EMID-700833

2019 Update to the Site Discharge Pollution Prevention Plan, Revision 1

NPDES Permit No. NM0030759
May 1, 2020

Water/Cañon de Valle Watershed

Receiving Waters:
Cañon de Valle, Potrillo Canyon, Water Canyon, and Fence Canyon

Volume 4

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180.0 CDV-SMA-1.2: SWMUs 16-017(b)-99 and 16-029(k)

180.1 Site Descriptions

Two historical industrial activity areas are associated with V001, CDV-SMA-1.2: Sites 16-017(b)-99 and 16-029(k).

SWMU 16-017(b)-99 is a former HE machining building (former structure 16-93) that was located at TA-16. Constructed in 1950, the wooden building measured 20 ft wide × 60 ft long × 11 ft high and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and later was used as an electroplating facility. By 1970, the building was used only for storage. Building 16-93 was removed in 1996.

SWMU 16-017(b)-99, along with numerous other SWMUs and AOCs, was investigated and remediated under the Consent Order as a single Site. Consent Order investigations are complete for SWMU 16-017(b)-99. NMED granted the Site a COC without controls on August 1, 2016.

SWMU 16-029(k) consists of two former HE sumps that served the former electroplating building 16-93 at TA-16. Constructed in 1950, the 5-ft-wide × 15-ft-long × 5-ft-deep concrete sumps were situated on the northeast and southeast corners of the building. Two VCP drainlines extended north from each sump and eventually merged into a single drainline that continued for approximately 500 ft to an outfall located north of the K-Site Road. In the 1960s, the sumps were filled with gravel. The building, sumps, and drainlines were removed during D&D operations in 1996.

SWMU 16-029(k), along with numerous other SWMUs and AOCs, was investigated and remediated under the Consent Order as a single Site. Consent Order investigations are complete for SWMU 16-029(k). NMED granted the Site a COC without controls on August 1, 2016.

The project map (Figure 180-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

180.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 180-1).

Table 180-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00102040012	Established Vegetation	-	X	X	-	B
V00103020008	Base Course Berm	-	X	-	X	CB
V00104060001	Rip Rap	-	X	X	-	CB
V00106010007	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

180.3 Storm Water Monitoring

SWMUs 16-017(b)-99 and 16-029(k) are monitored within CDV-SMA-1.2. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure 180-2). The HE analytical results for this sample were rejected because of holding times. The remaining analytical results yielded no TAL exceedances.

An additional baseline storm water sample was collected on August 2, 2015 (Figure 180-2). In Figure 180-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this monitoring sample yielded no TAL exceedances. Baseline confirmation is complete for CDV-SMA-1.2 and the associated SWMUs 16-017(b)-99 and 16-029(k) because all applicable sampling results are below the applicable MTAL or ATAL. This confirmation monitoring sample was collected to determine if corrective action was required.

No further sampling is required for CDV-SMA-1.2 for the duration of the IP.

180.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at CDV-SMA-1.2 during the 2019 season. These rain events triggered eight post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 180-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72949	3-19-2019
Storm Rain Event	BMP-74243	6-24-2019
Storm Rain Event	BMP-74656	7-10-2019
Storm Rain Event	BMP-74924	7-23-2019
Storm Rain Event	BMP-75455	8-6-2019
Storm Rain Event	BMP-76403	8-29-2019
Storm Rain Event	BMP-76699	9-10-2019
Storm Rain Event	BMP-77283	10-17-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-1.2 in 2019.

180.5 Compliance Status

The Sites associated with CDV-SMA-1.2 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 2019. Table 180-3 presents the 2019 compliance status.

Table 180-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-017(b)-99	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 9-14-2015. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site.
SWMU 16-029(k)	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 9-14-2015. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site.

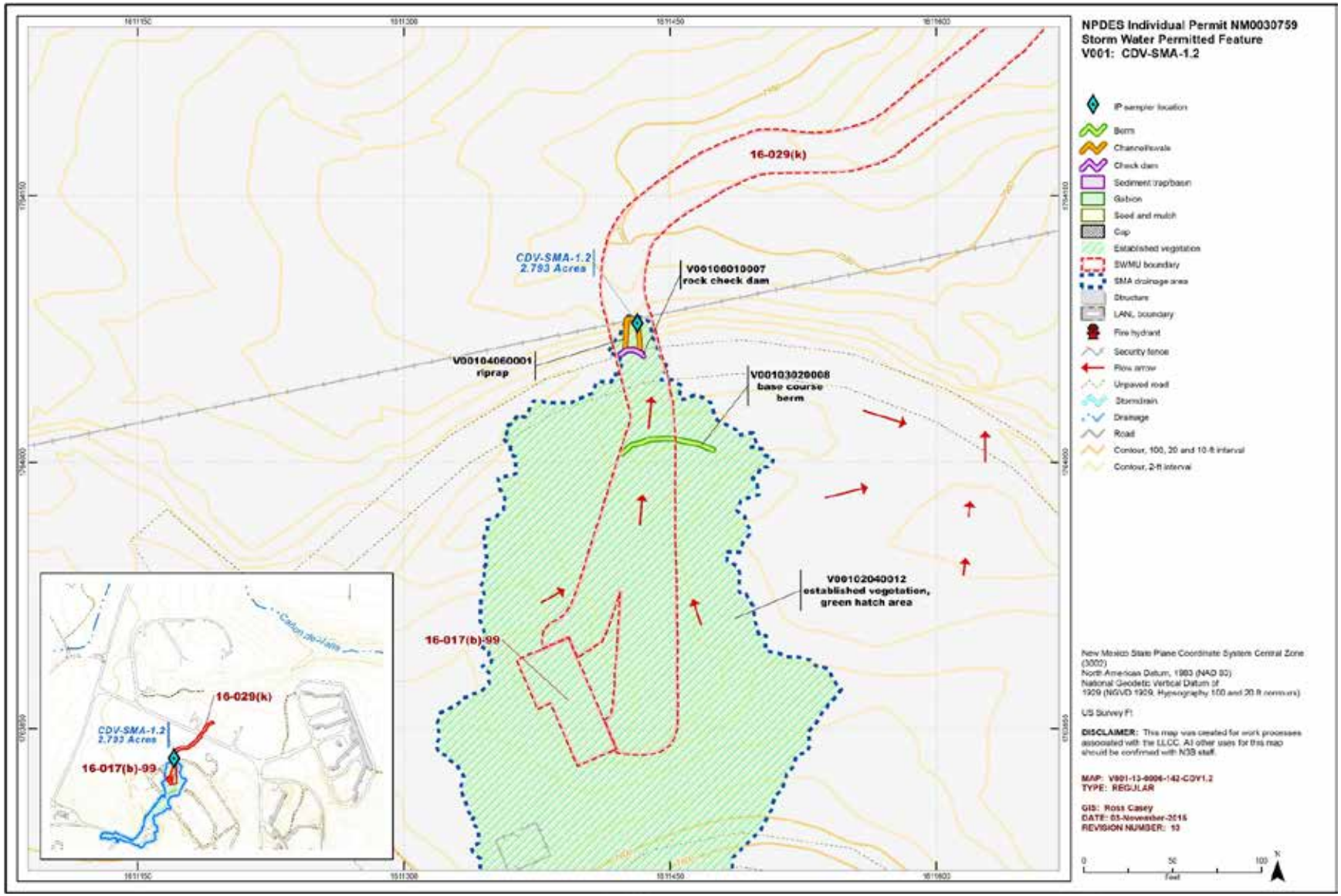


Figure 180-1 CDV-SMA-1.2 location map

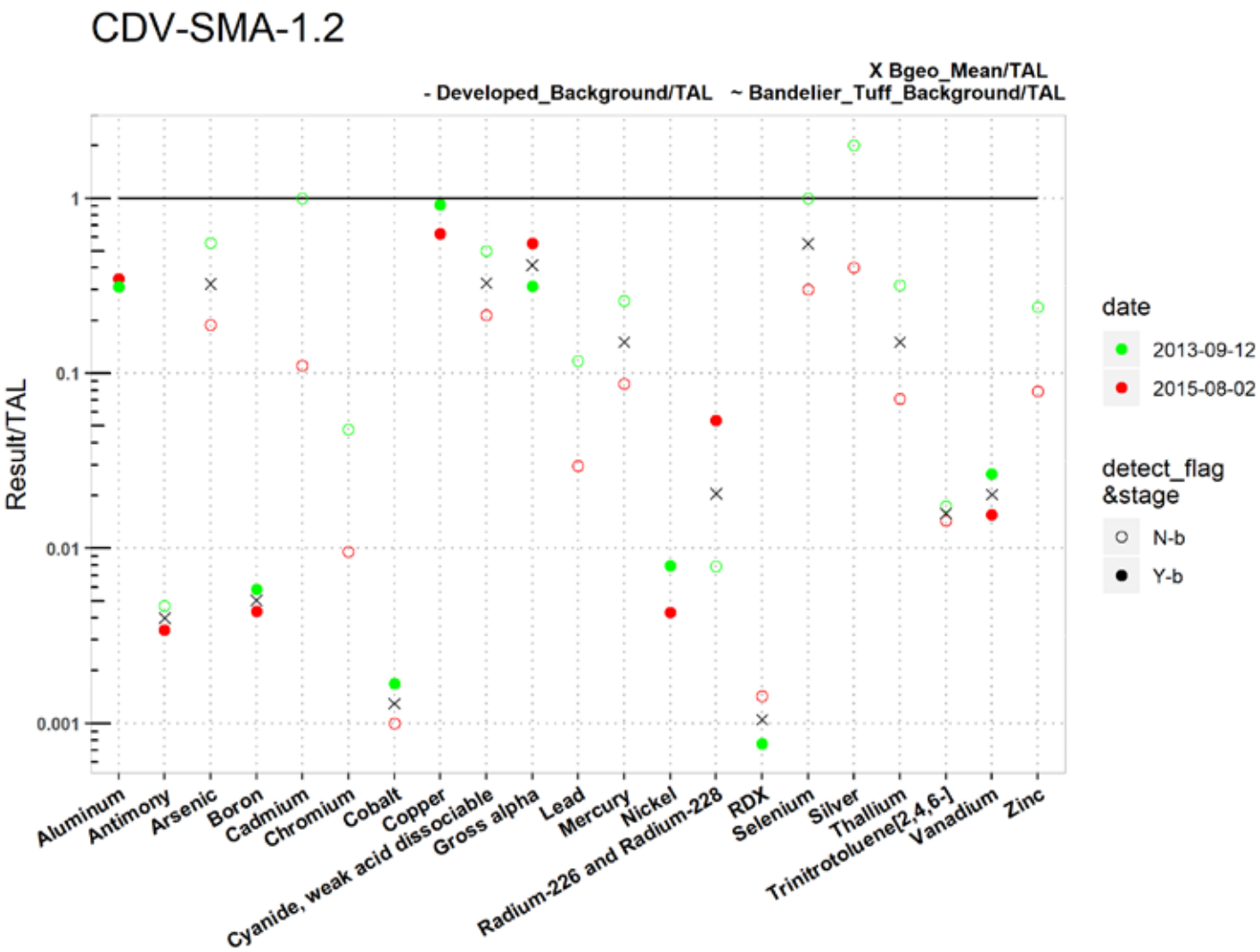


Figure 180-2 Analytical results summary for CDV-SMA-1.2

CDV-SMA-1.2

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.004	0.32	0.005	NA	NA	0.0013	NA	0.33	0.41	NA	0.15	NA	0.021	0.001	0.55	NA	0.15	0.016	0.02	NA
2013-09-12 d	0.31	NA	NA	0.0058	NA	NA	0.0017	0.92	NA	0.31	NA	NA	0.0079	NA	0.00076	NA	NA	NA	NA	0.027	NA
2013-09-12 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	0.12	0.26	NA	0.0079	NA	1	2	0.32	0.017	NA	0.24
2015-08-02 d	0.35	0.0034	NA	0.0044	NA	NA	NA	0.63	NA	0.55	NA	NA	0.0043	0.054	NA	NA	NA	NA	NA	0.016	NA
2015-08-02 nd	NA	NA	0.19	NA	0.11	0.0095	0.001	NA	0.21	NA	0.029	0.087	NA	NA	0.0014	0.3	0.4	0.071	0.014	NA	0.079

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 180-2 (continued) Analytical results summary for CDV-SMA-1.2

181.0 CDV-SMA-1.3: SWMUs 16-017(a)-99 and 16-026(m)

181.1 Site Descriptions

Two historical industrial activity areas are associated with V002, CDV-SMA-1.3: Sites 16-017(a)-99 and 16-026(m).

Site 16-017(a)-99 consists of a former HE machining building (structure 16-92) that was located at TA-16. Constructed in 1950, the wooden building measured 20 ft wide × 60 ft long × 11 ft high and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later used to clean and refurbish HE-contaminated equipment. By 1970 the building was used entirely for storage. The building was removed in 1996. This Site was originally a component of SWMU 16-017, which consisted of a group of 24 structures within TA-16. During the 1999 Annual Unit Audit, SWMU 16-017 was split into 24 separate SWMUs to facilitate investigation. Structure 16-92 was given the individual SWMU identification of SWMU 16-017(a)-99 at that time.

SWMUs 16-017(a)-99 and 16-026(m), along with numerous other SWMUs and AOCs, were investigated under the Consent Order as a single Site. The same surface sampling data set applies to both Sites.

Consent Order investigations are complete for SWMU 16-017(a)-99. NMED granted the Site a COC without controls on August 1, 2016.

SWMU 16-026(m) consists of two outfalls from two sumps [SWMU 16-029(l)], located near the 90s Line Pond area at TA-16, that served former HE machining building 16-92. The sumps were located on the east and west sides of building 16-92. The eastern sump discharged to a VCP drainline that extended north and west to its discharge point approximately 260 ft north of the building. The western sump discharged to a VCP that extended north and then west of the building where it discharged to an open drainage channel. Constructed in 1950, the building was used for machining HE until 1955. Subsequently, the building was used for cleaning and refurbishing HE-contaminated equipment. The sumps were filled with gravel during the mid-1960s, and by 1970 the building was devoted entirely to storage. The building, its sumps and drainlines were all removed in 1996. SWMUs 16-017(a)-99 and 16-026(m), along with numerous other SWMUs and AOCs, were investigated under the Consent Order as a single Site. The same surface sampling data set applies to both Sites.

Consent Order investigations are complete for SWMU 16-026(m). NMED granted the Site a COC without controls on August 1, 2016.

The project map (Figure 181-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

181.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 181-1).

Table 181-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00202040003	Established Vegetation	-	X	X	-	B
V00203020002	Base Course Berm	-	X	-	X	CB

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

181.3 Storm Water Monitoring

SWMUs 16-017(a)-99 and 16-026(m) are monitored within CDV-SMA-1.3. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 181-2). In Figure 181-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (34.7 pCi/L) and are presented in Figure 181-2.

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 16-017(a)-99:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1996 VCA and 2006 Consent Order soil samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical Site activities.

SWMU 16-026(m):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1996 VCA and 2006 Consent Order soil samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical Site activities.

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 181-2. 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 181-2.

Monitoring location CDV-SMA-1.3 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.

181.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at CDV-SMA-1.3 during the 2019 season. These rain events triggered eight post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 181-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72950	3-19-2019
Storm Rain Event	BMP-74244	6-24-2019
Storm Rain Event	BMP-74657	7-10-2019
Storm Rain Event	BMP-74925	7-23-2019
Storm Rain Event	BMP-75456	8-6-2019
Storm Rain Event	BMP-76404	8-29-2019
Storm Rain Event	BMP-76700	9-10-2019
Storm Rain Event	BMP-77284	10-17-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-1.3 in 2019.

181.5 Compliance Status

The Sites associated with CDV-SMA-1.3 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 2019. Table 181-3 presents the 2019 compliance status.

Table 181-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-017(a)-99	Corrective Action Complete	Corrective Action Complete	LANL, September 26, 2016, "NPDES Permit No. NM0030759 - Submittal of Completion of Corrective Action for Two [2] Sites [16-017(a)-99 and 16-026(m)] in CDV-SMA-1.3 Following Certificates of Completion from the New Mexico Environment Department."
SWMU 16-026(m)	Corrective Action Complete	Corrective Action Complete	LANL, September 26, 2016, "NPDES Permit No. NM0030759 - Submittal of Completion of Corrective Action for Two [2] Sites [16-017(a)-99 and 16-026(m)] in CDV-SMA-1.3 Following Certificates of Completion from the New Mexico Environment Department."

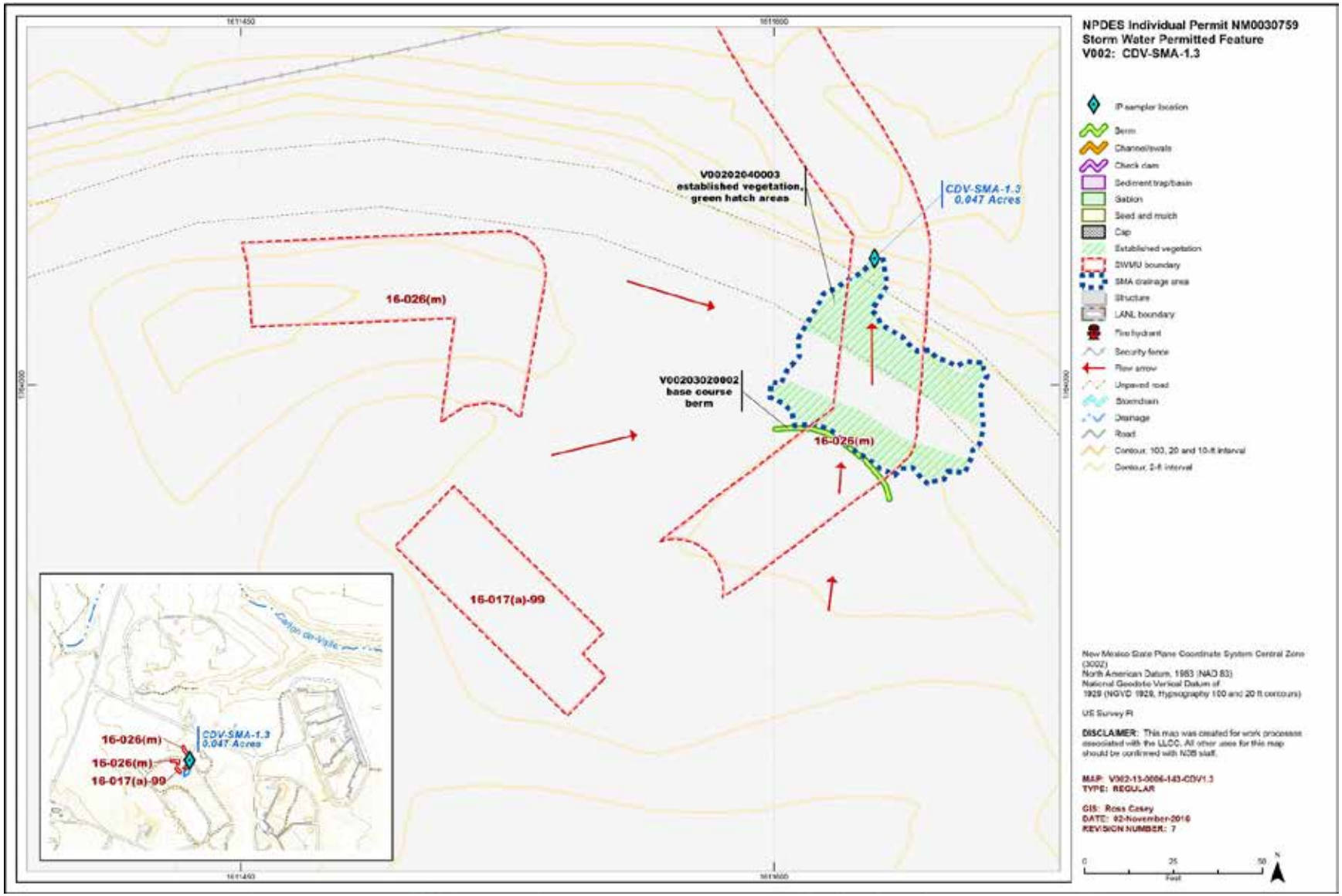


Figure 181-1 CDV-SMA-1.3 location map

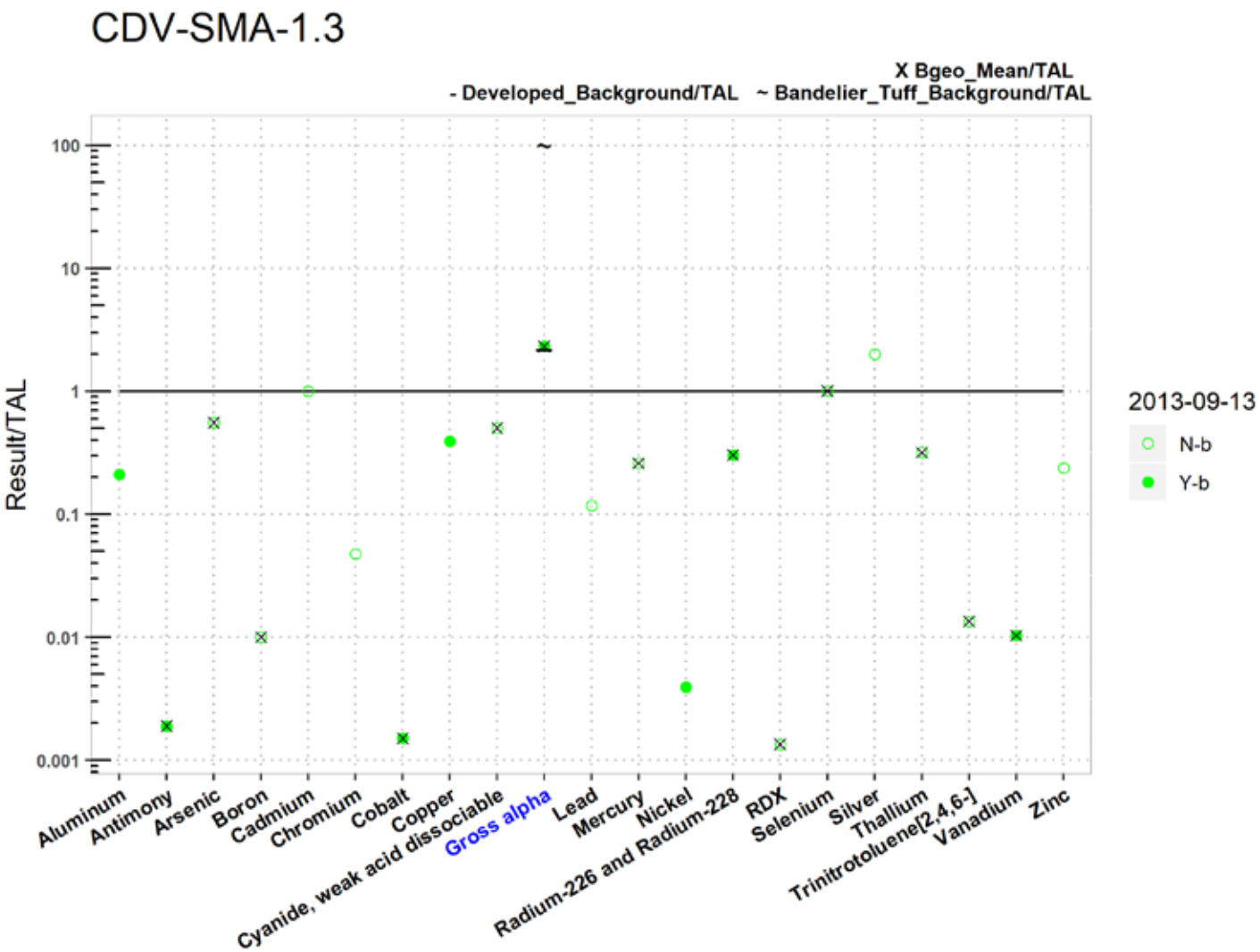


Figure 181-2 Analytical results summary for CDV-SMA-1.3

CDV-SMA-1.3

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0019	0.56	0.01	NA	NA	0.0015	NA	0.5	**2.3**	NA	0.26	NA	0.3	0.0013	1	NA	0.32	0.013	0.01	NA
2013-09-13 d	0.21	0.0019	NA	NA	NA	NA	0.0015	0.39	NA	**2.3**	NA	NA	0.0039	0.3	NA	NA	NA	NA	NA	0.01	NA
2013-09-13 nd	NA	NA	0.56	0.01	1	0.048	NA	NA	0.5	NA	0.12	0.26	NA	NA	0.0013	1	2	0.32	0.013	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 181-2 (continued) Analytical results summary for CDV-SMA-1.3

182.0 CDV-SMA-1.4: SWMUs 16-020, 16-026(l), 16-028(c), and 16-030(c)

182.1 Site Descriptions

Four historical industrial activity areas are associated with V003, CDV-SMA-1.4: Sites 16-020, 16-026(l), 16-028(c), and 16-030(c).

SWMU 16-020 is a formerly permitted outfall (EPA 06A037) located 300 ft south of former building 16-222 in the northern portion of TA-16. From 1951 to 1979, the outfall received untreated effluent from the sink and floor drains in photoprocessing building 16-222 and discharged to a drainage channel that empties into Cañon de Valle. In 1979, a silver recovery unit was installed to treat the photoprocessing solutions before discharge. Discharges to the outfall ceased when building 16-222 was decommissioned in 1995. In 2000, approximately 200 yd^3 of soil was removed from the outfall area as part of an IM. After soil removal, the outfall and a portion of the drainage channel were stabilized with rock pavements, check dams, and straw wattles. Building 16-222 underwent D&D in 2003. The outfall drainline is still in place.

Consent Order investigations have not yet begun for this Site; however, decision-level data are available from confirmation samples collected following the 2000 IM conducted at SWMU 16-020. SWMU 16-020 will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

SWMU 16-026(l) consists of two former outfalls that were located on the east side of former x-ray building 16-220 in the northern portion of TA-16. Both outfalls received storm water discharges from separate roof drains. Engineering records state that neither the drainline nor the outfall could be located in the field. Building 16-220 underwent D&D in 2003.

Consent Order investigations have not yet begun for this Site; no decision-level data are available for SWMU 16-026(l). SWMU 16-026(l) will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

SWMU 16-028(c) is a former NPDES-permitted outfall (04A070) and drainline that received discharges from eight floor drains in former building 16-220. Wastewater included noncontact cooling water, chiller condensate, periodic discharges from an HE vacuum pump, and wash water from cleaning building floors. The 6-in. VCP drainline discharged to an outfall located in a rocky ditch southeast of the building and flowed to a flat grassy field. The floor drains in former building 16-220 were plugged in 1991, and the outfall was removed from the Laboratory's NPDES permit on September 19, 1997. Building 16-220 underwent D&D in 2003. The outfall drainline is likely still in place.

Consent Order investigations have not yet begun for this Site; no decision-level data are available for SWMU 16-028(c). SWMU 16-028(c) will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

SWMU 16-030(c) consists of three former outfalls from four roof drains at a former rest house (former structure 16-222) at TA-16. The 1990 SWMU report describes SWMU 16-030(c) as consisting of two outfalls originating from roof drains located on the northwest and northeast corners of building 16-222. Engineering drawings show that building 16-222 had four roof drains located at each roof corner that discharged to three outfalls. The roof drain on the northeast corner of the building discharged via a 6-in. VCP to an outfall located approximately 65 ft southeast of building 16-222. The northwest corner roof drain discharged via a 6-in. VCP to an outfall located approximately 20 ft west of building 16-222. The southeast and southwest corner roof drains were connected to a 6-in. VCP that discharged to an outfall located approximately 15 ft southwest of building 16-222. Building 16-222 was constructed in 1953 and underwent D&D in 2003. All surface and subsurface structures were removed in 2003.

Consent Order investigations were not conducted at SWMU 16-030(c). Based on the available data, no COPCs were identified. Therefore, NMED issued a COC without controls for SWMU 16-030(c) in January 2008.

The project map (Figure 182-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

182.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 182-1).

Enhanced controls were installed and certified on May 12, 2014, and submitted to EPA on May 30, 2014, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 182-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00302040069	Established Vegetation	-	X	X	-	B
V00303010066	Earthen Berm	X	-	-	X	B
V00303010070	Earthen Berm	X	-	-	X	EC
V00303010071	Earthen Berm	-	X	-	X	EC
V00303010072	Earthen Berm	-	X	-	X	EC
V00303020017	Base Course Berm	X	-	-	X	CB
V00303120087	Rock Berm	X	-	-	X	B
V00305020068	Sediment Basin	X	-	-	X	B
V00305020073	Sediment Basin	X	-	-	X	EC
V00305020074	Sediment Basin	X	-	-	X	EC
V00305020075	Sediment Basin	X	-	-	X	EC
V00305020076	Sediment Basin	X	-	-	X	EC
V00306010012	Rock Check Dam	-	X	-	X	CB
V00306010039	Rock Check Dam	-	X	-	X	B
V00306010040	Rock Check Dam	-	X	-	X	B
V00306010043	Rock Check Dam	X	-	-	X	B
V00306010057	Rock Check Dam	X	-	-	X	B
V00306010058	Rock Check Dam	-	X	-	X	B
V00306010059	Rock Check Dam	-	X	-	X	B
V00306010060	Rock Check Dam	-	X	-	X	B
V00306010061	Rock Check Dam	-	X	-	X	B
V00306010062	Rock Check Dam	-	X	-	X	B
V00306010063	Rock Check Dam	-	X	-	X	B
V00306010064	Rock Check Dam	-	X	-	X	B
V00306010065	Rock Check Dam	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

182.3 Storm Water Monitoring

SWMUs 16-020, 16-026(l), 16-028(c), and 16-030(c) are monitored within CDV-SMA-1.4. Following the installation of baseline control measures, a baseline storm water sample was collected on September 10, 2012 (Figure 182-2). In Figure 182-2, cadmium and selenium are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for silver (7.86 µg/L) and are presented in Figure 182-2.

In addition, weak acid dissociable cyanide analysis was not performed on the September 10, 2012, sample. The sample bottle for cyanide was not correctly preserved, and the cyanide test was cancelled. Future storm water samples collected at CDV-SMA-1.4 will be analyzed for weak acid dissociable cyanide.

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 16-020:

- Silver is known to be associated with industrial materials historically managed at the Site. Silver was detected above BVs in 20 of 20 shallow IM confirmation samples at a maximum concentration 720 times the soil BV.

SWMU 16-026(l):

- Silver is not known to be associated with industrial materials historically managed at the Site. Decision-level data are not available for SWMU 16-026(l). However, a likely source of the cyanide TAL exceedance is SWMU 16-020, a former outfall located 300 ft south of former building 16-222 that received untreated effluent from the sink and floor drains in photoprocessing building 16-222 and discharged to a drainage channel that empties into Cañon de Valle. The SWMU 16-020 outfall is downstream of SWMU 16-026(l) and directly upstream of the SMA sampler.

SWMU 16-028(c):

- Silver is not known to be associated with industrial materials historically managed at the Site. Decision-level data are not available for SWMU 16-028(c). However, a likely source of the cyanide TAL exceedance is SWMU 16-020, a former outfall located 300 ft south of former building 16-222 that received untreated effluent from the sink and floor drains in photoprocessing building 16-222 and discharged to a drainage channel empties into Cañon de Valle. The SWMU 16-020 outfall is downstream of SWMU 16-028(c) and directly upstream of the SMA sampler.

SWMU 16-030(c):

- Silver is not known to be associated with industrial materials historically managed at the Site. Decision-level data are not available for SWMU 16-030(c).

The TAL exceedance was also evaluated against the appropriate storm water BV, that is, "Bandelier Tuff background" for undisturbed SMAs. BVs are expressed as UTLs using the approved EPA method for calculating BVs.

- Silver—The silver UTL from sediment derived from Bandelier Tuff was not calculated because the number of detected values was not sufficient to allow calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison with the background silver UTL could not be made.

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

182.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at CDV-SMA-1.4 during the 2019 season. These rain events triggered seven post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 182-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72951	3-19-2019
Storm Rain Event	BMP-74245	6-27-2019
Storm Rain Event	BMP-74658	7-17-2019
Storm Rain Event	BMP-75457	8-6-2019
Storm Rain Event	BMP-76405	8-29-2019
Storm Rain Event	BMP-76701	9-10-2019
Storm Rain Event	BMP-77285	10-10-2019

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

Table 182-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-72951	Picked up floatable garbage from area at inspection	3-19-2019	0 day(s)	Maintenance conducted as soon as practicable.

182.5 Compliance Status

The Sites associated with CDV-SMA-1.4 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 2019. Table 182-4 presents the 2019 compliance status.

Table 182-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-020	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 16-026(l)	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 16-028(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 16-030(c)	Corrective Action Complete Request to remove Site from the Permit	Corrective Action Complete Request to remove Site from the Permit	LANL, October 14, 2015, "NPDES Permit No. NM0030759-Request Deletion of Six Sites Planned for Deletion from the Individual Permit for Storm Water." LANL, November 29, 2012, "Submittal of Completion of Corrective Action for Twelve Monitoring Sites." LANL, August 21, 2013, "Resubmittal of Completion of Corrective Action for Twelve Site Monitoring Areas."

CDV-SMA-1.4, Earthen Berm, V00303010066, (photo ID 35020-4)

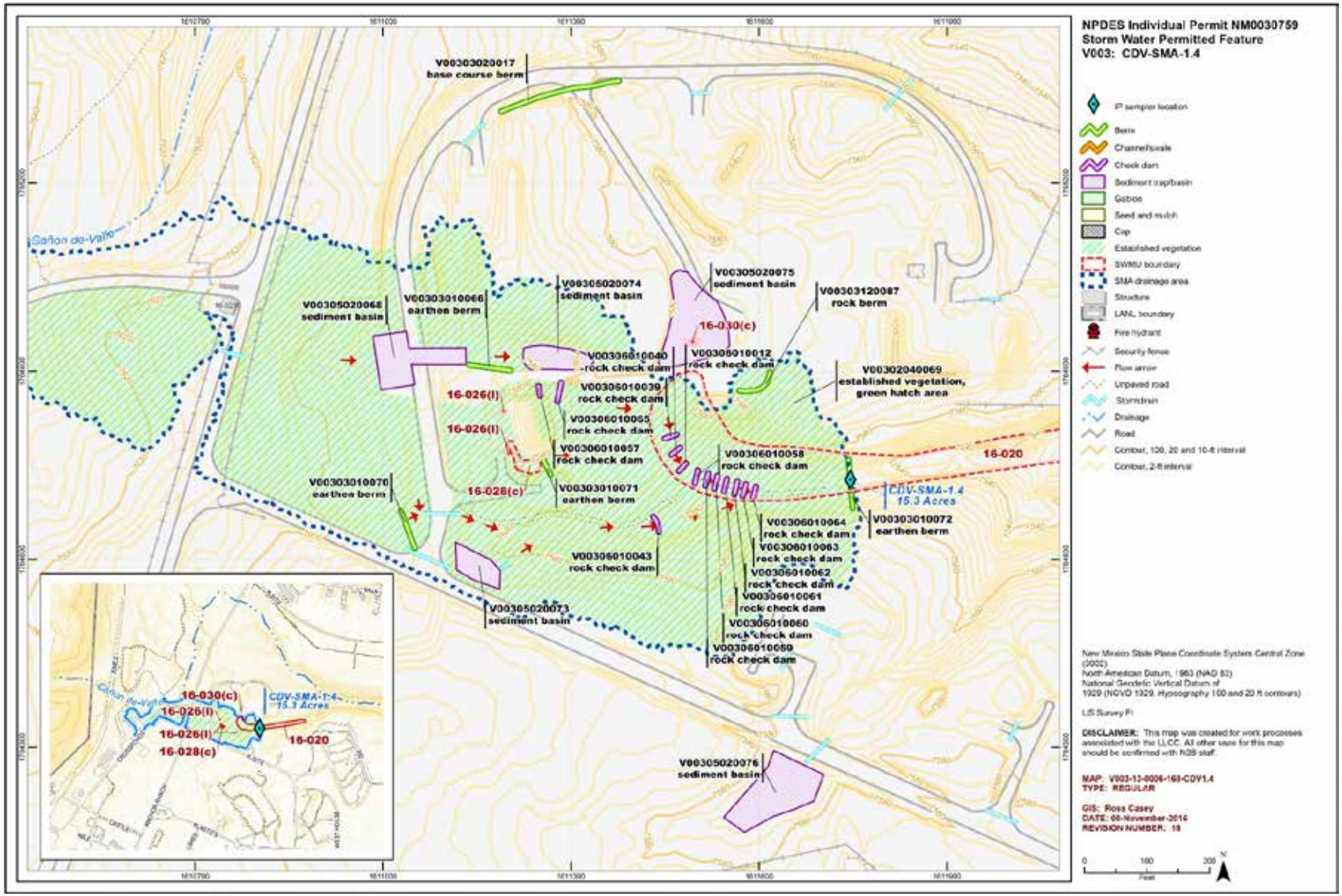


Figure 182-1 CDV-SMA-1.4 location map

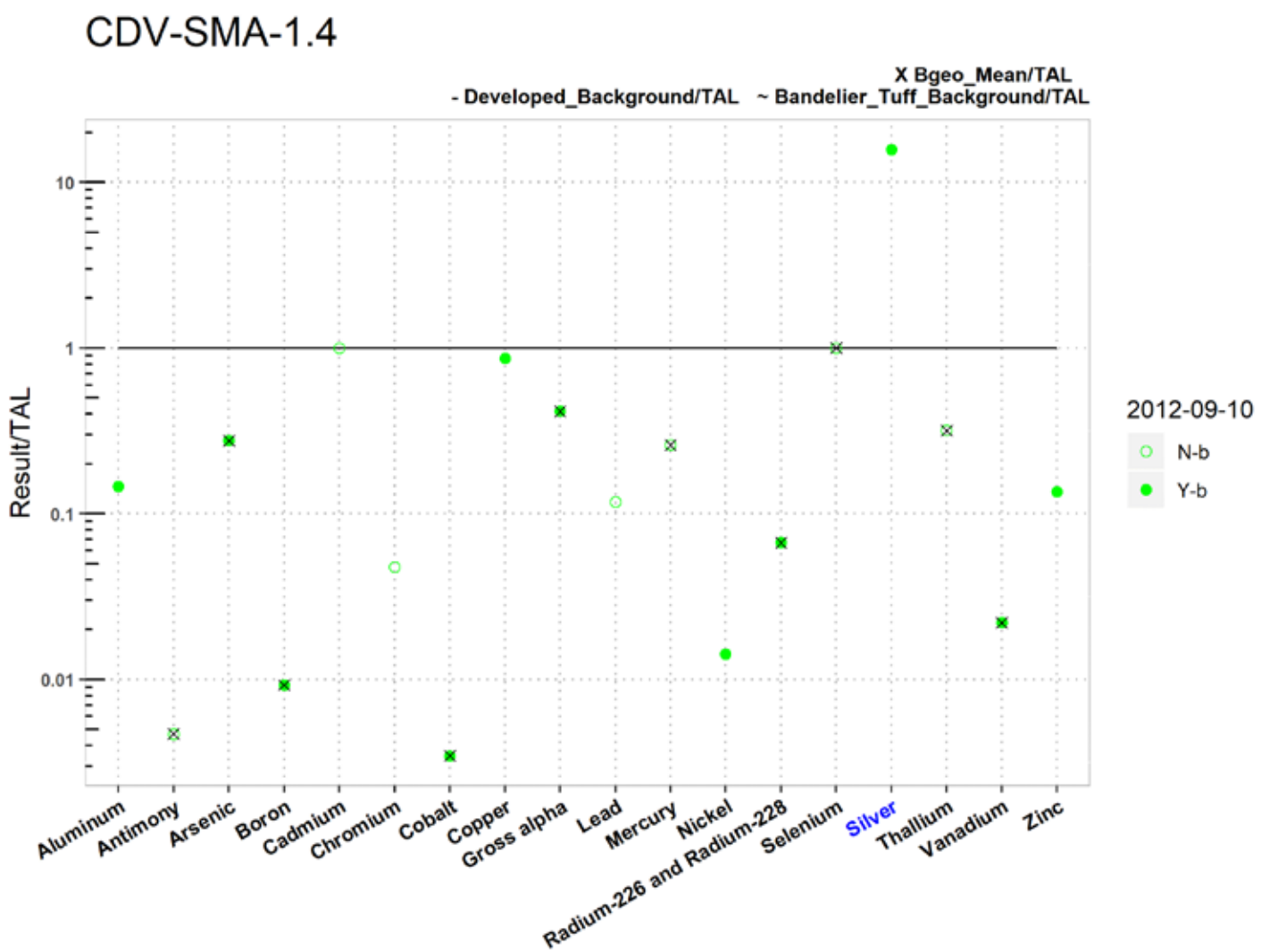


Figure 182-2 Analytical results summary for CDV-SMA-1.4

CDV-SMA-1.4

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.28	0.0093	NA	NA	0.0035	NA	0.41	NA	0.26	NA	0.067	1	NA	0.32	0.022	NA
2012-09-10 d	0.15	NA	0.28	0.0093	NA	NA	0.0035	0.87	0.41	NA	NA	0.014	0.067	NA	**16**	NA	0.022	0.14
2012-09-10 nd	NA	0.0047	NA	NA	1	0.048	NA	NA	NA	0.12	0.26	NA	NA	1	NA	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 182-2 (continued) Analytical results summary for CDV-SMA-1.4

183.0 CDV-SMA-1.45: SWMU 16-026(i)

183.1 Site Descriptions

One historical industrial activity area is associated with V004, CDV-SMA-1.45: Site 16-026(i).

SWMU 16-026(i) consists of a former outfall and drainline from former x-ray building 16-224 at TA-16. Finished packaged HE components were x-rayed in building 16-224 and returned to adjacent rest houses for storage; in some cases, HE components were unwrapped before they were x-rayed. Reportedly, HE dust and small chips would periodically break off unpackaged components during the x-ray process and could have entered the floor drains. Floor drains in building 16-224 discharged to an outfall northeast of former building 16-224; the discharges consisted of small volumes of washdown water discharged onto a gradual, grass-covered slope. The floor drains in building 16-224 were plugged in 1991; building 16-224 underwent D&D in 2003.

Consent Order investigations have not yet begun; no decision-level data are available for SWMU 16-026(i). SWMU 16-026(i) will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

The project map (Figure 183-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

183.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 183-1).

Enhanced controls were installed and certified on July 15, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 183-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00402040005	Established Vegetation	-	X	X	-	B
V00403010004	Earthen Berm	-	X	-	X	EC

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

183.3 Storm Water Monitoring

SWMU 16-026(i) is monitored within CDV-SMA-1.45. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 183-2). Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (17.8 pCi/L) and are presented in Figure 183-2.

Exceedances are typically evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities.

SWMU 16-026(i):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. No decision-level data are available for SWMU 16-026(i).

The TAL exceedance was 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 183-2. 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 183-2.

Monitoring location CDV-SMA-1.45 receives storm water run-on from locations with 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 background UTL for locations with sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than this value.

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

183.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at CDV-SMA-1.45 during the 2019 season. These rain events triggered seven post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 183-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72953	3-19-2019
Storm Rain Event	BMP-74247	6-27-2019
Storm Rain Event	BMP-74660	7-17-2019
Storm Rain Event	BMP-75459	8-6-2019
Storm Rain Event	BMP-76407	8-29-2019
Storm Rain Event	BMP-76703	9-10-2019
Storm Rain Event	BMP-77287	10-10-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-1.45 in 2019.

183.5 Compliance Status

The Site associated with CDV-SMA-1.45 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 2019. Table 183-3 presents the 2019 compliance status.

Table 183-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-026(i)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	July 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Twelve Site Monitoring Areas."

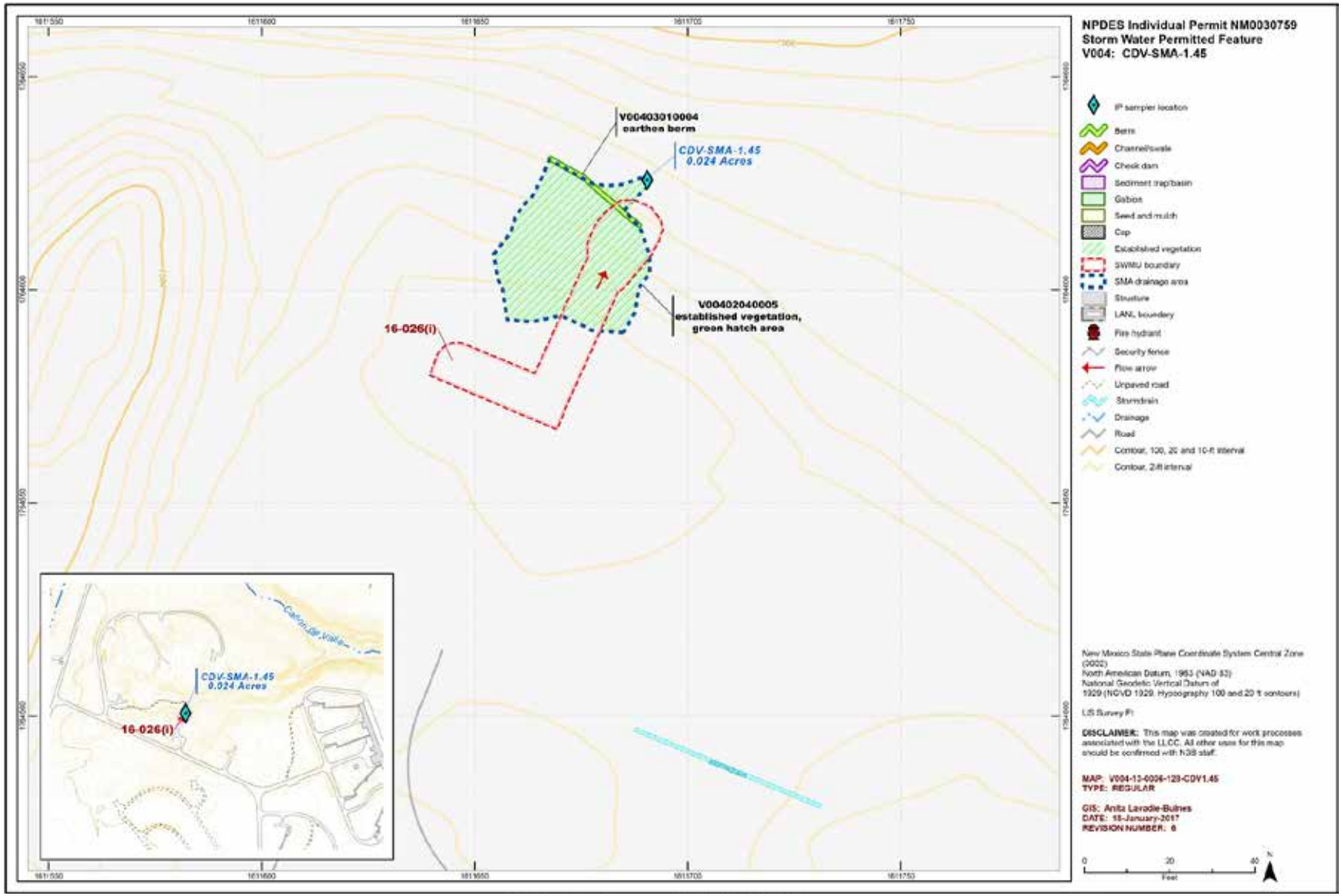


Figure 183-1 CDV-SMA-1.45 location map

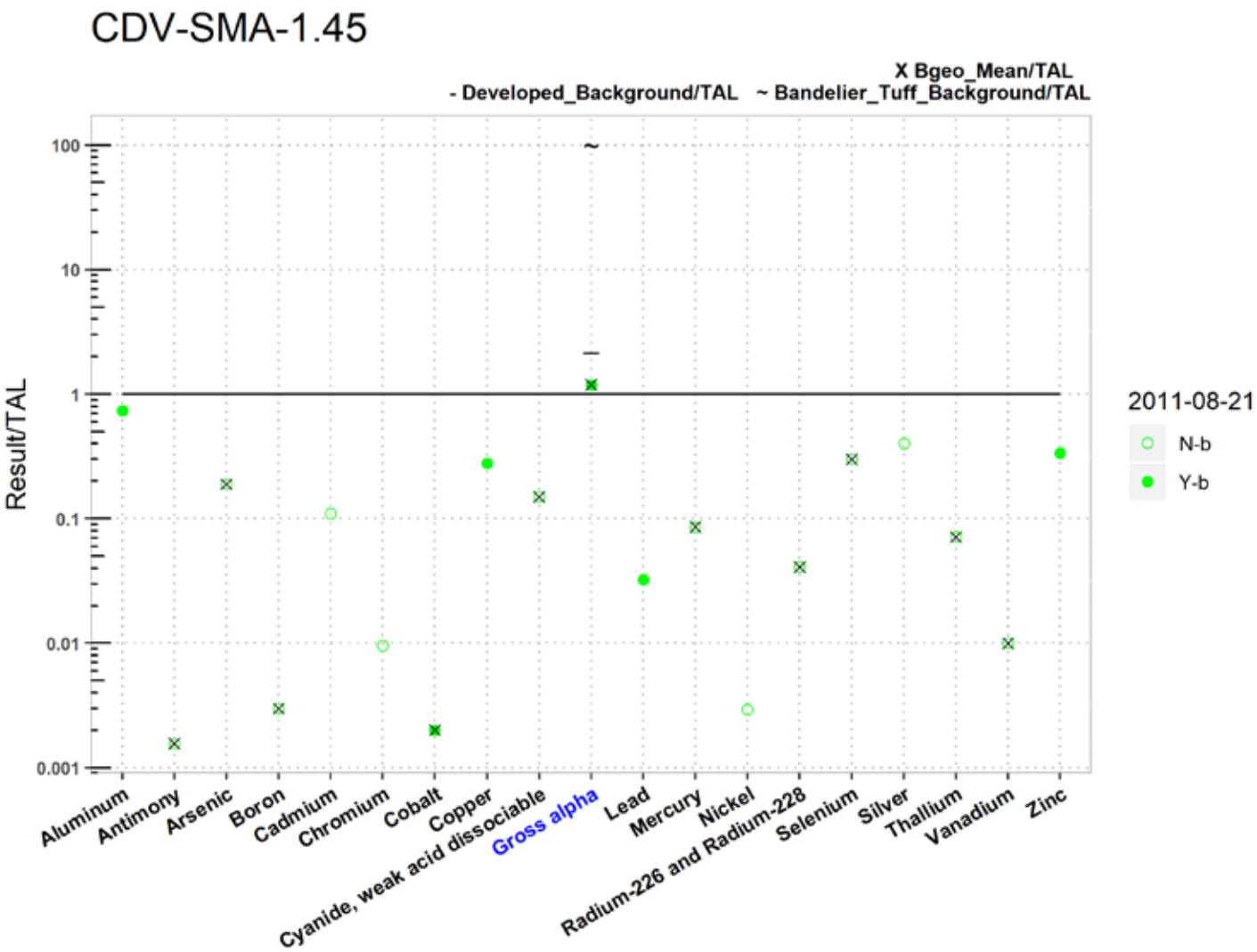


Figure 183-2 Analytical results summary for CDV-SMA-1.45

CDV-SMA-1.45

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.003	NA	NA	0.002	NA	0.15	**1.2**	NA	0.086	NA	0.041	0.3	NA	0.071	0.01	NA
2011-08-21 d	0.73	NA	NA	NA	NA	NA	0.002	0.28	NA	**1.2**	0.032	NA	NA	NA	NA	NA	NA	NA	0.34
2011-08-21 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	NA	0.086	0.0029	0.041	0.3	0.4	0.071	0.01	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 183-2 (continued) Analytical results summary for CDV-SMA-1.45

184.0 CDV-SMA-1.7: SWMU 16-019

184.1 Site Descriptions

One historical industrial activity area is associated with V005, CDV-SMA-1.7: Site 16-019.

SWMU 16-019, MDA R, consists of the original World War II S-Site Burning Ground and associated inactive waste disposal site. Located at TA-16 north of building 16-260 and south of Cañon de Valle, the MDA was used to burn HE wastes and began operating in the mid-1940s. Initially, the HE wastes were burned directly on the ground surface in an area cleared of grass and shrubs. By 1949, burning operations were conducted in three adjacent shallow burn pits, each approximately 75 ft^2, constructed in the eastern portion of the MDA, approximately 150 ft from the edge of the canyon.

CDV-SMA-1.7, Earthen Berm, V00503010027 (photo ID 48335-16)

Burning operations at MDA R ceased in the early 1950s when the buildings composing the 260 Line were constructed. During the construction of the 260 Line, the burn pits were backfilled with material from the associated berms and the entire area was leveled. In May 2000, the Cerro Grande fire burned over MDA R and continued to burn underground within the MDA for several weeks. As part of emergency response and fire-suppression efforts, portions of the MDA were excavated and stabilized and erosion-control measures were installed. The area is currently covered with grasses, small trees, and shrubs.

Consent Order investigations have not yet begun for SWMU 16-019. Decision-level data are available from investigation sampling conducted during 1997, 1998, and 2000. SWMU 16-019 will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

The project map (Figure 184-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

184.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 184-1).

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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 184-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00501060035	Erosion Control Blanket	-	X	X	-	B
V00502040016	Established Vegetation	-	X	X	-	B
V00503010027	Earthen Berm	-	X	-	X	EC
V00503010028	Earthen Berm	-	X	-	X	EC
V00503020034	Base Course Berm	X	-	-	X	B
V00503060025	Straw Wattle	-	X	-	X	EC
V00503060032	Straw Wattle	-	X	-	X	B
V00504010018	Earthen Channel/Swale	X	-	X	-	EC
V00504040017	Culvert	X	-	X	-	EC
V00504040036	Culvert	-	X	X	-	B
V00504060015	Rip Rap	-	-	X	-	CB
V00504060026	Rip Rap	-	-	X	-	EC
V00504060039	Rip Rap	-	X	X	-	B
V00504080033	TRM-Lined Swale	X	-	X	-	B
V00506010006	Rock Check Dam	-	X	-	X	CB
V00506010008	Rock Check Dam	X	-	-	X	CB
V00506010009	Rock Check Dam	X	-	-	X	CB
V00506010010	Rock Check Dam	X	-	-	X	CB
V00506010013	Rock Check Dam	X	-	-	X	CB
V00506010014	Rock Check Dam	X	-	-	X	CB
V00506010019	Rock Check Dam	X	-	-	X	EC
V00506010020	Rock Check Dam	X	-	-	X	EC
V00506010022	Rock Check Dam	X	-	-	X	EC
V00506010029	Rock Check Dam	-	X	-	X	EC
V00506010030	Rock Check Dam	-	X	-	X	EC
V00506010031	Rock Check Dam	-	X	-	X	EC
V00506020023	Log Check Dam	-	X	-	X	EC
V00506040038	Energy Dissipater	-	X	-	X	B
V00507010037	Gabion	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

184.3 Storm Water Monitoring

SWMU 16-019 is monitored within CDV-SMA-1.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 184-2). In Figure 184-2, cadmium and selenium are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (11 µg/L), cyanide (0.0175 mg/L), gross-alpha activity (36.9 pCi/L), and RDX concentration (908 µg/L) and are presented in Figure 184-2.

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 16-019:

- Copper is potentially associated with industrial materials historically managed at the Site. Copper was detected above BVs in 6 of the 44 shallow (i.e., less than 3 ft bgs) 1998 and 2000 RFI soil samples collected at the Site at a maximum concentration 1563 times the soil BV.
- Cyanide is not known to be associated with industrial materials historically managed at the Site. None of the 44 shallow 1998 and 2000 RFI samples were analyzed for cyanide.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. None of the 44 shallow 1998 and 2000 RFI samples were analyzed for alpha-emitting radionuclides.
- RDX is known to be associated with industrial materials historically managed at the Site. RDX was detected in 16 of 44 shallow soil samples at a maximum concentration 2577% of the residential SSL.

The monitoring station for CDV-SMA-1.7 has been relocated. The sampler has been repositioned to a location determined to be more representative of the SMA. The Sampler coordinates and the SMA drainage area have been updated in Attachment 4.

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 184-2. 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 184-2.

Monitoring location CDV-SMA-1.7 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.

- Copper—The copper UTL from background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is greater than this value.
- Cyanide, weak acid dissociable—The cyanide, weak acid dissociable, UTL from undisturbed Bandelier Tuff storm water run-on was not calculated.

- 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.
- RDX—The RDX UTL from undisturbed Bandelier Tuff was not calculated. Therefore, no comparison to RDX background values in storm water could be made.

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

184.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at CDV-SMA-1.7 during the 2019 season. These rain events triggered eight post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 184-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72952	3-16-2019
Storm Rain Event	BMP-74246	6-20-2019
Storm Rain Event	BMP-74659	7-10-2019
Storm Rain Event	BMP-74927	7-16-2019
Storm Rain Event	BMP-75458	7-30-2019
Storm Rain Event	BMP-76406	8-23-2019
Storm Rain Event	BMP-76702	9-5-2019
Storm Rain Event	BMP-77286	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-1.7 in 2019.

184.5 Compliance Status

The Site associated with CDV-SMA-1.7 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 2019. Table 184-3 presents the 2019 compliance status.

Table 184-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-019	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 10, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Six Site Monitoring Areas (2M-SMA-3; CDB-SMA-1; CDV-SMA-1.7; PJ-SMA-1.05; STRM-SMA-1.5; and W-SMA-1.5)."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

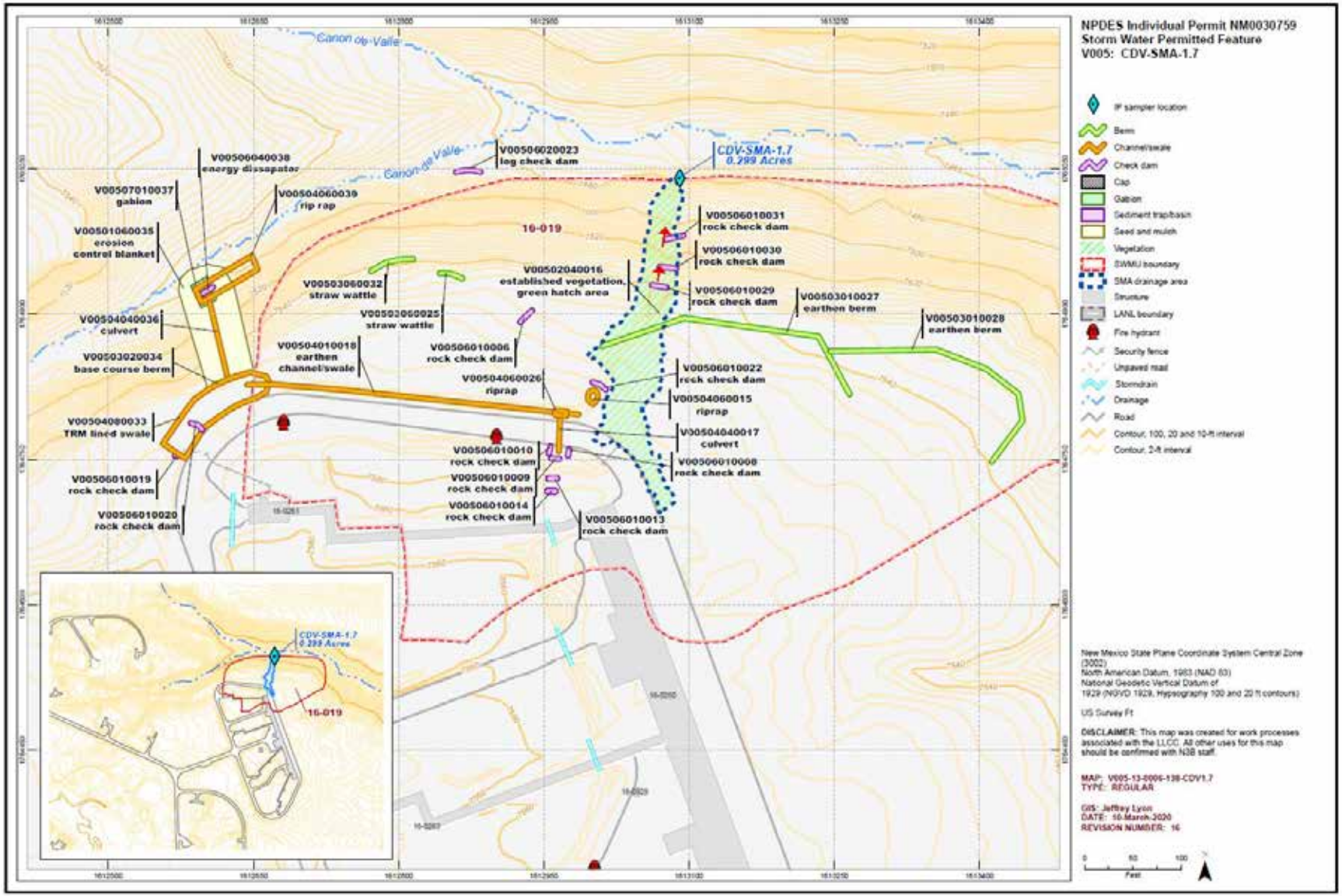


Figure 184-1 CDV-SMA-1.7 location map

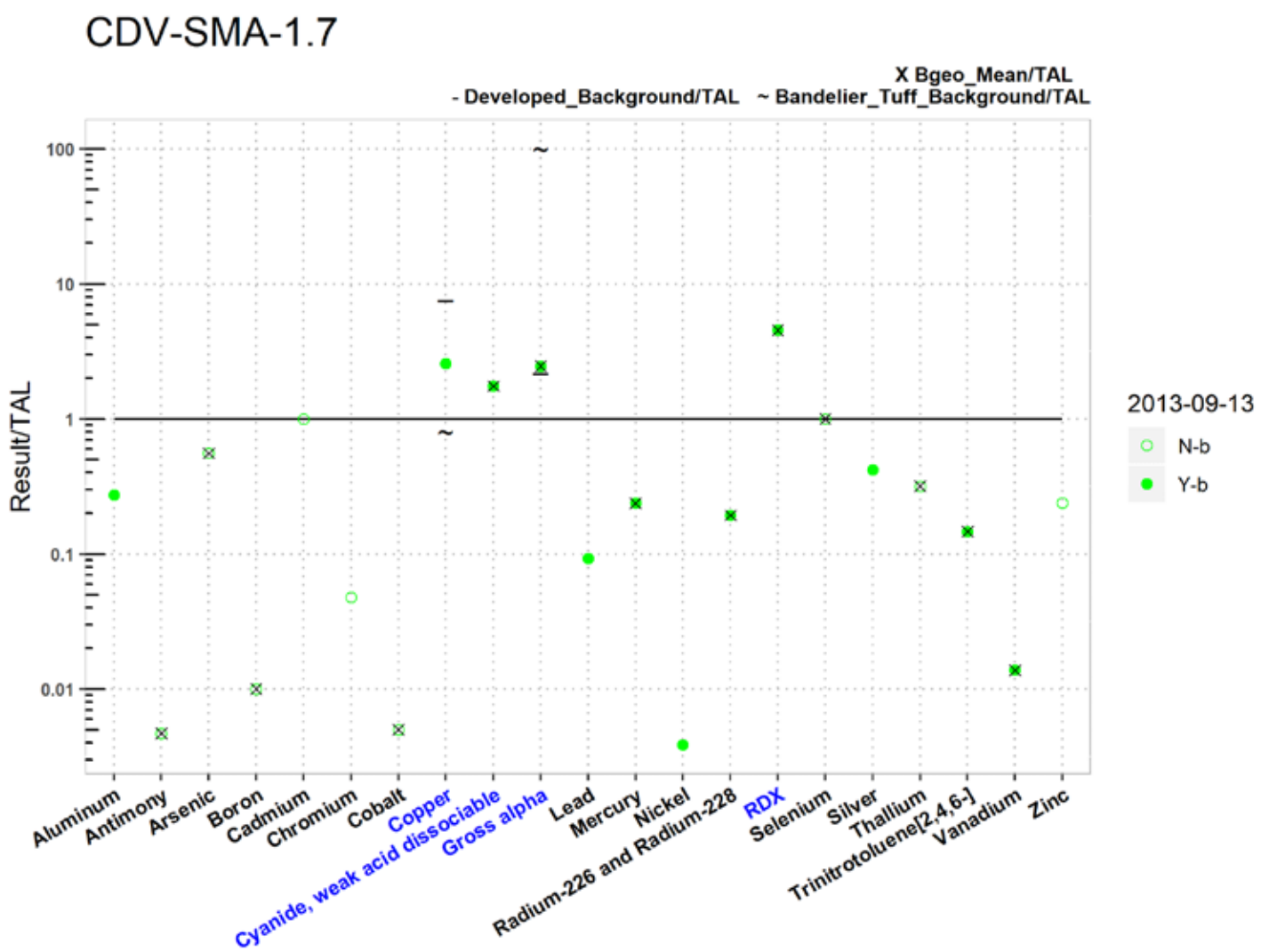


Figure 184-2 Analytical results summary for CDV-SMA-1.7

CDV-SMA-1.7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.01	NA	NA	0.005	NA	**1.8**	**2.5**	NA	0.24	NA	0.19	**4.5**	1	NA	0.32	0.15	0.014	NA
2013-09-13 d	0.27	NA	NA	NA	NA	NA	NA	**2.6**	**1.8**	**2.5**	0.092	0.24	0.0039	0.19	**4.5**	NA	0.42	NA	0.15	0.014	NA
2013-09-13 nd	NA	0.0047	0.56	0.01	1	0.048	0.005	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	0.32	NA	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 184-2 (continued) Analytical results summary for CDV-SMA-1.7

185.0 CDV-SMA-2: SWMU 16-021(c)

185.1 Site Descriptions

One historical industrial activity area is associated with V006, CDV-SMA-2: Site 16-021(c).

SWMU 16-021(c) received discharges of HE-contaminated wastewater from the building 16-260 HE sumps [SWMU 16-003(k)] that were located along the northeast side of the building in the southwest corner of TA-16. SWMU 16-021(c) consists of three sections; the building 16-260 Outfall (260 Outfall) and an upper drainage channel fed directly by the outfall, a former settling pond, and a lower drainage channel leading to Cañon de Valle. The former settling pond was approximately 50 ft long and 20 ft wide and was located in the upper drainage channel, approximately 45 ft below the 260 Outfall. The drainage channel runs approximately 600 ft northeast from the 260 Outfall to the bottom of Cañon de Valle. A 15-ft near-vertical cliff is located approximately 400 ft from the 260 Outfall and marks the break between the upper and lower drainage channels. HE-contaminated water from the 260 Outfall entered the former settling pond and drained into the 260 Outfall drainage channel, which was a substantial pathway for contamination identified in downgradient components of the SWMUs 16-003(k) and 16-021(c) hydrogeologic system, including the SWSC cut. The SWSC cut is next to SWSC spring and SWSC pipeline and derived its name because it is a roadcut for the SWSC pipline. Building 16-260 had been used since 1951 to process and machine HE. Water was used during the machining of HE, which is slighlty water-soluble; wastewater from machining operations contained dissolved HE and potential entrained HE cuttings. Wastewater treatment consisted of routing the water to 13 settling sumps [SWMU 16-003(k)] to recover entrained HE cuttings. From 1951 to 1996, the water from these sumps was discharged to the 260 Outfall. In 1994, outfall discharge volumes were measured at several million gallons per year. The discharge volumes were probably higher during the 1950s when HE-production output from building 16-260 was substantially greater than it was in the 1990s. In the past, barium had been a constituent of certain HE formulations, and thus barium was also present in the outfall wastewater from building 16-260. Discharge to the outfall continued until 1996 when the sumps were plugged. The outfall was removed from the NPDES permit in January 1998.

During an IM conducted in 2000 and 2001, more than 1300 yd^3 of contaminated soil was removed from the former settling pond and drainage channel. Approximately 90% of the HE in the SWMU 16-021(c) source area was removed. A low-permeability cap consisting of a 20-in.-thick crushed tuff/bentonite mixture was installed on top of the former settling pond during the IM. A CMI conducted in 2009 and 2010 included the removal of soil and tuff contaminated with HE and other constituents in the former 260 Outfall channel and in the alluvial systems of Cañon de Valle and Martin Spring Canyon, confirmation sampling, and installation of four HE treatment systems. Risk-assessment results for the 260 Outfall drainage channel indicate the Site meets residential risk levels. Groundwater contamination continues to be assessed, monitored, and treated.

Consent Order soil investigations for the SWMU 16-021(c) drainage channel are complete. Corrective actions for SWMU 16-021(c) are now being addressed under the Consent Order as part of the CME/CMI for the 260 Outfall.

The project map (Figure 185-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

185.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 185-1).

Table 185-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00602040013	Established Vegetation	-	X	X	-	B
V00603010006	Earthen Berm	-	X	-	X	CB
V00603010007	Earthen Berm	X	-	-	X	CB
V00603010008	Earthen Berm	X	-	-	X	CB
V00603010009	Earthen Berm	X	-	-	X	CB
V00603010010	Earthen Berm	X	-	-	X	CB
V00604060003	Rip Rap	-	X	X	-	CB
V00606010002	Rock Check Dam	-	X	-	X	CB
V00608020012	Rock Cap	-	X	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

185.3 Storm Water Monitoring

SWMU 16-021(c) is monitored within CDV-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 185-2). In Figure 185-2, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (18.2 pCi/L) and are presented in Figure 185-2.

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 16-021(c):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. None of the Consent Order soil samples were analyzed for alpha-emitting radionuclides.

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 185-2. 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 185-2.

Monitoring location CDV-SMA-2 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.

185.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-2 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 185-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72859	3-16-2019
Storm Rain Event	BMP-74603	7-10-2019
Storm Rain Event	BMP-74857	7-16-2019
Storm Rain Event	BMP-75297	7-30-2019
Storm Rain Event	BMP-76643	9-10-2019
Storm Rain Event	BMP-77216	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-2 in 2019.

185.5 Compliance Status

The Site associated with CDV-SMA-2 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 2019. Table 185-3 presents the 2019 compliance status.

Table 185-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-021(c)	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."

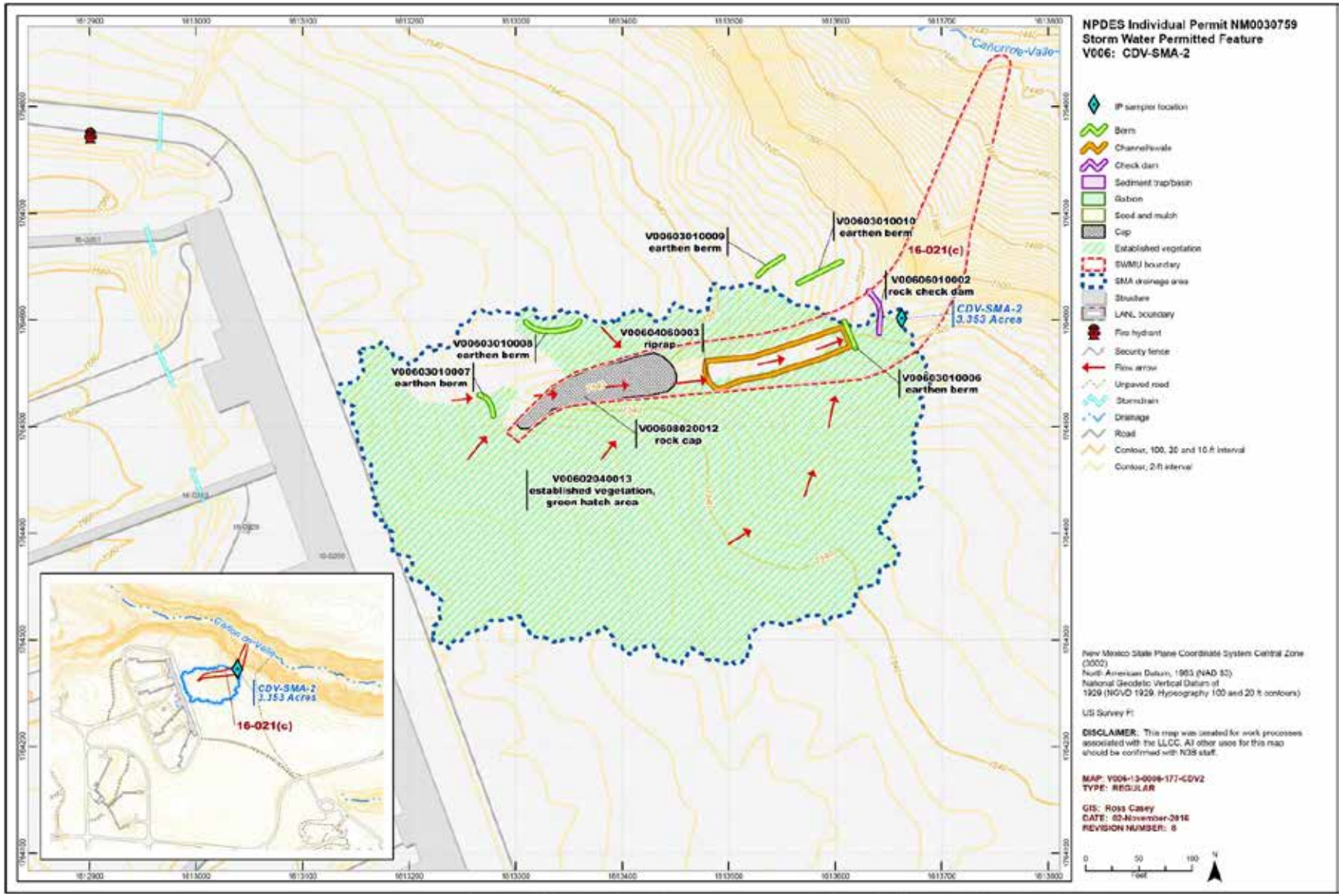


Figure 185-1 CDV-SMA-2 location map

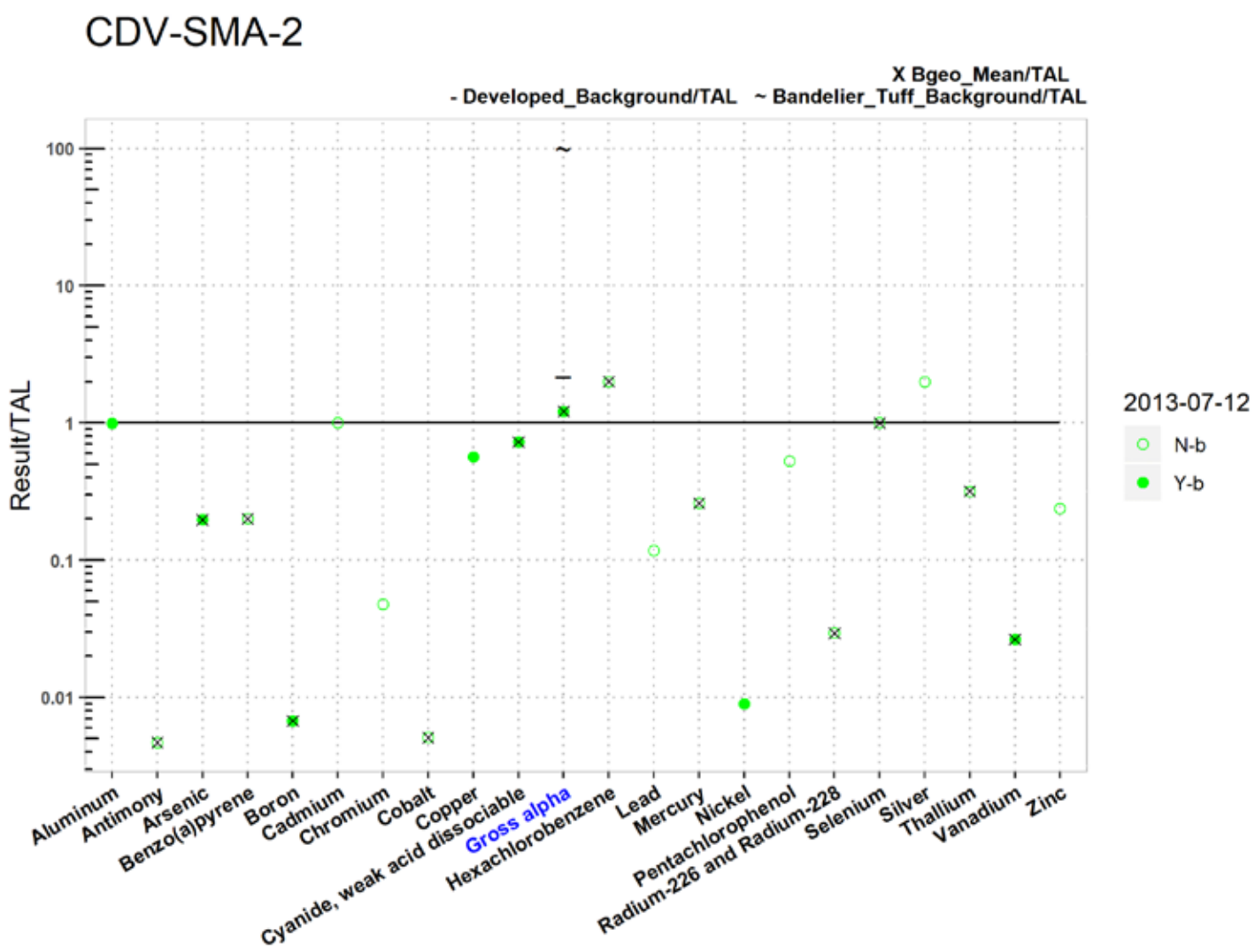


Figure 185-2 Analytical results summary for CDV-SMA-2

CDV-SMA-2

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5	17	0.77	170	19	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5	NA	0.77	NA	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA	17	1.4	170	19	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.2	0.2	0.0067	NA	NA	0.0051	NA	0.73	**1.2**	**2**	NA	0.26	NA	NA	0.029	1	NA	0.32	0.026	NA
2013-07-12 d	0.99	NA	0.2	NA	0.0067	NA	NA	NA	0.57	0.73	**1.2**	NA	NA	NA	0.0089	NA	NA	NA	NA	NA	0.026	NA
2013-07-12 nd	NA	0.0047	NA	0.2	NA	1	0.048	0.0051	NA	NA	NA	2	0.12	0.26	NA	0.53	0.029	1	2	0.32	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 185-2 (continued) Analytical results summary for CDV-SMA-2

186.0 CDV-SMA-2.3: SWMUs 13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), and 16-031(h)

186.1 Site Descriptions

Six historical industrial activity areas are associated with V007, CDV-SMA-2.3: Sites 13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), and 16-031(h).

SWMU 13-001 is an inactive firing site located east of former building 16-340, between battleship bunker buildings 16-477 and 16-478 at the eastern end of TA-16. The firing site was associated with firing activities conducted at P-Site (former TA-13) and operated from 1944 to 1949. The battleship bunker buildings 16-477 and 16-478 housed x-ray and magnetic equipment and were capped with steel nose cones to protect this equipment from explosive detonations that occurred at the firing site between the two bunkers. Debris from firing site experiments includes shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.

Consent Order sampling is complete for SWMU 13-001. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs except for two detections of arsenic in two subsurface tuff samples. SWMU 13-001 has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019.

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340, and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and, based on a 1948 aerial photograph, the site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the TA-16 WWTP is located on top of the southern tip of the surface disposal area. The SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at that time.

Consent Order sampling is complete for SWMU 13-002. All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 13-002 has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019.

SWMU 16-003(n) consists of a former sump that was located on the exterior northeast wall of former building 16-342 at TA-16. Installed in the early 1950s, the sump was constructed of reinforced concrete and measured approximately 3.5 ft wide × 6.5 ft long × 3 ft deep. The sump received effluent from building 16-342, an HE-processing building, and discharged to a former NPDES-permitted outfall (EPA 05A062) located in Fishladder Canyon, a tributary of Cañon de Valle. The outfall was removed from the Laboratory's NPDES permit effective July 31, 1996. Building 16-342, the sump, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005.

Consent Order sampling is complete for SWMU 16-003(n). SWMU 16-003(n) meets industrial risk levels. The Site was recommended for corrective action complete in the approved 2009 Phase II investigation report for the TA-16-34 complex.

SWMU 16-003(o) consists of the six former HE sumps and an outfall associated with the former explosives synthesis building (structure 16-340) at TA-16. The sumps were connected to the former NPDES-permitted outfall via a 10-in. VCP, which originally discharged to a hill slope east of building 16-340. Building 16-340 was used to produce the plastics explosive PBX. VOCs were used in this preparation, but most VOCs were distilled during the processing. The remaining solvents historically

were discharged with the wastewater to the sumps. In the late 1980s, a trough functioning as an air stripper was installed at the outfall and was designed to trap and volatilize residual solvents in the wastewater. The air stripper resembled a fish ladder, and it discharged approximately 250 ft east of the sumps into Fishladder Canyon, a tributary of Cañon de Valle. The outfall was removed from the Laboratory's NPDES permit on July 20, 1998. Building 16-340, the sumps, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005, when all aboveground and subsurface structures and contaminated soil were removed. Approximately 100 yd^3 of soil was removed from SWMU 16-003(o).

Consent Order sampling is complete for SWMU 16-003(o). SWMU 16-003(o) meets industrial risk levels. Alluvial wells downgradient of SWMU 16-003(o) continue to be monitored. The Site was recommended for corrective action complete in the approved 2009 investigation report.

SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in. VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in. VCP that intersected a drainage channel. Former structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the structure was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009 and 2010, no evidence of the French drain was found. SWMU 16-029(h) was identified as an HE sump (structure 16-487) in the 1990 SWMU report. The SWMU report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former structure 16-478, and also includes areas impacted by the 2000 Cerro Grande wildfire.

Consent Order sampling is complete for SWMU 16-029(h). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 16-029(h) has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019.

SWMU 16-031(h) consists of a former NPDES-permitted outfall (EPA04A134) and associated drainline that served a utility room in former structure 16-478. The outfall received discharges from the sink, vacuum pump, and floor drain in the utility room and was located 30 ft northwest of former building 16-478. Structure 16-478 (formerly structure 13-4) was used for photographing explosives tests and was later modified for testing the effects of machining HE remotely. In July 1995, building 16-478 was decommissioned and subsequently underwent D&D in 2005.

Consent Order sampling is complete for SWMU 16-031(h). All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 16-031(h) has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019.

The project map (Figure 186-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

186.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 186-1).

Table 186-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00702040021	Established Vegetation	-	X	X	-	B
V00703010027	Earthen Berm	-	X	-	X	B
V00703060028	Straw Wattle	-	X	-	X	B
V00703060030	Straw Wattle	-	X	-	X	B
V00703060031	Straw Wattle	X	-	-	X	B
V00703120026	Rock Berm	-	X	-	X	B
V00706010019	Rock Check Dam	X	-	-	X	B
V00706010020	Rock Check Dam	X	-	-	X	B
V00706010024	Rock Check Dam	-	X	-	X	B
V00706010025	Rock Check Dam	-	X	-	X	B
V00707010002	Gabions	-	X	-	X	CB

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

186.3 Storm Water Monitoring

SWMUs 13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), and 16-031(h) are monitored within CDV-SMA-2.3. As part of extended baseline monitoring, a baseline storm water sample was collected on July 20, 2015 (Figure 186-2). This confirmation monitoring sample was collected to determine if corrective action was required. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (54.4 pCi/L) and are presented in Figure 186-2.

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 13-001:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, which are alpha emitters. Americium-241 was detected slightly above BV/FV in 2 out of 27 samples (maximum activity of 0.0394 pCi/g versus 0.013 pCi/g) at SWMU 13-001.

SWMU 13-002:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, which are alpha emitters. Alpha-emitting radionuclides were not detected above BVs or FVs in any of the 0 to 3 ft bgs samples collected at SWMU 13-002.

SWMU 16-003(n):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Samples from 0 to 3 ft bgs were not analyzed for gross-alpha activity or uranium isotopes.

SWMU 16-003(o):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Soil samples were not analyzed using gamma spectroscopy but were analyzed for isotopic uranium (alpha emitters). Uranium isotopes were detected above BVs/FVs in 25 out of 67 samples (0 to 3 ft bgs). Activities were almost 5 times the BV/FV for uranium-234.

SWMU 16-029(h):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, which are alpha emitters. Americium-241 was detected slightly above FV in 3 out of 17 samples (maximum activity of 0.0246 pCi/g vs. 0.013 pCi/g) at SWMU 16-029(h).

SWMU 16-031(h):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, which are alpha emitters. Alpha-emitting radionuclides were not detected above BVs or FVs in any of the 0 to 3 ft bgs samples collected at SWMU 16-031(h).

TAL exceedance was 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 186-2. 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 186-2.

Monitoring location CDV-SMA-2.3 receives storm water run-on from mostly landscape consisting of Bandelier Tuff sediment. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha background UTL for locations with 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 2015 gross-alpha result is between these two values.

All the analytical results for this sample are reported in the 2015 Annual Report.

186.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-2.3 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 186-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72860	3-19-2019
Storm Rain Event	BMP-74604	7-11-2019
Storm Rain Event	BMP-74858	7-23-2019
Storm Rain Event	BMP-75298	8-5-2019
Storm Rain Event	BMP-76644	9-10-2019
Storm Rain Event	BMP-77217	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-2.3 in 2019.

186.5 Compliance Status

The Sites associated with CDV-SMA-2.3 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 2019. Table 186-3 presents the 2019 compliance status.

Table 186-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 13-001	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 - Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 13-002	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 - Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 16-003(n)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 - Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 16-003(o)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 - Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 16-029(h)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 - Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 16-031(h)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 - Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

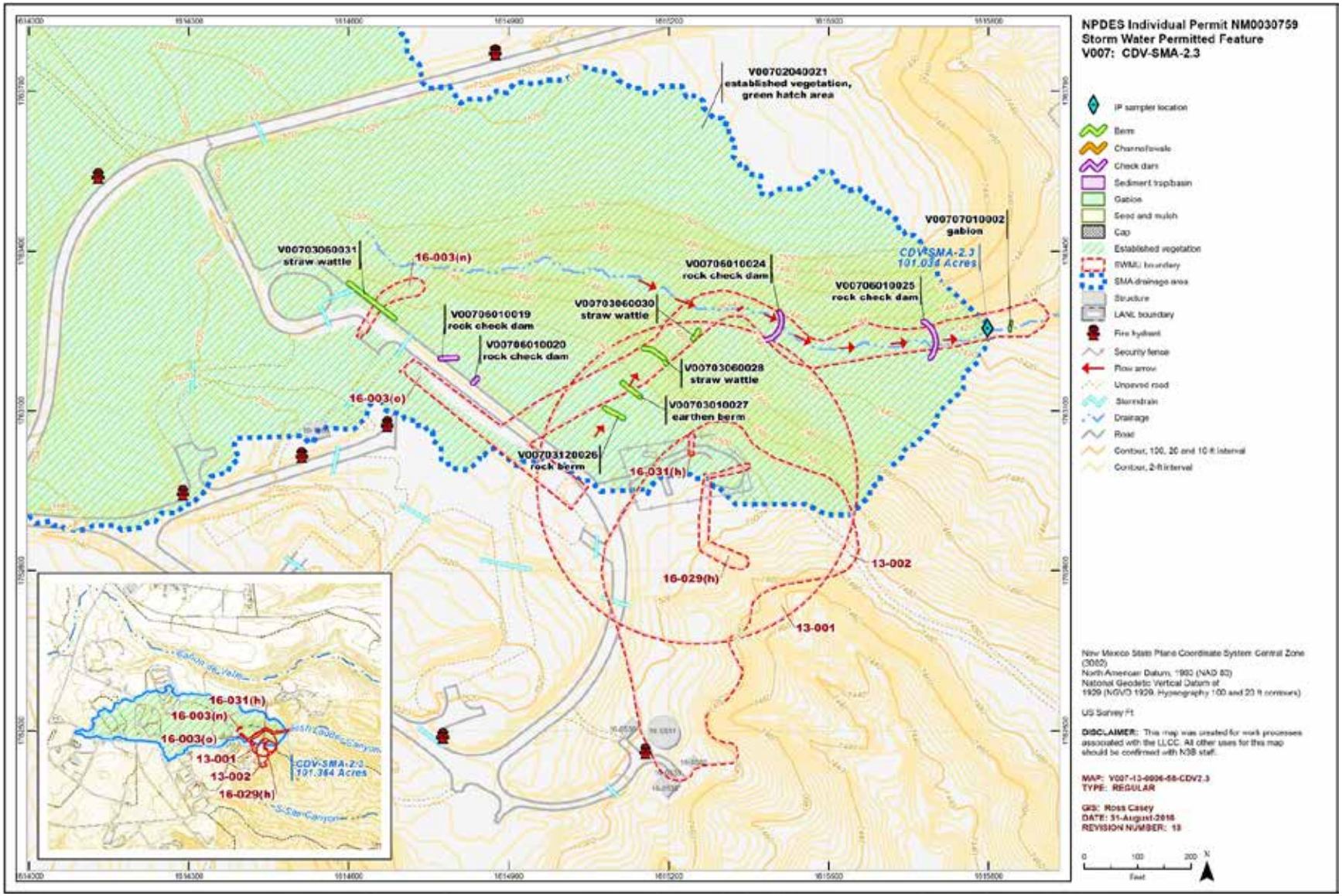


Figure 186-1 CDV-SMA-2.3 location map

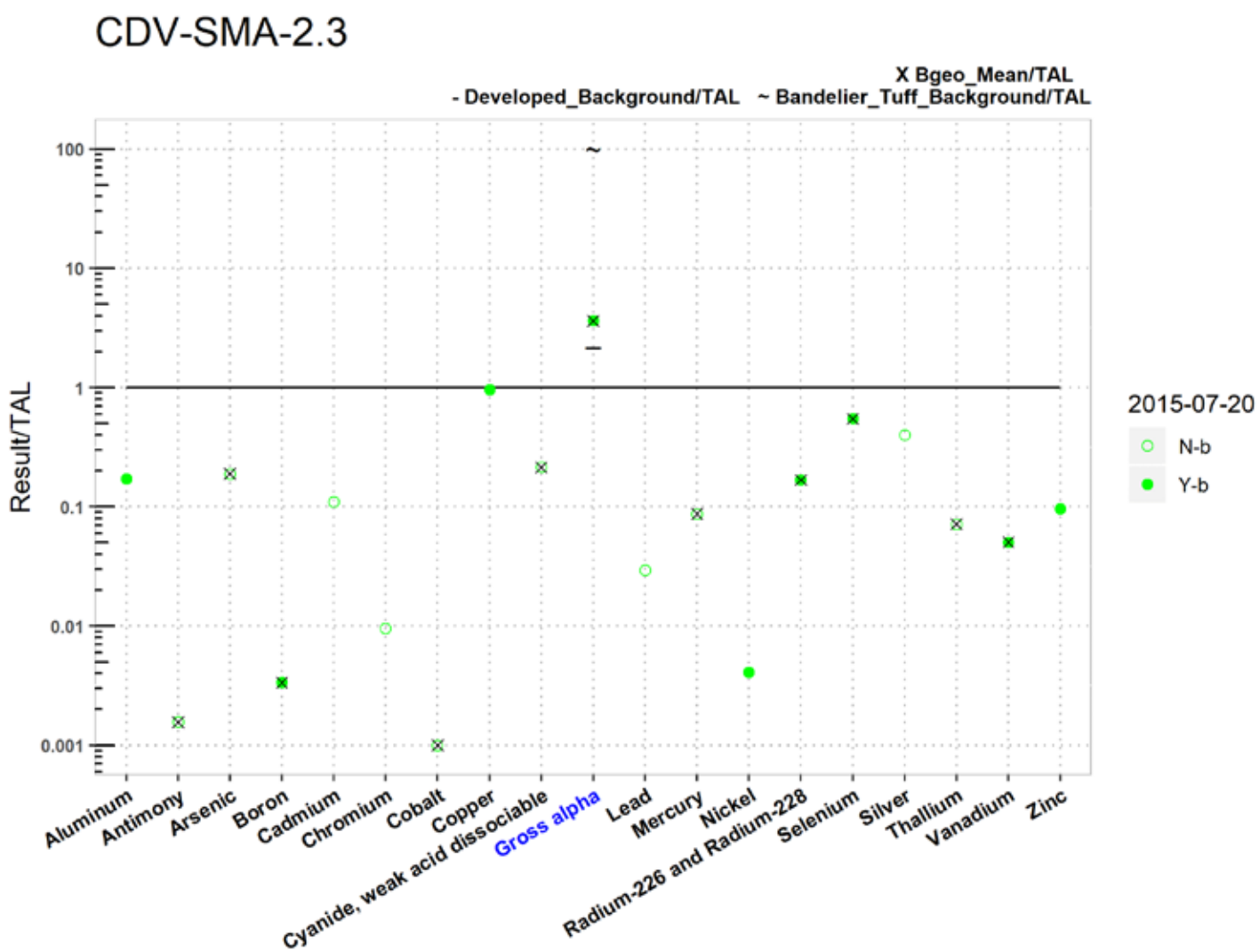


Figure 186-2 Analytical results summary for CDV-SMA-2.3

CDV-SMA-2.3

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.0034	NA	NA	0.001	NA	0.21	**3.6**	NA	0.087	NA	0.17	0.55	NA	0.071	0.05	NA
2015-07-20 d	0.17	NA	NA	0.0034	NA	NA	NA	0.96	NA	**3.6**	NA	NA	0.0041	0.17	0.55	NA	NA	0.05	0.097
2015-07-20 nd	NA	0.0016	0.19	NA	0.11	0.0095	0.001	NA	0.21	NA	0.029	0.087	NA	NA	NA	0.4	0.071	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 186-2 (continued) **Analytical results summary for CDV-SMA-2.3**

187.0 CDV-SMA-2.41: SWMU 16-018

187.1 Site Descriptions

One historical industrial activity area is associated with V008, CDV-SMA-2.41: Site 16-018.

SWMU 16-018 is the former location of MDA P, north of the TA-16 Burning Ground near the south rim of Cañon de Valle. MDA P operated from 1950 to 1984 as a disposal site for debris remaining from burning HE and HE-contaminated material at TA-16. Concrete and construction debris were deposited directly on the slopes leading down into the canyon. Other materials were burned at one of the nearby open-burn units, and the resulting debris or residue was pushed over the mesa rim into the canyon. The western area of MDA P primarily received construction debris from the demolition of World War II–era buildings; the eastern area received debris and residue from the open-burn units. MDA P underwent RCRA closure between 1999 and 2005. During closure, approximately 55,000 yd^3 of soil, rock, metal, and concrete debris was excavated from MDA P. Of this quantity, 21,506 $yd^3$of soil was disposed of as hazardous waste. The remainder of this quantity consisted of industrial waste soils, concrete and metal debris that was recycled or managed as industrial waste, and rock that was decontaminated and then used as riprap within TA-16. Other excavated waste included 3947 lb of asbestos-containing material; 888 containers of unknown content; 95 miscellaneous metal objects; 3240 lb of LLW; 5389 lb of mixed waste; and various smaller quantities of HE, HE-contaminated debris, and residuals from treating HE. Scrap metal and concrete were shipped to recycling facilities. Contaminated soils and industrial wastes were shipped to off-site solid waste landfills. Solid, nonhazardous wastes were disposed of at MDA J.

CDV-SMA-2.41, Rip Rap, V00804060010 (photo ID 8793-4r)

Consent Order sampling has not been conducted at SWMU 16-018; however, decision-level data are available from confirmation samples collected during the RCRA closure of MDA P Site. The Site was segregated into zones (biological and exposed tuff) for cleanup and confirmation sampling purposes and a 30- × 30-ft sampling grid was placed over the entire Site.

The approved 2005 MDA P Site closure certification report concluded the nature and extent had been defined for chemicals and radionuclides detected at SWMU 16-018. The Site meets residential risk levels. NMED approved the SWMU 16-018 RCRA closure report in 2005. SWMU 16-018 was removed from the Laboratory's Hazardous Waste Facility Permit in 2010; therefore, this unit is no longer subject to the Consent Order.

The project map (Figure 187-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

187.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 187-1).

Enhanced controls were installed and certified on June 26, 2014, and submitted to EPA on July 11, 2014, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 187-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00802040015	Established Vegetation	-	X	X	-	B
V00803010013	Earthen Berm	-	X	-	X	EC
V00804010014	Earthen Channel/Swale	X	-	X	-	EC
V00804040011	Culvert	X	-	X	-	CB
V00804060010	Rip Rap	X	-	X	-	CB
V00806010012	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

187.3 Storm Water Monitoring

SWMU 16-018 is monitored within CDV-SMA-2.41. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 187-2). Analytical results from this baseline sample yielded TAL exceedances for gross-alpha activity (231 pCi/L) and PCB concentration (24 ng/L) and are presented in Figure 187-2.

Following the installation of enhanced control measures at CDV-SMA-2.41, a corrective action storm water sample was collected on July 8, 2014 (Figure 187-2). Analytical results from this corrective action monitoring sample yielded TAL exceedances for gross-alpha activity (94.2 pCi/L) and PCB concentration (25 ng/L) and are presented in Figure 187-2.

