ESHID-602976

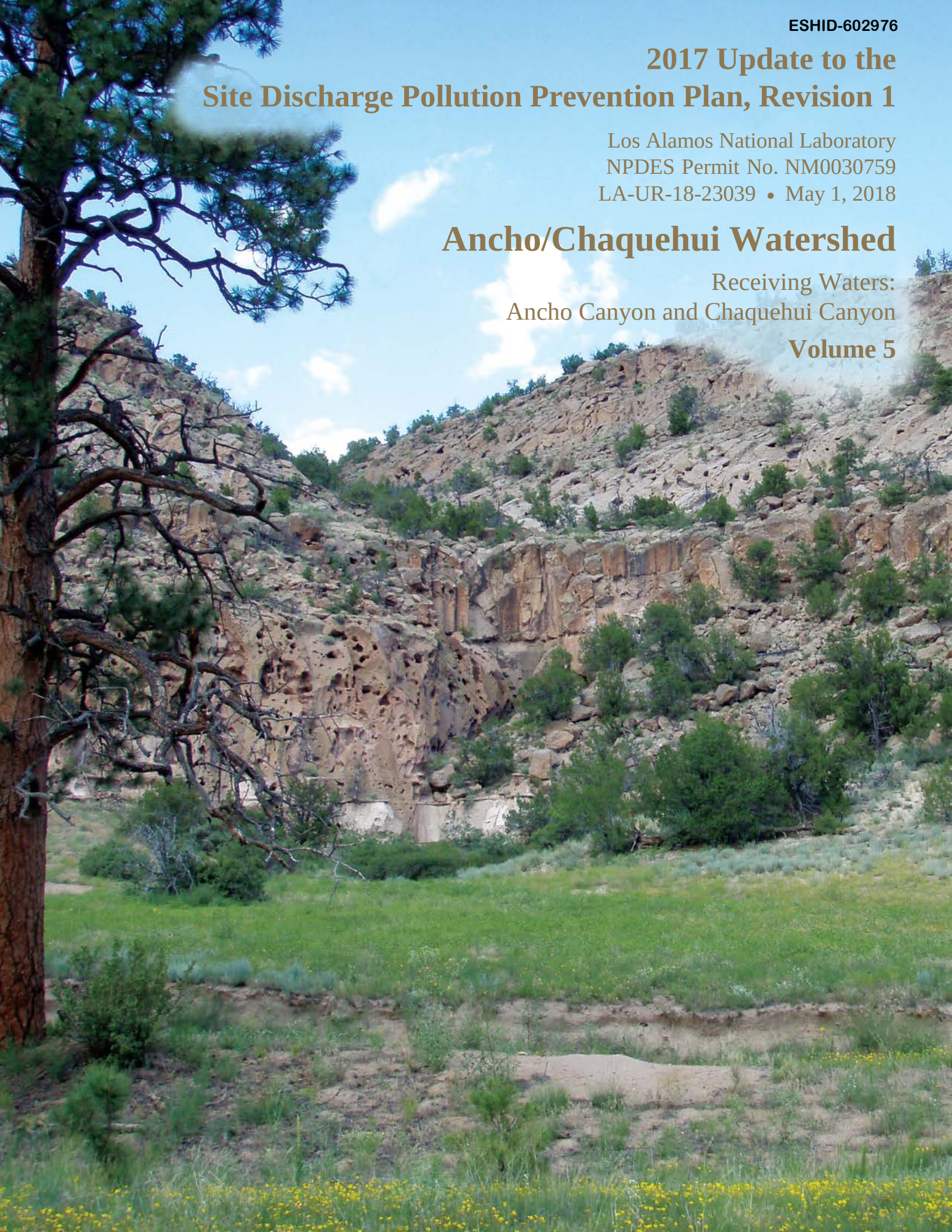
2017 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory
NPDES Permit No. NM0030759
LA-UR-18-23039 • May 1, 2018

Ancho/Chaquehui Watershed

Receiving Waters:
Ancho Canyon and Chaquehui Canyon

Volume 5



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Attachments

230.0 A-SMA-1.1: SWMUs 39-004(a) and 39-004(d)

230.1 Site Descriptions

Two historical industrial activity areas are associated with A001, A-SMA-1.1: Sites 39-004(a) and 39-004(d).

SWMU 39-004(a) is a firing site (structure 39-7) at TA-39. This Site was constructed in 1953 as a remote test firing facility to test materials. The experiments conducted at this firing site are designed to expend all the HE contained in the device. If a shot fails so not all the HE is spent, an effort is made to pick up and destroy the unexploded HE. A typical shot carries 10 to 100 lb of explosives but on occasion up to 1000 lb may be used. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. This firing site is within the fall zone of a high cliff that erodes when explosives experiments are conducted at the Site. The Site is currently on standby status (i.e., it is not currently being used, but is maintained to allow future use). SWMU 39-004(d), another remote test firing facility, is located near SWMU 39-004(a) and is currently active. Both SWMUs 39-004(a) and 39-004(d) are located along the northern tributary of the upper reach of Ancho Canyon. The firing pads are located in the canyon bottom between a diverted ephemeral stream and the canyon wall. For the purposes of evaluating the area, SWMUs 39-004(a) and 39-004(d) were sampled as one Site during the 1995 RFI and 2009 Consent Order investigations.

SWMU 39-004(d) is a firing site (structure 39-57) located along the northern tributary of the upper reach of Ancho Canyon and situated in the bottom of the canyon between a diverted ephemeral stream and the canyon wall. The firing site was constructed in 1953 and is used for explosives experiments.

Investigations of SWMUs 39-004(a) and 39-004(d) were deferred per Section XI and Appendix A of the Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Sites. RFI and Consent Order samples were collected around and downgradient of the Sites to determine the potential contaminants being released at the Sites and whether these contaminants are migrating off-site. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded the extent of detected inorganic, organic, and radionuclide contaminants is defined in drainages downgradient of the Sites and the drainages meet recreational and residential risk levels; therefore, no immediate corrective action is required until firing site activities cease. Further Consent Order investigations are deferred until the firing sites are no longer active.

The project map (Figure 230-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

230.2 Control Measures

All active control measures are listed in the following table and their locations are shown on the project map (Figure 230-1).

Table 230-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00102040006	Established Vegetation	-	X	X	-	B
A00103010005	Earthen Berm	X	-	-	X	CB

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

230.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at A-SMA-1.1. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

230.4 Inspections and Maintenance

RG267.4 recorded three storm events at A-SMA-1.1 during the 2017 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 230-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61377	4-4-2017
Pre-SIP Field Walkdown	COMP-54034	4-13-2017
Storm Rain Event	BMP-64199	8-9-2017
Storm Rain Event	BMP-65399	9-22-2017
Storm Rain Event	BMP-66431	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-1.1 in 2017.

230.5 Compliance Status

The Sites associated with A-SMA-1.1 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 230-3 presents the 2017 compliance status.

Table 230-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 39-004(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.
SWMU 39-004(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

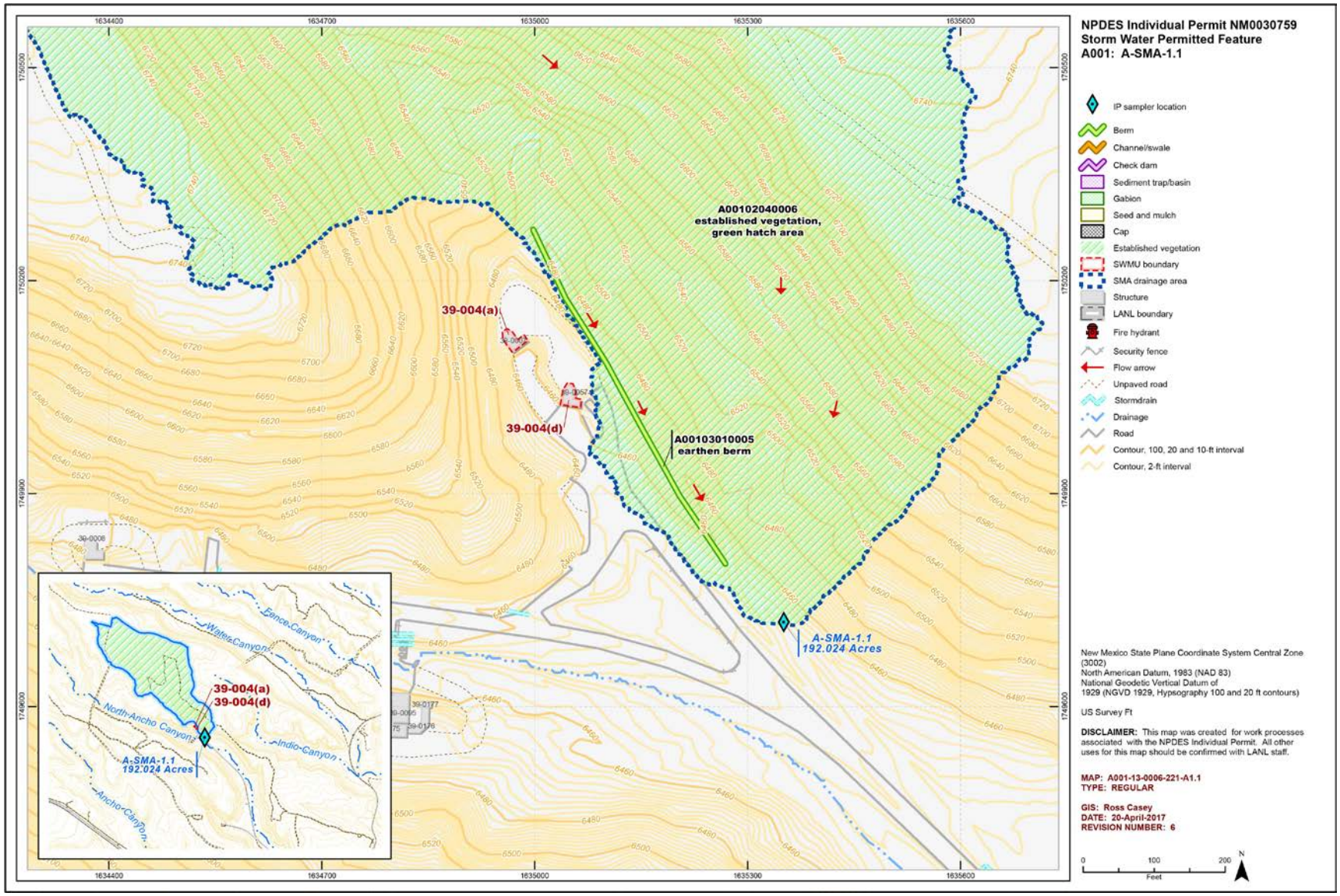


Figure 230-1 A-SMA-1.1 location map

231.0 A-SMA-2: SWMUs 39-004(b) and 39-004(e)

231.1 Site Descriptions

Two historical industrial activity areas are associated with A002, A-SMA-2: Sites 39-004(b) and 39-004(e).

SWMU 39-004(b) is a firing site (structure 39-8) located at TA-39. The SWMU 39-004(b) firing site is located in the western tributary of the upper reach of Ancho Canyon. The firing pad is located in the canyon bottom between an ephemeral stream and the northern canyon wall. This Site had been used to test materials from the time TA-39 was established as a remote test firing facility in 1953. The experiments conducted at this firing site were designed to expend all HE in the device. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. Activities at this Site were discontinued in 1980 because of the constant hazard of falling debris from the nearby cliff.

The completion of Consent Order investigations at SWMU 39-004(b) is deferred because the Site is within the area affected by operations at other active firing sites; however, Consent Order samples were collected from the extended drainages downgradient of the firing site to assess the potential for off-site migration. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.

SWMU 39-004(e) is a firing site located (structure 39-88) at TA-39. This Site has been in use since it was constructed in 1978 as a remote test firing facility to test materials. The experiments conducted at this firing site are designed to expend all HE in the device. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. The SWMU 39-004(e) firing site is located in the western tributary of the upper reach of Ancho Canyon on the same tributary as SWMU 39-004(b). This SWMU is within the deposition area of SWMUs 39-004(a,b,d).

The completion of Consent Order investigations at SWMU 39-004(e) is deferred because the Site is within the area affected by operations at other active firing sites; however, Consent Order samples were collected from the extended drainages downgradient of the firing site to assess the potential for off-site migration. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.

The project map (Figure 231-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

231.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 231-1).

Enhanced controls were installed and certified on August 10, 2015, and submitted to EPA on August 17, 2015, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 231-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00202040017	Established Vegetation	-	X	X	-	B
A00203010041	Earthen Berm	-	X	-	X	EC
A00203010042	Earthen Berm	X	-	-	X	EC
A00203010043	Earthen Berm	-	X	-	X	EC
A00203020051	Base Course Berm	-	X	-	X	EC
A00203150047	Redi-Rock Berm	X	-	-	X	EC
A00204040046	Culvert	X	-	X	-	EC
A00204040049	Culvert	X	-	X	-	EC
A00204050053	Water Bar	-	X	X	-	EC
A00204060004	Rip Rap	-	X	X	-	CB
A00204080045	TRM-Lined Swale	X	-	X	-	EC
A00204080048	TRM-Lined Swale	X	-	X	-	EC
A00204080052	TRM-Lined Swale	-	X	X	-	EC
A00205020050	Sediment Basin	X	-	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

231.3 Storm Water Monitoring

SWMUs 39-004(b) and 39-004(e) are monitored within A-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figures 231-2 and 231-3). In Figure 231-2, cadmium, selenium, and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Aluminum concentration of 1310 µg/L (MTAL is 750 µg/L),
- Copper concentration of 23.9 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 23.7 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 39-004(b):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected or detected above soil or sediment BVs in any of the 55 shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site.

- Copper is known to be associated with industrial materials historically managed at SWMU 39-004(b). Copper was detected above BVs in 13 of 31 shallow soil and sediment samples collected during the 1995 RFI conducted at the firing site at a maximum concentration 87.8 times the soil BV.
- Alpha-emitting radionuclides (uranium) are known to be associated with industrial materials historically managed at SWMU 39-004(b). Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting isotopes, and were analyzed for isotopic plutonium, thorium, and uranium, which are also alpha emitters. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 39-004(e):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected or detected above soil or sediment BVs in any of the 63 shallow 2009 Consent Order and 1995 RFI samples collected at the Site.
- Copper is known to be associated with industrial materials historically managed at SWMU 39-004(e). Copper was detected above BVs in 14 of 39 shallow soil and sediment samples collected during the 1995 RFI conducted at the firing site at a maximum concentration 563 times the soil BV. Copper was detected above BVs in 2 of 6 shallow soil and sediment Consent Order samples collected at three locations in the drainage adjacent to the firing site at a maximum concentration 4 times the soil BV.
- Alpha-emitting radionuclides (uranium) are known to be associated with industrial materials historically managed at SWMU 39-004(b). Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which contains alpha-emitting isotopes, and were analyzed for isotopic plutonium, thorium, and uranium, which are also alpha emitters. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are 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 231-2 and 231-3. 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 231-2 and 231-3.

Monitoring location A-SMA-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 aluminum and 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.

- Aluminum—The aluminum UTL from developed 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.

- Copper—The copper UTL from developed 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 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.

231.4 Inspections and Maintenance

RG267.4 recorded three storm events at A-SMA-2 during the 2017 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 231-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61378	4-4-2017
Pre-SIP Field Walkdown	COMP-54035	4-13-2017
Storm Rain Event	BMP-64200	8-9-2017
Storm Rain Event	BMP-65403	9-22-2017
Storm Rain Event	BMP-66435	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2 in 2017.

231.5 Compliance Status

The Sites associated with A-SMA-2 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 231-3 presents the 2017 compliance status.

Table 231-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 39-004(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 23, 2015, "NPDES Permit No. NM0030759-Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 39-004(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 23, 2015, "NPDES Permit No. NM0030759-Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."

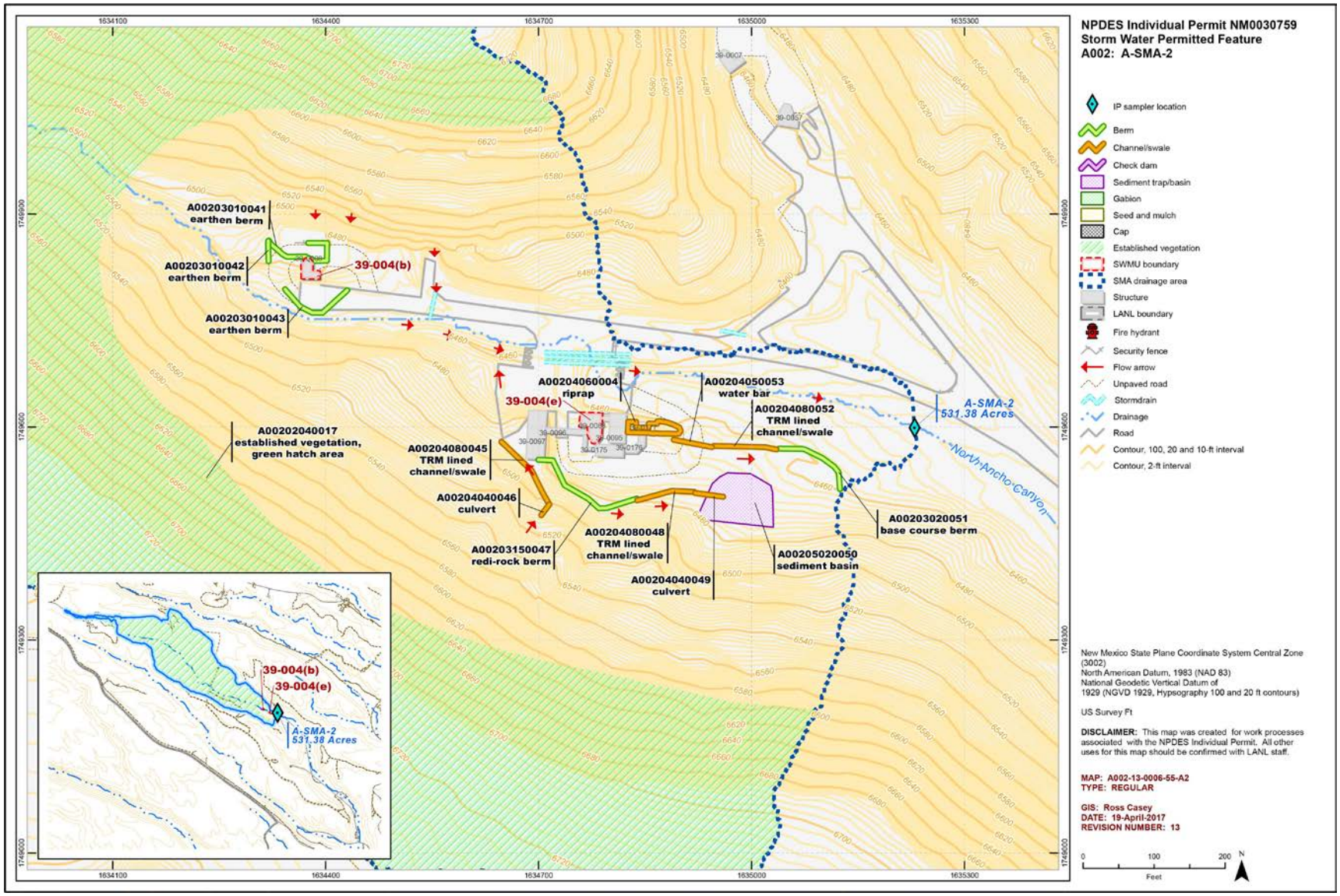
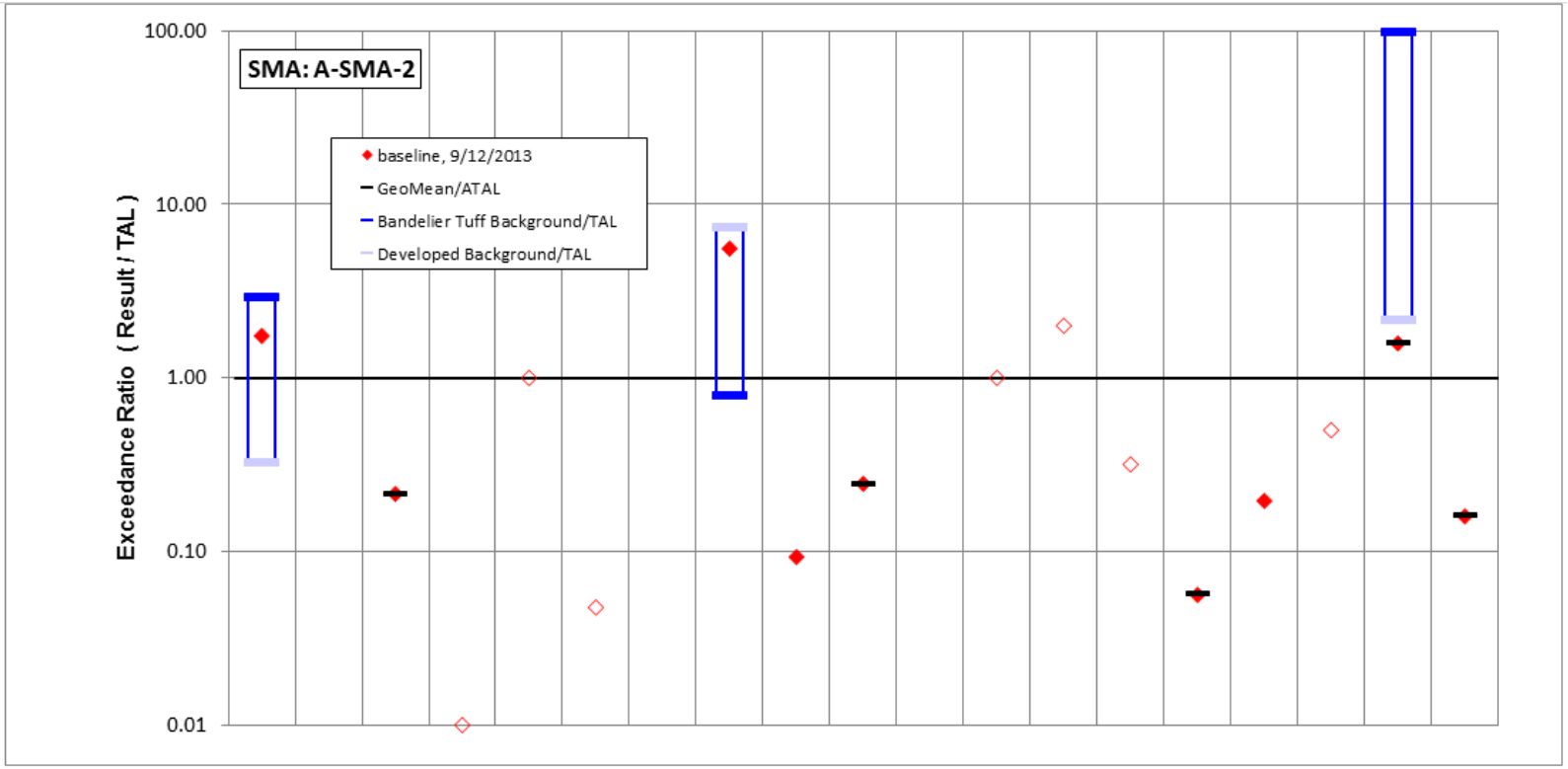


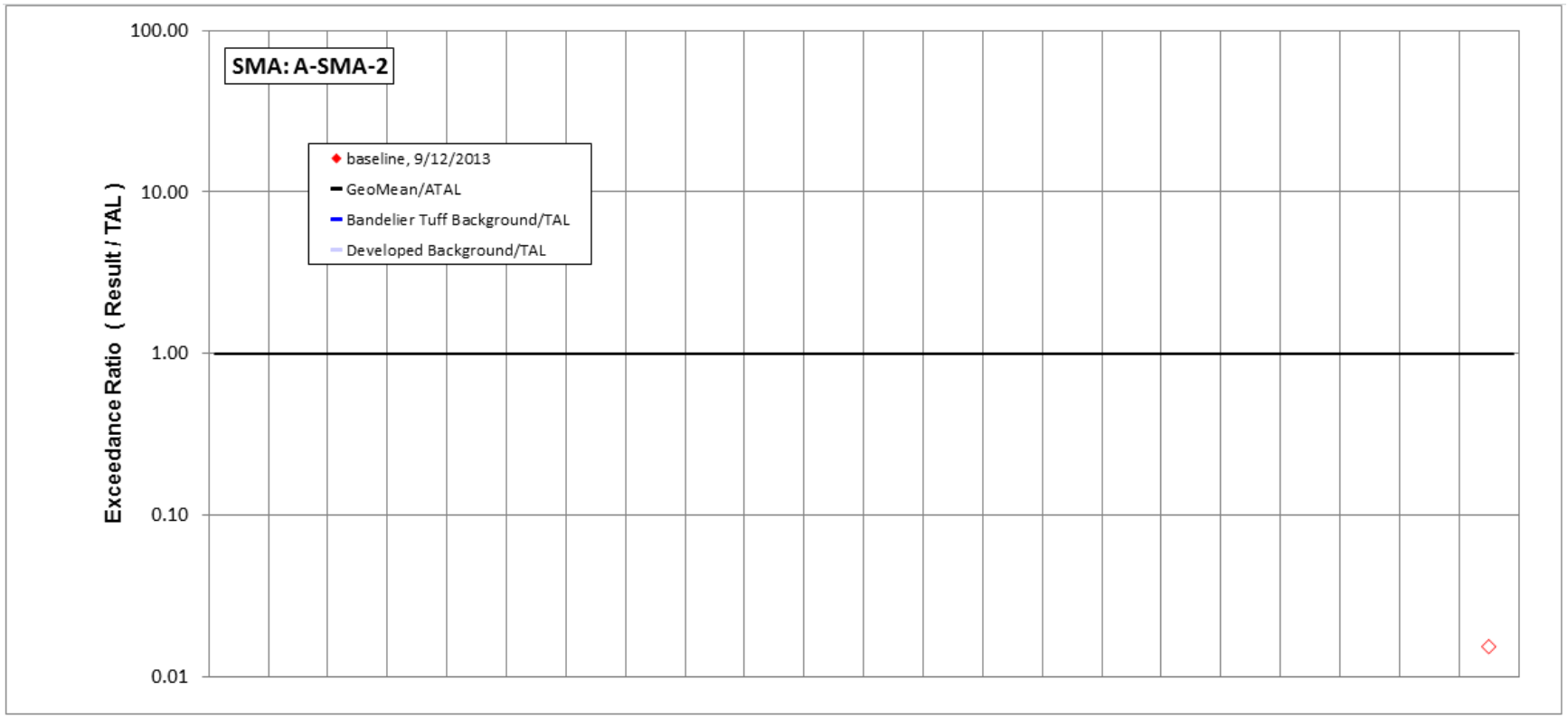
Figure 231-1 A-SMA-2 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/12/2013 result	**1310**	*3*	1.93	*50*	*1*	*10*	1.81	**23.9**	1.58	0.189	1.43	*5*	***1***	*2*	5.62	8.22	*0.005*	**23.7**	4.78
result / TAL	**1.7**	*0.005*	0.21	*0.01*	*1*	*0.048*	0.0018	**5.6**	0.093	0.25	0.0084	*1*	***2***	*0.32*	0.056	0.2	*0.5*	**1.6**	0.16

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

Figure 231-2 Inorganic analytical results summary plot for A-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	-	-	-	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
9/12/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.411	-	-	-	*0.307*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-	-	*0.015*

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

Figure 231-3 Organic analytical results summary plot for A-SMA-2

232.0 A-SMA-2.5: SWMU 39-010

232.1 Site Descriptions

One historical industrial activity area is associated with A003, A-SMA-2.5: Site 39-010.

SWMU 39-010 is an area that was used for staging soil excavated during the 1978 construction of a firing site [SWMU 39-004(e)]. During construction of the firing site, large quantities of soil were removed and deposited in the canyon east of the firing site, forming SWMU 39-010. This soil dump, covering approximately 76,200 ft^2, was not identified in the 1990 SWMU report. However, it was noted in both the 1993 RFI work plan and in a 2001 letter notification to NMED designating a new SWMU.

Phase I Consent Order sampling is complete for SWMU 39-010. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs, except for two detections of uranium-238. SWMU 39-010 will be recommended for corrective action complete in the Phase II Investigation report for North Ancho Canyon Aggregate Area. SWMU 39-010 will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 232-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

232.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 232-1).

Table 232-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00302040007	Established Vegetation	-	X	X	-	B
A00303010003	Earthen Berm	-	X	-	X	CB
A00303010010	Earthen Berm	X	-	X	-	B
A00303060008	Straw Wattle	X	-	-	X	B
A00303060009	Straw Wattle	X	-	-	X	B
A00304060014	Rip Rap	X	-	X	-	B
A00304080015	TRM-Lined Swale	X	-	X	-	B
A00307010012	Gabion	X	-	-	X	B
A00307010013	Gabion	X	-	X	-	B
A00307020011	Gabion Blanket	X	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

232.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at A-SMA-2.5. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

232.4 Inspections and Maintenance

RG265 recorded three storm events at A-SMA-2.5 during the 2017 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 232-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Remediation Construction Activity Inspection	COMP-61085	2-23-2017
Remediation Construction Activity Inspection	COMP-61086	3-2-2017
Remediation Construction Activity Inspection	COMP-61087	3-9-2017
Remediation Construction Activity Inspection	COMP-61088	3-16-2017
Remediation Construction Activity Inspection	COMP-61304	3-23-2017
Remediation Construction Activity Inspection	COMP-61305	3-31-2017
Storm Rain Event and Annual Erosion Evaluation	BMP-61379	4-4-2017
Remediation Construction Activity Inspection	COMP-61306	4-7-2017
Remediation Construction Activity Inspection	COMP-61499	4-13-2017
Remediation Construction Activity Inspection	COMP-61500	4-20-2017
Remediation Construction Activity Inspection	COMP-61587	4-27-2017
Pre-SIP Field Walkdown	COMP-54036	5-2-2017
Remediation Construction Activity Inspection	COMP-61588	5-4-2017
Remediation Construction Activity Inspection	COMP-61916	5-10-2017
Verification Inspection for Additional Controls	BMP-62059	5-17-2017
Storm Rain Event	BMP-62955	6-30-2017
Storm Rain Event	BMP-65800	10-4-2017
Storm Rain Event	BMP-66436	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2.5 in 2017.

232.5 Compliance Status

The Site associated with A-SMA-2.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 232-3 presents the 2017 compliance status.

Table 232-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 39-010	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

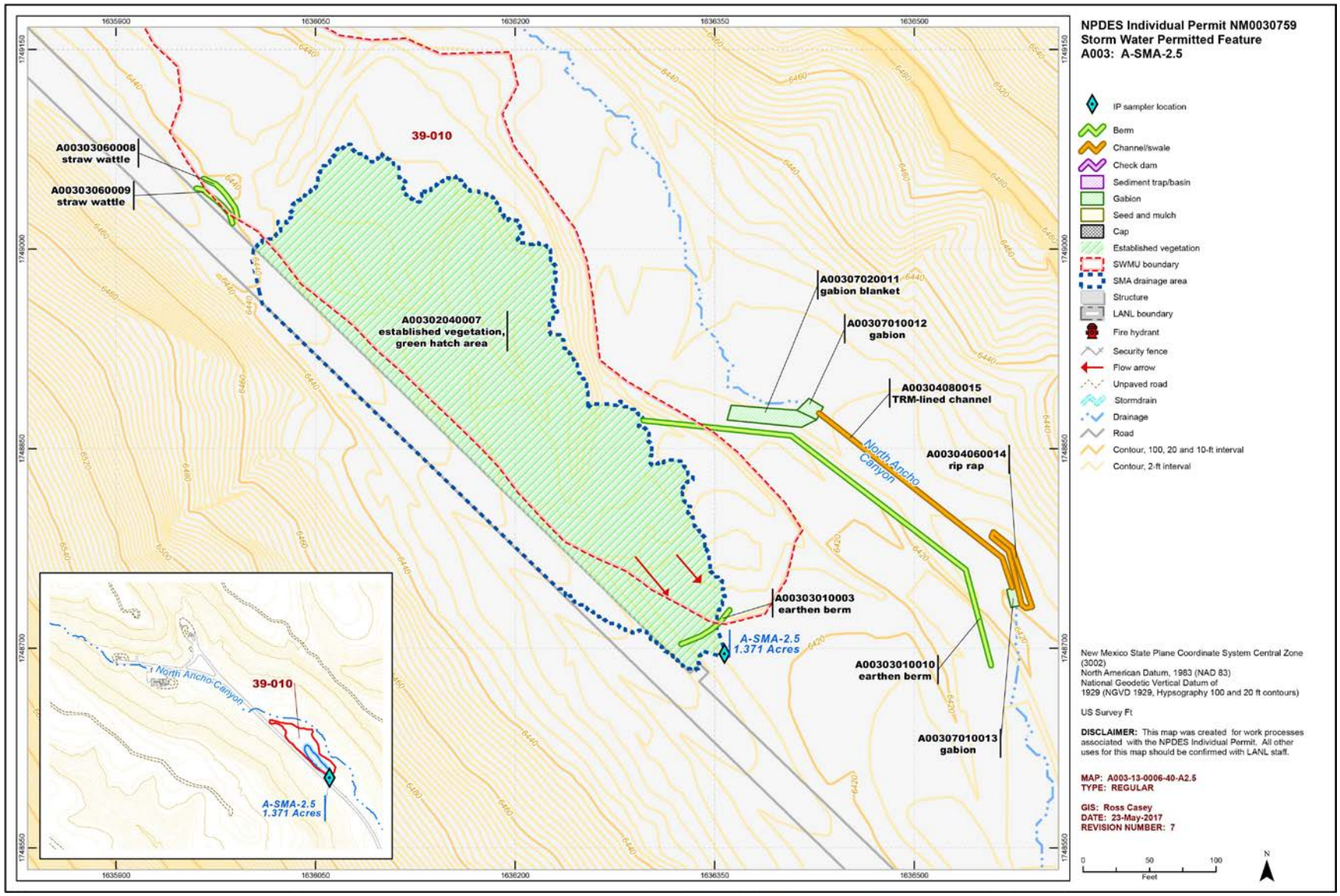


Figure 232-1 A-SMA-2.5 location map

233.0 A-SMA-2.7: AOC 39-002(c) and SWMU 39-008

233.1 Site Descriptions

Two historical industrial activity areas are associated with A004, A-SMA-2.7: Sites 39-002(c) and 39-008.

AOC 39-002(c) is the location of a former outdoor SAA on an asphalt-paved area next to the southwest corner of the gas-gun support structure (39-56). Waste paper; solvent-contaminated rags (ethanol, acetone, and trichloroethane); and vacuum grease were stored at this SAA. It is not known if this area was used for storage before it was placed in service as an SAA. This SAA was removed from service in February 1994.

The Consent Order investigation of AOC 39-002(c) is complete. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded the nature and extent for all detected inorganic and organic contaminants are defined at AOC 39-002(c); no radiological COPCs were detected at the Site. The Site meets residential risk levels; therefore, no further investigation or corrective action is required. NMED issued a COC without controls for AOC 39-002(c) in April 2010.

SWMU 39-008 is an area of potential soil contamination from an active gas-gun firing site. Building 39-137 houses a single-stage gas gun that is used to fire DU projectiles at targets on a cliff face. Testing at this Site was conducted from 1960 to 1975, suspended for 13 yr, and then resumed in 1988. Most of the debris from Site activities is scattered over the area just west of building 39-137, but occasionally projectiles and target fragments hit the cliff face, which is located approximately 200 ft west of another building associated with this experimental gun (building 39-56). SWMU 39-008 is impacted by continuing Site operations; therefore, further investigation of the Site under the Consent Order is delayed until operations at the Site cease.

RFI and Consent Order samples were collected at the Site to determine the potential contaminants being released at the Site and whether these contaminants are migrating off the Site. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all detected inorganic and radionuclide contaminants from this Site are at or below BVs and/or FVs, and organic COPCs were detected at or below the EQLs in the drainage downstream of the Site and that contaminants are not migrating off-site; therefore, no immediate corrective action is required.

The project map (Figure 233-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

233.2 Control Measures

All active control measures are listed in Table 233-1, and their locations are shown on the project map (Figure 233-1).

Enhanced controls were installed and certified on August 23, 2012, and submitted to EPA on September 20, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 233-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00402040017	Established Vegetation	-	X	X	-	B
A00403010013	Earthen Berm	-	X	-	X	EC
A00403010014	Earthen Berm	-	X	-	X	EC
A00403010015	Earthen Berm	-	X	-	X	EC
A00403010016	Earthen Berm	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

233.3 Storm Water Monitoring

AOC 39-002(c) and SWMU 39-008 are monitored within A-SMA-2.7. Following the installation of baseline control measures, baseline confirmation samples were collected on July 24, 2011, and September 4, 2011 (Figures 233-2 and 233-3). In Figure 233-2, cadmium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Inorganic analytical results from these samples yielded the following TAL exceedances:

- Copper concentrations of 5.4 µg/L and 6.2 µg/L (MTAL is 4.3 µg/L) and
- Gross-alpha activities of 25.4 pCi/L and 31.8 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at A-SMA-2.7, a corrective action storm water sample was collected on September 13, 2013 (Figures 233-2 and 233-3). Analytical results from this corrective action monitoring sample yielded the following TAL exceedance:

- Gross-alpha activity of 175 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

AOC 39-002(c):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at AOC 39-002(c). Consent Order samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.

SWMU 39-008:

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at SWMU 39-008. RFI and 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, and total uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BV, 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 233-2. 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 233-2.

Most of the A-SMA-2.7 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with gross-alpha storm water exceedances.

- Gross alpha—The gross-alpha activity is associated with naturally occurring radioactive uranium- and thorium-bearing minerals in Bandelier Tuff. The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2011 confirmation samples are below this value. The gross-alpha geometric mean of 28.4 pCi/L is approximately 50 times lower than the background storm water UTL.

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

233.4 Inspections and Maintenance

RG265 recorded three storm events at A-SMA-2.7 during the 2017 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in Table 233-2.

Table 233-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61380	4-4-2017
Pre-SIP Field Walkdown	COMP-54037	4-13-2017
Storm Rain Event	BMP-62956	6-30-2017
Storm Rain Event	BMP-65801	10-4-2017
Storm Rain Event	BMP-66437	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2.7 in 2017.

233.5 Compliance Status

The Sites associated with A-SMA-2.7 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 233-3 presents the 2017 compliance status.

Table 233-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
AOC 39-002(c)	Corrective Action Complete	Corrective Action Complete	LANL, August 21, 2013, "Resubmittal of Completion of Corrective Action for Twelve Site Monitoring Areas."
SWMU 39-008	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 23, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas."

