Work Plan to Reconfigure Well CdV-16-4ip

Primary Purpose	This work plan summarizes the methods Los Alamos National Laboratory (LANL) proposes to use for reconfiguring CdV-16-4ip from a two-screen well into a single-screen well equipped for sampling and removing potential contaminants from the upper perched-intermediate zone. The objective of this plan is to install a pump that can operate at high rates while allowing representative groundwater samples to be collected. The well is located on the canyon rim above Cañon de Valle in Technical Area 16 (TA-16). This objective is consistent with the recommendation presented in LANL's Technical Area 16 Well Network Evaluation and Recommendations (LANL 2012, 213573), which was approved with modifications by the New Mexico Environment Department (NMED) in its letter dated June 20, 2012 (NMED 2012, 520747).
Background	Well CdV-16-4ip was installed as a pumping well to be used in extended pumping tests to assess the hydrogeologic properties of the perched-intermediate zone beneath Consolidated Unit 16-021(c)-99 (also known as the 260 Outfall) at TA-16. The borehole was drilled using standard air-rotary drilling methods. The CdV-16-4ip borehole was advanced to a total depth of 1153.7 ft below ground surface (bgs) using a combination of dual-rotary casing advance and open-hole drilling methods. Pertinent well information is as follows. • 5-in.–inside diameter stainless-steel casing • Screen 1, 815.6–879.2 ft bgs (rod-based wire-wrapped screen) • Screen 2, 1110.0–1141.1ft bgs (rod-based wire-wrapped screen) • Depth to water for the upper screen is 808 ft bgs Pumping tests conducted on the upper screen indicate the well is tapping a permeable region within the upper-perched saturated zone with a limited areal extent. During the pumping test, this zone appeared to be recharged by groundwater flowing in the perched zone at a rate of 4.8 gallons per minute (gpm) (LANL 2011, 203711).
Reconfiguration Methods	Screens 1 and 2 are currently isolated from one another to prevent cross-flow from screen 1 to 2. As the well is being reconfigured, every effort will be made to minimize the time the two screens are in open communication. Efforts will include getting both the sand and cement in place as quickly as possible after the isolating packers are removed. The two detachable packers currently installed will be removed from between the two screens. Coarse sand (10/20) will be emplaced from the bottom of the sump up to 20 ft above the top of the lower screen. A 15-ft interval of finer sand (20/40) will then be installed to limit migration of the overlying cement toward the lower screen. Fifty feet of cement will then be emplaced and allowed to cure for a minimum of 24 h. Additional sand will then be emplaced to approximately 20 ft below the upper screen. A K-Packer will be emplaced on top of the sand, both to prevent upward agitation of the sand and to create a solid base for the retained screen's sump. To allow for maximum drawdown during pumping and fluctuations in the aquifer recharge rate, a Grundfos model 10S30-34 (or equivalent) environmentally retrofitted pump will be shrouded with an intake at 890 ft bgs. This pump is designed to produce 6 gpm from a water level of 850 ft bgs, which allows pumping at a rate greater than the calculated recharge rate of 4.8 gpm. Figure 1 shows schematics of the existing well construction and the proposed reconfiguration.
Waste Disposal	A waste characterization strategy form will be prepared to guide disposal of any wastes generated during reconfiguration (e.g., personal protective equipment).

Summary Report	A brief report will be prepared detailing the reconfiguration methods and the quantities of backfill materials used.	
Proposed Schedule	**Activity**	**Completion Date**
	Reconfigure well CdV-16-4ip	June 30, 2013
	Submit summary report	August 31, 2013

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.

