N3B Los Alamos

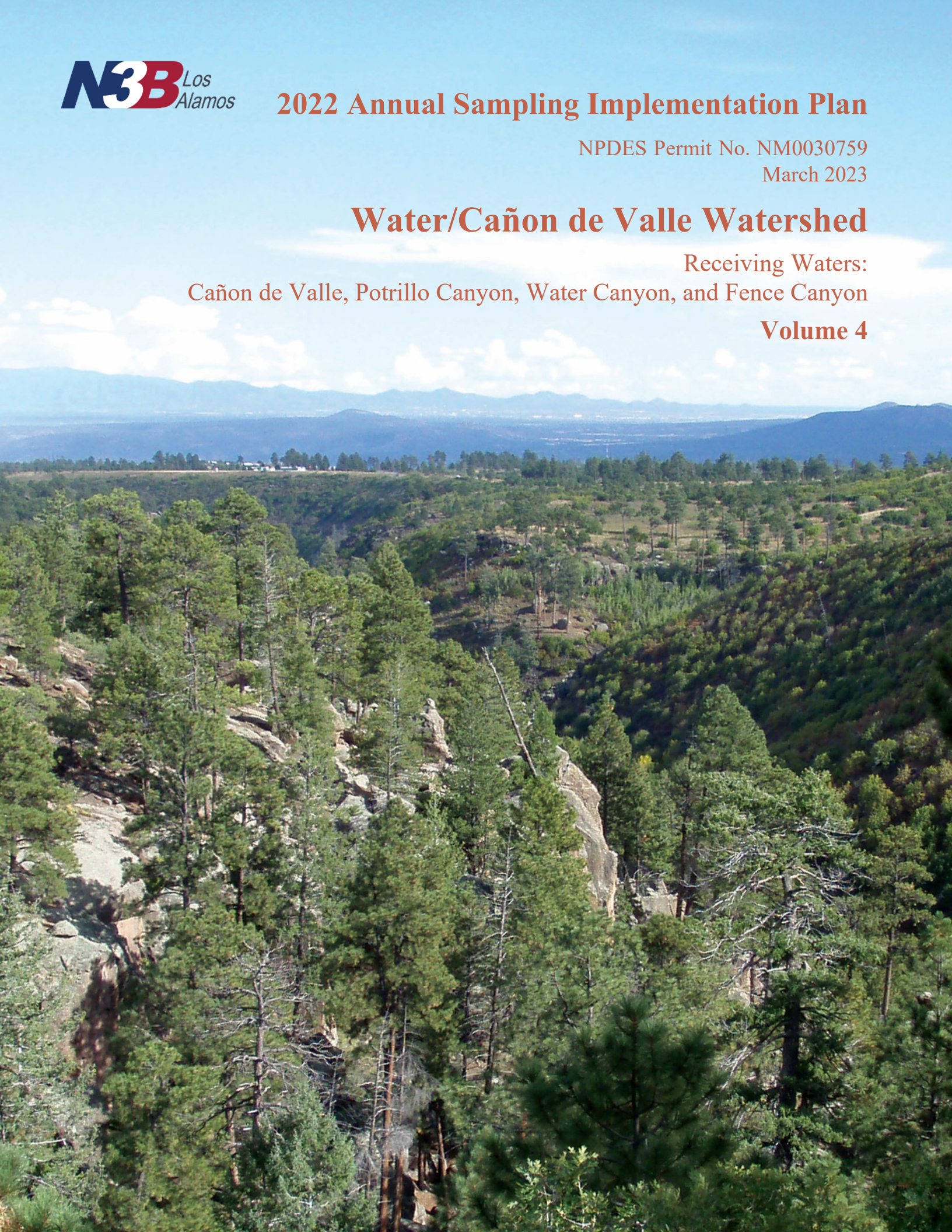
2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759
March 2023

Water/Cañon de Valle Watershed

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

Volume 4



CONTENTS

169.0 CDV-SMA-1.2

Associated Sites	16-017(b)-99, 16-029(k)
Receiving Water	Cañon de Valle
Drainage Area	2.79 acres
Landscape Characteristics	10% impervious, 90% pervious
Consent Order Site Status	SWMU 16-017(b)-99: Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls SWMU 16-029(k): Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended [a]
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

[a] Baseline monitoring was reinitiated in 2020 (where one baseline sample had previously been collected with no TAL exceedances) in order to collect a second sample.

169.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. The HE analytical results from this sample were rejected because of hold times and monitoring continued. An additional baseline sample was collected in August 2015. This sample had no TAL exceedances and stormwater monitoring ceased until 2020. Baseline confirmation monitoring resumed in 2020; the objective is to collect a second sample with all results below the applicable MTAL or ATAL, potentially allowing the Permittees to make a Site deletion request per Permit part I.I.2.

169.2 Site History

16-017(b)-99 (6/19/2017)

SWMU 16-017(b)-99 consists of a former HE machining building (former structure 16-93) that was located at TA-16. Constructed on a concrete pad in 1950, the 1,627 ft^2 wooden building was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later converted to an electroplating facility. By 1970, the building was used entirely for storage. By 1991, it was abandoned and subsequently removed during D&D operations in 1996. Two former HE sumps [SWMU 16-029(k)], located adjacent to former building 16-93, discharged to two outfalls in a drainage north of the building that emptied into Cañon de Valle 600 ft north of the former 90s Line ponds [SWMU 16-008(a)]. The sumps and associated drainlines were also removed in 1996. This SWMU was originally a component of SWMU 16-017, which consisted of a group of 24 structures within TA-16 that were part of the World War II era HE operations. During the 1999 Annual Unit Audit, SWMU 16-017 was split into 24 separate SWMUs to facilitate investigation. Structure 16-93 was given the individual SWMU identification of SWMU 16-017(b)-99 at that time.

16-029(k) (6/19/2017)

SWMU 16-029(k) consists of two former HE sumps at TA-16. The sumps were located adjacent to former building 16-93 [SWMU 16-017(b)-99], and discharged to associated drainlines and outfalls in a drainage north of the building that emptied into Cañon de Valle 600 ft north of the former 90s Line ponds [SWMU 16-008(a)]. Constructed of wood on a concrete pad in 1950, former building 16-93 measured 1,627 ft^2 and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later converted to an electroplating facility. By 1970, the building was used entirely for storage. The building was totally abandoned by 1991, and the building, sumps, drainlines, and berms were removed during D&D operations in 1996.

For investigation activities for the Sites refer to "Supplemental Investigation Report for Consolidated Units 16-007(a)-99 and 16-008(a)-99" (LANL 2010, 108279).

169.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 169.2-1.

Table 169.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-017(b)-99	Soil contamination from former HE Machining building 16-93	Metals, barium, chromium, copper, SVOCs, HE, uranium
16-029(k)	Sumps	Metals, barium, chromium, copper, SVOCs, HE, uranium

169.3 Consent Order Soil Data

Decision-level data for SWMUs 16-008(a), 16-017(a-e)-99, 16-026(m-p), 16-029 (k,l,s,t, and u), and AOC C-16-067, consist of results from samples collected in 1996, 2006, and 2007. Analytical results for these samples are presented in Figures 169.3-1 through 169.3-4. The January 2010 investigation report (LANL 2010, 108279) concluded that the nature and extent were defined for the SWMUs.

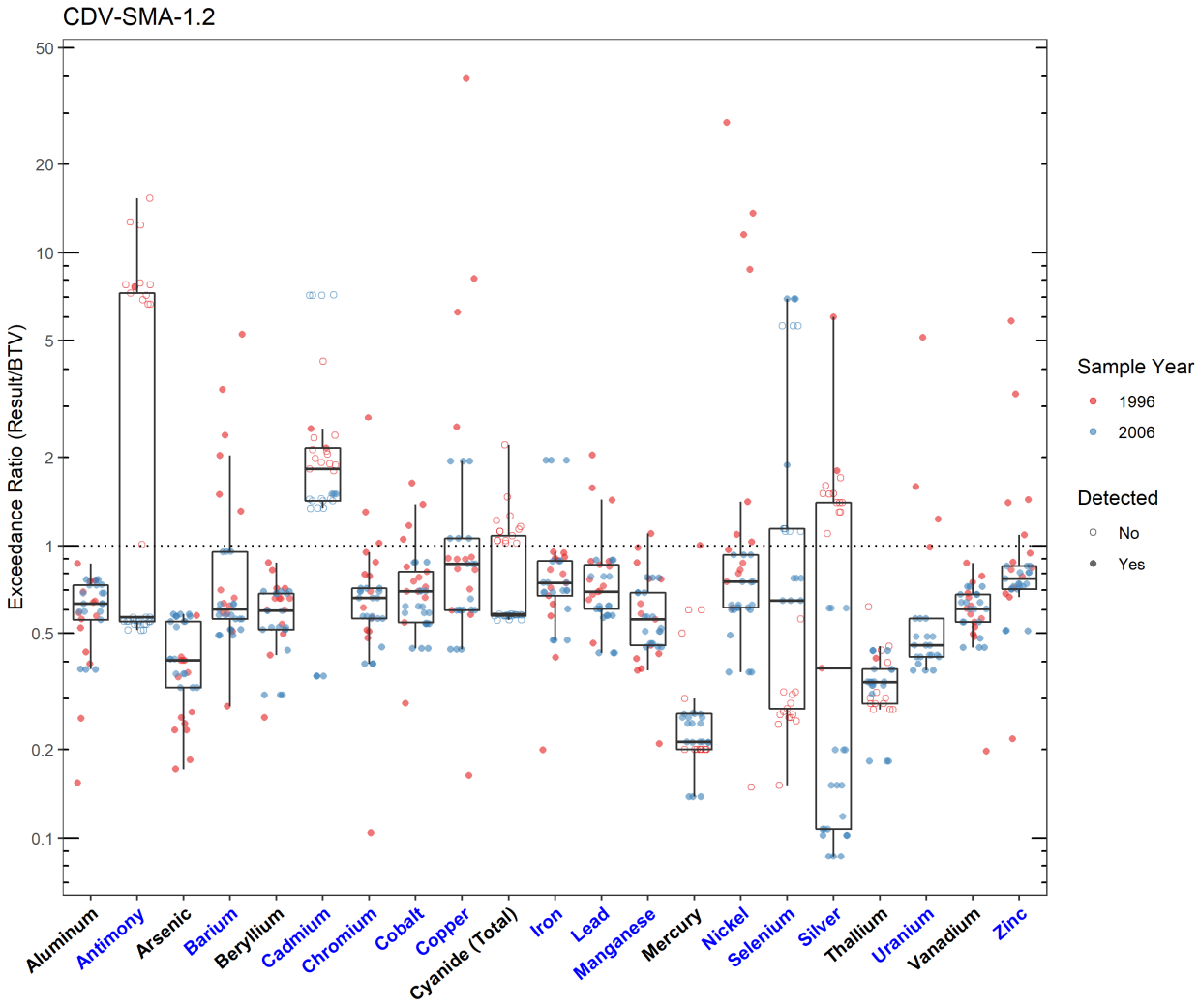


Figure 169.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.2

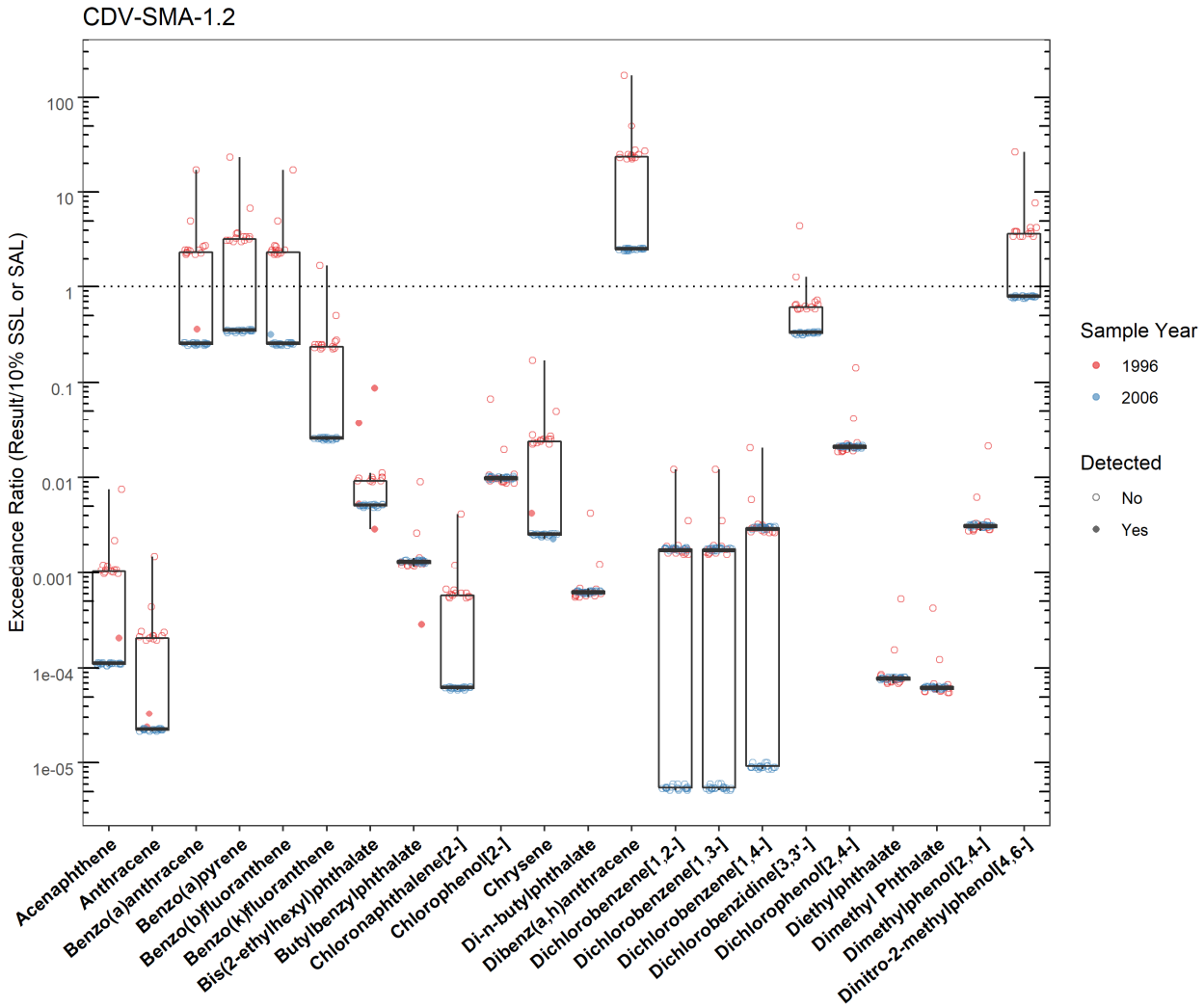


Figure 169.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.2 (Plot 1)

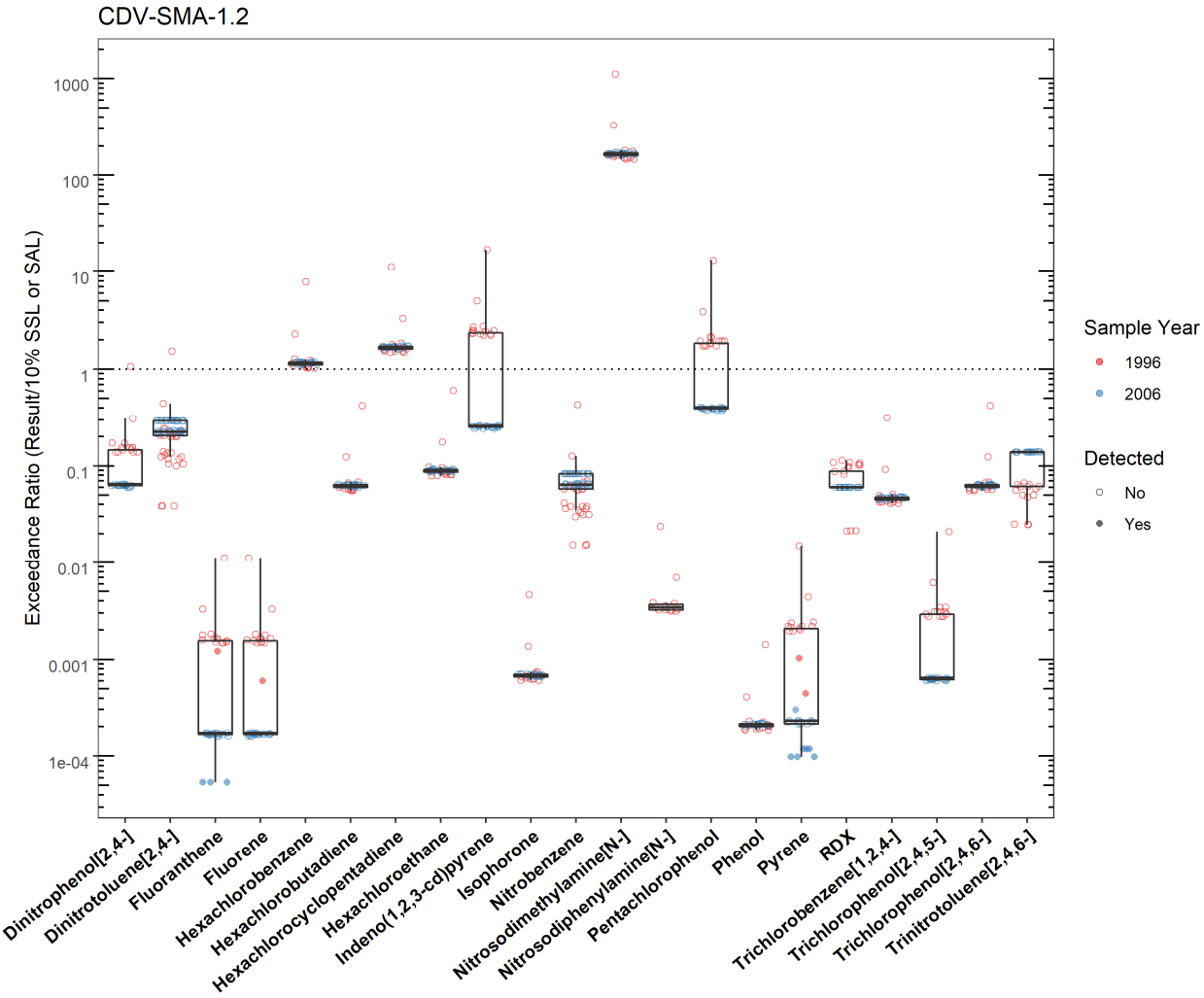


Figure 169.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.2 (Plot 2)

CDV-SMA-1.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-1.2	Sb	Y	BTV	0.830	6.30	1996-06-03
Barium	CDV-SMA-1.2	Ba	Y	BTV	295	1550	1996-03-27
Cadmium	CDV-SMA-1.2	Cd	Y	BTV	0.400	1.00	1996-04-05
Chromium	CDV-SMA-1.2	Cr	Y	BTV	19.3	52.9	1996-03-27
Cobalt	CDV-SMA-1.2	Co	Y	BTV	8.64	14.1	1996-06-03
Copper	CDV-SMA-1.2	Cu	Y	BTV	14.7	579	1996-03-27
Iron	CDV-SMA-1.2	Fe	Y	BTV	21500	42000	2006-09-25
Lead	CDV-SMA-1.2	Pb	Y	BTV	22.3	45.2	1996-03-27
Manganese	CDV-SMA-1.2	Mn	Y	BTV	671	741	1996-06-03
Nickel	CDV-SMA-1.2	Ni	Y	BTV	15.4	429	1996-03-27
Selenium	CDV-SMA-1.2	Se	Y	BTV	1.52	10.5	2006-09-27
Silver	CDV-SMA-1.2	Ag	Y	BTV	1.00	6.00	1996-06-04
Uranium	CDV-SMA-1.2	U	Y	BTV	1.82	9.34	1996-04-05
Zinc	CDV-SMA-1.2	Zn	Y	BTV	48.8	284	1996-06-04

Figure 169.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.2

169.4 Stormwater Evaluation

169.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in September 2013 and August 2015. Analytical results from these samples are presented in Figures 169.4-1 through 169.4-4.

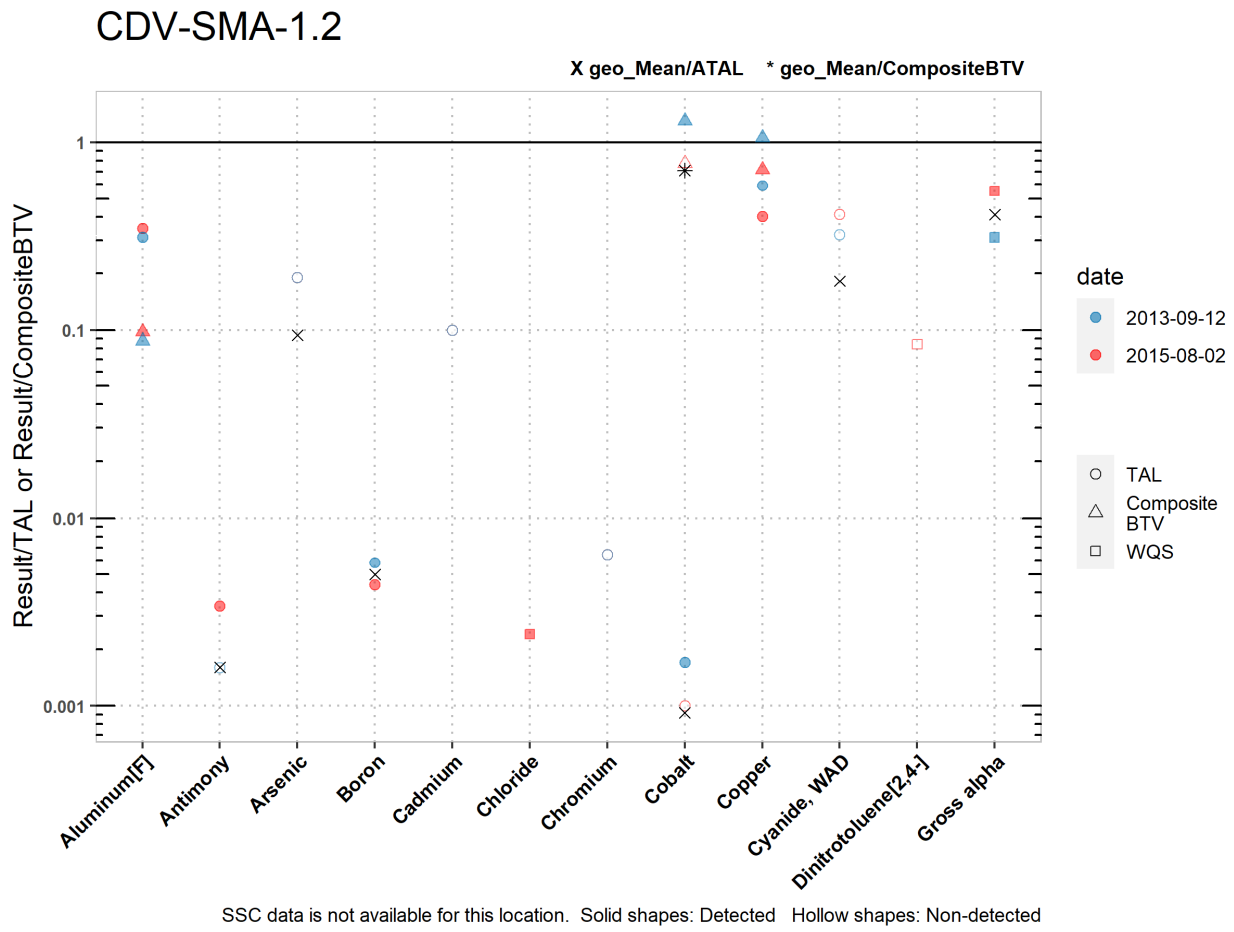


Figure 169.4-1 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Plot 1)

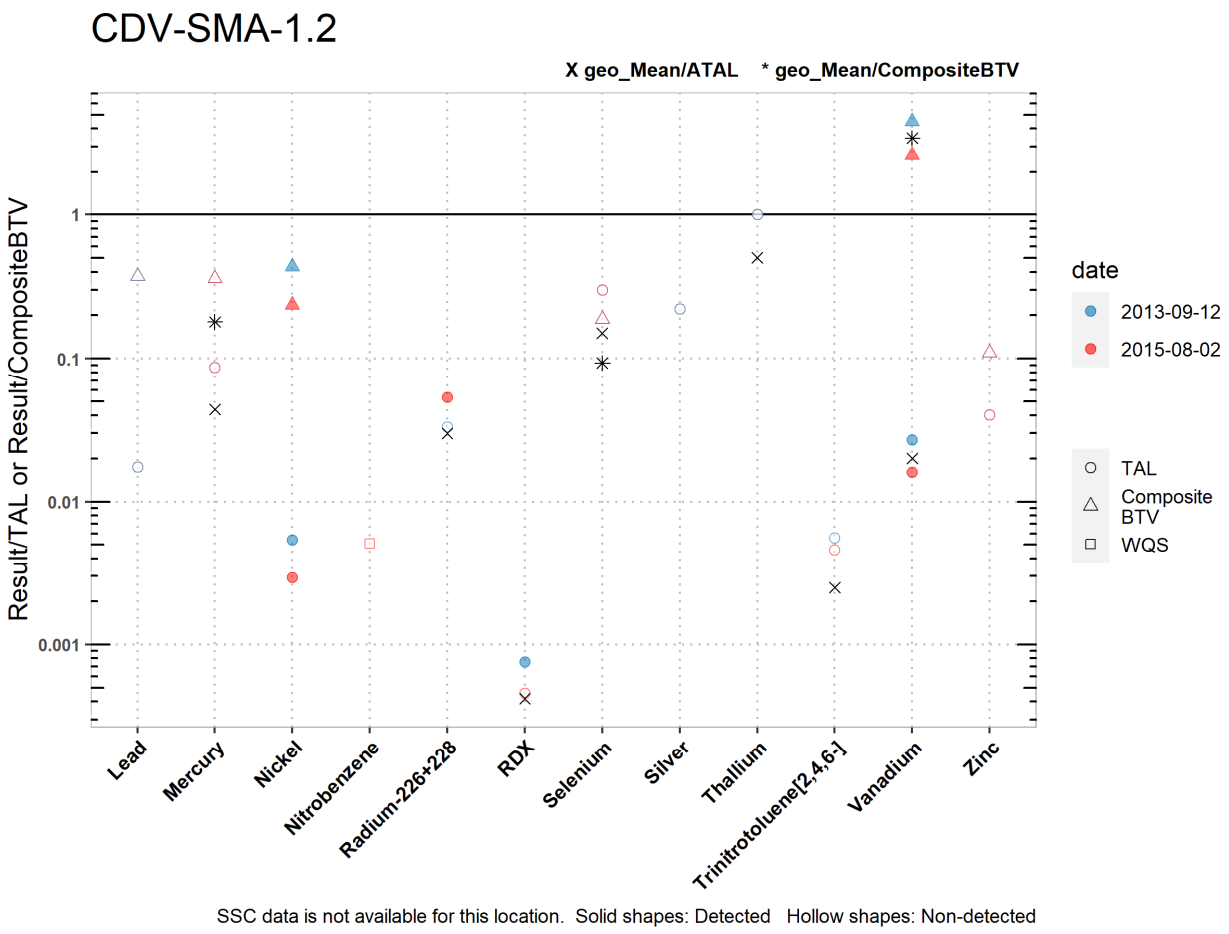


Figure 169.4-2 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Plot 2)

CDV-SMA-1.2

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	750	NA	340	NA	0.879	NA	311	NA	6.69	22	NA	NA
Composite_BTV	2660	NA	NA	NA	NA	NA	NA	1.29	3.74	NA	NA	56.4
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2013-09-12 result	233	*1.00*	*1.70*	29.2	*0.110*	NA	*2.00*	1.68	3.95	*1.67*	NA	4.70
2013-09-12 dT	0.311	NA	NA	0.0058	NA	NA	NA	0.0017	0.590	NA	NA	0.31
2013-09-12 dB	0.0876	NA	NA	NA	NA	NA	NA	1.30	1.06	NA	NA	NA
2015-08-02 result	260	2.18	*1.70*	21.8	*0.110*	546	*2.00*	*1.00*	2.69	*2.14*	*0.0920*	8.24
2015-08-02 dT	0.347	0.0034	NA	0.0044	NA	0.0024	NA	NA	0.402	NA	NA	0.55
2015-08-02 dB	0.0977	NA	NA	NA	NA	NA	NA	NA	0.719	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.094	0.0050	NA	NA	NA	0.00092	NA	0.182	NA	0.41
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	0.710	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 169.4-3 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Table 1)

CDV-SMA-1.2

	Lead	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	28.6	NA	250	NA	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	1.34	0.186	3.10	NA	4.86	NA	8.04	NA	NA	NA	0.592	30.0
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
2013-09-12 result	*0.500*	*0.0670*	1.35	NA	*1.00*	0.153	*1.50*	*0.200*	*0.450*	*0.111*	2.66	*3.30*
2013-09-12 dT	NA	NA	0.00540	NA	NA	0.00076	NA	NA	NA	NA	0.027	NA
2013-09-12 dB	NA	NA	0.435	NA	NA	NA	NA	NA	NA	NA	4.49	NA
2015-08-02 result	*0.500*	*0.0670*	0.733	*0.0920*	1.61	*0.0920*	*1.50*	*0.200*	*0.450*	*0.0920*	1.55	*3.30*
2015-08-02 dT	NA	NA	0.00293	NA	0.0537	NA	NA	NA	NA	NA	0.016	NA
2015-08-02 dB	NA	NA	0.236	NA	NA	NA	NA	NA	NA	NA	2.62	NA
geo_mean/ATAL	NA	0.044	NA	NA	0.0299	0.00042	0.15	NA	0.5	0.0025	0.020	NA
geo_mean/B	NA	0.180	NA	NA	NA	NA	0.0933	NA	NA	NA	3.43	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 169.4-4 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Table 2)

169.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.2 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

169.5 Site-Specific Demonstration

169.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil screening value and have not yet been measured in stormwater data: barium, iron, manganese, and uranium.

169.5.2 Stormwater Data Summary

No POCs exceeded TAL in the confirmation-monitoring samples collected.

169.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs have been monitored.

169.5.4 Sampling and Analysis Plan

Table 169.5-1 is the proposed SAP for CDV-SMA-1.2.

Table 169.5-1 Proposed SAP, CDV-SMA-1.2

Monitoring Constituent	Background for Monitoring
Dissolved barium, manganese, and uranium	Site history and soil data
Total iron	Site history and soil data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

170.0 CDV-SMA-1.3

Associated Sites	16-017(a)-99, 16-026(m)
Receiving Water	Cañon de Valle
Drainage Area	0.05 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-017(a)-99: Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls SWMU 16-026(m): Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

170.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

SWMUs 16-017(a)-99 and 16-026(m) received CoCs under the Consent Order from NMED in August 2016. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit Part I.E.2(d) in September 2016 (LANL 2016, 601823). Stormwater monitoring has not occurred since 2013.

170.2 Site History

16-017(a)-99 (6/19/2017)

SWMU 16-017(a)-99 consists of a former HE machining building (former structure 16-92) that was located at TA-16. Constructed in 1950, the wooden building measured 20 ft wide × 60 ft long × 11 ft high and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later used to clean and refurbish HE-contaminated equipment. Operations at building 16-92 may have resulted in uranium contamination because disassembled items may have contained uranium. By 1970, the building was used entirely for storage. By 1991, building 16-92 was abandoned and was subsequently removed during D&D operations in 1996. Two former sumps [SWMU 16-029(l)], located adjacent to former building 16-92, discharged to outfalls [SWMU 16-026(m)] in drainages east of the building that emptied into Cañon de Valle 600 ft north of the former 90s Line ponds [SWMU 16-008(a)]. The sumps and associated drainlines were also removed in 1996. This SWMU was originally a component of SWMU 16-017, which consisted of a group of 24 structures within TA-16 that were part of the World War II era HE operations. During the 1999 Annual Unit Audit, SWMU 16-017 was split into 24 separate SWMUs to facilitate investigation. Structure 16-92 was given the individual SWMU identification of SWMU 16-017(a)-99 at that time.

16-026(m) (6/19/2017)

SWMU 16-026(m) consists of two former outfalls and associated drainlines from two former sumps [SWMU 16-029(l)] that served former HE machining building 16-92, all of which were located near the 90s-Line Pond area at TA-16. The sumps measured approximately 15 ft × 5 ft × 5 ft and were located on the east and west sides of former building 16-92. The eastern sump discharged to a VCP drainline that extended north and west to its discharge point approximately 260 ft north of the building. The western sump discharged to a VCP that extended north and then west of the building where it discharged to an open drainage channel. The outfalls did not discharge to the 90s Line pond [SWMU 16-008(a)], but instead discharged to a northeast drainage that empties into Cañon de Valle 600 ft north of the 90s Line. Constructed in 1950, former building 16-92 consisted of a wooden structure on a concrete slab, measured 1332 ft^2, and was surrounded on three sides by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later used to clean and refurbish HE-contaminated equipment. The sumps were filled with gravel during the mid-1960s and by 1970, the building was used entirely for storage. Operations at building 16-92 may have resulted in uranium contamination because disassembled items may have contained uranium. By 1991, building 16-92 was abandoned and was subsequently removed during D&D operations in 1996 along with the SWMU 16-026(m) outfalls and associated drainlines, and the SWMU 16-026(l) sumps.

For investigation activities for the Sites refer to "Supplemental Investigation Report for Consolidated Units 16-007(a)-99 and 16-008(a)-99" (LANL 2010, 108279).

170.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 170.2-1.

Table 170.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-017(a)-99	Soil contamination from former HE Machining building 16-92	Metals, barium, organic chemicals, HE, uranium
16-026(m)	Outfalls associated with former building 16-92	Metals, barium, organic chemicals, HE, uranium

170.3 Consent Order Soil Data

Decision-level data for SWMUs 16-008(a), 16-017(a-e)-99, 16-026(m-p), 16-029(k,l,s,t, and u), and AOC C-16-067, consist of results from 302 samples collected at 154 locations in 1996 and 2006. Analytical results for these samples are presented in Figures 170.3-1 through 170.3-4. The January 2010 investigation report (LANL 2010, 108279) concluded that the nature and extent were defined for the SWMUs.

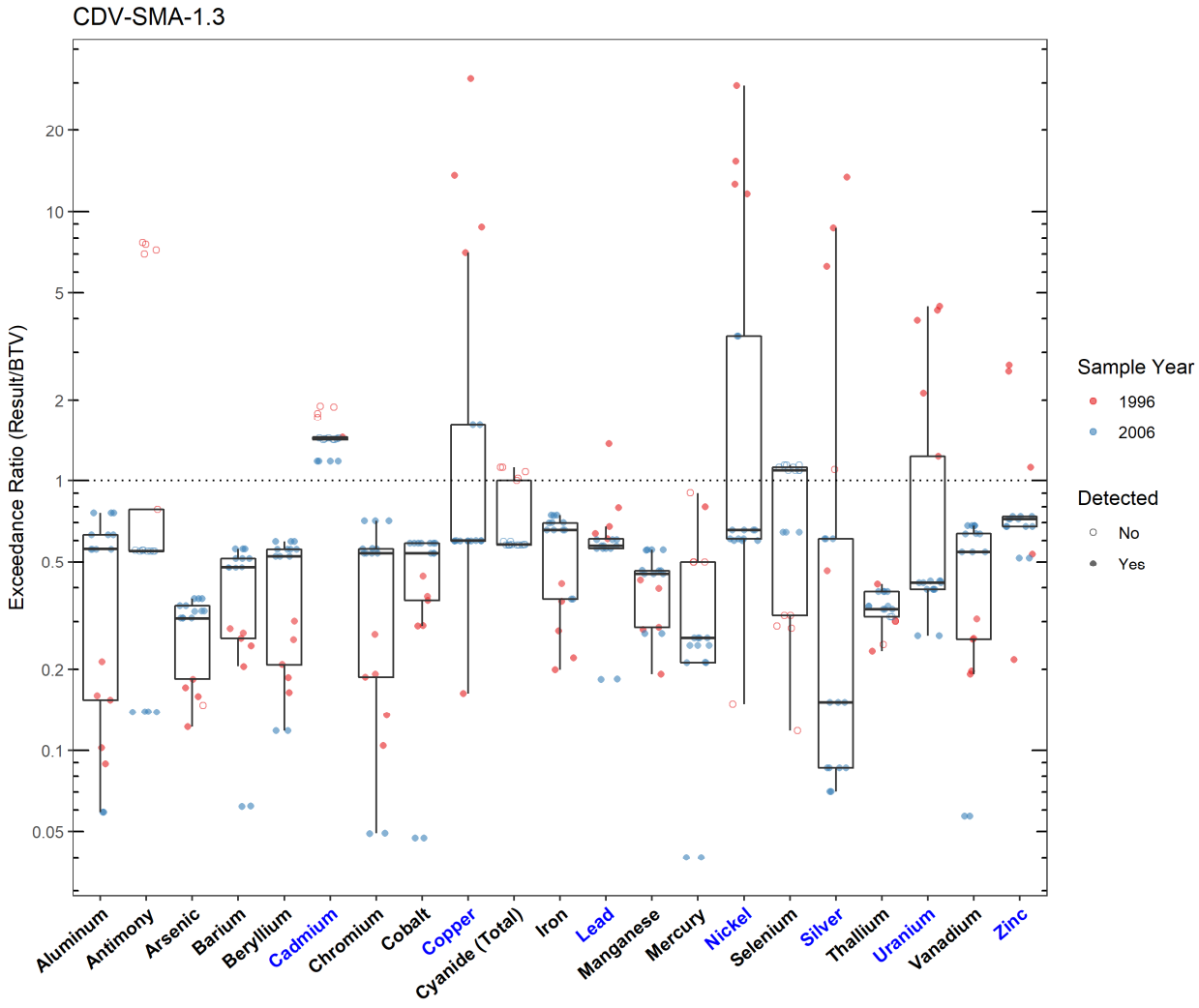


Figure 170.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.3

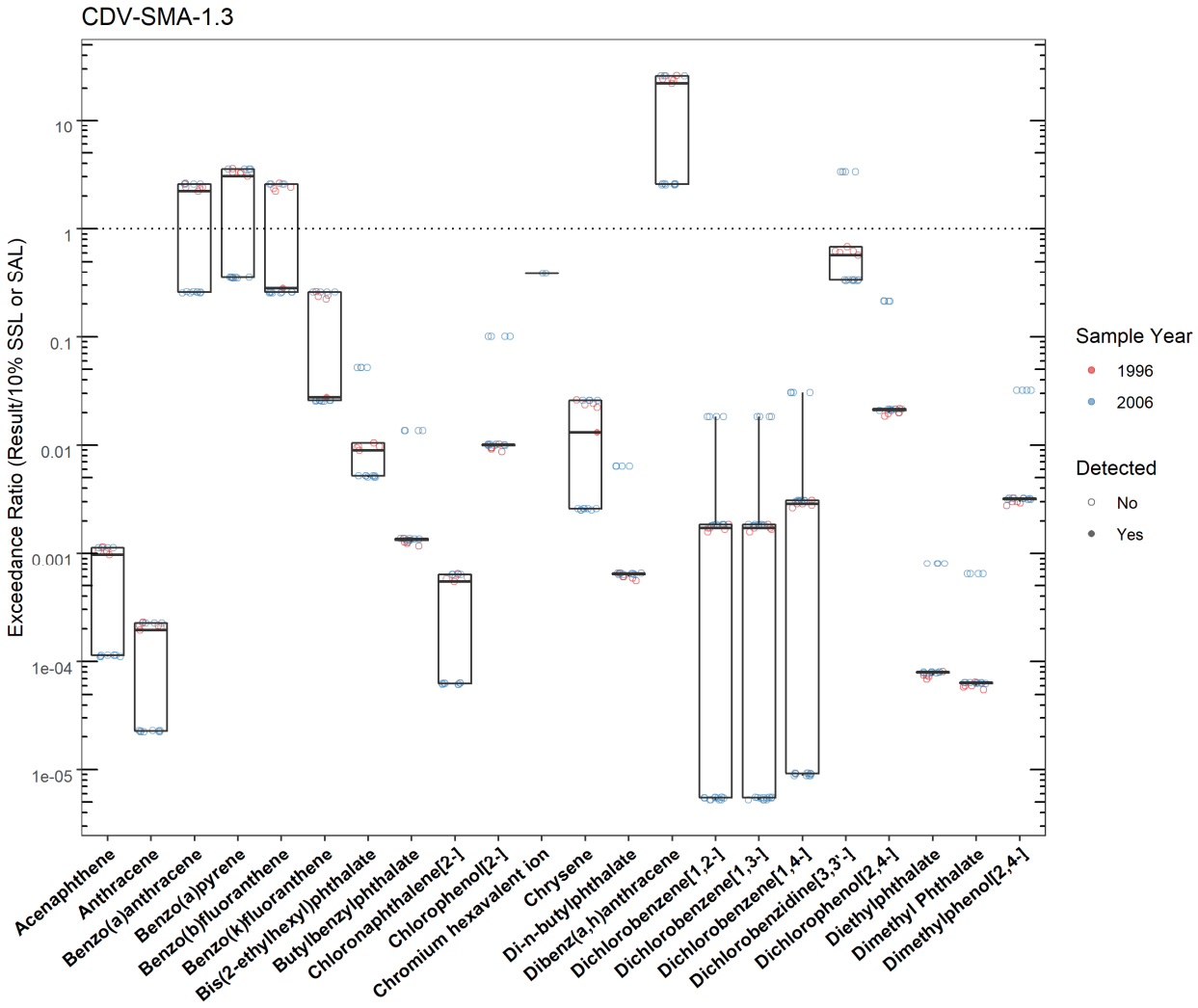


Figure 170.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.3 (Plot 1)

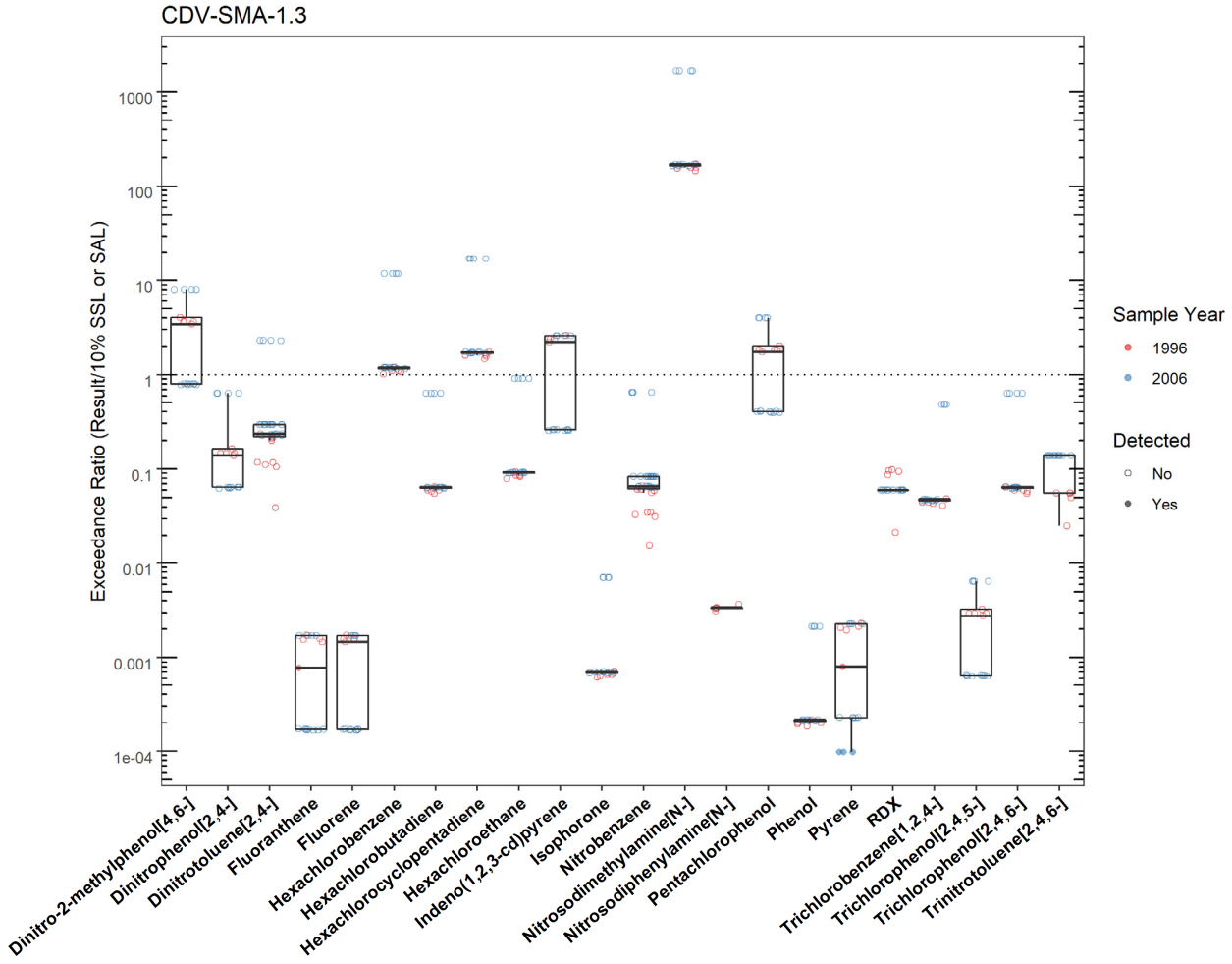


Figure 170.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.3 (Plot 2)

CDV-SMA-1.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	CDV-SMA-1.3	Cd	Y	BTV	0.400	0.580	1996-04-05
Copper	CDV-SMA-1.3	Cu	Y	BTV	14.7	458	1996-06-06
Lead	CDV-SMA-1.3	Pb	Y	BTV	22.3	30.6	1996-06-06
Nickel	CDV-SMA-1.3	Ni	Y	BTV	15.4	451	1996-06-06
Silver	CDV-SMA-1.3	Ag	Y	BTV	1.00	13.4	1996-06-06
Uranium	CDV-SMA-1.3	U	Y	BTV	1.82	8.10	1996-06-06
Zinc	CDV-SMA-1.3	Zn	Y	BTV	48.8	132	1996-06-06

Figure 170.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.3

170.4 Stormwater Evaluation

170.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 170.4-1 and 170.4-2.

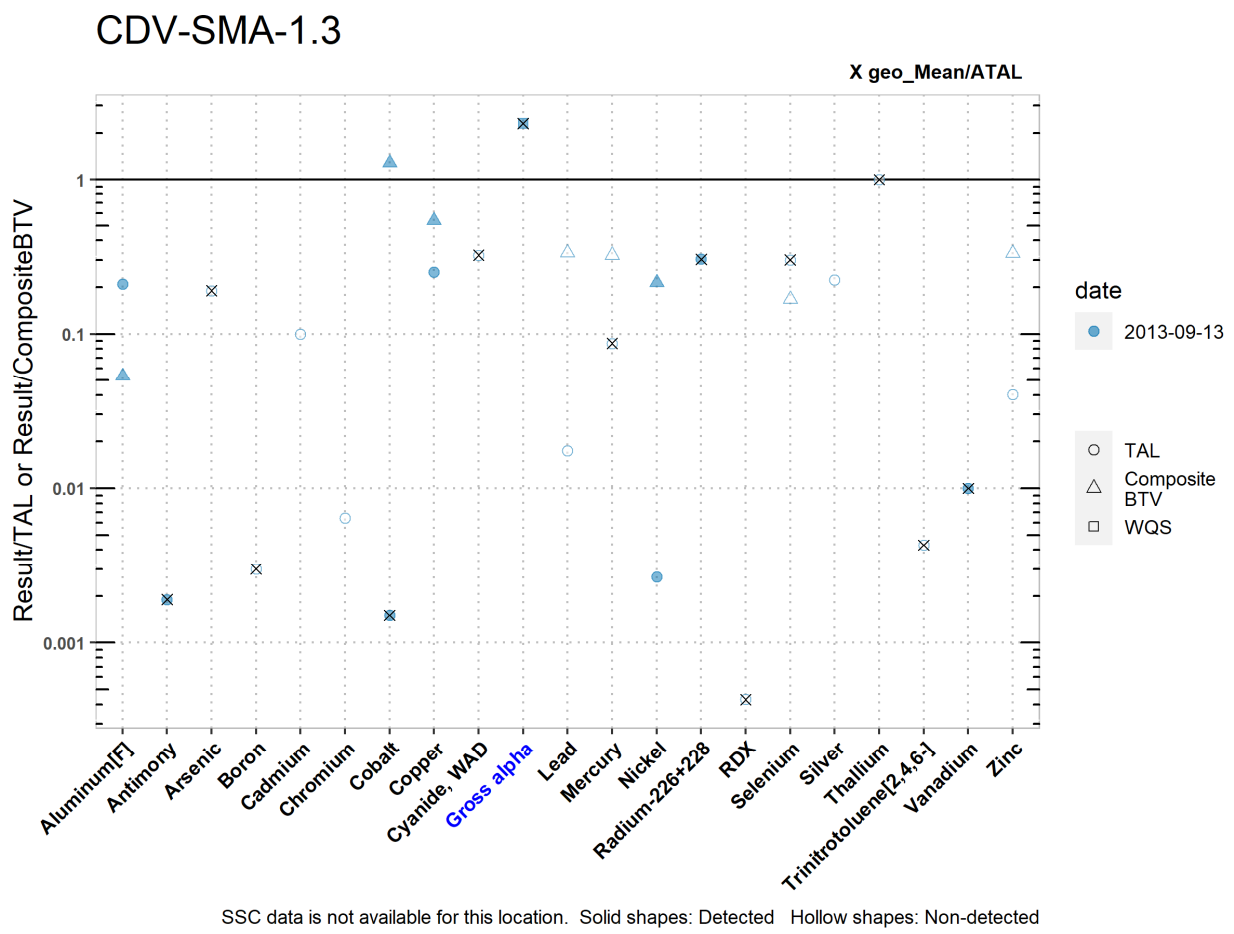


Figure 170.4-1 Analytical Results from Stormwater Samples, CDV-SMA-1.3 (Plot)

CDV-SMA-1.3

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	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	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2950	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2	1.50	0.208	3.10	4.21	NA	8.98	NA	NA	NA	NA	10.0
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
2013-09-13 result	157	1.21	*1.70*	*15.0*	*0.110*	*2.00*	1.51	1.68	*1.67*	34.7	*0.500*	*0.0670*	0.665	9.10	*0.0860*	*1.50*	*0.200*	*0.450*	*0.0860*	1.03	*3.30*
2013-09-13 dT	0.209	0.0019	NA	NA	NA	NA	0.0015	0.251	NA	2.3	NA	NA	0.00266	0.303	NA	NA	NA	NA	NA	0.010	NA
2013-09-13 dB	0.0532	NA	NA	NA	NA	NA	1.28	0.538	NA	NA	NA	NA	0.215	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0019	0.19	0.0030	NA	NA	0.0015	NA	0.321	2.3	NA	0.087	NA	0.303	0.00043	0.30	NA	1	0.0043	0.010	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 170.4-2 Analytical Results from Stormwater Samples, CDV-SMA-1.3 (Table)

170.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.3 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

170.5 Site-Specific Demonstration

170.5.1 Soil Data Summary

Uranium is a Site-related POC; it exceeded the applicable screening value in soil data and has not yet been measured in stormwater data, therefore it will be added to the SAP. The other metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

170.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL and there was no paired SSC data to determine if it was below BTV, therefore it will be added to the monitoring suite for analysis.

170.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

170.5.4 Sampling and Analysis Plan

Table 170.5-1 is the proposed SAP for CDV-SMA-1.3.

Table 170.5-1 Proposed SAP, CDV-SMA-1.3

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (organics)
Total PCBs	Site history (organics)
Gross alpha	Site history (uranium)
Dissolved uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

171.0 CDV-SMA-1.4

Associated Sites	16-020, 16-026(l), 16-028(c)
Receiving Water	Cañon de Valle
Drainage Area	15.27 acres
Landscape Characteristics	11% impervious, 89% pervious
Consent Order Site Status	SWMU 16-020: In Progress SWMU 16-026(l): In Progress SWMU 16-028(c): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

171.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2012. Analytical results from this sample initiated corrective action.

Following the May 2014 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2014, 256722), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection at this new location, and monitoring is ongoing until at least one confirmation sample is collected.

171.2 Site History

16-020 (9/14/2020)

SWMU 16-020, known as the Silver Outfall and described as such in the 1990 SWMU Report, is a former operational release area where untreated spent photo-fixing bath solutions were discharged from former building 16-222 to an outfall for a period of 20 years at TA-16. Former building 16-222 was part of the 16-220 Complex, which was a complex of connected buildings used for radiography of HE parts for nuclear weapons for approximately 43 years. According to the 1990 SWMU Report, between 1959 and 1979, photo-processing liquids were discharged to an outfall on the south side of former building 16-222 directly to the environment without treatment. The outfall and drainage downgradient of the outfall received significant quantities of silver (>12 g/L) as silver thiosulfate complexes in untreated, spent x-ray fixing solutions. Soil and sediment downgradient of this outfall was contaminated with photo-processing chemicals, including silver and chromium, as well as PAHs from asphalt roofing materials. In 1979, a silver recovery unit was installed in former building 16-222 to remove silver from the photo-processing effluent prior to discharge. The outfall was added to the LANL NPDES permit as outfall 06A-073. Discharges to the outfall ceased when building 16-222 was decommissioned in 1995 and was demolished and removed in 2003 and the outfall was removed from the LANL NPDES permit in 1997.

16-026(l) (6/3/2021)

SWMU 16-026(l) is described in the 1990 SWMU Report as consisting of three inactive outfalls and associated outlet drainlines that served former building 16-220 at TA-16. The 1990 SWMU Report states the outfalls were located on the northeast, southeast, and south sides of former building 16-220, a former x-ray building. According to the 1998 replacement of Chapter 6 of OU 1082 RCRA RFI work plan, Addendum 2, SWMU 16-026(l) consists of three outlet drainlines from the east wall and the northeastern and southeastern corners of building 16-220. The 1992 Santa Fe Engineering Wastewater Stream Characterization report #7 for TA-16, as-built drawings ENG-C 15660 (pg. 57 of 121) and ENG-C 15605 (pg. 2 of 121), and engineering drawing ENG-R 855 (pg. 2 of 38) show two 4-in.-diameter cast iron (CI) roof drainlines, one coming off the northeast corner of former building 16-220, and one coming off the southeast wall of former building 16-220 and discharging to outfalls located approximately 20 ft east of the former building. The third outfall discharged via a 4-in.-diameter CI outlet drainline from a steam pit that exited the middle east wall of former building 16-220 to an outfall located approximately 120 ft east of drainline former building 16-220, as shown on as-built drawings ENG-C 15660 (pg. 57 of 121) and ENG-C 15605 (pg. 2 of 121), engineering drawing ENG-R 855 (pg. 2 of 38), and the 1992 Santa Fe Engineering Wastewater Stream Characterization report #7 for TA-16. The 2006 IWP (LANL 2006, 091698) incorrectly states that the drainage area from these three outfalls is commingled with the outfall drainage from SWMU 16-028(c); they have separate drainage areas. Building 16-220 was removed in 2003. The 1991 orthographic GIS layer and a 1988 site photograph confirm the correct locations of the three former outfalls and the three associated outlet drainlines.

16-028(c) (6/3/2021)

SWMU 16-028(c) is a former NPDES-permitted outfall (EPA 04A-070) and outlet drainline that received discharges from eight floor drains in former building 16-220 at TA-16. The 1992 Santa Fe Engineering Wastewater Stream Characterization report #7 for TA-16 and as-built drawing ENG-C 15660 (pg. 57 of 121) show the former outfall (EPA 04A070) received discharges from eight floor drains in former building 16-220. The effluent contained noncontact cooling water, chiller condensate, periodic discharge from a HE vacuum pump, and floor washings. The 4-in.-diameter cast iron outlet drainline tied into a 6-in.-diameter VCP outlet drainline before discharging to a rocky ditch on the east side of the building and effluent flowed to a relatively flat, grassy field southeast of the building as shown in engineering drawing ENG-C 29835 (pg. 11 of 17) and a 1988 site photograph. The 2006 IWP (LANL 2006, 091698) incorrectly stated that the drainage area was commingled with the outfalls from SWMU 16-026(l); they have separate drainage areas. The floor drains in former building 16-220 were plugged in 1991 and building 16-220 was removed in 2003. This outfall was removed from the LANL NPDES permit, effective September 19, 1997.

Former rest houses within S-Site stored finished packaged HE components before and after they were radiographed in the x-ray buildings. The HE components were transported between the rest houses and the x-ray buildings in enclosed walkways. When the components arrived at the x-ray buildings, they were removed from their packaging, x-rayed, repackaged and returned to the rest houses. Small HE chips were historically observed in the floor drains. Site workers stated that HE dust and small chips would break off during the x-ray process and could have entered the building 16-220 floor drains. Because SWMU 16-028(c) is associated with floor drains in the former x-ray building, HE contamination could be present at the outfall.

For investigation activities for the Sites, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

171.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 171.2-1.

Table 171.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-020	Outfall from former building 16-222	Metals, chromium, silver
16-026(l)	Outfalls associated with former building 16-220	Metals, organic chemicals, HE
16-028(c)	Outfall from former building 16-220	Metals, organic chemicals, HE

171.3 Consent Order Soil Data

Decision-level data for SWMU 16-020 consist of results from samples collected in 2000. The 2006 IWP concluded that the nature and extent of contamination are not defined and additional sampling is recommended.

Decision-level data for SWMU 16-026(l) consist of results from samples collected in 2003. The 2006 IWP concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

Decision-level data for SWMU 16-028(c) consist of four samples collected at four locations in 2003 within the footprint of former building 16-220; drains associated with SWMU 16-026(l) were also located within the building footprint. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

Analytical results for the decision-level soil samples for this SMA are presented in Figures 171.3-1 through 171.3-4.

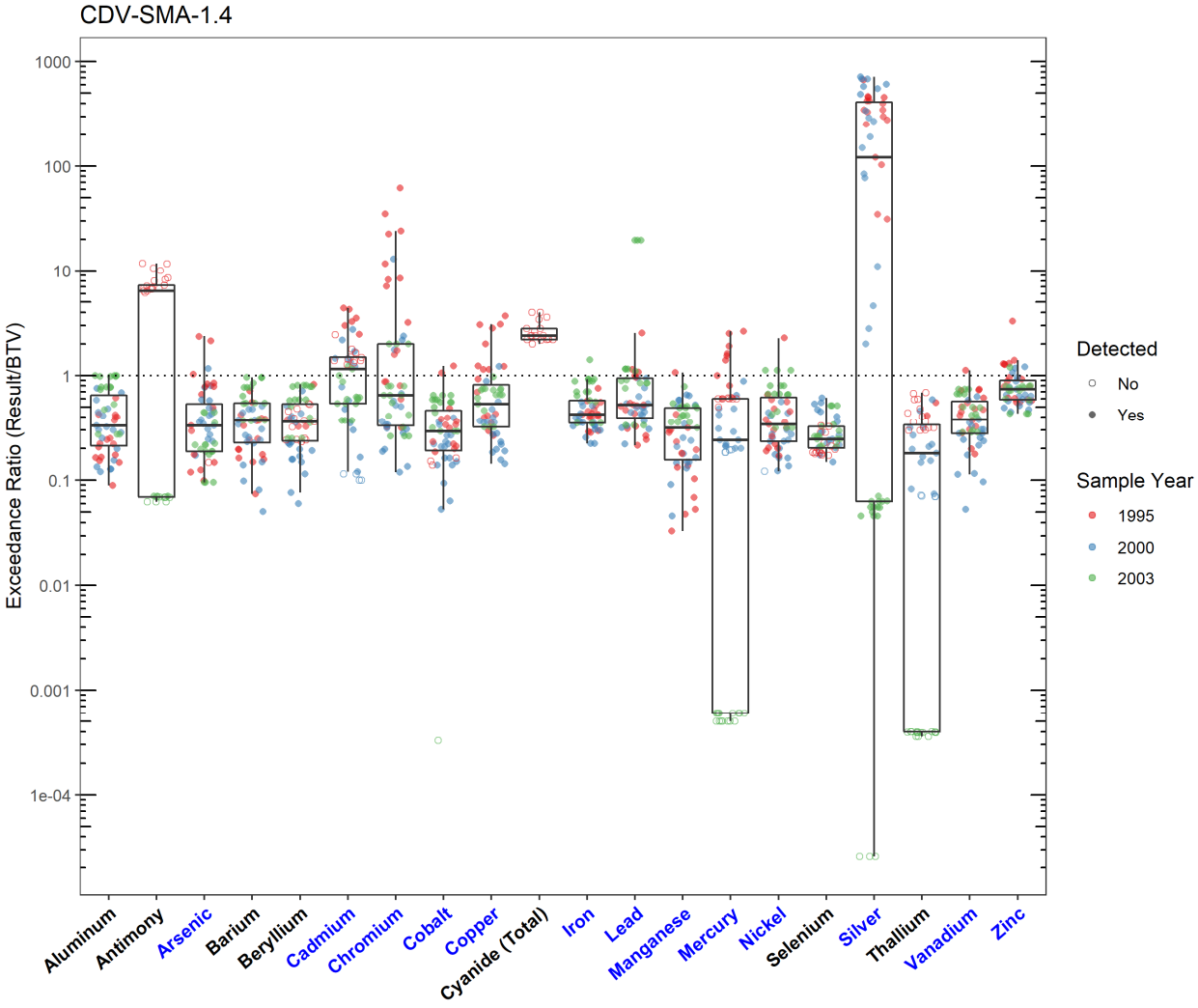


Figure 171.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.4

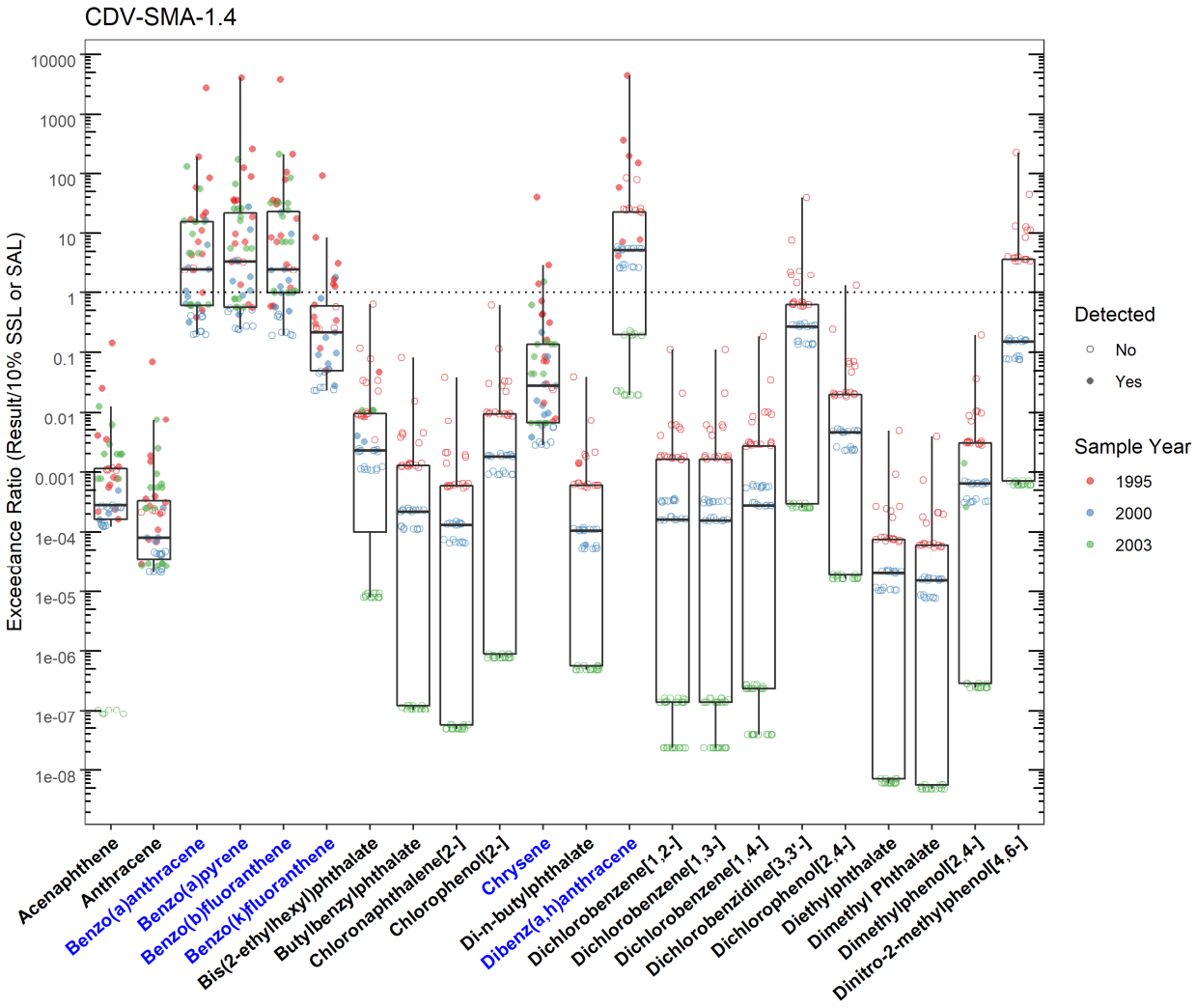


Figure 171.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.4 (Plot 1)

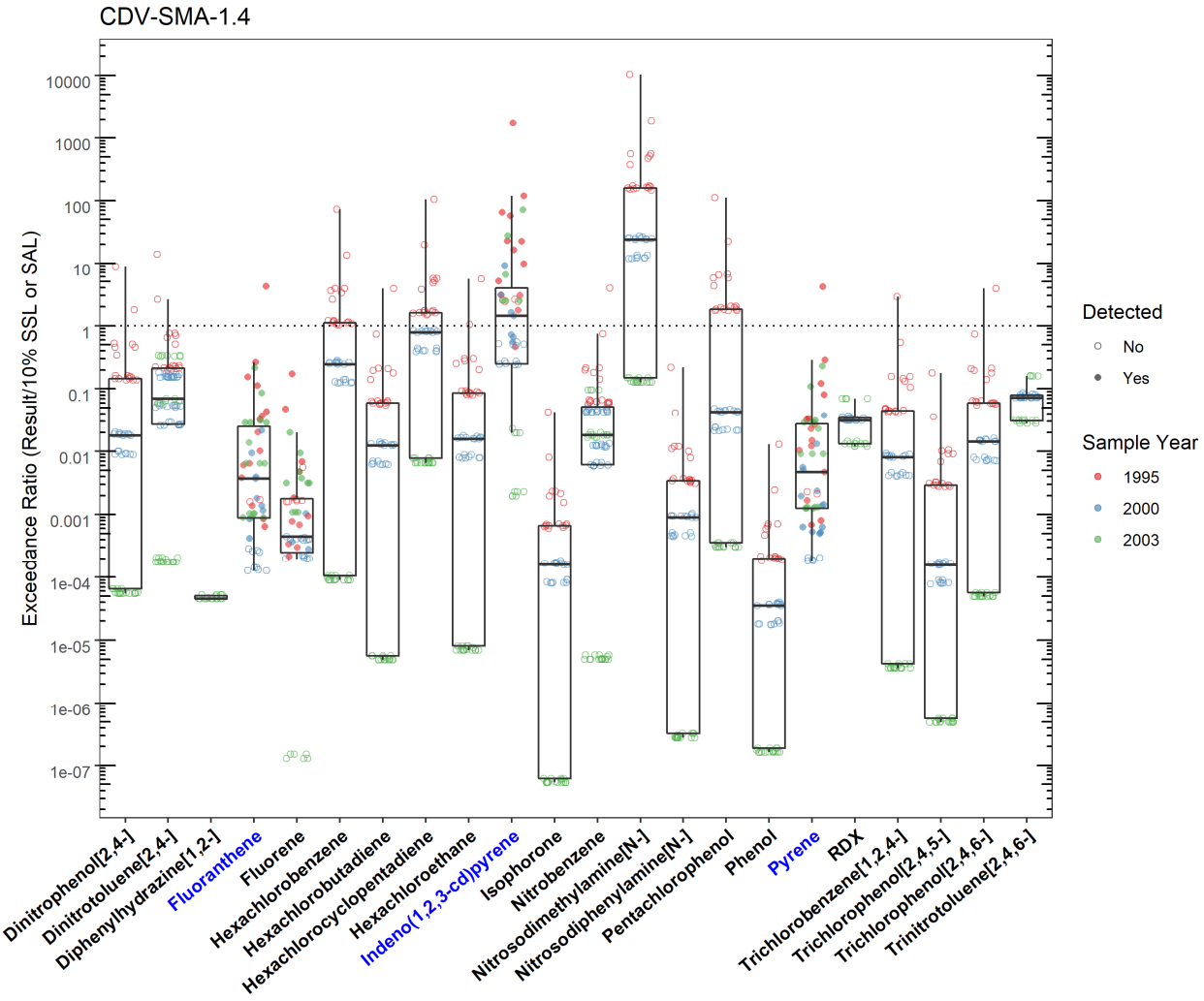


Figure 171.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.4 (Plot 2)

CDV-SMA-1.4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Arsenic	CDV-SMA-1.4	As	Y	BTV	8.17	19.3	1995-05-18
Benzo(a)anthracene	CDV-SMA-1.4	56-55-3	Y	SSL_0.1	0.153	420	1995-05-18
Benzo(a)pyrene	CDV-SMA-1.4	50-32-8	Y	SSL_0.1	0.112	460	1995-05-18
Benzo(b)fluoranthene	CDV-SMA-1.4	205-99-2	Y	SSL_0.1	0.153	580	1995-05-18
Benzo(k)fluoranthene	CDV-SMA-1.4	207-08-9	Y	SSL_0.1	1.53	140	1995-05-18
Cadmium	CDV-SMA-1.4	Cd	Y	BTV	0.400	1.75	1995-10-12
Chromium	CDV-SMA-1.4	Cr	Y	BTV	19.3	1190	1995-05-18
Chrysene	CDV-SMA-1.4	218-01-9	Y	SSL_0.1	15.3	610	1995-05-18
Cobalt	CDV-SMA-1.4	Co	Y	BTV	8.64	10.6	1995-05-18
Copper	CDV-SMA-1.4	Cu	Y	BTV	14.7	54.2	1995-05-18
Dibenz(a,h)anthracene	CDV-SMA-1.4	53-70-3	Y	SSL_0.1	0.0153	68.0	1995-05-18
Fluoranthene	CDV-SMA-1.4	206-44-0	Y	SSL_0.1	232	980	1995-05-18
Indeno(1,2,3-cd)pyrene	CDV-SMA-1.4	193-39-5	Y	SSL_0.1	0.153	270	1995-05-18
Iron	CDV-SMA-1.4	Fe	Y	BTV	21500	30300	2003-01-30
Lead	CDV-SMA-1.4	Pb	Y	BTV	22.3	437	2003-01-30
Manganese	CDV-SMA-1.4	Mn	Y	BTV	671	719	1995-05-18
Mercury	CDV-SMA-1.4	Hg	Y	BTV	0.100	0.263	1995-05-18
Nickel	CDV-SMA-1.4	Ni	Y	BTV	15.4	35.0	1995-09-18
Pyrene	CDV-SMA-1.4	129-00-0	Y	SSL_0.1	174	720	1995-05-18
Silver	CDV-SMA-1.4	Ag	Y	BTV	1.00	720	2000-09-28
Vanadium	CDV-SMA-1.4	V	Y	BTV	39.6	44.4	1995-05-18
Zinc	CDV-SMA-1.4	Zn	Y	BTV	48.8	160	1995-05-18

Figure 171.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.4

171.4 Stormwater Evaluation

171.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

171.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.4 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

171.5 Site-Specific Demonstration

171.5.1 Soil Data Summary

HE is a site-related POC and will be added to the SAP. Several metals and SVOCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater; therefore, they will be added to the SAP.

171.5.2 Stormwater Data Summary

No confirmation-monitoring data exist for the current stage and location.

171.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected at the current location.

171.5.4 Sampling and Analysis Plan

Table 171.5-1 is the proposed SAP for CDV-SMA-1.4.

Table 171.5-1 Proposed SAP, CDV-SMA-1.4

Monitoring Constituent	Background for Monitoring
Dissolved and Total metals	Site history, stormwater data, and soil data
HE	Site history and soil data
SVOCs	Site history (organic chemicals) and soil data
Total PCBs	Site history (organic chemicals)
DOC	Permit requirement
SSC	Permit requirement

172.0 CDV-SMA-1.45

Associated Sites	16-026(i)
Receiving Water	Cañon de Valle
Drainage Area	0.02 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-026(i): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

172.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until at least one confirmation sample is collected.

172.2 Site History

16-026(i) (9/14/2020)

SWMU 16-026(i) consists of an inactive outfall and associated floor drains and drainlines from former building 16-224 within the northern portion of S-Site at TA-16. Floor drains in former building 16-224 were connected to two drainlines located at the northeast and northwest corners of the building. The drainline tied into a single 6-in. VCP outlet drainline, which discharged to the outfall approximately 40 ft northeast of the building. Building 16-224 was an x-ray building constructed in the early 1950s and measured 58 ft long × 44 ft wide × 10 ft high.

Former rest houses within S-Site stored finished packaged HE components before and after they were radiographed in the x-ray buildings. The HE components were transported between the rest houses and the x-ray buildings in enclosed walkways. When the components arrived at the x-ray buildings, they were removed from their packaging, x-rayed, repackaged and returned to the rest houses. Small HE chips were historically observed in the floor drains. Site workers stated that HE dust and small chips would break off during the x-ray process and could have entered the floor drains. Because SWMU 16-026(i) is associated with floor drains in the x-ray building, HE contamination could be present at the outfall. The floor drains were plugged in 1991 and building 16-224 was removed in 2003. The outfall was characterized by low flow onto a shallow, grassy slope northeast of the building.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

172.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 172.2-1.

Table 172.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-026(i)	Outfall from former building 16-224	Metals, barium, SVOCs, HE

172.3 Consent Order Soil Data

Decision-level data for SWMU 16-026(i) consist of results from four samples collected at four locations in 2003. Analytical results for these samples are presented in Figures 172.3-1 through 172.3-4. The 2006 IWP concluded that the nature and extent of contamination were not defined and additional sampling is recommended. Human health and ecological risk assessments were not completed since the extent of contamination was not defined. Detected inorganic and organic chemical concentrations were all below residential SSLs.

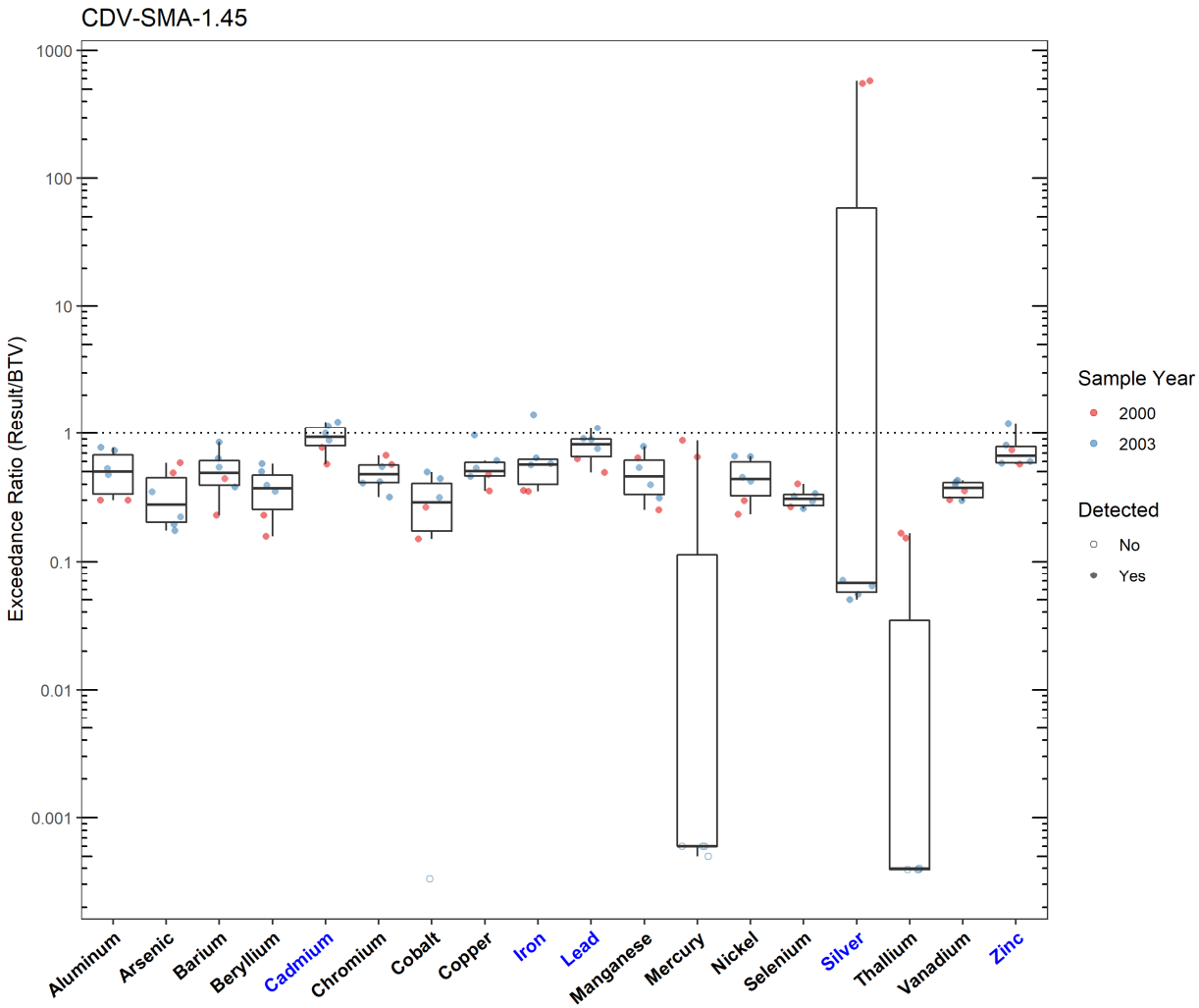


Figure 172.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.45

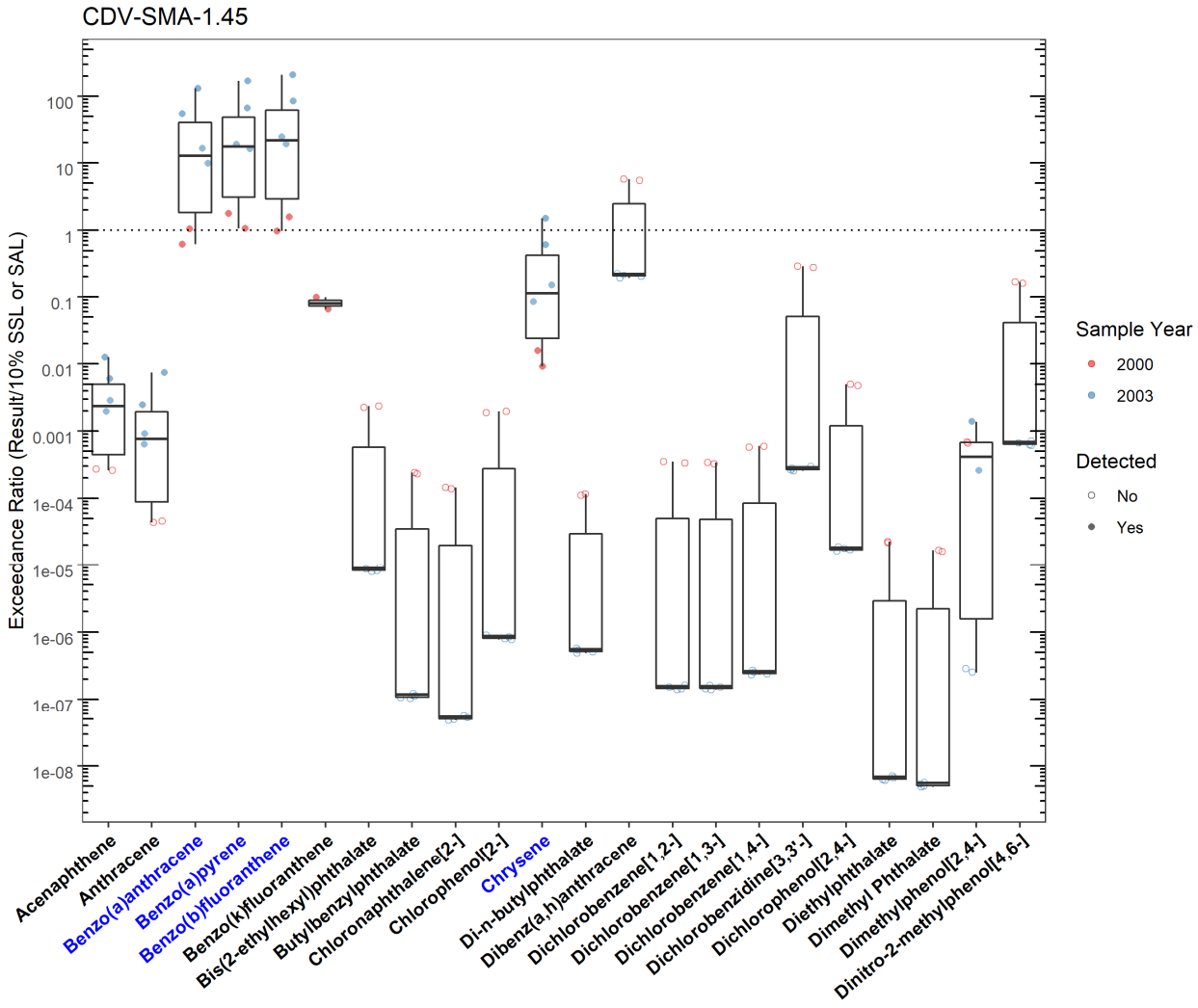


Figure 172.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.45 (Plot 1)

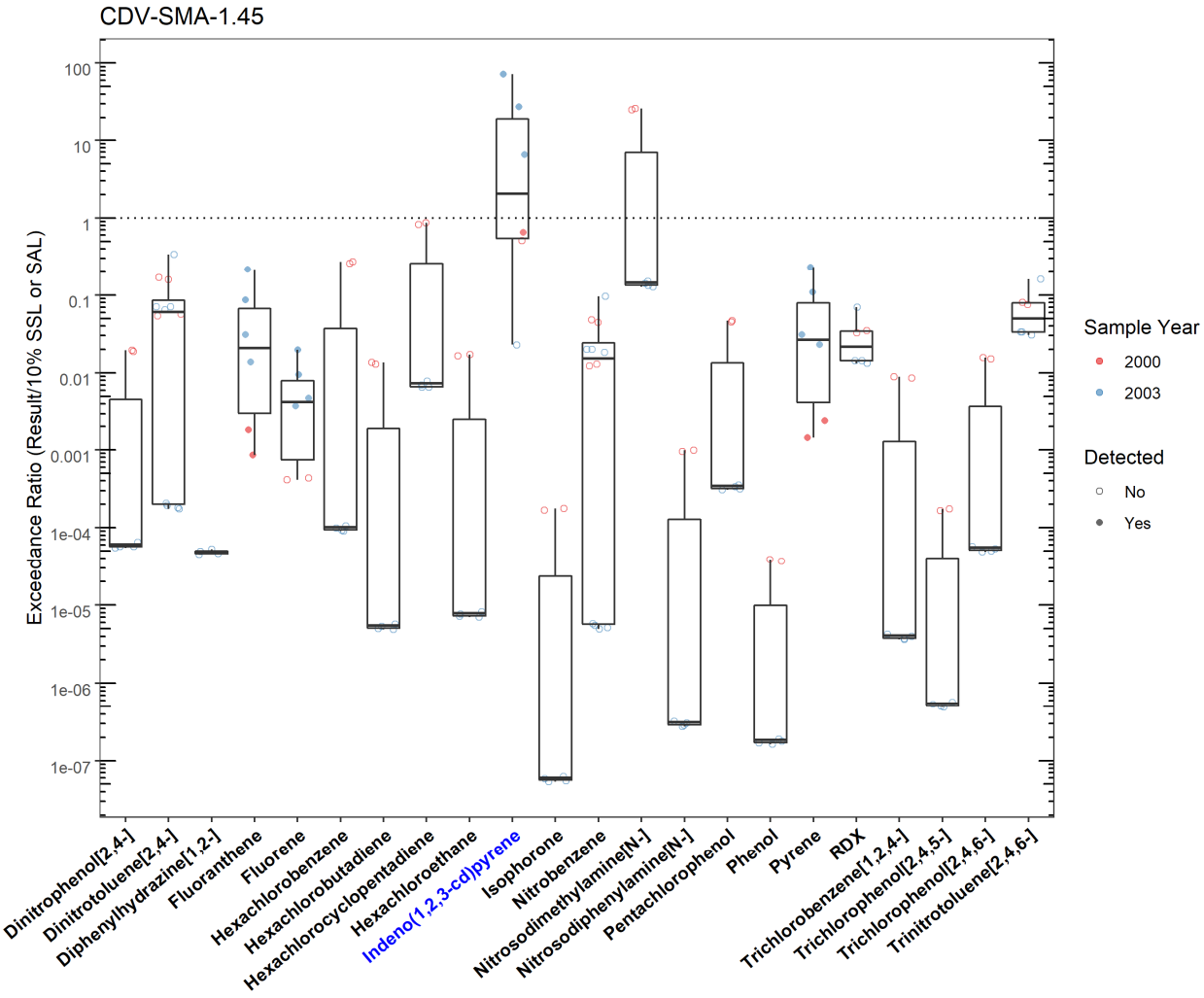


Figure 172.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.45 (Plot 2)

CDV-SMA-1.45

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	CDV-SMA-1.45	56-55-3	Y	SSL_0.1	0.153	20.0	2003-01-30
Benzo(a)pyrene	CDV-SMA-1.45	50-32-8	Y	SSL_0.1	0.112	19.0	2003-01-30
Benzo(b)fluoranthene	CDV-SMA-1.45	205-99-2	Y	SSL_0.1	0.153	32.0	2003-01-30
Cadmium	CDV-SMA-1.45	Cd	Y	BTV	0.400	0.493	2003-01-30
Chrysene	CDV-SMA-1.45	218-01-9	Y	SSL_0.1	15.3	23.0	2003-01-30
Indeno(1,2,3-cd)pyrene	CDV-SMA-1.45	193-39-5	Y	SSL_0.1	0.153	11.0	2003-01-30
Iron	CDV-SMA-1.45	Fe	Y	BTV	21500	30300	2003-01-30
Lead	CDV-SMA-1.45	Pb	Y	BTV	22.3	24.5	2003-01-30
Silver	CDV-SMA-1.45	Ag	Y	BTV	1.00	580	2000-09-29
Zinc	CDV-SMA-1.45	Zn	Y	BTV	48.8	58.8	2003-01-30

Figure 172.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.45

172.4 Stormwater Evaluation

172.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

172.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.45 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

172.5 Site-Specific Demonstration

172.5.1 Soil Data Summary

Several SVOCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater, therefore, SVOCs will be added to the SAP.

Cadmium, lead, silver, and zinc that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

172.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL in the previous monitoring stage data. It is not a Site-related POC and is no longer a TAL on the current permit, therefore, it will not be added to the SAP.

172.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

172.5.4 Sampling and Analysis Plan

Table 172.5-1 is the proposed SAP for CDV-SMA-1.45.

Table 172.5-1 Proposed SAP, CDV-SMA-1.45

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

173.0 CDV-SMA-1.7

Associated Sites	16-019
Receiving Water	Cañon de Valle
Drainage Area	0.30 acres
Landscape Characteristics	6% impervious, 94% pervious
Consent Order Site Status	SWMU 16-019: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, it was determined to move the sampler downgradient to monitor stormwater runoff from a larger area of potential contamination.
2022 Permit Status	Active Monitoring

173.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600911), corrective-action monitoring was initiated. While developing the 2019 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review and monitoring was reinitiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

173.2 Site History

16-019 (9/14/2020)

SWMU 16-019, known as MDA R, is located north of building 16-260 and south of Cañon de Valle at TA-16. MDA R lies within relatively flat terrain with a moderate slope to the north, dropping off approximately 80 ft into Cañon de Valle. MDA R consists of the original World War II (WWII) S-Site burning ground and an associated waste disposal area. MDA R was constructed in the mid-1940s and used as a burning ground for waste explosives until the early 1950s, probably 1951, when building 16-260 was constructed. Initially, HE were burned in the open; later, three bermed U-shaped pits, each measuring approximately 75 ft × 75 ft, were used for burning scrap HE. The three burn pits were placed roughly parallel to, and approximately 150 ft from the edge of the canyon and constructed side-by-side such that adjacent sides were common. Thus, the total footprint of the burn pits within MDA R was approximately 225 ft × 75 ft. A road encircled the burn pits and the area was fenced. The total area of MDA R is estimated as 2.25 acres. During the construction of building 16-260, the berms and surface soil were graded northward into Cañon de Valle. The area has not been used for any waste management activities since the early 1950s and is currently covered with grasses and small trees and shrubs, many planted following the May 2000 Cerro Grande fire.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

173.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 173.2-1.

Table 173.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-019	MDA R	Metals, barium, lead, dioxins/furans, HE, uranium

173.3 Consent Order Soil Data

Decision-level data for SWMU 16-019 consist of results from samples collected in 1998, and 2000. Analytical results for these samples are presented in Figures 173.3-1 through 173.3-4. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

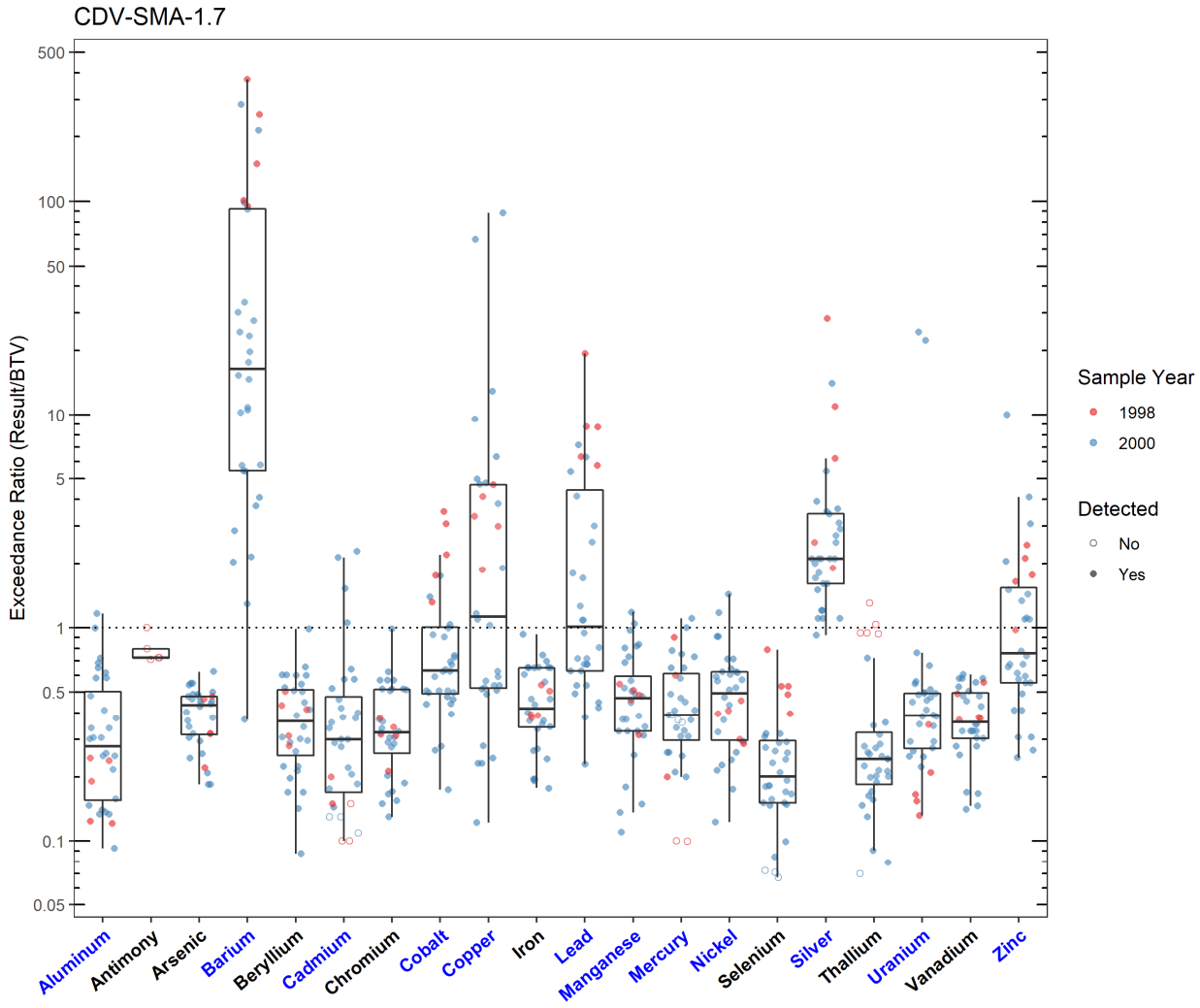


Figure 173.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.7

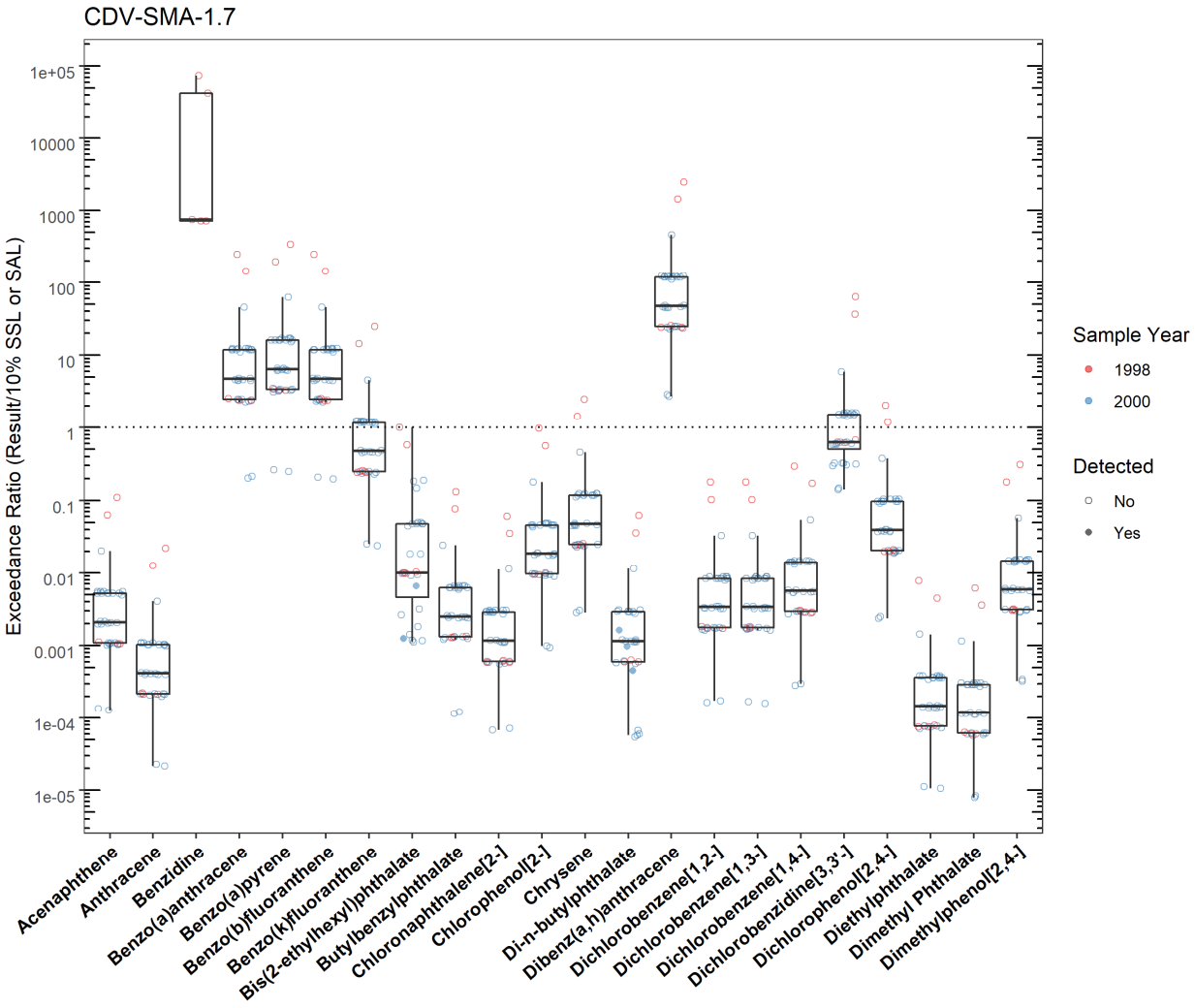


Figure 173.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.7 (Plot 1)

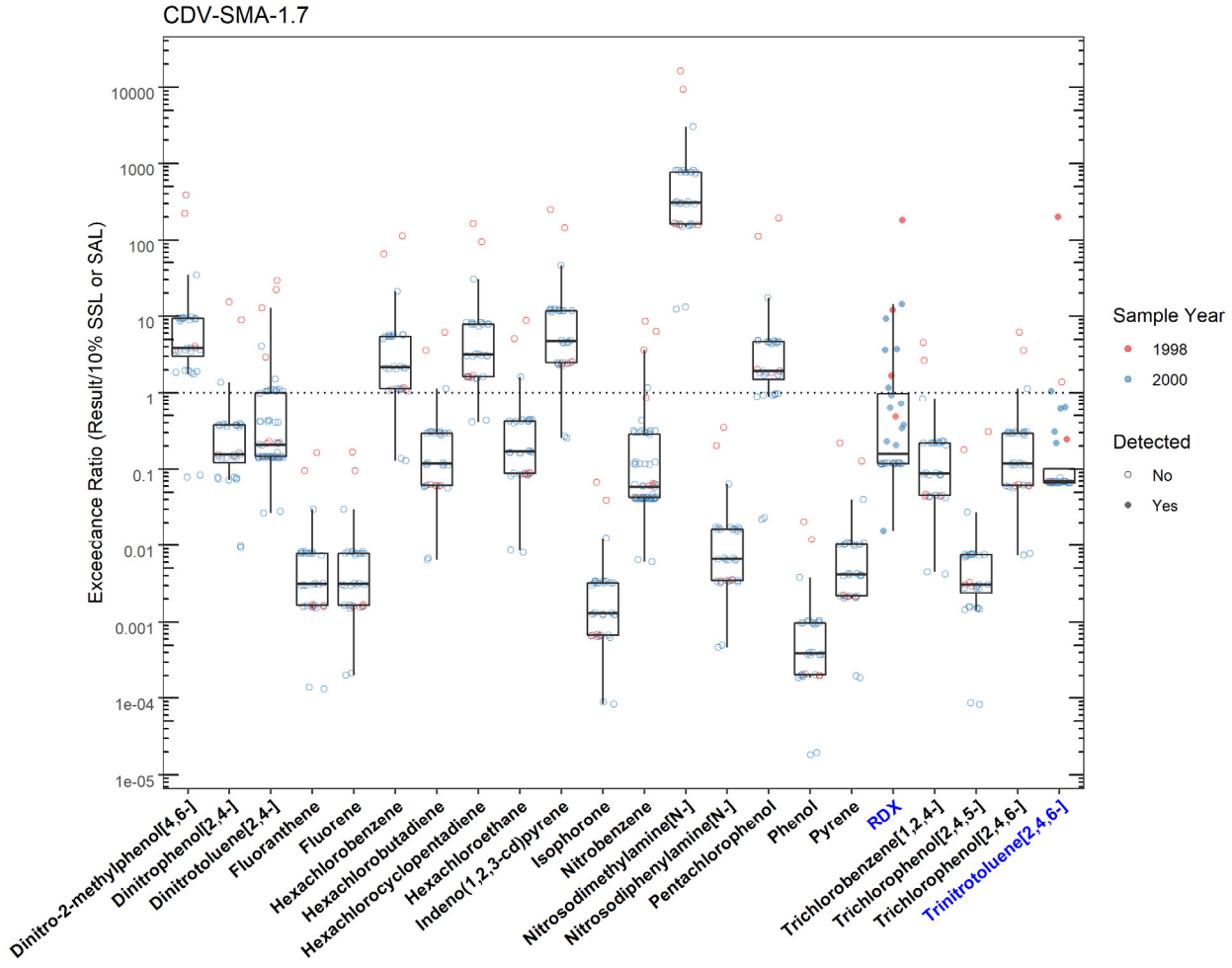


Figure 173.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.7 (Plot 2)

CDV-SMA-1.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	CDV-SMA-1.7	Al	Y	BTV	29200	34000	2000-09-30
Barium	CDV-SMA-1.7	Ba	Y	BTV	295	110000	1998-11-25
Cadmium	CDV-SMA-1.7	Cd	Y	BTV	0.400	0.913	2000-09-23
Cobalt	CDV-SMA-1.7	Co	Y	BTV	8.64	30.2	1998-11-25
Copper	CDV-SMA-1.7	Cu	Y	BTV	14.7	1300	2000-09-23
Lead	CDV-SMA-1.7	Pb	Y	BTV	22.3	431	1998-11-25
Manganese	CDV-SMA-1.7	Mn	Y	BTV	671	790	2000-09-23
Mercury	CDV-SMA-1.7	Hg	Y	BTV	0.100	0.110	2000-09-17
Nickel	CDV-SMA-1.7	Ni	Y	BTV	15.4	22.0	2000-09-24
RDX	CDV-SMA-1.7	121-82-4	Y	SSL_0.1	8.31	1500	1998-11-25
Silver	CDV-SMA-1.7	Ag	Y	BTV	1.00	28.2	1998-11-25
Trinitrotoluene[2,4,6-]	CDV-SMA-1.7	118-96-7	Y	SSL_0.1	3.60	720	1998-11-25
Uranium	CDV-SMA-1.7	U	Y	BTV	1.82	44.2	2000-09-23
Zinc	CDV-SMA-1.7	Zn	Y	BTV	48.8	490	2000-09-23

Figure 173.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.7

173.4 Stormwater Evaluation

173.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

173.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.7 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

173.5 Site-Specific Demonstration

173.5.1 Soil Data Summary

Aluminum, barium, cadmium, cobalt, copper, lead, manganese, mercury, nickel, RDX, silver, Trinitrotoluene[2,4,6-], uranium and zinc exceeded the applicable screening values in soil data and have not yet been measured in stormwater at this location.

173.5.2 Stormwater Data Summary

No confirmation-monitoring data.

173.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected at the current location.

173.5.4 Sampling and Analysis Plan

Table 173.5-1 is the proposed SAP for CDV-SMA-1.7.

Table 173.5-1 Proposed SAP, CDV-SMA-1.7

Monitoring Constituent	Background for Monitoring
Dissolved barium, cadmium, cobalt, copper, lead manganese, nickel, silver, uranium, and zinc	Site history (metals) and soil data
Total aluminum and mercury	Site history (metals) and soil data
HE	Site history and soil data
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history (dioxins/furans)
DOC	Permit requirement
SSC	Permit requirement

174.0 CDV-SMA-2

Associated Sites	16-021(c)
Receiving Water	Cañon de Valle
Drainage Area	3.35 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-021(c): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the March 2018 field visit, the current monitoring location does not adequately monitor runoff from the affected area. Therefore, the sampler should be moved down the drainage channel past soil sampling location 16-06420 (high concentrations of barium and explosives). However, no appropriate location could be identified, so the sampler will be placed as low in the drainage as possible.
2022 Permit Status	Active Monitoring

174.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal of certification of baseline control installation to EPA, two baseline stormwater samples were collected in July 2013. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

174.2 Site History

16-021(c) (6/5/2019)

SWMU 16-021(c) received discharges of HE-contaminated wastewater from the building 16-260 HE sumps [SWMU 16-003(k)] that were located along the northeast side of the building in the southwest corner of TA-16. SWMU 16-021(c) consists of three sections: the building 16-260 outfall (260 Outfall) and an upper drainage channel fed directly by the outfall, a former settling pond, and a lower drainage channel leading to Cañon de Valle. The former settling pond was approximately 50 ft long and 20 ft wide and was located in the upper drainage channel, approximately 45 ft below the 260 Outfall. The drainage channel runs approximately 600 ft northeast from the 260 Outfall to the bottom of Cañon de Valle. A 15-ft near-vertical cliff is located approximately 400 ft from the 260 Outfall and marks the break between the upper and lower drainage channels.

During the 2000–2001 IM, more than 1,300 yd^3 of contaminated soil was removed from the former settling pond and channel. Approximately 90% of the HE in the SWMUs 16-003(k) and 16-021(c) source area was removed. A low-permeability cap was installed on top of the former settling pond during the IM. The cap consisted of crushed tuff/bentonite mixture and was approximately 20-in. thick.

HE-contaminated water from the 260 Outfall entered the former settling pond and drained into the 260 Outfall drainage channel, which was a substantial pathway for contamination identified in downgradient components of the SWMUs 16-003(k) and 16-021(c) hydrogeologic system, including the

SWSC Cut. SWSC Cut is next to SWSC Spring and SWSC pipeline and derived its name because it is a roadcut for the SWSC pipeline.

Building 16-260 had been used since 1951 to process and machine HE. Water was used during the machining of HE (which is slightly water-soluble); wastewater from machining operations contained dissolved HE and potential entrained HE cuttings. Wastewater treatment consisted of routing the water to 13 settling sumps [SWMU 16-003(k)] to recover any entrained cuttings. From 1951 to 1996, the water from these sumps was discharged to the 260 Outfall. In 1994, outfall discharge volumes were measured at several million gallons per year. The discharge volumes were probably higher during the 1950s when HE-production output from building 16-260 was substantially greater than it was in the 1990s. In the past, barium had been a constituent of certain HE formulations, and thus barium was also present in the outfall wastewater from building 16-260.

From the late 1970s to 1996, the 260 Outfall was permitted by the EPA to operate as Outfall No. 05A056 under the LANLNPDES permit. The last NPDES permitting effort for the 260 Outfall occurred in 1994. The NPDES-permitted 260 Outfall was deactivated in November 1996 and removed from the permit in January 1998.

For investigation activities, refer to "2021 Annual Long-term Monitoring and Maintenance Report for the Corrective Measures Implementation at Former 260 Outfall Area, Revision 1," and Comment Response (N3B 2022, 702086).

174.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 174.2-1.

Table 174.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-021(c)	Former outfall 16-260	Metals, barium, HE

174.3 Consent Order Soil Data

Decision-level data for SWMU 16-021(c) consist of results from samples collected during the IM in 2000–2001 and the CMI in 2009–2010. Analytical results for these samples are presented in Figures 174.3-1 through 174.3-4. The 2017 remedy completion report concluded that the surface CMI at the 260 Outfall is complete, and remedial actions for cleanup of HE and other contaminants in the 260 Outfall channel have been successfully implemented.