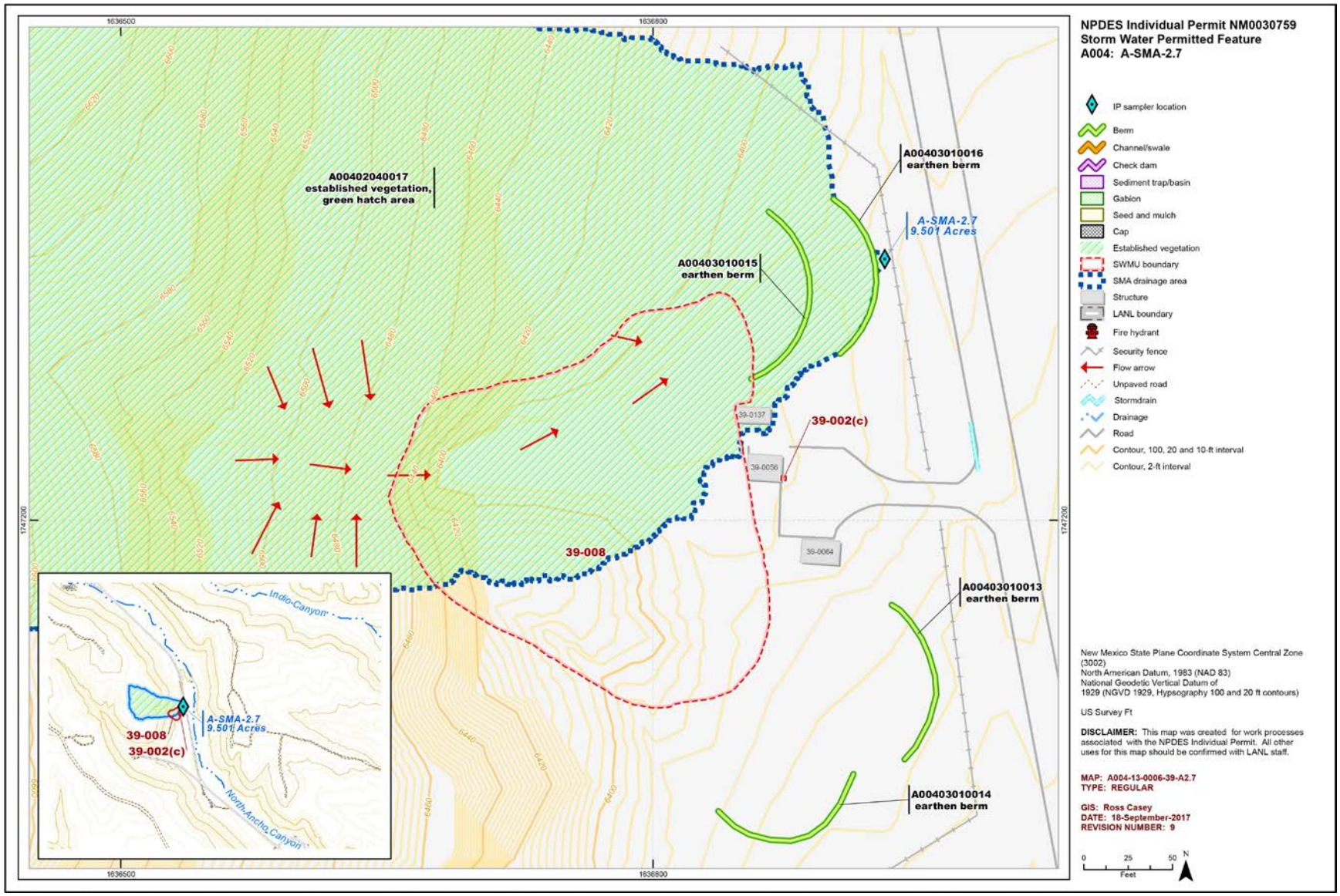
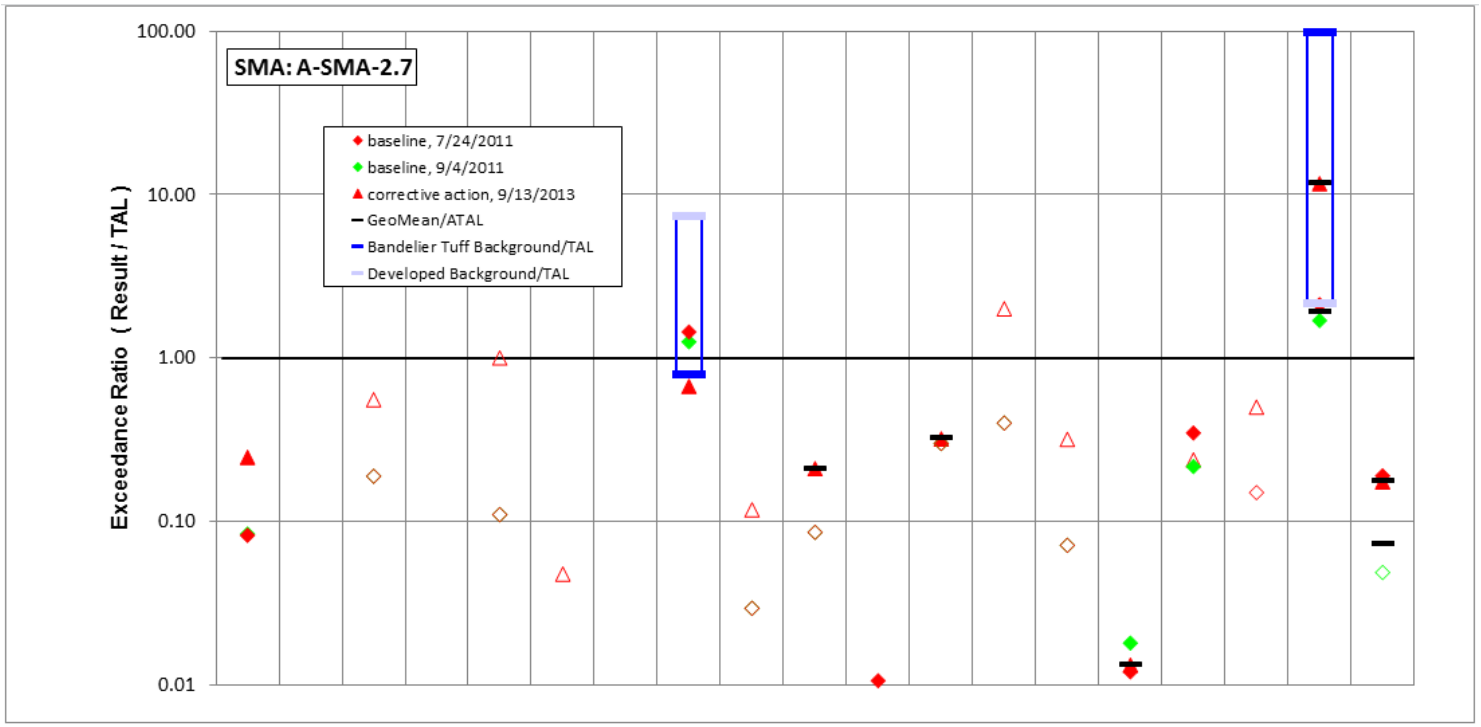


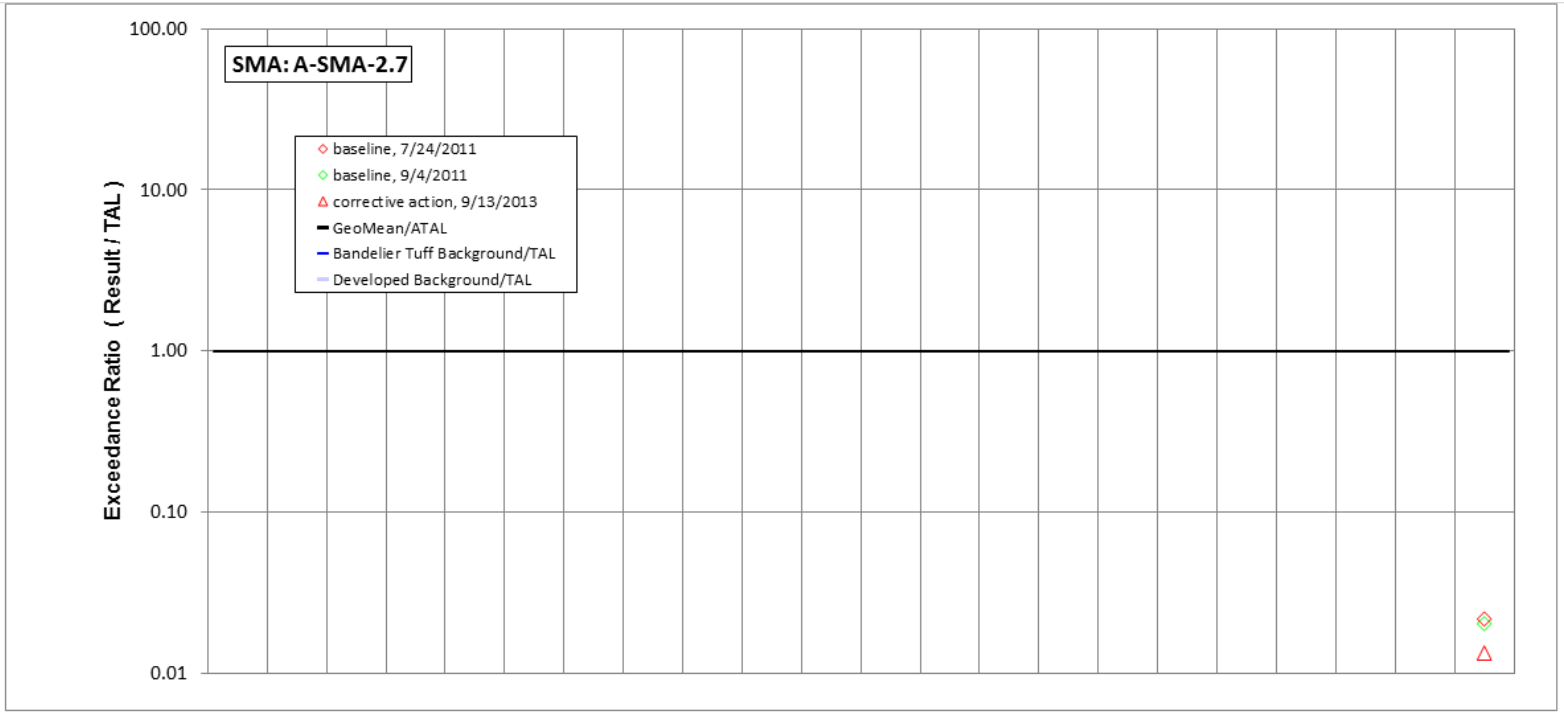
Figure 233-1 A-SMA-2.7 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	185	*3*	*5*	19.5	*1*	*10*	*5*	2.88	*2*	0.162	1.02	1.6	***1***	*2*	1.32	*10*	*0.005*	**175**	5.24
result / TAL	0.25	*0.005*	*0.56*	0.0039	*1*	*0.048*	*0.005*	0.67	*0.12*	0.21	0.006	0.32	***2***	*0.32*	0.013	*0.24*	*0.5*	**12**	0.17
9/4/2011 result	62.8	*1*	*1.7*	*15*	*0.11*	*2*	3.3	**5.4**	*0.5*	*0.066*	1.4	*1.5*	*0.2*	*0.45*	1.8	9.1	-	**25.4**	*1.46*
result / TAL	0.084	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0033	**1.3**	*0.029*	*0.086*	0.0082	*0.3*	*0.4*	*0.071*	0.018	0.22	-	**1.7**	*0.049*
7/24/2011 result	61.6	*1*	*1.7*	*15*	*0.11*	*2*	2.2	**6.2**	*0.5*	*0.066*	1.8	*1.5*	*0.2*	*0.45*	1.2	14.6	*0.002*	**31.8**	5.7
result / TAL	0.082	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0022	**1.4**	*0.029*	*0.086*	0.011	*0.3*	*0.4*	*0.071*	0.012	0.35	*0.15*	**2.1**	0.19

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

Figure 233-2 Inorganic analytical results summary plot for A-SMA-2.7



	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.267*	-	-	-	*0.267*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.013*
9/4/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	-	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	*0.02*
7/24/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.434*	-	-	-	*0.434*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	*0.022*

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

Figure 233-3 Organic analytical results summary plot for A-SMA-2.7

234.0 A-SMA-2.8: SWMU 39-001(b)

234.1 Site Descriptions

One historical industrial activity area is associated with A005, A-SMA-2.8: Site 39-001(b).

SWMU 39-001(b), also known as MDA Y, consists of three former disposal trenches used to dispose of debris from firing site SWMU 39-008, as well as empty chemical containers and office waste. During the 2009 Consent Order investigation, all wastes at SWMU 39-001(b) were excavated, removed, and disposed of off-site. The final excavation of SWMU 39-001(b) at its maximum dimensions measured 349 × 98 × 16 ft deep, with an average depth of 8.1 ft. SWMU 39-001(b) was backfilled with overburden material and clean fill after confirmatory sampling results determined that concentrations of COPCs at the base and walls of the excavation were below industrial SSLs and SALs.


A-SMA-2.8, Earthen Berm, A00501030002 (photo ID 11692-1)

Consent Order investigation and remediation are complete for SWMU 39-001(b); the Site meets residential risk levels. NMED issued a COC without controls for the Site in April 2010.

ACA activities were conducted in 2017 in accordance with the Phase II investigation work plan approved by NMED in 2011. The ACA was performed to address debris and contaminated soil excavated from MDA Y in 2009; the debris and soil were stockpiled to allow for characterization and packaging for off-site waste disposal. The ACA completed the extent sampling at the former waste stockpile area at SWMU 39-001(b) and removed soil from this area with PCB concentrations in excess of 1 mg/kg and SVOC concentrations above residential SSLs.

The project map (Figure 234-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

234.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 234-1).

Table 234-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00501010004	Seed and Wood Mulch	-	-	X	-	B
A00503010002	Earthen Berm	-	X	-	X	CB
A00508020005	Rock Cap	-	X	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

234.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at A-SMA-2.8. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

234.4 Inspections and Maintenance

RG265 recorded three storm events at A-SMA-2.8 during the 2017 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 234-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61381	4-4-2017
Pre-SIP Field Walkdown	COMP-54038	4-13-2017
Storm Rain Event	BMP-62957	6-30-2017
Storm Rain Event	BMP-65802	10-4-2017
Storm Rain Event	BMP-66438	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2.8 in 2017.

234.5 Compliance Status

The Site associated with A-SMA-2.8 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 234-3 presents the 2017 compliance status.

Table 234-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 39-001(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

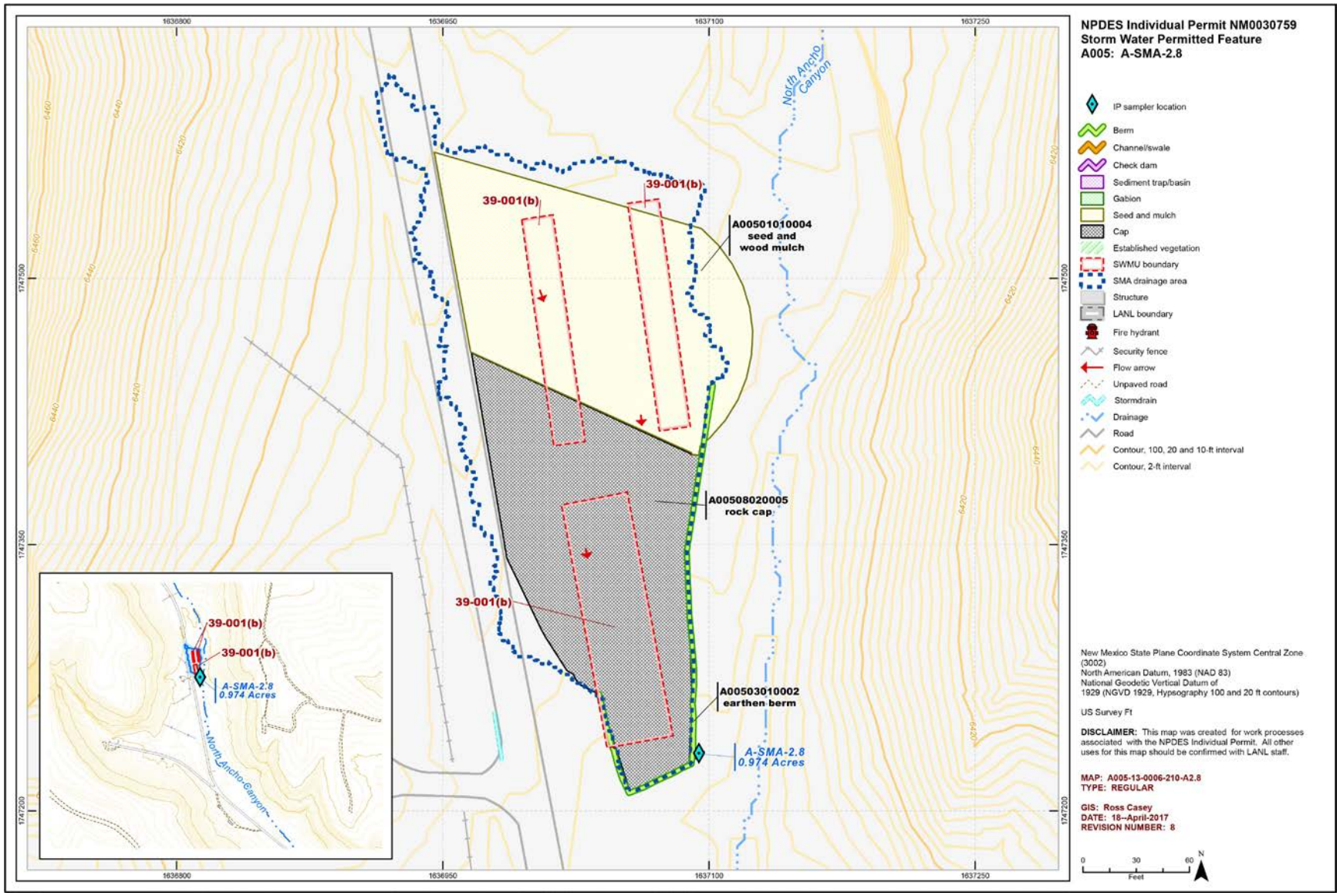


Figure 234-1 A-SMA-2.8 location map

235.0 A-SMA-3: AOC 39-002(b) and SWMU 39-004(c)

235.1 Site Descriptions

Two historical industrial activity areas are associated with A006, A-SMA-3: Sites 39-002(b) and 39-004(c).

AOC 39-002(b) is an active SAA located on a 5- × 5-ft concrete pad next to a firing site support building (structure 39-6) and an active firing site [SWMU 39-004(c)]. AOC 39-002(b) was also used for storage before it became an SAA. AOC 39-002(b) was used to store small quantities of paper contaminated with waste solvents (ethanol, acetone, trichloroethane, copper sulfate); transformer oil; vacuum grease; and Polaroid photographic wastes. There is no evidence, visible or documentary, of spills or leaks at this Site. However, this AOC is within the blast radius of a firing site.

No Consent Order or other investigations have been conducted at AOC 39-002(b).

SWMU 39-004(c) is an active firing site and active operating RCRA OD Site (structure 39-6) subject to RCRA closure requirements. The Site is located in the southernmost western tributary of Ancho Canyon in the canyon bottom between an ephemeral stream and steep hill slopes to both the north and south. The Site is used for explosives experiments and for treating reactive hazardous waste by OD. The experiments conducted at this firing site are designed to expend all HE in the device. Use of this Site as a test firing site began when TA-39 was established in 1953. Materials used in significant quantities at the TA-39 firing sites over the years include beryllium, mercury, natural and DU, lead, aluminum, copper, brass, iron, stainless steel, and various types of HE. Other materials used at TA-39 firing sites include thallium, cadmium, chromium, and thorium (the latter was naturally occurring thorium-232). In addition, firing assemblies were covered with dielectric oil (about 100 gal. per shot), much of which ended up in the soil of the firing pad. This oil likely contained PCBs.

The completion of Consent Order investigations at SWMU 39-004(c) is deferred because the Site is an active firing site. However, 2009 Consent Order samples were collected from the extended drainages downgradient of the firing site to assess the potential for off-site migration. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.

The project map (Figure 235-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

235.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 235-1).

Enhanced controls were installed and certified on September 4, 2015, and submitted to EPA on September 10, 2015, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 235-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00602040018	Established Vegetation	X	-	X	-	B
A00603020023	Base Course Berm	X	-	X	-	EC
A00603120017	Rock Berm	-	X	-	X	B
A00603140026	Coir Log	X	-	-	X	EC
A00603150027	Redi-Rock Berm	-	X	-	X	EC
A00603150035	Redi-Rock Berm	X	-	-	X	B
A00604010022	Earthen Channel/Swale	X	-	X	-	EC
A00604030025	Rock Channel/Swale	-	X	X	-	EC
A00604060024	Rip Rap	X	-	X	-	EC
A00606010010	Rock Check Dam	X	-	-	X	CB
A00606010011	Rock Check Dam	X	-	-	X	CB
A00606010019	Rock Check Dam	X	-	-	X	B
A00606010031	Rock Check Dam	X	-	-	X	B
A00606010032	Rock Check Dam	X	-	-	X	B
A00606010033	Rock Check Dam	X	-	-	X	B
A00606010034	Rock Check Dam	X	-	-	X	B
A00608020029	Rock Cap	-	-	X	-	EC
A00608020030	Rock Cap	-	X	X	-	B
A00608020036	Rock Cap	X	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

235.3 Storm Water Monitoring

AOC 39-002(b) and SWMU 39-004(c) are monitored within A-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figures 235-2 and 235-3). In Figure 235-2, silver is reported as a nondetectable result equal to or greater than the TAL. This value is reported at the PQL; however, the MDL for this analyte is below the TAL. Analytical results from this sample yielded the following TAL exceedances:

- Aluminum concentration of 997 µg/L (MTAL is 750 µg/L),
- Copper concentration of 245 µg/L (MTAL is 4.3 µg/L),
- Mercury concentration of 9.04 µg/L (ATAL is 0.77 µg/L),
- Selenium concentration of 12.1 µg/L (ATAL is 5 µg/L),
- Gross-alpha activity of 136 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 3060 ng/L (ATAL is 0.6 ng/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

AOC 39-002(b):

- Aluminum is not known to be associated with industrial materials historically managed at this Site.
- Copper is known to be associated with industrial materials historically managed at this Site.
- Mercury is not known to be associated with industrial materials historically managed at this Site.
- Selenium is 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 this Site.
- PCBs are known to be associated with industrial materials historically managed at this Site.

SWMU 39-004(c):

- Aluminum is known to be associated with industrial materials historically managed at the Site. Aluminum, however, was not detected above BV in 45 shallow (i.e., less than 3 ft bgs) soil samples collected during the 2009 Consent Order investigation and 1995 RFI.
- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above BV in shallow Consent Order and RFI soil samples. Copper was detected above the soil BV in 15 of 45 shallow samples with a maximum concentration 180 times the soil BV.
- Mercury is known to be associated with industrial materials historically managed at the Site. Mercury was only detected above the soil BV in 2 of 45 shallow samples with a maximum concentration 85 times the soil BV.
- Selenium is not known to be associated with industrial materials historically managed at the Site. Selenium was not detected above BV in 45 shallow Consent Order and RFI soil samples.
- PCBs are known to have been associated with industrial materials historically managed at this Site. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1248 was detected in 3 of 4 shallow samples with a maximum concentration 30 times the residential SSL. Aroclor-1254 was detected in 1 of 4 shallow samples with a maximum concentration 52% of the residential SSL. Aroclor-1260 was detected in 2 of 4 shallow samples with a maximum concentration 3.1 times the residential SSL.
- Thorium and uranium are known to have been associated with industrial materials historically managed at this Site. RFI and Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium, thorium, and uranium isotopes, which are alpha-emitting, and total uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BV, 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 235-2 and 235-3. 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 235-2 and 235-3.

Most of the A-SMA-3 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with aluminum, copper, PCBs, and gross-alpha storm water exceedances. Mercury and selenium did not have a sufficient number of detected results to determine the UTL BV.

- Aluminum—Aluminum is a major component of Bandelier Tuff. The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2013 is less than this value.
- Copper—Copper is associated with trace minerals in Bandelier Tuff. The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from the storm water confirmation sample in 2013 is above this value.
- PCBs—The PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The ATAL exceedance in the storm water confirmation sample in 2013 is greater than the storm water baseline UTL.
- Gross alpha—The gross-alpha activity is associated with naturally occurring radioactive uranium- and thorium-bearing minerals in Bandelier Tuff. The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2013 confirmation samples are below this value. The gross-alpha geometric mean of 136 pCi/L is approximately 11 times lower than the background storm water UTL.

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

235.4 Inspections and Maintenance

RG265 recorded three storm events at A-SMA-3 during the 2017 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 235-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61382	4-7-2017
Pre-SIP Field Walkdown	COMP-54039	5-30-2017
Storm Rain Event	BMP-62958	7-6-2017
Storm Rain Event	BMP-65803	10-4-2017
Storm Rain Event	BMP-66439	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-3 in 2017.

235.5 Compliance Status

The Sites associated with A-SMA-3 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 253-3 presents the 2017 compliance status.

Table 235-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
AOC 39-002(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 4, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."
SWMU 39-004(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 4, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

A-SMA-3, Redi Rock Berm, A00603150027 (photo ID 46339-8)

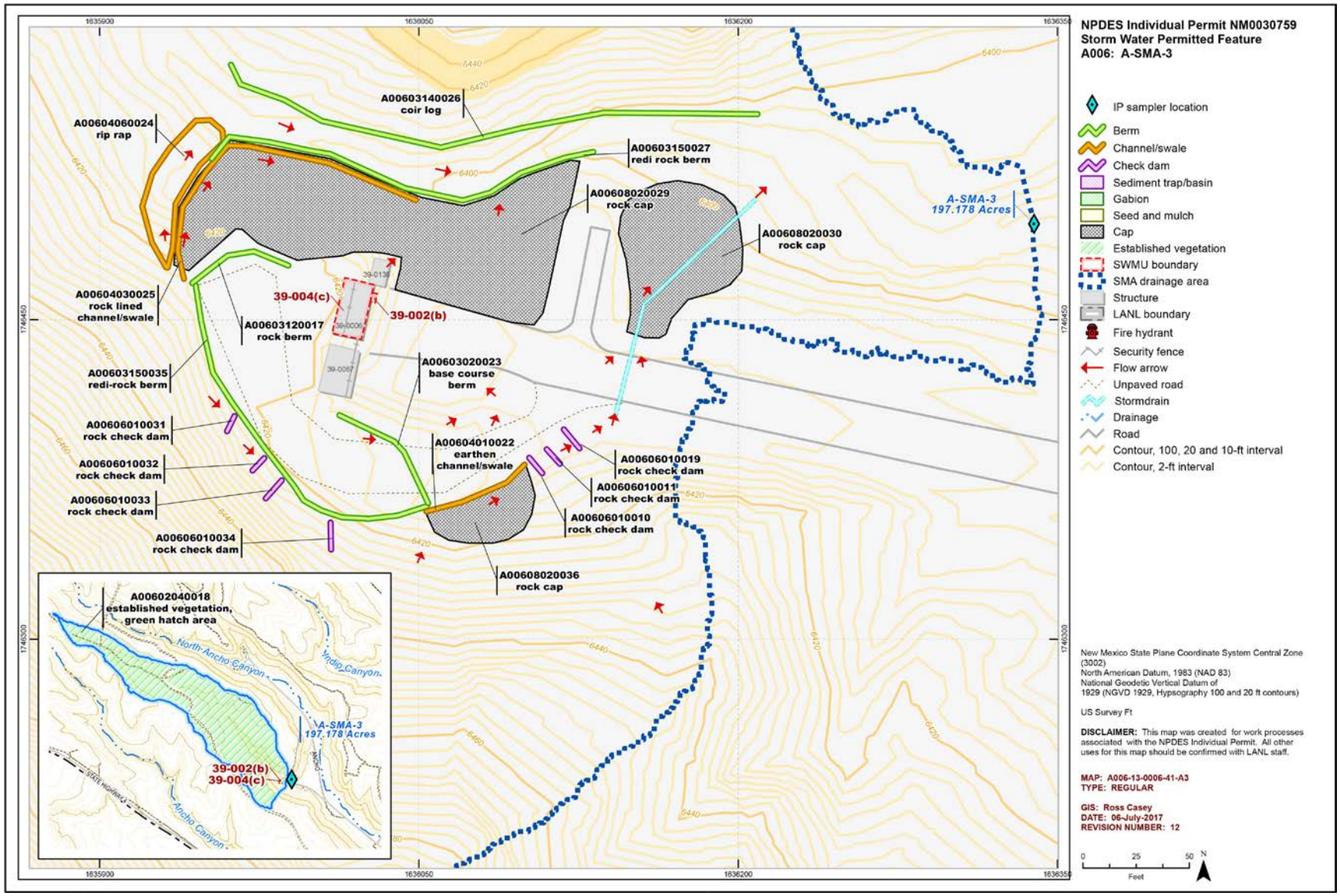
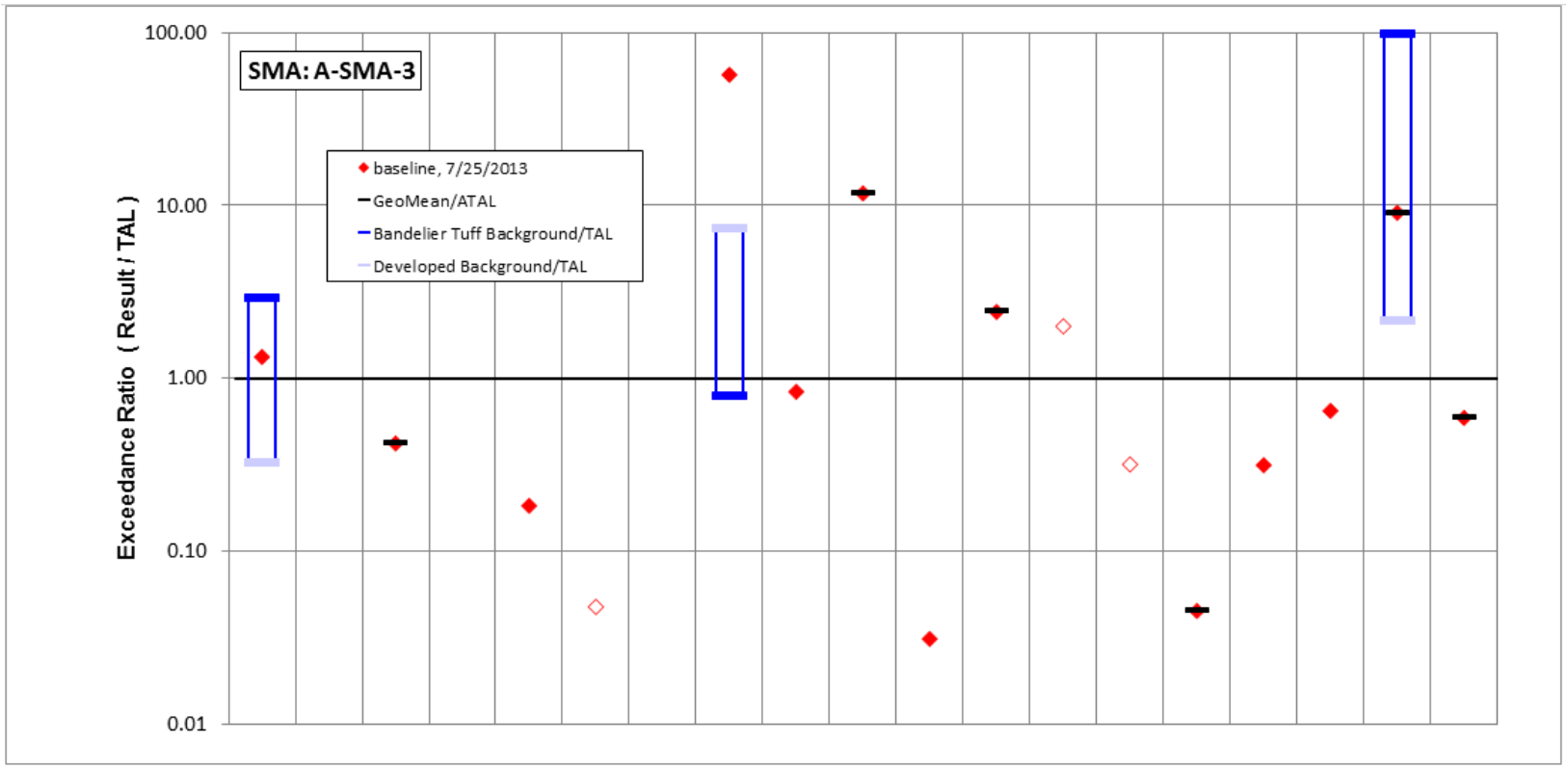


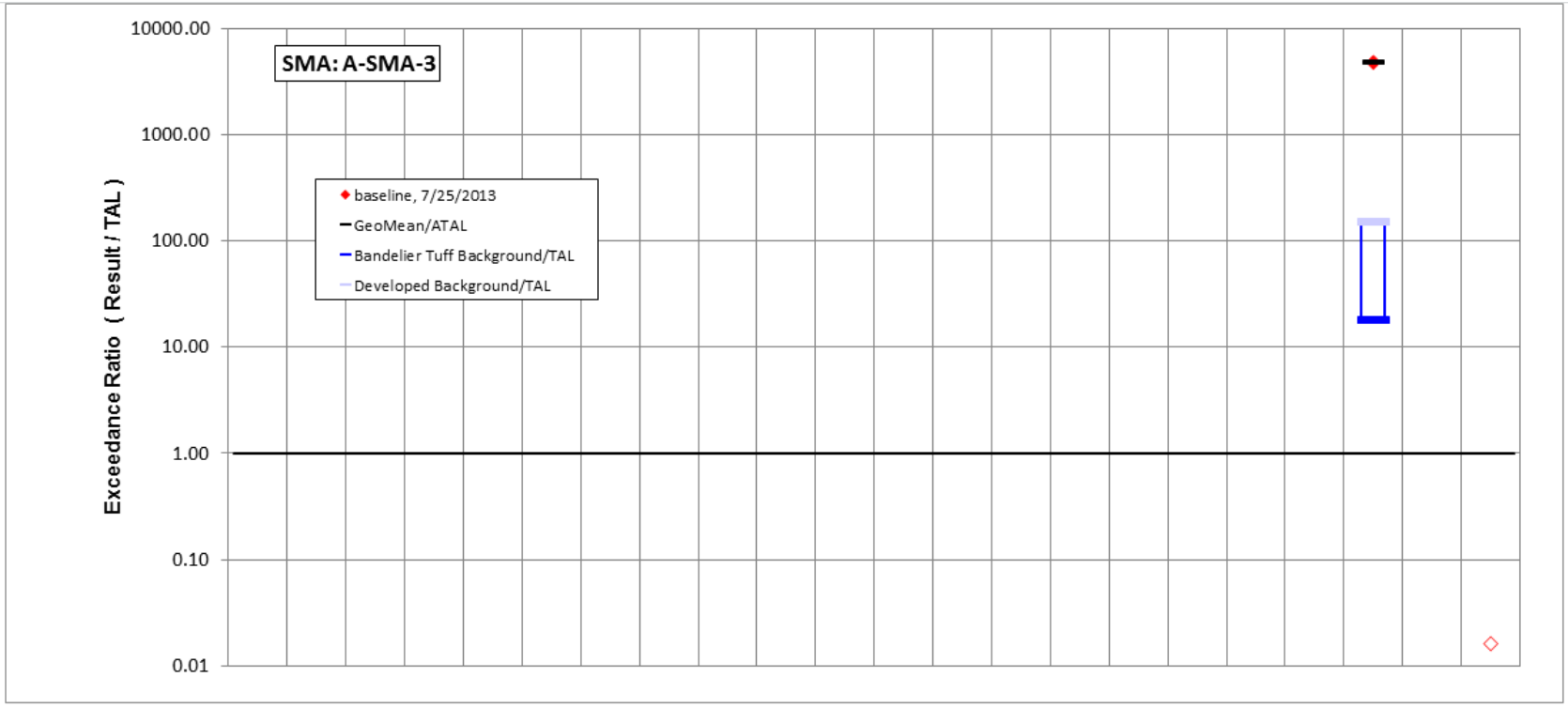
Figure 235-1 A-SMA-3 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/25/2013 result	**997**	3.52	3.78	41.8	0.183	*10*	7.25	**245**	14.2	**9.04**	5.28	**12.1**	***1***	*2*	4.51	13.2	0.0065	**136**	17.7
result / TAL	**1.3**	0.0055	0.42	0.0084	0.18	*0.048*	0.0072	**57**	0.84	**12**	0.031	**2.4**	***2***	*0.32*	0.045	0.31	0.65	**9.1**	0.59

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

Figure 235-2 Inorganic analytical results summary plot for A-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	-	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
7/25/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.192	-	**3.06**	-	*0.323*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1E-03	-	**4800**	-	*0.016*

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

Figure 235-3 Organic analytical results summary plot for A-SMA-3

236.0 A-SMA-3.5: SWMU 39-006(a)

236.1 Site Descriptions

One historical industrial activity area is associated with A007, A-SMA-3.5: Site 39-006(a).

SWMU 39-006(a) consists of a septic system with inactive and active components located east and south of building 39-2 at TA-39. The inactive portion of the septic system was constructed in 1953 and received discharges from building 39-2. The inactive portion of the septic system included an 1800-gal. septic tank (former structure 39-12), sections of drainlines, a subsurface sand filter, a chemical seepage pit, and an outfall. The septic tank was located 100 ft east of building 39-2 and was connected to a sand filter north of NM 4. The sand filter discharged to an outfall south of NM 4 in North Ancho Canyon. In 1973, the septic tank was enlarged, a new subsurface sand filter was installed on the south side of NM 4, and use of the old sand filter was discontinued. Septic tank 39-104, the new sand filter south of NM 4, and the still-active drainlines are part of the SWMU 39-006(a) active components. In 1989, the outlet from the new sand filter was plugged, eliminating the discharge to the outfall. Photographic-processing chemicals from building 39-2 were routinely discharged to former septic tank 39-12, eventually causing the septic tank to malfunction. To correct the problem, a seepage pit was installed in 1973 directly north of former septic tank 39-12 to manage the photographic-processing chemicals. The seepage pit handled approximately 75 gal./yr until 1992. The chemical seepage pit consisted of an open pit approximately 12 ft deep and filled with cobble. A CMP approximately 1 ft in diameter runs vertically through the center of the seepage pit. The inactive septic tank (former structure 39-12), inactive chemical seepage pit, and the original sand filter were removed during 2009 field activities.

Consent Order sampling data for the inactive components of SWMU 39-006(a) indicate the Site meets residential risk levels. During the 2009 Consent Order investigation, only the outfall drainage of the active components of SWMU 39-006(a) was sampled to provide initial characterization data. Samples were not collected from the active septic tank and the active sand filter because sampling would disrupt the lines of an active septic system currently in use. All detected inorganic and organic chemical concentrations were below residential SSLs; no radionuclides were detected. Because preliminary investigation results demonstrate that current activities are not contributing to off-site migration, further investigation of the active components of SWMU 39-006(a) is delayed until operations at the Site cease.

The project map (Figure 236-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

236.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 236-1).

Table 236-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00702040003	Established Vegetation	-	X	X	-	B
A00703060002	Straw Wattle	-	X	-	X	CB
A00703060005	Straw Wattle	X	-	-	X	B

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

236.3 Storm Water Monitoring

SWMU 39-006(a) is monitored within A-SMA-3.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figures 236-2 and 236-3). In Figure 236-2, cadmium, selenium, and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for A-SMA-3.5 and the associated SWMU 39-006(a) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for A-SMA-3.5 for the duration of the IP.

236.4 Inspections and Maintenance

RG340 recorded two storm events at A-SMA-3.5 during the 2017 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 236-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61370	4-4-2017
Pre-SIP Field Walkdown	COMP-54040	5-30-2017
Storm Rain Event	BMP-62959	7-5-2017
Storm Rain Event	BMP-65157	9-7-2017

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

Table 236-3 Maintenance during 2017

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-63184	Installed new straw wattle as replacement for A00703060004	7-12-2017	7 day(s)	Maintenance conducted as soon as practicable

236.5 Compliance Status

The Site associated with A-SMA-3.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 236-4 presents the 2017 compliance status.

