EMID-700832

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

NPDES Permit No. NM0030759
May 1, 2020

Pajarito Watershed

Receiving Waters:
Pajarito Canyon, Starmer Canyon, Twomile Canyon, and Threemile Canyon

Volume 3

CONTENTS

129.0 2M-SMA-1: SWMU 03-010(a) 4
130.0 2M-SMA-1.42: SWMU 06-001(a) 11
131.0 2M-SMA-1.43: SWMUs 22-014(a) and 22-015(a) 17
132.0 2M-SMA-1.44: SWMU 06-001(b) 24
133.0 2M-SMA-1.45: SWMU 06-006 31
134.0 2M-SMA-1.5: SWMU 22-014(b) 36
135.0 2M-SMA-1.65: SWMU 40-005 39
136.0 2M-SMA-1.67: SWMU 06-003(h) 45
137.0 2M-SMA-1.7: SWMU 03-055(a) 50
138.0 2M-SMA-1.8: SWMU 03-001(k) 56
139.0 2M-SMA-1.9: SWMU 03-003(a) 62
140.0 2M-SMA-2: SWMUs 03-050(d) and 03-054(b) 68
141.0 2M-SMA-2.2: AOC 03-003(k) 75
142.0 2M-SMA-2.5: SWMU 40-001(c) 81
143.0 2M-SMA-3: SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d) 86
144.0 3M-SMA-0.2: SWMU 15-010(b) 93
145.0 3M-SMA-0.4: SWMU 15-006(b) 100
146.0 3M-SMA-0.5: SWMUs 15-006(c) and 15-009(c) 106
147.0 3M-SMA-0.6: SWMU 15-008(b) 113
148.0 3M-SMA-2.6: SWMUs 36-008 and C-36-003 117
149.0 3M-SMA-4: SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f) 121
150.0 PJ-SMA-1.05: SWMU 09-013 128
151.0 PJ-SMA-2: SWMU 09-009 134
152.0 PJ-SMA-3.05: SWMU 09-004(o) 138
153.0 PJ-SMA-4.05: SWMUs 09-004(g) and 09-005(g) 144
154.0 PJ-SMA-5: SWMU 22-015(c) 150
155.0 PJ-SMA-5.1: SWMUs 22-010(b) and 22-016 157
156.0 PJ-SMA-6: SWMU 40-010 164
157.0 PJ-SMA-7: SWMU 40-006(c) 170
158.0 PJ-SMA-8: SWMU 40-006(b) 173
159.0 PJ-SMA-9: SWMU 40-009 176
160.0 PJ-SMA-10: SWMU 40-006(a) 185
161.0 PJ-SMA-11: SWMU 40-003(a) 193
162.0 PJ-SMA-11.1: AOC 40-003(b) 199
163.0 PJ-SMA-13: SWMU 18-002(a) 205
164.0 PJ-SMA-13.7: AOC 18-010(b) 208
165.0 PJ-SMA-14: SWMU 54-004 214
166.0 PJ-SMA-14.2: SWMU 18-012(b) 217

167.0 PJ-SMA-14.3: SWMU 18-003(e) 220
168.0 PJ-SMA-14.4: AOC 18-010(d) 223
169.0 PJ-SMA-14.6: AOC 18-010(e) 226
170.0 PJ-SMA-14.8: SWMU 18-012(a) 229
171.0 PJ-SMA-16: SWMU 27-002....234
172.0 PJ-SMA-17: SWMU 54-018....239
173.0 PJ-SMA-18: SWMUs 54-014(d) and 54-017 245
174.0 PJ-SMA-19: SWMUs 54-013(b), 54-017, and 54-020 251
175.0 PJ-SMA-20: SWMU 54-017....259
176.0 STRM-SMA-1.05: AOC 08-009(f) 265
177.0 STRM-SMA-1.5: SWMU 08-009(d) 271
178.0 STRM-SMA-4.2: SWMU 09-008(b) 278
179.0 STRM-SMA-5.05: SWMU 09-013....284

Attachments

Attachment 1 Amendments 290
Attachment 2 Vicinity Map.... 354
Attachment 3 Precipitation Network 355
Attachment 4 Physical Characteristics 368
Attachment 5 Sampling Requirements and Plan 371
Attachment 6 Additional Compliance Status Details for SMAs/Sites in Corrective Action.... 375

129.0 2M-SMA-1: SWMU 03-010(a)

129.1 Site Descriptions

One historical industrial activity area is associated with E001, 2M-SMA-1: Site 03-010(a).

SWMU 03-010(a) is the former outfall area from a former vacuum repair shop at TA-03. The outfall area is located on a steep slope on the rim of Twomile Canyon about 30 ft west of a general warehouse (building 03-30). The outfall received discharges of waste oil containing mercury between 1950 and 1957. Former workers estimated that more than 100 lb of mercury was disposed of at this Site. The 1994 Phase II RFI confirmed that the contaminants of concern (mercury, petroleum hydrocarbons, and VOCs) in surface soil were no longer present above applicable SSLs.

2M-SMA-1, Rip Rap, E00104060010, (photo ID 7516-5)

RFI and remediation activities were completed for SWMU 03-010(a) before the Consent Order went into effect in 2005. Groundwater monitoring was conducted in accordance with the Consent Order and is complete. SWMU 03-010(a) was investigated concurrently with AOC 03-001(e), the former vacuum repair shop in building 03-30. Residual contamination associated with AOC 03-001(e) may be detected beneath building 03-30. Therefore, further characterization and investigation of AOC 03-001(e) are delayed until the demolition of building 03-30. Investigation of SWMU 03-010(a) will be completed as part of the Twomile Canyon Aggregate Area Investigation.

The project map (Figure 129-1) 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.

129.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 129-1).

Enhanced controls were installed and certified on July 20, 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 129-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00102040026	Established Vegetation	-	X	X	-	B
E00103010014	Earthen Berm	X	-	-	X	EC
E00103110035	Eco-Block	X	-	-	X	B
E00103120034	Rock Berm	-	-	X	-	B
E00104060010	Rip Rap	X	-	X	-	CB
E00104060011	Rip Rap	X	-	X	-	CB
E00104060033	Rip Rap	-	X	-	X	B
E00105020013	Sediment Basin	X	-	-	X	EC
E00106010007	Rock Check Dam	X	-	-	X	CB
E00106010008	Rock Check Dam	X	-	-	X	CB
E00106010009	Rock Check Dam	X	-	-	X	CB
E00106010017	Rock Check Dam	X	-	-	X	EC
E00106010018	Rock Check Dam	X	-	-	X	EC
E00106010019	Rock Check Dam	X	-	-	X	EC
E00106010020	Rock Check Dam	X	-	-	X	EC
E00106010021	Rock Check Dam	X	-	-	X	EC
E00106010022	Rock Check Dam	X	-	-	X	EC
E00106010023	Rock Check Dam	X	-	-	X	EC
E00106010024	Rock Check Dam	X	-	-	X	EC
E00106010025	Rock Check Dam	X	-	-	X	EC
E00106010028	Rock Check Dam	X	-	-	X	B
E00106010029	Rock Check Dam	X	-	-	X	B
E00106020031	Log Check Dam	-	X	-	X	B
E00106020032	Log Check Dam	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

129.3 Storm Water Monitoring

SWMU 03-010(a) is monitored within 2M-SMA-1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 4, 2011, and August 20, 2011 (Figure 129-2). Analytical results from these baseline monitoring samples yielded TAL exceedances for aluminum (1200 µg/L) and gross-alpha activity (18.3 pCi/L) and are presented in Figure 129-2.

Following the installation of enhanced control measures, two corrective action storm water samples were collected on July 25, 2012, and September 12, 2012 (Figure 129-2). Analytical results from these corrective action monitoring samples yielded a TAL exceedance for aluminum (1430 µg/L) and are presented in Figure 129-2.

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 03-010(a):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above soil, sediment, or tuff BVs in shallow (i.e., less than 3 ft bgs) RFI decision-level samples.

2M-SMA-1, Rock Check Dam, E00106010007 (photo ID 24312-7)

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 129-2. 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 129-2.

Monitoring location 2M-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals, including 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; aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum results from both 2011 and 2012 are between these values.

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

129.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG121.9 recorded six storm events at 2M-SMA-1 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 129-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72909	3-21-2019
Storm Rain Event	BMP-74891	7-22-2019
Storm Rain Event	BMP-75401	8-2-2019
Storm Rain Event	BMP-76071	8-20-2019
Storm Rain Event	BMP-76666	9-6-2019
Storm Rain Event	BMP-77248	10-10-2019

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

Table 129-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-74099	Installed Eco-Block E00103110035 as a replacement for Asphalt Berm E00103040027.	6-17-2019	88 day(s)	Maintenance was delayed because of availability of supplies and coordination with facility.

129.5 Compliance Status

The Site associated with 2M-SMA-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 129-4 presents the 2019 compliance status.

Table 129-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 03-010(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

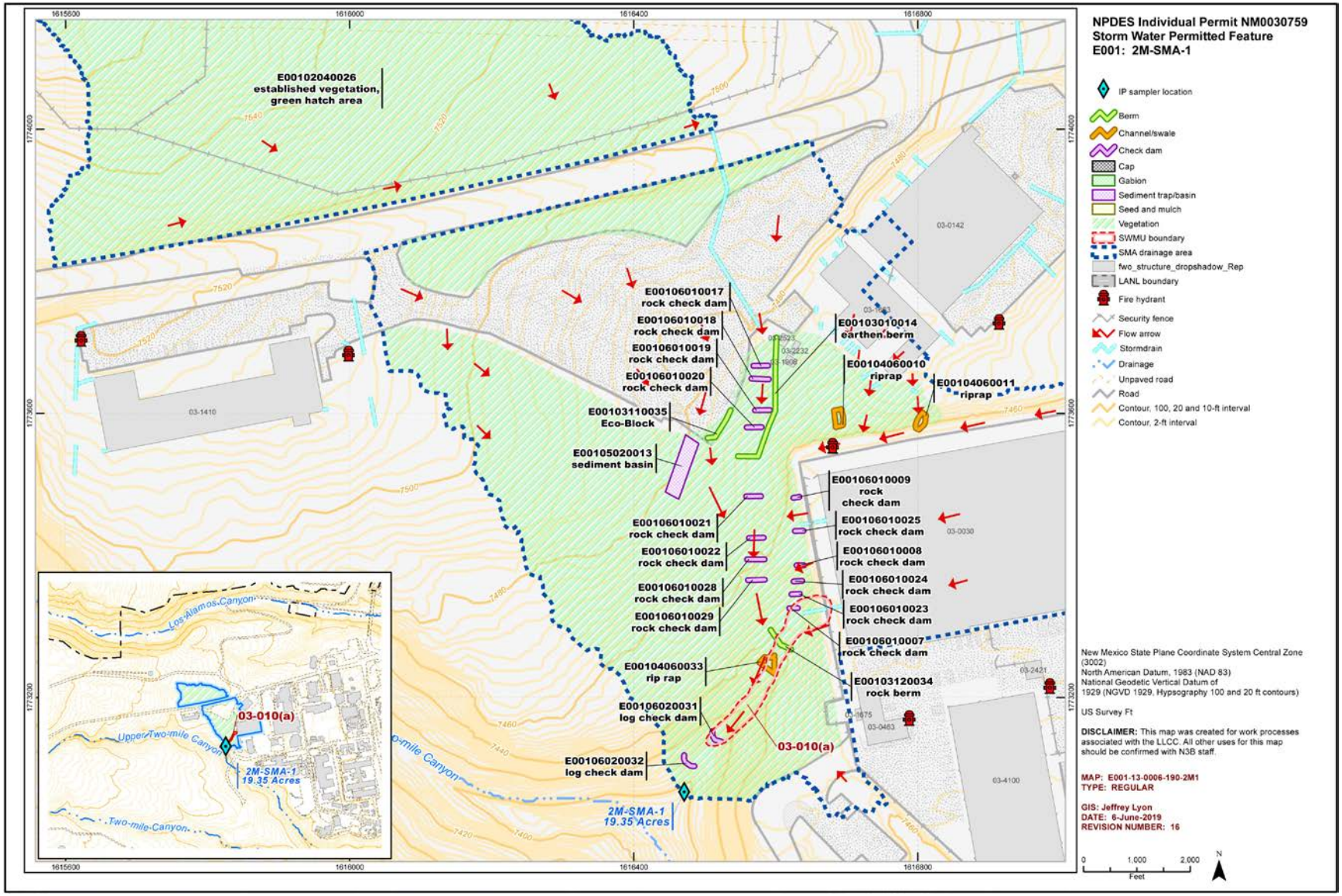


Figure 129-1 2M-SMA-1 location map

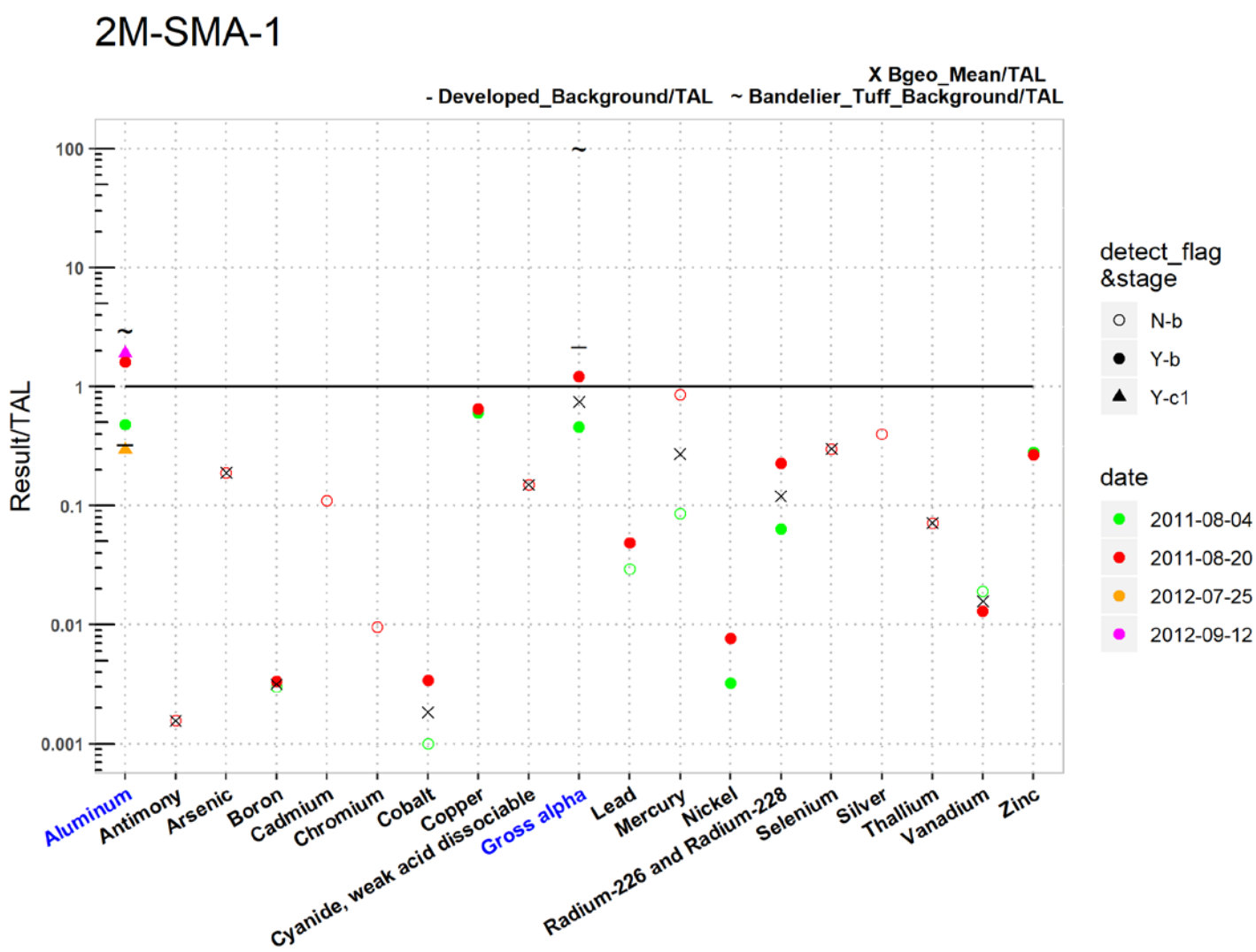


Figure 129-2 Analytical results summary for 2M-SMA-1

2M-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	0.0032	NA	NA	0.0018	NA	0.15	0.75	NA	0.27	NA	0.12	0.3	NA	0.071	0.016	NA
2011-08-04 d	0.48	NA	NA	NA	NA	NA	NA	0.6	NA	0.46	NA	NA	0.0032	0.064	NA	NA	NA	NA	0.28
2011-08-04 nd	NA	0.0016	0.19	0.003	0.11	0.0095	0.001	NA	0.15	NA	0.029	0.086	NA	NA	0.3	0.4	0.071	0.019	NA
2011-08-20 d	**1.6**	NA	NA	0.0033	NA	NA	0.0034	0.65	NA	**1.2**	0.049	NA	0.0076	0.23	NA	NA	NA	0.013	0.27
2011-08-20 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	0.15	NA	NA	0.86	NA	NA	0.3	0.4	0.071	NA	NA
2012-07-25 d	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2012-07-25 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2012-09-12 d	**1.9**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2012-09-12 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 129-2 (continued) Analytical results summary for 2M-SMA-1

130.0 2M-SMA-1.42: SWMU 06-001(a)

130.1 Site Descriptions

One historical industrial activity area is associated with E002, 2M-SMA-1.42: Site 06-001(a).

2M-SMA-1.42, Earthen Berm, E00203010011 (photo ID 23499-1)

SWMU 06-001 (a) is an inactive septic tank (structure 06-40) with a volume of approximately 840 gal. (the precise volume is not known) and the associated outfall area. The septic tank system served buildings 06-1 and 06-3 (currently a storage building). The septic tank is located approximately 400 ft north of Twomile Mesa Road and about 100 ft north of building 06-3. Building 06-1 included a laboratory and a carpenter shop. The laboratory was used in 1944 to develop analytical procedures for nonradioactive cobalt-tracer shots. Although no further information exists on the use of the laboratory, the carpenter shop may have later expanded into the laboratory space. In the late 1950s, silver may have been soldered in the shop. The building was not used after the carpenter shop closed in the early 1980s. Building 06-3 contained a restroom, a darkroom, and a laboratory with a lead-lined sink. Building 06-3 was first used as a control bunker for explosives shots; it was remodeled in 1944 with explosion-proof fixtures. From 1945 to 1948, the building housed offices, and from 1948 to the early 1950s, the building had a firing control panel and a bridgewire-testing laboratory. In 1972, the building was remodeled into a printed-circuit shop, and it was later used as a silk-screen facility until the mid-1980s. Since the mid-1980s, building 06-3 has been used for storage.

The septic system outfall drained to Tributary A of Twomile Canyon. The system ceased to be used in December 1986, and its drainline was plugged in 1988. During a reconnaissance visit in 1992, the tank was located and found to be empty. Buildings 06-1 and 06-3 were demolished and removed in 2004. The septic system was left in place.

Consent Order investigations have not been performed at SWMU 06-001(a), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994. SWMU 06-001(a) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 130-1) 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.

130.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 130-1).

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 130-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00202040015	Established Vegetation	-	X	X	-	B
E00203010011	Earthen Berm	-	X	-	X	EC
E00203010012	Earthen Berm	X	-	-	X	EC
E00203010014	Earthen Berm	X	-	-	X	EC
E00203120003	Rock Berm	X	-	-	X	CB
E00206010006	Rock Check Dam	X	-	-	X	CB
E00206010007	Rock Check Dam	X	-	-	X	CB
E00206010008	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

130.3 Storm Water Monitoring

SWMU 06-001(a) is monitored within 2M-SMA-1.42. Following the installation of baseline control measures, two baseline storm water samples were collected on August 21, 2011, and September 15, 2011 (Figure 130-2). Analytical results from these samples yielded TAL exceedances for aluminum (794 µg/L) and gross-alpha activity (51.8 pCi/L) and are presented in Figure 130-2.

Following the installation of enhanced control measures at 2M-SMA-1.42, a corrective action storm water sample was collected on July 20, 2015 (Figure 130-2). Analytical results from this corrective action monitoring sample yielded TAL exceedances for aluminum (1900 µg/L) and gross-alpha activity (16 pCi/L) and are presented in Figure 130-2.

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 06-001(a):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above BVs in shallow soil and sediment samples collected during the 1994 RFI.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 RFI 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 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 130-2. 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 130-2.

Monitoring location 2M-SMA-1.42 is located on Bandelier Tuff, and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared with aluminum and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Aluminum is associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for background storm water containing sediment from Bandelier Tuff is 2210 µg/L; the results from 2011 and 2015 are less than this value.
- Gross alpha—The gross alpha UTL for background storm water containing sediment from Bandelier Tuff is 1490 pCi/L; the results from 2011 and 2015 are less than this value

All the analytical results for these samples are reported in the 2011 and 2015 Annual Reports.

130.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.42 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 130-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72835	3-20-2019
Storm Rain Event	BMP-74589	7-15-2019
Storm Rain Event	BMP-74842	7-22-2019
Storm Rain Event	BMP-75258	8-7-2019
Storm Rain Event	BMP-76000	8-20-2019
Storm Rain Event	BMP-76372	9-3-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.42 in 2019.

130.5 Compliance Status

The Site associated with 2M-SMA-1.42 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 130-3 presents the 2019 compliance status.

Table 130-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 06-001(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, “Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Source.”

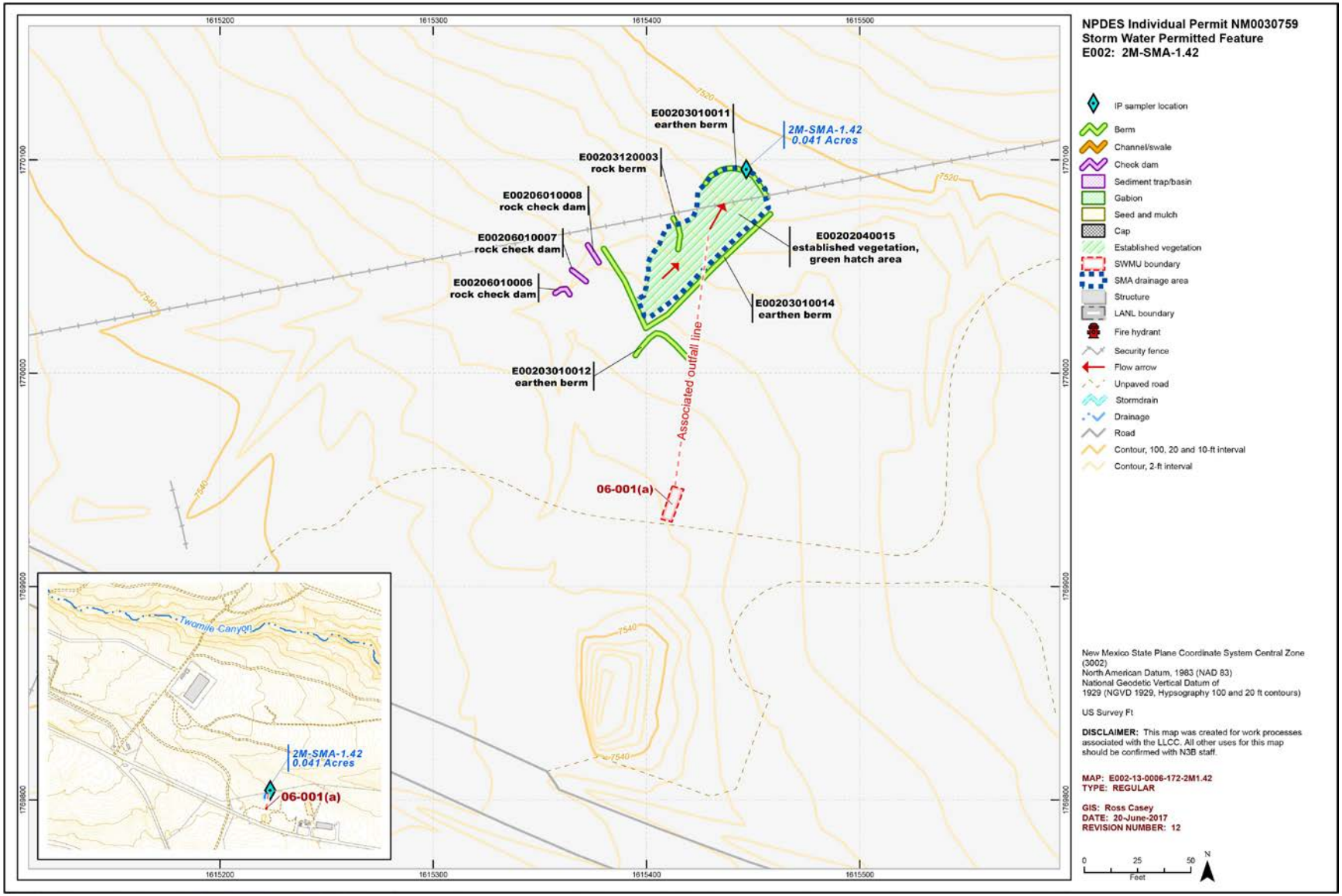


Figure 130-1 2M-SMA-1.42 location map

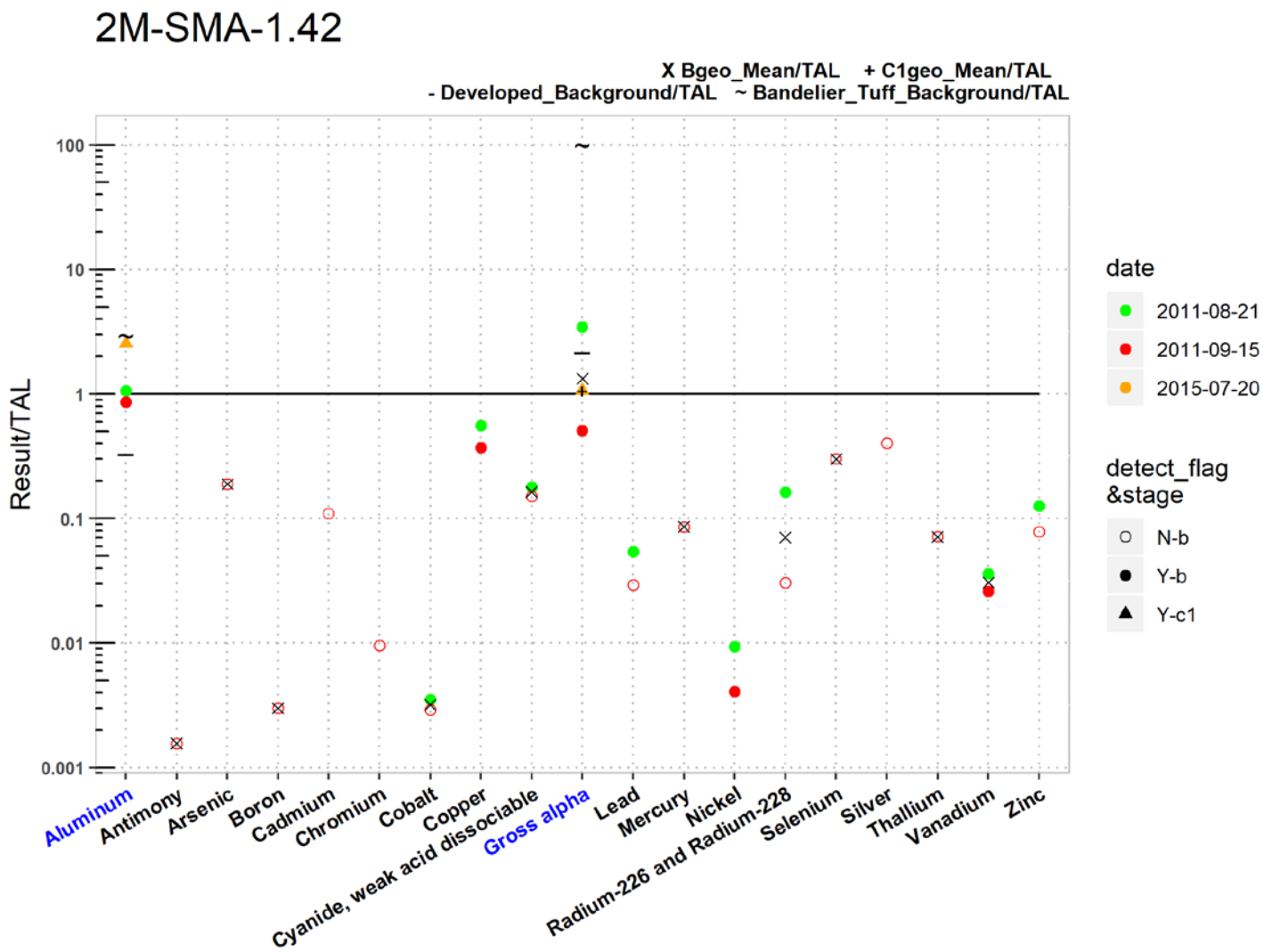


Figure 130-2 Analytical results summary for 2M-SMA-1.42

2M-SMA-1.42

	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	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	0.0032	NA	0.16	**1.3**	NA	0.086	NA	0.07	0.3	NA	0.071	0.031	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.1**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-08-21 d	**1.1**	NA	NA	NA	NA	NA	0.0035	0.56	0.18	**3.5**	0.054	NA	0.0094	0.16	NA	NA	NA	0.036	0.13
2011-08-21 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	NA	NA	NA	0.086	NA	NA	0.3	0.4	0.071	NA	NA
2011-09-15 d	0.86	NA	NA	NA	NA	NA	NA	0.37	NA	0.51	NA	NA	0.0041	NA	NA	NA	NA	0.026	NA
2011-09-15 nd	NA	0.0016	0.19	0.003	0.11	0.0095	0.0029	NA	0.15	NA	0.029	0.086	NA	0.031	0.3	0.4	0.071	NA	0.079
2015-07-20 d	**2.5**	NA	NA	NA	NA	NA	NA	NA	NA	**1.1**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2015-07-20 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 130-2 (continued) Analytical results summary for 2M-SMA-1.42

131.0 2M-SMA-1.43: SWMUs 22-014(a) and 22-015(a)

131.1 Site Descriptions

Two historical industrial activity areas are associated with E003, 2M-SMA-1.43: Sites 22-014(a) and 22-015(a).

SWMU 22-014(a) consists of an active HE sump, an associated inactive drainline, and an inactive seepage pit. The sump is located immediately south of building 22-93. The sump is constructed of concrete containing an inset aluminum tank and measures approximately 4 ft deep × 9 ft long × 3 ft wide. The sump system began operations in 1985 and receives rinse water from a washing facility for parts and clothing from explosives compacting operations in rooms C112 and C114 in building 22-93. Before 1995, the sump discharged approximately 100 gal. of wastewater each week through a drainline to a seepage pit located 150 ft south of the sump in the upper part of Tributary B of Twomile Canyon. The seepage pit is 4 ft in diameter and 40 ft deep. In 1995, the drainline from the sump was capped, rendering the sump drainlines and seepage pit inactive. Operations in building 22-93 continue to discharge wastewater to the sump, where the effluent is retained and suspended solids settle out as sludge. The sump contents are periodically removed for disposal at approved facilities at TA-16. The sump is equipped with a level monitor and an alarm that are monitored remotely in a manager's office.

Consent Order investigations have not been performed at SWMU 22-014(a); no decision-level data are available for this Site. SWMU 22-014(a) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

SWMU 22-015(a), situated on Twomile Mesa in the central-east area of TA-22, consists of two inactive seepage pits (Pits A and B), located east of building 22-91 in an open, grass-covered area. Each pit had an outside diameter of 4 ft and is filled with crushed gravel with a central 4-in. polypropylene perforated pipe vented to the surface. Pit A was 26 ft deep, and Pit B was 20 ft deep. The pits served rooms B102, B107, B121, B123, 8145, and B160 of building 22-91, which housed printed circuit-board etching operations. From 1985 to 1987, waste from the etching operations in building 22-91 was discharged through a 6-in.-diameter PVC drainpipe to the seepage pits. Before discharge, waste material was pretreated to remove contaminants. However, small quantities of dissolved contaminants and fine particulates may have been carried as effluent into the pits. The seepage pits were intended to allow liquids to percolate into the surrounding soils and tuff, while retaining potential contaminants in the seepage pit sediments and immediate (surrounding) soil matrix. The system failed because the effluent production rate exceeded the infiltration rate of liquid into the tuff, resulting in seepage pit overflow. In 1987, the pits were disconnected from their drainlines and left in place. After the pits were disconnected, effluent was allowed to daylight for only a few months before the drainlines were tied into the TA-16 WWTP.

Consent Order investigations have not been performed at Site 22-015(a), and no decision-level data are available for this Site. SWMU 22-015(a) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 131-1) 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.

131.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 131-1).

Table 131-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00302040005	Established Vegetation	-	X	X	-	B
E00306010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

131.3 Storm Water Monitoring

SWMUs 22-014(a) and 22-015(a) are monitored within 2M-SMA-1.43. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 131-2). In Figure 131-2, 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 aluminum (1500 µg/L) and gross-alpha activity (52 pCi/L) and are presented in Figure 131-2.

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 22-014(a):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) soil samples collected during the 1994 RFI at the Site were not analyzed for inorganic chemicals because these constituents are not associated with historical Site activities.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical Site activities.

SWMU 22-015(a):

- Aluminum may potentially be associated with industrial materials historically managed at the Site. Aluminum was not, however, detected above the BV in any of the three shallow 1994 RFI soil samples collected at the Site. Shallow samples were not collected during the 1997 RFI.
- Alpha-emitting radionuclides are not associated with historical Site activities. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides since 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 131-2. 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 131-2.

The SMA receives runoff from an asphalt road, grassy areas, parking areas, and undeveloped areas potentially impacted by surface releases from SWMU 22-015(a).

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

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

131.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.43 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 131-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72836	3-20-2019
Storm Rain Event	BMP-74590	7-9-2019
Storm Rain Event	BMP-74843	7-22-2019
Storm Rain Event	BMP-75259	8-7-2019
Storm Rain Event	BMP-76001	8-20-2019
Storm Rain Event	BMP076373	9-3-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.43 in 2019.

131.5 Compliance Status

The Sites associated with 2M-SMA-1.43 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 131-3 presents the 2019 compliance status.

Table 131-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 22-014(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 22-015(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015,"Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

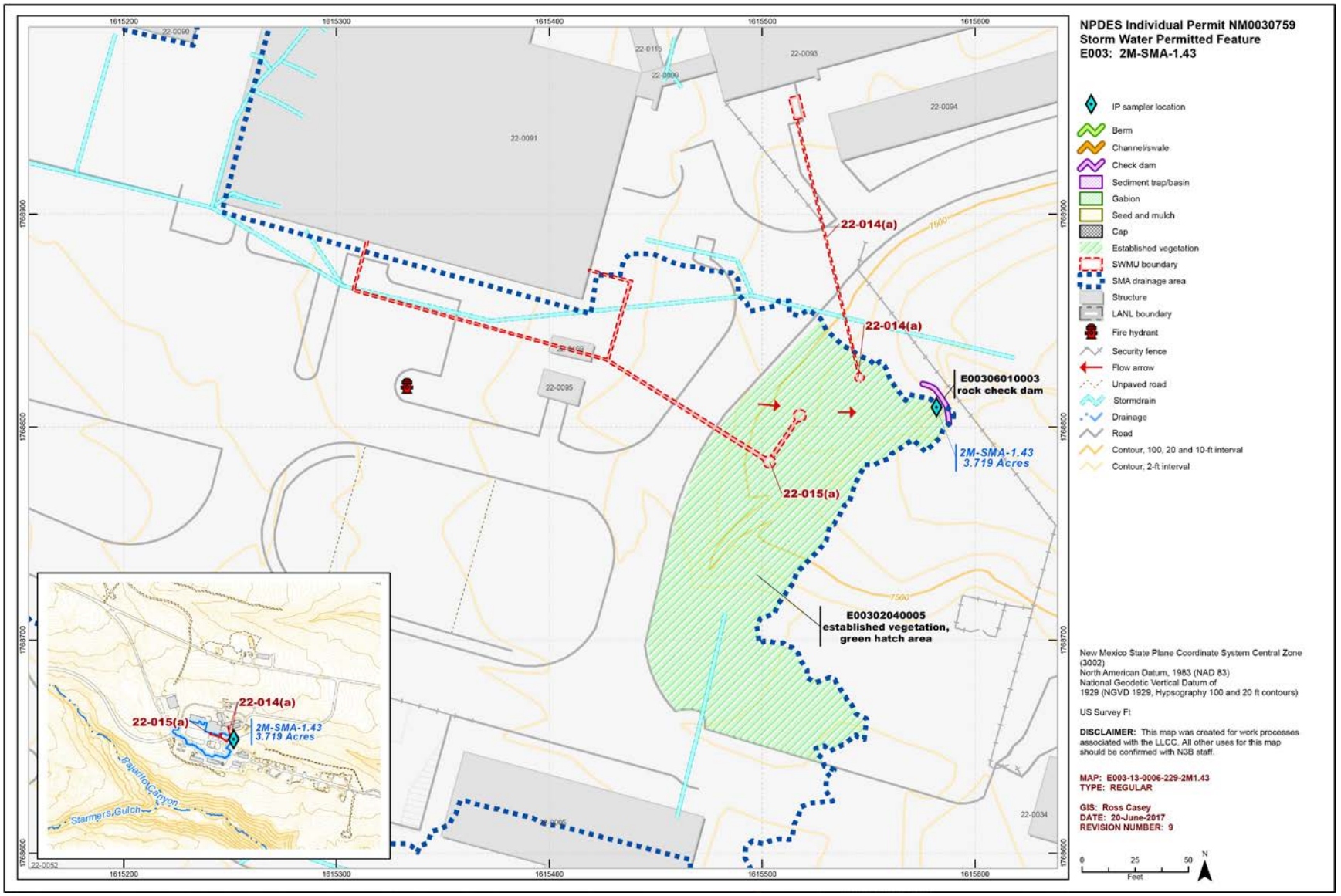


Figure 131-1 2M-SMA-1.43 location map

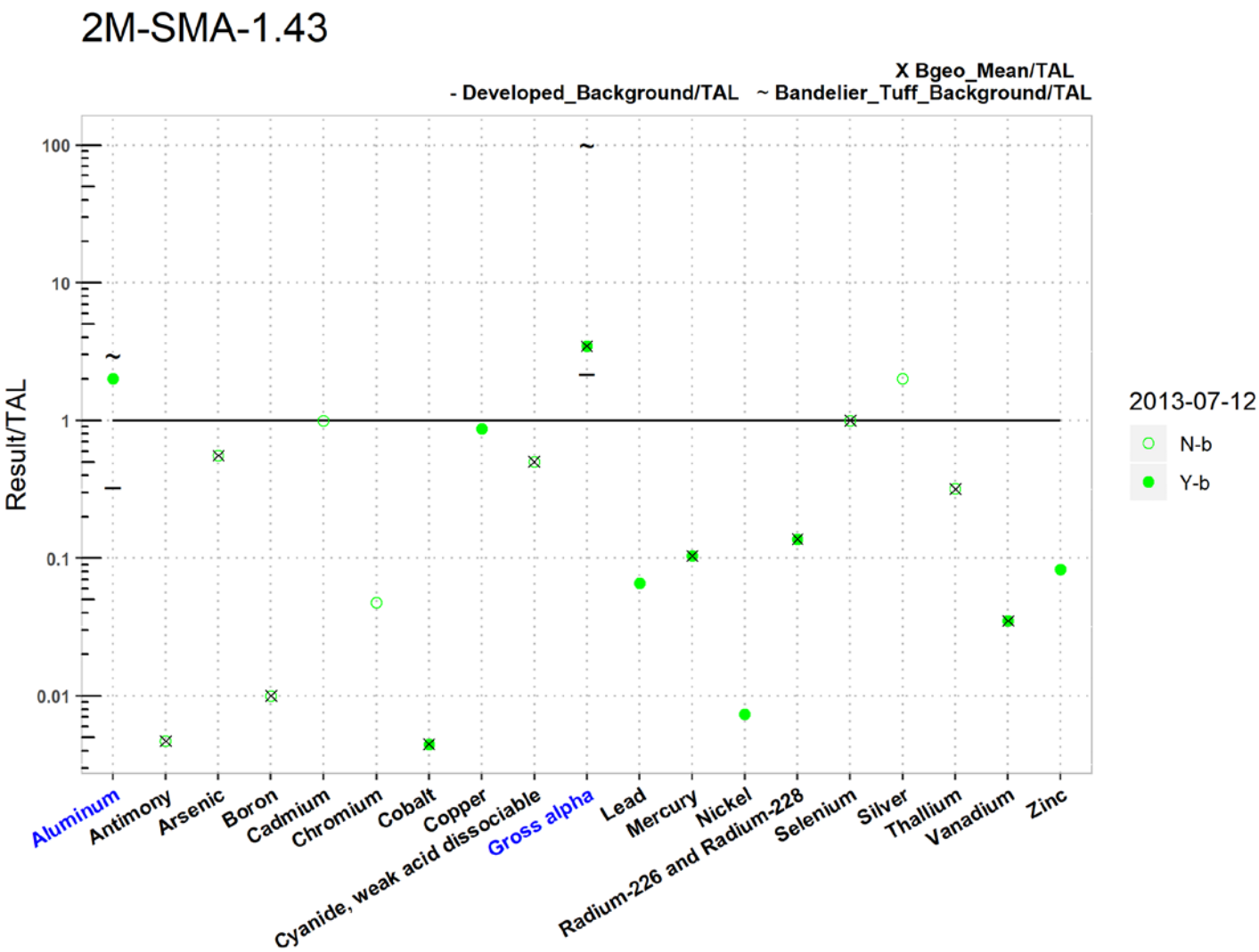


Figure 131-2 Analytical results summary for 2M-SMA-1.43

2M-SMA-1.43

	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	0.01	NA	NA	0.0045	NA	0.5	**3.5**	NA	0.1	NA	0.14	1	NA	0.32	0.035	NA
2013-07-12 d	**2**	NA	NA	NA	NA	NA	0.0045	0.87	NA	**3.5**	0.066	0.1	0.0074	0.14	NA	NA	NA	0.035	0.083
2013-07-12 nd	NA	0.0047	0.56	0.01	1	0.048	NA	NA	0.5	NA	NA	NA	NA	NA	1	2	0.32	NA	NA

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

Figure 130-2 (continued) Analytical results summary for 2M-SMA-1.43

132.0 2M-SMA-1.44: SWMU 06-001(b)

132.1 Site Descriptions

One historical industrial activity area is associated with E004, 2M-SMA-1.44: Site 06-001(b).

SWMU 06-001(b) consists of a 960-gal.-capacity septic tank (structure 06-43) and associated drainlines, distribution box, filter trench, and outfall located approximately 200 ft north of former building 06-6. The septic system served former building 06-6 and operated from 1945 to the 1980s. Former building 06-6 originally housed laboratory operations related to detonator assembly, an electronics work room, a chemistry laboratory, two darkrooms, restrooms, and a sink. The sink drain received rinsate containing copper, brass, and steel parts dipped in nitric acid to remove silver solder flux and oxidized metals. Solvents were also used to degrease metal. Tin and lead soldering using paste and aqueous zinc/aluminum chloride fluxes was performed on electrical circuits. Manometric apparatuses containing liquid mercury were serviced in the building. Ionizing radiation, in the form of electrically generated x-rays, was used through the 1950s to about 1965. By 1961, the darkrooms, assembly room, and a storage area had been converted to offices. In the 1970s, former building 06-6 was used as a cable shop where acetone, alcohol, and dilute acids may have been used. In the early 1980s, former building 06-6 was used for printed circuit production. Effluent from the septic tank discharged north to a distribution box and then to a filter trench consisting of two parallel trenches with perforated pipe surrounded by sand and covered with gravel. Overflow from the filter trench went north to an outfall that drained into Tributary A of Twomile Canyon. In 1989, the drainline was cut and capped. Building 06-6 was demolished and removed in 2004; however, the septic tank, drainlines, distribution box, and filter trenches were left in place.

The 1993 RFI work plan for OU 1111 and the 1997 RFI report state that plumbing in buildings 06-5 and 06-8 also drained to SWMU 06-001(b). However, engineering drawings for these two buildings show no drains or points of discharge. In addition, an engineering drawing of the sanitary sewer system at TA-06 shows no waste lines coming from either building. Thus, engineering records indicate the information in the 1993 RFI work plan and 1997 report concerning discharges from these buildings to SWMU 06-001(b) is incorrect.

Consent Order investigations have not been performed at SWMU 06-001(b), and no decision-level data are available for this Site. Screening-level data are available from an RFI conducted in 1994. SWMU 06-001(b) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 132-1) 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.

132.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 132-1).

Enhanced controls were installed and certified on June 27, 2012, and September 4, 2015, and submitted to EPA on July 25, 2012, and 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 132-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00402040008	Established Vegetation	-	X	X	-	B
E00403010006	Earthen Berm	X	-	-	X	EC
E00403010011	Earthen Berm	X	-	-	X	EC
E00403010015	Earthen Berm	-	X	-	X	EC
E00403060019	Straw Wattle	X	-	-	X	B
E00403060020	Straw Wattle	X	-	-	X	B
E00403060021	Straw Wattle	X	-	-	X	B
E00403060022	Straw Wattle	X	-	-	X	B
E00403060023	Straw Wattle	X	-	-	X	B
E00403060024	Straw Wattle	X	-	-	X	B
E00403060027	Straw Wattle	X	-	-	X	B
E00403140016	Coir Log	-	X	-	X	EC
E00404060012	Rip Rap	-	-	X	-	EC
E00406010009	Rock Check Dam	X	-	-	X	EC
E00406010010	Rock Check Dam	X	-	-	X	EC
E00406010013	Rock Check Dam	-	-	X	-	EC
E00406010014	Rock Check Dam	-	-	X	-	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

132.3 Storm Water Monitoring

SWMU 06-001(b) is monitored within 2M-SMA-1.44. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 132-2). Analytical results from this sample yielded TAL exceedances for copper (31.5 µg/L) and gross-alpha activity (21.1 pCi/L) and are presented in Figure 132-2.

Following the installation of enhanced control measures at 2M-SMA-1.44, corrective action storm water samples were collected on September 12, 2013, and July 31, 2014 (Figure 132-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (39.5 µg/L and 27.5 µg/L) and are presented in Figure 132-2.

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 06-001(b):

- Copper is known to be associated with industrial materials historically managed at the Site. Solutions containing copper were discharged to the septic system. Copper was detected above BVs in 5 of 15 shallow samples collected during the 1994 RFI at a maximum concentration 2 times the soil 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 132-2. 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 132-2.

Monitoring location 2M-SMA-1.44 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared with copper and gross-alpha MTAL and ATAL exceedances. Copper is associated with trace minerals in the Bandelier Tuff.

- Copper—The copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L; the results from 2011, 2013, and 2014 are greater than this value.

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

132.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.44 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 132-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72837	3-20-2019
Storm Rain Event	BMP-74591	7-8-2019
Storm Rain Event	BMP-74844	7-18-2019
Storm Rain Event	BMP-75260	7-30-2019
Storm Rain Event	BMP-75896	8-14-2019
Storm Rain Event	BMP-76374	8-27-2019

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

Table 132-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-74708	Built up Earthen Berm E00403010006 and repaired sections damaged by vehicle.	9-4-2019	58 day(s)	Maintenance was delayed.

132.5 Compliance Status

The Site associated with 2M-SMA-1.44 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 132-4 presents the 2019 compliance status.

Table 132-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 06-001(b)	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."

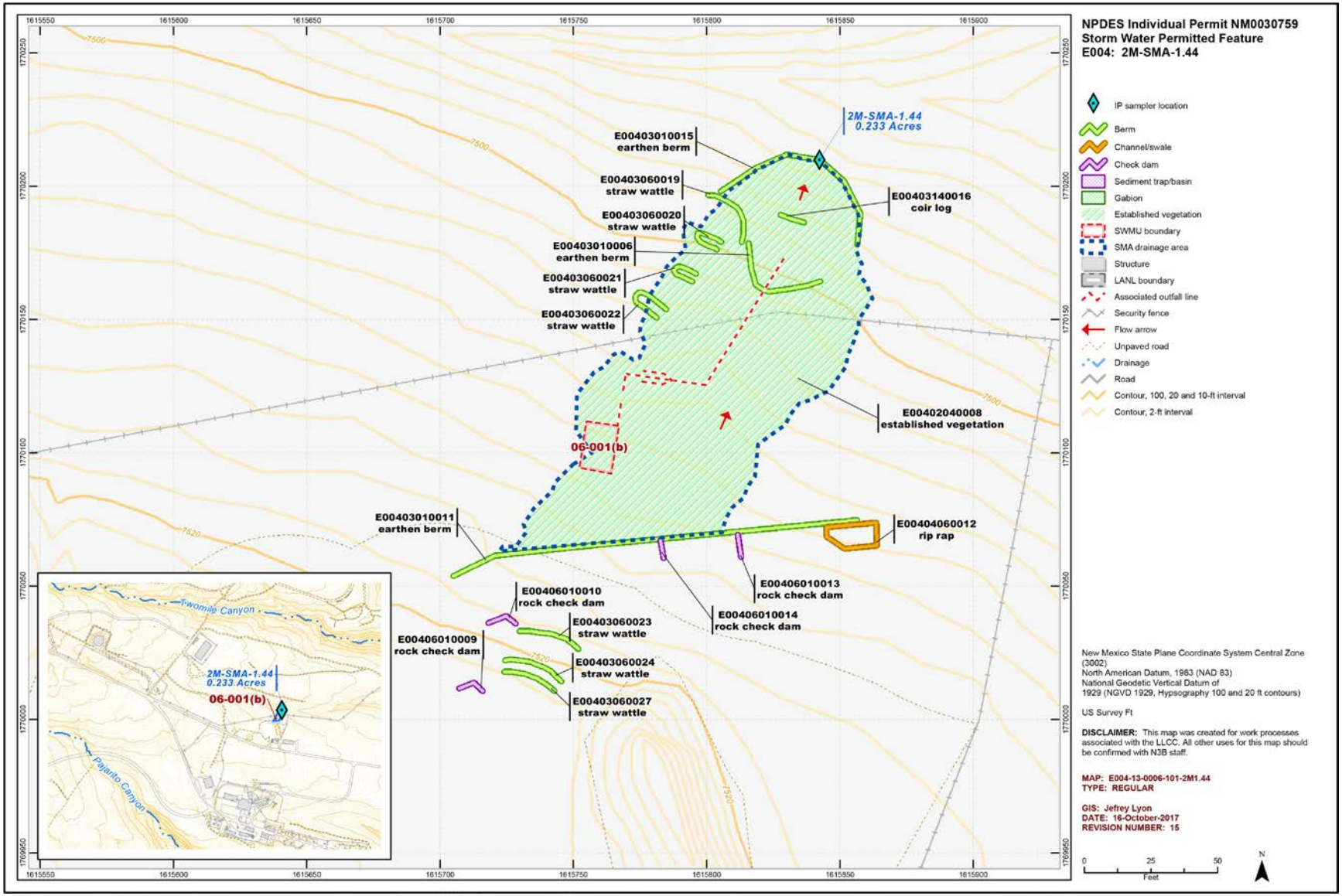


Figure 132-1 2M-SMA-1.44 location map

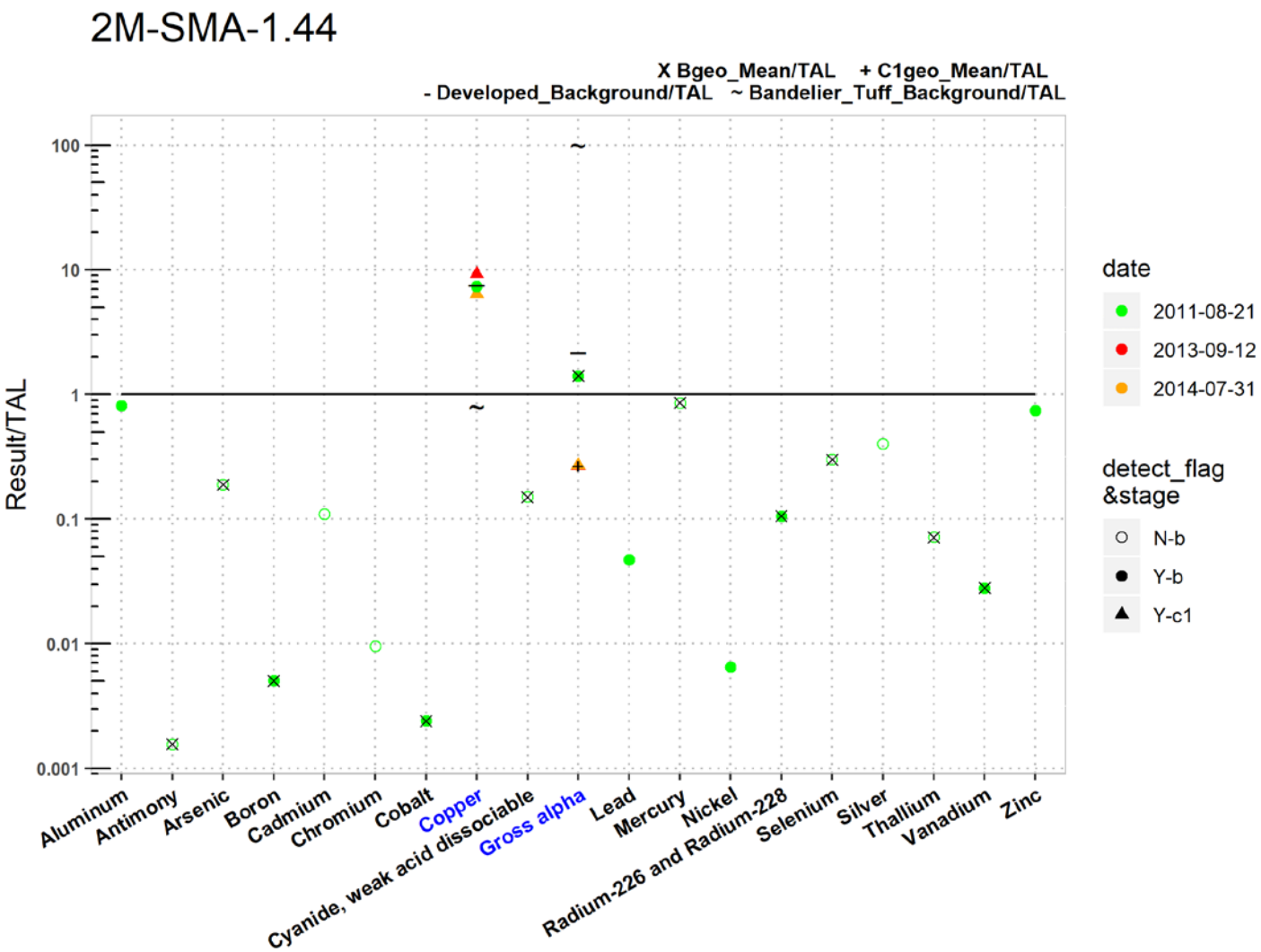


Figure 132-2 Analytical results summary for 2M-SMA-1.44

2M-SMA-1.44

	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	0.0051	NA	NA	0.0024	NA	0.15	**1.4**	NA	0.86	NA	0.11	0.3	NA	0.071	0.028	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.27	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-08-21 d	0.81	NA	NA	0.0051	NA	NA	0.0024	**7.3**	NA	**1.4**	0.047	NA	0.0065	0.11	NA	NA	NA	0.028	0.74
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	0.15	NA	NA	0.86	NA	NA	0.3	0.4	0.071	NA	NA
2013-09-12 d	NA	NA	NA	NA	NA	NA	NA	**9.2**	NA	0.27	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-09-12 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014-07-31 d	NA	NA	NA	NA	NA	NA	NA	**6.4**	NA	0.27	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

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

Figure 132-2 (continued) Analytical results summary for 2M-SMA-1.44

133.0 2M-SMA-1.45: SWMU 06-006

133.1 Site Descriptions

One historical industrial activity area is associated with E005, 2M-SMA-1.45: Site 06-006.

SWMU 06-006 includes a 300- × 20-ft concrete pad and an asphalt parking lot between former buildings 06-5 and 06-6. Containers and electrical equipment were stored at this Site during the 1980s. The containers and equipment are no longer present, but stains were observed on the asphalt and nearby soil during the 1988 field survey. SWMU 06-006 drains into Tributary A of Twomile Canyon.

Consent Order investigations have not been performed at SWMU 06-006, and no decision-level data are available for this Site. Screening-level data are available from an RFI conducted in 1994. SWMU 06-006 will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 133-1) 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.

133.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 133-1).

Enhanced controls were installed and certified on August 20, 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 133-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00502040018	Established Vegetation	-	X	X	-	B
E00503010014	Earthen Berm	-	X	-	X	B
E00503010015	Earthen Berm	X	-	-	X	B
E00503010016	Earthen Berm	-	X	-	X	EC
E00503010017	Earthen Berm	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

133.3 Storm Water Monitoring

SWMU 06-006 was monitored within 2M-SMA-1.45. Following the installation of baseline control measures, a baseline storm water sample was collected on September 7, 2011 (Figure 133-2). Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (398 pCi/L) and are presented in Figure 133-2.

Following the installation of enhanced control measures at 2M-SMA-1.45, two corrective action storm water samples were collected on July 7, 2015, and August 1, 2015 (Figure 133-2). Analytical results from these corrective action monitoring samples yielded no TAL exceedances. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at 2M-SMA-1.45. No further sampling is required for 2M-SMA-1.45 for the remainder of the IP.

All the analytical results for these samples are reported in the 2011 and 2015 Annual Reports.

133.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.45 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 133-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72838	3-20-2019
Storm Rain Event	BMP-74592	7-15-2019
Storm Rain Event	BMP-74845	7-22-2019
Storm Rain Event	BMP-75261	8-7-2019
Storm Rain Event	BMP-76003	8-20-2019
Storm Rain Event	BMP-76375	9-3-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.45 in 2019.

133.5 Compliance Status

The Site associated with 2M-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 133-3 presents the 2019 compliance status.

Table 133-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 06-006	Corrective Action Complete	Corrective Action Complete	LANL, October 30, 2015, “NPDES Permit No. NM0030759-Submittal of Certification of Completion of Corrective Action for One Site (06-006) Following Analytical Results Below Target Actions Levels.”

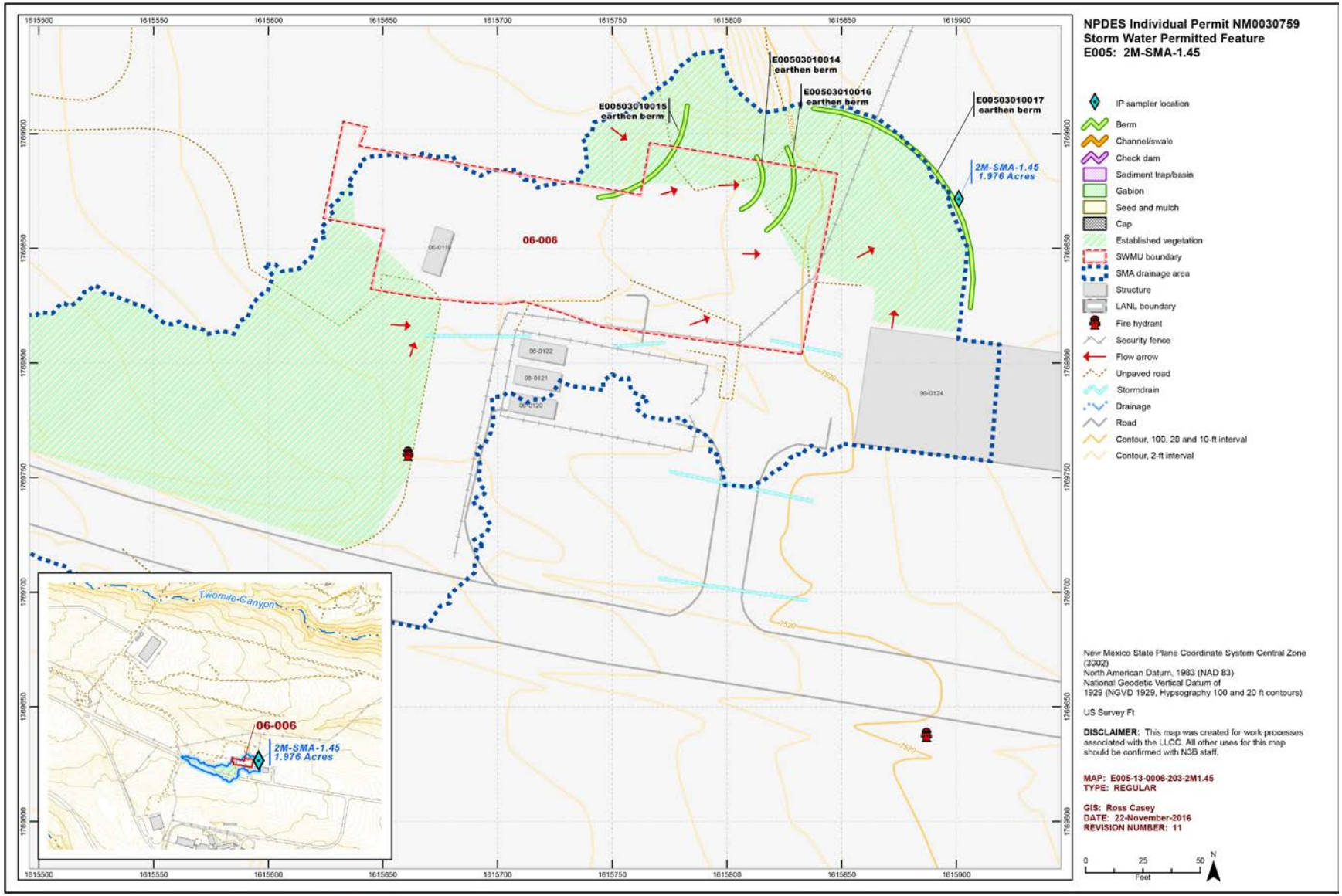


Figure 133-1 2M-SMA-1.45 location map

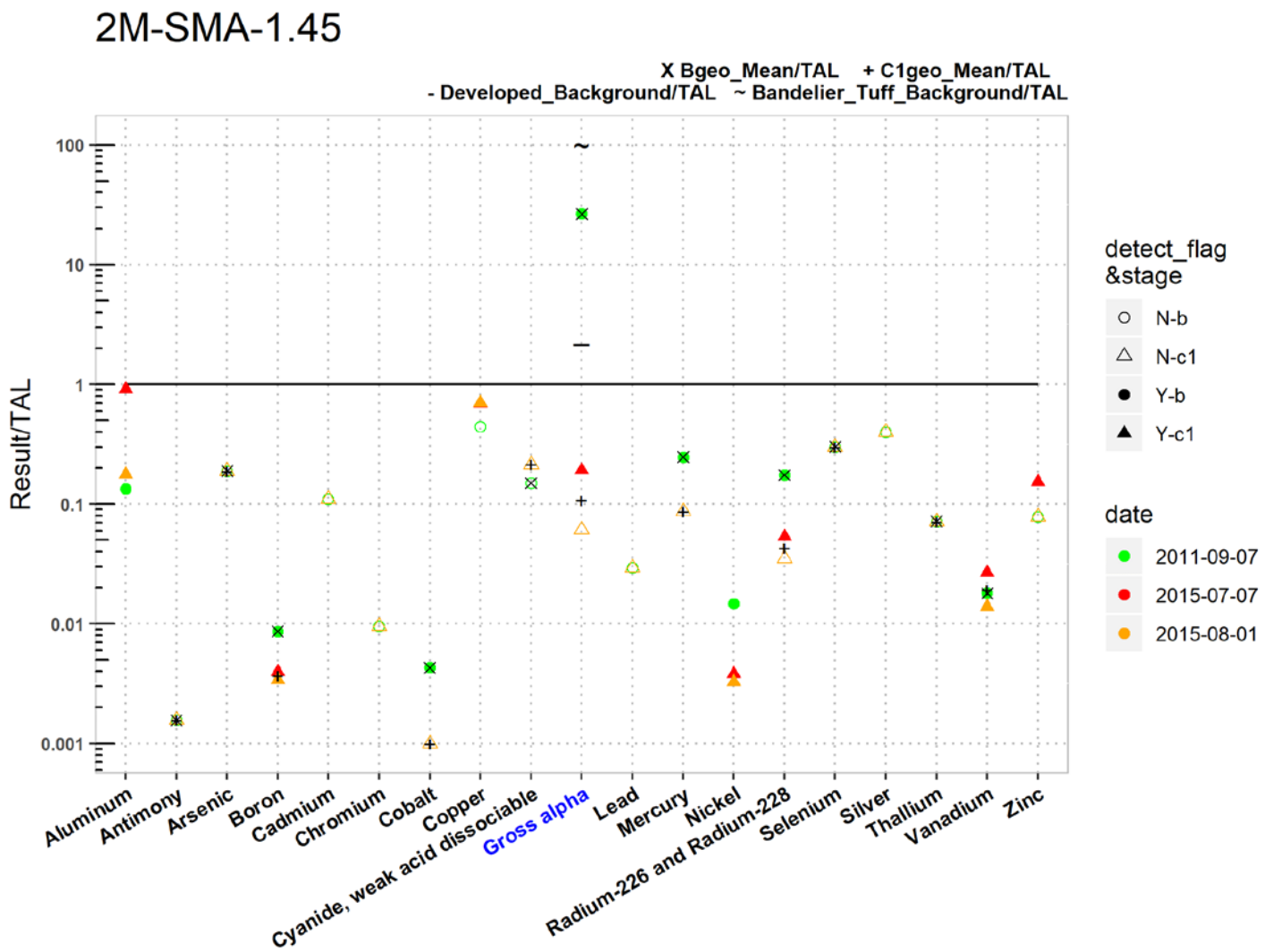


Figure 133-2 Analytical results summary for 2M-SMA-1.45

2M-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	0.0086	NA	NA	0.0043	NA	0.15	**27**	NA	0.25	NA	0.18	0.3	NA	0.071	0.018	NA
C1geo_mean/ATAL	NA	0.0016	0.19	0.0037	NA	NA	0.001	NA	0.21	0.11	NA	0.087	NA	0.043	0.3	NA	0.071	0.019	NA
2011-09-07 d	0.13	NA	NA	0.0086	NA	NA	0.0043	NA	NA	**27**	NA	0.25	0.015	0.18	NA	NA	NA	0.018	NA
2011-09-07 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	0.44	0.15	NA	0.029	NA	NA	NA	0.3	0.4	0.071	NA	0.079
2015-07-07 d	0.91	NA	NA	0.004	NA	NA	NA	0.69	NA	0.19	NA	NA	0.0038	0.053	NA	NA	NA	0.027	0.15
2015-07-07 nd	NA	0.0016	0.19	NA	0.11	0.0095	0.001	NA	0.21	NA	0.029	0.087	NA	NA	0.3	0.4	0.071	NA	NA
2015-08-01 d	0.18	NA	NA	0.0034	NA	NA	NA	0.7	NA	NA	NA	NA	0.0033	NA	NA	NA	NA	0.014	NA
2015-08-01 nd	NA	0.0016	0.19	NA	0.11	0.0095	0.001	NA	0.21	0.061	0.029	0.087	NA	0.035	0.3	0.4	0.071	NA	0.079

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

Figure 133-2 (continued) Analytical results summary for 2M-SMA-1.45

134.0 2M-SMA-1.5: SWMU 22-014(b)

134.1 Site Descriptions

One historical industrial activity area is associated with E006, 2M-SMA-1.5: Site 22-014(b).

SWMU 22-014(b) consists of an inactive explosives sump and outfall that serves rooms 101 through 113 in laser laboratory building 22-34 at TA-22. The concrete sump is located on the northeast corner of building 22-34 and is 4 × 2 × 3 ft deep with an inset aluminum tank. Building 22-34 was completed in 1953 and previously housed a chemistry laboratory, an explosives laboratory, and a photographic laboratory. The sump effluent drained north to an outfall located in a marshy area in the upper part of Tributary B of Twomile Canyon until 1994 when the sump outlet was plugged. The sump has not been used since 1994.

Consent Order investigations have not been performed at SWMU 22-014(b); no decision-level data are available for this Site. SWMU 22-014(b) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 134-1) 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.

134.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 134-1).

Table 134-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00602040005	Established Vegetation	-	X	X	-	B
E00603060006	Straw Wattle	X	-	-	X	B
E00604040002	Culvert	X	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

134.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at 2M-SMA-1.5. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

134.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.5 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 in the following table.

Table 134-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72839	3-20-2019
Storm Rain Event	BMP-74593	7-9-2019
Storm Rain Event	BMP-74846	7-17-2019
Storm Rain Event	BMP-75262	7-30-2019
Storm Rain Event	BMP-75898	8-9-2019
Storm Rain Event	BMP-76376	8-23-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.5 in 2019.

134.5 Compliance Status

The Site associated with 2M-SMA-1.5 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 134-3 presents the 2019 compliance status.

Table 134-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 22-014(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

2M-SMA-1.5, Culvert, E00604040002, (photo ID 7505-1)

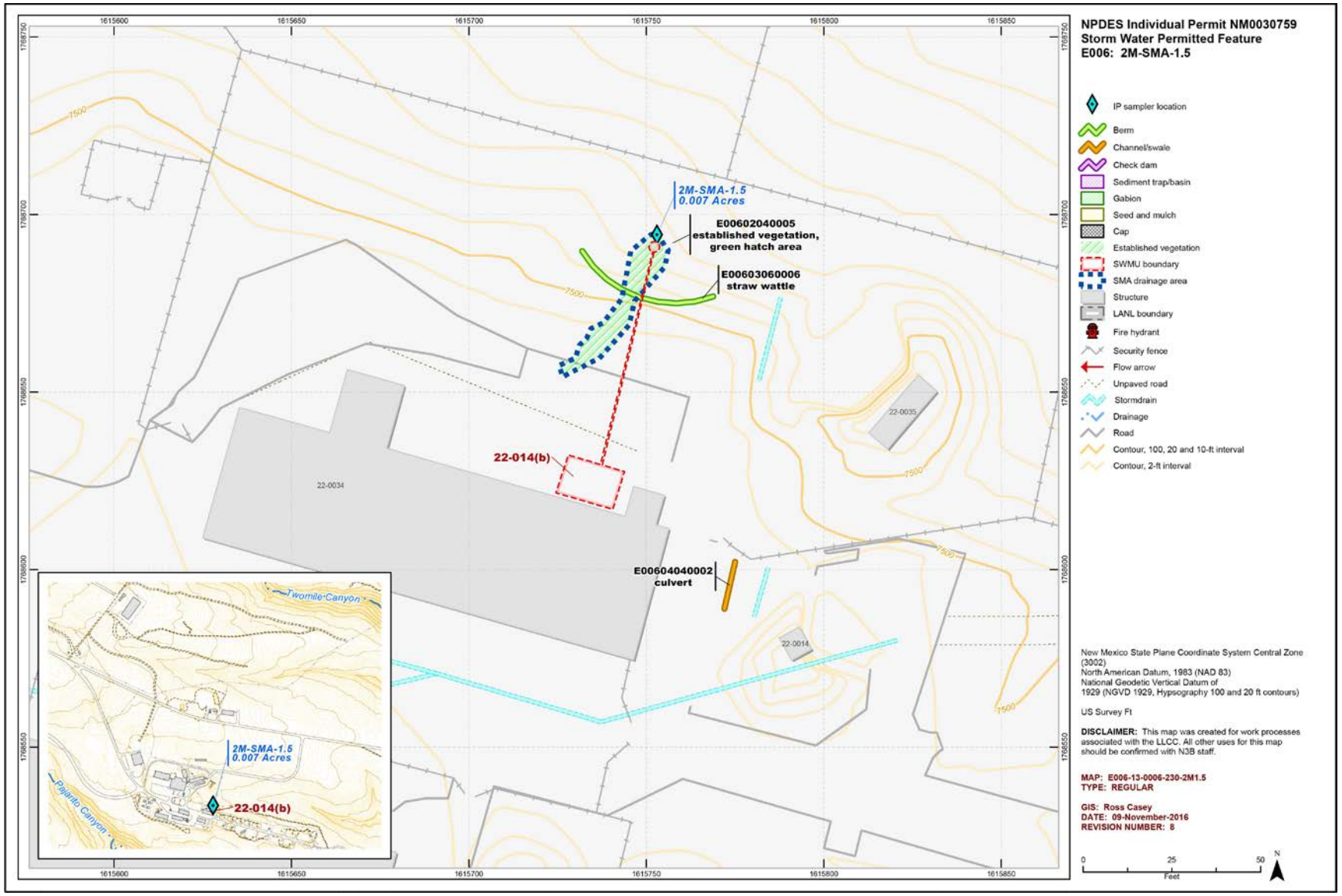


Figure 134-1 2M-SMA-1.5 location map

135.0 2M-SMA-1.65: SWMU 40-005

135.1 Site Descriptions

One historical industrial activity area is associated with E007, 2M-SMA-1.65: Site 40-005.

SWMU 40-005 is an inactive sump (structure 22-75) located at the northwest corner of building 40-41 (formerly building 22-41) and associated drainline and outfall. Building 40-41 was constructed in 1952 and was used to perform explosives-grinding operations. Before it was incorporated into TA-40, building 40-41 and the sump were part of TA-22. Currently, the building is used to prepare for explosive tests conducted at TA-40. The sump, built in 1961, is 4 ft 6 in. × 6 ft 4 in. × 5 ft deep and constructed of concrete with an inset aluminum baffle tank. Wastewater from a single sink drain discharged to the sump. Originally, the sump discharged via a drainline to a former NPDES-permitted outfall (EPA 05A 154) that flowed into Tributary B of Twomile Canyon. In 1994, the sump outlet port was capped, and in December 1995 the outfall was removed from the NPDES permit. The sump has been removed from service and filled with concrete. Possible contaminants in the system were explosives and solvents.

Consent Order investigations have not been performed at SWMU 40-005, but RFIs were performed in 1994 and 1996. Data from the 1994 RFI are screening-level data, and data from the 1996 RFI are decision-level data. SWMU 40-005 will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 135-1) 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.

135.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 135-1).

Enhanced controls were installed and certified on July 19, 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 135-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00702040011	Established Vegetation	-	X	X	-	B
E00703010010	Earthen Berm	X	-	-	X	EC
E00706010006	Rock Check Dam	X	-	-	X	EC
E00706010007	Rock Check Dam	X	-	-	X	EC
E00706010008	Rock Check Dam	X	-	-	X	EC
E00706010009	Rock Check Dam	X	-	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

135.3 Storm Water Monitoring

SWMU 40-005 is monitored within 2M-SMA-1.65. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 135-2). Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (220 pCi/L) and are presented in Figure 135-2.

Following the installation of enhanced control measures at 2M-SMA-1.65, a corrective action storm water sample was collected on September 13, 2013 (Figure 135-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (22.6 pCi/L) and are presented in Figure 135-2.

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 40-005:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 and 1996 RFIs were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides since these constituents are not associated with historical Site activities.

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 135-2. 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 135-2.

Monitoring location 2M-SMA-1.65 receives storm water run-on from landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 and 2013 gross-alpha results are below this value.

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

135.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.65 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 135-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72840	3-20-2019
Storm Rain Event	BMP-74594	7-16-2019
Storm Rain Event	BMP-75263	8-2-2019
Storm Rain Event	BMP-75899	8-16-2019
Storm Rain Event	BMP-76377	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.65 in 2019.

135.5 Compliance Status

The Site associated with 2M-SMA-1.65 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 135-3 presents the 2019 compliance status.

Table 135-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-005	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."

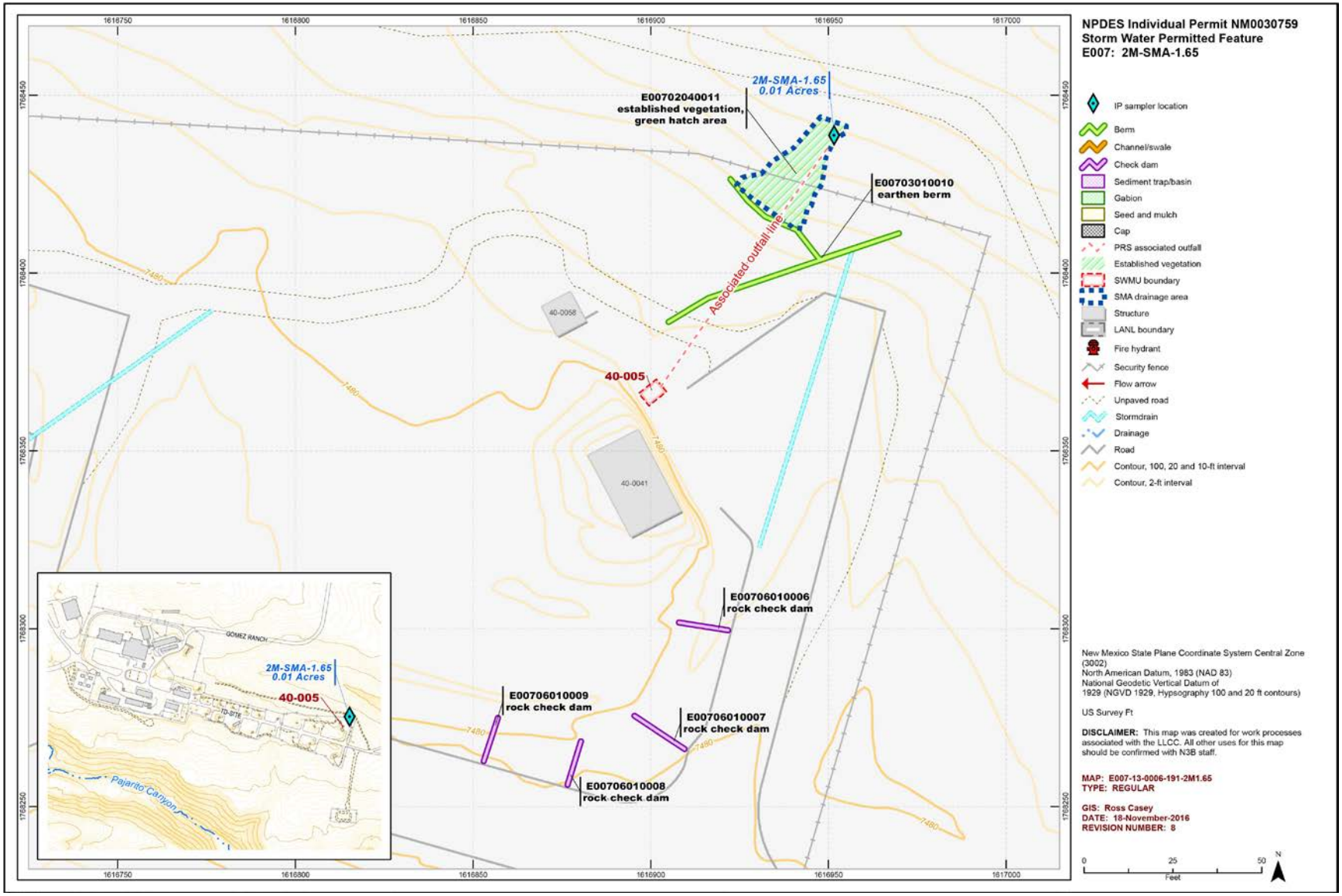


Figure 135-1 2M-SMA-1.65 location map

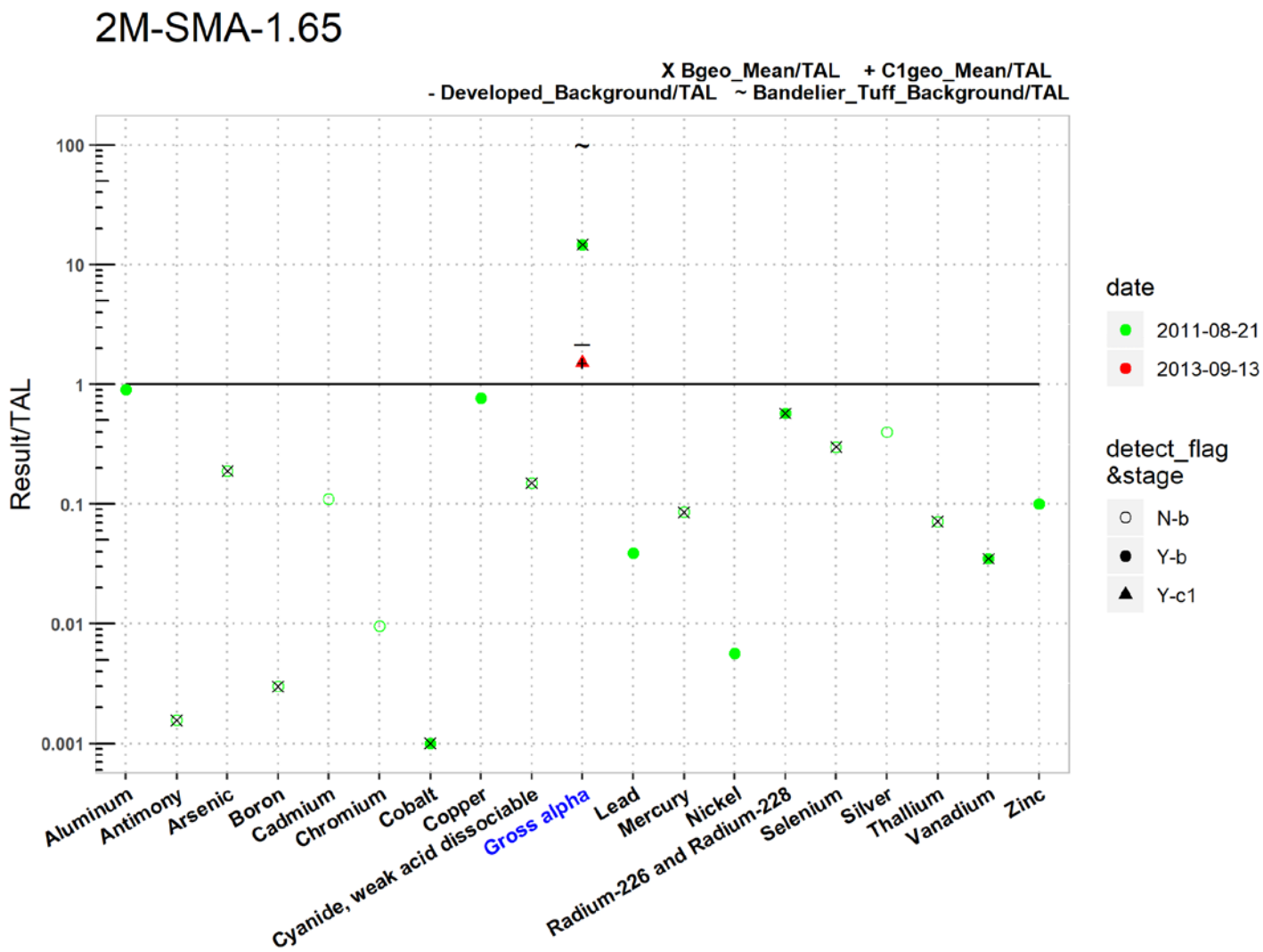


Figure 135-2 Analytical results summary for 2M-SMA-1.65

2M-SMA-1.65

	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	0.001	NA	0.15	**15**	NA	0.086	NA	0.57	0.3	NA	0.071	0.035	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2011-08-21 d	0.9	NA	NA	NA	NA	NA	0.001	0.77	NA	**15**	0.039	NA	0.0056	0.57	NA	NA	NA	0.035	0.1
2011-08-21 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	NA	0.086	NA	NA	0.3	0.4	0.071	NA	NA
2013-09-13 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.5**	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 135-2 (continued) **Analytical results summary for 2M-SMA-1.65**

136.0 2M-SMA-1.67: SWMU 06-003(h)

136.1 Site Descriptions

One historical industrial activity area is associated with E008, 2M-SMA-1.67: Site 06-003(h).

