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1200 Trinity Drive, Suite 150
Los Alamos, New Mexico 87544
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Environmental Management
Los Alamos Field Office
P.O. Box 1663, MS M984
Los Alamos, New Mexico 87545
(505) 257-7950/FAX (505) 606-2132

Date: October 27, 2020
Refer To: N3B-2020-0287

Esteban Herrera, Chief
Water Enforcement Branch (6EN-WS)
Compliance Assurance and Enforcement Division
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102

Subject: NPDES Permit No. NM0030759 – Alternative Compliance Requests for Six Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources

Dear Mr. Herrera:

Enclosed please find electronic files of the U.S. Department of Energy (DOE) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (the Permittees) written requests for alternative compliance for six site monitoring area (SMA)/site combinations at Los Alamos National Laboratory. The requests are being made in accordance with National Pollutant Discharge Elimination System Permit No. NM0030759 (the Individual Permit).

If the Permittees believe they have installed control measures to minimize pollutants in storm water discharges from Sites but are unable to certify completion of corrective action under Part I.E.2(a) through (d) of the Individual Permit, Part I.E.3 allows the Permittees to request the Sites be placed into alternative compliance. The enclosed requests address six SMA/Site combinations where target action level exceedances result from non-Site-related nonpoint sources.

As required by Part I.E.3 of the Individual Permit, the Permittees will notify the public of submittal of the alternative compliance requests by posting the notice on the Alternative Compliance page of the Individual Permit public website for a public review and comment period of 45 days (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4). The Permittees will prepare written responses to all relevant significant comments, which will also be posted on the Individual Permit page of N3B's public website.

After the 45-day comment period, the Permittees will submit the alternative compliance requests, along with the complete record of public comment and the Permittees' response to comments, to the U.S. Environmental Protection Agency, Region 6, for a final determination on the requests.

If you have any questions, please contact Emily Day at (505) 695-4243 (emily.day@em-la.doe.gov) or M. Lee Bishop at (505) 257-7902 (lee.bishop@em.doe.gov).

Sincerely,

Kimberly D Lebak

Kim Lebak
Program Manager
Environmental Remediation
N3B-Los Alamos

Sincerely,

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.22 15:42:19 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Enclosure(s):

1. Alternative Compliance Request for Solid Waste Management Unit 33-010(d) in A-SMA-4 (EM2020-0381)
2. Alternative Compliance Request for Solid Waste Management Unit 21-021 in DP-SMA-0.6 (EM2020-0382)
3. Alternative Compliance Request for Solid Waste Management Unit 21-021 in DP-SMA-3 (EM2020-0383)
4. Alternative Compliance Request for Solid Waste Management Unit 32-002(b2) in LA-SMA-5.361 (EM2020-0384)
5. Alternative Compliance Request for Area of Concern 20-003(c) in S-SMA-5.2 (EM2020-0385)
6. Alternative Compliance Request for Solid Waste Management Unit 11-001(c) in W-SMA-6 (EM2020-0386)

cc (letter with hard-copy enclosure[s]):
Sarah Holcomb, NMED-SWQB

cc (letter and enclosure[s] emailed):
Carol Johnson, EPA Region 6, Dallas, TX
Curry Jones, EPA Region 6, Dallas, TX
Laurie King, EPA Region 6, Dallas, TX
Brent Larsen, EPA Region 6, Dallas, TX
Chris Catechis, NMED-DOE-OB
Steve Yanicak, NMED-DOE-OB
M. Lee Bishop, EM-LA
Arturo Duran, EM-LA
Stephen Hoffman, EM-LA
Kirk D. Lachman, EM-LA
David Nickless, EM-LA
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Felicia Aguliar, N3B
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Emily Day, N3B
Mary Erwin, N3B
Thomas Harrison, N3B
Debby Holgerson, N3B
Jeff Holland, N3B
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Kim Lebak, N3B
Joseph Legare, N3B
Dana Lindsay, N3B
Pamela Maestas, N3B
Jason Moore, N3B
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Public Reading Room (EPRR)
PRS website

Pamela T. Maestas

From: Herrera, Esteban <Herrera.Esteban@epa.gov>
Sent: Monday, November 9, 2020 4:05 PM
To: Amanda B. White
Cc: Pamela T. Maestas; Steve J. Veenis
Subject: RE: Submittal to EPA on 10/27/2020 of Alternative Compliance Rqsts for 6 Sites

Hi Amanda,
Sorry. Yes, got it. Thank you!!!

U.S. Environmental Protection Agency
Compliance Assurance & Enforcement
Section Chief – Analysis and Assessment Section (R6-ECDWA)
1201 Elm Street, Suite 500
Dallas, TX 75270-2102
(214) 665-7213

From: Amanda B. White <Amanda.White@em-la.doe.gov>
Sent: Monday, November 09, 2020 4:37 PM
To: Herrera, Esteban <Herrera.Esteban@epa.gov>
Cc: Pamela T. Maestas <pamela.maestas@em-la.doe.gov>; Steve J. Veenis <Steve.Veenis@em-la.doe.gov>
Subject: RE: Submittal to EPA on 10/27/2020 of Alternative Compliance Rqsts for 6 Sites

Hi Esteban,

We were wondering if you received the Alternative Compliance Requests we sent EPA last week? If so, would you please reply that you have received the requests, as we use your acknowledgement email as the official receipt that you have, indeed, received the documents.

Thank you!

Amanda White, Ph.D.
Acting Program Manager
Monitoring and Compliance
Tech2 Solutions
505.309.1366
amanda.white@em-la.doe.gov

From: Pamela T. Maestas <pamela.maestas@em-la.doe.gov>
Sent: Tuesday, October 27, 2020 3:35 PM
To: Herrera, Esteban <Herrera.Esteban@epa.gov>
Cc: Johnson, Carol <johnson.carol@epa.gov>; Jones, Curry <jones.curry@epa.gov>; Larsen, Brent <Larsen.Brent@epa.gov>; Emily M. Day <Emily.Day@em-la.doe.gov>; Regulatory Documentation <RegDocs@EM-LA.DOE.GOV>; cheryl.rodriguez@em.doe.gov; Audrey Krehlik <Audrey.Krehlik@EM-LA.DOE.GOV>; Amanda B. White <Amanda.White@em-la.doe.gov>
Subject: Submittal to EPA on 10/27/2020 of Alternative Compliance Rqsts for 6 Sites

Mr. Herrera,
Attached for submittal is a pdf of the following:

- NPDES Permit No. NM0030759 – Alternative Compliance Requests for Six Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources (N3B-2020-0287, letter and enclosures)

Please acknowledge receipt of this submittal by responding to this email.
Let me know if you have any questions.
Thank you.

Pamela T. Maestas
Regulatory Documentation Manager
Newport News Nuclear BWXT-Los Alamos, LLC
c. 505-927-7882
regdocs@em-la.doe.gov

1200 Trinity Drive, Suite 150
Los Alamos, NM 87544

October 2020
EM2020-0381

Alternative Compliance Request for Solid Waste Management Unit 33-010(d) in A-SMA-4

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for Solid Waste Management Unit 33-010(d) in A-SMA-4

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kimberly D Lebak

Kim Lebak, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

9/28/20
Date

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.22 15:42:43 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System (NPDES) Storm Water Individual Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units (SWMUs) and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request for alternative compliance addresses SWMU 33-010(d) monitored at site monitoring area (SMA) A-SMA-4, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for SWMU 33-010(d) monitored at A-SMA-4 is that the pollutant of concern (POC), gross-alpha activity, is contributed by sources beyond the Permittees' control. Specifically, concentrations of the POC in the storm water discharge from A-SMA-4 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EM-LA	Environmental Management Los Alamos Field Office (DOE)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSC	suspended sediment concentration
SWMU	solid waste management unit
TA	technical area
TAL	target action level

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the DOE Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1) and is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

A-SMA-4 contains one Site, SWMU 33-010(d), and is located in Ancho Canyon. An extended baseline monitoring sample collected in 2018 from A-SMA-4 showed gross-alpha activity exceeding the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to initiate corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions when storm water monitoring results at an SMA exceed TALs. The Permittees may request to place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d). As described below, the Permittees have determined that the Site addressed in this request can achieve completion of corrective action only though the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Description, summarizes the historical operations that led to the Site in A-SMA-4 being identified as a SWMU in the 1990 SWMU report (LANL 1990), the current use of the Site, any Consent Order investigations and remedial actions conducted at the Site, and the current status of the Site under the Consent Order.
- Section 5.0, Description of Control Measures Installed within A-SMA-4, details the baseline control measures that were installed in A-SMA-4.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with historical industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a watershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a certificate of completion (COC) under NMED's Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, the agency will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part. I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 months of the effective date of the Permit, and certifications of completion of baseline control measures were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from achieving corrective action complete certification: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will make the alternative compliance request available to the public via the Individual Permit public website (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4).

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted to the Individual Permit public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTION

A-SMA-4 is a 0.64-acre watershed consisting of 100% undeveloped area. One Site is associated with A-SMA-4: SWMU 33-010(d).

SWMU 33-010(d) is a former canyon-side disposal area situated in the northeastern portion of East Site at TA-33. This Site is located on a steep slope directly north of the former gun-firing site berms [SWMU 33-006(b)] (LANL 2015). Debris scattered along the canyon rim and in a small drainage leading to Ancho Canyon consisted of concrete blocks, empty glass specimen vials, pieces of foam, cable, and metal cans (LANL 1995). The date this debris was deposited at the Site is not known; however, operations at East Site occurred between 1948 and 1972 (LANL 2015). Some of the debris was removed from this Site during a 1984 cleanup (LANL 1992). A voluntary corrective action was implemented in 1995 to remove debris from the Site. A total of 2 yd^3 nonhazardous, nonradioactive debris and 0.1 ft^3 radioactive debris was removed, including all debris larger than 3 in. in diameter, other than natural materials (LANL 1996). SWMU 33-010(d) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area.

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN A-SMA-4

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for A-SMA-4 is shown in Figure 5.0-1. An extended baseline confirmation sample was collected from A-SMA-4 on July 23, 2018. Analytical results from the samples yielded the following TAL exceedance:

- Gross-alpha activity of 122 pCi/L (ATAL is 15 pCi/L)

The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TALs (gross alpha) is within the natural background range of concentrations expected for storm water runoff from undeveloped landscapes.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following categories:

- Sources of pollutants
- Technical feasibility and practicability.

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at A-SMA-4 are described below.

7.1 Potential Sources of TAL Exceedances

Although alpha emitters are associated with industrial materials historically managed at Site 33-010(d), the likely source of gross alpha is runoff from undeveloped landscapes. The gross-alpha activity in the SMA sample does not exceed the gross-alpha activity in storm water runoff from undeveloped landscapes.

7.1.1 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including gross-alpha activity. These results are summarized in the publication entitled “Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision” (hereafter, the Background Report) (Windward 2020). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of metals and gross alpha in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = [(% impervious SMA area × 90th percentile developed landscape BTV) + (% pervious SMA area × 90th percentile undeveloped landscape BTV)]/100. A-SMA-4 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90th-percentile BTV for gross-alpha activity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The gross-alpha result from A-SMA-4 (122 pCi/L) had a paired SSC value of 28,600 mg/L. The SSC-normalized gross-alpha result is 4.3 pCi/g SSC, below the BTV of 57 pCi/g SSC. Table 7.1-1 compares the TAL-exceeding constituent with the composite BTV (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at A-SMA-4 were analyzed for gross-alpha activity, which is a measure of the alpha activity associated with all alpha-emitting radionuclides detected in the sample. The TAL specified in the Individual Permit, however, is for adjusted gross-alpha activity. Adjusted gross-alpha activity does not include the alpha activity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha activity of a sample will always be greater than the adjusted gross-alpha activity, use of gross-alpha activity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha activity as "total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954."

Significant industrial materials managed and potentially released at the Site addressed in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha activity from these significant materials associated with industrial activities and then potentially released to storm water discharges at this Site could not contribute to adjusted gross-alpha activity. There are, therefore, no sources of adjusted gross-alpha activity associated with this Site.

7.2 Rationale for Alternative Compliance

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the gross-alpha exceedance is a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of gross-alpha activity in storm water runoff from the Site that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe A-SMA-4 is not contributing to the gross-alpha activity TAL exceedance; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by the Site. Therefore, mitigating Site-related storm water would not reduce the gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because Site 33-010(d) is not the source of gross-alpha exceedance, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site, or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees propose to continue to inspect and maintain existing controls until the Site is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency), September 30, 2010. "Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759," Region 6, Dallas, Texas.

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT "Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759," Region 6, Dallas, Texas.

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. III of IV (TA-26 through TA-50), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1122," Los Alamos National Laboratory document LA-UR-92-925, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), November 1995. "Voluntary Corrective Action Plan for Solid Waste Management Units at TA-33: 33-010(a), Canyon-Side Disposal Area; 33-010(b), Canyon-Side Disposal Area; 33-010(d), Surface Disposal Area; 33-010(g), Canyon-Side Disposal Area; 33-011(b), General Storage Area," Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 1996. "Voluntary Corrective Action Completion Report for Solid Waste Management Units at TA-33, 33-010(a), Canyon-Side Disposal Area, 33-010(d), Surface Disposal Area, 33-010(g), Canyon-Side Disposal Area, 33-011(b), General Storage Area," Los Alamos National Laboratory document LA-UR-96-1839, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 2009. "2009 Hydrogeologic Site Atlas," Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), July 2015. "Investigation Work Plan for South Ancho Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-15-25429, Los Alamos, New Mexico.

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Strom Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle, Washington.

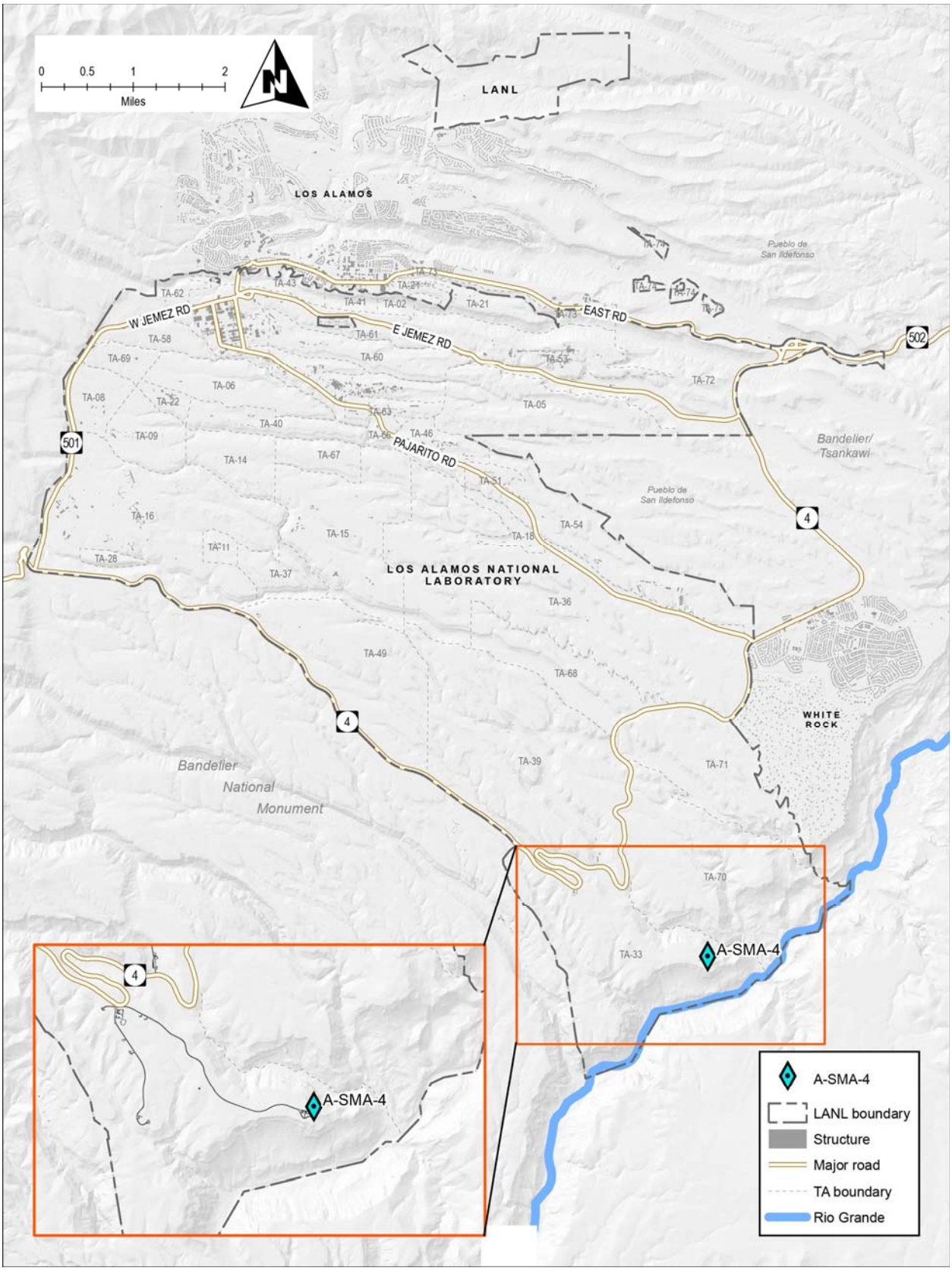


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

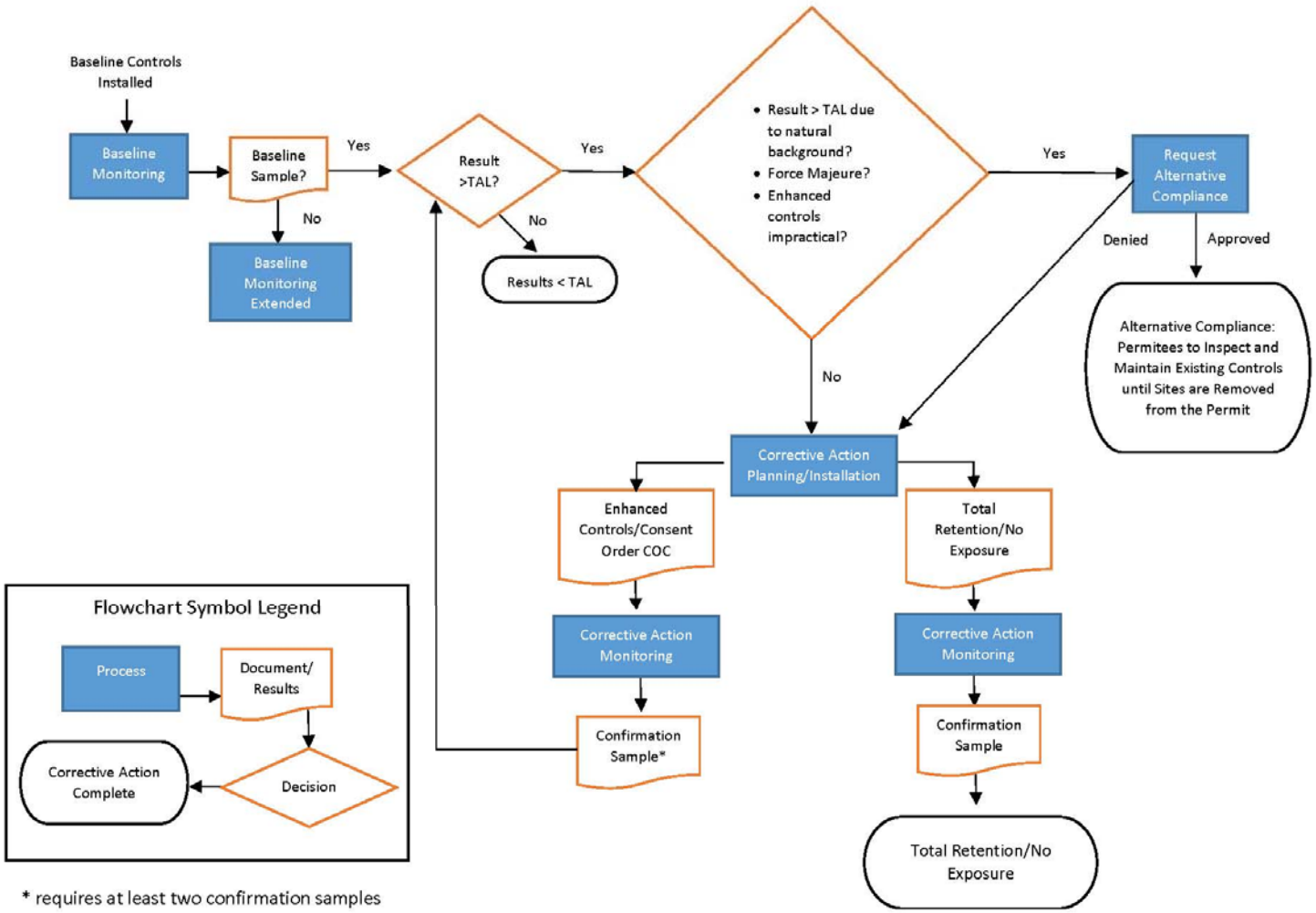


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

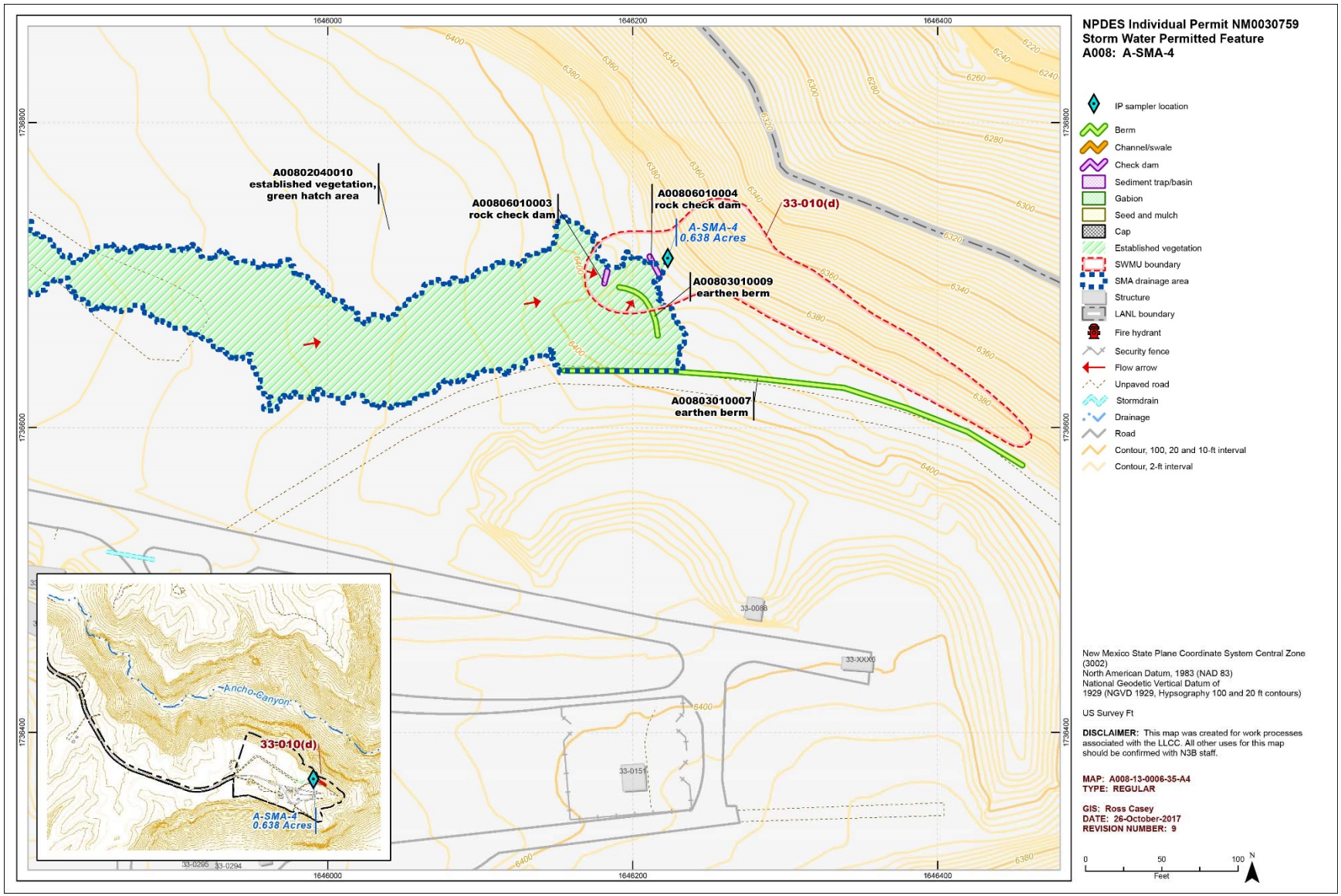
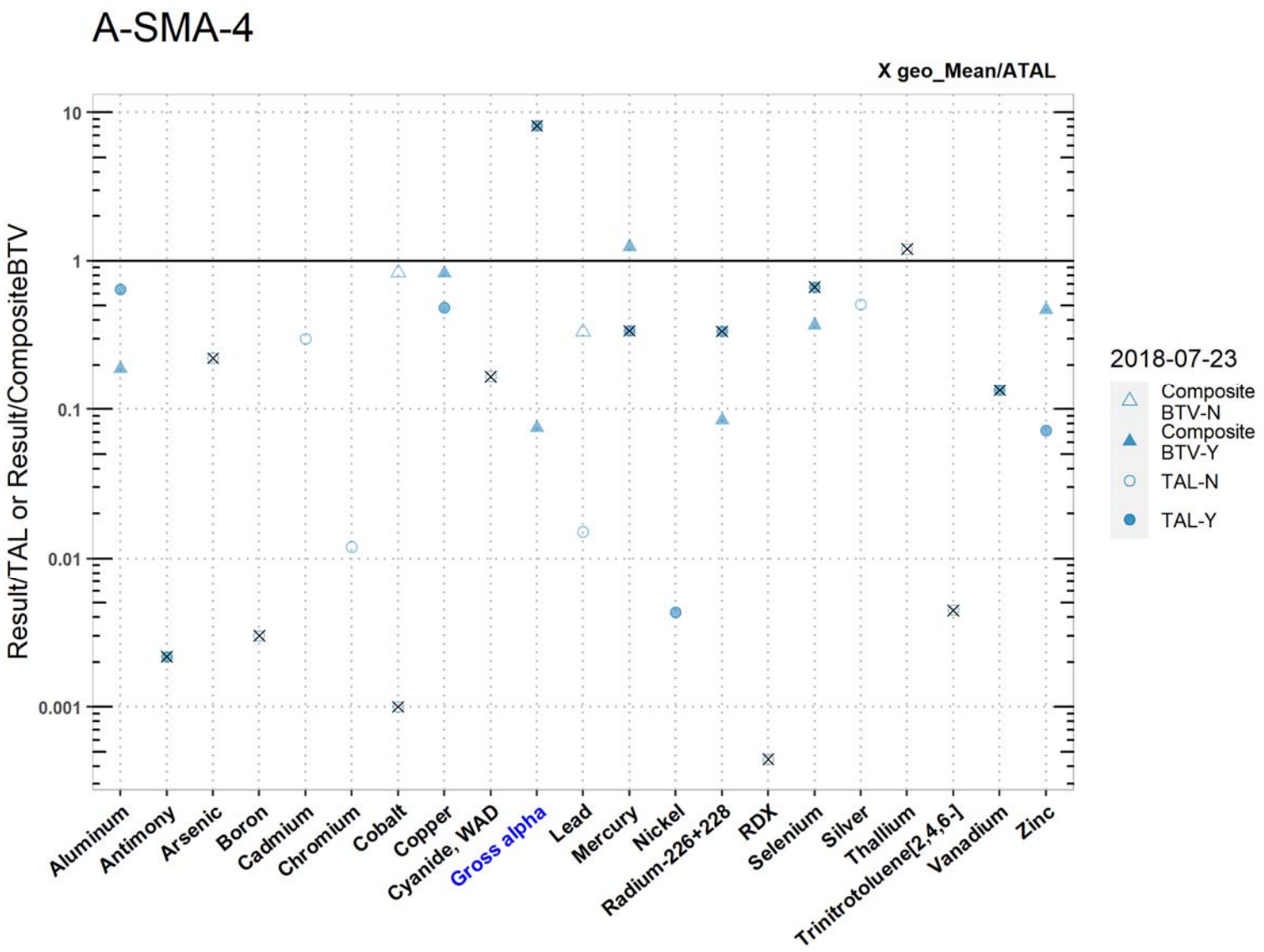


