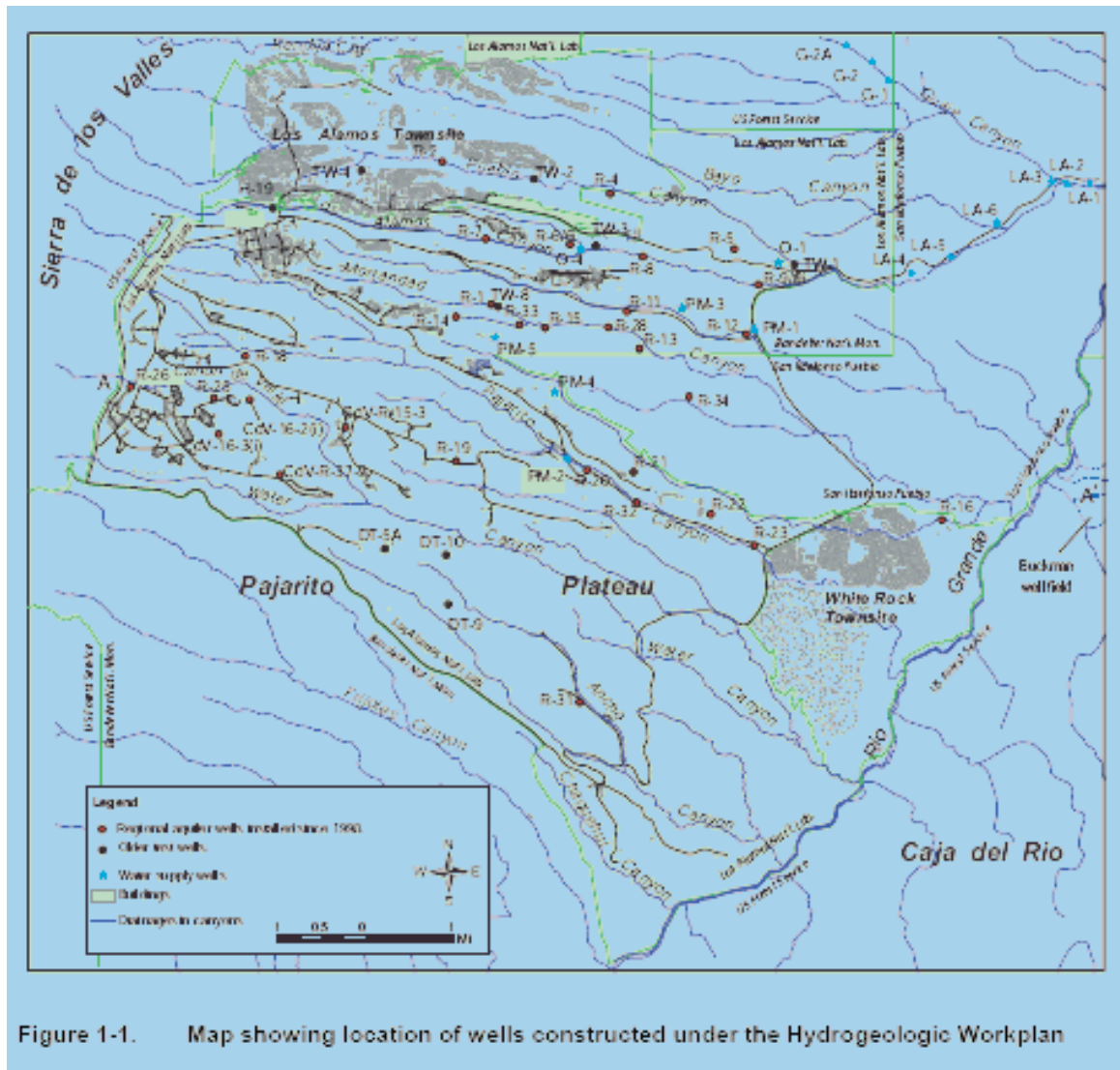


Attachment 1: Figures for Exhibits 1 to 4.
CCNS and EVEMG Comments about draft LANL SWEIS

Figure 1-1



From: LANL Workplan for R-Well Rehabilitation and Replacement,
LA-UR-06-3687, June 2006.