SWMU 06-003(h) is a former firing site located north of Twomile Mesa Road at TA-06 where defective explosive lenses manufactured for use in the Fat Man implosion weapon were destroyed by detonation in 1945. Some of the lenses were described as consisting of the explosive Baratol, which contains barium and TNT. This Site was identified as distinct from MDA F and was added as a separate Site to the Laboratory's hazardous waste permit in 1994.

This SWMU was investigated during a 1994 RFI; however, no sampling has been conducted under the Consent Order, and no decision-level data are available. SWMU 06-003(h) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 136-1) 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.

136.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 136-1).

Table 136-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00802040016	Established Vegetation	-	X	X	-	B
E00803010014	Earthen Berm	-	X	-	X	B
E00803010015	Earthen Berm	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

136.3 Storm Water Monitoring

SWMU 06-003(h) is monitored within 2M-SMA-1.67. Following the installation of baseline control measures, a baseline storm water sample was collected on September 15, 2011 (Figure 136-2). Analytical results from this sample yielded no TAL exceedances. The HE sample collected on September 15, 2011, was extracted or analyzed beyond the appropriate holding time and thus may have a low bias and potentially under report the concentration of HE in this sample. Consequently, the results for this analysis cannot be used to confirm that HE is present at a concentration greater or less than the TAL. Therefore, 2M-SMA-1.67 will remain in the baseline monitoring extended phase until collection of an additional sample occurs.

136.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.67 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 136-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-672841	3-20-2019
Storm Rain Event	BMP-74595	7-15-2019
Storm Rain Event	BMP-74848	7-17-2019
Storm Rain Event	BMP-75264	8-2-2109
Storm Rain Event	BMP-75900	8-13-2019
Storm Rain Event	BMP-76378	8-23-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.67 in 2019.

136.5 Compliance Status

The Site associated with 2M-SMA-1.67 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 136-3 presents the 2019 compliance status.

Table 136-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 06-003(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. HE holding time exceeded in first baseline sample; plan to collect additional baseline sample for HE analysis.

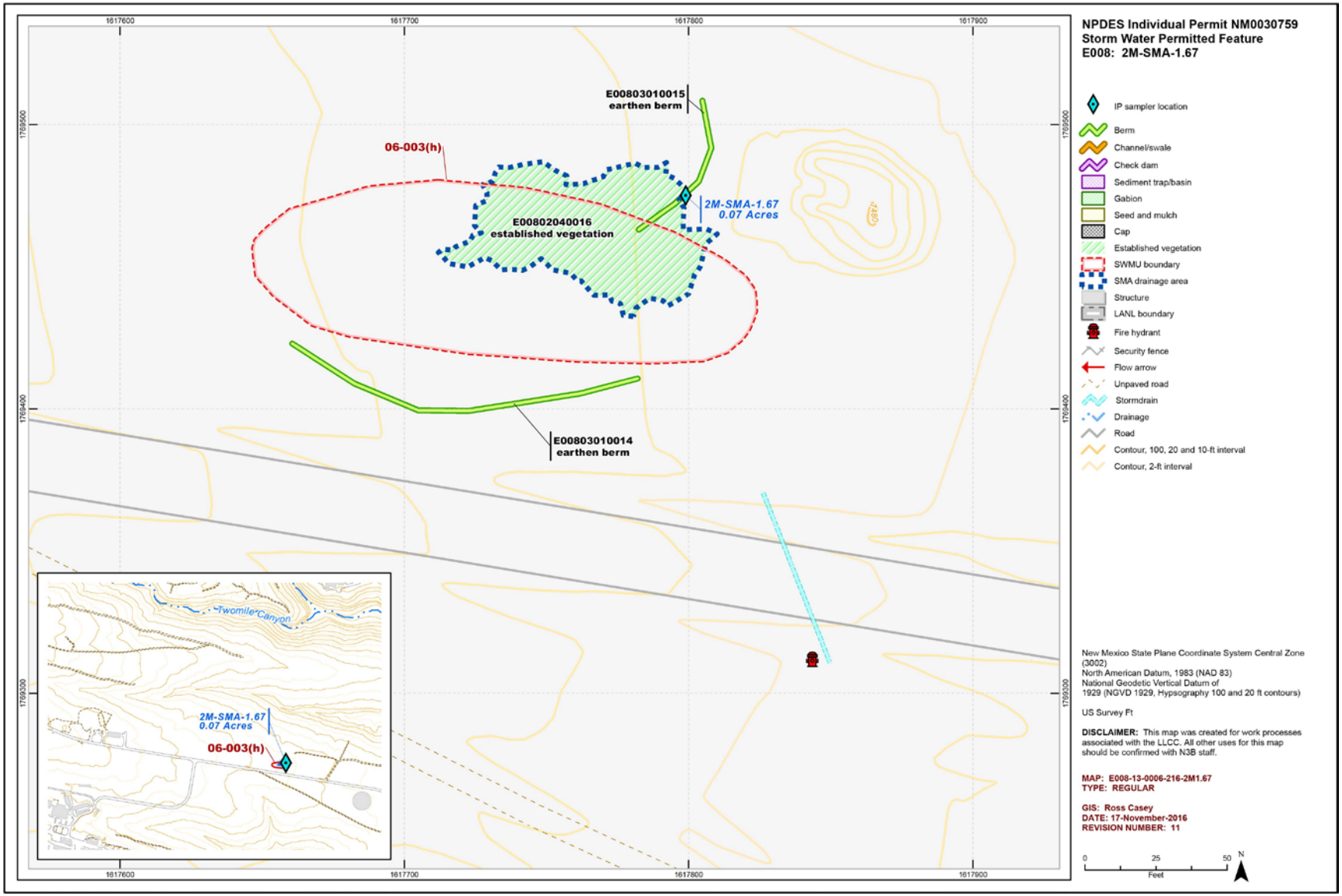


Figure 136-1 2M-SMA-1.67 location map

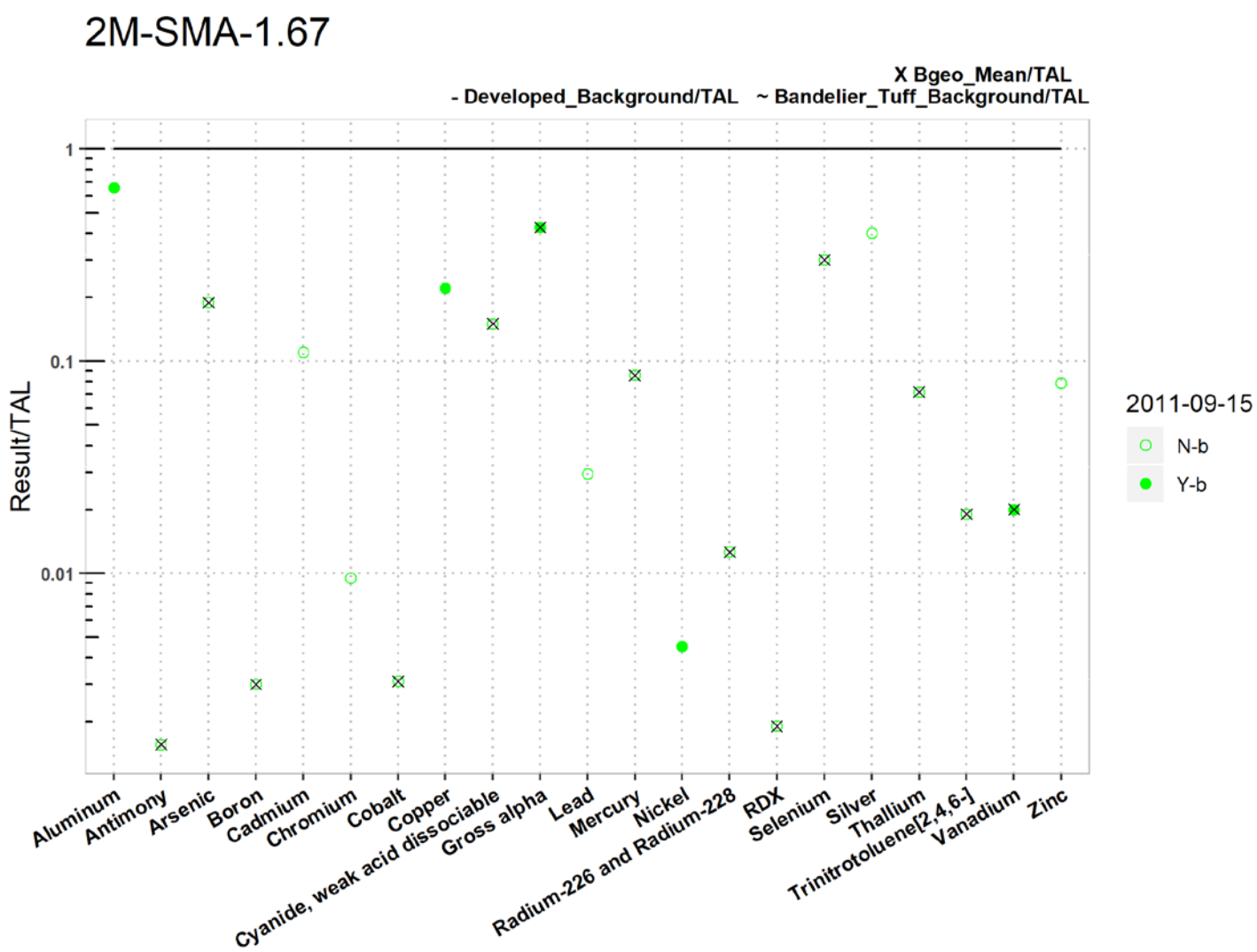


Figure 136-2 Analytical results summary for 2M-SMA-1.67

2M-SMA-1.67

	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	0.003	NA	NA	0.0031	NA	0.15	0.43	NA	0.086	NA	0.013	0.0019	0.3	NA	0.071	0.019	0.02	NA
2011-09-15 d	0.66	NA	NA	NA	NA	NA	NA	0.22	NA	0.43	NA	NA	0.0045	NA	NA	NA	NA	NA	NA	0.02	NA
2011-09-15 nd	NA	0.0016	0.19	0.003	0.11	0.0095	0.0031	NA	0.15	NA	0.029	0.086	NA	0.013	0.0019	0.3	0.4	0.071	0.019	NA	0.079

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

Figure 136-2 (continued) Analytical results summary for 2M-SMA-1.67

137.0 2M-SMA-1.7: SWMU 03-055(a)

137.1 Site Descriptions

One historical industrial activity area is associated with E009, 2M-SMA-1.7: Site 03-055(a).

SWMU 03-055(a) is an outfall located approximately 50 ft south of the Van de Graaff facility (building 03-16). Roof drains and one floor drain in a generator room (room 68) discharged to the outfall, which is located at the edge of the mesa into Twomile Canyon. The outfall currently receives only storm water from Van de Graaff building roof drains. The Van de Graaff facility was constructed in 1952. The facility has been inactive since the late 1990s; radiological D&D activities began in 2005.

Consent Order or other environmental investigations have not been performed at SWMU 03-055(a), and no investigation data are available for this Site. SWMU 03-055(a) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 137-1) 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.

137.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 137-1).

Enhanced controls were installed and certified on July 27, 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 137-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00902040009	Established Vegetation	-	X	X	-	B
E00903010008	Earthen Berm	X	-	-	X	EC
E00903120005	Rock Berm	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

137.3 Storm Water Monitoring

SWMU 03-055(a) is monitored within 2M-SMA-1.7. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 9, 2011 (Figure 137-2). Analytical results from these samples yielded a TAL exceedance for copper (11.4 µg/L) and are presented in Figure 137-2.

Following the installation of enhanced control measures at 2M-SMA-1.7, corrective action storm water samples were collected on July 8, 2014, and August 26, 2014 (Figure 137-2). Analytical results from these samples yielded a TAL exceedance for copper (4.6 µg/L) and are presented in Figure 137-2.

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 03-055(a):

- Copper is not known to be associated with industrial materials historically managed at the Site. No previous soil investigations have been conducted at SWMU 03-055(a), and decision-level data from soil samples are not available for comparison.

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 137-2. 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 137-2.

2M-SMA-1.7, Rock Berm, E00903120005 (photo ID 7517-2)

Monitoring location 2M-SMA-1.7 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- 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 2011 and 2014 are between these values.

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

137.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.7 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 137-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72842	3-21-2019
Storm Rain Event	BMP-74596	7-11-2019
Storm Rain Event	BMP-74849	7-22-2019
Storm Rain Event	BMP-75265	8-1-2019
Storm Rain Event	BMP-75901	8-12-2019
Storm Rain Event	BMP-76379	8-27-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.7 in 2019.

137.5 Compliance Status

The Site associated with 2M-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 137-3 presents the 2019 compliance status.

Table 137-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 03-055(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

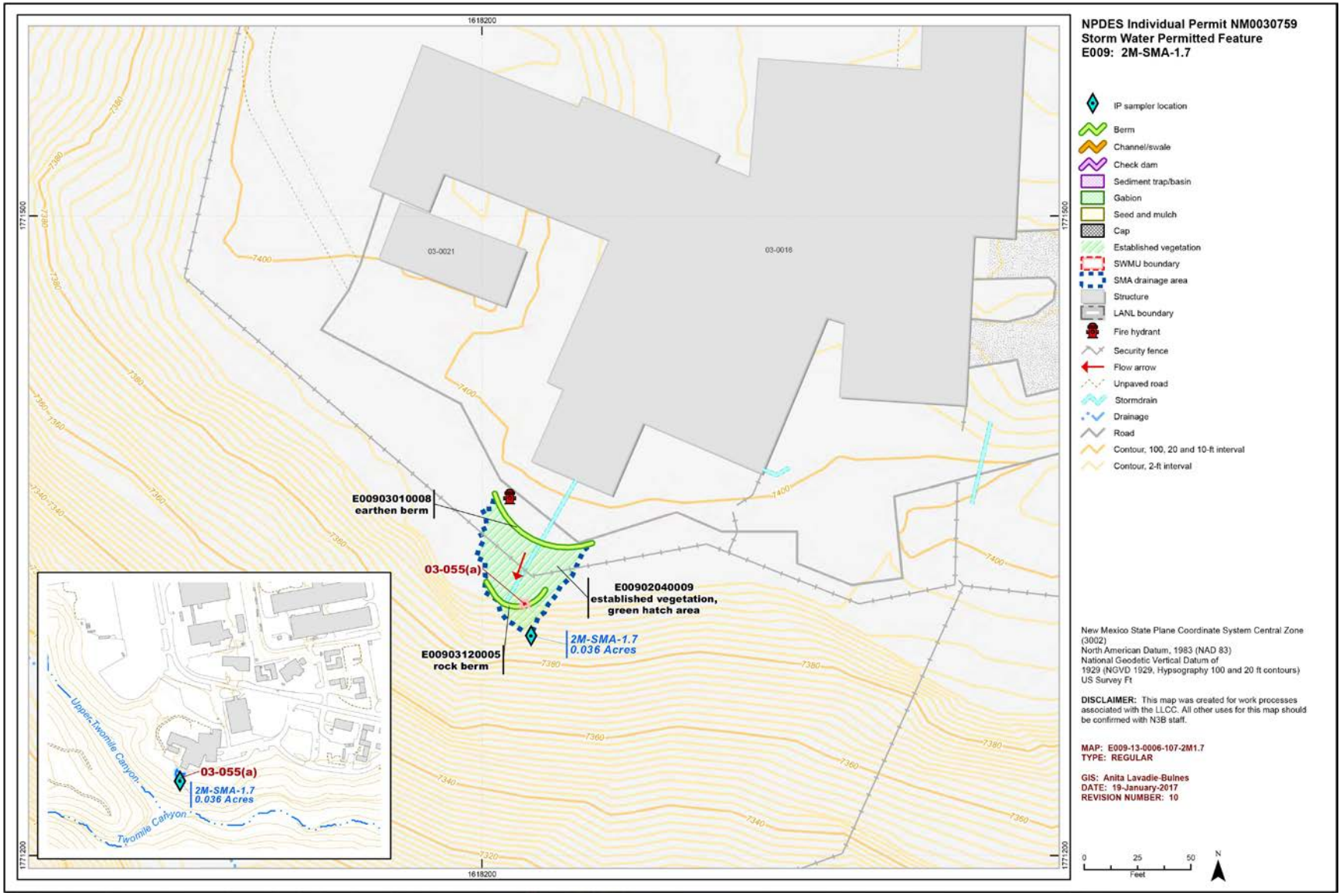


Figure 137-1 2M-SMA-1.7 location map

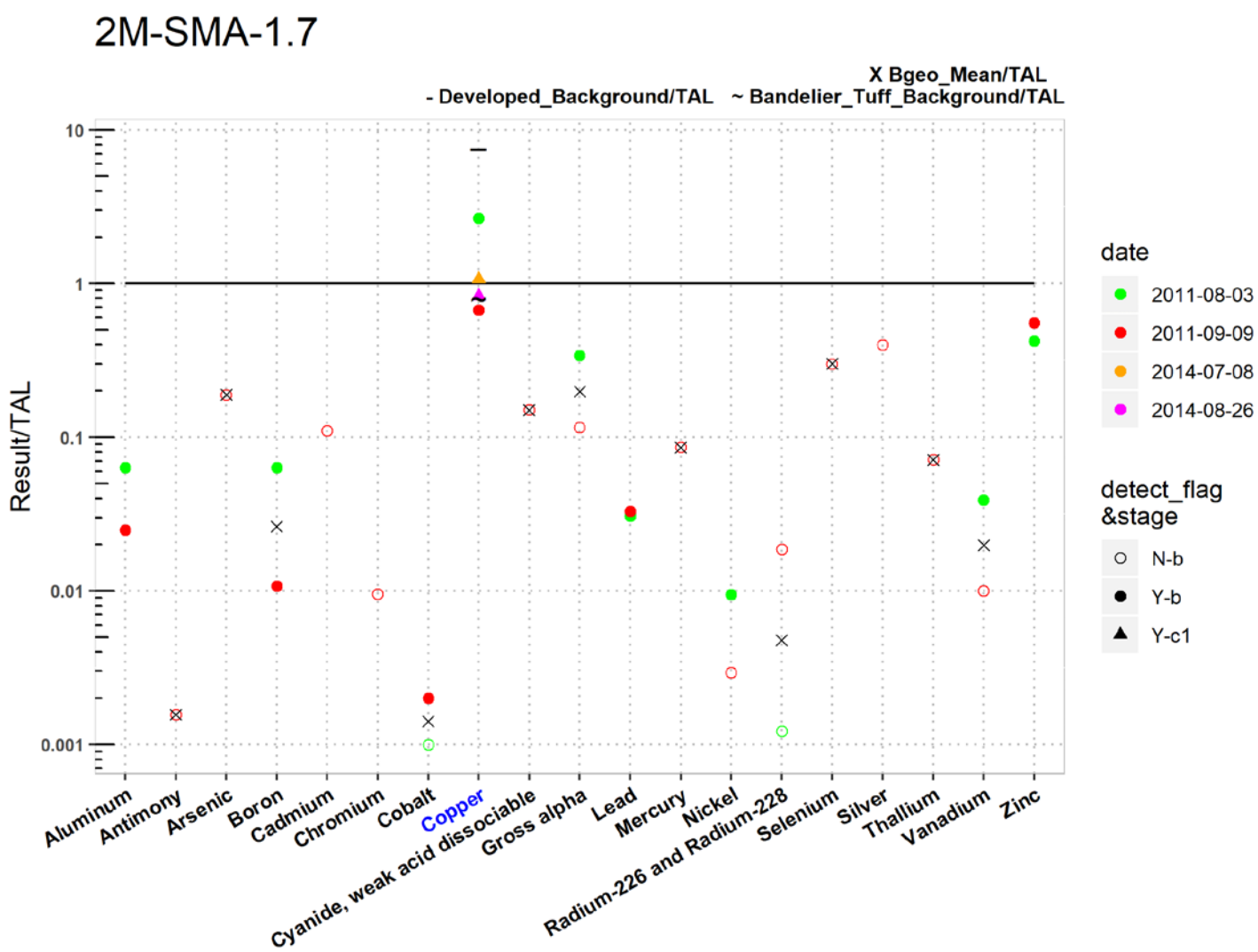


Figure 137-2 Analytical results summary for 2M-SMA-1.7

2M-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	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	0.026	NA	NA	0.0014	NA	0.15	0.2	NA	0.086	NA	0.0048	0.3	NA	0.071	0.02	NA
2011-08-03 d	0.064	NA	NA	0.064	NA	NA	NA	**2.7**	NA	0.34	0.031	NA	0.0094	NA	NA	NA	NA	0.039	0.42
2011-08-03 nd	NA	0.0016	0.19	NA	0.11	0.0095	0.001	NA	0.15	NA	NA	0.086	NA	0.0012	0.3	0.4	0.071	NA	NA
2011-09-09 d	0.025	NA	NA	0.011	NA	NA	0.002	0.67	NA	NA	0.033	NA	NA	NA	NA	NA	NA	NA	0.55
2011-09-09 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	0.15	0.12	NA	0.086	0.0029	0.019	0.3	0.4	0.071	0.01	NA
2014-07-08 d	NA	NA	NA	NA	NA	NA	NA	**1.1**	NA	NA	NA	NA	NA	NA	NA	NA	NA	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
2014-08-26 d	NA	NA	NA	NA	NA	NA	NA	0.83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014-08-26 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

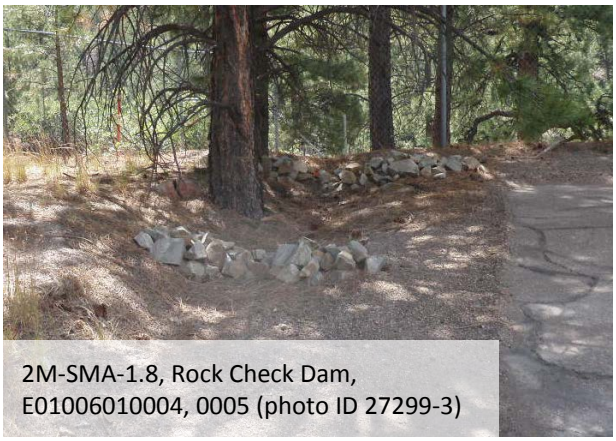
Figure 137-2 (continued) Analytical results summary for 2M-SMA-1.7

138.0 2M-SMA-1.8: SWMU 03-001(k)

138.1 Site Descriptions

One historical industrial activity area is associated with E010, 2M-SMA-1.8: Site 03-001(k).

SWMU 03-001(k) is the location of a former, less-than-90-day hazardous waste accumulation area located on the south side of building 03-16, the inactive Van de Graaff Building. SWMU 03-001(k) consists of two level asphalt areas, each measuring approximately 20 × 30 ft. The areas are located next to the doors on the south side of the building. Concrete pads located in front of each doorway are bounded by asphalt paving on three sides. SWMU 03-001(k) was used primarily as a storage yard for electrical equipment designated for salvage. Drums of vacuum oil, tritium-contaminated waste, and used solvents from experiments conducted in the building were also stored in this area. A 1986 field inspection of SWMU 03-001(k) noted oily unmarked drums where new vacuum oil for experiments was stored. Asphalt chip samples collected in 1989 indicated the presence of PCBs at a concentration of 7.8 mg/kg. A 1993 inspection found no stains on the asphalt and concrete pad.



2M-SMA-1.8, Rock Check Dam, E01006010004, 0005 (photo ID 27299-3)

Consent Order investigations have not been performed at SWMU 03-001(k), and no decision-level data are available for this Site. Soil and asphalt-chip sampling was performed in 2001 to support a previous request for NFA status for this Site. Data from the 2001 sampling are screening-level data. SWMU 03-001(k) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 138-1) 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.

138.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 138-1).

Table 138-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01002040010	Established Vegetation	-	X	X	-	B
E01003040003	Asphalt Berm	X	-	-	X	CB
E01003100012	Gravel Bags	X	-	-	X	B
E01006010004	Rock Check Dam	-	X	-	X	CB
E01006010005	Rock Check Dam	-	X	-	X	CB
E01006010006	Rock Check Dam	-	X	-	X	CB
E01006010007	Rock Check Dam	-	X	-	X	CB

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

138.3 Storm Water Monitoring

SWMU 03-001(k) is monitored within 2M-SMA-1.8. Following the installation of baseline control measures, two baseline storm water samples were collected on August 4, 2011, and September 9, 2011 (Figure 138-2). Analytical results from these samples yielded TAL exceedances for copper (6.6 µg/L and 13.2 µg/L) and zinc (71.8 µg/L) and are presented in Figure 138-2.

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 03-001(k):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BV in 1 of 4 shallow soil samples collected at the Site in 2001 with a maximum concentration 2 times the soil BV.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above BV in 1 of 4 shallow soil samples collected at the Site in 2001 with a maximum concentration 1.2 times the soil 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 138-2. 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 138-2.

Monitoring location 2M-SMA-1.8 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- 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 2011 are between these values.
- Zinc—The zinc UTL from developed landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. The zinc result from 2011 is less than both of these values.

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

138.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-1.8 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 in the following table.

Table 138-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72843	3-21-2019
Storm Rain Event	BMP-74597	7-11-2019
Storm Rain Event	BMP-74850	7-22-2019
Storm Rain Event	BMP-75266	8-1-2019
Storm Rain Event	BMP-75902	8-12-2019
Storm Rain Event	BMP-76380	8-27-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.8 in 2019.

138.5 Compliance Status

The Site associated with 2M-SMA-1.8 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 138-3 presents the 2019 compliance status.

Table 138-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 03-001(k)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

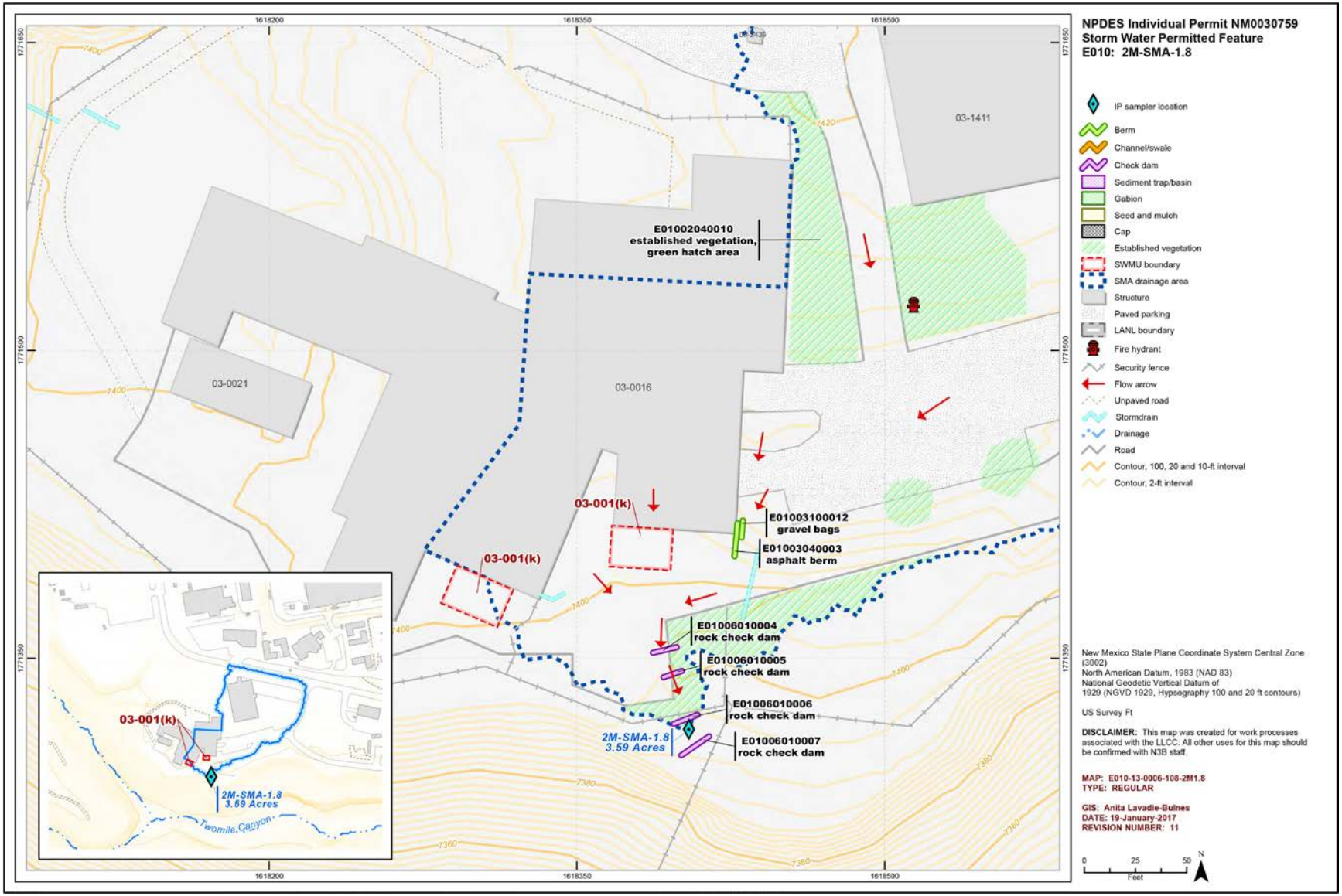


Figure 138-1 2M-SMA-1.8 location map

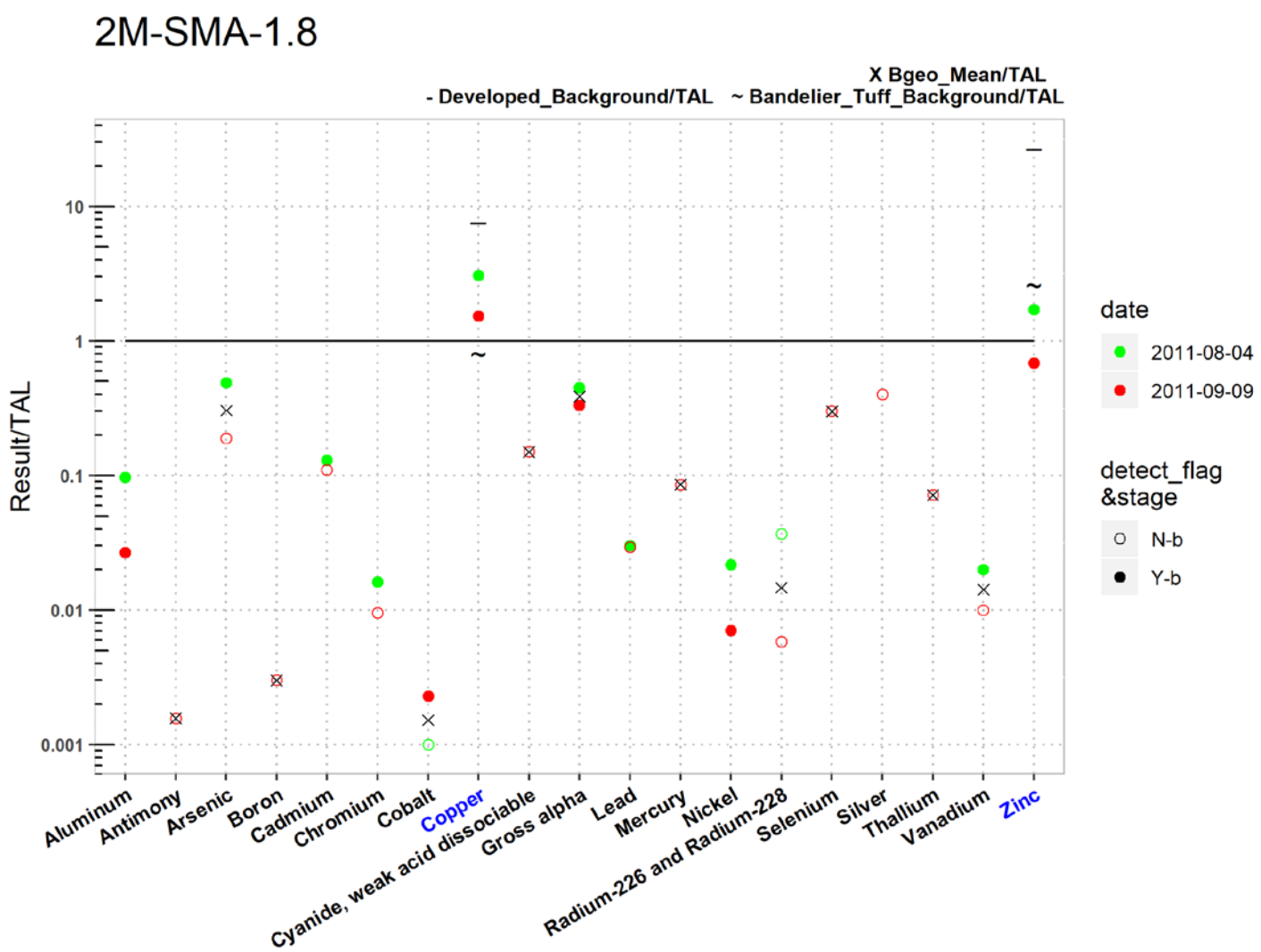


Figure 138-2 Analytical results summary for 2M-SMA-1.8

2M-SMA-1.8

	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	0.3	0.003	NA	NA	0.0015	NA	0.15	0.39	NA	0.086	NA	0.015	0.3	NA	0.071	0.014	NA
2011-08-04 d	0.097	NA	0.49	NA	0.13	0.016	NA	**3.1**	NA	0.45	0.03	NA	0.022	NA	NA	NA	NA	0.02	**1.7**
2011-08-04 nd	NA	0.0016	NA	0.003	NA	NA	0.001	NA	0.15	NA	NA	0.086	NA	0.037	0.3	0.4	0.071	NA	NA
2011-09-09 d	0.027	NA	NA	NA	NA	NA	0.0023	**1.5**	NA	0.33	NA	NA	0.0071	NA	NA	NA	NA	NA	0.68
2011-09-09 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	0.0058	0.3	0.4	0.071	0.01	NA

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

Figure 138-2 (continued) Analytical results summary for 2M-SMA-1.8

139.0 2M-SMA-1.9: SWMU 03-003(a)

139.1 Site Descriptions

One historical industrial activity area is associated with E011, 2M-SMA-1.9: Site 03-003(a).

SWMU 03-003(a) is a former outdoor storage area used for temporary storage of electrical equipment destined for salvage, some of which contained oil. The storage area was located on the north and west sides of building 03-218. The northern portion of the storage area consisted of the asphalt paving next to the north side of building 03-218. The western portion of the storage area consisted of a 44-ft-long × 27-ft-wide concrete pad surrounded by an 18- to 20-in.-high concrete curb. The concrete pad and curb are bounded on three sides by soil covered with gravel. A 30-ft-wide × 60-ft-long area of asphalt paving abuts the south end of the concrete curb. During the 1986 CEARP survey, six 55-gal. drums were observed stored next to capacitors on asphalt in the storage area on the north side of building 03-218; staining was visible on the asphalt beneath the drums. Capacitors and transformers labeled as containing less than 50 ppm PCBs were stored in the west portion of the former storage area. During a 1989 inspection, leaking capacitors, drums of epoxy, one or two batteries, and vacuum pumps were observed in the western portion of the storage area. In the early 1990s, a small area of oil-stained asphalt was excavated to a depth of 3 in. around the storm drain located in the western portion of SWMU 03-003(a). Use of the SWMU 03-003(a) storage area ceased in the early 1990s.

Consent Order sampling has not yet been conducted at SWMU 03-003(a); only screening-level data from the 1994 RFI are available for this Site. SWMU 03-003(a) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 139-1) 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.

139.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 139-1).

Table 139-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01103090001	Curbing	X	-	-	X	CB
E01103100003	Gravel Bags	-	X	-	X	CB
E01103100006	Gravel Bags	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

139.3 Storm Water Monitoring

SWMU 03-003(a) is monitored within 2M-SMA-1.9. Following the installation of baseline control measures, a baseline storm water sample was collected on July 11, 2012 (Figure 139-2). In Figure 139-2, 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 sample yielded TAL exceedances for copper (24.9 µg/L) and zinc (314 µg/L) and are presented in Figure 139-2.

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 03-003(a):

- Copper may have been associated with industrial materials historically managed at this Site. Copper was not detected above the soil BV in shallow 1994 RFI soil samples; the 1994 RFI data are screening level only.
- Zinc may have been associated with industrial materials historically managed at the Site. Zinc was detected above the soil BV in 1 of 2 shallow soil samples with a maximum concentration 1.1 times the soil BV but less than the maximum soil background concentration. The 1994 RFI data are screening level only.

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 139-2. 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 139-2.

Monitoring location 2M-SMA-1.9 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments derived from Bandelier Tuff. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is between both of these values.
- Zinc—The zinc UTL from developed landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc result from 2012 is between these values.

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

139.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG121.9 recorded six storm events at 2M-SMA-1.9 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 139-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72844	3-21-2019
Storm Rain Event	BMP-74851	7-22-2019
Storm Rain Event	BMP-75267	8-2-2019
Storm Rain Event	BMP-76009	8-20-2019
Storm Rain Event	BMP-76640	9-6-2019
Storm Rain Event	BMP-77210	10-10-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-1.9 in 2019.

139.5 Compliance Status

The Site associated with 2M-SMA-1.9 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 139-3 presents the 2019 compliance status.

Table 139-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 03-003(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, “Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources.”

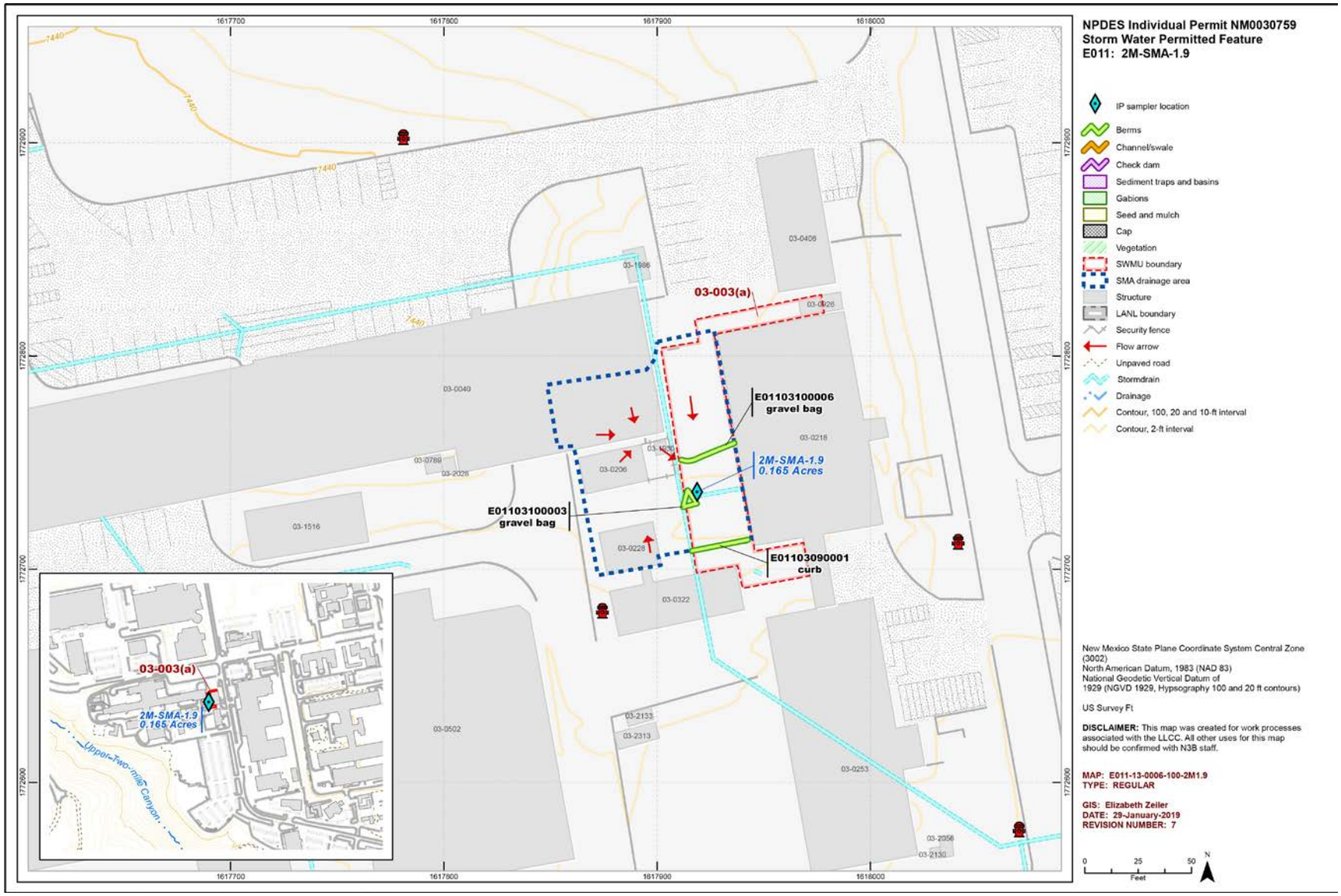


Figure 139-1 2M-SMA-1.9 location map

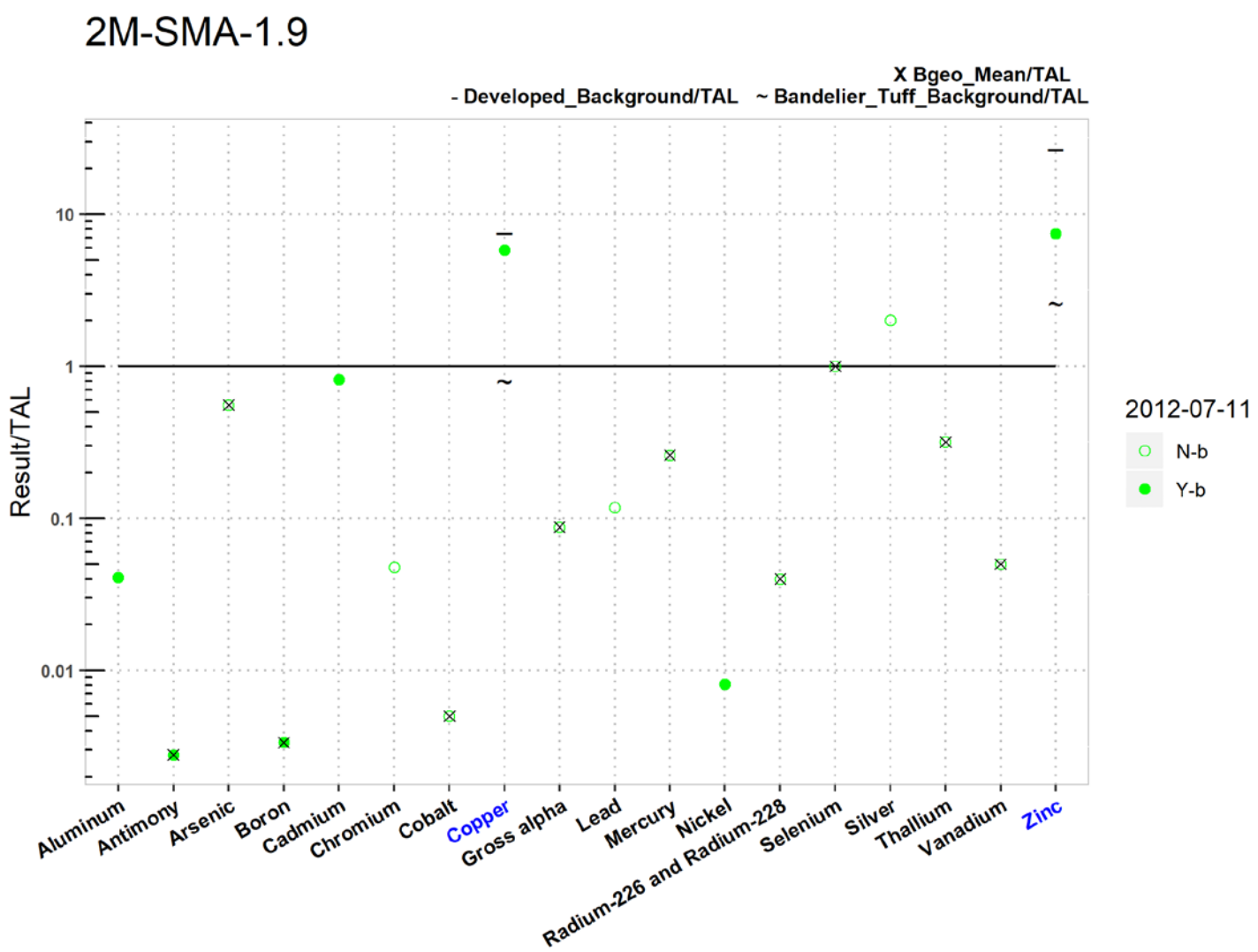


Figure 139-2 Analytical results summary for 2M-SMA-1.9

2M-SMA-1.9

	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	0.0028	0.56	0.0034	NA	NA	0.005	NA	0.087	NA	0.26	NA	0.04	1	NA	0.32	0.05	NA
2012-07-11 d	0.041	0.0028	NA	0.0034	0.82	NA	NA	**5.8**	NA	NA	NA	0.0081	NA	NA	NA	NA	NA	**7.5**
2012-07-11 nd	NA	NA	0.56	NA	NA	0.048	0.005	NA	0.087	0.12	0.26	NA	0.04	1	2	0.32	0.05	NA

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

Figure 139-2 (continued) Analytical results summary for 2M-SMA-1.9

140.0 2M-SMA-2: SWMUs 03-050(d) and 03-054(b)

140.1 Site Descriptions

Two historical industrial activity areas are associated with E012, 2M-SMA-2: Sites 03-050(d) and 03-054(b).

SWMU 03-050(d) consists of potential soil contamination from historical emissions of particulates possibly released from the former air-pollution control device on the exhaust system at the south side of the tech shops addition (building 03-102). The device was a shaker-type baghouse located on a concrete pad. Building 03-102 was built in 1957 for machining radioactive materials. Machined items included those with uranium-235 and -238, lithium hydride, and small quantities of other inorganic chemicals. The baghouse was the primary air-pollution-control device to remove lithium hydride particulates in the gas stream to the stack. The baghouse was also used as a secondary air-pollution-control device to remove uranium graphite particulates in the gas stream to the stack. The bag house ceased operating in 1992 because of failure in the dioctyl phthalate penetration test, which measures the efficiency of the collection system. All ventilation ducts associated with machining operations then were diverted to a high-flow-rate ventilation system connected to an operational baghouse located immediately east of the inoperative baghouse. Radionuclide air emissions at the inoperative baghouse were monitored from the beginning of its use in 1957. Release of radioactive uranium particulates to the concrete pad through the inoperative baghouse fabric filter also was documented. The concrete pad was painted in 1993 to immobilize any existing uranium particulates. Radiological survey results after the pad was painted showed no detectable activity on the pad or in the soil around the pad.

No Consent Order or other investigations have been conducted at SWMU 03-050(d). SWMU 03-050(d) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

SWMU 03-054(b) is an outfall at TA-03 that discharges into Twomile Canyon. This outfall, located southeast of building 03-1411 and southwest of building 03-1316, was formerly permitted as NPDES 03A009 to receive discharge water from the cooling tower effluent blowdown and noncontact cooling water from building 03-102. This discharge was rerouted to the TA-46 sanitary WWTP in 1993, and the outfall is no longer on the NPDES permit.

Two active storm drain inlets [SWMUs 03-052(a) and 03-052(e)] are connected to a drainline that goes to the outfall. Storm water runoff from surface areas surrounding 26 buildings and 94 roof drains in TA-03 currently discharge to this outfall.

No Consent Order investigations have been conducted at SWMU 03-054(b). Decision-level data are available from sampling performed in 2002 before construction activities were performed at the Site. SWMU 03-054(b) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 140-1) 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.

140.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 140-1).

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 140-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01202040015	Established Vegetation	-	X	X	-	B
E01203090006	Curbing	X	-	-	X	CB
E01205020014	Sediment Basin	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

140.3 Storm Water Monitoring

SWMUs 03-050(d) and 03-054(b) are monitored within 2M-SMA-2. Following the installation of baseline control measures, two baseline storm water samples were collected on July 28, 2011, and September 4, 2011 (Figure 140-2). In Figure 140-2, 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 (5.5 µg/L and 14.9 µg/L), PCB concentration (65 ng/L), and zinc (72.3 µg/L and 140 µg/L) and are presented in Figure 140-2.

Following the installation of enhanced control measures at 2M-SMA-2, corrective action storm water samples were collected on June 14, 2013, and August 18, 2013 (Figure 140-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (18.5 µg/L and 19.9 µg/L), PCB concentrations (50 ng/L and 15 ng/L), and zinc (102 µg/L and 123 µg/L) and are presented in Figure 140-2.

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 03-050(d):

Copper, PCBs, and zinc are not known to be associated with industrial materials historically managed at this Site.

SWMU 03-054(b):

- 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) site characterization samples collected in 2002 before construction activities began near the Site. Copper was detected above BV in 17 of 18 shallow samples with a maximum concentration 17 times the soil BV.
- PCBs are not known to be associated with industrial materials historically managed at the Site. Samples collected at the Site in 2002 were not analyzed for PCBs because they were not identified as a potential contaminant at this Site.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above the soil BV in shallow samples collected in 2002 before construction activities began near the Site. Zinc was detected above BV in 18 of 18 shallow samples with a maximum concentration 17 times the soil 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 140-2. 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 140-2.

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

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these values.
- PCB—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 and 2013 are between these values.
- Zinc—The zinc UTL from developed landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. One of the zinc results from 2011 and 2013 is less than both of these values, and the other result from both 2011 and 2013 is between them.

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

140.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG121.9 recorded six storm events at 2M-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 in the following table.

Table 140-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72845	3-21-2019
Storm Rain Event	BMP-74852	7-22-2019
Storm Rain Event	BMP-75268	8-1-2019
Storm Rain Event	BMP-76010	8-20-2019
Storm Rain Event	BMP-76641	9-6-2019
Storm Rain Event	BMP-77211	10-10-2019
Significant Event Inspection	COMP-77835	12-6-2019

No maintenance activities were conducted at 2M-SMA-2 in 2019. An overhead sprinkler line broke on December 1, 2019, in a building near control measures associated with 2M-SMA-2. After notification of the release from Triad personnel, SWPPP team members conducted an inspection of the Site and controls and found no impacts affecting discharge at 2M-SMA-2 as a result of the release.

140.5 Compliance Status

The Sites associated with 2M-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 140-3 presents the 2019 compliance status.

Table 140-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 03-050(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 03-054(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."

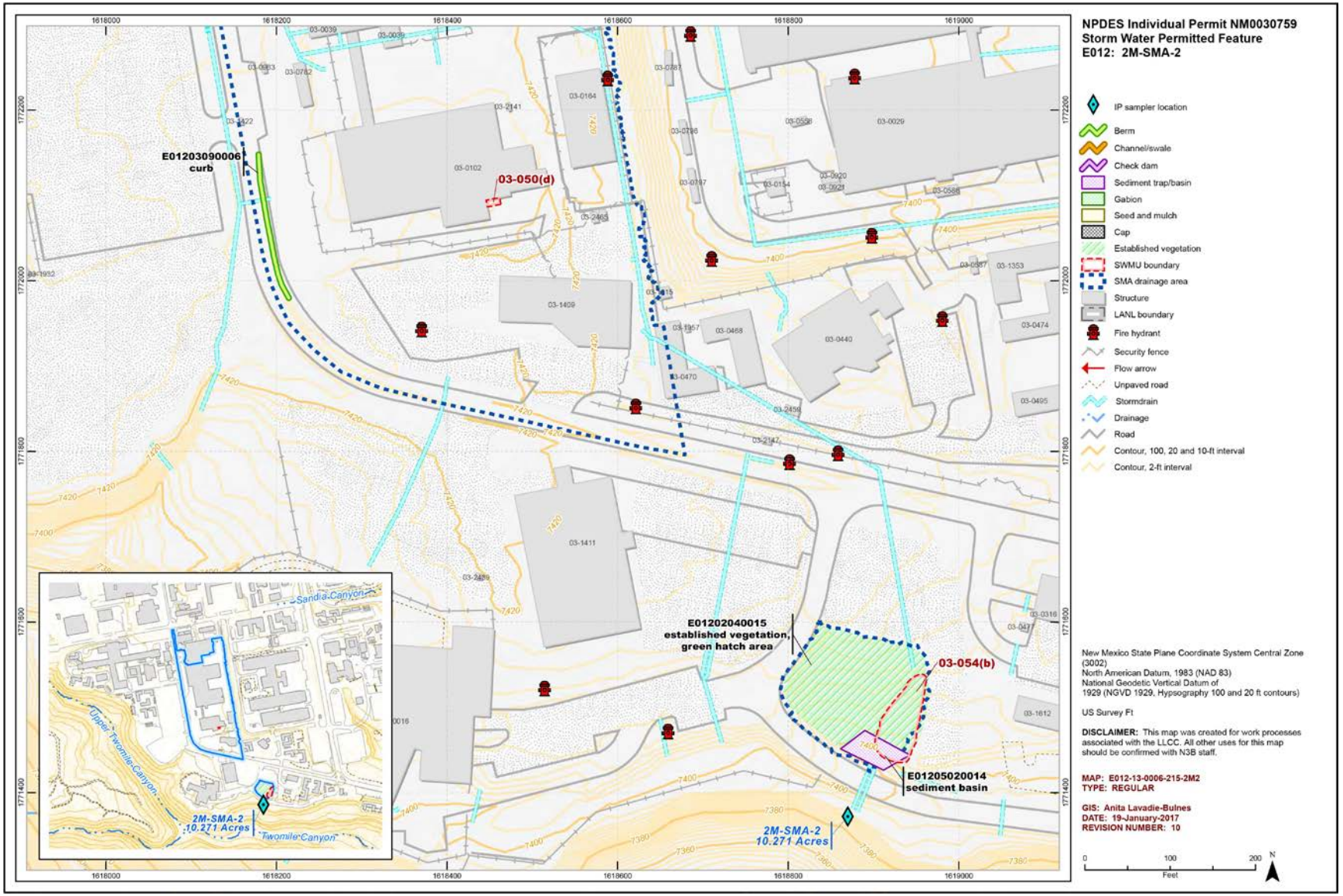


Figure 140-1 2M-SMA-2 location map

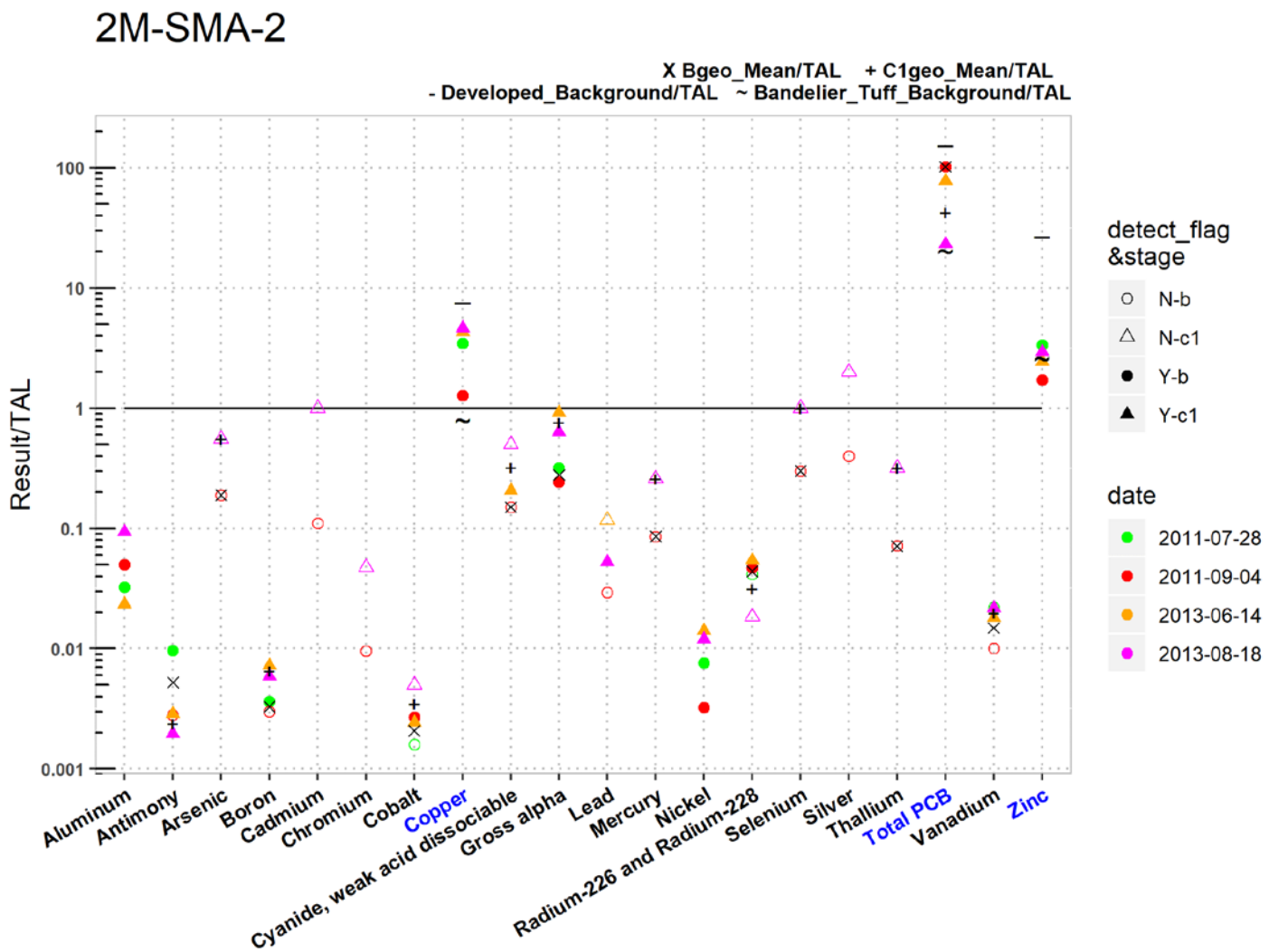


Figure 140-2 Analytical results summary for 2M-SMA-2

2M-SMA-2

	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	0.0052	0.19	0.0033	NA	NA	0.0021	NA	0.15	0.28	NA	0.086	NA	0.044	0.3	NA	0.071	**100**	0.015	NA
C1geo_mean/ATAL	NA	0.0024	0.56	0.0065	NA	NA	0.0035	NA	0.32	0.76	NA	0.26	NA	0.032	1	NA	0.32	**42**	0.02	NA
2011-07-28 d	0.033	0.0097	NA	0.0036	NA	NA	NA	**3.5**	NA	0.32	NA	NA	0.0076	NA	NA	NA	NA	NA	NA	**3.3**
2011-07-28 nd	NA	NA	0.19	NA	0.11	0.0095	0.0016	NA	0.15	NA	0.029	0.086	NA	0.041	0.3	0.4	0.071	NA	0.022	NA
2011-09-04 d	0.05	NA	NA	NA	NA	NA	0.0027	**1.3**	NA	0.24	NA	NA	0.0032	0.047	NA	NA	NA	**100**	NA	**1.7**
2011-09-04 nd	NA	0.0028	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	NA	0.01	NA
2013-06-14 d	0.023	0.0029	NA	0.0072	NA	NA	0.0024	**4.3**	0.21	0.91	NA	NA	0.014	0.054	NA	NA	NA	**78**	0.018	**2.4**
2013-06-14 nd	NA	NA	0.56	NA	1	0.048	NA	NA	NA	NA	0.12	0.26	NA	NA	1	2	0.32	NA	NA	NA
2013-08-18 d	0.094	0.002	NA	0.0059	NA	NA	NA	**4.6**	NA	0.63	0.052	NA	0.012	NA	NA	NA	NA	**23**	0.022	**2.9**
2013-08-18 nd	NA	NA	0.56	NA	1	0.048	0.005	NA	0.5	NA	NA	0.26	NA	0.018	1	2	0.32	NA	NA	NA

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

Figure 140-2 (continued) Analytical results summary for 2M-SMA-2

141.0 2M-SMA-2.2: AOC 03-003(k)

141.1 Site Descriptions

One historical industrial activity area is associated with E013, 2M-SMA-2.2: Site 03-003(k).

AOC 03-003(k) is an area of potential soil contamination associated with the location of a former non-PCB transformer (less than 50 ppm PCB), reportedly staged on the east side of building 03-316. No additional information is available for this Site.

Consent Order or other environmental investigations have not been performed at AOC 03-003(k); there are no investigation data for this Site. AOC 03-003(k) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 141-1) 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.

141.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 141-1).

Table 141-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01303090002	Curbing	X	-	-	-	CB
E01304020003	Concrete/Asphalt Channel/Swale	-	X	X	-	CB
E01306010004	Rock Check Dam	-	X	-	X	CB
E01306010005	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

141.3 Storm Water Monitoring

AOC 03-003(k) is monitored within 2M-SMA-2.2. Following the installation of baseline control measures, two baseline storm water samples were collected on August 13, 2011, and September 4, 2011 (Figure 141-2). Analytical results from these samples yielded TAL exceedances for copper (10.1 µg/L and 16.4 µg/L), PCB concentrations (7 ng/L and 10 ng/L), and zinc (90.1 µg/L and 97.2 µg/L) and are presented in Figure 141-2.

Following certification of no exposure, a corrective action investigation storm water sample was collected on July 1, 2016. Analytical results from this sample were submitted to EPA on September 26, 2016. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at 2M-SMA-2.2. No further sampling is required for 2M-SMA-2.2 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.

AOC 03-003(k):

- Copper is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k).
- Zinc is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k).
- PCBs are known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k).

2M-SMA-2.2, Rock Check Dam, E01306010005 (photo ID 27300-1)

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 141-2. 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 141-2.

Monitoring location 2M-SMA-2.2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these values.
- Zinc—The zinc UTL from developed landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than both of these values.
- PCB—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are less than both of these values.

All the analytical results for these samples are reported in the 2011 and 2016 Annual Reports.

141.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG121.9 recorded six storm events at 2M-SMA-2.2 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 in the following table.

Table 141-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72846	3-21-2019
Storm Rain Event	BMP-74853	7-22-2019
Storm Rain Event	BMP-75269	8-1-2019
Storm Rain Event	BMP-76011	8-20-2019
Storm Rain Event	BMP-76642	9-6-2019
Storm Rain Event	BMP-77212	10-10-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-2.2 in 2019.

141.5 Compliance Status

The Site associated with 2M-SMA-2.2 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. A completion of corrective action for 2M-SMA-2.2 was submitted September 29, 2015. The IP was under administrative continuance at the end of 2019. Table 141-3 presents the 2019 compliance status.

Table 141-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 03-003(k)	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	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]." LANL, September 26, 2016, "NPDES Permit No NM0030759 – Analytical Results for Site 03-003(k) in Site Monitoring Area 2M-SMA-2.2 after Certification of a No Exposure Condition."

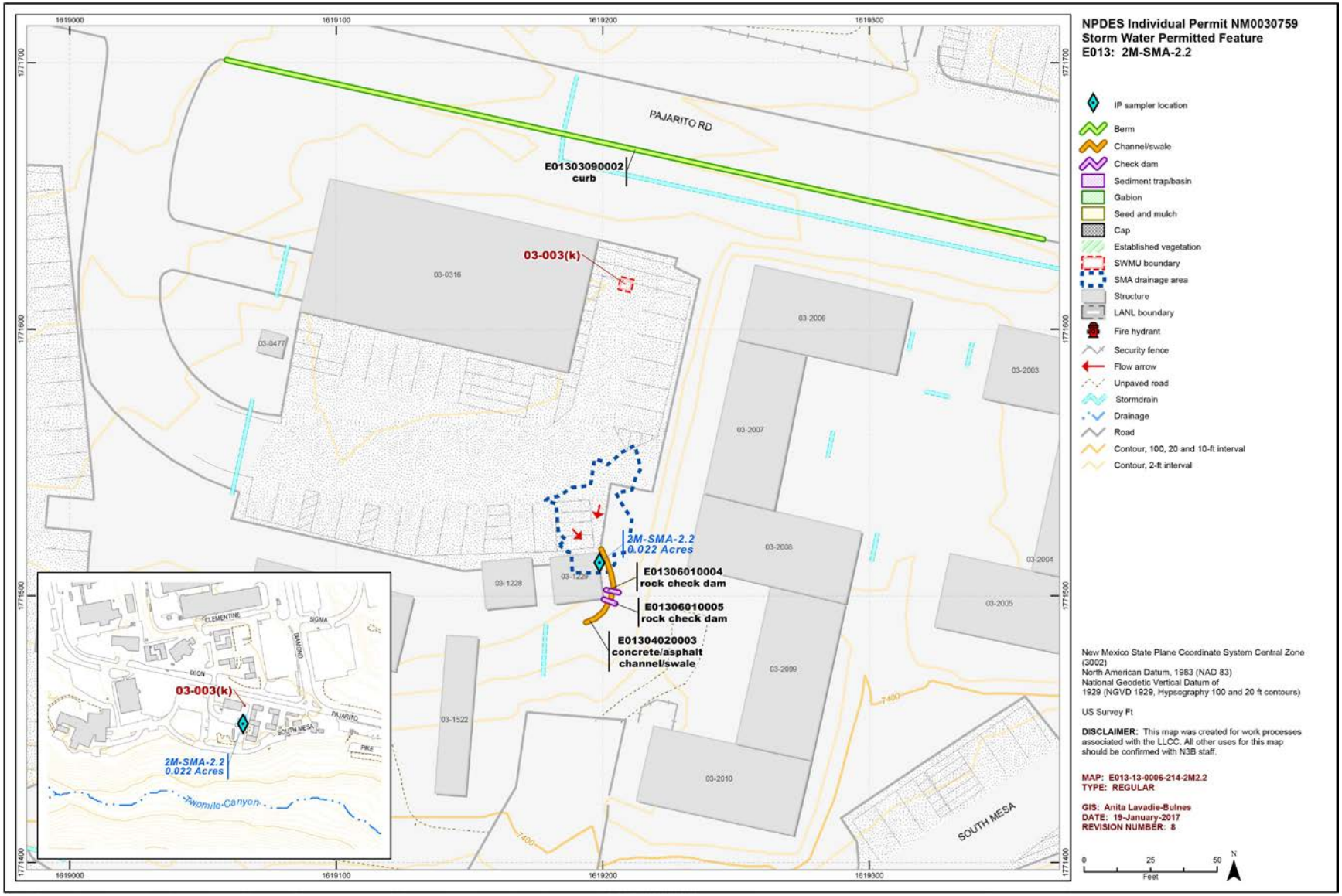


Figure 141-1 2M-SMA-2.2 location map

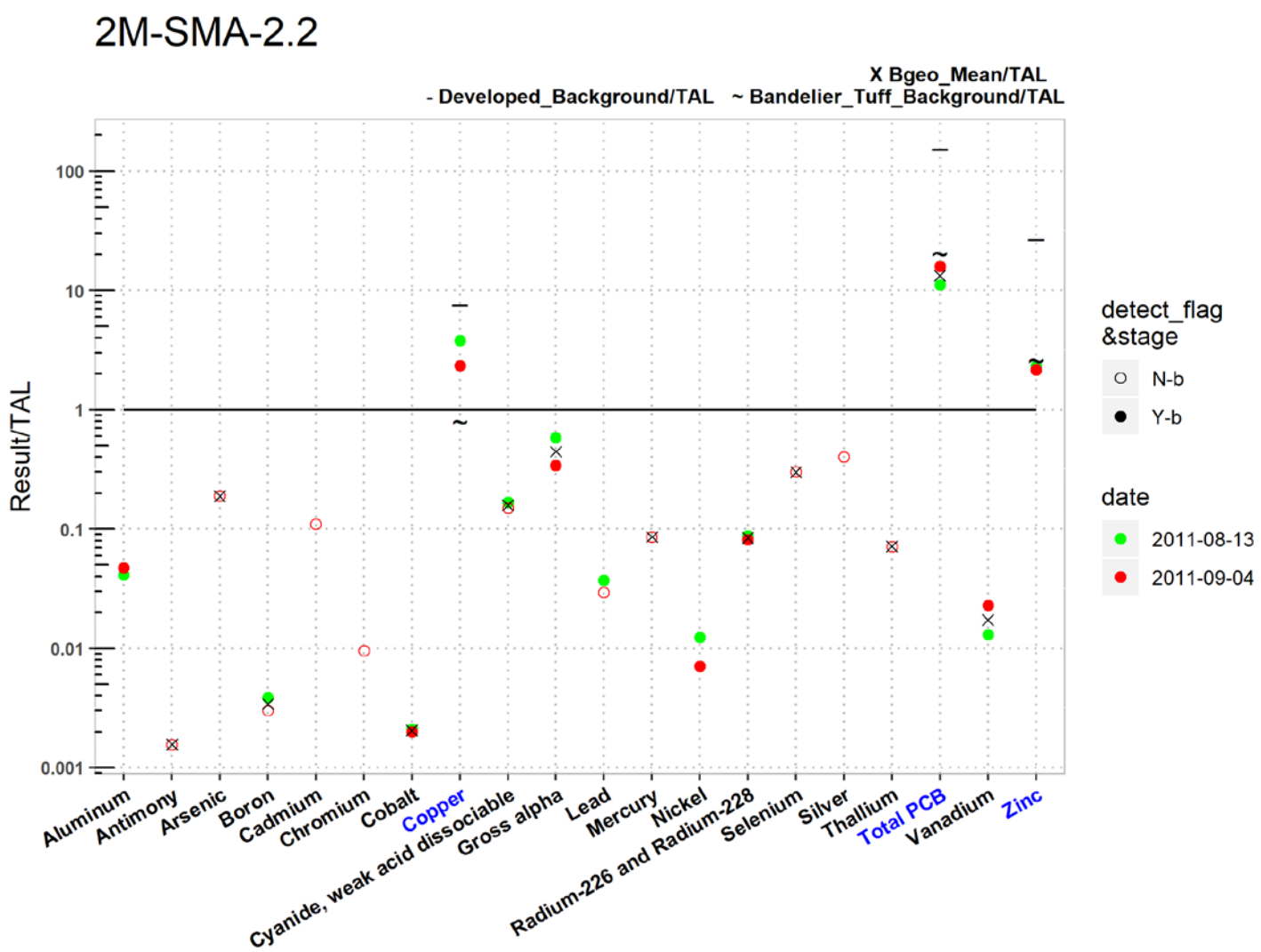


Figure 141-2 Analytical results summary for 2M-SMA-2.2

2M-SMA-2.2

	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	0.0034	NA	NA	0.002	NA	0.16	0.45	NA	0.086	NA	0.084	0.3	NA	0.071	**13**	0.017	NA
2011-08-13 d	0.041	NA	NA	0.0039	NA	NA	0.0021	**3.8**	0.17	0.58	0.037	NA	0.012	0.088	NA	NA	NA	**11**	0.013	**2.3**
2011-08-13 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	NA	NA	NA	0.086	NA	NA	0.3	0.4	0.071	NA	NA	NA
2011-09-04 d	0.047	NA	NA	NA	NA	NA	0.002	**2.3**	NA	0.34	NA	NA	0.0071	0.081	NA	NA	NA	**16**	0.023	**2.1**
2011-09-04 nd	NA	0.0016	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	NA	NA	NA

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

Figure 141-2 (continued) Analytical results summary for 2M-SMA-2.2

142.0 2M-SMA-2.5: SWMU 40-001(c)

142.1 Site Descriptions

One historical industrial activity area is associated with E015, 2M-SMA-2.5: Site 40-001(c).

SWMU 40-001(c) is a septic tank (structure 40-25) located at TA-40 approximately 25 ft east of building 40-11. Constructed of reinforced concrete, the septic tank measures 4 ft wide × 7 ft long × 6 ft deep and has a capacity of 540 gal. The septic tank was installed in 1950 and serves building 40-11, which houses changing rooms and restrooms. Originally, the septic tank discharged northeast into Twomile Canyon. In 1951, the drainline was rerouted to discharge south to Pajarito Canyon. In 1988, the septic tank outlet was again rerouted, this time to discharge to a leach field constructed south of the septic tank. The septic tank is currently active and registered with NMED.

This SWMU was investigated during a 1994 RFI; however, no sampling has been conducted under the Consent Order, and no decision-level data are available. SWMU 40-001(c) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 142-1) 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.

142.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 142-1).

Table 142-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01502040006	Established Vegetation	-	X	X	-	B
E01503010004	Earthen Berm	X	-	-	X	CB
E01503010005	Earthen Berm	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

142.3 Storm Water Monitoring

SWMU 40-001(c) is monitored within 2M-SMA-2.5. Following the installation of baseline control measures, a baseline storm water sample was collected on September 9, 2012 (Figure 142-2). In Figure 142-2, 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 2M-SMA-2.5 and the associated SWMU 40-001(c) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for 2M-SMA-2.5 for the duration of the IP.

142.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-2.5 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 142-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72847	3-25-2019
Storm Rain Event	BMP-74598	7-16-2019
Storm Rain Event	BMP-75270	8-7-2019
Storm Rain Event	BMP-76012	8-16-2019
Storm Rain Event	BMP-76381	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-2.5 in 2019.

142.5 Compliance Status

The Site associated with 2M-SMA-2.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2019. Table 142-3 presents the 2019 compliance status.

Table 142-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-001(c)	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 10-19-2012. All baseline confirmation monitoring results are less than TALs. No further confirmation monitoring is required for this Site

2M-SMA-2.5, Earthen Berm, E01503010005 (photo ID 8534-1)

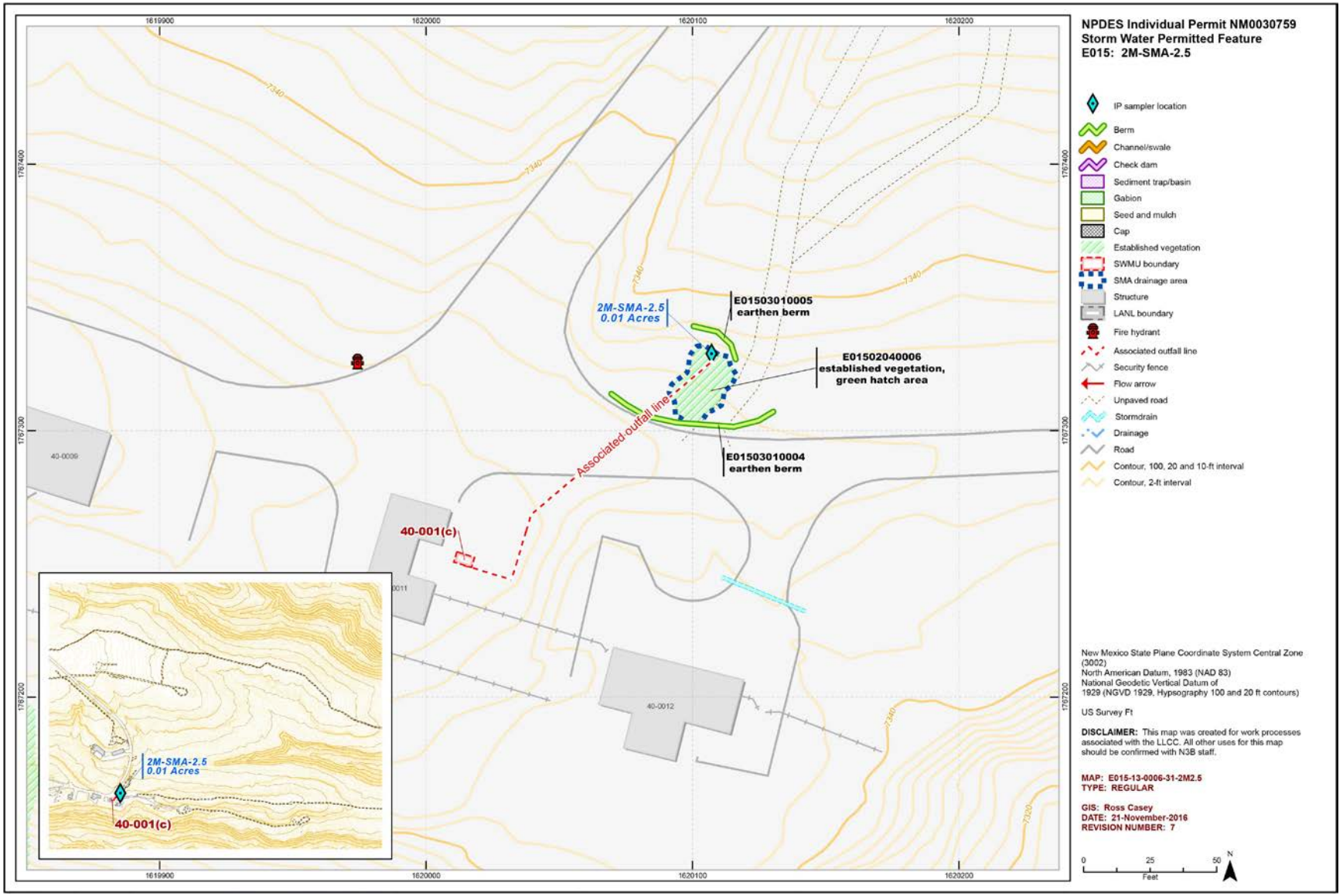


Figure 142-1 2M-SMA-2.5 location map

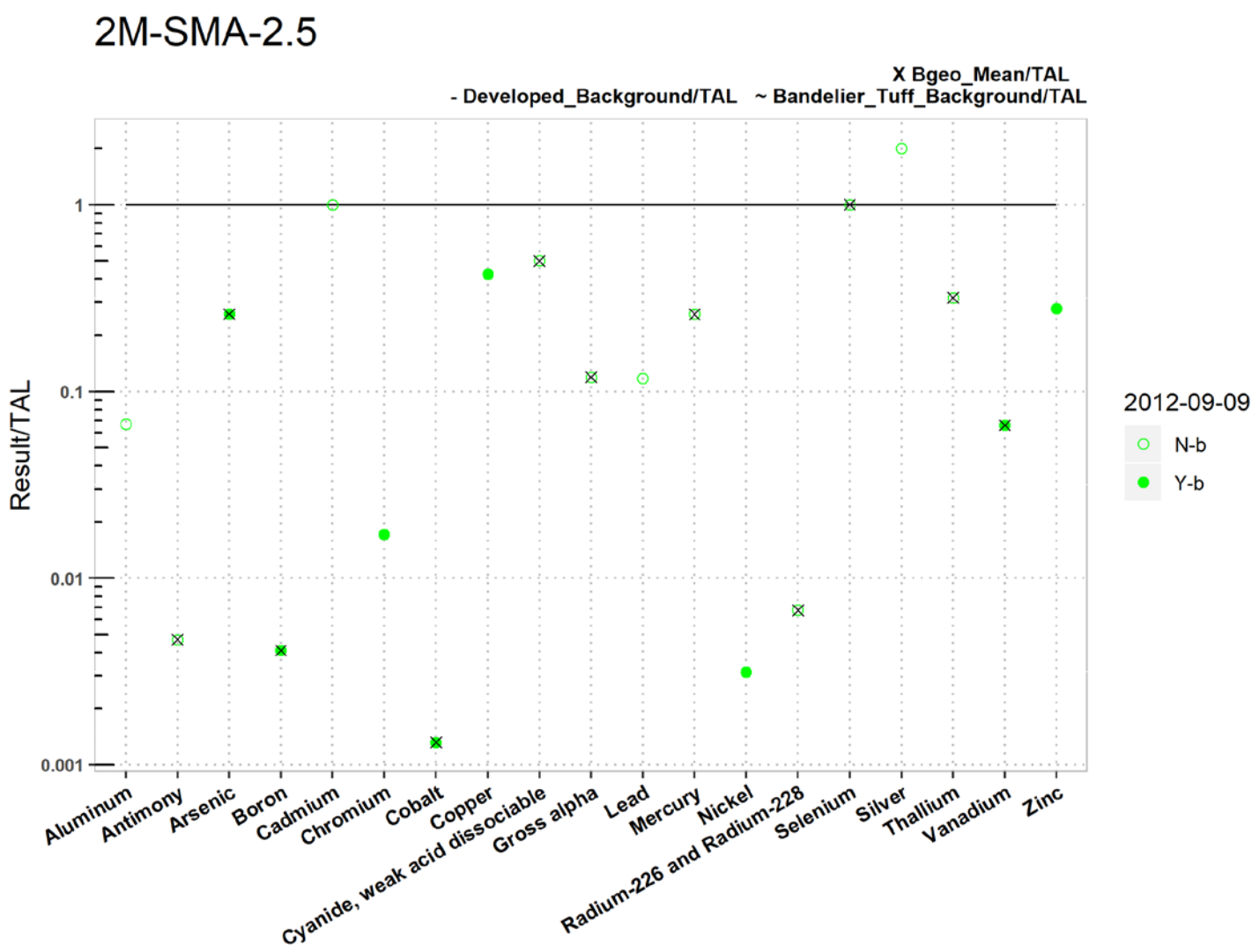


Figure 142-2 Analytical results summary for 2M-SMA-2.5

2M-SMA-2.5

	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	0.0047	0.26	0.0041	NA	NA	0.0013	NA	0.5	0.12	NA	0.26	NA	0.0067	1	NA	0.32	0.066	NA
2012-09-09 d	NA	NA	0.26	0.0041	NA	0.017	0.0013	0.43	NA	NA	NA	NA	0.0031	NA	NA	NA	NA	0.066	0.28
2012-09-09 nd	0.067	0.0047	NA	NA	1	NA	NA	NA	0.5	0.12	0.12	0.26	NA	0.0067	1	2	0.32	NA	NA

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

Figure 142-2 (continued) Analytical results summary for 2M-SMA-2.5

143.0 2M-SMA-3: SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d)

143.1 Site Descriptions

Four historical industrial activity areas are associated with E014, 2M-SMA-3: Sites 07-001(a), 07-001(b), 07-001(c), and 07-001(d).

SWMU 07-001(a) is an inactive firing pit located near the east end of TA-06. The Site consists of a circular depression surrounded by an annular berm about 4 ft high and approximately 30 ft in diameter. The firing pit was used in the 1950s to destroy scrap detonators and explosives. Materials to be destroyed were mixed with Composition B scraps or flaked TNT and the mixture was detonated. A 1959 memorandum states this method was very effective for destroying detonators, with no intact detonators thrown out of a pit and no undestroyed detonators found during a site survey, although pellets of unexploded PBX were found in post-firing debris. Small amounts of lead or mercury compounds may have been present in the blasting caps used to set off the HE used to destroy the detonators. This method of destroying detonators was discontinued at this Site in 1959.

The original IP Site narrative stated that beryllium and DU may have been released at this Site. A thorough review of Site records did not identify the use of either beryllium or DU.

Consent Order investigations have not been performed at SWMU 07-001(a), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only. SWMU 07-001(a) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

SWMU 07-001(b) is an inactive firing pit located near the east end of TA-06. The Site consists of a circular depression surrounded by an annular berm about 4 ft high and approximately 30 ft in diameter. The firing pit was used in the 1950s to destroy scrap detonators and explosives. Materials to be destroyed were mixed with Composition B scraps or flaked TNT and the mixture was detonated. A 1959 memorandum states this method was very effective in destroying detonators, with no intact detonators thrown out of a pit and no undestroyed detonators found during a site survey, although pellets of unexploded PBX were found. This method of destroying detonators was discontinued at this Site in 1959.

