

January 2012

**Field Implementation Plan to  
Plug and Abandon Test Well  
(TW) 3**

35161



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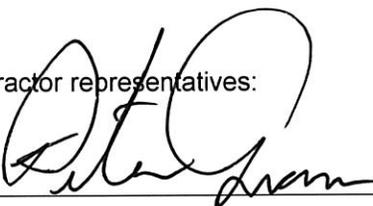
Responsible LANS representative:

Ted Ball		Project Manager	ADEP	2/2/12
Printed Name	Signature	Title	Organization	Date

Subcontract Technical Representative:

Dave Anderson		STR	ADEP	02/02/2012
Printed Name	Signature	Title	Organization	Date

Responsible subcontractor representatives:

Peter Gram		Program Manager	TerranearPMC	02/02/2012
Printed Name	Signature	Title	Organization	Date

Andrew Crowder		Project Manager	TerranearPMC	2/2/12
Printed Name	Signature	Title	Organization	Date

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## **1.0 INTRODUCTION**

This field implementation plan provides technical guidance for field activities associated with the plugging and abandonment of Test Well (TW) 3 located in Los Alamos, New Mexico as shown in Figure 1.0-1. This field implementation plan is an addendum to the Field Implementation Plan to Plug and Abandon Wells and Boreholes SHB 1, SHB 3, SHB 4, Test Hole (TH) 5, TH 6, the Beta Hole, the Sigma Mesa Well, borehole H-19, and the TA-21 Distillation Hole. Abandonment of TW-3 will be consistent with the requirements and guidelines of Sections IV.B.1.b.v and X.D (Well Abandonment) of the Compliance Order on Consent (the Consent Order).

Specific details including pre-abandonment activities and well construction and abandonment details of TW-3 are presented below.

## **2.0 PRE-ABANDONMENT ACTIVITIES**

The following activities will be conducted prior to mobilizing well abandonment crews and equipment onsite.

### **2.1 Removal of Appurtenances**

All aboveground and belowground appurtenances will be removed, including pumps, transducers, data loggers, control panels, concrete surface pads, etc.

### **2.2 Inspection and Geophysical Data Collection**

TW-3 will be inspected with a downhole video camera and a natural gamma ray log will be collected to document the existing conditions. Final water-level measurements will also be collected.

## **3.0 WELL CONSTRUCTION, CURRENT CONDITIONS, AND ABANDONMENT**

This section describes the location, construction, current disposition, and the methods that will be employed to plug and abandon TW-3.

### **3.1 TW-3 Well Construction and Current Conditions**

TW-3 was drilled by the cable tool method in 1949 in order to monitor the regional aquifer in Los Alamos Canyon. TW-3 was drilled to 815 ft below ground surface (bgs) (Purtymun 1995, 045344). TW-3 has a 6-in. diameter screened section located between 805 and 815 ft bgs. The screen section is swaged into the bottom of 10-in. casing which extends from ground surface to 805 ft bgs. A 16-in. diameter surface casing is located between ground surface and 33 ft bgs.

TW-3 is open to approximately 810 ft bgs with an approximate static water level of 790 ft bgs.

Figure 3.1-1 is a well construction diagram depicting the construction details of TW-3.

### **3.2 TW-3 Plugging and Abandonment**

TW-3 will be plugged and abandoned per the direction of the New Mexico Environment Department (NMED).

A total depth and depth to water measurement will be made and recorded.

