Davis Wright Tremaine LLP

505 Montgomery Street
Suite 800
San Francisco, CA 94111-6533

GERALD F. GEORGE
415.276.6526 tel
415.276.6599 fax
geraldgeorge@dwt.com

September 25, 2017

40 - 8903

BY OVERNIGHT MAIL AND ELECTRONIC MAIL

Director, Office of Enforcement [OE]
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Deputy Director
Division of Decommissioning
Uranium Recovery and Waste Programs [DUWP]
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

Re: Submission of the Land Application Report required under Conditions 14 and 15 of the Confirmatory Order of March 28, 2017 modifying License No. SUA-1471, EA-16-114

Dear Sir or Madam:

Attached is the Land Application Report required under Conditions 14 and 15 of the March 28, 2017 Confirmatory Order for the Homestake Grants facility.

If you have any questions, please contact me as soon as possible.

Sincerely,

Gerald F. George

Gerald F. George
Counsel for Homestake Mining Company of California

cc: NRC Document Control Desk (Hard Copy)
Patricia Holahan, Director of OE (email)
Andrea Kock, Deputy Director of DUWP (email)
Matthew Meyer (email)
Holton Burns (email)
Clark Burton (email)
Tom Wohlford (email)
Michael McCarthy (email)
Michelle Burgess (email)

OE01
NMSS01
NMSS
NRC/OE

Land Application Impact Assessment

For:

U.S. Nuclear Regulatory Commission

By:

Homestake Mining Company of California
P. O. Box 98
Grants, New Mexico 87020
And
Hydro-Engineering, L.L.C.
And
Environmental Restoration Group

September 2017

Randy Whicker	Brandon Weaver	George L. Hoffman, P.E.
Senior Health Physicist		Hydrologist
Environmental Restoration Group, Inc.	Hydro-Engineering, L.L.C.	Hydro-Engineering, L.L.C

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

FIGURES

TABLES

TABLE OF CONTENTS
(continued)

TABLES

Page Number

APPENDICES

Page Number

Executive Summary

This report presents an assessment of impacts from the land application (irrigation program) at the Homestake Grants Reclamation Project. The assessment was conducted to comply with Condition 14 of the Confirmatory Order entered by the NRC on March 28, 2017. The irrigation project was conducted by Homestake Mining Company of California (HMC) from 2000 through 2012 by irrigating an area ranging from 100 to 394 acres with water containing slightly elevated uranium and selenium concentrations.

The irrigation program project plan (HMC, 1999) established an upper limit for the uranium concentration in irrigation water at the U.S. Nuclear Regulatory Commission (NRC) effluent standard of 0.44 milligrams per liter (mg/l) (10 CFR 20, Appendix B). Selenium was set at a site-specific State of New Mexico Water Quality Control Commission standard of 0.12 mg/l (NMED DP-200 permit). These limits were reduced to upper limits of 0.16 and 0.10 mg/l for uranium and selenium respectively by NMED for the limited irrigation occurring from 2010 through 2012.

The fields subject to irrigation are located in Sections 28, 33, and 34 in Township 12 North, Range 10 West near Grants, New Mexico. Figure 1-1 shows the locations of the four irrigation fields. Fields in Sections 28 and 33 were irrigated using a center pivot irrigation system. The field in Section 34 and a small field in Section 33 were irrigated by flooding. The total amount of irrigation water applied to the fields from 2000 to 2012 was 9551 acre feet (ac-ft), with annual applications ranging from 201 to 1054 ac-ft.

The background concentrations of uranium and selenium in the soil are averages of these constituents in samples collected in the fields prior to the irrigation program, and in samples collected outside of the irrigated area for background comparisons. The background concentrations are compared to the concentration in each one-foot (ft) interval of the upper five feet of soil in irrigated areas, and each two-foot interval below five feet starting in 2009. The difference between the irrigated soil and background concentration is assumed to be the quantity of constituent added from the irrigation. The uranium and selenium concentrations in the soil only increased in the upper few feet of the soil profile, showing that these constituents are not migrating deeper into the soil profile. The largest measured uranium and selenium concentrations in soils subject to land application have remained below New Mexico screening levels.

Lysimeters installed within the soil profile in irrigation areas produced samples of soil pore water which defined constituent concentrations in the soil moisture, but are not a direct measurement of input to the groundwater. In this document and referenced reports, the terms soil moisture and pore water are used to describe water within or extracted from the vadose zone. An evaluation of uranium and selenium movement in the soil moisture predicts that these constituents will not reach the groundwater at rates that would cause groundwater levels to exceed applicable site standards.

Groundwater monitoring has indicated that the alluvial groundwater in the Section 33 center pivot had small increases in sulfate, TDS and chloride concentrations, but these small increases essentially dissipated after irrigation ended. No increases in uranium, selenium or other minor constituents were observed. The groundwater in the Section 34 flood area has had small increases in sulfate, TDS, chloride and uranium concentrations that may be attributed to the flood irrigation, but these small increases are dissipating and should continue to decrease. Because of the higher resident constituent concentrations in Section 28 groundwater, no increases in concentrations have been detected in the Section 28 center pivot area, but groundwater mass loading similar to those observed in Section 33 center pivot groundwater likely occurred.

Uranium levels in the soil do not pose a significant human health risk from a radiological dose perspective. The dose to any member of the public from any exposure pathway is negligible, and this includes other radionuclides that may have been introduced by irrigation during the land application project (see Section 5.0).

Potential radiation doses to the public were conservatively evaluated for an unlikely "worst-case" subsistence farming scenario[1]:

- A hypothetical resident farmer living near the irrigated areas during the land application project (2000 – 2012).
- A hypothetical future resident farmer living on and farming any of the formerly irrigated areas.

Each analysis shows that the radiological dose to existing or future occupants of the land on and near the irrigation areas is extremely small - less than one percent respectively of the public dose limits given in 10 CFR 20.1301 and the average dose that the population receives from natural background and medical radiation exposures.

With respect to toxicity criteria, both uranium and selenium levels in the soil are well below applicable New Mexico screening levels.

The monitoring of uranium and selenium concentrations in groundwater will continue as part of the ongoing monitoring program until post closure groundwater monitoring is complete in the area.

[1]It was acknowledged in the Draft RI Report (EPA, 2016) that deed restrictions on agricultural land use are currently in effect in these areas, but this assessment included a remote possibility of failure of institutional controls beyond the foreseeable future.

1.0 Introduction

This land application report provides an assessment of impacts associated with the irrigation of fields supplied with water from impacted groundwater sources near the Homestake Grants Reclamation Project. The irrigation project was conducted by Homestake Mining Company of California (HMC) from 2000 through 2012. The irrigation program facilitated hay cultivation and stabilized the soil against wind erosion.

Four fields were irrigated with water containing slightly elevated concentrations of uranium and selenium. Figure 1-1 shows the locations of the four fields irrigated to aid groundwater restoration in the Off-site areas. The extent of the North Off-site uranium plume was reduced by approximately one mile and the uranium and selenium concentrations were also reduced in the South and North Off-site plumes. An evaluation of the potential impacts from the irrigation program was presented in HMC (1999). The results from monitoring of the irrigation program were reported in HMC (2001a, 2004a, 2005a, 2006a, 2007a, 2008a, 2009a, 2010a, 2011a, 2012a, 2013a, 2014a and 2016).

The remainder of this report is organized as follows. Section 2 presents irrigation areas, quantity of water applied and constituent concentrations of the irrigation water. Section 3 presents the soil and soil moisture (pore water) assessment. Section 4 presents the assessment of the groundwater impacts. Section 5 discusses the potential effects from the irrigation on human health. The report ends with conclusions and references. Tabulations of the irrigation water quality, soil, soil moisture and groundwater quality data are presented in appendices.

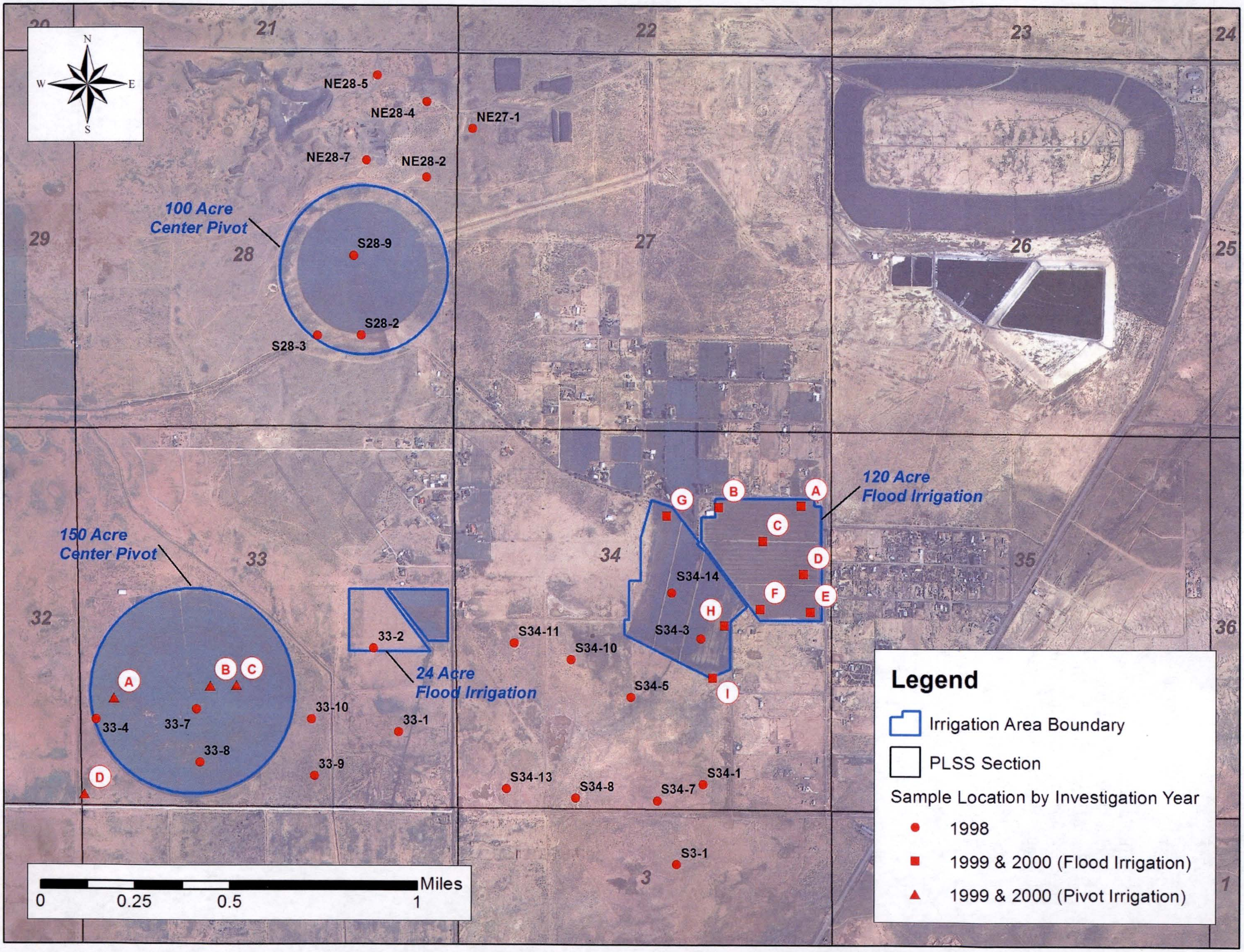


FIGURE 1-1. LOCATION OF THE IRRIGATION AREAS

2.0 Irrigation

South and North irrigation systems were used to apply water to the Sections 33 and 34 and Section 28, respectively (see Figure 1-1 for location). The project plan (HMC, 1999) established an upper limit for the uranium concentration in irrigation water at the NRC effluent standard of 0.44 milligrams per liter (mg/l) (10 CFR 20, Appendix B). The maximum allowable concentration of selenium in the irrigation supply was set at a State of New Mexico Water Quality Control Commission site standard of 0.12 mg/l. Yearly average uranium and selenium concentrations in the irrigation water were below these limits during the irrigation program through 2009. The upper concentration limits in the irrigation supply were reduced to 0.16 and 0.1 mg/l for uranium and selenium, respectively, for the limited irrigation in 2010 through 2012. As necessary, adjustments were made in the irrigation supply well configuration and production rates to ensure that season averages met established limits. Yearly data and averages are discussed in the following sections.

2.1 Irrigation Areas

Four fields have been irrigated with water containing slightly elevated concentrations of uranium and selenium. Figure 1-1 shows the locations of the four irrigations fields. Groundwater from wells adjacent to these fields near the Grants Reclamation Project was applied to fields situated in portions of Sections 28, 33 and 34 of Township 12 North, Range 10 West. Table 2-1 presents the water usage, total irrigated area, and location of the irrigated area by section for each year. The center pivot irrigation area in Section 28 was originally 60 acres with irrigation during 2002, 2003 and 2004 and was expanded to 100 acres prior to the 2005 season. The Section 33 center pivot area was 150 acres and there was also a 24-acre flood area in Section 33 that was irrigated in 2004, 2005, 2008 and 2009. The flood irrigated area in Section 34 was 120 acres.

2.1.1 South Irrigation Areas

The South irrigation system consisted of the three fields in Sections 33 and 34 and was supplied by a common pipe connecting the South irrigation supply wells (see Figure 2-1 for location of wells used to supply the South irrigation water supply from 2000 through 2012). HMC (2013a) describes the wells that were used during each year of the irrigation. The irrigation supply wells were completed in the alluvial aquifer with the following exceptions. Wells 482, 483, 493, 498, CW44 and CW45 are completed in the Middle Chinle aquifer. Also, well CW53 is completed in the Upper Chinle aquifer, wells CW29 and CW42 are completed in the Lower Chinle aquifer and well 943 is completed in the San Andres aquifer. Well 943 was used in the last two years of irrigation of the Section 34 flood area.

2.1.2 North Irrigation Area

Figure 2-2 shows the wells that supplied irrigation for the North irrigation in Section 28. Water from these wells was piped to the Section 28 center pivot for application of this water. All of the North irrigation supply wells are completed in the alluvial aquifer, except well 951R which is completed in the San Andres aquifer and was used during the last two years of irrigation.

2.2 Water Volume Applied

Water usage and the areas to which irrigation water was applied varied with the lowest amount of irrigation water of 201 acre feet (ac-ft) applied in 2010 to 120 acres in Section 34 to a maximum of 1054 ac-ft applied in 2008 to 394 acres in Sections 28, 33 and 34 (Table 2-1).

Table 2-1. Quantities of Water and Areas Irrigated

YEAR	WATER USAGE (AC-FT)	IRRIGATED AREA (AC)	AREA IRRIGATED
2000	715	270	Sections 33 and 34
2001	695	270	Sections 33 and 34
2002	995	330	Sections 28, 33 and 34
2003	949	330	Sections 28, 33 and 34
2004	1028	354	Sections 28, 33 and 34
2005	1034	394	Sections 28, 33 and 34
2006	837	370	Sections 28, 33 and 34
2007	789	370	Sections 28, 33 and 34
2008	1054	394	Sections 28, 33 and 34
2009	731	394	Sections 28, 33 and 34
2010	201	120	Section 34
2011	213	100	Section 28
2012	310	220	Section 28 and 34

Note: Irrigated areas and quantities of water applied were presented in HMC (2013a).

2.3 Constituent Concentrations in Irrigation Water

Water samples collected at the end of the pipeline at the flood outlet or center pivot represent the water quality of the combined active supply wells at the time when the samples were collected. A summary of the samples collected from the South and North irrigation water is presented in Table 2-2 and presents the range and mean of the concentrations for uranium, selenium, total dissolved solids (TDS) and sulfate observed in the 2000-2012 in the irrigation water. This tabulation shows that the mean of all of the uranium measurements for the South area was 0.23 mg/l while the mean for the North was 0.24 mg/l. Selenium mean concentrations were similar in the South and North irrigation water at 0.08 and 0.05 mg/l respectively. The mean TDS and sulfate concentrations in the North irrigation water were slightly higher than those in the South irrigation water at 1833 and 790 mg/l, respectively.

Table 2-2. Summary of North and South Irrigation Supply Water Quality

		Uranium		Selenium		TDS		Sulfate	
Site	No. of Data Values	Range (mg/l)	Mean (mg/l)	Range (mg/l)	Mean (mg/l)	Range (mg/l)	Mean (mg/l)	Range (mg/l)	Mean (mg/l)
South Irrigated Water	78	0.11-0.37	0.23	0.04-0.14	0.08	1390-2000	1589	561-1020	683
North Irrigated Water	65	0.08-0.51	0.24	0.02-0.19	0.05	1160-2240	1833	455-1020	790

Note: The May 14, 2003 and April 21, 2008 uranium values in the South and the May 14, 2003 selenium value in the North were not used in the range or calculation of the mean because they were an order of magnitude smaller than the remainder of the values.

2.3.1 Constituent Concentrations in the South Irrigation Water

A tabulation of uranium, selenium, TDS, sulfate, chloride and molybdenum concentrations is presented in Table 2-3 for the South irrigation water. This table shows the measured concentrations in the South irrigation water throughout each year of irrigation and also presents the average for each constituent for each year. The average of yearly average uranium concentrations was 0.26 mg/l through 2009. The irrigation uranium concentration limit was reduced from 0.44 mg/l to 0.16 mg/l after 2009, and the average uranium concentration in the irrigation water for 2010 and 2012 was reduced to 0.13 mg/l. Selenium concentrations were less than 0.1 mg/l and gradually decreased with time. All major and minor constituent water quality data for the South irrigation supply are listed in Table A.1-1 and Table A.1-2, respectively, in Appendix A. With respect to irrigation water sourced from a number of wells, only two measurements for radium-226 + radium-228 (Ra-226 + Ra-228), vanadium (V) and thorium-230 (Th-230) were collected (Appendix A Table A.1-2). Data show the South irrigation water concentrations were below site standards for these three constituents. All the major and minor constituent concentrations for all of the South irrigation supply wells are reported in Appendix A, Tables A.1-3 and A.1-4. Data from each supply well provided additional evidence of the low concentrations for some of the minor constituents of Ra-226, Ra-228, V and Th-230. Water quality statistics from individual supply wells for Ra-226 + Ra-228, V and Th-230 are listed in Table 2-4. The low concentrations of Ra-226 + Ra-228, V and Th-230 indicate the irrigation application did not likely increase their concentration in the soil or groundwater in the South area.

Table 2-3. 2000 through 2012 South Irrigation Supply Water Quality

Year	Sample Date	Uranium (mg/l)	Selenium (mg/l)	TDS (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	Molybdenum (mg/l)
2000	8/6/2000	0.26	0.12	1530	650	105	<0.03
	8/15/2000	0.26	0.12	1550	660	106	<0.03
	8/18/2000	0.28	0.12	1570	623	115	<0.03
	8/19/2000	0.27	0.12	1550	612	109	<0.03
	8/24/2000	0.27	0.11	1530	608	106	<0.03
	8/27/2000	0.26	0.11	1530	601	103	<0.03
	8/29/2000	0.3	0.11	1580	624	109	<0.03
	9/2/2000	0.28	0.11	1550	615	104	<0.03
	Average	0.27	0.12	1549	624	107	<0.03
2001	4/20/2001	0.28	0.11	1620	693	120	<0.03
	4/27/2001	0.27	0.12	1590	688	120	<0.03
	5/6/2001	0.3	0.11	1630	597	108	0.06
	5/10/2001	0.25	0.09	1590	580	103	<0.03
	5/19/2001	0.28	0.1	1590	660	118	<0.03
	5/24/2001	0.24	0.11	1500	664	116	<0.03
	6/3/2001	0.27	0.1	1610	665	118	<0.03
	6/10/2001	0.27	0.1	1570	659	113	<0.03
	6/28/2001	0.27	0.11	1530	661	104	<0.03
	7/5/2001	0.22	0.1	1480	655	94	<0.03
	7/24/2001	0.21	0.09	1460	650	120	<0.03
	8/29/2001	0.28	0.1	1600	693	114	0.41
	9/1/2001	0.27	0.1	1610	573	128	<0.03
	9/1/2001	0.21	0.1	1570	561	121	<0.03
	9/17/2001	0.29	0.13	1600	634	100	<0.03
	Average	0.26	0.1	1570	642	113	0.04
2002	4/15/2002	0.21	0.09	1510	708	125	<0.03
	4/16/2002	0.25	0.1	1580	704	129	<0.03
	5/8/2002	0.25	0.11	1600	678	----	----
	5/8/2002	0.26	0.1	1580	737	----	----
	5/14/2002	0.25	0.09	1560	741	120	<0.03
	7/3/2002	0.23	0.1	1560	694	135	0.05
	7/31/2002	0.23	0.1	1580	678	123	<0.05
	10/2/2002	0.21	0.1	1570	703	----	----
	Average	0.23	0.1	1564	705	126	<0.03
2003	5/14/2003	*0.03	0.05	1390	663	98.5	<0.03
	9/18/2003	0.22	0.08	1600	732	----	----
	Average	0.22	0.08	1600	732	----	----
2004	5/4/2004	0.28	0.11	1550	703	130	<0.03
	5/27/2004	0.25	0.08	1570	690	130	<0.03
	8/18/2004	0.27	0.08	1530	693	----	----
	10/6/2004	0.23	0.08	1560	629	133	<0.03
	Average	0.26	0.09	1553	679	131	<0.03
2005	4/19/2005	0.25	0.06	1520	1020	247	<0.03
	4/20/2005	0.25	0.06	1510	996	235	<0.03
	5/25/2005	0.23	0.06	1580	603	131	<0.03
	6/1/2005	0.24	0.06	1520	661	129	<0.03
	8/8/2005	0.27	0.06	1500	621	----	----
	9/26/2005	0.3	0.07	1550	659	124	<0.03
	10/11/2005	0.29	0.07	1580	612	125	<0.03
	10/24/2005	0.35	0.08	1610	683	144	<0.03
	Average	0.27	0.06	1546	732	162	<0.03

Table 2-3. 2000 through 2012 South Irrigation Supply Water Quality (continued)

Year	Sample Date	Uranium (mg/l)	Selenium (mg/l)	TDS (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	Molybdenum (mg/l)
2006	4/10/2006	0.24	0.05	1520	654	134	<0.03
	6/26/2006	0.37	0.1	2000	875	192	0.07
	8/14/2006	0.27	0.07	1580	696	----	----
	10/10/2006	0.29	0.07	1500	639	128	<0.03
	Average	0.29	0.07	1650	716	151	0.04
2007	4/12/2007	0.28	0.06	1630	668	136	<0.03
	4/30/2007	0.27	0.06	1580	670	132	<0.03
	6/4/2007	0.23	0.06	1540	654	125	<0.03
	8/21/2007	0.3	0.05	1600	678	----	----
	10/22/2007	0.31	0.06	1570	661	143	<0.03
	Average	0.28	0.06	1584	666	134	<0.03
2008	4/7/2008	*0.0521	0.073	1430	687	160	<0.03
	4/21/2008	0.262	0.042	1560	728	99	<0.03
	6/2/2008	0.254	0.048	1550	683	142	<0.03
	9/24/2008	0.213	0.049	1660	710	148	<0.03
	Average	0.24	0.05	1550	702	137	<0.03
2009	5/6/2009	0.262	0.048	1560	669	----	<0.03
	6/16/2009	0.213	0.047	1660	717	178	<0.03
	7/24/2009	0.239	0.047	1700	694	146	<0.03
	9/28/2009	0.232	0.059	1770	754	160	<0.03
	Average	0.24	0.05	1673	709	161	<0.03
2010	8/30/2010	0.129	0.044	1610	716	158	<0.03
	9/8/2010	0.129	0.045	1660	709	154	<0.03
	9/15/2010	0.118	0.048	1700	731	162	<0.03
	9/22/2010	0.119	0.044	1700	735	170	<0.03
	10/1/2010	0.143	0.044	1750	756	174	<0.03
	10/6/2010	0.159	0.048	1660	754	171	0.11
	10/13/2010	0.156	0.044	1760	754	170	<0.03
	10/27/2010	0.144	0.045	1760	751	173	<0.03
	11/1/2010	0.128	0.045	1800	745	168	<0.03
	Average	0.136	0.045	1711	739	167	<0.03
2012	8/22/2012	0.115	0.036	1690	666	155	<0.03
	8/31/2012	0.119	0.041	1710	707	164	<0.03
	9/5/2012	0.118	0.038	1690	711	165	<0.03
	9/21/2012	0.109	0.05	1690	681	158	<0.03
	9/25/2012	0.111	0.037	1680	677	158	<0.03
	10/11/2012	0.115	0.037	1670	686	161	<0.03
	10/17/2012	0.122	0.045	1700	698	167	<0.03
	Average	0.116	0.041	1690	689	161	<0.03

Note: One half of the detection limit was used in calculating the average for non-detection values.

Table 2-3. 2000 through 2012 South Irrigation Supply Water Quality (concluded)

Year	Date	Parameter Ra-226 (pCi/l)	Ra-228 (pCi/l)	V (mg/l)	Th-230 (pCi/l)
2010	11/1/2010	-0.02	0.7	<0.01	0.04
2012	10/11/2012	0.38	1.4	<0.01	0.03

Table 2-4. Ra-226+Ra-228, Vanadium and Th-230 Values for the South Irrigation Supply Wells

SOUTH IRRIGATION WELLS									
	Ra-226+Ra-228			Vanadium			Thorium-230		
Well	No. of Data Values	Range (pCi/l)	Mean (pCi/l)	No. of Data Values	Range (pCi/l)	Mean (pCi/l)	No. of Data Values	Range (pCi/l)	Mean (pCi/l)
482	4	<1.2-<2.3	1.31	4	<0.01-0.004	0.005	4	0.008-<1	0.18
483	2	0.76-<2	0.88	2	<0.01-0.004	0.0045	2	0.02-<1	0.26
490	18	0.1-<2	0.67	18	0.003-<0.10	0.007	18	0-<1.0	0.13
491	5	<1.2-<2.0	0.76	5	0.003-<0.10	0.005	5	<0.2-<1.0	0.18
493	20	0.03-4.94	0.91	20	0.004-<0.01	0.005	20	0-<1	0.11
496	1	<2.3-<2.3	1.8	1	<0.01-<0.01	0.005	1	0.1-<0.2	0.10
497	2	1.19-<1.2	0.9	2	<0.01-<0.01	0.005	2	0.08-<0.2	0.09
498	2	0.97-<1.2	0.79	2	<0.01-<0.01	0.005	2	0.1-<0.2	0.10
538	1	<1.2-<1.2	0.6	1	<0.01-<0.01	0.005	1	<0.2-<0.2	0.10
540	2	<1.4-1.63	1.17	2	<0.01-<0.01	0.005	2	0.02-<0.2	0.06
541	1	<1.7-<1.7	0.85	1	<0.01-<0.01	0.005	1	0.5-0.5	0.50
631	2	<1.2-<1.3	0.63	2	<0.01-<0.01	0.005	2	0.6-1.1	0.85
632	4	<1.2-<2.2	0.75	4	<0.01-<0.01	0.005	4	<0.2-<0.2	0.10
644	2	<1.2-<1.2	0.6	2	<0.01-0.01	0.0075	2	<0.2-<0.2	0.10
647	2	<1.2-<2.3	0.875	2	<0.01-<0.01	0.005	2	<0.2-<0.2	0.10
648	6	0-<1.7	0.54	6	<0.01-<0.01	0.005	6	0-0.6	0.20
649	11	0-4.2	0.86	11	<0.01-<0.01	0.005	12	0.04-0.5	0.12
653	2	<1.2-<1.2	0.6	2	<0.01-<0.01	0.005	2	<0.2-<0.2	0.10
657	2	<0.38-<1.2	0.4	2	<0.01-<0.01	0.005	2	<0.052-<0.2	0.06
658	2	<0.172-<2.5	0.67	2	<0.01-<0.01	0.005	2	<0.07-<0.2	0.07
687	4	0.3-<1.2	0.6	4	<0.01-0.01	0.006	4	<0.2-1.2	0.50
855	6	<1.2-<2.3	0.7	6	<0.01-0.01	0.007	5	<0.2-1.3	0.30
862	7	0.42-2.11	0.88	7	<0.01-<0.01	0.005	7	0-<0.2	0.07
863	5	<1.2-<4.6	1.04	5	<0.01-<0.01	0.005	5	<0.2-0.8	0.23
865	6	0.24-<18.5	2.02	6	<0.01-0.01	0.005	6	0.06-0.2	0.11
866	5	<1.2-3.5	1.48	5	<0.01-<0.01	0.005	5	<0.2-0.6	0.28
869	5	<1.2-<5.2	1.21	5	<0.01-<0.01	0.005	5	<0.2-0.8	0.40
943	9	0.33-12.8	2.58	9	<0.01-<0.01	0.005	9	0.005-0.8	0.16
996	5	<0.53-<1.2	0.58	5	<0.01-<0.01	0.005	5	0-0.3	0.12
CW29	6	<1.2-4.7	1.63	6	<0.01-<0.01	0.005	6	0.02-0.6	0.17
CW42	3	<1.2-<1.2	0.6	3	<0.01-<0.01	0.005	3	<0.2-<0.2	0.10
CW44	4	0.78-<1.2	0.65	4	<0.01-<0.01	0.005	4	0.004-0.6	0.20
CW45	4	0.52-1.2	0.73	4	<0.01-<0.01	0.005	4	0.005-<0.2	0.08
CW53	3	0.63-<1.7	0.988	3	<0.01-<0.01	0.005	3	0-<0.2	0.23
TOTAL	163	0-<18.5	1.000	163	<0.01-0.01	0.005	163	0-1.3	0.17

Note: One half of the detection limit was used in calculating the average for non-detection values.

2.3.2 Constituent Concentrations in the North Irrigation Water

Average yearly concentrations varied from 0.14 to 0.39 for uranium and 0.03 to 0.08 mg/l selenium for the North irrigation water over the irrigation program life (Table 2-5). Temporary permission to irrigate in the North irrigation area was granted from NMED in 2011 with established upper concentration limits of 0.16 mg/L for uranium and 0.10 mg/L for selenium. Table 2-5 also presents the low levels of Ra-226, Ra-228, V and Th-230 measured for the Section 28 irrigation water in 2011 and 2012.

Water quality data from the North irrigation water are listed in Table 2-5. The average of yearly average uranium concentrations for the 2002 through 2009 irrigation seasons was 0.32 mg/l which was below the irrigation limit of 0.44 mg/l. The irrigation concentration limit for uranium was reduced to 0.16 mg/ after 2009 and the yearly average uranium concentration for the North irrigation area in 2011 and 2012 was 0.14 mg/l. Average selenium concentrations were less than 0.1 mg/l for each year of irrigation. All major and minor constituent water quality data for the North irrigation water are listed in Appendix A, Tables A.2-1 and A.2-2. Ra-226 + Ra-228, V and Th-230 activities or concentrations measured in samples of the North irrigation water were at low levels (Table 2-5). All major and minor constituent concentrations for all of the North irrigation supply wells are listed in Appendix A, Tables A.2-3 and A.2-4. Water quality statistics for Ra-226 + Ra-228, V and Th-230 for the individual North irrigation supply wells are shown in Table 2-6. Low concentrations of Ra 226 + Ra 228, V and Th-230 in the water applied to the North irrigation areas indicates a low potential to increase their concentration in the soil or groundwater in the North area.

