 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at M-SMA-1, corrective action storm water samples were collected on June 14, 2013, and July 2, 2013 (Figures 94-2 and 94-3). Analytical results from this corrective action monitoring sample yielded four TAL exceedances:

- Copper concentrations of 9.66 µg/L and 31.2 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 53.4 µg/L and 264 µg/L (MTAL is 42 µg/L),
- Gross-alpha activity of 32.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 10 ng/L and 11 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 03-050(a):

No Consent Order investigation, RFI, or other environmental investigations have been performed at SWMU 03-050(a).

SWMU 03-054(e):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above the sediment BV in shallow (i.e., less than 3 ft bgs) Consent Order and RFI samples. Copper was detected above BV in 1 of 14 shallow soil, sediment, and tuff samples at a concentration 1.1 times the sediment BV.

- Zinc is not known to have been associated with industrial materials historically managed at this Site. Zinc was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Zinc was detected above BVs in 12 of 14 shallow samples, and the maximum detection above BV was 2.3 times the soil BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1242, Aroclor-1254, and Aroclor-1260 were detected in shallow Consent Order and RFI samples. Aroclor-1242 and Aroclor-1254 were detected in 1 of 14 shallow samples each at concentrations 2.1% and 0.2% of the residential SSLs, respectively. Aroclor-1260 was detected in 4 of 14 shallow samples at a maximum concentration 2.7% of the residential SSL.
- Uranium and plutonium isotopes and possibly other alpha-emitting isotopes are known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium and plutonium isotopes, which are alpha emitters. Uranium and plutonium isotopes are, however, excluded from the definition of adjusted gross-alpha radioactivity.

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 94-2 and 94-3. 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 94-2 and 94-3.

Monitoring location M-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- 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 results from 2013 are 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. One of the zinc results from 2013 is between these two values and the other 2103 result is below both of them.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. One of the 2011 gross-alpha results is less than both values, and the other result is between them. The 2013 gross-alpha result is equal to the lower value.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are between these two values, and the PCB results from 2013 are below both values

All the analytical results for these samples are reported in the 2011 and 2103 Annual Reports.

94.4 Inspections and Maintenance

RG121.9 recorded three storm events at M-SMA-1 during the 2013 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 94-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30775	4-4-2013
Storm Rain Event	BMP-33602	7-25-2013
Storm Rain Event	BMP-35553	9-23-2013
Annual Erosion Evaluation	COMP-36714	11-6-2013
TAL Exceedance	COMP-34939	8-22-13

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

Table 94-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34331	Install angular rip rap on east side of channel where erosion is occurring. M00107010006. Install non-woven geotextile fabric over areas of erosion on both downstream sides of gabion. Install non-woven geotextile fabric over area of erosion on west upstream side of gabion -0008. Install angular rip rap over all three areas of fabric covered erosion. Clear needle cast from top and upstream side of gabion M00107010008	8-12-2013	18 day(s)	Maintenance conducted in timely manner.

94.5 Compliance Status

The Sites associated with M-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 94-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-050(a)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated after 2nd TAL exceedance	2nd initiation on 8-13-13
SWMU 03-054(e)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated after 2nd TAL exceedance	2nd initiation on 8-13-13

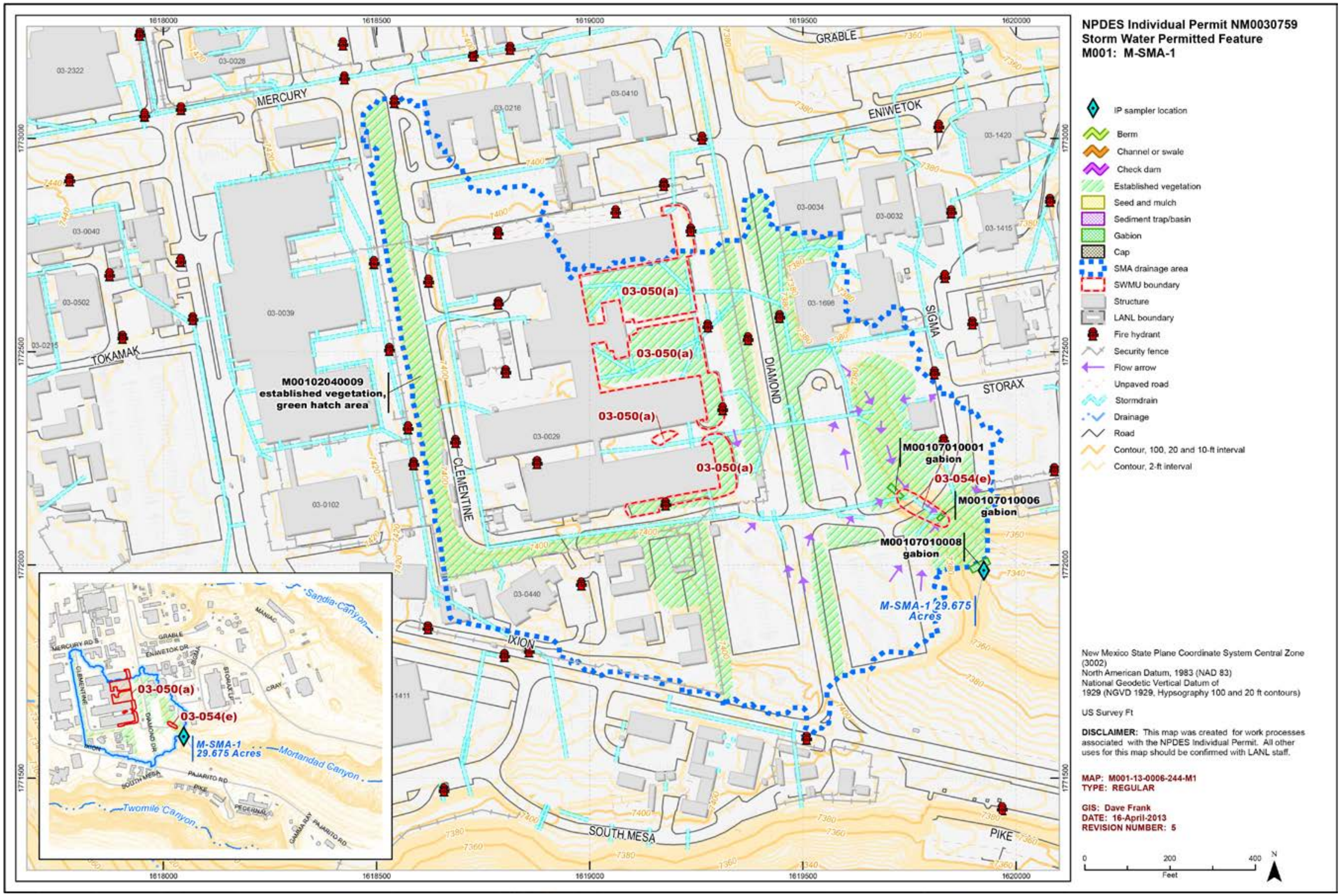
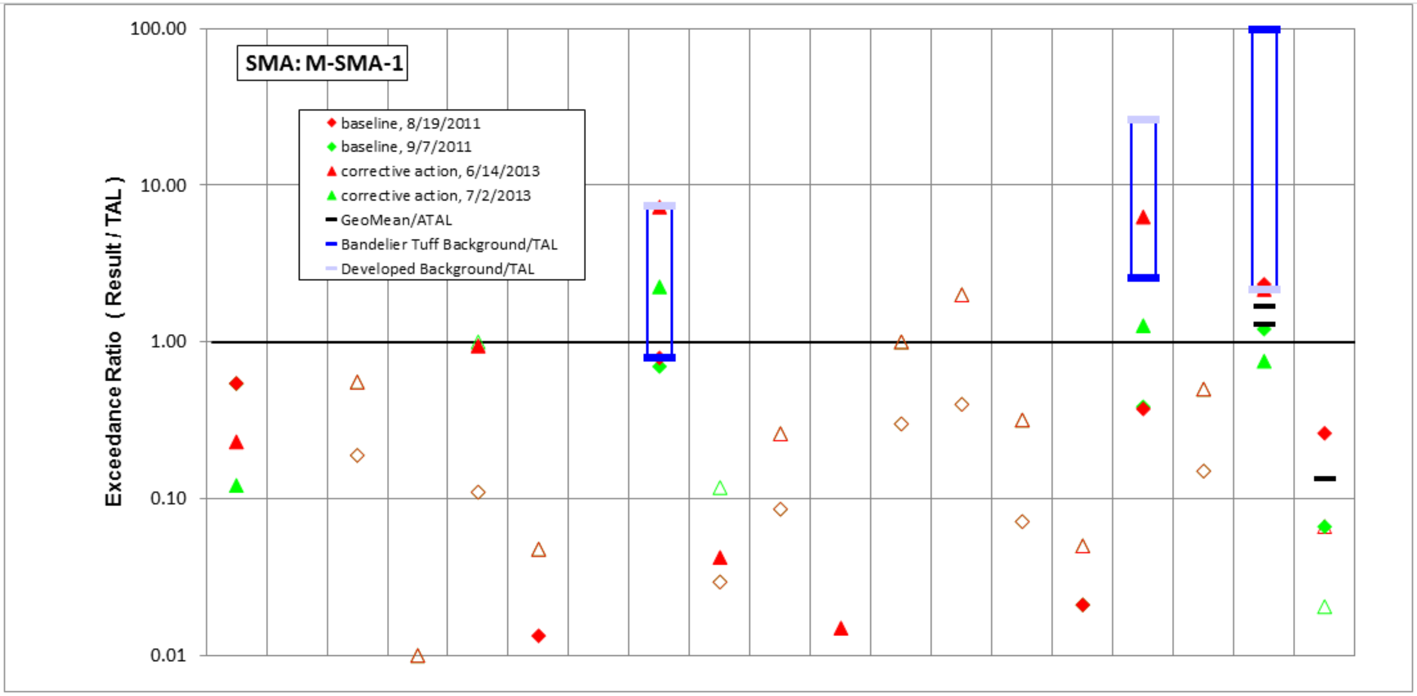


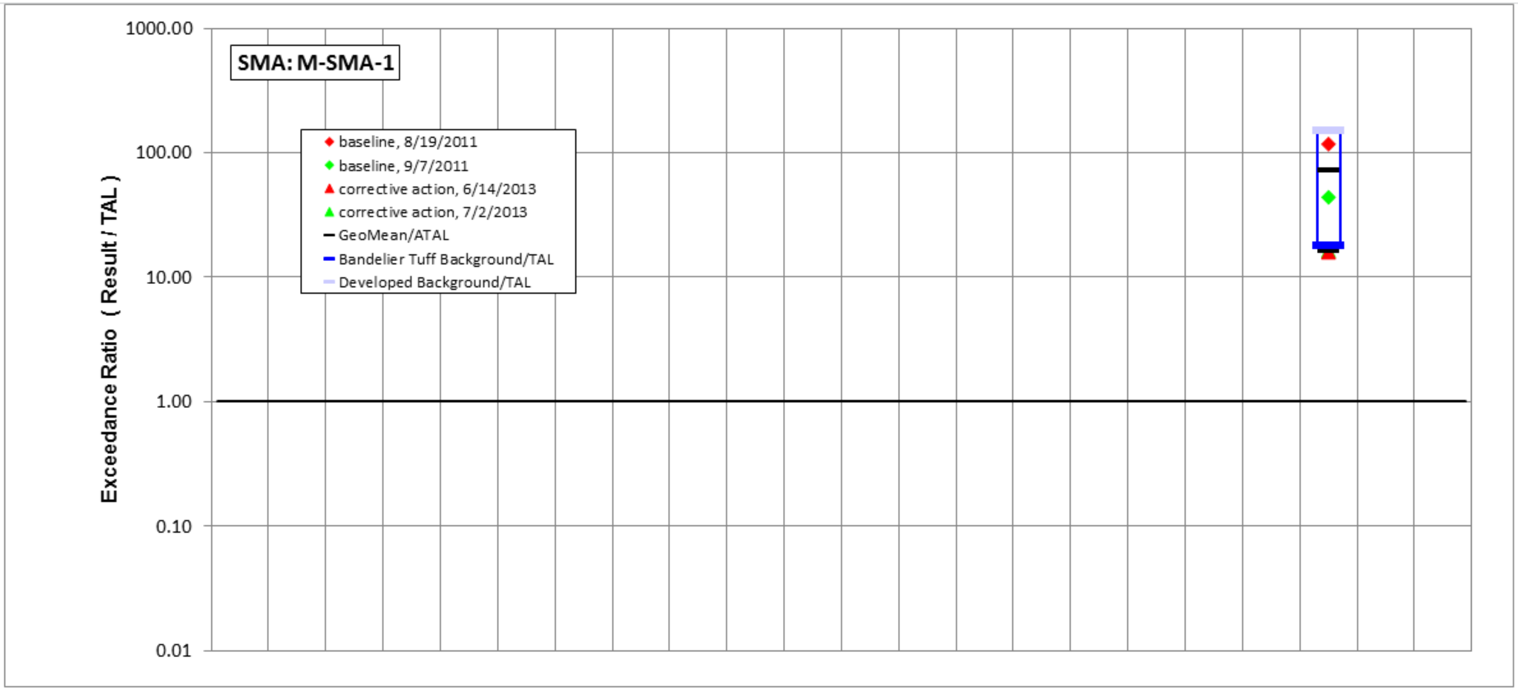
Figure 94-1 M-SMA-1 location map



	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
7/2/2013 result	91.2	*3*	*5*	*50*	*1*	*10*	*5*	**9.66**	*2*	*0.2*	0.817	*5*	***1***	*2*	*5*	**53.4**	*0.005*	11.3	*0.614*
result / TAL	0.12	*0.005*	*0.56*	*0.01*	*1*	*0.048*	*0.005*	**2.2**	*0.12*	*0.26*	0.0048	*1*	***2***	*0.32*	*0.05*	**1.3**	*0.5*	0.75	*0.02*
6/14/2013 result	173	*3*	*5*	*50*	0.944	*10*	3.23	**31.2**	0.717	*0.2*	2.54	*5*	***1***	*2*	*5*	**264**	*0.005*	**32.5**	*1.99*
result / TAL	0.23	*0.005*	*0.56*	*0.01*	0.94	*0.048*	0.0032	**7.3**	0.042	*0.26*	0.015	*1*	***2***	*0.32*	*0.05*	**6.3**	*0.5*	**2.2**	*0.066*
9/7/2011 result	407	*1*	*1.7*	*15*	*0.11*	*2*	3	3	*0.5*	*0.066*	0.65	*1.5*	*0.2*	*0.45*	2.1	16.2	*0.002*	**18.1**	1.99
result / TAL	0.54	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.003	0.7	*0.029*	*0.086*	0.0038	*0.3*	*0.4*	*0.071*	0.021	0.39	*0.15*	**1.2**	0.066
8/19/2011 result	408	*1*	*1.7*	*15*	*0.11*	2.8	2.1	3.4	*0.5*	*0.066*	1	*1.5*	*0.2*	*0.45*	2.1	15.7	*0.002*	**35**	7.84
result / TAL	0.54	*0.002*	*0.19*	*0.003*	*0.11*	0.013	0.0021	0.79	*0.029*	*0.086*	0.0059	*0.3*	*0.4*	*0.071*	0.021	0.37	*0.15*	**2.3**	0.26

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

Figure 94-2 Inorganic analytical results summary plot for M-SMA-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
7/2/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.011**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**16**	-	-
6/14/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**16**	-	-
9/7/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.028**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**44**	-	-
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.075**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**120**	-	-

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

Figure 94-3 Organic analytical results summary plot for M-SMA-1

95.0 M-SMA-1.2: SWMU 03-049(a)

95.1 Site Descriptions

One historical industrial activity area is associated with M002, M-SMA-1.2: Site 03-049(a).

SWMU 03-049(a) is an active NPDES-permitted outfall (03A022) located south of the Sigma Building (03-0066). The outfall formerly discharged treated cooling water from a former cooling tower (structure 03-0127), which served the Sigma Building, and continues to discharge runoff from six roof drains on the Sigma Building. The cooling tower operated from 1960 to 1999. From 1984 to 1990, the outfall also received discharge from rinse tanks associated with the electroplating operation in the Sigma Building. The tanks contained the final rinse from electroplating and surface-finishing experimental components. Although the rinse tanks were flushed continually with tap water to reduce contaminant buildup, trace amounts of metals, acids, cyanide, and DU were introduced into the rinse water. The NPDES permit allowed discharge of 4680 gal./d of treated cooling water and 24,000 gal./d of electroplating rinse water. The outfall predated the CWA and NPDES and was likely permitted in the mid-1970s; permit monitoring requirements are not available. Between 1990 and 1999, the outfall received treated cooling water and roof-drain runoff. The outfall currently discharges roof-drain runoff to upper Mortandad Canyon. SWMU 03-049(a) is permitted under the Laboratory's NPDES industrial and sanitary Permit, NM0028355.

The project map (Figure 95-1) 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.

95.2 Control Measures

Run-on results from overland sheet flow, an unpaved access road, and the permitted outfall associated with 03-049(a). Significant run-on to the Permitted Feature occurs from the storm drain and paved areas above the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 95-1).

Table 95-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00202040009	Established Vegetation		X	X		B
M00204060008	Rip Rap	X		X		CB
M00206010003	Rock Check Dam		X		X	CB
M00206010004	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and certification are being planned for the end of 2014 as part of corrective action.

95.3 Storm Water Monitoring

SWMU 03-049(a) is monitored within M-SMA-1.2. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 95-2). Analytical results from this sample yielded two TAL exceedances:

- Arsenic concentration of 10.6 µg/L (MTAL is 9 µg/L), and
- Copper concentration of 38.4 µg/L (MTAL is 4.3 µg/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 03-049(a):

- Arsenic is not known to be associated with industrial materials historically managed at this Site. Arsenic was detected above the BV in 2 of 32 shallow (i.e., less than 3 ft bgs) soil, sediment, and tuff samples collected during the 1997 RFI and 2009 Phase I Consent Order investigation at a maximum concentration 1.5 times the sediment BV.
- Copper may have potentially been associated with industrial materials historically managed at this Site. Copper was detected above sediment, soil, and tuff BVs in 19 of 32 shallow RFI and Consent Order samples at a maximum concentration 55 times the sediment BV.

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 95-2. 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 95-2.

Monitoring location M-SMA-1.2 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 arsenic are associated with building materials, parking lots, and automobiles.

- Arsenic—The arsenic UTL from developed urban landscape 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 arsenic UTL for background storm water containing sediment derived from Bandelier Tuff is 2.55 µg/L. The arsenic result from 2013 is greater than this value.
- 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 2013 is greater than both of these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

95.4 Inspections and Maintenance

RG121.9 recorded three storm events at M-SMA-1.2 during the 2013 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 95-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30776	4-4-2013
Storm Rain Event	BMP-33603	7-25-2013
Storm Rain Event	BMP-35554	9-23-2013
Annual Erosion Evaluation	COMP-36715	11-20-2013
TAL Exceedance	COMP-37068	11-20-2013

No maintenance activities were conducted at M-SMA-1.2 in 2013.

95.5 Compliance Status

The Site associated with M-SMA-1.2 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 95-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-049(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

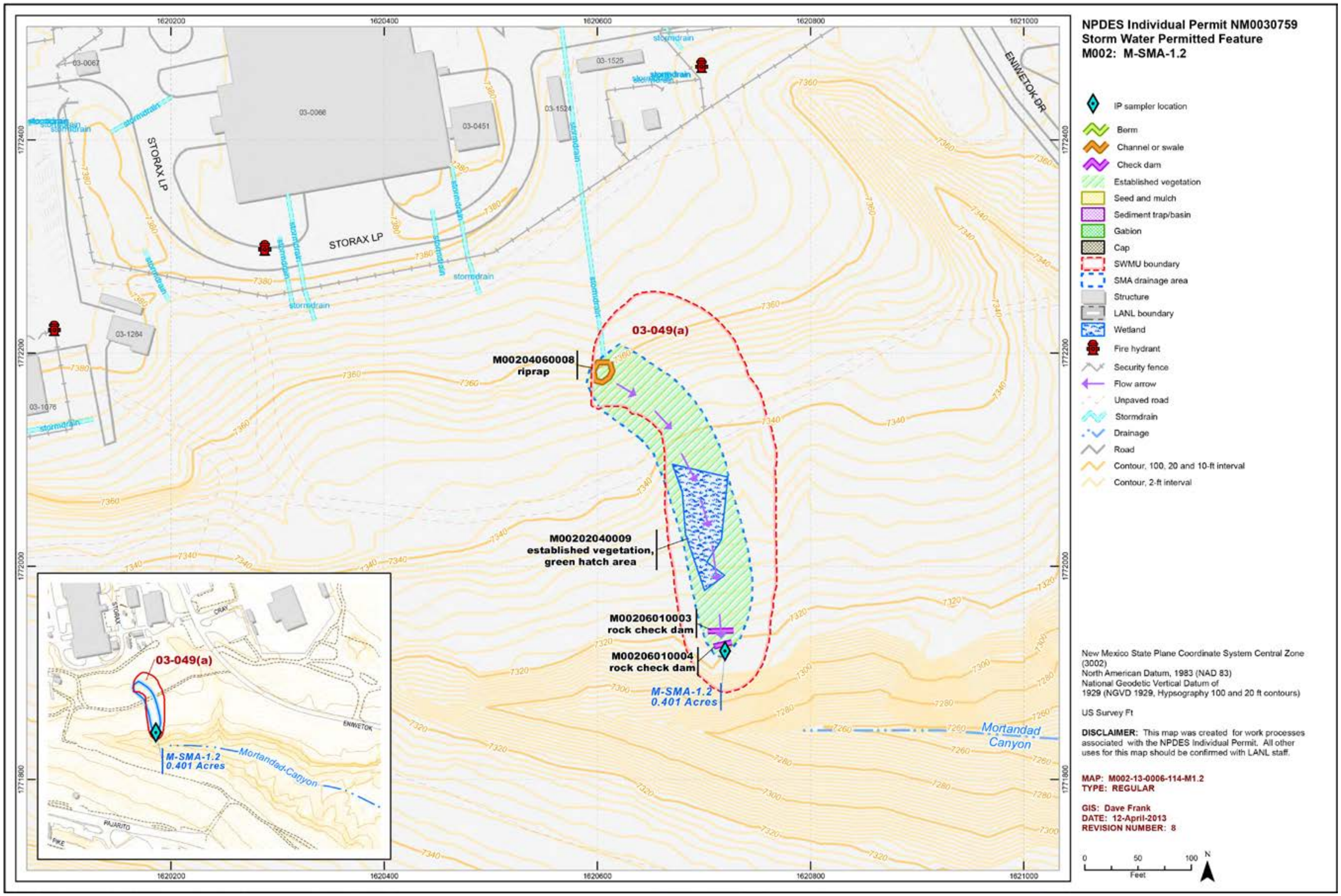
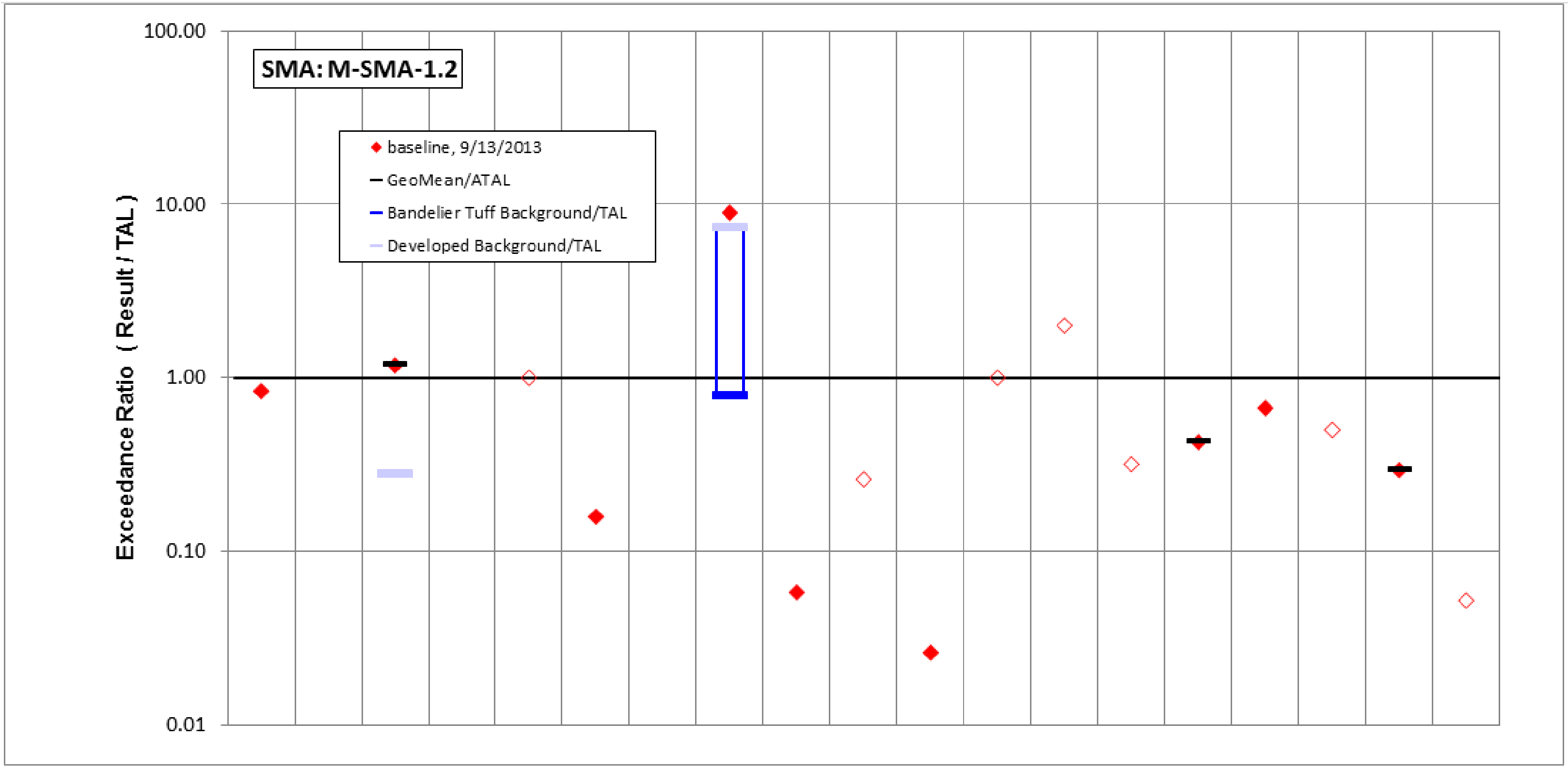


Figure 95-1 M-SMA-1.2 location map



	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	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	628	*3*	**10.6**	49.4	*1*	33.2	*5*	**38.4**	0.984	*0.2*	4.43	*5*	***1***	*2*	42.5	28.1	*0.005*	4.4	*1.56*
result / TAL	0.84	*0.005*	**1.2**	0.0099	*1*	0.16	*0.005*	**8.9**	0.058	*0.26*	0.026	*1*	***2***	*0.32*	0.42	0.67	*0.5*	0.29	*0.052*

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

Figure 95-2 Inorganic analytical results summary plot for M-SMA-1.2

96.0 M-SMA-1.21: SWMU 03-049(e)

96.1 Site Descriptions

One historical industrial activity area is associated with M002A, M-SMA-1.21: Site 03-049(e).

SWMU 03-049(e) is identified in the 1990 SWMU report as an area located south of the Sigma Building (03-0066) that was potentially contaminated by an outfall pipe of unknown origin. The 1990 SWMU report also states that the outfall discharged to Mortandad Canyon. Subsequent investigation of the Sigma Building determined that three of the building's roof drains connect to a single pipe and discharge to the outfall area of SWMU 03-049(e).

With the exception of four PAHs, all detected inorganic and organic chemical concentrations and radionuclide activities detected during a 2001 RFI and 2009 Consent Order sampling were below residential SSLs and SALs. Additional sampling is proposed under a Phase II investigation to define the extent of PAHs.

The project map (Figure 96-1) 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.

96.2 Control Measures

Run-on from the storm drain and culvert converges with the channel created from outfall from 03-049(e). A berm diverts culvert run-on to the west of the SMA and the outfall associated with SWMU 03-049(e). SWMU 03-049(e) is the outfall, which captures roof drainage associated with building 03-0066. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 96-1).

Table 96-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M002A02040007	Established Vegetation		X	X		B
M002A03010006	Earthen Berm		X		X	B
M002A03020002	Base Course Berm	X			X	CB
M002A03120005	Rock Berm		X		X	CB
M002A04060003	Rip Rap		X	X		CB
M002A06010004	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

96.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-1.21. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

96.4 Inspections and Maintenance

RG121.9 recorded three storm events at M-SMA-1.21 during the 2013 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 96-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30777	4-4-2013
Storm Rain Event	BMP-33604	7-25-2013
Storm Rain Event	BMP-35555	9-23-2013
Annual Erosion Evaluation	COMP-36716	11-6-2013

No maintenance activities were conducted at M-SMA-1.21 in 2013.

96.5 Compliance Status

The Site associated with M-SMA-1.21 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 96-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-049(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

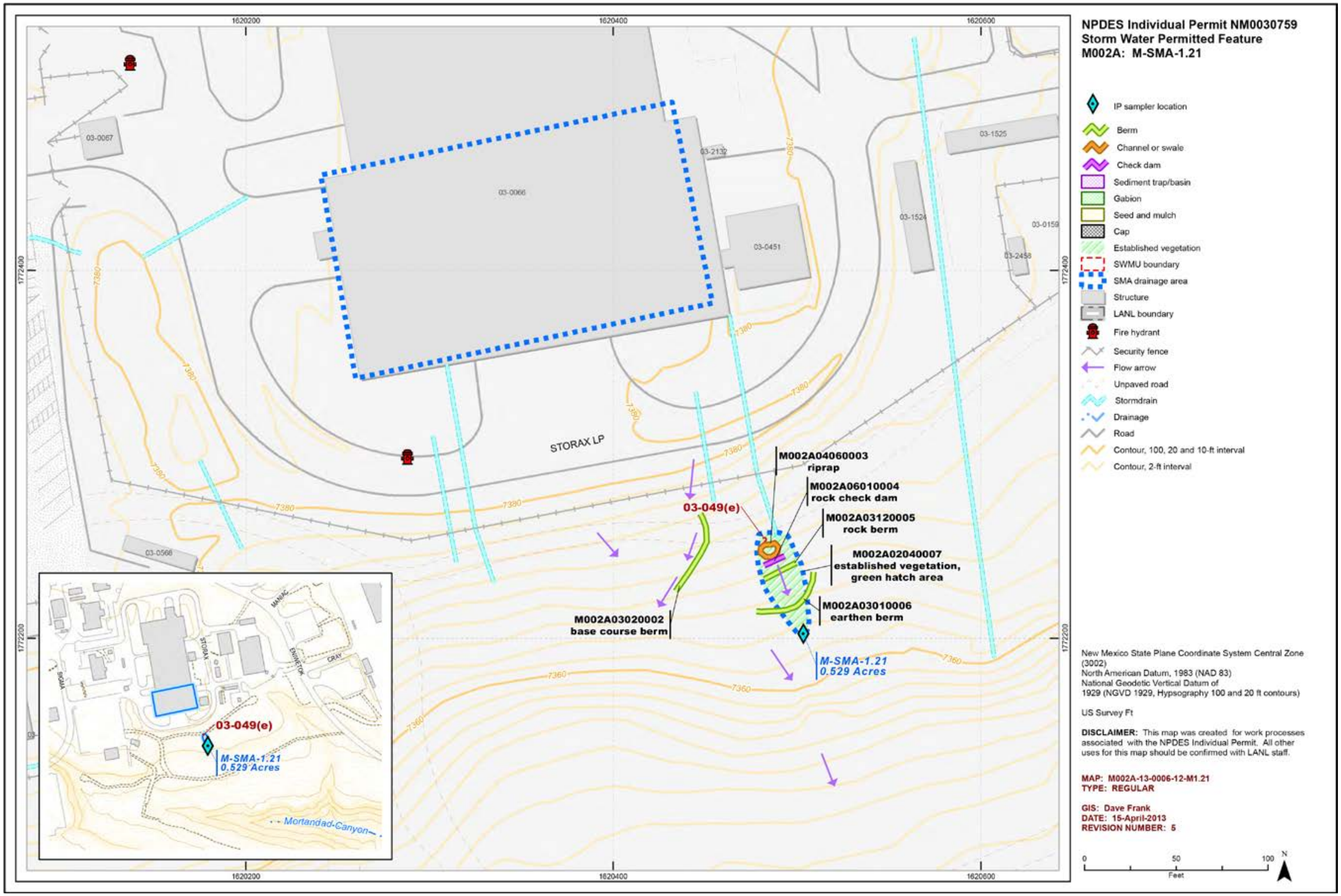


Figure 96-1 M-SMA-1.21 location map

97.0 M-SMA-1.22: SWMU 03-045(h)

97.1 Site Descriptions

One historical industrial activity area is associated with M002B, M-SMA-1.22: Site 03-045(h).

SWMU 03-045(h) is a former NPDES-permitted outfall (EPA 03A024) located in TA-03 at the north perimeter of the Sigma Complex security fence, approximately 50 ft north of a cooling tower (structure 03-187). The outfall was formerly permitted for the discharge of treated cooling water and storm water. It served a former cooling tower from 1953 until the late 1980s when the cooling tower became inactive. The cooling tower remained inactive until early 1995, when it was reactivated. In 1997, the cooling tower was removed and the outfall pipe plugged. The outfall was removed from the NPDES permit in 2007. The area at the outfall pipe is about 3 ft wide × 6 ft long. Effluent drained into a corrugated metal storm drainpipe that trended northeast and east of structure 03-187 where it combined with more storm water runoff from surrounding areas. The drainage continued south and joined a channel north of Eniwetok Drive that ultimately drained into Sandia Canyon. Routine water treatment began in 1968. Treatment included biocides and fungicides to reduce algae growth and chelating agents such as ethylenediaminetetraacetic acid to inhibit corrosion.

SWMU 03-045(h) was included in the supplemental investigation report for the Upper Sandia Canyon Aggregate Area, submitted to NMED under the Consent Order on August 27, 2013. The Site meets residential risk levels; however, because receiving waters for the Site are in Upper Mortandad Canyon, the Site will be recommended for corrective action complete without controls in the Upper Mortandad Canyon Aggregate Area supplemental investigation report, to be submitted to NMED in 2014. SWMU 03-045(h) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 97-1) 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.

97.2 Control Measures

Run-on enters the area from the storm drain and culvert. Significant run-on flows to the Permitted Feature from the storm drain and paved areas above the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 97-1).

Table 97-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M002B01010015	Seed and Wood Mulch			X		B
M002B02040014	Established Vegetation		X	X		B
M002B03010010	Earthen Berm		X		X	EC
M002B03010011	Earthen Berm		X		X	EC
M002B03010012	Earthen Berm		X		X	EC
M002B04050002	Water Bar	X		X		CB
M002B05030013	Sand Filter		X		X	EC
M002B06010008	Rock Check Dam		X		X	CB
M002B06010009	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls were installed and certified on June 4, 2013, 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.

97.3 Storm Water Monitoring

SWMU 03-045(h) is monitored within M-SMA-1.22. Following the installation of baseline control measures, a baseline storm water sample was collected on September 15, 2011 (Figure 97-2). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 904 µg/L (MTAL is 750 µg/L), and
- Copper concentration of 6 µg/L (MTAL is 4.3 µg/L).

Following the installation of enhanced control measures at M-SMA-1.22, a corrective action storm water sample was collected on September 12, 2013 (Figure 97-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Copper concentrations of 5.96 µg/L (MTAL is 4.3 µg/L).

Corrective action has resulted in a decrease in aluminum concentration detected in storm water samples collected at M-SMA-1.22.

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 03-045(h):

- Copper is not known to be associated with industrial materials historically managed at the Site and was not detected above the BV in the single shallow Consent Order sample collected at the Site.


M-SMA-1.22, Rock Check Dam, M002B06010008 (photo ID 30577-3)

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 97-2. 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 97-2.

Monitoring location M-SMA-1.22 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and aluminum 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 storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these two values.

All the analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

97.4 Inspections and Maintenance

RG121.9 recorded three storm events at M-SMA-1.22 during the 2013 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 97-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-30571	1-30-2013
Construction	COMP-30572	2-6-2013
Construction	COMP-30574	2-13-2013
Construction	COMP-30576	2-20-2013
BMP Verification	BMP-30577	3-1-2013
Annual Erosion Evaluation	COMP-30778	4-4-2013
Storm Rain Event	BMP-33605	7-25-2013
Storm Rain Event	BMP-35556	9-17-2013
Annual Erosion Evaluation	COMP-36717	11-20-2013
TAL Exceedance	COMP-37069	11-20-2013

No maintenance activities were conducted at M-SMA-1.22 in 2013.

97.5 Compliance Status

The Site associated with M-SMA-1.22 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 97-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-045(h)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	LANL, June 4, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (2M-SMA-2, M-SMA-1.22, S-SMA-3.53, STRM-SMA-1.05, W-SMA-1)"

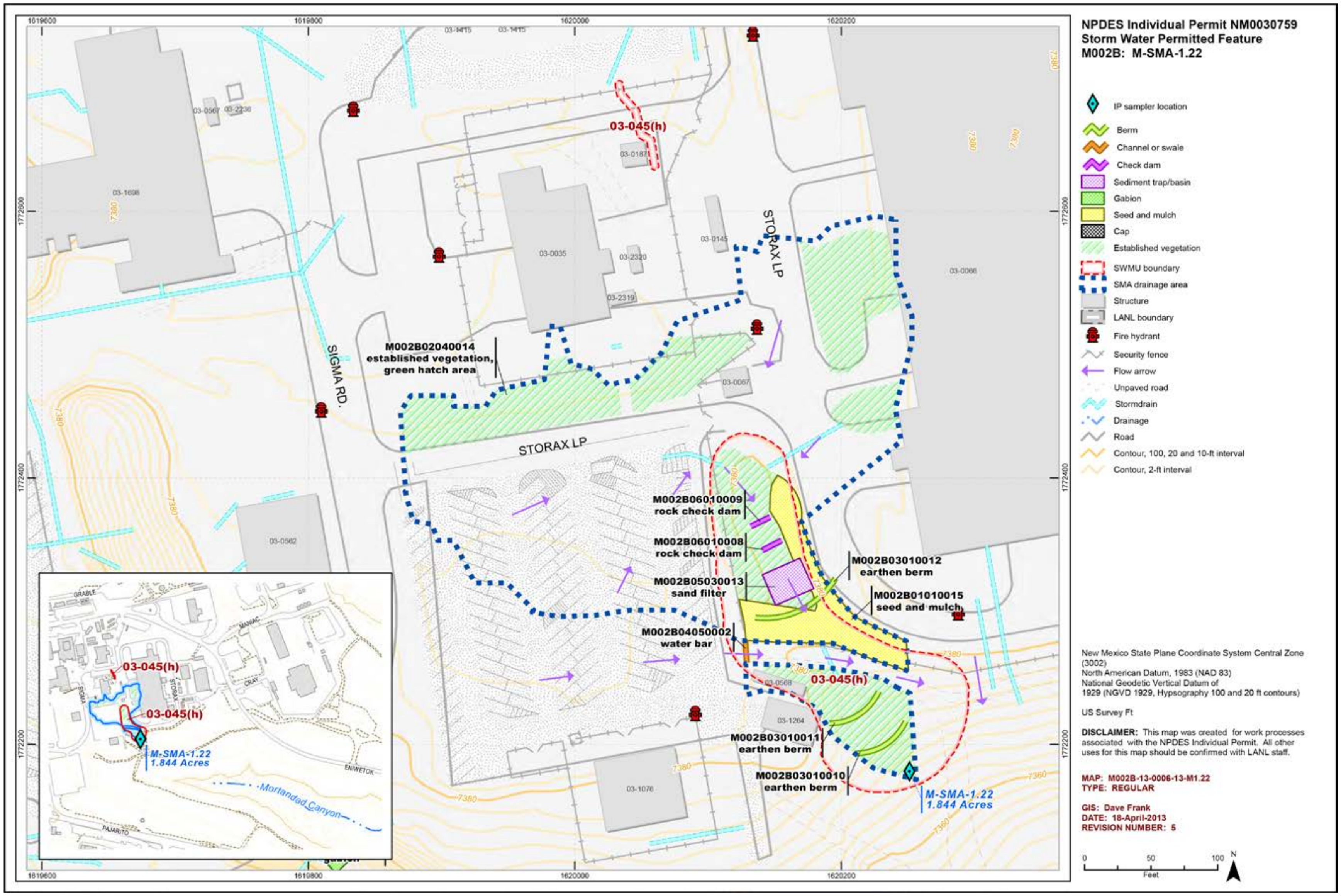
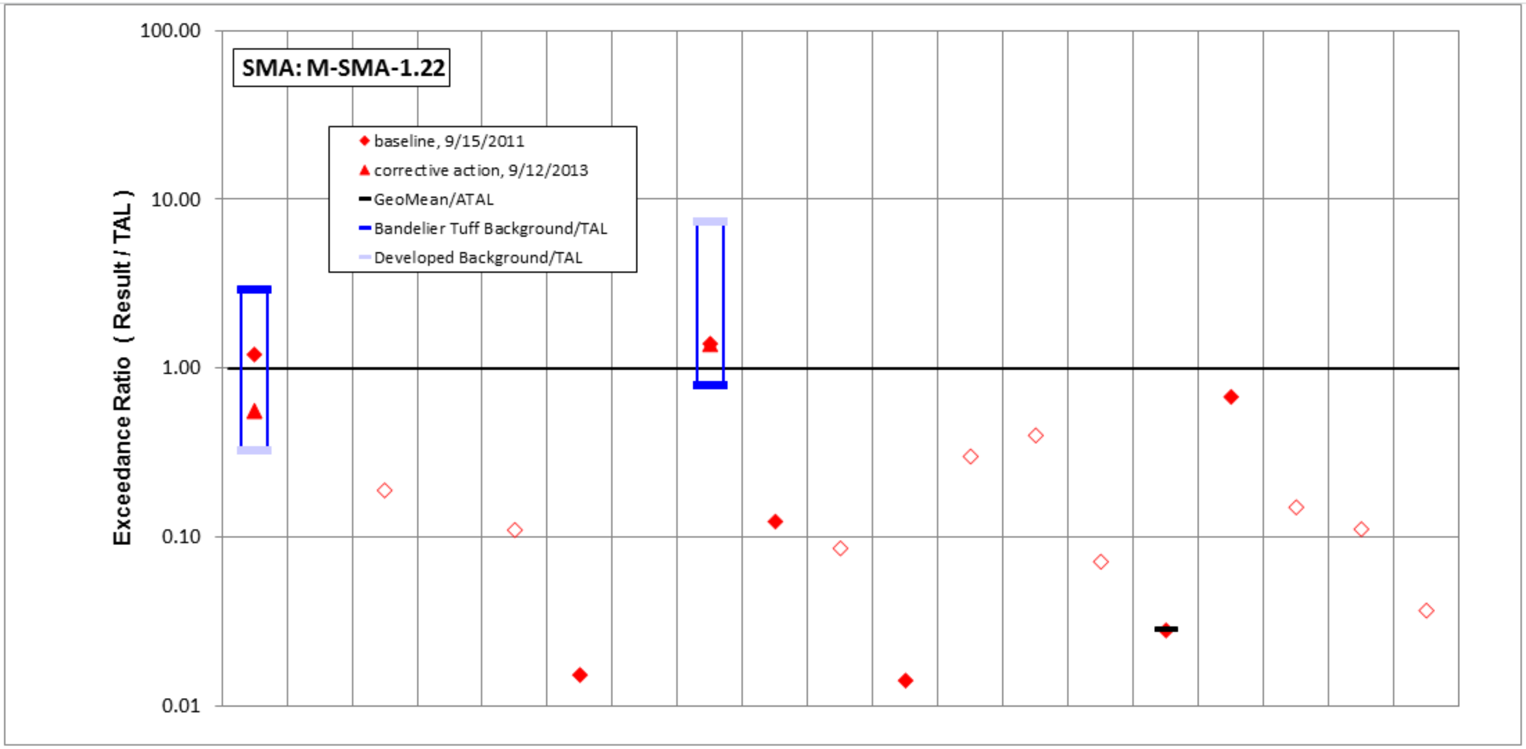


Figure 97-1 **M-SMA-1.22 location map**



	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
9/12/2013 result	419	-	-	-	-	-	-	**5.96**	-	-	-	-	-	-	-	-	-	-	-
result / TAL	0.56	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-
9/15/2011 result	**904**	*1*	*1.7*	*15*	*0.11*	3.2	4.1	**6**	2.1	*0.066*	2.4	*1.5*	*0.2*	*0.45*	2.8	28.4	*0.002*	*1.67*	*1.1*
result / TAL	**1.2**	*0.002*	*0.19*	*0.003*	*0.11*	0.015	0.0041	**1.4**	0.12	*0.086*	0.014	*0.3*	*0.4*	*0.071*	0.028	0.68	*0.15*	*0.11*	*0.037*

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

Figure 97-2 Inorganic analytical results summary plot for M-SMA-1.22

98.0 M-SMA-3: SWMUs 48-005 and 48-007(c) and AOC 48-001

98.1 Site Descriptions

Three historical industrial activity areas are associated with M003, M-SMA-3: Sites 48-001, 48-005, and 48-007(c).

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

SWMU 48-007(c) is an outfall that formerly received discharges from nine floor drains, a trench drain, and six roof drains at building 48-1. This outfall is located north of building 48-1 and discharges into Mortandad Canyon. Former sources of discharge to the floor drains included floor washings, backflow preventers, drainage and condensate from a vacuum pump, steam condensate, a boiler drain, a fire drain, and a water heater pressure relief valve. This outfall formerly operated as an NPDES-permitted outfall (131 EPA 04A) but was removed from the permit on January 14, 1998, because industrial wastewater discharges were discontinued. Currently, this outfall receives only storm water.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-1 and surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at the laboratory to support a variety of programs. The building 48-1 exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered gloveboxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glovebox stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Monitoring data for stack FE54 were collected beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium isotopes, uranium isotopes, and fission products, principally cesium-137, cerium-144, and strontium-90.

Consent Order and RFI sampling has been performed at AOC 48-001. No shallow (i.e., less than 3 ft bgs) samples have been collected for AOC 48-001 within the boundary of the M-SMA-3 drainage area, however. Therefore, no soil data are available to evaluate AOC 48-001 with respect to potential sources of TAL exceedances for M-SMA-3.

The project map (Figure 98-1) 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.

98.2 Control Measures

Run-on enters this Permitted Feature from the paved access road and parking areas above the sampler. Flow from the access road intersects the SMA and discharges off the mesa west of the SMA boundary. A riprap below the 24-in. culvert serves as outlet protection. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 98-1).

Table 98-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00302040013	Established Vegetation		X	X		B
M00303120009	Rock Berm	X			X	CB
M00303120010	Rock Berm	X			X	CB
M00303120011	Rock Berm	X			X	CB
M00304050005	Water Bar	X		X		CB
M00304060001	Rip Rap		X	X		CB
M00304060008	Rip Rap	X		X		CB
M00305020012	Sediment Basin	X			X	CB
M00306010007	Rock Check Dam		X		X	CB

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

98.3 Storm Water Monitoring

SWMUs 48-005 and 48-007(c) and AOC 48-001 are monitored within M-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figures 98-2 and 98-3). Analytical results from this sample yielded two TAL exceedances:

- Gross-alpha activity of 25.4 pCi/L (ATAL is 15 pCi/L) and
- PCB concentration of 18 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 48-005:

- PCBs are not known to have been associated with industrial materials historically managed at the Site. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order soil, sediment, and tuff samples. Aroclor-1248 was detected in one of five shallow samples at a concentration 0.13% of the residential SSL. Aroclor-1254 was detected in four of five shallow samples with a maximum concentration 0.78% of the residential SSL. Aroclor-1260 was detected in two of five shallow samples with a maximum concentration 0.31% of the residential SSL.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for analyzed for americium-241 and plutonium, thorium, and uranium isotopes, which are alpha-emitting radionuclides. The isotopes managed at this Site are exempt from the CWA under the AEA.

SWMU 48-007(c):

- PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order sediment and tuff samples. Aroclor-1254 was detected in five of six shallow samples with a maximum concentration 1.6% of the residential SSL. Aroclor-1260 was detected in four of six shallow samples with a maximum concentration 0.3% of the residential SSL.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity or for alpha-emitting radionuclides.

AOC 48-001:

- PCBs are not known to have been associated with industrial materials historically managed at the Site but may be associated with other Sites within the footprint of AOC 48-001.
- Alpha-emitting radionuclides are known to have been released from stacks at building 48-1. The isotopes managed at this Site are exempt from the CWA under the AEA.

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 98-2 and 98-3. 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 98-2 and 98-3.

Monitoring location M-SMA-3 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. 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, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these 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 2013 is between these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

98.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at M-SMA-3 during the 2013 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 98-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30784	4-30-2013
Storm Rain Event	BMP-33417	7-23-2013
Storm Rain Event	BMP-35501	9-24-2013
Annual Erosion Evaluation	COMP-36723	11-15-2013
TAL Exceedance	COMP-35296	9-18-2013

No maintenance activities were conducted at M-SMA-3 in 2013.

98.5 Compliance Status

The Sites associated with M-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 98-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 48-001	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-13-13
SWMU 48-005	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-13-13
SWMU 48-007(c)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-13-13

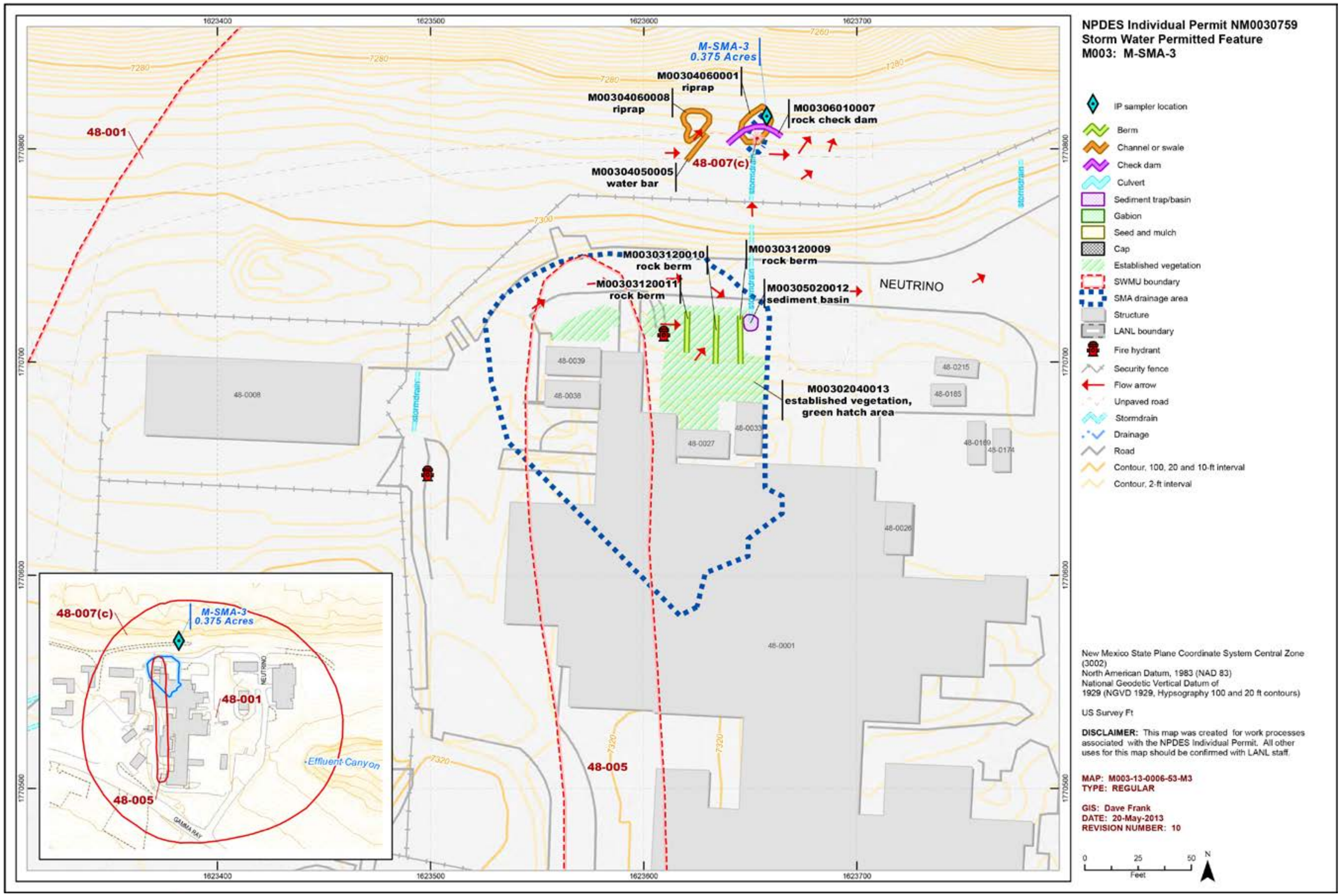
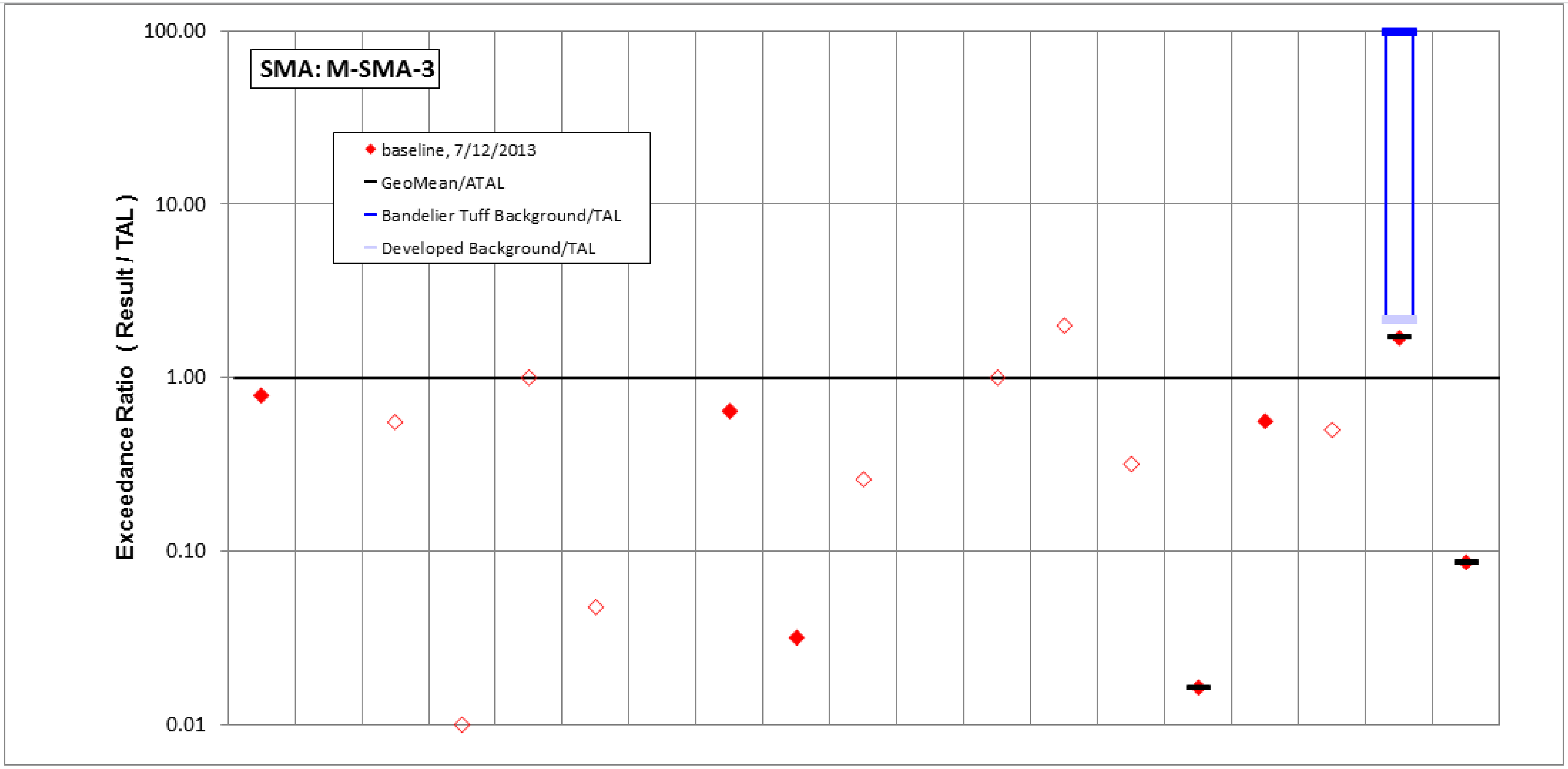


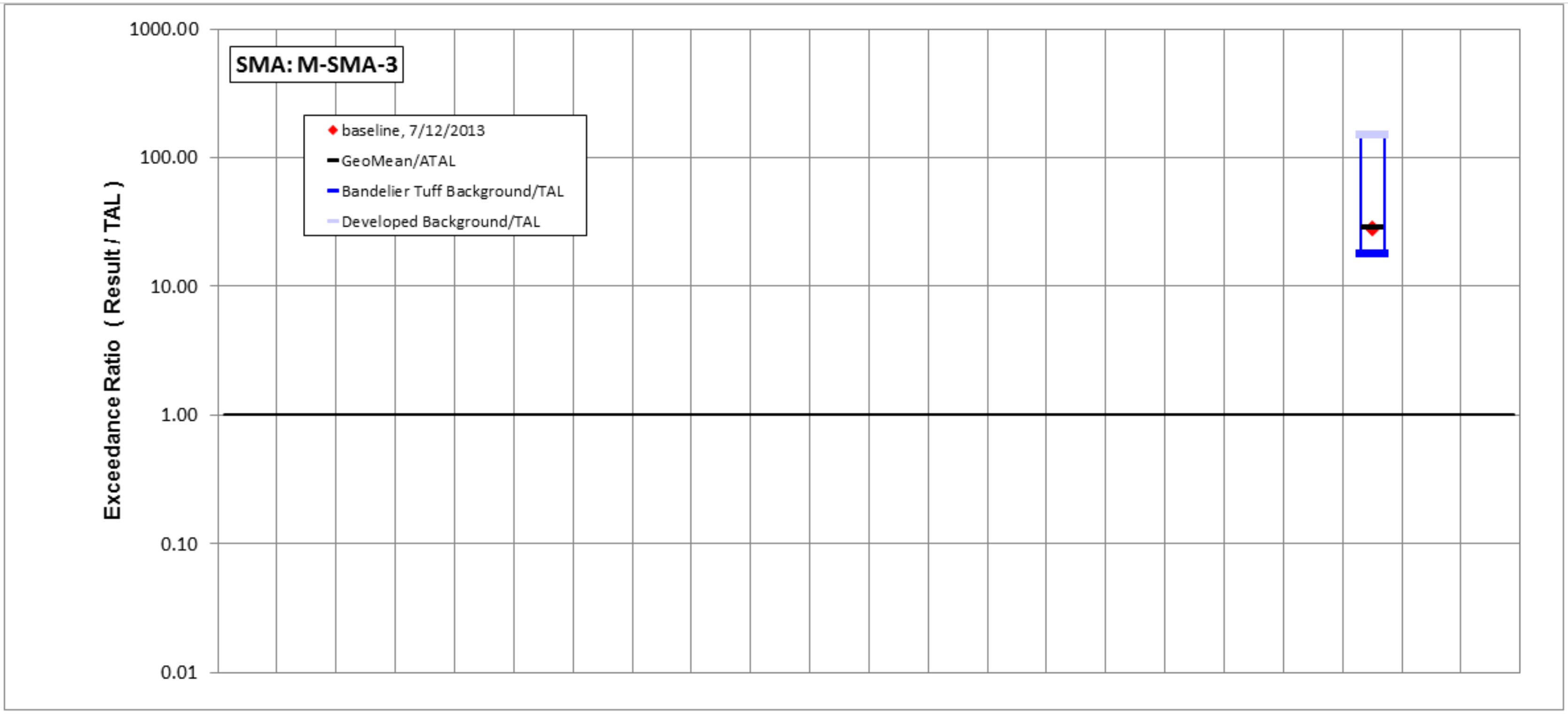
Figure 98-1 M-SMA-3 location map



	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
7/12/2013 result	592	*3*	*5*	*50*	*1*	*10*	*3.96*	2.76	0.539	*0.2*	0.693	*5*	***1***	*2*	1.64	23.6	*0.005*	**25.4**	2.59
result / TAL	0.79	*0.005*	*0.56*	*0.01*	*1*	*0.048*	*0.004*	0.64	0.032	*0.26*	0.0041	*1*	***2***	*0.32*	0.016	0.56	*0.5*	**1.7**	0.086

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

Figure 98-2 Inorganic analytical results summary plot for M-SMA-3



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/12/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.018**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**28**	-	-

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

Figure 98-3 Organic analytical results summary plot for M-SMA-3

99.0 M-SMA-3.1: SWMU 48-007(b) and AOC 48-001

99.1 Site Descriptions

Two historical industrial activity areas are associated with M004, M-SMA-3.1: Sites 48-001 and 48-007(b).