Figure 5.0-1 A-SMA-4 location map



Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 2018 analytical results summary plot and table for A-SMA-4

A-SMA-4

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	0.5	20	100	NA
MTAL	880	NA	340	NA	0.71	250	NA	5.3	22	NA	33	NA	200	NA	NA	20	0.59	NA	NA	NA	65
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	NA	9	NA	NA	NA	NA	10
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
2018-07-23 result	565	1.39	*2*	*15*	*0.3*	*3*	*1*	2.56	*1.67*	122	*0.5*	0.261	0.863	10.1	*0.0889*	3.33	*0.3*	*0.6*	*0.0889*	13.4	4.68
2018-07-23 dT	0.64	0.0022	NA	NA	NA	NA	NA	0.48	NA	**8.1**	NA	0.34	0.0043	0.34	NA	0.67	NA	NA	NA	0.13	0.072
2018-07-23 dB	0.19	NA	NA	NA	NA	NA	NA	0.83	NA	0.075	NA	**1.2**	NA	0.084	NA	0.37	NA	NA	NA	NA	0.47
geo_mean/ATAL	NA	0.0022	0.22	0.003	NA	NA	0.001	NA	0.17	**8.1**	NA	0.34	NA	0.34	0.00044	0.67	NA	**1.2**	0.0044	0.13	NA

Bold font indicates an exceedance of the TAL or composite BTV; Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

*SSC normalized unit is pCi/g

Figure 6.0-1 continued 2018 analytical results summary plot and table for A-SMA-4

Table 5.0-1
Active Control Measures at A-SMA-4

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status
A00802040010	Established Vegetation	No	Yes	Yes	No	B[a]
A00803010007	Earthen Berm	Yes	No	No	No	CB[b]
A00803010009	Earthen Berm	No	Yes	No	Yes	B
A00806010003	Rock Check Dam	Yes	No	No	Yes	CB
A00806010004	Rock Check Dam	No	Yes	No	Yes	CB

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, A-SMA-4

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX[a]	2018	Gross Alpha	pCi/L	1	122	15	n/a[b]	8.1	n/a	n/a	n/a

[a] MEX = Extended baseline monitoring.

[b] n/a = Not applicable.

Table 7.1-1
2018 Storm Water Exceedances and BTV Comparison, A-SMA-4

TAL Exceedance	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
Gross alpha = 122 pCi/L (ATAL is 15 pCi/L) **SSC** = 28,600 mg/L **SSC-normalized gross alpha** = 4.3 pCi/g SSC	(SSC-normalized BTV: 57 pCi/g SSC*) ☐ Yes ☒ No

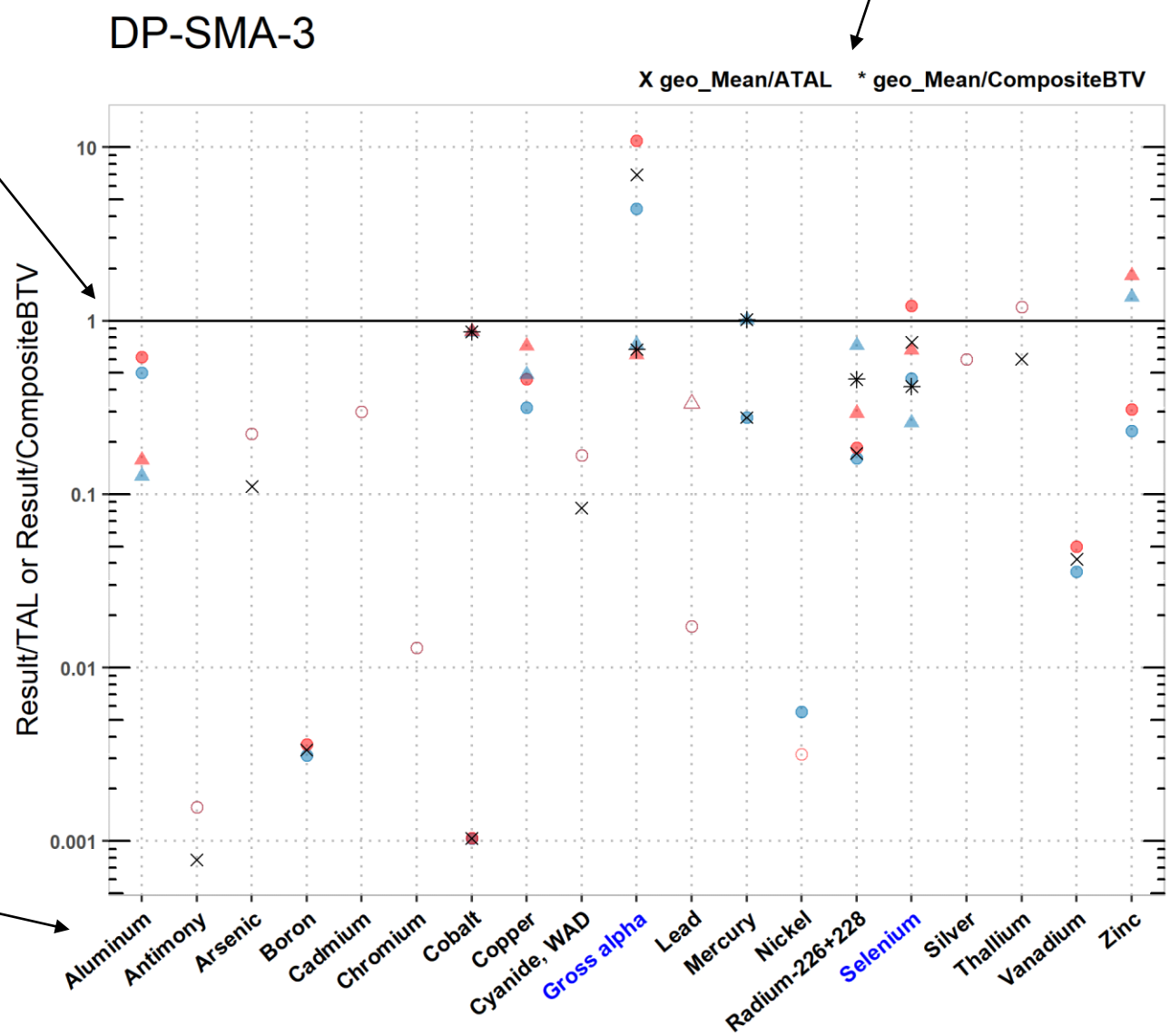
* Windward 2020

Appendix A

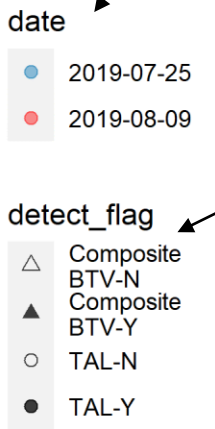
How to Read the Analytical Results Summary Plot and Table

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

Analytical results are normalized by dividing by the TAL or by the Composite BTV, creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL or BTV for each analyte.



List of all samples collected at the SMA for the current monitoring stage. Analytical data from each sample is plotted using the color shown in this legend.



Legend of symbols used in the plots. Hollow symbols indicate a nondetect result below quantitation level (-N) and the value plotted is the quantitation level divided by the TAL or Composite BTV. Solid symbols indicate a detected value (-Y) and the value plotted is the result divided by the TAL or Composite BTV. For example, "TAL-Y" represents the TAL ratio for detected results (detected result divided by the TAL). This legend is dynamic and will only display symbols relevant to the analytical data plotted for each SMA.

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedences are shown in blue font.

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the Composite Background Threshold Value. It is calculated based on the percentages of developed and undeveloped landscape in the SMA.

These three rows present the raw result (result), the result divided by TAL (dT), and the result divided by the Composite BTV (dB). They are grouped by date. The TAL ratio (dT) and BTV ratio (dB) are only calculated for detected results.

These two rows present the geometric mean of the results from multiple sampling dates divided by the ATAL and divided by the Composite BTV

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
2019-07-25 dT	0.5	NA	NA	0.0031	NA	NA	0.001	0.32	NA	**4.4**	NA	0.28	0.0056	0.16	0.46	NA	NA	0.036	0.23
2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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

October 2020
EM2020-0382

Alternative Compliance Request for Solid Waste Management Unit 21-021 in DP-SMA-0.6

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for Solid Waste Management Unit 21-021 in DP-SMA-0.6

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kimberly D Lebak

Kim Lebak, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

9/28/20
Date

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.27 06:56:50 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System (NPDES) Storm Water Individual Permit (Permit No. NM0030759) (the Permit or Individual Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units (SWMUs) and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request for alternative compliance addresses the portion of SWMU 21-021 monitored at site monitoring area (SMA) DP-SMA-0.6, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for the portion of SWMU 21-021 monitored at DP-SMA-0.6 is that the pollutant of concern (POC), gross-alpha activity, is contributed by sources beyond the Permittees' control. Specifically, concentrations of the POC in the storm water discharge from DP-SMA-0.6 are below storm water background concentrations.

CONTENTS

Figures

Tables

Appendix

ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
DP	Delta Prime
EM-LA	Environmental Management Los Alamos Field Office (DOE)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSC	suspended sediment concentration
SWMU	solid waste management unit
TA	technical area
TAL	target action level

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1) and is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

DP-SMA-0.6 contains two Sites, SWMU 21-021 and 21-024(l). SWMU 21-024(l) has received a certificate of completion (COC) from the New Mexico Environment Department (NMED) under the Compliance Order on Consent (Consent Order); therefore this alternative compliance request is for the portion of SWMU 21-021 within DP-SMA-0.6. An extended baseline monitoring sample collected in 2019 from DP-SMA-0.6 showed gross-alpha activity exceeding the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to initiate corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions when storm water monitoring results at an SMA exceed TALs. The Permittees may request to place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d). As described below, the Permittees have determined that SWMU 21-021, the Site addressed in this request, can achieve completion of corrective action only though the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Consent Order, administered by NMED; and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Description, summarizes the historical operations that led to the Sites in DP-SMA-0.6 being identified as SWMUs in the 1990 SWMU report (LANL 1990), the current use of the Sites, any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.

- Section 5.0, Description of Control Measures Installed within DP-SMA-0.6, details the baseline control measures that were installed in DP-SMA-0.6.
- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with historical industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a watershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have

been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a COC under NMED's Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to

EPA on or at least 6 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, the agency will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part. I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 months of the effective date of the Permit, and certifications of completion of baseline control measures were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from achieving corrective action complete certification: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will make the alternative compliance request available to the public via the Individual Permit public website (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4).

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted to the Individual Permit public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTION

DP-SMA-0.6 is a 0.03-acre watershed consisting of 100% undeveloped area. Two historical industrial activity areas are associated with DP-SMA-0.6: SWMU 21-021 and SWMU 21-024(l).

SWMU 21-021 consists of surface soil contamination resulting from emissions from stacks throughout Technical Area 21 (TA-21). The estimated area of soil contamination is approximately 300,000 m^2 and overlaps all of TA-21 (LANL 1990). Radionuclides were known to have been released from stacks throughout TA-21 (LANL 1990). There is no documentation of nonradioactive chemical releases associated with historical TA-21 stack emissions.

During a 1992 RCRA facility investigation, 155 shallow soil samples were collected from locations on a 40- × 40-m grid across TA-21. NMED approved the ensuing Delta Prime (DP) Site Aggregate Area investigation work plan, which indicated the investigation of SWMU 21-021 was complete and no additional investigations were required (LANL 2004, NMED 2005). SWMU 21-021 is also included in Appendixes A and C of the Consent Order as part of the TA-21 Decontamination and Decommissioning and Cleanup Campaign. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, evaluation of risk associated with SWMU 21-021 is not expected to be made until investigation of all other TA-21 SWMUs and AOCs is complete.

SWMU 21-024(l) is the location of a former outfall that received liquid waste from the floor drain of the building 21-021 mechanical room (LANL 1991). The 3-in. cast-iron drainline ran north from the building 21-021 mechanical room to the outfall near the south rim of DP Canyon (Engineering Drawing ENG-C 23358, LASL 1960; LANL 2008). From 1946 to 1974, building 21-021 housed a vault used to store uranium and plutonium. During the 2007 DP Site Aggregate Area investigation, the drainline was removed (LANL 2008). Decision-level data for SWMU 21-024(l) are available from soil samples collected from the interval 0 3 ft below ground surface during 2007 and 2009 Consent Order investigations (LANL 2016). SWMU 21-024(l) was recommended for corrective action complete with controls in the Phase III investigation report for DP Site Aggregate Area submitted to NMED in July 2016. NMED issued a COC with controls for SWMU 21-024(l) in September 2018 (NMED 2018). The Permittees certified corrective action complete at 21-024(l) to EPA on December 23, 2019 (N3B 2019).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN DP-SMA-0.6

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for DP-SMA-0.6 is shown in Figure 5.0-1. An extended baseline confirmation sample was collected from DP-SMA-0.6 on July 26, 2019. Analytical results from the samples yielded the following TAL exceedance:

- gross-alpha activity of 199 pCi/L (ATAL is 15 pCi/L)

The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TALs (gross alpha) is within the natural background range of concentrations expected for storm water runoff from undeveloped landscapes. Within DP-SMA-0.6, SWMU 21-024(l) has received a COC from NMED under the Consent Order, but SWMU 21-021 is not anticipated to receive a COC within the compliance timeframe of the Individual Permit. Thus the Permittees are requesting alternative compliance for the portion of SWMU 21-021 within DP-SMA-0.6.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following categories:

- Sources of pollutants
- Technical feasibility and practicability.

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at Site 21-021 are described below.

7.1 Potential Sources of TAL Exceedances

Although alpha emitters are associated with industrial materials historically managed at Site 21-021, the likely source of gross alpha is runoff from undeveloped landscapes. The gross-alpha activity in the SMA sample does not exceed the gross-alpha activity in storm water runoff from undeveloped landscapes.

7.1.1 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including gross-alpha activity. These results are summarized in the publication entitled "Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision" (hereafter, the Background Report) (Windward 2020). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of metals and gross alpha in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = [(% impervious SMA area × 90th percentile developed landscape BTV) + (% pervious SMA area × 90th percentile undeveloped landscape BTV)]/100. DP-SMA-0.6 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90th-percentile BTV for gross-alpha activity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The gross alpha result from DP-SMA-0.6 (199 pCi/L) had a paired SSC value of 4600 mg/L. The SSC-normalized gross-alpha result is 43.3 pCi/g SSC, below the BTV of 57 pCi/g SSC. Table 7.1-1 compares the TAL-exceeding constituent with the composite BTV (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at DP-SMA-0.6 were analyzed for gross-alpha activity, which is a measure of the alpha activity associated with all alpha-emitting radionuclides detected in the sample. The TAL specified in the Individual Permit, however, is for adjusted gross-alpha activity. Adjusted gross-alpha activity does not include the alpha activity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha activity of a sample will always be greater than the adjusted gross-alpha activity, use of gross-alpha activity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha activity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at SWMU 21-021 may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha activity from these significant materials associated with industrial activities and then potentially released to storm water discharges at Site 21-021 could not contribute to adjusted gross-alpha activity. There are, therefore, no sources of adjusted gross-alpha activity associated with Site 21-021.

7.2 Rationale for Alternative Compliance

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the gross-alpha exceedance is a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by Site 21-021 are exempt and are not regulated

under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of gross-alpha activity in storm water runoff from Site 21-021 that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe Site 21-021 at DP-SMA-0.6 is not contributing to the gross-alpha activity TAL exceedance; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by Site 21-021. Therefore, mitigating Site-related storm water would not reduce the gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because SWMU 21-021 is not the source of gross-alpha exceedance, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site, or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees propose to continue to inspect and maintain existing controls until Site 21-021 is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency), September 30, 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

LANL (Los Alamos National Laboratory), November 1990. “Solid Waste Management Units Report,” Vol. II of IV (TA-10 through TA-25), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1991. “TA-21 Operable Unit RFI Work Plan for Environmental Restoration,” Vol. II (Chapters 14 to 16), Los Alamos National Laboratory document LA-UR-91-962, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), August 2004. “Investigation Work Plan for Delta Prime Site Aggregate Area at Technical Area 21,” Los Alamos National Laboratory document LA-UR-04-5009, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), March 2008. “Delta Prime Site Aggregate Area Investigation Report, Revision 1,” Los Alamos National Laboratory document LA-UR-08-1834, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 2009. "2009 Hydrogeologic Site Atlas," Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), July 2016. "Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1," Los Alamos National Laboratory document LA-UR-16-24014, Los Alamos, New Mexico.

LASL (Los Alamos Scientific Laboratory), February 3, 1960. "Storage Vault Addition (for SF Material), Mechanical Plans and Details, Bldg. DPW-21, TA-21," Engineering Drawing ENG-C23358, Los Alamos, New Mexico.

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), December 23, 2019. "NPDES Permit No. NM0030759 – Completion of Corrective Action for 15 Sites in 12 Site Monitoring Areas Following Certificate of Completion from the New Mexico Environment Department," Newport News Nuclear BWXT-Los Alamos, LLC, letter to E. Herrera (EPA) from E. Lowes (N3B) and D. Nickless (EM-LA), Los Alamos, New Mexico.

NMED (New Mexico Environment Department), April 13, 2005. "Approval with Modifications for the Investigation Work Plan for Delta Prime Site Aggregate Area at Technical Area 21," New Mexico Environment Department letter to D. Gregory (DOE LASO) and G.P. Nanos (LANL Director) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico.

NMED (New Mexico Environment Department), September 4, 2018. "Re: Request for Certificates of Completion for Twenty-Three Solid Waste Management Units and Four Areas of Concern in the Delta Prime Site Aggregate Area," New Mexico Environment Department letter to D. Hintze (EM-LA) and N. Lombardo (N3B) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico.

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Strom Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle, Washington.