Initially, the 10-in. casing and 6-in. swaged screen section will be filled with Portland cement grout to approximately 300 ft bgs. The 10-in. casing will be cut at approximately 275 ft bgs and removed from the hole. If the upper 275 ft of 10-in. casing is able to be removed, hydrated bentonite chips will be installed from the top of the cement (at approximately 300 ft bgs) to approximately 50 ft bgs. If the upper 275 ft of 10-in. casing is not able to be removed, it will be perforated between 170 and 270 ft bgs and neat cement will be installed through the perforated interval to 75 ft bgs. If the 10-in. casing is perforated, another attempt to cut and remove the casing will be made at 50 ft bgs. If this is the case, hydrated bentonite chips will be installed in the open hole between 75 and 40 ft bgs. A 33-ft (long) piece of 16-in. casing is installed as a surface conductor and does not appear to be cemented in place. An attempt will be made to remove the entire piece of 16-in. casing. Hydrated bentonite chips will be installed in the open borehole from 40 to 10 ft bgs with neat cement installed from 10 to 2 ft bgs.

### **3.3 Surface Completion**

TW-3 will be cement-grouted to within 2.0 ft of ground surface. A 2-ft X 2-ft X 2-ft concrete surface pad will be installed at ground surface with a brass survey marker and will be surveyed in accordance with the 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.

### **4.0 WASTE**

All IDW generated during implementation of this work plan will be managed in accordance with applicable Environmental Programs–Waste and Environmental Services (EP-WES) and Environmental Protection Water Quality and Resource Conservation Recovery Group (ENV-RCRA) SOPs. These SOPs incorporate the requirements of all applicable U.S. Environmental Protection Agency (EPA) and NMED regulations, DOE orders, and Laboratory requirements. Documents applicable to the characterization and management of IDW are the following:

- EP-ERSS-SOP-5022, Characterization and Management of Environmental Restoration Project Waste ([http://int.lanl.gov/environment/all/docs/qa/ep\\_qa/EP-ERSS-SOP-5022.pdf](http://int.lanl.gov/environment/all/docs/qa/ep_qa/EP-ERSS-SOP-5022.pdf));
- the NMED-approved Notice of Intent (NOI) Decision Tree for Drilling, Development, Rehabilitation, and Sampling Purge Water; and
- the NMED-approved NOI decision Tree for IDW Solids from Construction of Wells and Boreholes.

A Waste Characterization Strategy Form (WCSF) will be prepared by LANS in accordance with EP-ERSS-SOP-5022 and will provide more detailed information on waste descriptions, quantities, handling, and disposition. All wastes generated during the TW-3 project will be managed according to the WCSF.

### **5.0 REPORTING**

A brief report will be prepared detailing the methods used, presenting borehole logs (video and natural gamma), quantities of materials used, and providing the final abandonment details. Figures depicting the location of the abandoned well and backfill completion will also be included in the report.

## 6.0 REFERENCES

- Gardner, J.N., T. Kolbe, and S. Chang, January 1993. "Geology, Drilling, and Some Hydrologic Aspects of Seismic Hazards Program Core Holes, Los Alamos National Laboratory, New Mexico," Los Alamos National Laboratory report LA-12460-MS, Los Alamos, New Mexico. (Gardner et al. 1993, 012582)
- LANL (Los Alamos National Laboratory), December 4, 2009. "Information on Wells and Boreholes, Los Alamos National Laboratory and Surrounding Area," Los Alamos National Laboratory document LA-UR-09-7521, Los Alamos, New Mexico. (LANL 2009, 107626)
- LANL (Los Alamos National Laboratory), November 2010. "Work Plans to Abandon Wells and Boreholes at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-10-6972, Los Alamos, New Mexico (LANL 2010, 111131)
- NMED (New Mexico Environment Department), July 30, 2010. "Requirement to Plug and Abandon Wells and Boreholes at Los Alamos National Laboratory," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M. Graham (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2010, 110427)
- 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)
- Purtymun, W.D., and A.S. Swanton, February 5, 1998. "Engineering, Geology, and Construction Data of Twenty-Five Test Holes and Test Wells on and Adjacent to the Pajarito Plateau," draft, Los Alamos National Laboratory, Los Alamos, New Mexico. (Purtymun and Swanton 1998, 099096)