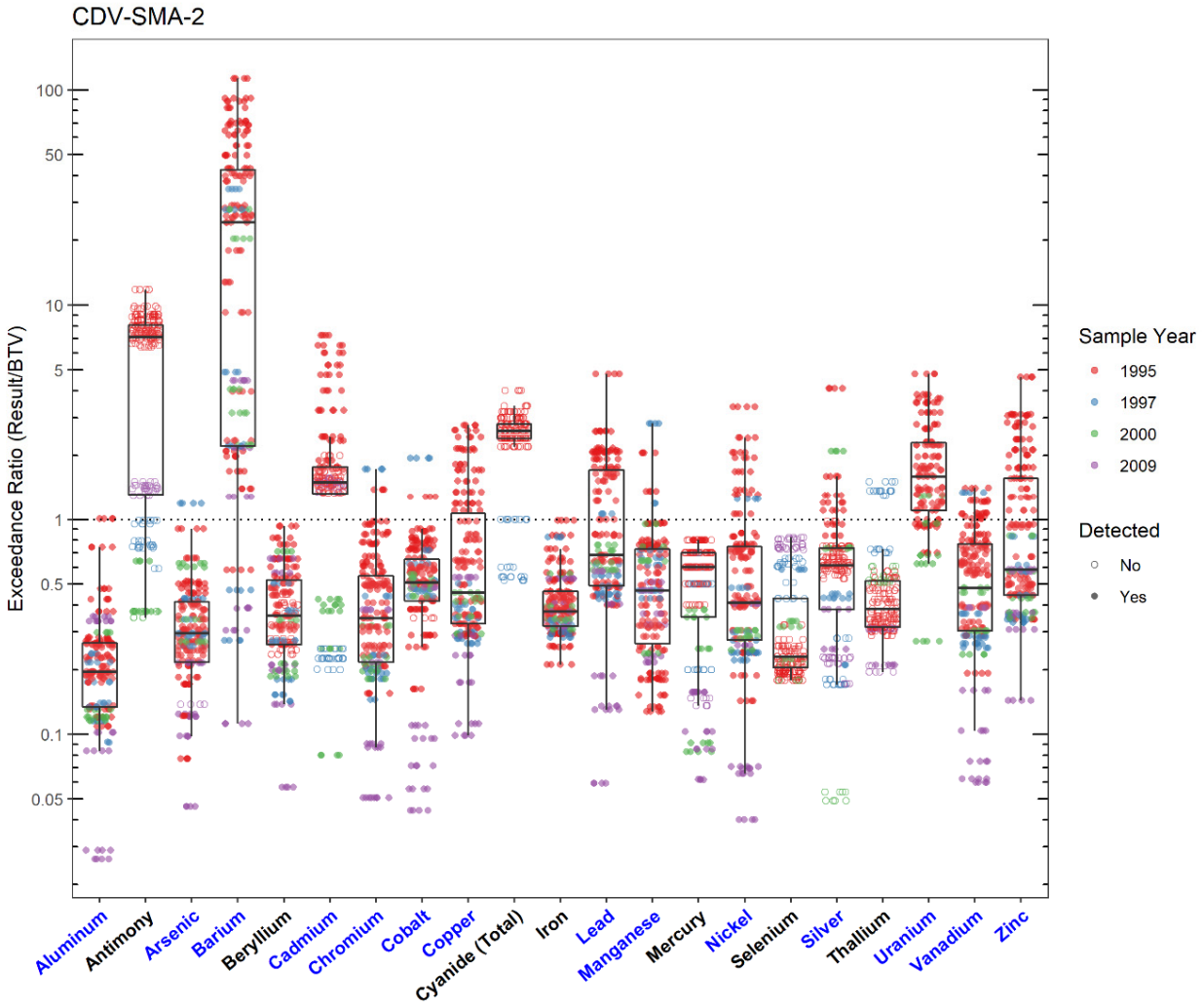


Figure 174.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2

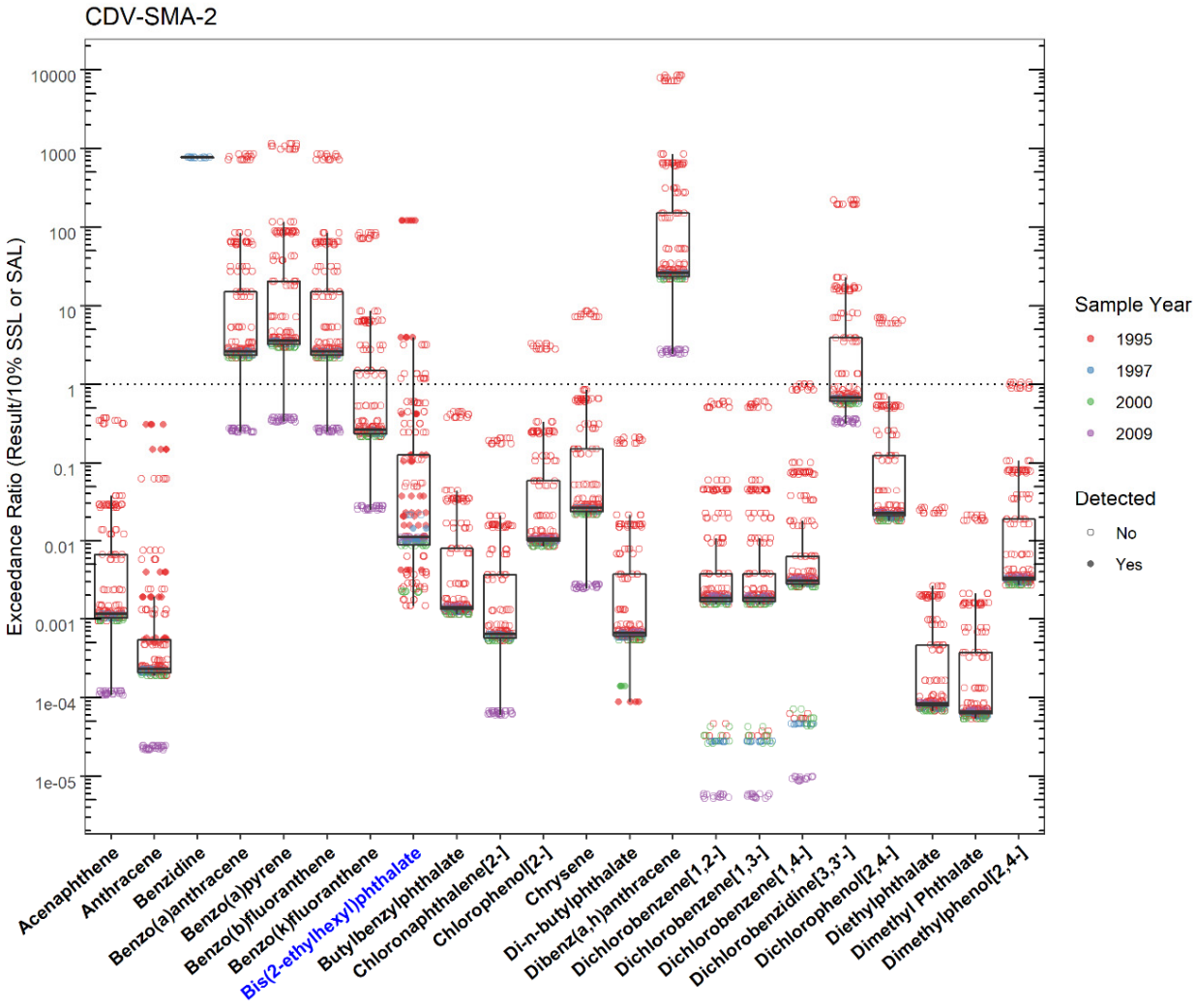


Figure 174.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2 (Plot 1)

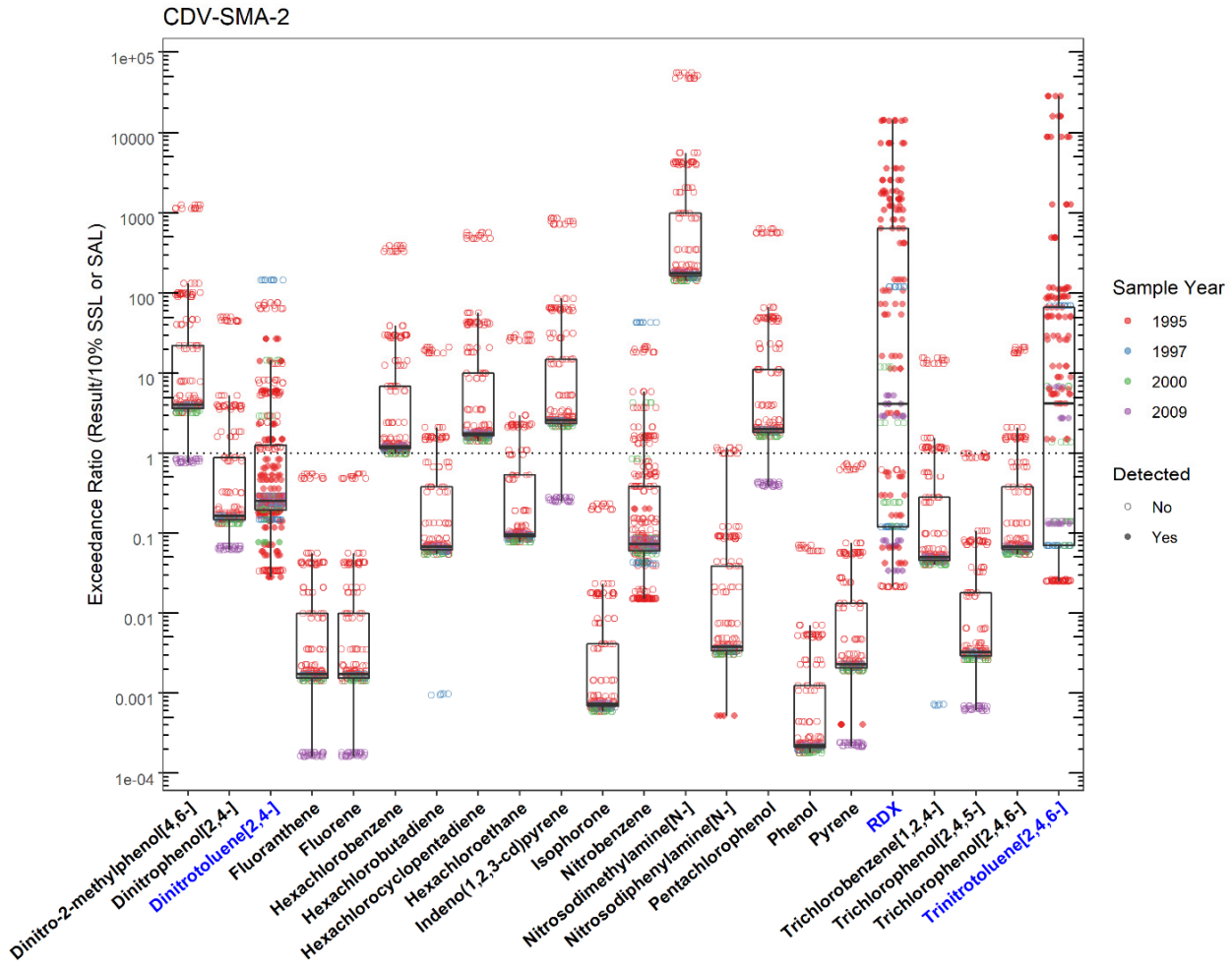


Figure 174.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2 (Plot 2)

CDV-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	CDV-SMA-2	Al	Y	BTV	29200	29600	1995-09-22
Arsenic	CDV-SMA-2	As	Y	BTV	8.17	9.70	1997-08-24
Barium	CDV-SMA-2	Ba	Y	BTV	295	33300	1995-09-22
Bis(2-ethylhexyl)phthalate	CDV-SMA-2	117-81-7	Y	SSL_0.1	38.0	4600	1995-09-08
Cadmium	CDV-SMA-2	Cd	Y	BTV	0.400	2.90	1995-06-16
Chromium	CDV-SMA-2	Cr	Y	BTV	19.3	33.4	1997-10-19
Cobalt	CDV-SMA-2	Co	Y	BTV	8.64	16.8	1997-08-24
Copper	CDV-SMA-2	Cu	Y	BTV	14.7	40.5	1995-09-22
Dinitrotoluene[2,4-]	CDV-SMA-2	121-14-2	Y	SSL_0.1	1.71	46.1	1995-09-08
Lead	CDV-SMA-2	Pb	Y	BTV	22.3	107	1995-09-22
Manganese	CDV-SMA-2	Mn	Y	BTV	671	1890	1997-08-24
Nickel	CDV-SMA-2	Ni	Y	BTV	15.4	51.9	1995-06-16
RDX	CDV-SMA-2	121-82-4	Y	SSL_0.1	8.31	118000	1995-09-08
Silver	CDV-SMA-2	Ag	Y	BTV	1.00	4.10	1995-09-22
Trinitrotoluene[2,4,6-]	CDV-SMA-2	118-96-7	Y	SSL_0.1	3.60	102000	1995-09-08
Uranium	CDV-SMA-2	U	Y	BTV	1.82	8.71	1995-06-16
Vanadium	CDV-SMA-2	V	Y	BTV	39.6	55.7	1995-09-22
Zinc	CDV-SMA-2	Zn	Y	BTV	48.8	226	1995-09-22

Figure 174.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2

174.4 Stormwater Evaluation

174.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current location.

174.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

174.5 Site-Specific Demonstration

174.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: aluminum, arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, RDX, silver, trinitrotoluene[2,4,6-], uranium, vanadium, and zinc.

The remaining exceedances of the applicable screening values in soil data are not for Site-related POCs. Therefore, they will not be added to the SAP.

174.5.2 Stormwater Data Summary

No confirmation-monitoring data.

174.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current location.

174.5.4 Sampling and Analysis Plan

Table 174.5-1 is the proposed SAP for CDV-SMA-2.

Table 174.5-1 Proposed SAP, CDV-SMA-2

Monitoring Constituent	Background for Monitoring
Dissolved arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, silver, vanadium, uranium, and zinc	Site history and soil data
Total aluminum	Site history and soil data
HE	Site history and soil data
Gross alpha	Site history (uranium)
DOC	Permit requirement
SSC	Permit requirement

175.0 CDV-SMA-2.3

Associated Sites	13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), 16-031(h)
Receiving Water	Cañon de Valle
Drainage Area	101.03 acres
Landscape Characteristics	9% impervious, 91% pervious
Consent Order Site Status	SWMU 13-001: Pending Receipt of Certificate of Completion SWMU 13-002: Pending Receipt of Certificate of Completion SWMU 16-003(n): Pending Receipt of Certificate of Completion SWMU 16-003(o): Pending Receipt of Certificate of Completion SWMU 16-029(h): In Progress SWMU 16-031(h): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

175.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2015. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in February 2016 (LANL 2016, 601239). No response has been received from EPA and stormwater monitoring has not occurred since 2015.

175.2 Site History

13-001 (11/26/2019)

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

13-002 (11/26/2019)

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340, and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and based on a 1948 aerial photograph, the site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the former TA-16 WWTP [SWMUs 16-004(b, c, and d)] is located on top of the southern end of the surface disposal area. The

SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at the time of the firing site decommissioning.

16-003(n) (6/13/2017)

SWMU 16-003(n) consists of a former HE sump that was located on the exterior northeast wall of former building 16-342 at TA-16. Installed in the early 1950s, the sump was constructed of reinforced concrete and measured approximately 3.5 ft wide × 6.5 ft long × 3 ft deep. The sump walls and bottom were constructed of 6-in.-thick, steel-reinforced concrete and lined with 0.25-in.-thick aluminum. The sump also had a removable 0.25-in.-thick aluminum lid. The sump received process and wash-down water from cleaning activities in former building 16-342, an HE-processing building in which the constituents of plastic-bonded explosive formulations were mixed and blended. Waste in the effluent consisted primarily of HE and organic solvents. The sump was connected to a 6-in. VCP that discharged to a former NPDES-permitted outfall (EPA 05A062) located in Fishladder Canyon, a tributary of Cañon de Valle. The sump removed suspended solids from process water before it was discharged to the outfall. HE fines were collected in a cloth filter bag and secured inside a metal filter basket. The baskets and filter bags were periodically removed and taken to the TA-16 basket-washing facility for cleaning. HE fines too small to collect in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE fines in the bottom of the sump were periodically removed and burned. During the 1970s, the EPA issued a NPDES permit for the associated with discharges from the building 16-342 HE sump (EPA Outfall 05A062). During the mid-1990s, the discharge to the building 16-342 outfall measured 4,600 gal./yr. The outfall was removed from the LANL NPDES permit effective July 31, 1996. Building 16-342, the sump, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005.

16-003(o) (6/13/2017)

SWMU 16-003(o) consists of six former HE sumps (former structures 16-105, -106, -107, -106, -107, -108, and -109) that were located along the exterior northeast wall of former building 16-340 at TA-16. Installed in the early 1950s, the sumps were constructed of reinforced concrete; three of the sumps measured approximately 3.5 ft wide × 7.3 ft long × 3 ft deep and three of the sumps measured approximately 3.5 ft wide × 10.3 ft long × 3 ft deep. The walls and bottoms of each sump were constructed of 6-in.-thick, steel-reinforced concrete and lined with 0.25-in.-thick aluminum. Each sump had a removable 0.25-in.-thick aluminum lid. Sump operations were similar to those described for former SWMU 16-003(n). The sumps received process and wash-down water from cleaning activities discharged from sinks, floor drains and equipment in former building 16-340, an HE-processing building in which the constituents of plastic-bonded explosive formulations were mixed and blended. Stormwater from roof drains on the building also discharged to the sumps. Waste in the effluent consisted primarily of HE and organic solvents. The sumps were connected to a 10-in. VCP that historically discharged to an outfall in what later became known as Fishladder Canyon, a tributary of Cañon de Valle. The sumps removed suspended solids from process water before it was discharged to the outfall. HE fines were collected in a cloth filter bag and secured inside a metal filter basket in each sump. The baskets and filter bags were periodically removed and taken to the TA-16 basket-washing facility for cleaning. HE fines too small to collect in the filter bags settled to the bottom of each sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE fines in the bottom of each sump were periodically removed and burned.

During the 1970s, the EPA issued a NPDES permit for the operation of the building 16-340 outfall (EPA Outfall 05A062). In the late 1980s, the outfall was plumbed to an air stripper designed to eliminate volatile organic compounds (VOCs) from the outfall. The air stripper resembled a Fishladder and discharged approximately 250 ft east of the sumps into Fishladder Canyon. Splashing caused by the air stripper may have resulted in the dispersal of effluent over a larger area.

Three evaluations of chemical use in building 16-340 were completed during the early 1970s. The HE use in building 16-340 was historically classified as moderate, and therefore the probability of HE found in the sump is low. Chemical inventories stated that the use of solvents at TA-16 was greatest in building 16-340. During a 6-mo period that began in 1970 and ended in 1971, 700 gal. of acetone, 500 lb of ammonium sulfate, 330 gal. of n-butyl-acetate, 3 gal. of chloroform, 55 gal. of 1,2-dichloroethane, 11 gal. of ethyl acetate, 72 gal. of isopropyl alcohol, 110 gal. of methanol, 72 gal. of methylene chloride, 750 gal. of butanone[2-], and 110 gal. of toluene had all been used in building 16-340. It was confirmed that large quantities of HE, organic solvents, gases, and other materials had been released from the building 16-340 sumps. Natural uranium may have also been used in the building. By the 1990s, organic solvents used at TA-16 HE facilities were containerized for disposal, but historically the solvents were discharged to the sumps.

The final NPDES permitting for the building 16-340 outfall occurred in 1994, and the outfall was deactivated on July 20, 1998. During the mid-1990s, the discharge to the building 16-340 outfall amounted to more than 3.5 million gal./yr. The TA-16 340 Complex, including the sumps and drainlines, were decommissioned in 1999 and underwent D&D in 2004 and 2005.

16-029(h) (11/26/2019)

SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former Structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in. VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in. VCP that intersected a drainage channel. Former structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When Structure 16-478 was removed in 2005, the sump was left in place. During Phase I Consent Order investigation activities conducted in 2010, no evidence of the French drain was found.

SWMU 16-029(h) was identified as an HE sump (Structure 16-487) in the 1990 SWMU Report. The SWMU Report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former Structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former Structure 16-478 and includes areas impacted by the 2000 Cerro Grande wildfire.

16-031(h) (2/5/2020)

SWMU 16-031(h) is a former NPDES-permitted outfall (EPA 04A134) and associated outlet drainline that served a utility room in former building 16-478 at TA-16. The outfall received discharges from the sink, vacuum pump, and floor drain in the utility room and was located 30 ft northwest of former building 16-478. Former building 16-478 was initially used as a bunker for photographing explosives testing. The utility room was added to the northwest corner of the building in 1950 when it was

modified to test the effects of machining on HE products. The floor drain and sink in the utility room in building 16-478 discharged to the outfall via a 4-in. VCP. A water-sealed/water-cooled vacuum pump was located in the utility room and served a vacuum system in another area of the building. The vacuum system in the other part of the building held HE pieces in place for machining. The vacuum line contained a water filter to prevent HE from reaching the vacuum pump lines. Building 16-478 was decommissioned in 1995 and underwent decontamination and demolition in 2005.

For investigation activities for SWMS 13-001, 13-002, 16-029(h) and 16-031(h), refer to "Supplemental Investigation Report for S-Site Aggregate Area, Revision 1" (N3B 2019, 700414). For investigation activities for SWMUs 16-003(n) and 16-003(o), refer to "Phase II Investigation Report for the TA-16-340 Complex [Consolidated Units 13-003(a)-99 and 16-003(n)-99 and Solid Waste Management Units 16-003(o), 16-026(j2) and 16-029(f)], Revision 1" (LANL 2009, 105061.17).

175.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 175.2-1.

Table 175.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
13-001	Firing site	Metals, beryllium, HE, uranium
13-002	Surface disposal area	Metals, beryllium, HE, uranium
16-003(n)	Sumps	HE, uranium
16-003(o)	Sumps	Organic chemicals, HE, uranium
16-029(h)	Drainlines and outfall	HE, uranium
16-031(h)	Outfall	Organic chemicals, HE

175.3 Consent Order Soil Data

Decision-level data for SWMU 13-001 consist of results from samples collected in 2010. These data are also used to characterize SWMUs 13-004, 16-035, and 16-036. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 13-002 and SWMU 16-031(h) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 16-003(n) and SWMU 16-003(o) consist of results from samples collected in 1995, 2005 and 2008. The 2009 Phase II IR (LANL 2009, 105061.17) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 16-029(h) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent have been defined except the vertical extent of arsenic.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 175.3-1 through 175.3-4.

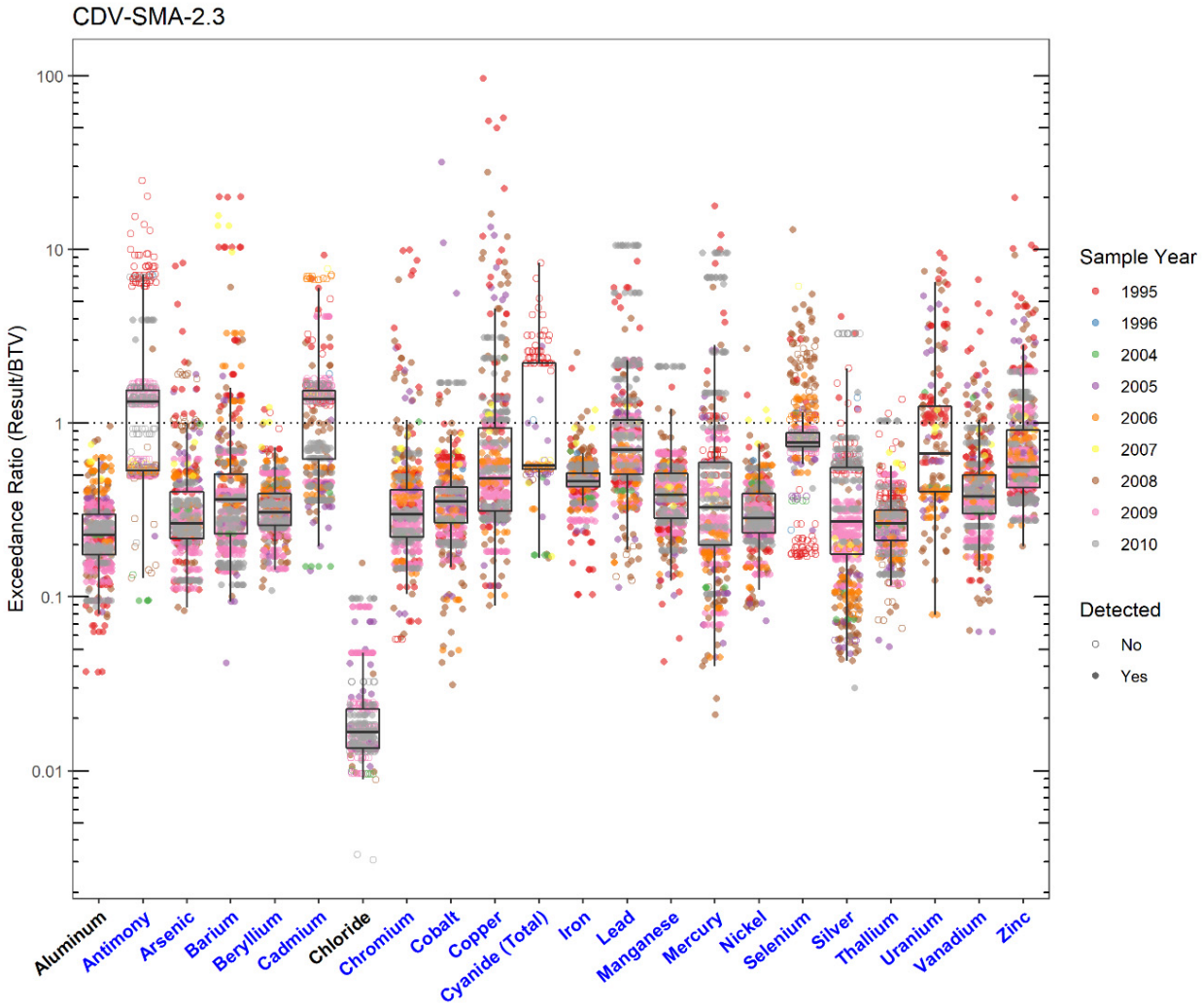


Figure 175.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.3

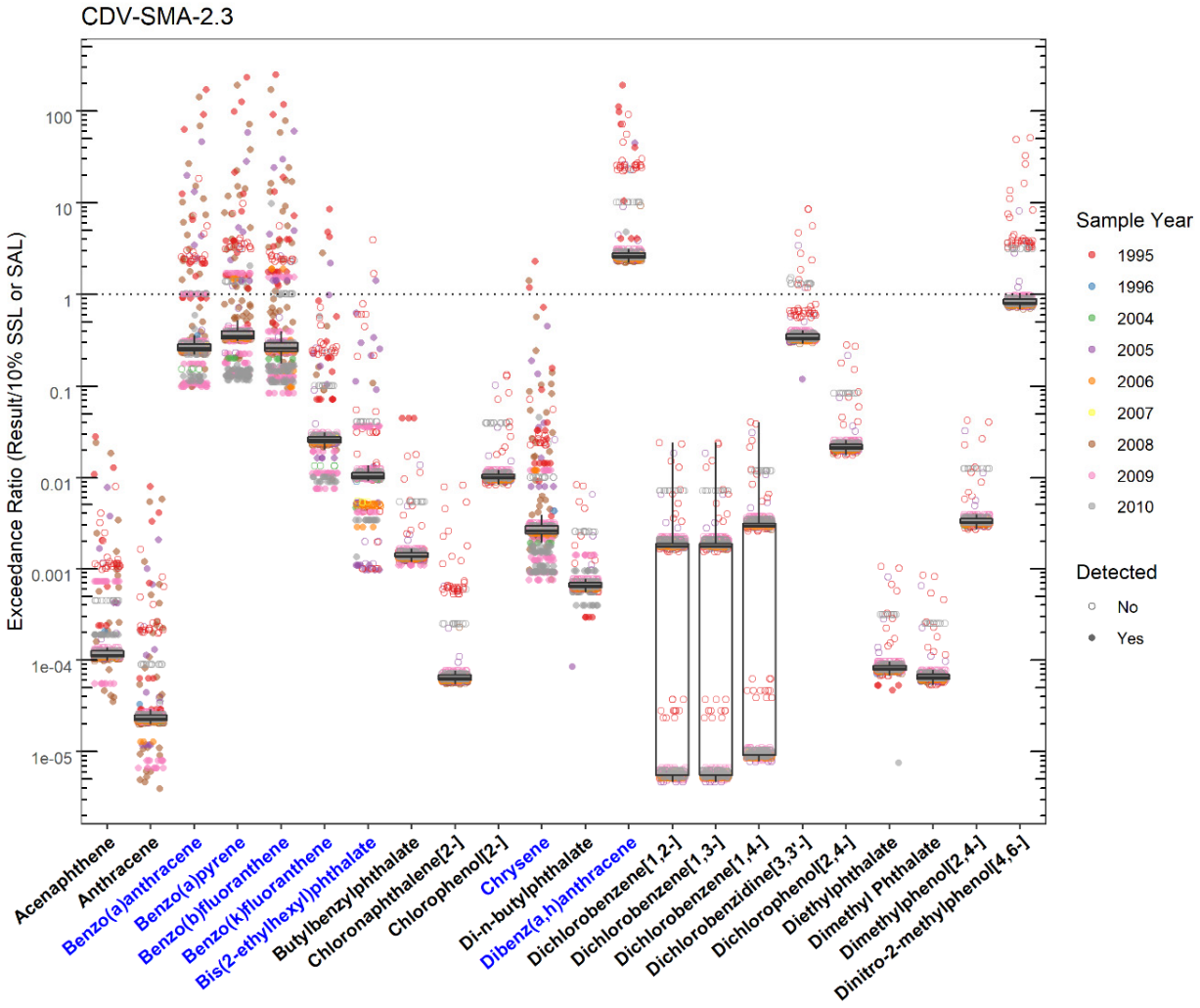


Figure 175.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.3 (Plot 1)

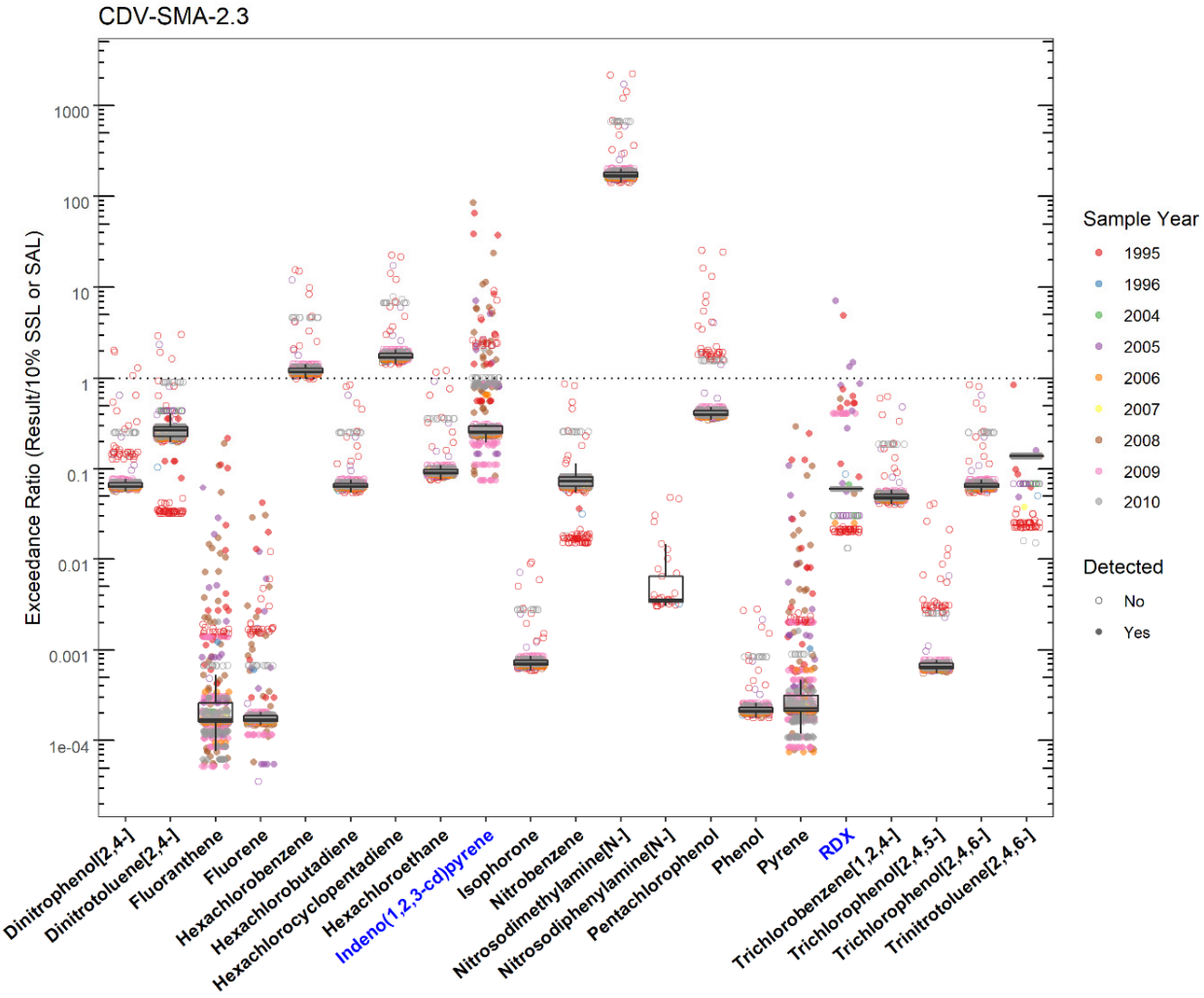


Figure 175.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.3 (Plot 2)

CDV-SMA-2.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-2.3	Sb	Y	BTV	0.830	3.26	2010-01-07
Arsenic	CDV-SMA-2.3	As	Y	BTV	8.17	68.3	1995-05-23
Barium	CDV-SMA-2.3	Ba	Y	BTV	295	5910	1995-08-16
Benzo(a)anthracene	CDV-SMA-2.3	56-55-3	Y	SSL_0.1	0.153	26.0	1995-08-16
Benzo(a)pyrene	CDV-SMA-2.3	50-32-8	Y	SSL_0.1	0.112	26.0	1995-08-16
Benzo(b)fluoranthene	CDV-SMA-2.3	205-99-2	Y	SSL_0.1	0.153	38.0	1995-08-16
Benzo(k)fluoranthene	CDV-SMA-2.3	207-08-9	Y	SSL_0.1	1.53	13.0	1995-08-16
Beryllium	CDV-SMA-2.3	Be	Y	BTV	1.83	2.25	2007-07-25
Bis(2-ethylhexyl)phthalate	CDV-SMA-2.3	117-81-7	Y	SSL_0.1	38.0	53.9	2005-08-05
Cadmium	CDV-SMA-2.3	Cd	Y	BTV	0.400	3.70	1995-08-16
Chromium	CDV-SMA-2.3	Cr	Y	BTV	19.3	192	1995-08-16
Chrysene	CDV-SMA-2.3	218-01-9	Y	SSL_0.1	15.3	35.0	1995-08-16
Cobalt	CDV-SMA-2.3	Co	Y	BTV	8.64	275	2005-01-11
Copper	CDV-SMA-2.3	Cu	Y	BTV	14.7	1420	1995-08-16
Cyanide (Total)	CDV-SMA-2.3	CN(TOTAL)	Y	BTV	0.500	1.38	2005-01-07
Dibenz(a,h)anthracene	CDV-SMA-2.3	53-70-3	Y	SSL_0.1	0.0153	2.90	1995-08-16
Indeno(1,2,3-cd)pyrene	CDV-SMA-2.3	193-39-5	Y	SSL_0.1	0.153	13.1	2008-07-07
Iron	CDV-SMA-2.3	Fe	Y	BTV	21500	54800	2008-07-07
Lead	CDV-SMA-2.3	Pb	Y	BTV	22.3	234	2010-01-11
Manganese	CDV-SMA-2.3	Mn	Y	BTV	671	1420	2010-01-07
Mercury	CDV-SMA-2.3	Hg	Y	BTV	0.100	1.78	1995-08-16
Nickel	CDV-SMA-2.3	Ni	Y	BTV	15.4	41.2	2008-07-07
RDX	CDV-SMA-2.3	121-82-4	Y	SSL_0.1	8.31	59.3	2005-08-05
Selenium	CDV-SMA-2.3	Se	Y	BTV	1.52	19.8	2008-07-07
Silver	CDV-SMA-2.3	Ag	Y	BTV	1.00	4.10	1995-08-16
Thallium	CDV-SMA-2.3	Tl	Y	BTV	0.730	0.753	2010-01-07
Uranium	CDV-SMA-2.3	U	Y	BTV	1.82	17.3	1995-05-23
Vanadium	CDV-SMA-2.3	V	Y	BTV	39.6	265	1995-05-23
Zinc	CDV-SMA-2.3	Zn	Y	BTV	48.8	967	1995-08-16

Figure 175.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.3

175.4 Stormwater Evaluation

175.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2015. Analytical results from that sample are presented in Figures 175.4-1 and 175.4-2.

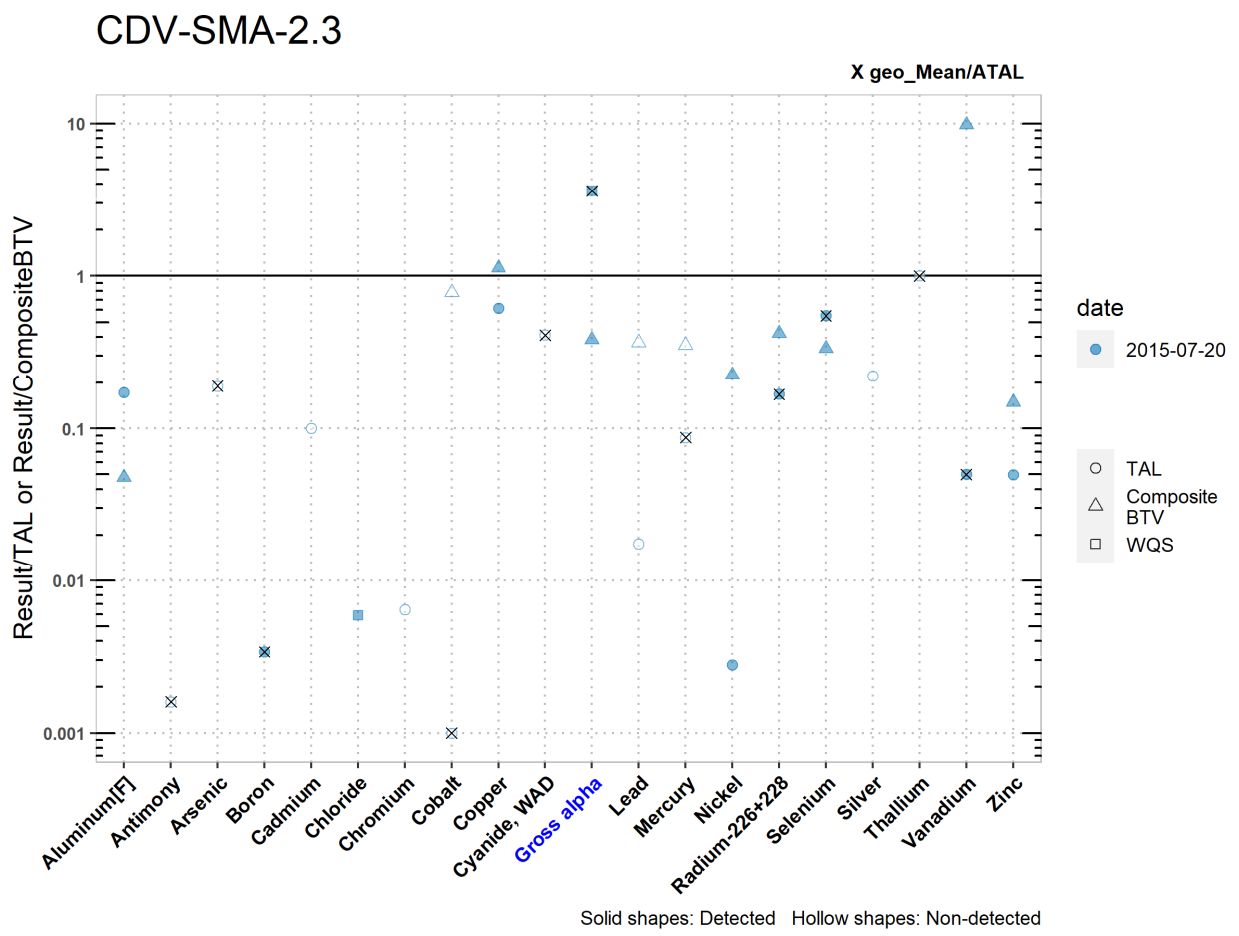


Figure 175.4-1 Analytical Results from Stormwater Sample, CDV-SMA-2.3 (Plot)

CDV-SMA-2.3

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	NA	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	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.879	NA	311	NA	6.69	22	NA	28.6	NA	250	NA	20	0.9	NA	NA	81.6
Composite_BTV	2700	NA	NA	NA	NA	NA	NA	1.28	3.66	NA	56.5	1.36	0.189	3.10	4.77	8.16	NA	NA	0.514	27.3
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	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L
2015-07-20 result	129	*1.00*	*1.70*	16.8	*0.110*	1350	*2.00*	*1.00*	4.13	*2.14*	54.4	*0.500*	*0.0670*	0.698	5.04	2.74	*0.200*	*0.450*	5.03	4.06
2015-07-20 dT	0.172	NA	NA	0.0034	NA	0.0059	NA	NA	0.617	NA	3.6	NA	NA	0.00279	0.168	0.55	NA	NA	0.050	0.0498
2015-07-20 dB	0.0478	NA	NA	NA	NA	NA	NA	NA	1.13	NA	0.385	NA	NA	0.225	0.423	0.336	NA	NA	9.79	0.149
geo_mean/ATAL	NA	0.0016	0.19	0.0034	NA	NA	NA	0.0010	NA	0.412	3.6	NA	0.087	NA	0.168	0.55	NA	1	0.050	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 175.4-2 Analytical Results from Stormwater Sample, CDV-SMA-2.3 (Table)

175.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.3 drains to Fishladder Canyon (Cañon del Valle to headwaters) which has not been assessed for impairments.

175.5 Site-Specific Demonstration

175.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: SVOCs, HE, barium, beryllium, iron, manganese, and uranium.

The other metals and cyanide that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

175.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but did not exceed the BTV.

175.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

175.5.4 Sampling and Analysis Plan

Table 175.5-1 is the proposed SAP for CDV-SMA-2.3.

Table 175.5-1 Proposed SAP, CDV-SMA-2.3

Monitoring Constituent	Background for Monitoring
HE	Site history and soil data
Total PCBs	Site history (organic chemicals)
SVOCs	Site history (organic chemicals) and soil data
Dissolved barium, beryllium, manganese, uranium	Site history (metals) and soil data
Total iron	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

176.0 CDV-SMA-2.41

Associated Sites	16-018
Receiving Water	Cañon de Valle
Drainage Area	2.08 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-018: No Further Action Approved
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Site was not reviewed in the 2016–2018 SIP process. It has been removed from the LANL Hazardous Waste Facility Permit and is therefore no longer subject to the Consent Order.
2022 Permit Status	Active Monitoring

176.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), corrective-action monitoring was initiated and a stormwater sample was collected in July 2014. Confirmation monitoring is ongoing to collect a second sample.

176.2 Site History

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

For investigation activities, refer to “Material Disposal Area P Site Closure Certification Report, Revision 1” (LANL 2005, 092251).

176.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 176.2-1.

Table 176.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-018	MDA P	Metals, lead, thallium, asbestos, PCBs, SVOCs, HE

176.3 Consent Order Soil Data

Decision-level data for SWMU 16-018 consist of results from samples collected from the excavated area. Analytical results for these samples are presented in Figures 176.3-1 through 176.3-4. The approved 2005 MDA P Site closure certification report (LANL 2005, 092251; NMED 2005, 093247) concluded that the nature and extent had been defined for chemicals and radionuclides detected at SWMU 16-018.

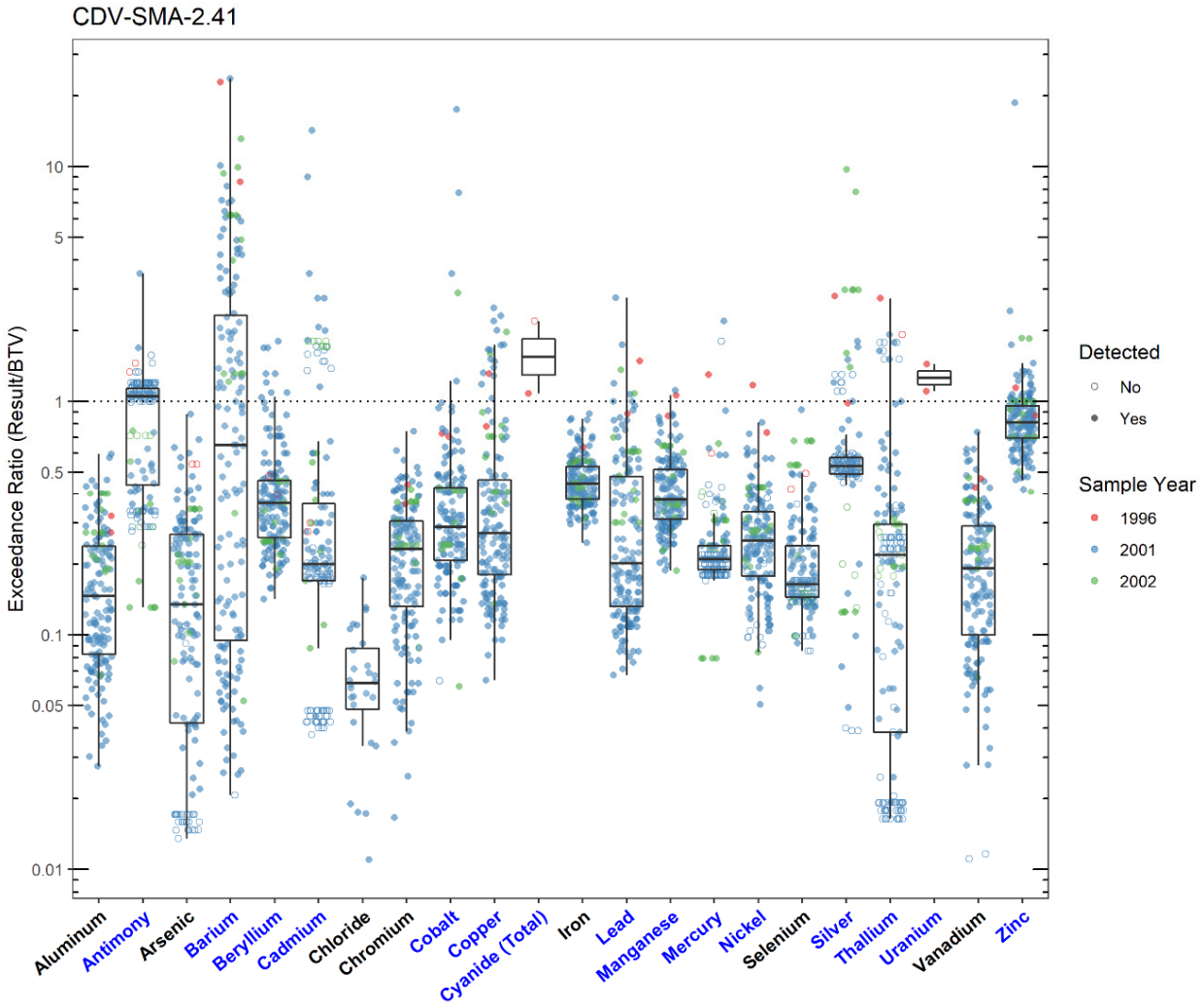


Figure 176.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.41

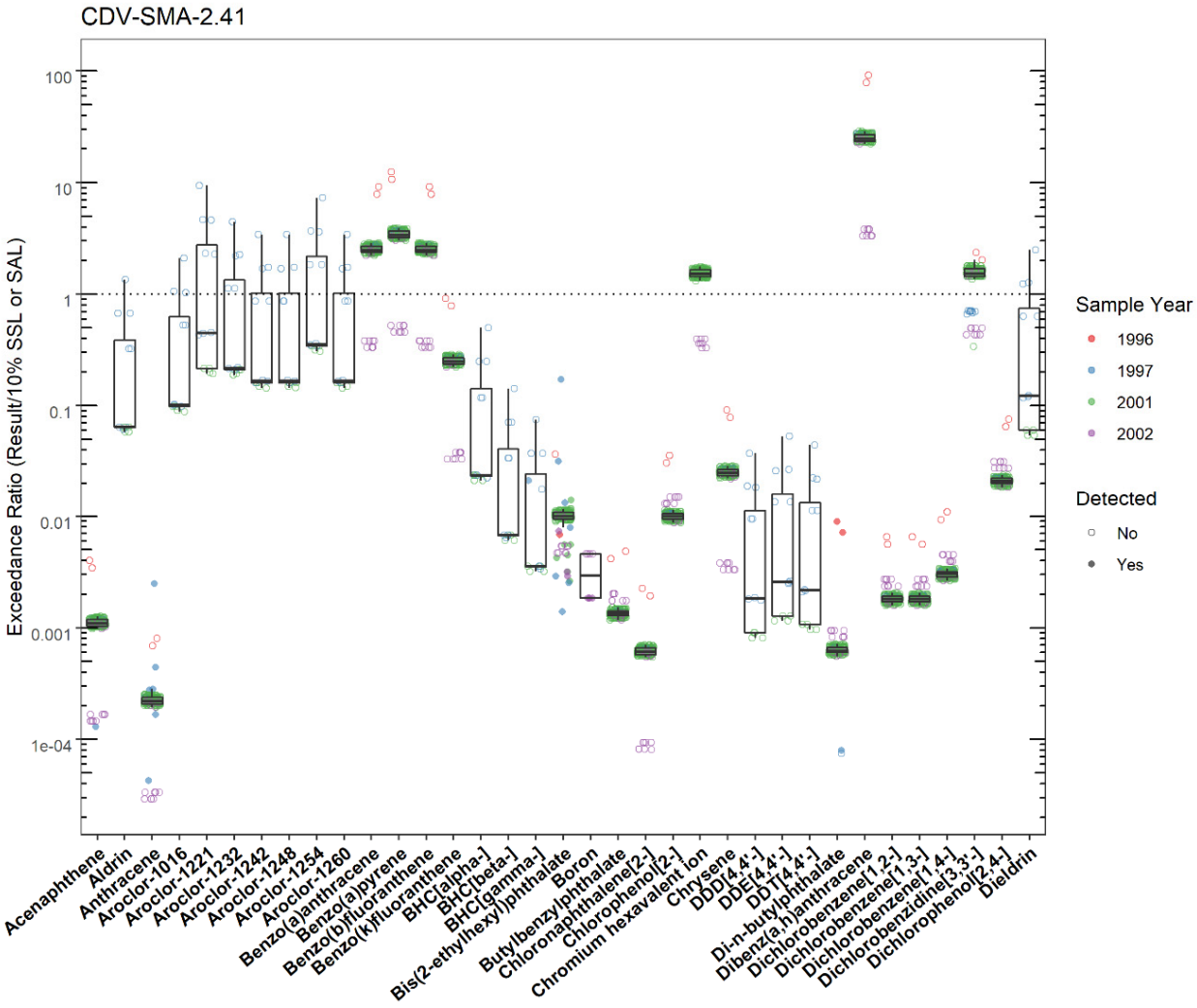


Figure 176.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.41 (Plot 1)

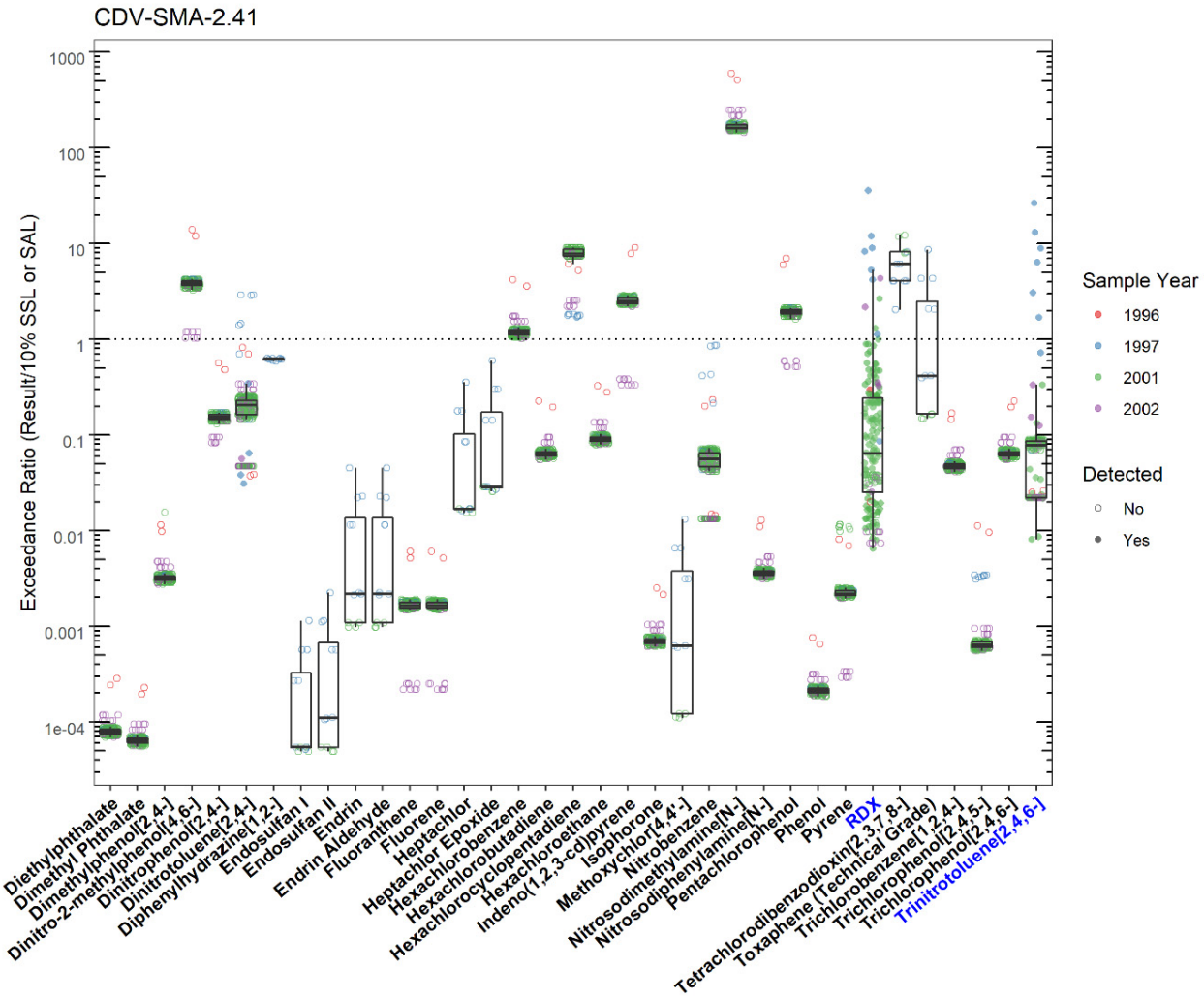


Figure 176.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.41 (Plot 2)

CDV-SMA-2.41

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-2.41	Sb	Y	BTV	0.830	2.90	2001-07-24
Barium	CDV-SMA-2.41	Ba	Y	BTV	295	6980	2001-07-26
Beryllium	CDV-SMA-2.41	Be	Y	BTV	1.83	3.30	2001-07-26
Cadmium	CDV-SMA-2.41	Cd	Y	BTV	0.400	5.70	2001-07-30
Cobalt	CDV-SMA-2.41	Co	Y	BTV	8.64	151	2001-07-26
Copper	CDV-SMA-2.41	Cu	Y	BTV	14.7	36.8	2001-06-20
Cyanide (Total)	CDV-SMA-2.41	CN(TOTAL)	Y	BTV	0.500	0.540	1996-09-06
Lead	CDV-SMA-2.41	Pb	Y	BTV	22.3	61.5	2001-07-24
Manganese	CDV-SMA-2.41	Mn	Y	BTV	671	743	2001-07-12
Mercury	CDV-SMA-2.41	Hg	Y	BTV	0.100	0.220	2001-08-01
Nickel	CDV-SMA-2.41	Ni	Y	BTV	15.4	18.0	1996-09-06
RDX	CDV-SMA-2.41	121-82-4	Y	SSL_0.1	8.31	300	1997-12-08
Silver	CDV-SMA-2.41	Ag	Y	BTV	1.00	9.70	2002-03-20
Thallium	CDV-SMA-2.41	Tl	Y	BTV	0.730	2.00	1996-09-06
Trinitrotoluene[2,4,6-]	CDV-SMA-2.41	118-96-7	Y	SSL_0.1	3.60	95.0	1997-12-08
Uranium	CDV-SMA-2.41	U	Y	BTV	1.82	2.62	1996-09-06
Zinc	CDV-SMA-2.41	Zn	Y	BTV	48.8	912	2001-07-24

Figure 176.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.41

176.4 Stormwater Evaluation

176.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2014. Analytical results from that sample are presented in Figures 176.4-1 and 176.4-2.

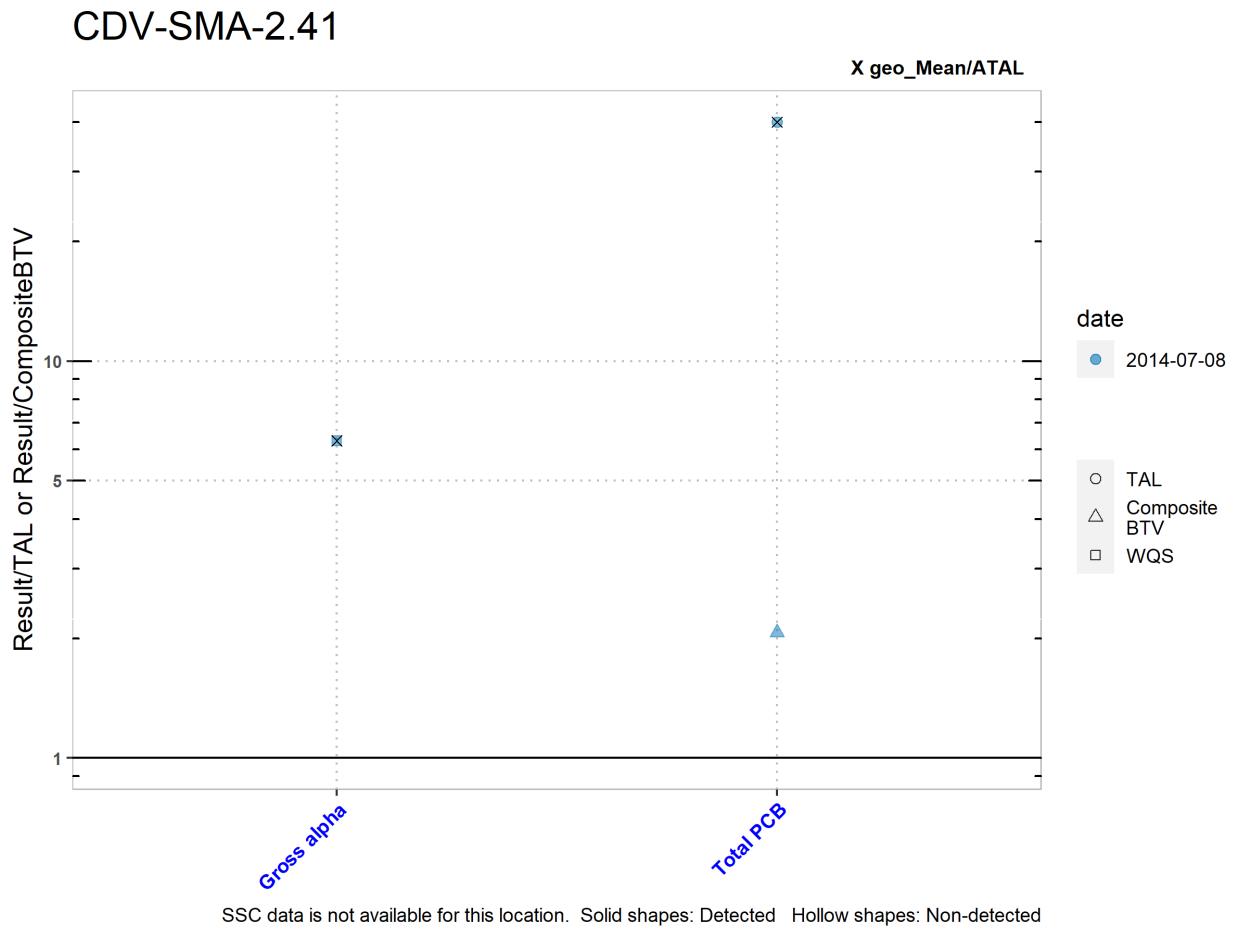


Figure 176.4-1 Analytical Results from Stormwater Sample, CDV-SMA-2.41 (Plot)

CDV-SMA-2.41

	Gross alpha	Total PCB
MQL	NA	0.2
ATAL	15	0.00064
MTAL	NA	NA
Composite_BTV	57.2	0.0122
unit	pCi/L	ug/L
2014-07-08 result	94.2	0.0253
2014-07-08 dT	6.3	40
2014-07-08 dB	NA	2.07
geo_mean/ATAL	6.3	40

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 176.4-2 Analytical Results from Stormwater Sample, CDV-SMA-2.41 (Table)

176.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.41 drains to Cañon de Valle (LANL gage E256 to Burning Ground Spring) which has impairments for PCBs. The PCB impairment may be Site-related, based on Site history.

176.5 Site-Specific Demonstration

176.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: trinitrotoluene[2,4,6-] and RDX.

The other metals and cyanide that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

176.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but it will not be added to the SAP because the assessment unit that CDV-SMA-2.41 drains to is not impaired for gross alpha. PCBs exceeded the TAL and BTV, therefore it will be added to the SAP. Metals were measured below TALs in the previous stage.

176.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

176.5.4 Sampling and Analysis Plan

Table 176.5-1 is the proposed SAP for CDV-SMA-2.41.

Table 176.5-1 Proposed SAP, CDV-SMA-2.41

Monitoring Constituent	Background for Monitoring
Total PCBs (1)	Impairment, Site history, and soil data
HE	Site history and soil data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

177.0 CDV-SMA-2.42

Associated Sites	16-010(b)
Receiving Water	Cañon de Valle
Drainage Area	0.81 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-010(b): No Further Action Approved
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Site was not reviewed in the 2016–2018 SIP process as it has been removed from the LANL Hazardous Waste Facility Permit and is therefore no longer subject to the Consent Order.
2022 Permit Status	Active Monitoring

177.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2013. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Stormwater samples were collected in June and October 2017. Analytical results from these samples initiated corrective action.

Following the July 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701533), and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

177.2 Site History

16-010(b) (no date)

SWMU 16-010(b) consists of a former flash pad (Structure 16-387) that was located at the TA-16 Burning Ground. The flash pad was enclosed within a 100-ft × 100-ft fenced area and consisted of a layer of sand several in. thick over a soil base. The pad was built in 1951 and was used to flash-burn solid and scrap HE, HE-contaminated equipment and debris, and HE-contaminated combustible material. Sands and residues from flash pad operations were disposed of at MDA P (SWMU 16-019). The flash pad operated as a hazardous waste treatment unit under RCRA interim status and underwent RCRA closure between 1999 and 2005. Closure activities included removal of the flash pad and associated debris and removal of soil and bedrock below and adjacent to the former pad. The former flash pad and MDA P were closed and remediated together along with adjacent SWMUs known as Consolidated Unit 16-016(c)-99; for cleanup and closure purposes, the sites were referred to as MDA P Site. Confirmation samples were collected as part of the closure of MDA P Site and included SWMU 16-010(b). The Site Closure Certification Report was approved by NMED on November 10, 2005. SWMU 16-010(b) is a formerly dual-regulated corrective-action unit and has been removed from the list of corrective-action units in LANL's Hazardous Waste Facility Permit; therefore, this unit is no longer subject to the Consent Order.

For investigation activities, refer to "Material Disposal Area P Site Closure Certification Report, Revision 1" (LANL 2005, 092251).

177.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 177.2-1.

Table 177.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-010(b)	Flash pad	Metals, dioxins/furans, HE

177.3 Consent Order Soil Data

SWMU 16-010(b) flash pad, and soil and tuff below and adjacent to the former flash pad were removed during the RCRA closure performed in 2000. Analytical results for these samples are presented in Figures 177.3-1 through 177.3-4. The approved closure certification report (LANL 2005, 092251) concluded that the nature and extent had been defined for all chemicals detected at SWMU 16-010(b).

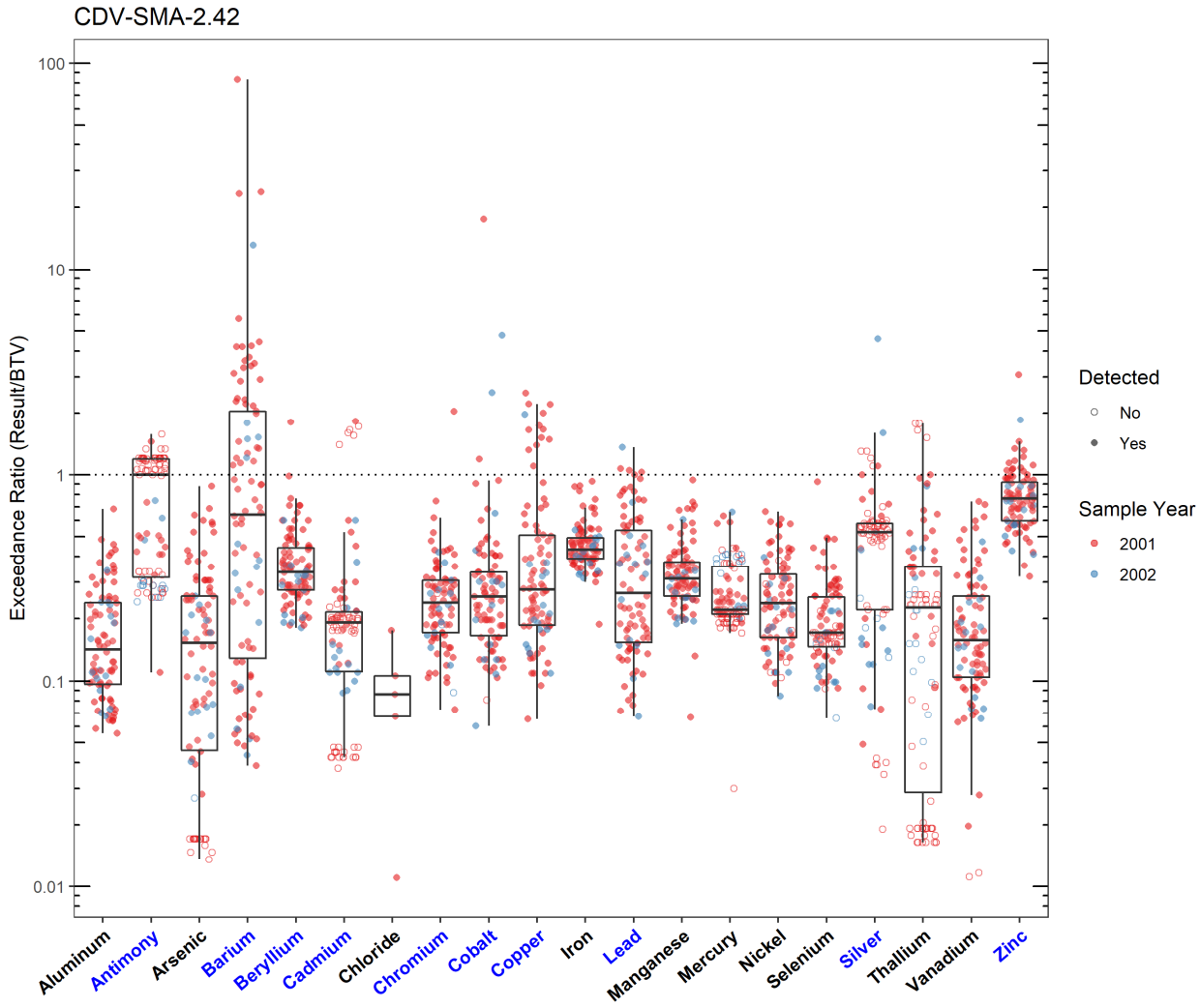


Figure 177.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.42

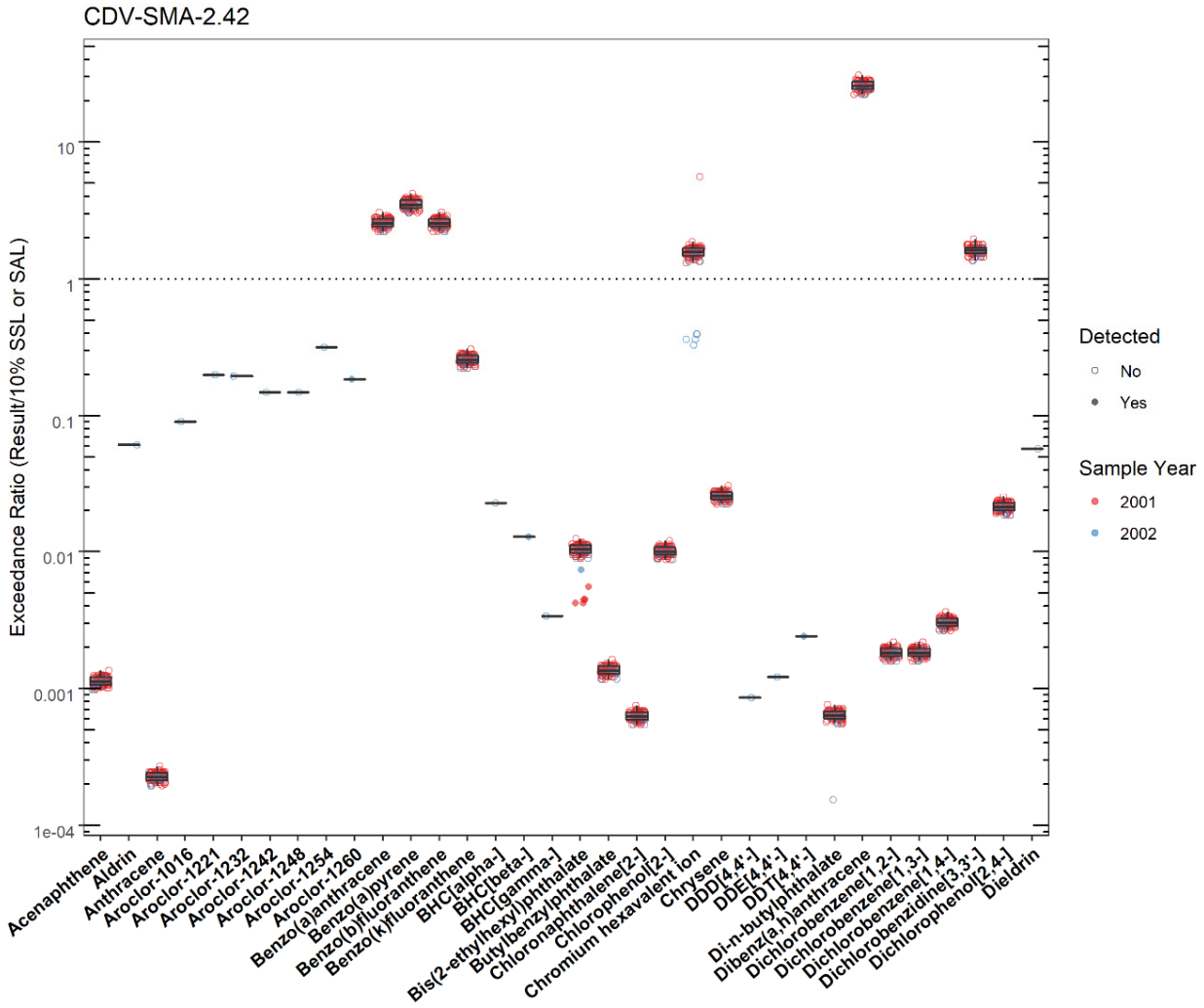


Figure 177.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.42 (Plot 1)

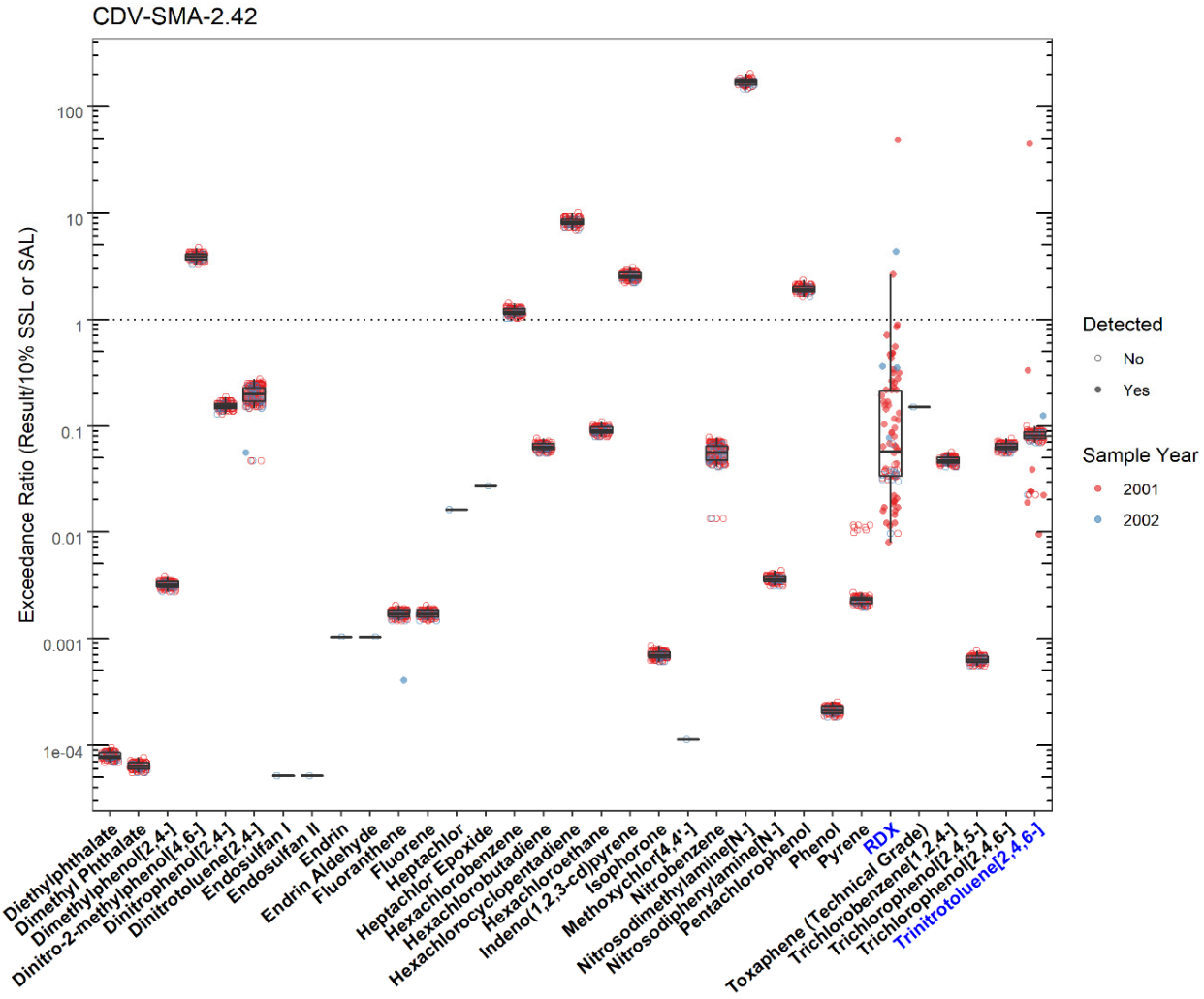


Figure 177.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.42 (Plot 2)

CDV-SMA-2.42

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-2.42	Sb	Y	BTV	0.830	1.20	2001-07-12
Barium	CDV-SMA-2.42	Ba	Y	BTV	295	24600	2001-11-13
Beryllium	CDV-SMA-2.42	Be	Y	BTV	1.83	3.30	2001-07-26
Cadmium	CDV-SMA-2.42	Cd	Y	BTV	0.400	0.730	2001-07-26
Chromium	CDV-SMA-2.42	Cr	Y	BTV	19.3	39.4	2001-06-25
Cobalt	CDV-SMA-2.42	Co	Y	BTV	8.64	151	2001-07-26
Copper	CDV-SMA-2.42	Cu	Y	BTV	14.7	36.8	2001-06-20
Lead	CDV-SMA-2.42	Pb	Y	BTV	22.3	30.3	2002-03-20
RDX	CDV-SMA-2.42	121-82-4	Y	SSL_0.1	8.31	400	2001-11-13
Silver	CDV-SMA-2.42	Ag	Y	BTV	1.00	4.60	2002-03-05
Trinitrotoluene[2,4,6-]	CDV-SMA-2.42	118-96-7	Y	SSL_0.1	3.60	160	2001-11-13
Zinc	CDV-SMA-2.42	Zn	Y	BTV	48.8	150	2001-06-20

Figure 177.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.42

177.4 Stormwater Evaluation

177.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

177.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.42 drains to Cañon de Valle (LANL gage E256 to Burning Ground Spring), which has impairments for PCBs. The PCB impairment is not likely to be Site-related, based on Site history.

177.5 Site-Specific Demonstration

177.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: trinitrotoluene[2,4,6-] and RDX.

The metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

177.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Aluminum, copper, gross alpha, and PCBs exceeded TALs in the previous monitoring stage; aluminum and gross alpha were below BTVs.

177.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

177.5.4 Sampling and Analysis Plan

Table 177.5-1 is the proposed SAP for CDV-SMA-2.42.

Table 177.5-1 Proposed SAP, CDV-SMA-2.42

Monitoring Constituent	Background for Monitoring
Total PCBs	Stormwater data
Dissolved copper	Site history (metals) and stormwater data
HE	Site history (unspecified explosive compounds) and soil data
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history (dioxins/furans)
DOC	Permit requirement
SSC	Permit requirement

178.0 CDV-SMA-2.5

Associated Sites	16-010(c), 16-010(d), 16-028(a)
Receiving Water	Cañon de Valle
Drainage Area	23.50 acres
Landscape Characteristics	10% impervious, 90% pervious
Consent Order Site Status	SWMU 16-010(c): No Further Action Approved SWMU 16-010(d): No Further Action Approved SWMU 16-028(a): In Progress
2010 Administratively Continued Permit Final Status	Baseline Confirmation Complete/Site Deletion Request
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from 16-028(a). SWMUs 16-010(c) and 16-010(d) were not reviewed in the 2016–2018 SIP process as they have been removed from the LANL Hazardous Waste Facility Permit and are therefore no longer subject to the Consent Order.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

178.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in September 2011, October 2012, and July 2013. Analytical results from these samples yielded no TAL exceedances and corrective action was not initiated. Stormwater monitoring has not occurred since 2013.

178.2 Site History

16-010(c) (no date)

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

16-010(d) (no date)

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

16-028(a) (2/18/2021)

SWMU 16-028(a) is the south drainage channel that drained the southern half of the Burning Ground at TA-16 Burning Ground. The drainage is associated with SWMUs 16-005(g) and 16-010(h-n), the former filter basket wash facility, and discharges from a carbon filter/treatment unit renumbered from Structure 16-228 to 16-363 [SWMU 16-010(g)]. The site provides the only surface water drainage for approximately half the TA-16 Burning Ground, and it marks the southern edge of historical Burning Ground activities.

Corrective-action investigations have not been conducted at 16-010(c) or 16-010(d). For investigation activities for the Sites, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

178.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 178.2-1.

Table 178.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-010(c)	Flash pad/burn tray	Metals, dioxins/furans, HE
16-010(d)	Burn tray	Metals, HE
16-028(a)	Drainage channel	Metals, barium, HE

178.3 Consent Order Soil Data

No data is available for 16-010(c) or 16-010(d). SWMUs 16-010(c) and 16-010(d) are RCRA interim status treatment units and were removed from Appendix A of the Consent Order.

Decision-level data for SWMU 16-028(a) consist of results from samples collected in 1995 and 1997. Analytical results for these samples are presented in Figures 178.3-1 through 178.3-4. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

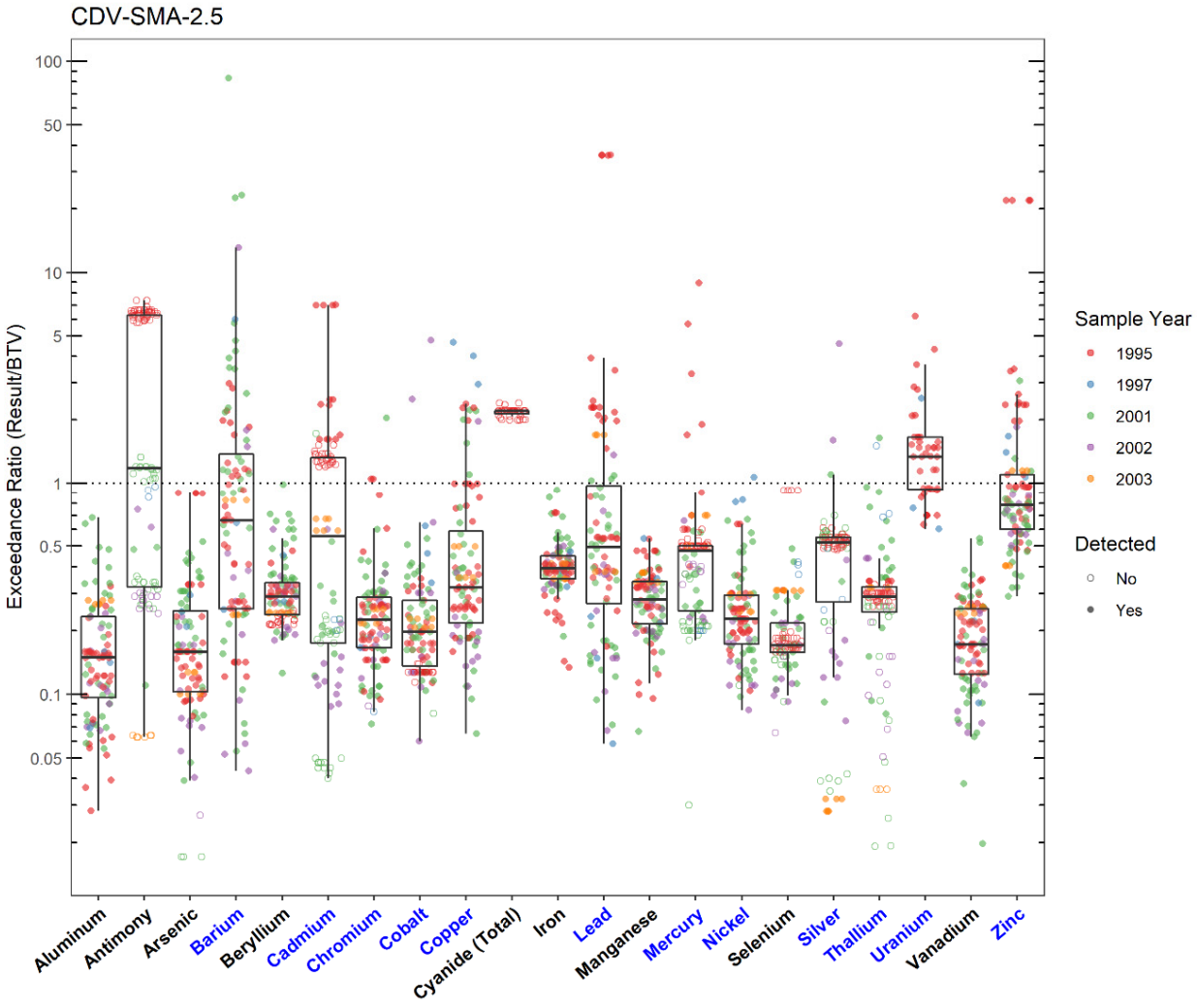


Figure 178.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.5

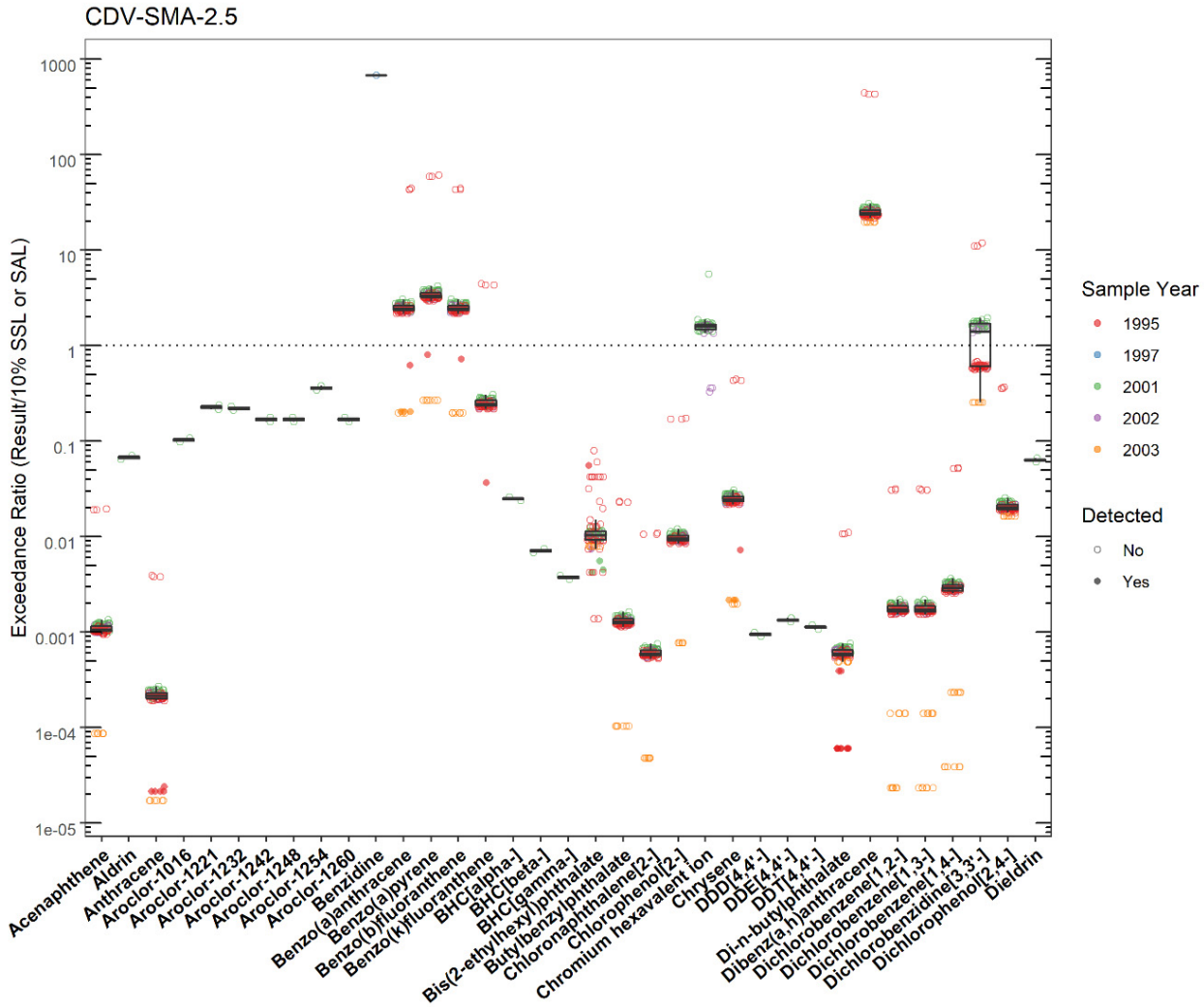


Figure 178.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.5 (Plot 1)

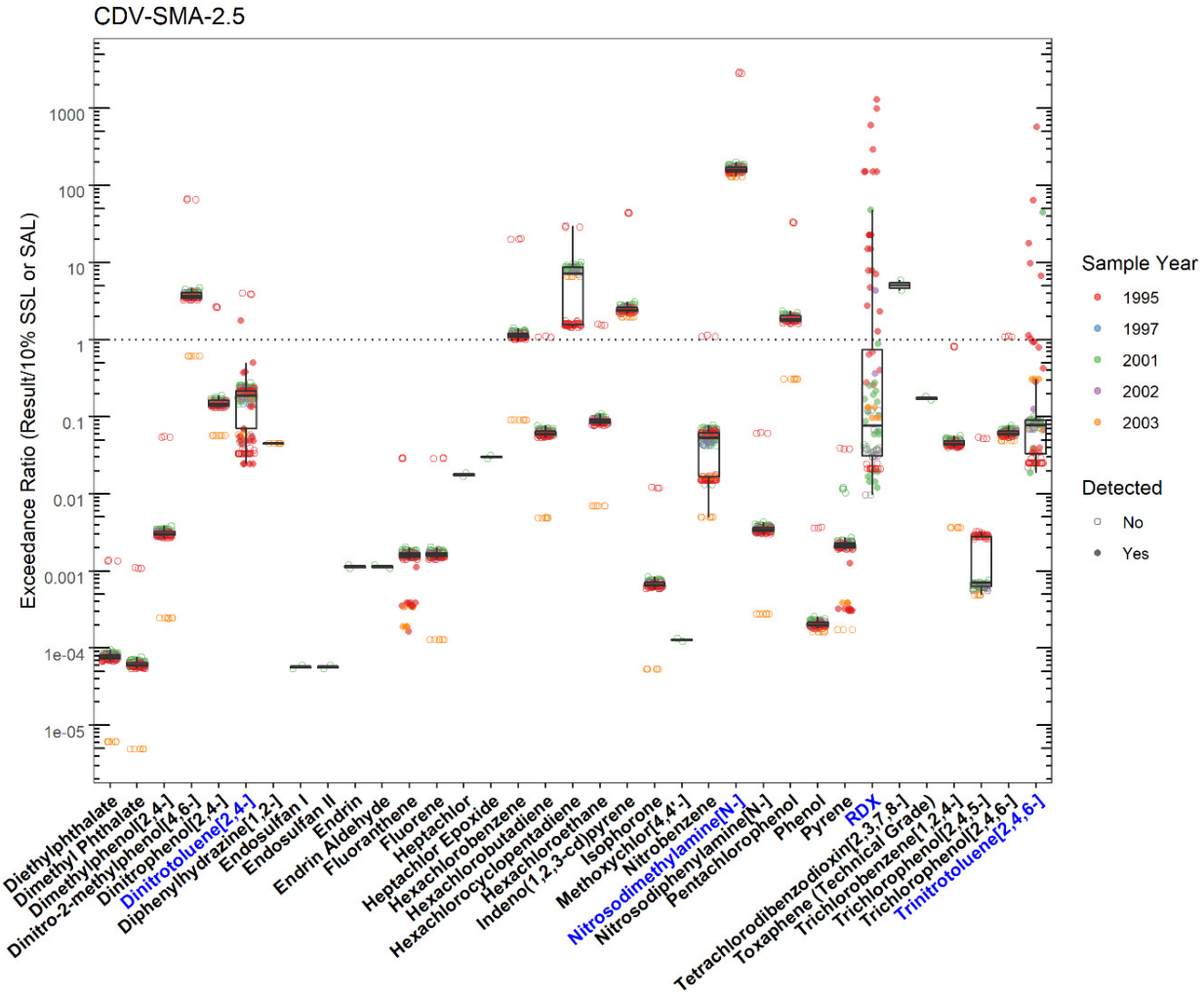


Figure 178.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.5 (Plot 2)

CDV-SMA-2.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	CDV-SMA-2.5	Ba	Y	BTV	295	24600	2001-11-13
Cadmium	CDV-SMA-2.5	Cd	Y	BTV	0.400	2.80	1995-10-20
Chromium	CDV-SMA-2.5	Cr	Y	BTV	19.3	39.4	2001-06-25
Cobalt	CDV-SMA-2.5	Co	Y	BTV	8.64	41.3	2002-03-05
Copper	CDV-SMA-2.5	Cu	Y	BTV	14.7	68.5	1997-08-22
Dinitrotoluene[2,4-]	CDV-SMA-2.5	121-14-2	Y	SSL_0.1	1.71	3.02	1995-10-04
Lead	CDV-SMA-2.5	Pb	Y	BTV	22.3	800	1995-10-10
Mercury	CDV-SMA-2.5	Hg	Y	BTV	0.100	0.890	1995-11-10
Nickel	CDV-SMA-2.5	Ni	Y	BTV	15.4	16.5	1997-08-22
Nitrosodimethylamine[N-]	CDV-SMA-2.5	62-75-9	Y	SSL_0.1	0.00234	0.330	1995-10-04
RDX	CDV-SMA-2.5	121-82-4	Y	SSL_0.1	8.31	10700	1995-10-04
Silver	CDV-SMA-2.5	Ag	Y	BTV	1.00	4.60	2002-03-05
Thallium	CDV-SMA-2.5	Tl	Y	BTV	0.730	1.20	2001-06-19
Trinitrotoluene[2,4,6-]	CDV-SMA-2.5	118-96-7	Y	SSL_0.1	3.60	2060	1995-10-04
Uranium	CDV-SMA-2.5	U	Y	BTV	1.82	11.3	1995-10-02
Zinc	CDV-SMA-2.5	Zn	Y	BTV	48.8	1070	1995-10-10

Figure 178.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.5

178.4 Stormwater Evaluation

178.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in September 2011, October 2012, and July 2013. Analytical results from these samples are presented in Figures 178.4-1 through 178.4-4.

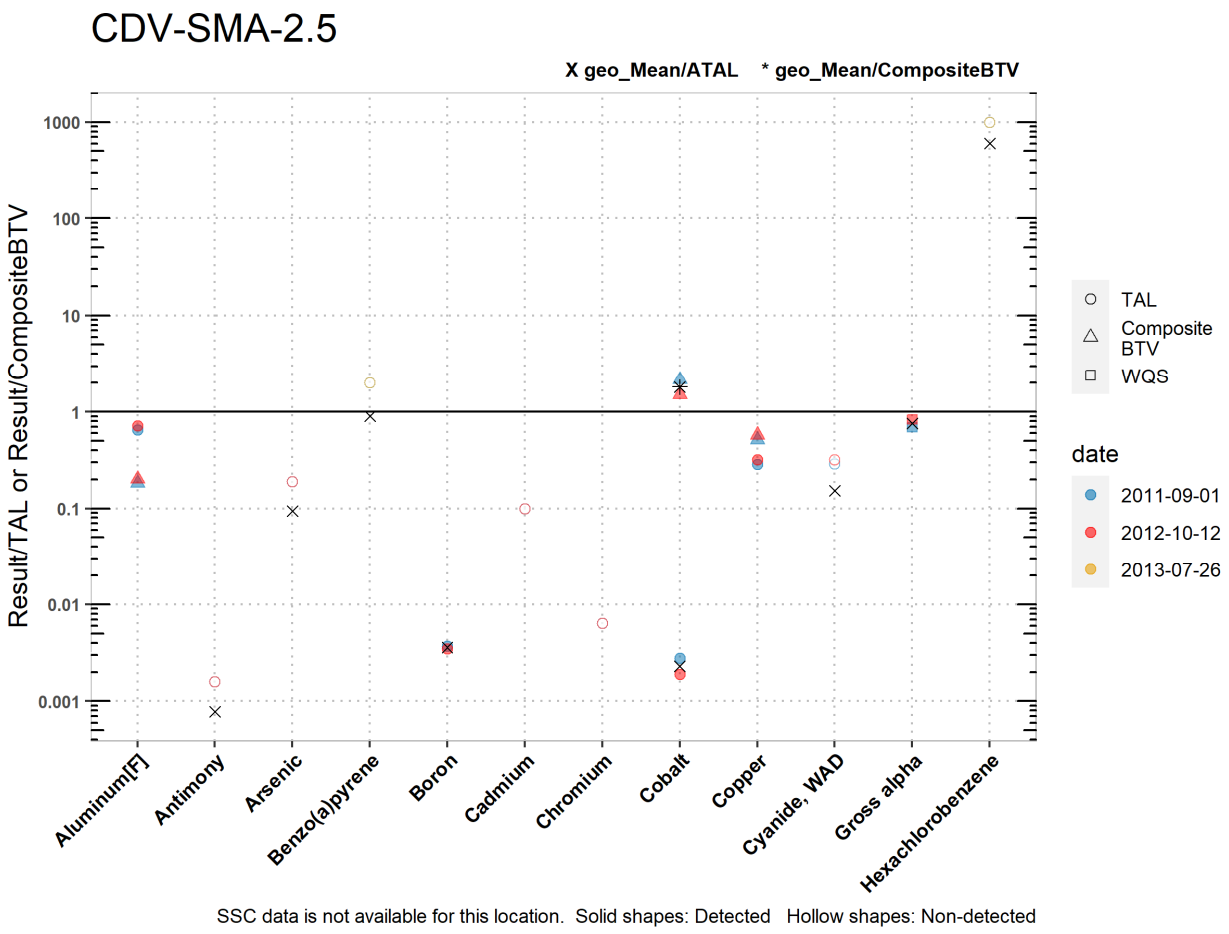


Figure 178.4-1 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Plot 1)

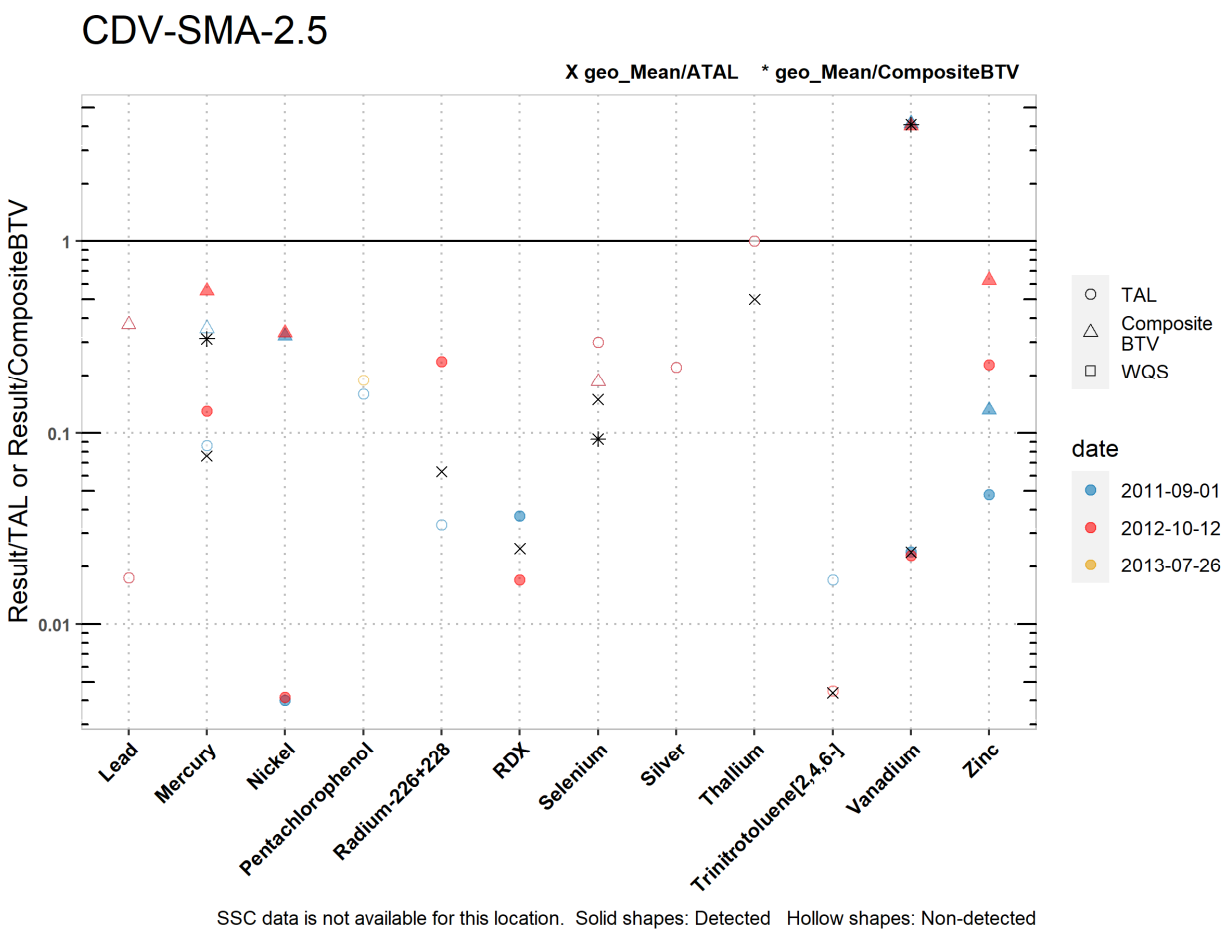


Figure 178.4-2 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Plot 2)

CDV-SMA-2.5

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	2660	NA	NA	NA	NA	NA	NA	1.29	3.73	NA	56.4	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
2011-09-01 result	483	*1.00*	*1.70*	*0.300*	18.4	*0.110*	*2.00*	2.80	1.90	*1.50*	10.3	*3.00*
2011-09-01 dT	0.644	NA	NA	NA	0.0037	NA	NA	0.0028	0.284	NA	0.69	NA
2011-09-01 dB	0.182	NA	NA	NA	NA	NA	NA	2.17	0.509	NA	NA	NA
2012-10-12 result	534	*1.00*	*1.70*	NA	17.4	*0.110*	*2.00*	1.94	2.15	*1.67*	12.5	NA
2012-10-12 dT	0.712	NA	NA	NA	0.0035	NA	NA	0.0019	0.321	NA	0.83	NA
2012-10-12 dB	0.201	NA	NA	NA	NA	NA	NA	1.50	0.576	NA	NA	NA
2013-07-26 result	NA	NA	NA	*0.357*	NA	NA	NA	NA	NA	NA	NA	*3.57*
2013-07-26 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.094	0.9	0.0036	NA	NA	0.0023	NA	0.152	0.76	600
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	1.81	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 178.4-3 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Table 1)

CDV-SMA-2.5

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
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	0.47	20	100	NA
MTAL	28.6	NA	250	19	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	1.35	0.187	3.10	NA	4.85	NA	8.06	NA	NA	NA	0.581	29.6
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
2011-09-01 result	*0.500*	*0.0660*	1.00	*3.00*	*1.00*	7.31	*1.50*	*0.200*	*0.450*	*0.340*	2.40	3.90
2011-09-01 dT	NA	NA	0.00400	NA	NA	0.037	NA	NA	NA	NA	0.024	0.0478
2011-09-01 dB	NA	NA	0.323	NA	NA	NA	NA	NA	NA	NA	4.13	0.132
2012-10-12 result	*0.500*	0.103	1.04	NA	7.14	3.40	*1.50*	*0.200*	*0.450*	*0.0899*	2.33	18.6
2012-10-12 dT	NA	0.13	0.00416	NA	0.238	0.017	NA	NA	NA	NA	0.023	0.228
2012-10-12 dB	NA	0.551	0.335	NA	NA	NA	NA	NA	NA	NA	4.01	0.628
2013-07-26 result	NA	NA	NA	*3.57*	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.076	NA	NA	0.0630	0.025	0.15	NA	0.5	0.0044	0.024	NA
geo_mean/B	NA	0.312	NA	NA	NA	NA	0.0931	NA	NA	NA	4.07	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 178.4-4 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Table 2)

178.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.5 drains to Fishladder Canyon (Cañon del Valle to headwaters) which has not been assessed for impairments.

178.5 Site-Specific Demonstration

178.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

178.5.2 Stormwater Data Summary

No TAL exceedances in confirmation-monitoring data.

178.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

179.0 CDV-SMA-2.51

Associated Sites	16-010(i)
Receiving Water	Cañon de Valle
Drainage Area	2.35 acres
Landscape Characteristics	5% impervious, 95% pervious
Consent Order Site Status	SWMU 16-010(i): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

179.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600417). No response has been received from EPA and stormwater monitoring has not occurred since 2013.

179.2 Site History

16-010(i) (9/14/2020)

SWMU 16-010(i) consists of a former filter bed and former burn pad (former Structure 16-392) located at northeast corner of the burning ground within the northeast portion of TA-16. Filter bed 16-392 was constructed in 1951 approximately 250 ft east of the former basket-wash house (former Structure 16-390) [SWMU 16-010(h)], and measured 12 ft by 12 ft by 1 ft deep. Filter bed 16-392 received suspected uranium-contaminated HE wash-down water from the basket-wash house through an elevated, open steel V-shaped trough (former Structure 16-1136) [SWMUs 16-010(n)]. Solid HE accumulated on and around the filter bed was burned on the bed. After burning, the filter-bed sand was removed for disposal at MDA P from the early 1950s to 1984, and then to MDA G at TA-54 thereafter. Filtered wash water from the basket-wash house collected within perforated piping along the bottom of the SWMU 16-010(i) filter bed and drained via gravity through a drainline to an outfall south-southeast of the filter bed. In 1988, filter bed 16-392 was modified to a burn pad to burn HE-contaminated uranium objects and Structure 16-1136 was decommissioned; the burn pad is still in place. It is not known if the drainline from the filter bed was removed. The basket-wash house and troughs underwent D&D in 2003.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

179.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 179.2-1.