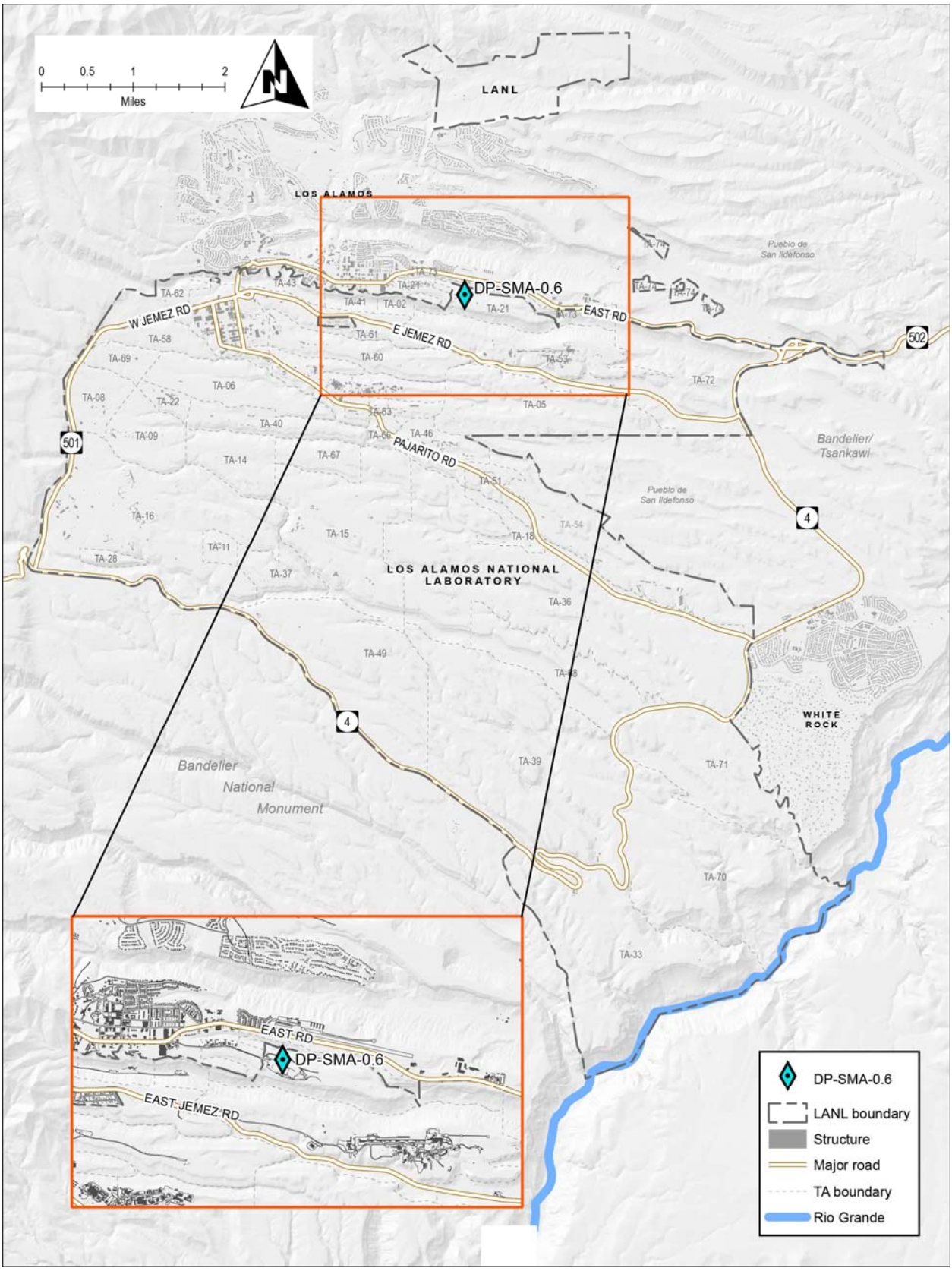


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

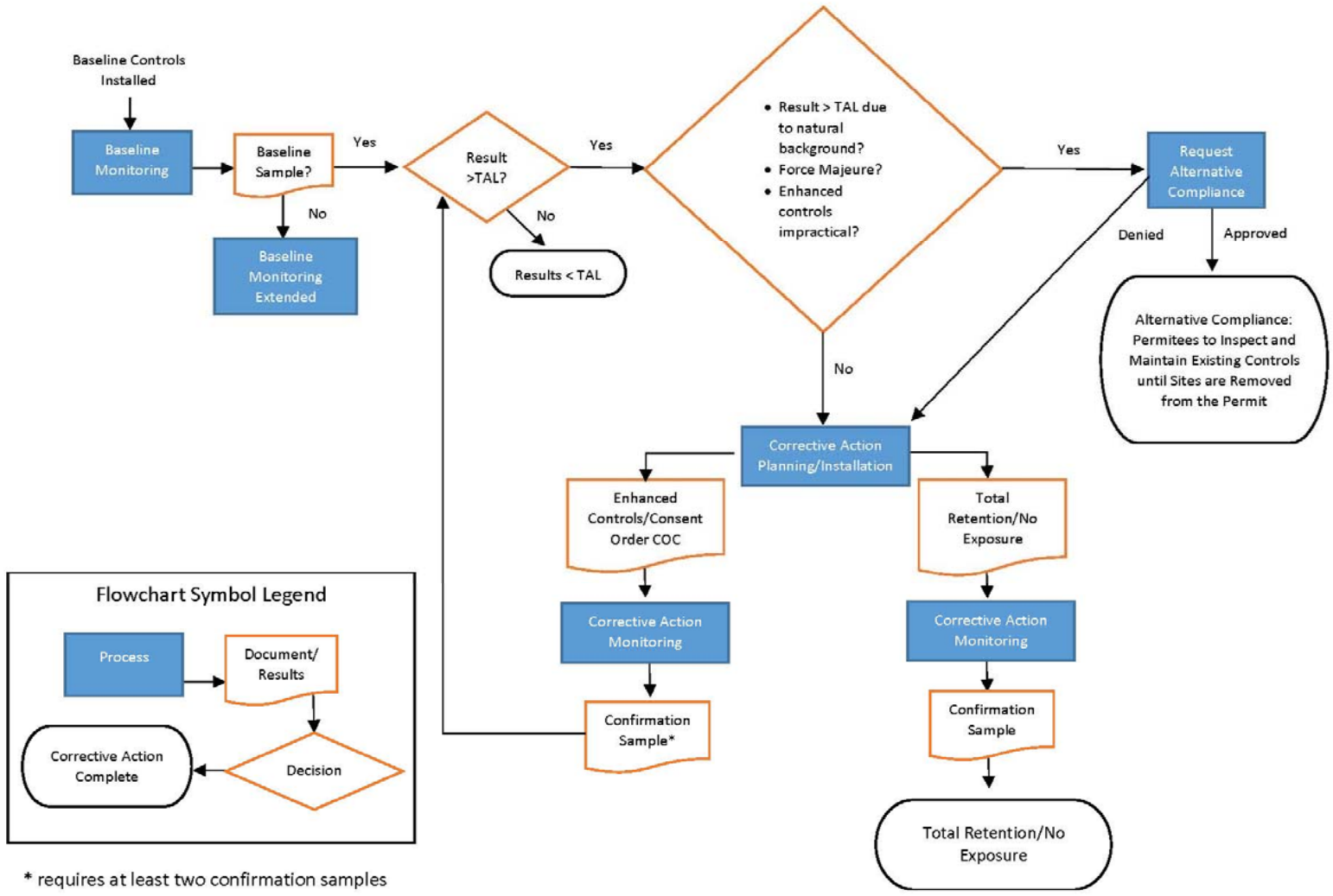


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

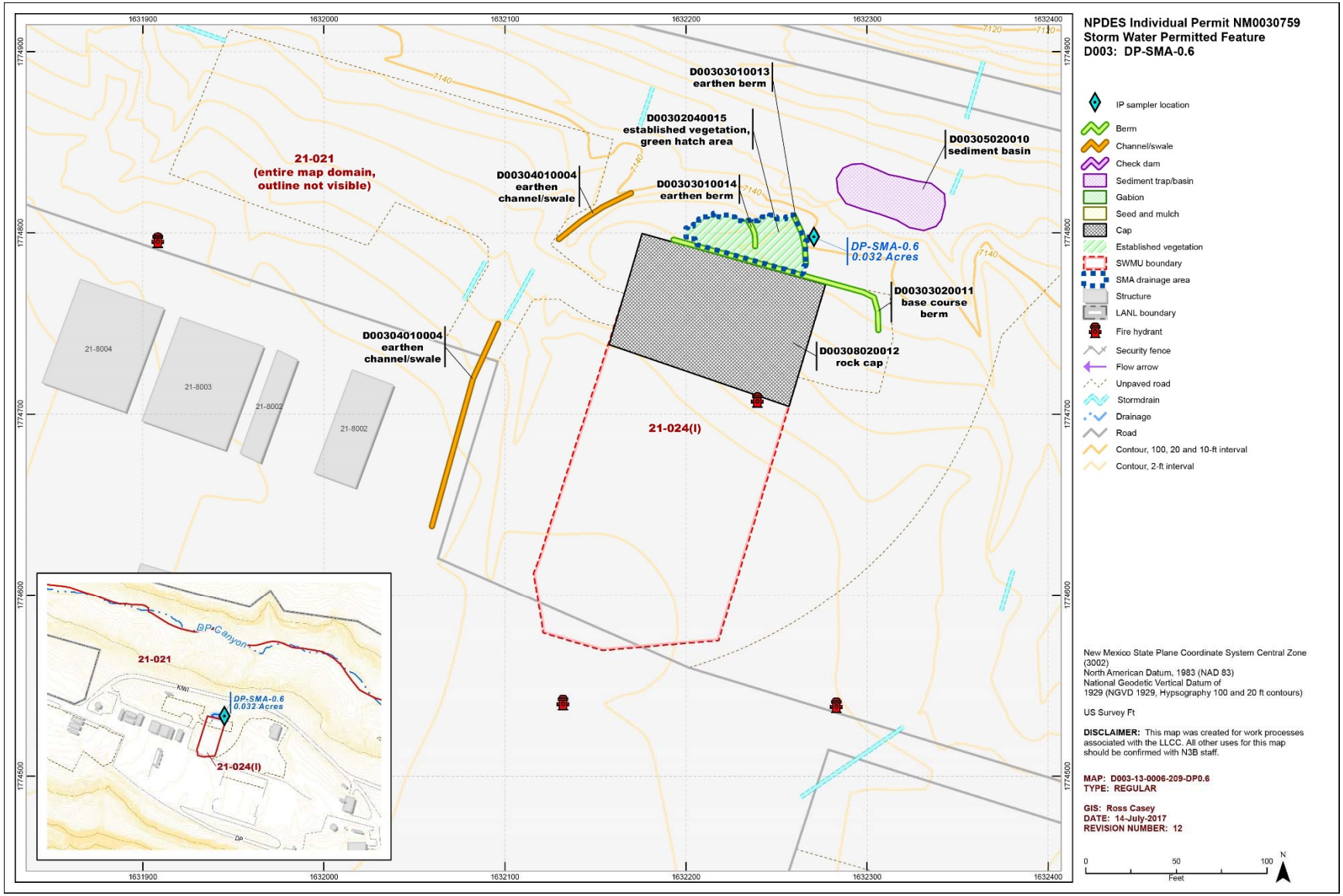
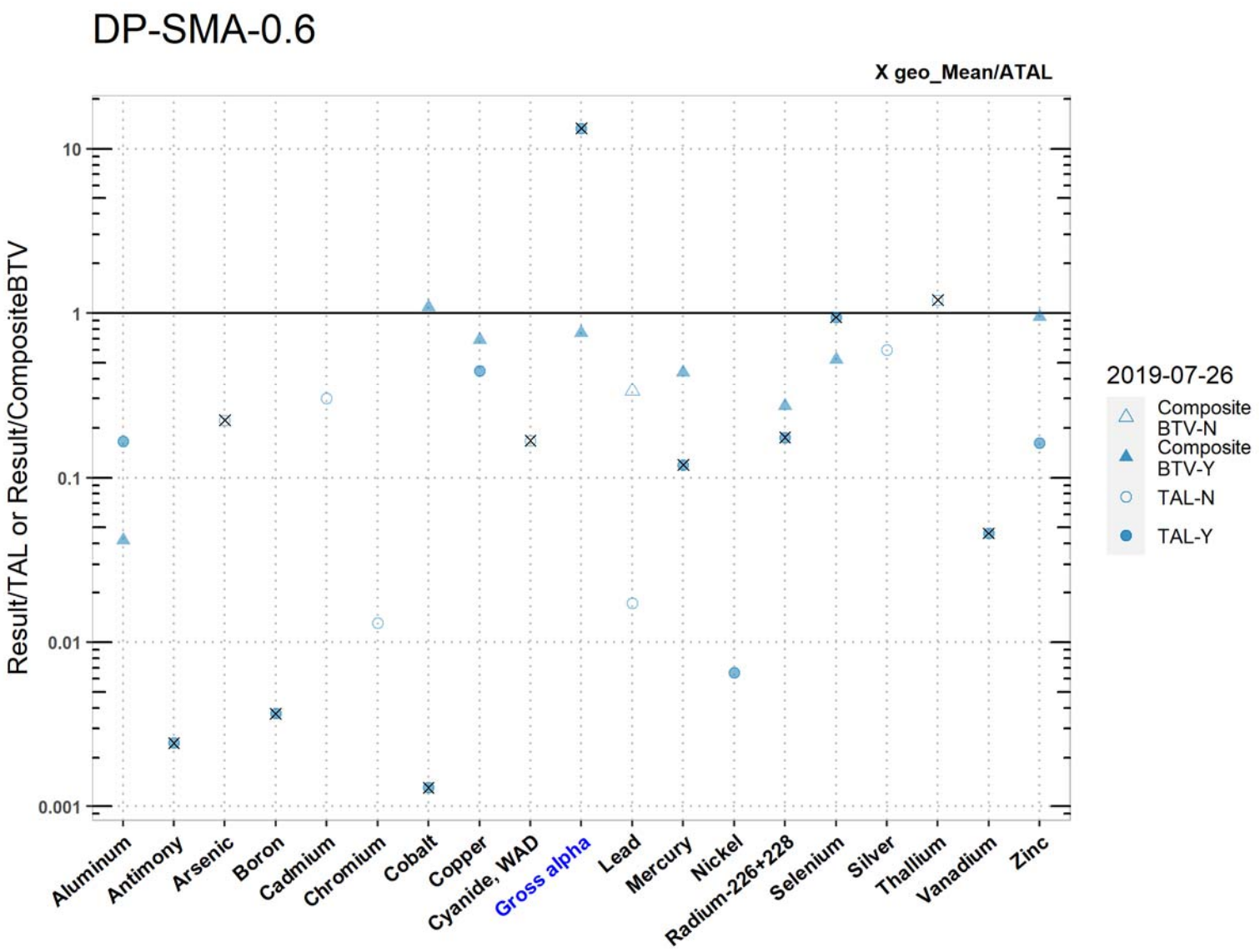


Figure 5.0-1 DP-SMA-0.6 location map



Note A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 2019 analytical results summary plot and table for DP-SMA-0.6

DP-SMA-0.6

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-26 result	126	1.57	*2*	18.5	*0.3*	*3*	1.3	2.14	*1.67*	199	*0.5*	0.092	1.24	5.24	4.71	*0.3*	*0.6*	4.62	9.52
2019-07-26 dT	0.17	0.0025	NA	0.0037	NA	NA	0.0013	0.45	NA	**13**	NA	0.12	0.0065	0.17	0.94	NA	NA	0.046	0.16
2019-07-26 dB	0.042	NA	NA	NA	NA	NA	**1.1**	0.69	NA	0.76	NA	0.44	NA	0.27	0.52	NA	NA	NA	0.95
geo_mean/ATAL	NA	0.0025	0.22	0.0037	NA	NA	0.0013	NA	0.17	**13**	NA	0.12	NA	0.17	0.94	NA	**1.2**	0.046	NA

Bold font indicates an exceedance of the TAL or composite BTV; Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

*SSC normalized unit is pCi/g

Figure 6.0-1 continued 2019 analytical results summary plot and table for DP-SMA-0.6

Table 5.0-1
Active Control Measures at DP-SMA-0.6

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status
D00302040015	Established Vegetation	No	Yes	Yes	No	B[a]
D00303010013	Earthen Berm	No	Yes	No	Yes	CB[b]
D00303010014	Earthen Berm	No	Yes	No	Yes	CB
D00303020011	Base Course Berm	Yes	No	No	Yes	CB
D00304010004	Earthen Channel/Swale	Yes	No	Yes	No	CB
D00305020010	Sediment Basin	No	Yes	No	Yes	CB
D00308020012	Rock Cap	No	No	Yes	No	CB

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, DP-SMA-0.6

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX[a]	2019	Gross Alpha	pCi/L	1	199	15	n/a[b]	13.3	n/a	n/a	n/a

[a] MEX = Extended baseline monitoring.

[b] n/a = Not applicable.

Table 7.1-1
2019 Storm Water Exceedances and BTV Comparison, DP-SMA-0.6

TAL Exceedance	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
Gross alpha = 199 pCi/L (ATAL is 15 pCi/L) **SSC** = 4600 mg/L **SSC-normalized gross alpha** = 43.3 pCi/g SSC	(SSC-normalized BTV: 57 pCi/g SSC*) ☐ Yes ☒ No

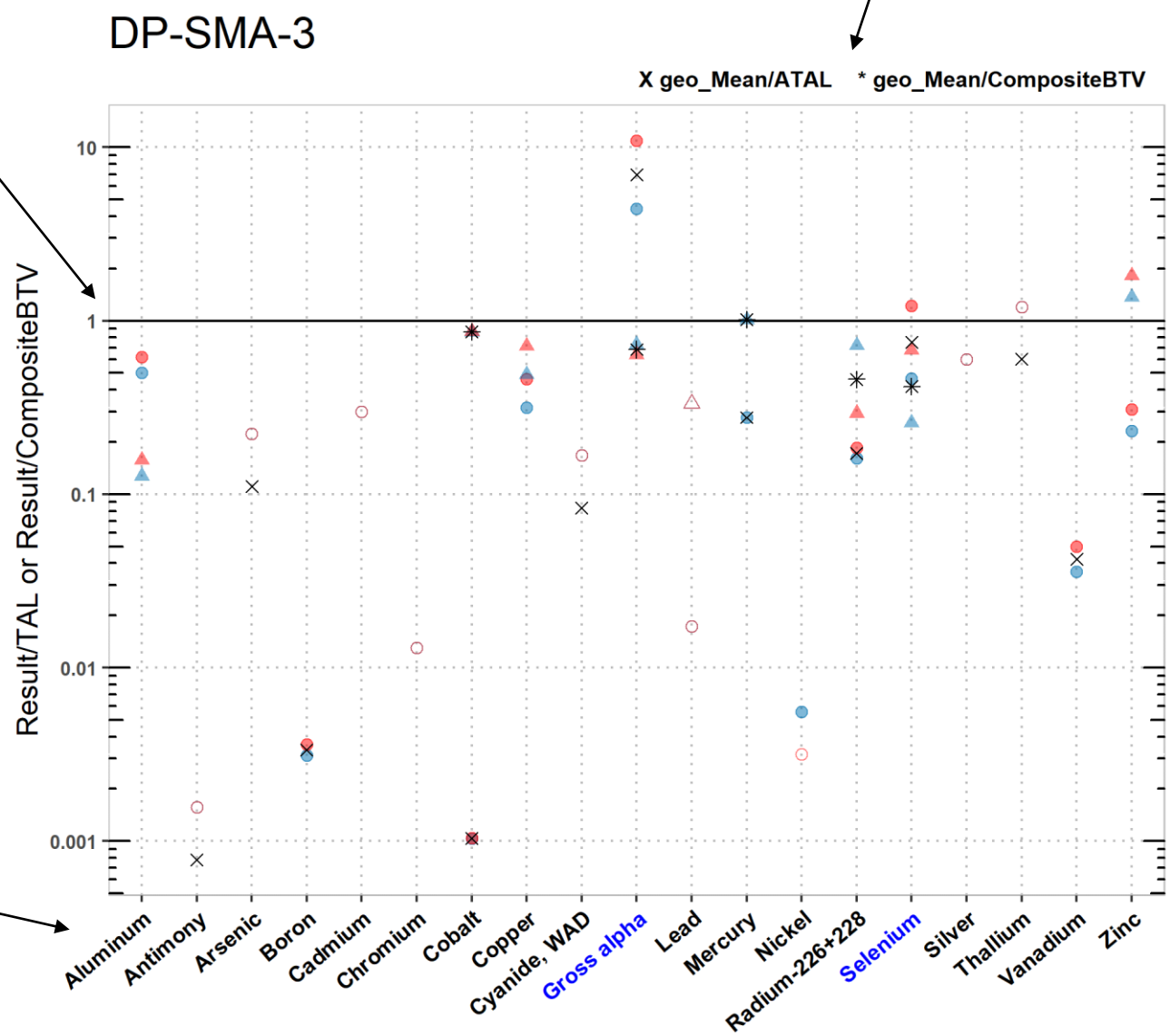
*Windward 2020.

Appendix A

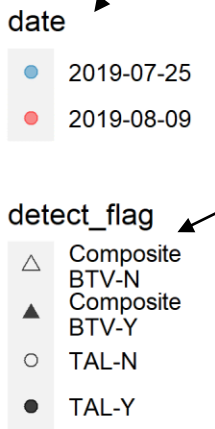
How to Read the Analytical Results Summary Plot and Table

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

Analytical results are normalized by dividing by the TAL or by the Composite BTV, creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL or BTV for each analyte.



List of all samples collected at the SMA for the current monitoring stage. Analytical data from each sample is plotted using the color shown in this legend.



Legend of symbols used in the plots. Hollow symbols indicate a nondetect result below quantitation level (-N) and the value plotted is the quantitation level divided by the TAL or Composite BTV. Solid symbols indicate a detected value (-Y) and the value plotted is the result divided by the TAL or Composite BTV. For example, "TAL-Y" represents the TAL ratio for detected results (detected result divided by the TAL). This legend is dynamic and will only display symbols relevant to the analytical data plotted for each SMA.

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedences are shown in blue font.

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the Composite Background Threshold Value. It is calculated based on the percentages of developed and undeveloped landscape in the SMA.

These three rows present the raw result (result), the result divided by TAL (dT), and the result divided by the Composite BTV (dB). They are grouped by date. The TAL ratio (dT) and BTV ratio (dB) are only calculated for detected results.

These two rows present the geometric mean of the results from multiple sampling dates divided by the ATAL and divided by the Composite BTV

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
2019-07-25 dT	0.5	NA	NA	0.0031	NA	NA	0.001	0.32	NA	**4.4**	NA	0.28	0.0056	0.16	0.46	NA	NA	0.036	0.23
2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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

October 2020
EM2020-0383

Alternative Compliance Request for Solid Waste Management Unit 21-021 in DP-SMA-3

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for Solid Waste Management Unit 21-021 in DP-SMA-3

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kimberly D Lebak

Kim Lebak, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

9/28/20
Date

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.27 06:57:28 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System (NPDES) Storm Water Individual Permit (Permit No. NM0030759) (the Permit or Individual Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units (SWMUs) and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request for alternative compliance addresses the portion of SWMU 21-021 monitored at site monitoring area (SMA) DP-SMA-3, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for the portion of SWMU 21-021 monitored at DP-SMA-3 is that the pollutant of concern (POC), gross-alpha activity, is contributed by sources beyond the Permittees' control. Specifically, concentrations of the POC in the storm water discharge from DP-SMA-3 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
BTV	background threshold value
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
DP	Delta Prime
EM-LA	Environmental Management Los Alamos Field Office (DOE)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSC	suspended sediment concentration
SWMU	solid waste management unit
TA	technical area
TAL	target action level
VCA	voluntary corrective action

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1) and is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

DP-SMA-3 contains two Sites, SWMUs 21-013(c) and 21-021. SWMU 21-013(c) has received a certificate of completion (COC) from the New Mexico Environment Department (NMED) under the Compliance Order on Consent (Consent Order); therefore this alternative compliance request is for the portion of SWMU 21-021 within DP-SMA-3. The confirmation monitoring samples collected in 2019 from DP-SMA-3 showed gross-alpha activity exceeding the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions when storm water monitoring results at an SMA exceed TALs. The Permittees may request to place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d). As described below, the Permittees have determined that SWMU 21-021, the Site addressed in this request, can achieve completion of corrective action only though the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Consent Order administered by the NMED; and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Description, summarizes the historical operations that led to the Sites in DP--SMA-3 being identified as SWMUs in the 1990 SWMU report (LANL 1990), the current use of the Sites, any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.

- Section 5.0, Description of Control Measures Installed within DP-SMA-3, details the baseline and enhanced control measures that were installed in DP-SMA-3.
- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with historical industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a watershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have

been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement Site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring result exceeds a TAL, the Permittees must initiate corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a COC under NMED's Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to

EPA on or at least 6 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, the agency will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part. I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 months of the effective date of the Permit, and certifications of completion of baseline control measures were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from achieving corrective action complete certification: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will make the alternative compliance request available to the public via the Individual Permit public website (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4).

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted to the Individual Permit public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTION

DP-SMA-3 is a 0.24-acre watershed consisting of 100% undeveloped area. Two historical industrial activity areas are associated with DP-SMA-3: Sites 21-013(c) and 21-021.

SWMU 21-013(c) is the former location of a surface disposal area located at the eastern end of Delta Prime (DP) Mesa. The Site consisted of construction debris, including piles of fill, asphalt, and concrete; an excavated trench; an earthen berm that contained scattered concrete, asphalt, and metal debris; and four large concrete pylons. Other surface debris included glass, scrap metal, wood, cans, paper, and plastic (LANL 1990, LANL 1991, LANL 1996). When the materials at this Site were disposed of is unknown. During a 1995 voluntary corrective action (VCA) implemented at SWMU 21-013(c), all debris was removed (LANL 1996). Previous RCRA facility investigation (RFI) sampling had not identified contaminants above risk levels, and the objective of the VCA was to remove visible debris (LANL 1996).

Decision-level data presented for the Site in the Phase II DP Site Aggregate Area investigation report indicate the Site poses no risk to residential receptors (LANL 2010). The Phase II DP Site Aggregate Area investigation report recommended SWMU 21-013(c) for a COC without controls. The Laboratory submitted a request for COC to NMED in June 2015 (LANL 2015). NMED granted the Site a COC without controls on January 19, 2016 (NMED 2016). EM-LA and the Laboratory certified corrective action complete at 21-013(c) to EPA on March 6, 2017 (LANL 2017).

SWMU 21-021 consists of surface soil contamination resulting from emissions from stacks throughout TA-21. The estimated area of soil contamination is approximately 300,000 m^2 and overlaps all of TA-21 (LANL 1990). Radionuclides were known to have been released from stacks throughout TA-21 (LANL 1990). There is no documentation of nonradioactive chemical releases associated with historical TA-21 stack emissions.

During the 1992 RFI, 155 shallow soil samples were collected from locations on a 40- × 40-m grid across TA-21. NMED approved the ensuing DP Site Aggregate Area investigation work plan, which indicated the investigation of SWMU 21-021 was complete and no additional investigations were required (LANL 2004, NMED 2005). SWMU 21-021 is also included in Appendixes A and C of the Consent Order as part of the TA-21 Decontamination and Decommissioning and Cleanup Campaign. Because SWMU 21-021 overlies all other SWMUs and AOCs within TA-21, evaluation of risk associated with SWMU 21-021 is not expected to be made until investigation of all other TA-21 SWMUs and AOCs is complete.

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN DP-SMA-3

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for DP-SMA-3 is shown in Figure 5.0-1. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2011. Analytical results from this sample yielded TAL exceedances for aluminum, copper, and gross alpha (Figure 6.0-1). As a corrective action, enhanced control measures were installed at DP-SMA-3 (Table 5.0-1) and certified to EPA on September 20, 2012 (LANL 2012). Corrective action monitoring confirmation samples were

collected from DP-SMA-3 on July 25, 2019, and August 9, 2019. Analytical results from the samples yielded the following TAL exceedance:

- Gross-alpha activities of 66.5 pCi/L and 164 pCi/L, geomean of 104 pCi/L (ATAL is 15 pCi/L)

The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TALs (gross alpha) is within the natural background range of concentrations expected for storm water runoff from undeveloped landscapes. Within DP-SMA-3, SWMU 21-013(c) has received a COC from NMED under the Consent Order, but SWMU 21-021 is not anticipated to receive a COC within the compliance timeframe of the Individual Permit. Thus the Permittees are requesting alternative compliance for the portion of SWMU 21-021 within DP-SMA-3.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following categories:

- Sources of pollutants
- Technical feasibility and practicability.

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at Site 21-021 are described below.

7.1 Potential Sources of TAL Exceedances

Although alpha emitters are associated with industrial materials historically managed at Site 21-021, the likely source of gross alpha is runoff from undeveloped landscapes. The gross-alpha activity in the SMA sample is less than the gross-alpha activity in storm water runoff from undeveloped landscapes.

7.1.1 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including gross-alpha activity. These results are summarized in the publication entitled "Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision" (hereafter, the Background

Report) (Windward 2020). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of metals and gross alpha in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = [(% impervious SMA area × 90th percentile developed landscape BTV) + (% pervious SMA area × 90th percentile undeveloped landscape BTV)]/100. DP-SMA-3 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90^{th}-percentile BTV for gross-alpha activity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

For the July 25, 2019, sample, the gross-alpha result from DP-SMA-3 (66.5 pCi/L) had a paired SSC value of 1600 mg/L and an SSC-normalized gross-alpha result of 41.6 pCi/g SSC. For the August 9, 2019 sample, the gross-alpha result (164 pCi/L) had a paired SSC value of 4500 mg/L and an SSC-normalized gross-alpha result of 36.4 pCi/g SSC. The geomean of the SSC-normalized gross alpha results is 38.9 pCi/g SSC, below the BTV of 57 pCi/g SSC. Table 7.1-1 compares the TAL-exceeding constituent with the composite BTV (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at DP-SMA-3 were analyzed for gross-alpha activity, which is a measure of the alpha activity associated with all alpha-emitting radionuclides detected in the sample. The TAL specified in the Individual Permit, however, is for adjusted gross-alpha activity. Adjusted gross-alpha activity does not include the alpha activity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha activity of a sample will always be greater than the adjusted gross-alpha activity, use of gross-alpha activity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha activity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at Site 21-021 may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha activity from these significant

materials associated with industrial activities and then potentially released to storm water discharges at Site 21-021 could not contribute to adjusted gross-alpha activity. There are, therefore, no sources of adjusted gross alpha activity associated with Site 21-021.

7.2 Rationale for Alternative Compliance

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the gross-alpha exceedance is a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by Site 21-021 are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of gross-alpha activity in storm water runoff from Site 21-021 that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe Site 21-021 at DP-SMA-3 is not contributing to the gross-alpha activity TAL exceedance; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by Site 21-021. Therefore, mitigating Site-related storm water would not reduce the gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because Site 21-021 is not the source of gross alpha exceedance, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site, or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees propose to continue to inspect and maintain existing controls until Site 21-021 is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency), September 30, 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

LANL (Los Alamos National Laboratory), November 1990. “Solid Waste Management Units Report,” Vol. II of IV (TA-10 through TA-25), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1991. “TA-21 Operable Unit RFI Work Plan for Environmental Remediation,” Vol. II (Chapters 14 to 16), Los Alamos National Laboratory document LA-UR-91-962, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), February 26, 1996. "Voluntary Corrective Action Report for Potential Release Sites 21-013(c), 21-013(d), 21-013(e), 31-001, Revision 1," Los Alamos National Laboratory document LA-UR-96-259, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), August 2004. "Investigation Work Plan for Delta Prime Site Aggregate Area at Technical Area 21," Los Alamos National Laboratory document LA-UR-04-5009, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 2009. "2009 Hydrogeologic Site Atlas," Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), October 2010. "Phase II Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1," Los Alamos National Laboratory document LA-UR-10-6478, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), September 20, 2012. "NPDES Permit No. NM0030759 – Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas," Los Alamos National Laboratory letter to P. Johnsey (EPA Region 6) from D. McInroy (LANL) and D.S. Rhodes (EM-LA), Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 18, 2015. "Request for Certificates of Completion for Two Areas of Concern and Twelve Solid Waste Management Units in the Delta Prime Site Aggregate Area," Los Alamos National Laboratory letter to J. Kieling (NMED-HWB) from A.M. Dorries (LANL) and C. Gelles (EM-LA), Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), March 6, 2017. "NPDES Permit No. NM0030759 – Completion of Corrective Action for Five [5] Sites in Five [5] Site Monitoring Areas Following Certificates of Completion from the New Mexico Environment Department," Los Alamos National Laboratory letter (ADESH-17-024) to P. Johnsey (EPA Region 6) from J.C. Bretzke (LANL) and D.H. Rhodes (EM-LA), Los Alamos, New Mexico.