Table 2-5. 2002 through 2012 North Irrigation Supply Water Quality

Year	Sample Date	Uranium (mg/l)	Selenium (mg/l)	TDS (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	Molybdenum (mg/l)
2002	10/2/2002	0.23	0.08	2070	881	----	----
2003	5/14/2003	0.24	<0.005	2070	936	184	<0.03
2004	5/4/2004	0.23	0.07	2120	933	190	<0.03
	5/27/2004	0.29	0.07	2110	950	170	<0.03
	8/18/2004	0.27	0.06	2140	956	----	----
	10/6/2004	0.27	0.06	2090	838	194	<0.03
	Average	0.27	0.07	2115	919	185	<0.03
2005	4/12/2005	0.48	0.11	2220	955	176	0.09
	5/6/2005	0.51	0.12	2230	1010	192	0.11
	5/20/2005	0.33	0.08	2120	916	194	<0.03
	5/27/2005	0.26	0.06	2050	907	176	<0.03
	6/3/2005	0.33	0.08	2040	926	182	<0.03
	6/10/2005	0.33	0.07	2000	943	186	<0.03
	6/17/2005	0.31	0.08	2100	899	167	<0.03
	10/11/2005	0.28	0.06	2110	863	170	<0.03
	Average	0.35	0.08	2109	927	180	0.04
2006	3/1/2006	0.35	0.08	2230	926	197	0.04
	4/10/2006	0.35	0.09	2150	985	185	0.05
	6/26/2006	0.3	0.07	1550	645	158	<0.03
	8/14/2006	0.36	0.09	1980	928	----	----
	10/2/2006	0.38	0.09	2020	925	161	0.07
	Average	0.35	0.08	1986	882	175	0.04
2007	4/1/2007	0.32	0.08	2130	904	173	<0.03
	4/30/2007	0.41	0.09	2240	980	164	0.04
	6/26/2007	0.32	0.08	2010	856	163	<0.03
	8/17/2007	0.38	0.08	2130	978	----	----
	10/10/2007	0.39	0.09	2100	885	184	0.04
	Average	0.36	0.08	2122	921	171	0.04
2008	4/1/2008	0.465	0.083	2050	1020	90	0.05
	6/2/2008	0.285	0.059	1750	893	152	<0.03
	9/24/2008	0.318	0.056	1950	867	157	<0.03
	Average	0.36	0.07	1917	927	133	0.04
2009	4/20/2009	0.388	0.065	2035	913	171	0.05
	6/2/2009	0.308	0.064	1980	871	174	0.03
	7/24/2009	0.369	0.061	2020	852	---	----
	9/28/2009	0.45	0.079	2080	940	177	0.07
	Average	0.39	0.07	2029	894	174	0.05
2011	6/17/2011	0.198	0.042	1490	672	135	<0.03
	6/23/2011	0.251	0.043	1570	685	138	<0.03
	6/29/2011	0.222	0.049	1490	676	138	<0.03
	7/7/2011	0.113	0.028	1290	532	110	<0.03
	7/15/2011	0.0837	0.015	1160	455	87	<0.03
	7/19/2011	0.155	0.028	1360	559	109	<0.03
	7/28/2011	0.13	0.021	1270	523	104	<0.03
	8/3/2011	0.132	0.022	1230	522	103	<0.03
	8/18/2011	0.0944	0.024	1450	682	118	<0.03
	8/24/2011	0.114	0.027	1460	629	---	----
	8/30/2011	0.107	0.025	1390	604	114	<0.03
	9/6/2011	0.124	0.027	1420	612	127	<0.03
	9/13/2011	0.104	0.026	1410	607	125	<0.03
	9/20/2011	0.128	0.033	1470	626	130	<0.03
	9/27/2011	0.128	0.034	1530	676	138	<0.03
	10/7/2011	0.127	0.029	1490	639	133	<0.03
	10/12/2011	0.122	0.032	1470	636	132	<0.03
	Average	0.14	0.03	1409	608	121	<0.03

Table 2-5. 2002 through 2012 North Irrigation Supply Water Quality (continued)

Year	Sample Date	Uranium (mg/l)	Selenium (mg/l)	TDS (mg/l)	Sulfate (mg/l)	Chloride (mg/l)	Molybdenum (mg/l)
2012	8/7/2012	0.149	0.033	1750	744	187	<0.03
	8/15/2012	0.176	0.039	2010	857	198	<0.03
	8/22/2012	0.146	0.034	1830	738	183	<0.03
	8/28/2012	0.135	0.031	1760	719	181	<0.03
	9/5/2012	0.123	0.030	1770	706	180	<0.03
	9/12/2012	0.158	0.038	1860	744	186	0.05
	9/18/2012	0.147	0.033	1800	755	184	<0.03
	9/25/2012	0.132	0.034	1810	672	170	<0.03
	10/2/2012	0.145	0.035	1830	768	195	<0.03
	10/11/2012	0.129	0.038	1860	741	189	0.03
	10/17/2012	0.131	0.044	1880	770	200	<0.03
	10/24/2012	0.132	0.035	1920	796	200	<0.03
	10/31/2012	0.133	0.038	1920	814	206	<0.03
	Average	0.14	0.036	1846	756	189	<0.03

Note: One half of the detection limit was used in calculating the average for non-detection values.

Table 2-5. 2002 through 2012 North Irrigation Supply Water Quality (concluded)

		Parameter			
Year	Date	Ra-226 (pCi/l)	Ra-228 (pCi/l)	V (mg/l)	Th-230 (pCi/l)
2011	10/12/2011	0.39	-0.4	<0.01	0.05
2012	10/2/2012	0.08	0.1	<0.01	0.05

Table 2-6. Ra-226+Ra-228, Vanadium and Th-230 Values for the North Irrigation Supply Wells

NORTH IRRIGATION WELLS									
	Ra-226+Ra-228			Vanadium			Thorium-230		
Well	No. of Data Values	Range (pCi/l)	Mean (pCi/l)	No. of Data Values	Range (mg/l)	Mean (mg/l)	No. of Data Values	Range (pCi/l)	Mean (pCi/l)
634	3	<1.2-7.2	3.04	3	<0.01-<0.01	0.005	3	0-0.2	0.10
659	12	<1.2-1.5	0.62	12	<0.01-<0.01	0.005	12	0-0.2	0.07
881	6	0.12-2.46	1.23	6	<0.01-0.01	0.006	6	0-0.2	0.10
886	7	0.01-1.91	1.4	7	<0.01-<0.01	0.005	7	0-<0.2	0.06
890	7	0.25-2.0	0.96	7	<0.01-<0.01	0.005	7	0.1-0.2	0.11
951R	4	0.71-3.4	2.12	4	<0.01-<0.01	0.005	4	0.0006-0.1	0.05
M16	1	2.05-2.05	2.05	1	<0.01-<0.01	0.005	1	0.04-0.04	0.04
MO	2	<1.2-<1.6	0.85	2	<0.01-<0.01	0.005	2	<0.2-<0.2	0.10
MQ	2	<1.2-<2.1	1.1	2	<0.01-<0.01	0.005	2	<0.2-0.6	0.35
MR	3	<1.3-3.01	1.57	3	<0.01-<0.01	0.005	3	0.009-0.4	0.17
MS	3	0.49-<1.8	0.93	3	<0.01-<0.01	0.005	3	0-0.40	0.17
TOTAL	50	0-7.2	1.25	50	<0.01-0.01	0.005	50	0-0.6	0.10

Note: One half of the detection limit was used in calculating the average for non-detection values.

2.4 Mass Removal

The extraction of water during the irrigation program significantly reduced the constituent of concern (COC) concentrations in the areas where the irrigation supply water was extracted. A series of Annual Performance Reports document the changes in concentrations of constituents of concern (COCs) in the irrigation areas with time (HMC 2001b, 2002, 2003, 2004b, 2005b, 2006b, 2007b, 2008b, 2009b, 2010b, 2011b, 2012b and 2013c). The mass (volume of water multiplied by the concentration) of a constituent is a measurement of the amount removed from the groundwater and the mass applied to the fields. Table 2-7 presents the gallons of water applied to the South and North areas for each year. A high of 280 million gallons (859 acre-feet) of water applied to the South irrigation in 2002 to a low of 43 million gallons (132 acre-feet) also applied in 2002 to Section 28 prior to this area being expanded to 100 acres (Table 2-7). This table also presents the average uranium, selenium and sulfate concentration in the water for each area and year, and also presents the mass removal of uranium, selenium, and sulfate through the irrigation program. The irrigation volume has been a significant portion of the total volume of groundwater with elevated COC concentrations collected from the Grants Reclamation Project (GRP) area. A total of 3.1 billion gallons of water was pumped from the irrigation supply wells from 2000 through 2012, while the volume of groundwater collected from the On-site area (i.e., for treatment, not for irrigation) was 4.7 billion gallons from 1978 through 2012 (see Table 2.1-1 in the 2012 Annual Performance Report, HMC 2013c). Figure 2-3 shows yearly gallons of water used in the irrigation program in blue, with a significant reduction in volume for years 2010 through 2012 due to the regulatory limits on the areas irrigated.

The calculated mass of uranium removed from the groundwater by the irrigation programs is 6,704 pounds. Figure 2-3 also shows the pounds of uranium removed from the groundwater each year in yellow. The uranium removed from the groundwater in 2010 and 2011 is only slightly more than a tenth of the average removal for prior years. The uranium removed in 2012 is slightly larger than that occurring in 2010 and 2011, but is still only slightly more than twenty percent of that removed in the least productive year (2001).

Table 2-7. Quantities of Water Applied to North and South Areas and Mass of Constituents Removed

YEAR	SYSTEM	TOTAL VOLUME PUMPED (GAL)	URANIUM CONC. (MG/L)	URANIUM MASS (LB)	SELENIUM CONC. (MG/L)	SELENIUM MASS (LB)	SULFATE CONC. (MG/L)	SULFATE MASS (LB)
2000	NORTH							
	SOUTH	233,130,506	0.27	525.4	0.12	233.5	624	1,214,286
	TOTAL	**233,130,506**		**525.4**		**233.5**		**1,214,286**
2001	NORTH							
	SOUTH	226,288,102	0.26	491.1	0.1	188.9	642	1,212,646
	TOTAL	**226,288,102**		**491.1**		**188.9**		**1,212,646**
2002	NORTH	43,009,402	0.23	82.6	0.08	28.7	881	316,284
	SOUTH	280,538,597	0.23	538.6	0.1	234.2	705	1,650,893
	TOTAL	**323,547,999**		**621.2**		**262.9**		**1,967,177**
2003	NORTH	50,242,801	0.24	100.7	*<.005	1.0	936	392,543
	SOUTH	258,642,901	0.22	475.0	0.08	172.7	732	1,580,334
	TOTAL	**308,885,702**		**575.6**		**173.8**		**1,972,877**
2004	NORTH	59,431,173	0.27	133.9	0.07	34.7	919	455,897
	SOUTH	275,436,118	0.26	597.8	0.09	206.9	679	1,561,090
	TOTAL	**334,867,291**		**731.7**		**241.6**		**2,016,987**
2005	NORTH	77,547,254	0.35	226.6	0.08	51.8	927	600,044
	SOUTH	259,444,440	0.27	584.7	0.06	129.9	732	1,585,232
	TOTAL	**336,991,694**		**811.3**		**181.7**		**2,185,276**
2006	NORTH	75,918,110	0.35	221.8	0.08	50.7	882	558,922
	SOUTH	196,865,761	0.29	476.5	0.07	115.0	716	1,176,577
	TOTAL	**272,783,871**		**698.3**		**165.7**		**1,735,499**
2007	NORTH	78,850,570	0.36	236.9	0.08	52.7	921	606,180
	SOUTH	178,098,022	0.28	416.3	0.06	89.2	666	990,081
	TOTAL	**256,948,592**		**653.2**		**141.9**		**1,596,261**
2008	NORTH	89,928,749	0.36	270.2	0.07	52.5	927	695,850
	SOUTH	254,674,307	0.24	510.2	0.05	106.3	702	1,492,312
	TOTAL	**344,603,056**		**780.4**		**158.8**		**2,188,162**
2009	NORTH	60,278,328	0.39	196.2	0.07	35.2	894	449,817
	SOUTH	177,648,378	0.24	355.9	0.05	74.1	709	1,051,344
	TOTAL	**237,926,706**		**552.1**		**109.4**		**1,501,161**
2010	NORTH							
	SOUTH	65,296,092	0.136	74.1	0.045	24.5	739	402,781
	TOTAL	**65,296,092**		**74.1**		**24.5**		**402,781**
2011	NORTH	69,401,534	0.14	81.1	0.03	17.4	597	345,844
	SOUTH							
	TOTAL	**69,401,534**		**81.1**		**17.4**		**345,844**
2012	NORTH	52,137,000	0.14	60.9	0.04	17.4	756	329,007
	SOUTH	48,821,000	0.116	47.3	0.04	16.3	689	280,778
	TOTAL	**100,958,000**		**108.2**		**33.7**		**609,785**
NORTH TOTAL		656,744,921		1,610.9		342.2		4,750,389
SOUTH TOTAL		2,454,884,224		5,092.8		1,591.6		14,198,354
COMBINED TOTAL		**3,111,629,145**		**6,703.8**		**1,933.8**		**18,948,743**

NOTE: *= .0025 mg/l used as concentration to calculate load

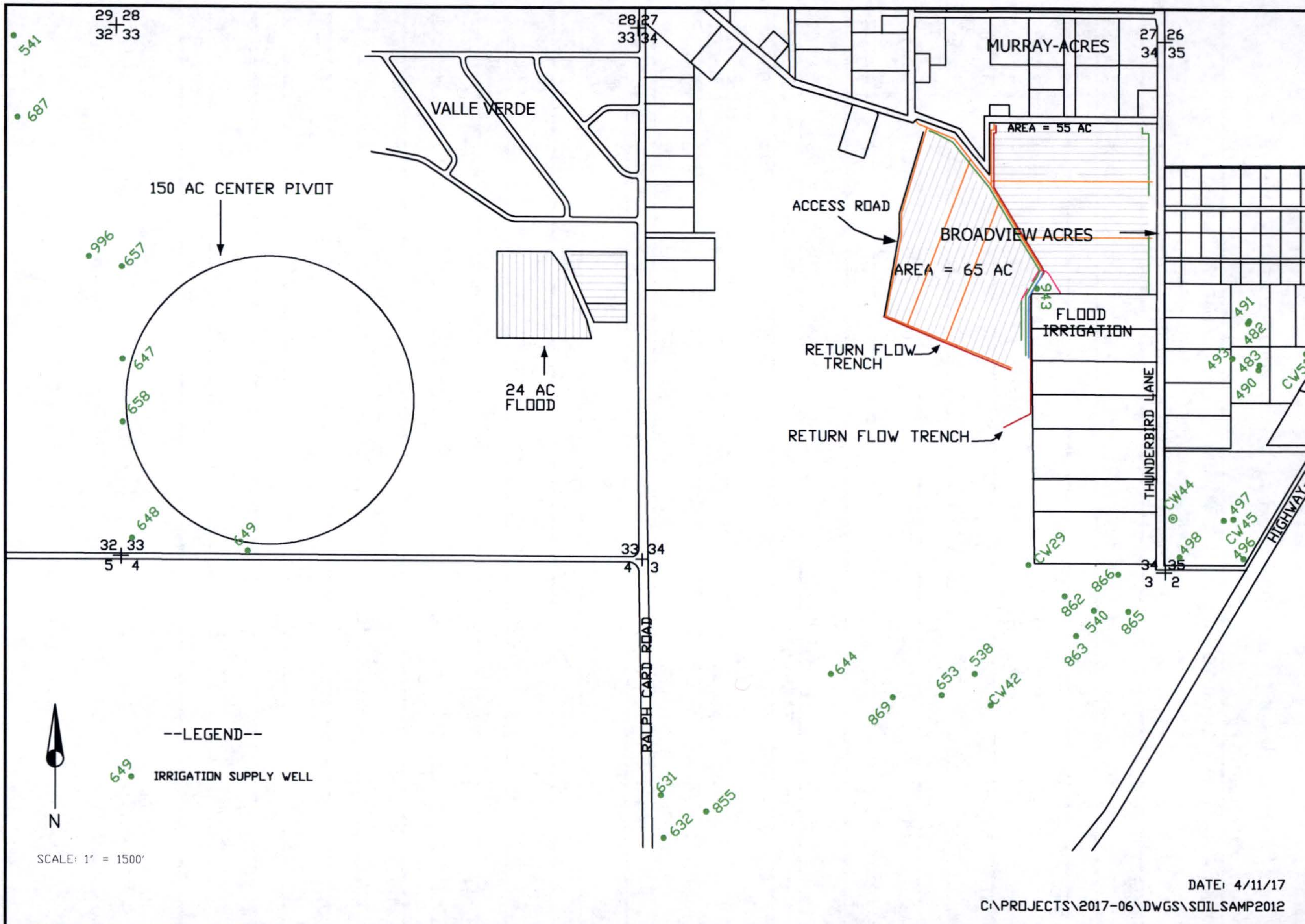


FIGURE 2-1. SOUTH IRRIGATION SUPPLY WELLS

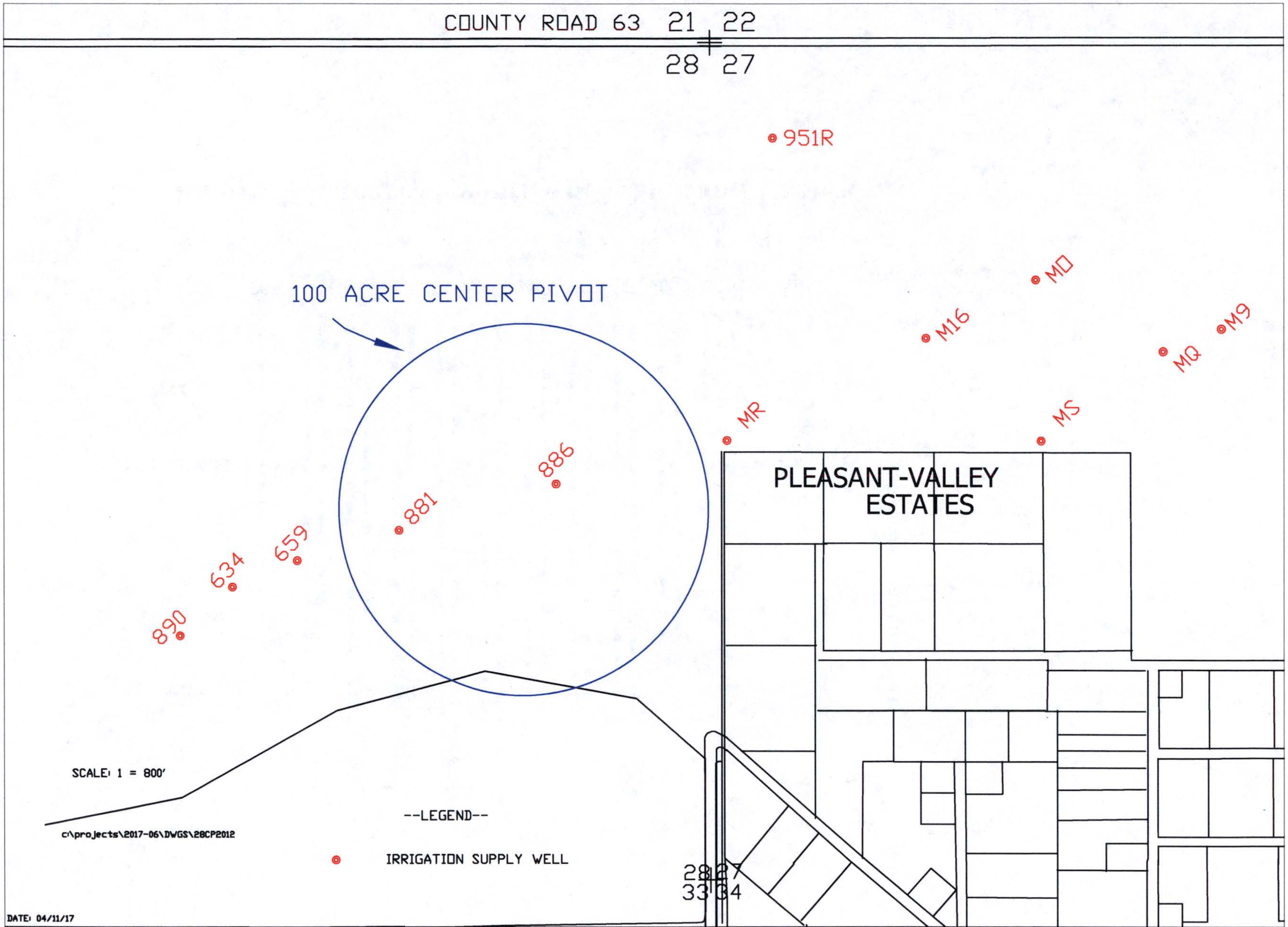


FIGURE 2-2. NORTH IRRIGATION SUPPLY WELLS

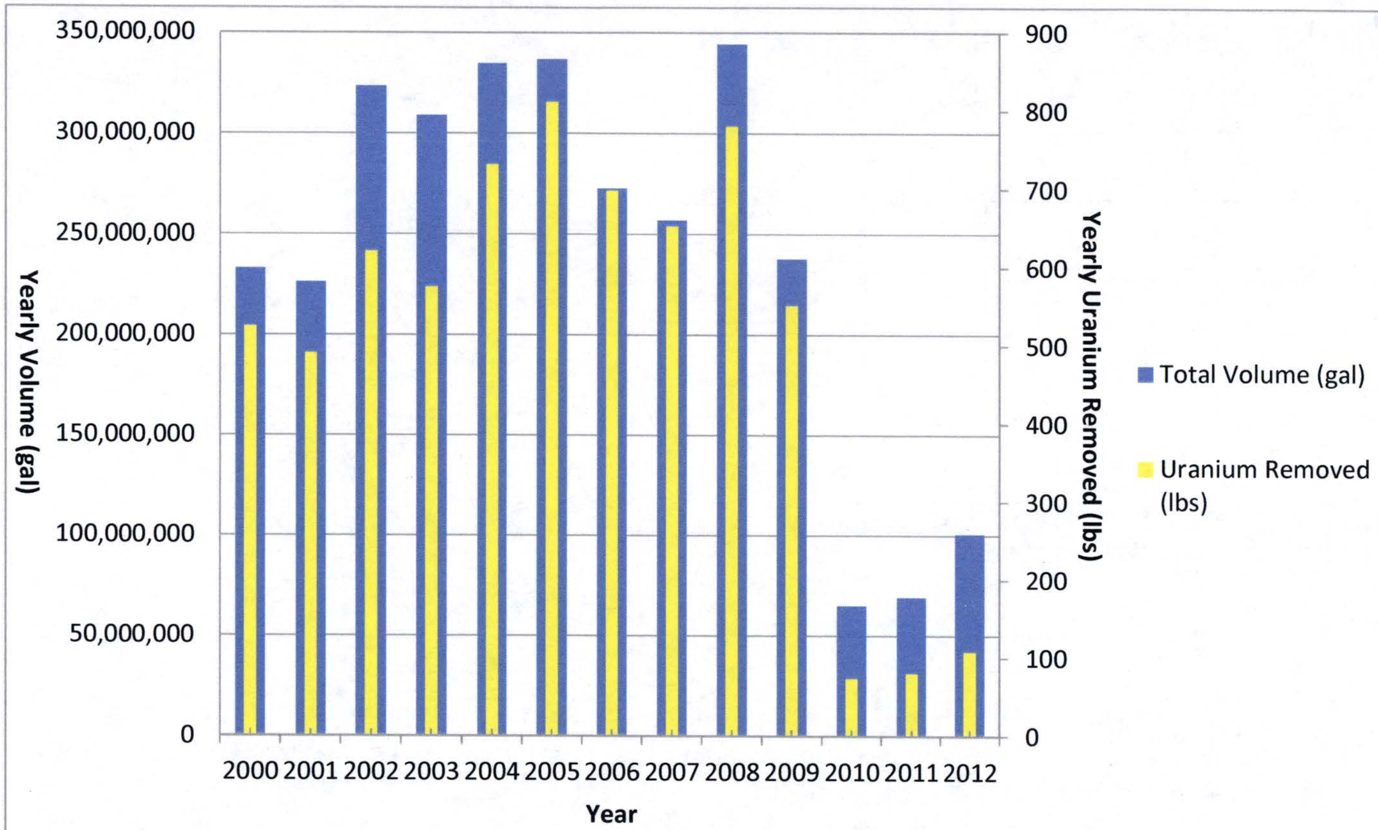


Figure 2-3. Yearly Quantity of Water and Uranium Removed

3.0 Soil and Soil Moisture (Pore Water) Assessment

Soil samples have been collected with a hand auger from irrigated and non-irrigated soils and analyzed for uranium, selenium, and chloride concentrations to quantify the retention/adsorption of these constituents in the soil profile over time (see HMC 2001a, 2004a, 2005a, 2006a, 2007a, 2008a, 2009a, 2010a, 2011a, 2012a, 2013a, 2014a and 2016 for details). The concentration of uranium and selenium retained in soil was then used to show the gain in concentrations with depth (see the above referenced reports for the tabulations of the gains and figures in Appendix B). Chloride was tracked as a conservative constituent and used as a contrast to observations of selenium retention in soil.

Samples collected from adjacent, fallow areas were labeled as background samples. Investigators labeled the samples collected prior to irrigation from areas slated for irrigation as pre-operations samples. Those were also assumed to be at background.

Soil moisture concentrations were initially collected from lysimeters in the irrigated fields in 2009. Lysimeters were installed starting in 2009 in selected locations to collect the soil moisture (pore water) samples (see HMC 2010a, 2011a, 2012a, 2013a, 2014a and 2016 for details on the lysimeters). Soil moisture content instruments were also added in the upper soil profile in Sections 28 and 34 areas in 2012 to measure the soil moisture content variations. The soil moisture content instrument results (see HMC 2013a, 2014a and 2016) show the drying of the soil profile because irrigation ceased shortly after their installation. The 2013 and 2014 irrigation reports and the 2016 Annual Performance Report contain information on these instruments, but the instruments and data are not discussed further in this report.

3.1 Subsurface Conditions

An interval of basalt exists within the alluvial material in the Sections 28 and 33 irrigation areas, which is important because its properties are very different than the remainder of the alluvium. The depth to the top of the basalt shows the thickness of alluvial material above the basalt (Figures 3-1, 3-3 and 3-5). The basalt is present as a lava flow generally over a portion of the alluvium or over the Chinle Shale or other bedrock. Although the basalt occurs within or in contact with the alluvium, it has physical and hydraulic properties that are typically much different than those of the alluvium. Cross sections illustrate the subsurface conditions down to the base of the alluvial aquifer as well as, the underlying lithologies.

3.1.1 Section 33

The depth of the alluvial material to the top of the basalt is presented in Figure 3-1 for the Section 33 area. This figure shows that the depth of the basalt below the land surface varies from less than 5 feet in the southwestern portion of Section 33 center pivot to greater than 20 feet in the southeastern portion of the pivot. The eastern limits of the basalt are shown in the eastern portion of Section 33 where the basalt is absent as indicated by a cross-hatch pattern. Figure 3-1 shows the location of a cross section that extends from irrigation well 657 to San Andres well 907 in Section 4. Figure 3-2 shows the cross section indicating thickness of the alluvial material above the basalt and the thickness of the basalt. The base of the alluvial material is also shown on this cross section and the 2009 alluvial water-level elevation is also presented to show how much of the alluvial material is saturated. The cross section also shows the alluvial wells with their completion interval and also the depth of installation of lysimeters along this cross section. The lysimeter water quality sample results are presented in Section 3.5.

3.1.2 Section 34

The Section 34 flood area is shown on the eastern portion of Figure 3-3 which also includes the Section 33 area. The 120-acre flood area is just south of Murray Acres and the basalt is not present under any of the Section 34 flood area. Figure 3-3 shows the location of a cross section which extends from well CW43 in the Section 33 flood area through the southern portion of the Section 34 flood area and into the western edge of Section 35. This cross section shows the depth to the alluvial aquifer and the base of the alluvial aquifer (see Figure 3-4). On the western side of the cross section shown in Figure 3-4, the basalt is present and the elevation of the base of the alluvium is higher than the surrounding water-level elevation in the alluvium. The cross section shows the location of the West Fault east of well CW37, and also shows that the Upper Chinle aquifer subcrops against the alluvial aquifer in the eastern edge of this cross section. Three lysimeter locations and installed depths are shown on the cross section figure. The soil moisture content instruments in Section 34 are adjacent to lysimeter LY34-3 and are also shown on the cross section in Figure 3-4.

The Section 33 flood area is also shown in Figure 3-3 on the east side of Section 33. The 24-acre flood area is just south of Valle Verde and the basalt is present under all of the Section 33 flood area. The cross section shows the depth to the basalt and base of the alluvium in the Section 33 flood area (see Figure 3-4).

3.1.3 Section 28

Figure 3-5 shows the depth to basalt in the Section 28 center pivot (North) area. The depth to basalt in this area generally increases from the southwest side of the center pivot where the depth to the top of the basalt is approximately 10 feet to greater than 20 feet on the northeast side of the center pivot. The cross-hatch pattern shows where the basalt does not exist in the alluvial material in the far southeast corner of Section 28. Figure 3-6 presents the cross section from irrigation well 659 through well CW32 (see Figure 3-5 for location of this cross section). This cross section shows that the basalt extends down below the alluvial water level in the majority of the Section 28 center pivot area. The cross section also shows the completion of two lysimeters and the soil moisture content instruments located adjacent to LY28-2 and LY28-2M.

3.2 Background Soil Concentrations

Naturally-occurring uranium and selenium concentrations in unirrigated soils were determined in two studies. In 1998, HMC characterized uranium and selenium concentrations in soils, prior to selecting fields for the irrigation study. Additional pre-operational soil samples were collected in 1999 in Sections 33 and 34 prior to the start of irrigation. Data for the pre-operation samples are reported in Appendix B. Figures 1-1 and 3-7 show the locations of the pre-irrigation soil samples while Figure 3-7 also shows the locations of the background samples collected during the irrigation. HMC has also collected and analyzed soil background samples outside of the irrigated areas during the irrigation program through 2010. The mean background soil concentrations are considered to be well defined. No additional soil samples outside of the irrigation areas were collected in 2011 or 2012.

The statistics for the pre-operational soil samples in Sections 28, 33 and 34 are presented in Table 3-1 and the sample locations are presented on Figures 1-1, 3-7 and 3-8.

Table 3-1. Summary Statistics of Pre-Operational Soil Samples for the Irrigation Areas.

Statistic	Section 28		Section 33		Section 34	
Number of samples	14		22		22	
Depth Range (inches)*	0-84		0-60		0-60	
	Analyte		Analyte		Analyte	
	U (pCi/g)	Se (mg/kg)	U (pCi/g)	Se (mg/kg)	U (pCi/g)	Se (mg/kg)
Mean	0.34	0.07	0.57	0.10	1.6	0.25
Standard Deviation	0.24	0.06	0.29	0.07	1.2	0.21
Minimum	0.13	0.03	0.24	0.03	0.58	0.03
Maximum	1.06	0.18	1.23	0.2	5.85	0.8
Median	0.24	0.04	0.53	0.10	1.2	0.14

3.2.1 South Area Background Soils

The first soils investigation (RIMCON and Hydro-Engineering, 1998) was completed prior to the selection of irrigation areas. Surface and near-surface soil samples were collected inside and outside the fields slated for irrigation. The samples were analyzed for uranium and selenium concentrations and parameters to define soil types. Figure 3-7 shows the location of the pre-operational soil samples in the South irrigation areas and also shows where additional background samples were collected in 2000 through 2010 outside of the irrigated areas (see HMC 2001a, 2004a, 2005a, 2006a, 2007a, 2008a, 2009a, 2010a, 2011a and 2012a for details on the additional background soil samples).

At the time of sampling, surface soils in Sections 28, 33, and 34 were placed in three general categories: loamy sand, sandy loam, and sandy clay loam, respectively. The percentage of clay in these soils increased from Section 28 to 33 to 34 (RIMCON and Hydro-Engineering, 1998).

The pre-operational and background soil sample data for Section 33 and 34 including pH, conductivity, calcium, magnesium, sodium, sodium adsorption ratio (SAR) and sulfate are reported in Appendix B. The Section 33 flood area samples are presented with the Section 34 flood soil data because the soil type in the Section 33 flood area is similar to the Section 34 flood area soil. A "1998" in the comment column in the tables indicate the sample was taken during the 1998 background investigation.