Table 179.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-010(i)	Burn pad	Metals, HE, uranium

179.3 Consent Order Soil Data

Decision-level data for SWMU 16-010(i) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 179.3-1 through 179.3-4. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

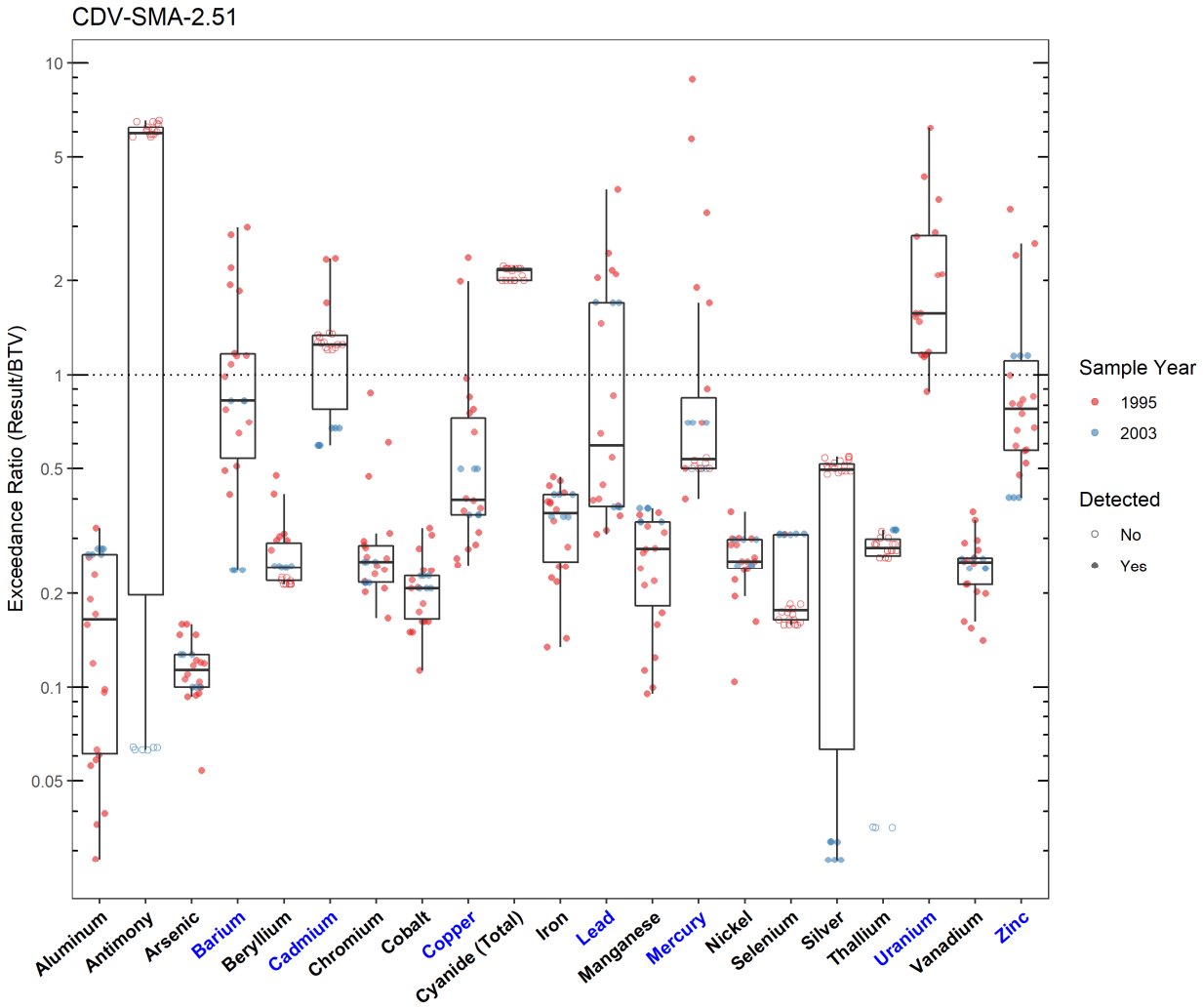


Figure 179.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.51

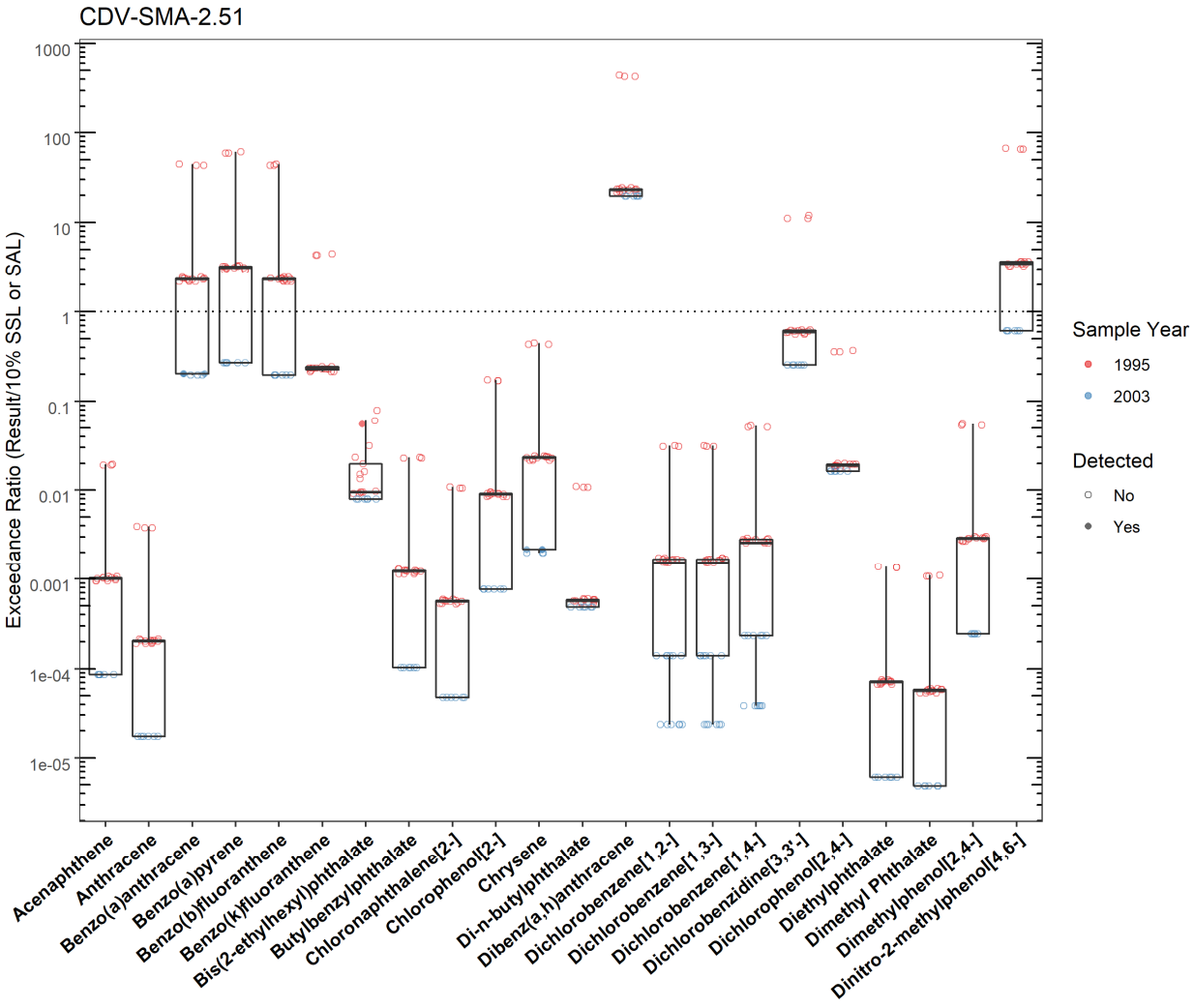


Figure 179.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.51 (Plot 1)

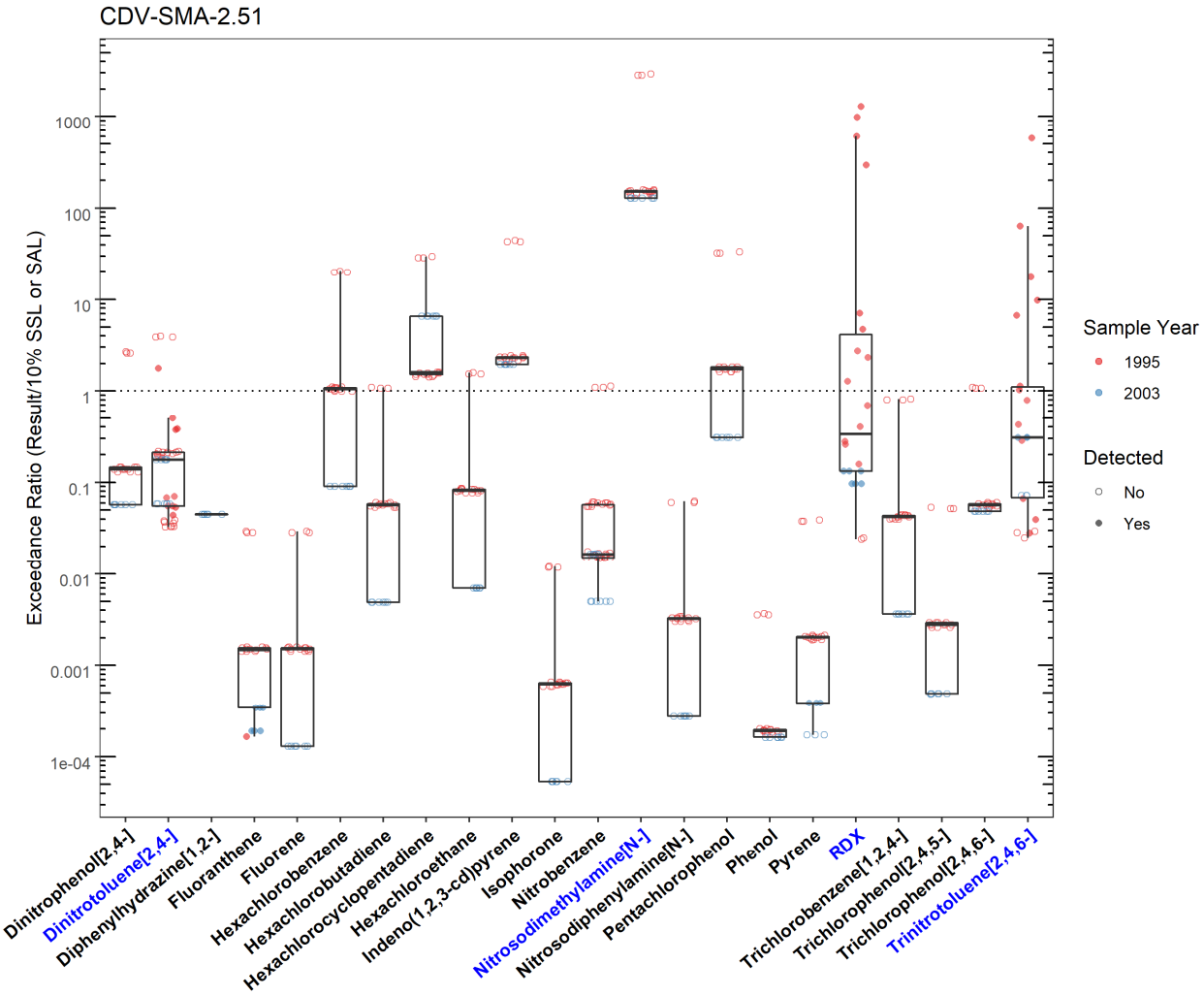


Figure 179.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.51 (Plot 2)

CDV-SMA-2.51

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	CDV-SMA-2.51	Ba	Y	BTV	295	880	1995-10-04
Cadmium	CDV-SMA-2.51	Cd	Y	BTV	0.400	0.950	1995-11-10
Copper	CDV-SMA-2.51	Cu	Y	BTV	14.7	35.0	1995-10-02
Dinitrotoluene[2,4-]	CDV-SMA-2.51	121-14-2	Y	SSL_0.1	1.71	3.02	1995-10-04
Lead	CDV-SMA-2.51	Pb	Y	BTV	22.3	87.6	1995-10-02
Mercury	CDV-SMA-2.51	Hg	Y	BTV	0.100	0.890	1995-11-10
Nitrosodimethylamine[N-]	CDV-SMA-2.51	62-75-9	Y	SSL_0.1	0.00234	0.330	1995-10-04
RDX	CDV-SMA-2.51	121-82-4	Y	SSL_0.1	8.31	10700	1995-10-04
Trinitrotoluene[2,4,6-]	CDV-SMA-2.51	118-96-7	Y	SSL_0.1	3.60	2060	1995-10-04
Uranium	CDV-SMA-2.51	U	Y	BTV	1.82	11.3	1995-10-02
Zinc	CDV-SMA-2.51	Zn	Y	BTV	48.8	166	1995-10-02

Figure 179.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.51

179.4 Stormwater Evaluation

179.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 179.4-1 through 179.4-4.

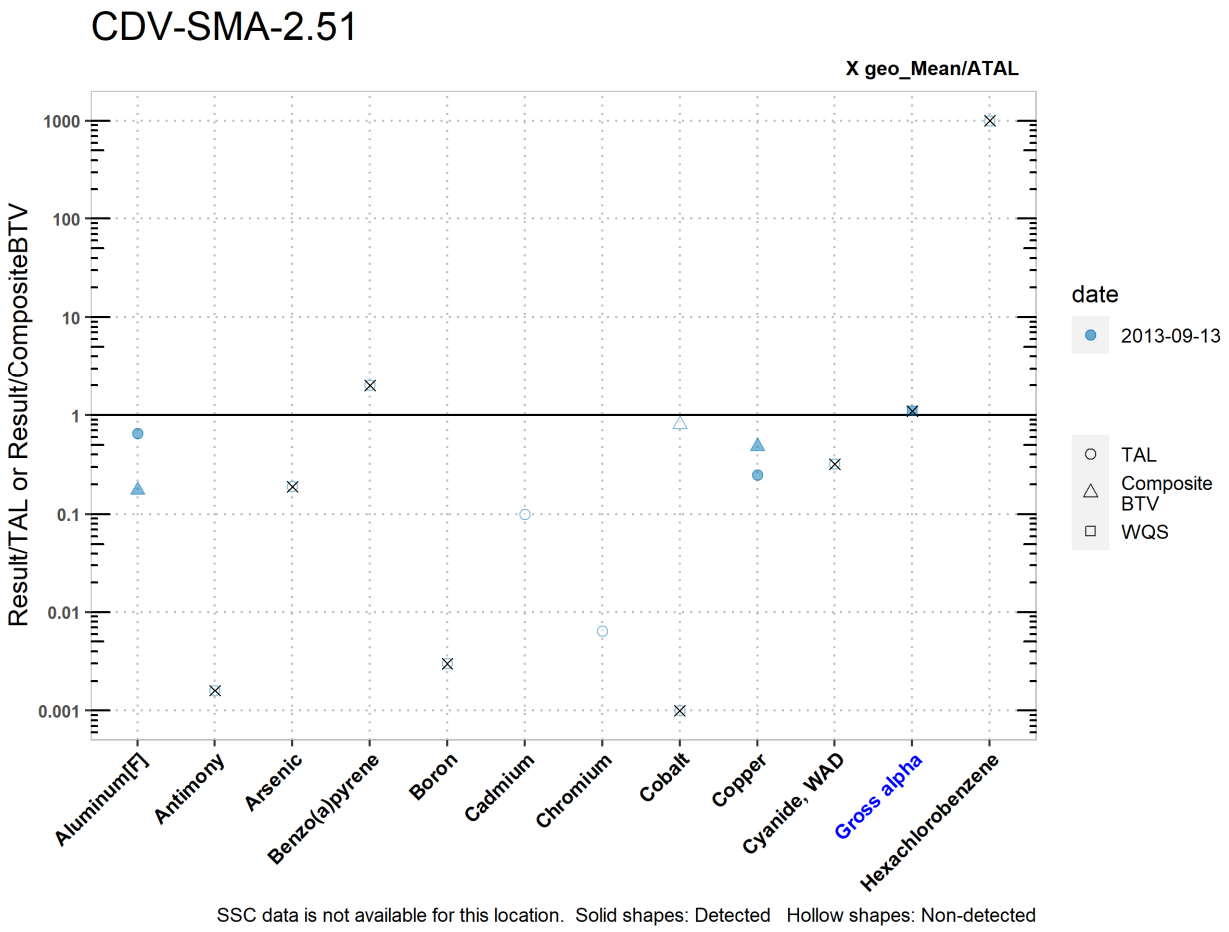


Figure 179.4-1 Analytical Results from Stormwater Sample, CDV-SMA-2.51 (Plot 1)

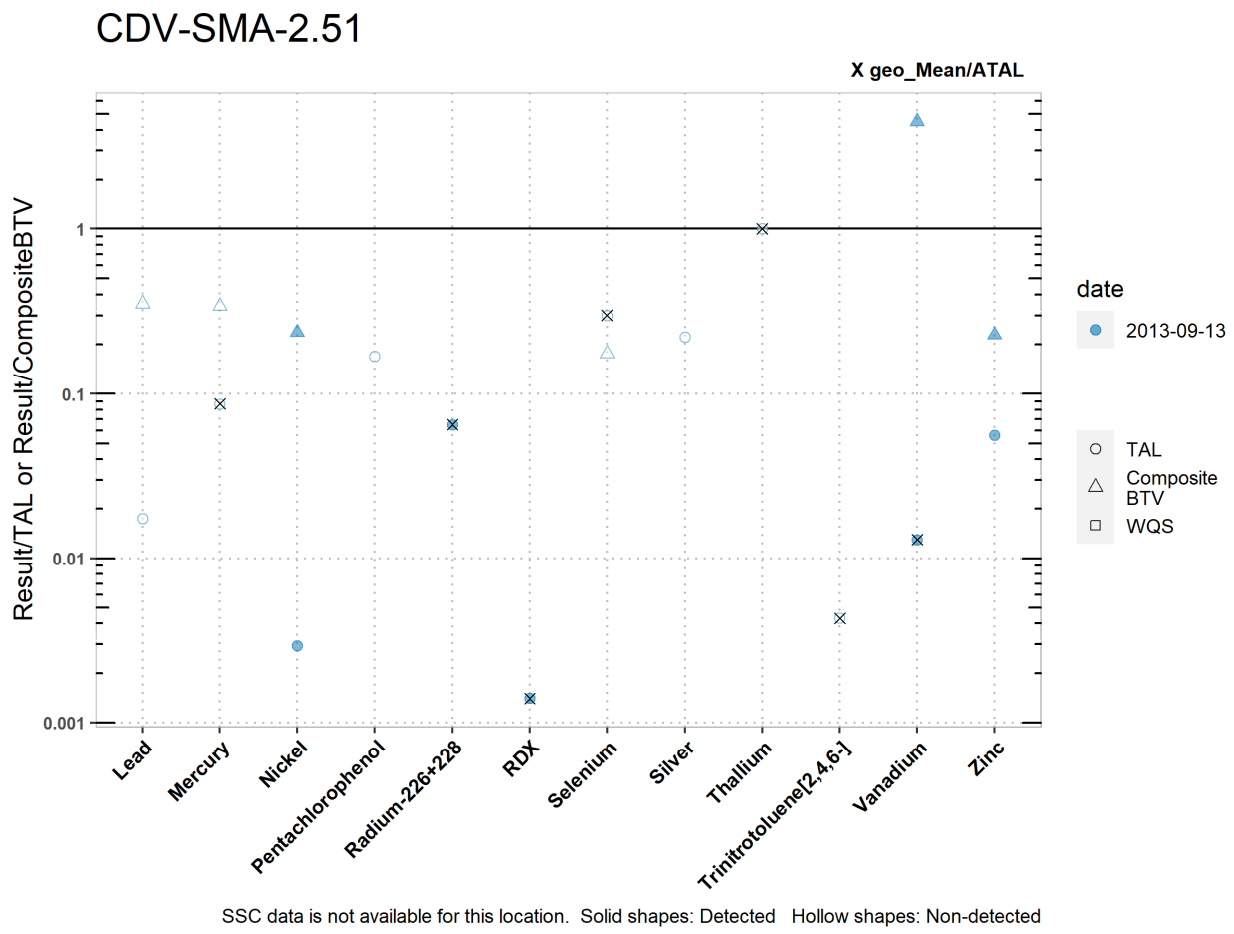


Figure 179.4-2 Analytical Results from Stormwater Sample, CDV-SMA-2.51 (Plot 2)

CDV-SMA-2.51

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	2800	NA	NA	NA	NA	NA	NA	1.24	3.43	NA	56.8	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
2013-09-13 result	491	*1.00*	*1.70*	*0.316*	*15.0*	*0.110*	*2.00*	*1.00*	1.66	*1.67*	16.4	*3.16*
2013-09-13 dT	0.655	NA	NA	NA	NA	NA	NA	NA	0.248	NA	1.1	NA
2013-09-13 dB	0.175	NA	NA	NA	NA	NA	NA	NA	0.484	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.0030	NA	NA	0.0010	NA	0.321	1.1	1000

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 179.4-3 Analytical Results from Stormwater Samples, CDV-SMA-2.51 (Table 1)

CDV-SMA-2.51

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
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	0.47	20	100	NA
MTAL	28.6	NA	250	19	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	1.42	0.197	3.10	NA	4.53	NA	8.50	NA	NA	NA	0.297	20.0
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
2013-09-13 result	*0.500*	*0.0670*	0.736	*3.16*	1.95	0.277	*1.50*	*0.200*	*0.450*	*0.0865*	1.34	4.56
2013-09-13 dT	NA	NA	0.00294	NA	0.0650	0.0014	NA	NA	NA	NA	0.013	0.0559
2013-09-13 dB	NA	NA	0.237	NA	NA	NA	NA	NA	NA	NA	4.51	0.228
geo_mean/ATAL	NA	0.087	NA	NA	0.0650	0.0014	0.30	NA	1	0.0043	0.013	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 179.4-4 Analytical Results from Stormwater Samples, CDV-SMA-2.51 (Table 2)

179.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.51 drains to Fishladder Canyon (Cañon del Valle to headwaters) which has not been assessed for impairments.

179.5 Site-Specific Demonstration

179.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

179.5.2 Stormwater Data Summary

Gross alpha exceeded the applicable screening values in 2013 storm water data. There was no paired SSC result to confirm whether it was below BTVs, therefore it will be added to the monitoring suite for analysis.

179.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

179.5.4 Sampling and Analysis Plan

Table 179.5-1 is the proposed SAP for CDV-SMA-2.51.

Table 179.5-1 Proposed SAP, CDV-SMA-2.51

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history and soil data
Gross alpha	Site history (uranium)
DOC	Permit requirement
SSC	Permit requirement

180.0 CDV-SMA-3

Associated Sites	14-009
Receiving Water	Cañon de Valle
Drainage Area	0.45 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 14-009: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

180.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

180.2 Site History

14-009 (2/18/2021)

SWMU 14-009 is an inactive surface disposal area located south and west of building 14-43 at TA-14. The disposal area measures approximately 30 ft × 140 ft and consists of sand and ruptured sandbags used during explosives tests performed at nearby firing sites [SWMUs 14-002(a) and 14-002(b)]. During explosives tests, sandbags were placed around firing sites to contain detonations. When the sandbags ruptured, the sand was used for erosion control around the firing sites. The sand from ruptured bags at SWMU 14-009 was placed over the hillside south of building 14-43 and is approximately one foot deep.

For investigation activities, refer to “Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1” (N3B 2020, 700746).

180.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 180.2-1.

Table 180.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-009	Surface disposal site	Beryllium, lead, HE, uranium

180.3 Consent Order Soil Data

Decision-level data for SWMU 14-009 consist of results from samples collected in 2011. Analytical results for these samples are presented in Figures 180.3-1 through 180.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

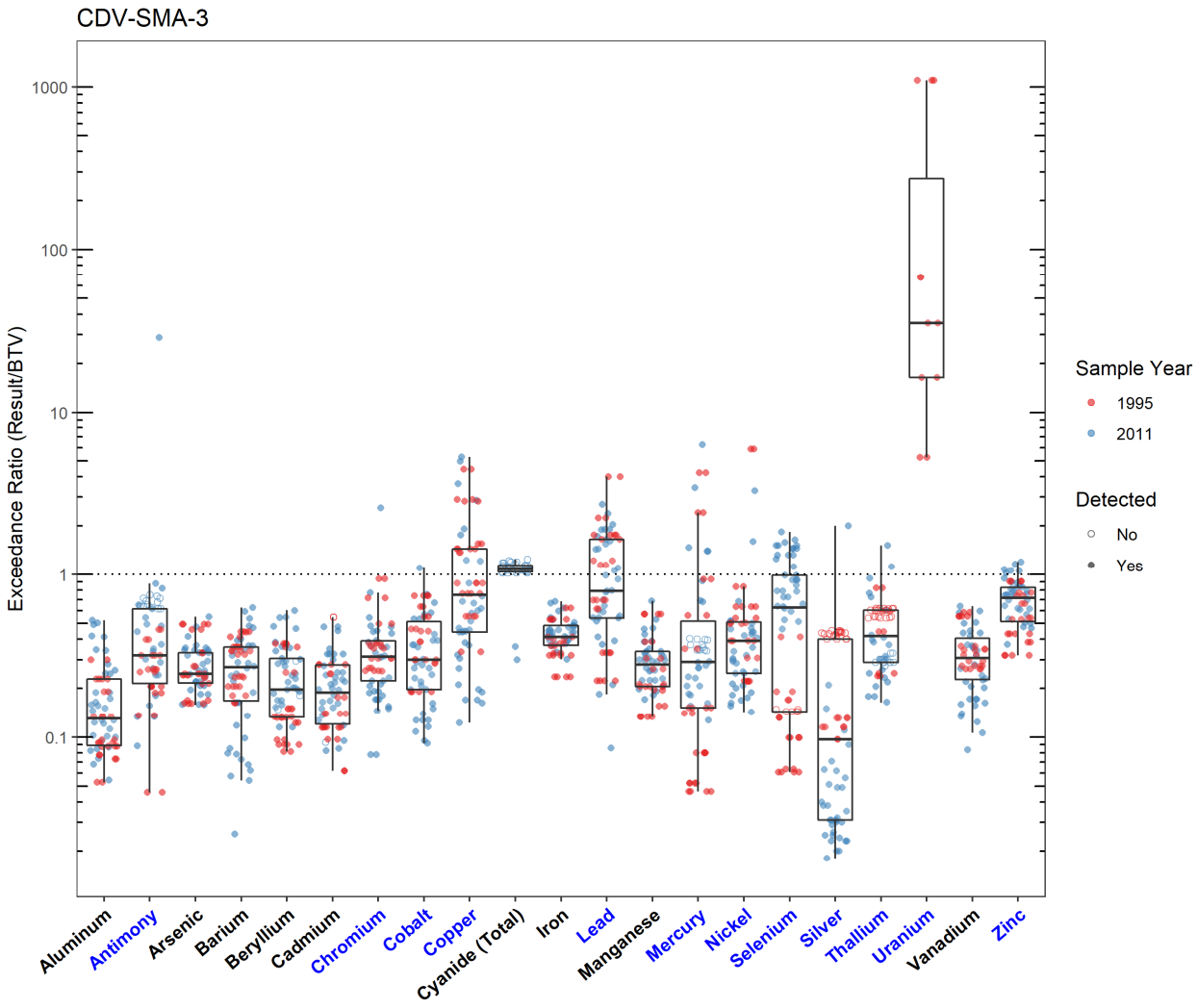


Figure 180.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-3

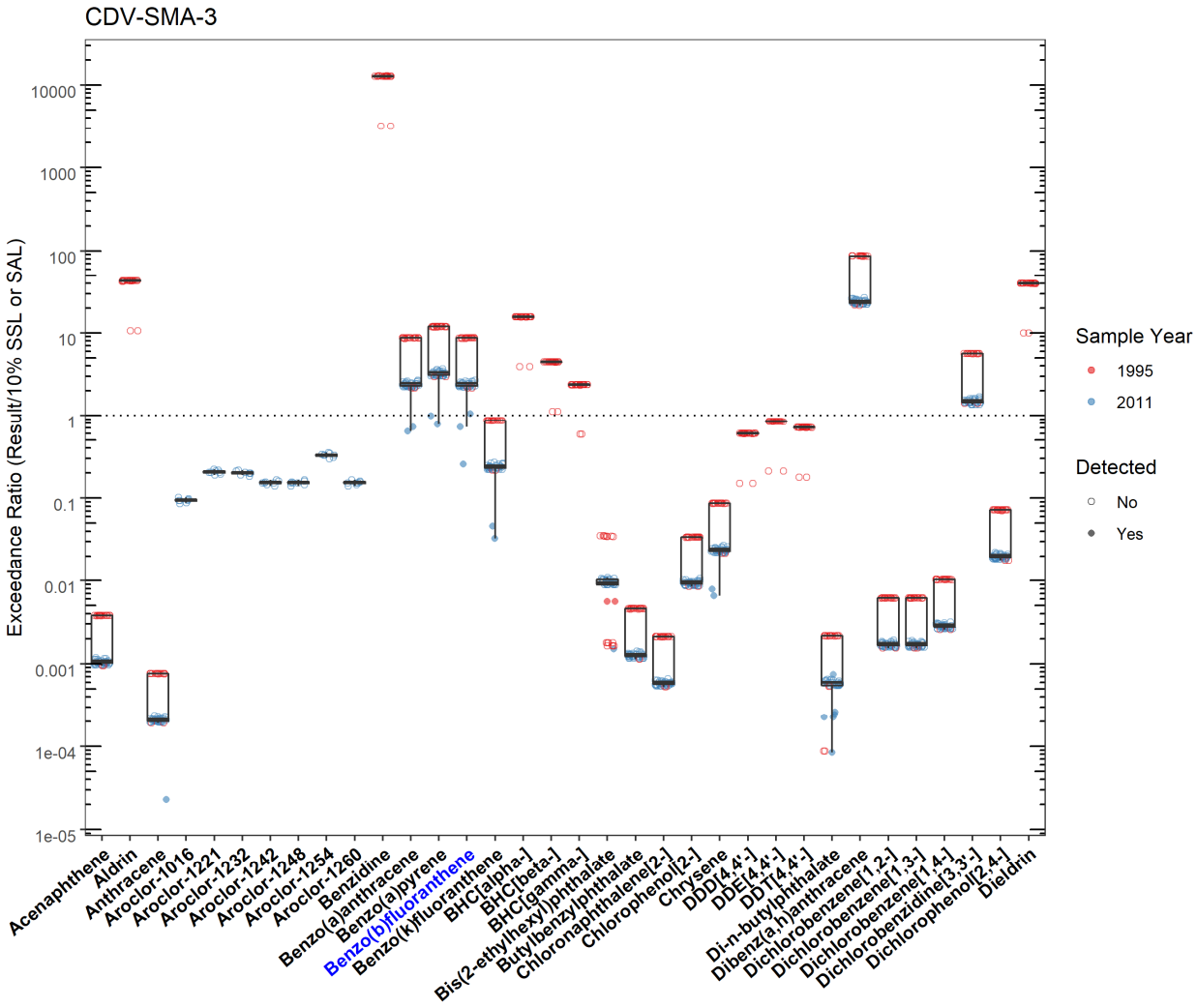


Figure 180.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-3 (Plot 1)

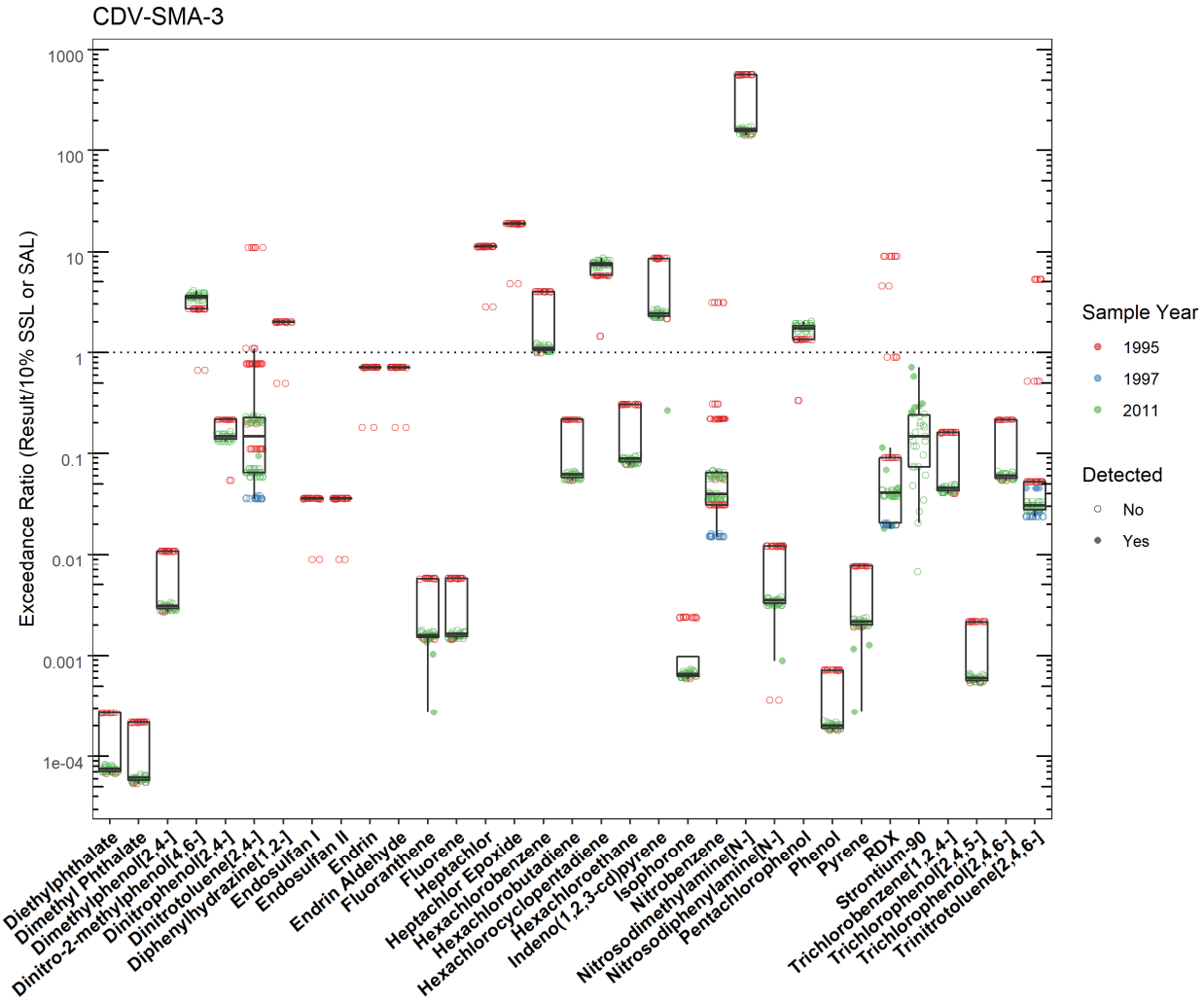


Figure 180.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-3 (Plot 2)

CDV-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-3	Sb	Y	BTV	0.830	23.8	2011-09-22
Benzo(b)fluoranthene	CDV-SMA-3	205-99-2	Y	SSL_0.1	0.153	0.160	2011-09-08
Chromium	CDV-SMA-3	Cr	Y	BTV	19.3	49.6	2011-09-08
Cobalt	CDV-SMA-3	Co	Y	BTV	8.64	9.50	2011-09-08
Copper	CDV-SMA-3	Cu	Y	BTV	14.7	77.8	2011-09-08
Lead	CDV-SMA-3	Pb	Y	BTV	22.3	89.3	1995-07-06
Mercury	CDV-SMA-3	Hg	Y	BTV	0.100	0.629	2011-09-08
Nickel	CDV-SMA-3	Ni	Y	BTV	15.4	90.9	1995-07-06
Selenium	CDV-SMA-3	Se	Y	BTV	1.52	2.80	2011-09-09
Silver	CDV-SMA-3	Ag	Y	BTV	1.00	2.00	2011-08-26
Thallium	CDV-SMA-3	Tl	Y	BTV	0.730	1.10	2011-09-09
Uranium	CDV-SMA-3	U	Y	BTV	1.82	2010	1995-07-07
Zinc	CDV-SMA-3	Zn	Y	BTV	48.8	58.4	2011-09-08

Figure 180.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-3

180.4 Stormwater Evaluation

180.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

180.4.2 Assessment Unit and Stream Impairments

CDV-SMA-3 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

180.5 Site-Specific Demonstration

180.5.1 Soil Data Summary

The following Site-related POC exceeded the applicable screening values in soil data and have not yet been measured in stormwater: uranium.

Lead exceeded the applicable screening values in soil data, but was measured below TAL in stormwater data. Beryllium and HE did not exceed the applicable screening values in soil data.

180.5.2 Stormwater Data Summary

Gross alpha exceeded the applicable screening values in 2011 stormwater data. There was no paired SSC result to confirm whether it was below BTVs, therefore, it will be added to the SAP.

180.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

180.5.4 Sampling and Analysis Plan

Table 180.5-1 is the proposed SAP for CDV-SMA-3.

Table 180.5-1 Proposed SAP, CDV-SMA-3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (uranium)
Dissolved uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

181.0 CDV-SMA-4

Associated Sites	14-010
Receiving Water	Cañon de Valle
Drainage Area	0.18 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 14-010: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

181.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. The sampler location was moved in 2013 to a more representative location after a boundary change for the Site and baseline monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

181.2 Site History

14-010 (2/18/2021)

SWMU 14-010 is a former HE sump located on the exterior south wall of a former firing chamber [structure 14-2, SWMU 14-002(a)]. The sump received waste from an associated floor drain in the closed firing chamber 14-2 and discharged through an associated drainline to an outfall located approximately 24 ft southeast of the sump. In 1973, the HE and radioactive-contaminated portions of structure 14-2 were removed and dispose of at TA-54; Also in 1973, the contents of the SWMU 14-010 sump were removed and disposed of and the sump, floor drain and drainline from the floor drainline to the sump were excavated by hand and removed. The remainder of the structure was then burned in place. The bullet test facility was constructed over a portion of the area and the remainder was paved. The outlet drainline from the sump remains in place.

For investigation activities, refer to “Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1” (N3B 2020, 700746).

181.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 181.2-1.

Table 181.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-010	Soil contamination from former sump and drainlines	Inorganic and organic chemicals, HE, radionuclides

181.3 Consent Order Soil Data

Decision-level data for SWMU 14-010 consist of results from samples collected in 1997 and 2011. Analytical results for these samples are presented in Figures 181.3-1 through 181.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

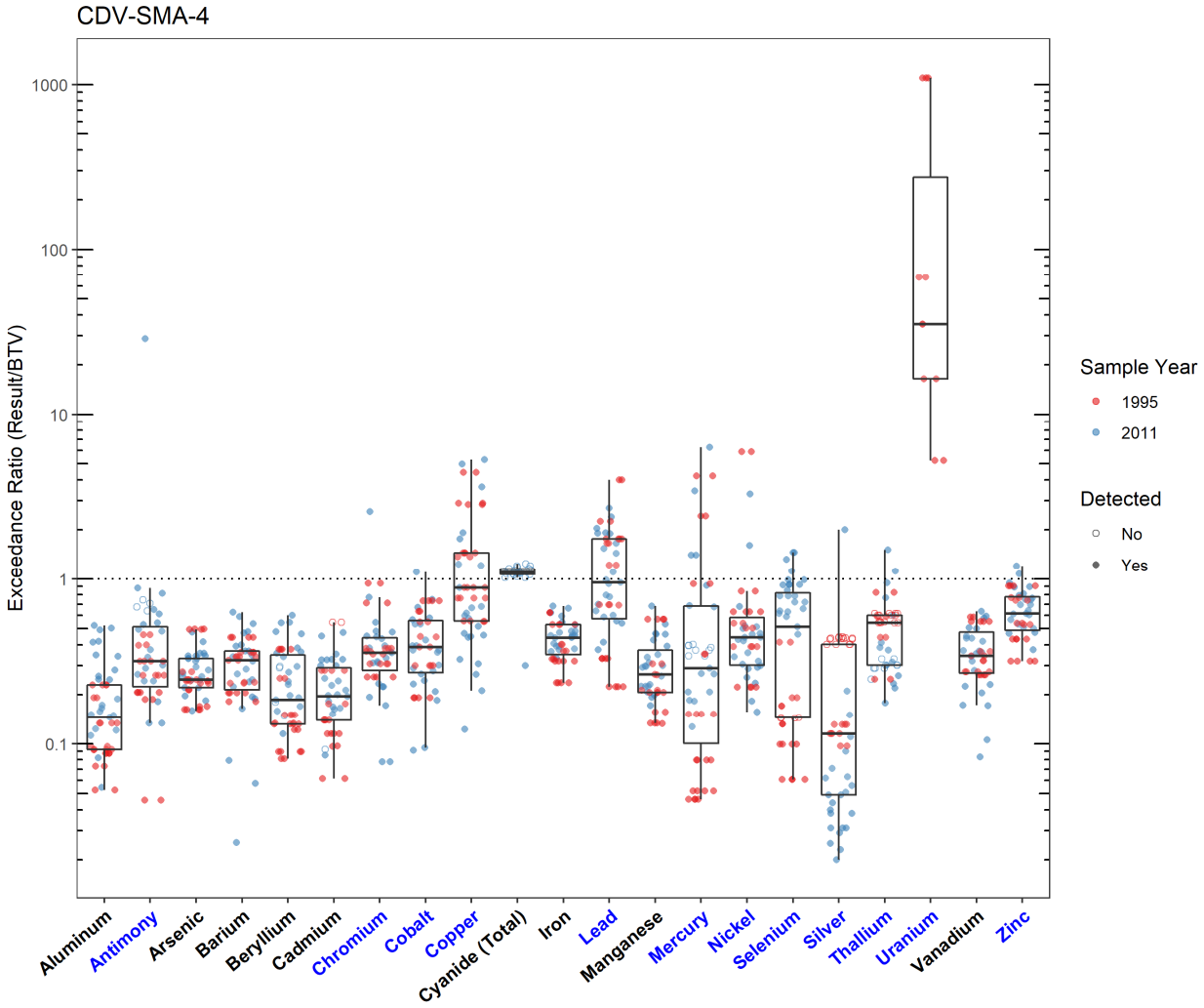


Figure 181.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-4

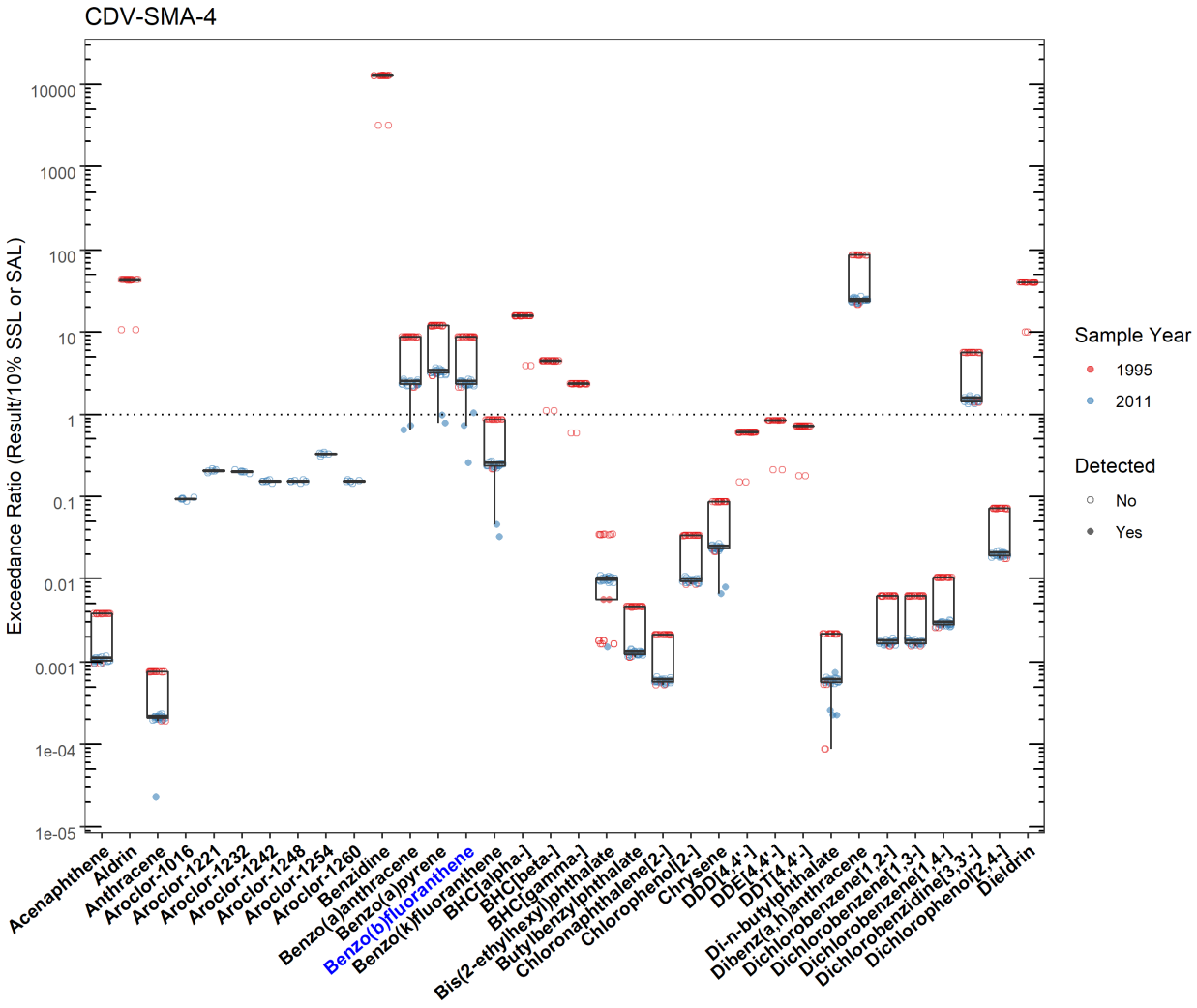


Figure 181.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-4 (Plot 1)

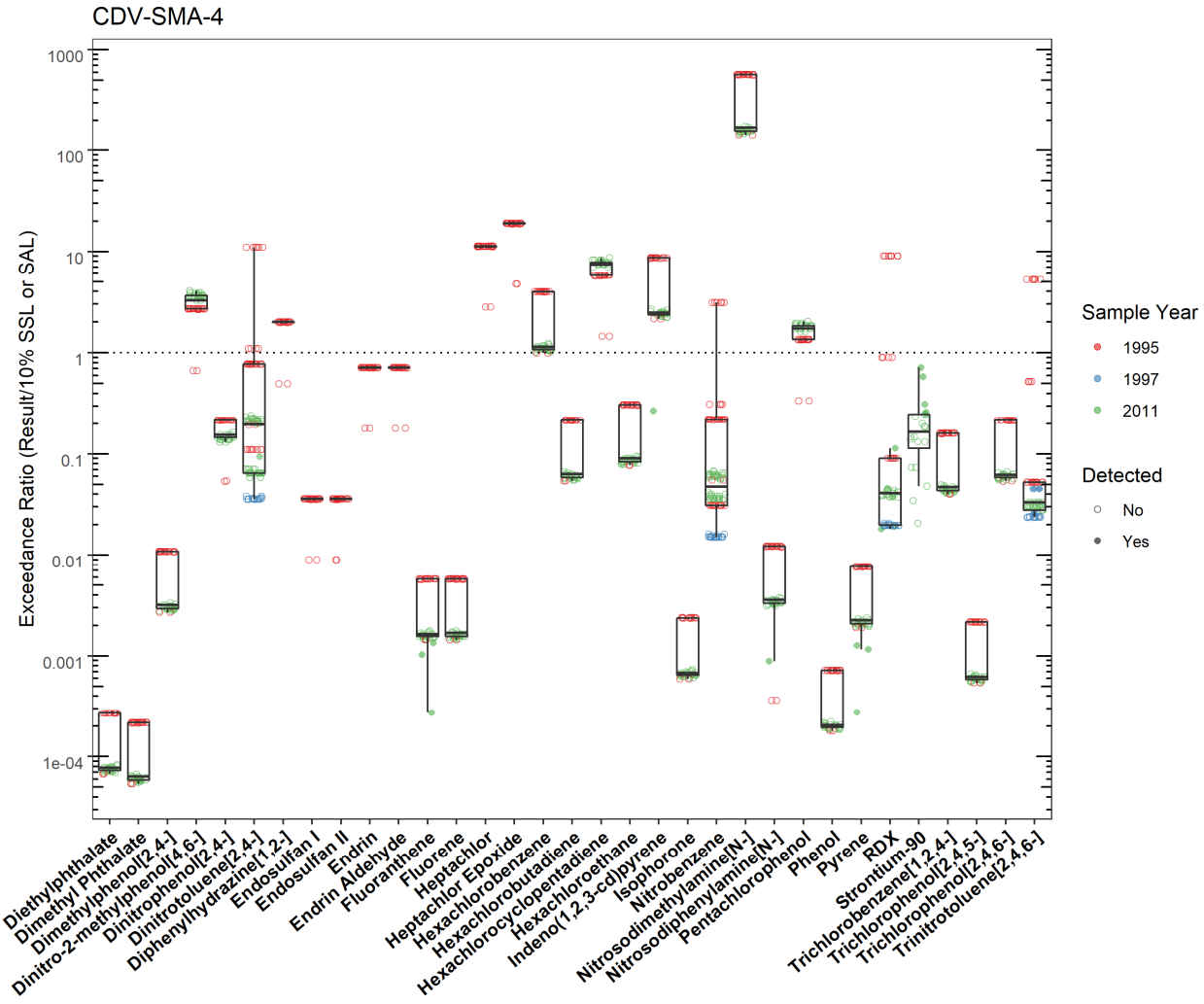


Figure 181.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-4 (Plot 2)

CDV-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-4	Sb	Y	BTV	0.830	23.8	2011-09-22
Benzo(b)fluoranthene	CDV-SMA-4	205-99-2	Y	SSL_0.1	0.153	0.160	2011-09-08
Chromium	CDV-SMA-4	Cr	Y	BTV	19.3	49.6	2011-09-08
Cobalt	CDV-SMA-4	Co	Y	BTV	8.64	9.50	2011-09-08
Copper	CDV-SMA-4	Cu	Y	BTV	14.7	77.8	2011-09-08
Lead	CDV-SMA-4	Pb	Y	BTV	22.3	89.3	1995-07-06
Mercury	CDV-SMA-4	Hg	Y	BTV	0.100	0.629	2011-09-08
Nickel	CDV-SMA-4	Ni	Y	BTV	15.4	90.9	1995-07-06
Selenium	CDV-SMA-4	Se	Y	BTV	1.52	2.20	2011-09-09
Silver	CDV-SMA-4	Ag	Y	BTV	1.00	2.00	2011-08-26
Thallium	CDV-SMA-4	Tl	Y	BTV	0.730	1.10	2011-09-09
Uranium	CDV-SMA-4	U	Y	BTV	1.82	2010	1995-07-07
Zinc	CDV-SMA-4	Zn	Y	BTV	48.8	58.4	2011-09-08

Figure 181.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-4

181.4 Stormwater Evaluation

181.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

181.4.2 Assessment Unit and Stream Impairments

CDV-SMA-4 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

181.5 Site-Specific Demonstration

181.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: antimony, benzo(b)fluoranthene, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, uranium, and zinc.

181.5.2 Stormwater Data Summary

No confirmation-monitoring data.

181.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

181.5.4 Sampling and Analysis Plan

Table 181.5-1 is the proposed SAP for CDV-SMA-4.

Table 181.5-1 Proposed SAP, CDV-SMA-4

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals) and soil data
Total PCBs	Site history (organic chemicals)
Dissolved antimony, chromium, cobalt, copper, lead, nickel, silver, thallium, uranium, and zinc	Site history (metals) and soil data
Total mercury and selenium	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

182.0 CDV-SMA-6.01

Associated Sites	14-001(g), 14-006
Receiving Water	Cañon de Valle
Drainage Area	1.39 acres
Landscape Characteristics	14% impervious, 86% pervious
Consent Order Site Status	AOC 14-001(g): In Progress Deferred per Consent Order SWMU 14-006: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

182.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600948), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

182.2 Site History

14-001(g) (2/18/2021)

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

AOC 14-001(g) was referred to as SWMU 14-001(g) in historical documents.

14-006 (2/18/2021)

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

For investigation activities at the Sites, refer to "Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1" (N3B 2020, 700746).

182.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 182.2-1.

Table 182.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-001(g)	Firing site	HE
14-006	Sump and/or associated equipment	HE

182.3 Consent Order Soil Data

Decision-level data for AOC 14-001(g) consist of results from 30 samples collected at 15 locations in 2011. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination in the drainages downgradient of the Site have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 14-006 consist of results from 22 samples collected at 11 locations in 2011. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 182.3-1 through 182.3-4.

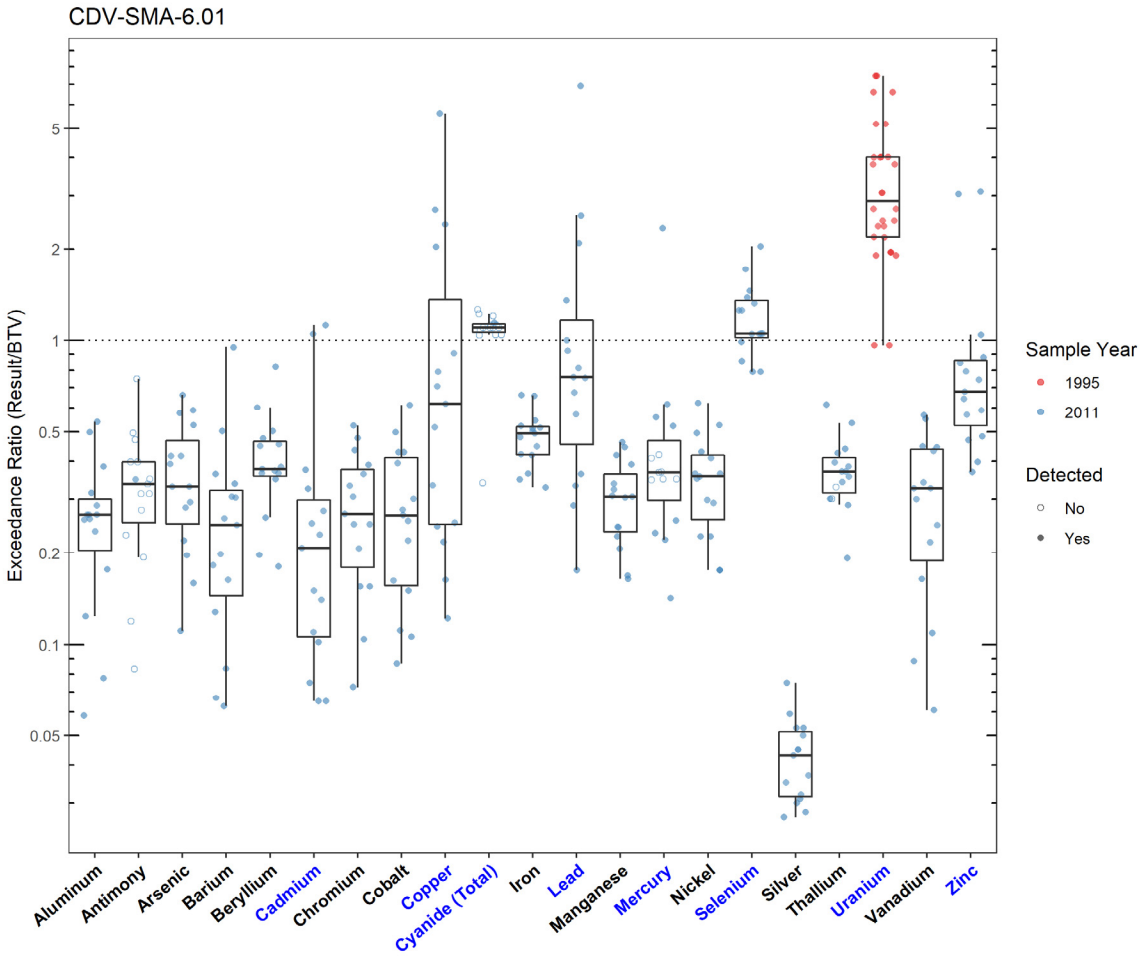


Figure 182.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-6.01

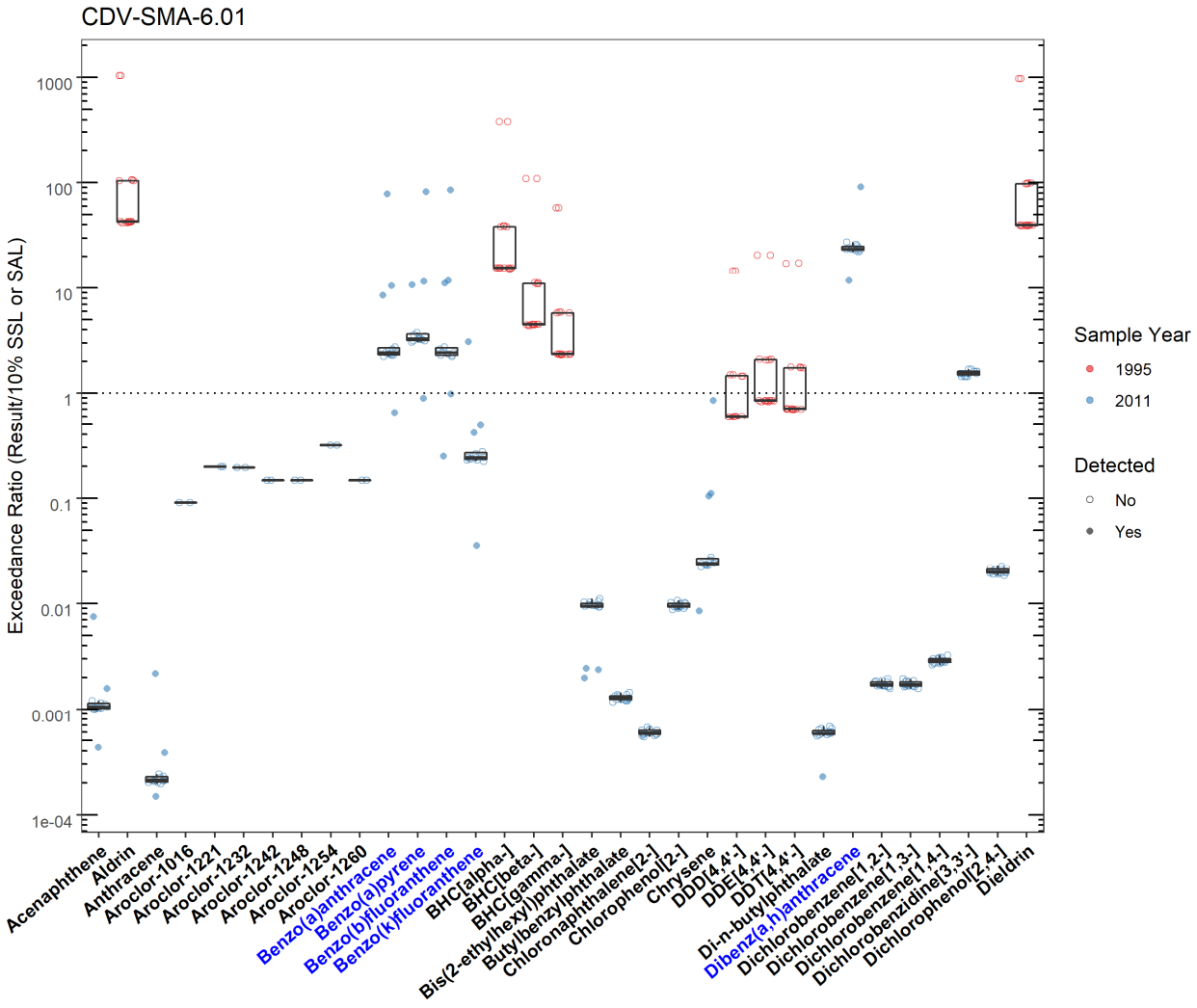


Figure 182.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.01 (Plot 1)

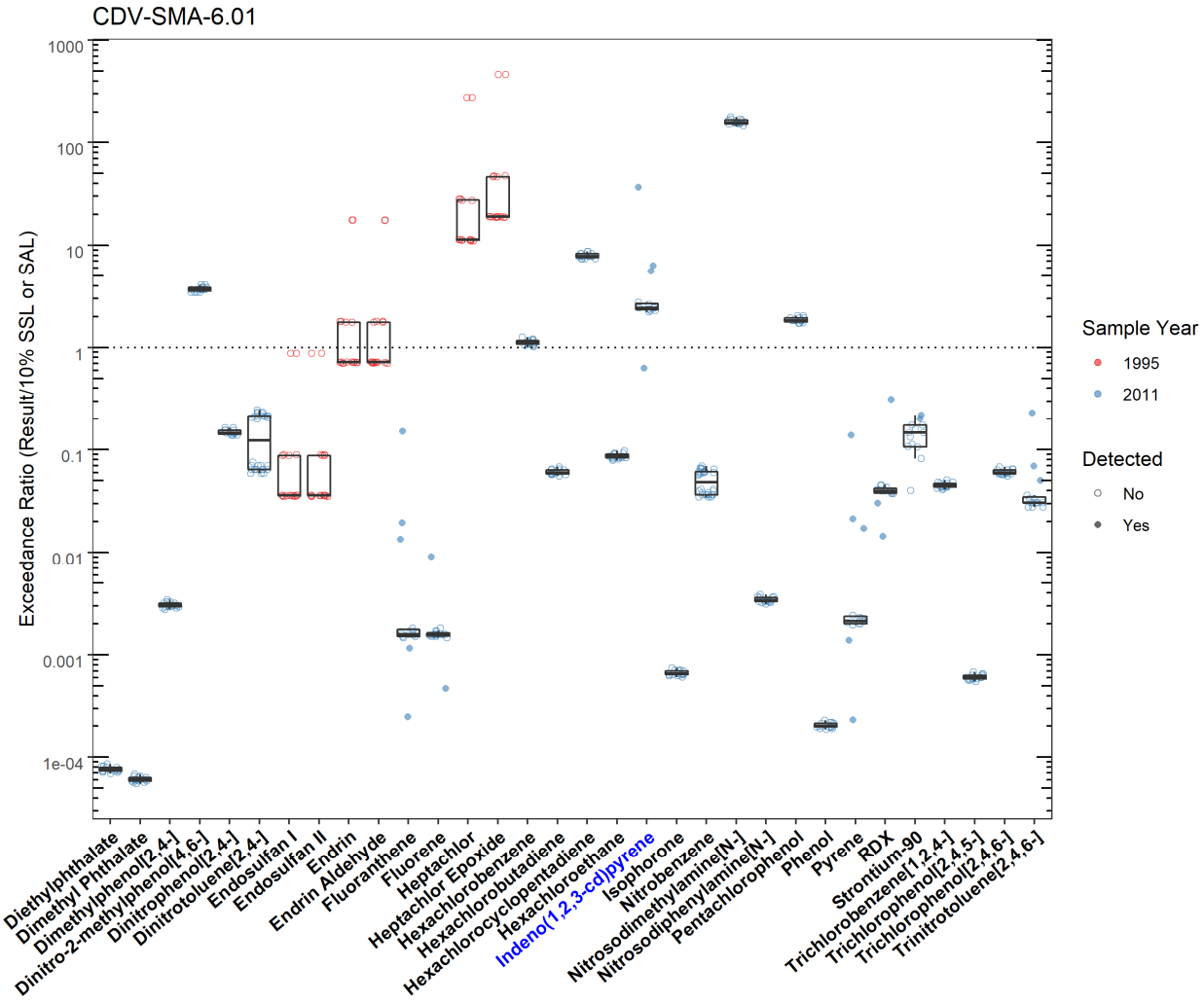


Figure 182.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.01 (Plot 2)

CDV-SMA-6.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	CDV-SMA-6.01	56-55-3	Y	SSL_0.1	0.153	12.0	2011-08-19
Benzo(a)pyrene	CDV-SMA-6.01	50-32-8	Y	SSL_0.1	0.112	9.20	2011-08-19
Benzo(b)fluoranthene	CDV-SMA-6.01	205-99-2	Y	SSL_0.1	0.153	13.0	2011-08-19
Benzo(k)fluoranthene	CDV-SMA-6.01	207-08-9	Y	SSL_0.1	1.53	4.70	2011-08-19
Cadmium	CDV-SMA-6.01	Cd	Y	BTV	0.400	0.450	2011-08-19
Copper	CDV-SMA-6.01	Cu	Y	BTV	14.7	82.5	2011-09-01
Cyanide (Total)	CDV-SMA-6.01	CN(TOTAL)	Y	BTV	0.500	0.570	2011-08-19
Dibenz(a,h)anthracene	CDV-SMA-6.01	53-70-3	Y	SSL_0.1	0.0153	1.40	2011-08-19
Indeno(1,2,3-cd)pyrene	CDV-SMA-6.01	193-39-5	Y	SSL_0.1	0.153	5.60	2011-08-19
Lead	CDV-SMA-6.01	Pb	Y	BTV	22.3	154	2011-09-01
Mercury	CDV-SMA-6.01	Hg	Y	BTV	0.100	0.234	2011-08-19
Selenium	CDV-SMA-6.01	Se	Y	BTV	1.52	3.10	2011-08-19
Uranium	CDV-SMA-6.01	U	Y	BTV	1.82	13.6	1995-06-20
Zinc	CDV-SMA-6.01	Zn	Y	BTV	48.8	151	2011-08-19

Figure 182.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-6.01

182.4 Stormwater Evaluation

182.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

182.4.2 Assessment Unit and Stream Impairments

CDV-SMA-6.01 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

182.5 Site-Specific Demonstration

182.5.1 Soil Data Summary

No Site-related POCs exceeded the applicable screening values in soil data.

182.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Copper, gross alpha, and radium-226 and radium-228 exceeded TALs in the previous monitoring stage at the former monitoring location. Copper also exceeded the BTV and there was no paired SSC data to determine if gross alpha and radium-226 and radium-228 were below BTVs. Therefore, they will be added to the SAP.

182.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

182.5.4 Sampling and Analysis Plan

Table 182.5-1 is the proposed SAP for CDV-SMA-6.01.

Table 182.5-1 Proposed SAP, CDV-SMA-6.01

Monitoring Constituent	Background for Monitoring
Gross alpha	Stormwater data
HE	Site history
Radium-226 and radium-228	Stormwater data
Dissolved copper	Soil data and stormwater data
DOC	Permit requirement
SSC	Permit requirement

183.0 CDV-SMA-6.02

Associated Sites	14-002(c)
Receiving Water	Cañon de Valle
Drainage Area	0.08 acres
Landscape Characteristics	8% impervious, 92% pervious
Consent Order Site Status	SWMU 14-002(c): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	SMA deletion, as long as no sample is collected between October 15, 2022 and the end of the monitoring season.

183.1 2010 Administratively Continued Permit Summary

SWMU 14-002(c) is not listed on the Administratively Continued Permit. During preparation for Consent Order investigations at TA-14, additional historical information was reviewed that indicated SWMU 14-002(c) was a candidate for inclusion in the Permit. The Permittees added the Site to the SMA in May 2013 as an "additional" IP Site. This administrative change has been included in the Annual Report and the SDPPP since that time.

Following the February 2011 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the July 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated. In July 2013, the monitoring location was relocated to be more representative after a change in condition observed at the annual erosion inspection required per Permit Part I.G.1. A stormwater sample was collected in September 2013 with no TAL exceedances. Confirmation monitoring is ongoing to collect a second sample.

183.2 Site History

14-002(c) (2/18/2021)

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

For investigation activities, refer to "Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1" (N3B 2020, 700746).

183.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 183.2-1.

Table 183.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-002(c)	Control building 14-5	HE

183.3 Consent Order Soil Data

Decision-level data for SWMU 14-002(c) consist of results from samples collected in 2011. Analytical results for these samples are presented in Figures 183.3-1 through 183.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

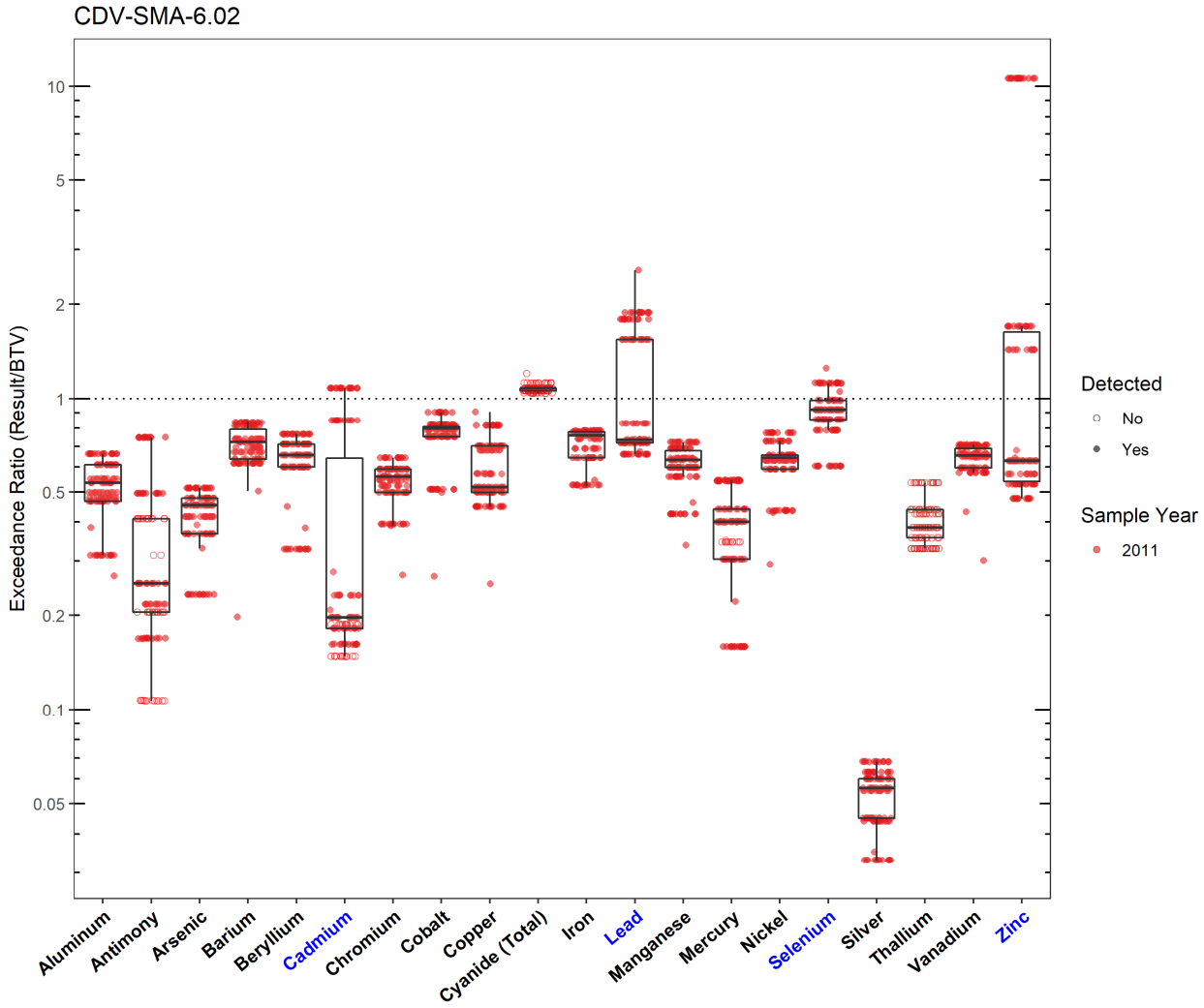


Figure 183.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-6.02

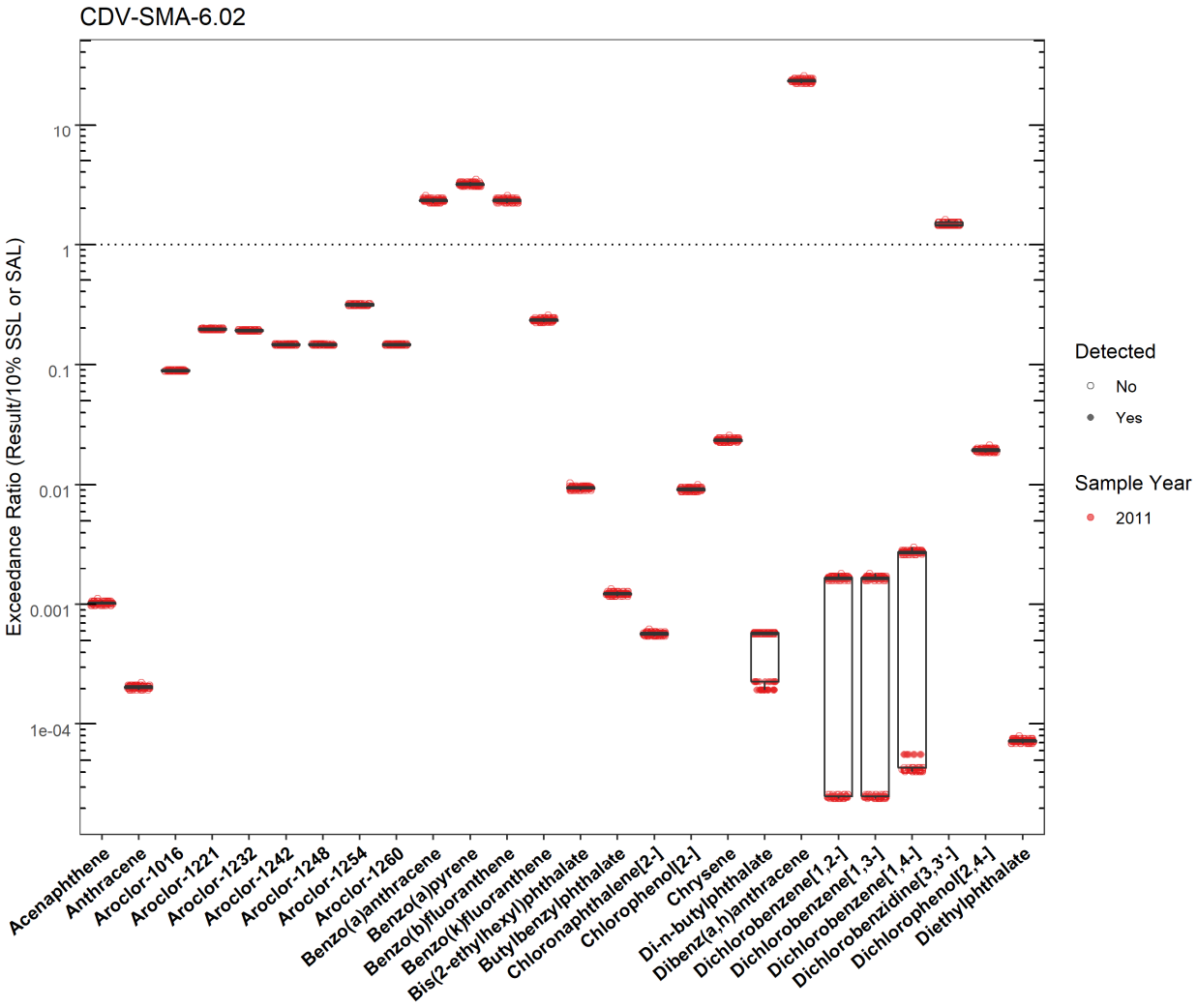


Figure 183.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.02 (Plot 1)

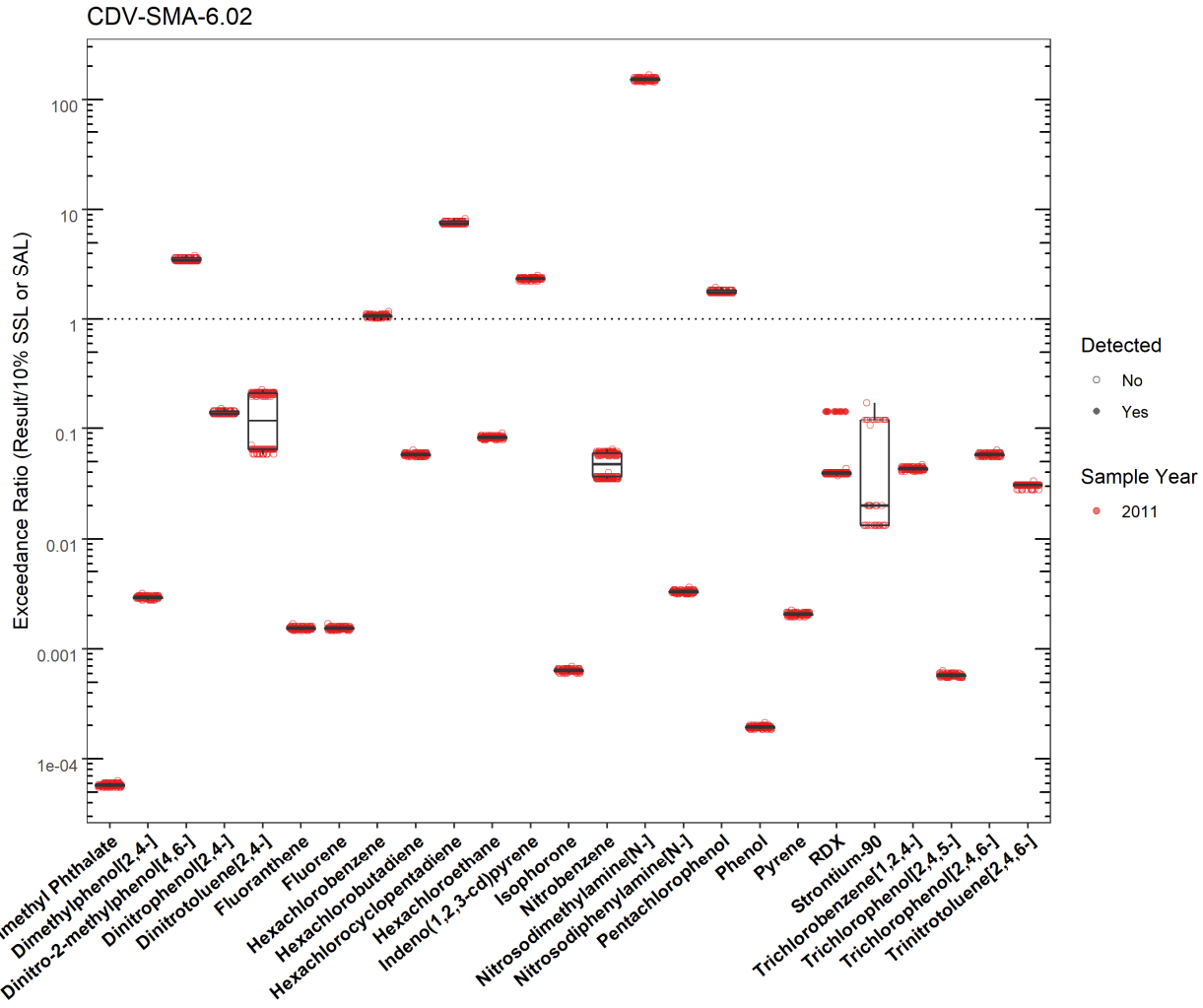


Figure 183.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.02 (Plot 2)

CDV-SMA-6.02

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	CDV-SMA-6.02	Cd	Y	BTV	0.400	0.430	2011-08-05
Lead	CDV-SMA-6.02	Pb	Y	BTV	22.3	57.6	2011-08-21
Selenium	CDV-SMA-6.02	Se	Y	BTV	1.52	1.90	2011-08-21
Zinc	CDV-SMA-6.02	Zn	Y	BTV	48.8	516	2011-08-05

Figure 183.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-6.02

183.4 Stormwater Evaluation

183.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 183.4-1 and 183.4-2.

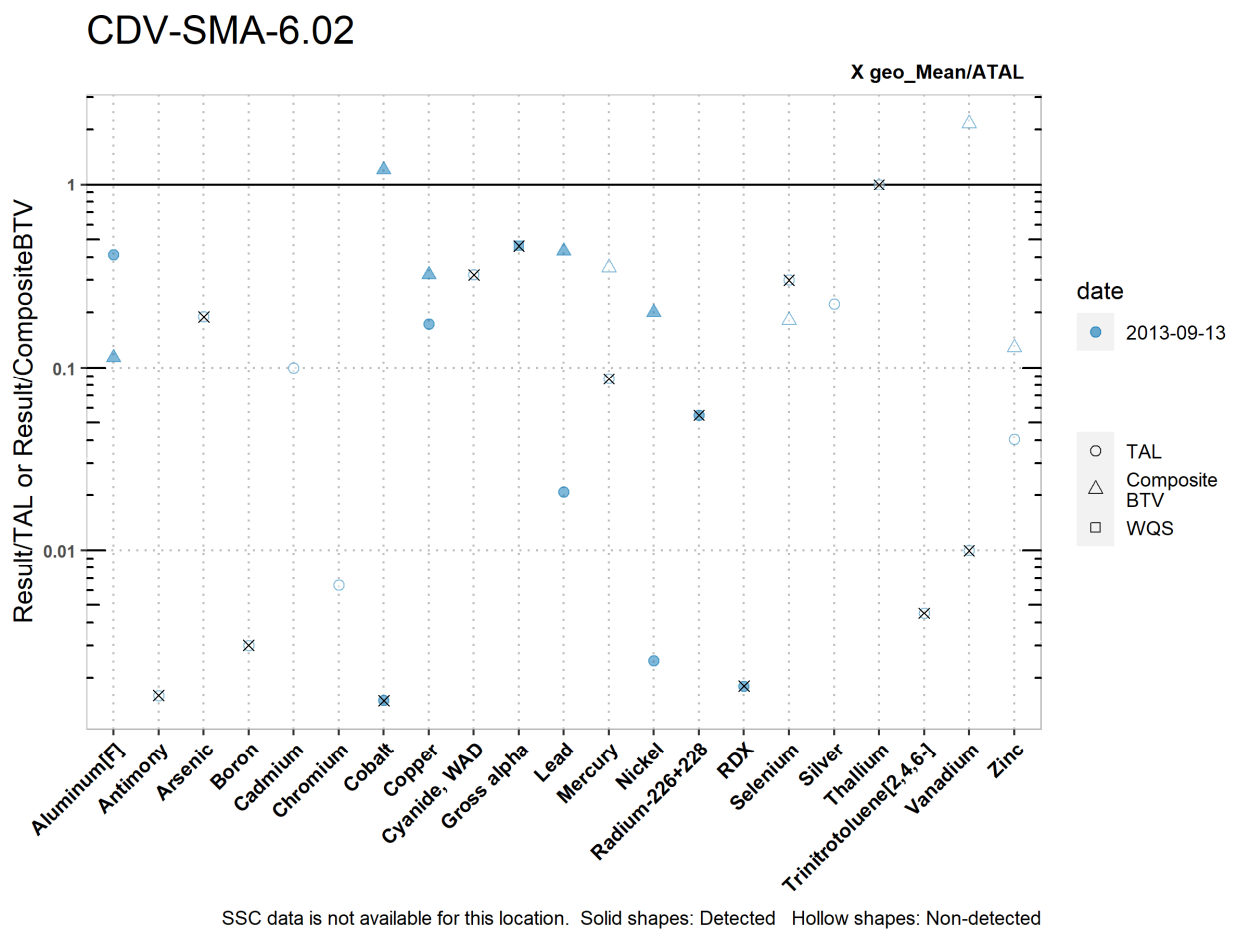


Figure 183.4-1 Analytical Results from Stormwater Sample, CDV-SMA-6.02 (Plot)

CDV-SMA-6.02

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	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	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2720	NA	NA	NA	NA	NA	1.27	3.61	NA	56.6	1.38	0.191	3.10	4.72	NA	8.24	NA	NA	NA	0.464	25.6
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
2013-09-13 result	309	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	1.54	1.16	*1.67*	6.97	0.596	*0.0670*	0.621	1.64	0.368	*1.50*	*0.200*	*0.450*	*0.0904*	*1.00*	*3.30*
2013-09-13 dT	0.412	NA	NA	NA	NA	NA	0.0015	0.173	NA	0.46	0.0208	NA	0.00248	0.0547	0.0018	NA	NA	NA	NA	NA	NA
2013-09-13 dB	0.114	NA	NA	NA	NA	NA	1.21	0.321	NA	NA	0.432	NA	0.200	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0015	NA	0.321	0.46	NA	0.087	NA	0.0547	0.0018	0.30	NA	1	0.0045	0.010	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 183.4-2 Analytical Results from Stormwater Sample, CDV-SMA-6.02 (Table)

183.4.2 Assessment Unit and Stream Impairments

CDV-SMA-6.02 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

183.5 Site-Specific Demonstration

183.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

183.5.2 Stormwater Data Summary

No TAL exceedances.

183.5.3 2022 Permit Status

The SMA and associated Sites are eligible for deletion because stormwater discharges associated with industrial activity no longer occur at the Site (Part I.C.4.e)

184.0 CDV-SMA-7

Associated Sites	15-008(d)
Receiving Water	Cañon de Valle
Drainage Area	0.39 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-008(d): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

184.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600909), corrective-action monitoring was initiated and stormwater samples were collected in July and August 2018. Analytical results from these samples initiated corrective action.

Following the December 2020 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2020, 701161), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Confirmation monitoring is ongoing to collect a second sample.

184.2 Site History

15-008(d) (3/13/2018)

SWMU 15-008(d) consists of a building debris pile located south of former building 15-22 in the northwest portion of TA-15 in an area known as “The Hollow.” The source of the debris is unknown. Building 15-22 was originally constructed in the 1970s as a control center for an experimental accelerator in nearby building 15-203. This control center was not needed to operate the accelerator, and the building was never used for this purpose. Building 15-22 was reportedly used for storage and was demolished and removed in October 2004.

The Hollow was a series of buildings (former buildings 15-20, 15-194, and 15-203) connected by a common roof structure that had been assembled over the years beginning in 1949. These buildings had various uses, including assembly buildings, laboratories, and shops. Although documentation of what was assembled is not available, it was likely explosive devices tested elsewhere at TA-15. In the 1960s, building 15-194 had a vapor degreaser (the solvents used were not specified but likely included halogenated hydrocarbons such as trichloroethene, tetrachloroethene, or 1,1,1-trichlorethane). The vapor degreaser was removed in 1987. Building 15-194 also contained stripping tanks that employed sulfuric, chromic, and/or hydrochloric acids. Structures associated with The Hollow were demolished and removed in 2004.

The northwest portion of TA-15 including The Hollow was moderately to severely damaged in the 2000 Cerro Grande fire, and several structures were destroyed. The ground cover and the canopy surrounding the Site were damaged extensively.

For investigation activities for the Site, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

184.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 184.2-1.

Table 184.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-008(d)	Surface disposal area	Metals

184.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-008(d).

184.4 Stormwater Evaluation

184.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figures 184.4-1 and 184.4-2.

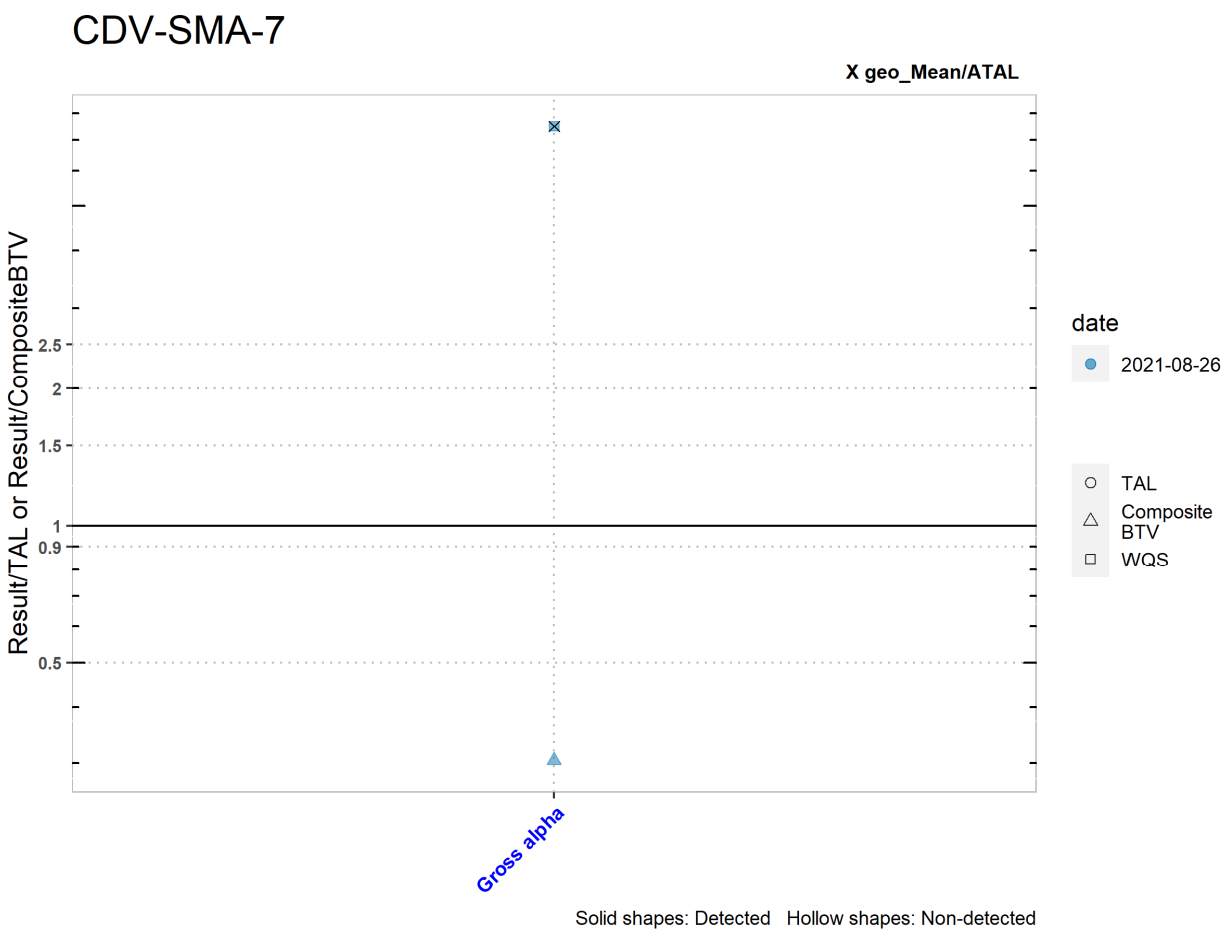


Figure 184.4-1 Analytical Results from Stormwater Sample, CDV-SMA-7 (Plot)

CDV-SMA-7

	Gross alpha
MQL	NA
ATAL	15
MTAL	NA
Composite_BTV	57.2
unit	pCi/L*
2021-08-26 result	113
2021-08-26 dT	7.5
2021-08-26 dB	0.304
geo_mean/ATAL	7.5

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 184.4-2 Analytical Results from Stormwater Sample, CDV-SMA-7 (Table)

184.4.2 Assessment Unit and Stream Impairments

CDV-SMA-7 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

184.5 Site-Specific Demonstration

184.5.1 Soil Data Summary

Decision-level data are not available for SWMU 15-008(d).

184.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

184.5.3 2022 Permit Status

The SMA is in active monitoring; a second confirmation-monitoring sample has not been collected at the current location.

184.5.4 Sampling and Analysis Plan

Table 184.5-1 is the proposed SAP for CDV-SMA-7.

Table 184.5-1 Proposed SAP, CDV-SMA-7

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Stormwater data
DOC (1)	Permit requirement
SSC (1)	Permit requirement

185.0 CDV-SMA-8

Associated Sites	15-011(c)
Receiving Water	Cañon de Valle
Drainage Area	27.88 acres
Landscape Characteristics	5% pervious, 95% impervious
Consent Order Site Status	SWMU 15-011(c): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.c criterion

185.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2014.

185.2 Site History

15-011(c) (3/15/2018)

SWMU 15-011(c) is a dry well and associated drainline located west of electron gun/pulse power laboratory (former building 15-194) in the northwest portion of TA-15 in an area known as the Hollow. The dry well, reportedly constructed in 1960, consists of eight feet of concrete pipe placed vertically within a shaft and covered with a metal lid. The bottom of the shaft was lined with gravel. The dry well reportedly received discharges from two acid cleaning sinks/tanks located within former building 15-50. The sinks/tanks were removed prior to 1986. Both the 1986 Comprehensive Environmental Assessment and Response Program (CEARP) Report and the 1990 SWMU Report state that effluent may have been discharged directly to Cañon de Valle rather than into a dry well. Engineering drawing C-19082 depicts the dry well design and location, however the drawing is not an as-built drawing; therefore, it is possible that the dry well was never constructed. The 1990 SWMU Report and the 1993 RFI work plan both identify SWMU 15-011(c) as a sump, as do engineering drawings. However, this structure as depicted in the drawings has a gravel bottom with no outfall pipe and is therefore better described as a drywell. The RFI work plan states that no evidence of the sump (dry well) was found during the work plan development, and concluded that effluent from the building was discharged to the canyon. The 1996 RFI report incorrectly describes SWMU 15-011(c) as the drainage located west of the buildings located at the Hollow. The dry well was also not located during site visits conducted prior to the preparation of the 2011 Field Implementation Plan for Cañon de Valle Aggregate Area, TA-15. It is unknown whether the dry well was ever constructed, or if it was, whether it is still in place. The Hollow was a series of buildings (former buildings 15-20, 15-194, and 15-203) connected by a common roof structure that had been

assembled over the years beginning in 1949. These buildings had various uses, including explosive assembly buildings, laboratories, and shops. Although documentation of what was assembled is not available, it was likely explosive devices tested elsewhere at TA-15. In the 1960s, building 15-194 had a vapor degreaser (the solvents used were not specified but likely included halogenated hydrocarbons such as trichloroethene; tetrachloroethene; or 1,1,1-trichlorethane). The vapor degreaser was removed in 1987. Building 15-194 also contained stripping tanks that employed sulfuric, chromic, and/or hydrochloric acids. Structures associated with The Hollow were demolished and removed in 2004. The northwest portion of TA-15 including the Hollow was moderately to severely damaged in the 2000 Cerro Grande fire, and several structures were destroyed. The ground cover and the canopy surrounding the site were damaged extensively.

For investigation activities for the Site, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

185.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 185.2-1.

Table 185.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-011(c)	Dry well	Inorganic chemicals

185.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-011(c).

185.4 Stormwater Evaluation

185.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2014. Analytical results from that sample are presented in Figures 185.4-1 through 185.4-4.

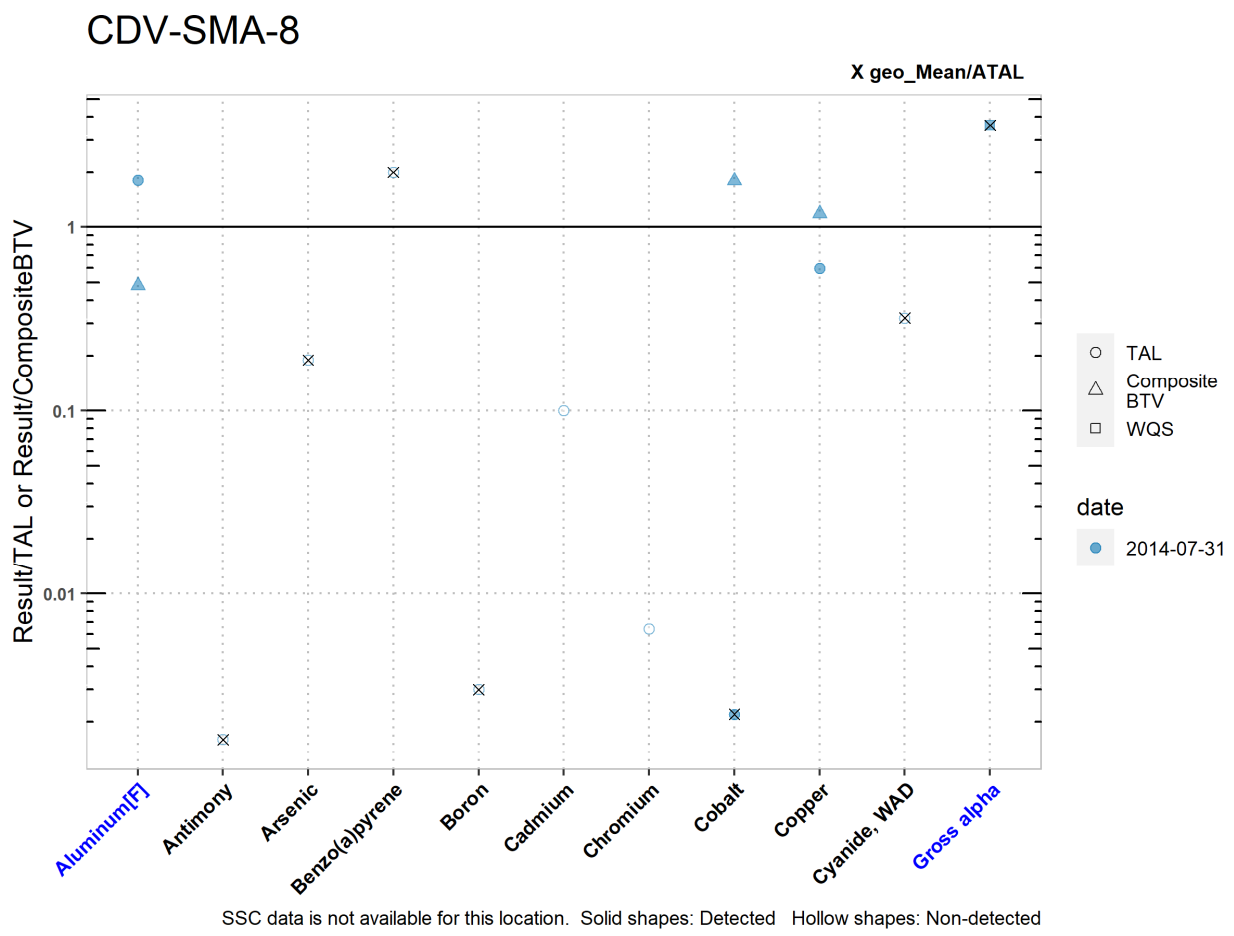


Figure 185.4-1 Analytical Results from Stormwater Sample, CDV-SMA-8 (Plot 1)

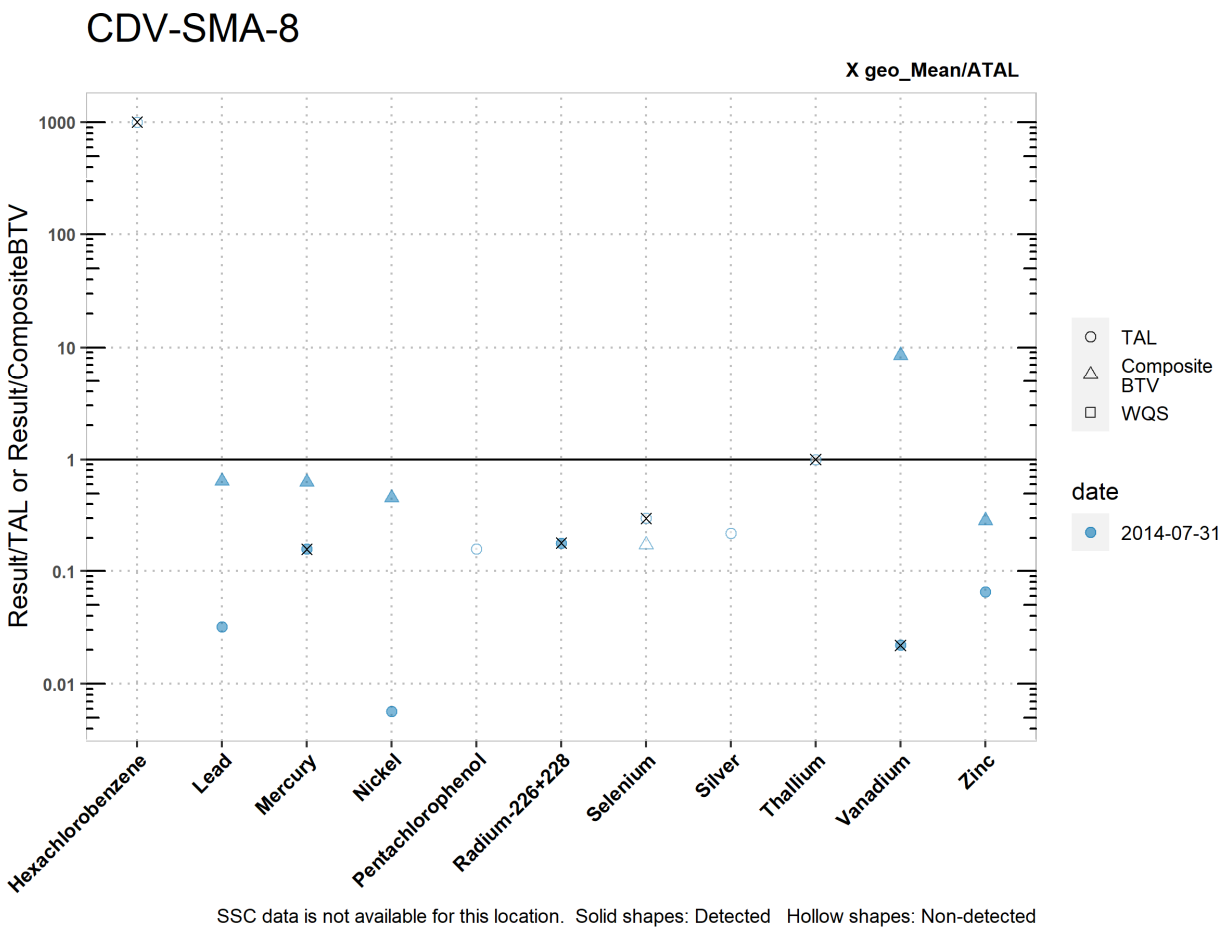


Figure 185.4-2 Analytical Results from Stormwater Sample, CDV-SMA-8 (Plot 2)

CDV-SMA-8

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	2820	NA	NA	NA	NA	NA	NA	1.23	3.39	NA	56.9
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2014-07-31 result	1360	*1.00*	*1.70*	*0.300*	*15.0*	*0.110*	*2.00*	2.22	4.00	*1.67*	53.4
2014-07-31 dT	1.81	NA	NA	NA	NA	NA	NA	0.0022	0.598	NA	3.6
2014-07-31 dB	0.482	NA	NA	NA	NA	NA	NA	1.80	1.18	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.0030	NA	NA	0.0022	NA	0.321	3.6

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 185.4-3 Analytical Results from Stormwater Sample, CDV-SMA-8 (Table 1)

CDV-SMA-8

	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	0.0029	NA	0.77	NA	NA	30	5	NA	0.47	100	NA
MTAL	NA	28.6	NA	250	19	NA	20	0.9	NA	NA	81.6
Composite_BTV	NA	1.43	0.198	3.10	NA	4.49	8.57	NA	NA	0.259	18.7
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2014-07-31 result	*3.00*	0.917	0.124	1.42	*3.00*	5.44	*1.50*	*0.200*	*0.450*	2.21	5.37
2014-07-31 dT	NA	0.0321	0.16	0.00568	NA	0.181	NA	NA	NA	0.022	0.0658
2014-07-31 dB	NA	0.641	0.626	0.458	NA	NA	NA	NA	NA	8.53	0.287
geo_mean/ATAL	1000	NA	0.16	NA	NA	0.181	0.30	NA	1	0.022	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 185.4-4 Analytical Results from Stormwater Sample, CDV-SMA-8 (Table 2)

185.4.2 Assessment Unit and Stream Impairments

CDV-SMA-8 drains to Cañon de Valle (below LANL gage E256), which has an impairment for adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

185.5 Site-Specific Demonstration

185.5.1 Soil Data Summary

Decision-level data are not available for SWMU 15-011(c).

185.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL and there was no paired SSC data to determine if it was below BTV. Filtered aluminum exceeded the TAL but was below BTV.

185.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. Gross alpha was the sole TAL exceedance, and, pursuant to Part I.C.3.c of the permit, this SMA has been screened into long-term stewardship.

186.0 CDV-SMA-8.5

Associated Sites	15-014(a)
Receiving Water	Cañon de Valle
Drainage Area	0.17 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-014(a): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	The November 2017 field visit determined that more of the impacted area should be included in the SMA. Therefore, the sampler was moved downgradient to address silver in soil at location 15-02532.
2022 Permit Status	Active Monitoring

186.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. While developing the 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review and monitoring was reinitiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

186.2 Site History

15-014(a) (/15/2018)

SWMU 15-014(a) consists of a former NPDES-permitted outfall [EPA 06A123] and associated drainlines west of building 15-183, within an area known as R-183 in the western portion of TA-15. Building 15-183 was constructed in 1961 and housed offices and laboratories including photo-processing operations. Beginning in 1961, effluent from floor drains and photo-processing operations in building 15-183 was discharged to the SWMU 15-014(a) outfall. This outfall is located approximately 130 ft from the edge of Cañon de Valle. The drainline associated with this outfall was reportedly replaced with a new drainline along the same path as the original drainline in 1987. The outfall location did not change and the outfall was added to the LANL NPDES Permit as outfall EPA 06A123 for discharges of photo waste. Routine monitoring of effluent was required by the former NPDES permit including sampling and analysis for pH and silver and, before August 1994, for cyanide. Effluent from the outfall followed a surface drainage into the canyon; the location of the drainage is marked by increased vegetation. The drains in building 15-183 and the outfall discharge point were plugged in 1997. The SWMU 15-014(a) outfall was removed from the NPDES permit as of January 14, 1998. Building 15-183 remains active.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

186.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 186.2-1.

Table 186.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-014(a)	Drainline and outfall from building 15-183	Silver, cyanide, organic chemicals, SVOCs

186.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-014(a). Some decision-level data exist within CDV-SMA-8.5 and have been used for SSD purposes.

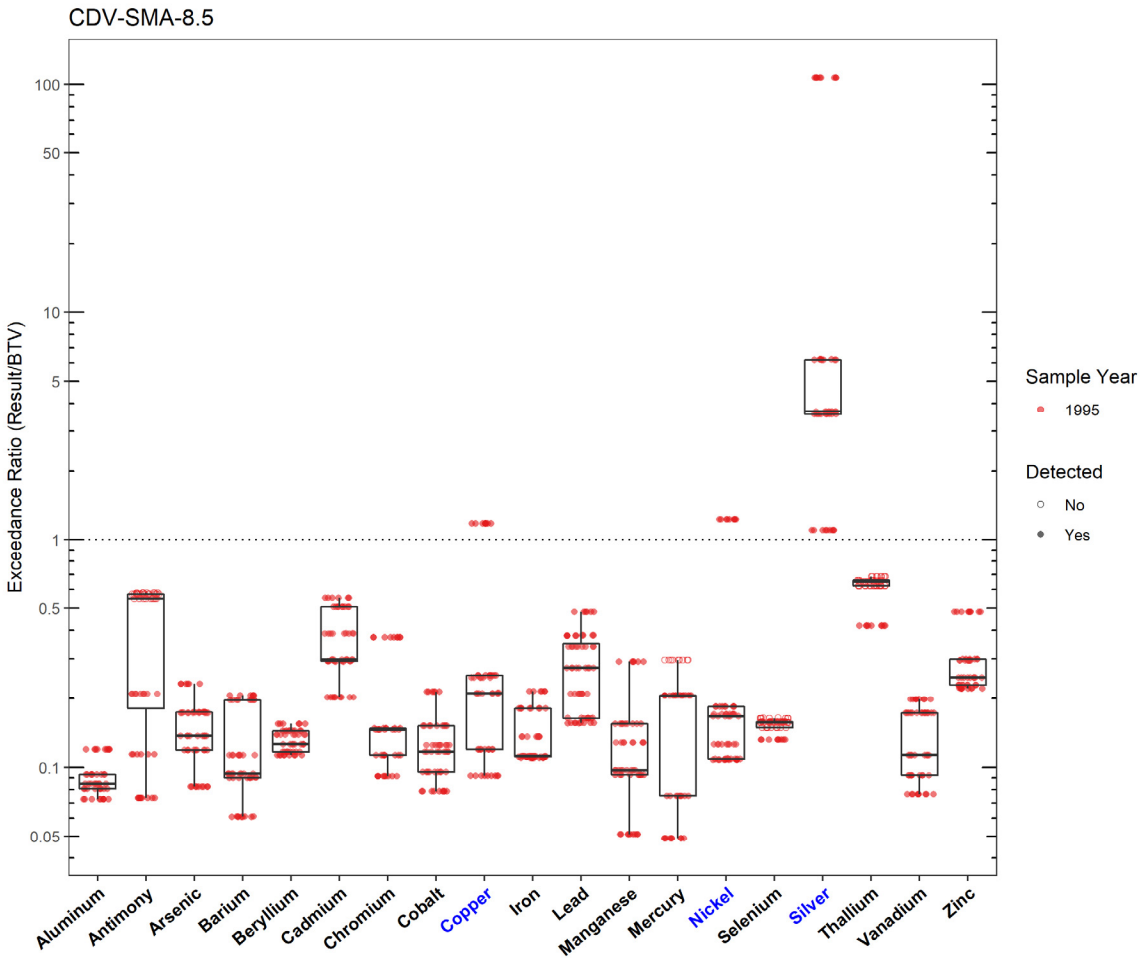


Figure 186.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-8.5

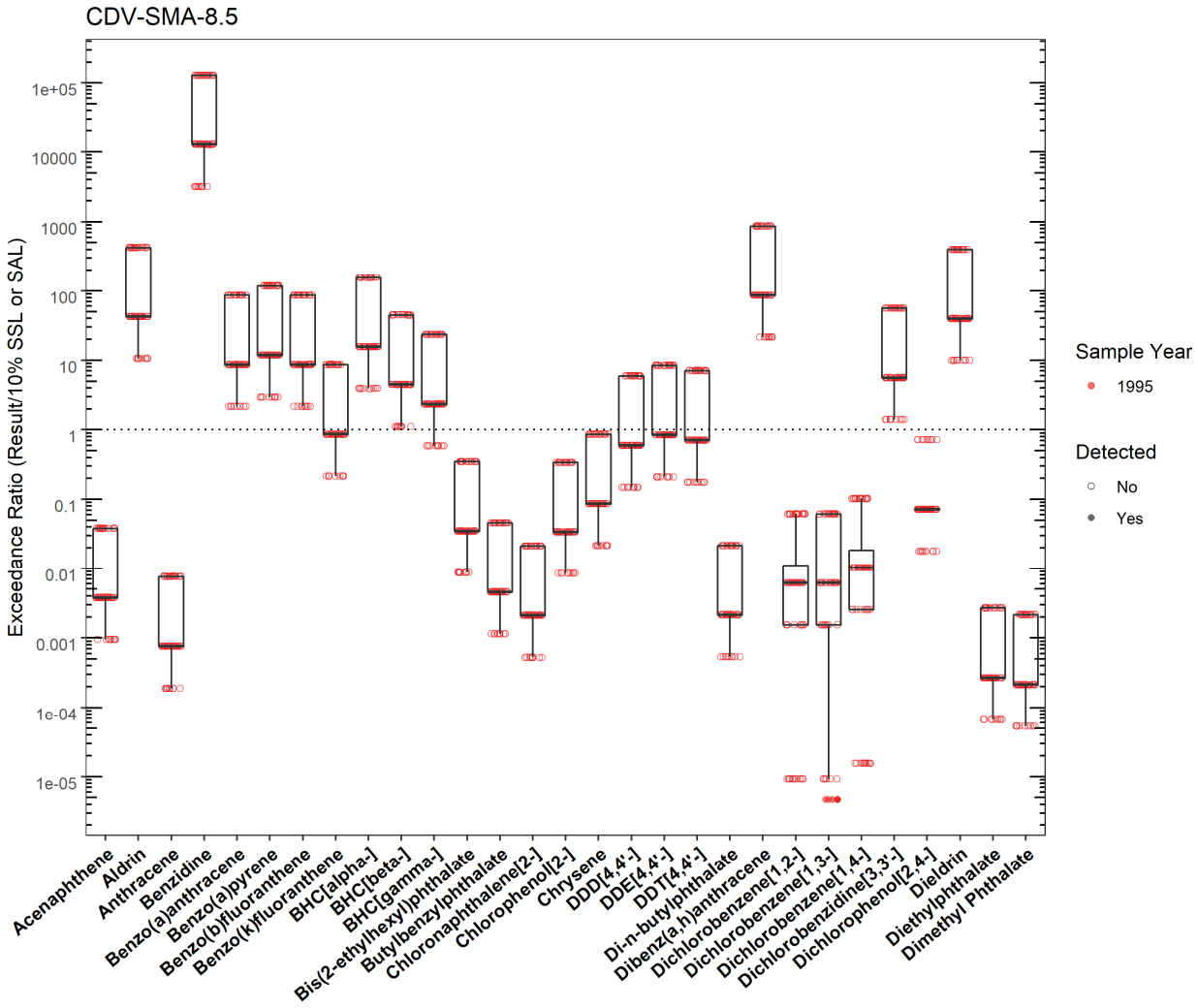


Figure 186.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-8.5 (Plot 1)

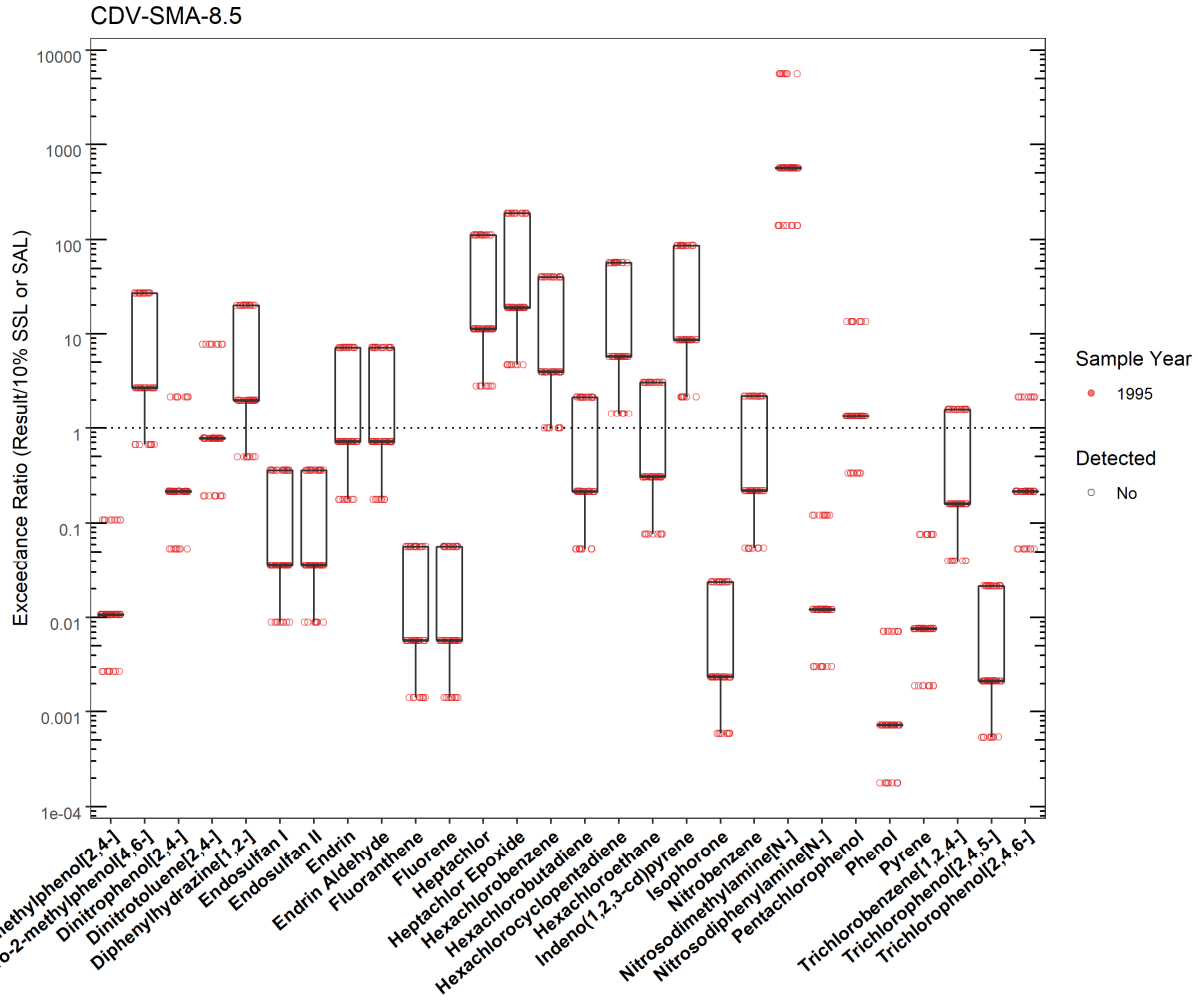


Figure 186.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-8.5 (Plot 2)

CDV-SMA-8.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	CDV-SMA-8.5	Cu	Y	BTV	14.7	17.4	1995-07-27
Nickel	CDV-SMA-8.5	Ni	Y	BTV	15.4	18.9	1995-07-27
Silver	CDV-SMA-8.5	Ag	Y	BTV	1.00	107	1995-07-27

Figure 186.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-8.5

186.4 Stormwater Evaluation

186.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

186.4.2 Assessment Unit and Stream Impairments

CDV-SMA-8.5 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

186.5 Site-Specific Demonstration

186.5.1 Soil Data Summary

Silver exceeded the applicable screening value in soil data and has not yet been measured in stormwater. The remaining metals that exceeded the applicable screening values in soil are not Site-related POCs and will not be added to the SAP.