NMED (New Mexico Environment Department), April 13, 2005. "Approval with Modifications for the Investigation Work Plan for Delta Prime Site Aggregate Area at Technical Area 21," New Mexico Environment Department letter to D. Gregory (DOE LASO) and G.P. Nanos (LANL Director) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico.

NMED (New Mexico Environment Department), January 19, 2016. "Certificates of Completion, Two Areas of Concern and Twelve Solid Waste Management Units in the Delta Prime Site Aggregate Area," New Mexico Environment Department letter to D. Hintze (DOE-EM-LA) and M. Brandt (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico.

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Strom Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle, Washington.

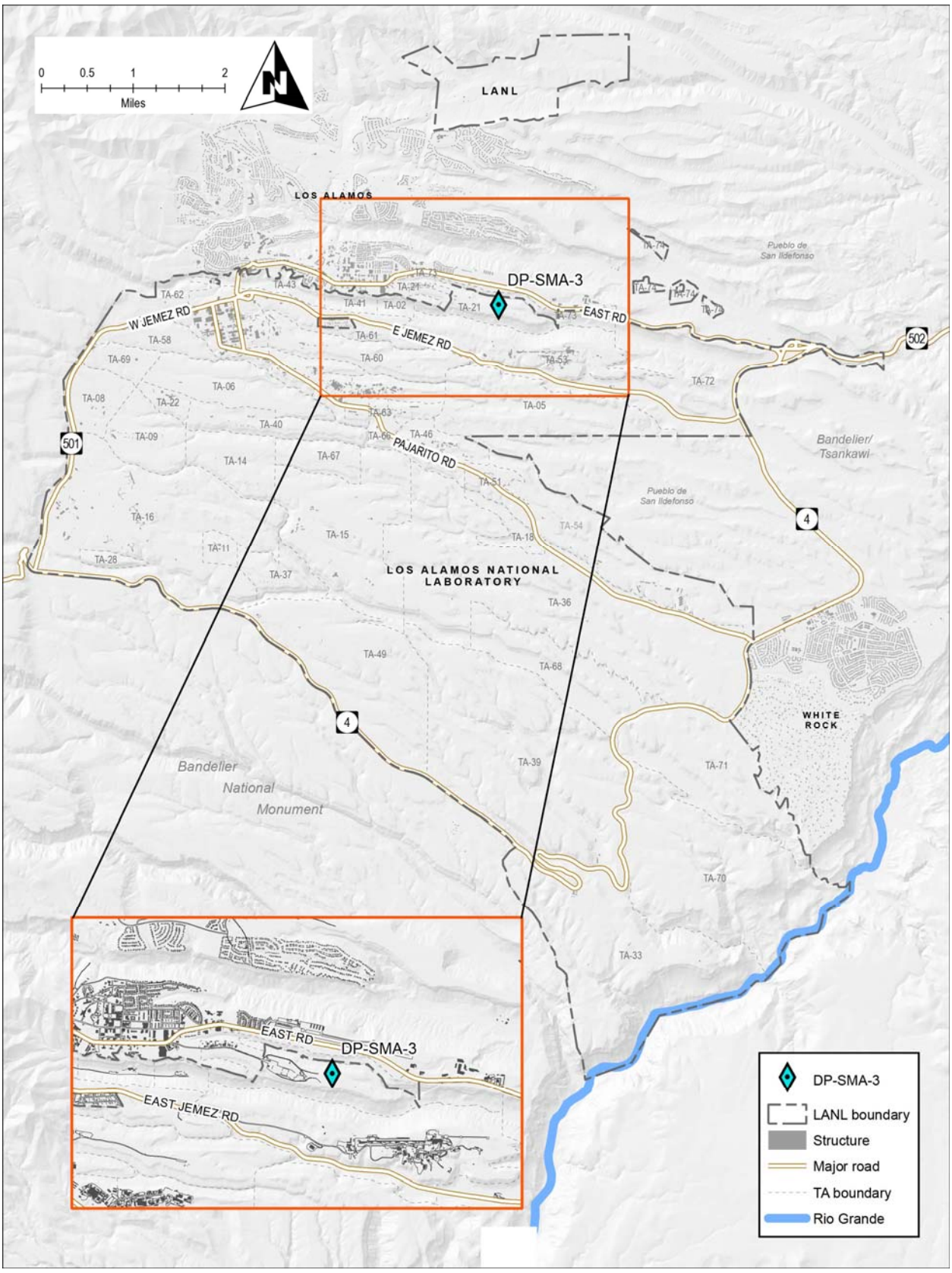


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

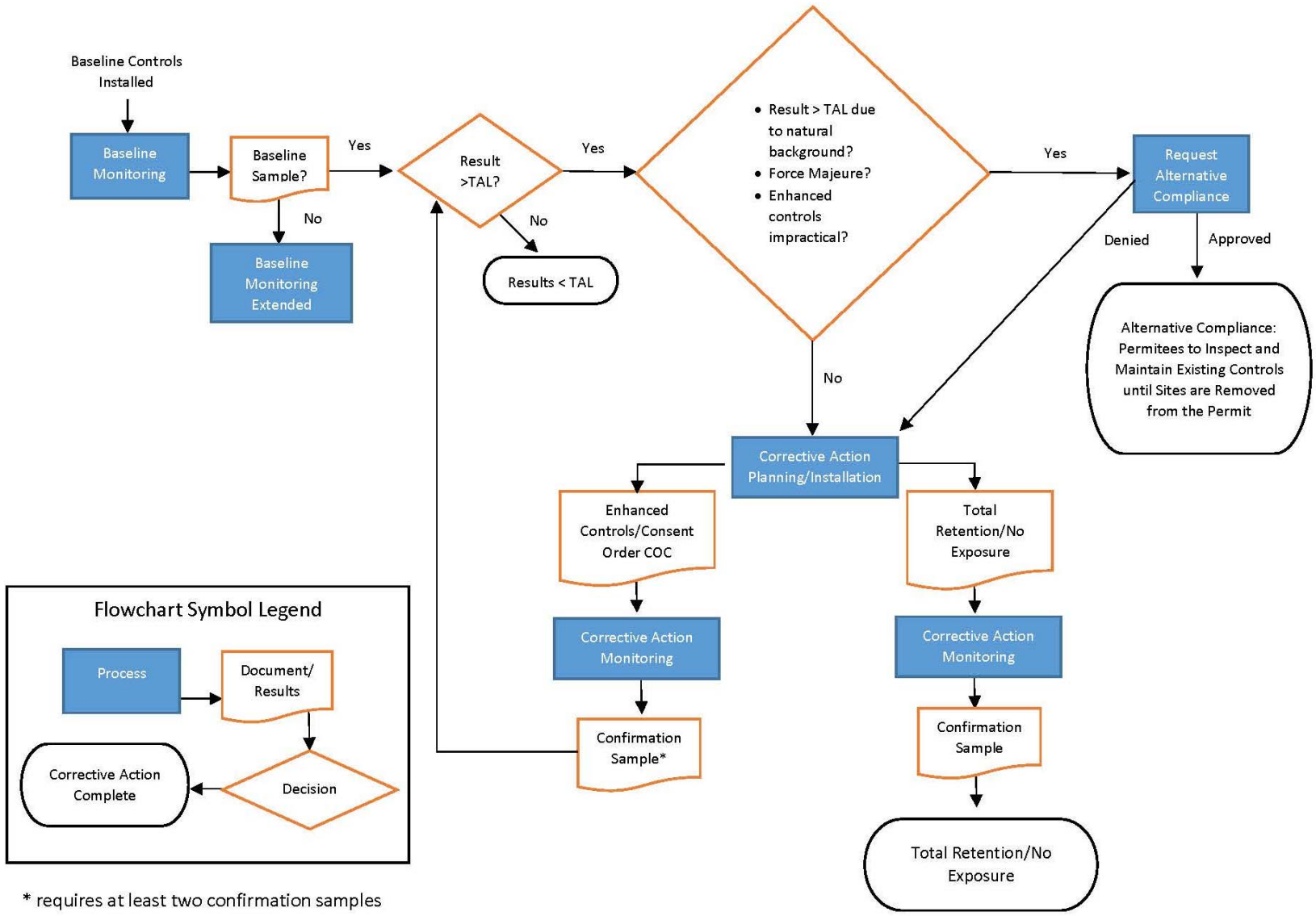


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

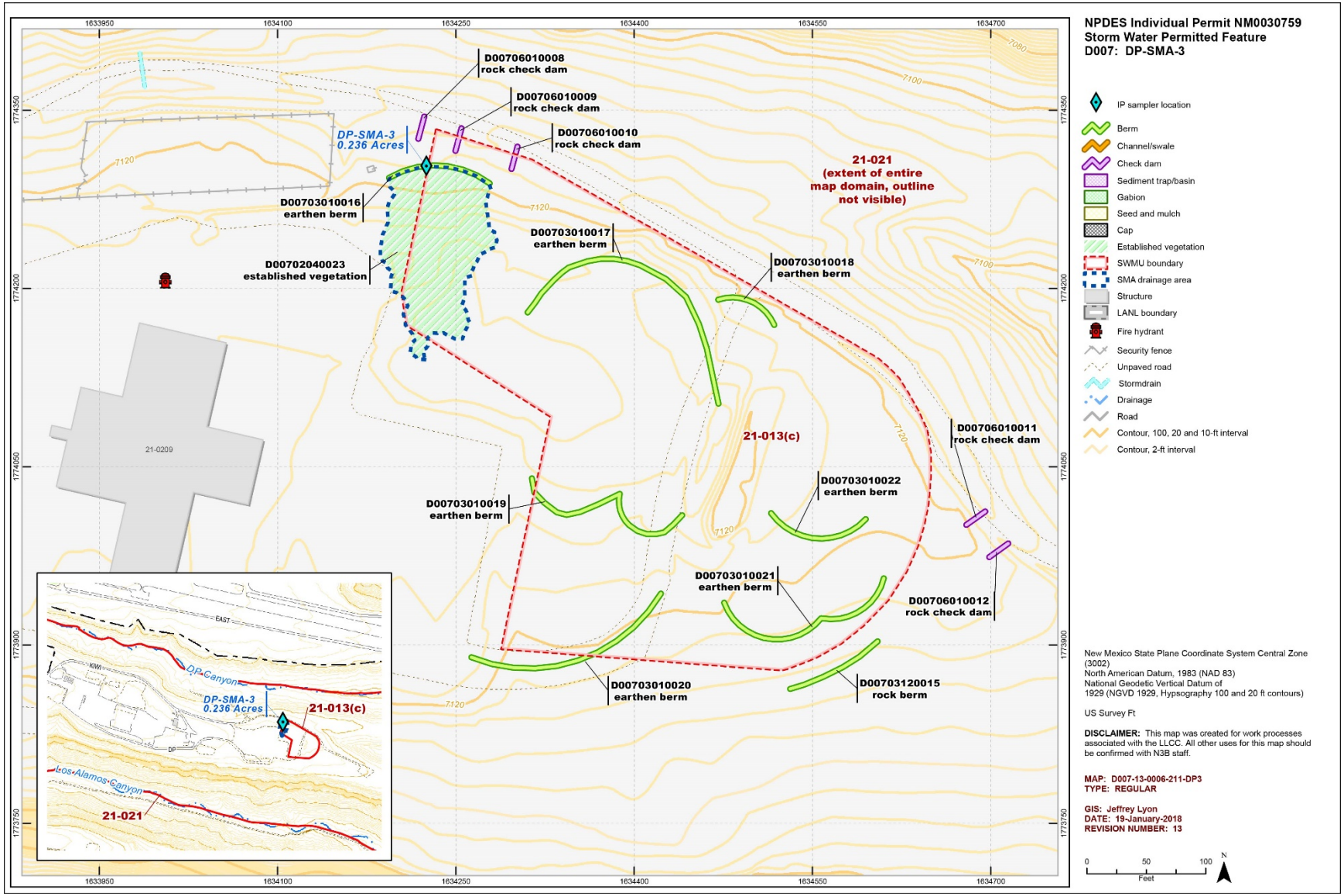
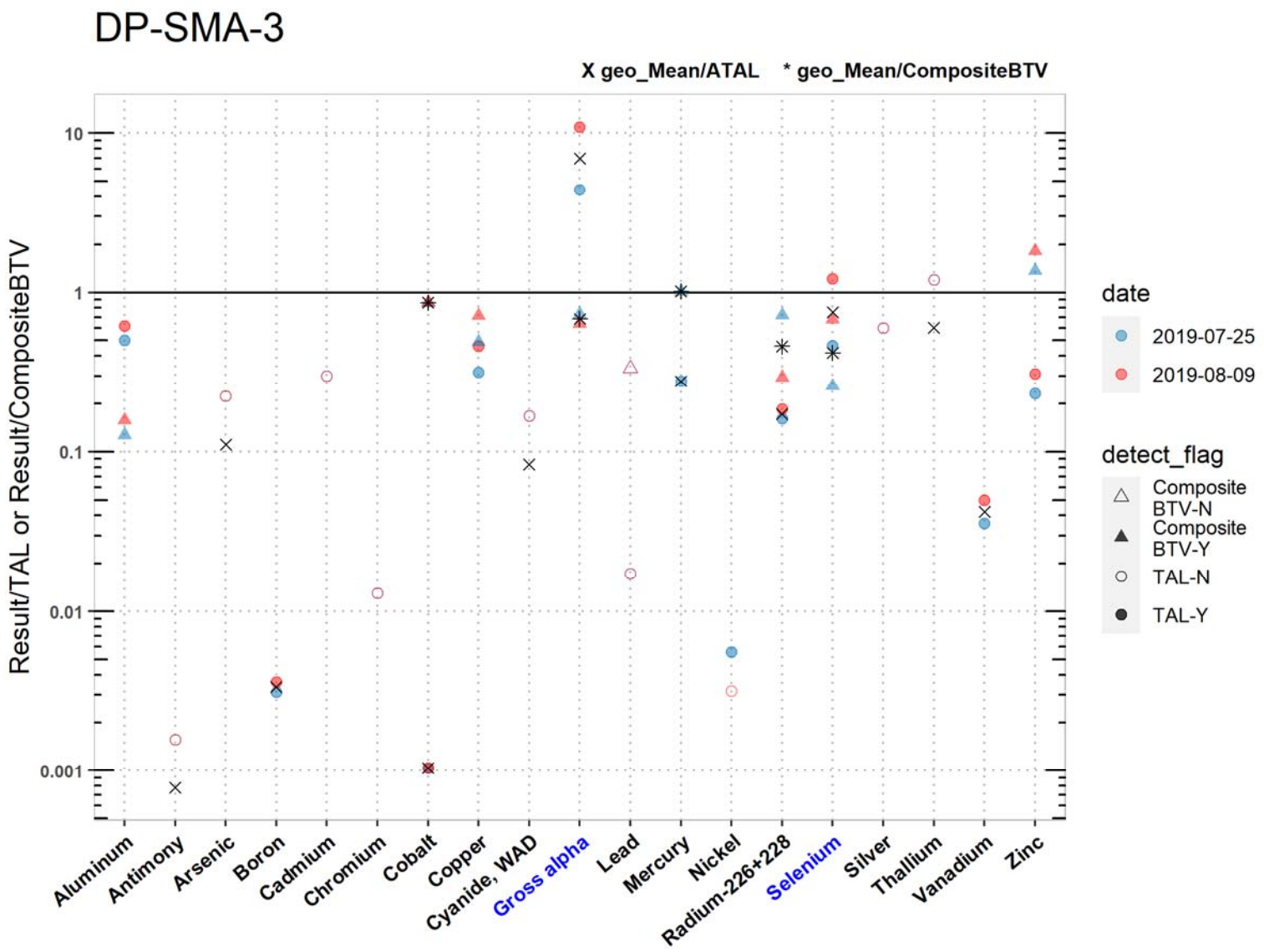


Figure 5.0-1 DP-SMA-3 location map



Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 2019 inorganic analytical results summary plot for DP-SMA-3

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
2019-07-25 dT	0.5	NA	NA	0.0031	NA	NA	0.001	0.32	NA	**4.4**	NA	0.28	0.0056	0.16	0.46	NA	NA	0.036	0.23
2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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 6.0-1 (continued) **2019 inorganic analytical results summary plot for DP-SMA-3**

Table 5.0-1
Active Control Measures at DP-SMA-3

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status
D00702040023	Established Vegetation	No	Yes	Yes	No	B[a]
D00703010016	Earthen Berm	No	Yes	No	Yes	EC[b]
D00703010017	Earthen Berm	No	Yes	No	Yes	EC
D00703010018	Earthen Berm	No	Yes	No	Yes	EC
D00703010019	Earthen Berm	No	Yes	No	Yes	EC
D00703010020	Earthen Berm	No	Yes	No	Yes	EC
D00703010021	Earthen Berm	No	Yes	No	Yes	EC
D00703010022	Earthen Berm	No	Yes	No	Yes	EC
D00703120015	Rock Berm	No	Yes	No	Yes	CB[c]
D00706010008	Rock Check Dam	No	Yes	No	Yes	CB
D00706010009	Rock Check Dam	No	Yes	No	Yes	CB
D00706010010	Rock Check Dam	No	Yes	No	Yes	CB
D00706010011	Rock Check Dam	No	Yes	No	Yes	CB
D00706010012	Rock Check Dam	No	Yes	No	Yes	CB

[a] B = Additional baseline control measure.

[b] EC = Enhanced control measure.

[c] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, DP-SMA-3

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
CAM[a]	2019	Gross Alpha	pCi/L	2	66.5–164	15	104	7.0	n/a[b]	n/a	n/a
MEX[c]	2011	Gross Alpha	pCi/L	1	174	15	174	11.6	n/a	n/a	n/a
MEX	2011	Aluminum	mg/L	1	1870	n/a	n/a	n/a	750	1	2.5
MEX	2011	Copper	mg/L	1	5.5	n/a	n/a	n/a	4.3	1	1.3

[a] CAM = Corrective action monitoring.

[b] n/a = Not applicable.

[c] MEX = Extended baseline monitoring.

Table 7.1-1
2019 Storm Water Exceedances and BTV Comparison, DP-SMA-3

TAL Exceedance	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
Gross-alpha geomean = 104 pCi/L (ATAL is 15 pCi/L) **SSC geomean** = 2683 mg/L **SSC-normalized gross-alpha geomean** = 38.9 pCi/g SSC	(SSC-normalized BTV: 57 pCi/g SSC*) ☐ Yes ☒ No

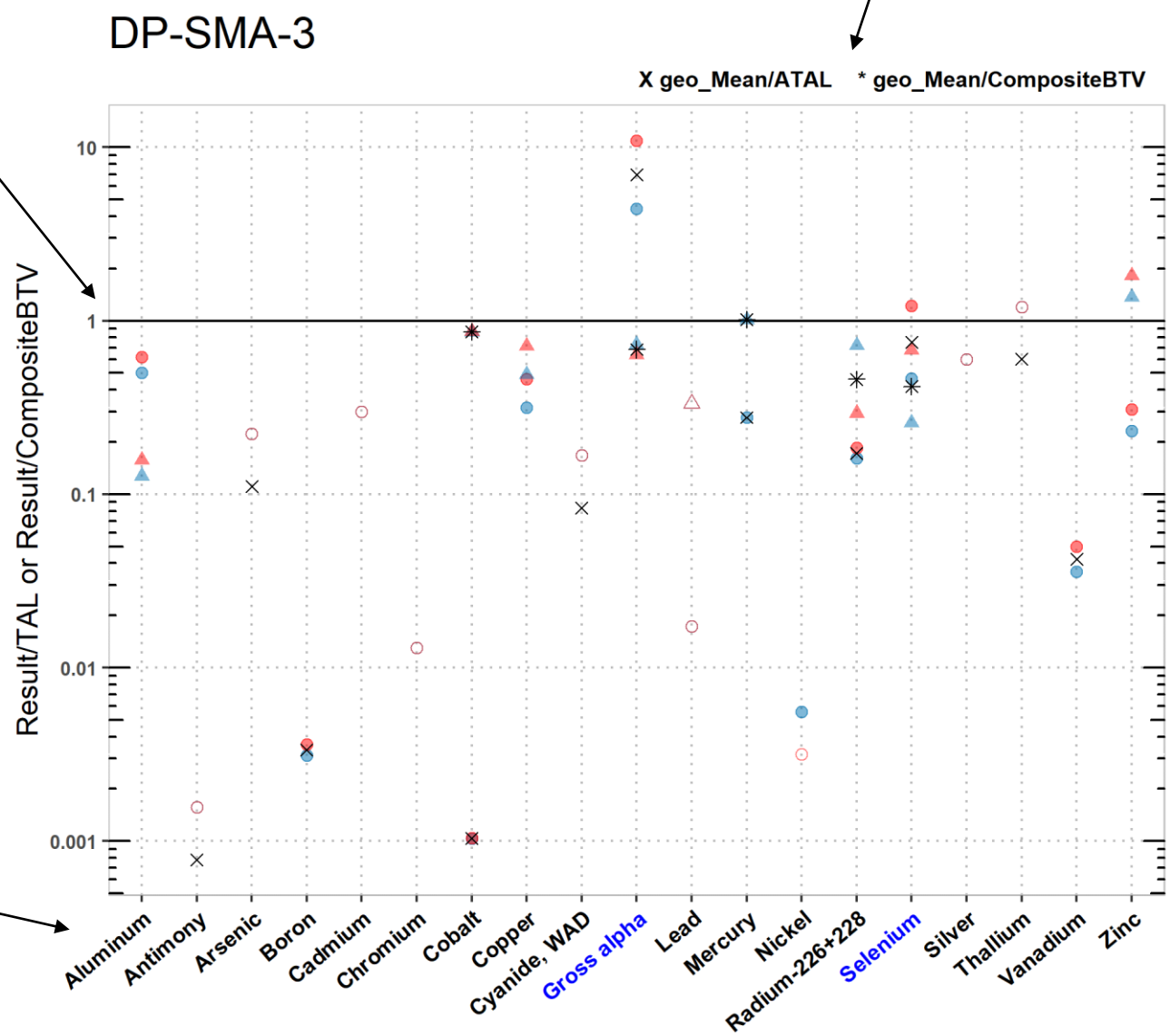
*Windward 2020.

Appendix A

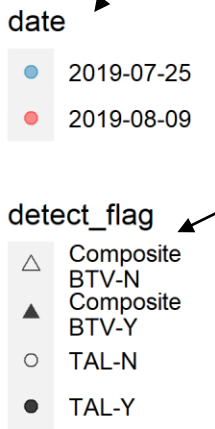
How to Read the Analytical Results Summary Plot and Table

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

Analytical results are normalized by dividing by the TAL or by the Composite BTV, creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL or BTV for each analyte.



List of all samples collected at the SMA for the current monitoring stage. Analytical data from each sample is plotted using the color shown in this legend.



Legend of symbols used in the plots. Hollow symbols indicate a nondetect result below quantitation level (-N) and the value plotted is the quantitation level divided by the TAL or Composite BTV. Solid symbols indicate a detected value (-Y) and the value plotted is the result divided by the TAL or Composite BTV. For example, "TAL-Y" represents the TAL ratio for detected results (detected result divided by the TAL). This legend is dynamic and will only display symbols relevant to the analytical data plotted for each SMA.

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedences are shown in blue font.

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the Composite Background Threshold Value. It is calculated based on the percentages of developed and undeveloped landscape in the SMA.

These three rows present the raw result (result), the result divided by TAL (dT), and the result divided by the Composite BTV (dB). They are grouped by date. The TAL ratio (dT) and BTV ratio (dB) are only calculated for detected results.

These two rows present the geometric mean of the results from multiple sampling dates divided by the ATAL and divided by the Composite BTV

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
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2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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

October 2020
EM2020-0384

Alternative Compliance Request for Solid Waste Management Unit 32-002(b2) in LA-SMA-5.361

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for Solid Waste Management Unit 32-002(b2) in LA-SMA-5.361

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kimberly D Lebak

Kim Lebak, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

9/28/20
Date

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.27 06:58:52 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System Storm Water Individual Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units (SWMUs) and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request is for alternative compliance addresses SWMU 32-002(b2) monitored at site monitoring area (SMA) LA-SMA-5.361, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. The completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for the alternative compliance request for SWMU 32-002(b2) monitored at LA-SMA-5.361 is that the pollutants of concern (POCs) are contributed by sources beyond the Permittees' control. Specifically, the concentrations of the POCs (selenium and gross-alpha activity) in the storm water discharge from LA-SMA-5.361 are below storm water background concentrations.

CONTENTS

Figures

Tables

Appendix

ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EM-LA	Environmental Management Los Alamos Field Office (DOE)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSC	suspended sediment concentration
SWMU	solid waste management unit
TAL	target action level

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the DOE Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1) and is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

LA-SMA-5.361 contains two Sites, SWMU 32-002(b1) and SWMU 32-002(b2). SWMU 32-002(b1) has received a certificate of completion (COC) from the New Mexico Environment Department (NMED) under the Compliance Order on Consent (Consent Order); therefore this alternative compliance request is for SWMU 32-002(b2) within LA-SMA-5.361. An extended baseline monitoring sample collected in 2019 from LA-SMA-5.361 showed gross-alpha activity and selenium at concentrations above the applicable target action levels (TALs). Because of these TAL exceedances, the Permittees are required to initiate corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions when storm water monitoring results at an SMA exceed TALs. The Permittees may request to place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Consent Order, administered by NMED; and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Site in LA-SMA-5.361 being identified as SWMUs in the 1990 SWMU report (LANL 1990), any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.