Consent Order investigations have not been performed at SWMU 07-001(b), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only. SWMU 07-001(b) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

SWMU 07-001(c) is in an inactive amphitheater-shaped firing site, approximately 50 × 50 ft, located near the eastern boundary of TA-06. Soft metal disks imbedded with bullets have been found at this Site. Little is known about this Site's history, but it may have been used briefly to study ballistic initiation of critical mass through the study of projectiles fired at lead plates.

Consent Order investigations have not been performed at SWMU 07-001(c), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only. SWMU 07-001(c) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

SWMU 07-001(d) is an inactive firing site located near the eastern boundary of TA-06. The Site is an approximately 20-ft-diameter × 3-ft-deep crater. Detonator parts have been found near the crater. Little is known about this Site's operating history, but it is believed to be the location of a one-time "celebratory shot" fired in 1945 after the Japanese surrender at the end of World War II. No debris is visible at or around the Site.

Consent Order investigations have not been performed at SWMU 07-001(d), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only. SWMU 07-001(d) will be investigated under the Consent Order as part of the Twomile Canyon Aggregate Area investigation.

The project map (Figure 143-1) 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.

143.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 143-1).

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 143-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01402040013	Established Vegetation	-	X	X	-	B
E01403010028	Earthen Berm	-	X	-	X	EC
E01403010029	Earthen Berm	-	X	-	X	EC
E01403060030	Straw Wattle	-	X	-	X	EC
E01403140022	Coir Log	-	X	-	X	EC
E01403140023	Coir Log	-	X	-	X	EC
E01403140024	Coir Log	-	X	-	X	EC
E01403140031	Coir Log	X	-	-	X	B
E01403140032	Coir Log	X	-	-	X	B
E01403140033	Coir Log	X	-	-	X	B
E01406010025	Rock Check Dam	-	X	-	X	EC
E01406010026	Rock Check Dam	-	X	-	X	EC
E01406010027	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

143.3 Storm Water Monitoring

SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d) are monitored within 2M-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 143-2). In Figure 143-2, 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 aluminum (3750 µg/L) and copper (6.05 µg/L) and are presented in Figure 143-2.

Enhanced control confirmation monitoring storm water samples were collected on July 26, 2017, and October 4, 2017 (Figure 143-2). Analytical results from these samples yielded no TAL exceedances. Gross-alpha activity exceeded the TAL in the October 4, 2017, sample, but not in the July 26, 2017, sample. As both corrective action samples are used to calculate the geomean, the geomean is less than the ATAL and thus not considered a TAL exceedance in corrective action monitoring. Corrective action monitoring is complete for associated SWMUs 07-001(a), 07-001(b), and 07-001(d) because all applicable sampling results are below the applicable MTAL or ATAL. Analytical results from the sample collected in 2017 are not representative of 07-001(c) and corrective action monitoring will continue for 2M-SMA-3 and associated SWMU 07-001(c).

The monitoring station for 2M-SMA-3 has been relocated. The sampler has been repositioned to a location determined to be more representative of Site 07-001(c). The Sampler coordinates and the SMA drainage area have been updated in Attachment 4.

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

143.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 2M-SMA-3 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 143-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72848	3-20-2019
Storm Rain Event	BMP-74600	7-16-2019
Storm Rain Event	BMP-75272	8-7-2019
Storm Rain Event	BMP-76013	8-16-2019
Storm Rain Event	BMP-76382	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at 2M-SMA-3 in 2019.

143.5 Compliance Status

The Sites associated with 2M-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 143-3 presents the 2019 compliance status.

Table 143-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 07-001(a)	Corrective Action Complete	Corrective Action Complete	N3B, November 27, 2019, "NPDES Permit No. NM0030759 – Completion of Corrective Action for Three Sites in 2M-SMA-3 Following Analytical Results Below Target Action Levels."
SWMU 07-001(b)	Corrective Action Complete	Corrective Action Complete	N3B, November 27, 2019, "NPDES Permit No. NM0030759 – Completion of Corrective Action for Three Sites in 2M-SMA-3 Following Analytical Results Below Target Action Levels."
SWMU 07-001(c)	Corrective Action Complete	Enhanced Corrective Action Monitoring	Initiated 5-7-2019.
SWMU 07-001(d)	Corrective Action Complete	Corrective Action Complete	N3B, November 27, 2019, "NPDES Permit No. NM0030759 – Completion of Corrective Action for Three Sites in 2M-SMA-3 Following Analytical Results Below Target Action Levels."

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

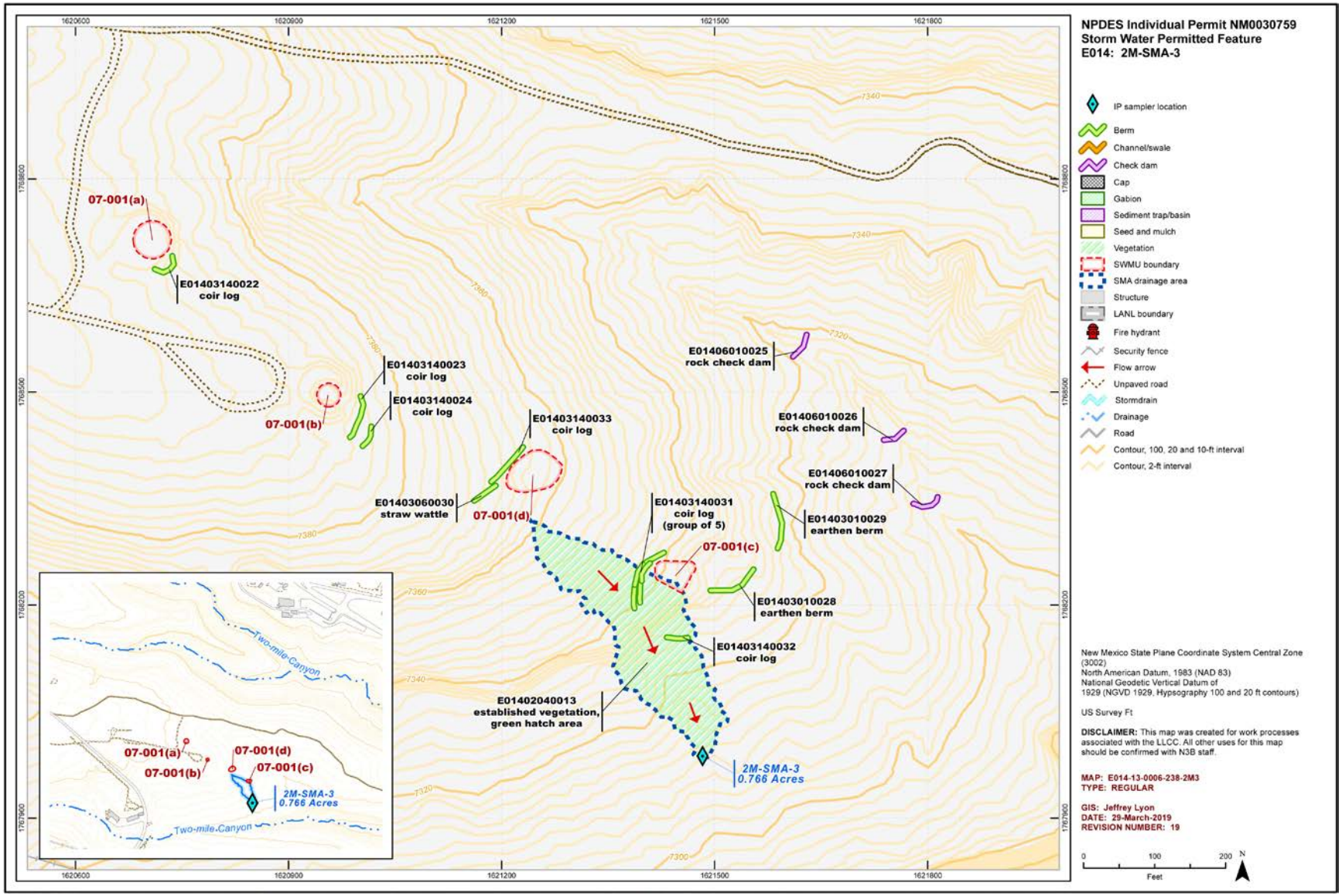


Figure 143-1 2M-SMA-3 location map

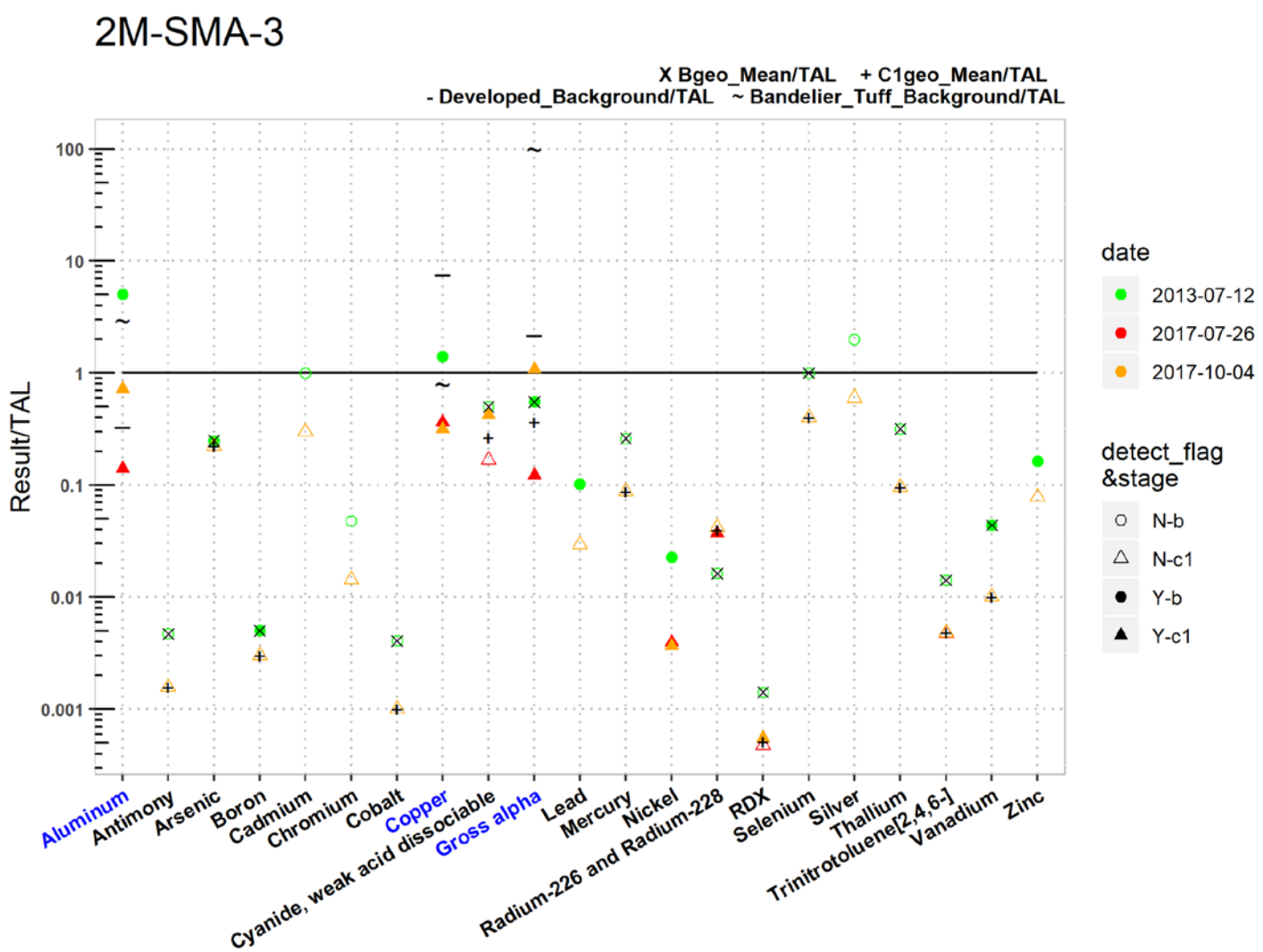


Figure 143-2 Analytical results summary for 2M-SMA-3

2M-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	0.25	0.005	NA	NA	0.0041	NA	0.5	0.55	NA	0.26	NA	0.016	0.0014	1	NA	0.32	0.014	0.044	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.003	NA	NA	0.001	NA	0.27	0.36	NA	0.087	NA	0.039	0.00051	0.4	NA	0.095	0.0048	0.01	NA
2013-07-12 d	**5**	NA	0.25	0.005	NA	NA	NA	**1.4**	NA	0.55	0.1	NA	0.023	NA	NA	NA	NA	NA	NA	0.044	0.16
2013-07-12 nd	NA	0.0047	NA	NA	1	0.048	0.0041	NA	0.5	NA	NA	0.26	NA	0.016	0.0014	1	2	0.32	0.014	NA	NA
2017-07-26 d	0.14	NA	NA	NA	NA	NA	NA	0.36	NA	0.12	NA	NA	0.004	0.037	NA	NA	NA	NA	NA	NA	NA
2017-07-26 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	0.17	NA	0.029	0.087	NA	NA	0.00048	0.4	0.6	0.095	0.0048	0.01	0.079
2017-10-04 d	0.72	NA	NA	NA	NA	NA	NA	0.32	0.42	**1.1**	NA	NA	0.0037	NA	0.00055	NA	NA	NA	NA	NA	NA
2017-10-04 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	NA	NA	0.029	0.087	NA	0.042	NA	0.4	0.6	0.095	0.0048	0.01	0.079

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

Figure 143-2 (continued) Analytical results summary for 2M-SMA-3

144.0 3M-SMA-0.2: SWMU 15-010(b)

144.1 Site Descriptions

One historical industrial activity area is associated with H001, 3M-SMA-0.2: Site 15-010(b).

SWMU 15-010(b) is an inactive settling tank (structure 15-147), inlet and outlet drainlines, and a former outfall located in the northwest corner of TA-15 north of former building 15-8. Building 15-8 was one of the first operational buildings at TA-15. It was constructed in 1947 and housed HE-machining operations with water cooling. The tank, constructed in 1947 of concrete, measures 5 ft × 5 ft × 5.5 ft with an approximate capacity of 900 gal. The tank was originally designed to be a septic tank and was described as a septic system in the 1990 SWMU Report. However, subsequent engineering records confirm the tank was used only as an HE settling tank. The settling tank served former building 15-8 during the 1950s and reportedly discharged to an outfall at the edge of Threemile Canyon. The tank is no longer in operation; however, the date it ceased to be used is not known. The investigation work plan proposed removing the tank. However, facility restrictions on the handling of HE prevented removing the tank, which was found to contain liquid, until the contents were characterized. The liquid content was sampled for waste characterization purposes, was found to be nonhazardous and nonradioactive, and was removed. The facility closed the tank in place.

Phase I Consent Order sampling is complete for SWMU 15-010(b). Vertical extent of inorganic and organic chemicals and radionuclides is not defined. Additional sampling to define vertical extent is proposed in the revised supplemental investigation report for Threemile Canyon Aggregate Area submitted to NMED in 2018.

The project map (Figure 144-1) 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.

144.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 144-1).

Table 144-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00102040006	Established Vegetation	-	X	X	-	B
H00103010005	Earthen Berm	X	-	-	X	B
H00106010002	Rock Check Dam	-	X	-	X	CB
H00106010007	Rock Check Dam	-	X	-	X	B
H00106010008	Rock Check Dam	-	X	-	X	B
H00106010009	Rock Check Dam	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

144.3 Storm Water Monitoring

SWMU 15-010(b) is monitored within 3M-SMA-0.2. Following the installation of baseline control measures and the monitoring station relocation, a storm water sample was collected on July 15, 2018 (Figure 144-2). Analytical results from the sample collected yielded TAL exceedances for copper (6.72 µg/L), gross-alpha activity (127 pCi/L), and mercury (2.02 µg/L) and are presented in Figure 144-2.

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 15-010(b):

- Copper is known to be associated with industrial materials historically managed at this Site. Copper was detected above the soil BV in 1 of 17 shallow soil samples with a maximum concentration 1.1 times the soil BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Shallow soil samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium. Plutonium and uranium were detected above preliminary remediation goals. Uranium was identified as a contaminant of concern in the supplemental investigation report. 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.
- Mercury is known to be associated with industrial materials historically managed at the Site. Mercury was detected above the soil BV in 5 of 17 shallow soil samples with a maximum concentration 6.9 times the soil 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 144-2. 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 144-2.

Monitoring location 3M-SMA-02 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. Most of the 3M-SMA-0.2 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with copper and gross-alpha storm water exceedances. Mercury did not have a sufficient number of detected results to determine the UTL BV.

- Copper—Copper is associated with trace minerals in Bandelier Tuff. The copper UTL from background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2018 is greater than this value.
- Gross alpha—Gross-alpha UTL from background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The gross-alpha result from 2018 is less than this value.

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

144.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at 3M-SMA-0.2 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 144-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72849	3-20-2019
Storm Rain Event	BMP-74601	7-11-2019
Storm Rain Event	BMP-74856	7-24-2019
Storm Rain Event	BMP-75273	8-8-2019
Storm Rain Event	BMP-76383	8-27-2019

No maintenance activities or facility modifications affecting discharge were conducted at 3M-SMA-0.2 in 2019.

144.5 Compliance Status

The Site associated with 3M-SMA-0.2 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 144-3 presents the 2019 compliance status.

Table 144-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-010(b)	The SMA is being evaluated for a corrective action recommendation	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-20-2018.

3M-SMA-0.2, Rock Check Dam, H00106010002 (photo ID 7515-2)

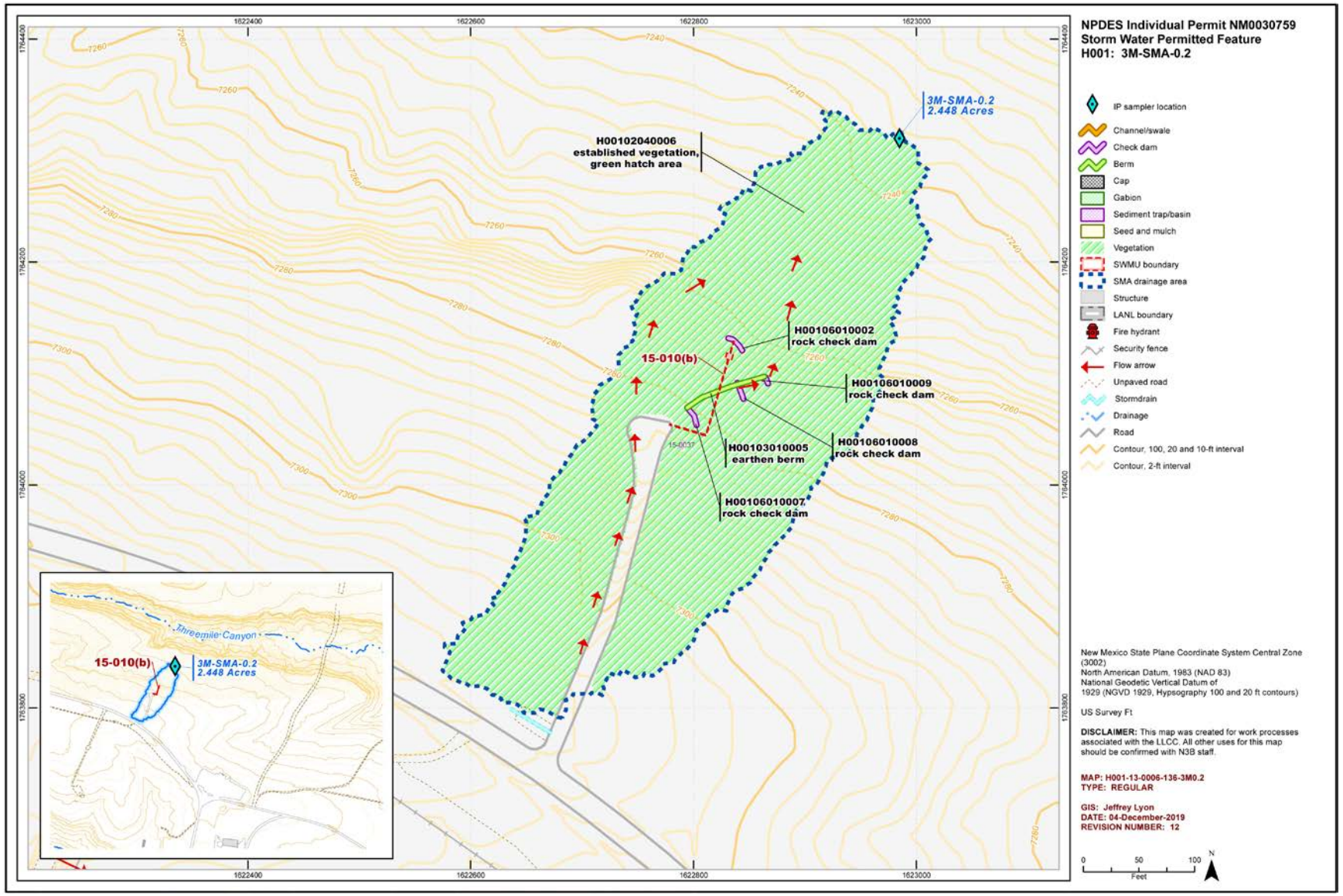


Figure 144-1 3M-SMA-0.2 location map

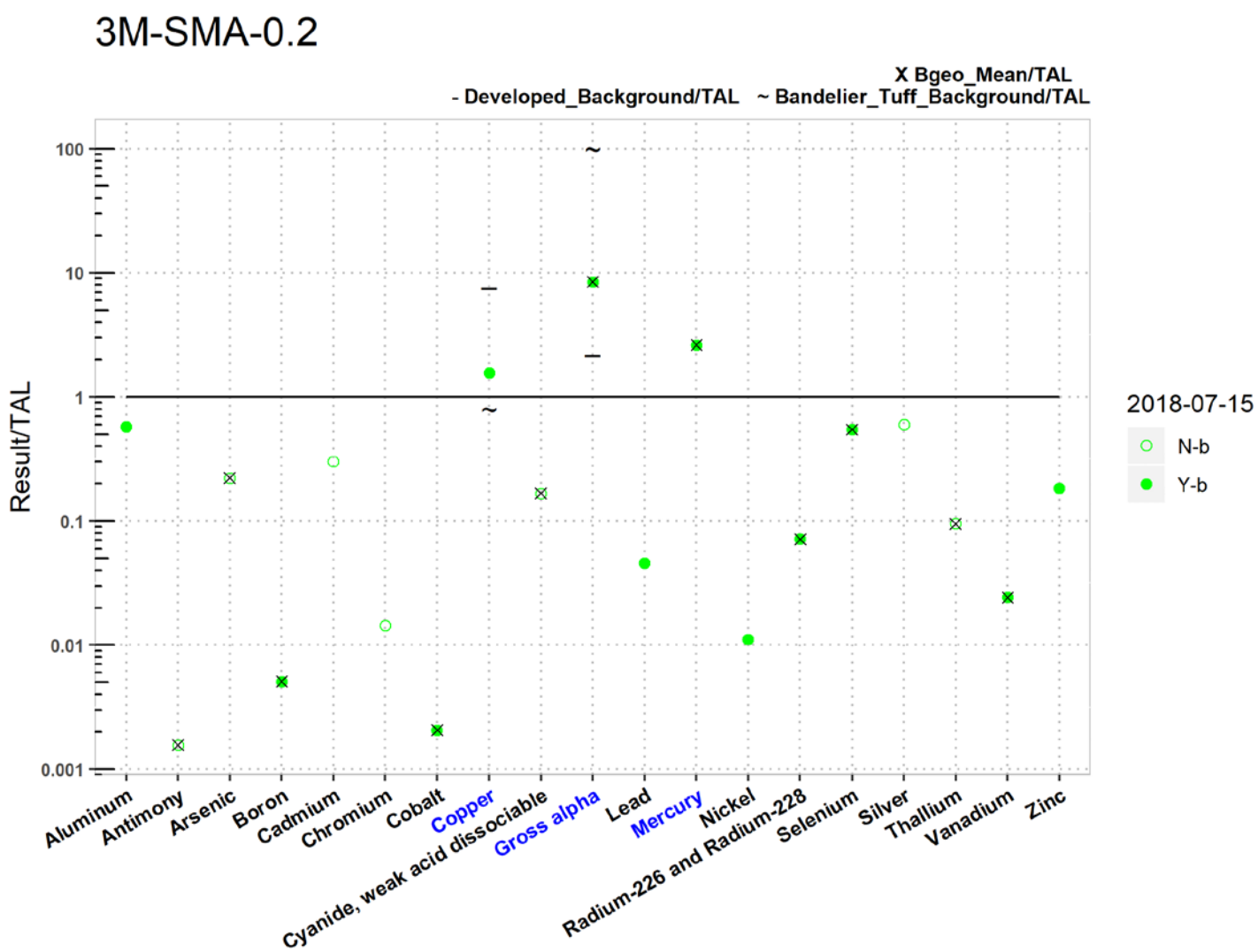


Figure 144-2 Analytical results summary for 3M-SMA-0.2

3M-SMA-0.2

	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	0.0051	NA	NA	0.0021	NA	0.17	**8.5**	NA	**2.6**	NA	0.071	0.55	NA	0.095	0.024	NA
2018-07-15 d	0.57	NA	NA	0.0051	NA	NA	0.0021	**1.6**	NA	**8.5**	0.046	**2.6**	0.011	0.071	0.55	NA	NA	0.024	0.18
2018-07-15 nd	NA	0.0016	0.22	NA	0.3	0.014	NA	NA	0.17	NA	NA	NA	NA	NA	NA	0.6	0.095	NA	NA

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

Figure 144-2 (continued) **Analytical results summary for 3M-SMA-0.2**

145.0 3M-SMA-0.4: SWMU 15-006(b)

145.1 Site Descriptions

One historical industrial activity area is associated with H002, 3M-SMA-0.4: Site 15-006(b).

SWMU 15-006(b) is the Ector firing site. Located along the eastern side of TA-15, the firing site was used for dynamic radiography of explosion-driven weapons components. It was originally established in 1973 and was used periodically until 1982. The Ector radiography machine was constructed at this Site, and the Site has operated with this machine from the mid-1980s to the present. Structures associated with the firing site are the firing point chamber (structure 15-276), the multidiagnostic hydrotest (building 15-306), and the blast-protection structure (15-319).

Investigation of SWMU 15-006(b) is deferred per Section XI and Appendix A of the 2016 Consent Order. The NMED-approved investigation work plan proposed no sampling for this Site.

The project map (Figure 145-1) 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.

145.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 145-1).

Table 145-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00202040005	Established Vegetation	-	X	X	-	B
H00203010003	Earthen Berm	-	X	-	X	CB
H00203010004	Earthen Berm	-	X	-	X	B
H00203140017	Coir Log	-	X	-	X	B
H00203100014	Gravel Bags	-	X	-	X	B
H00203120008	Rock Berm	X	-	-	X	B
H00203120009	Rock Berm	X	-	-	X	B
H00203120010	Rock Berm	X	-	-	X	B
H00203120011	Rock Berm	X	-	-	X	B
H00203120015	Rock Berm	-	X	-	X	B
H00203120016	Rock Berm	-	X	-	X	B
H00205020007	Sediment Basin	-	X	-	X	B
H00208020006	Rock Cap	-	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

145.3 Storm Water Monitoring

SWMU 15-006(b) is monitored within 3M-SMA-0.4. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 145-2). In Figure 145-2, 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 (120 pCi/L) and are presented in Figure 145-2.

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(b):

- Alpha-emitting radionuclides are not known to be associated with industrial materials managed at this Site. 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.

3M-SMA-0.4, Earthen Berm, H00203010003 (photo ID 8517-1)

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 145-2. 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 145-2.

Monitoring location 3M-SMA-0.4 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.

145.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG262.4 recorded two storm events at 3M-SMA-0.4 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 145-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72850	3-21-2019
Storm Rain Event	BMP-75274	8-6-2019
Storm Rain Event	BMP-76785	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at 3M-SMA-0.4 in 2019.

145.5 Compliance Status

The Site associated with 3M-SMA-0.4 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 145-3 presents the 2019 compliance status.

Table 145-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-006(b)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 19 Site Monitoring Area/Site Combinations Exceeding Target Action Levels for Gross-Alpha Radioactivity."

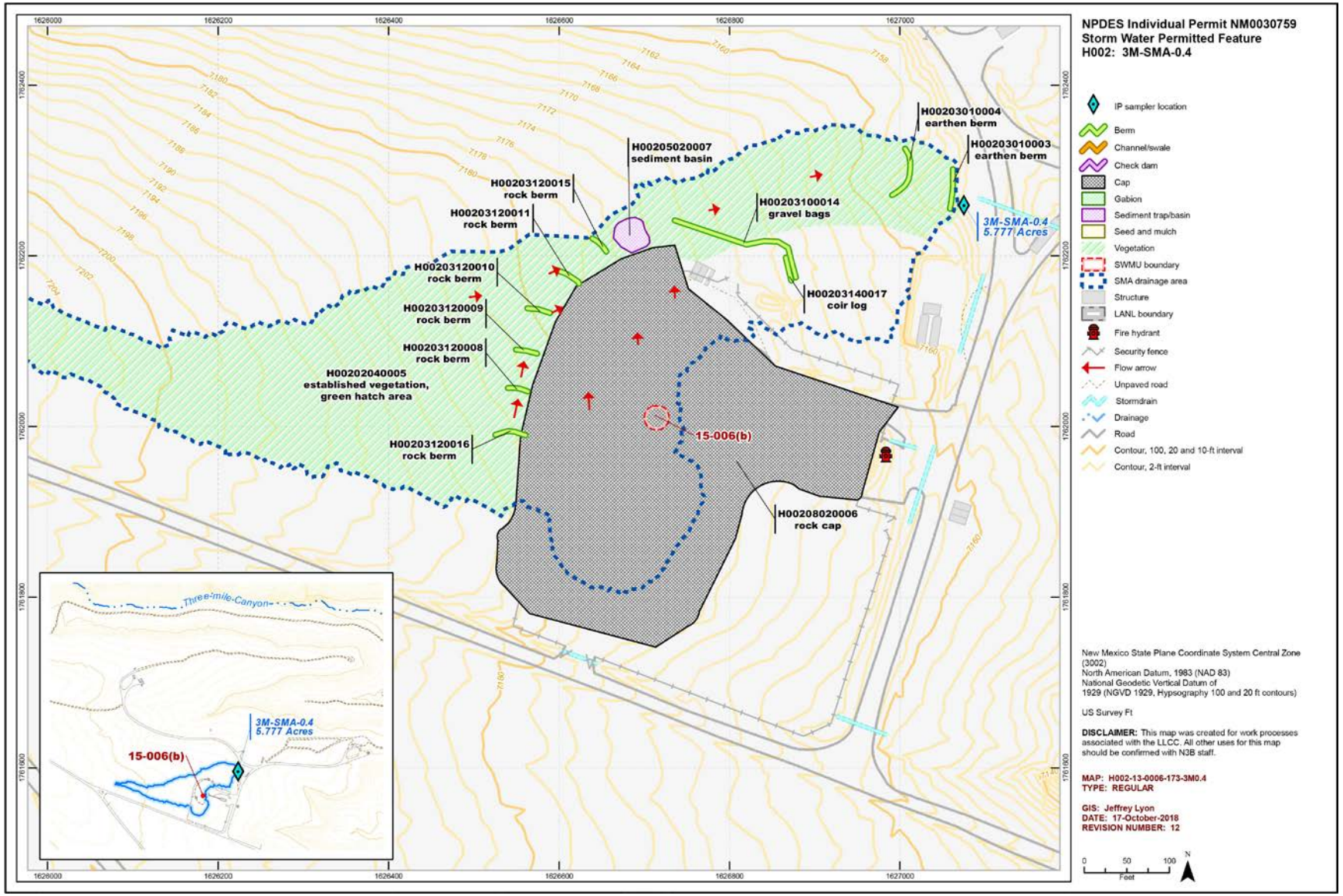


Figure 145-1 3M-SMA-0.4 location map

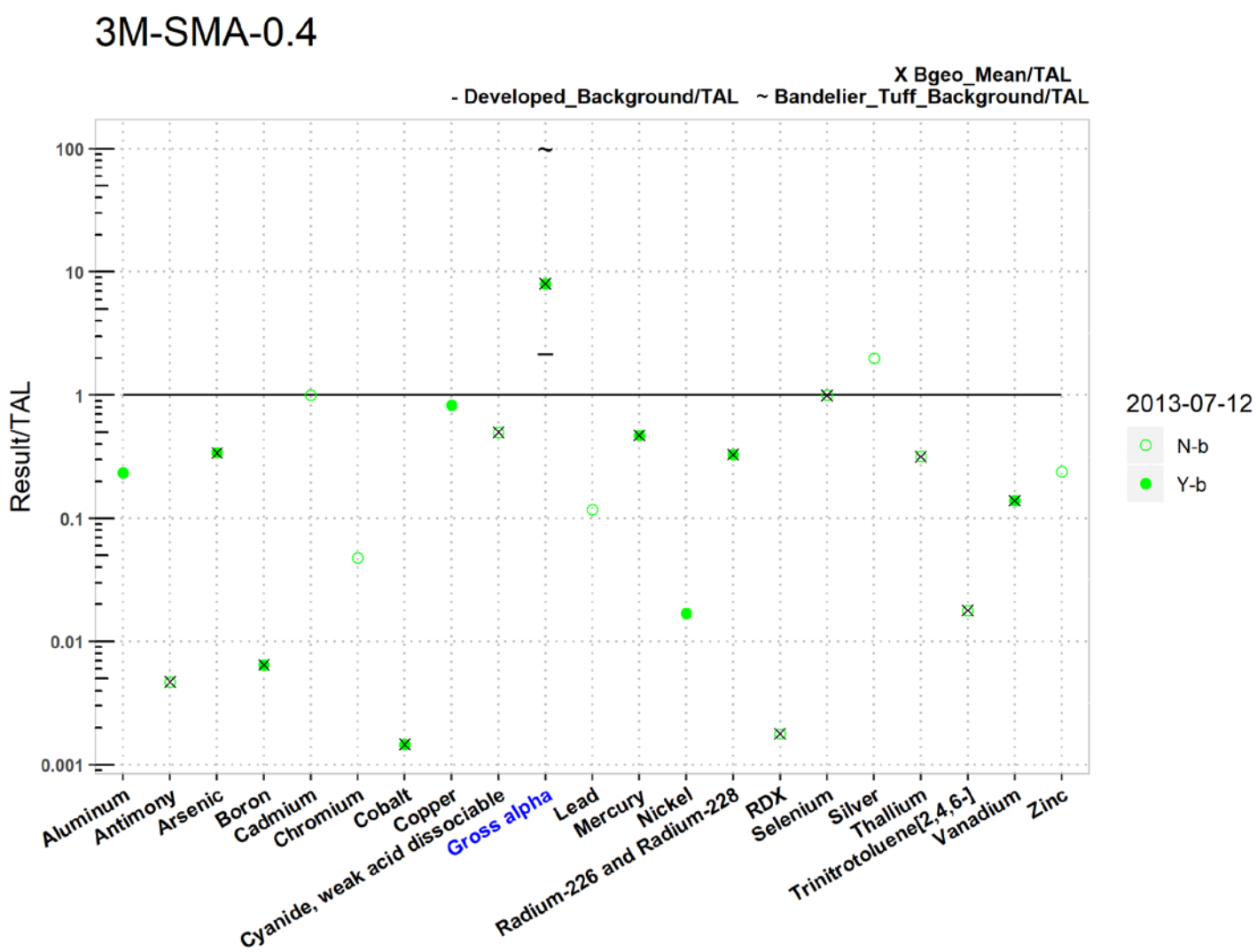


Figure 145-2 Analytical results summary for 3M-SMA-0.4

3M-SMA-0.4

	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	0.34	0.0065	NA	NA	0.0015	NA	0.5	**8**	NA	0.47	NA	0.33	0.0018	1	NA	0.32	0.018	0.14	NA
2013-07-12 d	0.23	NA	0.34	0.0065	NA	NA	0.0015	0.83	NA	**8**	NA	0.47	0.017	0.33	NA	NA	NA	NA	NA	0.14	NA
2013-07-12 nd	NA	0.0047	NA	NA	1	0.048	NA	NA	0.5	NA	0.12	NA	NA	NA	0.0018	1	2	0.32	0.018	NA	0.24

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

Figure 145-2 (continued) Analytical results summary for 3M-SMA-0.4

146.0 3M-SMA-0.5: SWMUs 15-006(c) and 15-009(c)

146.1 Site Descriptions

Two historical industrial activity areas are associated with H003, 3M-SMA-0.5: Sites 15-006(c) and 15-009(c).

SWMU 15-006(c) is the inactive firing site R-44. This firing site, located along the eastern side of TA-15, was originally constructed in 1951 and was used extensively from 1956 to 1978 for diagnostic tests of weapons components. After the PHERMEX and Ector firing sites became operational, firing site R-44 was used only for small experiments. Firing site R-44 was last used in 1992. Materials used in the tests included uranium, tritium, beryllium, lead, and HE. This firing site is located on a flat open area on a narrow mesa that overlooks Threemile Canyon. Debris from explosives tests has scattered onto the slope and into the canyon.

Investigation of SWMU 15-006(c) is deferred per Section XI and Appendix A of the 2016 Consent Order. Screening-level data from the 1995 RFI showed numerous inorganic chemicals detected above residential SSLs, several inorganic chemicals detected above industrial SSLs, and the HE RDX detected above residential and industrial SSLs; HMX was not detected above the residential SSL, and tritium was not detected above the residential SAL.

3M-SMA-0.5, Earthen Berm, H00303010030 (photo ID 50573-21)

SWMU 15-009(c) is a former septic system located at Firing Site R 44 at TA-15. The septic system consisted of a former septic tank (former structure 15-62), associated inlet and outlet drainlines, and a former outfall. The septic tank was constructed in 1951 of reinforced concrete with a 540-gal. capacity. The septic system served restroom facilities in the firing site control building 15-44. The drainlines were constructed of cast iron and discharged to an outfall into the south fork of Threemile Canyon. The outfall, located approximately 25 ft downgradient of the tank, has been plugged. The septic tank (former structure 15-62) was removed during the 2009 and 2010 Site investigation and the inlet and outlet drainlines were plugged and left in place. The excavation was backfilled with soil removed from the excavation and clean fill material from off-site placed on top to restore the area to its approximate original grade.

A Phase I investigation was conducted in 2010. Based on the 2010 data and data from a 1998 interim action RFI, no chemical or radionuclide constituents were detected above residential SSLs or SALs.

SWMU 15-009(c) was recommended for corrective action complete without controls in the "Supplemental Investigation Report for Threemile Canyon Aggregate Area, Revision 1," submitted to NMED in 2018. NMED issued a COC without controls for SWMU 15-009(c) in August 2019.

The project map (Figure 146-1) 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.

146.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 146-1).

Table 146-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00302040017	Established Vegetation	-	X	X	-	B
H00303010030	Earthen Berm	-	X	-	X	EC
H00304060001	Rip Rap	-	X	X	-	CB
H00304060004	Rip Rap	-	X	X	-	CB
H00304060018	Rip Rap	-	X	X	-	EC
H00306010002	Rock Check Dam	-	X	-	X	CB
H00306010005	Rock Check Dam	X	-	-	X	CB
H00306010006	Rock Check Dam	X	-	-	X	CB
H00306010012	Rock Check Dam	X	-	-	X	CB
H00306010016	Rock Check Dam	X	-	-	X	CB
H00306010019	Rock Check Dam	-	X	-	X	EC
H00306010020	Rock Check Dam	-	X	-	X	EC
H00306010021	Rock Check Dam	-	X	-	X	EC
H00306010022	Rock Check Dam	-	X	-	X	EC
H00306010023	Rock Check Dam	-	X	-	X	EC
H00306010024	Rock Check Dam	-	X	-	X	EC
H00306010025	Rock Check Dam	-	X	-	X	EC
H00306010026	Rock Check Dam	-	X	-	X	EC
H00306010027	Rock Check Dam	-	X	-	X	EC
H00306010028	Rock Check Dam	-	X	-	X	EC
H00306010029	Rock Check Dam	-	X	-	X	EC

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

146.3 Storm Water Monitoring

SWMUs 15-006(c) and 15-009(c) are monitored within 3M-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 9, 2014 (Figure 146-2). In Figure 146-2, 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 (4.35 µg/L) and gross-alpha activity (29.5 pCi/L) and are presented in Figure 146-2.

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(c):

- Copper is not known to be associated with industrial materials historically managed at the Site. Consent Order sampling has not been performed at the Site. Copper was not detected above preliminary remediation goals or identified as a contaminant of concern in the RFI performed at this Site in 1995 and 1996. Data from the RFI are screening level.
- Alpha-emitting radionuclides (uranium isotopes) are known to be associated with industrial materials historically managed at the Site. Consent Order sampling has not been performed at this Site. RFI samples were not analyzed for alpha-emitting radionuclides but were analyzed for uranium. Uranium was detected above preliminary remediation goals and identified as a contaminant of concern in the RFI. Data from the RFI are screening level. Uranium is excluded from the definition of adjusted gross-alpha radioactivity.

SWMU 15-009(c):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in any of the 39 shallow (i.e., less than 3 ft bgs) soil, sediment and tuff samples collected at the Site in 1998 and 2010.
- 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 146-2. 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 146-2.

Monitoring location 3M-SMA-0.5 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2014 is greater than this value.
- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2014 gross-alpha result is less than this value.

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

146.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG262.4 recorded two storm events at 3M-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 in the following table.

Table 146-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72851	3-20-2019
Storm Rain Event	BMP-75275	8-6-2019
Storm Rain Event	BMP-76786	9-11-2019

No maintenance activities or facility modifications affecting discharge were conducted at 3M-SMA-0.5 in 2019.

146.5 Compliance Status

The Sites associated with 3M-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 146-3 presents the 2019 compliance status.

Table 146-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-006(c)	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."
SWMU 15-009(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."

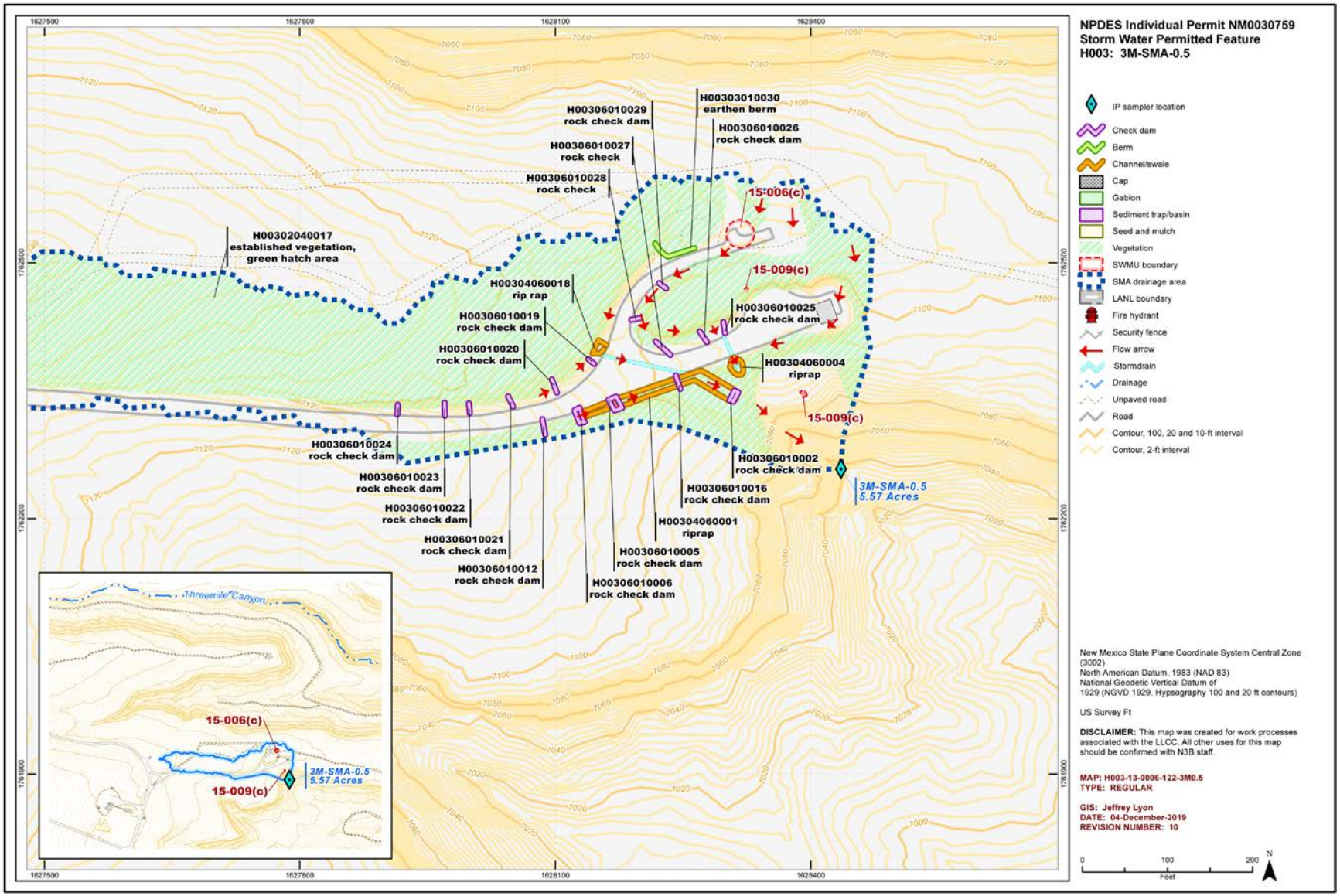


Figure 146-1 3M-SMA-0.5 location map

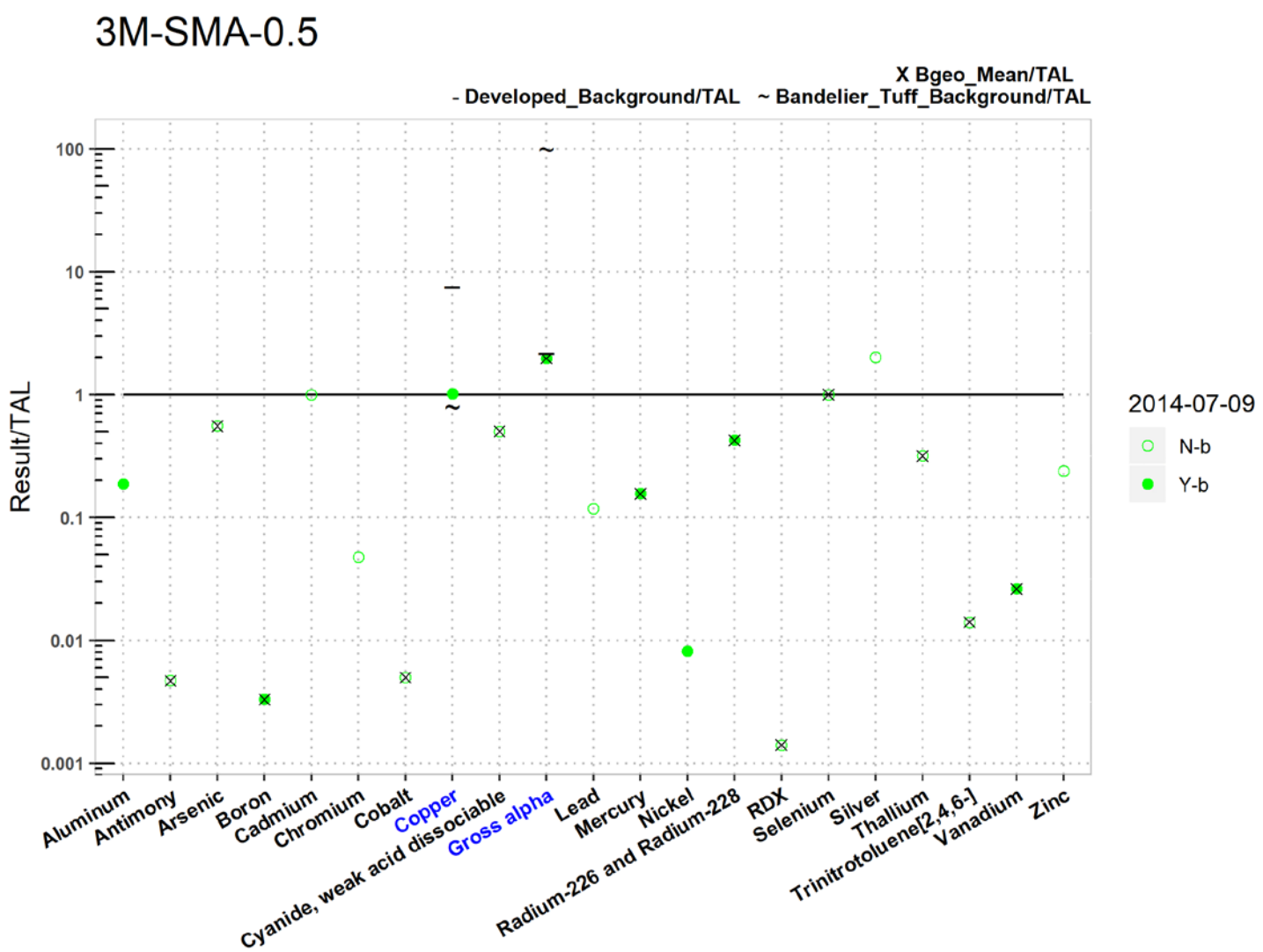


Figure 146-2 Analytical results summary for 3M-SMA-0.5

3M-SMA-0.5

	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	0.0033	NA	NA	0.005	NA	0.5	**2**	NA	0.16	NA	0.42	0.0014	1	NA	0.32	0.014	0.026	NA
2014-07-09 d	0.19	NA	NA	0.0033	NA	NA	NA	**1**	NA	**2**	NA	0.16	0.0082	0.42	NA	NA	NA	NA	NA	0.026	NA
2014-07-09 nd	NA	0.0047	0.56	NA	1	0.048	0.005	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 146-2 (continued) Analytical results summary for 3M-SMA-0.5

147.0 3M-SMA-0.6: SWMU 15-008(b)

147.1 Site Descriptions

One historical industrial activity area is associated with H004, 3M-SMA-0.6: Site 15-008(b).

SWMU 15-008(b) is a former surface disposal area at TA-15, located north of inactive firing site R-44 [SWMU 15-006(c)] and extending along the edge of the mesa and downslope into Threemile Canyon. The surface disposal area covers approximately 8.5 acres. Soil and debris from the firing site activities were disposed of at SWMU 15-008(b). Activities at the firing site began in 1951. R-44 was the third most extensively used firing site at TA-15 and was used extensively until 1978 and sporadically until 1992 when firing site activities ceased. An expedited cleanup was performed in July 2000 after the Cerro Grande fire, which included removing 20 yd3 of firing site debris from the SWMU and surrounding area and installing erosion-control features, such as straw wattles, rock check dams, and silt fencing to control run-on and runoff.

Soil samples were analyzed for TAL metals, explosive compounds, PCBs, and radionuclides from investigations in 1994 and 2010. Aluminum, antimony, arsenic, copper, lead, and uranium were detected above residential SSLs in 1 to 12 samples but well below industrial SSLs; lead concentrations exceed the industrial SSL at 3 locations. All detected organic chemicals are below residential SSLs. All detected radionuclides were below residential SALs, except uranium-238, which was detected above the residential SAL in 10 samples but below the industrial SAL.

Remediation and additional extent sampling were recommended in the “Threemile Canyon Aggregate Area Supplemental Investigation Report, Revision 1” submitted to NMED in 2018. Remediation activities were conducted in 2019 and approximately 1760 yd^3 of copper and lead contaminated soil was removed from the site. Results from this remediation will be presented in the Phase II Investigation Report for Threemile Canyon Aggregate Area.

The project map (Figure 147-1) 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.

147.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 147-1).

Table 147-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00402040029	Established Vegetation	-	X	X	-	B
H00403010030	Earthen Berm	-	X	-	X	B
H00403060006	Straw Wattle	X	-	-	X	CB
H00403060008	Straw Wattle	X	-	-	X	CB
H00403060011	Straw Wattle	-	X	-	X	CB
H00403060012	Straw Wattle	-	X	-	X	CB
H00403060015	Straw Wattle	X	-	-	X	CB
H00403060017	Straw Wattle	-	X	-	X	CB
H00403060019	Straw Wattle	-	X	-	X	CB
H00403060022	Straw Wattle	X	-	-	X	CB
H00403060027	Straw Wattle	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

147.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-0.6. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

147.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG245.5 recorded two storm events at 3M-SMA-0.6 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 147-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72986	3-20-2019
Storm Rain Event	BMP-75276	8-6-2019

No maintenance activities or facility modifications affecting discharge were conducted at 3M-SMA-0.6 in 2019.

147.5 Compliance Status

The Site associated with 3M-SMA-0.6 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 147-3 presents the 2019 compliance status.

Table 147-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 15-008(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

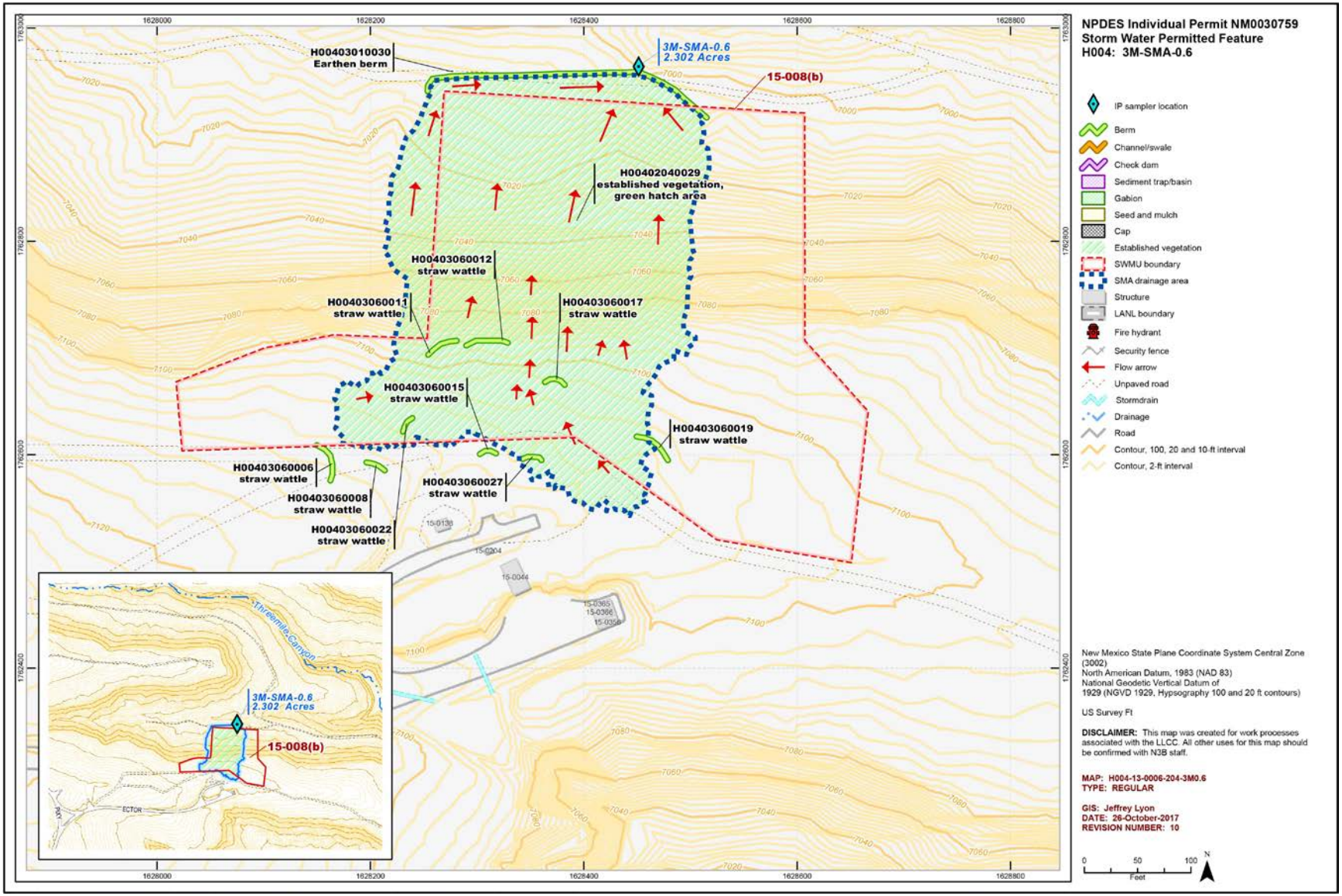


Figure 147-1 3M-SMA-0.6 location map

148.0 3M-SMA-2.6: SWMUs 36-008 and C-36-003

148.1 Site Descriptions

Two historical industrial activity areas are associated with H005, 3M-SMA-2.6: Sites 36-008 and C-36-003.

SWMU 36-008 is a surface disposal area located north of building 36-1 at TA-36. The disposal area is on the south rim of Threemile Canyon and extends down the steeply sloping edge of the mesa. The 1- to 2-acre disposal area was discovered in June 2000 after the Cerro Grande fire burned through the area. The dates the Site was used for disposal are not known. The materials strewn over the Site appeared to be associated with activities conducted in Building 36-1, which housed an office, laboratory, and x-ray developing operations. It is possible the disposal area may have been used as early as 1950, when building 36-1 became operational. Surface debris included laboratory glassware, metal cans, metal pipe, and miscellaneous metal fragments. As part of the emergency response actions associated with the fire, approximately 5 yd^3 of debris was collected from the Site, segregated, and staged for disposal, and storm water BMPs were installed to prevent erosion. The former SWMU C-36-003 outfall that received effluent from floor, sink, and equipment drains throughout building 36-1 is located within the southern boundary of SWMU 36-008.

Phase I sampling was conducted in 2009 and 2010. Two inorganic chemicals, copper and mercury, were detected above residential SSLs, and several PAHs were detected above residential and industrial SSLs. All other detected chemicals and radionuclides were below residential SSLs and SALs, respectively.

The Laboratory recommended corrective action complete without controls for this Site in the supplemental investigation report for Threemile Canyon Aggregate Area, submitted to NMED in 2016. The Site was recommended for a COC without controls in a letter sent to NMED in December 2018 (DOE 2018, 700158). NMED issued a COC without controls for SWMU 36-008 in August 2019.

SWMU C-36-003 is a former NPDES-permitted outfall (EPA06A106) and associated outlet drainline located north of building 36-1 on the south rim of Threemile Canyon at TA-36. The outfall became operational shortly after building 36-1 became operational in 1950 . The outfall served the sink and floor drains on the first floor of the building and the floor, sink, and equipment drains in the photo-processing unit on the second floor of the building. When operational, a steady stream of liquid was discharged to the outfall that flowed down the drainage for approximately 35 ft. In 1993, the floor and sink drains discharging to the outfall were rerouted to the TA-46 SWSC plant. In 1994, it was confirmed that the photo-processing unit was no longer plumbed to the outfall. The outfall was removed from the NPDES permit in 2001.

An RFI was conducted in 1994. Decision-level data were collected during a Phase I investigation in 2010: one PAH was detected above residential and industrial SSLs, and all other detected chemicals and radionuclides were below residential SSLs and SALs, respectively.

The Consent Order investigation is complete for SWMU C-36-003. It was recommended for a COC without controls in a letter sent to NMED in December 2018 (DOE 2018, 700158). NMED issued a COC without controls for SWMU C-36-003 in August 2019.

The project map (Figure 148-1) 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.

148.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 148-1).

Table 148-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00502040007	Established Vegetation	-	X	X	-	B
H00503120005	Rock Berm	X	-	-	X	CB
H00504040003	Culvert	X	-	-	-	CB
H00506010006	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

148.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-2.6. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

The monitoring station for 3M-SMA-2.6 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.

148.4 Inspections and Maintenance

RG-TA-49 recorded one winter storm event and RG245.5 recorded two storm events at 3M-SMA-2.6 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 148-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72987	3-21-2019
Storm Rain Event	BMP-75277	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at 3M-SMA-2.6 in 2019.

148.5 Compliance Status

The Sites associated with 3M-SMA-2.6 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2019. Table 148-3 presents the 2019 compliance status.

Table 148-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 36-008	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.
SWMU C-36-003	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

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

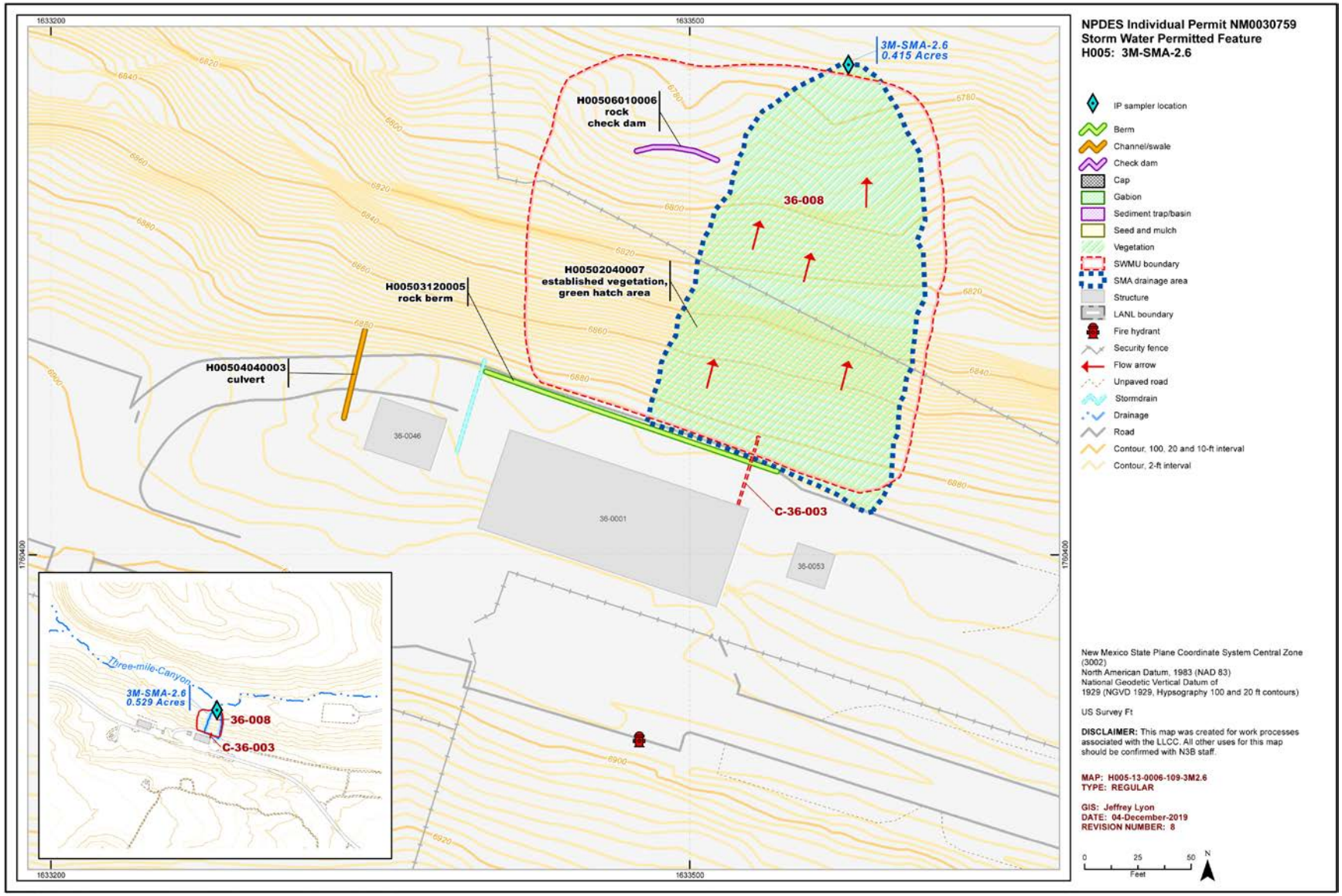


Figure 148-1 3M-SMA-2.6 location map

149.0 3M-SMA-4: SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f)

149.1 Site Descriptions

Three historical industrial activity areas are associated with H006, 3M-SMA-4: Sites 18-002(b), 18-003(c), and 18-010(f).

SWMU 18-002(b) is the former location of a firing points at TA-18 in Threemile Canyon near the former location of former building 18-32. The firing site was used from 1944 to 1945. The Site consisted of a 2-ft-long × 2-ft-wide × 2-ft-deep firing chamber (former structure 18-4) constructed from 1-in.-thick steel and an aboveground armored bunker (structure 18-5), commonly called a "battleship," used to protect shot instrumentation. The top of the firing chamber was open and set flush with the ground west of structure 18-5. A ground-level wooden structure (former structure 18-6), located east of structure 18-5, was the battery building for the firing site cable conduit system and contained racks of lead-acid batteries. Structure 18-4 was removed in 1945, structure 18-6 was dismantled in 1951, and structure 18-5 underwent D&D in 2011 and 2012. Three additional former firing points that were located upcanyon and west of the first former firing point are associated with SWMU 18-002(b). Firing Point C (beneath former building 18-32) and Firing Point G (located at the southeast corner of the former storage building 18-122) were used in firing operations involving smaller charges, while the third firing point, Medium Firing Point, was built to handle HE charges of up to 2 tons. A flat, graded area west of former building 18-32 marks the location of this former firing point. The firing points were removed in the late 1940s, before the construction of former building 18-32.

SWMU 18-002(b) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet been started. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for SWMU 18-002(b).

3M-SMA-4, Gabion, H00607010012 (photo ID 50801-10)

SWMU 18-003(c) is an inactive septic system at TA-18 that received sanitary waste from former building 18-32 (a former critical assembly building) from 1952 to 1995. The system includes an inlet line, a reinforced concrete septic tank (structure 18-42), a discharge line, a drain field, and an outfall. The septic tank is located approximately 15 ft east of former building 18-128 and approximately 90 ft northeast of former building 18-32. The tank had a capacity of 650 gal. The inlet line leading to the tank is approximately 130 ft in length, and the total length of the outlet line is approximately 115 ft. The drain field begins approximately 60 ft east of the septic tank and extends east 55 ft. The drain field consists of four drainlines spaced approximately 10 ft apart. Each drainline is approximately 75 ft long. An outfall, located at the distal end of the drain field, discharged into the stream channel in Threemile Canyon. During the 1996 IA conducted at the Site, the contents of the septic tank were removed and disposed of off-site and the tank was pressure-washed. In addition, the floor drains in former building 18-32 were sealed by fastening a gasket and metal plate over the drain opening; water service to the building was shut off. During the 2000 VCM conducted at the Site, samples were collected

from the tank interior and from subsurface soils around and beneath the tank; the tank was filled with pea gravel and closed in place. Buildings 18-32 and 18-128 underwent D&D in 2011 and 2012.

SWMU 18-003(c) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet been started. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010.

AOC 18-010(f) is a former outfall at TA-18 that received discharges from the roof and floor drains associated with former building 18-32. Roof and floor drains associated with former building 18-32 discharged to a drainline that was located at the northeast corner of the building. The drainline ran under the pavement and discharged to an outfall located approximately 100 ft north of former building 18-32, on the south side of the stream channel in Threemile Canyon. Building 18-32 was built in 1951 and used for nuclear critical assembly work. The date this outfall became operational is not known, but it is likely that the outfall has operated from the time building 18-32 was constructed in 1951. Building 18-32 was decommissioned in 2008 and underwent D&D in 2011 and 2012; the storm drainline was cut and capped at the foundation of former building 18-32 during D&D activities.

AOC 18-010(f) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for AOC 18-010(f).

The project map (Figure 149-1) 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.

149.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 149-1).

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 149-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00602040010	Established Vegetation	-	X	X	-	B
H00604020009	Concrete/Asphalt Channel/Swale	X	-	X	-	CB
H00604060005	Rip Rap	X	-	X	-	CB
H00604060013	Rip Rap	-	X	X	-	EC
H00604060015	Rip Rap	-	X	X	-	EC
H00606010011	Rock Check Dam	-	X	-	X	EC
H00607010002	Gabions	X	-	-	X	CB
H00607010012	Gabion	-	X	-	X	EC
H00607010014	Gabion	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

149.3 Storm Water Monitoring

SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f) are monitored within 3M-SMA-4. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2014 (Figure 149-2). Analytical results from this sample yielded TAL exceedances for copper (4.72 µg/L) and gross-alpha activity (259 pCi/L) and are presented in Figure 149-2.

Following certification of enhanced control installation, a confirmation monitoring storm water sample was collected on July 26, 2017 (Figure 149-2). Analytical results from this sample yielded a TAL exceedance for copper (8.11 µg/L) and are presented in Figure 149-2.

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 18-002(b):

- Copper is likely associated with industrial materials historically managed at the Site. No investigation data are available for SWMU 18-002(b).

SWMU 18-003(c):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above the BV in the single shallow (i.e., less than 3 ft bgs) 1997 VCM soil sample.

AOC 18-010(f):

- Copper is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 18-010(f).

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 149-2. 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 149-2.

Monitoring location 3M-SMA-4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles.

- 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 2017 are between these two values.

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

149.4 Inspections and Maintenance

RG245.5 recorded two storm events at 3M-SMA-4 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 149-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75278	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at 3M-SMA-4 in 2019.

149.5 Compliance Status

The Sites associated with 3M-SMA-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 149-3 presents the 2019 compliance status.

Table 149-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 18-002(b)	Corrective Action Initiated	Alterative Compliance Requested	N3B, April 22, 2019, "NPDES Permit No. NM0030759 – Alternative Compliance Requests for Seven Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 18-003(c)	Corrective Action Initiated	Alterative Compliance Requested	N3B, April 22, 2019, "NPDES Permit No. NM0030759 – Alternative Compliance Requests for Seven Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
AOC 18-010(f)	Corrective Action Initiated	Alterative Compliance Requested	N3B, April 22, 2019, "NPDES Permit No. NM0030759 – Alternative Compliance Requests for Seven Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."

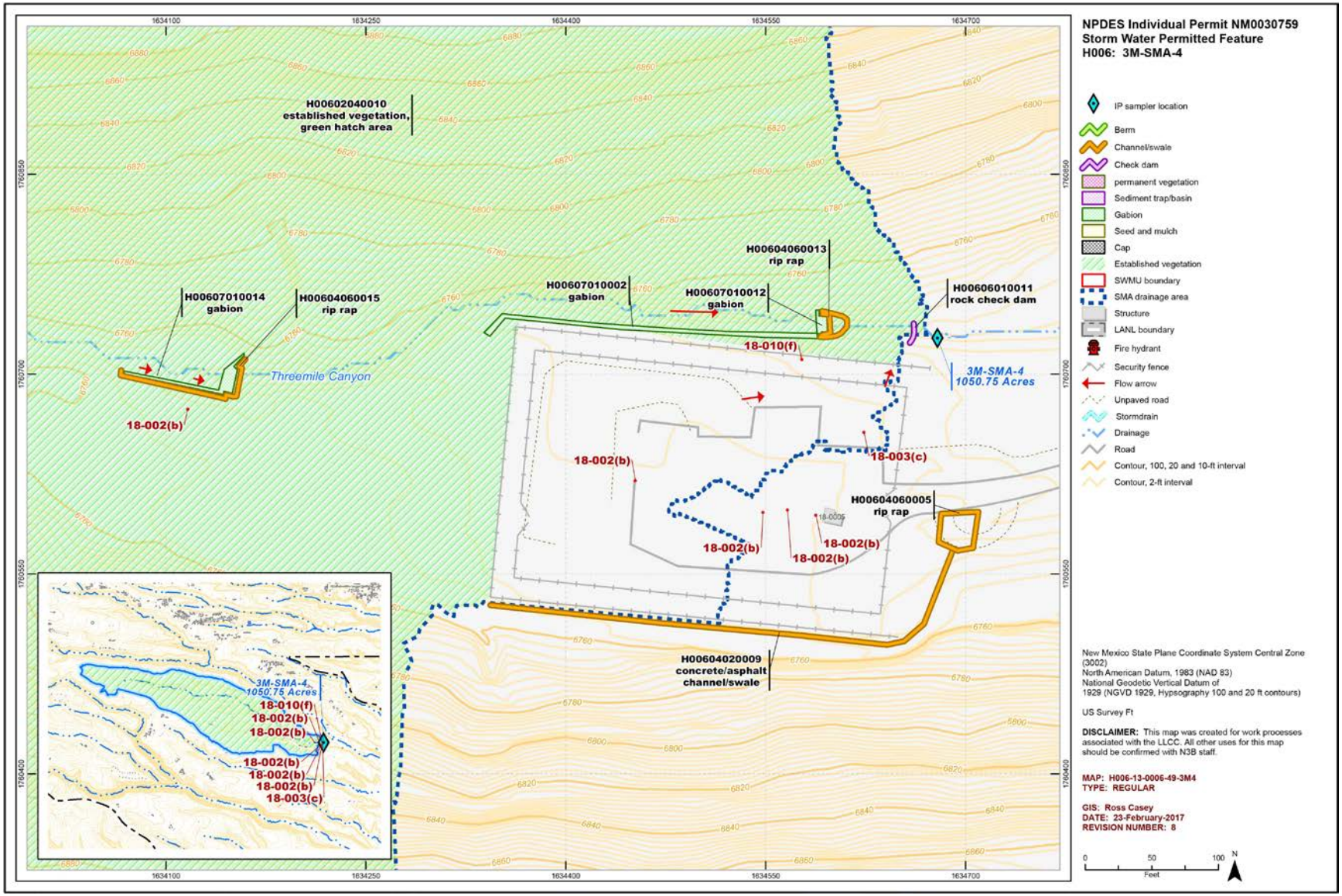


Figure 149-1 3M-SMA-4 location map

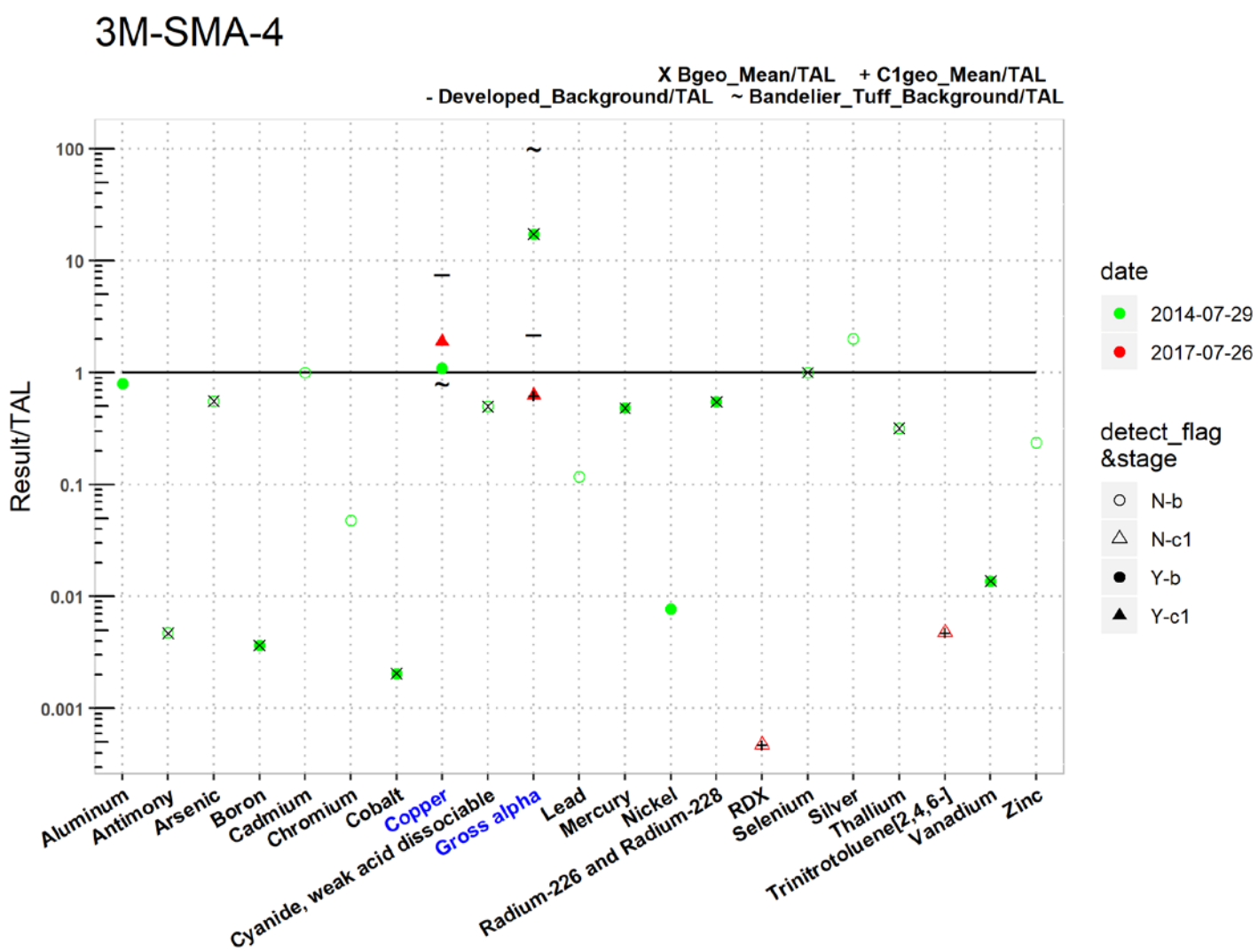


Figure 149-2 Analytical results summary for 3M-SMA-4

3M-SMA-4

	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	0.0037	NA	NA	0.002	NA	0.5	**17**	NA	0.48	NA	0.55	NA	1	NA	0.32	NA	0.014	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.63	NA	NA	NA	NA	0.00048	NA	NA	NA	0.0048	NA	NA
2014-07-29 d	0.79	NA	NA	0.0037	NA	NA	0.002	**1.1**	NA	**17**	NA	0.48	0.0077	0.55	NA	NA	NA	NA	NA	0.014	NA
2014-07-29 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	0.12	NA	NA	NA	NA	1	2	0.32	NA	NA	0.24
2017-07-26 d	NA	NA	NA	NA	NA	NA	NA	**1.9**	NA	0.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2017-07-26 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00048	NA	NA	NA	0.0048	NA	NA

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

Figure 149-2 (continued) Analytical results summary for 3M-SMA-4

150.0 PJ-SMA-1.05: SWMU 09-013

150.1 Site Descriptions

One historical industrial activity area is associated with J001, PJ-SMA-1.05: Site 09-013.

SWMU 09-013 is MDA M, which consists of two surface disposal areas at TA-09, a main area and a smaller satellite area. The main area occupies about 3.2 acres and is located approximately 1600 ft southwest of building 22-120. The 150-ft-wide × 260-ft-long satellite area is located approximately 750 ft northwest of the main area. MDA M was created during the demolition of the Old Anchor Ranch East and West sites. Structures were flash burned to remove any HE residue and deposited over the MDA surface. Debris from the construction of current TA-08 and TA-09 facilities (1949–1965) and other sites (1960–1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers. The main disposal area was surrounded by an earthen berm that was eroded through by surface-water runoff. MDA M has been inactive since 1965. All debris and contaminated soil were removed from MDA M during an expedited cleanup conducted in 1995 to 1996.

PJ-SMA-1.05, Earthen Berm, J00103010020 (photo ID 49619-1)

A Consent Order investigation has not been performed at SWMU 09-013, and no decision-level soil sampling data are available for this Site. Sampling was performed at the Site during a 1994 RFI and the 1995 and 1996 expedited cleanup. SWMU 09-013 will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 150-1) 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.

150.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 150-1).

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 150-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00102040019	Established Vegetation	-	X	X	-	B
J00103010018	Earthen Berm	-	X	-	X	B
J00103010020	Earthen Berm	-	X	-	X	EC
J00103010021	Earthen Berm	-	X	-	X	EC
J00103010022	Earthen Berm	-	X	-	X	EC
J00104050008	Water Bar	-	X	X	-	CB
J00104050012	Water Bar	X	-	X	-	B
J00104050013	Water Bar	X	-	X	-	B
J00104050014	Water Bar	X	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

150.3 Storm Water Monitoring

SWMU 09-013 is monitored within PJ-SMA-1.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 150-2). In Figure 150-2, 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 PCB concentration (9 ng/L) and are presented in Figure 150-2.

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 09-013:

- Based on descriptions of the wastes present at MDA M, PCBs are known to have been associated with industrial materials historically managed at this Site. PCBs were detected in RFI samples with Aroclor-1254 being detected above the 1 mg/kg SAL in 2 samples, both collected within the main (i.e., southern) area. The maximum concentration of Aroclor-1254 is 2.3 times the residential SSL. The PCB hotspots identified during the RFI were removed during the expedited cleanup, and confirmation samples were collected from grids. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow (i.e., 0 to 3 ft bgs) expedited cleanup confirmation samples. Aroclor-1248 was detected in 5 of 11 shallow samples collected within the main area and was not detected in 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1254 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1260 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 1% of the residential SSL. The RFI and expedited cleanup data are screening-level data.

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 150-2. 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 150-2.

Monitoring location PJ-SMA-1.05 receives storm water run-on from sediment derived from Bandelier Tuff.

- PCBs—The PCB UTL from background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2013 is below this value.

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

150.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG240 recorded seven storm events at PJ-SMA-1.05 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 150-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72895	3-20-2019
Storm Rain Event	BMP-74619	7-11-2019
Storm Rain Event	BMP-74810	7-17-2019
Storm Rain Event	BMP-75373	7-30-2019
Storm Rain Event	BMP-76388	8-26-2019
Storm Rain Event	BMP-76663	9-10-2019
Storm Rain Event	BMP-77245	10-9-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-1.05 in 2019.

150.5 Compliance Status

The Sites associated with PJ-SMA-1.05 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 150-3 presents the 2019 compliance status.

Table 150-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 09-013	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)."