3.2.2 North Area Background Soils

Pre-operational and background samples from locations outside of the irrigated area were collected for the Section 28 North irrigation area (Figure 3-8). The pre-operational and background soil sampling results are tabulated in Appendix B.

3.2.3 Mean Background Soil Concentrations

Mean background is defined as the average of the pre-irrigation and background concentrations of constituents in all such samples collected (see Tables B.1-1, B.1-3 and B.2-1 in Appendix B for the mean background values). The mean background soil concentration data are tabulated by section and depth interval, and were updated with new data as they were obtained through 2010. These mean background values are used to calculate the retention of a constituent in the soil profile in the irrigated areas. Plots of the mean background concentration with depth in the soil profile are included in Appendix B, and compared to measured irrigated concentrations as discussed in the following section.

The mean background concentrations of selenium are similar in Sections 28 and 33. Selenium concentrations in Section 34 are generally higher, presumably because of their association with clay soils. A statistical indication of the variability in uranium, selenium, and chloride levels in background soils includes coefficients of variation (100 x standard deviation/mean) ranging between 0 and 89 percent.

3.3 Increase in Soil Concentrations

Uranium, selenium, molybdenum, calcium, magnesium, sodium, chloride, and sulfate levels were measured in soil samples from Sections 33 and 34 in 1999 (prior to irrigation) and after each of the 2000 through 2012 irrigation seasons. The pH, conductivity and SAR were also measured or calculated for the samples. All samples within each irrigation area were composited to give average concentrations for use in evaluating temporal changes over time as the irrigation project progressed. With respect to spatial variability, the data are somewhat limited, but in 2009, individual samples from various locations were analyzed separately for each irrigation area. A statistical description of these individual sampling data is provided in Section 3.3.4.

Changes in soil chemistry between pre-irrigation samples and those collected after the first irrigation season in 2000 are described in HMC, 2001a, 2004a, 2005a, 2006a, 2007a, 2008a, 2009a, 2010a, 2011a, 2012a, 2013a, 2014a, 2016 and in this report. The statistics for the irrigated soil samples collected from 2000 through 2013 in Sections 28, 33 and 34 are presented in Table 3-2.

Table 3-2. Summary Statistics of Surface and Subsurface Soil for Irrigation Areas

Statistic	Section 28 Pivot		Section 33 Pivot		Section 33 Flood		Section 34 Flood	
Number	125		144		74		123	
	Analyte		Analyte		Analyte		Analyte	
	U (mg/kg)	Se (mg/kg)	U (mg/kg)	Se (mg/kg)	U (mg/kg)	Se (mg/kg)	U (mg/kg)	Se (mg/kg)
Mean	0.81	0.26	0.98	0.29	0.99	0.22	1.73	0.25
Standard Deviation	0.40	0.28	0.42	0.26	0.55	0.16	0.35	0.21
Minimum	0.35	0.05	0.42	0.05	0.13	0.05	0.31	0.03
Maximum	2.99	1	2.51	1	1.96	0.56	5.15	0.8
Median	0.74	0.15	0.69	0.19	1.10	0.21	1.26	0.14

3.3.1 Sections 33 Center Pivot Soils

The location of soil samples collected after the irrigation season each year is shown in Figure 3-9 for the Section 33 center pivot. The composite soil sample results are presented in Table B.1-5 in Appendix B (see HMC 2001a, 2004a, 2005a, 2006a, 2007a, 2008a, 2009a, 2010a, 2011a, 2012a, 2013a and 2014a for details of the soil sampling). Figure B.1-1 in Appendix B presents a plot of the mean concentrations for the background which includes data through 2010 and irrigated soil uranium concentrations with depth for the Section 33 pivot soils for years 2006, 2008, 2010 and 2012. The mean background concentrations for Section 33 center pivot are also presented on this plot. Comparing the background mean concentrations to the soil data collected after irrigation began shows that the uranium concentrations increased the most in the upper two feet. The uranium soil concentration increase occurred in the upper six feet of the soil profile, indicating very little movement of uranium below this depth. On the average, the 2010 and 2012 soil concentrations (after ceasing the Section 33 irrigation) are slightly higher than the average in 2006 and 2008.

A small increase in the selenium levels in the upper six feet was observed in the Section 33 pivot area soils (see Figure B.1-2). At depths greater than six feet, the irrigated soil selenium concentration in the soil profile is generally indistinguishable from background.

Meteoric water mobility tests were also conducted in 2015 to define the potential for constituents in the soil to become mobile as water comes in contact with the Section 33 center pivot soils. Table B.1-8 in Appendix B presents the water mobility test results for the Section 33 soils (see HMC 2016 for locations). These tests generally indicate more mobility of constituents in the upper portion of the soil profile similar to the patterns shown by soil concentration measurements through 2013.

3.3.2 Sections 33 and 34 Flood Area Soils

The locations of the Sections 33 and 34 flood irrigation area soil samples are also presented on Figure 3-9 (see Tables B.1-6 and B.1-7 in Appendix B for the Section 33 and Section 34 flood area soil analyses). Uranium concentrations versus depth for the Section 34 soils are shown on Figure B.1-3 in Appendix B and the concentration profiles illustrate that all of the increases above background are in the upper three feet of these clayey soils. Concentration profiles were not developed for the Section 33 flood area due to the limited data. The variability in the soil results makes it difficult to define any trends with time, and the concentrations in the upper three feet are fairly similar from 2006 through 2012. The clayey soils in Section 34 have a higher mean background concentration than the sandy soils in Section 33 and also retain more uranium in the upper soil intervals.

Mean selenium concentrations are also higher both in background and irrigated soils in the clayey soils in Section 34 when compared with the Section 33 soils. Figure B.1-4 shows that the selenium concentrations increased above background in only the upper three feet of the Section 34 flood irrigated area soils.

Table B.1-8 in Appendix B presents the meteoric water mobility test results for each foot interval below the land surface for the Sections 33 and 34 flood area soils. These tests generally show higher concentrations for the upper portion of the soil profile, indicating a larger potential for constituent movement from the upper portion of the soil profile.

3.3.3 Section 28 Center Pivot Soils

The irrigated soil sampling locations are shown on Figure 3-10 for the Section 28 center pivot. The results from these samples are tabulated in Table B.2-3 in Appendix B. Figure B.2-1 shows a plot of the mean uranium soil concentrations for Section 28 soils with depth for background samples collected in 2006, 2008, 2010 and 2012. A small increase in mean uranium concentrations above the background was observed for the upper six feet of soil. The background and irrigated soil concentrations are similar below a depth of six feet.

Selenium concentrations in the Section 28 sandy soils also only increased a small amount in the upper few feet. Figure B.2-2 presents the plot of the selenium soil concentrations for Section 28.

Table B.2-4 in Appendix B presents the meteoric water mobility test results for each foot interval below the land surface for the Section 28 sandy soils. These tests generally show higher concentrations for the soils from the upper portion of the soil profile, indicating a larger potential for constituent movement from the upper portion of the soil profile.

3.3.4 Spatial Variability

The spatial variability in uranium and selenium soil concentrations is of interest with respect to demonstrations of compliance with soil cleanup criteria. Soil samples for a given irrigation area were normally composited during the land application program to represent average values, and there is a need to understand spatial variability with respect to evaluating compliance with cleanup criteria for soils.

The variability within and between irrigation areas was evaluated based on individual soil samples that were collected and analyzed separately in 2009 for both uranium and selenium (HMC, 2012a). Summary statistics for these data are provided in Tables 3-3 and 3-4 below. Coefficient of variation (CV) values for individual locations across these irrigation areas ranged from 13.7% to 58.3%. Relative to proposed cleanup criteria for uranium (16 mg/kg) and selenium (5.17 mg/kg) as discussed in the following section of this report, this amount of variation in concentrations across the irrigation areas is considered relatively low and concentrations relatively uniform. However, the data are somewhat limited in scope and the sampling design was not intended to address issues of compliance with soil cleanup criteria.

Table 3-3. Summary Statistics for uranium in individual soil samples by irrigation area (mg/kg)

Area	N	Mean	Median	Minimum	Maximum	Std. Dev.	Coef. Var.	95% UCL
34 Flood	9	4.1	4.0	1.6	5.5	1.2	28.5	4.9
34 BKG	9	3.4	3.3	1.7	4.7	0.9	27.8	4.1
33 Pivot	10	2.0	2.0	1.2	3.6	0.7	32.6	2.5
28 Pivot	8	1.6	1.4	1.1	3.5	0.8	48.1	2.3
33 BKG	4	1.0	1.0	0.8	1.1	0.1	13.7	1.2

Table 3-4. Summary Statistics for selenium in individual soil samples by irrigation area (mg/kg)

Area	N	Mean	Median	Minimum	Maximum	Std. Dev.	Coef. Var.	95% UCL
34 Flood	9	1.0	1.0	0.4	1.4	0.3	28.4	1.2
33 Pivot	10	0.4	0.4	0.3	0.5	0.1	23.8	0.5
28 Pivot	8	0.4	0.4	0.2	0.9	0.2	48.5	0.6
33 BKG	4	0.3	0.3	0.2	0.6	0.2	58.3	0.6
34 BKG	9	0.7	0.6	0.2	1.3	0.3	48.3	0.9

In addition, individual soil samples collected by EPA (EPA, 2013) were also analyzed in a context of spatial variability within and between land application areas. Statistics for isotopic uranium (U-238, U-234, and U-235) and selenium within flood or pivot irrigation areas are provided in EPA's 2013 draft Human Health Risk Assessment Report (EPA, 2013), and in Appendix E of the EPA's Draft Remedial Investigation Report (EPA, 2016). Respectively excerpted data are reproduced below as Tables 3-5 and 3-6, respectively. Summary statistics for background soil concentrations of these constituents are also excerpted in Table 3-7 below. These data generally show similar CV values, ranging from about 13% to 85%. Again, this amount of spatial variability is considered relatively low and concentrations relatively uniform relative to the proposed cleanup criteria for uranium (16 mg/kg) and selenium (5.17 mg/kg) as discussed in the following section of this report.

Table 3-5. Excerpted descriptive statistics for selenium (mg/kg) and radionuclides (pCi/g) in soils for flood irrigation areas

Constituent	N	Mean	Median	Minimum	Maximum	Std. Dev.	Coef. Var.	95% UCL
Selenium	6	0.85	0.75	0.5	1.31	0.35	40.93	1.14
U-234	6	1.66	1.47	0.88	2.73	0.69	41.74	2.23
U-235	6	0.16	0.17	0.12	0.19	0.03	18.08	0.19
U-235	6	0.1	0.09	0.02	0.19	0.07	71.25	0.16
U-238	6	1.76	1.67	1.06	2.49	0.55	31.36	2.21

Table 3-6. Excerpted descriptive statistics for selenium (mg/kg) and radionuclides (pCi/g) in soils for center pivot irrigation fields

Constituent	N	Mean	Median	Minimum	Maximum	Std. Dev.	Coef. Var.	95% UCL
Selenium	13	0.48	0.46	0.29	0.71	0.11	23.24	0.53
U-234	12	7	0.73	0.56	0.84	0.09	13.43	0.75
U-235	9	0.07	0.07	0.06	0.1	0.01	14.49	0.08
U-235	12	0.05	0.06	0.02	0.08	0.03	51.64	0.06
U-238	12	0.63	0.61	0.48	0.89	0.12	19.33	0.69

Table 3-7. Excerpted background descriptive statistics for selenium (mg/kg) and radionuclides (pCi/g) in soil

Constituent	N	Mean	Median	Minimum	Maximum	Std. Dev.	Coef. Var.	95% UCL
Selenium	12	0.55	0.4	0.35	2.03	0.47	85.18	0.8
U-234	5	0.91	0.88	0.6	1.22	0.24	26.67	1.14
U-235	12	0.1	0.1	0.06	0.12	0.02	18.82	0.11
U-235	5	0.06	0.06	0	0.12	0.05	81.62	0.11
U-238	5	0.95	0.89	0.73	1.21	0.21	21.76	1.15

3.4 Comparison of Soil Concentrations with Risk-based Regulatory Criteria

This report summarizes all soil sampling data collected as part of the land application activities commissioned in 2000. Increases in uranium and selenium concentrations in surface soil have been observed in each irrigation area, but the levels are below regulatory limits and screening thresholds established to protect human health. Soil sampling data for the land application irrigation areas demonstrate the following:

- No concentrations of uranium in soil exceeded the 2017 State of New Mexico Soil Screening Levels (SSL) of 234 mg/kg for residential land use [or 270 mg/kg to be protective of groundwater quality, assuming a dilution/attenuation factor (DAF) of 20 as recommended by the New Mexico Environment Department] (NMED, 2017).

- No concentrations of uranium in soil exceeded the most recent (2017) EPA Regional SSL of 16 mg/kg for residential land use [or 280 mg/kg for protection of groundwater quality, assuming the EPA's default DAF of 20 (EPA, 1996)].[2]

- No concentrations of selenium in soil exceeded the State of New Mexico SSL of 391 mg/kg for residential land use [or 5.17 mg/kg to be protective of groundwater quality, assuming a DAF of 20 as recommended by the New Mexico Environmental Department (NMED, 2017)].

- The data indicate that uranium and selenium levels in soil within the irrigation areas would not pose an unacceptable health risk to future human receptors under any future land use practices. It was acknowledged in the Draft RI Report (EPA, 2016) that deed restrictions on agricultural land use are currently in effect in these areas, but this assessment includes a remote possibility of failure of institutional controls beyond the foreseeable future.

As required in 10 CFR 40 Appendix A, Criterion 6(6), a radium-226 benchmark evaluation to establish uranium clean-up levels in soil based on a radiological endpoint was performed and is presented in Section 5 of the Decommissioning and Reclamation Plan Update 2013 (HMC, 2013b). That report was submitted to NRC in 2013 and has been reviewed but has not been approved. The soil clean-up level for uranium based on this benchmark evaluation is 404 pCi/g (597 mg/kg assuming a specific activity of 677 pCi/mg for natural uranium). Since the soil clean-up level concentration for uranium is much greater than the SSL concentration for uranium, HMC proposed a uranium soil clean-up level equivalent to the NMED SSL activity concentration of 235 mg/kg (the residential SSL in effect at that time), which equates to an activity concentration of 159 pCi/g. Although irrigation area soil concentrations for uranium and selenium are below any current potentially applicable SSL on an individual basis (including recently updated SSLs from NMED and EPA), both NMED and EPA have risk assessment provisions if multiple contaminants are present.

EPA's Risk Assessment Guidance for Superfund (RAGS) describes summation of risks for carcinogens, and calculation of a Hazard Index (HI) for non-carcinogens (EPA, 1989). Because SSLs for both uranium and selenium are based on non-cancer (toxicity) effects, the HI approach is applicable to the land application irrigation areas. NMED has adopted the same approach (NMED, 2017), and defines the HI as follows:

Risk Assessment Guidance for Investigations and Remediation
Volume I
March 2017

$$\text{Site Hazard Index (HI)} = \left(\frac{\text{conc}_x}{\text{SSL}_x} + \frac{\text{conc}_y}{\text{SSL}_y} + \frac{\text{conc}_z}{\text{SSL}_z} + \ldots + \frac{\text{conc}_i}{\text{SSL}_i} \right) \times 1$$

Equation 59

[2] "EPA has selected a default DAF of 20 to account for contaminant dilution and attenuation during transport through the saturated zone to a compliance point (i.e., receptor well). At most sites, this adjustment will more accurately reflect a contaminant's threat to ground water resources than assuming a DAF of 1 (i.e., no dilution or attenuation)." (EPA, 1996).

For soils to be released from further regulatory consideration, the HI must be ≤ 1 (unity). This HI approach for non-radiological health endpoints is analogous to the dose-based "sum-of-fractions" approach described for radiological health endpoints in 10 CFR 20 Appendix B, as well as the "unity rule" for evaluation of compliance with soil cleanup criteria indicated in 10 CFR 40, Appendix A, Criterion 6(6).

Table 3-2 summarizes the soil data for uranium and selenium from 2000 to 2013. All soil sampling data are included in Appendix B. Existing data indicate that the highest measured uranium concentration in soil was 5.15 mg/kg, about three times *lower* than the most restrictive regulatory limit considered protective of human health and the environment (16 mg/kg; EPA Regional SSL for residential land use, assuming EPA's default DAF of 20 for the groundwater pathway). The highest selenium concentration was 1 mg/kg, approximately five times lower than the most restrictive regulatory limit of 5.17 mg/kg (State of New Mexico SSL for protection of groundwater quality, assuming a DAF of 20 per NMED, 2017).

When the maximum uranium and selenium concentrations in soil for any irrigation area are evaluated collectively against the most restrictive SSLs as noted above, the corresponding sum-of-fractions calculation yields the following HI result:

$$HI = \frac{5.15\ \mathrm{mg/kg}}{16\ \mathrm{mg/kg}} + \frac{1\ \mathrm{mg/kg}}{5.17\ \mathrm{mg/kg}} = 0.52$$

Because this result is well below a value of one (unity), this evaluation indicates that the additive impacts for uranium and selenium in soil associated with the land application program are well below current regulatory thresholds established to be protective of human health. In addition, this assessment does not include a subtraction of background concentrations and thus overestimates the true human health impacts of the land application irrigation program.

Based on the above analysis, it is proposed that acceptable individual soil concentration criteria for release of the land application areas for unrestricted future use be set at the most restrictive current SSLs for uranium (16 mg/kg) and selenium (5.17 mg/kg) (from EPA and NMED, respectively, each assuming a DAF of 20), and the HI calculation as defined above will be used to determine compliance with the limit for combined toxicity effects from both constituents.

Table 3-8 presents Ra-226 activity data for soil samples collected by the EPA as part of a background soil analysis program. These data were included in the Draft Human Health Risk Assessment (EPA, 2013) and Draft Remedial Investigation Report (EPA, 2016). Although the EPA sampling program included samples collected throughout the overall project area, only those samples from the former irrigation areas are relevant to this analysis. A total of eighteen samples were collected by EPA with six samples from each of the center pivot sprinkler areas in Sections 28 and 33. Four samples were collected from the Section 34 flood irrigation area, and two samples were collected from the Section 33 flood irrigation area. The Ra-226 activity in all samples was below 5 pCi/g, the soil cleanup criterion for license termination and unrestricted future use as given in 10 CFR 40, Appendix A. These results are consistent with the very low Ra-226 activities measured in irrigation supply water (Appendix B, Tables A.1-2 and A.2-2).

Table 3-8. Summary of Ra-226 Soil Data from the RI, pCi/g

No. Data Values	Section 33 Pivot		No. Data Values	Section 33 Flood		No. Data Values	Section 34 Flood		No. Data Values	Section 28 Pivot	
	Range	Mean		Range	Mean		Range	Mean		Range	Mean
6	1.1 - 1.6	1.2	2	1.8 - 2.4	2.1	4	2.4 - 3.1	2.9	6	0.83 - 1.2	1.0

3.5 Observed Soil Moisture Constituent Concentrations

Lysimeters were installed in the irrigation field areas to collect soil moisture samples and enable the measurement of the soil moisture constituent concentrations in 2009. The lysimeters were installed in augured holes at the desired depths. The porous cups were packed with a very fine flour sand to enhance their contact with the surrounding soil and the ability to pull moisture into the cup. A vacuum is placed on the lysimeter, which causes the soil moisture water to enter the cup. The soil moisture samples are then collected by purging the lysimeter cup. It is important to note that the fine sand around the lysimeters is typically installed with a slurry technique using distilled or deionized water. This places a zone of water with very low constituent concentrations around the lysimeters at installation. Because soil moisture typically moves very slowly, particularly under drier conditions, the initial lysimeter samples may essentially recapture a portion of the water used in installation before it has fully exchanged with or been replaced by the natural soil moisture. The water quality results for the first few lysimeters samples collected frequently have significantly lower constituent concentrations than subsequent samples. The method of installing the lysimeters may have affected the early lysimeters sample concentrations and should be considered in interpreting the results.

Lysimeters have been placed in each of the irrigation areas and Figure 3-11 (also Figure C-1 in Appendix C) shows the location and the name of the lysimeters. The irrigation reports (HMC 2010a, 2011a, 2012a, 2013a, 2014a and 2016) have presented the completion information with depths for the lysimeters and the lithology of the alluvium at each lysimeter. Tables C-1 and C-2 in Appendix C present the soil moisture concentration data collected from the lysimeters for the major and minor constituents respectively. Table 3-9 presents the yearly representative soil moisture concentrations from each of the lysimeters. Samples from the lysimeters define the constituent concentrations in the soil moisture at their respective depths but they do not define the amount of soil moisture or concentrations that will migrate to the groundwater table. Therefore, although the soil moisture data reveals constituent concentrations in the soil profile, the groundwater quality data from wells provide a more useful and direct means of defining the current groundwater impacts. The successful collection of samples from the lysimeters also becomes increasingly difficult as the soil dries out and the lysimeters may not remain operable.

3.5.1 Section 33

A total of eight lysimeters were installed in Section 33 Center Pivot irrigation area. These lysimeters have been installed at five different locations. Figure 3-11 shows the five lysimeter locations in the Section 33 center pivot area. Lysimeters were placed in the alluvial material above the basalt except at the locations LY-3 and LY-4 where lysimeters were also installed into the basalt. Lysimeters LY-3 and LY-3M never yielded a water sample. Figures C-2 through C-9 in Appendix C presents the plots of the soil moisture constituent concentrations for the Section 33 lysimeters. The uranium concentrations in the Section 33 lysimeters are typically lower than the concentrations of the irrigation water and show a gradual decreasing trend (Figure C-3, C-5, and C-7 Appendix C). Data from LY4MU is the exception with uranium concentrations above the irrigation water quality, however concentrations are declining (Figure C-9 Appendix C). Selenium concentrations in the Section 33 soil moisture represented by LY1 and LY2 are higher than the irrigation water quality and show increasing and decreasing trends with time (Figure C-3 and C-5 Appendix C). Selenium concentrations show an increasing trend in LY4 beginning in 2011and a similar increasing trend is observed in the chloride concentrations (Figure C-6 and C-7 Appendix C). Uranium concentrations show a decreasing trend in LY4 data also beginning in 2011.

Table 3-9. Typical Land Treatment Field Lysimeter Key Concentrations, in mg/l

LYSIMETER NUMBER	YEAR	URANIUM	SELENIUM	TDS	SULFATE	CHLORIDE	NITRATE	MOLYBDENUM
				SECTION 34				
LY34-1	2010	0.33	0.06	3500	1500	400	15	0.03
	2011	0.35	0.08	4200	2000	500	--	0.05
	2012	0.35	0.06	4800	2400	470	--	0.04
	2013	0.35	0.05	4800	2400	470	70	0.02
	2014	0.34	0.07	5400	2600	510	78	0.02
	2015	0.26	0.08	5800	2750	500	130	0.02
LY34-2	2010	0.22	0.06	4400	1900	630	12	0.08
	2011	0.38	0.1	6100	2900	900	--	0.2
	2012	0.08	0.06	4400	2200	450	--	0.1
	2013	0.1	0.05	4200	2000	430	12	0.03
	2014	0.1	0.06	4200	2000	450	17	0.03
	2015	0.06	0.01	4200	2500	450	2	0.03
LY34-3	2010	0.3	0.08	2800	1200	310	8	0.06
	2011	0.27	0.1	3100	1100	600	--	0.03
	2012	0.4	0.18	5500	2600	700	--	0.05
	2013	0.39	0.14	4300	1900	500	16	0.05
	2014	0.4	0.16	4300	2000	520	10	0.06
				SECTION 28				
LY28-1	2010	0.2	0.05	2700	1300	190	7	0.02
	2011	0.16	0.07	2700	1400	190	--	0.02
	2012	0.2	0.06	2900	1300	200	--	0.02
	2013	0.18	0.04	2670	1200	265	21	0.02
	2014	0.08	0.04	2700	1300	270	20	0.02
	2015	0.07	0.05	2900	1500	300	20	0.02
LY28-2	2011	0.78	0.04	6100	3500	160	--	0.05
	2012	0.65	0.05	5500	3200	170	--	0.02
	2013	0.3	0.08	4100	2200	270	26	0.02
	2014	0.16	0.11	4500	2500	280	27	0.02
	2015	0.06	0.13	4900	3000	330	30	0.02
LY28-2M	2010	0.04	0.01	900	100	110	9	0.09
	2011	0.34	0.15	6000	3200	720	--	0.1
	2012	0.34	0.12	6000	3000	800	--	0.2
	2013	0.38	0.13	6700	3300	920	45	0.12
	2014	0.33	0.11	6300	3000	800	32	0.1
LY28-3	2010	0.8	0.14	7000	3500	700	70	0.04
	2011	0.6	0.04	5000	2400	350	--	0.04
	2012	1.2	0.1	8000	3600	800	--	0.04
	2013	1.2	0.08	8400	4200	750	152	0.04
	2014	0.6	0.09	8500	4100	790	161	0.05
	2015	0.5	0.1	8800	4250	850	170	0.05

Table 3-9. Land Treatment Field Lysimeter Key Concentrations, in mg/l (Continued)

LYSIMETER NUMBER	YEAR	URANIUM	SELENIUM	TDS	SULFATE	CHLORIDE	NITRATE	MOLYBDENUM
SECTION 33								
LY1	2009	0.05	0.04	1600	550	230	2	0.02
	2010	0.05	0.11	2600	1200	350	1.3	0.02
	2011	0.05	0.11	4100	1940	661	--	0.02
	2012	0.05	0.15	4200	1860	720	--	0.02
	2013	0.05	0.18	4200	1820	880	6	0.02
	2014	0.03	0.1	3200	1700	240	8	0.02
	2015	0.03	0.12	3500	1850	250	9	0.02
LY2	2011	0.063	0.16	4420	1980	493	--	0.03
	2012	0.05	0.15	4300	2000	500	--	0.02
	2013	0.06	0.15	4120	1970	471	--	0.02
	2014	0.04	0.1	3100	1500	270	16	0.02
LY4	2009	0.07	0.04	4200	2150	340	0.6	0.02
	2010	0.08	0.05	4200	2150	370	0.8	0.02
	2011	0.03	0.08	3700	1900	500	--	0.02
	2012	0.03	0.1	3800	1800	540	--	0.02
	2013	0.02	0.11	3480	1790	579	1.1	0.02
	2014	0.02	0.13	3700	1750	600	1.1	0.02
	2015	0.01	0.15	3800	1850	630	1.9	0.02
LY4MU	2009	0.55	0.02	10000	5000	700	0.1	0.1
	2010	0.64	0.02	4400	1000	740	3	0.04
	2011	0.65	0.02	4300	1100	740	--	0.05
	2012	0.59	0.02	4100	1200	750	--	0.06
	2013	0.52	0.01	4300	1240	770	8	0.06
	2014	0.44	0.02	4450	1200	750	9	0.07
	2015	0.4	0.02	4600	1300	790	8	0.09
LY4ML	2009	0.4	0.01	8000	3500	640	0.6	0.02
	2010	0.4	0.02	3200	800	570	0.6	0.1

3.5.2 Section 34

Four lysimeters have been placed in the clay soils in Section 34 and 33 flood areas. Lysimeters LY34-1, LY34-2 and LY34-3 are in the Section 34 flood area while LY34-4 is in the Section 33 flood area. Figure 3-11 shows the location of these lysimeters. Figures C-10 through C-15 in Appendix C present the plots of the soil moisture concentrations for the Section 34 lysimeters. The uranium concentrations in the Section 34 soil moisture are gradually declining after termination of the land application irrigation program in this area.

3.5.3 Section 28

Figure 3-11 shows that five lysimeters were installed at three locations in Section 28. In addition to the alluvial lysimeters at the LY28-1 and LY28-2 locations, there are also two basalt lysimeter (lysimeters LY28-1M and LY28-2M). Lysimeters LY28-2 and LY28-3 were reinstalled in 2011 while lysimeter LY28-1M was not successfully washed out and made operable.

Tables C-1 and C-2 in Appendix C present the water quality results obtained from the LY28 series of lysimeters. Plots of the lysimeter water quality are presented in Figures C-16 through

C-23. The uranium concentration in the Section 28 lysimeter samples have generally decreased since termination of irrigation in this area in 2012. Generally higher uranium concentrations were observed in the Section 28 lysimeters.

3.6 Soil Health

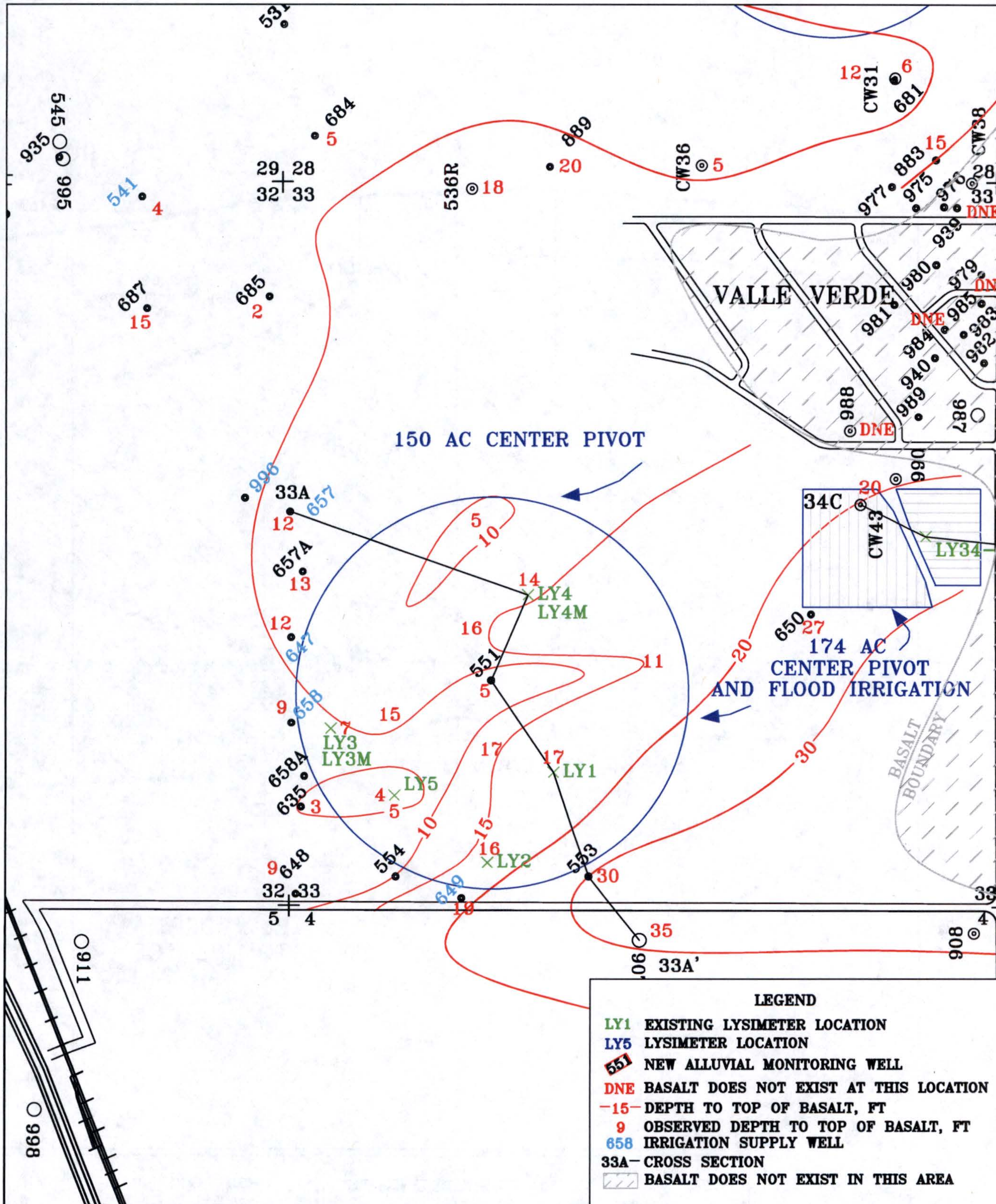
Soil health was evaluated in the Land Application Closure Plan (HMC 2014b). Soil health considerations associated with the irrigation program are generally related to the effects of excess sodium on the soil's physical properties and salt buildup which can affect the ability of the soil to sustain vegetation or crops. The conclusions of this evaluation are summarized as follows:

- Based on the irrigation water quality, no long-term adverse effects related to sodium application in irrigation waters are ever expected to occur in these soils (see Tables A.1-1, A.1-3, A.2-1 and A.2-3 in Appendix A and Tables B.1-5, B.1-6, B.1-7, and B.2-3 in Appendix B).