SWMU 48-007(b) is a former NPDES-permitted outfall (01604A) that discharged noncontact cooling water used to cool a magnet and laser housed in the main radiochemistry laboratory (building 48-01). The outfall is located north of building 48-01 and formerly discharged up to 4300 gal./d of cooling water that flowed into Mortandad Canyon. The outfall was removed from the NPDES permit on September 19, 1997, because industrial wastewater discharges were discontinued. Presently, the outfall receives only storm water.

Phase I Consent Order investigations are complete for SWMU 48-007(b). All detected constituents were below residential SSLs and SALs, except for benzo(a)pyrene, detected slightly above the residential SSL in one surface sample. The Site will be recommended for corrective action complete without controls in the Upper Mortandad Canyon Aggregate Area supplemental investigation report, to be submitted to NMED in 2014. SWMU 48-007(b) will be eligible for a COC upon approval of the report by NMED.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-1 and surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at the laboratory to support a variety of programs. The building 48-1 exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered gloveboxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glovebox stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Monitoring data for stack FE54 were collected beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium isotopes, uranium isotopes, and fission products, principally cesium-137, cerium-144, and strontium-90.

Consent Order and RFI sampling has been performed at AOC 48-001. No shallow (i.e., less than 3 ft bgs) samples have been collected for AOC 48-001 within the boundary of the M-SMA-3 drainage area, however. Therefore, no soil data are available to evaluate for AOC 48-001 with respect to potential sources of TAL exceedances for M-SMA-3.

The project map (Figure 99-1) 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.

99.2 Control Measures

A significant run-on source at this Permitted Feature occurs in the form of a 5-in. pipe located at the outfall. The existing curb along the northern edge of the paved access road above the area prevents run-on from the road and other parking areas. There are no run-on impacts from access roads at this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 99-1).

Table 99-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00402040007	Established Vegetation		X	X		B
M00403040006	Asphalt Berm	X			X	CB
M00404060005	Rip Rap		X	X		CB
M00406010004	Rock Check Dam		X		X	CB

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

99.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-3.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

99.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at M-SMA-3.1 during the 2013 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 99-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30785	4-29-2013
Storm Rain Event	BMP-33418	7-23-2013
Storm Rain Event	BMP-35502	9-24-2013
Annual Erosion Evaluation	COMP-36724	11-15-2013

No maintenance activities were conducted at M-SMA-3.1 in 2013.

99.5 Compliance Status

The Sites associated with M-SMA-3.1 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 99-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 48-001	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 48-007(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

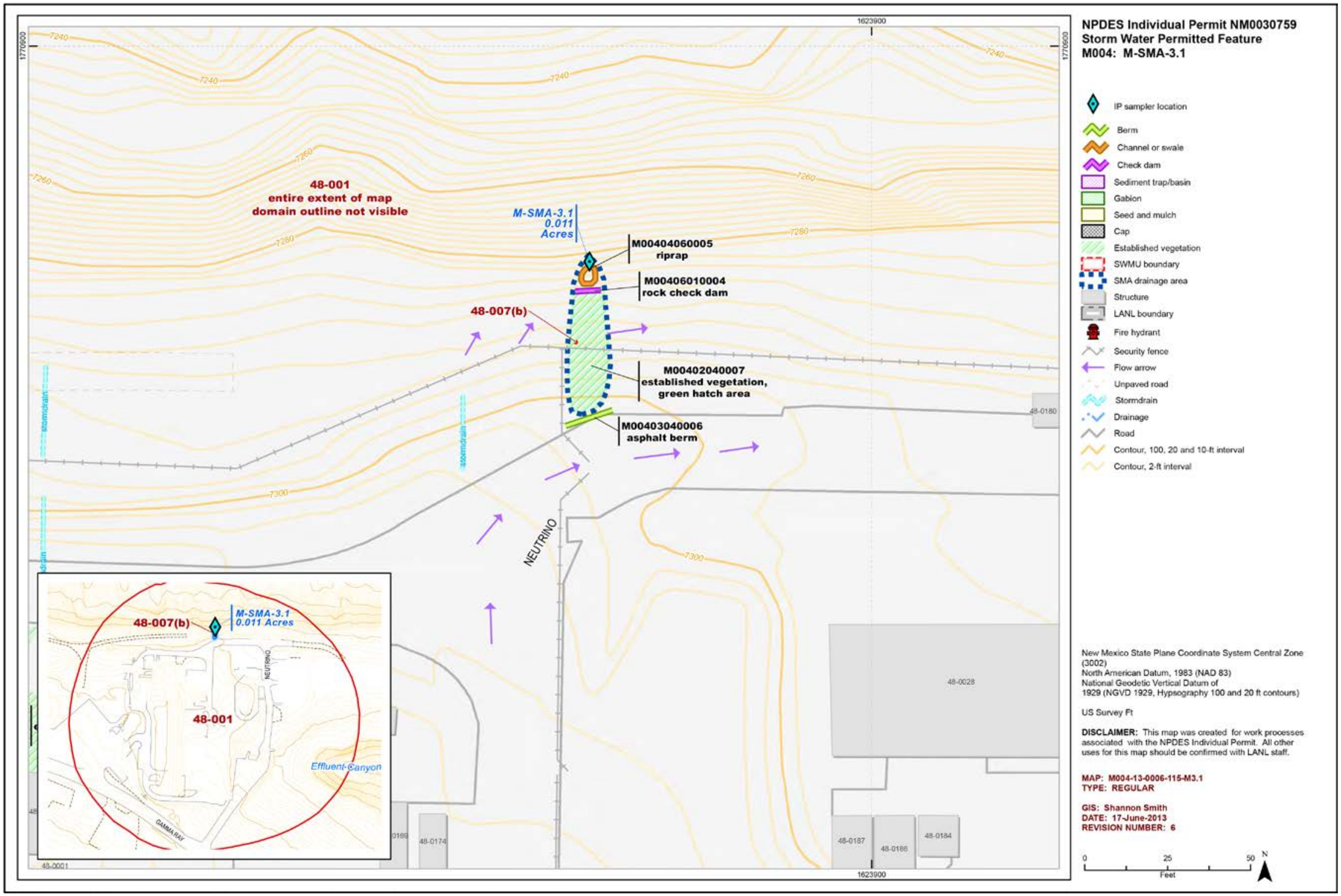


Figure 99-1 **M-SMA-3.1 location map**

100.0 M-SMA-3.5: SWMU 48-003 and AOC 48-001

100.1 Site Descriptions

Two historical industrial activity areas are associated with M005, M-SMA-3.5: Sites 48-001 and 48-003.

SWMU 48-003 consists of a former sanitary septic system that served TA-48 from 1957 to 1986. This septic system consisted of a septic tank (structure 48-5), a dosing chamber, a filter bed (structure 48-6), and a former NPDES-permitted outfall that discharged into Mortandad Canyon. The septic tank and dosing chamber were 21 ft 7 in. long and the filter bed measured 81 ft 2 in. long × 40 ft 7 in. wide. The septic system operated until 1986, at which time the septic tank and filter bed were decommissioned and removed. A laboratory and diagnostics facility (building 48-45) was constructed over the Site of the septic tank and filter bed. After the septic system was decommissioned, sanitary wastewater from TA-48 was sent to the sanitary lagoons at TA-35 and later to the consolidated treatment plant at TA-46.

Phase I Consent Order investigations are complete for SWMU 48-003. All detected constituents were below residential SSLs and SALs, except for benzo(a)pyrene, detected slightly above the residential SSL in one surface sample. The Site will be recommended for corrective action complete without controls in the Upper Mortandad Canyon Aggregate Area supplemental investigation report, to be submitted to NMED in 2014. SWMU 48-003 will be eligible for a COC upon approval of the report by NMED.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-1 and surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at the laboratory to support a variety of programs. The building 48-1 exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered gloveboxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glovebox stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Monitoring data for stack FE54 were collected beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium isotopes, uranium isotopes, and fission products, principally cesium-137, cerium-144, and strontium-90.

Consent Order and RFI sampling has been performed at AOC 48-001. No shallow (i.e., less than 3 ft bgs) samples have been collected for AOC 48-001 within the boundary of the M-SMA-3 drainage area, however. Therefore, no soil data are available to evaluate for AOC 48-001 with respect to potential sources of TAL exceedances for M-SMA-3.

The project map (Figure 100-1) 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.

100.2 Control Measures

The roof drain from building 48-0045 has caused a gully that carries run-on to the SMA. Some sheet flow from the sparsely vegetated and bedrock exposed area southeast of the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 100-1).

Table 100-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00502040018	Established Vegetation		X	X		B
M00503010015	Earthen Berm		X		X	CB
M00503010016	Earthen Berm		X		X	CB
M00503120009	Rock Berm		X		X	CB
M00503120010	Rock Berm		X		X	CB
M00503120013	Rock Berm	X			X	CB
M00503120014	Rock Berm	X			X	CB
M00504060011	Rip Rap	X		X		CB
M00504060012	Rip Rap	X		X		CB
M00504060017	Rip Rap		X	X		CB
M00506010004	Rock Check Dam	X			X	CB
M00506010005	Rock Check Dam	X			X	CB

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

100.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-3.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

100.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-3.5 during the 2013 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 100-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30786	4-29-2013
Storm Rain Event	BMP-32993	7-3-2013
Storm Rain Event	BMP-33622	7-23-2013
Storm Rain Event	BMP-34229	8-2-2013
Storm Rain Event	BMP-35751	9-24-2013
Annual Erosion Evaluation	COMP-36725	11-15-2013

No maintenance activities were conducted at M-SMA-3.5 in 2013.

100.5 Compliance Status

The Site associated with M-SMA-3.5 is a High Priority Site. The High Priority Site deadline for the certification of corrective action at this SMA is now 1 yr from the date of any observed TAL exceedance.

Table 100-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 48-001	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 48-003	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

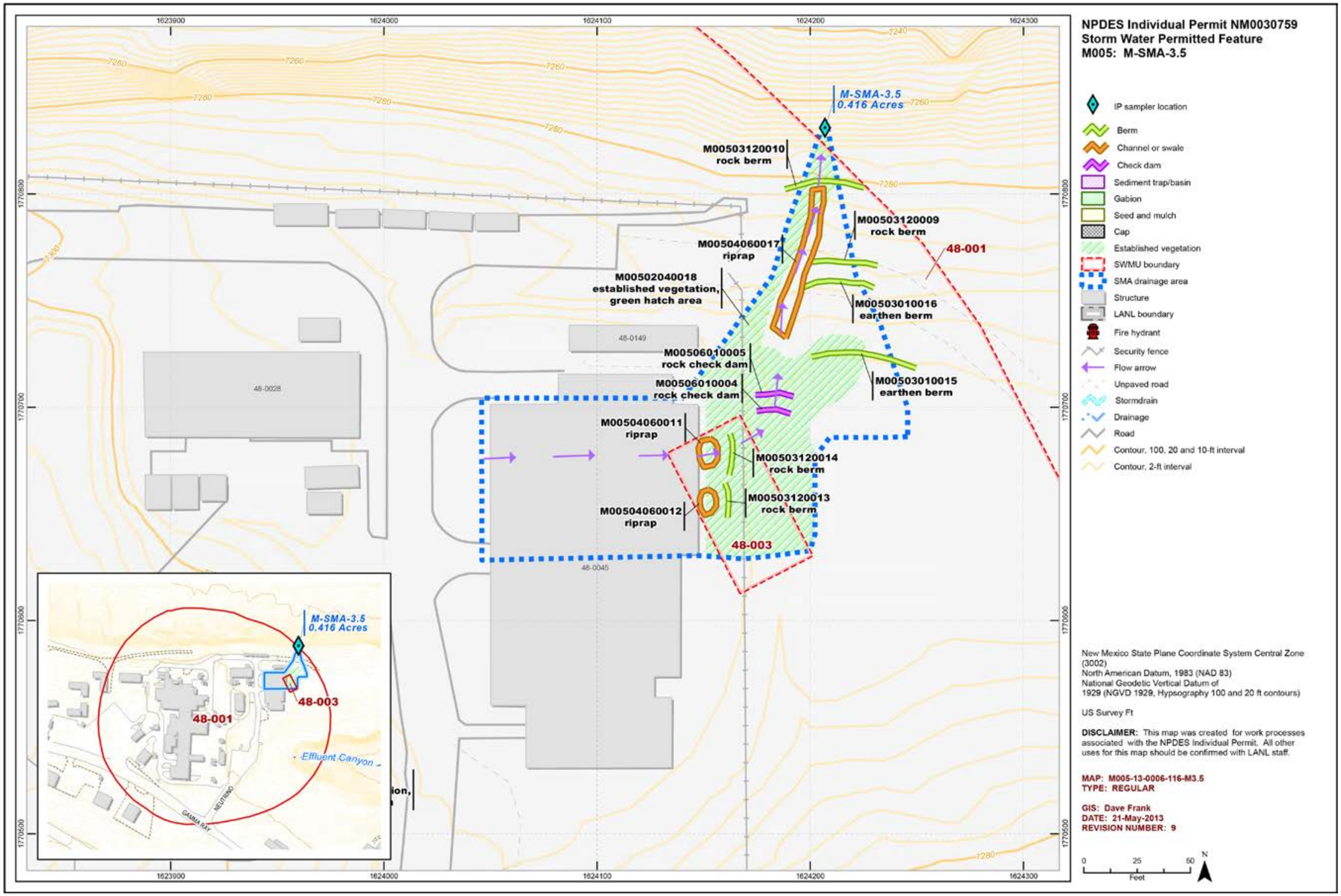


Figure 100-1 M-SMA-3.5 location map

101.0 M-SMA-4: SWMUs 48-005, 48-007(a), 48-007(d), and 48-010 and AOC 48-001

101.1 Site Descriptions

Five historical industrial activity areas are associated with M006, M-SMA-4: Sites 48-001, 48-005, 48-007(a), 48-007(d), and 48-010.

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

SWMU 48-007(a) is an outfall formerly used to discharge treated cooling tower blowdown from two cooling towers located on the roof of building 48-1. This outfall is located in TA-48 east of building 48-1. Up to 750 gal./h of cooling tower blowdown were discharged from the outfall. The discharge from this outfall flowed to an unlined surface impoundment, SWMU 48-010. The water used in these cooling towers was treated to control scale, corrosion, and biological growth. Additives used include Garratt Callahan (G. C.) Formula 227 L, a corrosion and scaling inhibitor, and G. C. Formula 314-T, a biocide. The date this outfall began operation is not known, but building 48-1 was constructed in 1957, so discharges would not have preceded this date. This outfall formerly operated as an NPDES-permitted outfall (045/046 EPA 03A) but was removed from the permit on December 6, 1999, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. Currently, the outfall discharges only storm water.

SWMU 48-007(a) was investigated jointly under the Consent Order with SWMUs 48-007(d) and 48-010 as Consolidated Unit 48-007(a)-00. The investigation concluded nature and extent of contamination were defined, there was no unacceptable human health risk or dose under the residential scenario and no unacceptable risk to ecological receptors. SWMU 48-007(a) received a COC with controls from NMED on September 7, 2011. The control for this Site is the continuation of storm water monitoring under the IP for potential transport of residual contamination.

SWMU 48-007(d) is an outfall formerly used to discharge noncontact cooling water that cooled a vacuum pump housed in the south end of building 48-1. This outfall is located east of building 48-1. The date the outfall began operation is not known, but building 48-1 was constructed in 1957, so discharges would not have preceded this date. Up to 4000 gal./d of cooling water was discharged from the outfall. Discharge from this outfall flowed to SWMU 48-010. This outfall formerly operated as an NPDES-permitted outfall (153 EPA 04A) but was removed from the permit on July 20, 1998, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. Storm water continues to flow through the outfall.

SWMU 48-007(d) was investigated jointly with SWMUs 48-007(a) and 48-010 as Consolidated Unit 48-007(a)-00. SWMU 48-007(d) was investigated jointly under the Consent Order with SWMUs 48-007(a) and 48-010 as Consolidated Unit 48-007(a)-00 The investigation concluded the nature and extent of contamination were defined, no unacceptable human health risk or dose exists under the residential scenario and no unacceptable risk exists to ecological receptors. SWMU 48-007(d) received a COC with controls from NMED on September 7, 2011. The control for this Site is the continuation of storm water monitoring under the IP for potential transport of residual contamination.

SWMU 48-010 is an unlined surface impoundment constructed in 1978 by excavating directly into the tuff. The surface impoundment is located approximately 300 ft east of building 48-1 and 150 ft south of building 48-45. The surface impoundment formerly received cooling tower blowdown discharged from SWMU 48-007(a), noncontact cooling water discharged from SWMU 48-007(d), and storm water runoff from the parking lot for building 48-45. Currently, the impoundment receives only storm water from the parking lot. A wetland has developed around the impoundment. The impoundment and surrounding wetland cover approximately 100 × 150 ft. SWMU 48-010 discharges to the east into a side canyon that is a tributary to Mortandad Canyon.

SWMU 48-010 was investigated jointly with SWMUs 48-007(a) and 48-007(d) as Consolidated Unit 48-007(a)-00. SWMU 48-010 was investigated jointly under the Consent Order with SWMUs 48-007(a) and 48-007(d) as Consolidated Unit 48-007(a)-00. The investigation concluded the nature and extent of contamination were defined, and there was no unacceptable human health risk or dose under the residential scenario and no unacceptable risk to ecological receptors. SWMU 48-010 received a COC with controls from NMED on September 7, 2011. The control for this Site is the continuation of storm water monitoring under the IP for potential transport of residual contamination.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-1 and surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at the laboratory to support a variety of programs. The building 48-1 exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered gloveboxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glovebox stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Monitoring data for stack FE54 were collected beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium isotopes, uranium isotopes, and fission products, principally cesium-137, cerium-144, and strontium-90.

Consent Order and RFI sampling has been performed at AOC 48-001. No shallow (i.e., less than 3 ft bgs) samples have been collected for AOC 48-001 within the boundary of the M-SMA-3 drainage area, however. Therefore, no soil data are available to evaluate AOC 48-001 with respect to potential sources of TAL exceedances for M-SMA-3.

The project map (Figure 101-1) 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.

101.2 Control Measures

Culverts located east of building 48-001 capture most of the pavement-generated run-on. The culverts discharge into the channels east of Neutrino Road and empty into the wetlands, west of the sampler. The sheet flow from the asphalt-paved TA-48 access road and asphalt-lined ditch west and unlined ditch to the east of this road flows to the culvert that empties into the wetland. The manmade swales on the north side of building 48-0107 drain into the ditch where the culvert daylights to the wetland. There is some sheet flow from south of the SMA contributes to the run-on to the wetland. Run-on from the access road flows to northeast away from the SWMU and sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 101-1).

Table 101-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00602040014	Established Vegetation		X	X		B
M00604060002	Rip Rap		X	X		CB
M00604060007	Rip Rap	X		X		CB
M00604060012	Rip Rap	X		X		CB
M00606010005	Rock Check Dam	X			X	CB
M00606010013	Rock Check Dam	X			X	B
M00607010006	Gabions	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for SWMU 48-005 in 2014.

101.3 Storm Water Monitoring

AOC 48-001 and SWMUs 48-005, 48-007(a), 48-007(d), and 48-010 are monitored within M-SMA-4. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figures 101-2 and 101-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 6 µg/L (MTAL is 4.3 µg/L),
- Radium-226 and radium-228 activity of 70.3 pCi/L (ATAL is 30 pCi/L), and
- PCB concentration of 50 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 48-001:

- PCBs are not known to have been associated with industrial materials historically managed at the Site but may be associated with other Sites within the footprint of AOC 48-001.

SWMU 48-005:

- PCBs are not known to have been associated with industrial materials historically managed at the Site. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order soil, sediment, and tuff samples. Aroclor-1248 was detected in 1 of 5 shallow samples at a concentration 0.13% of the residential SSL. Aroclor-1254 was detected in 4 of 5 shallow samples with a maximum concentration 0.78% of the residential SSL. Aroclor-1260 was detected in 2 of 5 shallow samples with a maximum concentration 0.31% of the residential SSL.

SWMU 48-007(a):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above BVs in 18 of 30 shallow samples with a maximum concentration 12 times the soil BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order sediment and tuff samples. Aroclor-1254 was detected in 4 of 5 shallow samples with a maximum concentration 1.8% of the residential SSL. Aroclor-1260 was detected in 3 of 5 shallow samples with a maximum concentration 0.58% of the residential SSL.
- Consent Order and RFI samples were not analyzed for radium isotopes and radium is not known to have been associated with industrial materials historically managed at this Site. Radium-226 and radium-228 are daughter products in the decay chains of thorium and uranium and occur naturally in soil, sediment, and tuff as a result of the decay of naturally occurring thorium and uranium.

SWMU 48-007(d):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above BVs in 18 of 30 shallow samples with a maximum concentration 12 times the soil BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order sediment and tuff samples. Aroclor-1254 was detected in 4 of 5 shallow samples with a maximum concentration 1.8% of the residential SSL. Aroclor-1260 was detected in 3 of 5 shallow samples with a maximum concentration 0.58% of the residential SSL.
- Consent Order and RFI samples were not analyzed for radium isotopes and radium is not known to have been associated with industrial materials historically managed at this Site. Radium-226 and radium-228 are daughter products in the decay chains of thorium and uranium and occur naturally in soil, sediment, and tuff as a result of the decay of naturally occurring thorium and uranium.

SWMU 48-010:

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above BVs in 18 of 30 shallow samples with a maximum concentration 12 times the soil BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow Consent Order sediment and tuff samples. Aroclor-1254 was detected in 4 of 5 shallow samples with a maximum concentration 1.8% of the residential SSL. Aroclor-1260 was detected in 3 of 5 shallow samples with a maximum concentration 0.58% of the residential SSL.
- Consent Order and RFI samples were not analyzed for radium isotopes and radium is not known to have been associated with industrial materials historically managed at this Site. Radium-226 and radium-228 are daughter products in the decay chains of thorium and uranium and occur naturally in soil, sediment, and tuff as a result of the decay of naturally occurring thorium and uranium.

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 101-2 and 101-3. 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 101-2 and 101-3.

Monitoring location M-SMA-4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Radium-226 and Radium-228—The radium-226 and radium-228 activity UTLs from developed urban landscape storm water run-on and from storm water containing sediments derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of the UTL value in the baseline metals background study. Thus, a comparison to storm water background levels could not be made for radium-226 and radium-228.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is between these two values.

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

101.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-4 during the 2013 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 101-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30787	4-29-2013
Storm Rain Event	BMP-32994	7-8-2013
Storm Rain Event	BMP-33623	7-23-2013
Storm Rain Event	BMP-34230	8-2-2013
Storm Rain Event	BMP-35752	9-24-2013
Annual Erosion Evaluation	COMP-36726	11-15-2013

No maintenance activities were conducted at M-SMA-4 in 2013.

101.5 Compliance Status

The Sites associated with M-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 101-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 48-001	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011
SWMU 48-005	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011
SWMU 48-007(a)	Corrective Action Initiated	Corrective Action Complete	NMED, September 2010, “Certificates of Completion, Upper Mortandad Canyon Aggregate Area”
SWMU 48-007(d)	Corrective Action Initiated	Corrective Action Complete	NMED, September 2010, “Certificates of Completion, Upper Mortandad Canyon Aggregate Area”
SWMU 48-010	Corrective Action Initiated	Corrective Action Complete	NMED, September 2010, “Certificates of Completion, Upper Mortandad Canyon Aggregate Area”

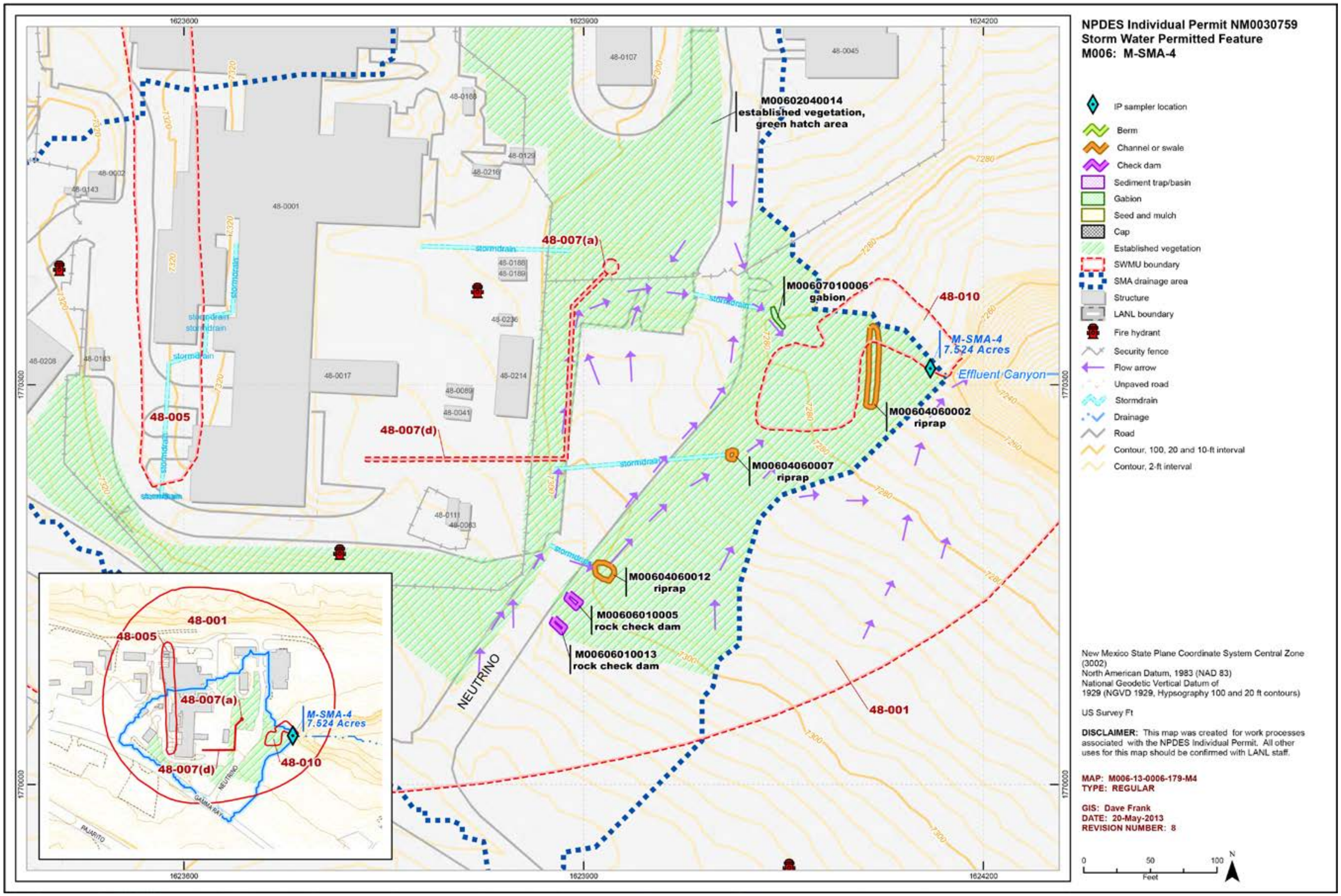
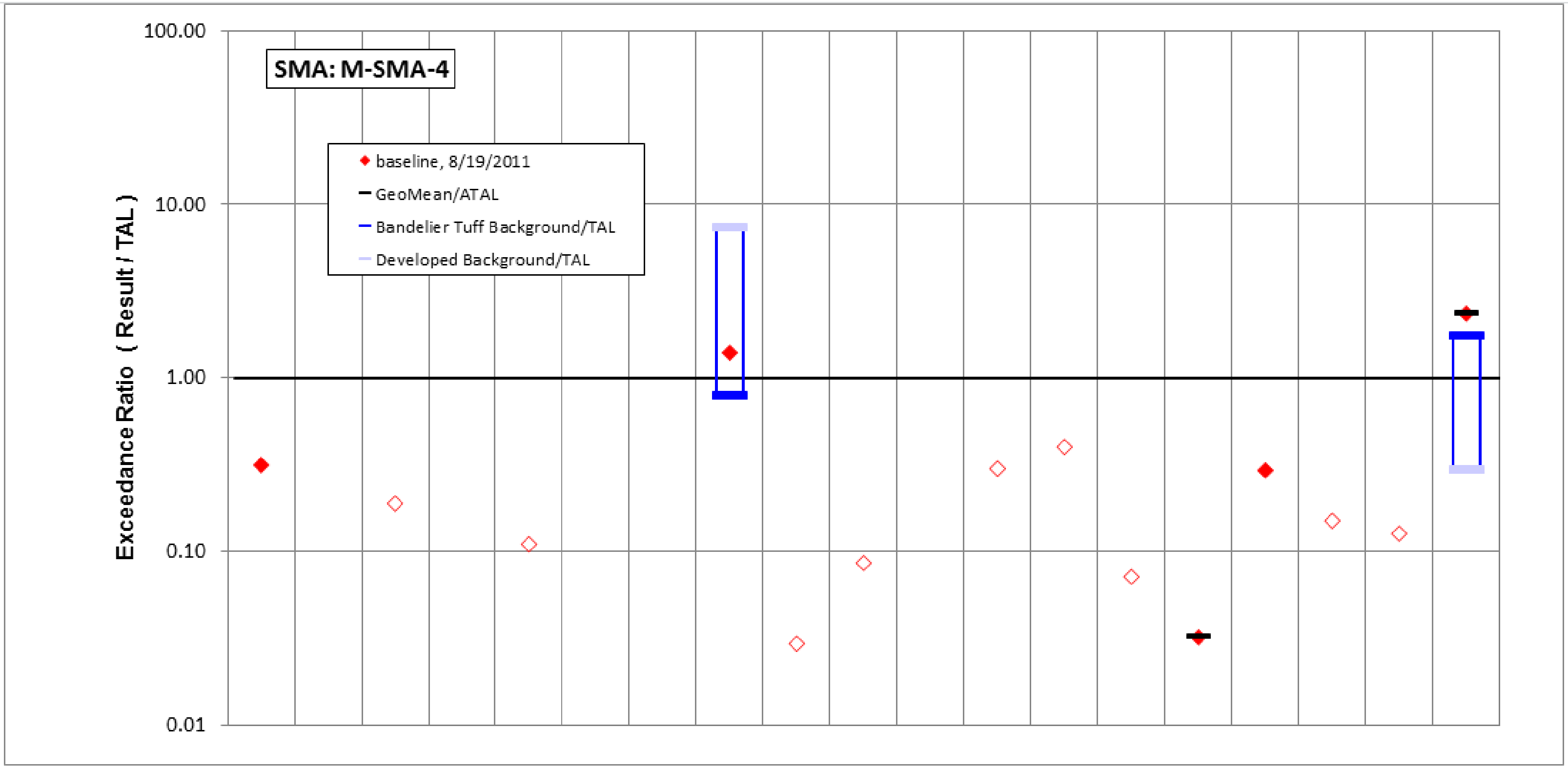


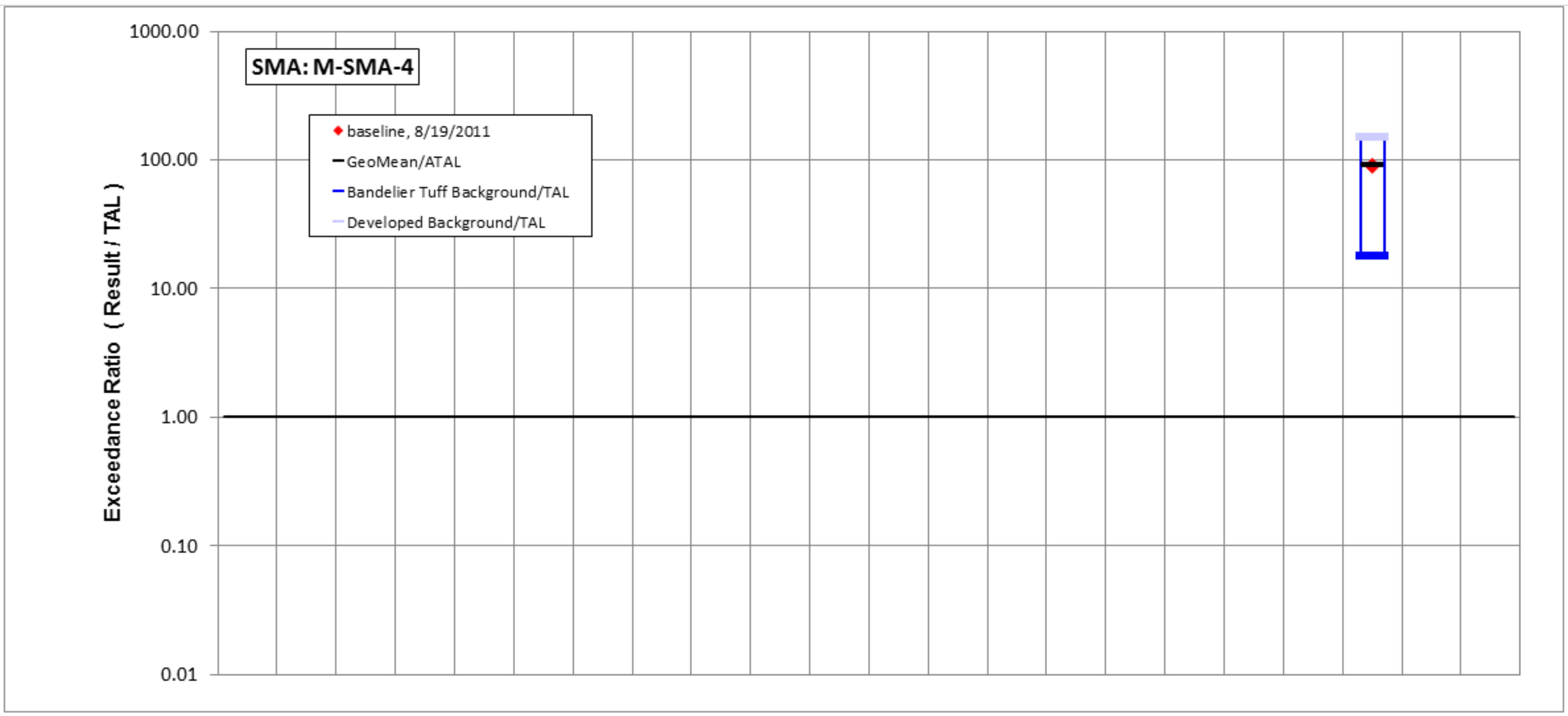
Figure 101-1 M-SMA-4 location map



	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
8/19/2011 result	236	*1*	*1.7*	18.5	*0.11*	*2*	2.3	**6**	*0.5*	*0.066*	0.96	*1.5*	*0.2*	*0.45*	3.2	12.3	*0.002*	*1.9*	**70.3**
result / TAL	0.31	*0.002*	*0.19*	0.0037	*0.11*	*0.01*	0.0023	**1.4**	*0.029*	*0.086*	0.0056	*0.3*	*0.4*	*0.071*	0.032	0.29	*0.15*	*0.13*	**2.3**

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

Figure 101-2 Inorganic analytical results summary plot for M-SMA-4



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.058**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**	-	-

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

Figure 101-3 Organic analytical results summary plot for M-SMA-4

102.0 M-SMA-5: SWMUs 42-001(a), 42-001(b), 42-001(c), and 42-002(b) and AOC 42-002(a)

102.1 Site Descriptions

Five historical industrial activity areas are associated with M007, M-SMA-5: Sites 42-001(a), 42-001(b), 42-001(c), 42-002(a), and 42-002(b).

SWMU 42-001(a) along with SWMUs 42-001(b and c), 42-002(b), and 42-003 and AOC 42-002(a) comprises Consolidated Unit 42-001(a)-99. SWMU 42-001(a) is the historical location of former building 42-0001 that housed the former TA-42 radioactive waste incinerator. Former building 42-0001 was a 2000-ft^2 steel-frame structure covered with corrugated metal. The building contained the incinerator, a cyclone dust collector, a spray cooler, a Venturi scrubber, a filter bank, and an ash separator. Combustion products passed through an off-gas cleanup system before they were released through an exhaust stack. The off-gas system consisted of a Venturi scrubber, a filter bank, and an ash separator. Ash trapped in the off-gas system and incinerator was transported by underground drainlines to two holding tanks [SWMUs 42-001(b) and 42-001(c)] located immediately north of the incinerator. Building 42-0001 and its concrete foundation were removed in 1978.

Decision-level data for Consolidated Unit 42-001(a)-99 consist of results from samples collected in 1992 and 2009. The approved 2010 investigation report concluded the lateral and vertical extent of all detected chemicals and radionuclides are defined at Consolidated Unit 42-001(a)-99, except the vertical extent of tritium on the mesa-top portion of the Site is not defined at one location. An investigation report is in progress to address any remaining concerns in this area.

SWMU 42-001(b) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(a and c), 42-002(b), and 42-003 and AOC 42-002(a). SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-0002 and 42-0003, respectively) associated with the incinerator complex. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to Area G for storage. The tanks were excavated and disposed of at MDA G. The tank drainlines were filled with asphalt to contain radioactive contamination. It is not known if the drainlines were removed.

Decision-level data for Consolidated Unit 42-001(a)-99 consist of results from samples collected in 1992 and 2009. The approved 2010 investigation report concluded the lateral and vertical extent of all detected chemicals and radionuclides are defined at Consolidated Unit 42-001(a)-99, except the vertical extent of tritium on the mesa-top portion of the Site is not defined at one location. An investigation report is in progress to address any remaining concerns in this area.

SWMU 42-001(c) along with SWMUs 42-001(a and b), 42-002(b), and 42-003 and AOC 42-002(a) comprises Consolidated Unit 42-001(a)-99. SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-0002 and 42-0003, respectively) associated with the incinerator complex. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to Area G for storage. The tanks were excavated and disposed of at MDA G. The tank drainlines were filled with asphalt to contain radioactive contamination and removed.

Decision-level data for Consolidated Unit 42-001(a)-99 consist of results from samples collected in 1992 and 2009. The approved 2010 investigation report concluded the lateral and vertical extent of all detected chemicals and radionuclides are defined at Consolidated Unit 42-001(a)-99, except the vertical extent of tritium on the mesa-top portion of the Site is not defined at one location. An investigation report is in progress to address any remaining concerns in this area.

SWMU 42-002(b) is part of Consolidated Unit 42-001(a)-99, which also includes SWMUs 42-001(a,b,c) and 42-003 and AOC 42-002(a). SWMU 42-002(b) is the location of a historical outdoor decontamination area associated with the former TA-42 radioactive waste incinerator, which was constructed in 1951 and shut down in 1952. Objects too large to decontaminate inside building 42-1 (such as vehicles) were decontaminated at the end of the asphalt driveway located west and north of building 42-1. Wash water from decontamination activities flowed down the embankment on the northwest side of the parking lot. Potentially contaminated soil in that area was not addressed during the 1978 D&D activities.

Decision-level data for Consolidated Unit 42-001(a)-99 consist of results from samples collected in 1992 and 2009. The approved 2010 investigation report concluded the lateral and vertical extent of all detected chemicals and radionuclides are defined at Consolidated Unit 42-001(a)-99, except the vertical extent of tritium on the mesa-top portion of the Site is not defined at one location. An investigation report is in progress to address any remaining concerns in this area.

AOC 42-002(a) along with SWMUs 42-001(a, b, and c), 42-002(b), and 42-003 comprises Consolidated Unit 42-001(a)-99. AOC 42-002(a) is the historical location of an indoor storage (former building 42-0001) and decontamination area. Between 1956 and 1969, the main floor of former building 42-0001 was used to store and decontaminate equipment. Building 42-0001 and its concrete foundation were removed in 1978.

Decision-level data for Consolidated Unit 42-001(a)-99 consist of results from samples collected in 1992 and 2009. The approved 2010 investigation report concluded the lateral and vertical extent of all detected chemicals and radionuclides are defined at Consolidated Unit 42-001(a)-99, except the vertical extent of tritium on the mesa-top portion of the Site is not defined at one location. An investigation report is in progress to address any remaining concerns in this area.

The project map (Figure 102-1) 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.

102.2 Control Measures

Besides the outfall, the TA-55 facility south of the security fence does not contribute run-on to the Permitted Feature. Run-on from the NPDES outfall, the areas east of building 55-0066, and the access road that bisects the Permitted Feature is diverted to the channel just east of 42-002(b) and discharges away from the SMA boundary and sampler to the west. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 102-1).

Table 102-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00702040016	Established Vegetation		X	X		B
M00703060015	Straw Wattles	X			X	CB
M00704020012	Concrete/Asphalt Channel/Swale	X		X		CB
M00704060001	Rip Rap		X	X		CB
M00704060008	Rip Rap	X		X		CB
M00706010002	Rock Check Dam		X		X	CB
M00706010007	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

102.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

102.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-5 during the 2013 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 102-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30788	5-15-2013
Storm Rain Event	BMP-32995	7-11-2013
Storm Rain Event	BMP-33624	7-24-2013
Storm Rain Event	BMP-34231	8-7-2013
Storm Rain Event	BMP-35753	9-25-2013
Annual Erosion Evaluation	COMP-36727	12-3-2013

No maintenance activities were conducted at M-SMA-5 in 2013.

102.5 Compliance Status

The Sites associated with M-SMA-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 102-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 42-001(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 42-001(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 42-001(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 42-002(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 42-002(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

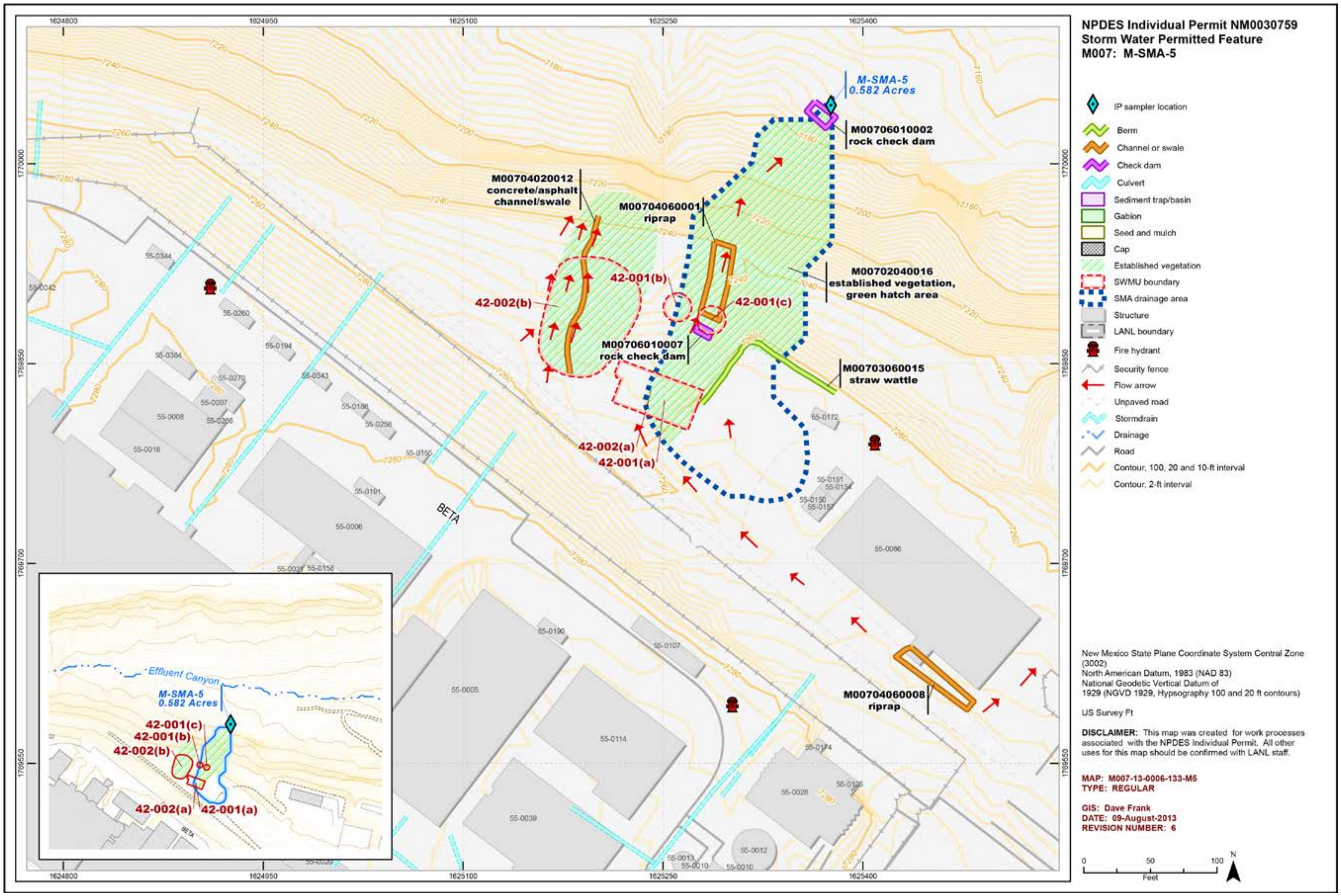


Figure 102-1 M-SMA-5 location map

103.0 M-SMA-6: AOC 35-016(h)

103.1 Site Descriptions

One historical industrial activity area is associated with M008, M-SMA-6: Site 35-016(h).

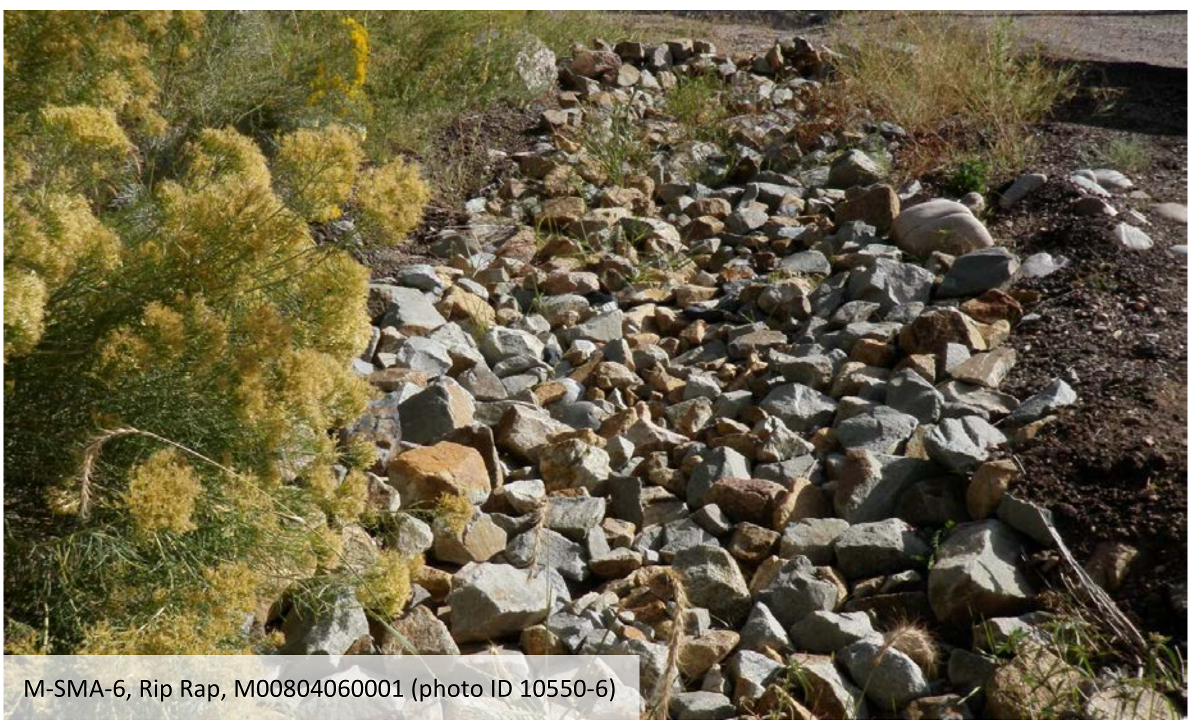
AOC 35-016(h) consists of three storm drains located north of building 35-213. The storm drains were installed in 1979 to handle storm water runoff from roof drains of building 35-213, the nearby parking lot, and discharge from a water deionizer in building 35-213. The drain from the water deionizer was rerouted to the RLW drain system in the mid-1990s and no longer discharges to the storm water system. The storm drain that handles the runoff from roof drains is located on the north side of building 35-213. The storm drain that handled discharges from the water deionizer is located on the northeast side of building 35-213. This storm drain currently only handles storm water runoff from the area around building 35-213. The third storm drain that handles storm water from the nearby parking lot is located northwest of building 35-213. All three storm drains discharge into Mortandad Canyon.

Reevaluation of nature and extent of contamination for AOC 35-016(h) will be completed in the supplemental investigation report for Middle Mortandad/Ten Site Canyons Aggregate Area, scheduled to be submitted to NMED in 2015. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 103-1) 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.

103.2 Control Measures

This SMA is influenced by paved areas and the associated engineered controls. Also, a new sediment basin controls paved run-on before it is discharged into the channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 103-1).



M-SMA-6, Rip Rap, M00804060001 (photo ID 10550-6)

Table 103-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00802040024	Established Vegetation		X	X		B
M00803100026	Gravel Bags					B
M00804060001	Rip Rap	X		X		CB
M00804060014	Rip Rap			X		CB
M00804060025	Rip Rap	X		X		B
M00805020016	Sediment Basin	X			X	CB
M00806010007	Rock Check Dam	X			X	CB
M00806010011	Rock Check Dam		X		X	CB
M00806010012	Rock Check Dam		X		X	CB
M00806010017	Rock Check Dam		X		X	B
M00806010020	Rock Check Dam	X			X	B
M00806010027	Rock Check Dam	X			X	B
M00806010028	Rock Check Dam	X			X	B
M00807020013	Gabion Blanket	X		X		CB
M00808030002	Concrete/Asphalt Cap	X		X		CB

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

103.3 Storm Water Monitoring

AOC 35-016(h) is monitored within M-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on October 12, 2012 (Figures 103-2 and 103-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 13 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 168 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 30 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 35-016(h):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil, sediment, and tuff BVs in shallow (i.e., less than 3 ft bgs) Consent Order and RFI samples. Copper was detected above BV in 6 of 21 shallow samples at a maximum concentration 2.3 times the soil BV.

- PCBs are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for PCBs because PCBs were not known to have been associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, both also alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample they are excluded from the definition of adjusted gross alpha radioactivity and would not be the source of the TAL exceedance.

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 103-2 and 103-3. 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 103-2 and 103-3.

Monitoring location M-SMA-6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2012 gross-alpha result is between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2012 is between these two values.

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

103.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-6 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 103-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30789	4-30-2013
Storm Rain Event	BMP-32996	7-15-2013
Storm Rain Event	BMP-34232	8-7-2013
Storm Rain Event	BMP-35754	9-25-2013
Annual Erosion Evaluation	COMP-36728	12-3-2013

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

Table 103-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33782	Install gravel bags on north slope of building 35-0213 to reduce rill formation. Comments: installed gravel bags (40) on north slope of building 35-0213	7-19-2013	4 day(s)	Maintenance conducted in timely manner.
BMP-37049	Rock Check Dam [M00806010011]. Reposition angular rock (add rock as necessary) to repair snow plow damage. Extend west end of check dam approx. 20 ft. Rock Check Dam [M00806010012] Add angular rock to extend both ends. Rip Rap [M00804060025] Add angular rock to rip rap area. Rock Check Dam [M00806010018] Install 1 rock check dam directly upgradient of existing rock check dam -0018. Rock check dam -0018 will be retired when work is completed. Rock Check Dam [M00806010019]. Install 1 rock check dam directly upgradient of existing rock check dam -0019. Rock check dam -0019 will be retired when work is completed. Rock Check Dam [M00806010007]. Clean out sediment from behind check dam. Place to the east and stabilize with seed and mulch. Add angular rock to extend both ends and increase height. Rip Rap [M00804060001]. Add angular rock to area of rip rap.	12-17-2013	83 day(s)	Maintenance conducted as soon as practicable.

103.5 Compliance Status

The Site associated with M-SMA-6 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 103-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-016(h)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-15-2012

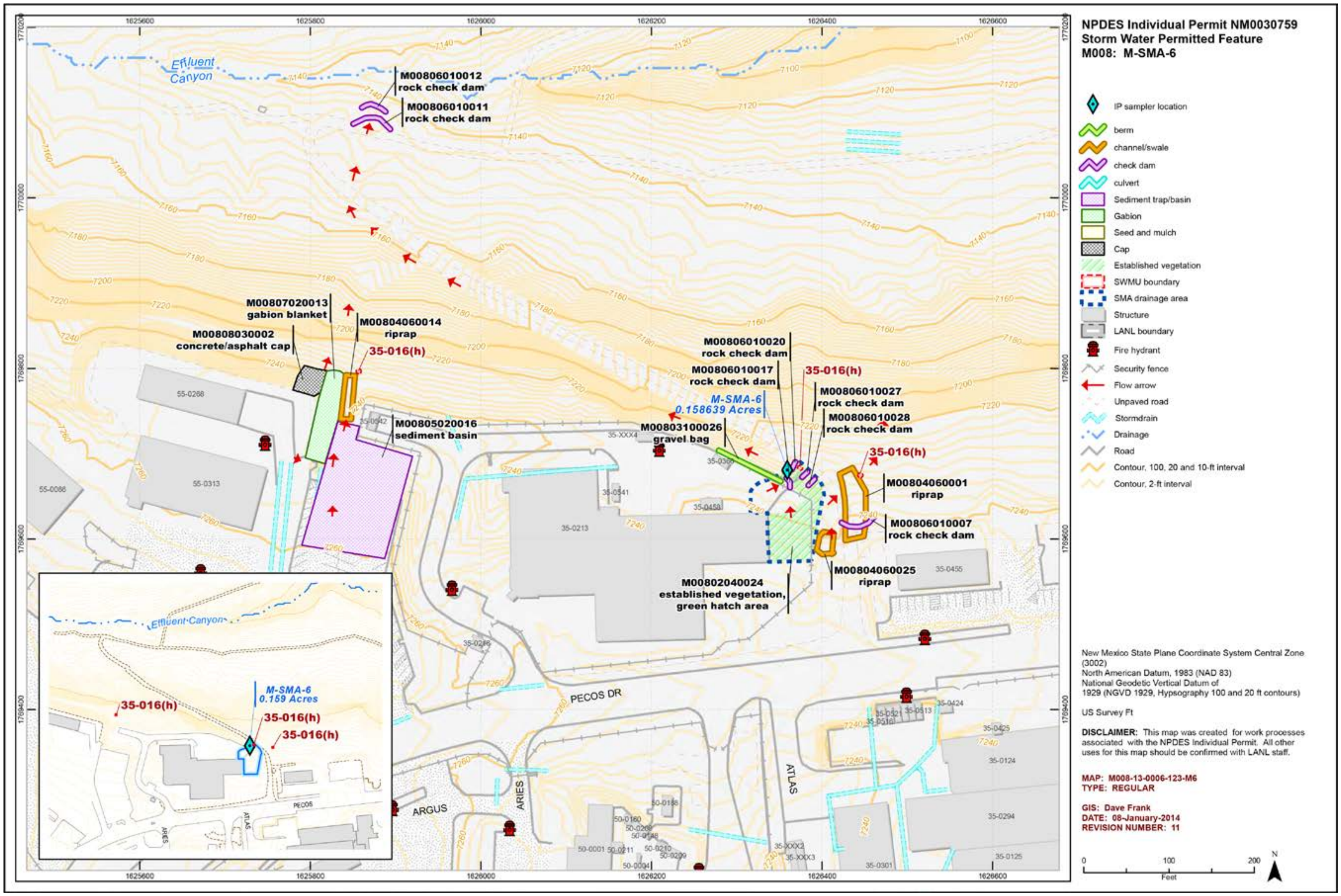
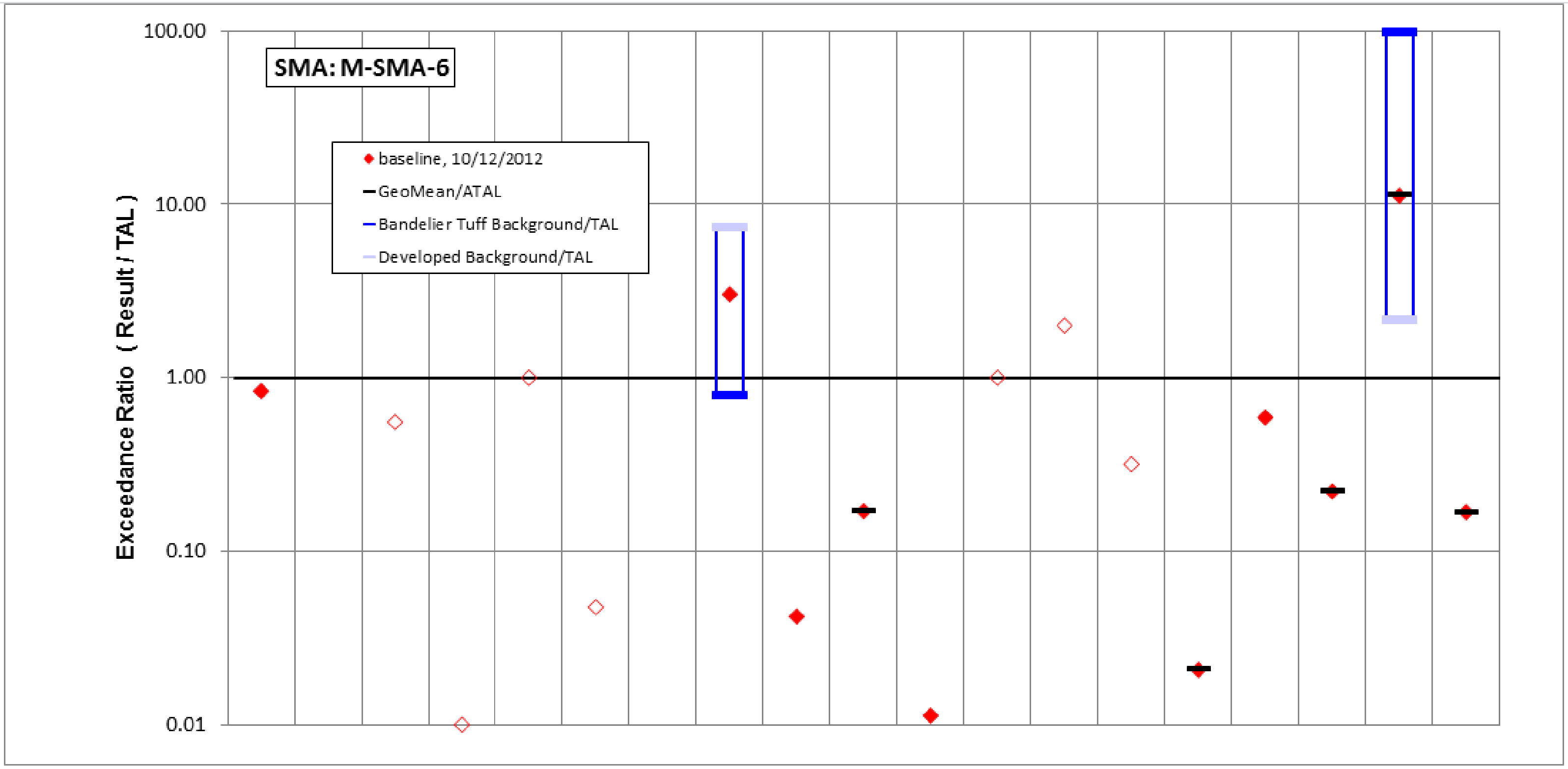


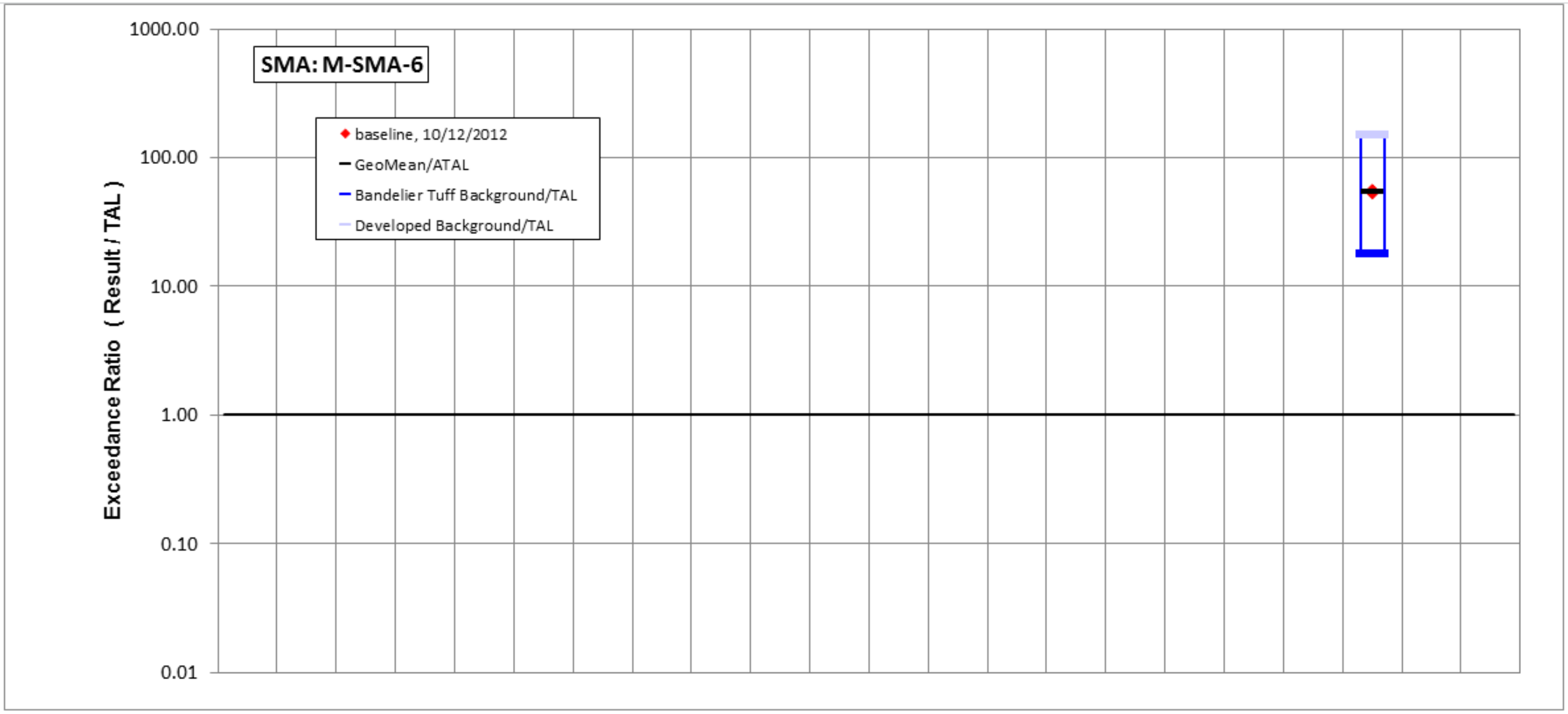
Figure 103-1 M-SMA-6 location map



	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
10/12/2012 result	628	*3*	*5*	*50*	*1*	*10*	2.91	**13**	0.715	0.131	1.92	*5*	***1***	*2*	2.07	24.8	0.0022	**168**	5.04
result / TAL	0.84	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0029	**3**	0.042	0.17	0.011	*1*	***2***	*0.32*	0.021	0.59	0.22	**11**	0.17

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

Figure 103-2 Inorganic analytical results summary plot for M-SMA-6



	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
10/12/2012 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.035**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**55**	-	-

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

Figure 103-3 Organic analytical results summary plot for M-SMA-6

104.0 M-SMA-7: AOC 35-016(g)

104.1 Site Descriptions

One historical industrial activity area is associated with M009, M-SMA-7: Site 35-016(g).