LANL (Los Alamos National Laboratory), June 2011. "Hydrologic Testing Report for Consolidated Unit 16-021(c)-99," Los Alamos National Laboratory document LA-UR-11-3072, Los Alamos, New Mexico. (LANL 2011, 203711)

LANL (Los Alamos National Laboratory), March 2012. "Technical Area 16 Well Network Evaluation and Recommendations," Los Alamos National Laboratory document LA-UR-12-1082, Los Alamos, New Mexico. (LANL 2012, 213573)

NMED (New Mexico Environment Department), June 20, 2012. "Approval with Modifications, Technical Area 16 Well Network Evaluation and Recommendations," New Mexico Environment Department letter to P. Maggiore (DOE-LASO) and M.J. Graham (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2012, 520747)

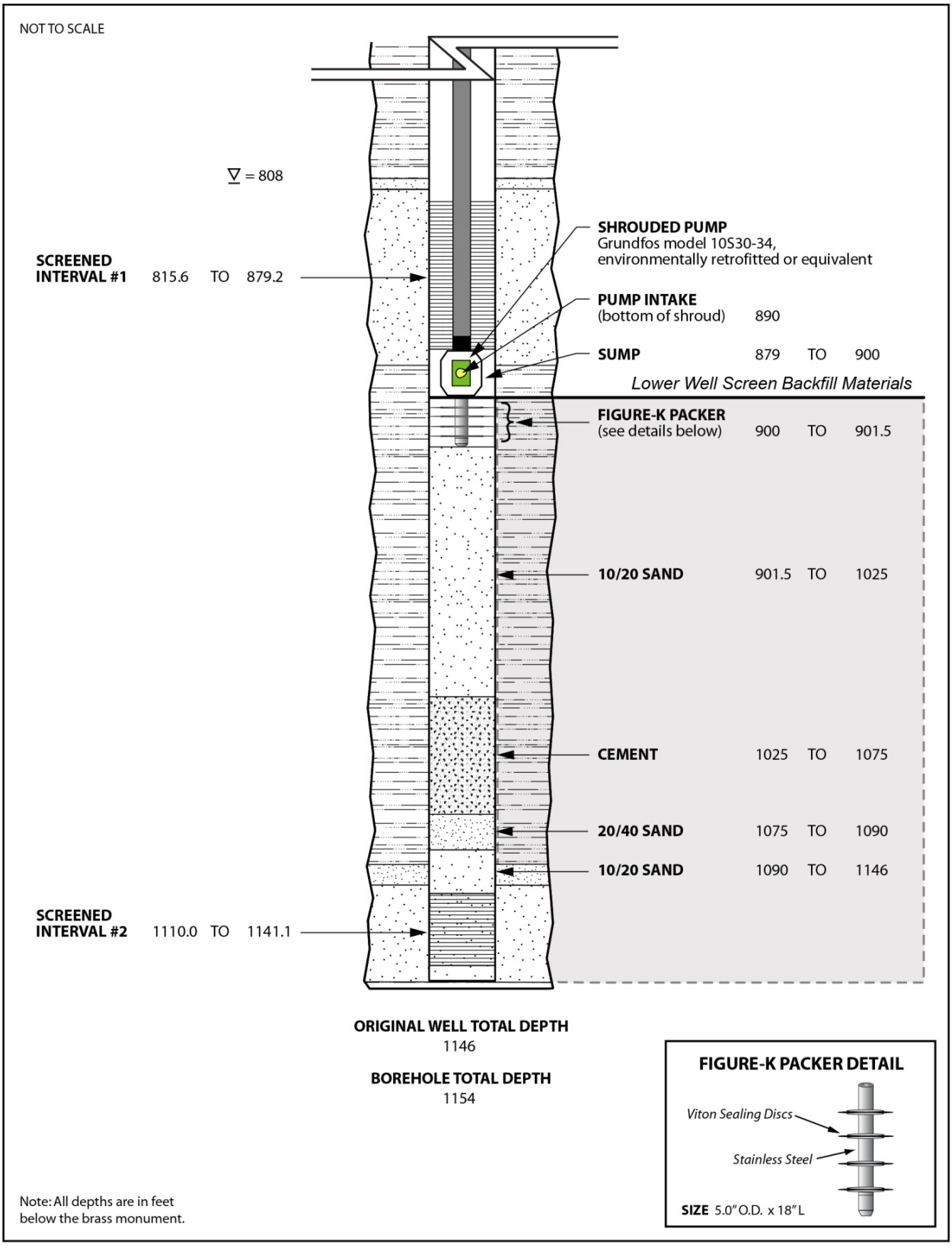

Figure 1 Schematics of the existing well construction and the proposed reconfiguration