Monthly Progress Report
Corrective Measures Study (CMS)/Corrective Measures Implementation (CMI) for
Consolidated Unit 16-021(c)-99
February 2007

This report summarizes Los Alamos National Laboratory (LANL) activities completed during February of fiscal year (FY) 2007 on the CMS/CMI for Consolidated Unit 16-021(c)-99, the TA-16-260 Outfall. Both the activities described in the CMS plan ([LA-UR-98-3918], approved by NMED-HWB on 9/8/99), and other related activities are described herein.

Description of Activities and Contacts

High Performing Team (HPT) – The TA-16-260 HPT met on February 12, 2006. Principal agenda items included a review of ongoing activities at the 260 outfall and a discussion of draft outlines for: 1) "Evaluation of the Suitability of Wells Near Technical Area-16 for Monitoring Contaminant Releases from Consolidated Unit 16-021(c)-99"; 2) the "CMI Plan for Consolidated Unit 16-021(c)-99" and 3) the "CME Report for Intermediate and Regional Groundwater Associated with SWMU 16-021(c)-99".

For the "Evaluation" document LANL presented a draft outline; NMED suggested rearranging this outline to place the discussion of well screens before the modeling section. LANL reviewed the key questions that need to be addressed by this document. LANL noted that the detailed write-up of the modeling would be included in the CME Report. NMED suggested that the document needed to evaluate issues such as screen lengths and construction problems, not just well screen quality. NMED also stated that the document should evaluate all of the existing data, with a focus on the most recent. Finally, NMED recommended that the document include explicit recommendation of wells to either rehabilitate or redrill.

For the CMI Plan, LANL presented a draft outline and discussed the content of this document. LANL noted that the general strategy for soil removal in the outfall area would be similar to that used in the 2000-2001 Interim Measure, including a renewal of the requests for 'contained in' determination for soils and for an Area of Contamination (AOC) during cleanup. LANL noted that the surge bed boreholes would be drilled within two to three weeks and posed the question whether the south borehole could be moved to its original proposed location. LANL posed the question whether excavation under the existing bentonite cap in the outfall area was necessary; NMED state they would consider this question and get back to LANL. LANL noted that the grouting plan for the outfall surge bed would be conceptual in nature. LANL and NMED agreed that installation of a Stormfilter in SWSC spring could be contingent on this spring wetting up, since there has been no flow in the past five years. LANL stated that a contingency would be written into the CMI Plan stating that a detailed design for a Stormfilter installation in SWSC spring would be submitted within 6 months of the observation of sustained flow there. LANL noted that the Permeable Reactive Barrier (PRB) detailed design would be for the pilot barrier only and that this would represent a unit in which the media could be easily replaced. LANL noted that column tests to support the PRB would not be finished by May, due to the long time frame for breakthrough in such tests. LANL noted that a 'contained in' determination for the waters to be treated in the CMI would be requested and that this would be described in the CMI

Plan. Required permits for the CMI were identified as a 401/404 permit and NEPA documentation. Overall NMED agreed with the strategies outlined in the discussion. However, NMED suggested reviewing the Sandia National Laboratory CMI Plan for the mixed waste landfill to ensure that LANL's plan did not miss any key components. LANL will set up a tour of the proposed PRB locations for NMED personnel; now scheduled for March 16, 2007.

For the CME Report, LANL noted the outline would closely mimic that used for the 2003 "CMS Report for SWMU 16-021(c)-99". LANL stated that the key remedies that would be discussed in detail in the CME Report would include monitored natural attenuation (MNA) and pump and treat using granular activated carbon (GAC). Other remedies to be discussed in less detail would include *in-situ* reduction, *in-situ* oxidation, and *in-situ* bioremediation. These discussions would be based largely on the recently-issued Pantex CMS. NMED generally agreed with the outline and strategies outlined for the CME Report. NMED indicated that the public involvement plan in the CME Report should propose public involvement through meetings at 6 month intervals.

NMED indicated that they would further review the draft outlines and provide any additional suggestions or comments by e-mail. LANL indicated that following incorporation of NMED's oral and any written comments into the outlines they would be submitted formally for NMED concurrence.

The next HPT meeting will be in late March or early April and will focus on groundwater modeling.

RCRA Facility Investigation (RFI) Phase II Report and CMS Plan– No activities this month

Best Management Practices (BMPs) – BMPs are inspected quarterly and following significant precipitation events. There were three small precipitation events in February; however, these did not require repair of BMPs in the 260 outfall area.

CMS Hydrogeologic Investigations– Hydrogeologic investigations include periodic water sampling as outlined in the Phase II RFI as well as continuing investigations delineated in the CMS plan. The ongoing spring sampling program, currently focused on capturing high-flow events, includes biannual stable isotope sampling at Martin and Burning Ground Springs. These sampling activities are now being accomplished under the auspices of the interim facility-wide groundwater monitoring plan.

The hydrologic system in Cañon de Valle remains wet following the higher-than-average intensity monsoonal rains and significant November through January snows. Martin Spring is flowing at ~ 500 mL/min., Burning Ground Spring is flowing at a rate of ~200 mL/ sec., and SWSC Spring remains dry. There are approximately two feet of snow in the canyon so there should be extensive spring runoff.

The 90s Line Pond and downgradient surface locations in Martin Spring Canyon and Cañon de Valle are wet and frozen. The alluvial wells in lower Cañon de Valle, Fishladder Canyon, and lower Martin Spring Canyon are wet. Surface water in Cañon de Valle remains present from Burning Ground spring to MDA-P. In the non-perennial reaches of Cañon de Valle, Martin

Spring canyon, and Fishladder canyon there are intermittent pockets of ponded water (ice) present at the surface.

Ecological Risk Pilot–

The ecological risk pilot study is complete; 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 HE program is focused on two DOE sites: LANL and Pantex. Ongoing studies include:

1. A study of the passive barrier technology of Stormwater Management, Inc., potentially useful for removing HE and barium from waters (LANL). Monitoring of barrier effectiveness recommenced after several quarters of drought conditions during which Martin spring was dry.
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).

Interim Measure (IM) –

The IM Report was approved by NMED in a letter dated January 13, 2003. No new activities occurred during this reporting period.

RFI and CMS/CME Reports –

The surface system CMS Report was completed and submitted to NMED on November 26, 2003; the RFI Report was completed and submitted in September of 2003. A response to the NOD on the RFI Report was submitted on January 28, 2004 and an addendum to that NOD response was submitted on February 25, 2004. An approval with modifications for the RFI was received 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. An 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.

The Investigation Report for TA-16 groundwater was completed and submitted to NMED on August 31, 2006. An approval with direction of this IR dated November 29, 2006 was received by e-mail the same day. This approval requires an additional report assessing the quality of the wells in and around TA-16. Additional information, including borehole videos and X-ray

diffraction data, requested in this approval was provided to NMED in a letter dated January 17, 2007.

Work on the TA-16 Well Evaluation Report has begun. A data pull of new well data obtained since January 2006 was received. An outline for this report has been completed.

A draft outline for the Groundwater CME Report was completed. Modeling to support that report is ongoing.

Corrective Measures Implementation (CMI) Plan –

An annotated outline was completed and engineering drawings are in process. A 60% design review was completed in February. Batch and column studies to support the permeable reactive barrier (PRB) design are continuing; initial studies suggest there are several media, including gypsum, a zeolite and "fishbone" that are appropriate for removal of barium from groundwater.

Public and Stakeholder Involvement – None

Percentage of CMS Completed

LANL estimates 100% of the surface CMS has been completed (please note this percentage does not reflect either the deep or intermediate boreholes being drilled per the CMS plan addendum)

Problems Encountered/Actions to Rectify Problems

None

Key Personnel Issues

None

Projected Work for March 2007

Investigation Reports and CMS/CME Reports

- Discussions regarding the Groundwater Investigation and CME Reports with NMED personnel
- Writing of the Well Evaluation report
- Continuation of groundwater modeling for the Groundwater CME Report
- Submittal of CME Report and Well Evaluation Report outlines to NMED for concurrence

BMPs

- Continued inspection of existing BMPs following significant precipitation events

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

Ecological Risk Pilot

- None

CMS Bench and Pilot Studies

- None

CMI

- Continuation of batch and column studies for designs of barrier materials for use in the PRB
- Drilling of boreholes in 260 outfall area to support delineation of surge beds
- Geophysics in 260 outfall surge bed boreholes
- Peer review of draft CMI Plan
- Submittal of draft outline to NMED for concurrence

Public and Stakeholder Involvement

None