186.5.2 Stormwater Data Summary

No confirmation-monitoring data.

186.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

186.5.4 Sampling and Analysis Plan

Table 186.5-1 is the proposed SAP for CDV-SMA-8.5.

Table 186.5-1 Proposed SAP, CDV-SMA-8.5

Monitoring Constituent	Background for Monitoring
Dissolved silver	Site history and soil data
Cyanide	Site history
SVOCs	Site history
Total PCBs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

187.0 CDV-SMA-9.05

Associated Sites	15-007(b)
Receiving Water	Cañon de Valle
Drainage Area	2.46 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 15-007(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

187.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2018. Analytical results from this sample initiated corrective action.

Following the December 2020 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2020, 701161), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Confirmation monitoring is ongoing to collect a second sample.

187.2 Site History

15-007(b) (3/13/2018)

SWMU 15-007(b) is an inactive disposal area known as MDA Z, located south of the side road leading to building 15-233 and northwest of inactive Firing Site G [SWMU 15-004(g)] in the south central portion of TA-15. MDA Z is roughly triangular, is approximately 200 × 50 ft, and appears to have been constructed in a natural depression. Thus, one face grades to native soil and one face is approximately 15 ft high and easily visible.

MDA Z operated from 1965 to 1981 and received construction debris, consisting of used sandbags filled with concrete and steel blast matting, from the PHERMEX [SWMU 15-006(a)]. The PHERMEX facility is used to x-ray photograph test explosions. The landfill also contains firing site debris contaminated with HE, uranium, lead, beryllium, and potentially mercury and barium. Partially burned wood was visible at the site during the 1995 RCRA RFI activities. When the site was surveyed after the 2000 Cerro Grande fire, only minor burning of ground cover was noted.

During the 1995 RFI activities, a geophysical survey was conducted to estimate the volume of the disposal area. The survey results indicated a roughly triangular surface area, with a wedge shape grading from about 10 ft deep at the face to the surface level landward edge. The triangle is roughly 225 ft long × 50 ft wide with a surface area of approximately 11,250 ft^2 (the area of a triangle is one-half the base times the height). If the depth were a uniform 10 ft, then the volume would be about 4,000 yd^3. However, because the shape tapers from the face to the opposite boundary, the MDA likely measures no more than half this size or approximately 2,000 yd^3.

For investigation activities for the Site, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

187.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 187.2-1.

Table 187.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-007(b)	MDA Z	Metals, dioxins/furans, PAHs, SVOCs, radionuclides

187.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-007(b).

187.4 Stormwater Evaluation

187.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figures 187.4-1 and 187.4-2.

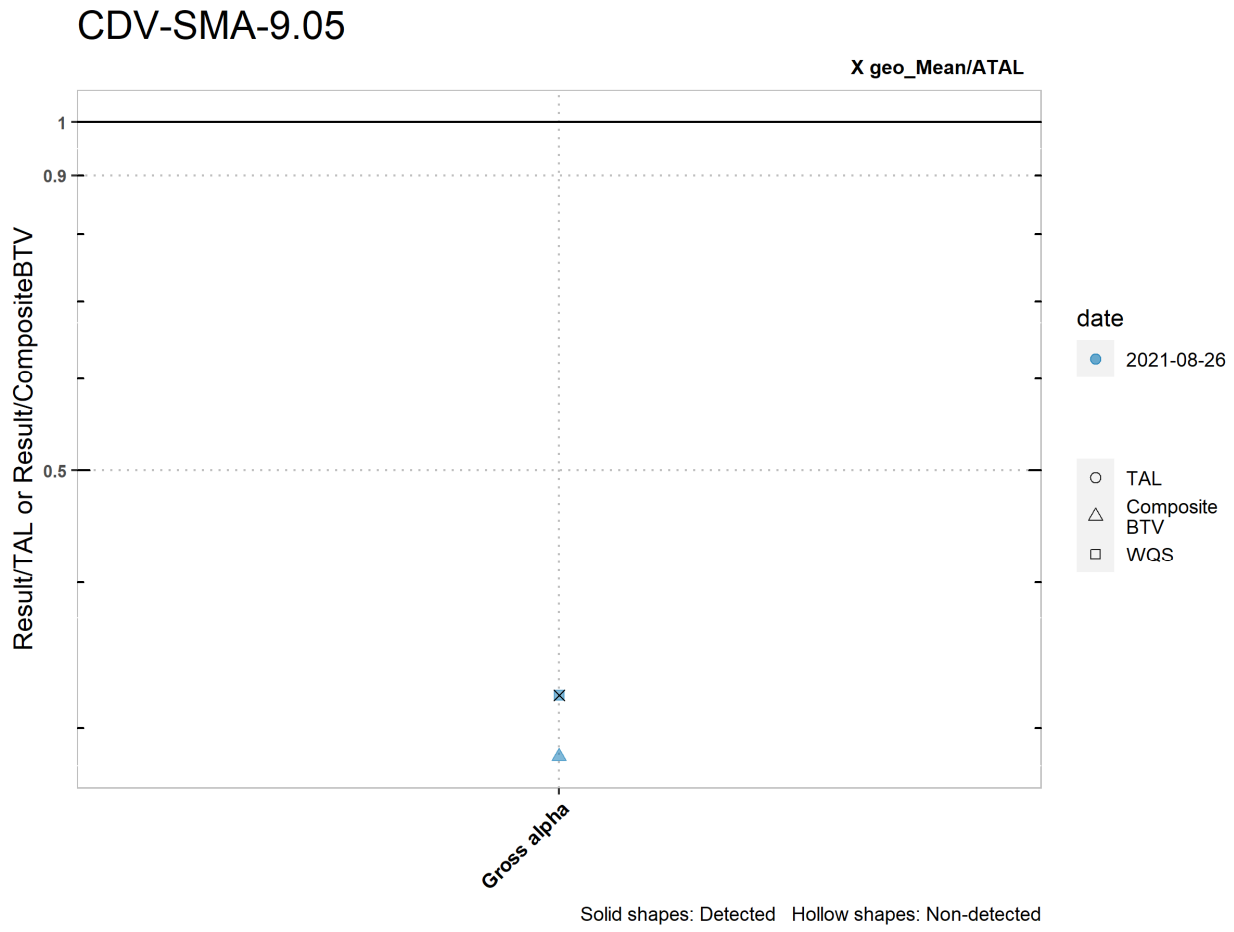


Figure 187.4-1 Analytical Results from Stormwater Sample, CDV-SMA-9.05 (Plot)

CDV-SMA-9.05

	Gross alpha
MQL	NA
ATAL	15
MTAL	NA
Composite_BTV	56.9
unit	pCi/L*
2021-08-26 result	4.83
2021-08-26 dT	0.32
2021-08-26 dB	0.283
geo_mean/ATAL	0.32

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 187.4-2 Analytical Results from Stormwater Sample, CDV-SMA-9.05 (Table)

187.4.2 Assessment Unit and Stream Impairments

CDV-SMA-9.05 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

187.5 Site-Specific Demonstration

187.5.1 Soil Data Summary

Decision-level data are not available for SWMU 15-007(b).

187.5.2 Stormwater Data Summary

No TAL exceedances occurred in the first confirmation sample in this stage.

187.5.3 2022 Permit Status

The SMA is in active monitoring; a second confirmation-monitoring sample has not been collected at this location.

187.5.4 Sampling and Analysis Plan

Table 187.5-1 is the proposed SAP for CDV-SMA-9.05.

Table 187.5-1 Proposed SAP, CDV-SMA-9.05

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history, and stormwater data
SVOCs	Site history
Strontium-90	Site history (Radionuclides)
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history (dioxins/furans)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

188.0 F-SMA-2

Associated Sites	36-004(c)
Receiving Water	Fence Canyon
Drainage Area	40.13 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 36-004(c): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, it was determined that although the SMA is 40 acres in size, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

188.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the June 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), corrective-action monitoring was initiated and two stormwater samples were collected in July 2014. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Monitoring is ongoing to collect a second sample.

188.2 Site History

36-004(c) (4/18/2022)

AOC 36-004(c) is the active Minie Firing Site at TA-36 near the head of Fence Canyon, approximately 800 ft southeast of the active Meenie Firing Site [AOC 36-004(b)]. AOC 36-004(c) is an active RCRA-regulated OD Site and is also used to conduct experiments involving explosives. This firing site consists of the firing point, a control bunker (building 36-8), a make-up building (36-7) [AOC 36-007(c)], a firing platform (no structure number), and an x-ray house (no structure number). Construction of the Minie Firing Site began in 1949 and was completed in 1950. The site has been extensively used to conduct armor-piercing experiments involving various metal penetrators. In these experiments, penetrator jets are directed at targets on the canyon wall to the west of the site. Metal plates are placed behind the targets to stop the penetrators. AOC 36-004(c) has also been used for OD of scrap HE. Emergency detonation of leaking gas cylinders has been performed, but very infrequently. The hazard radius for Minie Site is approximately 3,000 ft.

For investigation activities, refer to “Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1” (LANL 2011, 208336).

188.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 188.2-1.

Table 188.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-004(c)	Active firing site	Aluminum, barium, beryllium, copper, iron, lead, HE, DU

188.3 Consent Order Soil Data

Decision-level data for AOC 36-004(c) consist of results from samples collected in 2010 from sediment catchment areas in the drainage downgradient of the Site. Analytical results for these samples are presented in Figures 188.3-1 through 188.3-4. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(c) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

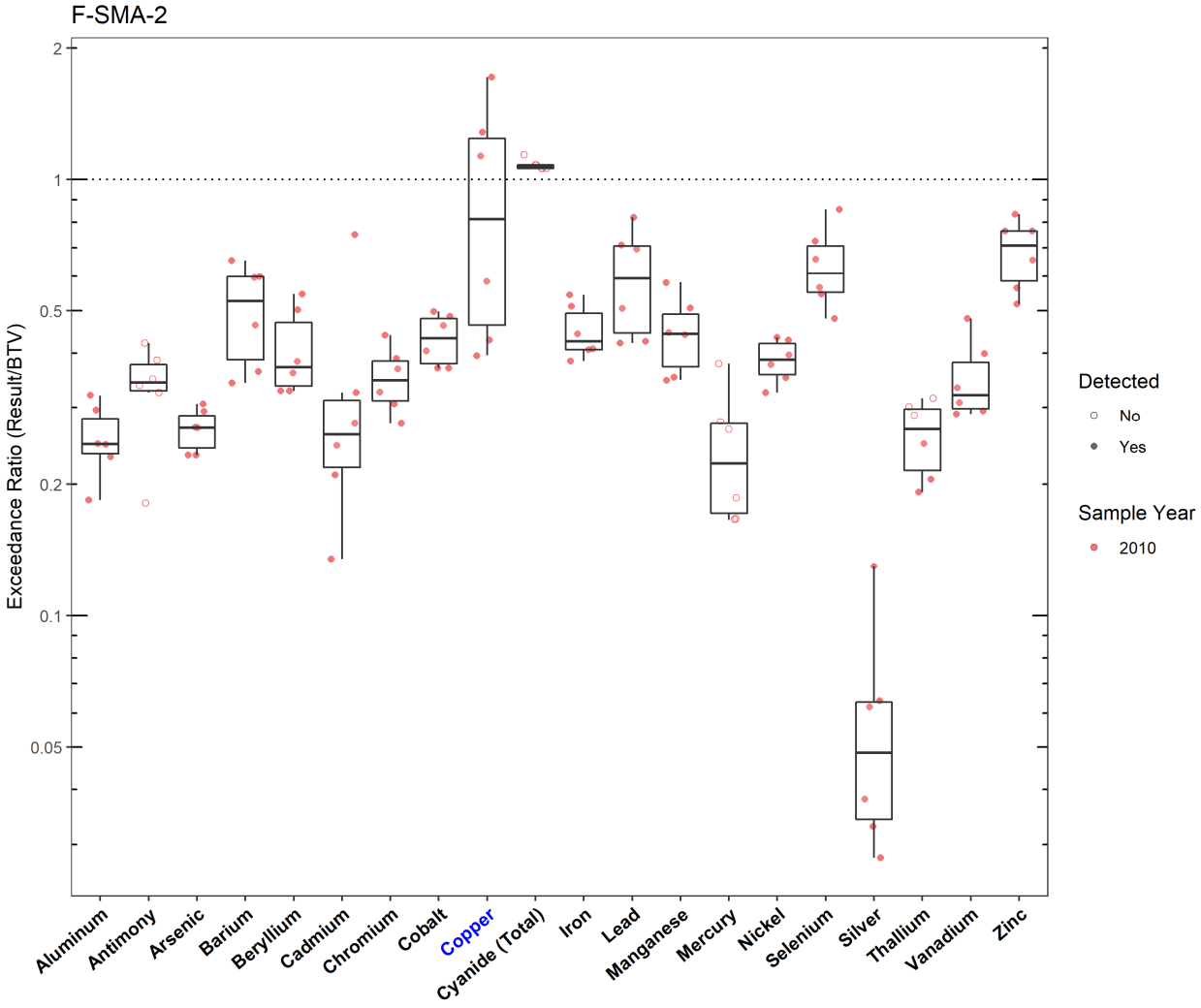


Figure 188.3-1 Inorganics Analytical Results from Soil Samples Associated with F-SMA-2

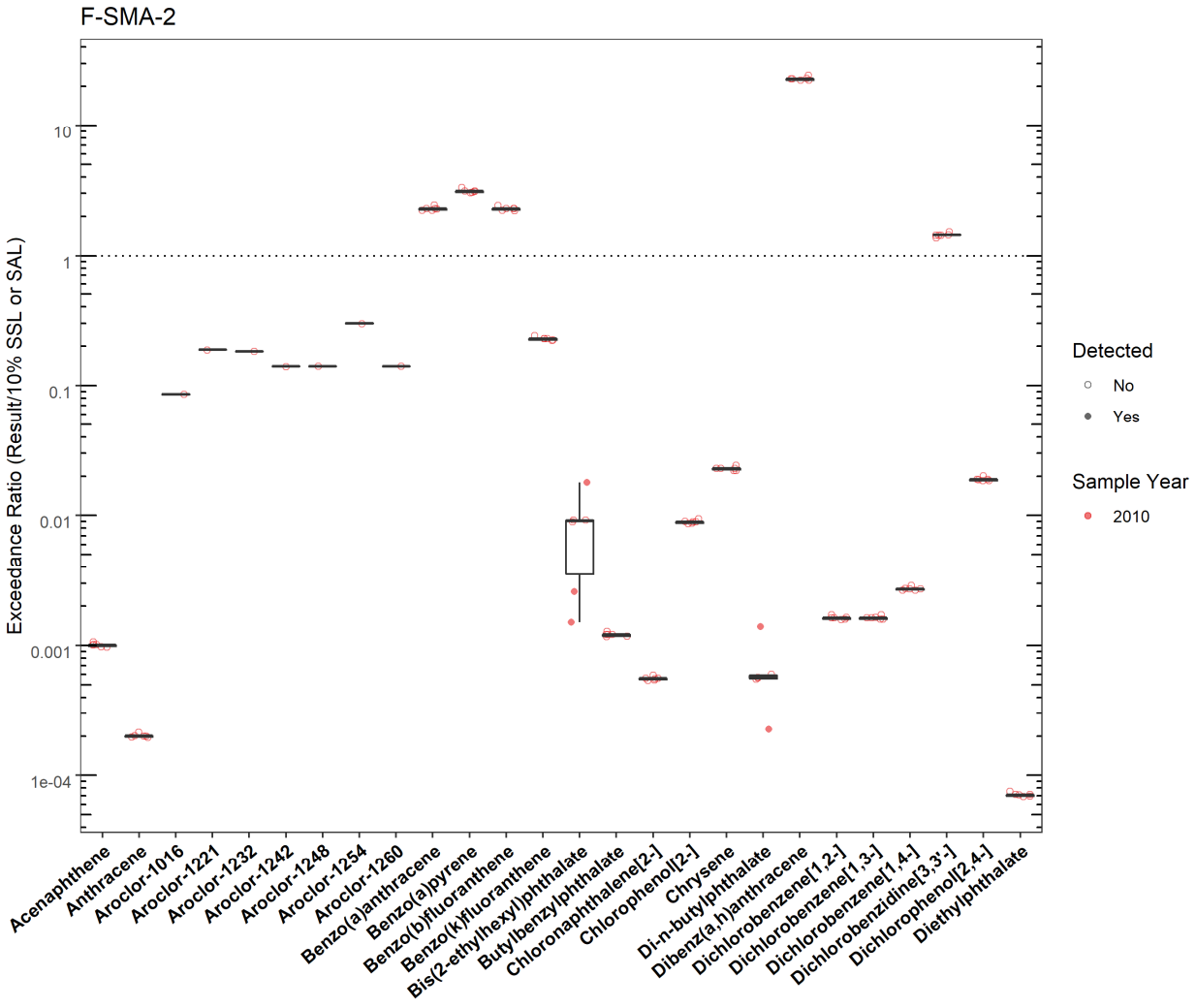


Figure 188.3-2 Organics Analytical Results from Soil Samples Associated with F-SMA-2 (Plot 1)

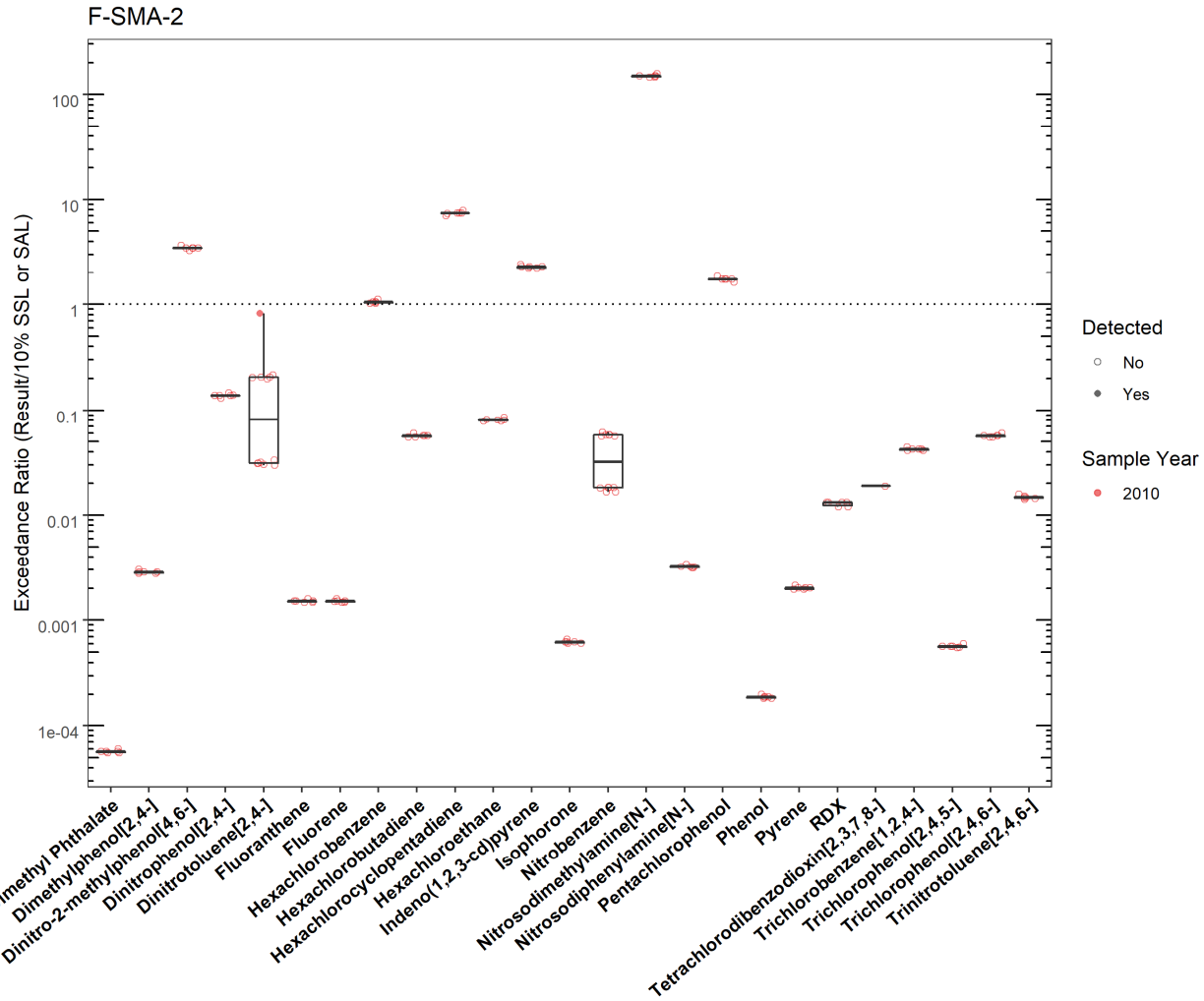


Figure 188.3-3 Organics Analytical Results from Soil Samples Associated with F-SMA-2 (Plot 2)

F-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	F-SMA-2	Cu	Y	BTV	14.7	25.3	2010-12-02

Figure 188.3-4 Screening-Level Exceedances from Soil Samples Associated with F-SMA-2

188.4 Stormwater Evaluation

188.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figures 188.4-1 through 188.4-4.

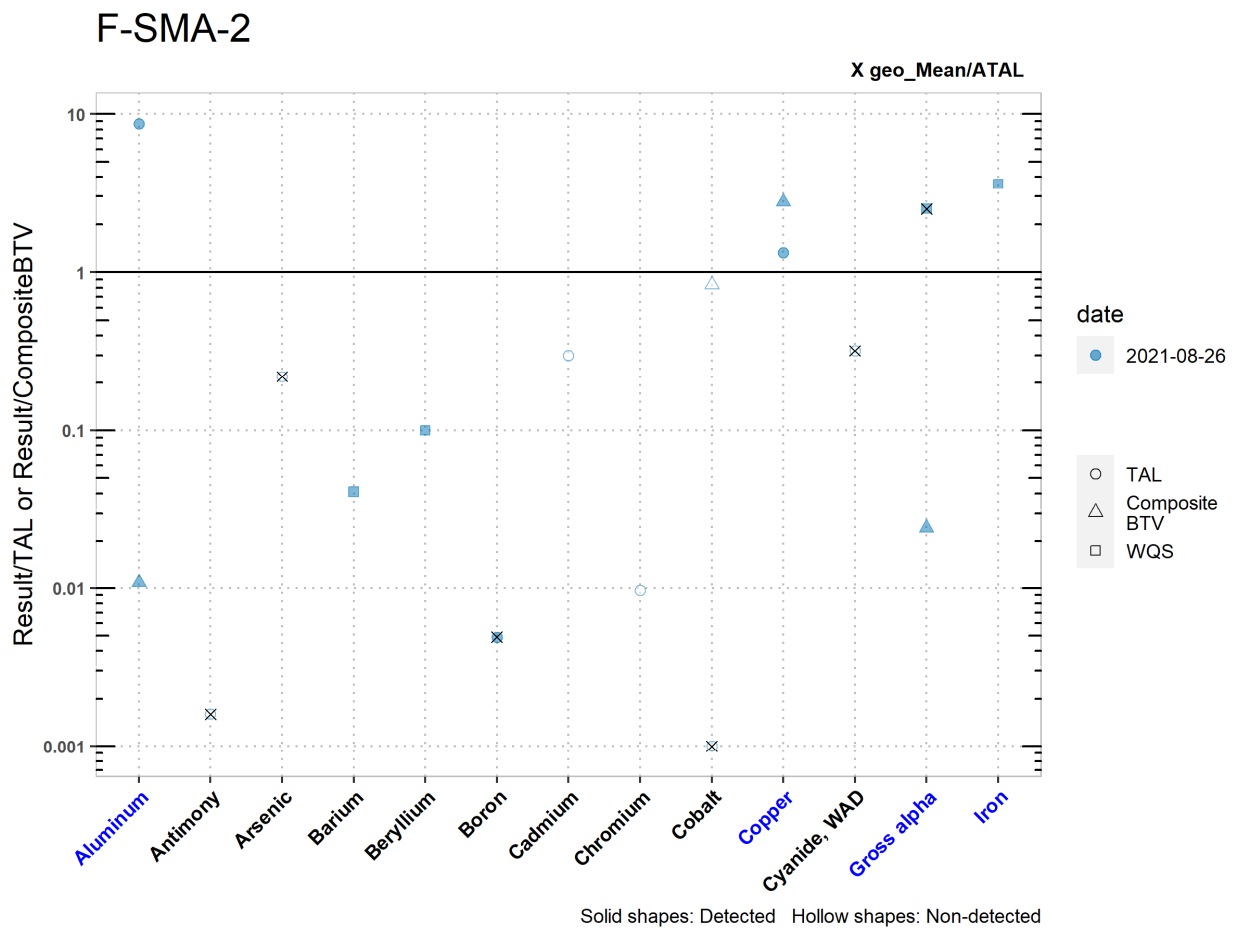


Figure 188.4-1 Analytical Results from Stormwater Sample, F-SMA-2 (Plot 1)

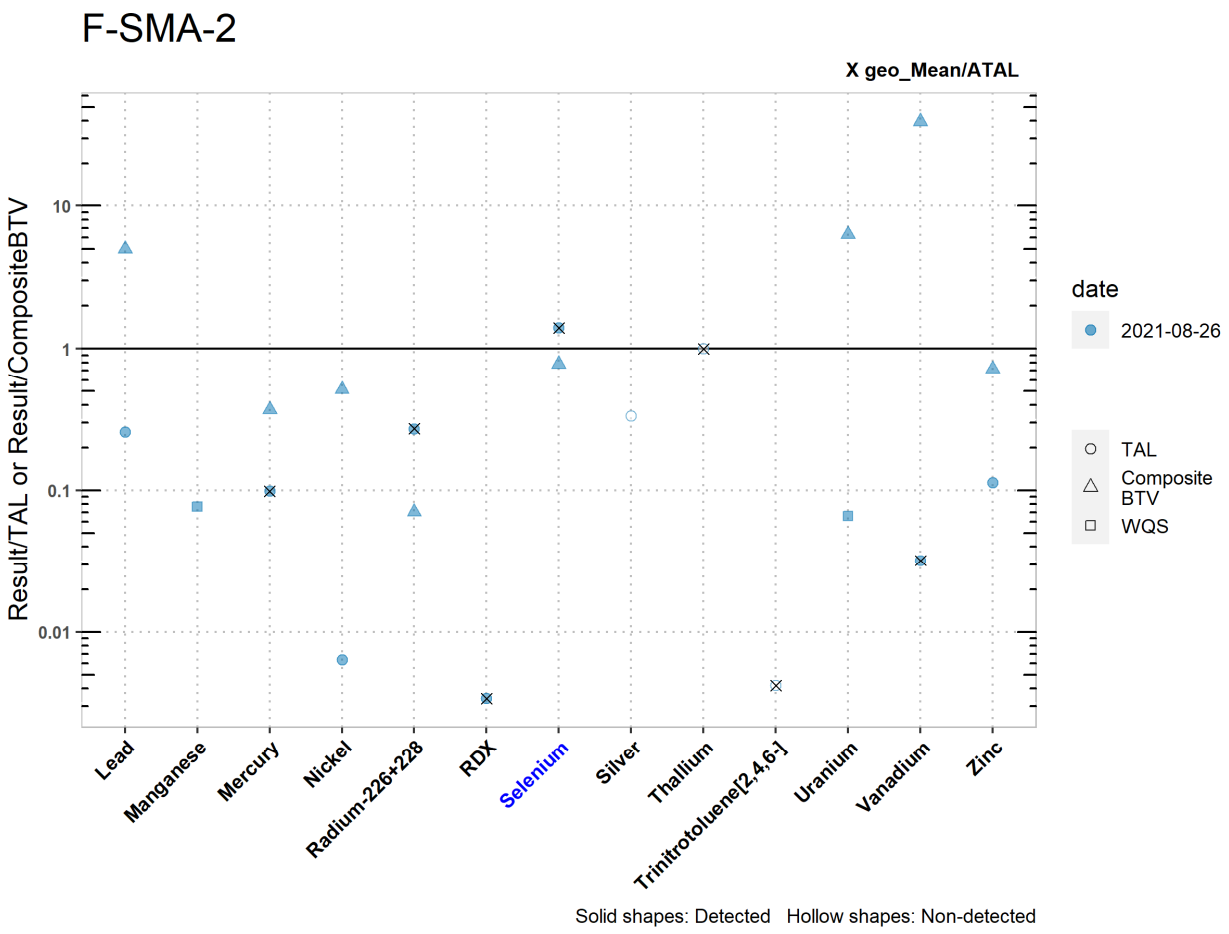


Figure 188.4-2 Analytical Results from Stormwater Sample, F-SMA-2 (Plot 2)

F-SMA-2

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA
MTAL	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	37300	NA	NA	NA	NA	NA	NA	NA	1.20	3.20	NA	57.1	NA
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L
2021-08-26 result	10800	*1.00*	*2.00*	81.3	0.409	24.7	*0.300*	*3.00*	*1.00*	8.87	*1.67*	37.2	3630
2021-08-26 dT	8.70	NA	NA	0.041	0.10	0.0049	NA	NA	NA	1.33	NA	2.5	3.6
2021-08-26 dB	0.0108	NA	NA	NA	NA	NA	NA	NA	NA	2.77	NA	0.0243	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0049	NA	NA	0.0010	NA	0.321	2.5	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 188.4-3 Analytical Results from Stormwater Sample, F-SMA-2 (Table 1)

F-SMA-2

	Lead	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	28.6	NA	NA	250	NA	NA	20	0.9	NA	NA	NA	NA	81.6
Composite_BTV	1.48	NA	0.205	3.10	4.30	NA	8.85	NA	NA	NA	0.313	0.0818	12.8
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	ug/L
2021-08-26 result	7.35	99.9	0.0760	1.59	8.13	0.674	6.91	*0.300*	*0.600*	*0.0847*	1.98	3.24	9.26
2021-08-26 dT	0.257	0.077	0.099	0.00636	0.271	0.0034	1.4	NA	NA	NA	0.066	0.032	0.113
2021-08-26 dB	4.97	NA	0.371	0.513	0.0705	NA	0.781	NA	NA	NA	6.33	39.6	0.723
geo_mean/ATAL	NA	NA	0.099	NA	0.271	0.0034	1.4	NA	1	0.0042	NA	0.032	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 188.4-4 Analytical Results from Stormwater Sample, F-SMA-2 (Table 2)

188.4.2 Assessment Unit and Stream Impairments

F-SMA-2 drains to Fence Canyon (above Potrillo Canyon) which has not been assessed for impairments.

188.5 Site-Specific Demonstration

188.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil data; it was previously monitored in stormwater data and exceeded TALs. When the Site is removed from deferred status, this Site-related POC will be monitored.

188.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV. Aluminum, gross alpha, and selenium exceeded the TAL but not the BTV.

188.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

189.0 PT-SMA-0.5

Associated Sites	15-009(e), C-15-004
Receiving Water	Potrillo Canyon
Drainage Area	6.80 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 15-009(e): In Progress AOC C-15-004: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

189.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2011. Analytical results from this sample initiated corrective action.

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

189.2 Site History

15-009(e) (8/17/2021)

SWMU 15-009(e) is a decommissioned septic system that served building 15-27 at E-F Firing Site [SWMU 15-004(f)] at TA-15. The 1990 SWMU Report describes SWMU 15-009(e) as a semi-active septic system consisting of a septic tank (structure 15-72) reportedly measuring 4 ft long × 3 ft wide × 5 ft deep, with a 1,200-gal. capacity that discharged to an outfall in Potrillo Canyon and served building 15-27. During the 1997 VCA conducted at SWMU 15-009(e), the decommissioned septic tank (structure 15-72) was uncovered and determined to have been constructed of reinforced concrete with a 1,500-gal. capacity, and dimensions of 9 ft long × 7 ft wide × 5 ft deep. The septic system was constructed in 1947 and received sanitary waste from the E-F Firing Site control building 15-27 located approximately 175 ft northeast of septic tank 15-72. Engineering drawings show a 4-in.-diameter VCP inlet drainline exited the west side of building 15-27 and connected to the decommissioned septic tank (structure 15-72) southwest of the building. A 4-in.-diameter VCP outlet drainline discharged from the septic tank (structure 15-72) to an outfall in Potrillo Canyon approximately 40 ft southwest of the decommissioned septic tank. The septic tank was used until 1981 when E-F Firing Site last operated.

C-15-004 (2/21/2020)

AOC C-15-004 is a former transformer station (former structure 15-56) located approximately 30 ft southwest of the former E-F Firing Site [SWMU 15-004(f)] control room (building 15-27) at TA-15. Two transformers (18-gal. and 30-gal. mineral oil capacity) were located on a 5-ft-long wooden platform

10 ft above the ground. Each transformer contained mineral oil with PCBs of unknown concentrations. The date of installation is not known, but the transformers were removed from the site in 1989. No evidence was found of a release on the wooden platform or on the soil beneath the platform.

For investigation activities for SWMU 15-009(e), refer to "Phase II Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area" (N3B 2021, 701660). For investigation activities for AOC C-15-004 refer to "Supplemental Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (N3B 2019, 700523).

189.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 189.2-1.

Table 189.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-009(e)	Septic system	Metals, lead, mercury, nitrate, uranium
C-15-004	Former transformer station	PAHs, PCBs

189.3 Consent Order Soil Data

Decision-level data for SWMU 15-009(e) consist of results from samples collected in 1997 and in 2010–2011. The 2015 IR (LANL 2015, 600935) recommended additional sampling to define the vertical extent of contamination below site structures.

Decision-level data for AOC C-15-004 consist of results from samples collected in 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 189.3-1 through 189.3-4.

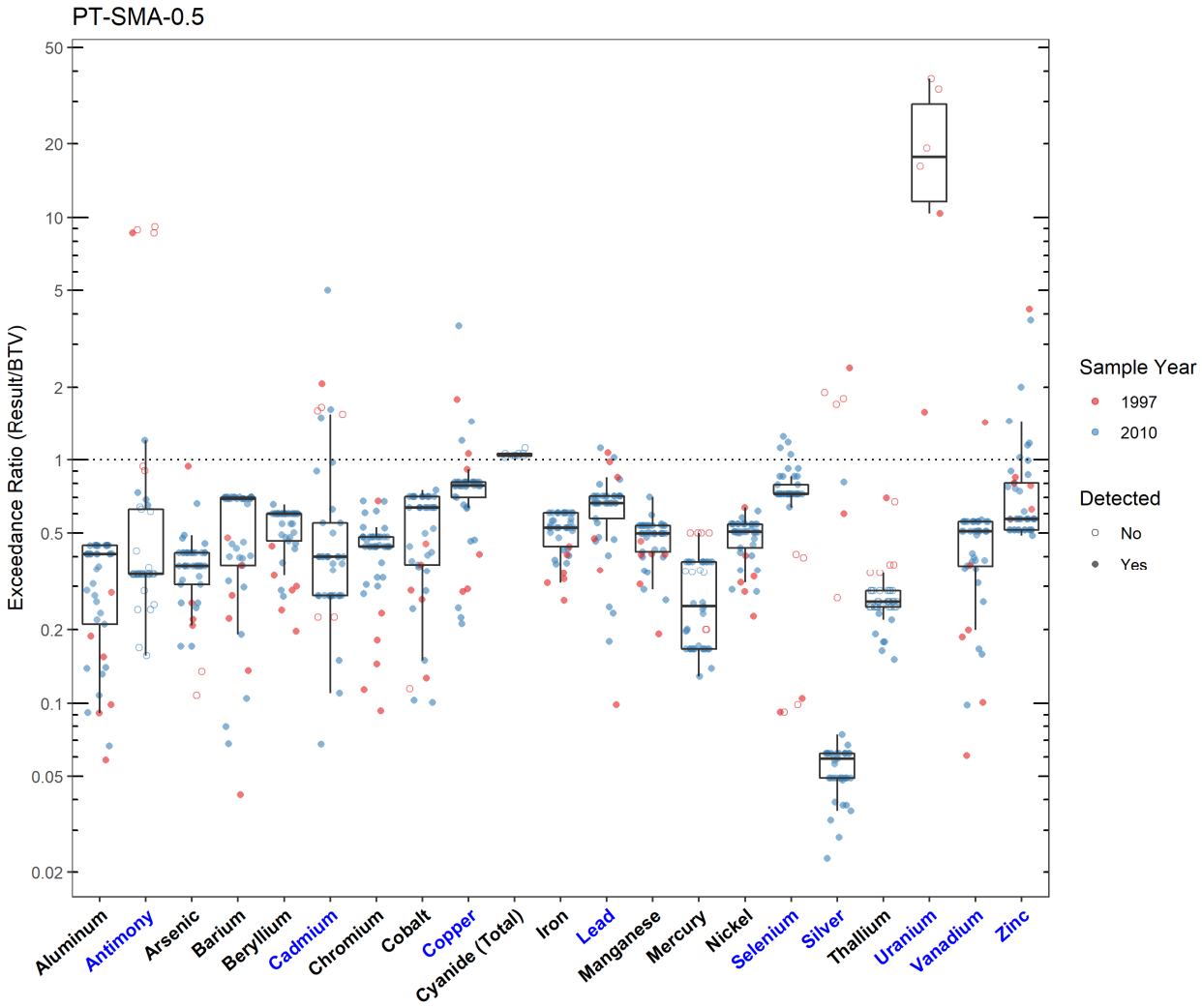


Figure 189.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-0.5

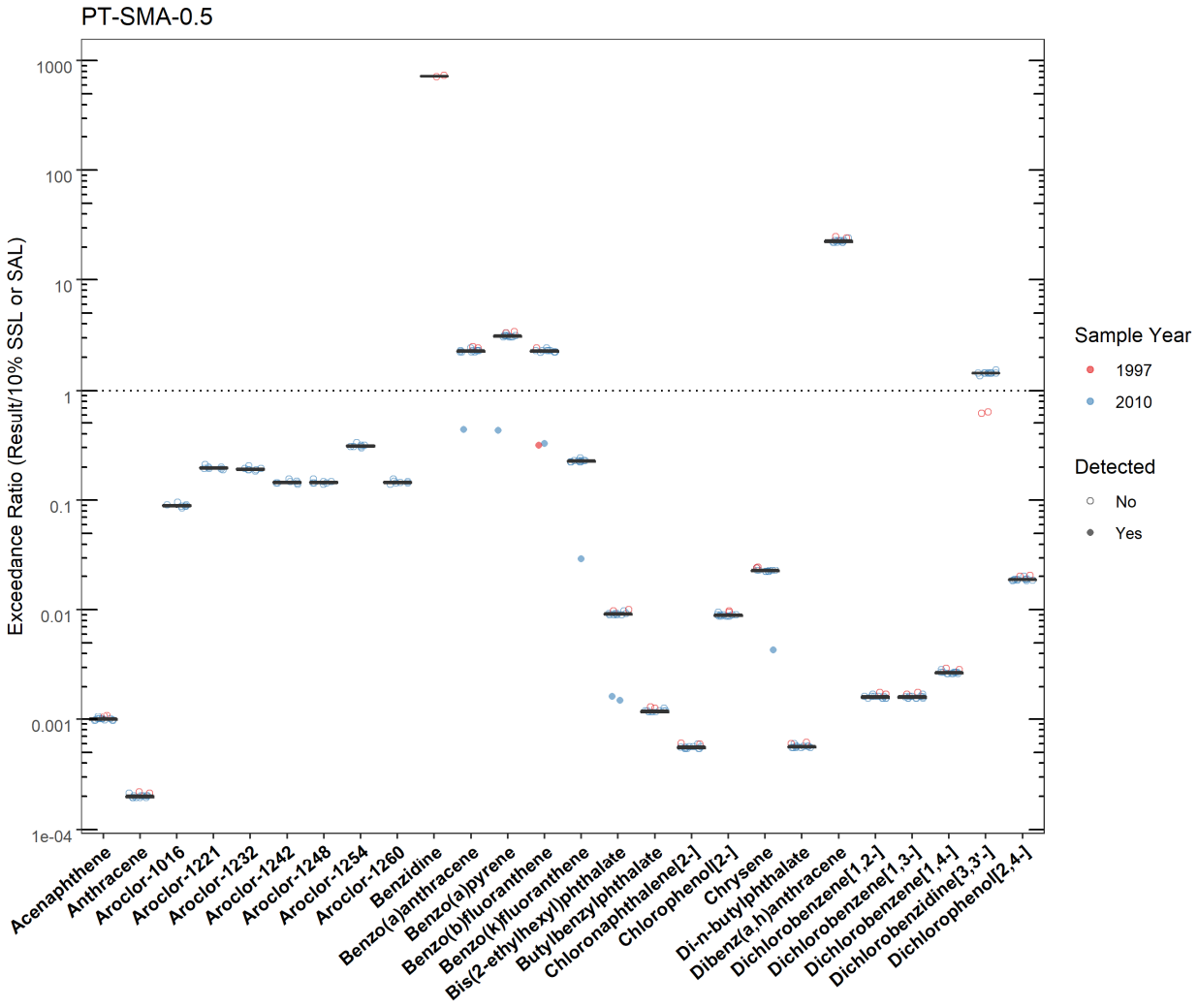


Figure 189.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-0.5 (Plot 1)

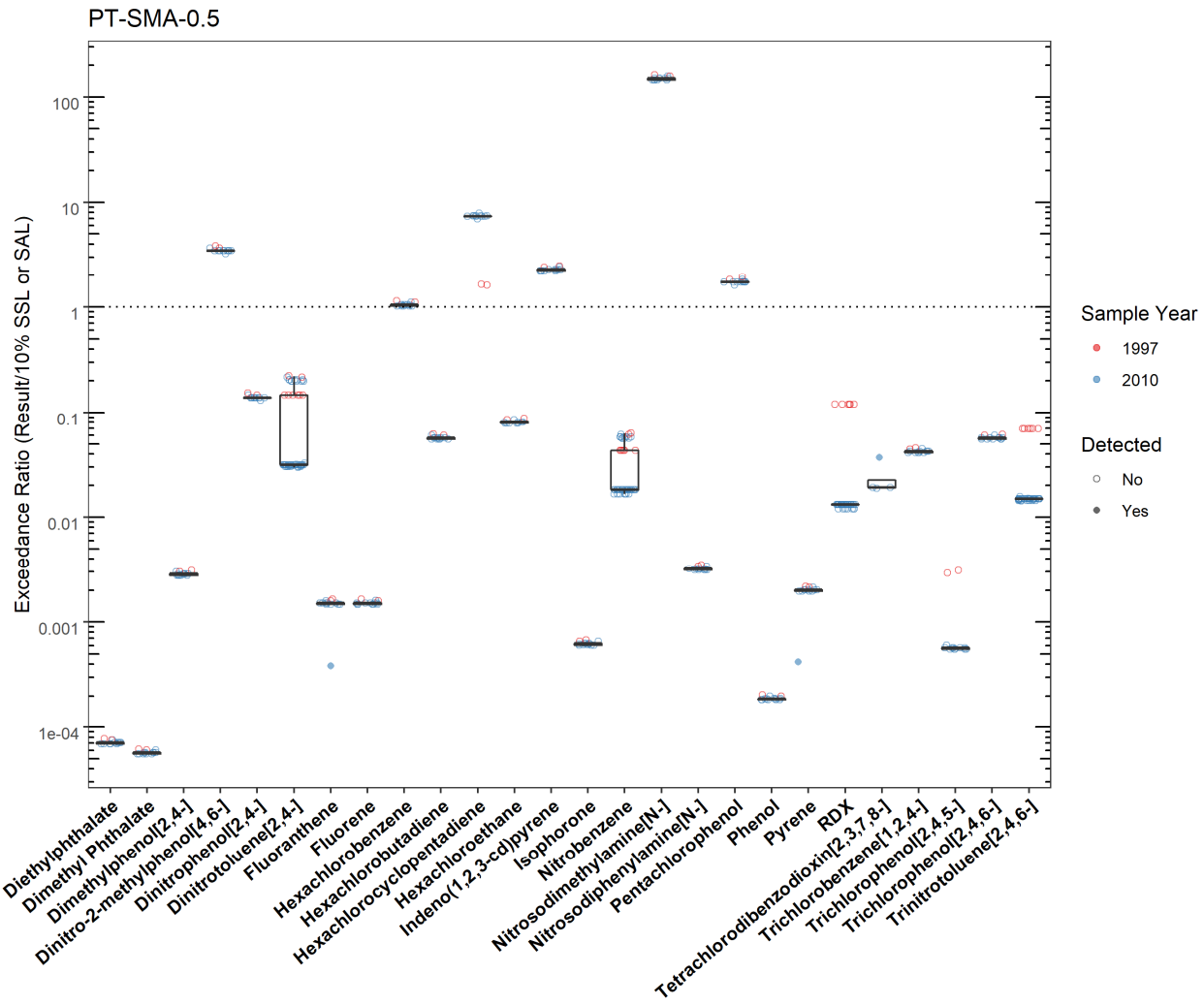


Figure 189.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-0.5 (Plot 2)

PT-SMA-0.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-0.5	Sb	Y	BTV	0.830	7.20	1997-07-14
Cadmium	PT-SMA-0.5	Cd	Y	BTV	0.400	2.00	2010-11-23
Copper	PT-SMA-0.5	Cu	Y	BTV	14.7	52.6	2010-11-23
Lead	PT-SMA-0.5	Pb	Y	BTV	22.3	25.0	2010-11-22
Selenium	PT-SMA-0.5	Se	Y	BTV	1.52	1.90	2010-11-22
Silver	PT-SMA-0.5	Ag	Y	BTV	1.00	2.40	1997-07-14
Uranium	PT-SMA-0.5	U	Y	BTV	1.82	18.9	1997-08-20
Vanadium	PT-SMA-0.5	V	Y	BTV	39.6	56.8	1997-09-02
Zinc	PT-SMA-0.5	Zn	Y	BTV	48.8	204	1997-09-02

Figure 189.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-0.5

189.4 Stormwater Evaluation

189.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring samples have been collected in the current stage at the SMA.

189.4.2 Assessment Unit and Stream Impairments

PT-SMA-0.5 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

189.5 Site-Specific Demonstration

189.5.1 Soil Data Summary

Uranium exceeded the applicable screening values in soil data and has not yet been measured in stormwater.

The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, with the exception of copper.

189.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Dissolved aluminum, gross alpha, and copper exceeded TALs in the previous monitoring stage. Dissolved aluminum was below BTV, so it will not be added to the SAP. There was no paired SSC result to confirm whether the gross alpha result was below BTVs. Because gross alpha may be Site-related, it will be added to the SAP. Copper also exceeded BTV, therefore it will be added to the SAP.

189.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

189.5.4 Sampling and Analysis Plan

Table 189.5-1 is the proposed SAP for PT-SMA-0.5.

Table 189.5-1 Proposed SAP, PT-SMA-0.5

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Dissolved uranium	Site history and soil data
SVOCs	Site history
Dissolved copper	Stormwater data and soil data
DOC	Permit requirement
SSC	Permit requirement

190.0 PT-SMA-1

Associated Sites	15-004(f), 15-008(a)
Receiving Water	Potrillo Canyon
Drainage Area	15.19 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-004(f): In Progress SWMU 15-008(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	The September 2016 field visit determined that the current sampler location does not capture surface water from the firing points west of the main firing mounds, nor from the 15-008(a) location that is south on top of the mesa. Therefore, the sampler was moved down the drainage area.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.c criterion

190.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2011. Analytical results from this sample initiated corrective action.

Following the August 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 225367), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Two stormwater samples were collected in July 2014. Analytical results from these samples initiated corrective action.

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600948), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. A stormwater sample was collected in September 2017. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in April 2019 (N3B 2019, 700401). No response has been received from EPA and stormwater monitoring has not occurred since 2017.

190.2 Site History

15-004(f) (8/17/2021)

SWMU 15-004(f) is inactive E-F Firing Site consisting of three inactive firing points (D, E, and F) covering a total area of approximately 60 acres at TA-15. E-F Firing Site began operations in 1946 and was last used in 1981. The Firing Site was operated extensively from 1947 to 1973 and was the largest firing site at the Laboratory.

The 1990 SWMU Report describes SWMU 15-004(f) as E-F Firing Site, a decommissioned firing site, consisting of a control chamber (structure 15-27) and an x-unit chamber (former structure 15-26) at TA-15. The 1990 SWMU Report incorrectly associated decommissioned Firing Site D with

SWMU 15-004(e); Firing Point D is part of SWMU 15-004(f). Originally, E-F Firing Site consisted of a single firing point (D), which operated from 1946 to 1949. The structures associated with Firing Point D were a control chamber (former structure 15-34) and an x-unit chamber (former structure 15-36) as shown on engineering drawing ENG-R 130. In 1946, the firing area was expanded to include Firing Point E, which was used for large-scale shots containing up to 2,500 lb of HE, and Firing Point F, which was used for smaller-scale shots. Firing Points E and F were approximately 650 ft apart and were wired to an underground control bunker (structure 15-27). Firing Points E and F were subsequently combined into E-F Firing Site. Tests at the two new firing points were conducted on the ground and created depressions in the ground. After test shots, the firing points were either regraded or backfilled with gravel to fill in depressions caused by the test shots. Eventually, nearby soil was mounded on the north and south sides of Firing Point E to protect structures at TA-15 from shrapnel. The x-unit chamber (former structure 15-26) associated with Firing Site E was damaged and removed in April 1952 and subsequently replaced with a new x-unit chamber (structure 15-134) according to the TA-15 Structure History Book and engineering drawing ENG-R 5110. As-built drawing ENG-C 12820 (pg. 1 of 7), engineering drawing A5-C37, and a 1958 aerial photograph indicate the approximate locations and dimensions of Firing Points D, E, and F. Firing Point D measures approximately 110 ft long by 85 ft wide, Firing Point E measures approximately 60 ft in diameter, and Firing Point F measures approximately 60 ft in diameter. Tests at E-F Firing Site involved HE, uranium, beryllium, lead, and mercury.

15-008(a) (2/21/2020)

SWMU 15-008(a) consists of two small surface disposal areas located on the edge of Potrillo Canyon, one south and one east of E-F Firing Site [SWMU 15-004(f)], at TA-15. The disposal areas are located within approximately 350 ft of each other, with each disposal area having dimensions of approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at the E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. The exact period of operation of the surface disposal areas is not known but probably falls within the period of operation for E-F Firing Site (1946 to 1981). All debris was removed from both surface disposal areas during the 2010–2011 Phase I Consent Order investigation. Excavated environmental media and manmade debris from SWMU 15-008(a) was characterized as low-level waste (LLW) and disposed of at TA-54.

For investigation activities for the Sites, refer to “Phase II Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area” (N3B 2021, 701660).

190.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 190.2-1.

Table 190.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-004(f)	EF firing site	Barium, beryllium, copper, lead, mercury, HE, uranium, DU
15-008(a)	Two surface disposal areas	Barium, beryllium, copper, lead, mercury, HE, uranium, DU

190.3 Consent Order Soil Data

Decision-level data for SWMU 15-004(f) consist of results from 159 samples collected at 83 locations in 1994 and 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) shows that inorganic chemicals and radionuclides are present above background in surface and near-surface soil

and tuff at grid sampling locations throughout SWMU 15-004(f) and within the earthen mounds associated with Firing Point E.

Decision-level data for SWMU 15-008(a) consist of results from samples collected in 1994 and 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the nature and extent of contamination have been defined; however, additional remediation is recommended to remove environmental media where total uranium concentrations exceed the construction worker SSL and uranium-238 activities exceed the construction worker SAL.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 190.3-1 through 190.3-4.

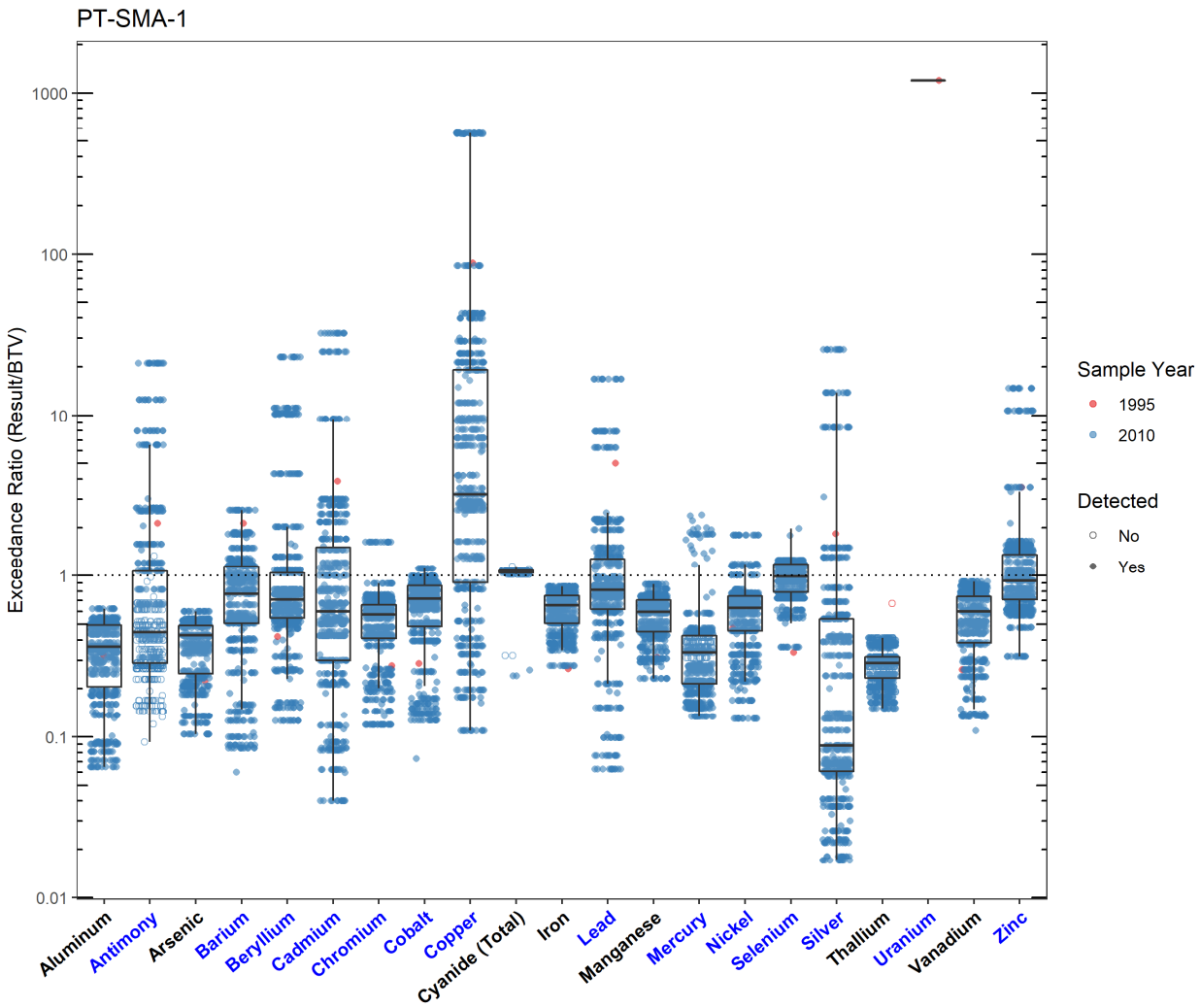


Figure 190.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-1

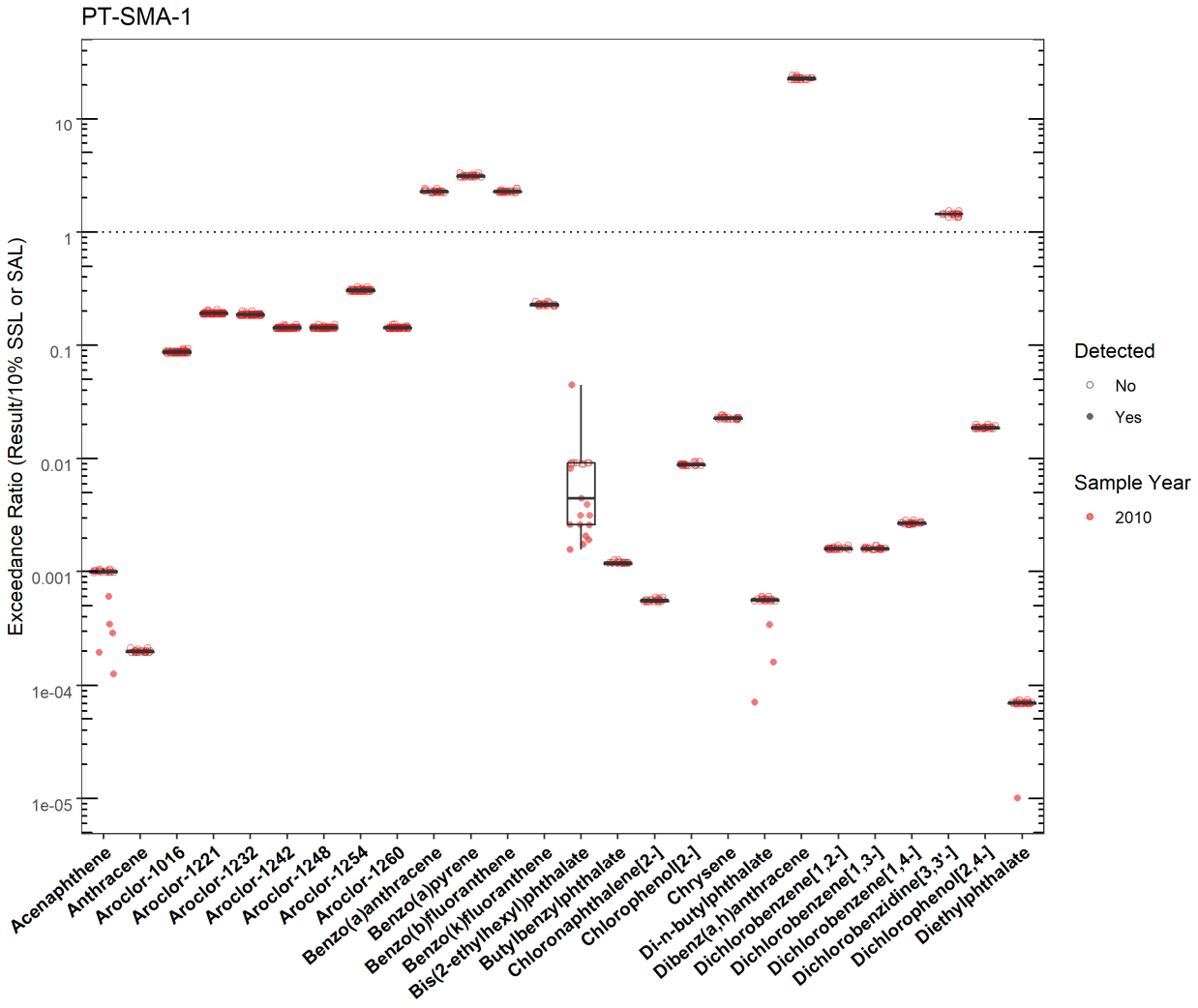


Figure 190.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-1 (Plot 1)

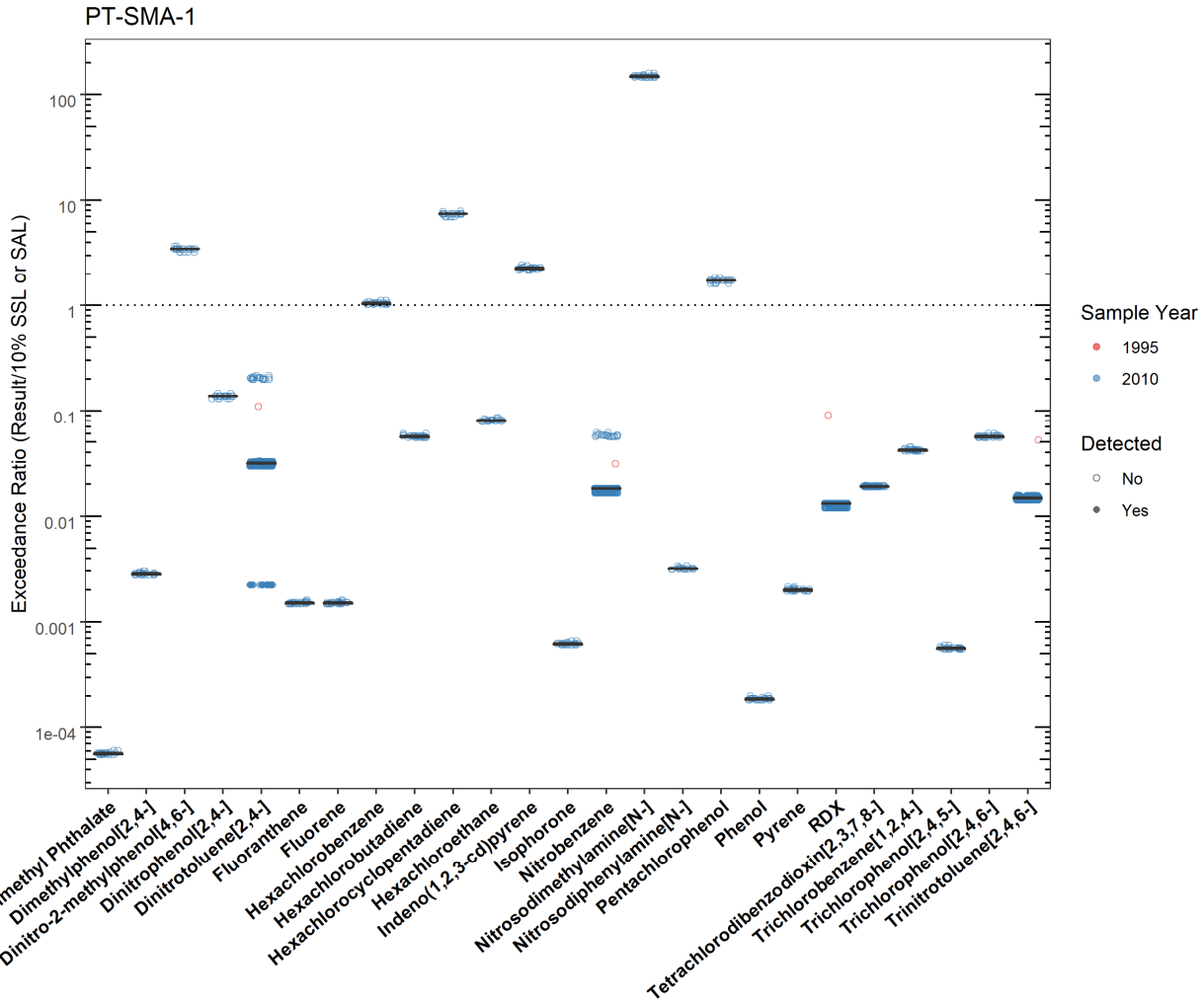


Figure 190.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-1 (Plot 2)

PT-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-1	Sb	Y	BTV	0.830	17.5	2010-11-10
Barium	PT-SMA-1	Ba	Y	BTV	295	755	2010-11-10
Beryllium	PT-SMA-1	Be	Y	BTV	1.83	42.1	2010-11-19
Cadmium	PT-SMA-1	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	PT-SMA-1	Cr	Y	BTV	19.3	31.2	2010-11-10
Cobalt	PT-SMA-1	Co	Y	BTV	8.64	9.60	2010-11-08
Copper	PT-SMA-1	Cu	Y	BTV	14.7	8250	2010-11-10
Lead	PT-SMA-1	Pb	Y	BTV	22.3	375	2010-11-19
Mercury	PT-SMA-1	Hg	Y	BTV	0.100	0.240	2010-12-09
Nickel	PT-SMA-1	Ni	Y	BTV	15.4	27.5	2010-11-10
Selenium	PT-SMA-1	Se	Y	BTV	1.52	3.00	2010-12-09
Silver	PT-SMA-1	Ag	Y	BTV	1.00	25.5	2010-11-19
Uranium	PT-SMA-1	U	Y	BTV	1.82	2180	1995-08-21
Zinc	PT-SMA-1	Zn	Y	BTV	48.8	716	2010-11-19

Figure 190.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-1

190.4 Stormwater Evaluation

190.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2017. Analytical results from that sample are presented in Figures 190.4-1 through 190.4-4.

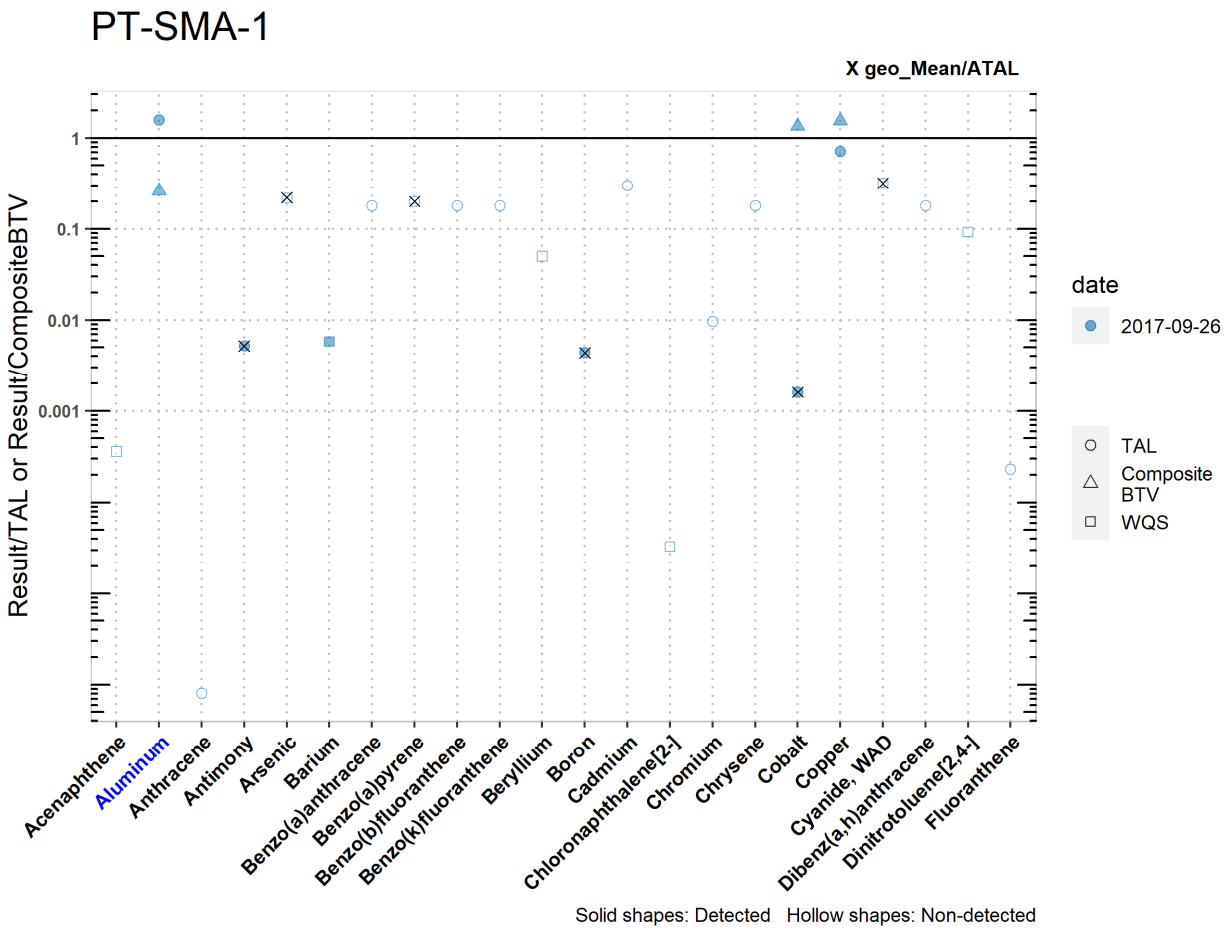


Figure 190.4-1 Analytical Results from Stormwater Sample, PT-SMA-1 (Plot 1)

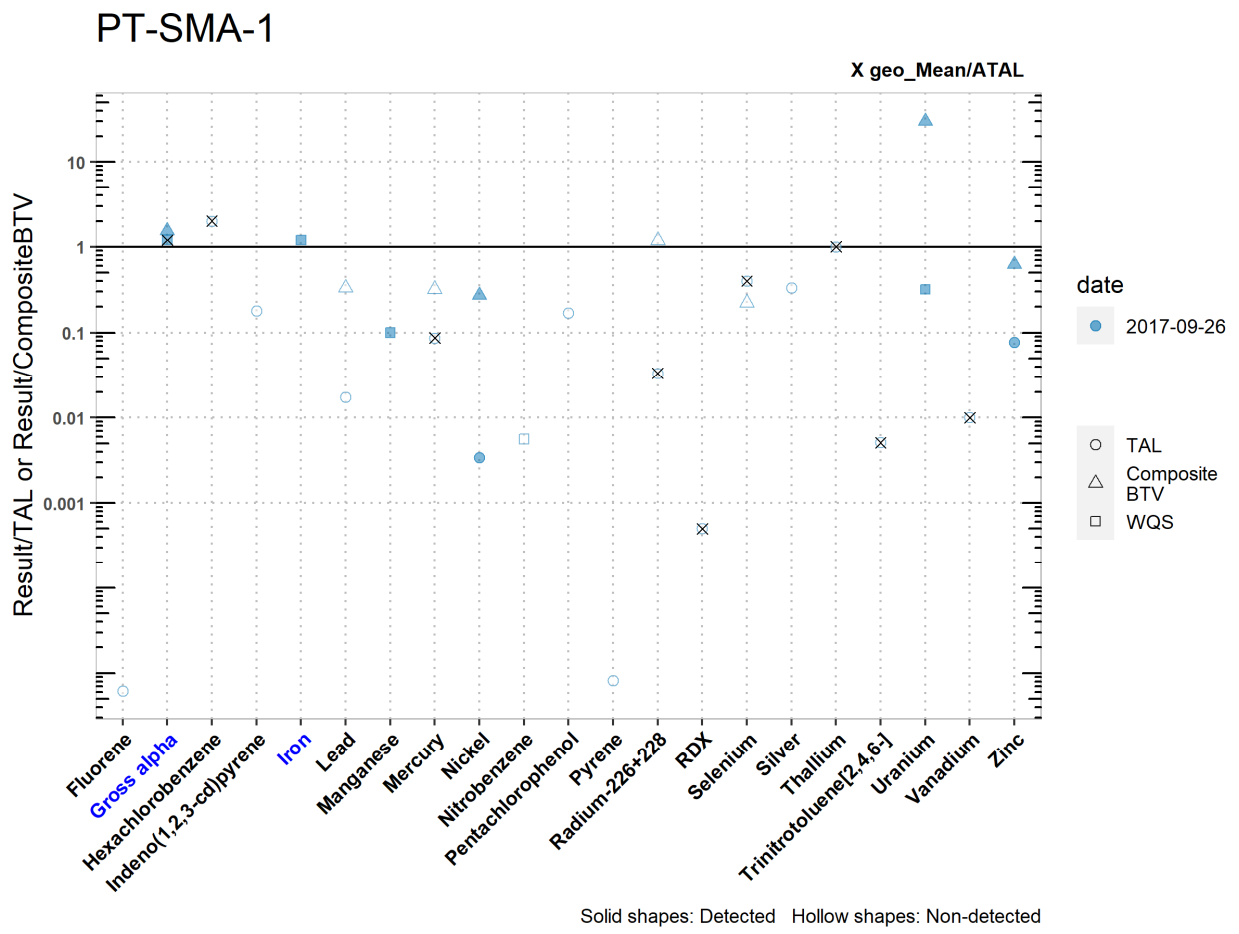


Figure 190.4-2 Analytical Results from Stormwater Sample, PT-SMA-1 (Plot 2)

PT-SMA-1

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium	Boron	Cadmium	Chloronaphthalene [2-]	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene	Dinitrotoluene [2,4-]	Fluoranthene
MQL	NA	2.5	0.064	1	0.5	NA	0.064	0.064	0.064	0.064	NA	100	1	NA	10	0.064	50	0.5	10	0.064	NA	0.064
ATAL	NA	NA	NA	640	9	NA	NA	0.18	NA	NA	NA	5000	NA	NA	NA	NA	1000	NA	5.2	NA	NA	NA
MTAL	NA	1241	NA	NA	340	NA	0.18	NA	0.18	0.18	NA	NA	0.879	NA	311	0.18	NA	6.69	22	0.18	NA	140
Composite_BTV	NA	37400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	NA	NA	NA
unit	ug/L	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-09-26 result	*0.0326*	1960	*0.0326*	3.31	*2.00*	11.6	*0.0326*	*0.0326*	*0.0326*	*0.0326*	*0.200*	22.1	*0.300*	*0.0326*	*3.00*	*0.0326*	1.59	4.80	*1.67*	*0.0326*	*0.101*	*0.0326*
2017-09-26 dT	NA	1.58	NA	0.0052	NA	0.0058	NA	NA	NA	NA	NA	0.0044	NA	NA	NA	NA	0.0016	0.717	NA	NA	NA	NA
2017-09-26 dB	NA	0.262	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.35	1.54	NA	NA	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0052	0.22	NA	NA	0.2	NA	NA	NA	0.0044	NA	NA	NA	NA	0.0016	NA	0.321	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
**SSC normalized unit is mg/kg

Figure 190.4-3 Analytical Results from Stormwater Sample, PT-SMA-1 (Table 1)

PT-SMA-1

	Fluorene	Gross alpha	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Iron	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Pentachlorophenol	Pyrene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.064	NA	5	0.064	NA	0.5	NA	0.005	0.5	NA	5	0.064	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	5300	NA	NA	0.18	NA	28.6	NA	NA	250	NA	19	4000	NA	NA	20	0.9	NA	NA	NA	NA	81.6
Composite_BTV	NA	57.2	NA	NA	NA	1.50	NA	0.208	3.10	NA	NA	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	ug/L	pCi/L*	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	ug/L	ug/L	ug/L
2017-09-26 result	*0.0326*	17.6	*0.00694*	*0.0326*	1220	*0.500*	134	*0.0670*	0.850	*0.101*	*3.23*	*0.0326*	*1.00*	*0.101*	*2.00*	*0.300*	*0.600*	*0.101*	9.48	*1.00*	6.26
2017-09-26 dT	NA	1.2	NA	NA	1.2	NA	0.10	NA	0.00340	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.32	NA	0.0767
2017-09-26 dB	NA	1.54	NA	NA	NA	NA	NA	NA	0.274	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.1	NA	0.626
geo_mean/ATAL	NA	1.2	2	NA	NA	NA	NA	0.087	NA	NA	NA	NA	0.0333	0.00050	0.40	NA	1	0.0051	NA	0.010	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 190.4-4 Analytical Results from Stormwater Sample, PT-SMA-1 (Table 2)

190.4.2 Assessment Unit and Stream Impairments

PT-SMA-1 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

190.5 Site-Specific Demonstration

190.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

190.5.2 Stormwater Data Summary

Total aluminum exceeded the TAL but not the BTV. Gross alpha exceeded both the TAL and BTV. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

190.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. Aluminum exceeded the TAL but not the BTV. Gross alpha exceeded the TAL and BTV, and, pursuant to Part I.C.3.c of the permit, this SMA has been screened into long-term stewardship.

191.0 PT-SMA-1.7

Associated Sites	15-003
Receiving Water	Potrillo Canyon
Drainage Area	1.9 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	15-003: In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

191.1 2010 Administratively Continued Permit Summary

SWMU 15-003 is not listed on the Administratively Continued Permit. During preparation for Consent Order investigations at TA-15, additional historical information was reviewed that indicated SWMU 15-003 was a candidate for inclusion in the Permit. The Permittees added the Site to the SMA in February 2019 as an "additional" IP Site. This administrative change has been included in the Annual Report and the SDPPP since that time.

Following the April 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2012. Analytical results from this sample initiated corrective action.

Following the July 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

191.2 Site History

15-003 (4/14/2022)

SWMU 15-003 consists of a steel firing pad located within the PHERMEX firing site [SWMU 15-006(a)]. The 1990 SWMU Report describes SWMU 15-003 as an active open detonation pad at the PHERMEX facility associated with the chamber building (structure 15-184) at TA-15. SWMU 15-003 consists of a 6-in.-thick steel pad approximately 12 ft wide × 24 ft long. Although the SWMU 15-003 steel firing pad was originally intended for the treatment of hazardous explosive waste by OD and had been granted a RCRA interim status designation under hazardous waste regulations, the steel pad was never actually used to treat hazardous explosives waste. Additionally, the Laboratory operating division responsible for this site determined that this unit was not needed for future HE waste-treatment activities. Therefore, in 1998, the Laboratory requested that this unit be withdrawn from the LANL Part B application as an OD Site, and the NMED concurred. The steel pad was used for nontreatment-related experimental test shots [SWMU 15-006(a)]. The exact dates of use of the steel pad are not known; however, operations at the PHERMEX facility began in approximately 1961.

The PHERMEX Firing Site and associated facilities were built in the early 1960s. The PHERMEX chamber building (structure 15-184) housed a radiographic machine used for radiographic studies of explosives and explosive-driven metal systems. The PHERMEX chamber is equipped with a bullnose, an exposed exterior piece of the radiographic machine on the east side of chamber 15-184, as shown in a 1991 photograph (pg. 19 of 137) in the 2004 The Hollow and GMX Manor at TA-15 (R-Site): Historic Context and Property Documentation report. As-constructed drawings ENG-C 30691 (pg. 77 of 186) and ENG-C 30518 (pg. 4 of 186) show the PHERMEX Firing Point is located directly east of the bullnose at the east end of the PHERMEX chamber building (structure 15-184), on its midline. The PHERMEX facility is currently inactive.

For investigation activities, refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336).

191.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 191.2-1.

Table 191.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-003	Phermex firing site	Beryllium, lead, mercury, HE, thorium, DU

191.3 Consent Order Soil Data

Decision level data for SWMU 15-003 consist of results from samples collected in 2010 from sediment catchment areas in the drainage downgradient of the Site in conjunction with the investigation of SWMU 15-006(a). Analytical results for these samples are presented in Figures 191.3-1 through 191.3-4. Revision 1 of the 2011 IR (LANL 2011, 208336) for the Potrillo and Fence Canyons Aggregate Area stated that because the investigation of SWMU 15-003 is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

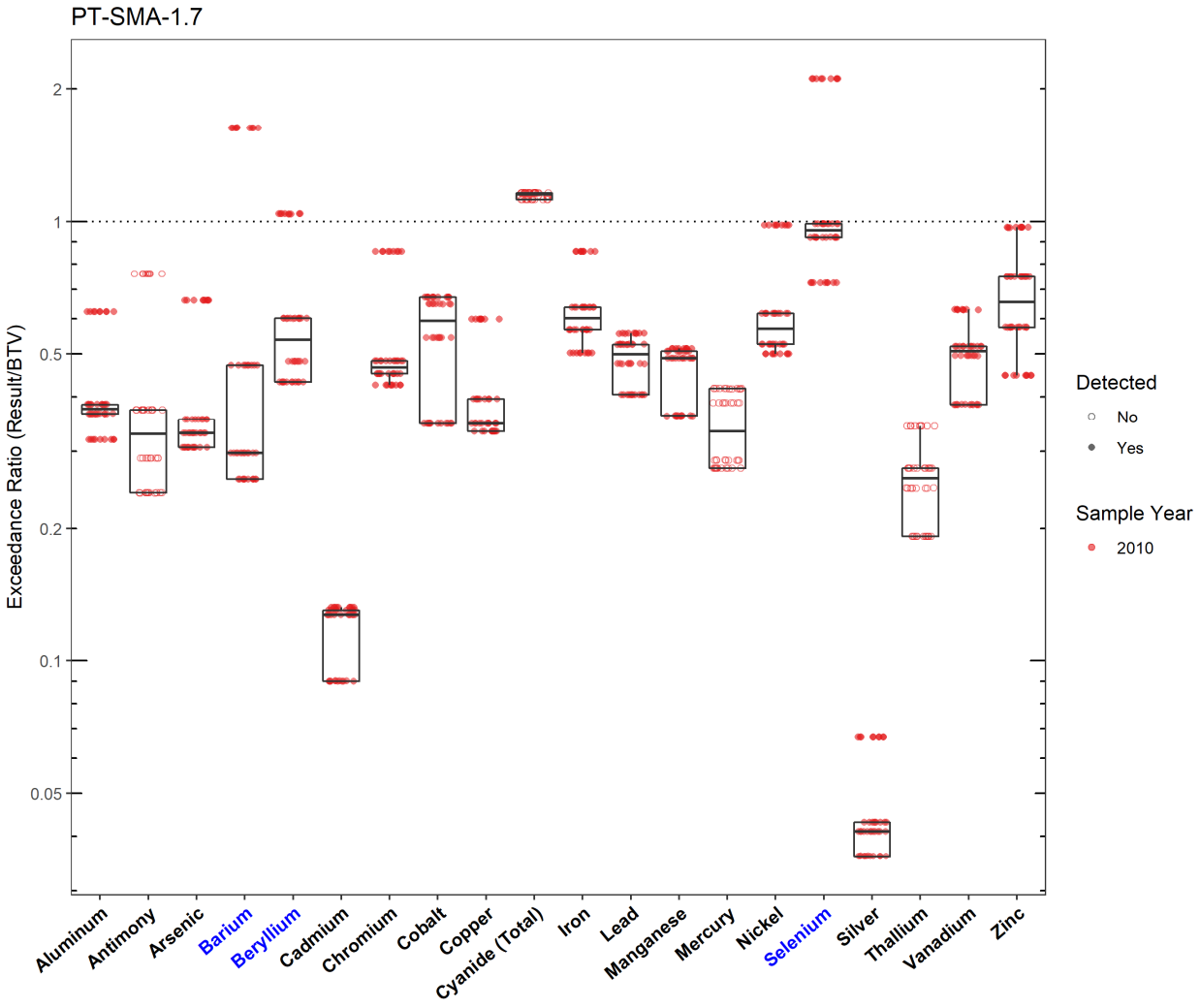


Figure 191.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-1.7

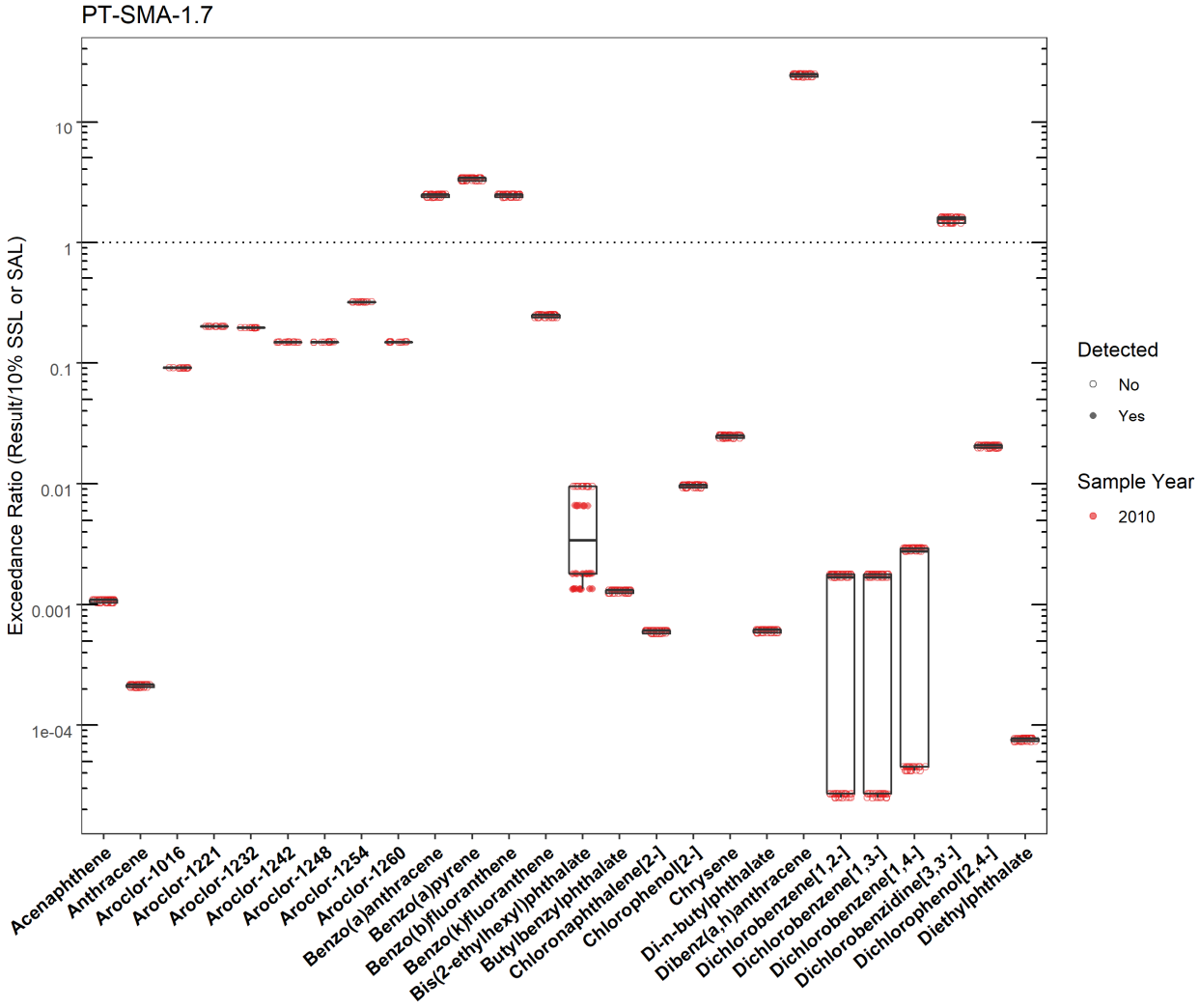


Figure 191.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-1.7 (Plot 1)

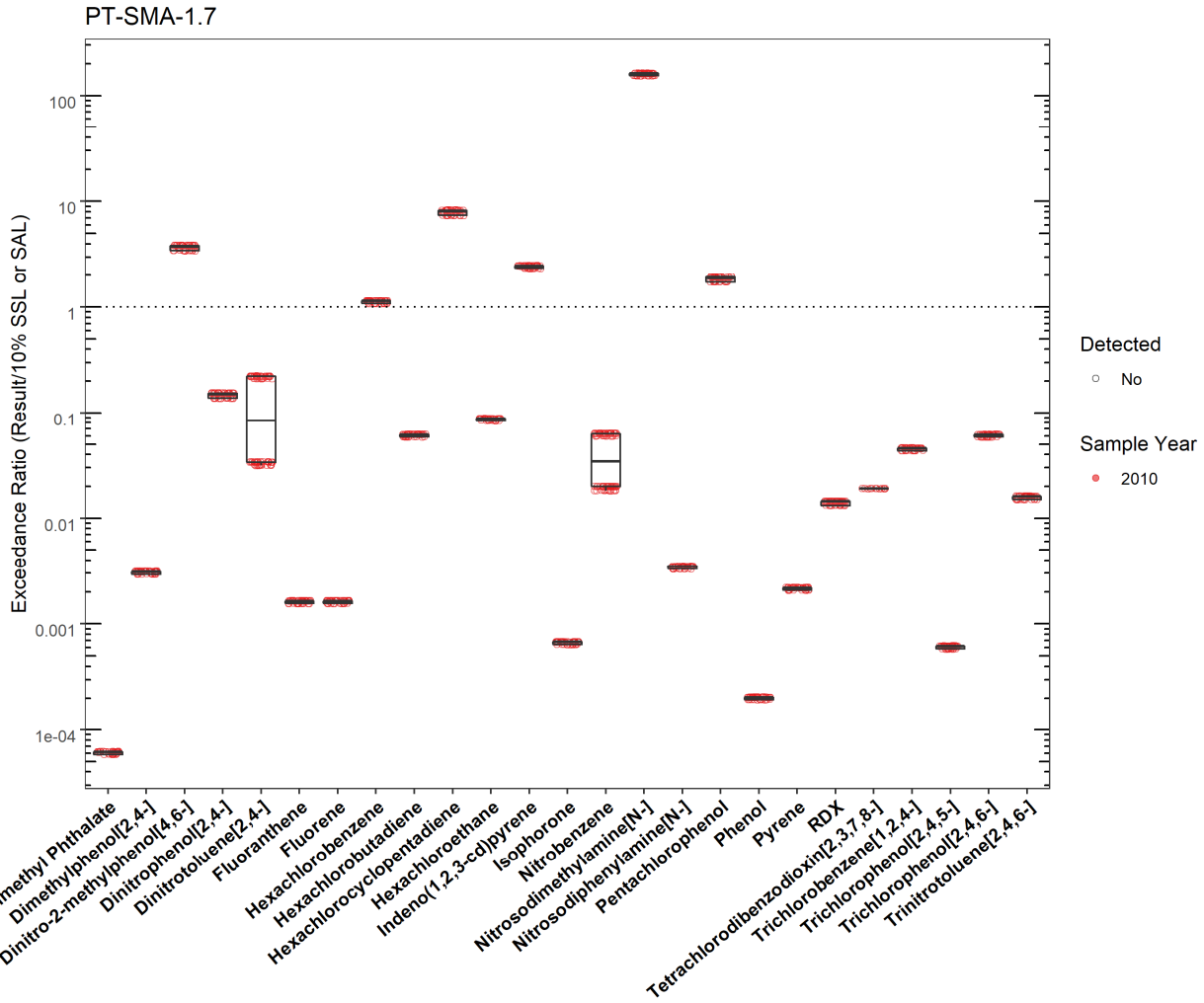


Figure 191.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-1.7 (Plot 2)

PT-SMA-1.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	PT-SMA-1.7	Ba	Y	BTV	295	480	2010-12-06
Beryllium	PT-SMA-1.7	Be	Y	BTV	1.83	1.90	2010-12-06
Selenium	PT-SMA-1.7	Se	Y	BTV	1.52	3.20	2010-12-06

Figure 191.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-1.7

191.4 Stormwater Evaluation

191.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

191.4.2 Assessment Unit and Stream Impairments

PT-SMA-1.7 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

191.5 Site-Specific Demonstration

191.5.1 Soil Data Summary

Beryllium is the only Site-related POC to exceed the applicable screening values in soil data, and has not yet been measured in stormwater at the current location. Barium and selenium exceeded the applicable screening value in soil data but are not Site-related POCs, and will not be added to the SAP.

191.5.2 Stormwater Data Summary

No samples have been collected in the current monitoring stage or location at the SMA.

191.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

192.0 PT-SMA-2

Associated Sites	15-008(f), 36-003(b), 36-004(e)
Receiving Water	Potrillo Canyon
Drainage Area	2.95 acres
Landscape Characteristics	17% impervious, 83% pervious
Consent Order Site Status	AOC 15-008(f): In Progress Deferred per Consent Order SWMU 36-003(b): In Progress AOC 36-004(e): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

192.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), corrective-action monitoring was initiated and stormwater samples were collected in July and October 2019. Analytical results from these samples initiated corrective action.

Following the July 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701533), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Confirmation monitoring is ongoing to collect a second sample.

192.2 Site History

15-008(f) (4/18/2022)

AOC 15-008(f) consist of two small inactive surface disposal areas located on the northern edge of Potrillo Canyon; one south and one east of inactive E-F Firing Site [SWMU 15-004(f)] at TA-15. The disposal areas are located within approximately 350 ft of each other, with each disposal area measuring approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. The exact period of operation of the surface disposal areas is not known but likely falls within the period of operation for E-F Firing Site (1946 to 1981). All debris was removed from both surface disposal areas during the 2010–2011 investigation.

36-003(b) (2/21/2020)

SWMU 36-003(b) is a decommissioned sanitary septic system located at the west end of TA-36. The septic system served building 36-55, the control bunker for the I-J Firing Site, and consist of a septic tank (structure 36-61), inlet and outlet drainlines, and an outfall near the edge of Potrillo Canyon. The septic tank sits near the edge of Mesita del Potrillo, approximately 100 ft southeast of building 36-55. The

control bunker housed the electronics and instrumentation used in the operation of the I-J Firing Site [AOC 36-004(e)], and housed a toilet, sink, and water fountain, all of which were connected to the septic tank via a 4-in.-diameter clay-tile inlet drainline. The septic tank is constructed of reinforced concrete and measures 7 ft long × 3.5 ft wide × 5.73 ft deep with a capacity of 420 gal. The tank has a buried overflow drainline that previously discharged to an outfall near the north rim of Potrillo Canyon. The overflow outlet from the septic tank was capped in 1989. After the overflow outlet was capped, the septic tank continued to be used as a holding tank and its contents were periodically removed and taken to a sanitary wastewater treatment plant for treatment and disposal. The SWMU 36-003(b) septic system was taken out of service in the early 1990s.

36-004(e) (4/14/20222)

AOC 36-004(e) is inactive I-J Firing Site located at the west end of TA-36 on Mesita del Potrillo along the north rim of Potrillo Canyon. I-J Firing Site consist of two firing points (I and J), two control buildings (one designated as structure 36-55), a dirt bunker, a covered work area, and an old chamber for enclosed firing. Construction of I-J Firing Site began in 1948 and the firing sites were ready for use by 1950. Firing Point J is located near control building 36-55 and Firing Point I, which is a firing pad with a radius of 15 ft, is located approximately 75 ft northeast of the former control building. The hazard radius for the I and J Firing Sites is 5,000 ft. I-J Firing Site was constructed in 1948 and was located within TA-15 until 1981 when the boundary of TA-36 was expanded to encompass the portion of TA-15 where the I-J Firing Site is located. Shots at I-J Firing Site used up to 500 lb of HE where tests involved a variety of solid and liquid explosives and inorganic chemicals. According to former employees, significant amounts of DU were used at I-J Firing Site in addition to small quantities of mercury and cadmium. Some shots were fired into iron, copper, or lead targets. Other metals used in shots included aluminum, antimony, various steels, lithium-magnesium alloys, and lithium hydride. In addition, hydrocarbons, argon, benzene, small amounts of mercury, cadmium, and beryllium were used in shots.

All shots involving radioactive materials at the I-J Firing Site were conducted in fully enclosed containment vessels. These vessels were removed from the I-J Firing Site for use at TA-15, although one was later returned to the I-J Firing Site. The returned vessel was identified in the 1990 SWMU Report as AOC C-36-001 and was subsequently removed from the site in 1994 and disposed of at MDA G at TA-54. Other firing-site activities conducted at I-J Firing Site included tests in which DU projectiles were fired into an embankment. This projectile test area is designated as AOC C-36-006(e).

For investigation activities for 15-008(f) and 36-004(e) refer to “Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1” (LANL 2011, 208336). For investigation activities for 36-003(b), refer to “Phase II Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area” (N3B 2021, 701660).

192.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 192.2-1.

Table 192.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-008(f)	IJ Firing Site	Aluminum, beryllium, cadmium, copper, iron, lead, mercury, PAHs, HE, DU, antimony
36-003(b)	Septic tank	Lead, inorganic and organic chemicals, HE, DU
36-004(e)	Active firing site- IJ	Inorganic chemicals, HE, DU

192.3 Consent Order Soil Data

Decision-level data for AOC 15-008(f) consist of results from samples collected in sediment catchment areas in the drainages downgradient of the site in conjunction with the investigation of AOCs 36-004(e) and C-36-006(e) in 2010. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 15-008(f) is deferred per the Consent Order, therefore, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

Decision-level data for SWMU 36-003(b) consist of results from samples collected at and downgradient of the outfall in 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the vertical extent of contamination has not been defined below the septic system structures.

Decision-level data for AOC 36-004(e) consist of results from samples collected in 2010 from sediment catchment areas in the drainages downgradient of the sites in conjunction with the investigation of AOCs 15-008(f) and C-36-006(e). Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(e) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 192.3-1 through 192.3-4.

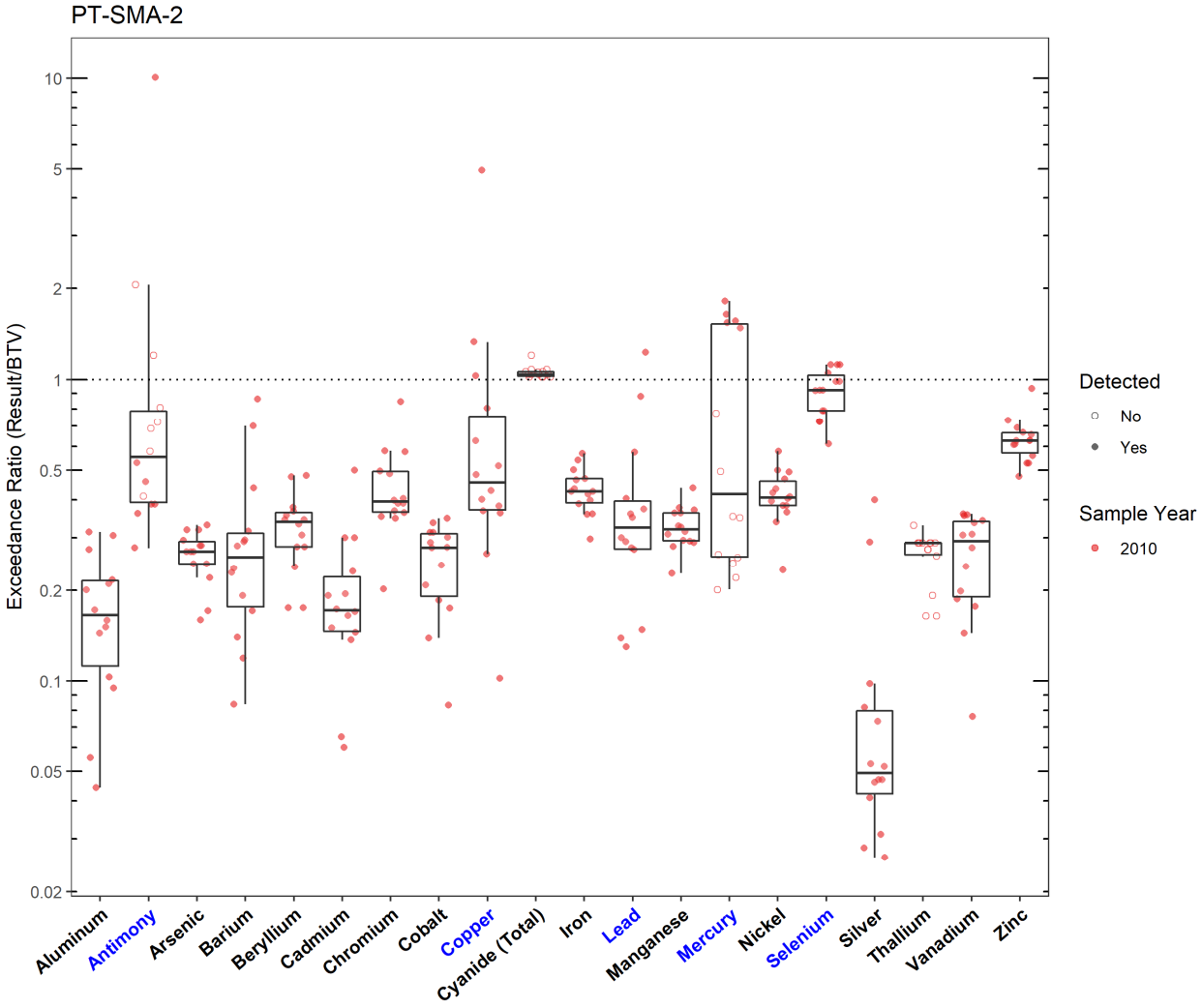


Figure 192.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-2

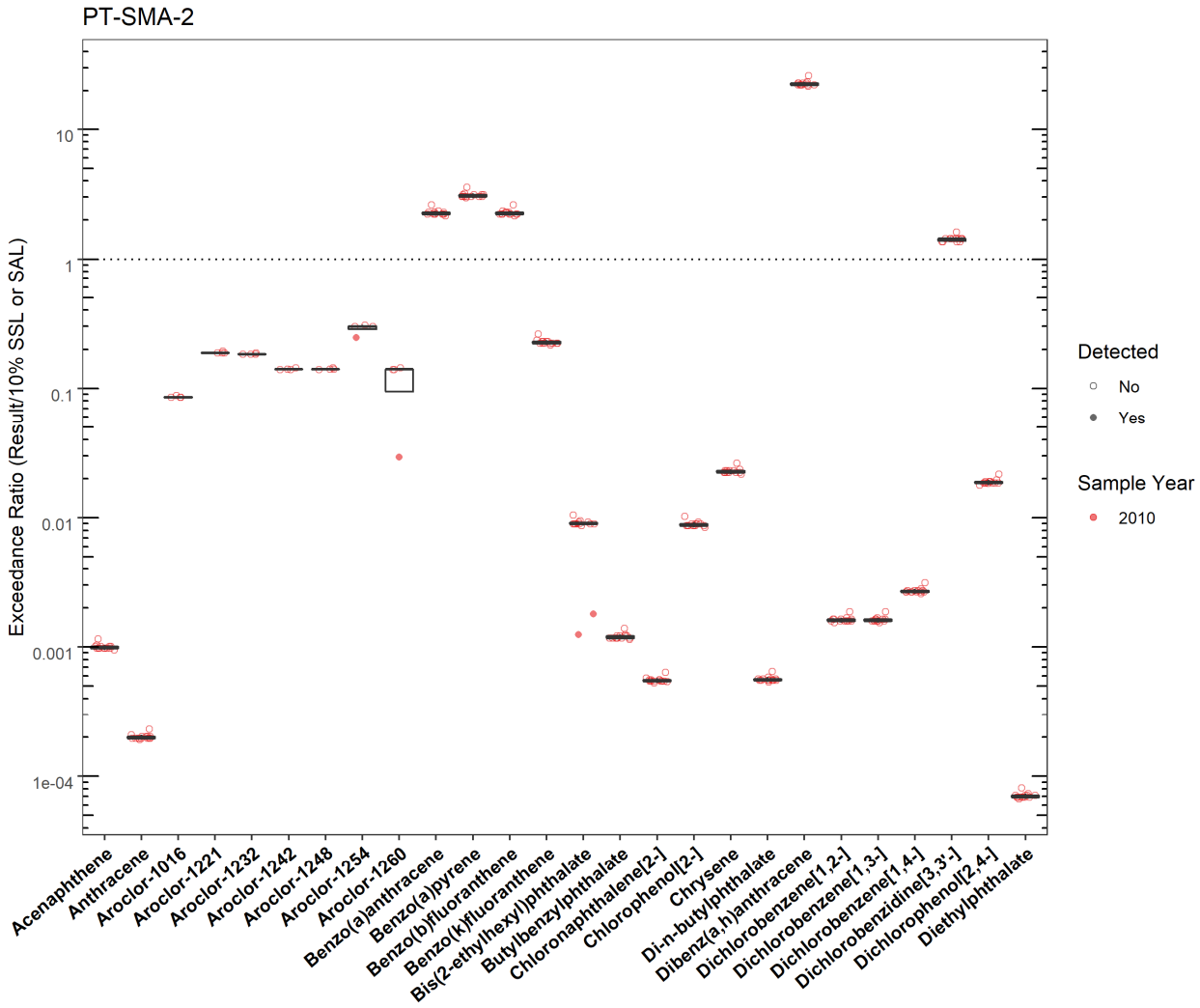


Figure 192.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-2 (Plot 1)

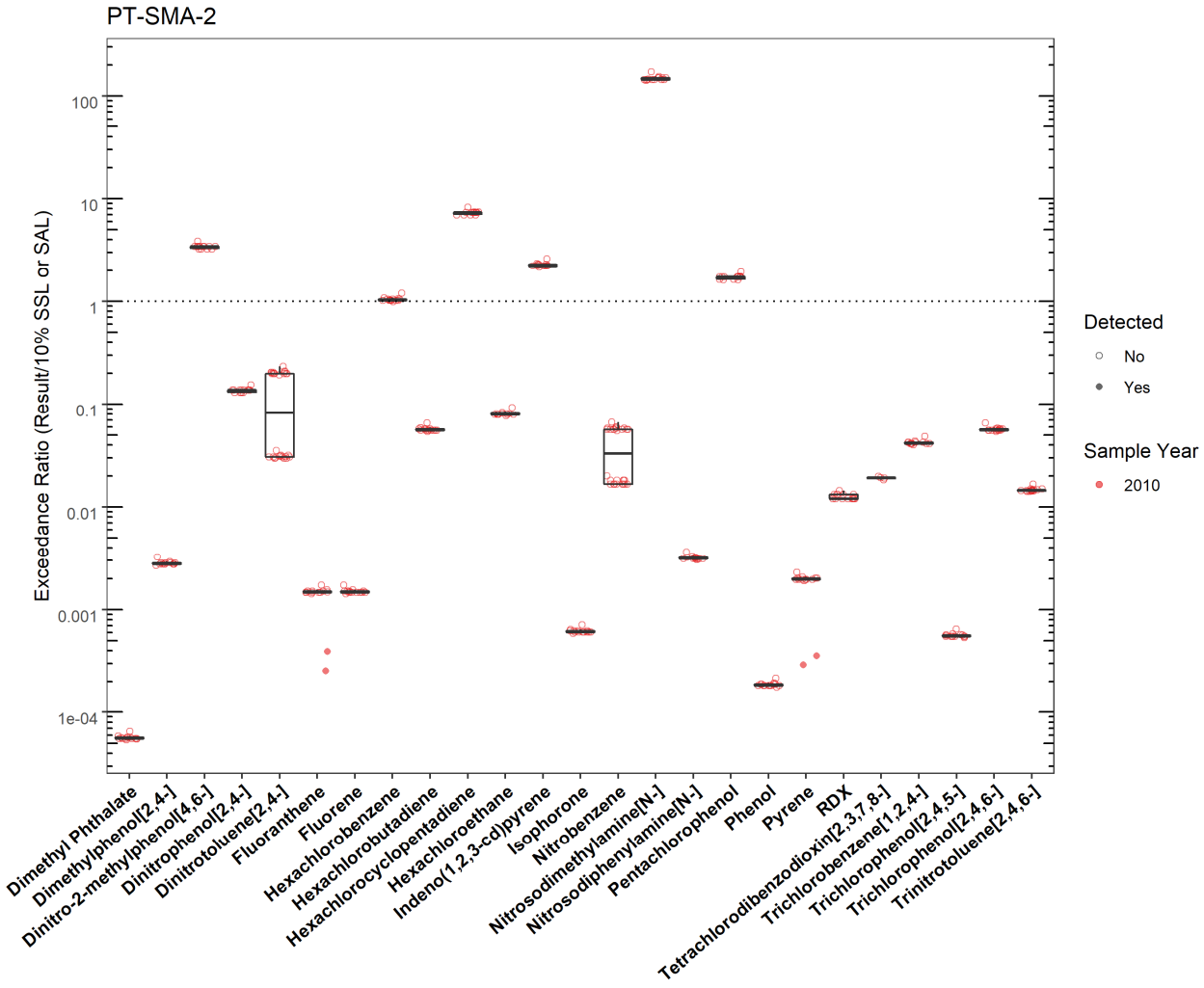


Figure 192.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-2 (Plot 2)

PT-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-2	Sb	Y	BTV	0.830	8.40	2010-11-30
Copper	PT-SMA-2	Cu	Y	BTV	14.7	72.6	2010-11-30
Lead	PT-SMA-2	Pb	Y	BTV	22.3	27.4	2010-11-30
Mercury	PT-SMA-2	Hg	Y	BTV	0.100	0.181	2010-12-01
Selenium	PT-SMA-2	Se	Y	BTV	1.52	1.70	2010-12-01; 2010-11-30

Figure 192.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-2

192.4 Stormwater Evaluation

192.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figures 192.4-1 and 192.4-2.

