



ENTERED

Department of Energy  
National Nuclear Security Administration  
Sandia Field Office  
P.O. Box 5400  
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JUL 27 2018

Mr. John E. Kieling  
Chief  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Bldg. 1  
Santa Fe, New Mexico 87505

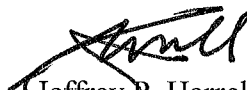
Subject: Department of Energy/National Nuclear Security Administration Sandia National Laboratories Environmental Restoration Operations Consolidated Quarterly Report, July 2018

Dear Mr. Kieling:

Enclosed is the Subject report for the Department of Energy, National Nuclear Security Administration, Sandia National Laboratories/New Mexico (SNL/NM). This report addresses all quarterly reporting (January through March 2018) set forth in the *Compliance Order on Consent* for SNL/NM, Environmental Protection Agency identification number NM5890110518.

If you have questions contact David Rast of our staff at (505) 845-5349.

Sincerely,

  
Jeffrey P. Harrell  
Manager

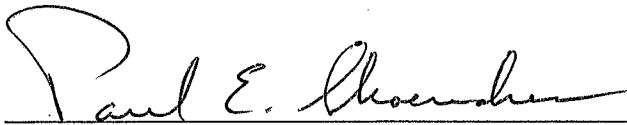
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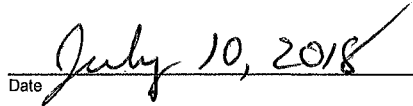
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ENVIRONMENTAL RESTORATION OPERATIONS  
CONSOLIDATED QUARTERLY REPORT, JULY 2018

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure 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 that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

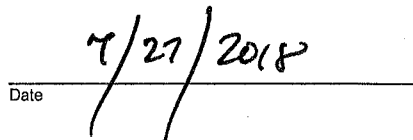
  
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Signature

  
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Date

**Paul E. Shoemaker**  
Defense Waste Management Programs  
Sandia National Laboratories/New Mexico  
Albuquerque, New Mexico 87185  
Operator

and

  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date

**Jeffrey P. Harrell, Manager**  
U.S. Department of Energy  
National Nuclear Security Administration  
Sandia Field Office  
Owner

Sandia National Laboratories, New Mexico

## **Environmental Restoration Operations**

A U.S. Department of Energy Environmental Cleanup Program

### **Consolidated Quarterly Report**

January – March 2018



**July 2018**



United States Department of Energy  
Sandia Field Office

# CONSOLIDATED QUARTERLY REPORT

July 2018

SANDIA NATIONAL LABORATORIES, NEW MEXICO

## ENVIRONMENTAL RESTORATION OPERATIONS

U.S. DEPARTMENT OF ENERGY:  
CONTRACTOR:

SANDIA FIELD OFFICE  
NATIONAL TECHNOLOGY AND  
ENGINEERING SOLUTIONS OF SANDIA  
John R. Cochran

PROJECT MANAGER:

**NUMBER OF POTENTIAL RELEASE SITES SUBJECT TO CORRECTIVE ACTION: 12**

**SUSPECT WASTE:** Radionuclides, metals, organic compounds, and explosives

**REPORTING PERIOD:** January – March 2018

### OVERVIEW

This Sandia National Laboratories, New Mexico Environmental Restoration Operations (ER) Consolidated Quarterly Report (ER Quarterly Report) fulfills all quarterly reporting requirements set forth in the Compliance Order on Consent. The 12 sites in the corrective action process are listed in Table I-1. This ER Quarterly Report presents activities and data as follows:

SECTION I: Environmental Restoration Operations Consolidated Quarterly Report,  
January – March 2018

Because there is no perchlorate analysis to report this quarter, this edition of the ER Quarterly Report does not include Section II “*Perchlorate Screening Quarterly Groundwater Monitoring Report.*”

