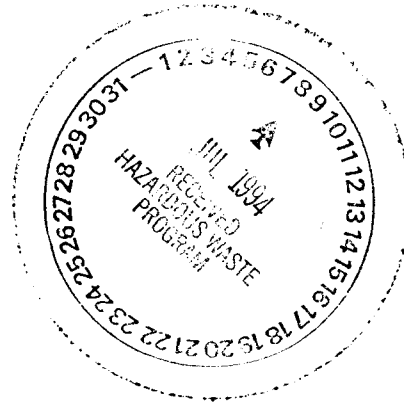


# Public Service Company of New Mexico



July 5, 1994

Certified Mail  
Return Receipt Requested

Ms. Teri Davis  
New Mexico Environment Department  
Hazardous and Radioactive Materials Bureau  
525 Camino de Los Marquez  
Santa Fe, NM 87502

Dear Ms. Davis:

Subject: Person Generating Station (NMT360010342),  
Production Well Closure Report

Enclosed please find one copy of Well Plugging Report For Production Wells Located at Person Station and Reeves Station, in Bernalillo County, New Mexico, Plugged From November 1992 to October 1993. This report was prepared by METRIC Corporation, which supervised the closure of the production wells. A copy of this report was filed with the State Engineers Office in Albuquerque.

This report is being provided to the HRMB because of the role that the Person Station production wells may have played in the ground water contamination at Person Station. If you have any questions, please feel free to contact me at 848-2998.

Sincerely,

Ron D. Johnson  
Sr. Environmental Scientist

RDJ:rdj  
enclosure

WELL PLUGGING REPORT FOR  
PRODUCTION WELLS LOCATED AT  
PERSON STATION AND REEVES STATION  
IN BERNALILLO COUNTY, NEW MEXICO  
PLUGGED FROM NOVEMBER 1992 TO OCTOBER 1993

PREPARED FOR  
PUBLIC SERVICE COMPANY OF NEW MEXICO

PREPARED BY  
METRIC CORPORATION  
ALBUQUERQUE, NEW MEXICO

JUNE 1994

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Six large production wells located at Person Station and one small construction water well located at Reeves Station were plugged during the period from November 1992 to October 1993. The six wells at Person Station were plugged as a part of decommissioning of the power plant and additionally because the wells are within or adjacent to a shallow groundwater contamination plume at the site. The small construction water well at Reeves Station was plugged because it is no longer in use.

The first step in plugging the wells was to conduct a review of Public Service Company of New Mexico (PNM) records and New Mexico State Engineer Office records.

### Person Station Wells

Since the records for the Person Station Wells were found to be inconsistent, the decision was made to remove the existing turbine pumps from the wells and perform color TV logs and caliper logs to establish the dimensions and conditions of the wells.

The logs together with available records indicate that two of the wells (Person #1 and Person #5) had liners placed in them subsequent to their original construction. The information also indicated that five of the wells (Person #1, #3, #4, #5 and #6) had significant amounts of fill in them (see TABLES 1 and 2).

The fill was bailed from the wells using a 6-inch sand pump. Well Person #3 had 247 feet of fill which consisted primarily of pea gravel. It is believed that the gravel was deliberately placed in the well to reduce sand production. The fill in the other wells consisted primarily of sand which probably passed through the screen into the wells.

Following removal of the fill from the five wells at Person Station, a second series of color TV logs were performed to establish the locations of the screened intervals (See TABLES 1 & 2).

Since well Person #2 is located underneath 116kV powerlines and adjacent to a switch yard, it was necessary to build a safety structure over the well service rig to protect the operators from the electrical hazards.

The screened intervals in each well were brushed with a properly sized wire brush to remove rust and scale. The existing perforations were subjected to 50 passes of the wire brush.

The unscreened intervals of each well were perforated up to a level about 40 feet above the water table (see TABLE 2). Person Wells #2,3,4, and 6 were perforated with appropriately sized casing knives. Four perforations spaced at 90° were made every four feet vertically.

Well Person #6 was filled with bentonite drilling fluid prior to perforation to prevent the fine grained gravel pack material from spilling into the well during perforation.

Since Person Wells #1 and #5 were found to have liners in them, they were perforated using two shaped charges spaced at 180° at intervals of four feet vertically. The reason for using shaped charges was to ensure that the original outer casing was also perforated to allow the cement grout to impregnate the original outer gravel pack.

Following perforation, each well was plugged with 5% bentonite cement grout having a weight of 13.0 to 13.5 lbs/gal. The grout was placed with a 2-inch diameter tremie pipe. When each well was filled with cement, the tremie pipe was removed; each well was capped and pressure grouted to a pressure of 100 psi.

The chronology of plugging activities for the Person Station wells is presented in Exhibit 1.