AOC 35-016(g) consists of a former NPDES-permitted discharge from a CMP culvert, which collected discharge from a reverse osmosis plant and cooling tower blowdown as well as roof and parking lot drainage. Non–storm water discharges from the outfall ceased in 1997 when it was removed from the NPDES permit. The CMP still collects the roof and parking lot storm water drainage. Discharge from the CMP flows in a steep channel incised into bedrock until it reaches an access road to the canyon bottom, where it combines with water from a portion of M-SMA-6 and continues along the access road ditch, ultimately combining with flow from the TA-55 retention basin.

The project map (Figure 104-1) 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.

104.2 Control Measures

There is minimal run-on from the paved areas above this Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 104-1).

Table 104-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00902040009	Established Vegetation		X	X		B
M00903060007	Straw Wattles	X			X	B
M00903060008	Straw Wattles	X			X	B
M00906010003	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

104.3 Storm Water Monitoring

AOC 35-016(g) is monitored within M-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2012 (Figure 104-2). Analytical results from this sample yielded two TAL exceedances:

- Zinc concentration of 60.6 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activity of 46.3 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 35-016(g):

- Zinc is not known to have been associated with industrial materials historically managed at this Site but may be present from corrosion of the galvanized CMP. Zinc was detected above sediment and tuff BVs in shallow (i.e., less than 3 ft bgs) Consent Order and RFI samples. Zinc was detected above BV in 5 of 20 shallow samples at a maximum concentration 5.4 times the sediment BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity because alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site.

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 104-2. 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 104-2.

Monitoring location M-SMA-7 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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.

- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc result from the 2012 sample is less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2012 gross-alpha result is between these two values.

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

104.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-7 during the 2013 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 104-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30790	4-30-2013
Storm Rain Event	BMP-32997	7-11-2013
Storm Rain Event	BMP-33626	7-23-2013
Storm Rain Event	BMP-34233	8-7-2013
Storm Rain Event	BMP-35755	9-25-2013
Annual Erosion Evaluation	COMP-36729	12-3-2013

No maintenance activities were conducted at M-SMA-7 in 2013.

104.5 Compliance Status

The Site associated with M-SMA-7 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 104-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-016(g)	Corrective Action Initiated	Corrective Action Initiated	Initiated 08-22-2012

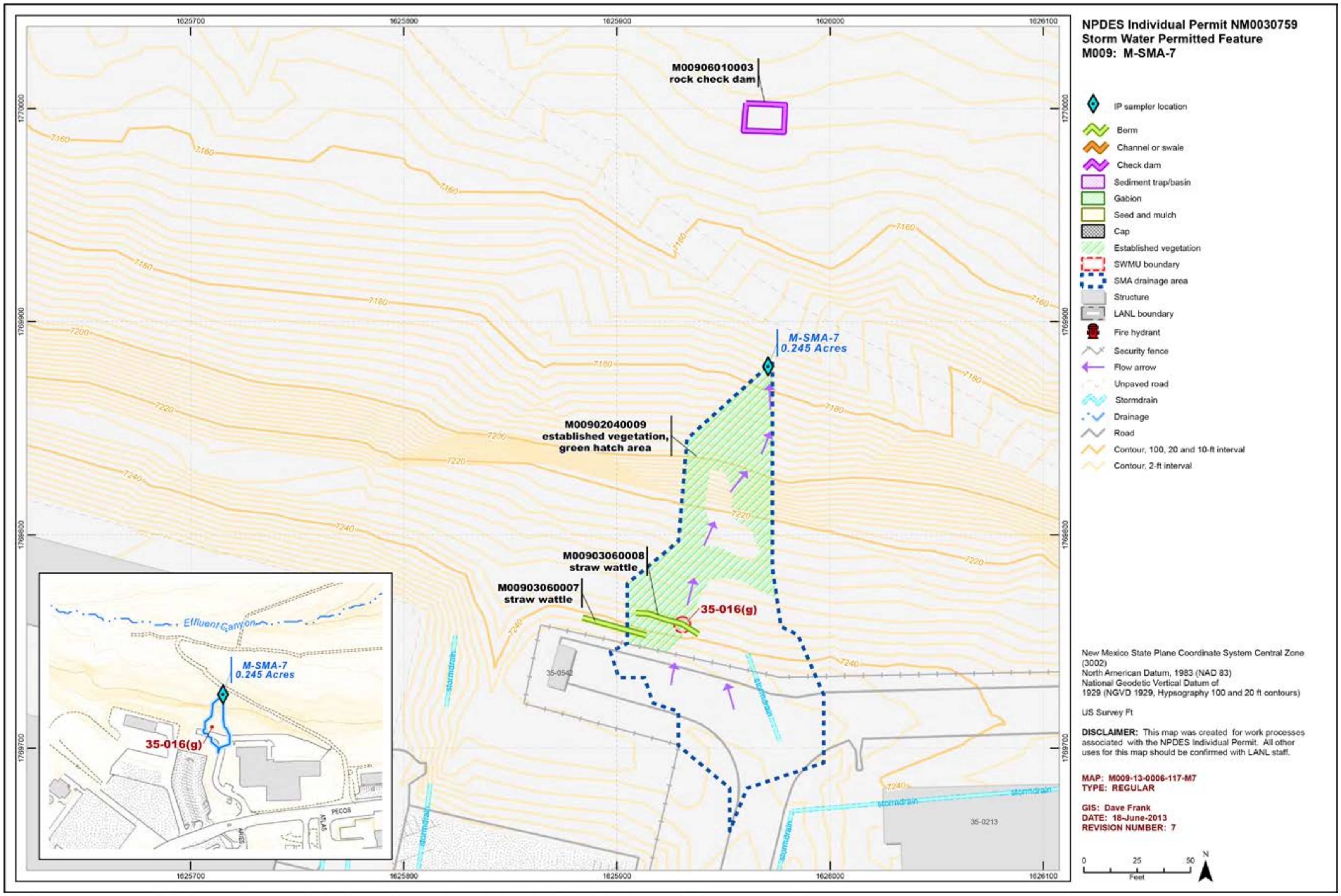
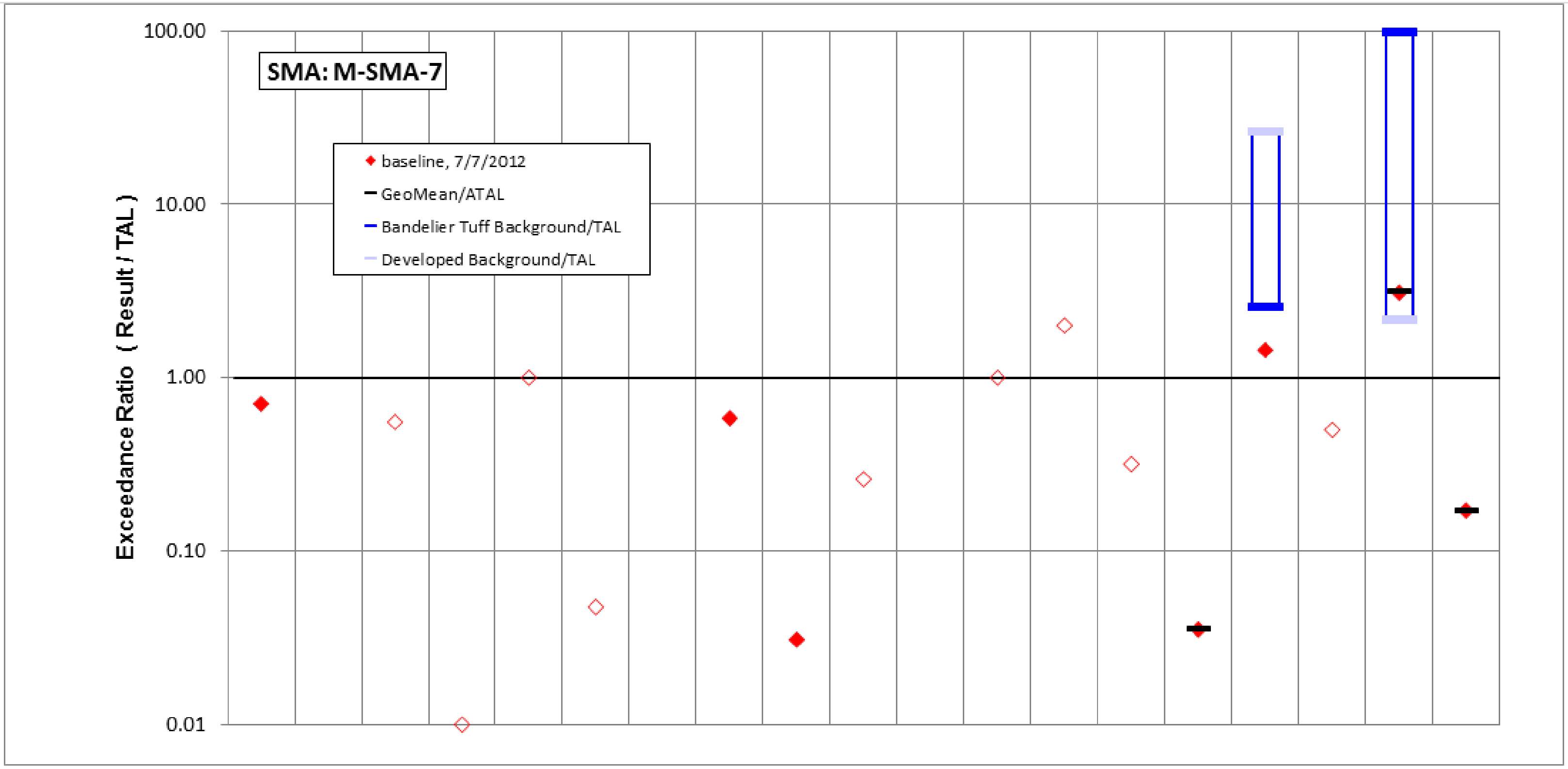


Figure 104-1 M-SMA-7 location map



	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
7/7/2012 result	530	4.84	*5*	*50*	*1*	*10*	2.15	2.51	0.525	*0.2*	1.07	*5*	***1***	*2*	3.53	**60.6**	*0.005*	**46.3**	5.14
result / TAL	0.71	0.0076	*0.56*	*0.01*	*1*	*0.048*	0.0022	0.58	0.031	*0.26*	0.0063	*1*	***2***	*0.32*	0.035	**1.4**	*0.5*	**3.1**	0.17

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

Figure 104-2 Inorganic analytical results summary plot for M-SMA-7

105.0 M-SMA-7.9: SWMU 50-006(d)

105.1 Site Descriptions

One historical industrial activity area is associated with M010, M-SMA-7.9: Site 50-006(d).

SWMU 50-006(d) consists of a drainline (structure 50-64) and associated NPDES-permitted Outfall 051 in Mortandad Canyon for treated wastewater from the TA-50 RLWTF. Structure 50-64 is a 6-in.-diameter iron discharge pipe rerouted in 1983 to accommodate construction of the TA 35 target fabrication facility (building 35-213). The subsurface drainline runs from the southern end of TA-50 RLWTF to the north under Pecos Drive to the outfall in upper Mortandad Canyon. In 1985, EPA Region 6 issued an administrative order to DOE requiring modification of the outfall to mitigate ongoing stream bank erosion caused by the discharge pipe ending 25 ft short of the stream channel. DOE extended the pipe into the stream channel, and subsequently EPA Region 6 closed the order in 1986. No discharges to Outfall 051 have occurred since November 2010; the effluent is currently evaporated using a mechanical evaporator. SWMU 50-006(d) is permitted under the Laboratory's NPDES industrial and sanitary permit, NM0028355.

The project map (Figure 105-1) 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.

105.2 Control Measures

The unpaved road running north to south, east of the SMA, diverts run-on to the west of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 105-1).

Table 105-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01002040013	Established Vegetation		X	X		B
M01003010004	Earthen Berm	X			X	CB
M01003010010	Earthen Berm	X			X	CB
M01003010011	Earthen Berm	X			X	CB
M01003010012	Earthen Berm		X		X	B
M01003120005	Rock Berm	X			X	CB
M01003120006	Rock Berm	X			X	CB

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

105.3 Storm Water Monitoring

SWMU 50-006(d) is monitored within M-SMA-7.9. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 105-2 and 105-3). Analytical results from this sample yielded two TAL exceedances:

- Gross-alpha activity of 51.4 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 2 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 50-006(d):

- PCBs were associated with industrial materials historically managed at this Site but at very low levels. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in three to nine shallow (i.e., less than 3 ft bgs) Consent Order and RFI samples at maximum concentrations 0.11% and 2.39% of the residential SSLs in tuff and soil samples, respectively. PCBs have been detected in RLW effluent discharged at the outfall, and the NPDES Permit specifies a PCB limit for effluent discharged from the outfall.
- Americium and plutonium isotopes and possibly other alpha-emitting isotopes are known to have been associated with industrial materials historically managed at this Site. These isotopes are, however, excluded from regulation under the CWA and are regulated under the AEA. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity.

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 105-2 and 105-3. 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 105-2 and 105-3.

Monitoring location M-SMA-7.9 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. 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, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 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 2013 is less than both of these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

105.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-7.9 during the 2013 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 105-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30791	4-30-2013
Storm Rain Event	BMP-32998	7-11-2013
Storm Rain Event	BMP-33627	7-23-2013
Storm Rain Event	BMP-34234	8-7-2013
Storm Rain Event	BMP-35756	9-25-2013
Annual Erosion Evaluation	COMP-36730	11-19-2013
TAL Exceedance	COMP-36884	11-19-2013

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

Table 105-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34415	Repair berm by removing existing matting from damaged/degraded areas and both ends of berm. Add clean fill to damaged/degraded areas of berm, add clean fill to raise height of berm approx. 2 ft., and add clean fill to extend both ends of berm to marked stakes in field. Compact all fill. Contour a spillway in berm and line with filter fabric. Apply seed and matting over repaired areas and any other areas as necessary (M01003010010) Add rock to spillway. Repair berm by removing existing matting from damaged/degraded areas of berm. Add clean fill to damaged/degraded areas of berm and compact. Install seed and matting over repaired areas and any other areas as necessary. Apply seed and mulch to any disturbed areas (e.g. heavy equipment tracks). (M01003010011)	12-2-2013	132 day(s)	Maintenance conducted as soon as practicable.

105.5 Compliance Status

The Site associated with M-SMA-7.9 is a High Priority Site. The High Priority Site deadline for the certification of corrective action is now 1 yr from the date of an observed TAL exceedance, which for M-SMA-7.9 is October 22, 2014.

Table 105-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 50-006(d)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

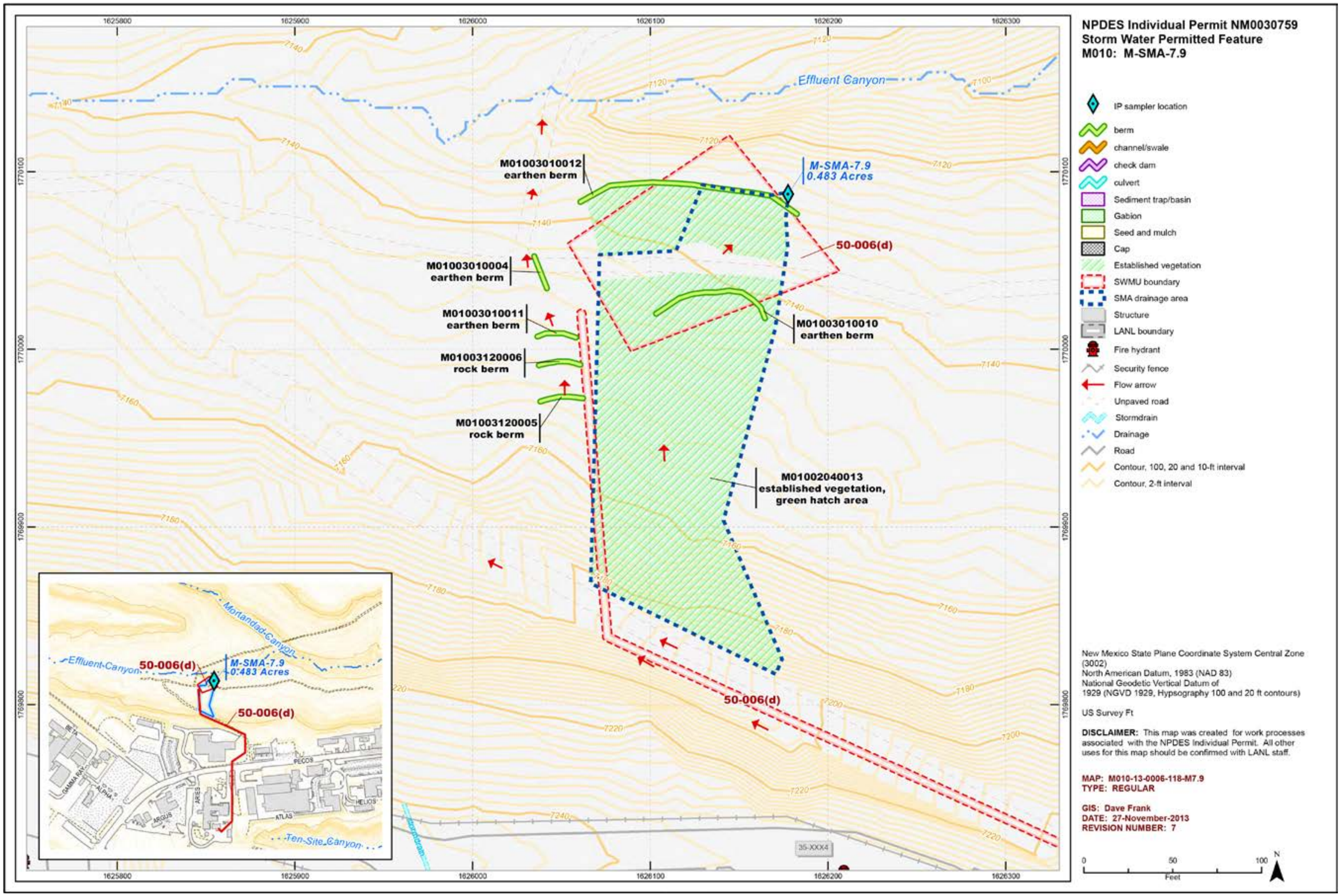
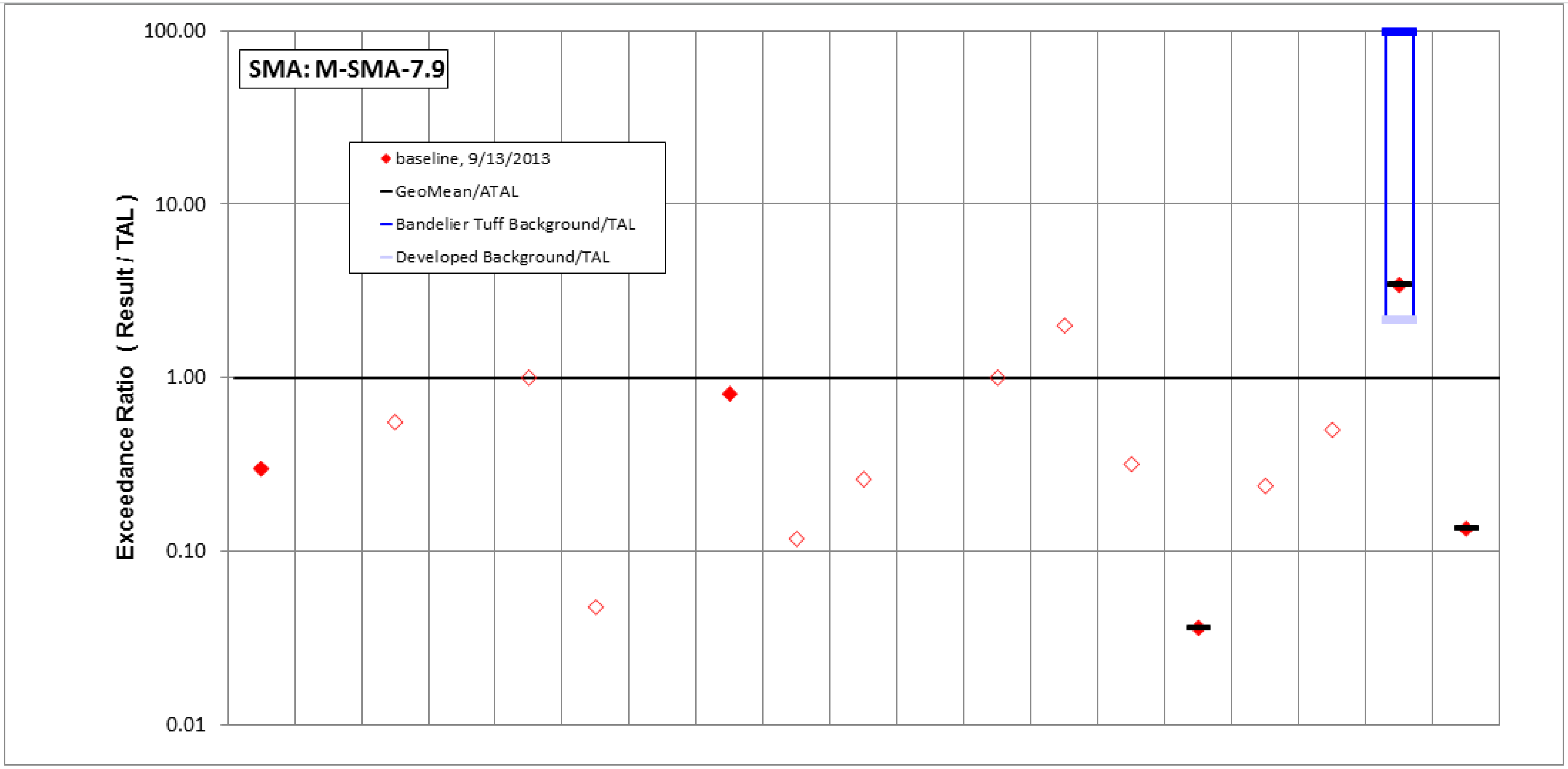


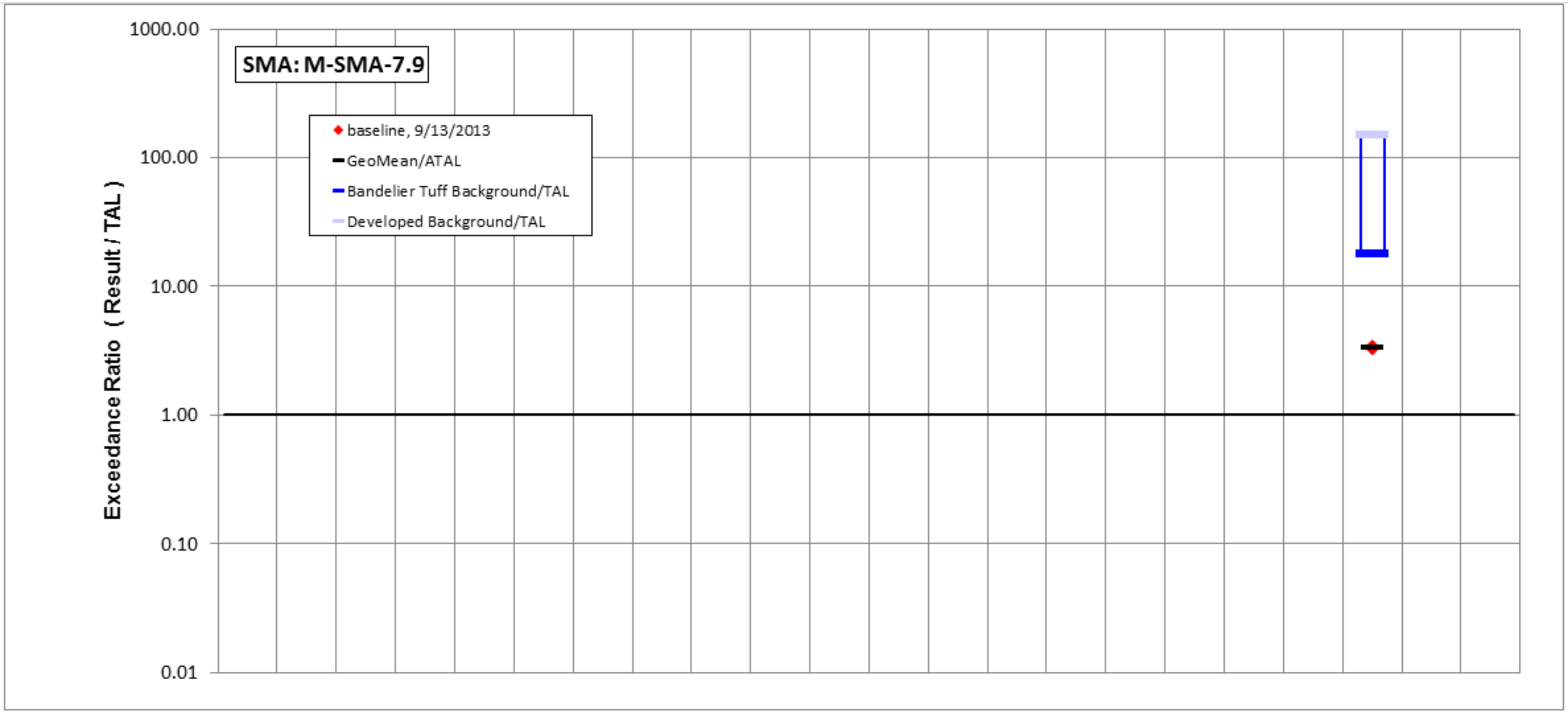
Figure 105-1 M-SMA-7.9 location map



	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
9/13/2013 result	224	*3*	*5*	18	*1*	*10*	1.52	3.47	*2*	*0.2*	1.28	*5*	***1***	*2*	3.62	*10*	*0.005*	**51.4**	4.04
result / TAL	0.3	*0.005*	*0.56*	0.0036	*1*	*0.048*	0.0015	0.81	*0.12*	*0.26*	0.0075	*1*	***2***	*0.32*	0.036	*0.24*	*0.5*	**3.4**	0.13

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

Figure 105-2 Inorganic analytical results summary plot for M-SMA-7.9



	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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.002**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3.4**	-	-

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

Figure 105-3 Organic analytical results summary plot for M-SMA-7.9

106.0 M-SMA-9.1: AOC 35-016(f)

106.1 Site Descriptions

One historical industrial activity area is associated with M011, M-SMA-9.1: Site 35-016(f).

AOC 35-016(f) is an active storm drain located north of the Chemical Laser Facility (building 35-85) on the west half of the TA-35 mesa. The outfall consists of an 18-in.-diameter CMP that discharges into a small channel cut into backfill material on the south slope of Mortandad Canyon. Documented releases, consisting of oil spills, reportedly occurred near the source areas for the storm drain. The volume of the spills is not documented.

Decision-level data for AOC 35-016(f) consist of results from sampling campaigns conducted in 1995 and 2004. The approved investigation report concluded the nature and extent of all detected chemicals and radionuclides are defined at AOC 35-016(f). Based on the human health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at AOC 35-016(f), and no potential ecological risk was found for any receptor. A COC without controls was requested from NMED in August 2011.

M-SMA-9.1, Rock Check Dam, M01106010005 (photo ID 7467-4)

The project map (Figure 106-1) 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.

106.2 Control Measures

The culvert/drop inlet and roof drain divert run-on from the buildings and paved areas above away from the Permitted Feature. The storm drain fed by the drop inlet west of building 36-0085 discharges outside the SMA boundary above and to the east of the outfall for AOC 35-016(f). The roof drain from building 35-0189 discharges outside or to the west of the SMA and does not impact the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 106-1).

Table 106-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01101020001	Seed and Gravel Mulch	X		X		CB
M01102040007	Established Vegetation		X	X		B
M01104040004	Culvert	X		X		CB
M01106010005	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

106.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-9.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

106.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-9.1 during the 2013 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 106-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30792	4-30-2013
Storm Rain Event	BMP-32999	7-11-2013
Storm Rain Event	BMP-33628	7-23-2013
Storm Rain Event	BMP-34235	8-7-2013
Storm Rain Event	BMP-35757	9-25-2013
Annual Erosion Evaluation	COMP-36731	12-3-2013

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

Table 106-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33775	Remove trash/debris from around culvert -0004 and seed/mulch -0001 as necessary.	7-19-2013	8 (day)s	Maintenance conducted in timely manner.
BMP-36988	Remove floatable garbage from the SMA.	11-8-2013	44 day(s)	Maintenance conducted as soon as practicable.

106.5 Compliance Status

The Site associated with M-SMA-9.1 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 106-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-016(f)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

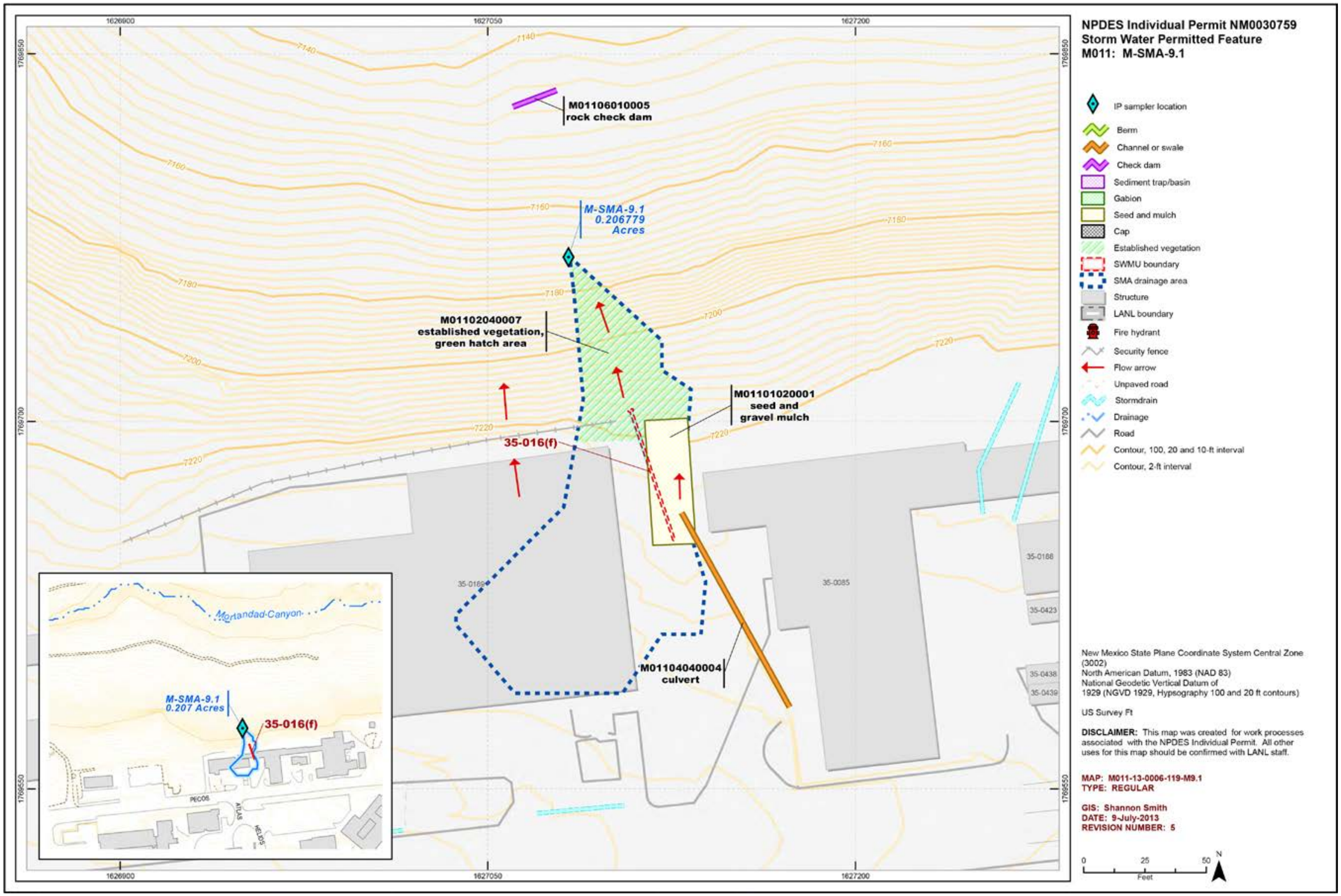


Figure 106-1 M-SMA-9.1 location map

107.0 M-SMA-10: SWMUs 35-008 and 35-014(e)

107.1 Site Descriptions

Two historical industrial activity areas are associated with M012, M-SMA-10: Sites 35-008 and 35-014(e).

SWMU 35-008 is the location of an inactive surface disposal area located north of building 35-85 on the edge of Mortandad Canyon. Debris at the Site consists of construction debris, including scrap metal and pipe, paint cans, a 55-gal. drum, and miscellaneous building materials refuse such as a large concrete slab, conduits, asphalt, pipe, and reinforcing rods. During a site inspection in 1991, only a small amount of debris, including tubing, scrap metal, and soda cans, was observed at the Site. The surface disposal area has likely been in existence since 1977 when the nearby Chemical Laser Facility (building 35-85) was constructed. Debris associated with SWMU 35-008 extends from the canyon rim to the canyon floor. Some of the dielectric oil associated with SWMU 35-014(e) flowed northward to the mesa edge and partially down the mesa slope over portions of the SWMU 35-008 disposal area.

SWMU 35-008 along with SWMU 35-014(e) comprise Consolidated Unit 35-008-00; both Sites were investigated together during the 1994, 1995, and 1997 RFIs and 2004 investigation. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. A request for a COC without controls for Site 35-008 was submitted to NMED in August 2011.

SWMU 35-014(e) is an area of oil-stained soil on the northern edge of Ten Site Mesa directly north of building 35-85. The 1990 SWMU report described SWMU 35-014(e) as three dielectric oil spill areas associated with building 35-85; however, the 1992 RFI work plan described each spill area as a separate SWMU. The stained soil associated with SWMU 35-014(e) may have been a result of a non-PCB (<50 mg/kg) dielectric oil spill that occurred east of building 35-188 when a forklift punctured an aboveground oil storage tank. The oil tank was removed before 1992. The non-PCB dielectric oil was used in laser experiment conducted in building 35-85. The volume of oil released is not known. However, it was reported that oil from the release flowed northward to the mesa edge and partially down the mesa slope over portions of the SWMU 35-008 disposal area. A 1984 photograph shows that the spill did flow down the side of the mesa. Reports also suggest that oil-stained soil may have been pushed over the mesa during the cleanup of the spill (the spill cleanup is not documented). After the oil spill, an extension to building 35-85 was constructed between building 35-188 and the edge of the mesa to house laser experiments. The building extension covers a portion of the area of the reported oil spill. The construction of this extension may have included site leveling, soil stabilization, and extension and stabilization of the mesa edge by backfilling with soil and riprap materials. During a Site visit in 1997, stained soil was visible on the slope near the edge of the mesa as a dark stain that covered an area measuring approximately 15 × 10 ft. No stained soils or odors were apparent on the mesa top north of building 35-85.

SWMU 35-008 along with SWMU 35-014(e) comprise Consolidated Unit 35-008-00; both sites were investigated together during the 1994, 1995, and 1997 RFIs and 2004 investigation. All detected inorganic and organic chemical concentrations and radionuclide activities from the 2004 samples were below residential SSLs and SALs. A request for a COC without controls for Site 35-014(e) was submitted to NMED in August 2011.

The project map (Figure 107-1) 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.

107.2 Control Measures

The primary source of run-on to the Permitted Feature comes from two culverts that drain from the paved areas and the roof of building 35-0085. Check dams and riprap in two drainage channels manage the associated discharge. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 107-1).

Table 107-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01202040012	Established Vegetation		X	X		B
M01204060004	Rip Rap	X		X		CB
M01204060007	Rip Rap		X	X		CB
M01204060008	Rip Rap		X	X		CB
M01206010001	Rock Check Dam		X		X	CB
M01206010005	Rock Check Dam		X		X	CB
M01206010006	Rock Check Dam		X		X	CB
M01206010009	Rock Check Dam		X		X	CB
M01206010010	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

107.3 Storm Water Monitoring

SWMUs 35-008 and 35-014(e) are monitored within M-SMA-10. Following the installation of baseline control measures, a baseline storm water sample was collected on June 30, 2013 (Figure 107-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 32.2 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 35-008:

- Alpha-emitting radionuclides are not known to be associated with industrial materials managed at this Site. Shallow samples collected during the 1994, 1995, and 1997 RFIs and 2004 investigation at SWMUs 35-008 and 35-014(e) were not analyzed for gross-alpha radioactivity but were analyzed for amercium-241, isotopic uranium, and isotopic plutonium which are alpha emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. The SMA receives runoff from developed and undeveloped areas. The gross-alpha radioactivity exceedance is below both the Bandelier Tuff BV and the developed site BV.

SWMU 35-014(e):

- Alpha-emitting radionuclides are not known to be associated with industrial materials managed at this Site. Shallow samples collected during the 1994, 1995, and 1997 RFIs and 2004 investigation at SWMUs 35-008 and 35-014(e) were not analyzed for gross-alpha radioactivity but were analyzed for amercium-241, isotopic uranium, and isotopic plutonium, which are alpha emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance. The SMA receives runoff from developed and undeveloped areas. The gross-alpha radioactivity exceedance is below both the Bandelier Tuff BV and the developed site BV.

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 107-2. 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 107-2.

Monitoring location M-SMA-10 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. 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, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

107.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-10 during the 2013 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 107-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30779	4-30-2013
Storm Rain Event	BMP-32988	7-11-2013
Storm Rain Event	BMP-33617	7-23-2013
Storm Rain Event	BMP-34224	8-7-2013
Storm Rain Event	BMP-35746	9-25-2013
Annual Erosion Evaluation	COMP-36718	12-3-2013
TAL Exceedance	COMP-35295	9-18-2013

No maintenance activities were conducted at M-SMA-10 in 2013.

107.5 Compliance Status

The Sites associated with M-SMA-10 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 107-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-008	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-13-13
SWMU 35-014(e)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-13-13

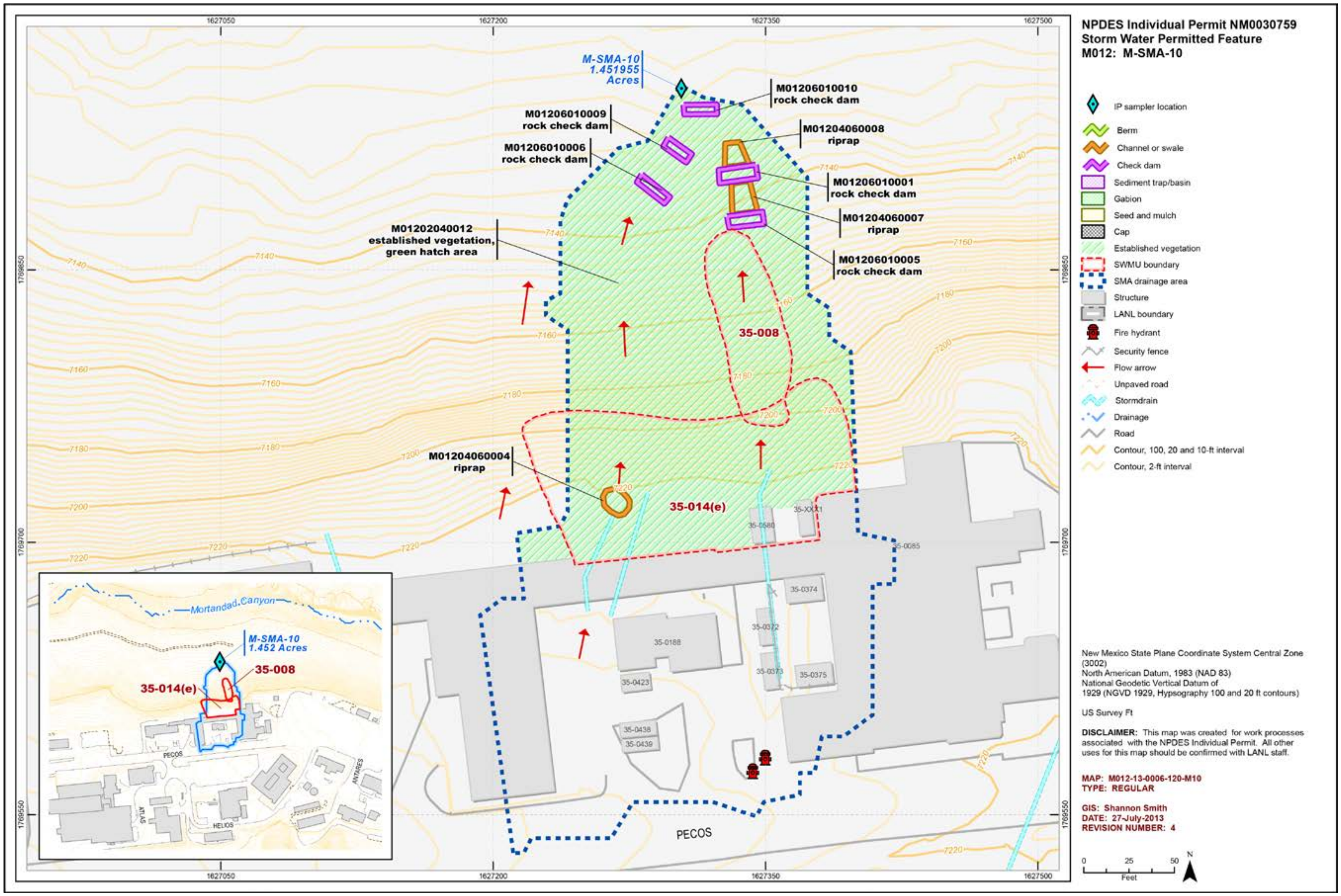
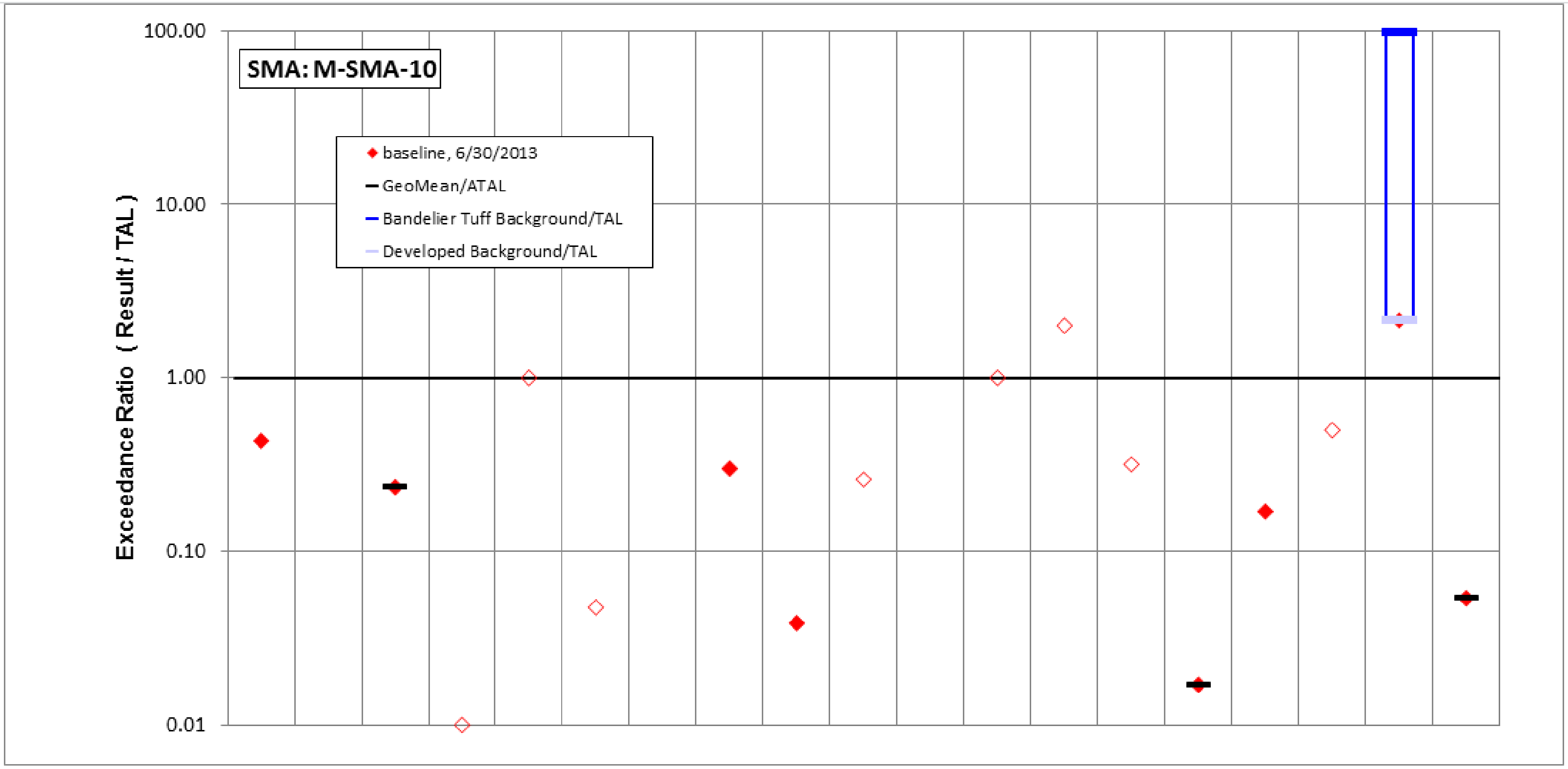


Figure 107-1 M-SMA-10 location map



	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
6/30/2013 result	325	*3*	2.11	*50*	*1*	*10*	4.56	1.29	0.657	*0.2*	1.62	*5*	***1***	*2*	1.7	7.13	*0.005*	**32.2**	1.61
result / TAL	0.43	*0.005*	0.23	*0.01*	*1*	*0.048*	0.0046	0.3	0.039	*0.26*	0.0095	*1*	***2***	*0.32*	0.017	0.17	*0.5*	**2.1**	0.054

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

Figure 107-2 Inorganic analytical results summary plot for M-SMA-10

108.0 M-SMA-10.01: AOC 35-016(e)

108.1 Site Descriptions

One historical industrial activity area is associated with M012A, M-SMA-10.01: Site 35-016(e).

AOC 35-016(e) is a former NPDES-permitted outfall established in 1977 to discharge only noncontact cooling water from the Chemical Laser Facility (building 35-85). The outfall consists of two adjacent 2-in.-diameter steel pipes insulated with fiberglass and wrapped with protective aluminum coating that originate from cooling towers on the roof of building 35-85. The outfall is located north of building 35-85 on the rim of Mortandad Canyon. The volume of water released is not documented, but significant erosion was evident below the outfall. The outfall was deleted from the NPDES permit in April 1987 and decommissioned in 1992.

The AOC 35-016(e) outfall is collocated with SWMU 35-008, a former canyon-side disposal area north of building 35-06 and SWMU 35-014(e1), a former dielectric oil spill north of building 35-85. Consent Order samples collected to characterize SWMUs 35-008 and 35-014(e1) were also used to characterize AOC 35-016(e).

The project map (Figure 108-1) 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.

108.2 Control Measures

M-SMA-10.01, Rock Check Dam, M012A06010003 (photo ID 7464-3)

The primary source of run-on to the Permitted Feature comes from sheet flow that drains from the paved areas and the roof of building 35-0085. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 108-1).

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 108-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M012A02040008	Established Vegetation		X	X		B
M012A03010006	Earthen Berm		X		X	EC
M012A03010007	Earthen Berm		X		X	EC
M012A06010003	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

108.3 Storm Water Monitoring

SWMU 35-016(e) is monitored within M-SMA-10.01. Following the installation of baseline control measures, a baseline storm water sample was collected on August 27, 2011, and September 15, 2011 (Figure 108-2). Analytical results from this sample yielded one TAL exceedances:

- Copper concentration of 6.5 µg/L and 16 µg/L (MTAL is 4.3 µg/L).

Following the installation of enhanced control measures at M-SMA-10.01, a corrective action storm water sample was collected on October 12, 2012 (Figure 108-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedances:

- Gross-alpha activity of 19.6 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in copper detected in storm water samples collected at M-SMA-10.01 to levels below TAL and a slight increase in the gross-alpha activity.

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 35-016(e):

- Copper is not known to be associated with industrial materials historically managed at the AOC. Copper was detected above tuff and sediment BVs in shallow (i.e., less than 3 ft bgs) Consent Order and RFI soil, sediment, and tuff samples. Copper was detected above BV in 2 of 36 shallow samples with a maximum concentration 1.5 times the tuff BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the AOC. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and isotopic uranium and plutonium, which are alpha emitters. These isotopes are, however, excluded from regulation under the CWA and are regulated under the AEA.

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 108-2. 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 108-2.

Monitoring location M-SMA-10.01 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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.

- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The gross-alpha result from the 2012 corrective action sample is less than both of these values, and is only slightly above the TAL level.

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

108.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-10.01 during the 2013 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 108-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30780	4-30-2013
Storm Rain Event	BMP-32992	7-11-2013
Storm Rain Event	BMP-33621	7-23-2013
Storm Rain Event	BMP-34228	8-7-2013
Storm Rain Event	BMP-35750	9-25-2013
Annual Erosion Evaluation	COMP-36719	12-3-2013

No maintenance activities were conducted at M-SMA-10.01 in 2013.

108.5 Compliance Status

The Site associated with M-SMA-10.01 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 108-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-016(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012

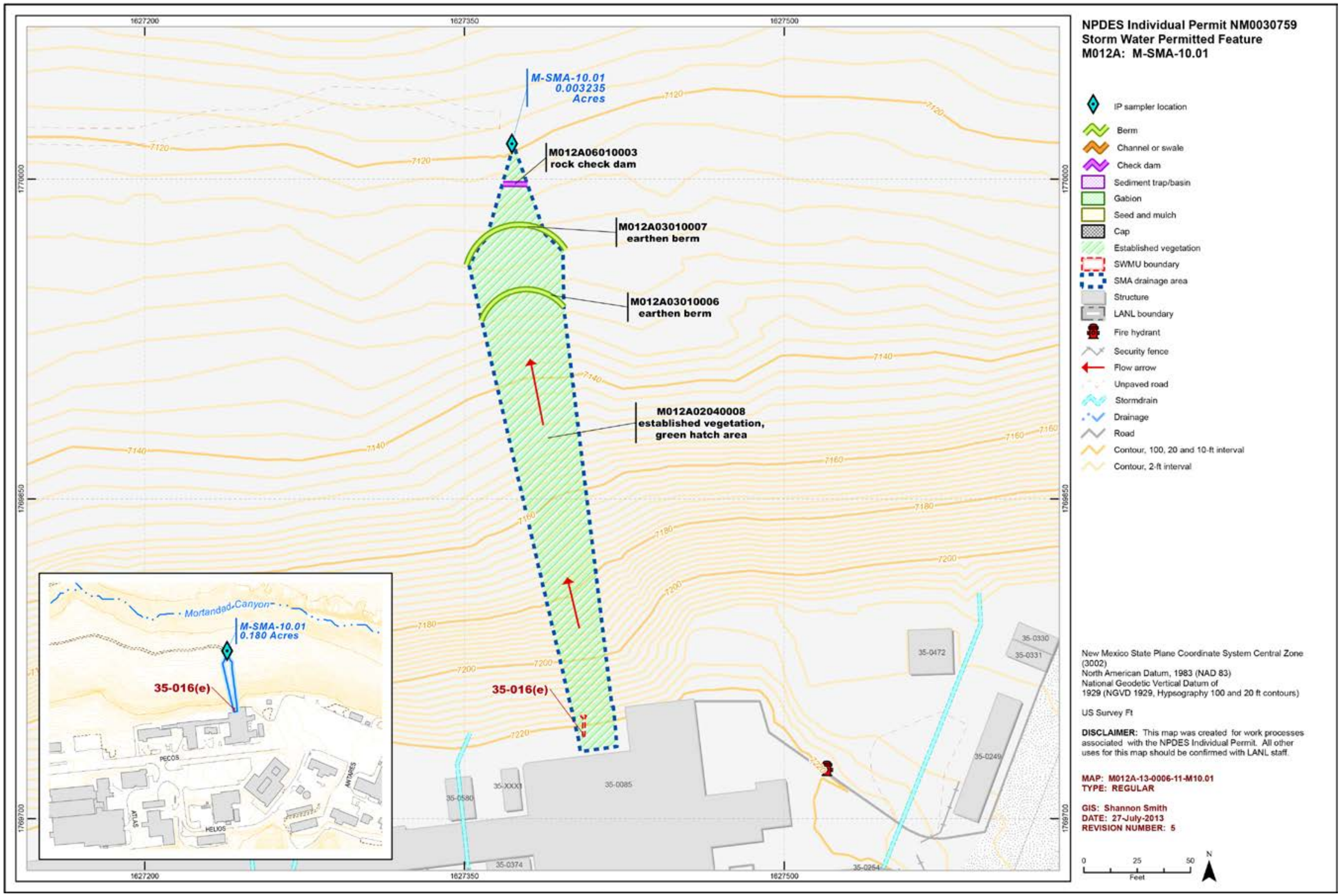
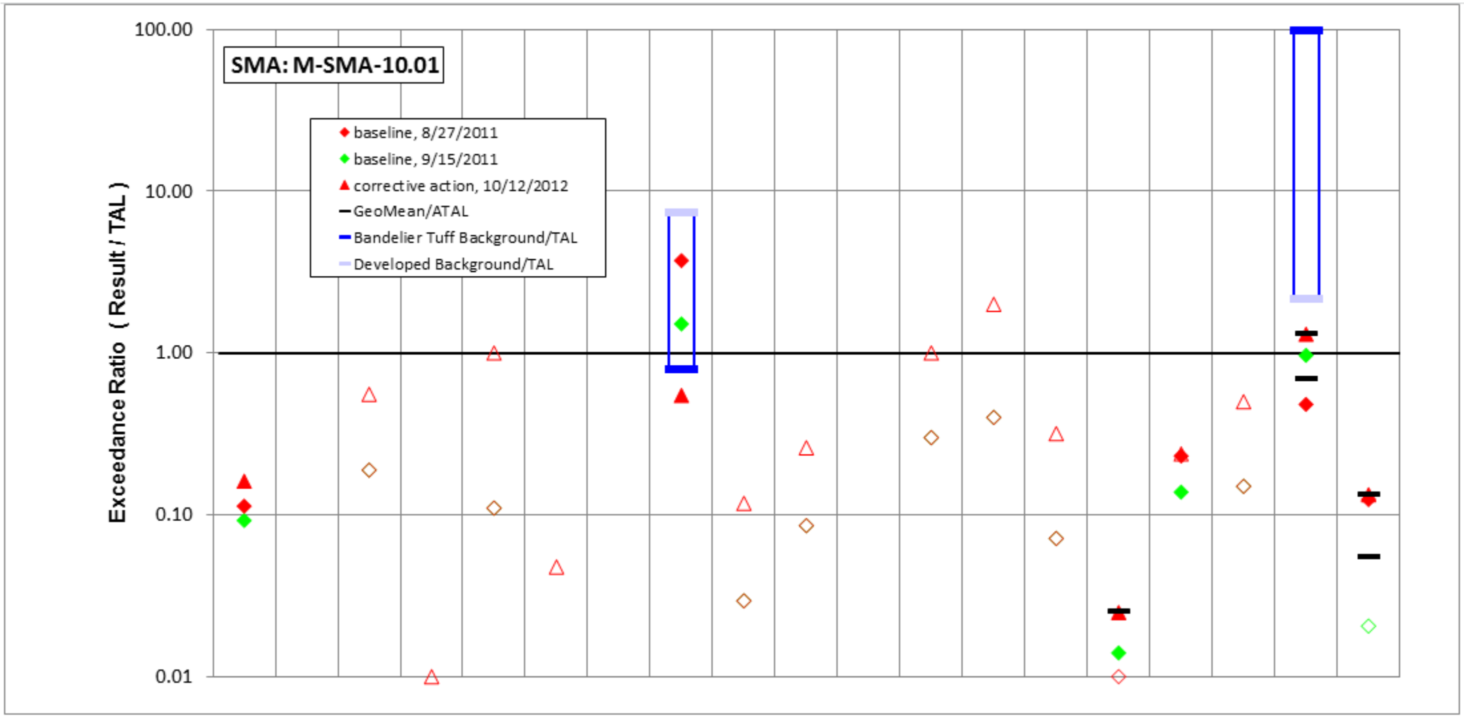


Figure 108-1 M-SMA-10.01 location map



	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
10/12/2012 result	121	*3*	*5*	*50*	*1*	*10*	2.48	2.35	*2*	*0.2*	1.69	*5*	**1**	*2*	2.49	*10*	*0.005*	**19.6**	3.99
result / TAL	0.16	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0025	0.55	*0.12*	*0.26*	0.0099	*1*	**2**	*0.32*	0.025	*0.24*	*0.5*	**1.3**	0.13
9/15/2011 result	69.2	*1*	*1.7*	*15*	*0.11*	*2*	1.9	**6.5**	*0.5*	*0.066*	*0.73*	*1.5*	*0.2*	*0.45*	1.4	5.8	*0.002*	14.5	*0.616*
result / TAL	0.092	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0019	**1.5**	*0.029*	*0.086*	*0.004*	*0.3*	*0.4*	*0.071*	0.014	0.14	*0.15*	0.97	*0.021*
8/27/2011 result	84.8	*1*	*1.7*	*15*	*0.11*	*2*	1.4	**16**	*0.5*	*0.066*	0.73	*1.5*	*0.2*	*0.45*	*1*	9.7	*0.002*	7.22	3.73
result / TAL	0.11	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0014	**3.7**	*0.029*	*0.086*	0.0043	*0.3*	*0.4*	*0.071*	*0.01*	0.23	*0.15*	0.48	0.12

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

Figure 108-2 Inorganic analytical results summary plot for M-SMA-10.01

109.0 M-SMA-10.3: SWMU 35-016(i) and AOC 35-014(e2)

109.1 Site Descriptions

Two historical industrial activity areas are associated with M013, M-SMA-10.3: Sites 35-016(i) and 35-014(e2) and.