Table 236-4 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 39-006(a)	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 9-6-2013. No additional sampling is necessary for this Site

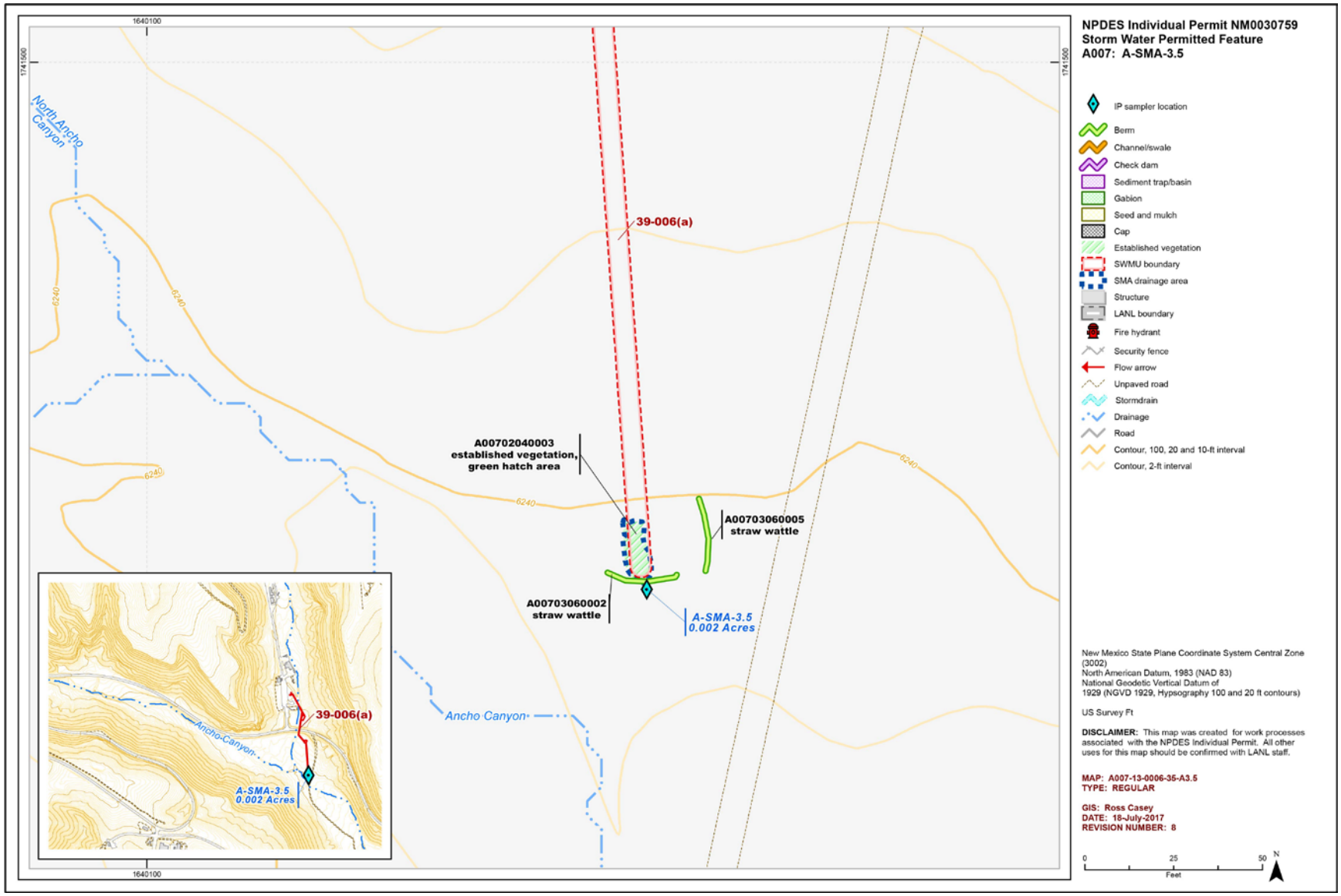
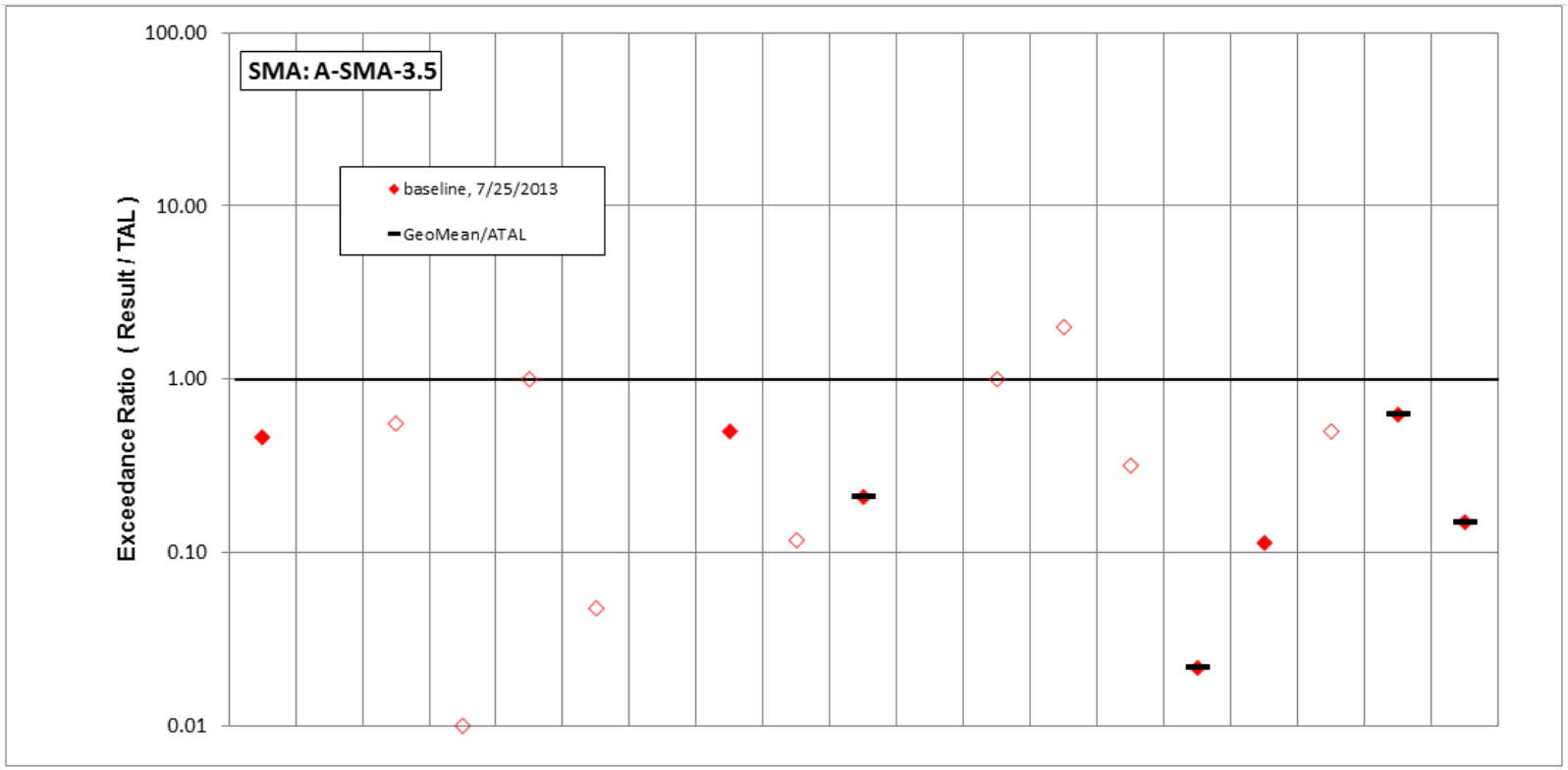


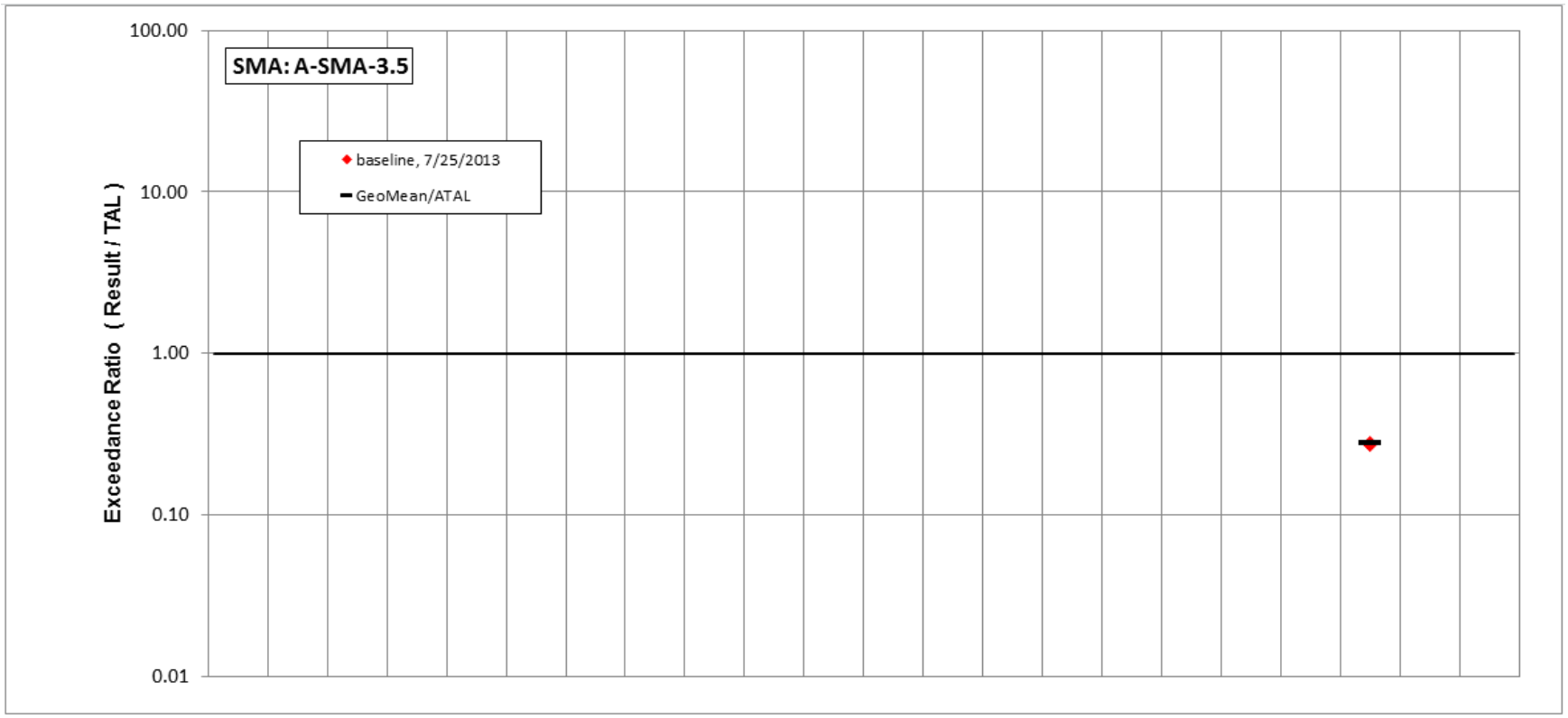
Figure 236-1 A-SMA-3.5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/25/2013 result	347	*3*	*5*	*50*	*1*	*10*	2.27	2.15	*2*	0.161	1.4	*5*	***1***	*2*	2.16	4.77	*0.005*	9.37	4.49
result / TAL	0.46	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0023	0.5	*0.12*	0.21	0.0082	*1*	***2***	*0.32*	0.022	0.11	*0.5*	0.62	0.15

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

Figure 236-2 Inorganic analytical results summary plot for A-SMA-3.5



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
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
7/25/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2E-04	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.27	-	-

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

Figure 236-3 Organic analytical results summary plot for A-SMA-3.5

237.0 A-SMA-4: SWMU 33-010(d)

237.1 Site Descriptions

One historical industrial activity area is associated with A008, A-SMA-4: Site 33-010(d).

SWMU 33-010(d) is a former canyon-side disposal area situated in the northeastern portion of East Site at TA-33 directly north of the former gun firing site berms [SWMU 33-006(b)]. Debris scattered along the canyon rim and in a small drainage leading to Ancho Canyon consisted of concrete blocks, empty glass specimen vials, pieces of foam, cable, and metal cans. The date this debris was deposited at the Site is not known, but operations at East Site occurred between 1948 and 1972. During the 1995 VCA implemented at the Site, 2 yd^3 of nonhazardous/nonradioactive debris and 0.1 yd^3 of radioactive debris were removed from Site.

SWMU 33-010(d) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The proposed investigation for this Site is presented in the South Ancho Canyon Aggregate Area investigation work plan, submitted to NMED in August 2015. No decision-level data are available for SWMU 33-010(d).

The project map (Figure 237-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

237.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 237-1).

Table 237-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00802040010	Established Vegetation	-	X	X	-	B
A00803010007	Earthen Berm	X	-	-	-	CB
A00803010009	Earthen Berm	-	X	-	X	B
A00806010003	Rock Check Dam	X	-	-	X	CB
A00806010004	Rock Check Dam	-	X	-	X	CB

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

237.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at A-SMA-4. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

237.4 Inspections and Maintenance

RG340 recorded two storm events at A-SMA-4 during the 2017 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 237-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61371	4-3-2017
Storm Rain Event	BMP-62960	7-6-2017
Storm Rain Event	BMP-65158	9-7-2017
Pre-SIP Field Walkdown	COMP-54041	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-4 in 2017.

237.5 Compliance Status

The Site associated with A-SMA-4 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 237-3 presents the 2017 compliance status.

Table 237-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-010(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

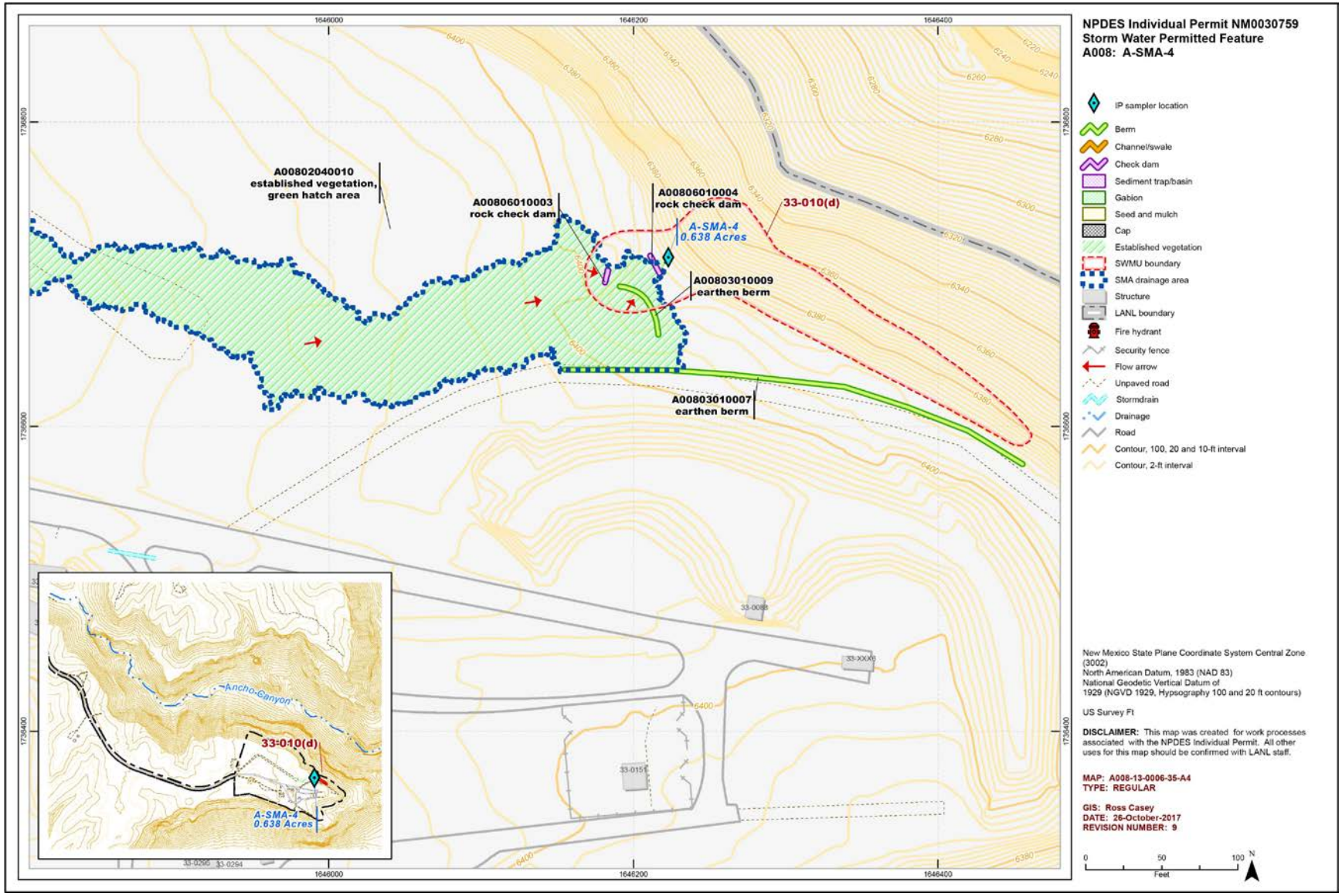


Figure 237-1 A-SMA-4 location map

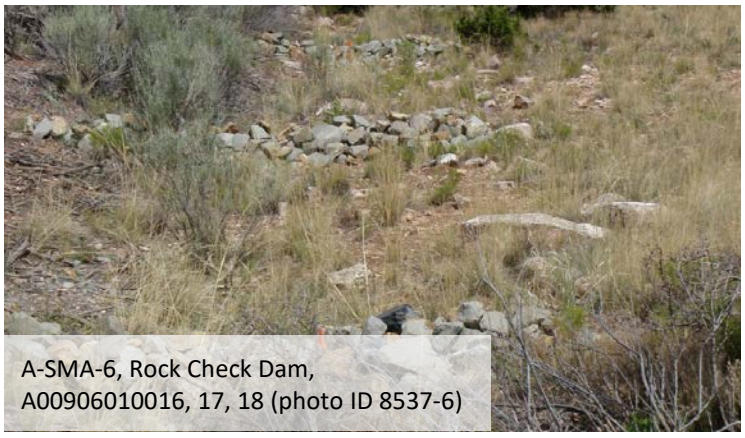
238.0 A-SMA-6: SWMUs 33-004(k), 33-007(a), and 33-010(a)

238.1 Site Descriptions

Three historical industrial activity areas are associated with A009, A-SMA-6: Sites 33-004(k), 33-007(a), and 33-010(a).

SWMU 33-004(k) consists of a suspected outfall from building 33-87 located at East Site at TA-33. Building 33-87 was constructed in 1955 to support firing site experiments at East Site. The firing tests that structure 33-87 supported were conducted until the early 1970s. The outfall reportedly received discharge from a toilet, sink, floor drains, and an electrical water cooler within the building. Structure 33-87 was used to house electronic equipment, and there is no recorded use of radioactive materials in this building. The RFI work plan indicated that photoprocessing may have occurred. Engineering drawing C-3304 shows a cast-iron drainpipe exiting the south wall of the building and extending approximately 125 ft southeast of the building where it terminates at the outfall. The engineering drawing describes the drainline as consisting of 54 ft of 8-in.-diameter cast-iron pipe and 71 ft of 8-in.-diameter VCP. Attempts to locate the drainline and outfall in 1994 and 1995 using geophysics and test trenches were unsuccessful. An inspection of the building performed in 1996 revealed that no floor drains existed in the building. The sink and toilet in the building discharge to septic tank 33-96 [SWMU 33-004(c)], located north of the building. Therefore, the drainline and outfall likely never existed.

SWMU 33-004(k) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The proposed investigation for this Site is presented in the South Ancho Canyon Aggregate Area investigation work plan, submitted to NMED in August 2015. No decision-level data are available for SWMU 33-004(k).



A-SMA-6, Rock Check Dam, A00906010016, 17, 18 (photo ID 8537-6)

SWMU 33-007(a) is a gun firing site located at East Site at TA-33. The firing site consists of three gun mounts (structures 33-116, 33-117, and 33-135) and two former catcher boxes (structures 33-118 and 33-136). Firing site activities began in the mid-1950s and included firing projectiles from large cannons into the catcher boxes filled with vermiculite and sand. Other activities included experiments using scintillation fluids and x-rays. Cobalt-60 was used in some of the firing site activities. Firing site activities ceased in 1972. In 1984, the catcher boxes and their contents were removed and disposed of in a landfill [SWMU 33-008(b)] located at East Site. A narrow asphalt road runs the length of the Site, as does an asphalt drainage ditch.

SWMU 33-007(a) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The proposed investigation for this Site is presented in the South Ancho Canyon Aggregate Area investigation work plan, submitted to NMED in August 2015. No decision-level data are available for SWMU 33-007(a).

SWMU 33-010(a) is a surface disposal area located on a cliff ledge above Ancho Canyon at East Site at TA-33. Much of the debris was associated with the initial clearing of East Site and included dead tree trunks, rocks, and scraped earth. Other debris, such as metal scrap, timber, and plastic foam, is

associated with firing site operations conducted from 1955 to 1972. Debris was scattered at the rim of the canyon and within 15 ft below the rim. A VCA performed in 1995 removed 8 yd^3 of nonhazardous, nonradioactive debris and 0.2 yd^3 of radioactive debris from the surface of the Site. No confirmation samples were collected.

SWMU 33-010(a) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The proposed investigation for this Site is presented in the South Ancho Canyon Aggregate Area investigation work plan, submitted to NMED in August 2015.

The project map (Figure 238-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

238.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 238-1).

Table 238-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00902040023	Established Vegetation	-	X	X	-	B
A00903010021	Earthen Berm	-	X	-	X	CB
A00904020007	Concrete/Asphalt Channel/Swale	-	X	X	-	CB
A00904060005	Rip Rap	-	X	X	-	CB
A00906010008	Rock Check Dam	-	X	-	X	CB
A00906010009	Rock Check Dam	-	X	-	X	CB
A00906010010	Rock Check Dam	-	X	-	X	CB
A00906010011	Rock Check Dam	-	X	-	X	CB
A00906010012	Rock Check Dam	-	X	-	X	CB
A00906010013	Rock Check Dam	X	-	-	X	CB
A00906010014	Rock Check Dam	-	X	-	X	CB
A00906010015	Rock Check Dam	-	X	-	X	CB
A00906010016	Rock Check Dam	-	X	-	X	CB
A00906010017	Rock Check Dam	-	X	-	X	CB
A00906010018	Rock Check Dam	-	X	-	X	CB
A00906010019	Rock Check Dam	-	X	-	X	CB
A00906010020	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

238.3 Storm Water Monitoring

SWMUs 33-004(k), 33-007(a), and 33-010(a) are monitored within A-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2013 (Figures 238-2 and 238-3). In Figure 238-2, selenium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Copper concentration of 5.86 µg/L (MTAL is 4.3 µg/L) and
- Gross-alpha activity of 29.6 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-004(k):

- Copper is not known to be associated with industrial materials historically managed at this Site.
- Gross-alpha radioactivity is not known to be associated with industrial materials historically managed at this Site.

SWMU 33-007(a):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was not detected above BV in 35 shallow (i.e., less than 3 ft bgs) soil and sediment samples collected during the 1994 RFI at the Site.
- Gross alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 33-010(a):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was not detected above BVs in 8 shallow screening-level soil samples collected during the 1994 RFI at the Site.
- Gross alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which has alpha-emitting isotopes.

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 238-2 and 238-3. 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 238-2 and 238-3.

Monitoring location A-SMA-6 receives runoff primarily from undeveloped areas, with some contribution from developed landscape. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed 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 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.

238.4 Inspections and Maintenance

RG340 recorded two storm events at A-SMA-6 during the 2017 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 238-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61372	4-3-2017
Storm Rain Event	BMP-62961	7-6-2017
Storm Rain Event	BMP-65159	9-7-2017
Pre-SIP Field Walkdown	COMP-54042	10-19-2017

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-6 in 2017.

238.5 Compliance Status

The Sites associated with A-SMA-6 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 238-3 presents the 2017 compliance status.

Table 238-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-004(k)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 33-007(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 33-010(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

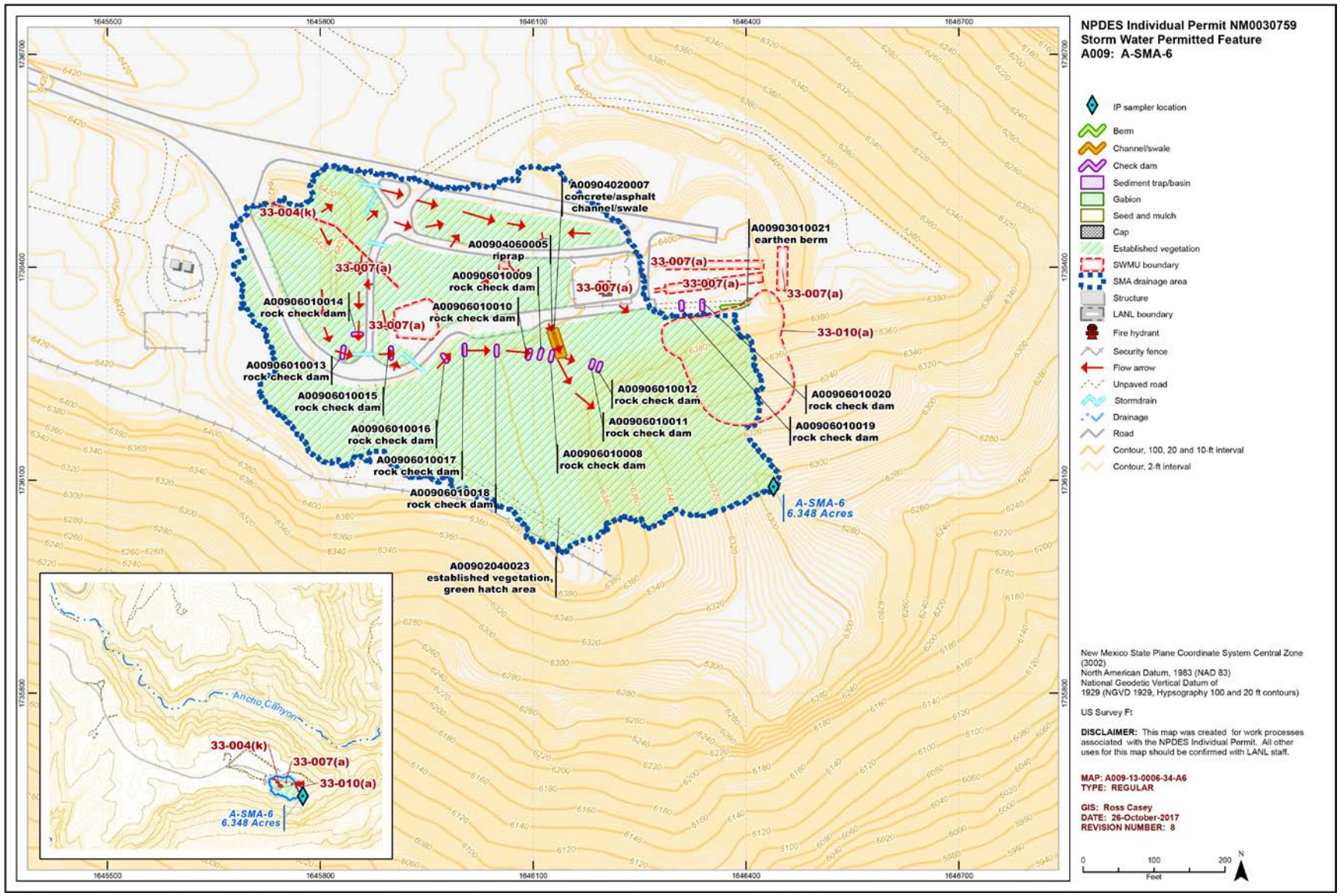
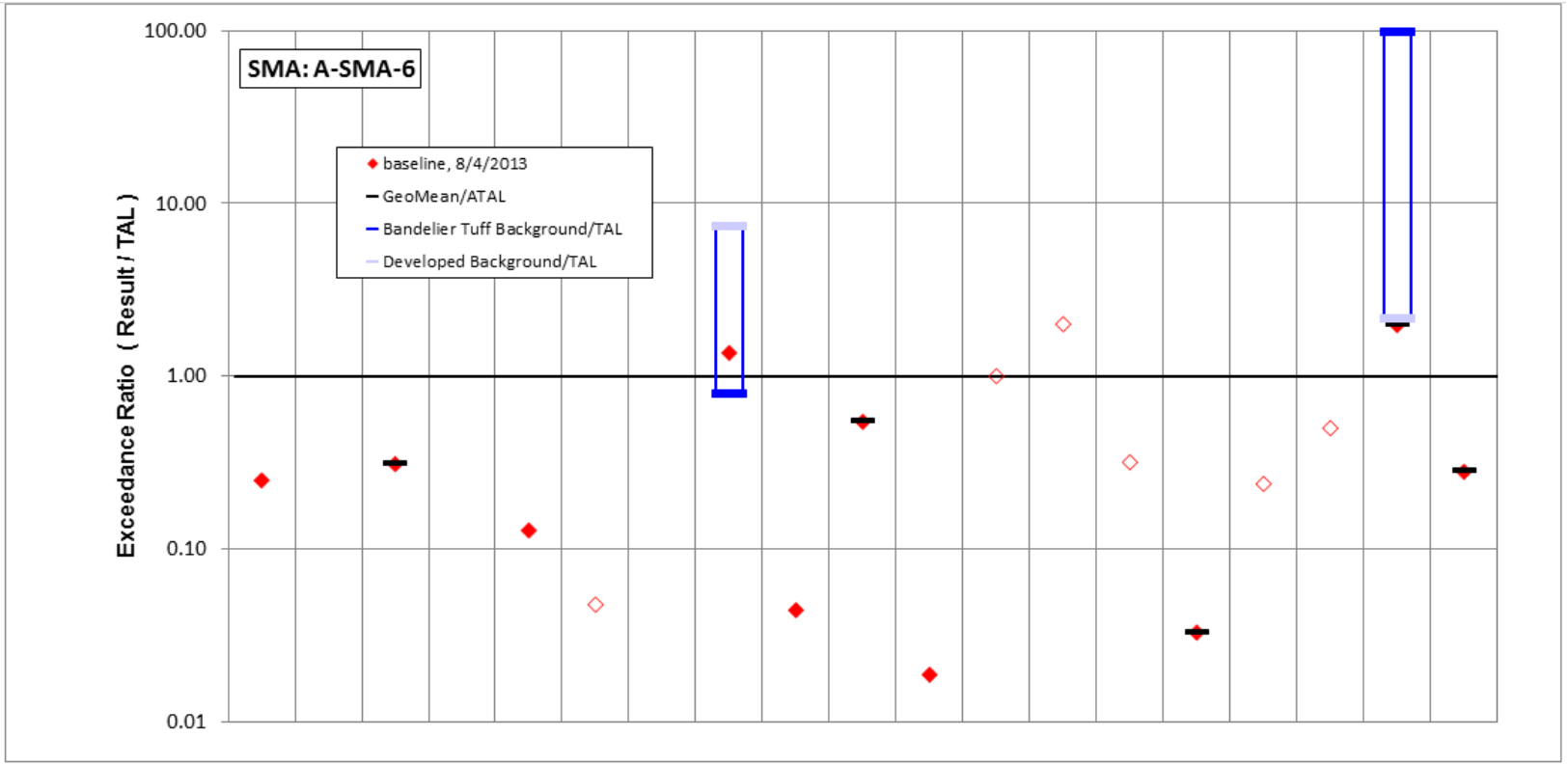


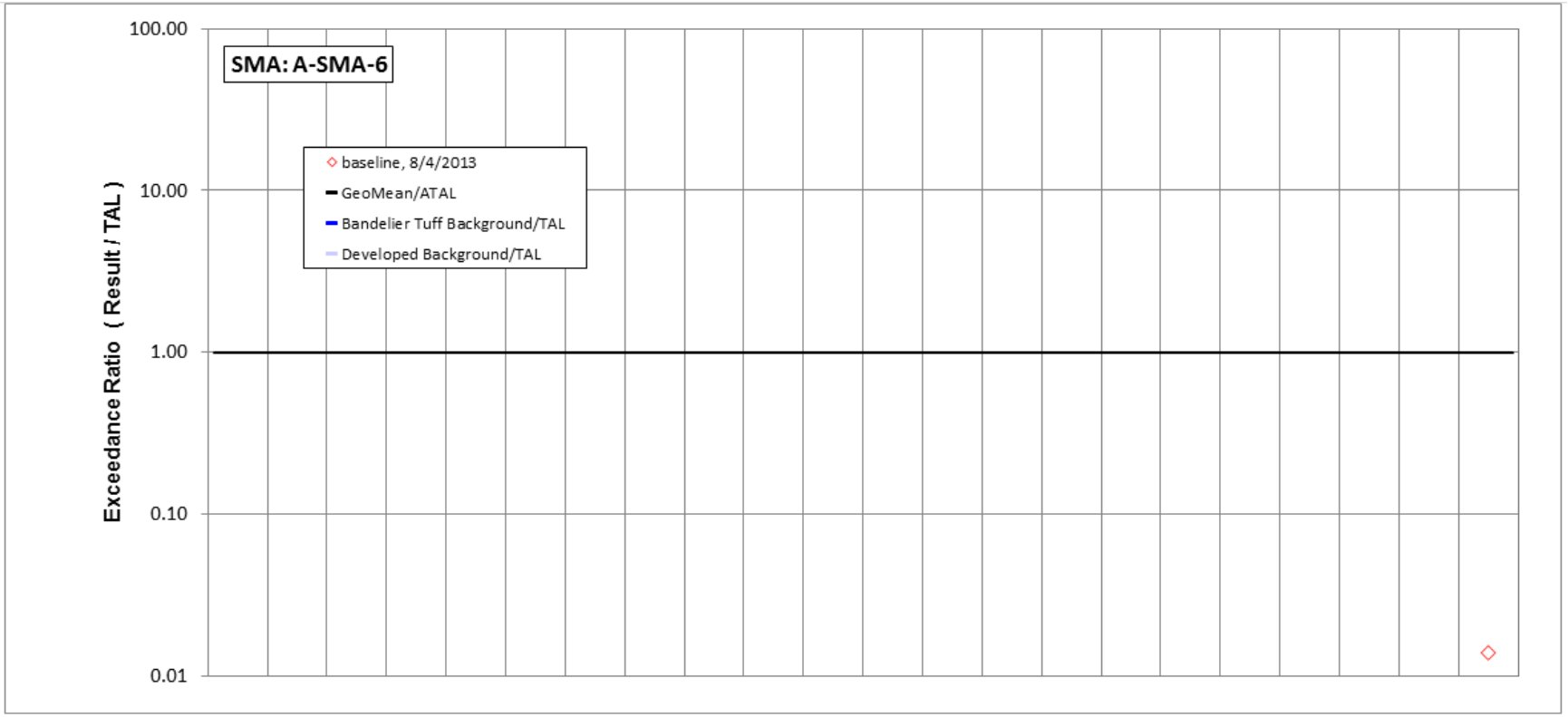
Figure 238-1 A-SMA-6 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/4/2013 result	187	1.49	2.79	31.1	0.128	*10*	4.92	**5.86**	0.752	0.419	3.18	*5*	***1***	*2*	3.28	*10*	*0.005*	**29.6**	8.39
result / TAL	0.25	0.0023	0.31	0.0062	0.13	*0.048*	0.0049	**1.4**	0.044	0.54	0.019	*1*	***2***	*0.32*	0.033	*0.24*	*0.5*	**2**	0.28

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

Figure 238-2 Inorganic analytical results summary plot for A-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
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/4/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.278*	-	-	-	*0.278*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.014*

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

Figure 238-3 Organic analytical results summary plot for A-SMA-6

239.0 CHQ-SMA-0.5: SWMUs 33-004(g), 33-007(c), and 33-009

239.1 Site Descriptions

Three historical industrial activity areas are associated with Q001, CHQ-SMA-0.5: Sites 33-004(g), 33-007(c), and 33-009.

SWMU 33-004(g) is reportedly an outfall and associated drainline that discharged wastewater from building 33-16. The outfall is located at the end of a VCP that runs west approximately 50 ft from the northwest corner of building 33-16. The pipe daylights at the edge of a level area above a drainage channel that leads to a tributary of Chaquehui Canyon. The ground surface below the outfall slopes steeply down to the tributary channel, which is approximately 70 ft lower than the outfall. A culvert under a roadway, approximately 60 ft southwest of the outfall, receives runoff from most of the paved portions of Area 6. Building 33-16 was constructed in 1949 as a gun building for initiator tests. It housed a gas gun that was used to fire projectiles as well as electronic equipment used to measure neutron production. Large-bore (2-in. to 5-in.-diameter) guns were also mounted on concrete pads around building 33-16 and used to fire projectiles containing initiator test assemblies. These activities continued until 1955. Photographs may have been developed in building 33-16 or in a small trailer parked next to the drainage from the Site. In 1956, building 33-16 was used to make and machine laminating materials that contained barium, lead, titanium, and zinc. Toxic fumes were reportedly released from a fume hood in the building used to cure epoxy resins. Building 33-16 later was used as a library and storage building and has been empty and unused since 1991. The 1992 Santa Fe Engineering study of drains and discharges at TA-33 was conducted to identify all sources of discharges from TA-33 buildings. This study identified no discharges from building 33-16 at that time. Thus, the source of any potential discharge to the SWMU 33-004(g) outfall during previous use is not known.

SWMU 33-004(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; no decision-level data are available for SWMU 33-004(g).

SWMU 33-007(c) consists of abandoned firing sites associated with the initiator tests conducted at Area 6. The firing sites included firing pads and two catcher boxes. One pad was located immediately west of building 33-16. The catcher boxes were located approximately 20 ft south of building 33-16 and were approximately 6 × 6 ft, constructed of timber, and filled with soil, wood chips, and vermiculite. Guns (2- to 5-in. bore) were placed on the concrete pads and used to fire projectiles containing test assemblies into targets placed in front of the catcher boxes. Materials used in the projectiles included beryllium, polonium-210, uranium, copper, lead, tungsten, and stainless steel. The projectiles frequently cracked open, contaminating the pads and surrounding area with polonium-210. Contaminated areas on the guns and pads were painted with lead-based paint to fix surface contamination. Several other firing pads were on a level area excavated into a basaltic cinder cone southwest of building 33-16. This area was used to test nuclear gun mock-ups. A 4- to 5-in. bore gun was used to fire projectiles into the back of the excavation. The back of the excavation currently extends about 75 ft farther back than when the Site was used. A 1951 memorandum describes a test at Area 6 that resulted in the leak of radioactive material from a projectile. The Site was cleaned up by using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels. The memorandum describes removing loose material and leaving impregnated spots as high as 1 million cpm. Contaminated surface dirt was bulldozed from the shot area into the adjacent canyon.

During the 1995 IA conducted at SWMU 33-007(c), the Site was stabilized to prevent migration of metals and isotopic uranium contamination identified during the RFI. In 1996, approximately 200 yd^3 of soil was removed from the catcher boxes and processed as part of a pilot test to verify the effectiveness of processes for remediating uranium-contaminated soil. Sampling results for the processed soil showed mean activities for uranium-234, uranium-235, and uranium-238 of 15.8 pCi/g, 0.515 pCi/g, and 15.7 pCi/g, respectively; the processed soil was returned to the catcher boxes. Experimental projectiles totaling 1720 lb were also discovered in the soil from the catcher boxes and were subsequently characterized and disposed of as LLW.

SWMU 33-007(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-007(c).

SWMU 33-009 is a former surface disposal area located in Area 6, west of the TA-33 Main Site. The disposal Site includes an area approximately 100 ft long × 75 ft wide that has been leveled into the side of a natural basaltic cinder cone as well as an area that extends approximately 80 ft down the slope of the cinder cone. The slope continues below the disposal Site until it reaches a tributary of Chaquehui Canyon. The debris within this surface disposal area is believed to be associated with the activities at a nearby gun firing site [SWMU 33-007(c)]. This gun firing site operated from 1949 to 1955. When the firing area became contaminated as a result of firing activities, contaminated soil and debris were bulldozed over the edge of the canyon. SWMU 33-009 also received debris from general operations at TA-33, including metal wastes, light bulbs, tires, and drums. In 1960, the Site received uranium turnings from the building 33-113 machine shop. In addition, from 1967 to 1972, the Site served as a storage and disposal area for defective electrical capacitors from the Sherwood Project. These capacitors had an average weight of 300 lb and were about 4 ft^3 to 6 ft^3 in volume. Disposal of the capacitors at this Site ceased in 1972, at which time defective capacitors were sent off-site for disposal. In December 1974, the Site was partially cleaned up as part of general cleanup activities conducted at TA-33. Several truckloads of material were taken to MDA G for disposal. Material removed from the Site included DU pieces, electrical capacitors, metal turnings, old tires, and fluorescent light tubes. A radiation survey was performed after the cleanup. The area was surveyed at intervals of about 10 ft across the slope and 16 ft up and down the slope. Radiation above background was not detected. Not all material was removed in 1974. Broken glass and chunks of metal were still present when the RFI was conducted in 1993. An empty capacitor containing small amounts of PCB-contaminated oil was also discovered partially buried at the Site in 1994 and was removed.

SWMU 33-009 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; no decision-level data are available for SWMU 33-009.

The project map (Figure 239-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

239.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 239-1).