### Reeves Station Well

Ten feet of fill was bailed from Reeves Well #3. The fill consisted of sand which probably passed through the screen (see TABLES 1 & 2).

Following removal of fill from the well, the screened interval was brushed with 50 passes of a properly sized wire brush to remove rust and scale from the existing perforations.

The unscreened interval in Reeves #3 was perforated up to a level about 40 feet above the water table (see TABLE 2). The well was perforated with a casing knife. Four perforations spaced at 90° were made every four feet vertically.

Following perforation, the well was plugged with 5% bentonite cement grout having a weight of 13.0 to 13.5 lbs./gal. The grout was placed with a 2-inch diameter tremie pipe. When the well was filled with cement, the tremie pipe was removed; the well was capped and pressure grouted to a pressure of 100 psi.

The chronology of plugging activities for the Reeves Station well is presented in Exhibit 2.

Table 2 shows that each well accepted a significantly larger volume of cement than was required to fill the casings, indicating that the gravel packs were adequately sealed.

## EXHIBIT 1

### CHRONOLOGY OF PLUGGING ACTIVITIES

#### PERSON WELLS 1, 2, 3, 4, 5, and 6

11-25-92 to 1-2-93	Remove turbine pumps and well pits from wells 1, 3, 4, and 6. Note: Wells 2 and 5 were not equipped.
1-5-93	Run color TV logs in all wells.
1-12-93	Run caliper logs in all wells.
2-26-93 to 4-22-93	Bail fill from wells 1, 3, 4, 5, and 6.
6-3-93	Run color TV logs in wells 1, 3, 4, 5, and 6.
5-28-93 to 6-2-93	Build safety structure over well 2 to protect against electrical hazard from 116kV wires above well.
6-2-93 to 9-2-93	Brush, perforate and plug wells 1, 2, 3, 4, 5 and 6.

**EXHIBIT 2**  
**CHRONOLOGY OF PLUGGING ACTIVITIES**  
**REEVES WELL 3**

<b>9-3-93 to 9-13-93</b>	<b>Remove submersible pump from Well 3.</b>
<b>9-13-93 to 9-14-93</b>	<b>Bail fill from Well 3.</b>
<b>9-28-93 to 10-1-93</b>	<b>Brush, perforate and plug well 3.</b>

TABLE 1  
WELL DATA

PNM WELL NUMBER	ORIGINAL FILE NUMBER	CURRENT FILE NUMBER	WELL DIAMETER (INCHES)	TOTAL DEPTH		SCREENED INTERVALS (ft.)
				REPORTED (ft.)	MEASURED (ft.)	
PERSON #1	RG-50	RG-50	13 3/8 0-250 12 1/4 250-300 7 3/4 300-696	728	696	250-696
PERSON #2	RG-51	RG-50-S	15 3/8 0-325 11 3/8 325-607	550?	607	250-550 (2)
PERSON #3	RG-52	RG-50-S-2	13 1/4 0-916	920	916	313-553 633-916
PERSON #4	RG-1903	RG-50-S-3	15 1/4 0-350 11 3/4 350-874	867	874	352-398 508-638 439-457 775-812 479-497
PERSON #5	--	RG-50-S (1)	13 1/4 0-465 7 3/4 465-722	727	722	242-314 427-461 467-722
PERSON #6	RG-50-S-4	RG-50-S-4	17 1/4 0-843	855	843	512-812
REEVES #3	RG-721	RG-721	6 0-305	304	305	150-305

(1) Although State Engineer Office Files are unclear, Person #5 appears to be under file RG-50-S. Person #2 was abandoned in 1963 and Person #5 was drilled in 1964 possibly to replace Person #2.

(2) Reported Screened Interval. No perforations were visible from TV log.



TABLE 2  
WELL PLUGGING DATA

PNM WELL NUMBER	FILL REMOVED (ft.)	SCREENED INTERVALS (ft.)	KNIFE PERFORATED INTERVALS (ft.)	EXPLOSIVES PERFORATED INTERVALS (ft.)	CEMENT VOLUME	
					CALCULATED(2) (bags)	USED (bags)
PERSON #1	620-696	250-696	--	78-246	233	400
PERSON #2	--	250-550 (1)	76-607	--	346	430
PERSON #3	669-916	313-553 633-916	180-309 557-629	--	492	1126
PERSON #4	858-874	352-398 508-638 439-457 775-812 479-497	178-348 501-504 402-435 642-771 461-475 816-874	--	471	1089
PERSON #5	652-722	242-314 427-461 467-722	--	124-238 318-423	297	489
PERSON #6	804-843	512-812	176-508	--	768	1101
REEVES #3	295-305	150-305	65-150	--	34	66

(1) Report Screened Interval. No perforations were visible from TV Logs.

(2) Assuming cement weight = 13.25 lbs/gal