SWMU 35-016(i) is a storm water outfall that originates from storm water drains south of building 35-85 along Pecos Drive. This outfall consists of an 18-in. diameter CMP that discharges to Mortandad Canyon and was installed around 1977 when building 35-85 was constructed. The area below the outfall also receives surface runoff from AOC 35-014(e2) and may have provided a pathway for oil spills associated with the former waste-oil impoundment. SWMU 35-016(i) received a COC with controls for storm water monitoring under the Consent Order from NMED in September 2013.

AOC 35-014(e2) is the Site of a former oil spill at TA-35 that originated from overflows of a gunite-lined, surface waste-oil impoundment used to store waste dielectric oil in the early 1980s. When the impoundment operated, the oil was periodically pumped out of the impoundment and recycled. The impoundment was drained in 1988 and decommissioned in 1989. Documented releases from the impoundment consisted of oil spills. Soil samples from oil-stained areas showed detectable PCB concentrations. Consent Order Phase I investigation sampling is complete. AOC 35-014(e2) received a COC with controls for storm water monitoring under the Consent Order from NMED in September 2013.

The project map (Figure 109-1) 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.

109.2 Control Measures

Most of the potential run-on to this Permitted Feature is from a culvert outlet discharging run-on from the parking lot drainage for the impervious area surrounding building 35-0127. Additional run-on originates from the parking lot just east of the SMA. Significant erosion and hillside instability from culvert discharge was observed during the site visit. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 109-1).

Table 109-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01302040014	Established Vegetation		X	X		B
M01303010011	Earthen Berm	X			X	CB
M01303010012	Earthen Berm		X		X	CB
M01303100013	Gravel Bags	X			X	CB
M01306010015	Rock Check Dam		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

109.3 Storm Water Monitoring

SWMU 35-016(i) and AOC 35-014(e2) are monitored within M-SMA-10.3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 30, 2011, and August 19, 2011 (Figures 109-2 and 109-3). On October 30, 2013, NMED issued a COC for SWMU 35-016(i) and AOC 35-014(e2). These Sites are now certified as corrective action complete, and monitoring of storm water discharges has ceased at M-SMA-10.3. No further sampling is required for M-SMA-10.3 for the remainder of the IP.

109.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-10.3 during the 2013 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 109-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30781	4-30-2013
Storm Rain Event	BMP-32989	7-11-2013
Storm Rain Event	BMP-33618	7-23-2013
Storm Rain Event	BMP-34225	8-7-2013
Storm Rain Event	BMP-35747	9-25-2013
Annual Erosion Evaluation	COMP-36720	12-3-2013

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

Table 109-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31699	Replace matting on berm M01303010011.	5-9-2013	9 day(s)	Maintenance conducted in timely manner.
BMP-31700	Replace matting on berm Asset ID M01303010012	5-9-2013	9 day(s)	Maintenance conducted in timely manner.
BMP-34087	Install a rock check dam above existing rock check dam -0010. Rock check dam -0010 will be retired when work is completed.	8-1-2-13	9 day(s)	Maintenance conducted in timely manner.
BMP-36940	Modify gravel bags M01303100013 by adding gravel bags around drop inlet	11-8-2013	44 day(s)	Maintenance conducted as soon as practicable.

109.5 Compliance Status

The Sites associated with M-SMA-10.3 are High Priority Sites. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 109-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-014(e2)	Corrective Action Initiated	Corrective Action Complete	LANL, October 30, 2013, “Submittal of Completion of Corrective Action at Sites 35-014(e2) and 35-016(i) in M-SMA-10.3”
SWMU 35-016(i)	Corrective Action Initiated	Corrective Action Complete	

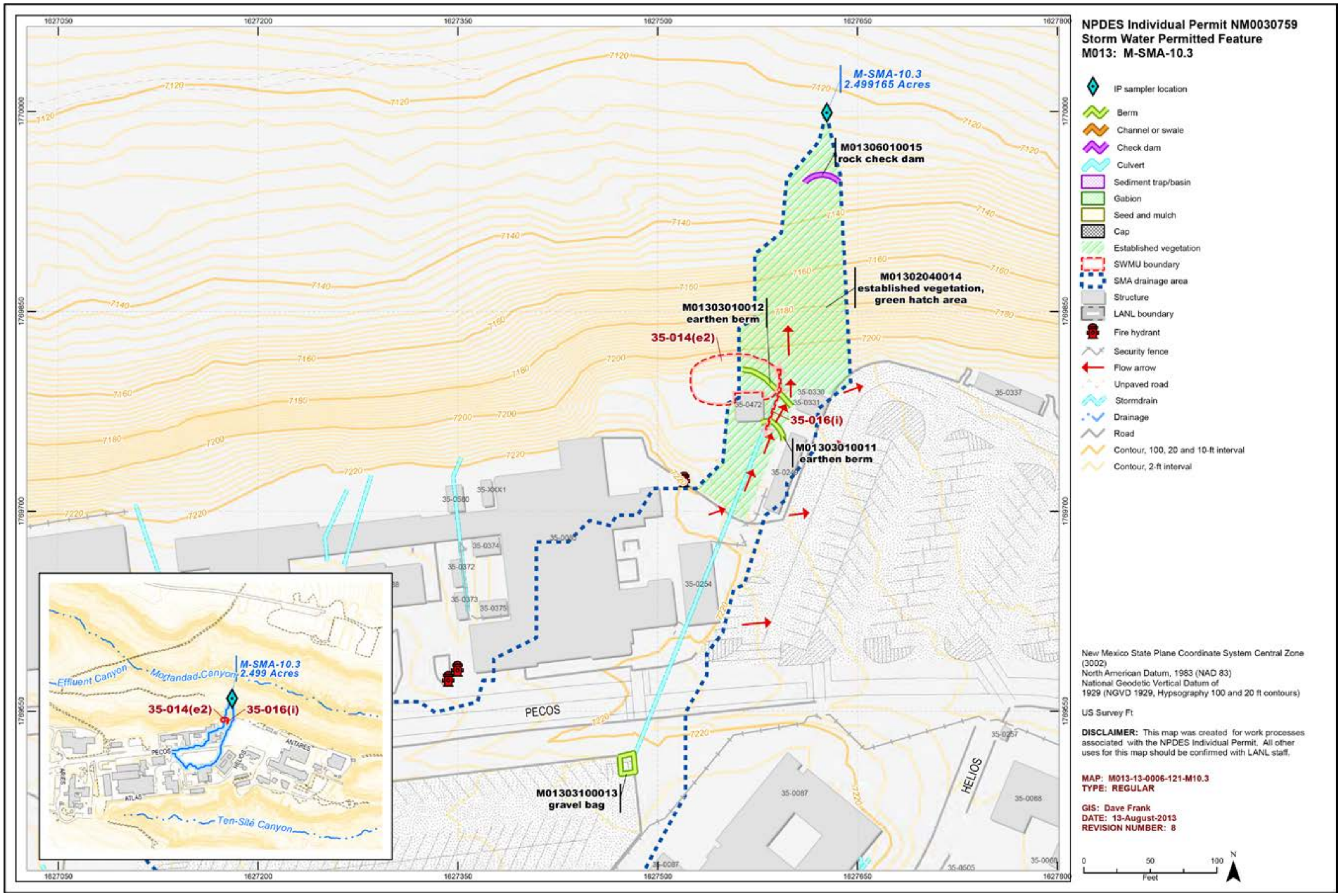
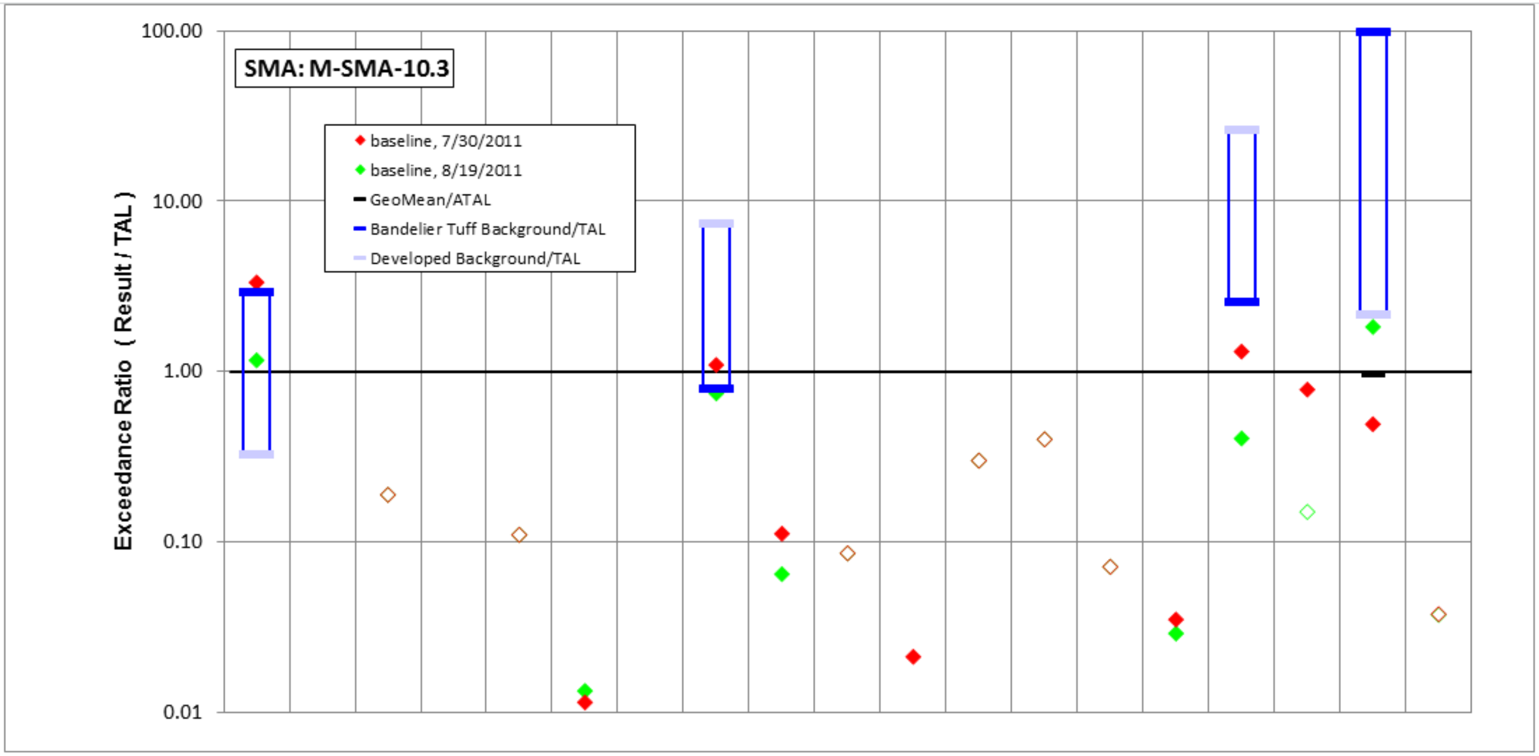


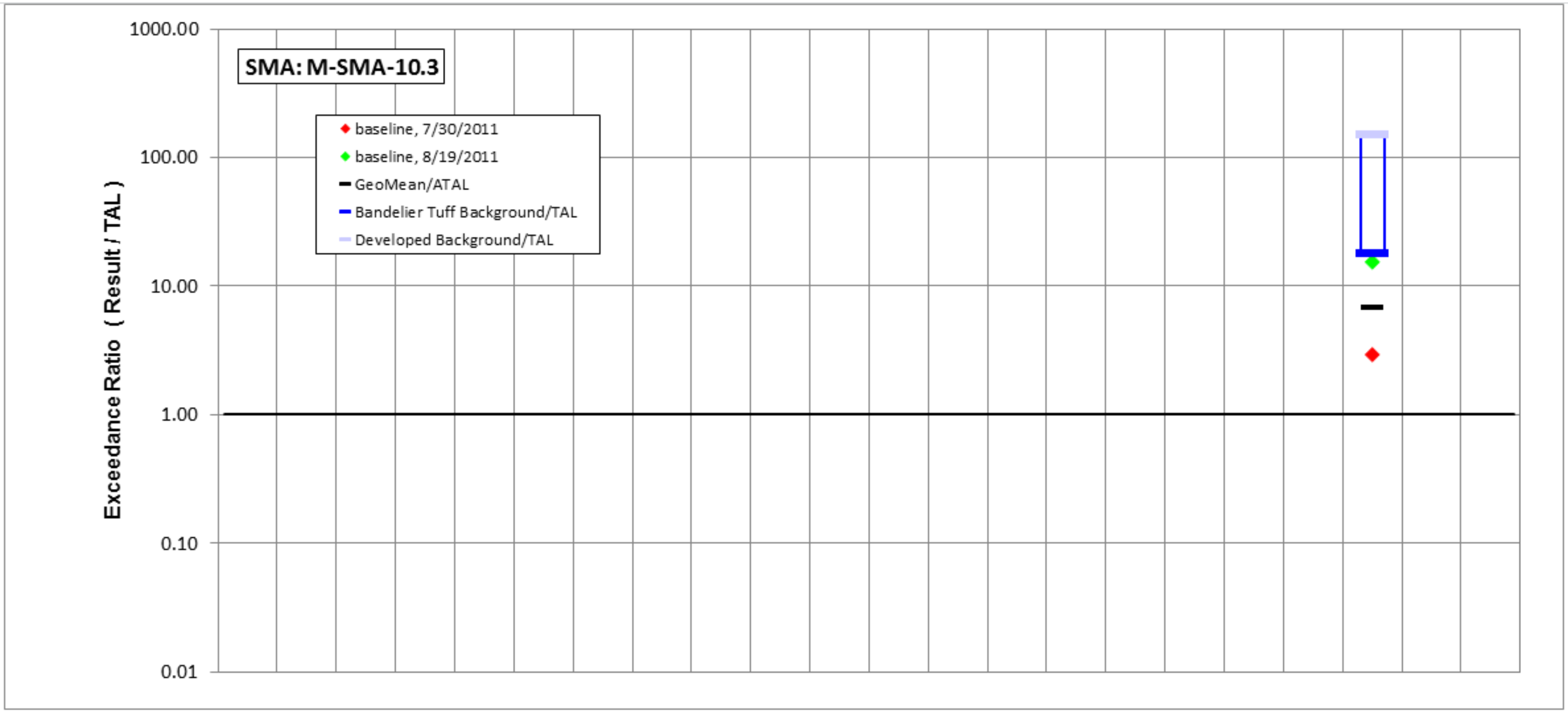
Figure 109-1 M-SMA-10.3 location map



	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
8/19/2011 result	**873**	*1*	*1.7*	*15*	*0.11*	2.8	1.3	3.2	1.1	*0.066*	1.1	*1.5*	*0.2*	*0.45*	2.9	17	*0.002*	**27.4**	*1.12*
result / TAL	**1.2**	*0.002*	*0.19*	*0.003*	*0.11*	0.013	0.0013	0.74	0.065	*0.086*	0.0065	*0.3*	*0.4*	*0.071*	0.029	0.4	*0.15*	**1.8**	*0.037*
7/30/2011 result	**2500**	*1*	*1.7*	20.9	*0.11*	2.4	1.3	**4.7**	1.9	*0.066*	3.6	*1.5*	*0.2*	*0.45*	3.5	**55**	0.0078	7.36	*1.13*
result / TAL	**3.3**	*0.002*	*0.19*	0.0042	*0.11*	0.011	0.0013	**1.1**	0.11	*0.086*	0.021	*0.3*	*0.4*	*0.071*	0.035	**1.3**	0.78	0.49	*0.038*

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

Figure 109-2 Inorganic analytical results summary plot for M-SMA-10.3



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**15**	-	-
7/30/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.002**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.9**	-	-

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

Figure 109-3 Organic analytical results summary plot for M-SMA-10.3

110.0 M-SMA-11.1: SWMU 35-016(o)

110.1 Site Descriptions

One historical industrial activity area is associated with M014, M-SMA-11.1: Site 35-016(o).

SWMU 35-016(o) is an active storm water system established in 1951 to collect and manage storm water runoff from the first laboratory and office building (35-02) constructed at TA-35. The three cast-iron storm drainlines channel storm water to three outfalls located on the east side of the mesa and discharge to the south slope of Mortandad Canyon, approximately 20 ft below the mesa edge. Effluent from floor drains in building 35-2 may have been discharged to this storm drain system. In addition, overflow from the septic system designated as SWMU 35-009(c) was discharged into Mortandad Canyon from two outfalls, located at the east and west ends of septic system leach fields; the outfall at the east end of the leach field coincides with one of the SWMU 35-016(o) drainage channels. The associated septic system [SWMU 35-009(c)] was decommissioned in 1992 and underwent a VCA in 1996.

Phase I Consent Order investigations are complete for SWMU 36-016(o); the Site meets recreational risk levels. A COC with controls was requested from NMED in August 2011.

The project map (Figure 110-1) 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.

110.2 Control Measures

Current discharge from the outfall is minimal and the potential for flow reaching the receiving waters is very low. There is no sign of erosion or sediment migration below the outfall pipe. The asphalt curbing serves to divert run-on away from this Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 110-1).

Table 110-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01402040008	Established Vegetation		X	X		B
M01403090005	Curbing	X			X	CB
M01403100007	Gravel Bags	X			X	B
M01404060001	Rip Rap	X		X		CB
M01406020006	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

110.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-11.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

110.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-11.1 during the 2013 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 110-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30782	4-30-2013
Storm Rain Event	BMP-32990	7-11-2013
Storm Rain Event	BMP-33619	7-23-2013
Storm Rain Event	BMP-34226	8-7-2013
Storm Rain Event	BMP-35748	9-25-2013
Annual Erosion Evaluation	COMP-36721	12-3-2013

Table 110-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33774	Remove trash/debris from beyond curbing -0005 as necessary.	7/19/2013	5 day(s)	Maintenance conducted in timely manner.

110.5 Compliance Status

The Site associated with M-SMA-11.1 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 110-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-016(o)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

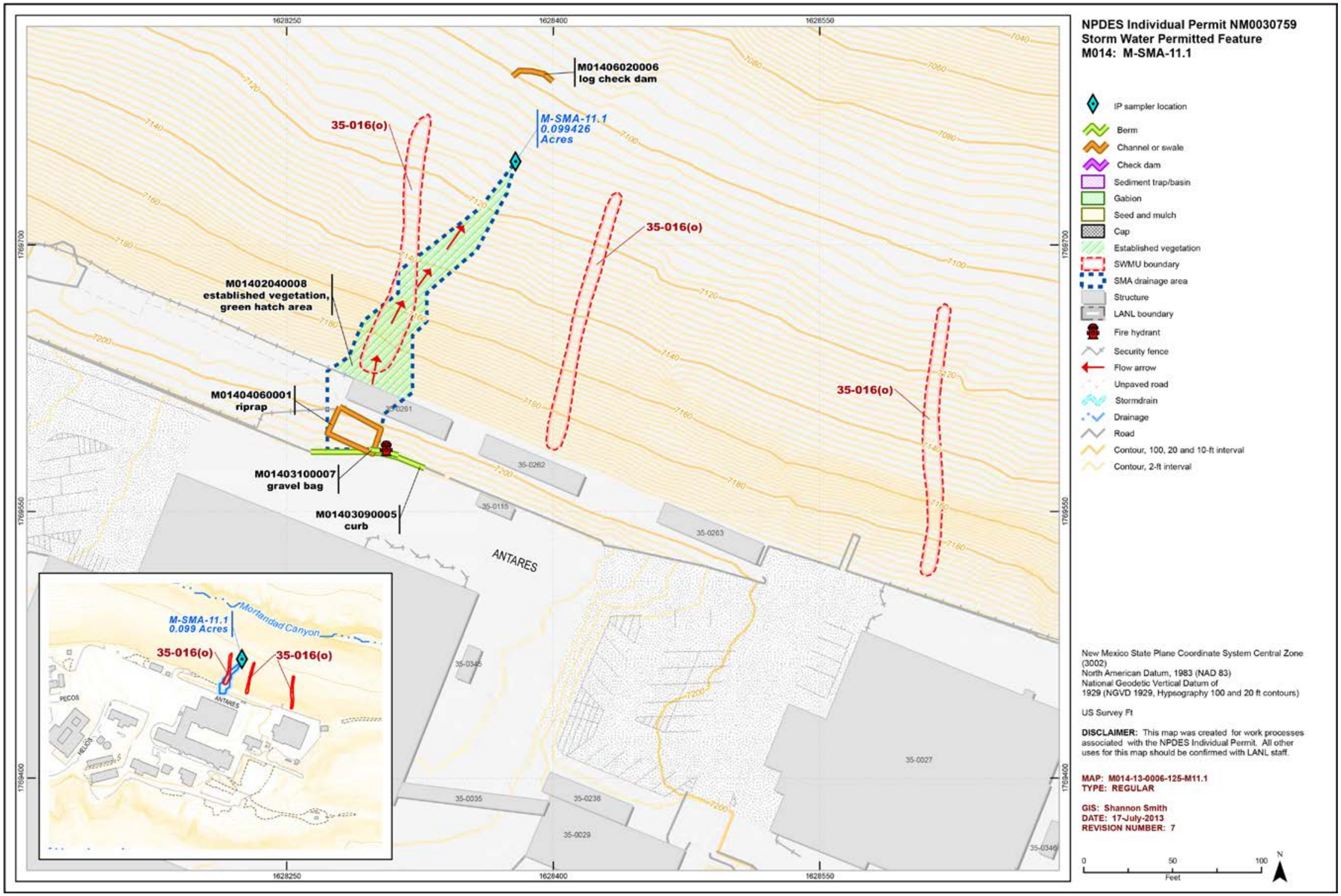


Figure 110-1 M-SMA-11.1 location map

111.0 M-SMA-12: SWMU 35-016(p)

111.1 Site Descriptions

One historical industrial activity area is associated with M015, M-SMA-12: Site 35-016(p).

SWMU 35-016(p) is an active storm water system that has handled storm water runoff from the roof of the Nuclear Safeguards Research Building (35-27) since it was constructed in 1964. The north and east sides of building 35-27 are equipped with 6-in.-diameter roof leaders along which direct roof runoff into CMP storm drains. The storm drains connect to a storm drain manhole located approximately 25 ft northeast of the northeast corner of building 35-27. An 18-in.-diameter CMP storm drain originates at this manhole and extends northward toward the edge of Ten Site Mesa. The outfall is located 40 ft below the mesa edge on the south slope of Mortandad Canyon, approximately 60 ft north of the security fence around building 35-27.

Phase I Consent Order investigations are complete for SWMU 35-016(p); the Site meets residential risk levels. A COC without controls was requested from NMED in August 2011.

The project map (Figure 111-1) 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.

111.2 Control Measures

The curb on the northern edge of the parking area is controlling run-on at this Permitted Feature. The log check dams above the sampler are controlling runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 111-1).

Table 111-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01502040008	Established Vegetation		X	X		B
M01503090004	Curbing	X			X	CB
M01506020001	Log Check Dam		X		X	CB
M01506020006	Log Check Dam		X		X	CB
M01506020007	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

111.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

111.4 Inspections and Maintenance

RG200.5 recorded six storm events at M-SMA-12 during the 2013 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 111-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30783	4-30-2013
Storm Rain Event	BMP-32991	7-11-2013
Storm Rain Event	BMP-33620	7-23-2013
Storm Rain Event	BMP-34227	8-7-2013
Storm Rain Event	BMP-35749	9-25-2013
Annual Erosion Evaluation	COMP-36722	12-3-2013

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

Table 111-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36989	Remove floatable garbage from SMA.	11-8-2013	44 day(s)	Maintenance conducted as soon as practicable.

111.5 Compliance Status

The Site associated with M-SMA-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 111-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-016(p)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

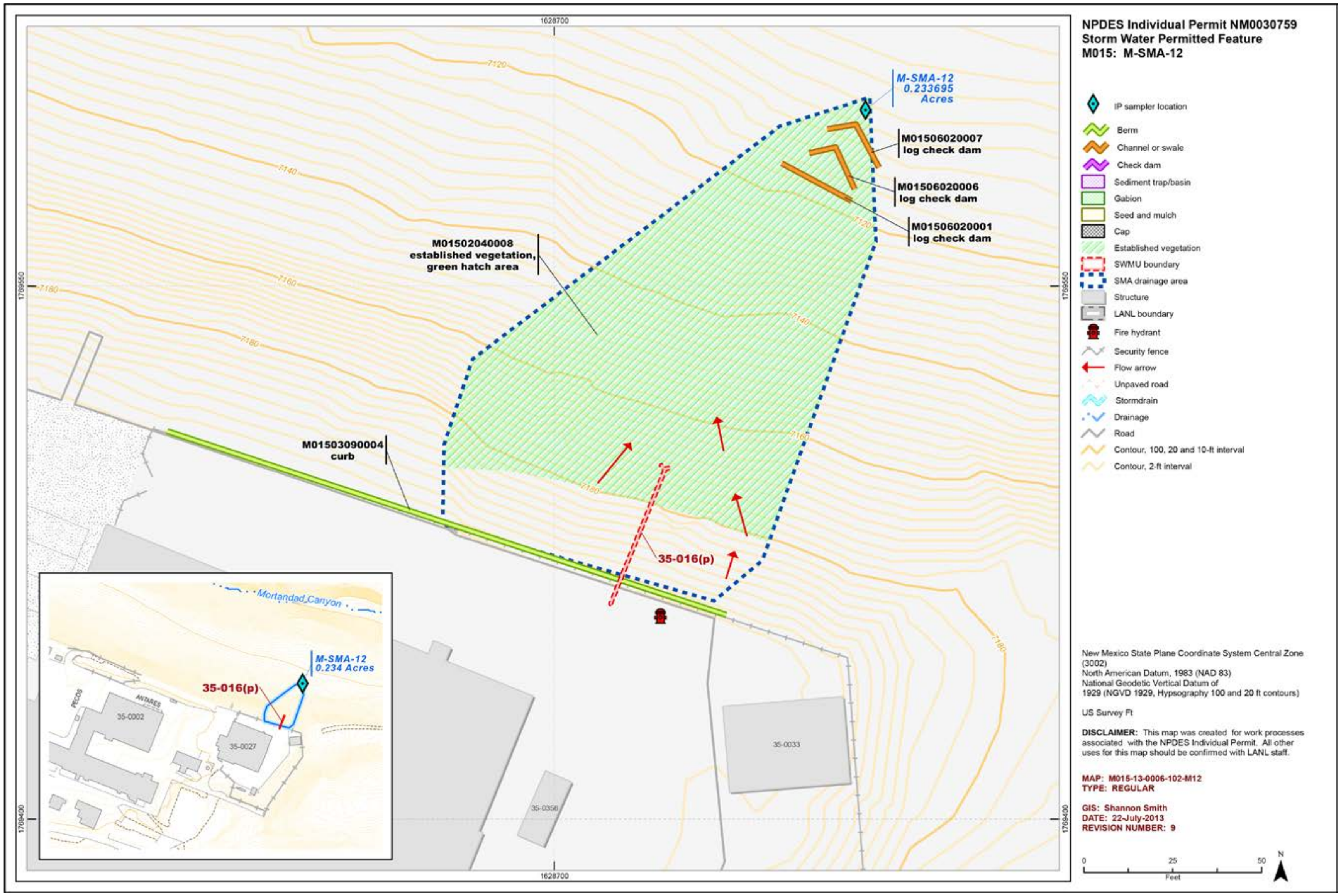


Figure 111-1 M-SMA-12 location map

112.0 M-SMA-12.5: SWMUs 05-005(b) and 05-006(c)

112.1 Site Descriptions

Two historical industrial activity areas are associated with M016, M-SMA-12.5: Sites 05-005(b) and 05-006(c).

SWMU 05-005(b) is an area of potentially contaminated soil associated with a former outfall located at the edge of Mortandad Canyon. The outfall, previously associated with former building 05-05, was identified during a 1987 site reconnaissance conducted by the former ER Project. The outfall was located on the edge of the canyon, approximately 80 ft south of building 05-05. This building, which is associated with SWMU 05-006(c), was used as a shop, a calibration facility, and a photographic darkroom. The building was used as a darkroom from 1944 to 1947 to process photographs of experiments conducted at the TA-05 firing sites. In 1952, building 05-05 was used to calibrate high-range radiation meters. The building was operational from about 1944 to 1959 and was destroyed by burning in May 1960. The outfall is believed to have operated from 1944 to 1959. No evidence of the outfall exists at the Site; however, a capped pipe was found at the ground surface at the former location of building 05-05 during the 2011 Consent Order investigation and was removed. This pipe may have been the drainline from the building. A drainage channel collects most of the runoff from the Site and is present at the edge of the mesa. Storm water BMPs are in place above and downslope of the Site.

Phase I Consent Order investigations are complete for SWMU 05-005(b); the Site meets residential risk levels. SWMU 05-005(b) was recommended for corrective action complete without controls in the approved investigation report for Lower Mortandad/Cedro Canyons Aggregate Area. The Site is eligible for a COC without controls.

SWMU 05-006(c) is an area of potentially contaminated soil associated with the location of former building 05-05, a shop and darkroom. The shop was 16 ft^2, and the darkroom was 6 ft wide × 9 ft long. The building operated from about 1944 to 1959. The structure was originally used to support firing-site activities, including processing photographs of experiments conducted at the TA-05 firing sites. In 1952, J Division temporarily used the building to calibrate high-range radiation meters. A 1959 memorandum indicates this structure was contaminated with HE, as does a 1959 list generated by the Laboratory's H-3 Group. Potential soil contamination associated with SWMU 05-006(c) was reported to also include uranium. Building 05-05 was destroyed by intentional burning on March 5, 1960. Cleanup of the site of the former building was included in the 1985 LASCP. Surface debris, including wood, copper wire, scrap metal, and other building debris, was removed. No radioactive contamination was detected. During 2011 Consent Order investigation activities, a small amount of burned debris (charred wood, melted glass, and metal) was removed from the former location of building 05-05. An 18-in.-long capped pipe was also removed.

Phase I Consent Order investigations are complete for SWMU 05-006(c); the Site meets residential risk levels. SWMU 05-006(c) was recommended for corrective action complete without controls in the approved investigation report for Lower Mortandad/Cedro Canyons Aggregate Area. The Site is eligible for a COC without controls.

The project map (Figure 112-1) 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.

112.2 Control Measures

Run-on contributions to this Permitted Feature originate from the unpaved access road on the northern boundary of the SMA. Controls have been installed to mitigate this run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 112-1).

Table 112-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01601010011	Seed and Wood Mulch			X		B
M01602040012	Established Vegetation		X	X		B
M01603010009	Earthen Berm	X			X	B
M01603010010	Earthen Berm		X		X	B

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

112.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

112.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-12.5 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 112-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30900	5-1-2013
Storm Rain Event	BMP-33010	7-2-2013
Storm Rain Event	BMP-34252	7-29-2013
Storm Rain Event	BMP-35428	9-24-2013
Annual Erosion Evaluation	COMP-36839	12-2-2013

No maintenance activities were conducted at M SMA-12.5 in 2013.

112.5 Compliance Status

The Sites associated with M-SMA-12.5 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 112-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 05-005(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

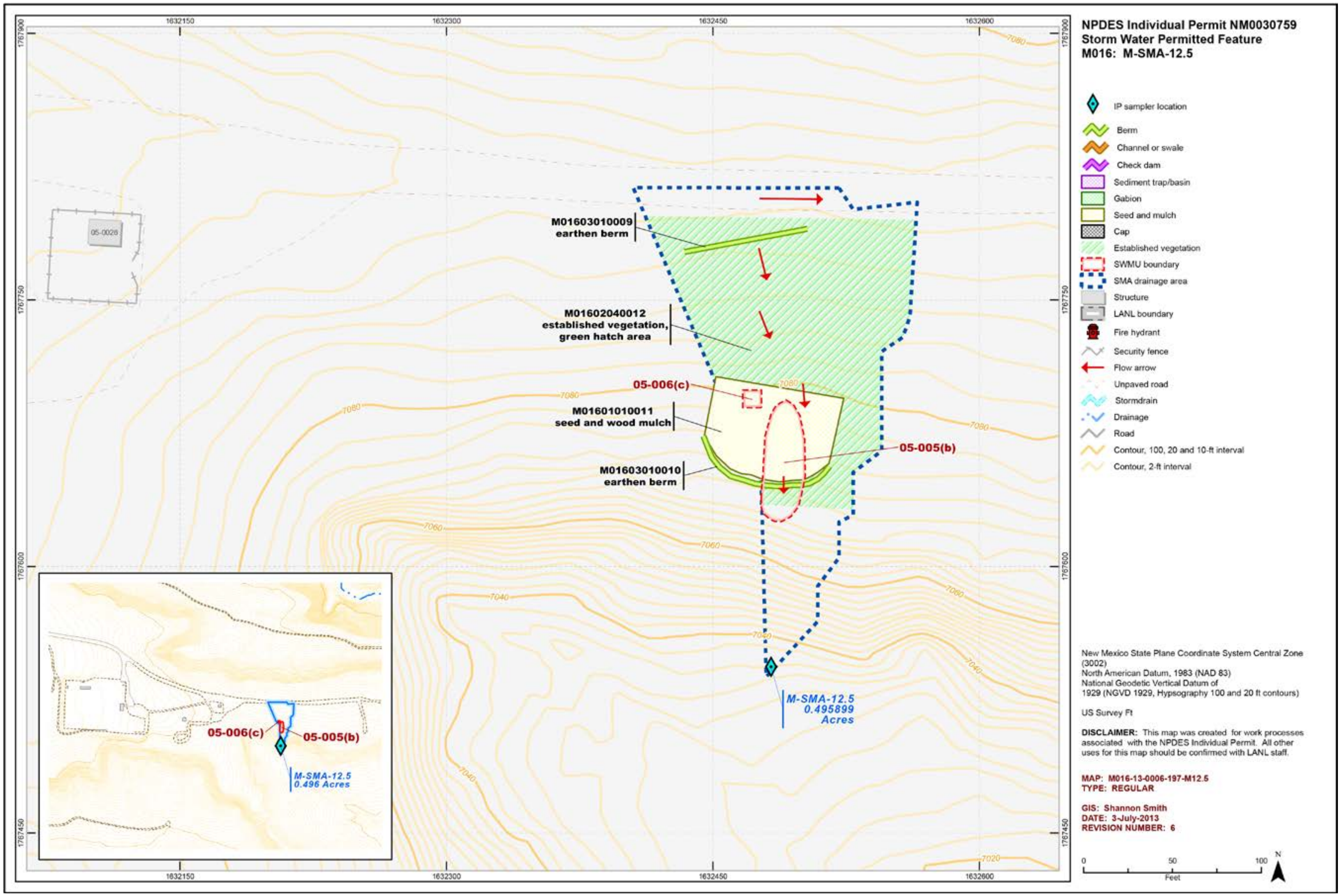


Figure 112-1 M-SMA-12.5 location map

113.0 M-SMA-12.6: SWMU 05-004

113.1 Site Descriptions

One historical industrial activity area is associated with M017, M-SMA-12.6: Site 05-004.

SWMU 05-004 is a former septic tank (structure 05-13), associated drainlines, and outfall located at the west end of TA-05 near the edge of Mortandad Canyon. The outfall, a 2-ft-wide × 1-ft-deep trench cut into the tuff, is located at the edge of the mesa. The tank was constructed in May 1948 to serve building 05-1 (a laboratory) and was decommissioned in place in December 1959. It was constructed of reinforced concrete and was 5 × 5 × 7 ft deep. As-built drawings show an inlet line running from building 05-1 to the septic tank and an outlet line discharging south into an unnamed tributary of Mortandad Canyon. From 1948 to 1949, the tank received industrial waste from a laboratory (building 05-1). A 1952 memorandum states that septic tank 05-13 was no longer needed to support use of building 05-1 and the structure was being returned to Engineering Division for disposition. The types of materials used in building 05-1 are not known. The septic tank and associated drainlines were removed in 1960.

SWMU 05-004 has been investigated under the Consent Order and recommended for corrective action complete without controls in the approved investigation report for Lower Mortandad/Cedro Canyons Aggregate Area.

The project map (Figure 113-1) 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.

113.2 Control Measures

Run-on to the Permitted Feature originates on the dirt access road along the northern boundary of the SMA. Run-on from the main access road flows south on a secondary dirt road, possibly causing erosion in the northern portion of the SMA. Berms have been installed to mitigate this run-on contribution. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 113-1).

Table 113-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01701010013	Seed and Wood Mulch			X		B
M01702040014	Established Vegetation		X	X		B
M01703010010	Earthen Berm	X			X	B
M01703020005	Base Course Berm	X			X	CB
M01703020006	Base Course Berm	X			X	CB
M01703020007	Base Course Berm	X			X	CB
M01703060012	Straw Wattles		X		X	B
M01706010008	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

113.3 Storm Water Monitoring

SWMU 05-004 is monitored within M-SMA-12.6. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 113-2 and 113-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activities of 19.2 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 05-004:

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These isotopes are excluded from regulation under the CWA and are regulated under the AEA. The SMA receives runoff from undeveloped areas.

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 113-2 and 113-3. 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 113-2 and 113-3.

Monitoring location M-SMA-12.6receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. 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, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

113.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-12.6 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 113-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30901	5-1-2013
Storm Rain Event	BMP-33011	7-2-2013
Storm Rain Event	BMP-34253	7-29-2013
Storm Rain Event	BMP-35429	9-23-2013
Annual Erosion Evaluation	COMP-36840	11-20-2013
TAL Exceedance	COMP-36883	11-20-2013

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

Table 113-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36996	Repair berm Asset ID M01703020006 by redistributing base course to fill in breach. Only hand tools needed.	11-8-2013	46 day(s)	Maintenance conducted as soon as practicable.

113.5 Compliance Status

The Site associated with M-SMA-12.6 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 113-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 05-004	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-22-13

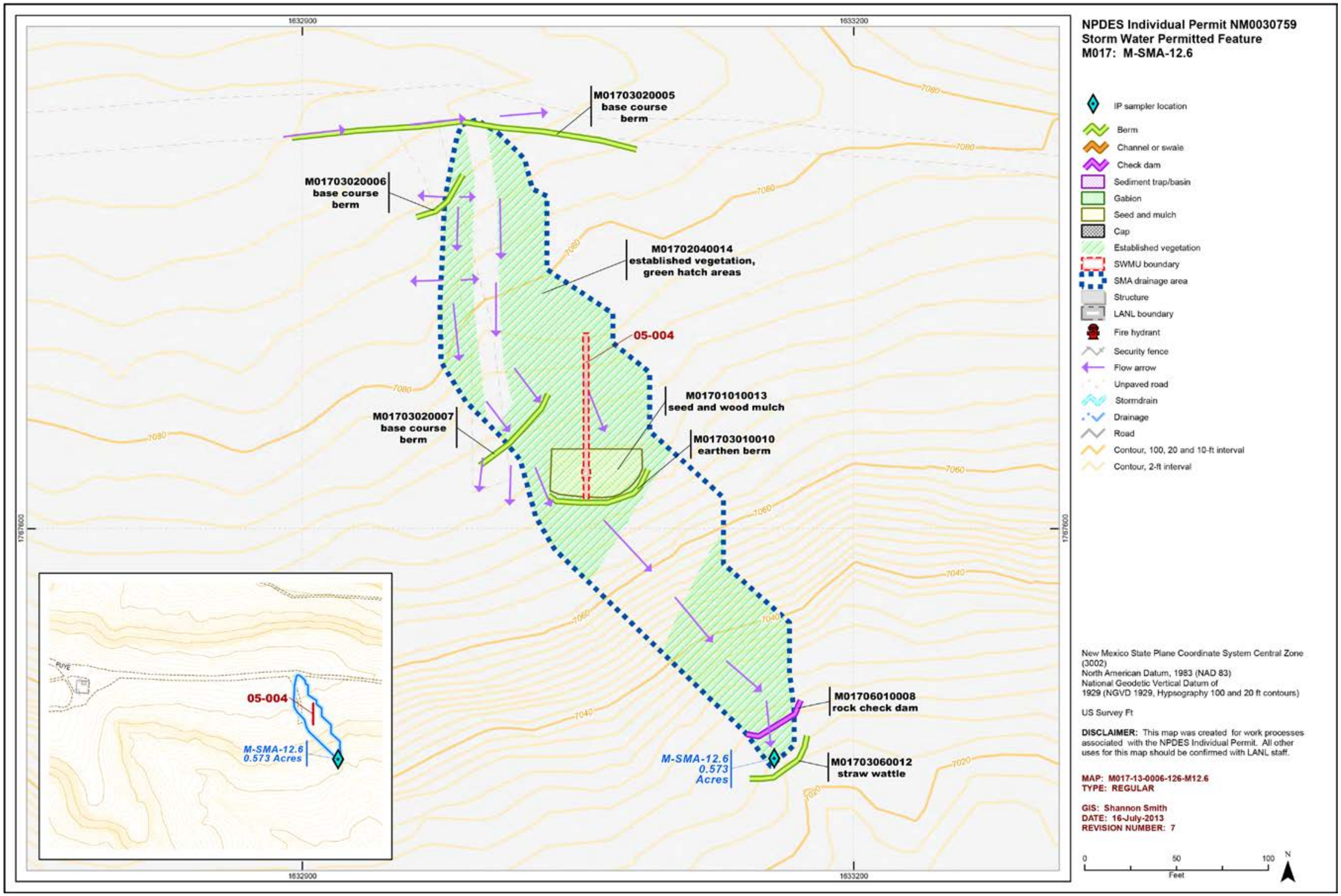
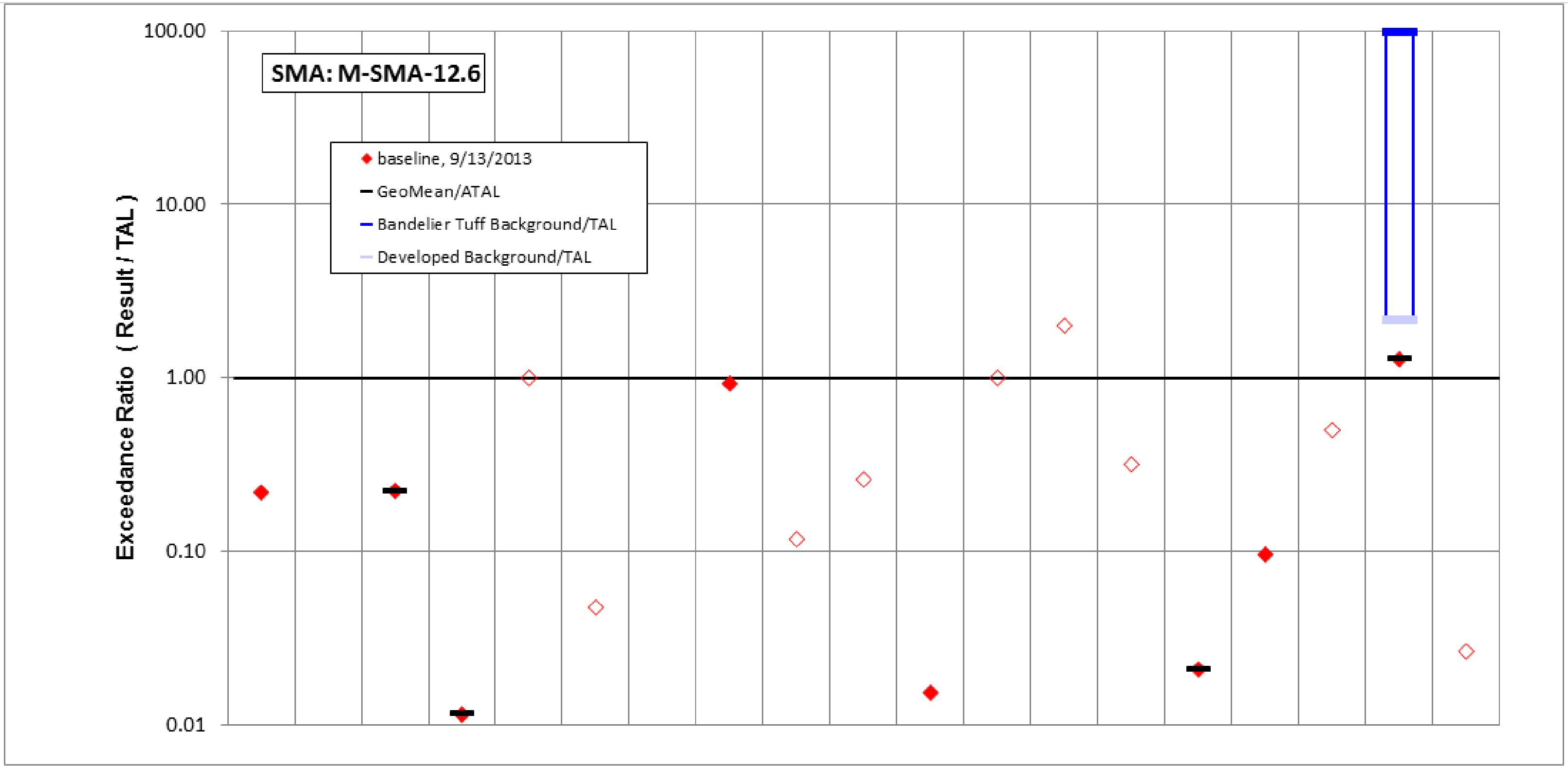


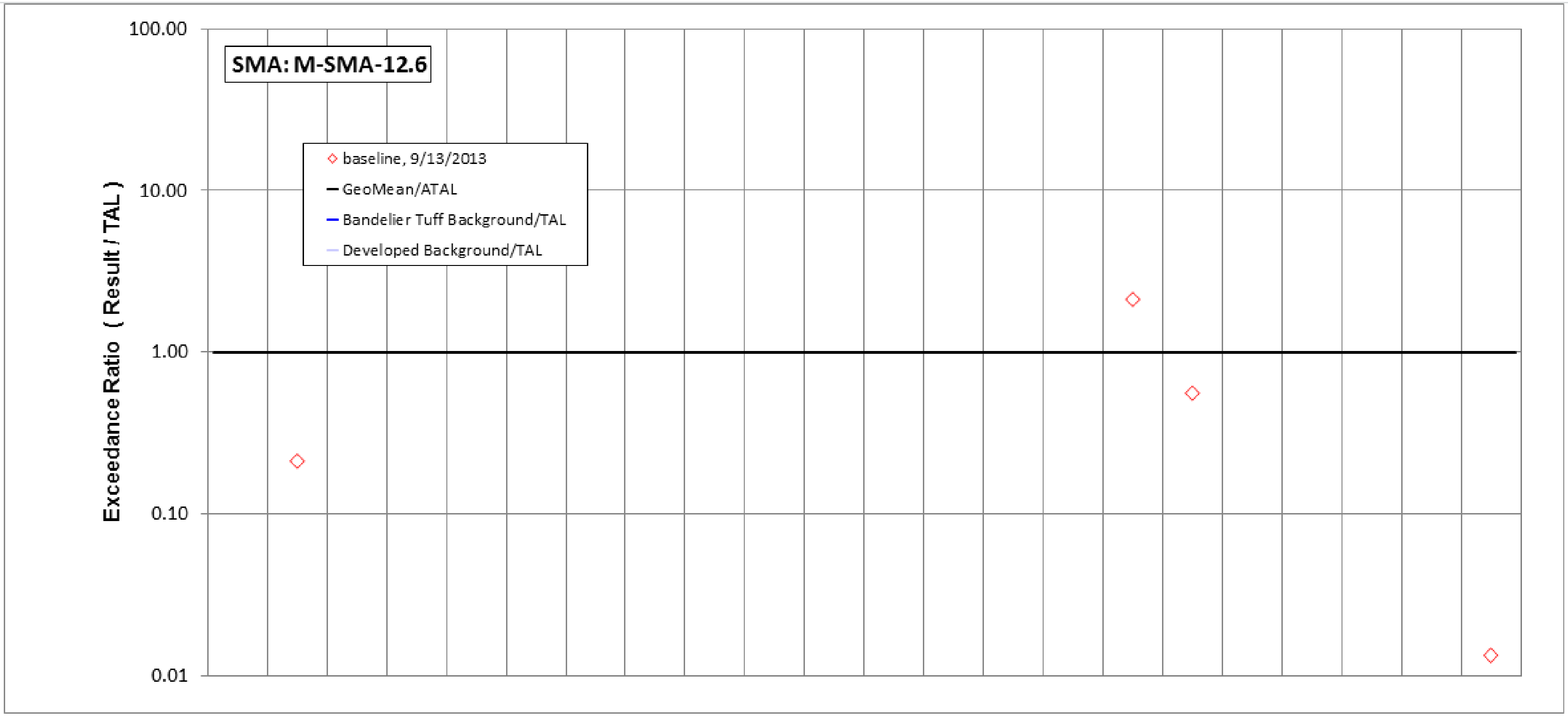
Figure 113-1 M-SMA-12.6 location map



	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
9/13/2013 result	164	*3*	2.01	57.4	*1*	*10*	1	3.99	*2*	*0.2*	2.61	*5*	***1***	*2*	2.09	4.03	*0.005*	**19.2**	*0.796*
result / TAL	0.22	*0.005*	0.22	0.011	*1*	*0.048*	0.001	0.93	*0.12*	*0.26*	0.015	*1*	***2***	*0.32*	0.021	0.096	*0.5*	**1.3**	*0.027*

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

Figure 113-2 Inorganic analytical results summary plot for M-SMA-12.6



	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	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	*1.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	**10.6**	*10.6*	*0.267*	-	-	-	*0.267*
result / TAL	-	*0.21*	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.1**	*0.56*	*0.001*	-	-	-	*0.013*

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

Figure 113-3 Organic analytical results summary plot for M-SMA-12.6

114.0 M-SMA-12.7: SWMUs 05-002, 05-005(a), 05-006(b), and 05-006(e)

114.1 Site Descriptions

Four historical industrial activity areas are associated with M018, M-SMA-12.7: Sites 05-002, 05-005(a), 05-006(b), and 05-006(e).

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This Site was used extensively for 3 yr. A 1976 radiation study showed contamination at this Site. During 1985 LASCP activities, visible surface shot debris was removed. Waste potentially disposed of at this Site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCP cleanup effort, all debris present at the Site was removed from SWMU 05-002.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. SWMUs 05-001(a), 05-001(b), and 05-002 were investigated together during the 1995 Phase I RFI and later in 2004. Based on the human health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

Based on the results of the human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at SWMU 05-002; a COC without control was requested from NMED in August 2011.

SWMUs 05-005(a), 05-006(b), and 05-006(e) are components of Consolidated Unit 05-005(a)-00 and are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. SWMU 05-005(a) was a French drain that ran north from the firing site control building (05-4) toward Mortandad Canyon. The drain was constructed in 1945 and became inactive along with the control building in 1959. The control building was removed in 1960; however, the drainline was not removed until 1985 during the LASCP. Radioactive contamination associated with building 05-4 was detected during the 1985 LASCP; there is no record of a release of radionuclides or chemicals to the drainline. The entire area was razed when building 05-4 was removed in 1985. The individual SWMUs are no longer individually distinguishable.

After firing activities at Beta Site were halted in the late 1940s, other Laboratory groups used the Site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. Most of the 1985 D&D work revolved around a central area where DU contamination was detected. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit.

SWMU 05-006(b) is an area of potentially contaminated soil at the location of former control building 05-4. During 1985 LASCP D&D activities at TA-05, uranium-contaminated soil was found at the former site of building 05-4. The entire area was razed when building 05-4 was removed in 1985. As a result, the individual SWMUs are no longer individually distinguishable.

SWMUs 05-005(a), 05-006(b), and 05-006(e) are components of Consolidated Unit 05-005(a)-00 and are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the Site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. Most of the 1985 D&D work revolved around a central area where DU contamination was detected. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit.

SWMU 05-006(e) is an area of potentially contaminated soil at TA-05 associated with a former platform (structure 05-19) next to building 05-04. The platform was a 6- × 6-ft wood structure that was mounted 26 ft above the ground on two 45-ft-tall wood poles. It was built in about 1953 and left in place in 1959. The entire area was razed when building 05-04 was removed in 1985. The individual SWMUs are no longer individually distinguishable at Consolidated Unit 05-005(a)-00.

SWMUs 05-005(a), 05-006(b), and 05-006(e) are components of Consolidated Unit 05-005(a)-00 and are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the Site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. Most of the 1985 D&D work revolved around a central area where DU contamination was detected. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit. TA-05 is currently used as a security buffer zone and contains physical support facilities, such as an electrical substation, test wells, several archeological sites, and environmental monitoring areas.

SWMUs 05-005(a), 05-006(b), and 05-006(e) were investigated together during the 1995 Phase I RFI and later in a 2004 investigation. The approved investigation report concluded the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 05-005(a)-00. Based on the human health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-005(a), 05-006(b), 05-006(e), and no potential ecological risk was found for any receptor. A COC without controls was requested from NMED in August 2011.

The project map (Figure 114-1) 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.

114.2 Control Measures

Run-on enters this Permitted Feature from the unpaved access road on the southern boundary. Some of the run-on is diverted to the west away from the area by a natural flow path. A berm is installed just north of this road to control run-on that is not diverted to the drainage channel west of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 114-1).

Table 114-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01802040012	Established Vegetation		X	X		B
M01803010008	Earthen Berm	X			X	CB
M01803060010	Straw Wattles	X			X	B
M01803060011	Straw Wattles	X			X	B
M01806020009	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

114.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

114.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-12.7 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 114-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30903	5-1-2013
Storm Rain Event	BMP-33012	7-9-2013
Storm Rain Event	BMP-34254	7-29-2013
Storm Rain Event	BMP-35430	9-24-2013
Annual Erosion Evaluation	COMP-36842	12-17-2013

No maintenance activities were conducted at M-SMA-12.7 in 2013.

114.5 Compliance Status

The Sites associated with M-SMA-12.7 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 114-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 05-002	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-005(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-006(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-006(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

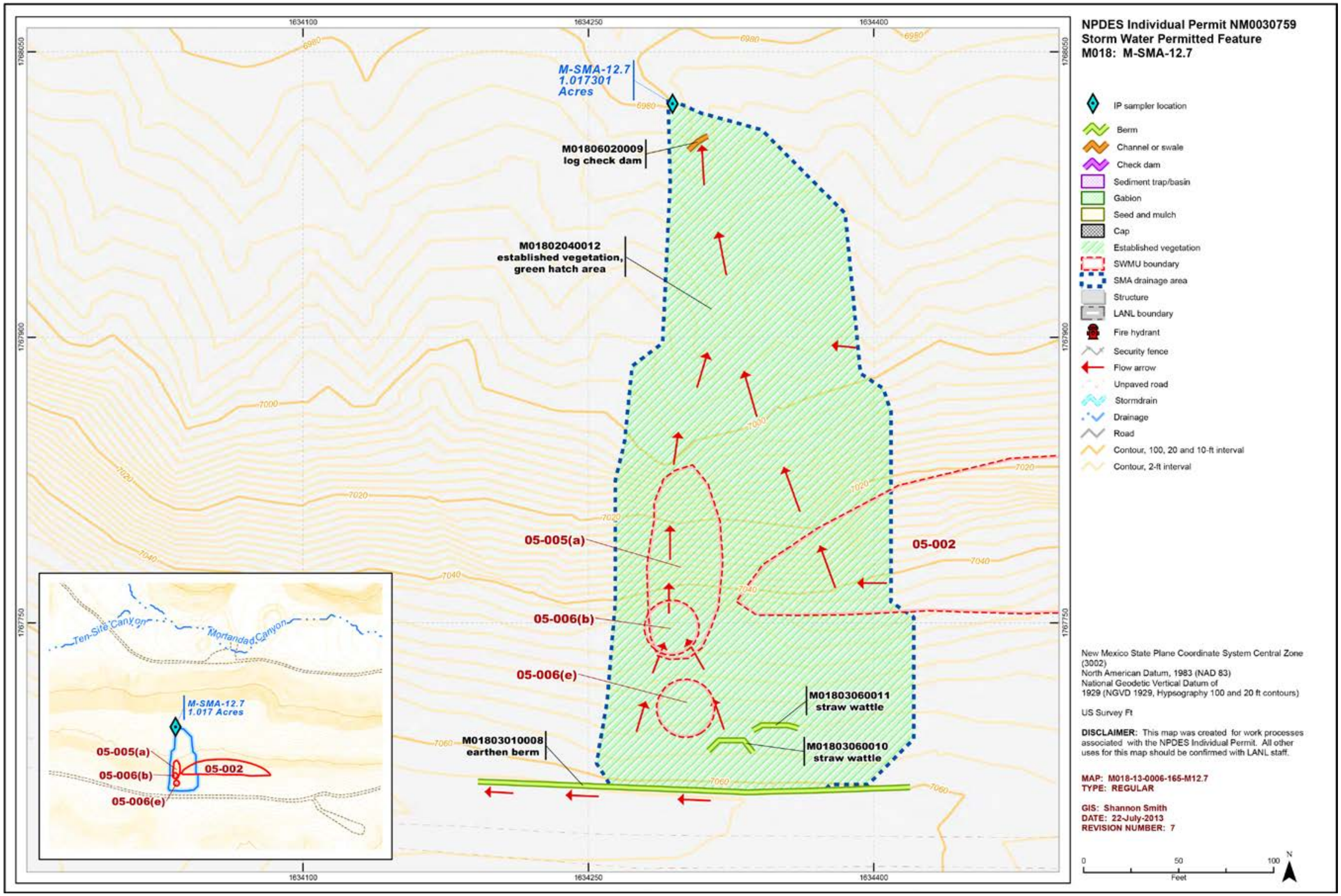


Figure 114-1 M-SMA-12.7 location map

115.0 M-SMA-12.8: SWMUs 05-001(a) and 05-002

115.1 Site Descriptions

Two historical industrial activity areas are associated with M019, M-SMA-12.8: Sites 05-001(a) and 05-002.

SWMU 05-001(a) is a former steel barricade firing pit, designated No. 1 (structure 05-07). The Site was used for implosion tests from 1944 to 1947. During the 1985 LASCP cleanup effort at structure 05-07, steel plates around the pit, a control box, and a wood platform were removed. No contamination was detected on the surface of the structures or in the soil directly beneath the firing pit. The soil in the area was contaminated in several spots; consequently, structure 05-7 and other material were taken to TA-54 for disposal. The pit was cleaned of all debris and backfilled.

Based on the results of human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at SWMU 05-001(a). A COC without controls was requested from NMED in August 2011.

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This Site was used extensively for 3 yr. A 1976 radiation study showed contamination at this Site. During 1985 LASCP activities, visible surface shot debris was removed. Waste potentially disposed of at this Site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCP cleanup effort, all debris present at the Site was removed from SWMU 05-002.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. SWMUs 05-001(a), 05-001(b) and 05-002 were investigated together during the 1995 Phase I RFI and later in 2004. Based on the human health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

Based on the results of the human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at SWMU 05-002; a COC without control was requested from NMED in August 2011.

The project map (Figure 115-1) 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.

115.2 Control Measures

Grading and maintenance on the unpaved road in the southern headwaters of this SMA have resulted in the formation of a berm along the road. Run-on to the area from the access road is effectively controlled by this berm. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 115-1).

Table 115-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01902040010	Established Vegetation		X	X		B
M01903010003	Earthen Berm	X			X	CB
M01903060009	Straw Wattles		X		X	B
M01906020006	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

115.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

115.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-12.8 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 115-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30902	5-1-2013
Storm Rain Event	BMP-33013	7-9-2013
Storm Rain Event	BMP-34255	7-29-2013
Storm Rain Event	BMP-35431	9-24-2013
Annual Erosion Evaluation	COMP-36841	12-17-2013

No maintenance activities were conducted at M-SMA-12.8 in 2013.