- The soil health, as related to salts and sodium, has not been adversely affected over the years, and is not expected to create long-term adverse effects when native vegetation is re-established.

3.7 Summary of Soil Assessment

The soil health of the HMC irrigated soils has not been significantly affected and formerly irrigated soils remain suitable for future agricultural uses. The maximum uranium soil concentration measured in irrigated areas was 5.15 mg/kg, far lower than the New Mexico screening level of 270 mg/kg for the protection of groundwater. It is also lower than the most recent SSLs established by EPA in 2017 (16 mg/kg for residential land use, and 14 mg/kg to protect groundwater). The maximum selenium soil concentration measured in irrigated areas is 1.32 mg/kg which is significantly less than the most restrictive NM SSL of 5.17 mg/kg. Although soil and soil moisture sample measurements reflect constituent concentrations within the soil profile, these data do not provide a measure of the rate and quality of irrigation area recharge to the groundwater. Water quality sample data for wells in and adjacent to the land application areas is a more reliable measure of the groundwater impacts from the irrigation.



SCALE: 1" = 900'	FIGURE 3-1. SECTION 33 DEPTH TO TOP OF BASALT, LOCATION OF LYSIMETERS, ADDITIONAL ALLUVIAL MONITORING WELLS AND CROSS SECTION.	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO
C:\PROJECTS\2013-06\BASALT		
DATE: 1/8/13		

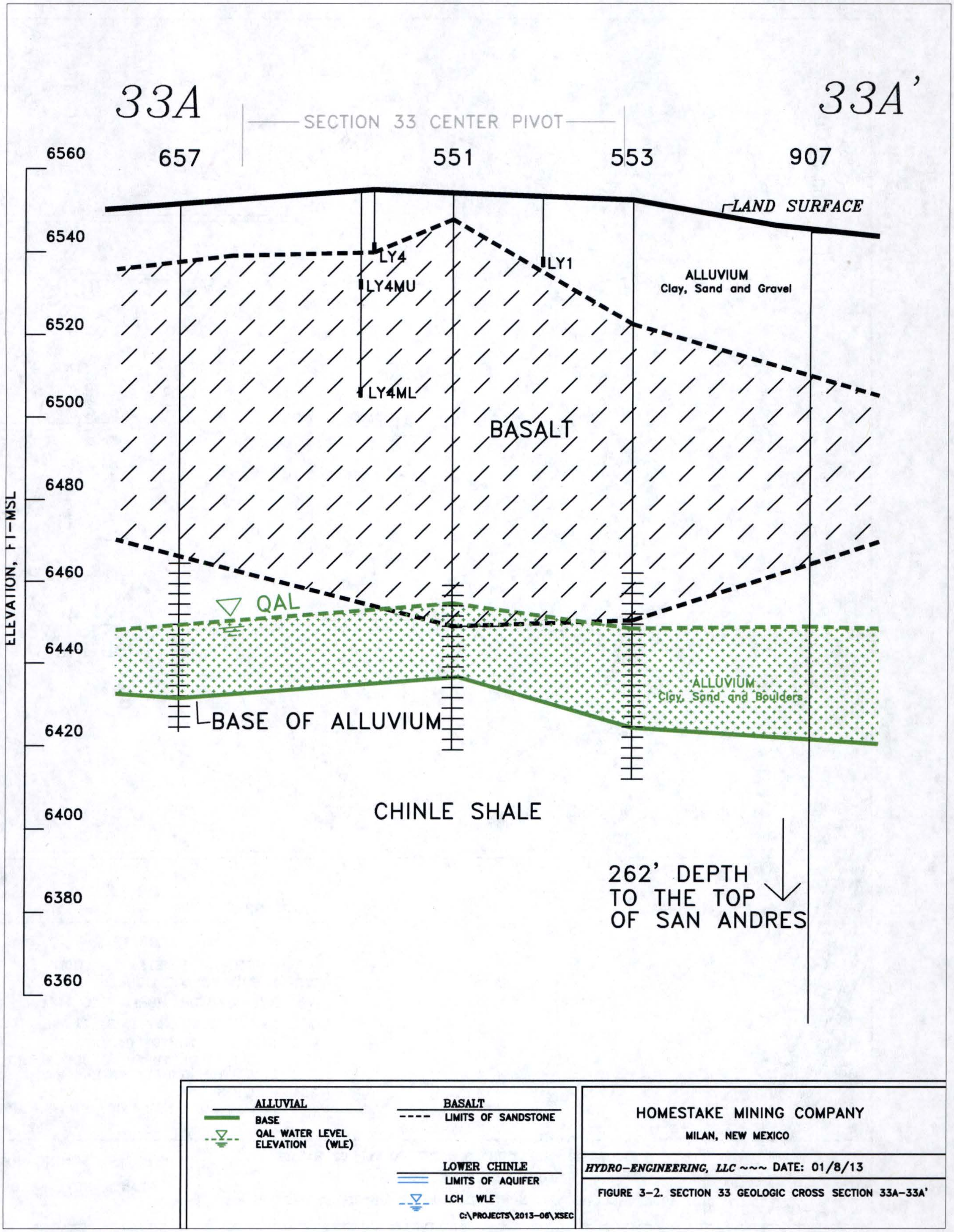
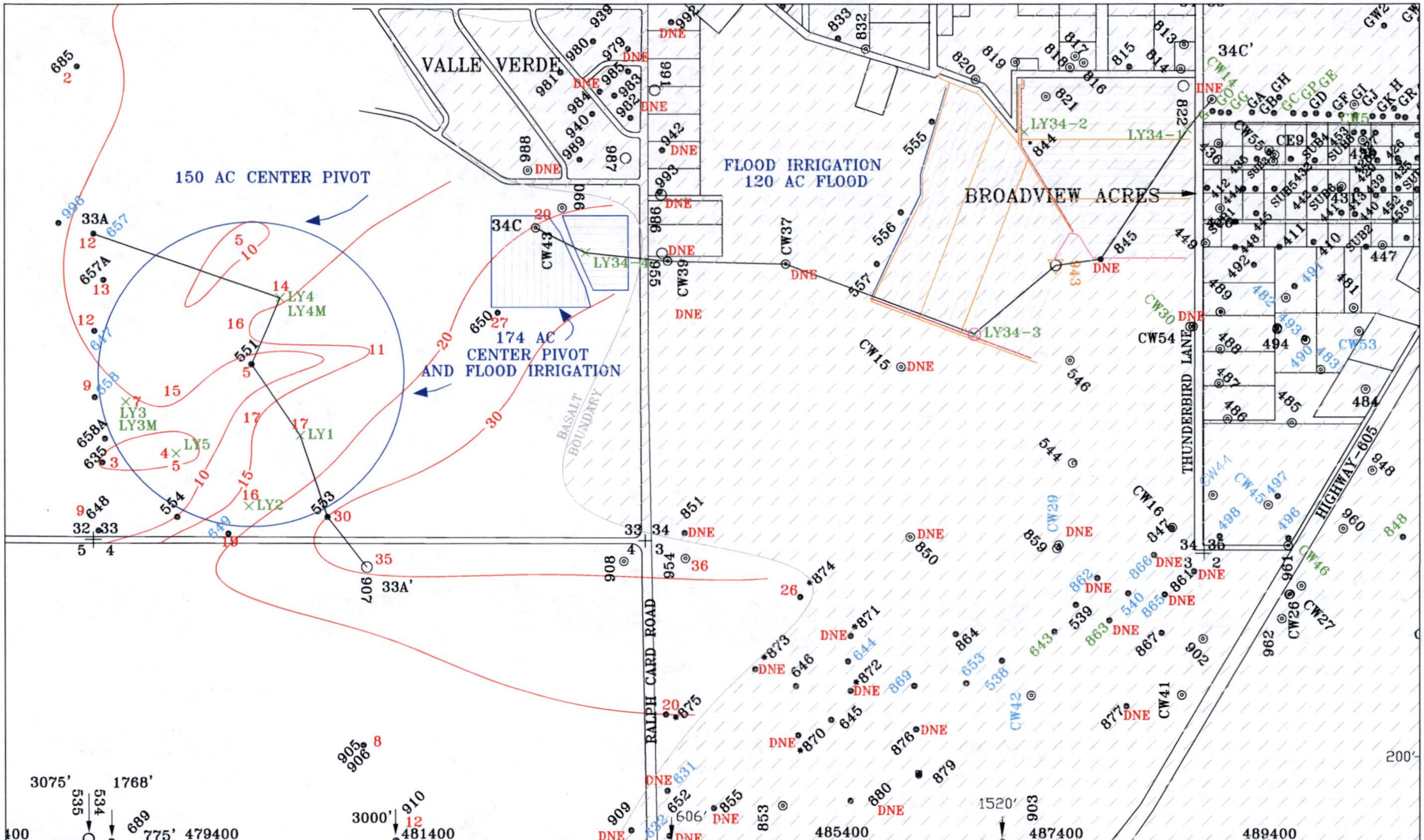
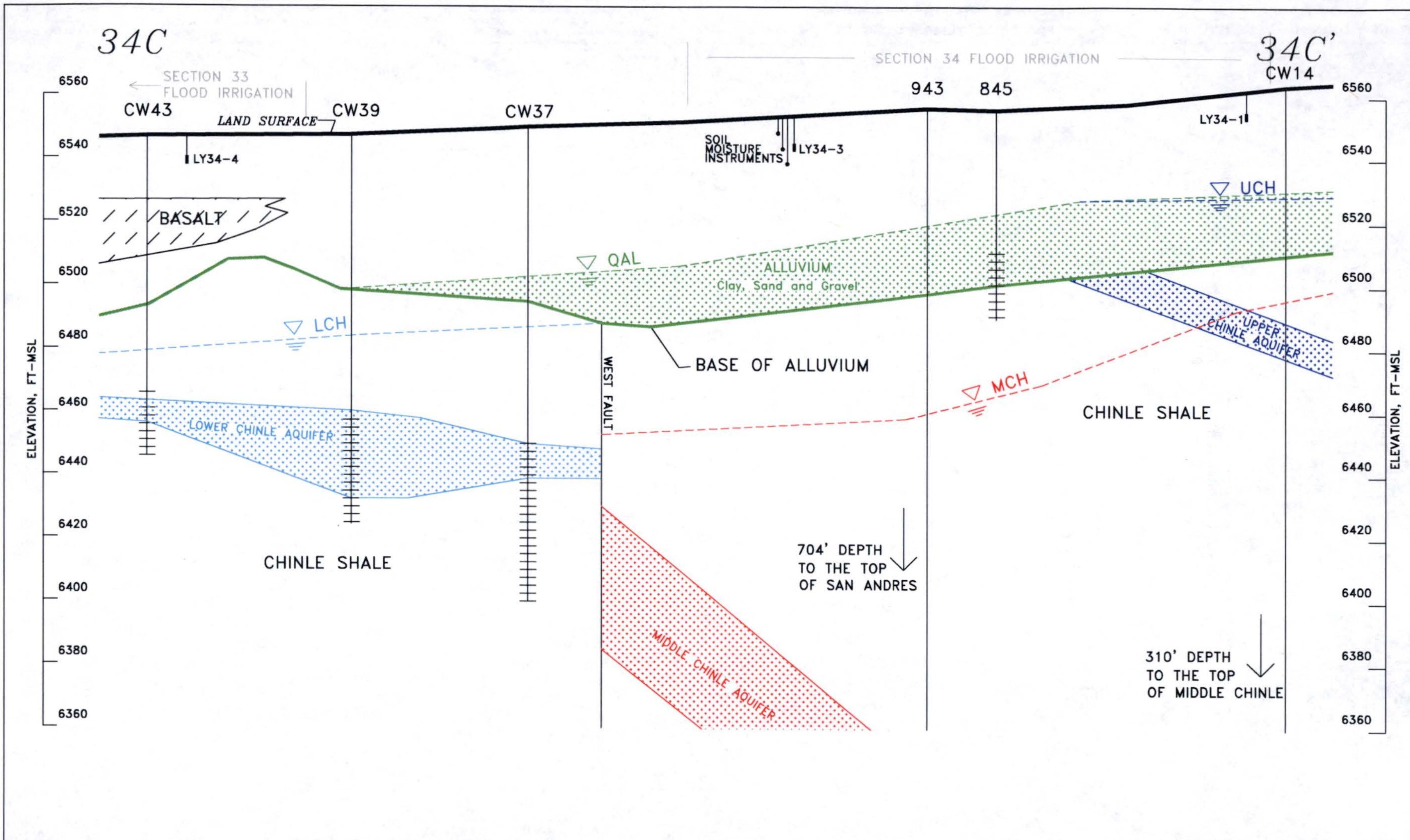


FIGURE 3-2. SECTION 33 GEOLOGIC CROSS SECTION 33A-33A'



SCALE: 1" = 800'	LEGEND		FIGURE 3-3. SECTION 34 DEPTH TO TOP OF BASALT, LOCATION OF LYSIMETERS, ADDITIONAL ALLUVIAL MONITORING WELLS AND CROSS SECTION	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO
C:\PROJECTS\2013-06\BASALT	LY34-1 LYSIMETER LOCATION	DNE BASALT DOES NOT EXIST AT THIS LOCATION		
DATE: 1/08/13	658 IRRIGATION SUPPLY WELL	-15- DEPTH TO TOP OF BASALT, FT		
	•867 ABANDONED WELL	9 OBSERVED DEPTH TO TOP OF BASALT, FT		
	SOIL MOISTURE INSTRUMENT LOCATION	34C- CROSS SECTION		
		BASALT DOES NOT EXIST IN THIS AREA		



SCALE: 1" = 550'

C:\PROJECTS\2011-06\Xsec

DATE: 1/24/12

LEGEND

ALLUVIAL: BASE; QAL WATER LEVEL ELEVATION (WLE)

MIDDLE CHINLE: LIMITS OF SANDSTONE; MCH WLE

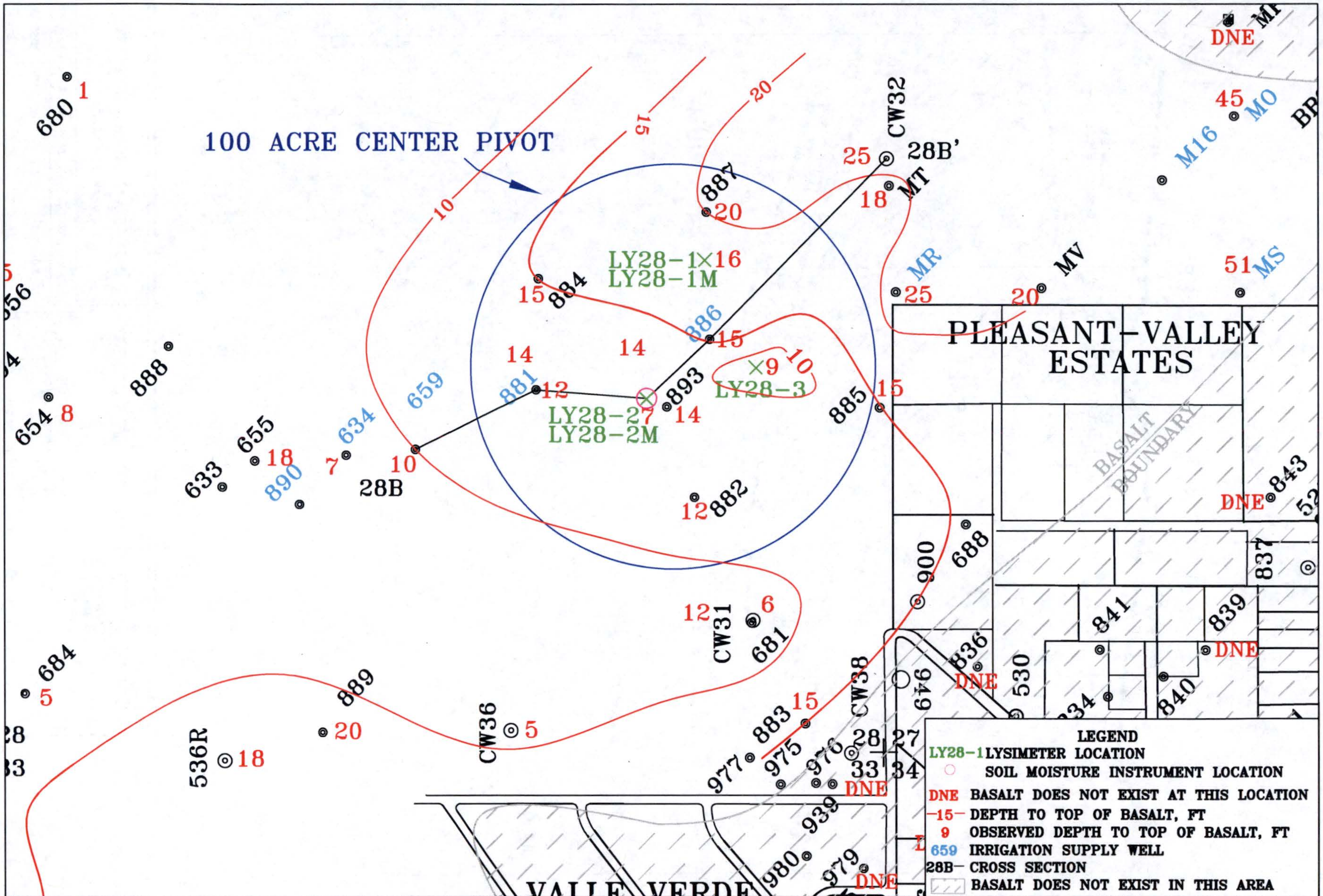
BASALT: LIMITS OF SANDSTONE

UPPLE CHINLE: LIMITS OF SANDSTONE; UCH WLE

LOWER CHINLE: LIMITS OF AQUIFER; LCH WLE

FIGURE 3-4. SECTION 34 GEOLOGIC CROSS SECTION 34C-34C'

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO



SCALE: 1" = 500'	FIGURE 3-5. SECTION 28 DEPTH TO TOP OF BASALT, LOCATION OF LYSIMETERS, ADDITIONAL ALLUVIAL MONITORING WELLS AND CROSS SECTION	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO
C:\PROJECTS\2013-06\BASALT		
DATE: 1/08/13		

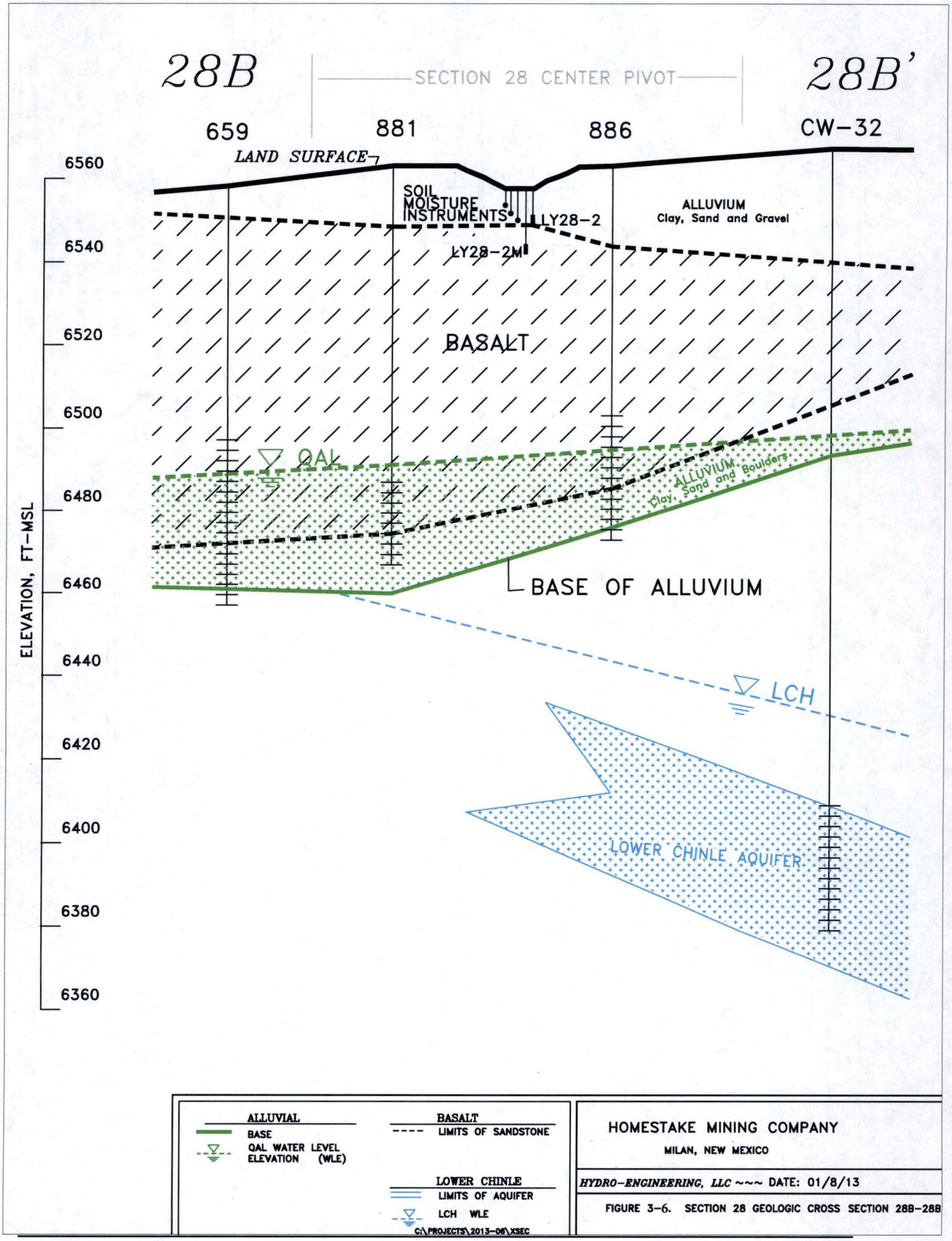


FIGURE 3-6. SECTION 28 GEOLOGIC CROSS SECTION 28B-28B'