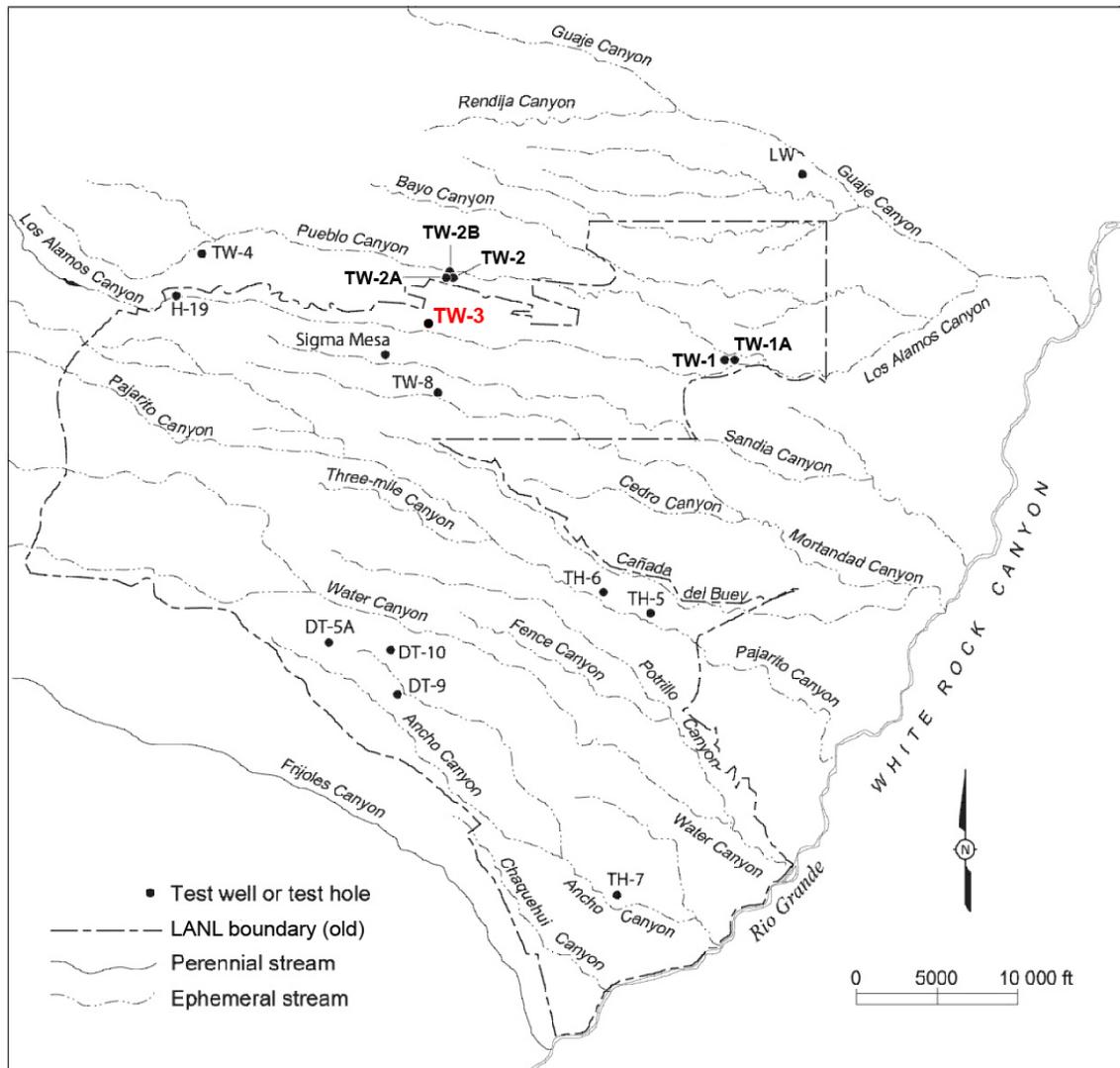


Figure 1.0-1 General location of TW-3