115.5 Compliance Status

The Sites associated with M-SMA-12.8 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 115-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 05-001(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-002	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

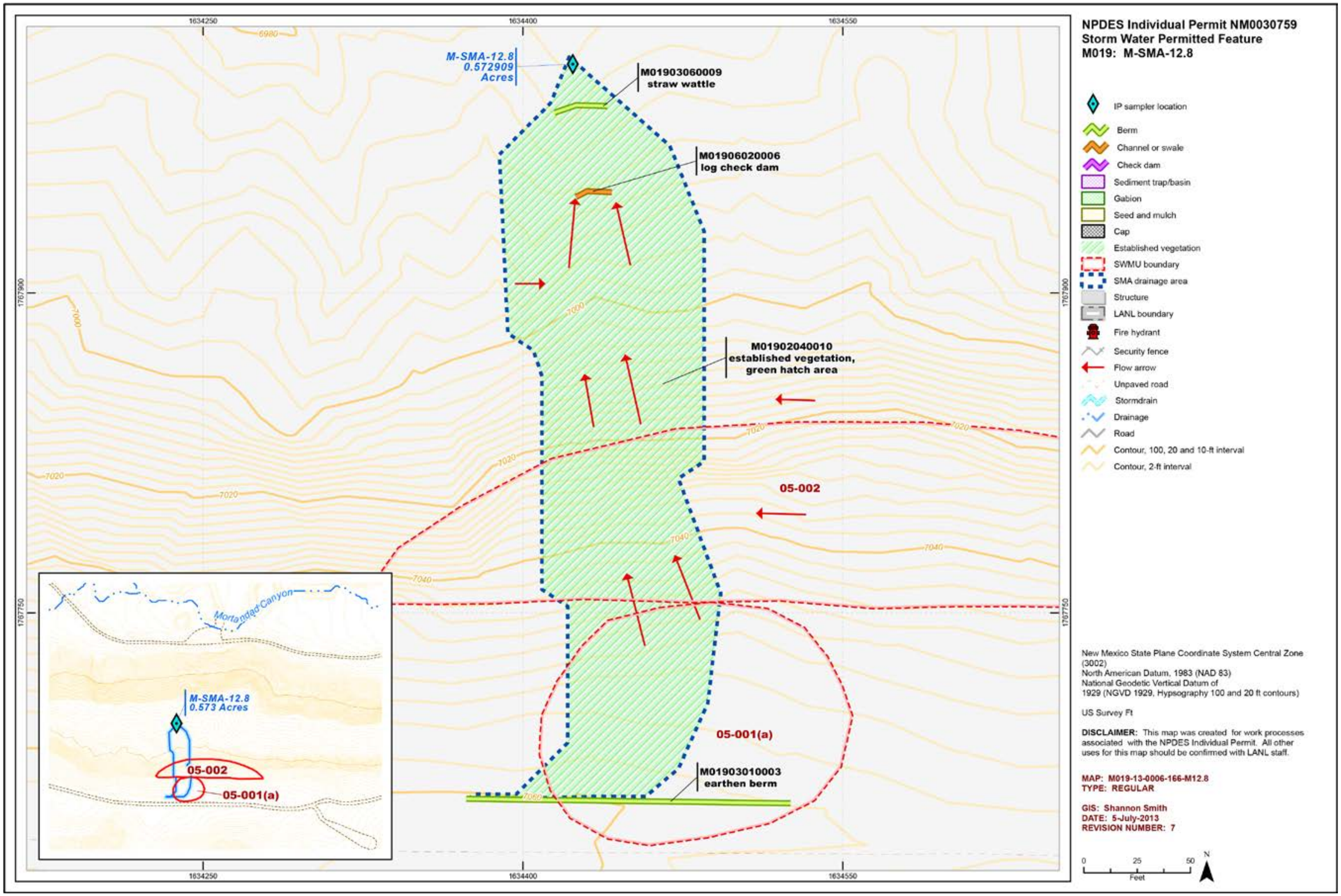


Figure 115-1 M-SMA-12.8 location map

116.0 M-SMA-12.9: SWMUs 05-001(b) and 05-002

116.1 Site Descriptions

Two historical industrial activity areas are associated with M020, M-SMA-12.9: Sites 05-001(b) and 05-002.

SWMU 05-001 (b) is a former steel barricade firing pit, designated No.2 (structure 05-15), and associated with the historical Beta Site at TA-05. The pit was constructed in 1944 and was taken out of service in 1959. Experimental shots were set up at the Site and fired on open ground. As debris accumulated, a bulldozer cleared the pit area by pushing scrap and debris north to the edge of Mortandad Canyon. The shrapnel zone included the canyon sides, canyon bottom, and about 200 ft around the firing pits. During 1985 D&D activities, the firing pit was removed. While it was being removed, uranium contamination was found in the soil to a depth of 15 ft. The area was decontaminated and backfilled with clean soil.

Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at SWMU 05-001(b); a request for COC without controls was submitted to NMED in May 2011.

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This Site was used extensively for 3 yr. A 1976 radiation study showed contamination at this Site. During 1985 LASCP activities, visible surface shot debris was removed. Waste potentially disposed of at this Site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCP cleanup effort, all debris present at the Site was removed from SWMU 05-002.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. SWMUs 05-001(a), 05-001(b), and 05-002 were investigated together during the 1995 Phase I RFI and later in 2004. Based on the human health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

Based on the results of the human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at SWMU 05-002; a COC without control was requested from NMED in August 2011.

The project map (Figure 116-1) 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.

116.2 Control Measures

Run-on has the potential to contribute storm water to this SMA from the unpaved access road and the pullout on the northern boundary of the SMA. Run-on is diverted away from the SMA via a natural channel that runs to the north along the eastern side of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 116-1).

Table 116-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M02002040012	Established Vegetation		X	X		B
M02003010005	Earthen Berm	X			X	CB
M02003010008	Earthen Berm	X			X	B
M02003060010	Straw Wattles		X		X	B
M02006020013	Log Check Dam		X	X		B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

116.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

116.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-12.9 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 116-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30904	5-1-2013
Storm Rain Event	BMP-33014	7-9-2013
Storm Rain Event	BMP-34256	7-29-2013
Storm Rain Event	BMP-35432	9-24-2013
Annual Erosion Evaluation	COMP-36843	12-17-2013

No maintenance activities were conducted at M-SMA-12.9 in 2013.

116.5 Compliance Status

The Sites associated with M-SMA-12.9 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 116-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 05-001(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-002	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

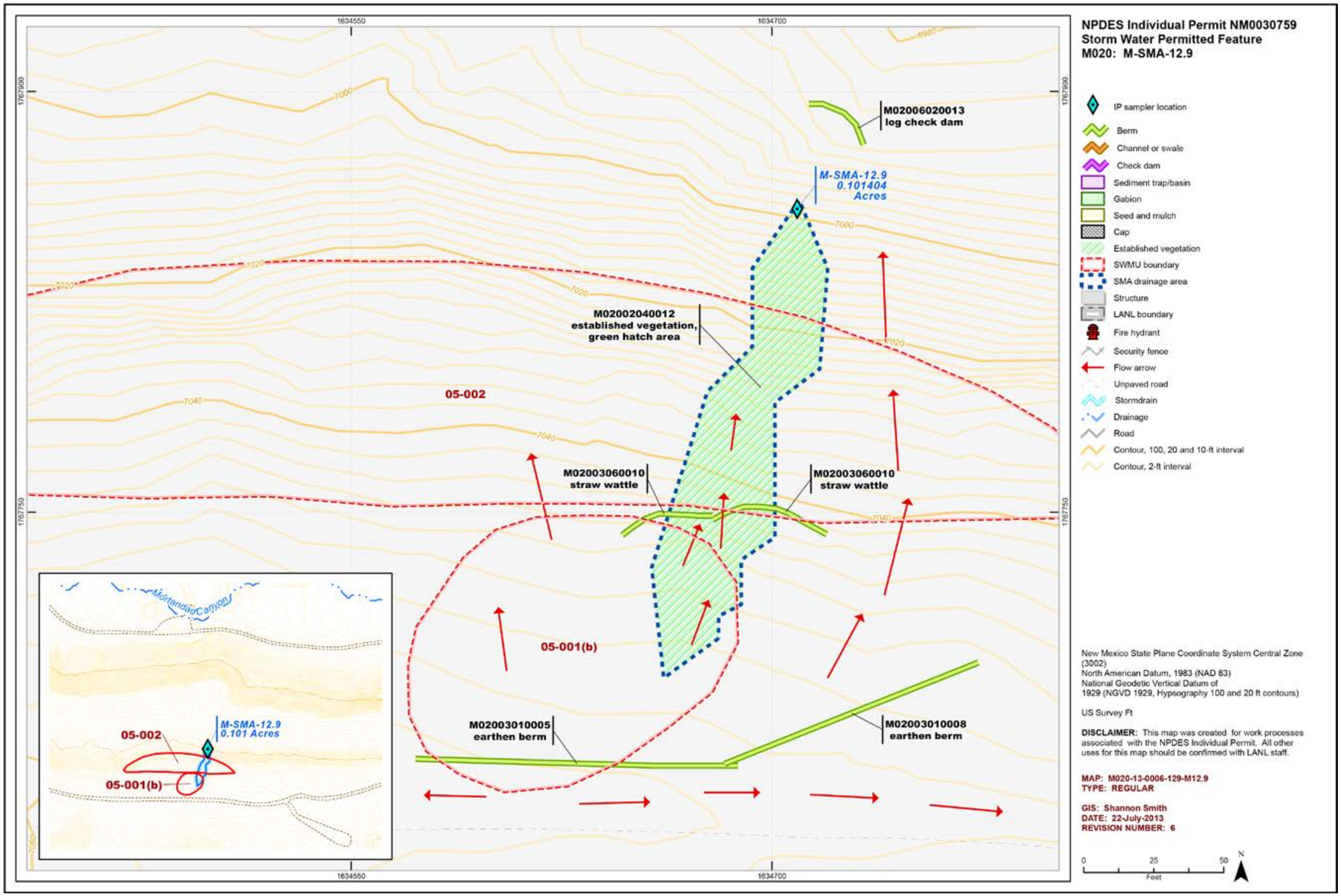


Figure 116-1 M-SMA-12.9 location map

117.0 M-SMA-12.92: SWMU 00-001

117.1 Site Descriptions

One historical industrial activity area is associated with M021, M-SMA-12.92: Site 00-001.

SWMU 00-001 is the area of the historical and current sediment traps in Mortandad Canyon. The Site is approximately 900 ft long × 200 ft wide within the Mortandad Canyon stream channel downstream from and east of the confluence of Mortandad and Ten Site Canyons. The two original traps were built in 1976 with a capacity of approximately 20,000 gal. In 1980, a third trap was built with a capacity of approximately 225,000 gal. Currently, trap 1, the upstream basin, has a capacity of approximately 286,000 gal. Trap 2, the next trap downstream, has a current capacity of 628,000 gal. Trap 3, the downstream trap, has a current capacity of 287,000 gal. The three basins were reexcavated in 1992 after they were filled following several storms. Excavated sediment from the traps was stockpiled next to the traps. The sediment traps are approximately 1.5 mi downstream from the TA-50 RLWTF outfall and about 1.4 mi upstream from and west of the Laboratory boundary. Maintenance of the sediment traps was performed as part of the post–Cerro Grande fire recovery work. Excavation of sediment trap 1 was conducted in July 2000. Approximately 384 yd^3 of soil from sediment trap 1 was excavated, transported, and disposed of at TA-54, Area G. Excavation of the soil piles north and adjacent to sediment trap 1 was completed in August 2000. Approximately 1308 yd^3 of soil from the piles was excavated, transported, and disposed of at TA-54, Area G. Sediment trap 3 was excavated in August 2000. Approximately 5040 yd^3 of soil from sediment trap 3 was excavated, transported, and disposed of at TA-54, Area G. In July 2002, the Laboratory requested and obtained NMED concurrence that the environmental media generated during this routine maintenance do not warrant management as F-listed hazardous wastes.

Decision-level data from the 2005–2006 Consent Order Mortandad Canyon investigation indicated the Site meets recreational risk levels, which are acceptable for present-day and foreseeable future land uses of the canyon. In addition, no adverse ecological effects were observed within terrestrial and aquatic systems in the canyon. Following the Las Conchas fire in the summer of 2011, additional sediments were removed from the traps in anticipation of increased sediment deposition from runoff from the burn scar. The SWMU 00-001 sediment traps incurred damage as a result of the extreme storm events that occurred between September 10 and 14, 2013, that were accompanied by record runoff, flooding, and erosion. Therefore, during the summer and fall of 2014, sediment within the SWMU 00-001 sediment traps will be excavated and placed upstream behind a new berm and stabilized, the traps and related spillways will be repaired and improved, and new berms will be constructed upstream of the traps to slow runoff and sediment transport during extreme storm events. The Mortandad sediment traps are routinely inspected.

The project map (Figure 117-1) 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.

117.2 Control Measures

The associated historical industrial activity is the existing sediment traps. They are installed to reduce sediment from discharges upstream of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 117-1).

Table 117-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M02102040005	Established Vegetation		X	X		B
M02105010001	Sediment Trap		X		X	CB
M02105010003	Sediment Trap		X		X	CB
M02105010004	Sediment Trap	X			X	CB

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

117.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.92. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

117.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-12.92 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 117-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30905	5-1-2013
Storm Rain Event	BMP-33015	7-9-2013
Storm Rain Event	BMP-34257	7-29-2013
Storm Rain Event	BMP-35433	9-23-2013
Annual Erosion Evaluation	COMP-36844	11-20-2013

No maintenance activities were conducted at M-SMA-12.92 in 2013.

117.5 Compliance Status

The Site associated with M-SMA-12.92 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 117-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 00-001	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

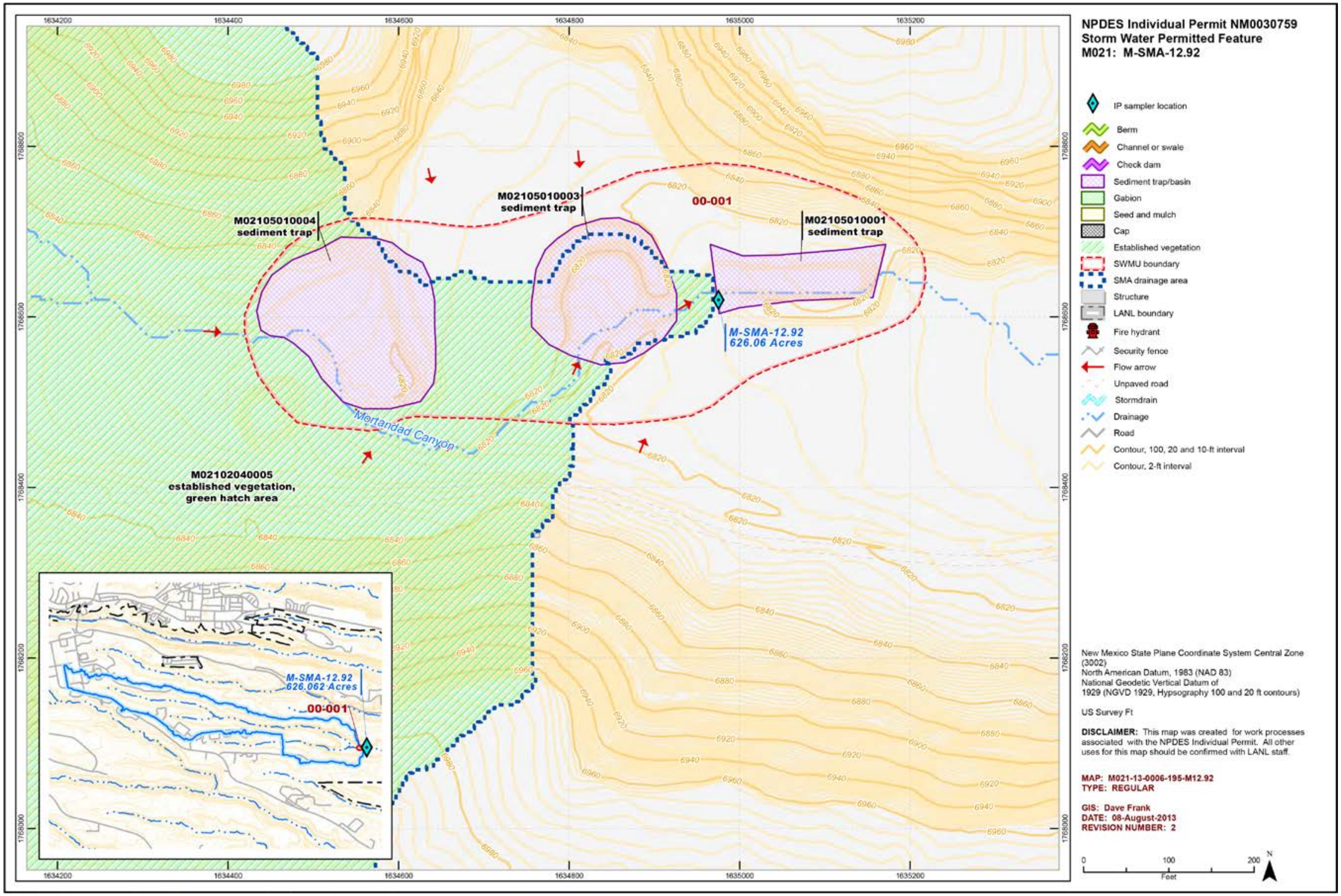


Figure 117-1 M-SMA-12.92 location map

118.0 M-SMA-13: AOC 05-001(c)

118.1 Site Descriptions

One historical industrial activity area is associated with M022, M-SMA-13: Site 05-001(c).

AOC 05-001(c) is a former firing point designated as the larger Beta Far Point Site at TA-05 and is known only by references on maps and memoranda. It reportedly was located several hundred feet east of SWMU 05-001(b) [now part of Consolidated Unit 05-001(a)-99], but its exact location, dates of operation, and types of potential releases are not known, as reported in the 1990 SWMU report. Ultimately, Beta Far Point Site is believed to have been located 600 to 700 ft south-southeast of Firing Points 1 [SWMU 05-001(a)] and 2 [SWMU 05-001(b)]. It was located in Cañada del Buey off the toe of the south mesa, 20 to 30 ft below the mesa top. Two or three 2500-lb shots were detonated at the Site during its period of operation. Shot debris consisted of cabling, tuballoy, steel, aluminum, and wood. The shot debris radius was estimated to be 100 to 200 yd from the firing point.

AOC 05-001(c) was investigated in 1995 and later as part of the Middle Mortandad/Ten Site Aggregate Area investigation in 2004 and 2005. The approved 2010 investigation report concluded that based on the human health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist at AOC 05-001(c). Additionally, no potential ecological risk was found for any receptor. All detected chemicals concentrations and radionuclides activities were below residential SSLs and SALs.

No further investigation or remediation activities are warranted at AOC 05-001(c); the Laboratory recommended this site as corrective action complete consistent with residential use in the approved investigation report in 2011.

The project map (Figure 118-1) 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.

118.2 Control Measures

Potential run-on may enter this Permitted Feature from an unpaved access road on the northern boundary of the SMA. A natural drainage channel bisects the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 118-1).

Table 118-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M02201010012	Seed and Wood Mulch			X		CB
M02202040014	Established Vegetation		X	X		B
M02203010013	Earthen Berm	X			X	B
M02206010008	Rock Check Dam	X			X	CB
M02206010009	Rock Check Dam	X			X	CB
M02206010010	Rock Check Dam	X			X	CB
M02206010011	Rock Check Dam	X			X	CB
M02206020001	Log Check Dam		X		X	CB
M02206020003	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

118.3 Storm Water Monitoring

AOC 05-001(c) is monitored within M-SMA-13. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 118-2 and 118-3). Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for M-SMA-13 and the associated AOC 05-001(c) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for M-SMA-13 for the duration of the IP.

118.4 Inspections and Maintenance

RG203 recorded five storm events at M-SMA-13 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 118-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30906	5-1-2013
Storm Rain Event	BMP-33016	7-9-2013
Storm Rain Event	BMP-34258	7-29-2013
Storm Rain Event	BMP-35434	9-24-2013
Annual Erosion Evaluation	COMP-36845	11-20-2013

No maintenance activities were conducted at M-SMA-13 in 2013.

118.5 Compliance Status

The Site associated with M-SMA-13 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 118-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 05-001(c)	Baseline Monitoring	Corrective Action Complete	No Comment

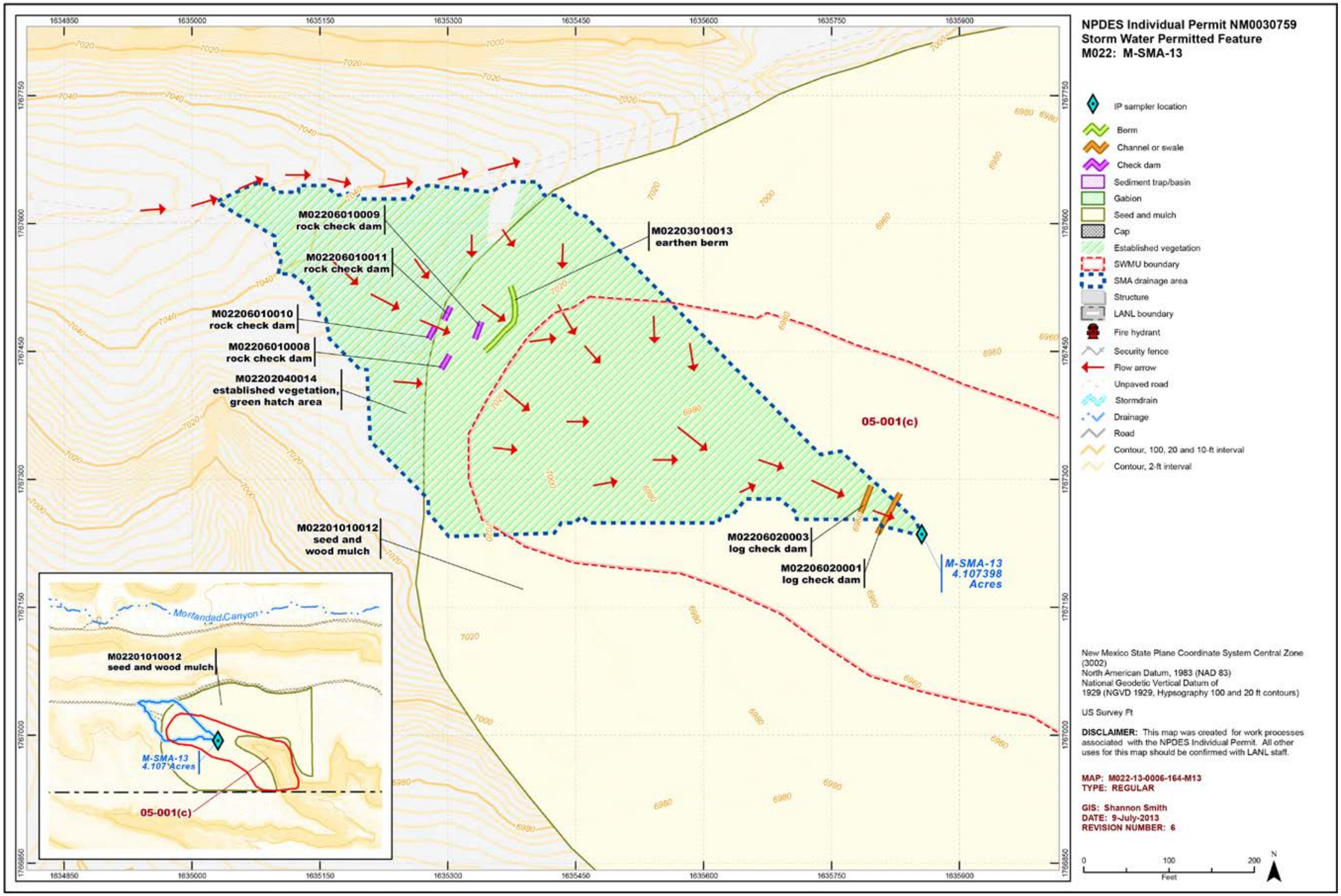
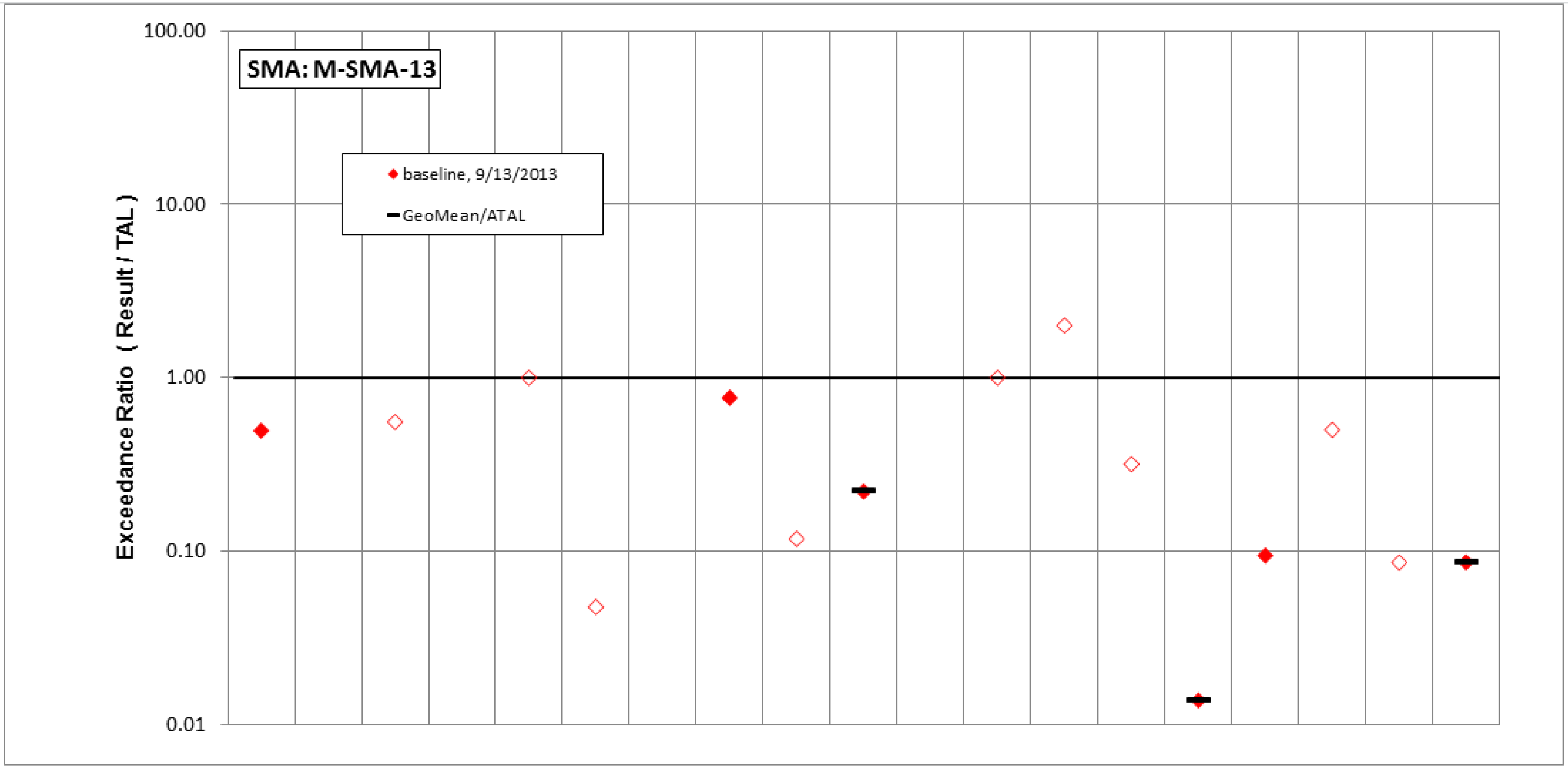


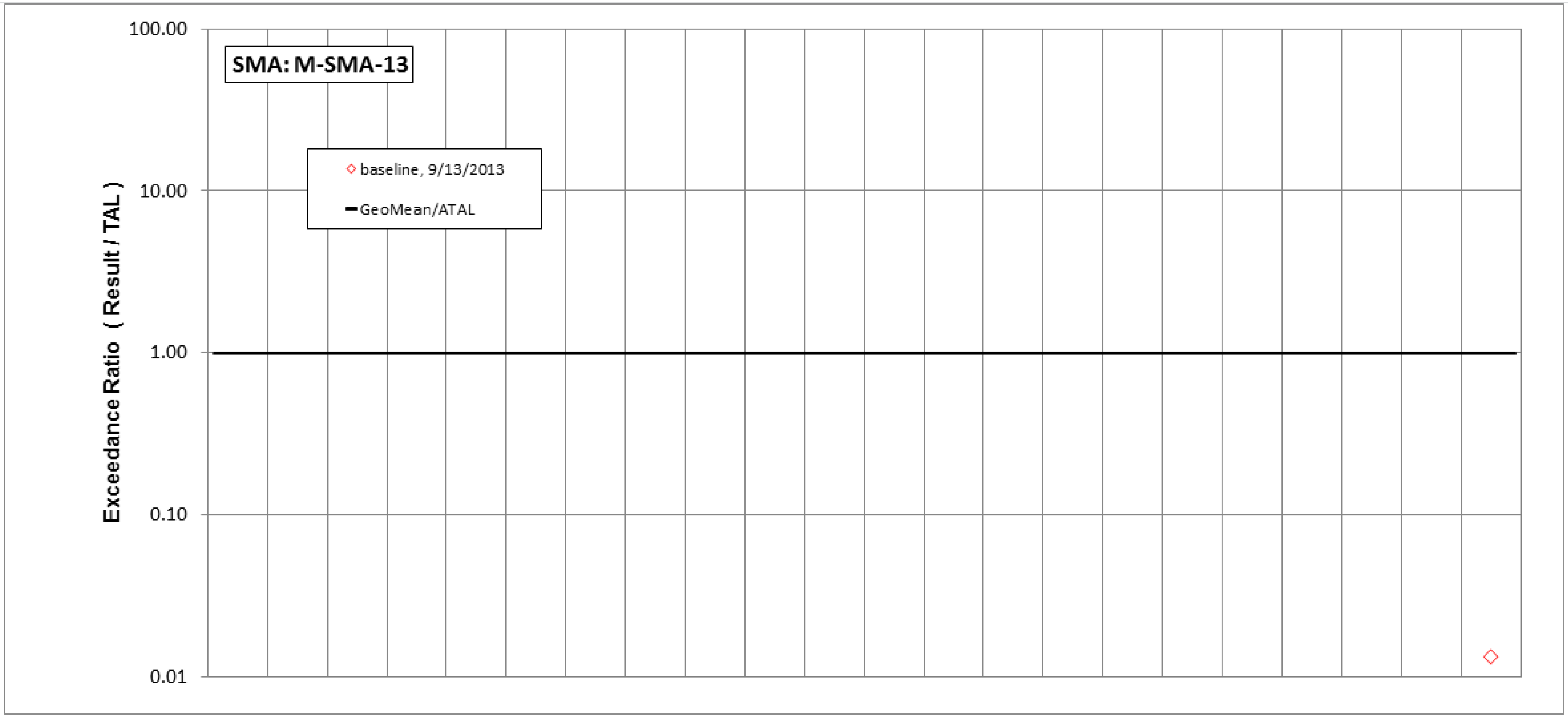
Figure 118-1 M-SMA-13 location map



	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
9/13/2013 result	371	*3*	*5*	15.1	*1*	*10*	1.48	3.29	*2*	0.17	1.1	*5*	***1***	*2*	1.38	3.96	*0.005*	*1.29*	2.59
result / TAL	0.49	*0.005*	*0.56*	0.003	*1*	*0.048*	0.0015	0.77	*0.12*	0.22	0.0065	*1*	***2***	*0.32*	0.014	0.094	*0.5*	*0.086*	0.086

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

Figure 118-2 Inorganic analytical results summary plot for M-SMA-13



	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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.266*	-	-	-	*0.266*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.013*

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

Figure 118-3 Organic analytical results summary plot for M-SMA-13

119.0 Pratt-SMA-1.05: SWMUs 35-003(h), 35-003(p), 35-004(h), 35-009(d), 35-016(k), and 35-016(m) and AOCs 35-003(r) and 35-016(l)

119.1 Site Descriptions

Eight historical industrial activity areas are associated with T001, Pratt-SMA-1.05: Sites 35-003(h), 35-003(p), 35-003(r), 35-004(h), 35-009(d), 35-016(k), 35-016(l), and 35-016(m).

SWMU 35-003(h) is the former location of a concrete retention tank that was added to the TA-35 WWTP in 1961. The retention tank was 8 × 12 × 10 ft deep and was connected to buildings 35-10 and 35-41 by 4-in.-diameter stainless-steel underground pipes. The retention tank and associated piping were removed in February 1985 during the Laboratory's RLW treatment consolidation project. During decommissioning, no leaks or discharges from the tank were documented. The tank and excavated soil were field screened for radioactivity during removal; no radioactivity above background levels was detected.

A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

SWMU 35-003(p) is the location of the former air-filter building (35-7). Radioactively contaminated air from work areas in building 35-2 was filtered in building 35-7. The air filters were cleaned with tap water or wastewater from the TA-35 WWTP tank farm [Consolidated Unit 35-003(d) 00]; the wastewater was contaminated with strontium-89 and strontium-90, both beta emitters. Buildup of isotopic strontium in the air filters required increased filter washings, which produced more radioactive wastewater. The large volumes of waste water exceeded the storage capacity of the system leading to unplanned spills and overflows to Pratt Canyon. The air-filter building was decommissioned in 1980 and removed in 1996.

Phase I Consent Order investigations are complete for SWMU 35-003(p); the Site meets residential risk levels. A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

Sites 35-003(h) and 35-003(p), along with numerous other SWMUs and AOCs, are part of Consolidated Unit 35-003(a)-99, the former TA-35 WWTP, and were investigated as a single Site. The same surface sampling data set applies to both Sites.

SWMU 35-004(h) consists of a former outdoor hazardous waste SAA located near the northeast corner of the former air filter building (former building 35-7) and next to former waste line manhole 35-11. Waste accumulated in the SAA reportedly included small quantities of potentially hazardous oils solvents and Freon. A 1979 photograph shows what appears to be a small storage container/drum on the asphalt paving next to the northeast corner of former building 35-7. A 1983 photograph shows the container/drum had been replaced by a small rectangular storage cabinet. The SAA was decommissioned before D&D activities began in 1985, when the sections of the waste lines next to the east and north side of former building 35-7 were removed. The SWMU 35-004(h) storage area was situated over the former building 35-7 waste lines and manhole 35-1; when these waste lines were removed, the location of the storage area was also removed. In 1996, building 35-7, its foundation, and all remaining inactive buried waste lines were removed to a depth of approximately 15 ft bgs. After these structures were removed, the entire area was backfilled with clean fill and regraded.

A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

SWMU 35-009(d) is an inactive septic system that consists of a 1600-gal. septic tank (structure 35-65), a cleanout manhole (structure 35-64), and an associated leach field. The septic system is located east of the northeast corner of building 35-27. An outfall from the east end of the septic system discharged to the south into a small extension of Ten Site Canyon, designated as Pratt Canyon. The leach field covers an area of approximately 1800 ft^2 and consists of fine- to coarse-grained sandstone and cobble filter bed material. Consolidated tuff is reached at depths of 8 to 10 ft bgs in the leach field.

This septic system served the Nuclear Safeguards Research Building (35-27) and other laboratory buildings at TA-35 from 1966 to 1990 when it was taken out of service. The tank was reportedly pumped on a weekly basis. The septic tank may have received laboratory wastes in addition to sanitary wastes. During the 1996 VCA conducted at SWMU 35-009(d), the contents of the septic tank were removed and disposed of off-site, and the tank and manhole were filled with concrete.

All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

SWMU 35-016(k) is a former NPDES-permitted outfall (04A116) that handled cooling water from the gas laser building (35-29) at TA-35. The outfall was installed in 1961 and deactivated in 1987. It handled once-through cooling water from a closed heat-exchange system that served a gas laser in building 35-29. The drainline runs eastward and discharges into a riprap-lined channel, which drains into a small tributary of Ten Site Canyon, informally known as Pratt Canyon.

SWMU 35-016(k) and AOC 35-016(l), along with numerous other SWMUs and AOCs, are part of Consolidated Unit 35-016(k)-00 and were investigated as a single Site. The same surface sampling data set applies to both Sites.

A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

SWMU 35-016(m) consists of a 1.5-in.-diameter metal blowdown line and a 4-in.-diameter metal drainline intended to serve an inactive noncontact cooling tower outfall established in 1966 and deactivated in 1982. This outfall is located on the east end of the TA-35 mesa top south of a cooling tower (structure 35-33) and east of the Nuclear Safeguards Research Building (35-27). The formerly permitted outfall associated with the cooling tower was intended for discharging treated cooling tower blowdown from two planned reactors in building 35-27. However, the reactors were never installed, the cooling tower was never operated, and the outfall never served its intended purpose. The SWMU 35-016(m) outfall has discharged only storm water runoff from paved parking areas at the east end of the TA-35 mesa top.

A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

None of the samples collected at SWMU 35-016(m) were analyzed for gross-alpha radioactivity. However, three shallow samples were analyzed for isotopic plutonium and uranium, which are alpha emitters. Uranium-234 and uranium-238 were each detected above soil BVs in one of three shallow samples with maximum activities 1.1 and 1.6 times BVs, respectively.

AOC 35-003(r) is the location of a former outfall for liquid sludge effluent associated with the former 35-10 holding tanks, [SWMU 35-003(d)] and the former TA-35 WWTP. This Site is located in Pratt Canyon and extends from the eastern edge of Ten Site Mesa (the headwall of Pratt Canyon) to the confluence of Pratt and Ten Site Canyons. The former TA-35 WWTP that released the effluent ceased operation in 1963 when the new RLWTF came on line at TA-50. The former structures associated with this consolidated unit are collectively referred to as the "Tank Farm."

The former TA-35 WWTP received and processed air and liquid wastes from radiochemistry laboratories and from the operation of radioactive lanthanum-140 hot cells located in building 35-2, where kilocurie sources of lanthanum-140 were prepared during the 1950s. The liquid wastes from the building 35-2 laboratories were acidic and included barium-140, lanthanum 140, strontium-89, strontium-90, and yttrium-90, all beta emitters. From 1951 to 1955, the treated wastewater was stored in four concrete tanks (Tank Farm 35-10) for approximately 6 mo to allow the lanthanum-140 to decay. The water was either allowed to evaporate or used to wash air-cleaning filters from the filter building. If the incoming waste volumes were greater than losses through evaporation, the stored water was released to Pratt Canyon, a small side canyon east of the TA-35 WWTP. Because the Tank Farm 35-10 holding tanks did not have a gravity drainline to the canyon, all contents were pumped through building 35-7 (the air-filter building) for treatment and discharged through a daylight diversion channel into Pratt Canyon. Several reports mention that the 35-10 holding tanks accidentally overfilled and spilled contaminated liquids directly into Pratt Canyon. These occasional spills were the only discharges that did not flow through the daylight diversion channel.

The TA-35 WWTP operated from 1951 to 1963. All buildings, foundations, and structures associated with Consolidated Unit 35-003(d)-00 were removed during D&D activities in 1981 and 1985. After the 1985 removal, the area was backfilled with clean fill material and native tuff.

AOC 35-003(r) along with SWMUs 35-003(d, l, and q) comprise Consolidated Unit 35-003(d)-00; the SWMUs were investigated as a single Site.

A request was submitted to NMED in August 2011 under the Consent Order for a COC without controls for this Site.

AOC 35-016(l) consists of active storm water drainage channels established in 1961 to handle runoff from building 35-29 and sterilized water leaks from an ultraviolet water sterilizer in room 001A of building 35-29 in TA-35. The drainages flow eastward to a 24-in. CMP outfall located on the north side of the security fence for building 35-27, discharging to the same channel as SWMU 35-016(k) into Pratt Canyon. A concrete catch basin located at the head of the drainage channels collects and detains storm water runoff before discharging to the drainage channels. Stained areas from past dielectric oil spills are present in the source areas for these channels. One of the areas at the head of the channel is the site of a transformer near the southwest corner of building 35-29 that leaked transformer oil. A VCA conducted at the Site removed soil contaminated with PCBs and PAHs.

AOC 35-016(l) and SWMU 35-016(k), along with numerous other SWMUs and AOCs, are part of Consolidated Unit 35-016(k)-00 and were investigated as a single Site. The same surface sampling data set applies to both Sites.

Consent Order Phase I investigation sampling is complete. A request for a COC without controls was submitted to NMED in August 2011.

The project map (Figure 119-1) 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.

119.2 Control Measures

Potential contributions to run-on at this SMA originate from the paved areas to the west as well as the roof drains of buildings in the area. Existing controls address these run-on sources. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 119-1).

Table 119-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00102040020	Established Vegetation		X	X		B
T00103010002	Earthen Berm		X		X	CB
T00103010017	Earthen Berm	X			X	CB
T00103020013	Base Course Berm	X			X	CB
T00103020014	Base Course Berm	X			X	CB
T00103020015	Base Course Berm	X			X	CB
T00103020016	Base Course Berm	X			X	CB
T00103020018	Base Course Berm	X			X	CB
T00103090004	Curbing	X			X	CB
T00103120008	Rock Berm		X		X	CB
T00104020006	Concrete/Asphalt Channel/Swale	X		X		CB
T00106010011	Rock Check Dam		X		X	CB
T00106010012	Rock Check Dam		X		X	CB
T00107010003	Gabions		X		X	CB
T00108020005	Rock Cap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and/or certification are planned for 2014 as part of corrective action.

119.3 Storm Water Monitoring

SWMUs 35-003(h), 35-003(p), 35-004(h), 35-009(d), 35-016(k), and 35-016(m) and AOCs 35-003(r) and 35-016(l) are monitored within Pratt-SMA-1.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 119-2 and 119-3). Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 943 µg/L (MTAL is 750 µg/L),
- Mercury concentration of 0.91 µg/L (ATAL is 0.77 µg/L),
- Gross-alpha activity of 96.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 447 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 35-003(h):

- Aluminum is not known to have been associated with industrial materials historically managed at these Sites. Aluminum was not detected above the soil BV in the 11 shallow (i.e., less than 3 ft bgs) Consent Order and RFI samples collected at Consolidated Unit 35-003(a)-99.
- Mercury is not known to have been associated with industrial materials historically managed at these Sites. Mercury was detected slightly above the soil BV in 5 of 11 shallow samples with a maximum concentration 2.1 times the soil BV.
- PCBs are not known to have been associated with industrial materials historically managed at these Sites. PCBs were not detected in the shallow soil samples collected at Consolidated Unit 35-003(a)-99.
- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Sites. Shallow samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for isotopic plutonium and uranium, which are alpha emitters. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 35-003(p):

- Aluminum is not known to have been associated with industrial materials historically managed at these Sites. Aluminum was not detected above the soil BV in the 11 shallow (i.e., less than 3 ft bgs) Consent Order and RFI samples collected at Consolidated Unit 35-003(a)-99.
- Mercury is not known to have been associated with industrial materials historically managed at these Sites. Mercury was detected slightly above the soil BV in 5 of 11 shallow samples with a maximum concentration 2.1 times the soil BV.
- PCBs are not known to have been associated with industrial materials historically managed at these Sites. PCBs were not detected in the shallow soil samples collected at Consolidated Unit 35-003(a)-99.
- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Sites. Shallow samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for isotopic plutonium and uranium, which are alpha emitters. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 35-004(h):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site.
- Mercury is not known to have been associated with industrial materials historically managed at this Site.
- PCBs are not known to have been associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. None of the samples collected at SWMU 35-004(h) were analyzed for gross-alpha radioactivity. However, a single shallow sample was analyzed for isotopic plutonium and uranium, which are alpha emitters. No plutonium or uranium isotopes were detected above BVs or FVs in this sample.

SWMU 35-009(d):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected or detected above BVs in shallow Consent Order and RFI samples collected at SWMU 35-009(d).
- Mercury is not known to have been associated with industrial materials historically managed at this Site. Mercury was not detected in shallow Consent Order and RFI samples collected at SWMU 35-009(d).
- PCBs are not known to have been associated with industrial materials historically managed at this Site. Shallow RFI samples were not analyzed for PCBs.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. None of the samples collected at SWMU 35-009(d) were analyzed for gross-alpha radioactivity. However, shallow samples were analyzed for gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for isotopic plutonium and uranium, which are alpha emitters. No alpha-emitting radionuclides, including plutonium and uranium isotopes, were detected above BVs/FVs in shallow Consent Order and RFI samples collected at SWMU 35-009(d). In addition, these radionuclides are exempt from regulation under the CWA.

SWMU 35-016(k):

- Aluminum is not known to have been associated with industrial materials historically managed at these Sites. Aluminum was not detected above soil BV in the 10 shallow Consent Order and RFI samples collected at Consolidated Unit 35-016(k)-00.
- Mercury is not known to have been associated with industrial materials historically managed at these Sites. Mercury was detected above the sediment BV in 1 of 10 shallow samples at a maximum concentration 10.4 times the sediment BV.
- PCBs are not known to have been associated with industrial materials historically managed at these Sites. PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow soil, sediment, and/or tuff samples collected at Consolidated Unit 35-016(k)-00, at maximum concentrations 9% and 41% of the residential SSLs in soil and sediment samples, respectively. PCBs were likely associated with industrial material historically managed at several SWMUs and

AOCs upgradient of SWMU 35-016(k) and AOC 35-016(l): SWMUs 35-003(j), 35-003(k), 35-014(b), and 35-015(b) and AOCs 35-014(c), 35-014(d), and 35-018(a). These SWMUs and AOCs include the former locations of dielectric oil spills from leaking equipment and/or containers and resulting areas of stained soil and tuff. The dielectric oil likely contained low concentrations (<50 mg/kg) of PCBs. The equipment and containers have been removed and many of the Sites were remediated; however, impacted soil and tuff likely remain within the source areas for SWMU 35-016(k) and AOC 35-016(l).

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at these Sites. Shallow samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for isotopic plutonium and uranium which are alpha emitters. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 35-016(m):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above BV in shallow Consent Order and RFI samples collected at SWMU 35-016(m).
- Mercury is not known to have been associated with industrial materials historically managed at this Site. Mercury was not detected in shallow Consent Order and RFI samples collected at SWMU 35-016(m).
- PCBs are not known to have been associated with industrial materials historically managed at this Site. PCBs were not detected in shallow Consent Order and RFI samples collected at SWMU 35-016(m).
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. None of the samples collected at SWMU 35-016(m) were analyzed for gross-alpha radioactivity. However, three shallow samples were analyzed for isotopic plutonium and uranium, which are alpha emitters. These radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

AOC 35-003(r):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above the soil, sediment, or tuff BVs in the 19 shallow Consent Order and RFI samples collected at Consolidated Unit 35-003(a)-99.
- Mercury was likely associated with industrial materials historically managed at this Site. Mercury was detected above the sediment BV in 10 of 11 shallow samples with a maximum concentration 16 times the sediment BV.
- PCBs were likely associated with industrial materials historically managed at this Site. PCBs were also associated with industrial material historically managed at several SWMUs and AOCs upstream of AOC 35-003(r), including SWMUs 35-003(j), 35-003(k), 35-014(b), and 35-015(b) and AOCs 35-014(c), 35-014(d), and 35-018(a). These SWMUs and AOCs include the former

locations of dielectric oil spills from leaking equipment and/or containers and resulting areas of stained soil and tuff. The dielectric oil likely contained low concentrations (<50 mg/kg) of PCBs. The equipment and containers have been removed, and many of the Sites were remediated; however, impacted soil and tuff likely remain within the source areas for AOC 35-003(r). Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow sediment samples collected at Consolidated Unit 35-003(a)-99 at maximum concentrations 1% and 20% of residential SSLs, respectively. These data are from shallow samples in the hillside drainage that was not remediated.

- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Sites. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for isotopic plutonium and uranium, which are alpha emitters. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

AOC 35-016(l):

- Aluminum is not known to have been associated with industrial materials historically managed at these Sites. Aluminum was not detected above soil BV in the 10 shallow Consent Order and RFI samples collected at Consolidated Unit 35-016(k)-00.
- Mercury is not known to have been associated with industrial materials historically managed at these Sites. Mercury was detected above the sediment BV in 1 of 10 shallow samples at a maximum concentration 10.4 times the sediment BV.
- PCBs are not known to have been associated with industrial materials historically managed at these Sites. PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow soil, sediment, and/or tuff samples collected at Consolidated Unit 35-016(k)-00, at maximum concentrations 9% and 41% of the residential SSLs in soil and sediment samples, respectively. PCBs were likely associated with industrial material historically managed at several SWMUs and AOCs upgradient of SWMU 35-016(k) and AOC 35-016(l): SWMUs 35-003(j), 35-003(k), 35-014(b), and 35-015(b) and AOCs 35-014(c), 35-014(d), and 35-018(a). These SWMUs and AOCs include the former locations of dielectric oil spills from leaking equipment and/or containers and resulting areas of stained soil and tuff. The dielectric oil likely contained low concentrations (<50 mg/kg) of PCBs. The equipment and containers have been removed and many of the Sites were remediated; however, impacted soil and tuff likely remain within the source areas for SWMU 35-016(k) and AOC 35-016(l).
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at these Sites. Shallow samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for isotopic plutonium and uranium which are alpha emitters. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 119-2 and 119-3. 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 119-2 and 119-3.

Monitoring location Pratt-SMA-1.05 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 and mercury 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 2013 is between these two values.
- Mercury—The mercury UTLs from undisturbed Bandelier Tuff and from developed urban landscape background storm water run-on 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, no comparison to mercury BVs in storm water could be made.
- 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 2013 gross-alpha result is between these 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 2013 is greater than these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

119.4 Inspections and Maintenance

RG200.5 recorded six storm events at Pratt-SMA-1.05 during the 2013 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 119-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30812	4-30-2013
Storm Rain Event	BMP-33009	7-10-2013
Storm Rain Event	BMP-33638	7-16-2013
Storm Rain Event	BMP-34245	7-29-2013
Storm Rain Event	BMP-35767	9-24-2013
Annual Erosion Evaluation	COMP-36751	11-20-2013
TAL Exceedance	COMP-37075	11-20-2013

No maintenance activities were conducted at Pratt-SMA-1.05 in 2013.

119.5 Compliance Status

The Sites associated with Pratt-SMA-1.05 are High Priority Sites. The High Priority Site deadline for the certification of corrective action is now 1 yr from the date of an observed TAL exceedance, which for Pratt-SMA-1.05 is October 24, 2014.

Table 119-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-003(h)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
SWMU 35-003(p)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
AOC 35-003(r)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
SWMU 35-004(h)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
SWMU 35-009(d)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
SWMU 35-016(k)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
AOC 35-016(l)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
SWMU 35-016(m)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

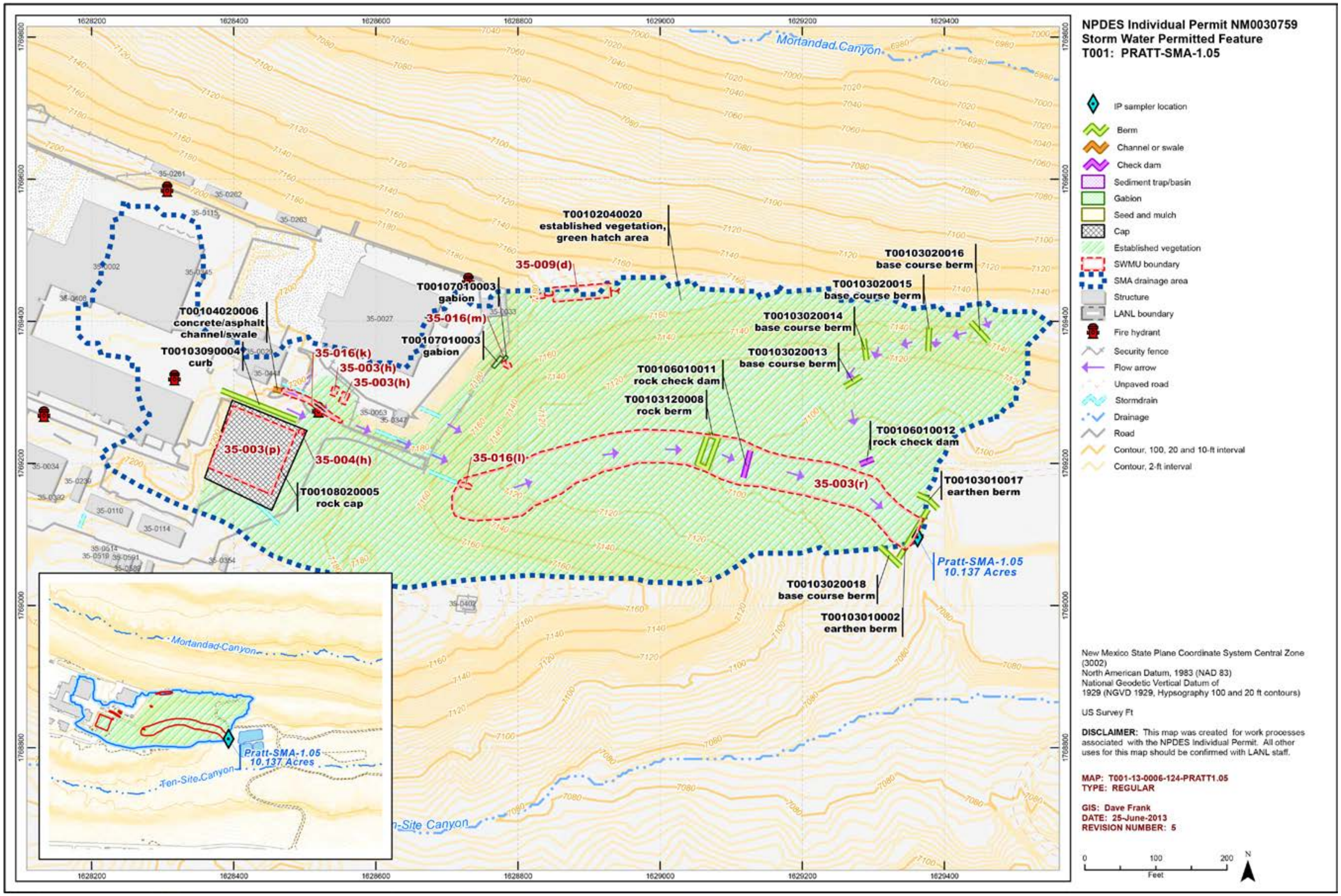
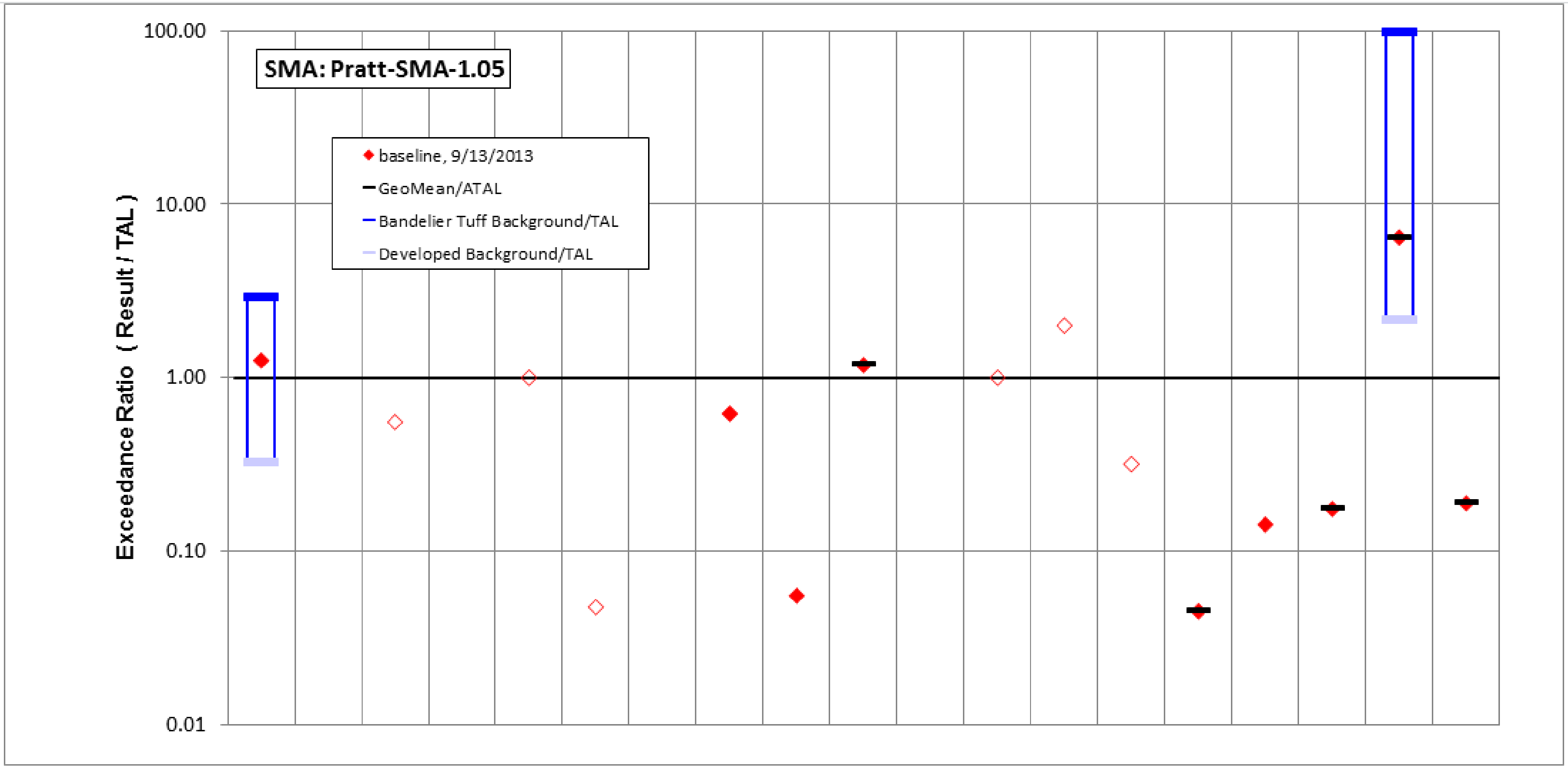


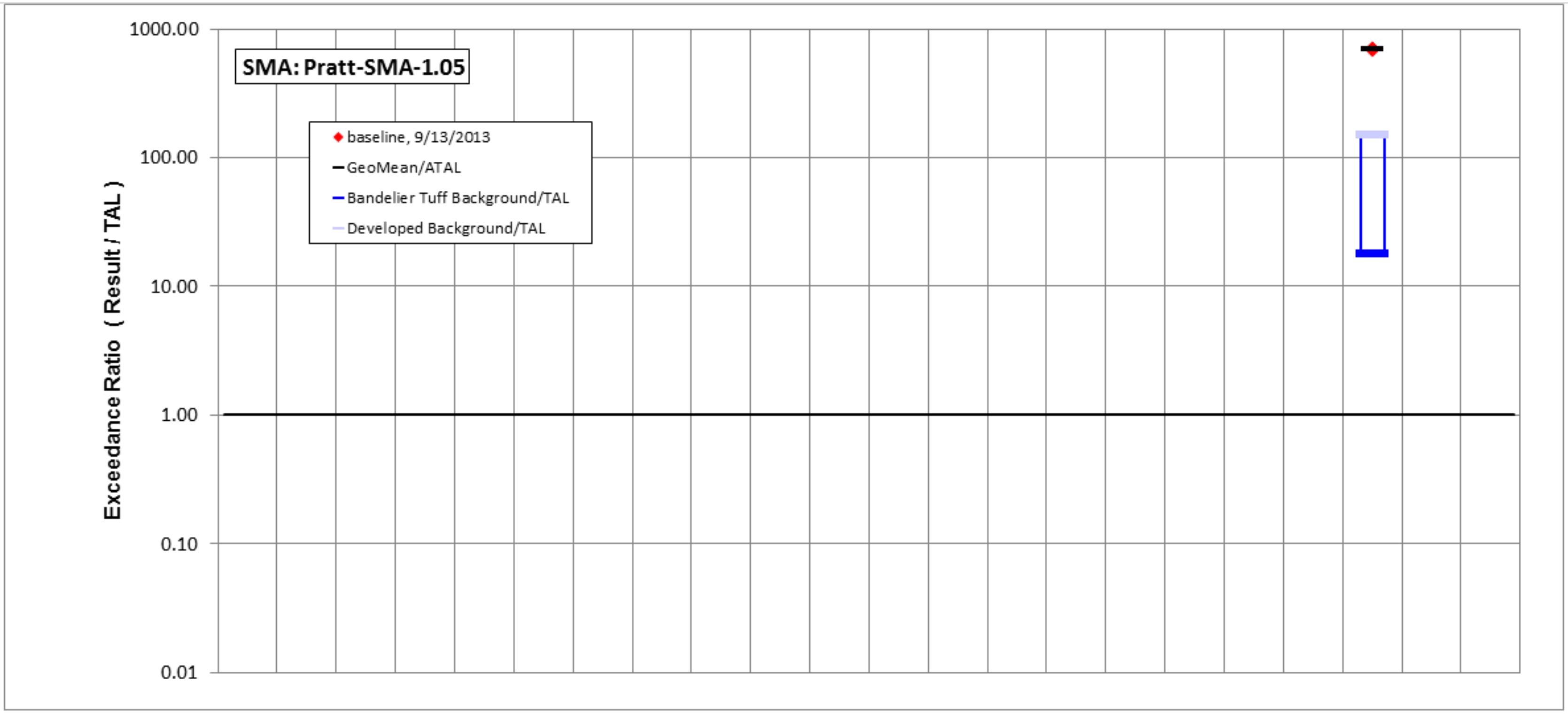
Figure 119-1 Pratt-SMA-1.05 location map



	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
9/13/2013 result	**943**	*3*	*5*	17.8	*1*	*10*	1.98	2.67	0.942	**0.91**	1.23	*5*	***1***	*2*	4.5	5.98	0.0018	**96.5**	5.67
result / TAL	**1.3**	*0.005*	*0.56*	0.0036	*1*	*0.048*	0.002	0.62	0.055	**1.2**	0.0072	*1*	***2***	*0.32*	0.045	0.14	0.18	**6.4**	0.19

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

Figure 119-2 Inorganic analytical results summary plot for Pratt-SMA-1.05



	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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.447**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**700**	-	-

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

Figure 119-3 Organic analytical results summary plot for Pratt-SMA-1.05

120.0 T-SMA-1: SWMUs 50-006(a) and 50-009

120.1 Site Descriptions

Two historical industrial activity areas are associated with T002, T-SMA-1: Sites 50-006(a) and 50-009.