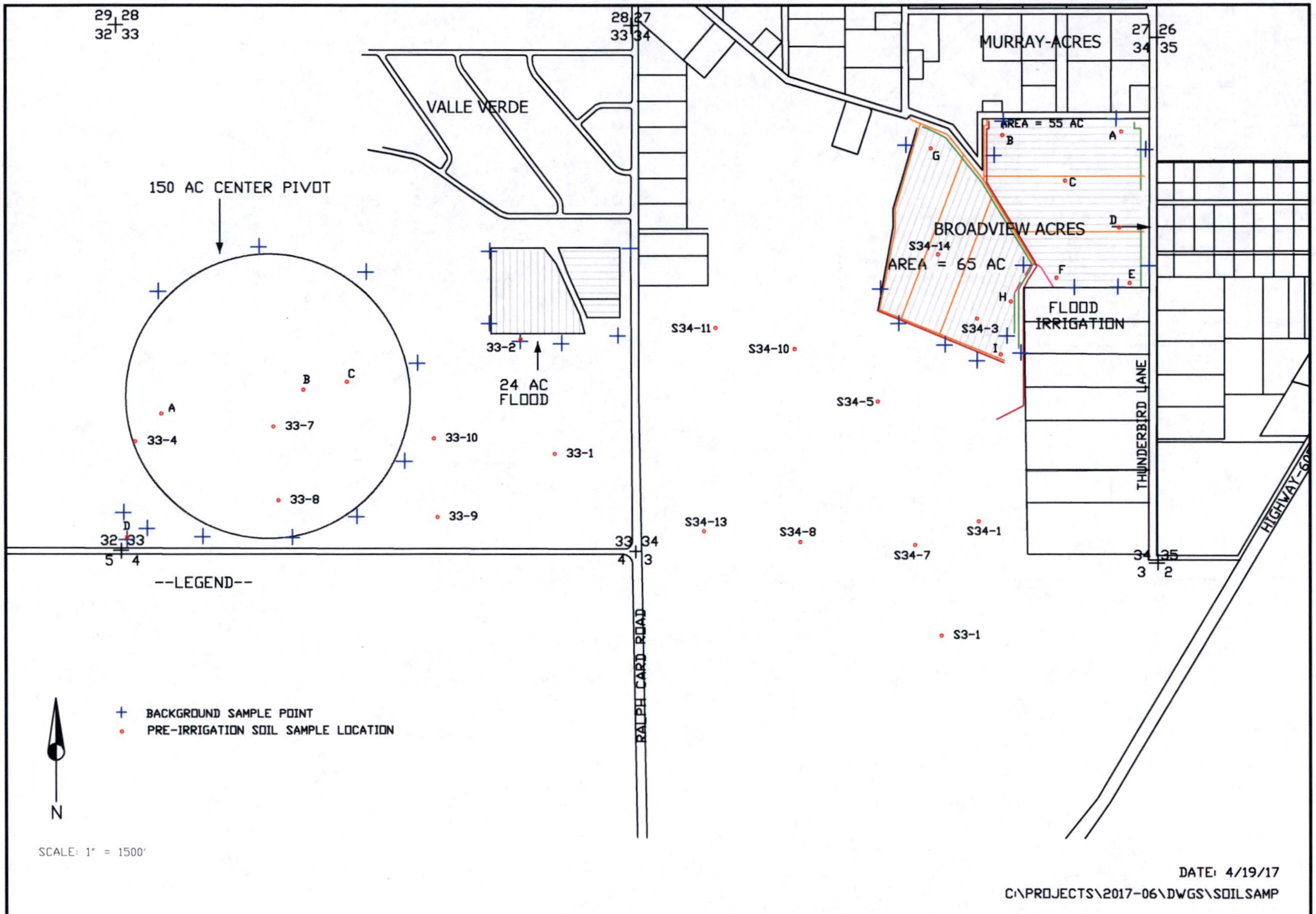


FIGURE 3–7. LOCATION OF PRE–IRRIGATION AND BACKGROUND SOIL SAMPLES IN THE SOUTH IRRIGATION AREAS

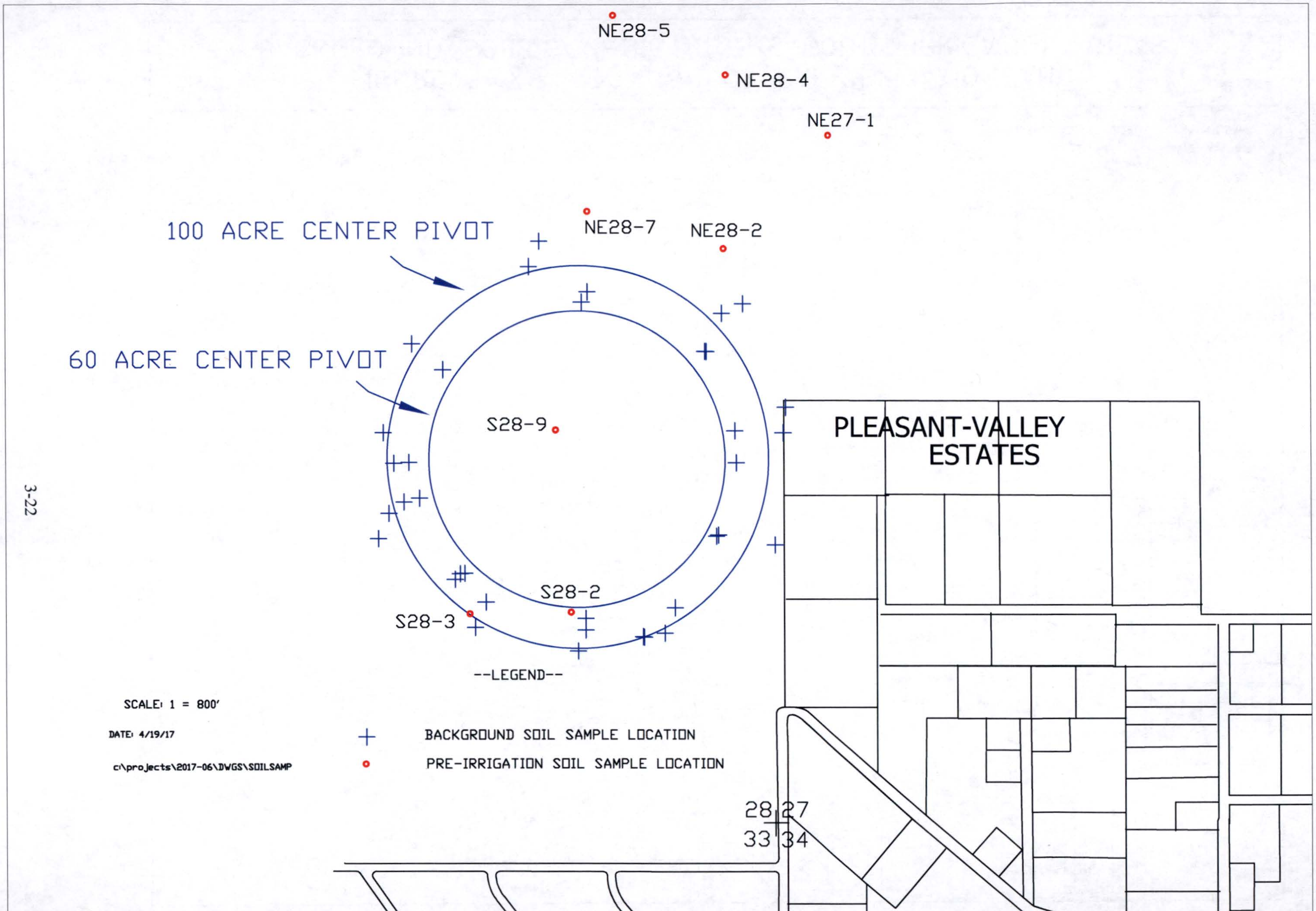


FIGURE 3-8. LOCATION OF PRE-IRRIGATION AND BACKGROUND SAMPLES IN THE NORTH IRRIGATION AREA

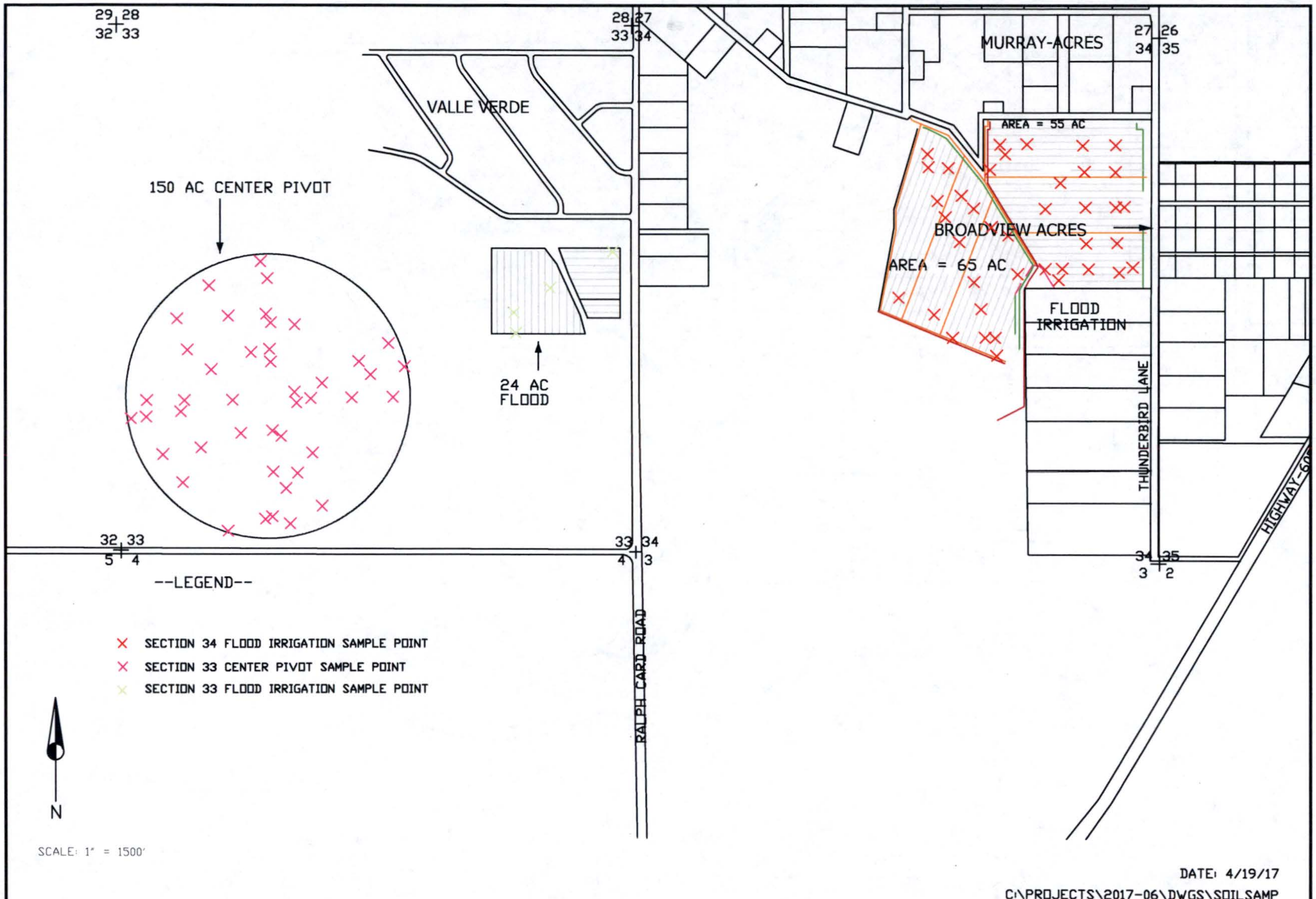


FIGURE 3-9. LOCATIONS OF SOIL SAMPLES IN THE SOUTH IRRIGATION AREAS

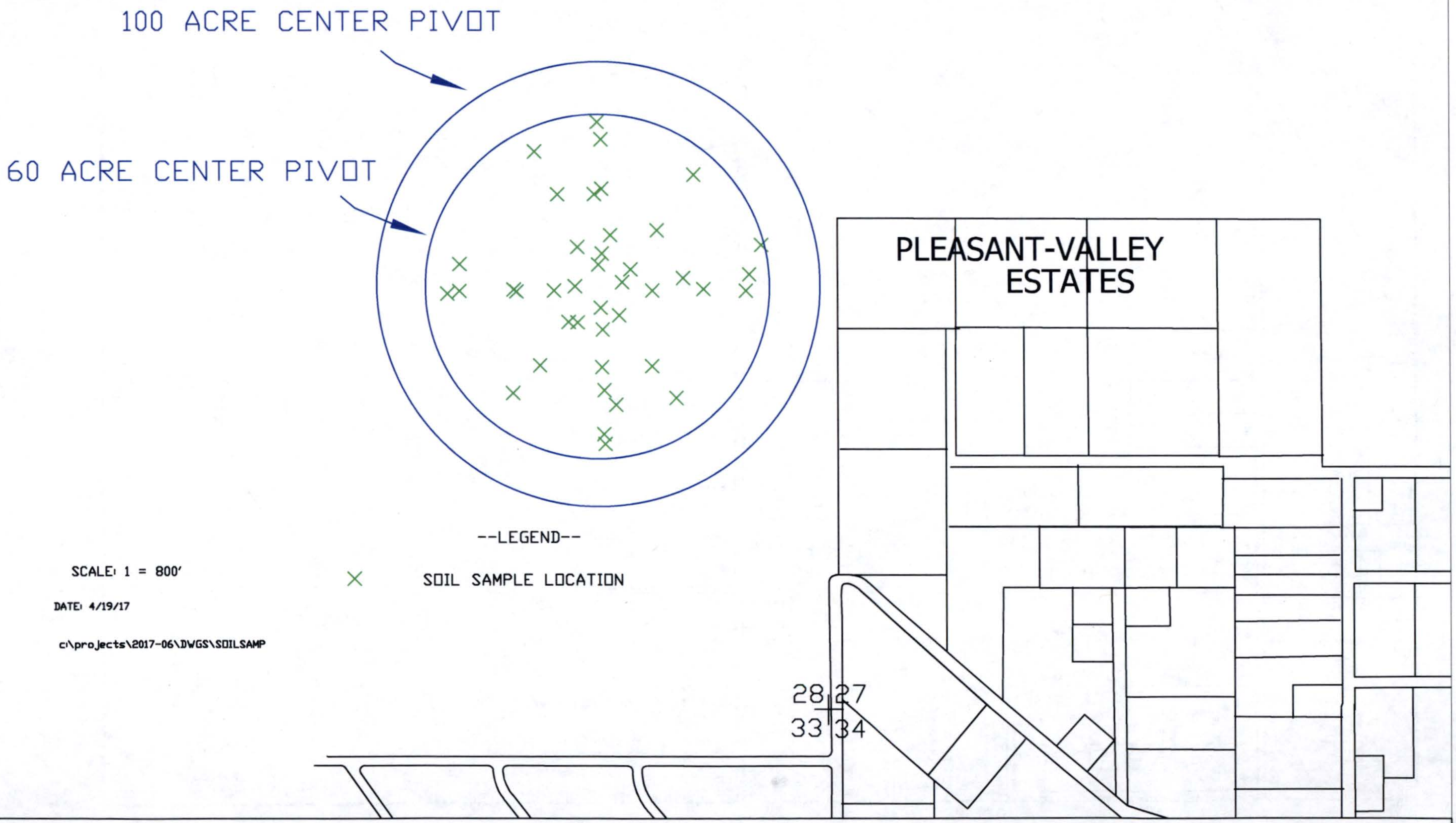
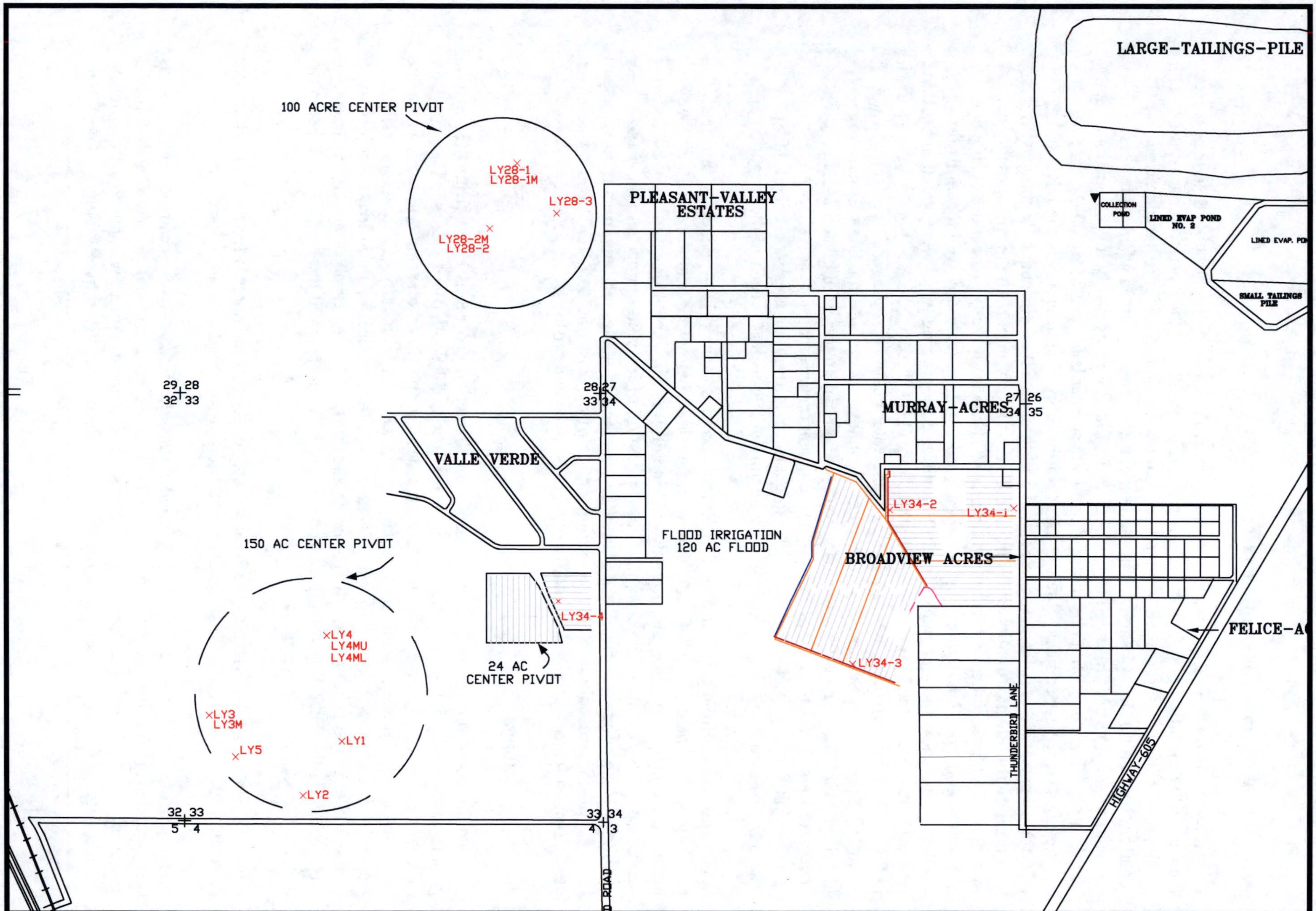


FIGURE 3-10. LOCATIONS OF SOIL SAMPLES IN THE NORTH IRRIGATION AREA



HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

DATE: 9/6/17

FIGURE 3-11. LOCATIONS OF THE SOIL MOISTURE LYSIMETERS IN THE IRRIGATION AREAS

SCALE: 1"=1600'

PAGE:

4.0 Assessment of Groundwater Impacts

Generally, groundwater elevations in the land application areas are higher now than they were at the end of the irrigation program and this is primarily a result of other restoration activities. This assessment is limited to potential impacts on groundwater quality. Figure 4-1 shows the locations of monitoring wells in each of the four former irrigation areas where time versus concentrations plots are presented in Appendices D, E and F respectively for the Sections 33, 34 and 28 areas. The concentrations of the alluvial site standards are presented on the time series plots in these three appendices. Site standards for the alluvial aquifer set by the NRC and NMED are presented and discussed in Section 3 of the Annual Performance Reports (APR). Monitoring groundwater quality in the irrigated area is a very important part of assessing the impacts of the land application irrigation program. The map figures in Appendix D shows wells in Section 33 in addition to those that are shown in Figure 4-1 and other well locations for Section 34 are shown in Appendix E maps. Additional monitoring wells were added in Section 33 (wells 551, 553, and 554) in 2009 and in Section 34 (wells 555, 556, 557) in 2010. As shown in Figure 4-1, the well density for defining groundwater quality and the resulting groundwater monitoring program in Section 28 is adequate. Groundwater monitoring data was used to identify and quantify any effects the irrigation program had on the groundwater system. Plots of concentrations versus time are presented for the irrigation area monitoring wells which are shown in blue on Figure 4-1 and wells upgradient of each irrigation area in a second time plot. The wells labeled in black on Figure 4-1 are the upgradient wells for each of the irrigation areas.

While the soil sampling data discussed previously and presented in Appendix C are useful in confirming that measured COC concentrations are well below applicable regulatory levels or guidelines (such as SSLs), the groundwater monitoring program discussed in the following sections provides the most direct and reliable indication of irrigation impacts to the groundwater aquifers. The monitoring well data described in the following sections are the most useful information to assess the impacts to groundwater. In contrast, the soil COC loading is only a qualitative indicator of the minor addition of COCs to the soil profile by irrigation.

4.1 Section 33

The likelihood of any groundwater impacts from irrigation can be assessed from the existing groundwater monitoring in the irrigation areas for Section 33 South pivot area (see Figure 4-1 for locations of wells 551, 647, 649, 650 and 658 used in the time series plots) as shown in the groundwater monitoring data analysis (Appendix D). Additionally, the data described in Appendix D for the Section 33 irrigation area include the 24 acres of flood irrigation just south of the Valle Verde subdivision. Irrigation in the Section 33 center pivot and flood irrigation areas ceased after the 2009 growing season, which therefore allowed the longest period of post-irrigation groundwater monitoring.

Figure D-1 in Appendix D shows the 2016 sulfate concentration contours for the alluvial aquifer in Section 33. All alluvial well sulfate concentrations are above 500 mg/L in Section 33.

The water quality sampling prior to 2000 and during the first few years can be interpreted as being representative of pre-irrigation (*i.e.,* baseline) water quality since this was before the irrigation affects occurred in Section 33. The sulfate concentrations pre- and post-irrigation in the alluvial aquifer show little to no variation and were consistently above 500 mg/l. The sulfate concentrations in the alluvial aquifer in well 551 (located near the center of the pivot) have declined for the last two years to a level near the baseline sulfate concentration (see Figure D-2). Figure D-3 shows the similar sulfate concentrations in the wells upgradient of the Section 33 irrigation area. The TDS map and time plots (see Figures D-4 through D-6) show water quality results and trends that are very similar to those observed for sulfate. Chloride (see Figures D-7 through D-9), which is considered a conservative constituent, shows concentration changes that are similar to those of sulfate and TDS. The monitoring of these three constituents shows that the Section 33 irrigation slightly affected the groundwater quality in this area but the small observed effects have nearly dissipated. These concentrations in wells 649 and 650 likely are still slightly elevated from the irrigation in these areas and are expected to gradually decrease.

Uranium is considered the most important COC in the alluvial aquifer in all Off-site areas because it is the only constituent that exceeded the approved site standards for the alluvial aquifer in the Off-site areas. Concentration maps and time plots are presented in Figures D-10 through D-12 of Appendix D. The 0.1 mg/L uranium contour in 2016 only extends into the northern portion of Section 32. The very small changes in uranium concentration in this area confirm that the uranium from the irrigation water did not migrate into the groundwater. Selenium concentrations in the irrigation water also have not migrated to the Section 33 groundwater (see Figures D-13 through D-15). Molybdenum, nitrate, radium-226 + radium-228, vanadium and thorium-230 concentrations or activities in the irrigation water were low and Figures D-16 through D-26 are presented to illustrate that concentrations in the groundwater have remained low in this area with no discernable impacts by irrigation.

In conclusion, the irrigation program yielded only minor impacts to the sulfate, TDS and chloride concentrations in the alluvium and those impacts have dissipated resulting in near-background levels. No irrigation-related impacts have been observed with respect to the uranium, selenium, molybdenum, nitrate, radium-226 + radium-228, vanadium and thorium-230 concentrations or activities in the groundwater in Section 33.

4.2 Section 34

Figures 1-1 and 4-1 show the location of the Section 34 flood irrigation area. The discussion, concentration maps and concentration versus time plots are presented in Appendix E. Irrigation in this area ceased after the 2012 growing season. Figure E-1 in Appendix E shows the location of the 120-acre flood irrigation area in Section 34. Alluvial groundwater is flowing to the west and northwest in the Section 34 area toward the Section 28 area. This figure also shows the 2016 sulfate concentration contours for the alluvial aquifer. The pre- and post-irrigation sulfate concentrations in the alluvial aquifer were above 1000 mg/l. While the sulfate concentrations measured in wells 555 and 844 exceed the site standard of 1500 mg/l, recent measurements show a declining trend. Thus, any minor impacts that may have resulted from the irrigation program are expected to last for only a few years. The sulfate concentration at well 846 exceeded the alluvial aquifer site standard of 1500 mg/l prior to the start of irrigation, and therefore the slightly higher concentration cannot be due to the irrigation program (Figure E-2). Figure E-3 shows that the recent sulfate concentrations in the wells upgradient (see Figure 4-1 for well locations) of the Section 34 irrigation area are less than those in the irrigation area. The TDS concentration map and time plot (see Figures E-4 through E-6) show water quality changes that are very similar to those observed for sulfate. The TDS concentrations in wells 844 and 845 increased for a few years from 2011 through 2014. However, the TDS concentrations have declined over the last couple of years, and any measurable impacts that may be attributable to the irrigation program are diminishing. Chloride (see Figures E-7 through E-9), which is a conservative constituent, shows concentration changes that are similar to those of sulfate and TDS. Chloride concentrations exceed the alluvial site standard of 250 mg/l at wells 844, 845 and 555, but a recent decline in these concentrations also indicates that measurable impacts that may be attributable to the irrigation program are diminishing.

Uranium is the most important COC in the alluvial aquifer in this area. Concentration maps and time plots are presented in Figures E-10 through E-12 of Appendix E. With the exception of a single sample for well 556, all of the recently measured Section 34 alluvial uranium concentrations are below the alluvial site standard of 0.16 mg/l. The site standard concentration is shown on Figures E-11 and E-12 in Appendix E. The time plot shows that the uranium concentration in well 844 had increased to a level slightly above the site standard in 2012, but has since declined to below 0.1 mg/l. The timing of the uranium concentration increase in well 844 suggests that at least some portion of the increase could have been attributable to the irrigation program. However, some of the change in uranium concentration in this well was likely due to varying concentrations in the upgradient alluvial groundwater. The higher uranium concentration in well 556 in 2016 is thought to be an outlier and was not confirmed by a sample collected in 2017. Therefore, the anomalous result in well 556 is not considered significant. Water quality measurements in monitoring wells in Section 34 indicate that selenium has not migrated to groundwater as a result of the irrigation program (see Figures E-13 through E-15). The changes in selenium in well 846 are believed to be a result of historical seepage from impacts upgradient from the well and are not thought to be a function of the Section 34 irrigation due to the large distance between the well and irrigated area. Molybdenum, nitrate, radium-226 + radium-228, vanadium and thorium-230 concentrations in the irrigation water were low and Figures E-16 through E-26 are presented to illustrate that concentrations in the groundwater have remained low.

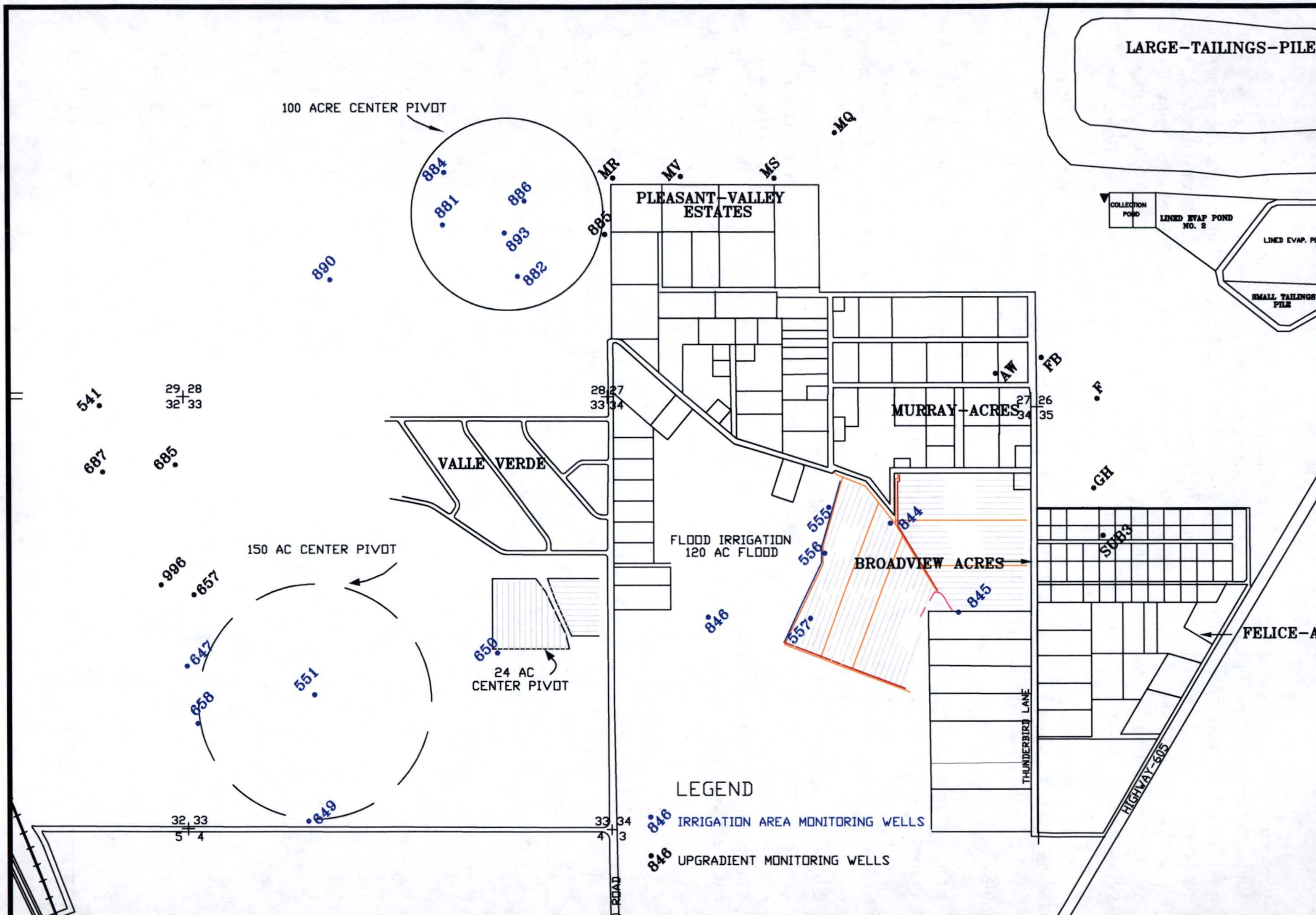
In conclusion, the data suggest small impacts to groundwater in Section 34 that may be attributable to the irrigation program, and that any such impact was relatively minor and is diminishing to levels consistent with background. The declining trends that best illustrate the recent changes in groundwater quality in Section 34 are shown in Figure E-11 with Figure E-8 showing similar trends. As shown in Figure E-11, the maximum uranium concentration in well 844 occurred in 2012 with decreasing concentrations thereafter. Groundwater quality in this area will continue to be monitored as part of HMC's monitoring efforts.

4.3 Section 28

The Section 28 pivot is located in an area underlain by groundwater that had previously been impacted by seepage from the Large Tailings Pile (LTP). This area has been referred in numerous HMC reports as the "North Off-Site Area." Therefore, groundwater impacts from the irrigation program are difficult to distinguish from the pre-existing elevated concentrations of COCs in this area. A discussion, concentration maps and concentration versus time plots are presented in Appendix F for the North pivot (Section 28) irrigation area. Irrigation in this area ceased after the 2012 growing season. Figure F-1 in Appendix F and Figure 4-1 shows the 100-acre center pivot in Section 28. This figure also shows the 2016 sulfate concentration contours for the alluvial aquifer. The pre-irrigation 1000 mg/l contour for sulfate in the alluvial aquifer extended to the west of the center pivot while the 2016 contour only extends to the eastern portion of the North pivot. The sulfate concentrations in the alluvial aquifer in the northern and southern portions of the North pivot area are lower than those in the middle of the pivot (near well 886). It is impossible to determine from existing data whether a small increase in the sulfate concentrations is due to the North pivot irrigation or due to the effects from the higher concentrations that have migrated to this area from the east (see Figures F-2 and F-3). Figure 4-1 shows the locations of wells used in both of these figures. Some of the lower sulfate concentrations observed in wells 884 and 886 were due to the lower sulfate in injection water from well 951. The TDS map and time plot (see Figures F-4 through F-6) show very similar results as those observed for sulfate with the 2000 mg/l contour extending to the west of the North pivot. Chloride (see Figures F-7 through F-9), which is a conservative constituent, shows similar results as sulfate and TDS, with only one value in the North pivot area still above 200 mg/l.

Uranium is the important constituent and the only constituent requiring restoration in the alluvial aquifer in this area. A map of the uranium concentrations in this area is presented in Figure F-10 and time plots of these concentrations are presented in Figures F-11 and F-12 in Appendix F. The 0.1 mg/l uranium contour depicted for 2016 extended west of the North pivot, but the concentrations west of the North pivot have been significantly reduced by the restoration program. Measured selenium concentrations in the area are also at levels where potential irrigation impacts would be indistinguishable from the seepage impacts in the North Off-Site area (see Figures F-13 and F-15). Molybdenum, nitrate, radium-226 + radium-228, vanadium and thorium-230 concentrations in the irrigation water were low and Figures F-16 through F-26 are presented to illustrate that concentrations have remained small in the groundwater in this area.

In conclusion, measurable impacts to groundwater from the irrigation program in Section 28 are indeterminable. However, it is reasonable to assume that, due to the similarities between the soils in Sections 28 and 33, the application of water containing elevated levels of uranium and selenium would not have adversely affected the groundwater in any significant way. Furthermore, the groundwater in the North Off-Site area is currently being remediated by HMC and the remediation is expected to continue in this area for another two or three years.



HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

FIGURE 4-1. LOCATIONS OF IRRIGATION GROUNDWATER MONITORING WELLS

DATE: 9/18/17

SCALE: 1"=1600'

PAGE:

5.0 Human Health Assessment - Impacts to the Public from Irrigation Activities

5.1 Radiological Health Assessment

This Section summarizes the results of an assessment of potential radiological impacts to the public associated with irrigation activities. The assessment involves modeling of doses for two conservative (worst-case) exposure scenarios. Doses to a member of the public due to assumed maximum net (above background) soil concentrations of uranium and its decay products, along with radium-228, were modeled using the RESRAD-OFFSITE computer code (ANL, 2016) for a rural residential farming scenario (considered to be the most conservative receptor scenario for unrestricted release land use). Although a resident farmer scenario was chosen for this assessment to represent the maximum plausible exposure to any member of the public, agricultural land use is not included in HMC's plans for the former land application areas. A detailed presentation of this modeling, including exposure pathways, model parameters and results, is provided in Appendix G.

Receptor Exposure Modeling Scenarios

Two site-specific resident farmer scenario layouts in RESRAD for the Section 34 flood irrigation area were modeled as shown in Figure G-1 (Appendix G). The Section 34 flood irrigation area was evaluated because soil concentrations are highest in this area. Both receptor scenarios modeled doses to a farmer living and working in the vicinity of a contamination zone representing the Section 34 flood irrigation area (approximately 120 acres). The differences in the two scenarios primarily involve the location of the resident farmer's dwelling site. In both instances, direct or indirect consumption of plant life grown on the irrigated area is assumed, although the nature and size of the area would place substantial limitations on what could be grown, which essentially would be grain for cattle feed.

The first receptor scenario (Scenario 1) places the farmer's home just outside and east/northeast of the contaminated zone, a downwind location relative to the Section 34 flood irrigation area and the strongest prevailing wind directions (Figure G-1). Scenario 1 is intended to conservatively model radiological doses to a hypothetical maximally exposed member of the public (in this case a resident farmer) from exposure pathways that could have existed during the period that land application irrigation was being conducted (2000 – 2012). Agricultural fields are assumed to be grown on contaminated soils within the Section 34 flood irrigation area, and the resident farmer derives some sustenance (plant foods and livestock meat) from these agricultural areas. While this modeling assumption is not known to have occurred during the land application project, it is conservative in terms of evaluating exposures that could conceivably have occurred during the project.

The second receptor scenario (Scenario 2) places the resident farmer's home at the center of the contaminated zone (Figure G-1), a circumstance that is unlikely to occur in the future. Under this scenario, both the receptor's dwelling site and all agricultural fields are situated within the zone of contaminated soils (representing the former Section 34 flood irrigation area). Scenario 2 represents the maximum possible radiological exposures to contaminated soils within the Section 34 flood irrigation area, i.e., a worst case scenario that is unlikely to occur in the future.

Model Input Parameters

The assumed exposure/dose pathways and model input parameters are detailed in Appendix G. Generally applicable RESRAD-OFFSITE default values were used for most model parameters, but site-specific values were used where appropriate to adequately represent each receptor scenario and/or where site-specific data were available.

Modeling Results and Conclusions

The maximum total radiological dose to the resident farmer under Scenario 1 was less than 0.1 mrem/yr. The primary implication of this result is that the maximum potential dose to any member of the public living adjacent to any of the land application areas during the period that irrigation was conducted (between 2000 and 2012) would have been insignificant relative to the operational public dose limit given in 10 CFR 20.1301 (100 mrem/yr).

The maximum total radiological dose to the resident farmer under Scenario 2 was approximately 0.3 mrem/yr. The primary implication of this result is that the maximum potential dose to any future member of the public who may decide to build a dwelling within any of the land application areas and engage in sustenance farming would be insignificant relative to the dose limit for license termination and unrestricted future land use as given in 10 CFR 20.1402 (25 mrem/yr).

Under either of the above receptor scenarios, the potential dose to any member of the public (< 1 mrem/yr) would be negligible relative to the average radiation dose to the U.S. population from exposure to natural background radiation sources, estimated at 320 mrem/yr (NCRP, 2009). The maximum modeled dose to a maximally exposed member of the public as a result of the land application irrigation project is comparable to the average radiation dose to the public from cooking with natural gas (< 1 mrem/yr).

5.2 Non-Radiological Health Assessment

With respect to non-radiological impacts to human health, receptor exposures to metals or metalloids introduced by the land application irrigation project warrant evaluation, and the biological effects of concern are based on toxicity with respect to cancer risk or other health detriments. This evaluation compared measured concentrations in soil against SSLs established by applicable regulatory agencies (NMED and/or EPA). These screening levels limit soil concentrations to levels determined by the agencies to be protective of human health. A detailed description of these comparisons is provided in Section 3.4 of this Report, and soil uranium and selenium concentrations are well below any applicable SSL. The conclusion of this assessment is that non-radiological constituents in the groundwater used to irrigate the land application areas do not pose significant health concerns, either past, present or future.

5.3 Summary

Potential radiation doses to the public were evaluated for:

- A hypothetical resident farmer living adjacent to the irrigated areas and deriving some sustenance from cultivation of crops and livestock in the Section 34 irrigated area (to represent maximum plausible public dose during the land application project); and

- A hypothetical resident farmer, living on and farming the Section 34 irrigated area (to represent maximum plausible public dose in the future)

Each analysis shows that the radiological dose to past, present or future occupants of the land on and near the irrigation areas is negligible relative to applicable dose limits given in 10 CFR 20.1301 and 10 CFR 20.1402, and is extremely low (less than one percent) compared to the average dose that the population receives from natural background radiation exposures.

6.0 Conclusions

Uranium and selenium concentrations increased in the upper few feet of the irrigated soils. The human health and safety impact of these increases is addressed in the last two paragraphs of this section. Constituent concentration increases in the soils have not been large enough to affect the soil health so future agricultural uses of these land application areas has not been impacted.

Constituent concentrations in the soil moisture samples from the lysimeters are not a direct measurement of groundwater impacts and therefore no conclusions relating to health and safety impacts to the public or future land uses were made from this data. Like the soil chemistry data, the lysimeter samples indicated constituent concentration increases in the upper few feet of the soil profile. However, the movement of these constituents through the soil profile is very slow and will not reach the groundwater at rates that would cause groundwater levels to exceed applicable site standards.

The groundwater quality results are a direct measurement of the groundwater impacts. The monitoring of the groundwater quality in the areas of the land application indicates the following:

1. A small increase in sulfate, TDS and chloride concentrations was observed in the Section 33 pivot due to the irrigation. However, the small increases have nearly dissipated and no increase in uranium and selenium concentrations in the groundwater resulted from the irrigation.
2. Small groundwater impacts resulted from the Section 34 flood irrigation and those slight increases in the constituent concentrations in groundwater are gradually dissipating.
3. A small increase in sulfate, TDS and chloride concentrations in the groundwater likely occurred during the irrigation of the Section 28 center pivot area, but the increases were masked by the seepage impacts from the LTP.
4. The long-term irrigation impacts to sulfate, TDS and chloride concentrations in the groundwater should be so small that they are not detectable in the Section 28 center pivot area.
5. No measurable increase in uranium and selenium concentrations in the groundwater should result from the Section 28 center pivot irrigation.

