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**U.S. Department of Energy**  
 Los Alamos Area Office, MS A316  
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 Los Alamos, New Mexico 87544  
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Date: October 18, 2000  
 Refer to: ER2000-0599



HSWA LANL 3/1082/16-021(c)

Mr. John Young, Corrective Action Project Leader  
 Permits Management Program  
 NMED – Hazardous Waste Bureau  
 2044 A Galisteo  
 Santa Fe, NM 87502

**SUBJECT: SEPTEMBER 2000 CORRECTIVE MEASURES STUDY (CMS)  
 PROGRESS REPORT FOR POTENTIAL RELEASE SITE (PRS) 16-021(c)**

Dear Mr. Young:

Enclosed are three copies of the September 2000 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, Project Manager  
 Department of Energy  
 Los Alamos Area Office

JC/TT/NR/vn

Enclosure: September 2000 CMS Progress Report



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Cy (w/enc.):

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T. Grieggs, ESH-19, MS M992  
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C. Rodriguez, E/ER, MS M992  
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E/ER File, MS M992  
RPF, MS M707

**Monthly Progress Report**  
**Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)**  
**September 2000**

This report summarizes Los Alamos National Laboratory (LANL) activities completed during September of fiscal year (FY) 2001 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 Waste Bureau [NMED-HWB] on 9/30/98, and approved by NMED-HWB on 9/8/99), and other related activities are described herein.

**Description of Activities and Contacts**

**High Performing Team (HPT) Activities** – The 260 HPT met on September 5, 2000. The HPT reviewed on-going activities and identified those activities that are going to be completed during the remainder of the fiscal year.

The overall status of the HPTs was discussed. Certain teams (e.g. the ecorisk HPT) are in a lull in activity. It was suggested that the ecorisk HPT activities could be coordinated with the 260 HPT activities due to the importance of ecorisk for the 260 HPT in the coming year.

The HPT reviewed the HPT matrix schedule. Changes were made to reflect the status of ongoing activities.

LANL personnel reviewed the status of ongoing activities. LANL personnel updated the HPT on the status of the post-flood sediment sampling in Water Canyon. Low levels of barium and very low levels of HE were detected: 1) in Water Canyon downgradient from the WW II area of TA-16; 2) downgradient from the confluence of Cañon de Valle and Water Canyon; and 3) in Water Canyon at State Route 4.

The progress of the Interim Measure (IM) was updated.

LANL personnel update the HPT on the status of the composting pilot. In addition, promising results of the W.R. Grace process tests were discussed.

The schedule for the RFI Report and CMS Report were discussed. LANL personnel stated that in the revised baseline schedule, these reports would probably be completed in mid FY 02. This would allow results from the FY 01 ecological risk studies to be incorporated into the report.

HWB personnel initiated a discussion of Temporary Authorization (TA) versus permitting for HE soil treatment. It was suggested that a treatment permit could be piggybacked with the ongoing permitting activities for TA-16. The HWB has concerns

with using TA, particularly if LANL anticipates that HE soil treatment will be more than a 'one-time' activity. Team members will discuss this issue again at the next meeting.

Initial discussions of points of compliance (POCs) and Media Cleanup Standards (MCSs) were held. It was noted that NMED would soon be issuing soil-screening levels. These issues need to be resolved prior to completion of the RFI and CMS Reports.

The next meeting is scheduled for Monday October 16, 2000. Agenda items will include discussions of TAs, POCs, and MCSs and potentially a joint meeting with the ecorisk HPT.

**RCRA Facility Investigation (RFI) Report and CMS Plan**– No new activities occurred during this reporting period.

**Best Management Practices (BMPs)**– BMPs were inspected daily during on-going fieldwork. New BMPs were installed in the lower drainage, following completion of excavation in that zone. No repairs were required this month.

**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 program included collecting samples at Burning Ground, Sanitary Waste Consolidation System (SWSC) and Martin springs every other day for bromide, other anions, and stable isotopes. Maintenance of the autosamplers continued during this period. A set of weekly flow-integrated spring samples was submitted for laboratory analysis. September samples are being analyzed. No new bromide breakthrough has been observed in samples to date. The flow in SWSC spring and in Cañon de Valle remains at a very low level.

The wells, both alluvial and deep, were checked weekly for both presence and level of water. Four of the five alluvial wells contained water; the exception is still alluvial well 2655, which is located in the steam plant drainage. None of the intermediate-depth boreholes contained water. Water levels in all the Canon de Valle alluvial wells remained low, but fluctuated during the course of the month; total dissolved solids (TDS) remained high. The high TDS may be due to the effects of the Cerro Grande fire.

In September, four samples from precipitation events were collected and submitted for analysis.