## ABBREVIATIONS AND ACRONYMS

AGMR	Annual Groundwater Monitoring Report
AOC	Area of Concern
AVN	Area V (North) (acronym used for well identification numbers in tables only)
BSG	Burn Site Groundwater
CAC	corrective action complete
CCBA	Coyote Canyon Blast Area
CCM	Current Conceptual Model
CME	Corrective Measures Evaluation
COC	constituent of concern
CTF	Coyote Test Field
CY	Calendar Year
CYN	Canyons (acronym used for well identification numbers in tables only at Burn Site Groundwater Area of Concern)
DOE	U.S. Department of Energy
DP	Discharge Permit
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration Operations
GWQB	Ground Water Quality Bureau
HWB	Hazardous Waste Bureau
INJ	injection (acronym used for well identification only)
ISB	in-situ bioremediation
LWDS	liquid waste disposal system (acronym used for well identification only)
MCL	maximum contaminant level
mg/L	milligrams per liter
µg/L	microgram(s) per liter
MW	monitoring well (acronym used for well identification only)
NA	not applicable
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
Permit	Resource Conservation and Recovery Act Facility Operating Permit
PGS	Parade Ground South (acronym used for well identification only)
SNL/NM	Sandia National Laboratories, New Mexico
SWMU	Solid Waste Management Unit
TA	Technical Area
TA1-W	Technical Area-I (Well)
TA2-NW	Technical Area-II (Northwest)
TA2-W	Technical Area-II (Well)

TAG	Tijeras Arroyo Groundwater
TAV	Technical Area-V (acronym used for well identification numbers in tables only)
TA-V	Technical Area-V
TAVG	Technical Area-V Groundwater
TCE	trichloroethene
TJA	Tijeras Arroyo (acronym used for well identification numbers in tables only)
TS/IM	Treatability Study/Interim Measure
TSWP	Treatability Study Work Plan
WYO	Wyoming (acronym used for well identification numbers in tables only)

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# **SECTION I**

## **ENVIRONMENTAL RESTORATION OPERATIONS CONSOLIDATED**

### **QUARTERLY REPORT, January – March 2018**

#### **1.0 Introduction**

This Environmental Restoration Operations (ER) Consolidated Quarterly Report provides the status of ongoing corrective action activities being implemented at Sandia National Laboratories, New Mexico (SNL/NM) during the January, February, and March 2018 quarterly reporting period.

Table I-1 lists the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified for corrective action at SNL/NM. Sections I.2.1 and I.2.2 summarize the work completed during this quarter. Section I.2.1 summarizes the quarterly activities at sites undergoing corrective action *field* activities. Field activities are conducted at the three groundwater AOCs (Burn Site Groundwater [BSG AOC], Technical Area [TA]-V [TA-V] Groundwater [TAVG AOC], and Tijeras Arroyo Groundwater [TAG AOC]). Section I.2.2 summarizes quarterly activities at sites where the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) has issued a certificate of completion and the sites are in the corrective action complete (CAC) *regulatory* process. Currently, SWMUs 8 and 58, 68, 149, 154, and 502 are in the CAC regulatory process.

Corrective action activities are deferred at the Long Sled Track (SWMU 83), the Gun Facilities (SWMU 84), and the Short Sled Track (SWMU 240) because these three sites are active mission facilities. These three active mission sites are located in TA-III.

#### **2.0 Environmental Restoration Operations Work Completed**

The following subsections describe the ER work completed during the first quarter 2018.

##### **2.1 Sites Undergoing Corrective Action**

In a letter dated April 14, 2016, the NMED HWB defined the scope and milestones for corrective action at three groundwater AOCs (BSG AOC, TAVG AOC, and TAG AOC)

(NMED April 2016). Sections 2.1.1 through 2.1.3 discuss the specific milestones from this letter.

### 2.1.1 **Burn Site Groundwater Area of Concern**

Nitrate has been identified as a constituent of concern (COC) in groundwater at the BSG AOC based on detections above the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) in samples collected from monitoring wells. The EPA MCL and State of New Mexico drinking water standard for nitrate is 10 milligrams per liter (mg/L) (as nitrogen).

The U.S. Department of Energy/National Nuclear Security Administration (DOE/NNSA) and SNL/NM personnel met with the NMED HWB on July 20, 2015 to discuss the status of sites currently undergoing corrective action. For the BSG AOC, all parties agreed to a weight-of-evidence characterization program: (1) to conduct additional isotopic analyses/nitrate fingerprinting and age-dating of the groundwater; (2) to conduct a transducer study using existing wells to determine whether the groundwater is unconfined, semi-confined, or confined; and (3) to conduct an aquifer pumping test to help determine the origin of the elevated nitrates in the groundwater.