The monitoring of concentrations of uranium and selenium will continue as part of the ongoing groundwater monitoring program.

Residual concentrations of uranium and selenium associated with land application irrigation in the upper layers of irrigated soils are significantly below any applicable SSLs, including those established in 2017 by NMED and by EPA. In terms of toxicological risks to human health, the soil sampling data confirm that the levels of these and other constituents from irrigation water have resulted in soil concentrations that are negligible. Similarly, the maximum plausible radiological dose to any member of the public (< 1 mrem/yr) is well below applicable public dose limits given in 10 CFR 20.1301 and 20.1402 and is also within the variability in natural background doses to the U.S public (about 320 mrem/yr on average).

Residual concentrations of uranium and selenium in soil associated with the land application irrigation project occur only within the upper few feet of the soil profile and are not migrating deeper into the soil profile. Both constituents, along with trace amounts of other measured water quality parameters occur at levels below any applicable SSLs or other regulatory criteria.

7.0 References

Argonne National Laboratory (ANL). 2016. RESRAD-OFFSITE for Windows. Version 3.2.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, February 1999, Evaluation of the Use of Alluvial Ground Water for Irrigation, Consulting Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2001a, Evaluation of the Year 2000 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2001b, Ground-Water Monitoring and Performance Review for Homestake's Grants Project, NRC License SUA-1471, and Discharge Plan DP-200, 2000. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2002, Ground-Water Monitoring and Performance Review for Homestake's Grants Project, NRC License SUA-1471, and Discharge Plan DP-200, 2001. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2003, Ground-Water Monitoring and Performance Review for Homestake's Grants Project, NRC License SUA-1471, and Discharge Plan DP-200, 2002. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2004a, Evaluation of the Year 2000 Through 2003 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2004b, Grants Reclamation Project, 2003 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2005a, Evaluation of the Year 2000 Through 2004 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2005b, Grants Reclamation Project, 2004 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2006a, Evaluation of the Year 2000 Through 2005 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2006b, Grants Reclamation Project, 2005 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2007a, Evaluation of the Year 2000 Through 2006 Irrigation with Alluvial Groundwater, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2007b, Grants Reclamation Project, 2006 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2008a, Evaluation of the Year 2000 Through 2007 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2008b, Grants Reclamation Project, 2007 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2009a, Evaluation of the Year 2000 Through 2008 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2009b, Grants Reclamation Project, 2008 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2010a, Evaluation of the Year 2000 Through 2009 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2010b, Grants Reclamation Project, 2009 Annual Monitoring Report/Performance Review for Homestake's Grants

Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2011a, Evaluation of the Year 2000 Through 2010 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2011b, Grants Reclamation Project, 2010 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2012a, Evaluation of the Year 2000 Through 2011 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2012b, Grants Reclamation Project, 2011 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2013a, Evaluation of the Year 2000 Through 2012 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company, 2013b, Decommissioning and Reclamation Plan Update 2013b, NRC Source Materials License SUA-1471, Grants, New Mexico.

Homestake Mining Company and Hydro-Engineering, L.L.C., 2013c, Grants Reclamation Project, 2012 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 and Discharge Plan DP-200. Consulting Report for Homestake Mining Company of California.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2014a, Evaluation of the Year 2000 Through 2013 Irrigation with Alluvial Ground Water, Consultants Report for Homestake Mining Company, Grants, New Mexico.

Homestake Mining Company, Environmental Restoration Group, Hydro-Engineering and RIMCON, 2014b, Land Application Closure Plan, Report Submitted to NMED and NRC, Grants, New Mexico.

Homestake Mining Company, Environmental Restoration Group and Hydro-Engineering, 2016, Grants Reclamation Project 2015 Monitoring of Former Irrigation Areas, Consultants Report for Homestake Mining Company, Grants, New Mexico.

EPA, 2003. EPA Assessment of Risks from Radon in Homes. June 2003, Office of Radiation and indoor Air, U. S. Environmental Protection Agency, Washington, DC 20460.

EPA, 2013. Draft Human Health Risk Assessment, Homestake Mining Co. Superfund Site, Cibola County, New Mexico. Risk and Site Assessment Section, United States Environmental Protection Agency, Region 6, June.

EPA, 2016. EPA Draft Remedial Investigation Report. June 2016, Homestake Mining Company Superfund Site, U. S. Environmental Protection Agency, Washington, DC 20460.

U.S. Environmental Protection Agency (EPA). 1989. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1-89/002. December.

U.S. Environmental Protection Agency (EPA). 1996. Soil Screening Guidance: Technical Background Document. EPA/540/R95/128.

New Mexico Environment Department (NMED, 2017). Risk Assessment Guidance for Site Investigations and Remediation. March 2017.

National Council on Radiation Protection and Measurements (NCRP). 2009. Ionizing Radiation Exposure of the Population of the United States. NCRP Report No. 160.

NRC, 1992, NUREG/CR 5512: Residual Radioactive Contamination from Decommissioning, Final Report, U.S. Nuclear Regulatory commission, Washington, D.C.

NRC, 2000. National Research Council, 2000, "Nutrient Requirements for Beef Cattle." National Academy Press, 500 Fifth Street NW, Lockbox 285, Washington, DC 20055.

RIMCON and Hydro-Engineering, 1998. Soil Characterization and Attenuation Studies. Prepared for Homestake Mining Company, Grants, New Mexico.

APPENDIX A
IRRIGATION WATER QUALITY

APPENDIX A

TABLE OF CONTENTS

IRRIGATION WATER QUALITY

TABLES

A.0 South Irrigation Water Supply

The South irrigation water was supplied by the South Off-site collection wells and piped to one of the South irrigation areas. The location of these collection wells is defined in Section 2 of this report. Table A.1-1 presents a tabulation of the water quality for the major constituents for the South irrigation water supply. The yearly average of the TDS, sulfate and chloride concentration (in units of mg/l) varied from 1546 to 1711, 624 to 739 and 107 to 167 respectively for the South irrigation water while the uranium and selenium varied from 0.12 to 0.29 and 0.04 to 0.12 respectively (see Table A.1-2).

Additional South irrigation water quality data for the individual supply wells is tabulated in Tables A.1-3 and A.1-4 for the major and minor water quality parameters. This data is useful because it presents additional water quality for some of the minor constituents to show the low levels in the supply wells.

A.1 North Irrigation Water Supply

The North irrigation water was supplied by wells from the North Off-site area in Sections 27 and 28 (see Section 2 of this report for locations). Table A.2-1 presents a tabulation of the water quality for the major constituents for the North irrigation water supply. The yearly average of the TDS, sulfate and chloride concentrations, in units of mg/l, varied from 1409 to 2122, 608 to 936 and 121 to 189 respectively for the North irrigation water while the uranium and selenium varied from 0.14 to 0.39 and 0.03 to 0.08 respectively (see Table A.2-2).

Additional North irrigation water quality data for the individual supply wells is tabulated in Tables A.2-3 and A.2-4 for the major and minor water quality parameters. This data is useful because it presents additional water quality data for some of the minor constituents to show the low levels in the supply wells.

Table A.1-1 Water Quality of the South Irrigation

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
IRR 33/34	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/3/2000	ENER	---	---	---	---	---	---	---	684	1460	---	---
	7/26/2000	ENER	---	---	---	---	---	---	---	619	1510	---	---
	7/28/2000	ENER	---	---	---	---	---	---	---	649	1520	---	---
	8/6/2000	ENER	---	---	---	---	---	---	105	650	1530	---	---
	8/15/2000	ENER	---	---	---	---	---	---	106	660	1550	---	---
	8/18/2000	ENER	---	---	---	---	---	---	115	623	1570	---	---
	8/19/2000	ENER	---	---	---	---	---	---	109	612	1550	---	---
	8/24/2000	ENER	---	---	---	---	---	---	106	608	1530	---	---
	8/27/2000	ENER	---	---	---	---	---	---	103	601	1530	---	---
	8/29/2000	ENER	---	---	---	---	---	---	109	624	1580	---	---
	9/2/2000	ENER	---	---	---	---	---	---	104	615	1550	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	696	1600	---	---
	9/9/2000	HMC	---	---	---	---	---	---	114	670	1630	---	---
	4/20/2001	ENER	---	---	---	---	---	---	120	693	1620	---	---
	5/6/2001	ENER	---	---	---	---	---	---	108	597	1630	---	---
	5/10/2001	ENER	---	---	---	---	---	---	103	580	1590	---	---
	5/19/2001	ENER	---	---	---	---	---	---	118	660	1590	---	---
	5/24/2001	ENER	---	---	---	---	---	---	116	664	1500	---	---
	6/3/2001	ENER	---	---	---	---	---	---	118	665	1610	---	---
	6/10/2001	ENER	---	---	---	---	---	---	113	659	1570	---	---
	6/28/2001	ENER	---	---	---	---	---	---	104	661	1530	---	---
	7/5/2001	ENER	---	---	---	---	---	---	93.6	655	1480	---	---
	7/24/2001	ENER	---	---	---	---	---	---	120	650	1460	---	---
	8/29/2001	ENER	---	---	---	---	---	---	114	693	1600	---	---

Table A.1-1 Water Quality of the South Irrigation (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
IRR 33/34	9/1/2001	ENER	---	---	---	---	---	---	128	573	1610	---	---
	9/1/2001	ENER	---	---	---	---	---	---	121	561	1570	---	---
	9/17/2001	ENER	---	---	---	---	---	---	99.8	634	1600	---	---
	4/15/2002	ENER	---	---	---	---	---	---	125	708	1510	---	---
	4/16/2002	ENER	---	---	---	---	---	---	129	704	1580	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	678	1600	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	# 737	# 1580	---	---
	5/14/2002	ENER	---	---	---	---	---	---	120	741	1560	---	---
	7/3/2002	ENER	---	---	---	---	---	---	135	694	1560	---	---
	7/31/2002	ENER	---	---	---	---	---	---	123	678	1580	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	703	1570	---	---
	5/14/2003	ENER	---	---	---	---	---	---	98.5	663	1390	---	---
	9/18/2003	ENER	---	---	---	---	---	---	---	732	1600	* 2142	---
	5/4/2004	ENER	---	---	---	---	---	---	130	703	1550	* 2078	---
	5/27/2004	ENER	---	---	---	---	---	---	130	690	1570	* 2000	---
	8/18/2004	ENER	---	---	---	---	---	---	---	693	1530	* 2100	---
	10/6/2004	ENER	---	---	---	---	---	---	133	629	1560	* 2087	---
	4/20/2005	ENER	---	---	---	---	---	---	235	996	1510	* 2110	---
	5/25/2005	ENER	---	---	---	---	---	---	131	603	1580	* 2124	---
	8/8/2005	ENER	---	---	---	---	---	---	---	621	1500	* 2163	---
	9/26/2005	ENER	---	---	---	---	---	---	124	659	1550	* 2100	---
	10/11/2005	ENER	---	---	---	---	---	---	125	612	1580	* 2158	---
	4/10/2006	ENER	---	---	---	---	---	---	134	654	1520	* 2297	---
	6/26/2006	ENER	---	---	---	---	---	---	192	875	2000	* 2828	---
	8/14/2006	ENER	---	---	---	---	---	---	---	696	1580	* 2257	---
	10/10/2006	ENER	---	---	---	---	---	---	128	639	1500	* 2266	---
	4/12/2007	ENER	---	---	---	---	---	---	136	668	1630	* 2170	---
	4/30/2007	ENER	---	---	---	---	---	---	132	670	1580	* 2168	---
	6/4/2007	ENER	---	---	---	---	---	---	125	654	1540	* 2140	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

Table A.1-1 Water Quality of the South Irrigation (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
IRR 33/34	8/20/2007	HMC	---	---	---	---	---	---	---	---	---	2245	---
	8/21/2007	ENER	---	---	---	---	---	---	---	678	1600	---	---
	10/22/2007	ENER	---	---	---	---	---	---	143	661	1570	* 2207	---
	4/7/2008	ENER	---	---	---	---	---	---	160	683	1550	* 2216	---
	4/21/2008	ENER	---	---	---	---	---	---	99.0	687	1430	* 1867	---
	6/2/2008	ENER	---	---	---	---	---	---	142	728	1560	* 2216	---
	9/24/2008	ENER	---	---	---	---	---	---	148	710	1660	* 2140	---
	5/6/2009	ENER	---	---	---	---	---	---	146	669	1560	* 2172	---
	6/16/2009	ENER	---	---	---	---	---	---	160	717	1660	* 2343	---
	11/1/2010	HMC	---	---	---	---	---	---	---	---	---	2450	---
	8/22/2012	ENER	---	---	---	---	---	---	155	666	1690	* 2316	---
	8/31/2012	ENER	---	---	---	---	---	---	164	707	1710	* 2300	---
	9/5/2012	ENER	---	---	---	---	---	---	165	711	1690	* 2311	---
	9/21/2012	ENER	---	---	---	---	---	---	158	681	1690	* 2327	---
	9/25/2012	ENER	---	---	---	---	---	---	158	677	1680	* 2331	---
	10/11/2012	ENER	198	54.0	6.20	283	433	< 5.00	161	686	1670	* 2331	1.03
	10/17/2012	ENER	---	---	---	---	---	---	167	698	1700	* 2375	---
IRR 34F	4/19/2005	ENER	---	---	---	---	---	---	247	1020	1520	* 2120	---
	6/1/2005	ENER	---	---	---	---	---	---	129	661	1520	* 2152	---
	10/24/2005	ENER	---	---	---	---	---	---	144	683	1610	* 2239	---
	8/30/2010	ENER	---	---	---	---	---	---	158	716	1610	* 2350	---
	9/8/2010	ENER	---	---	---	---	---	---	154	709	1660	* 2279	---
	9/15/2010	ENER	---	---	---	---	---	---	162	731	1700	* 2342	---
	9/22/2010	ENER	---	---	---	---	---	---	170	735	1700	* 2332	---
	10/1/2010	ENER	---	---	---	---	---	---	174	756	1760	* 2404	---
	10/6/2010	ENER	---	---	---	---	---	---	171	754	1660	* 2450	---
	10/11/2010	HMC	---	---	---	---	---	---	---	---	---	2486	---
	10/13/2010	ENER	---	---	---	---	---	---	170	754	1760	---	---
	10/27/2010	ENER	---	---	---	---	---	---	173	751	1760	* 2456	---

* Signifies Specific Conductivity from HMC

Table A.1-2 Water Quality of the South Irrigation

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
IRR 33/34	5/3/2000	ENER	---	0.128	---	0.0880	---	---	---	---	---
	7/26/2000	ENER	---	0.187	---	0.0630	---	---	---	---	---
	7/28/2000	ENER	---	0.233	---	0.0760	---	---	---	---	---
	8/6/2000	ENER	---	0.259	< 0.0300	0.116	---	---	---	---	---
	8/15/2000	ENER	---	0.264	< 0.0300	0.117	---	---	---	---	---
	8/18/2000	ENER	---	0.278	< 0.0300	0.119	---	---	---	---	---
	8/19/2000	ENER	---	0.271	< 0.0300	0.116	---	---	---	---	---
	8/24/2000	ENER	---	0.269	< 0.0300	0.106	---	---	---	---	---
	8/27/2000	ENER	---	0.262	< 0.0300	0.111	---	---	---	---	---
	8/29/2000	ENER	---	0.301	< 0.0300	0.106	---	---	---	---	---
	9/2/2000	ENER	---	0.275	< 0.0300	0.108	---	---	---	---	---
	9/6/2000	ENER	---	0.318	---	0.106	---	---	---	---	---
	9/9/2000	HMC	---	0.275	< 0.0300	0.139	---	---	---	---	---
	4/20/2001	ENER	---	0.282	< 0.0300	0.107	---	---	---	---	---
	5/6/2001	ENER	---	0.304	0.0600	0.114	---	---	---	---	---
	5/10/2001	ENER	---	0.252	< 0.0300	0.0910	---	---	---	---	---
	5/19/2001	ENER	---	0.276	< 0.0300	0.0990	---	---	---	---	---
	5/24/2001	ENER	---	0.242	< 0.0300	0.107	---	---	---	---	---
	6/3/2001	ENER	---	0.266	< 0.0300	0.102	---	---	---	---	---
	6/10/2001	ENER	---	0.273	< 0.0300	0.0990	---	---	---	---	---
	6/28/2001	ENER	---	0.270	< 0.0300	0.110	---	---	---	---	---
	7/5/2001	ENER	---	0.221	< 0.0300	0.0970	---	---	---	---	---
	7/24/2001	ENER	---	0.210	< 0.0300	0.0940	---	---	---	---	---
	8/29/2001	ENER	---	0.280	0.410	0.102	---	---	---	---	---
	9/1/2001	ENER	---	0.272	< 0.0300	0.102	---	---	---	---	---
	9/1/2001	ENER	---	0.212	< 0.0300	0.0960	---	---	---	---	---
	9/17/2001	ENER	---	0.292	< 0.0300	0.131	---	---	---	---	---
	4/15/2002	ENER	---	0.206	< 0.0300	0.0930	---	---	---	---	---
	4/16/2002	ENER	---	0.251	< 0.0300	0.101	---	---	---	---	---

Table A.1-2 Water Quality of the South Irrigation (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
IRR 33/34	5/8/2002	ENER	---	0.252	---	0.107	---	---	---	---	---
	5/8/2002	ENER	---	# 0.255	---	# 0.101	---	---	---	---	---
	5/14/2002	ENER	---	0.245	< 0.0300	0.0910	---	---	---	---	---
	7/3/2002	ENER	---	0.226	0.0500	0.0960	---	---	---	---	---
	7/31/2002	ENER	---	0.230	< 0.0500	0.103	---	---	---	---	---
	10/2/2002	ENER	---	0.208	---	0.0960	---	---	---	---	---
	5/14/2003	ENER	---	0.0339	< 0.0300	0.0480	2.60	---	---	---	---
	9/18/2003	ENER	---	0.221	---	0.0790	---	---	---	---	---
	5/4/2004	ENER	---	0.284	< 0.0300	0.112	---	---	---	---	---
	5/27/2004	ENER	---	0.249	< 0.0300	0.0830	---	---	---	---	---
	8/18/2004	ENER	---	0.268	---	0.0800	2.65	---	---	---	---
	10/6/2004	ENER	---	0.232	< 0.0300	0.0750	---	---	---	---	---
	4/20/2005	ENER	---	0.247	< 0.0300	0.0550	2.60	---	---	---	---
	5/25/2005	ENER	---	0.234	< 0.0300	0.0590	2.80	---	---	---	---
	8/8/2005	ENER	---	0.270	---	0.0620	2.80	---	---	---	---
	9/26/2005	ENER	---	0.298	< 0.0300	0.0720	2.50	---	---	---	---
	10/11/2005	ENER	---	0.290	< 0.0300	0.0670	3.10	---	---	---	---
	4/10/2006	ENER	---	0.243	< 0.0300	0.0540	2.80	---	---	---	---
	6/26/2006	ENER	---	0.369	0.0700	0.0950	5.50	---	---	---	---
	8/14/2006	ENER	---	0.273	---	0.0720	2.80	---	---	---	---
	10/10/2006	ENER	---	0.285	< 0.0300	0.0670	2.30	---	---	---	---
	4/12/2007	ENER	---	0.275	< 0.0300	0.0610	2.90	---	---	---	---
	4/30/2007	ENER	---	0.265	< 0.0300	0.0650	2.80	---	---	---	---
	6/4/2007	ENER	---	0.232	< 0.0300	0.0630	3.00	---	---	---	---
	8/21/2007	ENER	---	0.301	---	0.0510	2.90	---	---	---	---
	10/22/2007	ENER	---	0.312	< 0.0300	0.0590	2.40	---	---	---	---
	4/7/2008	ENER	---	0.254	< 0.0300	0.0480	2.99	---	---	---	---
	4/21/2008	ENER	---	0.0521	< 0.0300	0.0730	3.75	---	---	---	---
	6/2/2008	ENER	---	0.262	< 0.0300	0.0420	2.87	---	---	---	---

Signifies Quality Control Sample

Table A.1-2 Water Quality of the South Irrigation (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
IRR 33/34	9/24/2008	ENER	---	0.213	< 0.0300	0.0490	2.79	---	---	---	---
	5/6/2009	ENER	---	0.262	< 0.0300	0.0480	2.31	---	---	---	---
	6/16/2009	ENER	---	0.213	< 0.0300	0.0470	2.93	---	---	---	---
	8/22/2012	ENER	---	0.115	< 0.0300	0.0360	3.00	---	---	---	---
	8/31/2012	ENER	---	0.119	< 0.0300	0.0410	3.00	---	---	---	---
	9/5/2012	ENER	---	0.118	< 0.0300	0.0380	3.20	---	---	---	---
	9/21/2012	ENER	---	0.109	< 0.0300	0.0500	3.00	---	---	---	---
	9/25/2012	ENER	---	0.111	< 0.0300	0.0370	3.20	---	---	---	---
	10/11/2012	ENER	7.31	0.115	< 0.0300	0.0370	3.10	0.380	1.40	< 0.0100	0.0300
	10/17/2012	ENER	---	0.122	< 0.0300	0.0450	3.20	---	---	---	---
IRR 34F	4/19/2005	ENER	---	0.248	< 0.0300	0.0560	2.60	---	---	---	---
	6/1/2005	ENER	---	0.243	< 0.0300	0.0640	2.70	---	---	---	---
	10/24/2005	ENER	---	0.351	< 0.0300	0.0800	2.50	---	---	---	---
	8/30/2010	ENER	---	0.129	< 0.0300	0.0440	3.10	---	---	---	---
	9/8/2010	ENER	---	0.129	< 0.0300	0.0450	3.00	---	---	---	---
	9/15/2010	ENER	---	0.118	< 0.0300	0.0480	3.50	---	---	---	---
	9/22/2010	ENER	---	0.119	< 0.0300	0.0440	3.40	---	---	---	---
	10/1/2010	ENER	---	0.143	< 0.0300	0.0440	3.20	---	---	---	---
	10/6/2010	ENER	---	0.159	< 0.0300	0.0480	2.90	---	---	---	---
	10/13/2010	ENER	---	0.156	< 0.0300	0.0470	3.20	---	---	---	---
	10/27/2010	ENER	---	0.144	< 0.0300	0.0450	---	---	---	---	---

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0482	11/19/1980	HMC	---	---	---	---	---	---	240	1260	---	---	---
	10/14/1981	HMC	---	---	---	285	606	---	170	1230	2690	---	---
	3/1/1982	HMC	---	---	---	430	588	---	199	1300	2640	---	---
	3/22/1982	EID	251	65.1	4.29	382	563	---	193	983	2265	---	0.980
	3/22/1982	HMC	313	55.0	---	395	571	< 10.00	184	1056	2200	2102	---
	1/20/1983	HMC	330	---	---	357	550	60.0	---	956	---	---	---
	9/6/1983	HMC	2.80	4.00	3.90	317	456	0	163	834	1966	2292	1.04
	10/27/1983	HMC	---	---	---	---	---	---	149	907	2020	---	---
	11/10/1994	ENER	224	62.0	6.10	275	560	< 0.100	191	725	1851	* 2417	0.957
	4/11/1996	ENER	222	62.5	6.00	284	572	< 0.100	197	716	1906	* 2699	0.963
	2/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/25/2002	ENER	---	---	---	---	---	---	---	671	1860	---	---
	9/4/2003	ENER	226	65.7	7.10	274	539	< 1.000	204	751	1850	* 2465	0.951
	12/12/2003	ENER	---	---	---	---	---	---	208	671	1810	* 2556	---
	5/25/2005	ENER	---	---	---	---	---	---	193	681	1750	* 2415	---
	9/21/2005	ENER	219	65.4	6.50	278	445	< 1.000	184	664	1760	* 1266	1.08
	10/11/2006	ENER	---	---	---	---	---	---	182	661	1690	* 2675	---
	6/4/2007	ENER	---	---	---	---	---	---	170	617	1600	* 2298	---
	6/23/2008	ENER	---	---	---	---	---	---	156	684	1620	* 2300	---
	10/1/2008	ENER	---	---	---	---	---	---	194	792	1930	* 2560	---
	6/23/2009	ENER	---	---	---	---	---	---	193	717	1720	* 2443	---
	5/26/2010	ENER	---	---	---	---	---	---	183	638	1740	* 2377	---
	8/30/2010	ENER	---	---	---	---	---	---	187	664	1680	* 2250	---
	11/3/2011	ENER	---	---	---	---	---	---	183	658	1700	* 2294	---
	9/24/2012	ENER	---	---	---	---	---	---	196	720	1820	* 2508	---
	7/9/2013	ENER	---	---	---	---	---	---	260	670	1800	* 2425	---
	5/14/2014	ENER	215	61.4	6.20	273	515	< 5.00	201	707	1770	* 2971	0.959
0483	9/19/1979	EID	---	---	---	---	623	---	262	211	---	---	---
	12/10/1979	EID	---	---	---	---	481	---	277	2070	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0483	3/19/1980	EID	---	---	---	543	608	---	257	1930	---	---	---
	8/7/1980	EID	---	---	---	545	632	---	263	2100	---	---	---
	7/13/1981	HMC	---	---	---	550	---	---	---	1870	3800	---	---
	9/9/1981	HMC	---	---	---	490	616	---	---	1640	3300	---	---
	10/14/1981	HMC	---	---	---	360	618	---	210	1450	2950	---	---
	2/24/1982	HMC	252	74.0	---	425	244	< 10.00	184	1322	2510	---	---
	3/1/1982	HMC	---	---	---	430	588	---	199	1300	2640	---	---
	3/22/1982	HMC	342	69.0	* 4.68	425	578	0	* 204	1129	* 2360	2444	* 0.970
	12/6/1982	HMC	---	---	---	---	---	---	163	905	2080	---	---
	9/6/1983	HMC	---	---	---	---	---	---	---	---	---	2252	---
	9/6/1983	HMC	---	---	---	---	---	---	---	---	---	2302	---
	9/6/1983	HMC	---	---	---	---	---	---	---	---	---	2348	---
	9/6/1983	HMC	171	45.0	3.51	329	392	0	156	777	1820	2306	0.960
	7/24/1996	ENER	217	61.5	5.40	308	565	< 0.100	198	711	1891	* 2526	0.992
	2/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/7/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	8/9/2005	ENER	---	---	---	---	---	---	191	661	1790	* 2481	---
	9/20/2005	ENER	224	65.6	5.80	264	523	< 1.000	191	648	1810	* 963	1.03
	10/11/2006	ENER	---	---	---	---	---	---	177	632	1600	* 2494	---
	6/4/2007	ENER	---	---	---	---	---	---	168	624	1650	* 2356	---
	6/2/2008	ENER	---	---	---	---	---	---	177	791	1730	* 2477	---
	10/1/2008	ENER	---	---	---	---	---	---	194	815	1950	* 2620	---
	7/20/2009	ENER	---	---	---	---	---	---	186	733	1830	* 2500	---
	10/6/2009	ENER	---	---	---	---	---	---	209	848	1980	* 2683	---
	6/15/2010	ENER	---	---	---	---	---	---	187	656	1730	* 2454	---
	8/30/2010	ENER	---	---	---	---	---	---	192	671	1720	* 2450	---
	11/7/2011	ENER	---	---	---	---	---	---	193	699	1800	* 2499	---
	9/24/2012	ENER	---	---	---	---	---	---	202	772	1890	* 2595	---
	11/14/2013	ENER	---	---	---	---	---	---	383	1280	3030	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0483	6/11/2014	ENER	---	---	---	---	---	---	209	775	1840	* 2546	---
	9/10/2014	ENER	---	---	---	---	---	---	204	813	1890	* 2847	---
	5/12/2016	ENER	226	63.6	5.70	315	532	< 5.00	195	733	1850	2509	1.02
0490	12/30/1981	HMC	353	52.0	---	300	368	< 0.0100	170	1240	2740	---	---
	12/30/1981	HMC	355	47.0	---	300	360	< 0.0100	213	1208	---	---	---
	2/5/1982	HMC	411	---	---	445	571	< 0.0100	192	1307	2650	---	---
	2/5/1982	HMC	393	---	---	455	561	< 0.0100	199	1316	2620	---	---
	2/5/1982	HMC	395	---	---	455	571	< 0.0100	184	1307	2540	---	---
	3/22/1982	HMC	334	67.0	---	390	555	< 10.00	184	1203	2520	2544	---
	5/27/1982	HMC	---	---	---	---	---	---	177	1092	2380	---	---
	5/27/1982	HMC	---	---	---	---	---	---	---	---	---	2843	---
	5/27/1982	HMC	---	---	---	---	---	---	---	---	---	2913	---
	5/27/1982	HMC	---	---	---	---	---	---	---	---	---	2913	---
	12/30/1982	HMC	---	---	---	---	---	---	---	---	---	2649	---
	12/30/1982	HMC	---	---	---	---	---	---	---	---	---	2610	---
	12/30/1982	HMC	---	---	---	---	---	---	149	917	1930	2504	---
	2/11/1983	HMC	---	---	---	---	---	---	---	---	---	2511	---
	2/11/1983	HMC	---	---	---	---	---	---	---	---	---	2511	---
	2/11/1983	HMC	227	57.0	5.00	350	525	0	105	900	2060	2511	1.04
	4/27/1983	HMC	---	---	---	---	---	---	---	---	---	2456	---
	4/27/1983	HMC	---	---	---	---	---	---	---	---	---	2450	---
	4/27/1983	HMC	---	---	---	---	---	---	213	937	2020	2450	---
	6/27/1983	HMC	---	---	---	---	---	---	---	---	---	2417	---
	6/27/1983	HMC	---	---	---	---	---	---	---	---	---	2357	---
	6/27/1983	HMC	---	---	---	---	---	---	---	---	---	2351	---
	6/27/1983	EID	225	* 5.00	* 22.0	* 342	340	* 0	173	* 855	* 1990	2346	1.07
	9/2/1983	HMC	---	---	---	---	---	---	---	---	---	2252	---
	9/2/1983	HMC	---	---	---	---	---	---	---	---	---	2369	---
	9/2/1983	HMC	---	---	---	---	---	---	156	830	1970	2372	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0490	10/6/1983	HMC	---	---	---	---	---	---	---	---	---	1405	---
	10/6/1983	HMC	---	---	---	---	---	---	---	---	---	1325	---
	10/6/1983	HMC	---	---	---	---	---	---	163	856	1990	1357	---
	1/6/1984	HMC	---	---	---	---	---	---	---	---	---	2582	---
	1/6/1984	HMC	---	---	---	---	---	---	---	---	---	2612	---
	1/6/1984	HMC	337	31.0	5.00	350	537	0	156	855	1870	2628	1.12
	4/10/1984	HMC	---	---	---	---	---	---	---	---	---	2601	---
	4/10/1984	HMC	---	---	---	---	---	---	---	---	---	2601	---
	4/10/1984	HMC	---	---	---	---	---	---	177	873	1900	2601	---
	6/14/1984	HMC	---	---	---	---	---	---	---	---	---	2523	---
	6/14/1984	HMC	---	---	---	---	---	---	---	---	---	2549	---
	6/14/1984	HMC	---	---	---	---	---	---	199	824	1760	2549	---
	10/23/1984	HMC	---	---	---	---	---	---	---	---	---	2542	---
	10/23/1984	HMC	---	---	---	---	---	---	---	---	---	2542	---
	10/23/1984	HMC	---	---	---	---	---	---	170	758	1920	2511	---
	1/30/1985	HMC	---	---	---	---	---	---	---	---	---	2664	---
	1/30/1985	HMC	---	---	---	---	---	---	---	---	---	2538	---
	1/30/1985	HMC	312	14.0	5.00	340	562	0.0010	170	785	1490	2469	1.04
	4/2/1985	HMC	---	---	---	---	---	---	---	---	---	2453	---
	4/2/1985	HMC	---	---	---	---	---	---	---	---	---	2480	---
	4/2/1985	HMC	---	---	---	---	---	---	170	773	1830	2450	---
	7/8/1985	HMC	---	---	---	---	---	---	---	---	---	2516	---
	7/8/1985	HMC	---	---	---	---	---	---	---	---	---	2516	---
	7/8/1985	HMC	---	---	---	---	---	---	178	736	1860	2516	---
	7/8/1985	HMC	---	---	---	---	---	---	---	---	---	1663	---
	7/8/1985	HMC	---	---	---	---	---	---	---	---	---	1703	---
	10/14/1985	HMC	---	---	---	---	---	---	---	---	---	2504	---
	10/14/1985	HMC	---	---	---	---	---	---	---	---	---	2504	---
	10/14/1985	HMC	---	---	---	---	---	---	156	773	1600	2504	---

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0490	1/14/1986	HMC	---	---	---	---	---	---	---	---	---	2443	---
	1/14/1986	HMC	---	---	---	---	---	---	---	---	---	2443	---
	1/14/1986	HMC	---	---	---	---	---	---	---	---	---	2443	---
	1/14/1986	HMC	300	22.0	5.00	305	580	< 0.0010	163	756	1850	2443	1.01
	4/9/1986	HMC	---	---	---	---	---	---	---	---	---	2440	---
	4/9/1986	HMC	---	---	---	---	---	---	170	864	1670	2440	---
	7/14/1986	HMC	---	---	---	---	---	---	---	---	---	2456	---
	7/14/1986	HMC	---	---	---	---	---	---	---	---	---	2426	---
	7/14/1986	HMC	---	---	---	---	---	---	177	747	1760	2426	---
	10/21/1986	HMC	---	---	---	---	---	---	---	---	---	1475	---
	10/21/1986	HMC	---	---	---	---	---	---	---	---	---	1479	---
	10/21/1986	HMC	---	---	---	---	---	---	177	757	1830	1457	---
	10/21/1986	HMC	306	35.0	4.00	183	349	< 10.00	163	710	1790	---	1.03
	1/28/1987	HMC	---	---	---	---	---	---	---	---	---	2538	---
	1/28/1987	HMC	---	---	---	---	---	---	---	---	---	2511	---
	1/28/1987	HMC	306	13.0	6.00	303	601	< 0.0010	170	789	1670	2511	0.950
	4/14/1987	HMC	---	---	---	---	---	---	---	---	---	2483	---
	4/14/1987	HMC	---	---	---	---	---	---	---	---	---	2483	---
	4/14/1987	HMC	---	---	---	---	---	---	163	749	1690	2483	---
	7/15/1987	HMC	---	---	---	---	---	---	---	---	---	2520	---
	7/15/1987	HMC	---	---	---	---	---	---	191	771	1400	2518	---
	10/20/1987	HMC	---	---	---	---	---	---	---	---	---	2516	---
	10/20/1987	HMC	---	---	---	---	---	---	---	---	---	2516	---
	10/20/1987	HMC	---	---	---	---	---	---	163	815	1870	2516	---
	11/19/1987	HMC	---	---	---	---	---	---	---	---	---	2511	---
	11/19/1987	HMC	---	---	---	---	---	---	---	---	---	2511	---
	11/19/1987	HMC	---	---	---	---	---	---	---	---	---	2511	---
	11/19/1987	EID	224	51.2	4.83	319	550	---	166	675	1884	---	1.06
	11/19/1987	HMC	298	15.0	5.00	312	612	< 10.00	149	738	1890	2542	1.000

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0490	2/9/1988	HMC	---	---	---	---	---	---	---	---	---	2480	---
	2/9/1988	HMC	---	---	---	---	---	---	---	---	---	2450	---
	2/9/1988	HMC	313	19.0	5.00	320	604	< 10.00	170	776	1870	2480	1.000
	8/17/1988	HMC	---	---	---	---	---	---	191	749	1840	2811	---
	10/12/1988	HMC	325	22.0	5.00	330	639	---	184	754	1720	2444	1.04
	1/23/1989	HMC	---	---	---	---	---	---	---	---	---	2511	---
	1/23/1989	HMC	278	33.0	5.00	312	492	< 10.00	184	813	1730	2511	0.990
	6/15/1989	HMC	---	---	---	---	---	---	---	---	---	2556	---
	6/15/1989	HMC	---	---	---	---	---	---	184	790	1630	2402	---
	8/31/1989	HMC	---	---	---	---	---	---	---	---	---	2585	---
	8/31/1989	HMC	204	20.0	5.00	342	360	< 10.00	170	1036	1590	2585	0.823
	4/4/1990	HMC	---	---	---	---	---	---	---	758	1890	2587	---
	10/23/1990	HMC	---	---	---	---	---	---	---	---	---	2614	---
	10/23/1990	HMC	334	17.0	8.00	307	573	---	177	757	1900	2595	---
	4/30/1991	HMC	---	---	---	---	---	---	---	---	---	2555	---
	4/30/1991	HMC	---	---	---	---	---	---	---	768	1990	2574	---
	10/10/1991	HMC	---	---	---	---	---	---	---	---	---	2572	---
	10/10/1991	HMC	330	4.00	* 3.80	* 299	* 530	*< 1.000	184	782	* 1880	2554	0.990
	4/30/1992	HMC	---	---	---	---	---	---	---	---	---	2523	---
	4/30/1992	HMC	---	---	---	---	---	---	---	811	1920	2572	---
	10/22/1992	HMC	264	19.0	5.00	310	521	< 0.100	170	768	1890	2551	0.967
	10/22/1992	HMC	---	---	---	---	---	---	---	---	---	2460	---
	3/8/1993	HMC	252	16.0	5.00	318	337	< 0.100	191	853	1920	2503	0.971
	10/7/1993	ENER	---	---	---	---	---	---	---	731	1896	* 2473	---
	3/17/1994	ENER	230	53.6	3.90	281	543	< 0.100	194	689	1734	* 2430	0.982
	9/29/1994	ENER	---	---	---	---	---	---	---	690	1788	* 2439	---
	3/28/1995	ENER	232	67.0	5.00	278	560	< 0.100	193	677	1871	* 2582	1.02
	10/19/1995	ENER	---	---	---	---	---	---	---	713	1881	* 2585	---
	3/13/1996	ENER	256	69.0	5.20	274	583	< 0.100	208	870	1824	* 2585	0.909

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0490	10/14/1996	ENER	---	---	---	---	---	---	---	734	1930	* 2715	---
	2/7/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	3/17/1997	ENER	233	63.9	5.00	263	565	0	196	719	1894	---	0.956
	10/16/1997	ENER	---	---	---	---	---	---	---	678	1830	---	---
	3/10/1998	ENER	242	67.0	5.60	282	562	< 1.000	211	753	1910	---	0.972
	3/10/1998	ENER	# 237	# 66.0	# 5.50	# 281	# 566	# < 1.000	# 209	# 744	# 1930	---	# 0.965
	10/6/1998	ENER	---	---	---	---	---	---	---	689	1930	---	---
	3/3/1999	ENER	235	64.7	6.30	275	571	< 1.000	217	733	1910	---	0.948
	10/13/1999	ENER	---	---	---	---	---	---	---	719	1870	---	---
	3/8/2000	ENER	197	57.7	5.90	244	557	< 1.000	193	629	1880	---	0.915
	3/8/2000	ENER	# 213	# 60.3	# 6.80	# 257	# 558	# < 1.000	# 207	# 645	# 1870	---	# 0.947
	10/18/2000	ENER	---	---	---	---	---	---	---	544	1870	---	---
	10/18/2000	ENER	---	---	---	---	---	---	---	# 576	# 1870	---	---
	6/5/2001	ENER	---	---	---	---	---	---	---	702	1890	---	---
	6/11/2002	ENER	---	---	---	---	---	---	---	715	1880	---	---
	6/4/2003	ENER	226	65.1	6.10	272	540	< 1.000	200	695	1870	* 2525	0.987
	6/4/2003	ENER	# 223	# 64.0	# 6.10	# 273	# 540	# < 1.000	# 200	# 691	# 1800	---	# 0.983
	5/20/2004	ENER	232	64.9	6.50	280	537	< 1.000	202	699	1850	* 2547	1.01

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0490	5/25/2005	ENER	190	55.6	5.70	275	488	< 1.000	194	707	1790	* 2475	0.927
	9/19/2005	ENER	# 211	# 58.9	# 5.00	# 250	# 503	# < 1.000	# 191	# 720	# 1920	---	# 0.920
	9/19/2005	ENER	238	70.6	6.00	257	497	< 1.000	191	716	1900	* 1074	1.02
	5/18/2006	ENER	200	58.0	6.10	319	520	7.00	230	701	1730	* 2569	0.965
	6/19/2006	ENER	222	62.6	6.40	293	512	< 1.000	188	718	1820	* 2718	1.02
	6/19/2006	ENER	# 218	# 61.9	# 6.40	# 282	# 513	# < 1.000	# 193	# 711	# 1830	---	# 0.990
	10/11/2006	ENER	---	---	---	---	---	---	---	723	1790	* 2671	---
	6/4/2007	ENER	217	60.8	5.80	293	495	< 1.000	182	712	1790	* 1871	1.02
	10/1/2007	ENER	---	---	---	---	---	---	---	655	1810	* 2442	---
	10/1/2007	ENER	---	---	---	---	---	---	---	# 656	# 1790	---	---
	6/2/2008	ENER	245	68.3	5.60	320	465	< 1.000	185	832	1970	* 2526	1.06
	6/2/2008	ENER	# 244	# 68.0	# 5.50	# 314	# 467	# < 1.000	# 183	# 837	# 1840	---	# 1.04
	10/1/2008	ENER	---	---	---	---	---	---	---	876	2030	* 2680	---
	6/1/2009	ENER	203	59.9	6.60	291	502	< 1.000	185	663	1690	* 2117	1.02
	9/14/2009	EPA6	# 236	# 63.7	# 5.47	# 325	---	---	# 189	# 869	# 1860	---	---
	9/14/2009	ENER	---	---	---	---	---	---	---	806	1900	---	---
	6/15/2010	ENER	97.5	26.5	4.30	508	554	< 5.00	174	641	1680	* 2506	1.06
	8/30/2010	ENER	---	---	---	---	---	---	180	661	1310	* 2500	---
	10/27/2010	ENER	---	---	---	---	---	---	---	832	2020	* 2698	---
	6/8/2011	ENER	215	57.8	5.50	269	515	< 5.00	192	719	1780	* 2415	0.942
	10/11/2011	ENER	---	---	---	---	---	---	---	712	1770	* 2456	---
	6/13/2012	ENER	231	61.7	5.80	271	501	< 5.00	181	683	1820	* 2451	1.03
	10/3/2012	ENER	---	---	---	---	---	---	---	846	1910	* 2674	---
	11/4/2013	ENER	---	---	---	---	---	---	---	1370	2750	* 3580	---
	11/22/2013	ENER	---	---	---	---	---	---	199	761	1870	---	---
	6/11/2014	ENER	---	---	---	---	---	---	218	942	2020	* 2696	---
	5/21/2015	ENER	242	66.2	5.70	339	382	< 5.00	204	960	2140	* 2832	1.01
	10/15/2015	ENER	---	---	---	---	---	---	---	897	1950	* 2648	---
	5/12/2016	ENER	227	61.1	6.30	318	462	< 5.00	190	808	1930	2567	1.01

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0490	10/21/2016	ENER	200	53.0	6.70	309	519	< 5.00	176	672	1750	3944	1.01
	3/9/2017	ENER	---	---	---	---	---	---	201	1100	2170	2850	---
0491	12/30/1981	HMC	369	46.0	---	340	411	< 0.0100	199	1290	---	---	---
	12/30/1981	HMC	376	52.0	---	340	384	< 0.0100	206	1306	2910	---	---
	12/30/1981	HMC	381	50.0	---	355	403	< 0.0100	206	1272	---	---	---
	3/22/1982	HMC	289	64.0	---	395	504	< 10.00	184	1100	2250	2312	---
	10/25/1983	HMC	---	---	---	---	---	---	---	---	---	2547	---
	10/25/1983	HMC	---	---	---	---	---	---	---	---	---	2544	---
	10/25/1983	HMC	---	---	---	---	---	---	184	1414	2770	2483	---
	4/3/1990	HMC	---	---	---	---	---	---	---	760	1680	2879	---
	11/10/1994	ENER	232	60.0	4.20	296	584	< 0.100	193	741	1900	* 2476	0.969
	3/25/1996	ENER	286	75.2	4.50	387	531	< 0.100	301	1021	2547	* 3178	0.973
	12/4/1996	ENER	318	85.9	4.80	467	427	< 0.100	412	1250	2960	* 3907	0.971
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/25/1997	ENER	---	---	---	---	---	---	---	1300	3010	---	---
	8/27/1997	ENER	335	84.6	5.20	439	460	< 0.100	412	1190	2810	---	0.976
	3/26/1998	ENER	---	---	---	---	---	---	---	772	2050	---	---
	8/24/1998	ENER	226	59.8	4.40	287	569	< 1.000	191	659	1900	---	1.01
	8/22/2001	ENER	---	---	---	---	---	---	---	1200	3270	---	---
	7/25/2002	ENER	---	---	---	---	---	---	---	937	2510	---	---
	9/4/2003	ENER	---	---	---	---	---	---	212	730	1940	* 2582	---
	12/12/2003	ENER	---	---	---	---	---	---	217	751	1900	* 2644	---
	8/23/2004	ENER	---	---	---	---	---	---	---	779	1880	* 2536	---
	5/25/2005	ENER	---	---	---	---	---	---	211	666	1860	* 2467	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0491	9/21/2005	ENER	231	65.1	4.70	264	537	< 1.000	182	618	1760	* 1253	1.06
	5/18/2006	ENER	214	61.3	4.80	273	531	7.00	239	619	1670	* 2506	0.970
	6/4/2007	ENER	---	---	---	---	---	---	160	562	1540	* 2230	---
	6/4/2007	ENER	---	---	---	---	---	---	# 168	# 573	# 1560	---	---
	6/23/2008	ENER	---	---	---	---	---	---	475	1180	2860	* 3608	---
	10/1/2008	ENER	---	---	---	---	---	---	123	495	1380	* 1970	---
	6/23/2009	ENER	---	---	---	---	---	---	115	464	1280	* 1886	---
	10/7/2009	ENER	---	---	---	---	---	---	---	485	1300	* 1947	---
	5/26/2010	ENER	---	---	---	---	---	---	131	445	1320	* 1895	---
	8/30/2010	ENER	---	---	---	---	---	---	136	461	1310	* 1910	---
	6/13/2011	ENER	---	---	---	---	---	---	156	513	1380	* 1995	---
	11/3/2011	ENER	---	---	---	---	---	---	---	513	1400	* 1996	---
	9/24/2012	ENER	---	---	---	---	---	---	156	526	1420	* 2037	---
	7/9/2013	ENER	---	---	---	---	---	---	160	534	1470	* 2085	---
	5/14/2014	ENER	---	---	---	---	---	---	603	1660	3550	* 4600	---
	9/18/2014	ENER	---	---	---	---	---	---	622	1750	3940	---	---
	9/18/2014	ENER	---	---	---	---	---	---	# 632	# 1780	# 3950	*# 4911	---
0493	9/5/1984	HMC	26.0	1.000	2.00	363	281	---	43.0	530	1100	1766	1.02
	1/16/1985	HMC	---	---	---	---	---	---	43.0	528	1110	---	---
	4/2/1985	HMC	---	---	---	---	---	---	---	---	---	1680	---
	4/2/1985	HMC	---	---	---	---	---	---	---	---	---	1648	---
	4/2/1985	HMC	11.0	2.00	1.000	372	282	< 0.0010	35.0	575	1120	1680	0.960
	7/8/1985	HMC	---	---	---	---	---	---	---	---	---	1663	---
	7/8/1985	HMC	---	---	---	---	---	---	---	---	---	1703	---
	7/8/1985	HMC	---	---	---	---	---	---	35.0	566	1150	1703	---
	10/11/1985	HMC	---	---	---	---	---	---	---	---	---	1680	---
	10/11/1985	HMC	---	---	---	---	---	---	---	---	---	1680	---
	10/11/1985	HMC	---	---	---	---	---	---	35.0	543	1050	1680	---
	1/14/1986	HMC	---	---	---	---	---	---	---	---	---	1722	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0493	1/14/1986	HMC	---	---	---	---	---	---	---	---	---	1722	---
	1/14/1986	HMC	---	---	---	---	---	---	---	---	---	17.0	---
	1/14/1986	HMC	---	---	---	---	---	---	43.0	571	1100	1722	---
	4/9/1986	HMC	---	---	---	---	---	---	---	---	---	1698	---
	4/9/1986	HMC	---	---	---	---	---	---	---	---	---	1693	---
	4/9/1986	HMC	---	---	---	---	---	---	57.0	765	1000	1680	---
	7/14/1986	HMC	21.0	3.00	2.00	372	278	< 0.0010	57.0	574	950	2340	0.970
	10/20/1986	HMC	---	---	---	---	---	---	---	---	---	1357	---
	10/20/1986	HMC	---	---	---	---	---	---	---	---	---	1232	---
	10/20/1986	HMC	---	---	---	---	---	---	170	577	1090	1219	---
	10/20/1986	HMC	---	---	---	---	---	---	43.0	594	1040	---	---
	1/28/1987	HMC	---	---	---	---	---	---	---	---	---	1722	---
	1/28/1987	HMC	---	---	---	---	---	---	---	---	---	1722	---
	1/28/1987	HMC	---	---	---	---	---	---	43.0	587	1160	1764	---
	4/14/1987	HMC	---	---	---	---	---	---	---	---	---	1788	---
	4/14/1987	HMC	---	---	---	---	---	---	---	---	---	1722	---
	4/14/1987	HMC	---	---	---	---	---	---	35.0	527	1010	1724	---
	7/16/1987	HMC	---	---	---	---	---	---	---	---	---	1628	---
	7/16/1987	HMC	---	---	---	---	---	---	---	---	---	1635	---
	7/16/1987	HMC	---	---	---	---	---	---	---	---	---	1635	---
	7/16/1987	HMC	24.0	1.000	1.000	348	267	< 10.00	43.0	543	1000	1635	0.950
	10/20/1987	HMC	---	---	---	---	---	---	---	---	---	1724	---
	10/20/1987	HMC	---	---	---	---	---	---	---	---	---	1577	---
	10/20/1987	HMC	---	---	---	---	---	---	21.0	622	1060	1648	---
	11/19/1987	HMC	---	---	---	---	---	---	---	---	---	1693	---
	11/19/1987	EID	8.00	0.900	1.57	399	263	---	92.2	549	1108	* 1722	0.970
	11/19/1987	HMC	---	---	---	---	---	---	---	---	---	1708	---
	11/19/1987	HMC	22.0	1.000	1.000	363	284	< 10.00	35.0	535	810	1708	0.990
	2/9/1988	HMC	---	---	---	---	---	---	---	---	---	1688	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0493	2/9/1988	HMC	---	---	---	---	---	---	---	---	---	1676	---
	2/9/1988	HMC	---	---	---	---	---	---	35.0	567	1000	1655	---
	4/27/1988	HMC	---	---	---	---	---	---	---	---	---	1680	---
	4/27/1988	HMC	---	---	---	---	---	---	43.0	588	820	1680	---
	7/20/1988	HMC	---	---	---	---	---	---	---	---	---	1558	---
	7/20/1988	HMC	21.0	1.000	2.00	393	278	---	50.0	591	780	1558	1.000
	10/27/1988	HMC	---	---	---	---	---	---	43.0	623	---	1589	---
	1/19/1989	HMC	---	---	---	---	---	---	---	---	---	1722	---
	1/19/1989	HMC	---	---	---	---	---	---	43.0	625	1110	1722	---
	6/15/1989	HMC	---	---	---	---	---	---	---	---	---	1680	---
	6/15/1989	HMC	---	---	---	---	---	---	57.0	580	1150	1680	---
	8/31/1989	HMC	---	---	---	---	---	---	---	---	---	1712	---
	8/31/1989	HMC	22.0	3.00	2.00	427	264	17.0	50.0	676	1080	1680	0.980
	10/27/1989	HMC	---	---	---	---	---	---	---	---	1080	---	---
	4/4/1990	HMC	---	---	---	---	---	---	---	598	1180	1725	---
	10/22/1990	HMC	22.0	1.000	6.00	387	268	---	57.0	550	1110	1734	---
	4/30/1991	HMC	---	---	---	---	---	---	---	---	---	1766	---
	4/30/1991	HMC	---	---	---	---	---	---	---	559	1170	1784	---
	10/10/1991	HMC	22.0	3.00	2.00	400	262	< 0.100	50.0	650	1210	---	0.977
	10/10/1991	BARR	6.90	1.30	1.000	376	244	< 1.000	48.0	487	1100	* 1792	1.08
	4/13/1992	HMC	---	---	---	---	---	---	---	732	1240	1809	---
	4/30/1992	HMC	---	---	---	---	---	---	---	675	1270	1826	---
	11/2/1992	HMC	---	---	---	---	---	---	---	---	---	1827	---
	11/2/1992	HMC	---	---	---	---	---	---	---	---	---	1758	---
	11/2/1992	HMC	22.0	3.00	2.00	400	270	< 0.100	57.0	602	1220	1758	1.01
	3/8/1993	HMC	28.0	2.00	2.00	400	275	< 0.100	57.0	656	1230	1805	0.961
	12/10/1993	HMC	---	---	---	---	---	---	---	---	---	1890	---
	3/15/1994	ENER	7.20	1.20	0.500	403	254	< 0.100	66.1	597	1177	* 1892	0.975
	9/29/1994	HMC	---	---	---	---	---	---	---	672	1350	1885	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0493	9/29/1994	ENER	---	---	---	---	---	---	---	622	1275	* 1885	---
	11/14/1994	ENER	7.00	1.30	1.40	407	270	< 0.100	62.6	613	1238	* 1680	0.960
	11/21/1994	ENER	7.90	1.41	1.50	426	276	< 0.100	70.9	664	1294	* 1976	0.938
	3/28/1995	ENER	7.60	1.60	1.40	419	257	4.30	66.0	666	1258	* 1986	0.935
	10/16/1995	ENER	---	---	---	---	---	---	---	610	1264	* 2003	---
	3/13/1996	ENER	8.30	1.70	1.50	411	257	4.40	73.2	655	1257	* 2068	0.921
	10/14/1996	ENER	---	---	---	---	---	---	---	647	1300	* 2185	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/20/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	3/17/1997	ENER	7.70	1.50	1.60	396	263	0	69.0	630	1299	---	0.917
	4/15/1997	ENER	7.80	1.50	1.50	427	270	0	63.2	619	1320	---	1.00
	10/16/1997	ENER	---	---	---	---	---	---	---	604	1260	---	---
	3/10/1998	ENER	8.90	1.70	1.80	443	268	< 1.000	84.0	695	1390	---	0.936
	10/6/1998	ENER	---	---	---	---	---	---	---	674	1450	---	---
	3/3/1999	ENER	10.4	2.10	2.60	473	274	4.20	99.5	752	1510	---	0.924