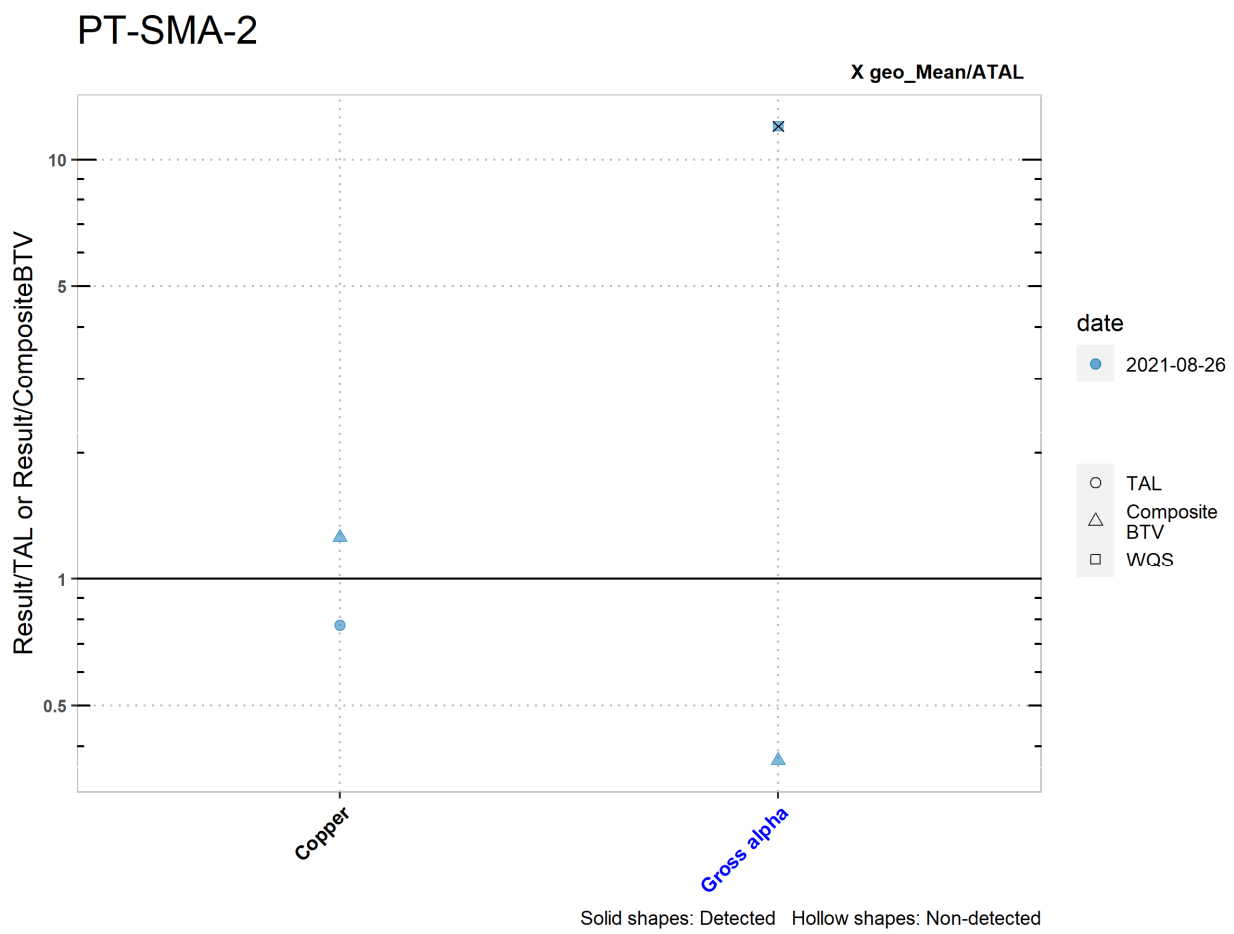


Figure 192.4-1 Analytical Results from Stormwater Sample, PT-SMA-2 (Plot)

PT-SMA-2

	Copper	Gross alpha
MQL	0.5	NA
ATAL	NA	15
MTAL	6.69	NA
Composite_BTV	4.11	55.9
unit	ug/L	pCi/L*
2021-08-26 result	5.19	175
2021-08-26 dT	0.776	12
2021-08-26 dB	1.26	0.368
geo_mean/ATAL	NA	12

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 192.4-2 Analytical Results from Stormwater Sample, PT-SMA-2 (Table)

192.4.2 Assessment Unit and Stream Impairments

PT-SMA-2 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

192.5 Site-Specific Demonstration

192.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, with the exception of copper.

192.5.2 Stormwater Data Summary

Copper and gross alpha were monitored in the first sample from this monitoring stage.

192.5.3 2022 Permit Status

The SMA is in active monitoring; a second confirmation-monitoring sample has not been collected at the current location.

192.5.4 Sampling and Analysis Plan

Table 192.5-1 is the proposed SAP for PT-SMA-2.

Table 192.5-1 Proposed SAP, PT-SMA-2

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history, and stormwater data
Dissolved copper (1)	Stormwater data, soil data, and Site history
SVOCs (2)	Site history (organics)
DOC (1)	Permit requirement
SSC (1)	Permit requirement

193.0 PT-SMA-2.01

Associated Sites	C-36-001, C-36-006(e)
Receiving Water	Potrillo Canyon
Drainage Area	0.23 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	AOC C-36-001: In Progress Deferred per Consent Order AOC C-36-006(e): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Corrective Action Complete/Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-term Stewardship per Permit Part 1.C.3 criterion

193.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the August 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 225367), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Following the 2017 submittal to EPA of certification of a no exposure condition at AOC C-36-001 per Permit Part I.E.2(c) (LANL 2017, 602575), corrective-action monitoring for AOC C-36-001 was stopped and monitoring was initiated for the required investigation sample for the Site.

Since 2012, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until at least one confirmation sample is collected from this SMA for AOC C-36-006(e) and the no exposure investigation sample is collected for AOC C-36-001.

193.2 Site History

C-36-001 (4/14/2022)

AOC C-36-001 is a former containment vessel that provided secondary containment for explosives tests at TA-36. The containment vessel was manufactured in 1970 and located at the PHERMEX test facility at TA-15. The containment vessel was later relocated to the I-J Firing Site [SWMU 36-004(e)] and placed south of building 36-55 where it remained until 1983 when it was removed. The containment vessel consisted of a 19.5-ton steel sphere that was 12 ft in diameter. An explosive device was placed and detonated in a primary containment vessel, which, in turn, was placed inside the AOC C-36-001 containment vessel. The explosion gases were vented through a filtration system that captured particulates and did not allow release of the test material. The interior of the containment vessel was contaminated from the tests, but the exterior remained uncontaminated. Plutonium remained in the filtration system and was disposed of at MDA G at TA-54 as low-level radioactive waste.

C-36-006(e) (4/6/2022)

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

For investigation activities at the Sites, refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336).

193.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 193.2-1.

Table 193.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
C-36-001	Containment Vessel	Metals, HE, plutonium
C-36-006(e)	Projectile test area	Copper, iron, lead, DU

193.3 Consent Order Soil Data

Decision-level data for AOC C-36-001 and AOC C-36-006(e) consist of results for samples collected in 2010 from sediment catchment areas in the drainages downgradient of the Sites. Analytical results for these samples are presented in Figures 193.3-1 through 193.3-4. The 2011 IR (LANL 2011, 208336) for Potrillo and Fence Canyons Aggregate Area concluded that because the investigation of C-36-001 and C-36-006(e) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

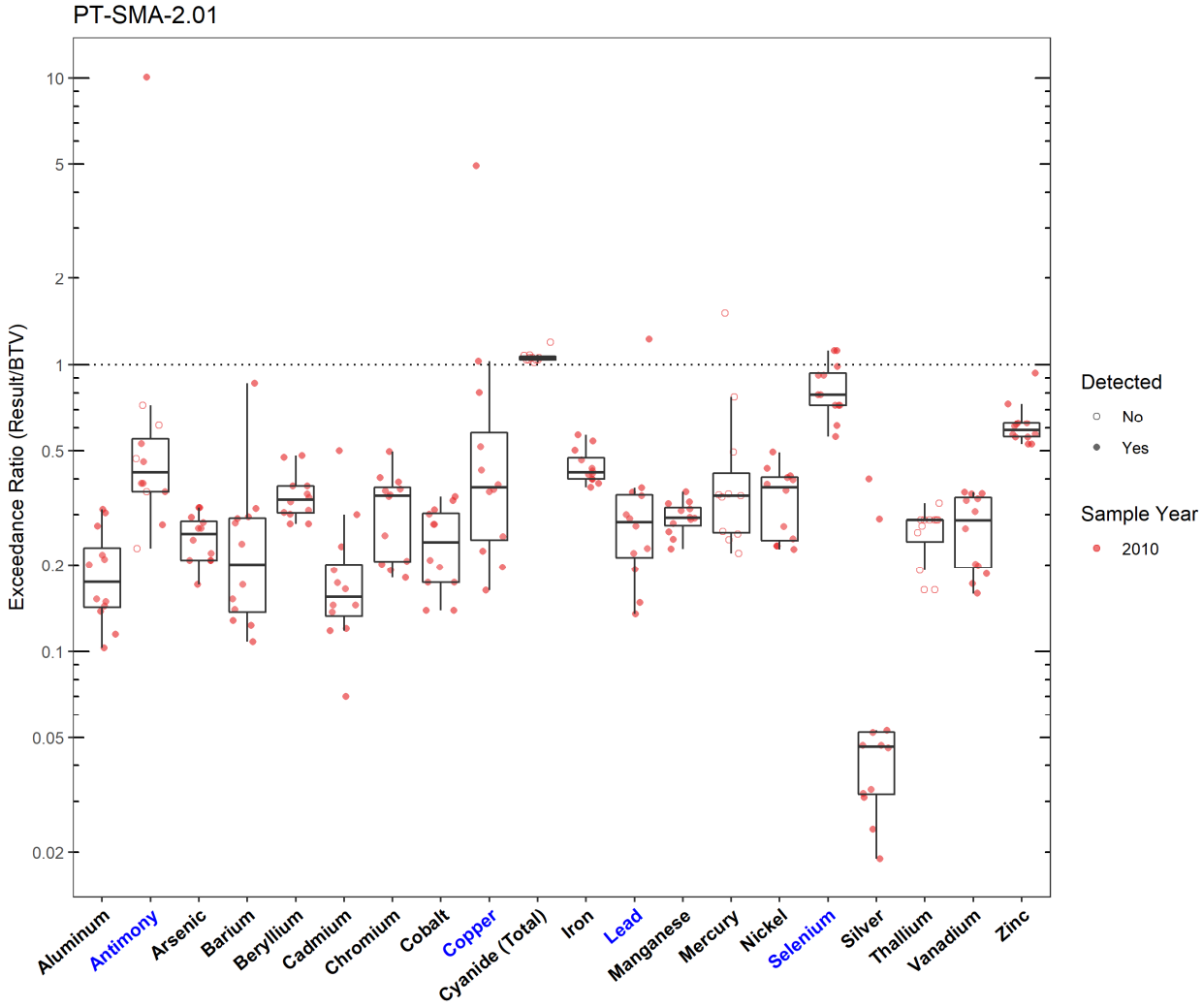


Figure 193.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-2.01

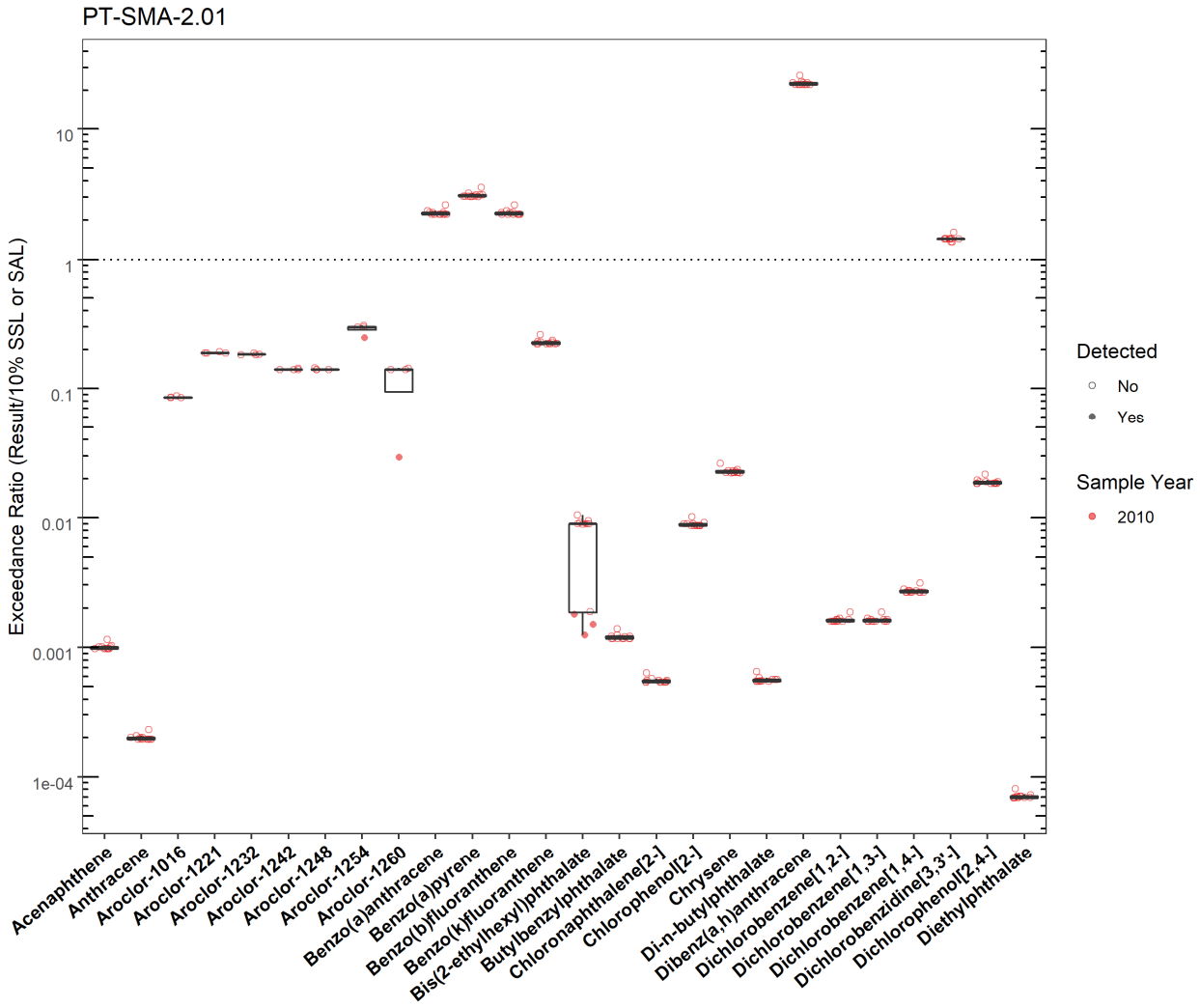


Figure 193.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-2.01 (Plot 1)

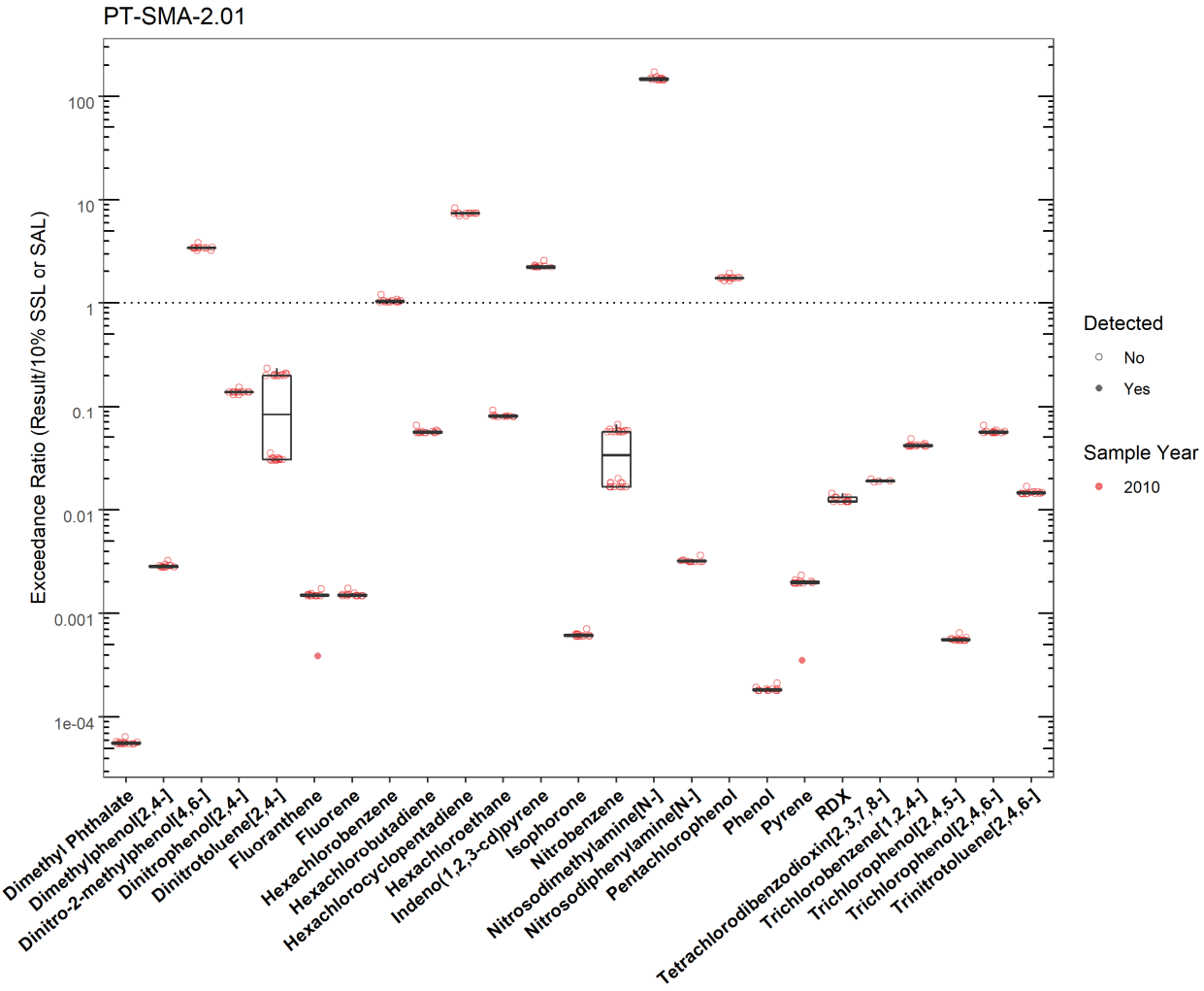


Figure 193.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-2.01 (Plot 2)

PT-SMA-2.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-2.01	Sb	Y	BTV	0.830	8.40	2010-11-30
Copper	PT-SMA-2.01	Cu	Y	BTV	14.7	72.6	2010-11-30
Lead	PT-SMA-2.01	Pb	Y	BTV	22.3	27.4	2010-11-30
Selenium	PT-SMA-2.01	Se	Y	BTV	1.52	1.70	2010-11-30

Figure 193.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-2.01

193.4 Stormwater Evaluation

193.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

193.4.2 Assessment Unit and Stream Impairments

PT-SMA-2.01 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

193.5 Site-Specific Demonstration

193.5.1 Soil Data Summary

Antimony, copper, lead, and selenium exceeded the applicable screening values.

193.5.2 Stormwater Data Summary

No confirmation-monitoring data in current stage.

193.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

194.0 PT-SMA-3

Associated Sites	36-004(a), 36-006
Receiving Water	Potrillo Canyon
Drainage Area	446.95 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	AOC 36-004(a): In Progress Deferred per Consent Order SWMU 36-006: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	The current SMA is over 700 acres in size. Based on the March 2018 field visit, the sampler was moved further north in the Potrillo Canyon drainage in order to capture the runoff from Sites 36-004(a) and 36-006.
2022 Permit Status	Active Monitoring

194.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600776), corrective-action monitoring was initiated. While developing the 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review and monitoring was reinitiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

194.2 Site History

36-004(a) (4/18/2022)

AOC 36-004(a) is the active Eenie Firing Site at TA-36 on Mesita del Potrillo on the rim of Potrillo Canyon. AOC 36-004(a) consist of the firing pad, a control bunker (building 36-3), and a make-up building (36-4) that houses a SAA [SWMU 36-007(a)]. Construction of the Eenie Firing Site began in 1949 and was completed in 1951. The established hazard radius for Eenie Firing Site is 3,000 ft. Materials used in experimental shots at this firing site have included lead oxide, mercury, copper, nickel, brass, DU, and nitroglycerine. Other activities conducted at the Eenie Firing Site include shoulder-mounted projectiles fired into targets south of the firing site.

36-006 (2/21/2020)

SWMU 36-006 consist of an inactive surface disposal area located on the southern slope of Potrillo Canyon, approximately 600 ft north of the Eenie Firing Site [AOC 36-004(a)] at TA-36. Cables, metal, concrete, and other similar debris from the TA-36 firing sites was disposed of at SWMU 36-006 from 1955 to 1970. This debris was dumped into the canyon from trucks on the canyon rim. The majority of the debris covered an area approximately 75 ft wide that extended approximately 100 ft down the south canyon slope. The remainder of the debris was scattered laterally 300 ft along the south canyon slope. Although the TA-36 firing sites are still active, SWMU 36-006 was not used as a surface

disposal area after 1996. Firing site personnel removed most of the debris between 1999 and 2006. All remaining debris was removed from the SWMU 36-006 surface disposal area during the 2010–2011 Consent Order investigation.

For investigation activities for 36-004(a), refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336). For investigation activities for 36-006, refer to "Supplemental Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (N3B 2019, 700523).

194.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 194.2-1.

Table 194.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-004(a)	Active firing site – Eenie	Aluminum, barium, beryllium, copper, iron, lead mercury, nickel, HE, DU
36-006	Surface disposal area	Aluminum, barium, beryllium, copper, iron, lead mercury, nickel, HE, DU

194.3 Consent Order Soil Data

Decision-level data for AOC 36-004(a) consist of results from two samples collected at one location in the drainage northwest and downgradient of the Site in 2010. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(a) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

Decision-level data for SWMU 36-006 consist of results from samples collected in 1995 and 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 194.3-1 through 194.3-4.

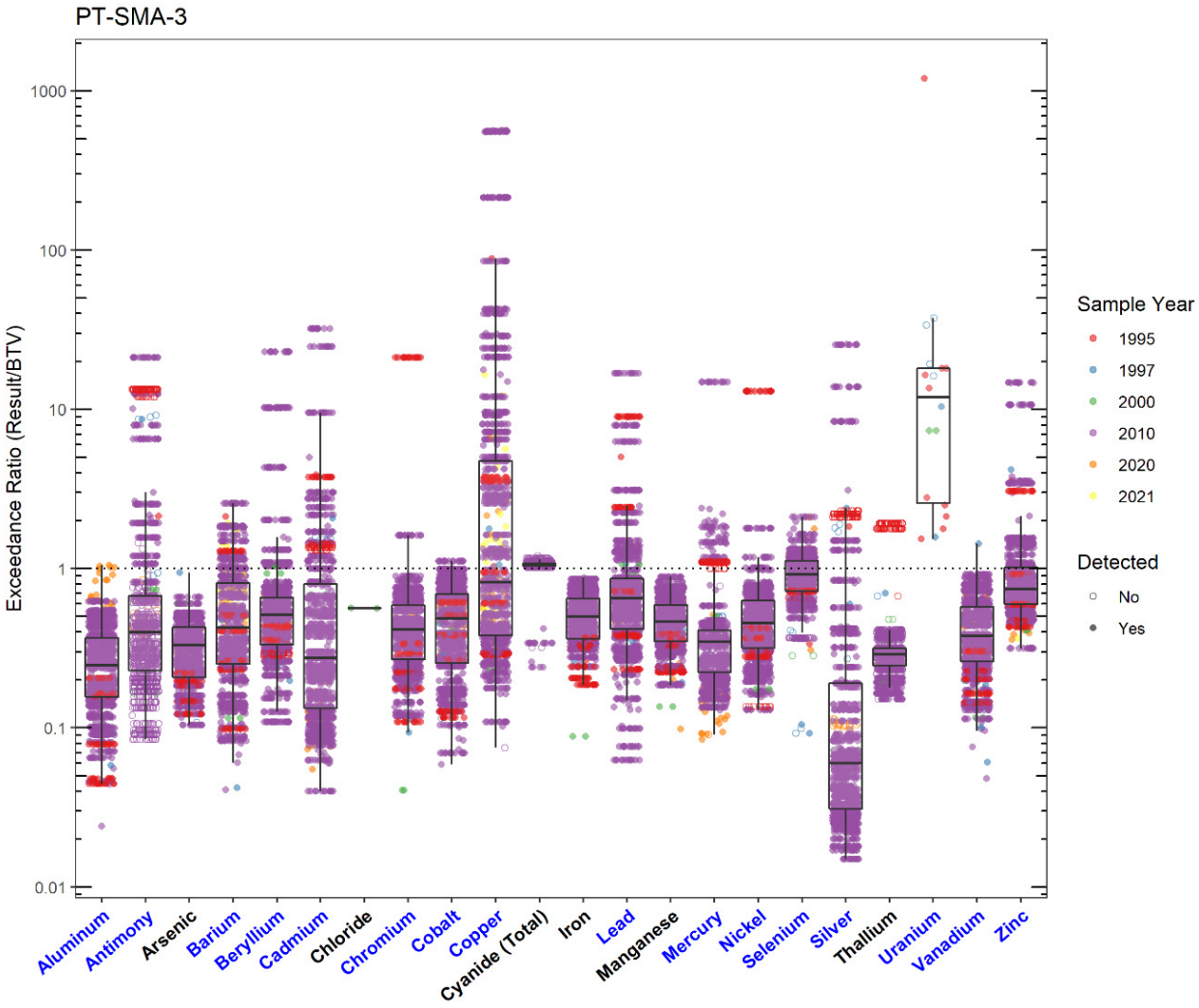


Figure 194.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-3

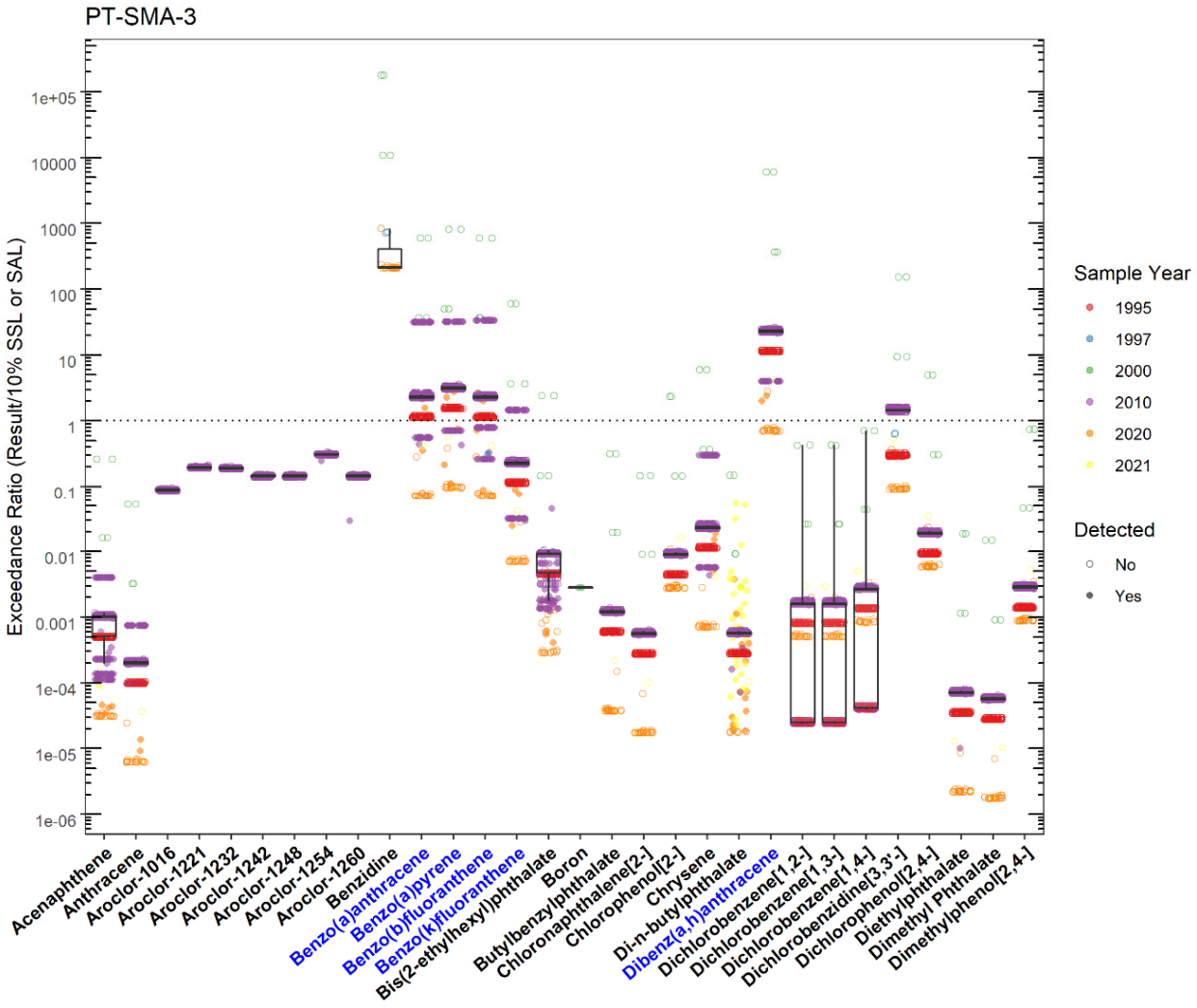


Figure 194.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-3 (Plot 1)

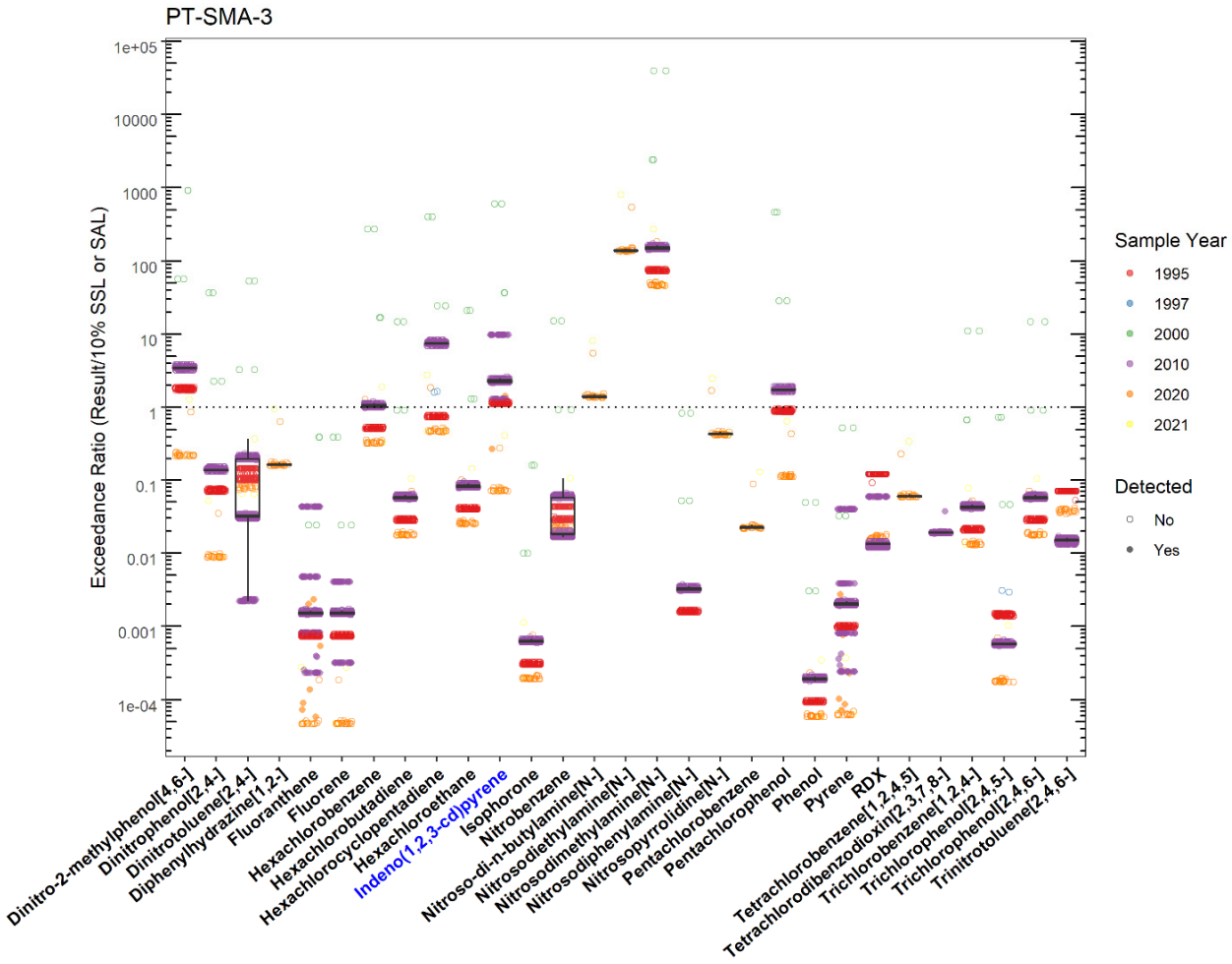


Figure 194.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-3 (Plot 2)

PT-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	PT-SMA-3	Al	Y	BTV	29200	30600	2020-09-01
Antimony	PT-SMA-3	Sb	Y	BTV	0.830	17.5	2010-11-10
Barium	PT-SMA-3	Ba	Y	BTV	295	755	2010-11-10
Benzo(a)anthracene	PT-SMA-3	56-55-3	Y	SSL_0.1	0.153	4.80	2010-11-21
Benzo(a)pyrene	PT-SMA-3	50-32-8	Y	SSL_0.1	0.112	3.60	2010-11-21
Benzo(b)fluoranthene	PT-SMA-3	205-99-2	Y	SSL_0.1	0.153	5.10	2010-11-21
Benzo(k)fluoranthene	PT-SMA-3	207-08-9	Y	SSL_0.1	1.53	2.20	2010-11-21
Beryllium	PT-SMA-3	Be	Y	BTV	1.83	42.1	2010-11-19
Cadmium	PT-SMA-3	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	PT-SMA-3	Cr	Y	BTV	19.3	410	1995-12-20
Cobalt	PT-SMA-3	Co	Y	BTV	8.64	9.60	2010-11-08
Copper	PT-SMA-3	Cu	Y	BTV	14.7	8250	2010-11-10
Dibenz(a,h)anthracene	PT-SMA-3	53-70-3	Y	SSL_0.1	0.0153	0.0610	2010-11-21
Indeno(1,2,3-cd)pyrene	PT-SMA-3	193-39-5	Y	SSL_0.1	0.153	1.50	2010-11-21
Lead	PT-SMA-3	Pb	Y	BTV	22.3	375	2010-11-19
Mercury	PT-SMA-3	Hg	Y	BTV	0.100	1.48	2010-11-21
Nickel	PT-SMA-3	Ni	Y	BTV	15.4	200	1995-12-20
Selenium	PT-SMA-3	Se	Y	BTV	1.52	3.20	2010-12-06
Silver	PT-SMA-3	Ag	Y	BTV	1.00	25.5	2010-11-19
Uranium	PT-SMA-3	U	Y	BTV	1.82	2180	1995-08-21
Vanadium	PT-SMA-3	V	Y	BTV	39.6	56.8	1997-09-02
Zinc	PT-SMA-3	Zn	Y	BTV	48.8	716	2010-11-19

Figure 194.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-3

194.4 Stormwater Evaluation

194.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring samples have been collected in the current location at the SMA.

194.4.2 Assessment Unit and Stream Impairments

PT-SMA-3 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

194.5 Site-Specific Demonstration

194.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: aluminum, barium, beryllium, copper, lead, mercury, nickel, and uranium.

194.5.2 Stormwater Data Summary

No confirmation-monitoring data.

194.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected at the current location.

194.5.4 Sampling and Analysis Plan

Table 194.5-1 is the proposed SAP for PT-SMA-3.

Table 194.5-1 Proposed SAP, PT-SMA-3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Dissolved barium, beryllium, copper, lead, nickel, uranium	Site history and soil data
Total aluminum and mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

195.0 PT-SMA-4.2

Associated Sites	36-004(d)
Receiving Water	Potrillo Canyon
Drainage Area	1067.02 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 36-004(d): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Corrective Action Evaluation
2016–2018 SIP Actions	Based on the March 2018 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part 1.C.3 criterion

195.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated and stormwater samples were collected in August 2018 and August 2021. Analytical results from these samples initiated corrective action and evaluations for corrective action are currently being conducted.

195.2 Site History

36-004(d) (4/18/2022)

SWMU 36-004(d) consists of the active Lower Slobbovia Firing Site and the inactive Skunk Works Firing Site in Potrillo Canyon, and three former burn pits located on the mesa top above Potrillo Canyon at TA-36. The Lower Slobbovia Firing Site consists of two active firing points and a control building (36-12). One of the firing points (structure 36-13) was constructed in 1950 and is located on top of an approximately 200-ft-diameter sand and dirt pad. The control building (structure 36-12) was constructed into the side of the pad. The second firing point consisted of a wooden tower (structure 36-120) constructed in 1986 at the northwest end of a 1,000-ft-long sled track for conducting drop tests. Shots fired at the Lower Slobbovia Firing Site primarily involved HE. Less than 2% of the shots involved significant amounts of metal [e.g., DU, lead, copper, aluminum, and steel]. The largest shot fired at Lower Slobbovia used 5,000 to 6,000 lb of HE. In addition, underground tests, buried to approximately 100 ft, were conducted at this site.

The Skunk Works Firing Site, located approximately 0.5 mi northwest of the Lower Slobbovia Firing Site, was used to conduct small-explosives experiments during the early to mid-1950s. These experiments involved gas (acetylene and oxygen), liquid (tetranitromethane), and solid explosives. Beryllium and radioactive materials were not used at the site. Structures at the Skunk Works Firing Site included a 5-ft × 5.5-ft × 5-ft belowgrade structure that previously served as a battery storage room and two buildings (structures 36-44 and 36-45) that were moved to the site from TA-15. All of the structures have since been removed. The Skunk Works firing pad was located next to building 36-45. A shallow depression, located approximately 100 ft further north in the canyon, was also used as a firing pad.

The burn pits were used for burning and disposal of test debris before MDA AA (SWMU 36-001) was established in the mid-1960s. These pits are located on Mesita del Potrillo approximately 4,000 ft west of the Lower Slobbovia control building (structure 36-12). The largest pit is bermed and located north of Potrillo Road and is approximately 40 ft in diameter. Two smaller areas are located south of Potrillo Road. Contaminated firing site debris was transported by truck from the TA-36 firing sites to the burn pits, placed in the pits, and burned. The debris consisted of wood, nails, other metal fragments, plastics, and sand contaminated with barium, uranium, and HE.

For investigation activities, refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336).

195.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 195.2-1.

Table 195.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-004(d)	Active firing site – Lower Slobbovia	Barium, steel, inorganic chemicals, dioxins/furans, HE, unspecified explosive compounds, uranium, DU

195.3 Consent Order Soil Data

Decision-level data for SWMU 36-004(d) consist of results from samples collected in 1996 and 2010 from sediment catchment areas in the drainages downgradient of the Site and within the burn pits. Analytical results for these samples are presented in Figures 195.3-1 through 195.3-5. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(d) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

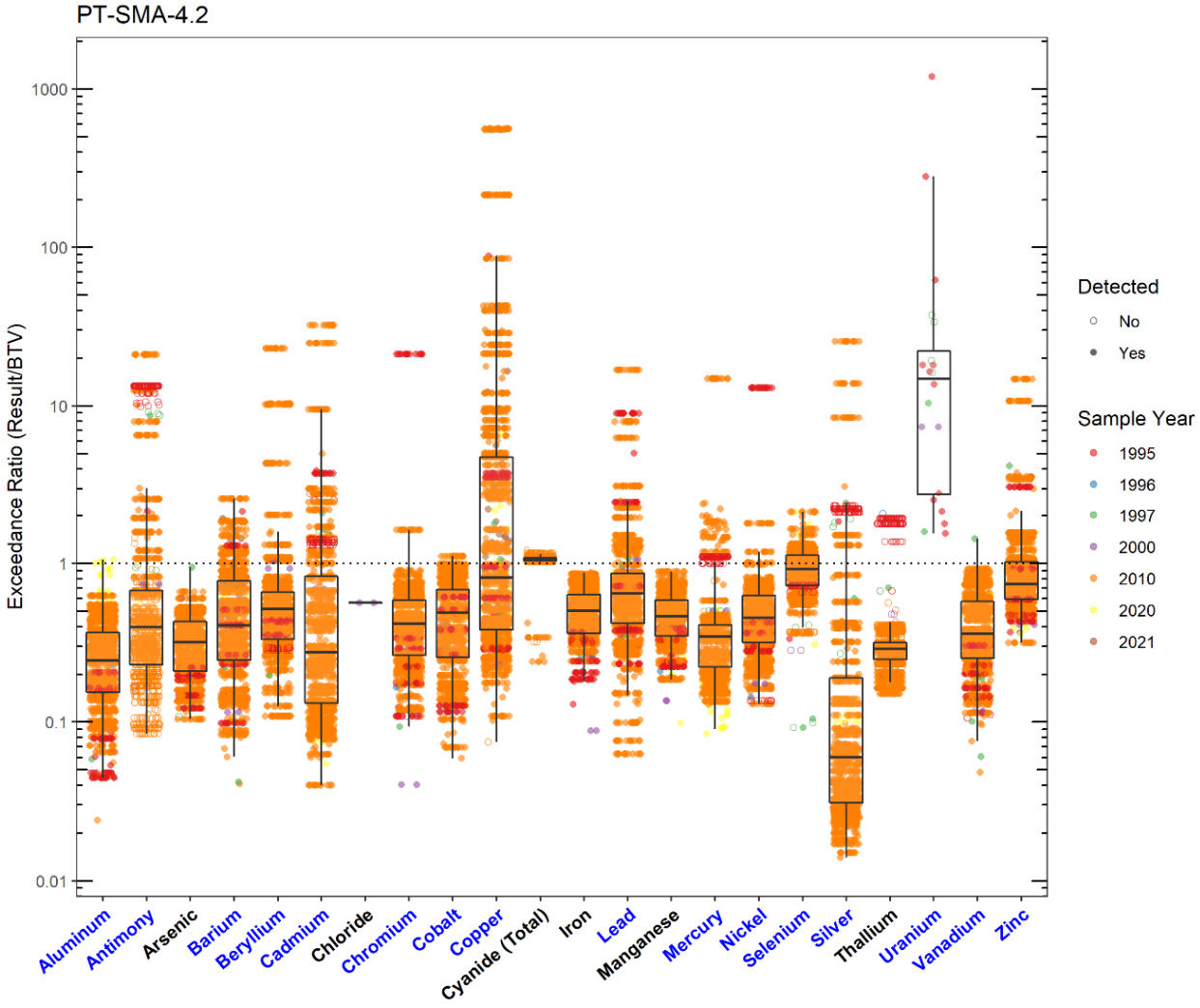


Figure 195.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-4.2

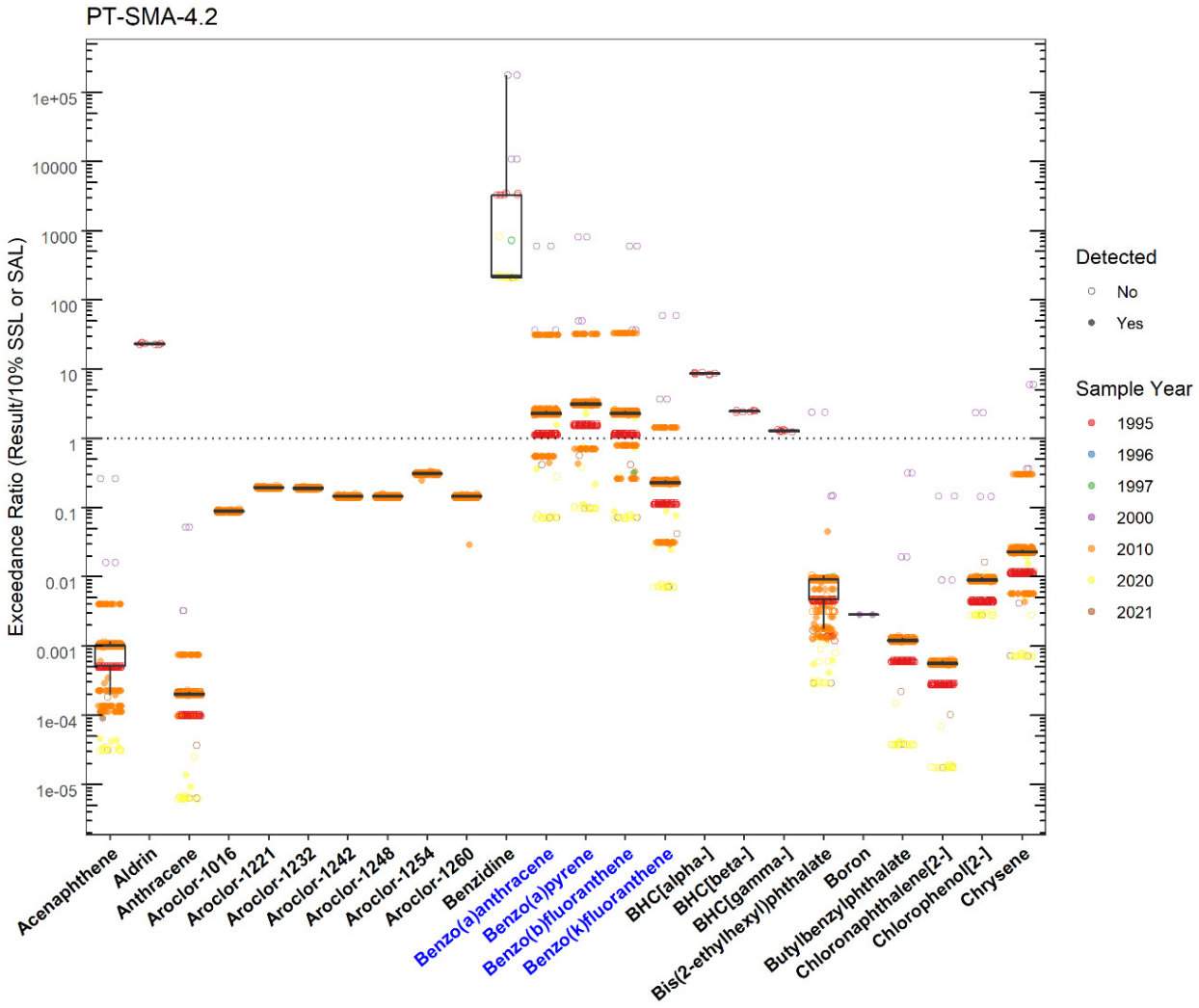


Figure 195.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-4.2 (Plot 1)

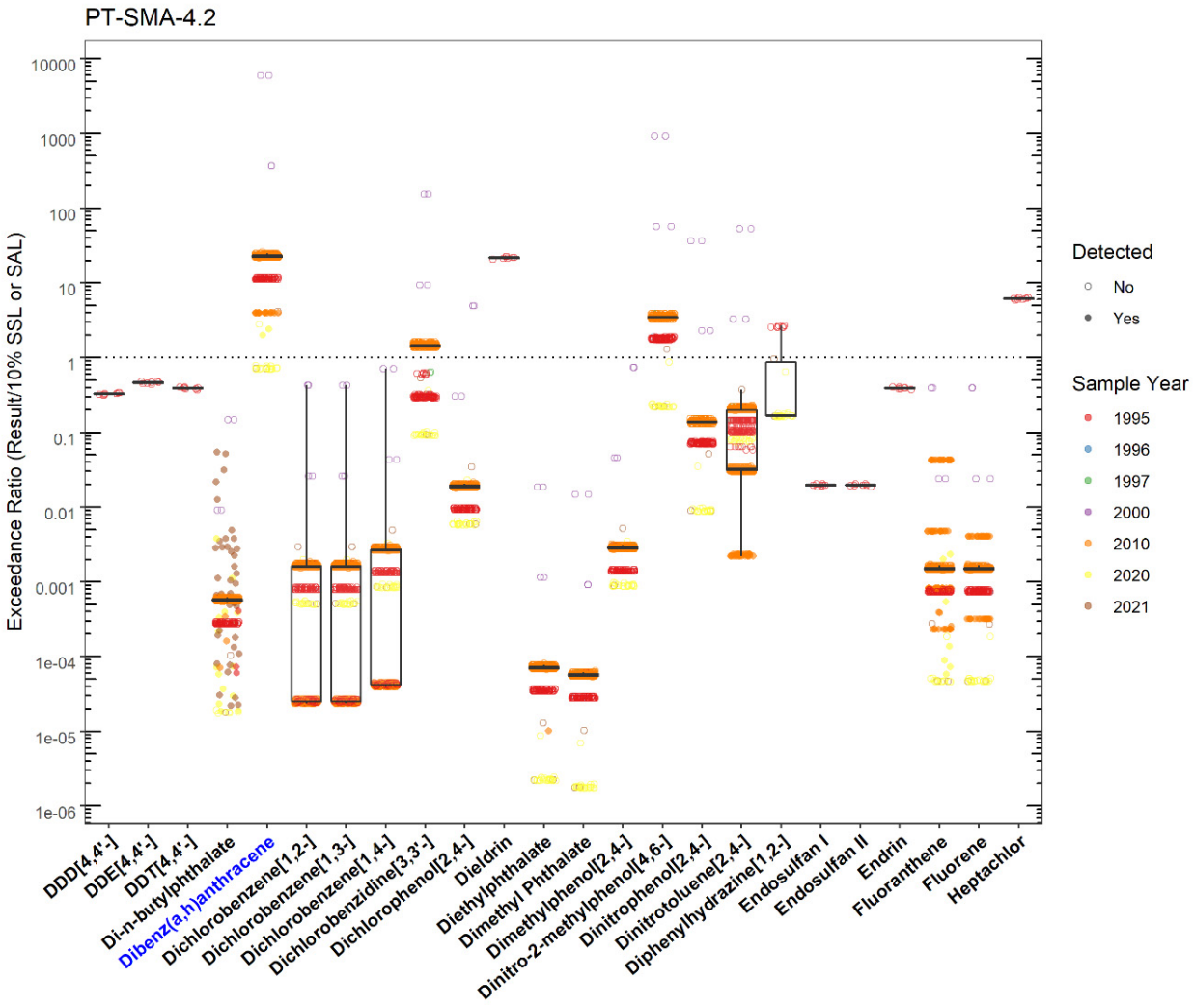


Figure 195.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-4.2 (Plot 2)

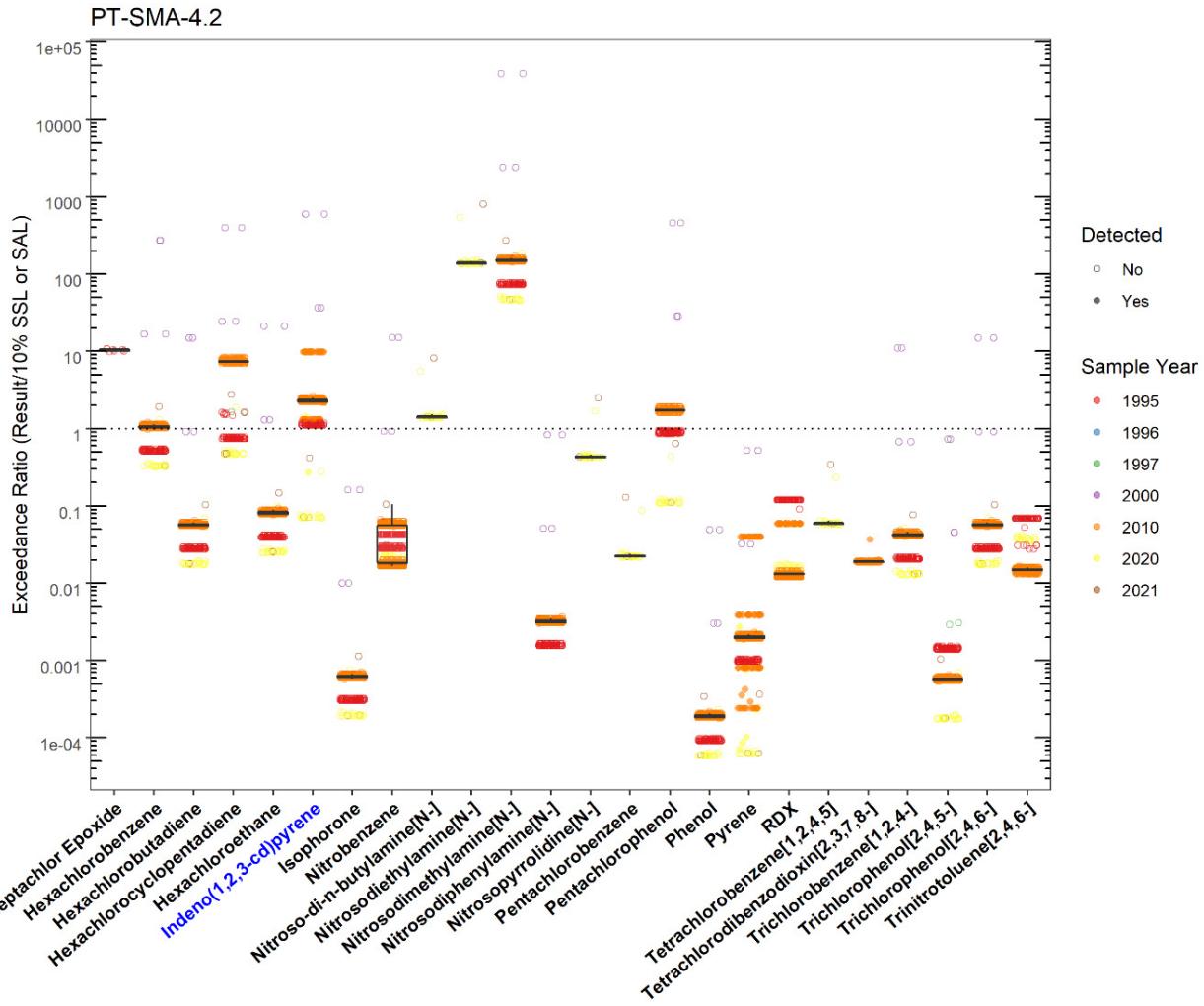


Figure 195.3-4 Organics Analytical Results from Soil Samples Associated with PT-SMA-4.2 (Plot 3)

PT-SMA-4.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	PT-SMA-4.2	Al	Y	BTV	29200	30600	2020-09-01
Antimony	PT-SMA-4.2	Sb	Y	BTV	0.830	17.5	2010-11-10
Barium	PT-SMA-4.2	Ba	Y	BTV	295	755	2010-11-10
Benzo(a)anthracene	PT-SMA-4.2	56-55-3	Y	SSL_0.1	0.153	4.80	2010-11-21
Benzo(a)pyrene	PT-SMA-4.2	50-32-8	Y	SSL_0.1	0.112	3.60	2010-11-21
Benzo(b)fluoranthene	PT-SMA-4.2	205-99-2	Y	SSL_0.1	0.153	5.10	2010-11-21
Benzo(k)fluoranthene	PT-SMA-4.2	207-08-9	Y	SSL_0.1	1.53	2.20	2010-11-21
Beryllium	PT-SMA-4.2	Be	Y	BTV	1.83	42.1	2010-11-19
Cadmium	PT-SMA-4.2	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	PT-SMA-4.2	Cr	Y	BTV	19.3	410	1995-12-20
Cobalt	PT-SMA-4.2	Co	Y	BTV	8.64	9.60	2010-11-08
Copper	PT-SMA-4.2	Cu	Y	BTV	14.7	8250	2010-11-10
Dibenz(a,h)anthracene	PT-SMA-4.2	53-70-3	Y	SSL_0.1	0.0153	0.0610	2010-11-21
Indeno(1,2,3-cd)pyrene	PT-SMA-4.2	193-39-5	Y	SSL_0.1	0.153	1.50	2010-11-21
Lead	PT-SMA-4.2	Pb	Y	BTV	22.3	375	2010-11-19
Mercury	PT-SMA-4.2	Hg	Y	BTV	0.100	1.48	2010-11-21
Nickel	PT-SMA-4.2	Ni	Y	BTV	15.4	200	1995-12-20
Selenium	PT-SMA-4.2	Se	Y	BTV	1.52	3.20	2010-12-06
Silver	PT-SMA-4.2	Ag	Y	BTV	1.00	25.5	2010-11-19
Uranium	PT-SMA-4.2	U	Y	BTV	1.82	2180	1995-08-21
Vanadium	PT-SMA-4.2	V	Y	BTV	39.6	56.8	1997-09-02
Zinc	PT-SMA-4.2	Zn	Y	BTV	48.8	716	2010-11-19

Figure 195.3-5 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-4.2

195.4 Stormwater Evaluation

195.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in August 2018 and August 2021. Analytical results from these samples are presented in Figures 195.4-1 and 195.4-2.

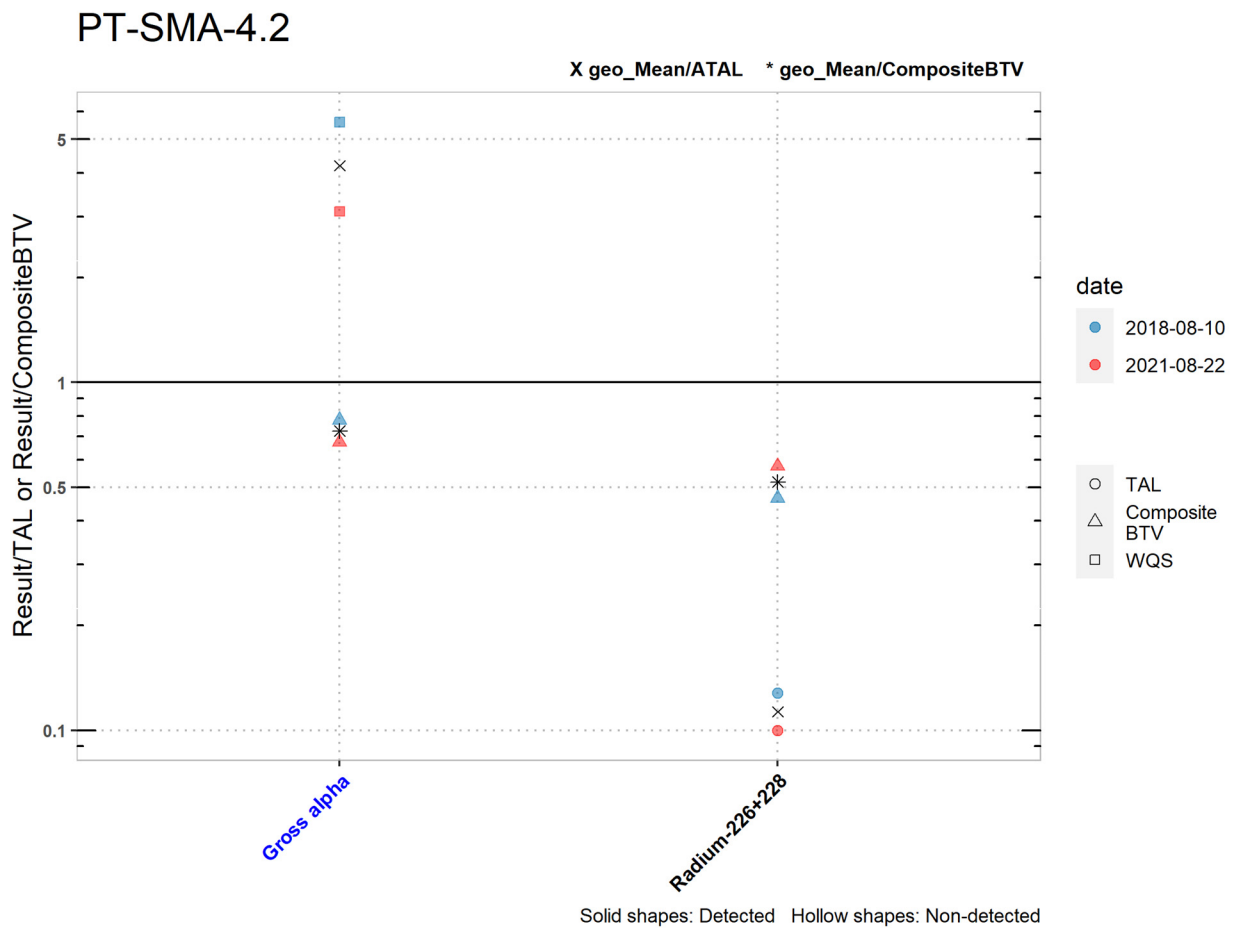


Figure 195.4-1 Analytical Results from Stormwater Samples, PT-SMA-4.2 (Plot)

PT-SMA-4.2

	Gross alpha	Radium-226+228
MQL	NA	NA
ATAL	15	30
MTAL	NA	NA
Composite_BTV	57.0	4.35
unit	pCi/L*	pCi/L*
2018-08-10 result	84.5	3.84
2018-08-10 dT	5.6	0.128
2018-08-10 dB	0.780	0.465
2021-08-22 result	46.1	3.00
2021-08-22 dT	3.1	0.100
2021-08-22 dB	0.674	0.575
geo_mean/ATAL	4.2	0.113
geo_mean/B	0.725	0.517

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g

Figure 195.4-2 Analytical Results from Stormwater Samples, PT-SMA-4.2 (Table)

195.4.2 Assessment Unit and Stream Impairments

PT-SMA-4.2 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

195.5 Site-Specific Demonstration

195.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: barium and uranium.

195.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

195.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

196.0 W-SMA-1

Associated Sites	16-017(j)-99, 16-026(c2), 16-026(v)
Receiving Water	Water Canyon
Drainage Area	5.91 acres
Landscape Characteristics	12% impervious, 88% pervious
Consent Order Site Status	SWMU 16-017(j)-99: In Progress SWMU 16-026(c2): In Progress SWMU 16-026(v): In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete for No Exposure/ Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

196.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the June 2013 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2013, 242173), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Stormwater samples were collected in September 2013 and July 2014. Analytical results from these samples initiated corrective action

The Permittees submitted a request for alternative compliance for SWMUs 16-026(c2) and 16-026(v) per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring for these sites has not occurred since 2015.

Following the September 2015 submittal to EPA of certification of a no exposure condition for SWMU 16-017(j)-99 (LANL 2015, 600932), stormwater monitoring was initiated and an investigation sample was collected in October 2018. The Permittees submitted a completion of corrective action per Permit part I.E.1(b) for the site in January 2020 (N3B 2020, 700731). Stormwater monitoring has not occurred since 2018.

196.2 Site History

16-017(j)-99 (2/27/2019)

SWMU 16-017(j)-99 is a former HE magazine (former Structure 16-63) at TA-16. The magazine was a 24 ft × 26 ft × 9 ft wood-framed structure surrounded by an earthen berm on three sides and the top. The magazine was built in 1945 and removed in 1998. The storage magazine was built at grade, and there is no longer any evidence of the berm that once surrounded the magazine. Any remaining berm material is indistinguishable from the surrounding soil.

This SWMU was originally designated as part of SWMU 16-017, a group of 24 structures in central TA-16. During the 1999 AUA, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure.

16-026(c2) (5/17/2019)

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

16-026(v) (3/21/2019)

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

No investigation activities have been conducted for SWMUs 16-017(j)-99 or 16-026(c2). For more information on these sites, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

196.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 196.2-1.

Table 196.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-017(j)-99	Former storage building 16-63	No known POCs
16-026(c2)	Outfall from building 16-432	No applicable POCs
16-026(v)	Outfall from building 16-460	Metals, HE

196.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-017(j)-99 or SWMU 16-026(c2).

Decision-level data for SWMU 16-026(v) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 196.3-1 through 196.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

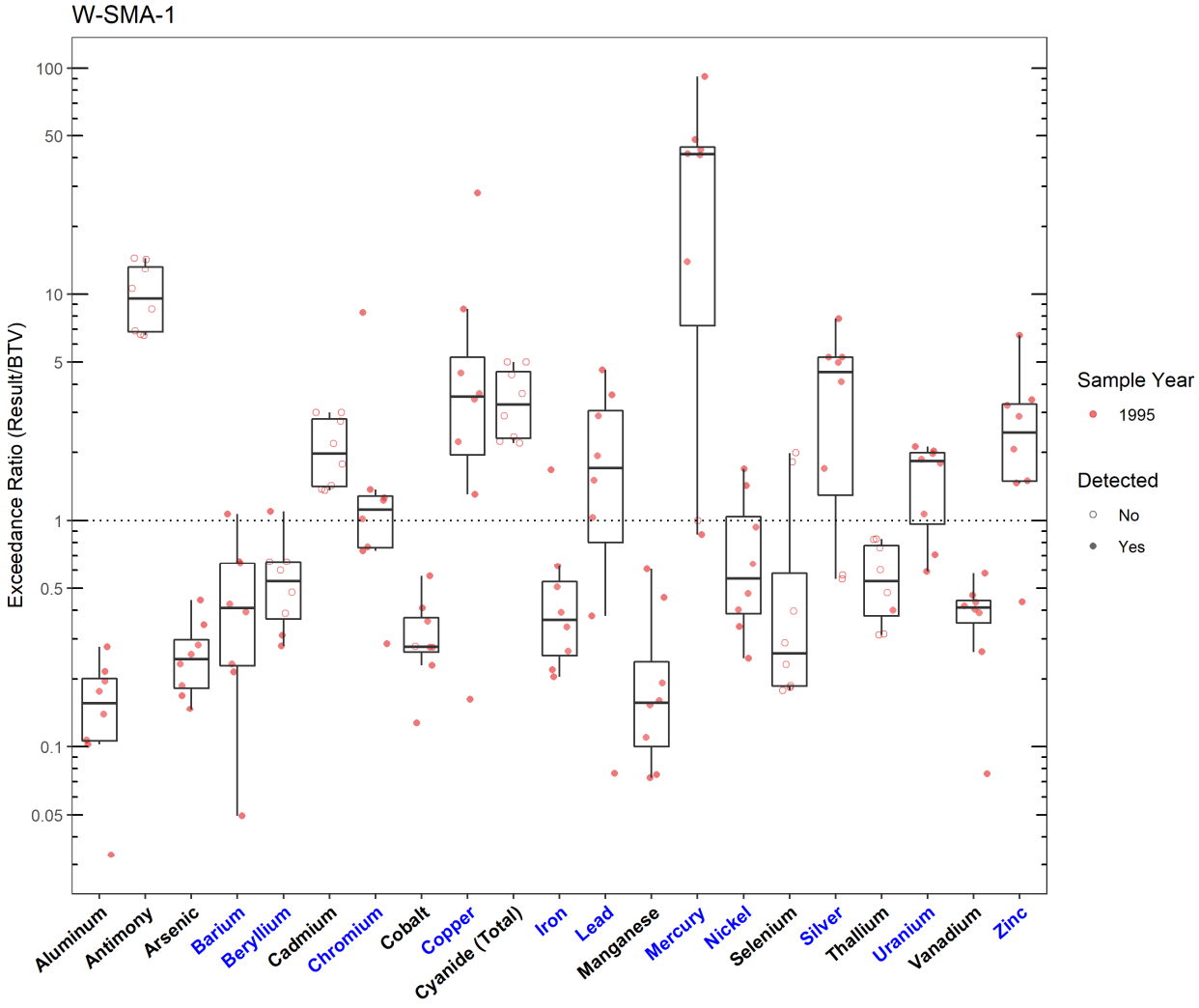


Figure 196.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-1

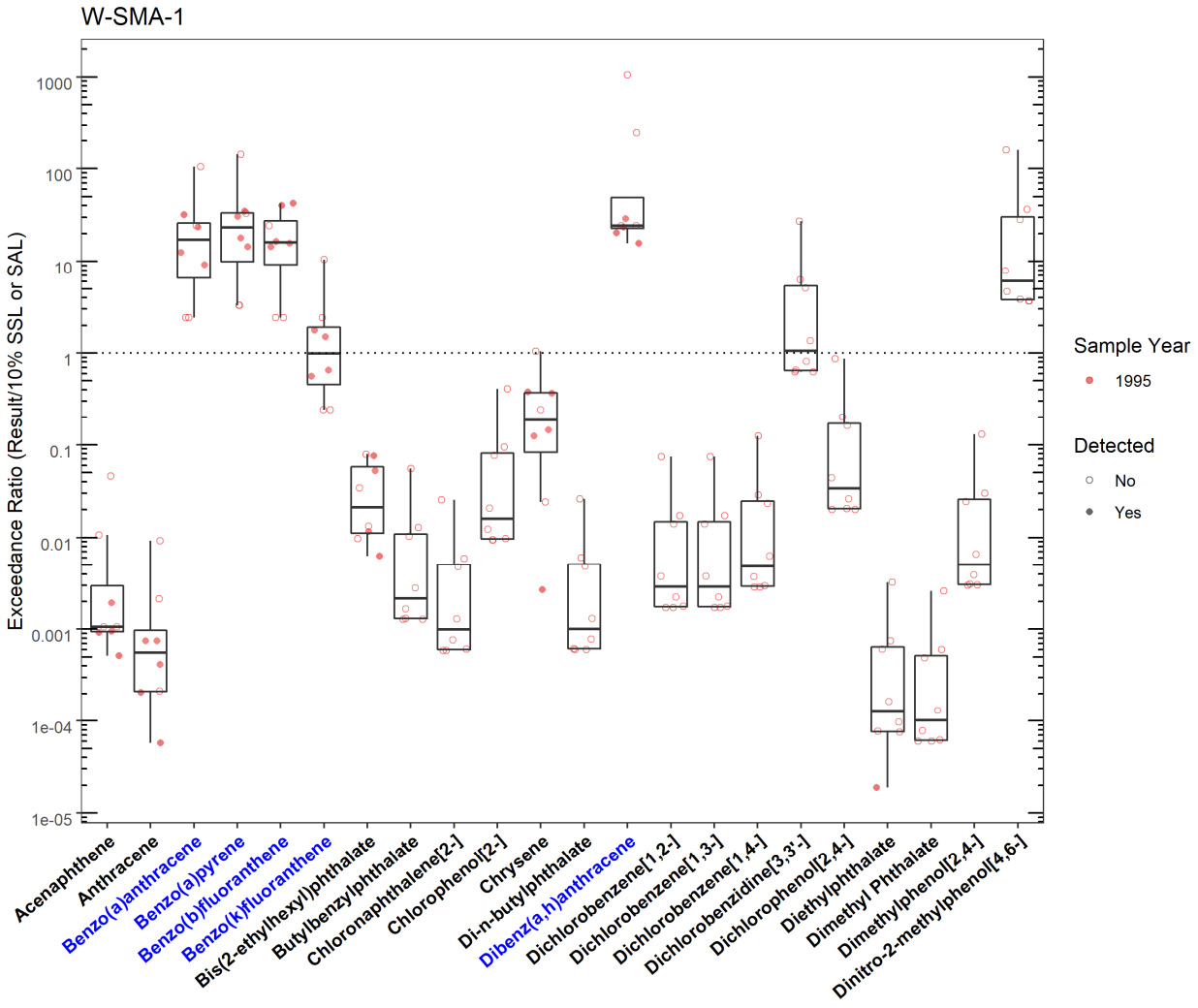


Figure 196.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-1 (Plot 1)

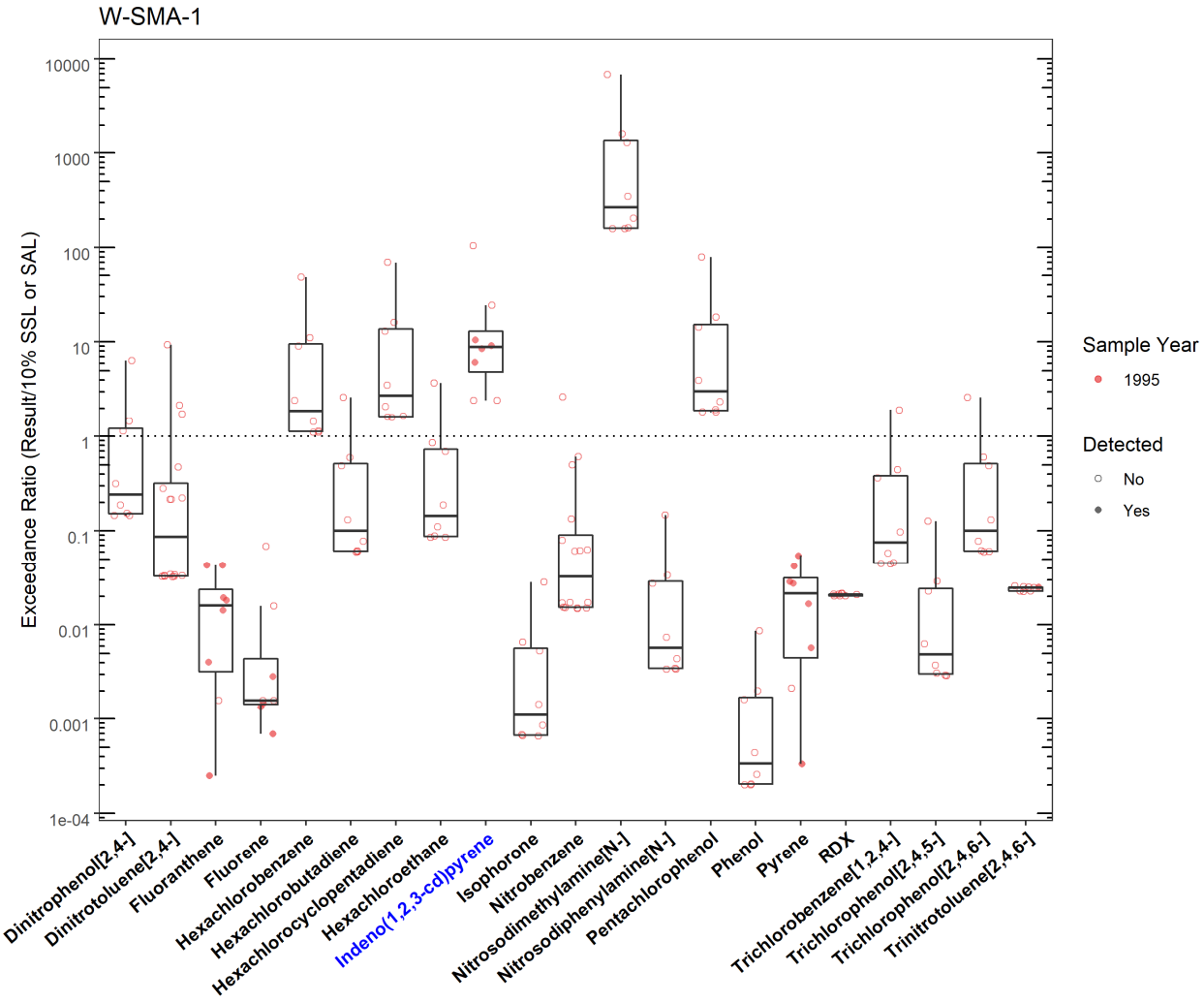


Figure 196.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-1 (Plot 2)

W-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	W-SMA-1	Ba	Y	BTV	295	317	1995-10-10
Benzo(a)anthracene	W-SMA-1	56-55-3	Y	SSL_0.1	0.153	4.90	1995-08-15
Benzo(a)pyrene	W-SMA-1	50-32-8	Y	SSL_0.1	0.112	3.90	1995-08-15
Benzo(b)fluoranthene	W-SMA-1	205-99-2	Y	SSL_0.1	0.153	6.50	1995-08-15
Benzo(k)fluoranthene	W-SMA-1	207-08-9	Y	SSL_0.1	1.53	2.70	1995-08-15
Beryllium	W-SMA-1	Be	Y	BTV	1.83	2.02	1995-10-10
Chromium	W-SMA-1	Cr	Y	BTV	19.3	160	1995-08-21
Copper	W-SMA-1	Cu	Y	BTV	14.7	412	1995-08-15
Dibenz(a,h)anthracene	W-SMA-1	53-70-3	Y	SSL_0.1	0.0153	0.440	1995-08-15
Indeno(1,2,3-cd)pyrene	W-SMA-1	193-39-5	Y	SSL_0.1	0.153	1.60	1995-08-15
Iron	W-SMA-1	Fe	Y	BTV	21500	36100	1995-08-15
Lead	W-SMA-1	Pb	Y	BTV	22.3	103	1995-08-15
Mercury	W-SMA-1	Hg	Y	BTV	0.100	9.20	1995-05-04
Nickel	W-SMA-1	Ni	Y	BTV	15.4	26.1	1995-08-15
Silver	W-SMA-1	Ag	Y	BTV	1.00	7.77	1995-08-15
Uranium	W-SMA-1	U	Y	BTV	1.82	3.86	1995-10-10
Zinc	W-SMA-1	Zn	Y	BTV	48.8	321	1995-08-15

Figure 196.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-1

196.4 Stormwater Evaluation

196.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in October 2018. Analytical results from that sample are presented in Figures 196.4-1 through 196.4-4.

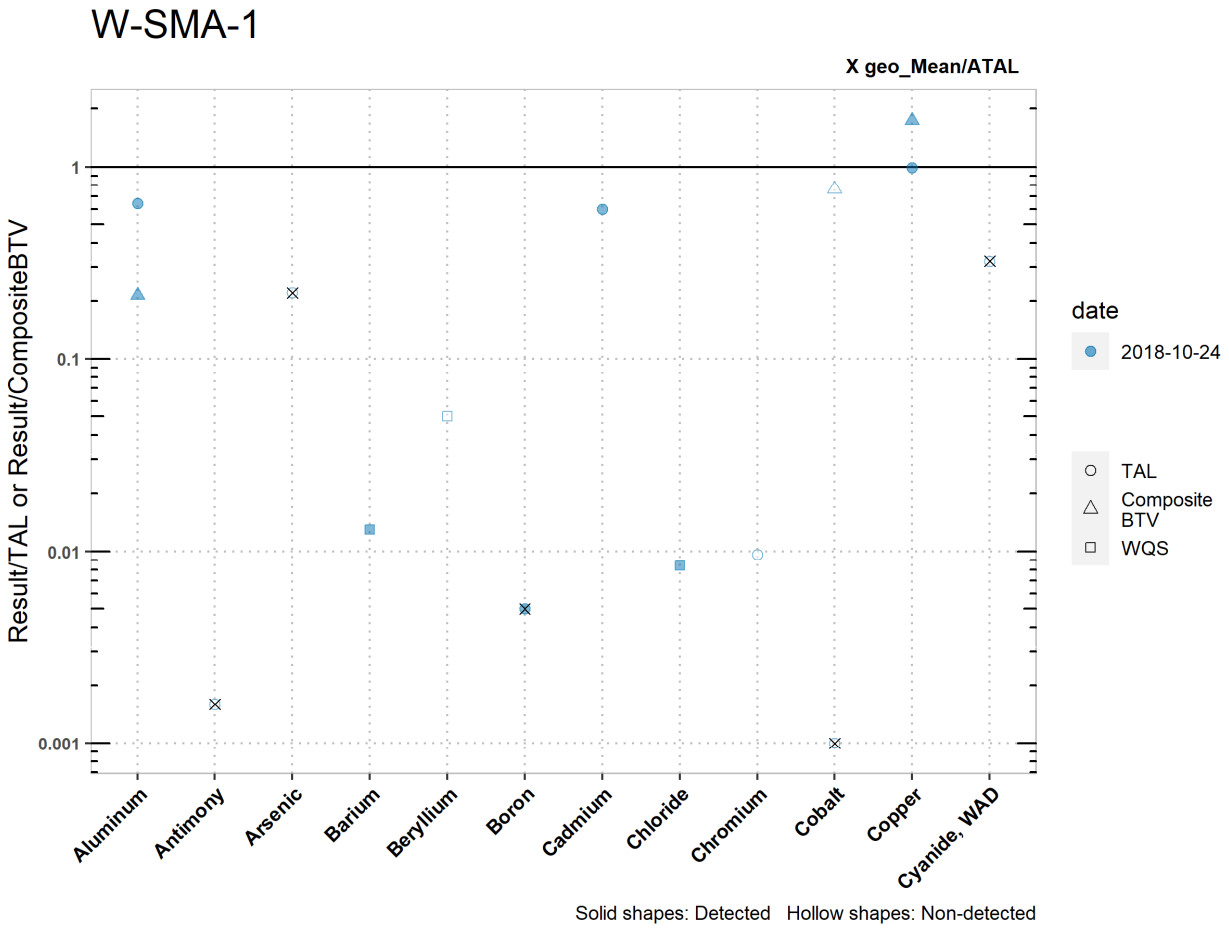


Figure 196.4-1 Analytical Results from Stormwater Sample, W-SMA-1 (Plot 1)

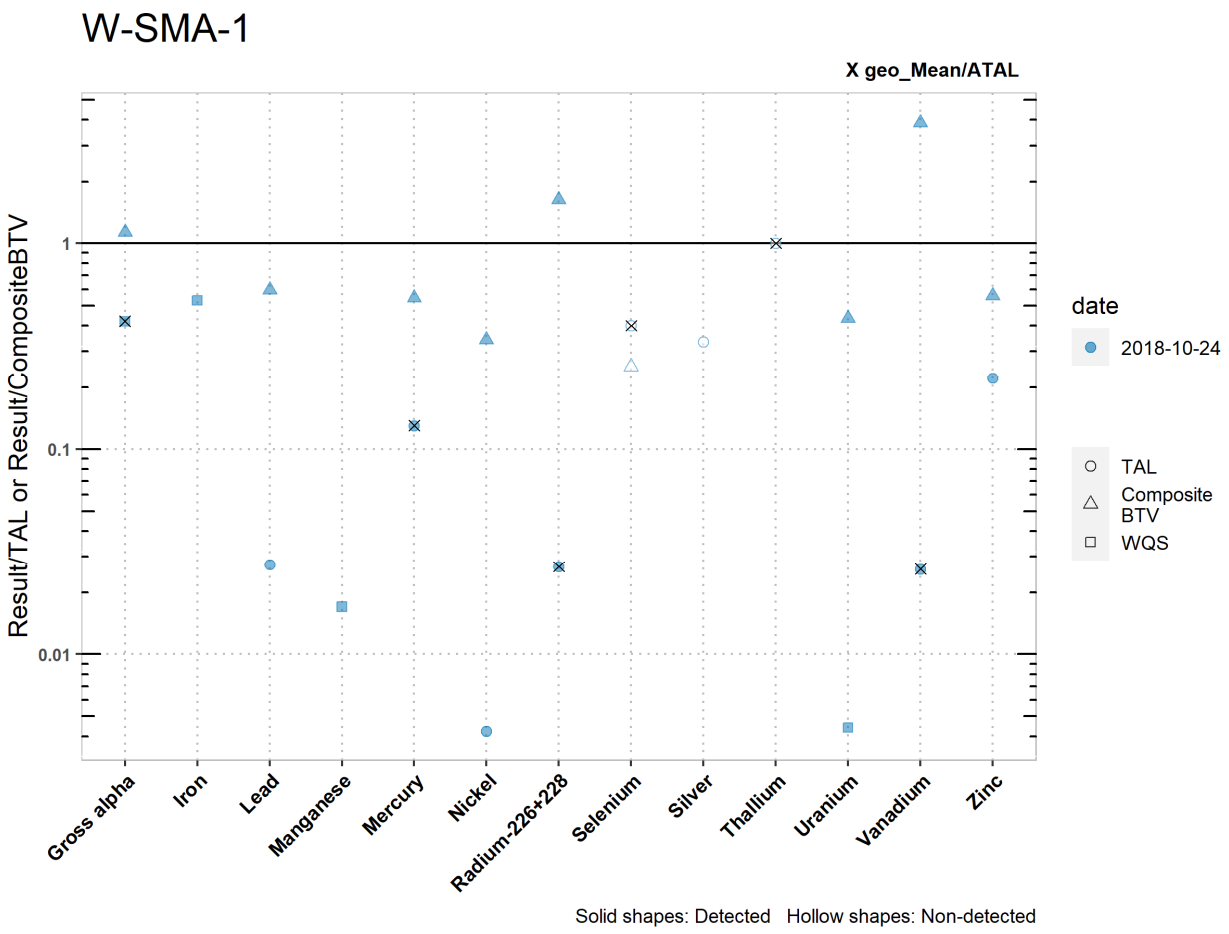


Figure 196.4-2 Analytical Results from Stormwater Sample, W-SMA-1 (Plot 2)

W-SMA-1

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2
MTAL	1241	NA	340	NA	NA	NA	0.879	NA	311	NA	6.69	22
Composite_BTV	37000	NA	NA	NA	NA	NA	NA	NA	NA	1.31	3.82	NA
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2018-10-24 result	793	*1.00*	*2.00*	26.4	*0.200*	25.2	0.558	1940	*3.00*	*1.00*	6.63	*1.67*
2018-10-24 dT	0.639	NA	NA	0.013	NA	0.0050	0.6	0.0084	NA	NA	0.991	NA
2018-10-24 dB	0.214	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.74	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0050	NA	NA	NA	0.0010	NA	0.321

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
**SSC normalized unit is mg/kg

Figure 196.4-3 Screening Results from Stormwater Samples, W-SMA-1 (Table 1)

W-SMA-1

	Gross alpha	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	15	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	NA	28.6	NA	NA	250	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	56.3	NA	1.32	NA	0.183	3.10	4.94	7.92	NA	NA	0.301	0.666	32.4
unit	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2018-10-24 result	6.34	526	0.785	22.7	0.100	1.06	0.800	*2.00*	*0.300*	*0.600*	0.131	2.57	18.1
2018-10-24 dT	0.42	0.53	0.0274	0.017	0.13	0.00424	0.0267	NA	NA	NA	0.0044	0.026	0.222
2018-10-24 dB	1.13	NA	0.595	NA	0.546	0.342	1.62	NA	NA	NA	0.435	3.86	0.559
geo_mean/ATAL	0.42	NA	NA	NA	0.13	NA	0.0267	0.40	NA	1	NA	0.026	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 196.4-4 Screening Results from Stormwater Samples, W-SMA-1 (Table 2)

196.4.2 Assessment Unit and Stream Impairments

W-SMA-1 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

196.5 Site-Specific Demonstration

196.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP. None of the HE Site-related POCs exceeded the applicable screening values in soil. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the applicable screening values in soil, but are not Site-related POCs and will not be added to the SAP.

196.5.2 Stormwater Data Summary

Copper exceeded the TAL but not the BTV.

196.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship; all Site-related POCs were below their respective composite TALs and background threshold values (Part I.C.3.a). Once soil data has been collected for Sites within this SMA, the SMA will be re-screened.

197.0 W-SMA-1.5

Associated Sites	16-026(b2), 16-028(d)
Receiving Water	Water Canyon
Drainage Area	12.30 acres
Landscape Characteristics	37% impervious, 63% pervious
Consent Order Site Status	SWMU 16-026(b2): In Progress SWMU 16-028(d): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

197.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated and a stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600911), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. A stormwater sample was collected in September 2017. Analytical results from this sample yielded no TAL exceedances. Confirmation monitoring is ongoing to collect a second sample.

197.2 Site History

16-026(b2) (5/17/2019)

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

16-028(d) (no date)

SWMU 16-028(d) is a formerly NPDES-permitted outfall (04A083) located approximately 80 ft southeast of decommissioned building 16-202 in the administrative area of TA-16. The outfall formerly served the decommissioned machine shop in building 16-202 and connected to the building through an 8-in.-diameter VCP. The outfall received noncontact cooling water and wash water from two floor drains, effluent from two non- HE sumps, discharge from two sink drains, and rainwater from 16 roof

drains. A variety of materials associated with machining metals and plastics were used in the building and could have been present in discharges to the outfall, including brazing alloy, trichloroethene, petroleum distillates, oils, and hydrochloric acid. In 1995, building 16-202 was converted to office space and the drains within the building were modified so that the outfall only receives stormwater from the building roof drains. The outfall was removed from the NPDES permit effective September 19, 1997.

No investigation activities have been conducted for these Sites. For more information on these Sites, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

197.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 197.2-1.

Table 197.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-026(b2)	Outfall from building 16-202 drain	Metals
16-028(d)	Outfall from building 16-202	Metals

197.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-026(b2) or 16-028(d).

197.4 Stormwater Evaluation

197.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2017. Analytical results from that sample are presented in Figures 197.4-1 through 197.4-4.

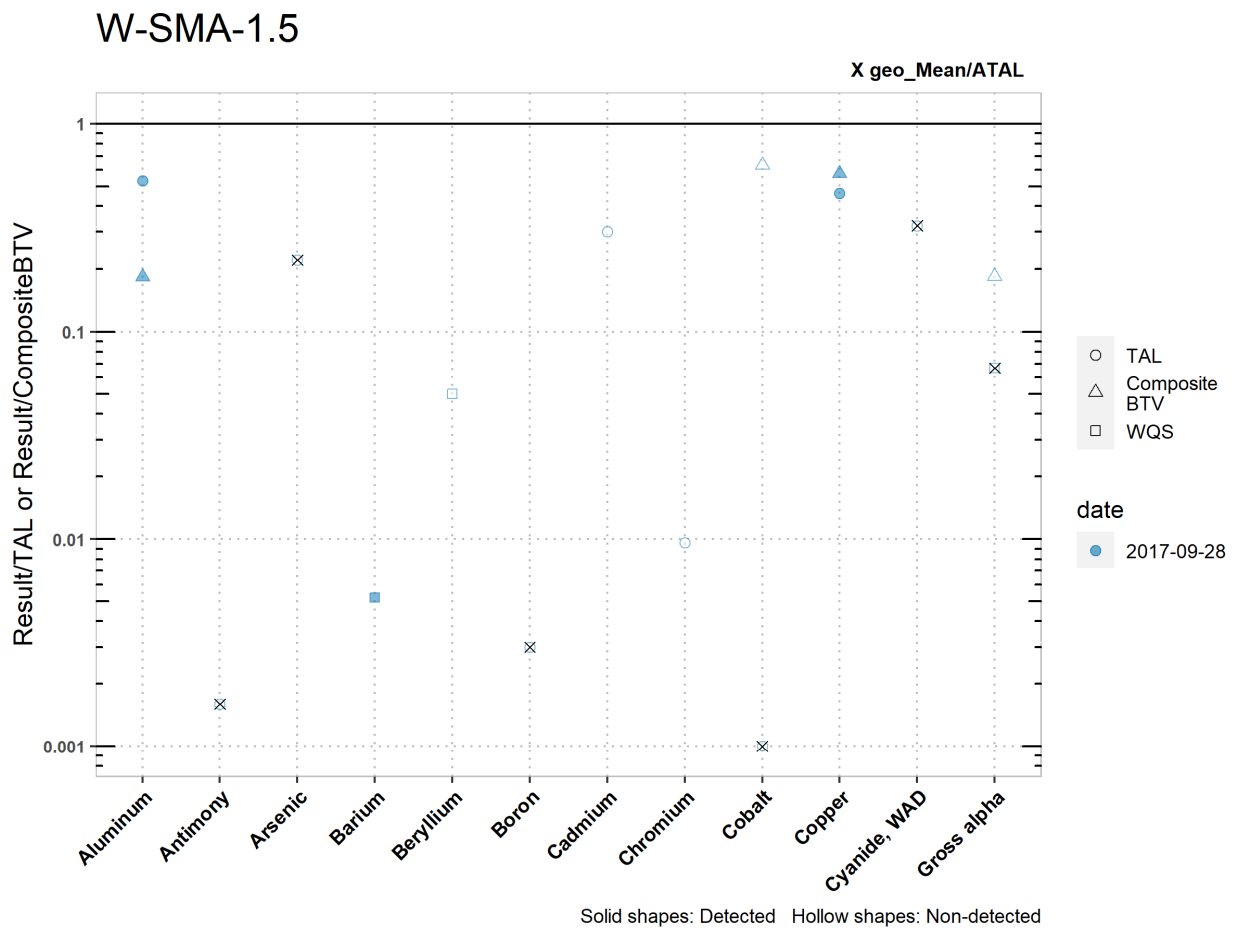


Figure 197.4-1 Analytical Results from Stormwater Sample, W-SMA-1.5 (Plot 1)

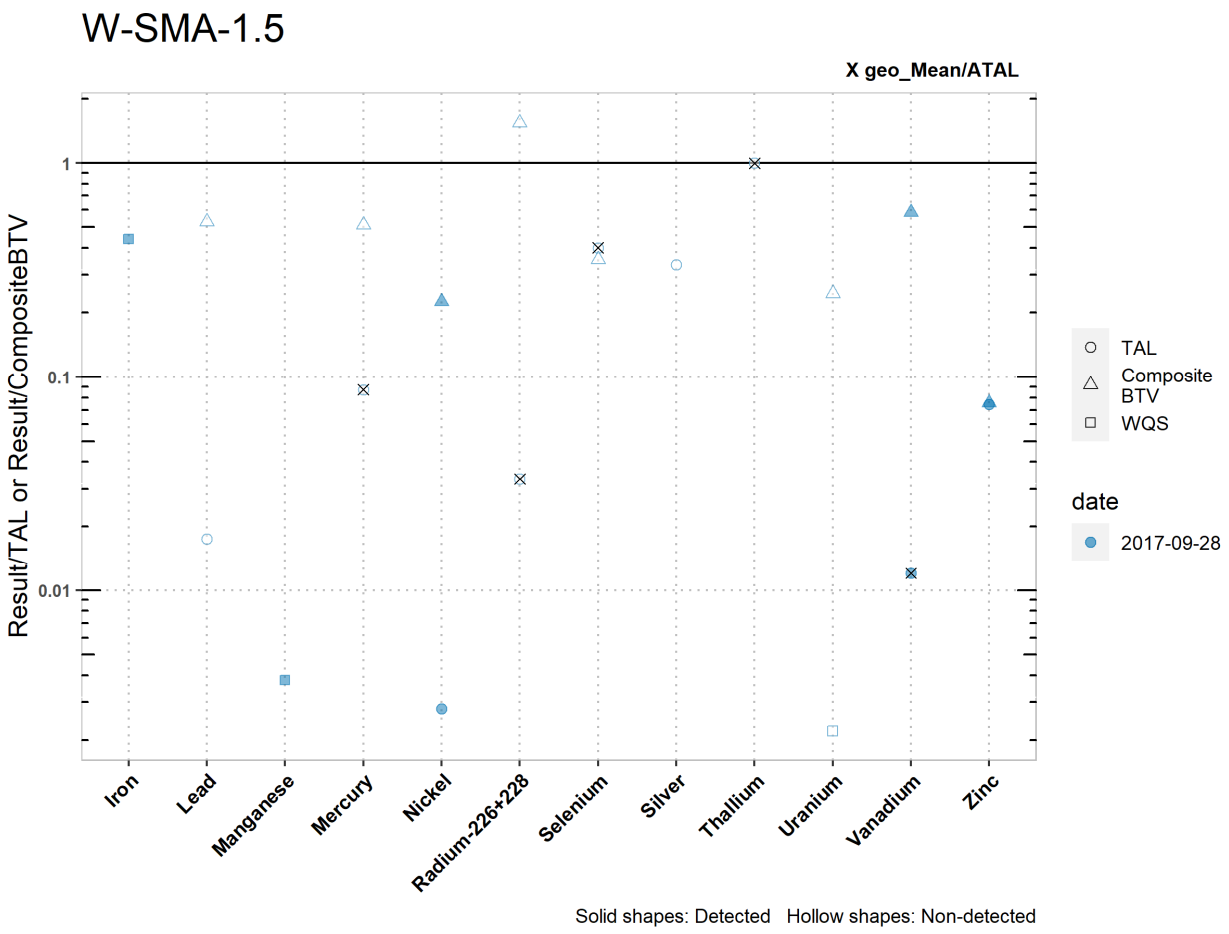


Figure 197.4-2 Analytical Results from Stormwater Sample, W-SMA-1.5 (Plot 2)

W-SMA-1.5

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15
MTAL	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	36100	NA	NA	NA	NA	NA	NA	NA	1.58	5.31	NA	54.4
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*
2017-09-28 result	661	*1.00*	*2.00*	10.4	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	3.06	*1.67*	*1.00*
2017-09-28 dT	0.533	NA	NA	0.0052	NA	NA	NA	NA	NA	0.457	NA	NA
2017-09-28 dB	0.183	NA	NA	NA	NA	NA	NA	NA	NA	0.576	NA	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	0.067

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 197.4-3 Screening Results from Stormwater Sample, W-SMA-1.5 (Table 1)

W-SMA-1.5

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	28.6	NA	NA	250	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	NA	0.945	NA	0.131	3.10	6.50	5.66	NA	NA	0.272	2.09	80.3
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-09-28 result	439	*0.500*	4.90	*0.0670*	0.699	*1.00*	*2.00*	*0.300*	*0.600*	*0.0670*	1.22	6.07
2017-09-28 dT	0.44	NA	0.0038	NA	0.00280	NA	NA	NA	NA	NA	0.012	0.0744
2017-09-28 dB	NA	NA	NA	NA	0.225	NA	NA	NA	NA	NA	0.584	0.0756
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0333	0.40	NA	1	NA	0.012	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 197.4-4 Screening Results from Stormwater Sample, W-SMA-1.5 (Table 2)

197.4.2 Assessment Unit and Stream Impairments

W-SMA-1.5 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

197.5 Site-Specific Demonstration

197.5.1 Soil Data Summary

No Consent Order data.

197.5.2 Stormwater Data Summary

No exceedances.

197.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

198.0 W-SMA-2.05

Associated Sites	16-028(e)
Receiving Water	Water Canyon
Drainage Area	0.70 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 16-028(e): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

198.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

198.2 Site History

16-028(e) (3/21/2019)

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

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

198.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 198.2-1.

Table 198.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-028(e)	Outfall associated with building 16-450	Metals, HE

198.3 Consent Order Soil Data

Decision-level data for SWMU 16-028(e) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 198.3-1 through 198.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

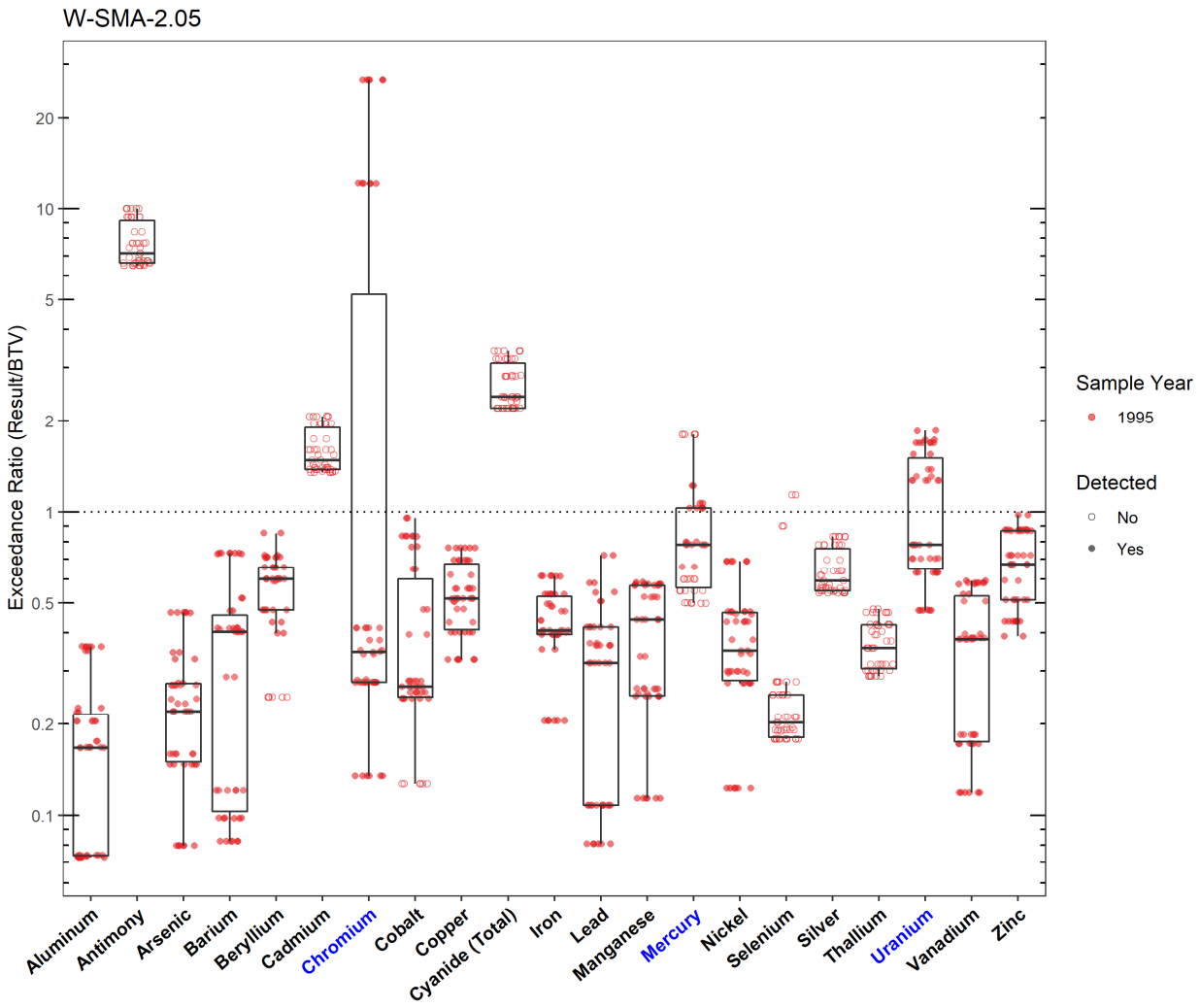


Figure 198.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-2.05

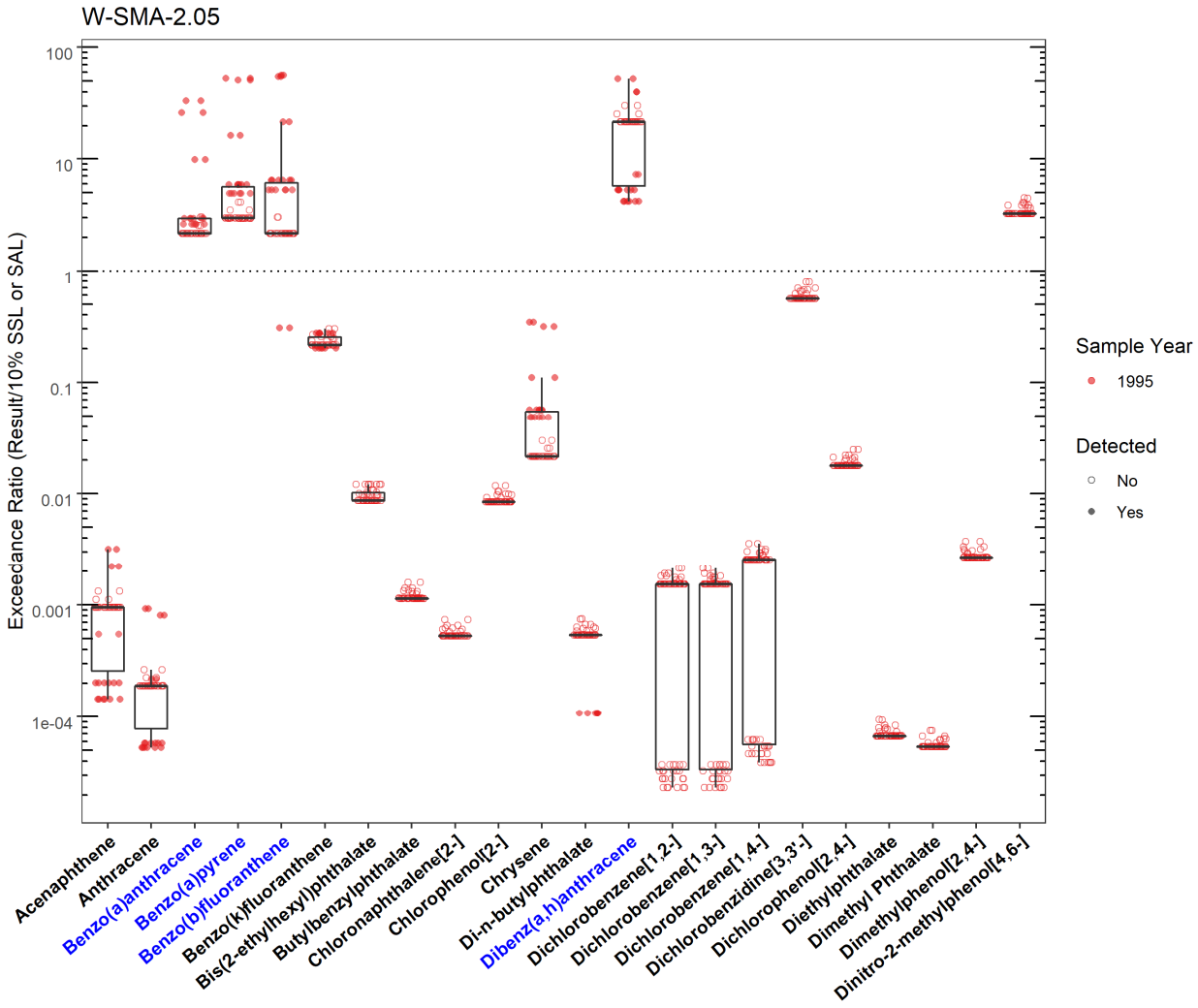


Figure 198.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-2.05 (Plot 1)

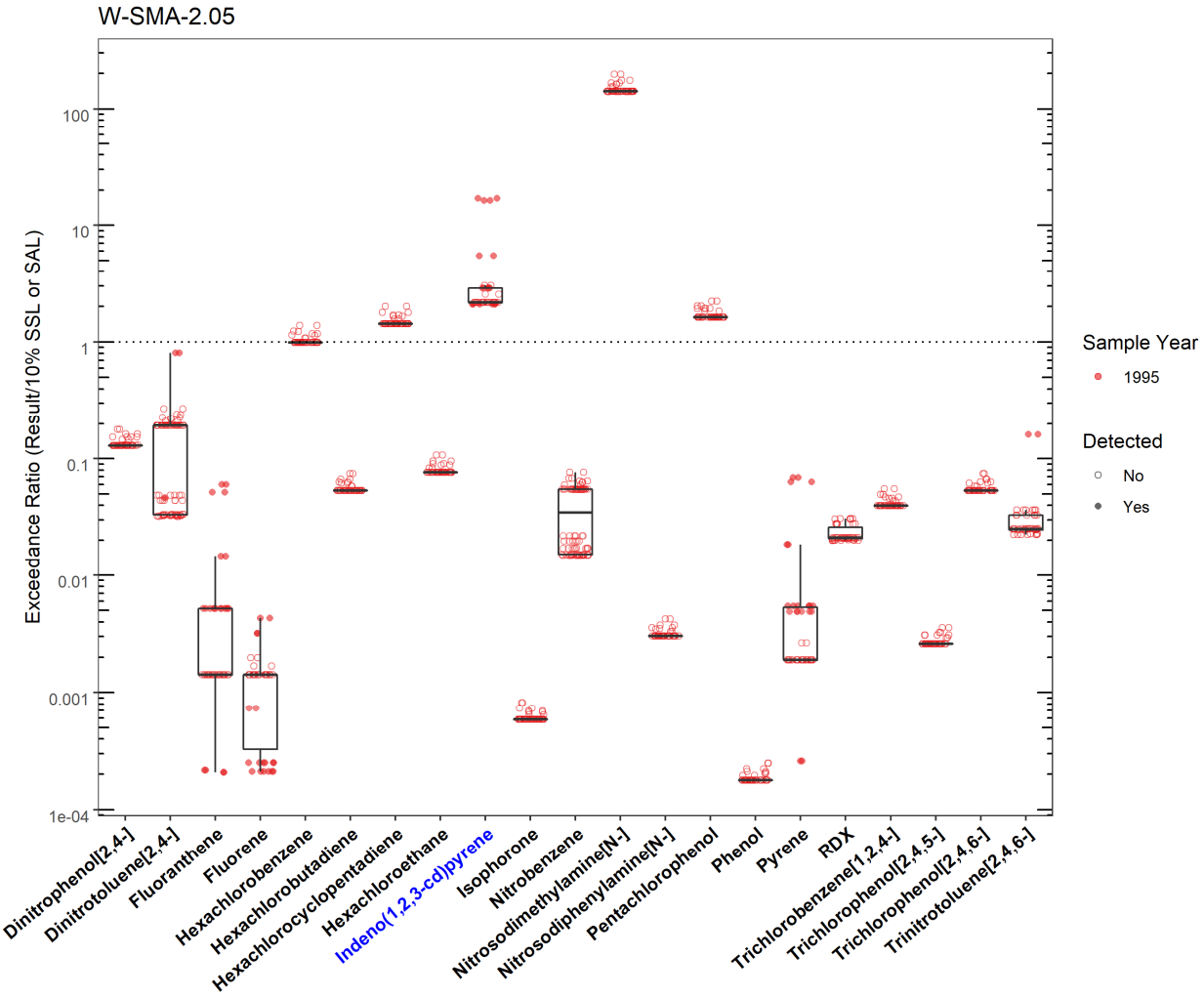


Figure 198.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-2.05 (Plot 2)

W-SMA-2.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-2.05	56-55-3	Y	SSL_0.1	0.153	5.10	1995-05-02
Benzo(a)pyrene	W-SMA-2.05	50-32-8	Y	SSL_0.1	0.112	5.90	1995-05-02
Benzo(b)fluoranthene	W-SMA-2.05	205-99-2	Y	SSL_0.1	0.153	8.60	1995-05-02
Chromium	W-SMA-2.05	Cr	Y	BTV	19.3	516	1995-08-24
Dibenz(a,h)anthracene	W-SMA-2.05	53-70-3	Y	SSL_0.1	0.0153	0.800	1995-05-02
Indeno(1,2,3-cd)pyrene	W-SMA-2.05	193-39-5	Y	SSL_0.1	0.153	2.60	1995-05-02
Mercury	W-SMA-2.05	Hg	Y	BTV	0.100	0.122	1995-05-02
Uranium	W-SMA-2.05	U	Y	BTV	1.82	3.36	1995-05-02

Figure 198.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-2.05

198.4 Stormwater Evaluation

198.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

198.4.2 Assessment Unit and Stream Impairments

W-SMA-2.05 drains to Water Canyon (Area-A Canyon to NM 501), which has no impairments.