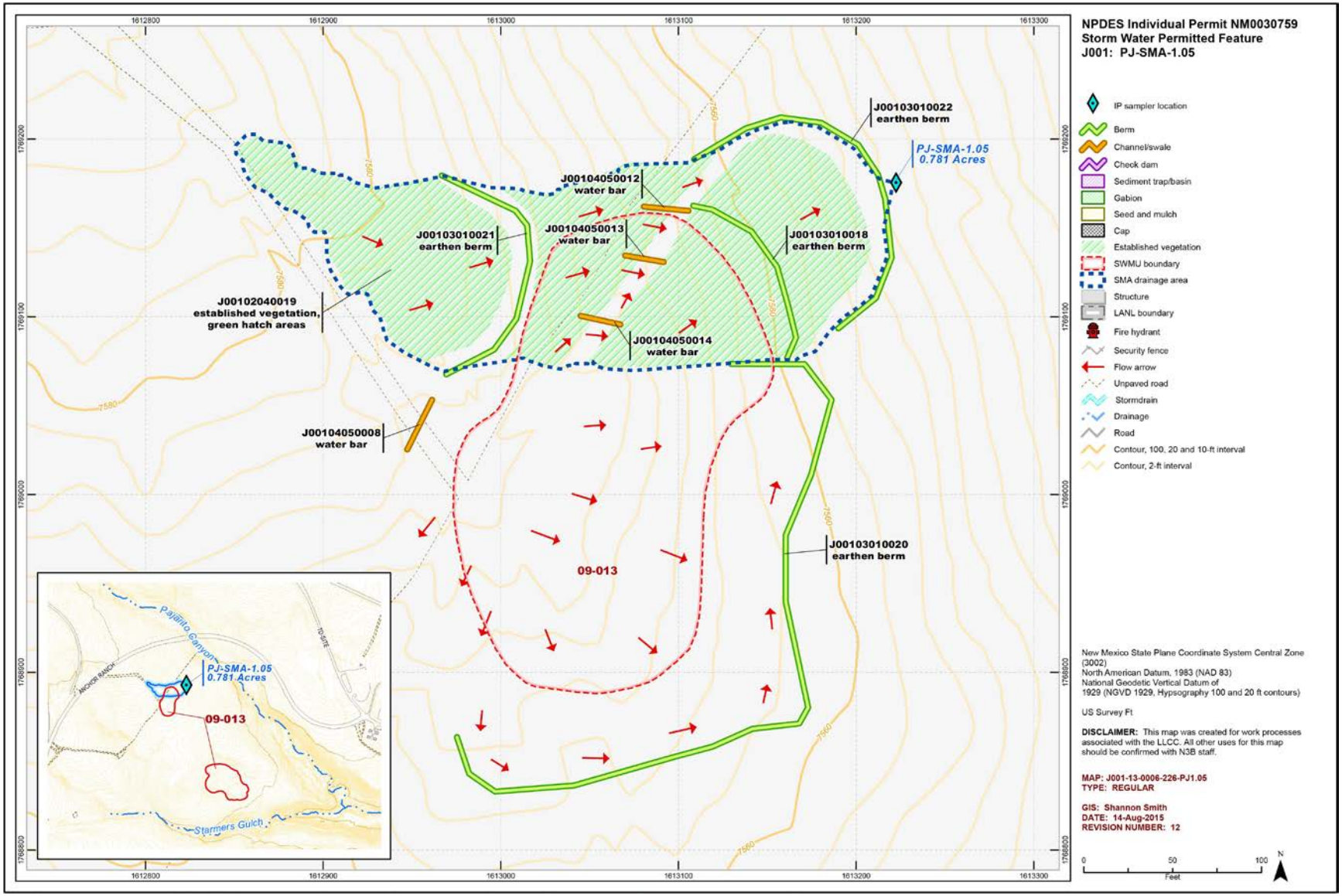


Figure 150-1 PJ-SMA-1.05 location map

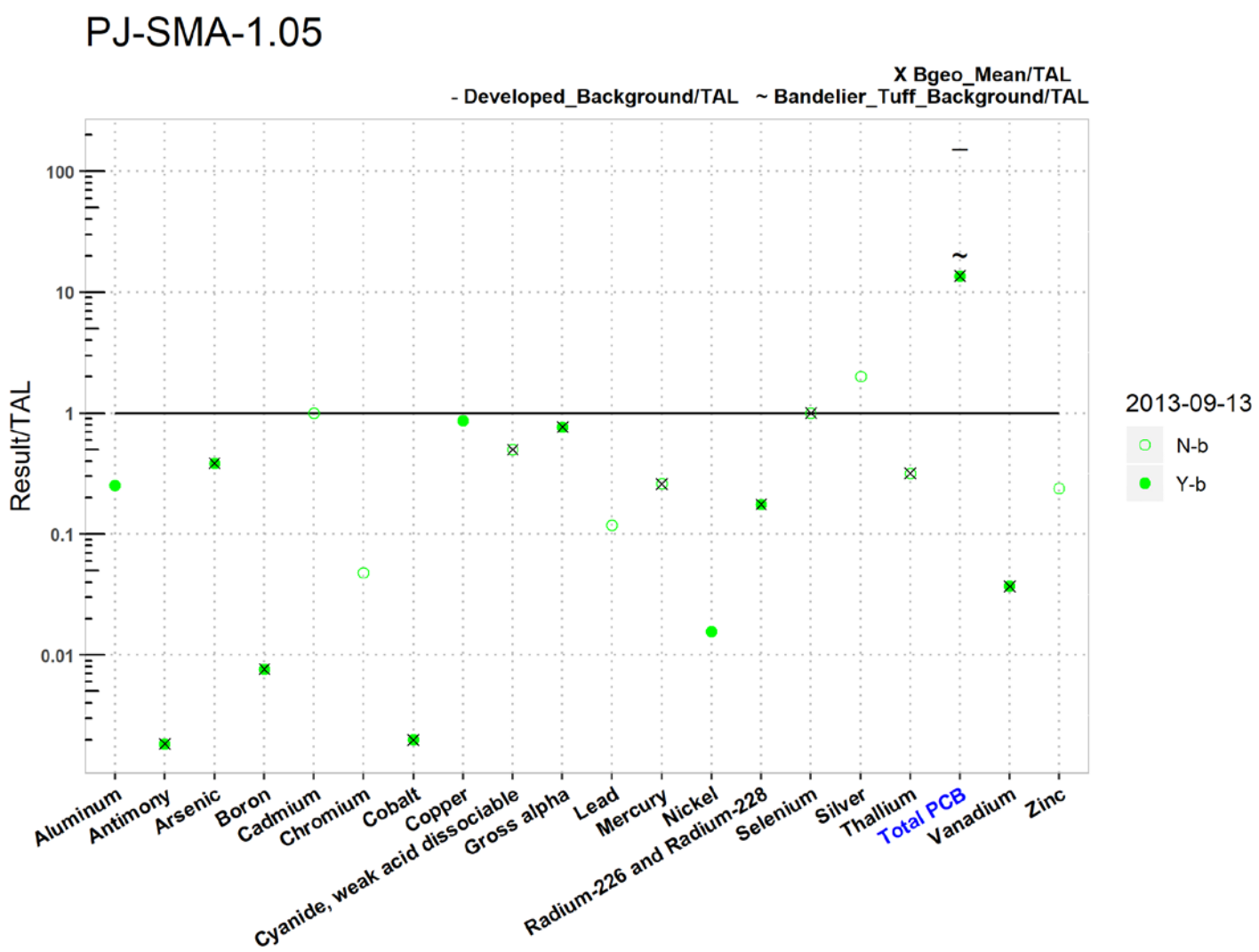


Figure 150-2 Analytical results summary for PJ-SMA-1.05

PJ-SMA-1.05

	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	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	0.0018	0.39	0.0076	NA	NA	0.002	NA	0.5	0.77	NA	0.26	NA	0.18	1	NA	0.32	**14**	0.037	NA
2013-09-13 d	0.25	0.0018	0.39	0.0076	NA	NA	0.002	0.86	NA	0.77	NA	NA	0.016	0.18	NA	NA	NA	**14**	0.037	NA
2013-09-13 nd	NA	NA	NA	NA	1	0.048	NA	NA	0.5	NA	0.12	0.26	NA	NA	1	2	0.32	NA	NA	0.24

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

Figure 150-2 (continued) Analytical results summary for PJ-SMA-1.05

151.0 PJ-SMA-2: SWMU 09-009

151.1 Site Descriptions

One historical industrial activity area is associated with J002, PJ-SMA-2: Site 09-009.

SWMU 09-009 consists of a decommissioned surface impoundment (structure 09-218) and two associated decommissioned sand filters at TA-09. The surface impoundment is located approximately 120 ft northeast of building 09-40, and the associated sand filters are approximately 120 ft northeast of the surface impoundment. The surface impoundment is 32 ft wide × 60 ft long × 7 ft deep; the sides are constructed of concrete and the bottom of bentonite. The two sand filters, which cover a total area of 33 ft wide × 60 ft long and approximately 4 ft deep, have a flexible membrane liner (butyl rubber) and are surrounded by a concrete curb. The surface impoundment was constructed in 1961 to treat sanitary waste from buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38 and discharged to an outfall approximately 300 ft to the northwest. After the sand filters were installed in 1974, the surface impoundment discharged effluent to the sand filters. After flowing through the sand filters, effluent discharged to a former NPDES-permitted outfall (55502S). In 1986, the sewer lines from TA-08 were connected to the surface impoundment, including the sewer line from building 08-24, where a strontium-90 spill occurred in 1954. The surface impoundment and sand filter system were decommissioned when the SWSC came online in 1992. All active buildings previously connected to the impoundment continue to discharge sanitary wastewater to the SWSC.

SWMU 09-009 is included in the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Starmer/Upper Pajarito Canyon Aggregate Area was approved in March 2011. Decision-level data are not available for SWMU 09-009.

The project map (Figure 151-1) 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.

151.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 151-1).

Table 151-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00202040022	Established Vegetation	-	X	X	-	B
J00203010006	Earthen Berm	X	-	-	X	CB
J00203010007	Earthen Berm	X	-	-	X	CB
J00203010008	Earthen Berm	X	-	-	X	CB
J00203010009	Earthen Berm	X	-	-	X	CB
J00203010015	Earthen Berm	X	-	-	X	B
J00204050026	Water Bar	X	-	X	-	B
J00206010014	Rock Check Dam	-	X	-	X	CB
J00206010019	Rock Check Dam	X	-	-	X	B
J00206010020	Rock Check Dam	X	-	-	X	B
J00206010021	Rock Check Dam	X	-	-	X	B
J00206010024	Rock Check Dam	X	-	-	X	B
J00206010025	Rock Check Dam	X	-	-	X	B
J00206010027	Rock Check Dam	X	-	-	X	B
J00206010028	Rock Check Dam	X	-	-	X	B
J00208030029	Concrete/Asphalt Cap	-	X	-	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

151.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-2. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

151.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG253 recorded eight storm events at PJ-SMA-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 151-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72954	3-21-2019
Storm Rain Event	BMP-74248	6-28-2019
Storm Rain Event	BMP-74661	7-9-2019
Storm Rain Event	BMP-74929	7-17-2019
Storm Rain Event	BMP-75460	7-30-2019
Storm Rain Event	BMP-76408	8-29-2019
Storm Rain Event	BMP-76704	9-10-2019
Storm Rain Event	BMP-77288	10-9-2019

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

Table 151-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-74583	Built up areas of Earthen Berm J00203010006 that were damaged by vehicles.	8-29-2019	62 days	Maintenance delayed because of reprioritization for sample and BMP inspection for multiple rain events occurring during the 2019 season.

151.5 Compliance Status

The Site associated with PJ-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 151-4 presents the 2019 compliance status.

Table 151-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 09-009	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

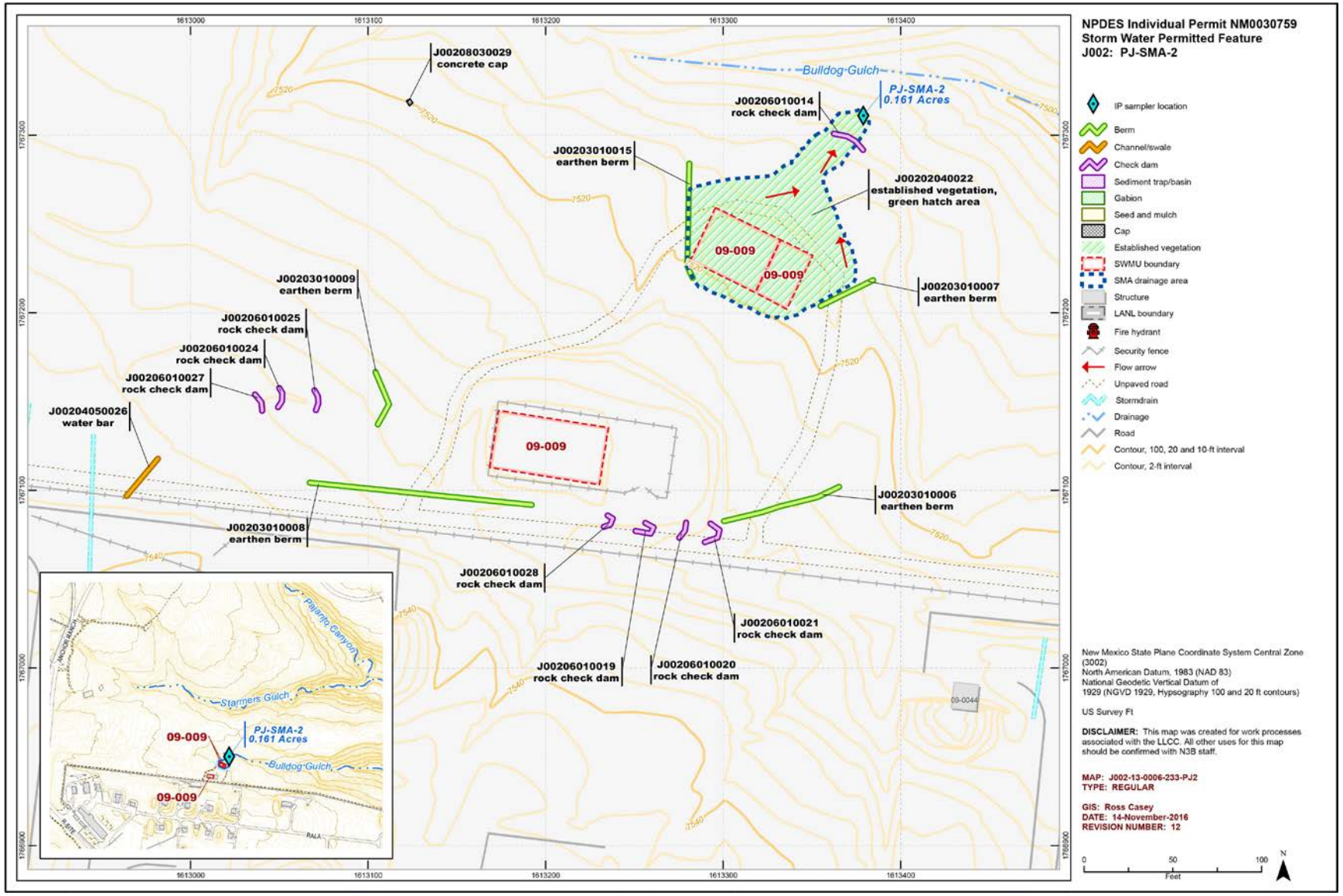


Figure 151-1 PJ-SMA-2 location map

152.0 PJ-SMA-3.05: SWMU 09-004(o)

152.1 Site Descriptions

One historical industrial activity area is associated with J003, PJ-SMA-3.05: Site 09-004(o).

SWMU 09-004(o) is an active sump (structure 09-198) that receives industrial waste from an HE machining building (09-48) at TA-09. The sump, installed between 1950 and 1952, is made of aluminum-lined reinforced concrete, and receives industrial waste from building 09-48. Activities in the building involve HE machining. The belowgrade sump collects settled HE particles that are not filtered out by the building's waste system. Originally, effluent from the sump was discharged to an NPDES-permitted outfall (EPA 05A068). The sump outlet was plugged and the outfall was removed from the Permit in the 1990s. The sump is now periodically cleaned by pumping to a specially equipped truck, which transports the wastewater to a treatment facility. The sump is equipped with an overfill alarm and is regularly inspected.

Consent Order investigations have not been performed at SWMU 09-004(o). Decision-level data are available from an RFI performed in 1999. RFI samples, however, were analyzed only for HE. SWMU 09-004(o) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 152-1) 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.

152.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 152-1).

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 152-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00302040012	Established Vegetation	-	X	X	-	B
J00303010010	Earthen Berm	X	-	-	X	EC
J00303010011	Earthen Berm	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

152.3 Storm Water Monitoring

SWMU 09-004(o) is monitored within PJ-SMA-3.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figure 152-2). Analytical results from this sample yielded TAL exceedances for cyanide (0.02 mg/L) and gross-alpha activity (65.9 pCi/L) and are presented in Figure 152-2.

Following the installation of enhanced control measures at PJ-SMA-3.05, a corrective action storm water sample was collected on September 3, 2018 (Figure 152-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (40.8 pCi/L) and are presented in Figure 152-2.

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 09-004(o):

- 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.

PJ-SMA-3.05 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared with gross-alpha ATAL. 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 sediment derived from Bandelier Tuff is 1490 pCi/L; the results from 2011 and 2018 are less than this value.

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

152.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at PJ-SMA-3.05 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 152-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72900	3-21-2019
Storm Rain Event	BMP-74624	7-9-2019
Storm Rain Event	BMP-74886	7-17-2019
Storm Rain Event	BMP-75391	7-30-2019
Storm Rain Event	BMP-76665	9-10-2019
Storm Rain Event	BMP-77247	10-9-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-3.05 in 2019.

152.5 Compliance Status

The Site associated with PJ-SMA-3.05 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2019. Table 152-3 presents the 2019 compliance status.

Table 152-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 09-004(o)	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."

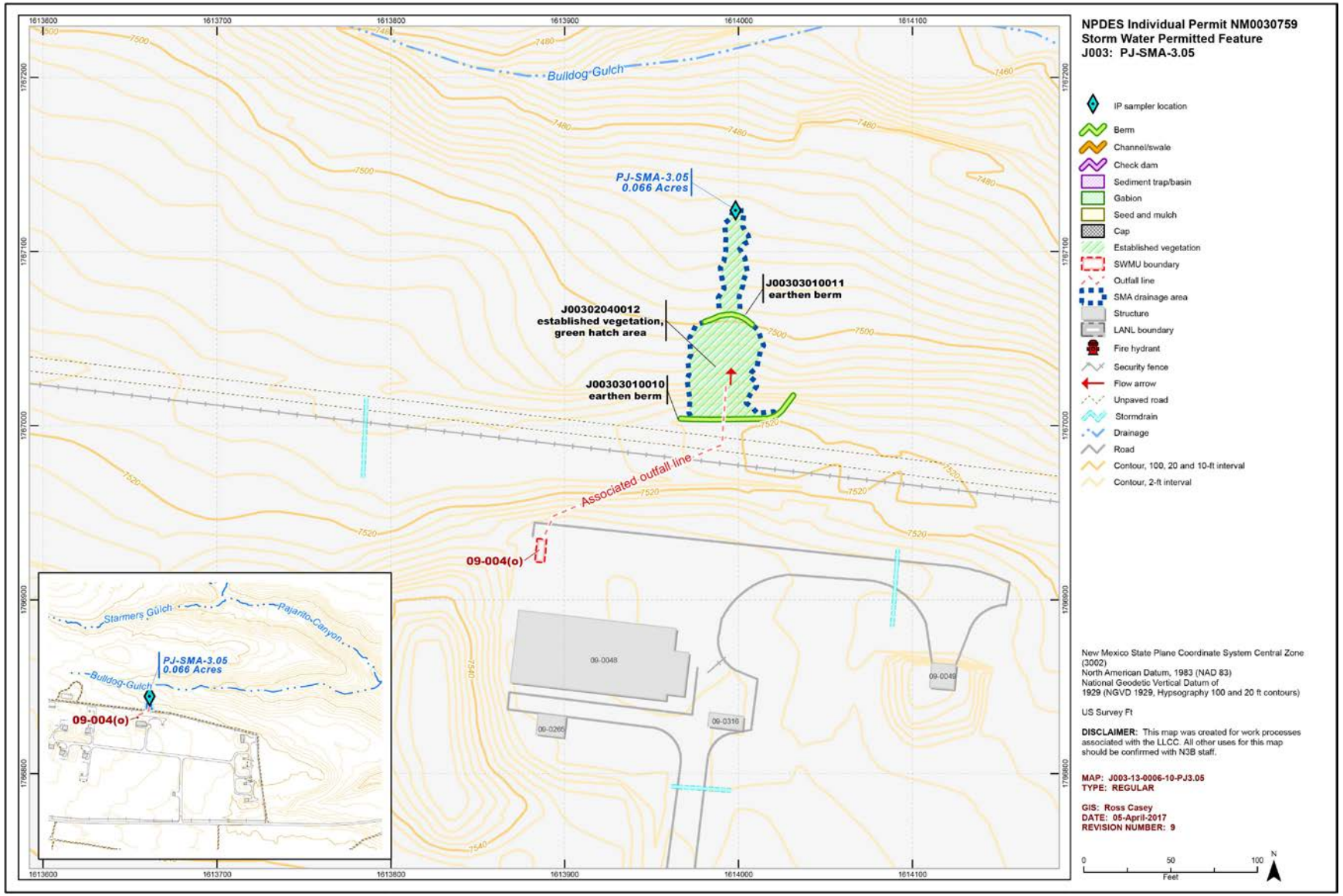


Figure 152-1 PJ-SMA-3.05 location map

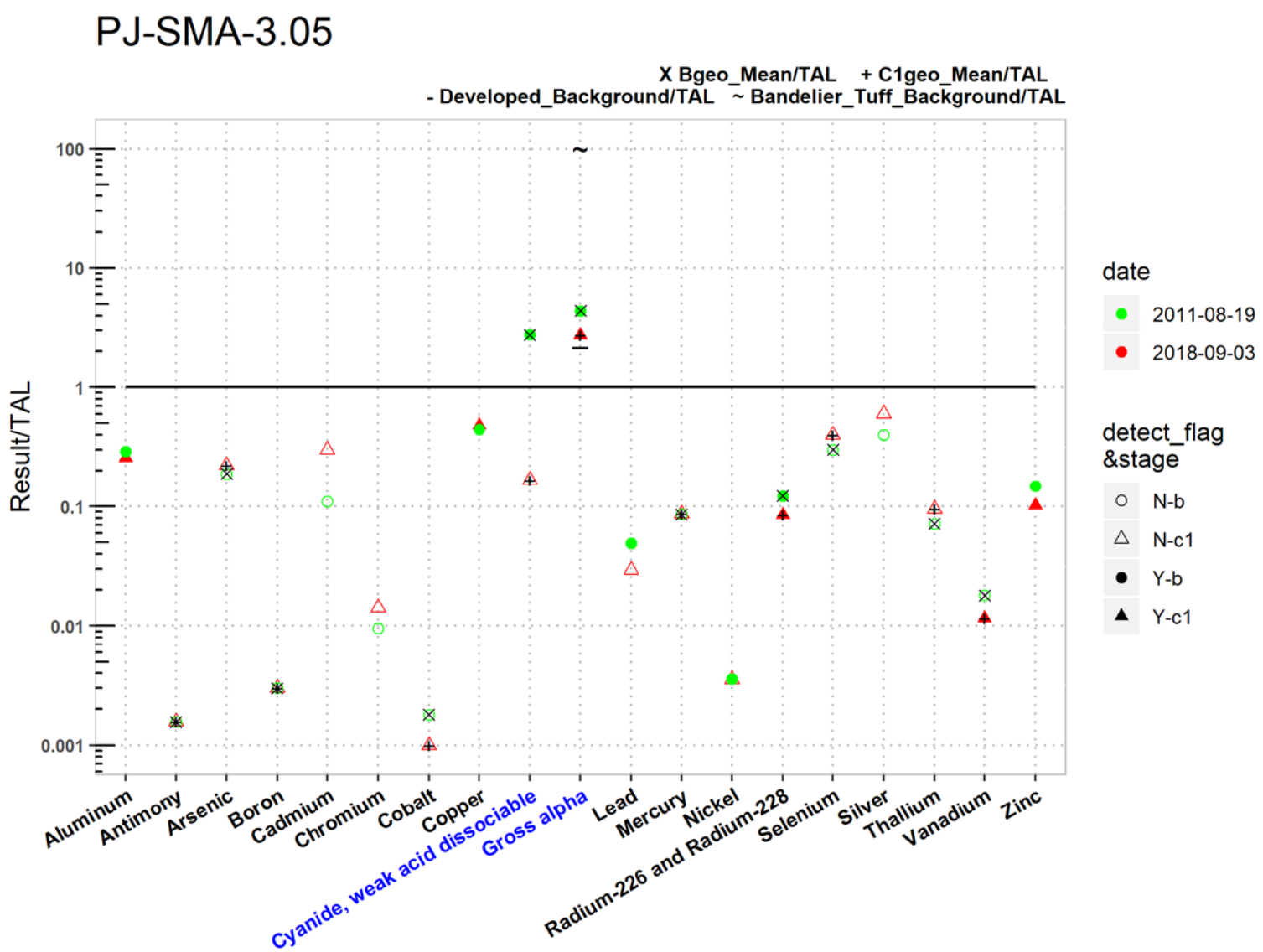


Figure 152-2 Analytical results summary for PJ-SMA-3.05

PJ-SMA-3.05

	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	0.003	NA	NA	0.0018	NA	**2.7**	**4.4**	NA	0.086	NA	0.12	0.3	NA	0.071	0.018	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.003	NA	NA	0.001	NA	0.17	**2.7**	NA	0.087	NA	0.085	0.4	NA	0.095	0.012	NA
2011-08-19 d	0.29	NA	NA	NA	NA	NA	NA	0.44	**2.7**	**4.4**	0.049	NA	0.0036	0.12	NA	NA	NA	NA	0.15
2011-08-19 nd	NA	0.0016	0.19	0.003	0.11	0.0095	0.0018	NA	NA	NA	NA	0.086	NA	NA	0.3	0.4	0.071	0.018	NA
2018-09-03 d	0.26	NA	NA	NA	NA	NA	NA	0.48	NA	**2.7**	NA	NA	NA	0.085	NA	NA	NA	0.012	0.1
2018-09-03 nd	NA	0.0016	0.22	0.003	0.3	0.014	0.001	NA	0.17	NA	0.029	0.087	0.0035	NA	0.4	0.6	0.095	NA	NA

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

Figure 152-2 (continued) Analytical results summary for PJ-SMA-3.05

153.0 PJ-SMA-4.05: SWMUs 09-004(g) and 09-005(g)

153.1 Site Descriptions

Two historical industrial activity areas are associated with J004, PJ-SMA-4.05: Sites 09-004(g) and 09-005(g).

SWMU 09-004(g) is the decommissioned sump (structure 09-190) located at TA-09 on the east side of building 09-50 (a shipping and receiving building). The original IP Site narrative described the SWMU as a settling tank, but the structure is a sump. The sump, installed between 1950 and 1952, is made of reinforced concrete and previously received industrial waste from building 09-50. Activities in the building involved shipping, receiving, short-term storage of HE, and small-scale laser experiments. Since 1993, building 09-50 has been used for storage only. The sump collected settling HE particles that were not filtered out by the building's waste system and discharged effluent to a former NPDES-permitted outfall (EPA 04A155), which is part of SWMU 09-005(g), a septic system that formerly received sanitary wastewater from building 09-50. Periodically, the sump was inspected, debris was removed using specially equipped trucks, and the sump was cleaned. In October 2006, the sump was removed.

SWMU 09-005(g) is a septic system at TA-09 consisting of a septic tank (structure 09-109), drain field, and formerly NPDES-permitted outfall (EPA 04A155) located at TA-09 approximately 100 ft southeast of building 09-50 (a shipping and receiving building). The Permittees are evaluating and reporting on Site 09-005(g) because it is the outfall that discharged from the Site 09-004(g) septic tank. The Site 09-005(g) septic tank is below ground and is not exposed to storm water. The information and evaluation of Site 09-00(g) provided below and in other sections of this SDPPP update are for informational purposed only. The Permittees recommended the addition of Site 09-005(g) to the Permit during renewal.
Building 09-50 is an active facility. Installed between 1950 and 1952, the tank is approximately 5 ft wide × 8 ft long × 4 ft deep, with a capacity of 750-gal. The tank receives sanitary waste from building 09-50 and originally discharged into the same industrial waste line as the SWMU 09-004(g) sump. In 1989, the septic tank 09-109 was rerouted to bypass the industrial waste line and discharge to an absorption trench (i.e., drain field). The precise location of the drain field is not known. The outfall has been removed from the NPDES permit. There is no documentation to show that the inlet drainline from the building to the septic tank has been either plugged or disconnected, although the outlet drainline was plugged in 1989. The septic tank is currently listed as abandoned in the Laboratory's Archibus facility information database, indicating it is not in use.

No Consent Order investigation, RFI, or other investigations have been conducted at SWMUs 09-004(g) or 09-005(g). SWMUs 09-004(g) and 09-005(g) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 153-1) 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.

153.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 153-1).

Table 153-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00402040008	Established Vegetation	-	X	X	-	B
J00403010007	Earthen Berm	X	-	-	X	B
J00406010006	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

153.3 Storm Water Monitoring

SWMU 09-004(g) and SWMU 09-005(g) are monitored within PJ-SMA-4.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 153-2). In Figure 153-2, 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 (47.2 pCi/L) and are presented in Figure 153-2.

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 09-004(g):

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site.

SWMU 09-005(g):

- 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 153-2. 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 153-2.

Monitoring location PJ-SMA-4.05 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013 gross-alpha result is below this value.

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

153.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG257 recorded five storm events at PJ-SMA-4.05 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 153-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72899	3-21-2019
Storm Rain Event	BMP-74623	7-15-2019
Storm Rain Event	BMP-74885	7-16-2019
Storm Rain Event	BMP-75390	7-30-2019
Storm Rain Event	BMP-76664	9-6-2019
Storm Rain Event	BMP-77246	10-16-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-4.05 in 2019.

153.5 Compliance Status

The Site associated with PJ-SMA-4.05 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 153-3 presents the 2019 compliance status.

Table 153-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 09-004(g)	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 09-005(g)*	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."

* This Site is not yet officially regulated by the IP. However, the Site is being treated as regulated as explained in the Site Description section above.

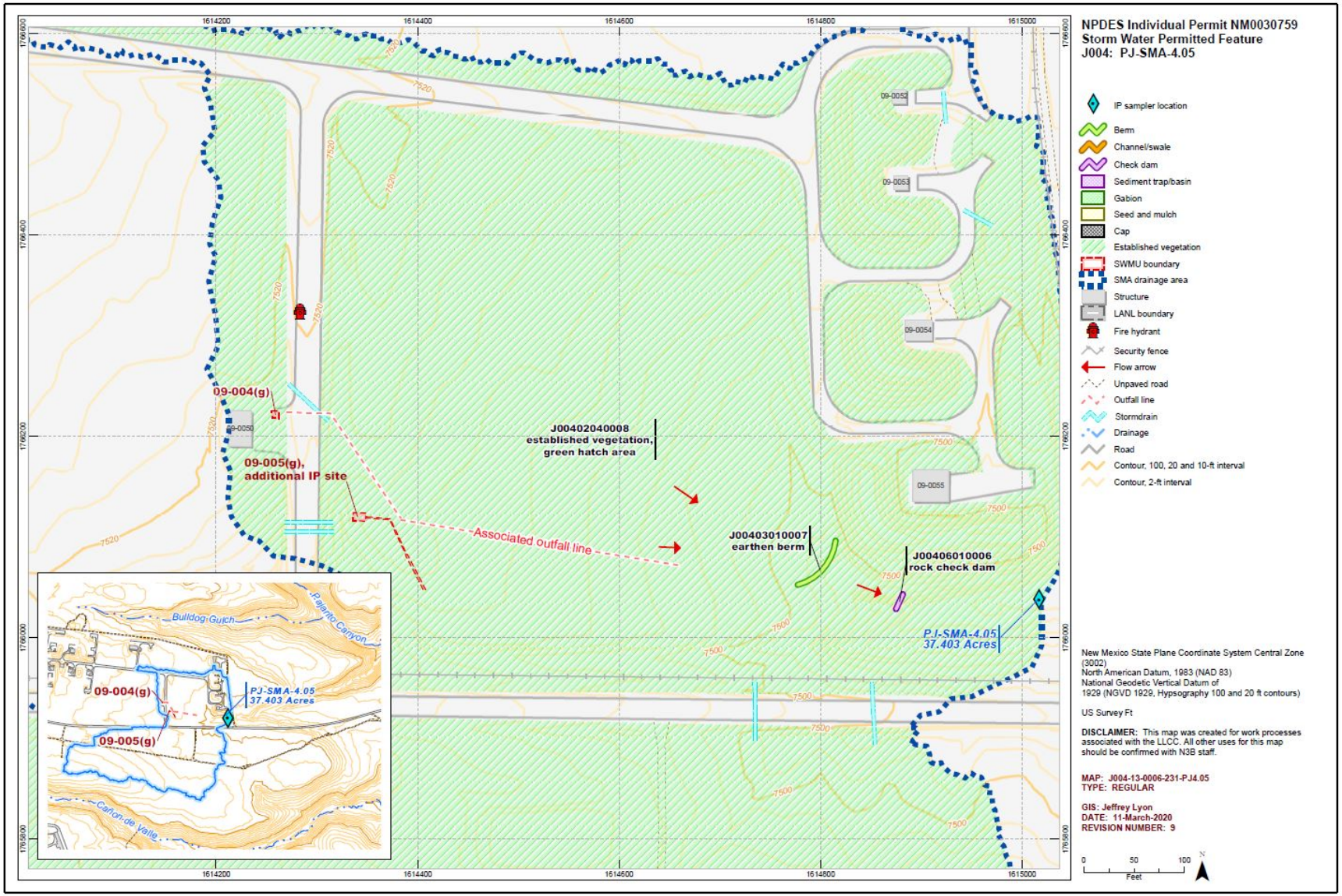


Figure 153-1 PJ-SMA-4.05 location map

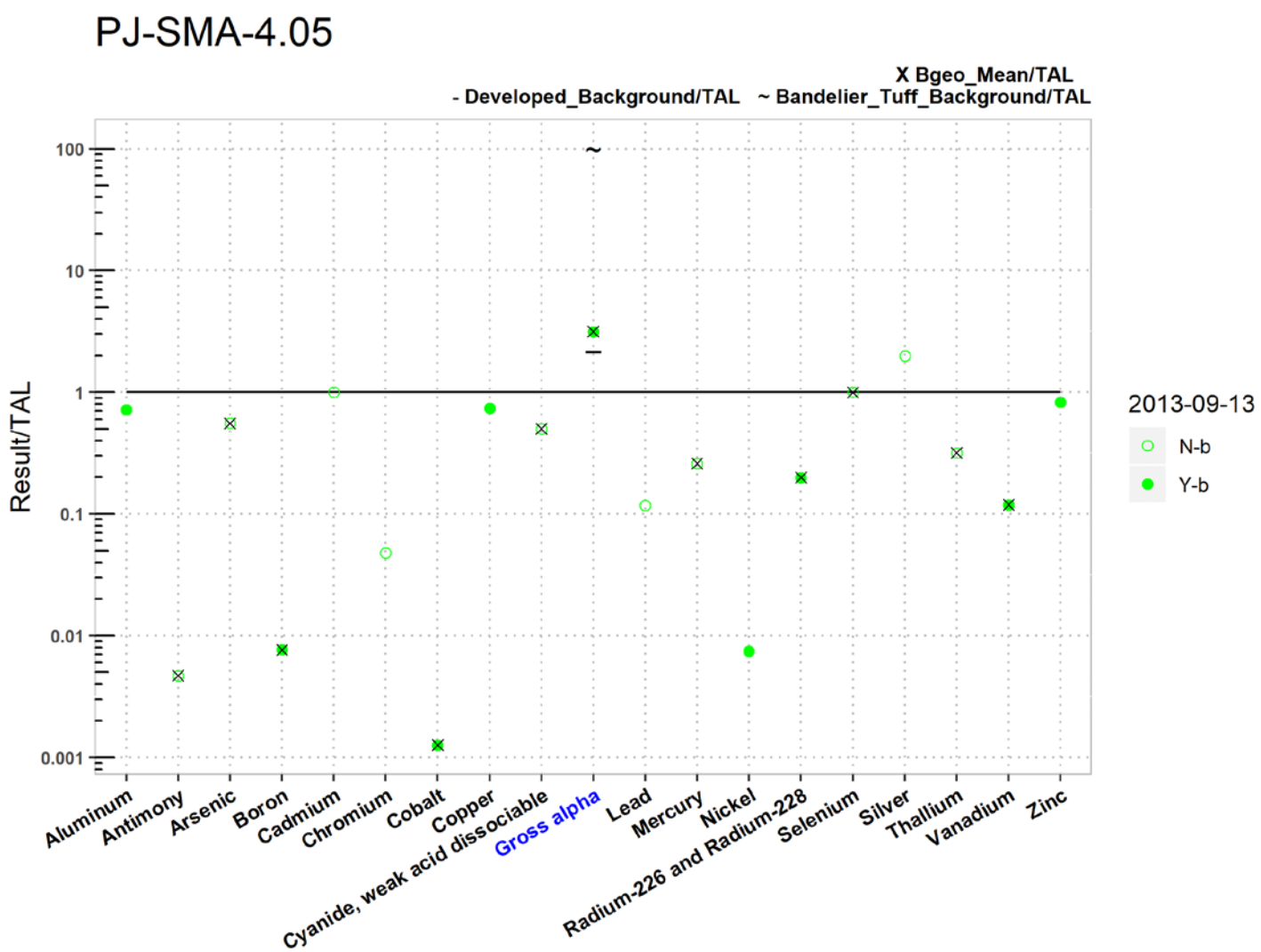


Figure 153-2 Analytical results summary for PJ-SMA-4.05

PJ-SMA-4.05

	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	0.0047	0.56	0.0076	NA	NA	0.0013	NA	0.5	**3.1**	NA	0.26	NA	0.2	1	NA	0.32	0.12	NA
2013-09-13 d	0.71	NA	NA	0.0076	NA	NA	0.0013	0.74	NA	**3.1**	NA	NA	0.0075	0.2	NA	NA	NA	0.12	0.83
2013-09-13 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	0.12	0.26	NA	NA	1	2	0.32	NA	NA

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

Figure 153-2 (continued) Analytical results summary for PJ-SMA-4.05

154.0 PJ-SMA-5: SWMU 22-015(c)

154.1 Site Descriptions

One historical industrial activity area is associated with J005, PJ-SMA-5: Site 22-015(c).

SWMU 22-015(c) consists of a former NPDES-permitted outfall (06A077) located at TA-22 approximately 80 ft south of building 22-52. The outfall received discharge from the floor drains in building 22-52, which were connected to the outfall via a 6-in.-diameter VCP drainline. The outfall daylighted in a channel that drained to a pond located near the edge of the mesa. Drainage from the pond eventually discharged into Pajarito Canyon. Beginning in 1952, building 22-52 was used as a plating laboratory and was later converted into a printed-circuit etching laboratory. Although most waste from the plating and etching operations at building 22-52 was collected manually, effluent from the rinse tanks overflowed to the floor drains. Discharge to the outfall was discontinued in 1977, when all liquid wastes were collected in drums and sent off-site for treatment. During the 1995 expedited cleanup of SWMU 22-015(c), 260 yd^3 of contaminated soil was excavated from the drainage below the outfall and disposed of off-site.

Consent Order investigations have not been performed at SWMU 22-015(c). Decision-level data are available from the 1995 expedited cleanup. SWMU 22-015(c) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 154-1) 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.

154.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 154-1).

Enhanced controls were installed and certified on July 18, 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.

PJ-SMA-5, Rock Check Dam, J00506010022 (photo ID 44824-6)

Table 154-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00502040015	Established Vegetation	-	X	X	-	B
J00503010025	Earthen Berm	-	X	-	X	EC
J00503030019	Log Berm	X	-	-	X	EC
J00503120026	Rock Berm	-	X	-	X	EC
J00503120027	Rock Berm	-	X	-	X	EC
J00503120028	Rock Berm	-	X	-	X	EC
J00504010003	Earthen Channel/Swale	X	-	X	-	CB
J00504010032	Earthen Channel/Swale	-	X	X	-	B
J00504040016	Culvert	X	-	X	-	EC
J00504060017	Rip Rap	X	-	X	-	EC
J00504060020	Rip Rap	X	-	X	-	EC
J00506010018	Rock Check Dam	X	-	-	X	EC
J00506010021	Rock Check Dam	X	-	-	X	EC
J00506010022	Rock Check Dam	-	X	-	X	EC
J00506010023	Rock Check Dam	-	X	-	X	EC
J00506010024	Rock Check Dam	-	X	-	X	EC
J00506030004	Juniper Bales	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

154.3 Storm Water Monitoring

SWMU 22-015(c) is monitored within PJ-SMA-5. Following the installation of baseline control measures, a baseline storm water sample was collected on October 12, 2012 (Figure 154-2). In Figure 154-2, 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 a TAL exceedance for copper (75.5 µg/L) and are presented in Figure 154-2.

Following the installation of enhanced control measures, a corrective action storm water sample was collected on September 3, 2018 (Figure 154-2). Analytical result from this sample yielded a TAL exceedance for copper (651 µg/L) and are presented in Figure 154-2.

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 22-015(c):

- Copper was associated with industrial materials historically managed at the Site. Copper was detected above soil and tuff BVs in shallow (i.e., less than 3 ft bgs) expedited cleanup confirmation samples. Copper was detected above BV in 11 of 11 shallow samples with a maximum concentration 782 times the soil 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 154-2. 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 154-2.

Monitoring location PJ-SMA-5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2012 and 2018 are greater than both of these values.

All the analytical results for these samples are reported in the 2012 and 2018 Annual Reports.

154.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-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 154-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72897	3-20-2019
Storm Rain Event	BMP-74621	7-9-2019
Storm Rain Event	BMP-74883	7-17-2019
Storm Rain Event	BMP-75388	8-6-2019
Storm Rain Event	BMP-76065	8-20-2019
Storm Rain Event	BMP-76390	9-3-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-5 in 2019.

154.5 Compliance Status

The Site associated with PJ-SMA-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 154-3 presents the 2019 compliance status.

Table 154-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 22-015(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."

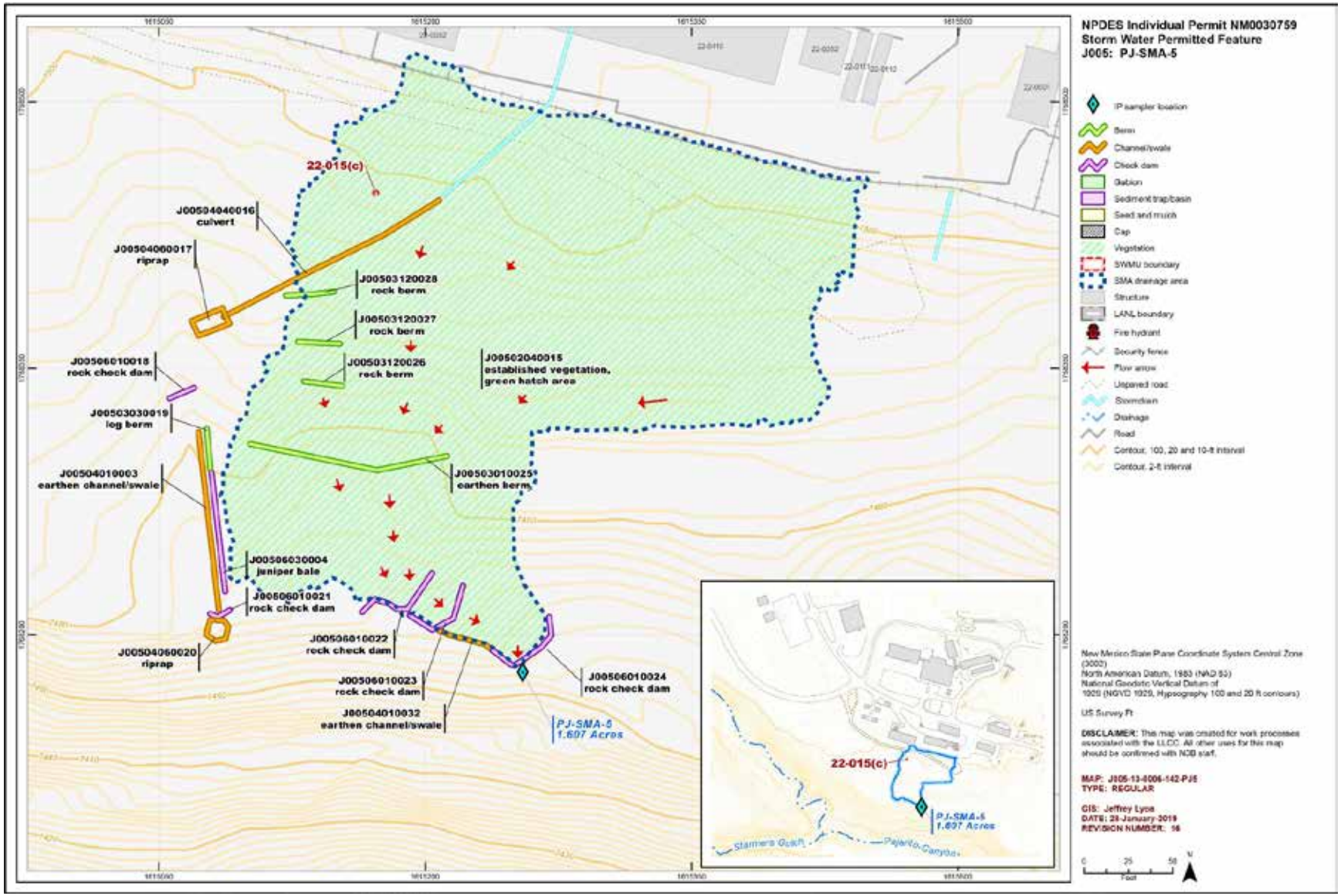


Figure 154-1 PJ-SMA-5 location map

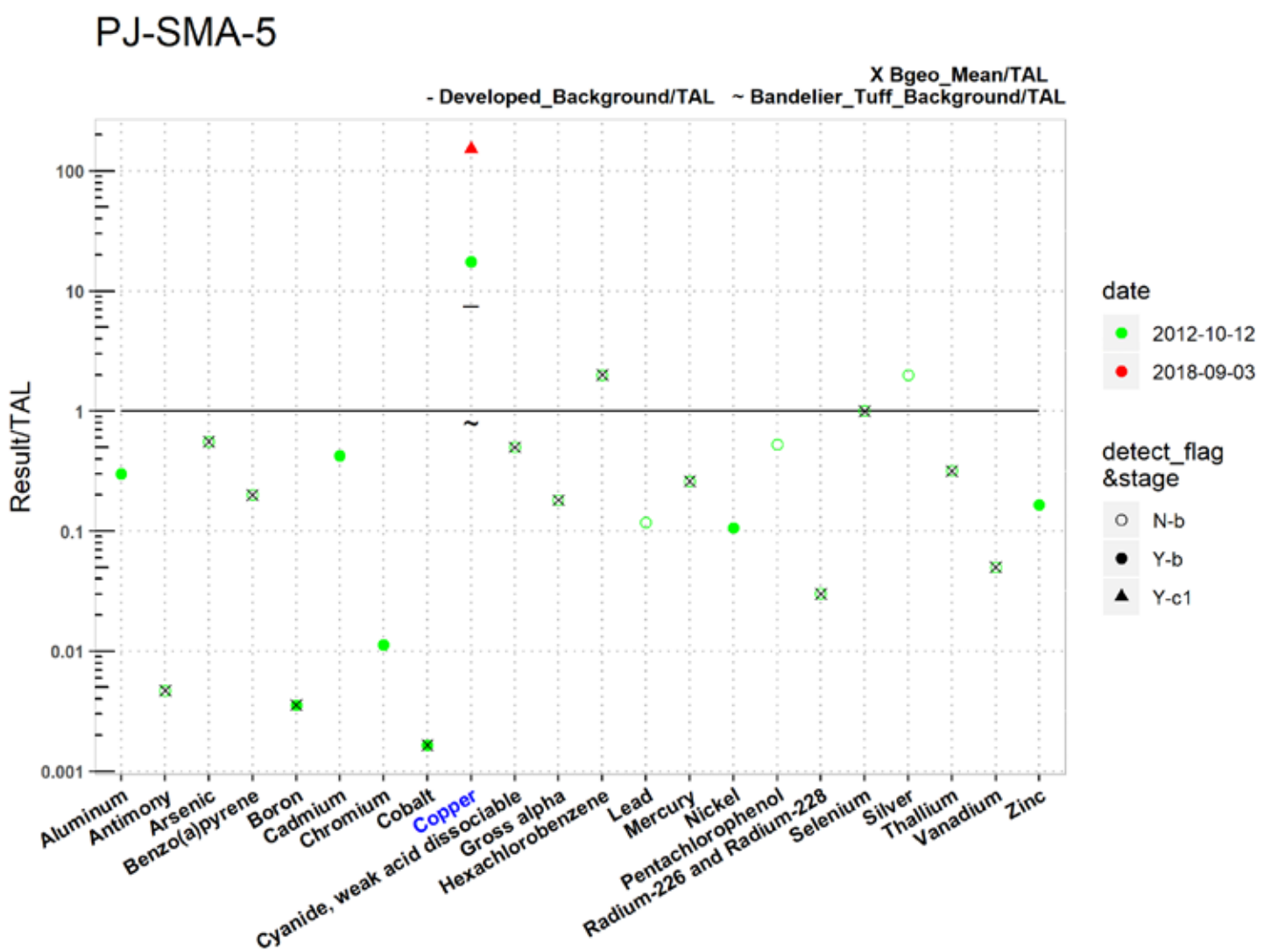


Figure 154-2 Analytical results summary for PJ-SMA-5

PJ-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	0.0036	NA	NA	0.0016	NA	0.5	0.18	**2**	NA	0.26	NA	NA	0.03	1	NA	0.32	0.05	NA
2012-10-12 d	0.3	NA	NA	NA	0.0036	0.43	0.011	0.0016	**18**	NA	NA	NA	NA	NA	0.11	NA	NA	NA	NA	NA	NA	0.17
2012-10-12 nd	NA	0.0047	0.56	0.2	NA	NA	NA	NA	NA	0.5	0.18	2	0.12	0.26	NA	0.53	0.03	1	2	0.32	0.05	NA
2018-09-03 d	NA	NA	NA	NA	NA	NA	NA	NA	**150**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018-09-03 nd	NA	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 154-2 (continued) Analytical results summary for PJ-SMA-5

155.0 PJ-SMA-5.1: SWMUs 22-010(b) and 22-016

155.1 Site Descriptions

Two historical industrial activity areas are associated with J006, PJ-SMA-5.1: Sites 22-010(b) and 22-016. However, only Site 22-016 is currently regulated by the Individual Permit. The Permittees are evaluating and reporting on Site 22-010(b) because it is the outfall that discharged from the Site 22-016 septic tank. The Site 22-016 septic tank is belowground and is not exposed to storm water. The information and evaluation of Site 22-010(b) provided below and in other sections of this SDPPP update are for informational purposes only. The Permittees recommended the addition of Site 22-010(b) to the Permit during renewal.

SWMU 22-016 is a decommissioned septic tank (structure 22-0042) located approximately 120 ft south of building 22-1. The septic tank was constructed of reinforced concrete and measured approximately 9 ft long × 6 ft wide × 5 ft deep, with a capacity of 1365 gal. The tank served building 22-1 (an assembly building) and former building 22-4 (an office and fabrication building) and was active from 1945 to 1948, when it was replaced by a new septic tank (structure 22-51), SWMU 22-010(b). Potential contaminants associated with industrial materials historically managed at this Site are explosive compounds and VOCs.

Consent Order or other environmental investigations have not been performed at SWMU 22-016, and no investigation data are available for this Site. SWMU 22-016 will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

SWMU 22-010(b) is an inactive septic system located at TA-22 approximately 90 ft south of building 22-1. The septic system consists of a septic tank (structure 22-51), drainlines, a leach field, sand filter, and outfall. The septic tank was installed in 1948 and originally served buildings 22-1 (an assembly building), 22-4 (an office and fabrication building), and 22-5 (a shop and laboratory building). In the 1950s, buildings 22-32 (a guard shack) and 22-52 (a plating and circuit-etching shop) were constructed and added to the septic system. In 1984, buildings 22-90 (an office building), 22-91 (an assembly building), and 22-93 (a detonator development building) were constructed and added to the system. In 1973, a sand filter was constructed (east of the leach field) to replace the leach field. The sand filter discharged through a 6-in.-diameter VCP that extended south 120 ft before terminating at an outfall. The sand filter operated until the 1990s when it was rerouted to the SWSC.

Consent Order or other environmental investigations have not been performed at SWMU 22-010(b), and no investigation data are available for this Site. SWMU 22-010(b) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 155-1) 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.

155.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 155-1).

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 155-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00602040010	Established Vegetation	-	X	X	-	B
J00603010009	Earthen Berm	-	X	-	X	EC
J00603010011	Earthen Berm	X	-	-	X	B
J00604010004	Earthen Channel/Swale	X	-	X	-	CB
J00606010007	Rock Check Dam	-	X	-	X	CB
J00608030012	Concrete/Asphalt Cap	-	X	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

155.3 Storm Water Monitoring

SWMUs 22-010(b) and 22-016 are monitored within PJ-SMA-5.1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 21, 2011, and September 7, 2011 (Figure 155-2). Analytical results from these samples yielded TAL exceedances for copper (8.2 µg/L and 11.1 µg/L), gross-alpha activity (38.4 pCi/L and 43.5 pCi/L), and zinc (50.6 µg/L and 59.4 µg/L) and are presented in Figure 155-2.

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 22-010(b):

- Copper is known to be associated with industrial materials historically managed at the Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.
- Zinc may have been associated with industrial materials historically managed at the Site.

SWMU 22-016:

- Copper is known to be associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site.
- Zinc may have been associated with industrial materials historically managed 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 155-2. 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 155-2.

PJ-SMA-5.1, Rock Check Dam, J00606010007 (photo ID 24186-1)

Monitoring location PJ-SMA-5.1 receives storm water run-on from landscape containing sediment derived from Bandelier Tuff. Metals including copper and zinc are associated with 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 sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are greater than this value.
- Gross alpha—The gross-alpha background UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha results are less than this value.
- Zinc—The zinc UTL from background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than this value.

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

155.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-SMA-5.1 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 155-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72898	3-20-2019
Storm Rain Event	BMP-74622	7-9-2019
Storm Rain Event	BMP-74884	7-17-2019
Storm Rain Event	BMP-75389	8-6-2019
Storm Rain Event	BMP-76066	8-20-2019
Storm Rain Event	BMP-76391	9-3-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-5.1 in 2019.

155.5 Compliance Status

The Site associated with PJ-SMA-5.1 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 155-3 presents the 2019 compliance status.

Table 155-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 22-010(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."
SWMU 22-016	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."

* This Site is not yet officially regulated by the IP. However, the Site is being treated as regulated as explained in the Site Description section above.

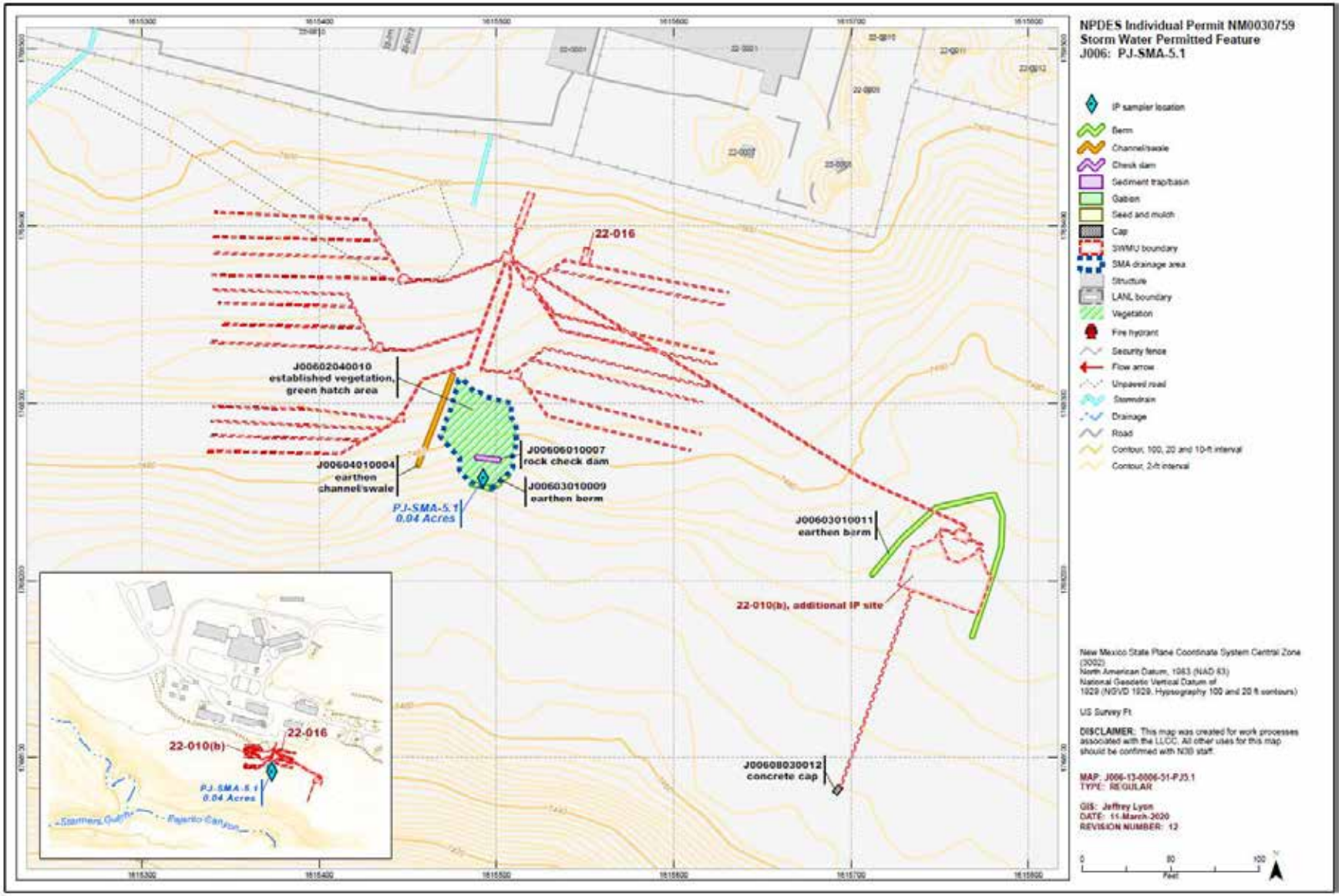


Figure 155-1 PJ-SMA-5.1 location map

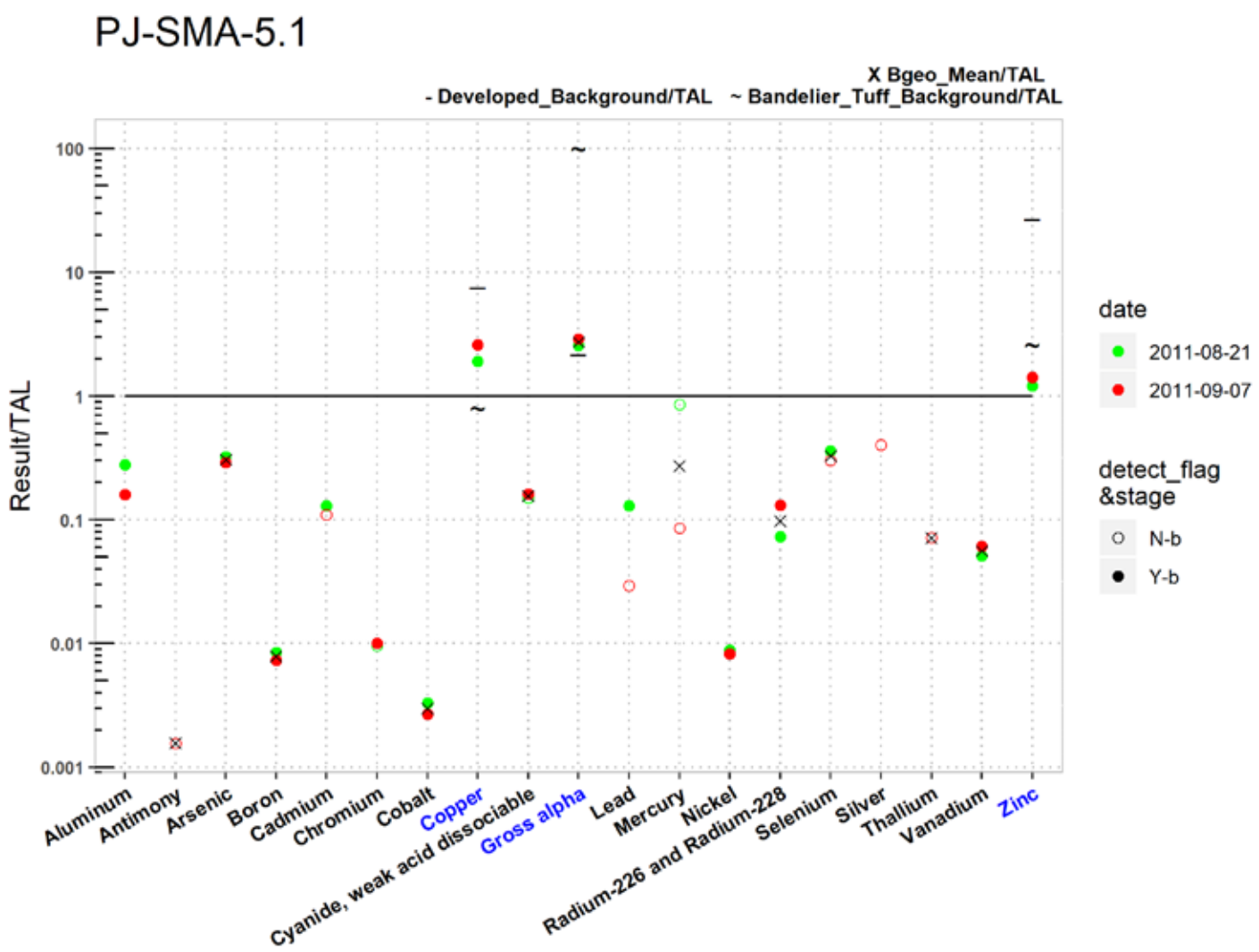


Figure 155-2 Analytical results summary for PJ-SMA-5.1

PJ-SMA-5.1

	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	0.31	0.0079	NA	NA	0.003	NA	0.16	**2.7**	NA	0.27	NA	0.098	0.33	NA	0.071	0.056	NA
2011-08-21 d	0.28	NA	0.32	0.0085	0.13	NA	0.0033	**1.9**	NA	**2.6**	0.13	NA	0.0088	0.073	0.36	NA	NA	0.051	**1.2**
2011-08-21 nd	NA	0.0016	NA	NA	NA	0.0095	NA	NA	0.15	NA	NA	0.86	NA	NA	NA	0.4	0.071	NA	NA
2011-09-07 d	0.16	NA	0.29	0.0073	NA	0.01	0.0027	**2.6**	0.16	**2.9**	NA	NA	0.0082	0.13	NA	NA	NA	0.061	**1.4**
2011-09-07 nd	NA	0.0016	NA	NA	0.11	NA	NA	NA	NA	NA	0.029	0.086	NA	NA	0.3	0.4	0.071	NA	NA

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

Figure 155-2 (continued) **Analytical results summary for PJ-SMA-5.1**

156.0 PJ-SMA-6: SWMU 40-010

156.1 Site Descriptions

One historical industrial activity area is associated with J007, PJ-SMA-6: Site 40-010.

SWMU 40-010 is a surface disposal area located at TA-40 on the edge of Pajarito Canyon, approximately 200 ft south of former building 40-72. The surface disposal area extends about 150 ft along the canyon edge and 140 ft down the canyon side. The area contained various types of debris, including twenty 30-gal. drums. This area also contains debris from farm and home implements that predate Manhattan Project activities. Post–Cerro Grande fire activities removed all the drums and exposed debris, with the exception of the pre–Manhattan Project debris, which is considered to be of archaeological importance and therefore cannot be removed. BMPs were installed at SWMU 40-010 in 2000 as part of the post–Cerro Grande fire recovery. The fire damage exposed the surface disposal area. Straw wattles were installed upgradient of the surface disposal area to provide run-on diversion. The area was raked, reseeded, and mulched. Surface debris near the edge was removed and disposed of as solid wastes.

SWMU 40-010 is included in the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Starmer/Upper Pajarito Canyon Aggregate Area was approved in March 2011. Decision-level data are not available for SWMU 40-010.

The project map (Figure 156-1) 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.

156.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 156-1).

Table 156-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00702040018	Established Vegetation	-	X	X	-	B
J00703010009	Earthen Berm	-	X	-	X	B
J00703010010	Earthen Berm	-	X	-	X	B
J00703010011	Earthen Berm	-	X	-	X	B
J00703120012	Rock Berm	X	-	-	X	B
J00706010002	Rock Check Dam	X	-	-	X	CB
J00706010004	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

156.3 Storm Water Monitoring

SWMU 40-010 is monitored within PJ-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 8, 2014 (Figure 156-2). In Figure 156-2, 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 (81.6 pCi/L) and are presented in Figure 156-2.

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 40-010:

- 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 156-2. 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 156-2.

Monitoring location PJ-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 2014 gross-alpha result is less than this value.

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

156.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-SMA-6 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 156-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72905	3-20-2019
Storm Rain Event	BMP-74626	7-16-2019
Storm Rain Event	BMP-75397	8-2-2019
Storm Rain Event	BMP-75928	8-16-2019
Storm Rain Event	BMP-76392	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-6 in 2019.

156.5 Compliance Status

The Site associated with PJ-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 156-3 presents the 2019 compliance status.

Table 156-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-010	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."

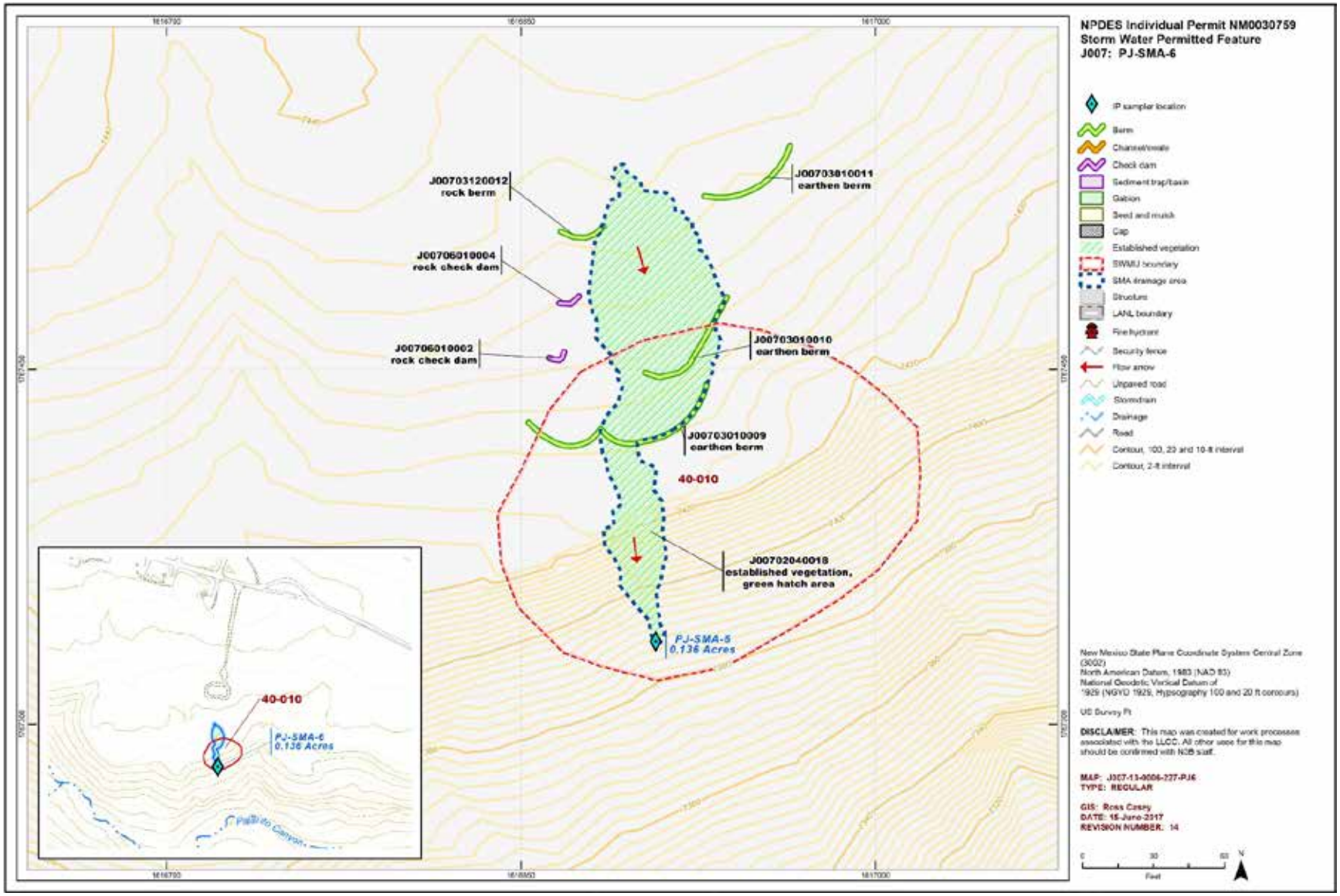


Figure 156-1 PJ-SMA-6 location map

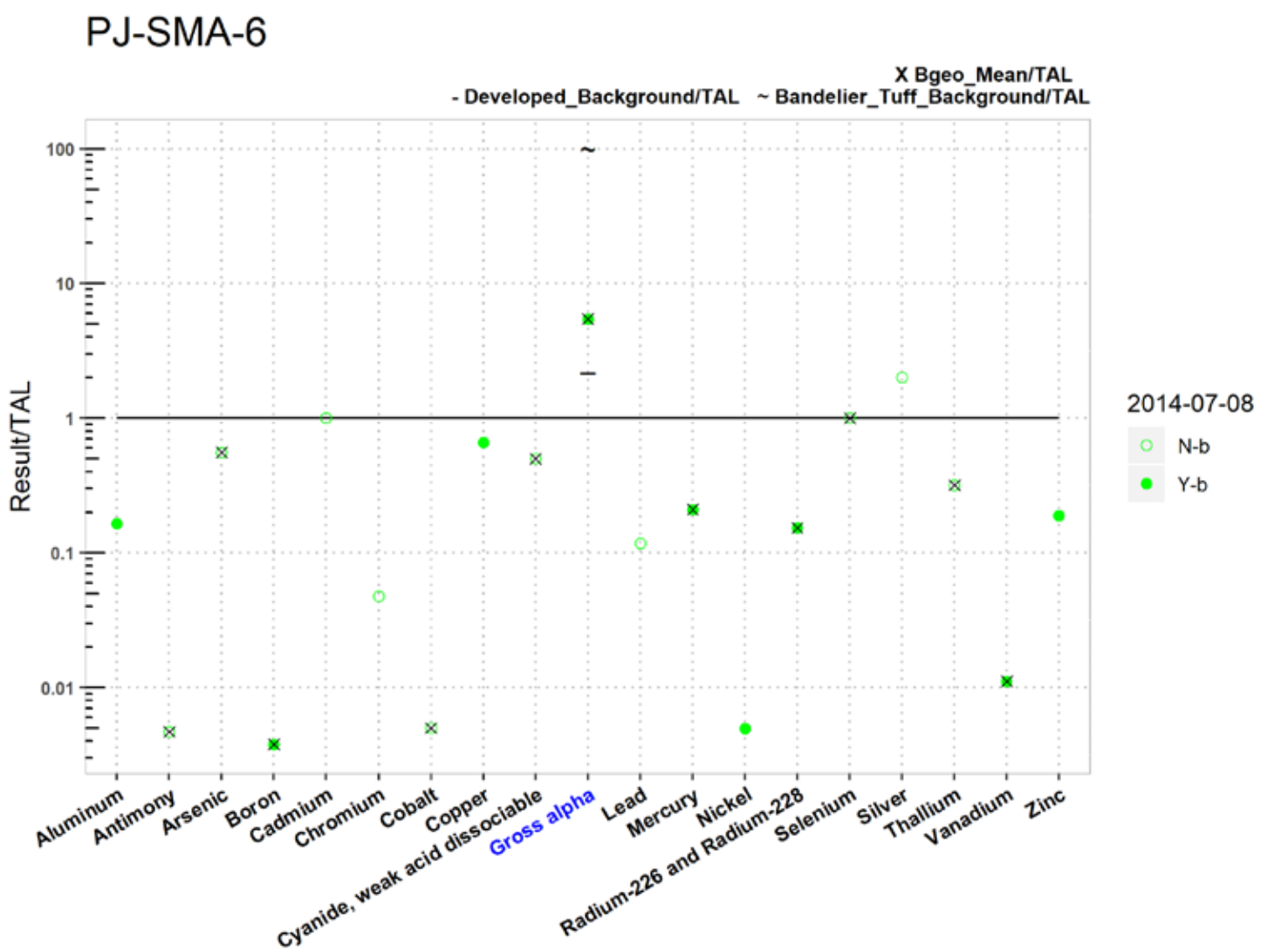


Figure 156-2 Analytical results summary for PJ-SMA-6

PJ-SMA-6

	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	0.0038	NA	NA	0.005	NA	0.5	**5.4**	NA	0.21	NA	0.15	1	NA	0.32	0.011	NA
2014-07-08 d	0.16	NA	NA	0.0038	NA	NA	NA	0.66	NA	**5.4**	NA	0.21	0.005	0.15	NA	NA	NA	0.011	0.19
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 156-2 (continued) Analytical results summary for PJ-SMA-6

157.0 PJ-SMA-7: SWMU 40-006(c)

157.1 Site Descriptions

One historical industrial activity area is associated with J008, PJ-SMA-7: Site 40-006(c).

SWMU 40-006(c) is an active firing site (structure 40-5) located at TA-40 on the north edge of Pajarito Canyon at the west end of TD Site Road. The SWMU 40-006(c) firing site consists of a reinforced concrete and steel building that allows observation of test shots and a partially protected area on the south side of the building where shots are prepared. Since 1950, this firing site has been used to test detonators. Historically, the firing site included an open firing pad connected to the south of the building where the larger shots (up to 50 lb) were fired. In the past, after each shot, large pieces of debris were removed and disposed of, and sand and debris were pushed to the edge of the canyon. This practice has created a soil berm near the canyon edge. The firing site is now used only to test and develop small explosive devices.

Investigation of SWMU 40-006(c) is deferred per Section XI and Appendix A of the 2016 Consent Order. Decision-level data are not available for SWMU 40-006(c).

The project map (Figure 157-1) 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.

157.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 157-1).

Table 157-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00802040006	Established Vegetation	-	X	X	-	B
J00803010004	Earthen Berm	-	X	-	X	CB
J00804010002	Earthen Channel/Swale	X	-	X	-	CB
J00804040003	Culvert	X	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

157.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-7. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

157.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-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. Remediation construction activity inspections are being conducted while facility construction activities are ongoing.

Table 157-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72906	3-25-2019
Storm Rain Event	BMP-74627	7-19-2019
Storm Rain Event	BMP-75398	7-30-2019
Storm Rain Event	BMP-75929	8-13-2019
Storm Rain Event	BMP-76393	8-28-2019

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

157.5 Compliance Status

The Site associated with PJ-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 157-3 presents the 2019 compliance status.

Table 157-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

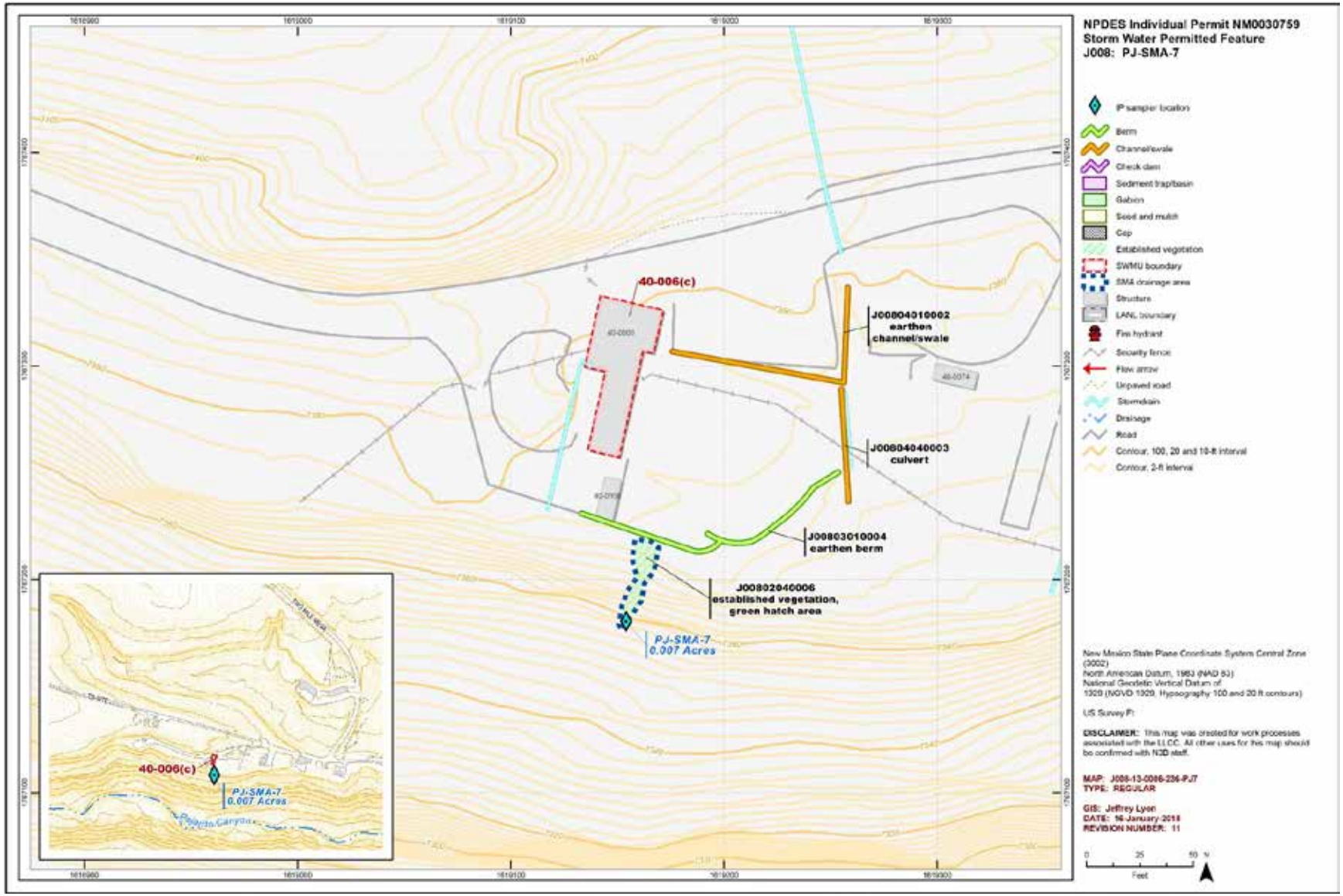


Figure 157-1 PJ-SMA-7 location map

158.0 PJ-SMA-8: SWMU 40-006(b)

158.1 Site Descriptions

One historical industrial activity area is associated with J009, PJ-SMA-8: Site 40-006(b).

SWMU 40-006(b) is an active firing site (structure 40-8) located at TA-40 on the northern rim of Pajarito Canyon, at the west end of TD Site Road. The SWMU 40-006(b) firing site consists of a reinforced concrete and steel building that allows observation of the test shots and a partially protected area on the south side of the building where shots are prepared. Since 1950, this firing site has been used to test detonators. Historically, the firing site included an open firing pad connected to the south of the building where the larger shots (up to 85 lb) were fired. In the past, after each shot, large pieces of debris were removed and disposed of off-site, and sand and debris were pushed to the edge of the canyon. This practice created a soil berm near the canyon edge. In 1992, the firing site was modified. The firing pad and the top 6 in. of soil were removed, and a containment system consisting of a large vessel with a high-efficiency particulate filtration system was installed. The firing site is now used only to test and develop small explosive devices.

Investigation of SWMU 40-006(b) is deferred per Section XI and Appendix A of the 2016 Consent Order. Decision-level data are not available for SWMU 40-006(b).

The project map (Figure 158-1) 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.

158.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 158-1).

Table 158-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00902040010	Established Vegetation	-	X	X	-	B
J00903010006	Earthen Berm	-	X	-	X	CB
J00903010009	Earthen Berm	-	X	-	X	CB
J00904020005	Concrete/Asphalt Channel/Swale	X	-	X	-	CB
J00906010002	Rock Check Dam	X	-	-	X	CB
J00906010004	Rock Check Dam	X	-	-	X	CB
J00906010011	Rock Check Dam	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

158.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-8. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

158.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-SMA-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 below.

Table 158-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72907	3-20-2019
Storm Rain Event	BMP-74628	7-16-2019
Storm Rain Event	BMP-75399	7-30-2019
Storm Rain Event	BMP-75930	8-16-2019
Storm Rain Event	BMP-76394	8-28-2019

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

158.5 Compliance Status

The Site associated with PJ-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 158-3 presents the 2019 compliance status.

Table 158-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-006(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

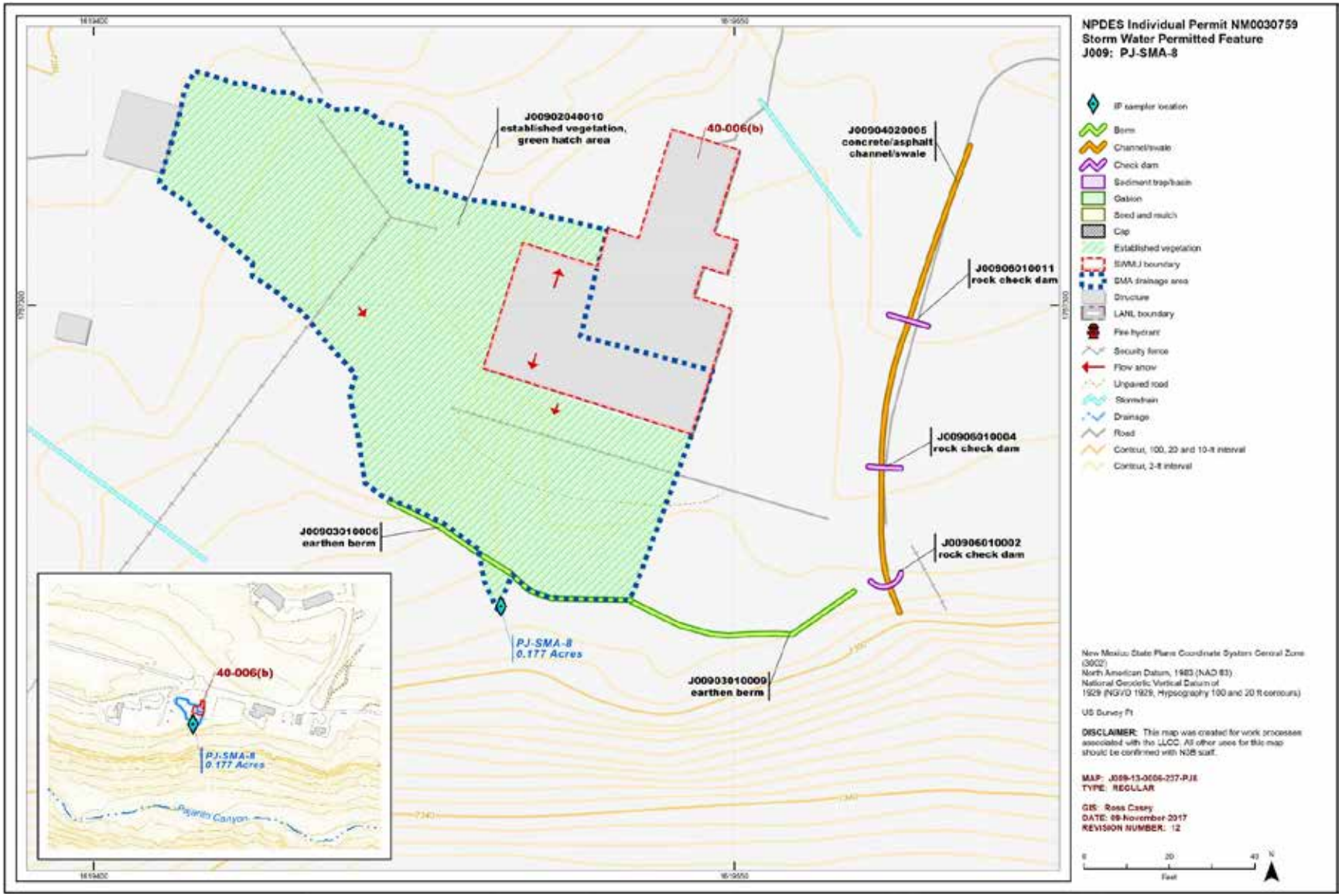


Figure 158-1 PJ-SMA-8 location map

159.0 PJ-SMA-9: SWMU 40-009

159.1 Site Descriptions

One historical industrial activity area is associated with J010, PJ-SMA-9: Site 40-009.

