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Date: NOV 20 2009
Refer To: EP2009-0609

James Bearzi, 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 October 2009 Monthly Progress Report Corrective Measures Study/Corrective Measures Implementation for Consolidated Unit 16-021(c)-99

Dear Mr. Bearzi:

Enclosed are two hard copies with electronic files of the October 2009 Monthly Progress Report Corrective Measures Study/Corrective Measures Implementation for Consolidated Unit 16-021(c)-99. The report is submitted according to the approved corrective measures study plan for Consolidated Unit 16-021(c)-99.

If you have questions, please call John McCann at (505) 665-1091 (jmccann@lanl.gov) or Woody Woodworth at (505) 665-5820 (lwoodworth@doeal.gov).

Sincerely,

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

David R. Gregory, Project Director
Environmental Operations
Los Alamos Site Office

MG/DG/DM/JM/DH:sm

Enclosures: Two hard copies with electronic files – October 2009 Monthly Progress Report
Corrective Measures Study for Potential Release Site 16-021(c)-99
(LA-UR-09-7316)

Cy: (w/enc.)
Neil Weber, San Ildefonso Pueblo
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John McCann, EP-CAP, MS M992
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Cy: (Letter and CD only)
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-DOE-OB, MS M894
Jeff Heikoop, EES-6, MS D462
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Cy: (w/o enc.)
Tom Skibitski, NMED-OB, Santa Fe, NM
Annette Russell, DOE-LASO (date-stamp copy emailed)
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Dave McInroy, EP-CAP, MS M992
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Monthly Progress Report
Corrective Measures Study (CMS)/Corrective Measures Implementation (CMI) for Consolidated Unit 16-021(c)-99
October 2009

This report summarizes Los Alamos National Laboratory (LANL) activities completed during October of fiscal year (FY) 2010 on the CMS/CMI for Consolidated Unit 16-021(c)-99, the Technical Area 16 (TA-16) 260 Outfall. Activities outlined in the CMS plan ([LA-UR-98-3918] approved by the New Mexico Environment Department [NMED] Hazardous Waste Bureau [HWB] on 9/8/99) and other related activities are described herein.

Description of Activities and Contacts – NMED and LANL representatives met on October 9, 2009, to discuss modifications to the permeable reactive barrier (PRB) design. The test pits, excavated in September 2009, had a greater depth to tuff than did nearby alluvial well 2658 (8.8 ft versus 5 ft) and indicated a greater alluvial system width than previously estimated. This and new insights provide by the PRB contractor resulted in several changes to the PRB design, including (1) using polyvinyl chloride sheet piling instead of a bentonite/soil wall to divert flow into the treatment unit; (2) locating the treatment vessel downgradient of the capture wall; (3) using upgradient and downgradient high-permeability capture/discharge galleries to improve flow; (4) incorporating baffles within the treatment vessel to eliminate wetting/drying; and (5) using instrumentation (flow meters, piezometers, alluvial wells) beyond what was originally proposed in the CMI plan. NMED personnel agreed the new design was an improvement and should be implemented but expressed concern about leakage resulting from mounding and surface-water infiltration. NMED requested that LANL submit a letter detailing the proposed changes; a letter will be submitted in November.

Best Management Practices (BMPs) – BMPs are inspected quarterly and following significant precipitation events. Multiple precipitation events occurred in October, two of which exceeded 0.5 in. BMPs were installed in both the 260 Outfall area and PRB installation area to support the CMI.

CMS Hydrogeologic Investigations – Hydrogeologic investigations include periodic water sampling as outlined in the Phase II Resource Conservation and Recovery Act facility investigation (RFI) work plan as well as continuing investigations delineated in the CMS plan. The ongoing spring sampling program, currently focused on capturing high-flow events, includes biannual sampling at Martin, SWSC, and Burning Ground Springs, activities now conducted under the auspices of the interim facility-wide groundwater monitoring plan. Sampling of all wet portions of the hydrologic system was completed in October 2009.

The hydrologic system in Cañon de Valle is drying out following the monsoonal rains. Martin Spring is flowing at 0.05 L/s, Burning Ground Spring is flowing at 0.2 L/s, and SWSC Spring is flowing at 0.005 L/s.