Figure 1-2

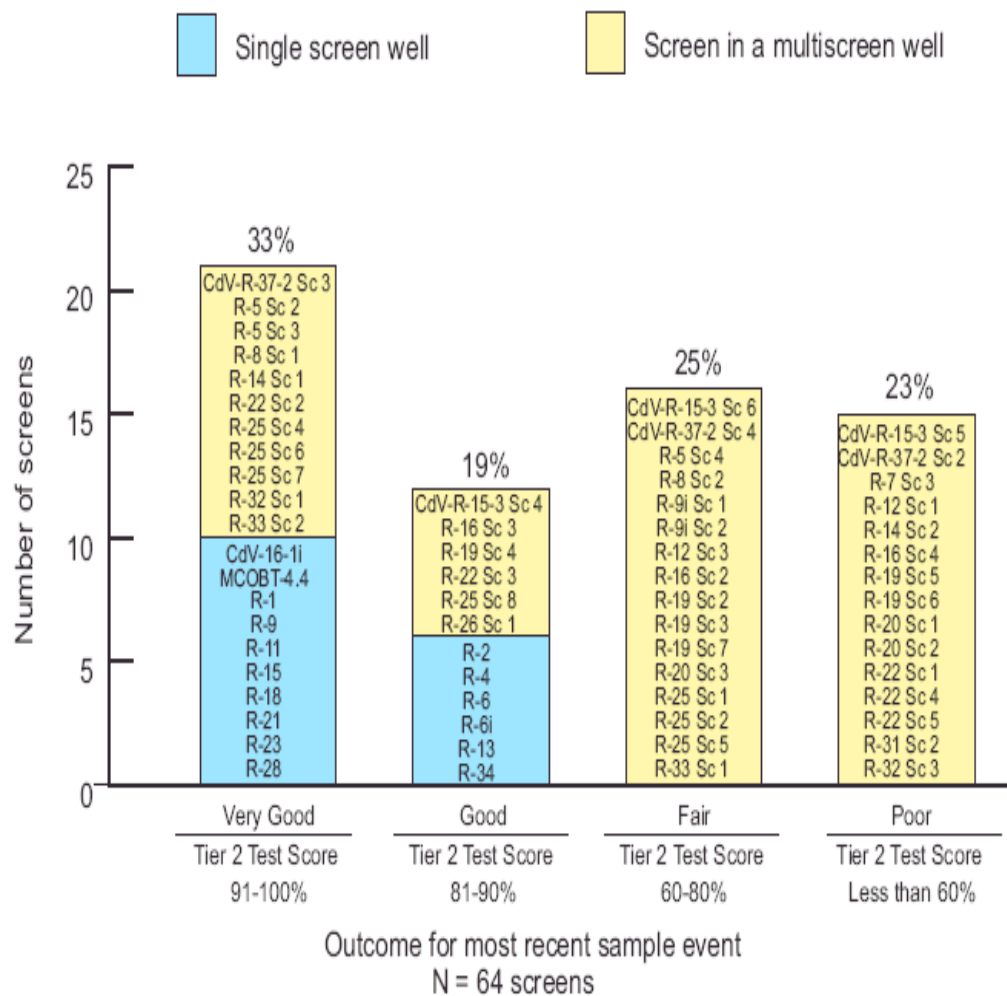


Figure 1-2. Overall condition of screens for producing reliable and representative water-quality samples as of November 2005

From: LANL Well Screen Analysis Report: LA-UR-05-8615, November 2005

Figure 1-3.