Enhanced controls were installed and certified on October 28, 2015, and submitted to EPA on October 30, 2015, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 239-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00102040008	Established Vegetation	-	X	X	-	B
Q00103010010	Earthen Berm	-	X	-	X	EC
Q00103010011	Earthen Berm	-	X	-	X	EC
Q00103140009	Coir Log	-	X	-	X	EC
Q00104050006	Water Bar	X	-	-	X	CB
Q00104050007	Water Bar	X	-	-	X	CB
Q00106010003	Rock Check Dam	X	-	-	X	CB
Q00106010004	Rock Check Dam	X	-	-	X	CB
Q00106010005	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

239.3 Storm Water Monitoring

SWMUs 33-004(g), 33-007(c), and 33-009 are monitored within CHQ-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 23, 2014 (Figures 239-2 and 239-3). In Figure 239-2, cadmium, selenium, and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Gross-alpha activity of 88.3 pCi/L (ATAL is 15 pCi/L) and
- PCB concentration of 12 ng/L (ATAL is 0.6 ng/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-004(g):

- PCBs are not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1993 RFI samples not analyzed for PCBs because they are not known to have been associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium was detected above BVs in 5 of 5 RFI samples at a maximum concentration 2 times the soil BV; RFI data are screening level only. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 33-007(c):

- PCBs are not known to be associated with industrial materials historically managed at the Site. The PCB mixtures Aroclor-1254 and Aroclor-1260 were detected in shallow 1993 RFI samples. Aroclor-1254 and Aroclor-1260 were each detected in 1 of 2 samples at concentrations 5.3% and 3.2% of the residential SSLs, respectively; RFI data are screening level only.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium was detected above the BV in 13 of 14 RFI samples at a maximum concentration 2.2 times the soil BV; RFI data are screening level only. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 33-009:

- PCBs are known to be associated with industrial materials historically managed at the Site. The PCB mixture Aroclor-1254 was detected in shallow 1993 RFI samples. The PCB mixture Aroclor-1254 was detected in 5 of 10 shallow RFI samples at a maximum concentration 140% of the residential SSL; RFI data are screening level only.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium was detected above the BV in 10 of 10 RFI samples at a maximum concentration 3 times the soil BV; RFI data are screening level only. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are 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 239-2 and 239-3. 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 239-2 and 239-3.

Monitoring location CHQ-SMA-0.5 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—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2014 gross-alpha result is between these values.
- PCBs—The PCB UTL from developed 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 2014 is between these values.

All the analytical results for these samples are reported in the 2014 Annual Report.

239.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-0.5 during the 2017 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 239-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61384	4-4-2017
Pre-SIP Field Walkdown	COMP-54078	4-17-2017
Storm Rain Event	BMP-62962	7-6-2017
Storm Rain Event	BMP-65160	9-11-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-0.5 in 2017.

239.5 Compliance Status

The Sites associated with CHQ-SMA-0.5 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 239-3 presents the 2017 compliance status.

Table 239-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-004(g)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 28, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."
SWMU 33-007(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 28, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."
SWMU 33-009	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 28, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."

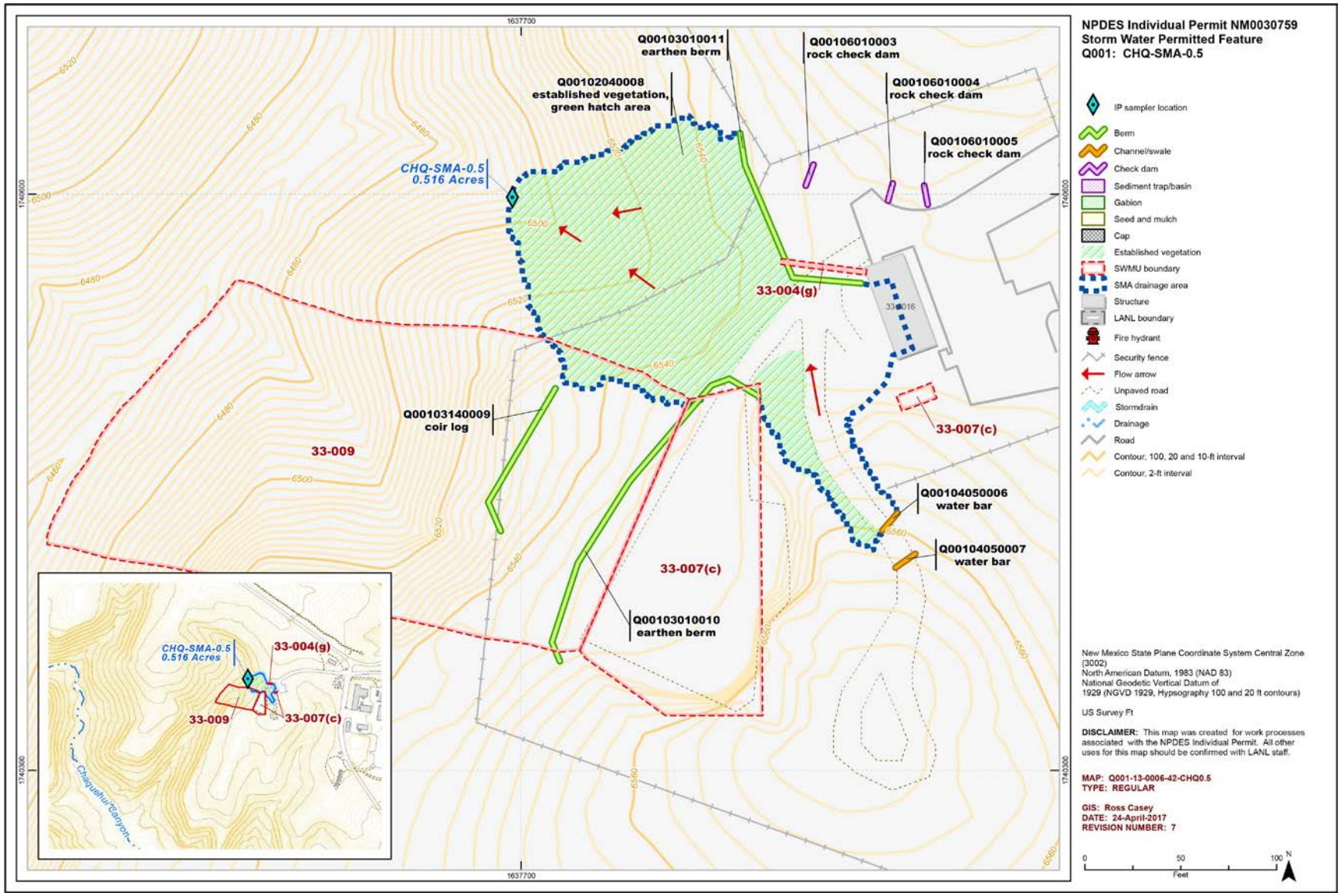
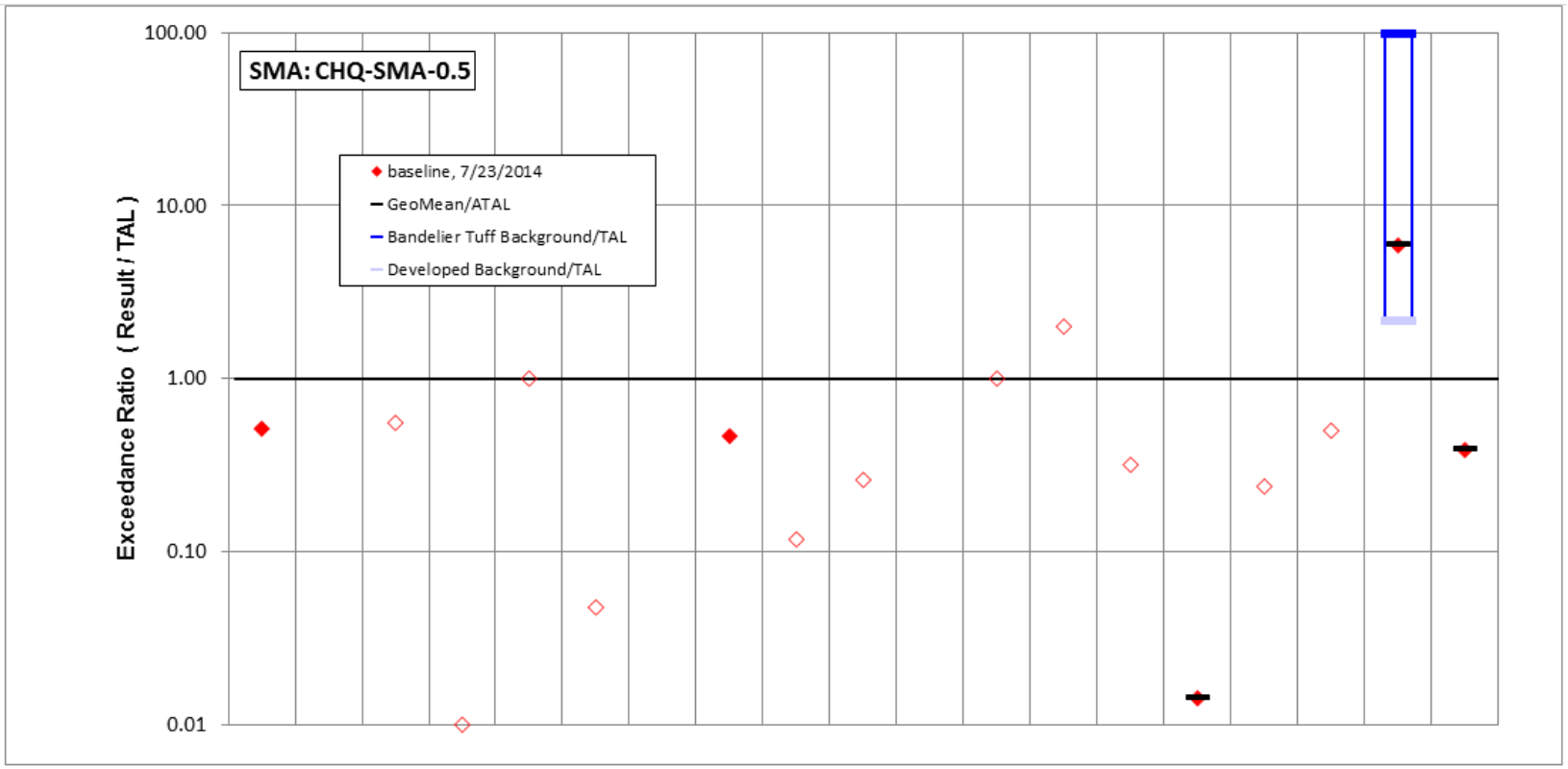


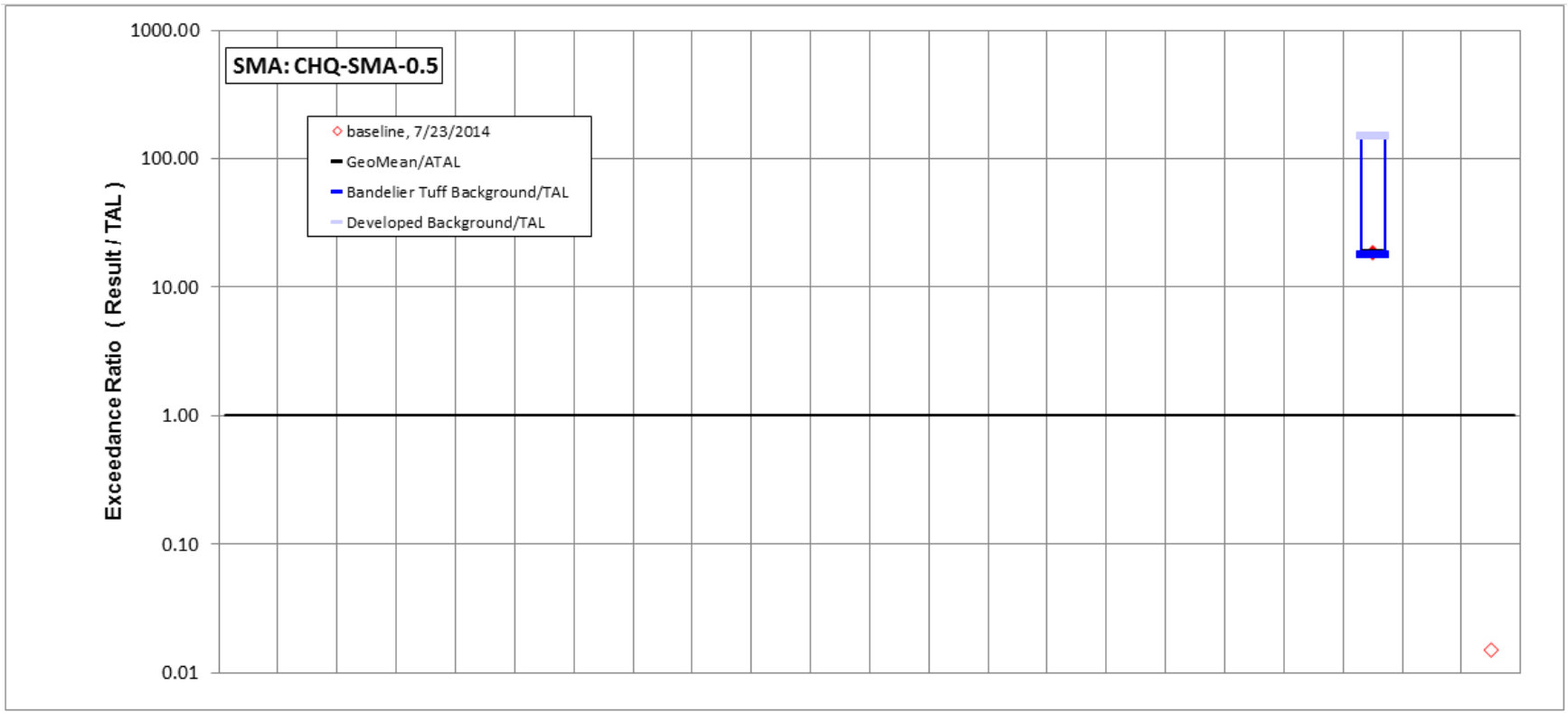
Figure 239-1 CHQ-SMA-0.5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/23/2014 result	385	*3*	*5*	*50*	*1*	*10*	*5*	2	*2*	*0.2*	0.512	*5*	***1***	*2*	1.42	*10*	*0.005*	**88.3**	11.6
result / TAL	0.51	*0.005*	*0.56*	*0.01*	*1*	*0.048*	*0.005*	0.47	*0.12*	*0.26*	0.003	*1*	***2***	*0.32*	0.014	*0.24*	*0.5*	**5.9**	0.39

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

Figure 239-2 Inorganic analytical results summary plot for CHQ-SMA-0.5



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	ATAL	-	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
7/23/2014 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.301*	-	**0.012**	-	*0.301*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	**19**	-	*0.015*

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

Figure 239-3 Organic analytical results summary plot for CHQ-SMA-0.5

240.0 CHQ-SMA-1.01: SWMU 33-002(d)

240.1 Site Descriptions

One historical industrial activity area is associated with Q002, CHQ-SMA-1.01: Site 33-002(d).

SWMU 33-002(d) is a former NPDES-permitted outfall that discharged noncontact cooling water from former building 33-86, the former high-pressure tritium facility. This outfall was created when the SWMU 33-002(c) seepage pit was deactivated and disconnected from the building 33-86 drainline. At that time, the drainline to the seepage pit was extended 90 ft to the east to create an outfall for the discharge of noncontact cooling water. Operations at building 33-86 ceased in 1990, including discharges to the SWMU 33-002(d) outfall; building 33-86 underwent D&D in the mid-1990s. The outfall was removed from the Laboratory's NPDES permit on July 11, 1995. The drainline that discharged to this outfall was removed in 2005 during an ACA implemented for other SWMUs associated with the former high-pressure tritium facility.

SWMU 33-002(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; no decision-level data are available for SWMU 33-002(d).

The project map (Figure 240-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

240.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 240-1).

Table 240-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00202040008	Established Vegetation	-	X	X	-	B
Q00203060009	Straw Wattle	X	-	-	X	B
Q00203060011	Straw Wattle	X	-	-	X	B
Q00203060012	Straw Wattle	-	X	-	X	B
Q00203060013	Straw Wattle	-	X	-	X	B
Q00203060014	Straw Wattle	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

240.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at CHQ-SMA-1.01. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

240.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-1.01 during the 2017 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 240-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61385	4-3-2017
Pre-SIP Field Walkdown	COMP-54079	4-17-2017
Storm Rain Event	BMP-62965	7-6-2017
Storm Rain Event	BMP-65163	9-6-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-1.01 in 2017.

240.5 Compliance Status

The Site associated with CHQ-SMA-1.01 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 240-3 presents the 2017 compliance status.

Table 240-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-002(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

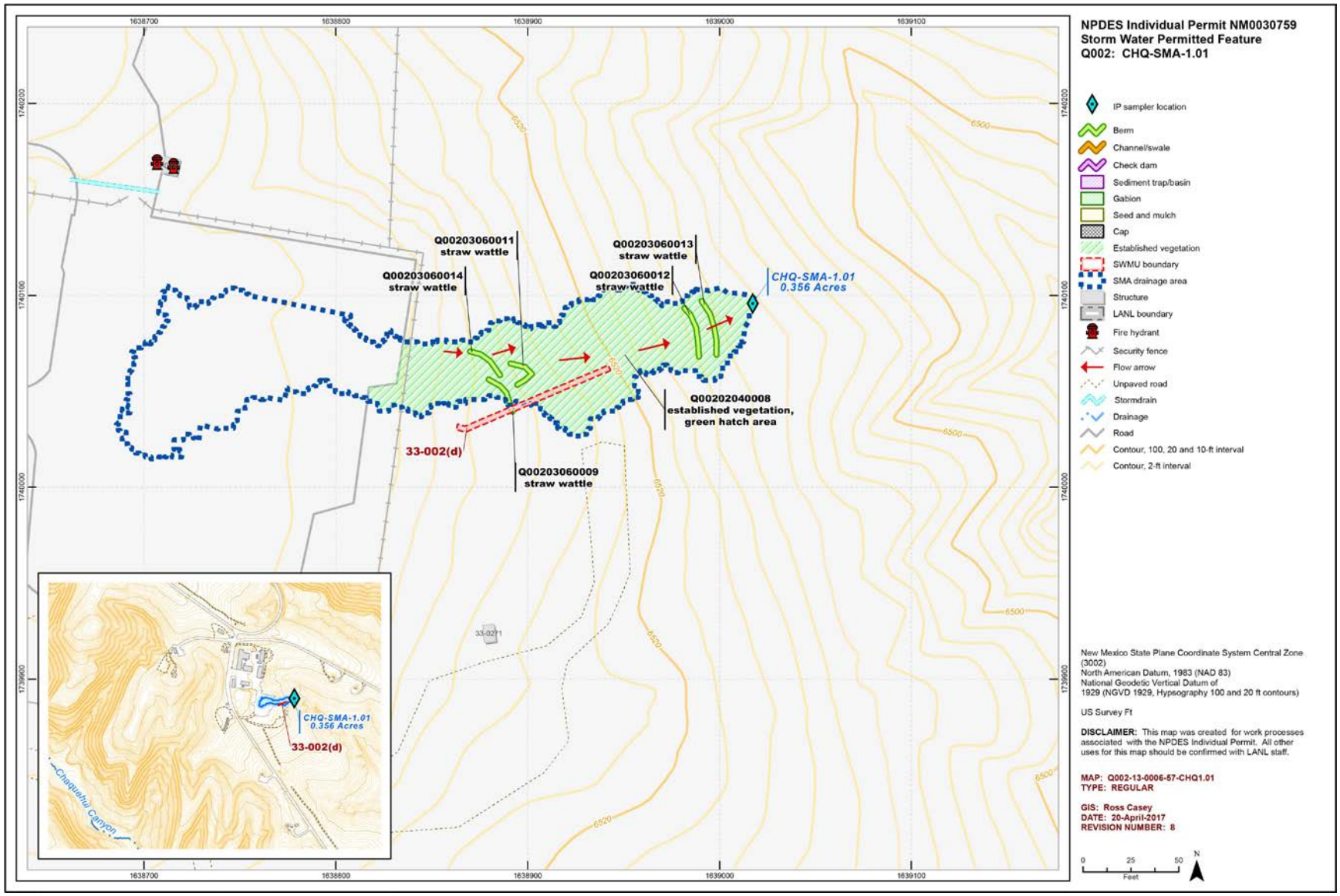


Figure 240-1 CHQ-SMA-1.01 location map

241.0 CHQ-SMA-1.02: SWMUs 33-004(h), 33-011(d), and 33-015 and AOC 33-008(c)

241.1 Site Descriptions

Four historical industrial activity areas are associated with Q002A, CHQ-SMA-1.02: Sites 33-004(h), 33-008(c), 33-011(d), and 33-015.

SWMU 33-004(h) consists of a reported outfall associated with a warehouse (building 33-20) located at the south side of Main Site. The warehouse was constructed in 1950 and used from 1952 to 1972 to store materials associated with initiator tests, including beryllium and uranium. The building subsequently was cleaned and used by other groups as a light laboratory and for general storage. The RFI work plan for OU 1122 states historical engineering drawings show an 8-in.-diameter VCP drain exiting the southeast corner of the building, which reportedly discharged to an outfall. A study of building drains at TA-33 identified two floor drains in building 33-20 but the outfall could not be located. The study also noted there was no source of water in the building. A geophysical survey conducted in 1993 found no evidence of a drainline.

SWMU 33-004(h) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011.

SWMU 33-011(d) consists of a former a storage area located on the asphalt next to a warehouse (building 33-20) near the south side of TA-33 Main Site. Beryllium and uranium were stored around building 33-20 from 1950 to 1972. In addition, recovered scrap from shots containing uranium, beryllium, and tungsten was stored south of building 33-20. Much of the material stored at the Site was salvaged for use elsewhere. A 1987 site survey found no materials remaining in storage at this location.

SWMU 33-011(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. RFI screening-level data are available for this Site.

SWMU 33-015 consists of the former location of a small incinerator (former structure 33-110) approximately 50 ft southeast of building 33-39 on a hillside that slopes to a tributary of Chaquehui Canyon. The incinerator measured approximately 4 × 4 × 6 ft high and was mounted on a concrete base. The incinerator was first used in 1955 to burn uncontaminated office trash. The date it ceased to be used is not known; however, it was no longer in use during the 1993 RFI and was no longer present at the Site by 1995.

SWMU 33-015 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; decision-level data are not available.

AOC 33-008(c) is a former surface disposal area located east of Main Site buildings 33-39 and 33-113 outside of the Main Site security fence. This former disposal site consists of two areas: one near a culvert discharge where glass bottles and other debris were discovered and the other an area of surface debris situated north of the culvert. The culvert receives storm water runoff from Main Site, is directly east of building 33-39, and is located in a drainage channel that discharges to a tributary of Chaquehui Canyon. Debris observed included machined metal turnings, cable, glass bottles, and general trash on the ground surface and in the channel downstream of the culvert. The outlines of a possible trenched area are visible in aerial photographs from 1958. A small asphalt pad is located at the west end

of the northern area. In 1999, a cleanup activity was performed and all visible debris was removed from the watercourse.

AOC 33-008(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; decision-level data are available for AOC 33-008(c) from the 1996 RFI.

The project map (Figure 241-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

241.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 241-1).

Enhanced controls were installed and certified on October 24, 2012, and September 9, 2015, and submitted to EPA on October 25, 2012, and September 10, 2015, respectively, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 241-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q002A03010010	Earthen Berm	-	X	-	X	EC
Q002A03010011	Earthen Berm	-	X	-	X	EC
Q002A03010012	Earthen Berm	-	X	-	X	EC
Q002A03010013	Earthen Berm	X	-	-	X	EC
Q002A03150014	Redi-Rock Berm	-	X	-	X	EC
Q002A06010002	Rock Check Dam	-	X	-	X	CB
Q002A06010003	Rock Check Dam	-	X	-	X	CB
Q002A06010007	Rock Check Dam	X	-	-	X	CB
Q002A06010009	Rock Check Dam	-	X	-	X	CB
Q002A08030004	Concrete/Asphalt Cap	-	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

241.3 Storm Water Monitoring

SWMUs 33-004(h), 33-011(d), and 33-015 and AOC 33-008(c) are monitored within CHQ-SMA-1.02. Following the installation of baseline control measures, a baseline storm water sample was collected on August 12, 2011 (Figures 241-2 and 241-3). Analytical results from this sample yielded the following TAL exceedances:

- Copper concentration of 8 µg/L (MTAL is 4.3 µg/L) and
- PCB concentration of 9.22 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at CHQ SMA 1.02, corrective action storm water samples were collected on July 25, 2013, and September 15, 2013 (Figures 241-2 and 241-3). Analytical results from this corrective action monitoring sample yielded the following TAL exceedances:

- Copper concentration of 4.46 µg/L (MTAL is 4.3 µg/L) and
- PCB concentration of 7 ng/L and 16 ng/L (ATAL is 0.6 ng/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-004(h):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in the three shallow (i.e., less than 3 ft bgs) 1993 RFI samples.
- PCBs are not known to be associated with industrial materials historically managed at the Site. The 1993 RFI samples were not analyzed for PCBs because they are not known to be associated with industrial materials historically managed at this Site.

SWMU 33-011(d):

- Copper is not known to be associated with industrial materials historically managed at the Site. RFI samples were not analyzed for copper.
- PCBs are not known to be associated with industrial materials historically managed at the Site. The 1993 RFI samples were not analyzed for PCBs.

SWMU 33-015:

- Copper is not known to be associated with industrial materials historically managed at the Site. Shallow RFI samples were not analyzed for copper.
- PCBs are not known to be associated with industrial materials historically managed at the Site. The 1993 RFI samples were not analyzed for PCBs.

AOC 33-008(c):

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above BVs in 15 of 17 shallow RFI samples at a maximum concentration 2250 times the sediment BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. RFI samples were not analyzed for PCBs because they 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 BV, 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 241-2 and 241-3. 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 241-2 and 241-3.

Monitoring location CHQ-SMA-1.02 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings as well as landscape consisting of sediments derived from Bandelier Tuff.

CHQ-SMA-1.02, Earthen Berm, Q002A03010010, 11, 12 (photo ID 26535-3)

- Copper—Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. The copper UTL from developed 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 the storm water confirmation samples in 2011 and 2013 are between these two values.
- PCBs—PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. The PCB UTL for storm water run-on from a developed landscape is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. Two of the three ATAL exceedances observed in the storm water confirmation samples are less than both storm water UTLs, and one detection from 2013 is between the UTLs.

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

241.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-1.02 during the 2017 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 241-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61386	4-3-2017
Pre-SIP Field Walkdown	COMP-54080	5-1-2017
Storm Rain Event	BMP-62966	7-6-2017
Storm Rain Event	BMP-65164	9-6-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-1.02 in 2017.

241.5 Compliance Status

The Sites associated with CHQ-SMA-1.02 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP is currently under administrative compliance at the end of 2017. Table 241-3 presents the 2017 compliance status.

Table 241-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-004(h)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 4, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."
SWMU 33-008(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 4, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."
SWMU 33-011(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 4, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."
SWMU 33-015	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 4, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

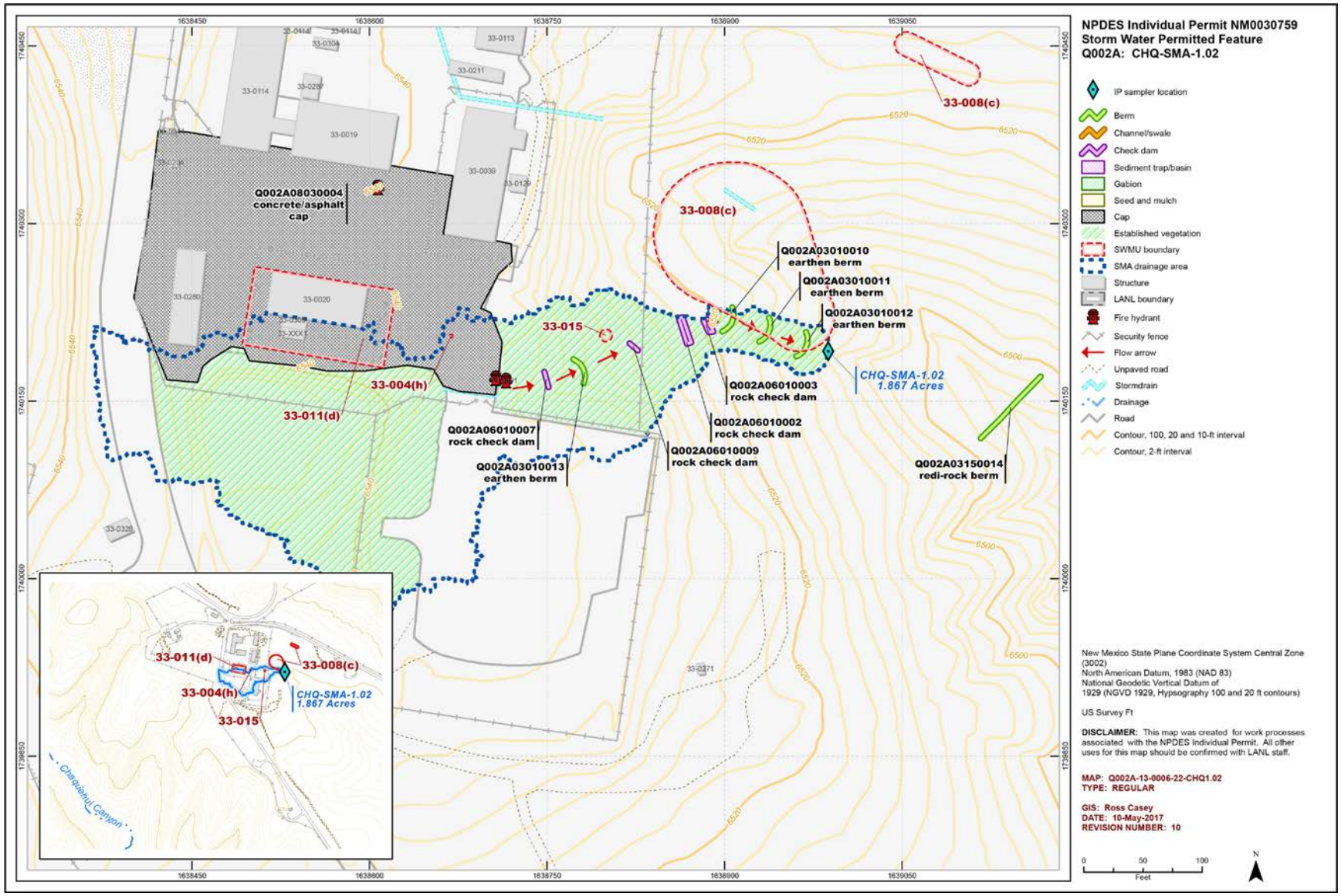
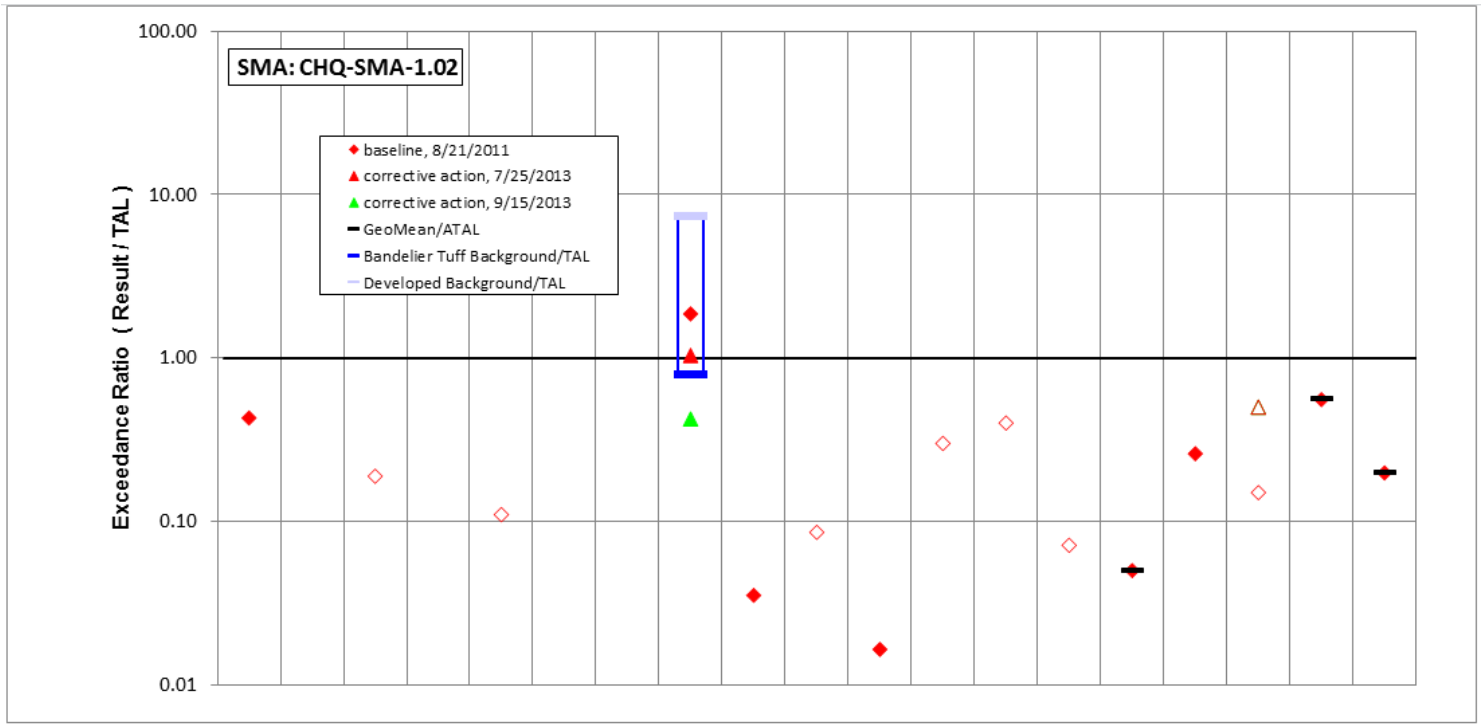


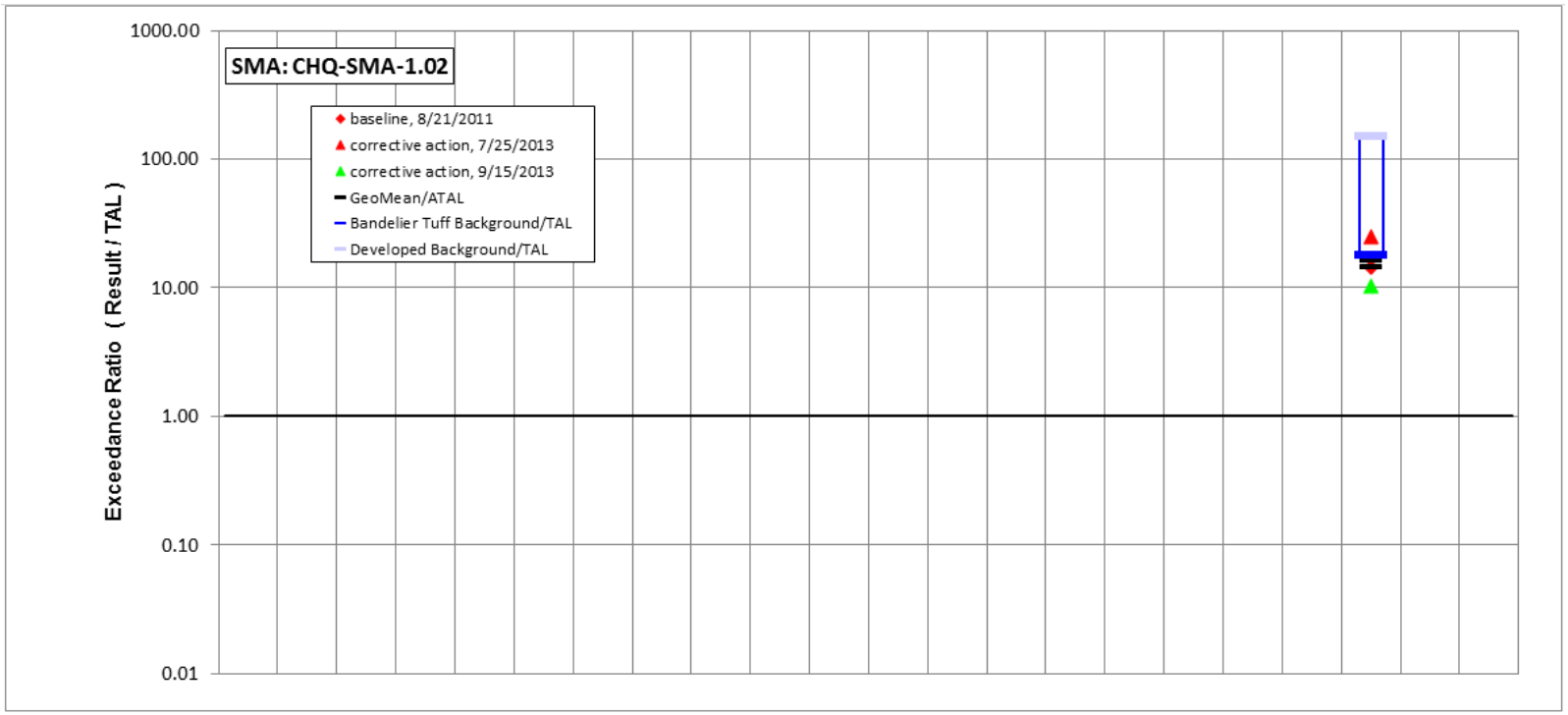
Figure 241-1 CHQ-SMA-1.02 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/15/2013 result	-	-	-	-	-	-	-	1.82	-	-	-	-	-	-	-	-	*0.005*	-	-
result / TAL	-	-	-	-	-	-	-	0.42	-	-	-	-	-	-	-	-	*0.5*	-	-
7/25/2013 result	-	-	-	-	-	-	-	**4.46**	-	-	-	-	-	-	-	-	*0.005*	-	-
result / TAL	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	*0.5*	-	-
8/21/2011 result	322	*1*	*1.7*	30	*0.11*	*2*	2.4	**8**	0.6	*0.066*	2.8	*1.5*	*0.2*	*0.45*	5	10.9	*0.002*	8.34	5.94
result / TAL	0.43	*0.002*	*0.19*	0.006	*0.11*	*0.01*	0.0024	**1.9**	0.035	*0.086*	0.016	*0.3*	*0.4*	*0.071*	0.05	0.26	*0.15*	0.56	0.2

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

Figure 241-2 Inorganic analytical results summary plot for CHQ-SMA-1.02



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**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
9/15/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.007**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**10**	-	-
7/25/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.016**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**25**	-	-
8/21/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.009**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**14**	-	-

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

Figure 241-3 Organic analytical results summary plot for CHQ-SMA-1.02

242.0 CHQ-SMA-1.03: SWMUs 33-012(a) and 33-017 and AOCs C-33-001, C-33-003, and 33-008(c)

242.1 Site Descriptions

Five historical industrial activity areas are associated with Q002B, CHQ-SMA-1.03: 33-012(a), 33-017, C-33-001, C-33-003, and 33-008(c).

SWMU 33-012(a) is the location of a former drum storage area for a machine shop (building 33-39). This storage area was located on an asphalt pad on the east side of building 33-39, between the building and a storage shed. The asphalt pad is approximately 20 ft wide × 20 ft long. The area was used to accumulate 55-gal. drums of solvents and solvent-contaminated oil that may have been contaminated with PCBs and unknown metals. The drums were placed on pallets or directly on the asphalt pad. The 1990 SWMU report notes the presence of multiple oil stains at this Site. The 1992 RFI work plan, however, states no evidence of oil staining was found at the Site. The asphalt pad is level, and the ground surface east of building 33-09 slopes to the east. The beginning date of operation of the storage area is not known; however, building 33-39 was constructed in 1951. The storage area was deactivated in 1992 or 1993. SWMU 33-012(a) lies within the boundary of former SWMU 33-017, which includes areas impacted by operational releases from TA-33 Main Site.

SWMU 33-012(a) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; only screening-level data from the 1993 RFI are available for SWMU 33-012(a).

SWMU 33-017 consists of areas potentially impacted by operational releases from the TA-33 Main Site. SWMU 33-017 is located at the northern and eastern edges of Main Site and is approximately 8.26 acres. The Site generally slopes downward to the east and is at the head of a small drainage tributary of Chaquehui Canyon. SWMU 33-017 is potentially impacted by runoff from the paved areas of the TA-33 Main Site complex by deposition from airborne releases from TA-33 Main Site facilities and by operational releases from an area east of building 33-39 used for vehicle maintenance. Operations conducted within Main Site included uranium processing and machining, cadmium and silver welding and soldering, lead melting and casting, cadmium and beryllium machining, and tritium processing and decontamination. These operations began in 1949 and most continued until 1972. Following these operations, some of the facilities were used for offices and electronics laboratories.

SWMU 33-017 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; decision-level data from the 1996 RFI are available for SWMU 33-017.

AOC C-33-001 consists of a former power transformer (structure 33-124) at TA-33 Main Site. The transformer was mounted on a concrete pad next to the east wall of building 33-114 and was bounded by asphalt to the north, east, and south. The pad was enclosed by a fence and accessible only through a locked gate. Because this transformer was placed into service in the 1950s, the oil in the transformer may have contained PCBs. The pad reportedly had oil stains, but active leaks from the transformer were not observed during inspections conducted in September 1985 and March 1992. In 1992, the transformer was replaced as part of activities conducted under TSCA. A BMP implemented in 1999 consisted of vacuuming PCB-contaminated soil and sediment present on the asphalt between buildings 33-113 and 33-114. In addition, the field team vacuumed a low-grade slope from building 33-114 east between buildings 33-0113 and 33-39. A total volume of 55 gal. of material was collected.

