16

ENTERED

Los Alamos
NATIONAL LABORATORY
EST. 1943

Associate Director for ESH
Environment, Safety, and Health
P.O. Box 1663, MS K491
Los Alamos, New Mexico 87545
505-667-4218/Fax 505-665-3811

Environmental Management
Los Alamos Field Office, MS A316
3747 West Jemez Road
Los Alamos, New Mexico 87544
(505) 665-5658/FAX (505) 606-2132

Date: OCT 29 2015
Refer To: ADESH-15-157
LAUR: 15-28017
Locates Action No.: N/A

RECEIVED
NMED
Hazardous Waste Bureau

John Kieling, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Submittal of the Semiannual Progress Report for Corrective Measures Evaluation/Corrective Measures Implementation for Consolidated Unit 16-021(c)-99

Dear Mr. Kieling:

Enclosed please find two hard copies with electronic files of the Semiannual Progress Report for Corrective Measures Evaluation/Corrective Measures Implementation for Consolidated Unit 16-021(c)-99. This deliverable meets the requirement in the New Mexico Environment Department's (NMED's) letter dated November 7, 2011, to provide semiannual progress reports.

Based on Los Alamos National Laboratory's (the Laboratory's) discussions with the NMED Hazardous Waste Bureau (HWB) on April 15, 2015, and on July 7, 2015, reporting of project status in this format is no longer necessary. The U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) therefore request approval from NMED to discontinue submitting semiannual progress reports for the corrective measures evaluation/corrective measures implementation (CMI) for Consolidated Unit 16-021(c)-99. Instead, as discussed with NMED, the updates will be incorporated into a report that will tie in with closeout and monitoring activities associated with the surface CMI, as described below.

The Laboratory requests approval to close out the surface CMI by performing the following activities, as discussed during the July 7, 2015, technical meeting with NMED-HWB: (1) remove the permeable reactive barrier located in Cañon de Valle; (2) evaluate the adequacy of the existing alluvial groundwater monitoring network and install additional alluvial wells, if necessary, to monitor the downgradient concentrations of RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) from spring discharges; and (3) evaluate and propose actions for SWSC, Burning Ground, and Martin Springs. The specific recommendation for the surface CMI proposed by DOE/LANS will include an approach and schedule for reporting.

If you have any questions, please contact Stephani Swickley at (505) 606-1628 (sfuller@lanl.gov) or Cheryl Rodriguez at (505) 665-5330 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Bruce Robinson, Program Director
Environmental Remediation Program
Los Alamos National Laboratory

Sincerely,

Douglas E. Hintze, Manager
Environmental Management
Los Alamos Field Office

BR/DE/SS:sm

Enclosure: Two hard copies with electronic files – Semiannual Progress Report for Corrective Measures Evaluation/Corrective Measures Implementation for Consolidated Unit 16-021(c)-99 (EP2015-0182)

Cy: (w/enc.)
emla.docs@em.doe.gov
Cheryl Rodriguez, DOE-EM-LA
Stephani Swickley, ADEP ER Program, MS M992
Public Reading Room (EPRR)
ADESH Records

Cy: (Letter and CD and/or DVD)
Laurie King, EPA Region 6, Dallas, TX
Tim Goering, ADEP ER Program, MS M992 (w/ MS Word files on CD)
PRS Database

Cy: (w/o enc./date-stamped letter emailed)
lasomailbox@nnsa.doe.gov
Annette Russell, DOE-EM-LA
Cheryl Rodriguez, DOE-EM-LA
Kimberly Davis Lebak, DOE-NA-LA
Randy Erickson, ADEP
Bruce Robinson, ADEP ER Program
Amy De Palma, PADOPS
Craig Leasure, PADOPS
Michael Brandt, ADESH
Alison Dorries, ADESH-ENV-DO
Tony Grieggs, ADESH-ENV-CP
Mike Saladen, ADESH-ENV-CP
Jocelyn Buckley, ADESH-ENV-CP

LA-UR-15-28017
October 2015
EP2015-0182

Semiannual Progress Report for Corrective Measures Evaluation/Corrective Measures Implementation for Consolidated Unit 16-021(c)-99

Los Alamos
NATIONAL LABORATORY
EST. 1943

EP2015-0182

Semiannual Progress Report for Corrective Measures Evaluation/ Corrective Measures Implementation for Consolidated Unit 16-021(c)-99

October 2015

Responsible project manager:

Printed Name	Signature	Title	Organization	Date
Stephani Swickley	Stephani Swickley	Project Manager	Environmental Remediation Program	10/22/15

Responsible LANS representative:

Printed Name	Signature	Title	Organization	Date
Randall Erickson	for	Acting Associate Director	Environmental Programs	10/22/15

Responsible DOE representative:

