Semiannual Progress Report
Corrective Measures Evaluation (CME)/Corrective Measures Implementation (CMI) for Consolidated Unit 16-021(c)-99
October 2011 to March 2012

This report summarizes Los Alamos National Laboratory (LANL) activities completed from October to March of fiscal year (FY) 2012 on the CME/CMI for Consolidated Unit 16-021(c)-99, the Technical Area 16 (TA-16) 260 Outfall. Activities outlined in the corrective measures study (CMS) plan ([LA-UR-98-3918] approved by the New Mexico Environment Department [NMED] Hazardous Waste Bureau [HWB] on September 8, 1999) and other related activities are described herein.

Description of Activities and Contacts – Several meetings and conference calls were held with NMED representative between October 2011 and March 2012. These included the following:

(1) A meeting with NMED representatives on October 4, 2011, focused on paths forward for both the surface CMI and groundwater CME associated with Consolidated Unit 16-021(c)-99. A key focus was how to proceed with the surface CMI in light of the Las Conchas fire and subsequent flooding in Cañon de Valle, which damaged the permeable reactive barrier (PRB) and alluvial monitoring wells.
(2) A meeting/teleconference with NMED representatives on December 13, 2011, focused on the TA-16 groundwater CME and the TA-16 network evaluation. NMED provided information on the upcoming notice of disapproval of the TA-16 Water Canyon and Cañon de Valle investigation report.
(3) A meeting with the NMED Hazardous Waste Bureau representatives on January 17, 2012, focused on the format and content of the TA-16 network evaluation. NMED agreed the key goal of the network evaluation was to ensure LANL could proceed to the groundwater CME phase with few outstanding data gaps; hence, the report would focus on the deep-intermediate perched zone rather than on the regional aquifer.

A tour of TA-16 for NMED representatives, scheduled for February 3, 2012, was cancelled because of inclement weather. It will be rescheduled for April or May 2012.

Surface CME/CMI

Best Management Practices (BMPs) – BMPs are inspected quarterly and following significant precipitation events. Over a dozen precipitation events occurred between October 2011 and March 2012; three exceeded 0.5 in.

CME 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 water sampling program, conducted under the auspices of LANL's interim facility-wide groundwater monitoring plan, includes semiannual sampling at Martin, SWSC, and Burning Ground Springs.

Sampling within the Cañon de Valle watershed was completed in January 2012, except for those alluvial wells destroyed by flooding in August 2011 and those locations containing no water.

Flow in the TA-16 canyons peaked in September 2011 from the intense monsoonal rains. During January 2012 sampling, Martin Spring was flowing at a rate of ~ 1.5 gallons per minute (gpm), Burning Ground Spring was flowing at a rate of ~ 3.85 gpm, and SWSC Spring did not flow over the weir-box exit. Of the remaining alluvial wells, those in Cañon de Valle were mostly wet; a few of the monitoring wells around the PRB were dry. Wells in Fishladder Canyon were dry. Only the farthest downgradient well in Martin Spring Canyon (MSC 16-06295) was wet and was sampled. Cold temperatures limited the field team's ability to sample the alluvial wells

During sampling in January 2012, the 90s Line Pond contained a small amount of ice. Well CdV-16-26644, located next to the pond, had a water level of 138.5 ft below ground surface (bgs). Surface water was present in Cañon de Valle from Burning Ground Spring to beyond the former location of Material Disposal Area P. This zone was partially frozen during January sampling

CMI – In a letter dated November 7, 2011, LANL withdrew the request for a draft permit (NM0031054) for National Pollutant Discharge Elimination System (NPDES) outfalls potentially associated with the storm filter systems installed at SWSC, Burning Ground, and Martin Springs. The permit request was withdrawn because proposed numeric effluent limits for copper, lead, silver, and thallium were likely to be exceeded.

Replacement of the zero-valent iron (ZVI) with granular activated carbon in the pilot PRB occurred in July. Severe damage to the PRB occurred in August 2011 as a result of fire-induced flooding. On August 3, 2011, flooding damaged monitoring wells associated with the project and on August 21, 2011, a second flood severely damaged the capture wall and many of the monitoring wells. The central portion of the capture wall was breached down to bedrock. Post-fire sediment sampling and analysis of geomorphic changes in Cañon de Valle and Water Canyon were completed during the late summer and fall of 2011. The results indicated that sediment reaches were significantly affected by the post-fire flooding but that the zones of maximum hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) and barium contamination downgradient from the 260 Outfall in Cañon de Valle remained undisturbed.

Subsurface CME/CMI

RFI/Investigation Report and CME for Deep Groundwater – NMED provided an approval with modifications on "Hydrologic Testing Report for Consolidated Unit 16-021(c)-99," dated December 27, 2011. This approval requested submittal of a tracer work plan by January 31, 2012.

The "Work Plan for a Tracer Test at Consolidated Unit 16-021(c)-99, Technical Area 16" was submitted to NMED on January 30, 2012. NMED approved the work plan in a letter dated February 7, 2012. The work plan provided a conceptual design for a tracer study to be conducted at TA-16 to better understand the hydrogeology of the intermediate-perched zone beneath Cañon de Valle.

LANL submitted the "Technical Area 16 Well Network Evaluation and Recommendations" to NMED on March 30, 2012. This report evaluated the adequacy of the current monitoring network located in and around TA-16 and recommended a geophysics study, the rehabilitation of three wells, and the drilling of selected new wells to improve the reliability of the TA-16 well network to support future remedy selection at TA-16.

Public and Stakeholder Involvement – None

Problems Encountered/Actions to Rectify Problems

The hydrologic system in Cañon de Valle was strongly perturbed by the August 2011 flooding following severe damage to the watershed caused by the Las Conchas wildfire; baseline contaminant levels within the canyon system will almost certainly need to be reevaluated. Two long-term alluvial wells were destroyed in this flooding, and the PRB capture wall was severely damaged.

Key Personnel Issues – None

Projected Work for April to September 2012

Surface CME/CMI

BMPs

- Continue inspection of existing BMPs following significant precipitation events

CME Hydrogeologic Investigations

- Maintain the TA-16 trailers
- Check for the presence and levels of water in the Cañon de Valle alluvial system
- Submit an evaluation of geomorphic changes in Cañon de Valle by July 2012
- Continue precipitation monitoring

CMI

- Meet with NMED personnel to determine a path forward for PRB and storm filters

Subsurface CME/CMI

- Analyze data from the latest watershed aggregate sampling
- Submit a geophysics work plan by April 30, 2012

- Complete laboratory tests of potential tracers
- Submit report on laboratory tests of potential tracers by August 30, 2012

Public and Stakeholder Involvement

- Continue discussions with NMED personnel regarding optimal path forward for both surface CMI and groundwater CME