

**Work Plan to Plug and Abandon Cañon de Valle Well CdV-16-2(i)**

<b>Primary Purpose</b>	This work plan summarizes the methods Los Alamos National Laboratory (the Laboratory) proposes to use in plugging and abandoning groundwater-monitoring well CdV-16-2(i). Well abandonment will be consistent with the requirements and guidelines of the “New Mexico Environment Department Monitoring Construction and Abandonment Guidelines” and guidelines in Sections IV.B.1.b.v and X.D (Well Abandonment) of the Compliance Order on Consent (the Consent Order). This work plan also responds to the New Mexico Environment Department’s (NMED’s) approval with modifications for supplemental investigation for intermediate and regional groundwater at Technical Area 16 (NMED 2009, 104973).
<b>Plugging and Abandonment</b>	<p>There are no aboveground or belowground appurtenances, such as pumps, transducers, data loggers, control panels, etc., currently present in monitoring well CdV-16-2(i). Before abandonment, the well will then be inspected with a downhole camera, and a natural gamma log will be collected to document the current conditions.</p> <p>Groundwater-monitoring well CdV-16-2(i) was installed in 2004 using air-rotary and fluid-assisted air-rotary methods that involved QUIK-FOAM and EZ-MUD. CdV-16-2(i) is a dual-screen well and is constructed as follows:</p> <ul style="list-style-type: none"> <li>• 0–12 ft below ground surface (bgs): 13 3/8-in.-outside diameter (O.D.) steel casing, cemented in place from 0 to 12 ft bgs</li> <li>• 0–1037 ft bgs: 5-in.-O.D. stainless-steel casing, with a bentonite chip seal from 75 to 837 ft bgs. Concrete backfill, consisting of Portland cement with 4% bentonite, was placed from 75 ft bgs to ground surface</li> <li>• 850.2–867.8 ft: 5.53 in.-O.D. pipe-based stainless-steel screen, with a secondary filter pack from 837 to 840 ft bgs and a primary filter pack from 840 to 877 ft bgs</li> <li>• 993–1015.2 ft bgs: 5.27-in.-O.D. rod-based stainless-steel screen with a secondary filter pack from 980 to 982 ft bgs and a primary filter pack from 982 to 1023 ft bgs</li> </ul> <p>To plug and abandon CdV-16-2(i), the entire filter pack from screen 1 (837–877 ft bgs) and screen 2 (980–1023 ft bgs) will be either ripped or perforated. Available options include both air-actuated and mechanically actuated ripping/perforating devices. Regardless of the method selected, the Laboratory will avoid using high explosives or other chemicals. The 837–877-ft and 980–1023-ft intervals will be pressure-grouted to force cement into the annular void created by the removed filter-pack sand. The remaining well casing will be pressure-grouted from the bottom to the top using a tremie pipe.</p>
<b>Surface Completion</b>	Once the well has been cement-grouted to within 2.5 ft of ground surface, the well casing will be cut off at the ground surface. A brass marker has been surveyed in accordance with Section IX.B.2.f of the Consent Order, which states that pertinent structures may be horizontally located with a global positioning system to within 0.5 ft. The surveyed location is recorded in the as-built figure in the well completion report (Kleinfelder 2004, 087843).
<b>Waste Disposal</b>	No sampling will take place during plugging and abandonment of this well. The intent is to reuse and recycle all materials. If some materials cannot be recycled, they will be disposed of in accordance with the waste characterization strategy form that applies to this activity.
<b>Summary Report</b>	A brief report will be prepared detailing the methods used to plug and abandon the well, presenting borehole logs (video and natural gamma), and providing the final abandonment configuration.
<b>Schedule</b>	<p>The schedule for completion of well abandonment and reporting follows:</p> <ul style="list-style-type: none"> <li>• Submission of work plan, May 1, 2009</li> <li>• Complete plugging and abandoning of CdV-16-2(i), July 1, 2009</li> <li>• Submit report to NMED, August 1, 2009</li> </ul>

## REFERENCES

*The following list includes all documents cited in this plan. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.*

*Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.*

Kleinfelder, May 14, 2004. "Final Well CdV-16-2(i) Completion Report," report prepared for Los Alamos National Laboratory, Project No. 37151/10.12, Albuquerque, New Mexico. (Kleinfelder 2004, 087843)

NMED (New Mexico Environment Department), January 26, 2009. "Approval with Modifications, Suppl[e]mental Investigation Work Plan for Intermediate and Regional Groundwater at TA-16 (Consolidated Unit 16-021(c)-99)," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2009, 104973)