The 90s Line Pond remained wet throughout October, although as of this submittal, it is almost dry. Downgradient surface locations in Martin Spring Canyon and Cañon de Valle have dried up. The alluvial wells are also drying up. Alluvial well samples could be collected only at

16-2556 and 16-2559 (Cañon de Valle) and 16-6294 and 16-6295 (Martin Spring Canyon). Surface water is present in Cañon de Valle from Burning Ground Spring to beyond the former location of Material Disposal Area P.

Ecological Risk Pilot – The ecological risk pilot study has been completed, and the results are presented in the Phase III RFI report.

CMS Bench and Pilot Studies – Write-up of bench and pilot studies, many of which were conducted under the auspices of the Innovative Technology Remediation Demonstration (ITRD) program, have been completed. The ITRD high explosives (HE) program was focused on two DOE sites: LANL and Pantex. Ongoing studies, mainly consisting of monitoring in support of the previous studies, include:

1. A study of the passive barrier technology of Stormwater Management, Inc.: potentially useful for removing HE and barium from water (LANL). The pilot unit at Martin Spring was turned off in July 2009 because of concerns it may require a National Pollutant Discharge Elimination System (NPDES) permit.
2. A study of in situ anaerobic bioremediation of HE using gas-phase carbon additions (Pantex)
3. Oxidation, reduction, and in-situ bioremediation studies of groundwater contamination (Pantex)

The CMS report from Pantex detailing these studies was reviewed and the results incorporated in the corrective measures evaluation (CME) report submitted to NMED on August 31, 2007.

RFI and CMS/CME for Surface System – The surface system CMS report was completed and submitted to NMED on November 26, 2003; the RFI report was completed and submitted in September 2003. A response to the notice of deficiency on the RFI report was submitted on January 28, 2004, and an addendum to that response was submitted on February 25, 2004. An approval with modifications for the RFI was received on June 23, 2004, and a response to the approval was submitted to NMED on July 23, 2004. The RFI text modifications were completed during December 2004 and submitted to NMED. A notice of disapproval (NOD) on the CMS report was received May 16, 2005. A response to that NOD was submitted on June 15, 2005.

NMED issued the "Intent to Public Notice Remedy Selection for the Solid Waste Management Unit 16-021(c)" on May 15, 2006. Public comments on this notice were due to NMED by July 14, 2006. LANL provided comments on this public notice. The remedy was approved by NMED in a letter dated October 13, 2006.

RFI/Investigation Report (IR) and CMS/CME for Deep Groundwater – The IR for TA-16 groundwater was completed and submitted to NMED on August 31, 2006; an approval with direction, dated November 29, 2006, was received by email the same day. This approval required an additional report assessing the quality of the wells in and around TA-16. Additional information requested in this approval, including borehole videos and x-ray diffraction data, was provided to NMED in a letter dated January 17, 2007.

The TA-16 well evaluation report was submitted to NMED on April 30, 2007, and an NOD was received on August 17, 2007. The response to that NOD and a revised report were provided to NMED on September 30, 2007. NMED approved the revised TA-16 well evaluation report on February 11, 2008. A response to this approval was submitted on March 15, 2008. Two drilling work plans [for CdV-R-15-1 and CdV-16-3(i)] were submitted as part of this approval response and were approved by NMED in letter dated March 28, 2008. An approval of the drilling work plan for the R-25b well, which was submitted in June 2007, was received in November 2007. A letter from NMED requiring completion of the CdV-16-3(i) as a regional well by July 30, 2008, was received in December 2008. The drilling work plan for R-25c was submitted in February 2008 and approved in a letter dated March 11, 2008. Drilling of well R-25c was completed in September, and the well was constructed at that time. The well is not producing water. R-25b was drilled, and the well was constructed in October 2008. The well completion report for R-25c was submitted in September 2008, and the well completion report for R-25b was submitted in October 2008.

The groundwater CME report was submitted to NMED on August 31, 2007, and an NOD requiring submittal of a supplemental investigation work plan (IWP) was received on April 22, 2008. The supplemental IWP was completed and submitted on June 30, 2008. An approval with modifications of the supplemental IWP was received on January 26, 2009. Additional development activities for R-25b occurred in April 2009.

Deepening the CdV-16-3(i) well (renamed R-48) was completed in August and September 2009. Well construction was completed in late September (NMED complete on September 25, 2009), and development activities proceeded continued into October. An aquifer pump test was completed in mid-October.