AOC C-33-001 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. Decision-level data from the 1996 RFI are available for AOC C-33-001.

AOC C-33-003 consists of two former fill areas located at Main Site in TA-33. Fill was placed in these areas to provide level sites for portable trailers. One of the trailers (structure 33-169) was installed next to the Main Site water tower. The filled area to accommodate trailer 33-169 is approximately 100 × 100 × 4 ft deep. The other trailer (structure 33-170) was installed north of building 33-114. The filled area to accommodate trailer 33-170 is approximately 70 × 90 × 7 ft deep. Both trailers were installed in January 1984 and removed in June 1988. After the trailers were removed, no further improvements were made to these Sites. Three projectiles, one of which contained uranium, were discovered at the fill area near the water tower during brush-clearing activities conducted during the spring of 1996. The source of these projectiles appears to have been the fill material, which was obtained from the cinder cone located in Area 6, just west of Main Site. Projectiles historically were fired into catcher boxes at the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].

During a 1999 VCA, fill material was excavated until native soil or tuff was encountered. A total of 408.5 yd^3 of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times BV. Confirmation samples verified cleanup levels were achieved. The excavated material was transported to a Segmented Gate System treatment plant, where radioactive materials were separated from the fill and disposed of. A total of 1.45 yd^3 of contaminated fill was separated and disposed of as LLW. Treated fill samples verified cleanup levels were achieved. The decontaminated fill was returned to the Site, and the Site was restored and revegetated.

CHQ-SMA-1.03, Rip Rap, Q002B04060010, 11, 12 (photo ID 37973-4)

AOC C-33-003 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. Decision-level data from the 1999 VCA confirmation samples are available for AOC C-33-003.

AOC 33-008(c) is a former surface disposal area located east of Main Site buildings 33-39 and 33-113 outside of the Main Site security fence. This former disposal site consists of two areas: one near a culvert discharge where glass bottles and other debris were discovered and the other an area of surface debris situated north of the culvert. The culvert receives storm water runoff from Main Site, is directly east of building 33-39, and is located in a drainage channel that discharges to a tributary of Chaquehui Canyon. Debris observed included machined metal turnings, cable, glass bottles, and general trash on the ground surface and in the channel downstream of the culvert. The outlines of a possible trenched area are visible in aerial photographs from 1958. A small asphalt pad is located at the west end of the northern area. In 1999, a BMP was performed and all visible debris was removed from the watercourse.

AOC 33-008(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. Decision-level data from the 1996 RFI are available for AOC 33-008(c).

The project map (Figure 242-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

242.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 242-1).

An enhanced control was installed and certified on May 13, 2014, and submitted to EPA on May 30, 2014, as part of corrective action. Photographs of the enhanced control is available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 242-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q002B02040012	Established Vegetation	-	X	X	-	B
Q002B03150013	Redi-Rock Berm	-	X	-	X	EC
Q002B04060006	Rip Rap	X	-	X	-	CB
Q002B04060007	Rip Rap	-	X	X	-	CB
Q002B04060010	Rip Rap	-	X	X	-	CB
Q002B06010004	Rock Check Dam	-	X	-	X	CB
Q002B06010008	Rock Check Dam	-	X	-	X	CB
Q002B06010011	Rock Check Dam	-	X	-	X	CB
Q002B08030003	Concrete/Asphalt Cap	-	X	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

242.3 Storm Water Monitoring

SWMUs 33-012(a) and 33-017 and AOCs C-33-001, C-33-003, and 33-008(c) are monitored within CHQ-SMA-1.03. Following the installation of baseline control measures, a baseline storm water sample was collected on July 4, 2012 (Figures 242-2 and 242-3). In Figure 242-2, selenium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Copper concentration of 14.4 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 63.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 16 ng/L (ATAL is 0.6 ng/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-012(a):

- Copper may have been associated with industrial materials historically managed at the Site. Copper was not detected above BVs in shallow RFI samples; however, the data are screening level only.
- PCBs may have been associated with industrial materials historically managed at the Site. The PCB mixture Aroclor-1254 was detected in 2 of 2 shallow RFI samples at a maximum concentration 205% of the residential SSL; however, the data are screening level only.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because they are not associated with industrial materials historically managed at the Site.

SWMU 33-017:

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not analyzed in any shallow RFI samples.
- 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 RFI samples. Aroclor-1254 was detected in 5 of 7 samples at a maximum concentration 124% of the residential SSL. Aroclor-1260 was detected in 7 of 7 samples at a maximum concentration 248% of the residential SSL.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because they are not associated with industrial materials historically managed at the Site.

AOC C-33-001:

- Copper is not known to be associated with industrial materials historically managed at the Site. RFI samples were not analyzed for inorganic chemicals because they are not associated with industrial materials historically managed at the Site.
- PCBs are known to have been associated with industrial materials historically managed at the Site. The PCB mixture Aroclor-1260 was detected in 4 of 4 shallow RFI soil samples at a maximum concentration 495% of the residential SSL.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at AOC C-33-001. RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because they are not associated with industrial materials historically managed at the Site.

AOC C-33-003:

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 14 of 17 shallow VCA samples at a maximum concentration 4.1 times the tuff BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. Confirmation samples collected during the 1999 VCA were not analyzed for PCBs because they are not known to have been associated with industrial materials historically managed at the Site.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. VCA samples were not analyzed for gross-alpha radioactivity but were analyzed for isotopic uranium, which contains alpha-emitting radionuclides.

AOC 33-008(c):

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above BVs in 15 of 17 shallow RFI samples at a maximum concentration 2250 times the sediment BV.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. RFI samples were not analyzed for PCBs because they are not known to have been associated with industrial materials historically managed at the Site.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides but were analyzed for uranium, which contains alpha-emitting radionuclides.

TAL exceedances were also evaluated against the appropriate storm water BV, 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 243-2. 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 243-2.

Monitoring location CHQ-SMA-1.03 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of sediments derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff storm water is 3.43 µg/L, and the copper storm water UTL for run-on from a developed landscape is 32.3 µg/L. The 2012 copper result is between these two values.
- Gross alpha—The gross-alpha background UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2012 gross-alpha result is between these two values.

- PCBs—The PCB baseline storm water UTL for storm water containing sediments derived Bandelier Tuff is 11.7 ng/L, and the PCB UTL for run-on from a developed landscape is 98 ng/L. The 2012 PCB result is between these values.

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

242.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-1.03 during the 2017 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 242-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61387	4-3-2017
Pre-SIP Field Walkdown	COMP-54081	5-1-2017
Storm Rain Event	BMP-62967	7-6-2017
Storm Rain Event	BMP-65165	9-6-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-1.03 in 2017.

242.5 Compliance Status

The Sites associated with CHQ-SMA-1.03 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 242-3 presents the 2017 compliance status.

Table 242-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
AOC 33-008(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
SWMU 33-012(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
SWMU 33-017	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
AOC C-33-001	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
AOC C-33-003	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."

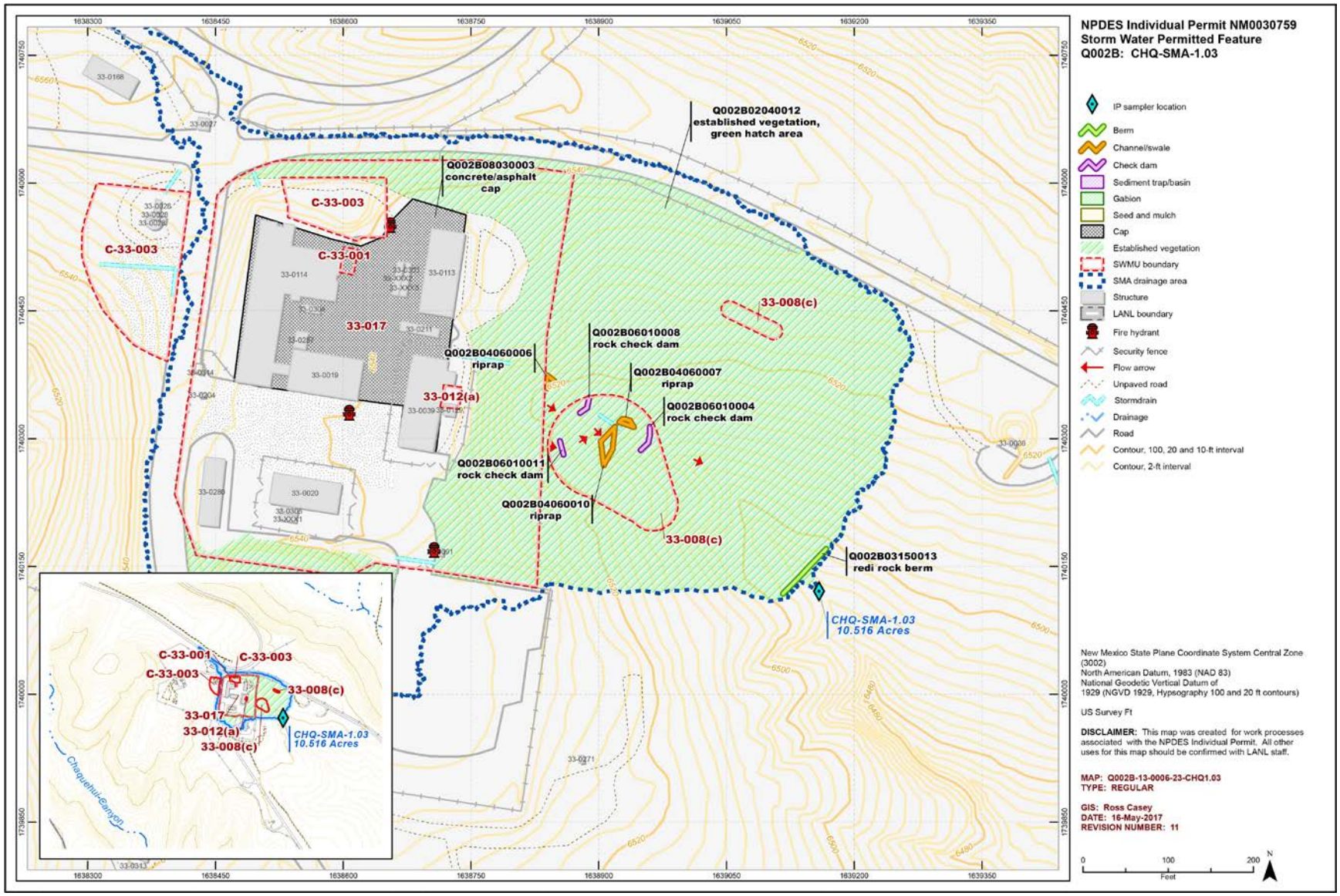
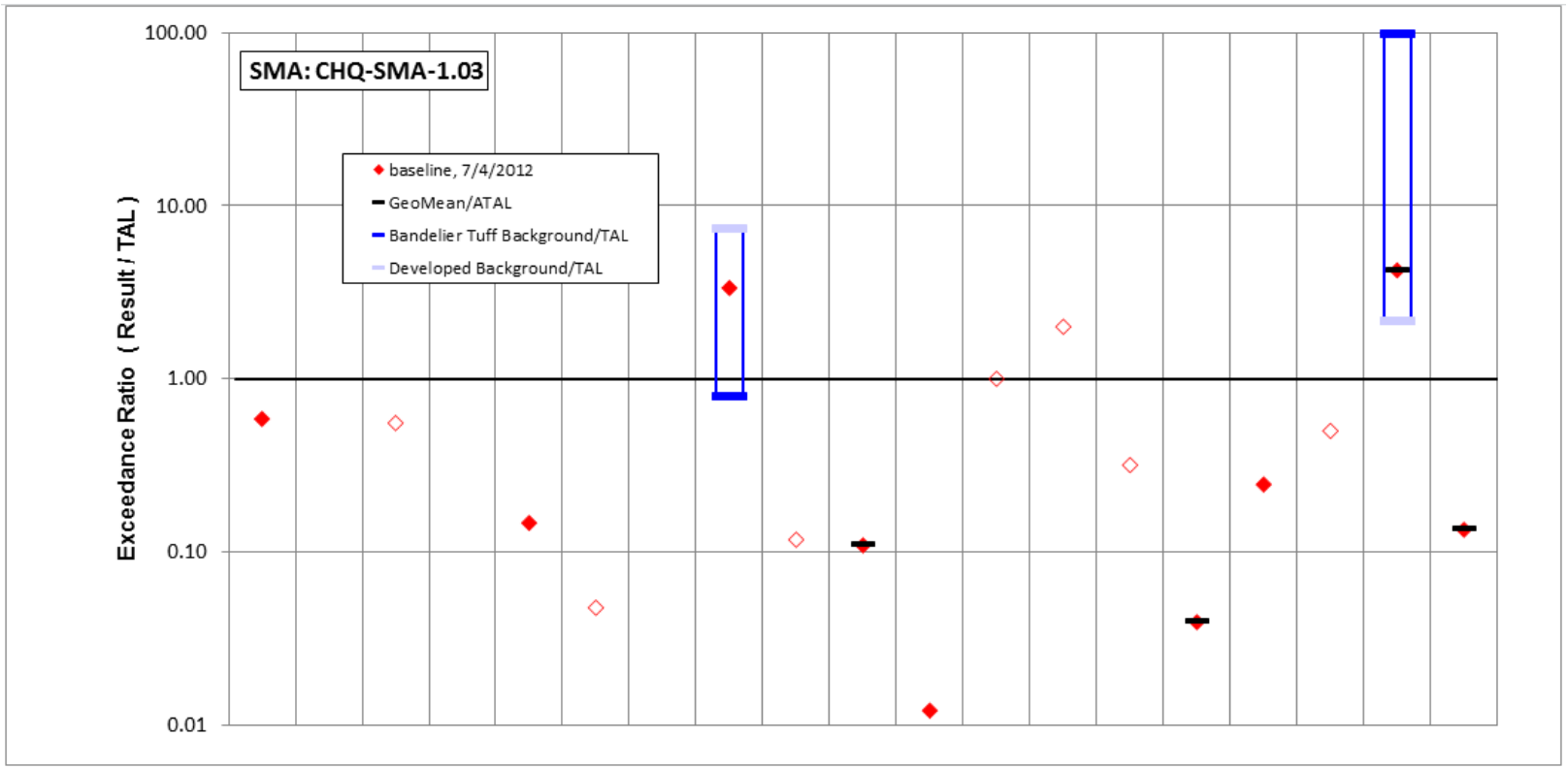


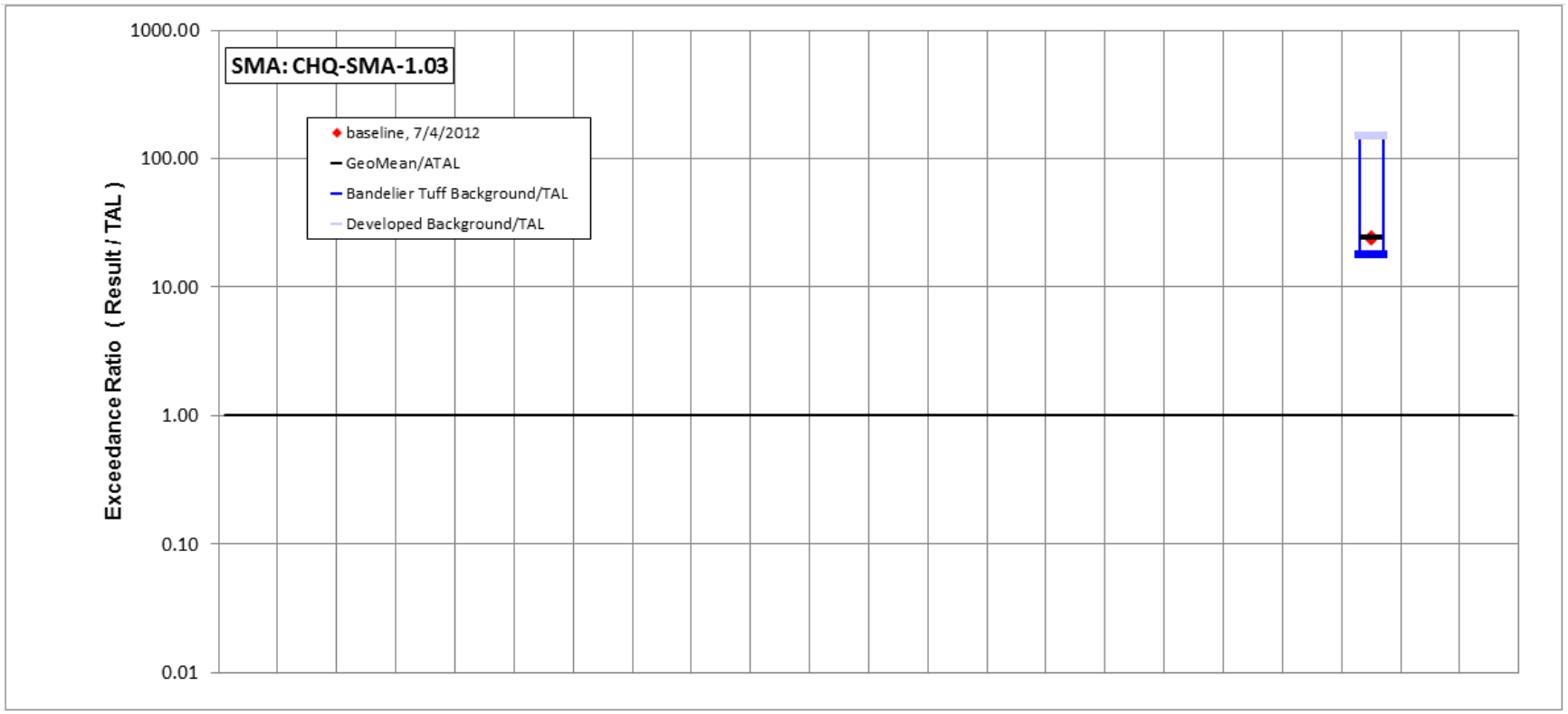
Figure 242-1 CHQ-SMA-1.03 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/4/2012 result	440	*3*	*5*	47.6	0.147	*10*	2.06	**14.4**	*2*	0.084	2.06	*5*	***1***	*2*	3.93	10.3	*0.005*	**63.5**	4.03
result / TAL	0.59	*0.005*	*0.56*	0.0095	0.15	*0.048*	0.0021	**3.3**	*0.12*	0.11	0.012	*1*	***2***	*0.32*	0.039	0.25	*0.5*	**4.2**	0.13

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

Figure 242-2 Inorganic analytical results summary plot for CHQ-SMA-1.03



	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
7/4/2012 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.016**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**24**	-	-

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

Figure 242-3 Organic analytical results summary plot for CHQ-SMA-1.03

243.0 CHQ-SMA-2: SWMUs 33-004(d) and 33-007(c) and AOC C-33-003

243.1 Site Descriptions

Three historical industrial activity areas are associated with Q003, CHQ-SMA-2: Sites 33-004(d), 33-007(c), and C-33-003.

SWMU 33-004(d) consists of an active septic tank (structure 33-121) and associated drainline and drain field located in TA-33, Area 6. Septic tank 33-121 is located approximately 50 ft southeast of building 33-1. Building 33-1 was used from 1948 to 1955 to support nonexplosive initiator tests conducted at Area 6. After 1955, building 33-1 was used as office space and for storage until use of the building was discontinued in 1991. A 1993 study of drains and discharges at TA-33 identified the only discharges to the septic system were from a lavatory, toilet, and sink drain. Although the building was removed from the Site in 1994, the septic tank is still in place.

The septic tank is constructed of corrugated iron and has a capacity of 500 gal. Septic tank 33-121 received wastewater from a toilet and sink in a laboratory building (33-1). While building 33-1 was in use, effluent was discharged from the septic tank to a drain field located approximately 20 ft east of the tank. The drain field is constructed of a single row of vitrified-clay tiles installed in gravel approximately 5 ft belowgrade. In addition, the RFI work plan stated that there is a buried outfall from the drain field in a side wash of Chaquehui Canyon. Land surface at the tank location slopes east approximately 200 ft to a shallow drainage eroded into the bedrock that flows south.

SWMU 33-004(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-004(d).

SWMU 33-007(c) consists of abandoned firing sites associated with the initiator tests conducted at Area 6. The firing sites included firing pads and two catcher boxes. One pad was located immediately west of building 33-16. The catcher boxes were located approximately 20 ft south of building 33-16 and were approximately 6 × 6 ft, constructed of timber, and filled with soil, wood chips, and vermiculite. Guns (2- to 5-in. bore) were placed on the concrete pads and used to fire projectiles containing test assemblies into targets placed in front of the catcher boxes. Materials used in the projectiles included beryllium, polonium-210, uranium, copper, lead, tungsten, and stainless steel. The projectiles frequently cracked open, contaminating the pads and surrounding area with polonium-210. Contaminated areas on the guns and pads were painted with lead-based paint to fix surface contamination. Several other firing pads were on a level area excavated into a basaltic cinder cone southwest of building 33-16. This area was used to test nuclear gun mock-ups. A 4-in. to 5-in. bore gun was used to fire projectiles into the back of the excavation. The back of the excavation currently extends about 75 ft farther back than when the Site was used. A 1951 memorandum describes a test at Area 6 that resulted in leakage of radioactive material from a projectile. The Site was cleaned up by using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels. The memorandum describes removing loose material and leaving impregnated spots as high as 1 million cpm. Contaminated surface dirt was bulldozed from the shot area into the adjacent canyon.

During the 1995 IA conducted at SWMU 33-007(c), the Site was stabilized to prevent migration of metals and isotopic uranium contamination identified during the RFI. In 1996, approximately 200 yd^3 of soil was removed from the catcher boxes and processed as part of a pilot test to verify the effectiveness of processes for remediating uranium-contaminated soil. Sampling results for the processed soil showed

mean activities for uranium-234, uranium-235, and uranium-238 of 15.8 pCi/g, 0.515 pCi/g, and 15.7 pCi/g, respectively; the processed soil was returned to the catcher boxes. Experimental projectiles totaling 1720 lb were also discovered in the soil from the catcher boxes and were subsequently characterized and disposed of as LLW.

SWMU 33-007(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33 007(c).

CHQ-SMA-2 Rock Check Dam
Q00306010041 (photo id. 50559-17)

AOC C-33-003 consists of two former fill areas located at Main Site in TA-33. Fill was placed in these areas to provide level sites for portable trailers. One of the trailers (structure 33-169) was installed next to the Main Site water tower. The filled area to accommodate trailer 33-169 is approximately 100 × 100 × 4 ft deep. The other trailer (structure 33-170) was installed north of building 33-114. The filled area to accommodate trailer 33-170 is approximately 70 × 90 × 7 ft deep. Both trailers were installed in January 1984 and removed in June 1988. After the trailers were removed, no further improvements were made to these Sites. Three projectiles, one of which contained uranium, were discovered at the fill area near the water tower during brush-clearing activities conducted during the spring of 1996. The source of these projectiles appears to have been the fill material, which was obtained from the cinder cone located in Area 6, just west of Main Site. Historically, projectiles were fired into catcher boxes at the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].

During a 1999 VCA, fill material was excavated until native soil or tuff was encountered. A total of 408.5 yd^3 of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times soil background. Confirmation samples verified cleanup levels were achieved. The excavated material was transported to a Segmented Gate System treatment plant, where radioactive materials were separated from the fill and disposed of. A total of 1.45 yd^3 of contaminated fill was separated and disposed of as LLW. Treated fill samples verified cleanup levels were achieved. The decontaminated fill was returned to the Site and the Site was restored and revegetated.

AOC C-33-003 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. Decision-level data are available for AOC C-33-003 from the 1999 VCA confirmation samples.

The project map (Figure 243-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

243.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 243-1).

Enhanced controls were installed and certified on October 28, 2015, and submitted to EPA on October 30, 2015, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 243-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00302040023	Established Vegetation	-	X	X	-	B
Q00303010030	Earthen Berm	X	-	-	X	EC
Q00303020028	Base Course Berm	-	X	-	X	EC
Q00303020029	Base Course Berm	-	X	-	X	EC
Q00303020053	Base Course Berm	X	-	-	X	EC
Q00303020054	Base Course Berm	X	-	-	X	EC
Q00303040015	Asphalt Berm	X	-	-	X	CB
Q00303140031	Coir Log	-	X	-	X	EC
Q00303140032	Coir Log	-	X	-	X	EC
Q00303140033	Coir Log	-	X	-	X	EC
Q00303140034	Coir Log	-	X	-	X	EC
Q00306010035	Rock Check Dam	X	-	-	X	EC
Q00306010036	Rock Check Dam	-	X	-	X	EC
Q00306010037	Rock Check Dam	-	X	-	X	EC
Q00306010038	Rock Check Dam	-	X	-	X	EC
Q00306010039	Rock Check Dam	-	X	-	X	EC
Q00306010040	Rock Check Dam	-	X	-	X	EC
Q00306010041	Rock Check Dam	-	X	-	X	EC
Q00306010042	Rock Check Dam	-	X	-	X	EC
Q00306010043	Rock Check Dam	-	X	-	X	EC
Q00306010044	Rock Check Dam	-	X	-	X	EC
Q00306010045	Rock Check Dam	-	X	-	X	EC
Q00306010046	Rock Check Dam	-	X	-	X	EC
Q00306010047	Rock Check Dam	-	X	-	X	EC
Q00306010048	Rock Check Dam	-	X	-	X	EC
Q00306010049	Rock Check Dam	-	X	-	X	B
Q00306010050	Rock Check Dam	-	X	-	X	EC
Q00306010051	Rock Check Dam	-	X	-	X	EC
Q00306010052	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

243.3 Storm Water Monitoring

SWMUs 33-004(d) and 33-007(c) and AOC C-33-003 are monitored within CHQ-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 4, 2012 (Figure 243-2). In Figure 243-2, cadmium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Aluminum concentration of 967 µg/L (MTAL is 750 µg/L),
- Copper concentration of 6.75 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 91.2 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-004(d):

- No soil sampling has been performed under the Consent Order. RFI samples were analyzed for TCLP metals rather than total metals, so aluminum and copper were not included in the analysis.
- RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because they were not identified as potential contaminants at this Site.
- Aluminum, copper, and alpha-emitting radionuclides are not associated with industrial materials historically managed at the Site, although laboratory bench-scale quantities of aluminum were used in growing crystals.

SWMU 33-007(c):

Potential contaminants associated with industrial materials historically managed at this Site are metals, including copper, lead, and zinc, and radionuclides, including uranium. Consent Order soil sampling has not yet been conducted at SWMU 33-007(c).

- Aluminum—Soil samples previously collected at the Site were not analyzed for aluminum because this constituent is not associated with industrial materials historically managed at this Site.
- Copper—Soil samples previously collected at the Site were not analyzed for copper. Although copper is associated with industrial materials historically managed at this Site, the quantities managed are believed to be low.
- Gross alpha—Uranium was detected above the BV in previous RFI soil samples with a maximum uranium concentration 40 times the BV.

In summary, based on site history, it was determined that the Site is an unlikely source of aluminum and copper in storm water results above TALs. Uranium, which has alpha-emitting isotopes, is associated with industrial materials historically managed at the Site and was detected substantially above BV in soil samples. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Based on site history, previous sampling results, and calculation of adjusted gross alpha, the Site is an unlikely source of adjusted gross alpha above the ATAL in storm water.

AOC C-33-003:

- Aluminum was not detected above BV in previous RFI soil samples collected at the Site. Aluminum is not associated with industrial materials historically managed at this Site.
- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 14 of 17 shallow VCA samples at a maximum concentration 4.1 times the tuff BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. VCA samples were not analyzed for gross-alpha radioactivity but were analyzed for isotopic uranium, which contains alpha-emitting radionuclides.

TAL exceedances were also evaluated against the appropriate storm water BV, 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 243-2. 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 243-2.

Most of the CHQ-SMA-2 drainage area is located on Bandelier Tuff, and minimal run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from samples containing sediment derived from Bandelier Tuff 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. Aluminum is a major component of Bandelier Tuff, and copper is associated with trace 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 2012 is less than this value.
- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L; the result from 2012 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 2012 is less than this value.

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

243.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-2 during the 2017 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 243-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61388	4-4-2017
Pre-SIP Field Walkdown	COMP-54082	5-1-2017
Storm Rain Event	BMP-62963	7-6-2017
Storm Rain Event	BMP-65161	9-11-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-2 in 2017.

243.5 Compliance Status

The Sites associated with CHQ-SMA-2 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 243-3 presents the 2017 compliance status.

Table 243-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-004(d)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 33-007(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 28, 2015, "NPDES Permit No. NM0030759-Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."
AOC C-33-003	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

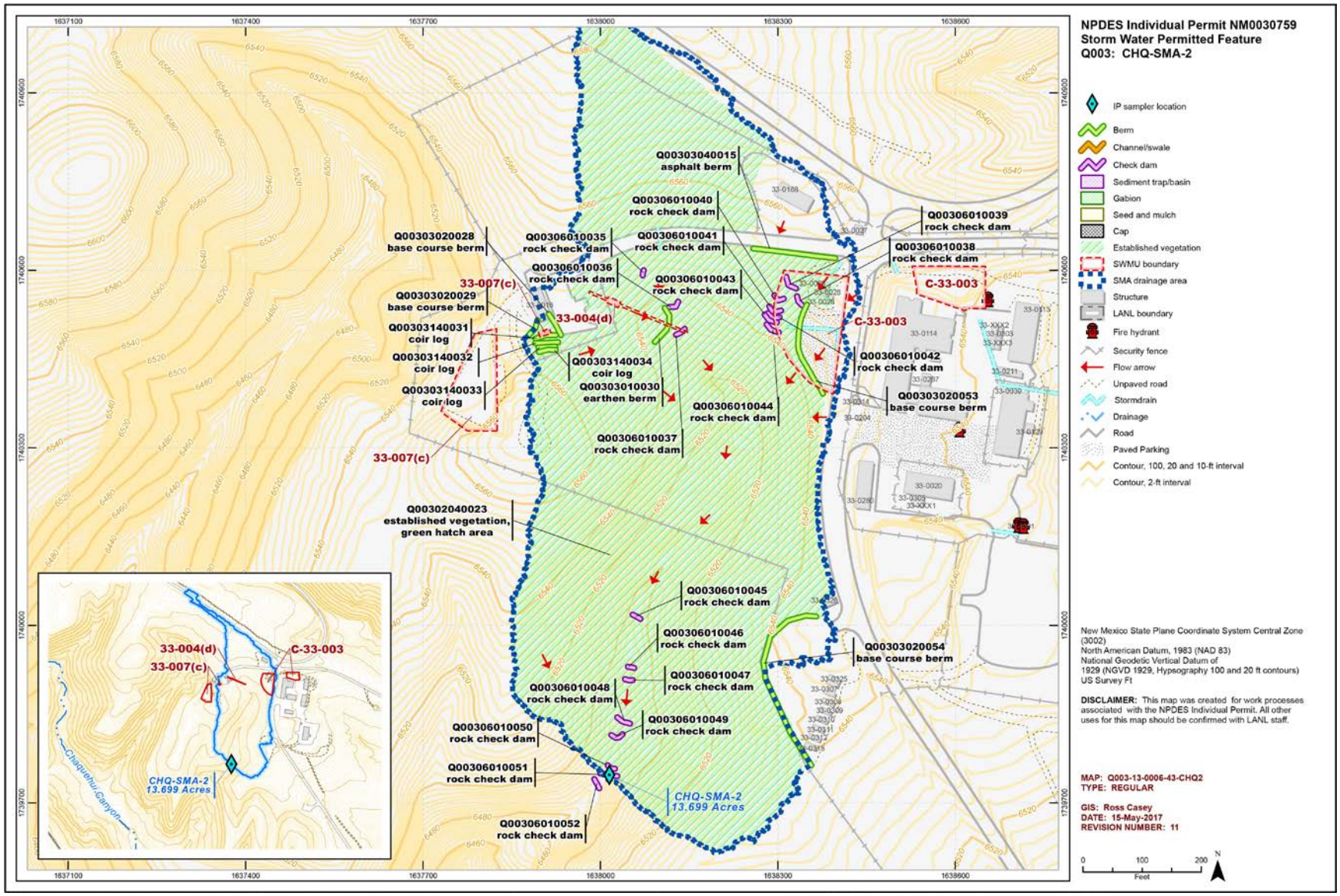
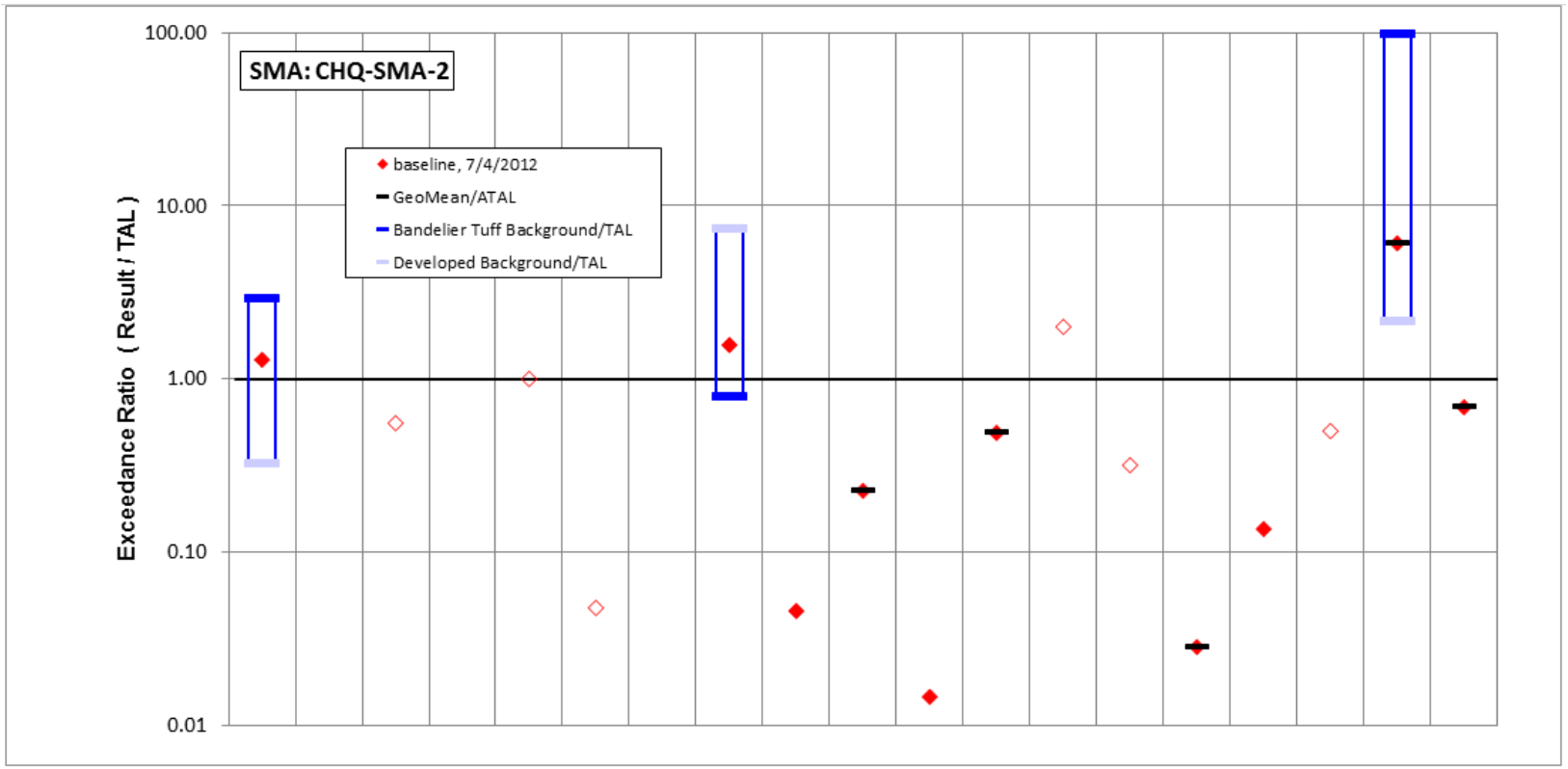


Figure 243-1 CHQ-SMA-2 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/4/2012 result	**967**	*3*	*5*	20.3	*1*	*10*	3.69	**6.75**	0.777	0.174	2.48	2.44	***1***	*2*	2.83	5.71	*0.005*	**91.1**	20.6
result / TAL	**1.3**	*0.005*	*0.56*	0.0041	*1*	*0.048*	0.0037	**1.6**	0.046	0.23	0.015	0.49	***2***	*0.32*	0.028	0.14	*0.5*	**6.1**	0.69

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

Figure 243-2 Inorganic analytical results summary plot for CHQ-SMA-2

244.0 CHQ-SMA-3.05: SWMU 33-010(f)

244.1 Site Descriptions

One historical industrial activity area is associated with Q004, CHQ-SMA-3.05: Site 33-010(f).

SWMU 33-010(f) consists of a surface disposal area at TA-33. The history of the Site and the origins of the wastes are not known. The 1990 SWMU report states the SWMU was observed during a 1987 reconnaissance conducted by the former ER Project and describes it as concrete, cans, and metal pieces that littered the area east of former building 33-86. The RFI report describes this SWMU as consisting of two small surface disposal areas located 300 ft southeast of former building 33-86 and approximately 50 ft apart. One of the areas is described as approximately 15 ft^2 and the other as approximately 200 ft^2. Materials at the Site included pieces of concrete; piles of tuff and cured asphalt; rusted metal cans, rebar, and strapping bands; and other debris. Although the source of these materials is not known, some materials are believed to be associated with roadwork activities. During the 2005 VCA implemented at SWMUs 33-002(a–c), directly northwest of SWMU 33-010(f), no debris was visible at this SWMU or anywhere around the SWMU.

SWMU 33-010(f) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-010(f).

The project map (Figure 244-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

244.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 244-1).

Enhanced controls were installed and certified on August 10, 2015, and submitted to EPA on August 17, 2015, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 244-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00402040009	Established Vegetation	-	X	X	-	B
Q00403010015	Earthen Berm	-	X	-	X	EC
Q00403060002	Straw Wattle	X	-	-	X	CB
Q00403120014	Rock Berm	-	X	-	X	EC
Q00403140010	Coir Log	X	-	-	X	EC
Q00403140011	Coir Log	-	X	-	X	EC
Q00403140012	Coir Log	X	-	-	X	EC
Q00403140013	Coir Log	-	X	-	X	EC

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

244.3 Storm Water Monitoring

SWMU 33-010(f) is monitored within CHQ-SMA-3.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 10, 2013 (Figures 244-2 and 244-3). In Figure 244-2, cadmium, selenium, and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Gross-alpha activity of 60.3 pCi/L (ATAL is 15 pCi/L) and
- PCB concentration of 0.9 ng/L (ATAL is 0.6 ng/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-010(f):

Although no soil samples have been collected under the Consent Order, screening-level RFI data are available for this Site.

- Soil samples collected from during the 1993 RFI at the Site were not analyzed for PCBs because they are not known to have been associated with industrial materials historically managed at this Site.
- RFI samples were not analyzed for gross-alpha radioactivity but were analyzed by gamma spectroscopy. However, alpha-emitting radionuclides were not included because they 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 Figures 244-2 and 244-3. 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 244-2 and 244-3.

Monitoring location CHQ-SMA-3.05 receives storm water run-on from 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. The 2013 gross-alpha result is less than this value.
- PCBs—The PCB UTL from background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2013 is less than this value.

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

244.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-3.05 during the 2017 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 244-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61389	4-3-2017
Pre-SIP Field Walkdown	COMP-54083	4-24-2017
Storm Rain Event	BMP-62968	7-6-2017
Storm Rain Event	BMP-65166	9-6-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-3.05 in 2017.

244.5 Compliance Status

The Site associated with CHQ-SMA-3.05 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative compliance at the end of 2017. Table 244-3 presents the 2017 compliance status.

Table 244-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-010(f)	Enhanced Controls Corrective Action Monitoring	Enhanced Controls Corrective Action Monitoring	LANL, August 10, 2015, "NPDES Permit No. NM0030759-Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."