Quarterly sampling of springs, alluvial wells, and other water-bearing locations was completed. Several prescribed locations, including two alluvial wells in Martin Canyon, the water in Fishladder canyon and Fishladder seep were not sampled due to the dry conditions.

Geomorphologic mapping in Martin Spring Canyon was completed. Based on screening analyses for barium by X-ray fluorescence (XRF) and HE by D-Tech, approximately 20

laboratory samples were selected for analysis. Analytical results are expected in the first quarter of FY 01.

The Westbay sampling system was installed in borehole CdV-R-15-3. The installation went smoothly. A progress report, which will be the majority of the well completion report, was peer reviewed and submitted to DOE.

### ***Ecological Risk Pilot–***

A draft sampling plan to support ecological risk assessments was initiated. This will be discussed at the next 260 HPT meeting.

***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. Seven studies are now 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.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). This study has been completed.
3. A study of in situ anaerobic bioremediation of HE using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of HE-contaminated soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment.
5. A study of HE composting. Amendments appropriate to northern New Mexico are being tested on both clean and contaminated soils.
6. A study of immobilization of barium-contaminated sediments from Cañon de Valle.
7. Phytoremediation studies in Cañon de Valle.

The HE-composting pilot study using clean and TA-16-260 soils was continued. Temperatures of the compost mix failed to rise to greater than 120°F. Diurnal temperature variations, which are severe in Northern New Mexico, may be inhibiting biological activity. Plans were formulated to redeploy the study in a building at TA-16, to determine if the diurnal variations can be damped out.

An on-site pilot study of the W.R. Grace process on these same soils was also continued. The W.R. Grace process decreased HE concentrations from greater than 3% HE to less than 0.5 % HE.

Plant and water samples were collected at Burning Ground Spring to evaluate whether phytoremediation is occurring at this location. Similar plants will also be used in HE-uptake studies. Results are anticipated in the first quarter of FY 01.

### ***Interim Measure (IM) –***

Excavation of the lower drainage was completed. Soils were removed from the lower drainage and staged in the soil stockpile. Approximately 120 cubic yards was removed from the lower drainage. Screening HE sampling was completed. HE levels are generally low, with RDX at levels less than 100 ppm at all but three locations. Laboratory verification samples were collected. A total of 46 laboratory samples, including both waste and verification samples, were submitted during September. The borehole in the center of the former pond was drilled to a depth of 80 ft. and sampled for bromide and HE.

***Public and Stakeholder Involvement***– No activities during this reporting period.

### **Percentage of CMS Completed**

LANL estimates 62% 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**

*General Problem (1)* The Cerro Grande fire has severely impacted the 260 RFI/CMS activities. These problems have been discussed in detail in previous monthly reports.

*Action to Rectify General Problem (1):* LANL will work closely with NMED through the auspices of the HPT to cope with the effects of the Cerro Grande fire.

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

*Problem (1):* The fact that NMED questions the quality of data from well R-25 is a significant concern to the TA-16-260 team.

*Action to Rectify Problem (1):* LANL will evaluate the data from the quarterly sampling of the R-25 well to evaluate its reliability through the auspices of the HPT.

*Problem (2)* The autosamplers in the three springs have operated poorly since the Cerro Grande fire. There are frequent distributor-arm-fault interruptions causing the sampler to cease operation. In addition, spurious noise generated by the ultrasonic flow loggers continues to cause problems with accurately metering spring flow.

*Action to Rectify Problem (2):* The IT field team maintains the autosamplers as needed. These problems are currently handled during a sampling period by intensively managing the samplers manually. Solutions to the technical problems are being pursued.

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

*Problem (1)* The HE-bearing composting test is not generating thermophilic conditions as anticipated.

*Action(s) to Rectify Problem (1).* Modifications to the composting pilot, such as deployment indoors in a heated facility will be undertaken.

### ***IM***

*Problem (1)* The lack of success of the HE-bearing composting test may complicate waste disposal for the IM.

*Action(s) to Rectify Problem (1)* LANL will continue to refine the composting tests. Additional waste disposal options will be investigated.

### **Key Personnel Issues**

None.

### **Projected Work for September 2000**

#### ***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***

- Maintenance of autosamplers
- Continued bromide sampling of springs
- Weekly checking for levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated autosamplers
- Continued precipitation monitoring and sampling for stable isotopes.
- Data analysis
- Quarterly sampling at CdV-R-15-3
- Stream profile (if stream flow increases)

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

- The ecorisk team will discuss the study plan for biota sampling in Canon de Valle with the HPT.

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

- Management of composting tests on HE-bearing materials.
- Evaluation and initiation of studies for stabilization and phytoremediation.

### ***IM***

- Site restoration

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No activities planned.

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