The drill rig and crew moved to the site of R-47 at TA-14 in July 2009 and began drilling. During early September 2009, this borehole reached a total depth of 1348 ft; perched water was encountered at approximately 835 ft. As of the end of September, the standing water level was approximately 1242 ft. Well construction began in early September and continued into early October. During well construction, it was determined bentonite was present in the regional well screen. After repeated, unsuccessful efforts to remove this bentonite, NMED was consulted, and it was decided to complete this well as an intermediate well within the perched zone.

The plugging and abandonment of CdV-16-2(i) was completed in July 2009.

CMI – The CMI plan was submitted to NMED on May 10, 2007. An NOD was received on June 29, 2007; LANL's response was submitted on July 30, 2007. NMED updated the CMI schedule by letter on June 24, 2009, and added the summary report for those remedial activities to the FY2010 stipulated-penalty document delivery list.

Bench and pilot studies supporting the CMI were completed; a report of these activities is in progress. Permitting for CMI activities continued in October. The first three segments of the 401/404 permit were submitted to the U.S. Army Corps of Engineers on June 25, 2009, for the carbon filtration system at SWSC and Martin Springs and the PRB. These requests were approved in July 2009. The 401/404 permit for the carbon filtration system at Burning Ground Spring was

submitted on October, 29, 2009. Notices of intent (NOIs) to discharge for the construction of the PRB and the operation of the springs' carbon-filtration systems were submitted to NMED Surface and Groundwater Bureaus on June 25, 2009. These NOIs were approved by NMED in mid-September. It was determined that the storm-filter systems in the springs required NPDES permits; LANL's permitting group is working on these permits. The "area of contamination letter" was submitted on June 15, 2009, and approved on August 10, 2009. A request for a "contained in" determination for the springs and alluvial groundwaters impacted by the CMI was submitted to NMED on May 4, 2009. This was approved by NMED in a letter dated September 16, 2009.

The contract for the CMI was awarded to TerranearPMC in July 2009. TPMC continued CMI activities in October 2009. Soil removal within the 260 Outfall drainage was almost complete by the end of the month. Field-screening data were collected and excavation continued until cleanup goals were attained. The concrete trough was excavated, and the soils underlying the trough were field screened for HE and barium. Soil removals were performed at the eastern end of the trough and at approximately 132 ft because of elevated HE field-screening results. Field screening of all soil samples has not been completed at the time of this report. The trough was determined to be collecting stormwater, which was pumped into holding tanks before the trough was removed. Surveying was completed in the PRB area.

The subcontractor provided a draft grouting plan for review that was revised following receipt of comments.

Public and Stakeholder Involvement – As noted above, a meeting with NMED personnel was held on October 9. 2009.

Percentage of CMS Completed

LANL estimates 100% of both the surface CMS and the groundwater CME have been completed. This estimate does not include additional work covered by the work plan submitted on June 30, 2008.

Problems Encountered/Actions to Rectify Problems

R-25c is not producing water, and the current level remains below the screen; R-25b is still showing high turbidity. LANL will continue to monitor the well screens.

Pilot studies at Martin Spring have been delayed because of differences in interpretation between NMED and the U.S. Environmental Protection Agency as to whether the studies require an NPDES permit. LANL's permitting group is currently working with the regulators to resolve the issue.

Bentonite present in R-47 necessitated completion of this well as an intermediate well. It is likely a new deep well at this site will need to be drilled.

Key Personnel Issues – None

Projected Work for November 2009

BMPs

- Continuing inspection of existing BMPs following significant precipitation events
- Installation of new BMPs to support CMI implementation

CMS Hydrogeologic Investigations

- Site maintenance at the TA-16 trailers
- Checking for presence and levels of water in Cañon de Valle alluvial system
- Precipitation monitoring

Groundwater CME/CMI

- Continuation of intermediate-well construction at R-47
- Site restoration at CdV-16-3(i) (now R-48)
- Initiation of work on pump test plan

CMS/CME Bench and Pilot Studies – No activities are projected for November 2009.

CMI

- Write-up of lab scale tests conducted to finalize selection of the media for the PRB
- NPDES permitting
- Implementation of CMI remedies, in particular grouting, to be completed
- Submittal of grouting plan
- Finalization of modified engineering drawings for PRB

Public and Stakeholder Involvement – None currently scheduled.