SWMU 50-006(a) is the former outfall area at the head of Ten Site Canyon impacted by two accidental operational releases of radioactive liquid waste in 1974 when a sump in a pumping station (building 50-2) overflowed, causing untreated radioactive wastewater to be discharged to waste lines 55 and 67 and the outfall area at the head of Ten Site Canyon. A soil sample collected from the outfall area for waste line 67 after the line was plugged in 1975 showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient of the outfall into Ten Site Canyon. Waste lines 67 and 55 were subsequently removed in 1981. Data from samples collected during waste line removal showed elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90. As a result, approximately of 2472 ft^3 of contaminated soil was removed from the SWMU 50-006(a) outfall area at the head of Ten Site Canyon.

SWMU 50-006(a) will be included in the supplemental investigation report for Upper Mortandad Canyon Aggregate Area, to be submitted to NMED under the Consent Order in 2014. The Site meets residential risk levels and will be recommended for a COC without controls. SWMU 50-006(a) will be eligible for a COC upon approval of the report by NMED. A Part I.E.4 (c) force majeure request was submitted to EPA in September 2013 to stay the deadline for completion of corrective action until NMED acts on the COC request.

SWMU 50-009 is an inactive 11.8-acre landfill consisting of 7 disposal pits and 108 shafts known as MDA C. Solid waste containing hazardous constituents as well as radioactive waste was disposed of in the landfill between 1948 and 1974. The depths of the 7 pits at MDA C range from 12 to 25 ft below the original ground surface, and the depths of the 108 shafts range from 10 to 25 ft below the original ground surface. The original ground surface is defined as the surface beneath the cover that was placed over the site in 1984. The pits and shafts are constructed in the Tshirege Member of the Bandelier Tuff. The topography of MDA C is relatively flat, although the slope descends to the north where the northeast corner of MDA C abuts the south wall of Ten Site Canyon. The pits were subsequently covered with varying amounts of crushed tuff and fill material. The shafts were sealed by filling them with crushed tuff, followed by concrete. The surface of the site is covered with native grasses. The dimensions and operation dates of the pits and shafts are listed in the historical investigation report for MDA C.

Wastes routinely disposed of in the pits consisted of boxes and bags of trash from chemistry laboratories and containerized sludge from WWTPs. The general operating procedure at MDA C was to deposit a single layer of waste over the course of several days and then cover the waste with crushed tuff. Another layer of waste would be emplaced, covered, and the process repeated until the capacity of the pit was reached. The crushed tuff acted as a temporary cover to prevent exposure of the waste to workers. Placement of all waste in the pit below the original land surface ensured the waste was contained within the disposal pit and prevented exposure to storm water runoff during the operational life of each pit. When MDA C was decommissioned in 1974, most of the surface was covered with crushed tuff and fill. The new surface was recontoured and seeded. In 1984, approximately 1.5 ft of crushed tuff, followed by 0.5 to 3 ft of topsoil, was placed over the surface of the pits. The above-mentioned original ground surface consists of the base of this 1984 fill layer. The surface of the Site is currently covered with native grasses. The thickness of the fill was verified by reviewing borehole logs from Consent Order investigations conducted at MDA C in 2004–2007 and 2008–2009.

Consent Order Phase I investigation sampling for SWMU 50-009 is complete. A CME was conducted at MDA C in 2012 to evaluate alternatives for preventing future exposure to buried waste. The results of the CME were submitted to NMED in September 2012.

The project map (Figure 120-1) 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.

120.2 Control Measures

The potential for run-on from surrounding roads is minimal. However, there is potential run-on from the paved areas below, especially the northeast portion of the SMA. A corrective action plan has been developed for this monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 120-1).

Table 120-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00203010013	Earthen Berm	X			X	EC
T00203010014	Earthen Berm	X			X	EC
T00203010015	Earthen Berm		X		X	EC
T00204020016	Concrete/Asphalt Channel/Swale	X		X		EC
T00204040017	Culvert	X		X		EC
T00204040018	Culvert	X		X		EC
T00208010001	Earth Cap	X		X		CB
T00208010019	Earth Cap	X		X		EC

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

Enhanced controls installation and/or certification are planned for 2014 as part of corrective action.

120.3 Storm Water Monitoring

SWMUs 50-006(a) and 50-009 are monitored within T-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on July 30, 2011, and August 15, 2011 (Figures 120-2 and 120-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 12.6 µg/L and 21.2 µg/L is 4.3 µg/L),
- Zinc concentration of 103 µg/L and 324 µg/L (MTAL is 42 µg/L), and
- PCB concentration of 10 ng/L 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.

SWMU 50-006(a):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in 31 shallow Consent Order or RFI samples collected at the Site.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above the sediment BV in 1 of 8 shallow Consent Order samples at a concentration 1.4 times the BV.
- PCBs are not known to be associated with industrial materials historically managed at the Site. PCB mixtures Aroclor-1254 and Aroclor-1260 were each detected in 2 to 17 shallow samples at maximum concentrations 6% and 62% of the residential SSL, respectively.

SWMU 50-009:

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in 31 shallow Consent Order or RFI samples collected at the Site.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above the sediment BV in 1 of 8 shallow Consent Order samples at a concentration 1.4 times the BV.
- PCBs are not known to be associated with industrial materials historically managed at the Site. PCB mixtures Aroclor-1254 and Aroclor-1260 were each detected in 2 to 17 shallow samples at maximum concentrations 6% and 62% of the residential SSL, respectively.

Potential contaminants associated with industrial materials historically managed at Site 50-009 are various chemicals, including metals, VOCs, SVOCs, and radionuclides. These materials could potentially have included copper, zinc, and PCBs. These materials, however, were placed in subsurface disposal pits and shafts and subsequently covered with crushed tuff. Therefore, these materials are not, nor have they ever been, exposed to storm water. In November 2013, a request was submitted to EPA Region 6 certifying the no exposure condition of Site 50-009 and for the completion of corrective action pursuant to Part 1.E.2(c) of the IP.

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 120-2 and 120-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau,

T-SMA-1, Earthen Berm, T00203010014 (photo ID 32353-1) including buildings, parking lots, roads, and associated features, and are labeled "Developed Background" in Figures 120-2 and 120-3.

Monitoring location T-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and zinc 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.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are both between these two values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. One of the zinc results from 2011 is less than both of these values, and the other result is between them.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. One of the PCB results from 2011 is less than both of these values, and the other result is between them.

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

120.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-1 during the 2013 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 120-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-31144	3-25-2013
Construction	COMP-31213	4-1-2013
Construction	COMP-31380	4-8-2013
Construction	COMP-31459	4-15-2013
Annual Erosion Evaluation	COMP-30926	4-22-2013
Construction	COMP-31427	4-22-2013
Construction	COMP-31790	4-29-2013
Construction	COMP-31801	5-6-2013
Construction	COMP-32021	5-13-2013
Enhanced Control Measure Verification	BMP-32353	5-25-2013
Storm Rain Event	BMP-33000	7-8-2013
Storm Rain Event	BMP-33629	7-23-2013
Storm Rain Event	BMP-34236	8-6-2013
Storm Rain Event	BMP-35758	9-25-2013
Annual Erosion Evaluation	COMP-36865	11-19-2013

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

Table 120-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33990	Remove trash/debris and pine needles from the drop inlet grate of culvert T00204040018. Remove sediment from concrete swale T00204020016 and place on north side of concrete swale where erosion occurred.	7-24-2013	1 day(s)	Maintenance conducted in timely manner.
BMP-34648	Earthen Berm [T00203010015] Repair berm by removing existing matting. Add clean fill to damaged/degraded areas. Compact fill, Re-apply seed and matting to berm. Culvert [T00204040018] Install a 6-inch layer of small granular material (fill, gravel, etc. in accordance with the BMP Manual or ADEP Specifications) around the exposed HDPE pipe. Cover this layer with filter fabric. Cover exposed soil with filter fabric. Backfill area with Type B riprap (consistent with design and original placement)	9-9-2013	47 day(s)	Maintenance conducted as soon as practicable.

120.5 Compliance Status

The Sites associated with T-SMA-1 are High Priority Sites. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 120-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 50-006(a)	Corrective Action Initiated	Force Majeure Requested	LANL, September 23, 2013, “NPDES Permit No. NM0030759 — Request for an Extension Due to Force Majeure under Part I.E.4(c) for Sites in Upper Mortandad Canyon”
SWMU 50-009	Corrective Action Initiated	Corrective Action Complete	LANL, October 31, 2013, “Submittal of Completion of Corrective Action for T-SMA-1, Site 50-009”

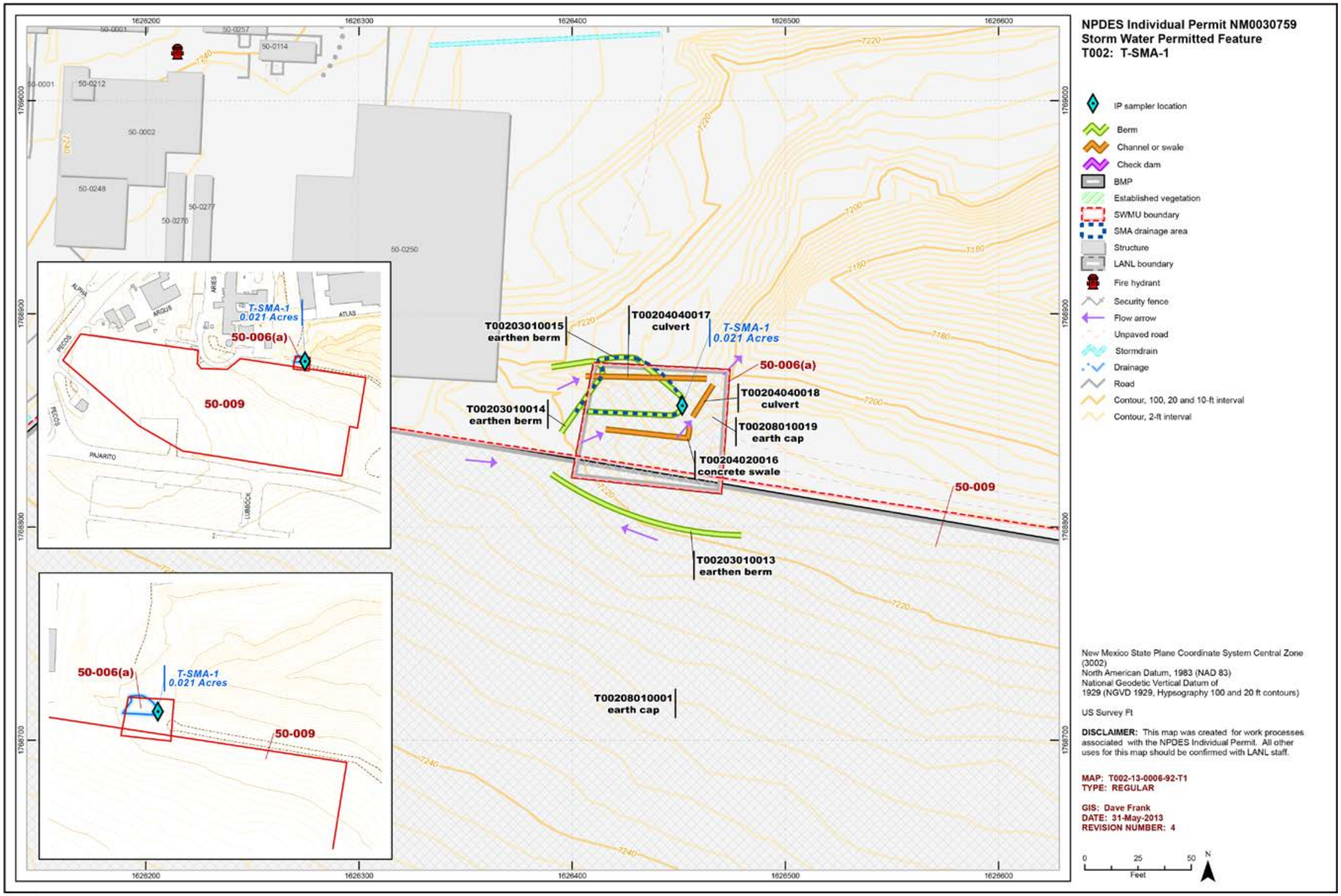
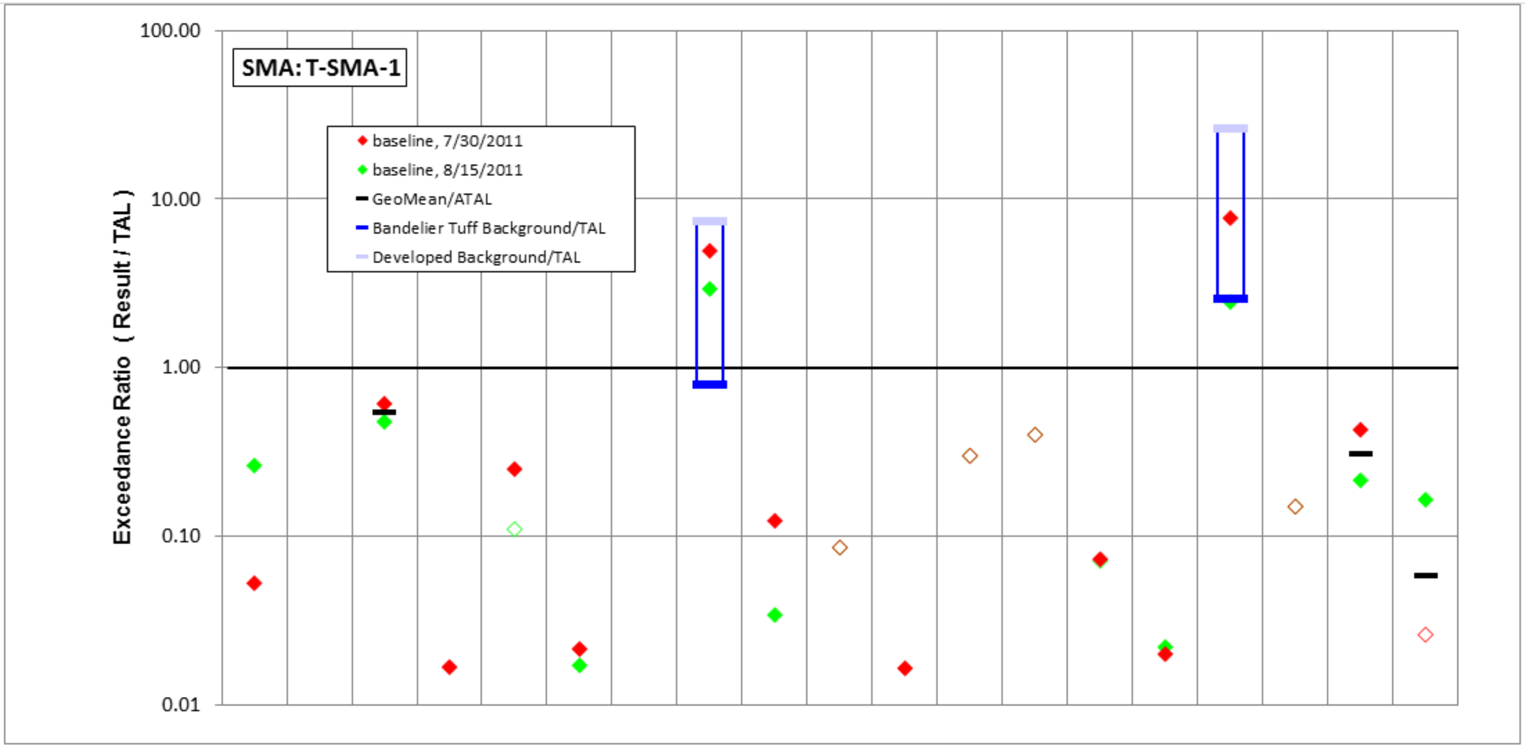


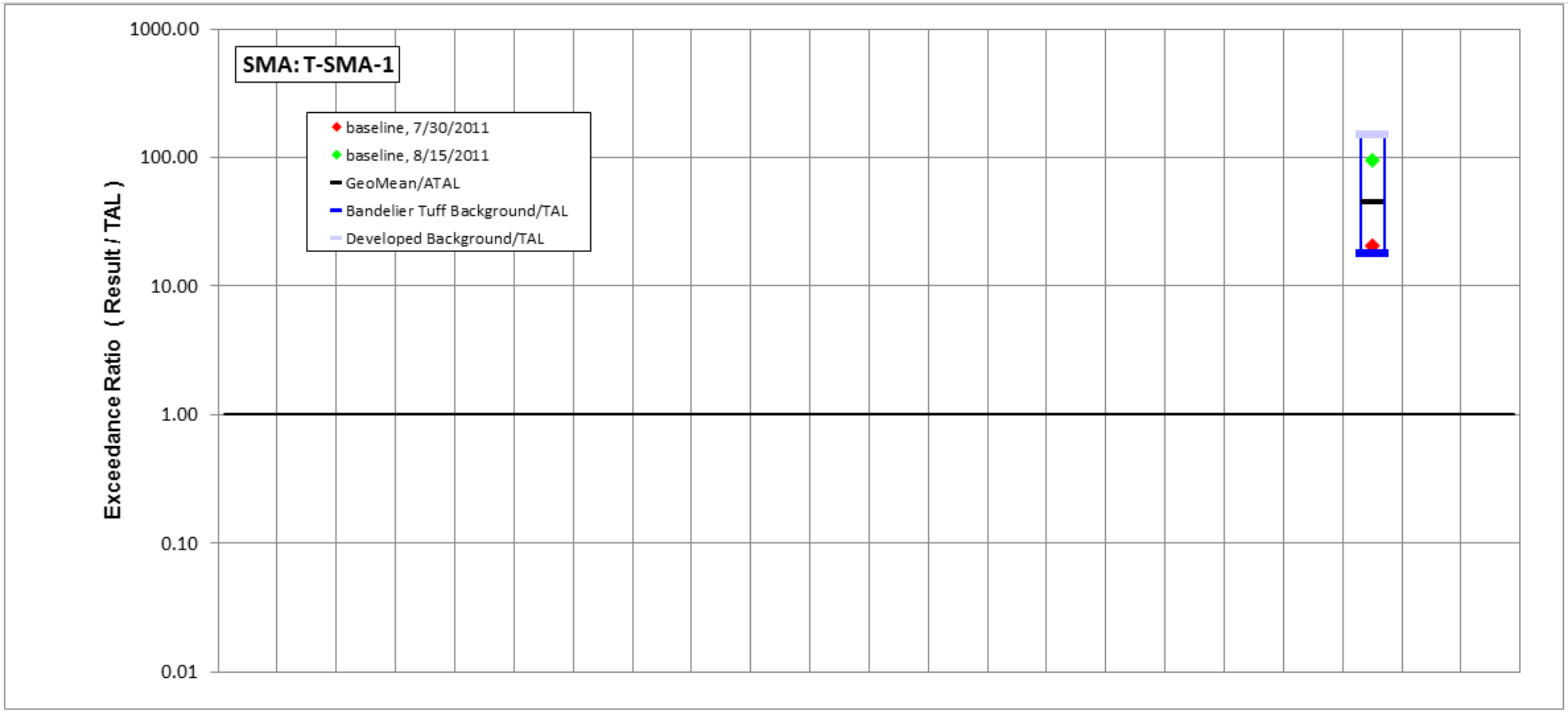
Figure 120-1 T-SMA-1 location map



	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
8/15/2011 result	197	*1*	4.3	27	*0.11*	3.6	*1*	**12.6**	0.58	*0.066*	1.4	*1.5*	*0.2*	*0.45*	2.2	**103**	*0.002*	3.22	4.94
result / TAL	0.26	*0.002*	0.48	0.0054	*0.11*	0.017	*0.001*	**2.9**	0.034	*0.086*	0.0082	*0.3*	*0.4*	*0.071*	0.022	**2.5**	*0.15*	0.21	0.16
7/30/2011 result	39.5	1.1	5.5	83.7	0.25	4.5	2.5	**21.2**	2.1	*0.066*	2.8	*1.5*	*0.2*	0.46	2	**324**	*0.002*	6.42	*0.782*
result / TAL	0.053	0.0017	0.61	0.017	0.25	0.021	0.0025	**4.9**	0.12	*0.086*	0.016	*0.3*	*0.4*	0.073	0.02	**7.7**	*0.15*	0.43	*0.026*

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

Figure 120-2 Inorganic analytical results summary plot for T-SMA-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
8/15/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.061**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**95**	-	-
7/30/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.013**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**21**	-	-

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

Figure 120-3 Organic analytical results summary plot for T-SMA-1

121.0 T-SMA-2.5: AOC 35-014(g3)

121.1 Site Descriptions

One historical industrial activity area is associated with T003, T-SMA-2.5: Site 35-014(g3).

AOC 35-014(g3) is an oil-stained area resulting from an oil spill that occurred in 1984 near the former tank farm [SWMU 35-015(a)] on the west side of the CO2 laser building (35-86). The source of the spill was an oil tanker truck; however, the quantity of oil released is not documented. The spill flowed southward through a culvert under the road on the south side of building 35-86, across the parking lot west of building 35-207, and south through a natural drainage channel [AOC 35-016(n)] into Ten Site Canyon. Staining from the spill is clearly visible in a 1986 aerial photograph. The stained area was observed during an August 1991 Site visit. At that time, vegetation in the path of the spill was dead, and a petroleum hydrocarbon odor was evident. During the 2004 investigation, no petroleum hydrocarbon odor was evident, and no staining was visible in the drainage.

Consent Order investigations for AOC 35-014(g3) are complete. The Site meets recreational risk levels. A request for a COC without controls for Site 35-014(g3) was submitted to NMED in February 2011.

The project map (Figure 121-1) 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.

121.2 Control Measures

The earthen channel above the ground cap diverts parking, culvert, and roof run-on to the east away from the SWMU. Road run-on from the north of the SWMU is captured by the cement channel west of the paved access road and is diverted to the west of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 121-1).

Table 121-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00304010002	Earthen Channel/Swale	X		X		CB
T00306010003	Rock Check Dam		X		X	CB
T00306010004	Rock Check Dam		X		X	CB
T00306010005	Rock Check Dam		X		X	CB
T00308020001	Rock Cap		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

121.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at T-SMA-2.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

121.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-2.5 during the 2013 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 121-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30843	4-30-2013
Storm Rain Event	BMP-33001	7-3-2013
Storm Rain Event	BMP-33630	7-23-2013
Storm Rain Event	BMP-34237	8-2-2013
Storm Rain Event	BMP-35759	9-24-2013
Annual Erosion Evaluation	COMP-36782	11-19-2013

No maintenance activities were conducted at T-SMA-2.5 in 2013.

121.5 Compliance Status

The Site associated with T-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 121-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-014(g3)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

T-SMA-2.5, Earthen Channel/Swale, T00304010002 (photo ID 7470-3)

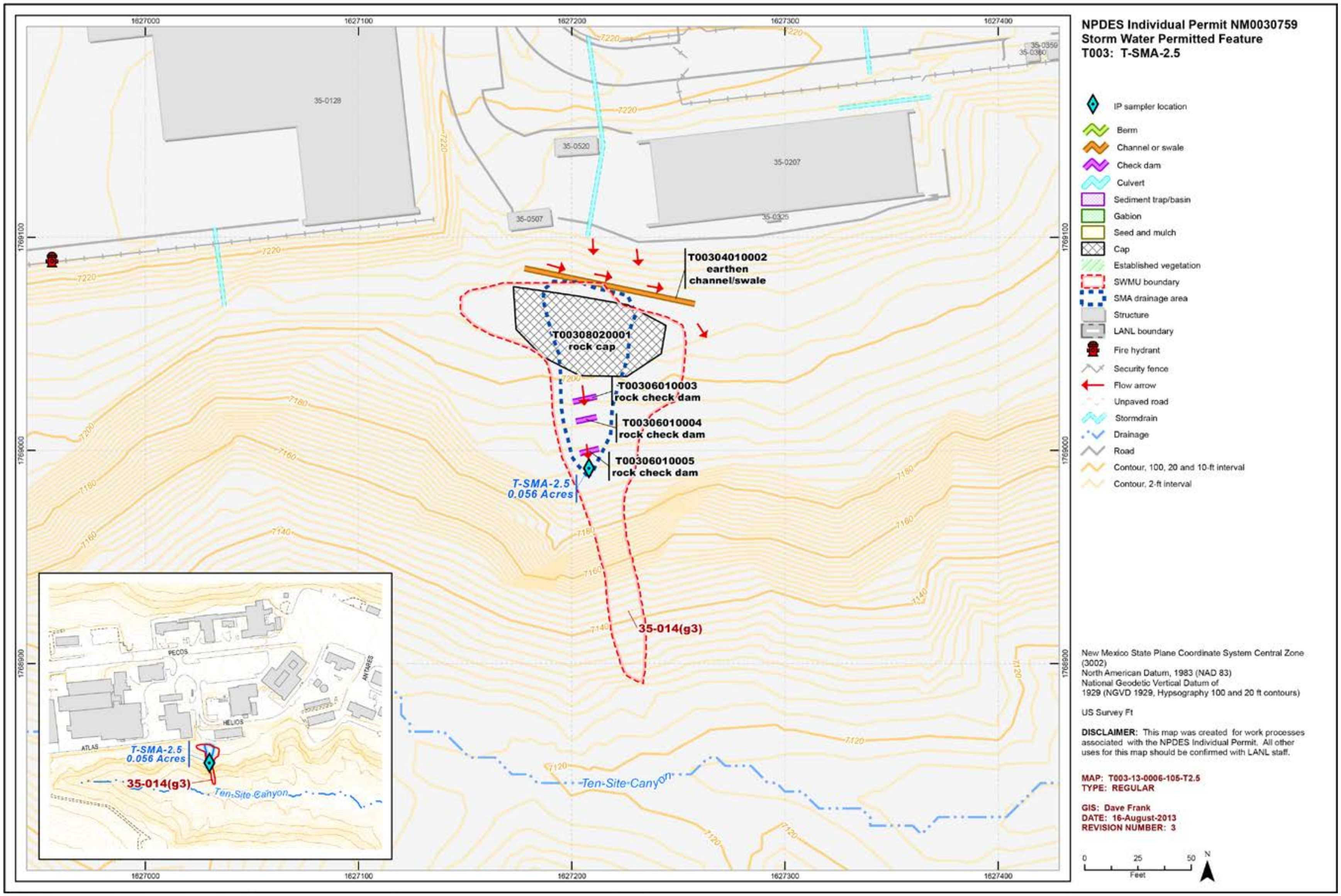


Figure 121-1 T-SMA-2.5 location map

122.0 T-SMA-2.85: SWMU 35-014(g) and AOC 35-016(n)

122.1 Site Descriptions

Two historical industrial activity areas are associated with T004, T-SMA-2.85: Sites 35-014(g) and 35-016(n).

SWMU 35-014(g) is stained concrete next to an asphalt-paved catchment basin located at the northeast corner of an experimental support laboratory (building 35-207). The concrete is stained as a result of a former oil spill. The origin and date of the spill are not known. The spill was reportedly cleaned up in the late 1980s during the D&D of the former tank farm and waste-oil treatment facility. A catchment basin directs storm water flow to a CMP outfall and daylight drainage channel [AOC 35-016(n)]. A small oil stain remains visible on the concrete. However, no obvious oil staining is apparent in the catchment basin or the outfall. Currently, no visible sign of the spill or any sign of continued releases are evident at the CMP outfall.

SWMU 34-014(g) was investigated as part of Consolidated Unit 35-014(g)-00, along with AOC 35-016(n) and two other non-IP SWMUs. SWMU 35-014(g) was investigated under the Consent Order and recommended for corrective action complete without controls. Consent Order COC without controls was requested from NMED in August 2011.

AOC 35-016(n) consists of a 10-in.-diameter CMP outfall and natural daylight drainage channel that received storm water runoff from the roof of the CO2 laser building (35-86), a paved area south of the laser building, and a grassy slope adjacent to an experimental support laboratory (building 35-207). The source of the outfall is a daylight drainage channel that leads to an asphalt-paved catchment basin. The outfall receives flow from the catchment basin through an intake grate. Because the decommissioned tank farm and waste-oil treatment facility [SWMU 35-015(a)] was previously located west of building 35-86, recycled, separated water was also discharged into Ten Site Canyon through a storm sewer that leads to AOC 35-016(n). The tank farm and treatment facility were decommissioned and removed in late 1988 or 1989.

AOC 34-016(n) was investigated as part of Consolidated Unit 35-014(g)-00, along with SWMU 35-014(g) and two other non-IP SWMUs. AOC 34-016(n) was investigated under the Consent Order and recommended for corrective action complete without controls. Consent Order COC without controls was requested from NMED in August 2011.

The project map (Figure 122-1) 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.

122.2 Control Measures

The primary source of potential run-on at this SMA is the roof drainage to the channel north of building 36-0207. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 122-1).

Table 122-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00402040007	Established Vegetation		X	X		B
T00403090004	Curbing	X			X	CB
T00406010005	Rock Check Dam		X		X	CB
T00406010006	Rock Check Dam	X		X		CB

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

122.3 Storm Water Monitoring

SWMU 35-014(g) and AOC 35-016(n) are monitored within T-SMA-2.85. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 122-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentrations of 5.64 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 36.6 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 35-014(g):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil BV in 3 of 18 shallow (i.e., less than 3 ft bgs) soil and sediment Consent Order and RFI samples at a maximum concentration 6 times soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

AOC 35-016(n)

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil BV in 3 of 18 shallow (i.e., less than 3 ft bgs) soil and sediment Consent Order and RFI samples at a maximum concentration 6 times soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in

the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 122-2. 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 122-2.

Monitoring location T-SMA-2.85receives 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. 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 2013 is between these two 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 2013 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

122.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-2.85 during the 2013 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 122-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30844	4-30-2013
Storm Rain Event	BMP-33008	7-9-2013
Storm Rain Event	BMP-33637	7-23-2013
Storm Rain Event	BMP-34244	8-2-2013
Storm Rain Event	BMP-35766	9-24-2013
Annual Erosion Evaluation	COMP-36783	11-19-2013
TAL Exceedance	COMP-35303	9-18-2013

No maintenance activities were conducted at T-SMA-2.85 in 2013.

122.5 Compliance Status

The Sites associated with T-SMA-2.85 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 122-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-014(g)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-21-13
AOC 35-016(n)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-21-13

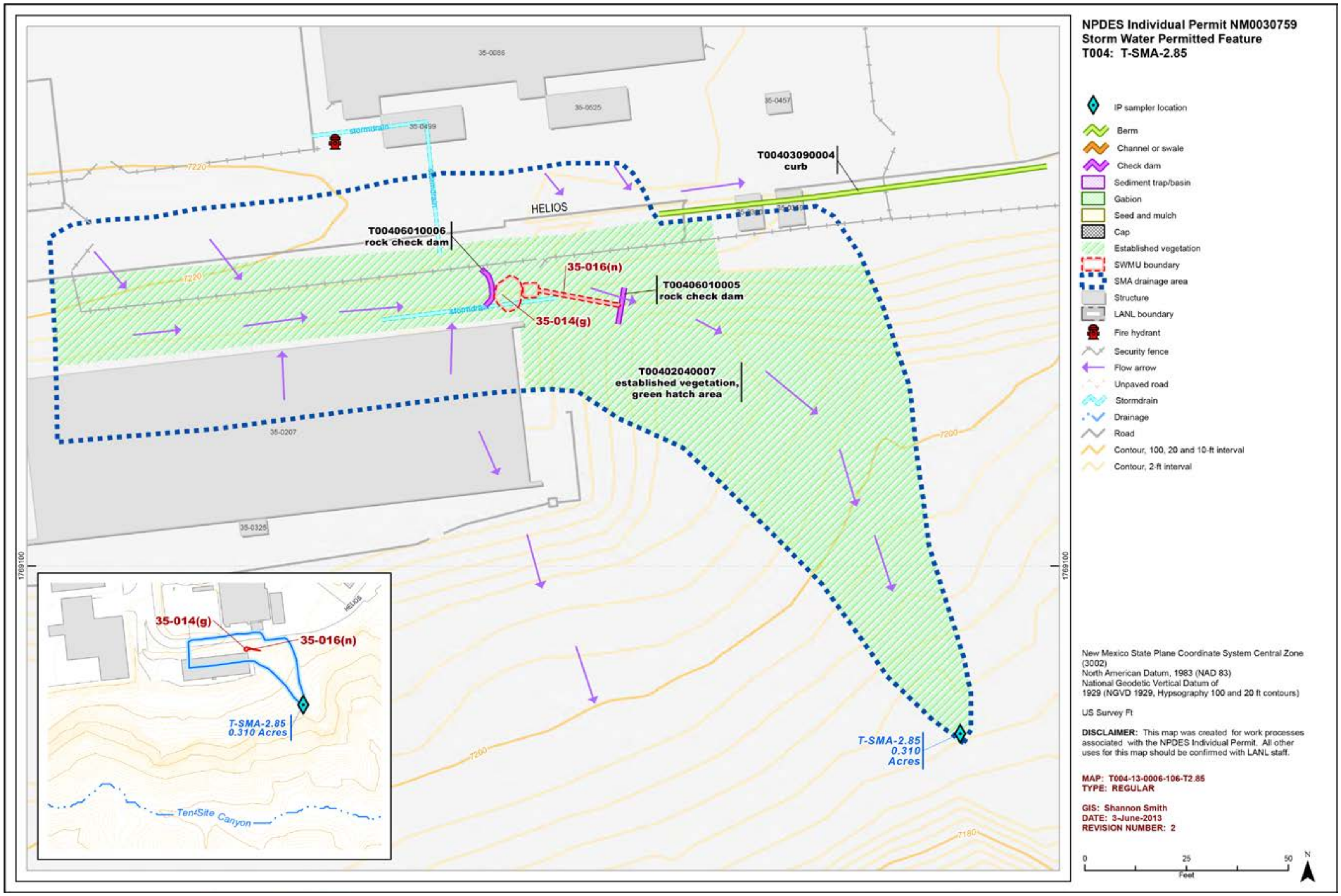
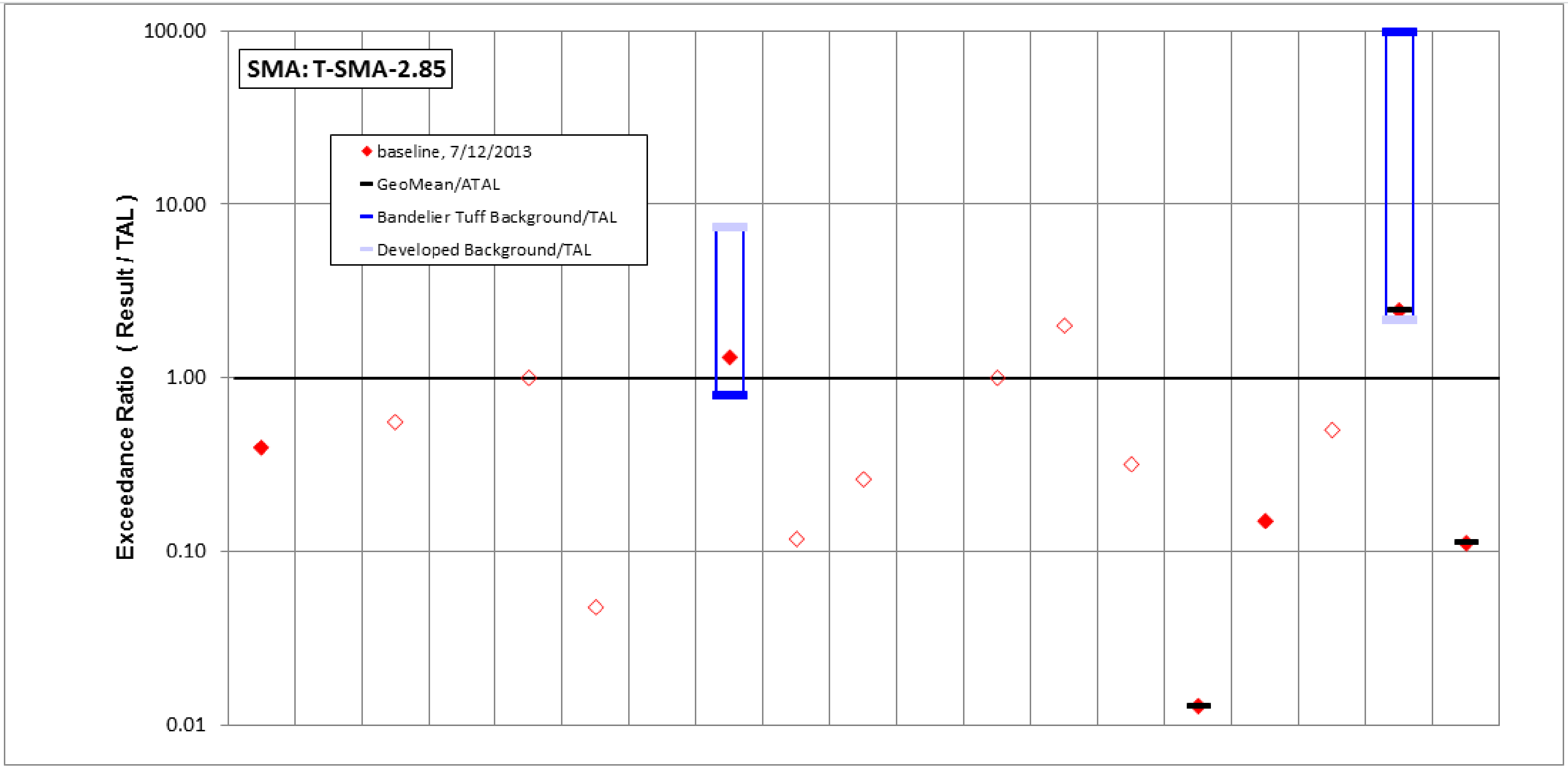


Figure 122-1 T-SMA-2.85 location map



	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
7/12/2013 result	297	*3*	*5*	49.8	*1*	*10*	2.75	**5.64**	*2*	*0.2*	1.02	*5*	***1***	*2*	1.28	6.28	*0.005*	**36.6**	3.34
result / TAL	0.4	*0.005*	*0.56*	0.01	*1*	*0.048*	0.0028	**1.3**	*0.12*	*0.26*	0.006	*1*	***2***	*0.32*	0.013	0.15	*0.5*	**2.4**	0.11

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

Figure 122-2 Inorganic analytical results summary plot for T-SMA-2.85

123.0 T-SMA-3: AOC 35-016(b)

123.1 Site Descriptions

One historical industrial activity area is associated with T005, T-SMA-3: Site 35-016(b).

AOC 35-016(b) is an outfall in Ten Site Canyon that formerly served roof, floor, and sink drains in building 35-87. Previously, the effluent discharge volume, limited to 3000 gal./d, was released to Ten Site Canyon. Photographic solutions were historically processed through a silver and cyanide recovery process and released through this outfall. The six photographic laboratory waste drains (i.e., three floor and three sink) routed to this outfall were either plugged (floor) or rerouted (sink) to the sanitary sewer system by 1992.

Consent Order Phase I investigation sampling is complete. A request for a COC without controls for AOC 35-016(b) was submitted to NMED in August 2011.

The project map (Figure 123-1) 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.

123.2 Control Measures

The potential for run-on at this SMA is impacted by a culvert that captures storm water from the paved area west of building 35-0087 and roof drain run-on that is captured by the culvert west of building 35-0067. These are significant run-on sources for this monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 123-1).

Table 123-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00502040012	Established Vegetation		X	X		B
T00504060001	Rip Rap	X		X		CB
T00506020009	Log Check Dam		X		X	B
T00506020010	Log Check Dam		X		X	B
T00506020011	Log Check Dam		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

123.3 Storm Water Monitoring

AOC 35-016(b) is monitored within T-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on September 9, 2012 (Figure 123-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentration of 13.4 μg/L (MTAL is 4.3 μg/L), and
- Gross-alpha activity of 34.4 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 35-016(b):

- Copper is not known to be associated with industrial materials historically managed at this AOC. Copper was detected above the sediment BV in 1 of 7 shallow Consent Order and RFI samples (i.e., less than 3 ft bgs), with a maximum concentration of 1.2 times the sediment BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this AOC. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium 241 and uranium and plutonium isotopes, which are alpha emitters. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 123-2. 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 123-2.

Monitoring location T-SMA-3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. 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 storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2012 gross-alpha result is between these two values.

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

123.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-3 during the 2013 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 123-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30845	4-30-2013
Storm Rain Event	BMP-33002	7-9-2013
Storm Rain Event	BMP-33631	7-23-2013
Storm Rain Event	BMP-34238	8-6-2013
Storm Rain Event	BMP-35760	9-25-2013
Annual Erosion Evaluation	COMP-36784	11-21-2013

No maintenance activities were conducted at T-SMA-3 in 2013.

123.5 Compliance Status

The Site associated with T-SMA-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 123-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-016(b)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-19-2012

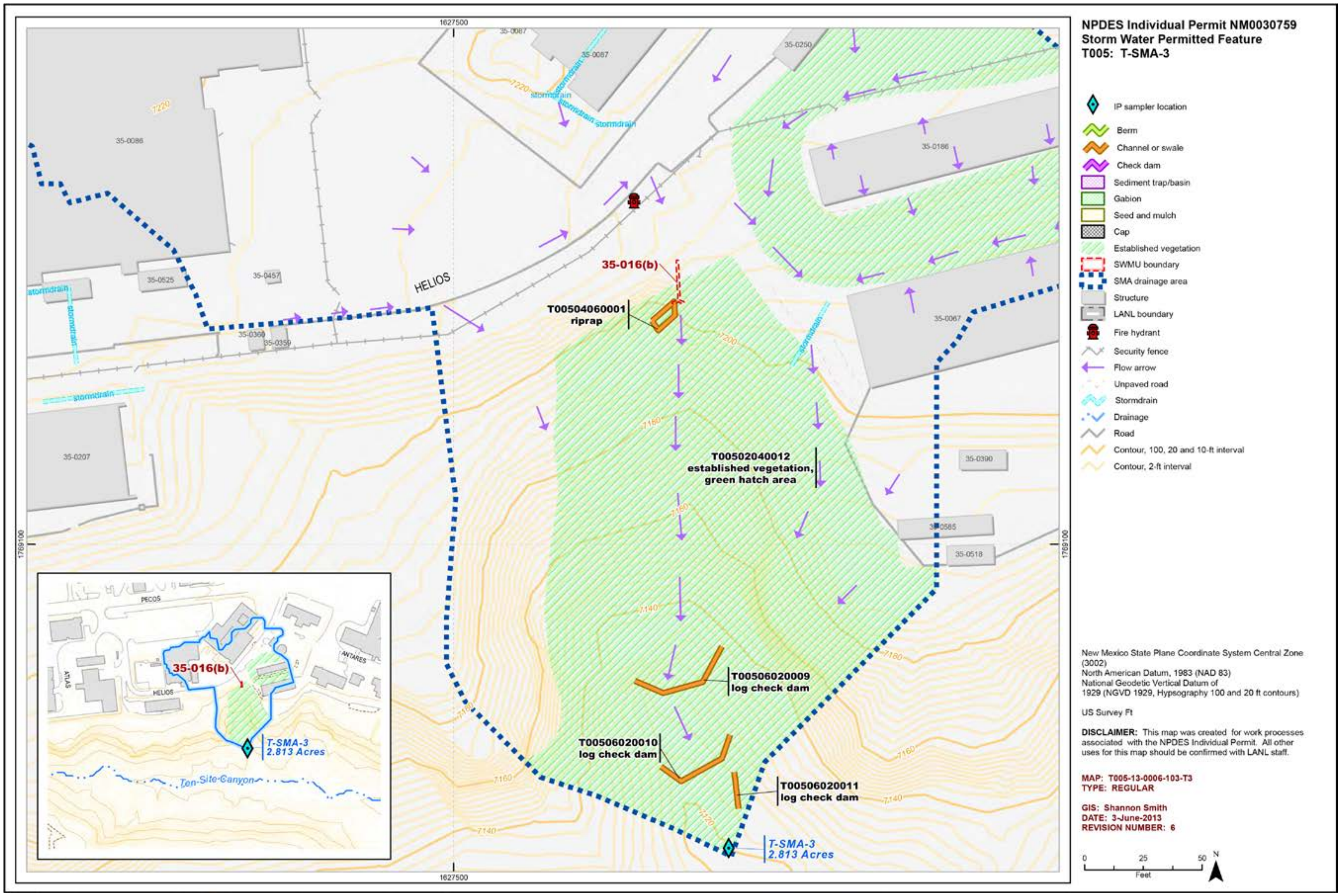
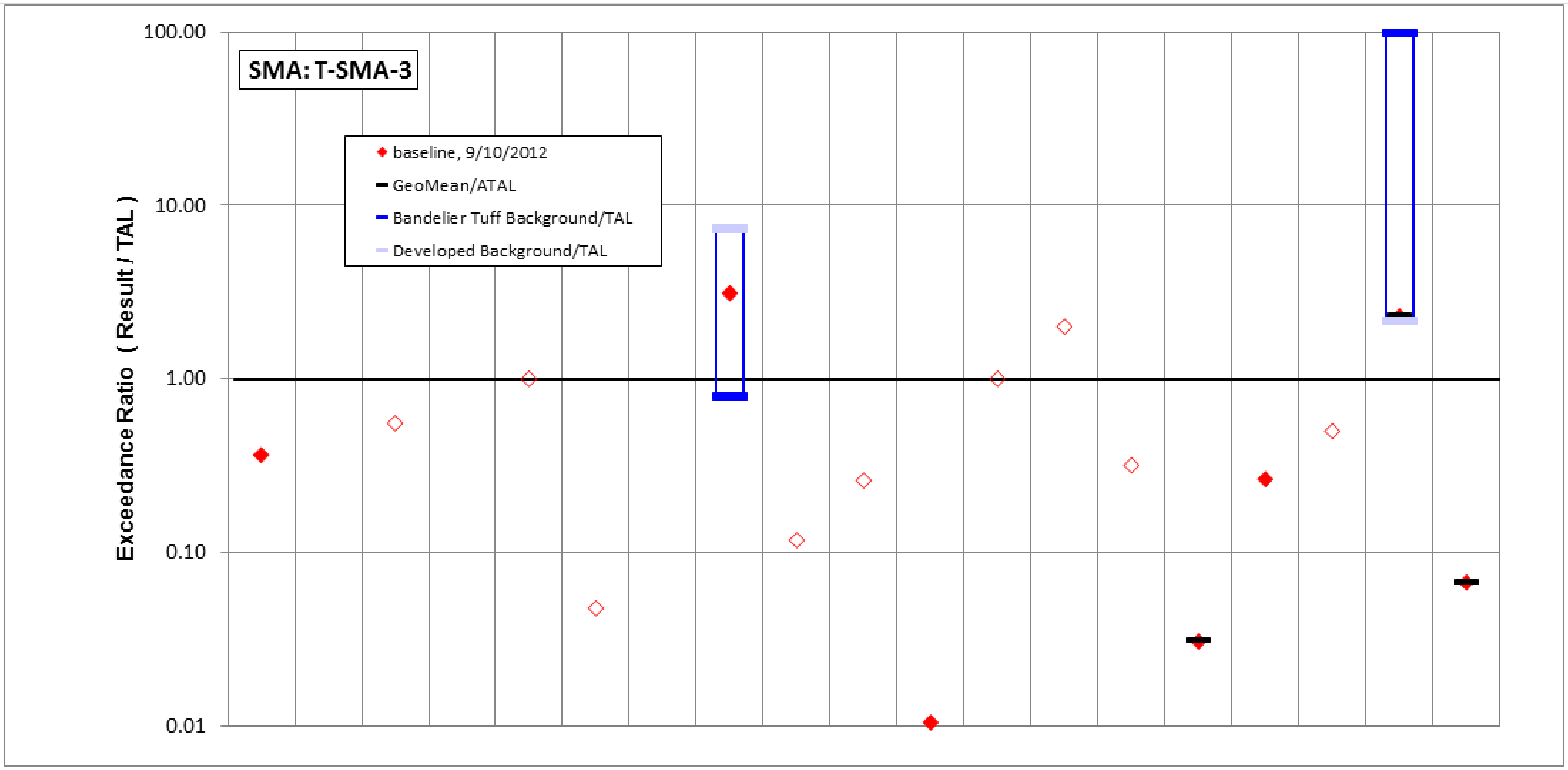


Figure 123-1 T-SMA-3 location map



	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
9/10/2012 result	273	3.09	*5*	20.9	*1*	*10*	2.33	**13.4**	*2*	*0.2*	1.78	*5*	***1***	*2*	3.07	11.1	*0.005*	**34.4**	2.01
result / TAL	0.36	0.0048	*0.56*	0.0042	*1*	*0.048*	0.0023	**3.1**	*0.12*	*0.26*	0.01	*1*	***2***	*0.32*	0.031	0.26	*0.5*	**2.3**	0.067

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

Figure 123-2 Inorganic analytical results summary plot for T-SMA-3

124.0 T-SMA-4: SWMUs 35-004(a), 35-009(a), 35-016(c), and 35-016(d)

124.1 Site Descriptions

Four historical industrial activity areas are associated with T006, T-SMA-4: Sites 35-004(a), 35-009(a), 35-016(c), and 35-016(d).

SWMU 35-004(a) consists of a former outdoor SAA located on asphalt adjacent to the southeast corner of building 35-25. Waste accumulated in the SAA reportedly included small quantities of waste oils and solvents. Staining was observed at the Site during a 1988 reconnaissance and during a 1990 inspection, but it was reportedly cleaned up before the 1992 RFI work plan was completed. A temporary metal flammable storage structure (35-386) was placed at the Site in 1990 and used as the SAA. According to the Laboratory RCRA database, the SWMU 35-004(a) SAA was taken out of service for hazardous waste accumulation in April 1997; however, structure 35-386 remains at the Site for hazardous materials storage.

The Consent Order investigation for SWMU 35-004(a) is complete. A COC without controls was requested from NMED in August 2011.

SWMU 35-009(a) is an inactive septic system that served building 35-2 from 1951 to 1975. The septic system is located near the southwest corner of building 35-4 and consists of a septic tank (structure 35-14), dosing chamber (structure 35-15), distribution box (structure 35-16), clean out, associated drainline, and a leach field located on the south-facing slope of Ten Site Canyon. The septic tank is approximately 4 ft bgs and measures 10 ft long × 4 ft wide × 5 ft deep with a capacity of 1500 gal. The location of the drainline is not known. The septic system received sanitary wastes from building 35-2. Historical operations at building 35-2 involved the use of lanthanum-140. In addition, two nuclear reactors were housed in building 35-2 as well as plutonium laboratories and lithium titride operations. A 1968 memorandum indicates that the leach field was plugged and the system was daylighted. In 1975, the remainder of the septic system was taken out of service but left in place. Portions of the leach field were excavated when the new sanitary sewer lines were routed to the sewage lagoons [Consolidated Unit 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

During the 1996 VCA conducted at SWMU 35-009(a), the septic tank contents were removed and disposed of off-site, and the tank and dosing chamber were filled with concrete; the clean out and distribution box were removed. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. A request for a COC with controls for Site 35-009(a) was submitted to NMED in August 2011.

SWMU 35-016(c) consists of two former NPDES-permitted outfalls, established in 1964 to discharge noncontact cooling water from building 35-67. Building 35-67 housed offices and heating and cooling systems in support of other TA-35 buildings. The drainline to one outfall ran about 75 ft southward to its point of discharge into Ten Site Canyon. The other outfall, deactivated in 1987, ran about 125 ft from building 35-67 to its point of discharge into Ten Site Canyon. The two outfalls were combined by 1985. The noncontact cooling water was from building cooling systems and was not process specific.

SWMU 35-016(c) was investigated as part of Consolidated Unit 35-016(c)-00, along with SWMU 35-016(d). The Consent Order investigation for SWMU 35-016(c) is complete. COCs with controls (i.e., maintain industrial or recreational land use) were requested from NMED in August 2011.

SWMU 35-016(d) is a former NPDES-permitted outfall constructed in 1962 to handle noncontact cooling water from the reactor components development building (35-46). Building 35-46 housed offices and heating and cooling systems in support of other TA-35 buildings. By 1990, this outfall had been removed from the NPDES permit. The drainline runs about 50 ft southward to its point of discharge into Ten Site Canyon. The noncontact cooling water was from building cooling systems and was not process-specific.

SWMU 35-016(d) was investigated as part of Consolidated Unit 35-016(c)-00, along with SWMU 35-016(c). The Consent Order investigation for SWMU 35-016(d) is complete. COCs with controls (i.e., maintain industrial or recreational land use) were requested from NMED in August 2011.

The project map (Figure 124-1) 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.

124.2 Control Measures

The major sources of potential run-on at this SMA are two storm culverts, roof drains, and paved areas in the northern portion of the SMA. This run-on contribution is significant. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 124-1).

Table 124-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00602040011	Established Vegetation		X	X		B
T00603030009	Log Berm		X		X	CB
T00603030010	Log Berm		X		X	CB
T00603090005	Curbing	X			X	CB
T00604060004	Rip Rap		X	X		CB
T00606010006	Rock Check Dam	X			X	CB
T00606010007	Rock Check Dam	X			X	CB
T00606010008	Rock Check Dam	X			X	CB
T00607010003	Gabions		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and certification are being planned at SWMU 35-016(d) for the end of 2014 or early in 2015 as part of corrective action.

124.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at T-SMA-4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

SWMUs 35-004(a), 35-009(a), 35-016(c), and 35-016(d) are monitored within T-SMA-4. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 124-2). Analytical results from this sample yielded three TAL exceedances:

- Copper concentrations of 6.61 μg/L (MTAL is 4.3 μg/L),
- Mercury concentration of 2.14 μg/L (ATAL is 0.77 μg/L), and
- Gross-alpha activity of 94.8 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 35-004(a):

- Copper is not known to have been associated with industrial materials historically managed at this Site. No shallow (i.e., less than 3 ft bgs) Consent Order samples were collected at SWMU 35-004(a) and shallow RFI samples were not analyzed for metals.
- Mercury is not known to have been associated with industrial materials historically managed at this Site. No shallow (i.e., less than 3 ft bgs) Consent Order samples were collected at SWMU 35-004(a), and shallow RFI samples were not analyzed for metals.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 35-009(a):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above the sediment BV in shallow Consent Order and RFI samples. Copper was detected above the sediment BV in 2 of 6 shallow soil and sediment samples with a maximum concentration 9 times sediment BV.
- Mercury is not known to have been associated with industrial materials historically managed at this Site. Mercury was detected above the sediment BV in shallow Consent Order and RFI samples. Mercury was detected above the sediment BV in 2 of 6 shallow soil and sediment samples with a maximum concentration 10.5 times sediment BV. The two samples where mercury was detected above BV, however, were collected at a location downstream of the SMA boundary.
- Alpha-emitting radionuclides are known to have been associated with historical operations at building 35-2, but it is not known whether alpha-containing wastes were discharged to the SWMU 35-009(a) septic system. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 35-016(c):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above the BVs in 4 of 23 shallow soil, sediment, and tuff samples with a maximum concentration 7.7 times tuff BV.
- Mercury is not known to have been associated with industrial materials historically managed at this Site. Mercury was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Mercury was detected above the BVs in 8 of 23 shallow soil, sediment, and tuff samples with a maximum concentration 27 times tuff BV. Mercury was not detected above BV, however, at sampling locations in the drainage immediately below the SWMU 35-016(c) outfall.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 35-016(d):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above the BVs in 4 of 23 shallow soil, sediment, and tuff samples with a maximum concentration 7.7 times tuff BV.
- Mercury is not known to have been associated with industrial materials historically managed at this Site. Mercury was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Mercury was detected above the BVs in 8 of 23 shallow soil, sediment, and tuff samples with a maximum concentration 27 times tuff BV. The highest concentrations of mercury were detected in samples collected below the SWMU 35-016(d) outfall, however, indicating that this Site may have been a source of mercury.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 124-2. 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 124-2.

Monitoring location T-SMA-4 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. 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 2013 is between these two values.
- Mercury—The mercury UTLs from undisturbed Bandelier Tuff and from developed urban landscape background storm water run-on 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, no comparison to mercury BVs in storm water could be made.
- 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 2013 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

124.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-4 during the 2013 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 124-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30846	4-30-2013
Storm Rain Event	BMP-33003	7-9-2013
Storm Rain Event	BMP-33632	7-23-2013
Storm Rain Event	BMP-34239	8-6-2013
Storm Rain Event	BMP-35761	9-25-2013
Annual Erosion Evaluation	COMP-36785	11-20-2013
TAL Exceedance	COMP-36888	11-20-2013

No maintenance activities were conducted at T-SMA-4 in 2013.