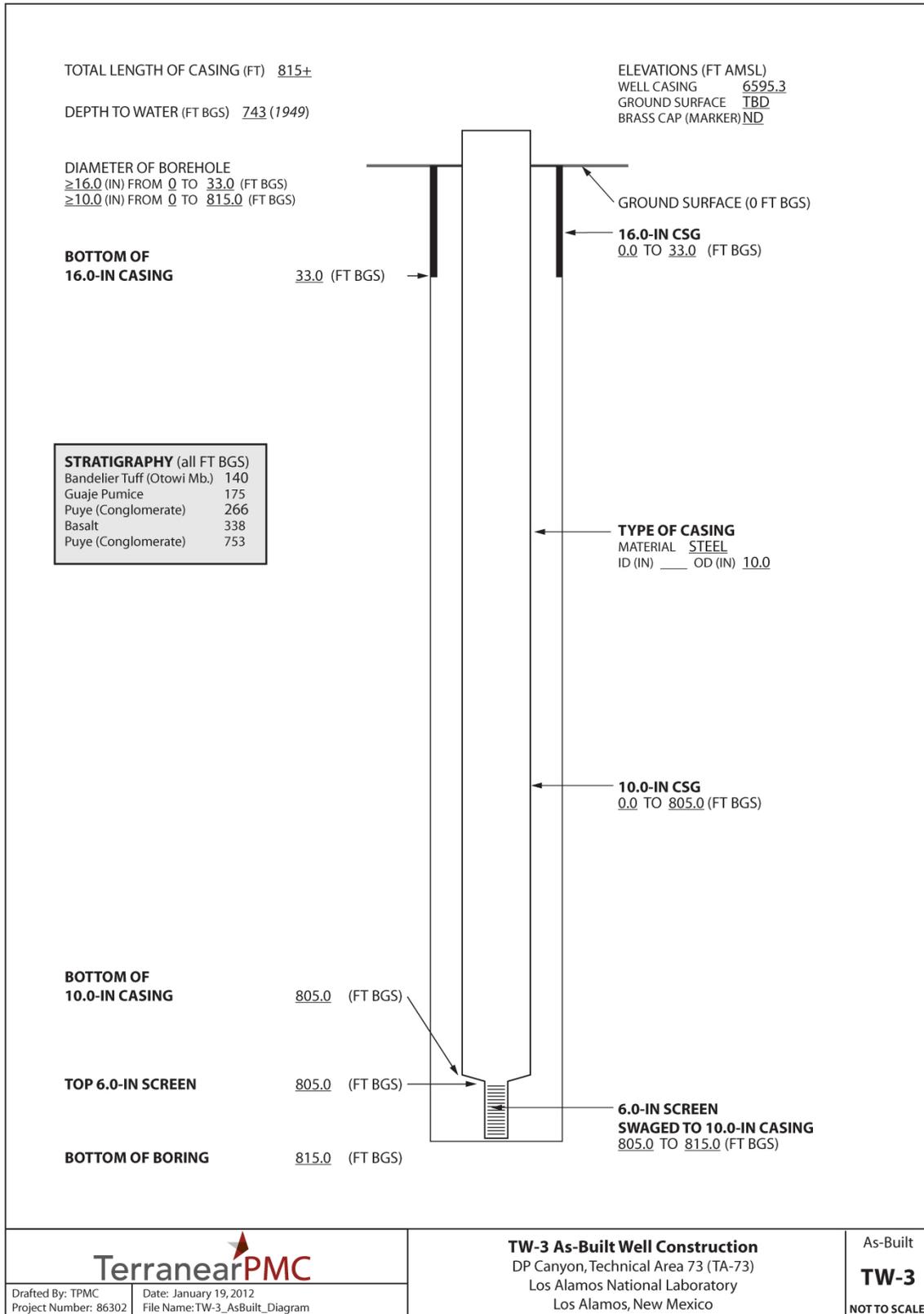


Figure 3.1-1 TW-3 as-built construction diagram