Printed Name	Signature	Title	Organization	Date
Douglas E. Hintze	Douglas E. Hintze	Manager	DOE-EM-LA	29 OCT 2015

CONTENTS

1.0 INTRODUCTION 1

2.0 SURFACE CMI 1
2.1 Best Management Practices 1
2.2 Hydrogeologic Investigations 2
2.3 CMI Activities – April 2015 to September 2015 2

3.0 SUBSURFACE CME 2
3.1 CME for Deep Groundwater 2
3.1.1 Monitoring Well Installation 3
3.1.2 Preparation for Tracer Deployment at TA-16 3
3.1.3 Site Conceptual Model Refinement 4

4.0 REGULATORY, PUBLIC, AND STAKEHOLDER INVOLVEMENT 5

5.0 PROBLEMS ENCOUNTERED/ACTIONS TO RECTIFY PROBLEMS 5

6.0 WORK PLANNED FOR THE NEAR FUTURE 5
6.1 Surface CMI 5
6.1.1 BMPs 5
6.1.2 Hydrogeologic Investigations 5
6.1.3 Surface CMI Activities 6
6.2 Subsurface CME 6
6.3 Public and Stakeholder Involvement 6

7.0 RECOMMENDATIONS 7

8.0 REFERENCES 7

Figure

Figure 3.1-1 Monitoring wells, springs, and base-flow sampling locations in the vicinity of Consolidated Unit 16-021(c)-99 at TA-16 9

EXECUTIVE SUMMARY

Significant achievements accomplished during this reporting period include drilling regional aquifer well R-58; submitting the R-63i well completion report; conducting two rounds of quarterly groundwater sampling at Technical Area 16 260 monitoring group locations; submitting a work plan for a tracer test at Consolidated Unit 16-021(c)-99; submitting a work plan for aquifer testing of three wells in the intermediate groundwater system; and conducting additional studies of the geology, geochemistry, and the potential for natural attenuation and bioremediation to further refine the site conceptual model.

Details of the activities completed during the period from April to September 2015 are summarized below.

3.1.1 Monitoring Well Installation

One new regional monitoring well, R-58, was drilled in the TA-16 area north of S-Site Canyon (Figure 3.1-1) to a total depth of 1378 ft below ground surface (bgs) (LANL 2012, 212117). A monitoring well design was submitted to and approved by the NMED Hazardous Waste Bureau (NMED-HWB). Data from R-58 will be used to monitor contaminants downgradient of potential contaminant breakthrough locations for S-Site and Fishladder Canyons. Regional groundwater was encountered at R-58 at a depth of 1240 ft bgs; water-level data from R-58 will constrain the shape of the regional water table and groundwater flow directions in this area. No perched groundwater was detected during the drilling of R-58.

Monitoring well R-63i was completed on November 10, 2014, at a location near regional well R-63 (Figure 3.1-1) (LANL 2013, 235924). The well is completed in deep perched-intermediate groundwater in a zone with very low yield. The completion report for R-63i was submitted to NMED on September 29, 2015 (LANL 2015, 600934).

3.1.2 Preparation for Tracer Deployment at TA-16

Significant progress was made to prepare for the tracer test at TA-16 during the period from April to September 2015 (LANL 2015, 600535).

- A laboratory study was conducted to evaluate the stability of naphthalene sulfonate (NF) tracers under TA-16 groundwater geochemical conditions and to examine potential interference of NF tracers with RDX analysis. The data showed that over a period of 6 mo, the tracers remained stable under all conditions and did not influence RDX concentrations.
- The Work Plan for a Tracer Test at Consolidated Unit 16-021(c)-99, Technical Area 16, Revision 1, was submitted to NMED on July 13, 2015 (LANL 2015, 600535) and approved by NMED on August 3, 2015 (NMED 2015, 600687). Notices of intent (NOIs) addressing the tracer tests were submitted to the NMED Ground Water Quality Bureau (GWQB) and SWQB on July 28, 2015, and August 6, 2015, respectively.
- The NMED-SWQB responded in a September 11, 2015, letter that neither approved nor disapproved the use of tracers but advised the Laboratory to contact EPA Region 6 to inquire whether a federal permit may be required (NMED 2015, 600928). A determination that no discharge permit is required for the groundwater tracer tests was received from the NMED-GWQB on September 22, 2015 (NMED 2015, 600924).
- While waiting for regulatory approval of the NOIs, preparation for deployment of the tracers continued. Shortly after NMED approval of the tracer test work plan on August 3, 2015 (NMED 2015, 600687), the tracers were ordered from a specialty chemical manufacturer and received in late September 2015. Field-readiness activities were conducted during August and September to prepare for tracer deployment.
- On September 18, 2015, the Laboratory submitted a letter to NMED requesting an extension from the September 30, 2015, date to deploy tracers at Consolidated Unit 16-021(c)-99 to a new date of December 18, 2015 (LANL 2015, 600918). The request was submitted because of delays in obtaining the tracers, to allow time for completing the dilution tests before tracer deployment, and to allow time for resolution of permitting requirements for the surface-water tracer.