124.5 Compliance Status

The Sites associated with T-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 124-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-004(a)	Baseline Monitoring	Correction Action Initiated	Initiated 10-25-13
SWMU 35-009(a)	Baseline Monitoring	Correction Action Initiated	Initiated 10-25-13
SWMU 35-016(c)	Baseline Monitoring	Correction Action Initiated	Initiated 10-25-13
SWMU 35-016(d)	Baseline Monitoring	Correction Action Initiated	Initiated 10-25-13

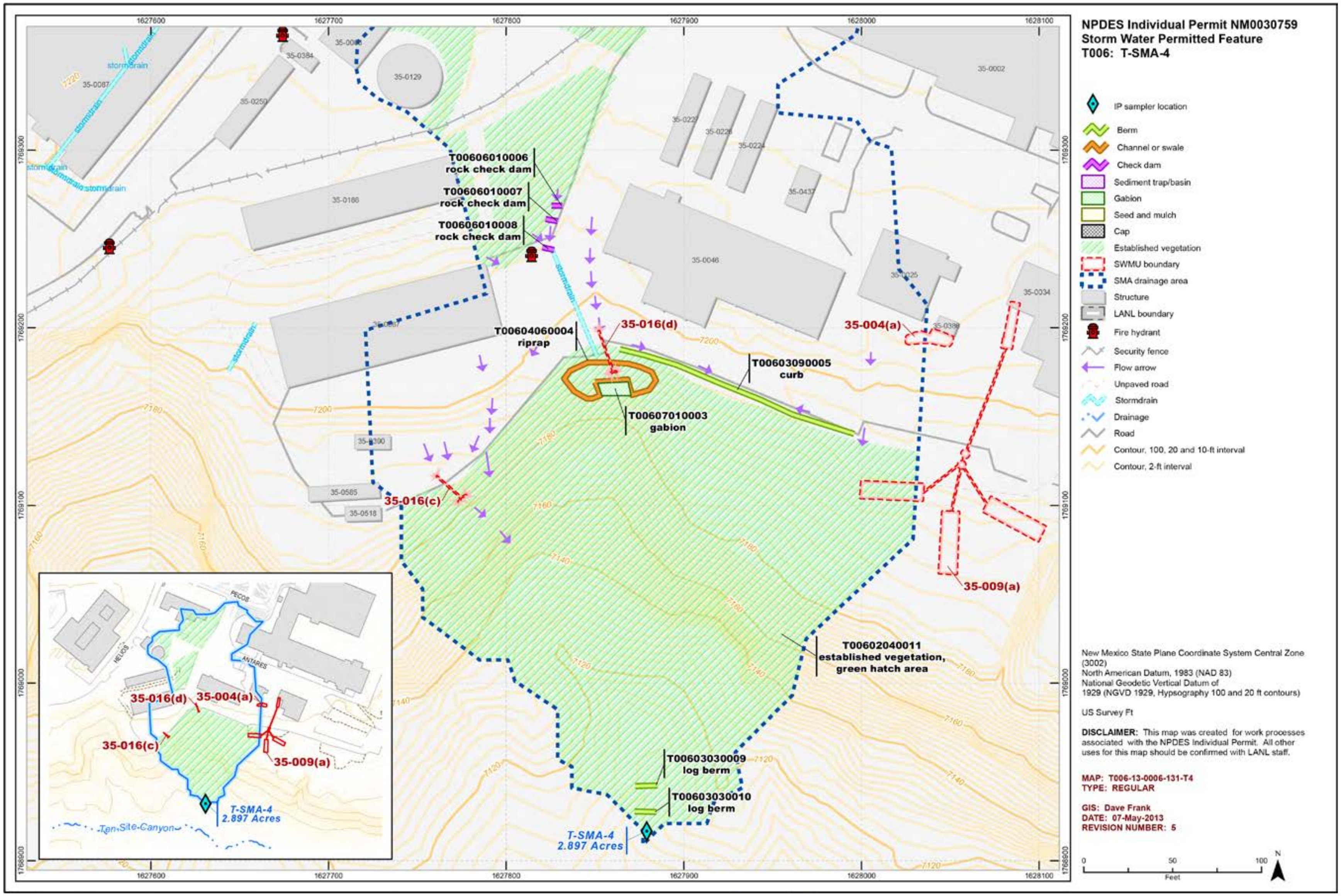
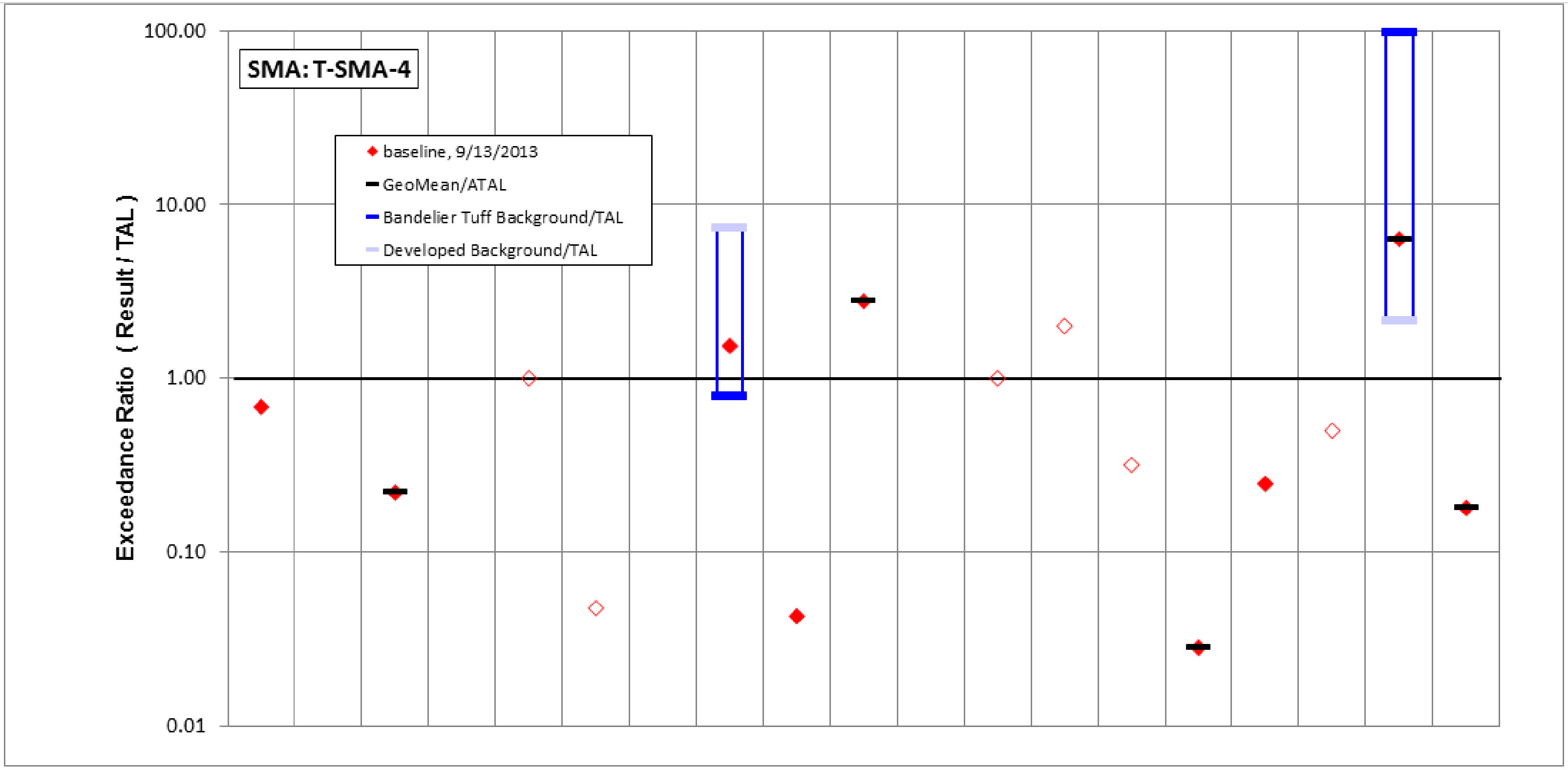


Figure 124-1 T-SMA-4 location map



	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
9/13/2013 result	514	*3*	1.98	20.1	*1*	*10*	1.94	**6.61**	0.727	**2.14**	1.19	*5*	***1***	*2*	2.82	10.4	*0.005*	**94.8**	5.38
result / TAL	0.69	*0.005*	0.22	0.004	*1*	*0.048*	0.0019	**1.5**	0.043	**2.8**	0.007	*1*	***2***	*0.32*	0.028	0.25	*0.5*	**6.3**	0.18

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

Figure 124-2 Inorganic analytical results summary plot for T-SMA-4

125.0 T-SMA-5: SWMUs 35-004(a), 35-009(a), 35-016(a), and 35-016(q)

125.1 Site Descriptions

Four historical industrial activity areas are associated with T007, T-SMA-5: Sites 35-004(a), 35-009(a), 35-016(a), and 35-016(q).

SWMU 35-004(a) consists of a former outdoor SAA located on asphalt adjacent to the southeast corner of building 35-25. Waste accumulated in the SAA reportedly included small quantities of waste oils and solvents. Staining was observed at the Site during a 1988 reconnaissance and during a 1990 inspection, but it was reportedly cleaned up before the 1992 RFI work plan was completed. A temporary metal flammable storage structure (35-386) was placed at the Site in 1990 and used as the SAA. According to the Laboratory's RCRA database, the SWMU 35-004(a) SAA was taken out of service for hazardous waste accumulation in April 1997; however, structure 35-386 remains at the Site for hazardous materials storage.

The Consent Order investigation for SWMU 35-004(a) is complete. A COC without controls was requested from NMED in August 2011.

SWMU 35-009(a) is an inactive septic system that served building 35-2 from 1951 to 1975. The septic system is located near the southwest corner of building 35-4 and consists of a septic tank (structure 35-14), dosing chamber (structure 35-15), distribution box (structure 35-16), clean out, associated drainline, and a leach field located on the south-facing slope of Ten Site Canyon. The septic tank is approximately 4 ft bgs and measures 10 ft long × 4 ft wide × 5 ft deep with a capacity of 1500 gal. The location of the drainline is not known. The septic system received sanitary wastes from building 35-2. Historical operations at building 35-2 involved the use of lanthanum-140. In addition, two nuclear reactors were housed in building 35-2 as well as plutonium laboratories and lithium titride operations. A 1968 memorandum indicates that the leach field was plugged and the system was daylighted. In 1975, the remainder of the septic system was taken out of service but left in place. Portions of the leach field were excavated when the new sanitary sewer lines were routed to the sewage lagoons [Consolidated Unit 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

During the 1996 VCA conducted at SWMU 35-009(a), the septic tank contents were removed and disposed of off-site, and the tank and dosing chamber were filled with concrete; the clean out and distribution box were removed. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. A request for a COC with controls for Site 35-009(a) was submitted to NMED in August 2011.

SWMU 35-016(a) is a former NPDES-permitted outfall that originally consisted of an 8-in.-diameter metal pipe with a valve and a 6-in. VCP placed in a trench cut into the tuff that discharged into Ten Site Canyon. The outfall was established in 1958 to handle noncontact cooling water from the sodium testing building (35-34) and was eliminated from the NPDES permit in 1985 when discharges to the outfall ceased. The drainlines were decommissioned and removed in 1987, and the remaining section of the trench now serves as a storm water collection channel for a small area on the south side of Ten Site Mesa at TA-35. SWMU 35-016(a) discharges to the same location as the SWMU 35-016(q) storm water outfall in Ten Site Canyon.

Aerial photographs from 1965 show a diagonal trench extending from the north end of SWMU 35-016(a) in a southeasterly direction that appears to connect with the north end of SWMU 35-016(q). Aerial photographs from 1974 show that the diagonal trench and approximately two-thirds of the northern portion of the SWMU were no longer present and may have been backfilled. The mid-1990s aerial photographs show this Site to be much the same as it appeared in 1974.

Consent Order investigations are complete for SWMU 35-016(a). The Site meets residential risk levels. A request for a COC without controls for SWMU 35-016(a) was submitted to NMED in February 2011.

SWMU 35-016(q) consists of a storm water trench cut into the tuff, parallel to and about 60 ft east of SWMU 35-016(a). Constructed in 1958, the trench includes several active storm water collection basins located between building 35-34 and the edge of Ten Site Canyon. The trench discharges storm water to the same area in Ten Site Canyon as SWMU 35-016(a).

Consent Order investigations are complete for SWMU 35-016(q). The Site meets residential risk levels. A request for a COC without controls for SWMU 35-016(q) was submitted to NMED in February 2011.

The project map (Figure 125-1) 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.

125.2 Control Measures

The primary sources of potential run-on at this SMA are the storm culverts, roof drainage, and paved areas to the north of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 125-1).

Table 125-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00702040012	Established Vegetation		X	X		B
T00703020003	Base Course Berm	X			X	CB
T00703020008	Base Course Berm	X			X	CB
T00703120010	Rock Berm		X		X	CB
T00706010002	Rock Check Dam		X		X	CB
T00706010004	Rock Check Dam		X		X	CB
T00706010009	Rock Check Dam	X			X	CB
T00706010011	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

125.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at T-SMA-5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

125.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-5 during the 2013 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 125-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30847	4-30-2013
Storm Rain Event	BMP-33004	7-9-2013
Storm Rain Event	BMP-33633	7-23-2013
Storm Rain Event	BMP-34240	8-6-2013
Storm Rain Event	BMP-35762	9-25-2013
Annual Erosion Evaluation	COMP-36786	11-21-2013

No maintenance activities were conducted at T-SMA-5 in 2013.

125.5 Compliance Status

The Sites associated with T-SMA-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 125-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 35-004(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 35-009(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 35-016(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 35-016(q)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

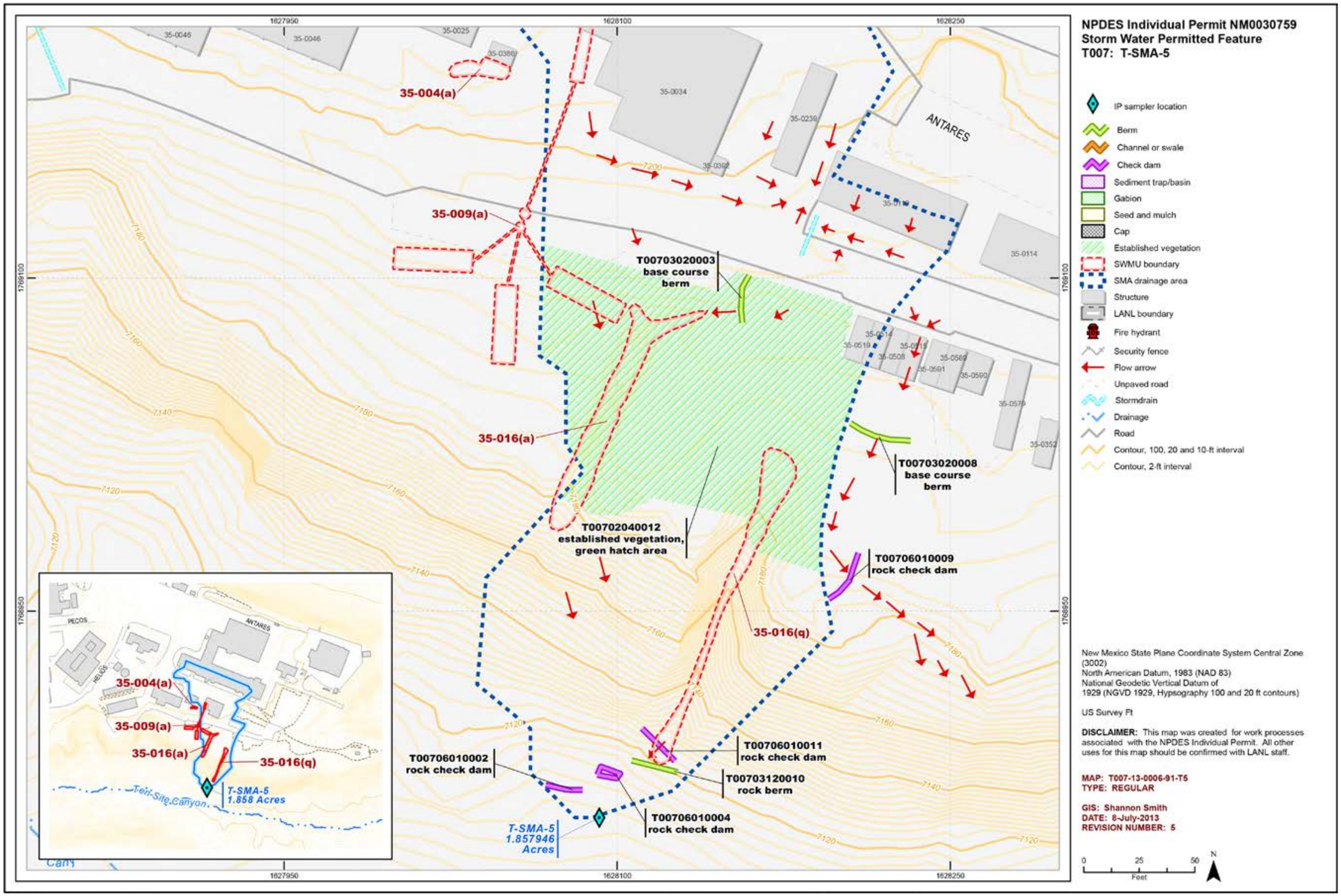


Figure 125-1 T-SMA-5 location map

126.0 T-SMA-6.8: AOC 35-010(e)

126.1 Site Descriptions

One historical industrial activity area is associated with T008, T-SMA-6.8: Site 35-010(e).

AOC 35-010(e) is a former NPDES-permitted outfall that discharged from the SWMU 35-010(d) filter beds into Ten Site Canyon. A depth recording gage station is located at the outfall and measured the effluent level above a small v-shaped weir discharge point. A rock dissipater apron is present at the discharge point. Compiled flow records of the outfall show that the average flow rate was approximately 45,000 gal./d, exceeding the planned capacity of 12,000 gal./d. AOC 35-010(e) is a component of the former TA-35 WWTP, which was used for the biological treatment of liquid waste, received sanitary and industrial wastewater from TA-35, TA-48, TA-50, and TA-55 from 1975 to 1992, when all discharges from the filters beds ceased.

Consent Order investigations for AOC 35-010(e) are complete. The Site meets recreational risk levels. A request for a COC without controls for AOC 35-010(e) was submitted to NMED in February 2011.

The project map (Figure 126-1) 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.

126.2 Control Measures

The primary source of potential run-on at this SMA is the channel west of the AOC. The sand beds are surrounded by a cement retaining wall and are not impacted by run-on. The outfall pipe associated with these sand filters was plugged in 2008. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 126-1).

Table 126-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00801060004	Erosion Control Blanket			X		B
T00803060002	Straw Wattles	X			X	CB
T00803100003	Gravel Bags		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

126.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at T-SMA-6.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

126.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-6.8 during the 2013 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 126-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30848	5-4-2013
Storm Rain Event	BMP-33005	7-9-2013
Storm Rain Event	BMP-33634	7-16-2013
Storm Rain Event	BMP-34241	7-29-2013
Storm Rain Event	BMP-35763	9-24-2013
Annual Erosion Evaluation	COMP-36787	11-12-2013

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

Table 126-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31827	Install matting for erosion control on bare areas adjacent to wattles as marked on attached map.	5-13-2013	9 day(s)	Maintenance conducted in timely manner.
BMP-36966	Add gravel bags to existing gravel bags -0003 to build up height and extend both ends.	11-8-2013	45 day(s)	Maintenance conducted as soon as practicable.

126.5 Compliance Status

The Site associated with T-SMA-6.8 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 126-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 35-010(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

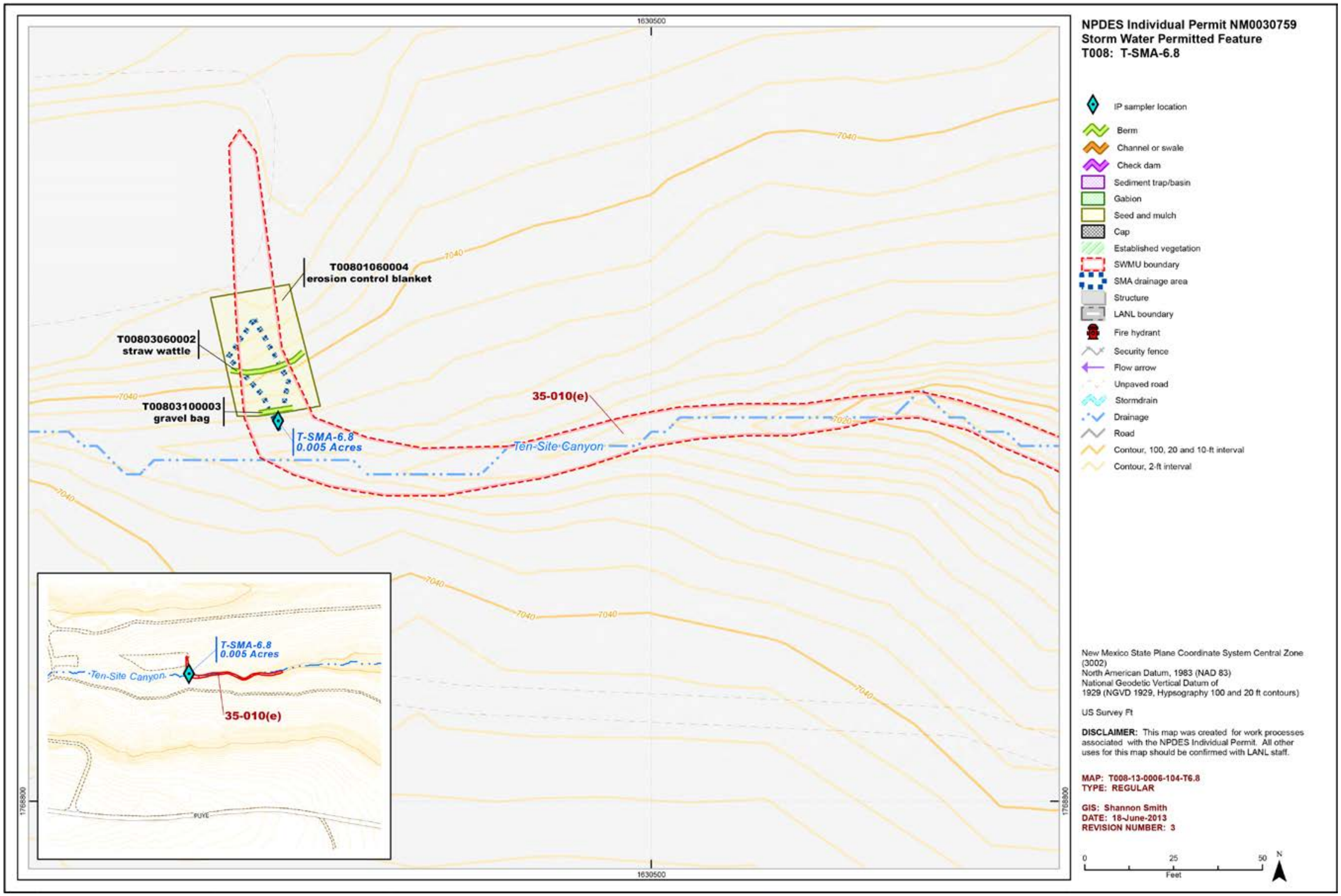


Figure 126-1 T-SMA-6.8 location map

127.0 T-SMA-7: SWMU 04-003(b)

127.1 Site Descriptions

One historical industrial activity area is associated with T009, T-SMA-7: Site 04-003(b).

SWMU 04-003(b) is the former drainline and outfall from a former laboratory control building (04-3), located at former TA-04. The outfall discharged about 20 ft north of building 04-3 into Mortandad Canyon. No radioactivity was detected in a 1953 survey, and the building was demolished and partially removed in 1956. The concrete storm drain, electrical conduit, wood and other surface debris, and the drainpipe were removed during the 1985 LASCP cleanup effort. During the LASCP cleanup, a portable radiation monitor was used, and no radioactive contamination was detected. In a 1988 survey, gamma radiation was detected at nearly twice the background level.

All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. SWMU 04-003(b) was recommended for corrective action complete in the investigation report for Middle Mortandad/Ten Site Aggregate Area submitted to NMED. SWMU 04-003(b) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 127-1) 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.

127.2 Control Measures

There are minimal run-on contributions from sources at this SMA. The paved access road is crowned to the north and south and is flat. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 127-1).

Table 127-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00902040011	Established Vegetation		X	X		B
T00903010009	Earthen Berm	X			X	B
T00903020008	Base Course Berm	X			X	CB
T00906010002	Rock Check Dam		X		X	CB
T00906010003	Rock Check Dam		X		X	CB
T00906010006	Rock Check Dam		X		X	CB
T00906010007	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

127.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at T-SMA-7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

127.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-7 during the 2013 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 127-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30849	5-1-2013
Storm Rain Event	BMP-33006	7-9-2013
Storm Rain Event	BMP-33635	7-16-2013
Storm Rain Event	BMP-34242	7-29-2013
Storm Rain Event	BMP-35764	9-24-2013
Annual Erosion Evaluation	COMP-36788	11-12-2013

No maintenance activities were conducted at T-SMA-7 in 2013.

127.5 Compliance Status

The Site associated with T-SMA-7 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 127-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 04-003(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

T-SMA-7, Base Course Berm, T00903020008 (photo ID 8665-5)

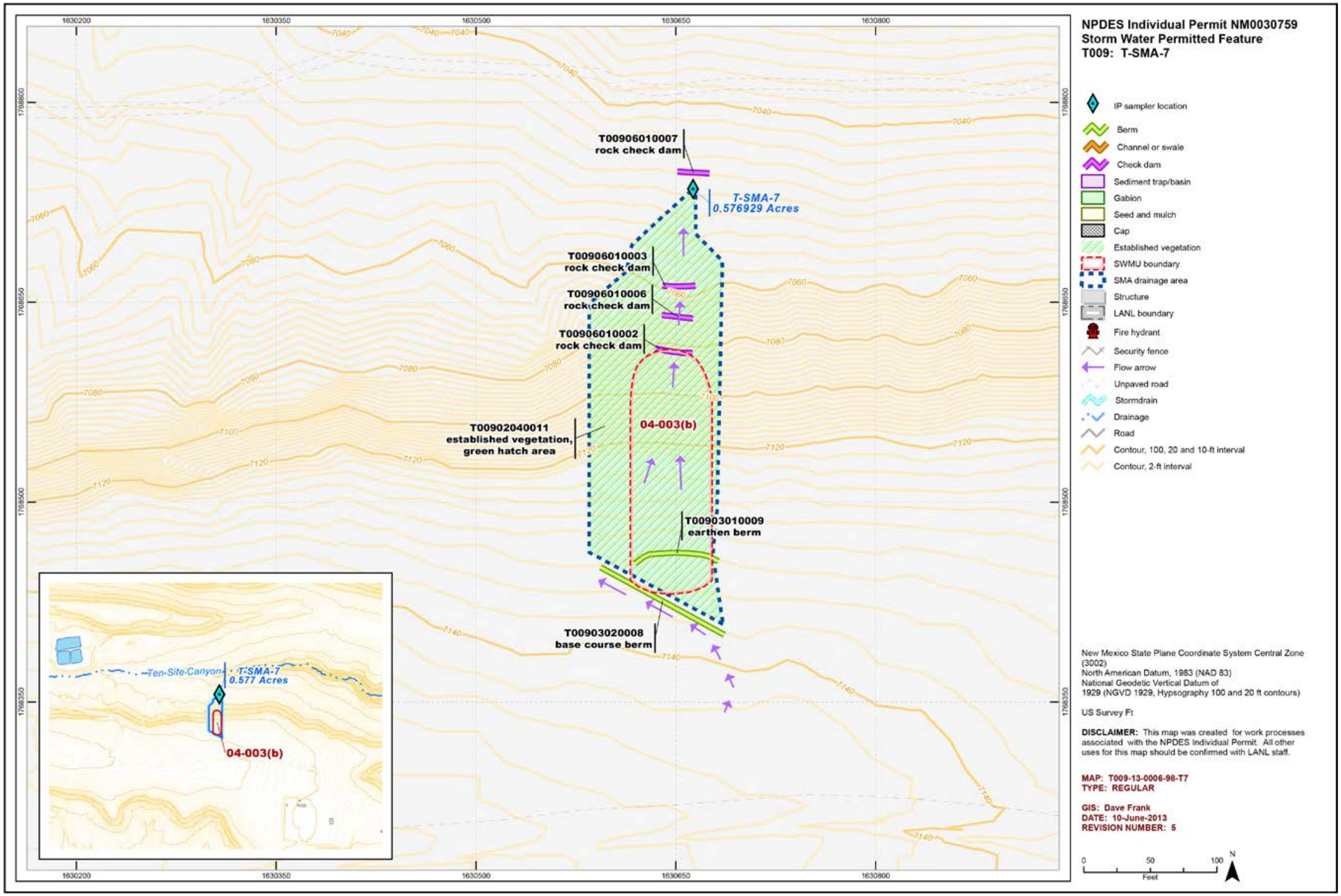


Figure 127-1 T-SMA-7 location map

128.0 T-SMA-7.1: SWMUs 04-001 and 04-002

128.1 Site Descriptions

Two historical industrial activity areas are associated with T010, T-SMA-7.1: Sites 04-001 and 04-002.

SWMU 04-001 was a 10-ft^2 firing pit constructed in 1945. Debris in the vicinity of the firing pit included wire and shrapnel. The energy source for the firing experiments was HE, and shot sizes ranged from 0.5 to 2000 lb of HE. Use of the pit ceased in 1946. The pit was cleaned of all debris, backfilled, and recontoured in 1985 during the LASCP cleanup effort.

Consent Order investigations are complete for SWMU 04-001; the Site meets residential risk levels. A request for a COC without controls was submitted to NMED in May 2011.

SWMU 04-002 is the 20-ft-wide canyon-side disposal site associated with 04-001. The Site is located on the north-facing slope of Mortandad Canyon immediately north of SWMU 04-001. After a shot, residual material from the firing site was bulldozed over the edge of the canyon to the area designated as the surface disposal site. The shot debris consisted of cables, wires, and possibly small amounts of uranium, beryllium, lead, aluminum, and HE. The material was not covered, and this Site was not addressed during the 1985 LASCP.

Consent Order investigations are complete for SWMU 04-002; the Site meets residential risk levels. A request for a COC without controls was submitted to NMED in May 2011.

The project map (Figure 128-1) 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.

128.2 Control Measures

The primary potential source of run-on to the SMA is from the paved road and unpaved area northeast of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 128-1).

Table 128-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T01002040009	Established Vegetation		X	X		B
T01003010007	Earthen Berm		X		X	B
T01003010008	Earthen Berm		X		X	B
T01003020005	Base Course Berm	X			X	CB
T01006020006	Log Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

128.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at T-SMA-7.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

128.4 Inspections and Maintenance

RG200.5 recorded six storm events at T-SMA-7.1 during the 2013 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 128-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30850	5-1-2013
Storm Rain Event	BMP-33007	7-9-2013
Storm Rain Event	BMP-33636	7-16-2013
Storm Rain Event	BMP-34243	7-29-2013
Storm Rain Event	BMP-35765	9-24-2013
Annual Erosion Evaluation	COMP-36789	11-12-2013

No maintenance activities were conducted at T-SMA-7.1 in 2013.

128.5 Compliance Status

The Sites associated with T-SMA-7.1 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 128-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 04-001	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 04-002	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

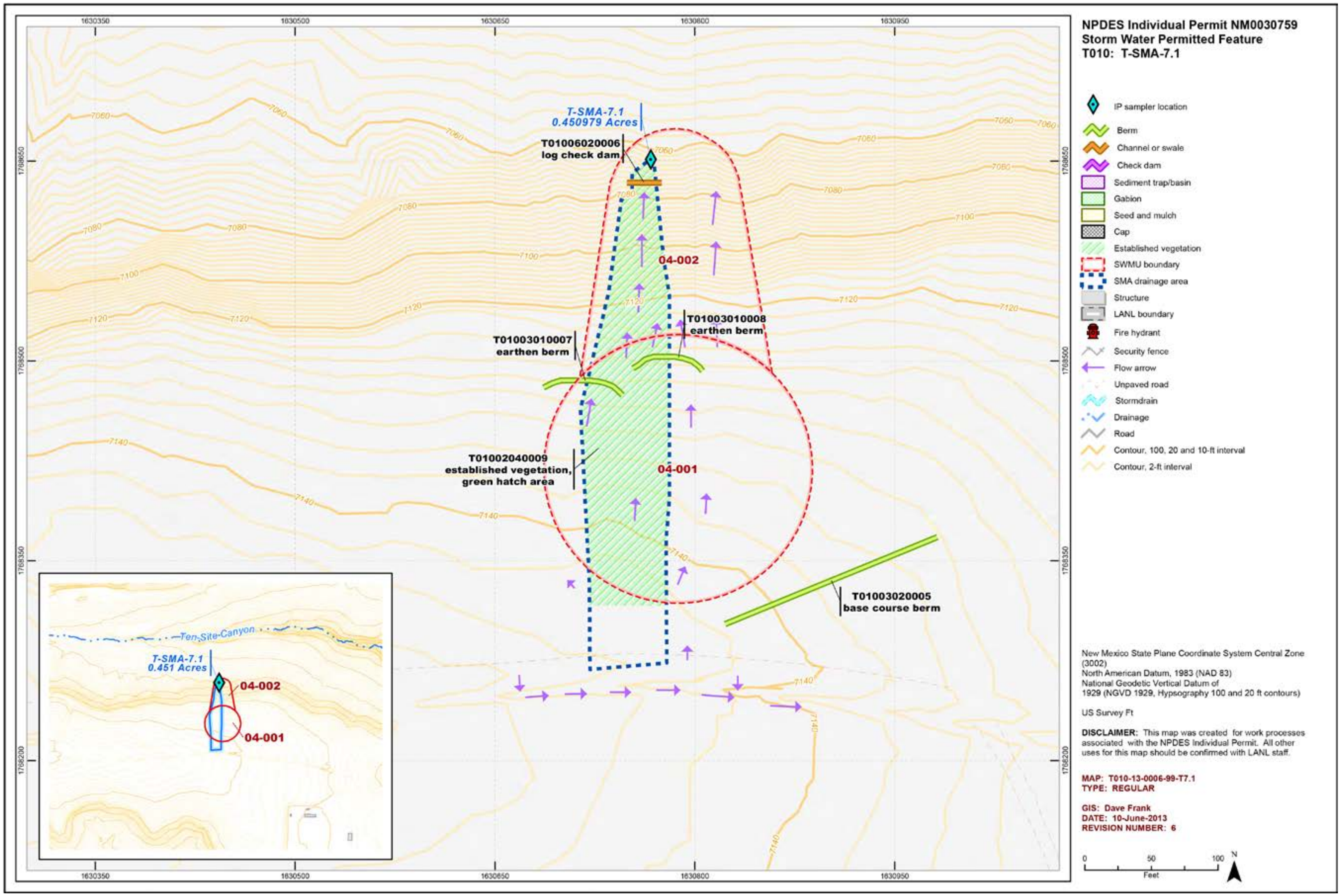


Figure 128-1 T-SMA-7.1 location map

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
V2.486	2/15/2013	M-SMA-3	Errata - Installation date for rock berm M00303120009 was corrected to 2-23-11. No map update necessary.	E	CCN - 30553
V2.487	2/15/2013	M-SMA-7	Errata - Installation date for straw wattle M00903060008 was corrected to 11-2-12. No map update necessary.	E	CCN - 30554
V2.488	6/19/2013	M-SMA-1.22	Retire Control - Lifecycle Expired - Control ID: M002B06010003	T	CCN - 30650
V2.489	6/19/2013	M-SMA-1.22	Retire Control - Lifecycle Expired - Control ID: M002B06010004	T	CCN - 30650
V2.490	6/19/2013	M-SMA-1.22	Retire Control - Lifecycle Expired - Control ID: M002B06010005	T	CCN - 30650
V2.491	6/19/2013	M-SMA-1.22	Retire Control - Lifecycle Expired - Control ID: M002B06010006	T	CCN - 30650
V2.492	6/19/2013	M-SMA-1.22	Retire Control - Lifecycle Expired - Control ID: M002B06010007	T	CCN - 30650
V2.493	6/19/2013	M-SMA-1.22	New Control - Corrective Action - Control ID: M002B03010010	T	CCN - 30650
V2.494	6/19/2013	M-SMA-1.22	New Control - Corrective Action - Control ID: M002B03010011	T	CCN - 30650
V2.495	6/19/2013	M-SMA-1.22	New Control - Corrective Action - Control ID: M002B03010012	T	CCN - 30650
V2.496	6/19/2013	M-SMA-1.22	New Control - Corrective Action - Control ID: M002B05030013	T	CCN - 30650
V2.497	6/19/2013	M-SMA-1.22	Errata - Corrected coding on map for water bar M002B04050002	E	CCN - 30650
V2.498	6/19/2013	M-SMA-1.22	Map Revision - (R4)	T	CCN - 30650
V2.499	5/24/2013	M-SMA-1.21	Retire Control - Damaged and/or Replaced - Control ID: M002A02010001	T	CCN - 31232
V2.500	5/24/2013	M-SMA-1.21	New Control - Augment Existing - Control ID: M002A02040007	T	CCN - 31232
V2.501	5/24/2013	M-SMA-1.21	Map Revision - (R5)	T	CCN - 31232
V2.502	5/24/2013	M-SMA-1.22	Retire Control - Damaged and/or Replaced - Control ID: M002B02010001	T	CCN - 31233
V2.503	5/24/2013	M-SMA-1.22	New Control - Routine/Replacement - Control ID: M002B02040014	T	CCN - 31233
V2.504	5/24/2013	M-SMA-1.22	New Control - Augment Existing - Control ID: M002B01010015	T	CCN - 31233
V2.505	5/24/2013	M-SMA-1.22	Map Revision - (R5)	T	CCN - 31233

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
V2.506	5/24/2013	M-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: M00102010007	T	CCN - 31231
V2.507	5/24/2013	M-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: M00102020005	T	CCN - 31231
V2.508	5/24/2013	M-SMA-1	New Control - Routine/Replacement - Control ID: M00102040009	T	CCN - 31231
V2.509	5/24/2013	M-SMA-1	Map Revision - (R5)	T	CCN - 31231
V2.510	5/24/2013	M-SMA-1.2	Retire Control - Damaged and/or Replaced - Control ID: M00202010001	T	CCN - 31234
V2.511	5/24/2013	M-SMA-1.2	Retire Control - Damaged and/or Replaced - Control ID: M00202020002	T	CCN - 31234
V2.512	5/24/2013	M-SMA-1.2	New Control - Routine/Replacement - Control ID: M00202040009	T	CCN - 31234
V2.513	5/24/2013	M-SMA-1.2	Map Revision - (R8)	T	CCN - 31234
V2.514	6/18/2013	T-SMA-7.1	Retire Control - Damaged and/or Replaced - Control ID: T01002010002	T	CCN - 31715
V2.515	6/18/2013	T-SMA-7.1	New Control - Routine/Replacement - Control ID: T01002040009	T	CCN - 31715
V2.516	6/18/2013	T-SMA-7.1	Map Revision - (R6)	T	CCN - 31715
V2.517	5/24/2013	T-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: T00602010001	T	CCN - 31716
V2.518	5/24/2013	T-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: T00602020002	T	CCN - 31716
V2.519	5/24/2013	T-SMA-4	New Control - Routine/Replacement - Control ID: T00602040011	T	CCN - 31716
V2.520	5/24/2013	T-SMA-4	Map Revision - (R5)	T	CCN - 31716
V2.521	6/4/2013	T-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: T00502010005	T	CCN - 31730
V2.522	6/4/2013	T-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: T00502020006	T	CCN - 31730
V2.523	6/4/2013	T-SMA-3	New Control - Routine/Replacement - Control ID: T00502040012	T	CCN - 31730
V2.524	6/4/2013	T-SMA-3	Map Revision - (R6)	T	CCN - 31730
V2.525	7/24/2013	M-SMA-12.7	Retire Control - Damaged and/or Replaced - Control ID: M01802010002	T	CCN - 31731
V2.526	7/24/2013	M-SMA-12.7	New Control - Routine/Replacement - Control ID: M01802040012	T	CCN - 31731
V2.527	7/24/2013	M-SMA-12.7	Map Revision - (R7)	T	CCN - 31731
V2.528	6/18/2013	T-SMA-7	Retire Control - Damaged and/or Replaced - Control ID: T00902010001	T	CCN - 31732
V2.529	6/18/2013	T-SMA-7	New Control - Routine/Replacement - Control ID: T00902040011	T	CCN - 31732

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
V2.530	6/18/2013	T-SMA-7	Retire Control - Lifecycle Expired - Control ID: T00901030010	T	CCN - 31732
V2.531	6/18/2013	T-SMA-7	Map Revision - (R5)	T	CCN - 31732
V2.532	7/19/2013	T-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: T00702010005	T	CCN - 31755
V2.533	7/19/2013	T-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: T00702020007	T	CCN - 31755
V2.534	7/19/2013	T-SMA-5	New Control - Routine/Replacement - Control ID: T00702040012	T	CCN - 31755
V2.535	7/19/2013	T-SMA-5	Map Revision - (R5)	T	CCN - 31755
V2.536	7/19/2013	M-SMA-13	Retire Control - Damaged and/or Replaced - Control ID: M02202010002	T	CCN - 31756
V2.537	7/19/2013	M-SMA-13	New Control - Routine/Replacement - Control ID: M02202040014	T	CCN - 31756
V2.538	7/19/2013	M-SMA-13	Map Revision - (R6)	T	CCN - 31756
V2.539	7/19/2013	M-SMA-12.5	Retire Control - Damaged and/or Replaced - Control ID: M01602010001	T	CCN - 31757
V2.540	7/19/2013	M-SMA-12.5	New Control - Routine/Replacement - Control ID: M01602040012	T	CCN - 31757
V2.541	7/19/2013	M-SMA-12.5	Map Revision - (R6)	T	CCN - 31757
V2.542	7/19/2013	M-SMA-12.6	Retire Control - Damaged and/or Replaced - Control ID: M01702010001	T	CCN - 31758
V2.543	7/19/2013	M-SMA-12.6	New Control - Routine/Replacement - Control ID: M01702040014	T	CCN - 31758
V2.544	7/19/2013	M-SMA-12.6	Map Revision - (R7)	T	CCN - 31758
V2.545	7/19/2013	M-SMA-12.8	Retire Control - Damaged and/or Replaced - Control ID: M01902010002	T	CCN - 31759
V2.546	7/19/2013	M-SMA-12.8	New Control - Routine/Replacement - Control ID: M01902040010	T	CCN - 31759
V2.547	7/19/2013	M-SMA-12.8	Map Revision - (R7)	T	CCN - 31759
V2.548	7/19/2013	M-SMA-12.8	Retire Control - Lifecycle Expired - Control ID: M01903060008	T	CCN - 31759
V2.550	7/24/2013	M-SMA-12.9	New Control - Routine/Replacement - Control ID: M02002040012	T	CCN - 31761
V2.551	7/24/2013	M-SMA-12.9	Retire Control - Lifecycle Expired - Control ID: M02001030009	T	CCN - 31761
V2.552	7/24/2013	M-SMA-12.9	Retire Control - Lifecycle Expired - Control ID: M02003060011	T	CCN - 31761
V2.553	7/24/2013	M-SMA-12.9	New Control - Augment Existing - Control ID: M02006020013	T	CCN - 31761
V2.554	7/24/2013	M-SMA-12.9	Map Revision - (R6)	T	CCN - 31761

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.555	7/24/2013	CDB-SMA-1.55	Retire Control - Damaged and/or Replaced - Control ID: C00802010002	T	CCN - 31770
V2.556	7/24/2013	CDB-SMA-1.55	Retire Control - Damaged and/or Replaced - Control ID: C00801010011	T	CCN - 31770
V2.557	7/24/2013	CDB-SMA-1.55	New Control - Routine/Replacement - Control ID: C00802040012	T	CCN - 31770
V2.558	7/24/2013	CDB-SMA-1.55	Map Revision - (R8)	T	CCN - 31770
V2.559	7/19/2013	CDB-SMA-1.65	Map Revision - (R4)	T	CCN - 31771
V2.560	7/24/2013	CDB-SMA-1.35	Retire Control - Damaged and/or Replaced - Control ID: C00602010001	T	CCN - 31772
V2.561	7/24/2013	CDB-SMA-1.35	Retire Control - Damaged and/or Replaced - Control ID: C00602020005	T	CCN - 31772
V2.562	7/24/2013	CDB-SMA-1.35	Retire Control - Damaged and/or Replaced - Control ID: C00601010008	T	CCN - 31772
V2.563	7/24/2013	CDB-SMA-1.35	New Control - Routine/Replacement - Control ID: C00602040010	T	CCN - 31772
V2.564	7/24/2013	CDB-SMA-1.35	Map Revision - (R4)	T	CCN - 31772
V2.565	7/19/2013	CDB-SMA-1.15	Retire Control - Damaged and/or Replaced - Control ID: C00502010005	T	CCN - 31773
V2.566	7/19/2013	CDB-SMA-1.15	Retire Control - Lifecycle Expired - Control ID: C00501060009	T	CCN - 31773
V2.567	7/19/2013	CDB-SMA-1.15	New Control - Routine/Replacement - Control ID: C00502040011	T	CCN - 31773
V2.568	7/19/2013	CDB-SMA-1.15	Map Revision - (R5)	T	CCN - 31773
V2.569	7/19/2013	CDB-SMA-0.55	Retire Control - Damaged and/or Replaced - Control ID: C00302010008	T	CCN - 31774
V2.570	7/19/2013	CDB-SMA-0.55	Retire Control - Lifecycle Expired - Control ID: C00306010009	T	CCN - 31774
V2.571	7/19/2013	CDB-SMA-0.55	Retire Control - Lifecycle Expired - Control ID: C00306020012	T	CCN - 31774
V2.572	7/19/2013	CDB-SMA-0.55	New Control - Routine/Replacement - Control ID: C00302040021	T	CCN - 31774
V2.573	7/19/2013	CDB-SMA-0.55	Map Revision - (R6)	T	CCN - 31774
V2.574	7/29/2013	CDB-SMA-1.54	Retire Control - Damaged and/or Replaced - Control ID: C00702010003	T	CCN - 31775
V2.575	7/29/2013	CDB-SMA-1.54	New Control - Routine/Replacement - Control ID: C00701010013	T	CCN - 31775
V2.576	7/29/2013	CDB-SMA-1.54	Map Revision - (R7)	T	CCN - 31775
V2.577	7/19/2013	S-SMA-5.5	Retire Control - Damaged and/or Replaced - Control ID: S01502010001	T	CCN - 31779
V2.578	7/19/2013	S-SMA-5.5	New Control - Routine/Replacement - Control ID: S01502040005	T	CCN - 31779

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.579	7/19/2013	S-SMA-5.5	Map Revision - (R5)	T	CCN - 31779
V2.580	7/19/2013	S-SMA-3.95	Retire Control - Damaged and/or Replaced - Control ID: S01002010002	T	CCN - 31780
V2.581	7/19/2013	S-SMA-3.95	New Control - Routine/Replacement - Control ID: S01002040007	T	CCN - 31780
V2.582	7/19/2013	S-SMA-3.95	Map Revision - (R4)	T	CCN - 31780
V2.583	7/19/2013	S-SMA-4.5	Retire Control - Damaged and/or Replaced - Control ID: S01202010001	T	CCN - 31797
V2.584	7/19/2013	S-SMA-4.5	Retire Control - Lifecycle Expired - Control ID: S01203060002	T	CCN - 31797
V2.585	7/19/2013	S-SMA-4.5	Retire Control - Lifecycle Expired - Control ID: S01203060003	T	CCN - 31797
V2.586	7/19/2013	S-SMA-4.5	New Control - Routine/Replacement - Control ID: S01202040007	T	CCN - 31797
V2.587	7/19/2013	S-SMA-4.5	Map Revision - (R6)	T	CCN - 31797
V2.588	7/19/2013	CDB-SMA-0.25	Retire Control - Damaged and/or Replaced - Control ID: C00202010005	T	CCN - 31793
V2.589	7/19/2013	CDB-SMA-0.25	New Control - Routine/Replacement - Control ID: C00202040019	T	CCN - 31793
V2.590	7/19/2013	CDB-SMA-0.25	Map Revision - (R5)	T	CCN - 31793
V2.591	7/19/2013	S-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: S01302010001	T	CCN - 31795
V2.592	7/19/2013	S-SMA-5	New Control - Routine/Replacement - Control ID: S01302040007	T	CCN - 31795
V2.593	7/19/2013	S-SMA-5	Map Revision - (R6)	T	CCN - 31795
V2.594	7/19/2013	CDB-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: C00402010001	T	CCN - 31799
V2.595	7/19/2013	CDB-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: C00402020002	T	CCN - 31799
V2.596	7/19/2013	CDB-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: C00402030007	T	CCN - 31799
V2.597	7/19/2013	CDB-SMA-1	New Control - Routine/Replacement - Control ID: C00402040015	T	CCN - 31799
V2.598	7/19/2013	CDB-SMA-1	Map Revision - (R6)	T	CCN - 31799
V2.599	6/18/2013	S-SMA-2.8	Retire Control - Damaged and/or Replaced - Control ID: S00402010001	T	CCN - 31671
V2.600	6/18/2013	S-SMA-2.8	New Control - Routine/Replacement - Control ID: S00402040008	T	CCN - 31671
V2.601	6/18/2013	S-SMA-2.8	Map Revision - (R8)	T	CCN - 31671
V2.602	7/19/2013	S-SMA-2.01	Retire Control - Damaged and/or Replaced - Control ID: S003A02030005	T	CCN - 31853

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.603	7/19/2013	S-SMA-2.01	New Control - Routine/Replacement - Control ID: S003A02040009	T	CCN - 31853
V2.604	7/19/2013	S-SMA-2.01	Map Revision - (R7)	T	CCN - 31853
V2.605	7/19/2013	S-SMA-3.71	Retire Control - Damaged and/or Replaced - Control ID: S00802010003	T	CCN - 31857
V2.606	7/19/2013	S-SMA-3.71	New Control - Routine/Replacement - Control ID: S00802040015	T	CCN - 31857
V2.607	7/19/2013	S-SMA-3.71	Map Revision - (R5)	T	CCN - 31857
V2.608	7/19/2013	S-SMA-3.51	Retire Control - Damaged and/or Replaced - Control ID: S00502010003	T	CCN - 31854
V2.609	7/19/2013	S-SMA-3.51	Retire Control - Lifecycle Expired - Control ID: S00503020006	T	CCN - 31854
V2.610	7/19/2013	S-SMA-3.51	New Control - Routine/Replacement - Control ID: S00502040013	T	CCN - 31854
V2.611	7/19/2013	S-SMA-3.51	Map Revision - (R5)	T	CCN - 31854
V2.612	7/19/2013	S-SMA-3.52	Retire Control - Damaged and/or Replaced - Control ID: S005A02010001	T	CCN - 31855
V2.613	7/19/2013	S-SMA-3.52	Map Revision - (R6)	T	CCN - 31855
V2.614	7/19/2013	S-SMA-3.52	New Control - Routine/Replacement - Control ID: S005A02040005	T	CCN - 31855
V2.615	7/19/2013	S-SMA-3.72	Retire Control - Damaged and/or Replaced - Control ID: S00902010001	T	CCN - 31858
V2.616	7/19/2013	S-SMA-3.72	Retire Control - Damaged and/or Replaced - Control ID: S00902020002	T	CCN - 31858
V2.617	7/19/2013	S-SMA-3.72	New Control - Routine/Replacement - Control ID: S00902040011	T	CCN - 31858
V2.618	7/19/2013	S-SMA-3.72	Map Revision - (R7)	T	CCN - 31858
V2.619	7/24/2013	S-SMA-3.7	Retire Control - Damaged and/or Replaced - Control ID: S00702020002	T	CCN - 31856
V2.620	7/24/2013	S-SMA-3.7	New Control - Routine/Replacement - Control ID: S00702040006	T	CCN - 31856
V2.621	7/24/2013	S-SMA-3.7	Map Revision - (R5)	T	CCN - 31856
V2.622	7/29/2013	M-SMA-10.01	Retire Control - Damaged and/or Replaced - Control ID: M012A02010005	T	CCN - 31865
V2.623	7/29/2013	M-SMA-10.01	New Control - Routine/Replacement - Control ID: M012A02040008	T	CCN - 31865
V2.624	7/29/2013	M-SMA-10.01	Map Revision - (R5)	T	CCN - 31865
V2.625	7/29/2013	M-SMA-10	Retire Control - Damaged and/or Replaced - Control ID: M01202010002	T	CCN - 31864
V2.626	7/29/2013	M-SMA-10	Retire Control - Damaged and/or Replaced - Control ID: M01202020011	T	CCN - 31864

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.627	7/29/2013	M-SMA-10	New Control - Routine/Replacement - Control ID: M01202040012	T	CCN - 31864
V2.628	7/29/2013	M-SMA-10	Map Revision - (R4)	T	CCN - 31864
V2.629	7/31/2013	M-SMA-10.3	Retire Control - Damaged and/or Replaced - Control ID: M01302010004	T	CCN - 31866
V2.630	7/31/2013	M-SMA-10.3	Retire Control - Damaged and/or Replaced - Control ID: M01302020005	T	CCN - 31866
V2.631	7/31/2013	M-SMA-10.3	New Control - Routine/Replacement - Control ID: M01302040014	T	CCN - 31866
V2.632	7/31/2013	M-SMA-10.3	Map Revision - (R7)	T	CCN - 31866
V2.633	8/7/2013	S-SMA-3.6	Retire Control - Damaged and/or Replaced - Control ID: S00602010004	T	CCN - 31862
V2.634	8/7/2013	S-SMA-3.6	New Control - Routine/Replacement - Control ID: S00602040021	T	CCN - 31862
V2.635	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00606010022	T	CCN - 31862
V2.636	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00606010023	T	CCN - 31862
V2.637	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00607020024	T	CCN - 31862
V2.638	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00607020025	T	CCN - 31862
V2.639	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00607010026	T	CCN - 31862
V2.640	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00603110027	T	CCN - 31862
V2.641	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00604060028	T	CCN - 31862
V2.642	8/7/2013	S-SMA-3.6	New Control - Augment Existing - Control ID: S00604060029	T	CCN - 31862
V2.643	8/7/2013	S-SMA-3.6	Map Revision - (R7)	T	CCN - 31862
V2.644	6/4/2013	T-SMA-2.85	Retire Control - Damaged and/or Replaced - Control ID: T00402010003	T	CCN - 31861
V2.645	6/4/2013	T-SMA-2.85	Retire Control - Damaged and/or Replaced - Control ID: T00402020002	T	CCN - 31861
V2.646	6/4/2013	T-SMA-2.85	New Control - Routine/Replacement - Control ID: T00402040007	T	CCN - 31861
V2.647	6/4/2013	T-SMA-2.85	Map Revision - (R2)	T	CCN - 31861
V2.648	5/24/2013	M-SMA-3.5	Retire Control - Damaged and/or Replaced - Control ID: M00502010001	T	CCN - 31919
V2.649	5/24/2013	M-SMA-3.5	New Control - Routine/Replacement - Control ID: M00502040018	T	CCN - 31919
V2.650	5/24/2013	M-SMA-3.5	Map Revision - (R9)	T	CCN - 31919

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.651	5/24/2013	M-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: M00602010003	T	CCN - 31920
V2.652	5/24/2013	M-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: M00602020004	T	CCN - 31920
V2.653	5/24/2013	M-SMA-4	New Control - Routine/Replacement - Control ID: M00602040014	T	CCN - 31920
V2.654	5/24/2013	M-SMA-4	Map Revision - (R8)	T	CCN - 31920
V2.655	6/18/2013	M-SMA-7	Retire Control - Damaged and/or Replaced - Control ID: M00902020002	T	CCN - 31923
V2.656	6/18/2013	M-SMA-7	New Control - Routine/Replacement - Control ID: M00902020002	T	CCN - 31923
V2.657	6/18/2013	M-SMA-7	Map Revision - (R7)	T	CCN - 31923
V2.658	7/19/2013	M-SMA-9.1	Retire Control - Damaged and/or Replaced - Control ID: M01102020006	T	CCN - 31925
V2.659	7/19/2013	M-SMA-9.1	New Control - Routine/Replacement - Control ID: M01102040007	T	CCN - 31925
V2.660	7/19/2013	M-SMA-9.1	Map Revision - (R5)	T	CCN - 31925
V2.661	7/19/2013	M-SMA-11.1	Retire Control - Damaged and/or Replaced - Control ID: M01402010003	T	CCN - 31915
V2.662	7/19/2013	M-SMA-11.1	Retire Control - Damaged and/or Replaced - Control ID: M01402020004	T	CCN - 31915
V2.663	7/19/2013	M-SMA-11.1	New Control - Routine/Replacement - Control ID: M01402040008	T	CCN - 31915
V2.664	7/19/2013	M-SMA-11.1	Map Revision - (R7)	T	CCN - 31915
V2.665	7/24/2013	M-SMA-12	Retire Control - Damaged and/or Replaced - Control ID: M01502010002	T	CCN - 31916
V2.666	7/24/2013	M-SMA-12	Retire Control - Damaged and/or Replaced - Control ID: M01502020003	T	CCN - 31916
V2.667	7/24/2013	M-SMA-12	New Control - Routine/Replacement - Control ID: M01502040008	T	CCN - 31916
V2.668	7/24/2013	M-SMA-12	Map Revision - (R9)	T	CCN - 31916
V2.669	8/12/2013	M-SMA-7.9	Retire Control - Damaged and/or Replaced - Control ID: M01002010002	T	CCN - 31924
V2.670	8/12/2013	M-SMA-7.9	Retire Control - Damaged and/or Replaced - Control ID: M01002020003	T	CCN - 31924
V2.671	8/12/2013	M-SMA-7.9	New Control - Routine/Replacement - Control ID: M01002040013	T	CCN - 31924
V2.672	8/12/2013	M-SMA-7.9	Map Revision - (R6)	T	CCN - 31924
V2.673	8/27/2013	M-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: M00302010003	T	CCN - 31917
V2.674	8/27/2013	M-SMA-3	New Control - Routine/Replacement - Control ID: M00302040013	T	CCN - 31917

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.675	8/27/2013	M-SMA-3	Map Revision - (R10)	T	CCN - 31917
V2.676	8/30/2013	M-SMA-6	Retire Control - Damaged and/or Replaced - Control ID: M00802010004	T	CCN - 31922
V2.677	8/30/2013	M-SMA-6	Retire Control - Damaged and/or Replaced - Control ID: M00802020005	T	CCN - 31922
V2.678	8/30/2013	M-SMA-6	New Control - Routine/Replacement - Control ID: M00802040024	T	CCN - 31922
V2.679	8/30/2013	M-SMA-6	New Control - Augment Existing - Control ID: M00804060025	T	CCN - 31922
V2.680	8/30/2013	M-SMA-6	Retire Control - Lifecycle Expired - Control ID: M00806010010	T	CCN - 31922
V2.681	8/30/2013	M-SMA-6	Retire Control - Lifecycle Expired - Control ID: M00806010021	T	CCN - 31922
V2.682	8/30/2013	M-SMA-6	Retire Control - Lifecycle Expired - Control ID: M00806010022	T	CCN - 31922
V2.683	8/30/2013	M-SMA-6	Retire Control - Lifecycle Expired - Control ID: M00806010023	T	CCN - 31922
V2.684	8/30/2013	M-SMA-6	New Control - Augment Existing - Control ID: M00803100026	T	CCN - 31922
V2.685	8/30/2013	M-SMA-6	Map Revision - (R10)	T	CCN - 31922
V2.686	5/24/2013	S-SMA-6	Retire Control - Damaged and/or Replaced - Control ID: S01602010003	T	CCN - 31989
V2.687	5/24/2013	S-SMA-6	New Control - Routine/Replacement - Control ID: S01602040012	T	CCN - 31989
V2.688	5/24/2013	S-SMA-6	Map Revision - (R6)	T	CCN - 31989
V2.689	7/24/2013	S-SMA-1.1	Map Revision - (R9)	T	CCN - 32000
V2.690	5/24/2013	CDB-SMA-0.15	Retire Control - Damaged and/or Replaced - Control ID: C00102010002	T	CCN - 32046
V2.691	5/24/2013	CDB-SMA-0.15	New Control - Routine/Replacement - Control ID: C00102040015	T	CCN - 32046
V2.692	5/24/2013	CDB-SMA-0.15	Retire Control - Lifecycle Expired - Control ID: C00101030012	T	CCN - 32046
V2.693	5/24/2013	CDB-SMA-0.15	Retire Control - Lifecycle Expired - Control ID: C00103060014	T	CCN - 32046
V2.694	5/24/2013	CDB-SMA-0.15	Map Revision - (R6)	T	CCN - 32046
V2.695	8/20/2013	S-SMA-2	Retire Control - Lifecycle Expired - Control ID: S00303020008	T	CCN - 30667
V2.696	8/20/2013	S-SMA-2	Retire Control - Lifecycle Expired - Control ID: S00307020006	T	CCN - 30667
V2.697	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00304060012	T	CCN - 30667
V2.698	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00301010013	T	CCN - 30667

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.699	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00305040014	T	CCN - 30667
V2.700	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00301010015	T	CCN - 30667
V2.701	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00304060016	T	CCN - 30667
V2.702	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00306010017	T	CCN - 30667
V2.703	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00306010018	T	CCN - 30667
V2.704	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00306010019	T	CCN - 30667
V2.705	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00306010020	T	CCN - 30667
V2.706	8/20/2013	S-SMA-2	New Control - Corrective Action - Control ID: S00304060021	T	CCN - 30667
V2.707	8/20/2013	S-SMA-2	Map Revision - (R7)	T	CCN - 30667
V2.708	6/18/2013	T-SMA-6.8	Retire Control - Damaged and/or Replaced - Control ID: T00802010001	T	CCN - 31828
V2.709	6/18/2013	T-SMA-6.8	New Control - Augment Existing - Control ID: T00801060004	T	CCN - 31828
V2.710	6/18/2013	T-SMA-6.8	Map Revision - (R3)	T	CCN - 31828
V2.711	8/12/2013	M-SMA-12.92	Retire Control - Damaged and/or Replaced - Control ID: M02102010002	T	CCN - 32106
V2.712	8/12/2013	M-SMA-12.92	New Control - Routine/Replacement - Control ID: M02102040005	T	CCN - 32106
V2.713	8/12/2013	M-SMA-12.92	Map Revision - (R2)	T	CCN - 32106
V2.714	8/12/2013	M-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: M00702010004	T	CCN - 32117
V2.715	8/12/2013	M-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: M00702020006	T	CCN - 32117
V2.716	8/12/2013	M-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: M00702030014	T	CCN - 32117
V2.717	8/12/2013	M-SMA-5	New Control - Routine/Replacement - Control ID: M00702040016	T	CCN - 32117
V2.718	8/12/2013	M-SMA-5	Retire Control - Lifecycle Expired - Control ID: M00704010013	T	CCN - 32117
V2.719	8/12/2013	M-SMA-5	Map Revision - (R6)	T	CCN - 32117
V2.720	6/18/2013	CDB-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: C01002010003	T	CCN - 32156
V2.721	6/18/2013	CDB-SMA-4	New Control - Routine/Replacement - Control ID: C01002040012	T	CCN - 32156
V2.722	6/18/2013	CDB-SMA-4	Map Revision - (R4)	T	CCN - 32156

