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Date: July 23, 2009

Refer To: EP2009-0309

James P. 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 Completion Documentation for Sediment Removal Activities at the Los Alamos Canyon Low-Head Weir

Dear Mr. Bearzi:

Please find attached the Completion Documentation for Sediment Removal Activities at the Los Alamos Canyon Low-Head Weir. This documentation fulfills the New Mexico Environment Department's (NMED's) requirement per the May 5, 2009, approval letter to provide this documentation by July 31, 2009.

If you have any questions, please contact Danny Katzman at (505) 667-6333 (katzman@lanl.gov) or Nancy Werdel at (505) 665-3619 (nwerdel@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/PH/DK:sm

Attachment: Completion Documentation for Sediment Removal Activities at the Los Alamos
Canyon Low-Head Weir (LA-UR-09-4628)

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COMPLETION DOCUMENTATION FOR SEDIMENT REMOVAL ACTIVITIES AT THE LOS ALAMOS CANYON LOW-HEAD WEIR

The project to excavate and modify the basin behind the Los Alamos Canyon low-head weir has been completed. The following discussion documents the sediment removal activities, stabilization and establishment of a vegetative cover on the sediments relocated onto the adjacent slope, modifications made within the basin to enhance sediment retention, and waste management activities.

EXCAVATION OF SEDIMENT

Sediment removal at the weir was completed on June 3, 2009. In accordance with requirements of the New Mexico Environment Department's (NMED's) "Approval to Proceed with Soil Removal at the Los Alamos Canyon Low-Head Weir," dated May 5, 2009, the Laboratory began excavation activities by first removing and segregating a layer of fine-grained sediment that capped the deposits behind the weir (Figures 1 and 2). These deposits were identified as having higher concentrations of several constituents, including dioxins/furans, than the rest of the sediment planned for excavation and placement on the adjacent hillslope and therefore warranted segregation. Excavation of these sediments began on May 7, 2009, and a total of approximately 80 yd³ was removed and placed in rolloff bins.

Crews then began excavation of the remaining sediment on May 11, 2009. An estimated total of 5000 yd³ of material was excavated and placed onto the adjacent hillslope. Excavation was completed by June 3, 2009. Figure 3 shows the final excavation.

PLACEMENT OF MATERIAL ONTO THE ADJACENT HILLSLOPE

Sediments were placed onto the hillslope during excavation behind the weir as approved by NMED's May 5, 2009 letter. Sediments were spread, contoured, and lightly compacted to stabilize the slope. The estimated maximum thickness of sediment placed on the hillside is 2 ft. Straw wattles were placed along contours to mitigate rilling associated with hillslope runoff. Seed was distributed across the slope and covered with hydromulch (Figures 4 and 5). The seed mix is the Laboratory-approved mix for hillslope stabilization and contains blue grama, sideoats grama, Indian ricegrass, streambank wheatgrass, galleta, alkali sacaton, sheep fescue, and little bluestem.

BASIN MODIFICATIONS

Berms were constructed to define three subbasins behind the weir structure. The berms were constructed with sediment excavated for this project. The height and position of the berms were set to increase water and sediment retention capacity within each subbasin and to establish the spill point between basins on basalt bedrock, thus preventing incision during floods.

Sediment was also left in place against the gabion baskets of the weir structure to prevent impounded floodwater from passing readily through the high-porosity open-rock matrix within the baskets. This structure should enhance sediment retention.

The upstream side of the berms and the sediment against the weir were stabilized with a mesh polyimide fabric called Enkamat 7020 to prevent erosion and rilling (Figure 6). A thin layer of preexisting fine-grained sediment (including clay, silts, and ash) was left on the floor of the basins and compacted during excavation of overlying material. The initial plan had been to place an impermeable liner on the floor of

basin 3 to inhibit potential infiltration. However, before the installation, it was observed that impounded flood water apparently was not infiltrating, so a decision was made to not apply the impermeable liner but rather to rely on the natural compacted material to inhibit infiltration.

WASTE MANAGEMENT

An estimated 80 yd³ of sediment identified as having elevated concentrations of several constituents was excavated and segregated into rolloff bins for characterization and management. The waste is stored on-site in four 20-yd³-capacity covered rolloff bins. Waste characterization samples were collected on May 26, 2009, and quick turnaround analysis was requested. The data have been received, and waste profile forms are being prepared. Preliminary sample results suggest that the material will be classified as low-level radioactive waste. Final disposition is expected to be at Technical Area 54, Area G.



Figure 1 Basin 3 area before cover vegetation and dioxin-contaminated layer was removed



Figure 2 Basin 3 area (looking southeast) after dioxin-contaminated layer was removed



Figure 3 View looking northeast from basin 2 towards basin 3 and gabion baskets after excavation



Figure 4 Application of hydromulch over seeded soil



Figure 5 Applying hydromulch to hillslope with straw wattles in place



Figure 6 Mesh polyimide fabric matting on sediment against face of gabion baskets