198.5 Site-Specific Demonstration

198.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs and BTVs, therefore they will not be added to the SAP. HE compounds monitored for in soil did not exceed the applicable screening values. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the applicable screening values in soil but are not Site-related POCs, therefore they will not be added to the SAP.

198.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Dissolved aluminum exceeded TAL but not BTV in the previous monitoring stage data.

198.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

198.5.4 Sampling and Analysis Plan

Table 198.5-1 is the proposed SAP for W-SMA-2.05.

Table 198.5-1 Proposed SAP, W-SMA-2.05

Monitoring Constituent	Background for Monitoring
Total aluminum	Site history and stormwater data
DOC	Permit requirement
SSC	Permit requirement

199.0 W-SMA-3.5

Associated Sites	16-026(y)
Receiving Water	Water Canyon
Drainage Area	1.89 acres
Landscape Characteristics	33% impervious, 67% pervious
Consent Order Site Status	SWMU 16-026(y): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

199.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

199.2 Site History

16-026(y) (no date)

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

No investigation activities have been conducted for the site. For more information on this Site, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

199.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 199.2-1.

Table 199.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-026(y)	Outfall from building 16-411	HE

199.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-026(y).

199.4 Stormwater Evaluation

199.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

199.4.2 Assessment Unit and Stream Impairments

W-SMA-3.5 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

199.5 Site-Specific Demonstration

199.5.1 Soil Data Summary

No Consent Order data.

199.5.2 Stormwater Data Summary

No confirmation-monitoring data.

199.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

199.5.4 Sampling and Analysis Plan

Table 199.5-1 is the proposed SAP for W-SMA-3.5.

Table 199.5-1 Proposed SAP, W-SMA-3.5

Monitoring Constituent	Background for Monitoring
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

200.0 W-SMA-4.1

Associated Sites	16-003(a)
Receiving Water	Water Canyon
Drainage Area	0.18 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-003(a): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2016 field visit it was determined that the current sampler location did not capture some soil samples with elevated concentrations of zinc (16-01588, 16-01589, and 16-01590). Therefore, a coir log was installed in June 2017 to divert flow across the slope in order to include runoff from these three locations to the current sampling location.
2022 Permit Status	Active Monitoring

200.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

200.2 Site History

16-003(a) (3/21/2019)

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

For investigation activities, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

200.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 200.2-1.

Table 200.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-003(a)	Sump	HE, uranium

200.3 Consent Order Soil Data

Decision-level data for SWMU 16-003(a) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 200.3-1 through 200.3-4. The 2011 IWP

(LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

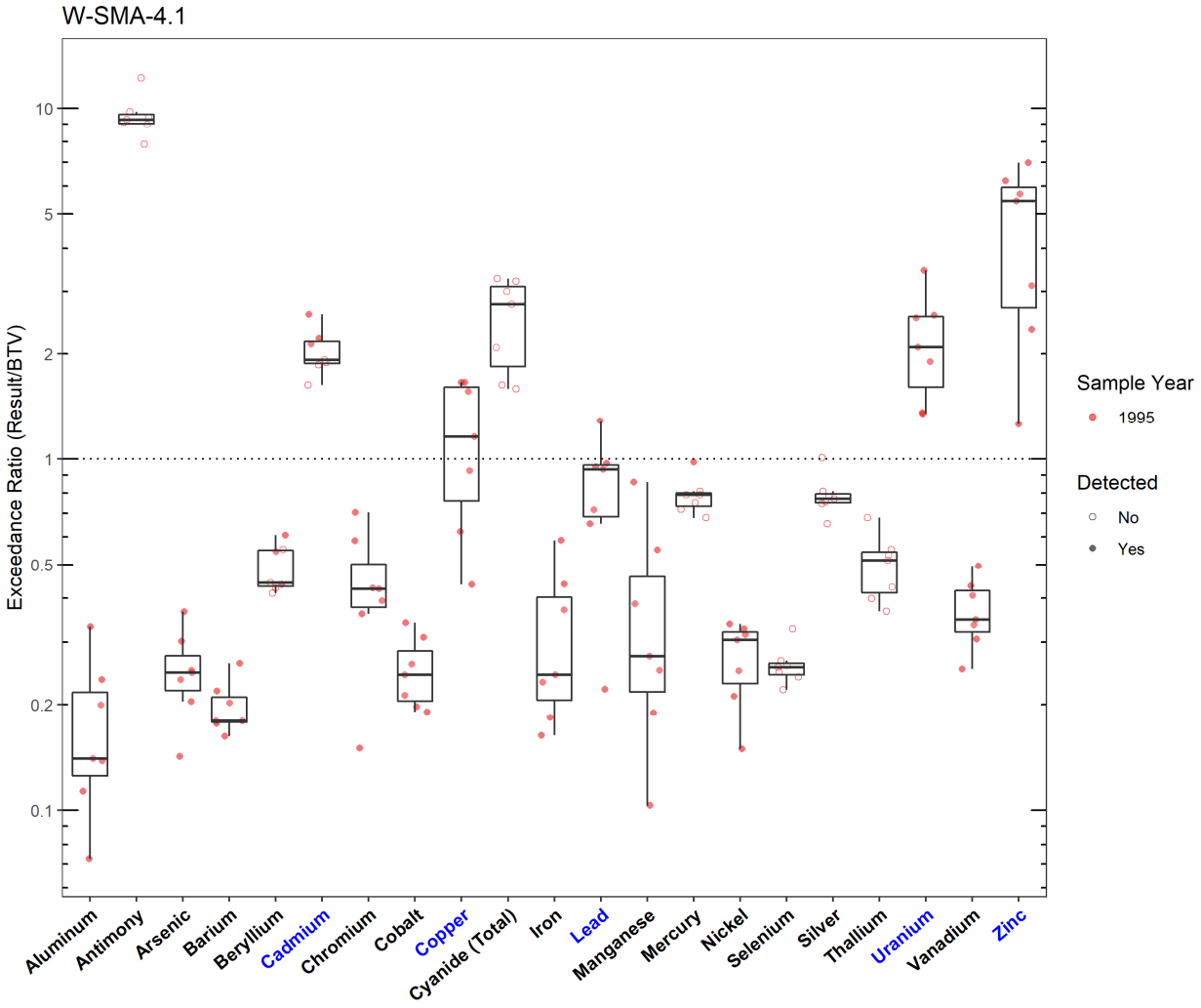


Figure 200.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-4.1

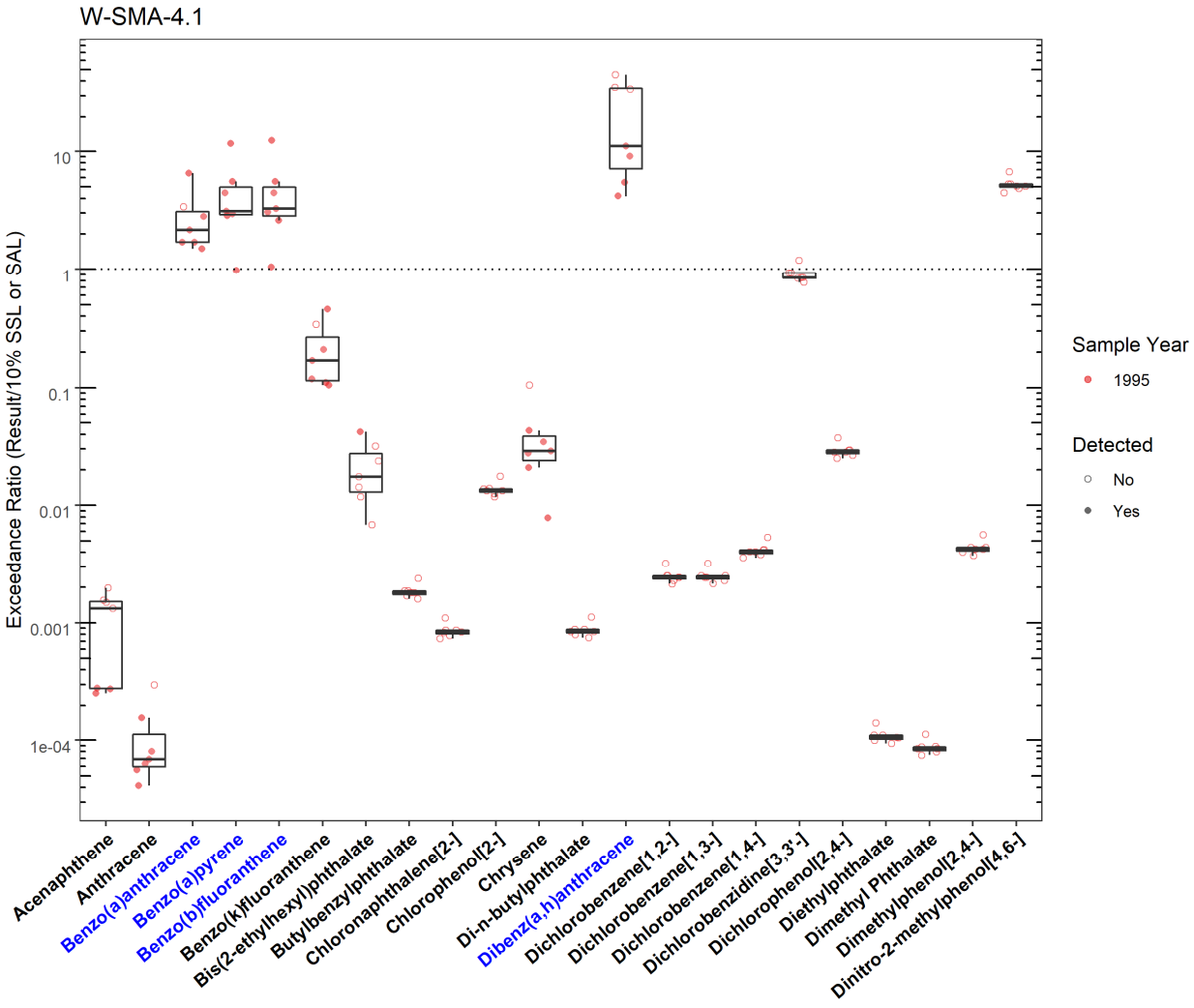


Figure 200.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-4.1 (Plot 1)

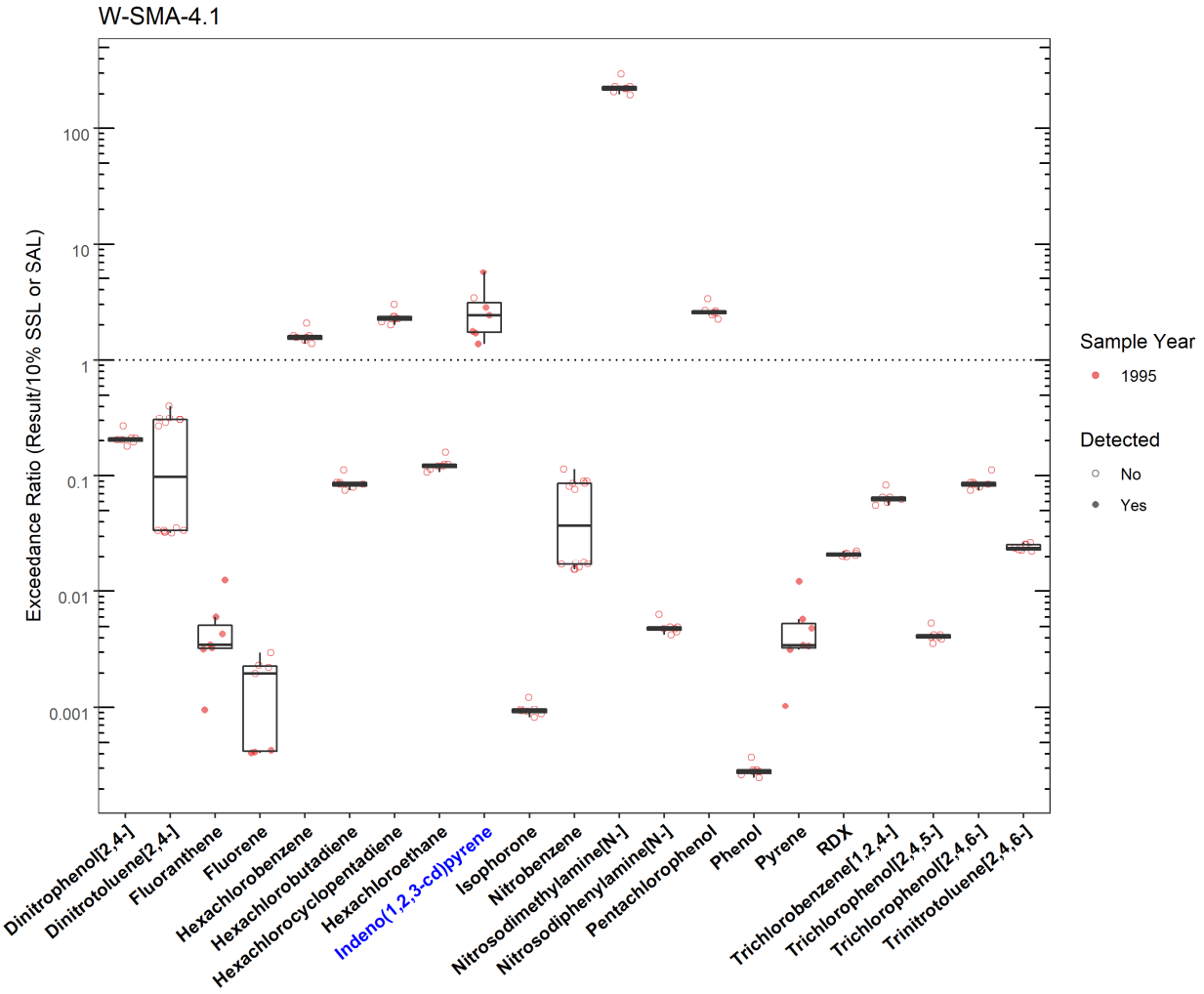


Figure 200.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-4.1 (Plot 2)

W-SMA-4.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-4.1	56-55-3	Y	SSL_0.1	0.153	1.00	1995-10-12
Benzo(a)pyrene	W-SMA-4.1	50-32-8	Y	SSL_0.1	0.112	1.30	1995-10-12
Benzo(b)fluoranthene	W-SMA-4.1	205-99-2	Y	SSL_0.1	0.153	1.90	1995-10-12
Cadmium	W-SMA-4.1	Cd	Y	BTV	0.400	1.03	1995-05-25
Copper	W-SMA-4.1	Cu	Y	BTV	14.7	24.4	1995-05-25; 1995-10-12
Dibenz(a,h)anthracene	W-SMA-4.1	53-70-3	Y	SSL_0.1	0.0153	0.170	1995-10-12
Indeno(1,2,3-cd)pyrene	W-SMA-4.1	193-39-5	Y	SSL_0.1	0.153	0.870	1995-10-12
Lead	W-SMA-4.1	Pb	Y	BTV	22.3	28.8	1995-10-12
Uranium	W-SMA-4.1	U	Y	BTV	1.82	6.29	1995-05-25
Zinc	W-SMA-4.1	Zn	Y	BTV	48.8	340	1995-10-12

Figure 200.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-4.1

200.4 Stormwater Evaluation

200.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

200.4.2 Assessment Unit and Stream Impairments

W-SMA-4.1 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

200.5 Site-Specific Demonstration

200.5.1 Soil Data Summary

Uranium exceeded the applicable screening values in soil data and has not yet been measured in stormwater.

High explosives are in the site history but did not exceed the applicable screening values in soil data. Therefore, they will not be added to the SAP.

200.5.2 Stormwater Data Summary

No confirmation-monitoring data.

200.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

200.5.4 Sampling and Analysis Plan

Table 200.5-1 is the proposed SAP for W-SMA-4.1.

Table 200.5-1 Proposed SAP, W-SMA-4.1

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

201.0 W-SMA-5

Associated Sites	16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), 16-026(e)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	68.41 acres
Landscape Characteristics	10% impervious, 90% impervious
Consent Order Site Status	SWMU 16-001(e): Pending Receipt of Certificate of Completion SWMU 16-003(f): In Progress SWMU 16-026(b): Pending Receipt of Certificate of Completion SWMU 16-026(c): Pending Receipt of Certificate of Completion SWMU 16-026(d): Pending Receipt of Certificate of Completion SWMU 16-026(e): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

201.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2012. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2012.

201.2 Site History

16-001(e) (9/6/2019)

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

16-003(f) (9/6/2019)

SWMU 16-003(f) consists of two inactive HE sumps located on the exterior east side of building 16-304 at TA-16. Building 16-304 was constructed between 1951 and 1953 and was used as a plastics and plastics components development and production facility for the weapons program. Polycarbonate

components were fabricated using injection molding machines and other components were fabricated using hydraulic presses. Large, high-temperature ovens were used for drying molding powders and curing thermoset plastics. Wash water from the building drained to the sumps. Chemical solvents including acetone and methyl ethyl ketone were used in the plastics processing operations were also discharged to the SWMU 16-003(f) sumps. One sump measured 123 in. × 41 in. × 31 in. with a 6 in. VCP outlet drainline, and the other sump measured 203 in. × 41 in. × 31 in. with an 8 in. VCP outlet drainline. HE-contaminated water and solvents from the SWMU 16-003(f) sumps discharged into the shared liquid waste trunk line located on the east side of the building. The effluent flowed through the liquid waste trunk line and discharged through a former NPDES-permitted outfall (EPA 05A058) into a well-defined drainage across HE Road and southeast of building 16-306. In the early 1990s, solvents were no longer discharged to the sumps. Discharges from the SWMU 16-003(f) sumps ceased in the mid-1990s, and the outfall was removed from the NPDES permit in 2000.

16-026(b) (11/26/2019)

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

16-026(c) (11/26/2019)

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

16-026(d) (11/26/2019)

SWMU 16-026(d) is an inactive outfall located southeast of a rest house (Structure 16-303) at TA-16. The outfall formerly received discharges from two HE sumps [SWMU 16-029(c)] located adjacent to the exterior west wall of the rest house. The outfall discharged to Martin Spring Canyon. The sumps were plugged in 1990–1991. Structure 16-303 was built between 1951 and 1953 to serve building 16-302, an HE casting facility. The rest house was used to store raw materials used in the casting process and HE castings produced in casting building 16-302.

For investigation activities for these Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

201.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 201.2-1.

Table 201.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-001(e)	Dry well	SVOCs, HE, chloride
16-003(f)	Sumps	SVOCs, chloride
16-026(b)	Outfall	Barium, SVOCs, HE
16-026(c)	Outfall	Barium, HE
16-026(d)	Outfall	Barium, HE
16-026(e)	Outfall	Barium, HE

201.3 Consent Order Soil Data

Decision-level data for SWMU 16-001(e) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 16-003(f) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined for all detected inorganic and organic chemicals, except the lateral and vertical extent of arsenic and thallium.

Decision-level data for SWMU 16-026(b), SWMU 16-026(c), and SWMU 16-026(d) consist of results from samples collected in 1995 and 2010. The 2019 Revision 1 of the supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination are defined and no further sampling for extent is warranted.

Decision-level data for SWMU 16-026(e) consist of results from samples collected in 1995, 1997, and 2010. The 2019 Revision 1 of the supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have not been defined and further sampling to define the lateral extent of RDX is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 201.3-1 through 201.3-4.

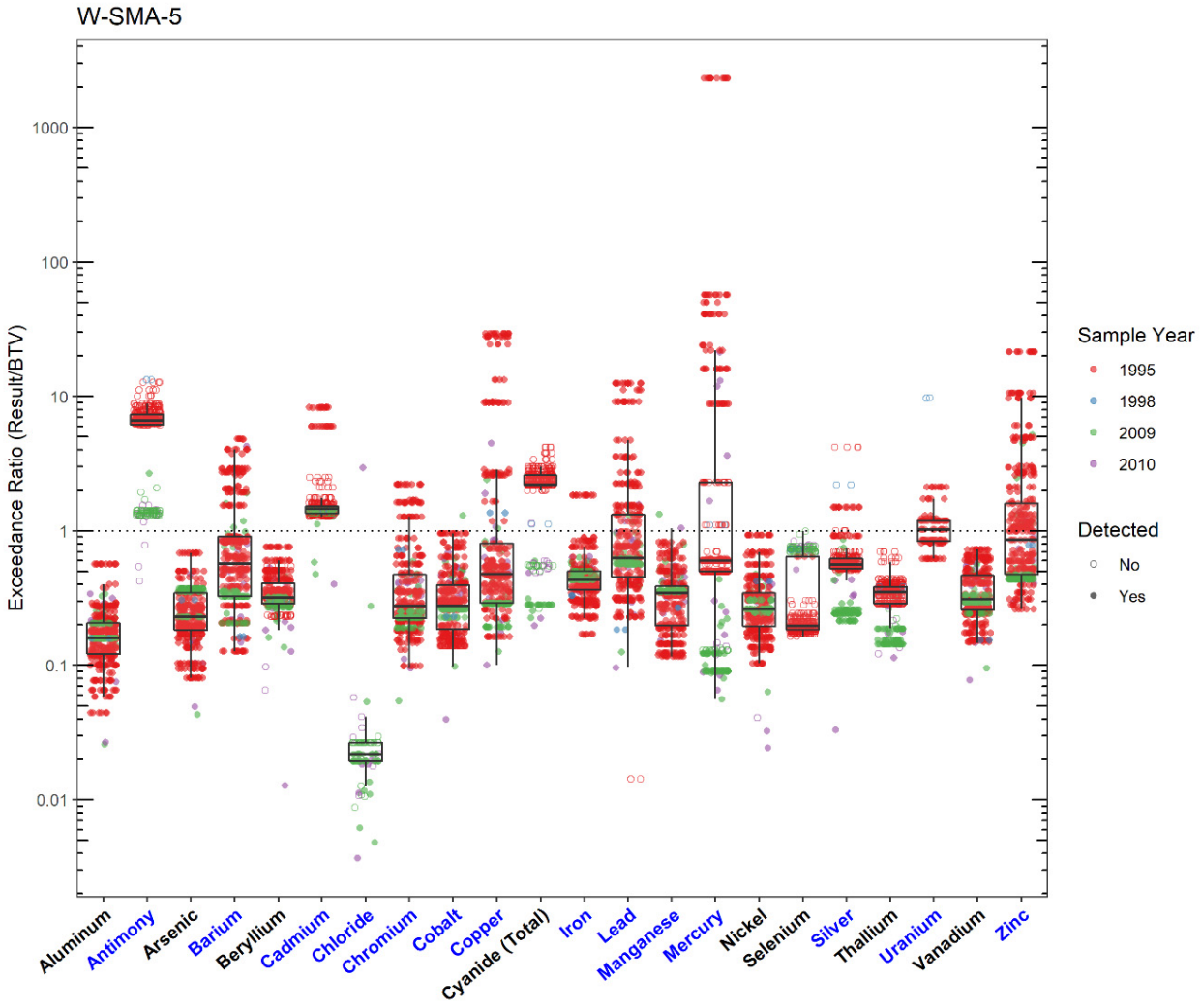


Figure 201.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-5

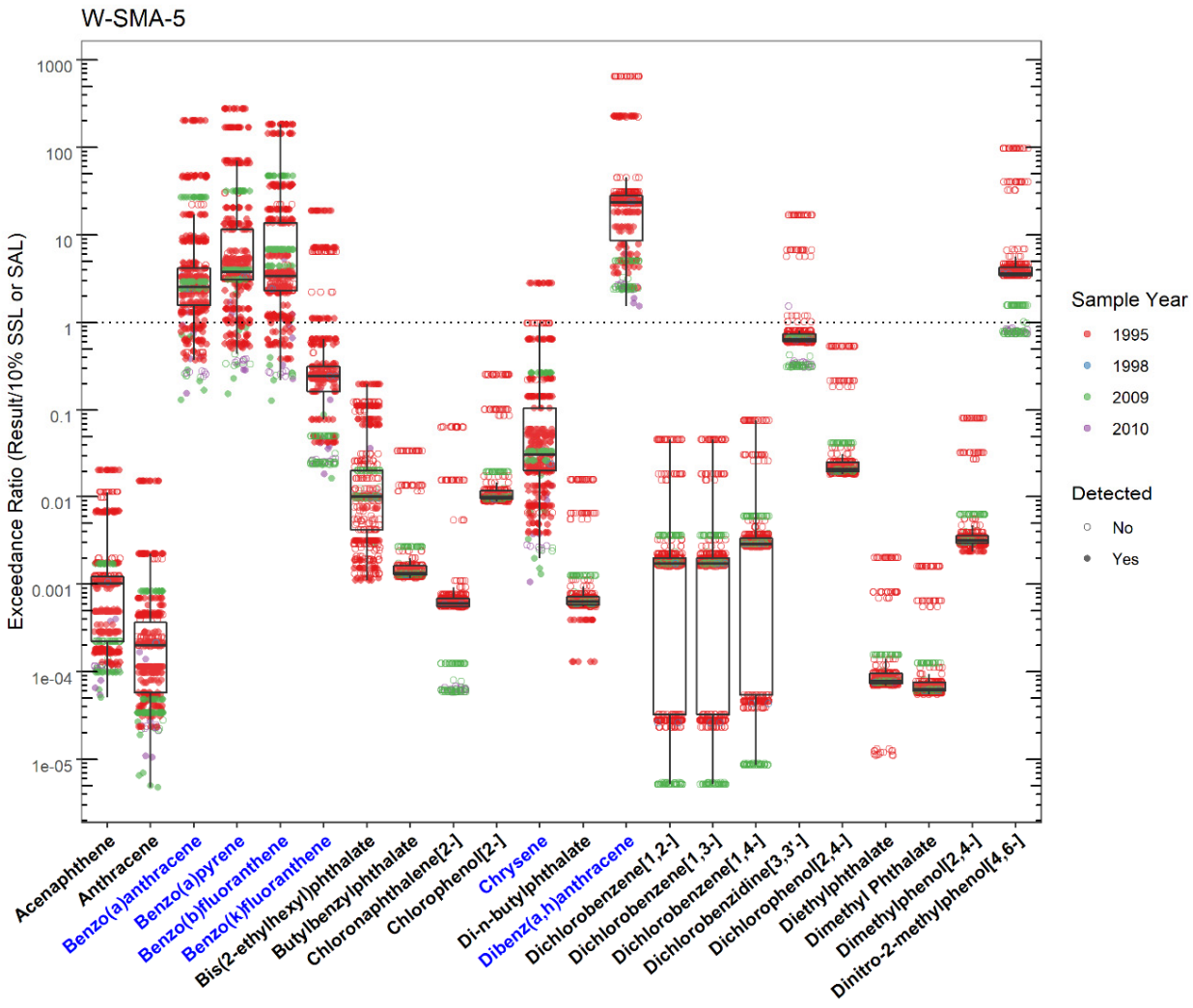


Figure 201.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-5 (Plot 1)

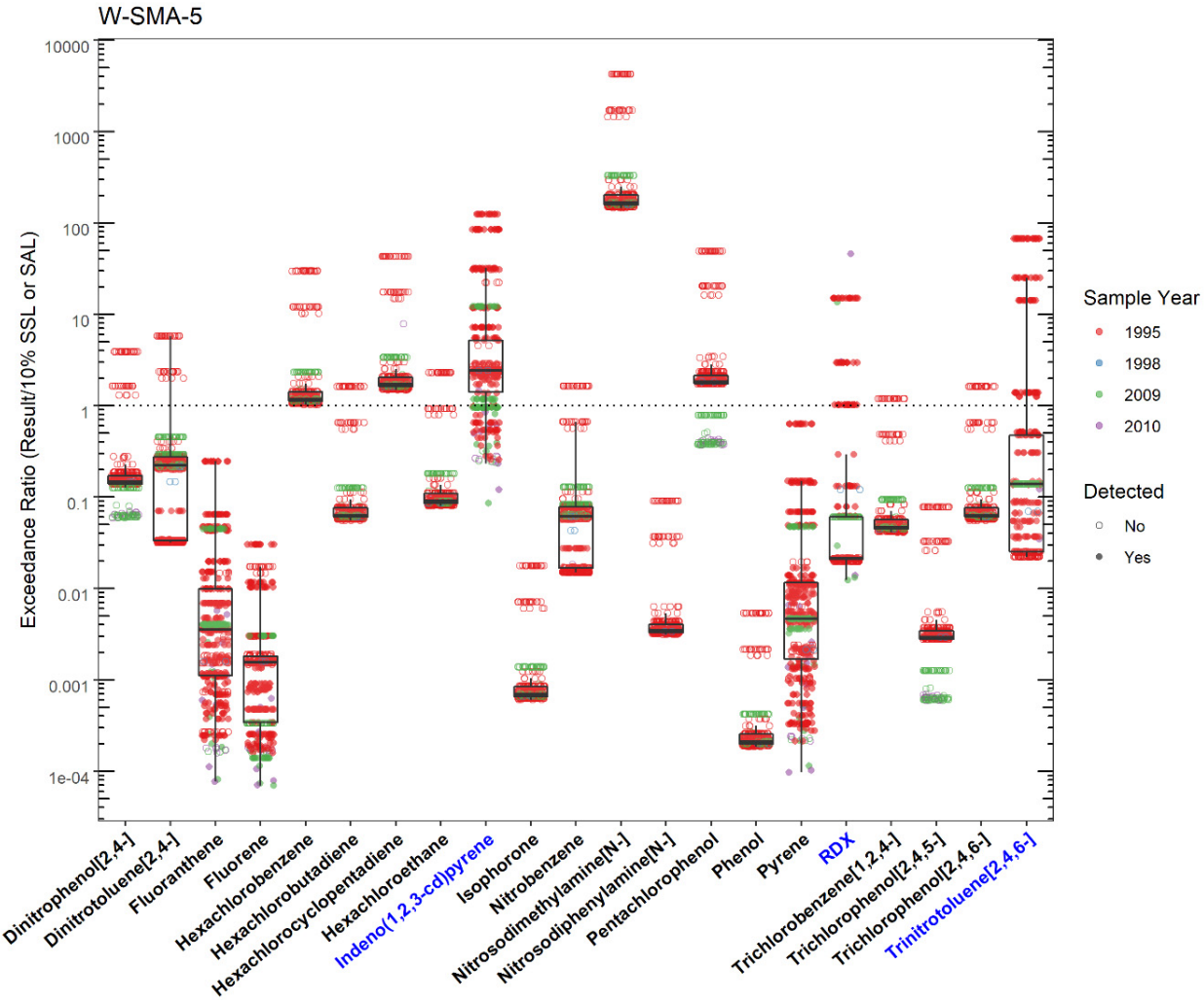


Figure 201.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-5 (Plot 2)

W-SMA-5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-5	Sb	Y	BTV	0.830	2.22	2009-11-18
Barium	W-SMA-5	Ba	Y	BTV	295	1420	1995-06-19
Benzo(a)anthracene	W-SMA-5	56-55-3	Y	SSL_0.1	0.153	31.0	1995-08-22
Benzo(a)pyrene	W-SMA-5	50-32-8	Y	SSL_0.1	0.112	31.0	1995-08-22
Benzo(b)fluoranthene	W-SMA-5	205-99-2	Y	SSL_0.1	0.153	28.0	1995-08-08
Benzo(k)fluoranthene	W-SMA-5	207-08-9	Y	SSL_0.1	1.53	29.0	1995-08-22
Cadmium	W-SMA-5	Cd	Y	BTV	0.400	3.30	1995-08-22
Chloride	W-SMA-5	Cl(-1)	Y	BTV	231	678	2010-01-29
Chromium	W-SMA-5	Cr	Y	BTV	19.3	42.8	1995-08-22
Chrysene	W-SMA-5	218-01-9	Y	SSL_0.1	15.3	43.0	1995-08-22
Cobalt	W-SMA-5	Co	Y	BTV	8.64	11.2	2009-12-18
Copper	W-SMA-5	Cu	Y	BTV	14.7	430	1995-08-22
Dibenz(a,h)anthracene	W-SMA-5	53-70-3	Y	SSL_0.1	0.0153	3.50	1995-08-08
Indeno(1,2,3-cd)pyrene	W-SMA-5	193-39-5	Y	SSL_0.1	0.153	19.0	1995-08-22
Iron	W-SMA-5	Fe	Y	BTV	21500	39500	1995-08-22
Lead	W-SMA-5	Pb	Y	BTV	22.3	278	1995-08-22
Manganese	W-SMA-5	Mn	Y	BTV	671	890	2009-12-18
Mercury	W-SMA-5	Hg	Y	BTV	0.100	233	1995-08-22
RDX	W-SMA-5	121-82-4	Y	SSL_0.1	8.31	380	2010-03-19
Silver	W-SMA-5	Ag	Y	BTV	1.00	1.50	1995-08-22
Trinitrotoluene[2,4,6-]	W-SMA-5	118-96-7	Y	SSL_0.1	3.60	243	1995-08-08
Uranium	W-SMA-5	U	Y	BTV	1.82	3.86	1995-05-18
Zinc	W-SMA-5	Zn	Y	BTV	48.8	1050	1995-08-22

Figure 201.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-5

201.4 Stormwater Evaluation

201.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2012. Analytical results from that sample are presented in Figures 201.4-1 through 201.4-4.

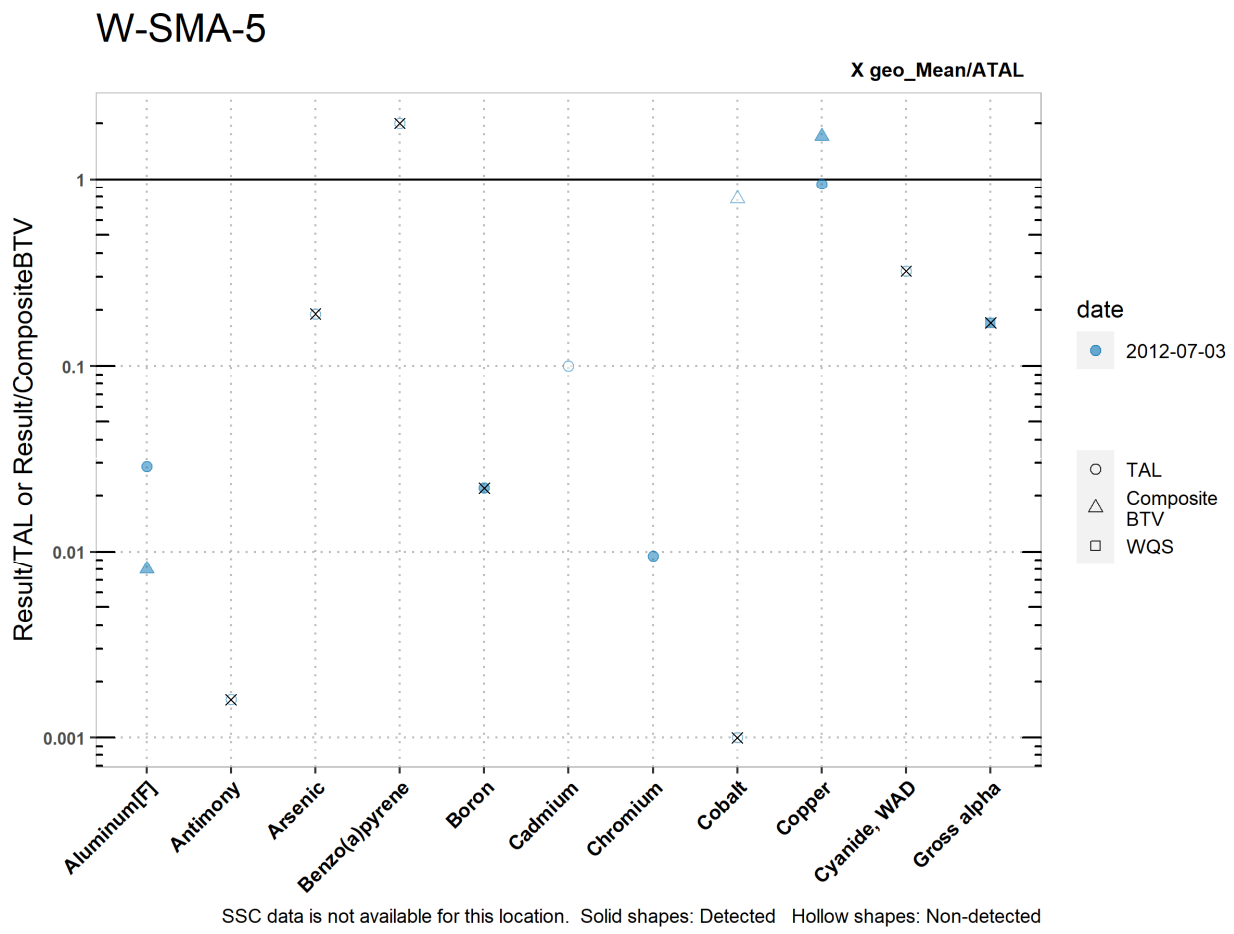


Figure 201.4-1 Analytical Results from Stormwater Sample, W-SMA-5 (Plot 1)

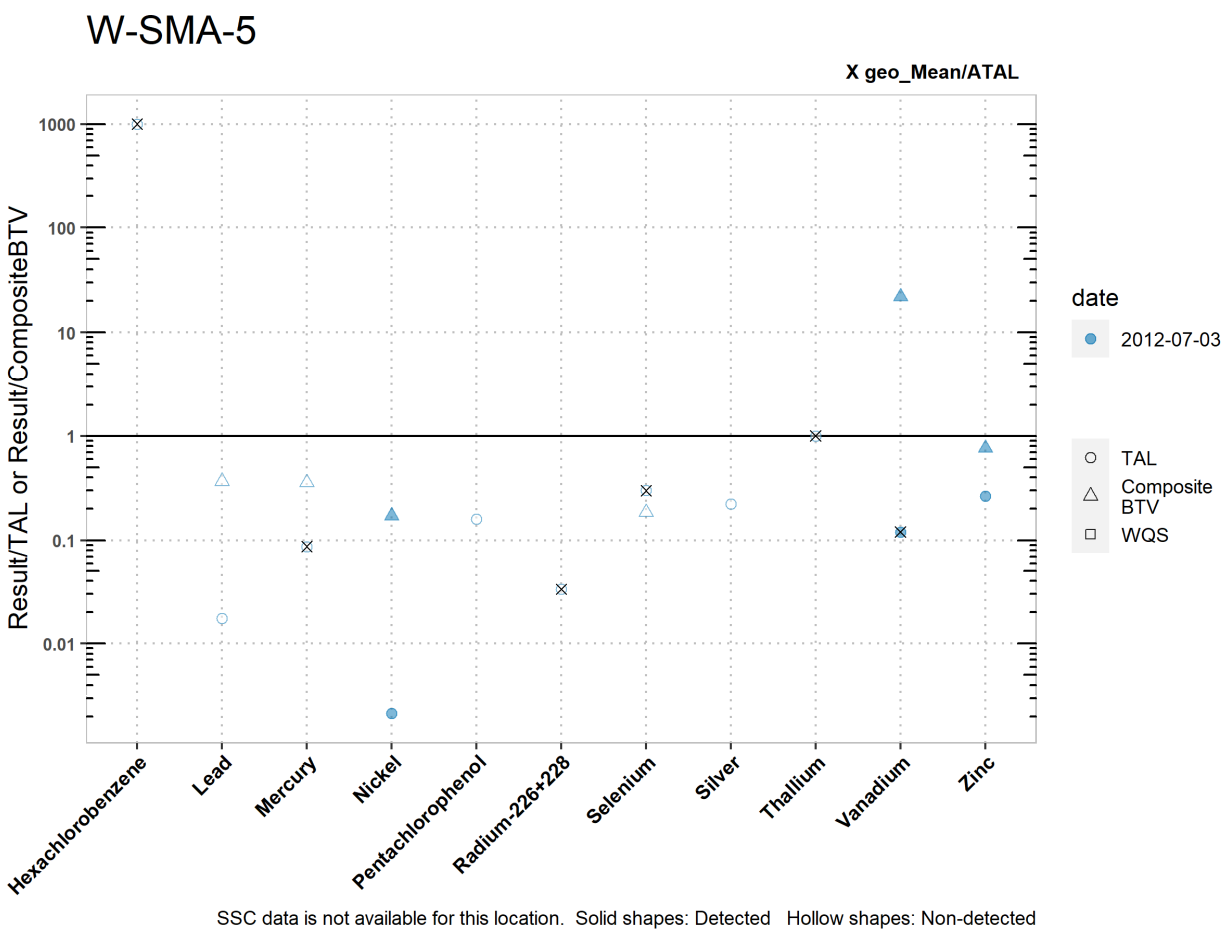


Figure 201.4-2 Analytical Results from Stormwater Sample, W-SMA-5 (Plot 2)

W-SMA-5

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	2680	NA	NA	NA	NA	NA	NA	1.28	3.69	NA	56.5
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2012-07-03 result	21.5	*1.00*	*1.70*	*0.440*	111	*0.110*	2.95	*1.00*	6.28	*1.67*	2.61
2012-07-03 dT	0.0287	NA	NA	NA	0.022	NA	0.00949	NA	0.939	NA	0.17
2012-07-03 dB	0.00802	NA	NA	NA	NA	NA	NA	NA	1.70	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.022	NA	NA	0.0010	NA	0.321	0.17

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 201.4-3 Analytical Results from Stormwater Sample, W-SMA-5 (Table 1)

W-SMA-5

	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	0.0029	NA	0.77	NA	NA	30	5	NA	0.47	100	NA
MTAL	NA	28.6	NA	250	19	NA	20	0.9	NA	NA	81.6
Composite_BTV	NA	1.36	0.188	3.10	NA	4.81	8.12	NA	NA	0.543	28.3
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2012-07-03 result	*3.00*	*0.500*	*0.0670*	0.533	*3.00*	*1.00*	*1.50*	*0.200*	*0.450*	11.9	21.7
2012-07-03 dT	NA	NA	NA	0.00213	NA	NA	NA	NA	NA	0.12	0.266
2012-07-03 dB	NA	NA	NA	0.172	NA	NA	NA	NA	NA	21.9	0.767
geo_mean/ATAL	1000	NA	0.087	NA	NA	0.0333	0.30	NA	1	0.12	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 201.4-4 Analytical Results from Stormwater Sample, W-SMA-5 (Table 2)

201.4.2 Assessment Unit and Stream Impairments

W-SMA-5 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

201.5 Site-Specific Demonstration

201.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chloride, chrysene, RDX, and TNT.

Iron, manganese, and uranium exceeded the applicable screening values, but are not Site-related POCs and will not be added to the SAP.

The other metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

201.5.2 Stormwater Data Summary

No TAL exceedances.

201.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

201.5.4 Sampling and Analysis Plan

Table 201.5-1 is the proposed SAP for W-SMA-5.

Table 201.5-1 Proposed SAP, W-SMA-5

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Chloride	Site history and soil data
Dissolved barium	Site history and soil data
HE	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

202.0 W-SMA-6

Associated Sites	11-001(c)
Receiving Water	Water Canyon
Drainage Area	0.13 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 11-001(c): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, the sampler was moved downgradient on the hillslope to capture stormwater runoff from the entire upper area.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

202.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2012. Because of a 2013 change in the Site boundary the 2012 sample was not used for confirmation monitoring. The sampler location was moved in 2013 to a more representative location and baseline monitoring was reinitiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. Stormwater samples were collected in July and October 2019. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in October 2020 (N3B 2020, 701098). No response has been received from EPA, and stormwater monitoring has not occurred since 2019.

202.2 Site History

11-001(c) (3/21/2019)

SWMU 11-001(c) is a former firing pit (former structure 11-15 that was located northwest of former building 16-370, near the edge of Water Canyon at TA-16). According to the 1990 SWMU Report, the firing pit was similar in construction to firing pit 11-14 [SWMU 11-001(a)], which consisted of a 12.5-ft semicircular concrete wall that was 4.5 ft high and 37 in. thick. The SWMU 11-001(c) firing pit was first used in 1944. The former TA-11 firing pits were arranged so that testing could be controlled and observed remotely. Components and assemblies were exposed to extreme physical environments including vibration, shock, and thermal testing. Shots fired at the former TA-11 firing pits reportedly contained uranium and aluminum. Use of the firing pit ceased by the early 1950s.

In 1989 when technical area boundaries were redefined within the Laboratory, portions of former TA-11 were absorbed into TA-16. As a result, SWMU 11-001(c) is now located within the northeast portion of TA-16.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

202.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 202.2-1.

Table 202.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-001(c)	Firing site	Aluminum, barium, HE, uranium

202.3 Consent Order Soil Data

Decision-level data are not available for SWMU 11-001(c).

202.4 Stormwater Evaluation

202.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in July and October 2019. Analytical results from these samples are presented in Figures 202.4-1 through 202.4-4.

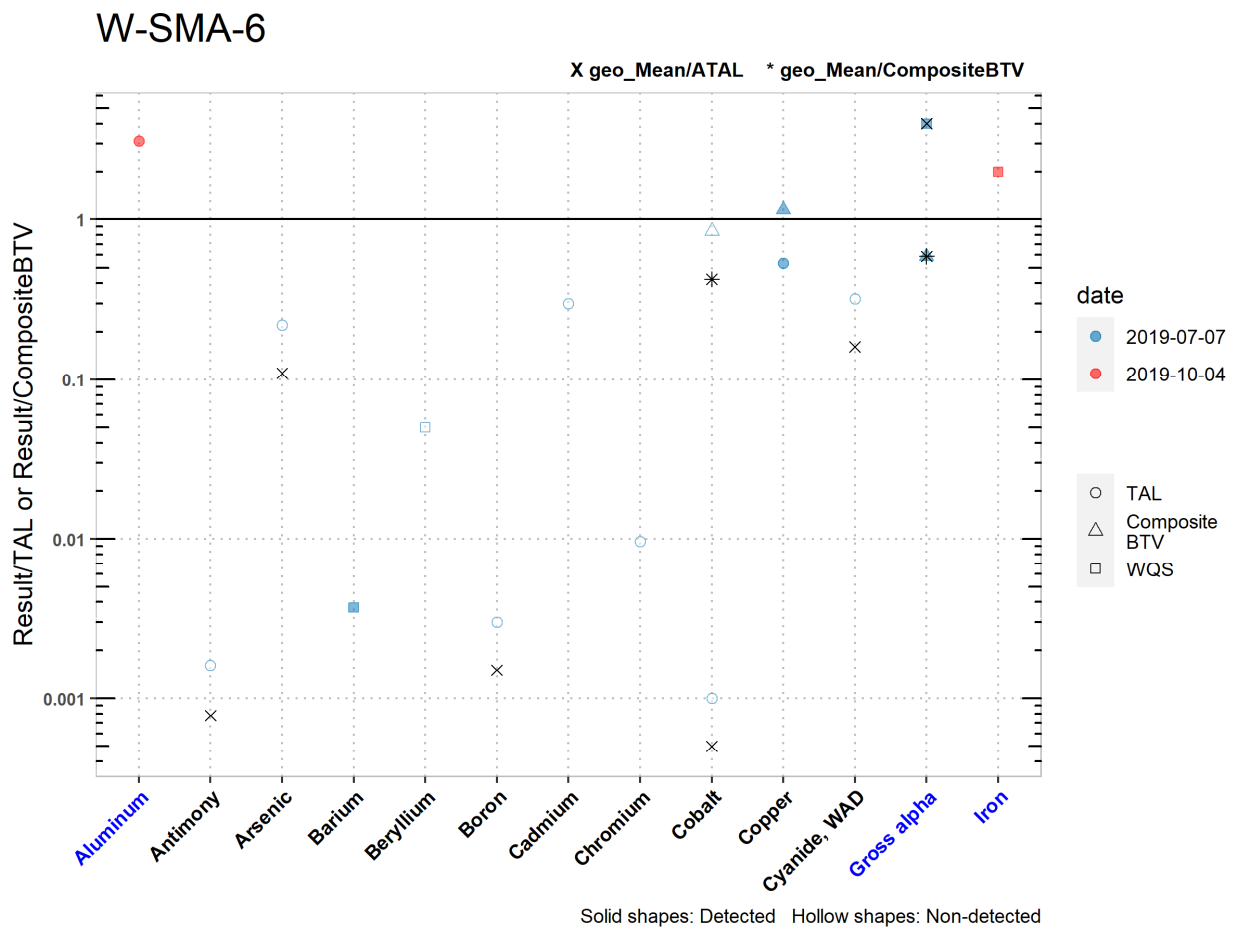


Figure 202.4-1 Analytical Results from Stormwater Samples, W-SMA-6 (Plot 1)

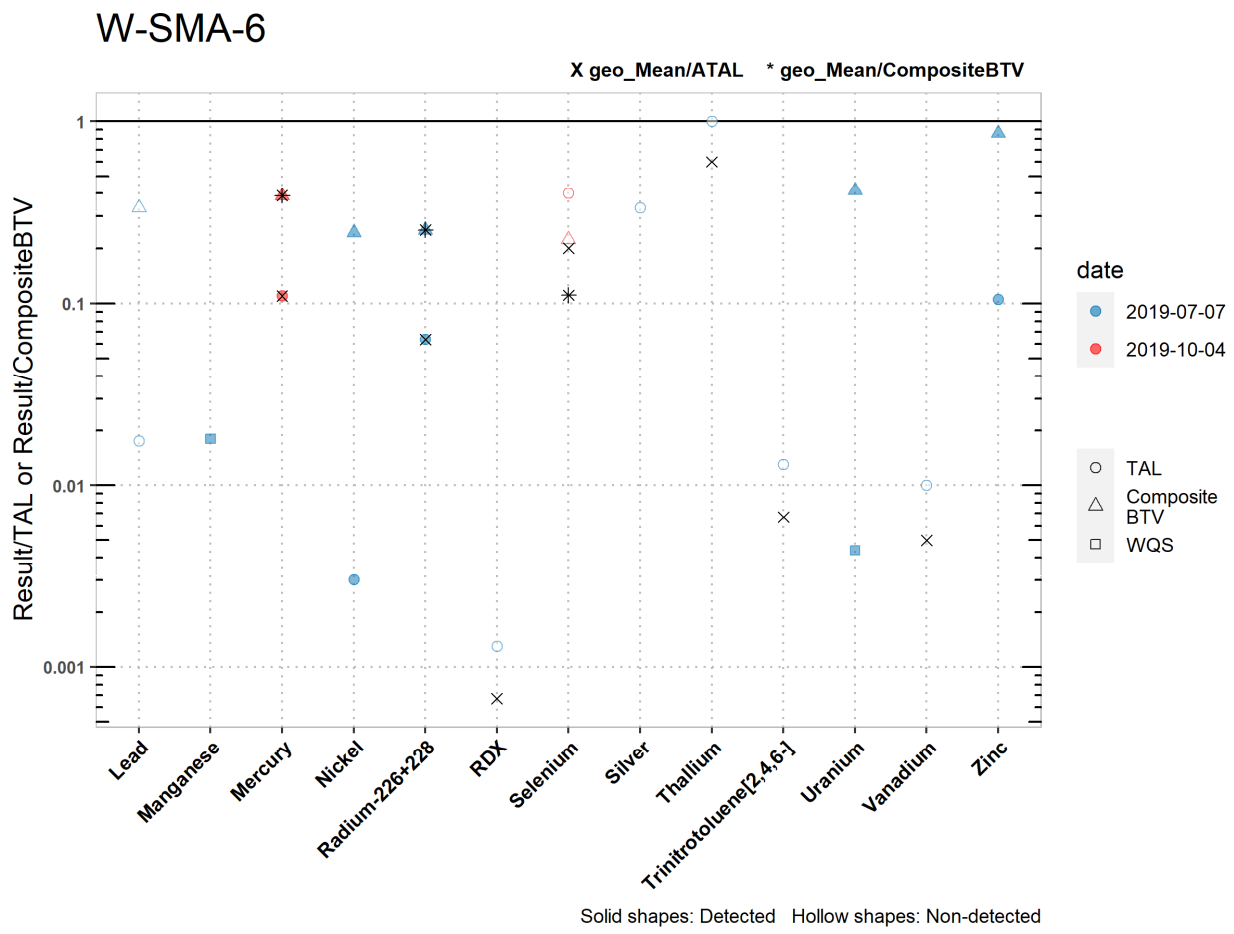


Figure 202.4-2 Analytical Results from Stormwater Samples, W-SMA-6 (Plot 2)

W-SMA-6

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA
MTAL	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2	NA
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L
2019-07-07 result	NA	*1.00*	*2.00*	7.40	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	3.58	*1.67*	60.5	NA
2019-07-07 dT	NA	NA	NA	0.0037	NA	NA	NA	NA	NA	0.535	NA	4.0	NA
2019-07-07 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.15	NA	0.588	NA
2019-10-04 result	3870	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2010
2019-10-04 dT	3.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0
2019-10-04 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0015	NA	NA	0.00050	NA	0.161	4.0	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.424	NA	NA	0.588	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 202.4-3 Analytical Results from Stormwater Samples, W-SMA-6 (Table 1)

W-SMA-6

	Lead	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	28.6	NA	NA	250	NA	NA	20	0.9	NA	NA	NA	NA	81.6
Composite_BTV	1.50	NA	0.208	3.10	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
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	ug/L
2019-07-07 result	*0.500*	22.8	NA	0.755	1.91	*0.267*	NA	*0.300*	*0.600*	*0.267*	0.131	*1.00*	8.60
2019-07-07 dT	NA	0.018	NA	0.00302	0.0637	NA	NA	NA	NA	NA	0.0044	NA	0.105
2019-07-07 dB	NA	NA	NA	0.244	0.252	NA	NA	NA	NA	NA	0.416	NA	0.860
2019-10-04 result	NA	NA	0.0810	NA	NA	NA	*2.00*	NA	NA	NA	NA	NA	NA
2019-10-04 dT	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019-10-04 dB	NA	NA	0.389	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	NA	0.11	NA	0.0637	0.00067	0.20	NA	0.6	0.0067	NA	0.0050	NA
geo_mean/B	NA	NA	0.389	NA	0.252	NA	0.111	NA	NA	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g

Figure 202.4-4 Analytical Results from Stormwater Samples, W-SMA-6 (Table 2)

202.4.2 Assessment Unit and Stream Impairments

W-SMA-6 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

202.5 Site-Specific Demonstration

202.5.1 Soil Data Summary

No Consent Order data.

202.5.2 Stormwater Data Summary

Gross alpha exceeded TALs but not BTVs. Dissolved aluminum and copper exceeded the TALs but not the BTVs. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

202.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

203.0 W-SMA-7

Associated Sites	16-029(e)
Receiving Water	Water Canyon
Drainage Area	2.24 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 16-029(e): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

203.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

203.2 Site History

16-029(e) (5/17/2019)

SWMU 16-029(e) consists of an inactive HE sump and formerly NPDES-permitted outfall (05A159) that served HE equipment assembly building 16-360 at TA-16. The sump is a 12-ft × 4-ft × 5-ft reinforced-concrete structure located on the exterior southeast side of the building. The sump received wash water from historical cleaning activities and discharged southeast to the outfall through a 6-in.-diameter drainline. In the 1990s, the sump outlet was plugged. The outfall was removed from the NPDES permit effective August 16, 1995.

The OU 1082 RCRA RFI work plan identifies SWMU 16-029(e) as an HE sump at building 16 360 with SWMU 16-026(h2) as the associated NPDES permitted outfall. However, the 1990 SWMU Report identifies SWMU 16-026(h2) as four outfalls from building drains at building 16-360. Because the four outfalls identified as SWMU 16 026(h2) in the SWMU Report are not associated with the HE sump, SWMU 16-029(e) is identified as the inactive HE sump, and the associated inlet and outlet drainlines and the outfall.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

203.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 203.2-1.

Table 203.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-029(e)	Sump	HE

203.3 Consent Order Soil Data

Decision-level data for SWMU 16-029(e) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 203.3-1 through 203.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

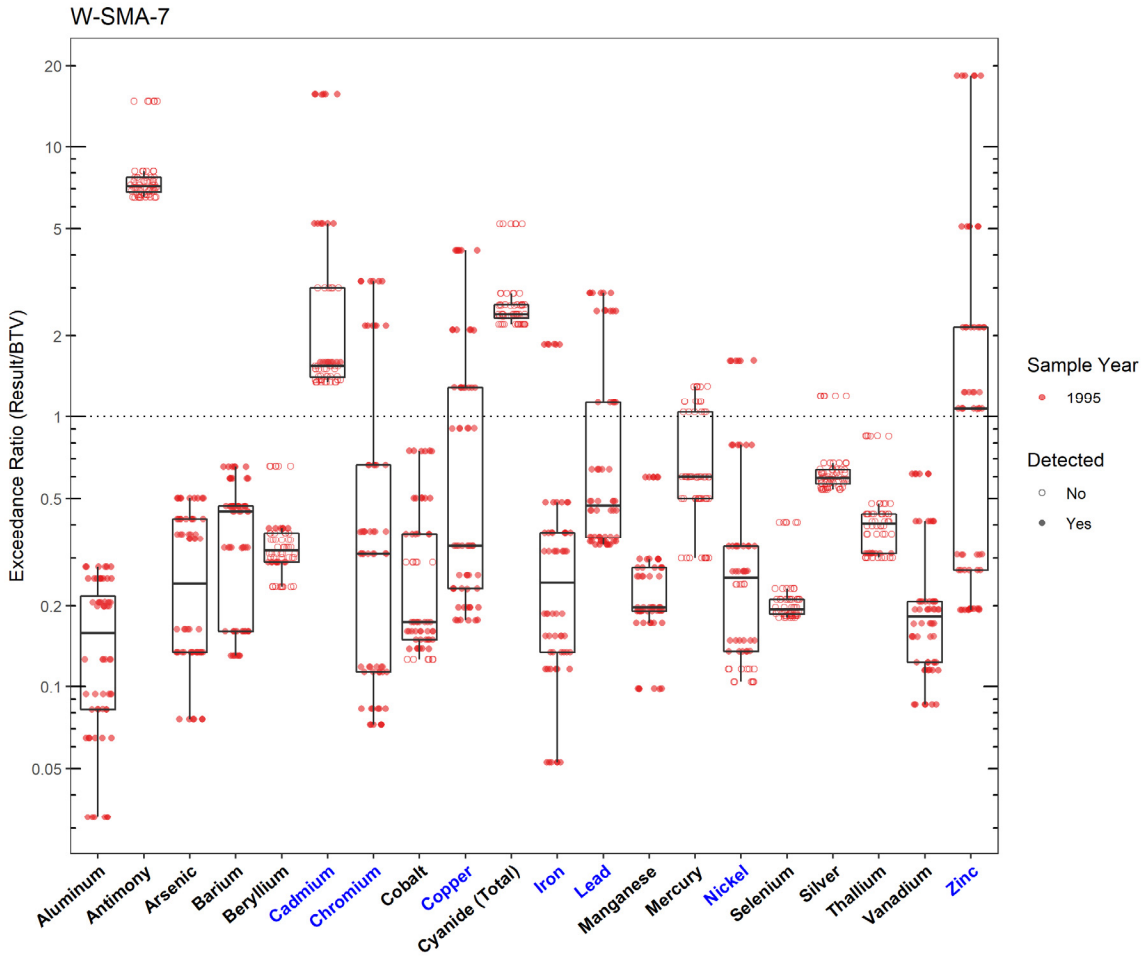


Figure 203.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-7

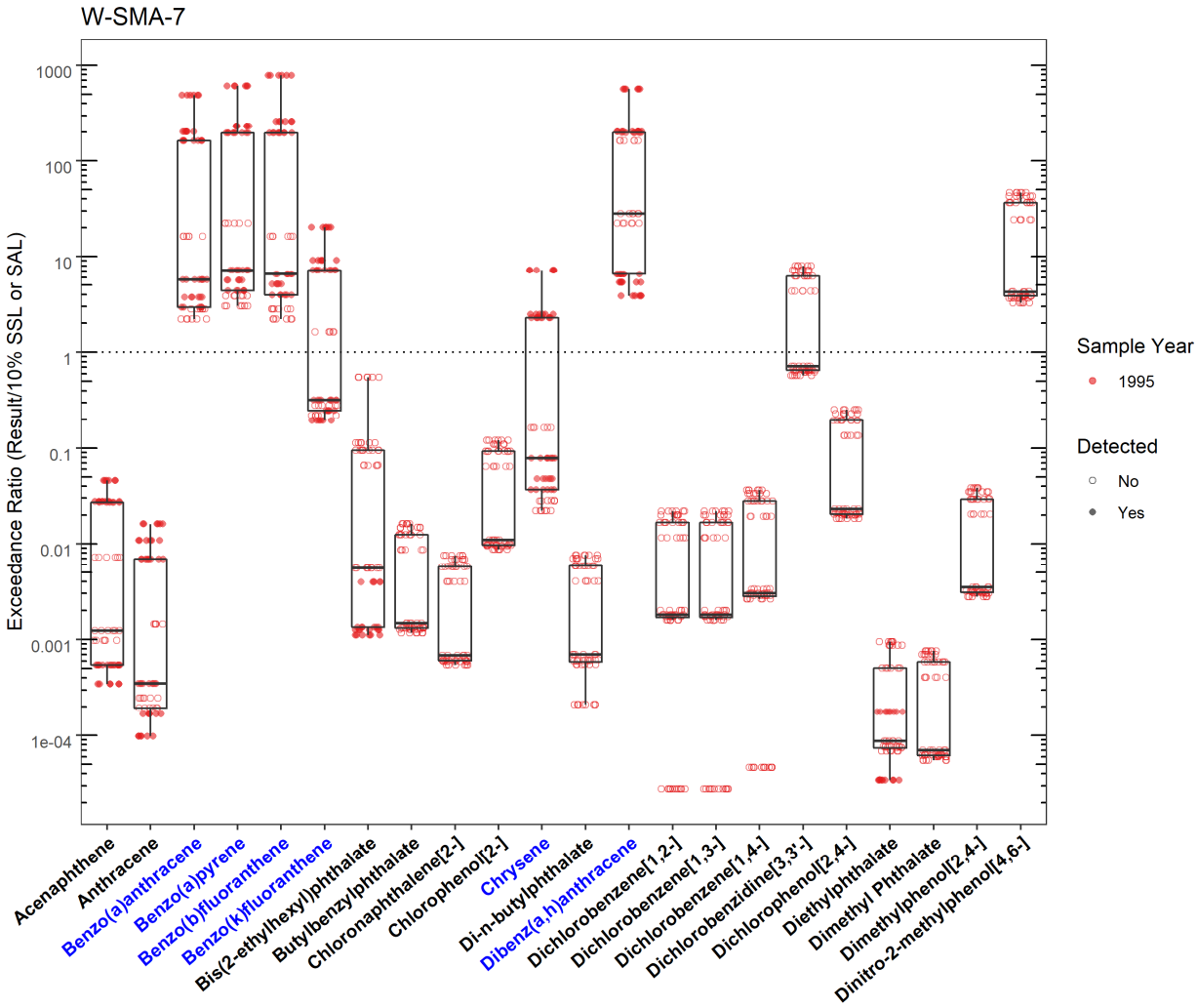


Figure 203.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-7 (Plot 1)

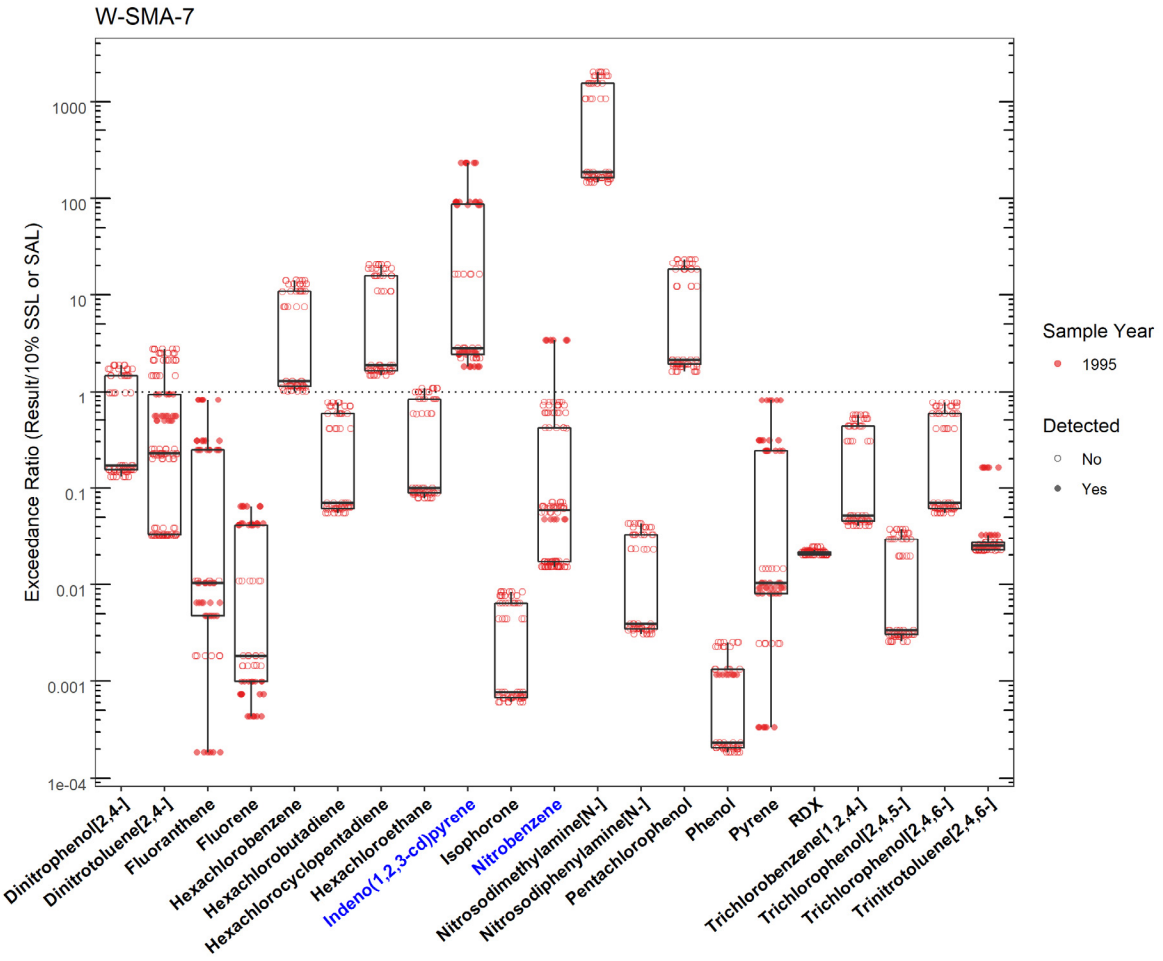


Figure 203.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-7 (Plot 2)

W-SMA-7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-7	56-55-3	Y	SSL_0.1	0.153	75.0	1995-08-15
Benzo(a)pyrene	W-SMA-7	50-32-8	Y	SSL_0.1	0.112	68.0	1995-08-15
Benzo(b)fluoranthene	W-SMA-7	205-99-2	Y	SSL_0.1	0.153	120	1995-08-15
Benzo(k)fluoranthene	W-SMA-7	207-08-9	Y	SSL_0.1	1.53	31.0	1995-08-15
Cadmium	W-SMA-7	Cd	Y	BTV	0.400	6.30	1995-08-15
Chromium	W-SMA-7	Cr	Y	BTV	19.3	61.1	1995-08-15
Chrysene	W-SMA-7	218-01-9	Y	SSL_0.1	15.3	110	1995-08-15
Copper	W-SMA-7	Cu	Y	BTV	14.7	61.2	1995-08-15
Dibenz(a,h)anthracene	W-SMA-7	53-70-3	Y	SSL_0.1	0.0153	8.70	1995-08-15
Indeno(1,2,3-cd)pyrene	W-SMA-7	193-39-5	Y	SSL_0.1	0.153	35.0	1995-08-15
Iron	W-SMA-7	Fe	Y	BTV	21500	40000	1995-08-15
Lead	W-SMA-7	Pb	Y	BTV	22.3	64.0	1995-05-04
Nickel	W-SMA-7	Ni	Y	BTV	15.4	24.9	1995-08-15
Nitrobenzene	W-SMA-7	98-95-3	Y	SSL_0.1	6.04	20.5	1995-05-04
Zinc	W-SMA-7	Zn	Y	BTV	48.8	900	1995-08-15

Figure 203.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-7

203.4 Stormwater Evaluation

203.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current location at the SMA.

203.4.2 Assessment Unit and Stream Impairments

W-SMA-7 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The impairments are not likely to be Site related, based on Site history.

203.5 Site-Specific Demonstration

203.5.1 Soil Data Summary

Nitrobenzene exceeded the applicable screening values in soil data and has not yet been measured in stormwater.

203.5.2 Stormwater Data Summary

No confirmation-monitoring data.

203.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected at the current location.

203.5.4 Sampling and Analysis Plan

Table 203.5-1 is the proposed SAP for W-SMA-7.

Table 203.5-1 Proposed SAP, W-SMA-7

Monitoring Constituent	Background for Monitoring
HE	Site history and soil data (nitrobenzene)
DOC	Permit requirement
SSC	Permit requirement

204.0 W-SMA-7.8

Associated Sites	16-031(a)
Receiving Water	Water Canyon
Drainage Area	0.78 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-031(a): In Progress
2010 Administratively Continued Permit Final Status	The SMA is being evaluated for a corrective action
2016–2018 SIP Actions	Based on the October 2016 field visit, there appeared to be two potential flow pathways for runoff. Therefore, gravel bags were installed in June 2017 to direct flow from both runoff pathways to the current sampler location.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

204.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in July 2019 and May 2021. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in April 2022 (N3B 2022, 701992). No response has been received from EPA and stormwater monitoring has not occurred since 2021.

204.2 Site History

16-031(a) (5/17/2019)

SWMU 16-031(a) is a former outfall and drainline that served a former cooling tower (former Structure 16-372) at TA-16. The outfall discharged approximately 150 ft south of the cooling tower at the edge of Water Canyon. The outfall drainline was a 6-in.-diameter VCP that originated from a drain inside the southeast corner of the cooling tower. The cooling tower served building 16-370, a barium nitrate-grinding facility and metal-forming shop. The cooling tower received chilled water that was cycled through pumps and machinery in building 16-372. The cooling water may have contained chromates, but there is no documentation confirming the use of chromates. The cooling tower was built in 1953 and burned down during the Cerro Grande fire in 2000. The concrete foundation remains in place.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

204.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 204.2-1.

Table 204.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-031(a)	Outfall from Cooling Tower 16-372	Metals, chromium, barium

204.3 Consent Order Soil Data

Decision-level data for SWMU 16-031(a) consist of results from a sample collected in 1998. Analytical results for these samples are presented in Figures 204.3-1 through 204.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

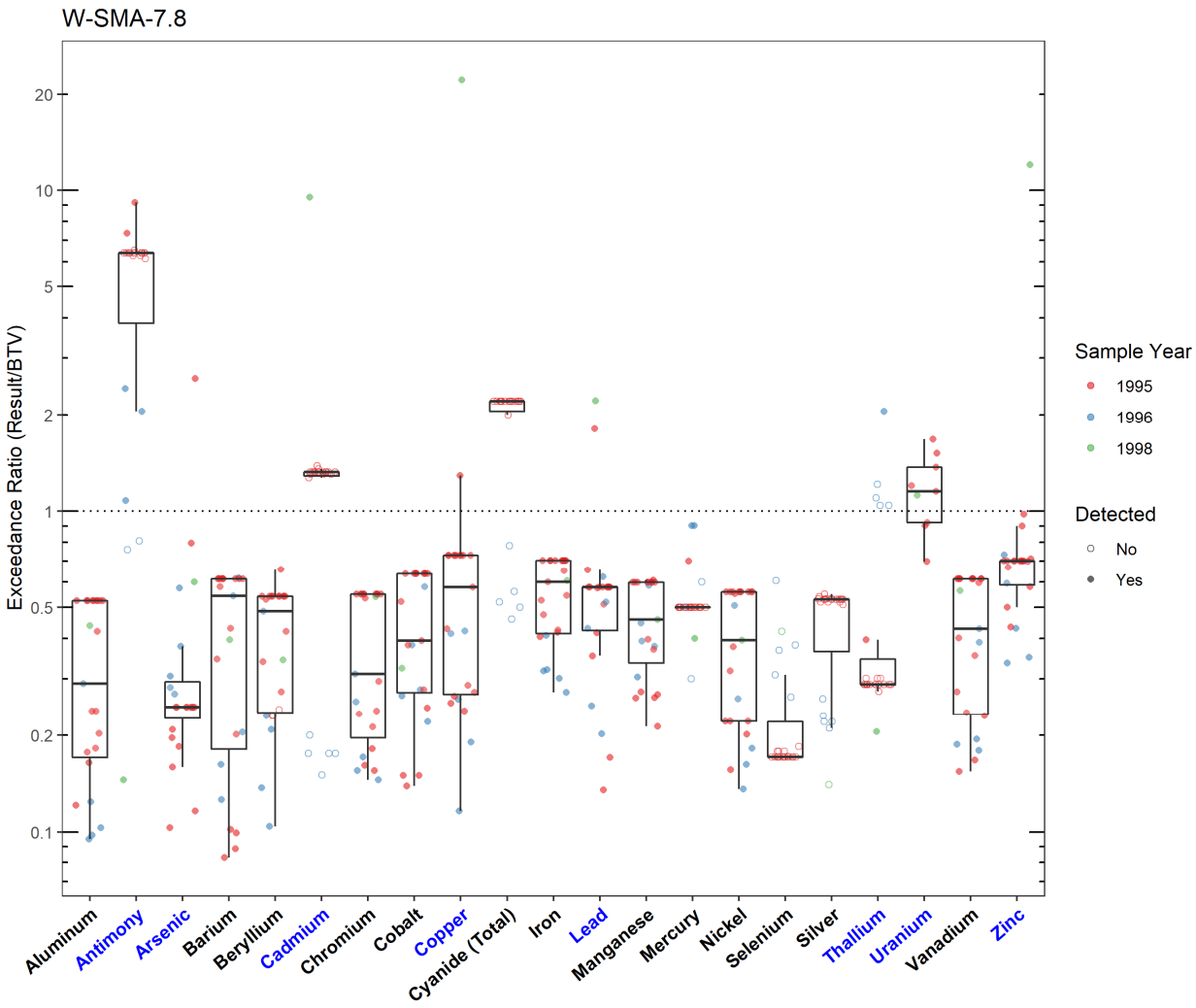


Figure 204.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-7.8

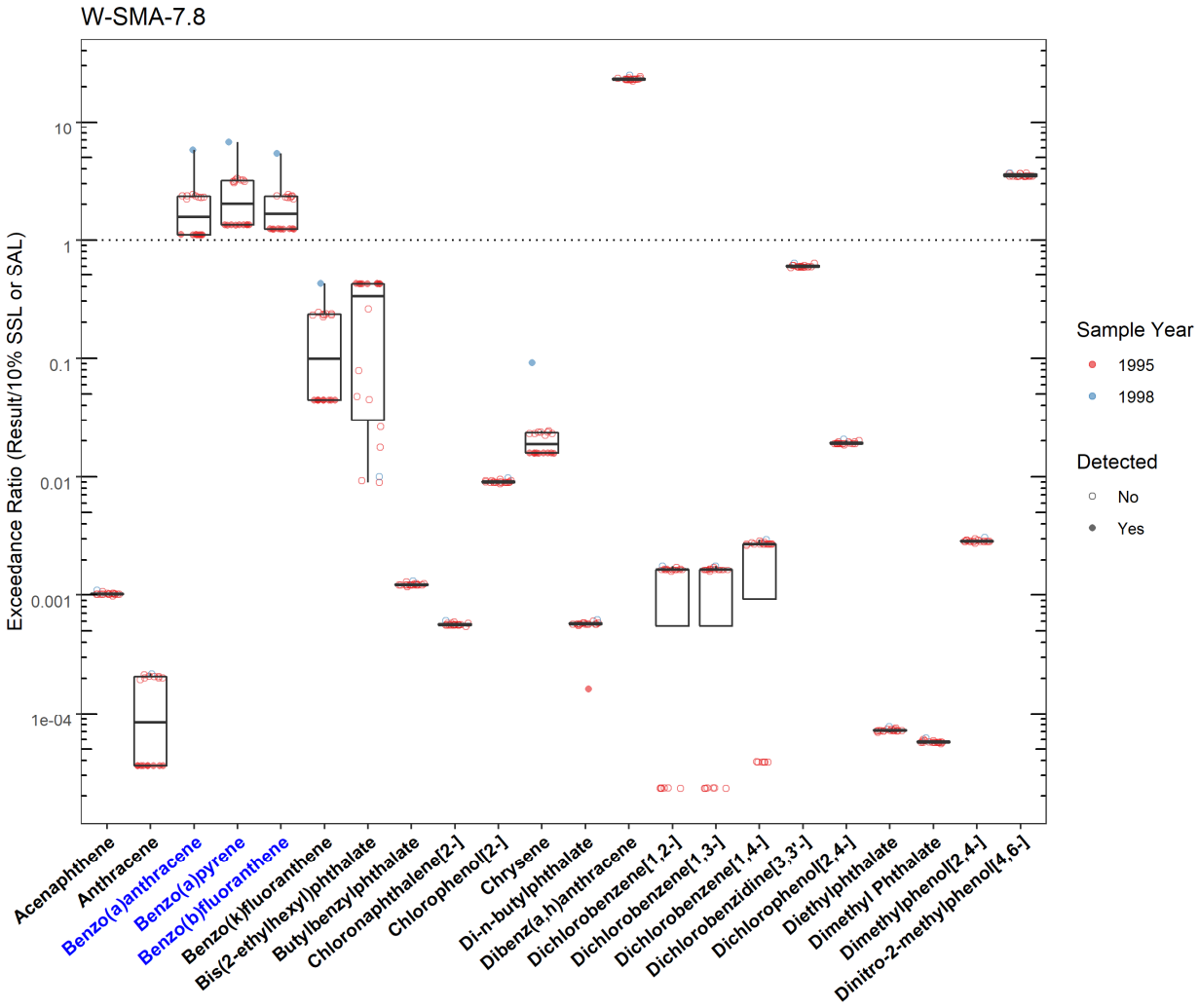


Figure 204.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-7.8 (Plot 1)

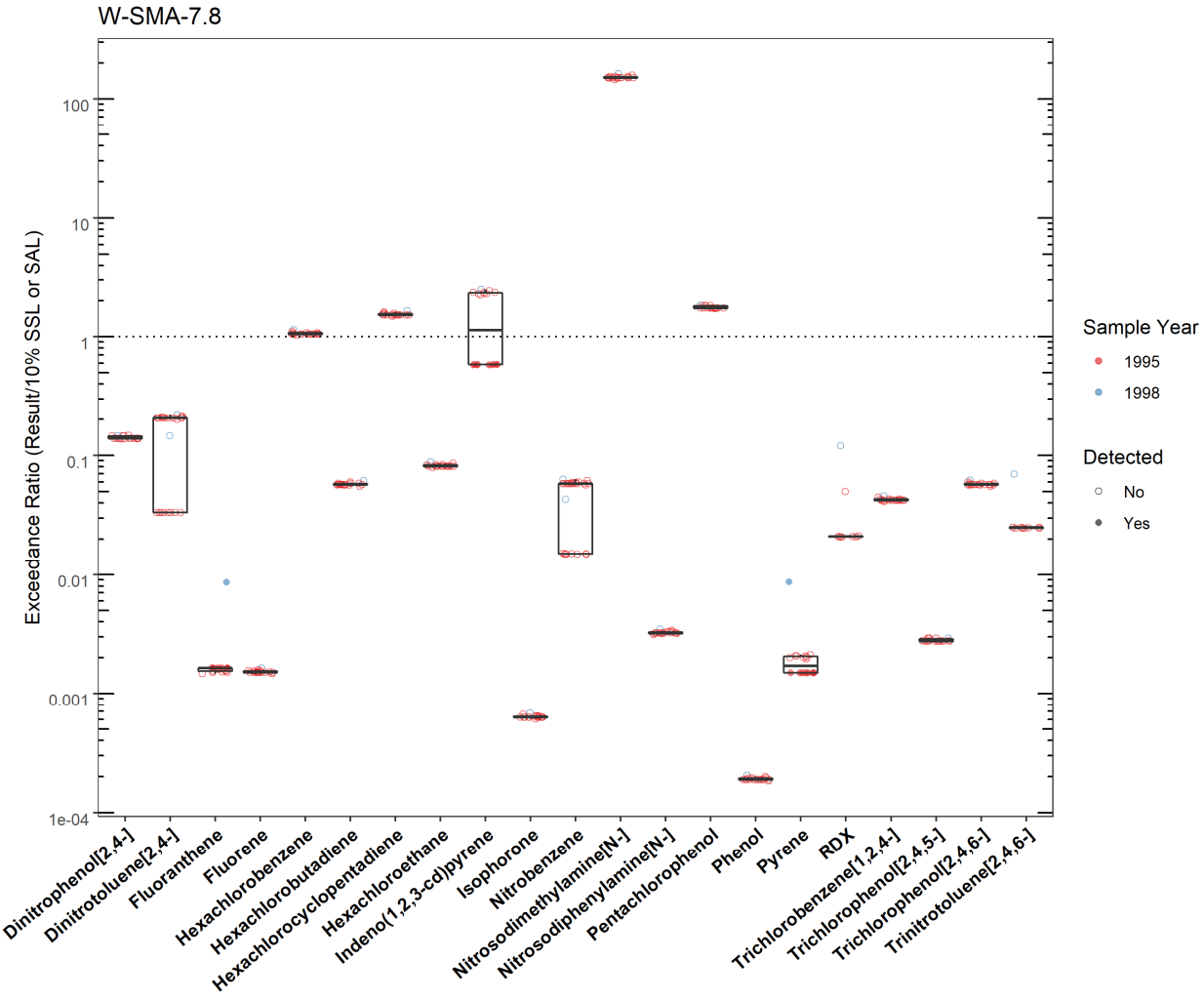


Figure 204.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-7.8 (Plot 2)

W-SMA-7.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-7.8	Sb	Y	BTV	0.830	7.60	1995-09-21
Arsenic	W-SMA-7.8	As	Y	BTV	8.17	21.2	1995-09-21
Benzo(a)anthracene	W-SMA-7.8	56-55-3	Y	SSL_0.1	0.153	0.880	1998-12-09
Benzo(a)pyrene	W-SMA-7.8	50-32-8	Y	SSL_0.1	0.112	0.750	1998-12-09
Benzo(b)fluoranthene	W-SMA-7.8	205-99-2	Y	SSL_0.1	0.153	0.820	1998-12-09
Cadmium	W-SMA-7.8	Cd	Y	BTV	0.400	3.80	1998-12-09
Copper	W-SMA-7.8	Cu	Y	BTV	14.7	326	1998-12-09
Lead	W-SMA-7.8	Pb	Y	BTV	22.3	49.3	1998-12-09
Thallium	W-SMA-7.8	Tl	Y	BTV	0.730	1.50	1996-09-03
Uranium	W-SMA-7.8	U	Y	BTV	1.82	3.04	1995-09-21
Zinc	W-SMA-7.8	Zn	Y	BTV	48.8	586	1998-12-09

Figure 204.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-7.8

204.4 Stormwater Evaluation

204.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in July 2019 and May 2021. Analytical results from these samples are presented in Figures 204.4-1 through 204.4-4.

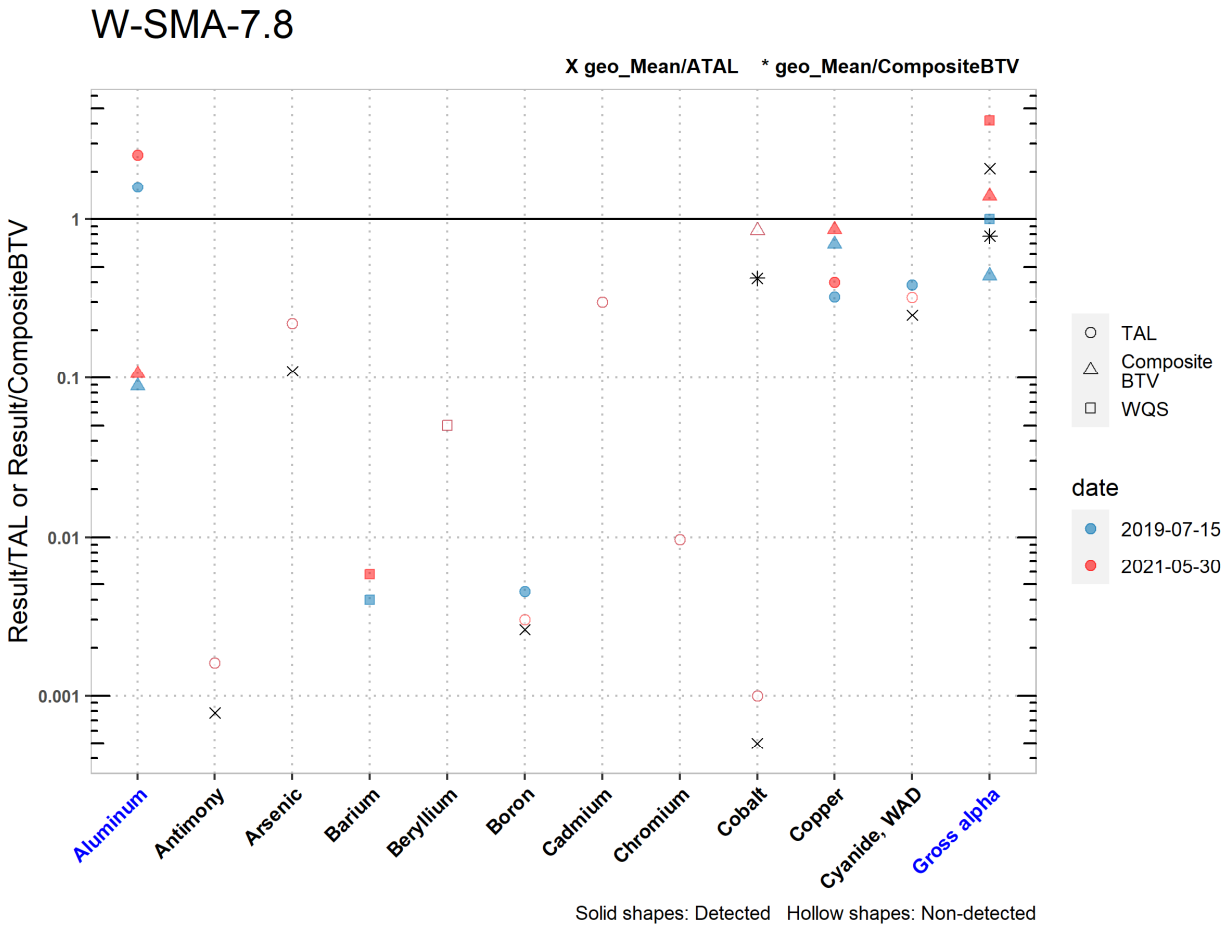


Figure 204.4-1 Analytical Results from Stormwater Samples, W-SMA-7.8 (Plot 1)

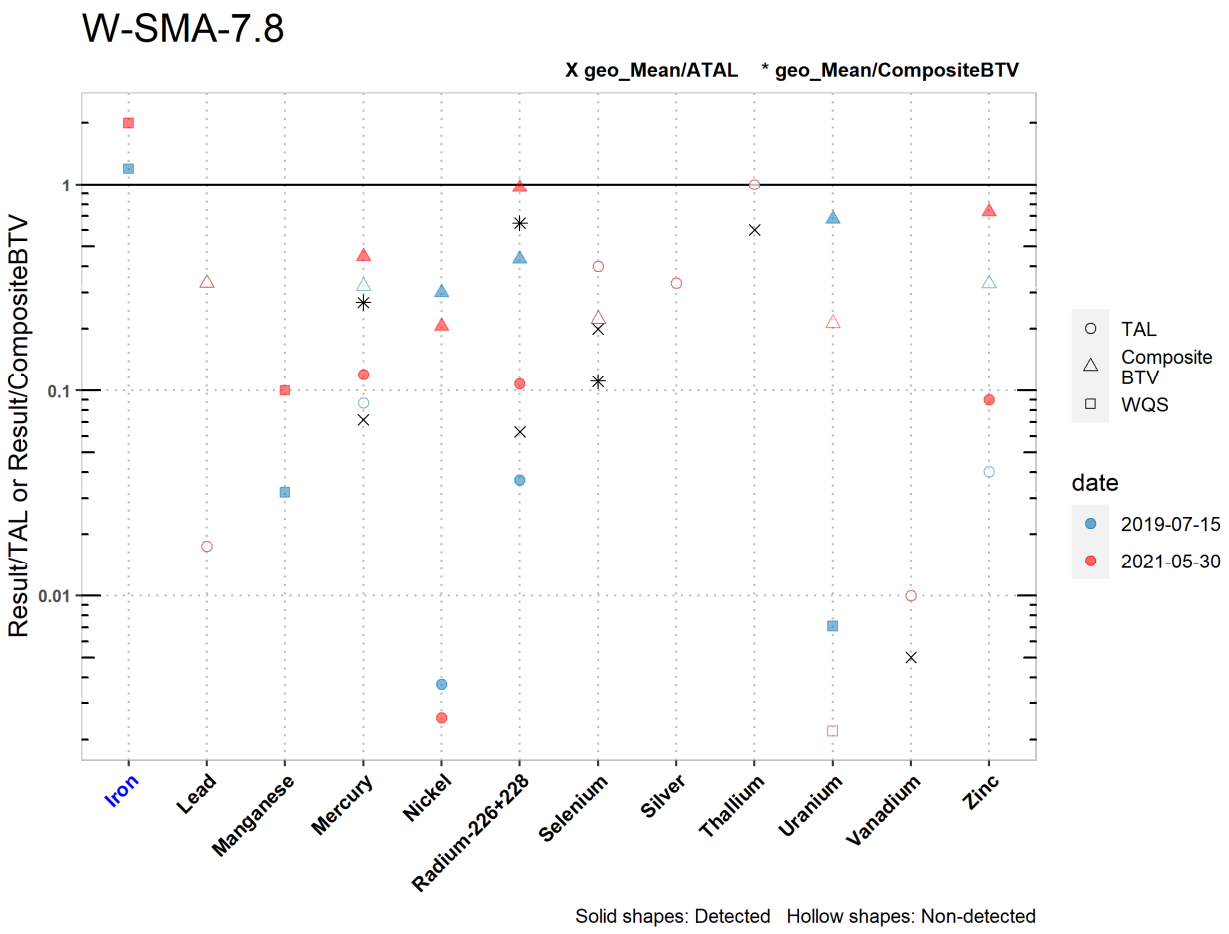


Figure 204.4-2 Analytical Results from Stormwater Samples, W-SMA-7.8 (Plot 2)

W-SMA-7.8

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15
MTAL	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*
2019-07-15 result	1980	*1.00*	*2.00*	8.10	*0.200*	22.7	*0.300*	*3.00*	*1.00*	2.17	2.00	15.1
2019-07-15 dT	1.60	NA	NA	0.0040	NA	0.0045	NA	NA	NA	0.324	0.385	1.0
2019-07-15 dB	0.0882	NA	NA	NA	NA	NA	NA	NA	NA	0.696	NA	0.440
2021-05-30 result	3170	*1.00*	*2.00*	11.5	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	2.68	*1.67*	63.4
2021-05-30 dT	2.55	NA	NA	0.0058	NA	NA	NA	NA	NA	0.401	NA	4.2
2021-05-30 dB	0.106	NA	NA	NA	NA	NA	NA	NA	NA	0.859	NA	1.39
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0026	NA	NA	0.00050	NA	0.249	2.1
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.424	NA	NA	0.781

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 204.4-3 Analytical Results from Stormwater Samples, W-SMA-7.8 (Table 1)

W-SMA-7.8

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	28.6	NA	NA	250	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	NA	NA	0.315	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2019-07-15 result	1250	*0.500*	41.5	*0.0670*	0.926	1.10	*2.00*	*0.300*	*0.600*	0.214	*1.00*	*3.30*
2019-07-15 dT	1.2	NA	0.032	NA	0.00370	0.0367	NA	NA	NA	0.0071	NA	NA
2019-07-15 dB	NA	NA	NA	NA	0.299	0.435	NA	NA	NA	0.679	NA	NA
2021-05-30 result	1990	*0.500*	131	0.0930	0.639	3.25	*2.00*	*0.300*	*0.600*	*0.0670*	*1.00*	7.36
2021-05-30 dT	2.0	NA	0.10	0.12	0.00256	0.108	NA	NA	NA	NA	NA	0.0902
2021-05-30 dB	NA	NA	NA	0.447	0.206	0.965	NA	NA	NA	NA	NA	0.736
geo_mean/ATAL	NA	NA	NA	0.072	NA	0.0630	0.20	NA	0.6	NA	0.0050	NA
geo_mean/B	NA	NA	NA	0.268	NA	0.648	0.111	NA	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g

Figure 204.4-4 Analytical Results from Stormwater Samples, W-SMA-7.8 (Table 2)

204.4.2 Assessment Unit and Stream Impairments

W-SMA-7.8 drains to Water Canyon (Area-A Canyon to NM 501), which has no impairments.

204.5 Site-Specific Demonstration

204.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

204.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TAL but not the BTV. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

204.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

205.0 W-SMA-7.9

Associated Sites	16-006(c)
Receiving Water	Water Canyon
Drainage Area	0.09 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-006(c): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

205.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until one confirmation sample is collected from this SMA.

205.2 Site History

16-006(c) (3/21/2019)

SWMU 16-006(c) is an inactive septic system located directly west of former building 16-370 in the eastern portion of TA-16. The septic system served building 16-370 and consists of a 1,200-gal. concrete septic tank (Structure 16-371), a manhole (Structure 16-813), inlet and outlet drainlines, and an outfall near the rim of Water Canyon. The 1990 SWMU Report states the septic tank discharged to a drain field; however, engineering drawings do not verify the existence of a drain field. Building 16-370 was constructed in 1953 as a barium nitrate grinding facility. In the late 1950s, the building was converted to a metal forming shop for steel and aluminum operations. The septic system was constructed in 1953 and served floor drains and bathrooms on the third floor of former building 16-370. Associated drainlines connect to a manhole (Structure 16-813), which drained to the septic tank. The outlet drainline discharged to an outfall approximately 260 ft south of the septic tank at the edge of Water Canyon. After the outlet drainline was plugged, the tank was pumped regularly during the time building 16-370 remained operational; the building was removed in 2005.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

205.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 205.2-1.

Table 205.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-006(c)	Septic tank	Inorganic and organic chemicals

205.3 Consent Order Soil Data

Decision-level data for SWMU 16-006(c) consist of results from samples collected in 1995 and 1996. Analytical results for these samples are presented in Figures 205.3-1 through 205.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

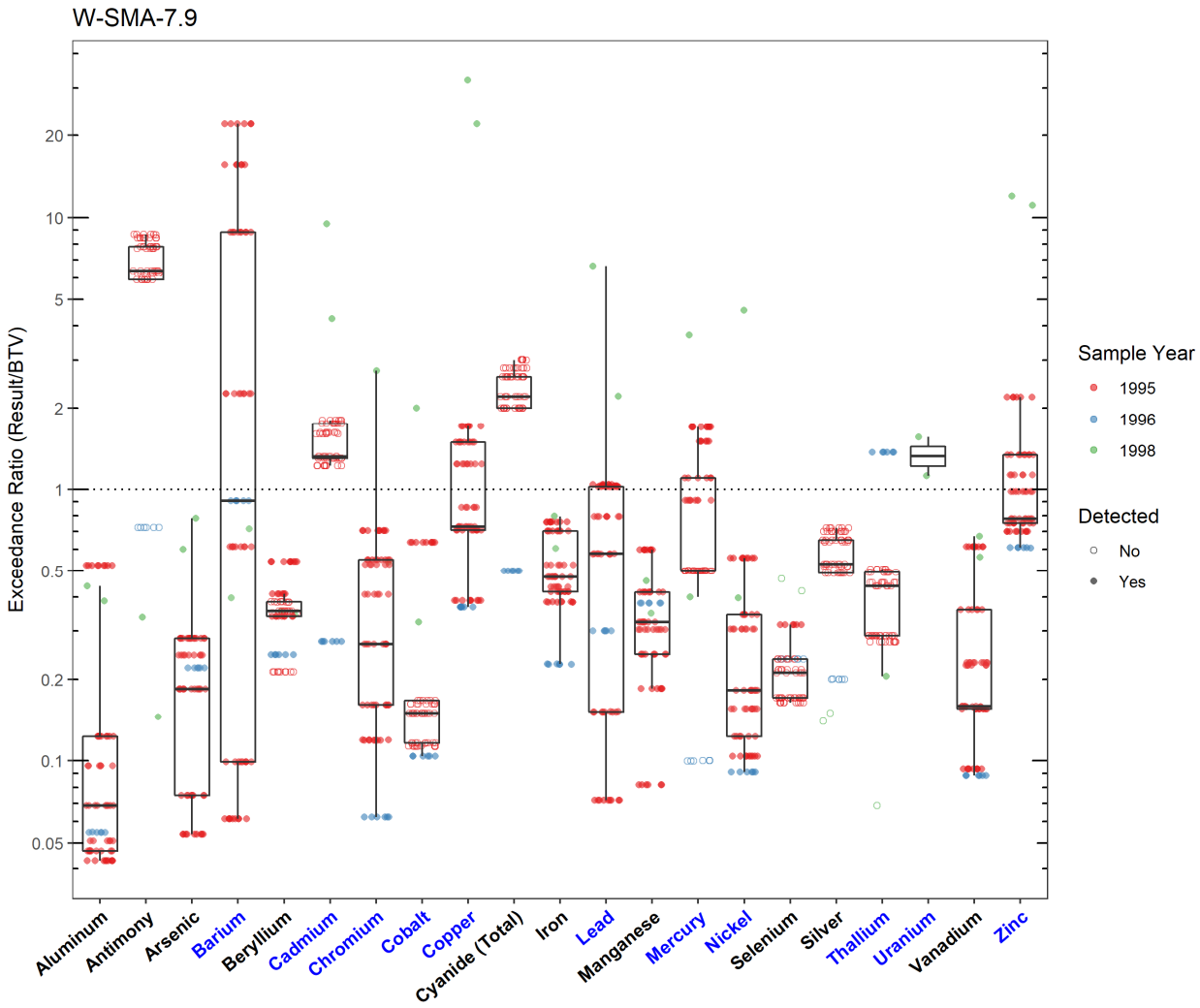


Figure 205.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-7.9

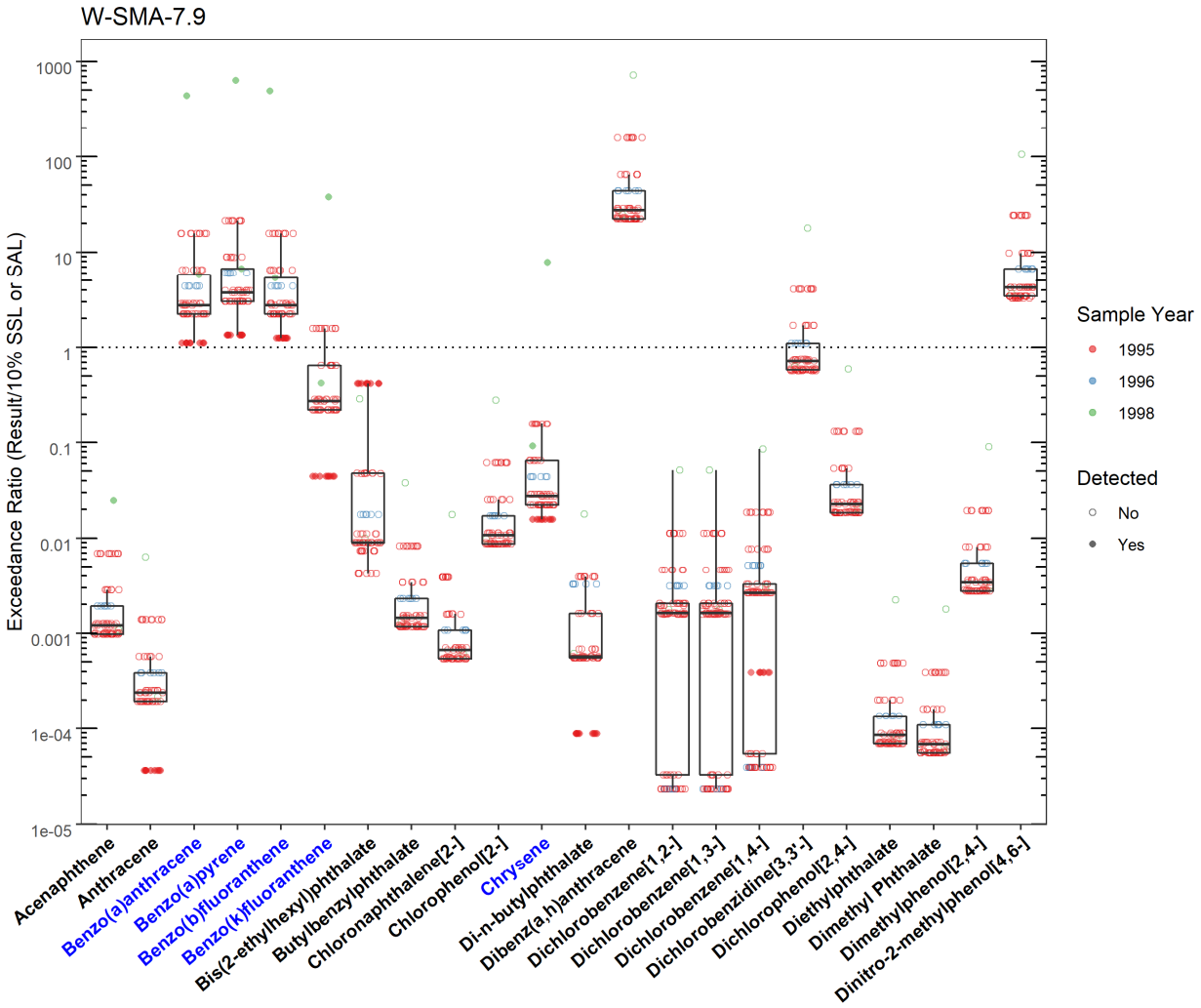


Figure 205.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-7.9 (Plot 1)

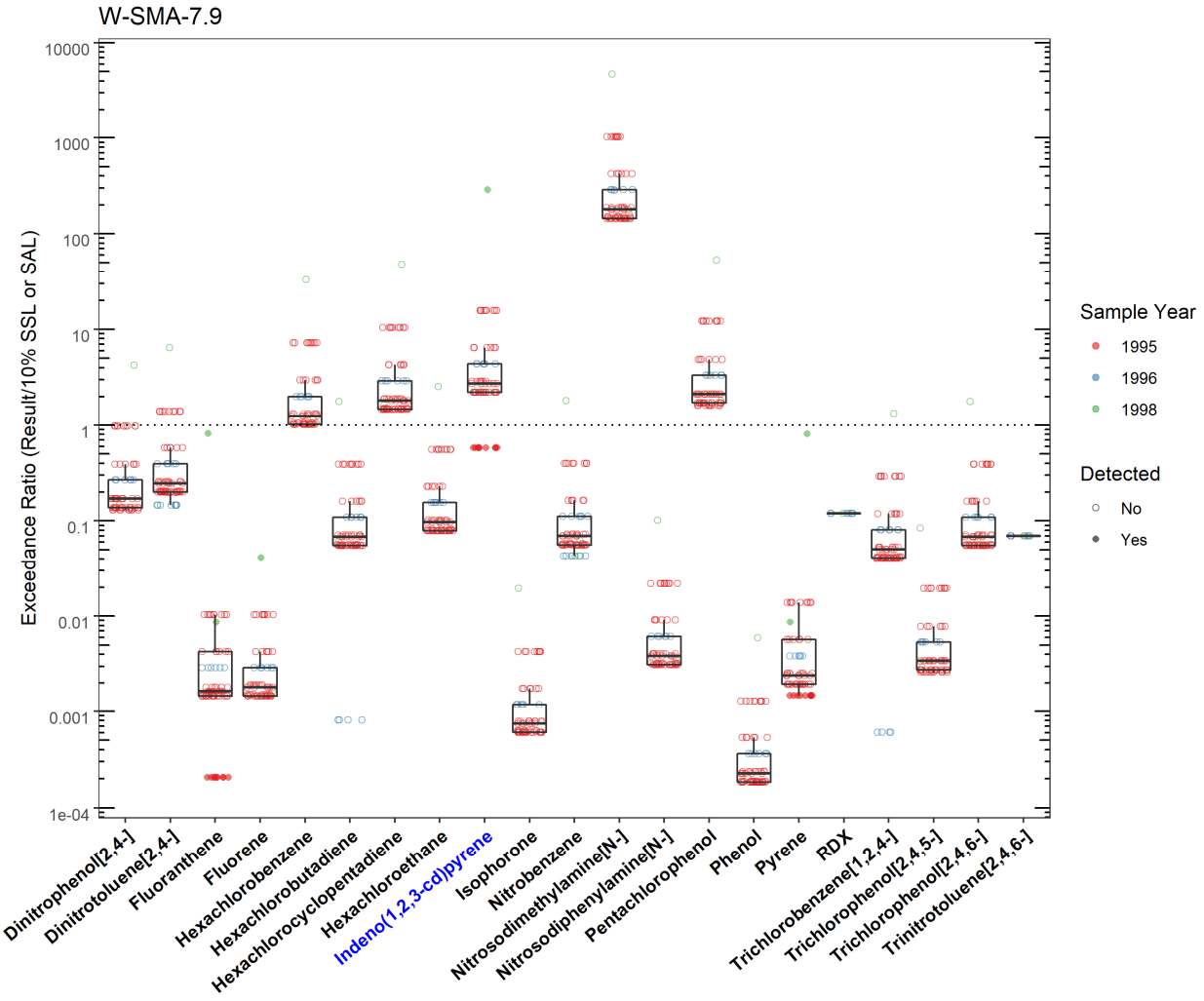


Figure 205.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-7.9 (Plot 2)

W-SMA-7.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	W-SMA-7.9	Ba	Y	BTV	295	6540	1995-05-30
Benzo(a)anthracene	W-SMA-7.9	56-55-3	Y	SSL_0.1	0.153	67.0	1998-12-09
Benzo(a)pyrene	W-SMA-7.9	50-32-8	Y	SSL_0.1	0.112	71.0	1998-12-09
Benzo(b)fluoranthene	W-SMA-7.9	205-99-2	Y	SSL_0.1	0.153	75.0	1998-12-09
Benzo(k)fluoranthene	W-SMA-7.9	207-08-9	Y	SSL_0.1	1.53	58.0	1998-12-09
Cadmium	W-SMA-7.9	Cd	Y	BTV	0.400	3.80	1998-12-09
Chromium	W-SMA-7.9	Cr	Y	BTV	19.3	52.9	1998-12-09
Chrysene	W-SMA-7.9	218-01-9	Y	SSL_0.1	15.3	120	1998-12-09
Cobalt	W-SMA-7.9	Co	Y	BTV	8.64	17.3	1998-12-09
Copper	W-SMA-7.9	Cu	Y	BTV	14.7	472	1998-12-09
Indeno(1,2,3-cd)pyrene	W-SMA-7.9	193-39-5	Y	SSL_0.1	0.153	44.0	1998-12-09
Lead	W-SMA-7.9	Pb	Y	BTV	22.3	148	1998-12-09
Mercury	W-SMA-7.9	Hg	Y	BTV	0.100	0.370	1998-12-09
Nickel	W-SMA-7.9	Ni	Y	BTV	15.4	70.2	1998-12-09
Thallium	W-SMA-7.9	Tl	Y	BTV	0.730	1.00	1996-09-20
Uranium	W-SMA-7.9	U	Y	BTV	1.82	2.84	1998-12-09
Zinc	W-SMA-7.9	Zn	Y	BTV	48.8	586	1998-12-09

Figure 205.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-7.9

205.4 Stormwater Evaluation

205.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

205.4.2 Assessment Unit and Stream Impairments

W-SMA-7.9 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The PCB and metal impairments may be Site related, based on Site history.