SWMU 40-009 is a landfill located at TA-40 south of building 40-9. The 1990 SWMU report states that the landfill resulted from a decommissioning effort undertaken at TA-15 in 1967. The SWMU report provides only a vague location and no estimate of the size or depth for the landfill, stating that debris from TA-15 was taken to TA-40 and disposed of in the canyon between buildings 40-5 and 40-15. The 1995 RFI field team walked the canyon area between the two buildings and found two prominent earthen berms on the steep hillside directly south of building 40-9. The field team suspected the berms were the landfill. BMPs were installed at SWMU 40-009 in 2000 as part of the post–Cerro Grande fire recovery. Straw wattles were installed along the mesa edge to divert run-on from the slope. Rock check dams constructed using on-site materials were installed to dissipate flow within the drainage channels on both the east and west ends of the Site.

SWMU 40-009 is included in the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Starmer/Upper Pajarito Canyon Aggregate Area was approved in March 2011. Decision-level data are available for SWMU 40-009 from the 1995 RFI.

The project map (Figure 159-1) 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.

159.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 159-1).

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.

PJ-SMA-9, Rock Check Dam, J01006010008, 009 (photo ID 7511-1)

Table 159-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01002040010	Established Vegetation	-	X	X	-	B
J01003010016	Earthen Berm	X	-	-	X	EC
J01003010017	Earthen Berm	X	-	-	X	EC
J01003010018	Earthen Berm	X	-	-	X	EC
J01003010019	Earthen Berm	-	X	-	X	EC
J01003140021	Coir Log	-	X	-	X	EC
J01006010008	Rock Check Dam	X	-	-	X	CB
J01006010009	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

159.3 Storm Water Monitoring

SWMU 40-009 is monitored within PJ-SMA-9. Following the installation of baseline control measures, a baseline storm water sample was collected on June 21, 2014 (Figure 159-2). In Figure 159-2, 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 copper (7.76 µg/L) and gross-alpha activity (41.6 pCi/L) and are presented in Figure 159-2.

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 40-009:

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above BVs in 5 of 15 shallow (i.e., less than 3 ft bgs) 1995 RFI soil and sediment samples at a maximum concentration 180 times the soil BV. Only 1 RFI sample location is within the PJ-SMA-9; copper was not detected above BVs at this location.
- Alpha-emitting radionuclides are likely associated with industrial materials historically managed at the Site. Shallow RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium was detected above BVs in 5 of 15 shallow RFI soil and sediment samples with a maximum concentration 2.2 times the tuff 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 159-2. 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 159-2.

Monitoring location PJ-SMA-9 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. 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—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 2014 gross-alpha result is between these two values.

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

159.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-SMA-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 below.

Table 159-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72908	3-20-2019
Storm Rain Event	BMP-74629	7-16-2019
Storm Rain Event	BMP-75400	8-2-2019
Storm Rain Event	BMP-75931	8-16-2019
Storm Rain Event	BMP-76395	8-29-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-9 in 2019.

159.5 Compliance Status

The Site associated with PJ-SMA-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 159-3 presents the 2019 compliance status.

Table 159-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-009	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."

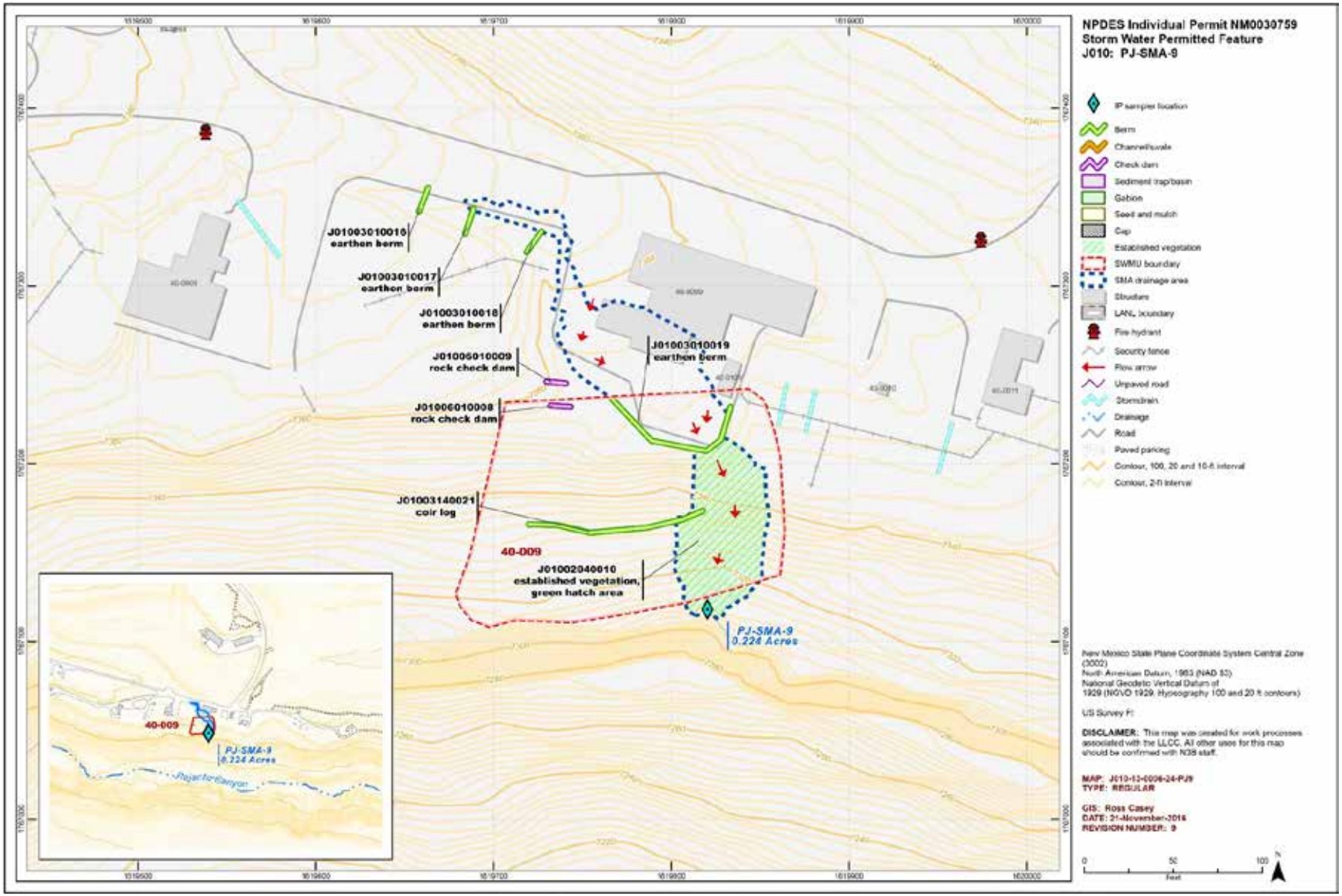


Figure 159-1 PJ-SMA-9 location map

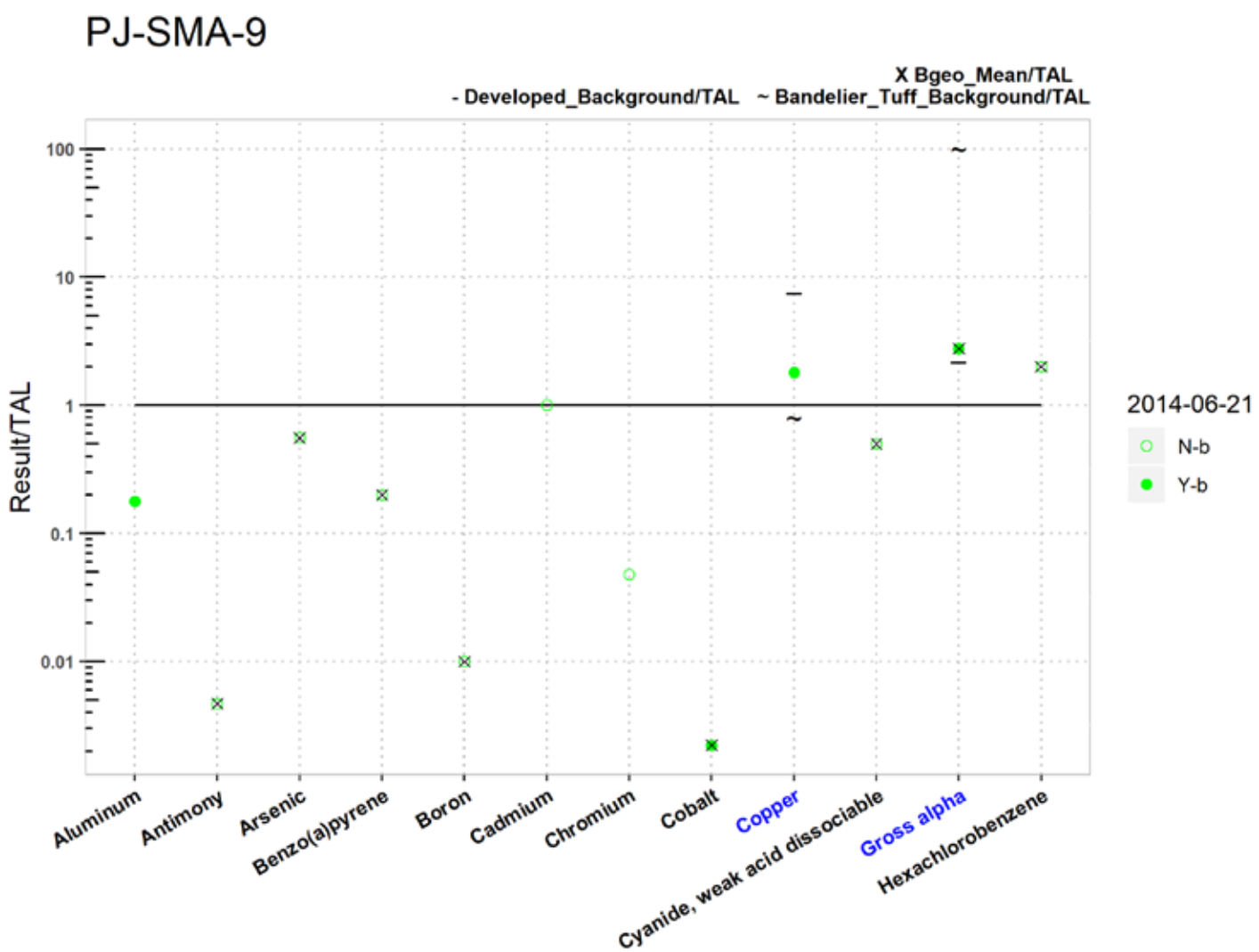


Figure 159-2 Analytical results summary for PJ-SMA-9

PJ-SMA-9

	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	0.2	0.01	NA	NA	0.0022	NA	0.5	**2.8**	**2**
2014-06-21 d	0.18	NA	NA	NA	NA	NA	NA	0.0022	**1.8**	NA	**2.8**	NA
2014-06-21 nd	NA	0.0047	0.56	0.2	0.01	1	0.048	NA	NA	0.5	NA	2

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

Figure 159-2 (continued) Analytical results summary for PJ-SMA-9

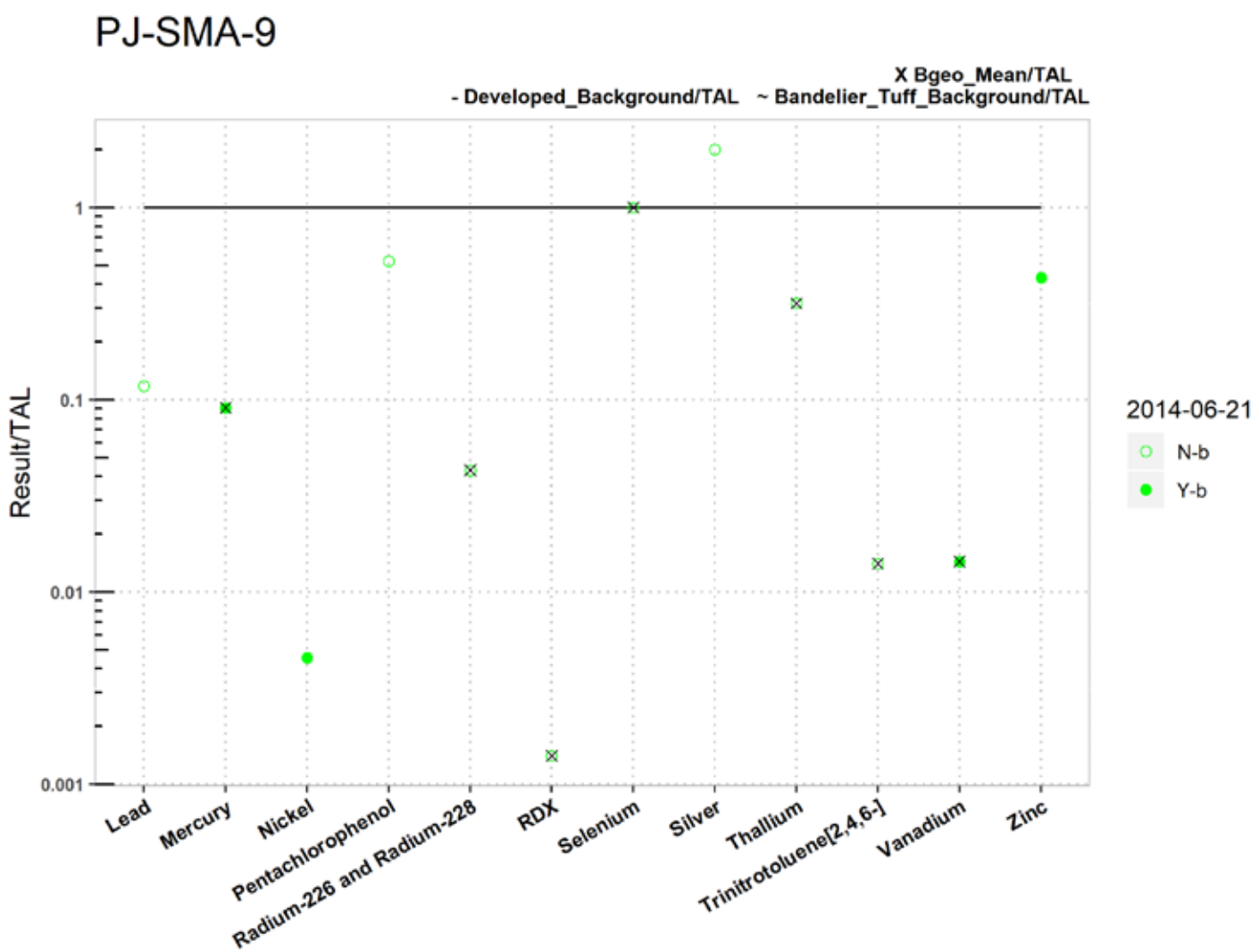


Figure 159-2 (continued) **Analytical results summary for PJ-SMA-9**

PJ-SMA-9

	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	0.091	NA	NA	0.043	0.0014	1	NA	0.32	0.014	0.014	NA
2014-06-21 d	NA	0.091	0.0045	NA	NA	NA	NA	NA	NA	NA	0.014	0.43
2014-06-21 nd	0.12	NA	NA	0.53	0.043	0.0014	1	2	0.32	0.014	NA	NA

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

Figure 159-2 (continued) Analytical results summary for PJ-SMA-9

160.0 PJ-SMA-10: SWMU 40-006(a)

160.1 Site Descriptions

One historical industrial activity area is associated with J012, PJ-SMA-10: Site 40-006(a).

SWMU 40-006(a) is an active firing site (structure 40-15) located at TA-40 on the northern rim of Pajarito Canyon, at the east end of TD Site Road. The SWMU 40-006(a) firing site consists of a reinforced concrete and steel building that allows observation of the test shots, a partially protected area on the south side of the building where shots are prepared, and an open firing pad connected to the south of the building where larger shots are fired. Since 1950, this firing site has been used to test and develop detonators. Tests conducted at this Site have included detonator booster tests, which use 2 lb of explosives, and large open-air shots, which can use up to 50 lb of explosives. After each shot, large pieces of debris are removed and disposed of off-site; the open area is graded, and the sand and debris are pushed to the edge of the canyon, creating a sand berm near the canyon edge. In late 2017 and early 2018, construction began on the 40-15 Chamber Upgrade Project, which expanded the structure in all directions. Construction activities were completed in the late fall of 2018.

Investigation of SWMU 40-006(a) is deferred per Section XI and Appendix A of the 2016 Consent Order. Only screening-level data from the 1995 RFI are available for SWMU 40-006(a).

The project map (Figure 160-1) 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.

160.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 160-1).

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 160-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01204030030	Rock Channel/Swale	-	X	-	X	EC
J01206010011	Rock Check Dam	-	X	-	X	EC
J01206010012	Rock Check Dam	-	X	-	X	EC
J01206010013	Rock Check Dam	-	X	-	X	EC
J01206010014	Rock Check Dam	-	X	-	X	EC
J01206010015	Rock Check Dam	-	X	-	X	EC
J01206010017	Rock Check Dam	-	X	-	X	EC
J01206010021	Rock Check Dam	X	-	-	X	EC
J01206010022	Rock Check Dam	X	-	-	X	EC
J01206010023	Rock Check Dam	X	-	-	X	EC
J01206010024	Rock Check Dam	X	-	-	X	EC
J01206010025	Rock Check Dam	X	-	-	X	EC

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01206010026	Rock Check Dam	X	-	-	X	EC
J01206010031	Rock Check Dam	-	X	-	X	EC
J01203040032	Asphalt Berm	X	-	-	X	CB
J01205020033	Sediment Basin	-	X	-	X	EC

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

160.3 Storm Water Monitoring

SWMU 40-006(a) is monitored within PJ-SMA-10. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2014 (Figure 160-2). In Figure 160-2, 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 (16.8 µg/L) and gross-alpha activity (280 pCi/L) and are presented in Figure 160-2.

Following the installation of enhanced control measures, two investigation storm water samples were collected on July 31 and August 24, 2016. Analytical results from these samples were determined not to be representative of 40-006(a). Consequently, the results for these samples will not be used for confirmation monitoring purposes. After a monitoring station move, sampling has been restarted and will remain in the corrective action monitoring phase until confirmation monitoring samples that are representative of the Site can be collected and analyzed.

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 40-006(a):

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above BVs in 53 of 92 shallow (i.e., less than 3 ft bgs) 1995 RFI soil, tuff, and sediment samples at a maximum concentration 1048 times the soil BV.
- Alpha-emitting radionuclides are likely associated with industrial materials historically managed at the Site. Shallow RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium was detected above BVs in 74 of 92 shallow RFI soil, sediment, and tuff samples with a maximum concentration 7.5 times the tuff 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 160-2. 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 160-2.

Monitoring location PJ-SMA-10 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 2014 is greater than this value.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2014 gross-alpha results is less than this value.

All the analytical results for these samples are reported in the 2014 and 2016 Annual Reports.

160.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-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 160-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72893	3-20-2019
Storm Rain Event	BMP-74617	7-16-2019
Storm Rain Event	BMP-75369	8-2-2019
Storm Rain Event	BMP-75923	8-13-2019
Storm Rain Event	BMP-76386	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-10 in 2019.

160.5 Compliance Status

The Site associated with PJ-SMA-10 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 160-3 presents the 2019 compliance status.

Table 160-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-006(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	October 30, 2017, "NPDES Permit No. NM0030759-Compliance Activity Update for PJ-SMA-10 (SWMU 40-006(a)) and S-SMA-6 (AOC 72-001)."

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

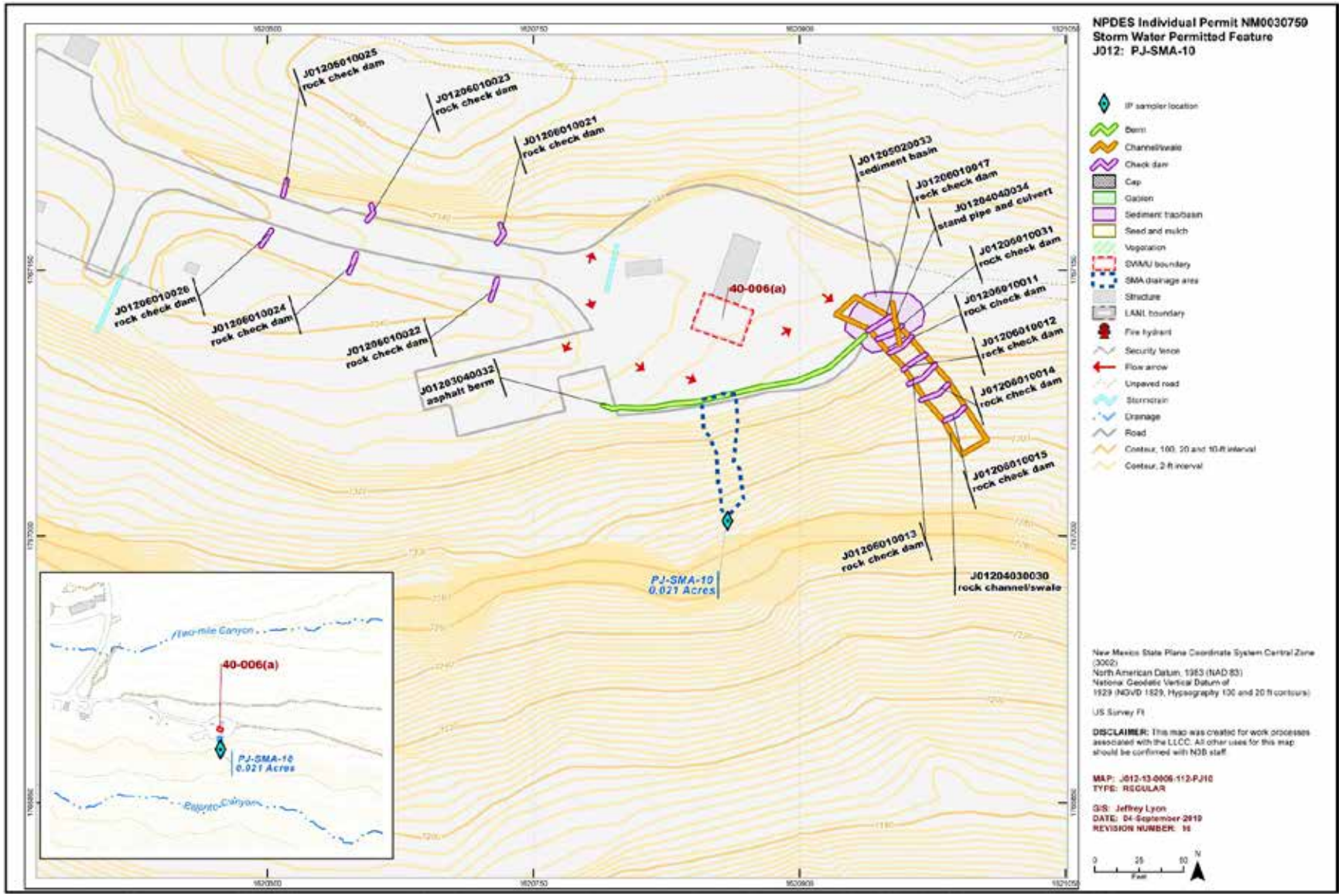


Figure 160-1 PJ-SMA-10 location map

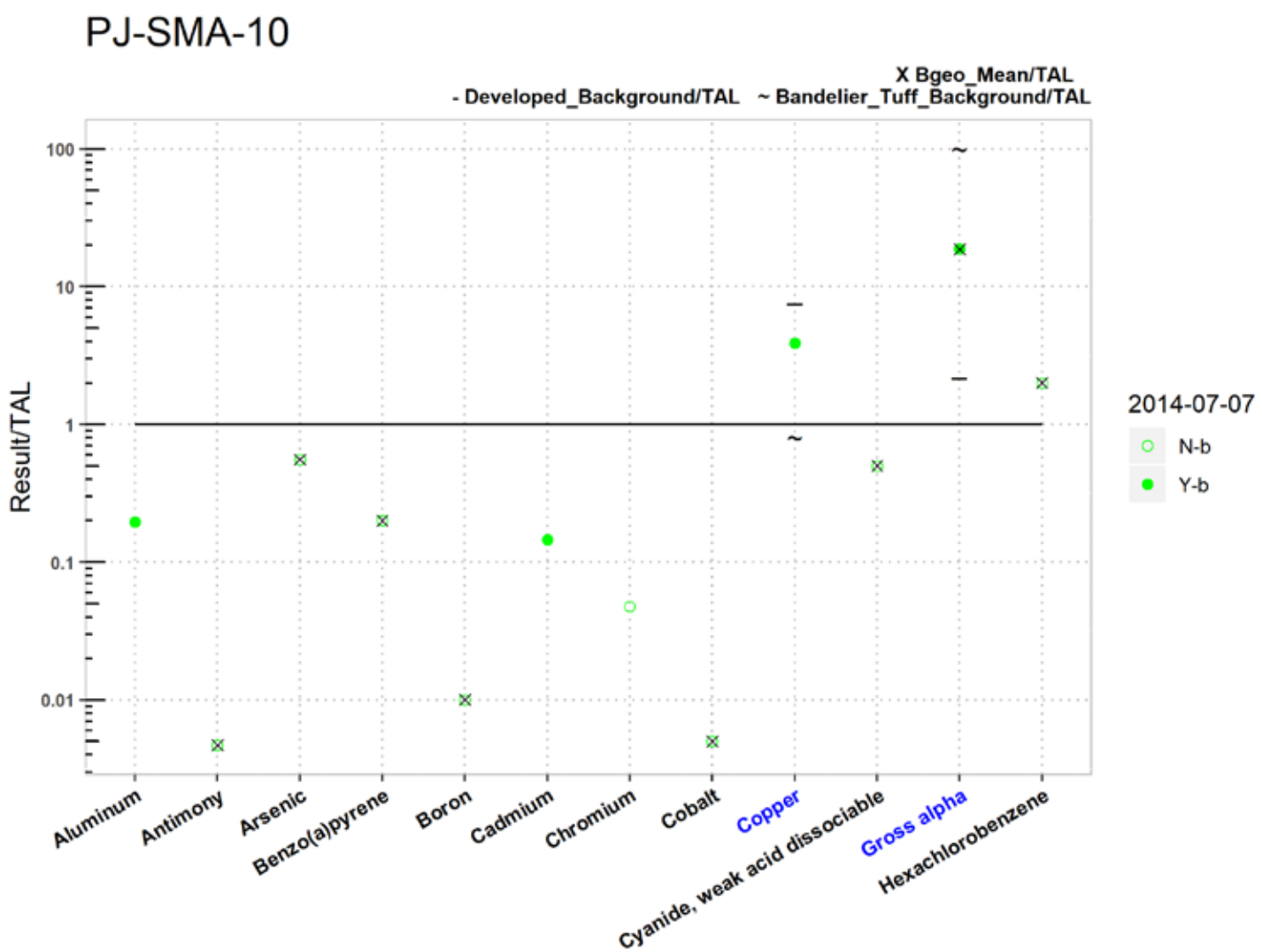


Figure 160-2 Analytical results summary for PJ-SMA-10

PJ-SMA-10

	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	0.2	0.01	NA	NA	0.005	NA	0.5	**19**	**2**
2014-07-07 d	0.19	NA	NA	NA	NA	0.14	NA	NA	**3.9**	NA	**19**	NA
2014-07-07 nd	NA	0.0047	0.56	0.2	0.01	NA	0.048	0.005	NA	0.5	NA	2

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

Figure 160-2 (continued) **Analytical results summary for PJ-SMA-10**

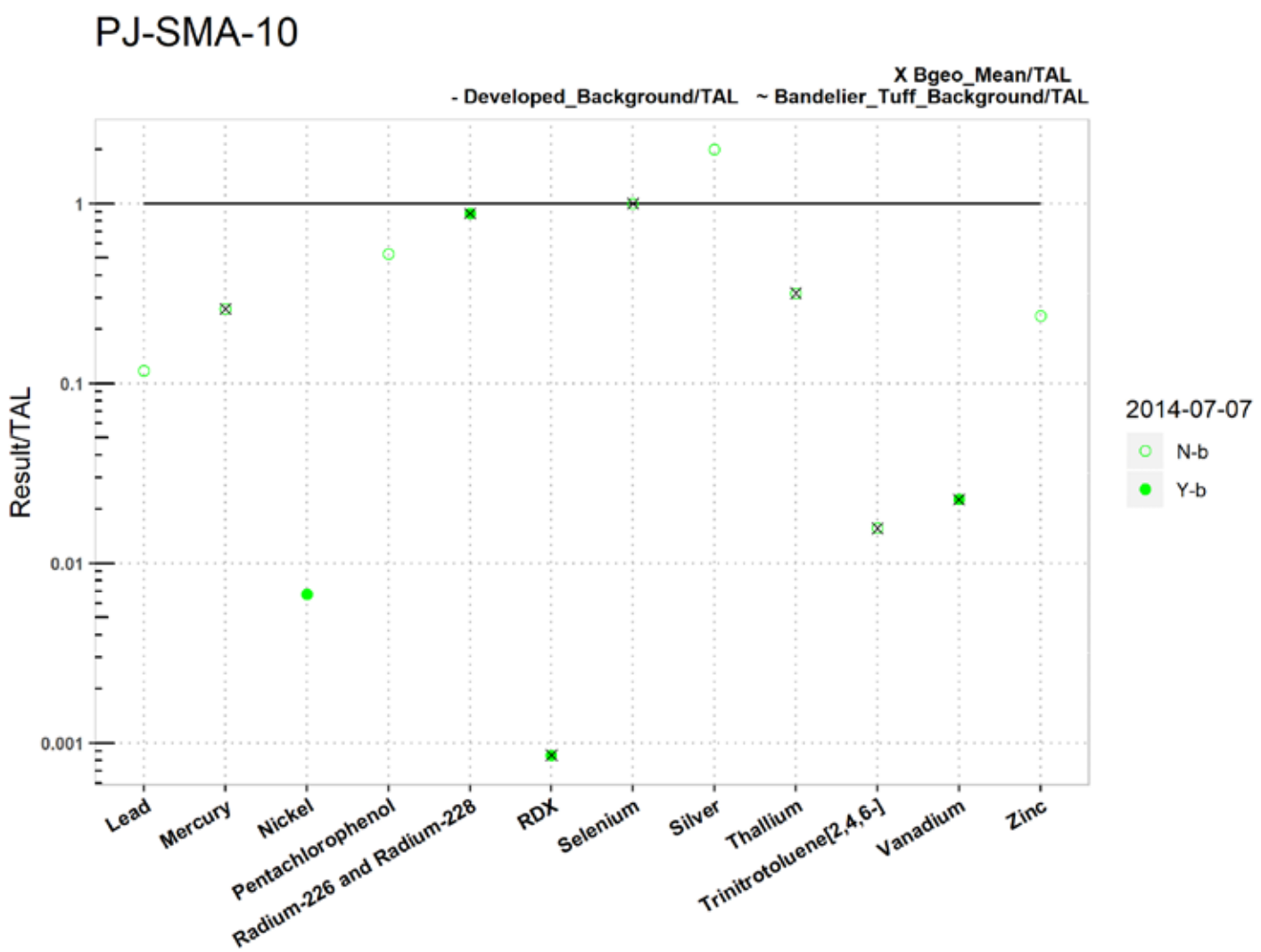


Figure 160-2 (continued) **Analytical results summary for PJ-SMA-10**

PJ-SMA-10

	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	0.88	0.00086	1	NA	0.32	0.016	0.023	NA
2014-07-07 d	NA	NA	0.0067	NA	0.88	0.00086	NA	NA	NA	NA	0.023	NA
2014-07-07 nd	0.12	0.26	NA	0.53	NA	NA	1	2	0.32	0.016	NA	0.24

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

Figure 160-2 (continued) Analytical results summary for PJ-SMA-10

161.0 PJ-SMA-11: SWMU 40-003(a)

161.1 Site Descriptions

One historical industrial activity area is associated with J013, PJ-SMA-11: Site 40-003(a).

SWMU 40-003(a) consists of two former detonation areas located at TA-40. The first area was located 450 ft east of structure 40-15. The detonation area is roughly circular and approximately 30 ft in diameter. Use of the area began in the early 1950s, and detonations were remotely controlled from structure 40-15. In 1958, several instances occurred when intact detonators and pieces of HE were discharged during detonations. Efforts to recover all the scattered detonators and HE were unsuccessful. Detonation activities at this first location ceased in the early 1960s when a second open detonation area was developed at a location farther to the east. This second area is approximately 1300 ft east of structure 40-15, within a natural amphitheater at the end of an unnamed dirt road. At the second area, scrap explosive materials were detonated and controlled remotely from structure 40-15. The detonation area is approximately 90 ft (east-west) by 110 ft (north-south). After each detonation, scattered debris was picked up and transported to an appropriate waste disposal site. Rock rubble and crushed tuff that sloughed from the amphitheater wall were pushed to the south, creating an area of fill that extended nearly to the edge of Pajarito Canyon. The second detonation area was later operated under RCRA interim status. All detonation operations ceased in 1985. The interim status open detonation area underwent RCRA closure from 1992 to 1994. The closure report was approved by NMED in August 1995.

A Consent Order investigation has not been performed at SWMU 40-003(a), and no decision-level soil sampling data are available for this Site. Confirmation samples were collected during the RCRA closure but were not analyzed for copper or gross-alpha radioactivity. SWMU 40-003(a) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 161-1) 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.

161.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 161-1).

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 161-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01301010020	Seed and Wood Mulch	-	-	X	-	B
J01301010028	Seed and Wood Mulch	-	-	X	-	B
J01302040018	Established Vegetation	-	X	X	-	B
J01303010024	Earthen Berm	-	X	-	X	EC
J01303010025	Earthen Berm	-	X	-	X	EC
J01303010026	Earthen Berm	-	X	-	X	EC
J01303010027	Earthen Berm	-	X	-	X	EC
J01303140029	Coir Log	X	-	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

161.3 Storm Water Monitoring

SWMU 40-003(a) is monitored within PJ-SMA-11. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 161-2). In Figure 161-2, 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 copper (42.9 µg/L) and gross-alpha activity (65.4 pCi/L) and are presented in Figure 161-2.

Following installation of enhanced control measures, corrective action storm water samples were collected on August 10, 2018, and July 2, 2019 (Figure 161-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (28 µg/L and 92.7 µg/L), gross-alpha activity (164 pCi/L and 108 pCi/L), and selenium (5.48 µg/L) and are presented in Figure 161-2. Selenium exceeded the TAL in the August 10, 2018, sample, but not in the July 2, 2019, sample. As both corrective action samples are used to calculate the geomean, the geomean is less than the ATAL and thus not considered a TAL exceedance in corrective action monitoring.

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 40-003(a):

- Copper may have been associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site.

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 161-2. 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 161-2.

Monitoring location PJ-SMA-11 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 results from 2013, 2018, and 2019 are all greater than this value.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013, 2018, and 2019 gross-alpha results are all less than this value.

All the analytical results for these samples are reported in the 2013, 2018, and 2019 Annual Reports.

161.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-SMA-11 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 161-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72894	3-20-2019
Storm Rain Event	BMP-74618	7-16-2019
Storm Rain Event	BMP-75370	8-2-2019
Storm Rain Event	BMP-75924	8-13-2019
TAL Exceedance Inspection	COMP-75870	8-13-2019
Storm Rain Event	BMP-76387	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-11 in 2019.

161.5 Compliance Status

The Site associated with PJ-SMA-11 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 161-3 presents the 2019 compliance status.

Table 161-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 40-003(a)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for Corrective Action	Initiated 8-5-2019

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

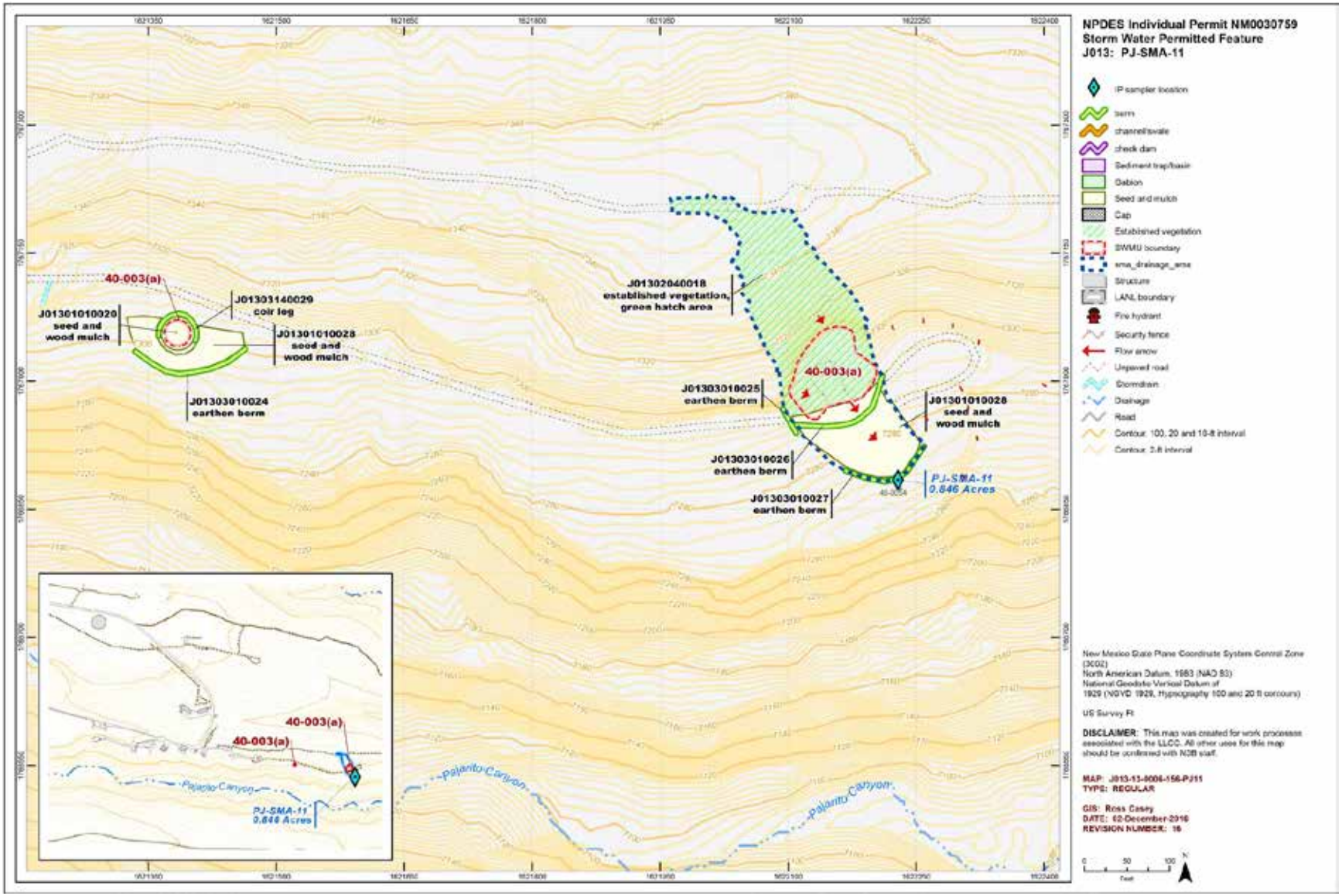


Figure 161-1 PJ-SMA-11 location map

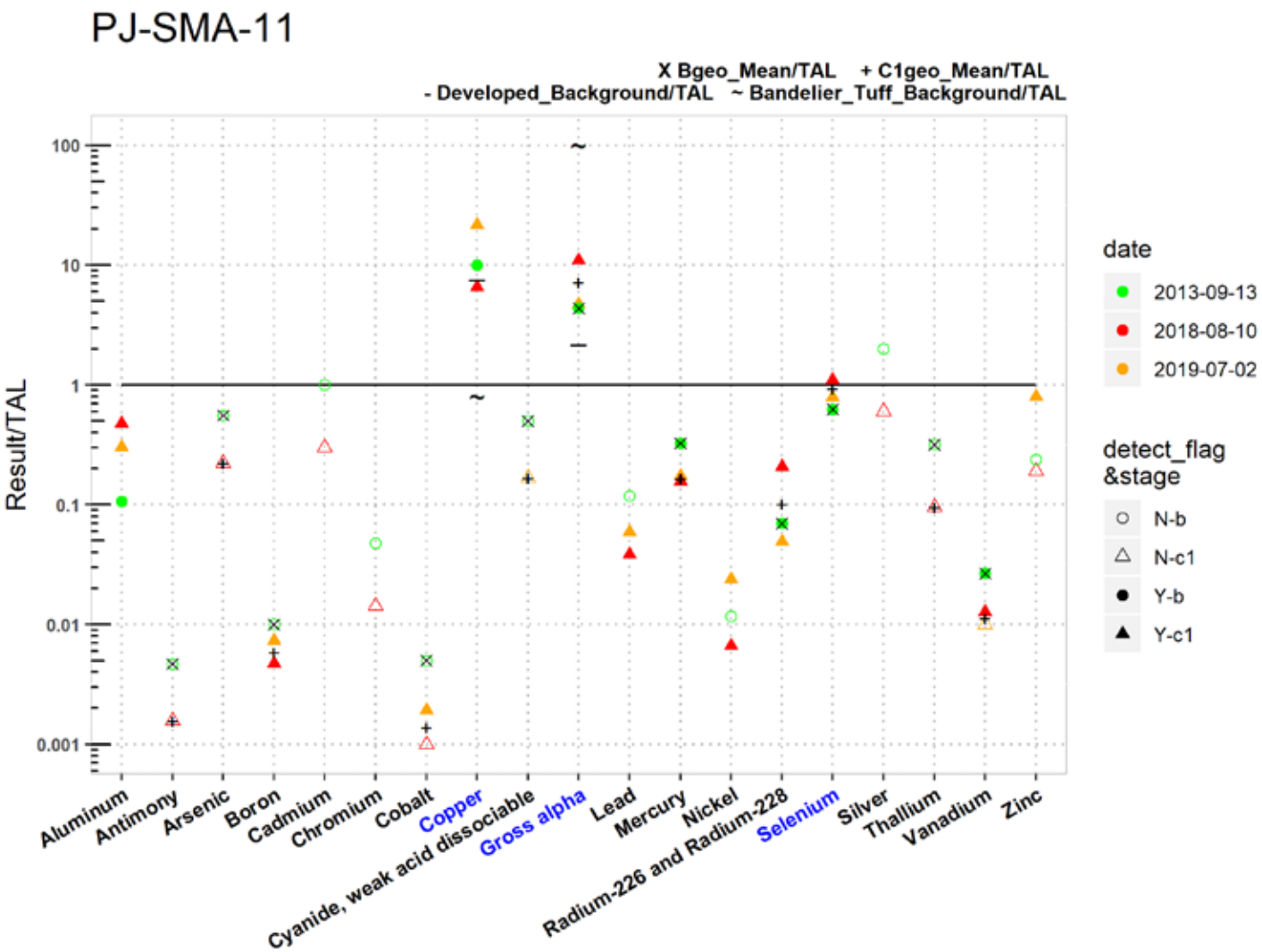


Figure 161-2 Analytical results summary for PJ-SMA-11

PJ-SMA-11

	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	0.01	NA	NA	0.005	NA	0.5	**4.4**	NA	0.32	NA	0.07	0.62	NA	0.32	0.027	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.0059	NA	NA	0.0014	NA	0.17	**7.2**	NA	0.16	NA	0.1	0.93	NA	0.095	0.011	NA
2013-09-13 d	0.11	NA	NA	NA	NA	NA	NA	**10**	NA	**4.4**	NA	0.32	NA	0.07	0.62	NA	NA	0.027	NA
2013-09-13 nd	NA	0.0047	0.56	0.01	1	0.048	0.005	NA	0.5	NA	0.12	NA	0.012	NA	NA	2	0.32	NA	0.24
2018-08-10 d	0.48	NA	NA	0.0047	NA	NA	NA	**6.5**	NA	**11**	0.038	0.16	0.0066	0.21	**1.1**	NA	NA	0.013	NA
2018-08-10 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	0.19
2019-07-02 d	0.3	NA	NA	0.0073	NA	NA	0.0019	**22**	NA	**4.7**	0.059	0.17	0.024	0.049	0.79	NA	NA	NA	0.8
2019-07-02 nd	NA	0.0016	0.22	NA	0.3	0.014	NA	NA	0.17	NA	NA	NA	NA	NA	NA	0.6	0.095	0.01	NA

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

Figure 161-2 (continued) Analytical results summary for PJ-SMA-11

162.0 PJ-SMA-11.1: AOC 40-003(b)

162.1 Site Descriptions

One historical industrial activity area is associated with J014, PJ-SMA-11.1: Site 40-003(b).

AOC 40-003(b) is a former burn site located at TA-40 approximately 1400 ft east of building 40-15, next to the open detonation area [SWMU 40-003(a)]. The burn site consists of three small burning areas (burn cage locations) and a burn pit. Materials burned consisted of explosives-contaminated combustibles, including rags, paper, wood, and glassware. From 1960 to 1985, a wire burn cage (4 ft wide × 4 ft long × 5 ft high) with a steel-plate floor was used at three different locations to contain burning materials and to prevent wastes from being windblown before and during burning activities. Kerosene was poured over the stacked waste, and burning was initiated using explosive detonators fired remotely. The burn cage locations operated as a hazardous waste thermal treatment unit RCRA interim status until operations ceased in 1985.

The burn pit was located between the two northern locations of the burn cage and measured approximately 12 ft wide × 50 ft long × 12 ft deep. Burn pit operations began in 1961 and ceased sometime before 1977.

The burn cage locations underwent RCRA closure from 1992 to 1994. The closure report was approved by NMED in August 1995. Aerial photographs showed that the entire area, including the burn pit, was backfilled and covered by 1976. The burn pit was excluded from the RCRA closure because its period of use occurred before 1980 and therefore before RCRA regulation.

A Consent Order investigation has not been performed at AOC 40-003(b), and no decision-level soil sampling data are available for this Site. AOC 40-003(b) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 162-1) 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.

162.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 162-1).

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 162-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01401010025	Seed and Wood Mulch	-	-	X	-	B
J01402040015	Established Vegetation	-	X	X	-	B
J01403010020	Earthen Berm	-	X	-	X	EC
J01403010021	Earthen Berm	-	X	-	X	EC
J01403010022	Earthen Berm	-	X	-	X	EC
J01403010023	Earthen Berm	-	X	-	X	EC
J01403060027	Straw Wattle	-	X	-	X	B
J01406010007	Rock Check Dam	-	X	-	X	CB
J01406010008	Rock Check Dam	-	X	-	X	CB
J01406010009	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

162.3 Storm Water Monitoring

AOC 40-003(b) is monitored within PJ-SMA-11.1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 162-2). In Figure 162-2, 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 (1040 µg/L), copper (20.9 µg/L) and gross-alpha activity (89.4 pCi/L) and are presented in Figure 162-2.

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 40-003(b):

- Confirmation samples were collected during the RCRA closure but were not analyzed for aluminum, copper, or gross-alpha radioactivity. Based on Site history, however, the Site is an unlikely source of the TAL exceedances.

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 162-2. 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 162-2.

Monitoring location PJ-SMA-11.1 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum 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.

- 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.
- 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.
- 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.

162.4 Inspections and Maintenance

RG-TA-06 recorded seven storm events at PJ-SMA-11.1 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 162-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72896	3-20-2019
Storm Rain Event	BMP-74620	7-16-2019
Storm Rain Event	BMP-75374	8-2-2019
Storm Rain Event	BMP-75925	8-13-2019
Storm Rain Event	BMP-76389	8-28-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-11.1 in 2019.

162.5 Compliance Status

The Site associated with PJ-SMA-11.1 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 162-3 presents the 2019 compliance status.

Table 162-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 40-003(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."

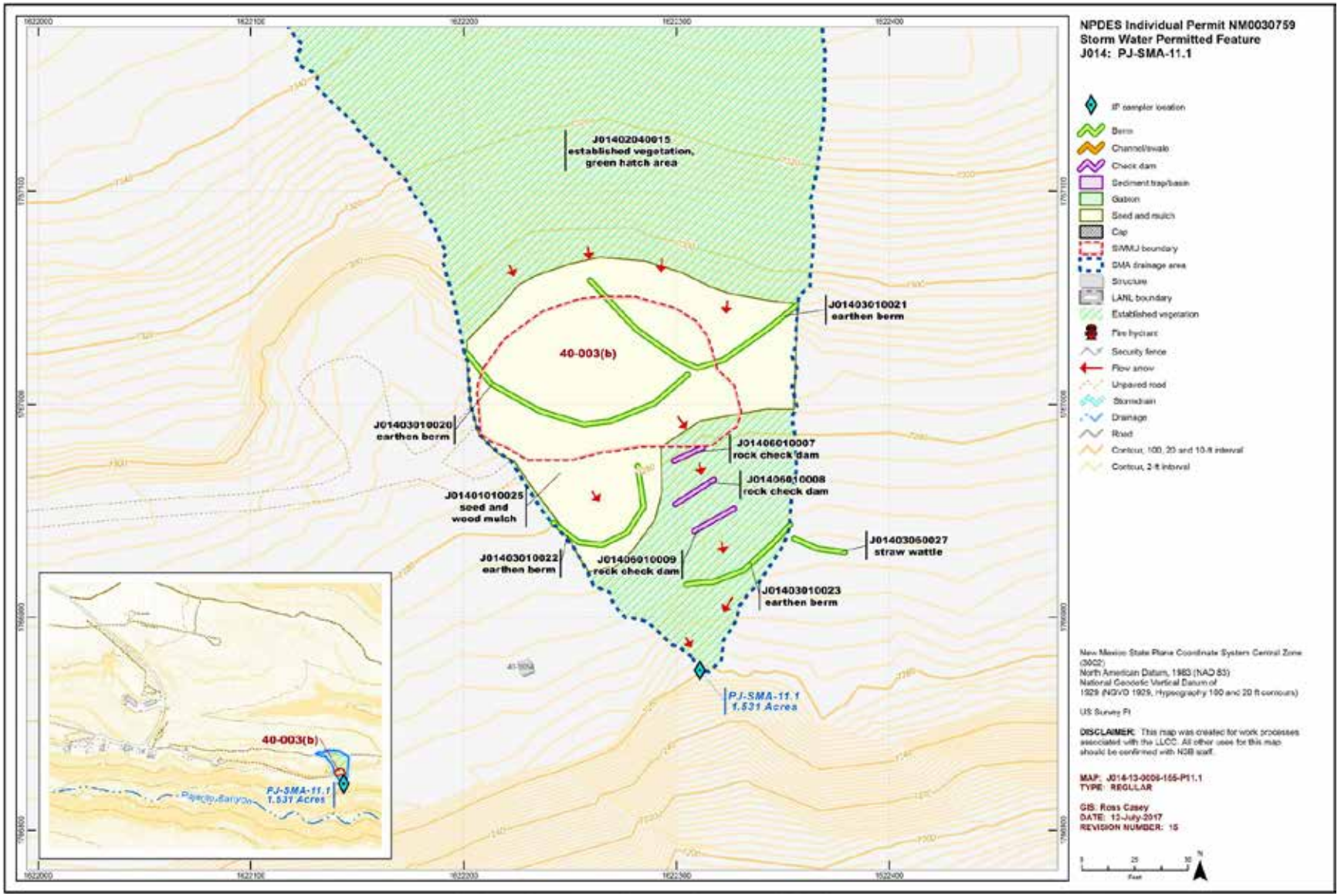


Figure 162-1 PJ-SMA-11.1 location map

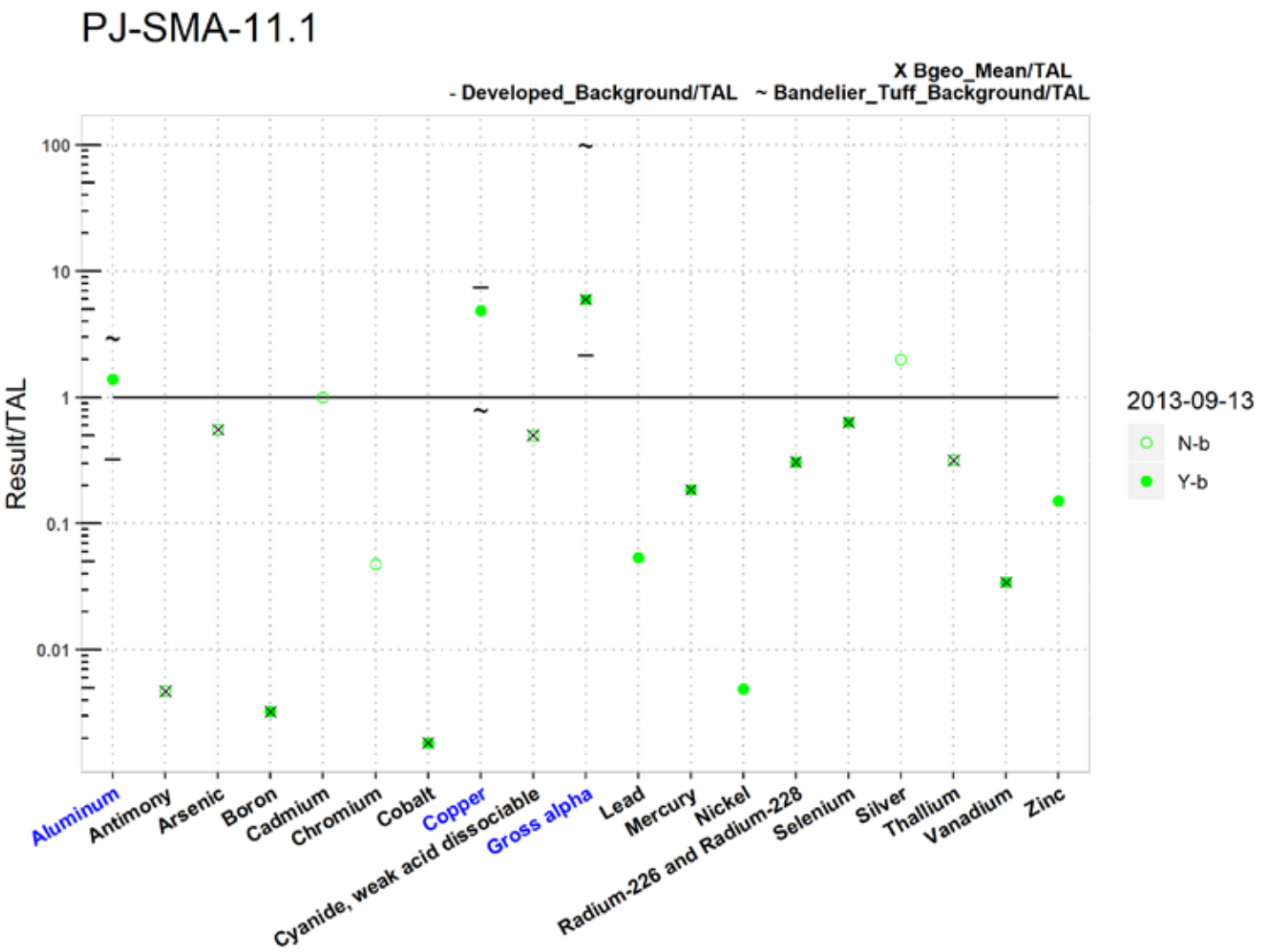


Figure 162-2 Analytical results summary t for PJ-SMA-11.1

PJ-SMA-11.1

	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	0.0047	0.56	0.0032	NA	NA	0.0018	NA	0.5	**6**	NA	0.19	NA	0.31	0.63	NA	0.32	0.034	NA
2013-09-13 d	**1.4**	NA	NA	0.0032	NA	NA	0.0018	**4.9**	NA	**6**	0.053	0.19	0.0049	0.31	0.63	NA	NA	0.034	0.15
2013-09-13 nd	NA	0.0047	0.56	NA	1	0.048	NA	NA	0.5	NA	NA	NA	NA	NA	NA	2	0.32	NA	NA

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

Figure 162-2 (continued) Analytical results summary for PJ-SMA-11.1

163.0 PJ-SMA-13: SWMU 18-002(a)

163.1 Site Descriptions

One historical industrial activity area is associated with J015, PJ-SMA-13: Site 18-002(a).

SWMU 18-002(a) consists of an inactive HE firing site at TA-18 in Pajarito Canyon south of the present location of building 18-23 (Kiva 1). The firing site was used from 1944 to 1945 and consisted of two structures: former structure 18-3, a firing chamber 2 ft wide × 2 ft long × 2.2 ft deep constructed from 1-in.-thick steel, and former structure 18-2, an aboveground armored bunker, commonly called a "battleship," used to protect shot instrumentation. The firing chamber was open on the top and set flush with the ground west of the bunker, which was designated as storage for HE in the historical TA-18 structure log. Structure 18-3 was removed in 1945, and structure 18-2 is no longer in use.

SWMU 18-002(a) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for SWMU 18-002(a).

The project map (Figure 163-1) 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.

163.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 163-1).

Table 163-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01502040005	Established Vegetation	-	X	X	-	B
J01503010003	Earthen Berm	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

163.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-13. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

163.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-13 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 163-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75375	7-31-2019

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

Table 165-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-75375	Gravel bags were installed in low spots of Earthen Berm J01503010003 at inspection as a temporary measure.	7-31-2019	0 day(s)	Maintenance conducted as soon as practicable.
BMP-76230	Built up low spots of Earthen Berm J01503010003, increasing in approximately 6 in. in height. TRM and native seed mix were also applied to the berm.	8-21-2019	21 day)s	Maintenance conducted as soon as practicable.

163.5 Compliance Status

The Site associated with PJ-SMA-13 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 163-4 presents the 2019 compliance status.

Table 163-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 18-002(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

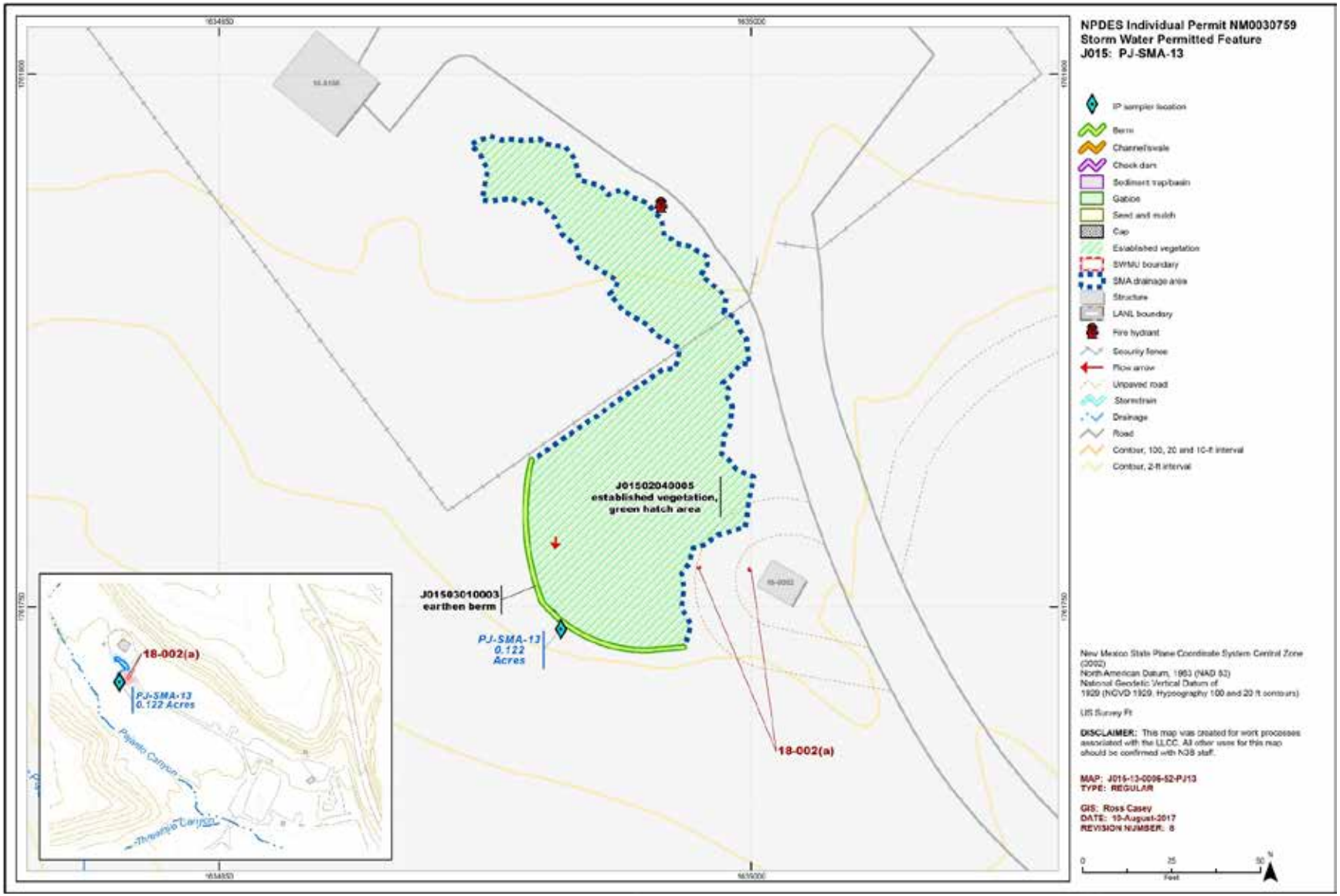


Figure 163-1 PJ-SMA-13 location map

164.0 PJ-SMA-13.7: AOC 18-010(b)

164.1 Site Descriptions

One historical industrial activity area is associated with J016, PJ-SMA-13.7: Site 18-010(b).

AOC 18-010(b) consists of an active outfall that receives storm water from a drainage ditch running southward along the west side of the paved area west of the former main laboratory and office building at TA-18 (former building 18-30). The outfall discharges to a flat, grassy area at the fence southwest of former building 18-30. This discharge point is approximately 25 ft north of the stream channel in Pajarito Canyon. The storm water discharged to this area from AOC 18-010(b) generally infiltrates the ground a short distance from the outfall, although heavy flow may reach the stream channel. The date this outfall became operational is not known, but building 18-30 was constructed in 1951. The RFI work plan describes a 1988 photograph that showed spillage from a former refueling platform at structure 18-110 into the drainage ditch. Building 18-30 and most of the other TA-18 structures were demolished in 2010 and 2011.

Consent Order investigations have not been performed at AOC 18-010(b), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994. AOC 18-010(b) will be investigated under the Consent Order as part of the Lower Pajarito Canyon Aggregate Area investigation.

The project map (Figure 164-1) 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.

164.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 164-1).

Enhanced controls were installed and certified on July 8, 2013, and submitted to EPA on July 9, 2013, as part of corrective action. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 164-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01602040011	Established Vegetation	-	X	X	-	B
J01605020008	Sediment Basin	-	X	-	X	EC
J01605020009	Sediment Basin	-	X	-	X	EC
J01606010007	Rock Check Dam	X	-	-	X	CB
J01607010002	Gabions	-	X	X	-	CB
J01608030010	Concrete/Asphalt Cap	-	X	-	-	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

164.3 Storm Water Monitoring

AOC 18-010(b) is monitored within PJ-SMA-13.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 164-2). Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (52.6 pCi/L) and are presented in Figure 164-2.

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 18-010(b):

- Alpha-emitting radionuclides, including isotopes of uranium and plutonium, are known to be associated with industrial materials historically managed at TA-18; these materials were handled only inside structures and were not exposed to storm water. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides but 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. Total uranium was detected above BV in 7 of 8 shallow RFI soil and sediment samples with a maximum concentration 5.7 times the maximum value in the background data set. Data collected during the 1994 RFI are screening-level data.

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 164-2. 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 164-2.

PJ-SMA-13.7, Gabions, J01607010002 (photo ID 30474-3)

Monitoring location PJ-SMA-13.7 receives storm water run-on from landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha background UTL for undisturbed 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.

164.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-13.7 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 164-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75376	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-13.7 in 2019.

164.5 Compliance Status

The Site associated with PJ-SMA-13.7 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 164-3 presents the 2019 compliance status.

Table 164-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
18-010(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, July 9, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

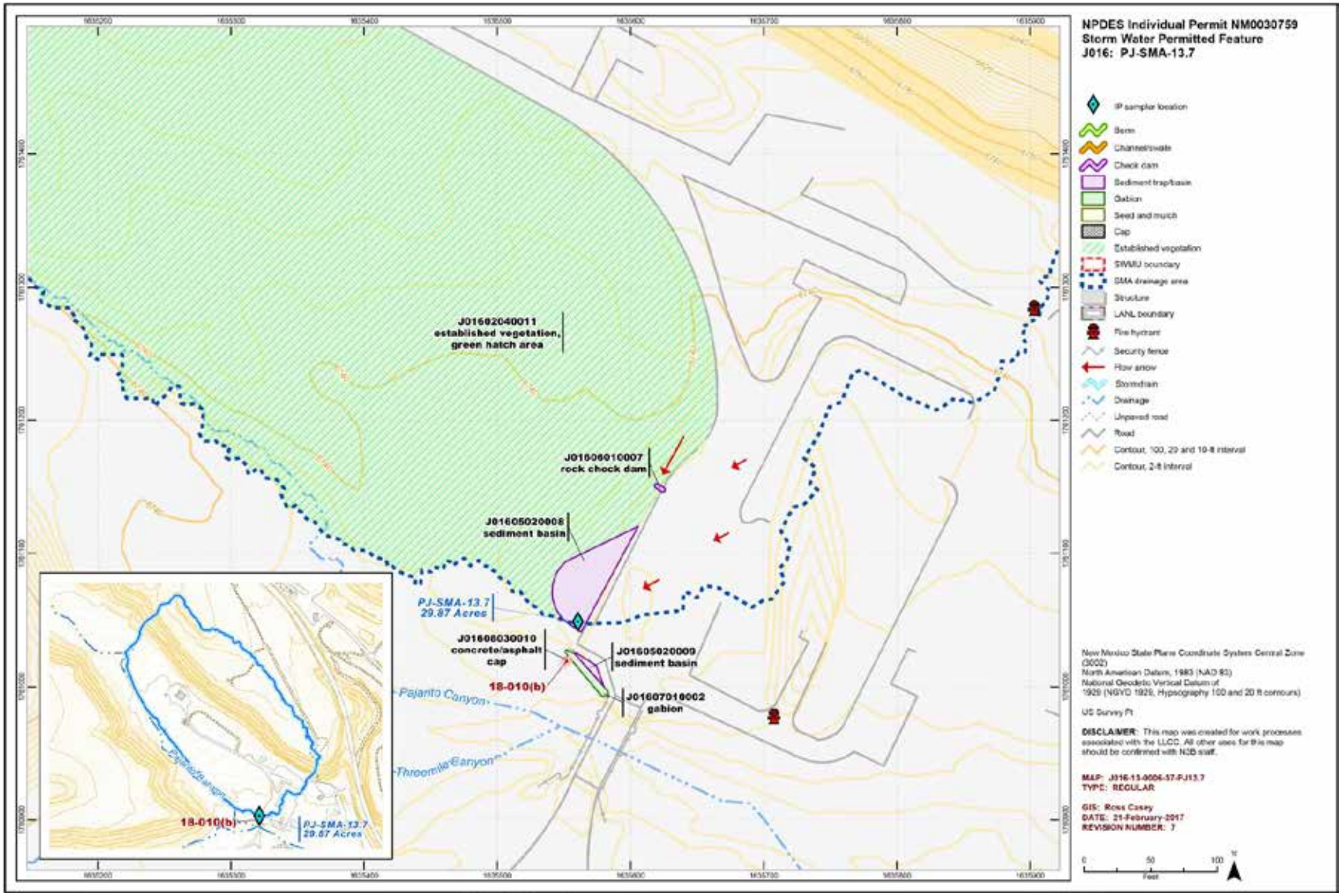


Figure 164-1 PJ-SMA-13.7 location map

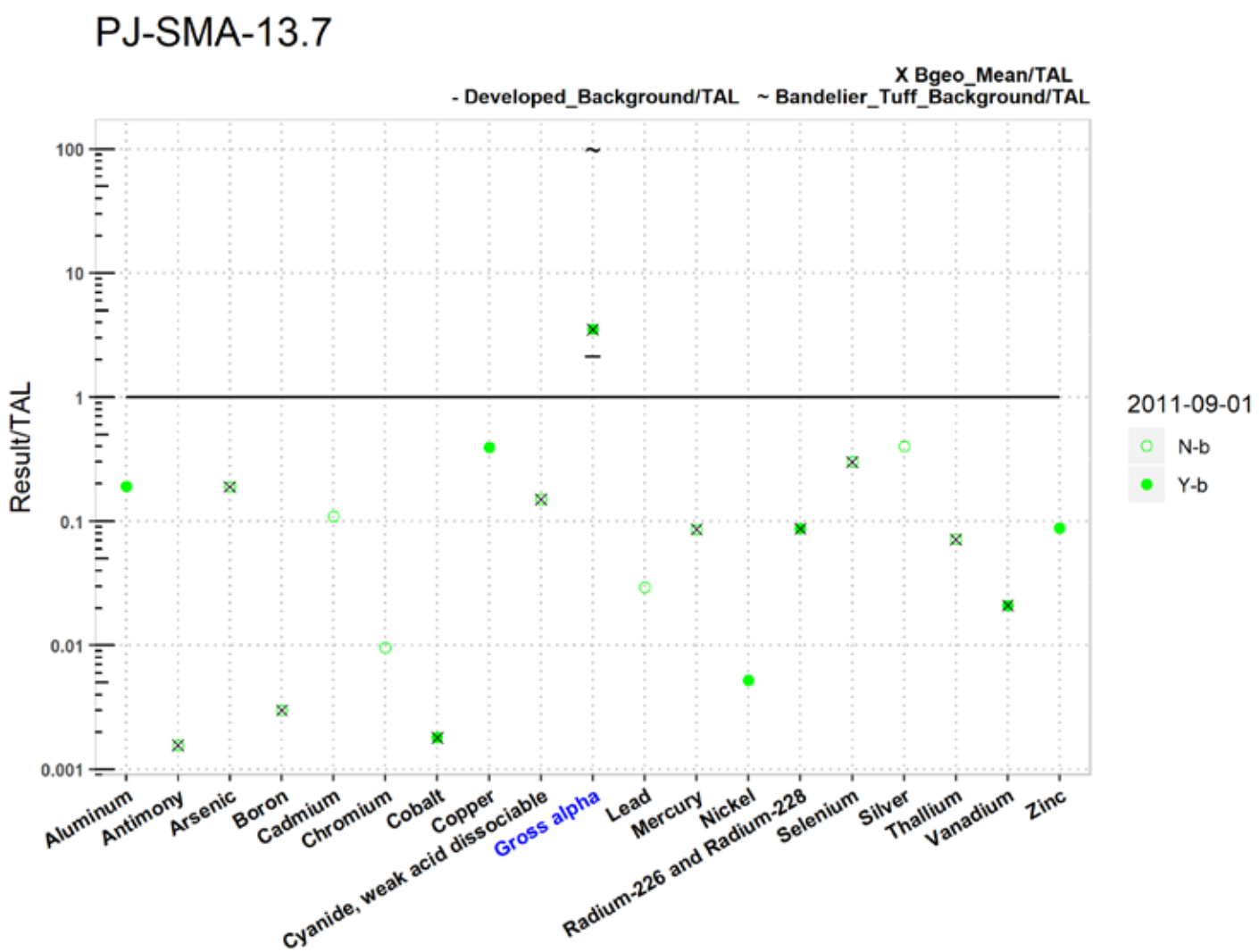


Figure 164-2 Analytical results summary for PJ-SMA-13.7

PJ-SMA-13.7

	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	0.0018	NA	0.15	**3.5**	NA	0.086	NA	0.087	0.3	NA	0.071	0.021	NA
2011-09-01 d	0.19	NA	NA	NA	NA	NA	0.0018	0.4	NA	**3.5**	NA	NA	0.0052	0.087	NA	NA	NA	0.021	0.088
2011-09-01 nd	NA	0.0016	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	NA	NA

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

Figure 164-2 (continued) Analytical results summary for PJ-SMA-13.7

165.0 PJ-SMA-14: SWMU 54-004

165.1 Site Descriptions

One historical industrial activity area is associated with J017, PJ-SMA-14: Site 54-004.

SWMU 54-004 (MDA H) is an inactive 0.3-acre landfill on Mesita del Buey in TA-54 consisting of nine inactive shafts used to dispose of Laboratory-generated classified waste such as weapon-component mockup shapes, detonators, papers, and tritium-contaminated items. Material disposed of at MDA H contained residues of DU, fuel elements, residual plutonium, HE, liquids, or gases, and the density of waste materials varied from 5 lb/ft^3 to over 400 lb/ft^3 in the shafts. Each shaft is 6 ft in diameter and 60 ft deep. Placement of all waste in the pit below the original land surface ensured the waste was contained within the disposal pit and prevented exposure to storm water runoff during the operational life of each pit. The shafts were capped when waste came to within 6 ft of the surface. Shafts 1 through 8 are capped with 3 ft of crushed tuff followed by 3-ft-thick concrete caps; shaft 9 is capped with only a 6-ft-thick layer of concrete. The nine shafts at MDA H were used from 1960 to 1986. One shaft, shaft 9, received hazardous waste after July 26, 1982, and therefore is considered a RCRA-regulated landfill. The surface area of MDA H was covered with clean fill and reseeded.

Investigation sampling is complete for SWMU 54-004. A CME was conducted at MDA H in 2009 and 2010 to evaluate alternatives for preventing future exposure to buried waste. CME results were submitted to NMED in September 2011. In October 2016, DOE withdrew the CME based on a reprioritization of activities planned under the Consent Order.

The project map (Figure 165-1) 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.

165.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 165-1).

Table 165-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01701010004	Seed and Wood Mulch	-	-	X	-	CB
J01703010005	Earthen Berm	-	X	-	X	B
J01703010006	Earthen Berm	-	X	-	X	B
J01703020002	Base Course Berm	X	-	-	X	CB
J01703020003	Base Course Berm	-	X	-	X	CB
J01708010001	Earth Cap	-	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

165.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

165.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-14 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 165-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75377	8-9-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-14 in 2019.

165.5 Compliance Status

The Site associated with PJ-SMA-14 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 165-3 presents the 2019 compliance status.

Table 165-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 54-004	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

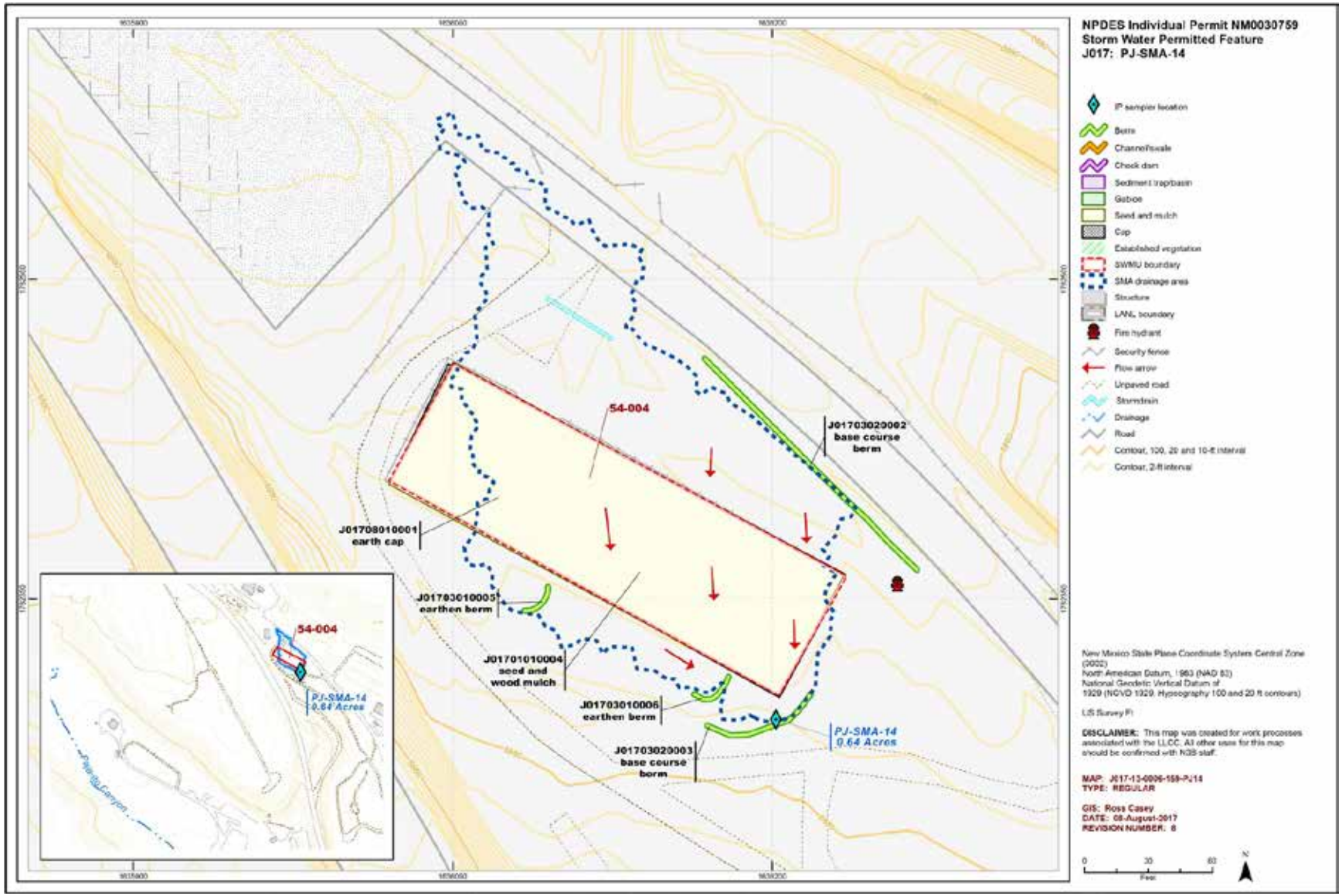


Figure 165-1 PJ-SMA-14 location map

166.0 PJ-SMA-14.2: SWMU 18-012(b)

166.1 Site Descriptions

One historical industrial activity area is associated with J018, PJ-SMA-14.2: Site 18-012(b).

SWMU 18-012(b) consists of a former outfall at TA-18 that received discharge from several sources in buildings 18-30 and 18-31. The outfall, which was active from the time the buildings were constructed in 1950, is located south of building 18-31, approximately 20 ft north of the main drainage channel in Pajarito Canyon. The outfall received discharge from an associated sump [SWMU 18-001(c)], floor drains, sinks, storm water from the east-wing roof of building 18-31, and a welding quench tank in building 18-30. The outfall also received discharge from machine shop floor drains and storm water from the roof of building 18-31. Discharges from both buildings were transported to the outfall via a series of 4-in. polyethylene pipes connected to the sources within the buildings. All drains in both buildings were plugged in 1992 and 1993, with the exception of the storm water roof drains. From 1993 to 2011, the outfall received only storm water from the east-wing roof of building 18-30. Buildings 18-30 and 18-31 underwent D&D in 2011 and 2012.

SWMU 18-012(b) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for SWMU 18-012(b).

The project map (Figure 166-1) 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.

166.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 166-1).

Table 166-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01802040005	Established Vegetation	-	X	X	-	B
J01803060006	Straw Wattle	X	-	-	X	B
J01803120004	Rock Berm	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

166.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.2. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

166.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-14.2 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 166-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75378	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-14.2 in 2019.

166.5 Compliance Status

The Site associated with PJ-SMA-14.2 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 166-3 presents the 2019 compliance status.

Table 166-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 18-012(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

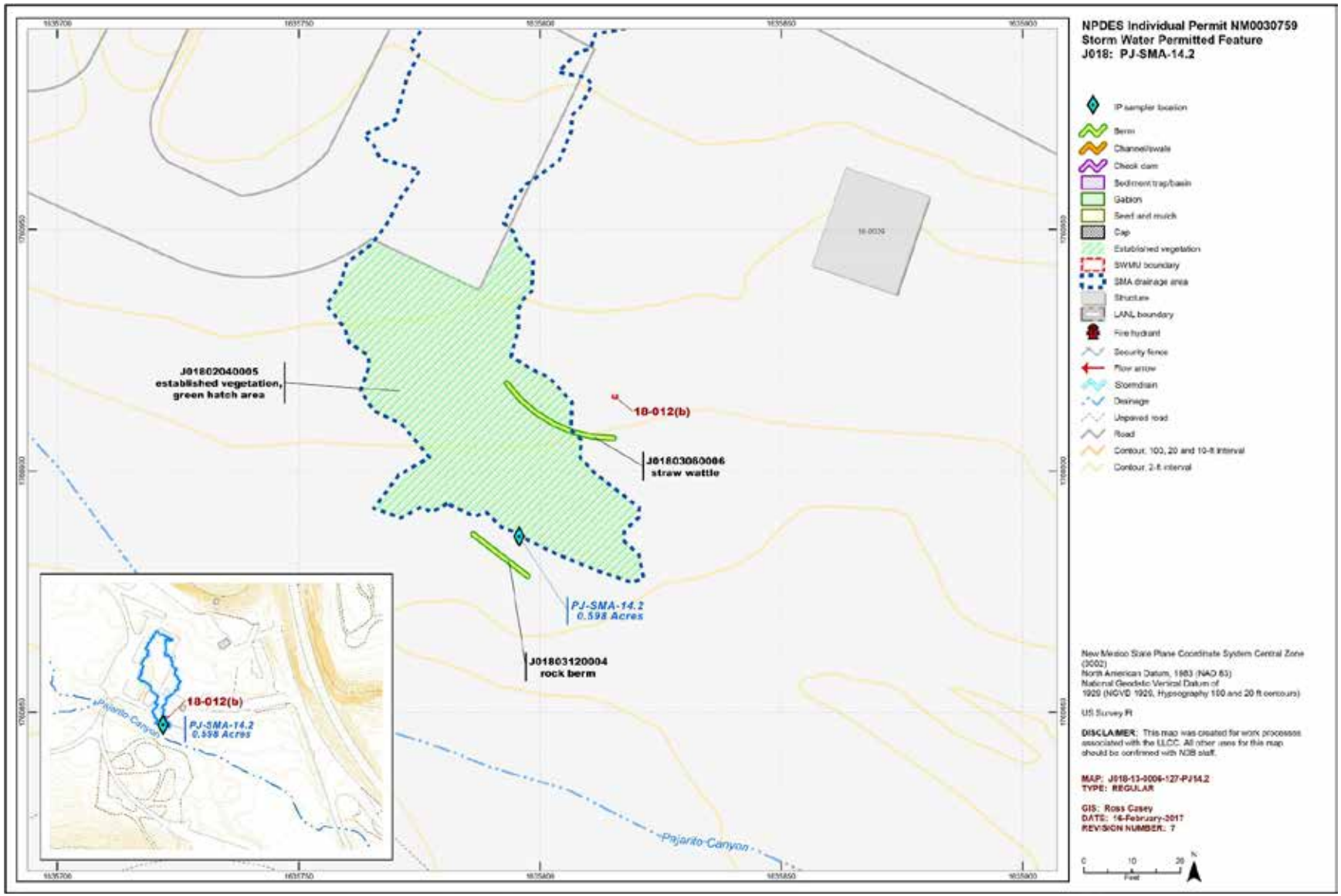


Figure 166-1 PJ-SMA-14.2 location map

167.0 PJ-SMA-14.3: SWMU 18-003(e)

167.1 Site Descriptions

One historical industrial activity area is associated with J019, PJ-SMA-14.3: Site 18-003(e).