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 16-018:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Confirmation samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, which are alpha emitters. Alpha-emitting radionuclides were not detected above BVs or FVs in any of the confirmation samples collected at SWMU 16-018.
- PCBs were potentially associated with industrial materials historically managed at SWMU 16-018. The PCB mixture (Aroclor-1260) was detected in 1 of 7 shallow soil confirmation samples collected at a concentration 2.8% of the residential SSL.

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 187-2. 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 187-2.

Monitoring location CDV-SMA-2.41 receives storm water run-on from locations with 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 background UTL for locations with sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 and 2014 gross-alpha results are less than this value.
- PCB—The PCB baseline storm water UTL for locations with sediment derived from Bandelier Tuff is 11.7 ng/L. The 2011 and 2014 PCB results are greater than this value.

All the analytical results for these samples are reported in the 2011 and 2014 Annual Reports.

187.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-2.41 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 187-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72861	3-19-2019
Storm Rain Event	BMP-74605	7-11-2019
Storm Rain Event	BMP-74859	7-23-2019
Storm Rain Event	BMP-75299	8-5-2019
Storm Rain Event	BMP-76645	9-10-2019
Storm Rain Event	BMP-77218	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-2.41 in 2019.

187.5 Compliance Status

The Site associated with CDV-SMA-2.41 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 2019. Table 187-3 presents the 2019 compliance status.

Table 187-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-018	Enhanced Control Corrective Action Monitoring Request to Delete Site from the Permit	Enhanced Control Corrective Action Monitoring Request to Delete Site from the Permit	LANL, July 11, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (CDV-SMA-2.41, F-SMA-2, LA-SMA-5.51, PT-SMA-1.7, S-SMA-0.25)." LANL, October 21, 2015, "NPDES Permit No. NM0030759 - Request for Permit Modification Removal of Sites 16-010(b) (CDV-SMA-2.42), 16-010(c) (CDV-SMA-2.5), 16-010(d) (CDV-SMA-2.5), and 16-018 (CDV-SMA-2.41)."

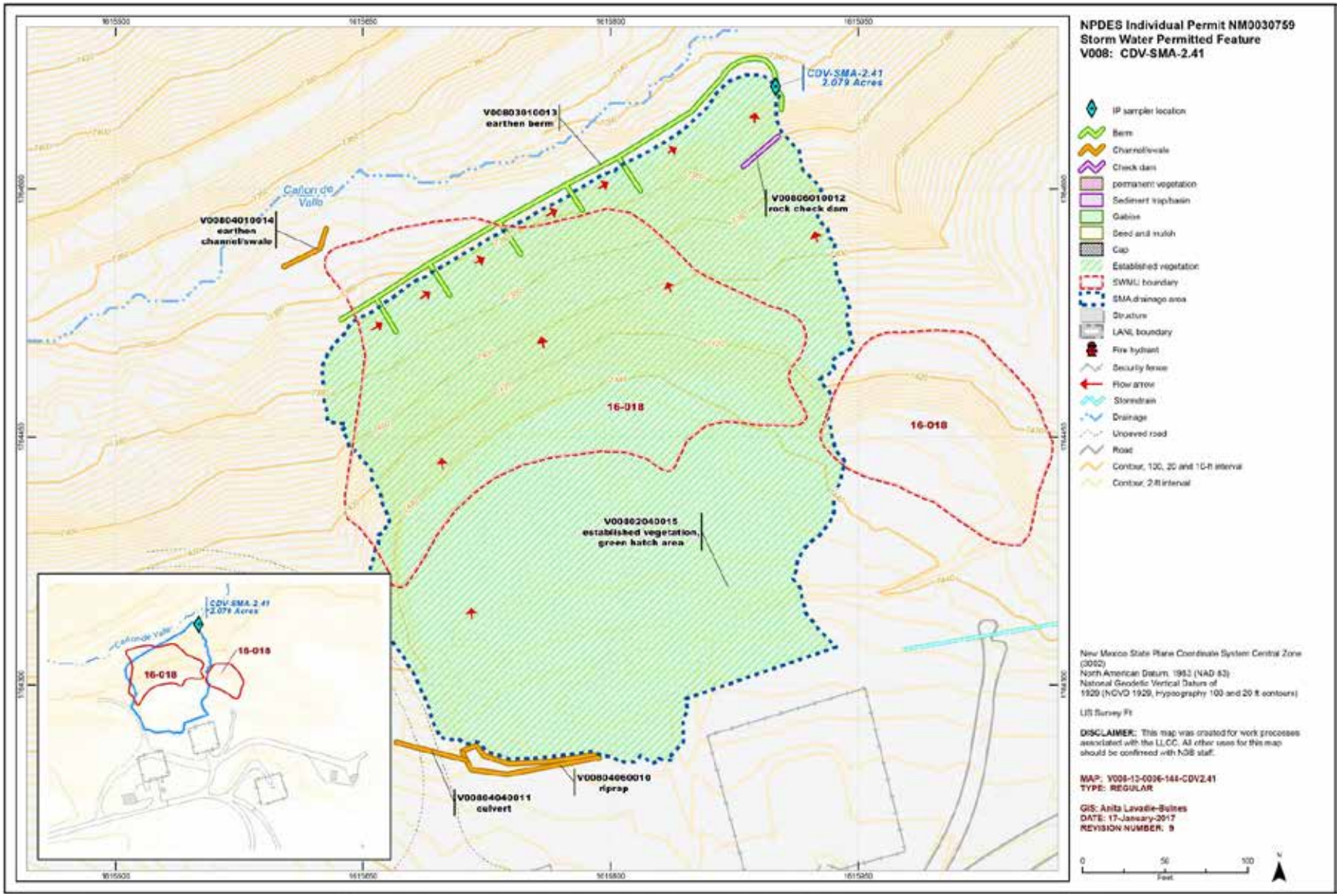


Figure 187-1 CDV-SMA-2.41 location map

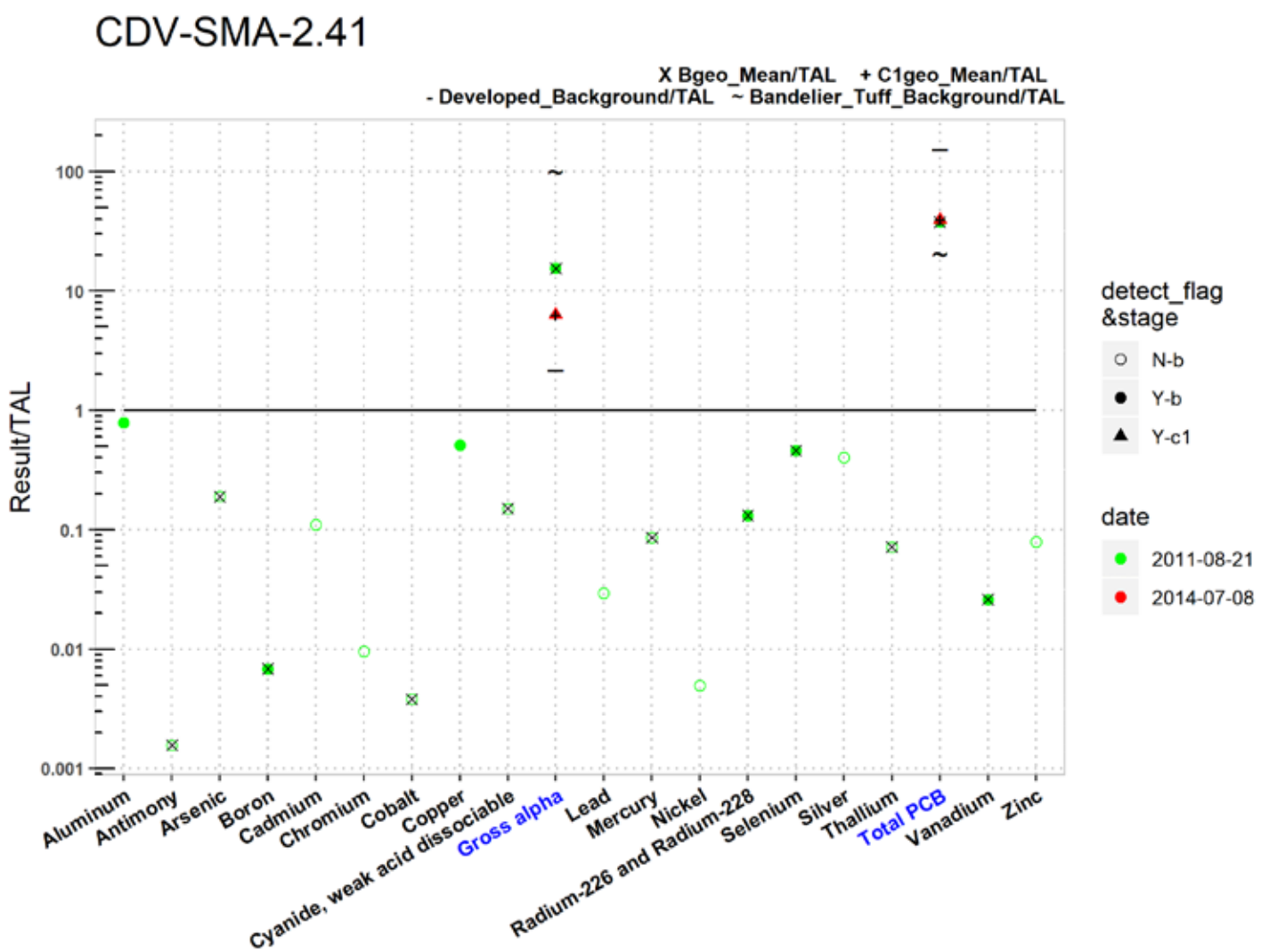


Figure 187-2 Analytical results summary for CDV-SMA-2.41

CDV-SMA-2.41

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.0068	NA	NA	0.0038	NA	0.15	**15**	NA	0.086	NA	0.13	0.46	NA	0.071	**38**	0.026	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	**6.3**	NA	NA	NA	NA	NA	NA	NA	**40**	NA	NA
2011-08-21 d	0.78	NA	NA	0.0068	NA	NA	NA	0.51	NA	**15**	NA	NA	NA	0.13	0.46	NA	NA	**38**	0.026	NA
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	0.0038	NA	0.15	NA	0.029	0.086	0.0049	NA	NA	0.4	0.071	NA	NA	0.079
2014-07-08 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	**6.3**	NA	NA	NA	NA	NA	NA	NA	**40**	NA	NA
2014-07-08 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 187-2 (continued) Analytical results summary for CDV-SMA-2.41

188.0 CDV-SMA-2.42: SWMU 16-010(b)

188.1 Site Descriptions

One historical industrial activity area is associated with V008A, CDV-SMA-2.42: Site 16-010(b).

SWMU 16-010(b) consists of a former flash pad (structure 16-387) that was located at the TA-16 Burning Ground. The flash pad was enclosed within a 100- × 100-ft fenced area and consisted of a layer of sand several inches thick over a soil base. The pad was built in 1951 and was used to flash-burn solid and scrap HE, HE-contaminated equipment and debris, and HE-contaminated combustible material. Sands and residues from flash pad operations were disposed of at MDA P (SWMU 16-019). The flash pad operated as a hazardous waste treatment unit under RCRA interim status and underwent RCRA closure between 1999 and 2005. Closure activities included removing the flash pad and associated debris and removing soil and bedrock below and next to the former pad. The former flash pad and MDA P were closed and remediated together along with adjacent SWMUs for cleanup and closure purposes, the Sites were referred to as MDA P Site. Confirmation samples were collected as part of the closure of MDA P Site and included SWMU 16-010(b). The Site Closure Certification Report was approved by NMED on November 10, 2005. SWMU 16-010(b) has been removed from the list of corrective action units in the Laboratory's Hazardous Waste Facility Permit; therefore, this unit is no longer subject to the Consent Order.

The project map (Figure 188-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

188.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 188-1).

Enhanced controls were installed and certified on September 28, 2015, and submitted to EPA on September 29, 2015, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 188-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V008A01030022	Hydromulch	-	-	X	-	EC
V008A02040020	Established Vegetation	-	X	X	-	B
V008A03010021	Earthen Berm	-	X	-	X	EC
V008A03010024	Earthen Berm	X	-	-	X	EC
V008A04040023	Culvert	-	-	X	-	EC
V008A04050025	Water Bar	X	-	X	-	B
V008A04060002	Rip Rap	-	X	X	-	CB
V008A04060005	Rip Rap	-	X	X	-	CB
V008A04060018	Rip Rap	X	-	X	-	B
V008A04060019	Rip Rap	-	X	X	-	B
V008A06010004	Rock Check Dam	-	X	-	X	CB
V008A06010017	Rock Check Dam	X	-	-	X	B
V008A07010003	Gabions	-	X	-	X	CB

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

188.3 Storm Water Monitoring

SWMU 16-010(b) is monitored within CDV-SMA-2.42. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 188-2). In Figure 188-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (4.37 µg/L), gross-alpha activity (89.3 pCi/L), and PCB concentration (33 ng/L) and are presented in Figure 188-2.

Following enhanced controls installation, two corrective action monitoring storm water samples were collected on June 25, 2017, and October 5, 2017 (Figure 188-2). Analytical results from these samples yielded TAL exceedances for aluminum (3470 µg/L), copper (5.51 µg/L), gross-alpha activity (136 pCi/L and 29.2 pCi/L), and PCB concentrations (34 ng/L and 26 ng/L) and are presented in Figure 188-2.

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. There are no Consent Order soil sampling data available for this Site.

SWMU 16-010(b):

- Based on site history and RCRA closure confirmation sampling, the Site is an unlikely source of the TAL exceedances for aluminum, copper, gross-alpha radioactivity, and PCBs.

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 188-2. 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 188-2.

Monitoring location CDV-SMA-2.42 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 2017 is above these 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 results from 2013 and 2017 are 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 and one of the 2017 gross-alpha results are between these two values. One of the 2017 gross-alpha results is less than both 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 results from 2013 and 2017 are between these values.

All the analytical results for these samples are reported in the 2013 and 2017 Annual Reports.

188.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-2.42 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 188-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72865	3-19-2019
Storm Rain Event	BMP-74609	7-11-2019
Storm Rain Event	BMP-74863	7-23-2019
Storm Rain Event	BMP-75303	8-5-2109
Storm Rain Event	BMP-76649	9-10-2019
Storm Rain Event	BMP-77222	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-2.42 in 2019.

188.5 Compliance Status

The Site associated with CDV-SMA-2.42 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 2019. Table 188-3 presents the 2019 compliance status.

Table 188-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-010(b)	Alternatives Analysis Evaluation Request to Delete Site from the Permit	Building Enhanced Controls. Request to Delete Site from the Permit	LANL, October 21, 2015, "NPDES Permit No. NM0030759 - Request for Permit Modification Removal of Sites 16-010(b) (CDV-SMA-2.42), 16-010(c) (CDV-SMA-2.5), 16-010(d) (CDV-SMA-2.5), and 16-018 (CDV-SMA-2.41)."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

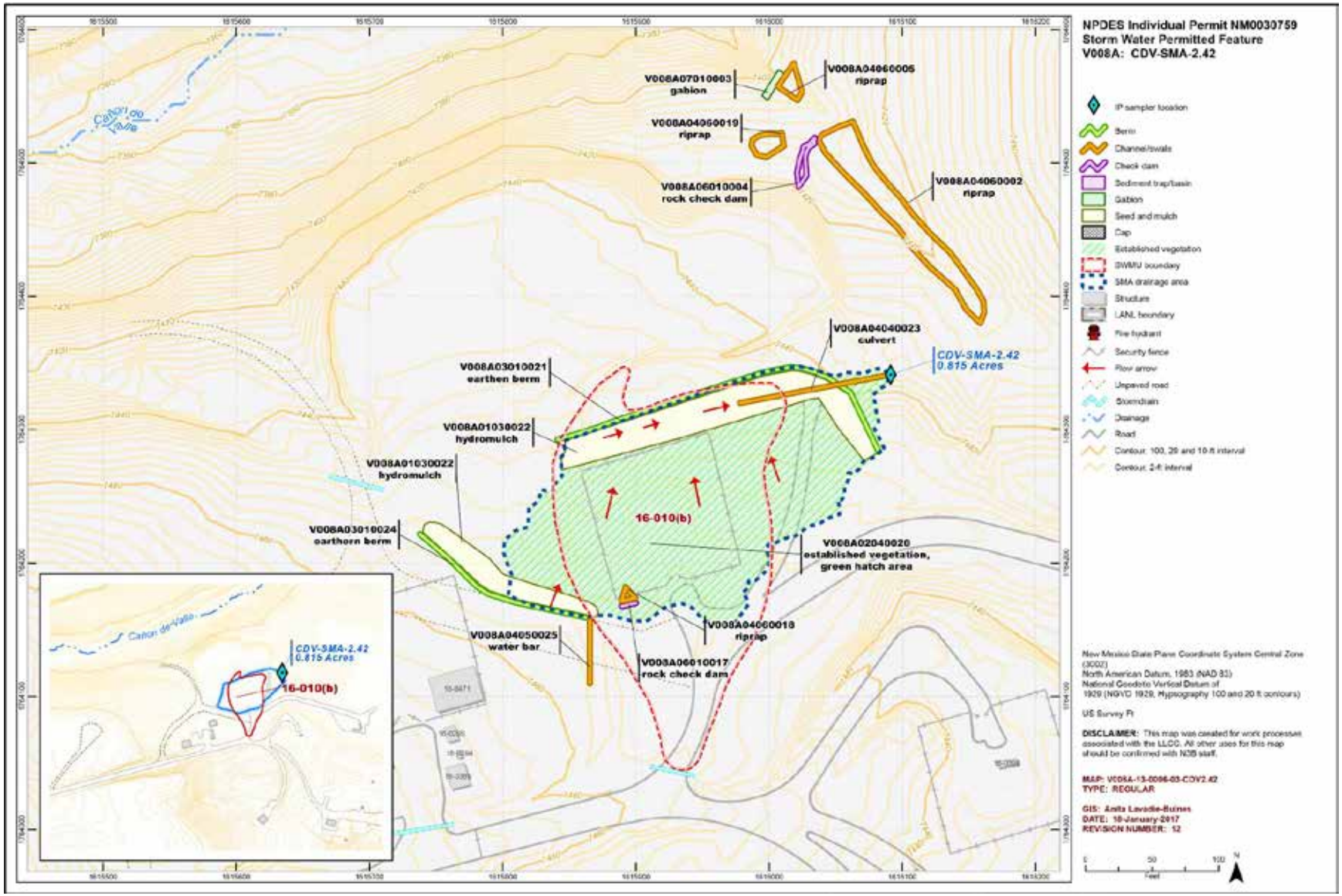


Figure 188-1 CDV-SMA-2.42 location map

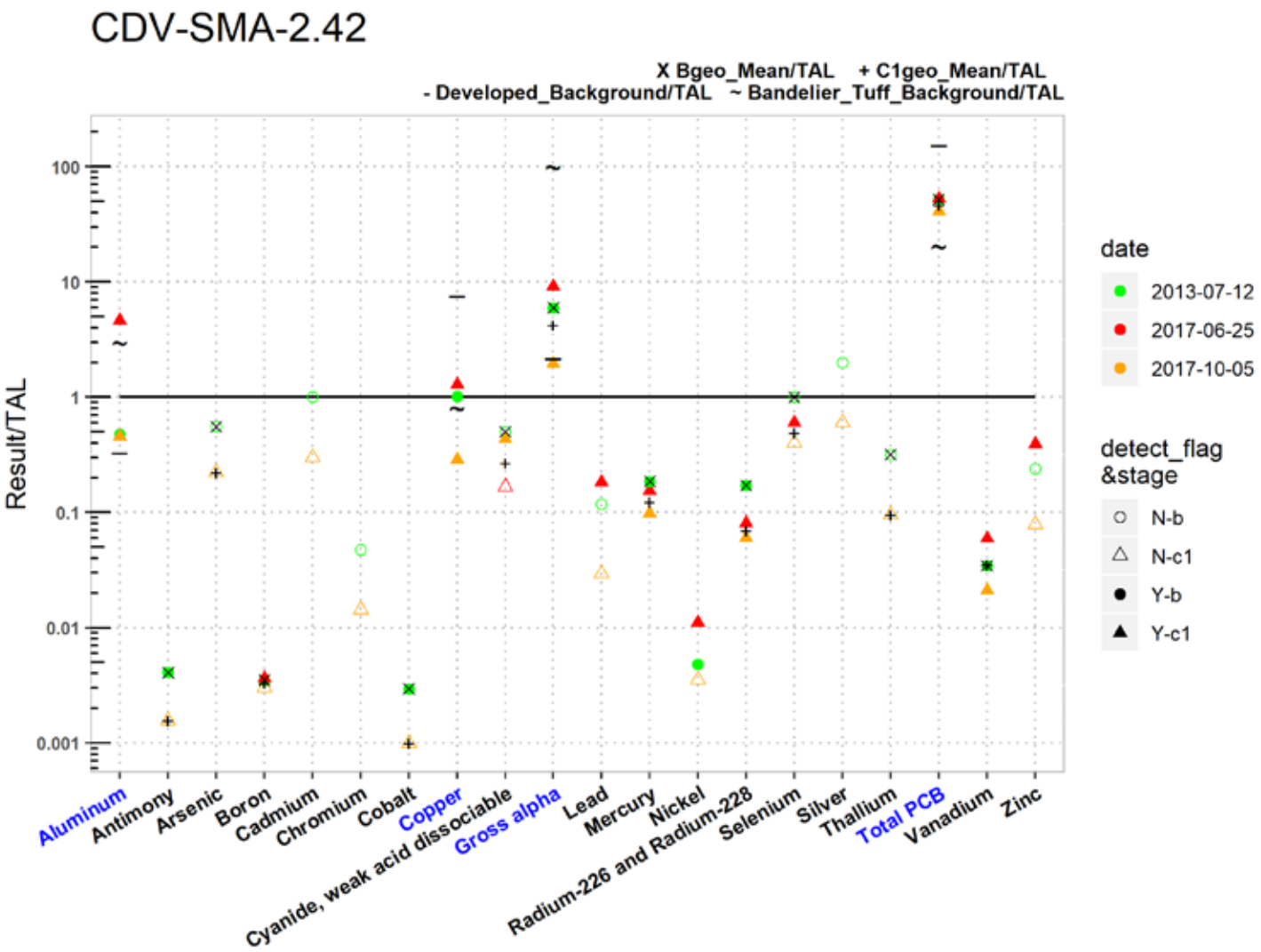


Figure 188-2 Analytical results summary for CDV-SMA-2.42

CDV-SMA-2.42

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0041	0.56	0.0035	NA	NA	0.003	NA	0.5	**6**	NA	0.19	NA	0.17	1	NA	0.32	**52**	0.034	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.0033	NA	NA	0.001	NA	0.27	**4.2**	NA	0.12	NA	0.07	0.49	NA	0.095	**46**	0.035	NA
2013-07-12 d	0.47	0.0041	NA	0.0035	NA	NA	0.003	**1**	NA	**6**	NA	0.19	0.0048	0.17	NA	NA	NA	**52**	0.034	NA
2013-07-12 nd	NA	NA	0.56	NA	1	0.048	NA	NA	0.5	NA	0.12	NA	NA	NA	1	2	0.32	NA	NA	0.24
2017-06-25 d	**4.6**	NA	NA	0.0036	NA	NA	NA	**1.3**	NA	**9.1**	0.18	0.15	0.011	0.081	0.6	NA	NA	**53**	0.06	0.39
2017-06-25 nd	NA	0.0016	0.22	NA	0.3	0.014	0.001	NA	0.17	NA	NA	NA	NA	NA	NA	0.6	0.095	NA	NA	NA
2017-10-05 d	0.45	NA	NA	NA	NA	NA	NA	0.29	0.43	**1.9**	NA	0.099	NA	0.06	NA	NA	NA	**41**	0.021	NA
2017-10-05 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	NA	NA	0.029	NA	0.0035	NA	0.4	0.6	0.095	NA	NA	0.079

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 188-2 (continued) **Analytical results summary for CDV-SMA-2.42**

189.0 CDV-SMA-2.5: SWMUs 16-010(c), 16-010(d), and 16-028(a)

189.1 Site Descriptions

Three historical industrial activity areas are associated with V009, CDV-SMA-2.5: Sites 16-010(c), 16-010(d), and 16-028(a).

SWMU 16-010(c) is a former burn table that was converted to a flash pad/burn tray (structure 16-388) located at the TA-16 Burning Ground. The burn table was used to treat HE scrap. The 100- × 100-ft enclosed area consisted of a concrete pad that was used to unload explosives and a 16- × 4-ft metal tray that was approximately 2 ft above the ground surface. Scrap HE was placed on the tray and burned. The current flash pad consists of a 22- × 22-ft concrete pad set on a secondary containment area and surrounded on three sides by a concrete wall. Before treatment, the HE-contaminated wastes are placed on steel pallets or steel trays. Propane burners are used as heat sources to treat the wastes at the flash pad, which can be covered with a movable steel roof when the pad is not in use. The current burn tray consists of a stainless-steel kettle that is 30 in. in diameter and 24 in. high. Propane burners are used to treat HE-contaminated liquid wastes at the burn tray. The entire assembly, which can be covered with a retractable cover, is provided with secondary containment.

No investigations have been conducted at this Site. SWMU 16-010(c) is a formerly dual-regulated corrective action unit that was removed from the list of corrective action units in the Laboratory's Hazardous Waste Facility Permit in November 2010; therefore, this unit is no longer subject to the Consent Order.

SWMU 16-010(d) is a former burn table that was converted to a burn tray (structure 16-399) located at the TA-16 Burning Ground. The 100-ft^2 enclosed area consists of a concrete pad, a burn table that is approximately 2 ft above the ground surface, and a 16- × 4-ft metal tray situated on the table. Scrap HE is placed on the tray and burned. A metal-covered rain guard can be rolled back to expose the tray.

No investigations have been conducted at this Site. SWMU 16-010(d) was removed from the list of corrective action units in the Laboratory's Hazardous Waste Facility Permit in November 2010; therefore, this unit is no longer subject to the Consent Order.

SWMU 16-028(a) is the south drainage channel located at the TA-16 Burning Ground. The drainage channel is located south of the Burning Ground road and east of a water treatment shed (structure 16-363). The drainage receives runoff from the entire Burning Ground and flows into a tributary of Cañon de Valle.

Consent Order investigations have not yet begun for this Site; however, decision-level data from 1995 and 1997 RFIs are available for SWMU 16-028(a). Several inorganic chemicals were detected above BVs in shallow RFI samples, and PAHs and HE were detected at concentrations below residential SSLs. SWMU 16-028(a) will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

The project map (Figure 189-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

189.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 189-1).

Table 189-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00902040036	Established Vegetation	-	X	X	-	B
V00903010011	Earthen Berm	-	X	-	X	CB
V00903010043	Earthen Berm	X	-	-	X	B
V00903120034	Rock Berm	-	X	-	X	B
V00903120035	Rock Berm	-	X	-	X	B
V00903120038	Rock Berm	X	-	-	X	B
V00903120039	Rock Berm	X	-	-	X	B
V00903120040	Rock Berm	X	-	-	X	B
V00903120041	Rock Berm	X	-	-	X	B
V00903120042	Rock Berm	-	X	-	X	B
V00904060005	Rip Rap	X	-	X	-	CB
V00904060006	Rip Rap	-	X	X	-	CB
V00904060007	Rip Rap	X	-	X	-	CB
V00904060009	Rip Rap	X	-	X	-	CB
V00906010029	Rock Check Dam	X	-	-	X	B
V00906010030	Rock Check Dam	X	-	-	X	B
V00906010031	Rock Check Dam	X	-	-	X	B
V00906010044	Rock Check Dam	X	-	-	X	B
V00906010045	Rock Check Dam	-	X	-	X	B
V00906010046	Rock Check Dam	-	X	-	X	B
V00906010047	Rock Check Dam	X	-	-	X	B
V00906010048	Rock Check Dam	X	-	-	X	B
V00906010049	Rock Check Dam	-	X	-	X	B
V00906010050	Rock Check Dam	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

189.3 Storm Water Monitoring

SWMUs 16-010(c), 16-010(d), and 16-028(a) are monitored within CDV-SMA-2.5. Following the installation of baseline control measures, baseline confirmation samples were collected on September 1, 2011, October 12, 2012, and July 26, 2013 (Figure 189-2). In Figure 189-2, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from these baseline samples yielded no TAL exceedances. Baseline confirmation is complete for CDV-SMA-2.5 and the associated SWMUs 16-010(c), 16-010(d), and 16-028(a) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for CDV-SMA-2.5 for the duration of the IP.

189.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-2.5 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 189-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72862	3-19-2019
Storm Rain Event	BMP-74606	7-11-2019
Storm Rain Event	BMP-74860	7-23-2019
Storm Rain Event	BMP-75300	8-5-2019
Storm Rain Event	BMP-76646	9-10-2019
Storm Rain Event	BMP-77219	10-16-2019

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

Table 189-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-73158	Extended Rock Check Dam V00906010030 to address erosion starting to occur near Rock Check Dam and Site 16-010(c).	4-8-2019	20 day(s)	Maintenance conducted as soon as practicable.

189.5 Compliance Status

The Sites associated with CDV-SMA-2.5 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 2019. Table 189-4 presents the 2019 compliance status.

Table 189-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-010(c)	Baseline Confirmation Complete Request to Delete Site from the Permit	Baseline Confirmation Complete Request to Delete Site from the Permit	Completed 8-29-2013. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site. October 21, 2015, "NPDES Permit No. NM0030759 - Request for Permit Modification Removal of Sites 16-010(b) (CDV-SMA-2.42), 16-010(c) (CDV-SMA-2.5), 16-010(d) (CDV-SMA-2.5), and 16-018 (CDV-SMA-2.41)."
SWMU 16-010(d)	Baseline Confirmation Complete Request to Delete Site from the Permit	Baseline Confirmation Complete Request to Delete Site from the Permit	Completed 8-29-2013. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site. October 21, 2015, "NPDES Permit No. NM0030759 - Request for Permit Modification Removal of Sites 16-010(b) (CDV-SMA-2.42), 16-010(c) (CDV-SMA-2.5), 16-010(d) (CDV-SMA-2.5), and 16-018 (CDV-SMA-2.41)."
SWMU 16-028(a)	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 8-29-2013. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site.

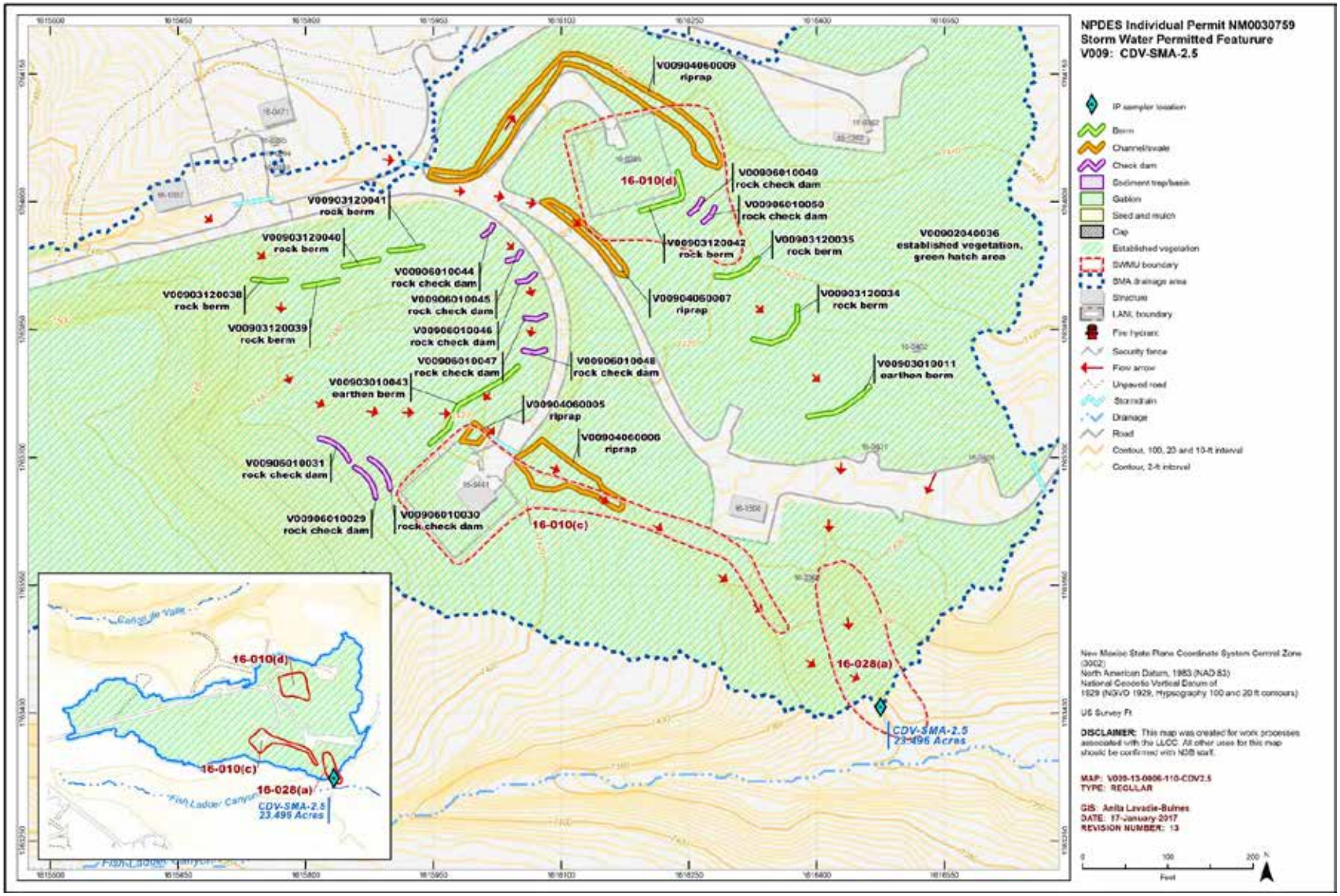


Figure 189-1 CDV-SMA-2.5 location map

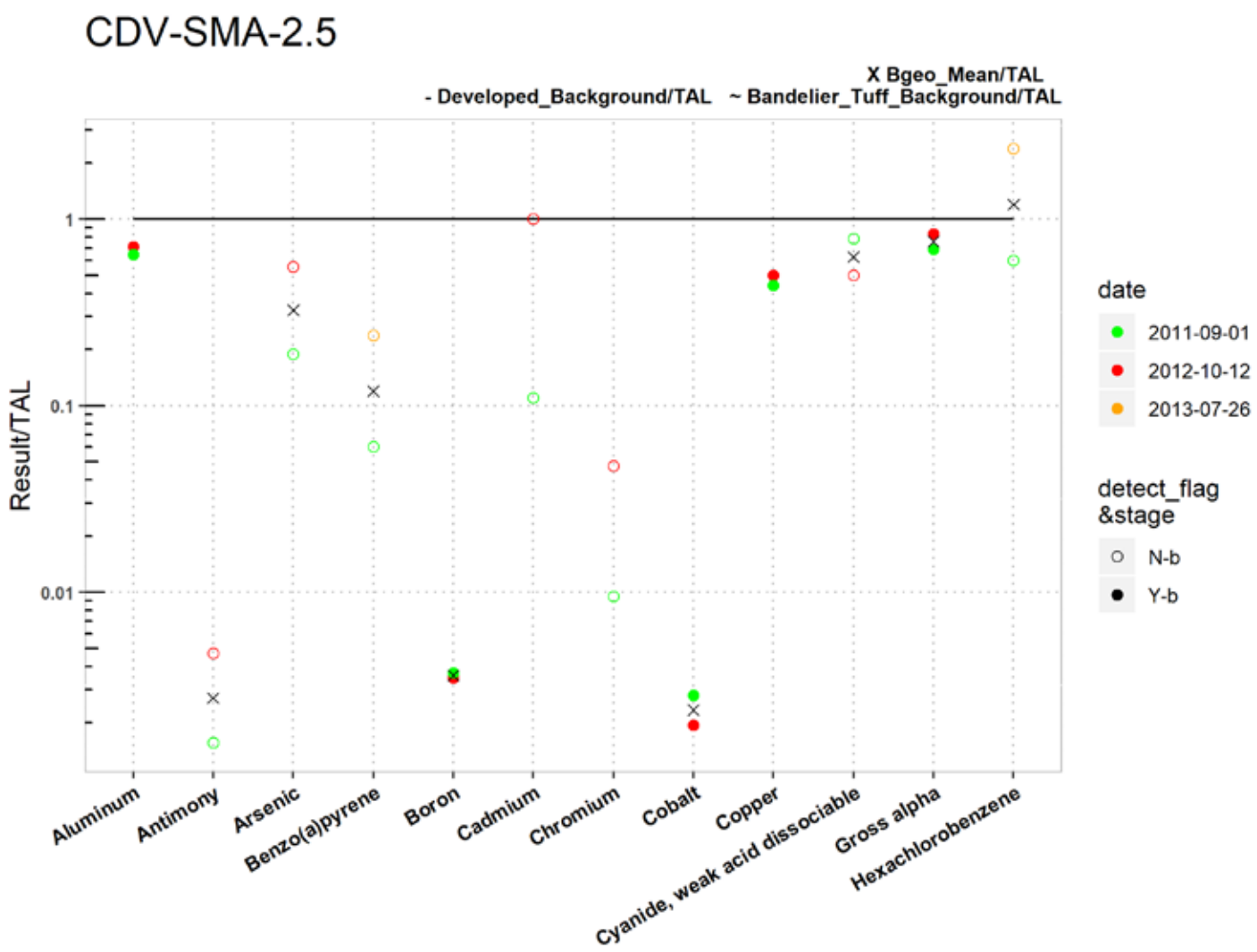


Figure 189-2 Analytical results summary for CDV-SMA-2.5

CDV-SMA-2.5

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0027	0.32	0.12	0.0036	NA	NA	0.0023	NA	0.63	0.76	**1.2**
2011-09-01 d	0.64	NA	NA	NA	0.0037	NA	NA	0.0028	0.44	NA	0.69	NA
2011-09-01 nd	NA	0.0016	0.19	0.06	NA	0.11	0.0095	NA	NA	0.79	NA	0.6
2012-10-12 d	0.71	NA	NA	NA	0.0035	NA	NA	0.0019	0.5	NA	0.83	NA
2012-10-12 nd	NA	0.0047	0.56	NA	NA	1	0.048	NA	NA	0.5	NA	NA
2013-07-26 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 nd	NA	NA	NA	0.24	NA	NA	NA	NA	NA	NA	NA	2.4

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 189-2 (continued) **Analytical results summary for CDV-SMA-2.5**

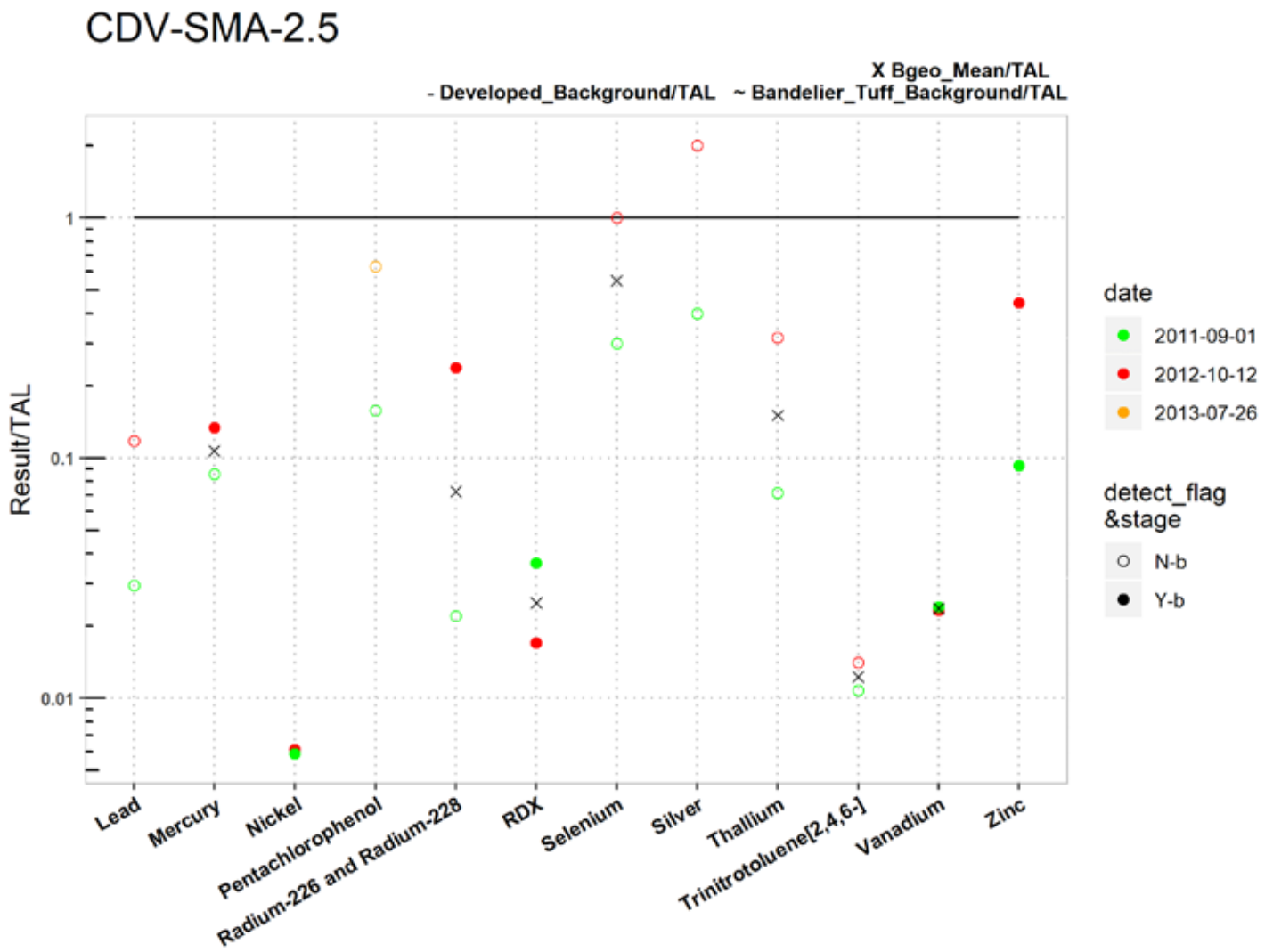


Figure 189-2 (continued) **Analytical results summary for CDV-SMA-2.5**

CDV-SMA-2.5

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	17	0.77	170	19	30	200	5	0.5	6.3	20	100	42
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	6.3	20	100	NA
MTAL	17	1.4	170	19	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.11	NA	NA	0.072	0.025	0.55	NA	0.15	0.012	0.024	NA
2011-09-01 d	NA	NA	0.0059	NA	NA	0.037	NA	NA	NA	NA	0.024	0.093
2011-09-01 nd	0.029	0.086	NA	0.16	0.022	NA	0.3	0.4	0.071	0.011	NA	NA
2012-10-12 d	NA	0.13	0.0061	NA	0.24	0.017	NA	NA	NA	NA	0.023	0.44
2012-10-12 nd	0.12	NA	NA	NA	NA	NA	1	2	0.32	0.014	NA	NA
2013-07-26 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 nd	NA	NA	NA	0.63	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 189-2 (continued) **Analytical results summary for CDV-SMA-2.5**

190.0 CDV-SMA-2.51: SWMU 16-010(i)

190.1 Site Descriptions

One historical industrial activity area is associated with V009A, CDV-SMA-2.51: Site 16-010(i).

SWMU 16-010(i) is structure 16-392, an inactive burn pad that previously was a filter bed that received wash water from the basket-wash facility. The wash water was received through a trough (structure 16-1136). Filtered wash water from the basket-wash facility collected within perforated piping along the bottom of the filter bed and drained via gravity through a pipe to an adjacent outfall southeast of the filter bed. The filter bed was modified to a burn pad to burn suspected uranium-contaminated objects. The basket-wash facility and discharge trough were removed in 2003; the filter bed is still in place. SWMU 16-010(i), along with numerous other SWMUs and AOCs, comprise the Burning Ground structures.

Consent Order sampling has not been conducted at SWMU 16-010(i); however, decision-level data are available from soil samples collected under the 1995 RFI. SWMU 16-010(i) will be sampled during the future Cañon de Valle Aggregate Area TA-16 investigation.

The project map (Figure 190-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

190.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 190-1).

Table 190-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V009A02040029	Established Vegetation	-	X	X	-	B
V009A03020005	Base Course Berm	X	-	-	X	CB
V009A03020012	Base Course Berm	X	-	-	X	CB
V009A03060032	Straw Wattle	X	-	-	X	B
V009A03060033	Straw Wattle	X	-	-	X	B
V009A06010003	Rock Check Dam	-	X	-	X	CB
V009A06010004	Rock Check Dam	-	X	-	X	CB
V009A06010006	Rock Check Dam	X	-	-	X	CB
V009A06010013	Rock Check Dam	-	X	-	X	CB
V009A06010014	Rock Check Dam	-	X	-	X	CB
V009A06010015	Rock Check Dam	-	X	-	X	CB
V009A06010016	Rock Check Dam	X	-	-	X	CB
V009A06030017	Juniper Bales	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

190.3 Storm Water Monitoring

SWMU 16-010(i) is monitored within CDV-SMA-2.51. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 190-2). In Figure 190-2, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (16.4 pCi/L) and are presented in Figure 190-2.

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 16-010(i):

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1995 RFI samples collected at the Site were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides. However, samples were analyzed for 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 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 190-2. 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 190-2.

Monitoring location CDV-SMA-2.51 receives storm water run-on from developed environments, including roads, as well as landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both these values.

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

190.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-2.51 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 190-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72866	3-19-2019
Storm Rain Event	BMP-74610	7-11-2019
Storm Rain Event	BMP-74864	7-23-2019
Storm Rain Event	BMP-75304	8-5-2019
Storm Rain Event	BMP-76650	9-10-2019
Storm Rain Event	BMP-77223	10-16-2019

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

Table 190-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-73159	Installed Straw Wattles V009A03060032 and V009A03060033 as replacements for Straw Wattles V009A03060030 and V009A03060031.	4-10-2019	22 day(s)	Maintenance conducted as soon as practicable.

190.5 Compliance Status

The Site associated with CDV-SMA-2.51 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 2019. Table 190-4 presents the 2019 compliance status.

Table 190-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-010(i)	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."

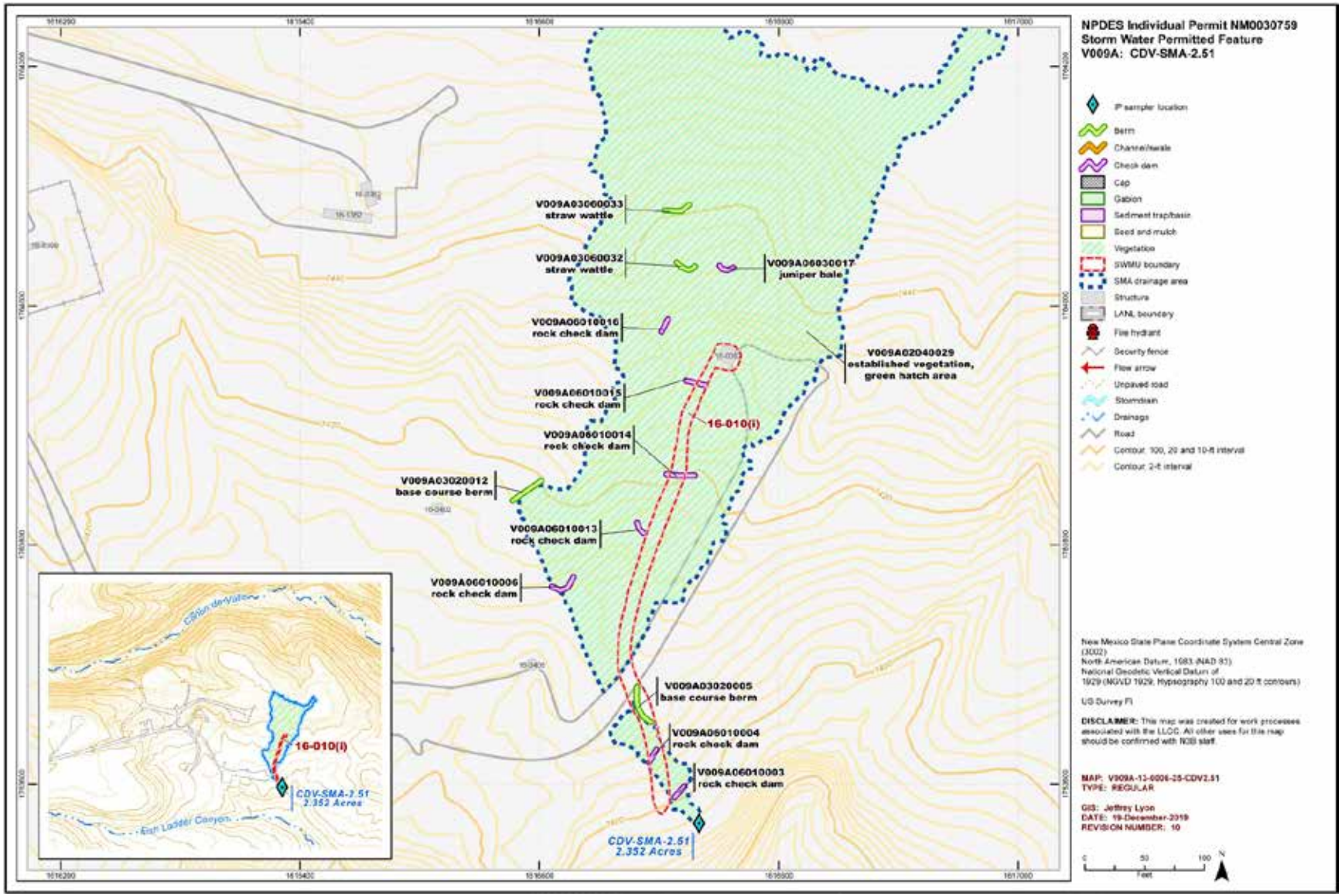


Figure 190-1 CDV-SMA-2.51 location map

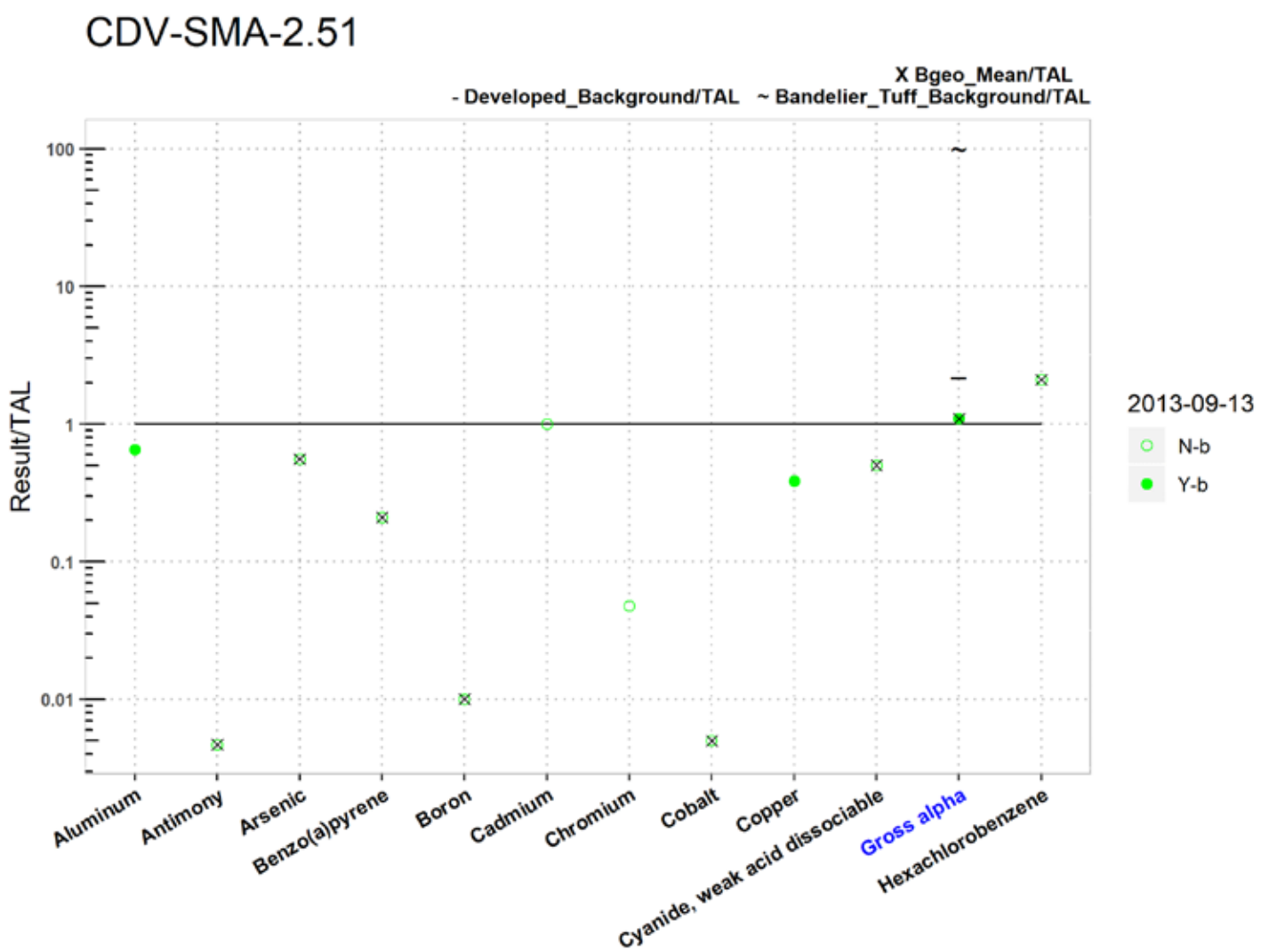


Figure 190-2 Analytical results summary for CDV-SMA-2.51

CDV-SMA-2.51

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.21	0.01	NA	NA	0.005	NA	0.5	**1.1**	**2.1**
2013-09-13 d	0.65	NA	NA	NA	NA	NA	NA	NA	0.39	NA	**1.1**	NA
2013-09-13 nd	NA	0.0047	0.56	0.21	0.01	1	0.048	0.005	NA	0.5	NA	2.1

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 190-2 (continued) **Analytical results summary for CDV-SMA-2.51**

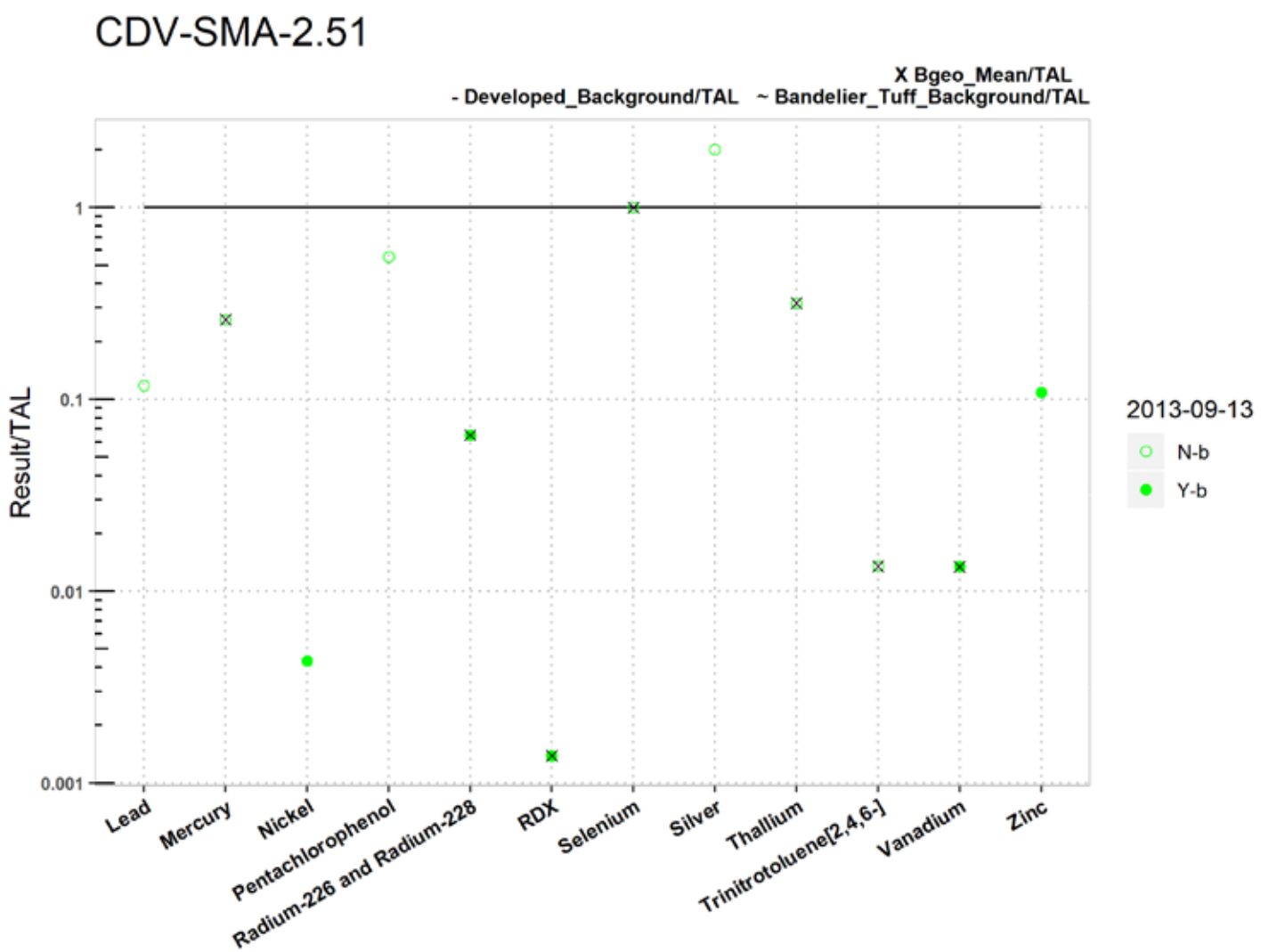


Figure 190-2 (continued) **Analytical results summary for CDV-SMA-2.51**

CDV-SMA-2.51

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	17	0.77	170	19	30	200	5	0.5	6.3	20	100	42
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	6.3	20	100	NA
MTAL	17	1.4	170	19	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.26	NA	NA	0.065	0.0014	1	NA	0.32	0.014	0.013	NA
2013-09-13 d	NA	NA	0.0043	NA	0.065	0.0014	NA	NA	NA	NA	0.013	0.11
2013-09-13 nd	0.12	0.26	NA	0.55	NA	NA	1	2	0.32	0.014	NA	NA

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 190-2 (continued) Analytical results summary for CDV-SMA-2.51

191.0 CDV-SMA-3: SWMU 14-009

191.1 Site Descriptions

One historical industrial activity area is associated with V010, CDV-SMA-3: Site 14-009.

SWMU 14-009 is an inactive surface disposal area located south and west of building 14-43 at TA-14. The disposal area measures approximately 30´ 140 ft and consists of sand and ruptured sandbags used during explosives tests performed at nearby firing sites [SWMUs 14-002(a) and 14-002(b)].

Phase I Consent Order investigation is complete for SWMU 14-009. SWMU 14-009 was recommended for corrective action complete without controls in the supplemental investigation report for Cañon de Valle Aggregate Area TA-14, submitted to NMED in 2016.

The project map (Figure 191-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

191.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 191-1).

Enhanced controls were installed and certified on July 18, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 191-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01002040013	Established Vegetation	-	X	X	-	B
V01003010010	Earthen Berm	-	X	-	X	EC
V01003010011	Earthen Berm	-	X	-	X	EC
V01003120005	Rock Berm	X	-	-	X	CB
V01003120009	Rock Berm	-	X	-	X	CB
V01006010004	Rock Check Dam	-	X	-	X	CB

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

191.3 Storm Water Monitoring

SWMU 14-009 is monitored within CDV-SMA-3. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 191-2). Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (33.4 pCi/L) and are presented in Figure 191-2.

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 14-009:

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, all of which are alpha-emitting radionuclides. 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.

CDV-SMA-3, Earthen Berm, V01003010010 (photo ID 23501-2)

The TAL exceedance was 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 191-2. 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 191-2.

Monitoring location CDV-SMA-3 receives storm water run-on from 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 background UTL for locations with sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than this value.

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

191.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-3 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 191-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72863	3-21-2019
Storm Rain Event	BMP-74607	7-8-2019
Storm Rain Event	BMP-74861	7-16-2019
Storm Rain Event	BMP-75301	8-6-2019
Storm Rain Event	BMP-76647	9-5-2019
Storm Rain Event	BMP-77220	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-3 in 2019.

191.5 Compliance Status

The Site associated with CDV-SMA-3 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 2019. Table 191-3 presents the 2019 compliance status.

Table 191-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 14-009	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Twelve Site Monitoring Areas."

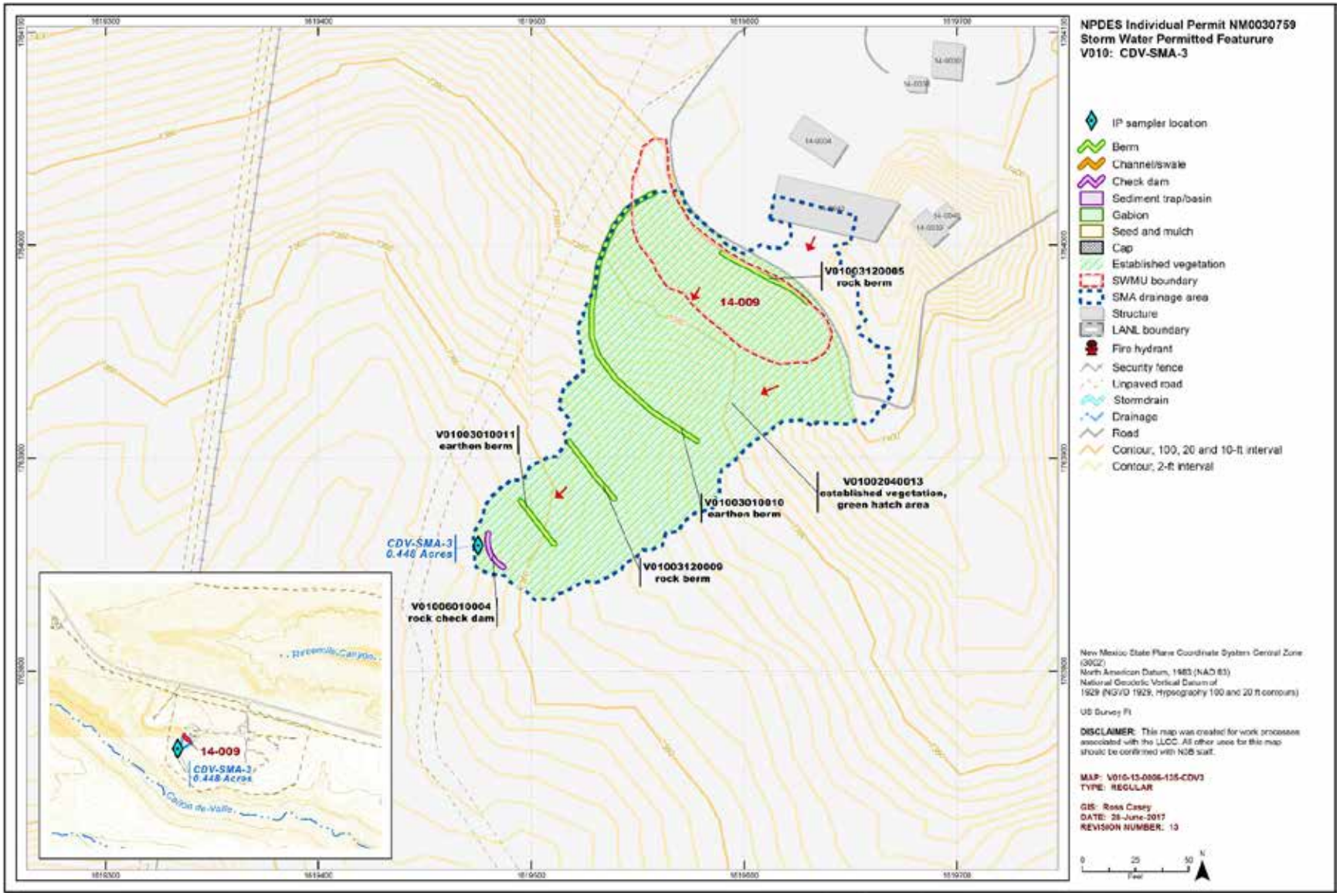


Figure 191-1 CDV-SMA-3 location map

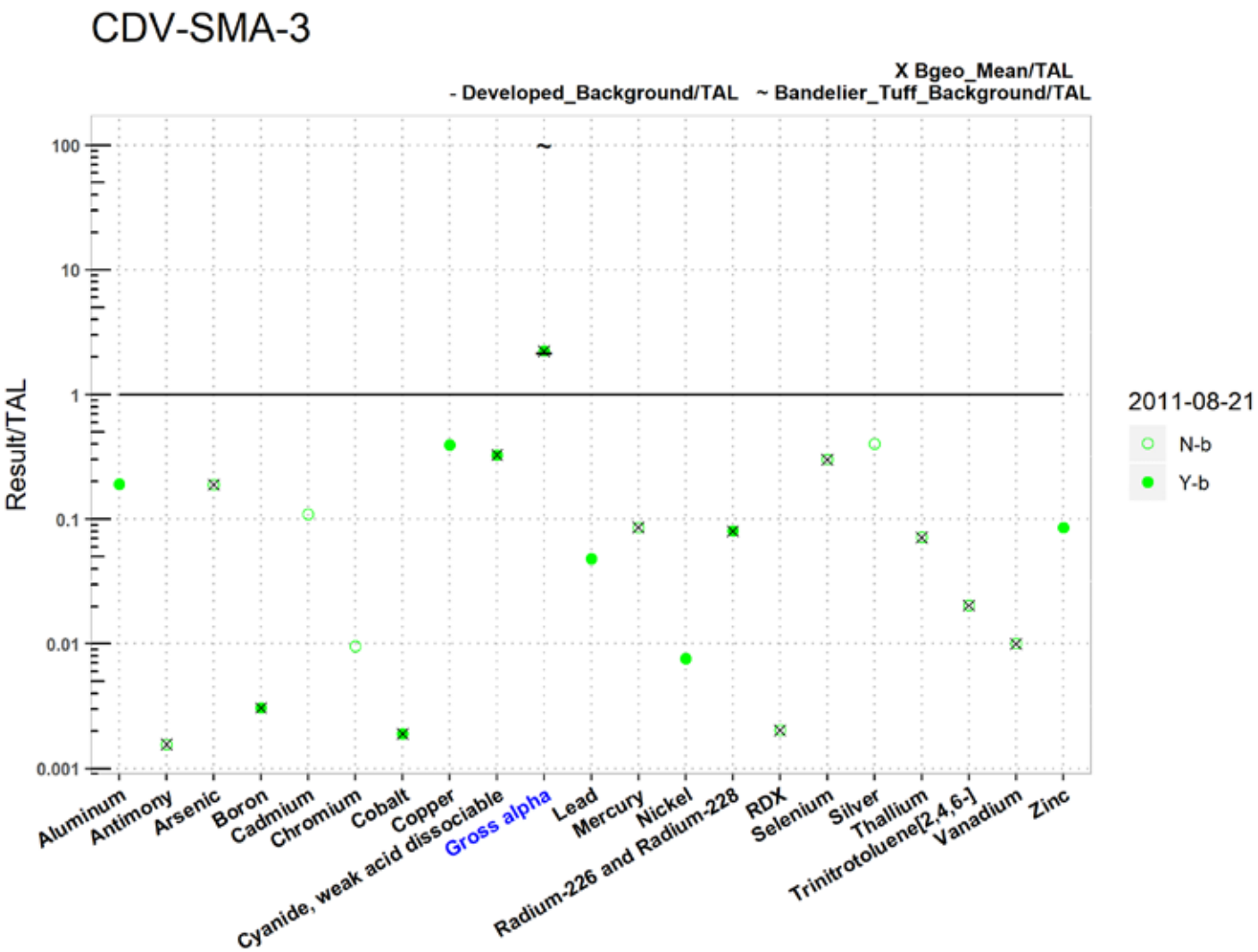


Figure 191-2 Analytical results summary for CDV-SMA-3

CDV-SMA-3

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.0031	NA	NA	0.0019	NA	0.33	**2.2**	NA	0.086	NA	0.08	0.002	0.3	NA	0.071	0.02	0.01	NA
2011-08-21 d	0.19	NA	NA	0.0031	NA	NA	0.0019	0.4	0.33	**2.2**	0.048	NA	0.0076	0.08	NA	NA	NA	NA	NA	NA	0.086
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	NA	NA	NA	0.086	NA	NA	0.002	0.3	0.4	0.071	0.02	0.01	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 191-2 (continued) Analytical results summary for CDV-SMA-3

192.0 CDV-SMA-4: SWMU 14-010

192.1 Site Descriptions

One historical industrial activity area is associated with V011, CDV-SMA-4: Site 14-010.

SWMU 14-010 is a former HE sump that was located on the exterior south wall of a former firing chamber [structure 14-2, SWMU 14-002(a)]. The sump received wastewater from a floor drain in firing chamber 14-2 and discharged to an outfall located approximately 24 ft southeast of the sump. In 1973, contaminated portions of structure 14-2 were removed and disposed of at TA-54; the rest of the building was demolished and burned, and the sump and most of the drainline were removed. During the 1997 VCA conducted at the Site, contaminated surface soil and sediment in the drainage area below the former outfall were excavated and removed.

Phase I Consent Order sampling is complete for SWMU 14-010. SWMU 14-010 was recommended for corrective action complete without controls in the supplemental investigation report for Cañon de Valle Aggregate Area TA-14, submitted to NMED in 2016.

The project map (Figure 192-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

192.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 192-1).

Table 192-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01102040010	Established Vegetation	-	-	X	-	B
V01103010008	Earthen Berm	-	X	-	X	B
V01104060007	Rip Rap	X	-	X	-	B
V01104060011	Rip Rap	-	-	X	-	B
V01106010009	Rock Check Dam	-	X	-	X	B

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

192.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-4. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

192.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-4 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 192-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72864	3-21-2019
Storm Rain Event	BMP-74608	7-8-2019
Storm Rain Event	BMP-74862	7-16-2019
Storm Rain Event	BMP-75302	8-6-2019
Storm Rain Event	BMP-76648	9-5-2019
Storm Rain Event	BMP-77221	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-4 in 2019.

192.5 Compliance Status

The Site associated with CDV-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 2019. Table 192-3 presents the 2019 compliance status.

Table 192-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 14-010	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since the initiation of the Permit.

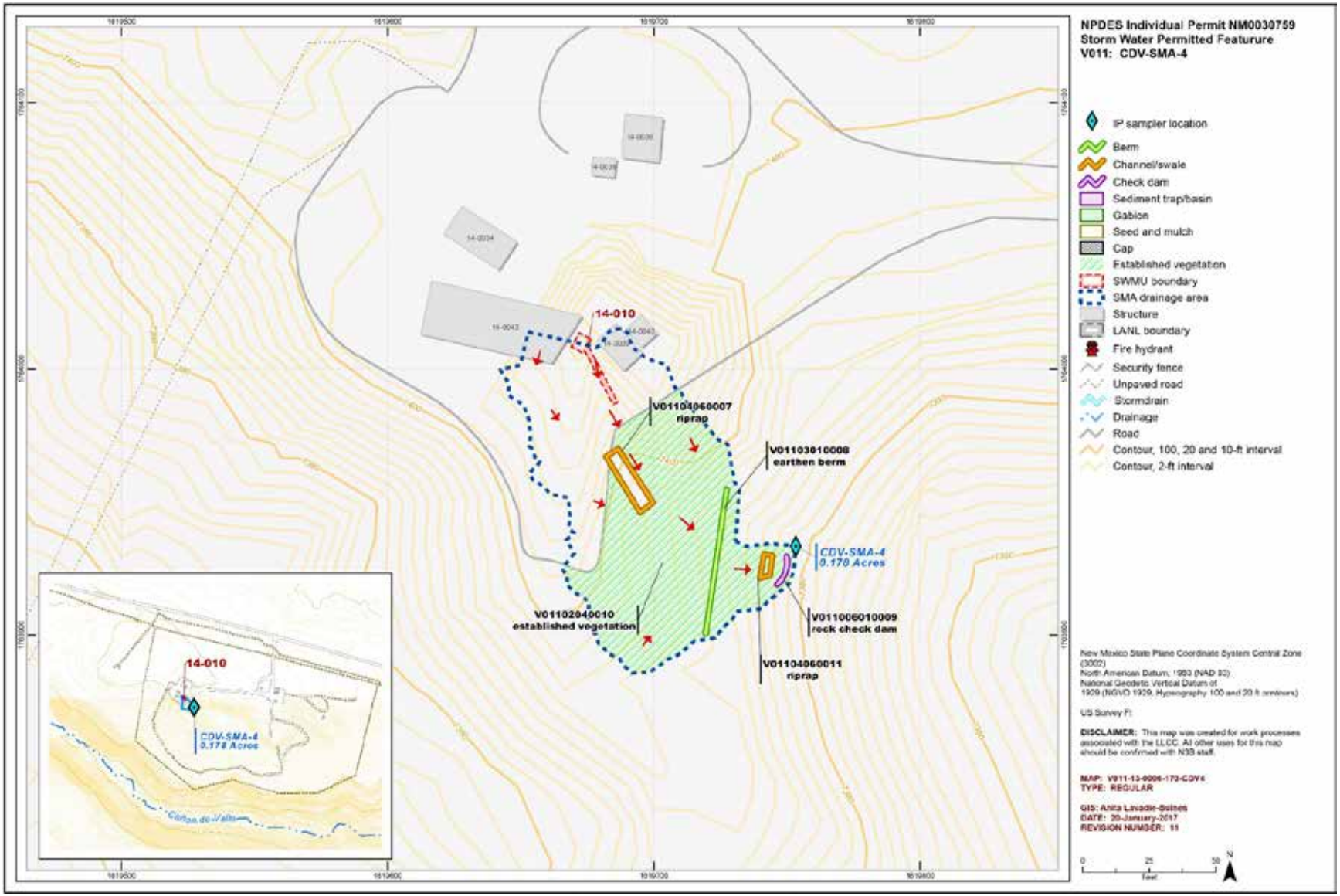


Figure 192-1 CDV-SMA-4 location map

193.0 CDV-SMA-6.01: SWMU 14-006 and AOC 14-001(g)

193.1 Site Descriptions

Two historical industrial activity areas are associated with V012, CDV-SMA-6.01: Sites 14-006 and 14-001(g).

SWMU 14-006 is a decommissioned HE sump (structure 14-31), associated drainline, and outfall located at TA-14 approximately 45 ft east of control building 14-23. Installed in 1952, the steel-lined sump is constructed of reinforced concrete and measures approximately 4.5 ft wide ´ 8 ft long ´ 5 ft deep. The sump received discharges from sink and floor drains in building 14-23 and discharged to an outfall approximately 55 ft southeast of the sump. The sump has been filled with concrete and its outlet is plugged (date not known). Currently, the outfall receives only storm water.

Phase I Consent Order sampling is complete for SWMU 14-006. SWMU 14-006 was recommended for corrective action complete in the supplemental investigation report for Cañon de Valle Aggregate Area TA-14, submitted to NMED in 2016.

AOC 14-001(g) is an active firing pad (structure 14-35) located south of control building 14-23 at TA-14. Installed in 1964, the reinforced concrete pad is 5 ft^2 ´ 2 ft thick and surrounded on three sides with a blast shield. At the base, the shield is a 6-ft^2 ´ 2-ft-thick concrete pad overlain by a neoprene shock pad, a 4.5-in.-thick steel plate, and several inches of sand. The shield directs the force of detonations away from nearby control building 14-23. The AOC 14-001(g) firing pad is used to conduct test shot experiments.

Since AOC 14-001(g) is an active firing point, Consent Order samples were collected in sediment catchment areas in the drainage downgradient of the Site to determine if contaminants are migrating from the Site. Consent Order sampling data indicate all detected inorganic and organic chemical concentrations and radionuclide activities are below residential SSLs and confirmed that contaminants are not migrating from the Site. Consent Order investigations will not be conducted at AOC 14-001(g) until firing point activities cease.

The project map (Figure 193-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

193.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 193-1).

Enhanced controls were installed and certified on October 15, 2015, and submitted to EPA on October 16, 2015, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 193-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01202040013	Established Vegetation	-	X	X	-	B
V01203010016	Earthen Berm	-	X	-	X	B
V01203010017	Earthen Berm	X	-	-	X	EC
V01203010018	Earthen Berm	-	X	-	X	EC
V01203020003	Base Course Berm	-	X	-	X	CB
V01206010022	Rock Check Dam	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

193.3 Storm Water Monitoring

SWMU 14-006 and AOC 14-001(g) are monitored within CDV-SMA-6.01. Following the installation of baseline control measures, a baseline storm water sample was collected on July 31, 2014 (Figure 193-2). In Figure 193-2, cadmium, selenium, and silver are reported as nondetected results than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (10 µg/L), gross-alpha activity (140 pCi/L), radium-226 and -228 activity (46.3 pCi/L) and are presented in Figure 193-2.

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 14-006:

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 4 of 7 shallow (i.e., less than 3 ft bgs) 2011 Consent Order soil and tuff samples at a maximum concentration 5.6 times the soil BV.
- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Site. However, radium-226 and radium-228 are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity or radium isotopes but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. No alpha-emitting radionuclides were detected or detected above BVs and/or FVs. 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.

AOC 14-001(g):

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above BVs in 3 of 30 shallow 2011 Consent Order soil and tuff samples at a maximum concentration 2 times the soil BV.

- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Site. However, radium-226 and radium-228 are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity or radium isotopes but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. No alpha-emitting radionuclides were detected or detected above BVs and/or FVs. 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 Figure 193-2. 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 193-2.

CDV-SMA-6.01, Earthen Berm, V01203010018 (photo ID 50327-4)

Monitoring location CDV-SMA-6.01 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed 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 2014 is between these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and 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 two values.
- Radium-226 and radium-228—Radium-226 and radium-228 UTL for background storm water containing sediment derived from Bandelier Tuff is 52.7 pCi/L, and radium-226 and radium-228 background storm water UTL for storm water run-on from a developed landscape is 8.94 pCi/L. The 2014 radium-226 and radium-228 result is between these two values.

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

193.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-6.01 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 193-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72869	3-21-2019
Storm Rain Event	BMP-74612	7-8-2019
Storm Rain Event	BMP-74866	7-16-2019
Storm Rain Event	BMP-75307	8-6-2019
Storm Rain Event	BMP-76652	9-5-2019
Storm Rain Event	BMP-77225	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-6.01 in 2019.

193.5 Compliance Status

The Sites associated with CDV-SMA-6.01 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 2019. Table 193-3 presents the 2019 compliance status.

Table 193-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 14-001(g)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 16, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."
SWMU 14-006	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 16, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

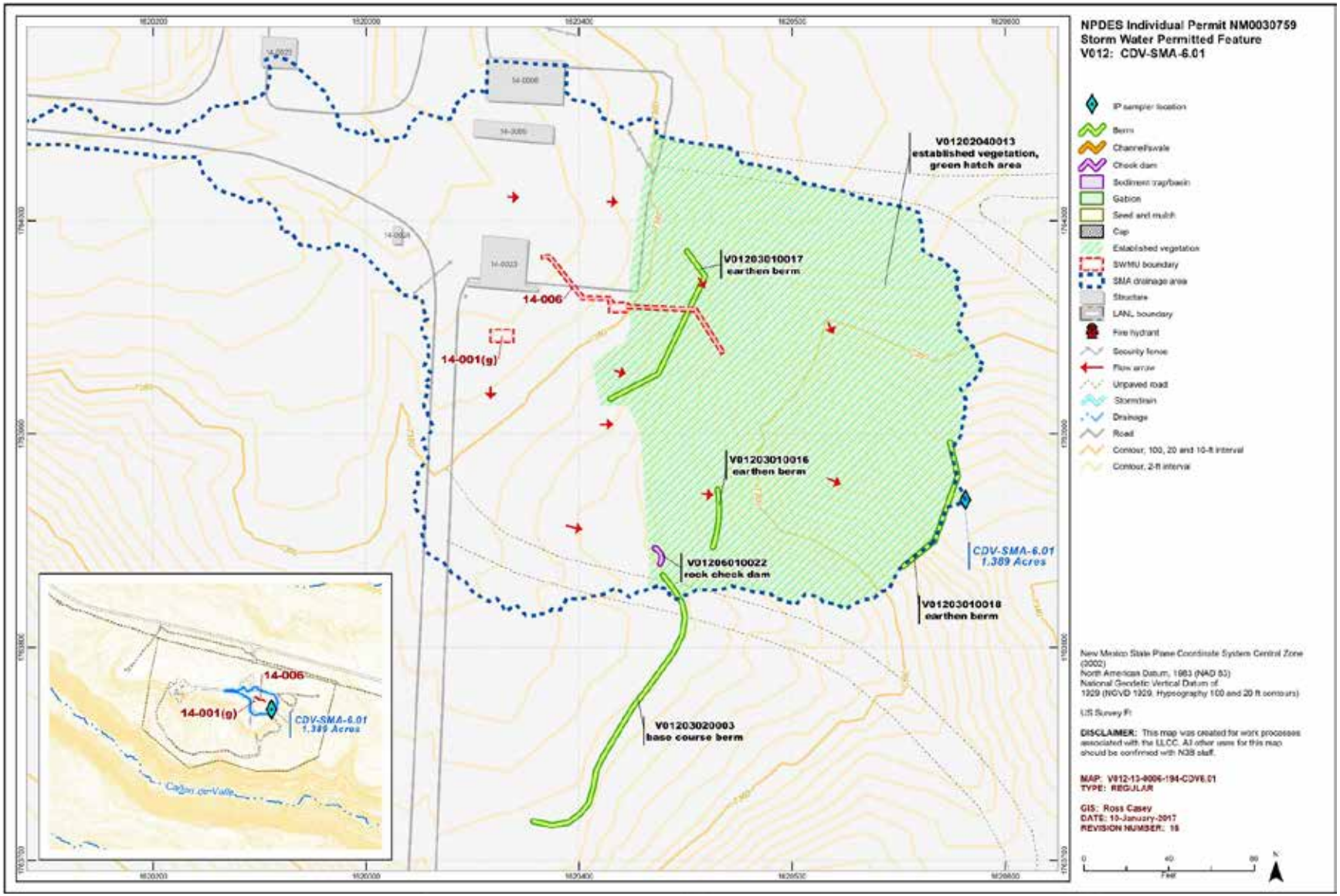


Figure 193-1 CDV-SMA-6.01 location map

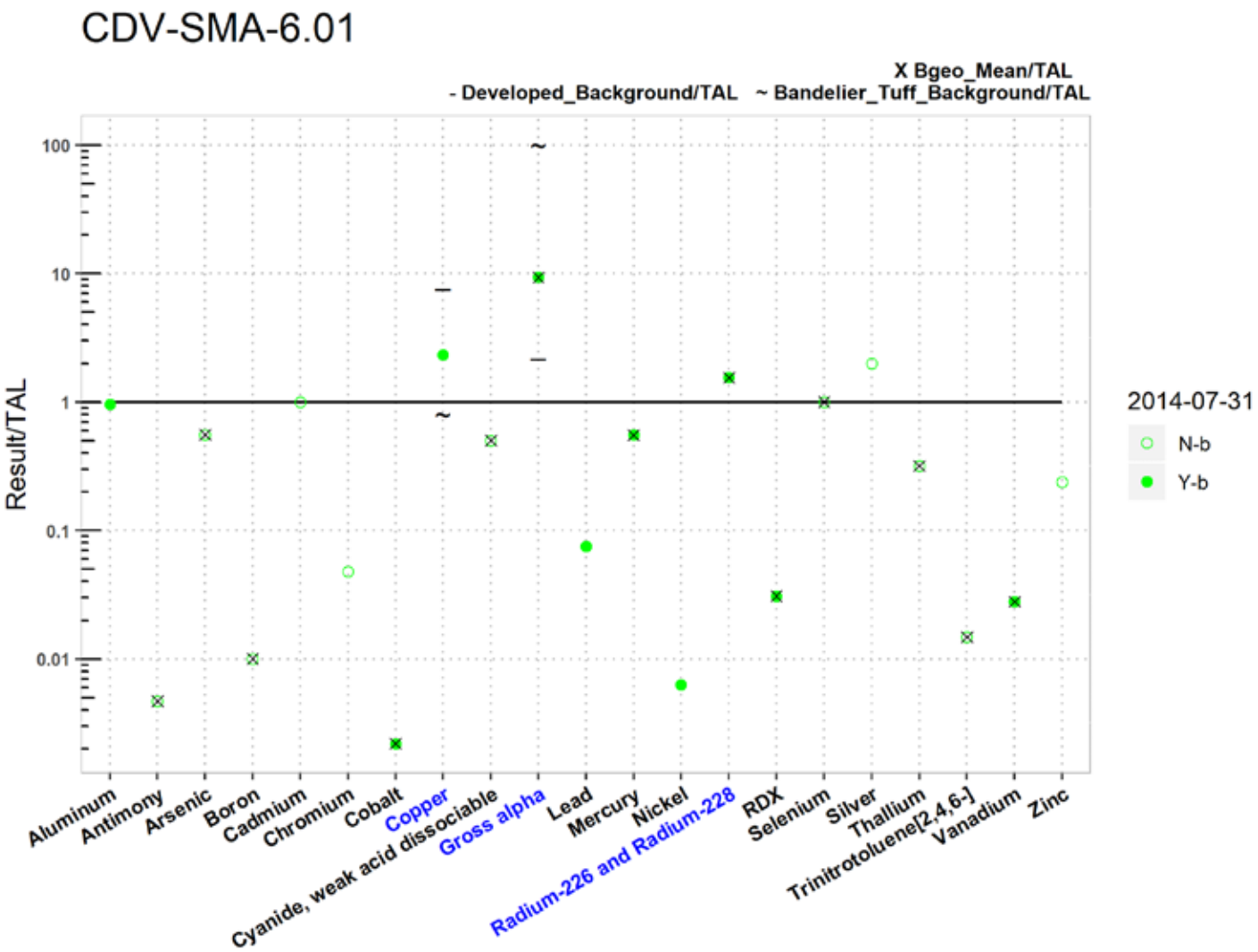


Figure 193-2 Analytical results summary for CDV-SMA-6.01

CDV-SMA-6.01

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.01	NA	NA	0.0022	NA	0.5	**9.3**	NA	0.55	NA	**1.5**	0.031	1	NA	0.32	0.015	0.028	NA
2014-07-31 d	0.95	NA	NA	NA	NA	NA	0.0022	**2.3**	NA	**9.3**	0.075	0.55	0.0063	**1.5**	0.031	NA	NA	NA	NA	0.028	NA
2014-07-31 nd	NA	0.0047	0.56	0.01	1	0.048	NA	NA	0.5	NA	NA	NA	NA	NA	NA	1	2	0.32	0.015	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 193-2 (continued) Analytical results summary for CDV-SMA-6.01

194.0 CDV-SMA-6.02: SWMUs 14-002(c), 14-002(d), and 14-002(e)

194.1 Site Descriptions

Three historical industrial activity areas are associated with V012A, CDV-SMA-6.02: Sites 14-002(c), 14-002(d), and 14-002(e).

SWMU 14-002(c) is a decommissioned firing site (structure 14-5) located in the southeastern portion of TA-14. Structure 14-5 consisted of a control building and firing pad. Constructed in 1944, the wood-framed control building measured 11 ft wide ´ 18 ft long ´ 10 ft high and was surrounded on three sides by an earthen berm. A 10-ft^2 ´ 8-ft-high concrete firing pad faced with a 0.5-in. steel plate was attached to the exterior south wall of the control building. The firing site was used to conduct small-scale explosive tests until the mid-1950s. The control building was converted to a storage site in 1961 and used to store cyanogen gas from 1965 to the 1970s. In 1980, a 5-ft-diameter metal sphere was installed on the firing pad at the south side of building 14-5. The sphere was used to conduct slow-combustion experiments, which continued until 1985, when building operations ceased. The firing pad was removed at an unknown date. The control building was partially destroyed by the Cerro Grande fire in 2000; only the concrete portions of the roof and walls remain.

Before implementation of the 2011 sampling for Sites in the Water/Cañon de Valle watershed, the historical information was thoroughly reviewed. The review determined that SWMU 14-002(c) should be added to CDV-SMA-6.02. Accordingly, the Site description and project map (Figure 194-1) have been updated to include SWMU 14-002(c). SWMU 14-002(c) is located within the current SMA boundary, and no changes to the SMA boundary are required. The sampler location did not change, and samples previously collected are representative of SWMU 14-002(c). An explanation of the error was incorporated in the IP renewal application. The information and evaluation of Site 14-002(c) provided below and in other sections of this SDPPP update are for informational purposes only.

Phase I Consent Order investigation is complete for SWMU 14-002(c). SWMU 14-002(c) was recommended for corrective action complete without controls in the supplemental investigation report for Cañon de Valle Aggregate Area TA-14, submitted to NMED in 2016.

SWMU 14-002(d) is an x-unit chamber (structure 14-14) located at TA-14, approximately 7 ft southwest of structure 14-5. Constructed in 1944, the x-unit chamber was one of two voltage distribution systems installed at the SWMU 14-002(c) firing site. The x-unit chamber was constructed of reinforced concrete and measured approximately 3 ft wide × 4 ft long × 3 ft high. The x-unit housed the firing voltage distribution system used for the remote detonation of small-scale explosives tests at structure 14-5. The x-unit was used from 1944 to the mid-1950s when explosives operations ceased. It is not known whether the chamber is still in place. Investigation of SWMU 14-002(d) is deferred per Section XI and Appendix A of the 2016 Consent Order. The 1994 RFI work plan for OU 1085 incorrectly identified SWMU 14-002(d) as a firing pad associated with former control building 14-5 [SWMU 14-002(c)]. Engineering drawings reviewed during planning for Consent Order investigations confirmed the firing pad was actually part of SWMU 14-002(c), and SWMU 14-002(d) is an x-unit chamber (ENG C-365).

CDV-SMA-6.02, Seed and Wood Mulch, V012A01010005 (photo ID 23502-1)

SWMU 14-002(e) is an x-unit chamber (structure 14-15) located at TA-14, approximately 7 ft southeast of structure 14-5. Constructed in 1944, the x-unit chamber was one of two voltage distribution systems installed at the SWMU 14-002(c) firing site. The x-unit chamber was constructed of reinforced concrete and measured approximately 3 ft wide × 4 ft long × 3 ft high. The x-unit housed the firing voltage distribution system used for the remote detonation of small-scale explosives tests at structure 14-5. The x-unit was used from 1944 to the mid-1950s when explosives operations ceased. It is not known whether the chamber is still in place. Investigation of SWMU 14-002(e) is deferred per Section XI and Appendix A of the 2016 Consent Order. The 1994 RFI work plan for OU 1085 incorrectly identified SWMU 14-002(e) as a firing pad associated with former control building 14-5 [SWMU 14-002(c)]. Engineering drawings reviewed during planning for Consent Order investigations confirmed the firing pad was actually part of SWMU 14-002(c).

The project map (Figure 194-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

194.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 194-1).

Enhanced controls were installed and certified on July 18, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 194-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V012A01010005	Seed and Wood Mulch	-	-	X	-	EC
V012A03010004	Earthen Berm	-	X	-	X	EC
V012A03010006	Earthen Berm	-	X	-	X	EC
V012A03060008	Straw Wattle	-	X	-	X	B
V012A03140009	Coir Log	-	X	-	X	B
V012A03140010	Coir Log	-	X	-	X	B

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

194.3 Storm Water Monitoring

SWMUs 14-002(c), 14-002(d), and 14-002(e) are monitored within CDV-SMA-6.02. Following the installation of baseline control measures, baseline confirmation samples were collected on August 13, 2011, and September 1, 2011 (Figure 194-2). In Figure 194-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from these baseline samples yielded TAL exceedances for copper (28.1 µg/L and 29.3 µg/L), gross-alpha activity (147 pCi/L and 199 pCi/L), and mercury (1.6 µg/L and 0.95 µg/L) and are presented in Figure 194-2.

Following the installation of enhanced control measures at CDV-SMA-6.02, a corrective action storm water sample was collected on September 13, 2013 (Figure 194-2). In Figure 194-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this corrective action monitoring sample yielded no TAL exceedances. Corrective action storm water monitoring is continuing at the SMA until the collection of a second sample.

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

194.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-6.02 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 194-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72870	3-21-2019
Storm Rain Event	BMP-74613	7-8-2019
Storm Rain Event	BMP-74867	7-16-2019
Storm Rain Event	BMP-75308	8-6-2019
Storm Rain Event	BMP-76653	9-5-2019
Storm Rain Event	BMP-77226	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-6.02 in 2019.

194.5 Compliance Status

The Sites associated with CDV-SMA-6.02 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 2019. Table 194-3 presents the 2019 compliance status.

Table 194-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 14-002(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Twelve Site Monitoring Areas.''
SWMU 14-002(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Twelve Site Monitoring Areas.''
SWMU 14-002(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Twelve Site Monitoring Areas.''