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
V2.723	7/18/2013	S-SMA-3.53	Retire Control - Damaged and/or Replaced - Control ID: S005B02020001	T	CCN - 31669
V2.724	7/18/2013	S-SMA-3.53	New Control - Routine/Replacement - Control ID: S005B02040009	T	CCN - 31669
V2.725	7/18/2013	S-SMA-3.53	New Control - Augment Existing - Control ID: S005B01010010	T	CCN - 31669
V2.726	7/18/2013	S-SMA-3.53	Map Revision - (R9)	T	CCN - 31669
V2.727	8/7/2013	S-SMA-4.1	Map Revision - (R6)	T	CCN - 32431
V2.728	7/19/2013	S-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: S00302010007	T	CCN - 32178
V2.729	7/19/2013	S-SMA-2	New Control - Routine/Replacement - Control ID: S00302040022	T	CCN - 32178
V2.730	7/19/2013	S-SMA-2	Map Revision - (R7)	T	CCN - 32178
V2.731	6/18/2013	M-SMA-3.1	Retire Control - Damaged and/or Replaced - Control ID: M00402010001	T	CCN - 31918
V2.732	6/18/2013	M-SMA-3.1	New Control - Routine/Replacement - Control ID: M00402040007	T	CCN - 31918
V2.733	6/18/2013	M-SMA-3.1	Map Revision - (R6)	T	CCN - 31918
V2.734	7/19/2013	S-SMA-0.25	Retire Control - Damaged and/or Replaced - Control ID: S00102010002	T	CCN - 31988
V2.735	7/19/2013	S-SMA-0.25	Retire Control - Damaged and/or Replaced - Control ID: S00102020006	T	CCN - 31988
V2.736	7/19/2013	S-SMA-0.25	New Control - Routine/Replacement - Control ID: S00102040011	T	CCN - 31988
V2.737	7/19/2013	S-SMA-0.25	Map Revision - (R7)	T	CCN - 31988
V2.738	7/19/2013	Pratt-SMA-1.05	Retire Control - Damaged and/or Replaced - Control ID: T00102010001	T	CCN - 32295
V2.739	7/19/2013	Pratt-SMA-1.05	Retire Control - Damaged and/or Replaced - Control ID: T00102020009	T	CCN - 32295
V2.740	7/19/2013	Pratt-SMA-1.05	New Control - Routine/Replacement - Control ID: T00102040020	T	CCN - 32295
V2.741	7/19/2013	Pratt-SMA-1.05	Map Revision - (R5)	T	CCN - 32295
V2.742	7/19/2013	S-SMA-5.2	Retire Control - Damaged and/or Replaced - Control ID: S01402010002	T	CCN - 31781
V2.743	7/19/2013	S-SMA-5.2	New Control - Routine/Replacement - Control ID: S01402040016	T	CCN - 31781
V2.744	7/19/2013	S-SMA-5.2	Map Revision - (R8)	T	CCN - 31781
V2.745	8/6/2013	T-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: T00202010004	T	CCN - 31863
V2.746	8/6/2013	T-SMA-1	Retire Control - Lifecycle Expired - Control ID: T00204060006	T	CCN - 31863

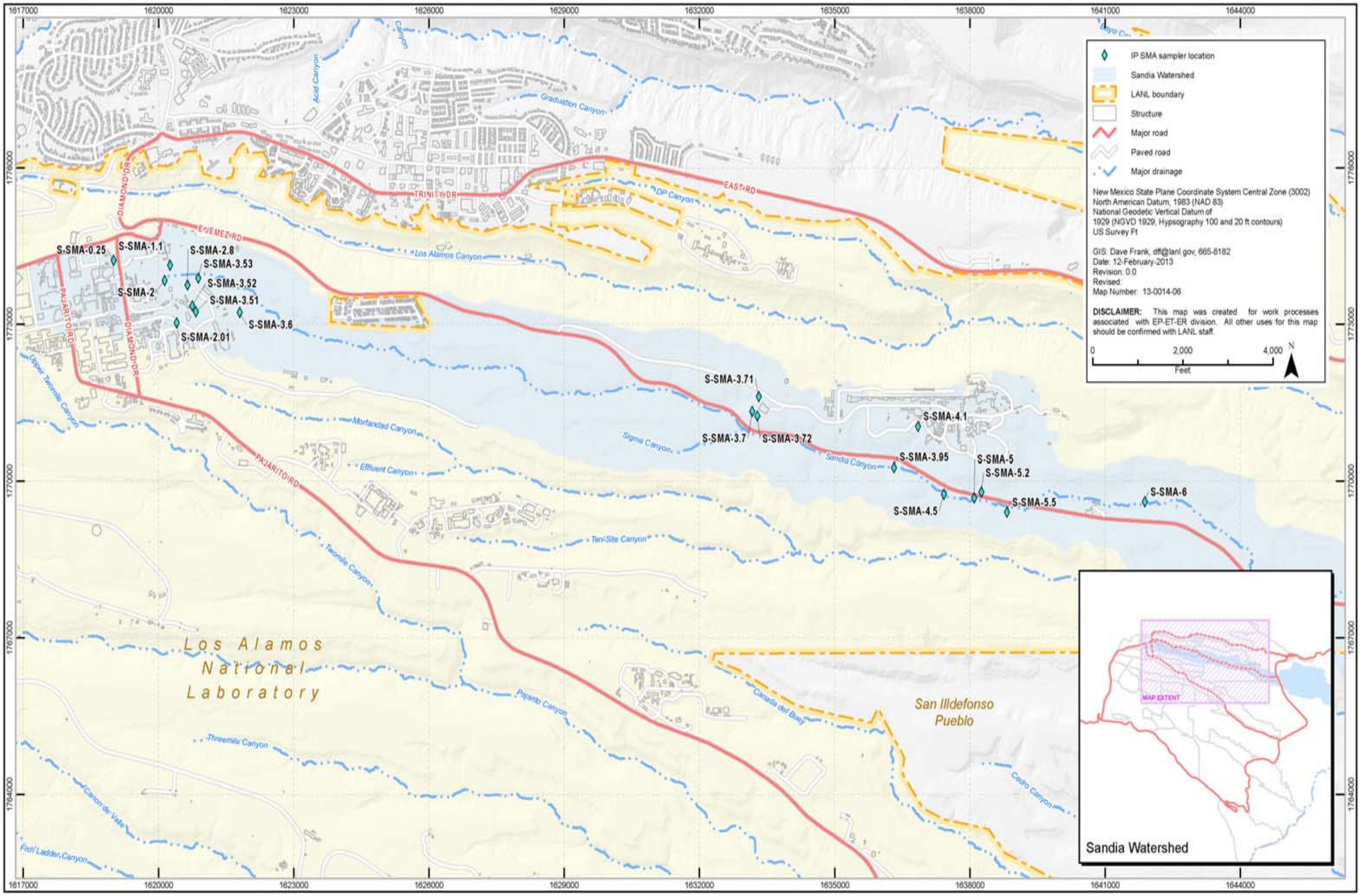
Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.747	8/6/2013	T-SMA-1	Retire Control - Lifecycle Expired - Control ID: T00204060006	T	CCN - 31863
V2.748	8/6/2013	T-SMA-1	SMA Boundary Modification	T	CCN - 31863
V2.749	8/6/2013	T-SMA-1	Map Revision - (R4)	T	CCN - 31863
V2.750	8/16/2013	M-SMA-10.3	Retire Control - Damaged and/or Replaced - Control ID: M01306010010	T	CCN - 34831
V2.751	8/16/2013	M-SMA-10.3	New Control - Routine/Replacement - Control ID: M01306010015	T	CCN - 34831
V2.752	8/16/2013	M-SMA-10.3	Map Revision - (R8)	T	CCN - 34831
V2.753	8/16/2013	T-SMA-2.5	Map Revision - (R3)	T	CCN - 34927
V2.754	8/29/2013	M-SMA-1.2	New Control - Routine/Replacement - Control ID: M00202040009	T	CCN - 35113
V2.755	11/5/2013	S-SMA-3.6	Retire Control - Lifecycle Expired - Control ID: S00606010001	T	CCN - 36259
V2.756	11/5/2013	S-SMA-3.6	Retire Control - Damaged and/or Replaced - Control ID: S00603110027	T	CCN - 36259
V2.757	11/5/2013	S-SMA-3.6	New Control - Routine/Replacement - Control ID: S00603100030	T	CCN - 36259
V2.758	11/5/2013	S-SMA-3.6	Map Revision - (R8)	T	CCN - 36259
V2.759	11/6/2013	M-SMA-13	Change to SDPPP - Baseline monitoring is complete, no TALs exceeded.	T	CCN - 37140
V2.760	11/20/2013	S-SMA-4.5	Retire Control - Damaged and/or Replaced - Control ID: S01203060006	T	CCN - 37292
V2.761	11/20/2013	S-SMA-4.5	New Control - Routine/Replacement - Control ID: S01203060008	T	CCN - 37292
V2.762	11/20/2013	S-SMA-4.5	Map Revision - (R7)	T	CCN - 37292
V2.763	11/20/2013	S-SMA-3.95	Retire Control - Damaged and/or Replaced - Control ID: S01003060005	T	CCN - 37300
V2.764	11/20/2013	S-SMA-3.95	New Control - Routine/Replacement - Control ID: S01003060008	T	CCN - 37300
V2.765	11/20/2013	S-SMA-3.95	Map Revision - (R5)	T	CCN - 37300
V2.766	11/20/2013	CDB-SMA-0.15	New Control - Augment Existing - Control ID: C00103060016	T	CCN - 37308
V2.767	11/20/2013	CDB-SMA-0.15	New Control - Augment Existing - Control ID: C00103060017	T	CCN - 37308
V2.768	11/20/2013	CDB-SMA-0.15	New Control - Augment Existing - Control ID: C00103060018	T	CCN - 37308
V2.769	11/20/2013	CDB-SMA-0.15	Map Revision - (R7)	T	CCN - 37308

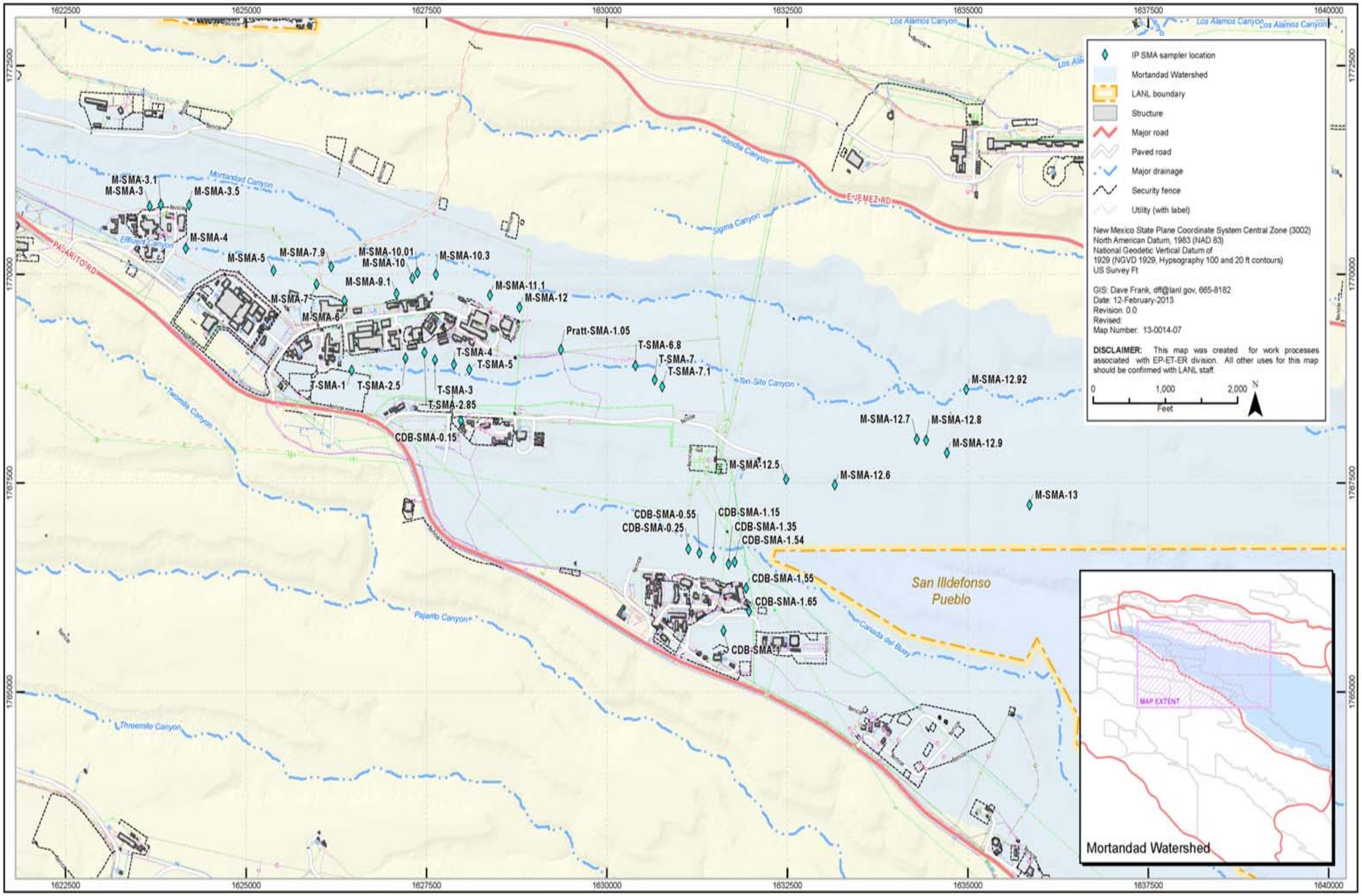
Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.770	3/5/2014	All Sections	Change to SDPPP - Updated storm water results section for each SMA in the SDPPP volume that had a storm water sample collected in 2013.	T	
V2.771	4/2/2014	All Sections	Change to SDPPP - Updated AOC and SWMU (Site) descriptions in the SDPPP volume to the most recent updated versions prepared for the Permit Renewal.	T	
V2.772	4/2/2014	Attachment 3	Change to SDPPP - Updated precipitation data collected in 2013.	T	
V2.773	4/2/2014	Attachment 4	Change to SDPPP - Updated changes to SMA and Site characteristics made in 2013.	T	
V2.774	4/2/2014	Attachment 5	Change to SDPPP - Updated sampling plan for samples to be collected in 2014.	T	
V2.775	4/2/2014	Attachment 1	Change to SDPPP - Updated amendments to SDPPP completed in 2013.	T	

Attachment 2
Vicinity Map



Attachment 2, Vicinity Map (continued)



Attachment 3
Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG121.9	April 8, 2013	0.01	0.01	5
RG121.9	April 9, 2013	0.3	0.06	140
RG121.9	April 10, 2013	0.28	0.15	80
RG121.9	April 23, 2013	0.01	0.01	5
RG121.9	May 9, 2013	0.06	0.04	25
RG121.9	May 10, 2013	0.05	0.03	25
RG121.9	May 15, 2013	0.07	0.06	25
RG121.9	May 20, 2013	0.01	0.01	5
RG121.9	June 14, 2013	0.44	0.17	70
RG121.9	June 17, 2013	0.01	0.01	5
RG121.9	June 28, 2013	0.01	0.01	5
RG121.9	June 29, 2013	0.07	0.06	25
RG121.9	June 30, 2013	0.4	0.23	55
RG121.9	July 2, 2013	0.27	0.16	55
RG121.9	July 5, 2013	0.14	0.06	40
RG121.9	July 6, 2013	0.09	0.08	20
RG121.9	July 7, 2013	0.01	0.01	5
RG121.9	July 11, 2013	0.16	0.16	25
RG121.9	July 12, 2013	0.79	0.63	75
RG121.9	July 13, 2013	0.24	0.11	55
RG121.9	July 14, 2013	0.22	0.16	55
RG121.9	July 15, 2013	0.02	0.01	10
RG121.9	July 20, 2013	0.01	0.01	5
RG121.9	July 21, 2013	0.08	0.06	20
RG121.9	July 24, 2013	0.01	0.01	5
RG121.9	July 25, 2013	0.29	0.11	80
RG121.9	July 26, 2013	0.19	0.08	75
RG121.9	July 28, 2013	0.06	0.05	15
RG121.9	August 1, 2013	0.12	0.07	40
RG121.9	August 2, 2013	0.01	0.01	5
RG121.9	August 4, 2013	0.22	0.05	110
RG121.9	August 5, 2013	0.35	0.18	75
RG121.9	August 8, 2013	0.03	0.03	10
RG121.9	August 9, 2013	0.12	0.05	35
RG121.9	August 13, 2013	0.06	0.04	20

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG121.9	August 18, 2013	0.2	0.15	55
RG121.9	August 19, 2013	0.02	0.02	10
RG121.9	August 20, 2013	0.14	0.12	30
RG121.9	August 21, 2013	0.01	0.01	5
RG121.9	August 25, 2013	0.02	0.02	5
RG121.9	August 30, 2013	0.12	0.12	25
RG121.9	August 31, 2013	0.01	0.01	5
RG121.9	September 1, 2013	0.05	0.05	20
RG121.9	September 2, 2013	0.06	0.05	25
RG121.9	September 8, 2013	0.06	0.06	25
RG121.9	September 10, 2013	1.35	0.15	440
RG121.9	September 11, 2013	0.02	0.01	10
RG121.9	September 12, 2013	2.31	0.35	575
RG121.9	September 13, 2013	2.35	1.11	330
RG121.9	September 14, 2013	0.19	0.05	80
RG121.9	September 15, 2013	0.07	0.06	20
RG121.9	September 17, 2013	0.38	0.2	70
RG121.9	September 18, 2013	0.07	0.04	30
RG121.9	September 22, 2013	0.74	0.15	120
RG121.9	September 27, 2013	0.05	0.03	30
RG121.9	October 9, 2013	0.01	0.01	5
RG121.9	October 10, 2013	0.35	0.16	120
RG121.9	October 13, 2013	0.12	0.04	60
RG121.9	October 15, 2013	0.21	0.04	120
RG121.9	October 16, 2013	0.21	0.06	120
RG121.9	October 24, 2013	0.29	0.09	120
RG121.9	October 25, 2013	0.01	0.01	5
RG121.9	October 29, 2013	0.04	0.02	30
RG121.9	October 30, 2013	0.05	0.03	30
RG121.9	October 31, 2013	0.01	0.01	5
RG121.9	November 4, 2013	0.53	0.16	180
RG200.5	April 9, 2013	0.17	0.03	85
RG200.5	April 10, 2013	0.18	0.06	85
RG200.5	May 9, 2013	0.02	0.02	10
RG200.5	May 10, 2013	0.09	0.08	35
RG200.5	May 15, 2013	0.04	0.03	15

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG200.5	May 21, 2013	0.01	0.01	5
RG200.5	June 14, 2013	0.22	0.09	60
RG200.5	June 28, 2013	0.01	0.01	5
RG200.5	June 29, 2013	0.04	0.04	15
RG200.5	June 30, 2013	0.45	0.38	60
RG200.5	July 2, 2013	0.05	0.03	25
RG200.5	July 3, 2013	0.01	0.01	5
RG200.5	July 5, 2013	0.38	0.23	60
RG200.5	July 6, 2013	0.02	0.02	10
RG200.5	July 7, 2013	0.01	0.01	5
RG200.5	July 11, 2013	0.09	0.09	25
RG200.5	July 12, 2013	1.16	0.86	80
RG200.5	July 13, 2013	0.12	0.08	35
RG200.5	July 14, 2013	0.05	0.02	25
RG200.5	July 21, 2013	0.08	0.04	35
RG200.5	July 25, 2013	0.36	0.19	85
RG200.5	July 26, 2013	0.43	0.32	80
RG200.5	July 28, 2013	0.12	0.11	20
RG200.5	August 1, 2013	0.04	0.02	20
RG200.5	August 2, 2013	0.03	0.03	15
RG200.5	August 4, 2013	0.47	0.2	140
RG200.5	August 5, 2013	0.21	0.16	40
RG200.5	August 6, 2013	0.01	0.01	5
RG200.5	August 7, 2013	0.02	0.01	10
RG200.5	August 8, 2013	0.12	0.07	40
RG200.5	August 9, 2013	0.04	0.03	15
RG200.5	August 13, 2013	0.15	0.09	25
RG200.5	August 18, 2013	0.17	0.16	30
RG200.5	August 20, 2013	0.01	0.01	5
RG200.5	August 25, 2013	0.02	0.02	10
RG200.5	August 30, 2013	0.01	0.01	5
RG200.5	September 1, 2013	0.06	0.06	20
RG200.5	September 2, 2013	0.01	0.01	5
RG200.5	September 3, 2013	0.01	0.01	5
RG200.5	September 8, 2013	0.06	0.06	20
RG200.5	September 10, 2013	1.25	0.18	440

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG200.5	September 11, 2013	0.02	0.02	10
RG200.5	September 12, 2013	1.48	0.22	420
RG200.5	September 13, 2013	2.53	1.01	315
RG200.5	September 14, 2013	0.19	0.06	95
RG200.5	September 17, 2013	0.36	0.26	50
RG200.5	September 18, 2013	0.04	0.02	20
RG200.5	September 21, 2013	0.03	0.03	10
RG200.5	September 22, 2013	0.61	0.26	125
RG200.5	September 27, 2013	0.01	0.01	5
RG200.5	October 9, 2013	0.01	0.01	5
RG200.5	October 10, 2013	0.19	0.07	60
RG200.5	October 13, 2013	0.13	0.04	60
RG200.5	October 15, 2013	0.04	0.03	30
RG200.5	October 16, 2013	0.08	0.07	60
RG200.5	October 24, 2013	0.32	0.1	120
RG200.5	October 25, 2013	0.01	0.01	5
RG200.5	October 29, 2013	0.02	0.01	30
RG200.5	October 30, 2013	0.05	0.03	30
RG200.5	October 31, 2013	0.01	0.01	5
RG200.5	November 4, 2013	0.67	0.17	240
RG200.5	November 5, 2013	0.02	0.01	30
RG203	April 8, 2013	0.03	0.03	15
RG203	April 9, 2013	0.15	0.02	75
RG203	April 10, 2013	0.21	0.11	75
RG203	April 17, 2013	0.01	0.01	5
RG203	April 24, 2013	0.01	0.01	5
RG203	May 10, 2013	0.03	0.02	15
RG203	May 11, 2013	0.01	0.01	5
RG203	May 15, 2013	0.02	0.02	10
RG203	May 22, 2013	0.01	0.01	5
RG203	June 13, 2013	0.01	0.01	5
RG203	June 14, 2013	0.18	0.07	70
RG203	June 28, 2013	0.01	0.01	5
RG203	June 29, 2013	0.04	0.04	10
RG203	June 30, 2013	0.34	0.31	35
RG203	July 2, 2013	0.1	0.06	40

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG203	July 3, 2013	0.06	0.06	15
RG203	July 5, 2013	0.32	0.1	80
RG203	July 6, 2013	0.02	0.01	10
RG203	July 7, 2013	0.02	0.01	10
RG203	July 9, 2013	0.01	0.01	5
RG203	July 11, 2013	0.02	0.01	10
RG203	July 12, 2013	0.16	0.14	35
RG203	July 13, 2013	0.03	0.02	15
RG203	July 14, 2013	0.08	0.06	30
RG203	July 16, 2013	0.01	0.01	5
RG203	July 21, 2013	0.07	0.07	20
RG203	July 25, 2013	0.46	0.22	75
RG203	July 26, 2013	0.57	0.41	95
RG203	July 28, 2013	0.26	0.24	25
RG203	July 30, 2013	0.02	0.02	10
RG203	August 1, 2013	0.06	0.02	30
RG203	August 2, 2013	0.04	0.03	20
RG203	August 4, 2013	0.41	0.13	150
RG203	August 5, 2013	0.03	0.03	10
RG203	August 6, 2013	0.01	0.01	5
RG203	August 8, 2013	0.32	0.23	40
RG203	August 9, 2013	0.01	0.01	5
RG203	August 13, 2013	0.07	0.05	20
RG203	August 18, 2013	0.12	0.11	35
RG203	August 20, 2013	0.01	0.01	5
RG203	September 1, 2013	0.03	0.03	10
RG203	September 2, 2013	0.01	0.01	5
RG203	September 8, 2013	0.06	0.06	15
RG203	September 9, 2013	0.02	0.02	10
RG203	September 10, 2013	1.56	0.29	490
RG203	September 11, 2013	0.02	0.02	10
RG203	September 12, 2013	1.86	0.27	380
RG203	September 13, 2013	2.34	0.79	320
RG203	September 14, 2013	0.47	0.14	160
RG203	September 17, 2013	0.3	0.17	45
RG203	September 18, 2013	0.03	0.02	15

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG203	September 19, 2013	0.01	0.01	5
RG203	September 21, 2013	0.24	0.23	30
RG203	September 22, 2013	0.4	0.1	115
RG203	October 9, 2013	0.02	0.02	10
RG203	October 10, 2013	0.23	0.09	90
RG203	October 11, 2013	0.01	0.01	5
RG203	October 13, 2013	0.13	0.04	55
RG203	October 15, 2013	0.26	0.06	130
RG203	October 16, 2013	0.03	0.01	15
RG203	October 24, 2013	0.32	0.1	135
RG203	October 25, 2013	0.02	0.01	10
RG203	October 29, 2013	0.02	0.01	10
RG203	October 30, 2013	0.02	0.02	10
RG203	October 31, 2013	0.01	0.01	5
RG203	November 4, 2013	0.88	0.23	240
RG203	November 5, 2013	0.01	0.01	5
RG245.5	April 8, 2013	0.04	0.04	20
RG245.5	April 9, 2013	0.15	0.02	75
RG245.5	April 10, 2013	0.2	0.07	95
RG245.5	April 17, 2013	0.01	0.01	5
RG245.5	May 9, 2013	0.01	0.01	5
RG245.5	May 10, 2013	0.03	0.03	15
RG245.5	May 15, 2013	0.02	0.02	10
RG245.5	June 13, 2013	0.01	0.01	5
RG245.5	June 14, 2013	0.07	0.04	35
RG245.5	June 29, 2013	0.04	0.04	10
RG245.5	June 30, 2013	0.3	0.23	50
RG245.5	July 2, 2013	0.06	0.04	30
RG245.5	July 3, 2013	0.04	0.03	20
RG245.5	July 5, 2013	0.25	0.12	45
RG245.5	July 6, 2013	0.05	0.03	25
RG245.5	July 7, 2013	0.01	0.01	5
RG245.5	July 9, 2013	0.44	0.41	30
RG245.5	July 11, 2013	0.02	0.02	10
RG245.5	July 12, 2013	0.26	0.23	40
RG245.5	July 13, 2013	0.07	0.04	30

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG245.5	July 14, 2013	0.06	0.04	20
RG245.5	July 16, 2013	0.01	0.01	5
RG245.5	July 21, 2013	0.06	0.06	20
RG245.5	July 22, 2013	0.01	0.01	5
RG245.5	July 23, 2013	0.01	0.01	5
RG245.5	July 25, 2013	0.79	0.48	90
RG245.5	July 26, 2013	0.39	0.26	80
RG245.5	July 27, 2013	0.01	0.01	5
RG245.5	July 28, 2013	0.07	0.05	25
RG245.5	July 31, 2013	0.01	0.01	5
RG245.5	August 1, 2013	0.07	0.02	35
RG245.5	August 2, 2013	0.05	0.03	25
RG245.5	August 4, 2013	0.46	0.14	160
RG245.5	August 5, 2013	0.02	0.02	10
RG245.5	August 8, 2013	0.26	0.19	55
RG245.5	August 13, 2013	0.1	0.05	35
RG245.5	August 18, 2013	0.19	0.17	30
RG245.5	August 24, 2013	0.01	0.01	5
RG245.5	September 1, 2013	0.03	0.02	10
RG245.5	September 8, 2013	0.09	0.08	30
RG245.5	September 10, 2013	1.32	0.17	455
RG245.5	September 11, 2013	0.01	0.01	5
RG245.5	September 12, 2013	1.83	0.3	375
RG245.5	September 13, 2013	2.06	0.69	310
RG245.5	September 14, 2013	0.62	0.16	180
RG245.5	September 17, 2013	0.08	0.05	25
RG245.5	September 18, 2013	0.03	0.01	15
RG245.5	September 19, 2013	0.01	0.01	5
RG245.5	September 21, 2013	0.04	0.03	20
RG245.5	September 22, 2013	0.37	0.11	110
RG245.5	October 10, 2013	0.22	0.08	85
RG245.5	October 13, 2013	0.09	0.04	45
RG245.5	October 15, 2013	0.23	0.06	115
RG245.5	October 16, 2013	0.07	0.03	35
RG245.5	October 24, 2013	0.28	0.1	120
RG245.5	October 25, 2013	0.02	0.02	10

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG245.5	October 29, 2013	0.01	0.01	5
RG245.5	October 30, 2013	0.01	0.01	5
RG245.5	October 31, 2013	0.11	0.1	10
RG245.5	November 1, 2013	0.07	0.05	10
RG245.5	November 3, 2013	0.01	0.01	5
RG245.5	November 4, 2013	0.01	0.01	5
RG-TA-06	January 26, 2013	0.39	0.17	225
RG-TA-06	January 28, 2013	0.1	0.02	135
RG-TA-06	March 8, 2013	0.14	0.05	135
RG-TA-06	April 8, 2013	0.04	0.04	30
RG-TA-06	April 9, 2013	0.52	0.07	420
RG-TA-06	April 17, 2013	0.04	0.04	30
RG-TA-06	May 9, 2013	0.03	0.01	45
RG-TA-06	May 10, 2013	0.03	0.03	30
RG-TA-06	May 15, 2013	0.05	0.05	15
RG-TA-06	June 14, 2013	0.19	0.09	105
RG-TA-06	June 29, 2013	0.08	0.07	45
RG-TA-06	June 30, 2013	0.49	0.24	90
RG-TA-06	July 2, 2013	0.28	0.14	120
RG-TA-06	July 5, 2013	0.21	0.14	75
RG-TA-06	July 6, 2013	0.03	0.01	45
RG-TA-06	July 7, 2013	0.03	0.02	45
RG-TA-06	July 11, 2013	0.25	0.25	30
RG-TA-06	July 12, 2013	1.62	1.13	90
RG-TA-06	July 13, 2013	0.27	0.13	105
RG-TA-06	July 14, 2013	0.29	0.22	75
RG-TA-06	July 15, 2013	0.02	0.01	30
RG-TA-06	July 21, 2013	0.04	0.02	60
RG-TA-06	July 25, 2013	0.38	0.15	150
RG-TA-06	July 26, 2013	0.28	0.14	120
RG-TA-06	July 28, 2013	0.01	0.01	15
RG-TA-06	August 1, 2013	0.25	0.19	105
RG-TA-06	August 2, 2013	0.01	0.01	15
RG-TA-06	August 4, 2013	0.38	0.11	270
RG-TA-06	August 5, 2013	0.37	0.2	90
RG-TA-06	August 8, 2013	0.05	0.05	30

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-06	August 9, 2013	0.08	0.05	45
RG-TA-06	August 12, 2013	0.01	0.01	15
RG-TA-06	August 13, 2013	0.06	0.03	45
RG-TA-06	August 14, 2013	0.04	0.02	45
RG-TA-06	August 18, 2013	0.23	0.14	60
RG-TA-06	August 20, 2013	0.06	0.06	30
RG-TA-06	August 25, 2013	0.03	0.03	15
RG-TA-06	August 30, 2013	0.22	0.18	45
RG-TA-06	September 1, 2013	0.06	0.06	30
RG-TA-06	September 2, 2013	0.03	0.02	45
RG-TA-06	September 8, 2013	0.1	0.08	60
RG-TA-06	September 10, 2013	1.39	0.13	780
RG-TA-06	September 11, 2013	0.06	0.04	60
RG-TA-06	September 12, 2013	2.46	0.31	900
RG-TA-06	September 13, 2013	2.93	1.39	465
RG-TA-06	September 14, 2013	0.21	0.07	195
RG-TA-06	September 17, 2013	0.54	0.36	105
RG-TA-06	September 18, 2013	0.07	0.04	60
RG-TA-06	September 22, 2013	0.82	0.17	210
RG-TA-06	September 27, 2013	0.05	0.03	60
RG-TA-06	October 10, 2013	0.36	0.15	120
RG-TA-06	October 13, 2013	0.13	0.04	150
RG-TA-06	October 14, 2013	0.01	0.01	15
RG-TA-06	October 15, 2013	0.12	0.06	120
RG-TA-06	October 16, 2013	0.33	0.12	135
RG-TA-06	October 24, 2013	0.4	0.12	255
RG-TA-06	October 25, 2013	0.01	0.01	15
RG-TA-06	October 29, 2013	0.03	0.02	45
RG-TA-06	October 30, 2013	0.05	0.03	60
RG-TA-06	November 4, 2013	0.7	0.18	300
RG-TA-06	November 5, 2013	0.01	0.01	15
RG-TA-06	November 15, 2013	0.17	0.03	225
RG-TA-53	January 26, 2013	0.33	0.16	195
RG-TA-53	January 27, 2013	0.01	0.01	15
RG-TA-53	January 28, 2013	0.03	0.01	45
RG-TA-53	March 8, 2013	0.16	0.07	90

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-53	April 8, 2013	0.04	0.04	30
RG-TA-53	April 9, 2013	0.3	0.04	360
RG-TA-53	April 17, 2013	0.02	0.02	30
RG-TA-53	May 10, 2013	0.05	0.04	45
RG-TA-53	May 15, 2013	0.06	0.05	45
RG-TA-53	May 30, 2013	0.08	0.08	30
RG-TA-53	June 13, 2013	0.01	0.01	15
RG-TA-53	June 14, 2013	0.24	0.13	105
RG-TA-53	June 17, 2013	0.01	0.01	15
RG-TA-53	June 29, 2013	0.02	0.02	15
RG-TA-53	June 30, 2013	0.11	0.11	30
RG-TA-53	July 2, 2013	0.05	0.04	45
RG-TA-53	July 3, 2013	0.04	0.04	30
RG-TA-53	July 5, 2013	0.19	0.09	105
RG-TA-53	July 6, 2013	0.02	0.01	30
RG-TA-53	July 7, 2013	0.01	0.01	15
RG-TA-53	July 10, 2013	0.02	0.02	15
RG-TA-53	July 11, 2013	0.01	0.01	15
RG-TA-53	July 12, 2013	0.04	0.04	30
RG-TA-53	July 13, 2013	0.11	0.05	75
RG-TA-53	July 14, 2013	0.05	0.04	45
RG-TA-53	July 21, 2013	0.06	0.05	45
RG-TA-53	July 25, 2013	0.45	0.25	105
RG-TA-53	July 26, 2013	0.32	0.2	105
RG-TA-53	July 28, 2013	0.18	0.16	60
RG-TA-53	July 30, 2013	0.01	0.01	15
RG-TA-53	August 1, 2013	0.03	0.02	30
RG-TA-53	August 2, 2013	0.03	0.01	45
RG-TA-53	August 4, 2013	0.2	0.04	180
RG-TA-53	August 5, 2013	0.05	0.05	30
RG-TA-53	August 6, 2013	0.01	0.01	15
RG-TA-53	August 8, 2013	0.16	0.07	60
RG-TA-53	August 13, 2013	0.04	0.02	45
RG-TA-53	August 18, 2013	0.03	0.02	30
RG-TA-53	September 2, 2013	0.06	0.04	45
RG-TA-53	September 8, 2013	0.02	0.02	15

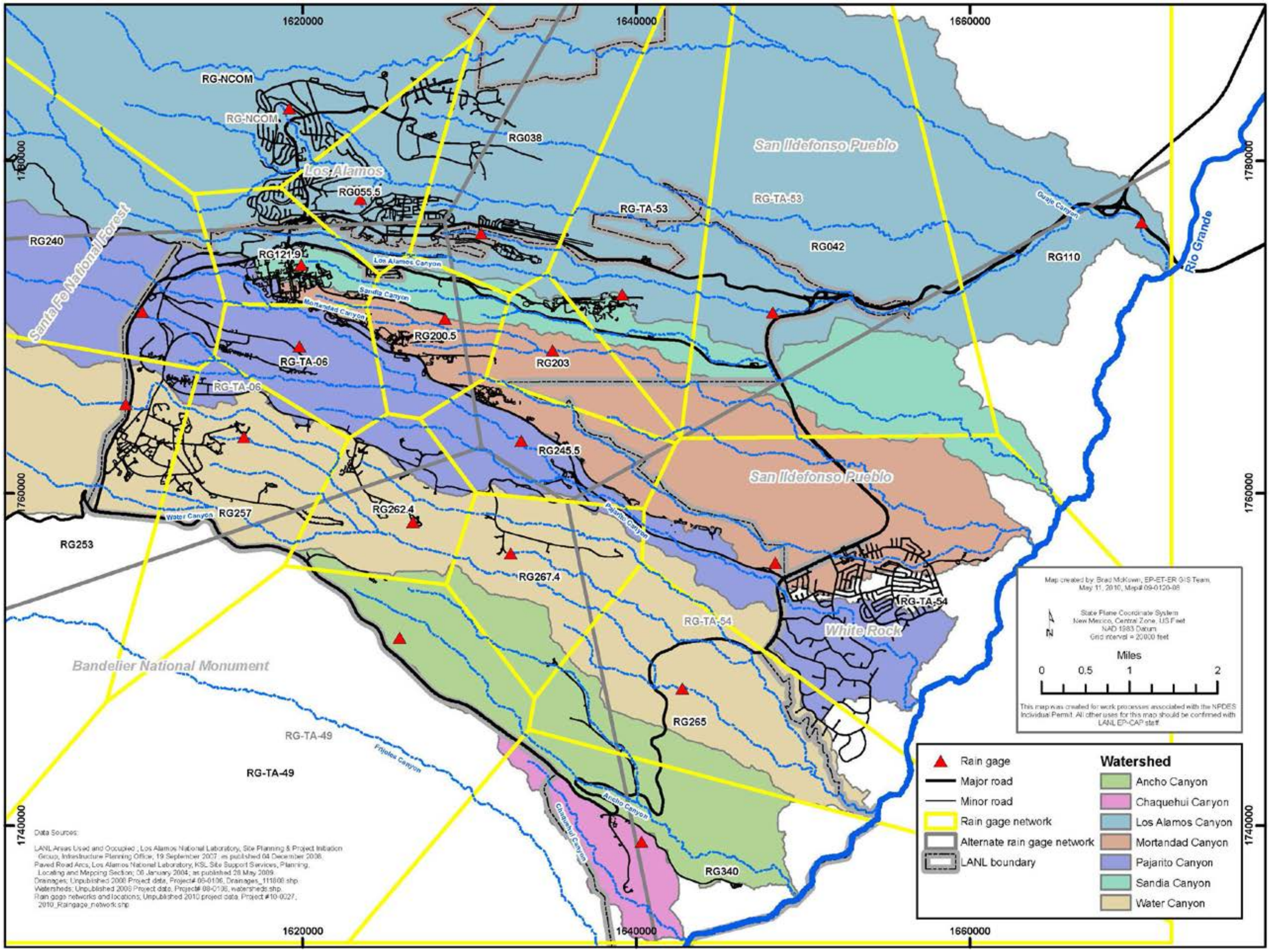
Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-53	September 10, 2013	1.26	0.19	615
RG-TA-53	September 12, 2013	1.94	0.33	450
RG-TA-53	September 13, 2013	1.96	0.63	375
RG-TA-53	September 14, 2013	0.31	0.1	240
RG-TA-53	September 17, 2013	0.35	0.27	60
RG-TA-53	September 18, 2013	0.01	0.01	15
RG-TA-53	September 19, 2013	0.01	0.01	15
RG-TA-53	September 21, 2013	0.39	0.35	45
RG-TA-53	September 22, 2013	0.31	0.12	165
RG-TA-53	October 9, 2013	0.01	0.01	5
RG-TA-53	October 10, 2013	0.14	0.06	120
RG-TA-53	October 13, 2013	0.06	0.05	60
RG-TA-53	October 15, 2013	0.08	0.03	120
RG-TA-53	October 24, 2013	0.17	0.08	120
RG-TA-53	November 4, 2013	0.87	0.39	240
RG-TA-53	November 15, 2013	0.03	0.01	30
RG-TA-53	November 22, 2013	0.37	0.07	360
RG-TA-53	November 23, 2013	0.06	0.01	30
RG-TA-54	January 26, 2013	0.25	0.07	195
RG-TA-54	January 28, 2013	0.01	0.01	15
RG-TA-54	March 8, 2013	0.15	0.1	60
RG-TA-54	April 8, 2013	0.02	0.01	30
RG-TA-54	April 9, 2013	0.08	0.02	120
RG-TA-54	June 14, 2013	0.07	0.06	45
RG-TA-54	June 28, 2013	0.78	0.68	60
RG-TA-54	June 29, 2013	0.01	0.01	15
RG-TA-54	June 30, 2013	0.15	0.14	45
RG-TA-54	July 2, 2013	0.07	0.06	60
RG-TA-54	July 3, 2013	0.5	0.49	45
RG-TA-54	July 5, 2013	0.05	0.03	30
RG-TA-54	July 6, 2013	0.05	0.04	45
RG-TA-54	July 7, 2013	0.01	0.01	15
RG-TA-54	July 11, 2013	0.84	0.66	60
RG-TA-54	July 12, 2013	0.08	0.08	15
RG-TA-54	July 14, 2013	0.46	0.44	60
RG-TA-54	July 15, 2013	0.01	0.01	15

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-54	July 19, 2013	0.01	0.01	15
RG-TA-54	July 23, 2013	0.03	0.03	30
RG-TA-54	July 25, 2013	0.66	0.3	195
RG-TA-54	July 26, 2013	0.42	0.25	120
RG-TA-54	July 28, 2013	0.18	0.14	60
RG-TA-54	July 31, 2013	0.03	0.02	45
RG-TA-54	August 1, 2013	0.03	0.01	45
RG-TA-54	August 2, 2013	0.06	0.03	75
RG-TA-54	August 4, 2013	0.22	0.06	165
RG-TA-54	August 5, 2013	0.56	0.56	30
RG-TA-54	August 8, 2013	0.86	0.77	75
RG-TA-54	August 13, 2013	0.05	0.04	45
RG-TA-54	August 25, 2013	0.01	0.01	15
RG-TA-54	August 30, 2013	0.06	0.05	45
RG-TA-54	September 1, 2013	0.15	0.1	75
RG-TA-54	September 3, 2013	0.12	0.09	60
RG-TA-54	September 10, 2013	1.39	0.22	675
RG-TA-54	September 12, 2013	3.24	0.71	525
RG-TA-54	September 13, 2013	1.28	0.42	435
RG-TA-54	September 14, 2013	0.78	0.19	285
RG-TA-54	September 17, 2013	0.11	0.1	45
RG-TA-54	September 18, 2013	0.01	0.01	15
RG-TA-54	September 21, 2013	0.25	0.21	45
RG-TA-54	September 22, 2013	0.35	0.31	75
RG-TA-54	October 10, 2013	0.27	0.12	90
RG-TA-54	October 15, 2013	0.12	0.02	180
RG-TA-54	October 24, 2013	0.23	0.08	180
RG-TA-54	November 4, 2013	0.81	0.35	360
RG-TA-54	November 15, 2013	0.14	0.03	240
RG-TA-54	November 21, 2013	0.52	0.07	360
RG-TA-54	November 23, 2013	0.07	0.02	180
RG-TA-54	November 24, 2013	0.09	0.01	120

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^2)	Site Number	Site Drainage Area (ft^2)
Sandia	S001	S-SMA-0.25	1618998 (35.876233)	1774220 (-106.3223)	1,439,520.77	03-013(a) 03-052(f)	3,534.82 7.03
Sandia	S002	S-SMA-1.1[1]	1620251.01 (35.875976)	1774023.04 (-106.318094)	378,931.78	03-029	6,983.70
Sandia	S003	S-SMA-2	1620125 (35.875167)	1773834 (-106.3185)	2,211,428.68	03-012(b) 03-045(b) 03-045(c) 03-056(c)	0.78 0.78 0.78 8,138.48
Sandia	S003A	S-SMA-2.01	1620394 (35.87295)	1773023 (-106.317583)	36,651.95	03-052(b)	1,160.69
Sandia	S004	S-SMA-2.8	1620634 (35.874933)	1773747 (-106.316783)	3,894.03	03-014(c2)	7.03
Sandia	S005	S-SMA-3.51	1620818 (35.873517)	1773232 (-106.31615)	816.64	03-009(i)	816.64
Sandia	S005A	S-SMA-3.52	1620742 (35.87385)	1773352 (-106.316417)	365.18	03-021	0.00
Sandia	S005B	S-SMA-3.53	1620873 (35.8753)	1773882 (-106.315967)	8,122.23	03-014(b2)	7.22
Sandia	S006	S-SMA-3.6	1621791 (35.873483)	1773219 (-106.312867)	311,515.13	60-007(b)	2,985.87
Sandia	S007	S-SMA-3.7	1633174 (35.868283)	1771323 (-106.27445)	138,639.08	53-012(e)	19.94
Sandia	S008	S-SMA-3.71	1633320 (35.869083)	1771609 (-106.27395)	8,569.13	53-001(a)	0.77
Sandia	S009	S-SMA-3.72	1633284 (35.86805)	1771234 (-106.274067)	11,118.90	53-001(b)	0.77
Sandia	S010	S-SMA-3.95	1636315 (35.865367)	1770255 (-106.26385)	3,671.30	20-002(a)	455.16
Sandia	S011	S-SMA-4.1	1636843 (35.8675)	1771035 (-106.262067)	13,554.34	53-014	181.24
Sandia	S012	S-SMA-4.5	1637389 (35.8639494)	1769755 (-106.2601048)	946.00	20-002(d)	13.00
Sandia	S013	S-SMA-5	1638094 (35.8637555)	1769672 (-106.2578407)	5,227.00	20-002(c)	982.00
Sandia	S014	S-SMA-5.2	1638251 (35.864067)	1769787 (-106.2573)	27,443.48	20-003(c)	168.47
Sandia	S015	S-SMA-5.5	1638979 (35.8630108)	1769464 (-106.2553901)	2,478.00	20-005	40.00
Sandia	S016	S-SMA-6	1641885 (35.86355)	1769600 (-106.24505)	12,203,808.89	72-001	0.77
Cañada del Buey	C001	CDB-SMA-0.15	1627975 (35.859817)	1768241 (-106.291983)	9,844.24	04-003(a) 04-004	0.00 0.77

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft^2)	Site Number	Site Drainage Area (ft^2)
Cañada del Buey	C002	CDB-SMA-0.25	1631127 (35.855617)	1766710 (-106.28135)	187,455.31	46-004(c2) 46-004(e2)	6,960.75 0.00
Cañada del Buey	C003	CDB-SMA-0.55	1631282 (35.855483)	1766662 (-106.280833)	202,180.86	46-004(g) 46-004(m) 46-004(s) 46-006(f)	5,831.49 5,069.44 1,678.86 4,172.51
Cañada del Buey	C004	CDB-SMA-1	1631615 (35.852933)	1765731 (-106.2797)	627,370.13	46-003(c) 46-004(d2) 46-004(f) 46-004(t) 46-004(w) 46-008(g) 46-009(a) C-46-001	5,743.69 0.77 1.54 1.54 1.54 5,278.73 39,136.49 2.31
Cañada del Buey	C005	CDB-SMA-1.15	1631475 (35.855333)	1766608 (-106.280183)	66,985.38	46-004(b) 46-004(y) 46-004(z) 46-006(d)	107.59 1,303.15 2,203.33 11,496.54
Cañada del Buey	C006	CDB-SMA-1.35	1631690 (35.855117)	1766528 (-106.27945)	56,827.92	46-004(a2) 46-004(u) 46-004(v) 46-004(x) 46-006(d) 46-008(f)	3,015.74 1,725.98 1,920.24 7.97 2,536.78 1,822.09
Cañada del Buey	C007	CDB-SMA-1.54	1631772 (35.855183)	1766553 (-106.279167)	45,195.61	46-004(h) 46-004(q) 46-006(d)	7.12 7.22 1,492.20
Cañada del Buey	C008	CDB-SMA-1.55	1631930 (35.854333)	1766241 (-106.278633)	3,123.17	46-003(e)	531.64
Cañada del Buey	C009	CDB-SMA-1.65	1631973 (35.853567)	1765962 (-106.2785)	214.18	46-003(b)	139.98
Cañada del Buey	C010	CDB-SMA-4	1643546 (35.832883)	1758435 (-106.23945)	330,316.17	54-017 54-018 54-020	14,263.99 73,481.35 665.10
Mortandad	M001	M-SMA-1[1]	1619892.32 (35.870094)	1772047.6699 (-106.319166)	1,292,653.37	03-050(a) 03-054(e)	79,426.03 5,163.00
Mortandad	M002	M-SMA-1.2	1620720 (35.869917)	1771920 (-106.316483)	17,481.90	03-049(a)	16,266.72
Mortandad	M002A	M-SMA-1.21	1620503 (35.870683)	1772203 (-106.317217)	23,029.92	03-049(e)	2.67
Mortandad	M002B	M-SMA-1.22	1620251 (35.870633)	1772180 (-106.318067)	80,304.86	03-045(h)	16,506.92
Mortandad	M003	M-SMA-3	1623658 (35.866883)	1770815 (-106.306567)	16,340.05	48-001 48-005 48-007(c)	19,394.77 6,547.64 7.07
Mortandad	M004	M-SMA-3.1	1623815 (35.866933)	1770835 (-106.306033)	183.01	48-001 48-007(b)	183.01 0.00

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft^2)	Site Number	Site Drainage Area (ft^2)
Mortandad	M005	M-SMA-3.5	1624207 (35.866933)	1770831 (-106.304717)	29,761.90	48-001 48-003	18,092.48 2,473.93
Mortandad	M006	M-SMA-4	1624160 (35.8655)	1770312 (-106.304867)	327,735.93	48-001 48-005 48-007(a) 48-007(d) 48-010	317,281.54 13,656.97 103.70 902.48 6,130.81
Mortandad	M007	M-SMA-5	1625376 (35.864767)	1770044 (-106.300767)	25,355.12	42-001(a) 42-001(b) 42-001(c) 42-002(a) 42-002(b)	1,209.21 539.47 539.47 1,209.21 0.00
Mortandad	M008	M-SMA-6	1625840 (35.8637714)	1769988 (-106.2974438)	6,910.00	35-016(h)	7.00
Mortandad	M009	M-SMA-7	1625971 (35.864317)	1769879 (-106.29875)	10,688.02	35-016(g)	44.78
Mortandad	M010	M-SMA-7.9[1]	1626103.01 (35.86488)	1770123.04 (-106.298058)	7,527.16	50-006(d)	6,336.69
Mortandad	M011	M-SMA-9.1	1627083 (35.864)	1769767 (-106.295)	9,007.31	35-016(f)	56.59
Mortandad	M012	M-SMA-10	1627304 (35.864517)	1769950 (-106.29425)	63.00	35-008 35-014(e)	3,378.65 11,885.37
Mortandad	M012A	M-SMA-10.01[1]	1627404.39 (35.86469)	1769752 (-106.294026)	140.92	35-016(e)	11.59
Mortandad	M013	M-SMA-10.3	1627627 (35.86465)	1769999 (-106.293167)	108,863.64	35-014(e2) 35-016(i)	808.25 48.80
Mortandad	M014	M-SMA-11.1	1628379 (35.86395)	1769747 (-106.290633)	4,331.00	35-016(o)	979.43
Mortandad	M015	M-SMA-12	1628788 (35.86355)	1769600 (-106.28925)	8,650.16	35-016(p)	34.85
Mortandad	M016	M-SMA-12.5	1632483 (35.8579)	1767544 (-106.276783)	21,601.36	05-005(b) 05-006(c)	1,351.84 102.81
Mortandad	M017	M-SMA-12.6	1633157 (35.857717)	1767475 (-106.2745)	24,968.29	05-004	276.18
Mortandad	M018	M-SMA-12.7	1634294 (35.859233)	1768023 (-106.270667)	44,313.61	05-002 05-005(a) 05-006(b) 05-006(e)	3,397.13 3,258.27 651.29 731.88
Mortandad	M019	M-SMA-12.8	1634423 (35.859183)	1768007 (-106.270233)	24,955.90	05-001(a) 05-002	5,322.52 5,521.99
Mortandad	M020	M-SMA-12.9	1634709 (35.858767)	1767858 (-106.269267)	4,417.16	05-001(b) 05-002	1,066.37 2,083.83
Mortandad	M021	M-SMA-12.92	1634976 (35.860867)	1768620 (-106.268367)	27,271,277.04	00-001	89,828.44

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft²)	Site Number	Site Drainage Area (ft²)
Mortandad	M022	M-SMA-13	1635856 (35.857067)	1767236 (-106.265383)	178,918.24	05-001(c)	88,139.45
Ten-Site	T001	Pratt-SMA-1.05	1629362 (35.862167)	1769096 (-106.2873)	441,552.83	35-003(h) 35-003(p) 35-003(r) 35-004(h) 35-009(d) 35-016(k) 35-016(l) 35-016(m)	296.75 9,123.84 37,468.17 50.03 1,166.43 787.48 128.28 104.57
Ten Site	T002	T-SMA-1	1626460 (35.861483)	1768848 (-106.2971)	610,151.64	50-006(a) 50-009	2,069.34 305,022.50
Ten Site	T003	T-SMA-2.5	1627208 (35.861883)	1768992 (-106.294583)	2,437.93	35-014(g3)	2,400.23
Ten Site	T004	T-SMA-2.85	1627468 (35.862067)	1769059 (-106.2937)	13,508.69	35-014(g) 35-016(n)	45.45 33.82
Ten Site	T005	T-SMA-3	1627617 (35.861817)	1768971 (-106.2932)	122,397.15	35-016(b)	21.83
Ten Site	T006	T-SMA-4	1627879 (35.861683)	1768917 (-106.292317)	126,172.00	35-004(a) 35-009(a) 35-016(c) 35-016(d)	71.63 319.36 24.30 28.24
Ten Site	T007	T-SMA-5	1628092 (35.861517)	1768857 (-106.2916)	80,932.13	35-004(a) 35-009(a) 35-016(a) 35-016(q)	0.00 573.58 1,199.97 1,026.72
Ten Site	T008	T-SMA-6.8	1630395 (35.86165)	1768907 (-106.283817)	218.20	35-010(e)	6.94
Ten Site	T009	T-SMA-7	1630663 (35.861183)	1768735 (-106.282917)	46,873.35	04-003(b)	10,542.24
Ten Site	T010	T-SMA-7.1	1630767 (35.86095)	1768651 (-106.282567)	19,644.64	04-001 04-002	11,424.02 4,967.88

[1] 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	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/ Furans	Pesticides	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:200.8	EPA:200.8	EPA 1668A	SW8321	EPA 1613B	EPA 608	EPA 625
Order code	SW-IP-Gross Alpha	SW-Ra226/ Ra-228	SW-IP-Cyanide	SW-Metals-Dissolved	SW-Metals-Total	SW-IP-Al F	SW-IP-Cu F	SW-IP-Zn F	SW-PCB-1668A-PQL	SW-HEXP-8330	SW-IP-D/F-1613B	SW-Pesticides	SW-SVOC-625
Field prep code	UF	UF	UF	F	UF	F	F	F	UF	UF	UF	UF	UF
Preservation	HNO_3	HNO_3	NaOH, Ice	HNO_3	HNO_3	HNO_3	HNO_3	HNO_3	Ice	Ice	Ice	Ice, store some analytes in dark	Ice, store some analytes in dark
Holding time (days)	180	180	14	180	180	180	180	180	365	7	365	7	7
Preferred volume (L)	2	2	1	0.5	0.5	0.5	0.5	0.5	3	2.5	2	3	3
Minimum volume required (L)	1	2	0.5	0.25	0.25	0.25	0.25	0.25	1	0.77	1	1	1
Shipping container	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Glass	Glass	Glass	Amber 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	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
S-SMA-0.25	65	SS091601	AltCompR													
S-SMA-1.1	66	SS121634	CAM3	X	X	X	X	X				X				
S-SMA-2	67	SS101626	AltCompR													
S-SMA-2.01	68	SS091602	CAM3							X		X				
S-SMA-2.8	69	SS091621	MEx	X	X	X	X	X				X				X
S-SMA-3.51	70	SS091603	MEx	X	X	X	X	X				X				X
S-SMA-3.52	71	SS091604	MEx	X	X	X	X	X				X				X
S-SMA-3.53	72	SS091605	CAM3	X					X	X		X				
S-SMA-3.6	73	SS12255	CAI2													
S-SMA-3.7	74	SS091620	MEx	X	X	X	X	X				X				
S-SMA-3.71	75	SS091610	MEx	X	X	X	X	X				X				
S-SMA-3.72	76	SS091611	MEx	X	X	X	X	X				X				
S-SMA-3.95	77	SS091606	CAI													
S-SMA-4.1	78	SS101623	CACompD													
S-SMA-4.5	79	SS101624	MEx	X	X	X	X	X					X			
S-SMA-5.2	81	SS101625	MEx	X	X	X	X	X				X	X			X
S-SMA-5.5	82	SS091619	MEx	X	X	X	X	X								
S-SMA-6	83	SS1248	CAI													
CDB-SMA-0.15	84	SS091310	MEx	X	X	X	X	X								
CDB-SMA-0.25	85	SS091311	CAI2													

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	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
CDB-SMA-0.55	86	SS091312	CAI													
CDB-SMA-1	87	SS2185	CAM5	X					X	X		X				
CDB-SMA-1.15	88	SS091313	MEx	X	X	X	X	X				X				
CDB-SMA-1.35	89	SS091314	MEx	X	X	X	X	X				X			X	X
CDB-SMA-1.54	90	SS091315	MEx	X	X	X	X	X				X			X	
CDB-SMA-1.55	91	SS091316	MEx	X	X	X	X	X								
CDB-SMA-1.65	92	SS091309	MEx	X	X	X	X	X								
CDB-SMA-4	93	SS101317	CAI													
M-SMA-1	94	SS121238	CAI2													
M-SMA-1.2	95	SS091202	CAI													
M-SMA-1.21	96	SS091227	MEx	X	X	X	X	X								
M-SMA-1.22	97	SS091228	CAM5						X	X						
M-SMA-3	98	SS1985	CAI													
M-SMA-3.1	99	SS192	MEx	X	X	X	X	X				X				
M-SMA-3.5	100	SS193	MEx	X	X	X	X	X				X				
M-SMA-4	101	SS1987	CAI													
M-SMA-5	102	SS199	MEx	X	X	X	X	X				X				
M-SMA-6	103	SS111234	CAI													
M-SMA-7	104	SS1992	CAI													
M-SMA-7.9	105	SS121237	CAI													
M-SMA-9.1	106	SS101231	MEx	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	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
M-SMA-10	107	SS2002	CAI													
M-SMA-10.01	108	SS121235	CAM5	X	X	X	X	X								
M-SMA-10.3	109	SS20025	CACompD													
M-SMA-11.1	110	SS101232	MEx	X	X	X	X	X				X				
M-SMA-12	111	SS2004	MEx	X	X	X	X	X				X				
M-SMA-12.5	112	SS2055	MEx	X	X	X	X	X					X			X
M-SMA-12.6	113	SS2058	CAI													
M-SMA-12.7	114	SS2023	MEx	X	X	X	X	X					X			X
M-SMA-12.8	115	SS2024	MEx	X	X	X	X	X					X			X
M-SMA-12.9	116	SS2032	MEx	X	X	X	X	X					X			
M-SMA-12.92	117	SS101233	MEx	X	X	X	X	X								
M-SMA-13	118	SS205	BCComp													
Pratt-SMA-1.05	119	SS093401	CAI													
T-SMA-1	120	SS093713	CAI													
T-SMA-2.5	121	SS103715	MEx	X	X	X	X	X								
T-SMA-2.85	122	SS093714	CAI													
T-SMA-3	123	SS20134	CAI													
T-SMA-4	124	SS20136	CAI													
T-SMA-5	125	SS20138	MEx	X	X	X	X	X								
T-SMA-6.8	126	SS103716	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	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
T-SMA-7	127	SS20143	MEx	X	X	X	X	X								
T-SMA-7.1	128	SS103717	MEx	X	X	X	X	X								

AltCompR = Alternative Compliance Requested.

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.

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.

CAI2 = Enhanced control corrective action monitoring has exceeded a target action level. A path to completion of corrective action is being planned.

CAM3 = Following completion of enhanced control measures at a high priority site, one or more samples will be collected within 3 yr of effective date of the IP.

CAM5 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples will be collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the IP.

MEx = Extended Baseline Monitoring: One confirmation monitoring sample will be collected to determine if corrective action is required.