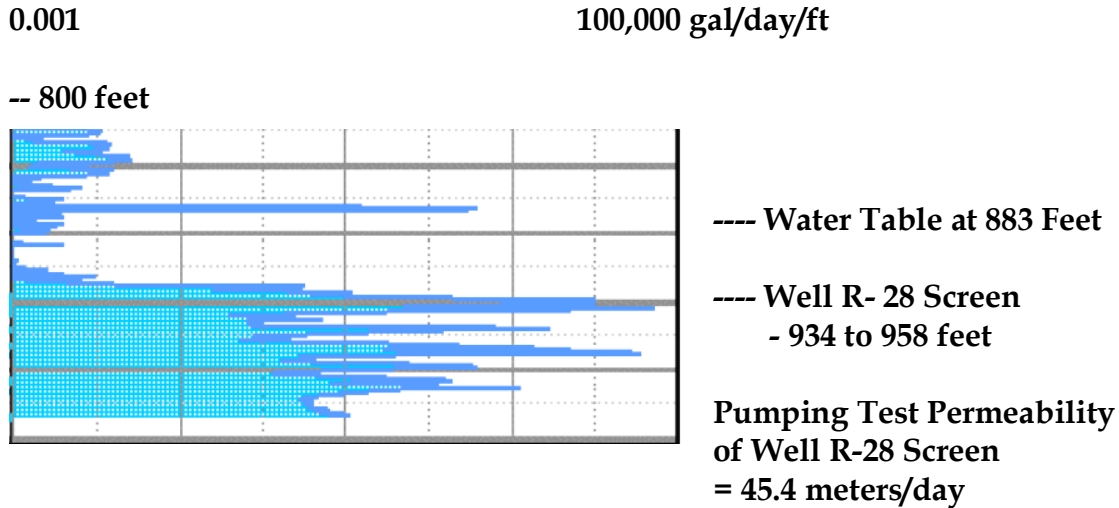
Hydrostratigraphy at LANL Wells R-28 and R-13

LANL Well R-13 is Downgradient of Chromium Plume at Well R-28

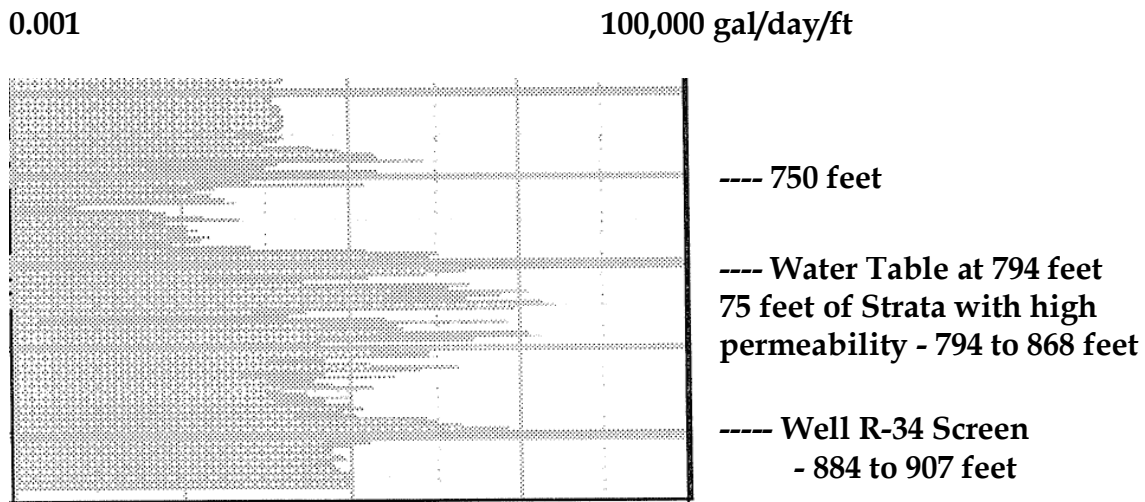
	Well R-28	Well R-13
Water Table		
Elevation	~5840	
(feet above	-	~5837
sea level)	All strata at	-
	well R-28	Permeable strata probably have
	have high	high chromium contamination
	permeability	but are not monitored
Screen	5794	-
Elevation	X 400 ppb	-
	X hexavalent chromium	-
	5770	-
		-
		Layer of clay strata form aquitard between
		shallow and deep groundwater
		-
		-
		-
		-
		5715
		X
		X
*EPA recommends monitoring well		*60-foot screen
screen length of not greater		causes dilution
than 10 feet		of contamination
		X
		5654
		-
		-
		-
		-
		Borehole drilled deep into aquifer with no
		reliable data on groundwater contamination
	1065 feet = Total Depth	5540 ft (elevation)

Figure 1-4.
Schlumberger Permeability Logs for Wells R-28 and R-34

- Schlumberger Permeability Log For Well R-28



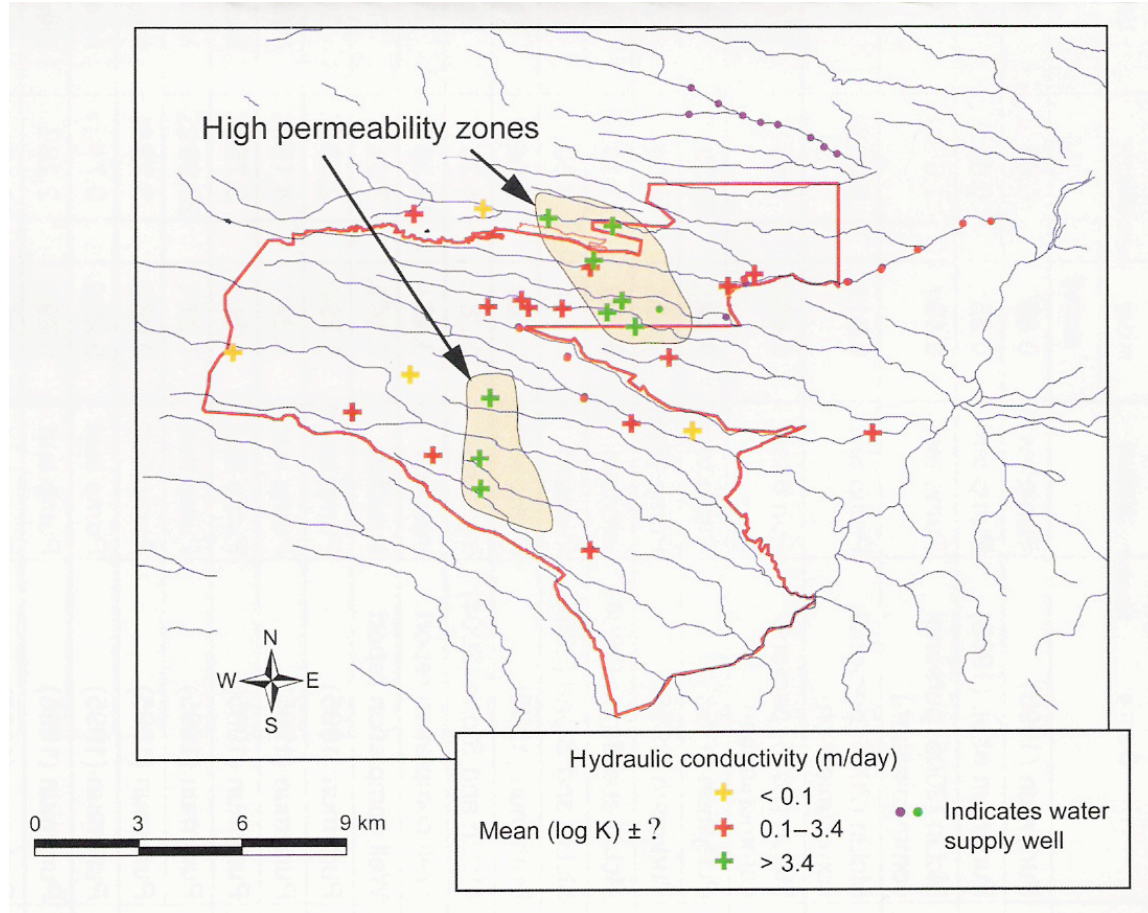
- Schlumberger Permeability Log for Well R-34



Well R-34 screen installed 90 feet below water table and below 22-ft thick confining bed of clay strata. Strata with high permeability immediately below water table are not monitored.

- Schlumberger Logs show clay strata with very low permeability in depth interval of 868 to 890 feet. The clay strata are across the upper 6 feet of the well screen.
- Because of mistakes, Well R-34 Pumping Test measured a SPURIOUS low permeability of 1.1 meters/day. The regional aquifer at well R-34 may have a permeability greater than 40 meters per day.

Figure 1-5



The above figure is figure 2-26 from the LANL *Synthesis Report* (LANL Report LA-14263-MS, December 2005)

Figure 1-5. The misrepresentation in the LANL *Synthesis Report* that the regional aquifer beneath the San Ildefonso Pueblo does not have high permeability. In fact, the LANL data show that the regional aquifer across the property of the Pueblo has very high permeability – possibly greater than 40 meters per day for much of the Pueblo. The regional aquifer of the San Ildefonso Pueblo is a valuable groundwater resource that must be protected from LANL waste. The high permeability of the regional aquifer increases the danger of widespread contamination of the groundwater of the San Ildefonso Pueblo from LANL waste.

Figure 1-6

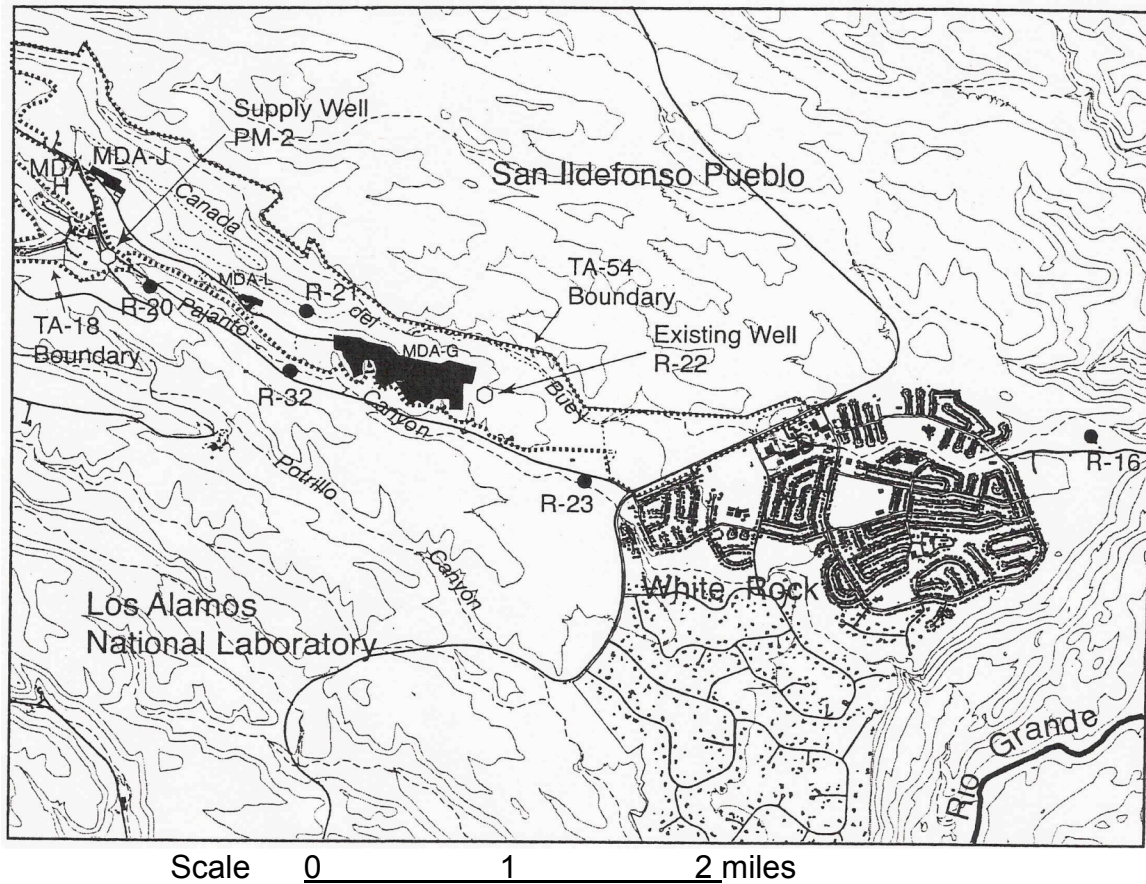
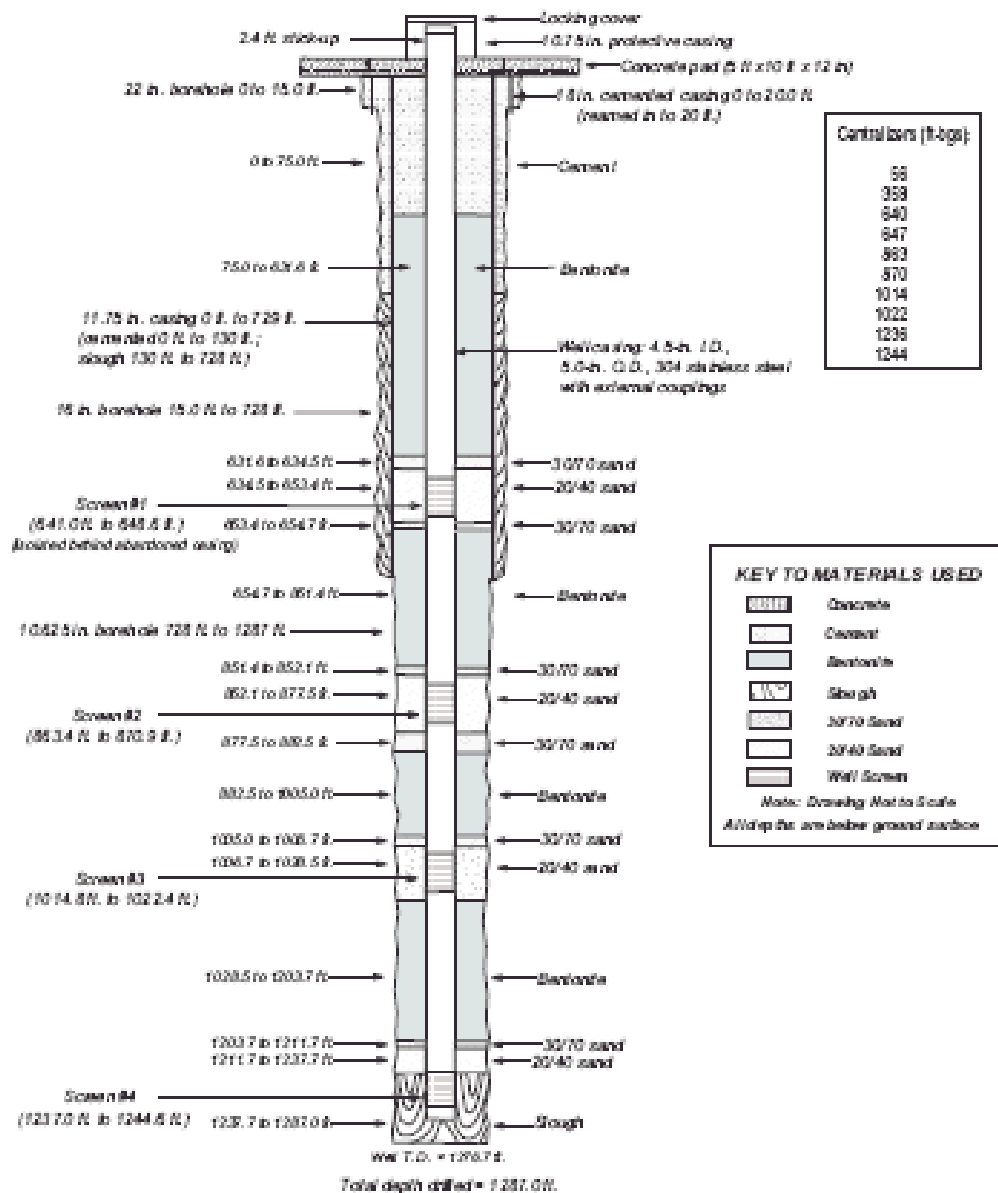


Figure 1-6. The LANL characterization wells R-16, R-20, R-21, R-22, R-23, and R-32 that surround the three RCRA regulated units MDA G (Area G), MDA L, and MDA H. None of the six wells meet the requirements of RCRA for monitoring groundwater contamination.

Figure 1-7.

As-built construction of LANL characterization well R-16, a sentry well for LANL contaminants traveling to the Rio Grande and to the Buckman well field. Screen #1 is blocked off by retractable drill casing that was abandoned in the borehole. Screen #4 does not produce representative groundwater samples because the screen is surrounded by bentonite clay slough sediments that were not cleaned from the borehole

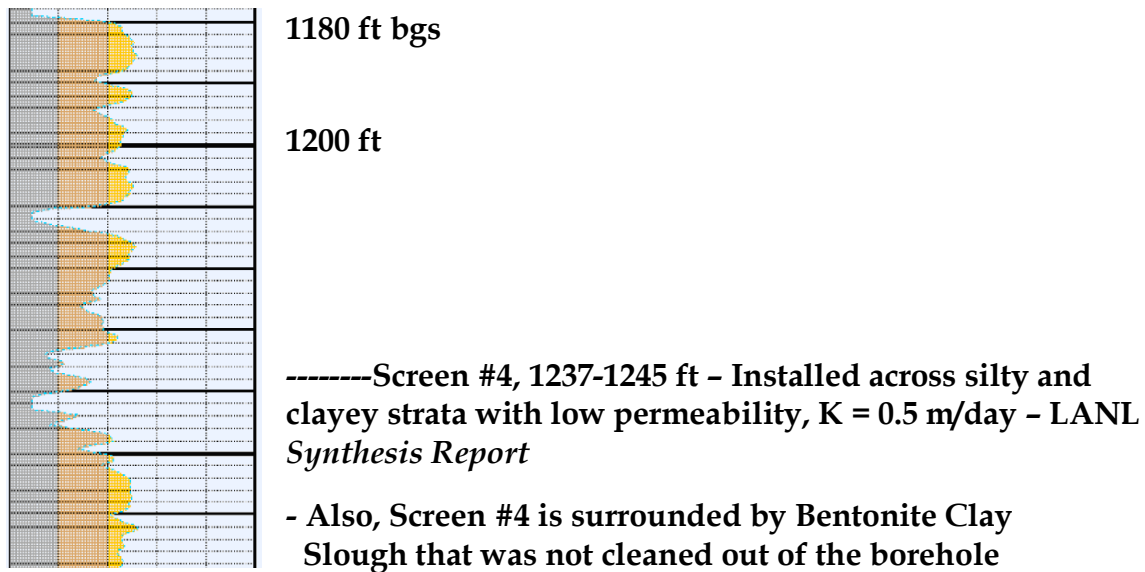


Source: LANL Well R-16 Completion Report, LA-UR-03-1841

Figure 1-8.

**Well R-16 Schlumberger Geophysics of Screen #4.
Pemeability increases from left to right on the figure.**

Strata with markedly higher permeability are at a depth of 1180 to 1188 feet and at a depth of 1252 to 1262 feet below ground surface (bgs).



- Well R-16 was drilled with the Conventional Mud Rotary Method.
- All of the screened intervals are invaded with large quantities of Bentonite Clay Drilling Mud and Organic Additives. None of the Screened Intervals in LANL Well R-16 meet the requirements of RCRA Subpart F.
- All of the drill cuttings produced from the mud rotary borehole are mixtures of cuttings from different depths as the cuttings travel out of the borehole along the borehole wall. Furthermore, all of the drill cuttings were contaminated with the bentonite clay drilling mud.
- The contaminated and mixed drill cuttings are not useful for identifying the strata with highest permeability that are appropriate for monitoring
- The borehole geophysics were the best information for locating the well screens in well R-16 but the Schlumberger report shows that the well screens are not installed in the aquifer strata that are important for long-term monitoring.
- There is a need to install a new monitoring well near the location of well R-16 to monitor the aquifer strata that may form a pathway for contamination from LANL to travel beneath the Rio Grande to the Buckman Well Field, and important water supply for Santa Fe.

Figure 1-9. Schlumberger Geophysics for Well R-22. From LA-UR-04-6777.