205.5 Site-Specific Demonstration

205.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, cadmium, cobalt, chromium, copper, indeno(1,2,3-cd)pyrene, lead, mercury, nickel, thallium, uranium, and zinc.

205.5.2 Stormwater Data Summary

No confirmation-monitoring data.

205.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

205.5.4 Sampling and Analysis Plan

Table 205.5-1 is the proposed SAP for W-SMA-7.9.

Table 205.5-1 Proposed SAP, W-SMA-7.9

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site History
Total aluminum and mercury	Impairment, Site history (inorganics), and soil data
SVOCs	Site history and soil data
Dissolved barium, cadmium, cobalt, chromium, copper, nickel, lead, thallium, uranium, and zinc	Site history (inorganics) and soil data
DOC	Permit requirement
SSC	Permit requirement

206.0 W-SMA-8

Associated Sites	16-016(g), 16-028(b)
Receiving Water	Water Canyon
Drainage Area	0.18 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-016(g): In Progress SWMU 16-028(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

206.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600776), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

206.2 Site History

16-016(g) (3/21/2019)

SWMU 16-016(g) is a surface disposal area located in a drainage ditch approximately 60 ft south of former building 16-370 in the eastern portion of TA-16. Debris at the site includes cans and pipes distributed over a 20-ft-diameter area. The surface disposal area lies in the drainage ditch shared by SWMUs 16-026(a) and 16-028(b). Field observations indicate the debris is likely from construction-related activities and not of a hazardous nature.

16-028(b) (no date)

SWMU 16-028(b) is a former NPDES-permitted outfall (04A092) and associated outlet drainline that served former building 16-370 at TA-16. The outfall is located approximately 50 ft south of former building 16-370. The outlet drainline consists of a 6-in. VCP that exited the northwest side of former building 16-370 and discharged at the rim of Water Canyon. The outfall formerly received effluent from 29 floor drains, an eyewash station, a drinking fountain, a sink, and noncontact treated cooling water. Building 16-370 was constructed in 1953 as a barium nitrate–grinding facility. In the late 1950s, the building was converted to a metal-forming shop for steel and aluminum. Materials potentially present in discharges to the drains include barium compounds, metal chips, oils, kerosene, and trichloroethylene. HE were not used in building 16-370 due to explosive hazard posed by grinding and machining activities.

All drains that discharged to the outfall were plugged in the 1990s. The outfall was removed from the NPDES permit effective January 14, 1998. Building 16-370 was removed in 2000.

No investigation activities have been conducted for SWMU 16-016(g).

For more information on these Sites, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

206.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 206.2-1.

Table 206.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-016(g)	Surface disposal area	Metals, aluminum, barium, nitrate
16-028(b)	Outfall from building 16-370	Metals, nitrate, PAHs

206.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-016(g).

Decision-level data for SWMU 16-028(b) consist of results from a sample collected in 1998. Analytical results for that sample are presented in Figures 206.3-1 through 206.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

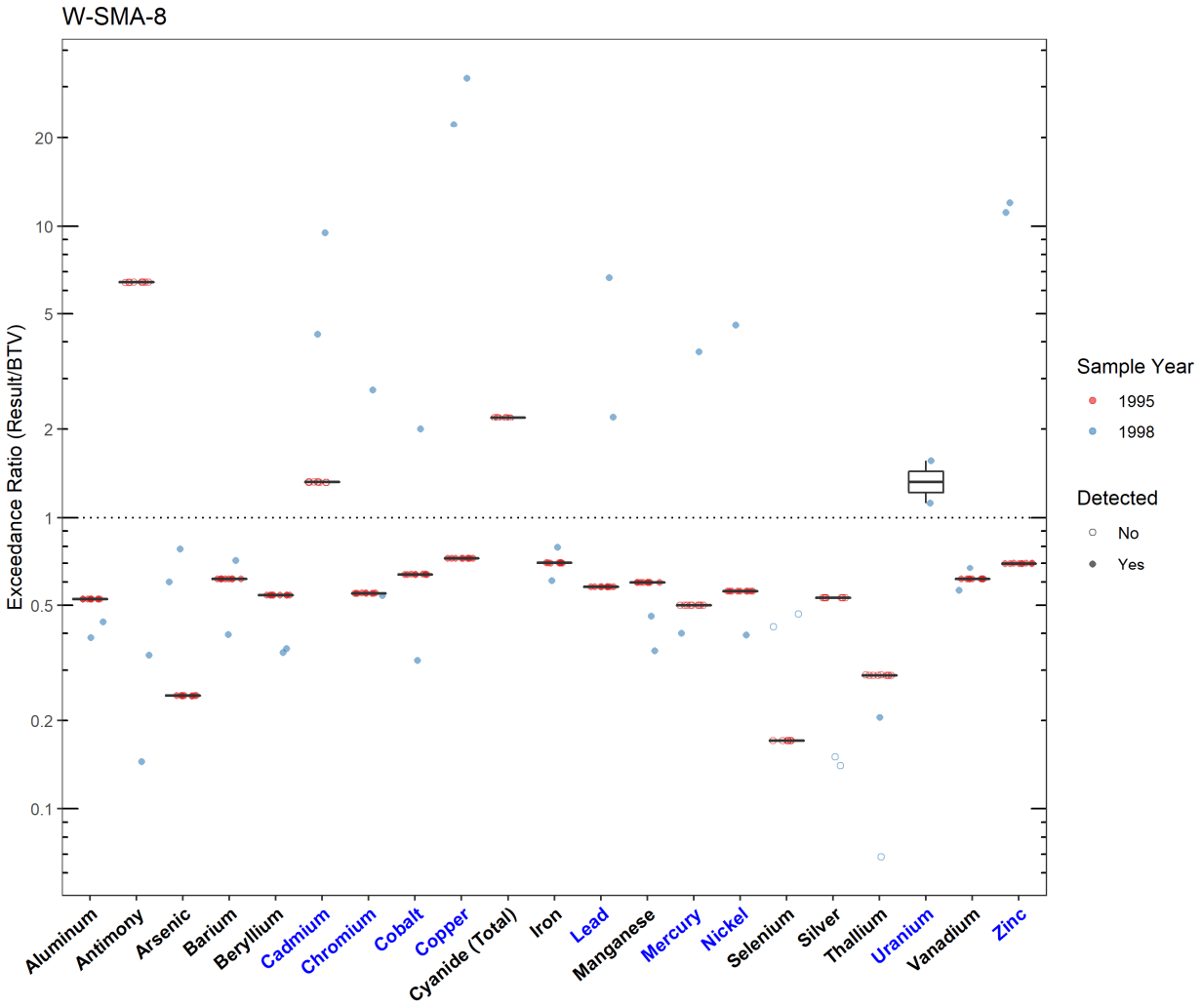


Figure 206.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-8

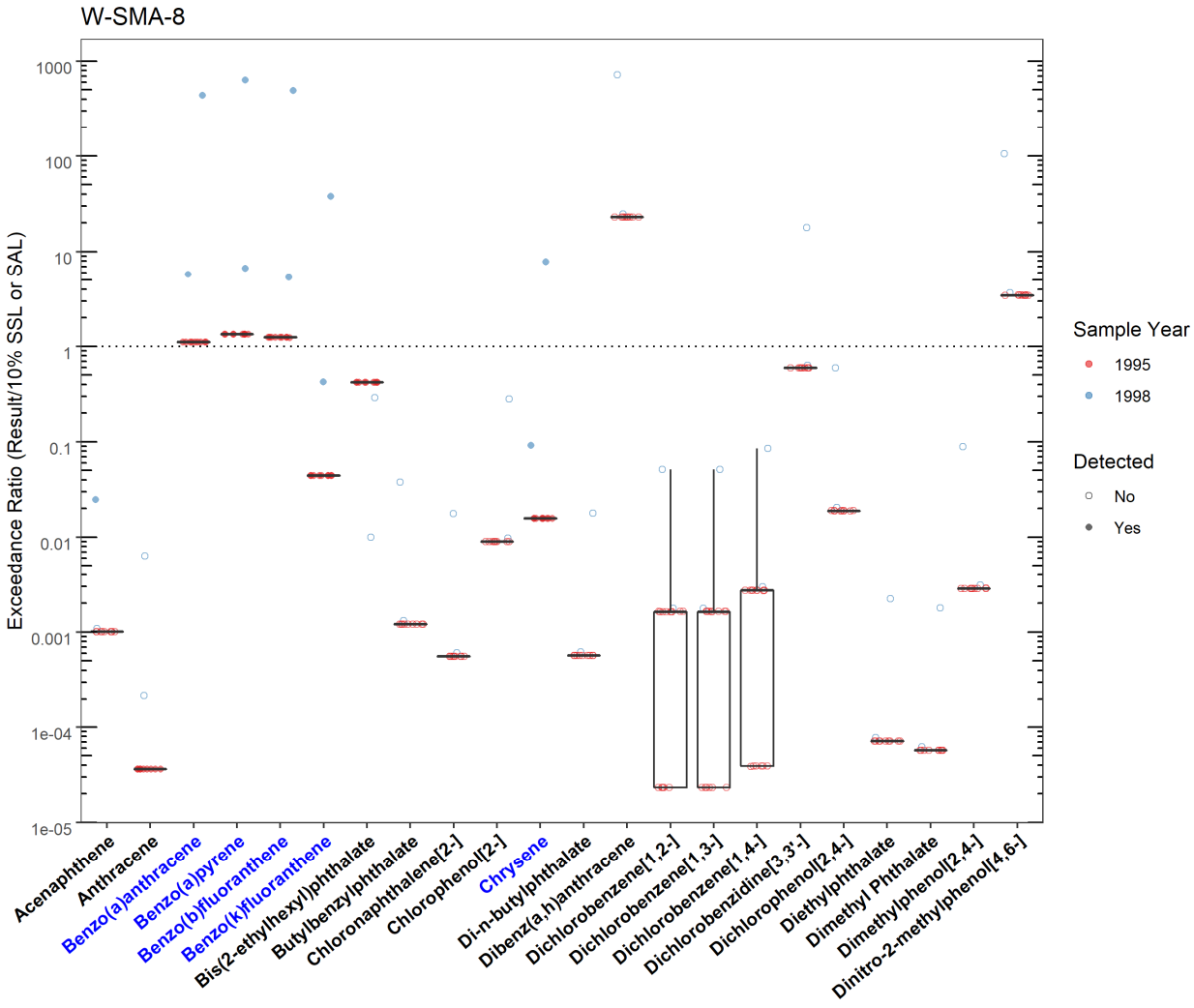


Figure 206.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-8 (Plot 1)

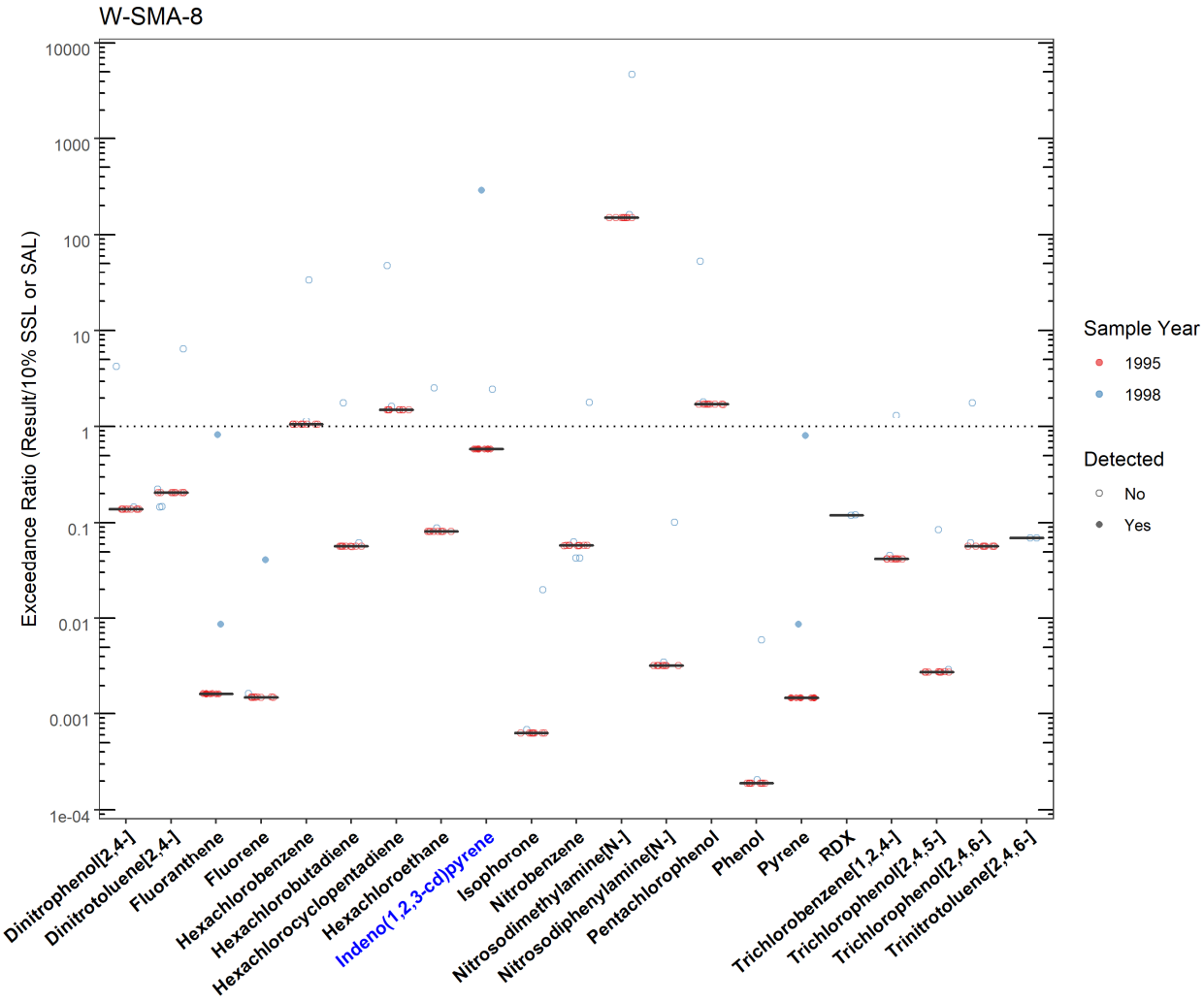


Figure 206.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-8 (Plot 2)

W-SMA-8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-8	56-55-3	Y	SSL_0.1	0.153	67.0	1998-12-09
Benzo(a)pyrene	W-SMA-8	50-32-8	Y	SSL_0.1	0.112	71.0	1998-12-09
Benzo(b)fluoranthene	W-SMA-8	205-99-2	Y	SSL_0.1	0.153	75.0	1998-12-09
Benzo(k)fluoranthene	W-SMA-8	207-08-9	Y	SSL_0.1	1.53	58.0	1998-12-09
Cadmium	W-SMA-8	Cd	Y	BTV	0.400	3.80	1998-12-09
Chromium	W-SMA-8	Cr	Y	BTV	19.3	52.9	1998-12-09
Chrysene	W-SMA-8	218-01-9	Y	SSL_0.1	15.3	120	1998-12-09
Cobalt	W-SMA-8	Co	Y	BTV	8.64	17.3	1998-12-09
Copper	W-SMA-8	Cu	Y	BTV	14.7	472	1998-12-09
Indeno(1,2,3-cd)pyrene	W-SMA-8	193-39-5	Y	SSL_0.1	0.153	44.0	1998-12-09
Lead	W-SMA-8	Pb	Y	BTV	22.3	148	1998-12-09
Mercury	W-SMA-8	Hg	Y	BTV	0.100	0.370	1998-12-09
Nickel	W-SMA-8	Ni	Y	BTV	15.4	70.2	1998-12-09
Uranium	W-SMA-8	U	Y	BTV	1.82	2.84	1998-12-09
Zinc	W-SMA-8	Zn	Y	BTV	48.8	586	1998-12-09

Figure 206.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-8

206.4 Stormwater Evaluation

206.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current location at the SMA.

206.4.2 Assessment Unit and Stream Impairments

W-SMA-8 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The metal impairments may be Site-related, based on Site history.

206.5 Site-Specific Demonstration

206.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater at the current monitoring location: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, cadmium, chromium, chrysene, cobalt, copper, indeno(1,2,3-cd)pyrene, lead, mercury, nickel, uranium, and zinc.

206.5.2 Stormwater Data Summary

No confirmation-monitoring data.

206.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected at the current location.

206.5.4 Sampling and Analysis Plan

Table 206.5-1 is the proposed SAP for W-SMA-8.

Table 206.5-1 Proposed SAP, W-SMA-8

Monitoring Constituent	Background for Monitoring
Total aluminum and mercury	Impairment, Site history, and soil data
Dissolved cadmium, chromium, cobalt, copper, lead, nickel, uranium, and zinc	Site history and soil data
SVOCs	Site history and soil data
Nitrate	Site history
DOC	Permit requirement
SSC	Permit requirement

207.0 W-SMA-8.7

Associated Sites	13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), 16-035
Receiving Water	Water Canyon
Drainage Area	16.37 acres
Landscape Characteristics	7% impervious, 93% pervious
Consent Order Site Status	SWMU 13-001: Pending Receipt of Certificate of Completion SWMU 13-002: Pending Receipt of Certificate of Completion SWMU 16-004(a): In Progress SWMU 16-026(j2): Pending Receipt of Certificate of Completion SWMU 16-029(h): In Progress SWMU 16-035: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

207.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

207.2 Site History

13-001 (11/26/2019)

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

13-002 (11/26/2019)

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340, and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and based on a 1948 aerial photograph, the site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the former TA-16 wastewater treatment plant (WWTP) [SWMUs 16-004(b, c, and d)] is located on top of the southern end of the

surface disposal area. The SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at the time of the firing site decommissioning.

16-004(a) (11/26/2019)

SWMU 16-004(a) is the inactive Imhoff tank (Structure 16-530) that was used for sewage treatment at the former sanitary WWTP at TA-16. The concrete structure is approximately 18 ft × 35 ft × 22 ft deep, with nine interconnected compartments that served as settling boxes, with a total area of 700 ft^2. Located southeast of the former 16-340 Complex and 15 ft north of the communitor (a cutting device for sewage solids), the Imhoff tank received solids that the communitor had shredded into fine particles. In addition to functioning as a settling box, the tank also offered some sludge digestion capability. Effluent from the boxes flowed over a weir into a dosing siphon. Any sludge that may have collected in the tank was digested before being discharged to drying beds [SWMUs 16-004(d) and 16-004(f)]. The Imhoff tank also had an emergency overflow pipe that discharged onto the slope northeast of the tank. The TA-16 WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. There is no evidence that this tank has ever leaked, and a site inspection in October 2014 revealed that the tank contains water.

16-026(j2) (6/19/2017)

SWMU 16-026(j2) is the former outfall for a former HE sump [SWMU 16-029(f)] associated with former building 16-345, an HE rest house that served as a storage facility for building 16-340. The sump received wash-down water from cleaning activities in former building 16-345. Waste in the effluent consisted primarily of HE. The sump was connected to a 6-in. VCP that discharged to the SWMU 16-026(j2) outfall that was not visible on the ground surface. This outfall was located southeast of building 16-345. The sump removed suspended solids from wash-down water before it was discharged to the outfall. HE fines were collected in a cloth filter bag and secured inside a metal filter basket. The baskets and filter bags were periodically removed and taken to the TA-16 basket-washing facility for cleaning. HE fines too small to collect in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE fines in the bottom of the sump were periodically removed and burned.

Building 16-345, the sump, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005.

16-029(h) (11/26/2019)

SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former Structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in. VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in. VCP that intersected a drainage channel. Former Structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When Structure 16-478 was removed in 2005, the sump was left in place. During Phase I Consent Order investigation activities conducted in 2010, no evidence of the French drain was found.

SWMU 16-029(h) was identified as an HE sump (Structure 16-487) in the 1990 SWMU Report. The SWMU Report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former Structure 16-478 and also includes areas impacted by the 2000 Cerro Grande wildfire.

16-035 (2/5/2020)

SWMU 16-035 is an area of potential soil contamination associated with a former control bunker (former structure 13-2 renumbered to 16-476), located approximately 200 ft east of former building 16-340 within former TA-13 and SWMU 13-001 at TA-16. The control bunker was one of several structures constructed at former TA-13 in 1944 to support the Manhattan Project. It was principally designed as a site for counter x-ray diagnostics of HE lens configurations. Between 1950 and 1999, former building 16-476 was used for a variety of LANL activities including operating counter x-ray equipment, HE assembly, and research in the magnetic method program. The control bunker was removed during D&D activities in 2005.

For investigation activities for SWMU 16-026(j2) refer to "Phase II Investigation Report for the TA-16-340 Complex [Consolidated Units 13-003(a)-99 and 16-003(n)-99 and SWMUs 16-003(o), 16-026(j2), and 16-029(f)], Revision 1" (LANL 2009, 105061.17). For investigation activities for all other Sites, refer to "Supplemental Investigation Report for S-Site Aggregate Area, Revision 1" (N3B 2019, 700414).

207.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 207.2-1.

Table 207.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
13-001	Firing site	Beryllium, copper, lead, steel, HE, uranium
13-002	Surface disposal area	Metals, beryllium, lead, steel, HE, polonium, uranium
16-004(a)	Imhoff tank	Inorganic and organic chemicals, radionuclides
16-026(j2)	Outfall	HE, aluminum
16-029(h)	Drainlines and outfall	HE, uranium, niobium
16-035	Soil contamination	Metals, beryllium, HE, polonium, uranium

207.3 Consent Order Soil Data

Decision-level data for SWMU 13-001, SWMU 13-002, SWMU 16-004(a), and SWMU 16-035 consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 16-026(j2) consist of results from samples collected in 1995, 1997, 2005, and 2008. The 2008 Phase II IR (LANL 2009, 105061.17) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 16-029(h) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent have been defined except the vertical extent of arsenic.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 207.3-1 through 207.3-4.

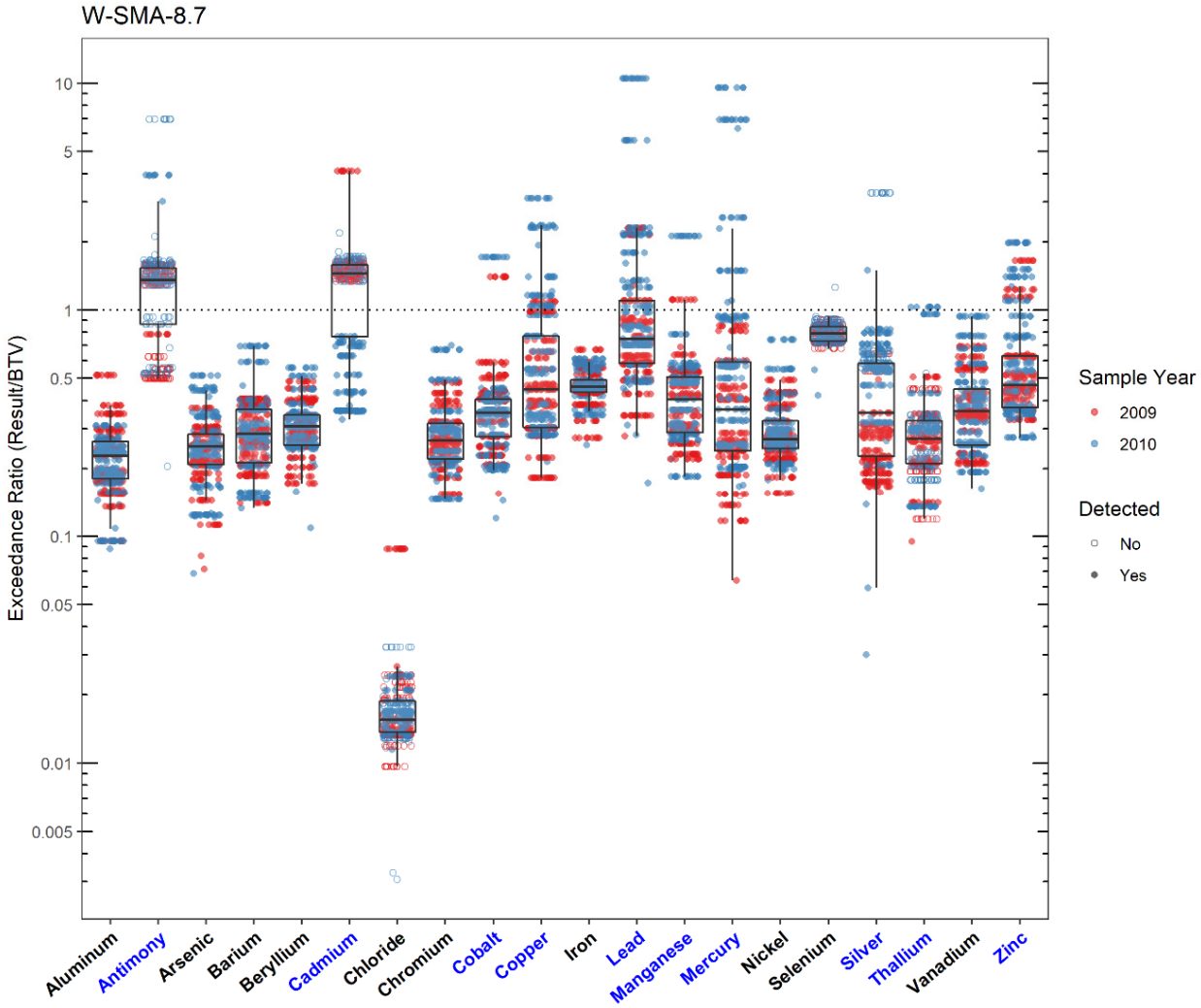


Figure 207.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-8.7

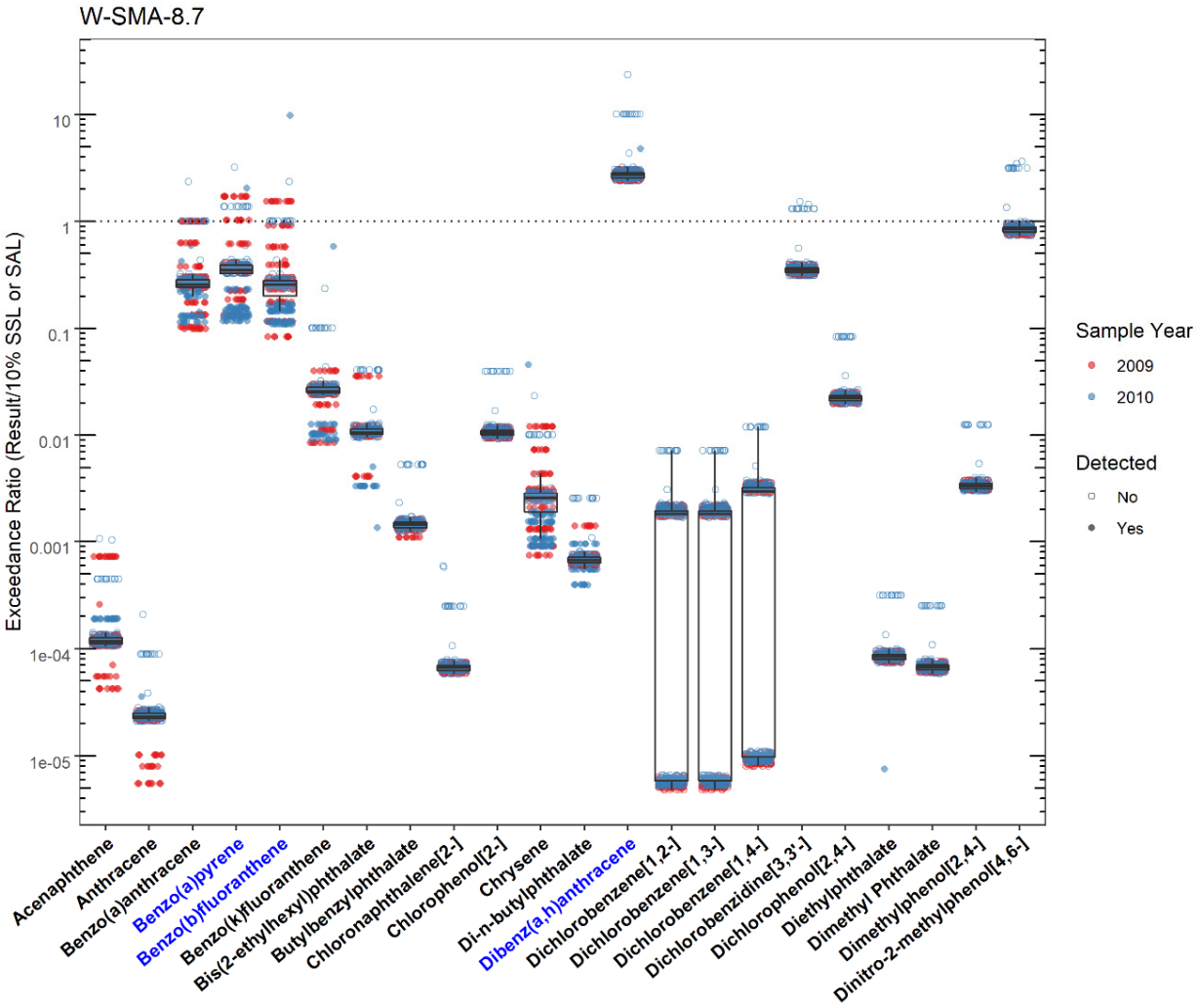


Figure 207.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-8.7 (Plot 1)

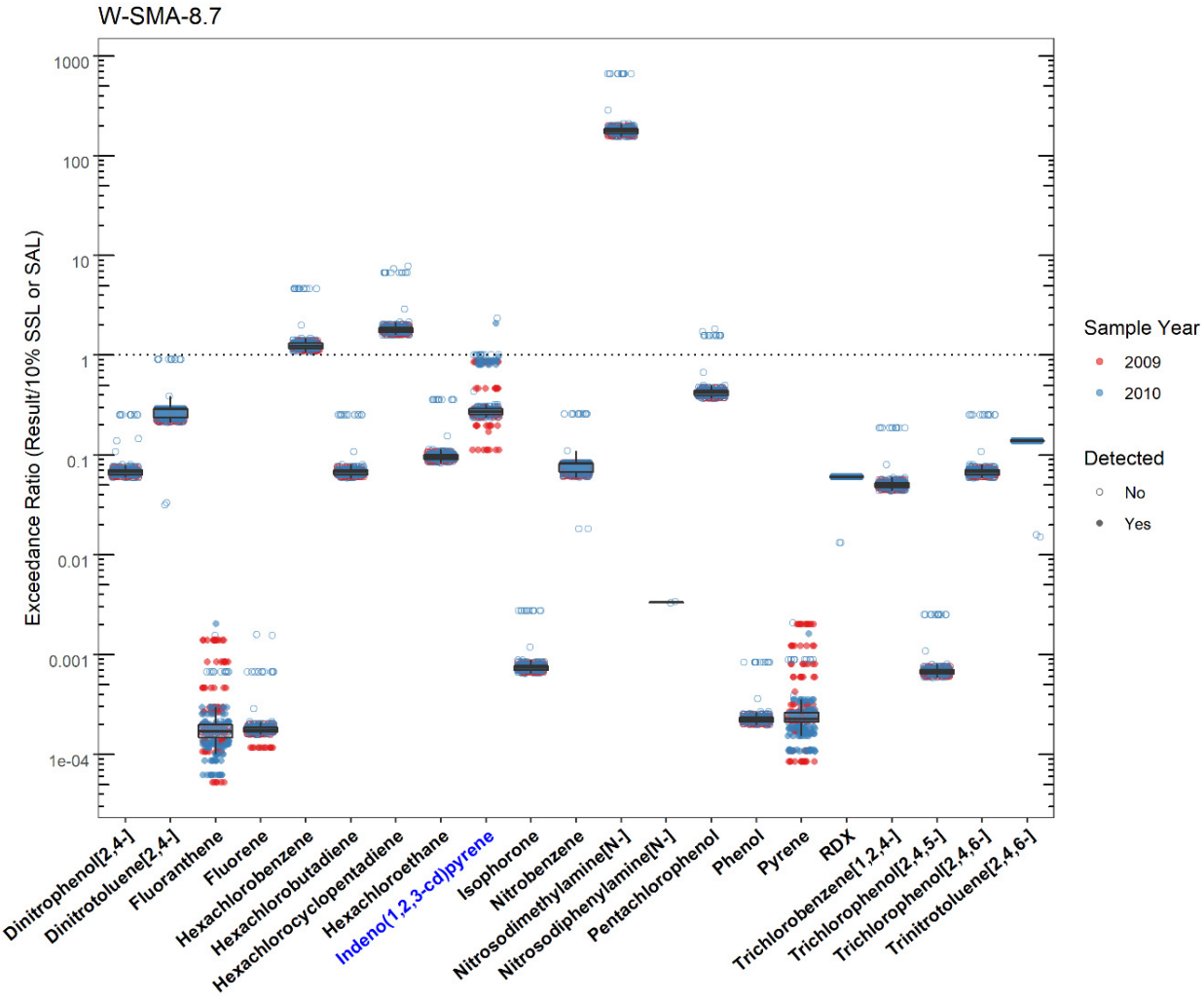


Figure 207.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-8.7 (Plot 2)

W-SMA-8.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-8.7	Sb	Y	BTV	0.830	3.26	2010-01-07
Benzo(a)pyrene	W-SMA-8.7	50-32-8	Y	SSL_0.1	0.112	0.230	2010-03-26
Benzo(b)fluoranthene	W-SMA-8.7	205-99-2	Y	SSL_0.1	0.153	1.50	2010-03-26
Cadmium	W-SMA-8.7	Cd	Y	BTV	0.400	1.64	2009-12-19
Cobalt	W-SMA-8.7	Co	Y	BTV	8.64	14.8	2010-01-07
Copper	W-SMA-8.7	Cu	Y	BTV	14.7	45.7	2010-01-08
Dibenz(a,h)anthracene	W-SMA-8.7	53-70-3	Y	SSL_0.1	0.0153	0.0730	2010-03-26
Indeno(1,2,3-cd)pyrene	W-SMA-8.7	193-39-5	Y	SSL_0.1	0.153	0.320	2010-03-26
Lead	W-SMA-8.7	Pb	Y	BTV	22.3	234	2010-01-11
Manganese	W-SMA-8.7	Mn	Y	BTV	671	1420	2010-01-07
Mercury	W-SMA-8.7	Hg	Y	BTV	0.100	0.955	2010-01-07
Silver	W-SMA-8.7	Ag	Y	BTV	1.00	1.50	2010-01-08
Thallium	W-SMA-8.7	Tl	Y	BTV	0.730	0.753	2010-01-07
Zinc	W-SMA-8.7	Zn	Y	BTV	48.8	96.4	2010-01-11

Figure 207.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-8.7

207.4 Stormwater Evaluation

207.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 207.4-1 and 207.4-2.

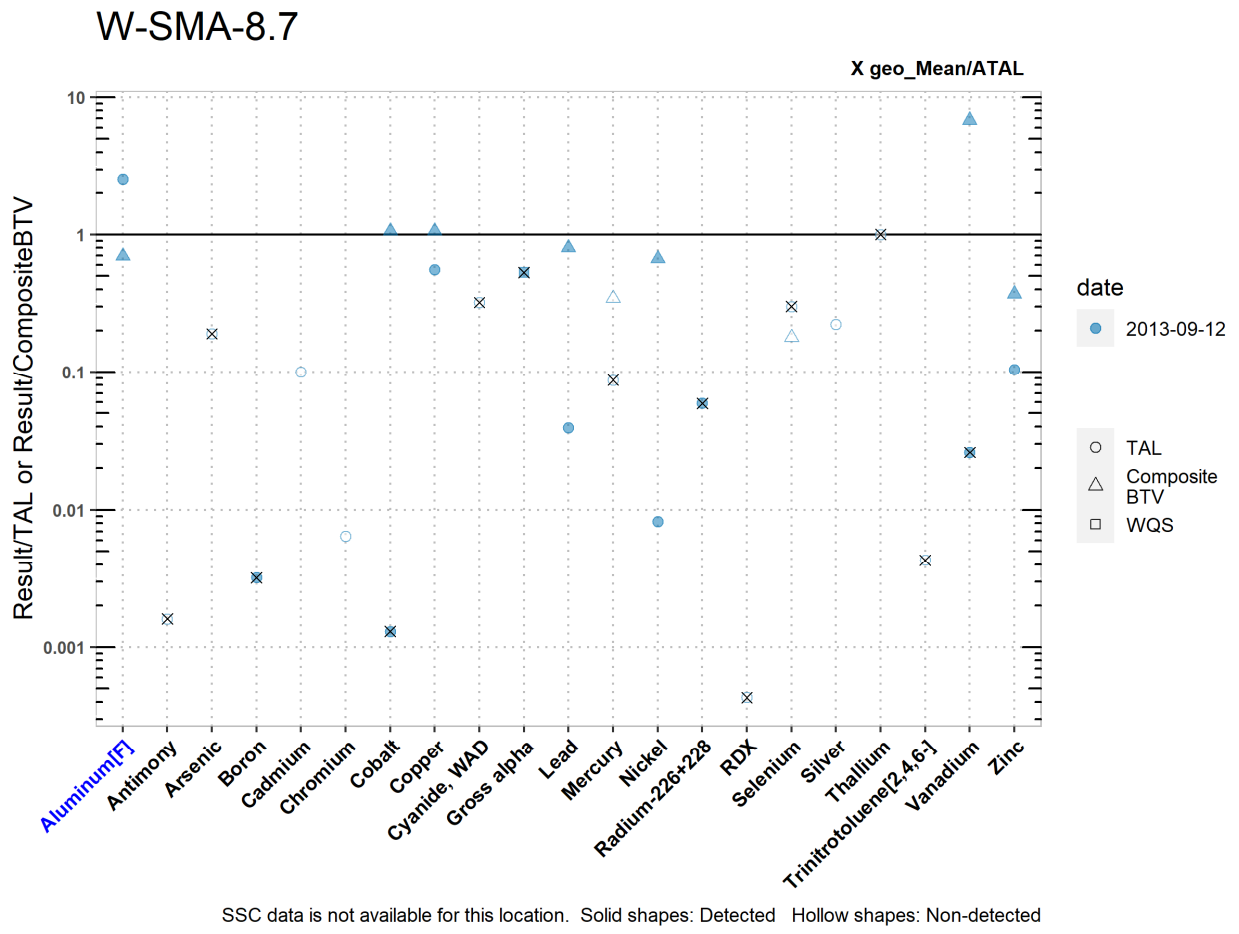


Figure 207.4-1 Analytical Results from Stormwater Sample, W-SMA-8.7 (Plot)

W-SMA-8.7

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	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	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2760	NA	NA	NA	NA	NA	1.25	3.52	NA	56.7	1.40	0.194	3.10	4.63	NA	8.37	NA	NA	NA	0.384	22.9
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
2013-09-12 result	1920	*1.00*	*1.70*	16.1	*0.110*	*2.00*	1.32	3.72	*1.67*	8.00	1.12	*0.0670*	2.06	1.77	*0.0865*	*1.50*	*0.200*	*0.450*	*0.0865*	2.62	8.47
2013-09-12 dT	2.56	NA	NA	0.0032	NA	NA	0.0013	0.556	NA	0.53	0.0392	NA	0.00824	0.0590	NA	NA	NA	NA	NA	0.026	0.104
2013-09-12 dB	0.696	NA	NA	NA	NA	NA	1.06	1.06	NA	NA	0.800	NA	0.665	NA	NA	NA	NA	NA	NA	6.82	0.370
geo_mean/ATAL	NA	0.0016	0.19	0.0032	NA	NA	0.0013	NA	0.321	0.53	NA	0.087	NA	0.0590	0.00043	0.30	NA	1	0.0043	0.026	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 207.4-2 Analytical Results from Stormwater Sample, W-SMA-8.7 (Table)

207.4.2 Assessment Unit and Stream Impairments

W-SMA-8.7 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

207.5 Site-Specific Demonstration

207.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and manganese.

The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

207.5.2 Stormwater Data Summary

Aluminum exceeded the TAL but not the BTV.

207.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

207.5.4 Sampling and Analysis Plan

Table 207.5-1 is the proposed SAP for W-SMA-8.7.

Table 207.5-1 Proposed SAP, W-SMA-8.7

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Dissolved manganese	Site history (metals) and soil data
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

208.0 W-SMA-8.71

Associated Sites	16-004(c)
Receiving Water	Water Canyon
Drainage Area	0.28 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 16-004(c): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

208.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. A stormwater sample was collected in September 2013. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600909), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

208.2 Site History

16-004(c) (11/26/2019)

SWMU 16-004(c) is the inactive clarifier or final tank (Structure 16-532) used for sewage treatment at the former sanitary wastewater treatment plant (WWTP) at TA-16. The structure is approximately 20 ft × 20 ft concrete box located approximately 45 ft below and southeast of the trickling filter [SWMU 16-004(b)], with a total area of 400 ft^2. The clarifier received discharges from the trickling filter; water flowed through an outlet in the clarifier and discharged through an 8-in. corrugated metal pipe (CMP) to a metering concrete outfall box, and then to formerly National Pollutant Discharge Elimination System (NPDES)-permitted outfall EPA SSS03S, which discharged to a tributary of Water Canyon. At full capacity, Structure 16-532 could manage 117,600 gal./day. The TA-16 WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. The clarifier has been inactive since 1992.

For investigation activities, refer to "Supplemental Investigation Report for S-Site Aggregate Area, Revision 1" (N3B 2019, 700414).

208.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 208.2-1.

Table 208.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-004(c)	Tank	Inorganic and organic chemicals, radionuclides

208.3 Consent Order Soil Data

Decision-level data for SWMU 16-004(c) consist of results from samples collected in 2010. Analytical results for these samples are presented in Figures 208.3-1 through 208.3-4. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination are not defined and further sampling for extent is warranted.

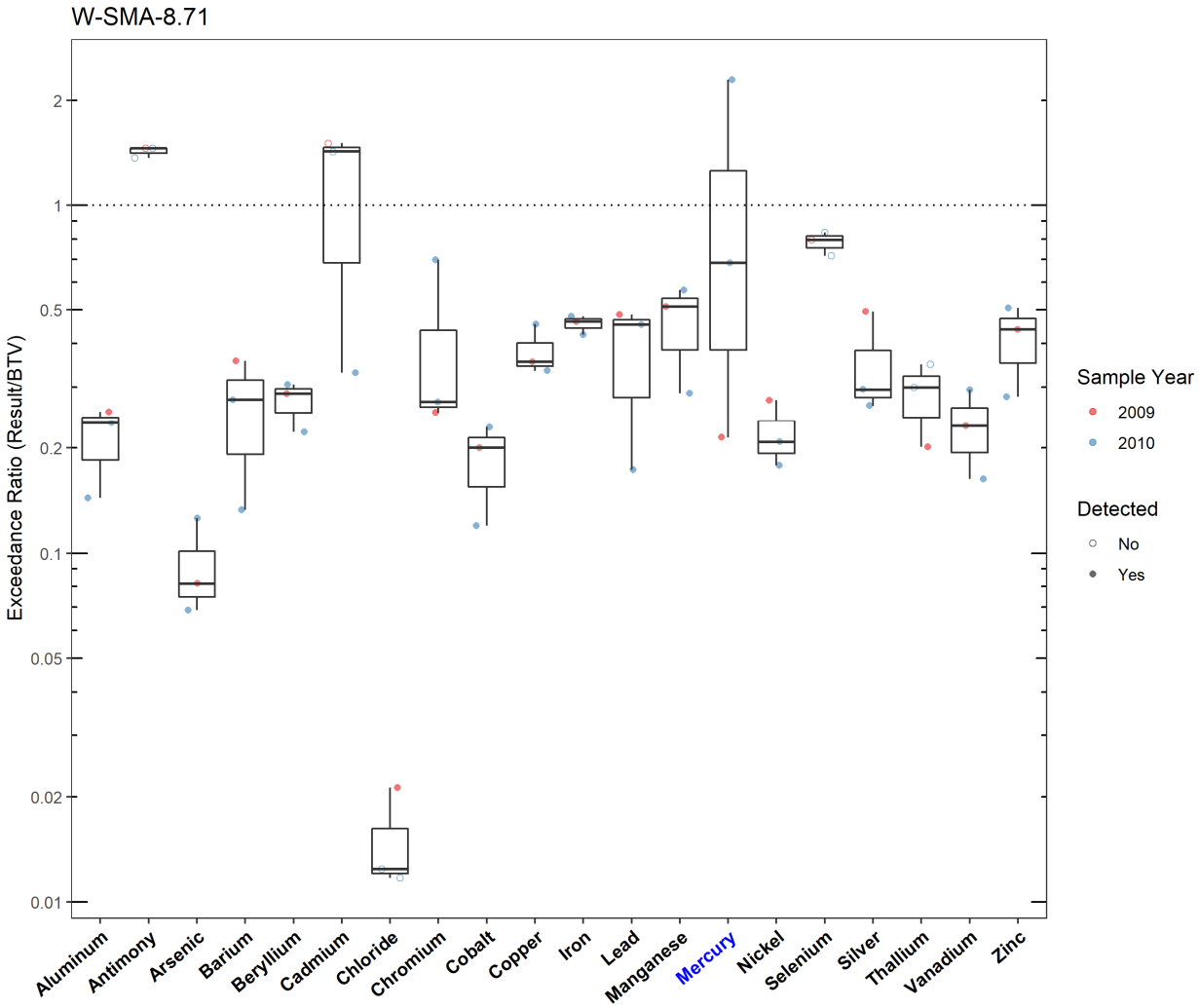


Figure 208.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-8.71

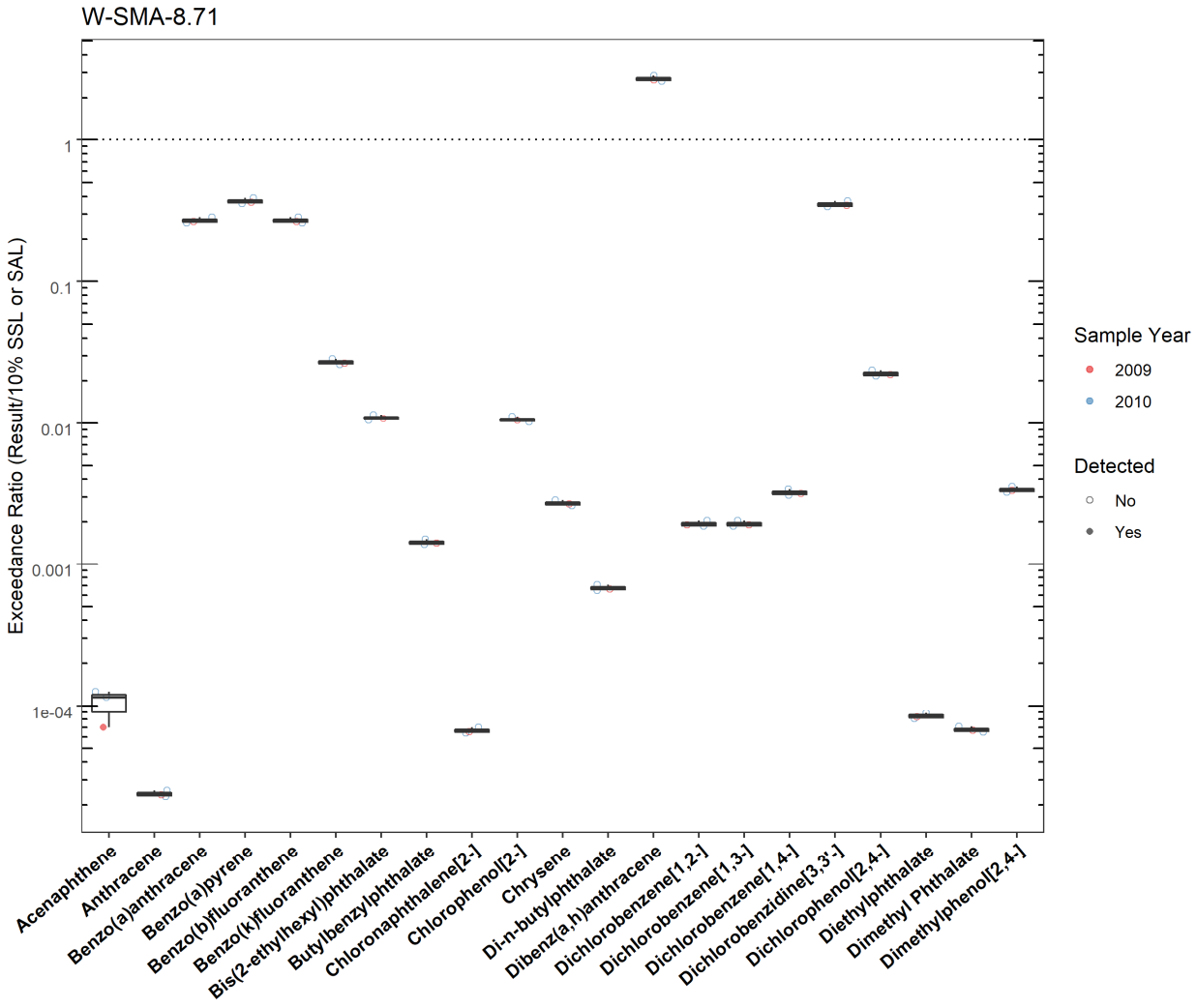


Figure 208.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-8.71 (Plot 1)

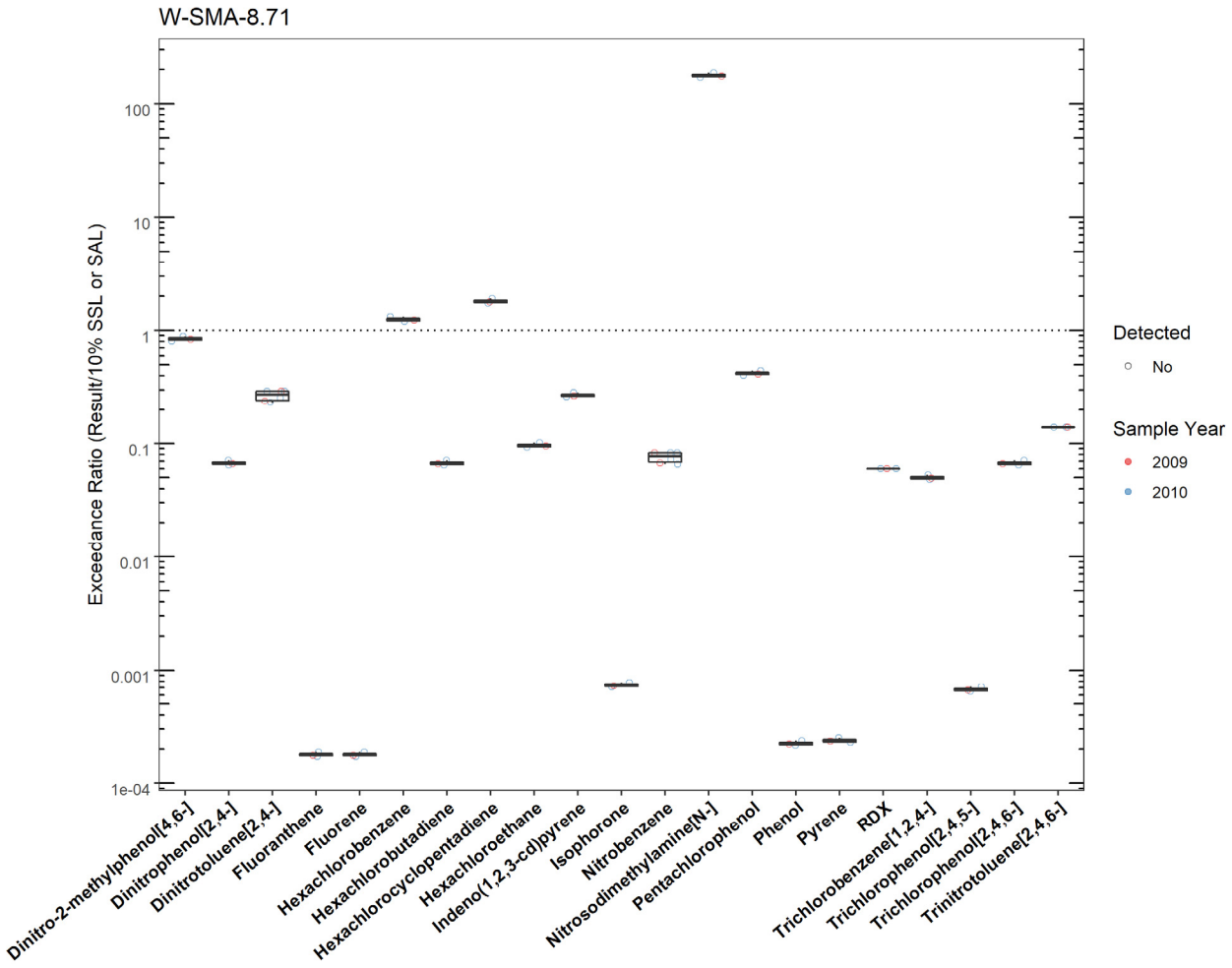


Figure 208.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-8.71 (Plot 2)

W-SMA-8.71

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Mercury	W-SMA-8.71	Hg	Y	BTV	0.100	0.229	2010-03-02

Figure 208.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-8.71

208.4 Stormwater Evaluation

208.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

208.4.2 Assessment Unit and Stream Impairments

W-SMA-8.71 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

208.5 Site-Specific Demonstration

208.5.1 Soil Data Summary

Mercury exceeded the applicable screening value in soil data, and was previously monitored in stormwater data and did exceed TALs. Therefore, it will be added to the SAP.

208.5.2 Stormwater Data Summary

No confirmation-monitoring data for the current monitoring stage have been collected. Copper and mercury exceeded the TAL and BTV in the previous monitoring stage. Gross alpha and zinc exceeded the TAL but not the BTV in the previous monitoring stage, therefore they will not be added to the monitoring suite for analysis.

208.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

208.5.4 Sampling and Analysis Plan

Table 208.5-1 is the proposed SAP for W-SMA-8.71.

Table 208.5-1 Proposed SAP, W-SMA-8.71

Monitoring Constituent	Background for Monitoring
Dissolved copper	Site history (inorganics) and stormwater data
SVOCs	Site history (organics)
Total PCBs	Site history (organics)
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
Total mercury	Site history (inorganics), stormwater data, and soil data
DOC	Permit requirement
SSC	Permit requirement

209.0 W-SMA-9.05

Associated Sites	16-030(g)
Receiving Water	Water Canyon
Drainage Area	0.54 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	AOC 16-030(g): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended[a]
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

[a] Baseline monitoring was reinitiated in 2020 (where one baseline sample had previously been collected with no TAL exceedances) in order to collect a second sample.

209.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. This sample had no TAL exceedances and stormwater monitoring ceased until 2020. Monitoring resumed in 2020 to continue baseline confirmation monitoring to collect a second sample with all results below the applicable MTAL or ATAL so the Permittees could make a Site deletion request per Permit part I.I.2. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing at this SMA.

209.2 Site History

16-030(g) (3/21/2019)

AOC 16-030(g) is a former NPDES-permitted outfall (05A052) and associated drainlines located adjacent to the southeast corner of building 16-380 in the eastern portion of TA-16. The outfall received effluent from a HE sump [SWMU 16-003(m)], two roof drains, a steam-heating system, and a drop inlet from a parking lot and discharged to Water Canyon. Building 16-380 was originally used to inspect raw HE powder brought into TA-16 and was later used to store ammunition for LANL security forces. From 1952 to the early 1990s, the sump received washdown water from building cleaning activities containing HE. Discharges from the sump ceased in 1993 when the outlet from the sump was plugged; the outfall was subsequently removed from the LANL NPDES permit effective June 24, 1994. The sump and the steam-heating system discharge lines have been plugged, and the outfall currently receives only roof drain and parking lot runoff. In 2010, Building 16-380 was being used to store ammunition for LANL security forces.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

209.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 209.2-1.

Table 209.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-030(g)	Outfall from building 16-380	HE

209.3 Consent Order Soil Data

Decision-level data for AOC 16-030(g) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 209.3-1 through 209.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

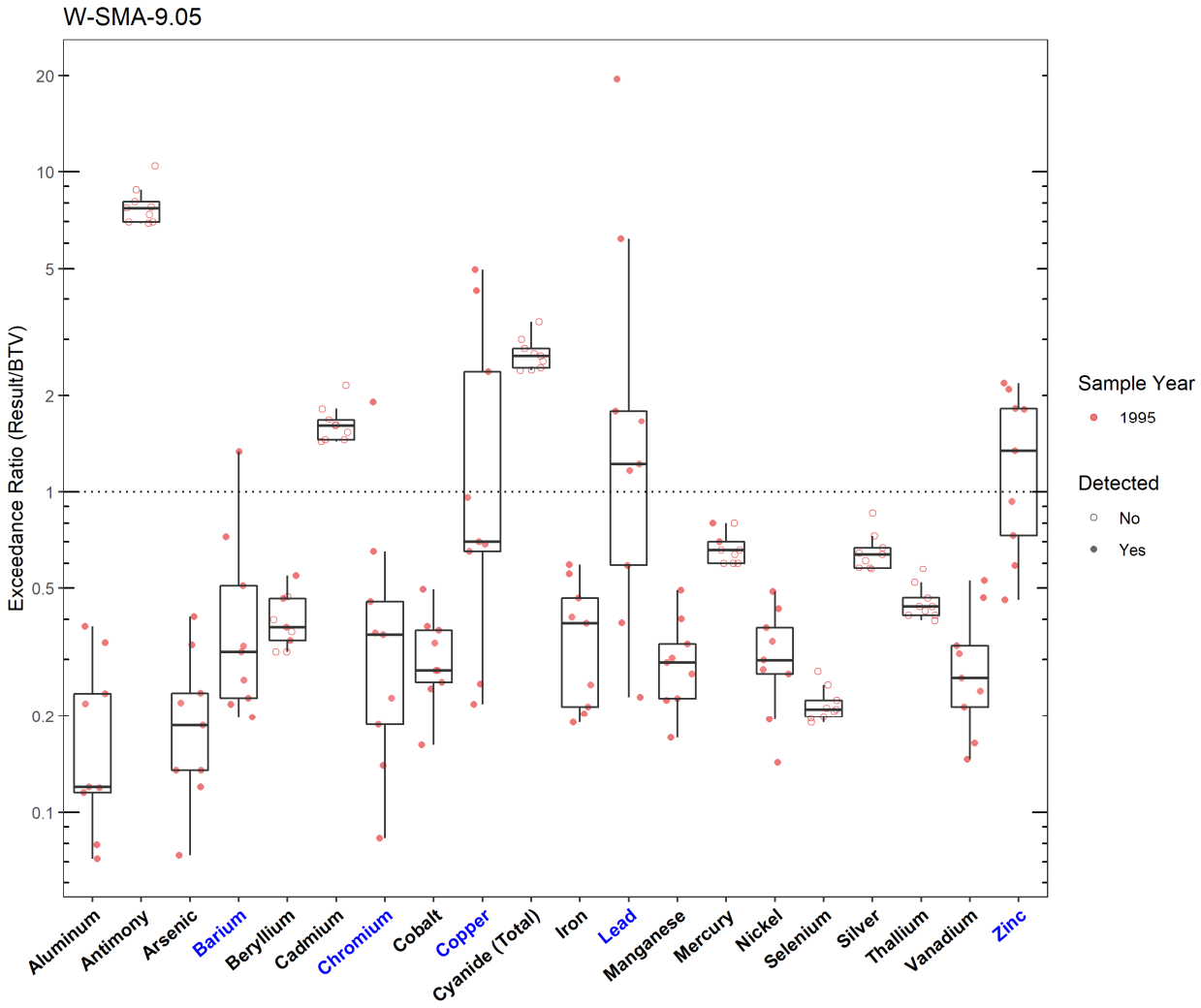


Figure 209.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.05

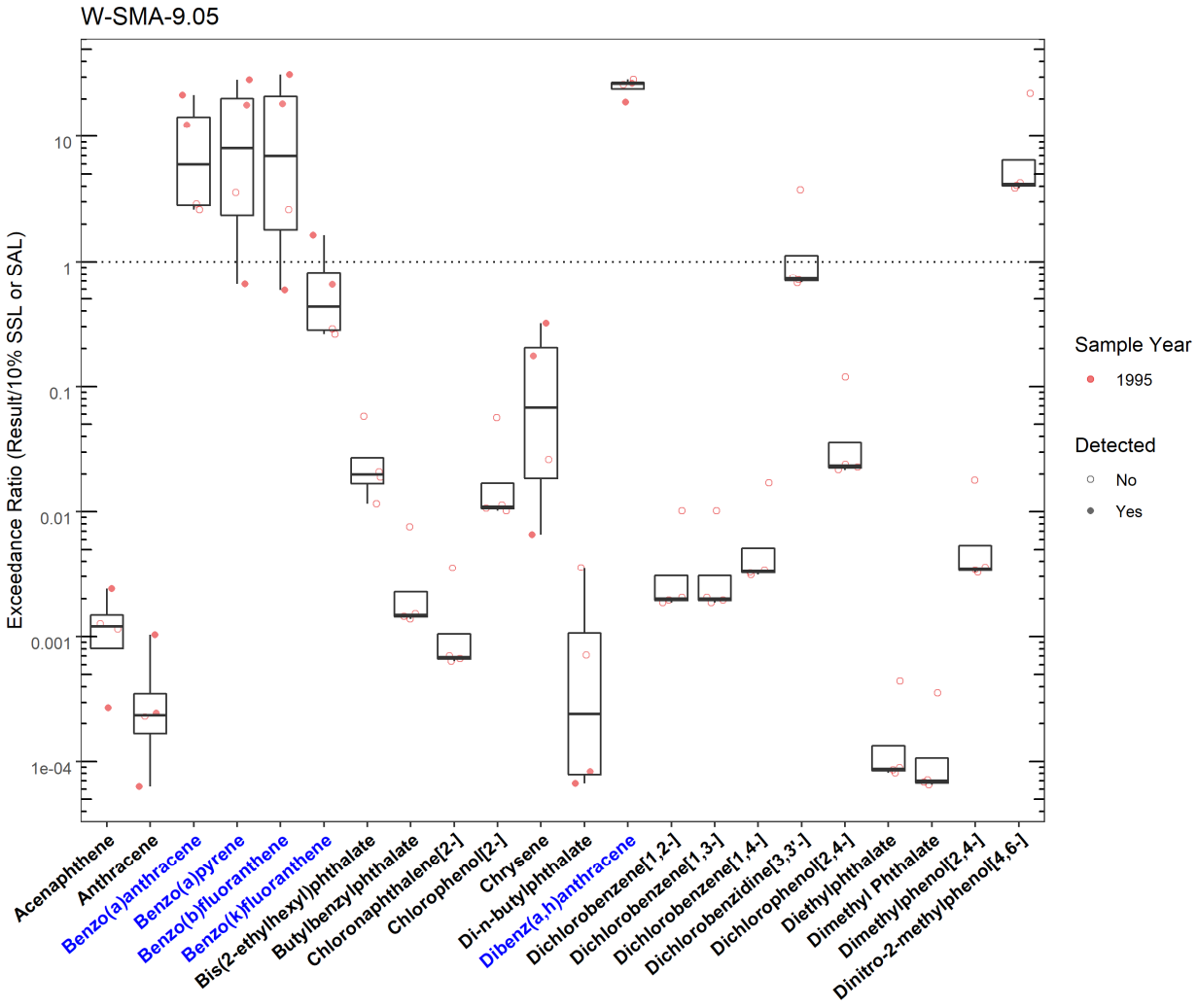


Figure 209.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.05 (Plot 1)

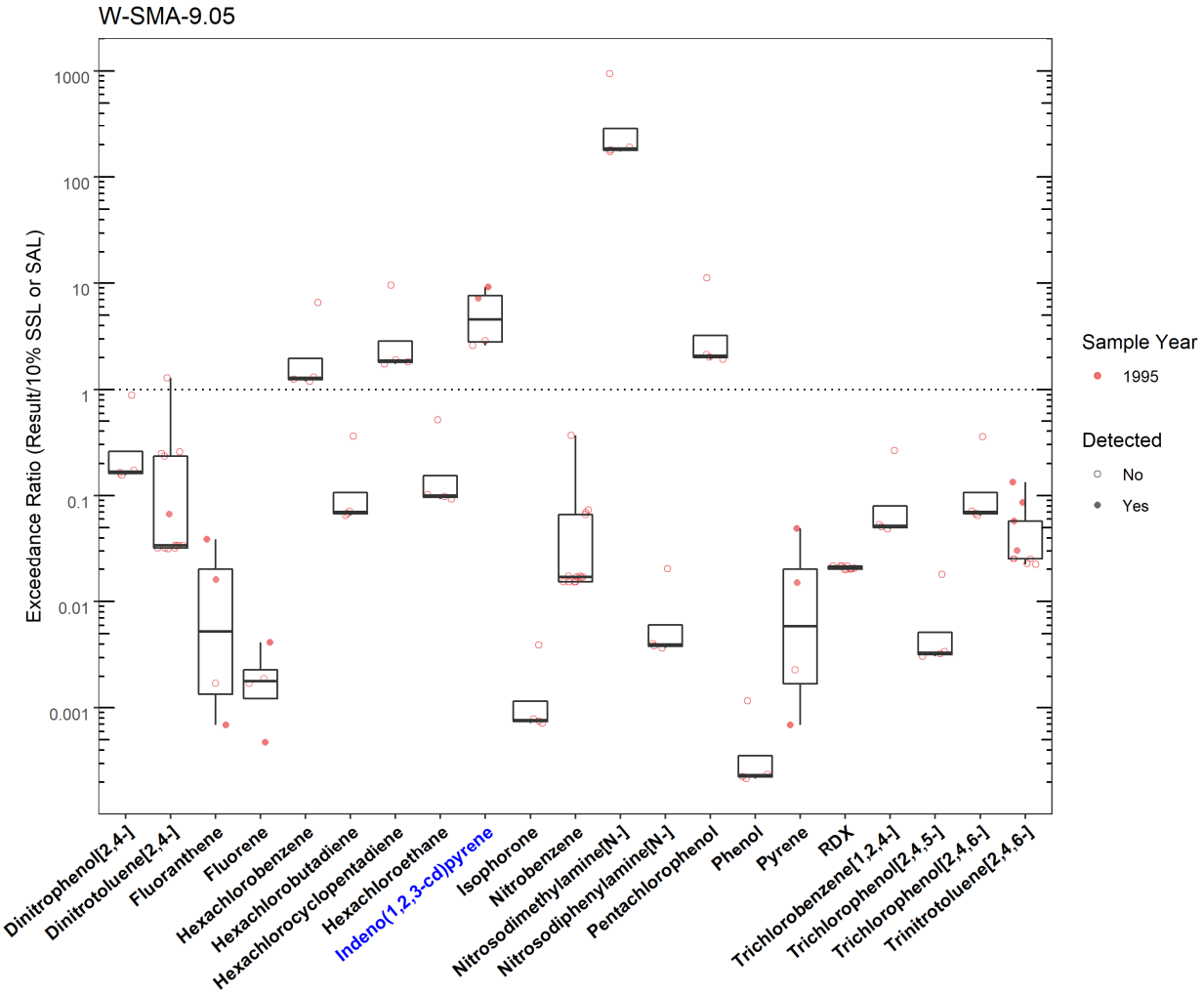


Figure 209.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.05 (Plot 2)

W-SMA-9.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	W-SMA-9.05	Ba	Y	BTV	295	391	1995-08-15
Benzo(a)anthracene	W-SMA-9.05	56-55-3	Y	SSL_0.1	0.153	3.30	1995-08-15
Benzo(a)pyrene	W-SMA-9.05	50-32-8	Y	SSL_0.1	0.112	3.20	1995-08-15
Benzo(b)fluoranthene	W-SMA-9.05	205-99-2	Y	SSL_0.1	0.153	4.80	1995-08-15
Benzo(k)fluoranthene	W-SMA-9.05	207-08-9	Y	SSL_0.1	1.53	2.50	1995-08-15
Chromium	W-SMA-9.05	Cr	Y	BTV	19.3	36.9	1995-08-15
Copper	W-SMA-9.05	Cu	Y	BTV	14.7	73.0	1995-05-10
Dibenz(a,h)anthracene	W-SMA-9.05	53-70-3	Y	SSL_0.1	0.0153	0.410	1995-08-15
Indeno(1,2,3-cd)pyrene	W-SMA-9.05	193-39-5	Y	SSL_0.1	0.153	1.40	1995-08-15
Lead	W-SMA-9.05	Pb	Y	BTV	22.3	434	1995-05-10
Zinc	W-SMA-9.05	Zn	Y	BTV	48.8	107	1995-08-15

Figure 209.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.05

209.4 Stormwater Evaluation

209.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 209.4-1 and 209.4-2.

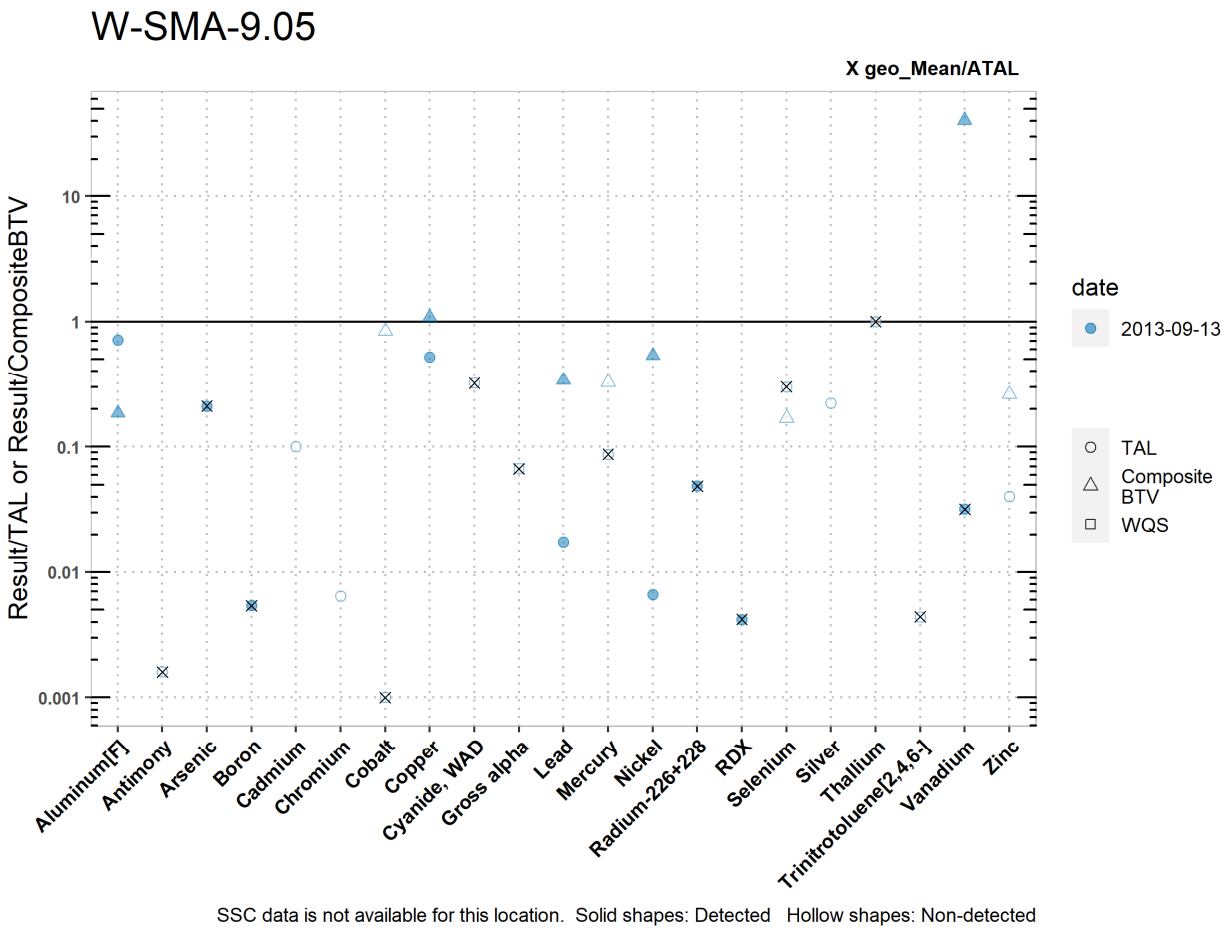


Figure 209.4-1 Analytical Results from Stormwater Sample, W-SMA-9.05 (Plot)

W-SMA-9.05

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	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	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2910	NA	NA	NA	NA	NA	1.19	3.20	NA	57.1	1.48	0.205	3.10	4.29	NA	8.85	NA	NA	NA	0.0778	12.6
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
2013-09-13 result	537	*1.00*	1.90	26.8	*0.110*	*2.00*	*1.00*	3.49	*1.67*	*1.00*	0.501	*0.0670*	1.66	1.46	0.847	*1.50*	*0.200*	*0.450*	*0.0879*	3.17	*3.30*
2013-09-13 dT	0.716	NA	0.21	0.0054	NA	NA	NA	0.522	NA	NA	0.0175	NA	0.00664	0.0487	0.0042	NA	NA	NA	NA	0.032	NA
2013-09-13 dB	0.185	NA	NA	NA	NA	NA	NA	1.09	NA	NA	0.339	NA	0.535	NA	NA	NA	NA	NA	NA	40.7	NA
geo_mean/ATAL	NA	0.0016	0.21	0.0054	NA	NA	0.0010	NA	0.321	0.067	NA	0.087	NA	0.0487	0.0042	0.30	NA	1	0.0044	0.032	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 209.4-2 Analytical Results from Stormwater Sample, W-SMA-9.05 (Table)

209.4.2 Assessment Unit and Stream Impairments

W-SMA-9.05 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The impairments are not likely to be Site related, based on Site history.

209.5 Site-Specific Demonstration

209.5.1 Soil Data Summary

No Site-related POCs exceeded the soil screening levels.

209.5.2 Stormwater Data Summary

No TAL exceedances.

209.5.3 2022 Permit Status

The SMA is in active monitoring; a second confirmation-monitoring sample has not been collected at the current location.

209.5.4 Sampling and Analysis Plan

Table 209.5-1 is the proposed SAP for W-SMA-9.05.

Table 209.5-1 Proposed SAP, W-SMA-9.05

Monitoring Constituent	Background for Monitoring
HE (1)	Site history
DOC (1)	Permit requirement
SSC (1)	Permit requirement

210.0 W-SMA-9.5

Associated Sites	11-012(c)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.11 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 11-012(c): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, the sampler was moved to catch runoff from the up-gradient side of the berm.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

210.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation baseline monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. A baseline stormwater sample was collected in June 2017. Analytical results from this sample initiated corrective action.

Following the September 2020 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2020, 701029), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

210.2 Site History

11-012(c) (5/31/2022)

AOC 11-012(c) is an area of potential soil contamination associated with the footprint of former HE storage magazine 11-9 that was located approximately 500 ft west of building 11-4 at TA-11. Constructed of wood, the 16-ft square by 9-ft high HE magazine was built in 1945 and destroyed by intentional burning in 1960. In 1956, a survey of four HE storage magazines, including magazine 11-9, was found to be free of radioactive contamination. A second survey in 1959, again found all four HE magazines free of radioactivity, but did show HE contamination. After burning in 1960, any remaining post-burn combustible materials were segregated and removed to the TA-16 burning ground and burned again. Post-burn non-combustibles were taken to former MDA P [SWMU 16-018] for disposal.

No investigations have been conducted at this Site. For more information on historical activities, refer to "RFI Work Plan for Operable Unit 1082" (LANL 1993, 020948).

210.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 210.2-1.

Table 210.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-012(c)	Potential soil contamination	HE

210.3 Consent Order Soil Data

Samples have not been collected from AOC 11-012(c).

210.4 Stormwater Evaluation

210.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

210.4.2 Assessment Unit and Stream Impairments

W-SMA-9.5 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

210.5 Site-Specific Demonstration

210.5.1 Soil Data Summary

Samples have not been collected from AOC 11-012(c).

210.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Aluminum, gross alpha and mercury exceeded TALs in the previous monitoring stage.

210.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

211.0 W-SMA-9.7

Associated Sites	11-011(a), 11-011(b)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.15 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	SWMU 11-011(a): In Progress SWMU 11-011(b): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

211.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2013.

211.2 Site History

11-011(a) (9/3/2019)

SWMU 11-011(a) is an inactive drainline and former NPDES-permitted outfall (EPA 03A130) located north of the K-Site complex and approximately 6 ft northeast of the Electrodynamics Vibration Test Facility (building 11-30) at TA-11. An insulated 2-in. pipe received cooling water blowdown from a cooling tower and deionized water from floor drains in from building 11-30A (an adjunct of building 11-30). The drainline discharged northward to an outfall in a drainage channel that flowed to a tributary of Water Canyon. The outfall became inactive following removal of the water-cooled equipment in building 11-30 and was removed from the NPDES permit during the 2013 permit renewal.

11-011(b) (9/6/2019)

SWMU 11-011(b) is an inactive 3-in. diameter outlet drainline and outfall located north of the Electrodynamics Vibration Test Facility (building 11-30) at TA-11. The 3-in. diameter outlet drainline extends about 10 ft beyond the side of a hill to the outfall. The outfall received discharge from floor drains in building 11-30 from the early 1960s until the early 1990s. A sink drain that formerly discharged to the outfall was removed prior to 1990. A 1992 wastewater characterization report prepared by Santa Fe Engineering stated discharges from two floor drains in building 11-30 consisted of deionized water and residual HE potentially released from containers processed on shakers in the building. The report recommended the outlet drainline be plugged; the drainline was subsequently plugged.

For investigation activities for these Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

211.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 211.2-1.

Table 211.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-011(a)	Outfall	Naturally occurring metals concentrated by evaporation; copper, cyanide
11-011(b)	Outfall	HE

211.3 Consent Order Soil Data

Decision-level data for SWMU 11-011(a) and SWMU 11-011(b) consist of results from samples collected in 2010. Analytical results for these samples are presented in Figures 211.3-1 through 211.3-4.

The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination are not defined at SWMU 11-011(a) and further sampling for extent is warranted. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined at SWMU 11-011(b) and further sampling for extent is not warranted.

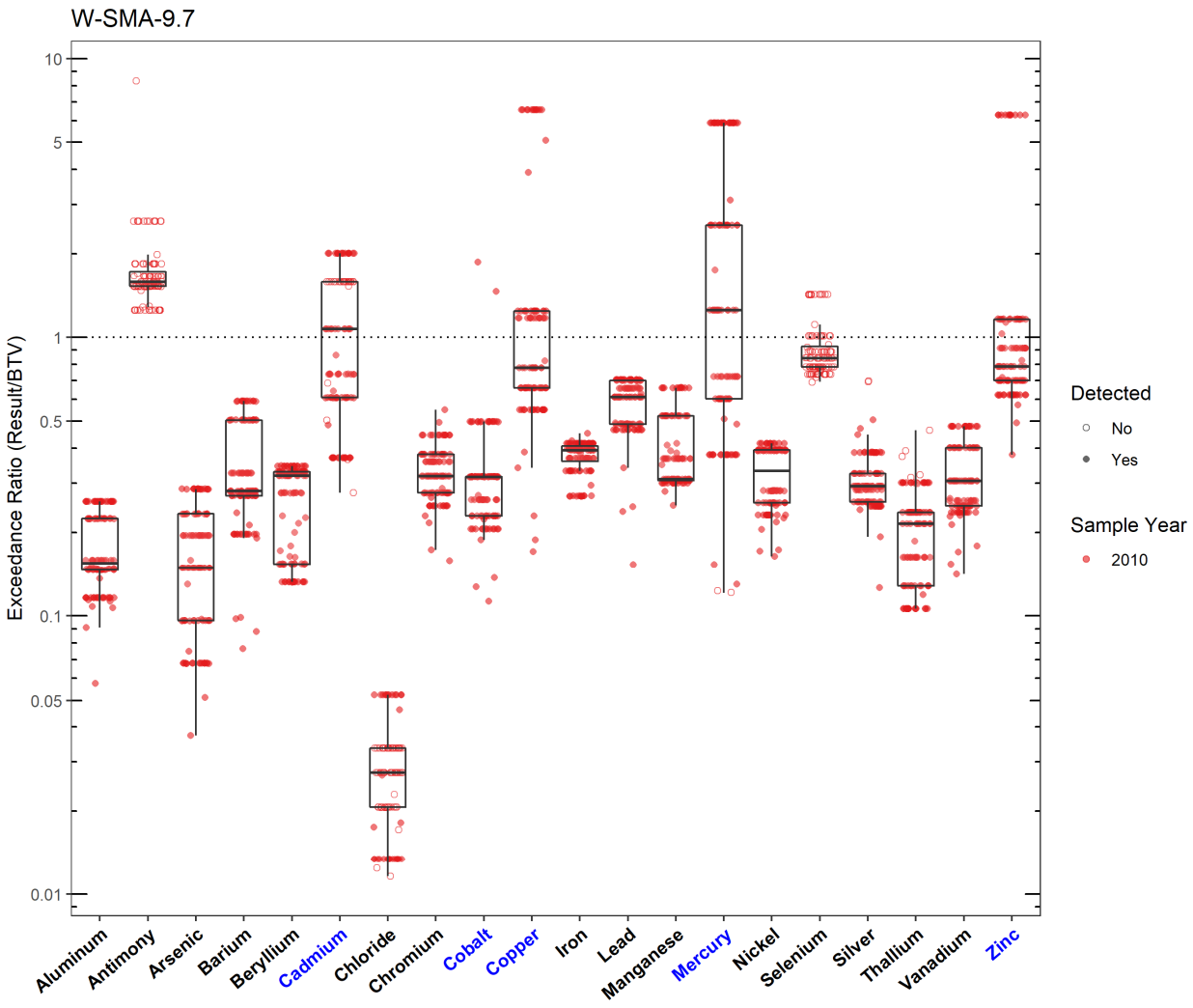


Figure 211.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.7

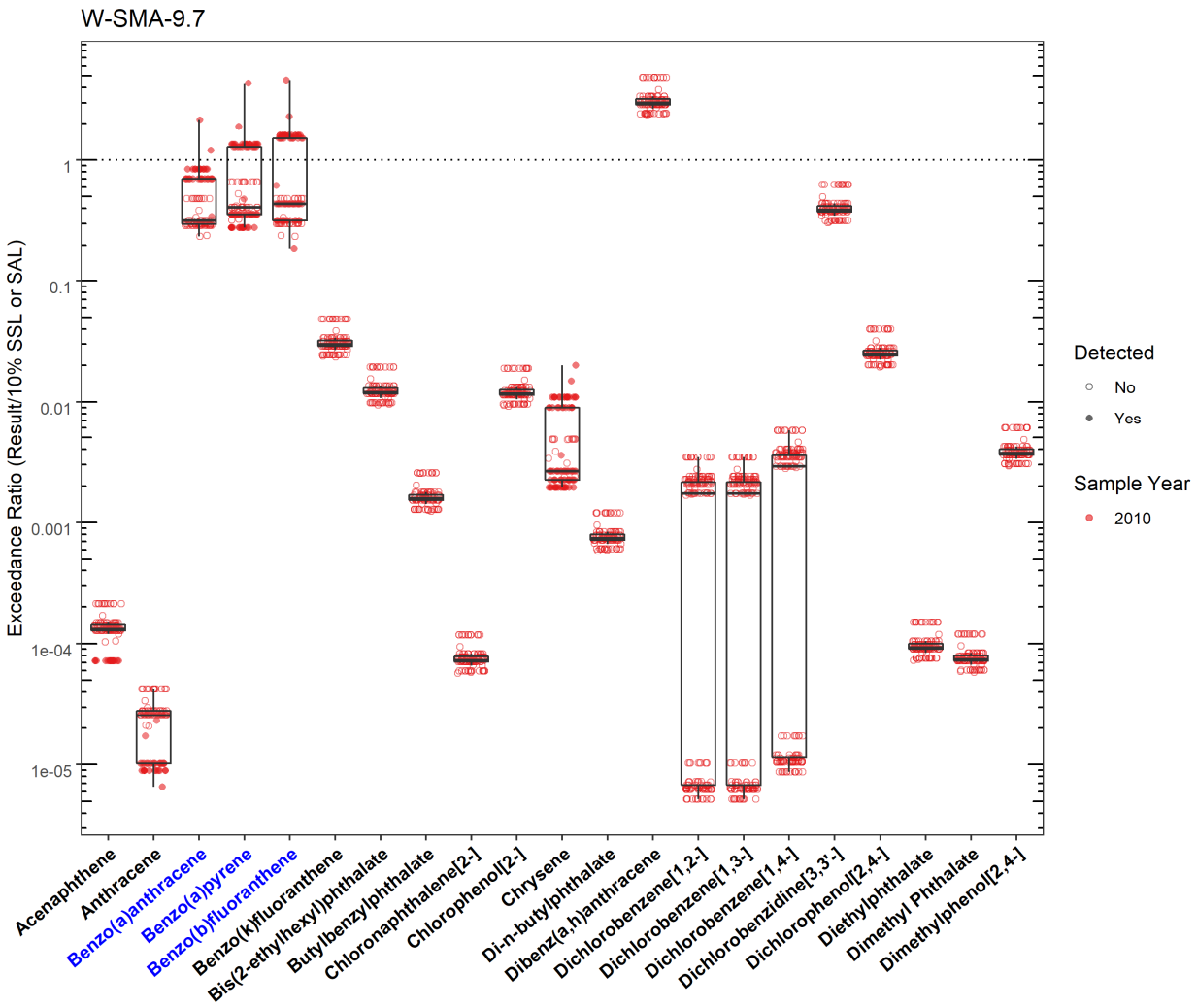


Figure 211.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.7 (Plot 1)

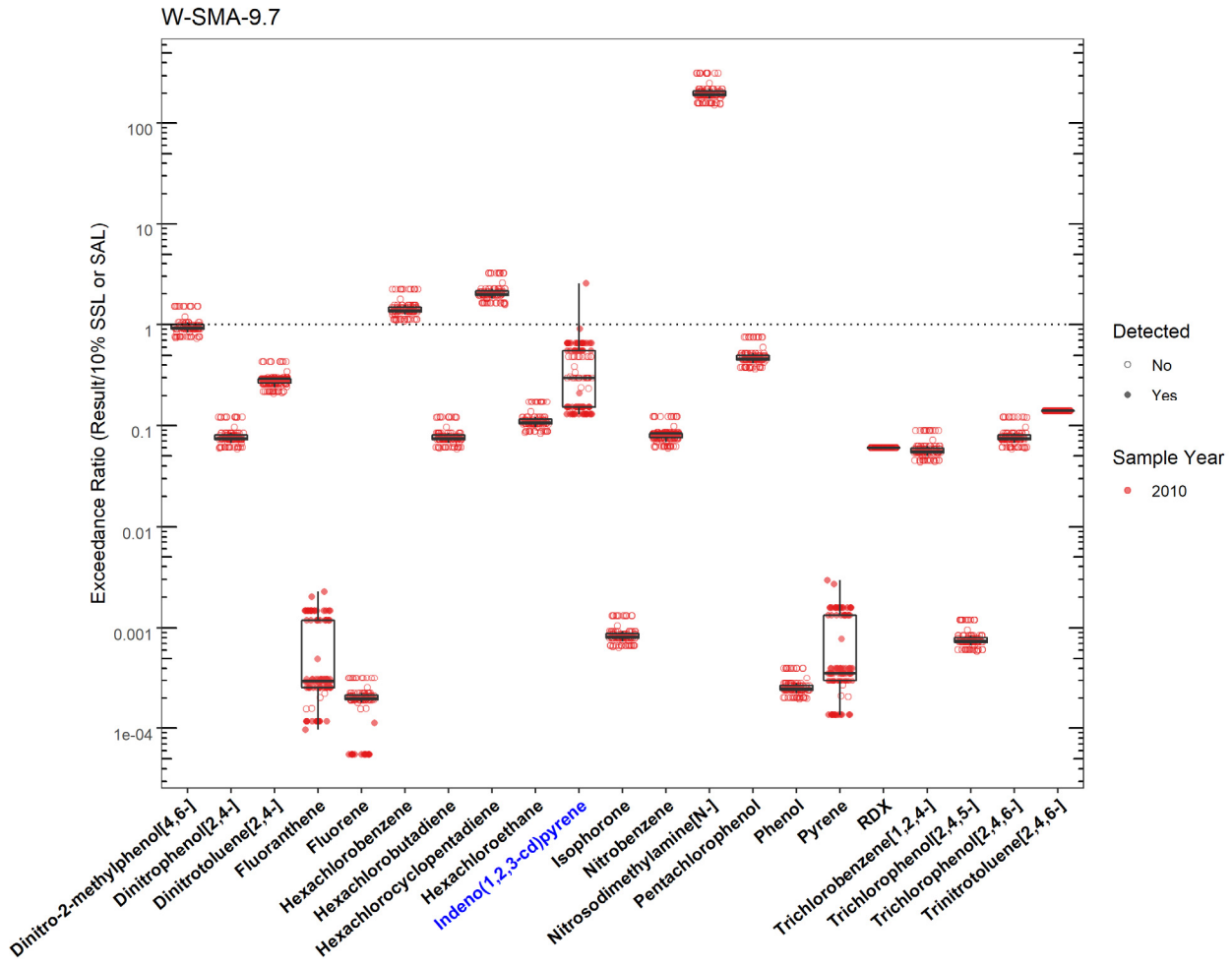


Figure 211.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.7 (Plot 2)

W-SMA-9.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-9.7	56-55-3	Y	SSL_0.1	0.153	0.330	2010-02-25
Benzo(a)pyrene	W-SMA-9.7	50-32-8	Y	SSL_0.1	0.112	0.488	2010-02-25
Benzo(b)fluoranthene	W-SMA-9.7	205-99-2	Y	SSL_0.1	0.153	0.707	2010-02-25
Cadmium	W-SMA-9.7	Cd	Y	BTV	0.400	0.803	2010-02-27
Cobalt	W-SMA-9.7	Co	Y	BTV	8.64	16.2	2010-02-25
Copper	W-SMA-9.7	Cu	Y	BTV	14.7	96.4	2010-02-25
Indeno(1,2,3-cd)pyrene	W-SMA-9.7	193-39-5	Y	SSL_0.1	0.153	0.388	2010-02-25
Mercury	W-SMA-9.7	Hg	Y	BTV	0.100	0.590	2010-02-25
Zinc	W-SMA-9.7	Zn	Y	BTV	48.8	307	2010-02-25

Figure 211.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.7

211.4 Stormwater Evaluation

211.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 211.4-1 and 211.4-2.

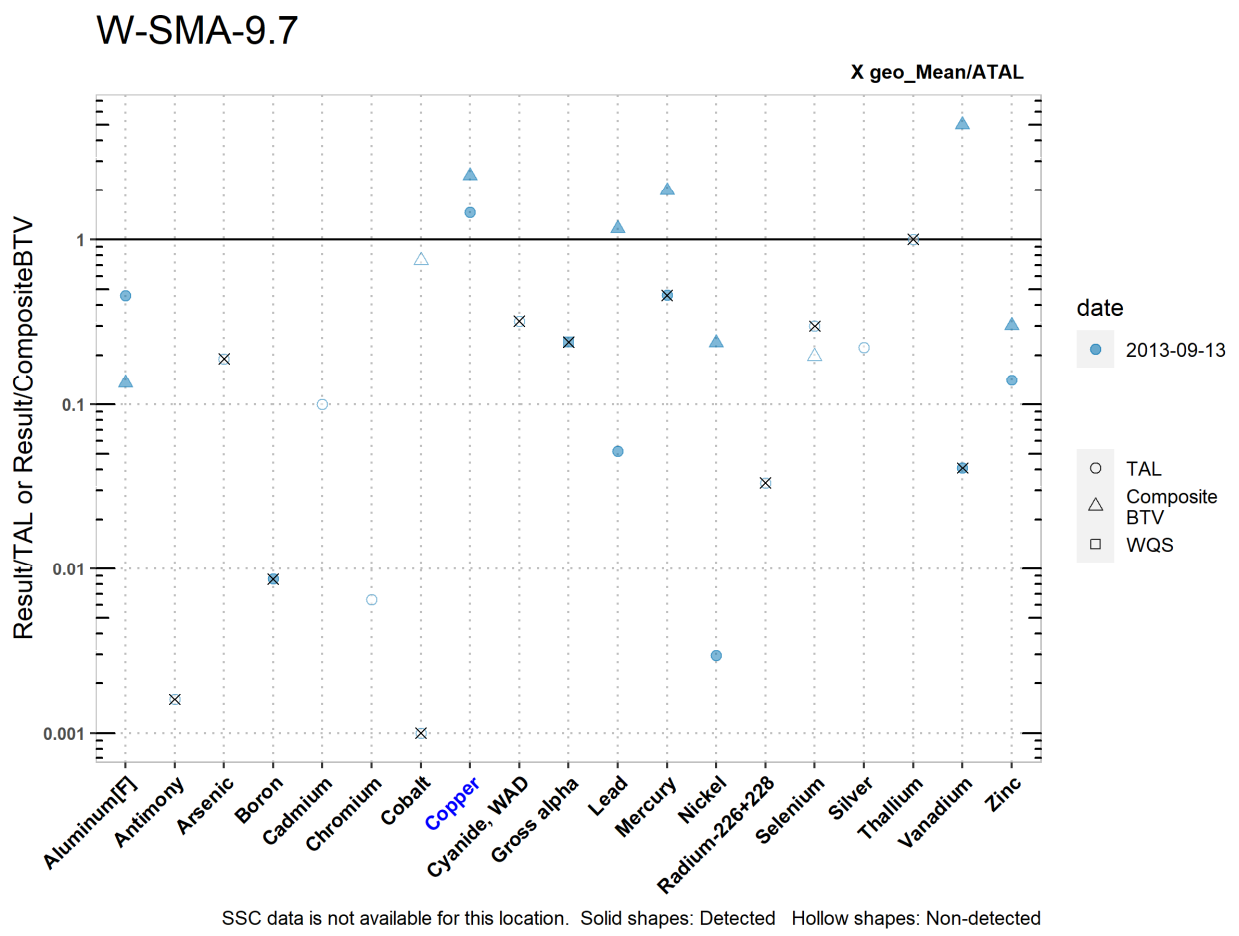


Figure 211.4-1 Analytical Results from Stormwater Sample, W-SMA-9.7 (Plot)

W-SMA-9.7

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	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	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	20	0.9	NA	NA	81.6
Composite_BTV	2540	NA	NA	NA	NA	NA	1.34	3.98	NA	56.1	1.28	0.178	3.10	5.11	7.67	NA	NA	0.823	37.7
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
2013-09-13 result	344	*1.00*	*1.70*	43.2	*0.110*	*2.00*	*1.00*	9.74	*1.67*	3.55	1.48	0.352	0.738	*1.00*	*1.50*	*0.200*	*0.450*	4.10	11.4
2013-09-13 dT	0.459	NA	NA	0.0086	NA	NA	NA	1.46	NA	0.24	0.0517	0.46	0.00295	NA	NA	NA	NA	0.041	0.140
2013-09-13 dB	0.135	NA	NA	NA	NA	NA	NA	2.45	NA	NA	1.16	1.98	0.238	NA	NA	NA	NA	4.98	0.302
geo_mean/ATAL	NA	0.0016	0.19	0.0086	NA	NA	0.0010	NA	0.321	0.24	NA	0.46	NA	0.0333	0.30	NA	1	0.041	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 211.4-2 Analytical Results from Stormwater Sample, W-SMA-9.7 (Table)

211.4.2 Assessment Unit and Stream Impairments

W-SMA-9.7 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

211.5 Site-Specific Demonstration

211.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil and in stormwater data, therefore it will be added to the SAP. The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP. HE did not exceed soil-screening levels and will not be added to the SAP.

211.5.2 Stormwater Data Summary

Copper exceeded TAL and BTV.

211.5.3 2022 Permit Status

The SMA is in active monitoring; a second confirmation-monitoring sample has not been collected at the current location.

211.5.4 Sampling and Analysis Plan

Table 211.5-1 is the proposed SAP for W-SMA-9.7.

Table 211.5-1 Proposed SAP, W-SMA-9.7

Monitoring Constituent	Background for Monitoring
Dissolved copper (1)	Site history, soil data, and stormwater data
DOC (1)	Permit requirement
SSC (1)	Permit requirement

212.0 W-SMA-9.8

Associated Sites	11-005(c)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.05 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2016 field visit, sampler adjustment is needed. The sampler was moved approximately 50 feet down gradient.
2022 Permit Status	Active Monitoring

212.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation baseline monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

212.2 Site History

11-005(c) (9/3/2019)

SWMU 11-005(c) is an inactive outlet drainline and outfall and located approximately 50 ft north of building 11-2 at TA-11. The drainline was installed in 1944 and received discharges from a sink, hot water heater, and floor drain in building 11-2. The outfall discharged to a slightly sloped area consisting of fill from an adjacent roadbed. The outlet drainline from building 11-2 was capped before the drop tower complex was constructed in 1956. Building 11-2 was used as a control room for the drop tower and is currently vacant.

For investigation activities, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

212.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 212.2-1.

Table 212.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-005(c)	Outfall	Inorganic chemicals, plutonium, uranium

212.3 Consent Order Soil Data

Decision-level data for SWMU 11-005(c) consist of results from samples collected in 2010. Analytical results for these samples are presented in Figures 212.3-1 through 212.3-4. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

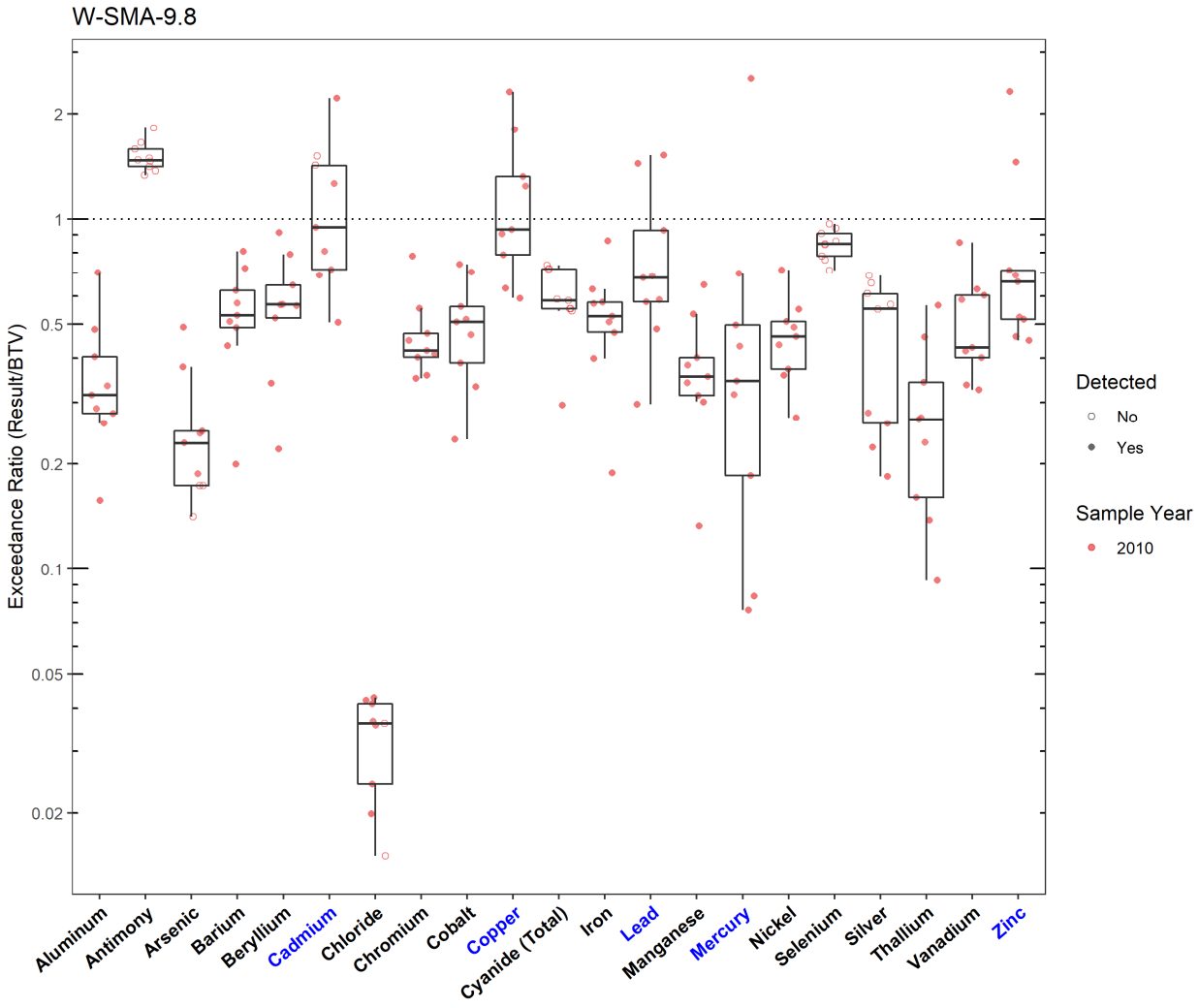


Figure 212.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.8

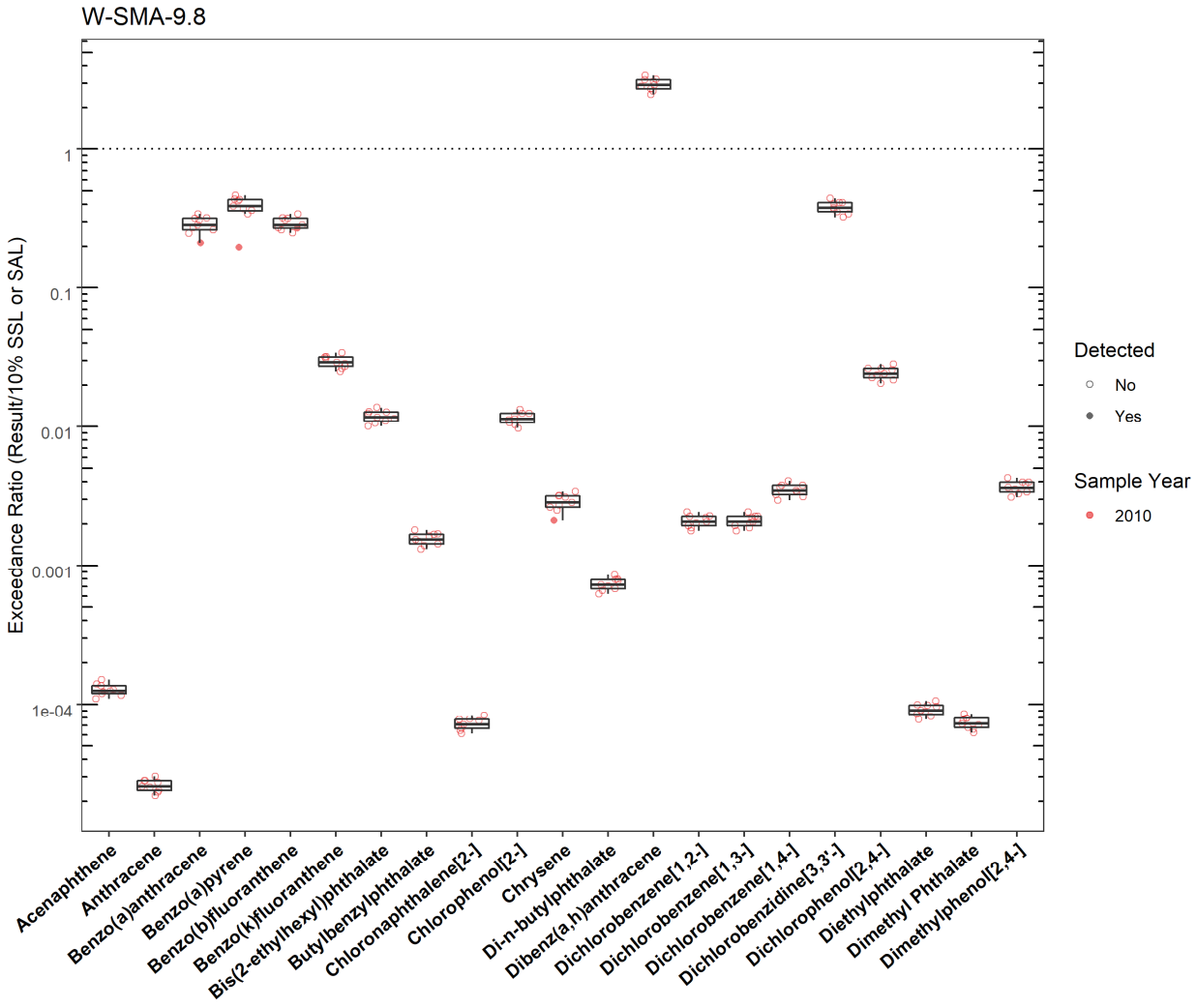


Figure 212.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.8 (Plot 1)

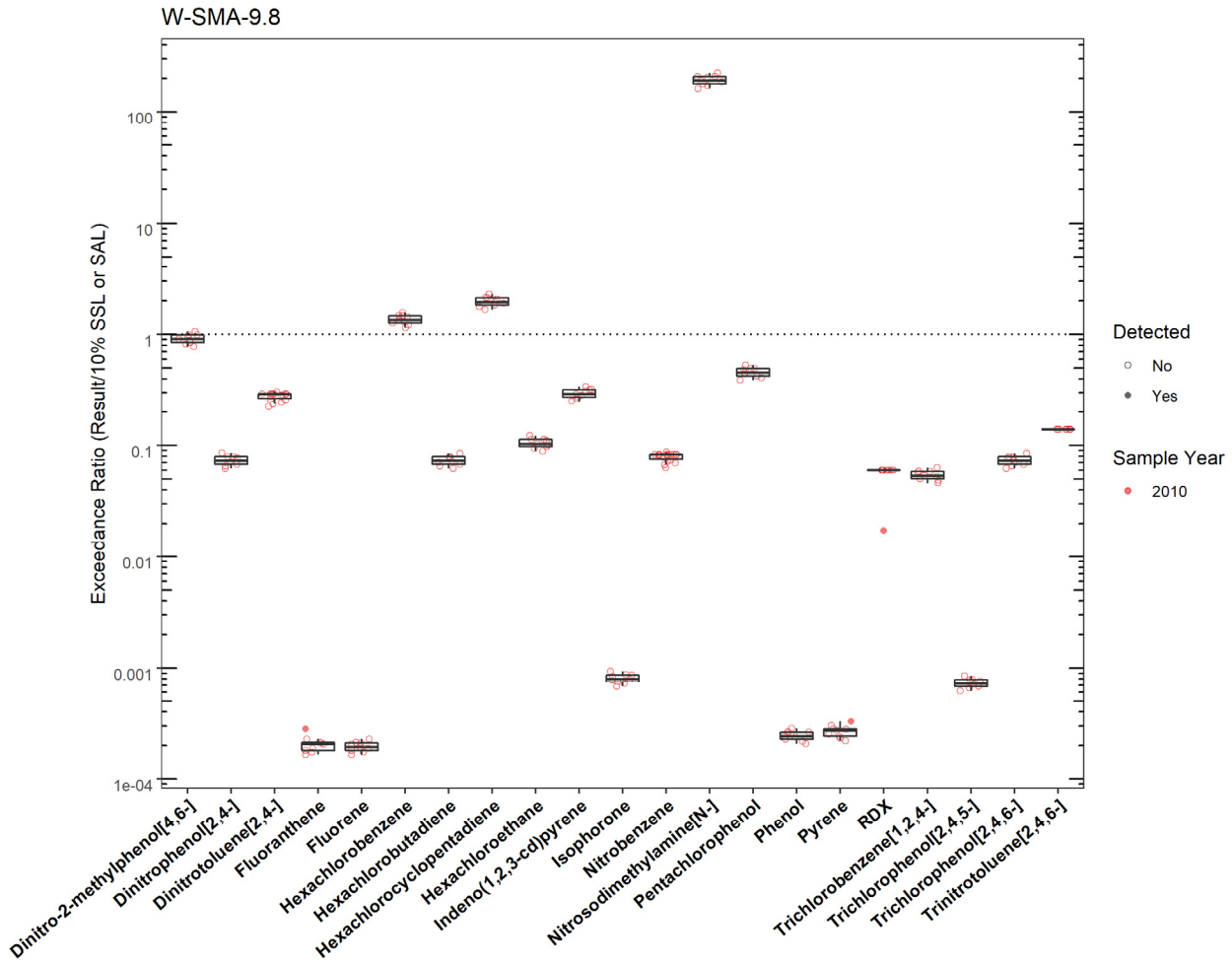


Figure 212.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.8 (Plot 2)

W-SMA-9.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	W-SMA-9.8	Cd	Y	BTV	0.400	0.887	2010-02-18
Copper	W-SMA-9.8	Cu	Y	BTV	14.7	33.9	2010-02-18
Lead	W-SMA-9.8	Pb	Y	BTV	22.3	33.8	2010-02-18
Mercury	W-SMA-9.8	Hg	Y	BTV	0.100	0.253	2010-02-18
Zinc	W-SMA-9.8	Zn	Y	BTV	48.8	113	2010-02-18

Figure 212.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.8

212.4 Stormwater Evaluation

212.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

212.4.2 Assessment Unit and Stream Impairments

W-SMA-9.8 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

212.5 Site-Specific Demonstration

212.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: cadmium, copper, lead, mercury, and zinc.