SWMU 18-003(e) consists of an inactive septic system at TA-18 that includes two inlet lines, a cylindrical septic tank (structure 18-40), an outlet line, a drain field, and a former outfall. The septic tank is located approximately 50 ft southwest of building 18-37 and approximately 50 ft east of building 18-29 (a log cabin). The tank is constructed of reinforced concrete and measures 6 ft in diameter × 6 ft deep. The septic system received sanitary waste from building 18-31 (a utility building), building 18-37 (Guard Station 205), building 18-129 (a reactor subassembly building), building 18-189, and building 18-190. While it was in operation from 1951 to 1969, the septic system may have also received industrial waste from a sink in building 18-28 (a warehouse). Septic tanks associated with SWMUs 18-003(g and h) (structures 18-43 and 18-152, respectively) may have discharged to this septic system. Effluent discharged into a drain field that has four drainlines, each of which is approximately 40 ft long. The drainlines, which are 10 ft apart, merge at the distal end of the drain field and continue an estimated 100 ft to the former outfall. In 1969, sanitary waste from the buildings was connected to the sewer system at the Site that routed effluent to the former TA-18 sanitary sewage lagoons. At that time, the septic tank was backfilled with sand.

SWMU 18-003(e) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for SWMU 18-003(e).

The project map (Figure 167-1) 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.

167.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 167-1).

Table 167-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01902040003	Established Vegetation	-	X	X	-	B
J01903060006	Straw Wattle	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

167.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.3. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

167.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-14.3 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 167-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75379	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-14.3 in 2019.

167.5 Compliance Status

The Site associated with PJ-SMA-14.3 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 167-3 presents the 2019 compliance status.

Table 167-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 18-003(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

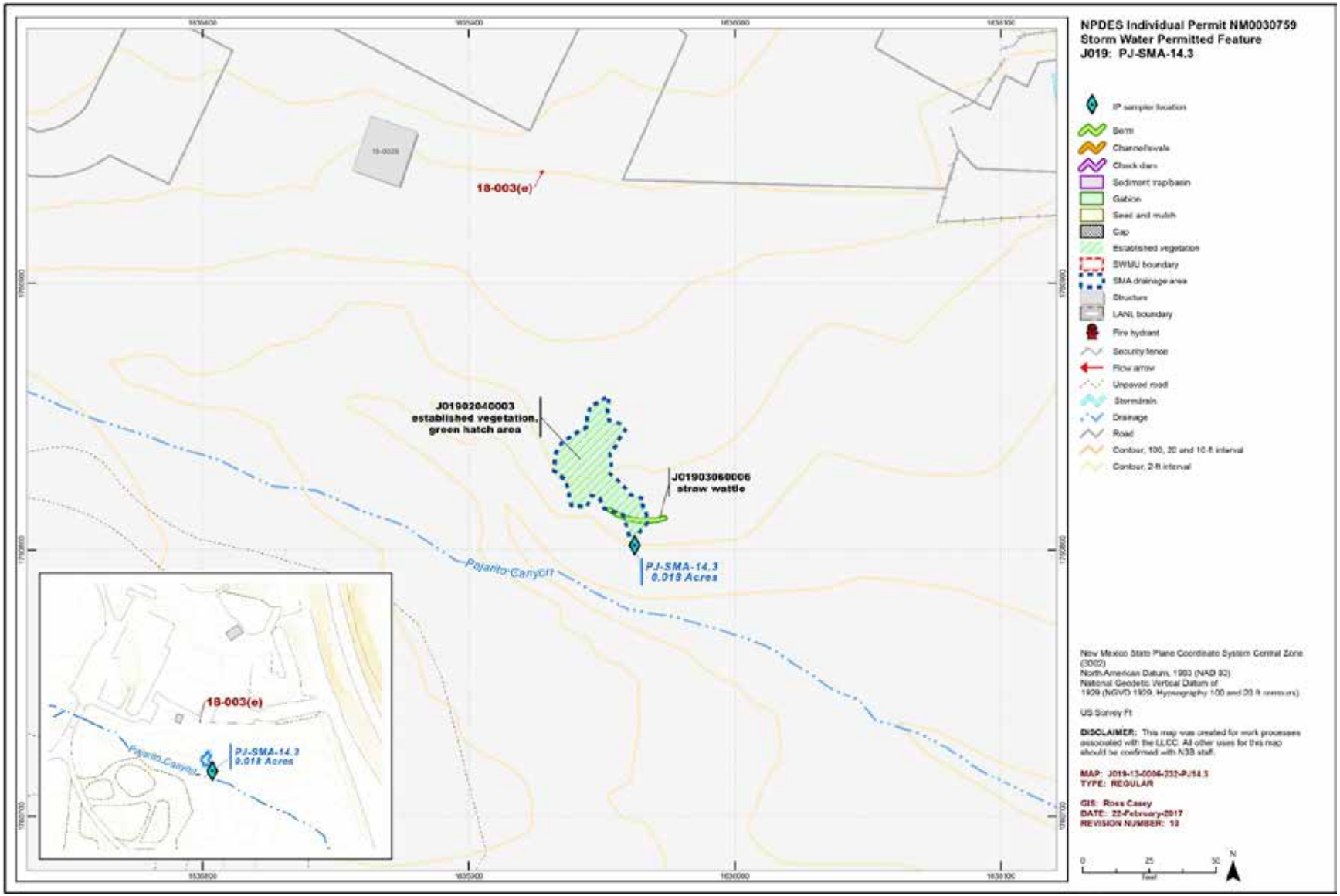


Figure 167-1 PJ-SMA-14.3 location map

168.0 PJ-SMA-14.4: AOC 18-010(d)

168.1 Site Descriptions

One historical industrial activity area is associated with J020, PJ-SMA-14.4: Site 18-010(d).

AOC 18-010(d) consists of an outfall at TA-18 that receives discharge in the form of sheet flow from a storm drainage collection area that drains the paved area northeast of a former guard station (building 18-37). The outfall discharges to a flat graveled and grassy area southeast of former building 18-37 and west of building 18-258. The discharge point is approximately 100 ft north of the stream channel in Pajarito Canyon. The date this outfall became operational is not known, but it is likely the outfall has been operational from the time building 18-37 was constructed in 1951. Building 18-37 underwent D&D in 2011 and 2012.

AOC 18-010(d) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for AOC 18-010(d).

The project map (Figure 168-1) 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.

168.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 168-1).

Table 168-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02002040010	Established Vegetation	-	X	X	-	B
J02003010013	Earthen Berm	-	X	-	X	B
J02003140012	Coir Log	X	-	X	-	B

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

168.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.4. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

168.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-14.4 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 168-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75380	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-14.4 in 2019.

168.5 Compliance Status

The Site associated with PJ-SMA-14.4 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 168-3 presents the 2019 compliance status.

Table 168-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 18-010(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.

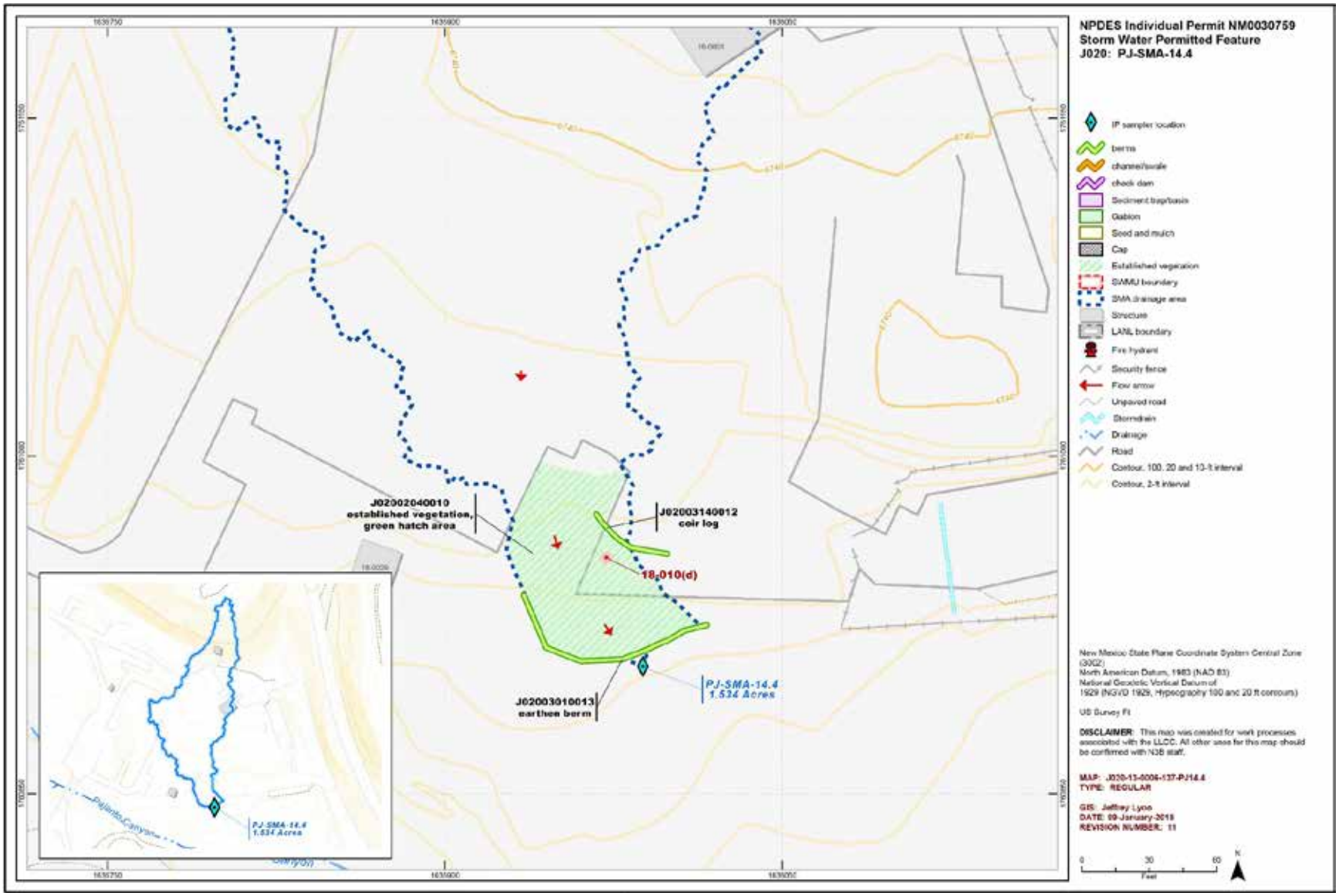


Figure 168-1 PJ-SMA-14.4 location map

169.0 PJ-SMA-14.6: AOC 18-010(e)

169.1 Site Descriptions

One historical industrial activity area is associated with J021, PJ-SMA-14.6: Site 18-010(e).

AOC 18-010(e) consists of an outfall at TA-18 that receives discharge from a storm sewer drainage that drains the paved area between buildings 18-28 and 18-147. Discharge enters a storm drain that runs southeast under the paved area west of building 18-129 to an area east of building 18-190 where the storm drain turns south. The storm drain reaches the outfall south of building 18-129, which discharges to a small grassy gully leading to the main stream channel in Pajarito Canyon. The outfall is located approximately 200 ft north of the stream channel. Buildings 18-28 and 18-147 underwent D&D in 2011 and 2012.

AOC 18-010(e) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for AOC 18-010(e).

The project map (Figure 169-1) 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.

169.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 169-1).

Table 169-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02102040008	Established Vegetation	-	X	X	-	B
J02103010005	Earthen Berm	-	X	-	X	B
J02104060007	Rip Rap	X	-	X	-	B

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

169.3 Storm Water Monitoring

Through calendar year 2019, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.6. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

169.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-14.6 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 169-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75381	7-31-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-14.6 in 2019.

169.5 Compliance Status

The Site associated with PJ-SMA-14.6 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 169-3 presents the 2019 compliance status.

Table 169-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 18-010(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.

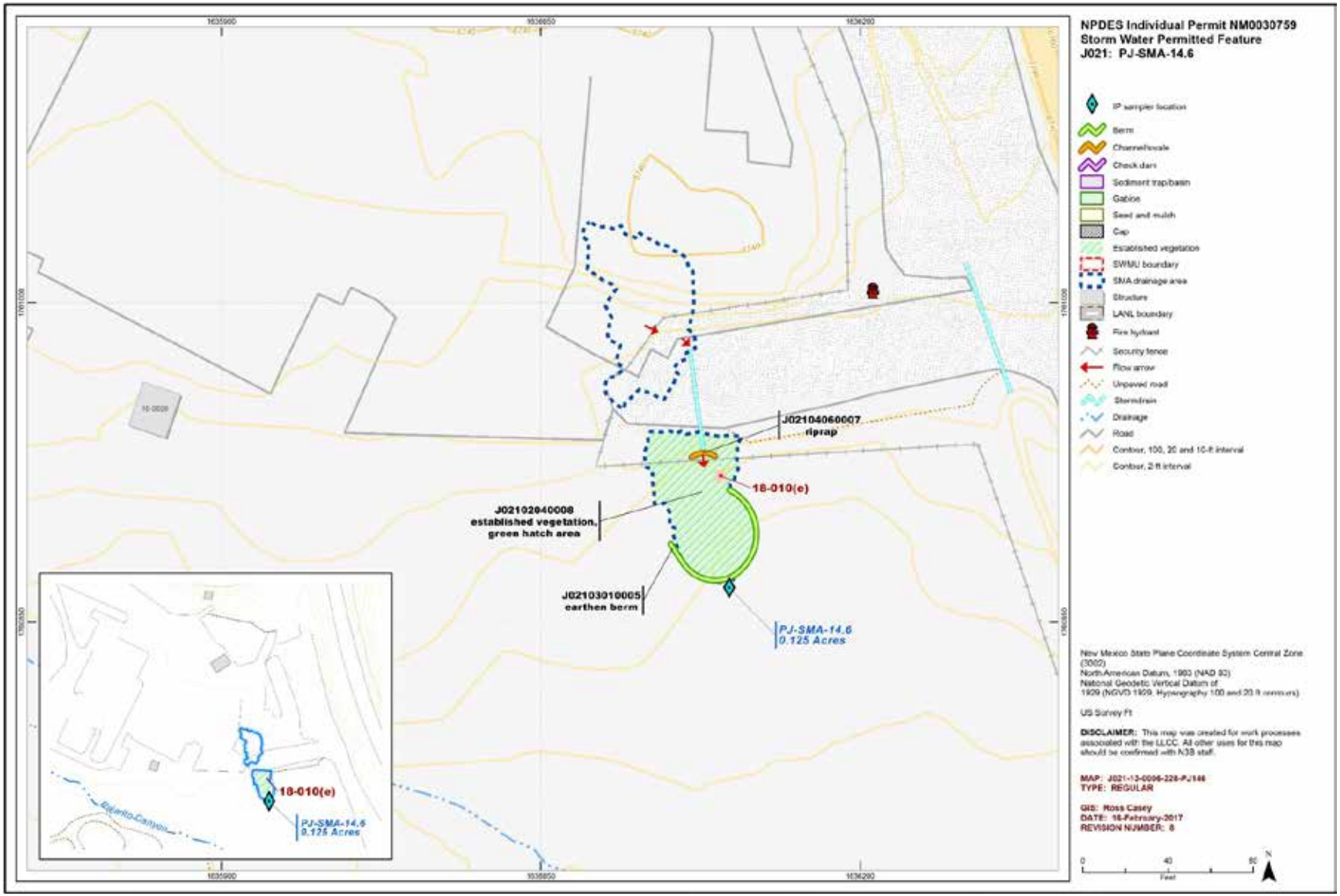


Figure 169-1 PJ-SMA-14.6 location map

170.0 PJ-SMA-14.8: SWMU 18-012(a)

170.1 Site Descriptions

One historical industrial activity area is associated with J022, PJ-SMA-14.8: Site 18-012(a).

SWMU 18-012(a) consists of a former outfall at TA-18 for a combined industrial drain and storm sewer drain for former building 18-116 (Kiva 3). Drainlines that discharged to this outfall were connected to building 18-116 roof drains, floor drains, and sinks. The outfall, found during 1992 field inspections using a dye-trace test, is located approximately 120 ft northeast of building 18-116 and approximately 150 ft from the stream channel in Pajarito Canyon. Building 18-116 was built in 1960 and used for uranium mockup tests for the Rover Program—a nuclear rocket propulsion program conducted from 1955 to 1972. The date this outfall became operational is not known, but it is likely the outfall has been operational from the time building 18-116 was completed in 1960. Building 18-116 underwent D&D in 2011 and 2012.

SWMU 18-012(a) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for SWMU 18-012(a).

The project map (Figure 170-1) 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.

170.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 170-1).

Table 170-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02202040007	Established Vegetation	-	X	X	-	B
J02203060008	Straw Wattle	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

170.3 Storm Water Monitoring

SWMU 18-012(a) is monitored within PJ-SMA-14.8. Following the installation of baseline control measures, baseline storm water samples were collected on July 28 and August 18, 2011 (Figure 170-2). Analytical results from these samples yielded no TAL exceedances. Baseline confirmation is complete for PJ-SMA-14.8 and the associated SWMU 18-012(a) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for PJ-SMA-14.8 for the duration of the IP.

170.4 Inspections and Maintenance

RG245.5 recorded two storm events at PJ-SMA-14.8 during the 2019 season. These rain events triggered one post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 170-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-75382	8-9-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-14.8 in 2019.

170.5 Compliance Status

The Site associated with PJ-SMA-14.8 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 170-3 presents the 2019 compliance status.

Table 170-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 18-012(a)	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 5-1-2012. All baseline confirmation monitoring results are less than TALs. No further confirmation monitoring is required for this Site.

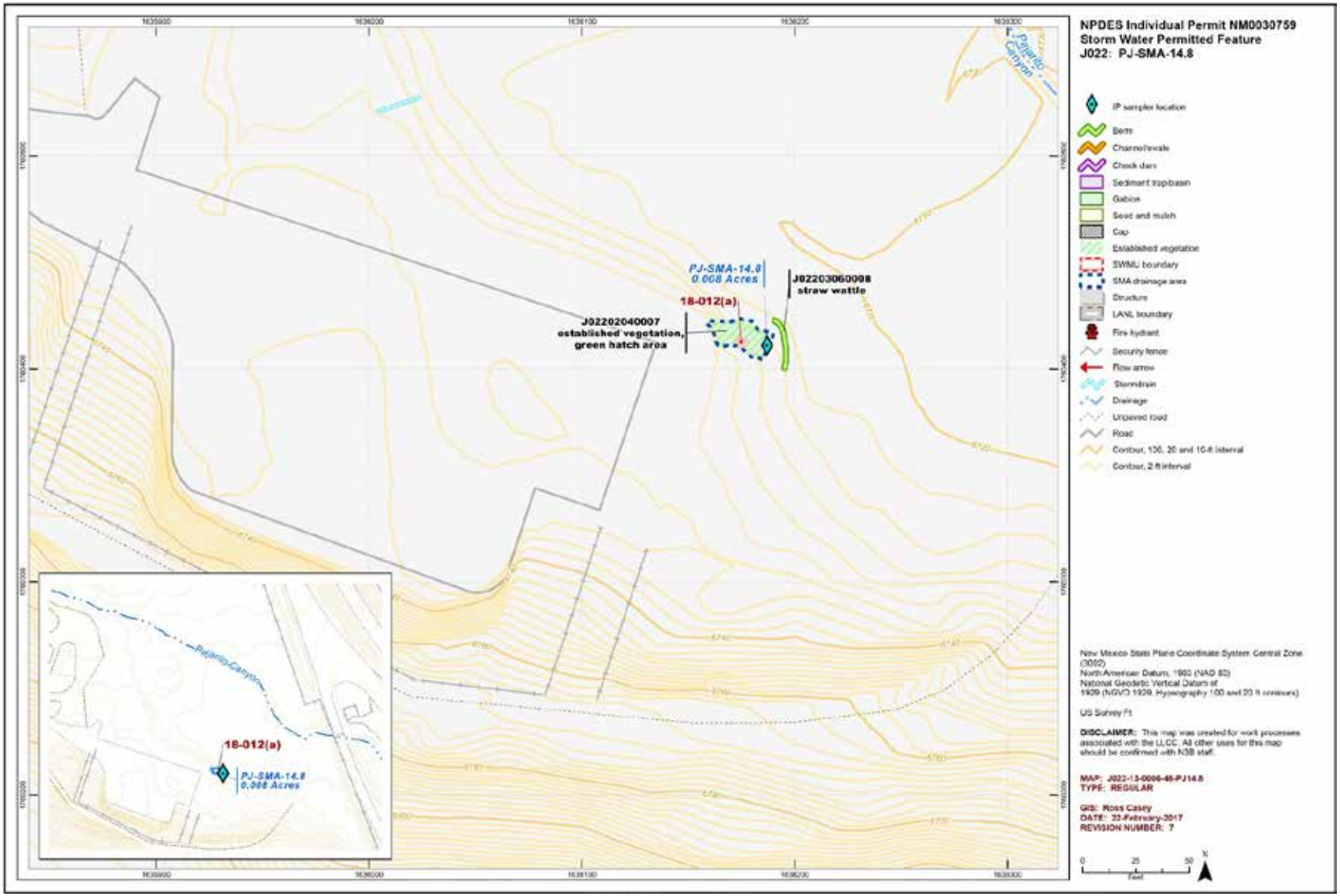


Figure 170-1 PJ-SMA-14.8 location map

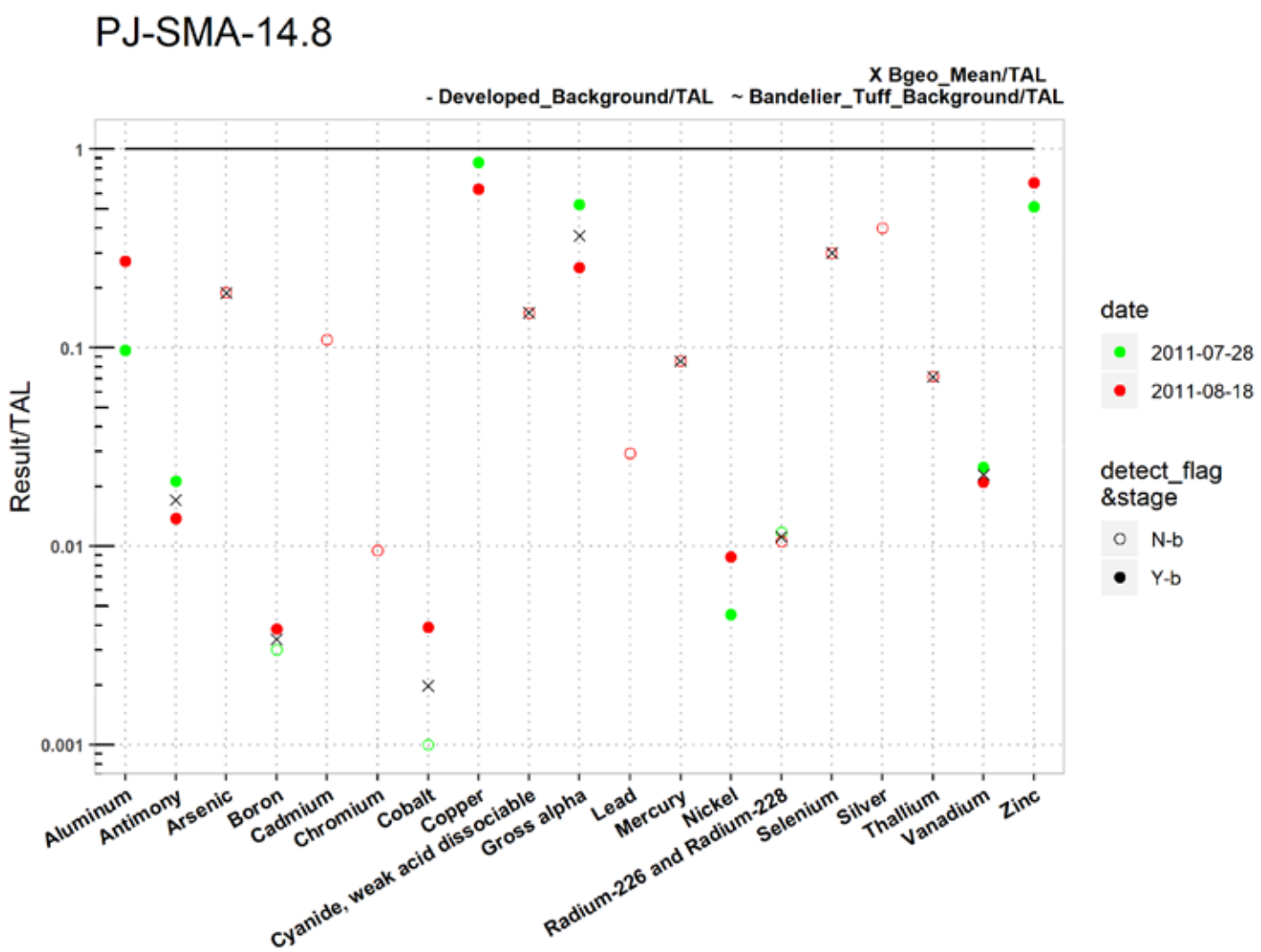


Figure 170-2 Analytical results summary for PJ-SMA-14.8

PJ-SMA-14.8

	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	0.017	0.19	0.0034	NA	NA	0.002	NA	0.15	0.37	NA	0.086	NA	0.011	0.3	NA	0.071	0.023	NA
2011-07-28 d	0.097	0.021	NA	NA	NA	NA	NA	0.86	NA	0.53	NA	NA	0.0045	NA	NA	NA	NA	0.025	0.51
2011-07-28 nd	NA	NA	0.19	0.003	0.11	0.0095	0.001	NA	0.15	NA	0.029	0.086	NA	0.012	0.3	0.4	0.071	NA	NA
2011-08-18 d	0.27	0.014	NA	0.0038	NA	NA	0.0039	0.63	NA	0.25	NA	NA	0.0088	NA	NA	NA	NA	0.021	0.68
2011-08-18 nd	NA	NA	0.19	NA	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	0.011	0.3	0.4	0.071	NA	NA

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

Figure 170-2 (continued) Analytical results summary for PJ-SMA-14.8

171.0 PJ-SMA-16: SWMU 27-002

171.1 Site Descriptions

One historical industrial activity area is associated with J023, PJ-SMA-16: Site 27-002.

SWMU 27-002 is an inactive firing site in Pajarito Canyon used between 1944 and 1947. The Site consists of five former firing pits situated on both sides of Pajarito Road, approximately 0.9 mi southeast of TA-18. Firing Pit 1 is located in the grassy area approximately 100 ft south of the TA-36 fence. Firing Pits 2 and 3 are approximately 200 ft east of Firing Pit 1, between the fence and Pajarito Road. Firing Pit 4 has been impacted by the construction of Pajarito Road but is located on the north side of Pajarito Road. Firing Pit 5 is located on a small curve on the north side of Pajarito Road. The pits were used for explosives testing with materials such as beryllium, thorium, and uranium. A 1946 bullet sensitivity test at Firing Pit 1 caused a block of Composition B explosive to undergo a low-order explosion, scattering unexploded HE over a 250-yd radius. During the 1960s, all structures, concrete foundations, HE, and other debris were removed from former TA-27, the firing pits were backfilled, and the ground surface was leveled.

SWMU 27-002 is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Pajarito Canyon Aggregate Area was approved in December 2010. Decision-level data are not available for SWMU 27-002.

The project map (Figure 171-1) 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.

171.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 171-1).

Table 171-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02302040004	Established Vegetation	-	X	X	-	B
J02303060003	Straw Wattle	-	X	-	X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

171.3 Storm Water Monitoring

SWMU 27-002 is monitored within PJ-SMA-16. Following the installation of baseline control measures, baseline storm water samples were collected on July 30, 2011, and August 8, 2013 (Figure 171-2). In Figure 171-2, 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 no TAL exceedances. Baseline confirmation is complete for PJ-SMA-16 and the associated SWMU 27-002 because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for PJ-SMA-16 for the duration of the IP.

171.4 Inspections and Maintenance

RG-TA-54 recorded two storm events at PJ-SMA-16 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 171-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73653	5-8-2019
Storm Rain Event	BMP-75383	8-7-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-16 in 2019.

171.5 Compliance Status

The Site associated with PJ-SMA-16 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 171-3 presents the 2019 compliance status.

Table 171-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 27-002	Baseline Confirmation Complete	Baseline Confirmation Complete	Completed 9-11-2013. All baseline confirmation monitoring results are less than TALs. No further confirmation monitoring is required for this Site.

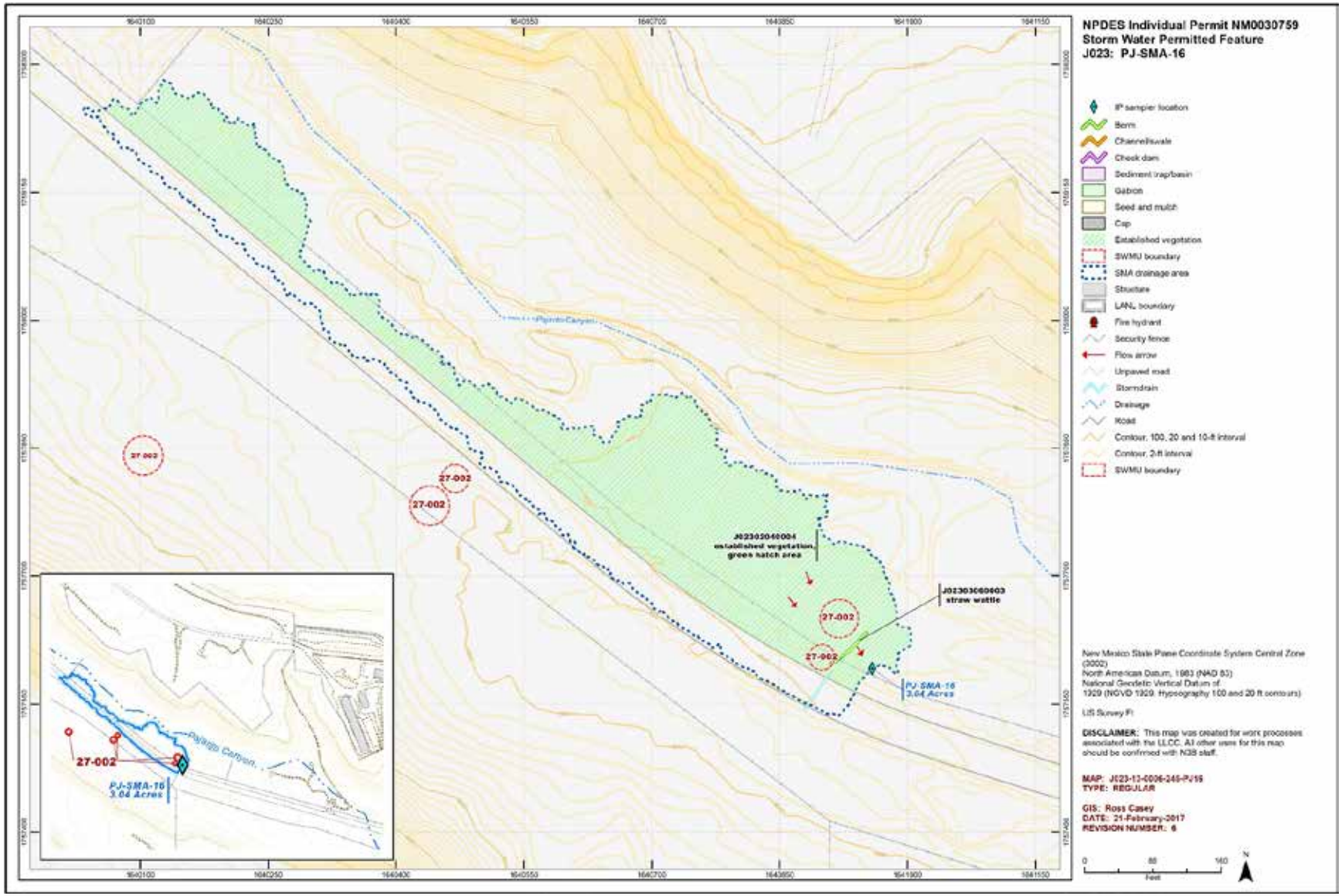


Figure 171-1 PJ-SMA-16 location map

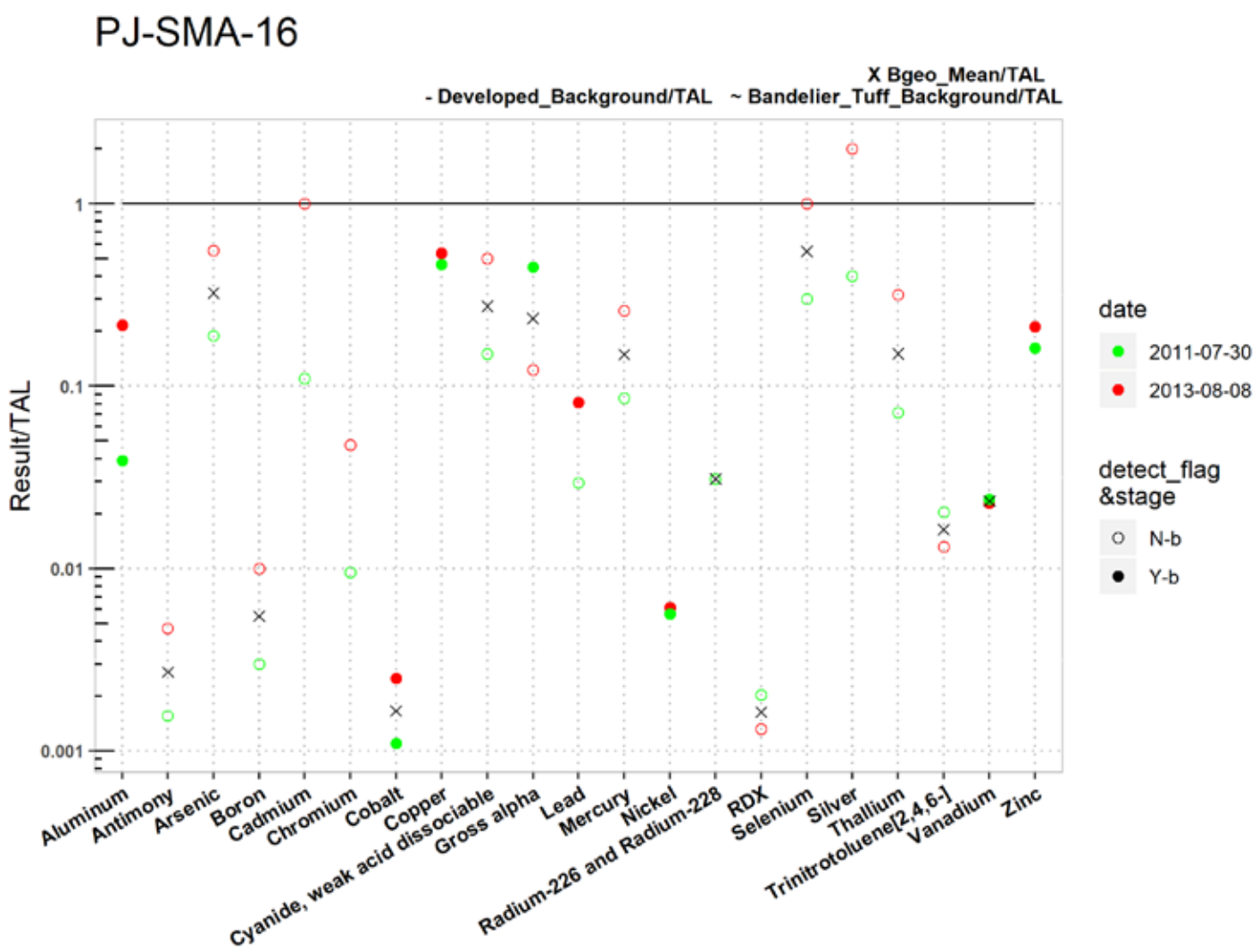


Figure 171-2 Analytical results summary for PJ-SMA-16

PJ-SMA-16

	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	0.0027	0.32	0.0055	NA	NA	0.0017	NA	0.27	0.23	NA	0.15	NA	0.031	0.0016	0.55	NA	0.15	0.016	0.023	NA
2011-07-30 d	0.039	NA	NA	NA	NA	NA	0.0011	0.47	NA	0.45	NA	NA	0.0056	NA	NA	NA	NA	NA	NA	0.024	0.16
2011-07-30 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	0.031	0.002	0.3	0.4	0.071	0.02	NA	NA
2013-08-08 d	0.22	NA	NA	NA	NA	NA	0.0025	0.54	NA	NA	0.081	NA	0.0061	NA	NA	NA	NA	NA	NA	0.023	0.21
2013-08-08 nd	NA	0.0047	0.56	0.01	1	0.048	NA	NA	0.5	0.12	NA	0.26	NA	0.031	0.0013	1	2	0.32	0.013	NA	NA

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

Figure 171-2 (continued) Analytical results summary for PJ-SMA-16

172.0 PJ-SMA-17: SWMU 54-018

172.1 Site Descriptions

One historical industrial activity area is associated with J024, PJ-SMA-17: Site 54-018.

SWMU 54-018 consists of inactive disposal pits 25 through 33 and 35 through 37 at Area G at TA-54. Pits 25 through 28 and 30 through 36 received low-level radioactive, mixed, and TRU-contaminated waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, gloveboxes, asbestos, and laboratory waste. The volumes ranged from 20,957 yd^3 to 59,930 yd^3. Pit 29 operated until 1986, after which the surface of Pit 29 was used to store retrievable TRU waste in cement-filled sections of corrugated pipe [SWMU 54-015(k)]. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SMWU 54-018 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011. In October 2016, DOE withdrew the CME based on a reprioritization of planned activities under the Consent Order.

The project map (Figure 172-1) 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.

172.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 172-1).

Table 172-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02402040008	Established Vegetation	-	X	X	-	B
J02404060006	Rip Rap	-	X	X	-	CB
J02404060007	Rip Rap	-	X	X	-	CB
J02405010005	Sediment Trap	-	X	-	X	CB
J02406010004	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

172.3 Storm Water Monitoring

SWMU 54-018 was monitored within PJ-SMA-17. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 172-2). In Figure 172-2, 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 copper (5.13 µg/L) and gross-alpha activity (61.6 pCi/L) and are presented in Figure 172-2.

Following certification of no exposure, a corrective action investigation storm water sample was collected on May 21, 2015. Analytical results from this sample were submitted to EPA on October 14, 2015. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-17. No further sampling is required for PJ-SMA-17 for the remainder of the IP.

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

172.4 Inspections and Maintenance

RG-TA-54 recorded two storm events at PJ-SMA-17 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 172-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73654	5-8-2019
Storm Rain Event	BMP-75384	8-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-17 in 2019.

172.5 Compliance Status

The Site associated with PJ-SMA-17 is a High Priority Site. The High Priority Site deadline for the certification of corrective action was 1 yr from the date of an observed TAL exceedance, which for PJ-SMA-17 was September 4, 2014. A completion of corrective action for PJ-SMA-17 was submitted on August 27, 2014. The IP was under administrative continuance at the end of 2019. Table 172-3 presents the 2019 compliance status.

Table 172-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 54-018	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	LANL, October 14, 2015, "NPDES Permit No. NM0030759 – Submittal of Analytical Results for Site 54-018 in Site Monitoring Area PJ-SMA-17 after Certification of a No Exposure Condition." No exposure confirmation monitoring is complete. LANL, August 27, 2014, "Submittal of Completion of Corrective Action for CDB-SMA-4 (Sites 54-017, 54-018, and 54-020) and PJ-SMA-17 (Site 54-018)."

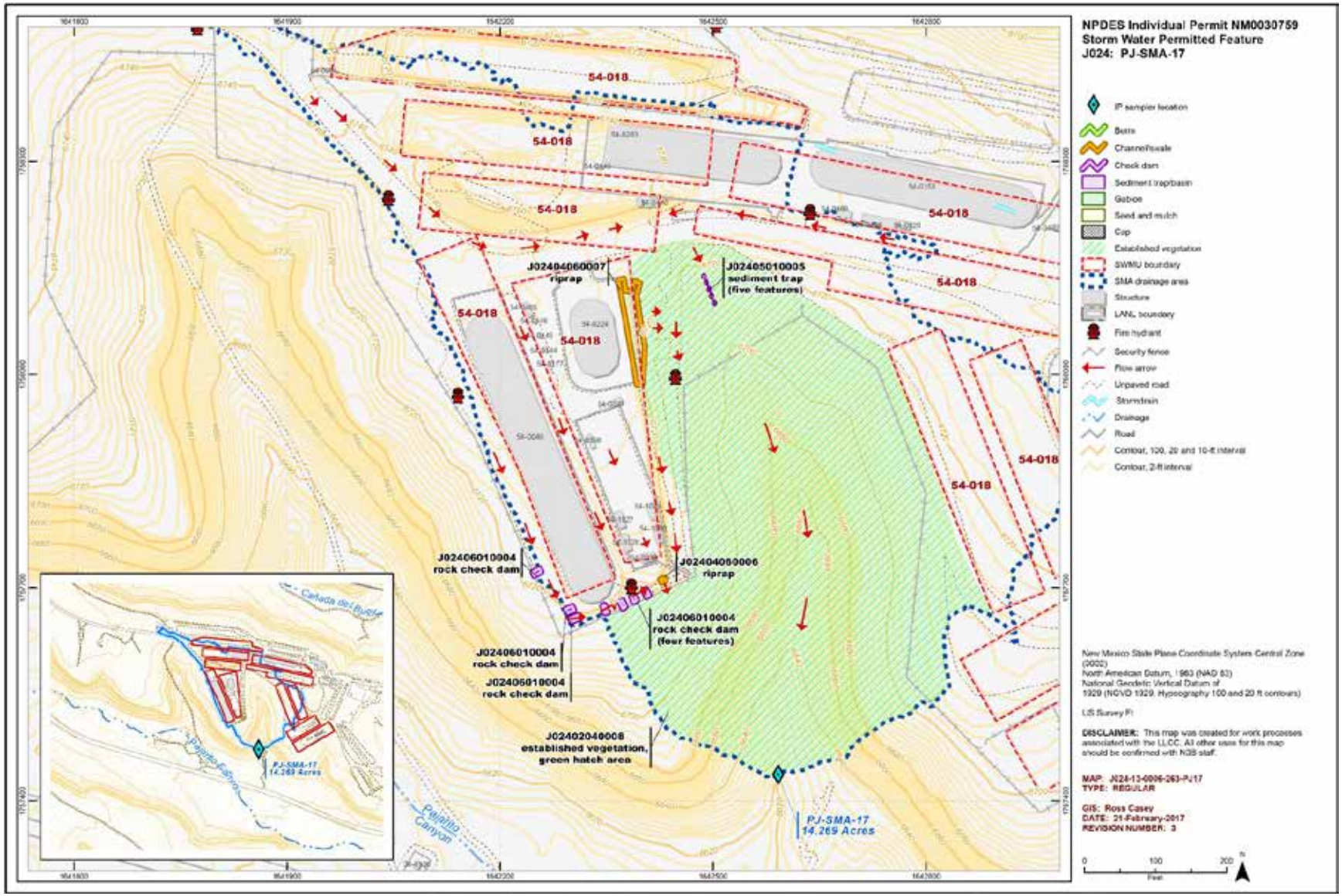


Figure 172-1 PJ-SMA-17 location map

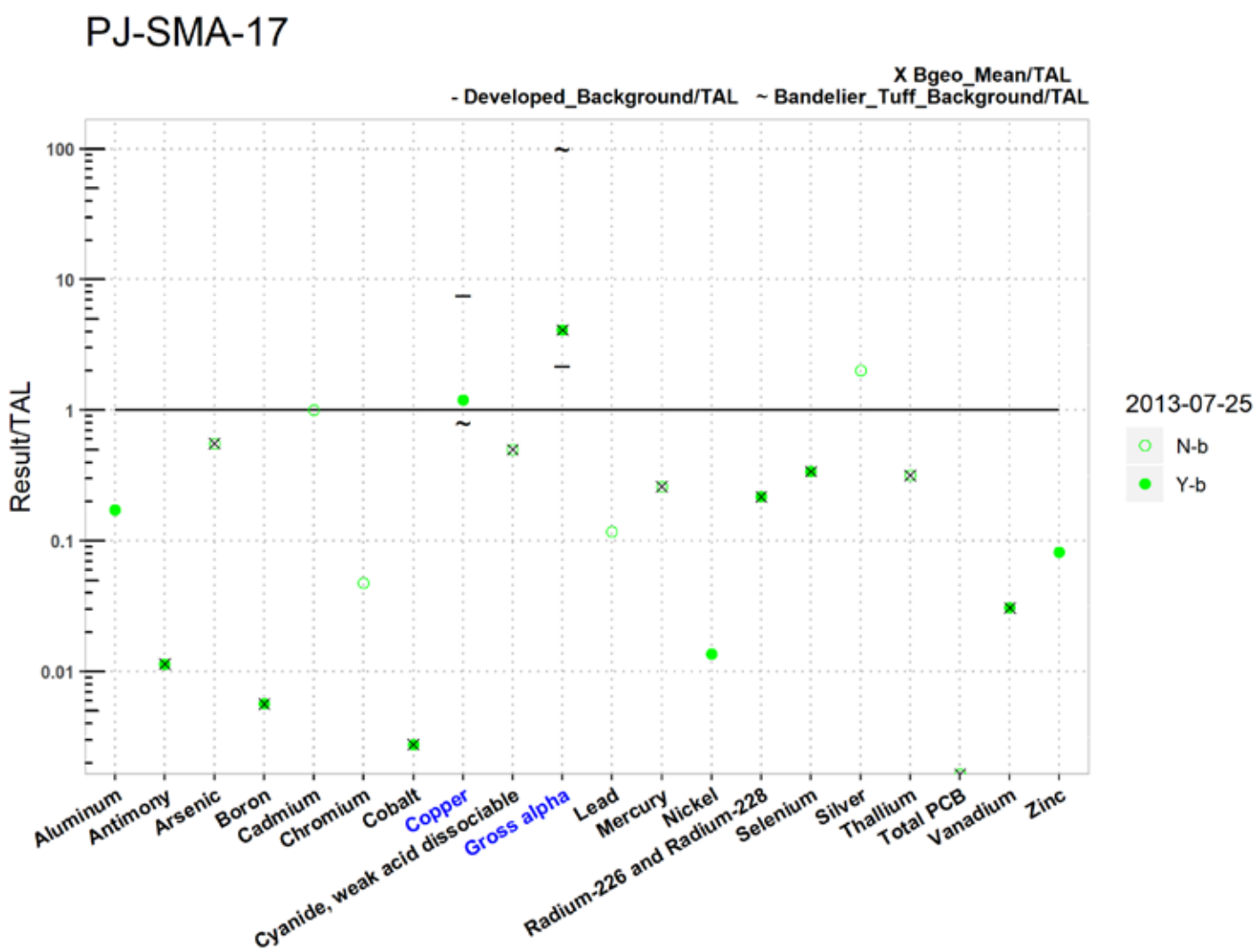


Figure 172-2 Analytical results summary for PJ-SMA-17

PJ-SMA-17

	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	0.011	0.56	0.0057	NA	NA	0.0028	NA	0.5	**4.1**	NA	0.26	NA	0.22	0.34	NA	0.32	0	0.031	NA
2013-07-25 d	0.17	0.011	NA	0.0057	NA	NA	0.0028	**1.2**	NA	**4.1**	NA	NA	0.014	0.22	0.34	NA	NA	NA	0.031	0.082
2013-07-25 nd	NA	NA	0.56	NA	1	0.048	NA	NA	0.5	NA	0.12	0.26	NA	NA	NA	2	0.32	0	NA	NA

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

Figure 172-2 (continued) Analytical results summary for PJ-SMA-17

173.0 PJ-SMA-18: SWMUs 54-014(d) and 54-017

173.1 Site Descriptions

Two historical industrial activity areas are associated with J026, PJ-SMA-18: Sites 54-014(d), and 54-017.

SWMU 54-014(d) consists of retrievable TRU waste storage trenches A, B, C, and D, which are located in the south-central portion of TA-54 Area G. These trenches began receiving TRU waste in 1974. Trenches A, B, and C vary in size from 219 ft to 262.5 ft long × 13 ft wide × 6 ft to 8 ft deep. Trench D is 60 ft long × 13 ft wide × 6 ft deep. The TRU waste placed in these trenches was packaged in 30-gal. containers inside concrete casks. The trenches were backfilled with 3.3 ft of crushed tuff, followed by 4 in. of topsoil. The surface was reseeded with native grasses. The TRU wastes in these trenches was placed for future retrieval and processing for disposal at WIPP.

Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011. In October 2016, DOE withdrew the CME based on a reprioritization of planned activities under the Consent Order.

SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at Area G at TA-54. These pits were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd^3 to 56,759 yd^3. When filled, the pits were covered with consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

Before the Consent Order went into effect in 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011. In October 2016, DOE withdrew the CME based on a reprioritization of planned activities under the Consent Order.

The project map (Figure 173-1) 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.

173.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 173-1).

Table 173-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02602040010	Established Vegetation	-	X	X	-	B
J02604010009	Earthen Channel/Swale	X	-	X	-	B
J02604010011	Earthen Channel/Swale	-	X	X	-	B
J02604060007	Rip Rap	-	X	X	-	CB
J02604060012	Rip Rap	-	X	X	-	B
J02605010005	Sediment Trap	-	X	-	X	CB
J02606010004	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

173.3 Storm Water Monitoring

SWMUs 54-014(d) and 54-017 were monitored within PJ-SMA-18. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 173-2). In Figure 173-2, 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 a TAL exceedance for gross alpha (23.6 pCi/L) and are presented in Figure 173-2.

Following certification of no exposure, a corrective action investigation sample was collected on August 10, 2018. Analytical results from this sample were submitted to EPA on December 6, 2018. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-18. No further sampling is required for PJ-SMA-18 for the remainder of the IP.

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

173.4 Inspections and Maintenance

RG-TA-54 recorded two storm events at PJ-SMA-18 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 173-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73656	5-8-2019
Storm Rain Event	BMP-75386	8-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-18 in 2019.

173.5 Compliance Status

The Sites associated with PJ-SMA-18 are High Priority Sites. The High Priority Site deadline for the certification of corrective action was 1 yr from the date of an observed TAL exceedance, which for PJ-SMA-18 was September 3, 2014. A completion of corrective action for PJ-SMA-18 was submitted August 28, 2014. The IP was under administrative continuance at the end of 2019. See Table 173-3 below for the 2019 compliance status.

Table 173-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 54-014(d)	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	N3B, December 6, 2018, "NPDES Permit No. NM0030759 – Analytical Results Following Completion of Corrective Action by Certification of a No Exposure Condition at Sites 54-014(d) and 54-017 in Site Monitoring Area PJ-SMA-18." No exposure confirmation monitoring is complete. LANL, August 28, 2014, "Submittal of Completion of Corrective Action for PJ-SMA-18 [Sites 54-017, 54-014(d)] and PJ-SMA-19 [Sites 54-013(b), 54-017, and 54-020]."
SWMU 54-017	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	N3B, December 6, 2018, "NPDES Permit No. NM0030759 – Analytical Results Following Completion of Corrective Action by Certification of a No Exposure Condition at Sites 54-014(d) and 54-017 in Site Monitoring Area PJ-SMA-18." No exposure confirmation monitoring is complete. LANL, August 28, 2014, "Submittal of Completion of Corrective Action for PJ-SMA-18 [Sites 54-017, 54-014(d)] and PJ-SMA-19 [Sites 54-013(b), 54-017, and 54-020]."

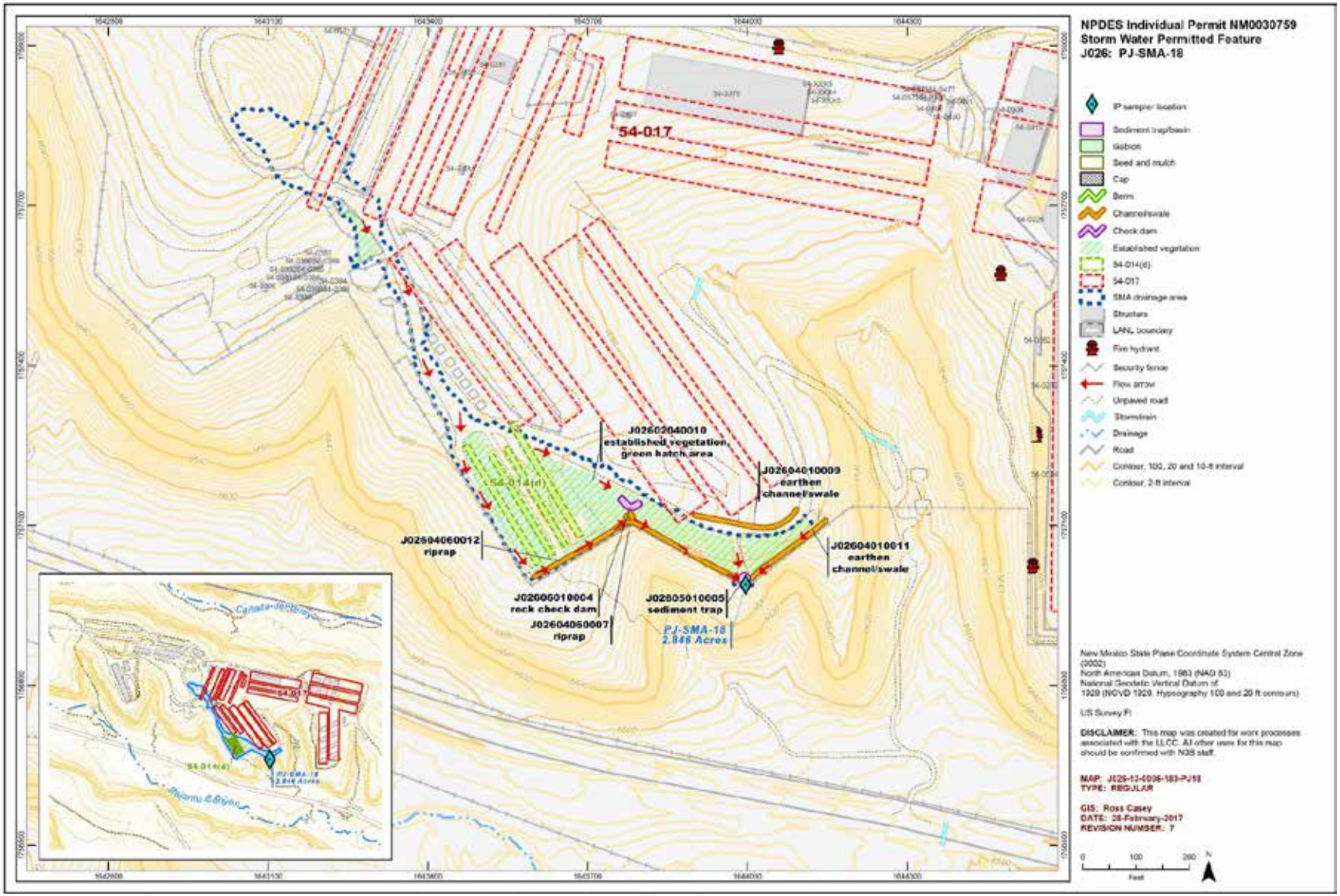


Figure 173-1 PJ-SMA-18 location map

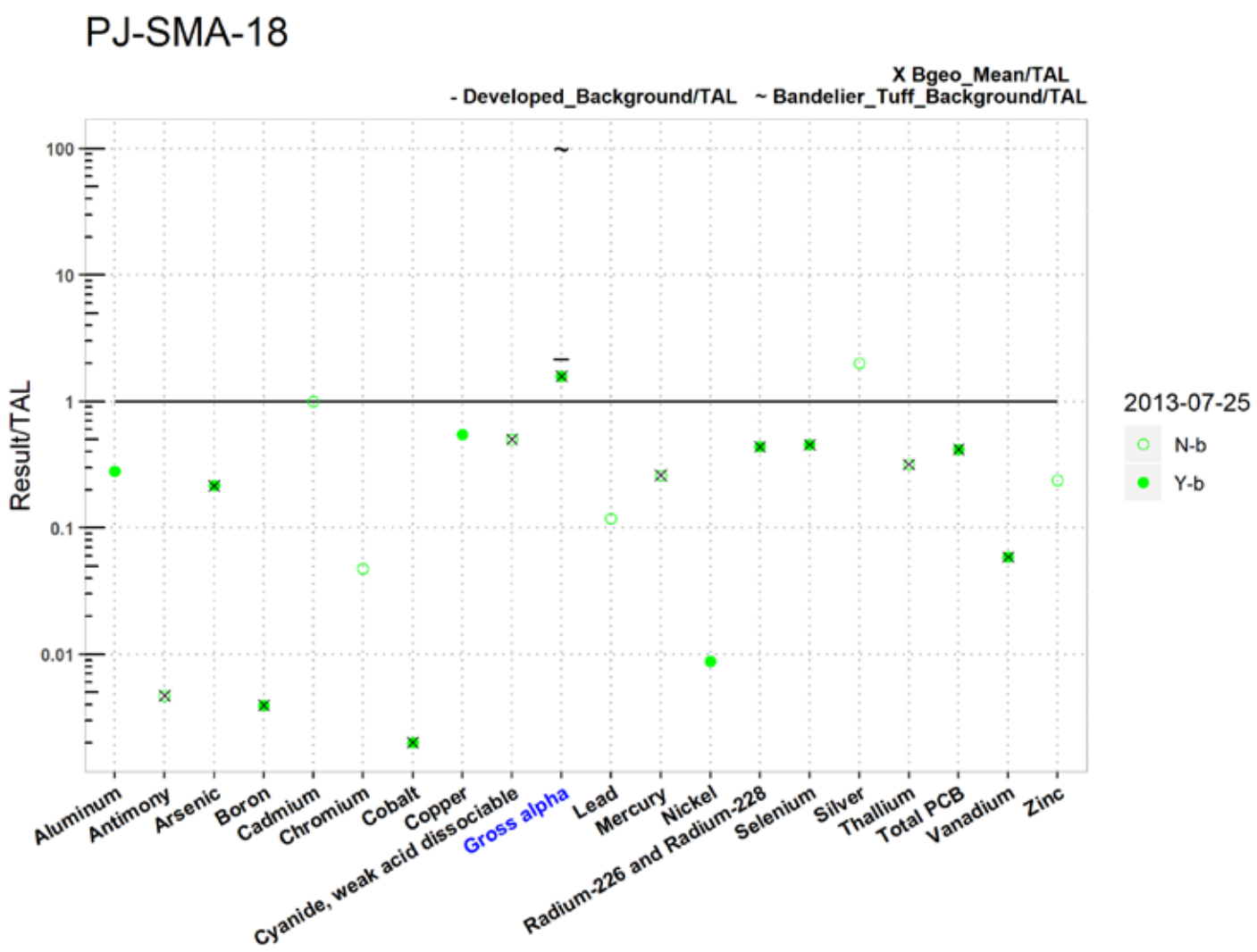


Figure 173-2 Analytical results summary for PJ-SMA-18

PJ-SMA-18

	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	0.0047	0.21	0.0039	NA	NA	0.002	NA	0.5	**1.6**	NA	0.26	NA	0.44	0.45	NA	0.32	0.42	0.059	NA
2013-07-25 d	0.28	NA	0.21	0.0039	NA	NA	0.002	0.55	NA	**1.6**	NA	NA	0.0088	0.44	0.45	NA	NA	0.42	0.059	NA
2013-07-25 nd	NA	0.0047	NA	NA	1	0.048	NA	NA	0.5	NA	0.12	0.26	NA	NA	NA	2	0.32	NA	NA	0.24

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

Figure 173-2 (continued) Analytical results summary for PJ-SMA-18

174.0 PJ-SMA-19: SWMUs 54-013(b), 54-017, and 54-020

174.1 Site Descriptions

Three historical industrial activity areas are associated with J025, PJ-SMA-19: Sites 54-013(b), 54-017, and 54-020.

SWMU 54-013(b) was a vehicle monitoring and decontamination area located in the northcentral portion of Area G at TA-54. This Site was excavated in April 1971 specifically to be used as a decontamination pit for washing trucks carrying equipment used at MDA G and TRU waste drums. The truck-washing and -decontamination pit was converted to a LLW disposal pit (Pit 19) in November 1975 when truck-washing activities ceased. Pit 19 is one of the LLW disposal pits comprising SWMU 54-017, and is also part of MDA G, which consists of subsurface disposal units within Area G that are subject to the Consent Order.

SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at Area G at TA-54. These pits were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd^3 to 56,759 yd^3. When filled, the pits were covered with consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

SWMU 54-020 consists of 68 disposal shafts (C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196) located in Area G at TA-54. These shafts operated between 1970 and the early 1990s. Shafts 189 and 192 are described in the 1990 SWMU Report as being “triplet shafts” where three shafts are associated with one shaft number and shaft 191 is a “doublet shaft” where two shafts are associated with one shaft number. The shafts contain one or a combination of the following waste types: PCB residues, LLW, hazardous, and mixed waste. The shafts range in size from 1-8 ft in diameter and 25–65 ft in depth and are located throughout the eastern portion of Area G. Most shafts are unlined, although a few are lined with cement or CMP. The shafts are separated by a minimum distance of 7.5 ft (the distance between doublet and triplet shafts is unknown). The shafts have 0.5-ft-thick layers of crushed tuff between the waste layers. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome. SWMU is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

Before the Consent Order went into effect in 2005, numerous RFIs were conducted at MDA G from 1993 to 2003. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined, and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A CME report was submitted to NMED under the Consent Order on September 9, 2011. In October 2016, DOE withdrew the CME based on a reprioritization of planned activities under the Consent Order.

The project map (Figure 174-1) 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.

174.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 174-1).

Table 174-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02502040011	Established Vegetation	-	X	X	-	B
J02504020004	Concrete/Asphalt Channel/Swale	X	-	X	-	CB
J02504020006	Concrete/Asphalt Channel/Swale	X	-	X	-	CB
J02504060010	Rip Rap	-	X	X	-	CB
J02505020002	Sediment Basin	-	X	-	X	CB
J02506010005	Rock Check Dam	-	X	-	X	CB
J02506010008	Rock Check Dam	-	X	-	X	CB
J02506010009	Rock Check Dam	-	X	-	X	CB
J02507010001	Gabions	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

174.3 Storm Water Monitoring

SWMUs 54-013(b), 54-017, and 54-020 were monitored within PJ-SMA-19. Following the installation of baseline control measures, a baseline storm water sample was collected on August 8, 2013 (Figure 174-2). In Figure 174-2, 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 (761 µg/L), gross-alpha activity (51.2 pCi/L), mercury (1.67 µg/L), radium-226 and radium-228 activity (43.7 pCi/L), and PCB concentration (20 ng/L) and are presented in Figure 174-2.

Following certification of no exposure, monitoring at PJ-SMA-19 is ongoing until the collection of a corrective action investigation storm water sample.

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 54-013(b):

Aluminum, mercury, PCBs, and gross-alpha-emitting radionuclides, including radium-226 and radium-228, are known to have been associated with industrial materials historically managed at this Site. However, industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits and shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

- Aluminum was not detected above soil or sediment BVs in 140 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- 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.
- Mercury was detected slightly above the soil and sediment BVs in 2 of 36 shallow samples collected at MDA G with a maximum concentration 2.2 times the BVs.
- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.

SWMU 54-017:

Aluminum, mercury, PCBs, and gross-alpha-emitting radionuclides, including radium-226 and radium-228, are known to have been associated with industrial materials historically managed at this Site. However, industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits and shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

- Aluminum was not detected above soil or sediment BVs in 56 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- 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.
- Mercury was not detected above soil or sediment BVs in 56 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- The PCB mixture Aroclor-1260 was not detected in 56 shallow RFI samples.

SWMU 54-020:

Industrial materials managed at this Site consist of wastes that were disposed of in subsurface shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- 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 174-2. 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 174-2.

Monitoring location PJ-SMA-19 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum and mercury are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is between these two values.
- Mercury—The mercury UTLs from undisturbed Bandelier Tuff and from developed landscape background storm water run-on were not calculated because the number of detected values was not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, no comparison to mercury BVs in storm water could be made.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is greater than both of these values.
- Radium—The radium-226 and radium-228 activity UTLs 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 2013 radium-226 and radium-228 result is between these values.
- PCBs—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2013 is between these values.

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

174.4 Inspections and Maintenance

RG-TA-54 recorded two storm events at PJ-SMA-19 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

Table 174-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73655	5-8-2019
Storm Rain Event	BMP-75385	8-8-2019

No maintenance activities or facility modifications affecting discharge were conducted at PJ-SMA-19 in 2019.

174.5 Compliance Status

The Sites associated with PJ-SMA-19 are High Priority Sites. The High Priority Site deadline for the certification of corrective action was 1 yr from the date of an observed TAL exceedance, which for PJ-SMA-19 was September 11, 2014. A completion of corrective action for PJ-SMA-19 was submitted on August 28, 2014. The IP was under administrative continuance at the end of 2019. Table 174-3 presents the 2019 compliance status.

Table 174-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 54-013(b)	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	LANL, August 28, 2014, "Submittal of Completion of Corrective Action for PJ-SMA-18 [Sites 54-017, 54-014(d)] and PJ-SMA-19 [Sites 54-013(b), 54-017, and 54-020]."
SWMU 54-017	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	LANL, August 28, 2014, "Submittal of Completion of Corrective Action for PJ-SMA-18 [Sites 54-017, 54-014(d)] and PJ-SMA-19 [Sites 54-013(b), 54-017, and 54-020]."
SWMU 54-020	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	LANL, August 28, 2014, "Submittal of Completion of Corrective Action for PJ-SMA-18 [Sites 54-017, 54-014(d)] and PJ-SMA-19 [Sites 54-013(b), 54-017, and 54-020]."

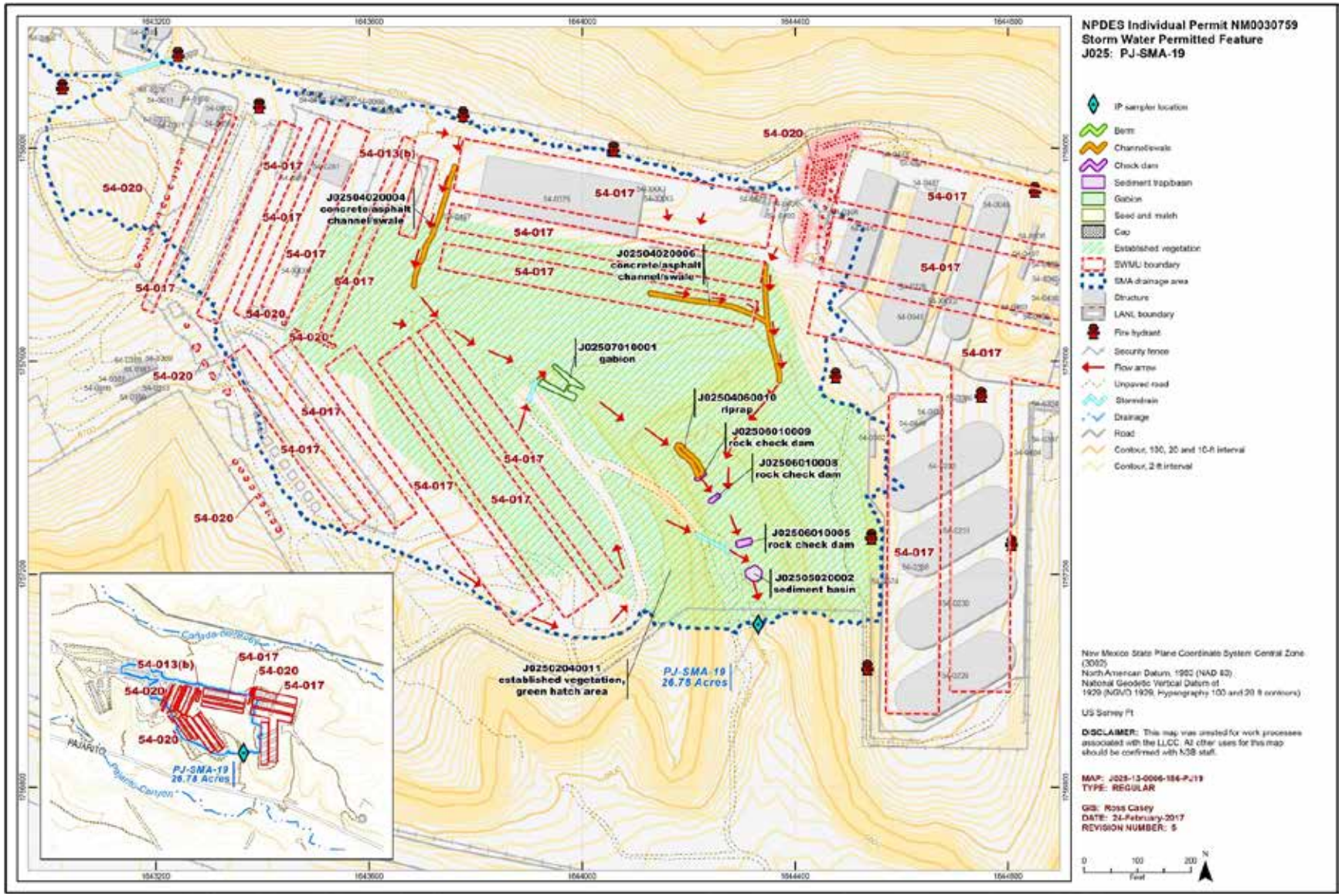


Figure 174-1 PJ-SMA-19 location map

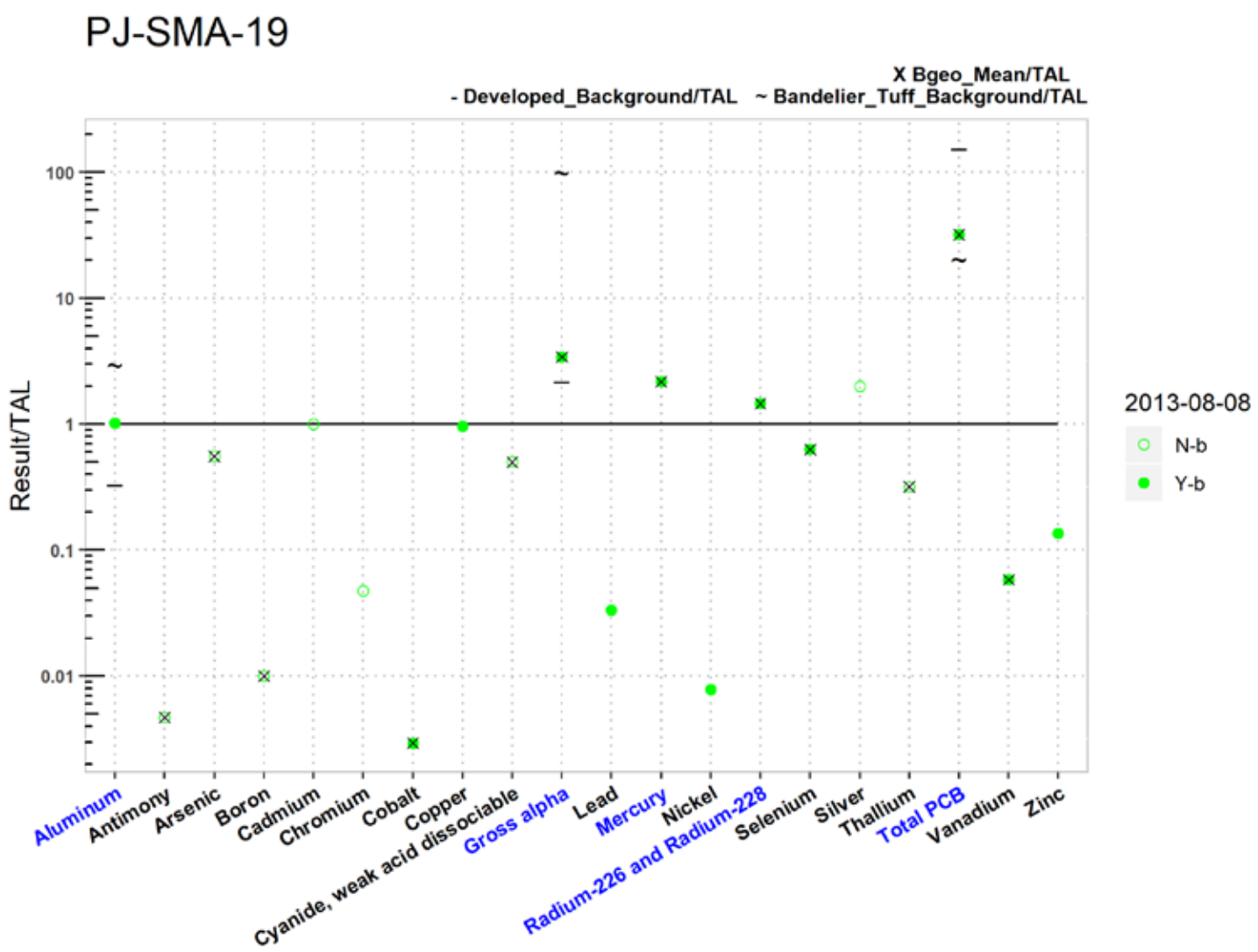


Figure 174-2 Analytical results summary for PJ-SMA-19

PJ-SMA-19

	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	0.0047	0.56	0.01	NA	NA	0.0029	NA	0.5	**3.4**	NA	**2.2**	NA	**1.5**	0.63	NA	0.32	**32**	0.058	NA
2013-08-08 d	**1**	NA	NA	NA	NA	NA	0.0029	0.96	NA	**3.4**	0.033	**2.2**	0.0078	**1.5**	0.63	NA	NA	**32**	0.058	0.14
2013-08-08 nd	NA	0.0047	0.56	0.01	1	0.048	NA	NA	0.5	NA	NA	NA	NA	NA	NA	2	0.32	NA	NA	NA

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

Figure 174-2 (continued) Analytical results summary for PJ-SMA-19

175.0 PJ-SMA-20: SWMU 54-017

175.1 Site Descriptions

One historical industrial activity area is associated with J027, PJ-SMA-20: Site 54-017.

SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at Area G at TA-54. These pits were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd^3 to 56,759 yd^3. When filled, the pits were covered with consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

Before the Consent Order went into effect in 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011. In October 2016, DOE withdrew the CME based on a reprioritization of activities planned under the Consent Order.

The project map (Figure 175-1) 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.

175.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 175-1).

Table 175-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02702040007	Established Vegetation	-	X	X	-	B
J02703090001	Curbing	-	X	-	X	CB
J02704060006	Rip Rap	-	X	X	-	CB
J02708030005	Concrete/Asphalt Cap	X	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

175.3 Storm Water Monitoring

SWMU 54-017 was monitored within PJ-SMA-20. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2011 (Figure 175-2). Analytical results from this sample yielded a TAL exceedance for copper (8.1 µg/L) and are presented in Figure 175-2.

Following certification of no exposure, a corrective action investigation storm water sample was collected on May 22, 2014. Analytical results from this sample were submitted to EPA on August 12, 2014. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-20. No further sampling is required for PJ-SMA-20 for the remainder of the IP.

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

175.4 Inspections and Maintenance

RG-TA-54 recorded two storm events at PJ-SMA-20 during the 2019 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 175-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-73657	5-8-2019
Storm Rain Event	BMP-75387	8-8-2019

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

Table 175-3 Maintenance during 2019

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-73657	Placed gravel bags in cracked area of south end of Curbing J02703090001 at inspection.	5-8-2019	0 day(s)	Maintenance conducted as soon as practicable.

175.5 Compliance Status

The Site associated with PJ-SMA-20 is a High Priority Site. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013). A completion of corrective action for PJ-SMA-20 was submitted on October 25, 2013. The IP was under administrative continuance at the end of 2019. Table 175-4 presents the 2019 compliance status.

Table 175-4 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 54-017	Corrective Action Complete for No Exposure	Corrective Action Complete for No Exposure	LANL, August 12, 2014, "NPDES Permit No. NM0030759 – Submittal of Analytical Results for Site 54-017 in Site Monitoring Area PJ-SMA-20." No exposure confirmation monitoring is complete. LANL, October 25, 2013, "Submittal of Completion of Corrective Action for PJ-SMA-20, Site 54-017."

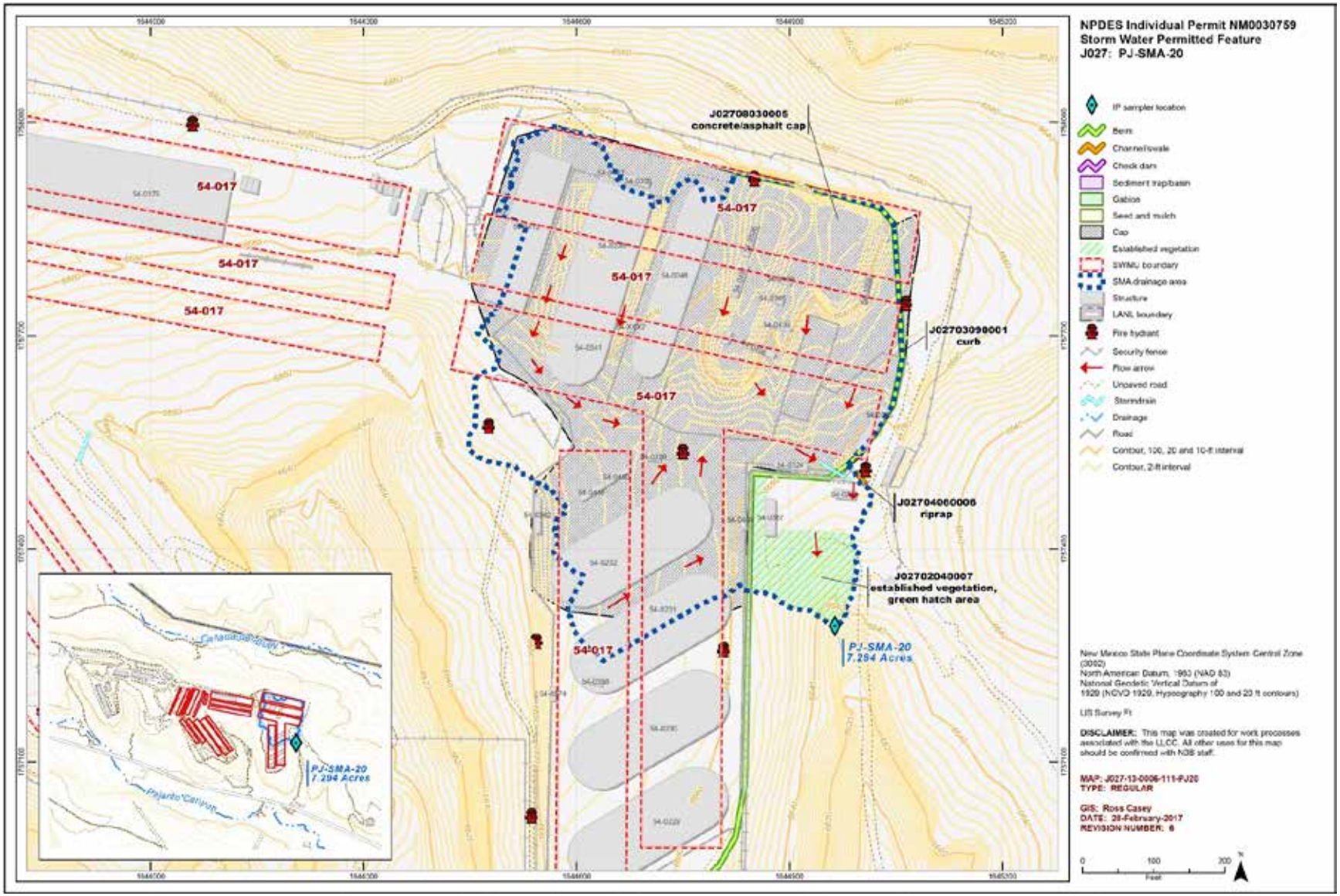


Figure 175-1 PJ-SMA-20 location map

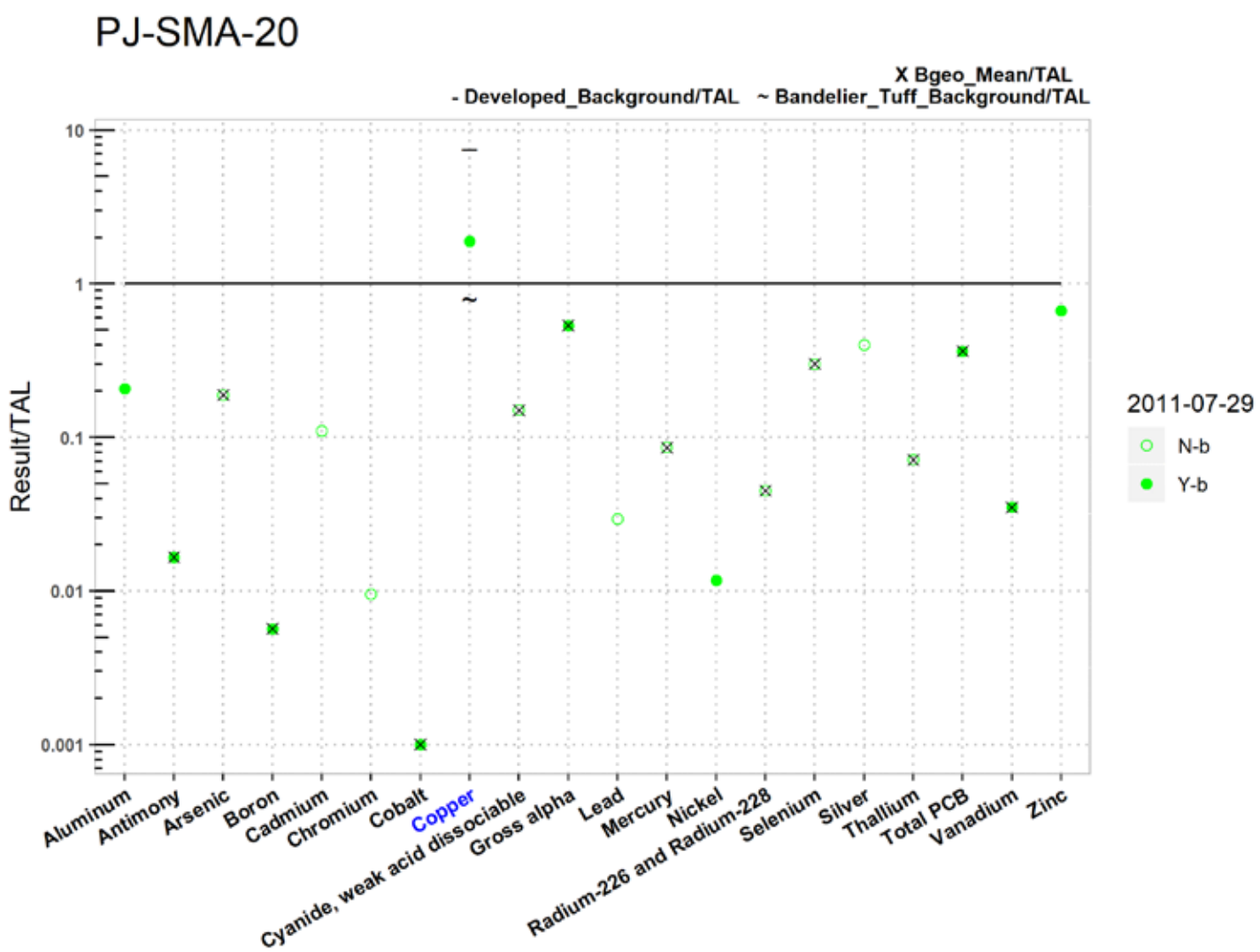


Figure 175-2 Analytical results summary for PJ-SMA-20

PJ-SMA-20

	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	0.017	0.19	0.0057	NA	NA	0.001	NA	0.15	0.53	NA	0.086	NA	0.045	0.3	NA	0.071	0.36	0.035	NA
2011-07-29 d	0.21	0.017	NA	0.0057	NA	NA	0.001	**1.9**	NA	0.53	NA	NA	0.012	NA	NA	NA	NA	0.36	0.035	0.66
2011-07-29 nd	NA	NA	0.19	NA	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	0.045	0.3	0.4	0.071	NA	NA	NA

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

Figure 175-2 (continued) Analytical results summary for PJ-SMA-20

176.0 STRM-SMA-1.05: AOC 08-009(f)

176.1 Site Descriptions

One historical industrial activity area is associated with J028, STRM-SMA-1.05: Site 08-009(f).