- Section 5.0, Description of Control Measures Installed within LA-SMA-5.361, details the baseline control measures that were installed in LA-SMA-5.361.
- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of the corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of the corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with historical industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a watershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for

inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a COC under NMED's Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of the corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, the agency will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of the corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges, as required by Part I.A of the Permit, at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 months of the effective date of the Permit, and certifications of completion of baseline control measures were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from achieving corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of the corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will make the alternative compliance request available to the public via the Individual Permit public website (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4).

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted to the Individual Permit public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

LA-SMA-5.361 is a 1.7-acre watershed that consists of 100% undeveloped area. Two Sites are associated with LA-SMA-5.361: SWMU 32-002(b1) and SWMU 32-002(b2).

Former SWMU 32-002(b) was a septic system that served former buildings 32-001 and 32-002 (LANL 2011). In 2012, former SWMU 32-002(b) was split into SWMU 32-002(b1), which is the portion located on Los Alamos School Board property, and SWMU 32-002(b2), which is the portion on DOE property, in order to expedite completion of corrective actions at SWMU 32-002(b1) (NMED 2012a). The septic system was installed directly northwest and slightly upgradient of the SWMU 32 002(a) septic tank, near the edge of Los Alamos Canyon. This system was installed when the SWMU 32-002(a) septic system could no longer meet the usage requirement of the Laboratory (building 32-001) and consisted of a reinforced concrete tank (former structure 32-008) with an outlet drainline that discharged to an outfall at the edge of Los Alamos Canyon (Engineering Drawing A5-C117, LASL 1948; LANL 1992; LANL 2011). The influent line from the SWMU 32-002(a) septic system was diverted to the former SWMU 32-002(b) septic system, which also received effluent from former building 32-002, the medical research annex (LANL 2011). The outfall was located at the edge of Los Alamos Canyon, approximately 15 ft southwest of the SWMU 32-002(a) outfall. The septic tank was decommissioned in 1954 (LANL 1992). Before the septic tank was removed in 1988, samples of the sludge and liquid were removed and analyzed and found to contain low concentrations of volatile organic compounds and phenols (LANL 1992). The influent drainline was removed in 1996 (LANL 1996). Research activities in former building 32-001 involved radionuclides and potentially inorganic and organic chemicals (LANL 2011). Because no industrial waste line served former Technical Area 32, it is possible that chemical and radioactive wastes may have been disposed of in sinks and drains connected to the SWMU 32-002(b1) septic system. After LANL activities at the property ceased, the Site was used by Los Alamos County to store equipment and materials used for road work and maintenance, including street sweepings (LANL 2011).

Consent Order investigations are complete for SWMU 32-002(b1); the Site meets industrial risk levels. NMED issued a COC with controls for new SWMU 32-002(b1) in December 2012 (NMED 2012b). The Permittees certified corrective action complete at SWMU 32-002(b1) to the EPA on December 23, 2019 (N3B 2019).

Phase I and II Consent Order investigations are complete for SWMU 32-002(b2). Mercury was detected at concentrations above residential soil screening levels at numerous sampling locations on the bench below the former septic tank outfall in Los Alamos Canyon and on DOE property. Approximately 160 yd^3 of mercury-contaminated soil was removed from the SWMU 32-002(b2) bench in 2015.
SWMU 32-002(b2) is recommended for a COC without controls in the Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area (N3B 2018).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN LA-SMA-5.361

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for LA-SMA-5.361 is shown in Figure 5.0-1. An extended baseline monitoring confirmation sample was collected at LA-SMA-5.361 on August 7, 2019. Analytical results from these samples yielded the following TAL exceedances:

- selenium concentration of 9 µg/L (ATAL is 5 µg/L, MTAL is 20 µg/L), and
- gross-alpha activity of 325 pCi/L (ATAL is 15 pCi/L).

The data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that show the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituents exceeding TALs (gross alpha and selenium) are within the natural background range of concentrations expected for storm water runoff from undeveloped landscapes. Within LA-SMA-5.361, SWMU 32-002(b1) has received a COC from NMED under the Consent Order; SWMU 32-002(b2) is not anticipated to receive a COC within the compliance timeframe of the Individual Permit. Thus the Permittees are requesting alternative compliance for the portion of 32-002(b2) within LA-SMA-5.361.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through I.E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at LA-SMA-5.361 are detailed below.

7.1 Potential Sources of TAL Exceedances

Potential non-Site-related and Site-related sources of gross-alpha activity and selenium in storm water samples are summarized below.

7.1.1 Runoff from Undeveloped Landscapes

To determine the contribution of naturally occurring constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including selenium and gross-alpha activity. These results are summarized in the publication entitled "Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, Revision 1" (hereafter, the Background Report) (Windward 2020). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of analytes in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring POCs in storm water runoff that were derived from the Pajarito Plateau natural background.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = [(% impervious SMA area × 90th percentile developed landscape BTV) + (% pervious SMA area × 90th percentile undeveloped landscape BTV)]/100. LA-SMA-5.361 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

Selenium was detected in soil samples at 32-002(b2) but did not exceed the soil background value (N3B 2018). There is no known Site use of selenium at 32-002(b2). The BTV for selenium in storm water runoff from undeveloped landscapes is 9 µg/L (Windward 2020). At LA-SMA-5.361, the selenium concentration in the storm water does not exceed the storm water concentrations from undeveloped landscapes. Table 7.1-1 compares TAL-exceeding constituent(s) with BTVs from undeveloped landscapes.

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments.

The results reported in the Background Report (Windward 2020) indicted that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized-90th percentile BTV for gross-alpha activity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The gross-alpha result from LA-SMA-5.361 (325 pCi/L) had a paired SSC value of 6600 mg/L. The SSC-normalized gross-alpha result is 49.2 pCi/g SSC, which does not exceed the BTV of 57 pCi/g SSC. Table 7.1-1 compares TAL-exceeding constituents with composite BTVs (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at LA-SMA-5.361 were analyzed for gross-alpha activity, which is a measure of the alpha activity associated with all alpha-emitting radionuclides detected in the sample. The TAL specified in the Individual Permit, however, is for adjusted gross-alpha activity. Adjusted gross-alpha activity does not include the alpha activity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha activity of a sample will always be greater than the adjusted gross-alpha activity, use of gross-alpha activity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha activity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the Site addressed in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha activity from these significant materials associated with industrial activities and then potentially released to storm water

discharges at these Sites would not contribute to adjusted gross-alpha activity. There are, therefore, no sources of adjusted gross-alpha activity associated with the Sites contained in this request.

7.2 Rationale for Alternative Compliance

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the selenium and gross-alpha exceedances are a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of selenium concentration and gross-alpha activity in storm water runoff from the Site that are different from the selenium concentration and gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe LA-SMA-5.361 is not contributing to the gross-alpha activity TAL exceedance; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by the Site. Therefore, mitigating Site-related storm water would not reduce the gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because Site 32-002(b2) is not the source of the selenium and gross-alpha exceedances, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site, or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees propose to continue to inspect and maintain existing controls until the Site is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency), September 30, 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

LANL (Los Alamos National Laboratory), November 1990. “Solid Waste Management Units Report,” Vol. III of IV (TA-26 through TA-50), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1992. “RFI Work Plan for Operable Unit 1079,” Los Alamos National Laboratory document LA-UR-92-850, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), September 1996. "Phase II and Voluntary Corrective Action Report for Potential Release Sites at TA-32: 32-001, Former Incinerator; 32-002(a,b), Former Septic Systems; 32-003, Former Transformer; 32-004, Former Radioactive Source Vault, Drain Line, and Outfall," Los Alamos National Laboratory document LA-UR-96-3128, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 2009. "2009 Hydrogeologic Site Atlas," Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), February 2011. "Remedy Completion Report for Upper Los Alamos Canyon Aggregate Area, Former Technical Area 32, Revision 1," Los Alamos National Laboratory document LA-UR-11-1177, Los Alamos, New Mexico.

LASL (Los Alamos Scientific Laboratory), April 9, 1948. "The TA-32-2 MRL-2 Electrical Plan and Details, Medical Research Annex," Engineering Drawing A5-C117, Los Alamos, New Mexico.

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), September 2018. "Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2018-0040, Los Alamos, New Mexico.

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), December 23, 2019. "NPDES Permit No. NM0030759 – Completion of Corrective Action for 15 Sites in 12 Site Monitoring Areas Following Certificate of Completion from the New Mexico Environment Department," Newport News Nuclear BWXT-Los Alamos, LLC, letter to E. Herrera (EPA) from E. Lowes (N3B) and D. Nickless (EM-LA), Los Alamos, New Mexico.

NMED (New Mexico Environment Department), December 20, 2012a. "Approval and Fee Assessment, Class 1 Permit Modification Request," New Mexico Environment Department letter to K.W. Smith (DOE-LASO) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico.

NMED (New Mexico Environment Department), December 28, 2012b. "Certificates of Completion, Two Solid Waste Management Units and One Area of Concern in the Upper Los Alamos Canyon Aggregate Area," New Mexico Environment Department letter to P. Maggiore (DOE-LASO) and J.D. Mousseau (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico.

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Strom Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle Washington.

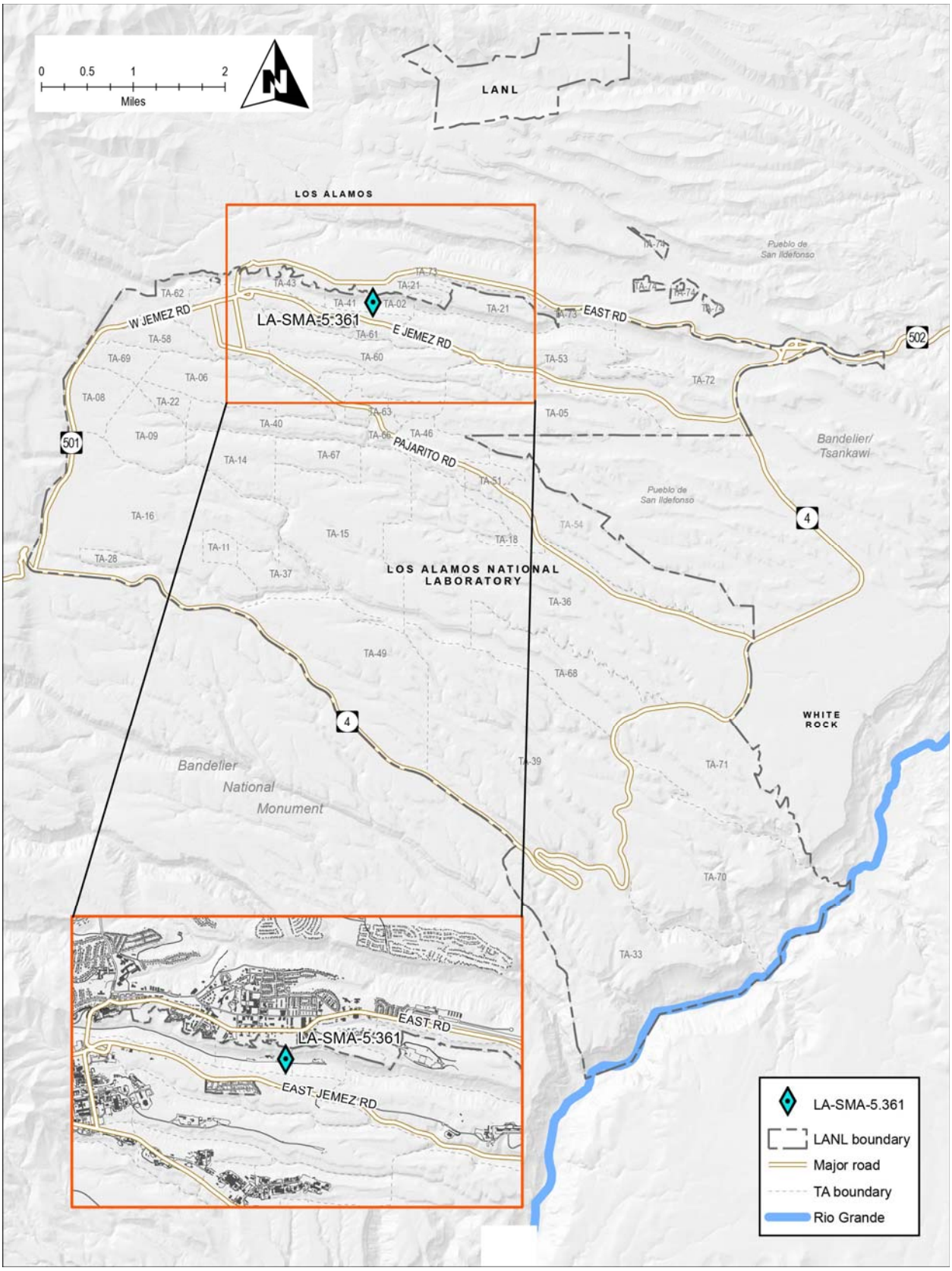


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

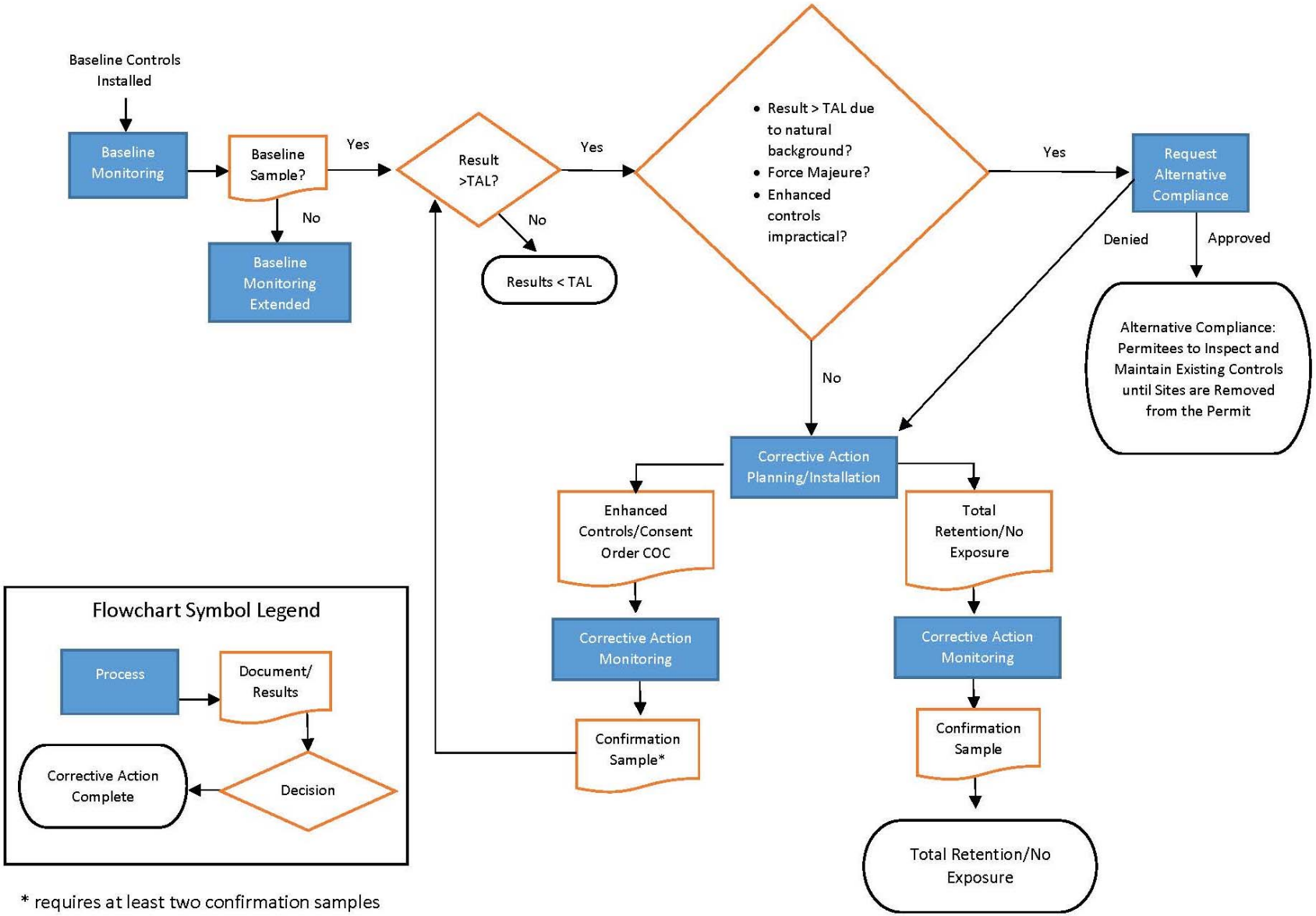


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

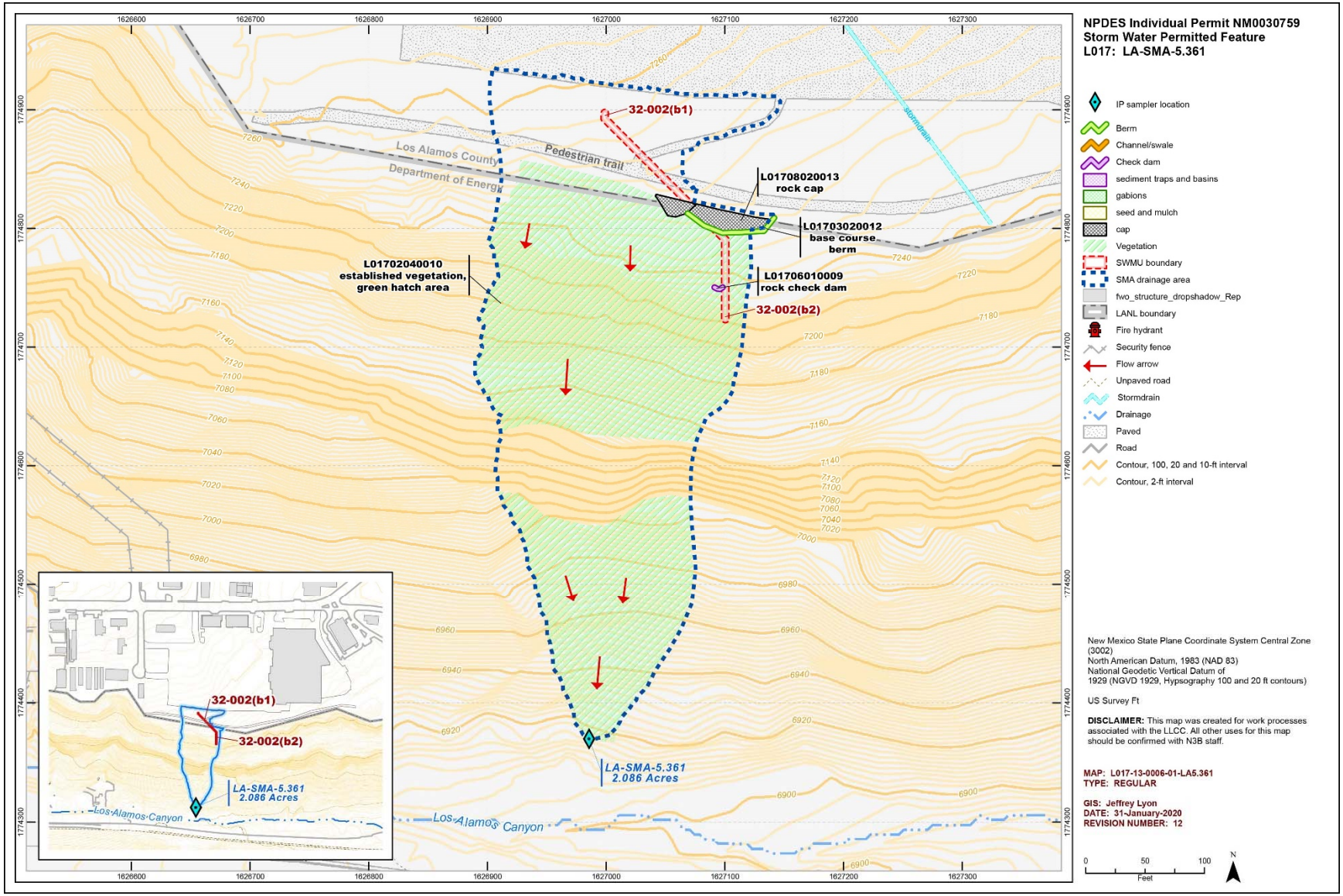
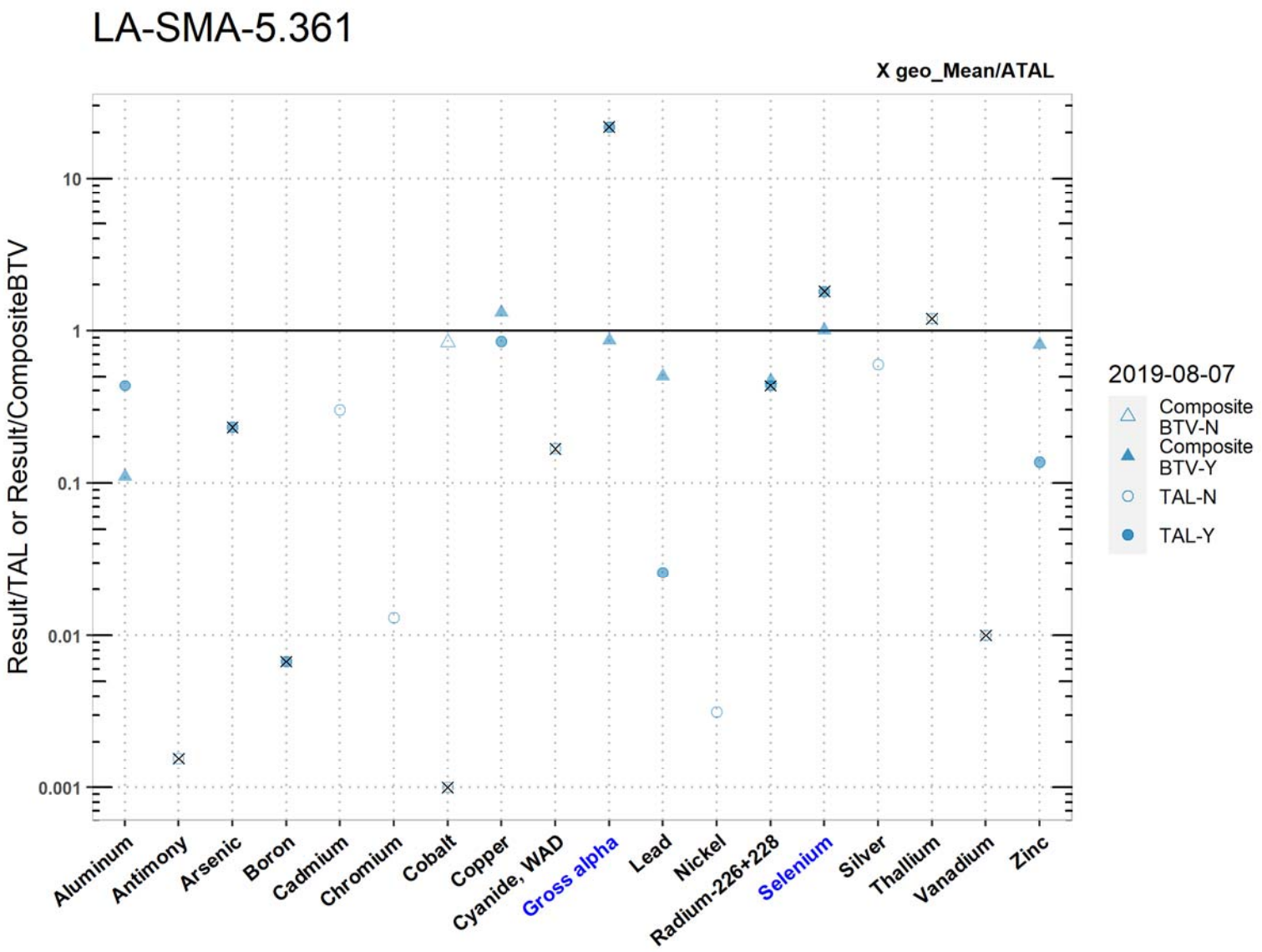


Figure 5.0-1 LA-SMA-5.361 location map



Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 2019 analytical results summary plot and table for LA-SMA-5.361

LA-SMA-5.361

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	NA	4.2	9	NA	NA	NA	10
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	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L
2019-08-07 result	330	*1*	2.08	33.7	*0.3*	*3*	*1*	4.08	*1.67*	325	0.752	*0.6*	13	9	*0.3*	*0.6*	*1*	8.1
2019-08-07 dT	0.43	NA	0.23	0.0067	NA	NA	NA	0.85	NA	**22**	0.026	NA	0.43	**1.8**	NA	NA	NA	0.14
2019-08-07 dB	0.11	NA	NA	NA	NA	NA	NA	**1.3**	NA	0.86	0.5	NA	0.47	1	NA	NA	NA	0.81
geo_mean/ATAL	NA	0.0016	0.23	0.0067	NA	NA	0.001	NA	0.17	**22**	NA	NA	0.43	**1.8**	NA	**1.2**	0.01	NA

Bold font indicates an exceedance of the TAL or composite BTV; Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

*SSC normalized unit is pCi/g

Figure 6.0-1 (continued) 2019 analytical results summary plot and table for LA-SMA-5.361

Table 5.0-1
Active Control Measures at LA-SMA-5.361

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status
L01702040010	Established Vegetation	No	Yes	Yes	No	B*
L01703020012	Base Course Berm	Yes	No	No	Yes	B
L01706010009	Rock Check Dam	No	Yes	No	Yes	B
L01708020013	Rock Cap	No	No	Yes	No	B

*B = Additional baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, LA-SMA-5.361

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX[a]	2019	Selenium	µg/L	1	9.0	5	9.0	1.8	20	0	0.5
MEX	2019	Gross alpha	pCi/L	1	325	15	325	22.7	n/a[b]	n/a	n/a

[a] MEX = Extended baseline monitoring.