212.5.2 Stormwater Data Summary

No confirmation-monitoring data.

212.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

212.5.4 Sampling and Analysis Plan

Table 212.5-1 is the proposed SAP for W-SMA-9.8.

Table 212.5-1 Proposed SAP, W-SMA-9.8

Monitoring Constituent	Background for Monitoring
Dissolved cadmium, copper, lead, and zinc	Site history and soil data
Total mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

213.0 W-SMA-9.9

Associated Sites	11-006(b)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.29 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 11-006(b): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.c criterion

213.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated and a stormwater sample was collected in September 2013. Confirmation monitoring is ongoing to collect a second sample.

213.2 Site History

11-006(b) (2/5/2020)

SWMU 11-006(b) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A069) located on the north side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(b) catch basin consists of a concrete basin (structure 11-50) measuring 6 ft × 4 ft × 2 ft deep, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA 05A069). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the former drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(b) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 burning ground. The outfall was removed from the LANL NPDES permit in May 1998 after drop tower activities ceased. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF.

The drop tower underwent D&D and was removed in 2004. Currently, the catch basin is capped and sealed; however, the outfall still receives storm-water runoff. Any runoff collected on the concrete pad and asphalt apron is now diverted to the other two catch basins associated with the former drop-tower complex [SWMUs 11-006(c) and 11-006(d)].

For investigation activities, refer to "Supplemental Investigation Report for S-Site Aggregate Area, Revision 1" (N3B 2019, 700414).

213.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 213.2-1.

Table 213.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-006(b)	Catch basin	Beryllium, HE, uranium

213.3 Consent Order Soil Data

Decision-level data for SWMU 11-006(b) consist of results from samples collected in 1998 and 2010. Analytical results for these samples are presented in Figures 213.3-1 through 213.3-4. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

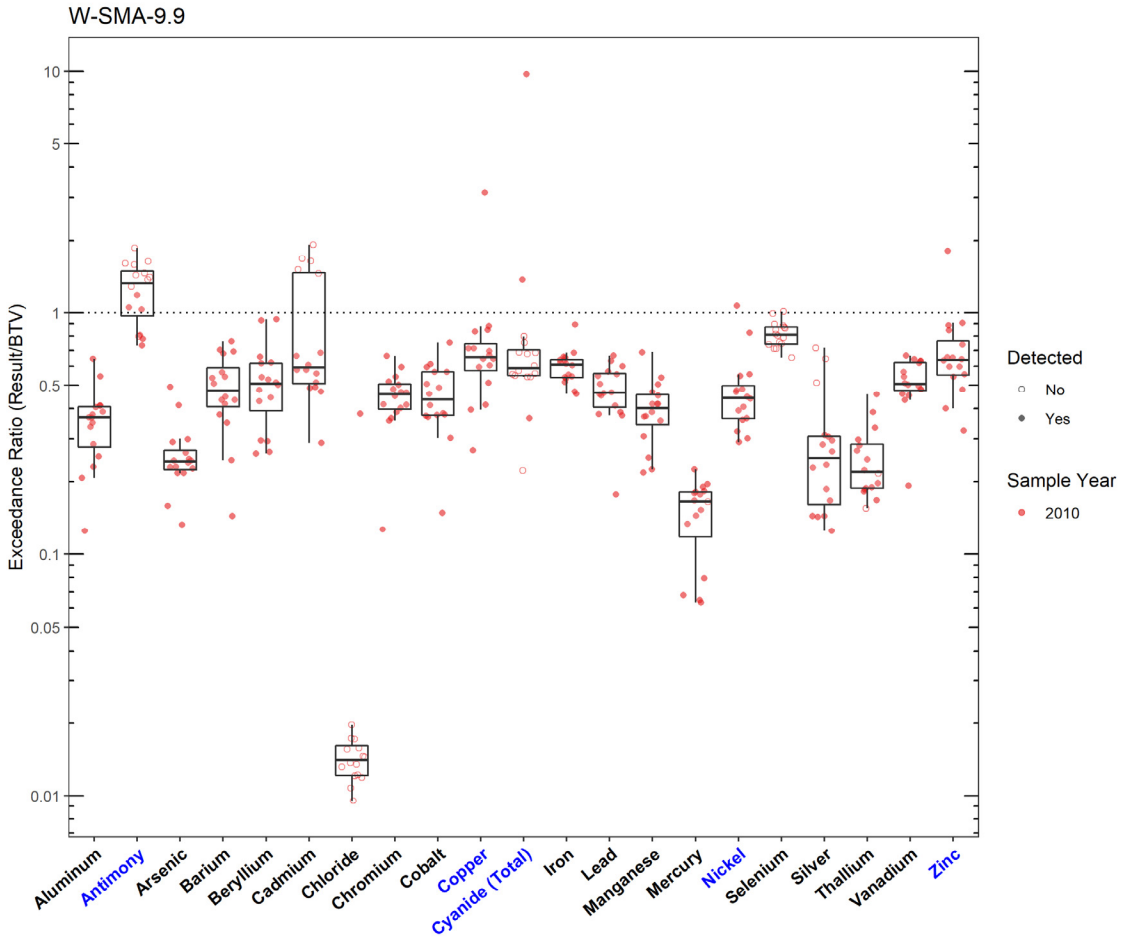


Figure 213.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.9

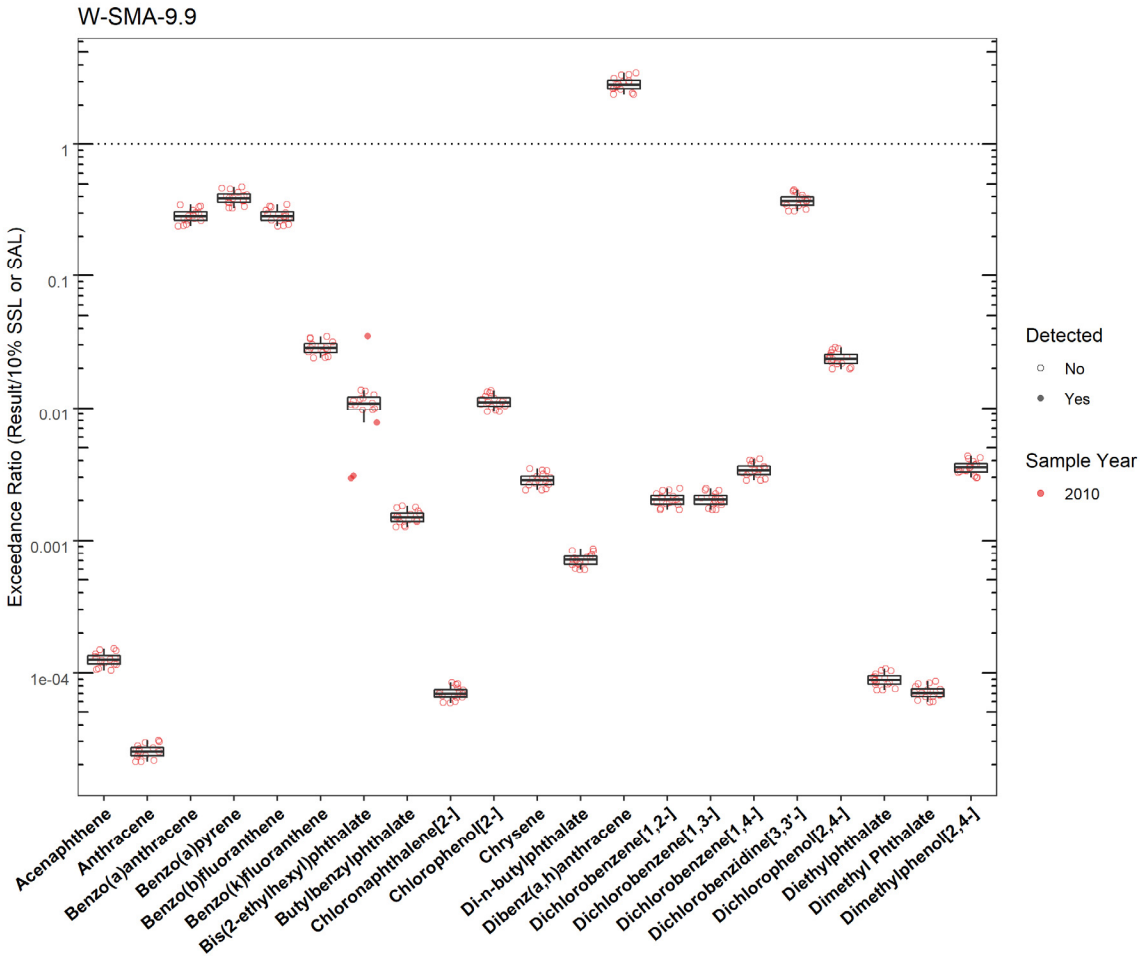


Figure 213.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.9 (Plot 1)

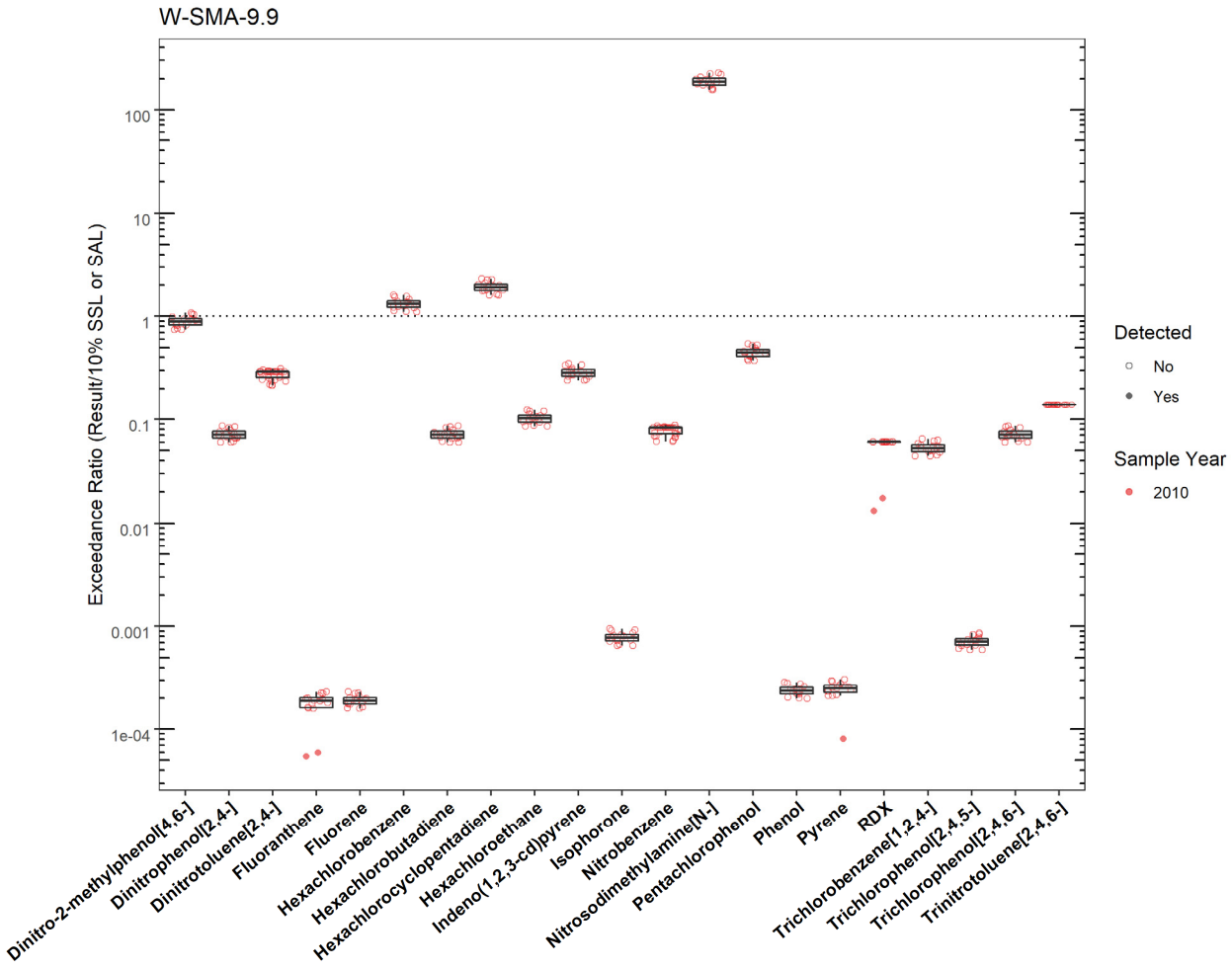


Figure 213.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.9 (Plot 2)

W-SMA-9.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-9.9	Sb	Y	BTV	0.830	0.981	2010-02-23
Copper	W-SMA-9.9	Cu	Y	BTV	14.7	46.3	2010-02-23
Cyanide (Total)	W-SMA-9.9	CN(TOTAL)	Y	BTV	0.500	4.87	2010-02-23
Nickel	W-SMA-9.9	Ni	Y	BTV	15.4	16.5	2010-02-24
Zinc	W-SMA-9.9	Zn	Y	BTV	48.8	88.1	2010-02-23

Figure 213.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.9

213.4 Stormwater Evaluation

213.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 213.4-1 and 213.4-2.

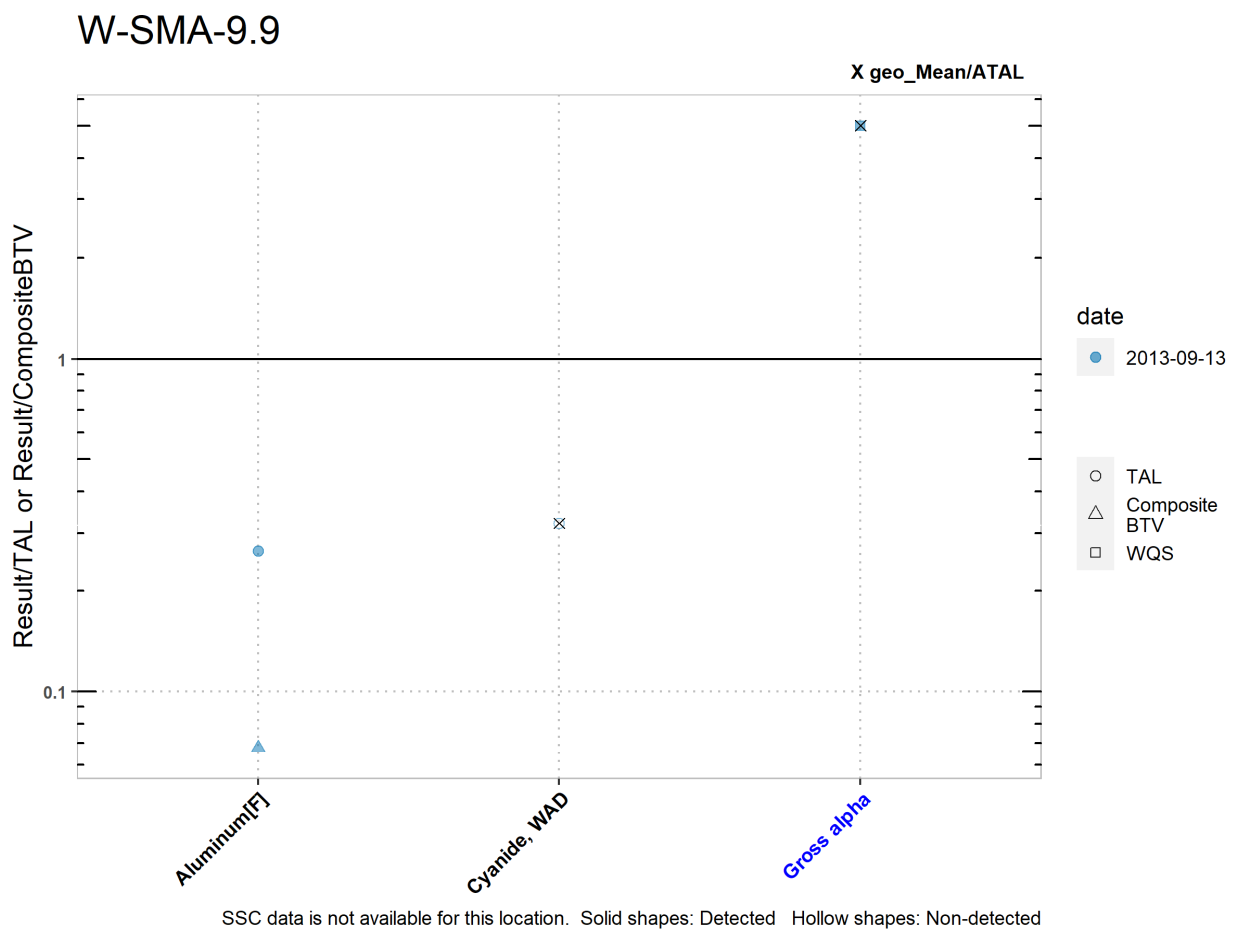


Figure 213.4-1 Analytical Results from Stormwater Sample, W-SMA-9.9 (Plot)

W-SMA-9.9

	Aluminum [F]	Cyanide, WAD	Gross alpha
MQL	2.5	10	NA
ATAL	NA	5.2	15
MTAL	750	22	NA
Composite_BTV	2950	NA	57.2
unit	ug/L	ug/L	pCi/L
2013-09-13 result	199	*1.67*	74.4
2013-09-13 dT	0.265	NA	5.0
2013-09-13 dB	0.0675	NA	NA
geo_mean/ATAL	NA	0.321	5.0

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 213.4-2 Analytical Results from Stormwater Sample, W-SMA-9.9 (Table)

213.4.2 Assessment Unit and Stream Impairments

W-SMA-9.9 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

213.5 Site-Specific Demonstration

213.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were measured in stormwater data in a previous stage and did not exceed TALs. Therefore, they will not be added to the SAP.

213.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL.

213.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. Gross alpha was the sole TAL exceedance, and pursuant to Part I.C.3.c of the permit, this SMA has been screened into long-term stewardship.

214.0 W-SMA-10

Associated Sites	11-002, 11-003(b), 11-005(a), 11-005(b), 11-006(c), 11-006(d), 11-011(d)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	7.06 acres
Landscape Characteristics	5% impervious, 95% pervious
Consent Order Site Status	SWMU 11-002: In Progress Deferred per Consent Order AOC 11-003(b): In Progress Deferred per Consent Order SWMU 11-005(a): Pending Receipt of Certificate of Completion SWMU 11-005(b): Pending Receipt of Certificate of Completion SWMU 11-006(c): Pending Receipt of Certificate of Completion SWMU 11-006(d): Pending Receipt of Certificate of Completion SWMU 11-011(d): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

214.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the September 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 227785), corrective-action monitoring was initiated and a stormwater sample was collected in August 2015. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in February 2016 (LANL 2016, 601239). No response has been received from EPA and stormwater monitoring has not occurred since 2015.

214.2 Site History

11-002 (5/31/2022)

SWMU 11-002 is an inactive open burning area that consisted of two sand pads located east of the former TA-11 drop tower (former structure 11-25) at the edge of the asphalt apron at TA-11. The 1990 SWMU Report describes the former burn site as a 10-ft × 10-ft area where two former sand burn pads were located. The 1993 July 1993 RCRA RFI Work Plan for OU 1082 indicates the open burn area measured 30 ft in diameter. Beginning in 1948, this area was used as an experimental burning area for components on or in assembled configurations with HE, propellants, and jet fuel. HE and propellant burns were conducted directly on the sand pads, and jet fuel was burned within an open-top steel containment tank. In 1975, a burn test involving thorium was performed at the site. Wastes burned at the site contained uranium-238 and HE-contaminated materials. Infrequent burning activities continued through 1992.

11-003(b) (5/31/2022)

AOC 11-003(b) is a former mortar impact area used as a target associated with the decommissioned air gun facility (building 11-24) located immediately adjacent to the inactive drop tower complex at TA-11 (K-Site). The air gun facility was completed in 1956. The gun had a 24-in. bore and an overall length of 96 ft and was used to launch experimental packages into targets located south of building 11-24. The targets, located 150 ft to 250 ft south of building 11-24, were 12-ft × 12-ft × 12-in.-thick concrete slabs set in line with the gun bore. Firing into the targets tested various weapons packages designed to withstand extremes of acceleration and deceleration. Some devices contained HE and DU. Interviews with site personnel who worked at the air-gun facility indicated the outer payload envelope was never compromised, which was concurred by OU 1082 personnel after review of post-shot target/projectile photographs. On a single occasion in 1972, during an impact test involving an inert mockup consisting of a 12-in.-diameter, hollow-steel sphere filled with steel or lead ball bearings suspended in a graphite matrix, the sphere fractured upon impact, potentially leaving behind 0.5-in.-diameter steel or lead balls.

11-005(a) (9/3/2019)

SWMU 11-005(a) is an active septic system located at approximately 70 ft southwest of building 11-24 at TA-11. The septic system began operation in 1944 and consists of inlet drainlines from buildings 11-1 and 11-4, a 500-gal. capacity concrete septic tank (structure 11-20) that discharged to an open-joint tile drainline in a rock-filled trench that extends to an outfall on a sloped area to the south of the septic tank. Building 11-1 was originally used as a control building for the Betatron Facility (building 11-2) and the Cloud Chamber (building 11-3), and building 11-4 was historically used as a machine shop and photo-processing facility. A memorandum from 1950 indicated a mercury spill occurred in building 11-4; however, the location, source, and extent of the spill are unknown.

Building 11-1 is currently a storage area for electrical equipment and building 11-4 is currently the control building for the Vibration-Test Facility (building 11-30). The drainline from building 11-1 has been plugged. Currently, only a restroom in building 11-4 discharges to the SWMU 11-005(a) septic tank. The outlet drainline from SWMU 11-005(a) was plugged in 1992; since that time, the septic tank has been pumped out on a regular basis.

11-005(b) (9/3/2019)

SWMU 11-005(b) is an active septic system located approximately 70 ft south of building 11-3 at TA-11. The septic system began operation in 1963 and consists of inlet drainlines from a restroom on the exterior of building 11-3 and building 11-24, a concrete septic tank (structure 11-43), an outlet drainline to an outfall south of the septic tank, and a drain field west of the outlet drainline. The septic system serves the restroom added to the exterior of building 11-3. Engineering drawings confirm the drainline for floor drains in building 11-24 was tied into septic tank 11-43 in 1992. Discharges to the outfall ceased in 1992. Building 11-24, a former air-gun facility now houses offices and a light machine shop and no longer discharges to the septic system.

11-006(c) (12/10/2019)

SWMU 11-006(c) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A096) located on the southeast side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(c) catch basin consists of a concrete basin (structure 11-51) measuring 6 ft × 4 ft × 2 ft deep, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA 05A096). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the former drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(c) received washdown water from

the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 burning ground. The outfall was removed from the LANL NPDES permit in May 1998 after drop tower activities ceased. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF.

The drop tower underwent D&D and was removed in 2004. Since 1998, any stormwater runoff collected in the SWMU 11-006(c) catch basin is routed to the SWMU 11-006(d) catch basin and the associated outfall.

11-006(d) (12/10/2019)

SWMU 11-006(d) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A097) located on the south side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(d) catch basin consists of a concrete basin (structure 11-52) measuring 6 ft × 4 ft × 2 ft deep, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA 05A097). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the former drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(d) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 burning ground. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF. The outfall was removed from the LANL NPDES permit in January 2006 after drop tower activities ceased.

The drop tower underwent D&D and was removed in 2004. Since drop tower operations ceased in 1998, this catch basin has collected only stormwater runoff, including runoff routed from the SWMU 11-006(c) catch basin, and discharges only stormwater to the outfall.

11-011(d) (9/6/2019)

SWMU 11-011(d) is an inactive drainline and outfall located south of building 11-24, the former air-gun facility at TA-11. The SWMU consists of a 4-in. steel drainline tied to floor drains and a sink in building 11-24. Originally, operations at building 11-24 consisted of acceleration and impact tests on full-scale warhead mockups. After World War II, building 11-24 was converted to an office and light machine shop. The drainline was tied into the SWMU 11-005(b) septic tank in 1992 and all discharges to the outfall ceased at that time.

No investigations have been conducted at SWMU 11-002 or AOC 11-003(b). For investigation activities for all other Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

214.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 214.2-1.

Table 214.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-002	Burn site	Dioxins/furans, HE, gross alpha, thorium, DU, iridium
11-003(b)	Air gun	Lead, HE, DU
11-005(a)	Septic system	Metals, silver, cyanide
11-005(b)	Septic system	Metals, organic chemicals
11-006(c)	Catch basin	Beryllium, HE, uranium
11-006(d)	Catch basin	Beryllium, HE, uranium
11-011(d)	Outfall	No known POCs

214.3 Consent Order Soil Data

Decision level data for SWMU 11-002 consist of results from samples collected in 1998.

There are no decision-level data for SWMU 11-003(b).

Decision-level data for SWMU 11-005(a), SWMU 11-005(b), and SWMU 11-011(d) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 11-006(c) and SWMU 11-006(d) consist of results from samples collected in 1998 and 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 214.3-1 through 214.3-4.

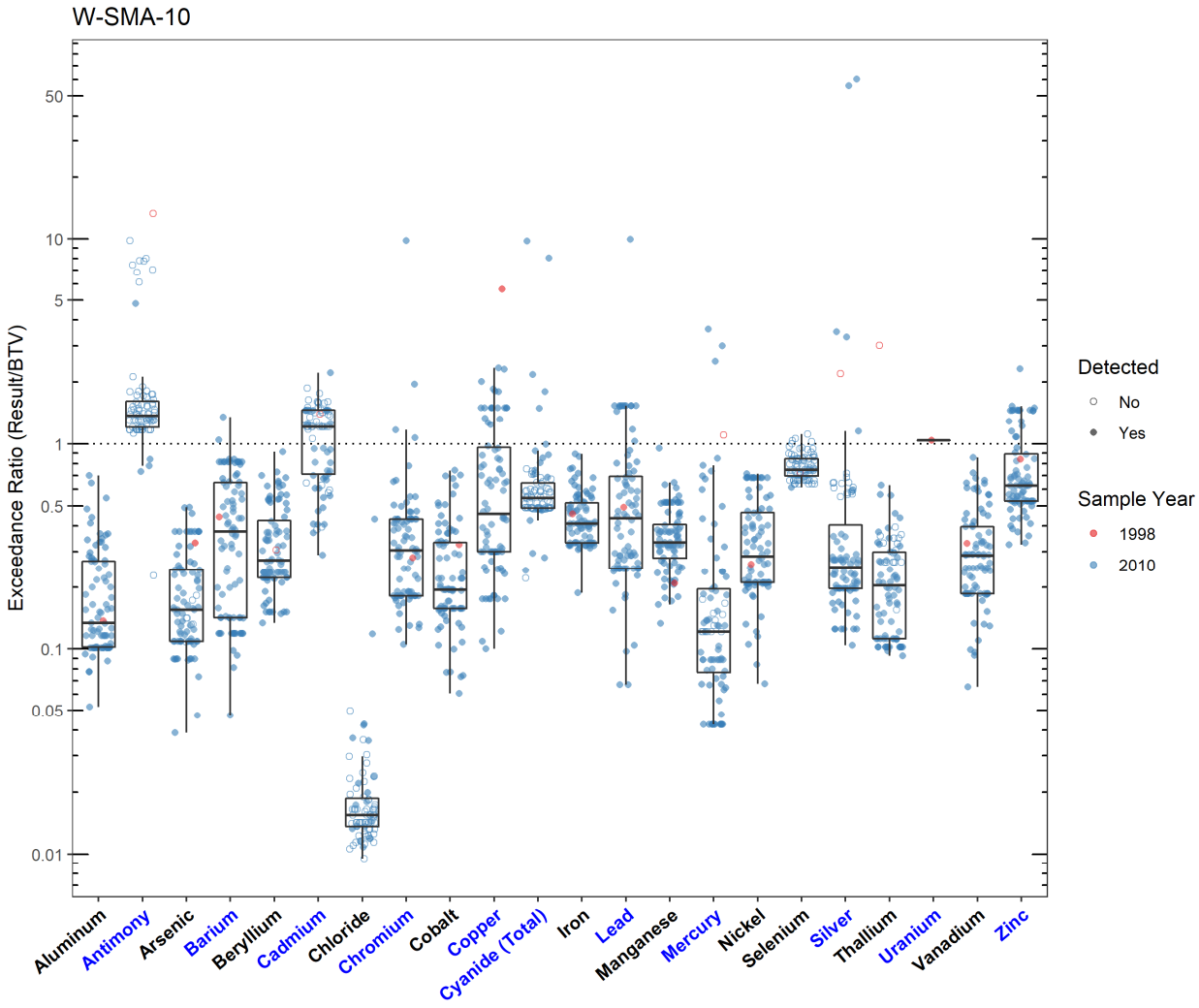


Figure 214.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-10

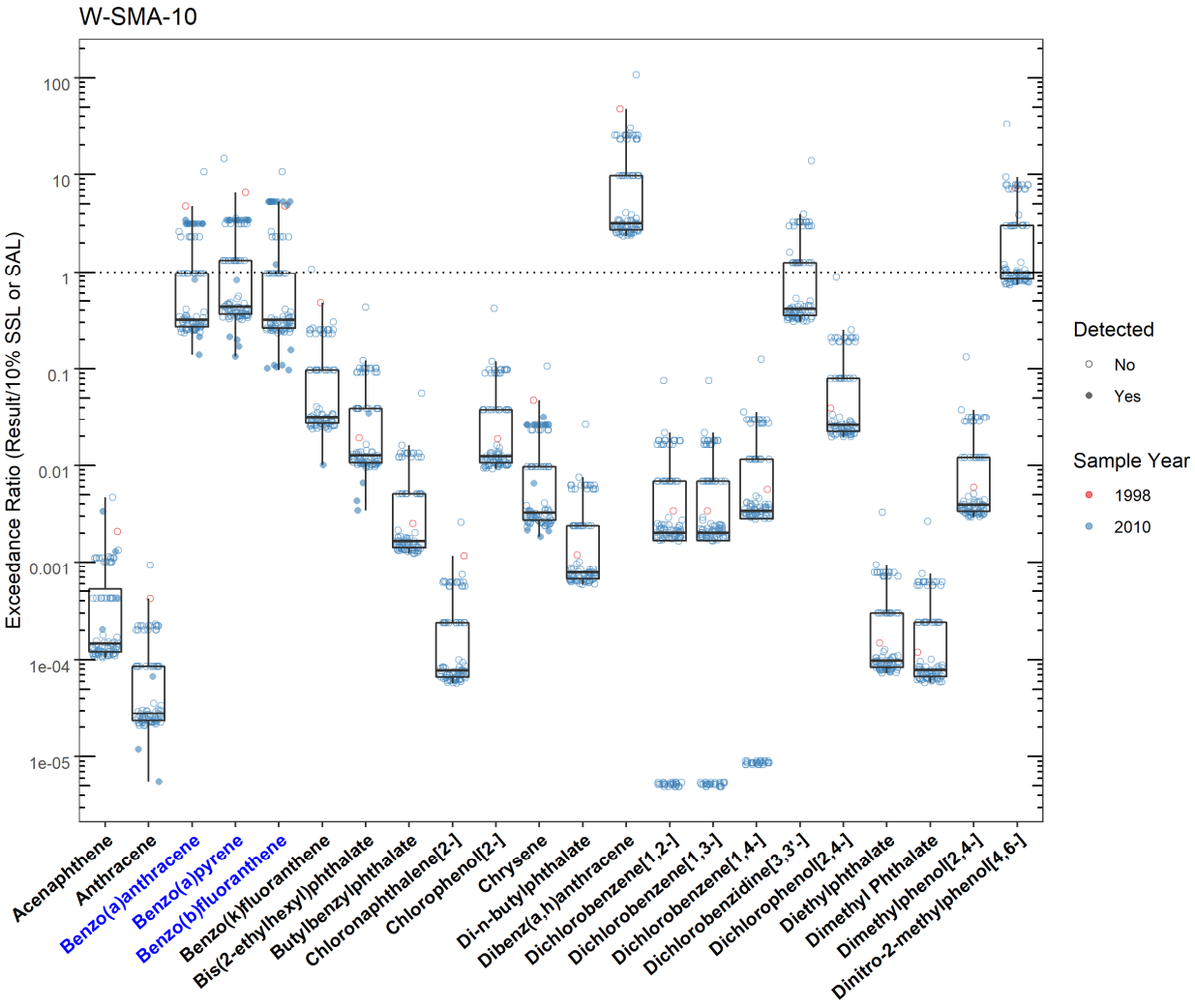


Figure 214.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-10 (Plot 1)

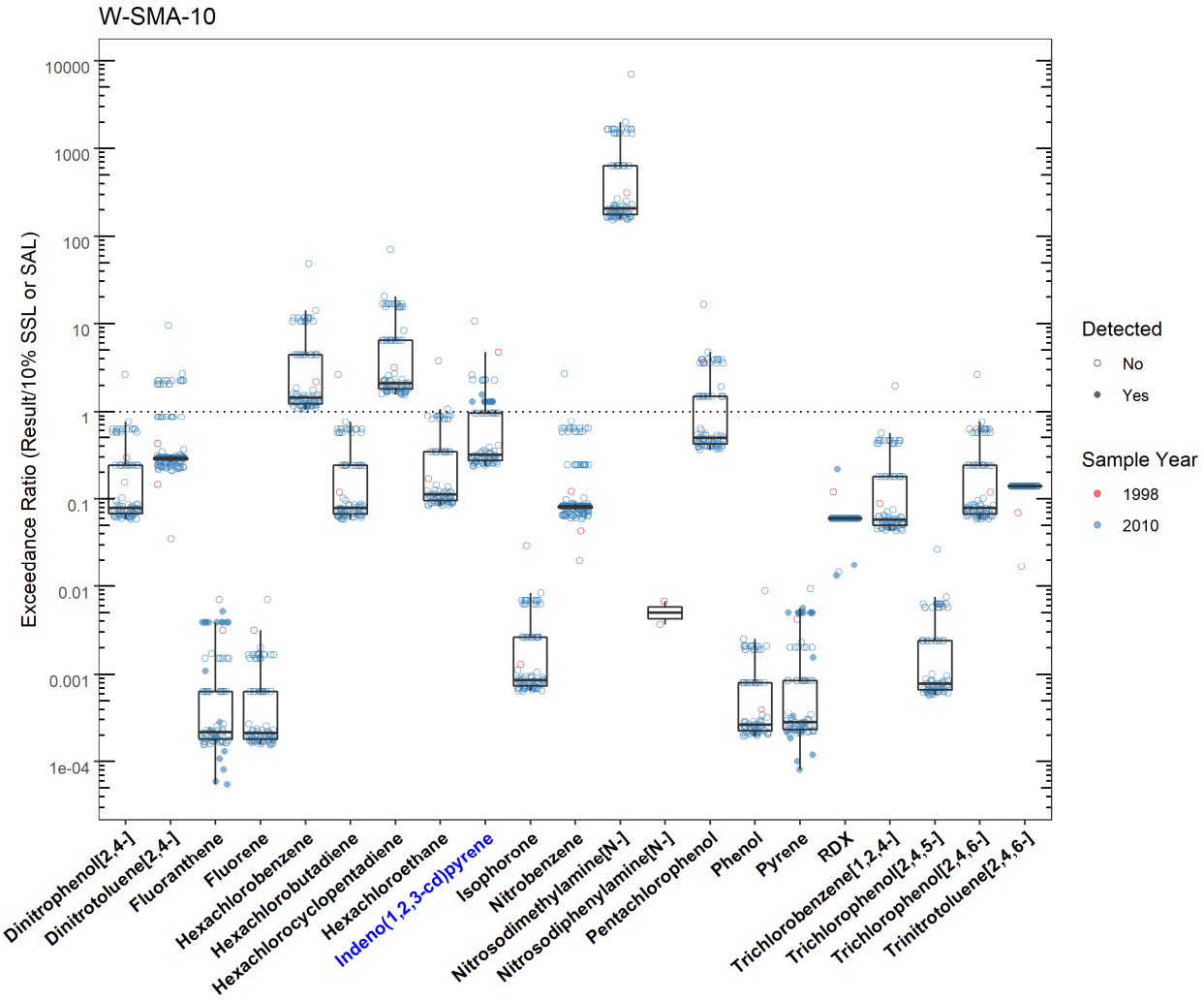


Figure 214.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-10 (Plot 2)

W-SMA-10

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-10	Sb	Y	BTV	0.830	3.98	2010-02-19
Barium	W-SMA-10	Ba	Y	BTV	295	398	2010-03-12
Benzo(a)anthracene	W-SMA-10	56-55-3	Y	SSL_0.1	0.153	0.522	2010-02-24
Benzo(a)pyrene	W-SMA-10	50-32-8	Y	SSL_0.1	0.112	0.387	2010-02-24
Benzo(b)fluoranthene	W-SMA-10	205-99-2	Y	SSL_0.1	0.153	0.808	2010-02-25
Cadmium	W-SMA-10	Cd	Y	BTV	0.400	0.887	2010-02-18
Chromium	W-SMA-10	Cr	Y	BTV	19.3	189	2010-02-19
Copper	W-SMA-10	Cu	Y	BTV	14.7	83.0	1998-11-12
Cyanide (Total)	W-SMA-10	CN(TOTAL)	Y	BTV	0.500	4.87	2010-02-23
Indeno(1,2,3-cd)pyrene	W-SMA-10	193-39-5	Y	SSL_0.1	0.153	0.238	2010-02-24
Lead	W-SMA-10	Pb	Y	BTV	22.3	222	2010-02-19
Mercury	W-SMA-10	Hg	Y	BTV	0.100	0.362	2010-02-19
Silver	W-SMA-10	Ag	Y	BTV	1.00	60.5	2010-02-19
Uranium	W-SMA-10	U	Y	BTV	1.82	1.90	1998-11-12
Zinc	W-SMA-10	Zn	Y	BTV	48.8	113	2010-02-18

Figure 214.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-10

214.4 Stormwater Evaluation

214.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in August 2015. Analytical results from that sample are presented in Figures 214.4-1 and 214.4-2.

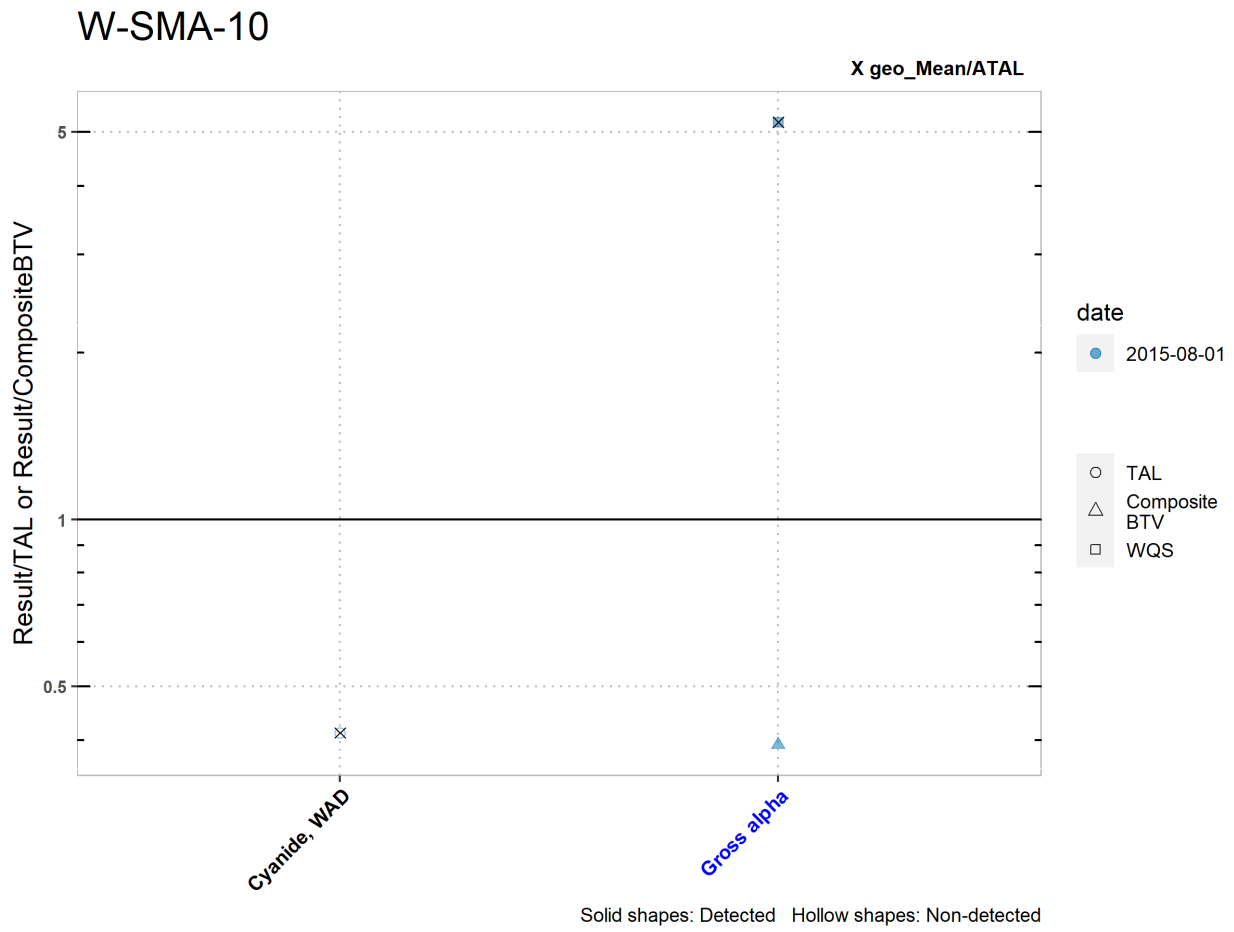


Figure 214.4-1 Analytical Results from Stormwater Sample, W-SMA-10 (Plot)

W-SMA-10

	Cyanide, WAD	Gross alpha
MQL	10	NA
ATAL	5.2	15
MTAL	22	NA
Composite_BTV	NA	56.8
unit	ug/L	pCi/L*
2015-08-01 result	*2.14*	77.8
2015-08-01 dT	NA	5.2
2015-08-01 dB	NA	0.391
geo_mean/ATAL	0.412	5.2

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 214.4-2 Analytical Results from Stormwater Sample, W-SMA-10 (Table)

214.4.2 Assessment Unit and Stream Impairments

W-SMA-10 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

214.5 Site-Specific Demonstration

214.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene.

The remaining metals and cyanide that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

214.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

214.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

214.5.4 Sampling and Analysis Plan

Table 214.5-1 is the proposed SAP for W-SMA-10.

Table 214.5-1 Proposed SAP, W-SMA-10

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Total PCBs	Site history
DOC	Permit requirement
SSC	Permit requirement

215.0 W-SMA-11.7

Associated Sites	49-008(c)
Receiving Water	Water Canyon
Drainage Area	7.16 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	AOC 49-008(c): In Progress
2010 Administratively Continued Permit Final Status	Installation of Enhanced Controls
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

215.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2011. Analytical results from this sample initiated corrective action.

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and August 2021. Analytical results from these samples initiated corrective action.

Following the September 2022 submittal to EPA of certification of enhanced control installation as a corrective-action (N3B 2022, 702307), corrective-action monitoring was initiated in 2022.

215.2 Site History

49-008(c) (8/30/2017)

AOC 49-008(c) consists of an area of potentially contaminated soil from historical radiochemistry operations and small-scale containment experiments within Area 11 at TA-49. Area 11 is an approximately 220 ft × 300 ft area. Activities conducted at Area 11 from 1959 to 1961 supported hydronuclear experiments conducted elsewhere at TA-49. Radiochemistry operations were conducted in a former laboratory and change house (former building 49-15) that was the main structure at Area 11. Other structures included a small storage building, latrines, and butane and propane tanks. The former building 49-15 laboratory was used to analyze samples collected during experiments in the experimental shafts at Areas 2, 2A, 2B, and 4. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. Wastes generated during radiochemical operations were typically collected in containers and taken to radioactive waste disposal facilities elsewhere at the Laboratory. Interim waste storage boxes were stored south of former building 49-15. Some liquid wastes reportedly discharged to a drain field [SWMU 49-003]. Small-scale containment experiments were conducted in 13 underground shafts located on the west side of Area 11. These shafts were drilled to a depth of 12 ft and lined with 10-in.-diameter steel casing. HE was placed in the shafts, which were backfilled to contain the explosions. Small amounts of irradiated uranium-238 tracer were used in some experiments. The structures in Area 11 were decontaminated and removed in 1970 and 1971.

Contamination was detected in sinks, ducts, and hoods in former building 49-15. Contaminated debris was removed and disposed of at TA-54, and uncontaminated debris (approximately 2,160 ft^3) was taken to the open-burning/landfill area at Area 6 (SWMU 49-004).

In May 2015, the TA-49 NES boundary was reduced to encompass three individual shaft fields at TA-49; SWMU-49-001(a) – Area 1; SWMUs 49-001(b), 49-001(c), and 49-001(d) - Area 2; and SWMU 49-001(f) - Area 4. Area 11 including SWMU 49-008(c) are no longer within the TA-49 NES boundary.

For investigation activities, refer to "Supplemental Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1" (N3B 2022, 702072).

215.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 215.2-1.

Table 215.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
49-008(c)	Soil contamination	HE, radionuclides, uranium-238

215.3 Consent Order Soil Data

Decision-level data for AOC 49-008(c) include results from samples collected in 1995 and 2010. Analytical results for these samples are presented in Figures 215.3-1 through 215.3-4. The 2022 Revision 1 of the 2016 supplemental IR (N3B 2022, 702072) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

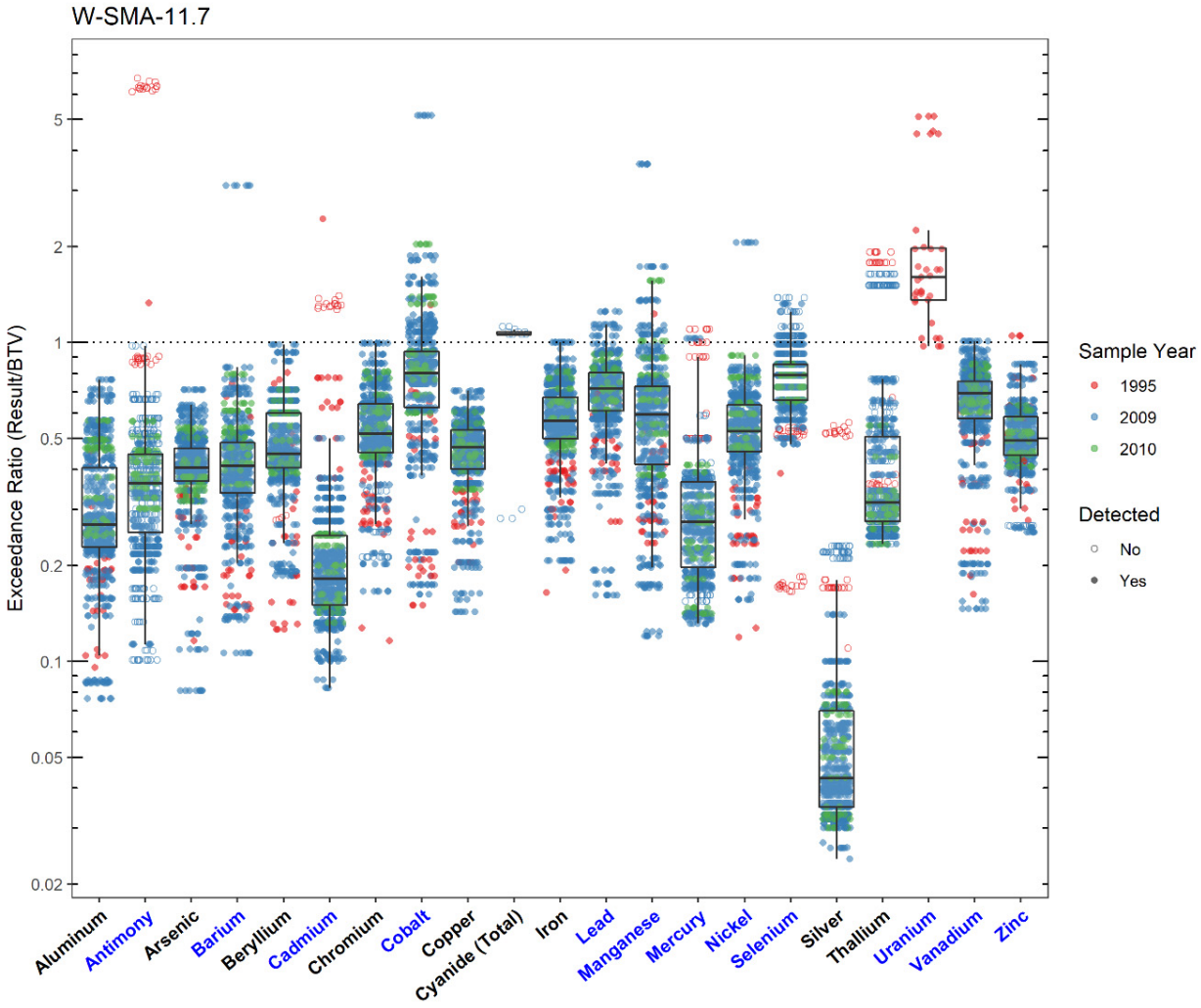


Figure 215.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-11.7

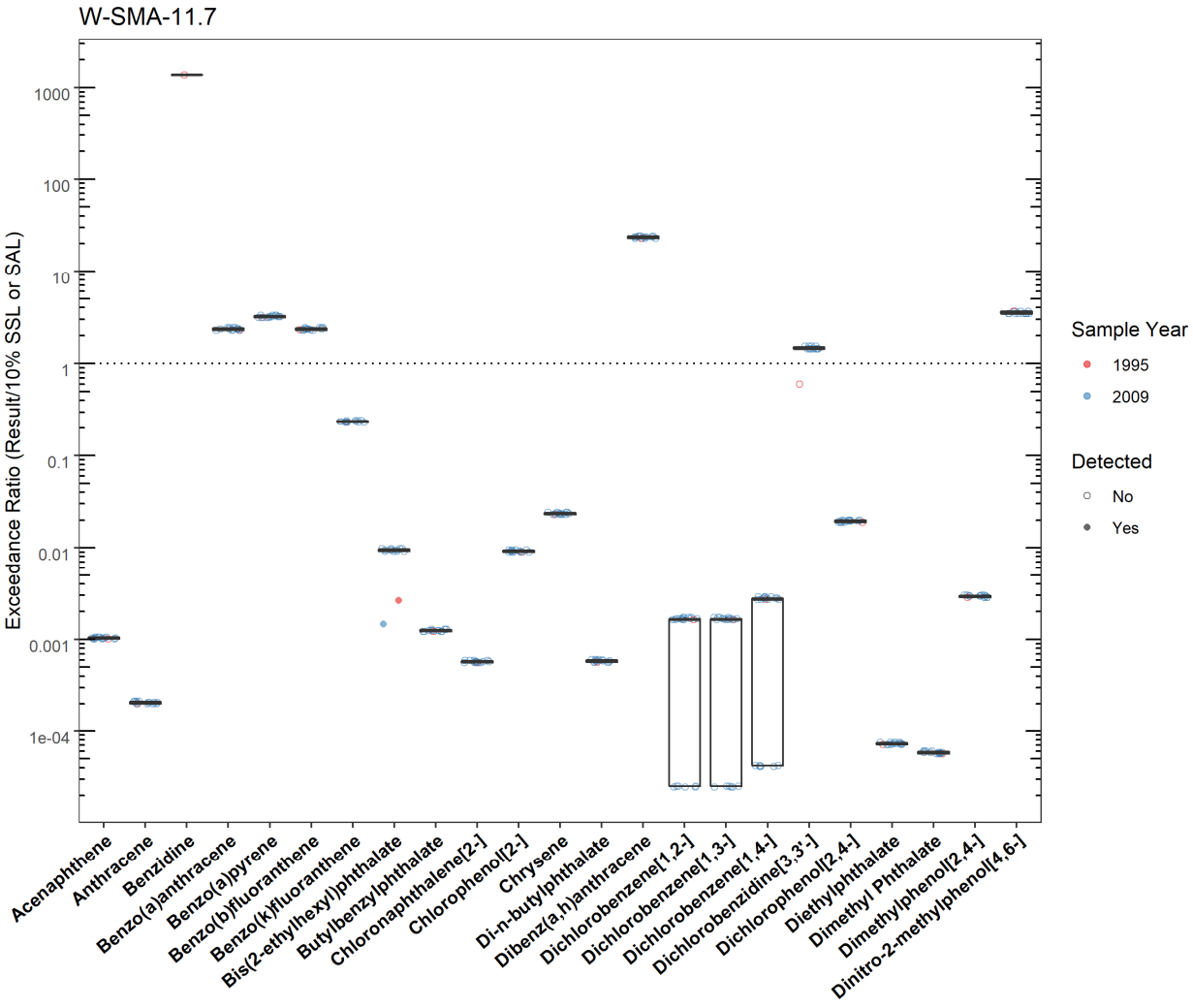


Figure 215.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-11.7 (Plot 1)

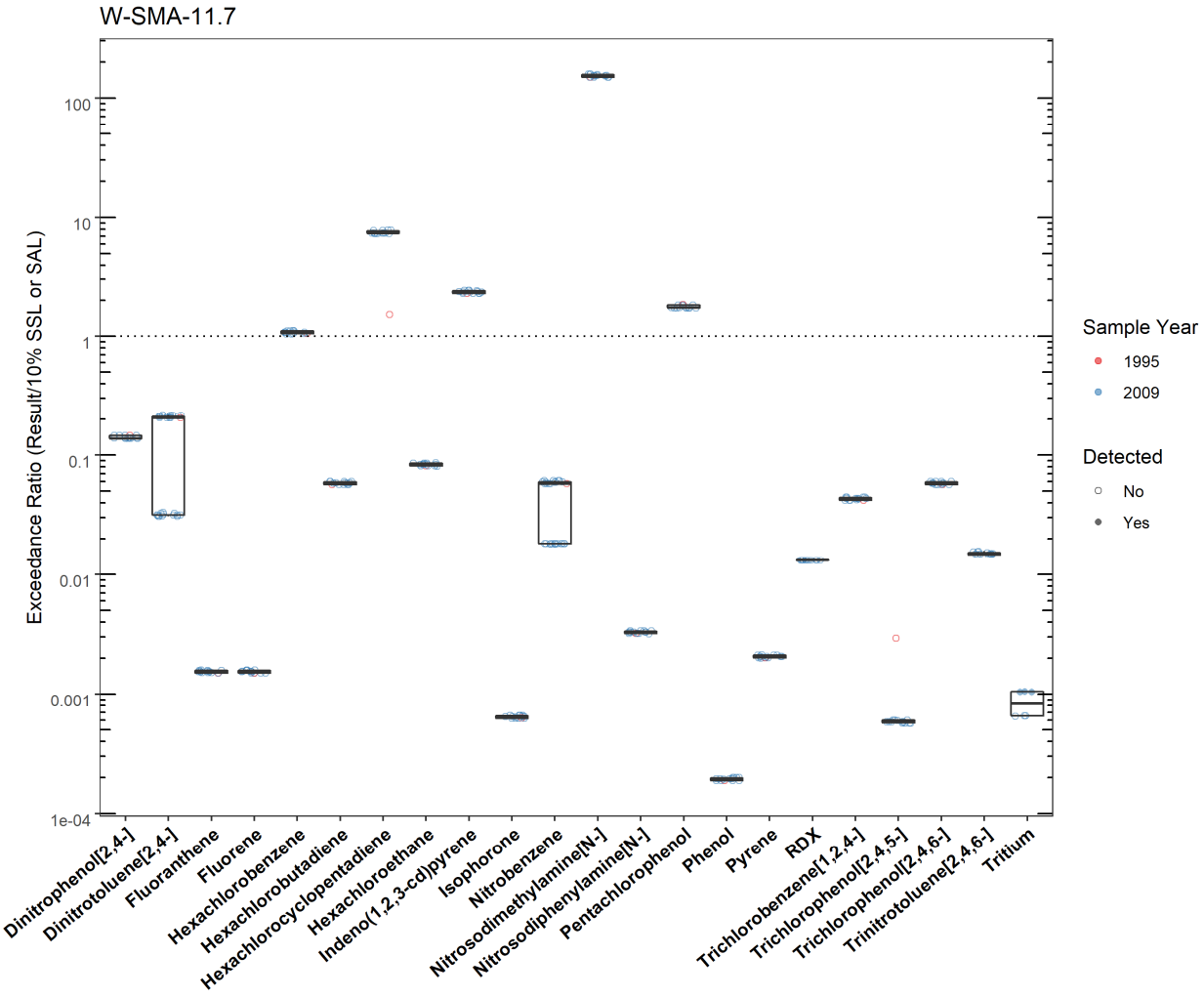


Figure 215.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-11.7 (Plot 2)

W-SMA-11.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-11.7	Sb	Y	BTV	0.830	1.10	1995-07-11
Barium	W-SMA-11.7	Ba	Y	BTV	295	915	2009-12-11
Cadmium	W-SMA-11.7	Cd	Y	BTV	0.400	0.975	1995-07-06
Cobalt	W-SMA-11.7	Co	Y	BTV	8.64	44.5	2009-12-11
Lead	W-SMA-11.7	Pb	Y	BTV	22.3	27.8	2009-12-11
Manganese	W-SMA-11.7	Mn	Y	BTV	671	2430	2009-12-11
Mercury	W-SMA-11.7	Hg	Y	BTV	0.100	0.103	2009-12-11
Nickel	W-SMA-11.7	Ni	Y	BTV	15.4	31.7	2009-12-11
Selenium	W-SMA-11.7	Se	Y	BTV	1.52	2.00	2009-12-11
Uranium	W-SMA-11.7	U	Y	BTV	1.82	9.30	1995-08-08
Vanadium	W-SMA-11.7	V	Y	BTV	39.6	40.1	2009-11-24
Zinc	W-SMA-11.7	Zn	Y	BTV	48.8	51.2	1995-08-08

Figure 215.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-11.7

215.4 Stormwater Evaluation

215.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples have not been collected in this monitoring stage.

215.4.2 Assessment Unit and Stream Impairments

W-SMA-11.7 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The adjusted gross alpha impairment may be Site related, based on Site history.

215.5 Site-Specific Demonstration

215.5.1 Soil Data Summary

Strontium-90 is a Site-related POC not monitored in soil data; it will be added to the SAP. HE was monitored in soil data and did not exceed the applicable screening value, therefore it will not be added to the SAP.

215.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

215.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected in the current stage.

215.5.4 Sampling and Analysis Plan

Table 215.5-1 is the proposed SAP for W-SMA-11.7.

Table 215.5-1 Proposed SAP, W-SMA-11.7

Monitoring Constituent	Background for Monitoring
Strontium-90	Site history
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

216.0 W-SMA-12.05

Associated Sites	49-001(g)
Receiving Water	Water Canyon
Drainage Area	0.49 acres
Landscape Characteristics	8% impervious, 92% pervious
Consent Order Site Status	SWMU 49-001(g): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

216.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until one confirmation sample is collected from this SMA.

216.2 Site History

49-001(g) (1/31/2017)

SWMU 49-001(g) is an area of potential soil contamination directly north of SWMUs 49-001(b) and 49-001(c) (Areas 2 and 2A), resulting from the transport of surface and near-surface radionuclide contamination associated with the shaft 2-M incident at Area 2. During the drilling of a drift at the bottom of shaft 2-M at SWMU 49-001(b), (Area 2) in November 1960, contamination was encountered from the experiment previously detonated at the bottom of shaft 2-L in April 1960, (Shaft 2-L is 25 ft west of shaft 2-M). As a result, alpha contamination was measured at 100,000 cpm within unused shaft 2-M, and as high as 800,000 cpm on the ground surface within Area 2. Contaminated equipment and surface soils from this incident were placed in shaft 2-M and the shaft was backfilled and capped. SWMU 49-001(g) is the approximate 0.8-acre natural drainage on the slope north of Area 2 that runs from the mesa to the bottom of Water Canyon.

For investigation activities, refer to "Supplemental Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1" (N3B 2022, 702072).

216.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 216.2-1.

Table 216.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
49-001(g)	MDA AB	Beryllium, lead, plutonium, tritium, uranium

216.3 Consent Order Soil Data

Data collected from the sites associated with MDA AB [SWMUs 49-001(b, c, d, g)] are addressed together because of their geographic proximity and similar operational history. Decision-level data for MDA AB consist of results from samples collected in 1998, 2000, and 2010. Analytical results for these samples are presented in Figures 216.3-1 and 216.3-2. The 2022 Revision 1 of the 2016 supplemental IR (N3B 2022, 702072) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted for SWMU 49-001(g).

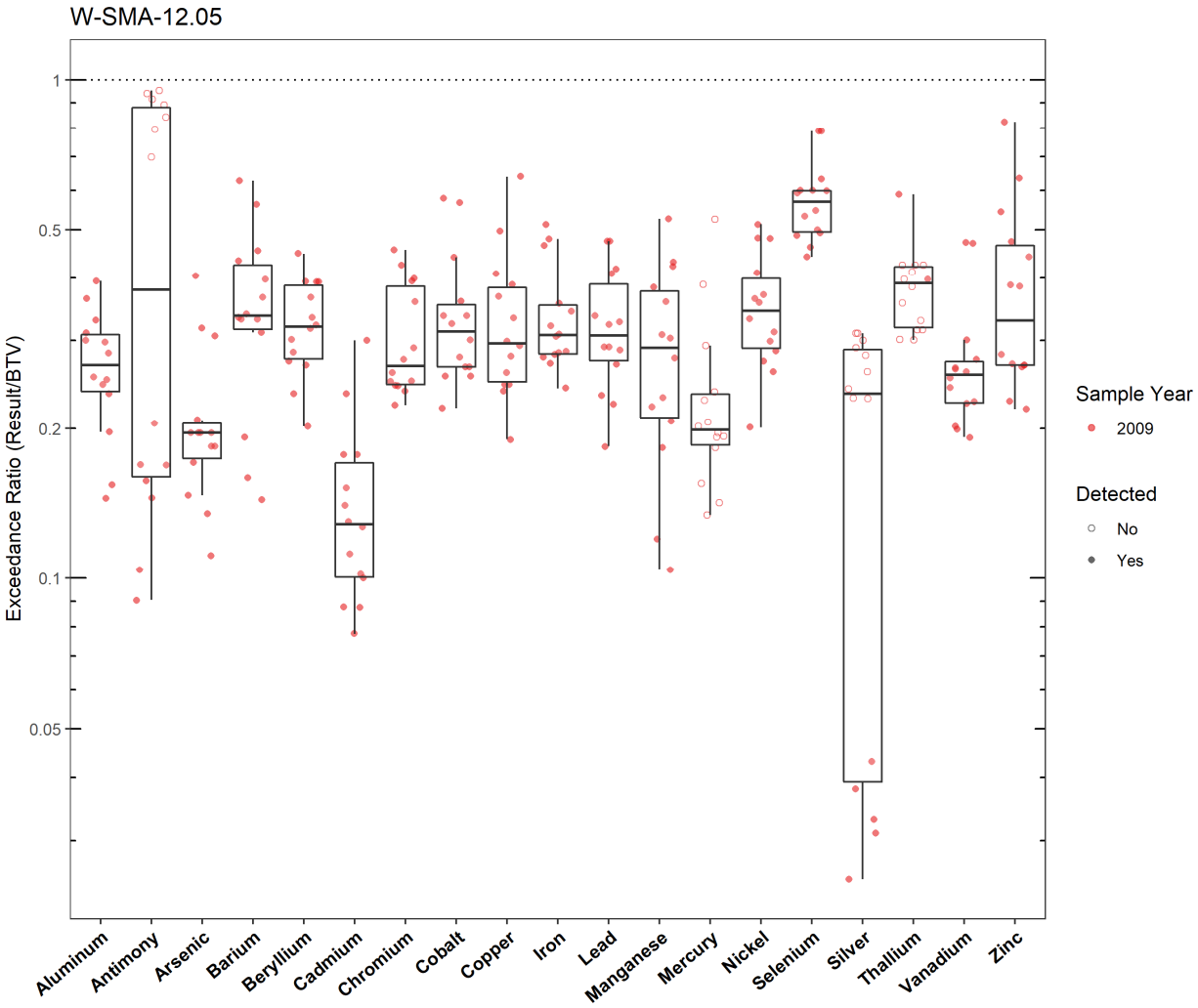


Figure 216.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-12.05

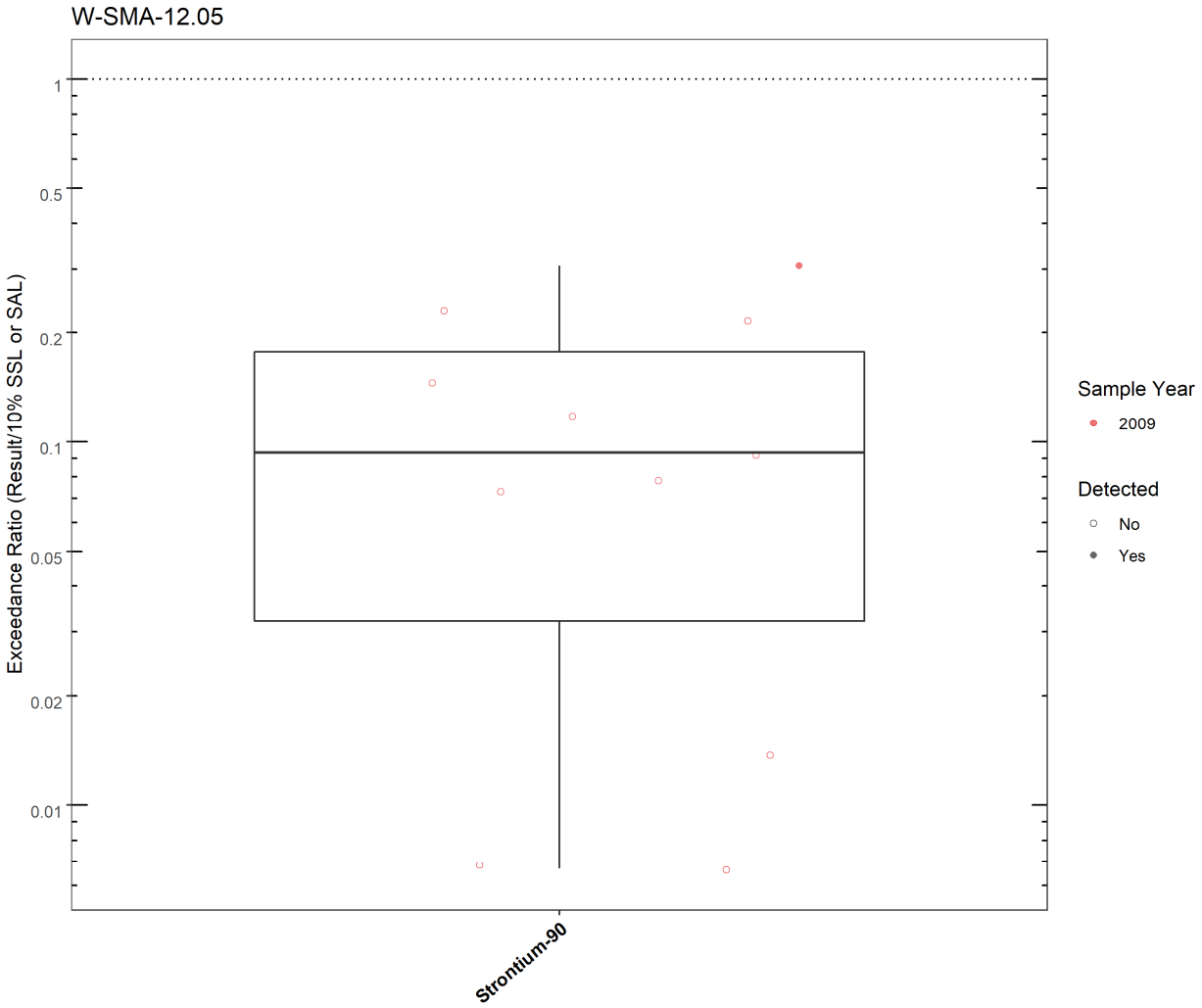


Figure 216.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-12.05

216.4 Stormwater Evaluation

216.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

216.4.2 Assessment Unit and Stream Impairments

W-SMA-12.05 drains to Water Canyon (within LANL below Area-A Cyn), which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The adjusted gross alpha impairment may be Site related, based on Site history.

216.5 Site-Specific Demonstration

216.5.1 Soil Data Summary

No Site-related POCs exceeded the applicable screening values in soil data.

216.5.2 Stormwater Data Summary

No confirmation-monitoring data.

216.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected.

216.5.4 Sampling and Analysis Plan

Table 216.5-1 is the proposed SAP for W-SMA-12.05.

Table 216.5-1 Proposed SAP, W-SMA-12.05

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved uranium	Site history
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

217.0 W-SMA-14.1

Associated Sites	15-004(h), 15-014(l)
Receiving Water	Water Canyon
Drainage Area	5.8 acres
Landscape Characteristics	22% impervious, 78% pervious
Consent Order Site Status	AOC 15-004(h): In Progress SWMU 15-014(l): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the March 2018 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

217.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal to EPA of certification of baseline control installation, two baseline stormwater samples were collected in July and August 2011. Analytical results from these samples initiated corrective action.

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and July 2014. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in May 2015 (LANL 2015, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2014.

217.2 Site History

15-004(h) (4/7/2017)

AOC 15-004(h) is an inactive Firing Site H located northwest of the PHERMEX facility at TA-15. Firing Site H is located approximately 100 ft north of the PHERMEX power control building (structure 15-185). The explosives testing firing site was constructed in 1948 and included a concrete pad, a protective berm, an instrument chamber (former structure 15-17), and a camera chamber (structure 15-92). The exact nature of the materials used during tests is not known but may have included DU, beryllium, lead, and HE. Firing site operations were discontinued in approximately 1953 and the instrument chamber was demolished in 1967. The camera chamber and the concrete pad remain on-site, but the concrete pad has been partially covered with fill. Hazardous debris from explosions at PHERMEX may have impacted AOC 15-004(h).

15-014(l) (4/7/2017)

SWMU 15-014(l) consists of a former NPDES-permitted outfall (EPA 03A028) and associated drainline for a cooling tower (structure 15-202) located at the PHERMEX facility at TA-15. This drainline and outfall received blowdown discharge from the cooling tower, which was installed in 1961. Cooling water was piped to building 15-185 and blowdown discharged to a basement floor drain. The basement floor drain

discharged to a concrete gutter in the paved area south of building 15-185. Discharges from the gutter flowed to a drainage ditch adjacent to the roadway and into a culvert that drained to the ground surface south of the roadway. This culvert also received discharges from the floor drains in building 15-184. In 1969, a corrugated metal pipe was installed to convey discharges from the SWMU 15-014(l) outfall to a new outfall south of the parking area and roadway, AOC 15-014(d). The SWMU 15-014(l) outfall is currently located within a drop inlet in a paved area outside the southeast corner of building 15-185. Outfall 03A028 was removed from the Laboratory's NPDES permit in 2007. The SWMU 15-014(l) outfall currently receives only stormwater discharges from the paved area around the drop inlet.

For investigation activities at the Sites, refer to "Investigation Report for Lower Water/Indio Canyons Aggregate Area" (N3B 2021, 701694).

217.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 217.2-1.

Table 217.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-004(h)	Firing Site H	Beryllium, lead, HE, DU
15-014(l)	Outfall from building 15-202	Inorganic chemicals

217.3 Consent Order Soil Data

Decision-level data for AOC 15-004(h) and SWMU 15-014(l) consist of results from samples collected in 2020 and 2021. Analytical results for these samples are presented in Figures 217.3-1 through 217.3-4. The 2021 IR (N3B 2021, 701694) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

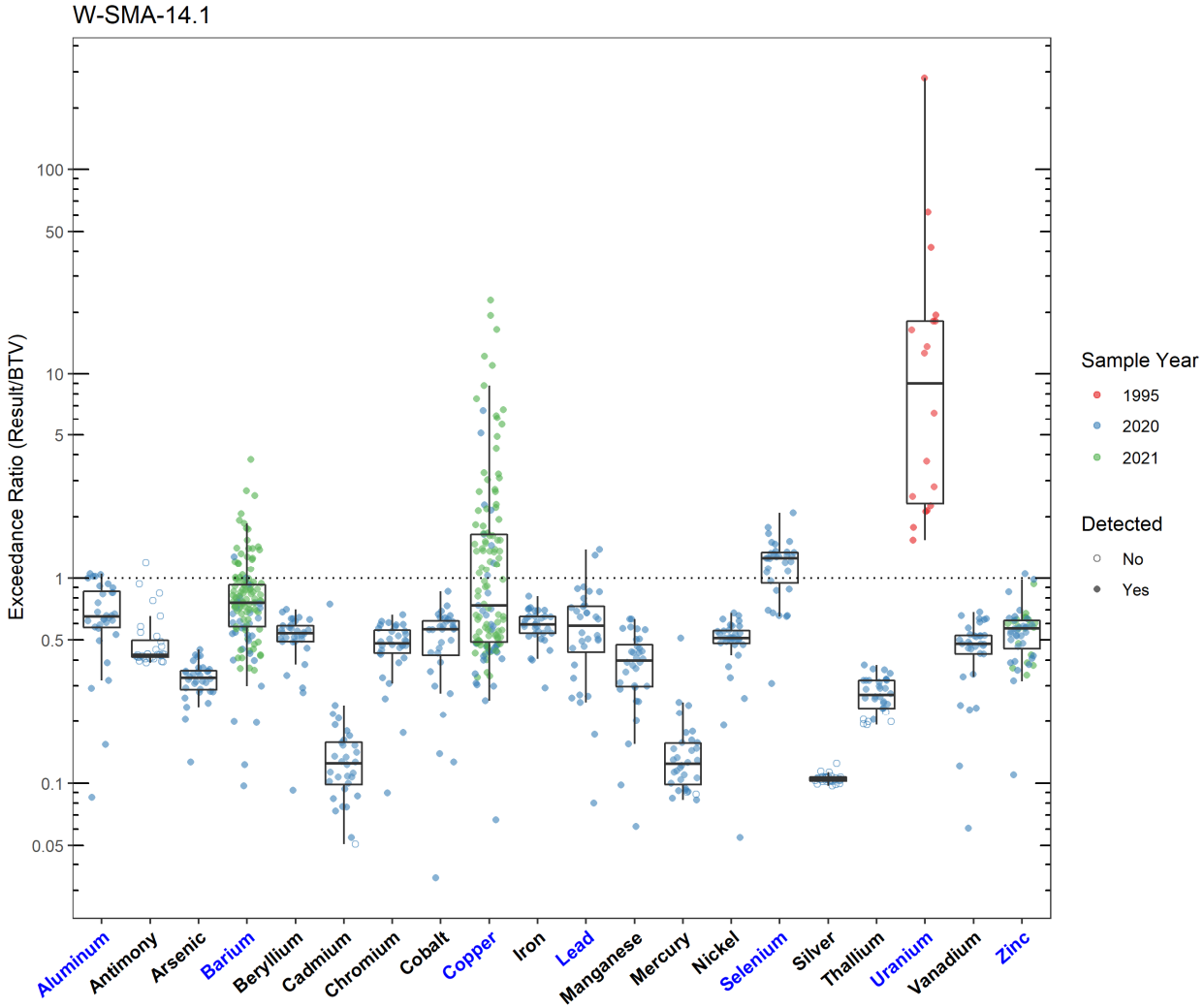


Figure 217.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-14.1

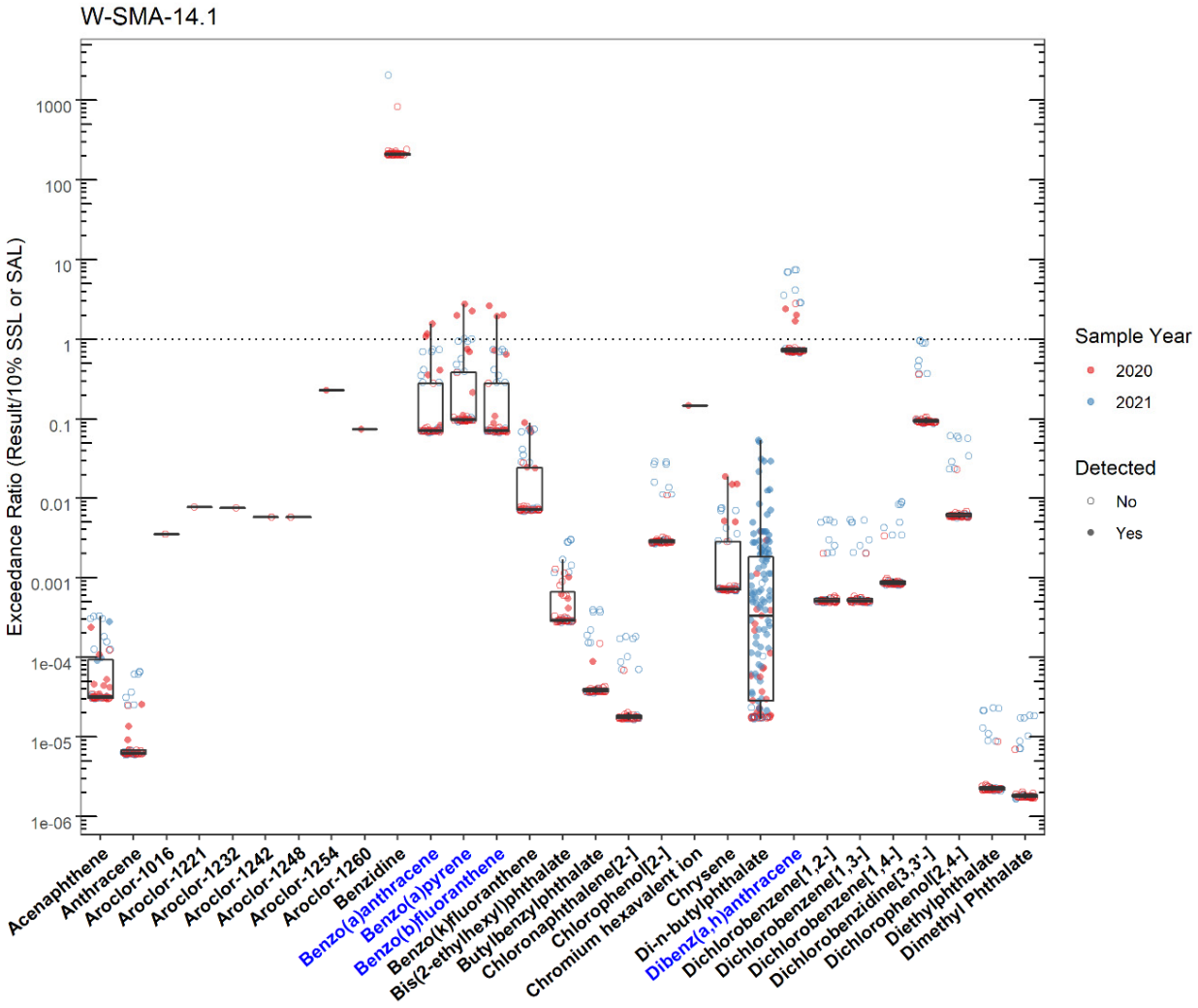


Figure 217.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-14.1 (Plot 1)

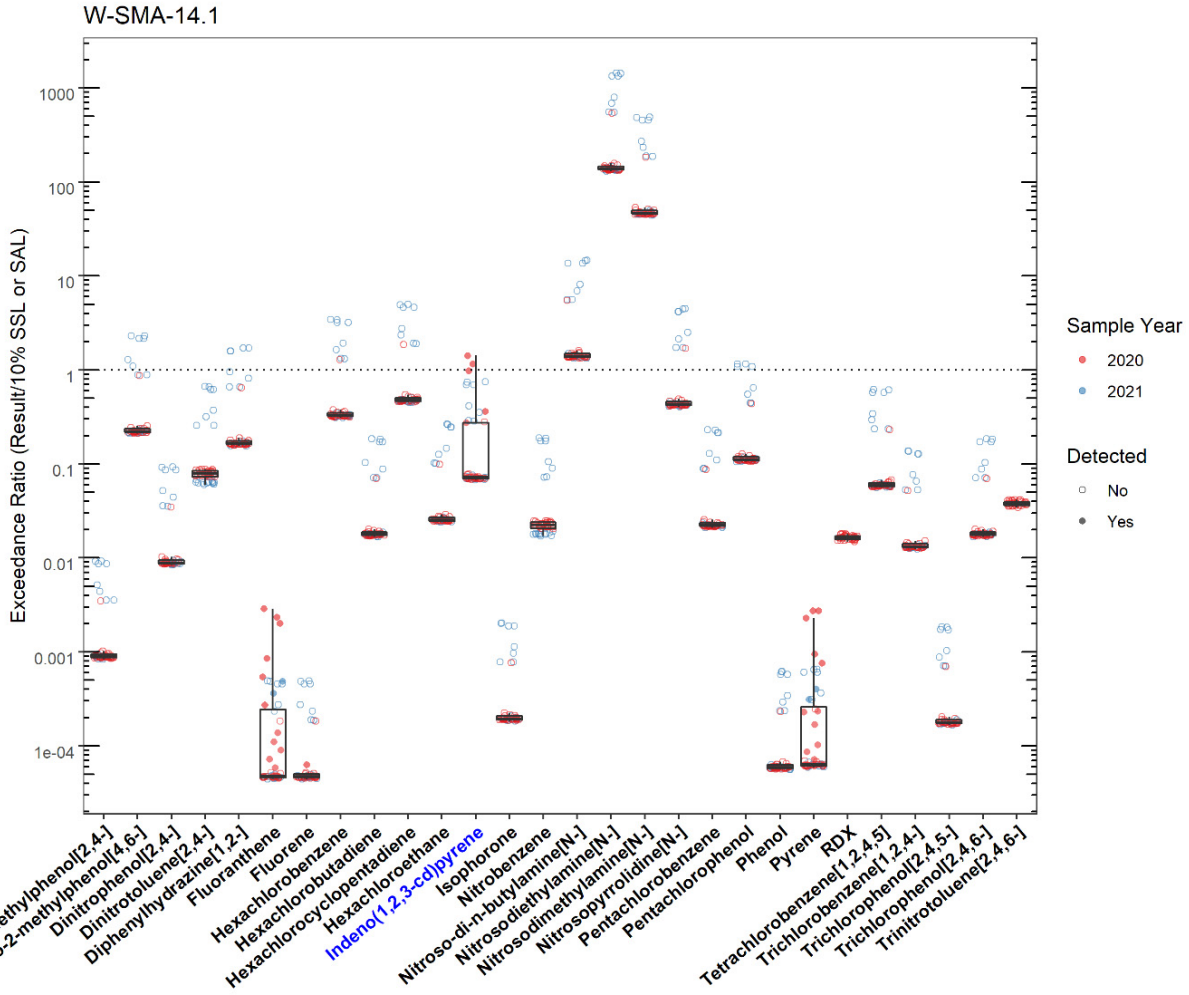


Figure 217.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-14.1 (Plot 2)

W-SMA-14.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	W-SMA-14.1	Al	Y	BTV	29200	30600	2020-09-01
Barium	W-SMA-14.1	Ba	Y	BTV	295	1120	2021-07-28
Benzo(a)anthracene	W-SMA-14.1	56-55-3	Y	SSL_0.1	0.153	0.238	2020-09-01
Benzo(a)pyrene	W-SMA-14.1	50-32-8	Y	SSL_0.1	0.112	0.308	2020-09-01
Benzo(b)fluoranthene	W-SMA-14.1	205-99-2	Y	SSL_0.1	0.153	0.401	2020-09-01
Copper	W-SMA-14.1	Cu	Y	BTV	14.7	337	2021-03-17
Dibenz(a,h)anthracene	W-SMA-14.1	53-70-3	Y	SSL_0.1	0.0153	0.0369	2020-09-01
Indeno(1,2,3-cd)pyrene	W-SMA-14.1	193-39-5	Y	SSL_0.1	0.153	0.218	2020-09-01
Lead	W-SMA-14.1	Pb	Y	BTV	22.3	30.9	2020-09-02
Selenium	W-SMA-14.1	Se	Y	BTV	1.52	3.17	2020-09-02
Uranium	W-SMA-14.1	U	Y	BTV	1.82	510	1995-06-27
Zinc	W-SMA-14.1	Zn	Y	BTV	48.8	51.0	2020-09-10

Figure 217.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-14.1

217.4 Stormwater Evaluation

217.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in September 2013 and July 2014. Analytical results from these samples are presented in Figures 217.4-1 and 217.4-2.

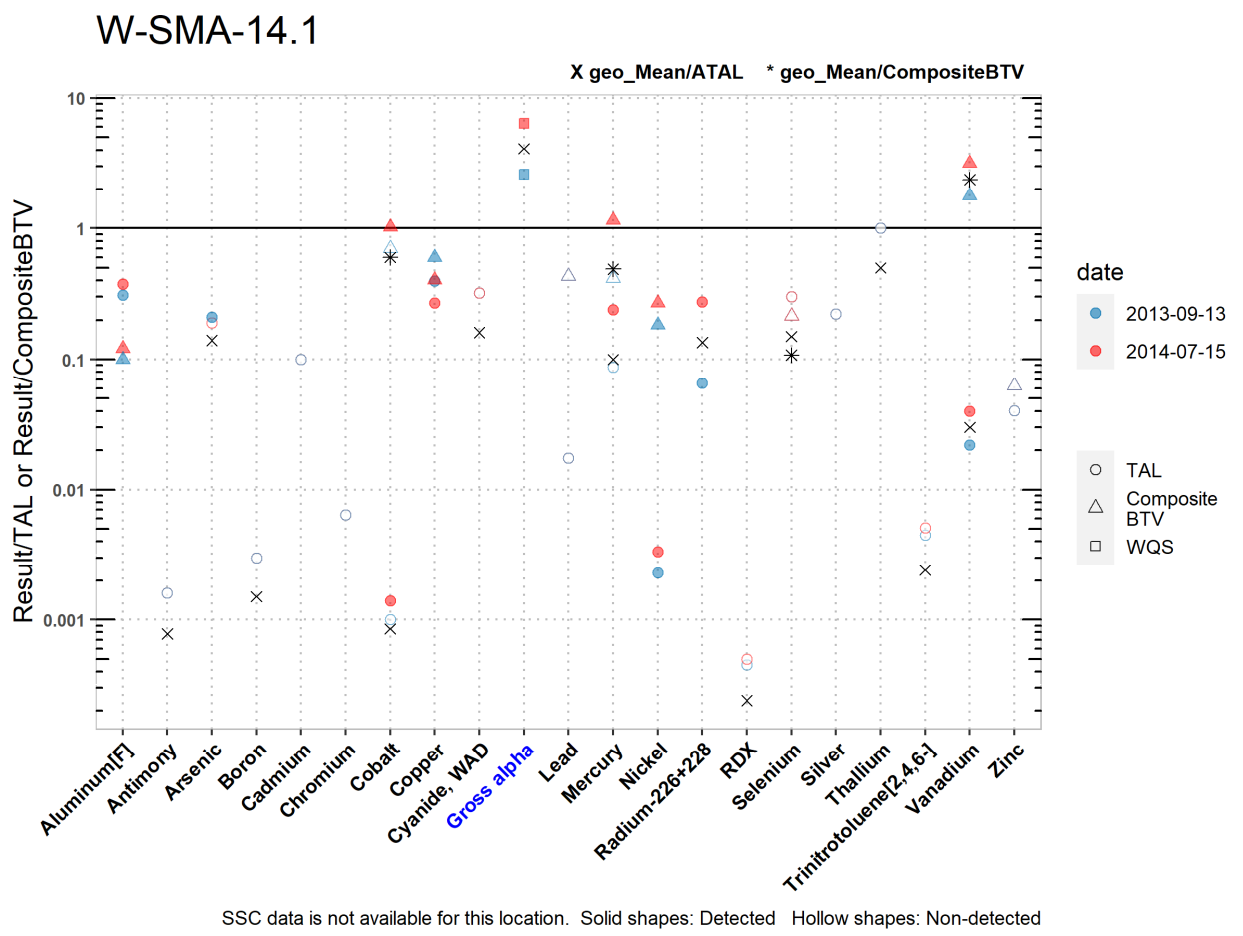


Figure 217.4-1 Analytical Results from Stormwater Samples, W-SMA-14.1 (Plot)

W-SMA-14.1

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	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	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2330	NA	NA	NA	NA	NA	1.42	4.44	NA	55.5	1.16	0.161	3.10	5.60	NA	6.97	NA	NA	NA	1.26	52.6
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
2013-09-13 result	233	*1.00*	1.90	*15.0*	*0.110*	*2.00*	*1.00*	2.66	*1.67*	38.7	*0.500*	*0.0670*	0.569	1.97	*0.0899*	*1.50*	*0.200*	*0.450*	*0.0899*	2.23	*3.30*
2013-09-13 dT	0.311	NA	0.21	NA	NA	NA	NA	0.398	NA	2.6	NA	NA	0.00228	0.0657	NA	NA	NA	NA	NA	0.022	NA
2013-09-13 dB	0.100	NA	NA	NA	NA	NA	NA	0.599	NA	NA	NA	NA	0.184	NA	NA	NA	NA	NA	NA	1.77	NA
2014-07-15 result	283	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	1.45	1.80	*1.67*	96.2	*0.500*	0.185	0.833	8.28	*0.101*	*1.50*	*0.200*	*0.450*	*0.101*	4.00	*3.30*
2014-07-15 dT	0.377	NA	NA	NA	NA	NA	0.0014	0.269	NA	6.4	NA	0.24	0.00333	0.276	NA	NA	NA	NA	NA	0.040	NA
2014-07-15 dB	0.121	NA	NA	NA	NA	NA	1.02	0.405	NA	NA	NA	1.15	0.269	NA	NA	NA	NA	NA	NA	3.17	NA
geo_mean/ATAL	NA	0.00078	0.14	0.0015	NA	NA	0.00085	NA	0.161	4.1	NA	0.10	NA	0.135	0.00024	0.15	NA	0.5	0.0024	0.030	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.600	NA	NA	NA	NA	0.489	NA	NA	NA	0.108	NA	NA	NA	2.37	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 217.4-2 Analytical Results from Stormwater Samples, W-SMA-14.1 (Table)

217.4.2 Assessment Unit and Stream Impairments

W-SMA-14.1 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

217.5 Site-Specific Demonstration

217.5.1 Soil Data Summary

Barium and uranium exceeded the applicable screening values in soil data and have not yet been measured in stormwater.

The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

Although there is an impairment for mercury, it is not a Site-related POC, the applicable screening value was not exceeded in soil data, and the TAL was not exceeded in stormwater data. Therefore, it will not be added to the SAP.

217.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL in stormwater data, and there was no paired SSC result to confirm whether it was below BTVs; therefore, it will be added to the SAP.

217.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

217.5.4 Sampling and Analysis Plan

Table 217.5-1 is the proposed SAP for W-SMA-14.1.

Table 217.5-1 Proposed SAP, W-SMA-14.1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved barium and uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

218.0 W-SMA-15.1

Associated Sites	49-005(a)
Receiving Water	Water Canyon
Drainage Area	0.19 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 49-005(a): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

218.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2011. Analytical results from this sample initiated corrective action.

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing until at least one confirmation sample is collected.

218.2 Site History

49-005(a) (1/31/2017)

SWMU 49-005(a) is an inactive landfill located east of Area 10 at TA-49. The landfill is located north of the road that runs east from Area 10 and is approximately 75 ft northeast of the Area 10 experimental chamber facility [AOC 49-002]. The landfill, described as a small pit in the 1990 SWMU Report, was excavated in 1984 for the disposal of uncontaminated debris generated during the 1984 general surface cleanup of TA-49.

For investigation activities, refer to "Supplemental Investigation Report for Sites at Technical Area 49 Outside the Nuclear Environmental Site Boundary, Revision 1" (N3B 2022, 702072).

218.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 218.2-1.

Table 218.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
49-005(a)	Landfill	Metals, beryllium, lead, plutonium, uranium

218.3 Consent Order Soil Data

Decision-level data for SWMU 49-005(a) consist of results from samples collected in 1995 and 2010. Analytical results for these samples are presented in Figures 218.3-1 through 218.3-4. The 2022

Revision 1 of the 2016 supplemental IR (N3B 2022, 702072) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

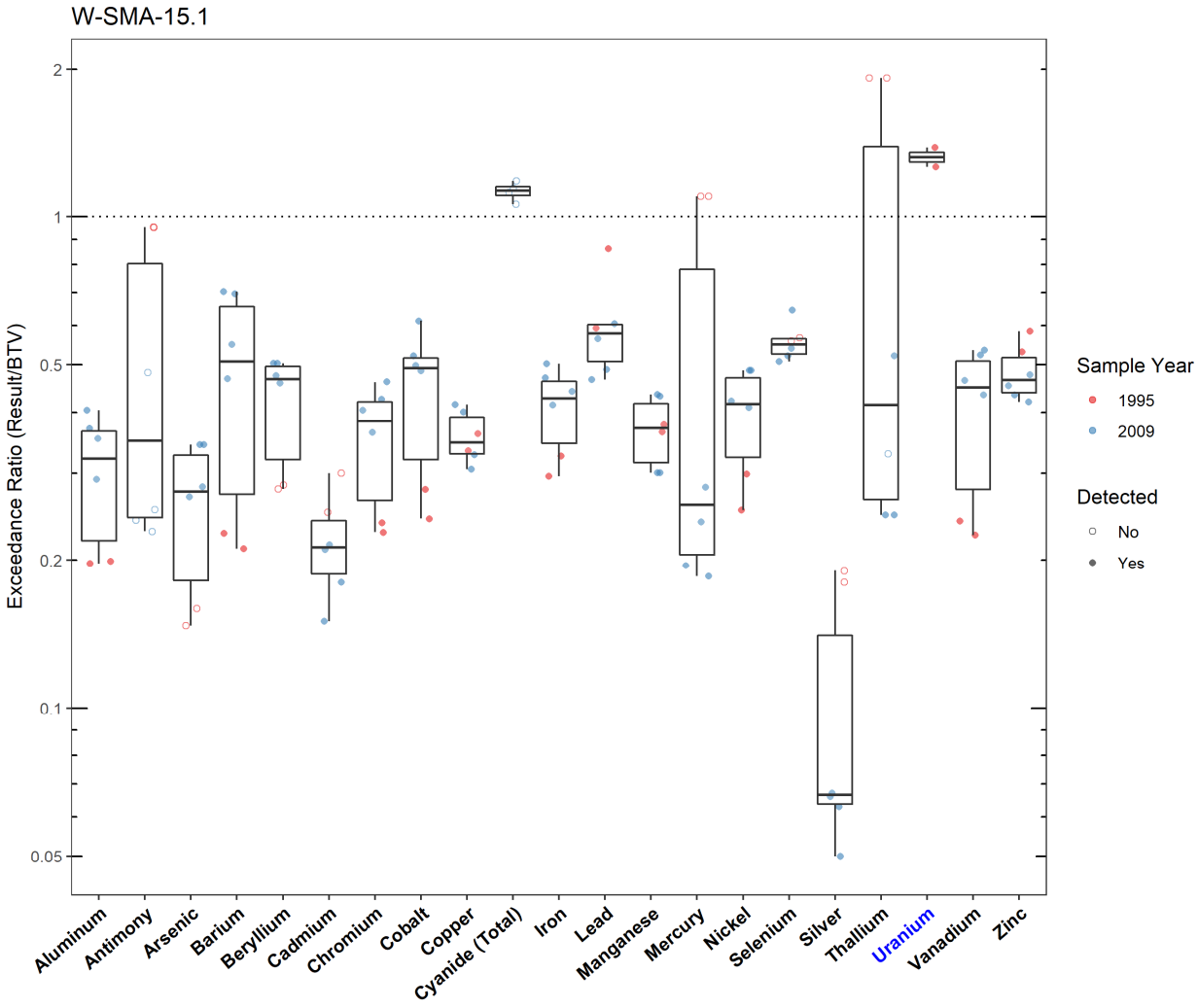


Figure 218.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-15.1

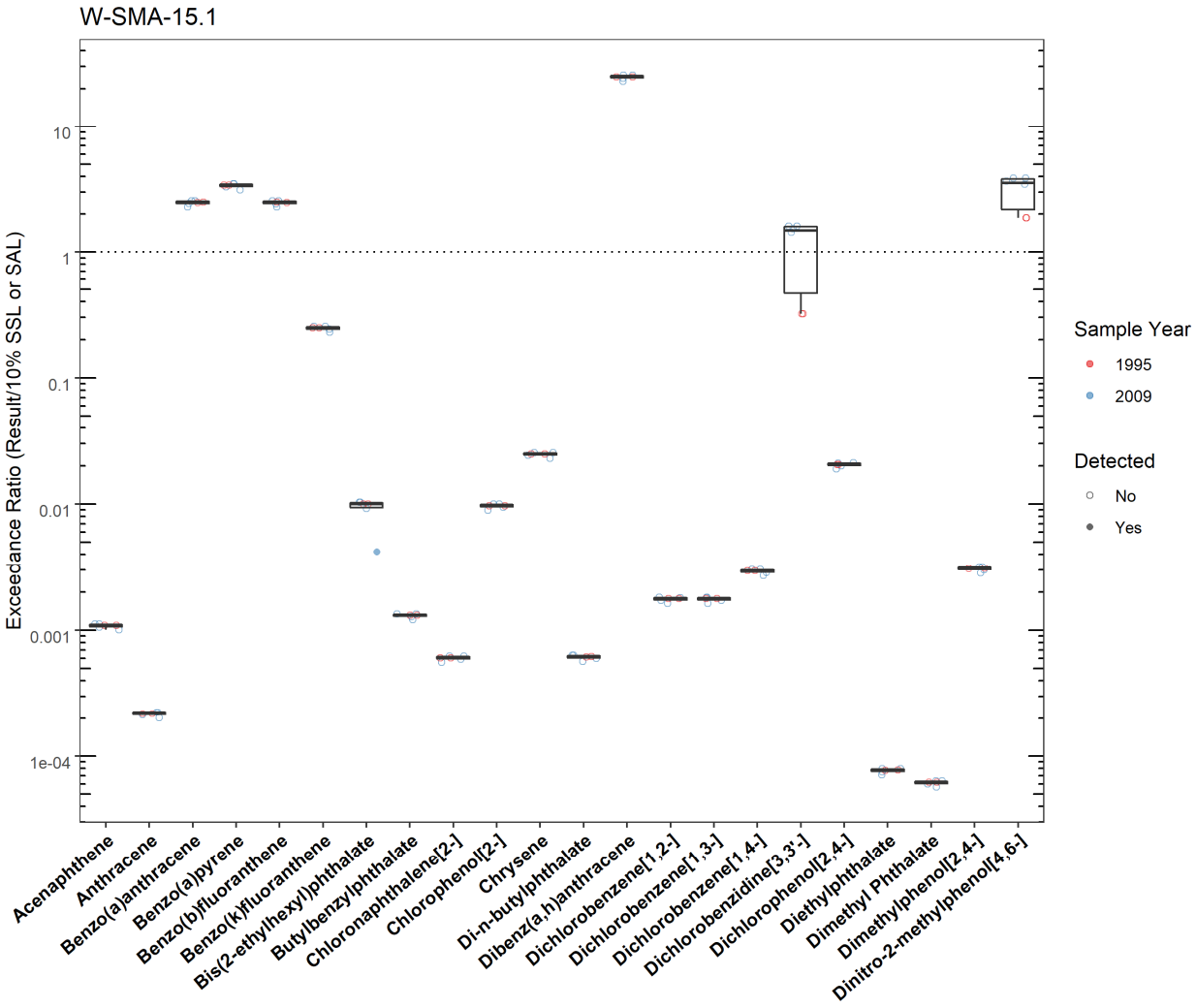


Figure 218.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-15.1 (Plot 1)

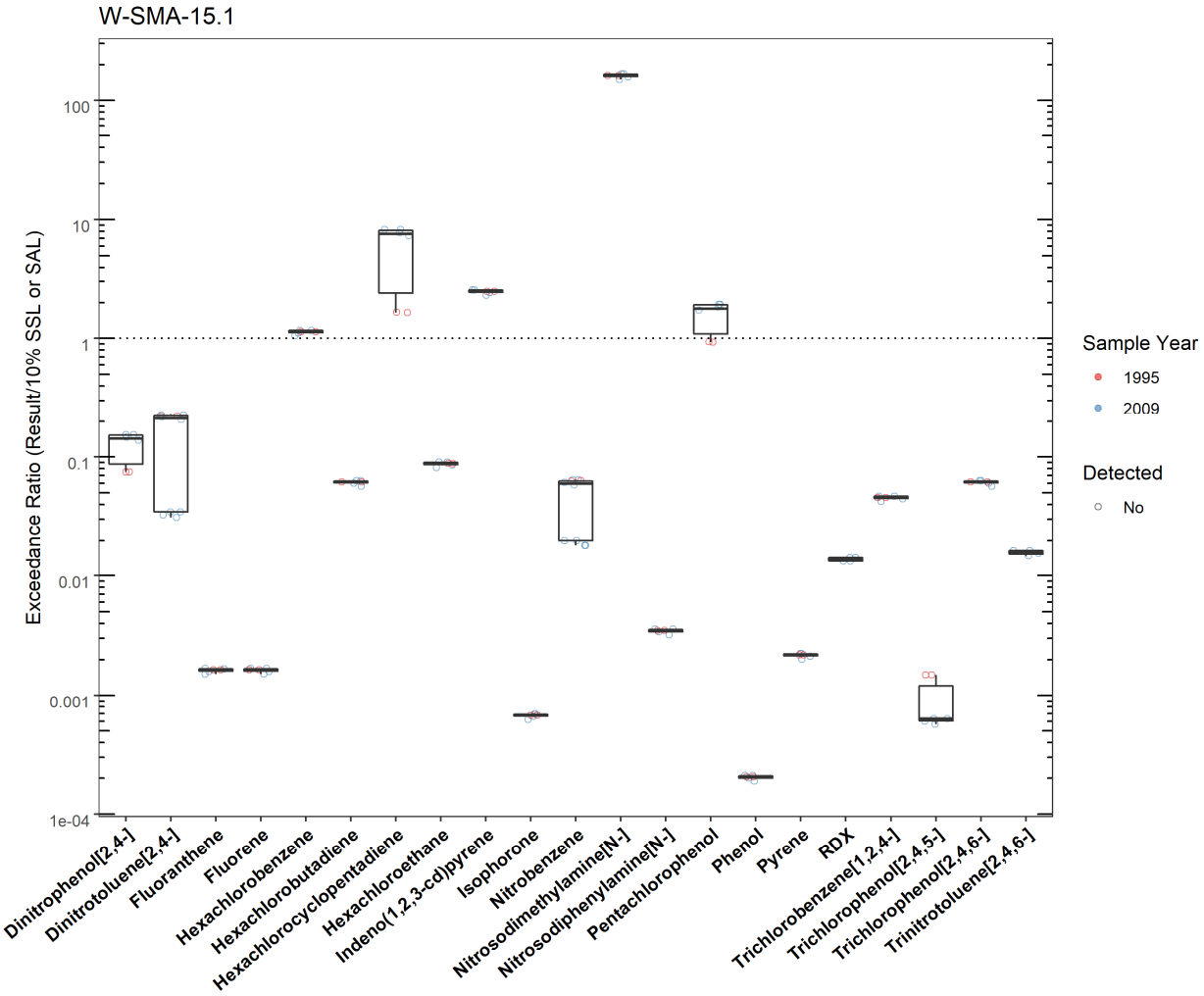


Figure 218.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-15.1 (Plot 2)

W-SMA-15.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Uranium	W-SMA-15.1	U	Y	BTV	1.82	2.51	1995-07-19

Figure 218.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-15.1

218.4 Stormwater Evaluation

218.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

218.4.2 Assessment Unit and Stream Impairments

W-SMA-15.1 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The metals and adjusted gross alpha impairments may be Site-related, based on Site history.

218.5 Site-Specific Demonstration

218.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: uranium.

218.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

218.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

218.5.4 Sampling and Analysis Plan

Table 218.5-1 is the proposed SAP for W-SMA-15.1.

Table 218.5-1 Proposed SAP, W-SMA-15.1

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement