

**TABLE 1**  
Southwest Alluvium Performance Monitoring Program, 2011 Operating Year  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Well	Use <sup>1</sup>	Water Level	Water Quality	NRC POC	Purpose
509 D	Monitor	X	X	Y	Seepage extent
624	Monitor	X	X		Downgradient background, seepage extent
627	Monitor	X	X		Downgradient background, seepage extent
632	Monitor	X	X	Y	Seepage extent
801 <sup>2</sup>	Pumping (idled)	X	X		Seepage and saturation extent
802	Pumping (idled)	X	X		Seepage and saturation extent
803	Pumping (idled)	X	X		Seepage and saturation extent
805	Monitor	X			Water level only
807	Monitor	X			Water level only
808 <sup>3</sup>	Pumping (idled)	X	X		Seepage extent
EPA 23	Monitor	X	X	Y	Problematic completion
EPA 25	Monitor	X	X		Downgradient background, seepage extent
EPA 28	Monitor	X	X	Y	Seepage extent
GW 1	Monitor	X	X	Y	Seepage extent
GW 2	Monitor	X	X	Y	Seepage extent
GW 3	Monitor	X	X	Y	Downgradient background, seepage extent
Total		16	14		

Eliminated From Monitoring				Reason for Elimination
GW 4	X	X		Dry
EPA 22A			Y	Dry
29A				Dry
639				Dry
642				Dry
644				Dry
645				Dry
804				Not needed, use 632
806				Not needed, use 805
EPA 27				Dry

Notes:

- 1 Pumping wells turned off in January 2001 after final baseline samples were collected. Well 801 is the exception, see Note 2.
- 2 Well 801 was turned off at the end of July 1999 because it met decommissioning criteria. Sample collection ceased after the first quarter 2000. Well 801 water quality is included in the test program, therefore sampling recommenced January 2001 and has continued through 2003.
- 3 Well 808 was not included in the Performance Monitoring Program prior to the NA Test, therefore no data are available prior to January 2001.

**TABLE 2**  
Detected Constituents in Southwest Alluvium, October 2011  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Chemical Name	Action Level	Unit	0509 D	0624	0627	0632	0801	0802	0803	0808	EPA 23	EPA 25	EPA 28
ALUMINUM	5	mg/l						0.2					
AMMONIA (AS N)		mg/l	2.3 D			0.6 D	2.8 D		2.5 D	0.6 D	0.7 D		
ARSENIC	0.05	mg/l	0.006					0.002	0.003	0.003		0.002	
BICARBONATE (HCO <sub>3</sub> )		mg/l	2420	1420	559	1790	1400	1900	1750	1920	1150	1110	771
CALCIUM		pci/l	918	694	509	604	552	618	664	729	668	770	532
CHLORIDE	250	mg/l	368 D	208 D	39 D	235 D	204 D	185 D	166 D	178 D	99 D	106 D	127 D
COBALT	0.05	mg/l											
GROSS ALPHA	15	mg/l				0.8	0.8						
LEAD-210	1												
MAGNESIUM		mg/l	434	408	227	793	644	892	755	680	376	228	466
MANGANESE	2.6	mg/l	3.7	0.19	0.02	2.64	4.13	1.18	2.12	1.2	5.68	0.27	0.74
NICKEL	0.05	mg/l											
NITRATE (NO <sub>3</sub> )	190	mg/l	8.9 D	74 D	96 D	70 D	11.2 D	107 D	44 D	83 D	0.5	80 D	28 D
PH (FIELD)		su	6.47	6.68	6.99	6.5	6.51	6.49	6.51	6.46	6.64	6.93	6.82
PH (LAB)		su	7.65	7.49	7.7	7.39	7.19	7.52	6.79	6.77	7.81	7.46	7.59
POTASSIUM		mg/l	13	6	6	10	12	6	14	6	11	8	11
RADIUM-226		pci/l	0.3		0.15	0.6	0.47			0.15	0.15		0.4
RADIUM-228			1.1			2			1.1				
RADIUM 226 & 228	5	pci/l	1.4		0.15	2.6	0.47		1.1	0.15	0.15		0.4
SELENIUM	0.01												
SODIUM		mg/l	430	279	460	406 D	354	362 D	301	338	146	190	227
SULFATE (SO <sub>4</sub> )	2125	mg/l	2170 D	2240 D	2420 D	3410 D	3290 D	3560 D	3350 D	3000 D	2410 D	1840 D	2890 D
THORIUM-230	5												
TOTAL DISSOLVED SOLIDS (LAB)	4800	mg/l	5600 D	4990 D	4260 D	7050 D	6000 D	7470 D	6450 D	6550 D	4460 D	4120 D	4910 D
TOTAL TRIHALOMETHANES	80	ug/l				3.16	2.39	17.2	9.64	4.16			
URANIUM	0.3	mg/l	0.226	0.0308	0.0184	0.0742	0.037	0.119	0.11	0.122	0.0296	0.113	0.0461



**TABLE 2**  
Detected Constituents in Southwest Alluvium, October 2011  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Chemical Name	Action Level	Unit	EPA 28 FD	GW 1	GW 2	GW 3	SBL-01
ALUMINUM	5	mg/l				0.4	0.1
AMMONIA (AS N)		mg/l		0.7 D	0.4 D		0.2 D
ARSENIC	0.05	mg/l		0.003	0.007	0.013	
BICARBONATE (HCO3)		mg/l	646	1830	2080	1550	415
CALCIUM		pci/l	536	721	613	896	510
CHLORIDE	250	mg/l	124 D	232 D	208 D	170 D	77 D
COBALT	0.05	mg/l					0.02
GROSS ALPHA	15	mg/l		0.8			0.5
LEAD-210	1						
MAGNESIUM		mg/l	458	631	1130	276	1140
MANGANESE	2.6	mg/l	0.63	0.1	1.56	1.65	3.57
NICKEL	0.05	mg/l					0.09
NITRATE (NO3)	190	mg/l	26 D	89 D	16 D	91 D	41 D
PH (FIELD)		su	6.88	6.59	6.33	6.71	6.62
PH (LAB)		su	7.4	7.51	7.27	7.54	7.49
POTASSIUM		mg/l	11	6	15	9	14
RADIUM-226		pci/l	0.32				0.28
RADIUM-228				0.93	0.99		2.1
RADIUM 226 & 228	5	pci/l	0.32	0.93	0.99		2.38
SELENIUM	0.01					0.003	
SODIUM		mg/l	232	419 D	397 D	344	301 D
SULFATE (SO4)	2125	mg/l	2960 D	2950 D	4590 D	2240 D	5690 D
THORIUM-230	5						
TOTAL DISSOLVED SOLIDS (LAB)	4800	mg/l	4860 D	6530 D	8490 D	5230 D	8720 D
TOTAL TRIHALOMETHANES	80	ug/l		2.38	6.08		
URANIUM	0.3	mg/l	0.0384	0.104	0.0834	0.22	0.0119

**TABLE 3**

Southwest Alluvium Saturated Thickness, October 2011  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

<b>Well</b>	<b>Water Level Measurement Date</b>	<b>SW Alluvium Unsaturated Thickness</b>	<b>SW Alluvium Saturated Thickness</b>	<b>SW Alluvium Percentage Saturated</b>
0509 D	10/3/2011	77.84	32.16	29%
0624	10/4/2011	51.27	23.73	32%
0627	10/4/2011	58.70	12.30	17%
0632	10/3/2011	43.91	23.09	34%
0801	10/3/2011	49.33	11.17	18%
0802	10/3/2011	47.20	34.30	42%
0803	10/3/2011	62.21	55.79	47%
0805	10/12/2011	49.72	70.28	59%
0807	10/12/2011	55.31	44.69	45%
0808	10/3/2011	48.80	83.20	63%
EPA 23	10/3/2011	52.90	67.10	56%
EPA 25	10/4/2011	51.71	18.29	26%
EPA 28	10/4/2011	61.25	16.75	21%
GW 1	10/3/2011	60.70	16.30	21%
GW 2	10/3/2011	54.52	35.48	39%
GW 3	10/4/2011	53.03	3.97	7%
SBL-01	10/4/2011	47.38	17.62	27%



**TABLE 4**  
Summary of Operational Data  
Southwest Alluvium Extraction Wells 1989 to 2001  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Well No.	Annual Average Pumping Rate (gallons per minute)												1990-2001
	1990 <sup>(1)</sup>	1991 <sup>(2)</sup>	1992 <sup>(3)</sup>	1993 <sup>(4)</sup>	1994 <sup>(5)</sup>	1995 <sup>(6)</sup>	1996 <sup>(7)</sup>	1997 <sup>(8)</sup>	1998 <sup>(9)</sup>	1999 <sup>(10)</sup>	2000 <sup>(11)</sup>	2001 <sup>(12)</sup>	
801 <sup>(13)</sup>	1.2	0.5	0.4	0.2	0.2	0.1	0.1	0.1	0.08	0.08	0.00	0.00	0.25
802	11.1	12.5	11.9	9.0	9.8	9.7	9.1	10.1	11.02	9.62	9.31	5.80	9.91
803	2.0	2.6	2.5	3.0	3.2	3.5	3.1	2.9	3.84	3.56	3.83	3.68	3.14
808 <sup>(14)</sup>		10.0	15.5	19.9	15.6	12.3	12.2	7.2	4.34	3.50	2.50	3.35	9.67
Total Pumping Rate	14.3	25.6	30.3	32.1	28.8	25.6	24.5	20.3	19.29	16.76	15.64	11.94	22.98
Volume Pumped (millions of gallons) <sup>(15)</sup>	7.4	12.4	17.2	18.1	15.7	12.9	12.2	9.2	9.0	7.5	7.7	1.7	131.0

Notes:

1. Average pumping rate calculated for the period between October 13, 1989, and October 12, 1990.
2. Average pumping rate calculated for the period between October 13, 1990, and October 11, 1991, except Well 808, which calculated for the period between June 26, 1991 (i.e., well startup) and October 11, 1991.
3. Average pumping rate calculated for the period between October 12, 1991, and October 8, 1992.
4. Average pumping rate calculated for the period between October 9, 1992, and October 8, 1993.
5. Average pumping rate calculated for the period between October 9, 1993, and October 14, 1994.
6. Average pumping rate calculated for the period between October 15, 1994, and September 29, 1995.
7. Average pumping rate calculated for the period between September 30, 1995, and September 27, 1996.
8. Average pumping rate calculated for the period between September 28, 1996, and September 26, 1997.
9. Average pumping rate calculated for the period between September 27, 1997, and September 25, 1998.
10. Average pumping rate calculated for the period between October 02, 1998, and September 27, 1999.
11. Average pumping rate calculated for the period between September 28, 1999, and September 29, 2000.
12. Average pumping rate calculated for the period between September 30, 2000, and January 12, 2001.
13. Well 801 decommissioned at the end of July 1999.
14. Well 808 began operation on June 26, 1991.
15. Data obtained from system flowmeter.

Source: Earth Tech, December 2002, Figure 2.1

**TABLE 5**

Southwest Alluvium Groundwater Velocities, October 2011  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

**Well Pair 805 and 624**

Groundwater Elevations: 6860.33 (Well 805) and 6846.89 (Well 624) ft amsl  
Separation Distance: 1902 ft  
Average Linear Horizontal Hydraulic Gradient: 0.0071  
Velocity 1 = 55 ft/yr  
Velocity 2 = 42 ft/yr  
Average Velocity = 49 ft/yr

**Well Pair 805 and 627**

Groundwater Elevations: 6860.33 (Well 805) and 6833.11 (Well 627) ft amsl  
Separation Distance: 3203 ft  
Average Linear Horizontal Hydraulic Gradient: 0.0085  
Velocity 1 = 64 ft/yr  
Velocity 2 = 49 ft/yr  
Average Velocity = 57 ft/yr

**Well Pair 624 and SBL 1**

Groundwater Elevations: 6846.89 (Well 624) and 6845.74 (Well SBL 1) ft amsl  
Separation Distance: 500 ft  
Average Linear Horizontal Hydraulic Gradient: 0.0023  
Velocity 1 = 18 ft/yr  
Velocity 2 = 14 ft/yr  
Average Velocity = 16 ft/yr

Darcy seepage velocity calculation input values:

Mean hydraulic conductivity used =  $2 \times 10^{-3}$  cm/s (USFilter, 2004b).

Range of effective porosities = 27% (velocity 1) to 35% (velocity 2) (Canonie, 1989b; Earth Tech, 2002c).



**TABLE 6**

Predicted Performance of Southwest Alluvium Natural Attenuation, 2011  
 United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Constituent	Will Standards Be Met?			Remarks
	Section 2	Section 3	Section 10	
Manganese	No	Yes?	No	Section 2 includes onsite seepage impact; Section 3 includes offsite seepage impact with Mn attenuated and known background water with Mn below standard; Section 10 includes advancing front of seepage impact with Mn below standard but Mn slightly above standard occasionally in background Well SBL 1 (see Table 2 and Table A.1 in Appendix A)
Sulfate	No	No	No	Seepage impact areas limited by calcium availability; background waters characterized by exceedances unrelated to seepage impact; highest sulfate concentrations occur in background Well SBL 1 but note previous increases in impacted Well GW 2 (see Figures 9 and 16)
TDS	No	No	No	Governed by sulfate concentration; highest TDS concentrations occur in background Well SBL 1 but note previous increases in impacted Well GW 2 (see Figure 17)
Metals	Yes	Yes?	No	Attenuation by neutralization and adsorption. Section 2 includes onsite seepage impact with no exceedances; Section 3 includes offsite seepage impact and known background water with no exceedances; Section 10 includes advancing front of seepage impact with no exceedances but small exceedances of nickel in background Well SBL 1 continued during 2011 (see Table 2)
Radionuclides	Yes	Yes	Yes	Attenuation by neutralization and adsorption
TTHMs	Yes	Yes	Yes	Attenuated by degradation, dilution, dispersion

**TABLE 7**  
**Change in Zone 3 Saturated Thickness Over Time**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Well Number <sup>1</sup>	Saturated Thickness		Change (feet)	Change
	3rd Quarter 1989	4th Quarter 2011		
402	--	16.89	--	--
411	62.5	--	--	--
420	56.3	5.66	-50.6	-90%
424	--	17.74	--	--
446	--	7.21	--	--
501 B	20.2	--	--	--
502 B	48.5	--	--	--
504 B	40.1	1.73	-38.4	-96%
517	42.7	10.74	-31.9	-75%
518 <sup>2</sup>	37.2	--	--	--
613 <sup>3</sup>	67.2	19.20	-48.0	-71%
EPA 01	14.7	--	--	--
EPA 03	8.3	--	--	--
EPA 09	8.1	3.50	-4.6	-57%
EPA 11	30.8	--	--	--
EPA 12	10.7	--	--	--
EPA 13	24.8	6.83	-18.0	-72%
EPA 14	76.3	25.10	-51.2	-67%
EPA 15	60.8	--	--	--
EPA 17	1.4	--	--	--
EPA 18	2.5	--	--	--
701	46.1	15.49	-30.6	-66%
702	24.1	8.66	-15.4	-64%
703	32.6	18.72	-13.9	-43%
705	--	--	--	--
706	--	15.97	--	--
707	58.8	12.70	-46.1	-78%
708	49.8	14.04	-29.8	-60%
709	56.1	11.96	-44.1	-79%
710	45.5	11.62	-33.9	-74%
711	43.7	18.57	-25.1	-58%
712	39.1	5.04	-34.1	-87%
713	34.2	8.68	-25.5	-75%
714 <sup>4</sup>	50.1	14.56	-35.5	-71%
715 <sup>4</sup>	47.6	9.48	-38.1	-80%
716 <sup>4</sup>	58.3	16.74	-41.6	-71%
717 <sup>4</sup>	57.6	19.00	-38.6	-67%
718 <sup>4</sup>	51.1	15.33	-35.8	-70%
719 <sup>4</sup>	39.9	6.57	-33.3	-84%
720 <sup>4</sup>	33.1	0.41	-32.7	-99%
NBL-01 <sup>5</sup>	--	11.10	--	--
Average	37.3	12.04	-33.2	-73%

**Notes:**

- <sup>1</sup> Wells 9 D and 106 D were not included because they appear to be completed above the bottom of Zone 3. Measurements of saturated thickness in these wells may be less than actual conditions. Well 126 was not included because it was completed above the bottom of Zone 3. Measurements of saturated thickness in this well are less than actual conditions. Wells 600, 610 and 672 were not included because they were used solely as pumping wells, therefore no water level data are available. Well 608 was not included because no water level data were available in 1989 and the last water level measurement was in February 2000.
- <sup>2</sup> Water level for Well 518 last measured in January 2000.
- <sup>3</sup> Water level for Well 613 measured in 1983 before pumping started. Water level data for 1989 are not available because the well was pumpin
- <sup>4</sup> Water levels for the Stage II wells were measured June 1991 when wells were installed. Not included in 1989 average saturated thickness calculation.
- <sup>5</sup> Well NBL-01 installed in July 2001 and first water level measured in August 2001.
- Shading indicates saturated thickness greater than 25 feet.
- " indicates that no data is available.



**TABLE 8**

Estimated Mass Removal by Extraction Well Pumping in Zone 3, December 2010 Through November 2011  
 United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Well	Water Pumped (gallons)	SO4 (kg)	NO3 as N (kg)	Chloroform (g)	Al (kg)	As (g)	Be (g)	Co (g)	Pb (g)	Mn (kg)	Mo (g)	Ni (g)	U (g)	Total Radium (mci)	Pb-210 (mci)	Gross Alpha (mci)
RW-11	226,150	2,397	0.0	0.0	0.0	5	0	180	0	4	86	205	115	0	0.00	9
RW-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
RW-13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
RW-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
RW-16	220,568	3,940	26.7	3.5	104	3.3	83	801	0	18	0	743	21.8	29	1.92	16
RW-17	268,097	4,018	0.00	0.0	0	0.0	0	365	0	6	0	457	6	17	0.00	4
PB-2	45,919	666	0.00	0.0	1	0.9	0	90	0	1	87	115	11	0	0.00	3
RW-A	223,886	2,398	0.00	0.0	0.0	0.0	0	212	0	4	169	229	89	0	0.00	12
NW-1	3,175	40	0.00	0.0	0.1	0.0	0	9	1	0	0	10	0	0	0.02	0
NW-2	257,593	3,256	0.00	0.0	5.8	0.0	10	702	49	7	0	829	37	31	1.66	14
NW-3	0	0	0.00	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0.00	0
NW-4	94,526	1,195	0.00	0.0	2.1	0.0	4	258	18	2	0	304	14	11	0.61	5
NW-5	0	0	0.00	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0.00	0
<b>Total</b>	<b>1,339,915</b>	<b>17,911</b>	<b>27</b>	<b>3</b>	<b>114</b>	<b>9</b>	<b>97</b>	<b>2,617</b>	<b>67</b>	<b>42</b>	<b>342</b>	<b>2,892</b>	<b>293</b>	<b>89</b>	<b>4</b>	<b>61</b>

**Notes:**

Wells are located on Figure 38 of the *2011 Annual Review Report*.

Wells RW-12, RW-13, and RW-15 were not pumped, because of negligible capacity.

Units for radionuclides (mci) are not mass units proper; mci are milli-Curies, or thousandths of Curies.

In developing this table, masses were estimated from analyses of October 2011 samples from RW-11 and RW-A. Masses for RW-16 and RW-17 were estimated from concentrations in samples from nearby wells 717 and 719. Masses in the NW-series wells were estimated from concentrations in the sample from NBL-01

Nonradiological nondetects were assigned values of one-half the reporting limit.

Radiological results were assigned as reported (even if negative).

**TABLE 9**  
 Zone 3 Performance Monitoring Program, 2011 Operating Year  
 United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Well	Water Level	Water Quality	NRC POC	Purpose
<b>Continue Monitoring</b>				
420	X	X		Postmining-pretailings background, track plume.
711	X	X	Y	Track saturation and plume, replace 502 B based on results of low flow purge testing performed in January 2000.
504 B	X	X		Track saturation and plume, extensive data set.
517	X	X	Y	Track plume, extensive data set.
EPA 9	X			Extent of saturation, water quality not necessary.
EPA 13	X	X		Extent of saturation. Water quality added 2nd quarter 2001.
EPA 14	X	X		Postmining-pretailings background, track plume.
702	X			Water level only, track saturation.
710	X			Water level only.
712	X			Water level only.
713	X			Water level only.
714	X			Water level only.
613	X	X	Y	Extensive data set, track saturation and source.
701	X			Water level only (decommissioned pumper).
706	X			Water level only (decommissioned pumper).
707	X			Water level only (decommissioned pumper).
708	X	X	Y	Added to program 2nd quarter 2001.
717	X	X		Water level. Water quality added 2nd quarter 2001.
719	X	X		Water level. Water quality added 2nd quarter 2001.
<b>Additional Wells, Not Included In Original Performance Monitoring Program</b>				
402	X			Long-term water level for migration path.
424	X			Long-term water level for migration path.
446	X			Long-term water level for migration path.
NBL-01	X	X		Well drilled and installed June 2001. Water level and water quality to track downgradient extent of seepage.
Total	23	11		

Eliminated From Monitoring			Reason For Elimination
9 D			Dry
106 D			Dry
411			Oil, cannot get water level or sample.
501 B		Y	Dry
EPA 1			Dry
EPA 3		Y	Dry
EPA 11			Unuseable since 1990 - water level below pump, pump cemented in well.
EPA 12			Dry
EPA 15			Dry
EPA 17			Dry
EPA 18			Dry
126			Dry
502 B			Failed low-flow test, use 711
518		Y	Failed low-flow test, use 517
608			Not needed (formerly water level only)
703			Not needed (formerly water level only)
715			Not needed (formerly water level only)
709			Not needed (decommissioned pumper)
716			Not needed (pumper)
718			Not needed (pumper)
720			Not needed (decommissioned pumper)

Notes:

NRC POC = Nuclear Regulatory Commission Point of Compliance well

Source: Earth Tech, December 2002, Table 3.2



**TABLE 10**  
 Zone 3 Saturated Thickness, October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Well	Water Level Measurement Date	Zone 3 Unsaturated Thickness	Zone 3 Saturated Thickness	Zone 3 Percentage Saturated
0402	10/12/2011	46.11	16.89	27%
0420	10/11/2011	45.34	5.66	11%
0424	10/12/2011	55.26	17.74	24%
0446	10/12/2011	57.79	7.21	11%
0504 B	10/12/2011	64.27	<1.73 <sup>1</sup>	--
0517	10/10/2011	51.26	10.74	17%
0613	10/4/2011	48.80	19.20	28%
0701	10/12/2011	48.51	15.49	24%
0702	10/12/2011	72.34	8.66	11%
0703	10/12/2011	73.28	18.72	20%
0706	10/12/2011	62.03	15.97	20%
0707	10/12/2011	75.30	12.70	14%
0708	10/10/2011	70.96	14.04	17%
0709	10/12/2011	65.04	11.96	16%
0710	10/12/2011	69.38	11.62	14%
0711	10/11/2011	66.43	18.57	22%
0712	10/12/2011	80.96	5.04	6%
0713	10/12/2011	64.32	8.68	12%
0714	10/12/2011	23.44	14.56	38%
0715	10/12/2011	25.52	9.48	27%
0716	10/12/2011	47.26	16.74	26%
0717	10/11/2011	52.00	19.00	27%
0718	10/12/2011	31.67	15.33	33%
0719	10/11/2011	38.43	6.57	15%
0720	10/12/2011	53.09	0.41	1%
EPA 09	10/10/2011	46.50	3.50	7%
EPA 13	10/10/2011	57.17	6.83	11%
EPA 14	10/4/2011	47.90	25.10	34%
IW-A <sup>2</sup>	10/12/2011	0.00	47.71	100%
MW-2	10/12/2011	49.33	11.10	18%
MW-3	10/12/2011	48.69	12.23	20%
MW-4	10/12/2011	46.58	<2 <sup>1</sup>	--
MW-5	10/12/2011	43.13	1.07	2%
MW-6	10/11/2011	38.94	8.77	18%
MW-7	10/11/2011	30.14	24.33	45%
NBL-01	10/11/2011	31.75	12.56	28%
NBL-02	10/10/2011	51.57	26.00	34%
NW-1	10/11/2011	38.22	6.07	14%
NW-2	10/11/2011	33.61	17.51	34%
NW-3	10/11/2011	33.34	24.47	42%
NW-4	10/11/2011	36.39	13.97	28%
NW-5	10/11/2011	33.15	24.86	43%
PB-02	10/11/2011	38.31	9.29	20%
PB-03	10/11/2011	32.70	14.27	30%
PB-04	10/11/2011	34.53	12.47	27%
RW-11	10/11/2011	44.76	17.08	28%
RW-15	10/12/2011	66.05	<4.9 <sup>1</sup>	--
RW-16	10/12/2011	56.18	6.92	11%
RW-17	10/12/2011	70.46	2.77	4%
RW-A	10/11/2011	56.61	11.26	17%
Z3 M-01	10/12/2011	42.98	0.20	0%
Z3 M-02	10/12/2011	43.94	0.00	0%

<sup>1</sup>Dry well

<sup>2</sup>The depth to water in injection well IW-A reflects the well bore and not the water level in the surrounding rock mass. Full saturation may occur in the near vicinity of the well screen, but this is a highly localized condition.

**TABLE 11**  
 Zone 3 Field Parameter Measurements of Tracking Wells, Through October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A
Oct-02	0	58	194	224	330			5,010	4,040	3,730	3,670	3,160			5.06	7.09	7.10	7.10	7.18			NA	25.3	23.8	113.0	NA		
Nov-02	0	41	188	299	285			4,930	3,080	2,860	2,510	3,120			5.30	5.95	6.47	6.60	6.51			14.0	26.5	24.3	23.8	21.0		
Dec-02	22.9	57	178	283	NA			5,040	4,120	3,950	3,330	NA			5.40	5.75	6.40	6.68	NA			22.9	26.2	23.2	25.7	NA		
Jan-03	0	34	148	239	311			5,180	3,930	3,716	3,460	3,300			5.54	4.97	6.92	6.41	6.43			NA	NA	22.9	22.8	NA		
Feb-03	0	58	193	324	328			3,620	2,910	2,660	2,570	2,300			3.52	5.57	6.96	6.92	6.53			26.7	30.1	30.4	28.5	21.5		
Mar-03	NA	60	188	311	326			4,000	3,090	2,890	2,680	2,500			3.49	5.59	6.71	6.95	6.73			26.4	30.1	29.7	29.7	22.1		
Apr-03	NA	34	172	310	321			4,210	4,460	4,220	3,820	2,650			5.14	5.46	5.94	6.26	6.87			26.6	30.5	30.0	30.1	21.6		
May-03	0	34	167	293	322			5,510	4,460	4,210	3,820	3,390			5.01	5.36	5.99	6.31	6.37			28.0	31.0	30.2	31.9	32.7		
Jun-03	0	21	129	267	316			5,470	4,480	4,060	3,820	3,380			4.28	5.15	6.17	6.20	6.36			27.7	30.8	29.6	30.6	28.0		
Jul-03	NA	32	126	257	311			5,480	4,560	4,330	3,920	3,500			5.35	5.28	5.85	6.32	6.29			26.5	30.6	29.7	31.1	25.8		
Aug-03	NA	5	100	234	307			5,210	4,280	3,960	3,630	3,230			5.14	5.18	5.76	6.18	6.28			27.0	30.4	29.7	31.1	23.1		
Sep-03	NA	7	91	218	295			5,260	4,400	4,160	3,770	3,340			4.68	5.23	5.79	6.28	6.39			28.0	30.5	29.3	31.5	26.7		
Oct-03	NA	0	65	211	295			5,360	4,450	4,210	3,860	3,410			5.48	5.18	5.81	6.34	6.41			27.7	21.0	30.0	32.7	26.8		
Nov-03	NA	0	73	197	285			5,290	4,510	4,210	3,880	3,490			5.09	5.25	5.81	6.24	6.42			27.3	30.6	30.2	32.1	24.8		
Dec-03	NA	NA	41	166	265			5,370	4,540	4,290	3,910	3,510			4.41	5.14	5.77	6.76	6.48			27.7	30.2	29.8	31.5	25.2		
Jan-04	NA	NA	73	194	327			5,340	4,610	4,310	4,030	3,550			5.39	5.16	5.82	7.51	6.50			32.5	30.5	29.5	32.6	26.8		
Feb-04	NA	NA	50	190	323			5,410	4,630	4,260	3,970	3,590			3.40	3.81	5.99	6.25	6.40			28.0	30.1	30.3	32.7	26.6		
Mar-04	NA	15	48	179	316			5,560	4,730	4,500	4,130	3,780			3.89	4.75	5.70	6.31	6.29			27.5	30.1	30.2	33.3	25.9		
Apr-04	NA	15	48	174	315			5,370	4,560	4,380	4,010	3,630			5.36	5.08	5.52	6.03	6.34			28.1	32.1	32.3	36.2	31.1		
May-04	NA	0	27	166	312			6,190	4,390	4,160	3,870	3,510			3.26	5.02	5.34	5.88	6.23			28.4	33.2	32.8	38.1	31.9		
Jun-04	NA	0	22	152	294			5,510	4,530	4,400	4,040	3,750			4.48	4.92	5.46	6.05	6.40			28.2	32.6	32.9	37.7	34.1		
Jul-04	NA	0	20	140	274			5,450	4,510	4,420	4,000	3,740			5.48	5.04	5.58	6.05	6.45			27.8	31.9	32.8	36.9	34.1		
Aug-04	NA	0	17	124	272			5,500	4,450	4,380	4,040	3,710			3.77	4.26	5.45	5.98	6.39			28.3	31.0	32.3	36.2	33.7		
Sep-04	0	0	20	117	251			5,480	4,500	4,430	4,030	3,790			4.04	4.46	5.48	6.05	6.45			28.5	30.9	32.5	36.0	34.0		
Oct-04	0	0	18	102	245			5,520	4,540	4,560	4,110	3,940			5.56	5.15	5.62	6.08	6.47			27.8	31.5	32.0	30.2	33.2		
Nov-04	0	0	17	98	245			5,370	4,400	4,340	3,950	3,840			4.46	4.23	5.47	5.99	6.37			28.8	31.4	32.3	35.6	32.0		
Dec-04	0	0	13	87	207			5,290	4,340	4,290	3,920	3,790			4.46	4.28	5.44	5.95	6.36			28.3	31.2	31.0	34.0	30.0		
Jan-05	11	0	32	79	198			5,700	4,610	4,520	4,110	4,080			5.31	3.92	5.46	6.03	6.29			29.1	31.3	31.3	33.8	34.2		
Feb-05	0	0	7	68	196			5,680	4,720	4,550	4,130	3,980			3.92	3.24	5.31	5.98	6.37			28.0	31.5	31.3	33.4	30.0		
Mar-05	0	0	0	60	169			5,540	4,510	4,350	3,990	3,960			3.84	3.72	5.32	5.93	6.27			24.5	31.3	32.0	33.7	35.2		
Apr-05	8	0	29	70	154			5,350	4,300	4,340	3,980	3,890			4.46	4.25	5.56	5.88	6.31			27.8	32.4	32.2	34.0	35.1		
May-05	0	0	0	67	150			5,300	4,290	4,170	3,840	3,810			4.33	3.78	4.53	5.85	6.30			28.5	32.6	30.6	33.4	34.6		
Jun-05	0	0	0	65	138			5,400	4,330	4,280	3,980	3,910			4.06	3.93	4.63	5.77	6.15			28.1	32.1	31.0	33.6	34.7		
Jul-05	0	0	0	67	123			5,020	4,150	4,100	3,780	3,640			5.10	3.55	4.04	5.58	5.88			27.9	31.2	31.9	33.1	34.3		
Aug-05	0	0	0	57	122			5,270	4,320	4,360	3,880	3,730			3.40	3.39	3.29	5.89	6.62			28.4	31.5	31.6	34.2	34.2		
Sep-05	0	NA	0	54	111			5,430	NA	4,230	3,920	3,830			3.58	NA	4.15	5.80	6.24			28.4	NA	31.3	33.2	34.1		
Oct-05	0	NA	0	51	107			5,630	NA	4,410	4,220	4,030			5.45	NA	4.99	6.00	6.26			28.3	NA	31.3	33.6	34.0		
Nov-05	0	NA	5	48	96			5,550	NA	4,180	4,080	3,940			3.75	NA	5.45	5.76	6.25			28.7	NA	33.0	34.2	34.2		
Dec-05	0	NA	22	44	77			5,670	NA	4,190	4,060	3,950			3.38	NA	5.92	5.97	6.43			33.3	NA	35.6	34.1	31.6		
Jan-06	0	NA	28	89	128			5,720	NA	4,110	4,330	4,250			5.22	NA	6.30	6.36	6.47			29.4	NA	45.0	35.2	32.2		
Feb-06	0	NA	101	117	126			5,670	NA	4,350	4,250	4,040			3.83	NA	6.19	6.14	6.38			27.5	NA	41.3	37.5	49.0		
Mar-06	0	NA	190	133	132			5,850	NA	4,290	4,310	4,060			4.14	NA	6.19	6.18	6.18			27.6	NA	43.7	39.9	38.8		
Apr-06	0	NA	244	139	119			5,710	NA	4,280	4,310	5,710			5.21	NA	6.24	6.17	6.10			28.9	NA	44.3	41.0	34.0		
May-06	0	NA	246	138	112			5,740	NA	4,180	4,290	4,130			4.12	NA	6.16	6.02	6.01			28.3	NA	45.1	42.0	33.9		
Jun-06	0	104	249	138	130			5,680	4,280	4,160	4,450	4,080			4.12	5.86	6.14	6.08	6.02			29.0	44.3	45.8	42.0	32.8		
Jul-06	0	134	230	217	138			5,140	4,020	3,750	4,060	3,810			5.06	5.90	6.13	6.14	6.06			29.4	40.7	45.0	50.5	37.0		
Aug-06	0	160	232	227	137			5,340	4,050	3,860	4,140	3,850			3.89	6.04	6.17	6.34	6.24			27.6	43.1	47.2	50.0	37.8		
Sep-06	0	137	235	278	155			5,350	3,960	3,740	3,980	3,870			3.41	6.00	6.16	6.45	6.49			27.8	38.7	27.8	50.5	41.2		
Oct-06	0	141	279	323	133			5,230	4,040	3,810	4,000	4,000			5.11	6.02	6.24	6.42	6.21			29.9	39.0	47.3	51.4	35.0		
Nov-06	0	159	229	304	155			5,390	4,180	3,840	4,020	4,020			3.64	6.01	6.96	6.46	6.59			27.8	38.7	46.2	53.1	44.0		



**TABLE 11**  
 Zone 3 Field Parameter Measurements of Tracking Wells, Through October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A
Dec-06	0	151	233	328	183			5,680	4,290	4,090	4,230	4,360			3.42	6.18	7.05	6.67	6.44			28.6	38.8	47.1	54.0	48.3		
Jan-07	0	149	243	335	196			5,310	4,170	3,920	4,010	4,220			5.23	6.13	6.70	6.56	6.36			29.0	37.0	48.0	53.0	49.0		
Feb-07	0	144	205	272	178			5,340	4,150	3,800	3,900	4,160			4.16	6.50	6.64	6.62	6.43			28.0	37.0	49.0	53.0	51.0		
Mar-07	0	NA	258	310	210			5,500	NA	3,970	4,120	4,200			3.84	NA	6.99	6.92	6.56			29.0	NA	50.0	53.0	50.0		
Apr-07	0	161	302	345	217			5,210	3,990	3,830	3,950	4,060			5.25	6.01	6.33	6.44	6.18			28.0	38.0	46.0	44.0	52.0		
May-07	0	173	288	317	223			5,260	3,980	3,750	3,850	3,860			3.91	6.05	6.48	6.52	6.61			28.0	36.0	48.0	52.0	54.0		
Jun-07	0	169	310	311	191			4,200	3,230	3,020	2,980	3,030			3.38	6.03	6.86	6.85	6.44			28.0	35.0	50.0	51.0	52.0		
Jul-07	0	156	293	322	199			4,750	3,400	3,530	3,410	3,520			5.10	6.16	6.37	6.51	6.40			29.0	36.0	51.0	49.0	54.0		
Aug-07	0	171	293	306	150			4,860	3,770	3,550	3,570	3,650			3.92	5.91	6.45	6.41	6.06			28.0	36.0	53.0	52.0	55.0		
Sep-07	0	184	307	304	135			4,940	3,610	3,570	3,660	3,720			3.58	6.09	6.60	6.46	6.77			29.0	35.0	54.0	53.0	57.0		
Oct-07	20	161	329	307	185			4,630	3,300	3,170	3,200	3,350			3.29	6.39	6.51	6.64	6.20			29.0	36.0	55.0	52.0	50.0		
Nov-07	0	159	295	258	109			4,400	3,530	3,170	3,160	3,350			3.69	5.88	6.94	6.52	6.20			29	36	53	50	53		
Dec-07	0	148	316	290	55			5,440	3,990	3,890	3,980	4,110			3.49	6.04	6.80	6.65	6.05			29	34	51	51	53		
Jan-08	NA	NA	289	294	107	302	350	NA	NA	4,190	4,220	4,470	3,720	3,870	NA	NA	6.41	6.37	5.88	6.69	6.27	NA	NA	54	54	50	37	43
Feb-08	NA	NA	189	299	13	313	NA	NA	NA	3,900	4,050	4,280	3,710	NA	NA	NA	6.80	7.00	5.34	6.64	NA	NA	NA	57	49	53	36	NA
Mar-08	NA	143	139	323	0	312	602	NA	4,220	3,900	4,060	4,370	3,630	3,870	NA	6.20	6.45	6.82	5.16	6.92	6.30	NA	32	57	50	57	35	50
Apr-08	NA	116	156	362	96	306	NA	NA	3,800	3,590	3,680	3,840	3,260	NA	NA	5.86	6.18	6.58	5.83	6.51	NA	NA	32	58	50	49	36	NA
May-08	NA	NA	169	337	29	312	406	NA	NA	3,900	4,040	3,950	3,690	3,980	NA	NA	6.21	6.50	5.97	6.29	6.47	NA	NA	58	53	51	36	37
Jun-08	NA	0	293	287	133	302	453	NA	4,570	3,890	3,990	3,940	3,640	3,880	NA	3.84	6.40	6.53	6.12	6.26	6.15	NA	35	54	54	48	35	37
Jul-08	NA	0	268	302	162	313	228	NA	4,140	3,740	3,770	3,850	3,450	3,730	NA	5.94	6.39	7.28	6.33	6.54	6.38	NA	36	49	53	50	33	41
Aug-08	NA	99	201	289	208	316	349	NA	4,230	3,800	3,840	3,790	3,620	3,810	NA	5.83	6.42	6.88	6.46	6.50	6.35	NA	35	52	51	48	34	40
Sep-08	NA	106	211	290	244	310	327	NA	4,170	3,650	3,720	3,340	3,510	3,740	NA	5.86	6.89	7.18	7.09	6.39	6.32	NA	37	42	48	46	35	38
Oct-08	NA	98	84	301	294	321	337	NA	4,080	4,000	3,770	3,820	3,560	3,760	NA	5.74	5.85	6.69	6.31	6.54	6.37	NA	30	50	55	48	38	38
Nov-08	NA	80	50	127	246	335	338	NA	4,120	3,570	3,900	3,730	3,560	3,750	NA	5.55	5.87	6.16	6.41	6.43	6.24	NA	32	53	57	46	34	35
Dec-08	NA	85	39	79	268	351	346	NA	3,990	3,500	4,040	3,660	3,530	3,700	NA	6.05	5.68	5.76	6.86	6.48	6.26	NA	34	52	57	44	36	38
Jan-09	NA	63	10	15	295	351	344	4950	4,190	3,690	4,100	3,860	3,580	3,800	5.5	5.41	4.02	5.41	6.24	6.55	6.25	NA	30	50	57	43	40	39
Apr-09	NA	55	0	174	271	338	385	5110	4,010	4,960	3,900	3,560	3,600	3,710	5.59	5.31	2.88	6.21	6.80	6.43	6.36	NA	29	42	53	40	38	38
Feb-09	NA	74	0	16	268	344	361	NA	4,200	4,220	3,910	3,420	3,580	3,730	NA	5.64	3.03	5.00	6.55	6.43	6.35	NA	29	51	58	43	39	40
Mar-09	NA	89	12	0	306	343	351	NA	4,170	3,430	3,850	3,750	3,580	3,750	NA	5.74	4.56	4.87	7.29	6.44	6.30	NA	31	39	58	40	38	37
May-09	NA	83	0	205	258	337	332	NA	4,250	4,980	3,800	3,600	3,530	3,820	NA	5.80	2.51	6.35	6.99	6.41	6.31	NA	28	51	50	44	36	36
Jun-09	NA	83	0	287	235	334	318	NA	4,010	4,410	3,520	3,400	3,410	3,660	NA	5.60	2.52	7.32	6.98	6.43	6.30	NA	29	51	48	44	39	37
Jul-09	NA	77	0	244	227	328	308	4670	4,030	4,540	3,680	3,370	3,470	3,660	3.56	5.70	2.50	6.45	7.16	7.91	6.30	NA	29	>40	48	50	40	38
Aug-09	NA	50	0	226	85	312	293	NA	4,440	5,200	3,760	3,640	3,490	3,860	NA	5.33	2.51	6.62	6.64	6.58	6.21	NA	29	40	48	51	41	37
Sep-09	NA	65	NA	51	59	306	277	NA	4,370	NA	3,570	3,720	3,390	3,910	NA	5.40	NA	9.18	6.60	6.44	6.30	NA	29	NA	49	59	43	37
Oct-09	NA	94	NA	111	178	335	280	4860	3,980	NA	3,530	3,960	3,360	3,470	5.5	5.60	NA	6.26	5.65	6.41	5.80	NA	28	NA	42	48	41	36
Nov-09	NA	96	0	87	198	252	294	NA	4,260	2,230	3,500	3,970	3,260	3,760	NA	5.80	3.83	7.04	6.10	6.65	6.40	NA	28	7	42	46	127	37
Dec-09	NA	76	0	47	44	280	283	NA	4,350	4,640	3,490	3,950	3,350	3,720	NA	6.10	2.90	7.14	6.93	7.15	6.38	NA	29	41	40	48	97	37
Jan-10	NA	87	0	38	80	302	299	5020	4,460	4,300	3,600	4,150	3,460	3,850	4.56	5.50	2.76	5.45	6.31	6.39	6.06	NA	29	35	40	46	79	37
Feb-10	NA	89	0	22	55	306	272	NA	4,400	4,610	3,440	3,990	3,450	3,810	NA	5.90	3.00	6.26	6.39	6.50	6.27	NA	29	30	36	47	74	37
Mar-10	NA	94	0	28	69	321	282	NA	4,340	4,690	3,440	4,130	3,520	3,800	NA	5.80	2.93	6.62	5.38	6.48	6.42	NA	29	31	37	43	56	37
Apr-10	NA	71	0	234	0	330	265	NA	4,680	4,410	3,490	4,000	3,500	4,080	NA	5.42	2.95	6.38	5.40	6.67	6.10	NA	29	33	34	43	50	38
May-10	NA	72	0	194	0	340	268	NA	4,730	5,030	3,800	4,220	3,860	4,050	NA	5.76	2.67	7.48	3.25	6.14	6.34	NA	29	33	33	43	45	38
Jun-10	NA	66	0	182	0	338	251	NA	4,430	4,930	3,400	4,300	3,460	3,740	NA	5.60	2.74	7.67	2.95	6.66	6.40	NA	29	30	33	43	44	36
Jul-10	NA	81	0	262	0	354	248	5460	4,480	4,670	3,290	3,930	3,260	3,790	3.13	5.78	2.62	7.13	4.46	6.45	6.34	NA	29	30	33	41	44	38
Aug-10	NA	39	0	222	0	358	250	NA	4,330	5,020	3,440	4,340	3,450	3,770	NA	5.25	2.69	7.54	3.01	6.61	6.30	NA	29	32	31	40	42	36
Sep-10	NA	85	0	239	0	332	241	NA	4,450	5,020	3,410	4,250	3,500	3,750	NA	5.76	2.71	7.25	3.01	6.61	6.24	NA	28	32	29	40	45	36
Oct-10	NA	78	0	232	4	354	243	4610	4,710	4,260	3,340	4,090	3,300	3,910	3.88	5.29	2.89	7.12	2.97	6.59	5.99	NA	28	32	29	37	45	36
Nov-10	NA	60	0	210	0	355	224	NA	4,680	4,980	3,610	3,860	3,690	3,790	NA	5.71	2.90	6.67	4.51	6.42	6.41	NA	28	30	27	37	43	38
Dec-10	NA	56	NA	235	20	365	227	NA	4,720	NA	3,610	3,800	3,530	4,020	NA	5.66	NA	7.32	4.70	6.78	6.14	NA	28	NA	29	37	48	34
Jan-11	NA	55	NA	239	103	407	260	NA	5,030	NA	3,540	4,170	3,450	3,990	NA	5.70	NA	7.70	7.04	7.40	7.36	NA	28	NA	31	37	50	38



**TABLE 11**  
 Zone 3 Field Parameter Measurements of Tracking Wells, Through October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A
Feb-11	NA	57	NA	234	16	390	246	NA	4,600	NA	3,510	3,750	3,530	3,850	NA	5.66	NA	7.35	4.94	6.91	6.30	NA	28	NA	26	36	45	35
Mar-11	NA	35	0	237	0	397	245	NA	4,680	5,220	3,430	3,790	3,520	3,860	NA	5.40	2.71	7.43	4.07	6.75	6.36	NA	28	28	27	36	48	36
Apr-11	NA	78	0	262	0	402	247	NA	4,720	5,390	3,490	4,060	3,490	3,940	NA	5.87	2.80	6.96	5.71	6.68	6.35	NA	30	28	29	36	50	37
May-11	NA	76	0	223	0	401	239	NA	4,110	5,390	3,470	3,830	3,550	3,920	NA	5.76	2.65	7.42	3.91	6.81	6.65	NA	30	NA	30	36	51	39
Jun-11	NA	67	0	223	0	412	241	NA	4,710	5,340	3,450	3,820	3,510	3,910	NA	5.52	2.59	7.61	3.74	6.87	6.36	NA	30	30	29	34	51	37
Jul-11	NA	65	0	272	0	405	248	NA	4,650	5,640	3,240	4,040	3,450	3,840	NA	5.48	2.70	7.28	5.47	6.51	7.12	NA	30	33	29	35	50	38
Aug-11	NA	294	0	235	0	405	243	NA	3,770	5,640	3,610	4,440	3,700	3,880	NA	6.42	2.70	7.74	3.17	6.78	6.43	NA	38	33	28	34	49	38
Sep-11	NA	85	0	267	0	400	243	NA	4,600	5,610	3,440	4,380	3,530	3,830	NA	5.87	2.51	6.52	2.83	6.58	6.41	NA	30	33	28	37	50	38
Oct-11	NA	79	0	251	0	414	244	NA	4,580	5,540	3,380	4,200	3,490	3,830	NA	5.73	2.56	7.35	2.88	6.80	6.40	NA	30	32	28	36	51	37

Notes:  
 Parameter monitoring of wells NBL-2 and RW-A started in January 2008.  
 NA = not available (parameters not measured).



**TABLE 12**  
Zone 3 Field Parameter Measurements of NW-Series Wells, Through October 2011  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

	Bicarbonate (mg/L)					Conductivity (umhos/cm)					pH (s.u.)					Chloride (mg/L)				
Date	NW-1	NW-2	NW-3	NW-4	NW-5	NW-1	NW-2	NW-3	NW-4	NW-5	NW-1	NW-2	NW-3	NW-4	NW-5	NW-1	NW-2	NW-3	NW-4	NW-5
Jun-09	137	351	484	196	502	4,170	3,640	3,350	4,270	3,450	5.93	6.27	6.52	6.15	6.52	26	39	40	31	45
Jul-09	127	333	483	212	577	4,270	3,660	3,380	4,400	3,440	6.25	6.15	6.40	6.64	6.30	27	39	37	32	45
Aug-09	106	319	458	220	563	4,460	3,820	3,530	4,460	3,670	5.91	6.16	6.40	6.30	6.51	26	37	36	33	46
Sep-09	112	328	457	232	511	4,420	3,850	3,570	4,530	3,650	6.00	6.35	6.51	6.55	6.88	26	37	37	32	46
Oct-09	146	341	490	243	597	4,060	3,480	3,250	4,080	3,340	7.01	6.73	6.91	6.59	7.15	25	36	36	29	48
Nov-09	117	380	475	154	604	4,330	3,670	3,390	4,270	3,560	6.50	6.34	6.70	5.96	6.70	27	39	38	30	52
Dec-09	124	402	502	167	612	4,320	3,560	3,520	4,260	3,600	6.11	6.38	6.52	6.13	6.89	26	41	39	30	52
Jan-10	123	432	524	167	591	4,310	3,820	3,680	4,230	3,680	6.68	6.26	6.33	6.10	6.35	26	43	41	29	53
Feb-10	119	428	554	173	590	4,280	3,620	3,630	4,150	3,400	6.57	6.47	6.55	6.28	6.76	26	45	45	29	53
Mar-10	127	415	546	192	595	4,260	3,540	3,650	4,080	3,640	6.90	6.52	6.88	6.36	6.97	26	43	46	29	54
Apr-10	123	404	569	173	589	4,560	3,930	3,950	4,260	3,960	5.72	5.96	6.22	5.76	6.32	26	42	47	30	50
May-10	128	400	573	174	597	4,520	3,890	4,210	4,440	3,830	6.16	6.33	6.61	6.09	6.88	26	42	49	29	54
Jun-10	126	395	606	168	584	4,210	3,540	3,720	4,020	3,540	6.11	6.36	6.63	6.09	6.86	26	43	50	30	53
Jul-10	160	389	561	168	590	4,200	3,630	3,690	4,030	3,590	6.12	6.46	6.69	6.17	6.71	26	43	49	30	53
Aug-10	121	402	563	172	501	4,190	3,530	3,680	3,990	3,490	6.13	6.50	6.63	6.11	6.19	26	42	49	30	47
Sep-10	129	401	533	177	597	4,160	3,500	3,680	3,970	3,560	6.10	6.42	6.6	6.05	6.52	25	40	47	28	53
Oct-10	134	399	508	163	585	4,190	3,540	3,690	4,040	3,630	6.17	6.50	6.49	6.12	6.84	25	41	44	28	53
Nov-10	132	390	488	155	567	4,220	3,600	3,680	4,080	3,650	5.94	6.31	6.56	5.92	6.62	24	41	44	28	52
Dec-10	138	390	490	175	563	4,340	3,650	3,860	4,120	3,760	6.30	6.43	6.68	6.05	6.85	24	40	45	27	51
Jan-11	141	395	511	169	610	4,350	3,750	3,860	4,210	3,690	6.49	6.65	6.83	6.20	7.10	25	39	46	27	51
Feb-11	151	391	490	171	622	4,180	3,630	3,750	4,090	3,640	6.37	6.52	6.69	6.19	6.94	25	40	45	28	51
Mar-11	150	409	489	171	627	4,200	3,620	3,770	4,070	3,670	6.70	6.57	6.77	6.26	6.90	25	41	47	28	52
Apr-11	155	395	489	168	557	4,280	3,700	3,820	4,190	3,620	6.36	6.52	6.85	6.20	6.91	25	43	48	30	51
May-11	133	377	465	173	549	4,330	3,730	3,800	4,200	3,650	6.18	6.50	6.81	6.27	6.83	26	43	49	30	50
Jun-11	135	399	468	158	545	4,280	3,700	3,790	4,170	3,640	6.17	6.35	6.75	6.01	6.91	26	43	48	29	49
Jul-11	140	398	445	162	544	4,160	3,670	3,780	4,120	3,600	6.64	6.84	6.50	6.81	6.89	26	42	50	29	50
Aug-11	141	393	435	162	582	4,130	3,590	3,530	4,050	3,520	6.58	6.56	6.80	6.21	7.05	26	42	48	29	50
Sep-11	145	367	437	139	583	4,120	3,630	3,630	3,950	3,480	6.59	6.65	6.94	6.14	7.10	28	43	46	30	50
Oct-11	266	368	399	163	591	3,880	3,630	3,620	4,090	3,540	6.60	6.53	6.98	6.30	7.00	35	42	46	28	52



**TABLE 13**  
Zone 3 Seepage Migration Evaluation, 2011  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

End Point Well	Starting Point	Distance Between Both Points (ft)	Time for Onset		Travel Time (ft/yr)	Basis for Determining Onset Date for Seepage Impacts At Selected Points
			Seepage Impacts at Starting Point (date)	Seepage Impacts at End Point (date)		
420	North Cell	2,100	1980	Oct-02	95	Bicarbonate concentration greater than 500 mg/L
504 B	North Cell	2,450	1980	Jul-92	204	Bicarbonate concentration less than 100 mg/L
EPA 14	North Cell	1,520	1980	Apr-96	95	Bicarbonate concentration greater than 500 mg/L
PB 2	North Cell	3,080	1980	Oct-02	140	Bicarbonate concentrations first declining to 50 mg/L at Well PB 2
PB 2	504 B	630	Jul-92	Oct-02	61	Bicarbonate concentrations first declining to 50 mg/L at each well
PB 4	PB 2	52	Apr-03	Feb-04	60	Bicarbonate concentrations first persistently at or below 50 mg/L at each well
PB 4	PB 2	52	Jan-08	Nov-08	58	Bicarbonate concentrations again declined to below 50 mg/L at each well
			Geometric Mean		92	

End Point Well	Starting Point Well	Distance Between Both Points (ft)	Time for Onset		Net Migration Distance (ft)	Basis for Determining Onset Date for Seepage Impacts At Selected Points
			Seepage Impacts at Starting Point (date)	Seepage Impacts at End Point (date)		
NBL 1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	<p>Since December 2005, water quality in the northern tracking wells (including NBL 1) has varied significantly (for example, see the field bicarbonate measurements in Table 11 and the lab bicarbonate measurements shown in Figure 40). This reflects the influence of pumping systems (which have changed over time) and variable mixing of impacted water with background water drawn in from the west. Full seepage impact has occurred at PB 4 since Nov-08 (bicarbonate &lt; 50 mg/L) or Jan-09 (pH &lt; 5.0). To the north of this well, NBL 1 has shown strongly degraded water quality (in terms of both bicarbonate and pH (Table 11)) and multiple other constituents (see laboratory analytical summary sheet for 2011 in Appendix B; e.g., elevated gross alpha and cobalt). Based on these data, the leading edge of the impacted water is shown as passing through NBL 1 in Figure 35. Between impacted wells PB 4 and NBL 1, the water quality at PB 3 significantly improved during 2010 and this continued during 2011 (Table 11 and Appendix B), indicating the high degree of geochemical variability, sometimes at very close spacing, in the northern part of Zone 3.</p>



**TABLE 14**  
Detected Constituents in Zone 3, October 2011  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Chemical Name	Action Level	Unit	420	517	613	708	711	711 FD	717	719	EPA-13	EPA-14	MW-6	MW-7	NBL-01	NBL-2	NW-1	NW-2	NW-3	NW-4	NW-5	PB-2	PB-3	PB-4	RW-11	RW-A
ALUMINUM	5	mg/l	0.2	9.3	582	35	0.5	0.2	125	0.3		116			5.9							7.1	0.1	29.2		
AMMONIA (AS N)		mg/l		10.5 D	208 D	1.0 D	0.4 D	0.4 D	61 D	1.2 D	0.3 D	42.3 D			3.1 D							1.0 D	0.9 D	0.6 D	1.8 D	2.8 D
ARSENIC	0.05	mg/l					0.037	0.015	0.004		0.029					0.004						0.005	0.003	0.007	0.006	
BERYLLIUM	0.017	mg/l			0.18	0.04			0.1			0.11			0.01											
BICARBONATE (HCO3)		mg/l	481					7			44		191	459		386	246	337	375	150	545	46	237		209	220
CADMIUM	0.01	mg/l		0.012	0.033				0.015			0.01														
CALCIUM		mg/l	670	450	420	427	480	471	460	474	486	477			585	609						551	508	507	556	560
CHLORIDE	250	mg/l	54 D	43 D	135 D	30 D	17 D	16 D	71 D	31 D	43 D	67 D	32 D	53 D	32 D	53 D	36 D	43 D	47 D	29 D	59 D	30 D	28 D	31 D	38 D	39 D
COBALT	0.05	mg/l	0.01	0.89	1.86	0.55		0.28	0.96	0.36	0.07	0.96			0.72	0.04						0.52	0.09	0.65	0.21	0.25
GROSS ALPHA	15	pci/l	5.9	13.8	33.1	12.4	4.9	4.4	18.8	3.9	5.1	7.8			14	5.5						15.6	7.1	31.3	10.1	13.6
LEAD															0.05									0.63		
LEAD-210	1	pci/l			1.9				2.3			2.2			1.7									12.7		
MAGNESIUM		mg/l	140	459	682	578	449	450	516	610	839	568			316	181						485	232	375	308	301
MANGANESE	2.6	mg/l	1.5	10.9	53.1	13	4.71	5.02	21.2	5.56	7	18.4			6.96	1.5						6.3	4.07	6.06	4.68	5.1
MOLYBDENUM	1	mg/l	0.7				0.1	0.1			0.1					0.1						0.5	0.4	0.5	0.1	0.2
NICKEL	0.05	mg/l		0.98	1.76	0.67	0.27	0.26	0.89	0.45	0.2	0.84			0.85							0.66	0.13	0.91	0.24	0.27
NITRATE (NO3)	190	mg/l			5.2 D				32 D			25 D				12 D										
PH (FIELD)		su	6.58	3.58	3.05	3.54	4.81	4.84	4.14	4.53	5.90	<0	6.71	6.77	2.88	6.80	6.60	6.53	6.98	6.30	7.00	5.73	7.35	2.56	6.41	6.40
PH (LAB)		su	7.55	3.14	3.14	3.14	4.26	5.27	4.39	4.14	7.08	4.40	7.49	7.44	3.03	7.56	6.99	7.54	7.31	7.17	7.53	6.73	7.60	2.79	7.34	7.58
POTASSIUM		mg/l	7	12		14	11	11	13	14	14	11			11	8						12	10	12	11	10
RADIUM-226		pci/l	4.9	6.3	8.9	7.9	4	3.7	13	4.9	5.3	6.4			15	5.6						15	7	13	9.6	13
RADIUM-228		pci/l	6.8	12		4	6.3	6.5	22	12	7.1	1.4			17	8.2						15	4.6	9.5	13	15
RADIUM 226 & 228	5		11.7	18.3	8.9	11.9	10.3	10.2	35	16.9	12.4	7.8			32	13.8						30	11.6	22.5	22.6	28
SELENIUM	0.01	mg/l																						0.002		
SODIUM		mg/l	151	151	256 D	124	101	98	184	145	162	176			138	154						151	127	141	144	142
SULFATE (SO4)	2125	mg/l	2070 D	3960 D	9300 D	4700 D	3490 D	3420 D	4720 D	3960 D	4940 D	4950 D			3340 D	2160 D						3830 D	2330 D	5440 D	2800 D	2830 D
THORIUM-230	5	pci/l		2.4	710				1.4						0.5							1.8		25.7		
TOTAL DISSOLVED SOLIDS (LAB)	4800	mg/l	3410	5120 D	11600 D	5910 D	4840 D	4940 D	6200 D	5530 D	6700 D	6180 D	4130 D	3650	4170 D	3470	4090	3690	3750	4470 D	3660	5200 D	3490	6630 D	4130 D	4100
TOTAL TRIHALOMETHANES	80	ug/l		1.3	122				4.16			1.3														
URANIUM	0.3	mg/l	0.354	0.0841	0.942	0.0863	0.0163	0.0157	0.0261	0.0058	0.01	0.0156			0.0379	0.167						0.0632	0.192	0.239	0.134	0.105
VANADIUM	0.1	mg/l			1.9																					



**TABLE 15**  
Zone 1 Performance Monitoring Program, 2011 Operating Year  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Well <sup>1</sup>	Water Level <sup>2</sup>	Water Quality <sup>2</sup>	NRC POC	Purpose
<b>Continue Monitoring</b>				
515 A	X	X		Track transition area
604	X	X	Y	Track center of seepage
614	X	X	Y	Track transition area
EPA 2	X	X		Postmining-pretailings background water quality
EPA 4	X	X	Y	Postmining-pretailings background water quality
EPA 5	X	X	Y	Track transition area
EPA 7	X	X	Y	Track transition area, edge of saturation
EPA 8	X			Track edge of saturation
142	X	X		Premining background
143	X			Water level only, use 142
<b>Additional Wells, Not Included In Original Performance Monitoring Program</b>				
505 A	X			Long-term water level for migration path
502 A	X			Long-term water level for migration path
501 A	X			Long-term water level for migration path
504 A	X			Long-term water level for migration path
412	X			Long-term water level for migration path
Total	15	8		

<b>Eliminated From Monitoring</b>			<b>Reason For Elimination</b>
141			No longer useable, plugged during arroyo flooding
516 A		Y	Failed low-flow testing
619			Anomalous water quality and water level
615			Decommissioned pumper, not needed - use 515 A
616			Decommissioned pumper, not needed - use 604
617			Decommissioned pumper, not needed

Notes:

1. No wells within the tailings reclamation cap were included.
2. Water level and water quality monitored on a quarterly basis.



**TABLE 16**  
**Zone 1 Saturated Thickness, October 2011**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

<b>Well</b>	<b>Water Level Measurement Date</b>	<b>Zone 1 Unsaturated Thickness</b>	<b>Zone 1 Saturated Thickness</b>	<b>Zone 1 Percentage Saturated</b>
TWQ-142	10/11/2011	0.00	55.00	100%
TWQ-143	10/12/2011	0.00	52.00	100%
412	10/12/2011	0.00	76.00	100%
501-A	10/12/2011	10.16	54.84	84%
502-A	10/12/2011	0.00	59.00	100%
504-A	10/12/2011	7.57	60.43	89%
505-A	10/12/2011	0.00	46.00	100%
515-A	10/5/2011	27.82	13.18	32%
604	10/5/2011	25.23	19.77	44%
614	10/5/2011	23.18	21.82	48%
EPA-02	10/10/2011	20.80	29.20	58%
EPA-04	10/10/2011	18.40	36.60	67%
EPA-05	10/10/2011	29.42	19.58	40%
EPA-07	10/10/2011	30.00	53.00	64%
EPA-08	10/10/2011	27.88	38.12	58%

**TABLE 17**

Detected Constituents in Zone 1, October 2011  
 United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Chemical Name	Action Level	Unit	142	515 A	604	614	EPA-2	EPA-2 FD	EPA-4	EPA-5	EPA-7
ALUMINUM	5	mg/l	0.1	0.1	1.2						0.2
AMMONIA (AS N)		mg/l	0.4 D	40 D		131 D	0.4 D	0.4 D	0.9 D	3.8 D	
ARSENIC					0.003	0.002				0.012	
BICARBONATE (HCO <sub>3</sub> )		mg/l	266	727	17	1220	285	295	145	65	589
CALCIUM		mg/l	51	455	440	556	384	386	578	476	513
CHLORIDE	250	mg/l	17	360 D	57 D	278 D	21 D	21 D	37 D	40 D	218 D
COBALT	0.05	mg/l		0.02	0.17					0.03	0.03
GROSS ALPHA	15	pci/l		1.6	1.6	0.8	2.4	4.7	2.1	2.1	
LEAD-210	1	pci/l	0	0	0	0	0	0	0	0	0
MAGNESIUM		mg/l	26	1180	786	700	169	171	375	493	1000
MANGANESE	2.6	mg/l	0.02	11.6	7.03	0.77	0.9	1.53	2.56	1.19	2.66
NICKEL	0.05	mg/l		0.1	0.23						
NITRATE (NO <sub>3</sub> )	190	mg/l		44 D	70 D	129 D				6.9 D	129 D
PH (FIELD)		su	7.90	6.12	5.35	6.57	6.80	6.77	6.65	5.95	6.01
PH (LAB)		su	8.01	7.37	5.62	7.02	7.51	7.75	7.38	6.43	7.49
POTASSIUM		mg/l	4	20	12	15	7	7	9	7	9
RADIUM-226		pci/l	0.78	1.9	1.6	0.83	1.2	1.5	1.5	2	0.42
RADIUM-228				2.2	6.3	4	2.4	2.6	2.5	2.6	1.3
RADIUM 226 & 228	5	pci/l	0.78	4.1	7.9	4.83	3.6	4.1	4	4.6	1.72
SELENIUM						0.001					
SODIUM		mg/l	332	595 D	306	488 D	206	210	187	115	382 D
SULFATE (SO <sub>4</sub> )	2125	mg/l	684 D	5990 D	4590 D	3620 D	1790 D	1780 D	3070 D	3280 D	4710 D
TOTAL DISSOLVED SOLIDS (LAB)	4800	mg/l	1220	9740 D	6980 D	7040 D	2840	2820	4390 D	4670 D	7990 D
TOTAL TRIHALOMETHANES	80	ug/l		83.6	5.24	49.2					
URANIUM	0.3	mg/l		0.0074	0.0004	0.0455	0.0014	0.0023	0.0004	0.0007	0.0019

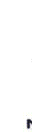
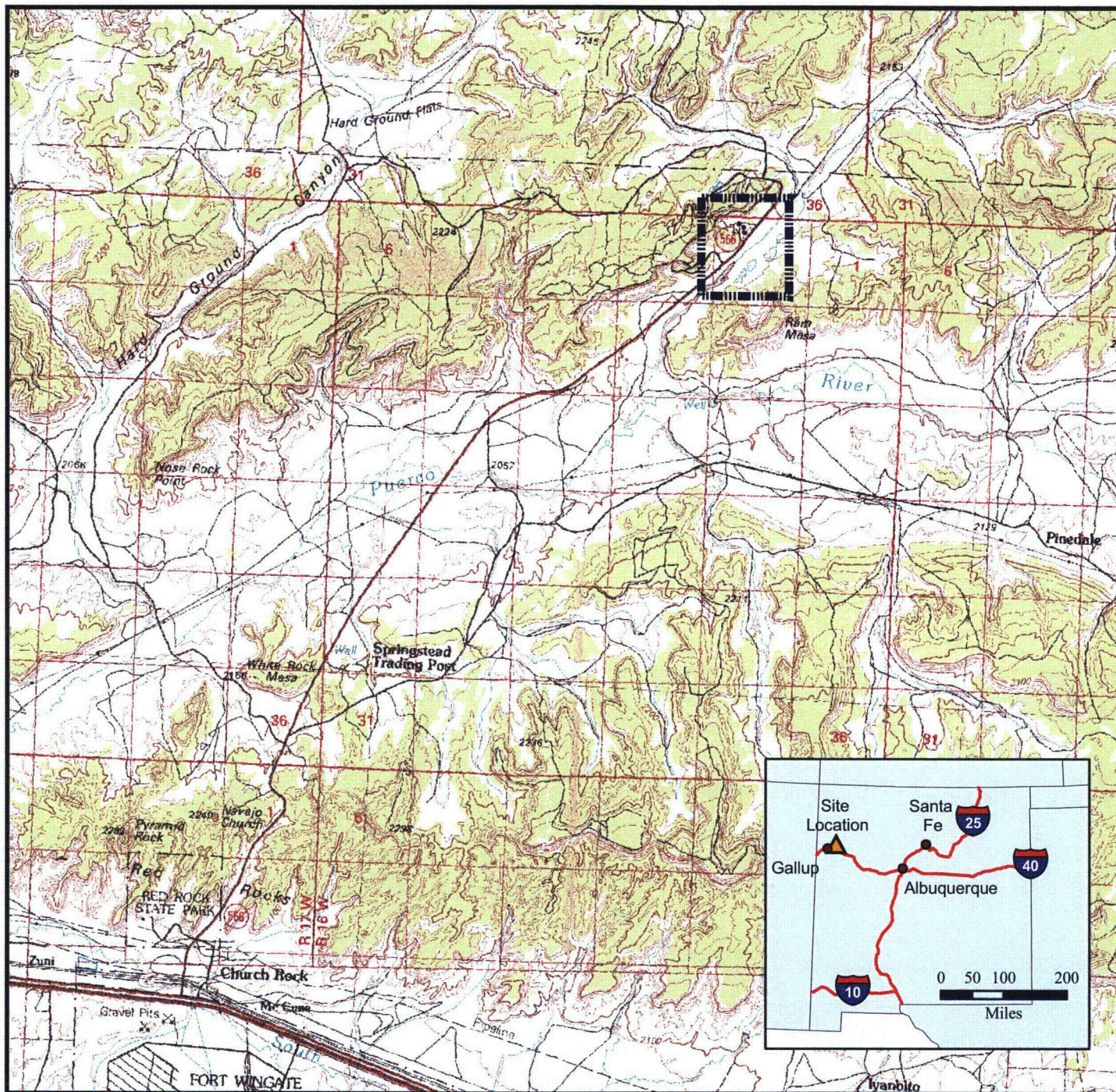


**TABLE 18**

Predicted Performance of the Zone 1 Natural System  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Constituent	Will Standards Be Met?		Remarks
	Section 1	Section 36	
Manganese	Maybe	Maybe	Dependent on bicarbonate availability
Sulfate	No	No	Limited by calcium availability
TDS	No	No	Governed by sulfate concentration
Metals	Yes	Yes	Attenuated by neutralization and adsorption
Radionuclides	Yes	Yes	Attenuated by neutralization and adsorption
TTHMs	Yes	Yes	Attenuated by degradation, dilution, dispersion





# **LEGEND**

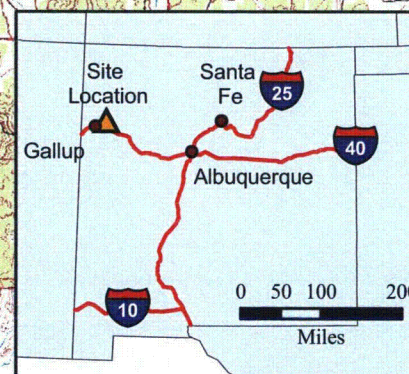
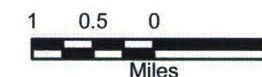
■ ■ ■ ■ ■ Approximate Site Location

## **NEW MEXICO INSET LEGEND**

- Major City
- ▲ Church Rock Site Location
- Interstate Highway
- State Boundary

## **Notes:**

1. Topographic basemap taken from the United States Geologic Survey 30x60 minute, 1:100,000 scale, Gallup, New Mexico Topographic Map, 1981.
2. Data for New Mexico Inset map taken from ESRI Data & Maps 2002 CD-ROM set.



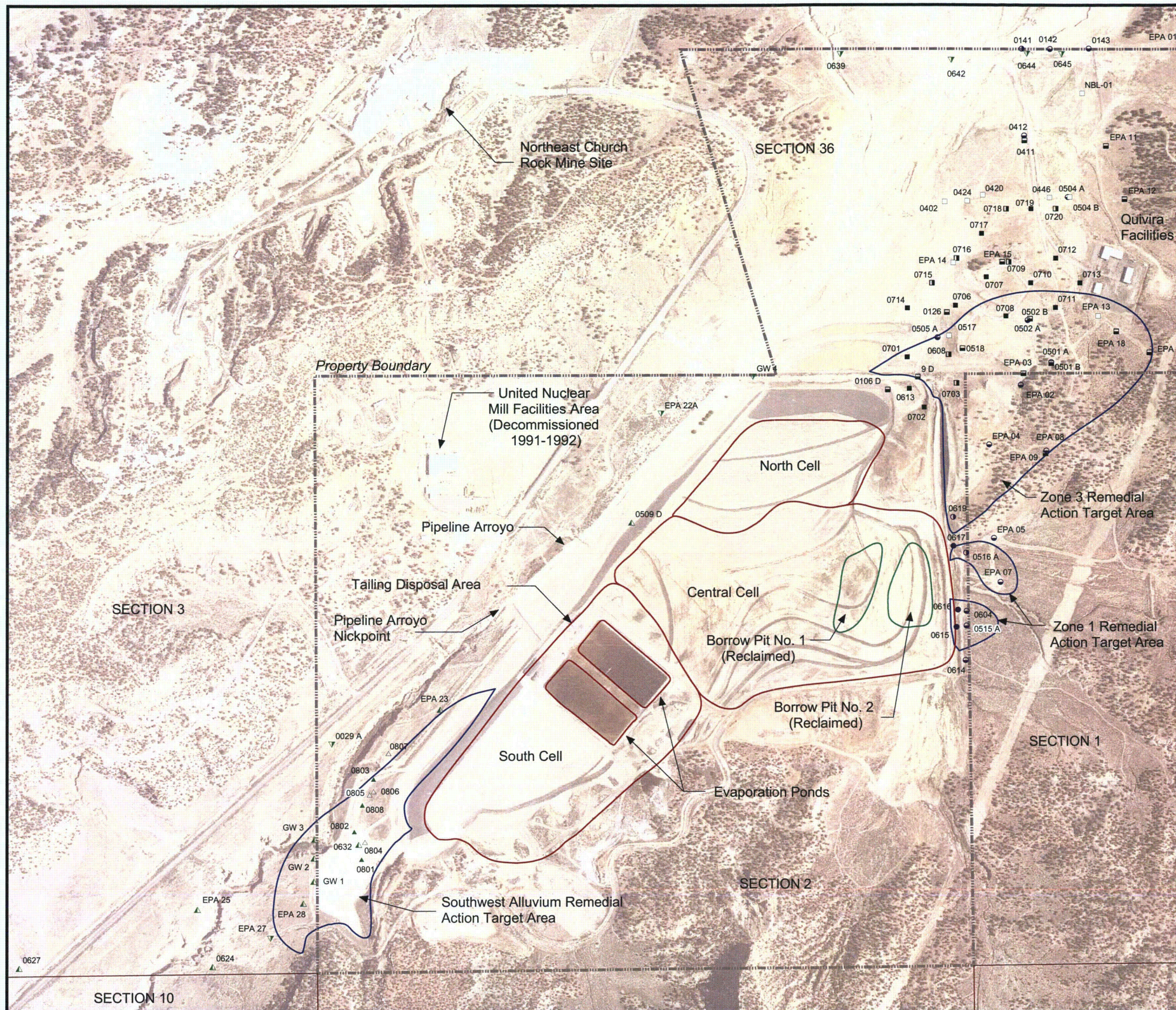
**FIGURE 1**

Site Location Map

United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

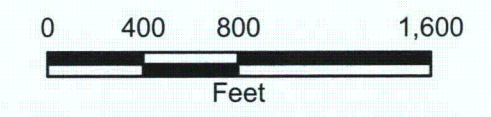






### Legend

- Southwest Alluvium**
  - ▲ Idled Extraction Well
  - ▲ Monitoring Well
  - △ Water Level Monitoring Well
  - ▼ Dry Monitoring Well
- Zone 3**
  - Idled Extraction Well Used for Monitoring
  - Decommissioned or Idle Extraction Well
  - Monitoring Well
  - Dry or Decommissioned Monitoring Well
- Zone 1**
  - Decommissioned Extraction Well
  - Decommissioned Monitoring Well
  - Monitoring Well



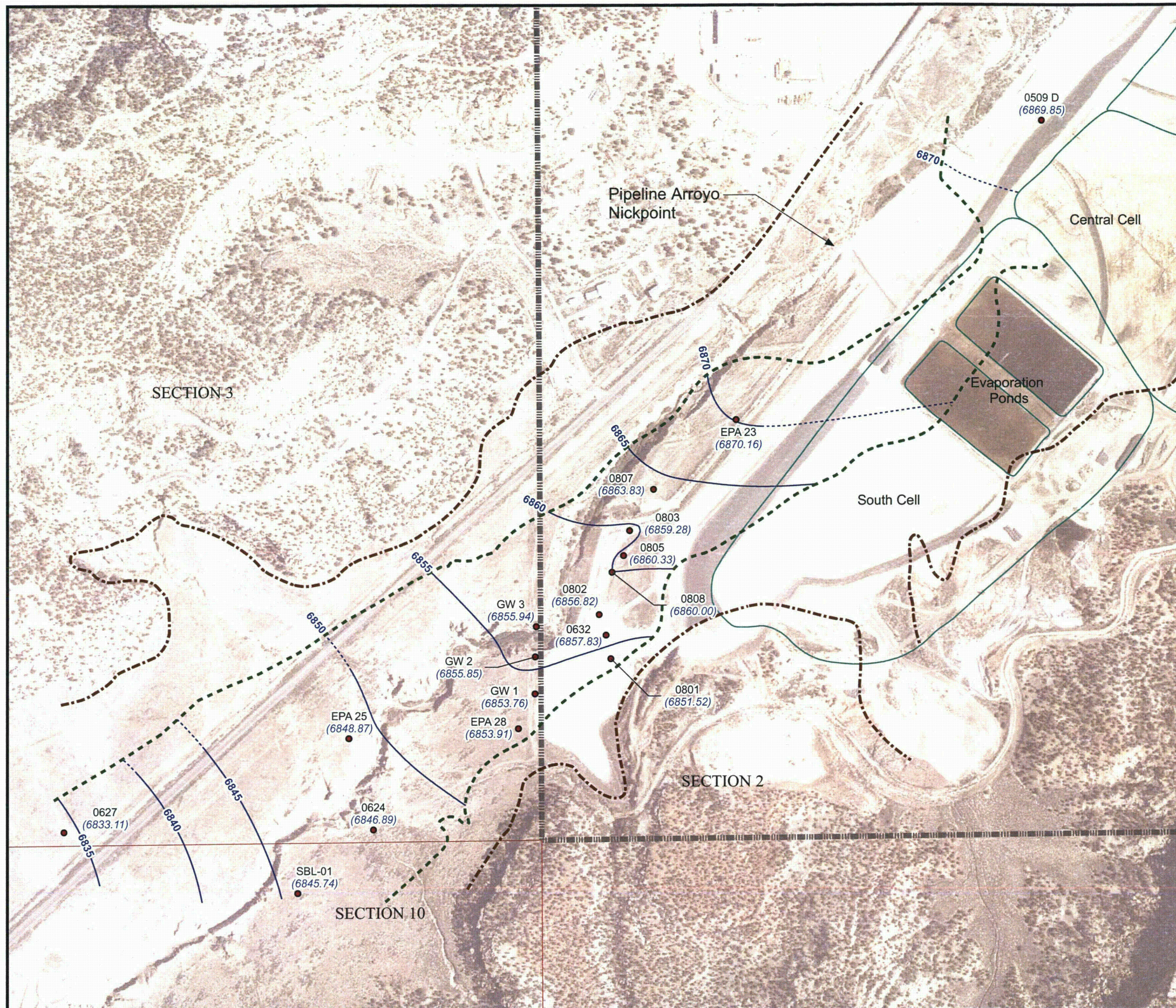
**FIGURE 2**

Site Layout and Performance  
Monitoring Well Locations  
2011 Operating Year

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico





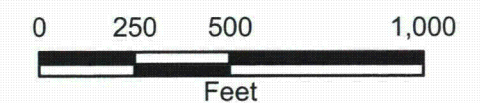


### Legend

- Southwest Alluvium Monitoring Well
- Groundwater Elevation Contour
- - - Inferred Groundwater Elevation Contour
- - - - Approximate Extent of Alluvium
- - - - Approximate Extent of Saturated Alluvium
- ||||| Property Boundary
- Section Boundary
- Cell Boundary

### Notes:

1. Groundwater elevation values are displayed in feet above mean sea level.
2. Well names are displayed with black text.
3. Groundwater elevations are shown with blue text and enclosed in parentheses.
4. Aerial photo taken on August 1, 1996.



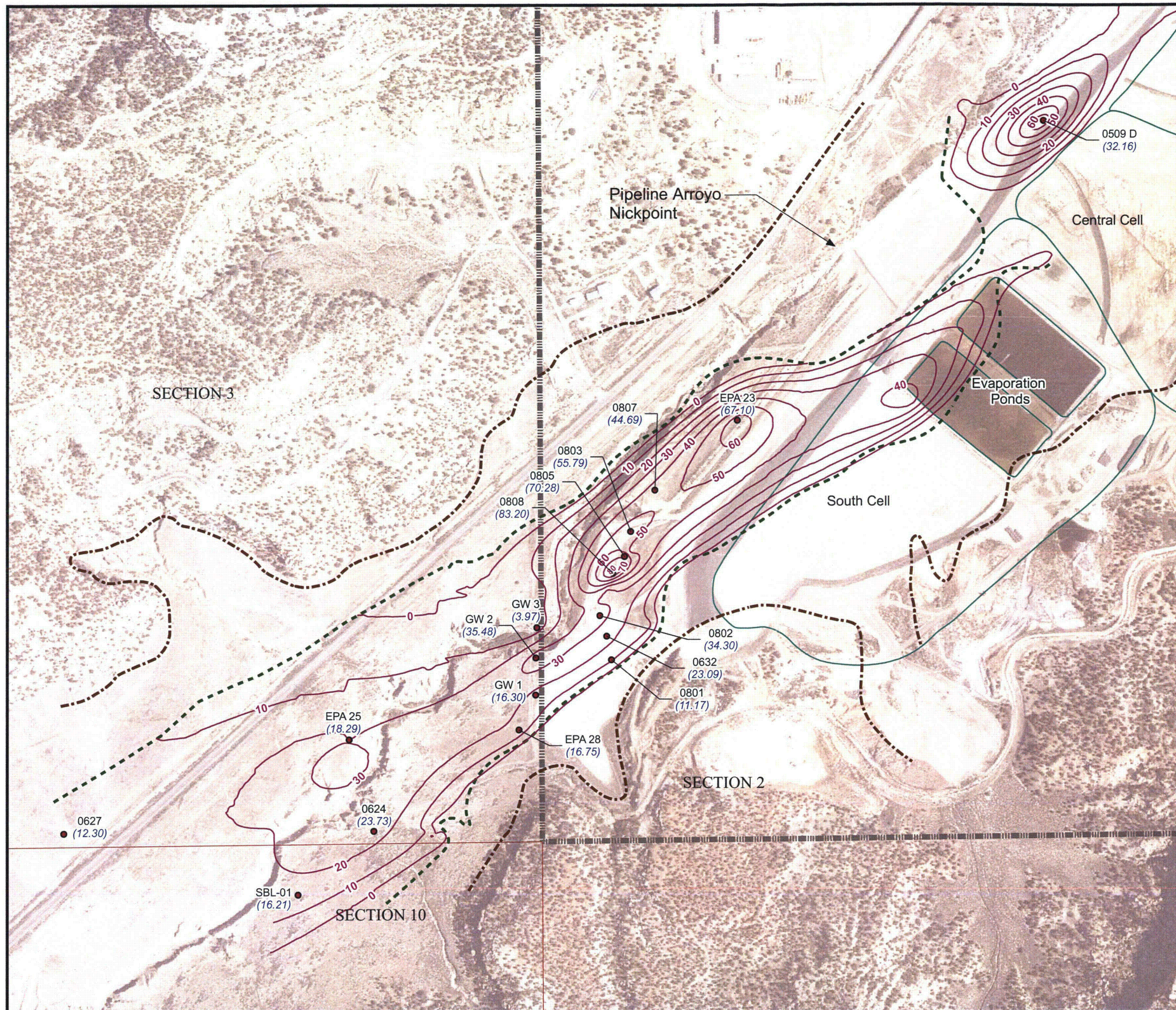
### FIGURE 3A

#### Southwest Alluvium Potentiometric Surface Map October 2011

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico





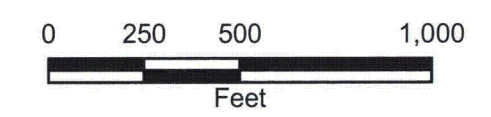


**Legend**

- Southwest Alluvium Monitoring Well
- Approximate Extent of Alluvium
- - - Approximate Extent of Saturated Alluvium
- ||||| Property Boundary
- Section Boundary
- Cell Boundary
- Saturated Thickness Contours (feet)

**Notes:**

1. Well names are displayed with black text.
2. Saturated thicknesses (feet) are shown with blue text and enclosed in parentheses.
3. Aerial photo taken on August 1, 1996.
4. The posted value of saturated thickness at well 0509 D derives from reference to the screen bottom. The alluvium extends as much as 38 feet below this depth in the vicinity of this well.



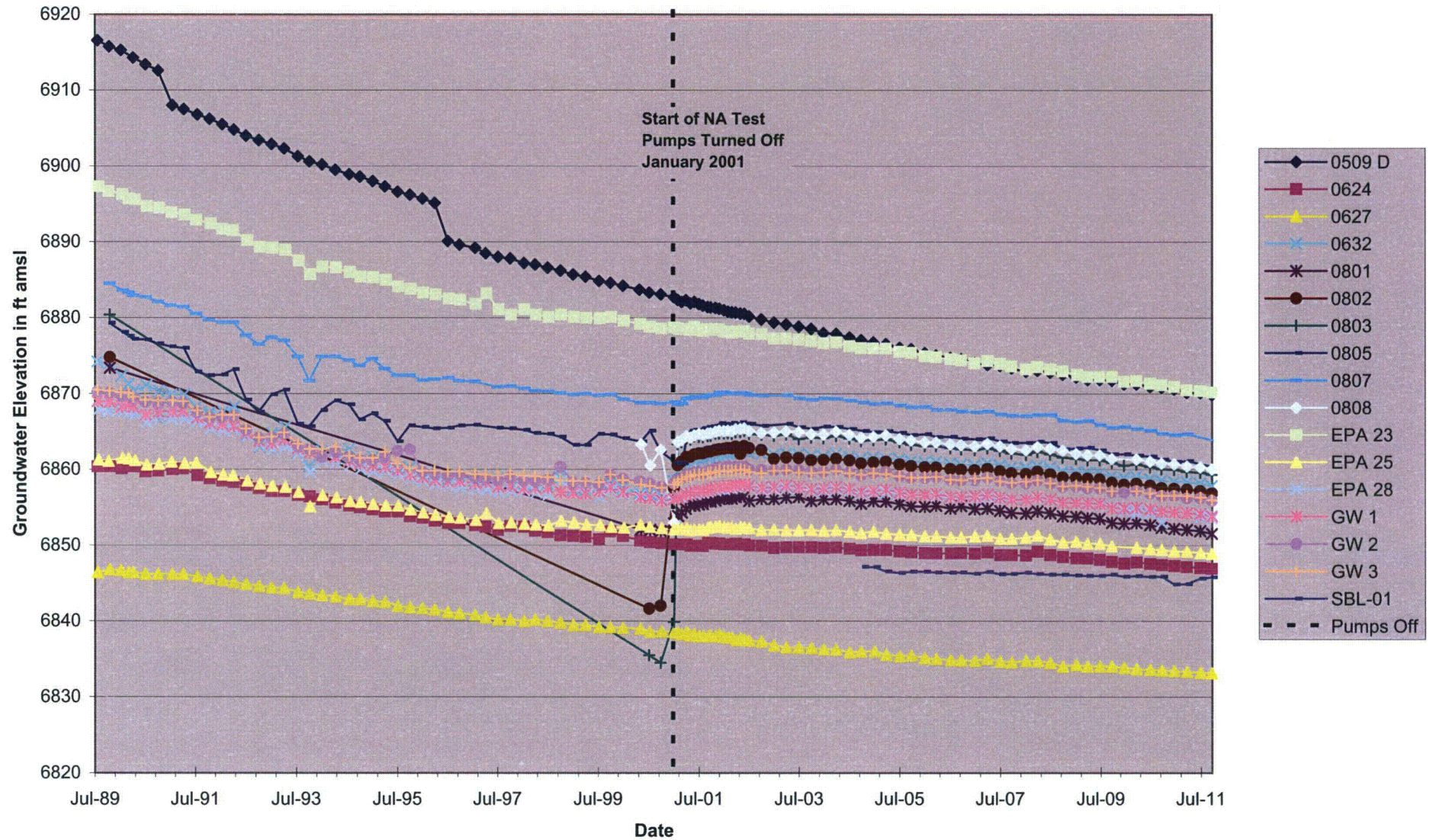
**FIGURE 3B**  
 Southwest Alluvium  
 Saturated Thickness Map  
 October 2011

United Nuclear Corporation Church Rock Site,  
 Church Rock, New Mexico



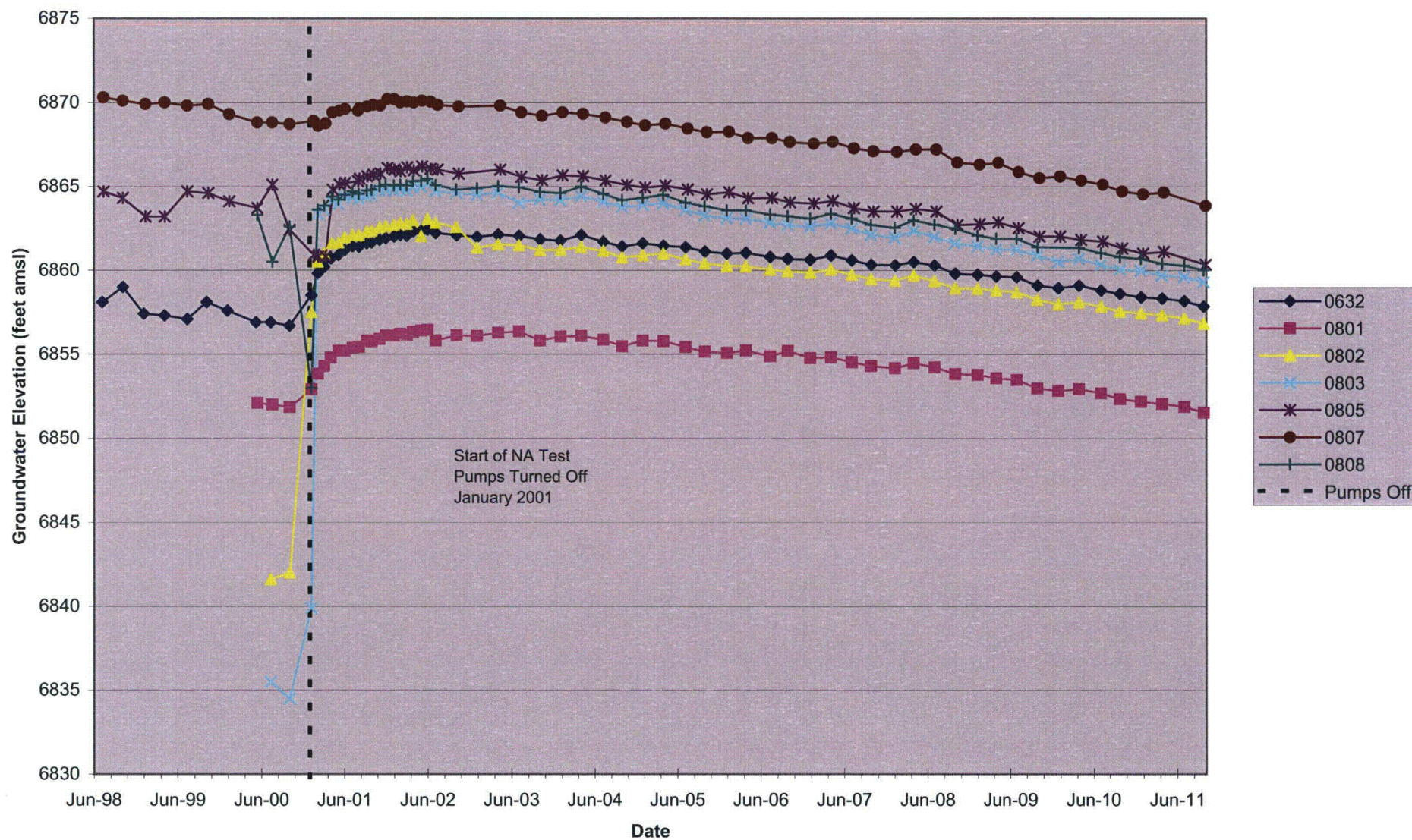


**FIGURE 4**  
 Southwest Alluvium Water Levels Over Time  
 United Nuclear Corporation, Church Rock Site, Church Rock New Mexico

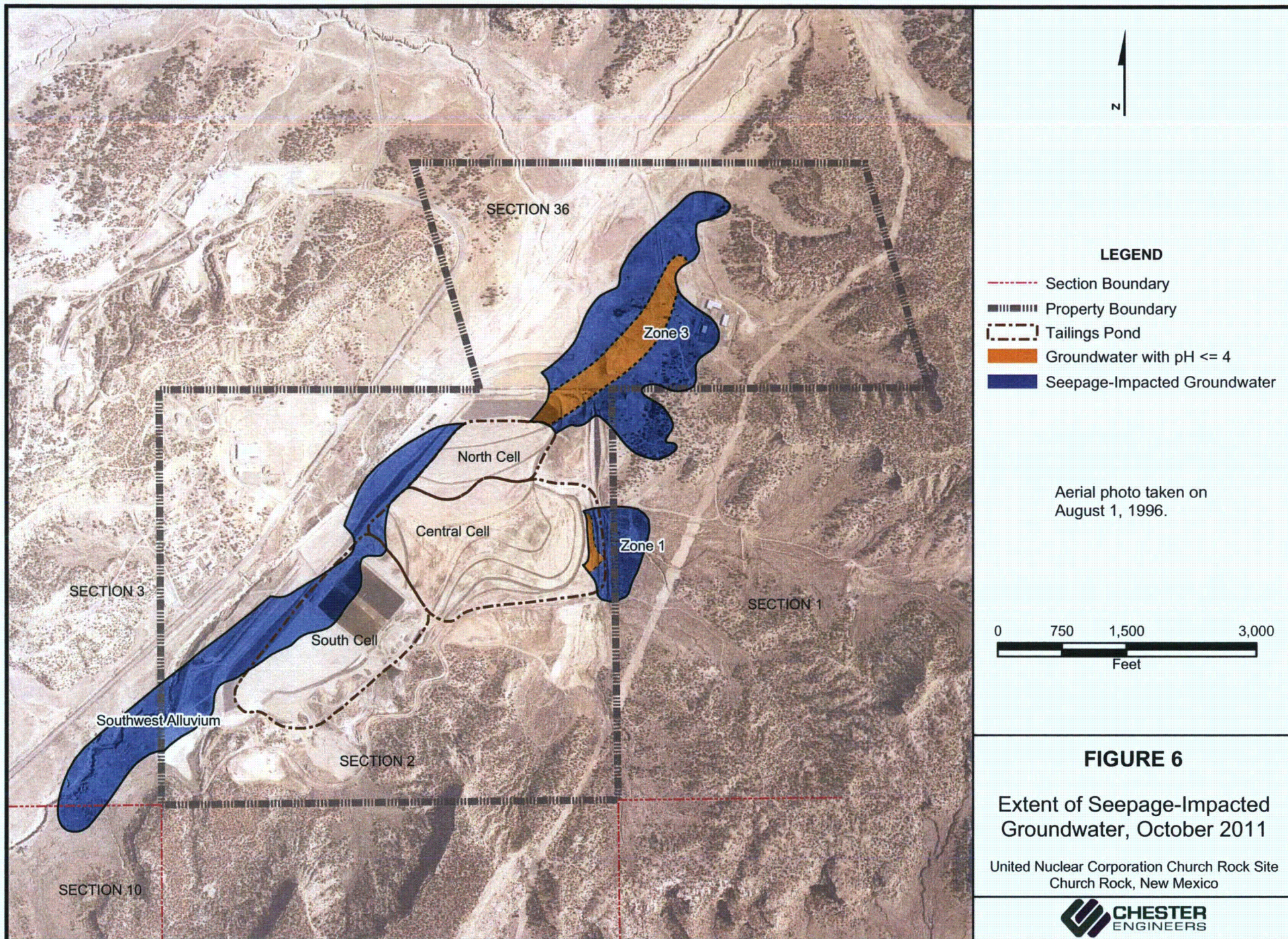




**FIGURE 5**  
 Southwest Alluvium Pumping Well Water Levels Over Time  
 United Nuclear Corporation, Church Rock Site, Church Rock New Mexico







**FIGURE 6**

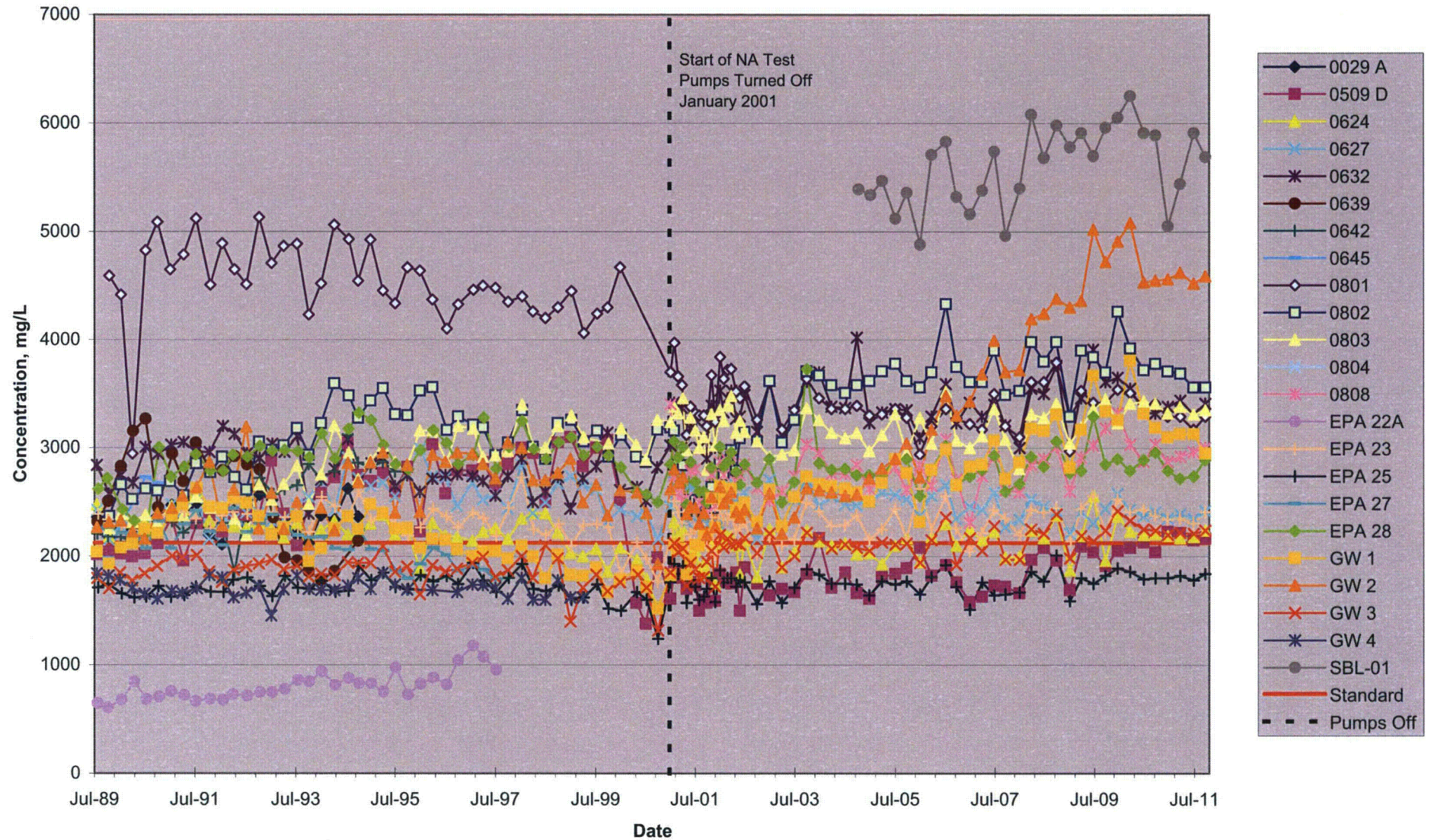
**Extent of Seepage-Impacted Groundwater, October 2011**

United Nuclear Corporation Church Rock Site  
Church Rock, New Mexico

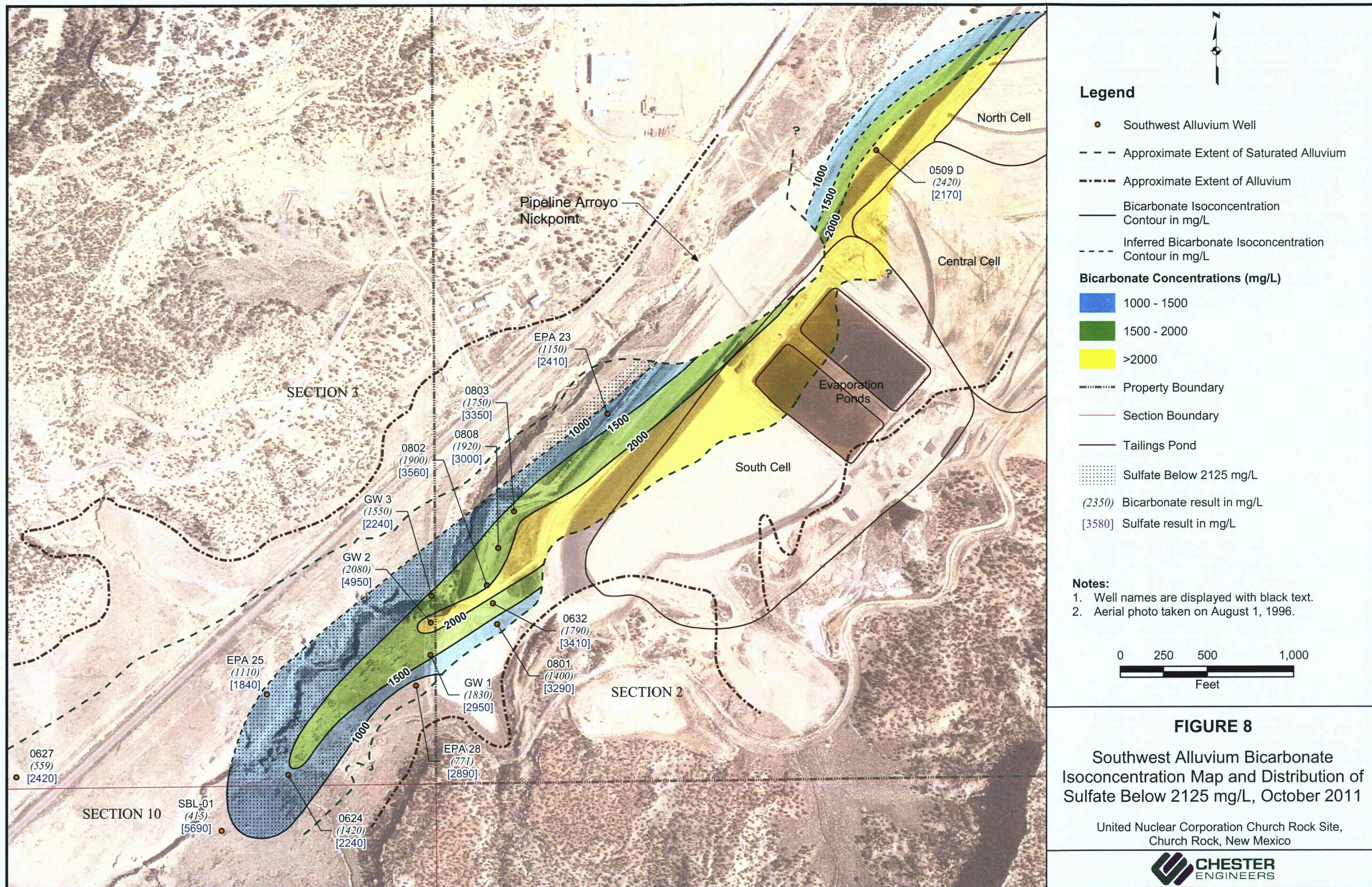




**FIGURE 7**  
 Southwest Alluvium Sulfate Concentraions Over Time  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico



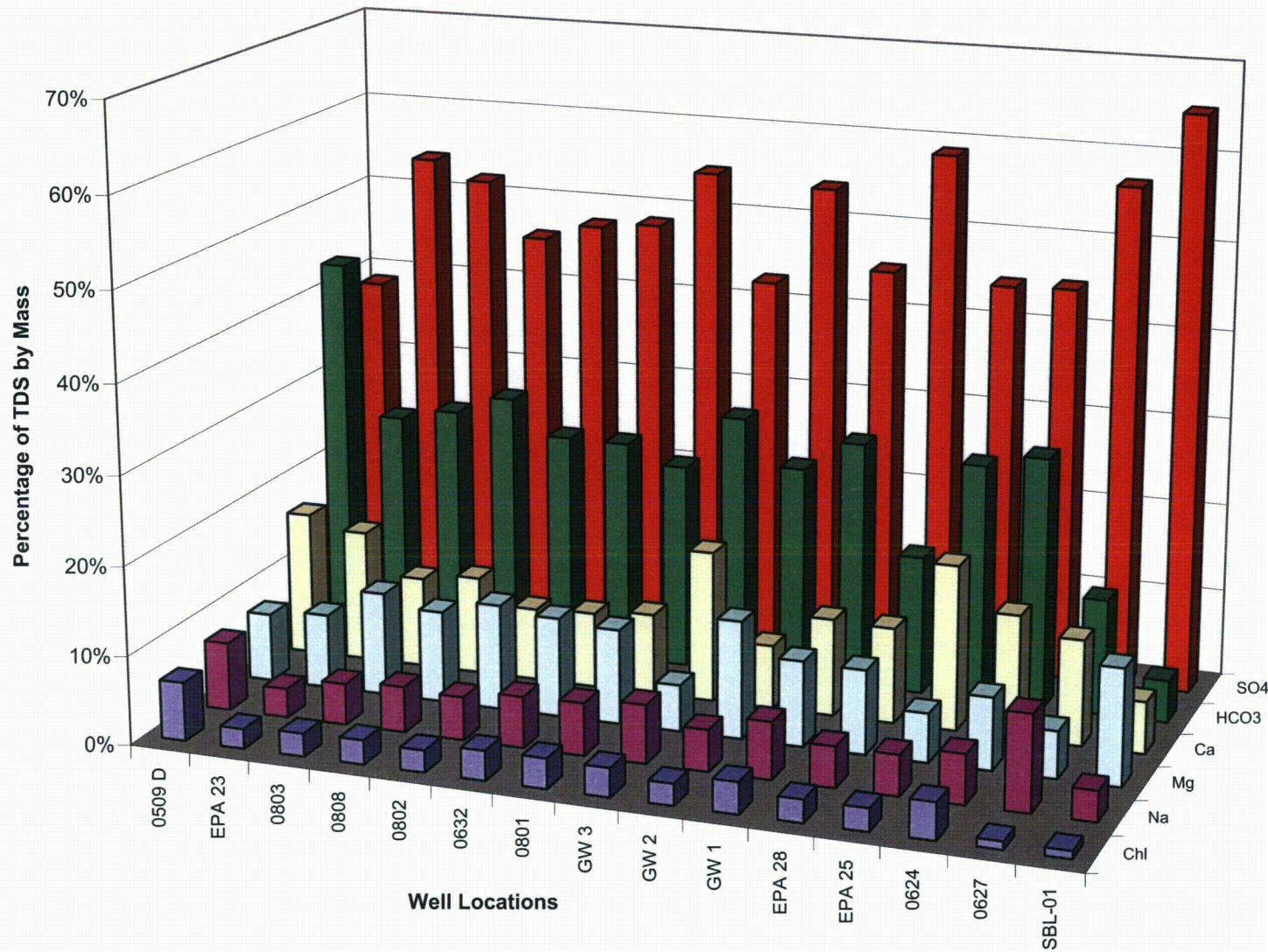






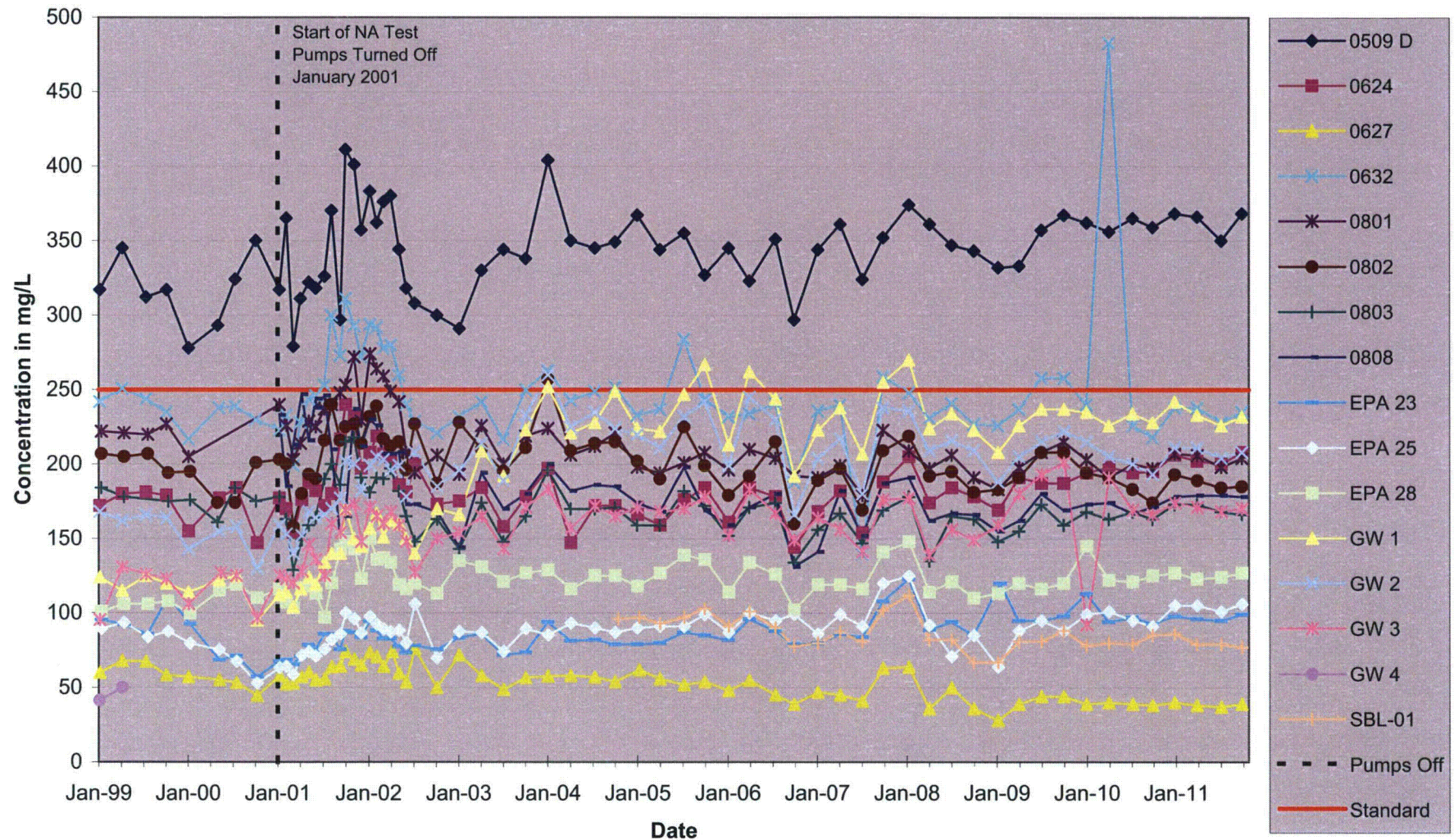
**FIGURE 9**

Primary Components of Total Dissolved Solids in the Southwest Alluvium, October 2011  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





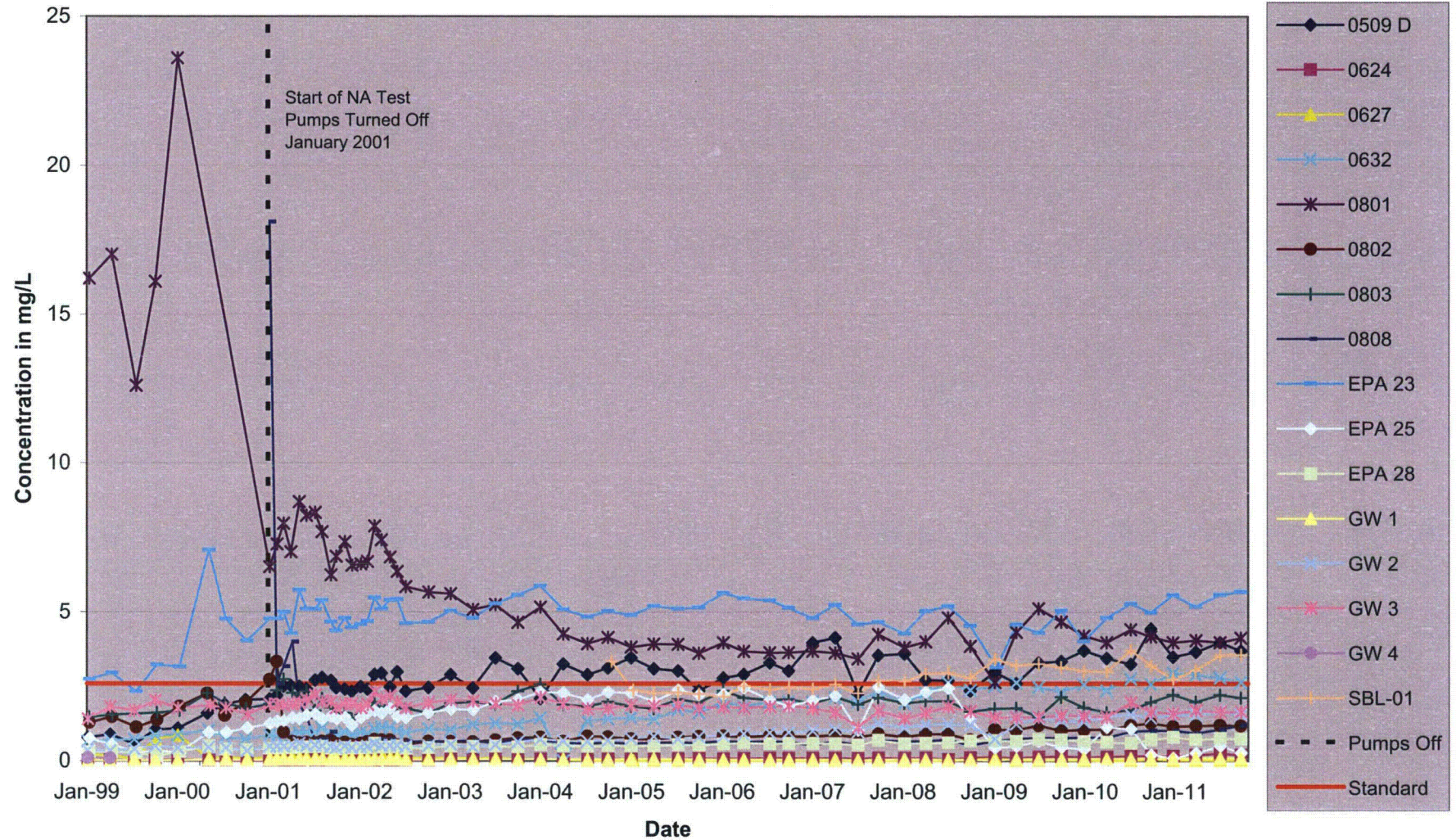
**FIGURE 10**  
 Southwest Alluvium Chloride Concentrations From 1999 Through October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





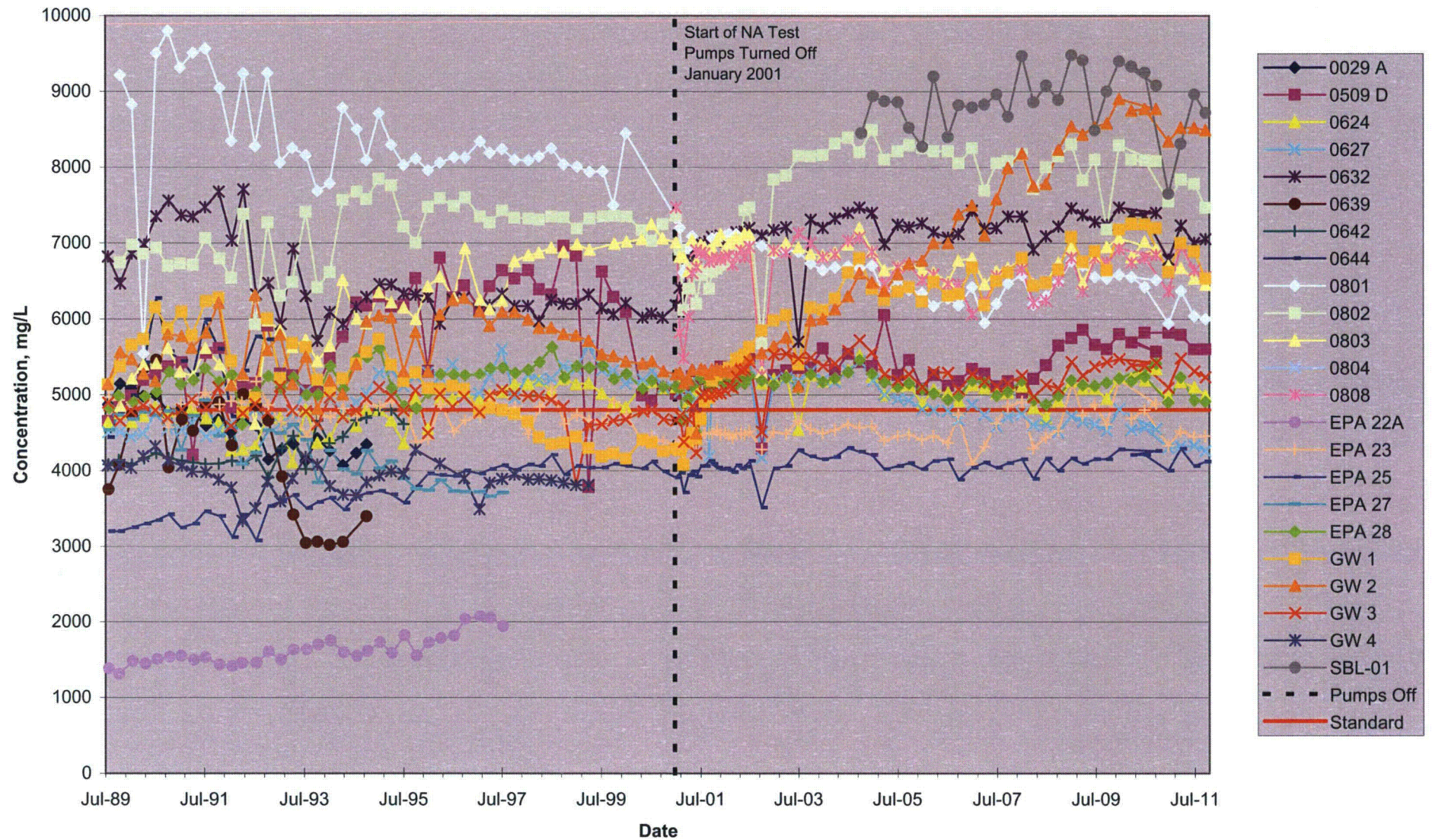
**FIGURE 11**

Southwest Alluvium Manganese Concentrations From 1999 Through October 2011  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico



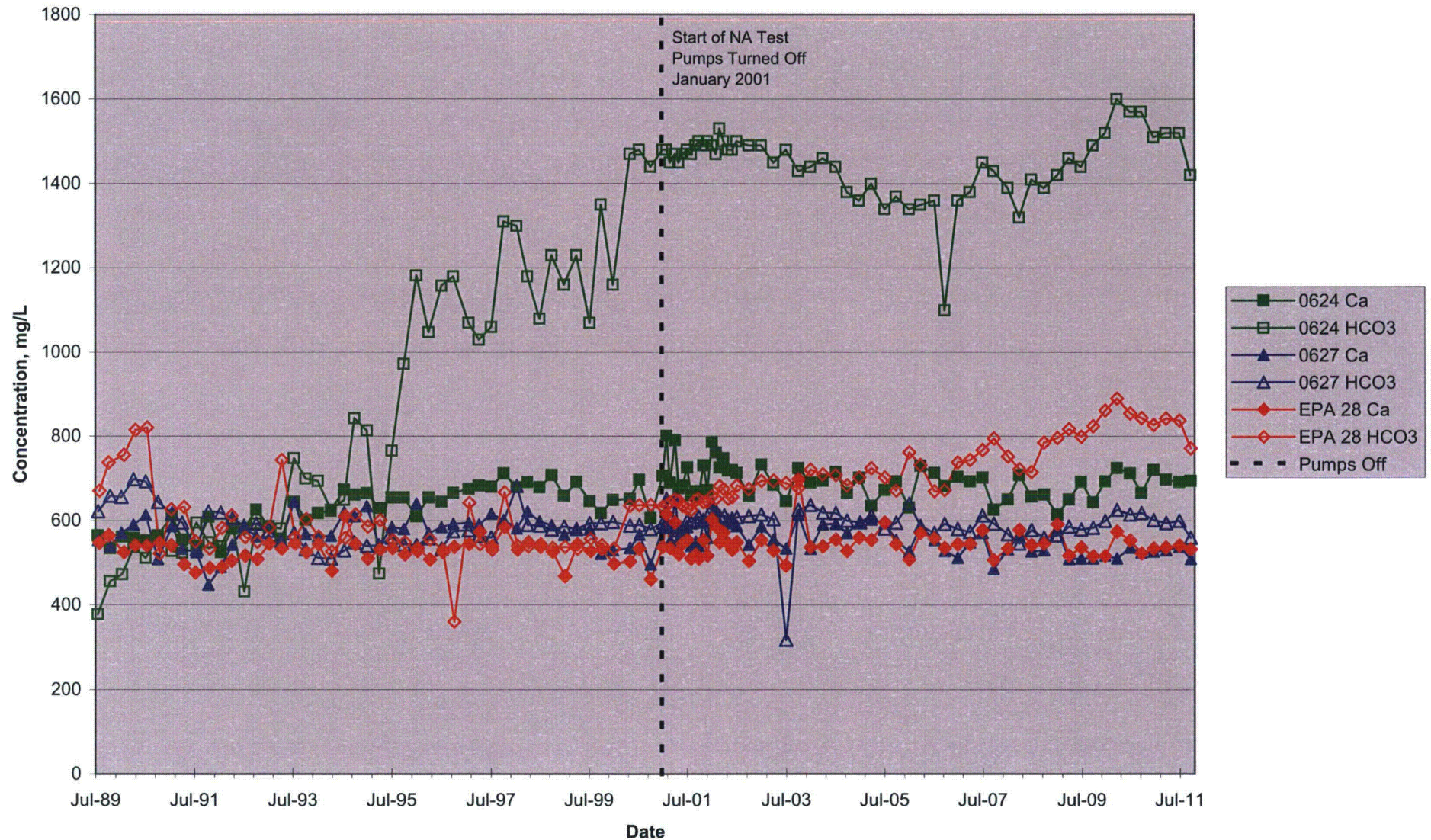


**FIGURE 12**  
 Southwest Alluvium Total Dissolved Solids Concentrations Over Time  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





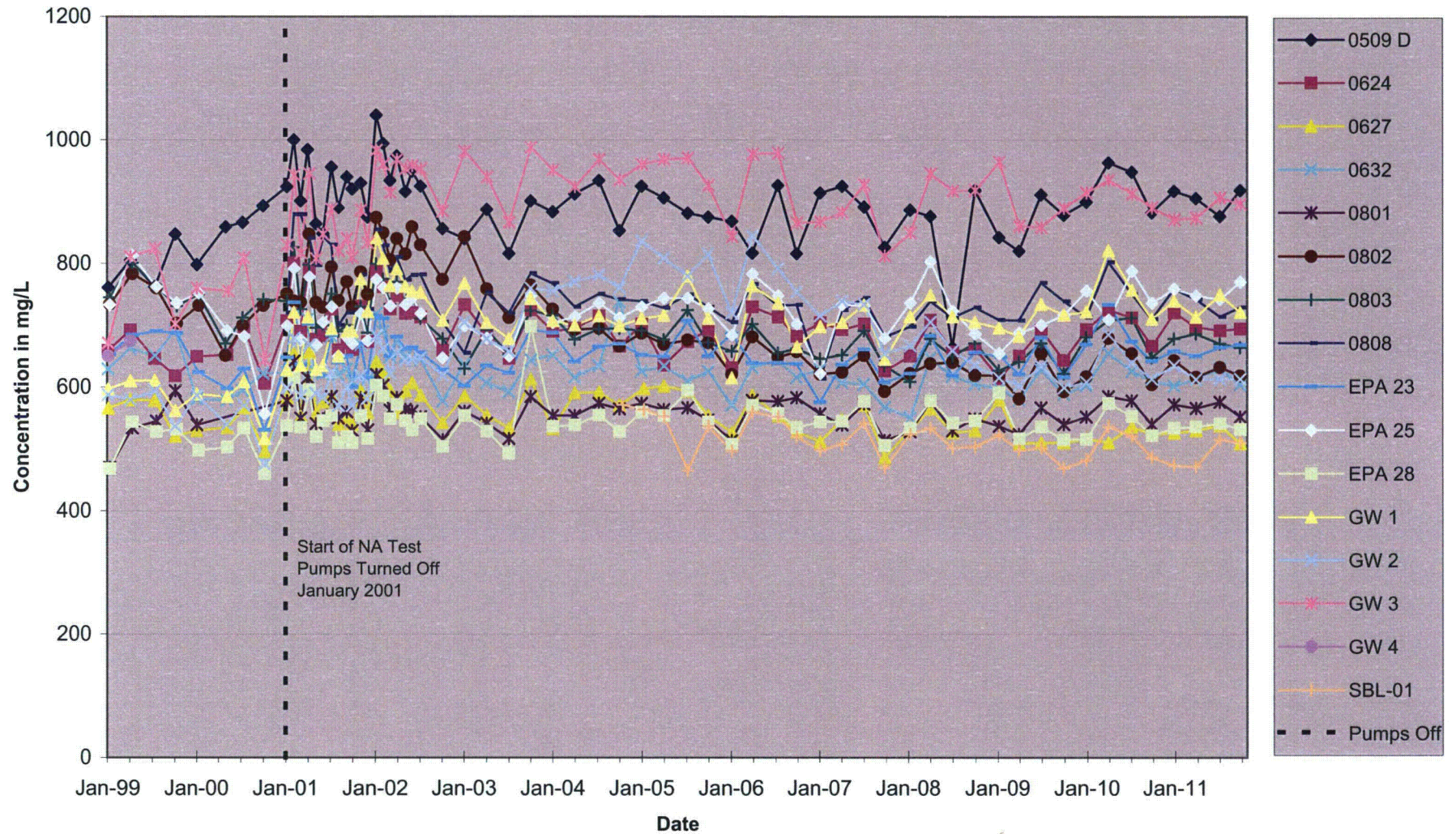
**FIGURE 13**  
 Calcium and Bicarbonate Concentrations in Selected Background and Seepage-Impacted Wells  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico





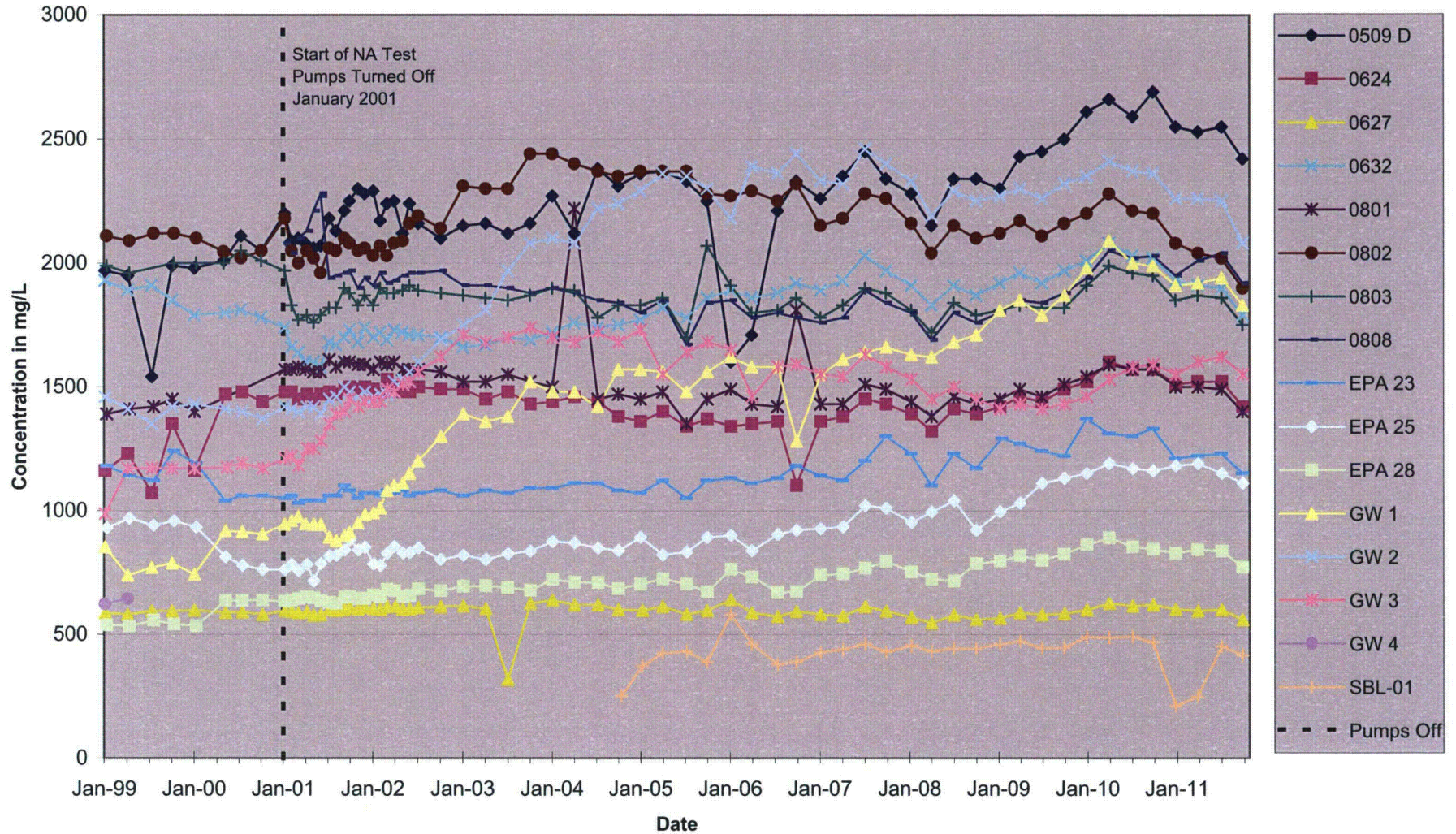
**FIGURE 14**

Southwest Alluvium Calcium Concentrations From 1999 Through October 2011  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico



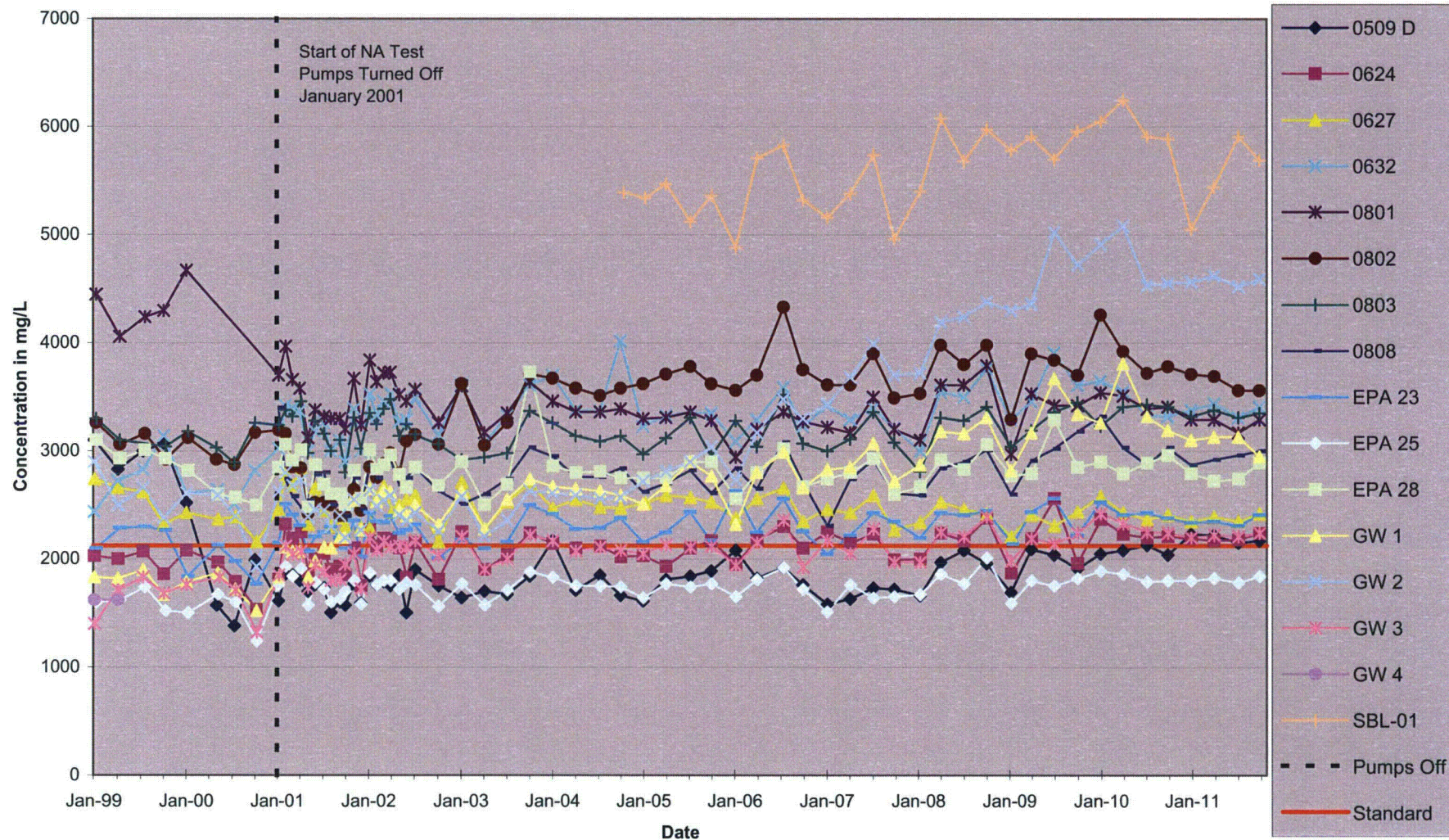


**FIGURE 15**  
 Southwest Alluvium Bicarbonate Concentrations From 1999 Through October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





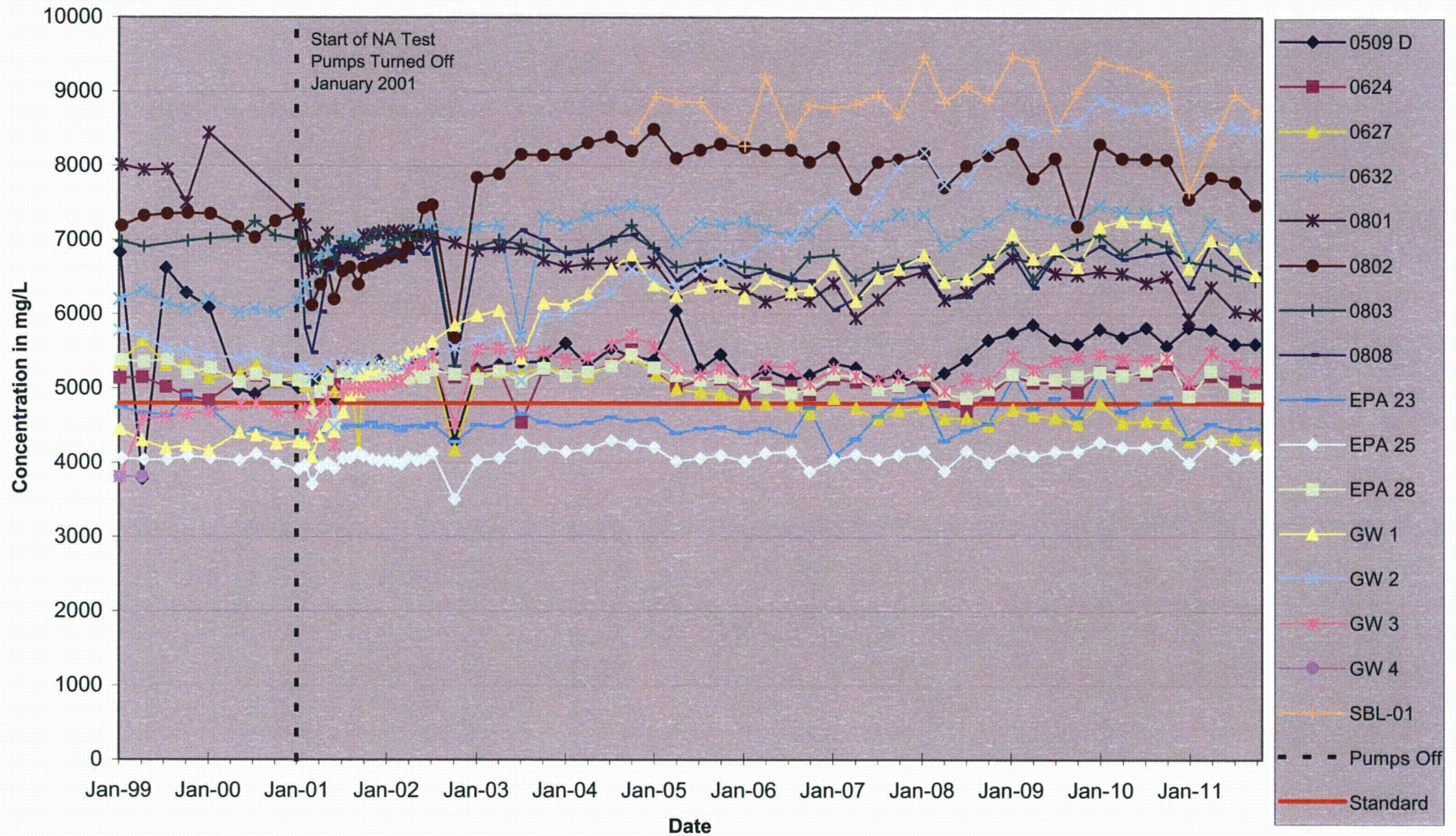
**FIGURE 16**  
 Southwest Alluvium Sulfate Concentrations From 1999 Through October 2011  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





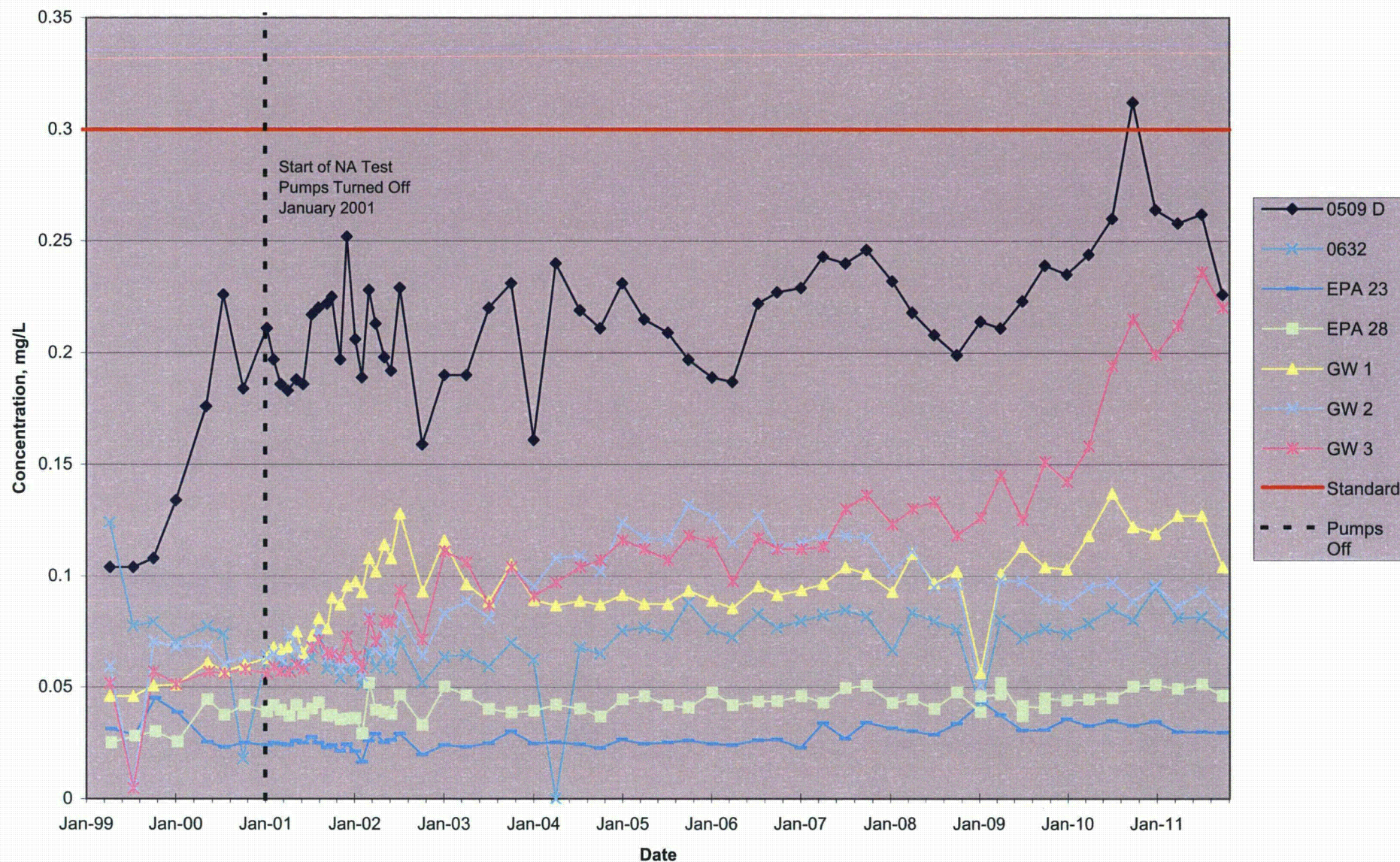
**FIGURE 17**

Southwest Alluvium Total Dissolved Solids Concentrations From 1999 Through October 2011  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





**FIGURE 18**  
 Uranium Concentrations in Selected Southwest Alluvium Wells  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico





**FIGURE 19**  
 Uranium Concentrations in Selected Southwest Alluvium Wells  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