CdV-16-1(i), and shallow alluvial wells FLC-16-25280 and CdV-16-611923 to collect samples for assessment of natural attenuation mechanisms for RDX.

4.0 REGULATORY, PUBLIC, AND STAKEHOLDER INVOLVEMENT

A meeting was held on July 7, 2015, with the NMED-HWB to discuss the path forward for closure of the 260 Outfall surface CMI. The approach for closure will likely involve additional actions, including removal of the PRB; evaluation of the alluvial monitoring network and installation of additional alluvial wells, if necessary; and evaluating the need to operate the spring treatment units at Burning Ground, SWSC, and Martin Springs.

A presentation about the RDX in groundwater was given to the Northern New Mexico Citizen's Advisory Board (NNMCAB) on July 8, 2015. The NNMCAB showed considerable interest in the studies being conducted for the RDX project at TA-16 and requested a tour of the TA-16 study area. On August 12, 2015, a tour of TA-16 and the RDX study area was given to the NNMCAB. During the tour, the RDX project was discussed in more depth, along with the upcoming plans for the TA-16 tracer test and aquifer testing of the intermediate groundwater system.

5.0 PROBLEMS ENCOUNTERED/ACTIONS TO RECTIFY PROBLEMS

The hydrologic system in Cañon de Valle was strongly impacted by the August 2011 and September 2013 floods because of severe damage to the watershed caused by the Las Conchas wildfire. Two long-term alluvial wells were destroyed in this flooding, and these wells may need to be replaced. The PRB capture wall was severely damaged and needs to be removed. Lastly, the spring treatment units at Burning Ground, SWSC, and Martin Springs have not been turned on because of permitting issues.

Deployment of the surface-water tracer at Cañon de Valle (in accordance with the requirements of the tracer test work plan [LANL 2015, 600686]) is awaiting approval by the EPA. In a letter to the Laboratory dated September 11, 2015, the NMED-SWQB neither approved nor disapproved the use of tracers in Cañon de Valle but advised the Laboratory to contact EPA Region 6 regarding federal permit requirements (NMED 2015, 600928). EPA Region 6 has been contacted, and the Laboratory is awaiting their decision regarding the permit requirements for the tracer deployment in Cañon de Valle.

6.0 WORK PLANNED FOR THE NEAR FUTURE

6.1 Surface CMI

6.1.1 BMPs

- Continue to inspect existing BMPs following significant precipitation events.

6.1.2 Hydrogeologic Investigations

- Check for the presence and levels of water in the Cañon de Valle alluvial system.
- Continue precipitation monitoring.

7.0 RECOMMENDATIONS

Recommendations for the TA-16 260 Outfall subsurface CME and surface CMI include the following.

- Activities relevant to the groundwater CME should be given priority in light of recent observations in deep groundwater. These observations include persistent elevated RDX concentrations in well CdV-16-4ip (at ~150 µg/L) and increasing RDX concentrations in regional well R-18 (at ~2.3 µg/L) and in deep perched-intermediate well CdV-16-2(i)r. RDX concentrations in CdV-16-2(i)r have doubled during the 10 yr since well installation, increasing from ~50 µg/L to ~100 µg/L. Elevated RDX concentrations have also been detected in perched-intermediate groundwater north of Cañon de Valle; RDX concentrations in screening samples from CdV-9-1(i) range from ~250 µg/L to ~80 µg/L.
- Successful completion of these activities over the next 2 yr should provide the data needed to analyze the corrective action alternatives for groundwater contamination at TA-16.
- The Laboratory recommends regular meetings between the Laboratory project team and NMED technical staff to review the planned RDX project activities and to build consensus on the technical approach to complete the groundwater CME.
- Based on the Laboratory's discussions with NMED-HWB on April 15, 2015 and on July 7, 2015, providing semiannual progress reports is no longer necessary. The Laboratory therefore requests approval from NMED to discontinue submitting semiannual progress reports for the CME/CMI for Consolidated Unit 16-021(c)-99. Instead, as discussed with NMED, these updates will be incorporated into a report that will tie in to closeout and monitoring activities associated with the surface CMI as described below.
- The Laboratory requests approval to close out the surface CMI by performing the following activities, as discussed during the July 7, 2015, technical meeting with NMED-HWB: (1) remove the PRB located in Cañon de Valle; (2) evaluate adequacy of the existing alluvial groundwater monitoring network and install additional alluvial wells, if necessary, for monitoring the downgradient concentrations of RDX from spring discharges; and (3) evaluate and propose actions for SWSC, Burning Ground, and Martin Springs. The specific recommendations for the surface CMI will include an approach and schedule for reporting.

8.0 REFERENCES

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID or ESH ID. This information is also included in text citations. ER IDs were assigned by the Environmental Programs Directorate's Records Processing Facility (IDs through 599999), and ESH IDs are assigned by the Environment, Safety, and Health (ESH) Directorate (IDs 600000 and above). IDs are used to locate documents in the Laboratory's Electronic Document Management System and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the ESH Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), September 1998. "RFI Report for Potential Release Site 16-021(c)," Los Alamos National Laboratory document LA-UR-98-4101, Los Alamos, New Mexico. (LANL 1998, 059891)

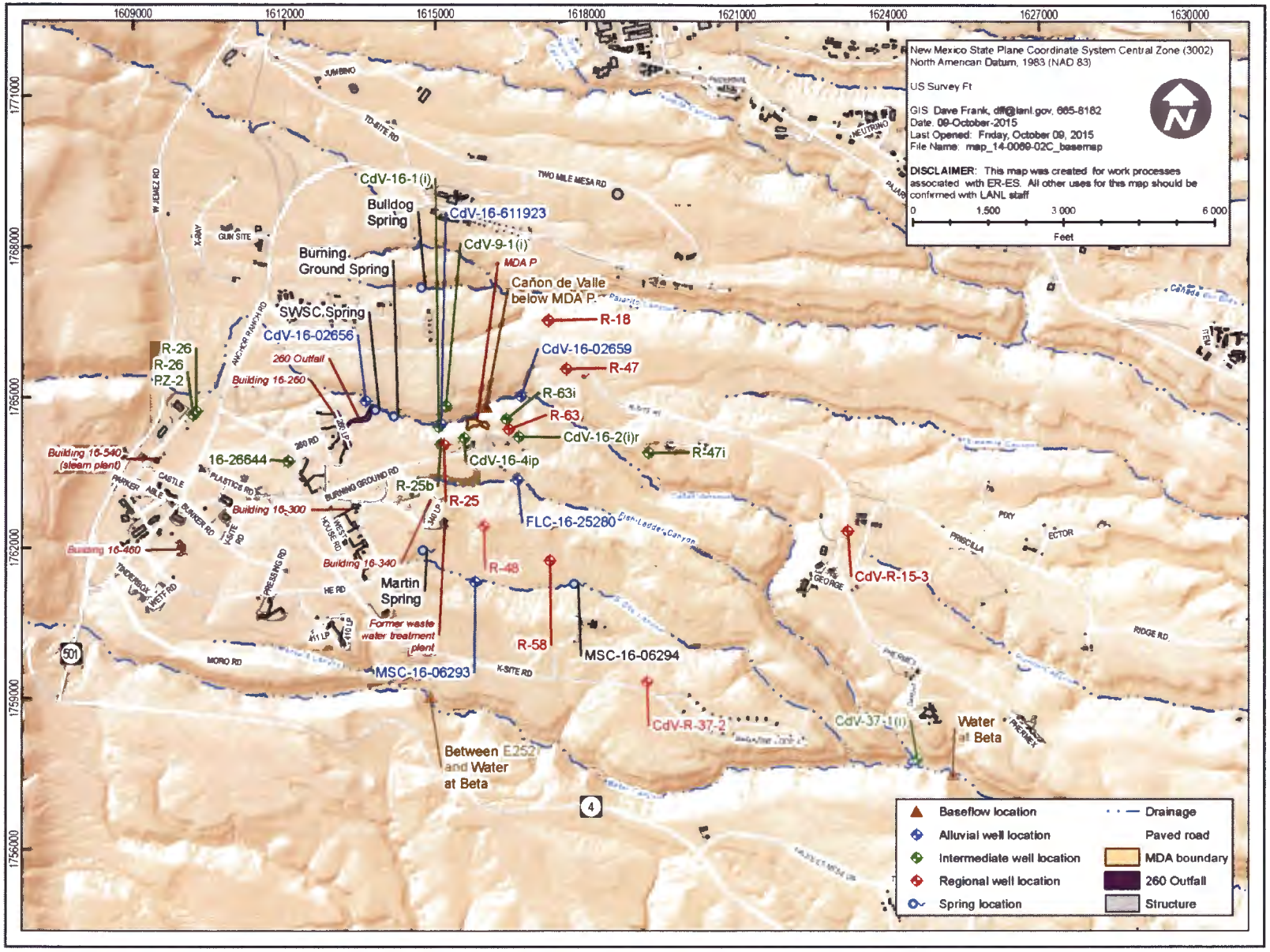

Figure 3.1-1 Monitoring wells, springs, and base-flow sampling locations in the vicinity of Consolidated Unit 16-021(c)-99 at TA-16