Semiannual sampling at the BSG AOC currently includes perchlorate analyses at one groundwater monitoring well. Due to the semiannual nature of the sampling, no groundwater samples were collected for perchlorate analysis during this reporting period. Therefore, this edition of the ER Quarterly Report does not include Section II “Perchlorate Screening Quarterly Groundwater Monitoring Report.”

The following activities occurred at BSG AOC during January, February, and March 2018:

- No groundwater sampling was conducted during this reporting period. Table I-2 presents the identification and the sampling frequency for BSG AOC monitoring wells.
- The Aquifer Pumping Test Report submitted to NMED in December 2017 (SNL/NM December 2017) was approved by NMED on January 30, 2018 (NMED January 2018).
- Developing recommendations for next steps in site characterization.

### 2.1.2 Technical Area-V Groundwater Area of Concern

Trichloroethene (TCE) and nitrate have been identified as COCs in groundwater at the TAVG AOC based on detections above the EPA MCLs in samples collected from monitoring wells. The EPA MCLs and the State of New Mexico drinking water standards for TCE and nitrate are 5 micrograms per liter ( $\mu\text{g/L}$ ) and 10 mg/L (as nitrogen), respectively.

Personnel from the DOE/NNSA, DOE Headquarters Office of Environmental Management, SNL/NM, and NMED HWB worked together to address the groundwater contamination at TAVG AOC. A meeting was held with the NMED HWB on July 20, 2015 and all parties agreed on a phased Treatability Study/Interim Measure (TS/IM) of in-situ bioremediation (ISB) to evaluate the effectiveness of ISB as a potential technology to treat the groundwater contamination at the TAVG AOC.

For the TS/IM, SNL/NM personnel plan to install up to three injection wells (TAV-INJ1, TAV-INJ2, and TAV-INJ3) at TA-V near the highest contaminant concentrations in groundwater detected in monitoring wells LWDS-MW1, TAV-MW6, and TAV-MW10. The proposed injection wells will be used to deliver substrate solution and biodegradation bacteria to groundwater. The substrate solution containing essential food and nutrients for biostimulation will be prepared in aboveground tanks. The substrate solution, along with the biodegradation bacteria, will be gravity-injected to groundwater via injection wells.

The NMED HWB approved the Revised Treatability Study Work Plan (TSWP) (SNL/NM March 2016) on May 10, 2016 (NMED May 2016). In accordance with the Revised TSWP, the Treatability Study will be conducted in two phases. Phase I includes a pilot test followed by a full-scale injection at the first injection well; Phase II includes full-scale injections at the second and third injection wells.

In addition to the Revised TSWP, the NMED Ground Water Quality Bureau (GWQB) requires a groundwater Discharge Permit (DP) for the operation of injection wells. NMED GWQB issued DP-1845 to DOE/NNSA for the SNL/NM TA-V Treatability Study injection wells on May 26, 2017 (NMED May 2017a). The DP-1845 term starts on May 30, 2017 and ends on May 30, 2022. DOE/NNSA and SNL/NM personnel submit quarterly reports for DP-1845 to NMED GWQB as required by the DP.

The following activities occurred at TAVG AOC during January, February, and March 2018:

- The pilot test of the TS/IM has started in November 2017 at injection well TAV-INJ1 and two nearby monitoring wells, TAV-MW6 and TAV-MW7. Performance monitoring of the pilot test is ongoing this quarter with in-situ water monitoring of water quality parameters and groundwater sampling at wells TAV-INJ1, TAV-MW6, and TAV-MW7.
- The TA-V groundwater monitoring network comprises 18 active wells. With the start of the TS/IM, monitoring wells TAV-MW6 and TAV-MW7 become performance monitoring wells for the ISB Treatability Study. Groundwater sampling at these wells follows the frequency and analytes specified in the Revised TSWP (SNL/NM March 2016). Monitoring results are presented in the DP-1845 quarterly reports.
- Table I-2 presents the sampling frequency for the monitoring wells at TAVG AOC for the remaining 16 wells in the TA-V groundwater monitoring network. Groundwater sampling was conducted in February 2018. The SNL/NM Calendar Year (CY) 2018 Annual Groundwater Monitoring Report will present the analytical results for CY 2018 groundwater monitoring, which is scheduled for submittal to the NMED HWB in the summer of 2019.