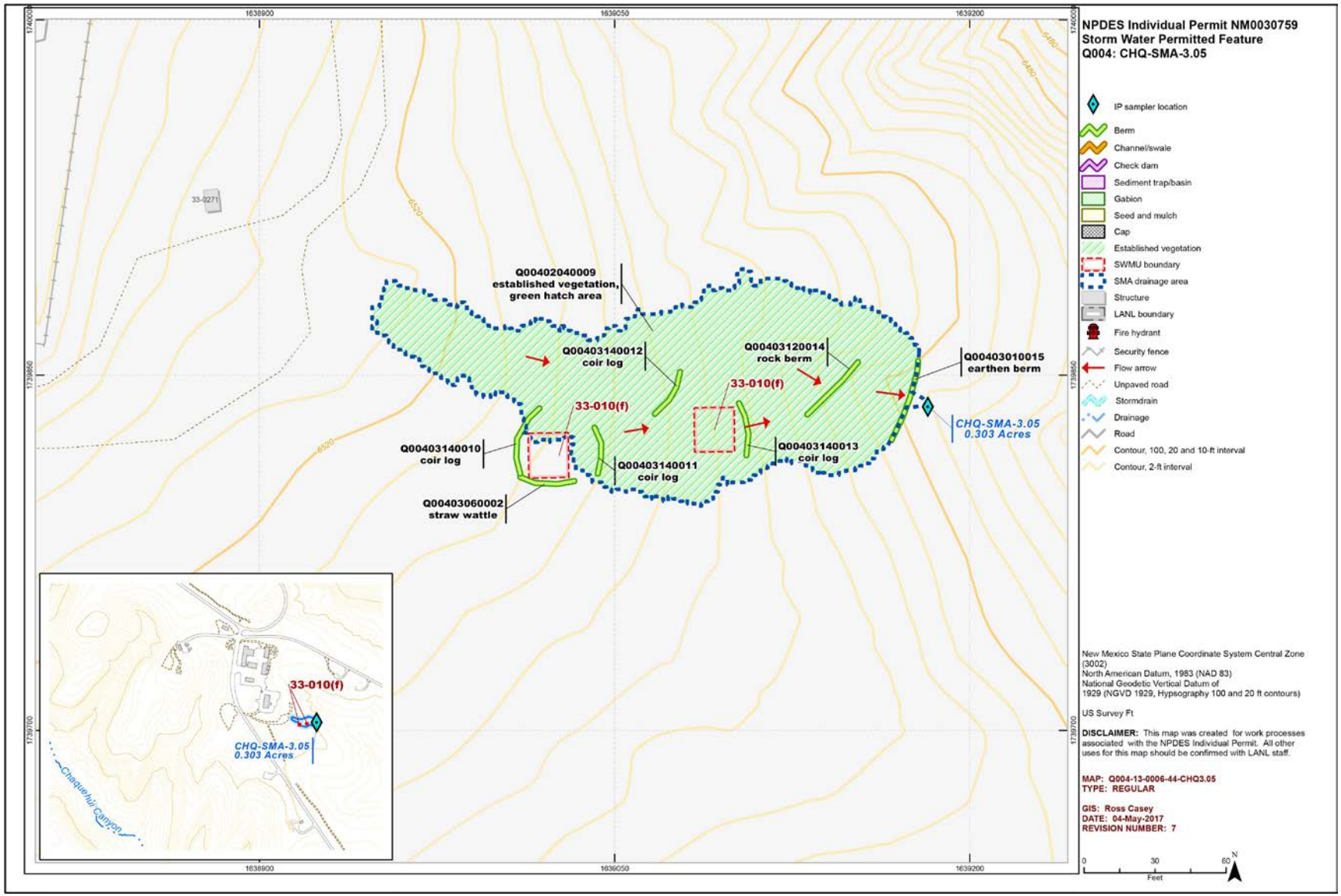
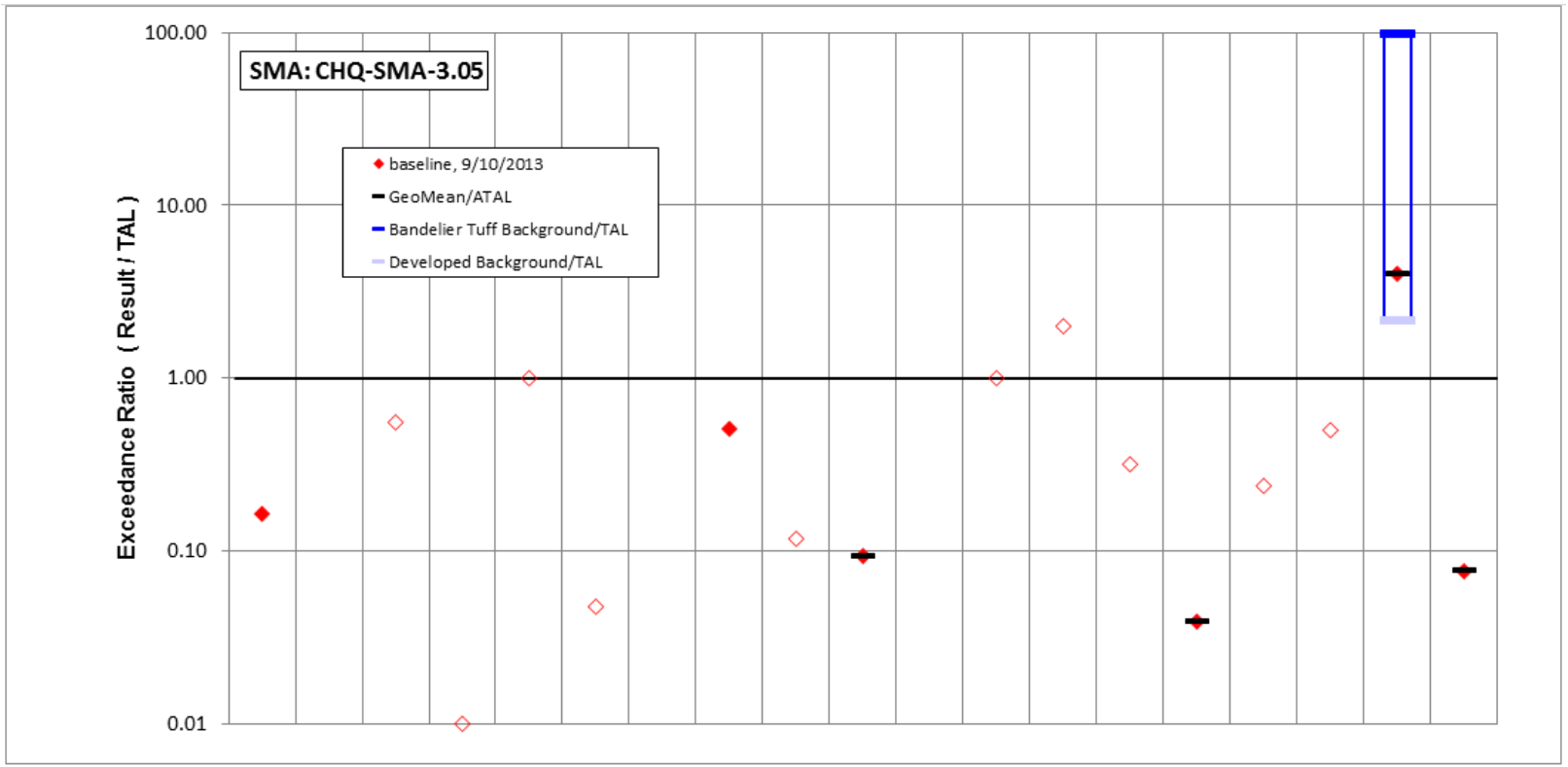


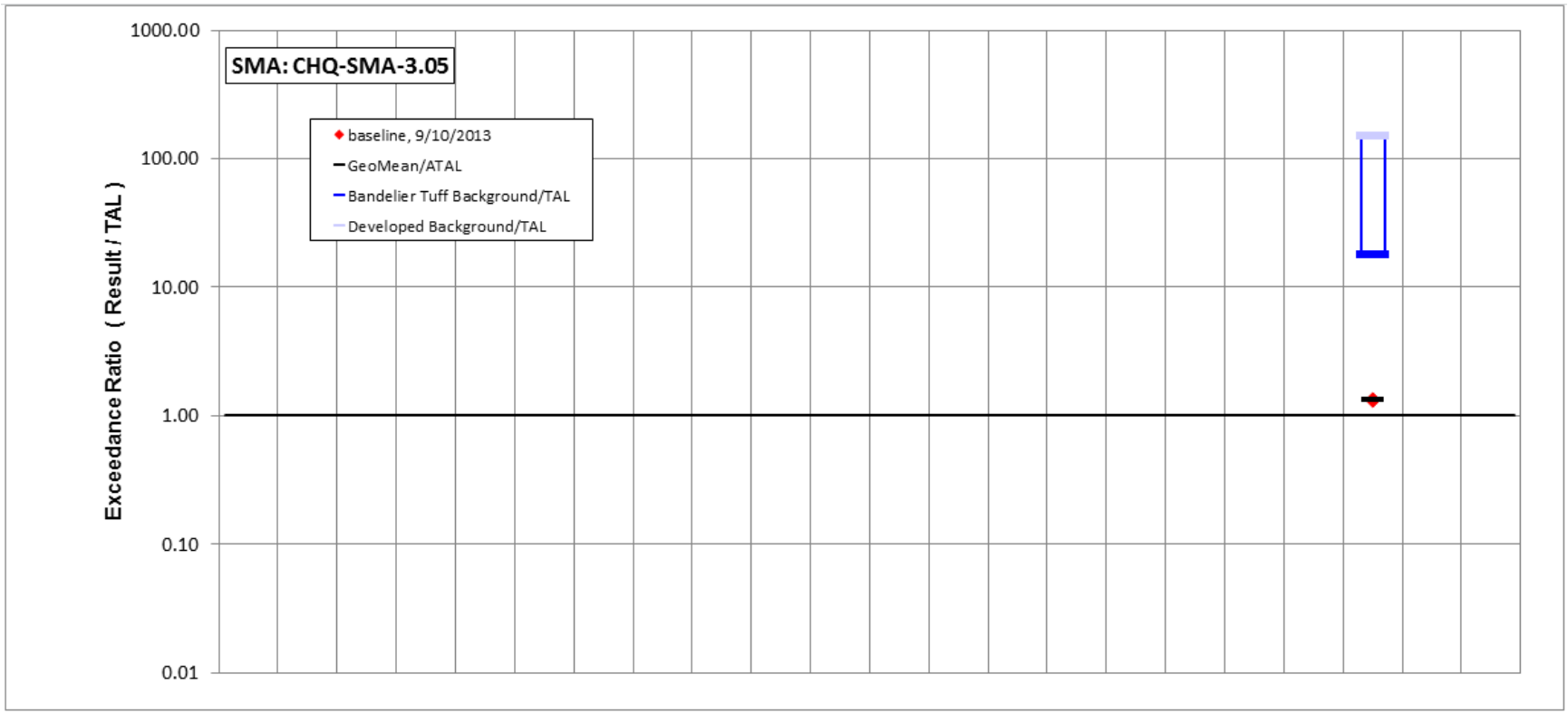
Figure 244-1 CHQ-SMA-3.05 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/10/2013 result	123	*3*	*5*	*50*	*1*	*10*	2.93	2.19	*2*	0.072	1.42	*5*	***1***	*2*	3.9	*10*	*0.005*	**60.3**	2.29
result / TAL	0.16	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0029	0.51	*0.12*	0.094	0.0084	*1*	***2***	*0.32*	0.039	*0.24*	*0.5*	**4**	0.076

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

Figure 244-2 Inorganic analytical results summary plot for CHQ-SMA-3.05



	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
9/10/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**9E-04**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.3**	-	-

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

Figure 244-3 Organic analytical results summary plot for CHQ-SMA-3.05

245.0 CHQ-SMA-4: SWMU 33-011(e)

245.1 Site Descriptions

One historical industrial activity area is associated with Q005, CHQ-SMA-4: Site 33-011(e).

SWMU 33-011(e) is a former drum-storage area located at the south end of TA-33 Main Site, approximately 30 ft northwest of building 33-22, a former HE storage magazine. The area is unpaved and gradually slopes to the southwest. Drums containing unknown materials were previously stored in this area. The date the materials were first stored at this Site is not known. At the time the OU 1122 RFI work plan was prepared in 1992, all drums had been removed from the Site and the area had been cleared. The Site has not been used since that time.

SWMU 33-011(e) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011; no decision-level data are available for SWMU 33-011(e).

CHQ-SMA-4, Rock Check Dam, Q00506010003, 4, 5 (photo ID 10888-2)

The project map (Figure 245-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

245.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 245-1).

Table 245-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00502040019	Established Vegetation	-	X	X	-	B
Q00503010020	Earthen Berm	-	X	-	X	B
Q00503060006	Straw Wattle	X	-	-	X	CB
Q00503140021	Coir Log	X	-	-	X	B
Q00503140022	Coir Log	X	-	-	X	B
Q00506010003	Rock Check Dam	-	X	-	X	CB
Q00506010004	Rock Check Dam	-	X	-	X	CB
Q00506010005	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

245.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at CHQ-SMA-4. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

245.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-4 during the 2017 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 245-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61390	4-3-2017
Pre-SIP Field Walkdown	COMP-54084	5-1-2017
Storm Rain Event	BMP-62964	7-6-2017
Storm Rain Event	BMP-65162	9-6-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-4 in 2017.

245.5 Compliance Status

The Site associated with CHQ-SMA-4 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 245-3 presents the 2017 compliance status.

Table 245-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-011(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

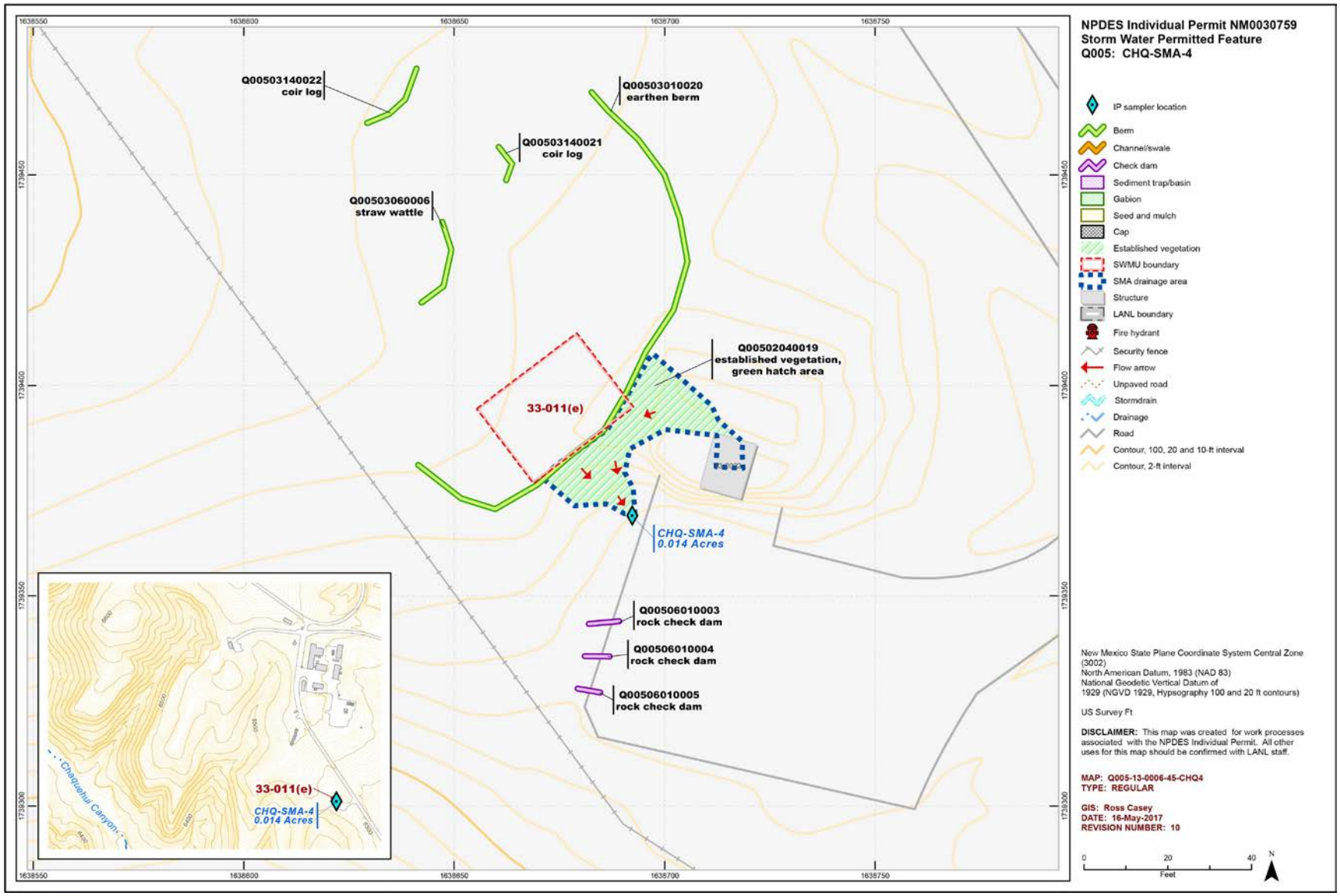


Figure 245-1 CHQ-SMA-4 location map

246.0 CHQ-SMA-4.1: SWMU 33-016

246.1 Site Descriptions

One historical industrial activity area is associated with Q006, CHQ-SMA-4.1: Site 33-016.

SWMU 33-016 consists of a formerly used sump and associated drainline and outfall at a process bunker (structure 33-23) located in the southern portion of Main Site at TA-33. The concrete sump is 3 × 2 × 2 ft deep and is located next to the northwest corner of the bunker's exterior wall, near the door. A drainline leads from the sump to an outfall approximately 250 ft southwest of the building to a small side canyon to Chaquehui Canyon. The sump was connected to a sink and floor drain in the bunker, which was constructed in 1950. From 1950 to 1972, the bunker was used as a trim building to prepare propellant charges for gun tests at South Site. Structure 33-23 was subsequently used until 1994 to store lithologic cores from the Hot Dry Rock Program. In addition to the sink and floor drain, the sump also may have received rainwater and snowmelt. The VCA implemented at SWMU 33-016 in 1995 involved removing the sump contents, filling the sump with approximately 3 yd^3 of sand and gravel and capping the sump with 1 ft of concrete. The sump contents were characterized and determined to be nonhazardous.

SWMU 33-016 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-016.

The project map (Figure 246-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

246.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 246-1).

Table 246-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00602040008	Established Vegetation	-	X	X	-	B
Q00603060009	Straw Wattle	X	-	-	X	B
Q00603060010	Straw Wattle	X	-	-	X	B
Q00606010002	Rock Check Dam	-	X	-	X	CB
Q00606010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

246.3 Storm Water Monitoring

SWMU 33-016 is monitored within CHQ-SMA-4.1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 246-2 and 246-3). In Figure 246-2, cadmium, selenium, and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedance:

- Gross-alpha activity of 34.5 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-016:

- None of the 5 shallow (i.e., less than 3 ft bgs) samples collected during the 1993 RFI at the Site were analyzed for gross-alpha radioactivity or any other radionuclides because they are not known to have been associated with industrial materials historically managed at this Site. Radionuclides were not detected in the sludge removed from the sump. The RFI data are screening level only; no decision-level data are available for 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 246-2 and 246-3. 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 246-2 and 246-3.

Monitoring location CHQ-SMA-4.1 receives storm water run-on from 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. The 2013 gross-alpha result is less than this value.

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

246.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-4.1 during the 2017 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 246-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61391	4-3-2017
Pre-SIP Field Walkdown	COMP-54470	4-17-2017
Storm Rain Event	BMP-62969	7-7-2017
Storm Rain Event	BMP-65167	9-7-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-4.1 in 2017.

246.5 Compliance Status

The Site associated with CHQ-SMA-4.1 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 246-3 presents the 2017 compliance status.

Table 246-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-016	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 19 Site Monitoring Area/Site Combinations Exceeding Target Action Levels for Gross-Alpha Radioactivity."

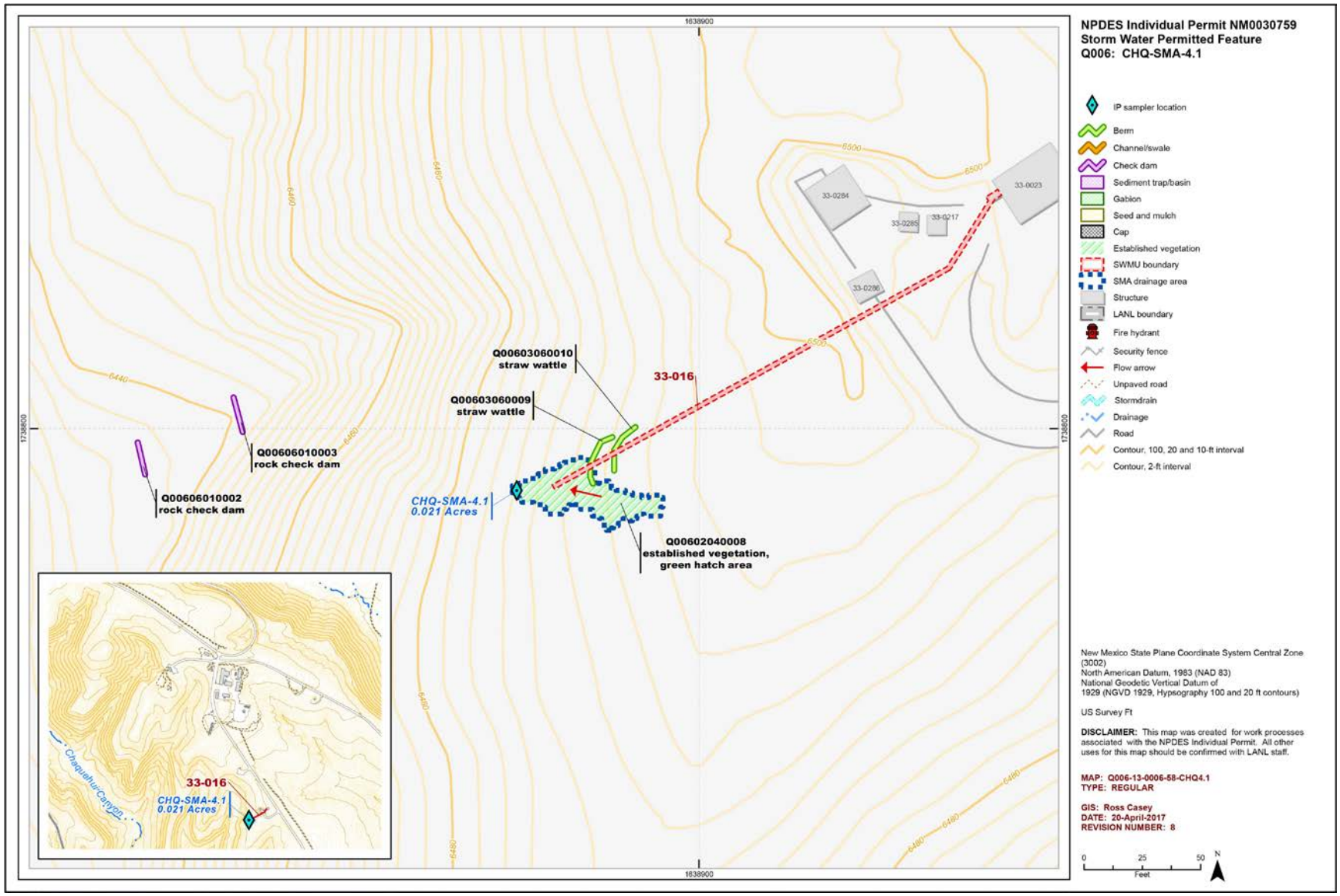
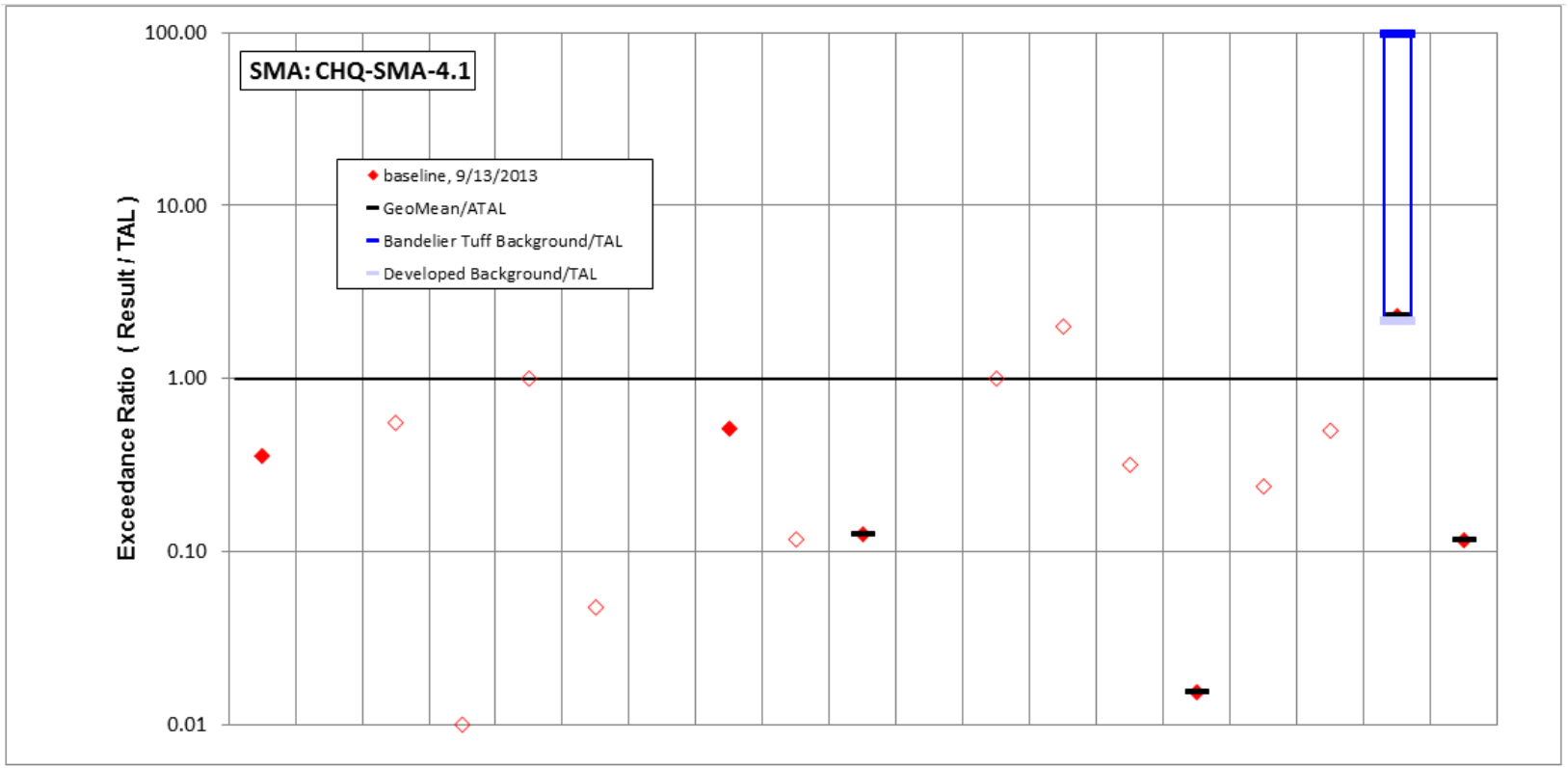


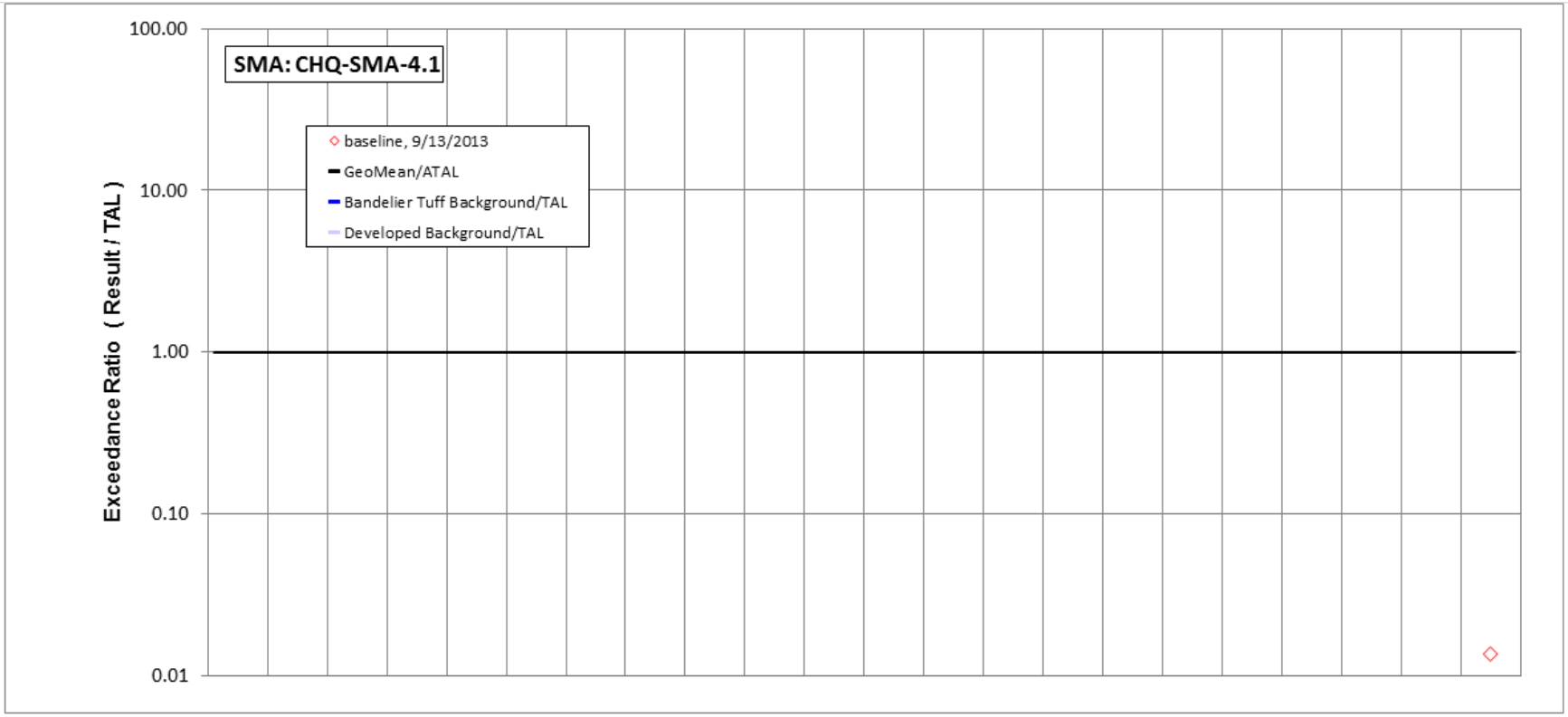
Figure 246-1 CHQ-SMA-4.1 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	268	*3*	*5*	*50*	*1*	*10*	2.06	2.21	*2*	0.097	0.702	*5*	***1***	*2*	1.54	*10*	*0.005*	**34.5**	3.49
result / TAL	0.36	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0021	0.51	*0.12*	0.13	0.0041	*1*	***2***	*0.32*	0.015	*0.24*	*0.5*	**2.3**	0.12

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

Figure 246-2 Inorganic analytical results summary plot for CHQ-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	-	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
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.272*	-	*1E-09*	-	*0.272*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	*2E-06*	-	*0.014*

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

Figure 246-3 Organic analytical results summary plot for CHQ-SMA-4.1

247.0 CHQ-SMA-4.5: AOC 33-011(b)

247.1 Site Descriptions

One historical industrial activity area is associated with Q007, CHQ-SMA-4.5: Site 33-011(b).

AOC 33-011(b) consists of a former storage area located just outside the northwest corner of the National Radio Astronomy Observatory site at TA-33. This storage area was approximately 300 ft wide × 600 ft long. Beginning in the 1950s, the Site served as a storage area for equipment and materials such as tungsten, uranium, and beryllium. Equipment used at the TA-33 firing sites was also stored at the Site. The storage area was cleaned in 1984, and most of the materials and debris were removed at that time, although some debris remained. Approximately 75% of the area was scraped and leveled to or near the tuff bedrock. During the 1996 VCA, all remaining surface debris was removed from the Site. A total of 2 yd^3 of nonhazardous/nonradioactive debris and 0.5 ft^3 of radioactive debris was removed. No confirmation samples were collected during the VCA because no soil was removed.

SWMU 33-011(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-011(b).

The project map (Figure 247-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

247.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 247-1).

Table 247-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00702040010	Established Vegetation	-	X	X	-	B
Q00703010009	Earthen Berm	-	X	-	X	B
Q00703060014	Straw Wattle	-	X	-	X	B
Q00703140017	Coir Log	-	X	-	X	B
Q00703140018	Coir Log	-	X	-	X	B
Q00703140019	Coir Log	-	X	-	X	B
Q00706010002	Rock Check Dam	-	X	-	X	CB
Q00706010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

247.3 Storm Water Monitoring

AOC 33-011(b) is monitored within CHQ-SMA-4.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 247-2). In Figure 247-2, cadmium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedance:

- Gross-alpha activity of 103 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

AOC 33-011(b):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Although no soil samples have been collected under the Consent Order, RFI screening-level soil data are available for this Site. None of the 10 shallow (i.e., less than 3 ft bgs) samples collected during the 1994 RFI were analyzed for gross-alpha radioactivity. These samples were, however, analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235. No alpha-emitting radionuclides were detected.

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 247-2. 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 247-2.

Monitoring location CHQ-SMA-4.5 receives storm water run-on from 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. The 2013 gross-alpha result is less than this value.

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

247.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-4.5 during the 2017 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 247-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61373	4-3-2017
Pre-SIP Field Walkdown	COMP-54318	4-24-2017
Storm Rain Event	BMP-62970	7-7-2017
Storm Rain Event	BMP-65168	9-7-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-4.5 in 2017.

247.5 Compliance Status

The Site associated with CHQ-SMA-4.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 247-3 presents the 2017 compliance status.

Table 247-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
AOC 33-011(b)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 19 Site Monitoring Area/Site Combinations Exceeding Target Action Levels for Gross-Alpha Radioactivity."

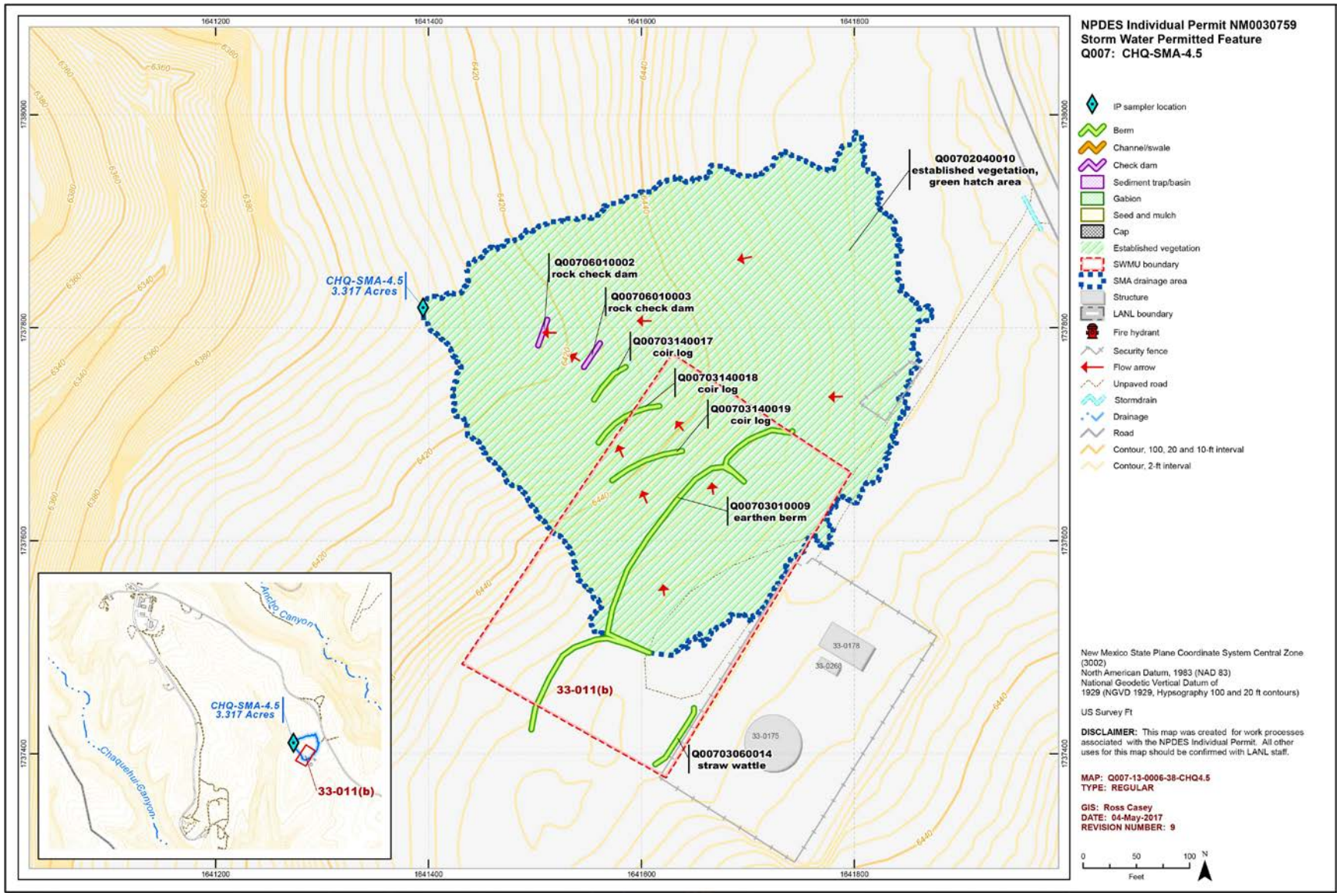
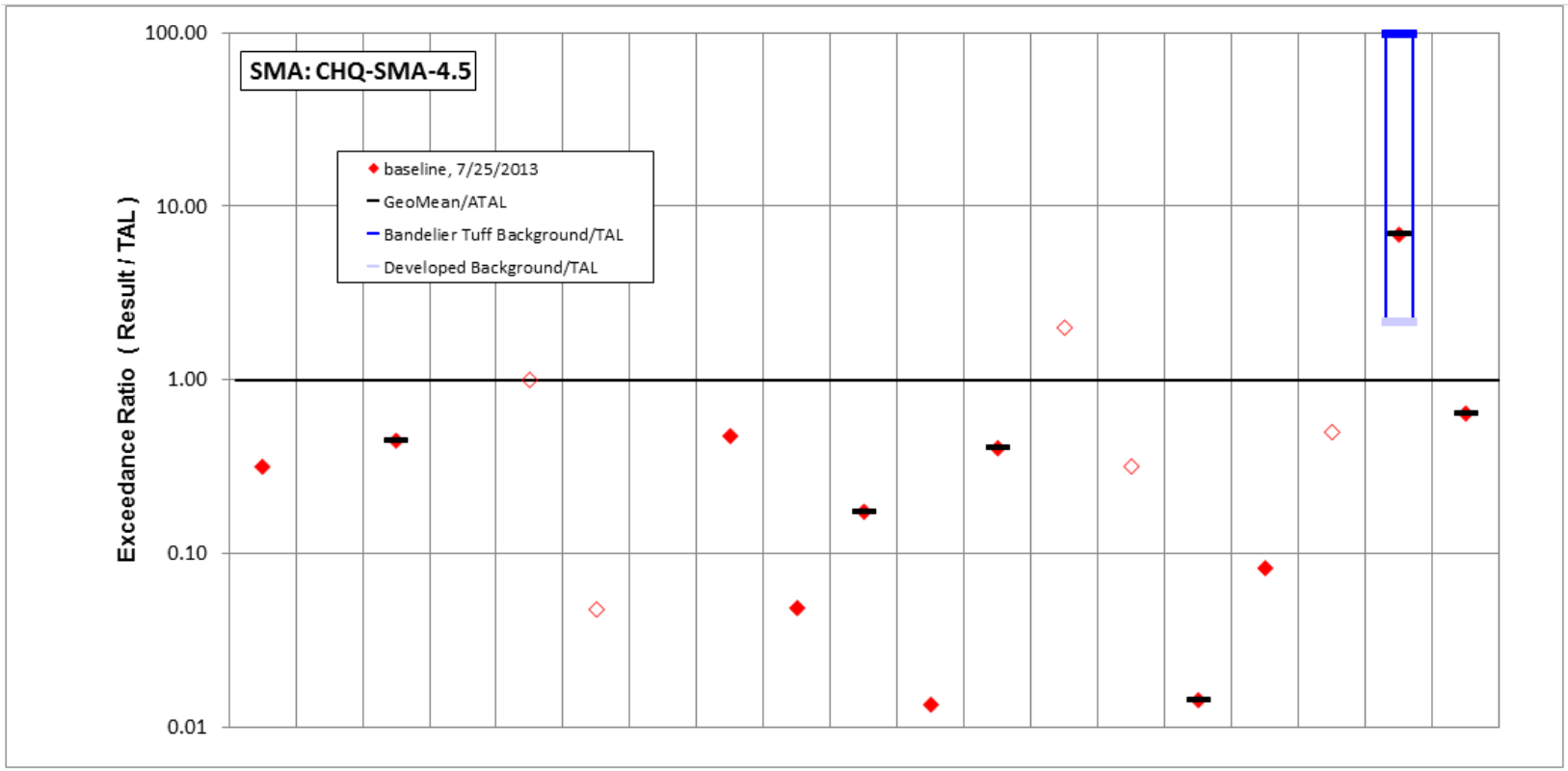


Figure 247-1 CHQ-SMA-4.5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/25/2013 result	237	*3*	4.02	21.9	*1*	*10*	5.11	2.04	0.825	0.134	2.29	2.02	***1***	*2*	1.43	3.46	*0.005*	**103**	19.2
result / TAL	0.32	*0.005*	0.45	0.0044	*1*	*0.048*	0.0051	0.47	0.049	0.17	0.013	0.4	***2***	*0.32*	0.014	0.082	*0.5*	**6.9**	0.64

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

Figure 247-2 Inorganic analytical results summary plot for CHQ-SMA-4.5

248.0 CHQ-SMA-5.05: SWMU 33-007(b)

248.1 Site Descriptions

One historical industrial activity area is associated with Q008, CHQ-SMA-5.05: Site 33-007(b).

SWMU 33-007(b) consists of two inactive gun firing sites at TA-33. The first area is located approximately 600 ft north of structure 33-26 [SWMU 33-006(a)] and consists of a 6- × 6-ft concrete pad and gun mount (structure 33-85), a u-shaped soil berm (structure 33-43), and a catcher box. The berm and catcher box were constructed in August 1950. The concrete pad and gun mount were constructed in June 1952. This area was used to test free-recoil weapons. Tests involved firing projectiles into the berm and the catcher box. Projectiles fired from the guns contained uranium, beryllium, titanium, and tritium housed inside steel casings.

The other gun firing site was located on the west side of South Site and included a gun building (structure 33-25) and a berm (structure 33-63). The gun building housed 2- to 4-in. bore guns that were used to fire projectiles into the structure 33-63 berm, which consisted of a mound of soil approximately 50 × 50 × 10 ft high. The projectiles used at this Site contained uranium, beryllium, and tungsten. South Site activities were discontinued in the late 1950s. The Site was used to support atmospheric physics measurements in the late 1980s and early 1990s. Structures associated with these activities include a tower (structure 33-203) constructed in 1987 and two trailers (structures 33-201 and 33-202).

A VCA was performed in 1999 during which time berm 33-63 was removed. Treated soil was returned to the location of the former berm, and the Site was graded and compacted. Recently, approximately 1 to 2 ft of engineered fill has been placed over the location of the former berm. Building 33-25 was renovated in 2005 and 2006.

SWMU 33-007(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level soil data are available for this Site. Screening-level data are available from the 1995 RFI and the 1999 VCA.

The project map (Figure 248-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

248.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 248-1).

Table 248-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00802040008	Established Vegetation	-	X	X	-	B
Q00803020006	Base Course Berm	-	X	-	X	CB
Q00804060002	Rip Rap	-	X	X	-	CB
Q00804060005	Rip Rap	X	-	X	-	CB
Q00804060007	Rip Rap	-	X	X	-	CB
Q00806010003	Rock Check Dam	-	X	-	X	CB

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

248.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at CHQ-SMA-5.05. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

248.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-5.05 during the 2017 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 248-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61393	4-3-2017
Pre-SIP Field Walkdown	COMP-54319	5-1-2017
Storm Rain Event	BMP-62973	7-7-2017
Storm Rain Event	BMP-65171	9-11-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-5.05 in 2017.

248.5 Compliance Status

The Sites associated with CHQ-SMA-5.05 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP (i.e., November 2015). The IP was under administrative continuance at the end of 2017. Table 248-3 presents the 2017 compliance status.

Table 248-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-007(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

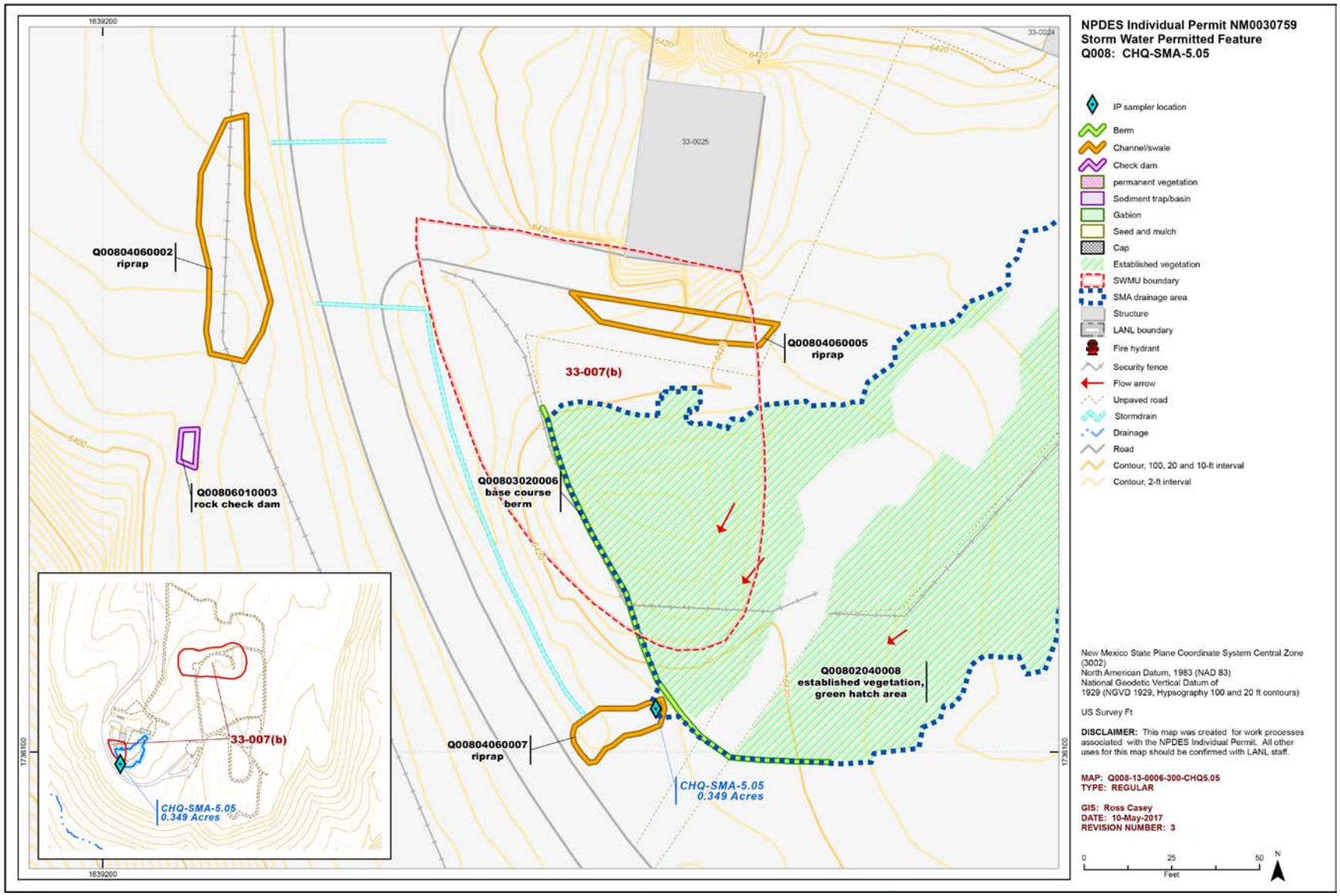


Figure 248-1 CHQ-SMA-5.05 location map

249.0 CHQ-SMA-6: SWMUs 33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), and 33-014

249.1 Site Descriptions

Seven historical industrial activity areas are associated with Q009, CHQ-SMA-6: Sites 33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), and 33-014.

SWMU 33-004(j) is an outfall at the end of a 4-in. steel pipe used to drain storm water from the entrance pad to building 33-26. Building 33-26 is the x-unit vault for the South Site firing pad at TA-35 and formerly housed electronics used to control experiments conducted on the firing pad. These experiments were conducted from 1950 to 1956, and the vault is now empty. Structure 33-26 was abandoned in 1956 along with the drainline and outfall.

The vault was cut into the tuff, and the entrance pad to the vault is located belowgrade. The drainline runs from the entrance pad, which is on the south side of building 33-26, approximately 200 ft south to the outfall. The outfall is located in a small arroyo that drains south to Chaquehui Canyon. A culvert at the upper end of this arroyo, upstream of the outfall, also may have received storm runoff from the vault entrance pad. No hazardous materials are known to have been used in building 33-26, but the entrance pad may have been contaminated with debris from the SWMU 33-006(a) firing pad, located above the vault.

SWMU 33-004(j) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-004(j).

SWMU 33-006(a) consists of an inactive shot pad at TA-33 South Site and the surrounding area that potentially was impacted by shrapnel and debris from implosion tests conducted at the pad. This area extends to a radius of approximately 1.1 mi around the shot pad. Operations at South Site began in June 1950 and continued until 1955. The shot pad has been inactive since that time. The shot pad is approximately 40 ft in diameter and encompasses building 33-26, which housed electronic equipment associated with the tests. The tests conducted at SWMU 33-006(a) involved initiator devices placed inside uranium shells and imploded with HE. The amount of HE used in each test ranged from 275 to 5000 lb. Before detonations, the assemblies were placed in copper cans for electrical shielding and covered with wooden boxes. The detonations spread shrapnel, including copper and uranium, throughout the South Site valley. Reportedly, two to three shots were made per week. Runoff from the firing pad flows to an arroyo, which drains south to Chaquehui Canyon.

An IA was performed at SWMU 33-006(a) in 1996 to remove contaminated debris within a half-mile radius from the shot pad and to prevent the off-site migration into Chaquehui Canyon. Firing-site shrapnel and debris were removed from mesa-top areas and drainages along the southern rim of Chaquehui Canyon within Bandelier National Monument, from drainage channels along the northern rim of Chaquehui Canyon, and from the canyon bottom. Since 1996, the entire area south of building 33-25 [SWMU 33-007(b)] has been significantly disturbed by the installation of new utilities during the complete renovation of building 33-25. Currently, the pad is covered with up to a foot or more of sand and firing site debris.

SWMU 33-006(a) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-006(a).

SWMU 33-007(b) consists of two inactive gun firing sites at TA-33. The first area is located approximately 600 ft north of structure 33-0026 [SWMU 33-006(a)] and consists of a 6- × 6-ft concrete pad and gun mount (structure 33-85), a u-shaped soil berm (structure 33-43), and a catcher box. The berm and catcher box were constructed in August 1950. The concrete pad and gun mount were constructed in June 1952. This area was used to test free-recoil weapons. Tests involved firing projectiles into the berm and the catcher box. Projectiles fired from the guns contained uranium, beryllium, titanium, and tritium housed inside steel casings.

The other gun firing site was located on the west side of South Site and included a gun building (structure 33-25) and a berm (structure 33-63). The gun building housed 2- to 4-in. bore guns that were used to fire projectiles into the structure 33-63 berm, which consisted of a mound of soil approximately 50 × 50 × 10 ft high. The projectiles used at this Site contained uranium, beryllium, and tungsten. South Site activities were discontinued in the late 1950s. The Site was used to support atmospheric physics measurements in the late 1980s and early 1990s. Structures associated with these activities include a tower (structure 33-203) constructed in 1987 and two trailers (structures 33-201 and 33-202).

A VCA was performed in 1999 during which time berm 33-0063 was removed. Treated soil was returned back to the location of the former berm, and the Site was graded and compacted. Recently, approximately 1 to 2 ft of engineered fill has been placed over the location of the former berm. Building 33-25 was renovated in 2005 and 2006.

CHQ-SMA-6, Redi Rock Berm, Q00903150043, (Photo ID 46213-26)

SWMU 33-007(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level soil data are available for this Site. Screening-level data are available from the 1995 RFI and the 1999 VCA.

SWMU 33-010(c) consists of a former surface disposal area located at South Site on the northern rim of Chaquehui Canyon, approximately 230 ft south of structure 33-0026. The disposal area dimensions were approximately 50 × 30 × 2 ft to 4 ft deep. The area is located along the western edge of the main South Site drainage channel. From approximately 1950 to 1955, this Site was used to dispose of debris from the implosion tests conducted at SWMU 33-006(a). Debris disposed of at the Site includes copper and aluminum shrapnel, pieces of electronic cable, and wood. Between shots, the shot pad and surrounding area were scraped and the debris deposited at SWMU 33-010(c).

SWMU 33-010(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. Decision-level data are available from the 1999 VCA.

During the 1999 VCA, the debris pile was excavated and removed. Soil with radioactivity levels above the cleanup criterion removed during the VCA was disposed of at Area G; soil with radioactivity levels below the cleanup criterion was returned to the SWMU boundaries. The treated soil was then regraded, compacted, and reseeded with native vegetation. Confirmation samples collected during the 1999 VCA included samples from four locations within the excavated area and three surface samples from the drainage east of the disposal area

SWMU 33-010(g) consists of a former disposal area that was located on the south side of TA-33 South Site at the edge of Chaquehui Canyon. Debris was scattered along the rim and upper walls of the canyon. This former disposal area is located within the boundaries impacted by former activities at the SWMU 33-006(a) gun firing site. The firing pad for SWMU 33-006(a) is located approximately 500 ft northwest of the SWMU 33-010(g) disposal area. Some debris present at SWMU 33-010(g) (such as dead tree trunks, rocks, and scraped earth) reportedly resulted from the initial clearing of South Site. Other debris included chunks of metal. The period of operation for this disposal Site is not known, but firing-site operations associated with initiator testing at South Site were conducted from 1950 to 1956. A VCA conducted in 1995 resulted in the removal of 4 yd^3 of nonhazardous, nonradioactive debris and 2 ft^2 of radioactive debris from the Site.

SWMU 33-010(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-010(g).

SWMU 33-010(h) consists of a surface disposal area located approximately 450 ft northeast of structure 33-26 and immediately south of berm 33-0043. The area is a mound of dirt, and firing-site debris is scattered on the soil surface. The debris includes metal, wood, cable, and shrapnel. The area is approximately 100 × 100 ft. There is no documentation regarding the history of the disposal area. The main drainage for South Site bounds the disposal area on the west, and an unimproved road is located to the east. During the 1994 Phase I RFI, a geophysical survey was conducted to determine the presence of subsurface anomalies; none were identified. A backhoe was used to excavate a 42-ft-long trench (0.5–2 ft deep) through the center of the Site. Debris was not observed during the trenching activities. No shallow surface samples were collected during the RFI.

SWMU 33-010(h) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-010(h).

SWMU 33-014 consists of a former location of an open burn area located approximately 300 ft north of the fence surrounding MDA E [Consolidated Unit 33-001(a)-99]. This burn area was believed to have been established in 1950 when operations at South Site began and may have served all of TA-33. Materials burned at this Site may have included construction debris, timber, and sawdust used in catcher boxes, and black powder. It is not known when burning operations were discontinued at this Site. The soil at the burn site was scraped to bedrock, and some bedrock is blackened from burning.

SWMU 33-014 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level soil data are available for this Site. Screening-level data are available from the 1994 RFI.

The project map (Figure 249-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

249.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 249-1).

Enhanced controls were installed and certified on August 10, 2015, and submitted to EPA on August 17, 2015, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 249-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00902040036	Established Vegetation	-	X	X	-	B
Q00903010017	Earthen Berm	-	X	-	X	CB
Q00903010041	Earthen Berm	-	X	-	X	EC
Q00903060035	Straw Wattle	-	X	-	X	B
Q00903060040	Straw Wattle	-	X	-	X	B
Q00903120030	Rock Berm	X	-	-	X	B
Q00903120031	Rock Berm	X	-	-	X	B
Q00903120032	Rock Berm	X	-	-	X	B
Q00903150043	Redi-Rock Berm	X	-	-	X	EC
Q00906010001	Rock Check Dam	-	X	-	X	CB
Q00906010007	Rock Check Dam	-	X	-	X	CB
Q00906010008	Rock Check Dam	-	X	-	X	CB
Q00906010011	Rock Check Dam	X	-	-	X	CB
Q00906010018	Rock Check Dam	X	-	-	X	CB
Q00906010021	Rock Check Dam	-	X	-	X	CB
Q00906010022	Rock Check Dam	-	X	-	X	CB
Q00906010023	Rock Check Dam	-	X	-	X	CB
Q00906010024	Rock Check Dam	X	-	-	X	CB
Q00906010025	Rock Check Dam	X	-	-	X	CB
Q00906010026	Rock Check Dam	X	-	-	X	CB
Q00906010027	Rock Check Dam	X	-	-	X	CB
Q00906010037	Rock Check Dam	X	-	-	X	B
Q00906010038	Rock Check Dam	X	-	-	X	B
Q00906010039	Rock Check Dam	X	-	-	X	B
Q00906010042	Rock Check Dam	X	-	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

249.3 Storm Water Monitoring

SWMUs 33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), and 33-014 are monitored within CHQ-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figures 249-2 and 249-3). In Figure 249-2, cadmium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TALs. Analytical results from this sample yielded the following TAL exceedances:

- Copper concentration of 87.6 µg/L (MTAL is 4.3 µg/L) and
- Gross-alpha activity of 157 pCi/L (ATAL is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-004(j):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above the sediment BV in shallow (i.e., less than 3 ft bgs) RFI samples. Copper was detected above the sediment BV in 4 of 4 samples at a maximum concentration 4.6 times the sediment BV. The RFI data are screening level only.
- Isotopic uranium is the only alpha-emitting radionuclide associated with industrial materials historically managed at the Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which has alpha-emitting isotopes. Uranium was detected above the sediment BV in 4 of 4 shallow samples with a maximum concentration 10 times the sediment BV. However, uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. The RFI data are screening level only.

SWMU 33-006(a):

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil and sediment BVs in shallow RFI samples. Copper was detected above the sediment BV in 11 of 11 drainage samples at a maximum concentration 36.3 times the sediment BV. Copper was also detected above the soil BV in 25 of 46 mesa top samples at a maximum concentration 1585 times the soil BV. The RFI data are screening level only.
- Uranium isotopes are known to have been associated with industrial materials historically managed at this Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which has alpha-emitting isotopes. Uranium was detected above the sediment BV in 11 of 11 shallow samples with a maximum concentration 183 times the sediment BV. Uranium was also detected above the soil BV in 28 of 46 mesa top samples at a maximum concentration 373 times the soil BV. Uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. The RFI data are screening level only.

SWMU 33-007(b):

- Copper was likely associated with industrial materials historically managed at the Site. Copper was detected above the soil and sediment BVs in 2 of 9 shallow RFI and VCA samples with a maximum concentration 1.4 times the sediment BV.
- Uranium isotopes are known to have been associated with industrial materials historically managed at this Site. RFI and VCA samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha emitters. Uranium-234, uranium-235/236, and uranium-238 were each detected above BVs in 2, 1, and 2 of 9 shallow soil and sediment samples with maximum activities 2.8, 1.6, and 3.1 times soil BVs, respectively. Uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 33-010(c):

- Copper is known to have been associated with industrial materials historically managed at the Site. Copper was detected above the sediment BV in 5 of 5 shallow RFI samples with a maximum concentration 123 times the sediment BV. Copper was detected above soil, sediment, and tuff BVs in shallow VCA confirmation samples with a maximum concentration 52 times the sediment BV.
- Uranium isotopes are known to have been associated with industrial materials historically managed at this Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which has alpha-emitting isotopes. Uranium was detected above soil and sediment BVs in 12 of 12 shallow samples with a maximum concentration 118 times the soil BV. VCA samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha emitters. Uranium-234, uranium-235/236 and uranium-238 were each detected above BVs in 9 of 10 shallow soil and sediment samples with maximum activities 8, 6, and 11 times soil BVs, respectively. Uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 33-010(g):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in shallow RFI samples.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Uranium was not detected or detected above BVs in shallow RFI samples.

SWMU 33-010(h):

- Neither copper nor alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site.

SWMU 33-014:

- Copper is not known to be an industrial material historically managed at this Site. Copper was detected above the soil BV in 4 of 5 shallow RFI samples with a maximum concentration 99 times the soil BV. Copper is, however, attributed to former firing site activities at nearby Site 33-006(a).
- Alpha-emitting radionuclides are not known to be industrial materials historically managed at this Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which has alpha-emitting isotopes. Uranium was detected above soil BV in 4 of 5 shallow RFI samples with a maximum concentration 32 times the soil 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 Figures 249-2 and 249-3. 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 249-2 and 249-3.

Monitoring location CHQ-SMA-6 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 and can be detected at low concentrations in Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed 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 these values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed 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.

249.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-6 during the 2017 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 249-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61394	4-3-2017
Pre-SIP Field Walkdown	COMP-54320	4-24-2017
Storm Rain Event	BMP-62971	7-7-2017
Storm Rain Event	BMP-65169	9-7-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-6 in 2017.

249.5 Compliance Status

The Sites associated with CHQ-SMA-6 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 249-3 presents the 2017 compliance status.

Table 249-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-004(j)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 33-006(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 33-007(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 33-010(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 33-010(g)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 33-010(h)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."
SWMU 33-014	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."

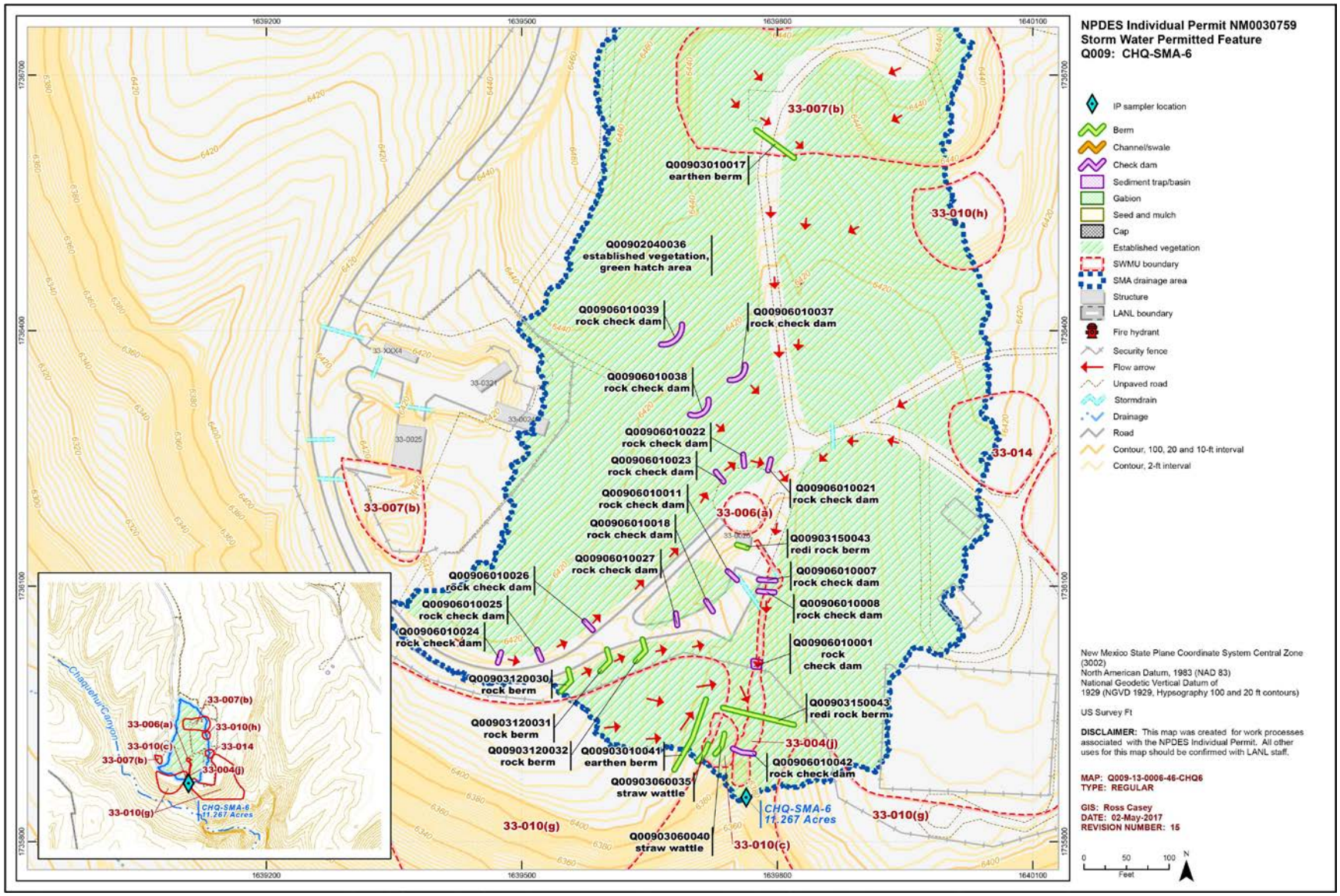
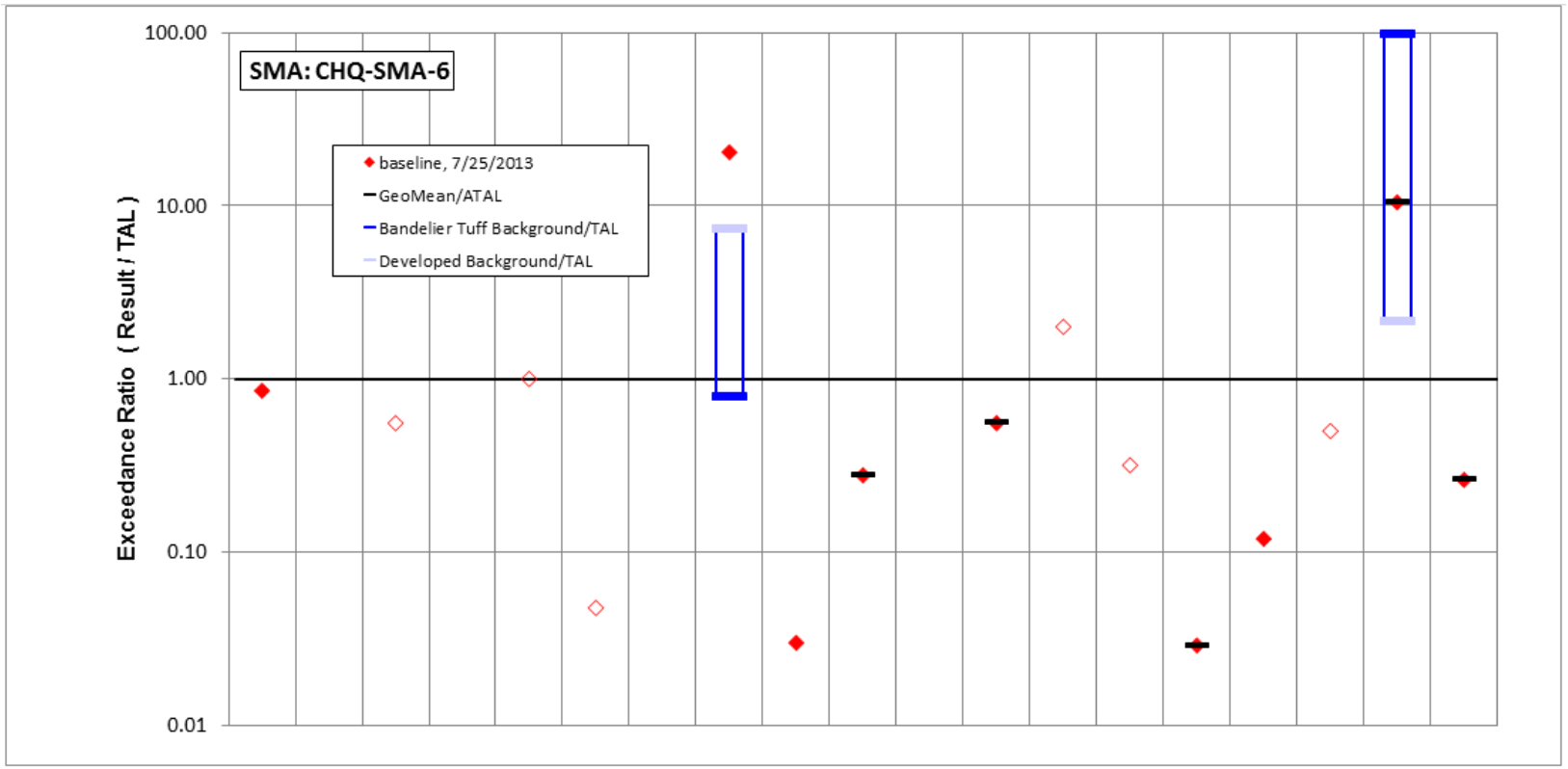


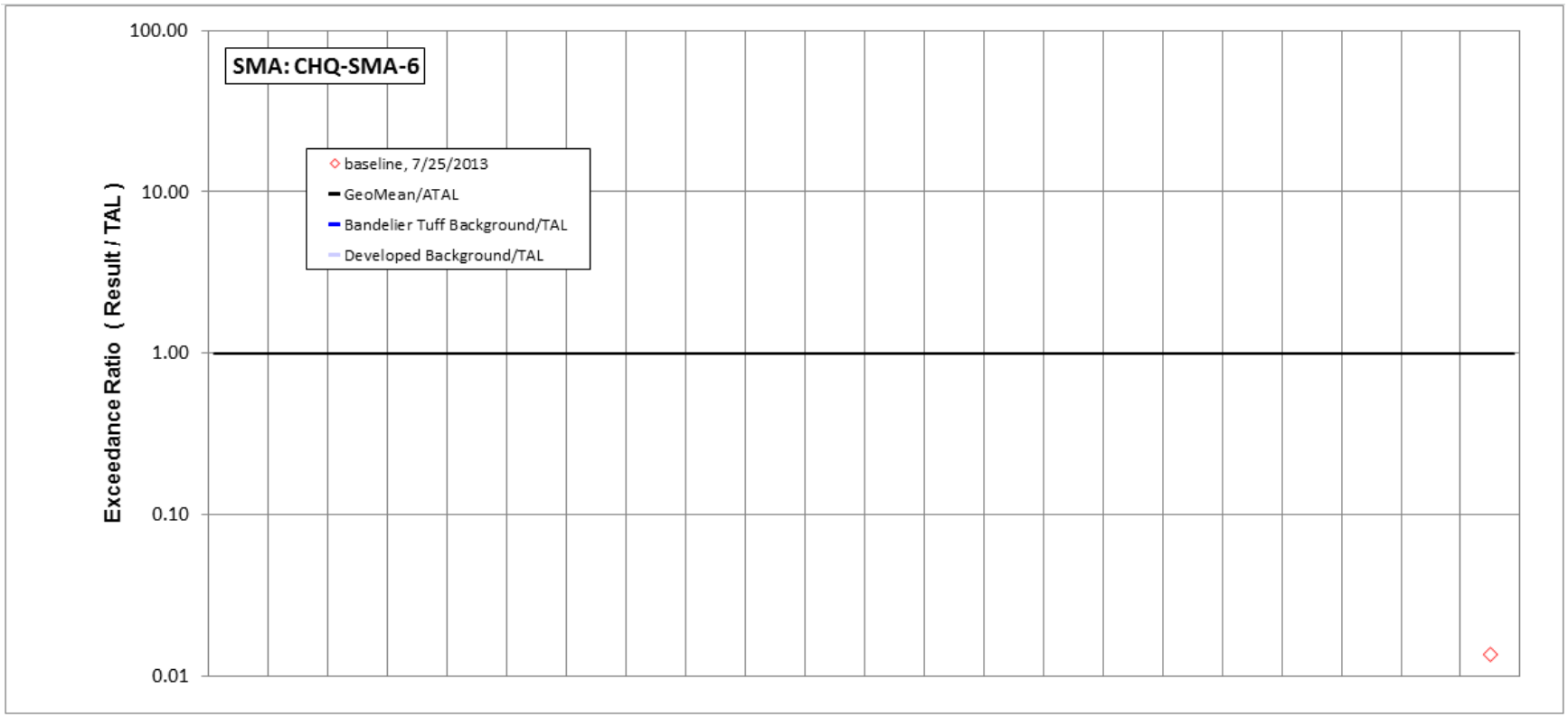
Figure 249-1 CHQ-SMA-6 location map



	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	MQL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MQL	ATAL	ATAL	MTAL	MQL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/25/2013 result	641	*3*	*5*	25.5	*1*	*10*	2.91	**87.6**	0.509	0.214	1.66	2.78	***1***	*2*	2.89	5.01	*0.005*	**157**	7.83
result / TAL	0.85	*0.005*	*0.56*	0.0051	*1*	*0.048*	0.0029	**20**	0.03	0.28	0.0098	0.56	***2***	*0.32*	0.029	0.12	*0.5*	**10**	0.26

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

Figure 249-2 Inorganic analytical results summary plot for CHQ-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
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
7/25/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.272*	-	-	-	*0.272*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.014*

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

Figure 249-3 Organic analytical results summary plot for CHQ-SMA-6

250.0 CHQ-SMA-7.1: SWMU 33-010(g)

250.1 Site Descriptions

One historical industrial activity area is associated with Q010, CHQ-SMA-7.1: Site 33-010(g).

SWMU 33-010(g) consists of a former disposal area that was located on the south side of TA-33 South Site at the edge of Chaquehui Canyon. Debris was scattered along the rim and upper walls of the canyon. This former disposal area is located within the boundaries impacted by former activities at the SWMU 33-006(a) gun firing site. The firing pad for SWMU 33-006(a) is located approximately 500 ft northwest of the SWMU 33-010(g) disposal area. Some debris present at SWMU 33-010(g) (such as dead tree trunks, rocks, and scraped earth) reportedly resulted from the initial clearing of South Site. Other debris included chunks of metal. The period of operation for this disposal site is not known, but firing site operations associated with initiator testing at South Site were conducted from 1950 to 1956. A VCA conducted in 1995 resulted in the removal of 4 yd^3 of nonhazardous, nonradioactive debris and 2 ft^2 of radioactive debris from the Site.

SWMU 33-010(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Chaquehui Canyon Aggregate Area was approved in March 2011. No decision-level data are available for SWMU 33-010(g).

The project map (Figure 250-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

250.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 250-1).

Table 250-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q01002040012	Established Vegetation	-	X	X	-	B
Q01003010010	Earthen Berm	X	-	-	X	B
Q01003010011	Earthen Berm	X	-	-	X	B
Q01006010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

250.3 Storm Water Monitoring

Through calendar year 2017, storm water flow has not been sufficient for full-volume sample collection at CHQ-SMA-7.1. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

250.4 Inspections and Maintenance

RG340 recorded two storm events at CHQ-SMA-7.1 during the 2017 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 250-2 Control Measure Inspections during 2017

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-61395	4-3-2017
Pre-SIP Field Walkdown	COMP-54321	4-24-2017
Storm Rain Event	BMP-62972	7-7-2017
Storm Rain Event	BMP-65170	9-7-2017

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-7.1 in 2017.

250.5 Compliance Status

The Sites associated with CHQ-SMA-7.1 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2017. Table 250-3 presents the 2017 compliance status.