AOC 08-009(f) consists of an inactive outfall located approximately 40 ft southeast of building 08-22 (the x-ray building). Fluorescent penetrants (mixtures of dyes and surfactants) were used in building 08-22 to detect cracks in parts being prepared for installation into a weapons assembly; copper was not a component in the fluorescent penetrants. Historically, fluorescent penetrants, developers, and emulsifiers were discharged to the outfall through drains and drainlines located within building 08-22. The valves to the sinks that discharged to the drains were disconnected in 1992, and the drains were rerouted to the building 08-22 sanitary sewer system. After 1992, secondary containers were used to collect the chemicals for disposal.

Consent Order investigations have not been performed at SWMU 08-009(f), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994. SWMU 08-009(f) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 176-1) 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.

176.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 176-1).

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 176-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02802040009	Established Vegetation	-	X	X	-	B
J02804060006	Rip Rap	-	X	X	-	CB
J02806010004	Rock Check Dam	X	-	-	X	CB
J02806010005	Rock Check Dam	X	-	-	X	CB
J02806010007	Rock Check Dam	X	-	-	X	B
J02808030008	Concrete/Asphalt Cap	-	-	X	-	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

176.3 Storm Water Monitoring

AOC 08-009(f) is monitored within STRM-SMA-1.05. Following the installation of baseline control measures, two baseline storm water samples were was collected on August 5, 2011, and August 26, 2011 (Figure 176-2). Analytical results from these samples yielded TAL exceedances for copper (5.7 µg/L and 6.9 µg/L) and are presented in Figure 176-2.

Following the installation of enhanced control measures at STRM-SMA-1.05, corrective action storm water samples were collected on July 12, 2013, and August 1, 2013 (Figure 176-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (9.92 µg/L and 10.8 µg/L) and are presented in Figure 176-2.

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 08-009(f):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was not detected above the soil BV in shallow (i.e., less than 3 ft bgs) RFI soil samples. The RFI data are screening level only.

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 176-2. 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 176-2.

STRM-SMA-1.05, Rock Check Dam, J02806010005 (photo ID 30475-4)

Monitoring location STRM-SMA-1.05 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these values.

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

176.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG240 recorded seven storm events at STRM-SMA-1.05 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 176-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72917	3-21-2019
Storm Rain Event	BMP-74632	7-19-2019
Storm Rain Event	BMP-75412	8-2-2019
Storm Rain Event	BMP-76396	8-28-2019
Storm Rain Event	BMP-76672	9-5-2019
Storm Rain Event	BMP-77256	10-7-2019

No maintenance activities or facility modifications affecting discharge were conducted at STRM-SMA-1.05 in 2019.

176.5 Compliance Status

The Site associated with STRM-SMA-1.05 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 176-3 presents the 2019 compliance status.

Table 176-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
AOC 08-009(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."

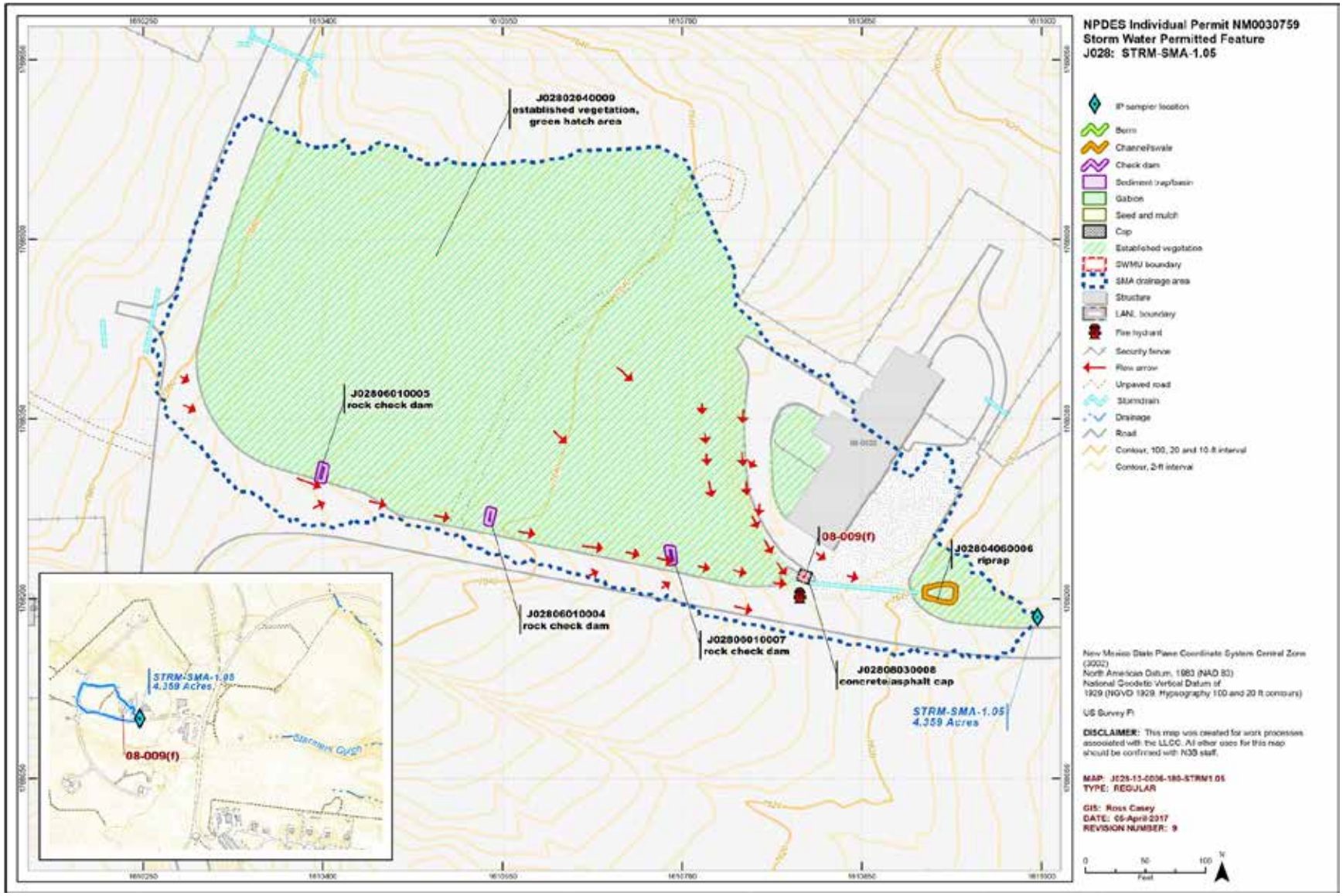


Figure 176-1 STRM-SMA-1.05 location map

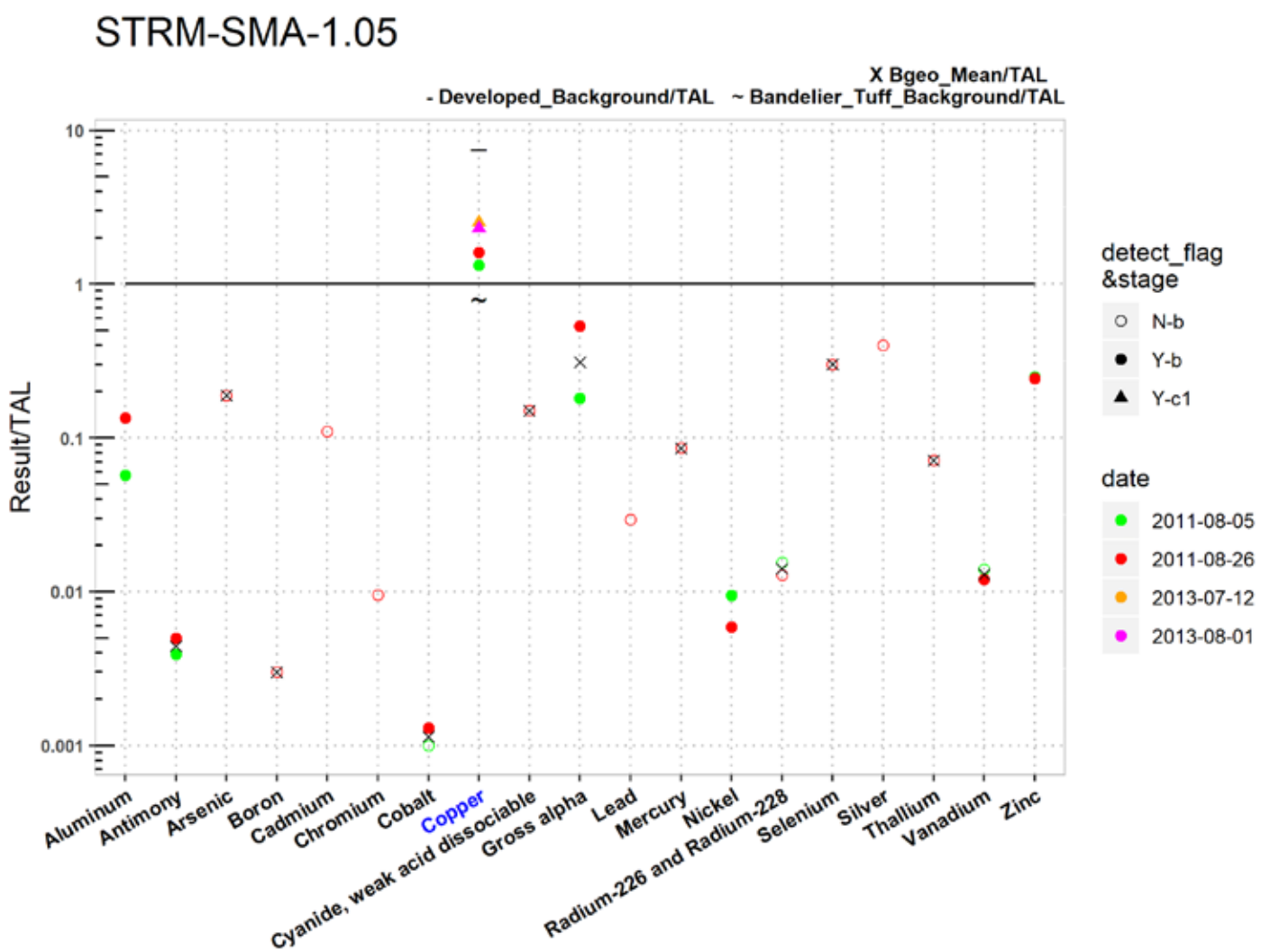


Figure 176-2 Analytical results summary for STRM-SMA-1.05

STRM-SMA-1.05

	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	0.0044	0.19	0.003	NA	NA	0.0011	NA	0.15	0.31	NA	0.086	NA	0.014	0.3	NA	0.071	0.013	NA
2011-08-05 d	0.057	0.0039	NA	NA	NA	NA	NA	**1.3**	NA	0.18	NA	NA	0.0094	NA	NA	NA	NA	NA	0.25
2011-08-05 nd	NA	NA	0.19	0.003	0.11	0.0095	0.001	NA	0.15	NA	0.029	0.086	NA	0.015	0.3	0.4	0.071	0.014	NA
2011-08-26 d	0.13	0.005	NA	NA	NA	NA	0.0013	**1.6**	NA	0.53	NA	NA	0.0059	NA	NA	NA	NA	0.012	0.24
2011-08-26 nd	NA	NA	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	0.013	0.3	0.4	0.071	NA	NA
2013-07-12 d	NA	NA	NA	NA	NA	NA	NA	**2.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-12 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-08-01 d	NA	NA	NA	NA	NA	NA	NA	**2.3**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-08-01 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 176-2 (continued) Analytical results summary for STRM-SMA-1.05

177.0 STRM-SMA-1.5: SWMU 08-009(d)

177.1 Site Descriptions

One historical industrial activity area is associated with J029, STRM-SMA-1.5: Site 08-009(d).

SWMU 08-009(d) consists of the drains located in the photoprocessing and x-ray rooms of building 08-22 (x-ray building) at TA-08. Building 08-22 was constructed in 1950 and housed x-ray machines used to radiograph various items. The SWMU 08-009(d) drains were dedicated to receiving photoprocessing and photodevelopment solutions containing silver salts, chromium, pentachlorophenol, and other chemicals used during the radiography process. Before they were plugged, the drains discharged effluent to a formerly NPDES-permitted outfall (EPA 06A074), located approximately 300 ft northeast of building 08-22. The outfall drained into Starmer Gulch, a tributary of Pajarito Canyon. The drains were plugged between 1995 and 1997. The outfall was removed from the NPDES permit effective September 19, 1997.

Consent Order investigations have not been performed at SWMU 08-009(d), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994. SWMU 08-009(d) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 177-1) 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.

177.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 177-1).

Enhanced controls were installed and certified on July 8, 2013, and September 4, 2015, and submitted to EPA on July 9, 2013, and 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 177-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02902040018	Established Vegetation	-	X	X	-	B
J02903010009	Earthen Berm	X	-	-	X	B
J02903010011	Earthen Berm	X	-	-	X	B
J02903010013	Earthen Berm	X	-	-	X	EC
J02903010014	Earthen Berm	-	X	-	X	EC
J02903120015	Rock Berm	-	X	-	X	EC
J02904010019	Earthen Channel/Swale	X	-	X	-	EC
J02904060016	Rip Rap	-	X	X	-	EC
J02904060020	Rip Rap	X	-	X	-	EC
J02908030017	Concrete/Asphalt Cap	-	X	X	-	EC

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

177.3 Storm Water Monitoring

SWMU 08-009(d) is monitored within STRM-SMA-1.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 11, 2012 (Figure 177-2). In Figure 177-2, hexachlorobenzene 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 cadmium (1.26 µg/L), cyanide (0.02 mg/L), gross-alpha activity (1270 pCi/L), mercury (1.17 µg/L), radium-226 and radium-228 activity (38.5 pCi/L), and silver (0.58 µg/L) and are presented in Figure 177-2.

Following the 2013 installation of enhanced control measures at STRM-SMA-1.5, a corrective action storm water sample was collected on September 13, 2013 (Figure 177-2). In Figure 177-2, cadmium, hexachlorobenzene, and selenium are reported as a nondetected results greater than their respective TALs. These value 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 TAL exceedances for gross-alpha activity (16.1 pCi/L) and silver (4.02 µg/L) and are presented in Figure 177-2.

Following the 2015 installation of enhanced control measures at STRM-SMA-1.5, a corrective action storm water sample was collected on September 3, 2018 (Figure 177-2). Analytical results from this corrective action monitoring sample yielded TAL exceedances for gross-alpha activity (81.3 pCi/L) and silver (1.21 µg/L) and are presented in Figure 177-2.

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 08-009(d):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because alpha-emitting radionuclides were not identified as COPCs.
- Silver is known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for silver. Silver was detected above BV in 4 of 4 shallow soil samples at a maximum concentration 177 times the soil BV. Data from the 1994 RFI are screening-level data.

STRM-SMA-1.5, Rip Rap, J02904060020 (photo ID 48717-9)

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 177-2. 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 177-2.

Monitoring location STRM-SMA-1.5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha background storm water UTL from locations 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 2012 and 2018 gross-alpha results are between these two values, while the 2013 result is below both of them.
- Silver—The silver UTLs from developed landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water silver UTLs could not be made.

All the analytical results for these samples are reported in the 2012, 2013, and 2018 Annual Reports.

177.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG240 recorded seven storm events at STRM-SMA-1.5 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 177-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72922	3-21-2019
Storm Rain Event	BMP-74633	7-16-2019
Storm Rain Event	BMP-75417	8-2-2019
Storm Rain Event	BMP-76397	8-28-2019
Storm Rain Event	BMP-76677	9-5-2019
Storm Rain Event	BMP-77261	10-7-2019

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

177.5 Compliance Status

The Site associated with STRM-SMA-1.5 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 177-3 presents the 2019 compliance status.

Table 177-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 08-009(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)." LANL, July 9, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas."

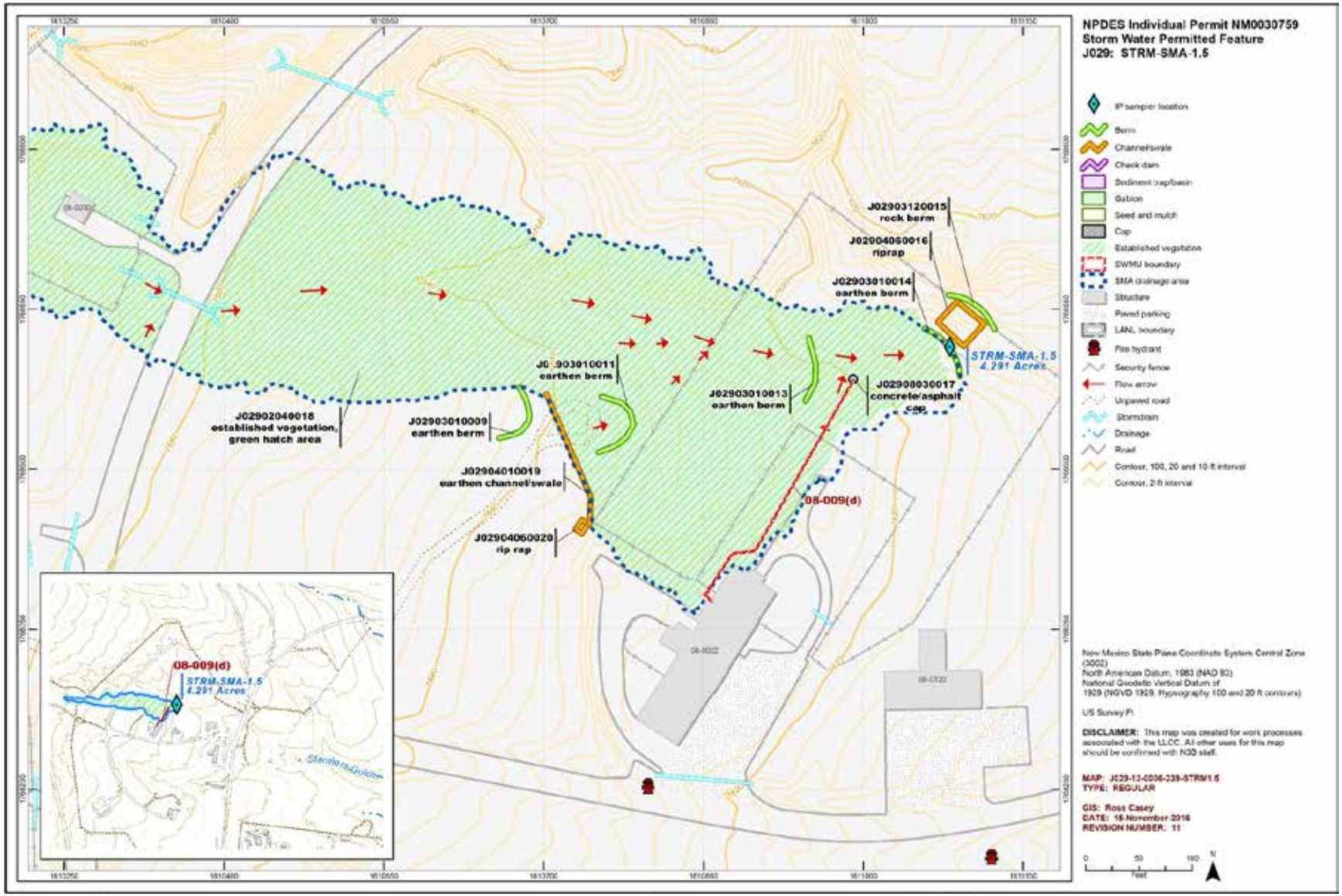


Figure 177-1 STRM-SMA-1.5 location map

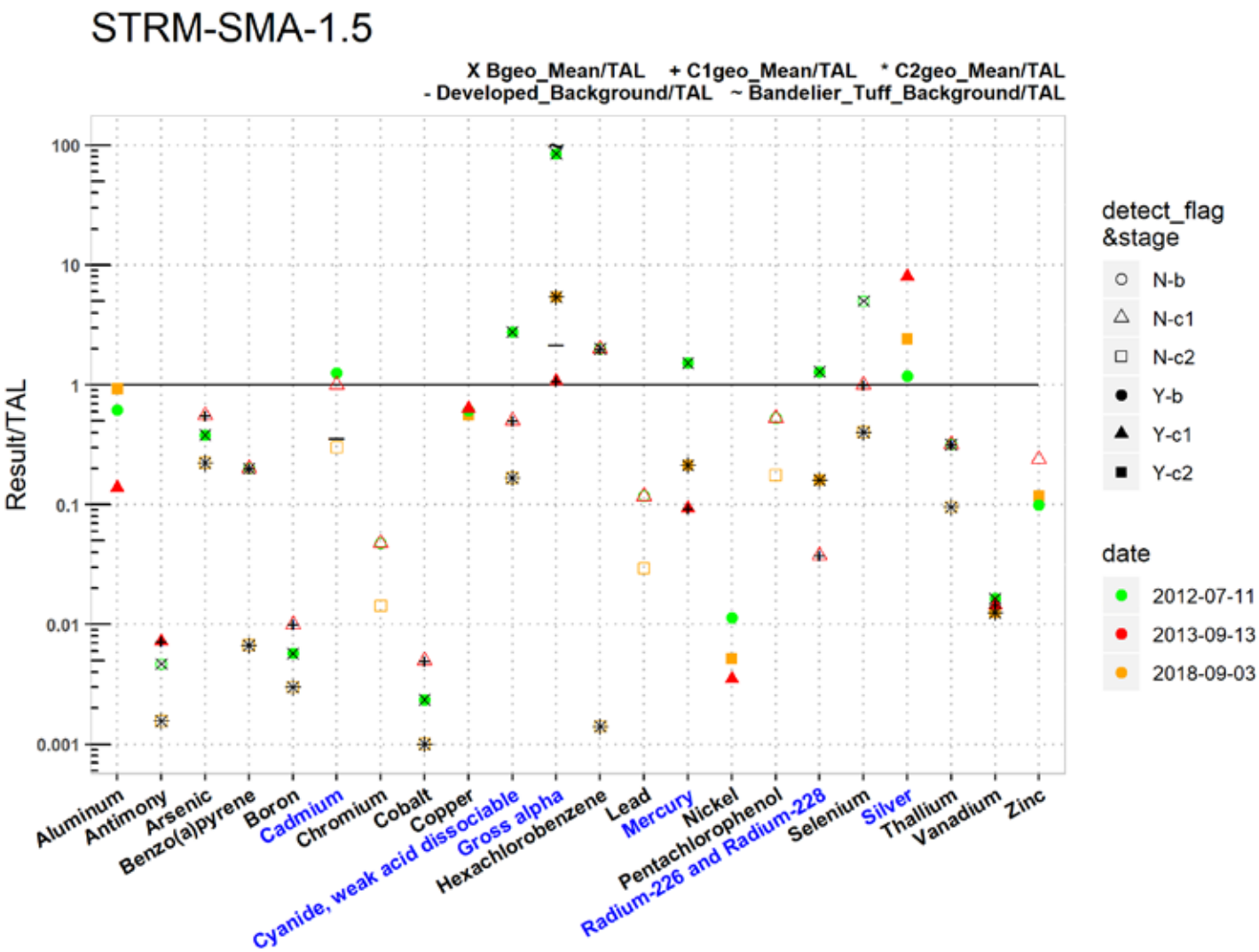


Figure 177-2 Analytical results summary for STRM-SMA-1.5

STRM-SMA-1.5

	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	0.38	0.2	0.0057	NA	NA	0.0024	NA	**2.8**	**85**	**2**	NA	**1.5**	NA	NA	**1.3**	**5**	NA	0.32	0.016	NA
C1geo_mean/ATAL	NA	0.0072	0.56	0.2	0.01	NA	NA	0.005	NA	0.5	**1.1**	**2**	NA	0.094	NA	NA	0.038	1	NA	0.32	0.014	NA
C2geo_mean/ATAL	NA	0.0016	0.22	0.0067	0.003	NA	NA	0.001	NA	0.17	**5.4**	0.0014	NA	0.21	NA	NA	0.16	0.4	NA	0.095	0.012	NA
2012-07-11 d	0.61	NA	0.38	NA	0.0057	**1.3**	NA	0.0024	0.61	**2.8**	**85**	NA	NA	**1.5**	0.011	NA	**1.3**	NA	**1.2**	NA	0.016	0.099
2012-07-11 nd	NA	0.0047	NA	0.2	NA	NA	0.048	NA	NA	NA	NA	2	0.12	NA	NA	0.53	NA	5	NA	0.32	NA	NA
2013-09-13 d	0.14	0.0072	NA	NA	NA	NA	NA	NA	0.63	NA	**1.1**	NA	NA	0.094	0.0035	NA	NA	NA	**8**	NA	0.014	NA
2013-09-13 nd	NA	NA	0.56	0.2	0.01	1	0.048	0.005	NA	0.5	NA	2	0.12	NA	NA	0.53	0.038	1	NA	0.32	NA	0.24
2018-09-03 d	0.93	NA	NA	NA	NA	NA	NA	NA	0.56	NA	**5.4**	NA	NA	0.21	0.0052	NA	0.16	NA	**2.4**	NA	0.012	0.12
2018-09-03 nd	NA	0.0016	0.22	0.0067	0.003	0.3	0.014	0.001	NA	0.17	NA	0.0014	0.029	NA	NA	0.18	NA	0.4	NA	0.095	NA	NA

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

Figure 177-2 (continued) **Analytical results summary for STRM-SMA-1.5**

178.0 STRM-SMA-4.2: SWMU 09-008(b)

178.1 Site Descriptions

One historical industrial activity area is associated with J030, STRM-SMA-4.2: Site 09-008(b).

SWMU 09-008(b) is the decommissioned oxidation pond (structure 09-212) located next to the western boundary of TA-09, approximately 200 ft east of Anchor Ranch Road. Installed in 1969, the pond measures 15 ft wide × 65 ft long × 6 ft deep, is lined with clay covered with emulsified asphalt water proofing, and is surrounded by an 8-ft-high chain link fence. An overflow pipe, located at the southeast corner of the pond, discharged to a drainage channel that flows into Starmer Canyon. The pond treated sanitary waste received from the SWMU 09-005(d) septic tank (structure 09-211), which received effluent from buildings 08-20, 08-21, 08-22, 08-23, and 08-24. These buildings had various uses including radiography of nuclear fuel elements, photoprocessing, photodevelopment, and x-ray operations. A strontium-90 spill occurred in building 08-24 in 1954; it is not known if any of the strontium-90 reached the pond. The pond was decommissioned and abandoned in place in 1988.

Consent Order investigations have not been performed at SWMU 09-008(b), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994. SWMU 09-008(b) will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 178-1) 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.

178.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 178-1).

Enhanced controls were installed and certified on August 21, 2012, and submitted to EPA on August 27, 2012, as part of corrective action. Enhanced controls installation was completed in late 2019, certified on January 10, 2020, and submitted to EPA on January 14, 2020. Photographs of the enhanced controls are available at https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications.

Table 178-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J03002040006	Established Vegetation	-	X	X	-	B
J03003010004	Earthen Berm	-	X	-	X	EC
J03004010002	Earthen Channel/Swale	X	-	X	-	CB
J03005070007	Plunge Pool	-	X	X	X	EC
J03005070008	Plunge Pool	-	X	X	X	EC
J03005070009	Plunge Pool	-	X	X	X	EC
J03006010010	Rock Check Dam	-	X	-	X	EC
J03006010011	Rock Check Dam	-	X	-	X	EC
J03006010012	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

178.3 Storm Water Monitoring

SWMU 09-008(b) is monitored within STRM-SMA-4.2. Following the installation of baseline control measures, baseline storm water samples were collected on August 21, 2011, and September 9, 2011 (Figure 178-2). In Figure 178-2, cyanide is reported as a nondetected result greater than the TAL. This value is reported at the PQL, the MDL for this analyte is below the TAL. The value is a nondetect and thus not considered a TAL exceedance. Analytical results from this sample yielded a TAL exceedance for aluminum (2330 µg/L) and are presented in Figure 178-2.

Following the 2012 installation of enhanced controls at STRM-SMA-4.2, corrective action storm water samples were collected on July 29, 2017, and September 27, 2017 (Figure 178-2). Analytical results from these samples yielded TAL exceedances for aluminum (2190 µg/L and 1980 µg/L), copper (8.81 µg/L and 5.26 µg/L), and silver (0.519 µg/L) and are presented in Figure 178-2.

As part of certification of enhanced controls installed in 2019, the coordinates for the corrective action monitoring location were corrected and have been updated in Attachment 4. The sampling location was not moved as part of the 2019 enhanced control measure installations and subsequent certification in January 2020.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data are not available for 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 178-2. 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 178-2.

STRM-SMA-4.2 is located primarily on Bandelier Tuff and very little run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from undisturbed background locations on Bandelier Tuff were compared with aluminum MTAL exceedances. Aluminum is associated with minerals in the Bandelier Tuff as well. Metals including copper 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 sediment derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is greater than this value.
- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2017 are between these values.
- Silver—There is no UTL for silver.

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

178.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG240 recorded seven storm events at STRM-SMA-4.2 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 178-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72923	3-20-2019
Storm Rain Event	BMP-74634	7-11-2019
Storm Rain Event	BMP-74813	7-22-2019
Storm Rain Event	BMP-75418	8-7-2019
Storm Rain Event	BMP-76398	8-27-2019
Storm Rain Event	BMP-76678	9-12-2019
Storm Rain Event	BMP-77262	10-17-2019
Verification	BMP-77639	11-6-2019

No maintenance activities or facility modifications affecting discharge were conducted at STRM-SMA-4.2 in 2019.

178.5 Compliance Status

The Site associated with STRM-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 178-3 presents the 2019 compliance status.

Table 178-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 09-008(b)	This SMA is being evaluated for Enhanced Control Measures.	Enhanced Control Measures installed, certification in progress	N3B, January 14, 2020, "NPDES Permit No. NM0030759 – Certification of Installation of Enhanced Control Measures for STRM-SMA-4.2."

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

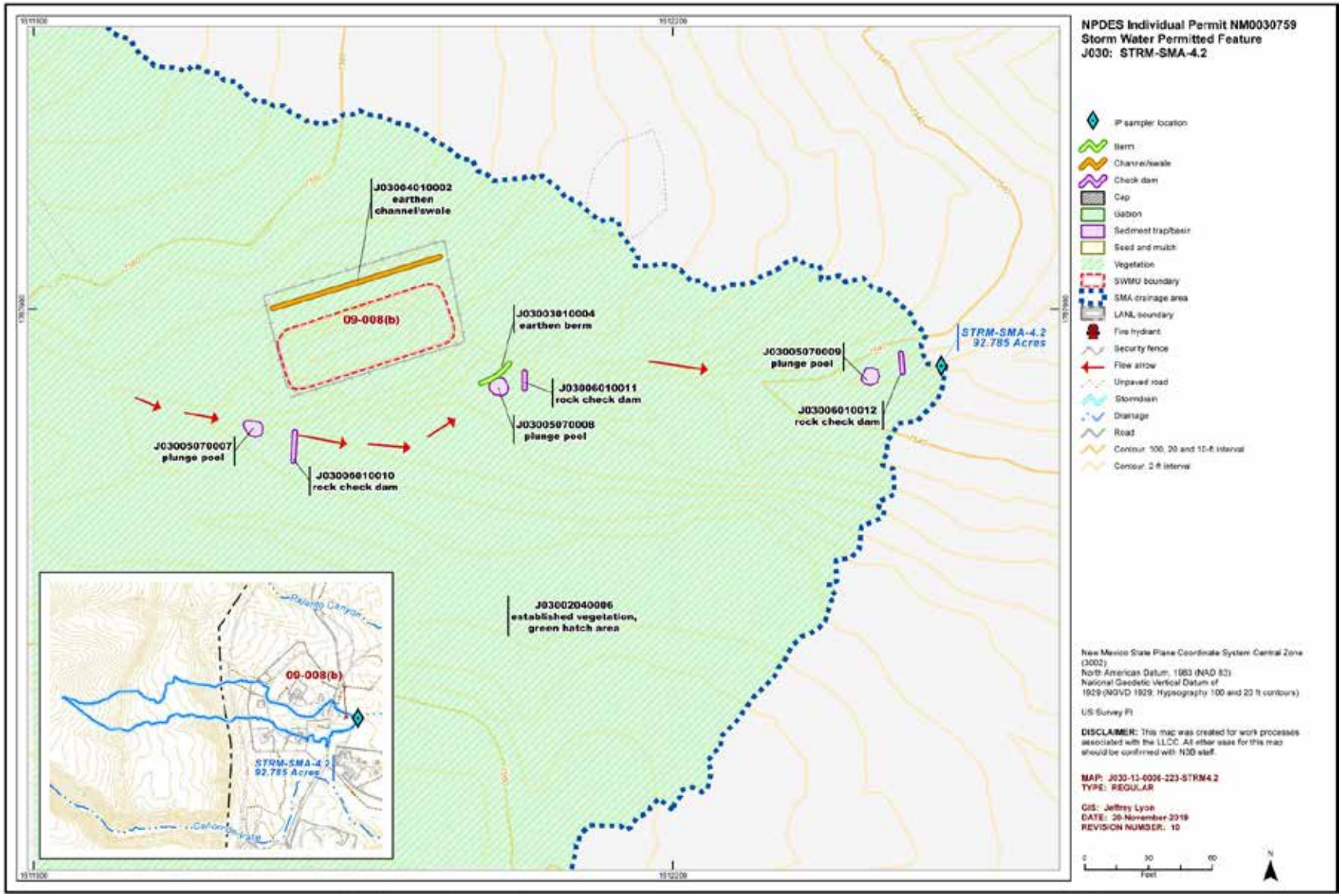


Figure 178-1 STRM-SMA-4.2 location map

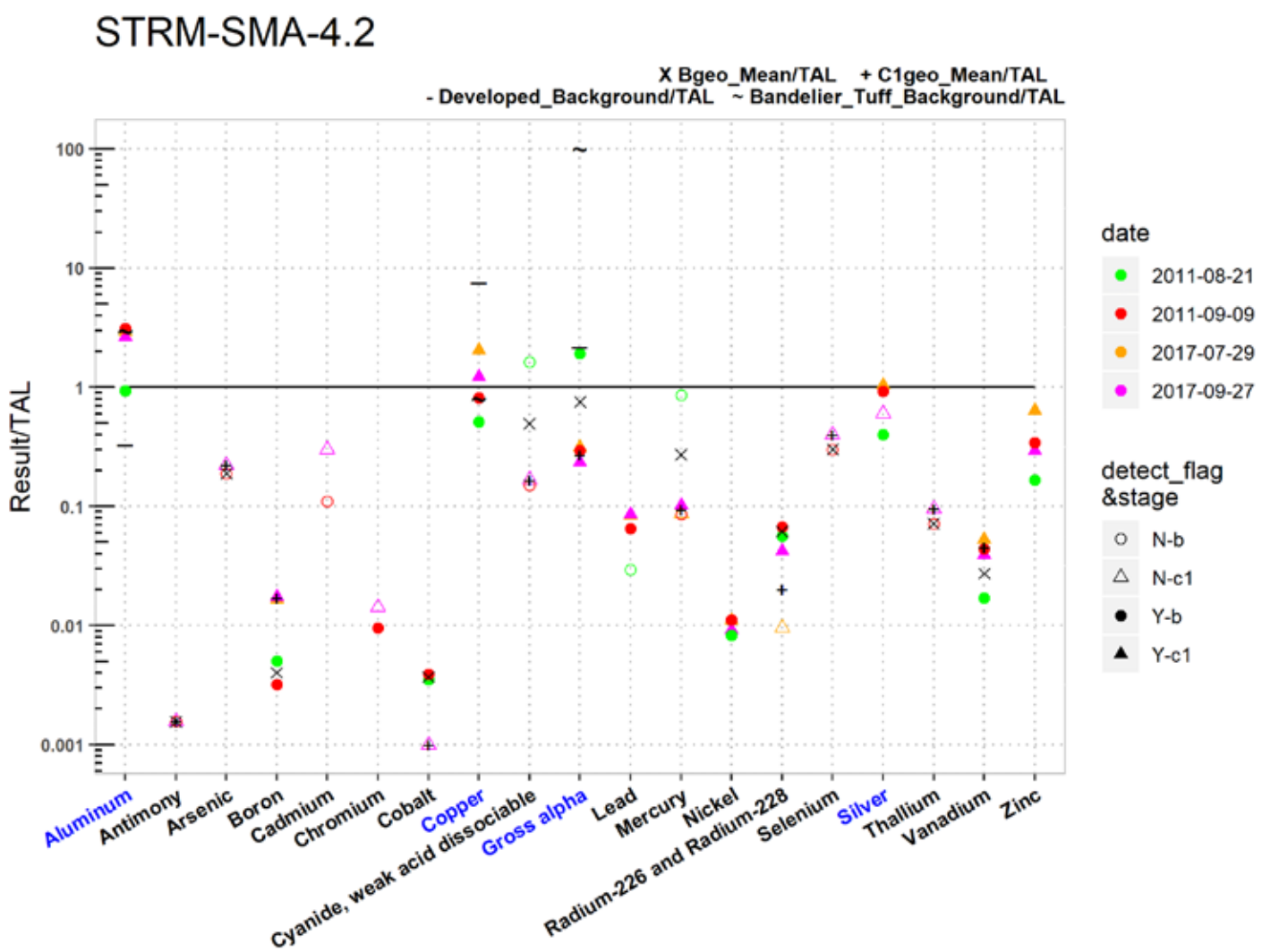


Figure 178-2 Analytical results summary for STRM-SMA-4.2

STRM-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	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	0.004	NA	NA	0.0037	NA	0.49	0.75	NA	0.27	NA	0.061	0.3	NA	0.071	0.027	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.017	NA	NA	0.001	NA	0.17	0.27	NA	0.094	NA	0.02	0.4	NA	0.095	0.045	NA
2011-08-21 d	0.93	NA	NA	0.005	NA	NA	0.0035	0.51	NA	**1.9**	NA	NA	0.0082	0.056	NA	0.4	NA	0.017	0.17
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	1.6	NA	0.029	0.86	NA	NA	0.3	NA	0.071	NA	NA
2011-09-09 d	**3.1**	NA	NA	0.0032	NA	0.0095	0.0039	0.81	NA	0.29	0.065	NA	0.011	0.067	NA	0.92	NA	0.044	0.34
2011-09-09 nd	NA	0.0016	0.19	NA	0.11	NA	NA	NA	0.15	NA	NA	0.086	NA	NA	0.3	NA	0.071	NA	NA
2017-07-29 d	**2.9**	NA	NA	0.016	NA	NA	NA	**2**	NA	0.31	0.084	NA	0.011	NA	NA	**1**	NA	0.053	0.64
2017-07-29 nd	NA	0.0016	0.22	NA	0.3	0.014	0.001	NA	0.17	NA	NA	0.087	NA	0.0095	0.4	NA	0.095	NA	NA
2017-09-27 d	**2.6**	NA	NA	0.017	NA	NA	NA	**1.2**	NA	0.23	0.086	0.1	0.0091	0.042	NA	NA	NA	0.039	0.29
2017-09-27 nd	NA	0.0016	0.22	NA	0.3	0.014	0.001	NA	0.17	NA	NA	NA	NA	NA	0.4	0.6	0.095	NA	NA

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

Figure 178-2 (continued) Analytical results summary for STRM-SMA-4.2

179.0 STRM-SMA-5.05: SWMU 09-013

179.1 Site Descriptions

One historical industrial activity area is associated with J031, STRM-SMA-5.05: Site 09-013.

SWMU 09-013 is MDA M, which consists of two surface disposal areas at TA-09, a main area and a smaller satellite area. The main area occupies about 3.2 acres and is located approximately 1600 ft southwest of building 22-120. The 150-ft-wide × 260-ft-long satellite area is located approximately 750 ft northwest of the main area. MDA M was created during the demolition of the Old Anchor Ranch East and West sites. Structures were flash burned to remove any HE residue and deposited over the MDA surface. Debris from the construction of current TA-08 and TA-09 facilities (1949 to 1965) and other sites (1960 to 1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers. The main disposal area was surrounded by an earth berm that eroded through by surface-water runoff. MDA M has been inactive since 1965. All debris and contaminated soil were removed from MDA M during an expedited cleanup conducted in 1995 and 1996.

A Consent Order investigation has not been performed at SWMU 09-013, and no decision-level soil sampling data are available for this Site. Sampling was performed at the Site during a 1994 RFI and the 1995 and 1996 expedited cleanup. SWMU 09-013 will be investigated under the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area investigation.

The project map (Figure 179-1) 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.

179.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 179-1).

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 179-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J03102040013	Established Vegetation	-	X	X	-	B
J03103010009	Earthen Berm	X	-	-	X	EC
J03103010012	Earthen Berm	X	-	-	X	B
J03103010014	Earthen Berm	-	X	-	X	B
J03103020004	Base Course Berm	-	X	-	X	CB

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

179.3 Storm Water Monitoring

SWMU 09-013 is monitored within STRM-SMA-5.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 179-2). Analytical results from this sample yielded TAL exceedances for aluminum (1170 µg/L), gross-alpha activity (24.5 pCi/L), and PCB concentration (7 ng/L) and are presented in Figure 179-2.

Following the installation of enhanced control measures at STRM-SMA-5.05, a corrective action storm water sample was collected on August 2, 2015 (Figure 179-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for PCB concentration (2.26 ng/L) and are presented in Figure 179-2.

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 09-013:

- Based on descriptions of the wastes present at MDA M, PCBs are not known to have been associated with industrial materials historically managed at this Site. PCBs were detected in RFI samples with Aroclor-1254 being detected above the 1 mg/kg SAL in two samples, both collected within the main (i.e., southern) area. The maximum concentration of Aroclor-1254 is 2.3 times the residential SSL. The PCB hotspots identified during the RFI were removed during the expedited cleanup, and confirmation samples were collected from grids. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow (i.e., 0 to 3 ft bgs) expedited cleanup confirmation samples. Aroclor-1248 was detected in 5 of 11 shallow samples collected within the main area and was not detected in 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1254 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1260 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 1% of the residential SSL. The RFI and expedited cleanup data are screening level only.

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 179-2. 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 179-2.

STRM-SMA-5.05 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared with the PCB exceedances.

- PCBs—The PCB UTL for storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L; the results from 2011 and 2015 are less than this value.

All the analytical results for these samples are reported in the 2011 and 2015 Annual Reports.

179.4 Inspections and Maintenance

RG-TA-06 recorded one winter storm event and RG240 recorded seven storm events at STRM-SMA-5.05 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 179-2 Control Measure Inspections during 2019

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-72924	3-20-2019
Storm Rain Event	BMP-74635	7-11-2019
Storm Rain Event	BMP-74822	7-22-2019
Storm Rain Event	BMP-75427	8-7-2019
Storm Rain Event	BMP-76399	8-27-2019
Storm Rain Event	BMP-76679	9-12-2019
Storm Rain Event	BMP-77263	10-17-2019

No maintenance activities or facility modifications affecting discharge were conducted at STRM-SMA-5.05 in 2019.

179.5 Compliance Status

The Sites associated with STRM-SMA-5.05 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 179-3 presents the 2019 compliance status.

Table 179-3 Compliance Status during 2019

Site	Compliance Status on Jan 1, 2019	Compliance Status on Dec 31, 2019	Comments
SWMU 09-013	Alternative Compliance Requested	Alternative Compliance Requested	LANL, February 26, 2016, "Alternative Compliance Request for 17 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Source."

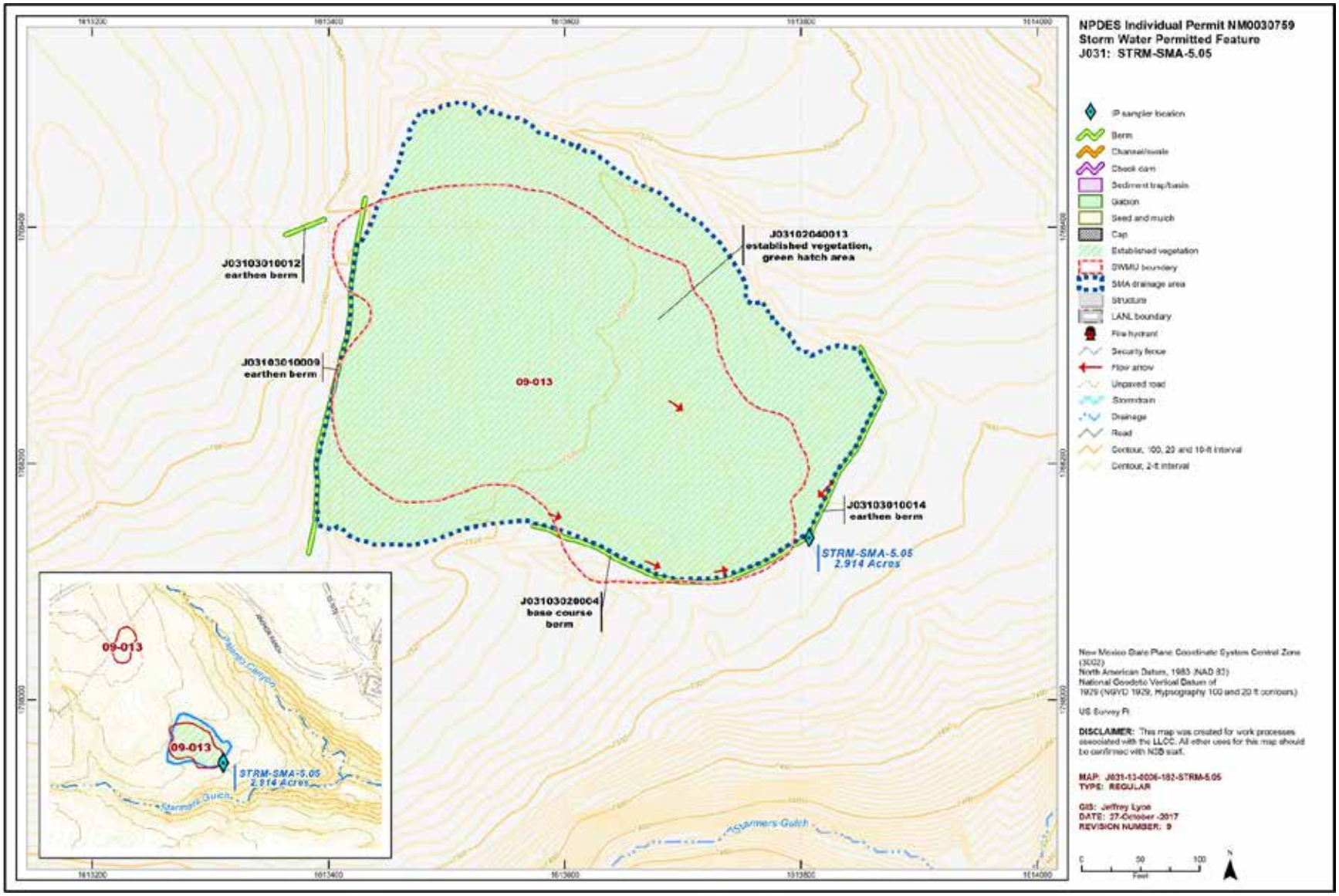


Figure 179-1 STRM-SMA-5.05 location map

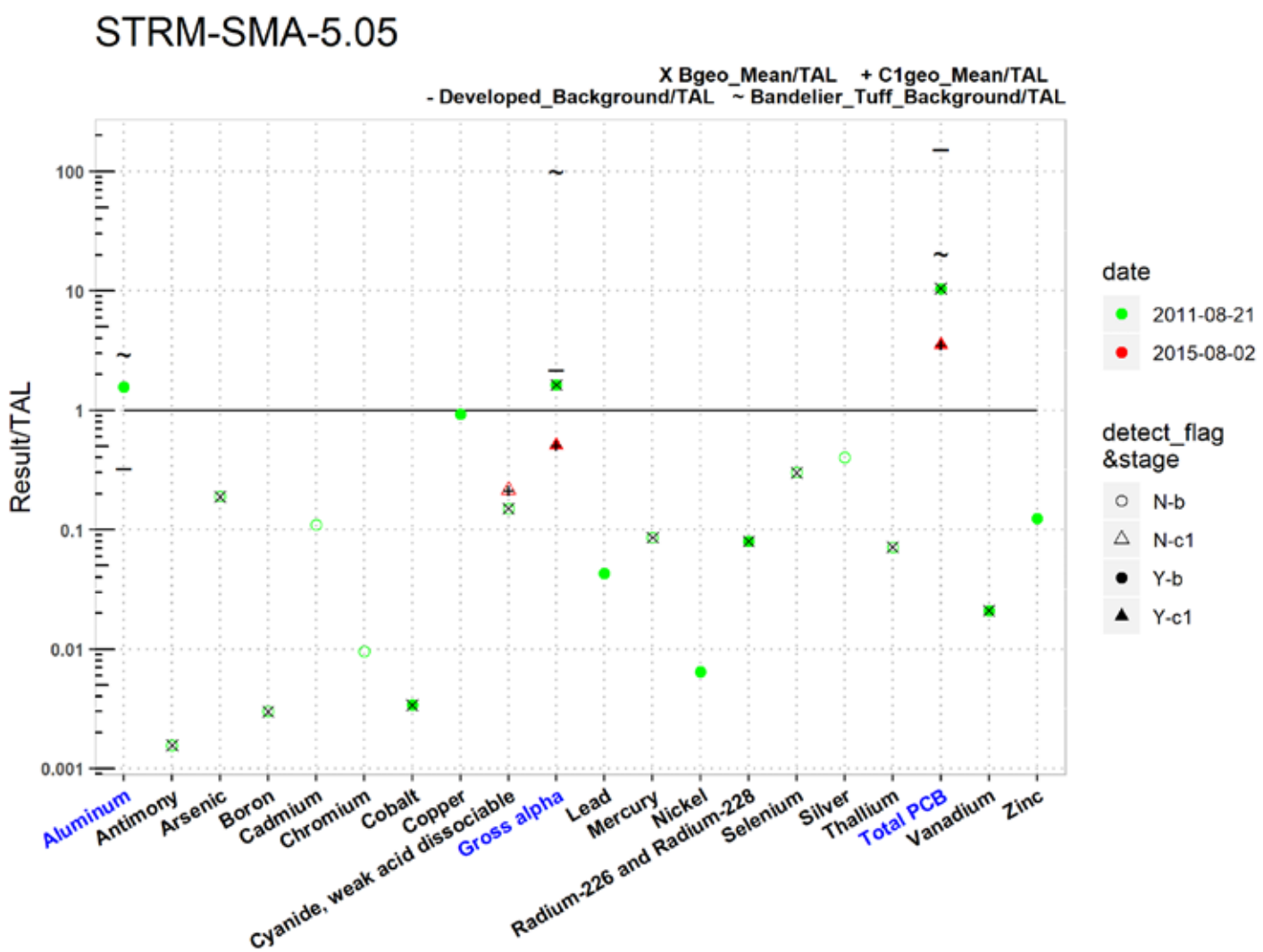


Figure 179-2 Analytical results summary for STRM-SMA-5.05

STRM-SMA-5.05

	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	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	0.003	NA	NA	0.0034	NA	0.15	**1.6**	NA	0.086	NA	0.08	0.3	NA	0.071	**10**	0.021	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	0.21	0.51	NA	NA	NA	NA	NA	NA	NA	**3.5**	NA	NA
2011-08-21 d	**1.6**	NA	NA	NA	NA	NA	0.0034	0.93	NA	**1.6**	0.043	NA	0.0065	0.08	NA	NA	NA	**10**	0.021	0.12
2011-08-21 nd	NA	0.0016	0.19	0.003	0.11	0.0095	NA	NA	0.15	NA	NA	0.086	NA	NA	0.3	0.4	0.071	NA	NA	NA
2015-08-02 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.51	NA	NA	NA	NA	NA	NA	NA	**3.5**	NA	NA
2015-08-02 nd	NA	NA	NA	NA	NA	NA	NA	NA	0.21	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 179-2 (continued) Analytical results summary for STRM-SMA-5.05

Attachment 1
Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1823	1/24/2019	3M-SMA-0.4	Per data QA/QC reviews in preparation for 2018 IP Annual Report and SDPPP data pulls, please update as necessary to:-Correct Asset ID for coir log 17 from H002030140017 to H00203140017 and Permit Phase value from CAM to CA for control 17. Asset ID and permit phase value incorrectly populated when control was added per CCN-71214 in 2018.	E	CCN-72393
V3. 1824	5/10/2019	2M-SMA-3	SIP reviews have identified a new confirmation monitoring sampling location is needed at 2M-SMA-3. The current confirmation monitoring sampling location (SS2439) 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: - Move Sampler location.- 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-72821
V3. 1825	5/10/2019	2M-SMA-3	Minor Sampler Adjustments, with Updated to Coordinates in Att. D	T	CCN-72821
V3. 1826	5/10/2019	2M-SMA-3	SMA Boundary Modification, with Update to Area in Att. D	T	CCN-72821
V3. 1827	5/10/2019	2M-SMA-3	Map Revision-(19)	T	CCN-72821
V3. 1828	5/10/2019	3M-SMA-2.6	SIP reviews in December of 2018 identified a new confirmation monitoring sampling location is needed at 3M-SMA-2.6. The current confirmation monitoring sampling location (SS101503) 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: - Move Sampler location.- 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-73022
V3. 1829	5/10/2019	3M-SMA-2.6	Minor Sampler Adjustments, with Updated to Coordinates in Att. D	T	CCN-73022
V3. 1830	5/10/2019	3M-SMA-2.6	SMA Boundary Modification, with Update to Area in Att. D	T	CCN-73022

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1831	5/10/2019	3M-SMA-2.6	Map Revision-(7)	T	CCN-73022
V3. 1832	6/24/2019	2M-SMA-1	Per BMP-72909 conducted on 3/21/2019, please update as necessary to: - Retire Asphalt Berm -0027. Control has been destroyed. Multiple back up controls are in place. Retire date is 3/21/2019. -Add Eco Block as a Run On Sediment Control. BMP-74099 generated for installation of Eco Block. Eco-Block installed 06/17/2019.	T	CCN-73838
V3. 1833	6/24/2019	2M-SMA-1	Retire Control - Damaged and/or Replaced- Control ID: E00103040027- Asphalt Berm	T	CCN-73838
V3. 1834	6/24/2019	2M-SMA-1	New Control- Routine/Replacement- Control ID: E001030110035- Eco-Block	T	CCN-73838
V3. 1835	6/24/2019	2M-SMA-1	Map Revision-(16)	T	CCN-73838
V3. 1836	8/5/2019	PJ-SMA-11	PJ-SMA-11. Corrective Action Initiated for CAM5-2 July 2, 2019, sample for copper (21.55814 × MTAL) and gross alpha (7.1684 × ATAL)	T	CCN-75936
V3. 1837	8/6/2019	3M-SMA-4	3M-SMA-4 Alternative Compliance Requested	T	CCN-73615
V3. 1838	9/13/2019	PJ-SMA-10	Per FTL site visit conducted 08/13/19, please update as necessary to: -Retire Coir Logs J012003140018, J012003140019, J012003140028, and J012003140029 (ron/sc). Destroyed by recent facility construction. Functions replaced by existing asphalt berm -0032 and new facility installed controls that will not be tracked as IP controls. Retire date 8/13/19.	T	CCN-76347
V3. 1839	9/13/2019	PJ-SMA-10	Retire Control - Damaged and/or Replaced- Control ID: J01203140018- Coir Log	T	CCN-76347
V3. 1840	9/13/2019	PJ-SMA-10	Retire Control - Damaged and/or Replaced- Control ID: J01203140019- Coir Log	T	CCN-76347
V3. 1841	9/13/2019	PJ-SMA-10	Retire Control - Damaged and/or Replaced- Control ID: J01203140028- Coir Log	T	CCN-76347
V3. 1842	9/13/2019	PJ-SMA-10	Retire Control - Damaged and/or Replaced- Control ID: J01203140029- Coir Log	T	CCN-76347
V3. 1843	9/13/2019	PJ-SMA-10	Map Revision-(16)	T	CCN-76347
V3. 1844	11/20/2019	STRM-SMA-4.2	SMA Boundary Modification, with Update to Area in Att. D	T	CCN-76998

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1845	11/22/2019	Volume 3	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 07 Life 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
V3. 1846	11/26/2019	STRM-SMA-4.2	Per Control Measure Verification form BMP-77639 conducted 11/06/19: Add three plunge pools installed as enhanced runoff erosion and sediment controls accept date of 11/06/19 see GPS coordinates for locations. Install three rock check dams installed as enhanced runoff sediment controls accept date of 11/06/19 see GPS coordinates for locations. Incorporate final drainage area from CCN-76998 for use in map revision 10 and in ECC map revision 1	T	CCN-76996
V3. 1847	11/26/2019	STRM-SMA-4.2	New Control- Corrective Action Control- Control ID: J03005070007- Plunge Pool	T	CCN-76996
V3. 1848	11/26/2019	STRM-SMA-4.2	New Control- Corrective Action Control- Control ID: J03005070008- Plunge Pool	T	CCN-76996
V3. 1849	11/26/2019	STRM-SMA-4.2	New Control- Corrective Action Control- Control ID: J03005070009- Plunge Pool	T	CCN-76996
V3. 1850	11/26/2019	STRM-SMA-4.2	New Control- Corrective Action Control- Control ID: J03006010010- Rock Check Dam	T	CCN-76996
V3. 1851	11/26/2019	STRM-SMA-4.2	New Control- Corrective Action Control- Control ID: J03006010011- Rock Check Dam	T	CCN-76996
V3. 1852	11/26/2019	STRM-SMA-4.2	New Control- Corrective Action Control- Control ID: J03006010012- Rock Check Dam	T	CCN-76996
V3. 1853	11/26/2019	STRM-SMA-4.2	Map Revision-(10)	T	CCN-76996
V3. 1854	12/5/2019	2M-SMA-1	Per data QA/QC reviews in preparation for 2019 IP Annual Report and SDPPP data pulls, and labor report notes on CCN-73838, complete listed MainConn asset updates for Eco-Block E01103110035 that were not completed during processing of CCN-73838: -Assign run-on and sediment control functions-Update permit phase to CA-Add additional control specification, date of 6/17/2019.	E	CCN-76507
V3. 1855	12/5/2019	PJ-SMA-10	Per data QA/QC reviews in preparation for 2019 IP Annual Report and SDPPP data pulls, and labor report notes on CCN-77821, complete listed MainConn asset updates that were not completed during processing of CCN-76347: -update map revision from 15 to 16. Map revision 16 effective 9/13/19.	E	CCN-77897