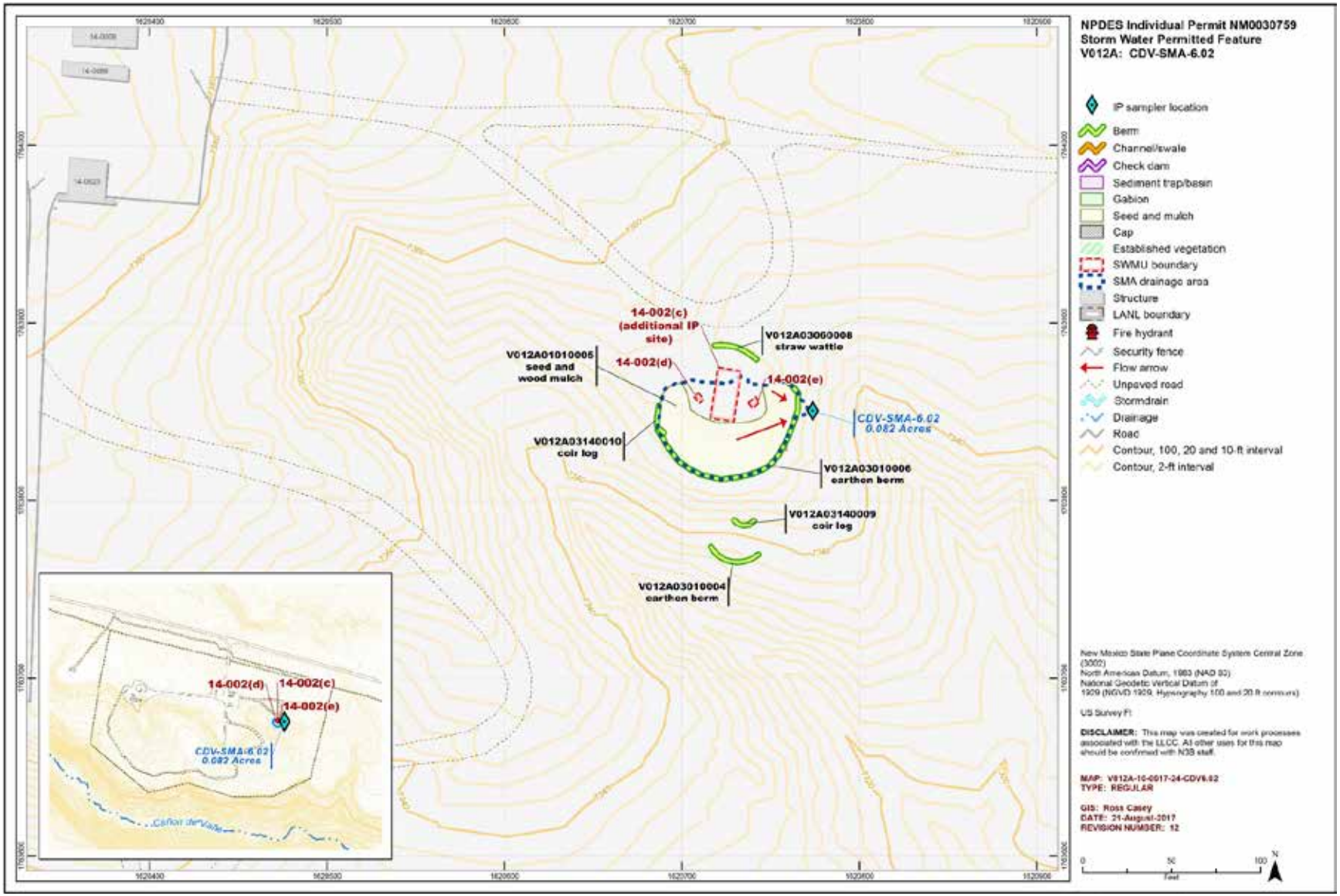


Figure 194-1 CDV-SMA-6.02 location map

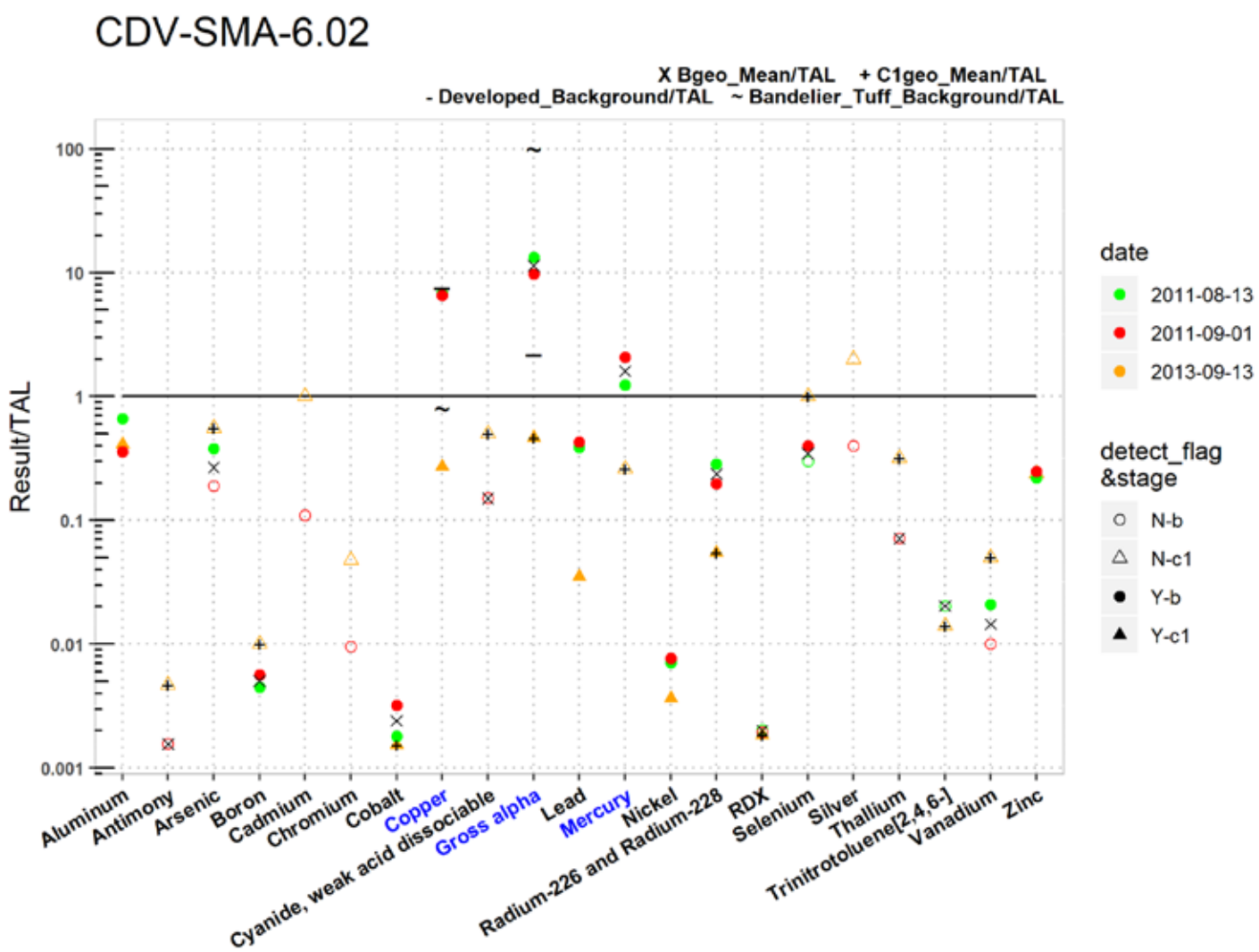


Figure 194-2 Analytical results summary for CDV-SMA-6.02

CDV-SMA-6.02

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.27	0.005	NA	NA	0.0024	NA	0.15	**11**	NA	**1.6**	NA	0.24	0.002	0.35	NA	0.071	0.02	0.014	NA
C1geo_mean/ATAL	NA	0.0047	0.56	0.01	NA	NA	0.0015	NA	0.5	0.46	NA	0.26	NA	0.055	0.0018	1	NA	0.32	0.014	0.05	NA
2011-08-13 d	0.66	NA	0.38	0.0045	NA	NA	0.0018	**6.8**	NA	**13**	0.39	**1.2**	0.0071	0.28	NA	NA	NA	NA	NA	0.021	0.22
2011-08-13 nd	NA	0.0016	NA	NA	0.11	0.0095	NA	NA	0.15	NA	NA	NA	NA	NA	0.002	0.3	0.4	0.071	0.02	NA	NA
2011-09-01 d	0.36	NA	NA	0.0056	NA	NA	0.0032	**6.5**	NA	**9.8**	0.43	**2.1**	0.0076	0.2	NA	0.4	NA	NA	NA	NA	0.25
2011-09-01 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	0.15	NA	NA	NA	NA	NA	0.002	NA	0.4	0.071	NA	0.01	NA
2013-09-13 d	0.41	NA	NA	NA	NA	NA	0.0015	0.27	NA	0.46	0.035	NA	0.0037	0.055	0.0018	NA	NA	NA	NA	NA	NA
2013-09-13 nd	NA	0.0047	0.56	0.01	1	0.048	NA	NA	0.5	NA	NA	0.26	NA	NA	NA	1	2	0.32	0.014	0.05	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 194-2 (continued) Analytical results summary for CDV-SMA-6.02

195.0 CDV-SMA-7: SWMU 15-008(d)

195.1 Site Descriptions

One historical industrial activity area is associated with V013, CDV-SMA-7: Site 15-008(d).

SWMU 15-008(d) is a building debris pile located south of former storage building 15-22 in the northwest portion of TA-15 in an area known as "The Hollow." The source of the building debris and the date it was placed at this location are not known.

Consent Order sampling has not been conducted at SWMU 15-008(d); no historical investigations were conducted before the Consent Order went into effect in 2005. SWMU 15-008(d) will be sampled during the future Cañon de Valle Aggregate Area TA-15 investigation.

The project map (Figure 195-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

195.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 195-1).

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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 195-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01302040008	Established Vegetation	-	X	X	-	B
V01303010006	Earthen Berm	X	-	-	X	CB
V01303010007	Earthen Berm	-	X	-	X	CB
V01303140010	Coir Log	-	X	-	X	EC
V01303140011	Coir Log	-	X	-	X	EC
V01303140013	Coir Log	X	-	-	X	EC
V01303140020	Coir Log	-	X	-	X	B
V01303140021	Coir Log	-	X	-	X	B
V01304010015	Earthen Channel/Swale	X	-	X	-	EC
V01304040009	Culvert	X	-	X	-	B
V01306010014	Rock Check Dam	X	-	-	X	EC
V01306010016	Rock Check Dam	X	-	-	X	B
V01306010017	Rock Check Dam	X	-	-	X	B
V01306010018	Rock Check Dam	X	-	-	X	B
V01306010019	Rock Check Dam	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

195.3 Storm Water Monitoring

SWMU 15-008(d) is monitored within CDV-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 195-2). In Figure 195-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for aluminum (956 µg/L), gross-alpha activity (191 pCi/L), and selenium (5.33 µg/L) and are presented in Figure 195-2.

Following the installation of enhanced controls two corrective action storm water samples were collected on July 17, 2018, and on August 10, 2018 (Figure 195-2). Analytical results from the corrective action monitoring samples yielded a TAL exceedance for gross-alpha activity (222 pCi/L and 186 pCi/L) and are presented in Figure 195-2.

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 15-008(d):

- Based on the site history, the Site is an unlikely a source of 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 Figure 195-2. 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 195-2.

Monitoring location CDV-SMA-7 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 and 2018 gross-alpha results are less than this value.

All the analytical results for these samples are reported in the 2013 and 2018 Annual Reports.

195.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at CDV-SMA-7 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 195-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72867	3-20-2019
Storm Rain Event	BMP-74611	7-11-2019
Storm Rain Event	BMP-74865	7-24-2019
Storm Rain Event	BMP-75305	8-8-2019
Storm Rain Event	BMP-76651	9-10-2019
Storm Rain Event	BMP-77224	10-17-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-7 in 2019.

195.5 Compliance Status

The Site associated with CDV-SMA-7 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 2019. Table 195-3 presents the 2019 compliance status.

Table 195-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-008(d)	Corrective Action Initiated.	Evaluation for a Corrective Action recommendation.	Initiated 10-24-2018. LANL, September 10, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

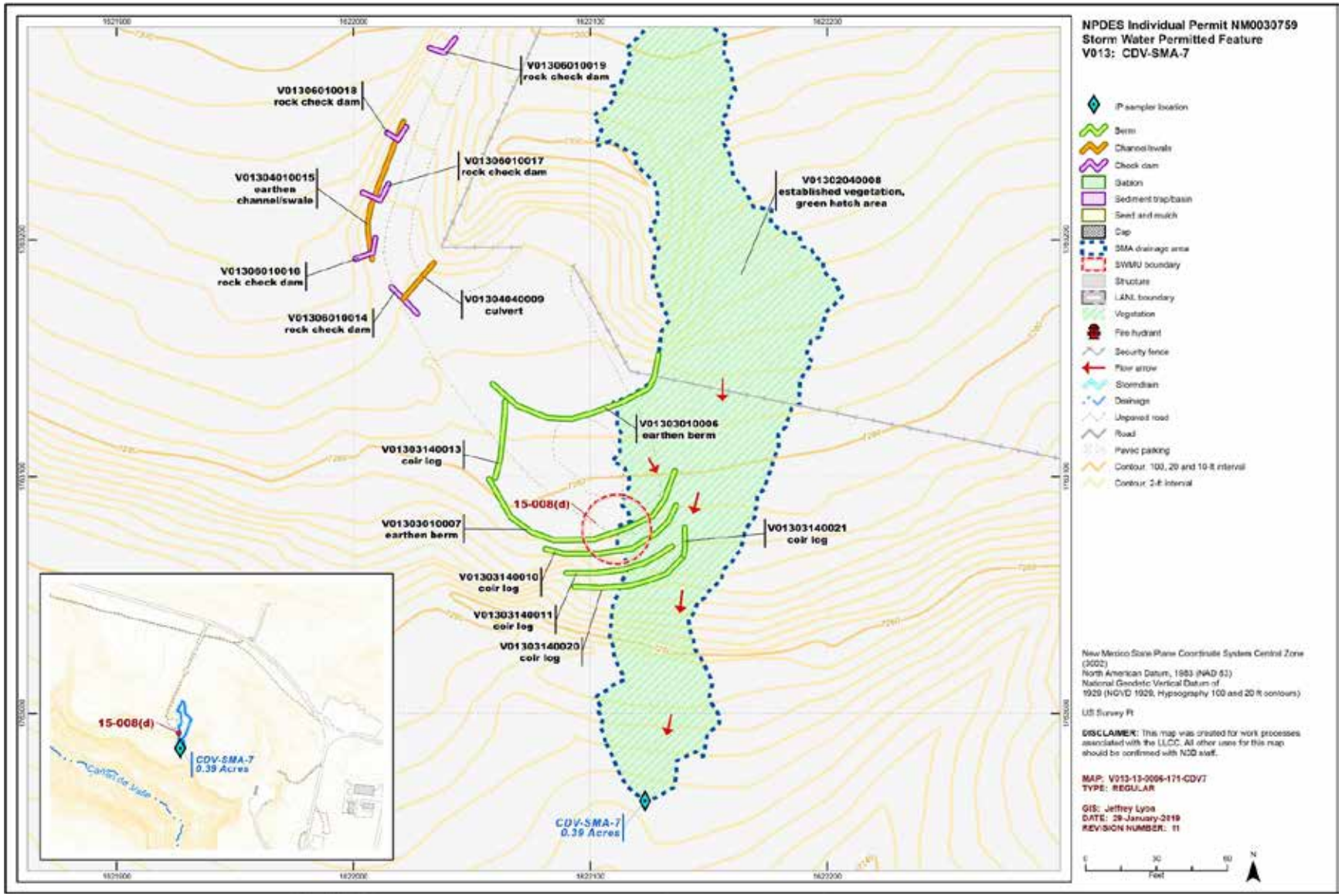


Figure 195-1 CDV-SMA-7 location map

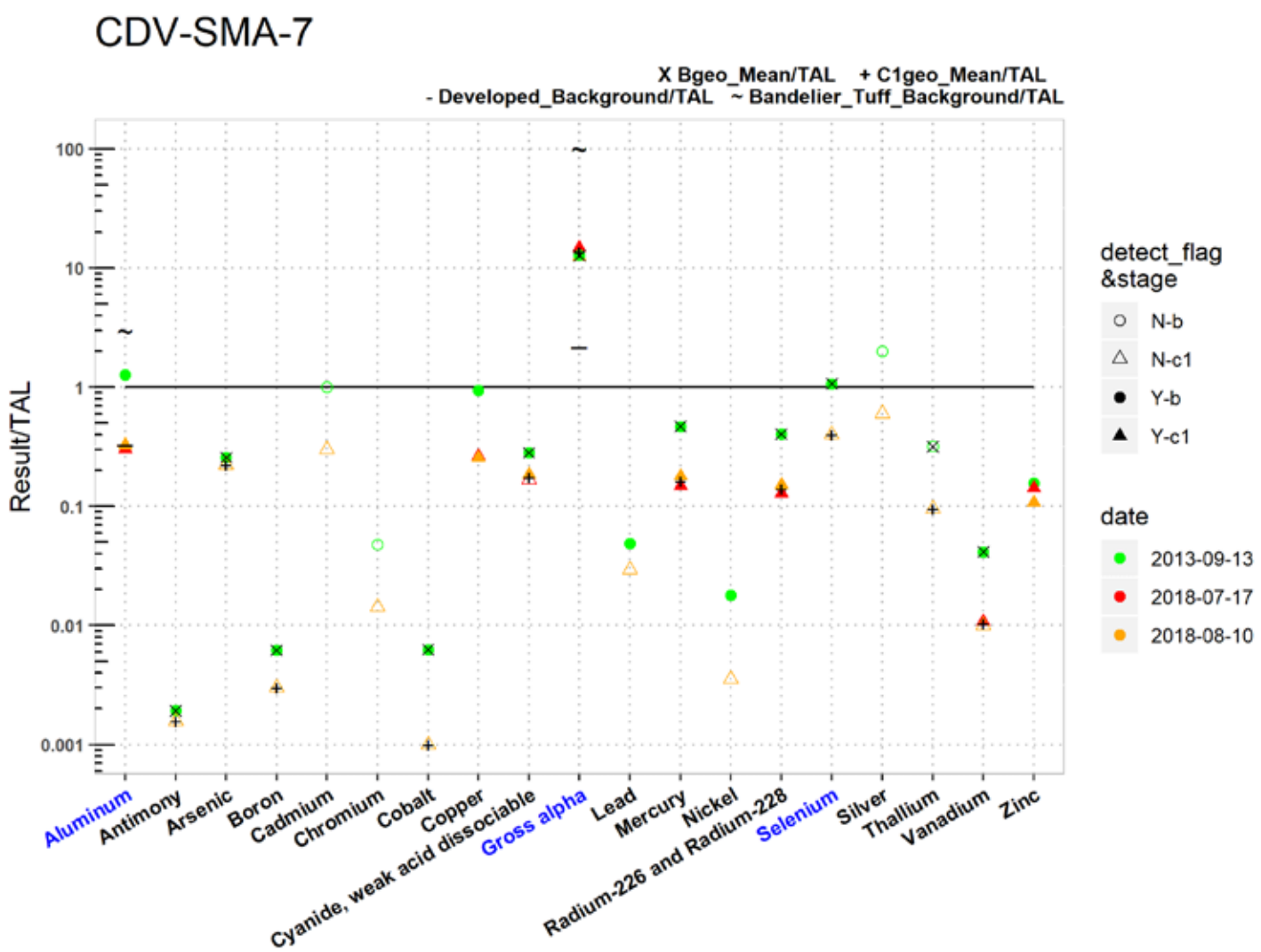


Figure 195-2 Analytical results summary for CDV-SMA-7

CDV-SMA-7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0019	0.26	0.0062	NA	NA	0.0063	NA	0.28	**13**	NA	0.47	NA	0.4	**1.1**	NA	0.32	0.042	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.003	NA	NA	0.001	NA	0.18	**14**	NA	0.16	NA	0.14	0.4	NA	0.095	0.01	NA
2013-09-13 d	**1.3**	0.0019	0.26	0.0062	NA	NA	0.0063	0.94	0.28	**13**	0.049	0.47	0.018	0.4	**1.1**	NA	NA	0.042	0.16
2013-09-13 nd	NA	NA	NA	NA	1	0.048	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	0.32	NA	NA
2018-07-17 d	0.3	NA	NA	NA	NA	NA	NA	0.27	NA	**15**	NA	0.15	NA	0.13	NA	NA	NA	0.011	0.14
2018-07-17 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	0.17	NA	0.029	NA	0.0035	NA	0.4	0.6	0.095	NA	NA
2018-08-10 d	0.33	NA	NA	NA	NA	NA	NA	0.26	0.18	**12**	NA	0.18	NA	0.15	NA	NA	NA	NA	0.11
2018-08-10 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	NA	NA	0.029	NA	0.0035	NA	0.4	0.6	0.095	0.01	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 195-2 (continued) **Analytical results summary for CDV-SMA-7**

196.0 CDV-SMA-8: SWMU 15-011(c)

196.1 Site Descriptions

One historical industrial activity area is associated with V014, CDV-SMA-8: Site 15-011(c).

SWMU 15-011(c) is a dry well and associated drainline located west of the former electron gun building (15-194) in the northwest portion of TA-15 in an area known as "The Hollow." The dry well, reportedly received discharges from two acid cleaning sinks/tanks located within former building 15-50. The sinks/tanks were removed before 1986. Both the 1986 Comprehensive Environmental Assessment and Response Program (CEARP) Report and the 1990 SWMU Report state that effluent may have discharged directly to Cañon de Valle rather than into a dry well. Engineering drawing C-19082 depicts the dry well design and location; however, the drawing is not an as-built drawing. Therefore, it is possible that the dry well was never constructed. The OU 1086 RFI work plan states that no evidence of the dry well was found at the time the work plan was prepared and concludes that effluent from the building was discharged directly to the canyon via the drainage located north and west of the former Hollow buildings. This conclusion is consistent with the CEARP report and the SWMU report.

Buildings 15-194 and 15-50 were decommissioned in the mid-1990s, sustained severe damage in the 2000 Cerro Grande fire, and were subsequently demolished in 2004.

Consent Order investigations have not yet begun; decision-level data are not available for SWMU 15-011(c). SWMU 15-011(c) will be sampled during the future Cañon de Valle Aggregate Area TA-15 investigation.

The project map (Figure 196-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

196.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 196-1).

Table 196-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01402040009	Established Vegetation	-	X	X	-	B
V01403010008	Earthen Berm	X	-	-	X	B
V01403010012	Earthen Berm	X	-	-	X	B
V01406010003	Rock Check Dam	X	-	-	X	CB
V01406010010	Rock Check Dam	X	-	-	X	B
V01406010011	Rock Check Dam	X	-	-	X	B
V01406010013	Rock Check Dam	X	-	-	X	B
V01406010014	Rock Check Dam	X	-	-	X	B
V01406010015	Rock Check Dam	X	-	-	X	B

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

196.3 Storm Water Monitoring

SWMU 15-011(c) is monitored within CDV-SMA-8. Following the installation of baseline control measures, a baseline storm water sample was collected on July 31, 2014 (Figure 196-2). In Figure 196-2, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for aluminum (1360 µg/L) and gross-alpha activity (53.4 pCi/L) and are presented in Figure 196-2.

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 15-011(c):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Consent Order investigations have not been performed at SWMU 15-011(c); no decision-level data are available for this Site.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, "Bandelier Tuff background" for undisturbed SMAs or "developed background" for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled "Bandelier Tuff Background" in Figure 196-2. 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 196-2.

Monitoring location CDV-SMA-8 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 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 2014 is between these values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2014 gross-alpha result is between these values.

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

196.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG262.4 recorded two storm events at CDV-SMA-8 during the 2019 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 196-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72868	3-20-2019
Storm Rain Event	BMP-75306	8-8-2019
Storm Rain Event	BMP-76788	9-19-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-8 in 2019.

196.5 Compliance Status

The Site associated with CDV-SMA-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 2019. Table 196-3 presents the 2019 compliance status.

Table 196-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-011(c)	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."

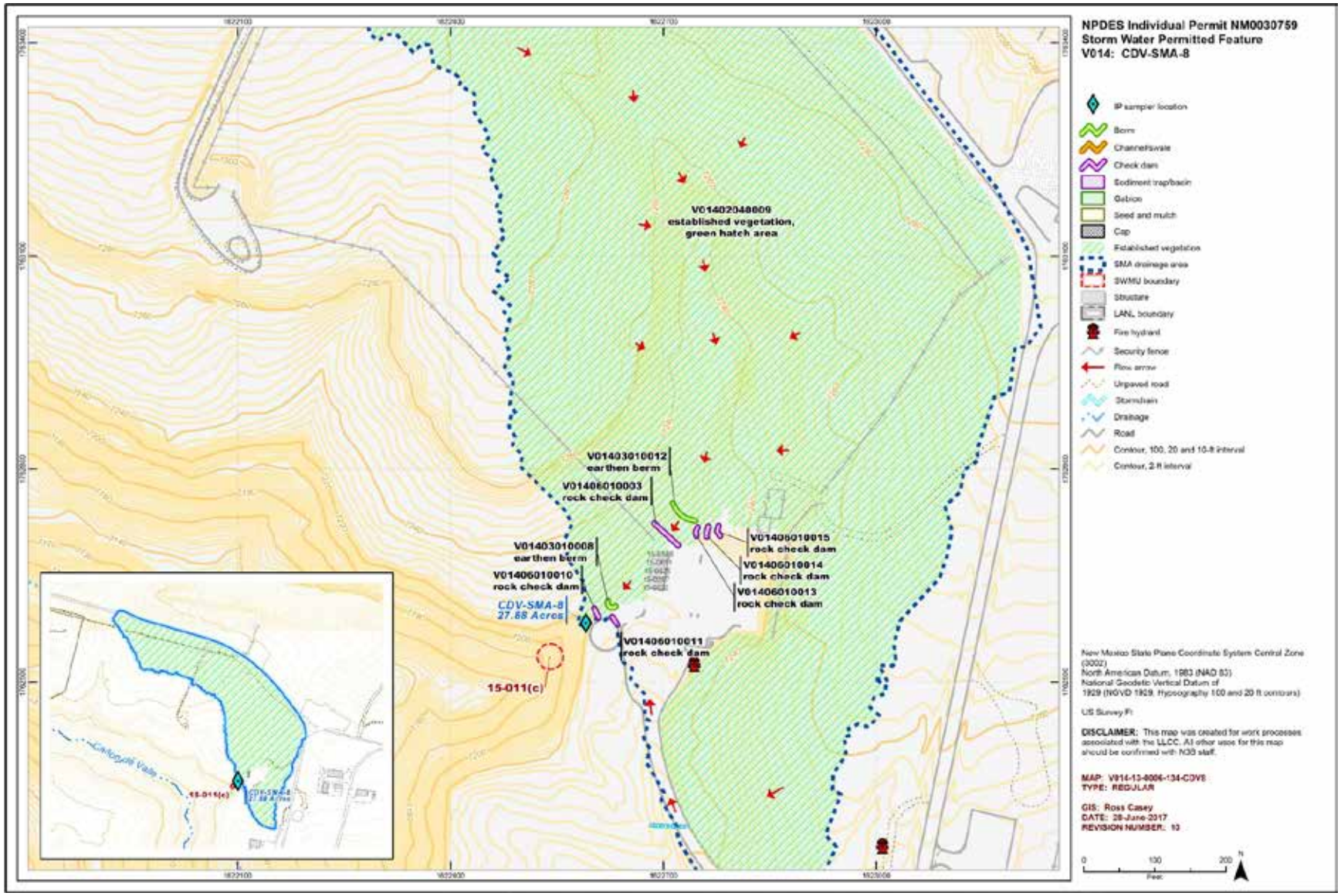


Figure 196-1 CDV-SMA-8 location map

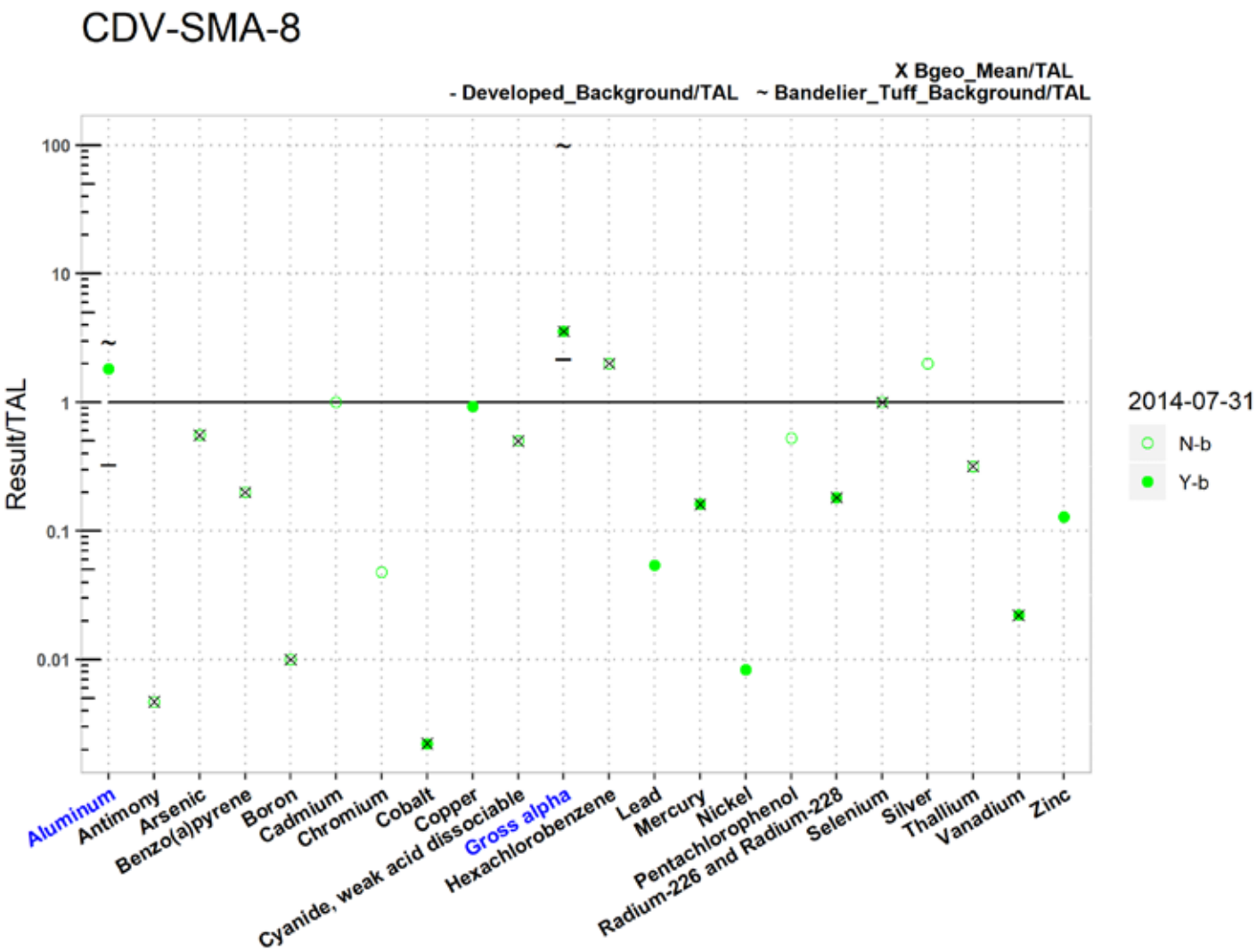


Figure 196-2 Analytical results summary for CDV-SMA-8

CDV-SMA-8

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5	17	0.77	170	19	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5	NA	0.77	NA	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA	17	1.4	170	19	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.2	0.01	NA	NA	0.0022	NA	0.5	**3.6**	**2**	NA	0.16	NA	NA	0.18	1	NA	0.32	0.022	NA
2014-07-31 d	**1.8**	NA	NA	NA	NA	NA	NA	0.0022	0.93	NA	**3.6**	NA	0.054	0.16	0.0084	NA	0.18	NA	NA	NA	0.022	0.13
2014-07-31 nd	NA	0.0047	0.56	0.2	0.01	1	0.048	NA	NA	0.5	NA	2	NA	NA	NA	0.53	NA	1	2	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 196-2 (continued) Analytical results summary for CDV-SMA-8

197.0 CDV-SMA-8.5: SWMU 15-014(a)

197.1 Site Descriptions

One historical industrial activity area is associated with V015, CDV-SMA-8.5: Site 15-014(a).

SWMU 15-014(a) is an inactive drainline and outfall associated with former building 15-183. The drainline received effluent from former photoprocessing operations in building 15-183 and discharged to a former NPDES-permitted outfall (EPA 06A123), located approximately 130 ft from the edge of Cañon de Valle. The drainline and outfall began receiving effluent in 1961 when building 15-183 was first constructed. The drainline associated with this outfall was reportedly replaced in 1987 with a new drainline along the same path as the original drainline. The drainline and the outfall discharge point were plugged in 1997 when the drainline was tied into the TA-16 sanitary sewer system. The outfall was removed from the NPDES permit as of January 14, 1998. Building 15-183 is currently used as a general nonnuclear laboratory.

Consent Order investigations have not yet begun; decision-level data are not available for SWMU 15-014(a). SWMU 15-014(a) will be sampled during the future Cañon de Valle Aggregate Area TA-15 investigation.

The project map (Figure 197-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

197.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 197-1).

Table 197-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01502040006	Established Vegetation	-	X	X	-	B
V01503010005	Earthen Berm	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

197.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-8.5. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

197.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG262.4 recorded two storm events at CDV-SMA-8.5 during the 2019 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 197-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72871	3-20-2019
Storm Rain Event	BMP-75310	8-7-2019
Storm Rain Event	BMP-76789	9-12-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-8.5 in 2019.

197.5 Compliance Status

The Site associated with CDV-SMA-8.5 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 2019. Table 197-3 presents the 2019 compliance status.

Table 197-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-014(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

CDV-SMA-8.5, Earthen Berm, V01503010005 (photo ID 8536-1r)

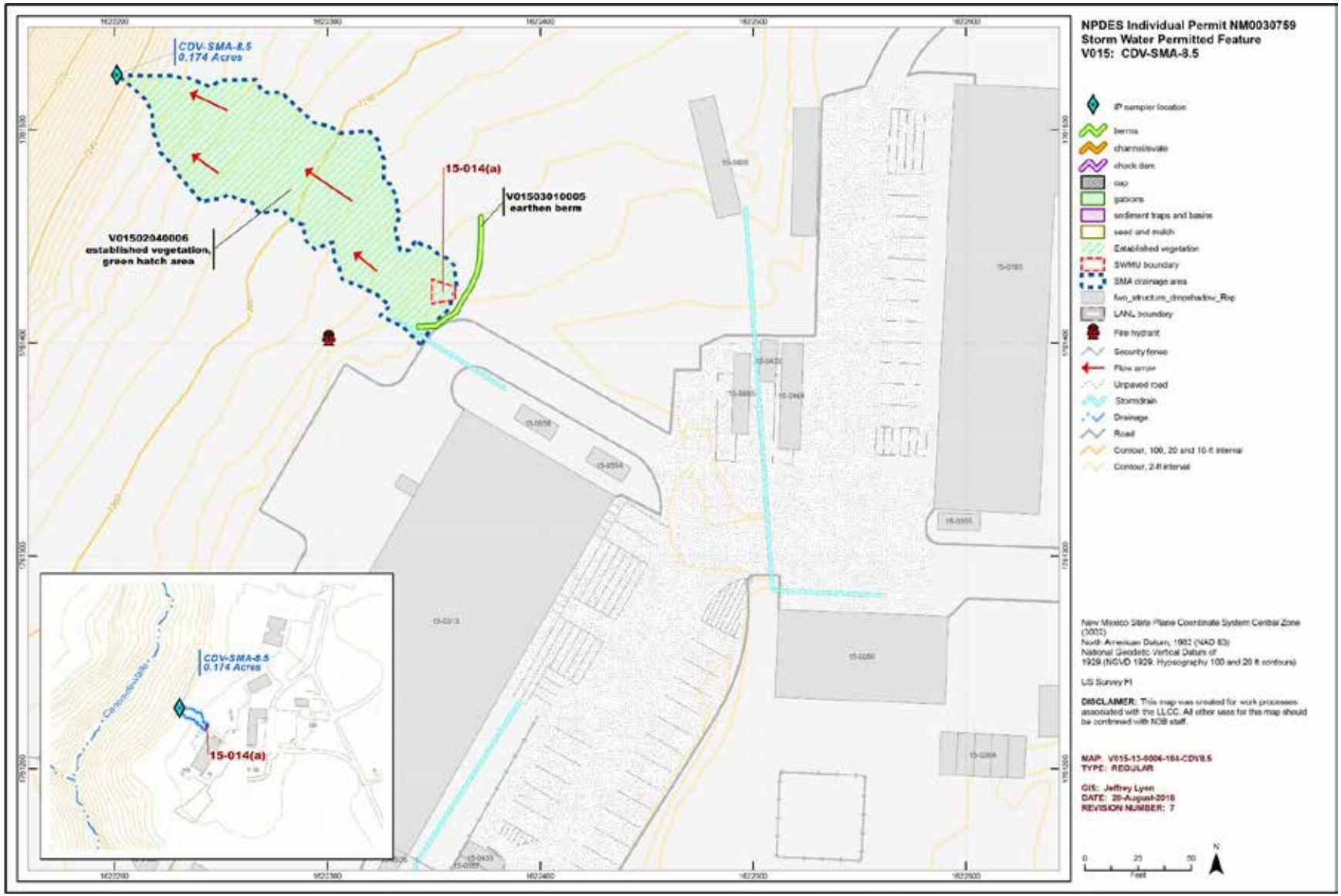


Figure 197-1 CDV-SMA-8.5 location map

198.0 CDV-SMA-9.05: SWMU 15-007(b)

198.1 Site Descriptions

One historical industrial activity area is associated with V016, CDV-SMA-9.05: Site 15-007(b).

SWMU 15-007(b) is an inactive disposal area known as MDA Z that is located northwest of inactive Firing Site G [SWMU 15-004(g)] in the south-central portion of TA-15 on the south side of the road leading to building 15-233. A geophysical survey conducted during the 1995 RFI yielded the following: MDA Z is roughly triangular and approximately 225 ft long ´ 50 ft wide with a surface area of approximately 11,250 ft^2; the volume of MDA Z measures approximately 2000 yd^3. Beginning in 1965, MDA Z received construction and shot debris from PHERMEX consisting of used sandbags filled with concrete and steel blast matting. Disposal activities at MDA Z ceased in the 1980s. When the Site was surveyed after the 2000 Cerro Grande fire, only minor burning of groundcover was noted. The presence of DU in surface soils at the Site was noted during the RFI and during a site visit in 2010.

Consent Order investigations have not yet begun; decision-level data are not available for SWMU 15-007(b). SWMU 15-007(b) will be sampled during the future Cañon de Valle Aggregate Area TA-15 investigation.

The project map (Figure 198-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

198.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 198-1).

Table 198-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01602040005	Established Vegetation	-	X	X	-	B
V01603010002	Earthen Berm	-	X	-	X	CB
V01603010003	Earthen Berm	-	X	-	X	CB
V01603010004	Earthen Berm	X	-	-	X	CB
V01603140006	Coir Log	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

198.3 Storm Water Monitoring

SWMU 15-007(b) is monitored within CDV-SMA-9.05. A baseline storm water sample was collected on August 10, 2018 (Figure 198-2). Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (16.4 pCi/L) and are presented in Figure 198-2.

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 15-007(b):

- 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 Figure 198-2. 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 198-2.

Monitoring location CDV-SMA-9.05 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 2018 gross-alpha result is less than this value.

All the analytical results for this sample are reported in the 2018 Annual Report.

198.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at CDV-SMA-9.05 during the 2019 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 198-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72872	3-21-2019
Storm Rain Event	BMP-75311	8-6-2019
Storm Rain Event	BMP-76790	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at CDV-SMA-9.05 in 2019.

198.5 Compliance Status

The Site associated with CDV-SMA-9.05 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 continuance at the end of 2019. Table 198-3 presents the 2019 compliance status.

Table 198-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-007(b)	Corrective Action Initiated.	The SMA is being evaluated for a Corrective Action recommendation.	Initiated 10-24-2018

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

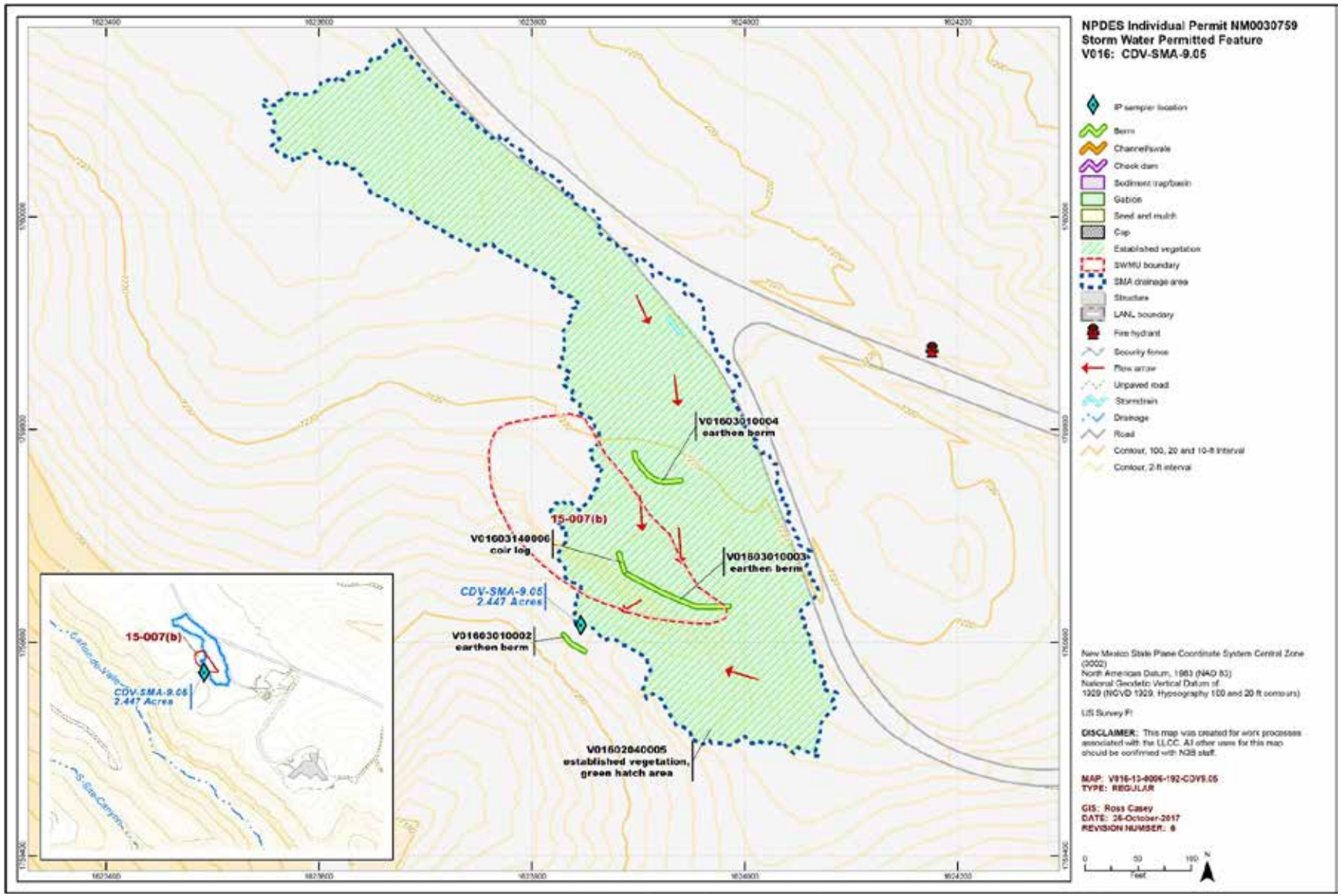


Figure 198-1 CDV-SMA-9.05 location map

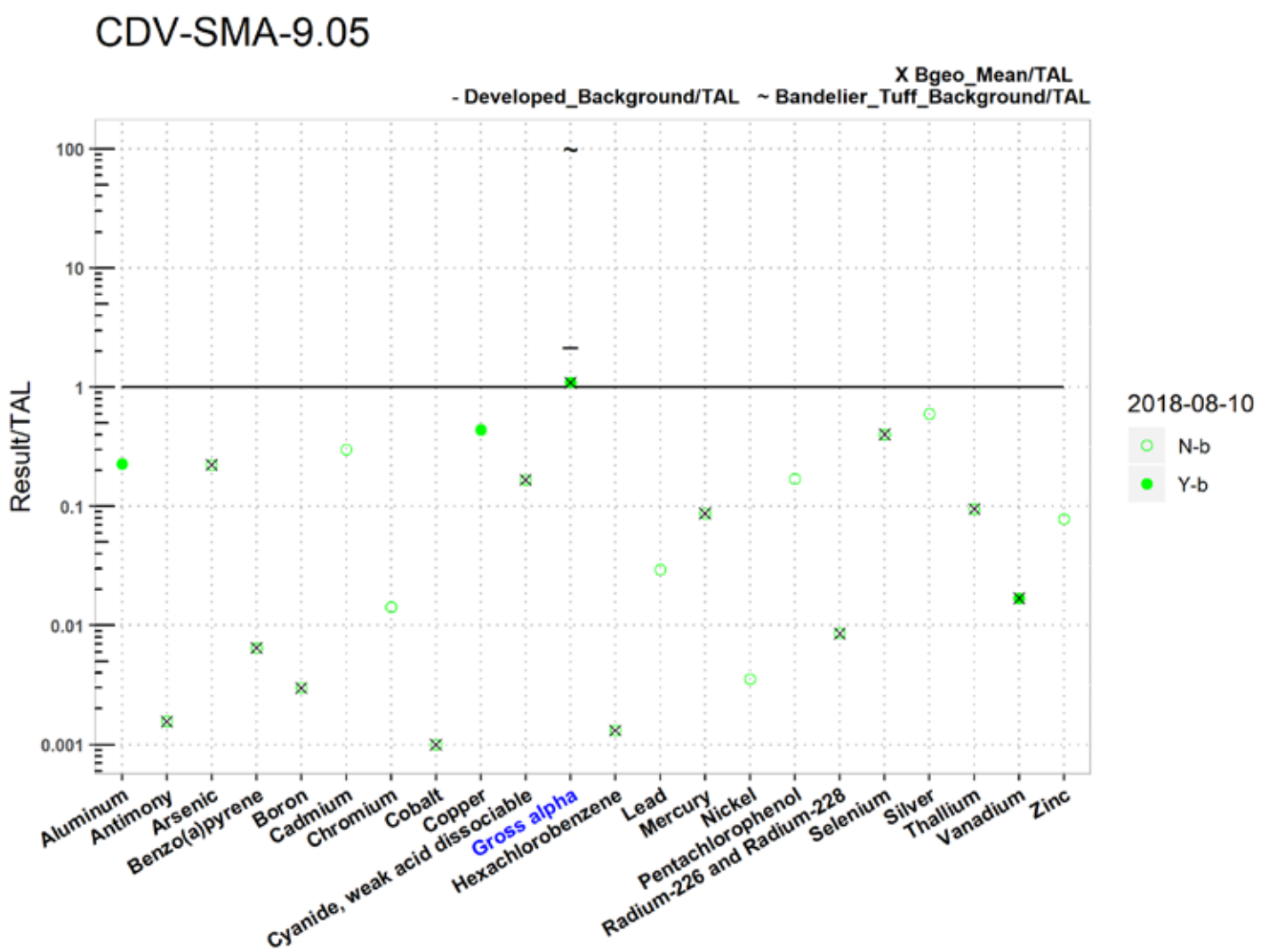


Figure 198-2 Analytical results summary for CDV-SMA-9.05

CDV-SMA-9.05

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5	17	0.77	170	19	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5	NA	0.77	NA	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA	17	1.4	170	19	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.22	0.0065	0.003	NA	NA	0.001	NA	0.17	**1.1**	0.0013	NA	0.087	NA	NA	0.0086	0.4	NA	0.095	0.017	NA
2018-08-10 d	0.23	NA	NA	NA	NA	NA	NA	NA	0.44	NA	**1.1**	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017	NA
2018-08-10 nd	NA	0.0016	0.22	0.0065	0.003	0.3	0.014	0.001	NA	0.17	NA	0.0013	0.029	0.087	0.0035	0.17	0.0086	0.4	0.6	0.095	NA	0.079

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 198-2 (continued) Analytical results summary for CDV-SMA-9.05

199.0 F-SMA-2: AOC 36-004(c)

199.1 Site Descriptions

One historical industrial activity area is associated with F001, F-SMA-2: Site 36-004(c).

AOC 36-004(c) consists of an active firing site, known as Minie Firing Site, located at TA-36 near the head of Fence Canyon, approximately 800 ft south of the Meenie Firing Site [AOC 36-004(b)]. Facilities associated with the Minie Firing Site include a control bunker (building 36-8), a make-up building (building 36-7), a firing platform, and an x-ray house. Construction of the Minie Firing Site was completed in 1950. The Site has been used extensively to conduct armor-piercing experiments in which penetrator jets are directed at targets at the canyon wall to the west of the Site. Metal plates are placed behind the targets to stop the penetrators. The Minie Firing Site has also been used for OD of scrap HE. In addition, emergency detonation of leaking gas cylinders has also been performed, but on a very infrequent basis.

Consent Order nature and extent sampling was not conducted at AOC 36-004(c) because the Site is an active RCRA-regulated OD unit. However, Consent Order samples were collected in sediment catchment areas in the drainage channel downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOC 36-004(c) is limited to the drainage downgradient of the Site for all constituents and does not extend beyond Fence Canyon Reach F-3. Further Consent Order investigations are deferred under Section XI and Appendix A of the 2016 Consent Order until the firing site is no longer active.

The project map (Figure 199-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

199.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 199-1).

Enhanced controls were installed and certified on June 27, 2014, and September 28, 2015, and submitted to EPA on July 11, 2014, and September 29, 2015, respectively, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 199-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
F00102040018	Established Vegetation	-	X	X	-	B
F00103010017	Earthen Berm	-	X	-	X	B
F00103010024	Earthen Berm	X	-	-	X	B
F00103010025	Earthen Berm	X	-	-	X	EC
F00103010026	Earthen Berm	X	-	-	X	EC
F00103010027	Earthen Berm	X	-	-	X	EC
F00103010028	Earthen Berm	-	X	-	X	EC
F00103010029	Earthen Berm	-	X	-	X	EC
F00103010030	Earthen Berm	-	X	-	X	EC
F00103010031	Earthen Berm	X	-	-	X	EC
F00103010035	Earthen Berm	X	-	-	X	B
F00103010036	Earthen Berm	X	-	-	X	EC
F00103010037	Earthen Berm	X	-	-	X	EC
F00103010039	Earthen Berm	-	X	-	X	EC
F00103010040	Earthen Berm	-	X	-	X	EC
F00103010041	Earthen Berm	-	X	-	X	EC
F00103010042	Earthen Berm	-	X	-	X	EC
F00103010043	Earthen Berm	-	X	-	X	EC
F00103010044	Earthen Berm	-	X	-	X	EC
F00103120021	Rock Berm	-	-	-	X	EC
F00103120023	Rock Berm	-	X	-	X	EC
F00103140048	Coir Log	X	-	-	X	B
F00103140051	Coir Log	X	-	-	X	B
F00104010001	Earthen Channel/Swale	X	-	X	-	CB
F00104010038	Earthen Channel/Swale	X	-	X	-	EC
F00104050033	Water Bar	-	-	X	-	EC
F00104060034	Rip Rap	-	-	X	-	EC
F00104060049	Rip Rap	X	-	X	-	B
F00104060050	Rip Rap	X	-	X	-	B
F00105060022	Infiltration Basin	-	X	-	X	EC
F00106010045	Rock Check Dam	X	-	-	X	B
F00106010046	Rock Check Dam	X	-	-	X	B
F00106010047	Rock Check Dam	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

199.3 Storm Water Monitoring

AOC 36-004(c) is monitored within F-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on August 15, 2011 (Figure 199-2). Analytical results from this sample yielded TAL exceedances for aluminum (866 µg/L), copper (72.5 µg/L), and gross-alpha activity (140 pCi/L) and are presented in Figure 199-2.

Following the 2014 installation of enhanced control measures at F-SMA-2, corrective action storm water samples were collected on July 15, 2014, and July 31, 2014 (Figure 199-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (10.8 µg/L) and gross-alpha activity (112 pCi/L and 58.9 pCi/L) and are presented in Figure 199-2.

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 36-004(c):

- Copper was likely associated with industrial materials historically managed at this Site. Copper was detected in 5 of 14 samples at maximum concentration 2.9 times the sediment BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at AOC 36-004(c). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, all of which are alpha-emitting radionuclides. 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 199-2. 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 199-2.

Monitoring location F-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; copper background storm water UTL from locations with sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is greater than both of these values, while the 2014 results are between these two values.
- Gross alpha—The gross-alpha background UTL for locations with 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 2011 and 2014 gross-alpha results are between these two values.

All the analytical results for these samples are reported in the 2011 and 2014 Annual Reports.

199.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG267.4 recorded four storm events at F-SMA-2 during the 2019 season. These rain events triggered five post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 199-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73000	3-21-2019
Storm Rain Event	BMP-74614	7-12-2019
Storm Rain Event	BMP-75329	8-5-2019
Storm Rain Event	BMP-76791	9-13-2019
Storm Rain Event	BMP-77310	10-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at F-SMA-2 in 2019.

199.5 Compliance Status

The Site associated with F-SMA-2 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 2019. Table 199-3 presents the 2019 compliance status.

Table 199-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 36-004(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 29, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas."

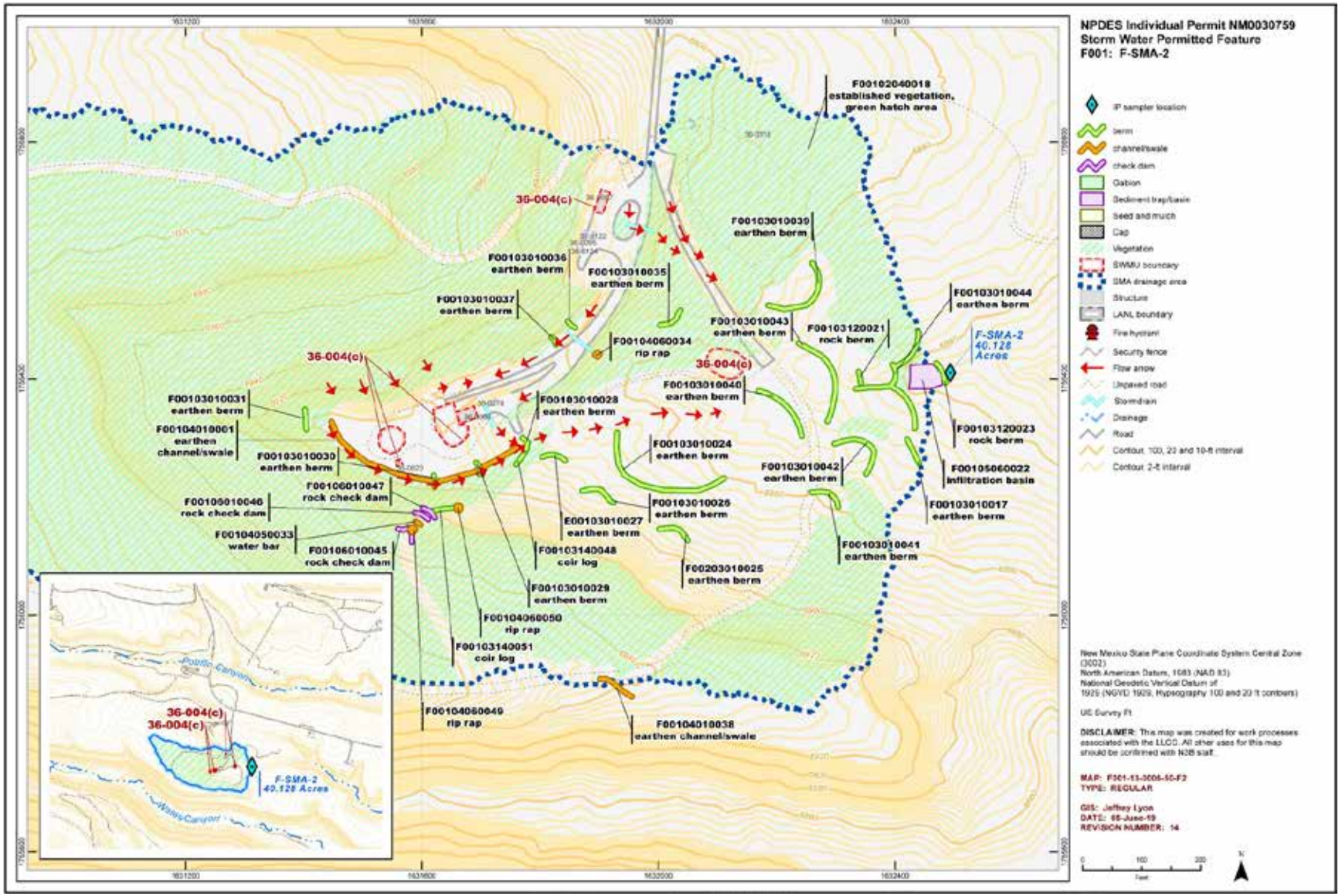


Figure 199-1 F-SMA-2 location map

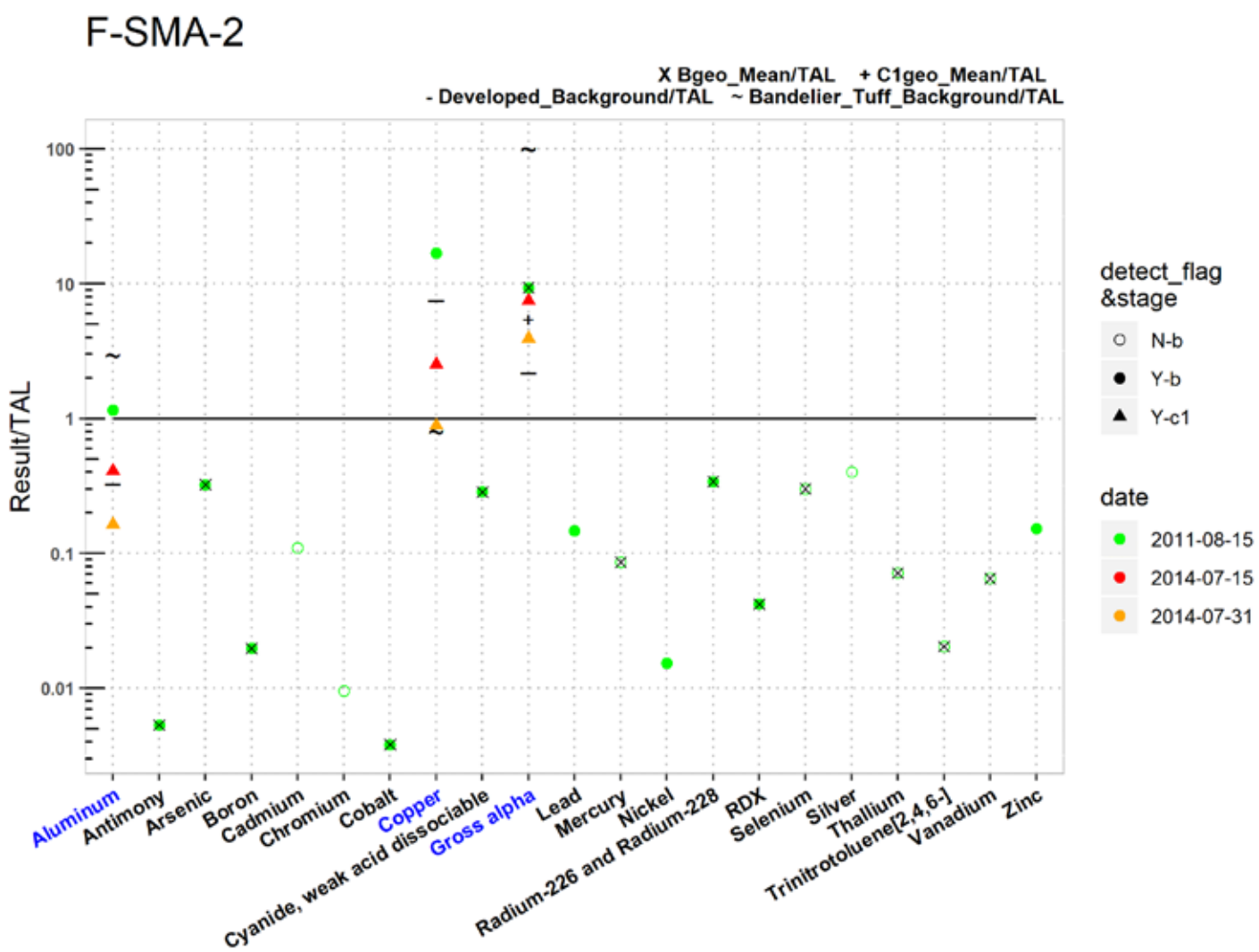


Figure 199-2 Analytical results summary for F-SMA-2

F-SMA-2

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0053	0.32	0.02	NA	NA	0.0038	NA	0.28	**9.3**	NA	0.086	NA	0.34	0.042	0.3	NA	0.071	0.02	0.065	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.4**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-08-15 d	**1.2**	0.0053	0.32	0.02	NA	NA	0.0038	**17**	0.28	**9.3**	0.15	NA	0.015	0.34	0.042	NA	NA	NA	NA	NA	0.15
2011-08-15 nd	NA	NA	NA	NA	0.11	0.0095	NA	NA	NA	NA	NA	0.086	NA	NA	NA	0.3	0.4	0.071	0.02	0.065	NA
2014-07-15 d	0.41	NA	NA	NA	NA	NA	NA	**2.5**	NA	**7.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014-07-15 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014-07-31 d	0.16	NA	NA	NA	NA	NA	NA	0.88	NA	**3.9**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014-07-31 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 199-2 (continued) Analytical results summary for F-SMA-2

200.0 PT-SMA-0.5: SWMU 15-009(e) and AOC C-15-004

200.1 Site Descriptions

Two historical industrial activity areas are associated with I001, PT-SMA-0.5: Sites 15-009(e) and C-15-004.

SWMU 15-009(e) is a decommissioned 1500-gal. septic tank (structure 15-72) at E-F Firing Site [SWMU 15-004(f)] at TA-15. The septic tank was constructed in 1947 and received sanitary waste from the E-F Firing Site control building (15-27), located approximately 175 ft northeast of the tank. The drainline goes around structure 15-463, a transportable used for storage. The septic tank is constructed of 4- to 6-in. reinforced concrete and measures 5 ft long × 9 ft deep × 7 ft wide. The septic tank was used until 1981 when E-F Firing Site last operated. Discharges from the septic tank flowed through a VCP to an outfall located approximately 30 ft from the tank at the edge of Potrillo Canyon. During the 1997 VCA conducted at SWMU 15-009(e), the contents of the septic tank were removed, the interior of septic tank was pressure-washed, concrete-chip samples were collected from the tank interior to demonstrate the adequacy of the corrective action, and the tank and drainlines were filled and plugged with expandable concrete and left in place.

Phase I Consent Order sampling is complete for SWMU 15-009(e). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order and VCA confirmation samples were below residential SSLs. SWMU 15-009(e) was recommended for additional field characterization activities in the supplemental investigation report for Potrillo and Fence Canyons Aggregate Area, submitted to NMED in 2015.

AOC C-15-004 is a former transformer station (former structure 15-56) that was located approximately 30 ft southwest of the former E-F Firing Site control room (building 15-27) at TA-15. Two transformers (18-gal. and 30-gal. capacity) were located on a 5-ft-long wooden platform 10 ft above the ground. Each transformer contained mineral oil with PCBs of unknown concentration. The date the transformers were installed is not known, but they were removed from the Site in 1989. No evidence was found of a release on the wooden platform or on the soil beneath the platform.

Phase I Consent Order sampling is complete for AOC C-15-004. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. AOC C-15-004 was recommended for corrective action complete without controls in the supplemental investigation report for Potrillo and Fence Canyons Aggregate Area, submitted to NMED in September 2015.

The project map (Figure 200-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

200.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 200-1).

Enhanced controls were installed and certified on November 27, 2012, and submitted to EPA on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 200-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00102040009	Established Vegetation	-	X	X	-	B
I00103010007	Earthen Berm	-	X	-	X	EC
I00103010008	Earthen Berm	X	-	-	X	EC
I00103060011	Straw Wattle	-	X	-	X	B
I00103060013	Straw Wattle	-	X	-	X	B
I00104030012	Rock Channel/Swale	X	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

200.3 Storm Water Monitoring

SWMU 15-009(e) and AOC C-15-004 are monitored within PT-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 200-2). Analytical results from this sample yielded TAL exceedances for aluminum (1380 µg/L), copper (6.5 µg/L), and gross-alpha activity (79.5 pCi/L) and are presented in Figure 200-2.

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 15-009(e):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in any of the 13 shallow Consent Order and VCA confirmation samples collected at SWMU 15-009(e).
- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above the BV in 1 of 13 shallow Consent Order and VCA confirmation samples collected at SWMU 15-009(e) at a concentration equivalent to the soil BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 15-009(e); however, they are associated with industrial materials managed at adjacent E-F Firing Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, the Site is an unlikely a source of the TAL exceedances. The SMA receives runoff from industrially developed (E-F Firing Site) areas and undeveloped areas.

AOC C-15-004:

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in any of the four shallow Consent Order samples collected at AOC C-15-004.
- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above the BV in 3 of 4 shallow Consent Order samples collected at AOC C-15-004 at a maximum concentration 3.3 times the soil BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at AOC C-15-004; however, they are associated with industrial materials managed at adjacent E-F Firing Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, the Site is an unlikely a source of the TAL exceedances. The SMA receives runoff from industrially developed (E-F Firing Site) areas and undeveloped areas.

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 200-2. 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 200-2.

PT-SMA-0.5 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediments 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. Copper and aluminum are associated with minerals in the Bandelier Tuff as well.

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

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

200.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at PT-SMA-0.5 during the 2019 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 200-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73001	3-21-2019
Storm Rain Event	BMP-75392	8-6-2019
Storm Rain Event	BMP-76792	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at PT-SMA-0.5 in 2019.

200.5 Compliance Status

The Sites associated with PT-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 2019. Table 200-3 presents the 2019 compliance status.

Table 200-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-009(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, December 13, 2012, “Certification of Installation of Enhanced Control Measures for Nine Site Monitoring Areas.”
AOC C-15-004	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, December 13, 2012, “Certification of Installation of Enhanced Control Measures for Nine Site Monitoring Areas.”

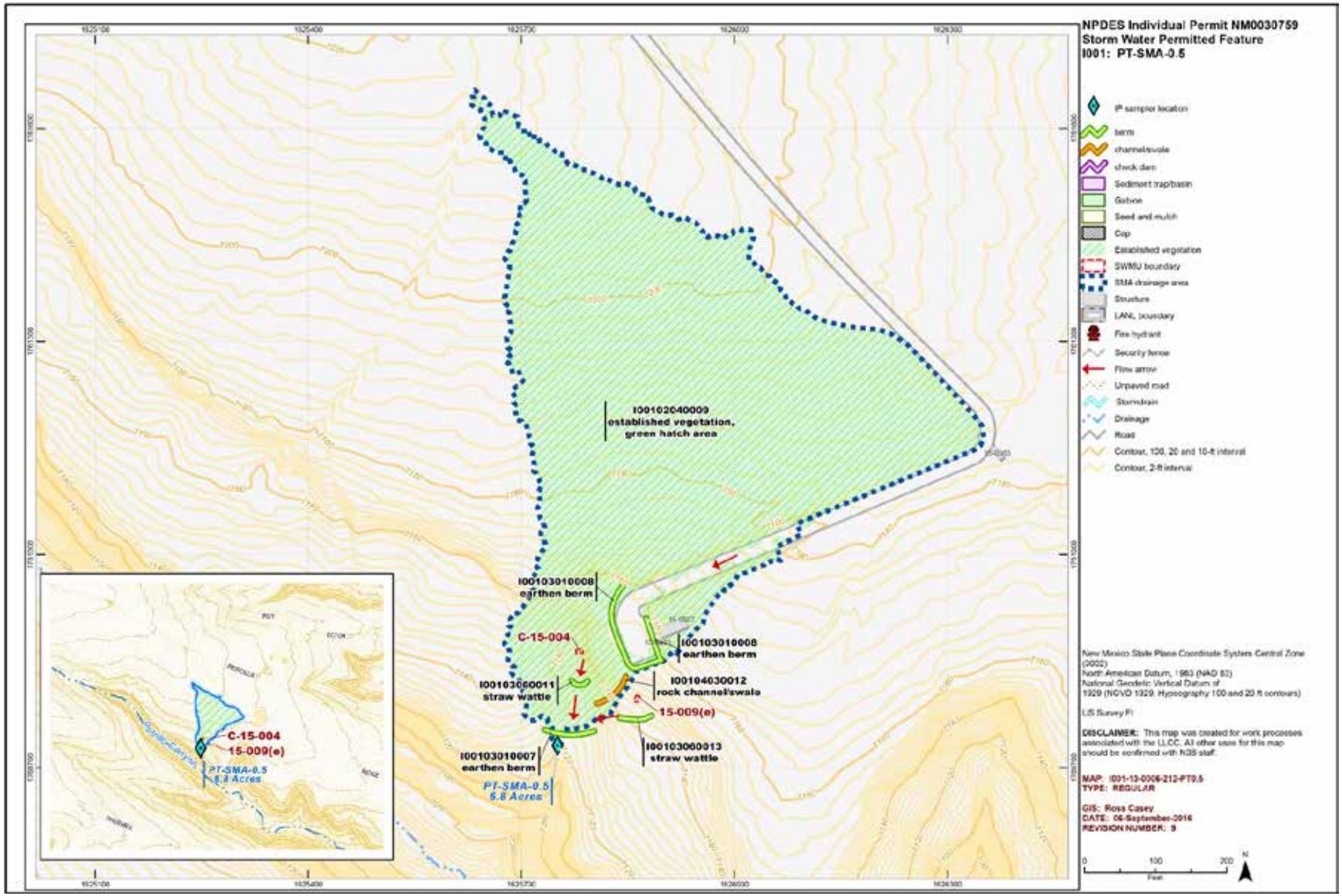


Figure 200-1 PT-SMA-0.5 location map

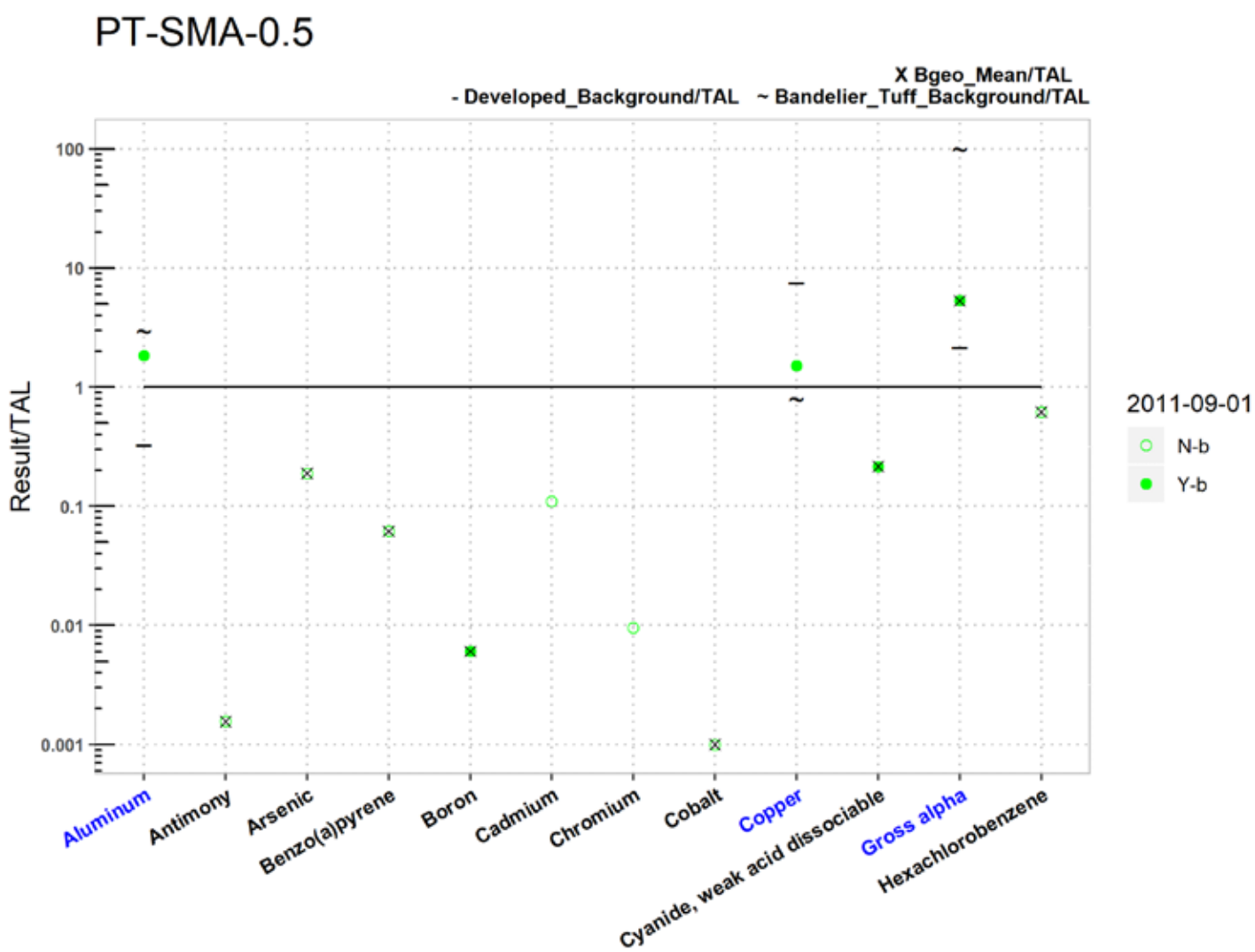


Figure 200-2 Analytical results summary for PT-SMA-0.5

PT-SMA-0.5

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.062	0.0061	NA	NA	0.001	NA	0.22	**5.3**	0.62
2011-09-01 d	**1.8**	NA	NA	NA	0.0061	NA	NA	NA	**1.5**	0.22	**5.3**	NA
2011-09-01 nd	NA	0.0016	0.19	0.062	NA	0.11	0.0095	0.001	NA	NA	NA	0.62

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 200-2 (continued) Analytical results summary for PT-SMA-0.5

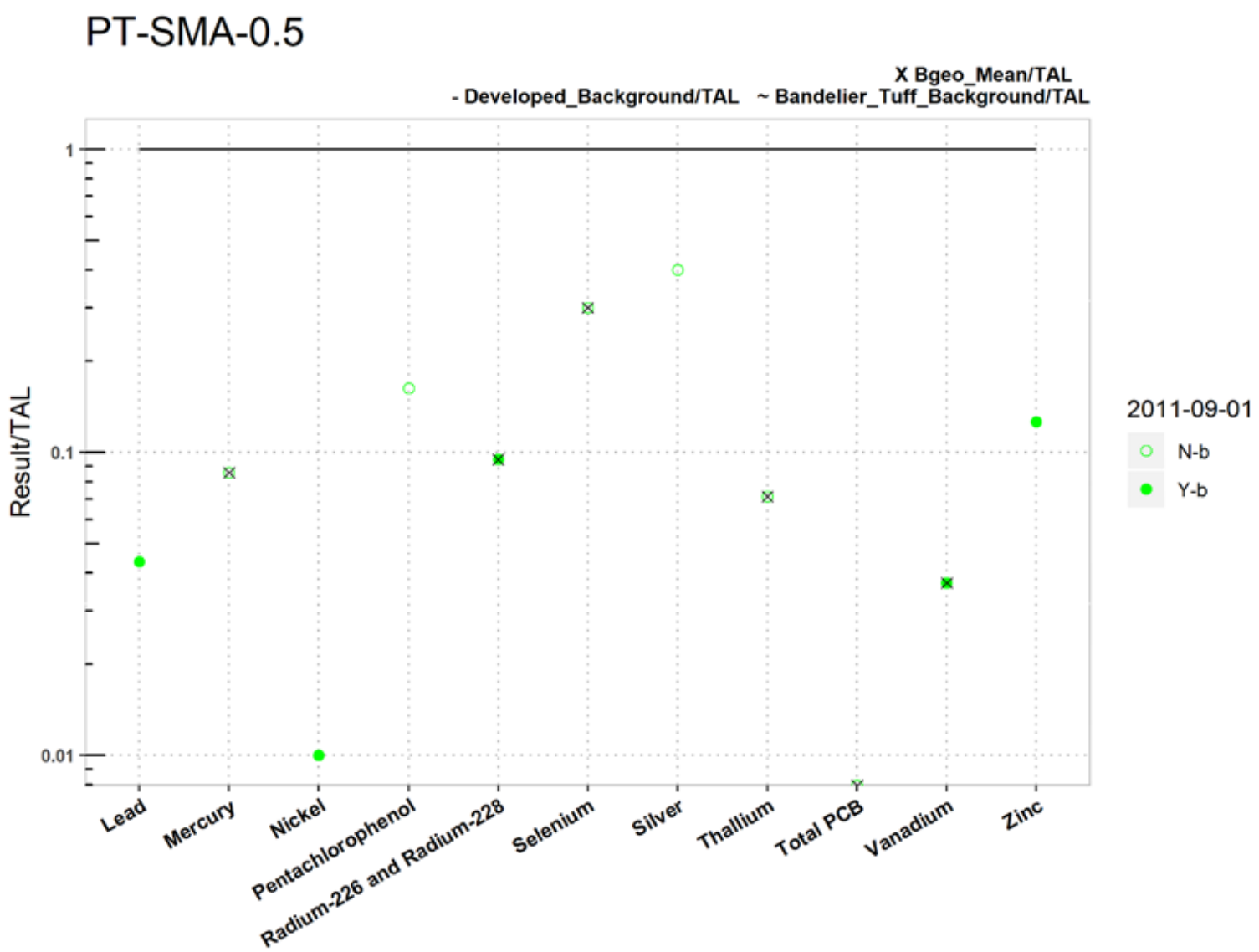


Figure 200-2 (continued) **Analytical results summary for PT-SMA-0.5**

PT-SMA-0.5

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
TAL	17	0.77	170	19	30	5	0.5	6.3	0.00064	100	42
MQL	0.5	0.005	0.5	5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	5	NA	6.3	0.00064	100	NA
MTAL	17	1.4	170	19	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.086	NA	NA	0.095	0.3	NA	0.071	0	0.037	NA
2011-09-01 d	0.044	NA	0.01	NA	0.095	NA	NA	NA	NA	0.037	0.13
2011-09-01 nd	NA	0.086	NA	0.16	NA	0.3	0.4	0.071	0	NA	NA

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 200-2 (continued) Analytical results summary for PT-SMA-0.5

201.0 PT-SMA-1: SWMUs 15-004(f) and 15-008(a)

201.1 Site Descriptions

Two historical industrial activity areas are associated with I002, PT-SMA-1: Sites 15-004(f) and 15-008(a).

SWMU 15-004(f) is an inactive firing site, E-F Firing Site, that consists of three inactive firing points (D, E, and F) covering a total area of approximately 60 acres at TA-15. E-F Firing Site began operating in 1946 and was last used in 1981. It was operated extensively from 1947 to 1973 and was the largest firing site at the Laboratory. Originally, E-F Firing Site consisted of a single firing point (D) that was built in 1946 and that ceased to operate in 1949. In 1947, the firing area was expanded to include Firing Point E, which was used for large-scale shots containing up to 2500 lb of HE, and Firing Point F, which was used for smaller-scale shots. Firing Points E and F were approximately 650 ft apart and were wired to an underground control bunker (structure 15-27). Tests at the two firing points were conducted on the ground and created depressions in the ground. After test shots, the firing points were either regraded or backfilled with gravel to fill in the depressions. Eventually, nearby soil was mounded on the north and south sides of Firing Point E to protect TA-15 structures from shrapnel. Tests at E-F Firing Site involved HE, uranium (metal and depleted), beryllium, lead, and mercury.

Phase I Consent Order sampling is complete for SWMU 15-004(f). The objective of the investigation was to identify areas and depths of soil requiring corrective action and to determine if contaminants are migrating from the Site. Although several constituents were detected above industrial SSLs/SALs, the Site does not pose a current risk because of the administrative controls that are in place. Per the Potrillo and Fence Canyons Aggregate Area supplemental investigation report submitted to NMED in September 2015, additional samples will be collected during the Phase II investigation to verify the distribution of potential contamination; subsequently, potential corrective actions for the Site will be identified and evaluated. The migration of potential contaminants from SWMU 15-004(f) is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-3.

SWMU 15-008(a) is the location of two former small surface disposal areas on the edge of Potrillo Canyon, south and east of E-F Firing Site [SWMU 15-004(f)], at TA-15. The disposal areas were located within approximately 350 ft of each other, with each disposal area having dimensions of approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. The exact period of operation of the surface disposal areas is not known but probably falls within the period of operation for E-F Firing Site (1946 to 1981). All debris and soil were removed from both surface disposal areas during the 2010 Consent Order investigation.

Phase I Consent Order sampling is complete for SWMU 15-008(a). SWMU 15-008(a) is located within the boundary of E-F Firing Site [SWMU 15-004(f)]. Per the Potrillo and Fence Canyons Aggregate Area supplemental investigation report submitted to NMED in September 2015, this Site will not be eligible for a COC until additional investigation and corrective actions are complete for E-F Firing Site.

The project map (Figure 201-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

201.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 201-1).

Enhanced controls were installed and certified on August 3, 2012, and October 15, 2015, and submitted to EPA on August 27, 2012, and October 16, 2015, respectively, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 201-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00201010022	Seed and Wood Mulch	-	-	X	-	CB
I00202040034	Established Vegetation	-	X	X	-	B
I00203010018	Earthen Berm	-	X	-	X	CB
I00203010019	Earthen Berm	-	X	-	X	CB
I00203010020	Earthen Berm	-	X	-	X	CB
I00203010021	Earthen Berm	-	X	-	X	CB
I00203010023	Earthen Berm	-	X	-	X	EC
I00203010024	Earthen Berm	-	X	-	X	EC
I00203010025	Earthen Berm	-	X	-	X	EC
I00203010026	Earthen Berm	-	X	-	X	EC
I00203010027	Earthen Berm	-	X	-	X	EC
I00203010028	Earthen Berm	-	X	-	X	EC
I00203010029	Earthen Berm	-	X	-	X	EC
I00203010030	Earthen Berm	-	X	-	X	EC
I00203010039	Earthen Berm	-	X	-	X	EC
I00203060035	Straw Wattle	-	X	-	X	B
I00203060036	Straw Wattle	-	X	-	X	B
I00203060037	Straw Wattle	-	X	-	X	B
I00203120012	Rock Berm	X	-	-	X	CB
I00203120013	Rock Berm	X	-	-	X	CB
I00203120038	Rock Berm	X	-	-	X	EC
I00203140040	Coir Log	-	X	-	X	EC
I00203140041	Coir Log	-	X	-	X	EC
I00206010031	Rock Check Dam	-	X	-	X	EC
I00206010032	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

201.3 Storm Water Monitoring

SWMUs 15-004(f) and 15-008(a) are monitored within PT-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 201-2). In Figure 201-2, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for aluminum (6550 µg/L), copper (174 µg/L), gross-alpha activity (104 pCi/L), and zinc (75.9 µg/L) and are presented in Figure 201-2.

Following the installation of enhanced control measures at PT-SMA-1, corrective action storm water samples were collected on July 9, 2014, and July 31, 2014 (Figure 201-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (45.5 µg/L and 21.4 µg/L) and gross-alpha activity (650 pCi/L and 4400 pCi/L) and are presented in Figure201-2.

Following a sampler move to a more representative monitoring location, a corrective action monitoring storm water sample was collected on September 26, 2017 (Figure 201-2). Analytical results from this sample yielded TAL exceedances for copper (4.8 µg/L) and gross-alpha activity (17.6 pCi/L) and are presented in Figure 201-2.

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 15-004(f):

- Copper was likely associated with industrial materials historically managed at this Site. Copper was detected above BVs in 38 of 69 shallow Consent Order and RFI samples at a maximum concentration 561 times the soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Shallow RFI and Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. 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.

PT-SMA-1, Rock Berm, I00203120013 (photo ID 23587-1)

SWMU 15-008(a):

- Copper was likely associated with industrial materials historically managed at this Site. Copper was detected above BVs in 15 of 22 shallow Consent Order samples at a maximum concentration 525 times the soil BV.

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. 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 UTL 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 201-2. 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 201-2.

PT-SMA-1 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediments derived from Bandelier Tuff were compared with copper and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper is associated with minerals in the Bandelier Tuff as well.

- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L; the results from 2011, 2014, and 2017 are greater than this value.
- Gross alpha—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2011 and 2017 and one result from 2014 are less than this value. The other result from 2014 is greater than this value.

All the analytical results for these samples are reported in the 2011, 2014, and 2017 Annual Reports.

201.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at PT-SMA-1 during the 2019 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 201-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72902	3-21-2019
Storm Rain Event	BMP-75393	8-6-2019
Storm Rain Event	BMP-76793	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at PT-SMA-1 in 2019.

201.5 Compliance Status

The Sites associated with PT-SMA-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 2019. Table 201-3 presents the 2019 compliance status.

Table 201-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-004(f)	Alternative Compliance Request in Process	Alternative Compliance Requested	N3B, April 22, 2019, "Alternative Compliance Request for 7 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 15-008(a)	Alternative Compliance Request in Process	Alternative Compliance Requested	N3B, April 22, 2019, "Alternative Compliance Request for 7 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

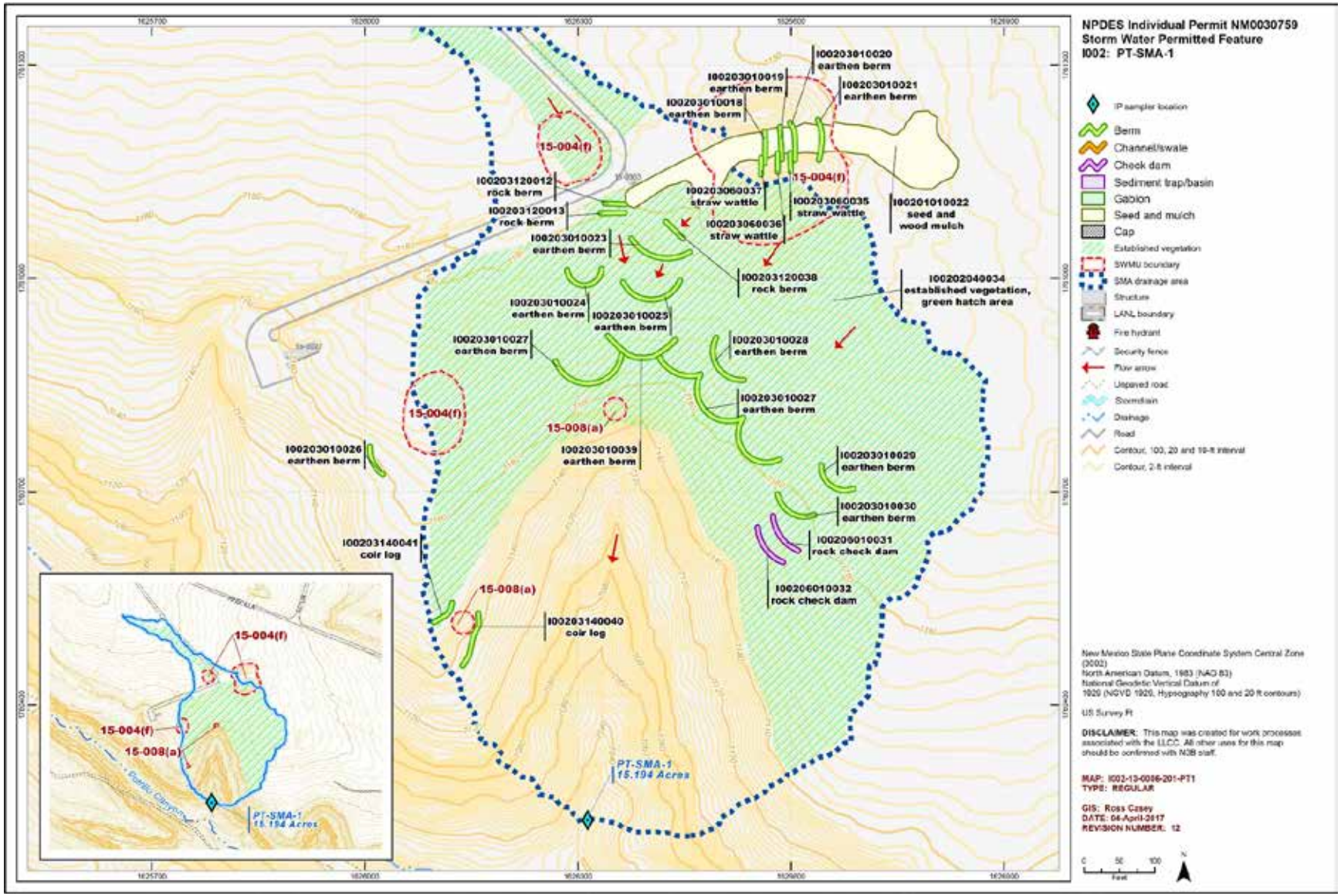


Figure 201-1 PT-SMA-1 location map

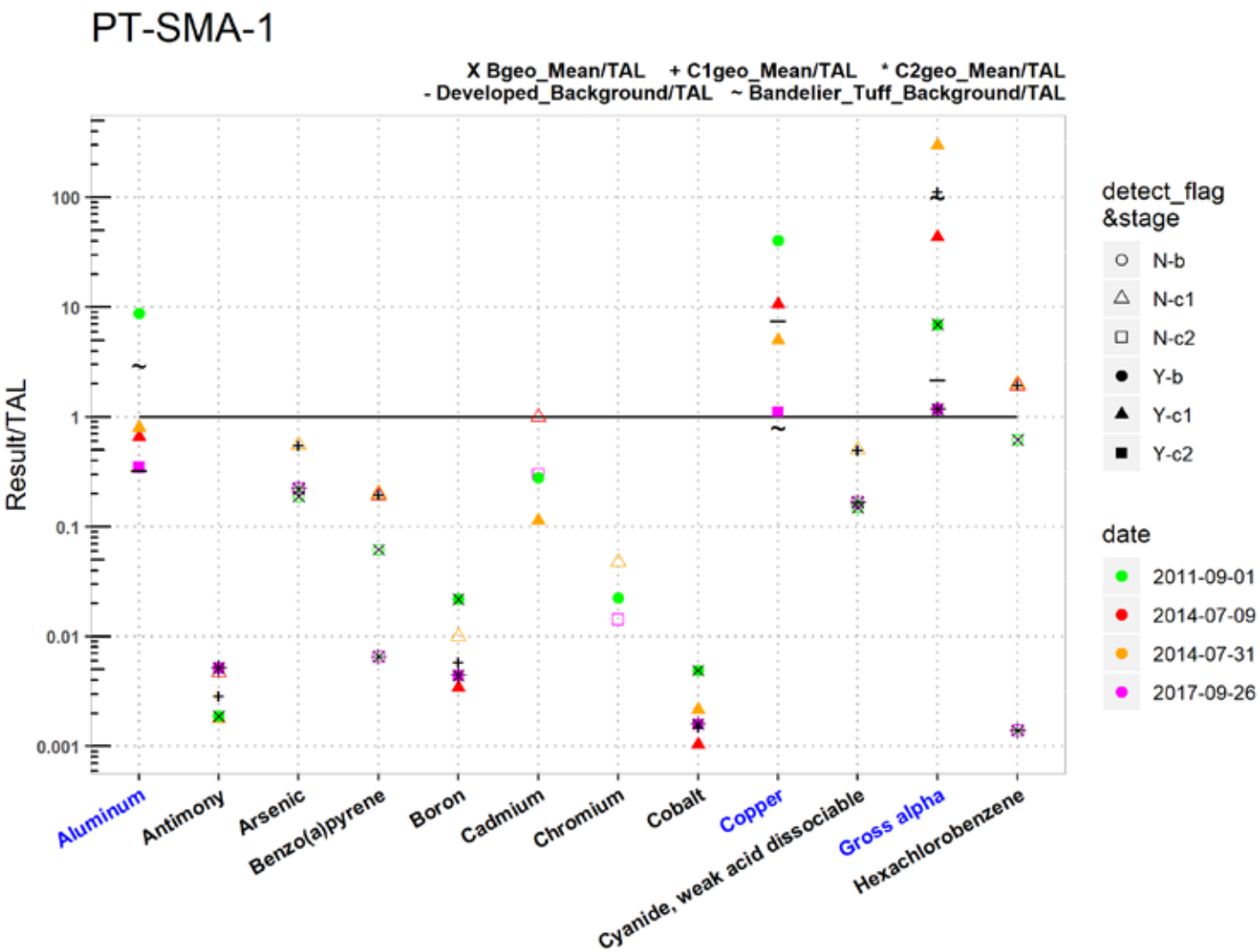


Figure 201-2 Analytical results summary for PT-SMA-1

PT-SMA-1

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0019	0.19	0.062	0.022	NA	NA	0.0049	NA	0.15	**6.9**	0.62
C1geo_mean/ATAL	NA	0.0029	0.56	0.2	0.0058	NA	NA	0.0015	NA	0.5	**110**	**2**
C2geo_mean/ATAL	NA	0.0052	0.22	0.0065	0.0044	NA	NA	0.0016	NA	0.17	**1.2**	0.0014
2011-09-01 d	**8.7**	0.0019	NA	NA	0.022	0.28	0.022	0.0049	**40**	NA	**6.9**	NA
2011-09-01 nd	NA	NA	0.19	0.062	NA	NA	NA	NA	NA	0.15	NA	0.62
2014-07-09 d	0.66	NA	NA	NA	0.0034	NA	NA	0.001	**11**	NA	**43**	NA
2014-07-09 nd	NA	0.0047	0.56	0.19	NA	1	0.048	NA	NA	0.5	NA	1.9
2014-07-31 d	0.8	0.0018	NA	NA	NA	0.11	NA	0.0022	**5**	NA	**300**	NA
2014-07-31 nd	NA	NA	0.56	0.2	0.01	NA	0.048	NA	NA	0.5	NA	2
2017-09-26 d	0.35	0.0052	NA	NA	0.0044	NA	NA	0.0016	**1.1**	NA	**1.2**	NA
2017-09-26 nd	NA	NA	0.22	0.0065	NA	0.3	0.014	NA	NA	0.17	NA	0.0014

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 201-2 (continued) Analytical results summary for PT-SMA-1

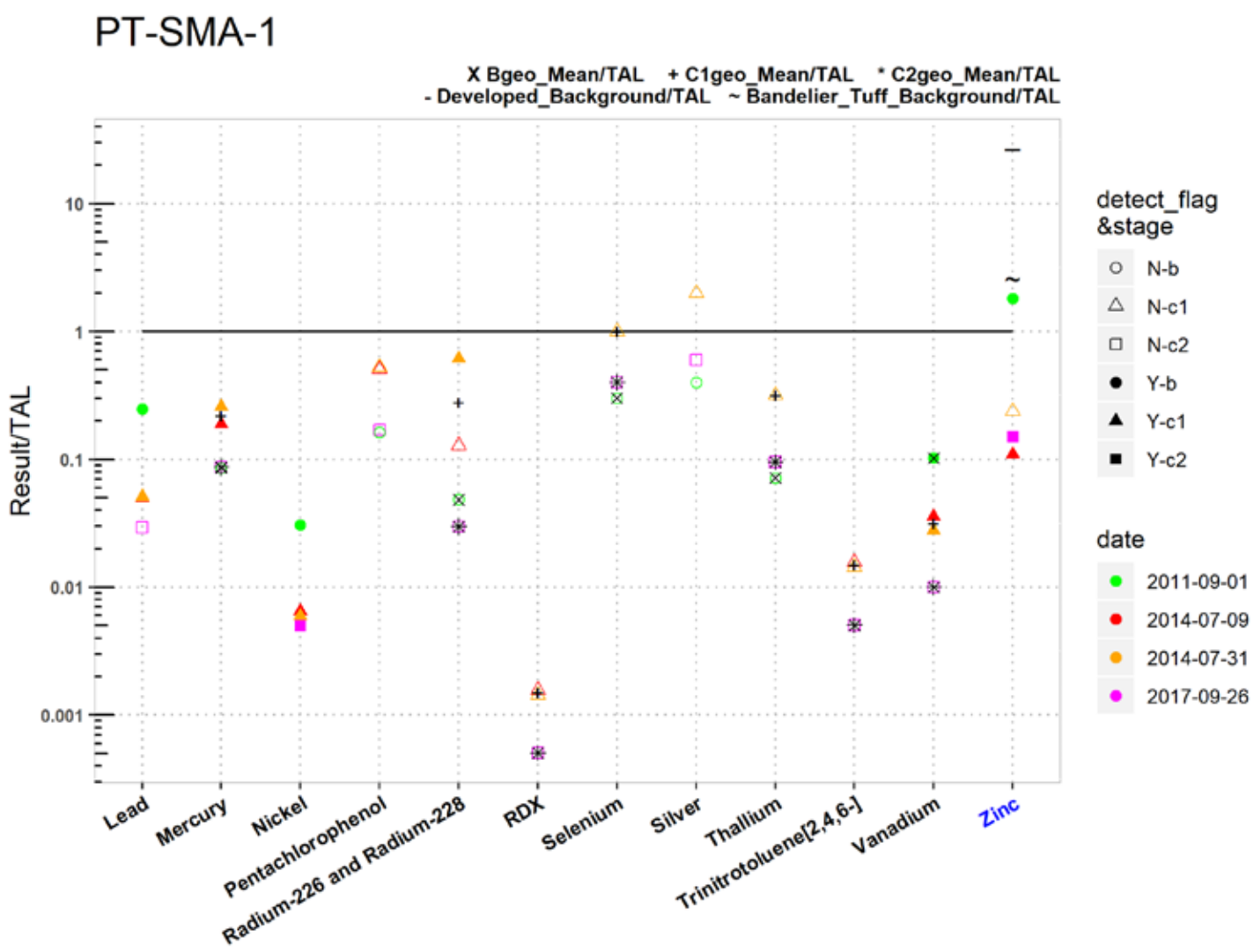


Figure 201-2 (continued) **Analytical results summary for PT-SMA-1**

PT-SMA-1

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	17	0.77	170	19	30	200	5	0.5	6.3	20	100	42
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	6.3	20	100	NA
MTAL	17	1.4	170	19	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.086	NA	NA	0.048	NA	0.3	NA	0.071	NA	0.1	NA
C1geo_mean/ATAL	NA	0.22	NA	NA	0.28	0.0015	1	NA	0.32	0.015	0.031	NA
C2geo_mean/ATAL	NA	0.087	NA	NA	0.03	5e-04	0.4	NA	0.095	0.005	0.01	NA
2011-09-01 d	0.25	NA	0.031	NA	NA	NA	NA	NA	NA	NA	0.1	**1.8**
2011-09-01 nd	NA	0.086	NA	0.16	0.048	NA	0.3	0.4	0.071	NA	NA	NA
2014-07-09 d	0.05	0.19	0.0065	NA	NA	NA	NA	NA	NA	NA	0.036	0.11
2014-07-09 nd	NA	NA	NA	0.51	0.13	0.0016	1	2	0.32	0.016	NA	NA
2014-07-31 d	0.051	0.26	0.0059	NA	0.61	NA	NA	NA	NA	NA	0.028	NA
2014-07-31 nd	NA	NA	NA	0.53	NA	0.0014	1	2	0.32	0.014	NA	0.24
2017-09-26 d	NA	NA	0.005	NA	NA	NA	NA	NA	NA	NA	NA	0.15
2017-09-26 nd	0.029	0.087	NA	0.17	0.03	5e-04	0.4	0.6	0.095	0.005	0.01	NA

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 201-2 (continued) **Analytical results summary for PT-SMA-1**

202.0 PT-SMA-1.7: SWMUs 15-006(a) and 15-003

202.1 Site Descriptions

Two historical industrial activity areas are associated with I003, PT-SMA-1.7: Sites 15-006(a) and 15-003.