[b] n/a = Not applicable.

Table 7.1-1
2019 Storm Water Exceedances and BTVs, LA-SMA-5.361

TAL Exceedances	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
Selenium (1.8×) = 9.0 µg/L (ATAL is 5 µg/L, MTAL is 20 µg/L)	(BTV: 9.0 µg/L*) ☐ Yes ☒ No
Gross alpha (22.7×) = 325 pCi/L (ATAL is 15 pCi/L) **SSC** = 6600 mg/L **SSC-normalized gross alpha** = 49.2 pCi/g SSC	(SSC-normalized BTV: 57 pCi/g SSC*) ☐ Yes ☒ No

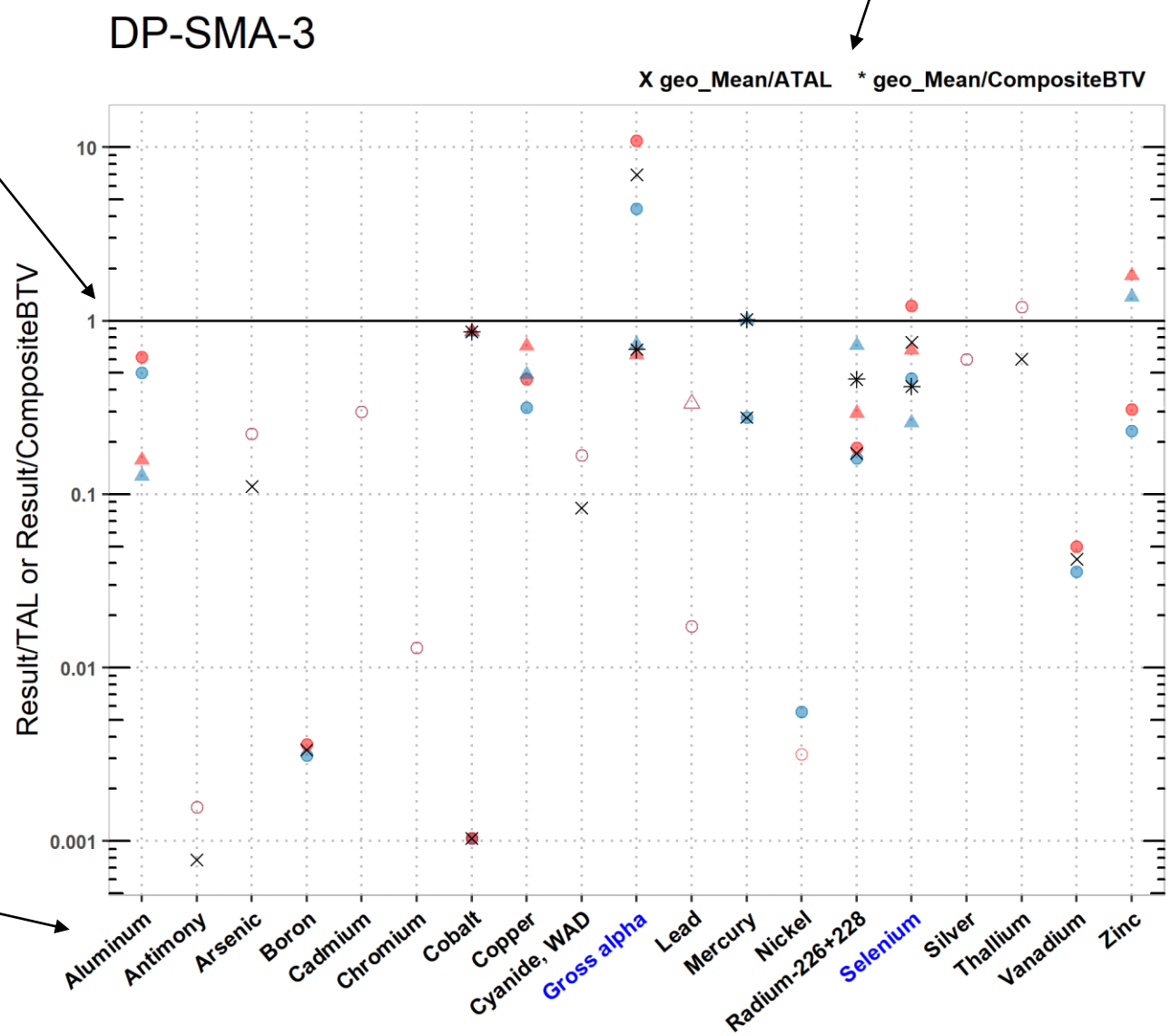
*Windward 2020.

Appendix A

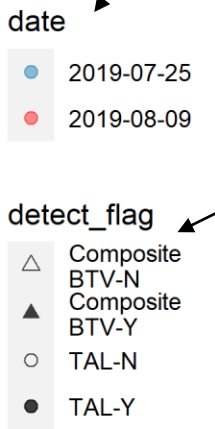
How to Read the Analytical Results Summary Plot and Table

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

Analytical results are normalized by dividing by the TAL or by the Composite BTV, creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL or BTV for each analyte.



List of all samples collected at the SMA for the current monitoring stage. Analytical data from each sample is plotted using the color shown in this legend.



Legend of symbols used in the plots. Hollow symbols indicate a nondetect result below quantitation level (-N) and the value plotted is the quantitation level divided by the TAL or Composite BTV. Solid symbols indicate a detected value (-Y) and the value plotted is the result divided by the TAL or Composite BTV. For example, "TAL-Y" represents the TAL ratio for detected results (detected result divided by the TAL). This legend is dynamic and will only display symbols relevant to the analytical data plotted for each SMA.

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedences are shown in blue font.

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the Composite Background Threshold Value. It is calculated based on the percentages of developed and undeveloped landscape in the SMA.

These three rows present the raw result (result), the result divided by TAL (dT), and the result divided by the Composite BTV (dB). They are grouped by date. The TAL ratio (dT) and BTV ratio (dB) are only calculated for detected results.

These two rows present the geometric mean of the results from multiple sampling dates divided by the ATAL and divided by the Composite BTV

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
2019-07-25 dT	0.5	NA	NA	0.0031	NA	NA	0.001	0.32	NA	**4.4**	NA	0.28	0.0056	0.16	0.46	NA	NA	0.036	0.23
2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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

October 2020
EM2020-0385

Alternative Compliance Request for Area of Concern 20-003(c) in S-SMA-5.2

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for Area of Concern 20-003(c) in S-SMA-5.2

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kimberly D Lebak

Kim Lebak, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

9/28/20
Date

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.27 06:59:57 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System Storm Water Individual Permit (Permit No. NM0030759) (the Permit or Individual Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern (AOCs), collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request is for alternative compliance addresses AOC 20-003(c) monitored at site monitoring area (SMA) S-SMA-5.2, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for the alternative compliance request for AOC 20-003(c) monitored at S-SMA-5.2 is that the pollutants of concern (POCs) are contributed by sources beyond the Permittees' control. Specifically, the concentrations of the POCs (total polychlorinated biphenyls and gross-alpha activity) in the storm water discharge from S-SMA-5.2 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EM-LA	Environmental Management Los Alamos Field Office (DOE)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSC	suspended sediment concentration
SWMU	solid waste management unit
TAL	target action level

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the DOE Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1) and is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

S-SMA-5.2 contains one AOC, 20-003(c), and is located in Sandia Canyon. An extended baseline monitoring sample collected in 2019 from S-SMA-5.2 showed gross-alpha activity and total polychlorinated biphenyls (PCBs) at concentrations above the applicable target action levels (TALs). Because of these TAL exceedances, the Permittees are required to initiate corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions when storm water monitoring results at an SMA exceed TALs. The Permittees may request to place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit , but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Site 20-003(c) in S-SMA-5.2 being identified as an AOC in the 1990 SWMU report (LANL 1990), any Consent Order investigations and remedial actions conducted at the Site, and the current status of the Site under the Consent Order.
- Section 5.0, Description of Control Measures Installed within S-SMA-5.2, details the baseline control measures that were installed in S-SMA-5.2.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of the corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of the corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with historical industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a watershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, PCBs, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a certificate of completion (COC) under NMED's Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 months before the applicable deadlines. As of the writing of this request, the Individual Permit was administratively continued.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of the corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, the agency will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of the corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges, as required by Part I.A of the Permit, at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 months of the effective date of the Permit, and certifications of completion of baseline control measures were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will make the alternative compliance request available to the public via the Individual Permit public website (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4).

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted to the Individual Permit public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

S-SMA-5.2 is a 0.63-acre watershed that consists of 100% undeveloped area. One historical industrial activity area is associated with S-SMA-5.2: Site 20-003(c).

AOC 20-003(c) is the Site of a former U.S. Navy gun mount located approximately 90 ft north of East Jemez Road in Sandia Canyon. The former gun Site was used between 1945 and 1948. A 10-ft × 10-ft concrete pad with a steel-plate surface (former structure 20-16) was used as a mount for the gun (LANL 1994). Engineering drawing ENG-C-1778 (LASL 1951) shows a 30-ft-long earth-bermed timber-frame bin filled with tamped earth (former structure 20-10) located near the gun and on the slope at the toe of the canyon wall. At the end nearest the gun, the timber frame was 12 ft wide and 10 ft high, and at the far end it was 20 ft wide and 5 ft high. The gun was fired into the earth-filled bin so the projectile could be recovered (LANL 1994). The Laboratory engineering records show that in April 1948, structures 20-10 and 20-16 were removed and that structure 20-28, a conduit manhole, was left in place. The disposition of the soil that filled the frame is not known (LANL 1994). During the 1995 voluntary corrective action conducted at AOC 20-003(c), the top 4 ft of the 6-ft-thick concrete pad, conduits, manhole (former structure 20-28), and miscellaneous metal debris were removed. The remaining portion of the concrete pad that was not removed was covered with 5–6 ft of clean fill (LANL 1996).

Phase I Consent Order sampling is complete for AOC 20-003(c). All detected inorganic chemical concentrations and radionuclide activities from Consent Order samples were below residential soil screening levels. AOC 20-003(c) was recommended for corrective action complete without controls in the "Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area," submitted to NMED in July 2017 (LANL 2017).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN S-SMA-5.2

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for S-SMA-5.2 is shown in Figure 5.0-1. An extended baseline confirmation sample was collected from S-SMA-5.2 on July 26, 2019. Analytical results from these samples yielded the following TAL exceedances:

- gross-alpha activity of 347 pCi/L (ATAL is 15 pCi/L), and
- total PCB concentration of 0.0028 µg/L (ATAL is 0.00064 µg/L).

The data are summarized in Table 6.0-1. Figure 6.0-1 are plots that show the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituents exceeding TALs (gross alpha and total PCB) are within the natural background range of concentrations expected for storm water runoff from undeveloped landscapes.

Part I.E.3(a) lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through I.E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that

make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at S-SMA-5.2 are detailed below.

7.1 Potential Sources of TAL Exceedances

Potential non-Site-related and Site-related sources of PCBs and gross-alpha activity in storm water samples are summarized below.

7.1.1 Runoff from Undeveloped Landscapes

To determine the contribution of naturally occurring constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including PCBs and gross-alpha activity. These results are summarized in the publication entitled "Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, Revision 1" (hereafter, the Background Report) (Windward 2020). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of analytes in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring POCs in storm water runoff that were derived from the Pajarito Plateau natural background.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = [(% impervious SMA area × 90th percentile developed landscape BTV) + (% pervious SMA area × 90th percentile undeveloped landscape BTV)]/100. S-SMA-5.2 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

PCBs are common anthropogenic-sourced constituents that result from environmental cycling on a global scale of past releases of PCBs, and also come from contamination due to the historical use of PCBs as additives in hundreds of industrial and commercial applications. These applications included electrical, heat-transfer, and hydraulic equipment; plasticizers in paints, plastics, caulking, and rubber products; pigments, dyes, and carbonless copy paper; and many other uses (LANL 2012). The BTV for total PCBs in storm water runoff from undeveloped landscapes is 0.0028 µg/L (Windward 2020).

At S-SMA-5.2, the total PCB concentration in the storm water is less than the storm water concentrations from undeveloped landscapes. Table 7.1-1 compares TAL-exceeding constituents with BTVs from undeveloped landscapes.

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily

Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90th-percentile BTV for gross-alpha activity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The gross-alpha result from S-SMA-5.2 (347 pCi/L) had a paired SSC value of 9400 mg/L. The SSC-normalized gross alpha result is 36.9 pCi/g SSC, below the BTV of 57 pCi/g SSC. Table 7.1-1 compares TAL-exceeding constituents with composite BTVs (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at S-SMA-5.2 were analyzed for gross-alpha activity, which is a measure of the alpha activity associated with all alpha-emitting radionuclides detected in the sample. The TAL specified in the Individual Permit, however, is for adjusted gross-alpha activity. Adjusted gross-alpha activity does not include the alpha activity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha activity of a sample will always be greater than the adjusted gross-alpha activity, use of gross-alpha activity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha activity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the Site addressed in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha activity from these significant materials associated with industrial activities and then potentially released to storm water discharges at these Sites would not contribute to adjusted gross-alpha activity. There are, therefore, no sources of adjusted gross-alpha activity associated with this Site.

7.2 Rationale for Alternative Compliance

After reviewing the Site history and comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the total PCB and gross-alpha exceedances are a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of PCBs and gross-alpha activity in storm water runoff that are different from the levels in storm water runoff from undeveloped landscapes. The Permittees believe the Site is not contributing to the total PCB and gross-alpha activity TAL exceedances; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by the Site. Therefore, mitigating Site-related storm water would not reduce the total PCB concentration and gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because Site 20-003(c) is not the source of the gross-alpha exceedance or total PCB exceedance, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site, or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees propose to continue to inspect and maintain existing controls until the Site is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019), this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency), September 30, 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas.

LANL (Los Alamos National Laboratory), November 1990. “Solid Waste Management Units Report,” Vol. III of IV (TA-26 through TA-50), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 1994. “RFI Work Plan for Operable Unit 1100,” Los Alamos National Laboratory document LA-UR-94-1097, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), January 1996. “Voluntary Corrective Action Completion Report for Potential Release Sites 20-003(c) and 53-010, Revision 1,” Los Alamos National Laboratory document LA-UR-96-1089, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 2009. “2009 Hydrogeologic Site Atlas,” Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), May 2012. “Polychlorinated Biphenyls in Precipitation and Stormwater within the Upper Rio Grande Watershed,” Los Alamos National Laboratory document LA-UR-12-1081, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), July 2017. “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area,” Los Alamos National Laboratory document LA-UR-17-25682, Los Alamos, New Mexico.

LASL (Los Alamos Scientific Laboratory), February 19, 1951. “TA-20, Revised Site Plan and Topographic Layout, Revision 1,” Engineering Drawing ENG-C-1778, Los Alamos, New Mexico.

Windward (Windward Environmental, LLC), May 21, 2020. “Development of Background Threshold Values for Strom Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision,” Seattle, Washington.

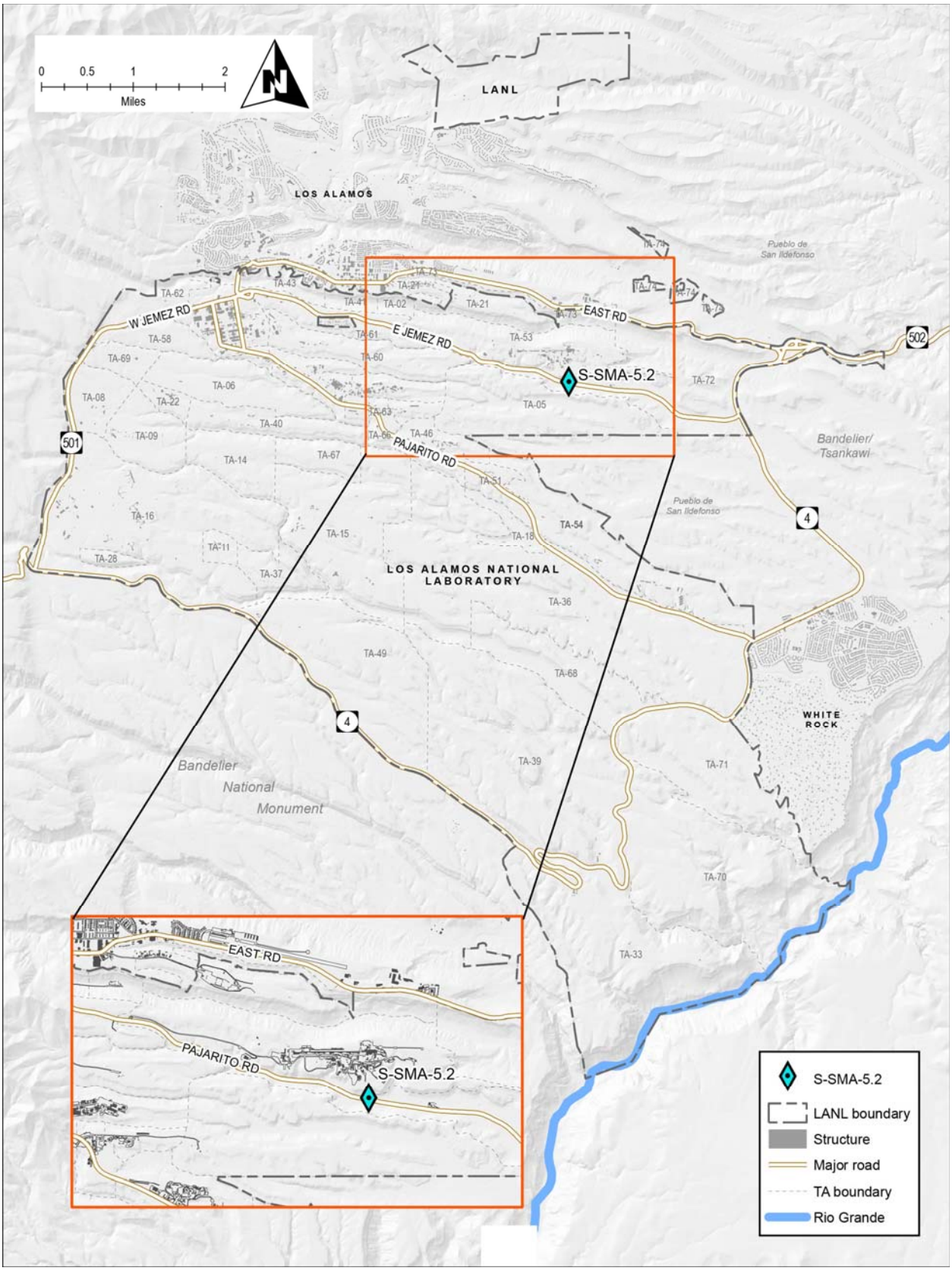


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

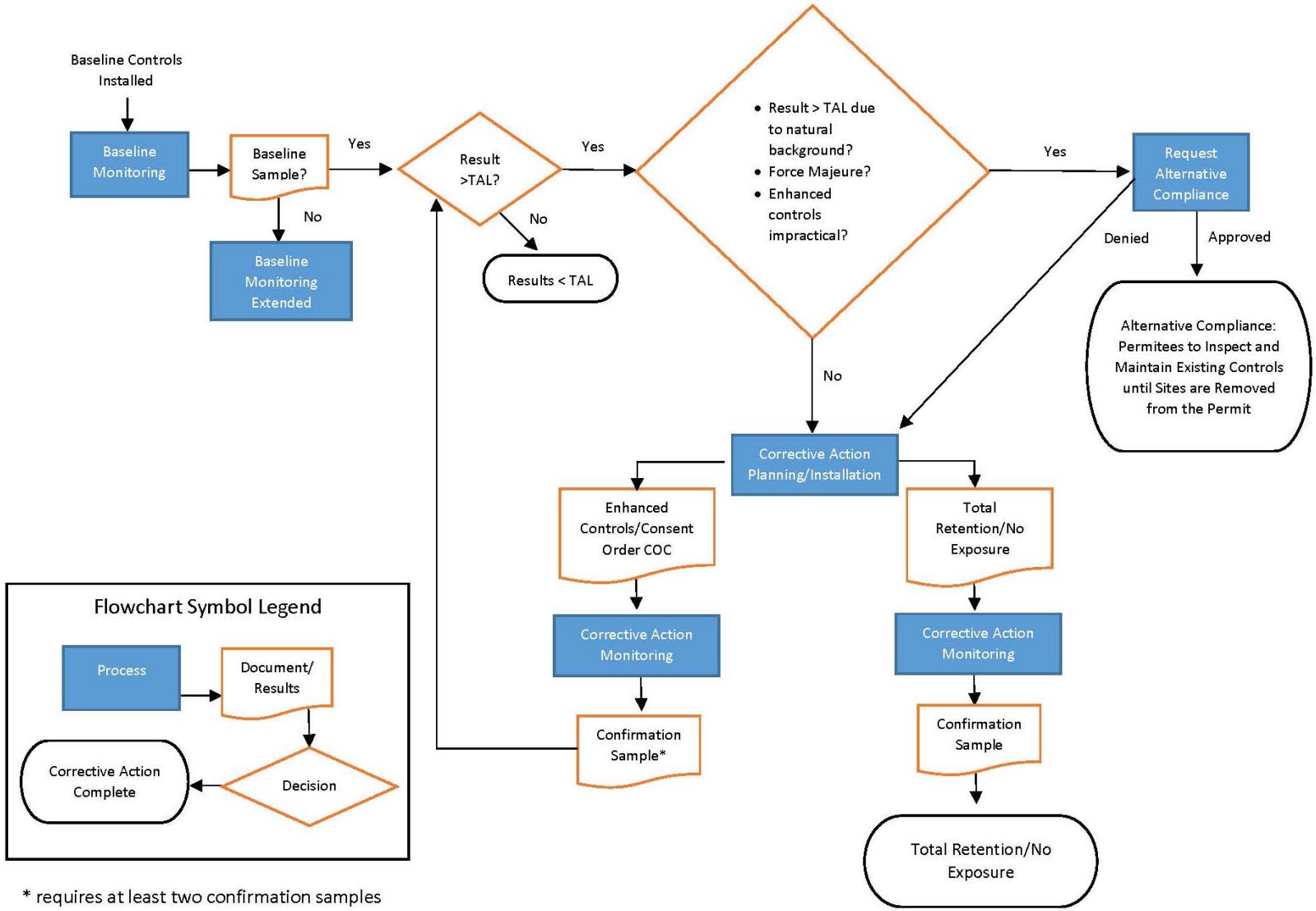


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

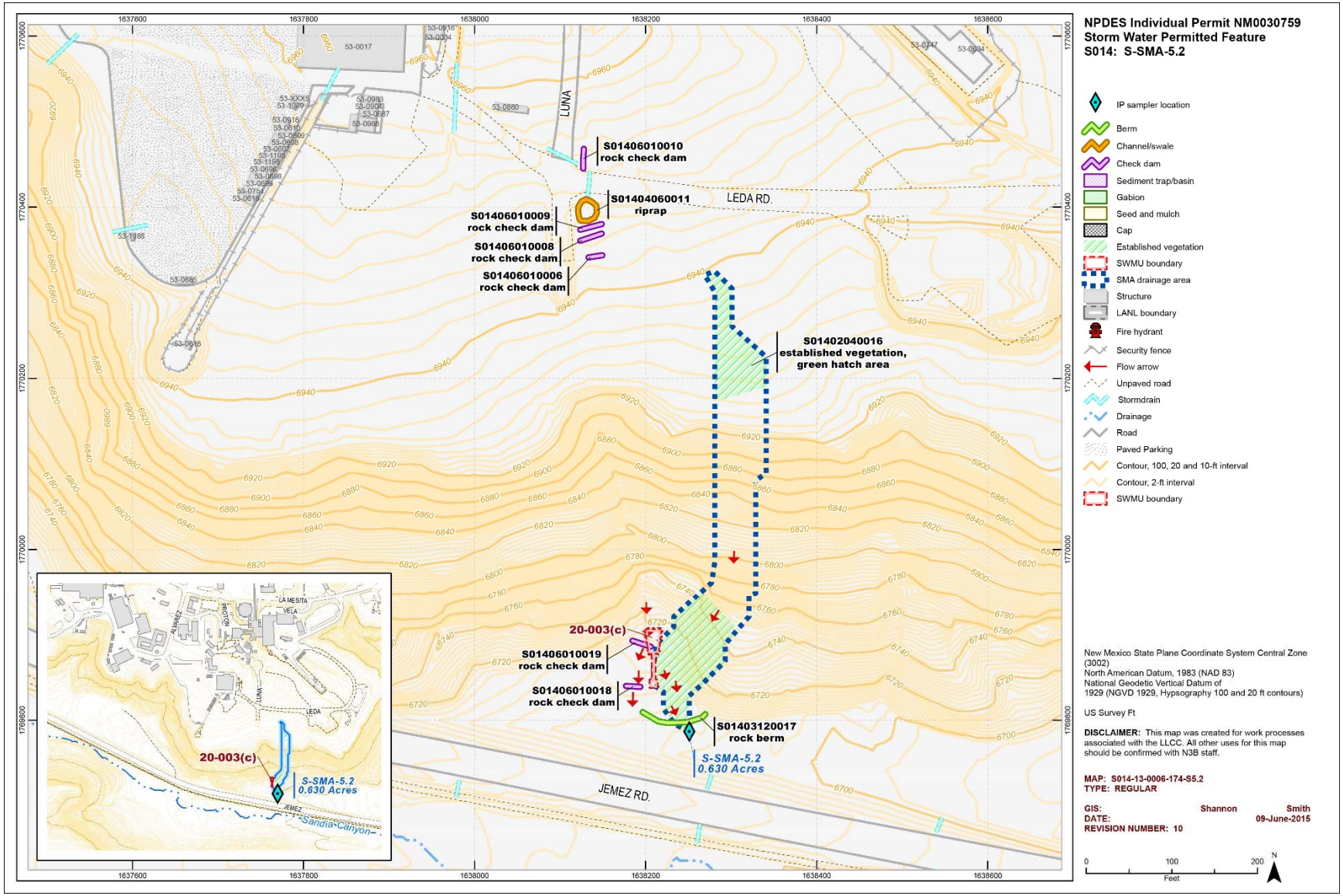
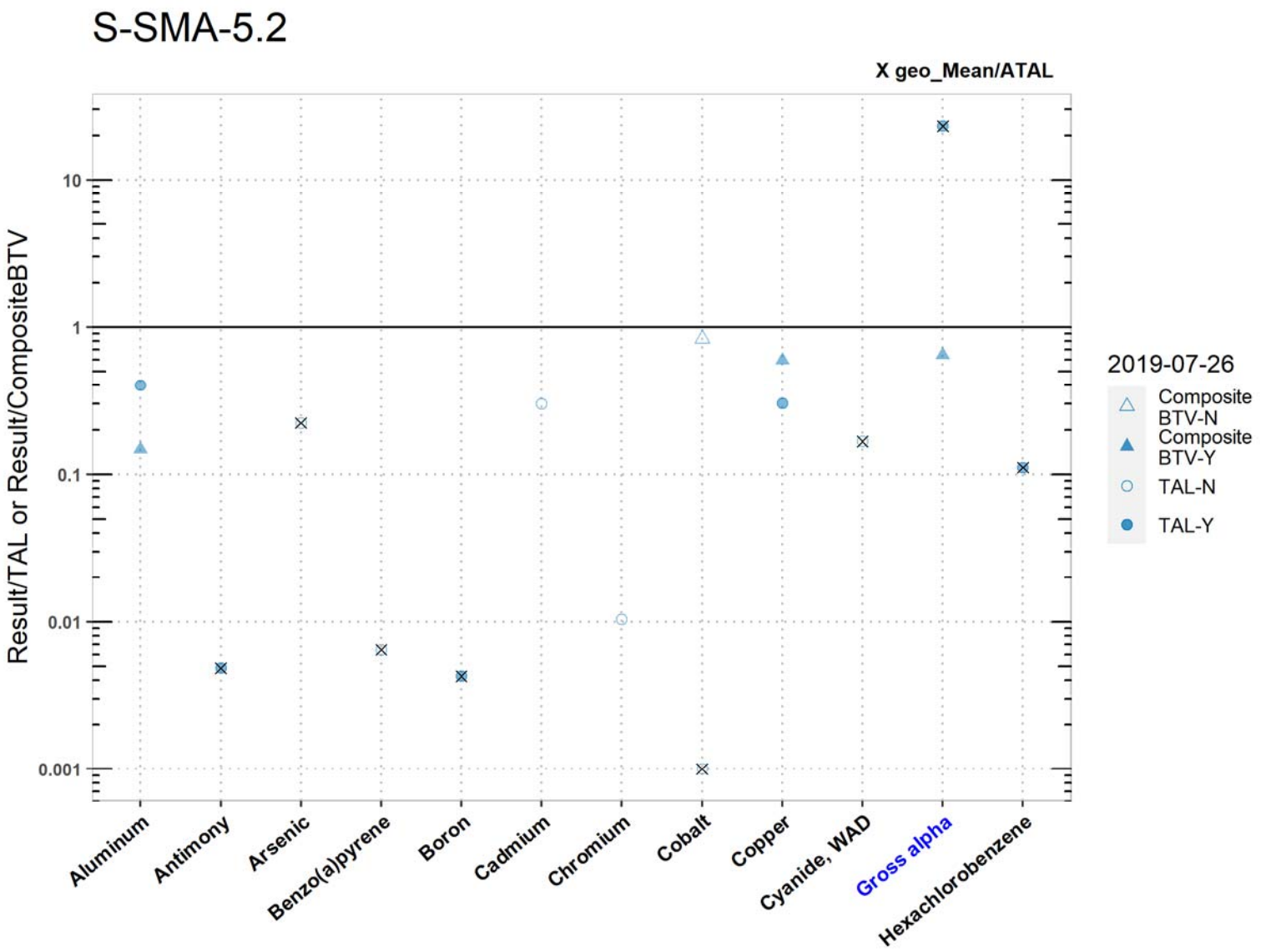


