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LAWA CANC 3/1032/16/16-021(c)

Date: 12/20/1999  
 Reference: E/ER:99-37



Mr. John Kieling  
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 P.O. Box 26110  
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**SUBJECT: NOVEMBER 1999 CORRECTIVE MEASURE STUDY (CMS)  
 PROGRESS REPORT FOR POTENTIAL RELEASE SITE (PRS)  
 16-021(c)**

Dear Mr. Kieling:

Enclosed is the November 1999 CMS Progress Report for PRS 16-021(c), the 260 Outfall. This report is being submitted as part of the reporting conditions outlined in Section R, *Scope of work for a Resource conservation and Recovery Act CMS at the Laboratory, Task IX, Reports, Part A, Progress of Module VIII of the Laboratory's Hazardous Waste Facility Permit.*

If you have any questions, please call Dave McInroy at (505) 667-0819 or Joe Mose at (505) 667-5808.

Sincerely,

Julie A. Canepa, Program Manager  
 Los Alamos National Laboratory  
 Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager  
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JC/TT/NR/ev-nr

Enclosure: November 1999 CMS Progress Report for PRS 16-021(c)



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**Monthly Progress Report**  
**Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)**  
**November 1999**

This report summarizes Los Alamos National Laboratory (LANL) activities that were completed during November of fiscal year (FY) 1999 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918]), which was submitted to the New Mexico Environment Department-Hazardous and Radioactive Materials Bureau [NMED-HRMB] on 9/30/98, and approved by NMED-HRMB on 9/8/99), and other related activities are described herein.

**Description of Activities and Contacts**

***RCRA Facility Investigation (RFI) Report and CMS Plan***—There was no new activity.

***Best Management Practices (BMPs)***—BMPs were inspected weekly during November. All of these BMPs, including straw bales, diversion dams, and diversion piping, have been designed to minimize run-on and runoff from the contaminated outfall area.

***CMS Hydrogeologic Investigations***—CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling included sampling the Sanitary Wastewater System Consolidation (SWSC) Spring, Burning Ground Spring, and Martin Spring every other day for bromide, other anions, and stable isotopes. The analyses from the November sampling are in process. No new bromide breakthrough has been observed in samples to date.

The wells, both alluvial and deep, were checked weekly for water level and presence of water. Four of the five alluvial wells contained water; the exception was still alluvial well 2655, which is located in the steam plant drainage. None of the intermediate-depth boreholes contained water.

In November, no samples from precipitation events were collected due to a lack of precipitation.

The transducers and automated data loggers that were installed at the three springs mentioned above, and in the alluvial boreholes, appear to be producing accurate data for water level, temperature, and conductivity. One well, which is located just upgradient from MDA-P, appears to be providing pressure response on a diurnal cycle, similar to the cycles observed in the springs.

The flow-integrated ISCO samplers in the TA-16 springs underwent troubleshooting.

New Mexico Environment Department (NMED) representatives were provided a tour of the proposed site for deep borehole CdV-R-15-3, the TA-15 plume-chasing well. They expressed no objections to the proposed site. The paperwork required to begin drilling at this site was continued. The environment, safety and health identification (ESH-ID) review was completed; comments are being incorporated by the Morrison-Knudsen field team. Threatened and endangered species concerns were deemed to be minimal by ESH-20. A memorandum of understanding (MOU) with the operating group was completed. A security plan was completed. The field implementation plan (FIP) was initiated. The site-specific health and safety plan (SSHASP) was initiated and is out for internal review. Planning to provide power and other utilities to the site was initiated.

**Ecological Risk Pilot**— Ecological risk screening and review is complete for the data that are in hand. Sediment and overbank screening and assessment will be completed when geomorphic sampling data are released. Alluvial water data have yet to be screened or evaluated.

**CMS Bench and Pilot Studies**—Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Four studies are ongoing under the auspices of ITRD, all of which may benefit the PRS 16-021(c) CMS:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters. Water from Cañon de Valle is being used in the study.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). This is being completed by the University of Nebraska/H&H Ecosystems using PRS 16-021(c) soil. This soil was taken from a moderately contaminated location within PRS 16-021(c) and does not constitute a RCRA-regulated hazardous waste (based on results from laboratory analysis).
3. A study of in situ anaerobic bioremediation of HE using gas-phase carbon additions. This study is being completed by Idaho National Engineering and Environment Laboratory (INEEL), together with Texas Tech University, using Pantex soil and a Pantex field site.
4. A study of ex situ anaerobic bioremediation of Pantex soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment.

Regarding the first study, LANL is waiting on feedback from NMED as to how to proceed with a pilot of the passive barrier technology. A follow-up meeting on this technology and presentation by Jim Phelan of Sandia National Laboratory (SNL) are scheduled with NMED for December 15, 1999.

Regarding the second study, the University of Nebraska/H&H Ecosystems study of ZVI remediation in building TA-16-224 was continued in November 1999. Samples from all experiments were collected at 120 days; these were submitted for screening analysis. Representatives from H&H Ecosystems attempted to modify the study protocol to improve breakdown of HMX. Three additional cycles of Fe addition were added to three of the experiments. Sampling was completed in support of these modified protocols. Analytical results of these samples are pending.

No new results were received on the third or fourth studies.

Due to the equivocal results from the ZVI pilot test for HMX, LANL and ITRD personnel have decided to implement a series of tests of HE composting as a backup to the ZVI process. The first of these tests is being performed on HE-free material to identify appropriate composting amendment mixes for northern New Mexico environmental media.

***Interim Measure (IM)*** – Weekly ER Project meetings were held to discuss IM Planning.

LANL representatives had several discussions with NMED representatives on issues associated with the IM. A meeting to discuss the health-based contained in determination was held on November 4, 1999. A meeting with representatives of HRMB and the New Mexico Solid Waste Bureau was held on November 9, 1999. To summarize current discussions: 1) HRMB appears to be amenable to soil blending for safety reasons; 2) such treatment (e.g. ZVI or composting) would occur under temporary authorization (TA); 3) the Area of Contamination concept would be utilized during the IM. The status of treatment of non-RCRA waste, if required, is not fully defined.

Preparations for IM fieldwork continued. The ESH-ID paperwork for the IM was almost completed. The site-specific health and safety plan (SSHASP) has been submitted to the internal reviewers and is awaiting signatures. The waste characterization strategy form (WCSF) and waste analysis plan (WAP) are still in internal review, pending resolution of regulatory issues.

Waste characterization samples were submitted to support using naturally occurring radioactive materials (NORM) and authorized limit determinations to expedite disposal of low-level uranium-contaminated soils.

Finalization of the IM plan is pending resolution of key regulatory issues with NMED. These issues include: the contained-in determination for F-listed solvents, the approval to blend D003 soils in-situ, and possible permitting issues.

***Public and Stakeholder Involvement***– There were no public or stakeholder involvement activities during November 1999.

#### **Percentage of CMS Completed**

LANL estimates that 37% of the CMS has been completed to date. Note that this percentage does not reflect the deep wells that will be drilled per the CMS plan addendum.

## **Problems Encountered/Actions to Rectify Problems**

### ***CMS Hydrogeologic Investigations***

*Problem (1)* The installation of alluvial wells in Martin Spring canyon was delayed by difficulties with updating SSHASPs to full Integrated Safety Management (ISM) compliance.

*Problem (2)* The lack of a completed well at R-25 remains a significant concern to the TA-16-260 team.

*Problem (3)* The change from mud drilling to casing-advance air rotary drilling of deep borehole CdV-R-15-3 yields significant logistical issues related to drilling the borehole. LANL does not currently have access to sufficient drill rigs and drill string to support parallel completion of two deep (greater than 1000 ft) wells.

*Action to Rectify Problem (1):* HEPS personnel are working with other institutional representatives to expedite the approval of these ISM-compliant SSHASPs.

*Action to Rectify Problem (2):* The Canyons Team will try to successfully complete the well. As of December 8, 1999, all seven accessible screens have been washed and individual screens will now be developed. Development will be completed before the holiday break. Borehole geophysics and installation of the Westbay™ sampling system will be completed in early January.

*Actions to Rectify Problem (3):* The drilling support facility is investigating three possible actions to speed drilling the deep boreholes: (1) drilling during two daily shifts rather than one; (2) obtaining additional drill string; and (3) procuring an additional dual air rotary rig. All of these options are being pursued.

### ***CMS Bench and Pilot Studies***

*Problem (1)* The ZVI pilot test is not currently working effectively for HMX.

*Action(s) to Rectify Problem (1)* The protocols for this test have been changed. Another round of ZVI was applied to several subtests. Composting is being investigated as a backup to ZVI.

### ***IM***

*Problem (1)* Several regulatory issues need to be resolved prior to implementation of the IM (see above).

*Action to Rectify Problem (1)* LANL is meeting frequently with NMED representatives to solve these regulatory issues.

## **Key Personnel Issues**

None.

## **Projected Work for December 1999**

### ***RFI Report and CMS Plan***

- No work is scheduled for this month.

### ***BMPs***

- Inspection of existing BMPs following significant precipitation events will continue.

### ***CMS Hydrogeologic Investigations***

- Continued bromide sampling of springs.
- Weekly checking of water levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated ISCO samplers.
- Continued precipitation monitoring and sampling for stable isotopes.
- Continued Canyons-type "reach investigations" in Martin Spring Canyon.
- Installation of alluvial wells in Martin Spring Canyon.
- Quarterly sampling
- Continued preparation of paperwork for the readiness review for deep borehole CdV-R-15-3.
- Completion of readiness review for deep borehole CdV-R-15-3.

### ***Ecological Risk Pilot***

- Additional literature support is being investigated to identify applicable ecological risk screening values.
- Aquatic screening results are being evaluated relative to site specific solubility constraints for inorganics.
- Work to-date is being documented.
- Screening and evaluation for the recent sediment sample data that supported the geomorphic mapping of Cañon deValle will be conducted in the next month, pending data availability and resources to cover this activity.

- Alluvial water data will be screened and evaluated, pending resources to cover this activity.

### ***CMS Bench and Pilot Studies***

- Sampling of the ZVI treatment test for performance at 20-day intervals.
- Follow-up with NMED on discussion items and requested letters from the October 14, 1999 meeting. Meeting with NMED on December 15, 1999.
- Continuation of composting tests on HE-free materials.

### ***IM***

- Completion of submittal draft of the IM plan (pending resolution of key regulatory issues).
- Resolution of IM issues with operating group.
- Completion of readiness review.

### ***Public and Stakeholder Involvement***

- No public or stakeholder involvement activities are anticipated for December 1999. There will be a general ER availability session on December 16, 1999.