Review of the Site descriptions and activities conducted within PT-SMA-1.7 identified that Site 15-006(a) was incorrectly associated with industrial materials to be monitored at the SMA. Site 15-006(a) is structure 15-184, which housed the equipment associated with the firing site 15-003. The firing site, 15-003, is the likely source of material released from the Site and the Site intended for regulation under the IP. An explanation of the error was incorporated in the IP renewal application. The information and evaluation of Site 15-003 provided below and in other sections of this SDPPP update are for informational purposes only.

SWMU 15-006(a) is a firing chamber (structure 15-184) and related equipment at TA-15 PHERMEX firing site. The PHERMEX firing site and associated facilities were built in the early 1960s. Past environmental surveys at the PHERMEX firing site include an aerial radiological survey conducted in 1982 that identified elevated levels of uranium-238. A 1991 surface radiation survey identified elevated contact exposure rates believed to be associated with chunks of DU at the PHERMEX firing site.

PT-SMA-1.7, Rock Check Dam, I00306010022 (photo ID 32227-

Investigation of SWMU 15-006(a) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site.

SWMU 15-003 is a steel firing pad located within the PHERMEX firing site [SWMU 15-006(a)]. SWMU 15-003 consists of a 6-in.-thick steel pad approximately 12 ft wide × 24 ft long. Although the SWMU 15-003 steel firing pad was originally intended for the treatment of hazardous explosive waste by Open Detonation (OD) and had been granted a RCRA interim status designation under hazardous waste regulations, the steel pad was never actually used to treat hazardous explosives waste. Because it was determined that the unit would not be needed in the future, the Laboratory requested that it be withdrawn from the Laboratory's Part B application as an OD site. NMED concurred in 1998. The steel pad was used for nontreatment-related experimental test shots. The exact dates of the use of the steel pad are not known; however, operations at the PHERMEX facility began in approximately 1961.

Consent Order samples were collected in sediment catchment areas in the drainage downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from SWMU 15-003 is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. Detected concentrations of inorganic and organic chemicals and radionuclides in Consent Order drainage samples were all below residential SSLs, except the single detection of arsenic, which was well below industrial SSL. Further Consent Order investigations are deferred until the firing site is no longer active.

The project map (Figure 202-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

202.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 202-1).

Enhanced controls were installed and certified on June 26, 2014, and submitted to EPA on July 11, 2014, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 202-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00302040017	Established Vegetation	-	X	X	-	B
I00303010018	Earthen Berm	-	X	-	X	EC
I00305040019	Gravel Infiltration Strip	-	X	-	X	EC
I00306010020	Rock Check Dam	-	X	-	X	EC
I00306010021	Rock Check Dam	-	X	-	X	EC
I00306010022	Rock Check Dam	-	X	-	X	EC
I00306010023	Rock Check Dam	-	X	-	X	EC
I00306010024	Rock Check Dam	-	X	-	X	EC
I00306010025	Rock Check Dam	-	X	-	X	EC
I00306010026	Rock Check Dam	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

202.3 Storm Water Monitoring

SWMU 15-006(a) and 15-003 is monitored within PT-SMA-1.7. Following the installation of baseline control measures, a baseline confirmation sample was collected on September 10, 2012 (Figure 202-2). In Figure 202-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (92.6 pCi/L) and are presented in Figure 202-2.

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 15-006(a) and 15-003:

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. 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 202-2. 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 202-2.

Monitoring location PT-SMA-1.7 receives storm water run-on from industrially developed locations (PHERMEX firing site) as well as locations with 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 background UTL for locations with 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 2012 gross-alpha result is between these two values.

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

202.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at PT-SMA-1.7 during the 2019 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 202-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72903	3-21-2019
Storm Rain Event	BMP-75394	8-6-2019
Storm Rain Event	BMP-76794	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at PT-SMA-1.7 in 2019.

202.5 Compliance Status

The Site associated with PT-SMA-1.7 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 2019. Table 202-3 presents the 2019 compliance status.

Table 202-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-006(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 11, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (CDV-SMA-2.41, F-SMA-2, LA-SMA-5.51, PT-SMA-1.7, S-SMA-0.25)."

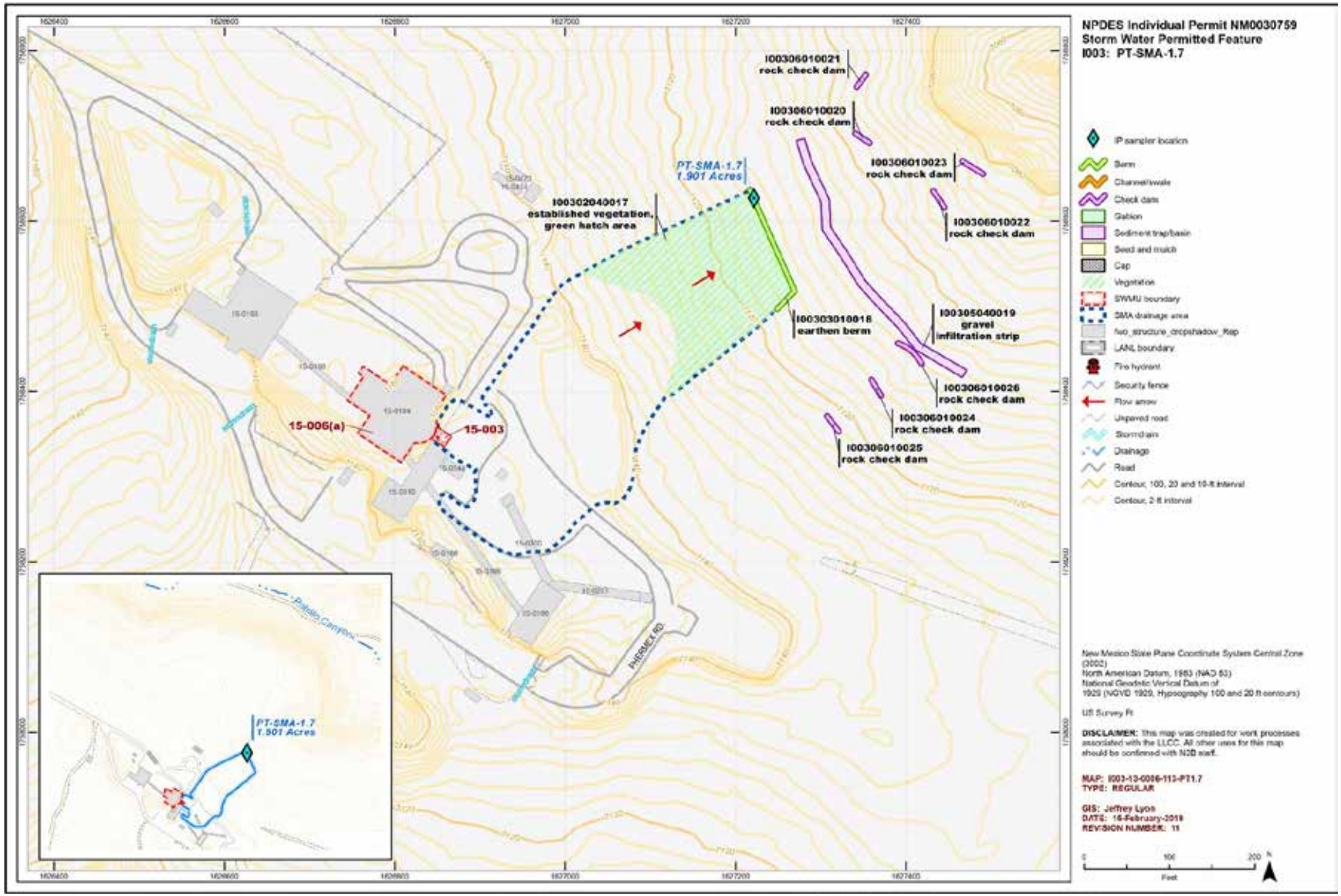


Figure 202-1 PT-SMA-1.7 location map

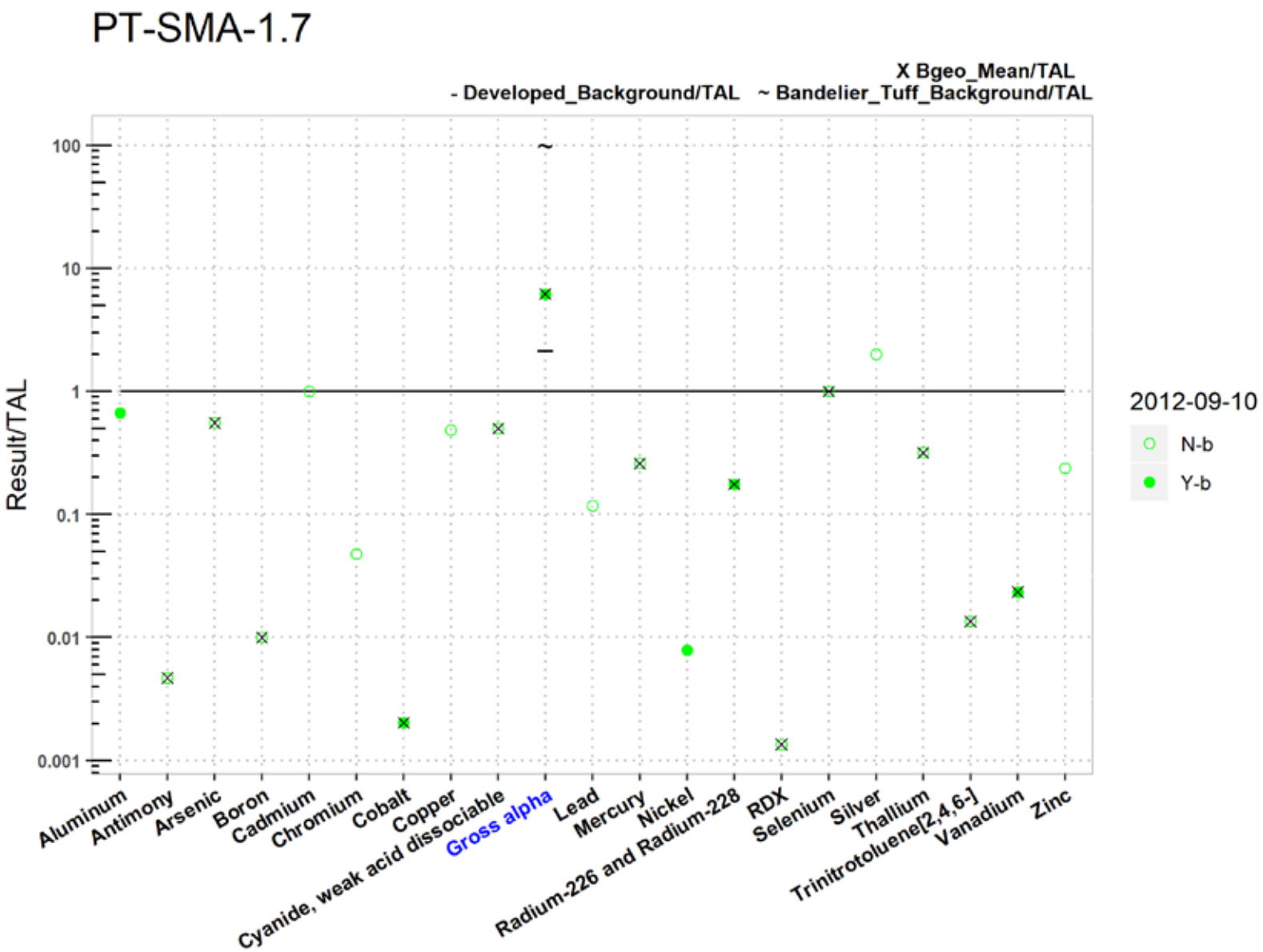


Figure 202-2 Analytical results summary for PT-SMA-1.7

PT-SMA-1.7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.01	NA	NA	0.002	NA	0.5	**6.2**	NA	0.26	NA	0.18	0.0014	1	NA	0.32	0.014	0.023	NA
2012-09-10 d	0.67	NA	NA	NA	NA	NA	0.002	NA	NA	**6.2**	NA	NA	0.0079	0.18	NA	NA	NA	NA	NA	0.023	NA
2012-09-10 nd	NA	0.0047	0.56	0.01	1	0.048	NA	0.49	0.5	NA	0.12	0.26	NA	NA	0.0014	1	2	0.32	0.014	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 202-2 (continued) Analytical results summary for PT-SMA-1.7

203.0 PT-SMA-2: SWMU 36-003(b) and AOCs 15-008(f) and 36-004(e)

203.1 Site Descriptions

Three historical industrial activity areas are associated with I004, PT-SMA-2: Sites 36-003(b), 15-008(f), and 36-004(e).

SWMU 36-003(b) is a decommissioned septic system located at the west end of TA-36. The septic system consists of a septic tank (structure 36-61) and its associated drainlines and outfall. The septic tank sits near the edge of Mesita del Potrillo, approximately 100 ft southwest of building 36-55, the control bunker for the I-J Firing Site. The control bunker housed the electronics and instrumentation used in the operation of the I-J Firing Site [SWMU 36-004(e)] and also contained a toilet, sink, and water fountain, all of which were connected to the septic tank via a 4-in.-diameter clay-tile pipe. The septic tank is constructed of reinforced concrete with a capacity of 420 gal. The tank has a buried overflow pipe that previously discharged near the north rim of Potrillo Canyon. The overflow pipe was capped in 1989 to stop its discharge into the canyon. After the overflow pipe was capped, the septic tank continued to be used until the early 1990s when the tank was taken out of service. During that time, the tank's contents were periodically removed and taken to a sanitary WWTP for treatment and disposal. The contents of the SWMU 36-003(b) septic tank were sampled in 1981, and the analytical data confirmed HE was not present. The 1996 VCA implemented at SWMU 36-003(b) included removing the septic tank contents, pressure-washing the tank, and filling the tank with expanding cement. The contents of the tank were disposed of as LLW at TA-54, Area G, and at the TA-50 RLWTF; no confirmation samples were collected.

Phase I Consent Order sampling is complete for SWMU 36-003(b). All detected constituent concentrations were below residential SSLs and SALs. Nature and extent was reevaluated under the supplemental investigation report for Potrillo and Fence Canyons Aggregate Area, submitted to NMED in 2015. The Site was recommended for additional field characterization activities to define the extent of contamination for one or more chemicals/radionuclides.

AOC 15-008(f) consists of several sand mounds located next to I-J Firing Site [AOC 36-004(e)] at TA-15. I-J Firing Site is located on a mesa overlooking Potrillo Canyon and was originally located in TA-15 when it was constructed in 1948 but is now part of TA-36.

Investigation of AOC 15-008(f) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of I-J Firing Site [AOC 36-004(e)], which includes AOC 15-008(f), to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOCs 15-008(f) and 36-004(e) is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. Detected contaminant concentrations in Consent Order drainage samples were below residential SSLs and SALs, except for uranium-238, which was detected above the residential SAL but below the industrial SAL in two samples from one location in the drainage downgradient of AOCs 15-008(f) and 36-004(e). Further Consent Order investigations are deferred until the firing site is no longer active.

AOC 36-004(e) is I-J Firing Site located at the west end of TA-36 on Mesita del Potrillo along the north rim of Potrillo Canyon. I-J Firing Site consists of two firing points (I and J) and the control building (36-55). The Site was constructed in 1948 and was located in TA-15 until 1981 when the boundary of TA-36 was expanded to encompass the portion of TA-15 that contained the I-J Firing Site. Shots at I-J Firing Site used up to 500 lb of HE and involved a variety of solid and liquid explosives and inorganic

chemicals. According to former employees, significant amounts of DU were used at I-J Firing Site in addition to small quantities of mercury and cadmium. Some shots were fired into iron, copper, or lead targets. Other metals used in shots included aluminum, antimony, various steels, lithium-magnesium alloys, and lithium hydride. In addition, hydrocarbons, argon, benzene, small amounts of mercury, cadmium, and beryllium were used in shots. All shots involving radioactive materials at I-J Firing Site were conducted in fully enclosed containment vessels. These vessels were removed from the I-J Firing Site for use at TA-15, although one was later returned to the I-J Firing Site. The returned vessel was identified in the 1990 SWMU report as AOC C-36-001 and was subsequently removed from the Site in 1994. Other activities conducted at I-J Firing Site included tests in which DU projectiles were fired into an embankment. This projectile test area was designated as AOC C-36-006(e).

Investigation of AOC 36-004(e) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOC 36-004(e) is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. Detected constituent concentrations in Consent Order drainage samples were below residential SSLs and SALs, except for uranium-238, which was detected above the residential SAL but below the industrial SAL in two samples from one location in the drainage downgradient of the Site. Further Consent Order investigations are deferred until the firing site is no longer active.

The project map (Figure 203-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

203.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 203-1).

Enhanced controls were installed and certified on September 28, 2015, and submitted to EPA on September 29, 2015, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 203-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00402040011	Established Vegetation	-	X	X	-	B
I00403010021	Earthen Berm	-	X	-	X	EC
I00403010022	Earthen Berm	X	-	-	X	EC
I00403010024	Earthen Berm	-	X	-	X	EC
I00403060012	Straw Wattle	X	-	-	X	EC
I00403060013	Straw Wattle	-	X	-	X	EC
I00403120010	Rock Berm	-	X	-	X	CB
I00403120023	Rock Berm	-	X	-	X	EC
I00404060020	Rip Rap	X	-	X	-	EC
I00406010014	Rock Check Dam	-	X	-	X	EC
I00406010015	Rock Check Dam	-	X	-	X	EC
I00406010016	Rock Check Dam	-	X	-	X	EC
I00406010017	Rock Check Dam	-	X	-	X	EC
I00406010018	Rock Check Dam	-	X	-	X	EC
I00406010019	Rock Check Dam	-	X	-	X	EC
I00406010025	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

203.3 Storm Water Monitoring

SWMU 36-003(b) and AOCs 15-008(f) and 36-004(e) are monitored within PT-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2014 (Figure 203-2). In Figure 203-2, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (10.3 µg/L) and gross-alpha activity (290 pCi/L) and are presented in Figure 203-2.

Following the installation of enhanced control measures at PT-SMA-2, corrective action storm water samples were collected on July 25, 2019, and October 4, 2019 (Figure 203-2). Analytical results from this sample yielded TAL exceedances for copper (3.66 µg/L and 5.15 µg/L) and gross-alpha activity (78.6 pCi/L and 137 pCi/L) and are presented in Figure 203-2.

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 36-003(b):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected at a concentration equivalent to the BV in 1 of the 3 shallow (i.e., less than 3 ft bgs) 2011 Consent Order soil samples.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site.

AOC 15-008(f):

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above BVs in 4 of 20 shallow 2011 Consent Order samples at a maximum concentration 1.3 times the soil BV.
- 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 isotopes, which are alpha-emitting radionuclides. Uranium-234, uranium-235/236, and uranium-238 were each detected above soil, sediment, and tuff BVs in 7, 6, and 11 of 20 shallow Consent Order samples at maximum detected activities 24, 27, and 62 times the soil BVs, respectively. 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.

AOC 36-004(e):

- Copper is known to have been associated with industrial materials historically managed at the Site. Copper was detected above BVs in 4 of 20 shallow 2011 Consent Order samples at a maximum concentration 1.3 times the soil BV.
- 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 isotopes, which are alpha-emitting radionuclides. Uranium-234, uranium-235/236, and uranium-238 were each detected above soil, sediment, and tuff BVs in 7, 6, and 11 of 20 shallow Consent Order samples at maximum detected activities 24, 27, and 62 times the soil BVs, respectively. 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 Figure 203-2. 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 203-2.

Monitoring location PT-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 copper are associated with building materials, parking lots, and automobiles. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2014 and 2019 are between these two values.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2014 and 2019 gross-alpha results are between these two values.

All the analytical results for these samples are reported in the 2014 and 2019 Annual Reports.

203.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at PT-SMA-2 during the 2019 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 203-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72904	3-20-2019
Storm Rain Event	BMP-75395	8-6-2019
TAL Exceedance Inspection	COMP-76547	9-10-2019
Storm Rain Event	BMP-76795	9-11-2019
TAL Exceedance Inspection	COMP-77841	11-26-2019

No maintenance activities or facility modifications affecting discharge were conducted at PT-SMA-2 in 2019.

203.5 Compliance Status

The Sites associated with PT-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 2019. Table 203-3 presents the 2019 compliance status.

Table 203-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 15-008(f)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated.	Initiated 11-14-2019
SWMU 36-003(b)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated.	Initiated 11-14-2019
AOC 36-004(e)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated.	Initiated 11-14-2019

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

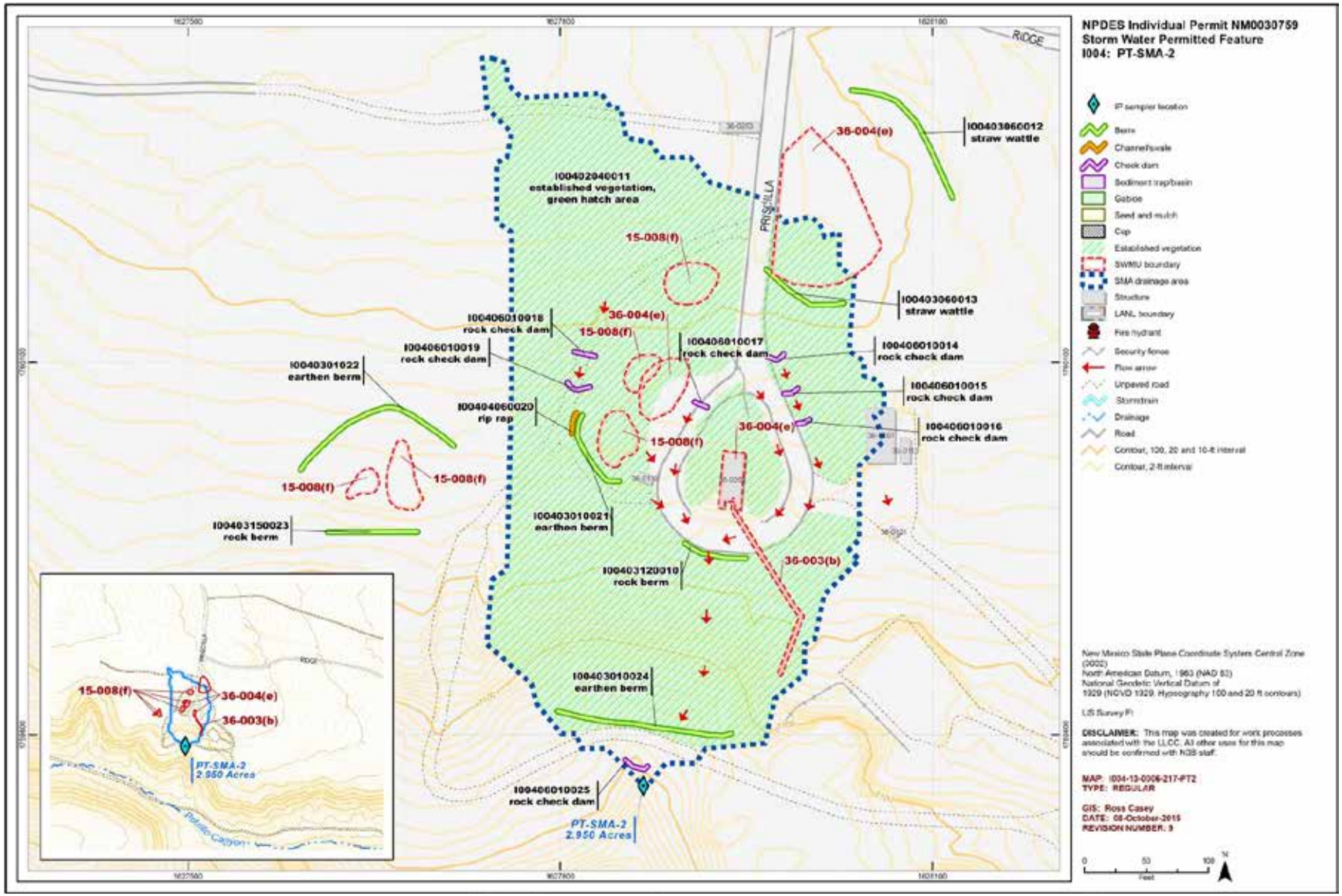


Figure 203-1 PT-SMA-2 location map

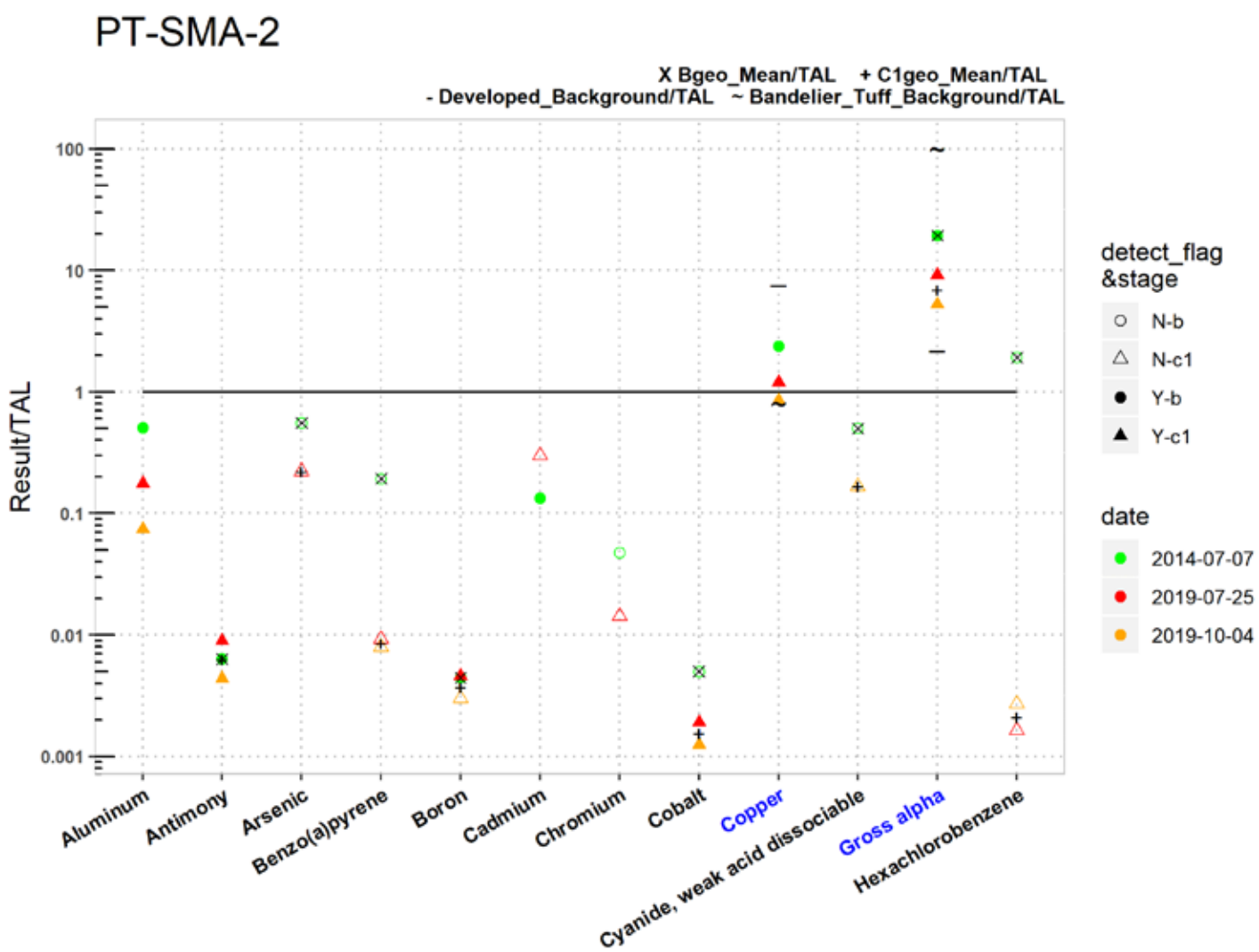


Figure 203-2 Analytical results summary for PT-SMA-2

PT-SMA-2

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0063	0.56	0.19	0.0044	NA	NA	0.005	NA	0.5	**19**	**1.9**
C1geo_mean/ATAL	NA	0.0063	0.22	0.0085	0.0037	NA	NA	0.0015	NA	0.17	**6.9**	0.0021
2014-07-07 d	0.51	0.0063	NA	NA	0.0044	0.13	NA	NA	**2.4**	NA	**19**	NA
2014-07-07 nd	NA	NA	0.56	0.19	NA	NA	0.048	0.005	NA	0.5	NA	1.9
2019-07-25 d	0.18	0.009	NA	NA	0.0046	NA	NA	0.0019	**1.2**	NA	**9.1**	NA
2019-07-25 nd	NA	NA	0.22	0.0092	NA	0.3	0.014	NA	NA	0.17	NA	0.0016
2019-10-04 d	0.074	0.0044	NA	NA	NA	NA	NA	0.0012	0.85	NA	**5.2**	NA
2019-10-04 nd	NA	NA	0.22	0.0079	0.003	0.3	0.014	NA	NA	0.17	NA	0.0027

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 203-2 (continued) **Analytical results summary for PT-SMA-2**

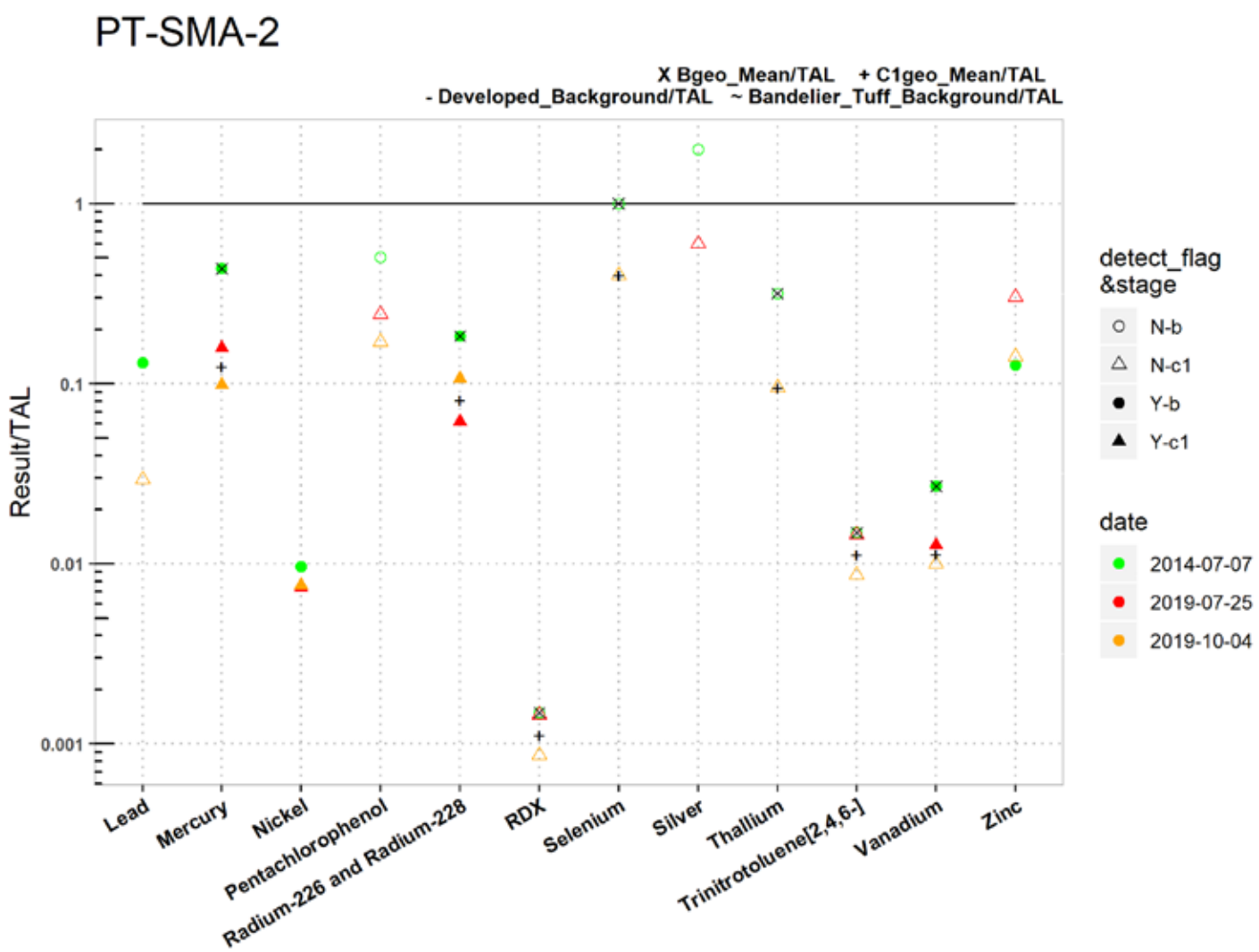


Figure 203-2 (continued) **Analytical results summary for PT-SMA-2**

PT-SMA-2

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	17	0.77	170	19	30	200	5	0.5	6.3	20	100	42
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	6.3	20	100	NA
MTAL	17	1.4	170	19	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.44	NA	NA	0.18	0.0015	1	NA	0.32	0.015	0.027	NA
C1geo_mean/ATAL	NA	0.13	NA	NA	0.081	0.0011	0.4	NA	0.095	0.011	0.011	NA
2014-07-07 d	0.13	0.44	0.0096	NA	0.18	NA	NA	NA	NA	NA	0.027	0.13
2014-07-07 nd	NA	NA	NA	0.51	NA	0.0015	1	2	0.32	0.015	NA	NA
2019-07-25 d	NA	0.16	0.0074	NA	0.062	NA	NA	NA	NA	NA	0.013	NA
2019-07-25 nd	0.029	NA	NA	0.24	NA	0.0014	0.4	0.6	0.095	0.014	NA	0.3
2019-10-04 d	NA	0.099	0.0076	NA	0.11	NA	NA	NA	NA	NA	NA	NA
2019-10-04 nd	0.029	NA	NA	0.17	NA	0.00086	0.4	0.6	0.095	0.0086	0.01	0.14

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 203-2 (continued) Analytical results summary for PT-SMA-2

204.0 PT-SMA-2.01: AOCs C-36-001 and C-36-006(e)

204.1 Site Descriptions

Two historical industrial activity areas are associated with I004A, PT-SMA-2.01: Sites C-36-001 and C-36-006(e).

AOC C-36-001 is a former containment vessel that provided secondary containment for explosives tests at TA-36. The containment vessel was manufactured in 1970 and located at the PHERMEX test facility at TA-15. The containment vessel was later relocated to the I-J Firing Site and placed south of building 36-55, where it remained until 1983 when it was removed. The containment vessel consisted of a 19.5-ton, 12-ft-diameter steel sphere. An explosive device was placed and detonated in a primary containment vessel which, in turn, was placed inside the AOC C-36-001 containment vessel. The explosion gases were vented through a filtration system that captured particulates and did not allow release of the test material. No specific location(s) exists for this Site; the location is identified only as the general area south of building 36-55. In 1994, a VCA was implemented at AOC C-36-001 that involved decontamination and disposal of the vessel. The vessel was taken from TA-36 to building 15-233 for initial decontamination and was subsequently taken to the facility at TA-50 for further decontamination. It was then returned to TA-15 pending acceptance for disposal at TA-54, Area G. In October 1994, the containment vessel was disposed of at MDA G at TA-54. No confirmation samples were collected during the VCA.

The previous locations of the former containment vessel used at PHERMEX and the I-J Firing Site are not known and would have been impacted by historical and current firing site operations. Therefore, characterization of any releases from AOC C-36-001 will be accomplished by future investigations at the PHERMEX and I-J Firing Site. Investigation of both PHERMEX and I-J Firing Site is deferred per Section XI and Appendix A of the 2016 Consent Order.

AOC C-36-006(e) is a former projectile test area located within the southern portion of the I-J Firing Site [AOC 36-004(e)] along the north rim of Potrillo Canyon. AOC C-36-006(e) was formerly used for testing DU projectiles as part of I-J Firing Site activities. Projectiles were fired from a 120-mm gun into a nearby embankment. Although some projectiles were recovered after an experiment was completed, much of the projectile material remains on-site. Originally, the I-J Firing Site was located within the boundary of TA-15. In 1981, the boundary of TA-36 was expanded to include portions of TA-15. As part of this expansion, the area where I-J Firing Site was located was transferred to TA-36. Although the 1990 SWMU report addresses the I-J Firing Site as AOC 36-004(e), it addresses the nearby projectile test area (which was also part of the 1981 transfer to TA-36) as AOC 15-006(e). AOC 15-006(e) was renamed AOC C-36-006(e) in the OU 1086 work plan because the projectile test area was within the boundaries of TA-36 when the work plan was written.

Previous investigations conducted at I-J Firing Site, which encompasses AOC C-36-006(e), consisted of a surface radiological survey conducted in 1991 that identified areas of elevated radioactivity at the time of the survey. Numerous pieces of DU and oxidized DU were present around the Site. Based on the presence of visible pieces of DU, an interim action plan was prepared in 1997 that called for removing visible pieces of DU from the firing site and surrounding area and installing storm water controls. However, the plan was never implemented.

AOC C-36-006(e) is encompassed by the I-J Firing Site, which is deferred for investigation per Section XI and Appendix A of the 2016 Consent Order. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of the Site to determine if contaminants are migrating from the Site, which includes the I-J Firing Site. Concentrations of detected inorganic

chemicals and organic chemicals and radionuclide activities decreased in the drainages downgradient of the Site and were not detected or not detected above BVs in samples collected from the bottom of the drainage below the Site. All detected concentrations and activities are below residential SSLs and SALs.

The project map (Figure 204-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

204.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 204-1).

Enhanced controls were installed and certified on August 3, 2012, and submitted to EPA on August 27, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 204-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I004A02040005	Established Vegetation	-	X	X	-	B
I004A03010004	Earthen Berm	-	X	-	X	EC

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

204.3 Storm Water Monitoring

AOCs C-36-001 and C-36-006(e) are monitored within PT-SMA-2.01. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 18, 2011 (Figure 204-2). Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (295 pCi/L) and are presented in Figure 204-2.

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 C-36-001:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Consent Order sampling has not been conducted; the location of the former containment vessel is not known.

AOC C-36-006(e):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Consent Order sampling has not been conducted; the location of the former containment vessel is not known.

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 204-2. 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 204-2.

The SMA receives runoff from industrially developed (I-J Firing Site) areas and undeveloped areas. The concentration of gross-alpha radioactivity detected in the SMA sample was above the BV for runoff from developed areas and below the BV for runoff from undeveloped areas. These results are consistent with the land use within the SMA drainage area.

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

204.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at PT-SMA-2.01 during the 2019 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 204-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72926	3-20-2019
Storm Rain Event	BMP-75431	8-6-2019
Storm Rain Event	BMP-76797	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at PT-SMA-2.01 in 2019.

204.5 Compliance Status

The Sites associated with PT-SMA-2.01 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 2019. Table 204-3 presents the 2019 compliance status.

Table 204-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC C-36-001	Corrective Action Complete	Corrective Action Complete	LANL, August 28, 2017, "NPDES Permit No. NM0030759 - Completion of Corrective Action for Site C-36-001 in PT-SMA-2.01."
AOC C-36-006(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 27, 2012, "Certification of Enhanced Control Measures for Eight Site Monitoring Areas."

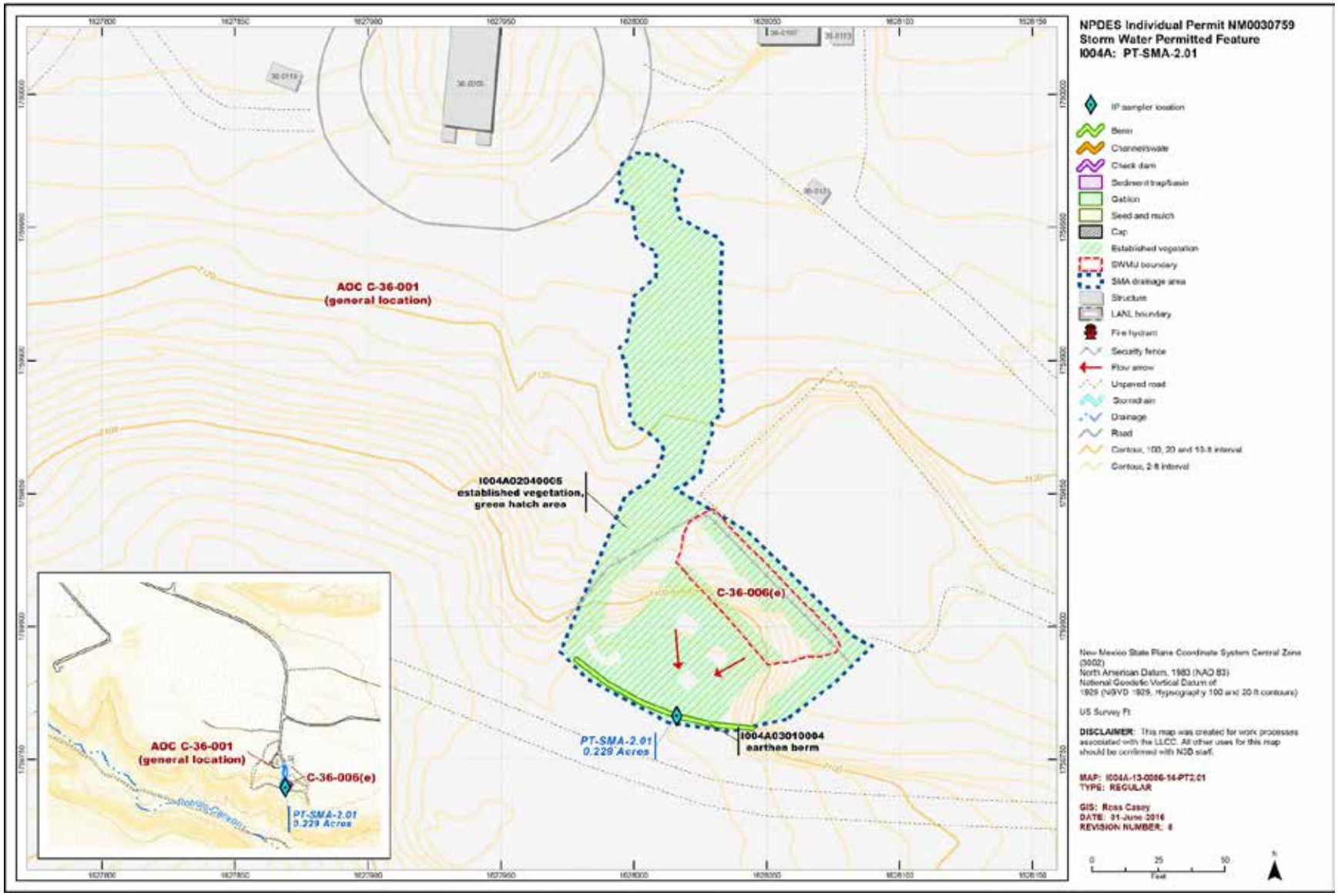


Figure 204-1 PT-SMA-2.01 location map

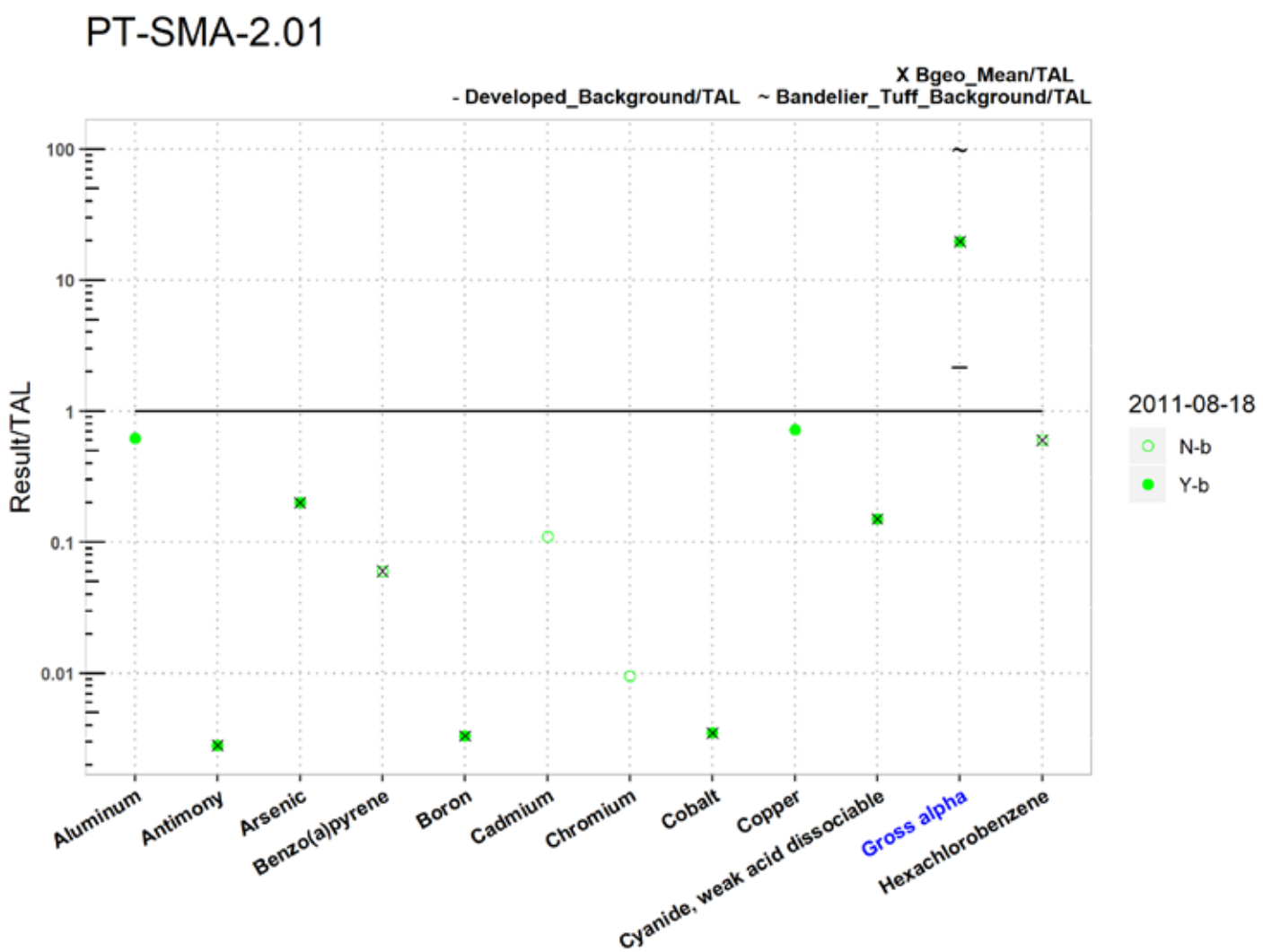


Figure 204-2 Analytical results summary for PT-SMA-2.01

PT-SMA-2.01

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0028	0.2	0.06	0.0033	NA	NA	0.0035	NA	0.15	**20**	0.6
2011-08-18 d	0.62	0.0028	0.2	NA	0.0033	NA	NA	0.0035	0.72	0.15	**20**	NA
2011-08-18 nd	NA	NA	NA	0.06	NA	0.11	0.0095	NA	NA	NA	NA	0.6

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 204-2 (continued) Analytical results summary for PT-SMA-2.01

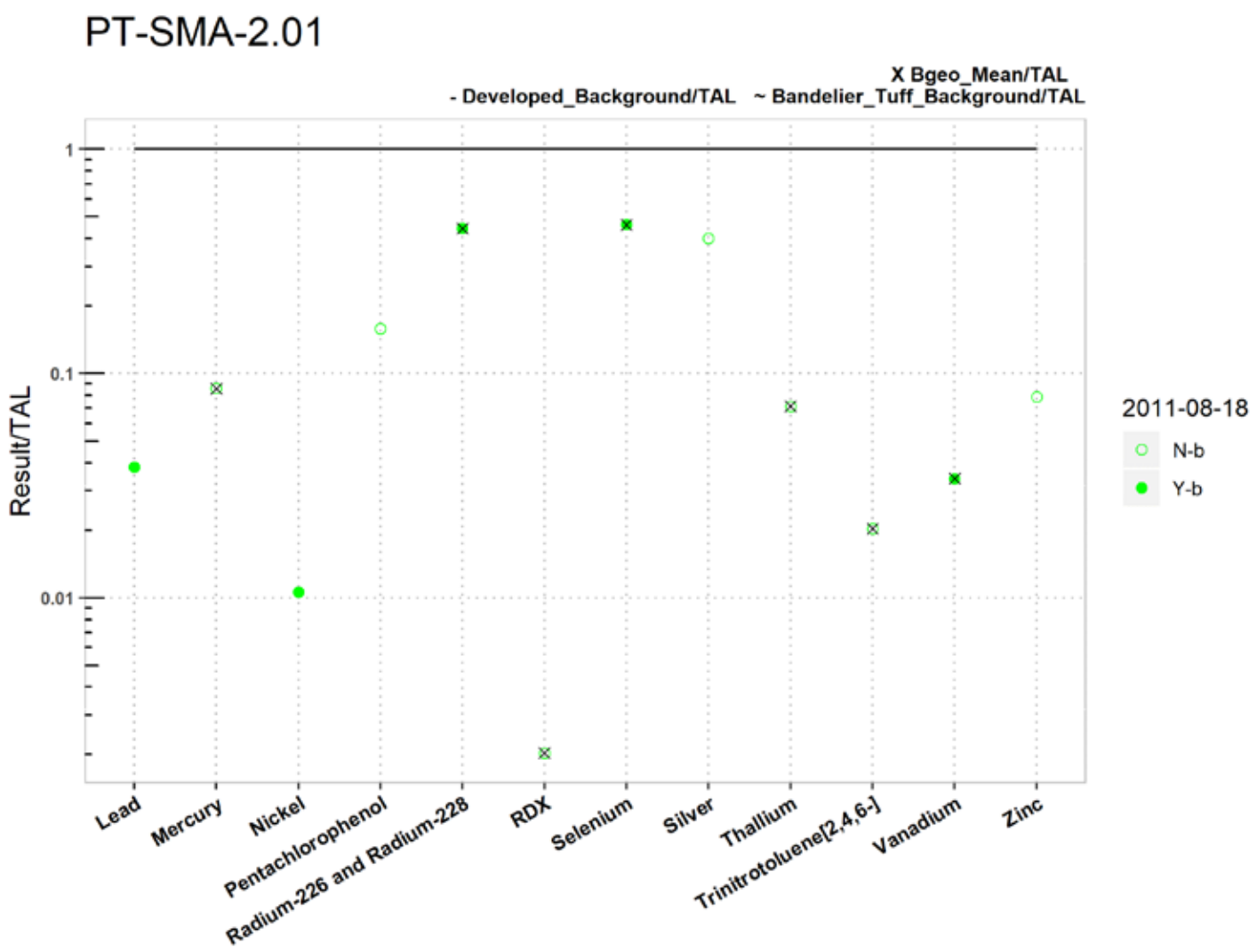


Figure 204-2 (continued) **Analytical results summary for PT-SMA-2.01**

PT-SMA-2.01

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	17	0.77	170	19	30	200	5	0.5	6.3	20	100	42
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	6.3	20	100	NA
MTAL	17	1.4	170	19	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.086	NA	NA	0.44	0.002	0.46	NA	0.071	0.02	0.034	NA
2011-08-18 d	0.038	NA	0.011	NA	0.44	NA	0.46	NA	NA	NA	0.034	NA
2011-08-18 nd	NA	0.086	NA	0.16	NA	0.002	NA	0.4	0.071	0.02	NA	0.079

Bold font indicate TAL exceedance;
d=detected_result/TAL, nd=nondetected_result/TAL

Figure 204-2 (continued) Analytical results summary for PT-SMA-2.01

205.0 PT-SMA-3: SWMU 36-006 and AOC 36-004(a)

205.1 Site Descriptions

Two historical industrial activity areas are associated with I005, PT-SMA-3: Sites 36-006 and 36-004(a).

SWMU 36-006 consists of a former surface disposal area that was located on the southern slope of Potrillo Canyon, approximately 600 ft north of the Eenie Firing Site [AOC 36-004(a)] at TA-36. SWMU 36-006 was used from 1955 to 1970 to dispose of cables, metal, concrete, and other similar debris from the TA-36 firing sites. The debris covered an area approximately 75 ft wide that extended approximately 100 ft down the south canyon slope. The remainder of the debris was scattered laterally 300 ft along the south canyon slope. This debris was dumped into the canyon from trucks on the canyon rim. Although the TA-36 firing sites were still active at that time, SWMU 36-006 was not used as a surface disposal area after 1996. Firing site personnel removed most of the debris between 1999 and 2006. All remaining debris was removed from the SWMU 36-006 surface disposal area during the 2010 Consent Order investigation.

Phase I Consent Order sampling is complete for SWMU 36-006. SWMU 36-006 was recommended for corrective action complete with controls in the supplemental investigation report for Potrillo and Fence Canyons Aggregate Area, submitted to NMED in September 2015.

AOC 36-004(a) is the active Eenie Firing Site located at TA-36 on Mesita del Potrillo on the rim of Potrillo Canyon. AOC 36-004(a) consists of the impact area, a control bunker (building 36-0003), and a make-up building (36-4) that contains a storage area. Construction of the Eenie Firing Site began in 1949 and was completed in 1951. Materials used in experimental shots include lead oxide, mercury, copper, nickel, brass, DU, and nitroglycerine. Other activities conducted at the Site include shoulder-mounted projectiles fired into targets in the southern portion of the firing site.

Investigation of AOC 36-004(a) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainage downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOC 36-004(a) is limited to the drainage below AOC 36-004(a) for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. All detected constituents in samples collected in the drainage downgradient of AOC 36-004(a) were below residential SSLs and SALs. Further Consent Order investigations are deferred until the firing site is no longer active.

The project map (Figure 205-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

205.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 205-1).

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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 205-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00502040009	Established Vegetation	-	X	X	-	B
I00503010030	Earthen Berm	X	-	X	-	EC
I00503140039	Coir Log	X	-	-	X	B
I00504040005	Culvert	-	X	X	-	CB
I00504040044	Culvert	-	-	X	-	B
I00504060038	Rip Rap	-	X	-	X	EC
I00504060042	Rip Rap	-	-	X	-	B
I00505020037	Sediment Basin	-	X	-	X	EC
I00505020041	Sediment Basin	-	X	-	X	B
I00506010031	Rock Check Dam	X	-	-	X	EC
I00506010032	Rock Check Dam	X	-	-	X	EC
I00506010033	Rock Check Dam	X	-	-	X	EC
I00506010034	Rock Check Dam	X	-	-	X	EC
I00506010035	Rock Check Dam	X	-	-	X	EC
I00506010036	Rock Check Dam	X	-	-	X	EC
I00506010040	Rock Check Dam	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

205.3 Storm Water Monitoring

SWMU 36-006 and AOC 36-004(a) are monitored within PT-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 15, 2014 (Figure 205-2). In Figure 205-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (548 pCi/L) and are presented in Figure 205-2.

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 36-006:

- 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 or radium isotopes but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. Uranium-238 was detected above the soil BV in 3 of 28 shallow (i.e., less than 3 ft bgs) 2011 Consent Order samples at a highest detected activity of 2.3 times the soil BV. 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.

AOC 36-004(a):

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. No samples have been collected at this Site.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, "Bandelier Tuff background" for undisturbed SMAs or "developed background" for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled "Bandelier Tuff Background" in Figure 205-2. 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 205-2.

Monitoring location PT-SMA-3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—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 two values.

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

205.4 Inspections and Maintenance

RG267.4 recorded four storm events at PT-SMA-3 during the 2019 season. These rain events triggered four post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 205-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Remediation Construction Activity Inspection	COMP-73816	5-15-2019
Storm Rain Event and Annual Erosion Evaluation	BMP-74625	7-10-2019
Storm Rain Event	BMP-75396	8-5-2019
Storm Rain Event	BMP-76796	9-11-2019
Storm Rain Event	BMP-77320	10-17-2019

Facility modifications were performed in the late winter and spring of 2019. These activities impacted IP controls, including the removal of multiple rock check dams, straw wattles, and an earthen berm. This facility modification was inspected on May 15, 2019, and facility installed control measures were accepted as replacements for these controls. No maintenance activities were conducted at PT-SMA-3 in 2019.

205.5 Compliance Status

The Sites associated with PT-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 2019. Table 205-3 presents the 2019 compliance status.

Table 205-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 36-004(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 36-006	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."

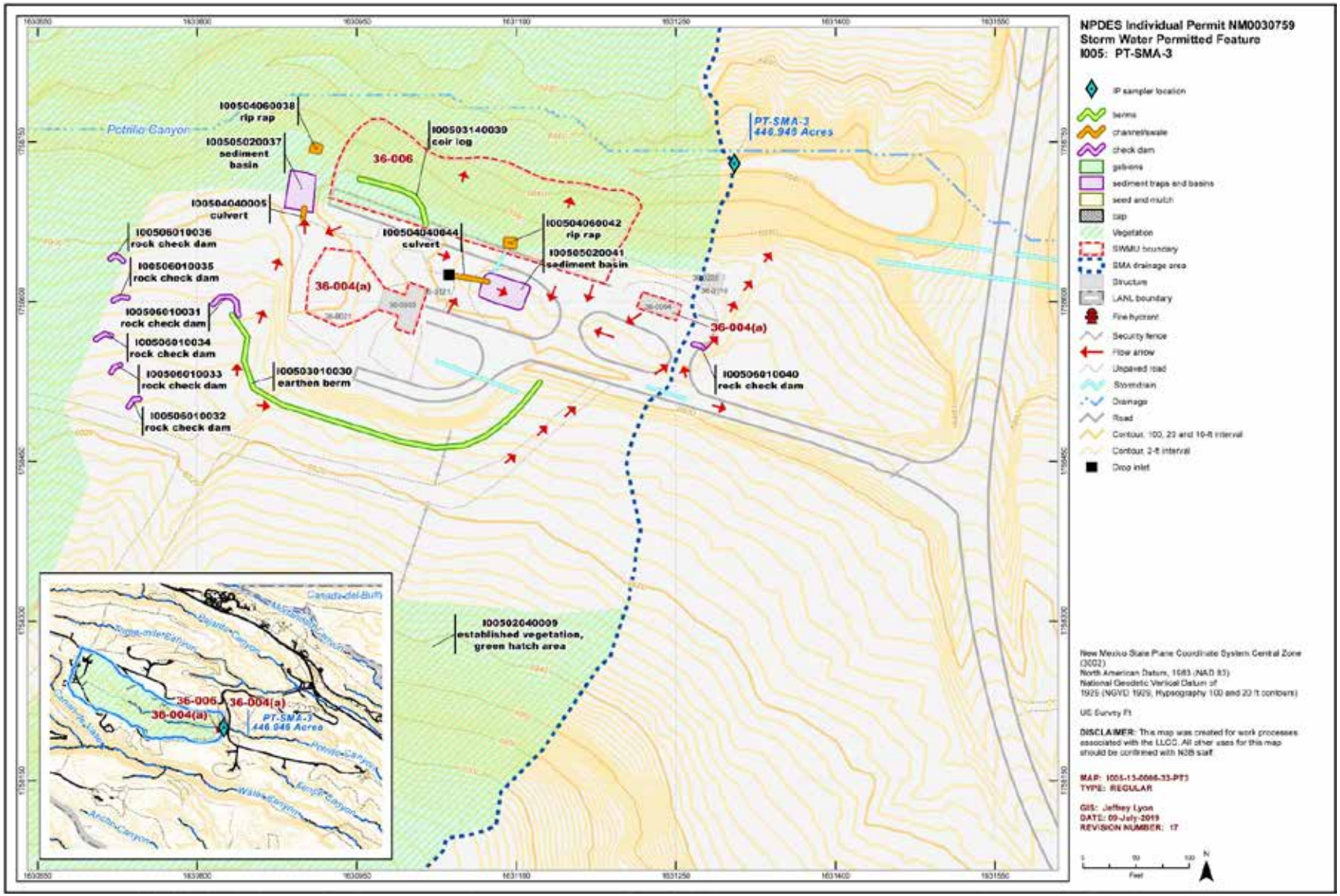


Figure 205-1 PT-SMA-3 location map

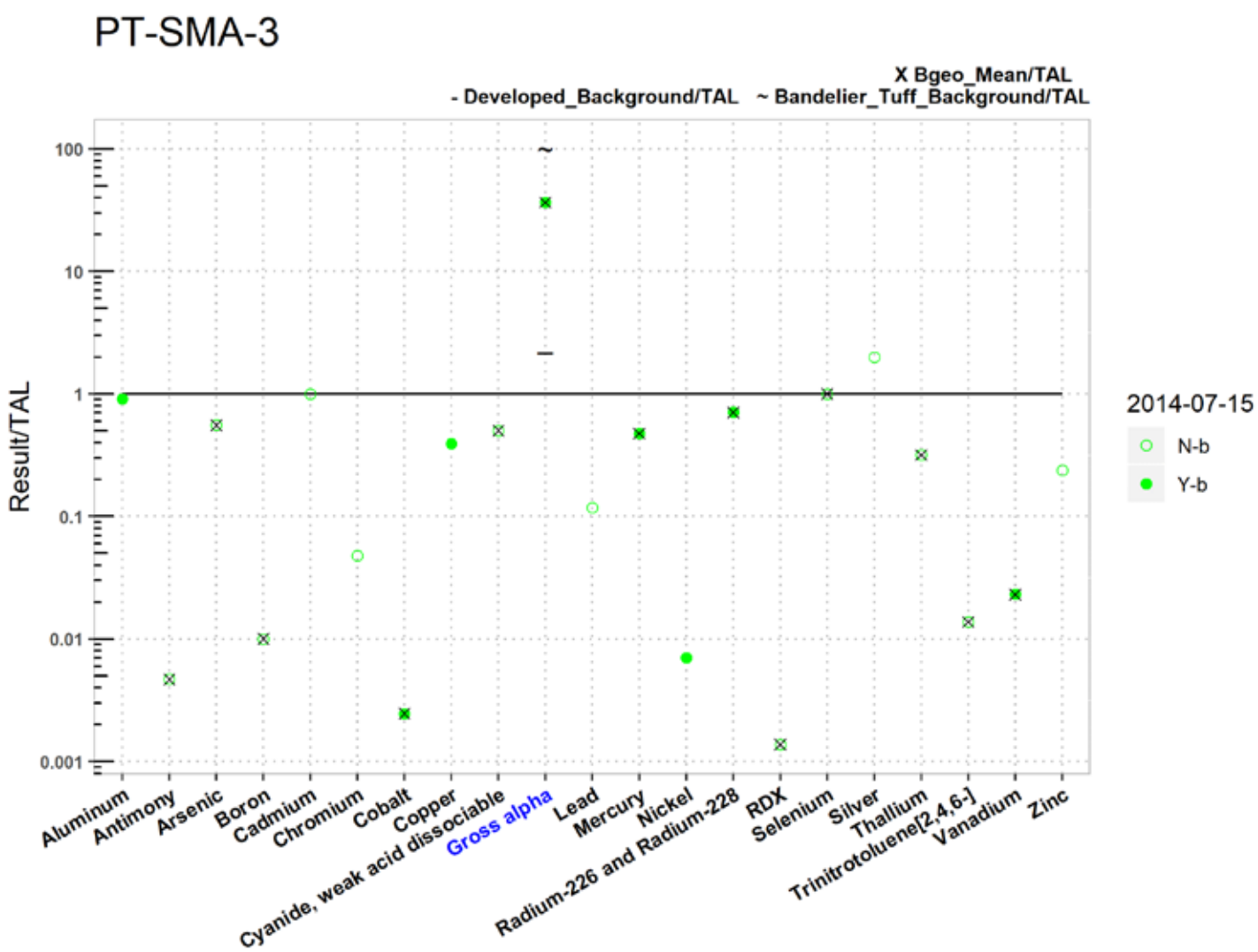


Figure 205-2 Analytical results summary for PT-SMA-3

PT-SMA-3

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.01	NA	NA	0.0025	NA	0.5	**37**	NA	0.48	NA	0.71	0.0014	1	NA	0.32	0.014	0.023	NA
2014-07-15 d	0.91	NA	NA	NA	NA	NA	0.0025	0.39	NA	**37**	NA	0.48	0.007	0.71	NA	NA	NA	NA	NA	0.023	NA
2014-07-15 nd	NA	0.0047	0.56	0.01	1	0.048	NA	NA	0.5	NA	0.12	NA	NA	NA	0.0014	1	2	0.32	0.014	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 205-2 (continued) Analytical results summary for PT-SMA-3

206.0 PT-SMA-4.2: SWMU 36-004(d)

206.1 Site Descriptions

One historical industrial activity area is associated with I007, PT-SMA-4.2: Site 36-004(d).

SWMU 36-004(d) consists of the active Lower Slobbovia Firing Site and the inactive Skunk Works Firing Site, located in Potrillo Canyon, and three former burn pits located on the mesa top above Potrillo Canyon at TA-36. The Lower Slobbovia Firing Site consists of two active firing points and a control building (36-12). One of the firing points (structure 36-13) was constructed in 1950 and is located on top of an approximately 200-ft-diameter sand and dirt pad. The control building (36-12) was constructed into the side of the pad. The second firing point consisted of a wooden tower (structure 36-120) constructed in 1986 at the northwest end of a 1000-ft-long sled track for conducting drop tests. Shots fired at the Lower Slobbovia Firing Site primarily involved HE. Less than 2% of the shots involved significant amounts of metal (e.g., DU, lead, copper, aluminum, and steel). The largest shot fired at Lower Slobbovia used 5000 to 6000 lb of HE. In addition, underground tests, buried to approximately 100 ft, were conducted at this Site.

The Skunk Works Firing Site, located approximately 0.5 mi northwest of the Lower Slobbovia Firing Site, was used to conduct small-explosives experiments during the 1950s. These experiments involved gas (acetylene and oxygen), liquid (tetranitromethane), and solid explosives. Beryllium and radioactive materials were not used at the Site. Structures at the Skunk Works Firing Site included a 5- × 5.5- × 5-ft below grade structure that previously served as a battery storage room and two buildings (36-44 and 36-45) that were moved to the Site from TA-15. All the structures have been removed. The Skunk Works firing pad was located next to building 36-45. A shallow depression, located approximately 100 ft farther up the canyon, was also used as a firing pad. The burn pits were used for burning and disposal of test debris before MDA AA (SWMU 36-001) was established in the mid-1960s. These pits are located on Mesita del Potrillo approximately 4000 ft west of the Lower Slobbovia control building (36-12). The largest pit is a bermed enclosure located north of Potrillo Road and is approximately 40 ft in diameter. Two smaller areas are located south of Potrillo Road. Debris was transported by truck from TA-36 firing sites to the pits, placed in the pits, and burned. The debris consisted of wood, nails, other metal fragments, plastics, and sand contaminated with barium, uranium, and HE.

Investigation of SWMU 36-004(d) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of all portions of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from SWMU 36-004(d) is limited to the drainages below SWMU 36-004(d) for most constituents and does not extend beyond Potrillo Canyon Reach PO-4 or Fence Canyon Reach F-3. All detected constituents in samples collected in drainages downgradient of SWMU 36-004(d) were below residential SSLs and SALs. Further Consent Order investigations are deferred until the firing site is no longer active.

The project map (Figure 206-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

206.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 206-1).

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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 206-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00701010037	Seed and Wood Mulch	-	X	X	-	B
I00701010053	Seed and Wood Mulch	-	X	X	-	B
I00701010054	Seed and Wood Mulch	-	X	X	-	B
I00701010058	Seed and Wood Mulch	-	X	X	-	B
I00701020038	Seed and Gravel Mulch	-	X	X	-	B
I00702040008	Established Vegetation	X	X	X	-	B
I00703010014	Earthen Berm	-	X	-	X	EC
I00703010022	Earthen Berm	-	-	X	-	EC
I00703010024	Earthen Berm	-	X	-	X	EC
I00703010025	Earthen Berm	-	X	-	X	EC
I00703010026	Earthen Berm	-	X	-	X	EC
I00703010027	Earthen Berm	-	X	-	X	EC
I00703010028	Earthen Berm	-	X	-	X	EC
I00703010029	Earthen Berm	-	X	-	X	EC
I00703010035	Earthen Berm	-	X	-	X	B
I00703010044	Earthen Berm	-	X	-	X	B
I00703140015	Coir Log	-	X	-	X	EC
I00703140016	Coir Log	-	X	-	X	EC
I00703140017	Coir Log	-	X	-	X	EC
I00703140018	Coir Log	-	X	-	X	EC
I00703140019	Coir Log	-	X	-	X	EC
I00703140020	Coir Log	-	X	-	X	EC
I00704040005	Culvert	X	-	X	-	CB
I00704050023	Water Bar	-	X	-	X	EC
I00704060034	Rip Rap	-	X	-	X	EC
I00704060036	Rip Rap	-	X	X	-	B
I00704060040	Rip Rap	-	X	X	-	B
I00704060041	Rip Rap	-	X	X	-	B
I00704060043	Rip Rap	-	X	X	-	B
I00704060045	Rip Rap	-	X	X	-	B
I00704060046	Rip Rap	-	X	X	-	B

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00704060048	Rip Rap	-	X	X	-	B
I00704060055	Rip Rap	-	X	X	-	B
I00704060057	Rip Rap	-	X	X	-	B
I00704080049	TRM-Lined Swale	-	X	X	-	B
I00704080050	TRM-Lined Swale	-	X	X	-	B
I00704080051	TRM-Lined Swale	-	X	X	-	B
I00706010010	Rock Check Dam	X	-	-	X	EC
I00706010011	Rock Check Dam	X	-	-	X	EC
I00706010012	Rock Check Dam	-	X	-	X	EC
I00706010013	Rock Check Dam	-	X	-	X	EC
I00706010031	Rock Check Dam	-	X	-	X	EC
I00706010032	Rock Check Dam	-	X	-	X	EC
I00706010033	Rock Check Dam	-	X	-	X	EC
I00706010039	Rock Check Dam	-	X	-	X	B
I00706010042	Rock Check Dam	-	X	-	X	B
I00706010047	Rock Check Dam	-	X	-	X	B
I00707010052	Gabion	-	X	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

206.3 Storm Water Monitoring

SWMU 36-004(d) is monitored within PT-SMA-4.2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 2, 2014 (Figure 206-2). In Figure 206-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for gross-alpha activity (393 pCi/L) and radium-226 and -228 activity (95.9 pCi/L) and are presented in Figure 206-2.

Following the installation of enhanced control measures at PT-SMA-4.2, a corrective action storm water sample was collected on August 10, 2018 (Figure 206-4). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (84.5 pCi/L) and are presented in Figure 206-2.

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 36-004(d):

- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Site. However, radium-226 and radium-228 are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity or radium isotopes but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. Uranium-238 was detected above the soil BV in 1 of 24 shallow (i.e., less than 3 ft bgs) 2011 Consent Order and 1996 RFI soil and sediment samples at a detected activity 1.2 times the soil BV. 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 Figure 206-2. 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 206-2.

Monitoring location PT-SMA-4.2 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—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2014 and 2018 gross-alpha results are less than this value.

All the analytical results for these samples are reported in the 2014 and 2018 Annual Reports.

206.4 Inspections and Maintenance

RG267.4 recorded four storm events at PT-SMA-4.2 during the 2019 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 206-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-74655	7-12-2019
Storm Rain Event	BMP-75454	8-5-2019
Storm Rain Event	BMP-76802	9-11-2019
Storm Rain Event	BMP-77326	10-8-2019

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

Table 206-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-76345	Stapled down loose matting on Earthen Berms I00703010024, I00703010025, I00703010026, I00703010027, I00703010028, and I00703010029 as needed.	9-11-2019	23 day(s)	Maintenance conducted as soon as practicable.

206.5 Compliance Status

The Site associated with PT-SMA-4.2 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 2019. Table 206-4 presents the 2019 compliance status.

Table 206-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 36-004(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 30, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."

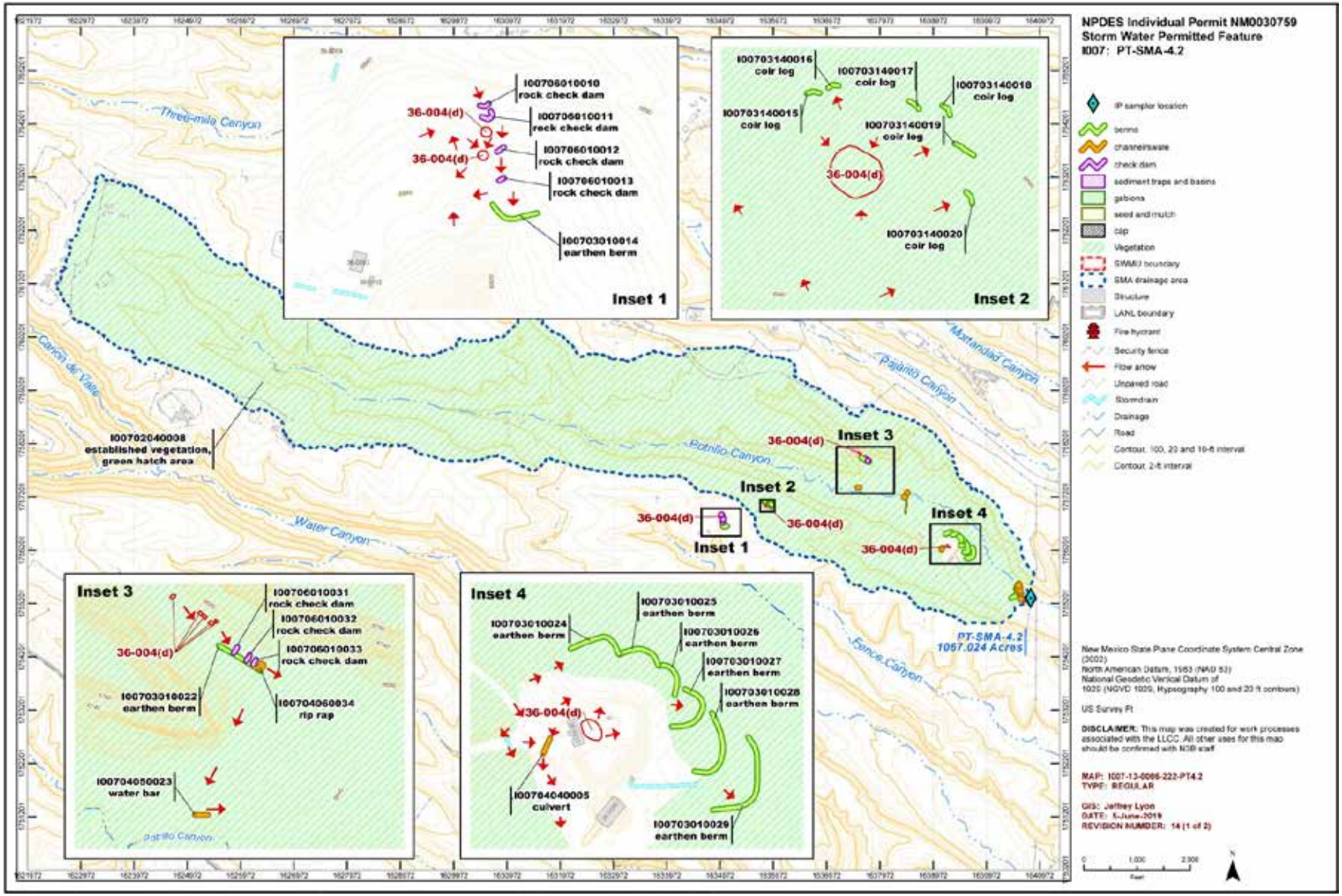


Figure 206-1 PT-SMA-4.2 location map

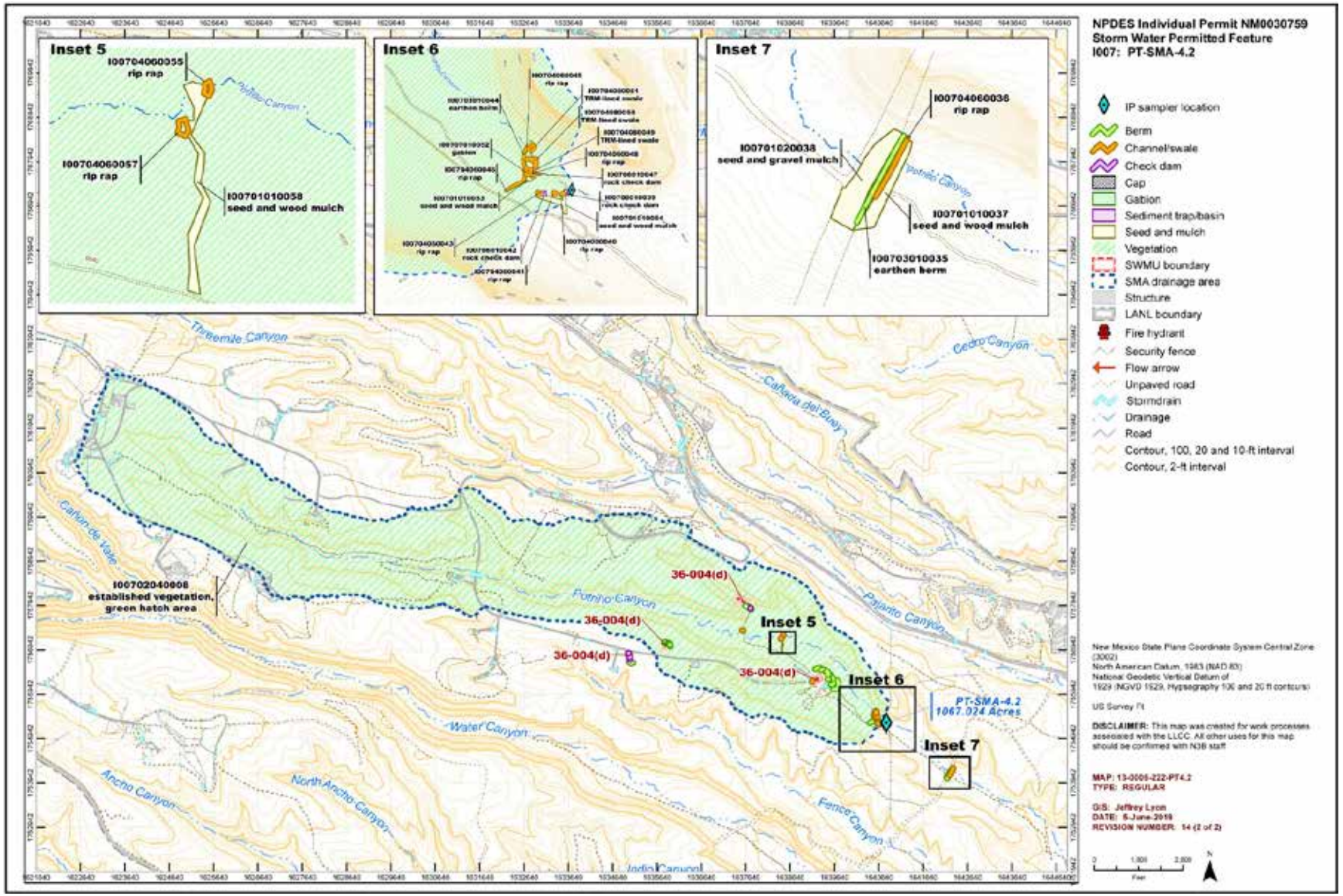


Figure 206-1 (continued) **PT-SMA-4.2 location map**

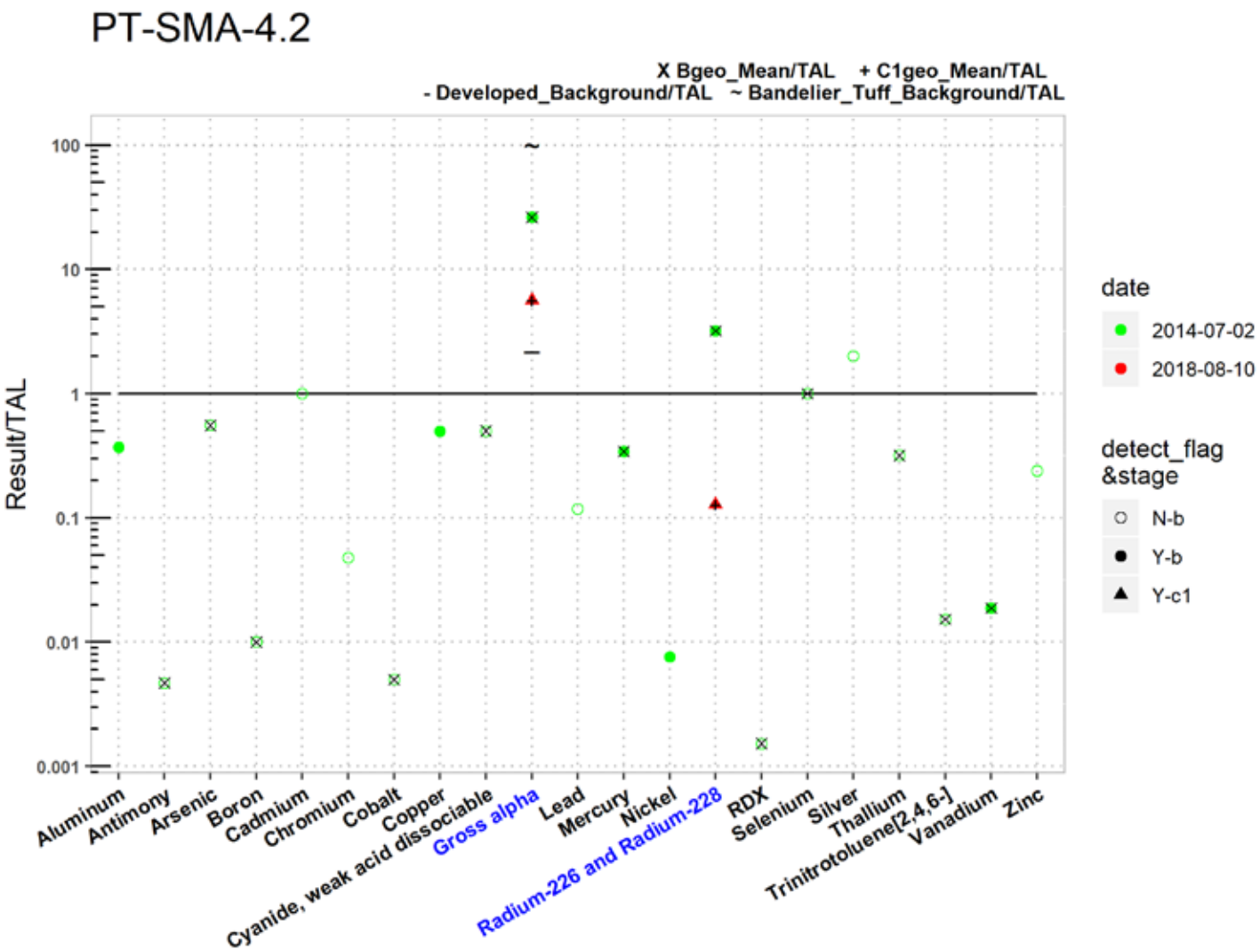


Figure 206-2 Analytical results summary for PT-SMA-4.2

PT-SMA-4.2

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.01	NA	NA	0.005	NA	0.5	**26**	NA	0.34	NA	**3.2**	0.0015	1	NA	0.32	0.015	0.019	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.6**	NA	NA	NA	0.13	NA	NA	NA	NA	NA	NA	NA
2014-07-02 d	0.37	NA	NA	NA	NA	NA	NA	0.5	NA	**26**	NA	0.34	0.0076	**3.2**	NA	NA	NA	NA	NA	0.019	NA
2014-07-02 nd	NA	0.0047	0.56	0.01	1	0.048	0.005	NA	0.5	NA	0.12	NA	NA	NA	0.0015	1	2	0.32	0.015	NA	0.24
2018-08-10 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.6**	NA	NA	NA	0.13	NA	NA	NA	NA	NA	NA	NA
2018-08-10 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 206-2 (continued) Analytical results summary for PT-SMA-4.2

207.0 W-SMA-1: SWMUs 16-017(j)-99, 16-026(v), and 16-026(c2)

207.1 Site Descriptions

Three historical industrial activity areas are associated with W001, W-SMA-1: Sites 16-017(j)-99, 16-026(v), and 16-026(c2).

SWMU 16-017(j)-99 is a former HE magazine (former structure 16-63) at TA-16. The magazine was a 24- × 26- × 9-ft wood-framed structure surrounded by an earthen berm on three sides and the top. The magazine was built in 1945 and removed in 1998. The storage magazine was built at grade, and there is no longer any evidence of the berm that once surrounded the magazine. Any remaining berm material is indistinguishable from the surrounding soil. This SWMU was originally designated as part of SWMU 16-017, a group of 24 structures in central TA-16. In 1999, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure.

Consent Order sampling has not yet been conducted at SWMU 16-017(j)-99; the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

SWMU 16-026(v) is a former NPDES-permitted outfall (05A072) that served decommissioned analytical chemistry laboratory building 16-460 at TA-16. The outfall is located approximately 60 ft southeast of the building. The outfall received effluent from a sump [SWMU 16-003(c)], which served building floor drains, steam-cup drains, sink drains, and a drinking fountain. Waste containing fine grains of HE from analytical chemistry experiments in addition to small quantities of a wide range of solvents and other chemicals were discharged to the sump from the 1950s to the 1990s. The outfall was plugged by 1995. It was removed from the NPDES permit effective September 19, 1997.

Consent Order sampling has not yet been conducted at SWMU 16-026(v); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1995 RFI.

SWMU 16-026(c2) consists of the two former outfalls and associated drainlines that served former chemical storage building 16-462 at TA-16. The outfalls were located approximately 30 ft southeast of the building. Each of the two rooms in building 16-462 had a floor trough that drained to 6-in.-diameter VCP drainline that exit the south and southeast side of the building. Effluent flowed from the drainline outfalls southeast to a drainage ditch. Building 16-462 was built in 1952 to store chemicals for use in the analytical chemistry laboratory (building 16-460). All drains at building 16-462 were plugged in 1991. One of the storage rooms contained solvents and oils, the other storage room contained inorganic and organic chemicals including acetone, benzene, mineral oil, nitric acid, propanol, and trichloroethene. No HE were stored in the building. Building 16-462 was removed post 2010.

Consent Order sampling has not yet been conducted at SWMU 16-026(c2); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

The project map (Figure 207-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

207.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 207-1).

Enhanced controls were installed and certified on May 2, 2013, and submitted to EPA on June 4, 2013, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 207-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00102040019	Established Vegetation	-	X	X	-	B
W00103010014	Earthen Berm	X	-	-	X	EC
W00103010015	Earthen Berm	X	-	-	X	EC
W00104060011	Rip Rap	X	-	X	-	CB
W00104060017	Rip Rap	-	X	X	-	EC
W00105030016	Sand Filter	-	X	-	X	EC
W00106010008	Rock Check Dam	-	X	-	X	CB
W00106010012	Rock Check Dam	X	-	-	X	EC
W00106010013	Rock Check Dam	X	-	-	X	EC
W00108020018	Rock Cap	-	-	X	-	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

207.3 Storm Water Monitoring

SWMUs 16-017(j)-99, 16-026(c2), and 16-026(v) are monitored within W-SMA-1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 9, 2011 (Figure 207-2). In Figure 207-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from these samples yielded TAL exceedances for aluminum (918 µg/L and 1410 µg/L) and gross-alpha activity (50.7 pCi/L) and are presented in Figure 207-2.

Following the installation of enhanced control measures at W-SMA-1, corrective action storm water samples were collected on September 12, 2013, and July 19, 2014 (Figure 207-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for aluminum (1010 µg/L and 858 µg/L), copper (4.45 µg/L), and gross-alpha activity (314 pCi/L) and are presented in Figure 207-2.

Following certification of no exposure for Site 16-017(j)-99 within W-SMA-1, a corrective action investigation storm water sample was collected on October 24, 2018. Analytical results from this sample were submitted to EPA on January 14, 2020. This Site is now certified as corrective action complete and no further monitoring is required for Site 16-017(j)-99 for the remainder of the IP.

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 16-017(j)-99:

- Aluminum is not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Copper is not known to be associated with industrial materials historically managed at the Site. Consent Order investigations have not been performed at SWMU 16-017(j)-99; no decision-level data are available for this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.

SWMU 16-026(c2):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Copper is not known to be associated with industrial materials historically managed at the Site. Consent Order investigations have not been performed at SWMU 16-026(c2); no decision-level data are available for this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.

SWMU 16-026(v):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was detected in 1 of 9 shallow RFI samples at a concentration equivalent to the tuff BV.
- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected in 7 of 9 shallow RFI samples at a maximum concentration 36.8 times the sediment BV. There are no other outfalls within the SMA and no documented source of copper.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Shallow RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because they are not potential contaminants at this 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 Figure 207-2. 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 207-2.

Monitoring location W-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L, and the aluminum background storm water UTL for storm water run-on from a developed landscape is 245 µg/L. The results from 2011, 2013, and 2014 are all between these 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 results from 2014 is between these two values.
- Gross alpha—The gross-alpha 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 geometric mean of both gross-alpha results from 2011 is below both of these values. The geometric mean of the gross-alpha results from 2013 and 2014 is between these values.

All the analytical results for these samples are reported in the 2011, 2013, 2014, and 2018 Annual Reports.

207.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at W-SMA-1 during the 2019 season. These rain events triggered seven post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 207-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72946	3-25-2019
Storm Rain Event	BMP-74240	6-28-2019
Storm Rain Event	BMP-74652	7-18-2019
Storm Rain Event	BMP-75451	8-6-2019
Storm Rain Event	BMP-76400	8-29-2019
Storm Rain Event	BMP-76696	9-11-2019
Storm Rain Event	BMP-77280	10-16-2019

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

Table 207-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-76742	Placed additional rock at bottom of Rip Rap W00104060017 to the end of the fabric in the channel.	9-17-2019	42 day(s)	Maintenance was delayed.

207.5 Compliance Status

The Sites associated with W-SMA-1 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. SWMU 16-017(j)-99 is corrective action complete with a certificate of no exposure. The IP was under administrative continuance at the end of 2019. Table 207-4 presents the 2019 compliance status.

Table 207-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-017(j)-99	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	N3B, January 14, 2020, "NPDES Permit No. NM0030759- Analytical Results Following Completion of Corrective Action by Certification of a No Exposure Condition at Site 16-017(j)-99 in Site Monitoring Area W-SMA-1." No exposure confirmation monitoring is complete. LANL, September 29, 2015, "NPDES Permit No. NM0030759 - Submittal of Completion of Corrective Action Certification of No Exposure at LA-SMA-1 (Site 00-017); M-SMA-4 (Site 48-005); 2M-SMA-2.2 [Site 03-003(k)]; S-SMA-0.25 [Site 03-013(a)]; and W-SMA-1 [Site 16-017(j)-99].".
SWMU 16-026(c2)	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 16-026(v)	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."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

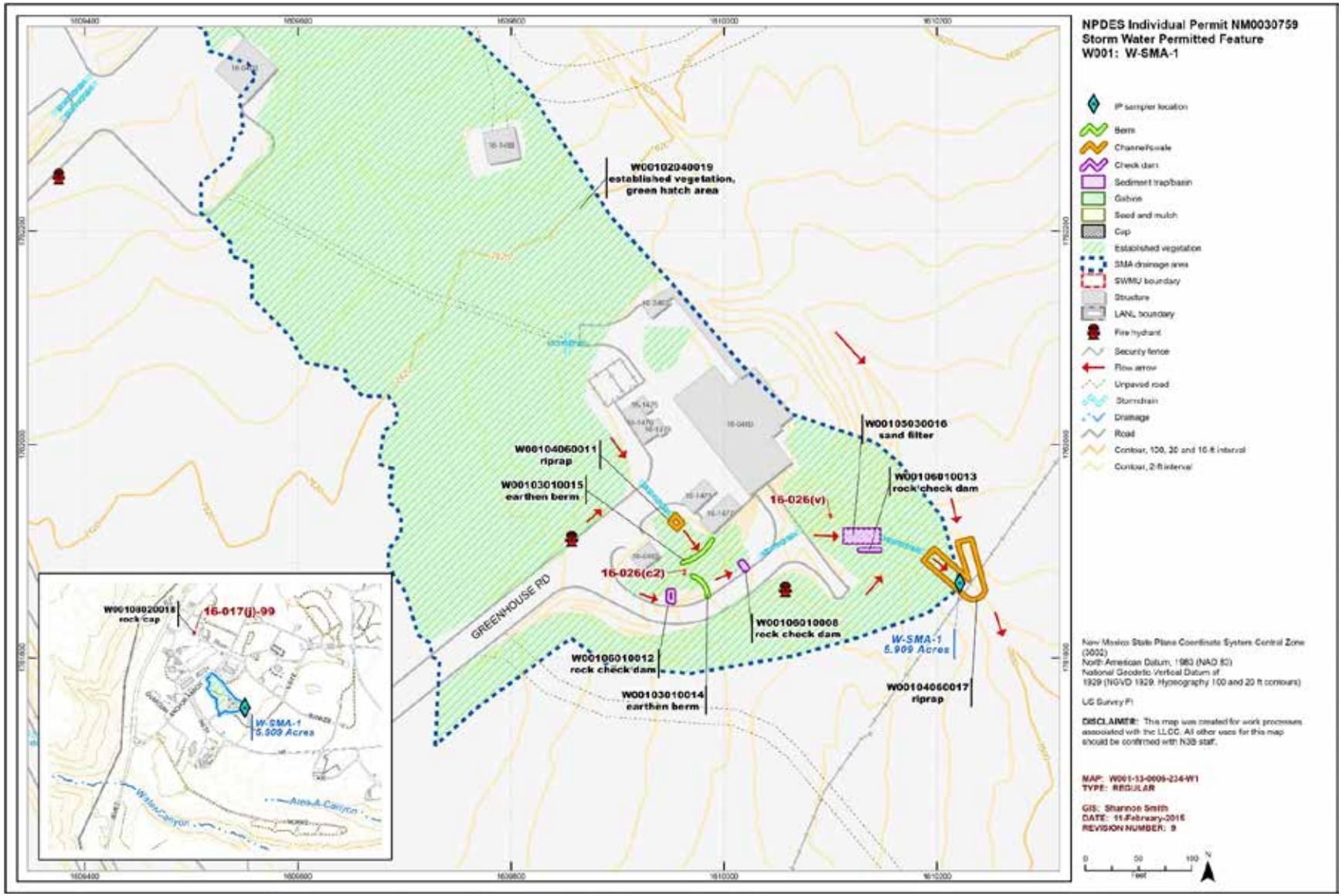


Figure 207-1 W-SMA-1 location map

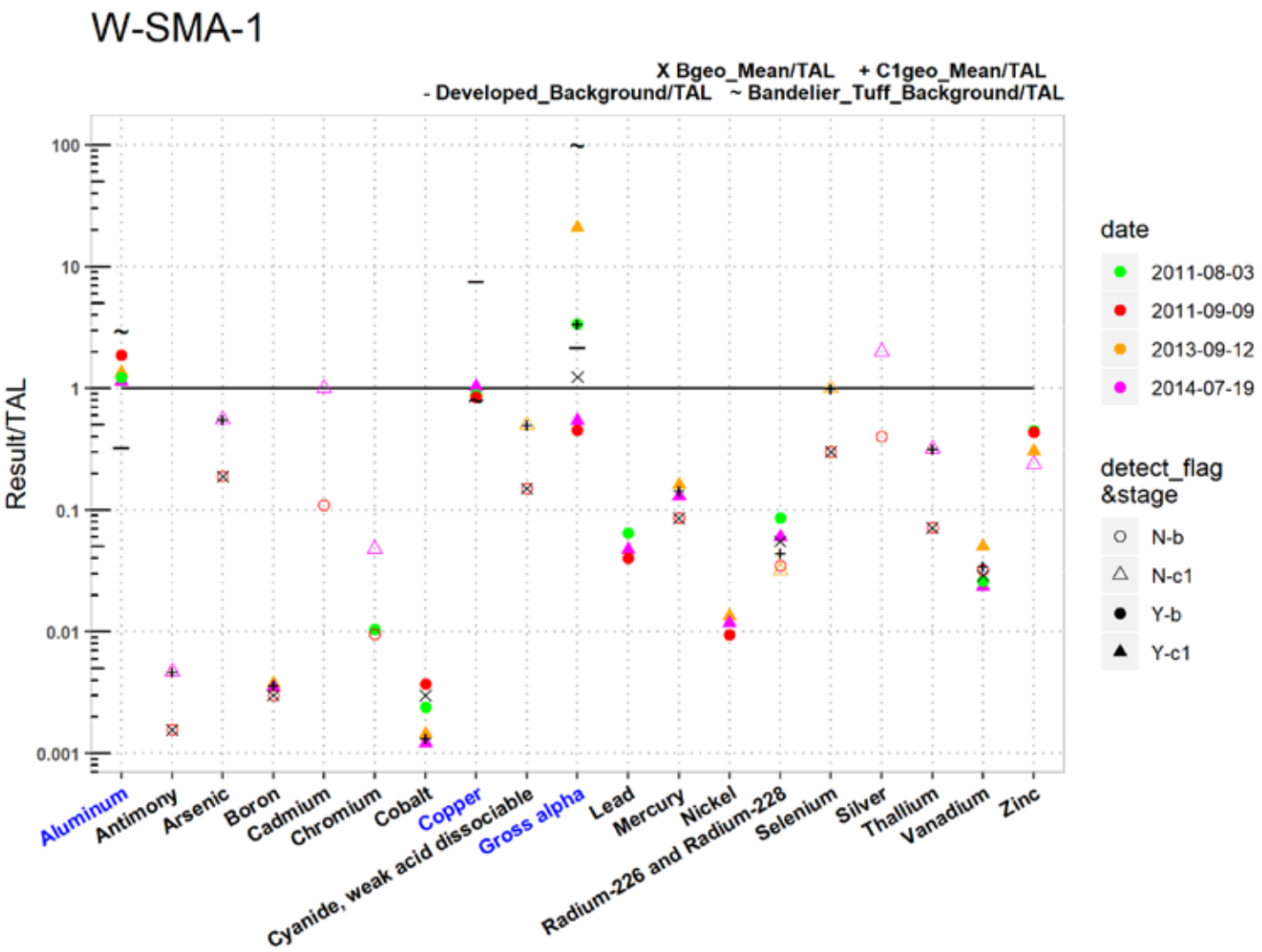


Figure 207-2 Analytical results summary for W-SMA-1

W-SMA-1

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.003	NA	NA	0.003	NA	0.15	**1.2**	NA	0.086	NA	0.055	0.3	NA	0.071	0.029	NA
C1geo_mean/ATAL	NA	0.0047	0.56	0.0036	NA	NA	0.0013	NA	0.5	**3.4**	NA	0.14	NA	0.044	1	NA	0.32	0.034	NA
2011-08-03 d	**1.2**	NA	NA	NA	NA	0.01	0.0024	0.88	NA	**3.4**	0.065	NA	0.0094	0.086	NA	NA	NA	0.026	0.45
2011-08-03 nd	NA	0.0016	0.19	0.003	0.11	NA	NA	NA	0.15	NA	NA	0.086	NA	NA	0.3	0.4	0.071	NA	NA
2011-09-09 d	**1.9**	NA	NA	NA	NA	NA	0.0037	0.84	NA	0.45	0.04	NA	0.0094	NA	NA	NA	NA	NA	0.43
2011-09-09 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	NA	0.086	NA	0.035	0.3	0.4	0.071	0.032	NA
2013-09-12 d	**1.3**	NA	NA	0.0038	NA	NA	0.0014	0.93	NA	**21**	0.047	0.16	0.013	NA	NA	NA	NA	0.05	0.3
2013-09-12 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	NA	NA	NA	0.032	1	2	0.32	NA	NA
2014-07-19 d	**1.1**	NA	NA	0.0035	NA	NA	0.0012	**1**	NA	0.54	0.047	0.13	0.012	0.06	NA	NA	NA	0.024	NA
2014-07-19 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	NA	NA	NA	NA	1	2	0.32	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 207-2 (continued) **Analytical results summary for W-SMA-1**

208.0 W-SMA-1.5: SWMUs 16-026(b2) and 16-028(d)

208.1 Site Descriptions

Two historical industrial activity areas are associated with W002, W-SMA-1.5: Sites 16-026(b2) and 16-028(d).

SWMU 16-026(b2) is an outfall and associated drainline that served decommissioned machine shop building 16-202 in the administrative area at TA-16. The drainline exited the northeast corner of building 16-20 and discharged to an outfall located approximately 135 ft east-southeast of the building in the drainage ditch along Anchor Ranch Road. The outfall received discharge from an oil/water separator, which consisted of a 3- × 3- × 3-ft cement pit located below floor level in a millwright shop. The separator was installed in 1952, when building 16-202 was built, and remains in place but is covered. Use of the separator ceased after 1977 and the millwright shop is now an office.

Consent Order sampling has not yet been conducted at SWMU 16-026(b2); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

W-SMA-1.5, Rock Check Dam, W00206010009 (photo ID 26655-2)

SWMU 16-028(d) is a former NPDES-permitted outfall (04A083) located in the administrative area of TA-16, approximately 80 ft southeast of decommissioned building 16-202. The outfall formerly served the decommissioned machine shop in building 16-202 and connected to the building through an 8-in.-diameter VCP. The outfall received noncontact cooling water and wash water from two floor drains, effluent from two non-HE sumps, discharge from two sink drains, and rainwater from 16 roof drains. A variety of materials associated with machining metals and plastics were used in the building and could have been present in discharges to the outfall, including brazing alloy, trichloroethene, petroleum distillates, oils, and hydrochloric acid. In 1995, building 16-202 was converted to office space, and the drainlines within the building were modified so that the outfall receives only storm water from the building's roof drains. The outfall was removed from the NPDES permit effective September 19, 1997.

Consent Order sampling has not yet been conducted at SWMU 16-028(d); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

The project map (Figure 208-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

208.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 208-1).

Enhanced controls were installed and certified on September 25, 2012, and September 4, 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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 208-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00202040017	Established Vegetation	-	X	X	-	B
W00203010015	Earthen Berm	-	X	-	X	EC
W00203010020	Earthen Berm	-	X	-	X	EC
W00203160022	Wood Chip Wattle	X	-	-	X	B
W00204060007	Rip Rap	-	X	X	-	CB
W00204070002	Vegetated Swale	-	X	X	-	CB
W00204070003	Vegetated Swale	-	X	X	-	CB
W00205020013	Sediment Basin	-	X	-	X	EC
W00205020021	Sediment Basin	-	X	-	X	EC
W00206010008	Rock Check Dam	X	-	-	X	CB
W00206010009	Rock Check Dam	X	-	-	X	CB
W00206010010	Rock Check Dam	-	X	-	X	CB
W00206010016	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

208.3 Storm Water Monitoring

SWMUs 16-026(b2) and 16-028(d) are monitored within W-SMA-1.5. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 1, 2011 (Figure 208-2). Analytical results from these samples yielded TAL exceedances for copper (9.7 µg/L), gross-alpha activity (22 pCi/L), and zinc (49.3 µg/L) and are presented in Figure 208-2.

Following the 2012 installation of enhanced control measures at W-SMA-1.5, a corrective action storm water sample was collected on July 19, 2014 (Figure 208-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for copper (6.9 µg/L) and are presented in Figure 208-2.

Following the 2015 installation of enhanced control measures at W-SMA-1.5, a corrective action storm water sample was collected on September 28, 2017 (Figure 208-2). Analytical results from this sample yielded no TAL exceedances. Corrective action monitoring will continue until the collection of a second sample.

All the analytical results for these samples are reported in the 2011, 2014, and 2017 Annual Reports.

208.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at W-SMA-1.5 during the 2019 season. These rain events triggered seven post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 208-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72947	3-25-2019
Storm Rain Event	BMP-74241	6-28-2019
Storm Rain Event	BMP-74653	77-18-2019
Storm Rain Event	BMP-75452	8-6-2019
Storm Rain Event	BMP-76401	8-29-2019
Storm Rain Event	BMP-76697	9-11-2019
Storm Rain Event	BMP-77281	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-1.5 in 2019.

208.5 Compliance Status

The Sites associated with W-SMA-1.5 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 2019. Table 208-3 presents the 2019 compliance status.

Table 208-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-026(b2)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 10, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Six Site Monitoring Areas (2M-SMA-3; CDB-SMA-1; CDV-SMA-1.7; PJ-SMA-1.05; STRM-SMA-1.5; and W-SMA-1.5)."
SWMU 16-028(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 10, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Six Site Monitoring Areas (2M-SMA-3; CDB-SMA-1; CDV-SMA-1.7; PJ-SMA-1.05; STRM-SMA-1.5; and W-SMA-1.5)."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

W-SMA-1.5, Earthen Berm, W00203010020 (photo ID 48334-12)

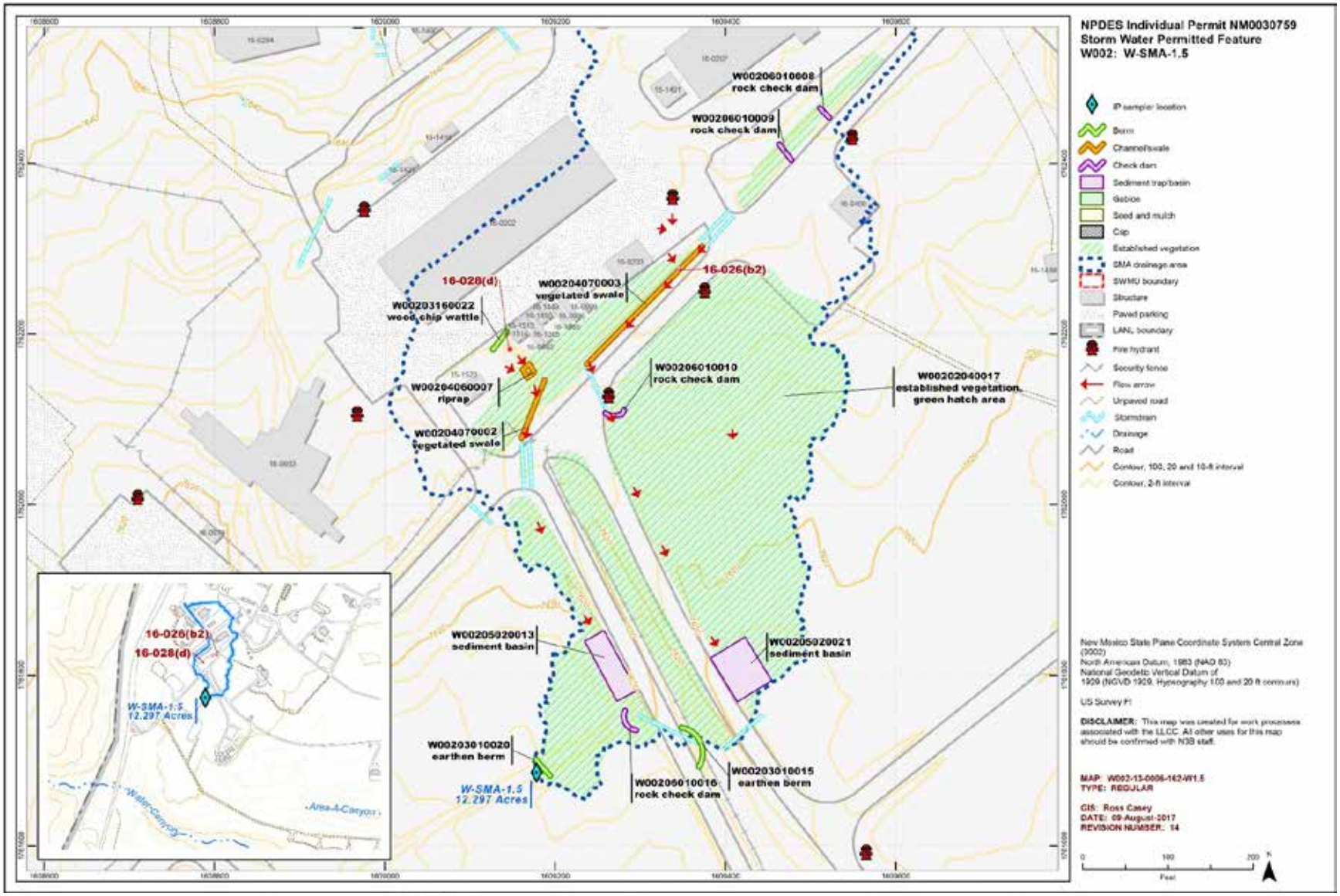


Figure 208-1 W-SMA-1.5 location map

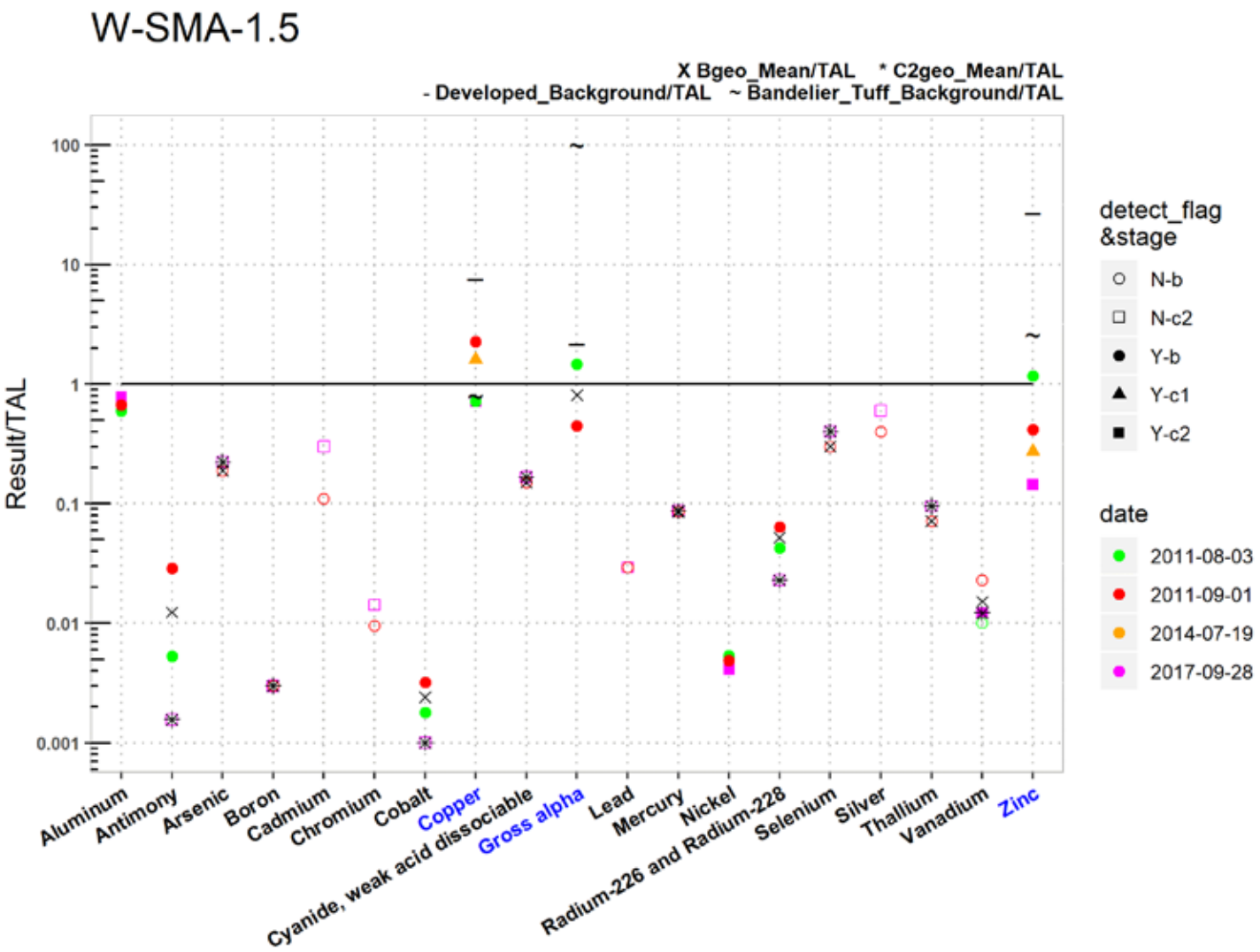


Figure 208-2 Analytical results summary for W-SMA-1.5

W-SMA-1.5

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.012	0.19	0.003	NA	NA	0.0024	NA	0.15	0.81	NA	0.086	NA	0.052	0.3	NA	0.071	0.015	NA
C2geo_mean/ATAL	NA	0.0016	0.22	0.003	NA	NA	0.001	NA	0.17	NA	NA	0.087	NA	0.023	0.4	NA	0.095	0.012	NA
2011-08-03 d	0.6	0.0053	NA	NA	NA	NA	0.0018	0.72	NA	**1.5**	NA	NA	0.0054	0.043	NA	NA	NA	NA	**1.2**
2011-08-03 nd	NA	NA	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	NA	0.3	0.4	0.071	0.01	NA
2011-09-01 d	0.67	0.029	NA	NA	NA	NA	0.0032	**2.3**	NA	0.45	NA	NA	0.0049	0.064	NA	NA	NA	NA	0.41
2011-09-01 nd	NA	NA	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	NA	0.3	0.4	0.071	0.023	NA
2014-07-19 d	NA	NA	NA	NA	NA	NA	NA	**1.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.27
2014-07-19 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2017-09-28 d	0.78	NA	NA	NA	NA	NA	NA	0.71	NA	NA	NA	NA	0.0041	NA	NA	NA	NA	0.012	0.14
2017-09-28 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	0.17	-0.013	0.029	0.087	NA	0.023	0.4	0.6	0.095	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 208-2 (continued) **Analytical results summary for W-SMA-1.5**

209.0 W-SMA-2.05: SWMU 16-028(e)

209.1 Site Descriptions

One historical industrial activity area is associated with W003, W-SMA-2.05: Site 16-028(e).

SWMU 16-028(e) is a formerly NPDES-permitted outfall (04A091) that served the materials-testing laboratory building 16-450 at TA-16. The outfall was located southeast of building 16-450 and received discharges through an outlet drainline from a former HE sump [SWMU 16-029(g)]. The outfall discharged outside the security fence at the edge of Water Canyon. The sump was removed in 1997, and the drainline to the outfall was plugged but left in place. The outfall was removed from the NPDES permit effective September 19, 1997.

Consent Order sampling has not yet been conducted at SWMU 16-028(e); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1995 RFI.

The project map (Figure 209-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

209.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 209-1).

Enhanced controls were installed and certified on September 25, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 209-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00302040010	Established Vegetation	-	X	X	-	B
W00303010007	Earthen Berm	-	X	-	X	EC
W00303010008	Earthen Berm	-	X	-	X	EC
W00306010009	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

209.3 Storm Water Monitoring

SWMU 16-028(e) is monitored within W-SMA-2.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 209-2). Analytical results from this sample yielded a TAL exceedance for aluminum (1240 µg/L) and are presented in Figure 209-2.

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 16-028(e):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was detected above the tuff BV in 1 of 10 shallow RFI samples at a concentration 1.4 times the tuff BV.

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 209-2. 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 209-2.

Monitoring location W-SMA-2.05 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Aluminum—The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L and the aluminum background storm water UTL for storm water run-on from a developed landscape is 245 µg/L. The 2011 result is between these values.

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

209.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at W-SMA-2.05 during the 2019 season. These rain events triggered seven post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 209-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72948	3-26-2019
Storm Rain Event	BMP-74242	6-28-2019
Storm Rain Event	BMP-74654	7-18-2019
Storm Rain Event	BMP-75453	8-6-2019
Storm Rain Event	BMP-76402	8-29-2019
Storm Rain Event	BMP-76698	9-9-2019
Storm Rain Event	BMP-77282	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-2.05 in 2019.

209.5 Compliance Status

The Site associated with W-SMA-2.05 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 continuance at the end of 2019. Table 209-3 presents the 2019 compliance status.

Table 209-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-028(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Nine Site Monitoring Areas."

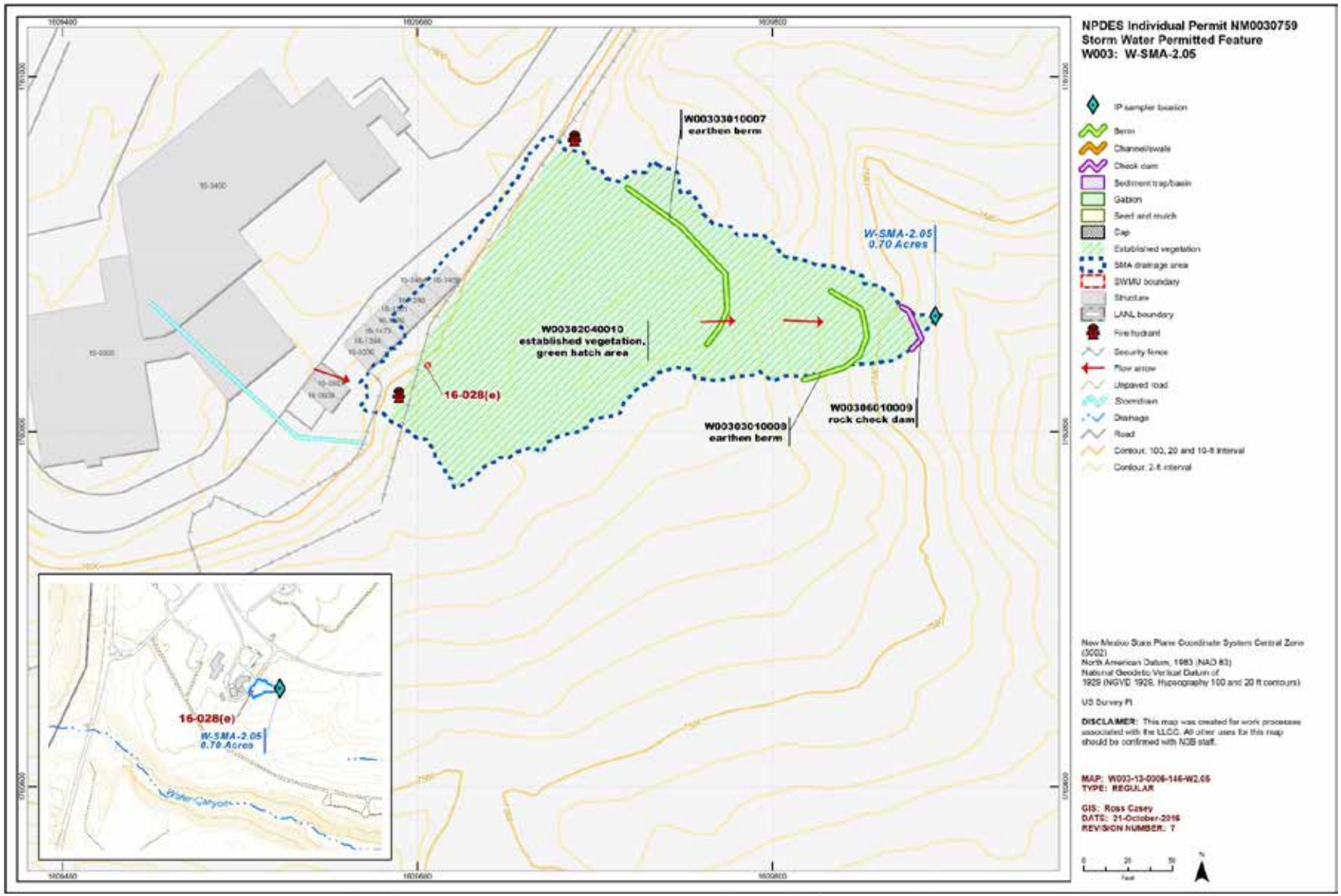


Figure 209-1 W-SMA-2.05 location map

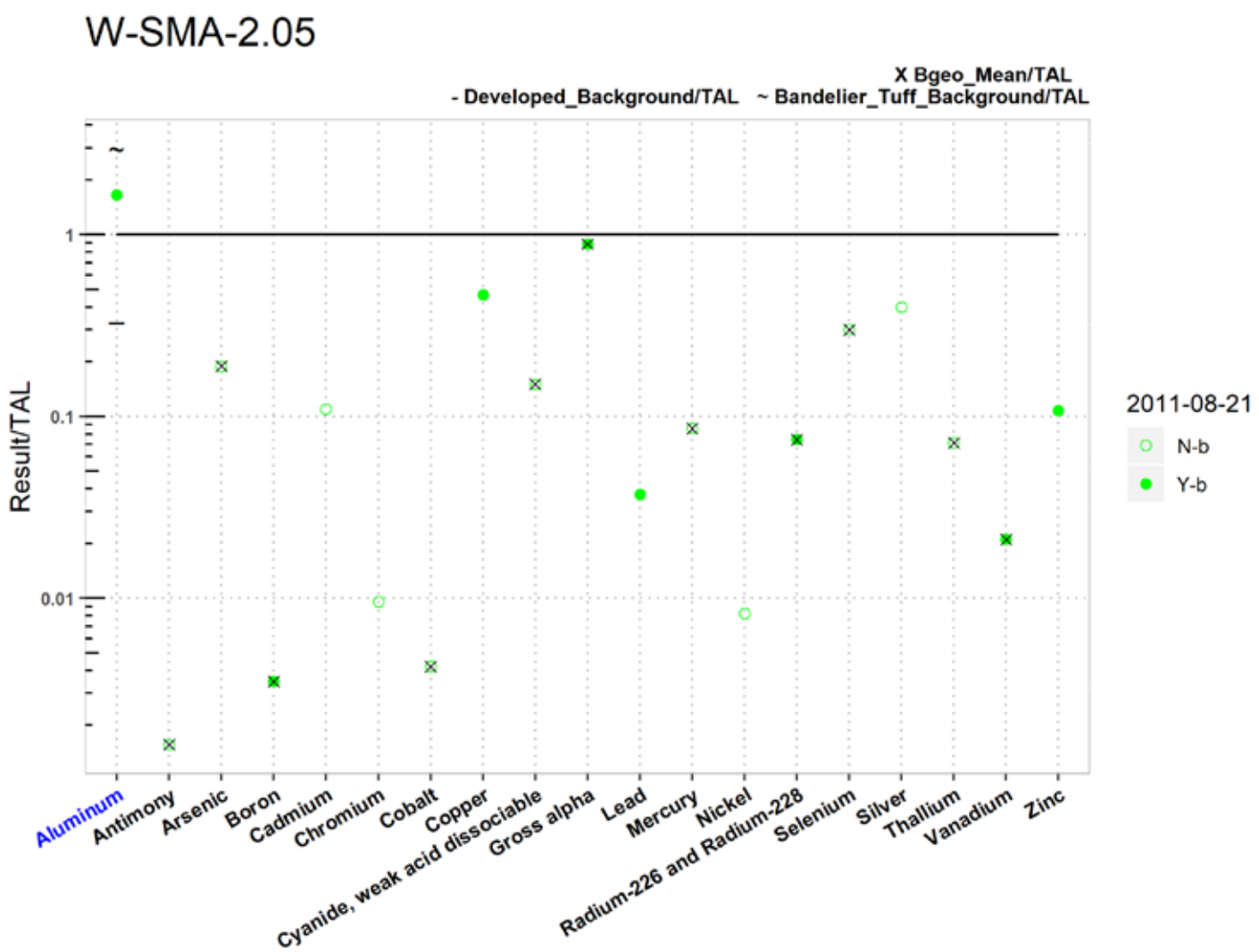


Figure 209-2 Analytical results summary for W-SMA-2.05

W-SMA-2.05

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.0035	NA	NA	0.0042	NA	0.15	0.89	NA	0.086	NA	0.074	0.3	NA	0.071	0.021	NA
2011-08-21 d	**1.7**	NA	NA	0.0035	NA	NA	NA	0.47	NA	0.89	0.037	NA	NA	0.074	NA	NA	NA	0.021	0.11
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	0.0042	NA	0.15	NA	NA	0.086	0.0082	NA	0.3	0.4	0.071	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 209-2 (continued) **Analytical results summary for W-SMA-2.05**

210.0 W-SMA-3.5: SWMU 16-026(y)

210.1 Site Descriptions

One historical industrial activity area is associated with W004, W-SMA-3.5: Site 16-026(y).

SWMU 16-026(y) is an inactive outfall and associated outlet drainline that served building 16-411 at TA-16. The outfall drainline consists of a 4-in.-diameter VCP that exits the southwest wall of building 16-411, then turns south to terminate at its discharge point on the hill slope of Water Canyon. The discharge point is located south of a double security fence at the edge of Water Canyon. Building 16-411 was constructed in 1951 and used to assemble finished HE components. The outfall received discharges from an equipment room floor drain, a sink, roof drains, a water fountain, and an eyewash station. The outfall was decommissioned in the late 1980s when the roof drains were rerouted to a separate outfall, and all other drains were either plugged or rerouted to a holding tank.

Consent Order investigations have not yet begun at SWMU 16-026(y); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are not available for the Site.

The project map (Figure 210-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

210.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 210-1).

Table 210-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00402040008	Established Vegetation	-	X	X	-	B
W00403060009	Straw Wattle	X	-	-	X	B
W00403060013	Straw Wattle	X	-	-	X	B
W00403060014	Straw Wattle	X	-	-	X	B
W00403060015	Straw Wattle	X	-	-	X	B
W00404060003	Rip Rap	-	X	X	-	CB
W00406010007	Rock Check Dam	-	X	-	X	CB

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

210.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at W-SMA-3.5. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

210.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-3.5 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 210-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72935	3-26-2019
Storm Rain Event	BMP-74642	7-17-2019
Storm Rain Event	BMP-75440	8-6-2019
Storm Rain Event	BMP-76686	9-9-2019
Storm Rain Event	BMP-77270	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-3.5 in 2019.

210.5 Compliance Status

The Site associated with W-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 2019. Table 210-3 presents the 2019 compliance status.

Table 210-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-026(y)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

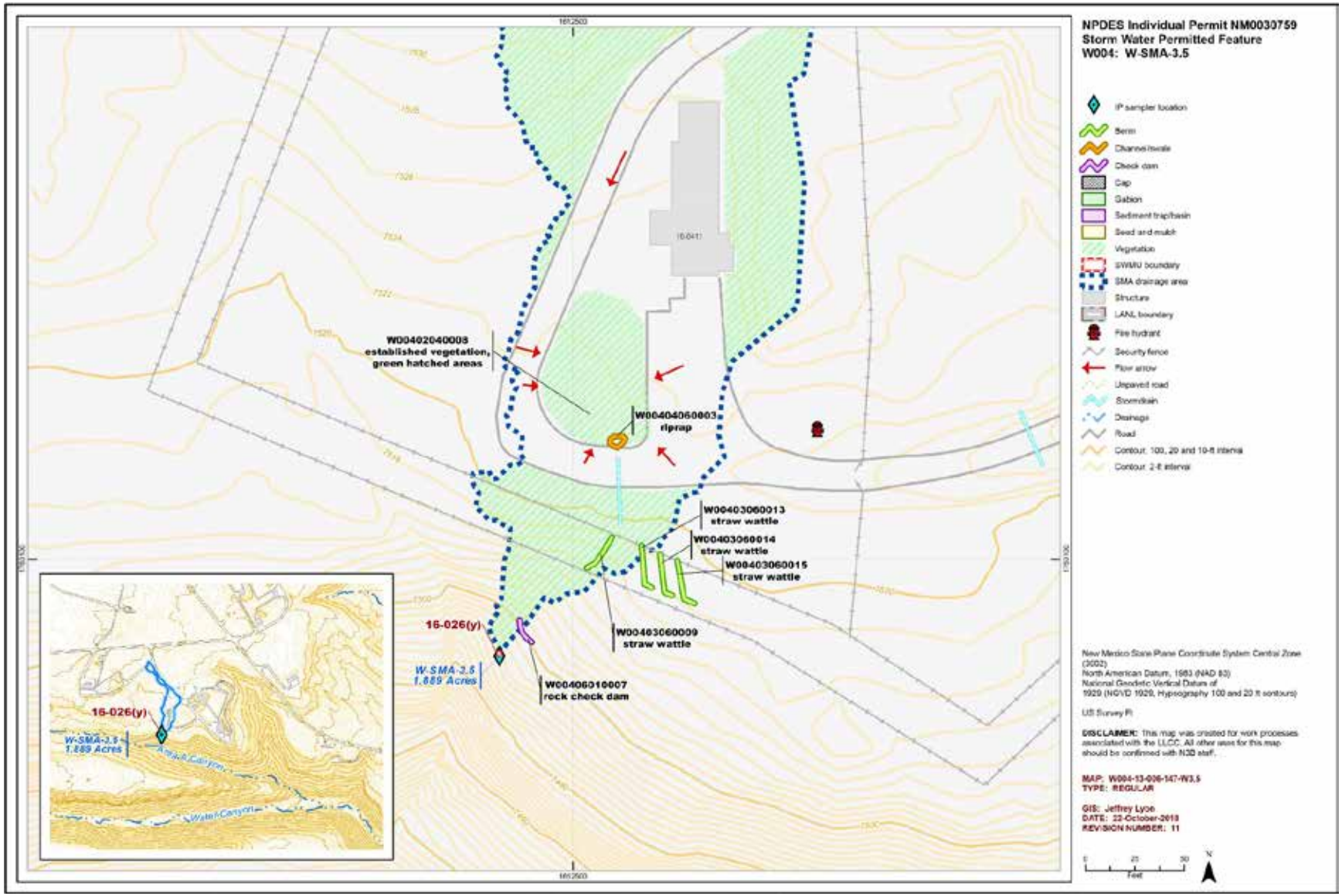


Figure 210-1 W-SMA-3.5 location map

211.0 W-SMA-4.1: SWMU 16-003(a)

211.1 Site Descriptions

One historical industrial activity area is associated with W005, W-SMA-4.1: Site 16-003(a).

SWMU 16-003(a) is an inactive HE sump, associated inlet and outlet drains, and former NPDES-permitted outfall (05A053) that served assembly building 16-410 at TA-16. The concrete sump is located on the exterior southeast wall of the building and measures 9.5 ft long × 3.5 ft wide × 2.5 ft deep. The sump served floor, roof, and equipment drains and removed suspended HE solids from process water before it was discharged to the outfall, located approximately 320 ft southeast of the building. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. The outlet drainline from the sump was plugged by 1995. The outfall was removed from the NPDES permit effective January 14, 1998.

Consent Order investigations have not yet begun at SWMU 16-003(a); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are available from an RFI performed in 1995.

The project map (Figure 211-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

211.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 211-1).

Table 211-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00502040006	Established Vegetation	-	X	X	-	B
W00503060008	Straw Wattle	X	-	-	X	B
W00503060009	Straw Wattle	-	X	-	X	B
W00503140010	Coir Log	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

211.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at W-SMA-4.1. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

211.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-4.1 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 211-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72936	3-26-2019
Storm Rain Event	BMP-74643	7-17-2019
Storm Rain Event	BMP-75441	8-6-2019
Storm Rain Event	BMP-76687	9-11-2019
Storm Rain Event	BMP-77271	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-4.1 in 2019.

211.5 Compliance Status

The Site associated with W-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 2019. Table 211-3 presents the 2019 compliance status.

Table 211-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-003(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

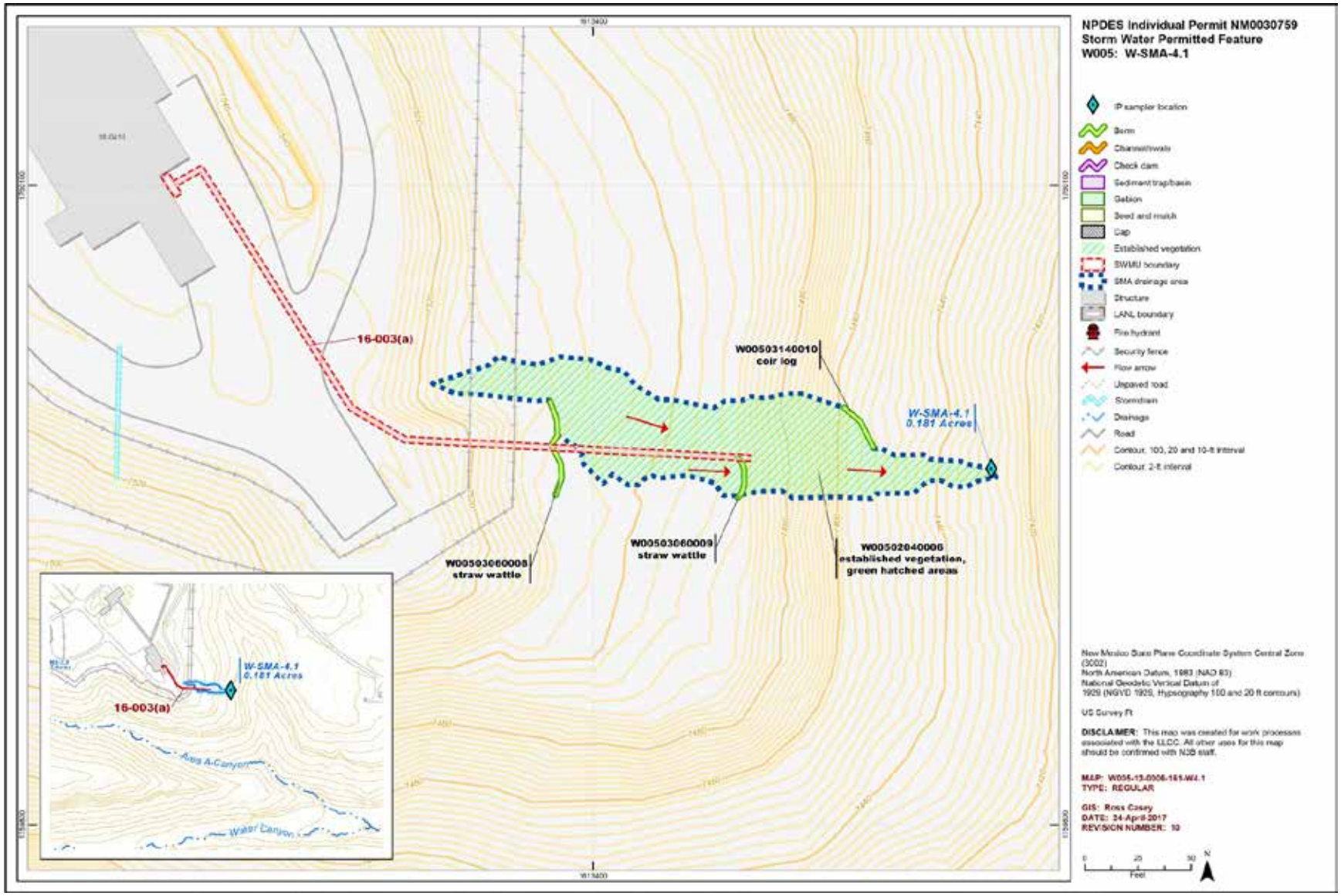


Figure 211-1 W-SMA-4.1 location map

212.0 W-SMA-5: SWMUs 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e)

212.1 Site Descriptions

Six historical industrial activity areas are associated with W006, W-SMA-5: Sites 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e).

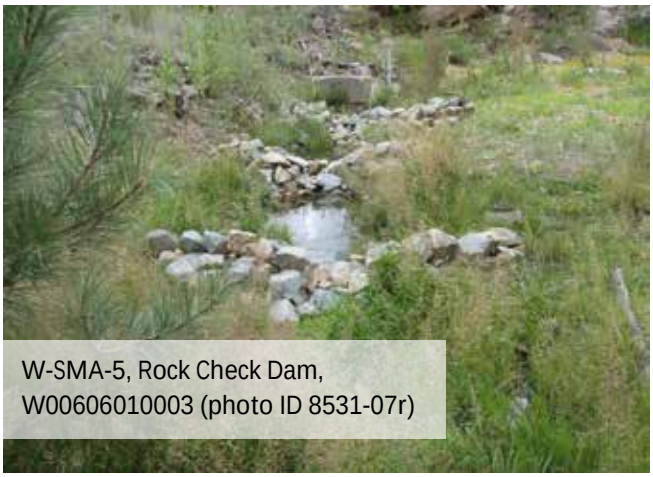
SWMU 16-001(e) is an inactive dry well located at TA-16 approximately 170 ft east of HE-processing building 16-306 at the head of a small tributary to Water Canyon. Constructed in the 1980s, the dry well served the building 16-300 series process line and never functioned properly because it drained to impermeable tuff. Building 16-300 was initially an HE-casting facility and was later converted to a mock (inert) explosives-preparation facility in 1962. The well was constructed of a 4-ft diameter CMP buried vertically to an unknown depth. A T-pipe was subsequently installed in the dry well to allow liquids discharged to the dry well to flow to a former NPDES-permitted outfall (EPA 05A058) where the liquid waste trunk line discharged effluent from HE sumps associated with the building 16-300 series process line. The dry well was filled with soil from the surrounding area and capped with concrete before 1992.

Consent Order Phase I investigation sampling is complete. SWMU 16-001(e) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 16-003(f) consists of two inactive HE sumps located on the exterior east side of building 16-304 at TA-16. Building 16-304 was constructed between 1951 and 1953 and was used as a plastics and plastic-component development and production facility for the weapons program. Polycarbonate components were fabricated using injection-molding machines. Other components were made using hydraulic presses. Large high-temperature ovens were used to dry-mold powders and to cure thermoset plastics. Wash water from the building drained to the sumps. Chemical solvents including acetone and methyl ethyl ketone were used in the plastics processing operations were also discharged to the SWMU 16-003(f) sumps. One sump measured 123 in. × 41 in. x 31 in. with a 6-in.-diameter VCP outlet drainline, and the other sump measured 203 in. x 41 in x 31 in. with an 8-in.-diameter VCP outlet drainline. HE-contaminated water and solvents from the sumps were discharged into the shared liquid waste trunk line located on the east side of the building .The effluent flowed through the liquid waste trunk line and discharged through a former NPDES-permitted outfall (EPSA 05A058) into a well-defined drainage across HE Road and southeast of building 16-306. In the early 1990s, solvents were no longer discharged to the sumps. Discharges from the sumps ceased in the mid-1990s, and the outfall was removed from the NPDES permit in 2000.

Consent Order Phase I investigation sampling is complete. SWMU 16-003(f) was recommended for additional field characterization activities in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 16-026(b) is an inactive former outfall located northeast of a rest house (structure 16-307) in TA-16. The outfall formerly received discharge from two HE sumps [SWMU 16-029(a)] located adjacent to the exterior southeast wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990 and 1991. Structure 16-307 was built between 1951 and 1953 to serve building 16-306. Structure 16-307 was used to store molds and other materials used in plastics development facilities, and also previously housed a solvent disassembly tank used to remove HE from test devices. This operation was the principal source of potential HE contamination in the drainage downgradient of the inactive outfall.


W-SMA-5, Rock Check Dam, W00606010003 (photo ID 8531-07r)

Consent Order Phase I investigation sampling is complete. SWMU 16-026(b) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 16-026(c) is an inactive outfall located at TA-16 south of a rest house (building 16-305). The outfall formerly received discharge from two HE sumps [SWMU 16-029(b)] located adjacent to the exterior southwest wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990 and 1991. Structure 16-305 was built between 1951 and 1953 to serve buildings 16-304 and 16-306, the plastics development and production facility. Structure 16-305 was used to store chemicals and solvents for plastics development and production and was also used for filament winding of developmental weapons components.

Consent Order Phase I investigation sampling is complete. SWMU 16-026(c) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 16-026(d) is an inactive outfall located southeast of a rest house (structure 16-303) at TA-16. The outfall formerly received discharges from two HE sumps [SWMU 16-029(c)] located adjacent to the exterior west wall of the rest house. The outfall discharged to Martin Spring Canyon. The sumps were plugged in 1990 and 1991. Structure 16-303 was built between 1951 and 1953 to serve building 16-302, an HE-casting facility. The rest house was used to store raw materials used in the casting process and HE castings produced in casting building 16-302.

Consent Order Phase I investigation sampling is complete. SWMU 16-026(d) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 16-026(e) is an inactive outfall located southwest of structure 16-301 at TA-16. The outfall formerly received discharge from two HE sumps [SWMU 16-029(d)] located on the exterior west side of structure 16-301. The outfall discharged to Martin Spring Canyon. The sumps were plugged in 1990 and 1991.Structure 16-301 was built in 1951 and 1952 and originally housed mock-HE processing operations and stored raw materials that were used to prepare mock HE. Structure 16-301 was later used as an environmental testing laboratory for research in the effects of temperature, pressure, and humidity on weapons and components.

Consent Order Phase I investigation sampling is complete. SWMU 16-026(e) was recommended for additional field characterization activities in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

The project map (Figure 212-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

212.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 212-1).

Table 212-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00602040029	Established Vegetation	-	X	X	-	B
W00604040011	Culvert	X	-	X	-	CB
W00604050033	Water Bar	X	-	X	-	B
W00604060006	Rip Rap	X	-	X	-	CB
W00606010003	Rock Check Dam	-	X	-	X	CB
W00606010012	Rock Check Dam	-	X	-	X	CB
W00606010013	Rock Check Dam	-	X	-	X	CB
W00606010014	Rock Check Dam	-	X	-	X	CB
W00606010015	Rock Check Dam	-	X	-	X	CB
W00606010017	Rock Check Dam	-	X	-	X	CB
W00606010021	Rock Check Dam	-	X	-	X	B
W00606010022	Rock Check Dam	-	X	-	X	B
W00606010023	Rock Check Dam	-	X	-	X	B
W00606010024	Rock Check Dam	-	X	-	X	B
W00606010028	Rock Check Dam	-	X	-	X	B
W00606010031	Rock Check Dam	X	-	-	X	B
W00606010032	Rock Check Dam	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

212.3 Storm Water Monitoring

SWMUs 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e) are monitored within W-SMA-5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 3, 2012 (Figure 212-2). In Figure 212-2, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for copper (6.28 µg/L) and are presented in Figure 212-2.

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 16-001(e):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in shallow (i.e., less than 3 ft bgs) Consent Order samples. Copper was detected above BV in 2 of 4 shallow samples with a maximum concentration 1.9 times the soil BV.

SWMU 16-003(f):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BV in 1 shallow Consent Order soil sample collected at the Site.

SWMU 16-026(b):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in 8 shallow Consent Order and RFI soil, sediment, and tuff samples.

SWMU 16-026(c):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above BVs in 5 of 13 shallow samples with a maximum concentration 3.8 times sediment BV.

SWMU 16-026(d):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above the BVs in 3 of 16 shallow soil and tuff samples with a maximum concentration 4.5 times soil BV.

SWMU 16-026(e):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected only slightly above soil and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above the BVs in 3 of 19 shallow soil and tuff samples with a maximum concentration above BV 1.7 times the tuff BV.

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 212-2. 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 212-2.

Monitoring location W-SMA-5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

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

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

212.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-5 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 212-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72937	3-26-2019
Storm Rain Event	BMP-74644	7-12-2019
Storm Rain Event	BMP-74913	7-24-2019
Storm Rain Event	BMP-75442	8-6-2019
Storm Rain Event	BMP-76688	9-11-2019
Storm Rain Event	BMP-77272	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-5 in 2019.

212.5 Compliance Status

The Sites associated with W-SMA-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 2019. Table 212-3 presents the 2019 compliance status.

Table 212-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-001(e)	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 16-003(f)	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 16-026(b)	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 16-026(c)	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 16-026(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 16-026(e)	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."

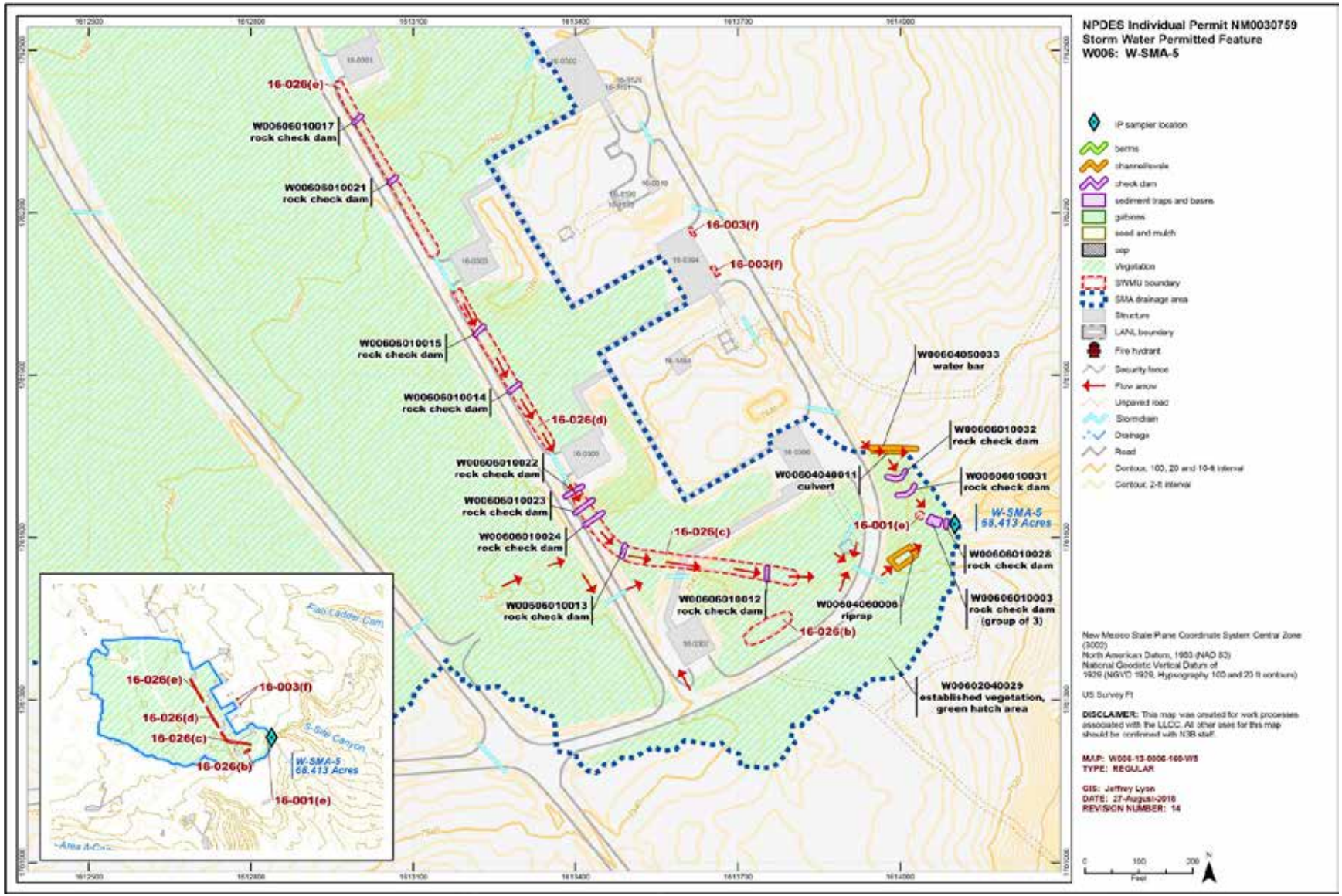


Figure 212-1 W-SMA-5 location map

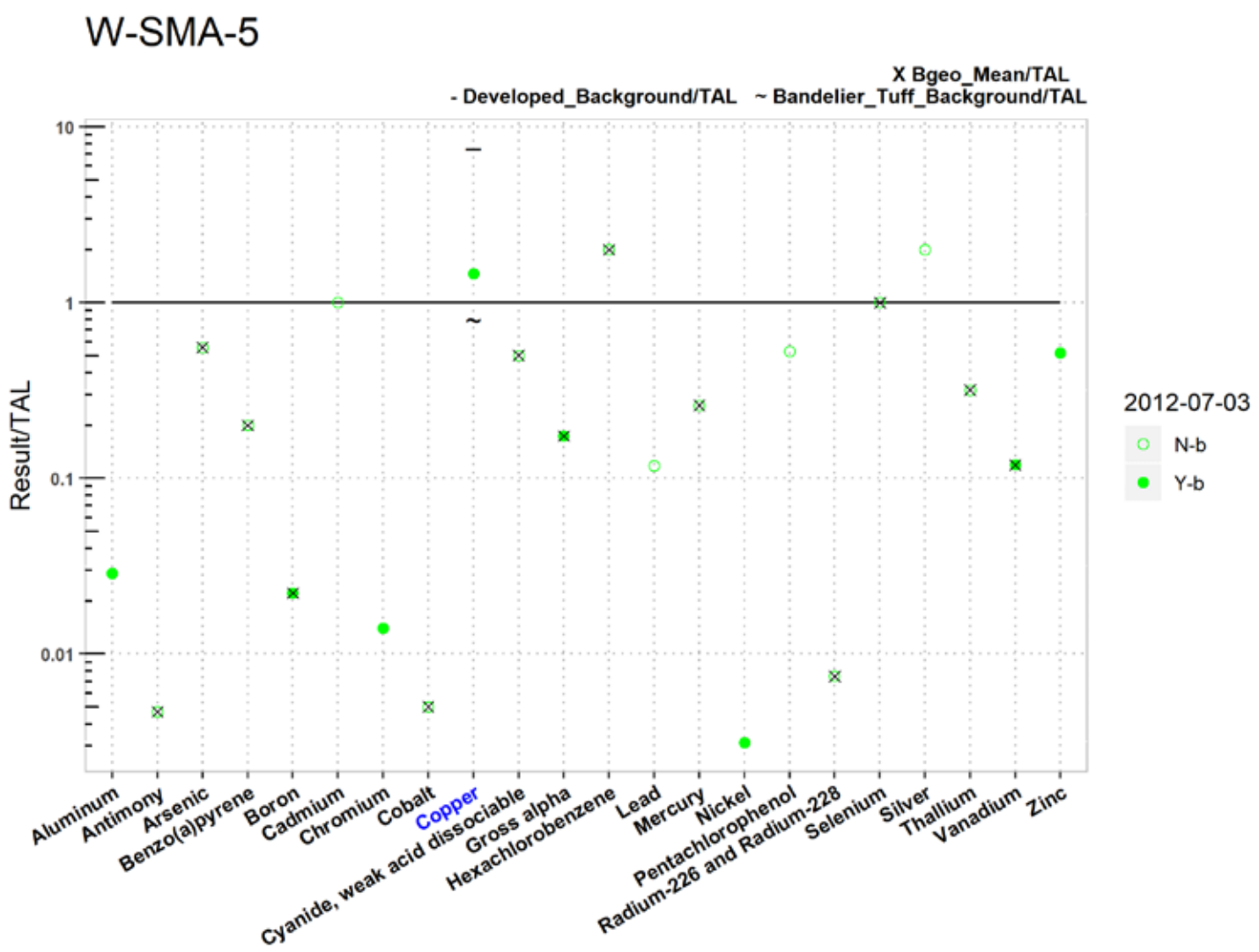


Figure 212-2 Analytical results summary for W-SMA-5

W-SMA-5

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5	17	0.77	170	19	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5	NA	0.77	NA	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA	17	1.4	170	19	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.2	0.022	NA	NA	0.005	NA	0.5	0.17	**2**	NA	0.26	NA	NA	0.0075	1	NA	0.32	0.12	NA
2012-07-03 d	0.029	NA	NA	NA	0.022	NA	0.014	NA	**1.5**	NA	0.17	NA	NA	NA	0.0031	NA	NA	NA	NA	NA	0.12	0.52
2012-07-03 nd	NA	0.0047	0.56	0.2	NA	1	NA	0.005	NA	0.5	NA	2	0.12	0.26	NA	0.53	0.0075	1	2	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 212-2 (continued) Analytical results summary for W-SMA-5

213.0 W-SMA-6: SWMU 11-001(c)

213.1 Site Descriptions

One historical industrial activity area is associated with W007, W-SMA-6: Site 11-001(c).

SWMU 11-001(c) is a former firing pit (former structure 11-15) at TA-16, that was located northwest of former building 16-370 near the edge of Water Canyon. According to the 1990 SWMU report, the firing pit was similar in construction to Firing Pit 11-14 [SWMU 11-001(a)], which consisted of a 12.5-ft semicircular concrete wall that was 4.5 ft high and 37 in. thick. The SWMU 11-001(c) firing pit was first used in 1944. The former TA-11 firing pits were arranged so that testing could be controlled and observed remotely. Components and assemblies were exposed to extreme physical environments including vibration, shock, and thermal-testing. Shots fired at the former TA-11 firing pits reportedly contained uranium and aluminum. Use of the firing pit ceased by the early 1950s. In 1989, when technical area boundaries were redefined within the Laboratory, portions of former TA-11 were absorbed into TA-16. As a result, SWMU 11-001(c) is now located within the northeast portion of TA-16. An RFI and a VCA were conducted in 1995 and 1996, respectively. However, in 2011 during preparation of the Upper Water Canyon Aggregate Area investigation work plan, it was determined from engineering drawing R-126 that samples from the RFI and VCA were collected from the wrong location. The firing pit was actually located northwest of the area that was sampled.

Consent Order sampling has not yet been conducted at SWMU 11-001(c); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are not available from the 1995 RFI or 1996 VCA.

The project map (Figure 213-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

213.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 213-1).

Table 213-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00701010007	Seed and Wood Mulch	-	-	X	-	B
W00702040004	Established Vegetation	-	X	X	-	B
W00703060005	Straw Wattle	-	X	-	X	B
W00703060006	Straw Wattle	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

213.3 Storm Water Monitoring

SWMU 11-001(c) is monitored within W-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2019 (Figure 213-2). Analysis for this sample did not include total metals so monitoring was continued. An additional limited volume baseline storm water sample was collected on October 4, 2019 (Figure 213-2). Analytical results from these samples yielded a TAL exceedance for gross-alpha activity (60.5 pCi/L) and are presented in Figure 213-2.

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. There are no soil data available for this Site.

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. There is no decision-level data from soil sampling at this Site, Consent Order sampling has not been conducted.

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 213-2. 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 214-2.

Monitoring location W-SMA-6 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—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2019 gross-alpha result is less than this value.

All the analytical results for these samples are reported in the 2019 Annual Report.

213.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-6 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 213-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72938	3-26-2019
Storm Rain Event	BMP-74645	7-12-2019
Storm Rain Event	BMP-74914	7-24-2019
Storm Rain Event	BMP-75443	8-6-2019
TAL Exceedance Inspection	COMP-76227	8-19-2019
Storm Rain Event	BMP-76689	9-11-2019
Storm Rain Event	BMP-77279	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-6 in 2019.

213.5 Compliance Status

The Site associated with W-SMA-6 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 2019. Table 213-3 presents the 2019 compliance status.

Table 213-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 11-001(c)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 11-13-2019

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

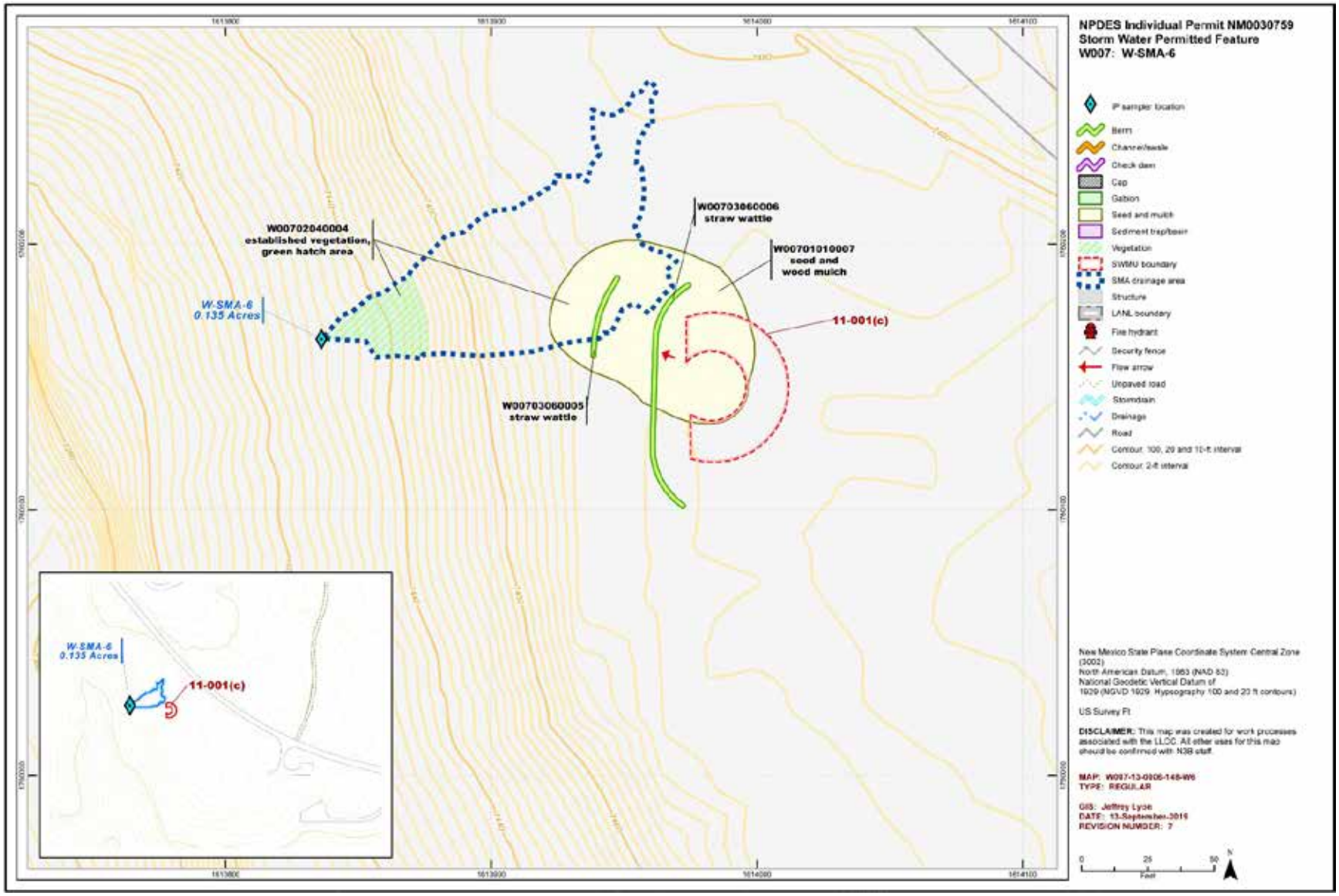


Figure 213-1 W-SMA-6 location map

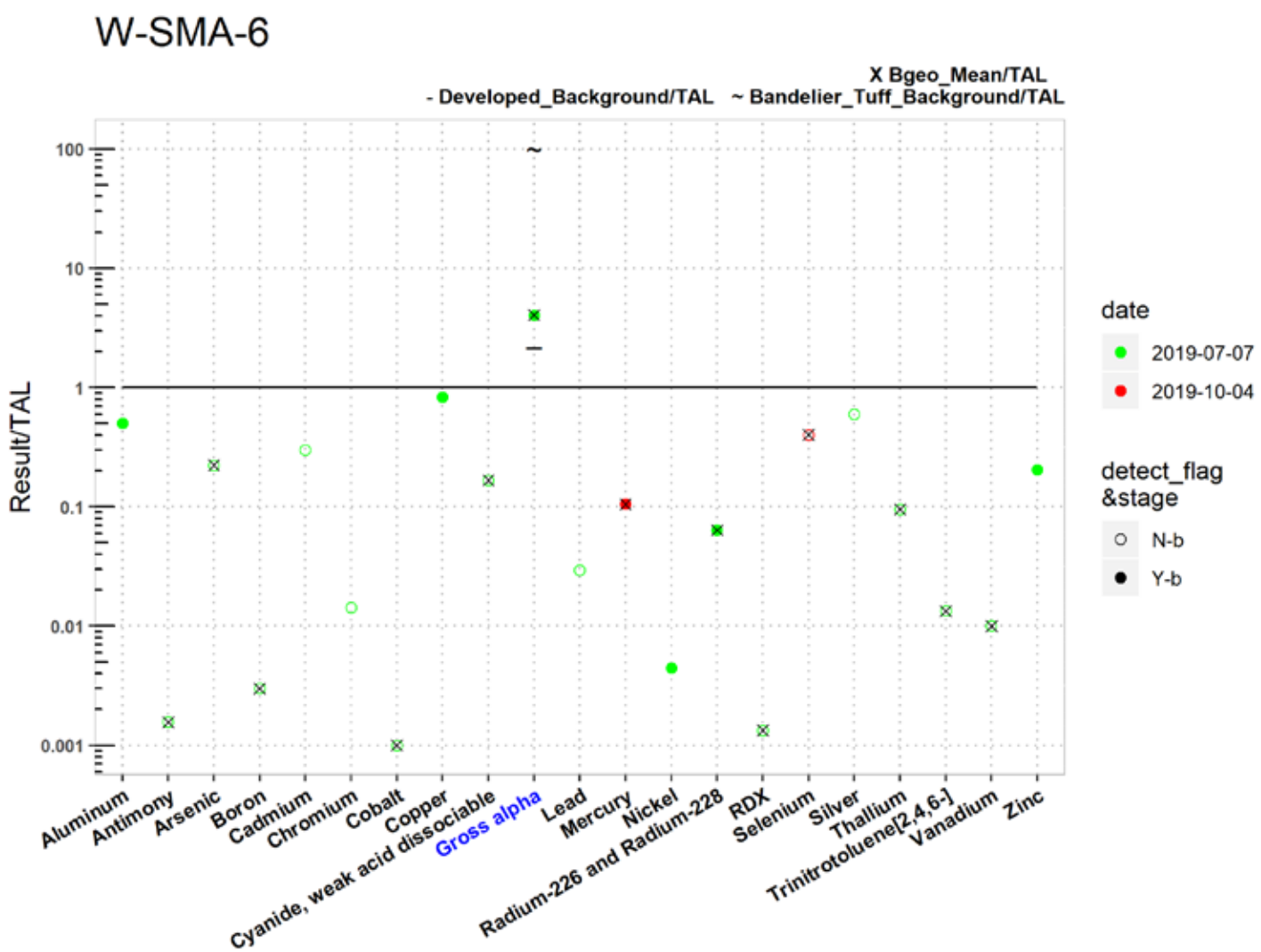


Figure 213-2 Analytical results summary for W-SMA-6

W-SMA-6

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.22	0.003	NA	NA	0.001	NA	0.17	**4**	NA	0.11	NA	0.064	0.0013	0.4	NA	0.095	0.013	0.01	NA
2019-07-07 d	0.5	NA	NA	NA	NA	NA	NA	0.83	NA	**4**	NA	NA	0.0044	0.064	NA	NA	NA	NA	NA	NA	0.2
2019-07-07 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	0.17	NA	0.029	NA	NA	NA	0.0013	NA	0.6	0.095	0.013	0.01	NA
2019-10-04 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019-10-04 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.4	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 213-2 (continued) Analytical results summary for W-SMA-6

214.0 W-SMA-7: SWMUs 16-029(e) and 16-026(h2)

214.1 Site Descriptions

Two historical industrial activity areas are associated with W008, W-SMA-7: Sites 16-029(e) and 16-026(h2).

SWMU 16-029(e) consists of an inactive HE sump and formerly NPDES-permitted outfall (05A159) that served HE equipment assembly building 16-360 at TA-16. The sump is a 12- × 4- × 5-ft reinforced concrete structure located on the exterior southeast side of the building. The sump received wash water from historical cleaning activities and discharged southeast to the outfall through a 6-in.-diameter drainline. The sump outlet was plugged in the early 1990s; the outfall was removed from the NPDES permit effective August 16, 1995.

The OU 1082 RFI work plan identifies SWMU 16-029(e) as an HE sump at building 16-360 with SWMU 16-026(h2) as the associated NPDES-permitted outfall. However, the 1990 SWMU report identifies SWMU 16-026(h2) as four outfalls from building drains at building 16-360. Because the four outfalls identified as SWMU 16-026(h2) in the SWMU report are not associated with the HE sump, SWMU 16-029(e) is identified as the inactive HE sump, and the associated inlet and outlet drainlines and the outfall. Consent Order sampling has not yet been conducted at SWMU 16-029(e); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1995 RFI.

SWMU 16-026(h2) consists of four outfalls and associated drainlines at TA-16 that served HE equipment assembly building 16-360. The western outfall received discharge from a steam pit drain. The southern outfall received condensate from three floor drains. The remaining two outfalls are located to the east of the building and discharge storm water from roof drains. In the 1990s, the steam pit drain and floor drains were rerouted to the sanitary sewer system; the roof drain outfalls remain active.

The OU 1082 RFI work plan identifies SWMU 16-026(h2) as the NPDES-permitted outfall associated with SWMU 16-029(e), an HE sump at building 16-360. However, the 1990 SWMU report identifies SWMU 16-026(h2) as four outfalls from building drains at building 16-360. Because the four outfalls identified as SWMU 16-026(h2) in the SWMU report are not associated with the HE sump, SWMU 16-026(h2) is identified as the four outfalls identified in the SWMU report rather than the HE sump outfall.

Consent Order sampling has not yet been conducted at SWMU 16-026(h2); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No previous investigations have been conducted at the Site.

The project map (Figure 214-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

214.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 214-1).

Enhanced controls were installed and certified on September 28, 2015, and submitted to EPA on September 29, 2015, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 214-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00801030048	Hydromulch	-	-	X	-	EC
W00802040014	Established Vegetation	-	X	X	-	B
W00803010049	Earthen Berm	-	X	-	X	EC
W00803060010	Straw Wattle	X	-	-	X	CB
W00803060019	Straw Wattle	-	X	-	X	B
W00803060024	Straw Wattle	-	X	-	X	B
W00803060025	Straw Wattle	-	X	-	X	B
W00803060052	Straw Wattle	-	X	-	X	B
W00803060053	Straw Wattle	-	X	-	X	B
W00803140035	Coir Log	-	X	-	X	EC
W00803140036	Coir Log	-	X	-	X	EC
W00803140041	Coir Log	X	-	-	X	EC
W00803140042	Coir Log	X	-	-	X	EC
W00803140043	Coir Log	X	-	-	X	EC
W00803140044	Coir Log	X	-	-	X	EC
W00803140045	Coir Log	X	-	-	X	EC
W00803140046	Coir Log	X	-	-	X	EC
W00803140047	Coir Log	X	-	-	X	EC
W00803140050	Coir Log	X	-	-	X	B
W00803140051	Coir Log	X	-	-	X	B
W00806010001	Rock Check Dam	-	X	-	X	CB
W00806010003	Rock Check Dam	-	X	-	X	CB
W00806010004	Rock Check Dam	-	X	-	X	CB
W00806010015	Rock Check Dam	-	X	-	X	B
W00806010016	Rock Check Dam	-	X	-	X	B
W00806010026	Rock Check Dam	X	-	-	X	EC
W00806010027	Rock Check Dam	X	-	-	X	EC
W00806010028	Rock Check Dam	X	-	-	X	EC
W00806010029	Rock Check Dam	-	X	-	X	EC
W00806010030	Rock Check Dam	X	-	-	X	EC
W00806010031	Rock Check Dam	X	-	-	X	EC
W00806010032	Rock Check Dam	X	-	-	X	EC
W00806010033	Rock Check Dam	X	-	-	X	EC
W00806010034	Rock Check Dam	X	-	-	X	EC
W00808040023	Metal Cap	X	-	-	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

214.3 Storm Water Monitoring

SWMUs 16-029(e) and 16-029(h2) are monitored within W-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on July 8, 2014 (Figure 214-2). In Figure 214-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for gross-alpha activity (427 pCi/L) and radium-226 and -228 activity (42 pCi/L) and are presented in Figure 214-2.

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 16-029(e):

- Alpha-emitting radionuclides including radium-226 and radium-228 are not known to be associated with industrial materials historically managed at the Site.

SWMU 16-029(h2):

- Alpha-emitting radionuclides including radium-226 and radium-228 are not known to be associated with industrial materials historically managed at the Site.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, "Bandelier Tuff background" for undisturbed SMAs or "developed background" for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled "Bandelier Tuff Background" in Figure 214-2. 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 214-2.

Monitoring location W-SMA-7 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 two values.
- Radium-226 and radium-228—Radium-226 and radium-228 UTL for background storm water containing sediment derived from Bandelier Tuff is 52.7 pCi/L, and radium-226 and radium-228 background storm water UTL for storm water run-on from a developed landscape is 8.94 pCi/L. The 2014 radium-226 and radium-228 result is between these two values.

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

214.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-7 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 214-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72939	3-26-2019
Storm Rain Event	BMP-74646	7-18-2019
Storm Rain Event	BMP-75444	8-6-2019
Storm Rain Event	BMP-76690	9-9-2019
Storm Rain Event	BMP-77274	10-16-2019

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

Table 214-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-73163	Installed Straw Wattles W00803060052 and W00803060053 as replacements for Straw Wattles W00803060017 and W00803060018.	4-10-2019	15 day(s)	Maintenance was conducted as soon as practicable.

214.5 Compliance Status

The Site associated with W-SMA-7 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 2019 Table 214-4 presents the 2019 compliance status.

Table 214-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-029(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 29, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas."
SWMU 16-026(h2)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 29, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas."

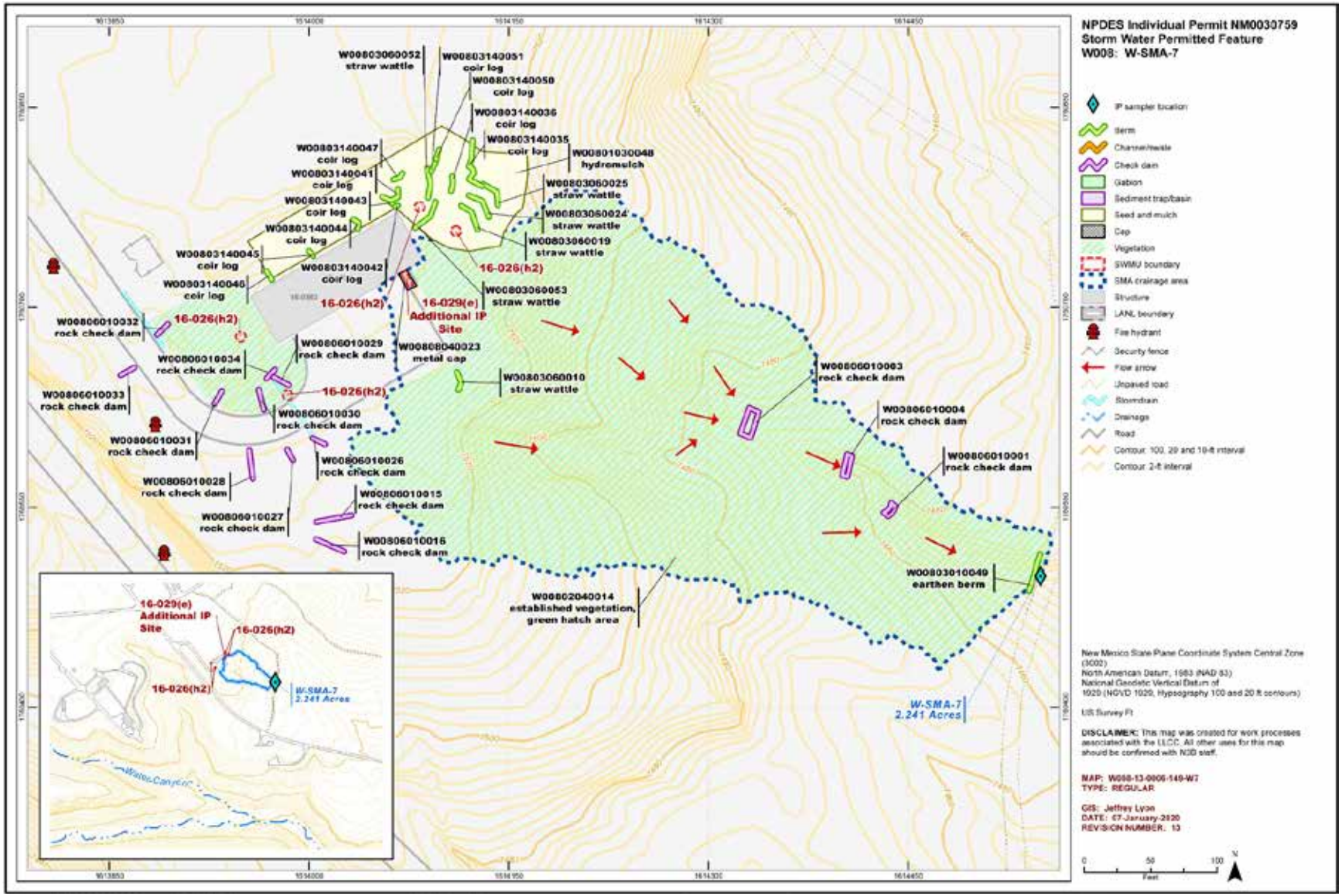


Figure 214-1 W-SMA-7 location map

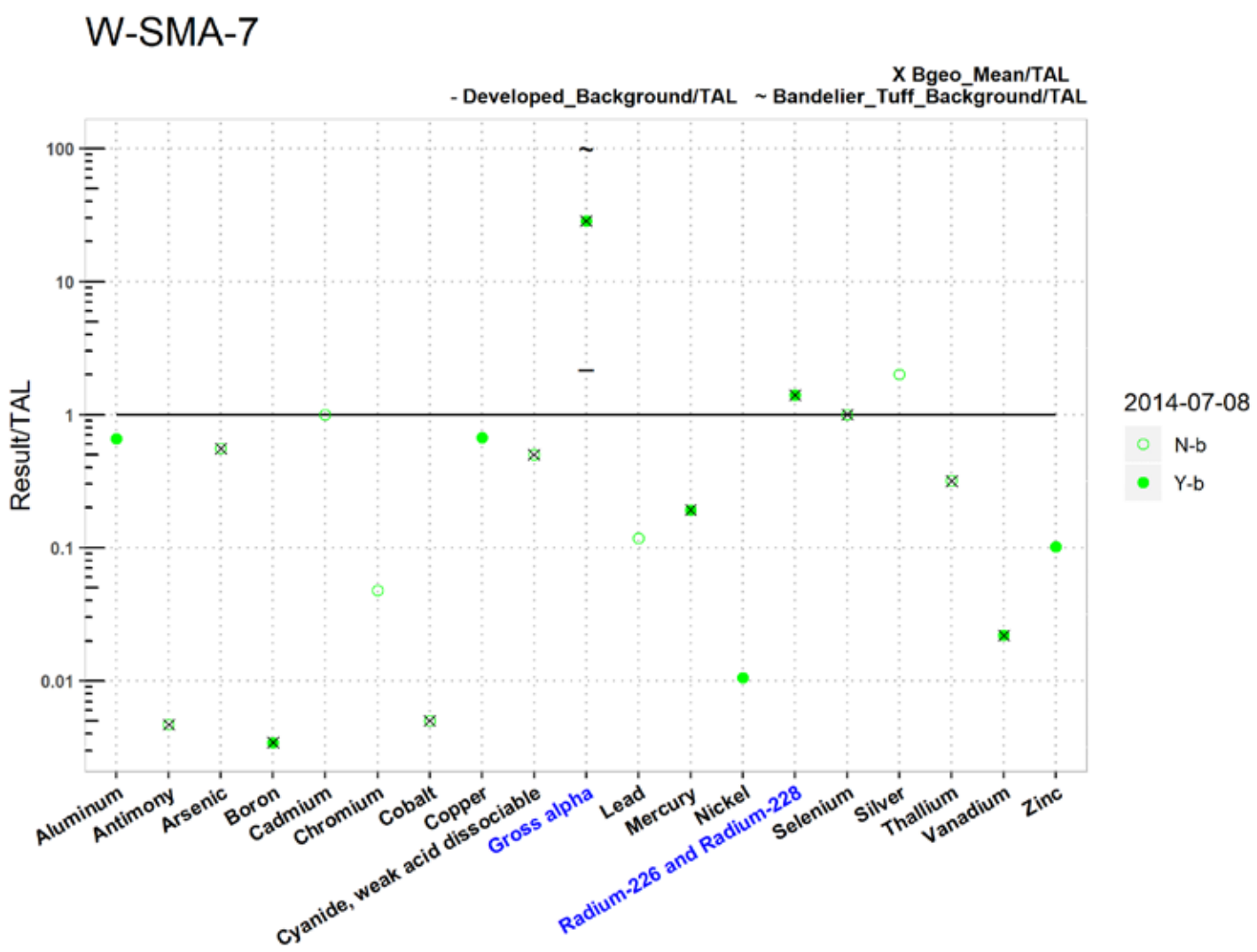


Figure 214-2 Analytical results summary for W-SMA-7

W-SMA-7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.0034	NA	NA	0.005	NA	0.5	**28**	NA	0.19	NA	**1.4**	1	NA	0.32	0.022	NA
2014-07-08 d	0.66	NA	NA	0.0034	NA	NA	NA	0.67	NA	**28**	NA	0.19	0.011	**1.4**	NA	NA	NA	0.022	0.1
2014-07-08 nd	NA	0.0047	0.56	NA	1	0.048	0.005	NA	0.5	NA	0.12	NA	NA	NA	1	2	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 214-2 (continued) Analytical results summary for W-SMA-7

215.0 W-SMA-7.8: SWMU 16-031(a)

215.1 Site Descriptions

One historical industrial activity area is associated with W009, W-SMA-7.8: Site 16-031(a).

SWMU 16-031(a) is a former outfall and drainline that served a former cooling tower (former structure 16-372) at TA-16. The outfall discharged approximately 150 ft south of the cooling tower at the edge of Water Canyon. The outfall drainline was a 6-in.-diameter VCP that originated from a drain inside the southeast corner of the cooling tower. The cooling tower served building 16-370, a barium nitrate–grinding facility and metal-forming shop. The cooling tower received chilled water that was cycled through pumps and machinery in structure 16-372. The cooling water may have contained chromates, but there is no documentation confirming the use of chromates. The cooling tower was built in 1953 and burned down during the Cerro Grande fire in 2000. The concrete foundation remains in place.

Consent Order investigations have not yet begun at SWMU 16-031(a); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are available from the 1998 investigation.

The project map (Figure 215-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

215.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 215-1).

Table 215-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00902040009	Established Vegetation	-	X	X	-	B
W00903010004	Earthen Berm	X	-	-	X	CB
W00903100010	Gravel Bags	-	X	-	X	B
W00906010001	Rock Check Dam	X	-	-	X	CB
W00906010005	Rock Check Dam	X	-	-	X	CB
W00906010006	Rock Check Dam	X	-	-	X	CB
W00906010007	Rock Check Dam	-	X	-	X	CB

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

215.3 Storm Water Monitoring

SWMU 16-031(a) is monitored within W-SMA-7.8. Following the installation of baseline control measures, a baseline storm water sample was collected on July 15, 2019 (Figure 215-2). Analytical results from this sample yielded no TAL exceedances. Extended baseline sampling will continue until the collection of a second sample.

All the analytical results for this sample are reported in the 2019 Annual Report.

215.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-7.8 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 215-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72940	3-26-2019
Storm Rain Event	BMP-74647	7-12-2019
Storm Rain Event	BMP-74916	7-24-2019
Storm Rain Event	BMP-75445	8-7-2019
Storm Rain Event	BMP-76691	9-9-2019
Storm Rain Event	BMP-77275	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-7.8 in 2019.

215.5 Compliance Status

The Site associated with W-SMA-7.8 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 2019. Table 215-3 presents the 2019 compliance status.

Table 215-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-031(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. Two samples with no TAL exceedances are required to be collected in order for the Site to be eligible for deletion from the IP.

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

W-SMA-7.8, Rock Check Dam, W00906010005 (photo ID 7801-4r)

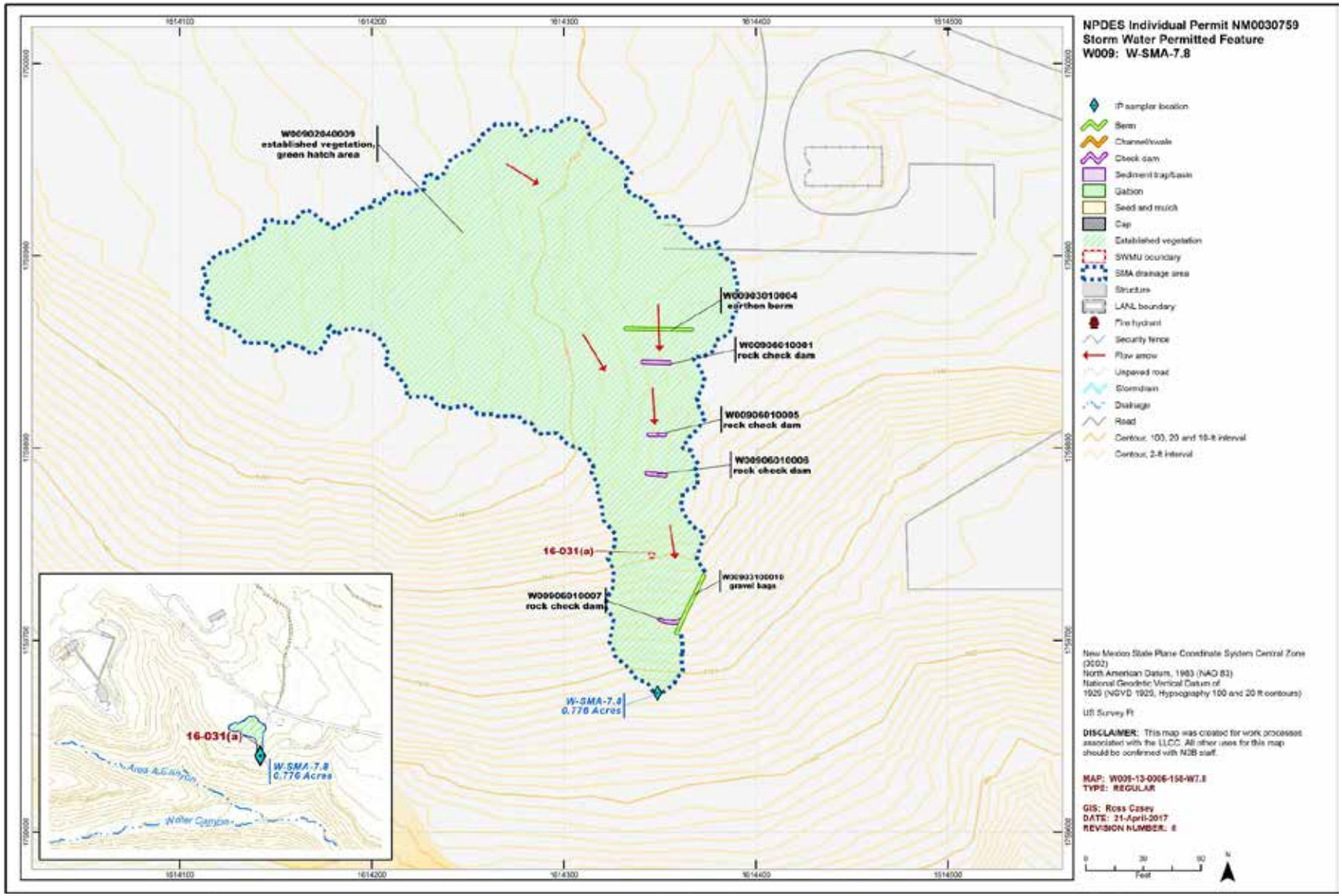


Figure 215-1 W-SMA-7.8 location map

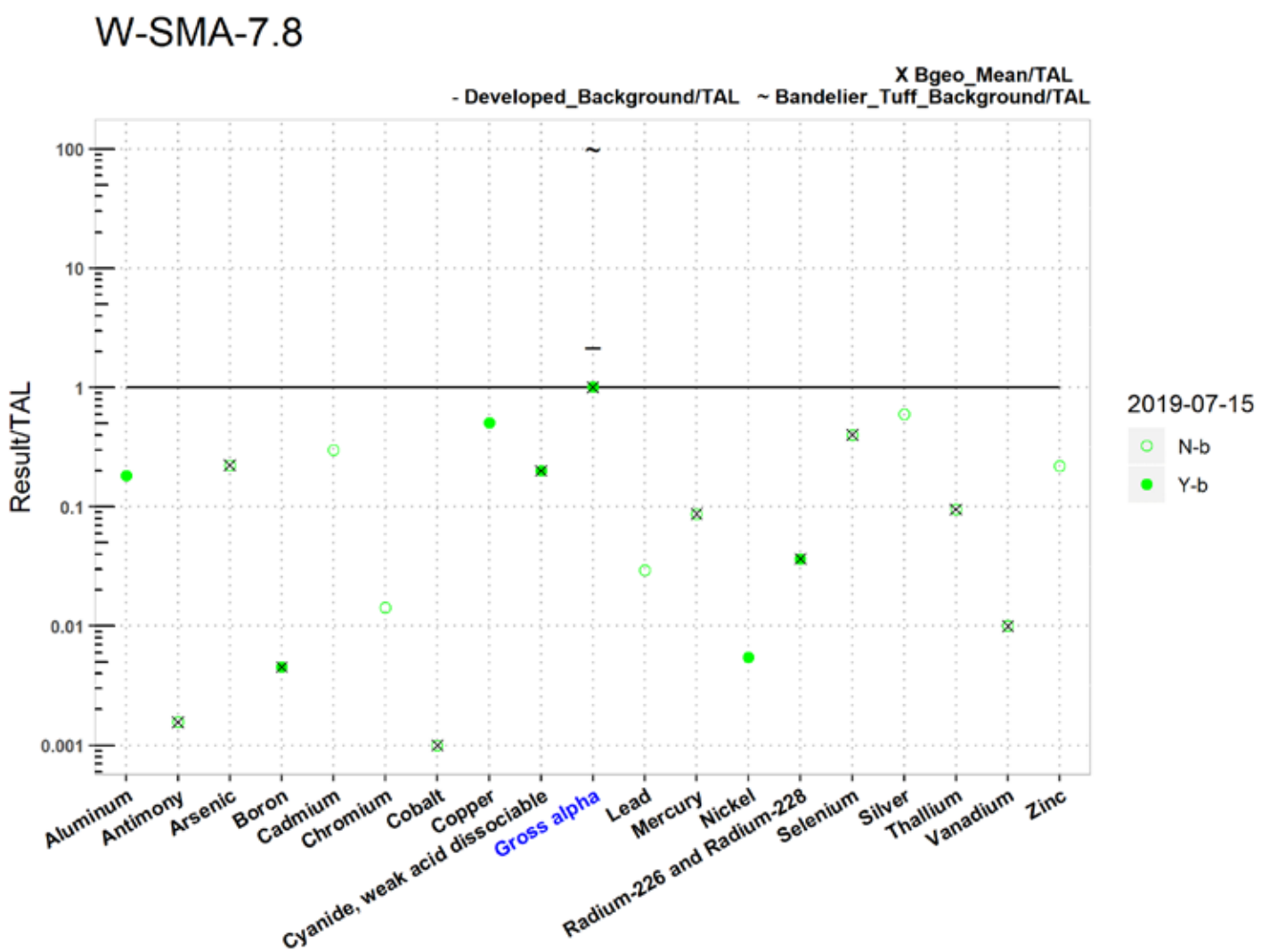


Figure 215-2 Analytical results summary for W-SMA-7.8

W-SMA-7.8

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.22	0.0045	NA	NA	0.001	NA	0.2	**1**	NA	0.087	NA	0.037	0.4	NA	0.095	0.01	NA
2019-07-15 d	0.18	NA	NA	0.0045	NA	NA	NA	0.5	0.2	**1**	NA	NA	0.0054	0.037	NA	NA	NA	NA	NA
2019-07-15 nd	NA	0.0016	0.22	NA	0.3	0.014	0.001	NA	NA	NA	0.029	0.087	NA	NA	0.4	0.6	0.095	0.01	0.22

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 215-2 (continued) **Analytical results summary for W-SMA-7.8**

216.0 W-SMA-7.9: SWMU 16-006(c)

216.1 Site Descriptions

One historical industrial activity area is associated with W010, W-SMA-7.9: Site 16-006(c).

SWMU 16-006(c) is an inactive septic system located directly west of former building 16-370 in the eastern portion of TA-16. The septic system served building 16-370 and consists of a 1200-gal. concrete septic tank (structure 16-371), a manhole (structure 16-813), inlet and outlet drainlines, and an outfall near the rim of Water Canyon. The 1990 SWMU report states the septic tank discharged to a drain field. However, engineering drawings do not verify the existence of a drain field. Building 16-370 was constructed in 1953 as a barium nitrate grinding facility. In the late 1950s, the building was converted to a metal forming shop for steel and aluminum operations. The septic system was constructed in 1953 and served floor drains and bathrooms on the third floor of building 16-370. Associated drainlines connect to a manhole (structure 16-813), which drained to the septic tank. The outlet line discharged to an outfall approximately 260 ft south of the septic tank at the edge of Water Canyon. After the drainline was plugged, the tank was pumped regularly during the time building 16-370 remained operational; the building was removed in 2005.

Consent Order investigations have not yet begun at SWMU 16-006(c); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are available from an RFI performed in 1995 and 1996.

The project map (Figure 216-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

216.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 216-1).

Table 216-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01002040004	Established Vegetation	-	X	X	-	B
W01006010003	Rock Check Dam	-	X	-	X	CB

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

216.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at W-SMA-7.9. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

216.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-7.9 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 216-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72927	3-26-2019
Storm Rain Event	BMP-74637	7-12-2019
Storm Rain Event	BMP-74906	7-24-2019
Storm Rain Event	BMP-75432	8-6-2019
Storm Rain Event	BMP-76681	9-9-2019
Storm Rain Event	BMP-77265	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-7.9 in 2019.

216.5 Compliance Status

The Site associated with W-SMA-7.9 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 2019. Table 216-3 presents the 2019 compliance status.

Table 216-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

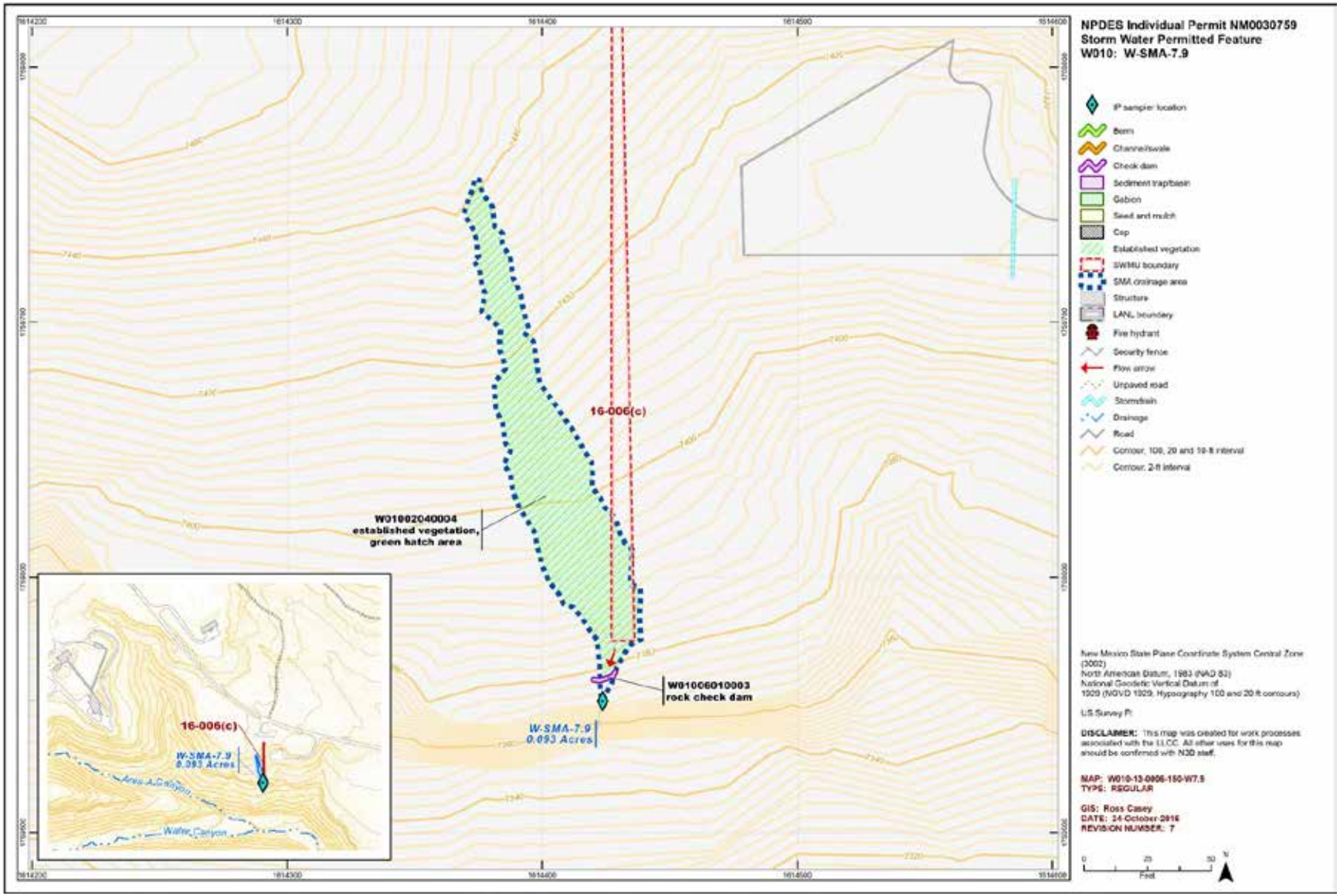


Figure 216-1 W-SMA-7.9 location map

217.0 W-SMA-8: SWMUs 16-016(g) and 16-028(b)

217.1 Site Descriptions

Two historical industrial activity areas are associated with W011, W-SMA-8: Sites 16-016(g) and 16-028(b).

SWMU 16-016(g) is a surface disposal area located in a drainage ditch approximately 60 ft south of former building 16-370 in the eastern portion of TA-16. Debris at the site includes cans and pipes distributed over a 20-ft-diameter area. The surface disposal area lies in the drainage ditch shared by both SWMUs 16-026(a) and 16-028(b). Field observations indicated the debris is likely from construction-related activities and not of a hazardous nature.

Consent Order sampling has not yet been conducted at SWMU 16-016(g); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No previous investigations have been conducted at the Site.

SWMU 16-028(b) is a formerly NPDES-permitted outfall (04A092) and associated drainline that served former building 16-370 at TA-16. The outfall is located approximately 50 ft south of former building 16-370. The outlet drainline consists of a 6-in. VCP that exited the northwest side of former building 16-370 and discharged at the rim of Water Canyon. The outfall formerly received effluent from 29 floor drains, an eyewash station, a drinking fountain, a sink, and noncontact-treated cooling water. Building 16-370 was built in 1953 as a barium nitrate–grinding facility. In the late 1950s, it was converted to a metal-forming shop for steel and aluminum. Materials potentially present in discharges to the drains include barium compounds, metal chips, oils, kerosene, and trichloroethylene. HE were not used in building 16-370 because of explosive hazard posed by grinding and machining activities. Building 16-370 was removed in 2000. All drains that discharged to the outfall were plugged in the 1990s. The outfall was removed from the NPDES permit effective January 14, 1998.

Consent Order sampling has not yet been conducted at SWMU 16-028(b). The Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1998 investigation.

The project map (Figure 217-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

217.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 217-1).

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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 217-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01102040009	Established Vegetation	-	X	X	-	B
W01103010012	Earthen Berm	X	-	-	X	EC
W01103010013	Earthen Berm	X	-	-	X	EC
W01103010014	Earthen Berm	X	-	-	X	EC
W01103010015	Earthen Berm	X	-	-	X	EC
W01103040010	Asphalt Berm	X	-	X	-	EC
W01106010006	Rock Check Dam	X	-	-	X	CB
W01106010011	Rock Check Dam	X	-	-	X	B
W01106010016	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

217.3 Storm Water Monitoring

SWMUs 16-016(g) and 16-028(b) are monitored within W-SMA-8. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure 217-2). In Figure 217-2, selenium, silver, and hexachlorobenzene are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for aluminum (823 µg/L) and copper (28.1 µg/L) and are presented in Figure 217-2.

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 16-016(g):

- Aluminum may have been associated with industrial materials historically managed at this Site. No soil data are available to evaluate whether the Site is a potential source of the TAL exceedances.
- Copper may have been associated with industrial materials historically managed at this Site. No soil data are available to evaluate whether the Site is a potential source of the TAL exceedances.

SWMU 16-028(b):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above the soil BV in the single shallow sample collected during the 1998 investigation.
- Copper may have been associated with industrial materials historically managed at this Site. Copper was detected at a concentration 32 times the soil BV in the single shallow sample collected during the 1998 investigation.

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 217-2. 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 217-2.

Monitoring location W-SMA-8 receives storm water run-on from the SWMU 16-016(g) surface disposal area and from landscapes containing sediment derived from Bandelier Tuff.

- 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.

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

217.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-8 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 217-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72928	3-26-2019
Storm Rain Event	BMP-74638	7-12-2019
Storm Rain Event	BMP-74907	7-24-2019
Storm Rain Event	BMP-75433	8-6-2019
Storm Rain Event	BMP-76682	9-9-2019
Storm Rain Event	BMP-77266	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-8 in 2019.

217.5 Compliance Status

The Sites associated with W-SMA-8 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 2019. Table 217-3 presents the 2019 compliance status.

Table 217-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-016(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 16-028(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."

W-SMA-8, Rock Check Dam, W01106010006 (photo ID 7806-1r)

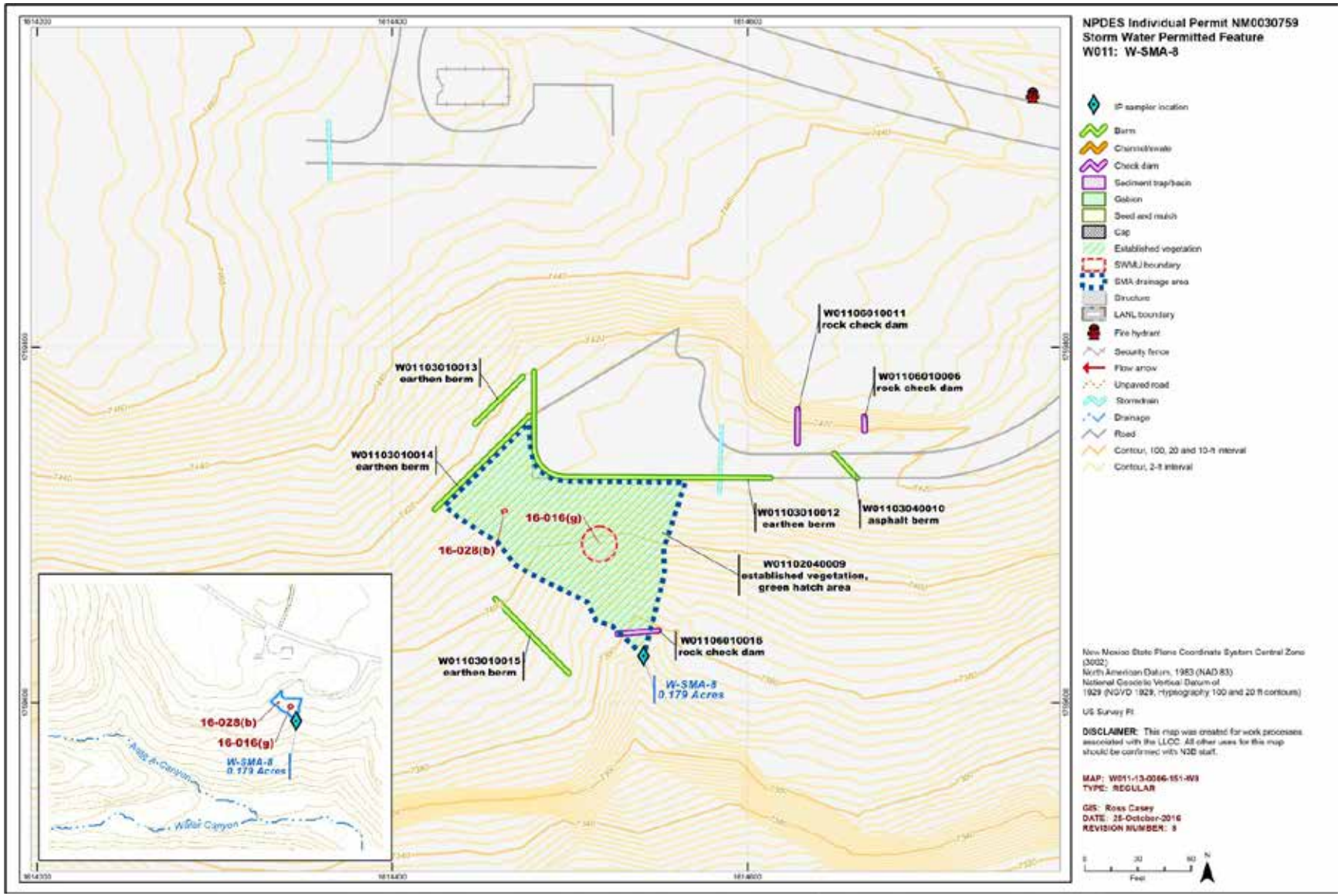


Figure 217-1 W-SMA-8 location map

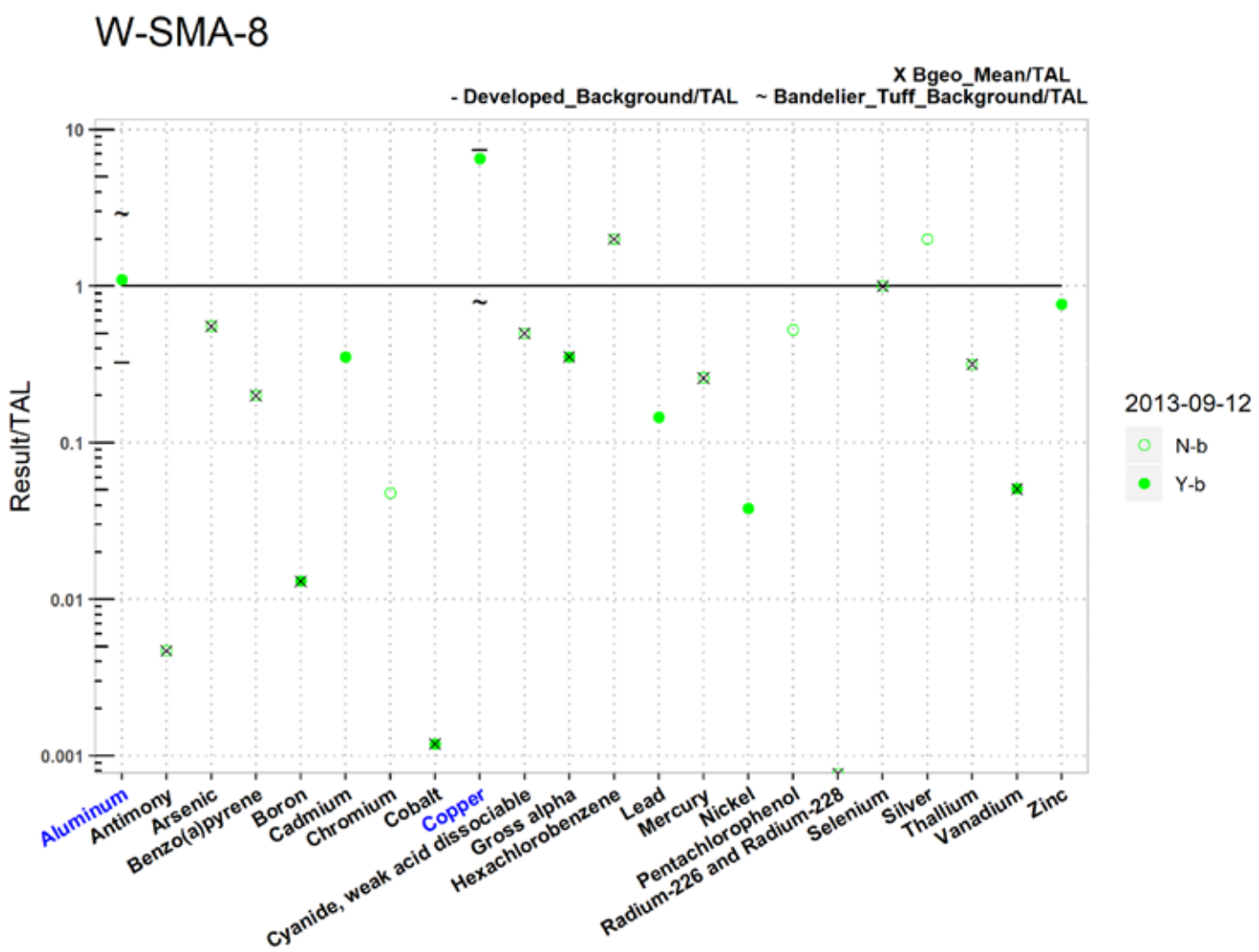


Figure 217-2 Analytical results summary for W-SMA-8

W-SMA-8

	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5	5000	1	210	1000	4.3	10	15	5	17	0.77	170	19	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5	NA	0.77	NA	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	NA	0.6	210	NA	4.3	22	NA	NA	17	1.4	170	19	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.2	0.013	NA	NA	0.0012	NA	0.5	0.35	**2**	NA	0.26	NA	NA	0	1	NA	0.32	0.051	NA
2013-09-12 d	**1.1**	NA	NA	NA	0.013	0.35	NA	0.0012	**6.5**	NA	0.35	NA	0.15	NA	0.038	NA	NA	NA	NA	NA	0.051	0.77
2013-09-12 nd	NA	0.0047	0.56	0.2	NA	NA	0.048	NA	NA	0.5	NA	2	NA	0.26	NA	0.53	0	1	2	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 217-2 (continued) Analytical results summary for W-SMA-8

218.0 W-SMA-8.7: SWMUs 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035

218.1 Site Descriptions

Six historical industrial activity areas are associated with W012, W-SMA-8.7: Sites 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035.

SWMU 13-001 is an inactive firing site located east of former building 16-340, between battleship bunker buildings 16-477 and 16-478 at the eastern end of TA-16. The firing site was associated with firing activities conducted at P-Site (former TA-13) and operated from 1944 to 1949. The battleship bunker buildings 16-477 and 16-478 housed x-ray and magnetic equipment and were capped with steel nose cones to protect this equipment from explosive detonations that occurred at the firing site between the two bunkers. Debris from firing site experiments includes shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.

Phase I Consent Order sampling is complete for SWMU 13-001. The Site meets residential risk levels. SWMU 13-001 has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in 2019.

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340, and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and, based on a 1948 aerial photograph, the site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the TA-16 WWTP is located on top of the southern tip of the surface disposal area. The SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at that time.

Phase I Consent Order sampling is complete for SWMU 13-002. SWMU 13-002 meets residential risk levels and has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in 2019.

SWMU 16-004(a) is the inactive Imhoff tank (structure 16-530) that was used for sewage treatment at the former TA-16 sanitary WWTP. The concrete structure is approximately 18 ft × 35 ft × 22 ft deep, with nine interconnected compartments that served as settling boxes, with a total area of 700 ft^2. Located southeast of the former TA-16-340 Complex and 15 ft north of the communitor (a cutting device for sewage solids), the Imhoff tank received solids that the communitor had shredded into fine particles. In addition to functioniong as a settling box, the tank also offered some sludge digrestion capacity. Effluent from the boxes flowed over a weir into a dosing siphon. Any sludge that may have collected in the tank was digested before it was discharged to drying beds [SWMUs 16-004(d) and 16-004(f)]. The tank had an emergency overflow pipe that discharged onto the slope northeast of the tank. The TA-16 WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. There is no evidence that this tank has ever leaked, and a site inspection in October 2014 revealed that the tank contains water.

Decision-level data for SWMU 16-004(a) consists of results from eight samples collected at four locations in 2010. The 2019 revision 1 of the 2015 supplemental investigation report for S-Site Aggregate Area concluded the nature and extent of contamination are not defined and further sampling for extent is warranted. Sampling to complete characterization of this site will be delayed until the future demolition of structure 16-530.

SWMU 16-026(j2) consists of the former outfall from a former HE sump [SWMU 16-029(f)] associated with a former rest house (structure 16-345) located on the 340 Line at TA-16. The rest house and sump were constructed in 1952 and served as a HE storage facility for former building 16-340. The sump was located on the southeast exterior wall and received discharge generated during cleaning activities. The outfall received effluent from the sump and discharged southeast of the sump location. The rest house, sump, and associated drainlines were removed in 2005.

SWMU 16-026(j2) was investigated under the Consent Order and recommended for corrective action complete in the Phase II investigation report for the TA-16-340 complex. NMED approved the investigation report but required the Laboratory to conduct additional surface water and groundwater sampling for the TA-16-340 Complex as well as to maintain the BMPs.

SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in.-VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in.-VCP that intersected a drainage channel. Former structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the structure was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009 and 2010, no evidence of the French drain was found. SWMU 16-029(h) was identified as an HE sump (structure 16-487) in the 1990 SWMU report. The SWMU report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former structure 16-478, and also includes areas impacted by the 2000 Cerro Grande wildfire.

Phase I Consent Order sampling is complete for SWMU 16-029(h). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 16-029(h) has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019. SWMU 16-035 is an area of potential soil contamination located approximately 200 ft east of former building 16-340. The soil contamination is associated with a former control bunker (former structure 13-2 renumbered to 16-476). The control bunker was one of several buildings constructed at TA-13 in 1944 to support the Manhattan Project. Former TA-13 was built in 1944 to support the HE project of the Manhattan Project and has been used since then for a variety of Laboratory activities. It was principally designed as a site for counter–x-ray diagnostics of HE lens configurations. Activities that supported the diagnostics included operating counter–x-ray equipment, HE assembly, and research in the magnetic method program. The control bunker was removed during D&D activities in 2005.

Phase I Consent Order sampling is complete for SWMU 16-035. SWMU 16-035 meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, submitted to NMED in 2015.

The project map (Figure 218-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

218.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 218-1).

Table 218-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01202040011	Established Vegetation	-	X	X	-	B
W01203060010	Straw Wattle	-	X	-	X	CB
W01206010006	Rock Check Dam	-	X	-	X	CB
W01206010007	Rock Check Dam	-	X	-	X	CB
W01206010008	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

218.3 Storm Water Monitoring

SWMUs 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035 are monitored within W-SMA-8.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure 218-2). In Figure 218-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for aluminum (1920 µg/L) and are presented in Figure 218-2.

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 13-001:

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above the soil BV in 28 shallow soil samples collected during 2009–2010 Consent Order investigations.

SWMU 13-002:

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above the soil BV in 8 shallow soil samples collected during 2009–2010 Consent Order investigations.

SWMU 16-004(a):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Samples collected during the 2010 Consent Order investigation were all deep (i.e., greater than 22 ft bgs) samples collected beneath the bottom of the Imhoff tank. No shallow sample data are available for this Site.

SWMU 16-026(j2):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was detected above sediment and tuff BVs in 2 of 14 shallow soil, sediment, and tuff samples collected during 2005 and 2008 Consent Order investigations. Aluminum was detected at a maximum concentration 2 times the sediment BV.

SWMU 16-029(h):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above the soil BV in 17 shallow soil samples collected during 2009–2010 Consent Order investigations.

SWMU 16-035:

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in 29 shallow (i.e., less than 3 ft bgs) soil and tuff samples collected during the 2010 Consent Order investigation.

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 218-2. 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 218-2.

Monitoring location W-SMA-8.7 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 are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- 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.

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

218.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-8.7 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 218-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72929	3-19-2019
Storm Rain Event	BMP-74639	7-18-2019
Storm Rain Event	BMP-75434	8-6-2019
Storm Rain Event	BMP-76683	9-11-2019
Storm Rain Event	BMP-77267	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-8.7 in 2019.

218.5 Compliance Status

The Sites associated with W-SMA-8.7 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 2019. Table 218-3 presents the 2019 compliance status.

Table 218-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 13-001	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 13-002	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 16-004(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 16-026(j2)	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."
SWMU16-029(h)	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 16-035	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."

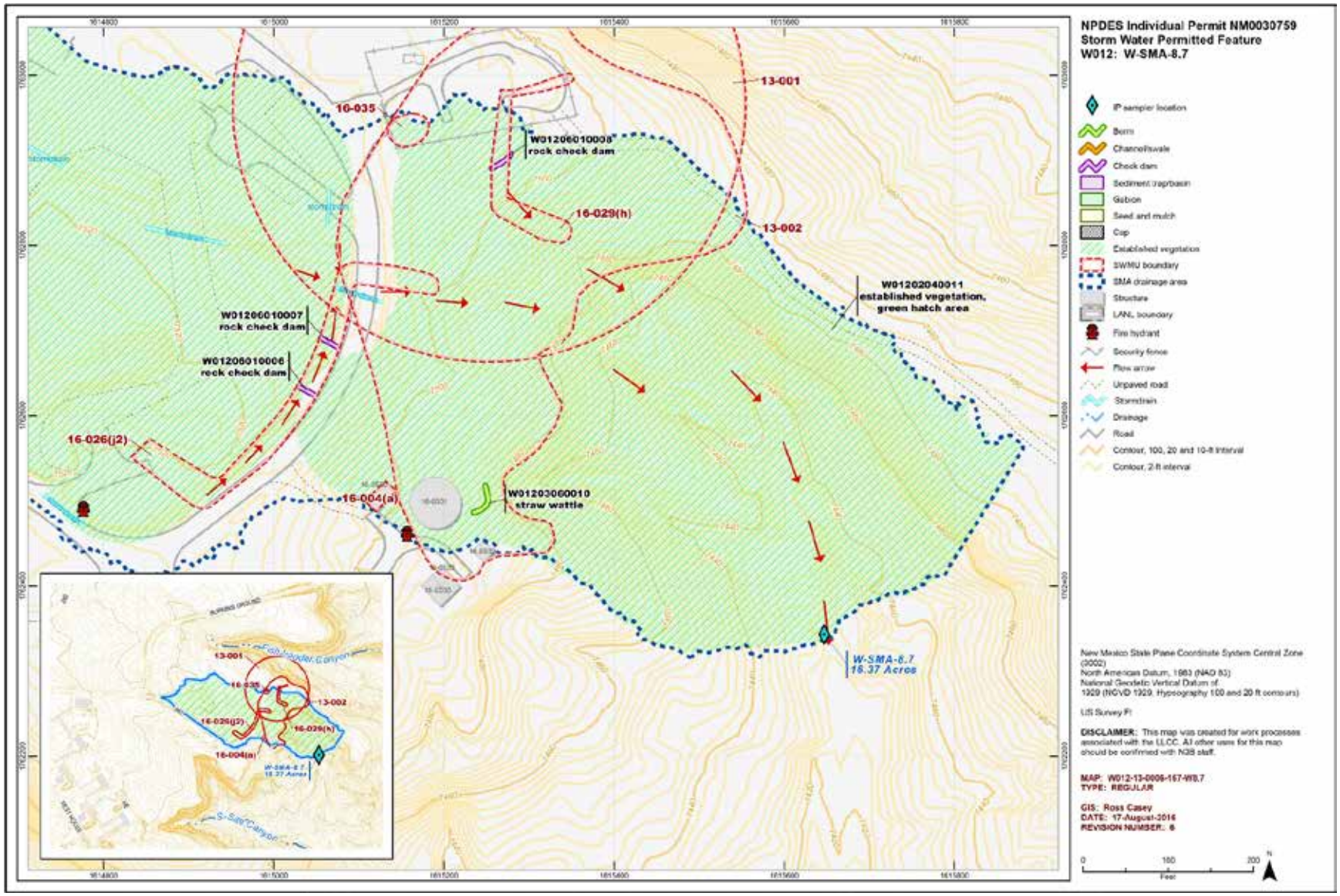


Figure 218-1 W-SMA-8.7 location map

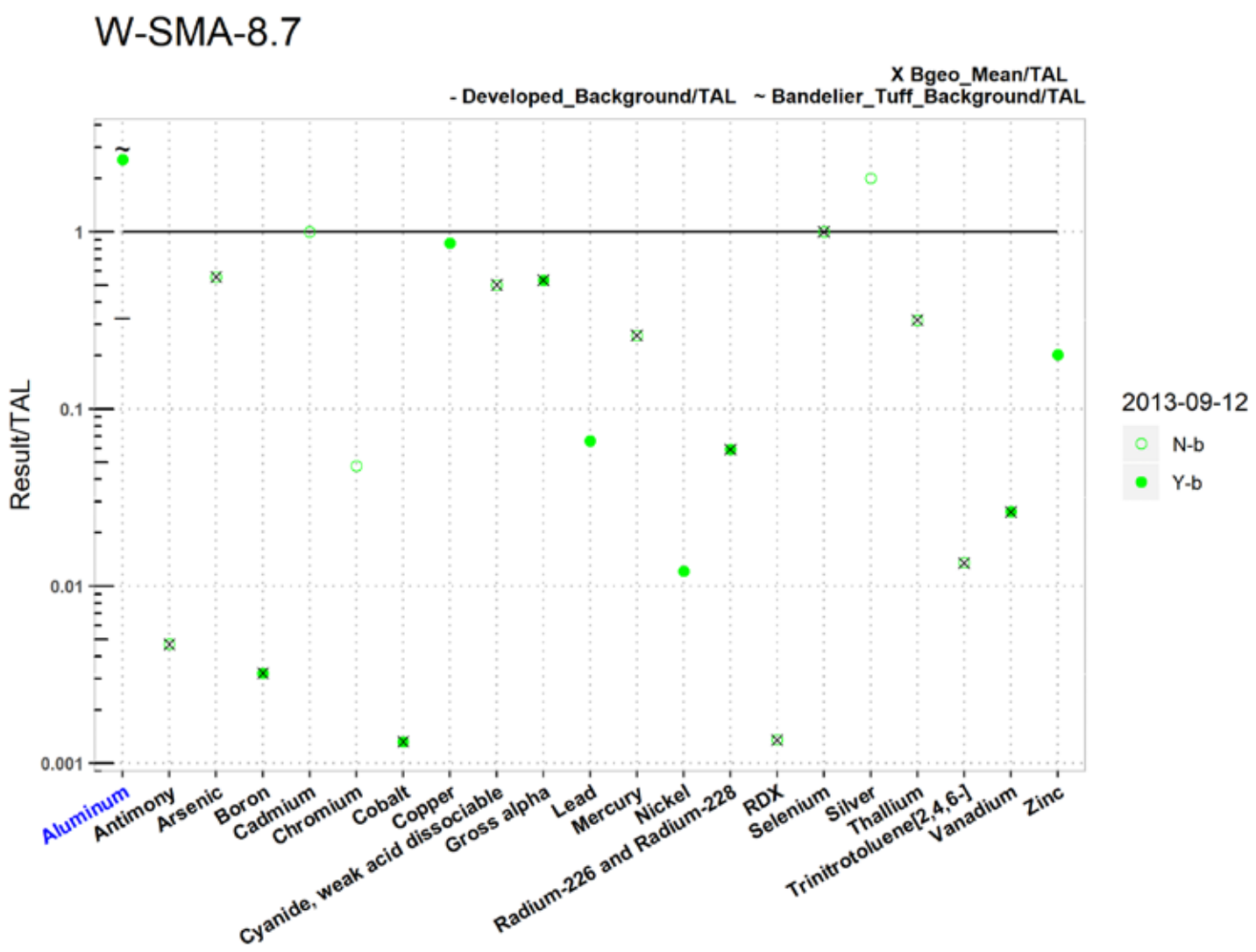


Figure 218-2 Analytical results summary for W-SMA-8.7

W-SMA-8.7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.0032	NA	NA	0.0013	NA	0.5	0.53	NA	0.26	NA	0.059	0.0014	1	NA	0.32	0.014	0.026	NA
2013-09-12 d	**2.6**	NA	NA	0.0032	NA	NA	0.0013	0.87	NA	0.53	0.066	NA	0.012	0.059	NA	NA	NA	NA	NA	0.026	0.2
2013-09-12 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	NA	0.26	NA	NA	0.0014	1	2	0.32	0.014	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 218-2 (continued) Analytical results summary for W-SMA-8.7

219.0 W-SMA-8.71: SWMU 16-004(c)

219.1 Site Descriptions

One historical industrial activity area is associated with W012A, W-SMA-8.71: Site 16-004(c).

SWMU 16-004(c) is the inactive clarifier or final tank (structure 16-532) used for sewage treatment at the former TA-16 sanitary WWTP. The structure is an approximately 20- × 20-ft concrete box located approximately 45 ft below and southeast of the trickling filter [SWMU 16-004(b)], with a total area of 400 ft^2. The clarifier received discharges from the trickling filter; water flowed through an outlet in the clarifier and discharged through an 8-in.-CMP to a metering concrete outfall box, and then to formerly NPDES-permitted outfall EPA-SSS03S, which discharged into a tributary of Water Canyon. At full capacity, structure 16-532 could manage 117,600 gal./d. The formerly NPDES-permitted outfall (EPA-SSS03S) for the WWTP was monitored for inorganic chemicals, organic chemicals, and pesticides. Effluent was monitored bimonthly for radionuclides and standard parameters for wastewater systems (e.g., biological oxygen demand, chemical oxygen demand, and total dissolved solids). The former TA-16 sanitary WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. The clarifier has been inactive since 1992.

Phase 1 Consent Order decision-level data for SWMU 16-004(a) consists of results from eight samples collected at four locations in 2010. The 2019 revision 1 of the 2015 supplemental investigation report for S-Site Aggregate Area concluded the nature and extent of contamination are not defined and further sampling for extent is warranted. Sampling to complete characterization of this site will be delayed until the future demolition of structure 16-532. The project map (Figure 219-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

219.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 219-1).

Enhanced controls were installed and certified on November 27, 2012, and September 4, 2015, and submitted to EPA on December 13, 2012, and September 10, 2015, respectively, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 219-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W012A02040006	Established Vegetation	-	X	X	-	B
W012A03010005	Earthen Berm	X	-	-	X	EC
W012A03010007	Earthen Berm	-	X	-	X	EC
W012A03060008	Straw Wattle	-	X	-	X	B
W012A03060009	Straw Wattle	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

219.3 Storm Water Monitoring

SWMU 16-004(c) is monitored within W-SMA-8.71. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 219-2). In Figure 219-2, selenium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (15.8 pCi/L) and are presented in Figure 219-2.

Following the installation of enhanced control measures at W-SMA-8.71, a corrective action storm water sample was collected on September 13, 2013 (Figure 219-2). Analytical results from this corrective action monitoring sample yielded TAL exceedances for copper (19.8 µg/L), mercury (1.51 µg/L), and zinc (55.4 µg/L) and are presented in Figure 219-2.

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 16-004(c):

- Copper is not known to be associated with industrial materials historically managed at this Site. No shallow Consent Order samples were collected from this Site; potential contamination is expected in the subsurface (i.e., greater than 20 ft bgs). However, copper was not detected above BVs in any of the subsurface Consent Order samples collected at SWMU 16-004(c).
- Mercury is not known to be associated with industrial materials historically managed at this Site. No shallow Consent Order samples were collected from this Site; potential contamination is expected in the subsurface (i.e., greater than 20 ft bgs). However, mercury was not detected above BVs in any of the subsurface Consent Order samples collected at SWMU 16-004(c).
- Zinc is not known to be associated with industrial materials historically managed at this Site. No shallow Consent Order samples were collected from this Site; potential contamination is expected in the subsurface (i.e., greater than 20 ft bgs). However, zinc was not detected above BVs in any of the subsurface Consent Order samples collected at SWMU 16-004(c).

W-SMA-8.71, Earthen Berm, W012A03010005 (photo ID 46536-2)

Based on the Site history (no surface contamination) and Consent Order sampling data (no detects of TAL exceedance constituents), the Site is an unlikely source of the TAL exceedances.

The TAL exceedance was 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 219-2. 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 219-2.

Monitoring location W-SMA-8.71 receives storm water run-on from locations with sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is greater than this value.
- Mercury—The mercury UTL from undisturbed Bandelier Tuff was not calculated because the number of detected values was not sufficient to calculate the UTL values in the baseline metals background study. Therefore, no comparison to the mercury background value in storm water could be made.
- Zinc—The zinc UTL from background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. The zinc result from 2013 is less than this value.

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

219.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-8.71 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 219-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72941	3-19-2019
Storm Rain Event	BMP-74648	7-18-2019
Storm Rain Event	BMP-75446	8-5-2019
Storm Rain Event	BMP-76692	9-11-2019
Storm Rain Event	BMP-77276	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-8.71 in 2019.

219.5 Compliance Status

The Site associated with W-SMA-8.71 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 2019. Table 219-3 presents the 2019 compliance status.

Table 219-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 16-004(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 10, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

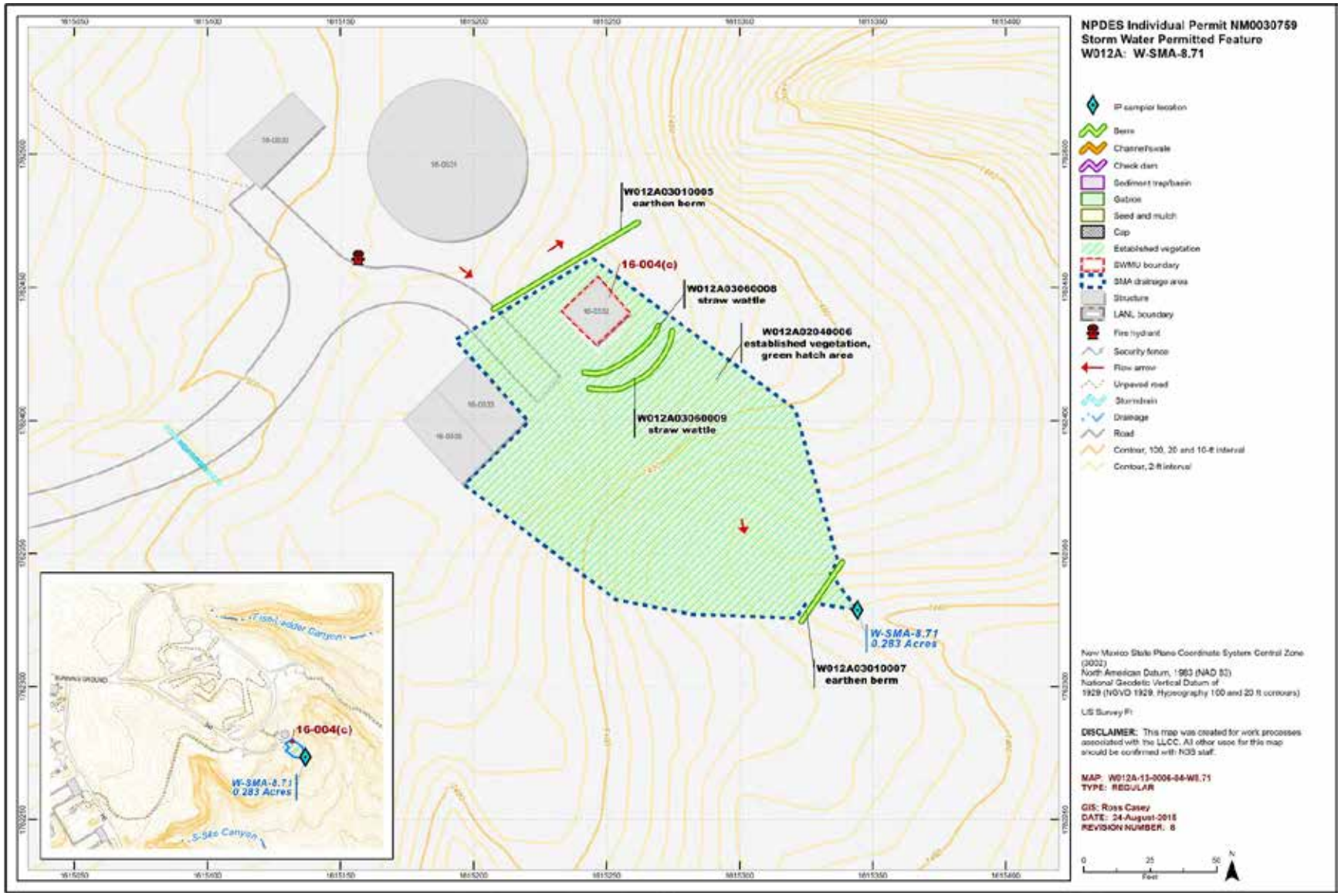


Figure 219-1 W-SMA-8.71 location map

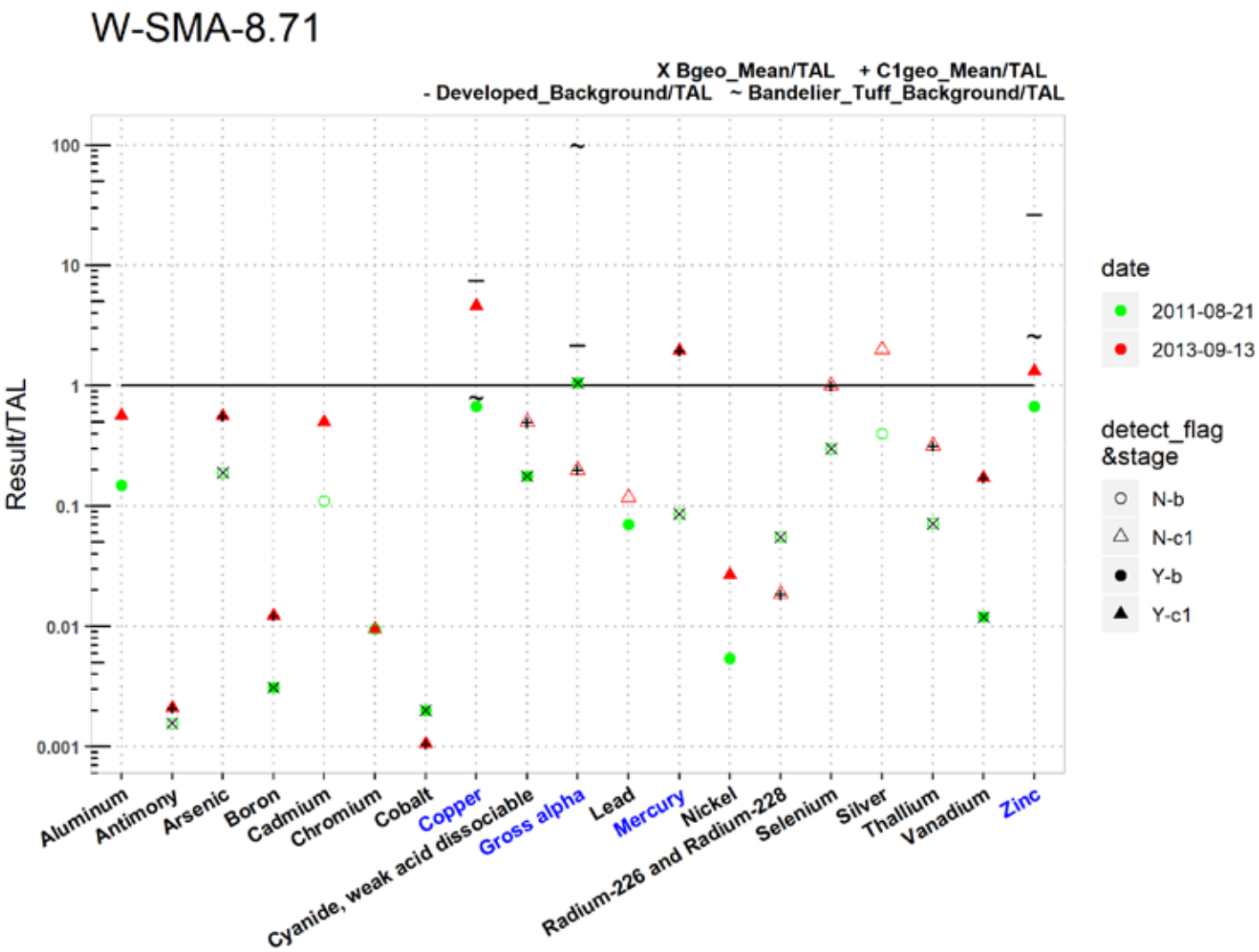


Figure 219-2 Analytical results summary for W-SMA-8.71

W-SMA-8.71

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.0031	NA	NA	0.002	NA	0.18	**1.1**	NA	0.086	NA	0.055	0.3	NA	0.071	0.012	NA
C1geo_mean/ATAL	NA	0.0021	0.56	0.012	NA	NA	0.0011	NA	0.5	0.2	NA	**2**	NA	0.019	1	NA	0.32	0.17	NA
2011-08-21 d	0.15	NA	NA	0.0031	NA	NA	0.002	0.67	0.18	**1.1**	0.071	NA	0.0054	NA	NA	NA	NA	0.012	0.67
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	NA	NA	NA	0.086	NA	0.055	0.3	0.4	0.071	NA	NA
2013-09-13 d	0.57	0.0021	0.56	0.012	0.5	0.0095	0.0011	**4.6**	NA	NA	NA	**2**	0.027	NA	NA	NA	NA	0.17	**1.3**
2013-09-13 nd	NA	NA	NA	NA	NA	NA	NA	NA	0.5	0.2	0.12	NA	NA	0.019	1	2	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 219-2 (continued) Analytical results summary for W-SMA-8.71

220.0 W-SMA-9.05: AOC 16-030(g)

220.1 Site Descriptions

One historical industrial activity area is associated with W013, W-SMA-9.05: Site 16-030(g).

AOC 16-030(g) is a former NPDES-permitted outfall (05A052) and associated drainlines located adjacent to the southeast corner of building 16-380 in the eastern portion of TA-16. The outfall received effluent from an HE sump [SWMU 16-003(m)], two roof drains, a steam-heating system, and a drop inlet from a parking lot and discharged to Water Canyon. Building 16-380 was originally used to inspect raw HE powder brought into TA-16 and was later used to store ammunition for LANL security forces. From 1952 to the early 1990s, the sump received washdown water from building cleaning activities containing HE. Discharges from the sump ceased in 1993 when the outlet from the sump was plugged; the outfall was subsequently removed from the NPDES permit effective June 24, 1994. The sump and the steam-heating system discharge lines have been plugged, and the outfall currently receives only roof drain and parking lot runoff. In 2010, building 16-380 was being used to store ammunition for LANL security forces.

Consent Order investigations have not yet begun at AOC 16-030(g). The Site will be sampled during the future Upper Water Canyon Aggregate Area investigation.

The project map (Figure 220-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

220.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 220-1).

Table 220-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01302040013	Established Vegetation	-	X	X	-	B
W01303010010	Earthen Berm	-	X	-	X	B
W01303010011	Earthen Berm	-	X	-	X	B
W01304010004	Earthen Channel/Swale	X	-	X	-	CB
W01306010001	Rock Check Dam	-	X	-	X	CB
W01306010012	Rock Check Dam	-	X	-	X	B

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

220.3 Storm Water Monitoring

AOC 16-030(g) is monitored within W-SMA-9.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 220-2). In Figure 220-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for W-SMA-9.05 and the associated AOC 16-030(g)

because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for W-SMA-9.05 for the remaining period of the IP.

220.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-9.05 during the 2019 season. These rain events triggered six post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 220-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72925	3-26-2019
Storm Rain Event	BMP-74636	7-12-2019
Storm Rain Event	BMP-74905	7-18-219
Storm Rain Event	BMP-75429	8-6-2019
Storm Rain Event	BMP-76680	9-9-2019
Storm Rain Event	BMP-77264	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-9.05 in 2019.

220.5 Compliance Status

The Site associated with W-SMA-9.05 is a Moderate Priority Site. The IP was under administrative continuance at the end of 2019. Table 220-3 presents the 2019 compliance status.

Table 220-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 16-030(g)	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 10-21-2013. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site.

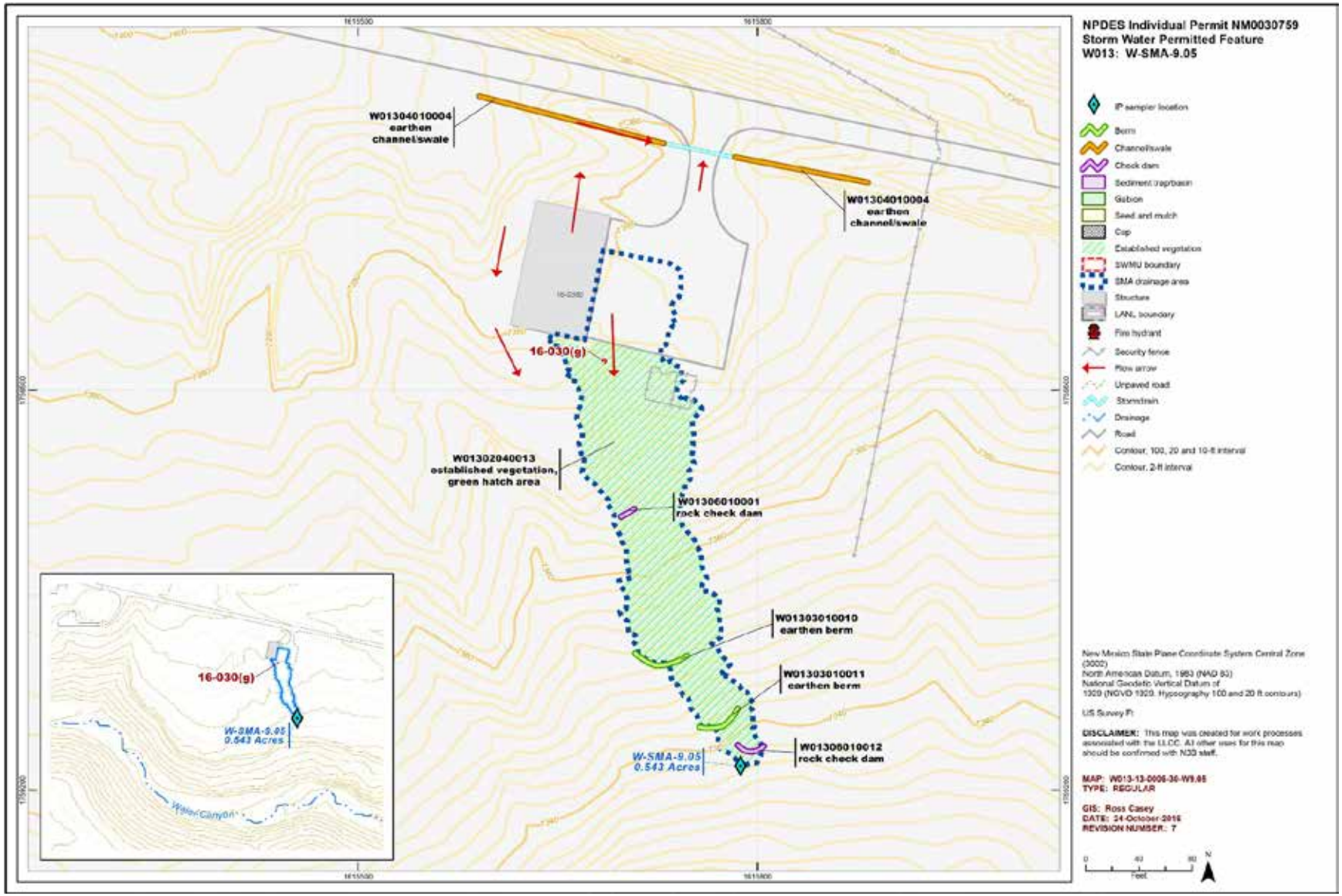


Figure 220-1 W-SMA-9.05 location map

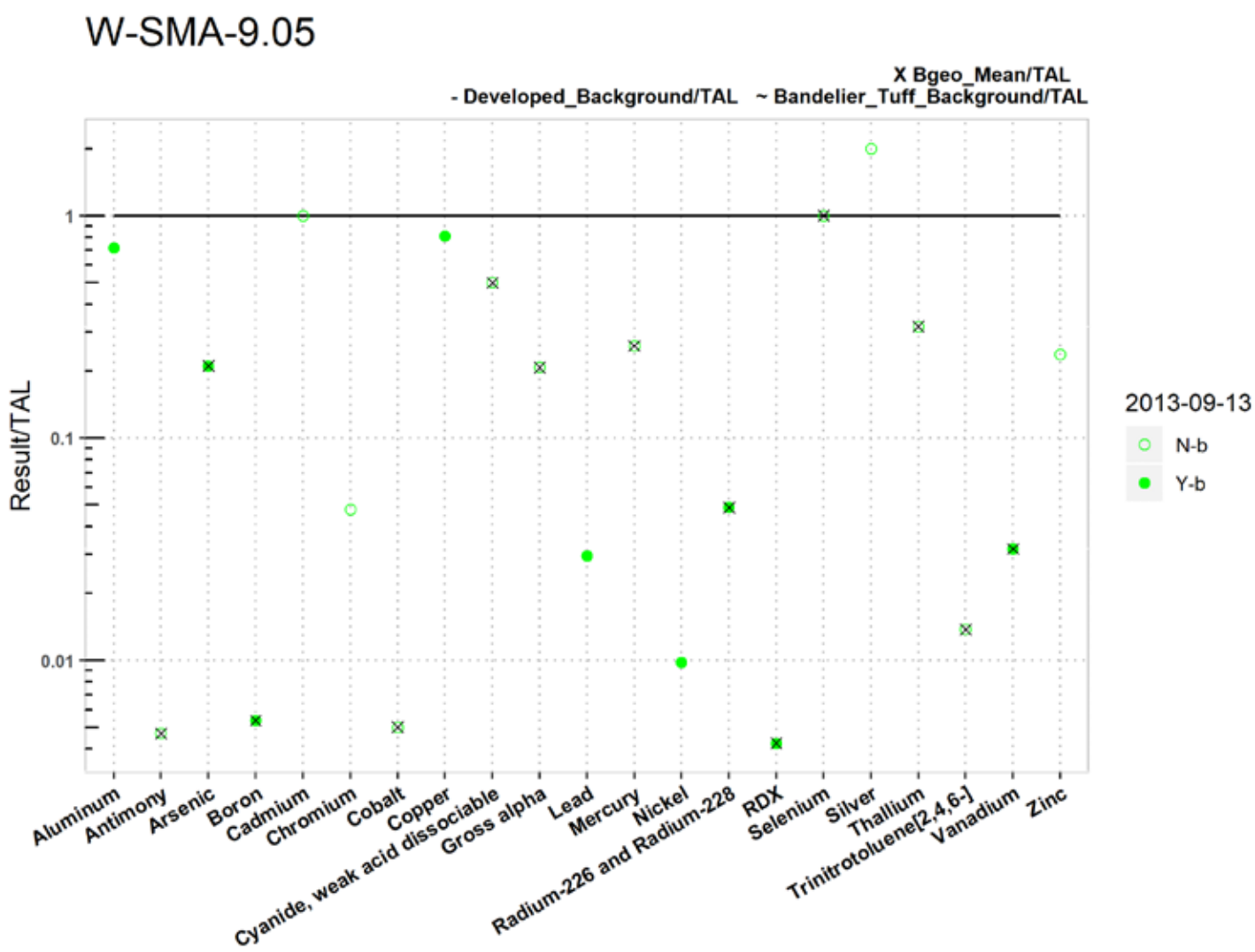


Figure 220-2 Analytical results summary for W-SMA-9.05

W-SMA-9.05

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.21	0.0054	NA	NA	0.005	NA	0.5	0.21	NA	0.26	NA	0.049	0.0042	1	NA	0.32	0.014	0.032	NA
2013-09-13 d	0.72	NA	0.21	0.0054	NA	NA	NA	0.81	NA	NA	0.029	NA	0.0098	0.049	0.0042	NA	NA	NA	NA	0.032	NA
2013-09-13 nd	NA	0.0047	NA	NA	1	0.048	0.005	NA	0.5	0.21	NA	0.26	NA	NA	NA	1	2	0.32	0.014	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 220-2 (continued) Analytical results summary for W-SMA-9.05

221.0 W-SMA-9.5: AOC 11-012(c)

221.1 Site Descriptions

One historical industrial activity area is associated with W014, W-SMA-9.5: Site 11-012(c).

AOC 11-012(c) is an area of potential surface-soil contamination associated with the footprint of former storage magazine 11-9 and is located approximately 500 ft west of building 11-4 at TA-11. Constructed of wood, the 16-ft-square × 9-ft-high magazine 11-9 was built in 1945 and was destroyed by intentional burning in 1960.

Investigation of AOC 11-012(c) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order sampling has not been conducted at the Site. No investigations were conducted before the Consent Order went into effect in March 2005.

The project map (Figure 221-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

221.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 221-1).

Table 221-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01402040008	Established Vegetation	-	X	X	-	B
W01403010006	Earthen Berm	X	-	-	X	B
W01403010007	Earthen Berm	X	-	-	X	B
W01403060002	Straw Wattle	-	X	-	X	CB
W01403060009	Straw Wattle	-	X	-	X	B

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

221.3 Storm Water Monitoring

AOC 11-012(c) is monitored within W-SMA-9.5. Following the installation of baseline control measures and a sampler move to a more representative location, a baseline storm water sample was collected on June 25, 2017 (Figure 221-2). Analytical results from the sample yielded TAL exceedances for gross-alpha activity (81 pCi/L), and mercury (1.1 µg/L) and are presented in Figure 221-2.

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. There are no soil data available for this Site.

AOC 11-012(c):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.
- Mercury is not known to be associated with industrial materials historically managed at the Site.

Based on the Site history and Consent Order sampling data, the Site is an unlikely source of the TAL exceedances.

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 221-2. 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 221-2.

The SMA receives runoff from undeveloped areas.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2017 gross-alpha result is less than this value.
- Mercury—There are no UTLs for mercury.

All the analytical results for this sample are reported in the 2017 Annual Report.

221.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-9.5 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 221-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72930	3-19-2019
Storm Rain Event	BMP-74640	7-18-2019
Storm Rain Event	BMP-75435	8-1-2019
Storm Rain Event	BMP-76684	9-9-2019
Storm Rain Event	BMP-77268	10-17-219

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-9.5 in 2019.

221.5 Compliance Status

The Site associated with W-SMA-9.5 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 2019. Table 221-3 presents the 2019 compliance status.

Table 221-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 11-012(c)	The SMA is being evaluated for Enhanced Control Measures.	Build Enhanced Controls	Initiated 1-16-2018.

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

W-SMA-9.5, Straw Wattles, W01403060002 (photo ID 10874-4r)

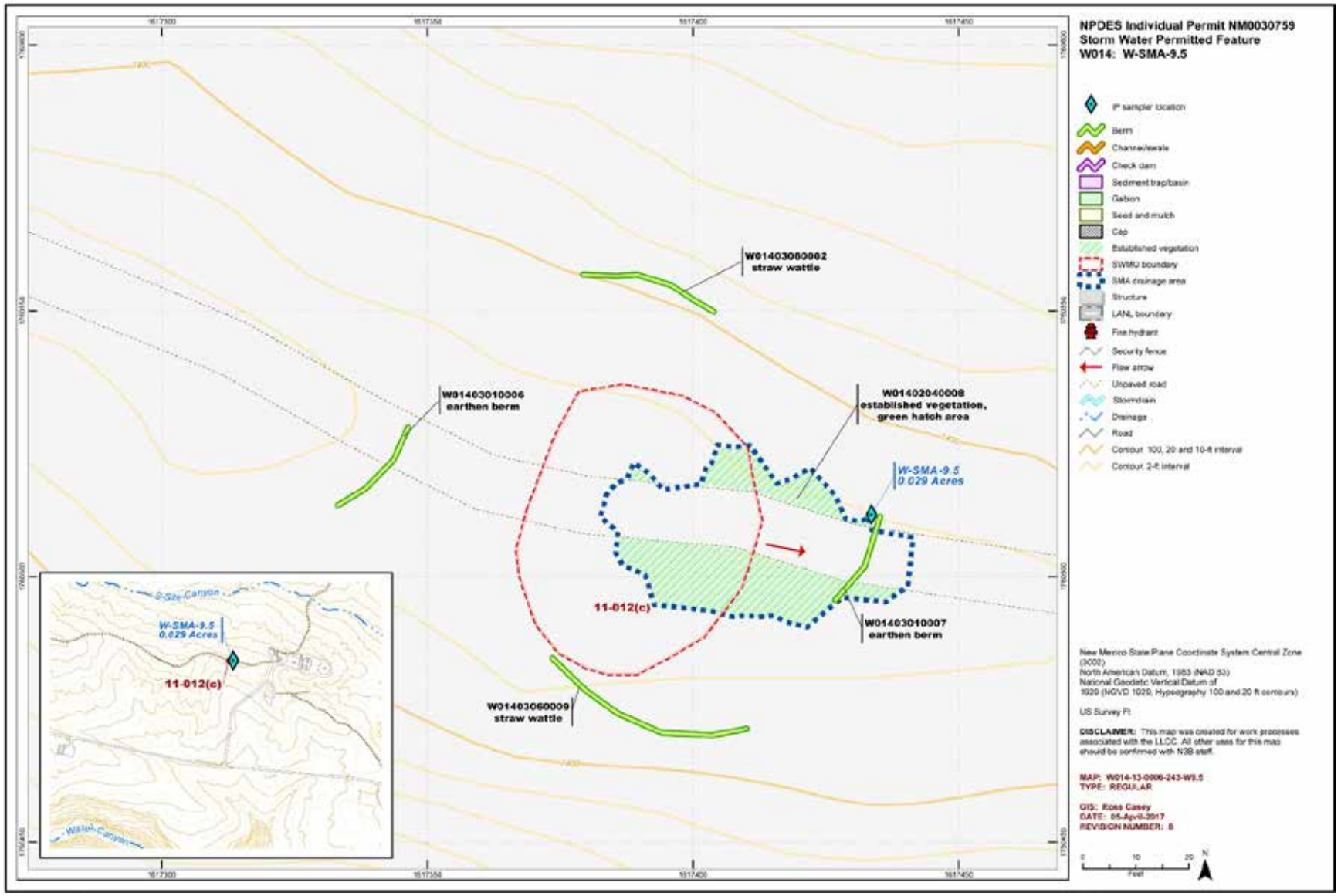


Figure 221-1 W-SMA-9.5 location map

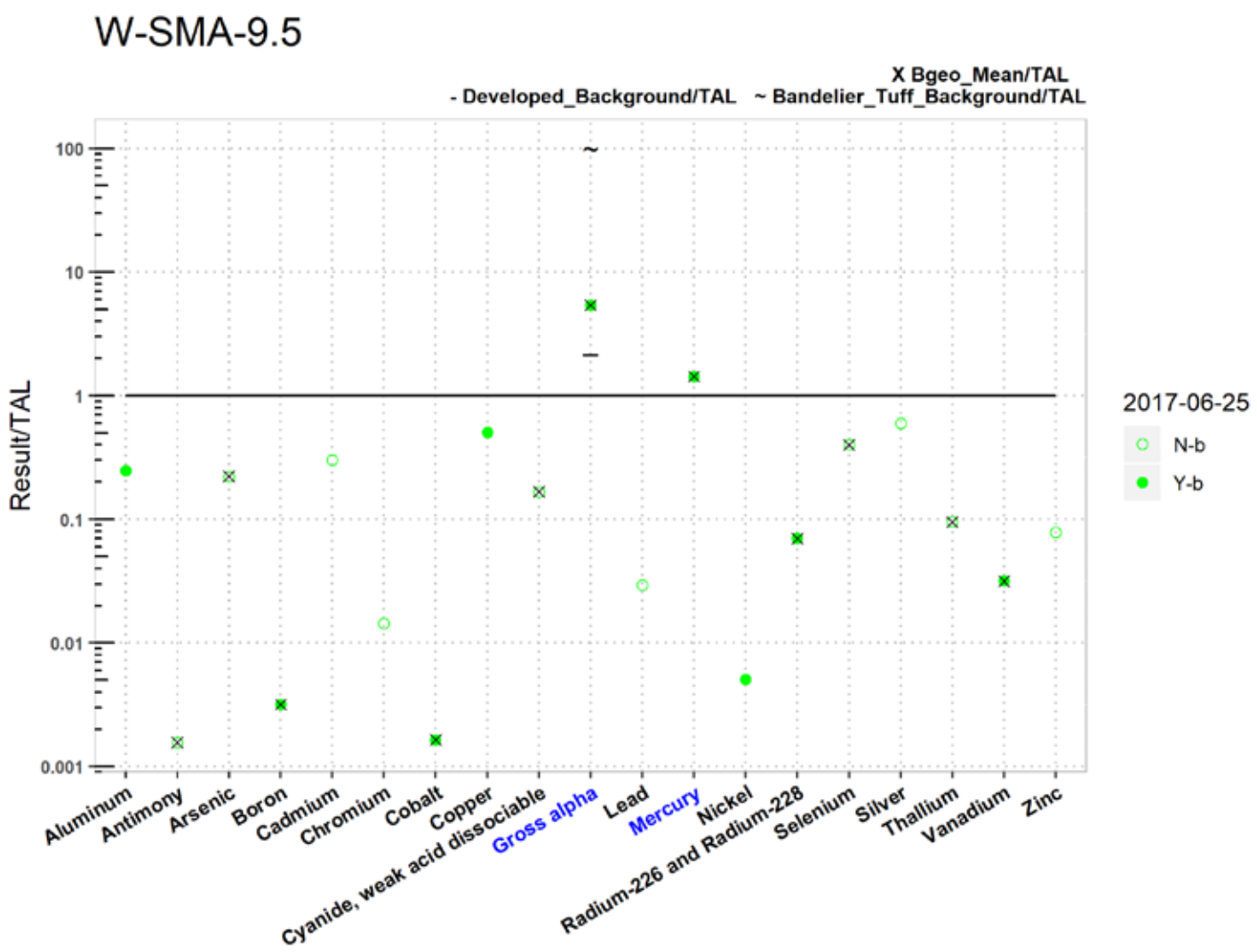


Figure 221-2 Analytical results summary for W-SMA-9.5

W-SMA-9.5

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.22	0.0032	NA	NA	0.0016	NA	0.17	**5.4**	NA	**1.4**	NA	0.07	0.4	NA	0.095	0.032	NA
2017-06-25 d	0.25	NA	NA	0.0032	NA	NA	0.0016	0.5	NA	**5.4**	NA	**1.4**	0.0051	0.07	NA	NA	NA	0.032	NA
2017-06-25 nd	NA	0.0016	0.22	NA	0.3	0.014	NA	NA	0.17	NA	0.029	NA	NA	NA	0.4	0.6	0.095	NA	0.079

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 221-2 (continued) Analytical results summary for W-SMA-9.5

222.0 W-SMA-9.7: SWMUs 11-011(a) and 11-011(b)

222.1 Site Descriptions

Two historical industrial activity areas are associated with W015, W-SMA-9.7: Sites 11-011(a) and 11-011(b).

SWMU 11-011(a) is an inactive drainline and former NPDES-permitted outfall (EPA-03A130) located at TA-11 north of the K-Site complex and approximately 6 ft northeast of the Electrodynamics Vibration Test Facility (building 11-30).An insulated 2-in. pipe received cooling water blowdown from a cooling tower and deionized water from floor drains in building 11-30A (an adjunct of building 11-30). The drainline discharged northward to an outfall in a drainage channel that flowed to a tributary of Water Canyon. The outfall became inactive following removal of the water-cooled equipment in building 11-30, and was removed from the NPDES permit during the 2013 permit renewal.

Consent Order Phase I investigation sampling is complete at this Site. Additional characterization sampling at SWMU 11-011(a) was recommended for additional field activities in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 11-011(b) is an inactive 3-in.-diameter outlet drainline and outfall located at TA-11 north of the Electrodynamics Vibration Test Facility (building 11-30). The 3-in.-diameter pipe extends about 10 ft beyond the side of a hill to the outfall. The outfall received discharges from floor drains in building 11-30 from the early 1960s until the early 1990s. A sink drain that formerly discharged to the outfall was removed before 1990.

A 1992 wastewater characterization report prepared by Santa Fe Engineering stated discharges from two floor drains in building 11-30 consisted of deionized water and residual HE potentially released from containers processed on shakers in the building. The report recommended the outlet drainline be plugged; the drainline was subsequently plugged.

Consent Order Phase I investigation sampling is complete at this Site. SWMU 11-011(b) meets residential risk and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

The project map (Figure 222-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

222.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 222-1).

Table 222-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01502040008	Established Vegetation	-	X	X	-	B
W01503060018	Straw Wattle	-	X	-	X	B
W01503060019	Straw Wattle	X	-	-	X	B
W01503100017	Gravel Bags	X	-	-	X	B
W01503140020	Coir Log	X	-	-	X	B
W01506030004	Juniper Bales	X	-	-	X	CB
W01506030005	Juniper Bales	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

222.3 Storm Water Monitoring

SWMUs 11-011(a) and 11-011(b) are monitored within W-SMA-9.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 222-2). In Figure 222-2, cadmium, selenium, and silver are reported as nondetected results equal to or greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for copper (9.74 µg/L) and are presented in Figure 222-2.

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 11-011(a):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BV in 4 of 10 shallow (i.e., less than 3 ft bgs) 2010 Consent Order soil samples at a maximum concentration 6.6 times the soil BV.

SWMU 11-011(b):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BVs in 2 of 11 shallow 2010 Consent Order soil samples at a maximum concentration 5.1 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 Figure 222-2. 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 222-2.

Monitoring location W-SMA-9.7 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- 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.

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

222.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-9.7 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 222-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72943	3-19-2019
Storm Rain Event	BMP-74649	7-18-2019
Storm Rain Event	BMP-75448	8-1-2019
Storm Rain Event	BMP-76693	9-9-2019
Storm Rain Event	BMP-77277	10-10-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-9.7 in 2019.

222.5 Compliance Status

The Sites associated with W-SMA-9.7 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 2019. Table 222-3 presents the 2019 compliance status.

Table 222-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 11-011(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 11-011(b)	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."

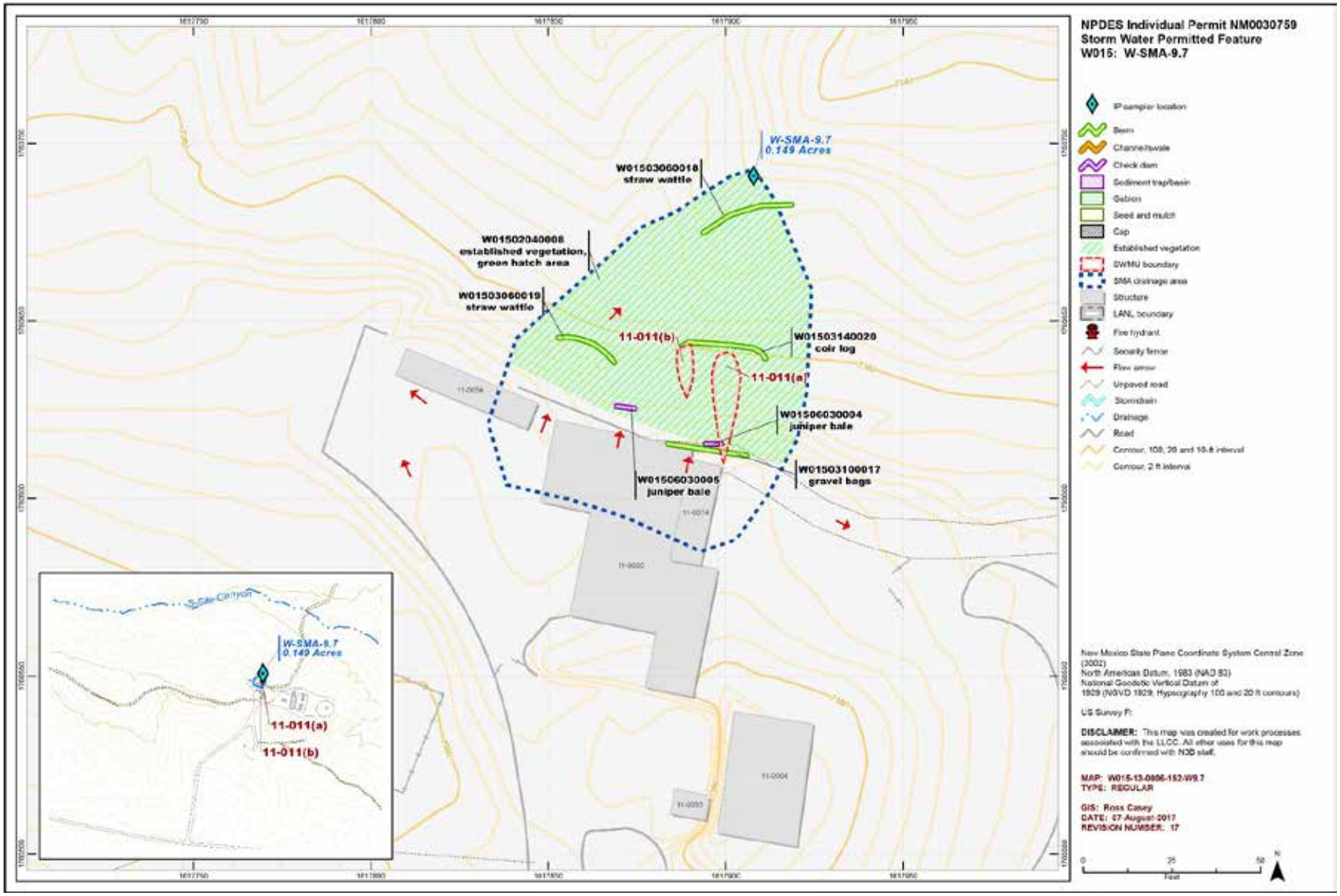


Figure 222-1 W-SMA-9.7 location map

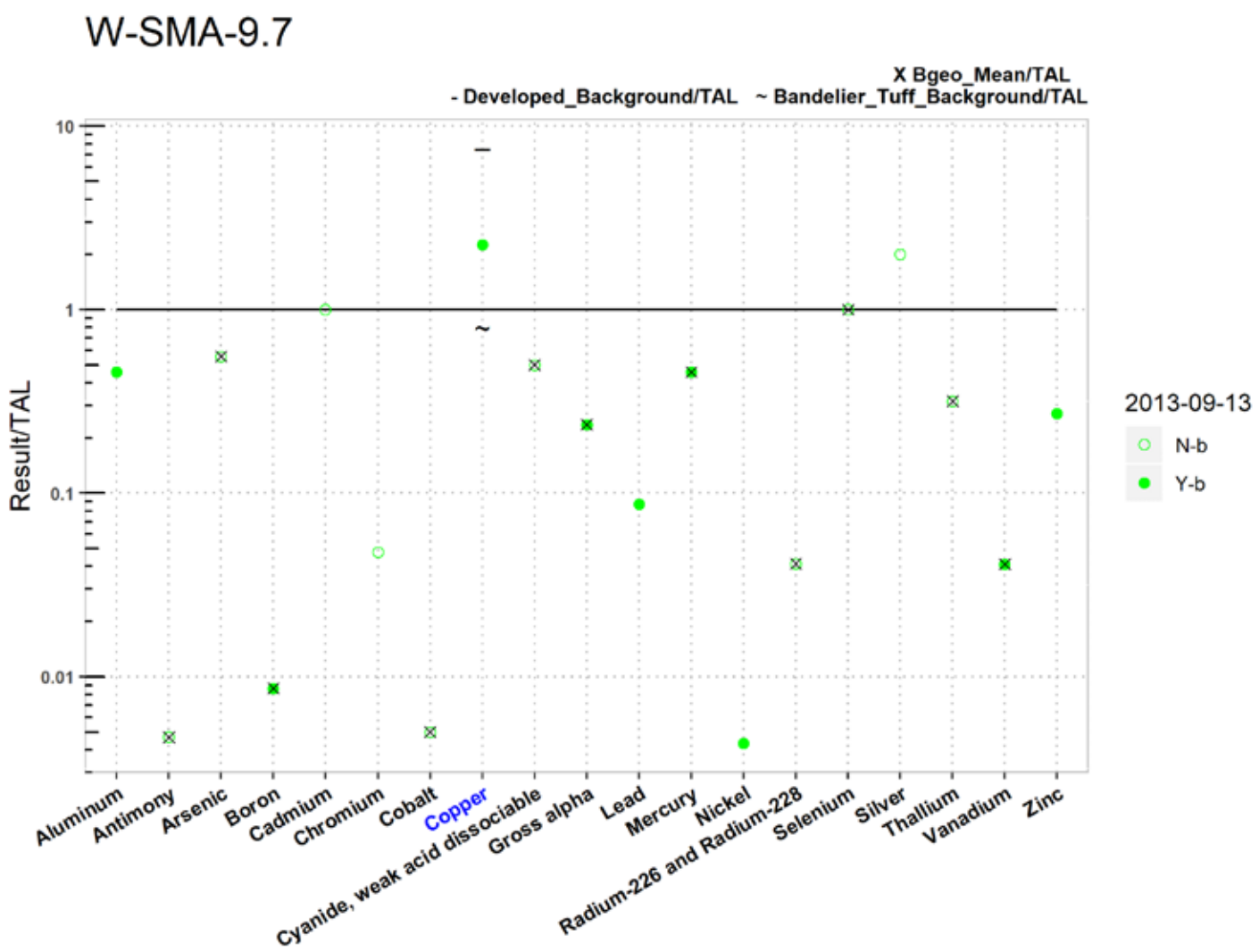


Figure 222-2 Analytical results summary for W-SMA-9.7

W-SMA-9.7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.0086	NA	NA	0.005	NA	0.5	0.24	NA	0.46	NA	0.041	1	NA	0.32	0.041	NA
2013-09-13 d	0.46	NA	NA	0.0086	NA	NA	NA	**2.3**	NA	0.24	0.087	0.46	0.0043	NA	NA	NA	NA	0.041	0.27
2013-09-13 nd	NA	0.0047	0.56	NA	1	0.048	0.005	NA	0.5	NA	NA	NA	NA	0.041	1	2	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 222-2 (continued) Analytical results summary for W-SMA-9.7

223.0 W-SMA-9.8: SWMU 11-005(c)

223.1 Site Descriptions

One historical industrial activity area is associated with W016, W-SMA-9.8: Site 11-005(c).

SWMU 11-005(c) is an inactive outlet drainline and outfall located approximately 50 ft north of building 11-2 at TA-11. The drainline was installed in 1944 and received discharges from a sink, a hot water heater, and a floor drain in building 11-2. The outfall discharged to a slightly sloped area consisting of fill from an adjacent roadbed. The outlet drainline from building 11-2 was capped before the drop tower complex was constructed in 1956. Building 11-2 was used as a control room for the drop tower and is currently vacant.

Phase I Consent Order sampling is complete for SWMU 11-005(c). SWMU 11-005(c) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

The project map (Figure 223-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

223.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 223-1).

Table 223-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01602040012	Established Vegetation	-	X	X	-	B
W01603020007	Base Course Berm	X	-	-	X	CB
W01603060010	Straw Wattle	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

223.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at W-SMA-9.8. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

223.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-9.8 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 223-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72944	3-19-2019
Storm Rain Event	BMP-74650	7-18-2019
Storm Rain Event	BMP-75449	8-1-2019
Storm Rain Event	BMP-76694	9-9-2019
Storm Rain Event	BMP-77278	10-10-2019

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

Table 223-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-73161	Built up east end of Base Course Berm W01603020007 that was damaged by snow removal activities.	8-28-2019	162 day(s)	Maintenance was delayed because of reprioritization for sample and BMP inspection for multiple rain events occurring during the 2019 season

223.5 Compliance Status

The Site associated with W-SMA-9.8 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 2019. Table 223-4 presents the 2019 compliance status.

Table 223-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 11-005(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. All baseline confirmation monitoring results are less than TALS. No further confirmation monitoring is required for this Site.

W-SMA-9.8, Base Course Berm, W01603020007 (photo ID 10876-2r)

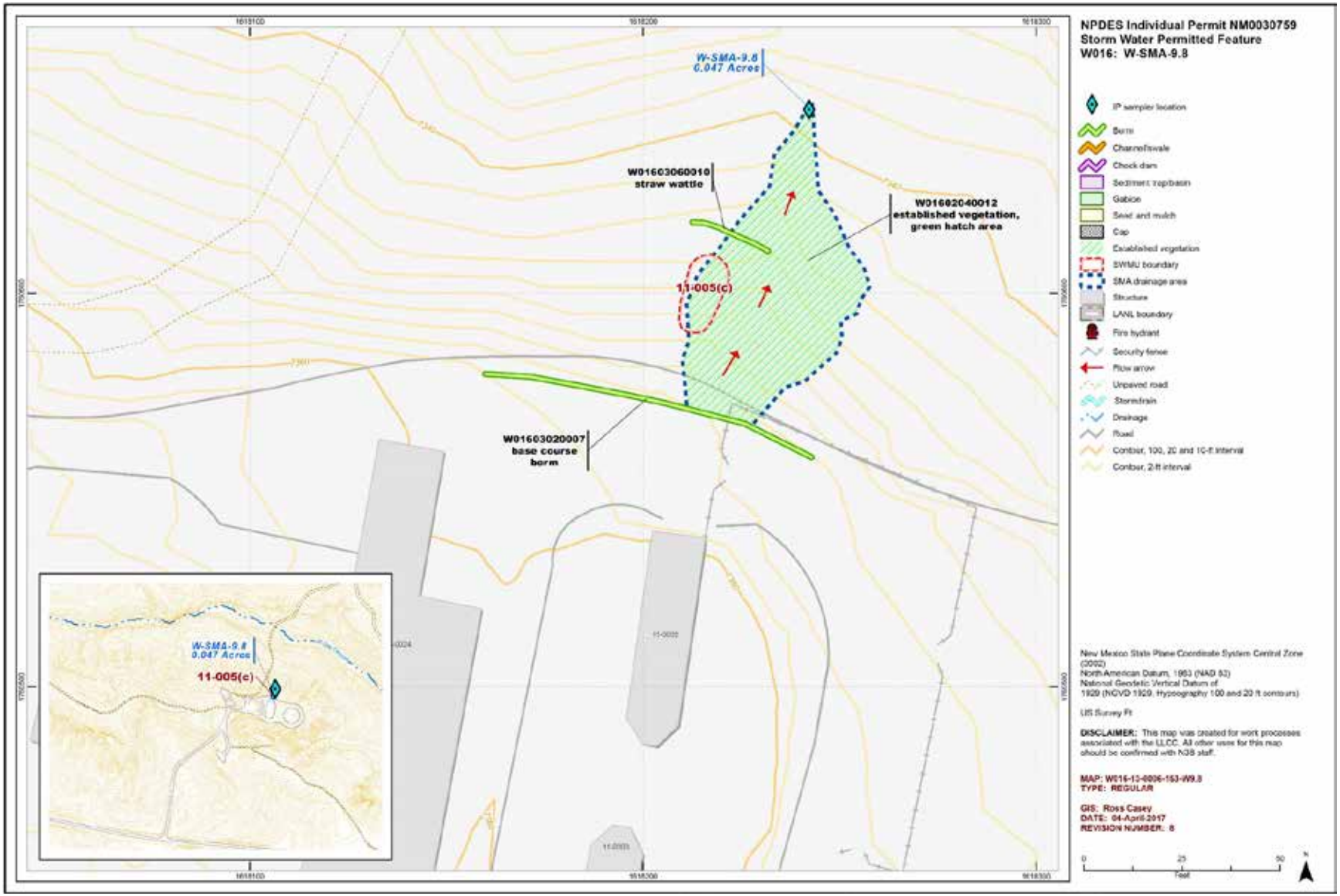


Figure 223-1 W-SMA-9.8 location map

224.0 W-SMA-9.9: SWMU 11-006(b)

224.1 Site Descriptions

One historical industrial activity area is associated with W017, W-SMA-9.9: Site 11-006(b).

SWMU 11-006(b) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A069) located on the north side of the former drop-tower complex [SWMUS 11-004(a-f)] at TA-11. The SWMU 11-006(b) catch basin consists of a concrete basin (structure 11-50) measuring 6 × 4 × 2 ft deep, equipped with an overflow drain, and former NPDES-permitted outfall EPA 05A069. Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(b) received washdown water via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining wash water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 Burning Ground. The outfall was removed from the NPDES permit in May 1998 after activities at the drop tower ceased. The drop tower underwent D&D in 2004. Currently, the catch basin is capped and sealed; however, the outfall still receives storm water runoff. Any runoff collected in the concrete pad and asphalt apron is now diverted to the other two catch basins associated with the former drop tower complex [SWMUS 11-006(c) and 11-006(d)].

Phase I Consent Order sampling is complete for SWMU 11-006(b). SWMU 11-006(b) meets residential risk levels and was recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in 2April 2019.

The project map (Figure 224-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

224.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 224-1).

Enhanced controls were installed and certified on June 27, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 224-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01702040022	Established Vegetation	-	X	X	-	B
W01703010017	Earthen Berm	X	-	-	X	EC
W01703010018	Earthen Berm	-	X	-	X	EC
W01703010019	Earthen Berm	-	X	-	X	EC
W01703010020	Earthen Berm	-	X	-	X	EC
W01703090001	Curbing	X	-	-	X	CB
W01703110023	Eco-Block	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

224.3 Storm Water Monitoring

SWMU 11-006(b) is monitored within W-SMA-9.9. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 224-2). Analytical results from this sample yielded TAL exceedances for aluminum (962 µg/L) and gross-alpha activity (95.9 pCi/L) and are presented in Figure 224-2.

Following the installation of enhanced control measures at W-SMA-9.9, a corrective action storm water sample was collected on September 13, 2013 (Figure 224-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (74.4 pCi/L) and are presented in Figure 224-2.

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 11-006(b):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, the Site is an unlikely source of the TAL exceedance.

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 224-2. 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 224-2.

The SMA receives runoff from undeveloped areas.

- 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 2011 and 2013 Annual Reports.

224.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-9.9 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 224-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72945	3-19-2019
Storm Rain Event	BMP-74651	7-18-2019
Storm Rain Event	BMP-75450	8-1-2019
Storm Rain Event	BMP-76695	9-9-2019
Storm Rain Event	BMP-77279	10-10-2019

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

Table 224-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-72945	Placed gravel bag in area of crack in Curbing W01703090001 at inspection as a temporary control.	3-19-2019	0 day(s)	Maintenance conducted as soon as practicable.
BMP-73169	Installed Eco-Block W01703110023 as a replacement for damaged portion of Curbing W01703090001. Remaining sections of curbing are still functioning properly.	4-17-2019	29 day(s)	Maintenance conducted as soon as practicable.

224.5 Compliance Status

The Site associated with W-SMA-9.9 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 2019. Table 224-4 presents the 2019 compliance status.

Table 224-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 11-006(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Twelve Site Monitoring Areas."

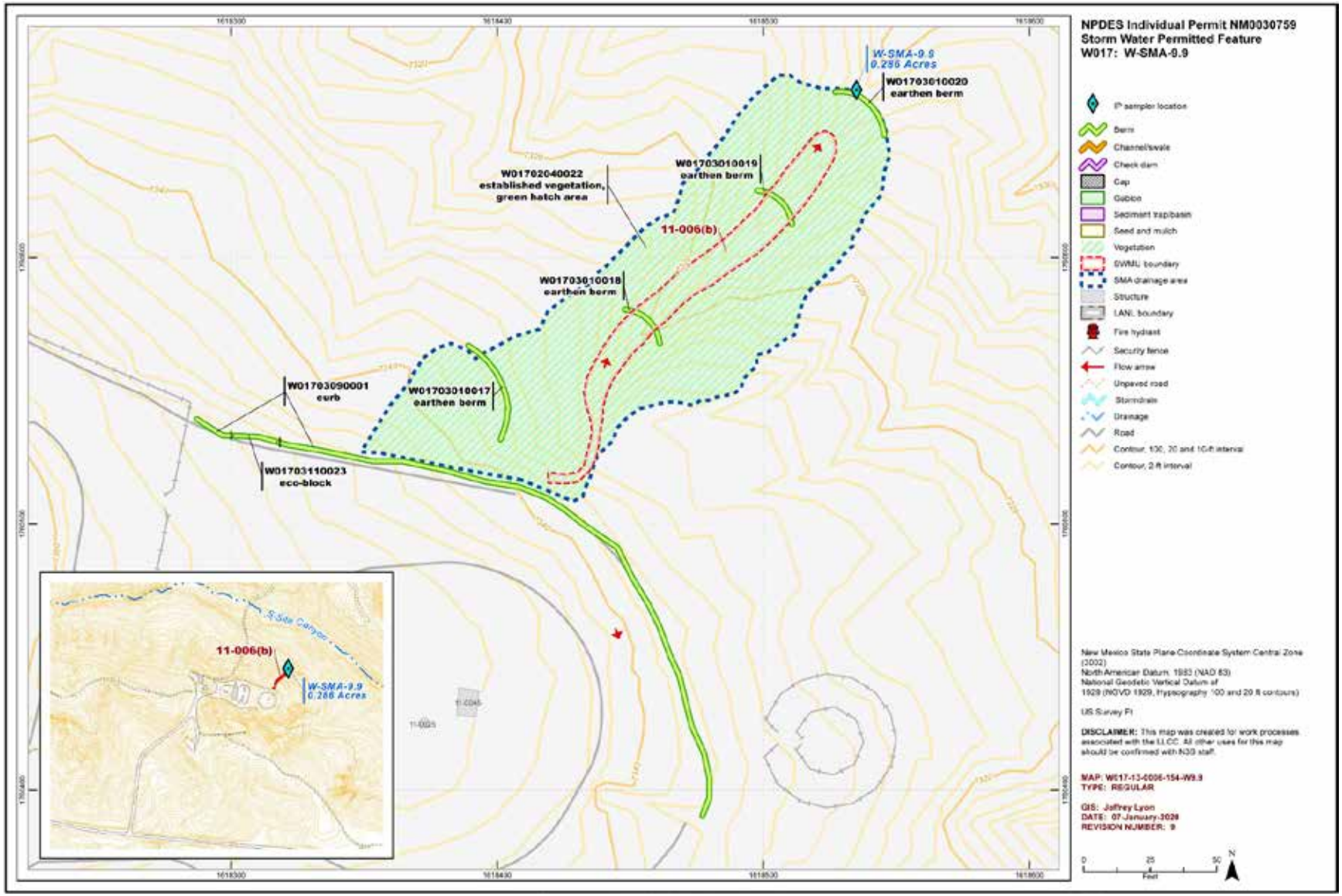


Figure 224-1 W-SMA-9.9 location map

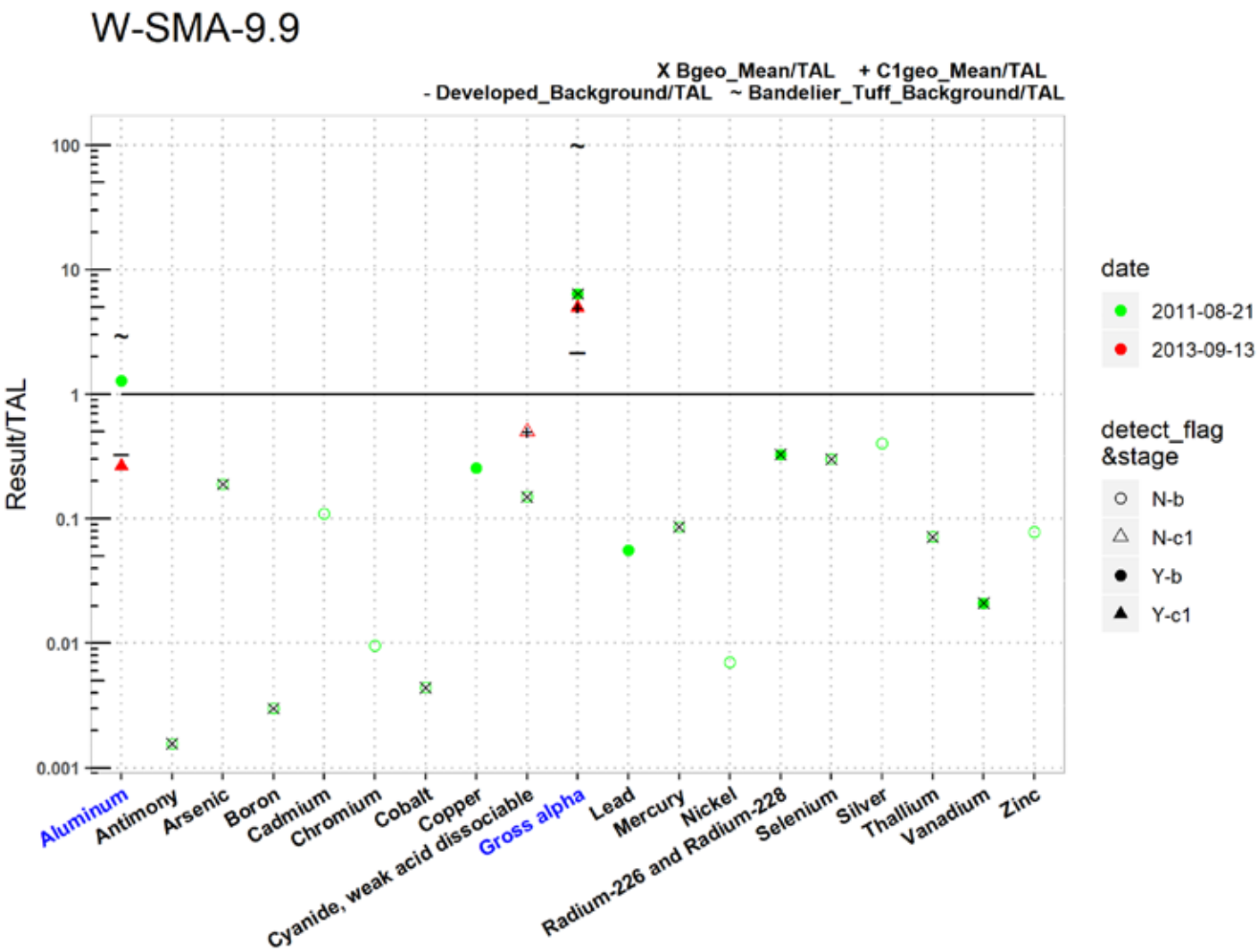


Figure 224-2 Analytical results summary for W-SMA-9.9

W-SMA-9.9

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.003	NA	NA	0.0044	NA	0.15	**6.4**	NA	0.086	NA	0.33	0.3	NA	0.071	0.021	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	0.5	**5**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-08-21 d	**1.3**	NA	NA	NA	NA	NA	NA	0.26	NA	**6.4**	0.056	NA	NA	0.33	NA	NA	NA	0.021	NA
2011-08-21 nd	NA	0.0016	0.19	0.003	0.11	0.0095	0.0044	NA	0.15	NA	NA	0.086	0.0071	NA	0.3	0.4	0.071	NA	0.079
2013-09-13 d	0.27	NA	NA	NA	NA	NA	NA	NA	NA	**5**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-09-13 nd	NA	NA	NA	NA	NA	NA	NA	NA	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 224-2 (continued) **Analytical results summary for W-SMA-9.9**

225.0 W-SMA-10: SWMUs 11-002, 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d) and AOC 11-003(b)

225.1 Site Descriptions

Seven historical industrial activity areas are associated with W018, W-SMA-10: Sites 11-002, 11-003(b), 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d).

SWMU 11-002 is a 30-ft-diameter burn area located east of the drop tower at the edge of its asphalt apron. Beginning in 1948, this area was used as an experimental burn area for components on or in assembled configurations with HE, propellants, and jet fuel. HE and propellants were burned directly on the sand pad, and jet fuel was burned within an open-top steel containment tank. Burning activities continued through 1992.

Investigation of SWMU 11-002 is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order sampling has not been conducted at the Site. No investigations were conducted before the Consent Order went into effect in 2005.

SWMU 11-005(a) is an active septic system located at TA-11 approximately 70 ft southwest of building 11-24. The septic system began operation in 1944 and consists of inlet drainlines from buildings 11-1 and 11-4, a 500-gal.-capacity concrete septic tank (structure 11-20) that discharged to an open-joint tile drainline in a rock-filled trench that extends to an outfall on a sloped area to the south of the septic tank. Currently, discharge to the septic system comes only from a restroom in building 11-4. Building 11-1 is currently a storage area for electrical equipment but was originally used as a control building for the Betatron Facility (building 11-2) and the Cloud Chamber (building 11-3). Building 11-4 is currently the control building for the Vibration-Test Facility (building 11-30), although it was historically used as a machine shop and photoprocessing facility. A memorandum from 1950 indicated a mercury spill occurred in building 11-4; however, the location, source, and extent of the spill are not known. The outlet drainline from SWMU 11-005(a) was plugged in 1992; since that time the septic tank has been pumped out on a regular basis.

Phase I Consent Order sampling is complete for SWMU 11-005(a). SWMU 11-005(a) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 11-005(b) is an active septic system located at TA-11, approximately 70 ft south of building 11-3. This septic system began operation in 1963 and consists of inlet drainlines from a restroom on the exterior of buildings 11-3 and 11-24, a concrete septic tank (structure 11-43), an outlet drainline to an outfall to the south of the septic tank, and a drain field west of the outlet drainline. The septic system serves the restroom added to the exterior of building 11-3. Engineering drawings confirm the drainline for floor drains in building 11-24 was tied into the septic tank in 1992. Discharges to the outfall ceased in 1992. Building 11-24, a former air-gun facility, now houses offices and a light machine shop and no longer discharges to the septic system.

Phase I Consent Order sampling is complete for SWMU 11-005(b). SWMU 11-005(b) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1 submitted to NMED in April 2019.

SWMU 11-006(c) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A096) located on the southeast side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(c) catch basin consists of a concrete basin (structure 11-51) measuring 6 × 4 × 2 ft, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA05A096). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(c) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. HE waste collected from the catch basin was disposed of at the TA-16 Burning Ground. The outfall was removed from the NPDES permit in May 1998 after drop tower operations ceased. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF. The drop tower underwent D&D activities and was removed in 2004. Since 1998, any storm water runoff collected in the SWMU 11-006(c) catch basin is routed to the SWMU 11-006(d) catch basin and the associated outfall.

Phase I Consent Order sampling is complete for SWMU 11-006(c). SWMU 11-006(c) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 11-006(d) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A097) located on the south side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(d) catch basin consists of a concrete basin (structure 11- 52) measuring 6 × 4 × 2 ft, equipped with an overflow drain and a former NPDES-permitted outfall (EPA05A097) Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(d) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. HE waste collected from the catch basin was disposed of at the burning grounds at TA-16. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF. The outfall was removed from the LANL NPDES permit in January 2006 after drop tower activities ceased. The drop tower underwent D&D activities and was removed in 2004. Since drop tower operations ceased in 1998, this catch basin has collected only storm water runoff, including runoff routed from the SWMU 11-006(c) catch basin, and discharges only storm water to the outfall.

Phase I Consent Order sampling is complete for SWMU 11-006(d). SWMU 11-006(d) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

SWMU 11-011(d) is an inactive drainline and outfall located at TA-11 south of building 11-24, the former air gun facility. The SWMU consists of a 4-in. steel drainline tied to floor drains and a sink in building 11-24. Originally, operations at building 11-24 consisted of acceleration and impact tests on full-scale warhead mockups. After World War II, building 11-24 was converted to an office and light machine shop. The drainline was tied into the SWMU 11-005(b) septic tank in 1992 and all discharges to the outfall ceased at that time.

Phase I Consent Order sampling is complete for SWMU 11-011(d). SWMU 11-011(d) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019.

AOC 11-003(b) is a former mortar impact area used as a target by the decommissioned air gun facility (building 11-24). This AOC is located immediately adjacent to the inactive drop tower complex at TA-11 (K-Site). The air gun facility was completed in 1956. The gun was used to launch experimental packages into targets located south of building 11-24. The targets, located 150–250 ft south of building 11-24, were 12-ft^2 by 12-in.-thick concrete slabs set in line with the gun bore. Firing into the targets tested various weapons packages designed to withstand extremes of acceleration and deceleration. Some devices contained HE and DU. On a single occasion in 1972, an impact test involved an inert mockup consisting of a 12-in.-diameter, hollow-steel sphere filled with steel or lead ball bearings suspended in a graphite matrix. The sphere fractured upon impact, potentially leaving behind 0.5-in.-diameter steel or lead balls.

Investigation of AOC 11-003(b) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order sampling has not been conducted at the Site. No investigations were conducted before the Consent Order went into effect in 2005.

The project map (Figure 225-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

225.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 225-1).

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 https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 225-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01802040025	Established Vegetation	-	X	X	-	B
W01803010022	Earthen Berm	-	X	-	X	EC
W01803010023	Earthen Berm	-	X	-	X	EC
W01803010024	Earthen Berm	-	X	-	X	EC
W01803040010	Asphalt Berm	X	-	-	X	CB
W01803040016	Asphalt Berm	X	-	-	X	CB
W01803060028	Straw Wattle	-	X	-	X	B
W01803060032	Straw Wattle	-	X	-	X	B
W01803090002	Curbing	X	-	-	X	CB
W01803100026	Gravel Bags	X	-	-	X	B
W01803100027	Gravel Bags	X	-	-	X	B
W01803140031	Coir Log	X	-	X	-	B
W01804060004	Rip Rap	-	-	X	-	CB
W01804060013	Rip Rap	X	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

225.3 Storm Water Monitoring

SWMUs 11-002, 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d) and AOC 11-003(b) are monitored within W-SMA-10. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 225-2). Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (106 pCi/L) and are presented in Figure 225-2.

Following the installation of enhanced control measures at W-SMA-10, a corrective action storm water sample was collected on August 1, 2015 (Figure 225-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (77.8 pCi/L) and are presented in Figure 225-2.

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 11-002:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. No investigations have been conducted at this Site.

Based on the Site history and sampling data, the Site is an unlikely source of the TAL exceedance.

SWMU 11-005(a):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, SWMU 11-005(a) is an unlikely source of the TAL exceedance

SWMU 11-005(b):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, SWMU 11-005(b) is an unlikely source of the TAL exceedance.

SWMU 11-006(c):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, SWMU 11-006(c) is an unlikely source of the TAL exceedance.

SWMU 11-006(d):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, SWMU 11-006(d) is an unlikely source of the TAL exceedance.

SWMU 11-011(d):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, SWMU 11-011(d) is an unlikely source of the TAL exceedance.

AOC 11-003(b):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. No investigations have been conducted at this Site. Based on the Site history, AOC 11-003(b) is an unlikely source of the TAL exceedance.

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 225-2. 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 225-2.

Monitoring location W-SMA-10 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 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 gross-alpha results from 2011 and 2015 are between these two values.

All the analytical results for these samples are reported in the 2011 and 2015 Annual Reports.

225.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at W-SMA-10 during the 2019 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 225-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72931	3-19-2019
Storm Rain Event	BMP-74641	7-18-2019
Storm Rain Event	BMP-75436	8-1-2019
Storm Rain Event	BMP-76685	9-9-2019
Storm Rain Event	BMP-77269	10-10-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-10 in 2019.

225.5 Compliance Status

The Sites associated with W-SMA-10 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 2019. Table 225-3 presents the 2019 compliance status.

Table 225-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 11-002	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
AOC 11-003(b)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 11-005(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 11-005(b)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 11-006(c)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 11-006(d)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 11-011(d)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "NPDES Permit No. NM0030759 – Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

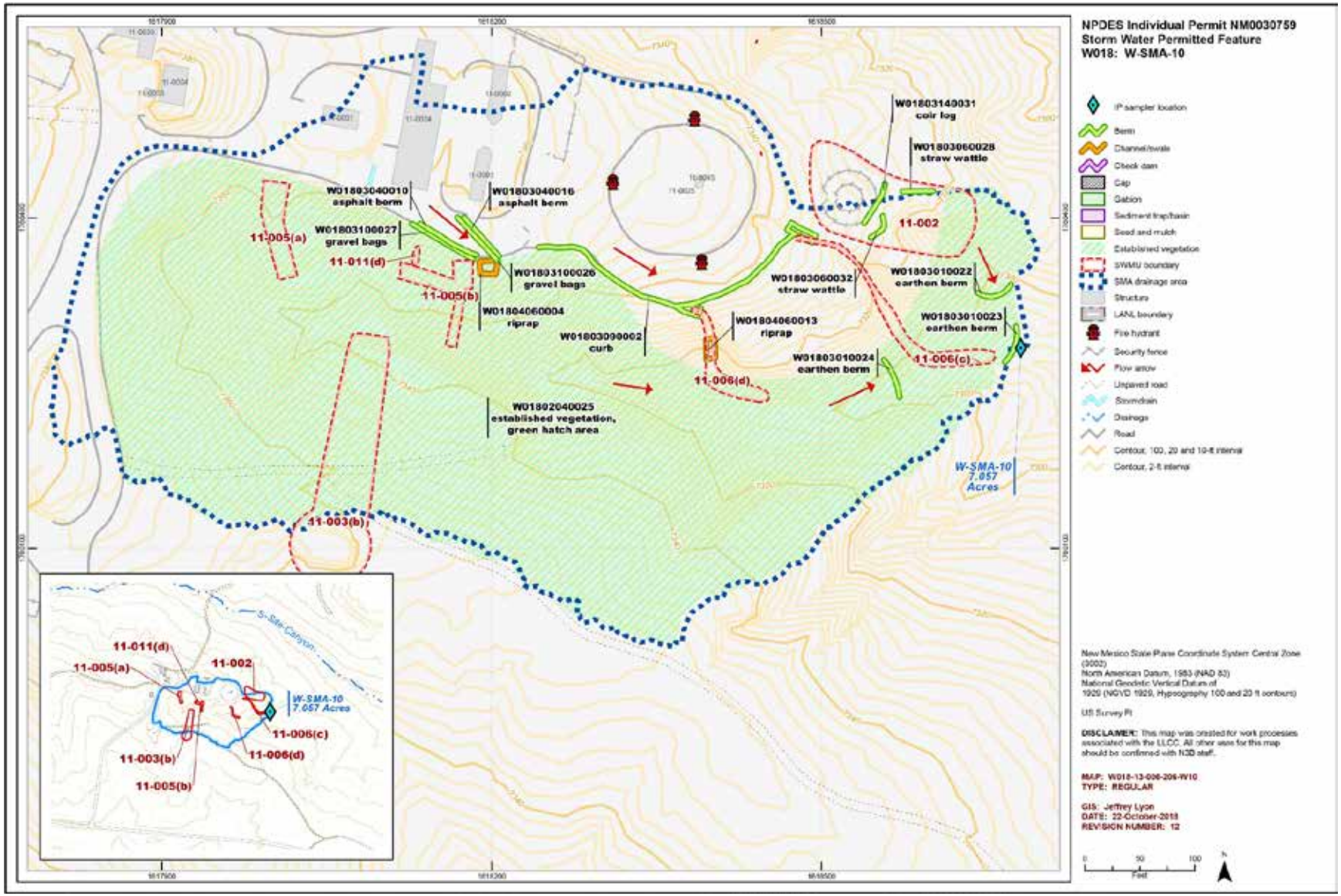


Figure 225-1 W-SMA-10 location map

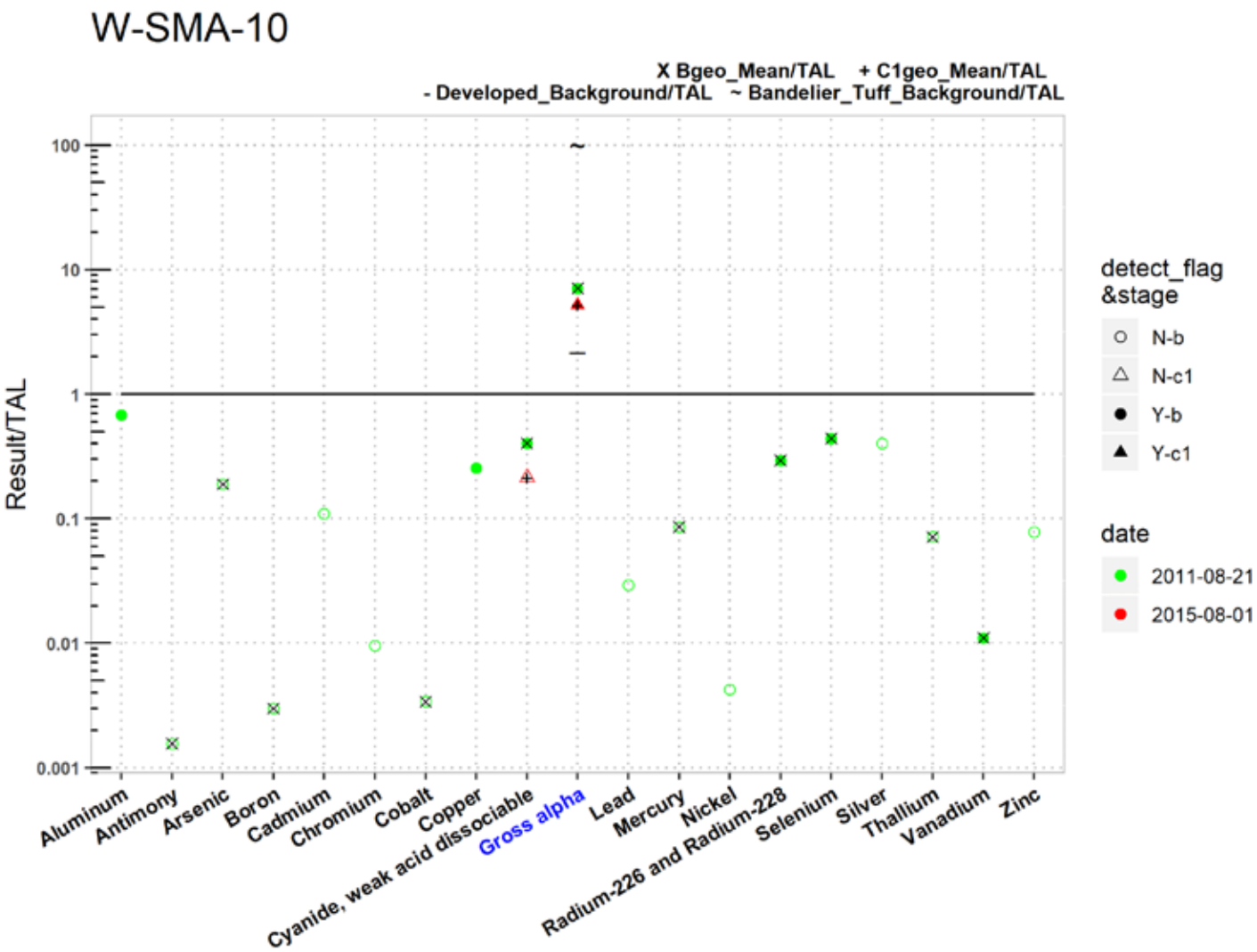


Figure 225-2 Analytical results summary for W-SMA-10

W-SMA-10

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.003	NA	NA	0.0034	NA	0.4	**7.1**	NA	0.086	NA	0.29	0.44	NA	0.071	0.011	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	0.21	**5.2**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-08-21 d	0.68	NA	NA	NA	NA	NA	NA	0.26	0.4	**7.1**	NA	NA	NA	0.29	0.44	NA	NA	0.011	NA
2011-08-21 nd	NA	0.0016	0.19	0.003	0.11	0.0095	0.0034	NA	NA	NA	0.029	0.086	0.0042	NA	NA	0.4	0.071	NA	0.079
2015-08-01 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.2**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2015-08-01 nd	NA	NA	NA	NA	NA	NA	NA	NA	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 225-2 (continued) Analytical results summary for W-SMA-10

226.0 W-SMA-11.7: AOC 49-008(c)

226.1 Site Descriptions

One historical industrial activity area is associated with W019, W-SMA-11.7: Site 49-008(c).

AOC 49-008(c) consists of an area of potentially contaminated soil from historical radiochemistry operations and small-scale containment experiments at Area 11 within the northern portion of the MDA AB NES boundary at TA-49. Area 11 is approximately 220 × 300 ft. Activities conducted at Area 11 from 1959 to 1961 supported hydronuclear experiments conducted elsewhere at TA-49. Radiochemistry operations were conducted in a former laboratory and change house (former building 49-15) that was the main structure at Area 11. Other structures included a small storage building, latrines, and butane and propane tanks. The former building 49-15 laboratory was used to analyze samples collected during experiments in the experimental shafts at Areas 2, 2A, 2B, and 4. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. Wastes generated during radiochemical operations were typically collected in containers and taken to radioactive waste disposal facilities elsewhere at the Laboratory. Interim waste storage boxes were stored south of former building 49-15. Small-scale containment experiments were conducted in 13 underground shafts located on the west side of Area 11. These shafts were drilled to a depth of 12 ft and lined with 10-in.-diameter steel casing. HE was placed in the shafts, which were backfilled to contain the explosions. Small amounts of irradiated uranium-238 tracer were used in some experiments. The structures in Area 11 were decontaminated and removed in 1970 and 1971. Radiological contamination was detected in sinks, ducts, and hoods in former building 49-15. Contaminated debris was removed and disposed of at TA-54 and uncontaminated debris (approximately 2160 ft^3) was taken to the open-burning/landfill area at Area 6 (SWMU 49-004).

During the 1987 soil and vegetation radiological-screening survey of TA-49, 22 surface samples were collected from within Area 11, and 20 vegetation samples were collected within and around Area 11. The samples were analyzed for radionuclides, and the results showed radionuclides detected at background levels for most sampling locations; however, elevated levels of americium-241 and plutonium and uranium isotopes were present in a sample from a location next to the east corner of former building 49-15, possibly where the sink drain was located. Vegetation samples showed no elevated radioactivity.

Phase I Consent Order sampling is complete for AOC 49-008(c). AOC 49-008(c) was recommended for corrective action without controls in the supplemental investigation report for TA-49 Sites inside the NES boundary, submitted to NMED in 2016.

The project map (Figure 226-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

226.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 226-1).

Enhanced controls were installed and certified on October 23, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 226-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01902040052	Established Vegetation	-	X	X	-	B
W01903010040	Earthen Berm	X	-	-	X	B
W01903010041	Earthen Berm	-	X	-	X	EC
W01903010042	Earthen Berm	-	X	-	X	EC
W01903010043	Earthen Berm	-	X	-	X	EC
W01903010044	Earthen Berm	-	X	-	X	EC
W01903010045	Earthen Berm	-	X	-	X	EC
W01903010046	Earthen Berm	-	X	-	X	EC
W01903010047	Earthen Berm	-	X	-	X	EC
W01903010048	Earthen Berm	-	X	-	X	EC
W01903010049	Earthen Berm	-	X	-	X	EC
W01903010050	Earthen Berm	-	X	-	X	EC
W01904010051	Earthen Channel/Swale	X	-	X	-	EC

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

226.3 Storm Water Monitoring

AOC 49-008(c) is monitored within W-SMA-11.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 226-2). Analytical results from this sample yielded TAL exceedances for aluminum (1020 µg/L) and gross-alpha activity (38.1 pCi/L) and are presented in Figure 226-2.

Following the installation of enhanced control measures at W-SMA-11.7, a corrective action storm water sample was collected on September 13, 2013 (Figure 226-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (39.6 pCi/L) and are presented in Figure 226-2.

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 49-008(c):

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at SWMU 49-008(c). Shallow Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Site history and Consent Order sampling results indicate the Site is an unlikely source of the TAL exceedance.

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 226-2. 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 226-2.

W-SMA-11.7 receives runoff from undeveloped areas.

- 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 2011 and 2013 Annual Reports.

226.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at W-SMA-11.7 during the 2019 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 226-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72932	3-25-2019
Storm Rain Event	BMP-75437	8-5-2019
Storm Rain Event	BMP-76798	9-19-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-11.7 in 2019.

226.5 Compliance Status

The Site associated with W-SMA-11.7 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 2019. Table 226-3 presents the 2019 compliance status.

Table 226-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 49-008(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Nine Site Monitoring Areas."

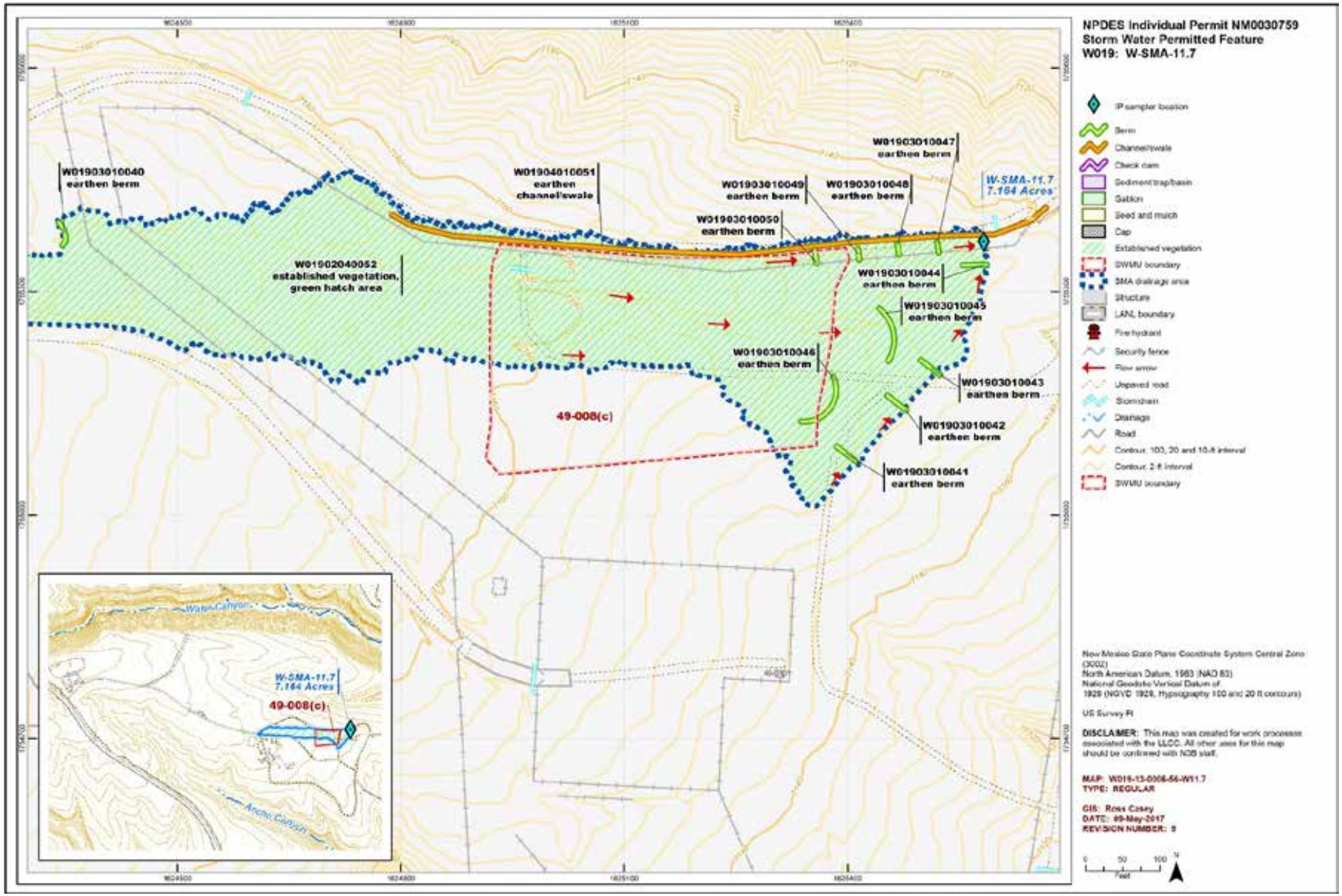


Figure 226-1 W-SMA-11.7 location map

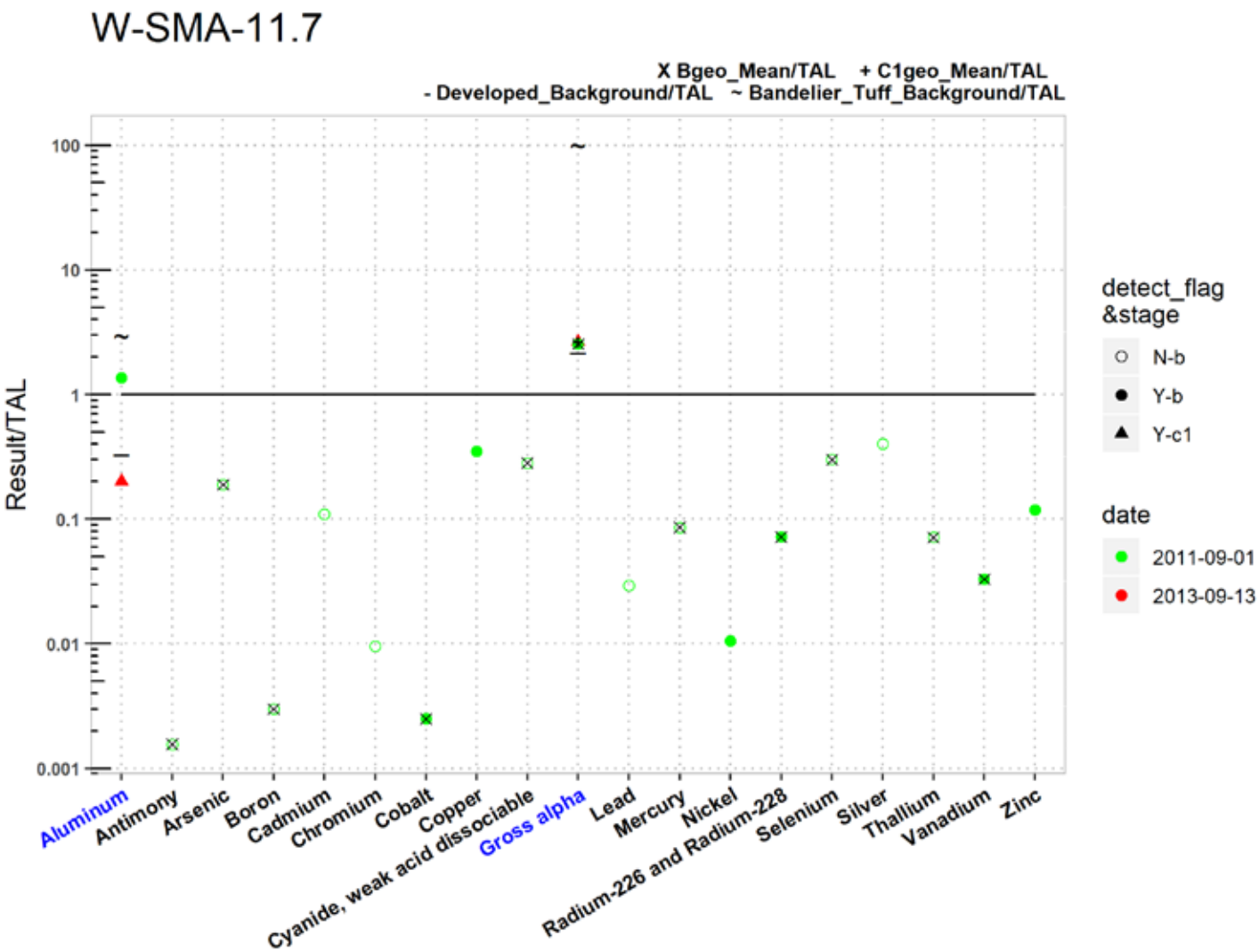


Figure 226-2 Analytical results summary for W-SMA-11.7

W-SMA-11.7

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.003	NA	NA	0.0025	NA	0.28	**2.5**	NA	0.086	NA	0.072	0.3	NA	0.071	0.033	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-09-01 d	**1.4**	NA	NA	NA	NA	NA	0.0025	0.35	NA	**2.5**	NA	NA	0.011	0.072	NA	NA	NA	0.033	0.12
2011-09-01 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.28	NA	0.029	0.086	NA	NA	0.3	0.4	0.071	NA	NA
2013-09-13 d	0.2	NA	NA	NA	NA	NA	NA	NA	NA	**2.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-09-13 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 226-2 (continued) **Analytical results summary for W-SMA-11.7**

227.0 W-SMA-12.05: SWMU 49-001(g)

227.1 Site Descriptions

One historical industrial activity area is associated with W020, W-SMA-12.05: Site 49-001(g).

SWMU 49-001(g) is an area of potentially contaminated surface soil directly north of SWMUs 49-001(b) and 49-001(c), resulting from the transport of surface and near-surface radionuclide contamination associated with the shaft 2-M incident at Area 2. During the drilling of a drift at the bottom of shaft 2-M in November 1960, contamination was encountered from the experiment previously detonated at the bottom of shaft 2-L in April 1960. As a result, alpha contamination was measured at 100,000 cpm within unused shaft 2-M and as high as 800,000 cpm on the ground surface within Area 2. Contaminated equipment and surface soils from this incident were placed in shaft 2-M and the shaft was backfilled and capped.

Phase I Consent Order sampling is complete for SWMU 49-001(g). SWMU 49-001(g) was recommended for corrective action without controls for this Site in the supplemental investigation report for TA-49 Sites inside the NES boundary, submitted to NMED in 2016.

The project map (Figure 227-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

227.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 227-1).

Table 227-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W02002040018	Established Vegetation	-	X	X	-	B
W02003010015	Earthen Berm	-	X	-	X	B
W02003010016	Earthen Berm	-	X	-	X	B
W02003010017	Earthen Berm	-	X	-	X	B
W02004060002	Rip Rap	X	-	X	-	CB
W02006010001	Rock Check Dam	-	X	-	X	CB

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

227.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at W-SMA-12.05. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

227.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at W-SMA-12.05 during the 2019 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 227-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72942	3-25-2019
Storm Rain Event	BMP-75447	8-5-2019
Storm Rain Event	BMP-76801	9-19-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-12.05 in 2019.

227.5 Compliance Status

The Site associated with W-SMA-12.05 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 continuance at the end of 2019. Table 227-3 presents the 2019 compliance status.

Table 227-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 49-001(g)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

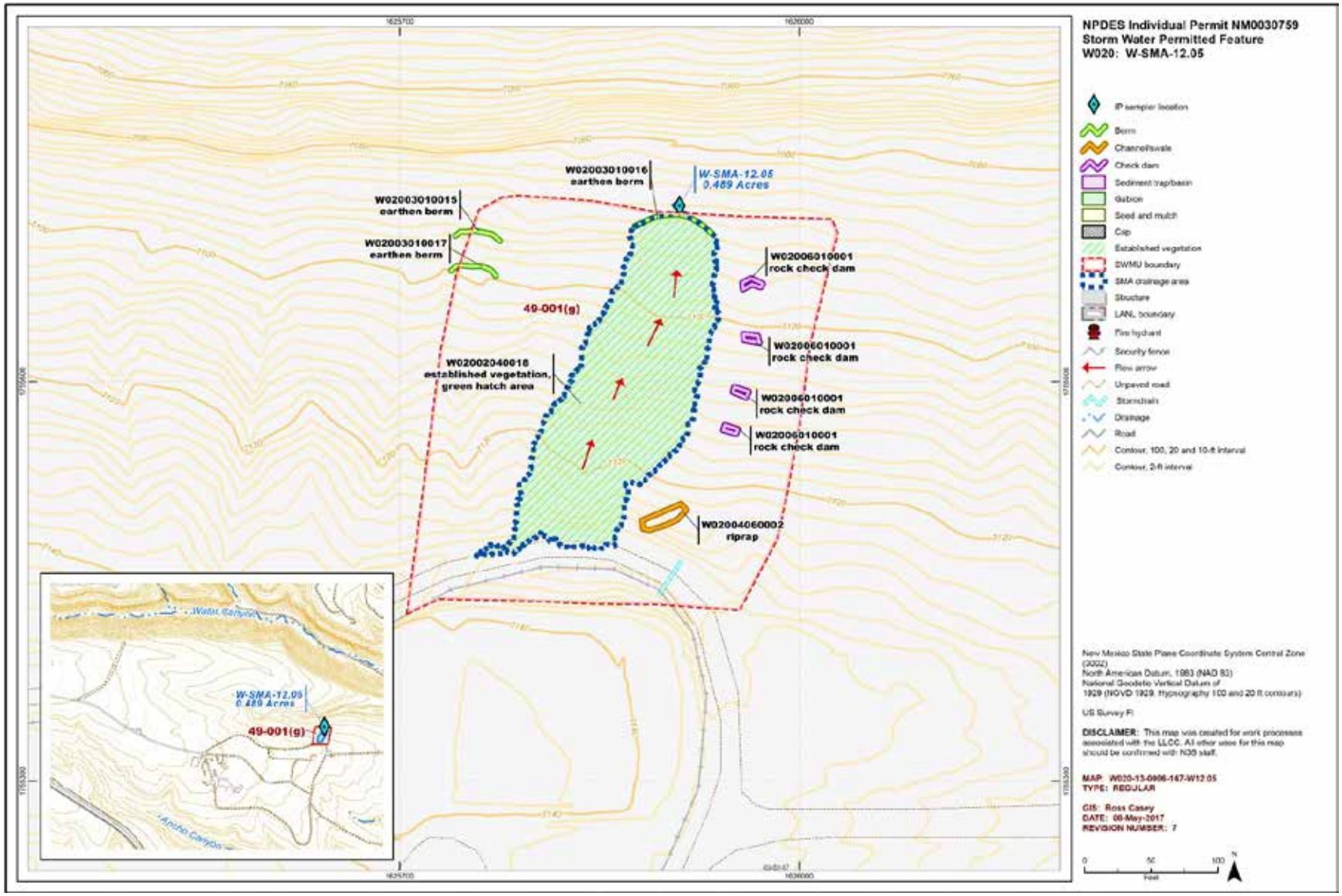


Figure 227-1 W-SMA-12.05 location map

228.0 W-SMA-14.1: SWMU 15-014(l) and AOC 15-004(h)

228.1 Site Descriptions

Two historical industrial activity areas are associated with W021, W-SMA-14.1: Sites 15-014(l) and 15-004(h).

SWMU 15-014(l) is a drainline and formerly permitted outfall (EPA 03A028) for a cooling tower (structure 15-202) located within the PHERMEX facility in TA-15. This drainline and outfall received blowdown discharge from the cooling tower that was built in 1961. It is not known if the outfall is still active.

Consent Order investigations have not been performed at SWMU 15-014(l). SWMU 15-014(l) will be included in the future Consent Order Lower Water/Indio Canyons Aggregate Area investigation. No investigations were conducted at SWMU 15-014(l) before the Consent Order went into effect in 2005.

AOC 15-004(h) is inactive Firing Site H located west of the PHERMEX facility at TA-15. Firing Site H is located approximately 100 ft north of the power control building for PHERMEX (structure 15-185). This firing site was built in 1948 and included an instrument chamber (structure 15-17) and a camera chamber (structure 15-92) and was used for explosives testing. The exact nature of the materials used during tests is not known but is believed to include DU, beryllium, lead, and HE. Firing site operations were discontinued in 1953. The surface of the Site was reportedly regraded in 1992. The camera chamber (structure 15-92) remains on-site.

Consent Order investigations have not been performed at SWMU 15-004(h). AOC 15-004(h) will be included in the future Consent Order Lower Water/Indio Canyons Aggregate Area investigation. No investigations were conducted at AOC 15-004(h) before the Consent Order went into effect in 2005.

The project map (Figure 228-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

228.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 228-1).

Enhanced controls were installed and certified on September 25, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 228-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W02102040021	Established Vegetation	-	X	X	-	B
W02103010016	Earthen Berm	-	X	-	X	EC
W02103010017	Earthen Berm	-	X	-	X	EC
W02103010018	Earthen Berm	-	X	-	X	EC
W02103010019	Earthen Berm	-	X	-	X	EC
W02103010020	Earthen Berm	X	-	-	X	EC
W02104060014	Rip Rap	X	-	X	-	CB
W02106010008	Rock Check Dam	X	-	-	X	CB
W02106010009	Rock Check Dam	X	-	-	X	CB
W02106010011	Rock Check Dam	X	-	-	X	CB
W02106010012	Rock Check Dam	-	X	-	X	CB

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

228.3 Storm Water Monitoring

SWMU 15-014(l) and AOC 15-004(h) are monitored within W-SMA-14.1. Following the installation of baseline control measures, two baseline storm water samples were collected on July 25, 2011, and August 18, 2011 (Figure 228-2). In Figure 228-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from these samples yielded TAL exceedances for copper (20 µg/L) and zinc (49.3 µg/L) and are presented in Figure 228-2.

Following the installation of enhanced control measures at W-SMA-14.1, corrective action storm water samples were collected on September 13, 2013, and July 15, 2014 (Figure 228-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for gross-alpha activity (38.7 pCi/L and 96.2 pCi/L) and are presented in Figure 228-2.

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 15-014(l):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.

AOC 15-004(h):

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this 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 Figure 228-2. 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 228-2.

W-SMA-14.1, Rock Check Dam, W02106010012 (photo ID 25735-4)

Monitoring location W-SMA-14.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Gross alpha—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 and 2014 gross-alpha results are between these two values.

All the analytical results for these samples are reported in the 2011, 2013, and 2014 Annual Reports.

228.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at W-SMA-14.1 during the 2019 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 228-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72933	3-21-2019
Storm Rain Event	BMP-75438	8-6-2019
Storm Rain Event	BMP-76799	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-14.1 in 2019.

228.5 Compliance Status

The Sites associated with W-SMA-14.1 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 2019. Table 228-3 presents the 2019 compliance status.

Table 228-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 15-004(h)	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."
SWMU 15-014(l)	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."

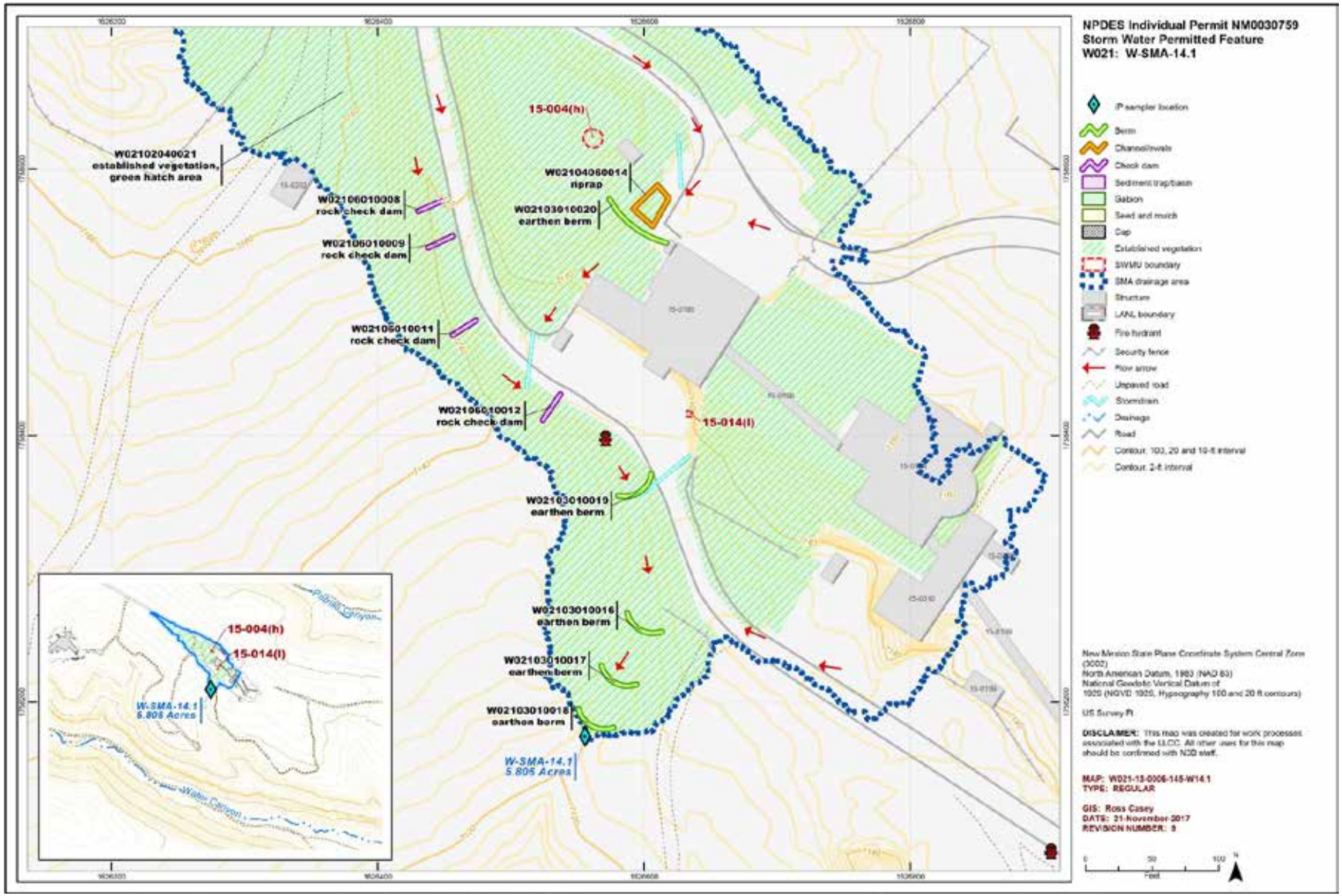


Figure 228-1 W-SMA-14.1 location map

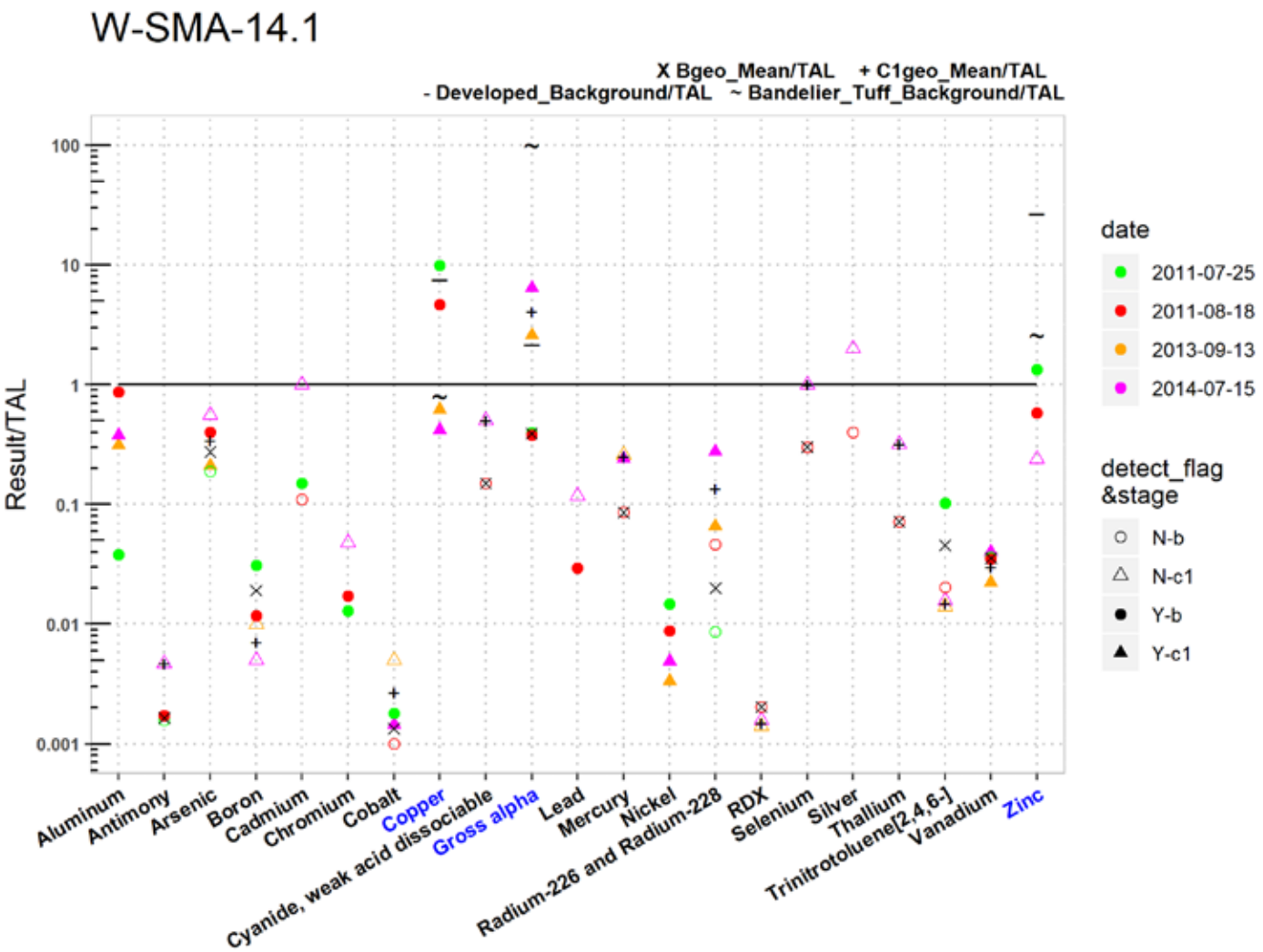


Figure 228-2 Analytical results summary for W-SMA-14.1

W-SMA-14.1

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.27	0.019	NA	NA	0.0013	NA	0.15	0.39	NA	0.086	NA	0.02	0.002	0.3	NA	0.071	0.046	0.035	NA
C1geo_mean/ATAL	NA	0.0047	0.34	0.0071	NA	NA	0.0027	NA	0.5	**4.1**	NA	0.25	NA	0.13	0.0015	1	NA	0.32	0.015	0.03	NA
2011-07-25 d	0.038	NA	NA	0.031	0.15	0.013	0.0018	**9.9**	NA	0.4	NA	NA	0.015	NA	NA	NA	NA	NA	0.1	0.036	**1.3**
2011-07-25 nd	NA	0.0016	0.19	NA	NA	NA	NA	NA	0.15	NA	0.029	0.086	NA	0.0086	0.002	0.3	0.4	0.071	NA	NA	NA
2011-08-18 d	0.87	0.0017	0.4	0.012	NA	0.017	NA	**4.7**	NA	0.38	0.029	NA	0.0088	NA	NA	NA	NA	NA	NA	0.035	0.58
2011-08-18 nd	NA	NA	NA	NA	0.11	NA	0.001	NA	0.15	NA	NA	0.086	NA	0.046	0.002	0.3	0.4	0.071	0.02	NA	NA
2013-09-13 d	0.31	NA	0.21	NA	NA	NA	NA	0.62	NA	**2.6**	NA	NA	0.0033	0.066	NA	NA	NA	NA	NA	0.022	NA
2013-09-13 nd	NA	0.0047	NA	0.01	1	0.048	0.005	NA	0.5	NA	0.12	0.26	NA	NA	0.0014	1	2	0.32	0.014	NA	0.24
2014-07-15 d	0.38	NA	NA	NA	NA	NA	0.0014	0.42	NA	**6.4**	NA	0.24	0.0049	0.28	NA	NA	NA	NA	NA	0.04	NA
2014-07-15 nd	NA	0.0047	0.56	0.005	1	0.048	NA	NA	0.5	NA	0.12	NA	NA	NA	0.0016	1	2	0.32	0.016	NA	0.24

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 228-2 (continued) **Analytical results summary for W-SMA-14.1**

229.0 W-SMA-15.1: SWMU 49-005(a)

229.1 Site Descriptions

One historical industrial activity area is associated with W022, W-SMA-15.1: Site 49-005(a).

SWMU 49-005(a) is an inactive landfill located east of Area 10. The landfill, described as a small pit, was constructed north of the road that runs east from Area 10 and is approximately 50–100 ft northeast of the Area 10 experimental chamber and shafts (AOC 49-002). SWMU 49-005(a) was constructed in 1984 as a disposal area for nonradiologically contaminated debris generated during the 1984 general surface cleanup of TA-49.

Phase I Consent Order sampling is complete for SWMU 49-005(a). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order and RFI samples were below residential SSLs and SALs. SWMU 49-005(a) was recommended for corrective action complete without controls for this Site in the supplemental investigation report for the TA-49 Sites outside the NES boundary, submitted to NMED in 2016.

The project map (Figure 229-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps.

229.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 229-1).

Enhanced controls were installed and certified on October 23, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 229-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W02202040006	Established Vegetation	-	X	X	-	B
W02203010004	Earthen Berm	X	-	-	X	EC
W02203010005	Earthen Berm	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

229.3 Storm Water Monitoring

SWMU 49-005(a) is monitored within W-SMA-15.1. Following the installation of baseline control measures, a baseline confirmation sample was collected on September 1, 2011 (Figure 229-2). Analytical results from this baseline sample yielded a TAL exceedance for gross-alpha activity (33.2 pCi/L) and are presented in Figure 229-2.

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 49-005(a):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 49-005(a). Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides.

Based on the Site history and Consent Order sampling data, the Site is an unlikely source of the TAL exceedance.

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 229-2. 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 229-2.

W-SMA-15.1 receives runoff from portions of the inactive landfill and from undeveloped areas. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

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

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

229.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG262.4 recorded two storm events at W-SMA-15.1 during the 2019 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 229-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72934	3-25-2019
Storm Rain Event	BMP-75439	8-5-2019
Storm Rain Event	BMP-76800	9-19-2019

No maintenance activities or facility modifications affecting discharge were conducted at W-SMA-15.1 in 2019.

229.5 Compliance Status

The Site associated with W-SMA-15.1 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 2019. Table 229-3 presents the 2019 compliance status.

Table 229-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 49-005(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 25, 2012, "Submittal of Certification of Installation of Enhanced Control Measures for Nine Site Monitoring Areas."

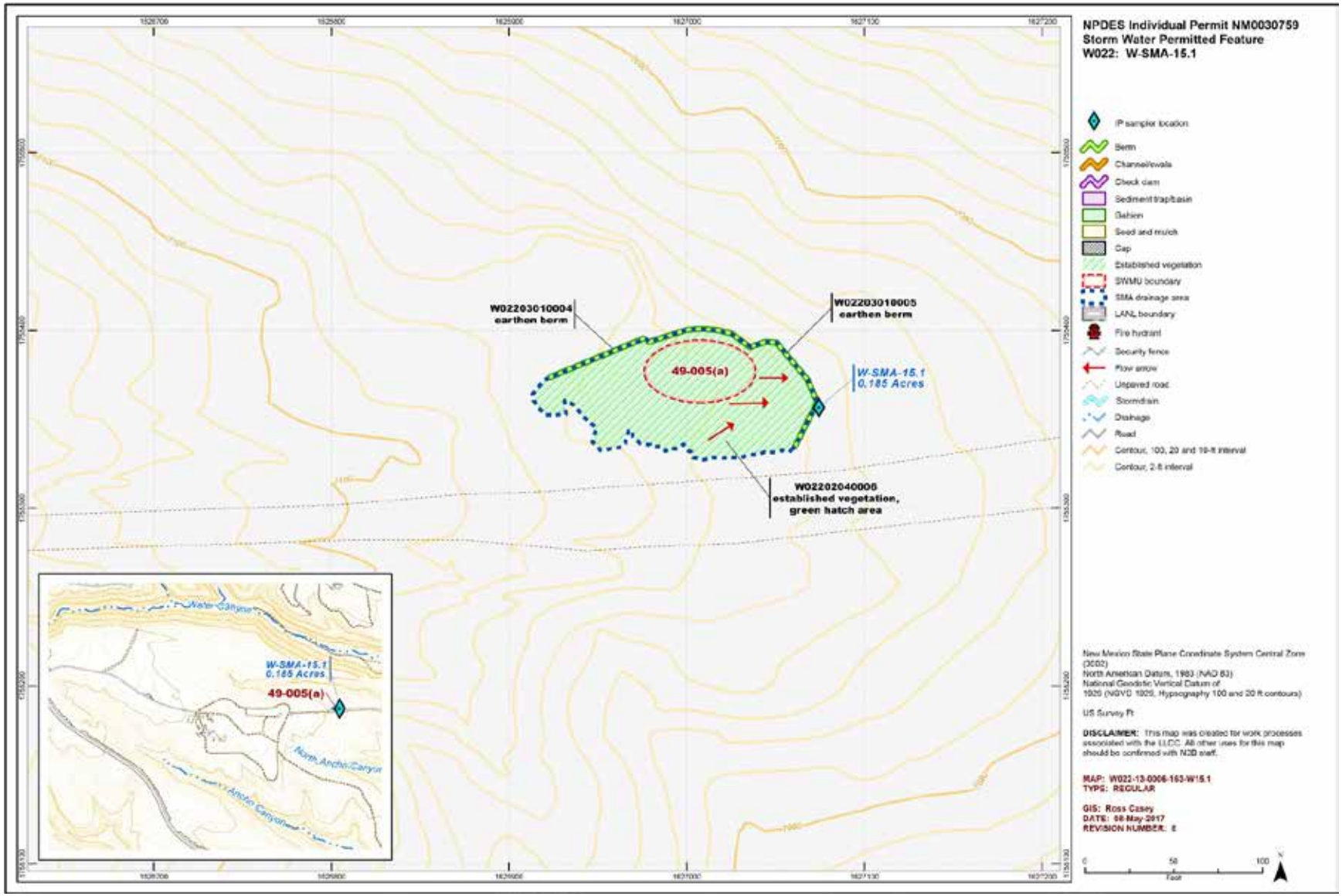


Figure 229-1 W-SMA-15.1 location map

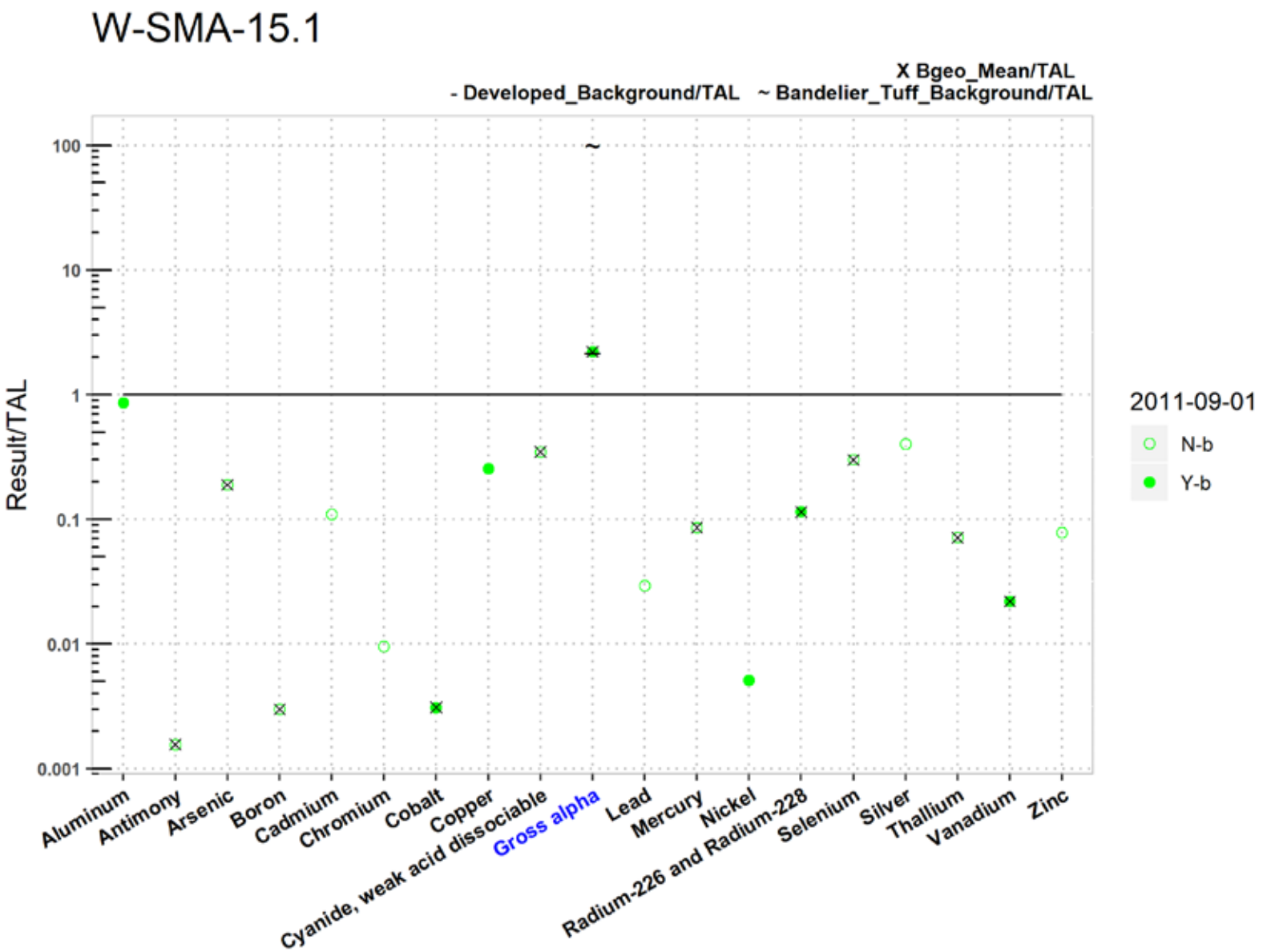


Figure 229-2 Analytical results summary for W-SMA-15.1

W-SMA-15.1

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.19	0.003	NA	NA	0.0031	NA	0.35	**2.2**	NA	0.086	NA	0.12	0.3	NA	0.071	0.022	NA
2011-09-01 d	0.86	NA	NA	NA	NA	NA	0.0031	0.26	NA	**2.2**	NA	NA	0.0051	0.12	NA	NA	NA	0.022	NA
2011-09-01 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.35	NA	0.029	0.086	NA	NA	0.3	0.4	0.071	NA	0.079

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 229-2 (continued) Analytical results summary for W-SMA-15.1

Attachment 1
Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4192	3/6/2019	PT-SMA-1.7	Per Individual Permit Annual Report, January 1 - December 31, 2017 (LA-UR-18-21185) Please update as necessary to:-Add site 15-003 (firing site) as a site associated with PT-SMA-1.7. Include site addition in 2018 SDPPP R1 update. Review of the Site descriptions and activities conducted with PT-SMA-1.7 identified that Site 15-006(a) was incorrectly associated with industrial materials to be monitored at the SMA. Site 15-006(a) is structure 15-184, which housed the equipment associated with the firing site. The firing site, 15-003, is the likely source material released from the Site and the Site intended for regulation under the Individual Permit. Site 15-006(a) will remain active and associated with PT-SMA-1.7 at this time.	E	CCN-71071
V4. 4193	5/10/2019	CDV-SMA-1.7	SIP reviews in December of 2018 identified a new confirmation monitoring sampling location is needed at CDV-SMA-1.7. The current confirmation monitoring sampling location ID (SS2547) will be decommissioned upon completion of this move. See attached email and SIP sampler location evaluation map for sampler move rationale. Please update as necessary:- Confirm sampler location has been moved- Update the drainage area associated with the new sampler location.- Update the extent of established vegetation to match the new drainage.- Update flow arrows as appropriate.	T	CCN-73035
V4. 4194	5/10/2019	CDV-SMA-1.7	Minor Sampler Adjustments, with Update to Coordinates in Att. 4	T	CCN-73035
V4. 4195	5/10/2019	CDV-SMA-1.7	SMA Boundary Modification, with Update to Area in Att. 4	T	CCN-73035
V4. 4196	5/10/2019	CDV-SMA-1.7	Map Revision-(15)	T	CCN-73035
V4. 4197	6/12/2019	F-SMA-2	Per FTL site walk conducted on 05/30/2019, please update as necessary to:-Add Riprap as additional ron/ec control. Assigned asset ID F00104060049. See attached map markup for location.-Add Riprap as additional ron/ec control. Assigned asset ID F00104060050. See attached map markup for location.-Add Coir Log as additional ron/sc control. Assigned asset ID F00103140051. See attached map markup for location. Controls were installed in 2018, accepted as IP controls in 2019.	E	CCN-74101

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4198	6/12/2019	F-SMA-2	New Control- Augmenting Existing/Baseline Control- Control ID: F00104060049- Rip Rap	E	CCN-74101
V4. 4199	6/12/2019	F-SMA-2	New Control- Augmenting Existing/Baseline Control- Control ID: F00104060050- Rip Rap	E	CCN-74101
V4. 4200	6/12/2019	F-SMA-2	New Control- Augmenting Existing/Baseline Control- Control ID: F00103140051- Coir Log	E	CCN-74101
V4. 4201	6/12/2019	F-SMA-2	Map Revision-(14)	T	CCN-74101
V4. 4202	6/12/2019	PT-SMA-4.2	6/4/2019 - 151501: Per FTL site walk conducted on 05/30/2019, please update as necessary to:-Retire Riprap 0002. Replaced by existing control Earthen Berm 0028. Retire date is 06/04/2019.-Retire Rock Berm 0007. Replaced by existing control Earthen Berm 0027. Retire date is 06/04/2019.-Retire Rock Berm 0009. Replaced by existing control Earthen Berm 0029. Retire date is 06/04/2019.-Retire Erosion Control Blanket 0021. Replaced by existing control Earthen Berm 0027. Retire date is 06/04/2019.See attached map markup for location.	T	CCN-74102
V4. 4203	6/12/2019	PT-SMA-4.2	Retire Control - Damaged and/or Replaced- Control ID: I00704060002- Rip Rap	T	CCN-74102
V4. 4204	6/12/2019	PT-SMA-4.2	Retire Control - Damaged and/or Replaced- Control ID: I00703120007- Rock Berm	T	CCN-74102
V4. 4205	6/12/2019	PT-SMA-4.2	Retire Control - Damaged and/or Replaced- Control ID: I00703120009- Rock Berm	T	CCN-74102
V4. 4206	6/12/2019	PT-SMA-4.2	Retire Control - Damaged and/or Replaced- Control ID: I00701060021 - Erosion Control Blanket	T	CCN-74102
V4. 4207	6/12/2019	PT-SMA-4.2	Map Revision-(14)	T	CCN-74102

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4208	7/16/2019	PT-SMA-3	Per COMP-73816 conducted on 05/15/2019, please update as necessary to:-Retire Rock Check Dam 0022. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Check Dam 0023. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Check Dam 0021. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Check Dam 0024. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Check Dam 0026. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Check Dam 0027. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Berm 0015. Replaced by new control. Retire date is 05/15/2019.-Retire Straw Wattle 0017. Replaced by new control. Retire date is 05/15/2019.-Retire Straw Wattle 0018. Replaced by new control. Retire date is 05/15/2019.-Retire Rock Lined Channel Swale 0016. Replaced by new control. Retire date is 05/15/2019.-Add Sediment Basin as additional roff/sc control. Assigned asset ID 100505020041. See attached map markup for location-Add Culvert as additional erosion control. Assigned asset ID 100504040044. See attached map markup for location-Add Rip Rap outlet as additional erosion control. Assigned asset ID 100504040042. See attached map markup for location-Add Rock Check Dam as additional roff/sc control. Assigned asset ID 100506010040. See attached map markup for location-Update flow arrows. See attached map markup for location-Add drop inlet symbol. See attached map markup for location-Amend watershed boundary to reflect field verified hydrology per map markups and HYDRO.	T	CCN-73853
V4. 4209	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00506010021- Rock Check Dam	T	CCN-73853
V4. 4210	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00506010022- Rock Check Dam	T	CCN-73853
V4. 4211	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00506010023- Rock Check Dam	T	CCN-73853
V4. 4212	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00506010024- Rock Check Dam	T	CCN-73853
V4. 4213	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00506010026- Rock Check Dam	T	CCN-73853
V4. 4214	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00506010027- Rock Check Dam	T	CCN-73853

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4215	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I005003120015- Rock Berm	T	CCN-73853
V4. 4216	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00503060017- Straw Wattle	T	CCN-73853
V4. 4217	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00503060018- Straw Wattle	T	CCN-73853
V4. 4218	7/16/2019	PT-SMA-3	Retire Control - Damaged and/or Replaced- Control ID: I00504030016- Rock Channel/Swale	T	CCN-73853
V4. 4219	7/16/2019	PT-SMA-3	New Control- Routine/Replacement- Control ID: I00505020041- Sediment Basin	T	CCN-73853
V4. 4220	7/16/2019	PT-SMA-3	New Control- Routine/Replacement- Control ID: I00504040044- Culvert	T	CCN-73853
V4. 4221	7/16/2019	PT-SMA-3	New Control- Routine/Replacement- Control ID: I00504060042- Rip Rap	T	CCN-73853
V4. 4222	7/16/2019	PT-SMA-3	New Control- Routine/Replacement- Control ID: I00506010040- Rock Check Dam	T	CCN-73853
V4. 4223	7/16/2019	PT-SMA-3	SMA Boundary Modification, with Update to Area in Att. 4	T	CCN-73853
V4. 4224	7/16/2019	PT-SMA-3	Map Revision-(17)	T	CCN-73853
V4. 4225	8/6/2019	PT-SMA-1	PT-SMA-1 Alternative Compliance Request	T	CCN-73682
V4. 4226	8/13/2019	W-SMA-6	W-SMA-6. Corrective Action Initiated for MEx July 7, 2019 sample for Gross-Alpha (4.033 X ATAL)	T	CCN-76226
V4. 4227	10/8/2019	W-SMA-6	Update extent of established vegetation. See attached map for markup.	T	CCN-76812
V4. 4228	10/8/2019	W-SMA-6	Map Revision-(7)	T	CCN-76812
V4. 4229	11/14/2019	PT-SMA-2	PT-SMA-2 Corrective Action initiation. 2 CA Samples collected in 2019. TAL exceedances Copper (1.2X) Gross Alpha (6.9X)	T	CCN-77840
V4. 4230	11/22/2019	Volume 4	Per enhanced control measure installations conducted in 2019 and forecasted for 2020, add new control measure type plunge pool MainConn Classification- Sediment Traps and Basins 05 MainConn subclassification- plunge pool 07Life cycle - 10 years (120 months) Description: Relatively shallow depression lined with Class B angular rock (or similar large rock) that temporarily retains surface water allowing sediment deposition and provides erosion control scour protection to area.	E	CCN-77138
V4. 4231	12/20/2019	CDV-SMA-2.51	Per BMP-73159, completed 4/10/19, please update as necessary to:-Retire straw wattles V009A03060030 and V009A03060031. Replaced by new controls. Retire date 4/10/19-Add two straw wattles installed as replacement run-on/sediment controls for -0030 and -0031. Install date 4/10/19. See attached map markup.	T	CCN-77777

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4232	12/20/2019	CDV-SMA-2.51	Retire Control - Damaged and/or Replaced- Control ID: V009A03060030- Straw Wattle	T	CCN-77777
V4. 4233	12/20/2019	CDV-SMA-2.51	Retire Control - Damaged and/or Replaced- Control ID: V009A03060031- Straw Wattle	T	CCN-77777
V4. 4234	12/20/2019	CDV-SMA-2.51	New Control- Routine/Replacement- Control ID: V009A03060032- Straw Wattle	T	CCN-77777
V4. 4235	12/20/2019	CDV-SMA-2.51	New Control- Routine/Replacement- Control ID: V009A03060033- Straw Wattle	T	CCN-77777
V4. 4236	12/20/2019	CDV-SMA-2.51	Map Revision-(10)	T	CCN-77777
V4. 4237	1/8/2020	PT-SMA-3	Per data QA/QC reviews in preparation for 2019 IP Annual Report and SDPPP data pulls, and labor report notes on CCN-73853, complete listed MainConn asset updates for culvert -0044, rip rap -0042, rock check dam -0040, and sediment basin -0041 that were incorrectly completed during processing of CCN-73853:-Correct PFID portion of asset ID's from 1005 to I005-Move retired control I00503060018 to retired BMPs folder in Asset Hierarchy. Control was retired effective 5/15/19	E	CCN-77836
V4. 4238	1/23/2020	F-SMA-2	Per data QA/QC reviews in preparation for 2018 IP Annual Report and SDPPP data pulls, please update as necessary to: -Complete MainConn Asset updates for coir logs F00103140048, F00103140051, and for Rip Rap F00104060050 not completed on CCNs 72459 and 74101. F00103140048 and F00103140052 are run-on/sediment controls Rip rap F00104060050 is a run-on/erosion control	E	CCN-78080
V4. 4239	1/31/2020	W-SMA-7	Per BMP-73163 completed 4/10/19, please update as necessary to:-Retire straw wattles W00803060017 and W00803060018. Retire date 4/10/19. -Add 2 straw wattles installed as replacement runoff/sediment controls for -0017 and -0018. Install date 4/10/19.	T	CCN-77547
V4. 4240	1/31/2020	W-SMA-7	Retire Control - Damaged and/or Replaced- Control ID: W00803060017- Straw Wattle	T	CCN-77547
V4. 4241	1/31/2020	W-SMA-7	Retire Control - Damaged and/or Replaced- Control ID: W00803060018- Straw Wattle	T	CCN-77547
V4. 4242	1/31/2020	W-SMA-7	New Control- Routine/Replacement- Control ID: W00803060052- Straw Wattle	T	CCN-77547
V4. 4243	1/31/2020	W-SMA-7	New Control- Routine/Replacement- Control ID: W00803060053- Straw Wattle	T	CCN-77547
V4. 4244	1/31/2020	W-SMA-7	Map Revision-(13)	T	CCN-77547
V4. 4245	1/31/2020	W-SMA-9.9	Per BMP-73169, completed on 4/17/19, please update as necessary to:-Add eco-block installed as a replacement run-on/sediment control for broken section of Curbing W01703090001. Installed 4/17/19. Remaining sections of Curbing -0001 will remain active. See map markup for location of installation.	T	CCN-77948