Figure 5.0-1 S-SMA-5.2 location map



Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 2019 analytical results summary plot and table for S-SMA-5.2

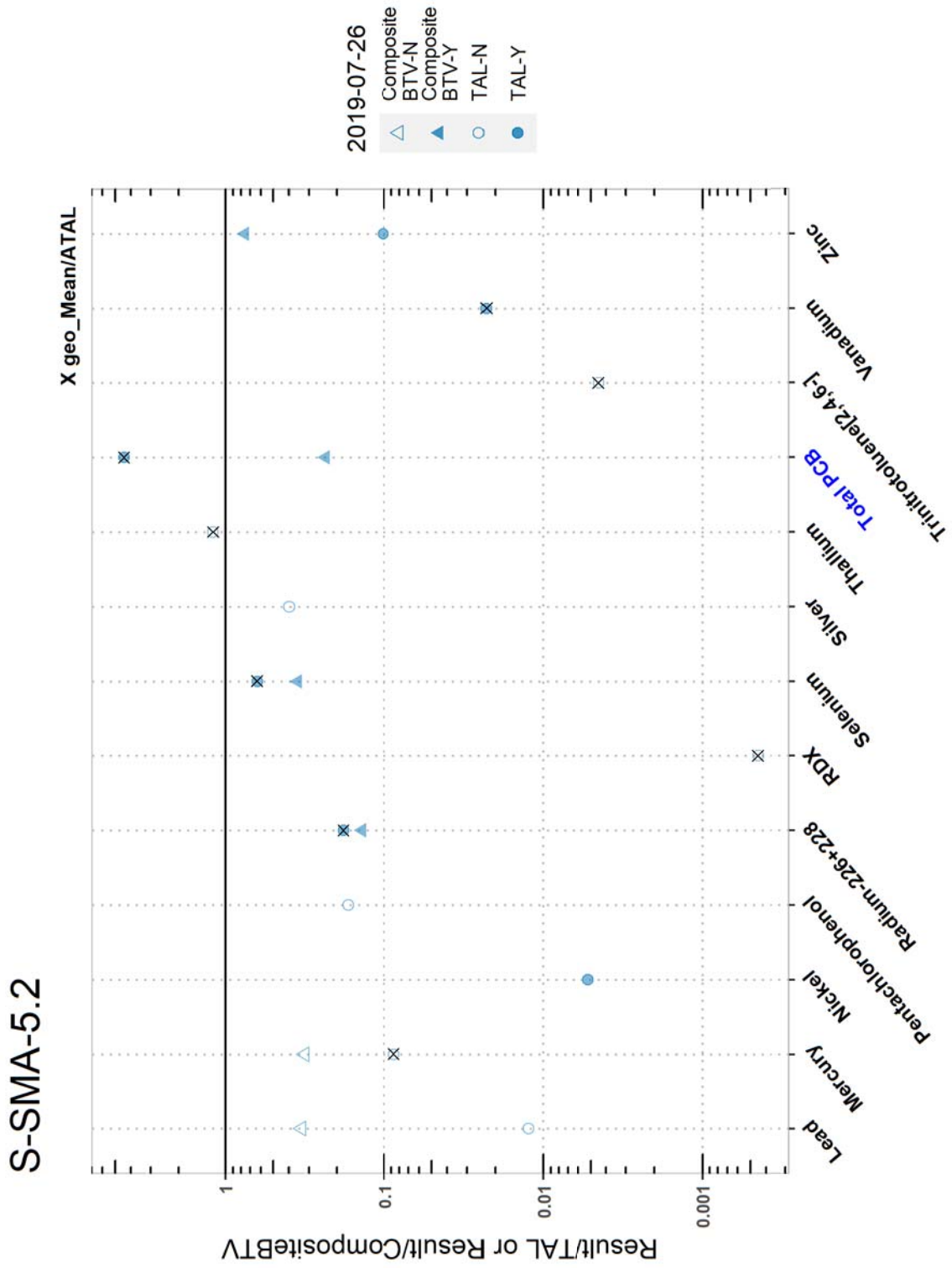
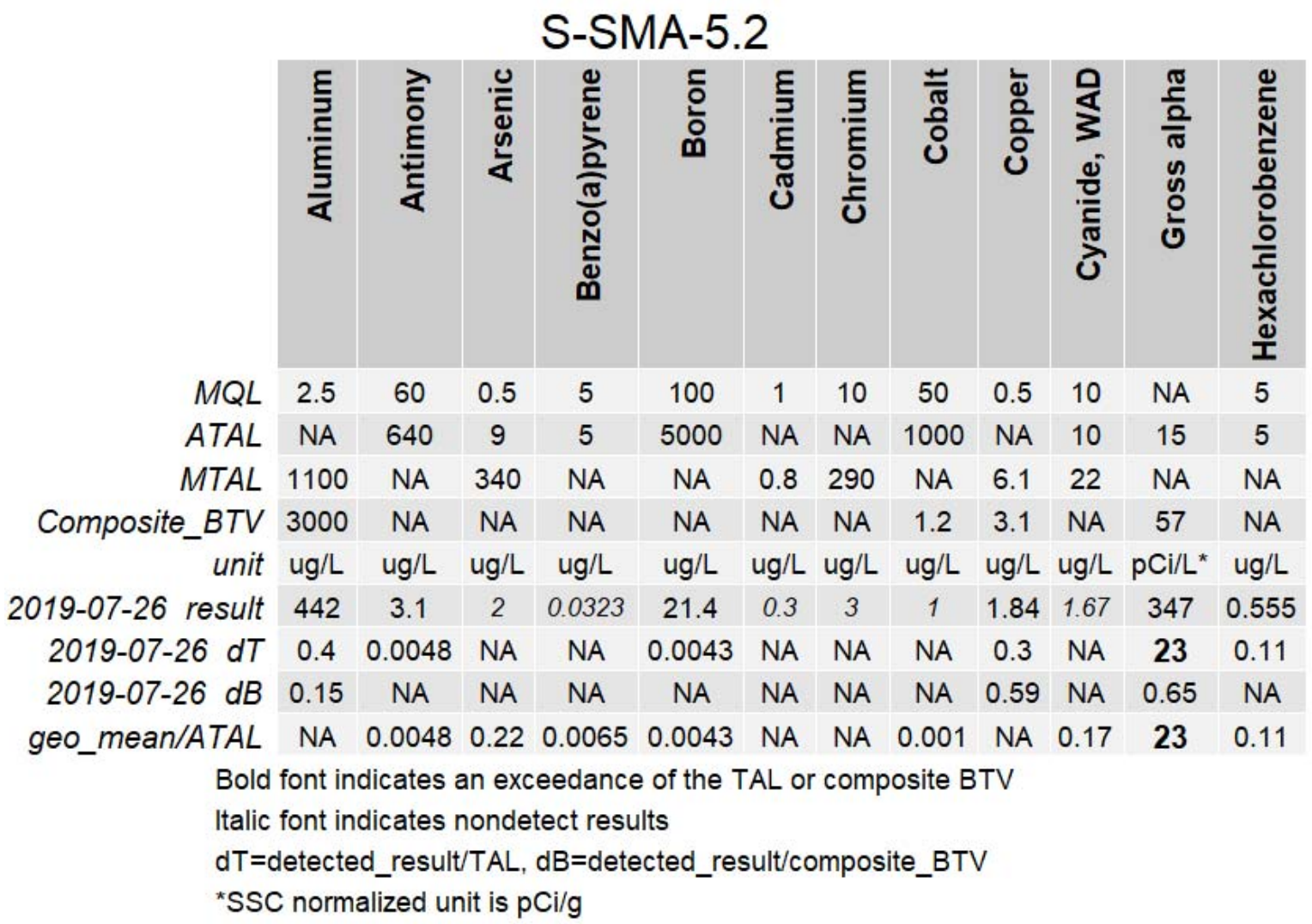


Figure 6.0-1 (continued) 2019 analytical results summary plot and table for S-SMA-5.2



	Aluminum	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	60	0.5	5	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	5	5000	NA	NA	1000	NA	10	15	5
MTAL	1100	NA	340	NA	NA	0.8	290	NA	6.1	22	NA	NA
Composite_BTV	3000	NA	NA	NA	NA	NA	NA	1.2	3.1	NA	57	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
2019-07-26 result	442	3.1	*2*	*0.0323*	21.4	*0.3*	*3*	*1*	1.84	*1.67*	347	0.555
2019-07-26 dT	0.4	0.0048	NA	NA	0.0043	NA	NA	NA	0.3	NA	**23**	0.11
2019-07-26 dB	0.15	NA	NA	NA	NA	NA	NA	NA	0.59	NA	0.65	NA
geo_mean/ATAL	NA	0.0048	0.22	0.0065	0.0043	NA	NA	0.001	NA	0.17	**23**	0.11

Bold font indicates an exceedance of the TAL or composite BTV

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

*SSC normalized unit is pCi/g

Figure 6.0-1 (continued) **2019 analytical results summary plot and table for S-SMA-5.2**

S-SMA-5.2

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	0.00064	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.5	0.00064	20	100	NA
MTAL	40	NA	230	19	NA	NA	20	0.75	NA	NA	NA	NA	74
Composite_BTV	1.5	0.21	NA	NA	4.2	NA	9	NA	NA	0.012	NA	NA	10
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
2019-07-26 result	*0.5*	*0.067*	1.2	*3.23*	5.47	*0.0898*	3.17	*0.3*	*0.6*	0.00282	*0.0898*	2.28	7.54
2019-07-26 dT	NA	NA	0.0052	NA	0.18	NA	0.63	NA	NA	**4.4**	NA	0.023	0.1
2019-07-26 dB	NA	NA	NA	NA	0.14	NA	0.35	NA	NA	0.24	NA	NA	0.75
geo_mean/ATAL	NA	0.087	NA	NA	0.18	0.00045	0.63	NA	**1.2**	**4.4**	0.0045	0.023	NA

Bold font indicates an exceedance of the TAL or composite BTV

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

*SSC normalized unit is pCi/g

Figure 6.0-1 (continued) **2019 analytical results summary plot and table for S-SMA-5.2**

Table 5.0-1
Active Control Measures at S-SMA-5.2

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status
S01402040016	Established Vegetation	No	Yes	Yes	No	B[a]
S01403120017	Rock Berm	No	Yes	No	Yes	B
S01404060011	Rip Rap	Yes	No	Yes	No	CB[b]
S01406010006	Rock Check Dam	Yes	No	No	Yes	CB
S01406010008	Rock Check Dam	Yes	No	No	Yes	CB
S01406010009	Rock Check Dam	Yes	No	No	Yes	CB
S01406010010	Rock Check Dam	Yes	No	No	Yes	CB
S01406010018	Rock Check Dam	No	Yes	No	Yes	B
S01406010019	Rock Check Dam	No	Yes	No	Yes	B

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, S-SMA-5.2

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX[a]	2019	Gross alpha	pCi/L	1	347	15	346	23.1	n/a[b]	n/a	n/a
MEX	2019	Total PCBs	µg/L	1	0.0028	0.00064	0.0028	4.38	n/a	n/a	n/a

[a] MEX = Extended baseline monitoring.

[b] n/a = Not applicable.

Table 7.1-1
2019 Storm Water Exceedances and BTV Comparison, S-SMA-5.2

TAL Exceedances	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
Total PCBs (4.38×) = 0.0028 µg/L (ATAL is 0.00064 µg/L)	(BTV: 0.012 µg/L*) ☐ Yes ☒ No
Gross alpha (23.1×) = 347 pCi/L (ATAL is 15 pCi/L) **SSC** = 9400 mg/L **SSC-normalized gross alpha** = 36.9 pCi/g SSC	(SSC-normalized BTV: 57 pCi/g SSC*) ☐ Yes ☒ No

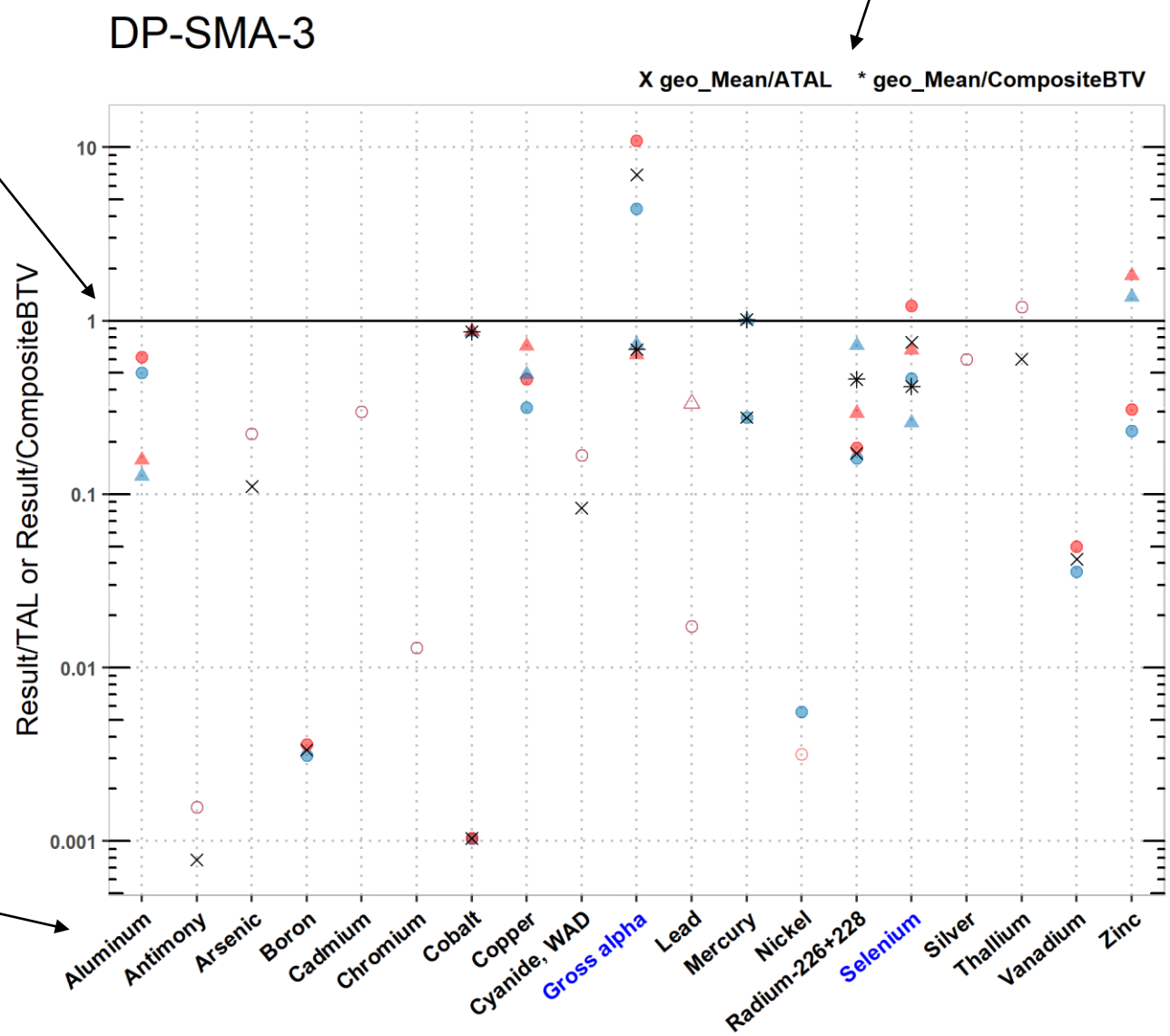
*Windward 2020.

Appendix A

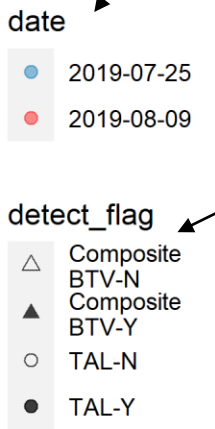
How to Read the Analytical Results Summary Plot and Table

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

Analytical results are normalized by dividing by the TAL or by the Composite BTV, creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL or BTV for each analyte.



List of all samples collected at the SMA for the current monitoring stage. Analytical data from each sample is plotted using the color shown in this legend.



Legend of symbols used in the plots. Hollow symbols indicate a nondetect result below quantitation level (-N) and the value plotted is the quantitation level divided by the TAL or Composite BTV. Solid symbols indicate a detected value (-Y) and the value plotted is the result divided by the TAL or Composite BTV. For example, "TAL-Y" represents the TAL ratio for detected results (detected result divided by the TAL). This legend is dynamic and will only display symbols relevant to the analytical data plotted for each SMA.

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedences are shown in blue font.

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the Composite Background Threshold Value. It is calculated based on the percentages of developed and undeveloped landscape in the SMA.

These three rows present the raw result (result), the result divided by TAL (dT), and the result divided by the Composite BTV (dB). They are grouped by date. The TAL ratio (dT) and BTV ratio (dB) are only calculated for detected results.

These two rows present the geometric mean of the results from multiple sampling dates divided by the ATAL and divided by the Composite BTV

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
2019-07-25 dT	0.5	NA	NA	0.0031	NA	NA	0.001	0.32	NA	**4.4**	NA	0.28	0.0056	0.16	0.46	NA	NA	0.036	0.23
2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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

October 2020
EM2020-0386

Alternative Compliance Request for Solid Waste Management Unit 11-001(c) in W-SMA-6

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for Solid Waste Management Unit 11-001(c) in W-SMA-6

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kimberly D Lebak

Kim Lebak, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

9/28/20
Date

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2020.10.27 07:00:49 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System Storm Water Individual Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units (SWMUs) and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request for alternative compliance addresses SWMU 11-001(c) monitored at site monitoring area (SMA) W-SMA-6, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for SWMU 11-001(c) monitored at W-SMA-6 is that the pollutant of concern (POC), gross-alpha activity, is contributed by sources beyond the Permittees' control. Specifically, concentrations of the POC in the storm water discharge from W-SMA-6 are below storm water background concentrations.

CONTENTS

Figures

Tables

Appendix

ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EM-LA	Environmental Management Los Alamos Field Office (DOE)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSC	suspended sediment concentration
SWMU	solid waste management unit
TA	technical area
TAL	target action level
VCA	voluntary corrective action

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the DOE Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1) and is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

W-SMA-6 contains one Site, SWMU 11-001(c), and is located in Water Canyon. An extended baseline monitoring sample collected in 2019 from W-SMA-6 showed gross-alpha activity exceeding the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to initiate corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions when storm water monitoring results at an SMA exceed TALs. The Permittees may request to place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d). As described below, the Permittees have determined that the Site addressed in this request can achieve completion of corrective action only though the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Description, summarizes the historical operations that led to the Site in W-SMA-6 being identified as a SWMU in the 1990 SWMU report (LANL 1990), the current use of the Site, any Consent Order investigations and remedial actions conducted at the Site, and the current status of the Site under the Consent Order.
- Section 5.0, Description of Control Measures Installed within W-SMA-6, details the baseline control measures that were installed in W-SMA-6.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with historical industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a watershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a certificate of completion (COC) under NMED's Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, the agency will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part. I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 months of the effective date of the Permit, and Certifications of Completion of Baseline Control Measures were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from achieving corrective action complete certification: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will make the alternative compliance request available to the public via the Individual Permit public website (https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4).

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted to the Individual Permit public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTION

W-SMA-6 is a 0.13-acre watershed consisting of 100% undeveloped area. One Site is associated with W-SMA-6: SWMU 11-001(c).

SWMU 11-001(c) is a former firing pit (former structure 11-15) at Technical Area 16 (TA-16), that was located northwest of former building 16-370 near the edge of Water Canyon. According to the 1990 SWMU report, the firing pit was similar in construction to Firing Pit 11-14 [SWMU 11-001(a)], which consisted of a 12.5-ft semicircular concrete wall that was 4.5 ft high and 37 in. thick (LANL 1990). The SWMU 11-001(c) firing pit was first used in 1944 (LANL 1990). 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. A RCRA facility investigation (RFI) and a voluntary corrective action (VCA) were conducted in 1995 and 1996, respectively. However, in 2011 during preparation of the Upper Water Canyon Aggregate Area investigation work plan, it was determined from engineering drawing R-126 that samples from the RFI and VCA were collected from the wrong location (LANL 2011). The firing pit was actually located northwest of the area that was sampled (LASL 1952). Consent Order sampling has not been conducted at SWMU 11-001(c); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation.

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN W-SMA-6

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for W-SMA-6 is shown in Figure 5.0-1. An extended baseline confirmation sample was collected from W-SMA-6 on July 7, 2019. A second sample was collected on October 4, 2019, for unfiltered metals analysis. Analytical results from the samples yielded the following TAL exceedance:

- gross-alpha activity of 60.5 pCi/L (ATAL is 15 pCi/L)

The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TALs (gross alpha) is within the natural background range of concentrations expected for storm water runoff from undeveloped landscapes.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following categories:

- Sources of pollutants

- Technical feasibility and practicability.

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at W-SMA-6 are described below.

7.1 Potential Sources of TAL Exceedances

Although alpha emitters are associated with industrial materials historically managed at Site 11-001(c), the likely source of gross alpha is runoff from undeveloped landscapes. The gross-alpha activity in the SMA sample does not exceed the gross-alpha activity in storm water runoff from undeveloped landscapes.

7.1.1 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including gross-alpha activity. These results are summarized in the publication entitled “Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, Revision 1” (hereafter, the Background Report) (Windward 2020). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of metals and gross alpha in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = [(% impervious SMA area × 90th percentile developed landscape BTV) + (% pervious SMA area × 90^{th} percentile undeveloped landscape BTV)]/100. W-SMA-6 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90th percentile BTV for gross-alpha activity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The gross-alpha result from W-SMA-6 (60.5 pCi/L) had a paired SSC value of 1800 mg/L. The SSC-normalized gross-alpha result is 33.6 pCi/g SSC, below the BTV of 57 pCi/g SSC. Table 7.1-1 compares the TAL-exceeding constituent with the composite BTV (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at W-SMA-6 were analyzed for gross-alpha activity, which is a measure of the alpha activity associated with all alpha-emitting radionuclides detected in the sample. The TAL specified in the Individual Permit, however, is for adjusted gross-alpha activity. Adjusted gross-alpha activity does not include the alpha activity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha activity of a sample will always be greater than the adjusted gross-alpha activity, use of gross-alpha activity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha activity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the Site addressed in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha activity from these significant materials associated with industrial activities and then potentially released to storm water discharges at this Site could not contribute to adjusted gross-alpha activity. There are, therefore, no sources of adjusted gross-alpha activity associated with this Site.

