Work Plan to Plug and Abandon Test Well 3

Primary Purpose	This work plan summarizes the plugging and abandonment methods Los Alamos National Laboratory (LANL or the Laboratory) proposes for Test Well (TW) 3 located in Los Alamos Canyon. Well abandonment will be performed in accordance with Sections IV.B.1.b.v and X.D (Well Abandonment) of the Compliance Order on Consent (Consent Order).
Construction	TW-3 was drilled by the cable tool method in 1949 to 815 ft below ground surface (bgs) in Los Alamos Canyon (Purtymun 1995, 045344). The depth to water (DTW) in 1949 was 743 ft bgs. The current DTW is about 790 ft bgs. Perched water was not encountered during the drilling of TW-3; however, perched intermediate groundwater is present at nearby wells LAOI-3.2 and LAOI-3.2a at depths of approximately 125 to 195 ft bgs, respectively. The TW-3 borehole is approximately 16 in. in diameter and the well is constructed as follows: • 0−33 ft bgs – 16-in. surface casing • 0−805 ft bgs – 10-in. well casing • 805−815 ft bgs – 6-in.-diameter screen swaged into the bottom of the well casing
Abandonment Methods	The existing surface casing and any exterior appurtenances will be removed from the well before abandonment begins. An attempt will then be made to remove the existing 10-in. well casing. If the casing can be removed, the open borehole will be filled with hydrated bentonite chips to 10 ft bgs, and neat cement will be emplaced above the chips to 2 ft bgs (Figure 1, option 1). If the entire casing string cannot be removed, it will be cut at approximately 270 ft bgs and an attempt will again be made to remove it. If it comes out, then cement will be used to fill the remaining casing. The open borehole will be filled with hydrated bentonite chips to 10 ft bgs, and neat cement will be emplaced above the chips to 2 ft bgs (option 2). If the casing cut and extraction is unsuccessful, the casing will be perforated across the likely perching horizon (190−239 ft bgs). Based on field observations, an additional casing cut may then be made higher in the well accompanied by an additional attempt to pull the casing. Whether or not any of the 10-in. casing comes out at this point, neat cement will be used to backfill up through the perforated interval to 180 ft bgs followed by hydrated bentonite chips to 10 ft bgs. Neat cement will be emplaced above the bentonite to 2 ft bgs (option 3).
Surface Completion	A 2.5-ft-wide × 2.5-ft-long × 2-ft-deep concrete pad with brass marker will be installed at ground surface over the well. The marker will be 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 with an accuracy of +/- 0.5 ft.
Waste Disposal	A waste characterization strategy form (WCSF) will be prepared to guide disposal of any wastes generated during abandonment. No waste samples will be collected. Materials removed from the borehole will be reused or recycled if possible. Nonrecyclable materials will be disposed in accordance with the WCSF.
Summary Report	A report will be prepared detailing the abandonment methods and the quantities of backfill materials used. A location map and abandonment schematic will also be included in the report.
Proposed Schedule	**Activity** — **Completion Date** Plug and abandon TW-3 — December 20, 2011

REFERENCE

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 New Mexico Environment Department 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.

Purtymun, W.D., January 1995. "Geologic and Hydrologic Records of Observation Wells, Test Holes, Test Wells, Supply Wells, Springs, and Surface Water Stations in the Los Alamos Area," Los Alamos National Laboratory report LA-12883-MS, Los Alamos, New Mexico. (Purtymun 1995, 045344)

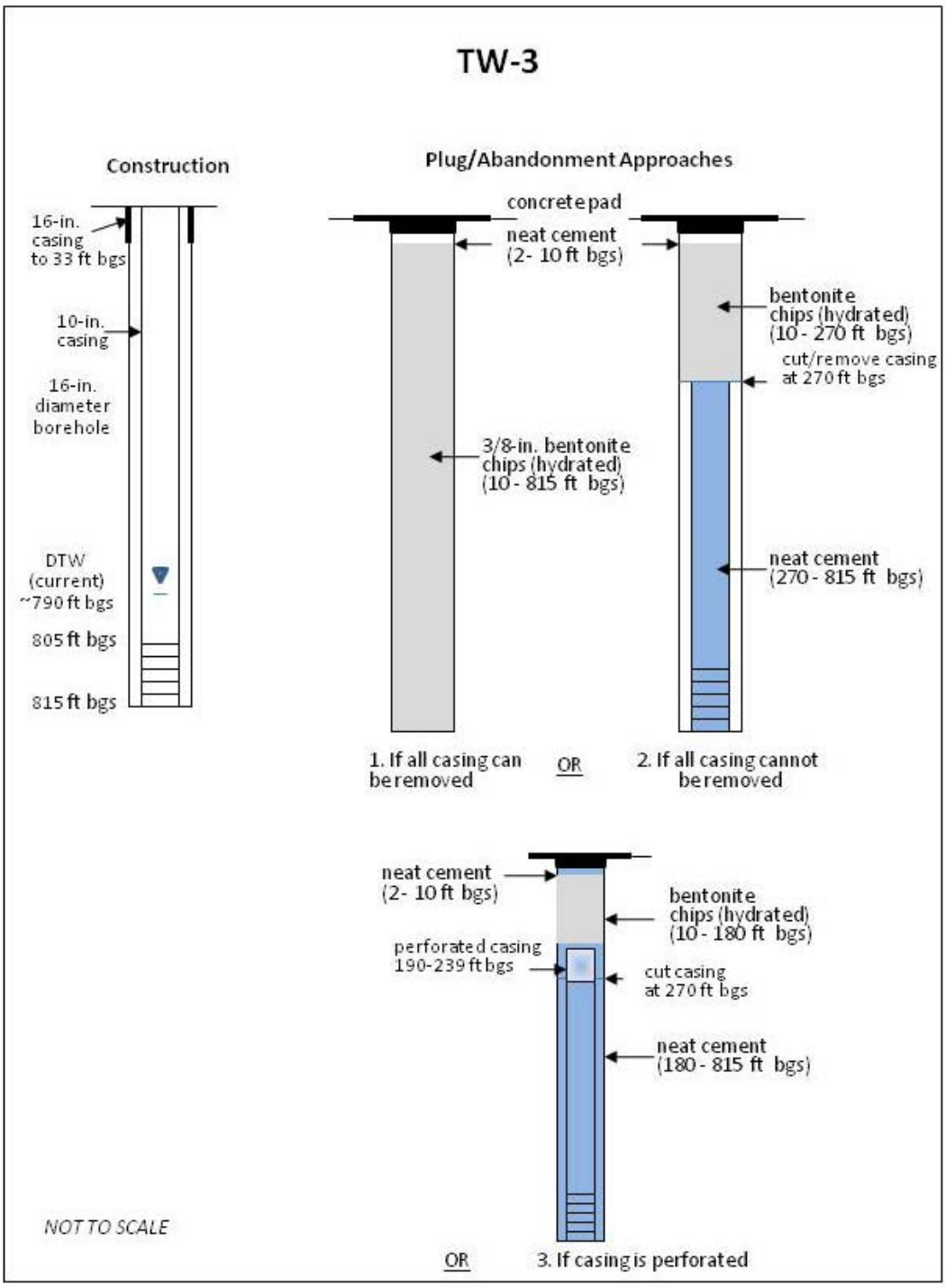

Figure 1 Existing well construction and proposed abandonment options