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4246	1/31/2020	W-SMA-9.9	New Control - Augmenting Existing/Baseline Control- Control ID: W01703110023- Eco-Block	T	CCN-77948
V4. 4247	1/31/2020	W-SMA-9.9	Map Revision-(9)	T	CCN-77948
V4. 4248	3/9/2020	CDV-SMA-1.2	Figure 180-2 replaced and Figure 180-3 removed	T	
V4. 4249	3/9/2020	CDV-SMA-1.4	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4250	3/9/2020	CDV-SMA-1.45	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4251	3/9/2020	CDV-SMA-1.7	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4252	3/9/2020	CDV-SMA-2.41	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4253	3/9/2020	CDV-SMA-2.42	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4254	3/9/2020	CDV-SMA-3	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4255	3/9/2020	CDV-SMA-6.01	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4256	3/9/2020	CDV-SMA-6.02	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4257	3/9/2020	CDV-SMA-7	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4258	3/9/2020	F-SMA-2	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4259	3/9/2020	PT-SMA-0.5	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4260	3/9/2020	PT-SMA-1	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4261	3/9/2020	PT-SMA-1.7	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4262	3/9/2020	PT-SMA-2	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4263	3/9/2020	PT-SMA-2.01	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4264	3/9/2020	PT-SMA-3	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4265	3/9/2020	PT-SMA-4.2	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4266	3/9/2020	W-SMA-1	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4267	3/9/2020	W-SMA-1.5	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4268	3/9/2020	W-SMA-2.05	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4269	3/9/2020	W-SMA-7	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4270	3/9/2020	W-SMA-8	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4271	3/9/2020	W-SMA-8.71	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4272	3/9/2020	W-SMA-9.9	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4273	3/9/2020	W-SMA-10	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4274	3/9/2020	W-SMA-11.7	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4275	3/9/2020	W-SMA-14.1	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4276	3/9/2020	W-SMA-15.1	Change to SDPPP - Photographs of the enhanced controls are available at ~~http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php~~https//ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.	T	
V4. 4277	3/9/2020	CDV-SMA-1.3	Figure 180-2 replaced and Figure 180-3 removed	T	
V4. 4278	3/9/2020	CDV-SMA-1.4	Added Maintenance Table	T	
V4. 4279	3/9/2020	CDV-SMA-1.4	Figure 182 replaced	T	
V4. 4280	3/9/2020	CDV-SMA-1.45	Figure 183-2 replaced	T	
V4. 4281	3/9/2020	CDV-SMA-1.7	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Site in this SMA.	T	
V4. 4282	3/9/2020	CDV-SMA-1.7	Figure 184-2 replaced and Figure 184-3 removed	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4283	3/9/2020	CDV-SMA-2	Figure 185-2 replaced and Figure 185-3 removed	T	
V4. 4284	3/9/2020	CDV-SMA-2.3	Replaced Figure 186-3	T	
V4. 4285	3/9/2020	CDV-SMA-2.41	Figure 187-2 replaced and Figure 187-3 removed	T	
V4. 4286	3/9/2020	CDV-SMA-2.42	Removed Maintenance Table	T	
V4. 4287	3/9/2020	CDV-SMA-2.42	Updated Compliance Status Table	T	
V4. 4288	3/9/2020	CDV-SMA-2.42	Figure 188-2a replaced and renamed as 188-2. Figures 1882b, 188-3a and 188-3b removed	T	
V4. 4289	3/9/2020	CDV-SMA-2.5	Added Maintenance Table	T	
V4. 4290	3/9/2020	CDV-SMA-2.5	Figure 189-2 replaced and Figure 189-3 removed	T	
V4. 4291	3/9/2020	CDV-SMA-2.51	Figure 190-2 replaced and Figure 190-3 removed	T	
V4. 4292	3/9/2020	CDV-SMA-3	Figure 191-2 replaced and Figure 191-3 removed	T	
V4. 4293	3/9/2020	CDV-SMA-6.01	Figure 193-2 replaced and Figure 193-3 removed	T	
V4. 4294	3/9/2020	CDV-SMA-6.02	Figure 194-2 replaced and Figure 194-3 removed	T	
V4. 4295	3/9/2020	CDV-SMA-7	Removed Maintenance Table	T	
V4. 4296	3/9/2020	CDV-SMA-7	Updated Compliance Status Table	T	
V4. 4297	3/9/2020	CDV-SMA-7	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V4. 4298	3/9/2020	CDV-SMA-7	Figure 195-2a replaced and renamed as Figure 195-2 and Figure 195-2b removed	T	
V4. 4299	3/9/2020	CDV-SMA-8	Figure 196-2 replaced and Figure 196-3 removed	T	
V4. 4300	3/9/2020	CDV-SMA-9.05	Updated Compliance Status Table	T	
V4. 4301	3/9/2020	CDV-SMA-9.05	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V4. 4302	3/9/2020	CDV-SMA-9.05	Figure 198-2 replaced and Figure 198-3 removed	T	
V4. 4303	3/9/2020	F-SMA-2	Removed Maintenance Table	T	
V4. 4304	3/9/2020	F-SMA-2	Figure 199-2 replaced and Figure 199-3 removed	T	
V4. 4305	3/9/2020	PT-SMA-0.5	Figure 200-2 replaced and Figure 200-3 removed	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4306	3/9/2020	PT-SMA-1	Updated Compliance Status Table	T	
V4. 4307	3/9/2020	PT-SMA-1	Figure 201-2a replaced and renamed as 201-2. Removed Figures 201-2b, 201-3a, and 201-3b	T	
V4. 4308	3/9/2020	PT-SMA-1.7	Figures 202-2 and 202-3 replaced	T	
V4. 4309	3/9/2020	PT-SMA-2	Updated Compliance Status Table	T	
V4. 4310	3/9/2020	PT-SMA-2	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V4. 4311	3/9/2020	PT-SMA-2	Figure 203-2 replaced and Figure 203-3 removed	T	
V4. 4312	3/9/2020	PT-SMA-2.01	Change to SDPPP - ~~Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.~~	T	
V4. 4313	3/9/2020	PT-SMA-2.01	Figure 204-2 replaced and Figure 204-3 removed	T	
V4. 4314	3/9/2020	PT-SMA-3	Removed Maintenance Table	T	
V4. 4315	3/9/2020	PT-SMA-3	Figure 205-2 replaced and Figure 205-3 removed	T	
V4. 4316	3/9/2020	PT-SMA-4.2	Figure 206-2 replaced, removed Figures 206-3 and 206-4	T	
V4. 4317	3/9/2020	W-SMA-1	Added Maintenance Table	T	
V4. 4318	3/9/2020	W-SMA-1	Updated Compliance Status Table	T	
V4. 4319	3/9/2020	W-SMA-1	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V4. 4320	3/9/2020	W-SMA-1	Figure 207-2 replaced	T	
V4. 4321	3/9/2020	W-SMA-1.5	Figure 208-2a replaced and renamed as Figure 208-2. Figure 208-2b removed	T	
V4. 4322	3/9/2020	W-SMA-2.05	Figure 209-2 replaced	T	
V4. 4323	3/9/2020	W-SMA-3.5	Removed Maintenance Table	T	
V4. 4324	3/9/2020	W-SMA-5	Figure 212-2 replaced and Figure 212-3 removed	T	
V4. 4325	3/9/2020	W-SMA-6	Updated Compliance Status Table	T	
V4. 4326	3/9/2020	W-SMA-6	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V4. 4327	3/9/2020	W-SMA-6	Added Figure 213-2	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4328	3/9/2020	W-SMA-7	Figure 214-2 replaced	T	
V4. 4329	3/9/2020	W-SMA-7.8	Updated Compliance Status Table	T	
V4. 4330	3/9/2020	W-SMA-7.8	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V4. 4331	3/9/2020	W-SMA-7.8	Added Figure 215-2	T	
V4. 4332	3/9/2020	W-SMA-8	Figure 217-2 replaced and Figure 217-3 removed	T	
V4. 4333	3/9/2020	W-SMA-8.7	Figure 218-2 replaced and Figure 218-3 removed	T	
V4. 4334	3/9/2020	W-SMA-8.71	Figure 219-2 replaced	T	
V4. 4335	3/9/2020	W-SMA-9.05	Figure 220-2 replaced and Figure 220-3 removed	T	
V4. 4336	3/9/2020	W-SMA-9.5	Updated Compliance Status Table	T	
V4. 4337	3/9/2020	W-SMA-9.5	Figure 221-2 replaced	T	
V4. 4338	3/9/2020	W-SMA-9.7	Removed Maintenance Table	T	
V4. 4339	3/9/2020	W-SMA-9.7	Figure 222-2 replaced	T	
V4. 4340	3/9/2020	W-SMA-9.8	Added Maintenance Table	T	
V4. 4341	3/9/2020	W-SMA-9.9	Added Maintenance Table	T	
V4. 4342	3/9/2020	W-SMA-9.9	Figure 224-2 replaced	T	
V4. 4343	3/9/2020	W-SMA-10	Removed Maintenance Table	T	
V4. 4344	3/9/2020	W-SMA-10	Figure 225-2 replaced	T	
V4. 4345	3/9/2020	W-SMA-11.7	Figure 226-2 replaced	T	
V4. 4346	3/9/2020	W-SMA-14.1	Figure 228-2 replaced and Figure 228-3 removed	T	
V4. 4347	3/9/2020	W-SMA-15.1	Figure 229-2 replaced	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4348	3/9/2020	CDV-SMA-1.2	Change to SDPPP- SWMUs 16-017(b)-99 and 16-029(k) are monitored within CDV-SMA-1.2. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure~~s~~ 180-2~~ and 180-3~~). The HE analytical results for this sample were rejected because of holding times. The remaining analytical results yielded no TAL exceedances. An additional baseline storm water sample was collected on August 2, 2015 (Figure~~s~~ 180-2~~ and 180-3~~). In Figure 180-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this monitoring sample yielded no TAL exceedances. Baseline confirmation is complete for CDV-SMA-1.2 and the associated SWMUs 16-017(b)-99 and 16-029(k) because all applicable sampling results are below the applicable MTAL or ATAL. This confirmation monitoring sample was collected to determine if corrective action was required.	T	
V4. 4349	3/9/2020	CDV-SMA-1.3	Change to SDPPP- SWMUs 16-017(a)-99 and 16-026(m) are monitored within CDV-SMA-1.3. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 181-2 and 181-3). In Figure 181-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (34.7 pCi/L) and are presented in Figure 181-2. ~~• Gross-alpha activity of 34.7 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4350	3/9/2020	CDV-SMA-1.3	Change to SDPPP- 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~~s~~ 181-2~~ and 181-3~~. 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 Figure~~s~~ 181-2~~ and 181-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4351	3/9/2020	CDV-SMA-1.4	Change to SDPPP-SWMUs 16-020, 16-026(l), 16-028(c), and 16-030(c) are monitored within CDV-SMA-1.4. Following the installation of baseline control measures, a baseline storm water sample was collected on September 10, 2012 (Figure 182-2). In Figure 182-2, cadmium and selenium are reported as~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ a TAL exceedance for silver (7.86 µg/L), and are presented in Figure 182-2.~~:~~ ~~• Silver concentration of 7.86 µg/L (MTAL is 0.5 µg/L).~~	T	
V4. 4352	3/9/2020	CDV-SMA-1.45	Change to SDPPP- SWMU 16-026(i) is monitored within CDV-SMA-1.45. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 183-2).~~ Inorganic analytical~~ results from this baseline sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (17.8 pCi/L) and are presented in Figure 183-2.~~:~~ ~~• Gross-alpha activity of 17.8 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4353	3/9/2020	CDV-SMA-1.7	Change to SDPPP- SWMU 16-019 is monitored within CDV-SMA-1.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure~~s~~ 184-2 ~~and 184-3~~). In Figure 184-2, cadmium and selenium are reported as~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (11 µg/L), cyanide (0.0175 mg/L), gross-alpha activity (36.9 pCi/L), and RDX concentration (908 µg/L) and are presented in Figure 184-2.~~:~~ ~~• Copper concentration of 11 µg/L (MTAL is 4.3 µg/L),~~ ~~• Cyanide, weak acid dissociable concentration of 0.0175 mg/L (MTAL is 0.01 mg/L),~~ ~~• Gross-alpha activity of 36.9 pCi/L (ATAL is 15 pCi/L), and~~ ~~• RDX concentration of 908 µg/L (ATAL is 200 µg/L).~~	T	
V4. 4354	3/9/2020	CDV-SMA-1.7	Change to SDPPP- The monitoring station for CDV-SMA-1.7 has been relocated. The sampler has been repositioned to a location determined to be more representative of the SMA. The Sampler coordinates and the SMA drainage area have been updated in Attachment 4.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4355	3/9/2020	CDV-SMA-1.7	Change to SDPPP- 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~~s~~ 184-2~~ and 184-3~~. 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 Figure~~s~~ 184-2~~ and 184-3~~.	T	
V4. 4356	3/9/2020	CDV-SMA-2	Change to SDPPP- SWMU 16-021(c) received discharges of HE-contaminated wastewater from the building 16-260 ~~consists of a formerly NPDES-permitted outfall (the 260 Outfall) for 13~~ HE sumps [SWMU 16-003(k)] that were located along the northeast side of the building in the southwest corner of TA-16. SWMU 16-021(c) consists of three sections; the building 16-260 Outfall (260 Outfall) and an upper drainage channel fed directly by the outfall, a former settling pond, and a lower drainage channel leading to Cañon de Valle. ~~served HE machining building 16-260 at TA-16. Wastewater from the sumps flowed through a concrete trough to the outfall, located approximately 200 ft east of the building. Discharge from the outfall flowed to a~~The former settling pond ~~that~~ was approximately 50 ft long and 20 ft wide and ~~that~~ was located in the upper drainage channel, approximately 45 ft below the 260 ~~outfall~~Outfall. The drainage channel ~~continued~~ runs approximately 600 ft northeast from the 260 O~~o~~utfall to the bottom of Cañon de Valle. A 15 ft near-vertical cliff is located approximately 400 ft from the 260 O~~o~~utfall and marks the break between the upper and lower drainage channels. HE-contaminated water from the 260 Outfall entered the former settling pond and drained into the 260 Outfall drainage channel, which was a substantial pathway for contamination identified in downgradient components of the SWMUs 16-003(k) and 16-021(c) hydrogeologic system, including the SWSC cut. The SWSC cut is next to SWSC spring and SWSC pipeline and derived its name because it is a roadcut for the SWSC pipline. Building 16-260 had been used since~~was constructed in~~ 1951 to process and machine HE. Water was used during the machining of HE which is slightly water-soluble; w~~W~~astewater from machining operations contained dissolved HE and potential entrained HE cuttings.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4356 (cont.)	3/9/2020	CDV-SMA-2	Wastewater treatment consisted of routing the water to 13 settling sumps [SWMU 16-003(k)] to recover entrained HE cuttings. From 1951 to 1996, the water from these sumps was discharged to the 260 Outfall. In 1994, outfall discharge volumes were measured at several million gallons per year. The discharge volumes were ~~likely~~ probably higher during the 1950s when HE-production output from building 16-260 was substantially greater than it was in the 1990s. In the past, barium had been a constituent of certain HE formulations, and thus barium was also present in the outfall wastewater from building 16-260. Discharge to the outfall continued until 1996 when the sumps were plugged. The outfall was removed from the NPDES permit in January 1998. During an IM conducted in 2000 and 2001, more than 1300 yd3 of contaminated soil was removed from the former settling pond and drainage channel. Approximately 90% of the HE in the SWMU 16-021(c) source area was removed. A low-permeability cap consisting of a 20-in.-thick crushed tuff/bentonite mixture was installed on top of the former settling pond during the IM. A CMI conducted in 2009 and 2010 included the removal of soil and tuff contaminated with HE and other constituents in the former 260 Outfall channel and in the alluvial systems of Cañon de Valle and Martin Spring Canyon, confirmation sampling, and installation of four HE treatment systems. Risk-assessment results for the 260 Outfall drainage channel indicate the Site meets residential risk levels. Groundwater contamination continues to be assessed, monitored, and treated.	T	
V4. 4357	3/9/2020	CDV-SMA-2	Change to SDPPP-SWMU 16-021(c) is monitored within CDV-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure~~s~~ 185-2~~ and 185-3~~). In Figure~~s~~ 185-2~~ and 185-3~~, cadmium, selenium, silver, and hexachlorobenzene are reported as nondetected~~nondetectable~~ results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ a TAL exceedance for gross-alpha activity (18.2 pCi/L) and are presented in Figure 185-2.~~: • Gross-alpha activity of 18.2 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4358	3/9/2020	CDV-SMA-2	Change to SDPPP- 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~~s~~ 185-2~~ and 185-3~~. 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 Figure~~s~~ 185-2~~ and 185-3~~.	T	
V4. 4359	3/9/2020	CDV-SMA-2.3	Change to SDPPP- SWMU 13-001 is an inactive firing site located east of former building 16-340, between battleship bunker buildings 16-477 and 16-478 at the eastern end of TA-16. The firing site ~~is~~ was associated with firing activities conducted at P-Site (former TA-13) and operated from 1944 to 1949. The battleship bunker buildings 16-477 and 16-478 housed x-ray and magnetic equipment and were capped with steel nose cones to protect this equipment from explosive detonations that occurred at the firing site between the two bunkers. Debris from firing site experiments includes ~~The area contains~~ shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper. Consent Order sampling is complete for SWMU 13-001. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs except for two detections of arsenic in two subsurface tuff samples. SWMU 13-001 has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in ~~2015~~2019.	T	
V4. 4360	3/9/2020	CDV-SMA-2.41	Change to SDPPP- 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~~s~~ 187-2~~ and 187-3~~. 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 Figure~~s~~ 187-2~~ and 187-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4361	3/9/2020	CDV-SMA-2.42	Change to SDPPP- 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~~s~~ 188-2~~ and 188-3~~. 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 Figure~~s~~ 188-2~~ and 188-3~~.	T	
V4. 4362	3/9/2020	CDV-SMA-2.51	Change to SDPPP- 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~~s~~ 190-2~~ and 190-3~~. 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 Figure~~s~~ 190-2~~ and 190-3~~.	T	
V4. 4363	3/9/2020	CDV-SMA-3	Change to SDPPP- 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~~s~~ 191-2~~ and 191-3~~. 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 Figure~~s~~ 191-2~~ and 191-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4364	3/9/2020	CDV-SMA-6.01	Change to SDPPP- 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~~s~~ 181-2~~ and 181-3~~. 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 Figure~~s~~ 181-2~~ and 181-3~~.	T	
V4. 4365	3/9/2020	CDV-SMA-6.02	Change to SDPPP- 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~~s~~ 194-2~~ and 194-3~~. 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 Figure~~s~~ 194-2~~ and 194-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4366	3/9/2020	CDV-SMA-2.3	Change to SDPPP - SWMU 13-002 is an inactive surface disposal area located east of former building 16-340 and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and, based on a 1948 aerial photograph., tThe site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the TA-16 WWTP is located on top of the southern tip of the surface disposal area. The SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at that time. ~~SWMU 13-002 is an inactive surface disposal area located east of former building 16-340. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13). A portion of the TA-16 WWTP is located above the southern tip of the surface disposal area.~~ Consent Order sampling is complete for SWMU 13-002. All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 13-002 ~~was~~ has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in ~~2015~~2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4367	3/9/2020	CDV-SMA-2.3	Change to SDPPP - SWMU 16-029(h) consists of ~~an~~ a former NPDES-permitted ~~inactive~~ outfall and two inactive~~/former~~ drainlines (one known and one ~~suspected~~alleged) from an inactive~~the~~ HE sump [AOC 16-003(p)]~~,~~ located on the south side of former ~~building~~ structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in. VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline ~~is suspected to~~possibly existed until the late 1960s and ~~be present. The second drainline is~~ reportedly was a French drain that extend~~s~~ed approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in. VCP that intersected a drainage channel. Former ~~building~~structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the ~~building~~structure was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009 and 2010, no evidence of the French drain was found. SWMU 16-029(h) was identified as an HE sump (structure 16-487) in the 1990 SWMU report. The SWMU report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former structure 16-478, and also includes areas impacted by the 2000 Cerro Grande wildfire. Consent Order sampling is complete for SWMU 16-029(h). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. ~~SWMU 16-029(h) was recommended for additional sampling to define the extent of contamination for one or more inorganic and/or organic chemicals in the S-Site Aggregate Area supplemental investigation report, submitted to NMED in 2015.~~ SWMU 16-029(h) has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4368	3/9/2020	CDV-SMA-2.3	Change to SDPPP -SWMUs 13-001, 13-002, 16 003(n), 16-003(o), 16-029(h), and 16-031(h) are monitored within CDV SMA 2.3. As part of extended baseline monitoring, a baseline storm water sample was collected on July 20, 2015 (Figure 186-2). This confirmation monitoring sample was collected to determine if corrective action was required. Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (54.4 pCi/L) and are presented in Figure 186-2.~~:~~ ~~• Gross-alpha activity of 54.4 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4369	3/9/2020	CDV-SMA-2.41	Change to SDPPP - SWMU 16-018 is monitored within CDV-SMA-2.41. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure~~s~~ 187-2~~ and 187-3~~). Analytical results from this baseline sample yielded~~ the following~~ TAL exceedances for gross-alpha activity (231 pCi/L) and PCB concentration (24 ng/L) and are presented in Figure 187-2. ~~÷~~ ~~• Gross-alpha activity of 231 pCi/L (ATAL is 15 pCi/L) and~~ ~~• PCB concentration of 24 ng/L (ATAL is 0.6 ng/L).~~ Following the installation of enhanced control measures at CDV-SMA-2.41, a corrective action storm water sample was collected on July 8, 2014 (Figure~~s~~ 187-2~~ and 187-3~~). Analytical results from this corrective action monitoring sample yielded ~~the following~~ TAL exceedances for gross-alpha activity (94.2 pCi/L) and PCB concentration (25 ng/L) and are presented in Figure 187-23.~~:~~ ~~Gross-alpha activity of 94.2 pCi/L (ATAL is 15 pCi/L) and~~ ~~PCB concentration of 25 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. ~~Exceedances are typically evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4370	3/9/2020	CDV-SMA-2.41	Change to SDPPP - Monitoring location CDV-SMA-2.41 receives storm water run-on from locations with 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 background UTL for locations with sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 and 2014 gross-alpha results ~~is~~ are less than this value. • PCB—The PCB baseline storm water UTL for locations with sediment derived from Bandelier Tuff is 11.7 ng/L. The 2011 and 2014 PCB results are~~is~~ greater than this value.	T	
V4. 4371	3/9/2020	CDV-SMA-2.42	Change to SDPPP - SWMU 16-010(b) is monitored within CDV-SMA-2.42. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure~~s~~ 188-2~~b and 188-3b~~). In Figure 188-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (4.37 µg/L), gross-alpha activity (89.3 pCi/L), and PCB concentration (33 ng/L) and are presented in Figure 188-2.~~:~~ ~~• Copper concentration of 4.37 µg/L (MTAL is 4.3 µg/L),~~ ~~• Gross-alpha activity of 89.3 pCi/L (ATAL is 15 pCi/L), and~~ ~~• PCB concentration of 33 ng/L (ATAL is 0.6 ng/L).~~ Following enhanced controls installation, two corrective action monitoring storm water samples were collected on June 25, 2017, and October 5, 2017 (Figure~~s~~ 188-2~~b and 188-3b~~). Analytical results from these samples yielded ~~the following~~ TAL exceedances for aluminum (3470 µg/L), copper (5.51 µg/L), gross-alpha activity (136 pCi/L and 29.2 pCi/L), and PCB concentrations (34 ng/L and 26 ng/L) and are presented in Figure 188-2. ~~• Aluminum concentration of 3470 µg/L (MTAL is 750 µg/L),~~ ~~• Copper concentration of 5.51 µg/L (MTAL is 4.3 µg/L),~~ ~~• Gross-alpha activities of 136 pCi/L and 29.2 pCi/L (ATAL is 15 pCi/L), and~~ ~~• PCB concentrations of 34 ng/L and 26 ng/L (ATAL is 0.6 ng/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4372	3/9/2020	CDV-SMA-2.5	Change to SDPPP - SWMUs 16-010(c), 16-010(d), and 16-028(a) are monitored within CDV-SMA-2.5. Following the installation of baseline control measures, baseline confirmation samples were collected on September 1, 2011, October 12, 2012, and July 26, 2013 (Figure~~s~~ 189-2~~ and 189-3~~). In Figure~~s~~ 189-2~~ and 189-3~~, cadmium, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. ~~Inorganic and organic analytical~~Analytical results from these baseline samples yielded no TAL exceedances. Baseline confirmation is complete for CDV-SMA-2.5 and the associated SWMUs 16-010(c), 16-010(d), and 16 028(a) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for CDV-SMA-2.5 for the duration of the IP.	T	
V4. 4373	3/9/2020	CDV-SMA-2.51	Change to SDPPP - SWMU 16-010(i) is monitored within CDV-SMA-2.51. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure~~s~~ 190-2~~ and 190-3~~). In Figure~~s~~ 190-2~~ and 190-3~~, cadmium, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ a TAL exceedance for gross-alpha activity (16.4 pCi/L) and are presented in Figure 190-2.~~:~~ ~~• Gross-alpha activity of 16.4 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4374	3/9/2020	CDV-SMA-3	Change to SDPPP - SWMU 14-009 is monitored within CDV-SMA-3. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 191-2~~ and 191-3~~). ~~Inorganic analytical~~ Analytical results from this baseline sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (33.4 pCi/L) and are presented in Figure 191-2.~~:~~ ~~• Gross-alpha activity of 33.4 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4375	3/9/2020	CDV-SMA-6.01	Change to SDPPP - SWMU 14-006 and AOC 14-001(g) are monitored within CDV-SMA-6.01. Following the installation of baseline control measures, a baseline storm water sample was collected on July 31, 2014 (Figures 193-2 and 193-3). In Figure 193-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (10 µg/L), gross-alpha activity (140 pCi/L), radium-226 and -228 activity (46.3 pCi/L) and are presented in Figure 193-2.~~:~~ ~~• Copper concentration of 10 µg/L (MTAL is 4.3 µg/L),~~ ~~• Gross-alpha activity of 140 pCi/L (ATAL is 15 pCi/L), and~~ ~~• Radium-226 and radium-228 activity of 46.3 pCi/L (ATAL is 30 pCi/L).~~	T	
V4. 4376	3/9/2020	CDV-SMA-6.02	Change to SDPPP - SWMUs 14-002(c), 14-002(d), and 14-002(e) are~~is~~ monitored within CDV-SMA-6.02. Following the installation of baseline control measures, baseline confirmation samples were collected on August 13, 2011, and September 1, 2011 (Figure~~s~~ 194-2 ~~and 194-3~~). In Figure 194-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Inorganic analytical results from these baseline samples yielded ~~the following~~ TAL exceedances for copper (28.1 µg/L and 29.3 µg/L), gross-alpha activity (147 pCi/L and 199 pCi/L), and mercury (1.6 µg/L and 0.95 µg/L) and are presented in Figure 194-2.~~:~~ ~~• Copper concentrations of 28.1 µg/L and 29.3 µg/L (MTAL is 4.3 µg/L),~~ ~~• Mercury concentrations of 1.6 µg/L and 0.95 µg/L (ATAL is 0.77 µg/L), and~~ ~~• Gross-alpha activities of 147 pCi/L and 199 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4376	3/9/2020	CDV-SMA-6.02	Following the installation of enhanced control measures at CDV-SMA-6.02, a corrective action storm water sample was collected on September 13, 2013 (Figure 194-2). In Figure 194-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances. Analytical results from this corrective action monitoring sample yielded no TAL exceedances. Corrective action storm water monitoring is continuing at the SMA until the collection of a second sample. ~~These exceedances are typically evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The following discussion is organized by Site and analyte.~~ ~~SWMU 14-002(c):~~ ~~• Copper is not known to be associated with industrial materials historically managed at this Site. Copper was not detected above BVs in any of the five shallow RFI samples collected at this Site.~~ ~~• Mercury is not known to be associated with industrial materials historically managed at this Site. Mercury was not detected or was not detected above BVs in any of the five shallow RFI samples collected at this Site.~~ ~~• Alpha-emitting radionuclides are not known to be 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 contains alpha-emitting radionuclides, and for uranium isotopes, which are alpha-emitting radionuclides.~~ ~~Site history and Consent Order sampling data indicate the Site is an unlikely a source of the TAL exceedances. The Site is impacted by active firing site operations.~~ ~~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 194-2. 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 194-2.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4376 (cont.)	3/9/2020	CDV-SMA-6.02	~~Monitoring location CDV-SMA-6.02 receives storm water run-on from sediment derived from Bandelier Tuff. Metals including copper are found at low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.~~ ~~• Copper—The copper UTL from locations with sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are higher than this value.~~ ~~• Mercury—The mercury UTL from locations with sediment derived from Bandelier Tuff was not calculated because the number of detected values was not sufficient to allow calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison with background mercury UTL could not be made.~~ ~~• Gross alpha—The gross-alpha background UTL for locations with sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha results are less than this value.~~	T	
V4. 4377	3/9/2020	CDV-SMA-7	Change to SDPPP - SWMU 15-008(d) is monitored within CDV-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 195-2~~a~~). In Figure 195-2, cadmium and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (956 µg/L), gross-alpha activity (191 pCi/L), and selenium (5.33 µg/L) and are presented in Figure 195-2.~~:~~ ~~• Aluminum concentration of 956 µg/L (MTAL is 750 µg/L),~~ ~~• Selenium concentration of 5.33 µg/L (ATAL is 5 µg/L), and~~ ~~• Gross-alpha activity of 191 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced controls two corrective action storm water samples were collected on July 17, 2018, and on August 10, 2018 (Figure 195-2~~b~~). Analytical results from the corrective action monitoring samples yielded ~~the following~~ a TAL exceedance for gross-alpha activity (222 pCi/L and 186 pCi/L) and are presented in Figure 195-2.~~:~~ ~~• Gross-alpha activity of 222 pCi/L and 186 pCi/L (ATAL is 15 pCi/L)~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4378	3/9/2020	CDV-SMA-8	Change to SDPPP - SWMU 15-011(c) is monitored within CDV-SMA-8. Following the installation of baseline control measures, a baseline storm water sample was collected on July 31, 2014 (Figure~~s~~ 196-2~~ and 196-3~~). In Figure~~s~~ 196-2~~ and 196-3~~, cadmium, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (1360 µg/L) and gross-alpha activity (53.4 pCi/L) and are presented in Figure 196-2.~~:~~ ~~• Aluminum concentration of 1360 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 53.4 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4379	3/9/2020	CDV-SMA-8.5	Change to SDPPP - ~~The monitoring station for CDV-SMA-8.5 has been relocated. The sampler has been repositioned to a location determined to be more representative of the SMA. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.~~	T	
V4. 4380	3/9/2020	CDV-SMA-9.05	Change to SDPPP - SWMU 15-007(b) is monitored within CDV-SMA-9.05. A baseline storm water sample was collected on August 10, 2018 (Figure~~s~~ 198-2~~ and 198-3~~). ~~In Figure 198-2, hexachlorobenzene is reported as a nondetectable result equal to or greater than the respective TAL. These values are reported at the MDL.~~ Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (16.4 pCi/L) and are presented in Figure 198-2.~~:~~ ~~• Gross-alpha activity of 16.4 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4381	3/9/2020	F-SMA-2	Change to SDPPP - AOC 36-004(c) is monitored within F-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on August 15, 2011 (Figures 199-2~~ and 199-3~~). Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (866 µg/L), copper (72.5 µg/L), and gross-alpha activity (140 pCi/L) and are presented in Figure 199-2.~~:~~ ~~• Aluminum concentration of 866 µg/L (MTAL is 750 µg/L),~~ ~~• Copper concentration of 72.5 µg/L (MTAL is 4.3 µg/L), and~~ ~~• Gross-alpha activity of 140 pCi/L (ATAL is 15 pCi/L).~~ Following the 2014 installation of enhanced control measures at F-SMA-2, corrective action storm water samples were collected on July 15, 2014, and July 31, 2014 (Figure~~s~~ 199-2~~ and 199-3~~). Analytical results from these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for copper (10.8 µg/L) and gross-alpha activity (112 pCi/L and 58.9 pCi/L) and are presented in Figure 199-2.~~:~~ ~~Copper concentrations of 10.8 µg/L (MTAL is 4.3 µg/L) and~~ ~~Gross-alpha activities of 112 pCi/L and 58.9 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4382	3/9/2020	PT-SMA-0.5	Change to SDPPP - SWMU 15-009(e) and AOC C-15-004 are monitored within PT-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure~~s~~ 200-2~~ and 200-3~~). Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (1380 µg/L), copper (6.5 µg/L), and gross-alpha activity (79.5 pCi/L) and are presented in Figure 200-2.~~:~~ ~~• Aluminum concentration of 1380 µg/L (MTAL is 750 µg/L),~~ ~~• Copper concentration of 6.5 µg/L (MTAL is 4.3 µg/L), and~~ ~~• Gross-alpha activity of 79.5 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4383	3/9/2020	PT-SMA-1	Change to SDPPP - SWMUs 15-004(f) and 15-008(a) are monitored within PT-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure~~s~~ 201-2~~ and 201-3~~). In Figure~~s~~ 201-2~~ and 201-3~~, cadmium, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (6550 µg/L), copper (174 µg/L), gross-alpha activity (104 pCi/L), and zinc (75.9 µg/L) and are presented in Figure 201-2.~~:~~ ~~• Aluminum concentration of 1380 µg/L (MTAL is 750 µg/L),~~ ~~• Copper concentration of 6.5 µg/L (MTAL is 4.3 µg/L),~~ ~~• Zinc concentration of 75.9 µg/L (MTAL is 42 µg/L), and~~ ~~• Gross-alpha activity of 79.5 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at PT-SMA-1, corrective action storm water samples were collected on July 9, 2014, and July 31, 2014 (Figure~~s~~ 201-2~~ and 201-3~~). Analytical results from these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for copper (45.5 µg/L and 21.4 µg/L) and gross-alpha activity (650 pCi/L and 4400 pCi/L) and are presented in Figure 201-2.~~:~~ ~~Copper concentrations of 45.5 µg/L and 21.4 µg/L (MTAL is 4.3 µg/L) and~~ ~~Gross-alpha activities of 650 pCi/L and 4400 pCi/L (ATAL is 15 pCi/L).~~ Following a sampler move to a more representative monitoring location, a corrective action monitoring storm water sample was collected on September 26, 2017 (Figure~~s~~ 201-2~~ and 201-3~~). Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (4.8 µg/L) and gross-alpha activity (17.6 pCi/L) and are presented in Figure 201-2.~~:~~ ~~Copper concentration of 4.8 µg/L (MTAL is 4.3 µg/L) and~~ ~~Gross-alpha activity of 17.6 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4384	3/9/2020	PT-SMA-1.7	Change to SDPPP - SWMU 15-006(a) and 15-003 is monitored within PT-SMA-1.7. Following the installation of baseline control measures, a baseline confirmation sample was collected on September 10, 2012 (Figure~~s~~ 202-2~~ and 202-3~~). In Figure 202-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. ~~Inorganic analytical~~Analytical results from this baseline sample yielded ~~the following~~ a TAL exceedance for gross-alpha activity (92.6 pCi/L) and are presented in Figure 202-2.~~:~~ ~~• Gross-alpha activity of 92.6 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4385	3/9/2020	PT-SMA-2	Change to SDPPP - SWMU 36-003(b) and AOCs 15-008(f) and 36-004(e) are monitored within PT-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2014 (Figure~~s~~ 203-2~~ and 203-3~~). In Figure~~s~~ 203-2~~ and 203-3~~, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (10.3 µg/L) and gross-alpha activity (290 pCi/L) and are presented in Figure 203-2.~~:~~ ~~• Copper concentration of 10.3 µg/L (MTAL is 4.3 µg/L) and~~ ~~Gross-alpha activity of 290 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at PT-SMA-2, corrective action storm water samples were collected on July 25, 2019, and October 4, 2019 (Figure 203-2). Analytical results from this sample yielded TAL exceedances for copper (3.66 µg/L and 5.15 µg/L) and gross-alpha activity (78.6 pCi/L and 137 pCi/L) and are presented in Figure 203-2.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4386	3/9/2020	PT-SMA-2	Change to SDPPP - Monitoring location PT-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 copper are associated with building materials, parking lots, and automobiles. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. • Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2014 and 2019 are~~is~~ between these two values. • Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2014 and 2019 gross-alpha results ~~is~~ are between these two values. All the analytical results for these samples are reported in the 2014 and 2019 Annual Reports.	T	
V4. 4387	3/9/2020	CDV-SMA-8	Change to SDPPP- 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~~s~~ 196-2~~ and 196-3~~. 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 Figure~~s~~ 196-2~~ and 196-3~~.	T	
V4. 4388	3/9/2020	CDV-SMA-9.05	Change to SDPPP- 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~~s~~ 198-2~~ and 198-3~~. 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 Figure~~s~~ 198-2~~ and 198-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4389	3/9/2020	F-SMA-2	Change to SDPPP- 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~~s~~ 199-2~~ and 199-3~~. 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 Figure~~s~~ 199-2~~ and 199-3~~.	T	
V4. 4390	3/9/2020	PT-SMA-0.5	Change to SDPPP- 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~~s~~ 200-2~~ and 200-3~~. 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 Figure~~s~~ 200-2~~ and 200-3~~.	T	
V4. 4391	3/9/2020	PT-SMA-1	Change to SDPPP- 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~~s~~ 201-2~~ and 201-3~~. 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 Figure~~s~~ 201-2~~ and 201-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4392	3/9/2020	PT-SMA-1.7	Change to SDPPP- 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~~s~~ 202-2~~ and 202-3~~. 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 Figure~~s~~ 202-2~~ and 202-3~~.	T	
V4. 4393	3/9/2020	PT-SMA-2.01	Change to SDPPP- 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~~s~~ 204-2~~ and 204-3~~. 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 Figure~~s~~ 204-2~~ and 204-3~~.	T	
V4. 4394	3/9/2020	PT-SMA-3	Change to SDPPP- 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~~s~~ 205-2~~ and 205-3~~. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarit Plateau, including buildings, parking lots, roads, and associated features, and are labeled "Developed Background" in Figure~~s~~ 205-2~~ and 205-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4395	3/9/2020	PT-SMA-4.2	Change to SDPPP- 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~~s~~ 206-2~~3 and 206-4~~. 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~~s~~ 206-2~~3 and 206-4~~.	T	
V4. 4396	3/9/2020	W-SMA-8.7	Change to SDPPP- 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~~s~~ 218-2~~ and 218-3~~. 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 Figure~~s~~ 218-2~~ and 218-3~~.	T	
V4. 4397	3/9/2020	W-SMA-9.05	Change to SDPPP- 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~~s~~ 220-2~~ and 220-3~~. 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 Figure~~s~~ 220-2~~ and 220-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4398	3/9/2020	W-SMA-8	Change to SDPPP- 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~~s~~ 217-2~~ and 217-3~~. 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 Figure~~s~~ 217-2~~ and 217-3~~.	T	
V4. 4399	3/9/2020	W-SMA-5	Change to SDPPP- 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~~s~~ 212-2~~ and 212-3~~. 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 Figure~~s~~ 212-2~~ and 212-3~~.	T	
V4. 4400	3/9/2020	PT-SMA-2.01	Change to SDPPP- AOCs C-36-001 and C-36-006(e) are monitored within PT-SMA-2.01. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 18, 2011 (Figure~~s~~ 204-2~~ and 204-3~~). ~~Inorganic analytical~~Analytical results from this baseline sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (295 pCi/L) and are presented in Figure 204-2.~~:~~ ~~• Gross-alpha activity of 295 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4401	3/9/2020	PT-SMA-3	Change to SDPPP- SWMU 36-006 and AOC 36-004(a) are monitored within PT-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 15, 2014 (Figure~~s~~ 205-2~~ and 205-3~~). In Figure 205-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (548 pCi/L) and are presented in Figure 205-2.~~:~~ ~~• Gross-alpha activity of 548 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4402	3/9/2020	PT-SMA-3	Change to SDPPP- ~~The monitoring station for PT-SMA-3 has been relocated. The sampler has been repositioned to a location determined to be more representative of the SMA. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.~~	T	
V4. 4403	3/9/2020	PT-SMA-4.2	Change to SDPPP- SWMU 36-004(d) is monitored within PT-SMA-4.2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 2, 2014 (Figure~~s~~ 206-2~~ and 206-3~~). In Figure 206-2, cadmium, selenium, and silver are reported as nondetected~~nondetectable~~ results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for gross-alpha activity (393 pCi/L) and radium-226 and -228 activity (95.9 pCi/L) and are presented in Figure 206-2.~~:~~ ~~• Gross-alpha activity of 393 pCi/L (ATAL is 15 pCi/L) and~~ ~~• Radium-226 and radium-228 activity of 95.9 pCi/L (ATAL is 30 pCi/L).~~ Following the installation of enhanced control measures at PT-SMA-4.2, a corrective action storm water sample was collected on August 10, 2018 (Figure 206-2~~4~~). Analytical results from this corrective action monitoring sample yielded~~ the following~~a TAL exceedance for gross-alpha activity (84.5 pCi/L) and are presented in Figure 206-2. ~~• Gross-alpha activity of 84.5 pCi/L (ATAL is 15 pCi/L)~~	T	
V4. 4404	3/9/2020	W-SMA-1	Change to SDPPP- SWMU 16-017(j)-99 is a former HE magazine (former structure 16-63) at TA-16. The magazine was a 24- × 26- × 9-ft wood-framed structure surrounded by an earthen berm on three sides and the top. The magazine was built in 1945 ~~to store HE~~ and ~~was~~ removed in 1998. The storage magazine was built at grade, and there is no longer any evidence of the berm that once surrounded the magazine. Any remaining berm material is indistinguishable from the surrounding soil. This SWMU was originally designated as part of SWMU 16 017, a group of 24 structures in central TA-16. In 1999, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4405	3/9/2020	W-SMA-1	Change to SDPPP- SWMU 16-026(v) is a former NPDES-permitted outfall (05A072) that served decommissioned analytical chemistry laboratory building 16 460 at TA-16. The outfall is located approximately 60 ft southeast of the building. The outfall ~~and~~ received effluent from a sump [SWMU 16-003(c)], which served building floor drains, steam-cup drains, sink drains, and a drinking fountain. Waste containing fine grains of HE from analytical chemistry experiments in addition to small quantities of a wide range of solvents and other chemicals were discharged to the sump from the 1950s to the 1990s. The outfall was plugged ~~in~~ by ~~1992~~1995. It was removed from the NPDES permit effective September 19, 1997.	T	
V4. 4406	3/9/2020	W-SMA-1	Change to SDPPP- SWMU 16-026(c2) consists of the two former outfalls and associated drainlines that served former chemical storage building 16-462 at TA-16. The outfalls were~~are~~ located approximately 30 ft southeast of the building. Each of the two rooms in building ~~Floor troughs within~~ 16-462 had a floor trough that drained to 6-in.-diameter VCP drainline~~s~~ that exit the south and southeast side of the building. Effluent flowed from the drainline outfalls southeast to a drainage ditch. Building 16 462 was built in 1952 to store chemicals for use in the analytical chemistry laboratory (building 16 460). All drains at building 16 462 were plugged in 1991. One of the storage rooms contained solvents and oils, and the other storage room contained inorganic and organic chemicals including acetone, benzene, mineral oil, nitric acid, propanol, and trichloroethene. No HE were stored in the building. Building 16-462 was removed post 2010. ~~There are no records of chemical spills in building 16-462.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4407	3/9/2020	W-SMA-1	Change to SDPPP- SWMUs 16-017(j)-99, 16-026(c2), and 16-026(v) are monitored within W-SMA-1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 9, 2011 (Figure 207-2). In Figure 207-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from these samples yielded the following TAL exceedances for aluminum (918 µg/L and 1410 µg/L) and gross-alpha activity (50.7 pCi/L) and are presented in Figure 207-2.~~:~~ ~~• Aluminum concentrations of 918 µg/L and 1410 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 50.7 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at W-SMA-1, ~~a~~ corrective action storm water samples was were collected on September 12, 2013, and July 19, 2014 (Figure 207-2). Analytical results from ~~this~~ these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for aluminum (1010 µg/L and 858 µg/L), copper (4.45 µg/L), and gross alpha activity (314 pCi/L) and are presented in Figure 207-2. ~~Aluminum concentration of 1010 µg/L (MTAL is 750 µg/L) and~~ ~~Gross-alpha activity of 314 pCi/L (ATAL is 15 pCi/L).~~ ~~A second corrective action storm water sample was collected on July 19, 2014 (Figure 207-2). No exposure was certified and a completion of corrective action for W-SMA-1 was submitted on September 29, 2015. This Site is now certified as corrective action complete,~~ Following certification of no exposure for Site 16-017(j)-99 within W-SMA-1, a corrective action investigation storm water sample was collected on October 24, 2018. Analytical results from this sample were submitted to EPA on January 14, 2020. This Site is now certified as corrective action complete and no further monitoring is required for Site 16-017(j)-99 for the remainder of the IP. ~~for – and monitoring of storm water discharges has ceased at W-SMA-1. No further sampling is required for W-SMA-1 for the remainder of the IP. Analytical results from this corrective action monitoring sample yielded the following TAL exceedances:~~ ~~• Aluminum concentration of 858 µg/L (MTAL is 750 µg/L) and~~ ~~• Copper concentration of 4.45 µg/L (MTAL is 4.3 µg/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4408	3/9/2020	W-SMA-1	Change to SDPPP- Monitoring location W-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L, and the aluminum background storm water UTL for storm water run-on from a developed landscape is 245 µg/L. The ~~two~~ results from 2011, ~~and the result from~~ 2013, and 2014 are all between these 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 results from 2014 is between these two values. • Gross alpha—The gross-alpha 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 ~~result from 2013 is between these two values and the~~ geometric mean of both gross-alpha results from 2011 is below both of these values. The geometric mean of the gross-alpha results from 2013 and 2014 is between these values. All the analytical results for these samples are reported in the 2011, 2013, ~~and~~ 2014, and 2018 Annual Reports.	T	
V4. 4409	3/9/2020	W-SMA-1.5	Change to SDPPP- SWMU 16-026(b2) is an outfall and associated drainline that served decommissioned ~~small~~ machine ~~(millwright) shop located in room 138 of~~shop building 16-202 in the administrative area at TA-16. The drainline exited the northeast corner of building 16-20 and discharged to an outfall ~~is~~ located approximately 135 ft east-southeast of ~~building 16-202 and daylighted~~the building in the drainage ditch along Anchor Ranch Road. The outfall received ~~overflow~~ discharge from an oil/water separator, which consisted of a 3- × 3- × 3-ft cement pit located below floor level in a millwright shop. The separator was installed in 1952, when building 16-202 was built, and remains in place but is covered. Use of the separator ceased after 1977 and the millwright shop is now an office.~~By 1977, room 138 was no longer used as shop and the separator ceased to be used. The building has been used for administrative offices since 1995.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4410	3/9/2020	W-SMA-1.5	Change to SDPPP- SWMU 16-028(d) is a former NPDES-permitted outfall (04A083) located ~~at~~ in the administrative area of TA-16, approximately 80 ft southeast of decommissioned building 16-202. The outfall formerly served ~~a~~ the decommissioned machine shop in building 16 202 and connected to the building through an 8-in.-diameter VCP. The outfall received noncontact cooling water and wash water from two floor drains, effluent from two non-HE sumps, discharge from two sink drains, and rainwater from 16 roof drains. A variety of materials associated with machining metals and plastics were used in the building and could have been present in discharges to the outfall, including brazing alloy, trichloroethene, petroleum distillates, oils, and hydrochloric acid. In 1995, building 16-202 was converted to office space, and the drainlines within the building were modified so that the outfall receives only storm water from the building's roof drains. The outfall was removed from the NPDES permit effective September 19, 1997.	T	
V4. 4411	3/9/2020	W-SMA-1.5	Change to SDPPP- SWMUs 16-026(b2) and 16-028(d) are monitored within W-SMA-1.5. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 1, 2011 (Figure 208-2). Analytical results from these samples yielded ~~the following~~ TAL exceedances for copper (9.7 µg/L), gross-alpha activity (22 pCi/L), and zinc (49.3 µg/L) and are presented in Figure 208-2.~~:~~ ~~• Copper concentration of 9.7 µg/L (MTAL is 4.3 µg/L),~~ ~~• Zinc concentration of 49.3 µg/L (MTAL is 42 µg/L), and~~ ~~• Gross-alpha activity of 22 pCi/L (ATAL is 15 pCi/L).~~ Following the 2012 installation of enhanced control measures at W-SMA-1.5, a corrective action storm water sample was collected on July 19, 2014 (Figure 208-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~ a TAL exceedance for copper (6.9 µg/L) and are presented in Figure 208-2. ~~:~~ ~~Copper concentration of 6.9 µg/L (MTAL is 4.3 µg/L).~~ Following the 2015 installation of enhanced control measures at W-SMA-1.5, a~~A~~ corrective action storm water sample was collected on September 28, 2017 (Figure 208-2). Analytical results from this sample yielded no TAL exceedances. Corrective action monitoring will continue until the collection of a second sample.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4411 (cont.)	3/9/2020	W-SMA-1.5	~~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 16-026(b2):~~ ~~• Copper may have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.~~ ~~• Zinc may have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.~~ ~~• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.~~ ~~SWMU 16-028(d):~~ ~~• Copper may have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.~~ ~~• Zinc may have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.~~ ~~• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this 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 Figure 208-2. 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 208-2.~~ ~~Monitoring location W-SMA-1.5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4411 (cont.)	3/9/2020	W-SMA-1.5	~~• Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L, and the copper background storm water UTL for storm water run-on from a developed landscape is 32.3 µg/L. One result from 2011 and the 2014 result are between these values, and the second 2011 result is below both values.~~ All the analytical results for these samples are reported in the 2011, 2014, and 2017 Annual Reports.	T	
V4. 4412	3/9/2020	W-SMA-2.05	Change to SDPPP- SWMU 16-028(e) is a formerly NPDES-permitted outfall (04A091) that served ~~the materials~~ materials-testing laboratory building 16-450 at TA-16. The outfall was located southeast of building 16-450 and received discharges through an outlet drainline from ~~an~~ a former HE sump [SWMU 16-029(g)]. The outfall discharged outside the security fence at the edge of Water Canyon. The sump was removed in 1997, and the drainline to the outfall was plugged but left in place. The outfall was removed from the NPDES permit effective September 19, 1997.	T	
V4. 4413	3/9/2020	W-SMA-2.05	Change to SDPPP- SWMU 16-028(e) is monitored within W-SMA-2.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 209-2. Analytical results from this sample yielded ~~the following~~ a TAL exceedance for aluminum (1240 µg/L) and are presented in Figure 209-2.~~:~~ ~~• Aluminum concentration of 1240 µg/L (MTAL is 750 µg/L).~~	T	
V4. 4414	3/9/2020	W-SMA-3.5	Change to SDPPP- SWMU 16-026(y) is ~~a former~~an inactive outfall and associated outlet drainline that served building 16-411 at TA-16. The outfall drainline consists of a 4-in.-diameter VCP that exits the ~~west side~~southwest wall of building 16-411, then turns south to terminate at ~~a~~ its discharge point on the hill slope of Water Canyon. The discharge point is located south of a double security fence at the edge of Water Canyon. Building 16 411 was constructed in 1951 and used to assemble finished HE components. The outfall received discharges from an equipment room floor drain, a sink, roof drains, a water fountain, and an eyewash station. The outfall was decommissioned in the late 1980s ~~In the 1990s,when~~ the roof drains were rerouted to a separate outfall, and all other drains were either plugged or rerouted to a holding tank.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4415	3/9/2020	W-SMA-4.1	Change to SDPPP- SWMU 16-003(a) is an inactive HE sump, associated inlet and outlet drains, and ~~an inactive~~ former NPDES-permitted outfall (05A053) that served assembly building 16-410 at TA-16. The concrete ~~subsurface~~ sump is located on the exterior southeast wall of the building and ~~measured~~ measures ~~12~~ 9.5 ft long × ~~4~~ 3.5 ft wide × ~~5~~ 2.5 ft ~~high~~deep. The sump served floor, roof, and equipment drains and removed suspended HE solids from process water before it was discharged to the outfall, located approximately 320 ft southeast of the building. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. The ~~outfall~~ outlet drainline from the sump was plugged ~~in 1992~~ by 1995. The outfall was~~and~~ removed from the NPDES permit effective January 14, 1998. ~~The sump remains active and is pumped out on a regular basis.~~	T	
V4. 4416	3/9/2020	W-SMA-5	Change to SDPPP- SWMU 16-001(e) is an inactive dry well located at TA-16 approximately ~~100~~ 170 ft east of HE-processing building 16-306 at the head of a small tributary to Water Canyon. Constructed in the 1980s, the dry well served the building 16-300 series process line and never functioned properly because it drained to impermeable tuff. Building 16-300 was initially an HE-casting facility and was later converted to a mock (inert) explosives-preparation facility in 1962. The well was constructed of a 4-ft diameter CMP buried vertically to an unknown depth. A T-pipe was subsequently installed in the dry well to allow liquids discharged to the dry well to flow to a former NPDES-permitted outfall (EPA 05A058) where the liquid waste trunk line discharged effluent from HE sumps associated with the building 16-300 series process line. ~~Eventually, the~~The dry well was filled with soil from the surrounding area and capped with concrete before 1992. Consent Order Phase I investigation sampling is complete. SWMU 16-001(e) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4417	3/9/2020	W-SMA-5	Change to SDPPP- SWMU 16-003(f) consists of two inactive HE sumps located on the exterior east side of building 16-304 at TA-16. Building 16-304 was constructed between 1951 and 1953 and was used as ~~that served building 16-304. The sumps discharged to an outfall. Building 16-304 was~~ a plastics and plastic-component development and production facility for the weapons program. Polycarbonate components were fabricated using injection-molding machines. Other components were made using hydraulic presses. Large high-temperature ovens were used to dry-mold powders and to cure thermoset plastics. Wash water from the building drained to the sumps. Chemical solvents including acetone and methyl ethyl ketone were used in the plastics processing operations were also discharged to the SWMU 16-003(f) sumps. One sump measured 123 in. ×x 41 in. xx 31 in. with a 6-in.-diameter VCP outlet drainline, and the other sump measured 203 in. xx 41 in xx 31 in. with an 8-in.-diameter VCP outlet drainline. HE-contaminated water and solvents from the sumps were discharged into the shared liquid waste trunk line located on the east side of the building .The effluent flowed through the liquid waste trunk line and discharged through a former NPDES-permitted outfall (EPSA 05A058) into a well-defined drainage across HE Road and southeast of building 16-306. In the early 1990s, solvents were no longer discharged to the sumps. Discharges from the sumps ceased in the mid-1990s, and the outfall was removed from the NPDES permit in 2000. ~~also were used at building 16-304. By 1993, solvents were containerized and sent off-site for disposal, and HE operations in the building had ceased.~~ Consent Order Phase I investigation sampling is complete. SWMU 16-003(f) was recommended for additional field characterization activities in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4418	3/9/2020	W-SMA-5	Change to SDPPP- SWMU 16-026(b) is an inactive former outfall located ~~to the east~~northeast of a rest house (~~building~~ structure16-307) in TA- 16. The outfall formerly received discharge from two HE sumps [SWMU 16-029(a)] located adjacent to~~near~~ the exterior southeast wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990 and 1991. ~~The resthouse~~ Structure 16-307 was built between 1951 and 1953 to serve building 16-306. Structure 16-307 was used to store molds and other materials used in~~for~~ plastics development facilities, and also previously housed a solvent disassembly tank used to remove HE from test devices. This operation was the principal source of potential HE contamination in the drainage downgradient of the inactive outfall. Consent Order Phase I investigation sampling is complete. SWMU 16-026(b) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	
V4. 4419	3/9/2020	W-SMA-5	Change to SDPPP- SWMU 16-026(c) is an inactive outfall located at TA-16 ~~to the~~ south of a rest house (building 16 305). The outfall ~~previously~~ formerly received discharge from two HE sumps [SWMU 16-029(b)] located ~~near~~ adjacent to the exterior southwest wall of the rest house. The outfall discharged to Water Canyon. ~~One soil sample was taken from the outfall at structure 16 305 in 1970. Analytical results showed no TNT, RDX, or HMX, although some unknown HE decomposition products may have been present at low levels.~~ The sumps were plugged in 1990 and 1991. Structure 16-305 was built between 1951 and 1953 to serve buildings 16-304 and 16-306, the plastics development and production facility. Structure 16-305 ~~The resthouse~~ was used to store chemicals and solvents for plastics development and production and was also used for filament winding of developmental weapons components. Consent Order Phase I investigation sampling is complete. SWMU 16-026(c) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4420	3/9/2020	W-SMA-5	Change to SDPPP- SWMU 16-026(d) is an inactive outfall located ~~to the~~ southeast of a rest house (structure~~building~~ 16-303) at TA-16. The outfall formerly received discharges from two HE sumps [SWMU 16-029(c)] located ~~on~~ adjacent to the exterior ~~south~~west wall of the rest house. ~~Potential contaminants were HE, inorganic chemicals, and organic chemicals.~~ The outfall discharged to Martin Spring Canyon. ~~Two samples were taken at the SWMU 16-026(d) outfall in 1970. Samples showed elevated levels of HMX and/or RDX and TNT.~~ The sumps were plugged in 1990 and 1991. Structure 16-303 was built between 1951 and 1953 to serve building 16-302, an HE-casting facility. The rest house was used to store raw materials used in the casting process and HE castings produced in casting building 16-302. Consent Order Phase I investigation sampling is complete. SWMU 16-026(d) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	
V4. 4421	3/9/2020	W-SMA-5	Change to SDPPP- SWMU 16-026(e) is an inactive outfall located ~~to the south~~southwest of structure~~building~~ 16-301 at TA-16. The outfall formerly received discharge from two HE sumps [SWMU 16-029(d)] located on the exterior west side of ~~building~~ structure 16-301. The outfall discharged to Martin Spring Canyon. The sumps were plugged in 1990 and 1991.~~Building~~ Structure 16-301 was built in 1951 and 1952 and originally housed mock-HE -processing operations and stored raw materials that were used to prepare mock HE. Structure~~Building~~ 16-301 was later used as an environmental testing laboratory for research in the effects of temperature, pressure, and humidity on weapons and components. The sumps were plugged in 1990 and 1991. Consent Order Phase I investigation sampling is complete. SWMU 16 026(e) was recommended for additional field characterization activities in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4422	3/9/2020	W-SMA-5	Change to SDPPP- SWMUs 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e) are monitored within W SMA-5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 3, 2012 (Figure~~s~~ 212-2~~ and 212-3~~). In Figure~~s~~ 212-2~~ and 212-3~~, cadmium, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~a TAL exceedance for copper (6.28 µg/L) and are presented in Figure 212-2.~~:~~ ~~• Copper concentration of 6.28 µg/L (MTAL is 4.3 µg/L).~~	T	
V4. 4423	3/9/2020	W-SMA-6	Change to SDPP- SWMU 11-001(c) is a former firing pit (former structure 11-15)~~located~~ at TA-16, that was located northwest of former building 16-370 near the edge of Water Canyon. According to the 1990 SWMU report, the firing pit was similar in construction to Firing Pit 11-14 [SWMU 11-001(a)], which ~~was a 37-ft semicircular wall that was 12.5 ft high and 4.5 ft thick~~consisted of a 12.5-ft semicircular concrete wall that was 4.5 ft high and 37 in. thick. The SWMU 11 001(c) firing pit was first used in 1944. The former TA-11 firing pits were arranged so that testing could be controlled and observed remotely. Components and assemblies were exposed to extreme physical environments including vibration, shock, and thermal-testing. Shots fired at the former TA-11 firing pits reportedly contained uranium and aluminum. Use of the firing pit ceased by the early 1950s. In 1989, when technical area boundaries were redefined within the Laboratory, portions of former TA-11 were absorbed into TA-16. As a result, SWMU 11-001(c) is now located within the northeast portion of TA-16.~~The date when the firing pit ceased to be used is not documented; however, it would have been before construction of building 16-370 in the 1953.~~ An RFI and a VCA were conducted in 1995 and 1996, respectively. However, in 2011 during preparation of the Upper Water Canyon Aggregate Area investigation work plan, it was determined from engineering drawing R 126 that samples from the RFI and VCA were collected from the wrong location. The firing pit was actually located northwest of the area that was sampled.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4424	3/9/2020	W-SMA-6	Change to SDPPP- ~~Through calendar year 2018, storm water flow has not been sufficient for full-volume sample collection at W-SMA-6. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.~~SWMU 11-001(c) is monitored within W-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2019 (Figure 213-2). Analysis for this sample did not include total metals so monitoring was continued. An additional limited volume baseline storm water sample was collected on October 4, 2019 (Figure 213-2). Analytical results from these samples yielded a TAL exceedance for gross-alpha activity (60.5 pCi/L) and are presented in Figure 213-2. 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. There are no soil data available for this Site. • Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. There is no decision-level data from soil sampling at this Site, Consent Order sampling has not been conducted. 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 213-2. 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 214-2. Monitoring location W-SMA-6 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—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2019 gross-alpha result is less than this value. All the analytical results for these samples are reported in the 2019 Annual Report.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4425	3/9/2020	W-SMA-7	Change to SDPPP- SWMU 16-029(e) consists of an inactive HE sump and formerly NPDES-permitted outfall (05A159) that served HE equipment assembly building 16-360 at TA-16. The sump is a 12- × 4- × 5-ft ~~subsurface~~ reinforced concrete structure located on the exterior southeast side of the building. The sump received wash water from historical cleaning activities and discharged southeast to the outfall through a 6-in.-diameter drainline. The sump outlet was plugged in the early 1990s; the outfall was removed from the NPDES permit effective August 16, 1995. The OU 1082 RFI work plan identifies SWMU 16-029(e) as an HE sump at building 16-360 with SWMU 16-026(h2) as the associated NPDES-permitted outfall. However, the 1990 SWMU report identifies SWMU 16-026(h2) as four outfalls from building drains at building 16-360. Because the four outfalls identified as SWMU 16-026(h2) in the SWMU report are not associated with the HE sump, SWMU 16-029(e) is identified as the inactive HE sump, and the associated inlet and outlet drainlines and the outfall. ~~Review of the Site descriptions and activities conducted within W-SMA-7 identified that Site 16-029(h2) was incorrectly associated with industrial materials to be monitored at the SMA.~~ Consent Order sampling has not yet been conducted at SWMU 16-029(e); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1995 RFI.	T	
V4. 4426	3/9/2020	W-SMA-7	Change to SDPPP- SWMU 16-026(h2) consists of four outfalls and associated drainlines at TA-16 that served HE equipment assembly building 16 360. The western outfall received discharge from a steam pit drain. The southern outfall received condensate from three floor drains. The remaining two outfalls are located to the east of the building and discharge storm water from roof drains. In the 1990s, the steam pit drain and floor drains were rerouted to the sanitary sewer system~~.~~; the roof drain outfalls remain active. The OU 1082 RFI work plan identifies SWMU 16-026(h2) as the NPDES-permitted outfall associated with SWMU 16-029(e), an HE sump at building 16-360. However, the 1990 SWMU report identifies SWMU 16-026(h2) as four outfalls from building drains at building 16-360. Because the four outfalls identified as SWMU 16-026(h2) in the SWMU report are not associated with the HE sump, SWMU 16-026(h2) is identified as the four outfalls identified in the SWMU report rather than the HE sump outfall.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4427	3/9/2020	W-SMA-7	Change to SDPPP- SWMUs 16-029(e) and 16-029(h2) are monitored within W-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on July 8, 2014 (Figure 214-2). In Figure 214-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded the following TAL exceedances for gross-alpha activity (427 pCi/L), and radium-226 and -228 activity (42 pCi/L) and are presented in Figure 214-2.~~:~~ ~~• Gross-alpha activity of 427 pCi/L (ATAL is 15 pCi/L) and~~ ~~• Radium-226 and radium-228 activity of 42 pCi/L (ATAL is 30 pCi/L).~~	T	
V4. 4428	3/9/2020	W-SMA-7.8	Change to SDPPP- SWMU 16-031(a) is ~~an~~ a former outfall and drainline that served a former cooling tower (former ~~building~~ structure ~~-~~16-372) at TA-16. The outfall discharged approximately 150 ft south of the cooling tower at the edge of Water Canyon. The outfall drainline was a 6-in.-diameter VCP that originated from a drain inside the southeast corner of the cooling tower. The cooling tower served building 16-370, a barium nitrate–grinding facility and metal-forming shop. The cooling tower received chilled water that was cycled through pumps and machinery in structure 16-372. The cooling water may have contained chromates, but there is no documentation confirming the use of chromates. The cooling tower was built in 1953 and burned down during the Cerro Grande fire in 2000. The concrete foundation remains in place. Consent Order investigations have not yet begun at SWMU 16-031(a); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are ~~not available for the Site.~~available from the 1998 investigation.	T	
V4. 4429	3/9/2020	W-SMA-7.8	Change to SDPPP- ~~Through calendar year 2018, storm water flow has not been sufficient for full-volume sample collection at W-SMA-7.8. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.~~SWMU 16-031(a) is monitored within W-SMA-7.8. Following the installation of baseline control measures, a baseline storm water sample was collected on July 15, 2019 (Figure 215-2). Analytical results from this sample yielded no TAL exceedances. Extended baseline sampling will continue until the collection of a second sample. All the analytical results for this sample are reported in the 2019 Annual Report.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4430	3/9/2020	W-SMA-7.9	Change to SDPPP- SWMU 16-006(c) is an inactive septic system located ~~just~~ directly west of former building 16-370 in the eastern portion of TA-16. The septic system served building 16-370 and consist~~sed~~ of a 1200-gal. concrete septic tank (structure 16-371), a manhole (structure 16-813), inlet and outlet drainlines, and an outfall ~~drainline~~near the rim of Water Canyon. The 1990 SWMU report states the septic tank discharged to a drain field. However, engineering drawings ~~verify that a drain field was never constructed.~~do not verify the existence of a drain field. Building 16-370 was constructed in 1953 as a barium nitrate grinding facility. In the late 1950s, the building was converted to a metal forming shop for steel and aluminum operations. The septic system ~~The tank~~ was constructed in 1953 and served floor drains and bathrooms on the third floor of building 16-370. Associated drainlines connect to a manhole (structure 16-813), which drained to the septic tank. The outlet line ~~drained~~ discharged to an outfall approximately 260 ft south of the septic tank at the edge of Water Canyon. ~~The outfall discharged at the edge of Water Canyon.~~ After the drainline was plugged ~~in 1992~~, the tank was pumped regularly during the time building 16-370 remained operational ~~until 2000~~; the building was removed in 2005. ~~Building 16-370 underwent partial D&D in 2004; only a portion of the wall and the concrete slab remain.~~	T	
V4. 4431	3/9/2020	W-SMA-8	Change to SDPPP- SWMU 16-016(g) is a surface disposal area located in a drainage ditch approximately 60 ft south of former building 16-370 in the eastern portion of TA-16. ~~associated with former building 16-370.~~ Debris at the site includes cans and pipes ~~that were~~ distributed over a 20-ft-diameter area ~~and located in a drainage ditch approximately 60 ft south of the building. Building 16-370 was constructed in 1953 as a barium nitrate–grinding facility and later converted to a metal-forming shop for steel and aluminum. Building 16-370 was demolished in March 2005. HE was never used in the building.~~ The surface disposal area lies in the drainage ditch shared by both SWMUs 16-026(a) and 16-028(b). Field observations indicated the debris ~~was~~ is likely from construction debris ~~related activities~~ and not ~~operational waste~~of a hazardous nature.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4432	3/9/2020	W-SMA-8	Change to SDPPP- SWMU 16-028(b) is a formerly NPDES-permitted outfall (04A092) and associated drainline that served former building 16 370 at TA-16. The outfall is located approximately 50 ft south of former building 16-370. The outlet drainline consists of a 6 in. VCP that exited the northwest side of former building 16-370 and discharged at the rim of Water Canyon. The outfall formerly received effluent from 29 floor drains, an eyewash station, a drinking fountain, ~~and~~ a sink, and noncontact-treated cooling water. Building 16-370 was built in 1953 as a barium nitrate–grinding facility. In the late 1950s, it was converted to a metal-forming shop for steel and aluminum. Materials potentially present in discharges to the drains include barium compounds, metal chips, oils, kerosene, and trichloroethylene. HE were not used in building 16-370 because of explosive hazard posed by grinding and machining activities. Building 16-370 was ~~demolished in March 2005~~removed in 2000. All drains that discharged to the outfall were plugged in the 1990s. The outfall was removed from the NPDES permit effective January 14, 1998. ~~In July 2000, as part of the post-Cerro Grande fire recovery, debris removal, mulching, and permanent seeding were conducted at this Site as BMPs. Straw wattles were also installed to stabilize the Site and to prevent storm water run-on and runoff.~~	T	
V4. 4433	3/9/2020	W-SMA-8	Change to SDPPP- SWMUs 16-016(g) and 16-028(b) are monitored within W-SMA-8. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure~~s~~ 217-2 ~~and 217-3~~). In Figure~~s~~ 217-2 ~~and 217-3~~, selenium, silver, and hexachlorobenzene are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (823 µg/L) and copper (28.1 µg/L) and are presented in Figure 217-2.~~:~~ ~~• Aluminum concentration of 823 µg/L (MTAL is 750 µg/L) and~~ ~~• Copper concentration of 28.1 µg/L (MTAL is 4.3 µg/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4434	3/9/2020	W-SMA-8.7	Change to SDPPP- SWMU 13-001 is an inactive firing site located east of former building 16-340, between battleship bunker buildings 16-477 and 16-478 at the eastern end of TA-16. The firing site was associated with firing activities conducted at P-Site (former TA-13) and operated from 1944 to 1949. The battleship bunker buildings 16-477 and 16-478 housed x-ray and magnetic equipment and were capped with steel nose cones to protect this equipment from explosive detonations that occurred at the firing site between the two bunkers. Debris from firing site experiments includes shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper. ~~SWMU 13-001 is an inactive firing site located east of former building 16-340. The firing site is associated with firing activities conducted at P-Site (former TA-13). The area contains shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.~~ Phase I Consent Order sampling is complete for SWMU 13-001. The Site meets residential risk levels. SWMU 13-001 ~~was~~ has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~2019.	T	
V4. 4435	3/9/2020	W-SMA-8.7	Change to SDPPP- SWMU 13-002 is an inactive surface disposal area located east of former building 16-340 and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and, based on a 1948 aerial photograph~~.~~, t~~T~~he site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the TA-16 WWTP is located on top of the southern tip of the surface disposal area. The SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at that time. Phase I Consent Order sampling is complete for SWMU 13-002. SWMU 13-002 meets residential risk levels and ~~was~~ has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4436	3/9/2020	W-SMA-8.7	Change to SDPPP- SWMU 16-004(a) is the inactive Imhoff tank (structure 16-530) that was used for sewage treatment at the former TA-16 sanitary WWTP. The concrete structure is approximately 18 ft~~20~~ × 35 ft × 22 ft deep, with nine interconnected compartments that served as settling boxes, with a total area of 700 ft2 and a depth of 22 ft. ~~The tank was taken out of service in 1992.~~ Located southeast of the former TA-16-340 Complex and 15 ft north of the communitor (a cutting device for sewage solids), the Imhoff tank received solids that the communitor had shredded into fine particles. In addition to functioning as a settling box, the tank also offered some sludge digrestion capacity. E~~e~~ffluent from the boxes~~that~~ flowed over a weir into a dosing siphon. Any sludge that may have collected in the tank was digested before it was discharged to drying beds [SWMUs 16-004(d) and 16-004(f)]. The tank had an emergency overflow pipe that discharged onto the~~a~~ slope northeast of the tank. The TA-16 WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. There is no evidence that this tank has ever leaked, and a site inspection in October 2014 revealed that the tank contains water. Decision-level data for SWMU 16-004(a) consists of results from 8eight samples collected at 4four locations in 2010. The 2019 revision 1 of the 2015 supplemental investigation report for S-Site Aggregate Area concluded the nature and extent of contamination are not defined and further sampling for extent is warranted. Sampling to complete characterization of this site will be delayed until the future demolition of structure 16-530. ~~SWMU 16-004(a) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, submitted to NMED in 2015.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4437	3/9/2020	W-SMA-8.7	Change to SDPPP- SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in.-VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in.-VCP that intersected a drainage channel. Former structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the structure was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009 and 2010, no evidence of the French drain was found. SWMU 16-029(h) was identified as an HE sump (structure 16-487) in the 1990 SWMU report. The SWMU report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former structure 16-478, and also includes areas impacted by the 2000 Cerro Grande wildfire. ~~SWMU 16-029(h) consists of an inactive outfall and two inactive/former drainlines (one known and one suspected) from the HE sump [AOC 16-003(p)], located on the south side of former building 16-478. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This drainline discharged directly into Cañon de Valle before the drainline was plugged in 1987. A second drainline is alleged to be present. The second drainline is reportedly a French drain that extends south of the sump. Former building 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the building was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009 and 2010, no evidence of the French drain was found.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4437 (cont.)	3/9/2020	W-SMA-8.7	Phase I Consent Order sampling is complete for SWMU 16-029(h). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 16-029(h) has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in 2019. ~~SWMU 16-029(h) was recommended for additional field characterization activities in the supplemental investigation report for S-Site Aggregate Area, submitted to NMED in 2015.~~	T	
V4. 4438	3/9/2020	W-SMA-8.7	Change to SDPPP- SWMUs 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035 are monitored within W-SMA-8.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure~~s~~ 218-2~~ and 218-3~~). In Figure 218-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~a TAL exceedance for aluminum (1920 µg/L) and are presented in Figure 218-2. ~~:~~ ~~• Aluminum concentration of 1920 µg/L (MTAL is 750 µg/L).~~	T	
V4. 4439	3/9/2020	W-SMA-14.1	Change to SDPPP- 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~~s~~ 228-2~~ and 228-3~~. 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 Figure~~s~~ 228-2~~ and 228-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4440	3/9/2020	W-SMA-15.1	Change to SDPPP- SWMU 49-005(a) is monitored within W-SMA-15.1. Following the installation of baseline control measures, a baseline confirmation sample was collected on September 1, 2011 (Figure 229-2).~~Inorganic analytical~~Analytical results from this baseline sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (33.2 pCi/L) and are presented in Figure 229-2.~~:~~ ~~• Gross-alpha activity of 33.2 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4441	3/9/2020	W-SMA-8.71	Change to SDPPP- SWMU 16-004(c) is the inactive clarifier or final tank (structure 16-532) used for sewage treatment at the former TA-16 sanitary WWTP. The structure is an approximately 20- × 20-ft concrete box located approximately 45 ft below and southeast of the trickling filter [SWMU 16-004(b)], with a total area of 400 ft2. ~~The clarifier was located southeast of the trickling filter.~~The clarifier received discharges from the trickling filter; water flowed through an outlet in the clarifier and discharged through an 8-in.-CMP to a metering concrete outfall box, and then to formerly NPDES-permitted outfall EPA-SSS03S, which discharged ~~and eventually~~ into a tributary of Water Canyon. At full capacity, structure 16-532 could manage 117,600 gal./d. The formerly NPDES-permitted outfall (EPA-SSS03S) for the WWTP was monitored for inorganic chemicals, organic chemicals, and pesticides. Effluent was monitored bimonthly for radionuclides and standard parameters for wastewater systems (e.g., biological oxygen demand, chemical oxygen demand, and total dissolved solids). The former TA-16 sanitary WWTP ~~was constructed~~began operations in 1952~~3~~ and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. The clarifier has been inactive since 1992.~~; some of the concrete foundations remain in place.~~ Phase 1 Consent Order decision-level data for SWMU 16-004(a) consists of results from eight samples collected at four locations in 2010. The 2019 revision 1 of the 2015 supplemental investigation report for S-Site Aggregate Area concluded the nature and extent of contamination are not defined and further sampling for extent is warranted. Sampling to complete characterization of this site will be delayed until the future demolition of structure 16-532. ~~Phase I Consent Order sampling is complete for SWMU 16-004(c). SWMU 16-004(c) was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, submitted to NMED in 2015, because it has no complete exposure pathway.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4442	3/9/2020	W-SMA-8.71	Change to SDPPP- SWMU 16-004(c) is monitored within W-SMA-8.71. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 219-2). In Figure 219-2, selenium and silver are reported as ~~nondetectable~~ nondetected results ~~equal or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. ~~Inorganic analytical~~Analytical results from this baseline sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (15.8 pCi/L) and are presented in Figure 219-2. ~~:~~ ~~• Gross-alpha activity of 15.8 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at W-SMA-8.71, a corrective action storm water sample was collected on September 13, 2013 (Figure 219-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~ TAL exceedances for copper (19.8 µg/L), mercury (1.51 µg/L), and zinc (55.4 µg/L) and are presented in Figure 219-2.~~:~~ ~~• Copper concentration of 19.8 µg/L (MTAL is 4.3 µg/L),~~ ~~• Mercury concentration of 1.51 µg/L (ATAL is 0.77 µg/L), and~~ ~~• Zinc concentration of 55.4 µg/L (MTAL is 42 µg/L).~~	T	
V4. 4443	3/9/2020	W-SMA-9.05	Change to SDPPP- AOC 16-030(g) is a former NPDES-permitted outfall (05A052) and associated drainlines located adjacent to the southeast corner of building 16-380 in the eastern portion of~~at~~ TA 16. The outfall received effluent from an HE sump [SWMU 16-003(m)], two roof drains, a steam-heating system, and a drop inlet from a parking lot and discharged to Water Canyon. Building 16-380 was originally used to inspect raw HE powder brought into TA-16 and was later used to store ammunition for LANL security forces. From 1952 to the early 1990s, the sump received washdown water from building cleaning activities containing HE. Discharges from the sump ceased in 1993 when the outlet from the sump was plugged; t~~T~~he outfall was subsequently removed from the NPDES permit effective June 24, 1994~~in 1993~~. The sump and the steam-heating system discharge lines have been plugged, and the outfall currently receives only roof drain and parking lot runoff. In 2010, building 16-380 was being used to store ammunition for LANL security forces.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4444	3/9/2020	W-SMA-9.05	Change to SDPPP- AOC 16-030(g) is monitored within W-SMA-9.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure~~s~~ 220-2 ~~and 220-3~~). In Figure 220-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for W-SMA-9.05 and the associated AOC 16-030(g) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for W SMA 9.05 for the remaining period of the IP.	T	
V4. 4445	3/9/2020	W-SMA-9.5	Change to SDPPP- AOC 11-012(c) is monitored within W-SMA-9.5. Following the installation of baseline control measures and a sampler move to a more representative location, a baseline storm water sample was collected on June 25, 2017 (Figure 221-2). Analytical results from the June sample yielded ~~the following~~ TAL exceedances for gross-alpha activity (81 pCi/L) and mercury (1.1 µg/L) and are presented in Figure 221-2.~~:~~ ~~• Mercury concentration of 1.1 µg/L (ATAL is 0.77 µg/L) and~~ ~~• Gross-alpha activity of 81 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4446	3/9/2020	W-SMA-9.7	Change to SDPPP- SWMU 11-011(a) is an inactive drainline and former NPDES-permitted outfall (EPA-03A130) located at TA-11 north of the K Site complex and approximately 6 ft northeast of the Electrodynamics Vibration Test Facility (building 11-30)~~, which housed water-cooled electronic equipment. Potential contaminants are organic chemicals. The outfall consisted of a~~An insulated 2-in. pipe received cooling water blowdown from a cooling tower and deionized water from floor drains in building 11-30A (an adjunct of building 11-30). The drainline~~that~~ discharged northward to an outfall in a drainage channel that flowed to a tributary of Water Canyon. ~~The outfall received untreated cooling tower blowdown from building 11-30. This~~ The outfall became inactive following removal of the water-cooled equipment in building 11-30, and was removed from the NPDES permit during the 2013 permit renewal. Consent Order Phase I investigation sampling is complete at this Site. Additional characterization sampling at SWMU 11-011(a) was recommended for additional field activities in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	
V4. 4447	3/9/2020	W-SMA-9.7	Change to SDPPP- SWMU 11-011(b) is an inactive 3-in.-diameter outlet drainline and outfall located at TA-11 north of the Electrodynamics Vibration Test Facility (building 11-30). The ~~inactive outfall consists of a~~ 3-in.~~ pipe that~~diameter pipe extends about 10 ft~~in.~~ beyond the side of a hill to the outfall. The outfall received discharges from floor drains in building 11-30 from the early 1960s~~ to~~until the early 1990s. A sink drain that formerly discharged to the outfall was removed before to 1990. A 1992 wastewater characterization report prepared by Santa Fe Engineering stated the only potential discharges from two floor drains in building 11-30 consisted of ~~would be~~ deionized water and residual HE potentially released from containers processed on shakers in the building. The report recommended the outlet drainline be plugged; the drainline was subsequently plugged. Consent Order Phase I investigation sampling is complete at this Site. SWMU 11-011(b) meets residential risk and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4448	3/9/2020	W-SMA-9.7	Change to SDPPP- SWMUs 11-011(a) and 11-011(b) are monitored within W-SMA-9.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 222-2). In Figure 222-2, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results ~~equal to or~~ greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~a TAL exceedance for copper (9.74 µg/L) and are presented in Figure 222-2.~~:~~ ~~• Copper concentration of 9.74 µg/L (MTAL is 4.3 µg/L).~~	T	
V4. 4449	3/9/2020	W-SMA-9.8	Change to SDPPP- SWMU 11-005(c) is ~~a former outfall with a capped~~an inactive outlet drainline and outfall and located approximately 50 ft north of ~~the former Betatron Building (~~building 11-2) at TA-11. The drainline was installed in 1944 and ~~served~~ received discharges from a sink, a hot water heater, and a floor drain in building 11-2. The outfall discharged to a slightly sloped area consisting of fill from an adjacent roadbed. The outlet drainline from building 11-2 was capped before the drop tower complex was constructed in 1956. Building 11-2 was used as a control room for the drop tower and is currently vacant. Phase I Consent Order sampling is complete for SWMU 11-005(c). SWMU 11-005(c) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~ April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4450	3/9/2020	W-SMA-9.9	Change to SDPPP- SWMU 11-006(b) is one of three inactive HE catch basins and a former NPDES-permitted outfall (~~located~~ EPA 05A069) located on the north side of the former drop-tower complex [SWMUS 11-004(a-f)] at TA-11 ~~near the drop tower complex~~. The SWMU 11-006(b) catch basin ~~is located on the north side of the drop tower complex and~~ consists of a concrete basin (structure 11 50) measuring 6 × 4 × 2 ft deep, ~~and~~ equipped with an overflow drain, and former NPDES-permitted outfall EPA 05A069. Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the ~~SWMU 11-006(b) received washdown water from the~~ concrete pad and asphalt apron at the base of the drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(b) received washdown water via an HE sump [SWMU 11 006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining wash water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA 16 Burning Ground. The outfall was removed from the NPDES permit in May 1998 after activities at the drop tower ceased. The drop tower underwent D&D in 2004. Currently, the catch basin is capped and sealed; however, the outfall still receives storm water runoff. Any runoff collected in the concrete pad and asphalt apron is now diverted to the other two catch basins associated with the former drop tower complex [SWMUS 11-006(c) and 11-006(d)]. Phase I Consent Order sampling is complete for SWMU 11-006(b). SWMU 11-006(b) meets residential risk levels and was recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4451	3/9/2020	W-SMA-9.9	Change to SDPPP- SWMU 11-006(b) is monitored within W-SMA-9.9. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 224-2). Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (962 µg/L) and gross-alpha activity (95.9 pCi/L) and are presented in Figure 224-2.: • Aluminum concentration of 962 µg/L (MTAL is 750 µg/L) and • Gross-alpha activity of 95.9 pCi/L (ATAL is 15 pCi/L). Following the installation of enhanced control measures at W-SMA-9.9, a corrective action storm water sample was collected on September 13, 2013 (Figure 224-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (74.4 pCi/L) and are presented in Figure 224-2. ~~:~~ ~~• Gross-alpha activity of 74.4 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4452	3/9/2020	W-SMA-10	Change to SDPPP- SWMU 11-005(a) is an active septic system located at TA-11 approximately 70 ft southwest of building 11-24. ~~This septic system consists of a septic tank (structure 11-20), associated drainlines from buildings 11-1 and 11-4, and a tile drain field that extends to an outfall on a sloped area to the south of the septic tank.~~ The septic system began operation in 1944 and consists of inlet drainlines from buildings 11-1 and 11-4, a 500-gal.-capacity concrete septic tank (structure 11-20) that discharged to an open-joint tile drainline in a rock-filled trench that extends to an outfall on a sloped area to the south of the septic tank. ~~The drainline from building 11-1 has been plugged.~~ Currently, discharge to the septic system comes only from a restroom in building 11-4. Building 11-1 is currently a storage area for electrical equipment but was originally used as a control building for the Betatron Facility (building 11-2) and the Cloud Chamber (building 11-3). Building 11-4 is currently the control building for the Vibration-Test Facility (building 11-30), although it was historically used as a machine shop and photoprocessing facility. A memorandum from 1950 indicated a mercury spill occurred in building 11-4; however, the location, source, and extent of the spill are not known. The outlet~~flow~~ drainline from SWMU 11-005(a) was plugged in 1992; since that time the septic tank has been pumped out on a regular basis. Phase I Consent Order sampling is complete for SWMU 11-005(a). SWMU 11-005(a) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4453	3/9/2020	W-SMA-10	Change to SDPPP- SWMU 11-005(b) is an active septic system located at TA-11, approximately 70 ft south of building 11-3. This septic system began operation in 1963 and consists of inlet drainlines from a restroom on the exterior of buildings 11-3 and 11-24, a concrete septic tank (structure 11 43), an outlet drainline to an outfall to the south of the septic tank, and a drain field west of the outlet drainline. The septic system serves the restroom~~s~~ added to the exterior of building 11-3~~ and was tied to a floor drain in the test room of building 11-3 until 1992 when the drain was plugged~~. Engineering drawings confirm the drainline for floor drains in building 11-24 was tied into the septic tank in 1992. Discharges to the outfall ceased in 1992. Building 11-24, a former air-gun facility, now house~~s an~~ offices and a light machine shop and no longer discharges to the septic system. Phase I Consent Order sampling is complete for SWMU 11-005(b). SWMU 11-005(b) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1 submitted to NMED in April 2019~~ 2015~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4454	3/9/2020	W-SMA-10	Change to SDPPP- SWMU 11-006(c) is one of three inactive HE catch basins and ~~its associated~~a former NPDES-permitted outfall (EPA 05A096) located on the southeast side of the former drop-tower complex [SWMUs 11-004(a-f)] ~~located~~ at TA-11~~ near the drop tower complex~~. The SWMU 11-006(c) catch basin ~~is located on the southeast side of the drop tower complex and~~ consists of a concrete basin (structure 11 51) measuring 6 × 4 × 2 ft, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA05A096)~~ that discharged into Water Canyon~~. Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, ~~SWMU 11-006(c) received washdown water from~~ the concrete pad and asphalt apron at the base of the drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(c) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a~~ flowed through an asphalt-lined drainage channel to a natural~~ drainage ~~channel~~ and the NPDES permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. HE waste collected from the catch basin was disposed of at the TA 16 Burning Ground. The outfall was removed from the NPDES permit in May 1998 after drop tower operations ceased. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF. The drop tower underwent D&D activities and was removed in 2004. Since 1998,~~ and discharges to the drainage channels stopped. Any~~ any storm water runoff collected in the SWMU 11-006(c) catch basin~~ since 1998~~ is ~~pumped~~ routed to the SWMU 11-006(d) catch basin and the associated outfall. Phase I Consent Order sampling is complete for SWMU 11-006(c). SWMU 11-006(c) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4455	3/9/2020	W-SMA-10	Change to SDPPP- SWMU 11-006(d) is one of three inactive HE catch basins and a former NPDES-permitted ~~its associated~~ outfall (EPA 05A097) located on the south side of the former drop-tower complex [SWMUs 11-004(a-f)] ~~located~~ at TA-11 ~~near the drop tower complex~~. The SWMU 11-006(d) catch basin ~~is located on the south side of the drop tower complex and~~ consists of a concrete basin (structure 11-52) measuring 6 × 4 × 2 ft, equipped with an overflow drain and a former NPDES-permitted outfall (EPA05A097) ~~that discharged to Water Canyon~~. Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, ~~SWMU 11-006(d) received washdown water from~~ the concrete pad and asphalt apron at the base of the drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(d) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11 006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a~~flowed through an asphalt-lined~~ drainage ~~to a natural drainage channel~~ and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged~~then east~~ into Water Canyon. HE waste collected from the catch basin was disposed of at the burning grounds at TA 16. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF. The outfall was removed from the LANL NPDES permit in January 2006 after drop tower activities ceased. The drop tower underwent D&D activities and was removed in 2004. Since drop tower operations ceased in 1998, this catch basin has collected only storm water runoff, including runoff routed from the SWMU 11-006(c) catch basin, and discharges only storm water ~~that drains~~ to the outfall. Phase I Consent Order sampling is complete for SWMU 11-006(d). SWMU 11-006(d) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in ~~2015~~April 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4456	3/9/2020	W-SMA-10	Change to SDPPP- SWMU 11-011(d) is an inactive drainline and outfall located at TA-11 south of building 11-24, the former air gun facility. The SWMU consists ~~outfall consisted~~ of a 4-in. steel ~~pipe~~ drainline tied to floor drains and a sink in ~~the air gun facility~~building 11-24. Originally, operations at building 11 24 consisted of acceleration and impact tests on full-scale warhead mockups. After World War II, building 11-24 was converted to an office and light machine shop. The drainline was tied into the SWMU 11-005(b~~d~~) septic tank in 1992 and all discharges to the outfall ceased at that time. Phase I Consent Order sampling is complete for SWMU 11-011(d). SWMU 11-011(d) meets residential risk levels and was recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, submitted to NMED in April 2019~~2015~~.	T	
V4. 4457	3/9/2020	W-SMA-10	Change to SDPPP- SWMUs 11-002, 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d) and AOC 11-003(b) are monitored within W-SMA-10. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 225-2). Inorganic analytical results from this baseline sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (106 pCi/L) and are presented in Figure 225-2.~~:~~ ~~• Gross-alpha activity of 106 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at W-SMA-10, a corrective action storm water sample was collected on August 1, 2015 (Figure 225-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (77.8 pCi/L) and are presented in Figure 225-2.~~:~~ ~~Gross-alpha activity of 77.8 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4458	3/9/2020	W-SMA-11.7	Change to SDPPP- AOC 49-008(c) is monitored within W-SMA-11.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 226-2). Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (1020 µg/L) and gross-alpha activity (38.1 pCi/L) and are presented in Figure 226-2.~~:~~ ~~• Aluminum concentration of 1020 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 38.1 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at W-SMA-11.7, a corrective action storm water sample was collected on September 13, 2013 (Figure 226-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (39.6 pCi/L) and are presented in Figure 226-2.~~:~~ ~~• Gross-alpha activity of 39.6 pCi/L (ATAL is 15 pCi/L).~~	T	
V4. 4459	3/9/2020	W-SMA-14.1	Change to SDPPP- SWMU 15-014(l) and AOC 15-004(h) are monitored within W-SMA-14.1. Following the installation of baseline control measures, two baseline storm water samples were collected on July 25, 2011, and August 18, 2011 (Figure~~s~~ 228-2~~and 228-3~~). In Figure~~s~~ 228-2~~ and 228-3~~, cadmium, selenium, and silver are reported as ~~nondetectable~~ nondetected results equal or greater than their respective TALs. These values are reported at the PQL, the MDL for these analytes are below the TAL. The values are nondetects and thus not considered TAL exceedances~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from these samples yielded ~~the following~~ TAL exceedances for copper (20 µg/L) and zinc (49.3 µg/L) and are presented in Figure 228-2.~~:~~ ~~• Copper concentrations of 20 µg/L and 42.6 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Zinc concentration of 49.3 µg/L (MTAL is 42 µg/L).~~ Following the installation of enhanced control measures at W-SMA-14.1, corrective action storm water samples were collected on September 13, 2013, and July 15, 2014 (Figure~~s~~ 228-2~~ and 228-3~~). Analytical results from these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for gross-alpha activity (38.7 pCi/L and 96.2 pCi/L) and are presented in Figure 228-2.~~:~~ ~~• Gross-alpha activities of 38.7 pCi/L and 96.2 pCi/L (ATAL is 15 pCi/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4460	3/9/2020	CDV-SMA-1.7	Per 2020 IP SDPPP Update peer review comment resolution, please update as necessary to: -update acreage label in inset map to match primary map label. This label was not updated as part of map revision 15 processed on CCN-73035.	T	CCN-78692
V4. 4461	3/9/2020	CDV-SMA-1.7	Map Revision-(16)	T	CCN-78692
V4. 4462	3/9/2020	CDV-SMA-1.2	Updated Compliance Status Table	T	
V4. 4463	3/9/2020	CDV-SMA-2.3	Change to SDPPP- SWMU 16-031(h) consists of a former NPDES-permitted outfall (EPA04A134) and associated drainline that served a utility room in former ~~building~~ structure 16-478. The outfall received discharges from the sink, vacuum pump, and floor drain in the utility room and was located 30 ft northwest of former building 16 478. Structure 16-478 (formerly structure 13-4) was used for photographing explosives tests and was later modified for testing the effects of machining HE remotely. In July 1995, building 16-478 was decommissioned and subsequently underwent D&D in 2005. Consent Order sampling is complete for SWMU 16-031(h). All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 16-031(h) ~~was~~ has been recommended for corrective action complete without controls in the supplemental investigation report for S-Site Aggregate Area, Revision 1, which was submitted to NMED in ~~2015~~2019.	T	
V4. 4464	3/9/2020	CDV-SMA-2.42	Change to SDPPP- Monitoring location CDV-SMA-2.42 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.	T	
V4. 4465	3/9/2020	CDV-SMA-2.5	Compliance Status Table updated	T	

Attachment 1, Amendments (continued)

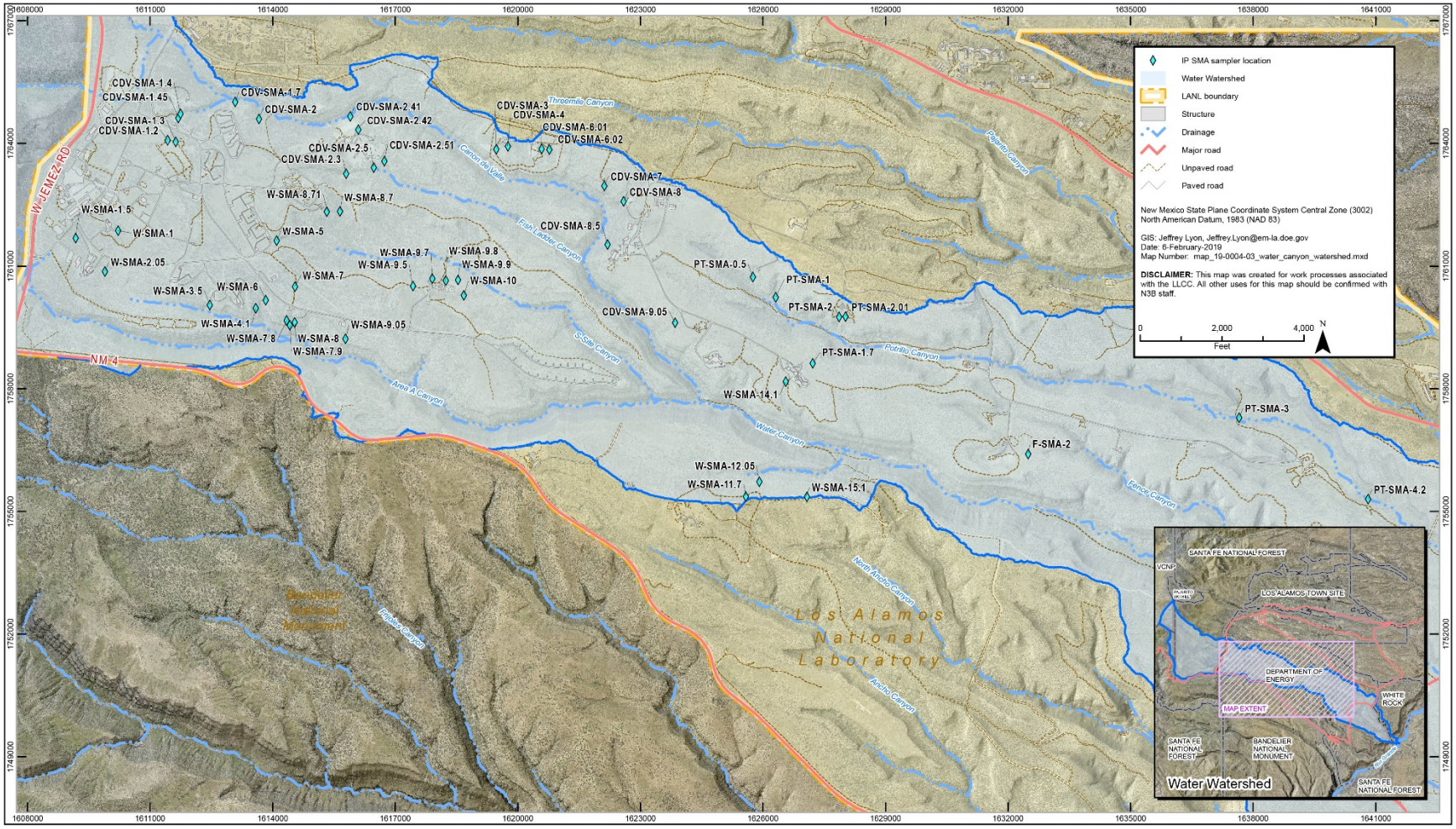
Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4466	3/9/2020	CDV-SMA-7	Change to SDPPP- SWMU 15-008(d): • Based on the site history, the Site is an unlikely a source of the ~~aluminum, selenium, and~~ gross-alpha radioactivity. TAL exceedances 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 Figure 195-2. 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 195-2. Monitoring location CDV-SMA-7 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. ~~• Aluminum—The aluminum UTL from background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is less than this value.~~ ~~• Selenium—The selenium UTL from undisturbed Bandelier Tuff was not calculated because the number of detected values is not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, no comparison to selenium background values in storm water can be made.~~ • Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013 and 2018 gross-alpha results are less than this value.	T	
V4. 4467	3/9/2020	CDV-SMA-9.05	Change to SDPPP- Monitoring location CDV-SMA-9.05 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 ~~(Figure 198-2~~).	T	
V4. 4468	3/9/2020	PT-SMA-3	Updated Compliance Status Table	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V4. 4469	3/9/2020	PT-SMA-4.2	Change to SDPPP- Monitoring location PT-SMA-4.2 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—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2014 and 2018 gross-alpha results are less than this value. ~~• Radium-226 and radium-228—Radium-226 and radium-228 UTL for background storm water containing sediment derived from Bandelier Tuff is 52.7 pCi/L. The 2014 radium-226 and radium-228 result is greater than this value.~~ All the analytical results for these samples are reported in the 2014 and 2018 Annual Reports.	T	
V4. 4470	3/9/2020	W-SMA-9.05	Compliance Status Table updated	T	
V4. 4471	3/9/2020	W-SMA-9.7	Compliance Status Table updated	T	
V4. 4472	3/9/2020	W-SMA-9.8	Compliance Status Table updated	T	
V.4 4473	3/10/2020	PT-SMA-3	Change to SDPPP- Facility modifications were performed in the late winter and spring of 2019. These activities impacted IP controls, including the removal of multiple rock check dams, straw wattles, and an earthen berm. This facility modification was inspected on May 15, 2019 and facility installed control measures were accepted as replacements for these controls. No maintenance activities ~~or facility modifications affecting discharge~~ were conducted at PT-SMA-3 in 2019.	T	

*T = technical, E = errata.

Attachment 2
Vicinity Map



Attachment 3
Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG253	4/17/2019	0.02	0.02	15
RG253	4/22/2019	0.84	0.12	319.8
RG253	4/23/2019	0.17	0.06	54.6
RG253	4/29/2019	0.35	0.08	139.8
RG253	4/30/2019	0.01	0.01	4.8
RG253	5/8/2019	0.16	0.04	69.6
RG253	5/9/2019	0.56	0.07	274.8
RG253	5/10/2019	0.39	0.15	109.8
RG253	5/11/2019	0.41	0.14	124.8
RG253	5/21/2019	0.03	0.02	15
RG253	5/30/2019	0.01	0.01	4.8
RG253	6/3/2019	0.08	0.06	34.8
RG253	6/15/2019	0.09	0.09	24.6
RG253	6/16/2019	0.09	0.05	24.6
RG253	6/17/2019	0.46	0.25	79.8
RG253	6/28/2019	0.22	0.22	24.6
RG253	7/1/2019	0.1	0.05	39.6
RG253	7/2/2019	0.04	0.02	15
RG253	7/6/2019	0.37	0.13	135
RG253	7/7/2019	0.55	0.52	45
RG253	7/13/2019	0.3	0.28	39.6
RG253	7/14/2019	0.05	0.02	24.6
RG253	7/15/2019	0.75	0.62	69.6
RG253	7/16/2019	0.05	0.03	24.6
RG253	7/22/2019	0.06	0.04	30
RG253	7/25/2019	0.98	0.71	39.6
RG253	7/26/2019	0.13	0.07	49.8
RG253	7/27/2019	0.06	0.04	24.6
RG253	8/2/2019	0.06	0.04	24.6
RG253	8/3/2019	0.01	0.01	4.8
RG253	8/5/2019	0.13	0.11	34.8
RG253	8/6/2019	0.28	0.12	109.8
RG253	8/9/2019	0.01	0.01	4.8
RG253	8/11/2019	0.02	0.02	9.6

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG253	8/11/2019	0.02	0.02	9.6
RG253	8/14/2019	0.01	0.01	4.8
RG253	8/15/2019	0.12	0.12	30
RG253	8/16/2019	0.25	0.21	45
RG253	8/20/2019	0.36	0.29	45
RG253	8/21/2019	0.01	0.01	4.8
RG253	9/01/2019	0.5	0.41	54.6
RG253	9/07/2019	0.09	0.08	19.8
RG253	9/10/2019	0.16	0.12	30
RG253	9/15/2019	0.33	0.08	139.8
RG253	9/16/2019	0.1	0.06	34.8
RG253	9/23/2019	0.16	0.11	54.6
RG253	10/3/2019	0.47	0.28	79.8
RG253	10/4/2019	0.69	0.24	174.6
RG253	11/19/2019	0.19	0.13	54.6
RG253	11/20/2019	0.31	0.06	129.6
RG257	4/17/2019	0.05	0.04	30
RG257	4/18/2019	0.01	0.01	4.8
RG257	4/22/2019	0.65	0.09	270
RG257	4/23/2019	0.1	0.04	45
RG257	4/24/2019	0.01	0.01	4.8
RG257	4/26/2019	0.01	0.01	4.8
RG257	4/29/2019	0.29	0.05	144.6
RG257	4/30/2019	0.01	0.01	4.8
RG257	5/8/2019	0.18	0.03	84.6
RG257	5/9/2019	0.5	0.07	244.8
RG257	5/10/2019	0.3	0.08	139.8
RG257	5/11/2019	0.23	0.06	94.8
RG257	5/21/2019	0.05	0.01	24.6
RG257	5/30/2019	0.01	0.01	4.8
RG257	6/3/2019	0.08	0.06	30
RG257	6/5/2019	0.01	0.01	4.8
RG257	6/6/2019	0.01	0.01	4.8
RG257	6/15/2019	0.1	0.08	34.8
RG257	6/16/2019	0.11	0.04	49.8
RG257	6/17/2019	0.22	0.13	75
RG257	7/1/2019	0.1	0.04	45

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG257	7/2/2019	0.07	0.05	19.8
RG257	7/6/2019	0.21	0.07	94.8
RG257	7/7/2019	0.34	0.31	45
RG257	7/13/2019	0.19	0.14	45
RG257	7/14/2019	0.05	0.03	24.6
RG257	7/15/2019	0.54	0.4	60
RG257	7/16/2019	0.06	0.04	30
RG257	7/22/2019	0.05	0.03	19.8
RG257	7/25/2019	0.74	0.38	79.8
RG257	7/26/2019	0.18	0.07	64.8
RG257	7/27/2019	0.17	0.1	39.6
RG257	7/28/2019	0.01	0.01	4.8
RG257	8/2/2019	0.03	0.02	15
RG257	8/3/2019	0.02	0.01	9.6
RG257	8/4/2019	0.01	0.01	4.8
RG257	8/5/2019	0.11	0.1	30
RG257	8/6/2019	0.27	0.08	120
RG257	8/8/2019	0.01	0.01	4.8
RG257	8/9/2019	0.08	0.07	19.8
RG257	8/11/2019	0.1	0.1	9.6
RG257	8/14/2019	0.01	0.01	4.8
RG257	8/15/2019	0.18	0.17	30
RG257	8/16/2019	0.11	0.08	45
RG257	8/20/2019	0.2	0.17	30
RG257	8/21/2019	0.04	0.03	19.8
RG257	8/27/2019	0.03	0.03	15
RG257	9/1/2019	0.44	0.37	49.8
RG257	9/7/2019	0.06	0.06	19.8
RG257	9/10/2019	0.15	0.1	24.6
RG257	9/15/2019	0.26	0.08	105
RG257	9/16/2019	0.03	0.02	9.6
RG257	9/23/2019	0.1	0.08	34.8
RG257	9/24/2019	0.01	0.01	4.8
RG257	10/3/2019	0.35	0.26	69.6
RG257	10/4/2019	0.7	0.2	165
RG257	11/19/2019	0.2	0.16	49.8
RG257	11/20/2019	0.1	0.05	34.8

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG262.4	4/14/2019	0.01	0.01	4.8
RG262.4	4/17/2019	0.03	0.02	15
RG262.4	4/22/2019	0.59	0.09	249.6
RG262.4	4/23/2019	0.08	0.03	39.6
RG262.4	4/29/2019	0.36	0.06	169.8
RG262.4	4/30/2019	0.01	0.01	4.8
RG262.4	5/8/2019	0.19	0.04	94.8
RG262.4	5/9/2019	0.52	0.1	240
RG262.4	5/10/2019	0.22	0.05	109.8
RG262.4	5/11/2019	0.13	0.03	64.8
RG262.4	5/20/2019	0.01	0.01	4.8
RG262.4	5/21/2019	0.02	0.01	9.6
RG262.4	5/30/2019	0.12	0.11	24.6
RG262.4	6/5/2019	0.06	0.06	9.6
RG262.4	6/15/2019	0.08	0.07	30
RG262.4	6/16/2019	0.05	0.03	19.8
RG262.4	6/17/2019	0.21	0.15	45
RG262.4	6/18/2019	0.01	0.01	4.8
RG262.4	7/1/2019	0.04	0.03	15
RG262.4	7/2/2019	0.09	0.04	34.8
RG262.4	7/6/2019	0.18	0.07	79.8
RG262.4	7/7/2019	0.17	0.17	30
RG262.4	7/8/2019	0.01	0.01	4.8
RG262.4	7/13/2019	0.06	0.03	24.6
RG262.4	7/14/2019	0.14	0.08	45
RG262.4	7/15/2019	0.19	0.15	49.8
RG262.4	7/16/2019	0.02	0.01	9.6
RG262.4	7/22/2019	0.22	0.13	45
RG262.4	7/25/2019	0.89	0.45	124.8
RG262.4	7/26/2019	0.14	0.05	60
RG262.4	7/27/2019	0.06	0.04	24.6
RG262.4	8/3/2019	0.06	0.04	24.6
RG262.4	8/5/2019	0.14	0.12	34.8
RG262.4	8/6/2019	0.26	0.06	120
RG262.4	8/8/2019	0.01	0.01	4.8
RG262.4	8/9/2019	0.17	0.17	19.8
RG262.4	8/11/2019	0.22	0.21	19.8

Attachment 3, Precipitation Network (continued)

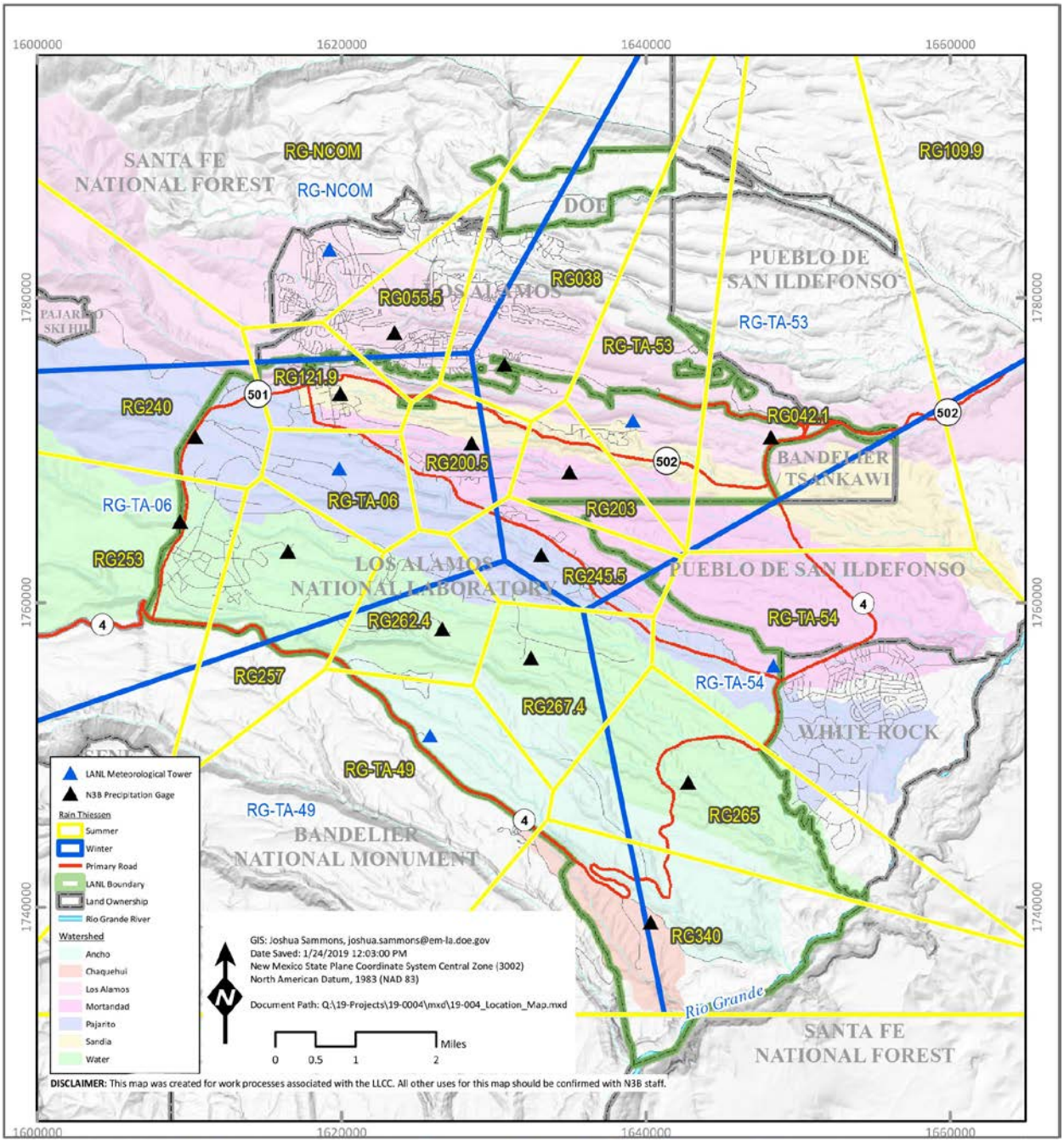
Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG262.4	08/21/2019	0.05	0.04	19.8
RG262.4	08/27/2019	0.22	0.22	30
RG262.4	08/30/2019	0.09	0.09	15
RG262.4	08/31/2019	0.04	0.04	9.6
RG262.4	09/01/2019	0.19	0.08	84.6
RG262.4	09/07/2019	0.34	0.26	45
RG262.4	09/10/2019	0.07	0.06	15
RG262.4	09/15/2019	0.12	0.03	60
RG262.4	09/16/2019	0.01	0.01	4.8
RG262.4	09/23/2019	0.1	0.06	45
RG262.4	10/03/2019	0.29	0.18	75
RG262.4	10/04/2019	0.69	0.21	154.8
RG262.4	11/19/2019	0.15	0.1	49.8
RG262.4	11/20/2019	0.34	0.11	105
RG267.4	04/04/2019	0.01	0.01	4.8
RG267.4	04/17/2019	0.03	0.02	15
RG267.4	04/22/2019	0.51	0.1	210
RG267.4	04/23/2019	0.08	0.03	39.6
RG267.4	04/29/2019	0.5	0.2	159.6
RG267.4	05/08/2019	0.25	0.07	109.8
RG267.4	05/09/2019	0.45	0.09	204.6
RG267.4	05/10/2019	0.19	0.05	94.8
RG267.4	05/11/2019	0.14	0.03	64.8
RG267.4	05/20/2019	0.01	0.01	4.8
RG267.4	05/30/2019	0.1	0.1	15
RG267.4	06/01/2019	0.01	0.01	4.8
RG267.4	06/15/2019	0.06	0.05	24.6
RG267.4	06/16/2019	0.05	0.04	19.8
RG267.4	06/17/2019	0.17	0.04	84.6
RG267.4	07/01/2019	0.02	0.01	9.6
RG267.4	07/02/2019	0.06	0.03	19.8
RG267.4	07/06/2019	0.14	0.05	69.6
RG267.4	07/07/2019	0.29	0.28	34.8
RG267.4	07/13/2019	0.12	0.08	30
RG267.4	07/14/2019	0.09	0.03	39.6
RG267.4	07/15/2019	0.13	0.11	60
RG267.4	07/16/2019	0.02	0.02	9.6

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG267.4	07/17/2019	0.01	0.01	4.8
RG267.4	07/20/2019	0.05	0.05	15
RG267.4	07/21/2019	0.03	0.03	9.6
RG267.4	07/22/2019	0.15	0.12	34.8
RG267.4	07/25/2019	1.09	0.48	129.6
RG267.4	07/26/2019	0.16	0.09	54.6
RG267.4	07/27/2019	0.06	0.05	19.8
RG267.4	07/31/2019	0.03	0.03	9.6
RG267.4	08/03/2019	0.04	0.03	19.8
RG267.4	08/05/2019	0.19	0.09	75
RG267.4	08/06/2019	0.22	0.05	105
RG267.4	08/08/2019	0.04	0.04	4.8
RG267.4	08/09/2019	0.13	0.11	24.6
RG267.4	08/11/2019	0.15	0.14	24.6
RG267.4	08/15/2019	0.01	0.01	4.8
RG267.4	08/21/2019	0.06	0.05	24.6
RG267.4	08/27/2019	0.2	0.2	24.6
RG267.4	08/30/2019	0.01	0.01	4.8
RG267.4	08/31/2019	0.01	0.01	4.8
RG267.4	09/07/2019	0.35	0.32	34.8
RG267.4	09/10/2019	0.04	0.03	9.6
RG267.4	09/15/2019	0.12	0.03	45
RG267.4	09/23/2019	0.09	0.05	45
RG267.4	10/03/2019	0.27	0.18	69.6
RG267.4	10/04/2019	0.89	0.34	169.8
RG267.4	11/19/2019	0.15	0.08	54.6
RG267.4	11/20/2019	0.34	0.11	120
RG-TA-06*	3/12/2019	0.77	0.27	330
RG-TA-49*	3/12/2019	0.88	0.27	360

*- Met tower precipitation data is used for winter network (~November – March)

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)
Cañon de Valle	V001	CDV-SMA-1.2	1611432 (35.84835)	1764078 (-106.3478)	121,649.25	16-017(b)-99 16-029(k)	1,892.39 9,450.25
Cañon de Valle	V002	CDV-SMA-1.3	1611628 (35.848233)	1764036 (-106.34715)	2,026.82	16-017(a)-99 16-026(m)	0.00 1,004.56
Cañon de Valle	V003	CDV-SMA-1.4	1611746 (35.850131)	1764727 (-106.346749)	664,981.13	16-020 16-026(l) 16-028(c) 16-030(c)	33,144.05 1.53 1,140.44 0.00
Cañon de Valle	V004	CDV-SMA-1.45	1611691 (35.84985)	1764622 (-106.346933)	1,049.17	16-026(i)	320.68
Cañon de Valle	V005	CDV-SMA-1.7	1613090 (35.850996)	1765040 (-106.342214)	13,065.32	16-019	13,062.91
Cañon de Valle	V006	CDV-SMA-2	1613663 (35.8498)	1764602 (-106.340283)	146,055.33	16-021(c)	16,809.77
Cañon de Valle	V007	CDV-SMA-2.3	1615798 (35.8461)	1763255 (-106.333067)	4,401,017.58	13-001 13-002 16-003(n) 16-003(o) 16-029(h) 16-031(h)	151,725.99 32,210.20 3,775.39 66,547.90 917.51 440.35
Cañon de Valle	V008	CDV-SMA-2.41	1615900 (35.849967)	1764662 (-106.332733)	90,548.26	16-018	34,642.91
Cañon de Valle	V008A	CDV-SMA-2.42	1616091 (35.849084)	1764341 (-106.332085)	35,481.13	16-010(b)	24,021.18
Cañon de Valle	V009	CDV-SMA-2.5	1616475 (35.846517)	1763407 (-106.330783)	1,023,500.26	16-010(c) 16-010(d) 16-028(a)	25,088.91 28,218.90 10,948.58
Cañon de Valle	V009A	CDV-SMA-2.51	1616733 (35.846967)	1763567 (-106.329917)	102,432.62	16-010(i)	4,032.03
Cañon de Valle	V010	CDV-SMA-3	1619475 (35.847767)	1763859 (-106.320667)	19,531.45	14-009	3,321.77
Cañon de Valle	V011	CDV-SMA-4	1619753 (35.847971)	1763933 (-106.319726)	7,763.15	14-010	62.24
Cañon de Valle	V012	CDV-SMA-6.01	1620581 (35.8478)	1763869. (-106.316932)	60,525.00	14-001(g) 14-006	67.47 239.68
Cañon de Valle	V012A	CDV-SMA-6.02	1620774 (35.847745)	1763751 (-106.316283)	3,576.60	14-002(c) 14-002(d) 14-002(e)	294.25 16.61 20.92
Cañon de Valle	V013	CDV-SMA-7	1622123 (35.8453)	1762963 (-106.311733)	17,000.02	15-008(d)	262.26
Cañon de Valle	V014	CDV-SMA-8	1622591 (35.844267)	1762583 (-106.31015)	1,214,320.24	15-011(c)	0.00

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft^2)	Site Number	Site Drainage Area (ft^2)
Cañon de Valle	V015	CDV-SMA-8.5	1622201 (35.84136)	1761526 (-106.311461)	7605.25	15-014(a)	95.0849
Cañon de Valle	V016	CDV-SMA-9.05	1623846 (35.836117)	1759616 (-106.3059)	106,576.00	15-007(b)	12,853.47
Fence	F001	F-SMA-2	1632493 (35.827319)	1756410 (-106.267673)	1,747,981.91	36-004(c)	8,461.09
Potrillo	I001	PT-SMA-0.5	1625751 (35.839183)	1760731 (-106.299483)	296,295.95	15-009(e) C-15-004	0.00 65.85
Potrillo	I002	PT-SMA-1	1626314 (35.837828)	1760238 (-106.297583)	661,860.88	15-004(f) 15-008(a)	27,885.79 1,651.92
Potrillo	I003	PT-SMA-1.7	1627221 (35.833404)	1758627 (-106.294518)	82,798.85	15-006(a)	146.37
Potrillo	I004	PT-SMA-2	1627867 (35.836517)	1759759 (-106.29235)	128,520.02	15-008(f) 36-003(b) 36-004(e)	2,906.55 641.17 4,895.21
Potrillo	I004A	PT-SMA-2.01	1627976.76 (35.836535)	1759680.16 (-106.291838)	9,960.09	C-36-001 C-36-006(e)	0.00 1,617.18
Potrillo	I005	PT-SMA-3	1631305 (35.83369)	1758730 (-106.280741)	19,468,890.40	36-004(a) 36-006	5,923.58 22,024.19
Potrillo	I007	PT-SMA-4.2	1640805 (35.824283)	1755302 (-106.248683)	46,479,398.93	36-004(d)	4,745.91
Water	W001	W-SMA-1	1610435 (35.842278)	1761579 (-106.351884)	257,402.03	16-017(j)-99 16-026(c2) 16-026(v)	0.00 1.56 7.03
Water	W002	W-SMA-1.5	1609178 (35.84177)	1761686 (-106.355403)	535,734.95	16-026(b2) 16-028(d)	7.03 7.03
Water	W003	W-SMA-2.05	1609892 (35.839517)	1760865 (-106.353)	30,483.41	16-028(e)	7.03
Water	W004	W-SMA-3.5	1612463 (35.837283)	1760051 (-106.344317)	82,312.49	16-026(y)	0.00
Water	W005	W-SMA-4.1	1613587 (35.83705)	1759967 (-106.340517)	7,891.56	16-003(a)	242.83
Water	W006	W-SMA-5	1614101 (35.841617)	1761625 (-106.3388)	2,980,044.68	16-001(e) 16-003(f) 16-026(b) 16-026(c) 16-026(d) 16-026(e)	211.80 0.00 2,770.92 12,687.20 7,240.25 6,643.29
Water	W007	W-SMA-6	1613836 (35.837602)	1760164 (-106.339682)	5,874.28	11-001(c)	0.00
Water	W008	W-SMA-7	1614549 (35.838521)	1760498 (-106.337276)	97,573.73	16-026(h2) 16-029(e)	0.00 47.73

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)
Water	W009	W-SMA-7.8	1614363 (35.836317)	1759695 (-106.3379)	33,820.81	16-031(a)	7.03
Water	W010	W-SMA-7.9	1614423 (35.83595)	1759563 (-106.3377)	4,071.56	16-006(c)	355.82
Water	W011	W-SMA-8	1614541 (35.836126)	1759626 (-106.337299)	7,809.07	16-016(g) 16-028(b)	312.57 7.03
Water	W012	W-SMA-8.7	1615647 (35.843583)	1762343 (-106.333583)	713,083.70	13-001 13-002 16-004(a) 16-026(j2) 16-029(h) 16-035	129,708.58 136,842.58 602.27 14,230.33 4,632.95 1,316.58
Water	W012A	W-SMA-8.71	1615273.3 (35.843552)	1762405.91 (-106.334599)	12,231.38	16-004(c)	335.04
Water	W013	W-SMA-9.05	1615787 (35.83502)	1759218 (-106.3331)	23,643.37	16-030(g)	7.03
Water	W014	W-SMA-9.5	1617434 (35.838565)	1760512 (-106.327545)	1,257.25	11-012(c)	630.98
Water	W015	W-SMA-9.7	1617908 (35.83905)	1760691 (-106.32595)	6,496.57	11-011(a) 11-011(b)	163.16 52.29
Water	W016	W-SMA-9.8	1618242 (35.838938)	1760647 (-106.324817)	2,067.92	11-005(c)	132.90
Water	W017	W-SMA-9.9	1618535 (35.838983)	1760663 (-106.323833)	12,461.62	11-006(b)	1,713.60
Water	W018	W-SMA-10	1618681 (35.837933)	1760282 (-106.323333)	307,380.35	11-002 11-003(b) 11-005(a) 11-005(b) 11-006(c) 11-006(d) 11-011(d)	6,216.09 7,483.51 1,769.65 1,723.32 2,115.85 1,343.42 96.85
Water	W019	W-SMA-11.7	1625583 (35.82445)	1755367 (-106.300033)	312,076.23	49-008(c)	82,834.81
Water	W020	W-SMA-12.05	1625910 (35.82545)	1755732 (-106.298933)	21,318.78	49-001(g)	21,260.17
Water	W021	W-SMA-14.1	1626602.93 (35.83215)	1758304.06 (-106.296763)	252,723.37	15-004(h) 15-014(l)	163.74 19.27
Water	W022	W-SMA-15.1	1627047 (35.824433)	1755361 (-106.2951)	8,058.70	49-005(a)	1,736.58

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	PCBs	High Explosives	SVOCs
Analytical method	EPA 900.0	EPA 903.0 EPA 904.1	SM 4500 CN-I	EPA:200.7 EPA:200.8	EPA:200.7 EPA:200.8 EPA:245.2	EPA:200.8	EPA:200.8	EPA 1668A	SW8321	EPA 625 EPA 8310 EPA 8081B
Field prep code	UF	UF	UF	F	UF	F	F	UF	UF	UF
Preservation	HNO3	HNO3	NaOH, Ice	HNO3	HNO3	HNO3	HNO3	Ice	Ice	Ice, store some analytes in dark
Holding time (days)	180	180	14	180	180	180	180	365	7	7
Preferred volume (L)	2	2	1	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	1	0.77	1
Shipping container	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
CDV-SMA-1.2	180	SS100421	BCComp															
CDV-SMA-1.3	181	SS100422	CACompD															
CDV-SMA-1.4	182	SS130425	CAM5	X	X	X	X	X										
CDV-SMA-1.45	183	SS090406	CAM5	X														
CDV-SMA-1.7	184	SS190430	CAM5	X	X	X	X	X							X			
CDV-SMA-2	185	SS255	AltCompR															
CDV-SMA-2.3	186	SS080404	AltCompR															
CDV-SMA-2.41	187	SS090407	CAM5	X										X				
CDV-SMA-2.42	188	SS150427	BEC															
CDV-SMA-2.5	189	SS090420	BCComp															
CDV-SMA-2.51	190	SS090409	AltCompR															
CDV-SMA-3	191	SS25605	CAM5	X											X			
CDV-SMA-4	192	SS130424	MEx	X	X	X	X	X							X			
CDV-SMA-6.01	193	SS150428	CAM5	X	X	X	X	X							X			
CDV-SMA-6.02	194	SS130423	CAM5	X	X	X	X	X							X			
CDV-SMA-7	195	SS252625	S7															
CDV-SMA-8	196	SS25630	AltCompR															
CDV-SMA-8.5	197	SS180429	MEx	X	X	X	X	X										
CDV-SMA-9.05	198	SS090412	S7															
F-SMA-2	199	SS152402	CAM5-2	X	X	X	X	X							X			

Attachment 5, Sampling Requirements and Plan (continued)

Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum (Filtered)	Arsenic (Filtered)	Copper (Filtered)	Mercury (Unfiltered)	Zinc (Filtered)	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
PT-SMA-0.5	200	SS26565	CAM5	X					X		X				X			X
PT-SMA-1	201	SS174821	AltCompR															
PT-SMA-1.7	202	SS134817	CAM5	X	X	X	X	X							X			
PT-SMA-2	203	SS2658	CAI															
PT-SMA-2.01	204	SS124816	CACompC-Inv	X	X	X	X	X							X			X
PT-SMA-3	205	SS184822	CAM5	X											X			
PT-SMA-4.2	206	SS094806	CAM5	X	X													
W-SMA-1	207	SS133939	CACompC															
W-SMA-1.5	208	SS153942	CAM5-2	X	X	X	X	X										
W-SMA-2.05	209	SS093903	CAM5			X			X									
W-SMA-3.5	210	SS103929	MEx	X	X	X	X	X										
W-SMA-4.1	211	SS103930	MEx	X	X	X	X	X							X			
W-SMA-5	212	SS2528	AltCompR															
W-SMA-6	213	SS173944	CAI															
W-SMA-7	214	SS153943	CAM5	X	X	X	X	X										
W-SMA-7.8	215	SS103931	MEx	X	X	X	X	X										
W-SMA-7.9	216	SS103932	MEx	X	X	X	X	X										X
W-SMA-8	217	SS143941	CAM5	X	X	X	X	X										X
W-SMA-8.7	218	SS103933	AltCompR															
W-SMA-8.71	219	SS123938	CAM5-2	X	X	X	X	X										
W-SMA-9.05	220	SS093914	BCComp															

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
W-SMA-9.5	221	SS173945	BEC															
W-SMA-9.7	222	SS093916	AltCompR															
W-SMA-9.8	223	SS173946	MEx	X	X	X	X	X										
W-SMA-9.9	224	SS103934	CAM5	X		X			X									
W-SMA-10	225	SS25245	AltCompR															
W-SMA-11.7	226	SS103935	CAM5	X					X									
W-SMA-12.05	227	SS093922	MEx	X	X	X	X	X							X			
W-SMA-14.1	228	SS123937	AltCompR															
W-SMA-15.1	229	SS093927	CAM5	X														

AltCompR = Alternative compliance requested.

BEC = Enhanced controls are being built to initiate corrective action monitoring.

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.

CACompA = Corrective action is complete with a certification that all pollutants of concern are at or below applicable TALs per IP Part I.E.2(a).

CACompC-Inv = Corrective action is complete with a certification that no pollutants are exposed to storm water. Investigation sample being collected.

CACompD = The Site has achieved RCRA "corrective action complete" status or a certificate of completion under NMED's Compliance Order on Consent.

CAI = Corrective action has been initiated.

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.

S6B = Permit screening process for corrective action recommendation: Submit alternative compliance request to EPA.

S7 = Alternatives analysis. Permittees are preparing an analysis of alternatives to complete corrective action.

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

SMA	Site List	Additional Compliance Status Details
PT-SMA-1	73-001(a) and 73-004(d)	In 2017, a storm water sample was collected at this SMA from the first measurable storm event after certification of installation of enhanced controls and a monitoring location move. The Permittees prepared an Alternative Compliance request for these Sites. The Alternative Compliance request was submitted to EPA in April 2019.
PT-SMA-2	36-003(b) 15-008(f) 36-004(e)	In 2019, storm water samples were collected from the first measurable storm events after certification of installation of enhanced controls. Corrective action has been initiated at these Sites.
CDV-SMA-1.7	16-019	Following a SIP site visit, it was determined that the sampler was not located in the most representative location. At the beginning of the 2019 monitoring season the sampler was moved further downslope and corrective action confirmation monitoring continues.
CDV-SMA-2.42	16-010(b)	The Permittees requested this Site be removed from the IP in 2015. There has been no response from EPA. Therefore, this Site was still being monitored in 2017. A sample was collected with TAL exceedances. Enhanced controls are being built to initiate corrective action monitoring at this Site.
CDV-SMA-7	15-008(d)	In 2018, a sample was collected with TAL exceedances. Permittees are preparing an analysis of alternatives to complete corrective actions at this Site.
CDV-SMA-9.05	15-007(b)	In 2018, a sample was collected with TAL exceedances. Permittees are preparing an analysis of alternatives to complete corrective actions at this Site.
W-SMA-1	16-017(j)-99 16-026(c2) 16-026(v)	Alternative Compliance request has been submitted for Sites 16-026(c2) and 16-026(v). Certification of a no exposure condition at 16-017(j)-99 was submitted to EPA in 2015In 2018, a no exposure investigative compliance monitoring sample was collected for Site 16-017j)-99. Analytical results for this sample were submitted to EPA in January 2020.
W-SMA-1.5	16-026(b2) 16-028(d)	In 2017, a storm water sample was collected from the first measurable storm event after certification of installation of enhanced controls with no TAL exceedance. Corrective action monitoring will continue until a second storm water sample with no TAL exceedances is collected per Permit Part I.4.a to remove pollutants of concern from monitoring requirements for these Sites.
W-SMA-6	11-001(c)	In 2019, storm water samples were collected from the first measurable storm events after certification of baseline control installation with TAL exceedances. Corrective action has been initiated at this Site.
W-SMA-7.8	16-031(a)	In 2019, a storm water sample was collected from the first measurable storm event after certification of baseline control installation with no TAL exceedances. Extending baseline monitoring will continue until a second storm water sample with no TAL exceedances is collected per Permit Part I.4.a to remove pollutants of concern from monitoring requirements for this Site.
W-SMA-9.5	11-012(c)	Enhanced controls are being built to initiate corrective action monitoring at this Site