7.2 Rationale for Alternative Compliance

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the gross-alpha exceedance is a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of gross-alpha activity in storm water runoff from the Site that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe W-SMA-6 is not contributing to the gross-alpha activity TAL exceedance; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by the Site. Therefore, mitigating Site-related storm water would not reduce the gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because Site 11-001(c) is not the source of gross-alpha exceedance, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site, or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees propose to continue to inspect and maintain existing controls until the Site is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency), September 30, 2010. "Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759," Region 6, Dallas, Texas.

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT "Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759," Region 6, Dallas, Texas.

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. III of IV (TA-26 through TA-50), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), June 2009. "2009 Hydrogeologic Site Atlas," Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico.

LANL (Los Alamos National Laboratory), January 2011. "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-0135, Los Alamos, New Mexico.

LASL (Los Alamos Scientific Laboratory), July 1, 1952. "Structure Location Plan, TA-11, K-Site, Revision 4," Engineering Drawing ENG-R-126, Los Alamos, New Mexico.

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Strom Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle, Washington.

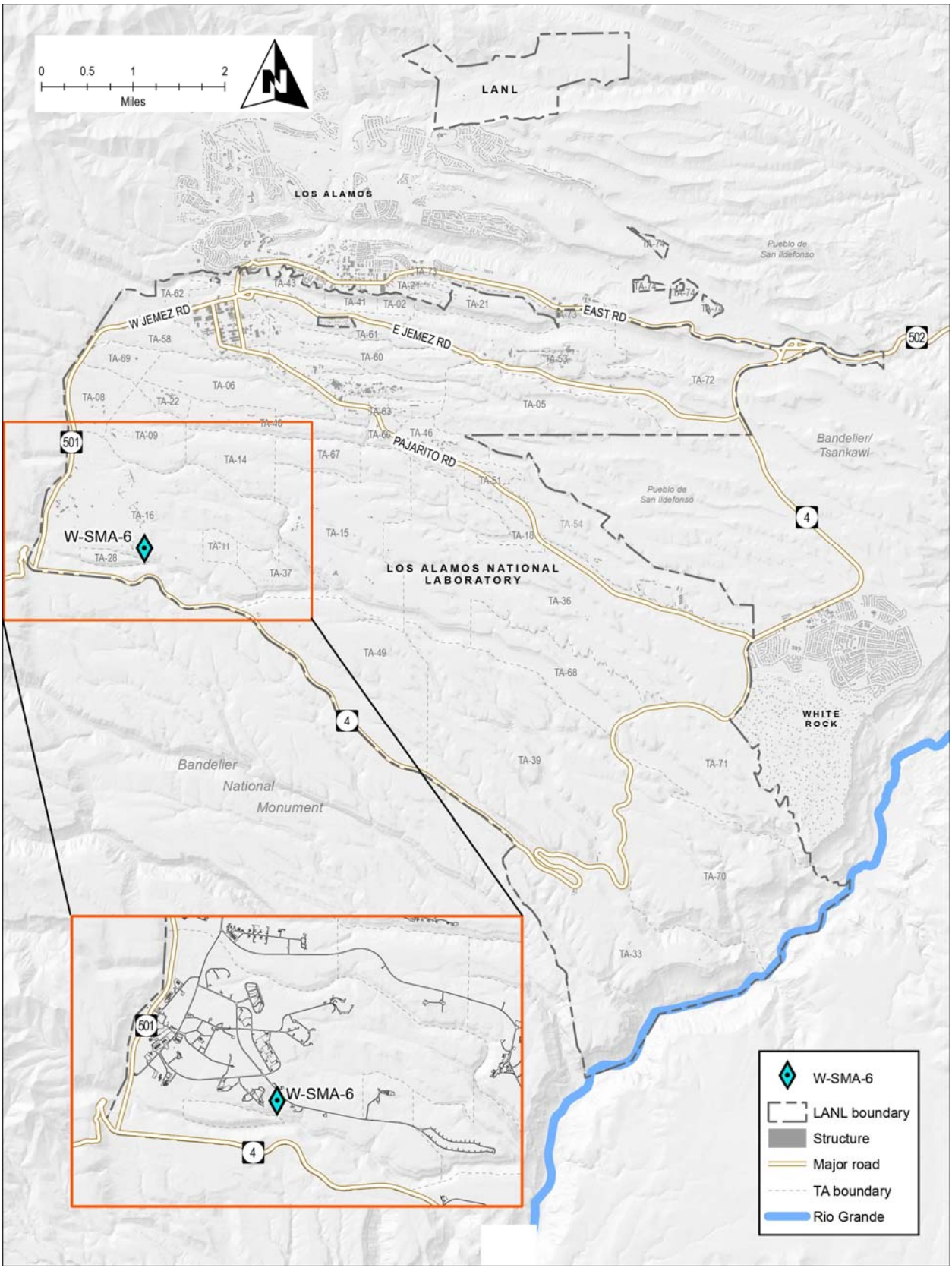


Figure 1.0-1 Location of W-SMA-6 with respect to the Laboratory and surrounding landholdings

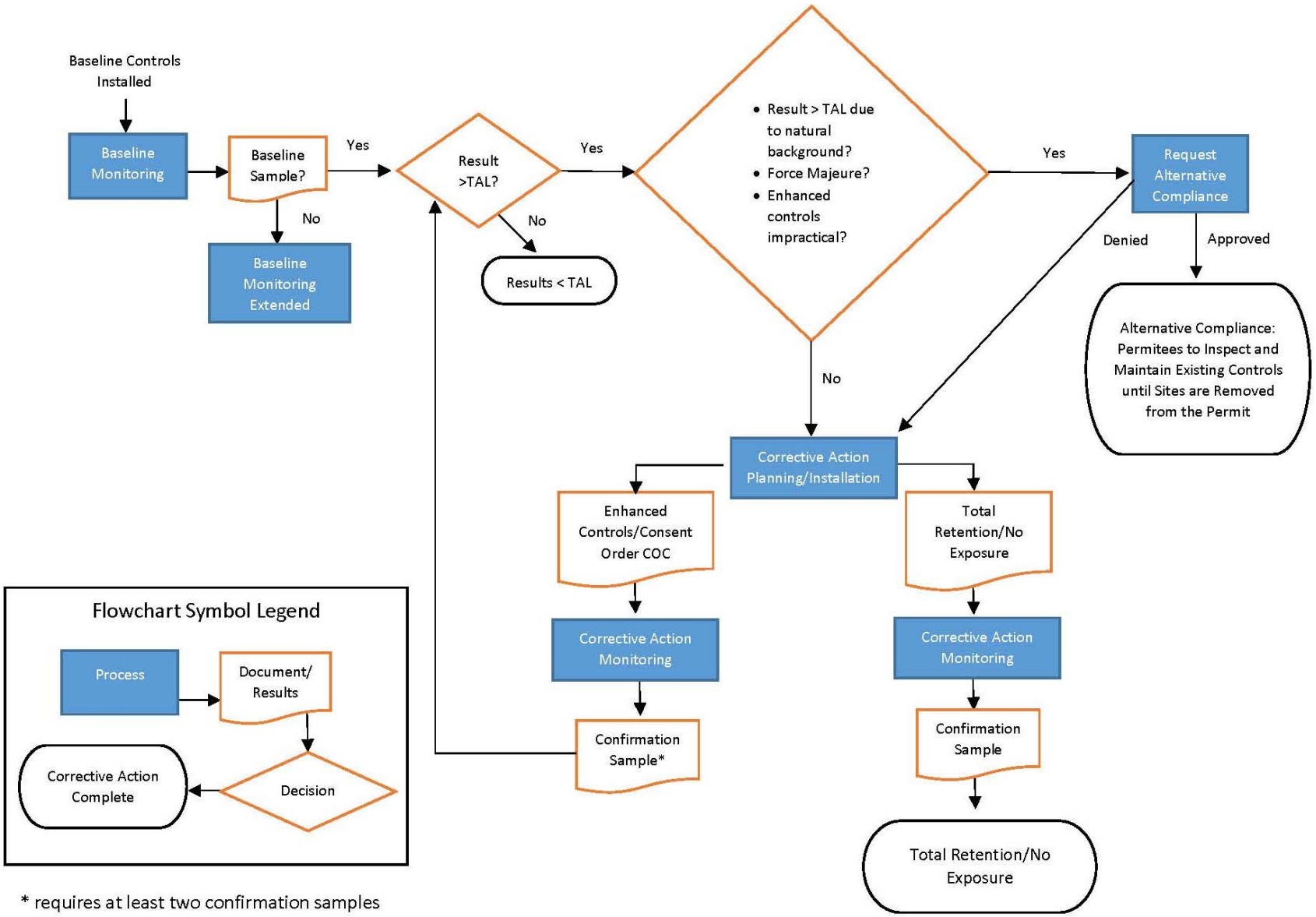


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

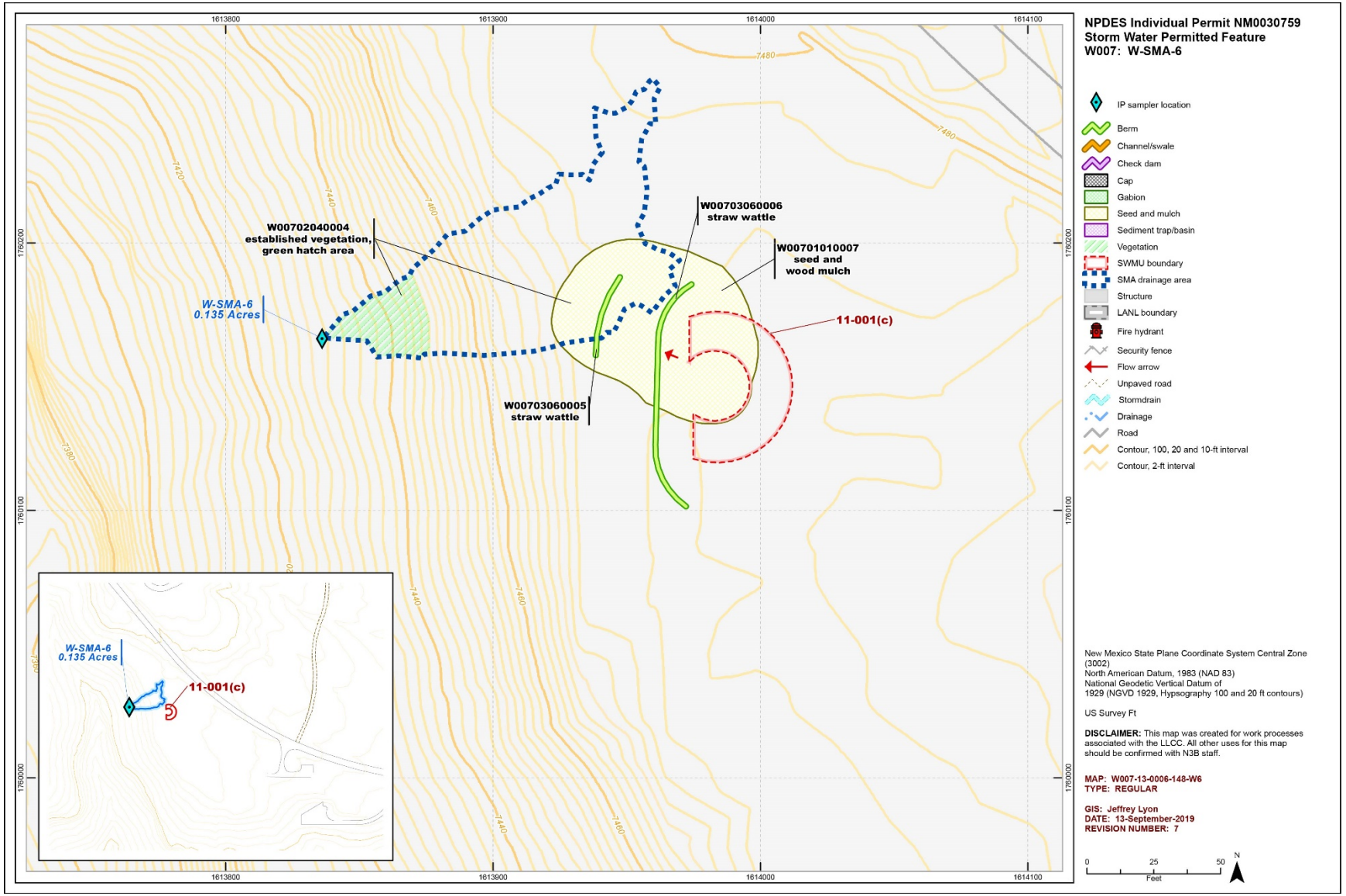
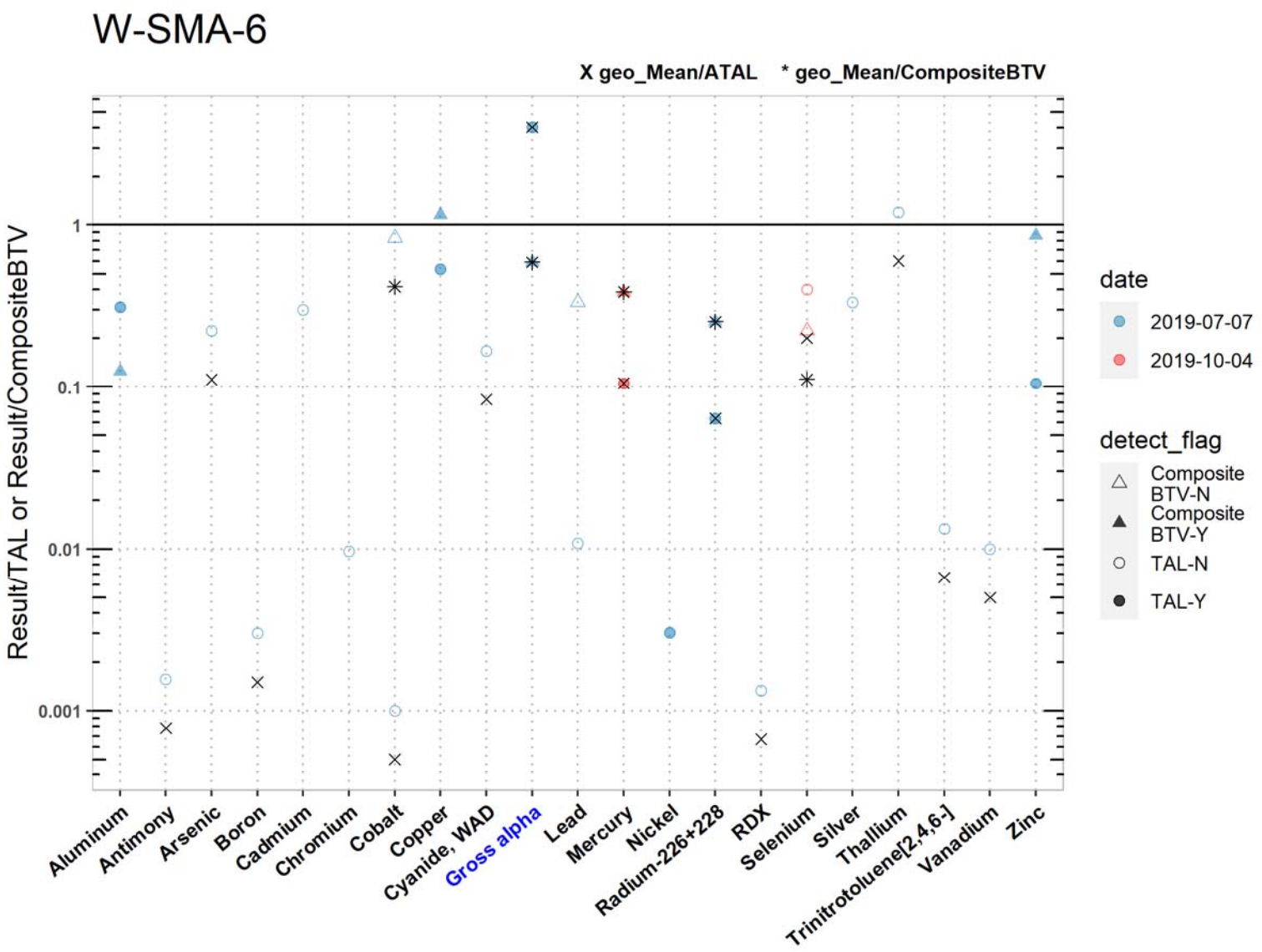


Figure 5.0-1 W-SMA-6 location map



Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 2019 analytical results summary plot and table for W-SMA-6

W-SMA-6

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	0.5	20	100	NA
MTAL	1200	NA	340	NA	0.88	310	NA	6.7	22	NA	46	NA	250	NA	NA	20	0.9	NA	NA	NA	82
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	NA	9	NA	NA	NA	NA	10
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
2019-07-07 result	374	*1*	*2*	*15*	*0.3*	*3*	*1*	3.58	*1.67*	60.5	*0.5*	NA	0.755	1.91	*0.267*	NA	*0.3*	*0.6*	*0.267*	*1*	8.6
2019-07-07 dT	0.31	NA	NA	NA	NA	NA	NA	0.53	NA	**4**	NA	NA	0.003	0.064	NA	NA	NA	NA	NA	NA	0.1
2019-07-07 dB	0.12	NA	NA	NA	NA	NA	NA	**1.2**	NA	0.59	NA	NA	NA	0.25	NA	NA	NA	NA	NA	NA	0.86
2019-10-04 result	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.081	NA	NA	NA	*2*	NA	NA	NA	NA	NA
2019-10-04 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019-10-04 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.39	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.11	0.0015	NA	NA	5e-04	NA	0.084	**4**	NA	0.11	NA	0.064	0.00067	0.2	NA	0.6	0.0067	0.005	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.42	NA	NA	0.59	NA	0.39	NA	0.25	NA	0.11	NA	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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 6.0-1 (continued) **2019 analytical results summary plot and table for W-SMA-6**

Table 5.0-1
Active Control Measures at W-SMA-6

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status
W00701010007	Seed and Wood Mulch	No	No	Yes	No	B*
W00702040004	Established Vegetation	No	Yes	Yes	No	B
W00703060005	Straw Wattle	No	Yes	No	Yes	B
W00703060006	Straw Wattle	No	Yes	No	Yes	B

*B = Additional baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, W-SMA-6

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX[a]	2019	Gross Alpha	pCi/L	1	60.5	15	n/a[b]	4.0	n/a	n/a	n/a

[a] MEX = Extended baseline monitoring.

[b] n/a = Not applicable.

Table 7.1-1
2019 Storm Water Exceedances and BTV Comparison, W-SMA-6

TAL Exceedance	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
Gross alpha = 60.5 pCi/L (ATAL is 15 pCi/L) **SSC** = 1800 mg/L **SSC-normalized gross alpha** = 33.6 pCi/g SSC	(SSC-normalized BTV: 57 pCi/g SSC*) ☐ Yes ☒ No

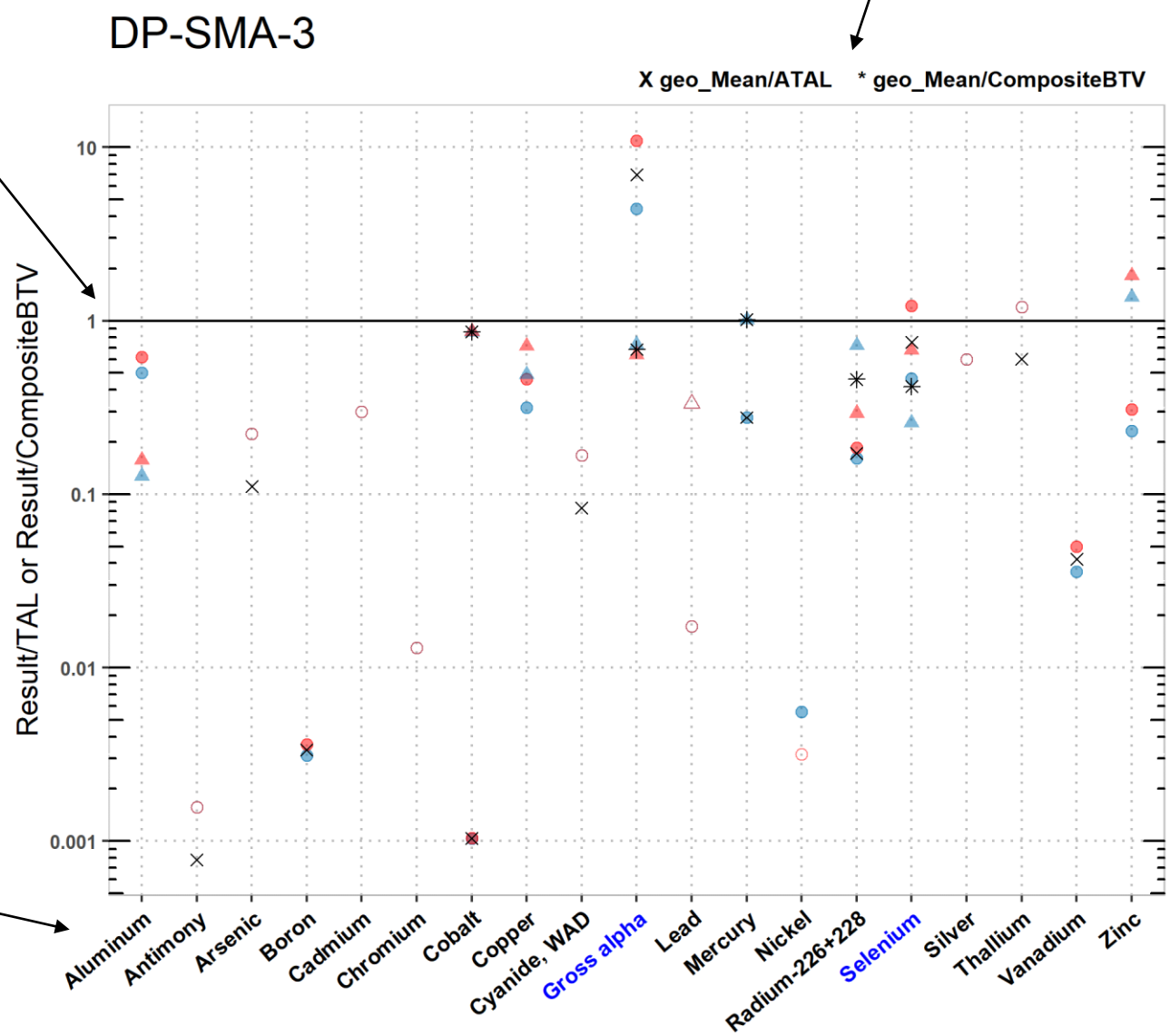
*Windward 2020.

Appendix A

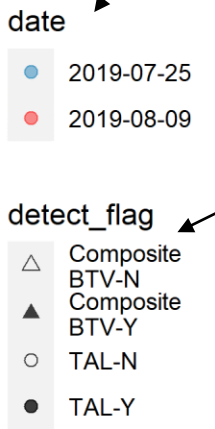
How to Read the Analytical Results Summary Plot and Table

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

Analytical results are normalized by dividing by the TAL or by the Composite BTV, creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL or BTV for each analyte.



List of all samples collected at the SMA for the current monitoring stage. Analytical data from each sample is plotted using the color shown in this legend.



Legend of symbols used in the plots. Hollow symbols indicate a nondetect result below quantitation level (-N) and the value plotted is the quantitation level divided by the TAL or Composite BTV. Solid symbols indicate a detected value (-Y) and the value plotted is the result divided by the TAL or Composite BTV. For example, "TAL-Y" represents the TAL ratio for detected results (detected result divided by the TAL). This legend is dynamic and will only display symbols relevant to the analytical data plotted for each SMA.

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedences are shown in blue font.

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the Composite Background Threshold Value. It is calculated based on the percentages of developed and undeveloped landscape in the SMA.

These three rows present the raw result (result), the result divided by TAL (dT), and the result divided by the Composite BTV (dB). They are grouped by date. The TAL ratio (dT) and BTV ratio (dB) are only calculated for detected results.

These two rows present the geometric mean of the results from multiple sampling dates divided by the ATAL and divided by the Composite BTV

DP-SMA-3

	Aluminum	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	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	0.5	100	NA
MTAL	760	NA	340	NA	0.64	230	NA	4.8	22	NA	29	NA	190	NA	20	0.49	NA	NA	59
Composite_BTV	3000	NA	NA	NA	NA	NA	1.2	3.1	NA	57	1.5	0.21	NA	4.2	9	NA	NA	NA	10
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
2019-07-25 result	382	*1*	*2*	15.6	*0.3*	*3*	1.03	1.52	*1.67*	66.5	*0.5*	0.213	1.06	4.83	2.32	*0.3*	*0.6*	3.58	13.7
2019-07-25 dT	0.5	NA	NA	0.0031	NA	NA	0.001	0.32	NA	**4.4**	NA	0.28	0.0056	0.16	0.46	NA	NA	0.036	0.23
2019-07-25 dB	0.13	NA	NA	NA	NA	NA	0.86	0.49	NA	0.73	NA	**1.014**	NA	0.72	0.26	NA	NA	NA	**1.4**
2019-08-09 result	471	*1*	*2*	18.1	*0.3*	*3*	1.04	2.21	*1.67*	164	*0.5*	NA	*0.6*	5.54	6.08	*0.3*	*0.6*	4.99	18.2
2019-08-09 dT	0.62	NA	NA	0.0036	NA	NA	0.001	0.46	NA	**11**	NA	NA	NA	0.18	**1.2**	NA	NA	0.05	0.31
2019-08-09 dB	0.16	NA	NA	NA	NA	NA	0.87	0.71	NA	0.64	NA	NA	NA	0.29	0.68	NA	NA	NA	**1.8**
geo_mean/ATAL	NA	0.00078	0.11	0.0034	NA	NA	0.001	NA	0.084	**7**	NA	0.28	NA	0.17	0.75	NA	0.6	0.042	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.86	NA	NA	0.68	NA	**1.014**	NA	0.46	0.42	NA	NA	NA	NA

Bold font indicates an exceedance of the TAL or composite BTV; 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