### 2.1.3 Tijeras Arroyo Groundwater Area of Concern

Nitrate has been identified as a COC in groundwater for the TAG AOC based on exceedances of the EPA MCL in samples collected from monitoring wells completed in the Perched Groundwater System and in the Regional Aquifer. TCE has been identified as a COC for the Perched Groundwater System. However, the area where TCE exceedances occurred has naturally dewatered and the last reported TCE concentration was 3.82 µg/L, occurring in November 2015, which is less than the EPA MCL of 5 µg/L (SNL/NM June 2016). No TCE concentrations in Regional Aquifer samples have exceeded the MCL. The EPA MCLs and State of New Mexico drinking water standards for TCE and nitrate are 5 µg/L and 10 mg/L (as nitrogen), respectively.

In May 2017, NMED HWB completed its review of the Current Conceptual Model (CCM) and Corrective Measures Evaluation (CME) Report for the TAG AOC (SNL/NM December 2016), which was submitted to the NMED HWB on November 23, 2016 (DOE November 2016). The report was submitted in accordance with NMED's "Agreements and Proposed

Milestones” letter of April 14, 2016 (NMED April 2016). NMED’s subsequent disapproval letter (NMED May 2017b) requested additional information with a revised report to be submitted on or before November 30, 2017. However, NMED, DOE/NNSA, and SNL/NM staff identified additional issues during an August 2017 meeting. In order to address the additional issues, DOE/NNSA and SNL/NM staff requested extending the submittal date to February 15, 2018 (DOE September 2017). NMED approved this extension request on October 13, 2017 (NMED October 2017). The Revised TAG CCM/CME Report was submitted to NMED HWB in February 2018 and addresses the issues discussed in the August 2017 meeting, including the status of monitoring well WYO-4. This well is screened in the Perched Groundwater System in a location upgradient of SNL/NM operations. In the meeting, NMED management stated that DOE/NNSA staff and its prime contractor for SNL/NM no longer have responsibility for monitoring well WYO-4 and the surrounding area.

The following events occurred at TAG AOC during January, February, and March 2018:

- Groundwater sampling at the TAG AOC was conducted in February and March 2018. Samples were collected from all seven monitoring wells (TA1-W-06, TA2-W-01, TA2-W-19, TA2-W-26, TA2-W-27, TJA-2, and TJA-7) scheduled for sampling. Table I-2 presents the CY 2018 sampling frequency for the TAG monitoring wells. The analytical results for the TAG CY 2018 groundwater monitoring will be included in the SNL/NM CY 2018 Annual Groundwater Monitoring Report, which is scheduled for submittal to the NMED HWB in the summer of 2019.
- Video logging was conducted at four monitoring wells (TA1-W-03, TA2-W-24, TA2-W-25, and TJA-5) in March 2018. The four wells were in good condition.
- Slug testing was conducted at replacement well TA2-W-28. The hydraulic conductivity values will be reported in a later quarterly report.
- The Revised TAG CCM/CME Report was submitted to NMED HWB on February 13, 2018 (SNL/NM February 2018)

## 2.2 Sites in Corrective Action Complete Regulatory Process

After NMED HWB certifies completion of corrective action activities at a SWMU or an AOC, DOE/NNSA will request a Class 3 Modification to the Resource Conservation and

Recovery Act Facility Operating Permit (Permit) to formally change the status of the SWMU or AOC from corrective action to either CAC without Controls or CAC with Controls. The Class 3 Permit Modification is a regulatory process.