Table 250-3 Compliance Status during 2017

Site	Compliance Status on Jan 1, 2017	Compliance Status on Dec 31, 2017	Comments
SWMU 33-010(g)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

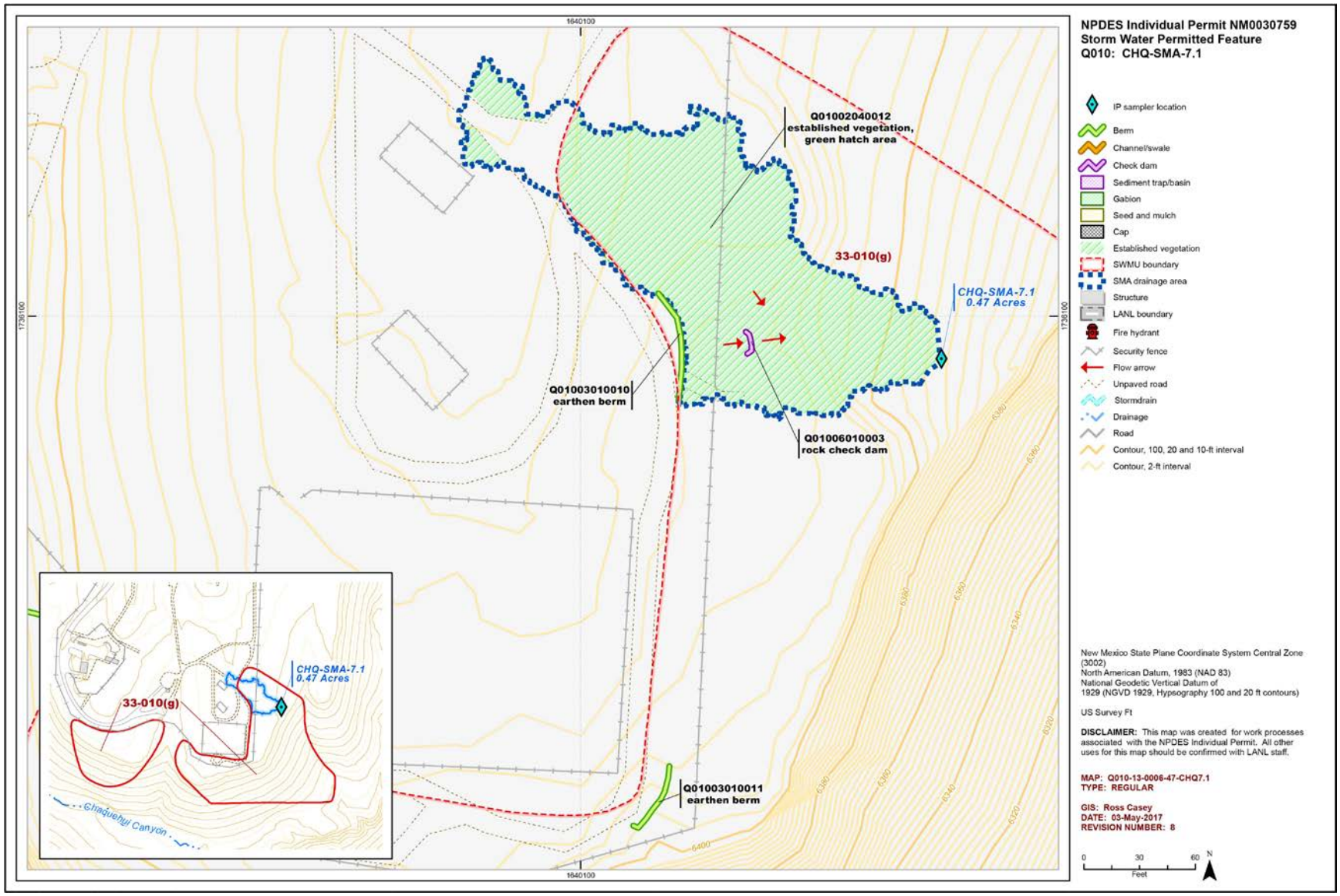


Figure 250-1 CHQ-SMA-7.1 location map

Attachment 1
Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.739	5/9/2017	A-SMA-1.1	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54034 conducted on 4/13/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61516
V5.740	5/9/2017	A-SMA-1.1	Map Revision - (6)	T	CCN - 61516
V5.741	5/9/2017	A-SMA-2	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54035 conducted on 4/13/17, please update as necessary to: -Retire culvert -0044. Control is not necessary for ron/roff for Site. Retire date 4/13/17. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61515
V5.742	5/9/2017	A-SMA-2	Retire Control - Lifecycle Expired - Control ID: A00204040044	T	CCN - 61515
V5.743	5/9/2017	A-SMA-2	Map Revision - (13)	T	CCN - 61515

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.744	5/9/2017	A-SMA-2.7	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate with the exception of the portion that feeds into earthen berm -0016. The flow should match the length of the berm. This was updated on the orthophotographic map. Per COMP-54037 conducted on 4/17/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61517
V5.745	5/9/2017	A-SMA-2.7	Map Revision - (8)	T	CCN - 61517
V5.746	5/9/2017	A-SMA-2.8	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54038 conducted on 4/13/17, please update as necessary to: -Update the locations of earthen berm -0002 and rock cap -0005. See orthophotographic map for locations. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61518
V5.747	5/9/2017	A-SMA-2.8	Map Revision - (8)	T	CCN - 61518

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.748	5/9/2017	CHQ-SMA-0.5	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate with the exception of the northeast portion of the earthen berm -0010 and the runoff from the roof of building 33-0016. The drainage area east of earthen berm -0011 does not flow to the sampler. Per COMP-54078 conducted on 4/17/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Remove flow arrows outside of drainage. -Update location of the earthen berm -0011. See orthophotographic map and GPS coordinates taken on 4/17/17. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61525
V5.749	5/9/2017	CHQ-SMA-0.5	Map Revision - (7)	T	CCN - 61525
V5.750	5/9/2017	CHQ-SMA-1.01	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate with exception of the drainage around the transportainers to the northwest of the drainage. Per COMP-54079 conducted on 4/17/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61526
V5.751	5/9/2017	CHQ-SMA-1.01	Map Revision - (8)	T	CCN - 61526
V5.752	5/9/2017	CHQ-SMA-4.1	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54470 conducted on 4/17/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61519
V5.753	5/9/2017	CHQ-SMA-4.1	Map Revision - (8)	T	CCN - 61519

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.754	5/18/2017	CHQ-SMA-3.05	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54083 conducted on 4/25/17, please update as necessary to: -Update location of earthen berm -0015. See GPS coordinates taken 4/25/17. -Retire hydromulch -0016. Replaced by established vegetation. Retire date 4/25/17. -Update location of coir log -0012 based on the orthophotograph. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61570
V5.755	5/18/2017	CHQ-SMA-3.05	Retire Control - Lifecycle Expired - Control ID: Q00401030016	T	CCN - 61570
V5.756	5/18/2017	CHQ-SMA-3.05	Map Revision - (7)	T	CCN - 61570
V5.757	5/18/2017	CHQ-SMA-4.5	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54318 conducted on 4/24/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61571
V5.758	5/18/2017	CHQ-SMA-4.5	Map Revision - (9)	T	CCN - 61571
V5.759	5/18/2017	CHQ-SMA-6	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54320 conducted on 04/25/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61558
V5.760	5/18/2017	CHQ-SMA-6	Map Revision - (15)	T	CCN - 61558

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.761	5/18/2017	CHQ-SMA-7.1	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54321 conducted on 4/24/17, please update as necessary to: -Update location of earthen berm -0010 and sampler location. See GPS coordinates taken 4/24/17. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61569
V5.762	5/18/2017	CHQ-SMA-7.1	Map Revision - (8)	T	CCN - 61569
V5.763	5/18/2017	A-SMA-2.5	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The orthophotographic map is accurate and does not require modification with the exception of a portion the drainage to the southwest. Flow does not cross the road due to a borrow ditch. The map has been modified to correct this. Per COMP-54036 conducted on 5/2/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61643
V5.764	5/18/2017	A-SMA-2.5	Map Revision - (6)	T	CCN - 61643
V5.765	5/25/2017	CHQ-SMA-1.02	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54080 conducted on 05/02/2017, please update as necessary to: -Update locations of rock check dams -0002, -0003, and -0009. See GPS coordinates taken 5/2/17. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61642
V5.766	5/25/2017	CHQ-SMA-1.02	Map Revision - (10)	T	CCN - 61642

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.767	5/25/2017	CHQ-SMA-1.03	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The orthophotographic map is accurate except for the southern portion of the area that contributes to the sampler. The drainage on the map shows flow contributing from CHQ-SMA-1.01 but the drainage exits below the location of the sampler for CHQ-SMA-1.03. This was updated on the map to reflect the location of the sampler on the map. Per COMP-54081 conducted on 5/1/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61650
V5.768	5/25/2017	CHQ-SMA-1.03	Map Revision - (11)	T	CCN - 61650
V5.769	5/25/2017	CHQ-SMA-2	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54082 conducted on 05/02/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61644
V5.770	5/25/2017	CHQ-SMA-2	Map Revision - (11)	T	CCN - 61644
V5.771	5/25/2017	CHQ-SMA-4	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The orthophotographic map is not accurate as the sampler location is in the wrong location. A pore point was established in the field and the map was updated accordingly. Per COMP-54084 conducted on 5/1/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61648

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.772	5/25/2017	CHQ-SMA-4	Map Revision - (11)	T	CCN - 61648
V5.773	5/25/2017	CHQ-SMA-5.05	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54319 conducted on 5/1/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update the end points of the base course berm -0006, see GPS points collected on 5/17/17. -Add the culvert at the north end of the riprap -0007. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 61649
V5.774	5/25/2017	CHQ-SMA-5.05	Map Revision - (3)	T	CCN - 61649
V5.775	6/20/2017	A-SMA-2.5	New Control - Corrective Action - Control ID: A00303010010	T	CCN - 62162
V5.776	6/20/2017	A-SMA-2.5	New Control - Corrective Action - Control ID: A00307020011	T	CCN - 62162
V5.777	6/20/2017	A-SMA-2.5	New Control - Corrective Action - Control ID: A00307010012	T	CCN - 62162
V5.778	6/20/2017	A-SMA-2.5	New Control - Corrective Action - Control ID: A00307010013	T	CCN - 62162
V5.779	6/20/2017	A-SMA-2.5	New Control - Corrective Action - Control ID: A00304060014	T	CCN - 62162
V5.780	6/20/2017	A-SMA-2.5	New Control - Corrective Action - Control ID: A00304080015	T	CCN - 62162
V5.781	6/20/2017	A-SMA-2.5	Map Revision - (7)	T	CCN - 62162

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.782	7/28/2017	A-SMA-3	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54039 conducted on 5/30/17, please update as necessary to: -Add 4 rock check dams as ron/sc additional controls. Install date 5/30/17. -Add redi-rock berm as ron/sc additional control. Install date 5/30/17. -Add rock cap as ron/ec additional control. Install date 5/30/17. *See GPS coordinates taken 5/30/17 for new control locations. -Update location of storm drain on map. See SDPPP map for location. -Add flow arrows to storm drain inlet and outlet. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage and update flow arrows on map. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 62367
V5.783	7/28/2017	A-SMA-3	New Control - Corrective Action - Control ID: A00606010031	T	CCN - 62367
V5.784	7/28/2017	A-SMA-3	New Control - Corrective Action - Control ID: A00606010032	T	CCN - 62367
V5.784	7/28/2017	A-SMA-3	New Control - Corrective Action - Control ID: A00606010033	T	CCN - 62367
V5.785	7/28/2017	A-SMA-3	New Control - Corrective Action - Control ID: A00606010034	T	CCN - 62367
V5.786	7/28/2017	A-SMA-3	New Control - Corrective Action - Control ID: A00603150035	T	CCN - 62367
V5.787	7/28/2017	A-SMA-3	New Control - Corrective Action - Control ID: A00608020036	T	CCN - 62367
V5.788	7/28/2017	A-SMA-3	Map Revision - (12)	T	CCN - 62367
V5.789	7/28/2017	A-SMA-3.5	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is inaccurate. A pore point was established at the sampler and outfall location, and the drainage was updated. Per COMP-54040 conducted on 5/30/17, please update as necessary to: -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 62368

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.790	7/28/2017	A-SMA-3.5	Map Revision - (7)	T	CCN - 62368
V5.791	11/30/2017	A-SMA-4	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54041 conducted on 10/19/17, please update as necessary to: -Update location of earthen berm 7 and 9. See orthophotographic map for location. -Update location of rock check dam 4. See GPS coordinates taken 10/19/17. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Add several flow arrows due to updated drainage and control locations. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 66802
V5.792	11/30/2017	A-SMA-4	Map Revision - (9)	T	CCN - 66802
V5.793	11/30/2017	A-SMA-6	Errata - Utilized 2014 LiDAR DEM and Arc Hydro to develop a draft SMA drainage polygon. Field observations were conducted and the Arc Hydro SMA drainage polygon was modified to represent on the ground conditions that the 2014 LiDAR did not detect including: -The ArcHydro drainage is accurate and does not require modification. Per COMP-54042 conducted on 10/19/17, please update as necessary to: -Update depiction/location of rock check dams 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18. The controls are depicted as rectangles but should just be straight lines. See orthophotographic map to update. -Update location of rock check dams 19 and 20. See orthophotographic map. -Update location of earthen berm -0021. See orthophotographic map. -Modify SDPPP map, map inset, and SIP map to reflect update to SMA drainage. See attached Orthophotographic and SDPPP maps. -Update extent of established vegetation to match new drainage. -Remove any flow arrows outside new drainage. -Discuss map changes with TPMC in safety briefing once map update complete.	E	CCN - 66801
V5.794	11/30/2017	A-SMA-6	Map Revision - (8)	T	CCN - 66801
V5.795	7/28/2017	A-SMA-3.5	Retire Control - Lifecycle Expired - Control ID: A00703060004	T	CCN - 63546
V5.796	7/28/2017	A-SMA-3.5	New Control - Corrective Action - Control ID: A00703060005	T	CCN - 63546
V5.797	7/28/2017	A-SMA-3.5	Map Revision - (8)	T	CCN - 63546

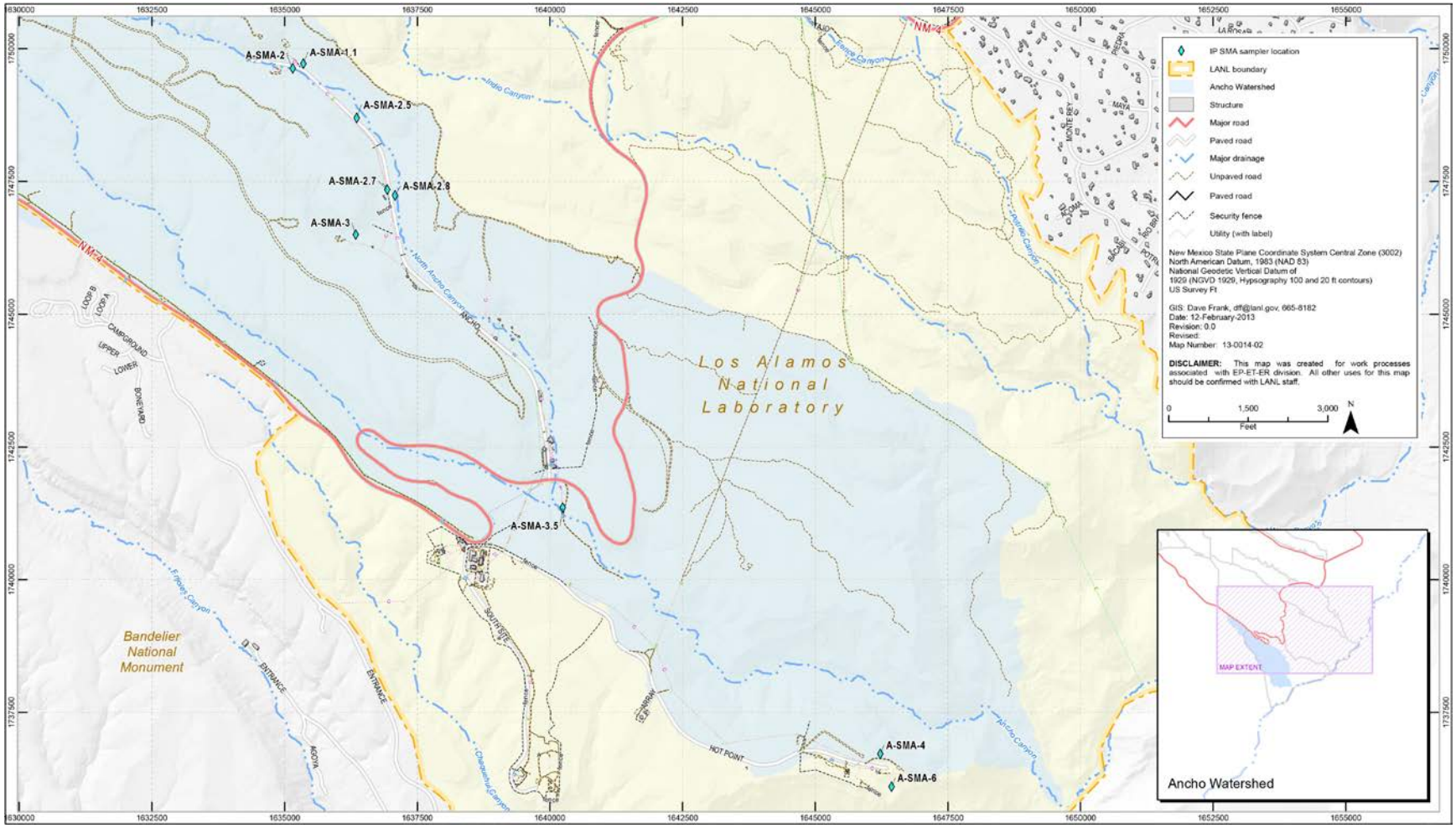
Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.798	9/28/2017	A-SMA-2.7	Errata - Per SIP Site visit conducted on 9/13/17, please update as necessary to: -Modify SDPPP map and SIP maps to reflect updates. -Update the location of earthen berm -0013 and -0014. Utilize Orthophotographic map.	E	CCN - 65506
V5.799	7/28/2017	A-SMA-2.7	Map Revision - (9)	T	CCN - 65506
V5.800	1/9/2018	A-SMA-2.5	Errata - Per data QA/QC reviews in preparation for 2017 IP Annual Report and SDPPP data pulls, please update as necessary to: -Correct Asset location in asset hierarchy for ID for earthen berm A00303010010 in Mainconn. Control was added to database and map rev 7 per CCN-62162 6/14/17. Asset was incorrectly located as child of permitted feature instead of SMA and was left inactive. Asset not included on WO inspections in 2017, however, no inspection findings are noted for the SMA. Asset not assigned to appropriate specification for annual report and SDPPP reporting use.	E	CCN - 67131
V5.801	3/29/2018	A-SMA-2	Change to SDPPP - The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.	T	
V5.802	3/29/2018	A-SMA-2.5	Change to SDPPP - SWMU 39-010 will be recommended for corrective action complete in the ~~Phase 1 investigation report~~Phase II Investigation report for North Ancho Canyon Aggregate Area. SWMU 39-010 will be eligible for a COC upon approval of the report by NMED.	T	
V5.803	3/29/2018	A-SMA-2.8	Change to SDPPP - ACA activities were conducted in 2017 in accordance with the Phase II investigation work plan approved by NMED in 2011. The ACA was performed to address debris and contaminated soil excavated from MDA Y in 2009; the debris and soil were stockpiled to allow for characterization and packaging for off-site waste disposal. The ACA completed the extent sampling at the former waste stockpile area at SWMU 39 001(b) and removed soil from this area with PCB concentrations in excess of 1 mg/kg and SVOC concentrations above residential SSLs.	T	

Attachment 1, Amendments (continued)

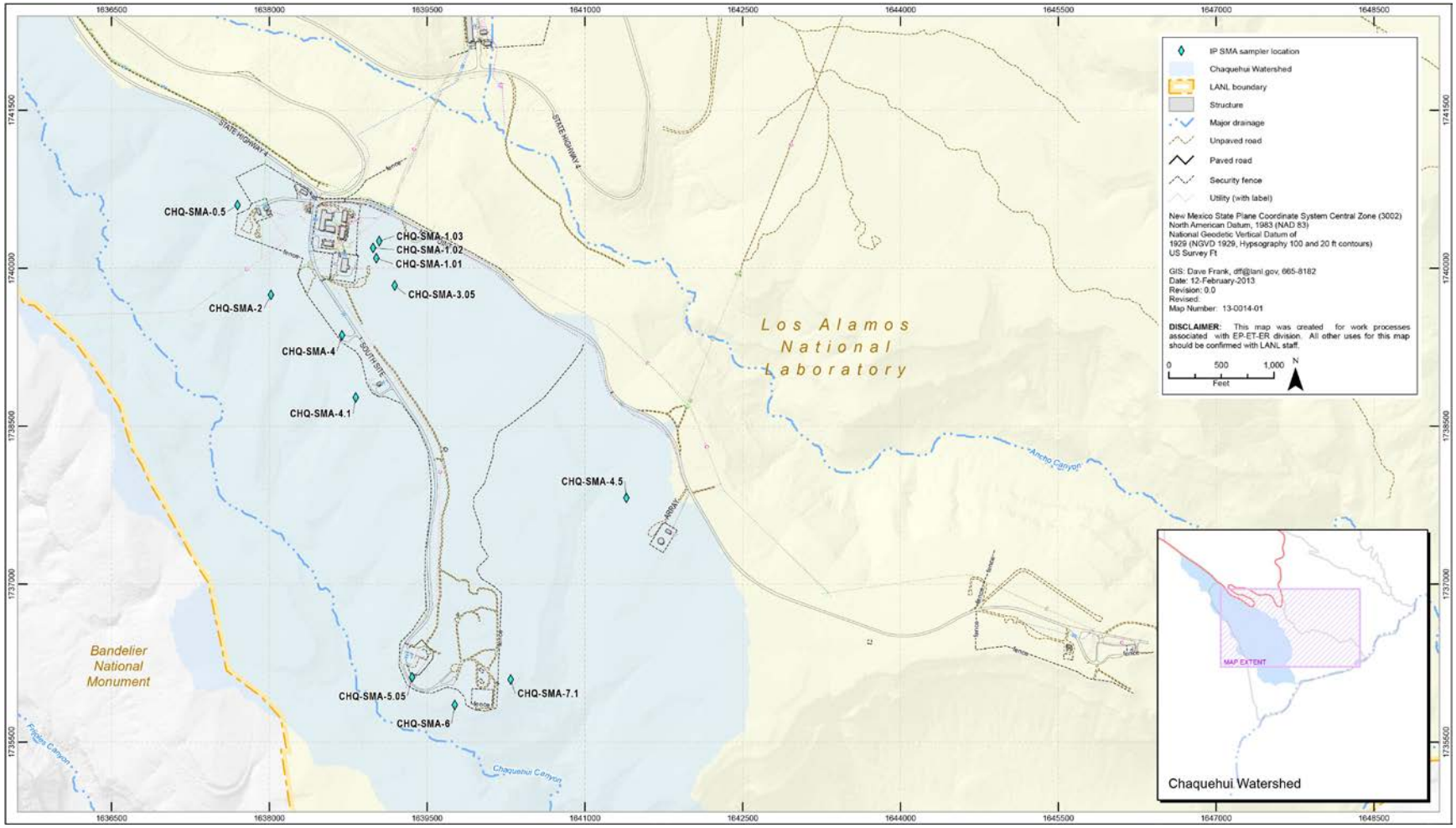
Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V5.804	3/29/2018	A-SMA-3	The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.	T	
V5.805	3/29/2018	CHQ-SMA-3.05	All the analytical results for these samples are reported in the 2013 Annual Report. ~~The monitoring station for CHQ-SMA-3.05 has been relocated. The new location of the sampler is approximately 10 ft west of the retired location. The sampler is positioned to be in a more representative location after enhanced control measure installation. Sampler coordinates and the SMA drainage area are updated in Attachment 4. The sampling suites are listed in Attachment 5. A summary of this information is presented in Table 4 of the Overview.~~	E	

*T = Technical, E = Errata.

Attachment 2
Vicinity Map



Attachment 2, Vicinity Map (continued)



Attachment 3
Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG265	03/27/2017	0.02	0.01	9.6
RG265	04/01/2017	0.28	0.04	139.8
RG265	04/25/2017	0.06	0.06	19.8
RG265	05/09/2017	0.65	0.21	180
RG265	05/10/2017	0.04	0.01	19.8
RG265	05/12/2017	0.01	0.01	4.8
RG265	05/23/2017	0.05	0.05	15
RG265	05/30/2017	0.03	0.03	4.8
RG265	06/01/2017	0.01	0.01	4.8
RG265	06/04/2017	0.02	0.02	9.6
RG265	06/05/2017	0.01	0.01	4.8
RG265	06/06/2017	0.16	0.08	60
RG265	06/07/2017	0.11	0.11	19.8
RG265	06/22/2017	0.02	0.02	9.6
RG265	06/25/2017	0.52	0.28	99.6
RG265	06/26/2017	0.01	0.01	4.8
RG265	07/09/2017	0.02	0.02	9.6
RG265	07/10/2017	0.05	0.04	30
RG265	07/11/2017	0.05	0.04	19.8
RG265	07/12/2017	0.12	0.06	54.6
RG265	07/13/2017	0.06	0.05	24.6
RG265	07/18/2017	0.1	0.08	24.6
RG265	07/24/2017	0.08	0.04	34.8
RG265	07/25/2017	0.04	0.02	15
RG265	07/26/2017	0.24	0.24	30
RG265	07/27/2017	0.19	0.06	90
RG265	07/28/2017	0.01	0.01	4.8
RG265	07/29/2017	0.07	0.04	34.8
RG265	07/31/2017	0.02	0.01	9.6
RG265	08/03/2017	0.07	0.07	15
RG265	08/04/2017	0.04	0.04	15
RG265	08/05/2017	0.04	0.04	9.6
RG265	08/06/2017	0.01	0.01	4.8
RG265	08/08/2017	0.09	0.09	15
RG265	08/11/2017	0.17	0.05	84.6
RG265	08/14/2017	0.11	0.08	60

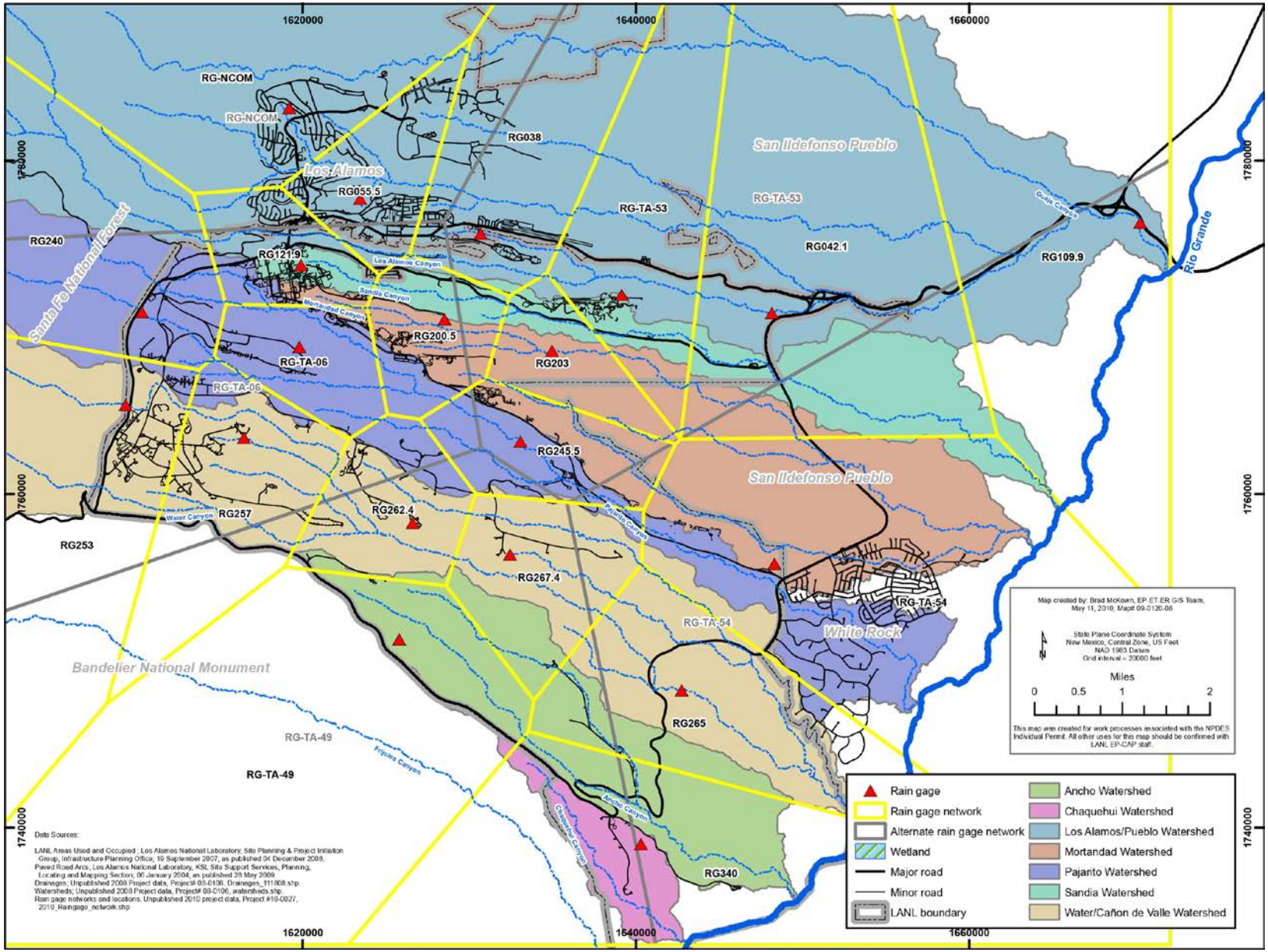
Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG265	08/20/2017	0.2	0.08	75
RG265	08/21/2017	0.03	0.02	15
RG265	08/22/2017	0.01	0.01	4.8
RG265	08/23/2017	0.02	0.01	9.6
RG265	08/24/2017	0.04	0.01	19.8
RG265	08/26/2017	0.01	0.01	4.8
RG265	08/28/2017	0.06	0.06	9.6
RG265	08/29/2017	0.19	0.19	24.6
RG265	09/01/2017	0.06	0.04	30
RG265	09/07/2017	0.03	0.01	15
RG265	09/12/2017	0.05	0.03	24.6
RG265	09/14/2017	0.04	0.03	15
RG265	09/15/2017	0.02	0.01	9.6
RG265	09/23/2017	0.25	0.11	79.8
RG265	09/26/2017	0.42	0.15	139.8
RG265	09/27/2017	1.23	0.27	364.8
RG265	09/28/2017	1.09	0.17	279.6
RG265	09/29/2017	0.01	0.01	4.8
RG265	09/30/2017	0.15	0.07	64.8
RG265	10/04/2017	0.29	0.08	99.6
RG265	10/05/2017	0.83	0.26	135
RG265	10/19/2017	0.01	0.01	15
RG265	10/20/2017	0.01	0.01	4.8
RG265	11/07/2017	0.11	0.07	45
RG265	11/08/2017	0.01	0.01	4.8
RG267.4	03/24/2017	0.02	0.01	9.6
RG267.4	03/27/2017	0.03	0.02	15
RG267.4	04/01/2017	0.21	0.08	90
RG267.4	04/25/2017	0.09	0.09	30
RG267.4	05/09/2017	0.33	0.12	99.6
RG267.4	05/10/2017	0.04	0.02	19.8
RG267.4	05/17/2017	0.01	0.01	4.8
RG267.4	06/01/2017	0.15	0.13	34.8
RG267.4	06/06/2017	0.39	0.23	60
RG267.4	06/07/2017	0.25	0.24	19.8
RG267.4	06/22/2017	0.01	0.01	4.8
RG267.4	06/24/2017	0.03	0.03	9.6
RG267.4	06/25/2017	0.49	0.22	84.6
RG267.4	06/26/2017	0.07	0.03	30

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG267.4	07/07/2017	0.02	0.02	9.6
RG267.4	07/09/2017	0.01	0.01	4.8
RG267.4	07/11/2017	0.03	0.02	15
RG267.4	07/12/2017	0.11	0.03	49.8
RG267.4	07/13/2017	0.15	0.15	15
RG267.4	07/14/2017	0.01	0.01	4.8
RG267.4	07/18/2017	0.08	0.06	19.8
RG267.4	07/22/2017	0.2	0.2	24.6
RG267.4	07/24/2017	0.09	0.06	30
RG267.4	07/25/2017	0.02	0.01	9.6
RG267.4	07/26/2017	0.17	0.17	15
RG267.4	07/27/2017	0.23	0.05	94.8
RG267.4	07/28/2017	0.06	0.03	19.8
RG267.4	07/29/2017	0.62	0.4	64.8
RG267.4	07/30/2017	0.01	0.01	4.8
RG267.4	07/31/2017	0.06	0.02	30
RG267.4	08/03/2017	0.18	0.09	30
RG267.4	08/04/2017	0.02	0.02	9.6
RG267.4	08/05/2017	0.03	0.03	4.8
RG267.4	08/06/2017	0.06	0.03	24.6
RG267.4	08/07/2017	0.06	0.05	19.8
RG267.4	08/08/2017	0.06	0.06	9.6
RG267.4	08/11/2017	0.47	0.16	135
RG267.4	08/13/2017	0.03	0.03	4.8
RG267.4	08/14/2017	0.07	0.04	60
RG267.4	08/19/2017	0.01	0.01	4.8
RG267.4	08/20/2017	0.32	0.14	114.6
RG267.4	08/21/2017	0.02	0.01	9.6
RG267.4	08/23/2017	0.04	0.03	19.8
RG267.4	08/24/2017	0.07	0.04	19.8
RG267.4	08/26/2017	0.2	0.19	19.8
RG267.4	08/28/2017	0.02	0.02	4.8
RG267.4	08/29/2017	0.04	0.04	19.8
RG267.4	09/01/2017	0.05	0.04	24.6
RG267.4	09/07/2017	0.03	0.03	15
RG267.4	09/12/2017	0.3	0.3	30
RG267.4	09/14/2017	0.04	0.03	15
RG267.4	09/23/2017	0.21	0.07	75
RG267.4	09/26/2017	0.36	0.13	120

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG267.4	09/27/2017	1.23	0.21	399.6
RG267.4	09/28/2017	0.96	0.22	270
RG267.4	09/29/2017	0.05	0.02	24.6
RG267.4	09/30/2017	0.11	0.04	54.6
RG267.4	10/04/2017	0.45	0.21	99.6
RG267.4	10/05/2017	0.81	0.36	144.6
RG267.4	10/19/2017	0.02	0.02	30
RG267.4	11/07/2017	0.1	0.06	45
RG267.4	11/17/2017	0.02	0.01	9.6
RG340	03/27/2017	0.01	0.01	4.8
RG340	04/01/2017	0.33	0.06	159.6
RG340	04/25/2017	0.05	0.05	19.8
RG340	05/08/2017	0.01	0.01	4.8
RG340	05/09/2017	0.74	0.24	184.8
RG340	05/10/2017	0.02	0.02	9.6
RG340	05/23/2017	0.02	0.02	4.8
RG340	05/29/2017	0.01	0.01	4.8
RG340	05/31/2017	0.02	0.01	9.6
RG340	06/01/2017	0.01	0.01	4.8
RG340	06/06/2017	0.1	0.05	39.6
RG340	06/07/2017	0.04	0.04	9.6
RG340	06/22/2017	0.03	0.02	15
RG340	06/24/2017	0.03	0.02	15
RG340	06/25/2017	0.98	0.66	99.6
RG340	06/26/2017	0.04	0.04	9.6
RG340	07/06/2017	0.01	0.01	4.8
RG340	07/10/2017	0.03	0.03	15
RG340	07/11/2017	0.03	0.03	9.6
RG340	07/12/2017	0.18	0.06	69.6
RG340	07/13/2017	0.08	0.04	34.8
RG340	07/24/2017	0.21	0.08	54.6
RG340	07/25/2017	0.08	0.08	9.6
RG340	07/26/2017	0.08	0.08	19.8
RG340	07/27/2017	0.12	0.03	60
RG340	07/28/2017	0.04	0.04	15
RG340	07/29/2017	0.06	0.04	30
RG340	07/31/2017	0.02	0.02	9.6
RG340	08/01/2017	0.01	0.01	4.8
RG340	08/03/2017	0.04	0.04	9.6

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG340	08/04/2017	0.11	0.08	45
RG340	08/06/2017	0.02	0.01	9.6
RG340	08/07/2017	0.01	0.01	4.8
RG340	08/11/2017	0.21	0.05	99.6
RG340	08/12/2017	0.01	0.01	4.8
RG340	08/14/2017	0.09	0.06	60
RG340	08/19/2017	0.01	0.01	4.8
RG340	08/20/2017	0.15	0.05	69.6
RG340	08/21/2017	0.01	0.01	4.8
RG340	08/23/2017	0.02	0.02	9.6
RG340	08/28/2017	0.26	0.25	19.8
RG340	08/29/2017	0.08	0.08	15
RG340	09/01/2017	0.08	0.06	34.8
RG340	09/07/2017	0.03	0.02	15
RG340	09/12/2017	0.07	0.05	24.6
RG340	09/14/2017	0.06	0.04	19.8
RG340	09/15/2017	0.05	0.03	15
RG340	09/23/2017	0.25	0.12	79.8
RG340	09/25/2017	0.01	0.01	4.8
RG340	09/26/2017	0.52	0.17	150
RG340	09/27/2017	1.16	0.2	375
RG340	09/28/2017	1.09	0.18	270
RG340	09/29/2017	0.02	0.01	9.6
RG340	09/30/2017	0.16	0.06	69.6
RG340	10/01/2017	0.01	0.01	4.8
RG340	10/04/2017	0.25	0.12	84.6
RG340	10/05/2017	0.7	0.18	144.6
RG340	10/19/2017	0.01	0.01	15
RG340	10/20/2017	0.01	0.01	4.8
RG340	11/07/2017	0.1	0.06	49.8
RG-TA-49	03/28/2017	0.75	0.29	378
RG-TA-54	03/28/2017	0.66	0.25	378

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)
Ancho	A001	A-SMA-1.1	1635351 (35.808933)	1749719 (-106.267083)	8,364,510.335	39-004(a) 39-004(d)	0.00 0.00
Ancho	A002	A-SMA-2	1635229 (35.808608)	1749599 (-106.267495)	23,146,810.28	39-004(b) 39-004(e)	589.79 1,074.60
Ancho	A003	A-SMA-2.5	1636357 (35.806133)	1748696 (-106.263683)	59,731.46523	39-010	44,321.01
Ancho	A004	A-SMA-2.7	1636976.6 (35.802422)	1747175.3 (-106.261756)	413,865.0914	39-002(c) 39-008	0.00 21,506.34
Ancho	A005	A-SMA-2.8	1637078 (35.802117)	1747235 (-106.261267)	42,446.94204	39-001(b)	9,801.41
Ancho	A006	A-SMA-3	1636339 (35.800083)	1746495 (-106.26375)	8,589,039.39	39-002(b) 39-004(c)	10.14 374.92
Ancho	A007	A-SMA-3.5	1640239 (35.78595)	1741352 (-106.2506)	103.2344765	39-006(a)	77.92
Ancho	A008	A-SMA-4	1646223 (35.7732)	1736711 (-106.230433)	27,693.40659	33-010(d)	1,567.89
Ancho	A009	A-SMA-6	1646439 (35.7715)	1736091 (-106.2297)	276,527.0527	33-004(k) 33-007(a) 33-010(a)	109.29 3,959.78 14,648.17
Chaquehui	Q001	CHQ-SMA-0.5	1637696 (35.783883)	1740598 (-106.259167)	22,466.9859	33-004(g) 33-007(c) 33-009	8.51 48.39 776.11
Chaquehui	Q002	CHQ-SMA-1.01	1639017 (35.7825)	1740096 (-106.254717)	15,519.66633	33-002(d)	141.48
Chaquehui	Q002A	CHQ-SMA-1.02	1638988 (35.782767)	1740192 (-106.254817)	81,305.75926	33-004(h) 33-008(c) 33-011(d) 33-015	7.02 1,497.49 3,426.59 85.85
Chaquehui	Q002B	CHQ-SMA-1.03	1639159 (35.782570)	1740121 (-106.254241)	458,089.8205	33-008(c) 33-012(a) 33-017 C-33-001 C-33-003	18,133.54 591.94 198,699.46 518.51 7,614.62
Chaquehui	Q003	CHQ-SMA-2	1638015 (35.78155)	1739747 (-106.2581)	596,725.7302	33-004(d) 33-007(c) C-33-003	862.46 165.25 19,037.52
Chaquehui	Q004	CHQ-SMA-3.05	1639182 (35.781789)	1739837 (-106.254162)	13,214.89508	33-010(f)	367.15
Chaquehui	Q005	CHQ-SMA-4	1638691 (35.780483)	1739363 (-106.255817)	625.4904518	33-011(e)	10.80

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)
Chaquehui	Q006	CHQ-SMA-4.1	1638823 (35.7788686)	1738774 (-106.2553743)	901.0029578	33-016	39.17
Chaquehui	Q007	CHQ-SMA-4.5	1641395 (35.77625)	1737819 (-106.2467)	144,485.2704	33-011(b)	45,800.12
Chaquehui	Q008	CHQ-SMA-5.05	1639356 (35.77155)	1736112 (-106.253567)	15,197.85914	33-007(b)	3114.46
Chaquehui	Q009	CHQ-SMA-6	1639763 (35.77085)	1735852 (-106.2522)	490,803.1106	33-004(j) 33-006(a) 33-007(b) 33-010(c) 33-010(g) 33-010(h) 33-014	4,008.37 1,955.75 52,320.52 1,954.17 17,521.70 4,525.26 3,841.00
Chaquehui	Q010	CHQ-SMA-7.1	1640295 (35.7715)	1736091 (-106.250417)	20,487.08977	33-010(g)	17,923.50

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	Mercury	PCBs	High Explosives	Pesticides
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 245.2	EPA 1668A	SW8321	EPA 608
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_HG	SW-PCB-1668A-PQL	SW-HEXP-8330	SW-Pesticides
Field prep code	UF	UF	UF	F	UF	F	F	UF	UF	UF	UF
Preservation	HNO3	HNO3	NaOH, Ice	HNO3	HNO3	HNO3	HNO3	HNO3	Ice	Ice	Ice, store some analytes in dark
Holding time (days)	180	180	14	180	180	180	180	28	365	7	7
Preferred volume (L)	2	2	1	0.5	0.5	0.5	0.5	0.5	3	2.5	3
Minimum volume required (L)	1	2	0.5	0.25	0.25	0.25	0.25	0.25	1	0.77	1
Shipping container	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Glass	Glass	Amber glass

UF = Unfiltered.

F = Filtered.

Attachment 5, Sampling Requirements and Plan (continued)

Sampling and Analysis Plan

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum (Filtered)	Arsenic (Filtered)	Copper (Filtered)	Mercury (Unfiltered)	Zinc (Filtered)	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
A-SMA-1.1	230	SS100209	MEx	X	X	X	X	X							X			
A-SMA-2	231	SS140212	CAM5	X	X	X	X	X							X			
A-SMA-2.5	232	SS090204	MEx	X	X	X	X	X										
A-SMA-2.7	233	SS120211	CAM5	X	X	X	X	X							X			
A-SMA-2.8	234	SS090206	MEx	X	X	X	X	X										
A-SMA-3	235	SS100210	CAM5	X					X		X	X		X				
A-SMA-3.5	236	SS090208	BCComp															
A-SMA-4	237	SS276	MEx	X	X	X	X	X							X			
A-SMA-6	238	SS310	AltCompR															
CHQ-SMA-0.5	239	SS090601	CAM5	X	X	X	X	X						X	X			
CHQ-SMA-1.01	240	SS090612	MEx	X	X	X	X	X						X				
CHQ-SMA-1.02	241	SS090613	CAM5-2								X			X				
CHQ-SMA-1.03	242	SS140619	CAM5	X	X	X	X	X						X				
CHQ-SMA-2	243	SS3374	CAM5	X	X	X	X	X						X				
CHQ-SMA-3.05	244	SS150620	CAM5	X	X	X	X	X						X			X	
CHQ-SMA-4	245	SS3375	MEx	X	X	X	X	X						X	X			
CHQ-SMA-4.1	246	SS100617	AltCompR															
CHQ-SMA-4.5	247	SS341	AltCompR															

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 (Filtered)	Arsenic (Filtered)	Copper (Filtered)	Mercury (Unfiltered)	Zinc (Filtered)	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
CHQ-SMA-5.05	248	SS090616	MEx	X	X	X	X	X										
CHQ-SMA-6	249	SS3377	CAM5	X							X							
CHQ-SMA-7.1	250	SS100618	MEx	X	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.

CAM5 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples are collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the Permit.

CAM5-2 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples are collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the Permit. Corrective action enhanced controls were installed twice at this Site. This is the second round of sampling.

MEx = Extended Baseline Monitoring: One confirmation monitoring sample is collected to determine if corrective action is required.

Attachment 6
Additional Compliance Status Details for SMAs/Sites in Corrective Action

SMA	Site List	Additional Compliance Status Details
None	Not Applicable	No compliance status changes from 2016.