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1856	12/17/2019	3M-SMA-0.2	Per spatial PRS Database Change request CR2017-0481, approved 6/11/2019: - Generate new map revision showing updated spatial presentation of site 15-010(b).	T	CCN-76995
V3. 1857	12/17/2019	3M-SMA-0.2	Site Boundary Change- 15-010(b)	T	CCN-76995
V3. 1858	12/17/2019	3M-SMA-0.2	Map Revision-(12)	T	CCN-76995
V3. 1859	12/17/2019	3M-SMA-0.5	Per spatial PRS Database Change request CR2017-0481, approved 6/11/2019: - Generate new map revision showing updated spatial presentation of site 15-0009(c).	T	CCN-77866
V3. 1860	12/17/2019	3M-SMA-0.5	Site Boundary Change- 15-009(c)	T	CCN-77866
V3. 1861	12/17/2019	3M-SMA-0.5	Map Revision-(10)	T	CCN-77866
V3. 1862	12/17/2019	3M-SMA-2.6	Per spatial PRS Database Change request CR2017-0481, approved 6/11/2019: - Generate new map revision showing updated spatial presentation of site C-36-003.	T	CCN-77867
V3. 1863	12/17/2019	3M-SMA-2.6	Site Boundary Change- C-36-003	T	CCN-77867
V3. 1864	12/17/2019	3M-SMA-2.6	Map Revision-(8)	T	CCN-77867
V3. 1865	1/31/2020	2M-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	
V3. 1866	1/31/2020	2M-SMA-1.42	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	
V3. 1867	1/31/2020	2M-SMA-1.44	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	
V3. 1868	1/31/2020	2M-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	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1869	1/31/2020	2M-SMA-1.65	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	
V3. 1870	1/31/2020	2M-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	
V3. 1871	1/31/2020	2M-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	
V3. 1872	1/31/2020	2M-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	
V3. 1873	1/31/2020	3M-SMA-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	
V3. 1874	1/31/2020	PJ-SMA-1.05	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	
V3. 1875	1/31/2020	PJ-SMA-3.05	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	
V3. 1876	1/31/2020	PJ-SMA-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	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1877	1/31/2020	PJ-SMA-5.1	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	
V3. 1878	1/31/2020	PJ-SMA-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	
V3. 1879	1/31/2020	PJ-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	
V3. 1880	1/31/2020	PJ-SMA-11	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	
V3. 1881	1/31/2020	PJ-SMA-11.1	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	
V3. 1882	1/31/2020	PJ-SMA-13.7	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	
V3. 1883	1/31/2020	STRM-SMA-1.05	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	
V3. 1884	1/31/2020	STRM-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	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1885	1/31/2020	STRM-SMA-4.2	Change to SDPPP - Enhanced controls were installed and certified on August 21, 2012, and submitted to EPA on August 27, 2012, as part of corrective action. Enhanced controls installation was completed in late 2019, certified on January 10, 2020, and submitted to EPA on January 14, 2020. 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	
V3. 1886	1/31/2020	STRM-SMA-5.05	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	
V3. 1887	1/31/2020	2M-SMA-1	Figure 129-2 replaced	T	
V3. 1888	1/31/2020	2M-SMA-1.42	Removed Maintenance Table	T	
V3. 1889	1/31/2020	2M-SMA-1.42	Updated Compliance Status Table	T	
V3. 1890	1/31/2020	2M-SMA-1.42	Figure 130-2 replaced	T	
V3. 1891	1/31/2020	2M-SMA-1.43	Figure 131-2 replaced	T	
V3. 1892	1/31/2020	2M-SMA-1.44	Figure 132-2 replaced	T	
V3. 1893	1/31/2020	2M-SMA-1.45	Removed Maintenance Table	T	
V3. 1894	1/31/2020	2M-SMA-1.45	Figure 133-2 replaced	T	
V3. 1895	1/31/2020	2M-SMA-1.5	Removed Maintenance Table	T	
V3. 1896	1/31/2020	2M-SMA-1.65	Removed Maintenance Table	T	
V3. 1897	1/31/2020	2M-SMA-1.65	Figure 135-2 replaced	T	
V3. 1898	1/31/2020	2M-SMA-1.67	Figure 136-2 replaced and 136-3 removed	T	
V3. 1899	1/31/2020	2M-SMA-1.7	Figure 137-2 replaced	T	
V3. 1900	1/31/2020	2M-SMA-1.8	Removed Maintenance Table	T	
V3. 1901	1/31/2020	2M-SMA-1.8	Figure 138-2 replaced	T	
V3. 1902	1/31/2020	2M-SMA-1.9	Removed Maintenance Table	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1903	1/31/2020	2M-SMA-1.9	Figure 139-2 replaced	T	
V3. 1904	1/31/2020	2M-SMA-2	Removed Maintenance Table	T	
V3. 1905	1/31/2020	2M-SMA-2	Figure 140-2 replaced and Figure 140-3 removed	T	
V3. 1906	1/31/2020	2M-SMA-2.2	Removed Maintenance Table	T	
V3. 1907	1/31/2020	2M-SMA-2.2	Updated Compliance Status Table	T	
V3. 1908	1/31/2020	2M-SMA-2.2	Figure 141-2 replaced and Figure 141-3 removed	T	
V3. 1909	1/31/2020	2M-SMA-2.5	Figure 142-2 replaced and Figure 142-3 removed	T	
V3. 1910	1/31/2020	2M-SMA-3	Updated Compliance Status Table	T	
V3. 1911	1/31/2020	2M-SMA-3	Figures 143-2a replaced and renamed as Figure 143-2. Removed Figures 143-2b , 143-3a, and 143-3b	T	
V3. 1912	1/31/2020	3M-SMA-0.2	Updated Compliance Status Table	T	
V3. 1913	1/31/2020	3M-SMA-0.2	Figure 144-2 replaced	T	
V3. 1914	1/31/2020	3M-SMA-0.4	Removed Maintenance Table	T	
V3. 1915	1/31/2020	3M-SMA-0.4	Figure 145-2 replaced and Figure 145-3 removed	T	
V3. 1916	1/31/2020	3M-SMA-0.5	Figure 146-2 replaced and Figure 146-3 removed	T	
V3. 1917	1/31/2020	3M-SMA-2.6	Removed Maintenance Table	T	
V3. 1918	1/31/2020	3M-SMA-2.6	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Sites in this SMA.	T	
V3. 1919	1/31/2020	3M-SMA-4	Updated Compliance Status Table	T	
V3. 1920	1/31/2020	3M-SMA-4	Figure 143-2a replaced and renamed as Figure 123-2. Removed Figures 143-2b, 143-3a, and 143-3b.	T	
V3. 1921	1/31/2020	PJ-SMA-1.05	Figure 150-2 replaced and Figure 150-3 removed	T	
V3. 1922	1/31/2020	PJ-SMA-2	Added Maintenance Table	T	
V3. 1923	1/31/2020	PJ-SMA-3.05	Figure152-2 replaced and Figure 153-3 removed	T	
V3. 1924	1/31/2020	PJ-SMA-4.05	Updated Compliance Status Table	T	
V3. 1925	1/31/2020	PJ-SMA-4.05	Figure 153-2 replaced	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1926	1/31/2020	PJ-SMA-5	Removed Maintenance Table	T	
V3. 1927	1/31/2020	PJ-SMA-5	Figure 154-2 replaced. Figures 154-3 and 154-4 removed	T	
V3. 1928	1/31/2020	PJ-SMA-5.1	Figure 155-2 replaced	T	
V3. 1929	1/31/2020	PJ-SMA-6	Figure 156-2 replaced	T	
V3. 1930	1/31/2020	PJ-SMA-9	Figure 159-2 replaced and Figure 159-3 removed	T	
V3. 1931	1/31/2020	PJ-SMA-10	Updated Compliance Status Table	T	
V3. 1932	1/31/2020	PJ-SMA-10	Figure 160-2 replaced and Figure 160-3 removed	T	
V3. 1933	1/31/2020	PJ-SMA-11	Updated Compliance Status Table	T	
V3. 1934	1/31/2020	PJ-SMA-11	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Site in this SMA.	T	
V3. 1935	1/31/2020	PJ-SMA-11	Figure 161-2 replaced and Figure 161-3 removed	T	
V3. 1936	1/31/2020	PJ-SMA-11.1	Figure 162-2 replaced	T	
V3. 1937	1/31/2020	PJ-SMA-13	Added Maintenance Table	T	
V3. 1938	1/31/2020	PJ-SMA-13.7	Figure 164-2 replaced	T	
V3. 1939	1/31/2020	PJ-SMA-14	Removed Maintenance Table	T	
V3. 1940	1/31/2020	PJ-SMA-14.8	Figure 170-2 replaced	T	
V3. 1941	1/31/2020	PJ-SMA-16	Figure 171-2 replaced and Figure 171-3 removed	T	
V3. 1942	1/31/2020	PJ-SMA-17	Updated Compliance Status Table	T	
V3. 1943	1/31/2020	PJ-SMA-17	Figure 172-2 replaced and Figure 172-3 removed	T	
V3. 1944	1/31/2020	PJ-SMA-18	Updated Compliance Status Table	T	
V3. 1945	1/31/2020	PJ-SMA-18	Figure 173-2 replaced and Figure 173-3 removed	T	
V3. 1946	1/31/2020	PJ-SMA-19	Figure 174-2 replaced and Figure 174-3 removed	T	
V3. 1947	1/31/2020	PJ-SMA-20	Added Maintenance Table	T	
V3. 1948	1/31/2020	PJ-SMA-20	Updated Compliance Status Table	T	
V3. 1949	1/31/2020	PJ-SMA-20	Figure 175-2 replaced and Figure 175-3 removed	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1950	1/31/2020	STRM-SMA-1.05	Figure 176-2 replaced	T	
V3. 1951	1/31/2020	STRM-SMA-1.5	Figure 177-2 replaced. Figure 177-3, 177-4, and 177-5 removed	T	
V3. 1952	1/31/2020	STRM-SMA-4.2	Updated Compliance Status Table	T	
V3. 1953	1/31/2020	STRM-SMA-4.2	Change to SDPPP - Further details regarding compliance status and planned activities can be found in Attachment 6 for the Site in this SMA.	T	
V3. 1954	1/31/2020	STRM-SMA-4.2	Figure 178-2a renamed to 178-2 and Figure 174-2b removed	T	
V3. 1955	1/31/2020	STRM-SMA-5.05	Figure 179-2 replaced and Figure 179-3 removed	T	
V3. 1956	3/12/2020	2M-SMA-1	Change to SDPPP- SWMU 03-010(a) is monitored within 2M-SMA-1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 4, 2011, and August 20, 2011 (Figure 129-2). Analytical results from these baseline monitoring samples yielded ~~the following~~ TAL exceedances for aluminum (1200 µg/L) and gross-alpha activity (18.3 pCi/L) and are presented in Figure 129-2.~~:~~ ~~• Aluminum concentration of 1200 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 18.3 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures, two corrective action storm water samples were collected on July 25, 2012, and September 12, 2012 (Figure 129-2). Analytical results from these corrective action monitoring samples yielded ~~the following~~a TAL exceedance for aluminum (1430 µg/L) and are presented in Figure 129-2.~~:~~ ~~• Aluminum concentration of 1430 µg/L (MTAL is 750 µg/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1957	3/12/2020	2M-SMA-1.42	Change to SDPPP- SWMU 06-001(a) is monitored within 2M-SMA-1.42. Following the installation of baseline control measures, two baseline storm water samples were collected on August 21, 2011, and September 15, 2011 (Figure 130-2). Analytical results from these samples yielded ~~the following~~ TAL exceedances ~~in the first sample collected~~for aluminum (794 µg/L) and gross-alpha activity (51.8 pCi/L) and are presented in Figure 130-2.~~:~~ ~~• Aluminum concentration of 794 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 51.8 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at 2M-SMA-1.42, a corrective action storm water sample was collected on July 20, 2015 (Figure 130-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~ TAL exceedances for aluminum (1900 µg/L) and gross-alpha activity (16 pCi/L) and are presented in Figure 130-2.~~:~~ ~~• Aluminum concentration of 1900 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 16 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1958	3/12/2020	2M-SMA-1.43	Change to SDPPP- SWMUs 22-014(a) and 22-015(a) are monitored within 2M-SMA-1.43. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 131-2). In Figure 131-2, 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 ~~two~~ TAL exceedances for aluminum (1500 µg/L) and gross-alpha activity (52 pCi/L) and are presented in Figure 131-2.~~:~~ ~~• Aluminum concentration of 1500 µg/L (MTAL is 750 µg/L) and~~ ~~• Gross-alpha activity of 52 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
V3. 1959	3/12/2020	2M-SMA-1.44	Change to SDPPP- SWMU 06-001(b) is monitored within 2M-SMA-1.44. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 132-2). Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (31.5 µg/L) and gross-alpha activity (21.1 pCi/L) and are presented in Figure 132-2.~~:~~ ~~• Copper concentration of 31.5 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Gross-alpha activity of 21.1 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at 2M-SMA-1.44, corrective action storm water samples were collected on September 12, 2013, and July 31, 2014 (Figure 132-2). Analytical results from ~~this~~these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for copper (39.5 µg/L and 27.5 µg/L) and are presented in Figure 132-2.: • Copper concentrations of 39.5 µg/L and 27.5 µg/L (MTAL is 4.3 µg/L).	T	
V3. 1960	3/12/2020	2M-SMA-1.45	Change to SDPPP- SWMU 06-006 was monitored within 2M-SMA-1.45. Following the installation of baseline control measures, a baseline storm water sample was collected on September 7, 2011 (Figure 133-2). Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (398 pCi/L) and are presented in Figure 133-2.~~:~~ ~~• Gross-alpha activity of 398 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1961	3/12/2020	2M-SMA-1.65	Change to SDPPP- SWMU 40-005 is monitored within 2M-SMA-1.65. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 135-2). Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (220 pCi/L) and are presented in Figure 135-2.~~:~~ ~~• Gross-alpha activity of 220 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at 2M-SMA-1.65, a corrective action storm water sample was collected on September 13, 2013 (Figure 135-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~a TAL ~~exceedances~~exceedance for gross-alpha activity (22.6 pCi/L) and are presented in Figure 135-2.~~:~~ ~~• Gross-alpha activity of 22.6 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
V3. 1962	3/12/2020	2M-SMA-1.67	Change to SDPPP- SWMU 06-003(h) is monitored within 2M-SMA-1.67. Following the installation of baseline control measures, a baseline storm water sample was collected on September 15, 2011 (Figure~~s~~ 136-2~~ and 136-3~~). Analytical results from this sample yielded no TAL exceedances. The HE sample collected on September 15, 2011, was extracted or analyzed beyond the appropriate holding time and thus may have a low bias and potentially under report the concentration of HE in this sample. Consequently, the results for this analysis cannot be used to confirm that HE is present at a concentration greater or less than the TAL. Therefore, 2M-SMA-1.67 will remain in the baseline monitoring extended phase until ~~a viable baseline confirmation monitoring sample can be collected and analyzed with fully usable results.~~collection of an additional sample occurs.	T	
V3. 1963	3/12/2020	2M-SMA-1.7	Change to SDPPP- SWMU 03-055(a) is monitored within 2M-SMA-1.7. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 9, 2011 (Figure 137-2). Analytical results from these samples yielded ~~the following~~ a TAL exceedance for copper (11.4 µg/L) and are presented in Figure 137-2.~~:~~ ~~• Copper concentration of 11.4 µg/L (MTAL is 4.3 µg/L).~~ Following the installation of enhanced control measures at 2M-SMA-1.7, corrective action storm water samples were collected on July 8, 2014, and August 26, 2014 (Figure 137-2). Analytical results from ~~the July 8, 2014,~~ these corrective action monitoring samples yielded ~~the following~~ a TAL exceedance for copper (4.6 µg/L) and are presented in Figure 137-2.~~:~~ ~~• Copper concentration of 4.6 µg/L (MTAL is 4.3 µg/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. ~~This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations (where applicable) with the storm water TAL exceedance to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1964	3/12/2020	2M-SMA-1.8	Change to SDPPP- SWMU 03-001(k) is monitored within 2M-SMA-1.8. Following the installation of baseline control measures, two baseline storm water samples were collected on August 4, 2011, and September 9, 2011 (Figure 138-2). Analytical results from these samples yielded~~ the following~~ TAL exceedances for copper (6.6 µg/L and 13.2 µg/L) and zinc (71.8 µg/L) and are presented in Figure 138-2.~~:~~ ~~• Copper concentrations of 6.6 µg/L and 13.2 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Zinc concentration of 71.8 µg/L (MTAL is 42 µg/L).~~	T	
V3. 1965	3/12/2020	2M-SMA-1.9	Change to SDPPP- SWMU 03-003(a) is monitored within 2M-SMA-1.9. Following the installation of baseline control measures, a baseline storm water sample was collected on July 11, 2012 (Figure 139-2). In Figure 139-2, 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 copper (24.9 µg/L) and zinc (314 µg/L) and are presented in Figure 139-2.~~:~~ ~~• Copper concentration of 24.9 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Zinc concentration of 314 µg/L (MTAL is 42 µg/L).~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1966	3/12/2020	2M-SMA-2	Change to SDPPP- SWMUs 03-050(d) and 03-054(b) are monitored within 2M-SMA-2. Following the installation of baseline control measures, two baseline storm water samples were collected on July 28, 2011, and September 4, 2011 (Figure~~s~~ 140-2~~ and 140-~~3). In Figure 140-2, 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 these samples yielded ~~the following~~ TAL exceedances for copper (5.5 µg/L and 14.9 µg/L), PCB concentration (65 ng/L), and zinc (72.3 µg/L and 140 µg/L,) and are presented in Figure 140-2.~~:~~ ~~• Copper concentrations of 5.5 µg/L and 14.9 µg/L (MTAL is 4.3 µg/L),~~ ~~• Zinc concentrations of 72.3 µg/L and 140 µg/L (MTAL is 42 µg/L), and~~ ~~• PCB concentration of 65 ng/L (ATAL is 0.6 ng/L).~~ Following the installation of enhanced control measures at 2M-SMA-2, corrective action storm water samples were collected on June 14, 2013, and August 18, 2013 (Figure~~s~~ 140-2~~ and 140-3~~). Analytical results from these corrective action monitoring samples yielded the following TAL exceedances for copper (18.5 µg/L and 19.9 µg/L), PCB concentrations (50 ng/L and 15 ng/L), and zinc (102 µg/L and 123 µg/L) and are presented in Figure 140-2.~~:~~ ~~Copper concentrations of 18.5 µg/L and 19.9 µg/L (MTAL is 4.3 µg/L),~~ ~~Zinc concentrations of 102 µg/L and 123 µg/L (MTAL is 42 µg/L), and~~ ~~PCB concentrations of 50 ng/L and 15 ng/L (ATAL is 0.6 ng/L).~~	T	
V3. 1967	3/12/2020	2M-SMA-2	Change to SDPPP- 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~~s~~ 140-2~~ and 140-3~~. 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~~ 140-2~~ and 140-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1968	3/12/2020	2M-SMA-2	Change to SDPPP- No maintenance activities were conducted at 2M-SMA-2 in 2019. An overhead sprinkler line broke on December 1, 2019, in a building near control measures associated with 2M-SMA-2. After notification of the release from Triad personnel, SWPPP team members conducted an inspection of the Site and controls and found no impacts affecting discharge at 2M-SMA-2 as a result of the release.	T	
V3. 1969	3/12/2020	2M-SMA-2.2	Change to SDPPP- AOC 03-003(k) is monitored within 2M-SMA-2.2. Following the installation of baseline control measures, two baseline storm water samples were collected on August 13, 2011, and September 4, 2011 (Figure~~s~~ 141-2~~ and 141-3~~). ~~This Site is now certified as corrective action complete under no exposure.~~ Analytical results from these samples yielded ~~the following~~ TAL exceedances for copper (10.1 µg/L and 16.4 µg/L), PCB concentrations (7 ng/L and 10 ng/L), and zinc (90.1 µg/L and 97.2 µg/L) and are presented in Figure 141-2.~~:~~ ~~Copper concentrations of 10.1 µg/L and 16.4 µg/L (MTAL is 4.3 µg/L), Zinc concentrations of 90.1 µg/L and 97.2 µg/L (MTAL is 42 µg/L), and PCB concentrations of 7 ng/L and 10 ng/L (ATAL is 0.6 ng/L).~~ Following certification of no exposure, a corrective action investigation storm water sample was collected on July 1, 2016. Analytical results from this sample were submitted to EPA on September 26, 2016. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at 2M-SMA-2.2. No further sampling is required for 2M-SMA-2.2 for the remainder of the IP. ~~(Figures 141-2 and 141-3). Analytical results from this sample yielded the following TAL exceedances:~~ ~~• Copper concentration of 4.8 µg/L (MTAL is 4.3 µg/L),~~ ~~• Gross alpha activity of 37.9 pCi/L (ATAL is 15 pCi/L), and~~ ~~• PCB concentration of 41.1 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
V3. 1970	3/12/2020	2M-SMA-2.2	Change to SDPPP- 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 03-003(k): • Copper is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k). • Zinc is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k). • PCBs are known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k). ~~• 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.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1971	3/12/2020	2M-SMA-2.2	Change to SDPPP- Monitoring location 2M-SMA-2.2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. • Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011~~ and 2016~~ are between these values. • Zinc—The zinc UTL from developed landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than both of these values. • PCB—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are less than both of these values. ~~• The 2016 PCB result is between these two values.~~ ~~• Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2016 gross-alpha result is between these two values.~~ All the analytical results for these samples are reported in the 2011 and 2016 Annual Reports.	T	
V3. 1972	3/12/2020	2M-SMA-2.5	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
V3. 1973	3/12/2020	2M-SMA-3	Change to SDPPP- SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d) are monitored within 2M-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure~~s~~ 143-2~~ and 143-3~~). In Figure 143-2, 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 aluminum (3750 µg/L) and copper (6.05 µg/L) and are presented in Figure 143-2.~~:~~ ~~• Aluminum concentration of 3750 µg/L (MTAL is 750 µg/L) and~~ ~~• Copper concentration of 6.05 µg/L (MTAL is 4.3 µg/L).~~ Enhanced control confirmation monitoring storm water samples were collected on July 26, 2017, and October 4, 2017 (Figure~~s~~ 143-2~~ and 143-3~~). Analytical results from these samples yielded no TAL exceedances. Gross-alpha activity exceeded the TAL in the October 4, 2017, sample, but not in the July 26, 2017, sample. As both corrective action samples are used to calculate the geomean, the geomean is less than the ATAL and thus not considered a TAL exceedance in corrective action monitoring. Corrective action monitoring is complete for associated SWMUs 07-001(a), 07-001(b), and 07-001(d) because all applicable sampling results are below the applicable MTAL or ATAL. Analytical results from the sample collected in 2017 are not representative of 07-001(c) and corrective action monitoring will continue for 2M-SMA-3 and associated SWMU 07-001(c).	T	
V3. 1974	3/12/2020	2M-SMA-3	Change to SDPPP- The monitoring station for 2M-SMA-3 has been relocated. The sampler has been repositioned to a location determined to be more representative of Site 07-001(c). 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
V3. 1975	3/12/2020	3M-SMA-0.2	Change to SDPPP- SWMU 15-010(b) is an inactive settling tank (structure 15-147), inlet and outlet drainlines, and a former outfall located in the northwest corner of TA-15 ~~near~~ north of former ~~shop building~~ building 15-8. Building 15-8 was one of the first operational buildings at TA-15. It was constructed in 1947 and housed HE-machining operations with water cooling. The tank, constructed in 1947 of concrete, measures 5 ft × 5 ft × 5.5 ft with an approximate capacity of 900 gal. The tank was originally designed to be a septic tank and was described as a septic system in the 1990 SWMU Report.~~;~~ H~~h~~owever, subsequent engineering records confirm the tank was used only as an HE settling tank. The settling tank served former building 15-8, ~~which housed HE-machining operations~~ during the 1950s~~,~~ and reportedly discharged to an outfall at the edge of Threemile Canyon. The tank is no longer in operation; however, the date it ceased to be used is not known. The investigation work plan proposed removing the tank. However, facility restrictions on the handling of HE prevented removing the tank, which was found to contain liquid, until the contents were characterized. The liquid content was sampled for waste characterization purposes, was found to be nonhazardous and nonradioactive, and was removed. The facility closed the tank in place.	T	
V3. 1976	3/12/2020	3M-SMA-0.2	Change to SDPPP- SWMU 15-010(b) is monitored within 3M-SMA-0.2. Following the installation of baseline control measures and the monitoring station relocation, a storm water sample was collected on July 15, 2018 (Figure 144-2). Analytical results from the sample collected yielded ~~the following~~ TAL exceedances for copper (6.72 µg/L), gross-alpha activity (127 pCi/L), and mercury (2.02 µg/L) and are presented in Figure 144-2.~~:~~ ~~• Copper concentration of 6.72 µg/L (MTAL is 4.3 µg/L),~~ ~~• Gross-alpha activity of 127 pCi/L (ATAL is 15 pCi/L), and~~ ~~• Mercury concentration of 2.02 µg/L (ATAL is 0.77 µg/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.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1977	3/12/2020	3M-SMA-0.4	Change to SDPPP- SWMU 15-006(b) is monitored within 3M-SMA-0.4. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure~~s~~ 145-2~~ and 145-3~~). In Figure 145-2, 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~~; 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 (120 pCi/L) and are presented in Figure 145-2.~~:~~ ~~• Gross-alpha activity of 120 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1978	3/12/2020	3M-SMA-0.5	Change to SDPPP- SWMU 15-009(c) is a former septic system located at Firing Site R 44 at TA 15. The septic system consisted of a former septic tank (former structure 15 62), associated inlet and outlet drainlines, and a former~~an~~ outfall. The septic tank was constructed in 1951 of reinforced concrete with a 540-gal. capacity. The septic system ~~received effluent from~~served restroom facilities in the firing site control building 15-44. The drainlines ~~are~~ were constructed of cast iron and discharged to an outfall into the south fork of Threemile Canyon. The outfall, ~~is~~ located approximately 25 ft downgradient of the tank, has been plugged. The septic tank (former structure 15-62) was removed during the 2009 and 2010 Site investigation and the inlet and outlet drainlines were plugged and left in place. The excavation was backfilled with soil removed from the excavation and clean fill material from off-site placed on top to restore the area to its approximate original grade.~~ A 2003 engineering drawing shows the outfall has been plugged and the septic tank was removed during the 2009 and 2010 Site investigation, but the drainlines remain in place.~~ A Phase I investigation was conducted in 2010. Based on the 2010 data and data from a 1998 interim action RFI, no chemical or radionuclide constituents were detected above residential SSLs or SALs. SWMU 15-009(c) was recommended for corrective action complete without controls in the "Supplemental Investigation Report for Threemile Canyon Aggregate Area, Revision 1," submitted to NMED in ~~2016~~2018. ~~It was recommended for a COC without controls in a letter to NMED sent in December, 2018 (DOE 2018, 700158).~~NMED issued a COC without controls for SWMU 15-009(c) in August 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1979	3/12/2020	3M-SMA-0.5	Change to SDPPP- SWMUs 15-006(c) and 15-009(c) are monitored within 3M-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 9, 2014 (Figure~~s~~ 146-2~~ and 146-3~~). In Figure 146-2, 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~~; however, the MDLs for these analytes are below the TALs~~. Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (4.35 µg/L) and gross-alpha activity (29.5 pCi/L) and are presented in Figure 146-2.~~:~~ ~~• Copper concentration of 4.35 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Gross-alpha activity of 29.5 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
V3. 1980	3/12/2020	3M-SMA-0.6	Change to SDPPP- SWMU 15-008(b) is a former surface disposal area at TA-15, located north of inactive firing site R-44 [SWMU 15-006(c)] and extending along the edge of the mesa and downslope into Threemile Canyon. The surface disposal area covers approximately 8.5 acres. ~~Firing Site R-44 was built in 1951 for diagnostic tests of weapons components and used extensively until 1978 and sporadically until 1992.~~ Soil and debris from the firing site activities were disposed of at SWMU 15-008(b). Activities at the firing site began in 1951. R-44 was the third most extensively used firing site at TA-15 and was used extensively until 1978 and sporadically until 1992 when firing site activities ceased. An expedited cleanup was performed in July 2000 after the Cerro Grande fire, which included removing 20 yd3 of firing site debris from the SWMU and surrounding area and installing erosion-control features, such as straw wattles, rock check dams, and silt fencing to control run-on and runoff. Soil samples were analyzed for TAL metals, explosive compounds, PCBs, and radionuclides from investigations in 1994 and 2010. Aluminum, antimony, arsenic, copper, lead, and uranium were detected above residential SSLs in 1 to 12 samples but well below industrial SSLs; lead concentrations exceed the industrial SSL at 3 locations. All detected organic chemicals are below residential SSLs. All detected radionuclides were below residential SALs, except uranium-238, which was detected above the residential SAL in 10 samples but below the industrial SAL. Remediation and additional extent sampling were recommended in the "Threemile Canyon Aggregate Area Supplemental Investigation Report, Revision 1" submitted to NMED in ~~2016~~2018. Remediation activities were conducted in 2019 and approximately 1760 yd^3 of copper and lead contaminated soil was removed from the site. Results from this remediation will be presented in the Phase II Investigation Report for Threemile Canyon Aggregate Area.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1981	3/12/2020	3M-SMA-2.6	Change to SDPPP- SWMU 36-008 is a surface disposal area located north of building 36-1 at TA-36. The disposal area is on the south rim of Threemile Canyon and extends down the steeply sloping edge of the mesa~~ behind building 36-1~~. The ~~disposal area covers an estimated~~ 1- to 2-acre~~s~~ disposal area was discovered in June 2000 after the Cerro Grande fire burned through the area~~ and extends below the building over the steeply sloping edge of the mesa~~. The dates the Site was used for disposal are not known~~,~~. The materials strewn over ~~but~~ the Site ~~appears~~ appeared to be associated with activities conducted in B~~b~~uilding 36-1~~ (an office and laboratory)~~, which housed an office, laboratory, and x-ray developing operations. It is possible the disposal area may have been used as early as 1950, when building 36-1 became operational. Surface debris ~~was constructed in 1949. Materials disposed of at the Site~~ included laboratory glassware, metal cans, metal pipe, and miscellaneous metal ~~pieces, and other debris~~fragments. ~~This disposal area was revealed in June 2000 after the Cerro Grande fire burned the vegetation surrounding the Site~~. As part of the emergency response actions associated with the fire, approximately 5 yd3 of debris was collected from the Site, segregated, and staged for disposal, and storm water BMPs were installed to prevent erosion. The former SWMU C-36-003 outfall that received effluent from floor, sink, and equipment drains throughout building 36-1 is located within the southern boundary of SWMU 36-008. Phase I sampling was conducted in 2009 and 2010. Two inorganic chemicals, copper and mercury, were detected above residential SSLs, and several PAHs were detected above residential and industrial SSLs. All other detected chemicals and radionuclides were below residential SSLs and SALs, respectively. The Laboratory recommended corrective action complete without controls for this Site in the supplemental investigation report for Threemile Canyon Aggregate Area, submitted to NMED in 2016. The Site was recommended for a COC without controls in a letter sent to NMED in December 2018 (DOE 2018, 700158). NMED issued a COC without controls for SWMU 36-008 in August 2019.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1982	3/12/2020	3M-SMA-2.6	Change to SDPPP- SWMU C-36-003 is a former NPDES-permitted outfall (EPA06A106) and associated outlet drainline located north of building 36-1~~ at TA-36~~ on the south rim of Threemile Canyon~~, north of office and laboratory building 36-1~~ at TA-36. The outfall became operational shortly after building 36-1 became operational in ~~the~~ 1950~~s~~ . The outfall~~and~~ served the sink and floor drains on the first floor of the building and the floor, sink, and equipment drains in the photo-processing ~~laboratories~~ unit on the second floor of the building. When operational, a steady stream of liquid was discharged to the outfall that flowed down the drainage for approximately 35 ft. In 1993, the floor and sink drains discharging to the outfall were rerouted to the TA-46 SWSC plant. In 1994, it was confirmed that the photo-processing unit was no longer plumbed to the outfall. The outfall was removed from the NPDES permit in 2001. An RFI was conducted in 1994. Decision-level data were collected during a Phase I investigation in 2010: one PAH was detected above residential and industrial SSLs, and all other detected chemicals and radionuclides were below residential SSLs and SALs, respectively. The Consent Order investigation is complete for SWMU C-36-003. It was recommended for a COC without controls in a letter sent to NMED in December 2018 (DOE 2018, 700158). NMED issued a COC without controls for SWMU C-36-003 in August 2019.	T	
V3. 1983	3/12/2020	3M-SMA-2.6	Change to SDPPP- The monitoring station for 3M-SMA-2.6 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
V3. 1984	3/12/2020	3M-SMA-4	Change to SDPPP- SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f) are monitored within 3M-SMA-4. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2014 (Figure~~s~~ 149-2~~ and 149-3~~). Analytical results from this sample yielded ~~the following~~ TAL exceedances for copper (4.72 µg/L) and gross-alpha activity (259 pCi/L) and are presented in Figure 149-2. Following certification of enhanced control installation, ~~:~~ ~~• Copper concentration of 4.72 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Gross-alpha activity of 259 pCi/L (ATAL is 15 pCi/L).~~ An enhanced control confirmation monitoring storm water sample was collected on July 26, 2017 (Figure~~s~~ 149-2~~ and 149-3~~). Analytical results from this sample yielded ~~the following~~a TAL exceedance for copper (8.11 µg/L) and are presented in Figure 149-2. ~~:~~ ~~• Copper concentration of 8.11 µg/L (MTAL is 4.3 µg/L).~~	T	
V3. 1985	3/12/2020	3M-SMA-4	Change to SDPPP- Monitoring location 3M-SMA-4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. • Copper—The copper UTL from developed 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 2017 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 gross-alpha result is ~~greater than both of~~between these two values.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1986	3/12/2020	PJ-SMA-1.05	Change to SDPPP- SWMU 09-013 is monitored within PJ-SMA-1.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure~~s~~ 150-2~~ and 150-3~~). In Figure 150-2, 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~~a TAL exceedance for PCB concentration (9 ng/L) and are presented in Figure 150-2. ~~:~~ ~~• PCB concentration of 9 ng/L (ATAL is 0.6 ng/L).~~	T	
V3. 1987	3/12/2020	PJ-SMA-3.05	Change to SDPPP- SWMU 09-004(o) is monitored within PJ-SMA-3.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figure 152-2). Analytical results from this sample yielded ~~the following~~ TAL exceedances for cyanide (0.02 mg/L) and gross-alpha activity (65.9 pCi/L) and are presented in Figure 152-2.~~:~~ ~~• Weak acid dissociable cyanide concentration of 0.02 mg/L (MTAL is 0.01 mg/L) and~~ ~~• Gross-alpha activity of 65.9 pCi/L (ATAL is 15 pCi/L).~~ ~~A corrective action storm water sample was collected on September 3, 2018 (Figures 152-3). Analytical results from this corrective action monitoring sample yielded the following TAL exceedance:~~ ~~• Gross-alpha activity of 40.8 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures at PJ-SMA-3.05, a corrective action storm water sample was collected on September 3, 2018 (Figure 152-2). Analytical results from this corrective action monitoring sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (40.8 pCi/L) and are presented in Figure 152-2. ~~:~~ ~~• Gross-alpha activity of 40.8 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
V3. 1988	3/12/2020	PJ-SMA-4.05	Change to SDPPP- SWMU 09-004(g) and SWMU 09-005(g) are monitored within PJ-SMA-4.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 153-2). In Figure 153-2, 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 (47.2 pCi/L) and are presented in Figure 153-2.~~:~~ ~~• Gross-alpha activity of 47.2 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1989	3/12/2020	PJ-SMA-5	Change to SDPPP- SWMU 22-015(c) is monitored within PJ-SMA-5. Following the installation of baseline control measures, a baseline storm water sample was collected on October 12, 2012 (Figure~~s~~ 154-2~~ and 154-3~~). In Figure~~s~~ 154-2~~ and 154-3~~, 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~~a TAL exceedance for copper (75.5 µg/L) and are presented in Figure 154-2. ~~• Copper concentration of 75.5 µg/L (MTAL is 4.3 µg/L).~~ Following the installation of enhanced control measures, a corrective action storm water sample was collected on September 3, 2018 (Figure~~s~~ 154-24). Analytical result from this sample yielded ~~the following~~a TAL exceedance for copper (651 µg/L) and are presented in Figure 154-2.~~:~~ ~~• Copper concentration of 651 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
V3. 1990	3/12/2020	PJ-SMA-5.1	Change to SDPPP- SWMUs 22-010(b) and 22-016 are monitored within PJ-SMA-5.1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 21, 2011, and September 7, 2011 (Figure 155-2). Analytical results from these samples yielded ~~the following~~ TAL exceedances for copper (8.2 µg/L and 11.1 µg/L), gross-alpha activity (50.6 µg/L and 59.4 µg/L), and zinc (38.4 pCi/L and 43.5 pCi/L) and are presented in Figure 155-2. ~~• Copper concentrations of 8.2 µg/L and 11.1 µg/L (MTAL is 4.3 µg/L),~~ ~~• Zinc concentrations of 50.6 µg/L and 59.4 µg/L (MTAL is 42 µg/L), and~~ ~~• Gross-alpha activities of 38.4 pCi/L and 43.5 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1991	3/12/2020	PJ-SMA-6	Change to SDPPP- SWMU 40-010 is monitored within PJ-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 8, 2014 (Figure 156-2). In Figure 156-2, 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 (81.6 pCi/L) and are presented in Figure 156-2. ~~• Gross-alpha activity of 81.6 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1992	3/12/2020	PJ-SMA-9	Change to SDPPP- SWMU 40-009 is monitored within PJ-SMA-9. Following the installation of baseline control measures, a baseline storm water sample was collected on June 21, 2014 (Figure~~s~~ 159-2~~ and 159-3~~). In Figure~~s~~ 159-2~~ and 159-3~~, 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 copper (7.76 µg/L) and gross-alpha activity (41.6 pCi/L) and are presented in Figure 159-2. ~~• Copper concentration of 7.76 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Gross-alpha activity of 41.6 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
V3. 1993	3/12/2020	PJ-SMA-10	Change to SDPPP- RG-TA-06 recorded four seven storm events at PJ-SMA-10 during the 2019 season. These rain events triggered three five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below. ~~Remediation construction activity inspections were being conducted while facility construction activities were ongoing. The SMA drainage area and associated control measures were updated after the completion of facility construction activities. The project map (Figure 160-1) shows the post-construction of the SMA.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1994	3/12/2020	PJ-SMA-11	Change to SDPPP- SWMU 40-003(a) is monitored within PJ-SMA-11. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 161-2). In Figure 161-2, 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 copper (42.9 µg/L) and gross-alpha activity (65.4 pCi/L) and are presented in Figure 161-2. ~~:~~ ~~• Copper concentration of 42.9 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Gross-alpha activity of 65.4 pCi/L (ATAL is 15 pCi/L).~~ Following installation of enhanced control measures, a corrective action storm water samples was were collected on August 10, 2018, and July 2, 2019 (Figure 161-2~~-3~~). Analytical results from these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for copper (28 µg/L and 92.7 µg/L), gross-alpha activity (164 pCi/L and 108 pCi/L), and selenium (5.48 µg/L) and are presented in Figure 161-2. Selenium exceeded the TAL in the August 10, 2018, sample, but not in the July 2, 2019, sample. As both corrective action samples are used to calculate the geomean, the geomean is less than the ATAL and thus not considered a TAL exceedance in corrective action monitoring. ~~:~~ ~~• Copper concentration of 28 µg/L (MTAL is 4.3 µg/L),~~ ~~• Gross Alpha activity of 164 pCi/L (ATAL is 15 pCi/L), and~~ ~~• Selenium concentration of 5.48 µg/L (ATAL is 5 µg/L).~~ Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent. SWMU 40-003(a): • Copper may have been associated with industrial materials historically managed at this Site.~~,~~ • A~~a~~lpha-emitting radionuclides~~, and selenium~~ are not known to have been associated with industrial materials historically managed at this Site.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 1995	3/12/2020	PJ-SMA-11	Change to SDPPP- Monitoring location PJ-SMA-11 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 results from 2013, 2018, and 2019 ~~is~~ are all greater than this value. • Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013, 2018, and 2019 gross-alpha results ~~is~~ are all less than this value. ~~• Selenium—The selenium UTL from undisturbed Bandelier Tuff was not calculated because the number of detected values was not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, no comparison to selenium background values in storm water could be made.~~ All the analytical results for these samples are reported in the 2013 ~~and~~, 2018, and 2019 Annual Reports.	T	
V3. 1996	3/12/2020	PJ-SMA-11.1	Change to SDPPP- AOC 40-003(b) is monitored within PJ-SMA-11.1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 162-2). In Figure 162-2, 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 (1040 µg/L), copper (20.9 µg/L), and gross-alpha activity (89.4 pCi/L) and are presented in Figure 162-2. ~~:~~ ~~• Aluminum concentration of 1040 µg/L (MTAL is 750 µg/L),~~ ~~• Copper concentration of 20.9 µg/L (MTAL is 4.3 µg/L), and~~ ~~• Gross-alpha activity of 89.4 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1997	3/12/2020	PJ-SMA-13.7	Change to SDPPP- AOC 18-010(b) is monitored within PJ-SMA-13.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 164-2). Analytical results from this sample yielded ~~the following~~a TAL exceedance for gross-alpha activity (52.6 pCi/L) and are presented in Figure 164-2. ~~:~~ ~~• Gross-alpha activity of 52.6 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 1998	3/12/2020	PJ-SMA-14.8	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
V3. 1999	3/12/2020	PJ-SMA-16	Change to SDPPP- SWMU 27-002 is monitored within PJ-SMA-16. Following the installation of baseline control measures, baseline storm water samples were collected on July 30, 2011, and August 8, 2013 (Figure~~s~~ 171-2~~ and 171-3~~). In Figure 171-2~~ and 171-3~~, 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 no TAL exceedances. Baseline confirmation is complete for PJ-SMA-16 and the associated SWMU 27-002 because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for PJ-SMA-16 for the duration of the IP.	T	
V3. 2000	3/12/2020	PJ-SMA-16	Updated Compliance Status Table	T	
V3. 2001	3/12/2020	PJ-SMA-17	Change to SDPPP- SWMU 54-018 consists of inactive disposal pits 25 through 33 and 35 through 37 at Area G at TA-54~~-MDA G~~. ~~Only pPits 29 and 37, although no longer in use, isare considered a regulated unit until RCRA closure is certified and approved by NMED.~~ Pits 25 through 28 and 30 through 36 ~~were operational between 1979 and 1980 and~~ received low-level radioactive, mixed, and TRU-contaminated waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, gloveboxes, asbestos, and laboratory waste. The volumes ranged from 20,957 yd3 to 59,930 yd3. Pit 29 operated until 1986, after which the surface of Pit 29 was used to store retrievable TRU waste in cement-filled sections of corrugated pipe [SWMU 54-015(k)]. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses~~; several of the pits were subsequently covered with asphalt.~~ SMWU 54-018 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2002	3/12/2020	PJ-SMA-17	Change to SDPPP- SWMU 54-018 was monitored within PJ-SMA-17. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure~~s~~ 172-2~~ and 172-3~~). In Figure 172-2, 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 copper (5.13 µg/L) and gross-alpha activity (61.6 pCi/L) and are presented in Figure 172-2.~~:~~ ~~Copper concentration of 5.13 µg/L (MTAL is 4.3 µg/L) and~~ ~~Gross-alpha activity of 61.6 pCi/L (ATAL is 15 pCi/L).~~ ~~No exposure was certified and a completion of corrective action for PJ-SMA-17 was submitted on August 27, 2014.~~Following certification of no exposure, a corrective action investigation storm water sample was collected on May 21, 2015. Analytical results from this sample were submitted to EPA on October 14, 2015. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-17. No further sampling is required for PJ-SMA-17 for the remainder of the IP.	T	
V3. 2003	3/12/2020	PJ-SMA-18	Change to SDPPP- SWMU 54-014(d) consists of retrievable TRU waste storage trenches A, B, C, and D, which are located in the south-central portion of TA-54 Area G. These trenches began receiving TRU waste ~~and MLLW~~ in 1974. Trenches A, B, and C vary in size from 219 ft to 262.5 ft long × 13 ft wide × 6 ft to 8 ft deep. Trench D is 60 ft long × 13 ft wide × 6 ft deep. The TRU waste placed in these trenches was packaged in 30-gal. containers inside concrete casks. The trenches were backfilled with 3.3 ft of crushed tuff, followed by 4 in. of topsoil. The surface was reseeded with native grasses. The TRU wastes in these trenches ~~will be retrieved and processed for disposal.~~was placed for future retrieval and processing for disposal at WIPP.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2004	3/12/2020	PJ-SMA-18	Change to SDPPP- SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at ~~MDA G~~Area G at TA-54. These pits were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU~~-contaminated~~ wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. ~~Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50.~~ Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd3 to 56,759 yd3. When filled, the pits were covered with consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. ~~All the~~ SWMU 54-017 ~~pits within PJ-SMA-18 currently have a minimum of 3 ft of soil cover over the buried wastes.~~is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2005	3/12/2020	PJ-SMA-18	Change to SDPPP- SWMUs 54-014(d) and 54-017 were monitored within PJ-SMA-18. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure~~s~~ 173-2~~ and 173-3~~). In Figure 173-2, cadmium 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 TAL~~. Analytical results from this sample yielded the following a TAL exceedance for gross alpha (23.6 pCi/L) and are presented in Figure 173-2. ~~:~~ ~~• Gross alpha activity of 23.6 pCi/L (ATAL is 15 pCi/L).~~ ~~No~~ Following certification of no exposure, a corrective action investigation sample was collected on August 10, 2018. Analytical results from this sample were submitted to EPA on December 6, 2018. ~~was certified and a completion of corrective action for PJ-SMA-18 was submitted on August 28, 2014.~~ This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-18. No further sampling is required for PJ-SMA-18 for the remainder of the IP. ~~In Figure 173-2, cadmium and silver are reported as nondetectable results equal to or greater than their respective TALs. These values are reported at the PQL; however, the MDLs for these analytes are below the TAL. Analytical results from this sample yielded the following TAL exceedance:~~ ~~A no exposure confirmation sample was collected on August 10, 2018 (Figures 173-2 and 173-3). Analytical results from this sample yielded the following TAL exceedences:~~ ~~• Gross alpha activity of 33.6 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 2006	3/12/2020	PJ-SMA-18	Change to SDPPP- Monitoring location PJ-SMA-18 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~~ is less than this value.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2007	3/12/2020	PJ-SMA-19	Change to SDPPP- SWMU 54-013(b) was a vehicle ~~consists of a former truck~~ monitoring and ~~/~~decontamination area located in the northcentral portion of Area G at TA-54~~ at MDA G~~. This Site was excavated in April 1971 specifically to be used as a decontamination ~~(truck-washing)~~ pit for washing trucks carrying equipment used at MDA G and TRU waste drums. The truck-washing and -decontamination pit was converted to a LLW disposal pit (Pit 19) in November 1975 when truck-washing activities ceased. Pit 19 is one of the LLW disposal pits ~~and the pit began receiving LLW for disposal as part of~~comprising SWMU 54-017, and is also part of MDA G, which consists of subsurface disposal units within Area G that are subject to the Consent Order.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2008	3/12/2020	PJ-SMA-19	Change to SDPPP- SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at Area G at TA-54. These pits were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd3 to 56,759 yd3. When filled, the pits were covered with consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order. ~~SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at MDA G. These pits were operational between 1959 and 1980 and received radioactive, mixed, and TRU-contaminated wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd3 to 56,759 yd3. When filled, the pits were covered with consolidated crushed tuff and topsoil and reseeded with native grasses. All the SWMU 54-017 pits within PJ-SMA-19 currently have a minimum of 3 ft of soil cover over the buried wastes.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2009	3/12/2020	PJ-SMA-19	Change to SDPPP- SWMU 54-020 consists of 68 disposal shafts (C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196) located in Area G at TA-54~~at MDA G~~. These shafts operated between 1970 and the early 1990s. Shafts 189 and 192 are described in the 1990 SWMU Report as being "triplet shafts" where three shafts are associated with one shaft number and shaft 191 is a "doublet shaft" where two shafts are associated with one shaft number. ~~Only shaft 124, although no longer in use, is considered active a RCRA-regulated unit until RCRA closure is certified and approved by NMED. The shafts contain one or a combination of the following waste types: PCB residues, LLW, and hazardous, and mixed waste.~~ The shafts range in size from 1 8 ft in diameter and 25–65 ft in depth and are located throughout the eastern portion of Area G. Most shafts are unlined, although a few are lined with cement or CMP. The shafts are separated by a minimum distance of 7.5 ft (the distance between doublet and triplet shafts is unknown). The shafts have 0.5-ft-thick layers of crushed tuff between the waste layers. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome. SWMU is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2010	3/12/2020	PJ-SMA-19	Change to SDPPP- SWMUs 54-013(b), 54-017, and 54-020 were monitored within PJ-SMA-19. Following the installation of baseline control measures, a baseline storm water sample was collected on August 8, 2013 (Figure~~s~~ 174-2~~ and 174-3~~). In Figure 174-2, 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 (761 µg/L), gross-alpha activity (51.2 pCi/L), mercury (1.67 µg/L), radium-226 and radium-228 activity (43.7 pCi/L), and PCB concentration (20 ng/L) and are presented in Figure 174-2.~~:~~ ~~• Aluminum concentration of 761 µg/L (MTAL is 750 µg/L),~~ ~~• Mercury concentration of 1.67 µg/L (ATAL is 0.77 µg/L),~~ ~~• Gross-alpha activity of 51.2 pCi/L (ATAL is 15 pCi/L),~~ ~~• Radium-226 and radium-228 activity of 43.7 pCi/L (ATAL is 30 pCi/L), and~~ ~~• PCB concentration of 20 ng/L (ATAL is 0.6 ng/L).~~ Following certification of no exposure, monitoring at PJ-SMA-19 is ongoing until the collection of a corrective action investigation storm water sample. ~~No exposure was certified and a completion of corrective action for PJ-SMA-19 was submitted on August 28, 2014. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-19. No further sampling is required for PJ-SMA-19 for the remainder of the IP.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2011	3/12/2020	PJ-SMA-20	Change to SDPPP- SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at Area G at TA-54. These pits were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd3 to 56,759 yd3. When filled, the pits were covered with consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order. ~~SWMU 54-017 consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 at MDA G. These pits were operational between 1959 and 1980 and received radioactive, mixed, and TRU-contaminated wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd3 to 56,759 yd3. When filled, the pits were covered with consolidated crushed tuff and topsoil and reseeded with native grasses. All the SWMU 54-017 pits within PJ-SMA-20 currently have a minimum of 3 ft of soil cover over the buried wastes and have been covered with asphalt.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2012	3/12/2020	PJ-SMA-20	Change to SDPPP- SWMU 54-017 was monitored within PJ-SMA-20. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2011 (Figure~~s~~ 175-2~~ and 175-3~~). Analytical results from this sample yielded ~~the following~~a TAL exceedance for copper (8.1 µg/L) and are presented in Figure 175-2. ~~s:~~ ~~Copper concentration of 8.1 µg/L (MTAL is 4.3 µg/L).~~ ~~On October 25, 2013, a document certifying the no exposure condition of SWMU 54-017 was completed and submitted to EPA.~~ Following certification of no exposure, a corrective action investigation storm water sample was collected on May 22, 2014. Analytical results from this sample were submitted to EPA on August 12, 2014. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-20. No further sampling is required for PJ-SMA-20 for the remainder of the IP.	T	
V3. 2013	3/12/2020	2M-SMA-2.2	Change to SDPPP- 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~~s~~ 141-2~~ and 141-3~~. 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~~ 141-2~~ and 141-3~~.	T	
V3. 2014	3/12/2020	2M-SMA-2.5	Change to SDPPP- 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~~s~~ 142-2~~ and 142-3~~. 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~~ 142-2~~ and 142-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2015	3/12/2020	2M-SMA-3	Change to SDPPP- 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~~s~~ 143-2~~ and 143-3~~. 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~~ 143-2~~ and 143-3~~.	T	
V3. 2016	3/12/2020	3M-SMA-0.4	Change to SDPPP- 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~~s~~ 145-2~~ and 145-3~~. 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~~ 145-2~~ and 145-3~~.	T	
V3. 2017	3/12/2020	3M-SMA-0.5	Change to SDPPP- 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~~s~~ 146-2~~ and 146-3~~. 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~~ 146-2~~ and 146-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2018	3/12/2020	PJ-SMA-1.05	Change to SDPPP- 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~~s~~ 150-2~~ and 150-3~~. 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~~ 150-2~~ and 150-3~~.	T	
V3. 2019	3/12/2020	PJ-SMA-5	Change to SDPPP- 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~~s~~ 154-2~~ and 154-3~~. 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~~ 154-2~~ and 154-3~~.	T	
V3. 2020	3/12/2020	PJ-SMA-9	Change to SDPPP- 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~~s~~ 159-2~~ and 159-3~~. 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~~ 159-2~~ and 159-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2021	3/12/2020	PJ-SMA-10	Change to SDPPP- 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~~s~~ 160-2~~ and 160-3~~. 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~~ 160-2~~ and 160-3~~. Monitoring location PJ-SMA-10 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 2014 is greater than this value. • Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2014~~ and 2016~~ gross-alpha results ~~are~~ is less than this value.	T	
V3. 2022	3/12/2020	PJ-SMA-17	Change to SDPPP- 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~~s~~ 172-2~~ and 172-3~~. 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~~ 172-2~~ and 172-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2023	3/12/2020	PJ-SMA-18	Change to SDPPP- 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~~s~~ 173-2~~ and 173-3~~. 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~~ 173-2~~ and 173-3~~.	T	
V3. 2024	3/12/2020	PJ-SMA-19	Change to SDPPP- 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~~s~~ 174-2~~ and 174-3~~. 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~~ 174-2~~ and 174-3~~.	T	
V3. 2025	3/12/2020	PJ-SMA-20	Change to SDPPP- 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~~s~~ 175-2~~ and 175-3~~. 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~~ 175-2~~ and 175-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2026	3/12/2020	STRM-SMA-1.05	Change to SDPPP- AOC 08-009(f) is monitored within STRM-SMA-1.05. Following the installation of baseline control measures, two baseline storm water samples were was collected on August 5, 2011, and August 26, 2011 (Figure 176-2). Analytical results from these samples yielded ~~the following~~ TAL exceedances for copper (5.7 µg/L and 6.9 µg/L) and are presented in Figure 176-2. ~~:~~ ~~• Copper concentrations of 5.7 µg/L and 6.9 µg/L (MTAL is 4.3 µg/L).~~ Following the installation of enhanced control measures at STRM-SMA-1.05, corrective action storm water samples were collected on July 12, 2013, and August 1, 2013 (Figure 176-2). Analytical results from ~~this~~these corrective action monitoring samples yielded ~~the following~~ TAL exceedances for copper (9.92 µg/L and 10.8 µg/L) and are presented in Figure 176-2. : Copper concentrations of 9.92 µg/L and 10.8 µg/L (MTAL is 4.3 µg/L).	T	
V3. 2027	3/12/2020	STRM-SMA-1.5	Change to SDPPP- SWMU 08-009(d) is monitored within STRM-SMA-1.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 11, 2012 (Figure~~s~~ 177-2~~ and 177-3~~). In Figure 177-2, cadmium, hexachlorobenzene, 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 cadmium (1.26 µg/L), cyanide (0.02 mg/L), gross-alpha activity (1270 pCi/L), mercury (1.17 µg/L), radium-226 and radium-228 activity (38.5 pCi/L), and silver (0.58 µg/L) and are presented in Figure 177-2.~~:~~ ~~• Cadmium concentration of 1.26 µg/L (MTAL is 1 µg/L),~~ ~~• Mercury concentration of 1.17 µg/L (ATAL is 0.77 µg/L),~~ ~~• Silver concentration of 0.58 µg/L (MTAL is 0.5 µg/L),~~ ~~• Cyanide concentration of 0.02 mg/L (ATAL is 0.01 mg/L),~~ ~~• Gross-alpha activity of 1270 pCi/L (ATAL is 15 pCi/L), and~~ ~~• Radium-226 and radium-228 activity of 38.5 pCi/L (ATAL is 30 pCi/L)~~~~.~~	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2027 (cont.)	3/12/2020	STRM-SMA-1.5	Following the 2013 installation of enhanced control measures at STRM-SMA-1.5, a corrective action storm water sample was collected on September 13, 2013 (Figure~~s~~ 177-2~~ and 177-3~~). In Figure 177-2, cadmium, hexachlorobenzene, and selenium 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 corrective action monitoring sample yielded the following TAL exceedances for gross-alpha activity (16.1 pCi/L) and silver (4.02 µg/L) and are presented in Figure 177-2. ~~÷~~ ~~• Silver concentration of 4.02 µg/L (MTAL is 0.5 µg/L) and~~ ~~• Gross-alpha activity of 16.1 pCi/L (ATAL is 15 pCi/L).~~ Following the 2015 installation of enhanced control measures at STRM-SMA-1.5, a~~A~~ corrective action storm water sample was collected on September 3, 2018 (Figure~~s~~ 177-~~4~~ 2~~and 177-5~~). ~~In Figure 177-2, hexachlorobenzene is reported as a nondetectable result equal to or greater than the respective TAL. This value is reported at the PQL; however, the MDL for this analyte is below the TAL.~~ Analytical results from these this corrective action monitoring sample yielded ~~the following~~ TAL exceedances for gross-alpha activity (81.3 pCi/L) and silver (1.21 µg/L) and are presented in Figure 177-2.~~÷~~ ~~Silver concentration of 1.21 µg/L (MTAL is 0.5 µg/L) and~~ ~~Gross-alpha activity 81.3 pCi/L (ATAL is 15 pCi/L).~~	T	
V3. 2028	3/12/2020	STRM-SMA-1.5	Change to SDPPP- 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~~s~~ 177-2~~ and 177-3~~. 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~~ 177-2~~ and 177-3~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2029	3/12/2020	STRM-SMA-4.2	Change to SDPPP- SWMU 09-008(b) is monitored within STRM-SMA-4.2. Following the installation of baseline control measures, baseline storm water samples were collected on August 21, 2011, and September 9, 2011 (Figure 178-2~~b~~). In Figure 178-2~~b~~, cyanide is reported as a ~~nondetectable~~ nondetected result ~~equal to or~~ greater than the TAL~~s~~. This value is reported at the PQL, the MDL for this analyte is below the TAL. The value is a nondetect and thus not considered a TAL exceedance~~; however, the MDL for this analyte is below the TAL~~. Analytical results from this sample yielded ~~the following~~a TAL exceedance for aluminum (2330 µg/L) and are presented in Figure 178-2~~.:~~ ~~• Aluminum concentration of 2330 µg/L (MTAL is 750 µg/L).~~ Following the 2012 installation of e~~E~~nhanced controls at STRM-SMA-4.2, ~~confirmation~~corrective action storm water samples were collected on July 29, 2017, and September 27, 2017 (Figure 178-~~2b~~2). Analytical results from these samples yielded ~~the following~~ TAL exceedances for aluminum (2190 µg/L and 1980 µg/L), copper (8.81 µg/L and 5.26 µg/L), and silver (0.519 µg/L) and are presented in Figure 178-2.~~:~~ ~~Aluminum concentration of 2190 µg/L and 1980 µg/L (MTAL is 750 µg/L),~~ ~~Copper concentration of 8.81 µg/L and 5.26 µg/L (MTAL is 4.3 µg/L), and~~ ~~Silver concentration of 0.519 µg/L (MTAL is 0.5 µg/L)~~. As part of certification of enhanced controls installed in 2019, the coordinates for the corrective action monitoring location were corrected and have been updated in Attachment 4. The sampling location was not moved as part of the 2019 enhanced control measure installations and subsequent certification in January 2020.	T	
V3. 2030	3/12/2020	STRM-SMA-4.2	Change to SDPPP- 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 178-2~~b~~. 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 178-2~~b~~.	T	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2031	3/12/2020	STRM-SMA-5.05	Change to SDPPP- SWMU 09-013 is monitored within STRM-SMA-5.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure~~s~~ 179-2~~ and 179-3~~). Analytical results from this sample yielded ~~the following~~ TAL exceedances for aluminum (1170 µg/L), gross-alpha activity (24.5 pCi/L), and PCB concentration (7 ng/L) and are presented in Figure 179-2. ~~:~~ ~~• Aluminum concentration of 1170 µg/L (MTAL is 750 µg/L),~~ ~~• Gross-alpha activity of 24.5 pCi/L (ATAL is 15 pCi/L), and~~ ~~• PCB concentration of 7 ng/L (ATAL is 0.6 ng/L).~~ Following the installation of enhanced control measures at STRM-SMA-5.05, a corrective action storm water sample was collected on August 2, 2015 (Figure~~s~~ 179-2~~ and 179-3~~). Analytical results from this corrective action monitoring sample yielded ~~the following~~a TAL exceedance for PCB concentration (2.26 ng/L) and are presented in Figure 179-2.~~:~~ ~~• PCB concentration of 2.26 ng/L (ATAL is 0.6 ng/L).~~	T	
V3. 2032	3/12/2020	STRM-SMA-5.05	Change to SDPPP- 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~~s~~ 179-2~~ and 179-3~~. 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~~ 179-2~~ and 179-3~~.	T	
V3. 2033	3/12/2020	STRM-SMA-4.2	Per Control Measure Verification form BMP-77639 conducted 11/06/19 Update SMA Drainage Area based on installation of Enhanced Controls. Use coordinates X:-106.344802 ft., Y: 35.858783 ft. for monitoring location pour point. Note, this is a physical monitoring location change of ~ 5 feet, monitoring location ID will remain SS173009. Contact Susan Lime for existing ArcHydro data files for updated drainage area or any questions regarding drainage area change. This will result in a map location change of ~ 35 feet from digitized SIP monitoring location coordinates listed for SS173009. 3/11/20 addition- Y coordinate is 35.858777 due to data modeling adjustment of drainage area.	T	CCN-76998

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2034	3/12/2020	STRM-SMA-4.2	Update to monitoring location coordinates in Attachment 4	T	CCN-76998
V3. 2035	3/12/2020	2M-SMA-1.44	Change to SDPPP- Monitoring location 2M-SMA-1.44 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared 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 trace minerals in the Bandelier Tuff ~~as well~~. • Copper—The copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L; the results from 2011, 2013, and 2014 are greater than this value. ~~• Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.~~ All the analytical results for these samples are reported in the 2011, 2013, and 2014 Annual Reports.		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2036	3/12/2020	2M-SMA-1.45	Change to SDPPP- ~~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 06-006:~~ ~~• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical Site activities.~~ ~~Monitoring location 2M-SMA-1.45 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.~~ ~~• Gross alpha—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 and 2015 Annual Reports.		
V3. 2037	3/12/2020	2M-SMA-2.5	Change to SDPPP- SWMU 40-001(c) is monitored within 2M-SMA-2.5. Following the installation of baseline control measures, a baseline storm water sample was collected on September 9, 2012 (Figure 142-2). In Figure 142-2, 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 2M-SMA-2.5 and the associated SWMU 40-001(c) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for 2M SMA 2.5 for the duration of the IP.		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2038	3/12/2020	2M-SMA-3	Change to SDPPP- ~~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 07-001(a):~~ ~~• Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 11 shallow (i.e., less than 3 ft bgs) soil samples collected during the 1994 RFI at the Site.~~ ~~• Copper was likely associated with industrial materials historically managed at the Site. Copper was not detected above the soil BV in any of the 11 shallow (i.e., less than 3 ft bgs) soil samples collected during the 1994 RFI at the Site.~~ ~~SWMU 07-001(b):~~ ~~• Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 12 shallow 1994 RFI soil samples collected at the Site.~~ ~~• Copper was likely associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in 8 of 12 shallow 1994 RFI soil samples collected at the Site.~~ ~~SWMU 07-001(c):~~ ~~• Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 3 shallow 1994 RFI soil samples.~~ ~~• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above the soil BV in any of the 3 shallow 1994 RFI soil samples.~~ ~~SWMU 07-001(d):~~ ~~• Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 13 shallow 1994 RFI soil samples.~~ ~~• Copper was likely associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in 7 of 13 shallow 1994 RFI soil samples at a maximum concentration 5.3 times the soil BV.~~		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2038 (cont.)	3/12/2020	2M-SMA-3	~~TAL exceedances were also evaluated against the appropriate storm water BVs, that is, "Bandelier Tuff background" for undisturbed SMAs or "developed background" for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled "Bandelier Tuff Background" in Figure 143-2. 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 143-2.~~ ~~Monitoring location 2M-SMA-3 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum are found at low concentrations in the Bandelier Tuff.~~ ~~• Aluminum—The aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is greater than this value.~~ ~~• Copper—The copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is greater than this value.~~ All the analytical results for these samples are reported in the 2013 and 2017 Annual Reports.		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2039	3/12/2020	3M-SMA-4	Change to SDPPP- 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 18-002(b): • Copper is likely associated with industrial materials historically managed at the Site. No investigation data are available for SWMU 18-002(b). ~~• Alpha-emitting radionuclides are likely associated with industrial materials historically managed at the Site. No investigation data are available for SWMU 18-002(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.~~ SWMU 18-003(c): • Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above the BV in the single shallow (i.e., less than 3 ft bgs) 1997 VCM soil sample. ~~• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.~~ AOC 18-010(f): • Copper is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 18-010(f). ~~• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.~~		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2040	3/12/2020	3M-SMA-4	Change to SDPPP- Monitoring location 3M-SMA-4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles. ~~Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.~~ • Copper—The copper UTL from developed 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 2017 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 gross-alpha result is between these two values.~~		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2041	3/12/2020	PJ-SMA-3.05	Change to SDPPP- 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 09-004(o): ~~• Cyanide is not known to be associated with industrial materials historically managed at the Site.~~ • 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. PJ-SMA-3.05 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared with gross-alpha ATAL. 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 sediment derived from Bandelier Tuff is 1490 pCi/L; the results from 2011 and 2018 are less than this value. ~~• Cyanide—The weak acid dissociable cyanide UTLs for storm water run-on containing sediment derived from Bandelier Tuff were not calculated because samples collected from these areas were not analyzed for weak acid dissociable cyanide. Therefore, a comparison to background weak acid dissociable cyanide UTLs could not be made.~~ All the analytical results for these samples are reported in the 2011 and 2018 Annual Reports.		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2042	3/12/2020	PJ-SMA-10	Change to SDPPP- SWMU 40-006(a) is monitored within PJ-SMA-10. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2014 (Figure~~s~~ 160-2~~ and 160-3~~). In Figure 160-2, selenium, silver, and hexachlorobenzene are reported as nondetectednondetectable 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 (16.8 µg/L) and gross-alpha activity (280 pCi/L) and are presented in Figure 160-2.~~:~~ ~~• Copper concentration of 16.8 µg/L (MTAL is 4.3 µg/L) and~~ ~~• Gross-alpha activity of 280 pCi/L (ATAL is 15 pCi/L).~~ Following the installation of enhanced control measures, two ~~corrective actioninvestigation~~ storm water samples were collected on July 31 and August 24, 2016. Analytical results from these samples were determined not to be representative of 40-006(a). Consequently, the results for these samples will not be used for confirmation monitoring purposes. After a monitoring station move, sampling has been restarted and will remain in the corrective action monitoring phase until confirmation monitoring samples can be collected and analyzed that are representative of the Site. ~~ (Figures 160-2 and 160-3). Confirmation results are displayed in the graph-the results are not displayed on the organic analytical results graph because the exceedance ratio is below the start of the y-axis.:~~ ~~• Gross-alpha activity range of 35.1 to 68.1 pCi/L (ATAL is 15 pCi/L).~~		
V3. 2043	3/12/2020	PJ-SMA-17	Change to SDPPP-~~ 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 54-018:~~ ~~Industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits. Therefore, these industrial materials are not exposed to any storm water runoff.~~		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2043 (cont.)	3/12/2020	PJ-SMA-17	~~• Copper is known to be associated with industrial materials managed at this Site. Copper was not detected above soil or sediment BVs in 56 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.~~ ~~• 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 172-2. 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 172-2.~~ ~~Monitoring location PJ-SMA-17 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.~~ ~~• Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is between these two values.~~ ~~• Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.~~ All the analytical results for these samples are reported in the 2013 Annual Report.		

V3. 2044	3/12/2020	PJ-SMA-18	Change to SDPPP- ~~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 54-014(d):~~ ~~• Gross-alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at these Sites. Shallow RFI samples were not analyzed for gross-alpha radioactivity. Industrial materials managed at these Sites, however, consist of wastes disposed of in subsurface pits and trenches. Therefore, these industrial materials are not exposed to storm water runoff. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.~~ ~~SWMU 54-017:~~ ~~• Gross-alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity. 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. Industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits and shafts. Therefore, these industrial materials are not exposed to any storm water runoff.~~ ~~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 173-2. 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 173-2.~~ ~~Monitoring location PJ-SMA-18 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 results is less than this value.~~ All the analytical results for these samples are reported in the 2013 and 2018 Annual Reports.		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2045	3/12/2020	PJ-SMA-20	Change to SDPPP- ~~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 54-017:~~ ~~• Copper is known to have been associated with industrial materials historically managed at this Site. Copper was not detected above the soil or sediment BV in shallow (i.e., less than 3 ft bgs) RFI soil samples. The RFI data are screening level only.~~ ~~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 175-2. 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 175-2.~~ ~~Monitoring location PJ-SMA-20 receives storm water run-on from developed environments, including paved parking lots, roads, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper are associated with 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 storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these values.~~ All the analytical results for these samples are reported in the 2011 Annual Report.		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2046	3/12/2020	STRM-SMA-1.5	Change to SDPPP- 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 08-009(d): ~~• Cadmium is not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for cadmium. Cadmium was detected above BV in 1 of 2 shallow soil samples but was not detected above the maximum soil background concentration. Data from the 1994 RFI are screening-level data.~~ ~~• Mercury is not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for mercury. Mercury was detected above BV in 1 of 2 shallow soil samples at a maximum concentration 1.9 times the maximum soil background concentration. Data from the 1994 RFI are screening-level data.~~ • Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because alpha-emitting radionuclides were not identified as COPCs. • Silver is known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for silver. Silver was detected above BV in 4 of 4 shallow soil samples at a maximum concentration 177 times the soil BV. Data from the 1994 RFI are screening-level data. ~~• Cyanide is not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for cyanide because cyanide was not identified as a COPC.~~		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2046 (cont.)	3/12/2020	STRM-SMA-1.5	~~• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because alpha-emitting radionuclides were not identified as COPCs.• Radium isotopes are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for radium-226 and radium-228 because radium was not identified as a COPC.~~		
V3. 2047	3/12/2020	STRM-SMA-1.5	Change to SDPPP- Monitoring location STRM-SMA-1.5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. ~~• Cadmium—The cadmium UTL from developed landscape storm water run-on is 0.36 µg/L; the cadmium background storm water UTL from locations containing sediment derived from Bandelier Tuff was not calculated because an insufficient number of detected values was available to permit calculation of the UTL value in the baseline metals background study. The cadmium result from 2012 is greater than the developed landscape storm water UTL value.~~ ~~• Radium—The radium-226 and radium-228 activity UTLs 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 2012 radium-226 and radium-228 result is between these values.~~ • Gross alpha—The gross-alpha background storm water UTL from locations 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 2012 and 2018 gross-alpha results are between these two values, while the 2013 result is below both of them. ~~• Mercury—The mercury UTLs from developed landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water mercury UTLs could not be made.~~		

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V3. 2047 (cont.)	3/12/2020	STRM-SMA-1.5	• Silver—The silver UTLs from developed landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water silver UTLs could not be made. ~~• Cyanide—The weak acid dissociable cyanide UTLs from developed landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water weak acid dissociable cyanide UTLs could not be made.~~ All the analytical results for these samples are reported in the 2012, 2013, and 2018 Annual Reports.		
V3. 2048	3/12/2020	STRM-SMA-5.05	Change to SDPPP- STRM-SMA-5.05 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediment derived from Bandelier Tuff were compared with ~~aluminum and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Aluminum is associated with minerals in the Bandelier Tuff as well.~~the PCB exceedances. ~~• The aluminum UTL for storm water containing sediment derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.~~ ~~• The gross-alpha UTL for storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.~~ • The PCB UTL for storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L; the results from 2011 and 2015 are less than this value. All the analytical results for these samples are reported in the 2011 and 2015 Annual Reports.		
V3. 2049	3/12/2020	PJ-SMA-4.05	Per SDPPP Vol 3 update comment resolution, please update as needed to: -remove highlighting from label of 09-005(g) in the primary map.	T	CCN-78700
V3. 2050	3/12/2020	PJ-SMA-5.1	Per SDPPP Vol 3 update comment resolution, please update as needed to: -remove highlighting from label of 22-010(b) in the primary map.	T	CCN-78701
V3. 2051	3/12/2020	PJ-SMA-5.1	Map Revision-(12)	T	CCN-78701
V3. 2052	3/12/2020	PJ-SMA-4.05	Map Revision-(9)	T	CCN-78700

*T = Technical, E = Errata.

Attachment 2
Vicinity Map

Attachment 3
Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG121.9	4/5/2019	0.04	0.04	4.8
RG121.9	4/17/2019	0.01	0.01	4.8
RG121.9	4/22/2019	0.74	0.13	319.8
RG121.9	4/23/2019	0.05	0.03	24.6
RG121.9	4/29/2019	0.32	0.09	135
RG121.9	4/30/2019	0.01	0.01	4.8
RG121.9	5/8/2019	0.21	0.04	99.6
RG121.9	5/9/2019	0.58	0.1	270
RG121.9	5/10/2019	0.24	0.09	99.6
RG121.9	5/11/2019	0.15	0.06	69.6
RG121.9	5/15/2019	0.01	0.01	4.8
RG121.9	5/20/2019	0.01	0.01	4.8
RG121.9	5/21/2019	0.01	0.01	4.8
RG121.9	6/3/2019	0.1	0.09	30
RG121.9	6/15/2019	0.05	0.05	24.6
RG121.9	6/16/2019	0.03	0.02	15
RG121.9	6/17/2019	0.12	0.07	49.8
RG121.9	6/30/2019	0.01	0.01	4.8
RG121.9	7/1/2019	0.03	0.01	15
RG121.9	7/2/2019	0.24	0.21	34.8
RG121.9	7/6/2019	0.19	0.07	84.6
RG121.9	7/7/2019	0.24	0.21	45
RG121.9	7/13/2019	0.17	0.12	45
RG121.9	7/14/2019	0.05	0.03	19.8
RG121.9	7/15/2019	0.53	0.51	39.6
RG121.9	7/16/2019	0.05	0.04	24.6
RG121.9	7/22/2019	0.09	0.08	19.8
RG121.9	7/25/2019	0.83	0.42	94.8
RG121.9	7/26/2019	0.68	0.35	90
RG121.9	7/27/2019	0.05	0.05	15
RG121.9	8/2/2019	0.03	0.03	9.6
RG121.9	8/3/2019	0.01	0.01	4.8
RG121.9	8/5/2019	0.02	0.02	9.6
RG121.9	8/6/2019	0.18	0.09	75

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG121.9	8/7/2019	0.71	0.48	49.8
RG121.9	8/8/2019	0.03	0.03	4.8
RG121.9	8/9/2019	0.03	0.02	15
RG121.9	8/11/2019	0.13	0.13	19.8
RG121.9	8/15/2019	0.01	0.01	4.8
RG121.9	8/16/2019	0.01	0.01	4.8
RG121.9	8/20/2019	0.22	0.19	45
RG121.9	8/31/2019	0.01	0.01	4.8
RG121.9	9/1/2019	0.67	0.63	49.8
RG121.9	9/7/2019	0.01	0.01	4.8
RG121.9	9/8/2019	0.01	0.01	4.8
RG121.9	9/10/2019	0.13	0.06	30
RG121.9	9/15/2019	0.32	0.1	109.8
RG121.9	9/16/2019	0.1	0.05	45
RG121.9	9/23/2019	0.12	0.09	45
RG121.9	10/3/2019	0.49	0.28	79.8
RG121.9	10/4/2019	0.61	0.2	159.6
RG121.9	11/19/2019	0.16	0.12	49.8
RG121.9	11/20/2019	0.09	0.05	34.8
RG240	4/17/2019	0.01	0.01	4.8
RG240	4/22/2019	0.78	0.11	324.6
RG240	4/23/2019	0.14	0.05	64.8
RG240	4/29/2019	0.32	0.08	135
RG240	4/30/2019	0.01	0.01	4.8
RG240	5/8/2019	0.32	0.07	135
RG240	5/9/2019	0.49	0.07	240
RG240	5/10/2019	0.37	0.11	139.8
RG240	5/11/2019	0.25	0.07	90
RG240	5/21/2019	0.03	0.01	15
RG240	5/30/2019	0.01	0.01	4.8
RG240	6/3/2019	0.08	0.06	30
RG240	6/5/2019	0.01	0.01	4.8
RG240	6/6/2019	0.05	0.03	19.8
RG240	6/15/2019	0.08	0.08	19.8
RG240	6/16/2019	0.11	0.09	34.8
RG240	6/17/2019	0.4	0.22	94.8

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG240	6/28/2019	0.02	0.01	9.6
RG240	6/30/2019	0.01	0.01	4.8
RG240	7/1/2019	0.11	0.04	54.6
RG240	7/2/2019	0.03	0.02	9.6
RG240	7/6/2019	0.3	0.08	129.6
RG240	7/7/2019	0.5	0.46	49.8
RG240	7/13/2019	0.26	0.18	49.8
RG240	7/14/2019	0.71	0.68	39.6
RG240	7/15/2019	0.43	0.28	45
RG240	7/16/2019	0.08	0.04	34.8
RG240	7/22/2019	0.14	0.09	54.6
RG240	7/25/2019	0.66	0.44	49.8
RG240	7/26/2019	0.33	0.14	69.6
RG240	7/27/2019	0.04	0.03	19.8
RG240	8/2/2019	0.11	0.1	30
RG240	8/3/2019	0.01	0.01	4.8
RG240	8/4/2019	0.02	0.02	9.6
RG240	8/5/2019	0.23	0.18	45
RG240	8/6/2019	0.21	0.09	90
RG240	8/7/2019	0.03	0.03	9.6
RG240	8/9/2019	0.02	0.01	9.6
RG240	8/11/2019	0.01	0.01	4.8
RG240	8/14/2019	0.02	0.02	9.6
RG240	8/15/2019	0.03	0.03	15
RG240	8/16/2019	0.01	0.01	4.8
RG240	8/20/2019	0.49	0.45	60
RG240	8/21/2019	0.01	0.01	4.8
RG240	8/29/2019	0.02	0.02	4.8
RG240	9/1/2019	0.64	0.55	60
RG240	9/7/2019	0.1	0.1	19.8
RG240	9/8/2019	0.02	0.02	9.6
RG240	9/10/2019	0.16	0.1	39.6
RG240	9/15/2019	0.36	0.1	139.8
RG240	9/16/2019	0.09	0.04	34.8
RG240	9/23/2019	0.15	0.09	6
RG240	10/3/2019	0.4	0.26	75

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG240	10/4/2019	0.51	0.17	150
RG240	11/19/2019	0.28	0.14	0
RG240	11/20/2019	0.36	0.07	39.6
RG245.5	4/14/2019	0.01	0.01	4.8
RG245.5	4/16/2019	0.01	0.01	4.8
RG245.5	4/17/2019	0.03	0.02	15
RG245.5	4/22/2019	0.55	0.11	219.6
RG245.5	4/23/2019	0.09	0.02	45
RG245.5	4/29/2019	0.39	0.04	195
RG245.5	4/30/2019	0.07	0.02	34.8
RG245.5	5/8/2019	0.21	0.06	90
RG245.5	5/9/2019	0.43	0.09	199.8
RG245.5	5/10/2019	0.19	0.05	94.8
RG245.5	5/11/2019	0.1	0.02	49.8
RG245.5	5/12/2019	0.01	0.01	4.8
RG245.5	5/20/2019	0.01	0.01	4.8
RG245.5	5/21/2019	0.02	0.01	9.6
RG245.5	5/30/2019	0.12	0.11	30
RG245.5	6/5/2019	0.01	0.01	4.8
RG245.5	6/15/2019	0.04	0.04	15
RG245.5	6/16/2019	0.07	0.03	34.8
RG245.5	6/17/2019	0.17	0.11	45
RG245.5	7/1/2019	0.04	0.02	19.8
RG245.5	7/2/2019	0.05	0.05	15
RG245.5	7/3/2019	0.26	0.24	34.8
RG245.5	7/6/2019	0.14	0.07	64.8
RG245.5	7/7/2019	0.16	0.13	39.6
RG245.5	7/13/2019	0.02	0.01	9.6
RG245.5	7/14/2019	0.17	0.12	49.8
RG245.5	7/15/2019	0.08	0.06	24.6
RG245.5	7/16/2019	0.03	0.02	15
RG245.5	7/20/2019	0.02	0.02	9.6
RG245.5	7/22/2019	0.07	0.06	24.6
RG245.5	7/25/2019	0.96	0.35	154.8
RG245.5	7/26/2019	0.82	0.44	99.6
RG245.5	7/27/2019	0.04	0.03	19.8

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG245.5	7/28/2019	0.01	0.01	4.8
RG245.5	7/31/2019	0.04	0.04	15
RG245.5	8/2/2019	0.03	0.03	9.6
RG245.5	8/3/2019	0.05	0.02	24.6
RG245.5	8/4/2019	0.01	0.01	4.8
RG245.5	8/5/2019	0.37	0.2	105
RG245.5	8/6/2019	0.2	0.05	99.6
RG245.5	8/8/2019	0.02	0.02	4.8
RG245.5	8/9/2019	0.14	0.12	24.6
RG245.5	8/11/2019	0.19	0.17	19.8
RG245.5	8/16/2019	0.05	0.04	30
RG245.5	8/21/2019	0.06	0.04	19.8
RG245.5	8/27/2019	0.09	0.09	19.8
RG245.5	9/1/2019	0.06	0.05	19.8
RG245.5	9/7/2019	0.16	0.11	19.8
RG245.5	9/10/2019	0.05	0.05	15
RG245.5	9/15/2019	0.17	0.03	75
RG245.5	9/23/2019	0.08	0.05	39.6
RG245.5	9/25/2019	0.01	0.01	4.8
RG245.5	10/3/2019	0.25	0.15	79.8
RG245.5	10/4/2019	0.71	0.24	159.6
RG245.5	11/19/2019	0.12	0.08	45
RG245.5	11/20/2019	0.35	0.11	109.8
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

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
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
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	9/1/2019	0.5	0.41	54.6
RG253	9/7/2019	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

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
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
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

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
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
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

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
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
RG262.4	8/21/2019	0.05	0.04	19.8
RG262.4	8/27/2019	0.22	0.22	30
RG262.4	8/30/2019	0.09	0.09	15
RG262.4	8/31/2019	0.04	0.04	9.6
RG262.4	9/1/2019	0.19	0.08	84.6
RG262.4	9/7/2019	0.34	0.26	45
RG262.4	9/10/2019	0.07	0.06	15
RG262.4	9/15/2019	0.12	0.03	60
RG262.4	9/16/2019	0.01	0.01	4.8
RG262.4	9/23/2019	0.1	0.06	45
RG262.4	10/3/2019	0.29	0.18	75
RG262.4	10/4/2019	0.69	0.21	154.8
RG262.4	11/19/2019	0.15	0.1	49.8

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG262.4	11/20/2019	0.34	0.11	105
RG-TA-06	2/4/2019	0.06	0.03	75
RG-TA-06	2/14/2019	0.53	0.06	540
RG-TA-06	3/3/2019	0.01	0.01	15
RG-TA-06	3/4/2019	0.01	0.01	15
RG-TA-06	3/10/2019	0.22	0.06	225
RG-TA-06	3/11/2019	0.8	0.11	525
RG-TA-06	3/12/2019	0.77	0.27	330
RG-TA-06	3/21/2019	0.62	0.16	300
RG-TA-06	4/17/2019	0.03	0.02	30
RG-TA-06	4/22/2019	0.64	0.11	480
RG-TA-06	4/23/2019	0.08	0.04	90
RG-TA-06	4/29/2019	0.29	0.06	315
RG-TA-06	5/8/2019	0.18	0.04	210
RG-TA-06	5/9/2019	0.51	0.09	495
RG-TA-06	5/10/2019	0.2	0.04	240
RG-TA-06	5/11/2019	0.15	0.05	165
RG-TA-06	5/17/2019	0.01	0.01	15
RG-TA-06	5/20/2019	0.02	0.01	30
RG-TA-06	5/21/2019	0.02	0.01	30
RG-TA-06	6/3/2019	0.08	0.05	75
RG-TA-06	6/15/2019	0.05	0.05	15
RG-TA-06	6/16/2019	0.04	0.02	60
RG-TA-06	6/17/2019	0.14	0.09	75
RG-TA-06	7/1/2019	0.03	0.01	45
RG-TA-06	7/2/2019	0.29	0.2	75
RG-TA-06	7/6/2019	0.19	0.07	135
RG-TA-06	7/7/2019	0.29	0.25	75
RG-TA-06	7/13/2019	0.15	0.09	105
RG-TA-06	7/14/2019	0.03	0.02	45
RG-TA-06	7/15/2019	0.51	0.31	60
RG-TA-06	7/16/2019	0.06	0.04	60
RG-TA-06	7/22/2019	0.07	0.07	30
RG-TA-06	7/25/2019	0.9	0.3	120
RG-TA-06	7/26/2019	0.6	0.24	210
RG-TA-06	7/27/2019	0.03	0.03	30

Attachment 3, Precipitation Network (continued)

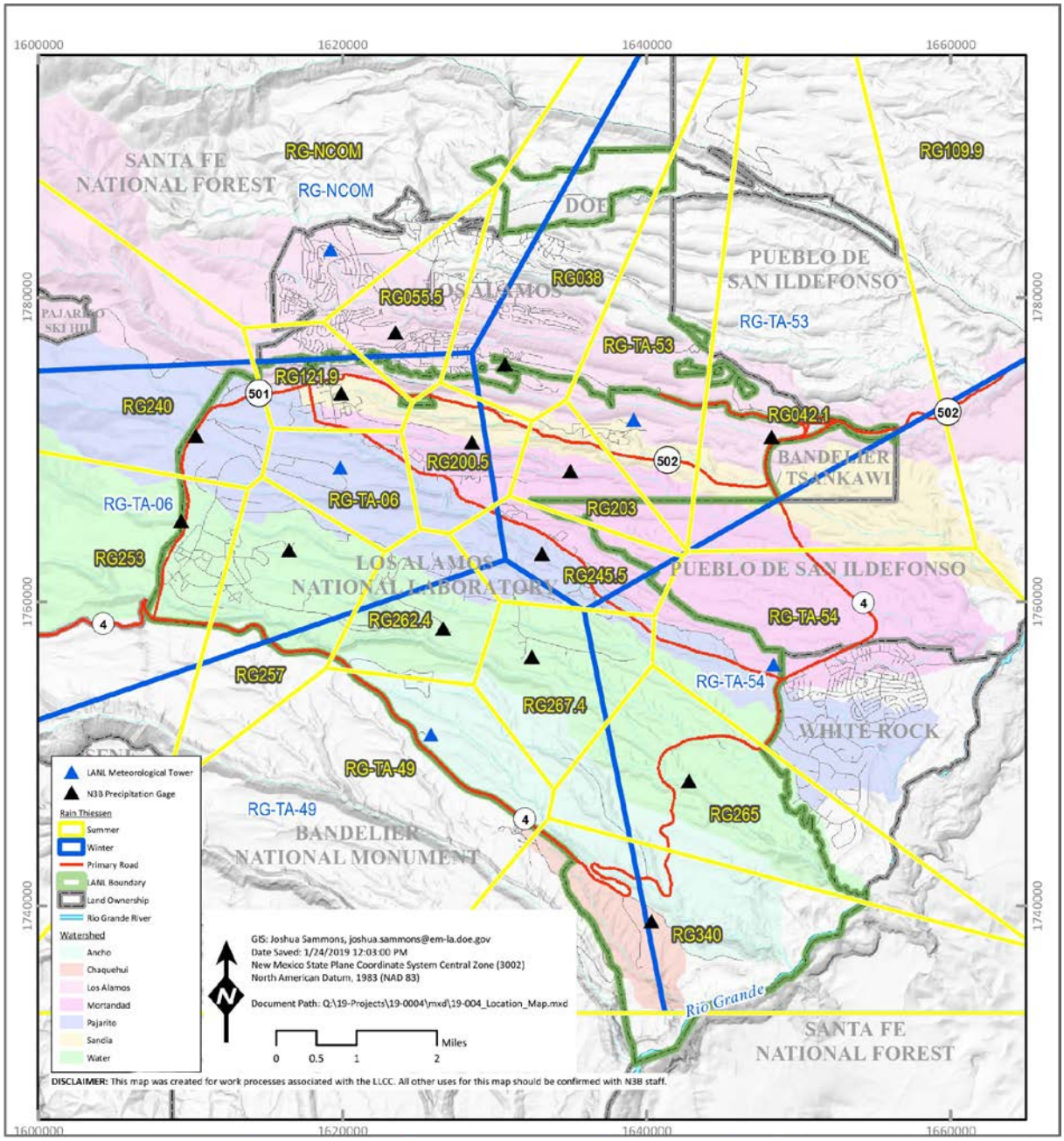
Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-06	8/2/2019	0.11	0.11	30
RG-TA-06	8/3/2019	0.02	0.01	30
RG-TA-06	8/5/2019	0.59	0.54	60
RG-TA-06	8/6/2019	0.25	0.08	210
RG-TA-06	8/7/2019	0.47	0.42	60
RG-TA-06	8/8/2019	0.05	0.04	30
RG-TA-06	8/9/2019	0.1	0.1	30
RG-TA-06	8/11/2019	0.12	0.12	30
RG-TA-06	8/14/2109	0.01	0.01	15
RG-TA-06	8/15/2019	0.11	0.11	30
RG-TA-06	8/16/2019	0.06	0.04	60
RG-TA-06	8/20/2019	0.3	0.25	60
RG-TA-06	8/27/2019	0.14	0.14	30
RG-TA-06	9/1/2019	0.25	0.2	60
RG-TA-06	9/7/2019	0.04	0.02	60
RG-TA-06	9/10/2019	0.09	0.04	90
RG-TA-06	9/15/2019	0.25	0.06	240
RG-TA-06	9/16/2019	0.07	0.03	75
RG-TA-06	9/23/2019	0.12	0.07	90
RG-TA-06	10/3/2019	0.37	0.24	135
RG-TA-06	10/4/2019	0.5	0.13	240
RG-TA-06	11/19/2019	0.12	0.09	75
RG-TA-06	11/20/2019	0.31	0.09	165
RG-TA-49*	3/12/2019	0.88	0.27	360
RG-TA-54	2/14/2019	0.38	0.05	435
RG-TA-54	3/11/2019	0.36	0.07	330
RG-TA-54	3/21/2019	0.35	0.16	150
RG-TA-54	4/22/2019	0.36	0.07	345
RG-TA-54	4/23/2019	0.09	0.05	90
RG-TA-54	4/29/2019	0.57	0.34	255
RG-TA-54	4/30/2019	0.04	0.04	15
RG-TA-54	5/8/2019	0.2	0.07	120
RG-TA-54	5/9/2019	0.26	0.08	240
RG-TA-54	5/10/2019	0.22	0.07	210
RG-TA-54	5/20/2019	0.02	0.01	30
RG-TA-54	5/30/2019	0.15	0.1	60

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-54	6/15/2019	0.06	0.05	45
RG-TA-54	6/16/2019	0.09	0.06	60
RG-TA-54	6/17/2019	0.1	0.04	90
RG-TA-54	7/1/2019	0.03	0.01	45
RG-TA-54	7/6/2019	0.14	0.06	135
RG-TA-54	7/7/2019	0.15	0.13	60
RG-TA-54	7/14/2019	0.03	0.05	60
RG-TA-54	7/16/2019	0.02	0.02	30
RG-TA-54	7/21/2019	0.03	0.03	30
RG-TA-54	7/22/2019	0.18	0.15	60
RG-TA-54	7/25/2019	1.14	0.64	225
RG-TA-54	7/26/2019	0.32	0.22	150
RG-TA-54	7/27/2019	0.03	0.03	30
RG-TA-54	8/3/2019	0.01	0.01	15
RG-TA-54	8/5/2019	0.01	0.01	15
RG-TA-54	8/6/2019	0.19	0.17	60
RG-TA-54	8/9/2019	0.15	0.06	150
RG-TA-54	8/11/2019	0.22	0.2	60
RG-TA-54	8/16/2019	0.04	0.04	15
RG-TA-54	8/21/2019	0.01	0.01	15
RG-TA-54	8/27/2019	0.01	0.01	15
RG-TA-54	9/2/2019	0.19	0.18	30
RG-TA-54	9/7/2019	0.01	0.01	15
RG-TA-54	9/10/2019	0.06	0.06	15
RG-TA-54	9/15/2019	0.34	0.16	210
RG-TA-54	9/23/2019	0.12	0.05	75
RG-TA-54	10/3/2019	0.21	0.1	120
RG-TA-54	10/4/2019	0.61	0.18	240
RG-TA-54	11/19/2019	0.1	0.07	45
RG-TA-54	11/20/2019	0.22	0.07	180

*- 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)
Twomile	E001	2M-SMA-1	1616471 (35.87305)	1773067 (-106.330833)	842,986.22	03-010(a)	7,480.30
Twomile	E002	2M-SMA-1.42	1615447 (35.864890)	1770096 (-106.334276)	1805.26	06-001(a)	0.00
Twomile	E003	2M-SMA-1.43	1615582 (35.861357)	1768809 (-106.333816)	162005.87	22-014(a) 22-015(a)	24.10 451.61
Twomile	E004	2M-SMA-1.44	1615842 (35.865205)	1770210 (-106.332942)	10,155.57	06-001(b)	207.97
Twomile	E005	2M-SMA-1.45	1615829.64 (35.864276)	1769892.78 (-106.332742)	86,087.70	06-006	13,522.39
Twomile	E006	2M-SMA-1.5	1615739 (35.861047)	1768703 (-106.3332356)	330.51	22-014(b)	11.46
Twomile	E007	2M-SMA-1.65	1616952 (35.86035)	1768439 (-106.3292)	406.22	40-005	0.00
Twomile	E008	2M-SMA-1.67	1617799 (35.863183)	1769475 (-106.326333)	3,069.05	06-003(h)	2,235.91
Twomile	E009	2M-SMA-1.7	1618223 (35.868217)	1771303 (-106.324917)	1,583.95	03-055(a)	0.77
Twomile	E010	2M-SMA-1.8	1618405 (35.86825)	1771315 (-106.3243)	15,6422.34	03-001(k)	728.11
Twomile	E011	2M-SMA-1.9	1617919 (35.87215)	1772736 (-106.325933)	7,200.11	03-003(a)	2,626.92
Twomile	E012	2M-SMA-2	1618915 (35.868405)	1771455 (-106.322726)	44,7423.81	03-050(d) 03-054(b)	129.18 3,317.33
Twomile	E013	2M-SMA-2.2	1619199 (35.868783)	1771512 (-106.321617)	946.71	03-003(k)	0.00
Twomile	E015	2M-SMA-2.5	1620107 (35.8573)	1767329 (-106.31855)	452.13	40-001(c)	0.00
Twomile	E014	2M-SMA-3	1621483 (35.859111)	1767987 (-106.313898)	33398.67	07-001(a) 07-001(b) 07-001(c) 07-001(d)	0.00 .0.00 276.65 0.00
Threemile	H001	3M-SMA-0.2	1622985 (35.849013)	1764311 (-106.308823)	106645.82	15-010(b)	123.78
Threemile	H002	3M-SMA-0.4	1627075 (35.843383)	1762259 (-106.295017)	251,653.53	15-006(b)	653.39
Threemile	H003	3M-SMA-0.5	1628435 (35.843381)	1762258 (-106.290426)	242640.11	15-006(c) 15-009(c)	865.19 57.45
Threemile	H004	3M-SMA-0.6	1628451 (35.845320	1762964 (-106.290375)	100276.74	15-008(b)	83067.580

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)
Threemile	H005	3M-SMA-2.6	1633574 (35.83891305)	1760630 (-106.2730858)	18116.78	36-008 C-36-003	17687.08 010.80
Threemile	H006	3M-SMA-4	1634679 (35.839183)	1760727 (-106.269367)	45770573.44	18-002(b) 18-003(c) 18-010(f)	1.54 0.77 0.77
Pajarito	J001	PJ-SMA-1.05	1613223 (35.862357)	1769176 (-106.341780)	34,006.82	09-013	9,376.69
Pajarito	J002	PJ-SMA-2	1613379 (35.857233)	1767311 (-106.34125)	7,005.55	09-009	2017.30
Pajarito	J003	PJ-SMA-3.05	1613998 (35.856722)	1767124 (-106.339156)	2888.52	09-004(o)	0.00
Pajarito	J004	PJ-SMA-4.05	1615017 (35.853741)	1766038 (-106.335715)	1629247.50	09-004(g) 09-005(g)	52.16 243.90
Pajarito	J005	PJ-SMA-5	1615255 (35.859633)	1768179 (-106.334917)	70,011.67	22-015(c)	7.03
Pajarito	J006	PJ-SMA-5.1	1615493 (35.859833)	1768258 (-106.334117)	1,724.39	22-010(b) 22-016	0.00 0.00
Pajarito	J007	PJ-SMA-6	1616907 (35.8573)	1767335 (-106.32935)	5,916.17	40-010	3,023.70
Pajarito	J008	PJ-SMA-7	1619154 (35.8568894)	1767180 (-106.3217566)	312.31	40-006(c)	0.00
Pajarito	J009	PJ-SMA-8	1619495 (35.8570254)	1767229 (-106.3206049)	7746.91	40-006(b)	1066.10
Pajarito	J010	PJ-SMA-9	1619820 (35.856717)	1767118 (-106.319517)	9,732.82	40-009	5,110.75
Pajarito	J012	PJ-SMA-10	1620859 (35.856421)	1767009 (-106.316001)	934.60	40-006(a)	0.00
Pajarito	J013	PJ-SMA-11	1622229 (35.856082)	1766884 (-106.311380)	36,847.90	40-003(a)	7,082.63
Pajarito	J014	PJ-SMA-11.1	1622311 (35.85605)	1766875 (-106.3111)	66,703.06	40-003(b)	7,414.55
Pajarito	J015	PJ-SMA-13	1634943 (35.841883)	1761709 (-106.268467)	5297.36	18-002(a)	0.00
Pajarito	J016	PJ-SMA-13.7	1635561 (35.840065)	1761049 (-106.266385)	1300636.15	18-010(b)	0.00
Pajarito	J017	PJ-SMA-14	1636219 (35.843467)	1762287 (-106.264167)	27878.26	54-004	11553.86
Pajarito	J018	PJ-SMA-14.2	1635813 (35.839667)	1760906 (-106.265533)	26064.89	18-012(b)	0.00
Pajarito	J019	PJ-SMA-14.3	1635962 (35.839383)	1760802 (-106.265033)	791.61	18-003(e)	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)
Pajarito	J020	PJ-SMA-14.4	1635967 (35.839717)	1760919 (-106.265017)	67865.03	18-010(d)	0.77
Pajarito	J021	PJ-SMA-14.6	1636131 (35.839533)	1760855 (-106.264467)	5437.87	18-010(e)	0.77
Pajarito	J022	PJ-SMA-14.8	1636187 (35.838317)	1760411 (-106.264267)	337.52	18-012(a)	0.72
Pajarito	J023	PJ-SMA-16	1640959 (35.830567)	1757592 (-106.248167)	132422.17	27-002	2327.77
Pajarito	J024	PJ-SMA-17	1642592 (35.83015)	1757437 (-106.242667)	621554.79	54-018	228544.82
Pajarito	J026	PJ-SMA-18	1643997 (35.828917)	1756989 (-106.237917)	123963.52	54-014(d) 54-017	10862.97 4734.46
Pajarito	J025	PJ-SMA-19	1644331 (35.829233)	1757106 (-106.2368)	1166628.47	54-013(b) 54-017 54-020	0.00 349577.31 1531.24
Pajarito	J027	PJ-SMA-20	1644964 (35.82975)	1757292 (-106.23465)	317705.70	54-017	213458.83
Pajarito	J028	STRM-SMA-1.05	1610997 (35.859629)	1768185 (-106.349289)	189865.75	08-009(f)	0.77
Pajarito	J029	STRM-SMA-1.5	1611081 (35.860811)	1768615 (-106.349005)	189,053.09	08-009(d)	250.92
Pajarito	J030	STRM-SMA-4.2	1612325 (35.858777)	1767873 (-106.344802)	4041724.23	09-008(b)	2357.13
Pajarito	J031	STRM-SMA-5.05	1613807 (35.8595)	1768137 (-106.3398)	126952.20	09-013	90230.32

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
2M-SMA-1	129	SS2432	AltCompR															
2M-SMA-1.42	130	SS093203	AltCompR															
2M-SMA-1.43	131	SS093204	AltCompR															
2M-SMA-1.44	132	SS153222	CAM5-2	X	X	X	X	X										
2M-SMA-1.45	133	SS123220	CACompA															
2M-SMA-1.5	134	SS2436	MEx	X	X	X	X	X							X			X
2M-SMA-1.65	135	SS093209	CAM5	X														
2M-SMA-1.67	136	SS103216	MEx	X	X	X	X	X							x			
2M-SMA-1.7	137	SS2438	AltCompR															
2M-SMA-1.8	138	SS103217	AltCompR															
2M-SMA-1.9	139	SS103218	AltCompR															
2M-SMA-2	140	SS123221	AltCompR															
2M-SMA-2.2	141	SS093214	CACompC															
2M-SMA-3	142	SS193230	CAM5-2	X	X	X	X	X							X			
2M-SMA-2.5	143	SS093210	BCComp															
3M-SMA-0.2	144	SS091501	MEx	X	X	X	X	X										
3M-SMA-0.4	145	SS101502	AltCompR															
3M-SMA-0.5	146	SS141505	CAM5	X							X				X			
3M-SMA-0.6	147	SS2457	MEx	X	X	X	X	X										

4*ttachment 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
3M-SMA-2.6	148	SS191508	MEx	X	X	X	X	X							X			X
3M-SMA-4	149	SS101504	AltCompR															
PJ-SMA-1.05	150	SS152342	CAM5	X	X	X	X	X						X				
PJ-SMA-2	151	SS2422	MEx	X	X	X	X	X										
PJ-SMA-3.05	152	SS092326	CAM5	X		X												
PJ-SMA-4.05	153	SS092328	AltCompR															
PJ-SMA-5	154	SS24254	CAM5								X							
PJ-SMA-5.1	155	SS092306	CAM5	X							X		X					
PJ-SMA-6	156	SS24255	AltCompR															
PJ-SMA-7	157	SS112337	MEx	X	X	X	X	X							X			
PJ-SMA-8	158	SS112338	MEx	X	X	X	X	X							X			
PJ-SMA-9	159	SS2427	CAM5	X	X	X	X	X							X			X
PJ-SMA-10	160	SS172345	CAM	X	X	X	X	X						X	X			
PJ-SMA-11	161	SS152341	S7															
PJ-SMA-11.1	162	SS102334	CAM5	X					X		X							
PJ-SMA-13	163	SS102335	MEx	X	X	X	X	X							X			
PJ-SMA-13.7	164	SS132339	CAM5	X	X	X	X	X										
PJ-SMA-14	165	SS2465	MEx	X	X	X	X	X							X			
PJ-SMA-14.2	166	SS092320	MEx	X	X	X	X	X										
PJ-SMA-14.3	167	SS092321	MEx	X	X	X	X	X										
PJ-SMA-14.4	168	SS092322	MEx	X	X	X	X	X										

4*ttachment 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
PJ-SMA-14.6	169	SS092323	MEx	X	X	X	X	X										
PJ-SMA-14.8	170	SS092324	BCComp															
PJ-SMA-16	171	SS092325	BCComp															
PJ-SMA-17	172	SS092331	CACompC															
PJ-SMA-18	173	SS092329	CACompC-Inv	X	X	X	X	X						X				
PJ-SMA-19	174	SS092330	CACompC-Inv	X	X	X	X	X						X				
PJ-SMA-20	175	SS092332	CACompC															
STRM-SMA-1.05	176	SS093001	AltCompR															
STRM-SMA-1.5	177	SS133007	CAM5-2	X	X	X	X	X										X
STRM-SMA-4.2	178	SS173009	CAM5-2				X											
STRM-SMA-5.05	179	SS093002	AltCompR															

S7 = Alternatives analysis. The permittees are preparing an analysis of alternatives to complete corrective action.

AltCompA = Corrective action is complete with certification of all confirmation monitoring results less than TAL.

AltCompR = Alternative compliance requested.

BCComp = Baseline Confirmation Complete: All confirmation monitoring results for all pollutants of concern at the SMA are at or below TALs, and corrective action is not required at the Sites. No further sampling is required.

CACompA = Corrective action is complete with a certification that all pollutants of concern are at or below applicable TALs.

CACompC = The Site has achieved corrective action complete under no exposure.

CACompC-Inv = Corrective action is complete with a certification that no pollutants are exposed to storm water. Investigation sample being collected.

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

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

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

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

SMA	Site List	Additional Compliance Status Details
PJ-SMA-10	40-006(a)	Following a SIP site visit, it was determined that the sampler was not located in the most representative location. In 2017, the sampler was moved to the area with the highest concentrations of soil contamination, and confirmation monitoring sampling continues.
PJ-SMA-11	40-003(a)	In 2018 and 2019, storm water samples were collected at this SMA from the first two measurable storm events after certification of installation of enhanced controls. The Permittees are currently preparing an analysis of alternatives to completion of correction action.
2M-SMA-3	07-001(c)	Following a SIP site visit, it was determined that the sampler did not monitor runoff from 07-001(c). Therefore, the sampler was moved in 2019 to sample runoff specifically from this Site and confirmation monitoring sampling was restarted on May 7, 2019.
3M-SMA-2.6	36-008 C-36-003	Following a SIP site visit, it was determined that the sampler was not located in the most representative location. In 2019 the sampler was moved to an area more suited to capture runoff from both Sites, and extended baseline monitoring sampling continues.
STRM-SMA-4.2	09-008(b)	Installation of enhanced controls were completed in late 2019, certified on January 10, 2020, and submitted to EPA on January 14, 2020. In 2020, corrective action monitoring will be conducted to collect storm water samples from the first measurable storm events after the certification of these controls.