### **2.2.1 Solid Waste Management Units 8 and 58, 68, 149, and 154**

In February 2015, NMED HWB agreed that corrective action activities at SWMUs 8 and 58, 68, 149, and 154 had been completed, and that certificates of completion could be requested (NMED February 2015). A letter requesting certificates of completion for these SWMUs was submitted to the NMED HWB on September 4, 2015 (DOE September 2015). In January 2016, NMED HWB granted the certificates of completion for these SWMUs (NMED January 2016). Section I.2.2.3 describes the Class 3 Permit Modification request for CAC status, which was prepared and submitted to the NMED HWB on May 16, 2016 (DOE May 2016).

### **2.2.2 Solid Waste Management Unit 502**

On February 29, 2016, the NMED HWB approved the November 2013 SWMU 502 Voluntary Corrective Action Report and noted that a permit modification for CAC status for SWMU 502 could be requested (NMED February 2016). Section I.2.2.3 describes the Class 3 Permit Modification request for CAC status, which was prepared and submitted to the NMED HWB on May 16, 2016 (DOE May 2016).

### **2.2.3 Class 3 Permit Modification Request**

A Class 3 Permit Modification to designate six SWMUs as approved for CAC status (DOE May 2016) was requested in a letter dated May 16, 2016. The following SWMUs were included in the request:

- SWMU 8      Open Dump (Coyote Canyon Blast Area)
- SWMU 58     Coyote Canyon Blast Area
- SWMU 68     Old Burn Site
- SWMU 149    Building 9930 Septic System (Coyote Test Field)
- SWMU 154    Building 9960 Septic System and Seepage Pits (Coyote Test Field)
- SWMU 502    Building 9938 Surface Discharge Site

The DOE/NNSA and SNL/NM personnel held a 60-day public comment period from May 25 through July 24, 2016 and hosted a public meeting with information about the SWMUs on June 21, 2016. Information about the public notices, public meeting, meeting attendance list, and summary information about the six SWMUs was provided to the NMED HWB in a letter transmitted on September 8, 2016 (DOE September 2016). On November 17, 2017 the NMED notified the DOE/NNSA and SNL/NM personnel of their intent to modify the Permit (NMED November 2017), by changing the status of SWMUs 8/58, 68, 154, and 502 from corrective action to CAC. The NMED also began a 60-day public comment period ending on January 16, 2018.

The DOE and NTESS submitted a letter to NMED on January 11, 2018 stating the following three objections to the proposed approval:

- NMED's risk analysis methodology for Feature 58B/8Y, and Feature 58FF,
- The imposition of long-term controls for Feature 58B/8Y,
- The imposition of long term controls at SWMU 68 based solely on the presence of radiological constituents.

The DOE and NTESS requested a public hearing and meetings to resolve the issues in advance of any public hearing. The NMED met with DOE and NTESS in February 2018 to discuss the issues.

### 3.0 **References**

New Mexico Environment Department (NMED), February 2015. Letter to G. Beausoleil (U.S. Department of Energy NNSA/Sandia Field Office) and P. Davies (Sandia National Laboratories, New Mexico), *Approval Annual Groundwater Monitoring Report, Calendar Year 2013, June 2014, Sandia National Laboratories, EPA ID# NM5890110518, HWB SNL 14 013, NMED, Hazardous Waste Bureau, Santa Fe, New Mexico*, February 4, 2015.

New Mexico Environment Department (NMED), January 2016. Letter to J. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and P. Davies (Sandia National Laboratories, New Mexico), "Certificates of Completion for the Solid Waste Management Units 68, 149, 154, 8 and 58, September 2015, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-15-018," NMED, Hazardous Waste Bureau, Santa Fe, New Mexico, January 19, 2016.

New Mexico Environment Department (NMED), February 2016. Letter to J. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and P. Davies (Sandia National Laboratories, New Mexico), "Approval Investigation Report for Voluntary Correction Action at Solid Waste Management Unit 502 Building 9938 Surface Discharge Site for Sandia National Laboratories/New Mexico, October 2013, Sandia National Laboratories EPA ID# NM5890110518, SNL-15-013," NMED, Hazardous Waste Bureau, Santa Fe, New Mexico, February 29, 2016.

New Mexico Environment Department (NMED), April 2016. Letter to J.P. Harrell (U.S. Department of Energy, NNSA/Sandia Field Office) and M. W. Hazen (Sandia National Laboratories, New Mexico), "Summary of Agreements and Proposed Milestones Pursuant to the Meeting of July 20, 2015, March 30, 2016, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-16-MISC," NMED, Hazardous Waste Bureau, Santa Fe, New Mexico, April 14, 2016.

New Mexico Environment Department (NMED), May 2016. Letter to J. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and P. Davies (Sandia National Laboratories, New Mexico), "Approval Revised Treatability Study Work Plan for In-Situ Bioremediation at the Technical Area-V Groundwater Area of Concern, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-15-020," NMED, Hazardous Waste Bureau, Santa Fe, New Mexico, May 10, 2016.

New Mexico Environment Department (NMED), May 2017a. Ground Water Discharge Permit, Sandia National Laboratories/New Mexico, Discharge Permit-1845, NMED, Ground Water Quality Bureau, Santa Fe, New Mexico, May 26, 2017.

New Mexico Environment Department (NMED), May 2017b. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and Carol Adkins (Sandia National Laboratories), "Disapproval Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report, December 2016, Sandia National Laboratories [sic] New Mexico, EPA ID#NM5890110518, HWB-SNL-16-020," May 18, 2017.

New Mexico Environment Department (NMED), October 2017. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and Richard O. Griffith (Sandia National Laboratories), "Approval Request for Extension for Submittal of a Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measure Evaluation Report, Sandia National Laboratories/New Mexico, EPA ID#NM5890110518, HWB-SNL-16-020," October 13, 2017.

New Mexico Environment Department (NMED), November 2017. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and Jaime Moya (Sandia National Laboratories), "Intent to Approve a Permit Modification, Corrective Action Complete Determination, Six Solid Waste Management Units, Resource Conservation and Recovery Act Hazardous Waste Permit, Sandia National Laboratories/New Mexico, EPA ID#NM5890110518, HWB-SNL-16-009," November 17, 2017.



New Mexico Environment Department (NMED), January 2018. Letter to J.W. Todd (U.S. Department of Energy NNSA/Sandia Field Office) and R.O. Griffith (Sandia National Laboratories), “Approval, Aquifer Pumping Test Report for the Burn Site Groundwater Area of Concern, December 2017, Sandia National Laboratories/New Mexico, EPA ID#NM5890110518, HWB-SNL-17-015,” January 30, 2018.

NMED, see New Mexico Environment Department

Sandia National Laboratories, New Mexico (SNL/NM), December 2017. *Aquifer Pumping Test Report for the Burn Site Groundwater Area of Concern*, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), March 2016. *Revised Treatability Study Work Plan for In-Situ Bioremediation at the Technical Area-V Groundwater Area of Concern*, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), June 2016. *Annual Groundwater Monitoring Report, Calendar Year 2015, June 2016*, Sandia National Laboratories, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), December 2016. *Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report*, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), February 2018. *Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report*, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories, New Mexico.

U.S. Department of Energy (DOE), September 2015. Letter to J.E. Kieling (New Mexico Environment Department), “Request for Certificates of Completion from the New Mexico Environment Department for Solid Waste Management Units (SWMUs) 68 and 149 (without controls) and SWMUs 154, 8, and 58 (with controls),” EPA ID# NM5890110518, DOE, National Nuclear Security Administration, Sandia Field Office, Albuquerque, New Mexico, September 4, 2015.

U.S. Department of Energy (DOE), May 2016. “Request for Class 3 Modification to the Resource Conservation and Recovery Act Facility Operating Permit for Sandia National Laboratories/New Mexico,” EPA ID# NM5890110518, May 16, 2016.

U.S. Department of Energy (DOE), September 2016. “Documentation of Public Notices, Meetings, and Comments Related to Request for Class 3 Modification to the Resource Conservation and Recovery Act Facility Operating Permit for Sandia National Laboratories/New Mexico,” EPA ID NM5890110518, September 8, 2016.

U.S. Department of Energy (DOE), November 2016. Letter to J.E. Kieling (New Mexico Environment Department), “Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report, December 2016,” November 23, 2016.

U.S. Department of Energy (DOE), September 2017. Letter to J.E. Keiling (New Mexico Environment Department), “Request for Extension for Submittal of the Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report in Response to the NMED Disapproval Letter dated May 18, 2017”, September 25, 2017.

# Tables

**Table I-1**  
**Solid Waste Management Units and Areas of Concern**  
**Where Corrective Action is Not Complete**

<b>Solid Waste Management Units and Areas of Concern</b>	
<b>Site Number</b>	<b>Site Description</b>
8	Open Dump (CCBA)
58	CCBA
68	Old Burn Site
83	Long Sled Track
84	Gun Facilities
149	Building 9930 Septic System (CTF)
154	Building 9960 Septic System and Seepage Pits (CTF)
240	Short Sled Track
502	Building 9938 Surface Discharge Site
NA	Tijeras Arroyo Groundwater Investigation (TAG AOC)
NA	TA-V Groundwater Investigation (TAVG AOC)
NA	Burn Site Groundwater Investigation (BSG AOC)
<b>Total</b>	<b>12</b>

**Notes:**

AOC = Area of Concern.  
 BSG = Burn Site Groundwater.  
 CCBA = Coyote Canyon Blast Area.  
 CTF = Coyote Test Field.  
 NA = Not applicable. A site number was not assigned.  
 TA = Technical Area.  
 TAG = Tijeras Arroyo Groundwater.  
 TA-V = Technical Area V.  
 TAVG = Technical Area V Groundwater.

**Table I-2  
Groundwater Sampling and Analysis**

Investigation Site	Sampling Frequency in CY 2018	Quarter of Sampling in CY 2018	Location of Analytical Results	Location of Perchlorate Analytical Results	Monitoring Wells in Network
TAVG AOC <sup>a</sup>	Quarterly	1,2,3,4	AGMR	NA	LWDS-MW1, TAV-MW2, TAV-MW4, TAV-MW8, TAV-MW10, TAV-MW11, TAV-MW12, TAV-MW14, TAV-MW15, TAV-MW16
	Annually	2	AGMR	NA	AVN-1, LWDS-MW2, TAV-MW3, TAV-MW5, TAV-MW9, TAV-MW13
BSG AOC	Semiannually	2,4	AGMR	NA	CYN-MW4, CYN-MW7, CYN-MW8, CYN-MW9, CYN-MW10, CYN-MW11, CYN-MW12, CYN-MW13, CYN-MW14A, CYN-MW15
TAG AOC	Quarterly	1,2,3,4	AGMR	NA	TA2-W-19, TA2-W-26, TA2-W-28, TJA-2, TJA-3, TJA-4, TJA-7, WYO-4
	Semiannually	1,3	AGMR	NA	TA1-W-06, TA2-W-01, TA2-W-27, TJA-6
	Annually	3	AGMR	NA	PGS-2, TA1-W-01, TA1-W-02, TA1-W-03, TA1-W-04, TA1-W-05, TA1-W-08, TA2-NW1-595, WYO-3

**Notes:**

<sup>a</sup> TAVG AOC monitoring network comprises 18 active wells: 16 wells are listed here; wells TAV-MW6 and TAV-MW7 currently are part of the Treatability Study and follow a separate monitoring plan (see Section 2.1.2).

AGMR = Annual Groundwater Monitoring Report.  
AOC = Area of Concern.  
AVN = Area V (North).  
BSG = Burn Site Groundwater (Area of Concern).  
CY = Calendar Year.  
CYN = Canyons (Burn Site Groundwater Area of Concern).  
LWDS = Liquid waste disposal system.  
MW = Monitoring well.  
NA = Not applicable. No wells in the site network are currently being sampled and analyzed for perchlorate.  
PGS = Parade Ground South.  
TA1-W = Technical Area-I (Well).  
TA2-NW = Technical Area-II (Northwest).  
TA2-W = Technical Area-II (Well).  
TAG = Tijeras Arroyo Groundwater (Area of Concern).  
TAV = Technical Area V (acronym used for well identification numbers only).  
TAVG = Technical Area V Groundwater (Area of Concern).  
TJA = Tijeras Arroyo.  
WYO = Wyoming.