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0493	10/13/1999	ENER	---	---	---	---	---	---	---	710	1450	---	---
	10/13/1999	ENER	---	---	---	---	---	---	---	# 696	# 1440	---	---
	3/8/2000	ENER	8.30	1.70	3.20	432	275	< 1.000	88.3	638	1370	---	0.956
	10/18/2000	ENER	---	---	---	---	---	---	---	499	1290	---	---
	3/13/2001	ENER	---	---	---	---	---	---	---	722	1320	---	---
	6/5/2001	ENER	---	---	---	---	---	---	---	639	1330	---	---
	3/27/2002	ENER	---	---	---	---	---	---	---	719	1420	---	---
	6/11/2002	ENER	---	---	---	---	---	---	---	668	1350	---	---
	3/20/2003	ENER	---	---	---	---	---	---	---	737	1530	---	---
	3/20/2003	ENER	---	---	---	---	---	---	---	# 739	# 1520	---	---
	6/4/2003	ENER	11.3	2.40	2.00	496	294	3.50	99.3	698	1510	* 2278	1.01
	3/11/2004	ENER	---	---	---	---	---	---	---	733	1570	* 2224	---
	3/11/2004	ENER	---	---	---	---	---	---	---	# 723	# 1560	---	---
	5/20/2004	ENER	12.1	3.80	2.30	470	314	< 1.000	117	707	1560	* 2350	0.923
	2/8/2005	ENER	---	---	---	---	---	---	---	743	1570	* 2420	---
	5/25/2005	ENER	9.80	1.70	1.60	557	320	< 1.000	109	688	1500	* 2343	1.10
	5/25/2005	ENER	# 9.80	# 1.70	# 1.70	# 558	# 320	# < 1.000	# 112	# 691	# 1520	---	# 1.09
	9/19/2005	ENER	9.80	1.90	1.60	458	311	6.00	111	648	1560	* 1397	0.940
	2/13/2006	ENER	---	---	---	---	---	---	---	693	1620	* 2460	---
	2/13/2006	ENER	---	---	---	---	---	---	---	# 681	# 1640	---	---
	6/19/2006	ENER	12.0	2.20	2.20	500	364	< 1.000	122	692	1570	* 2589	0.947
	2/5/2007	ENER	---	---	---	---	---	---	---	783	1600	* 2380	---
	5/10/2007	ENER	11.5	2.10	1.90	558	357	< 1.000	123	658	1580	* 2372	1.09
	2/5/2008	ENER	---	---	---	---	---	---	---	732	1510	* 2537	---
	6/23/2008	ENER	12.8	2.60	1.80	552	365	1.000	113	669	1560	* 2359	1.08
	10/1/2008	ENER	---	---	---	---	---	---	---	684	1500	* 2270	---
	7/20/2009	ENER	13.0	2.60	1.70	583	367	< 1.000	126	673	1590	* 2400	1.11
	9/14/2009	ENER	12.2	2.50	1.70	561	371	7.00	133	734	1520	* 2443	0.997
	9/14/2009	EPA6	# 14.0	# 2.89	# 2.03	# 548	---	---	# 129	# 751	# 1460	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0493	2/8/2010	ENER	---	---	---	---	---	---	---	774	1620	* 2662	---
	6/15/2010	ENER	14.9	3.00	2.00	657	440	< 5.00	142	751	1720	* 2645	1.10
	10/27/2010	ENER	---	---	---	---	---	---	131	702	1630	* 2476	---
	2/7/2011	ENER	---	---	---	---	---	---	---	693	1550	* 2466	---
	2/7/2011	ENER	---	---	---	---	---	---	---	# 688	# 1550	---	---
	6/8/2011	ENER	15.1	2.90	2.00	616	404	6.00	137	699	1630	* 2510	1.10
	3/6/2012	ENER	---	---	---	---	---	---	---	640	1720	* 2479	---
	6/13/2012	ENER	16.6	3.10	1.90	590	407	< 5.00	132	707	1670	* 2537	1.06
	9/20/2012	ENER	---	---	---	---	---	---	138	701	1630	* 1919	---
	2/8/2013	HMC	---	---	---	---	---	---	---	697	1650	2503	---
	7/8/2013	ENER	14.8	3.00	2.10	575	416	< 5.00	141	689	1610	* 2492	1.03
	2/12/2014	ENER	---	---	---	---	---	---	---	700	1660	* 2588	---
	2/12/2014	ENER	---	---	---	---	---	---	---	# 695	# 1670	---	---
	6/16/2014	ENER	15.0	2.80	2.00	621	408	< 5.00	143	704	1620	* 2469	1.10
	3/4/2015	ENER	---	---	---	---	---	---	---	676	1550	* 2384	---
	3/4/2015	ENER	---	---	---	---	---	---	---	# 679	# 1530	* 2384	---
	5/21/2015	ENER	12.3	2.40	1.80	531	361	< 5.00	128	658	1540	* 2368	1.02
	2/15/2016	ENER	---	---	---	---	---	---	---	677	1550	2393	---
	7/11/2016	ENER	13.9	2.80	1.90	550	388	11.0	139	652	1600	2449	1.03
	3/1/2017	ENER	---	---	---	---	---	---	---	688	1530	2393	---
0496	2/5/1997	ENER	228	57.9	6.20	297	451	0	174	841	1940	---	0.980
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	2/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/4/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0496	3/4/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/4/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	ENER	225	56.0	6.00	308	455	0	174	827	1940	---	0.993
	8/18/1997	ENER	---	---	---	---	---	---	---	838	1900	---	---
	4/13/1998	ENER	219	56.0	6.00	305	571	< 1.000	184	816	1880	---	0.917
	8/10/1998	ENER	---	---	---	---	---	---	---	764	1900	---	---
	8/31/1999	ENER	---	---	---	---	---	---	---	736	1820	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	668	1870	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	# 666	# 1850	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	640	1880	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	# 630	# 1880	---	---
	8/12/2002	ENER	---	---	---	---	---	---	---	690	1780	---	---
	8/12/2002	ENER	---	---	---	---	---	---	---	# 698	# 1780	---	---
	8/21/2003	ENER	---	---	---	---	---	---	203	736	1770	* 2343	---
	8/17/2004	ENER	---	---	---	---	---	---	---	662	1590	* 2129	---
	3/28/2005	ENER	---	---	---	---	---	---	139	565	1470	* 2122	---
	9/26/2005	ENER	---	---	---	---	---	---	123	514	1410	* 2018	---
	3/15/2006	ENER	---	---	---	---	---	---	133	534	1360	* 2152	---
	3/26/2007	ENER	---	---	---	---	---	---	123	559	1310	* 1895	---
	9/11/2007	ENER	---	---	---	---	---	---	134	569	1420	* 2015	---
	3/31/2008	ENER	---	---	---	---	---	---	167	671	1510	* 2163	---
	3/23/2009	ENER	---	---	---	---	---	---	173	634	1630	* 2274	---
	8/12/2009	ENER	---	---	---	---	---	---	182	666	1650	* 2410	---
	10/6/2010	ENER	---	---	---	---	---	---	178	664	1690	* 2420	---
	10/27/2010	ENER	---	---	---	---	---	---	179	664	1700	* 2400	---
	4/18/2011	ENER	---	---	---	---	---	---	181	675	1660	* 2442	---
	10/19/2011	ENER	---	---	---	---	---	---	176	663	1680	* 2400	---
	5/7/2012	ENER	---	---	---	---	---	---	170	652	1750	* 2436	---
	9/20/2012	ENER	---	---	---	---	---	---	170	650	1700	* 1853	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0496	3/6/2013	ENER	---	---	---	---	---	---	170	647	1670	* 2434	---
	11/14/2013	ENER	---	---	---	---	---	---	166	636	1700	---	---
	4/1/2014	ENER	---	---	---	---	---	---	164	648	1690	* 2413	---
0497	2/27/1997	ENER	224	60.3	6.20	352	572	0	190	767	1910	---	1.03
	3/4/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/4/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/6/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/12/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	ENER	218	55.3	6.20	334	583	0	185	747	1931	---	0.993
	8/18/1997	ENER	---	---	---	---	---	---	---	760	1910	---	---
	4/13/1998	ENER	221	58.0	6.00	333	508	< 1.000	188	779	1920	---	1.02
	8/10/1998	ENER	---	---	---	---	---	---	---	752	1990	---	---
	8/31/1999	ENER	---	---	---	---	---	---	---	748	1930	---	---
	8/15/2000	ENER	---	---	---	---	---	---	---	699	1960	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	680	2050	---	---
	8/12/2002	ENER	---	---	---	---	---	---	---	747	2000	---	---
	8/25/2003	ENER	---	---	---	---	---	---	215	851	2000	* 2648	---
	8/17/2004	ENER	---	---	---	---	---	---	---	793	1920	* 2581	---
	11/8/2004	ENER	---	---	---	---	---	---	176	713	1920	* 2607	---
	2/2/2005	ENER	---	---	---	---	---	---	---	727	1910	* 2580	---
	9/26/2005	ENER	---	---	---	---	---	---	170	676	1890	* 2583	---
	1/10/2006	ENER	---	---	---	---	---	---	---	710	1840	* 2553	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0497	8/14/2006	ENER	---	---	---	---	---	---	184	671	1740	* 2506	---
	9/11/2007	ENER	---	---	---	---	---	---	181	721	1850	* 2510	---
	10/1/2008	HMC	73.0	---	---	---	---	---	* 186	* 721	* 1880	2083	---
	7/20/2009	ENER	---	---	---	---	---	---	183	713	1810	* 2510	---
	5/26/2010	ENER	---	---	---	---	---	---	185	729	1900	* 2605	---
	10/19/2011	ENER	---	---	---	---	---	---	172	702	1760	* 2422	---
	10/9/2012	ENER	---	---	---	---	---	---	169	693	1830	* 2505	---
	11/7/2012	ENER	216	57.9	6.10	322	550	< 5.00	171	723	1830	* 2523	1.02
	6/17/2013	ENER	---	---	---	---	---	---	171	673	1770	* 2462	---
	11/14/2013	ENER	---	---	---	---	---	---	175	664	1790	---	---
	4/1/2014	ENER	---	---	---	---	---	---	187	801	1950	* 2689	---
	6/11/2014	ENER	---	---	---	---	---	---	184	794	1920	* 2590	---
	7/10/2014	ENER	---	---	---	---	---	---	186	802	1820	* 2597	---
	11/13/2014	ENER	---	---	---	---	---	---	174	753	1860	* 2574	---
	12/23/2014	ENER	---	---	---	---	---	---	168	752	1850	* 2599	---
	3/4/2016	ENER	291	78.3	7.40	374	476	< 5.00	213	1210	2390	3059	0.955
	3/17/2017	ENER	270	72.6	6.60	354	483	< 5.00	191	1040	2240	2888	0.997
0498	3/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/12/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	1/19/2004	ENER	199	51.0	7.00	298	447	< 1.000	181	730	1830	* 2418	0.986
	9/13/2004	ENER	---	---	---	---	---	---	206	745	1750	* 2378	---
	9/26/2005	ENER	---	---	---	---	---	---	153	623	1620	* 2286	---
	8/14/2006	ENER	---	---	---	---	---	---	146	583	1460	* 2134	---
	6/4/2007	ENER	---	---	---	---	---	---	163	602	1560	* 2292	---
	6/23/2008	ENER	---	---	---	---	---	---	149	637	1500	* 2179	---
	10/1/2008	ENER	---	---	---	---	---	---	157	613	1530	* 2192	---
	6/15/2009	ENER	---	---	---	---	---	---	175	646	1620	* 2318	---
	5/26/2010	ENER	---	---	---	---	---	---	178	662	1740	* 2417	---
	6/13/2011	ENER	---	---	---	---	---	---	178	666	1690	* 2320	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0498	7/9/2012	ENER	---	---	---	---	---	---	166	639	1740	* 2426	---
	11/14/2013	ENER	---	---	---	---	---	---	161	632	1680	---	---
	6/11/2014	ENER	---	---	---	---	---	---	84.0	332	1690	* 2390	---
	6/9/2015	ENER	---	---	---	---	---	---	167	646	1630	* 2785	---
	7/5/2016	ENER	151	36.6	5.60	260	539	< 5.00	120	505	1430	2026	0.961
0538	1/19/2004	ENER	188	53.0	6.60	323	409	< 1.000	161	823	1890	* 2473	0.984
	9/13/2004	ENER	---	---	---	---	---	---	176	850	1750	* 2325	---
	2/7/2005	ENER	---	---	---	---	---	---	---	738	1660	* 2380	---
	12/11/2006	ENER	---	---	---	---	---	---	---	763	1760	* 2405	---
	4/30/2007	ENER	---	---	---	---	---	---	---	751	1740	* 2353	---
	3/31/2008	ENER	---	---	---	---	---	---	---	770	1680	* 2244	---
	6/15/2009	ENER	---	---	---	---	---	---	---	711	1710	---	---
	5/25/2010	ENER	---	---	---	---	---	---	---	726	1750	* 2456	---
	8/28/2010	ENER	---	---	---	---	---	---	178	705	1760	* 2440	---
	4/18/2011	ENER	---	---	---	---	---	---	---	744	1740	* 2424	---
	5/9/2012	ENER	---	---	---	---	---	---	---	716	1830	* 2465	---
	9/20/2012	ENER	---	---	---	---	---	---	179	721	1830	* 1972	---
	3/18/2013	HMC	---	---	---	---	---	---	---	744	1750	2475	---
	4/1/2014	ENER	---	---	---	---	---	---	---	734	1780	* 2456	---
	7/18/2014	ENER	---	---	---	---	---	---	192	732	1770	* 2002	---
	8/9/2016	ENER	---	---	---	---	---	---	188	727	1740	2453	---
0540	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/20/2004	ENER	184	49.0	6.30	310	387	< 1.000	171	783	1820	* 2400	0.977
	9/13/2004	ENER	---	---	---	---	---	---	193	808	1720	* 2336	---
	9/27/2005	ENER	---	---	---	---	---	---	159	729	1750	* 2425	---
	9/12/2007	ENER	---	---	---	---	---	---	165	862	1880	* 2580	---
	10/1/2008	ENER	---	---	---	---	---	---	174	915	2020	* 2667	---
	9/11/2009	ENER	---	---	---	---	---	---	175	812	1850	* 2500	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0540	3/1/2010	ENER	167	43.0	6.10	313	486	< 5.00	173	722	1670	* 2491	0.914
	5/25/2010	ENER	---	---	---	---	---	---	172	710	1770	* 2484	---
	8/28/2010	ENER	---	---	---	---	---	---	181	704	1780	* 2450	---
	10/19/2011	ENER	---	---	---	---	---	---	183	735	1740	* 2477	---
	9/20/2012	ENER	---	---	---	---	---	---	188	755	1880	* 1973	---
	5/3/2013	ENER	---	---	---	---	---	---	177	698	1830	* 3095	---
	11/14/2013	ENER	---	---	---	---	---	---	179	695	1780	---	---
	10/3/2014	ENER	---	---	---	---	---	---	192	740	1820	* 2514	---
	5/14/2015	ENER	---	---	---	---	---	---	194	728	1790	* 2469	---
	4/28/2016	ENER	92.0	28.3	5.00	142	298	< 5.00	78.0	267	814	---	1.03
	8/4/2016	ENER	---	---	---	---	---	---	133	539	1400	1994	---
0541	2/9/2004	ENER	174	48.5	6.50	118	379	< 1.000	84.0	462	1140	* 1530	0.986
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	1920	---
	9/13/2004	ENER	---	---	---	---	---	---	129	614	1360	* 1775	---
	9/26/2005	ENER	---	---	---	---	---	---	101	584	1410	* 1927	---
	8/30/2006	ENER	---	---	---	---	---	---	92.0	598	1340	* 1860	---
	8/22/2007	ENER	---	---	---	---	---	---	101	555	1400	* 1814	---
	10/2/2008	ENER	---	---	---	---	---	---	95.0	554	1320	* 1802	---
	7/21/2009	ENER	---	---	---	---	---	---	96.0	549	1390	* 1820	---
	4/20/2010	ENER	---	---	---	---	---	---	117	655	1570	* 2085	---
	6/15/2010	ENER	---	---	---	---	---	---	117	657	1590	* 2101	---
	10/27/2010	ENER	---	---	---	---	---	---	103	592	1470	* 1970	---
	9/20/2012	ENER	---	---	---	---	---	---	131	640	1500	* 1634	---
	8/8/2013	ENER	---	---	---	---	---	---	156	628	1620	* 2201	---
	7/21/2015	ENER	---	---	---	---	---	---	168	637	1570	* 2179	---
	12/28/2016	ENER	---	---	---	---	---	---	150	635	1480	2028	---
0631	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0631	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/30/1999	ENER	152	36.7	5.70	312	207	< 1.000	93.5	814	1650	---	1.06
	3/31/1999	ENER	154	36.9	5.70	310	212	< 1.000	93.2	816	1640	---	1.05
	10/28/1999	ENER	---	---	---	---	---	---	---	820	1570	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	720	1520	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	719	1590	---	---
	9/17/2001	ENER	---	---	---	---	---	---	---	677	1540	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	819	1560	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	743	1550	---	---
	5/27/2003	ENER	---	---	---	---	---	---	98.7	488	1550	---	---
	9/18/2003	ENER	---	---	---	---	---	---	107	826	1570	* 2077	---
	5/13/2004	ENER	---	---	---	---	---	---	---	867	1650	* 2163	---
	9/14/2004	ENER	---	---	---	---	---	---	---	847	1580	* 2122	---
	3/28/2005	ENER	---	---	---	---	---	---	---	792	1580	* 2195	---
	9/26/2005	ENER	---	---	---	---	---	---	105	788	1620	* 2202	---
	3/15/2006	ENER	---	---	---	---	---	---	---	634	1510	* 2366	---
	10/10/2006	ENER	---	---	---	---	---	---	128	797	1590	* 2370	---
	5/1/2007	ENER	---	---	---	---	---	---	---	866	1730	* 2275	---
	9/12/2007	ENER	---	---	---	---	---	---	133	854	1650	* 2262	---
	3/31/2008	ENER	---	---	---	---	---	---	---	869	1650	* 2366	---
	6/16/2009	ENER	---	---	---	---	---	---	---	848	1700	* 2416	---
	7/21/2009	ENER	---	---	---	---	---	---	144	833	1720	* 2360	---
	4/21/2010	ENER	---	---	---	---	---	---	---	838	1790	* 2463	---
	8/28/2010	ENER	---	---	---	---	---	---	162	820	1680	* 2420	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0631	4/18/2011	ENER	---	---	---	---	---	---	---	817	1700	* 2428	---
	5/9/2012	ENER	---	---	---	---	---	---	---	779	1730	* 2415	---
	9/20/2012	ENER	---	---	---	---	---	---	166	792	1770	* 1878	---
	11/7/2012	ENER	172	40.7	6.30	343	324	< 5.00	163	778	1780	* 2414	1.03
	3/6/2013	ENER	---	---	---	---	---	---	---	751	1710	* 2404	---
	4/1/2014	ENER	---	---	---	---	---	---	---	809	1780	* 2462	---
	12/27/2016	ENER	---	---	---	---	---	---	190	787	1800	2535	---
0632	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/25/1999	ENER	156	36.1	6.00	320	201	< 1.000	114	823	1710	---	1.05
	3/26/1999	ENER	156	35.9	6.00	316	199	< 1.000	113	824	1690	---	1.04
	10/28/1999	ENER	---	---	---	---	---	---	---	874	1650	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	743	1550	---	---
	9/17/2001	ENER	---	---	---	---	---	---	---	688	1580	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	746	1610	---	---
	9/18/2003	ENER	---	---	---	---	---	---	142	891	1710	* 2284	---
	9/14/2004	ENER	157	36.0	6.70	322	220	< 1.000	137	887	1710	* 2268	0.962
	2/3/2005	ENER	170	33.4	6.50	310	226	< 1.000	167	858	1750	* 2334	0.946
	5/1/2007	ENER	---	---	---	---	---	---	129	803	1680	* 2280	---
	9/12/2007	ENER	---	---	---	---	---	---	132	828	1610	* 2260	---
	3/31/2008	ENER	---	---	---	---	---	---	146	855	1580	* 2287	---
	6/23/2009	ENER	---	---	---	---	---	---	147	824	1630	* 2323	---
	7/21/2009	ENER	---	---	---	---	---	---	141	786	1690	* 2290	---
	4/21/2010	ENER	---	---	---	---	---	---	142	797	1690	* 2328	---
	8/28/2010	ENER	---	---	---	---	---	---	145	782	1690	* 2310	---
	4/18/2011	ENER	---	---	---	---	---	---	147	798	1650	* 2285	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0632	5/9/2012	ENER	---	---	---	---	---	---	141	749	1680	* 2296	---
	9/20/2012	ENER	---	---	---	---	---	---	140	747	1680	* 1806	---
	3/6/2013	ENER	---	---	---	---	---	---	147	755	1600	* 2290	---
	4/1/2014	ENER	---	---	---	---	---	---	151	748	1670	* 2314	---
0644	10/22/1996	ENER	150	35.9	5.70	281	179	< 0.100	97.0	840	1630	* 2281	0.985
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/15/1997	ENER	179	39.0	6.20	305	174	0	123	934	1750	---	0.992
	9/12/1997	ENER	186	41.1	6.40	315	172	< 0.100	130	984	1770	---	0.983
	10/16/1997	ENER	---	---	---	---	---	---	---	946	1780	---	---
	5/14/1998	ENER	182	42.0	5.90	311	173	< 1.000	135	990	1820	---	0.961
	10/20/1998	ENER	---	---	---	---	---	---	---	987	1850	---	---
	10/19/1999	ENER	---	---	---	---	---	---	---	961	1840	---	---
	10/31/2000	ENER	---	---	---	---	---	---	---	954	1860	---	---
	10/15/2001	ENER	---	---	---	---	---	---	---	843	1900	---	---
	10/16/2002	ENER	---	---	---	---	---	---	---	879	1920	---	---
	1/7/2004	ENER	---	---	---	---	---	---	175	1000	1900	* 2544	---
	6/22/2004	ENER	---	---	---	---	---	---	167	989	1970	* 2588	---
	7/6/2005	ENER	---	---	---	---	---	---	170	941	1950	* 2506	---
	8/30/2006	ENER	---	---	---	---	---	---	171	891	1870	* 2570	---
	9/12/2007	ENER	---	---	---	---	---	---	170	873	1870	* 2601	---
	10/1/2008	ENER	---	---	---	---	---	---	174	826	1870	* 2551	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0644	8/10/2009	ENER	---	---	---	---	---	---	180	784	1820	* 2650	---
	5/25/2010	ENER	---	---	---	---	---	---	185	789	1820	* 2552	---
	8/28/2010	ENER	---	---	---	---	---	---	177	738	1830	* 2510	---
	7/11/2011	ENER	---	---	---	---	---	---	178	764	1780	* 2488	---
	9/20/2012	ENER	---	---	---	---	---	---	179	776	1830	* 1968	---
	10/10/2014	ENER	---	---	---	---	---	---	172	700	1880	* 2569	---
	8/1/2016	ENER	---	---	---	---	---	---	193	768	1800	2504	---
0647	1/10/1997	ENER	196	50.6	6.30	192	346	0	111	640	1470	---	1.01
	3/4/1997	ENER	209	55.5	6.90	214	382	0	137	740	1700	---	0.959
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/15/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	ENER	---	---	---	---	---	---	---	788	1710	---	---
	7/9/1997	ENER	242	60.0	7.40	226	378	< 0.100	175	820	1790	---	0.958
	1/21/1998	ENER	---	---	---	---	---	---	---	689	1480	---	---
	7/21/1998	ENER	214	56.2	6.90	219	376	< 1.000	126	727	1820	---	1.00
	12/17/1998	ENER	214	56.8	6.80	207	380	< 1.000	126	707	1700	---	1.000
	7/21/1999	ENER	---	---	---	---	---	---	116	662	1510	---	---
	3/7/2000	ENER	---	---	---	---	---	---	---	635	1430	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	612	1470	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0647	8/12/2002	ENER	---	---	---	---	---	---	---	642	1460	---	---
	8/21/2003	ENER	---	---	---	---	---	---	104	645	1370	* 1803	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	2010	---
	8/19/2004	ENER	---	---	---	---	---	---	96.0	611	1330	* 1784	---
	8/10/2005	ENER	---	---	---	---	---	---	92.0	541	1290	* 1771	---
	10/4/2006	ENER	---	---	---	---	---	---	100.0	558	1380	* 1982	---
	8/22/2007	ENER	---	---	---	---	---	---	83.0	562	1300	* 1759	---
	10/2/2008	ENER	---	---	---	---	---	---	85.0	557	1230	* 1672	---
	7/21/2009	ENER	---	---	---	---	---	---	98.0	566	1390	* 1810	---
	11/6/2009	ENER	---	---	---	---	---	---	130	676	1510	* 2076	---
	6/15/2010	ENER	---	---	---	---	---	---	136	713	1650	* 2217	---
	8/28/2010	ENER	---	---	---	---	---	---	128	665	1780	* 2160	---
	10/30/2010	ENER	---	---	---	---	---	---	139	736	1670	* 2219	---
	2/9/2011	ENER	---	---	---	---	---	---	137	738	1630	* 2224	---
	5/11/2011	ENER	237	58.6	6.20	229	397	< 5.00	145	757	1640	* 2268	1.01
	8/16/2011	ENER	---	---	---	---	---	---	145	774	1610	* 2258	---
	9/20/2012	ENER	---	---	---	---	---	---	140	728	1700	* 1798	---
	2/6/2013	HMC	215	55.4	5.50	210	414	< 5.00	143	733	1730	2280	0.936
	8/8/2013	ENER	---	---	---	---	---	---	129	660	1670	---	---
	8/27/2014	ENER	---	---	---	---	---	---	142	654	1550	* 2100	---
0648	1/10/1997	ENER	170	42.7	6.00	172	328	0	72.3	564	1270	---	1.02
	3/4/1997	ENER	158	40.4	5.40	162	322	0	72.7	564	1290	---	0.964
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	ENER	---	---	---	---	---	---	---	618	1300	* 1648	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0648	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/17/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/23/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/9/1997	ENER	193	46.0	5.80	174	312	< 0.100	104	649	1390	---	0.980
	11/24/1997	ENER	---	---	---	---	---	---	---	634	1360	---	---
	1/21/1998	ENER	---	---	---	---	---	---	---	647	1360	---	---
	7/21/1998	ENER	157	40.2	5.60	159	395	< 1.000	68.1	456	1280	---	1.02
	12/17/1998	ENER	170	42.8	5.50	167	312	< 1.000	77.6	589	1310	---	0.990
	7/21/1999	ENER	---	---	---	---	---	---	61.8	421	1030	---	---
	10/28/1999	ENER	---	---	---	---	---	---	---	487	1110	---	---
	1/24/2000	ENER	---	---	---	---	---	---	---	554	1250	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	538	1270	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	523	1290	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	# 520	# 1310	---	---
	8/15/2001	ENER	---	---	---	---	---	---	---	570	1330	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	587	1210	---	---
	8/12/2002	ENER	---	---	---	---	---	---	---	526	1200	---	---
	5/27/2003	ENER	---	---	---	---	---	---	59.4	516	1170	---	---
	8/21/2003	ENER	---	---	---	---	---	---	62.5	526	1120	* 1541	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	1600	---
	5/13/2004	ENER	141	33.4	5.00	168	329	< 1.000	69.6	540	1160	* 1580	0.924
	8/19/2004	ENER	---	---	---	---	---	---	---	510	1110	* 1532	---
	3/23/2005	ENER	156	39.6	5.80	179	324	< 1.000	72.0	523	1180	* 1656	1.04

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0648	8/10/2005	ENER	---	---	---	---	---	---	---	465	1110	* 1560	---
	10/4/2006	ENER	---	---	---	---	---	---	---	538	1200	* 1712	---
	5/1/2007	ENER	161	38.9	4.60	182	320	< 1.000	77.0	558	1270	* 1692	1.01
	8/22/2007	ENER	---	---	---	---	---	---	---	578	1300	* 1826	---
	4/10/2008	ENER	181	44.4	5.00	202	369	< 1.000	78.0	622	1250	* 1784	1.02
0649	1/16/1997	ENER	164	39.2	4.60	172	344	0	62.0	631	1370	---	0.926
	3/4/1997	ENER	161	39.1	4.50	171	359	0	59.3	567	1300	---	0.971
	4/17/1997	ENER	---	---	---	---	---	---	---	601	1240	---	---
	4/23/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/28/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/29/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/29/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/29/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/29/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/29/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/29/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/6/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	7/9/1997	ENER	172	39.3	4.40	170	285	< 0.100	67.8	632	1270	---	0.979
	1/21/1998	ENER	---	---	---	---	---	---	---	627	1260	---	---
	1/21/1998	ENER	---	---	---	---	---	---	---	# 616	# 1250	---	---
	7/21/1998	ENER	155	37.3	4.30	176	287	< 1.000	51.1	581	1330	---	1.02
	12/17/1998	ENER	148	35.5	4.10	164	294	< 1.000	49.5	543	1230	---	0.999
	7/21/1999	ACZ	---	---	---	---	---	---	---	# 540	# 1220	---	---
	7/21/1999	ENER	---	---	---	---	---	---	---	554	1180	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0649	7/21/1999	ENER	---	---	---	---	---	---	---	# 577	# 1190	---	---
	10/28/1999	ENER	---	---	---	---	---	---	---	559	1150	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	606	1400	---	---
	8/15/2001	ENER	---	---	---	---	---	---	---	470	1100	---	---
	8/15/2001	ENER	---	---	---	---	---	---	---	# 470	# 1120	---	---
	8/12/2002	ENER	---	---	---	---	---	---	---	459	1090	---	---
	8/21/2003	ENER	---	---	---	---	---	---	49.7	477	1050	* 1430	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	1510	---
	8/19/2004	ENER	126	30.3	4.40	164	343	< 1.000	54.0	477	1010	* 1439	0.937
	3/28/2005	ENER	---	---	---	---	---	---	---	691	1660	* 2330	---
	8/10/2005	ENER	131	31.6	3.70	176	320	< 1.000	47.0	441	1060	* 1500	1.07
	10/4/2006	ENER	154	39.0	4.50	177	320	< 1.000	71.0	509	1240	* 1768	1.05
	5/1/2007	ENER	---	---	---	---	---	---	---	534	1210	* 1672	---
	8/22/2007	ENER	153	38.0	4.70	199	342	< 1.000	80.0	524	1300	* 1709	1.04
	10/22/2007	ENER	164	44.1	5.10	208	391	< 1.000	93.0	564	1250	* 1837	1.01
	4/10/2008	ENER	---	---	---	---	---	---	---	656	1210	* 1708	---
	6/3/2008	ENER	---	---	---	---	---	---	---	610	1210	* 1740	---
	10/2/2008	ENER	168	42.6	4.50	192	317	< 1.000	92.0	583	1300	* 1781	1.02
	5/6/2009	ENER	---	---	---	---	---	---	---	606	1310	* 1832	---
	6/16/2009	ENER	---	---	---	---	---	---	---	646	1350	* 1874	---
	11/13/2009	ENER	194	44.6	4.60	200	334	< 1.000	117	667	1420	* 2004	0.977
	4/20/2010	ENER	---	---	---	---	---	---	94.0	686	1470	* 1955	---
	6/28/2010	ENER	---	---	---	---	---	---	---	697	1450	* 2001	---
	8/28/2010	ENER	252	59.5	5.10	193	348	< 5.00	136	784	1730	* 2220	0.999
	2/9/2011	ENER	---	---	---	---	---	---	106	689	1440	* 1968	---
	4/18/2011	ENER	---	---	---	---	---	---	---	706	1470	* 1936	---
	5/11/2011	ENER	196	45.5	5.00	211	305	6.00	114	696	1460	* 1912	0.997
	6/13/2011	ENER	---	---	---	---	---	---	---	698	1470	* 2012	---
	8/16/2011	ENER	205	46.8	4.90	219	315	< 5.00	121	725	1450	* 1966	0.996

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0649	3/13/2012	ENER	213	47.8	5.10	215	321	< 5.00	122	700	1560	* 2115	1.03
	5/9/2012	ENER	---	---	---	---	---	---	---	713	1610	* 2118	---
	7/9/2012	ENER	---	---	---	---	---	---	---	678	1540	* 2144	---
	8/1/2012	ENER	---	---	---	---	---	---	129	727	1570	* 2150	---
	9/20/2012	ENER	---	---	---	---	---	---	102	676	1440	* 1550	---
	2/6/2013	HMC	214	49.6	5.00	207	333	< 5.00	132	728	1580	2128	0.975
	3/6/2013	ENER	---	---	---	---	---	---	---	725	1570	* 2155	---
	8/15/2013	ENER	---	---	---	---	---	---	141	765	1680	---	---
	4/1/2014	ENER	---	---	---	---	---	---	---	813	1850	* 2433	---
	3/4/2015	ENER	283	64.6	5.10	231	373	< 5.00	190	902	1950	* 2567	0.974
	2/22/2016	ENER	245	59.3	5.10	233	359	< 5.00	168	795	1770	2328	1.00
	3/15/2017	ENER	238	56.0	5.00	223	377	< 5.00	151	771	1920	2265	0.987
0653	4/22/1997	ENER	205	51.2	6.40	346	344	0	176	827	1988	---	1.07
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/2/1997	ENER	201	50.2	6.20	342	345	0	180	914	2010	---	0.981
	4/15/1998	ENER	196	50.0	6.00	337	360	< 1.000	172	907	1970	---	0.968
	10/19/1998	ENER	---	---	---	---	---	---	---	888	1930	---	---
	7/12/2000	ENER	---	---	---	---	---	---	---	776	1920	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0653	9/6/2000	ENER	---	---	---	---	---	---	---	821	1950	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	# 809	# 1950	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	739	1980	---	---
	9/17/2001	ENER	---	---	---	---	---	---	---	741	1940	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	864	1910	---	---
	10/10/2002	ENER	---	---	---	---	---	---	---	815	1940	---	---
	5/27/2003	ENER	---	---	---	---	---	---	128	668	1560	---	---
	9/18/2003	ENER	---	---	---	---	---	---	196	871	1930	* 2471	---
	5/13/2004	ENER	---	---	---	---	---	---	---	852	1970	* 2595	---
	9/27/2004	ENER	---	---	---	---	---	---	---	812	1870	* 2516	---
	2/7/2005	ENER	---	---	---	---	---	---	---	728	1790	* 2463	---
	3/23/2005	ENER	220	65.7	8.80	296	471	< 1.000	194	751	1830	* 2546	1.02
	12/11/2006	ENER	---	---	---	---	---	---	---	781	1750	* 2388	---
	9/12/2007	ENER	---	---	---	---	---	---	---	772	1730	* 2367	---
	10/1/2008	ENER	---	---	---	---	---	---	---	745	1790	* 2370	---
	7/21/2009	ENER	---	---	---	---	---	---	---	715	1770	* 2400	---
	5/25/2010	ENER	---	---	---	---	---	---	---	743	1740	* 2447	---
	10/19/2011	ENER	---	---	---	---	---	---	---	730	1680	* 2400	---
	10/22/2012	ENER	---	---	---	---	---	---	---	705	1790	* 2453	---
	6/17/2013	ENER	---	---	---	---	---	---	---	711	1790	* 2477	---
	11/14/2013	ENER	---	---	---	---	---	---	179	710	1740	---	---
	7/18/2014	ENER	---	---	---	---	---	---	187	732	1740	* 1932	---
	8/1/2016	ENER	---	---	---	---	---	---	189	739	1790	2439	---
0657	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0657	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/5/1999	ENER	180	48.2	6.70	164	326	< 1.000	91.3	550	1350	---	1.04
	10/28/1999	ENER	---	---	---	---	---	---	---	640	1420	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	635	1490	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	614	1590	---	---
	9/17/2001	ENER	---	---	---	---	---	---	---	597	1540	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	701	1550	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	663	1530	---	---
	5/27/2003	ENER	---	---	---	---	---	---	179	839	1910	---	---
	9/18/2003	ENER	---	---	---	---	---	---	145	723	1590	* 2098	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	2160	---
	5/13/2004	ENER	---	---	---	---	---	---	---	700	1640	* 2147	---
	9/14/2004	ENER	---	---	---	---	---	---	---	595	1430	* 1914	---
	5/9/2005	ENER	---	---	---	---	---	---	---	695	1560	* 2131	---
	9/26/2005	ENER	---	---	---	---	---	---	---	571	1410	* 1941	---
	8/30/2006	ENER	---	---	---	---	---	---	---	691	1560	---	---
	5/1/2007	ENER	---	---	---	---	---	---	---	655	1560	* 2093	---
	8/22/2007	ENER	---	---	---	---	---	---	---	628	1600	* 2144	---
	10/22/2007	ENER	---	---	---	---	---	---	---	637	1500	* 2066	---
	4/10/2008	ENER	---	---	---	---	---	---	---	675	1490	* 2063	---
	5/6/2009	ENER	---	---	---	---	---	---	---	690	1580	* 2044	---
	9/16/2009	ENER	---	---	---	---	---	---	---	733	1610	* 2228	---
	9/16/2009	EPA6	# 224	# 59.2	# 6.06	# 214	---	---	# 132	# 751	# 1520	---	---
	11/6/2009	ENER	---	---	---	---	---	---	144	736	1580	* 2257	---
	4/21/2010	ENER	---	---	---	---	---	---	138	733	1700	* 2267	---
	8/28/2010	ENER	---	---	---	---	---	---	135	720	1690	* 2200	---
	5/11/2011	ENER	---	---	---	---	---	---	---	744	1650	* 2269	---
	5/9/2012	ENER	---	---	---	---	---	---	---	727	1740	* 2285	---
	5/13/2013	ENER	---	---	---	---	---	---	---	675	1610	* 2162	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0657	8/8/2013	ENER	---	---	---	---	---	---	---	638	1590	---	---
0658	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	4/13/1999	ENER	183	41.6	4.80	167	323	< 1.000	69.5	604	1340	---	1.00
	10/28/1999	ENER	---	---	---	---	---	---	---	650	1280	---	---
	9/2/2000	ENER	---	---	---	---	---	---	---	597	1310	---	---
	9/17/2001	ENER	---	---	---	---	---	---	---	543	1310	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	624	1300	---	---
	9/18/2003	ENER	---	---	---	---	---	---	63.0	617	1250	* 1644	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	1740	---
	9/14/2004	ENER	---	---	---	---	---	---	74.0	616	1240	* 1668	---
	9/26/2005	ENER	---	---	---	---	---	---	60.0	554	1180	* 1637	---
	10/4/2006	ENER	---	---	---	---	---	---	72.0	527	1270	* 1844	---
	8/22/2007	ENER	---	---	---	---	---	---	92.0	574	1400	* 1881	---
	6/3/2008	ENER	---	---	---	---	---	---	---	597	1180	* 1613	---
	10/2/2008	ENER	---	---	---	---	---	---	76.0	617	1300	* 1779	---
	6/16/2009	ENER	---	---	---	---	---	---	---	686	1410	* 1898	---
	9/16/2009	ENER	---	---	---	---	---	---	119	779	1630	* 2108	---
	9/16/2009	EPA6	# 224	# 52.2	# 5.52	# 236	---	---	# 109	# 808	# 1580	---	---
	11/9/2009	ENER	---	---	---	---	---	---	126	812	1650	* 2274	---
	4/20/2010	ENER	---	---	---	---	---	---	103	735	1600	* 2097	---
	8/28/2010	ENER	---	---	---	---	---	---	130	693	1600	* 2140	---
	10/27/2010	ENER	---	---	---	---	---	---	96.0	696	1520	* 2038	---
	2/9/2011	ENER	---	---	---	---	---	---	78.0	620	1280	* 1788	---
	5/11/2011	ENER	141	32.0	4.60	203	291	8.00	63.0	538	1130	* 1627	1.03
	6/13/2011	ENER	---	---	---	---	---	---	---	547	1140	* 1619	---
	3/13/2012	ENER	144	32.9	4.40	195	285	< 5.00	62.0	524	1190	* 1662	1.06

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0658	7/9/2012	ENER	---	---	---	---	---	---	---	534	1190	* 1650	---
	8/1/2012	ENER	---	---	---	---	---	---	68.0	555	1180	* 1667	---
	8/1/2012	ENER	---	---	---	---	---	---	# 66.0	# 543	# 1190	---	---
	9/20/2012	ENER	---	---	---	---	---	---	71.0	573	1230	* 1329	---
	11/7/2012	ENER	169	39.6	4.80	215	306	< 5.00	79.0	616	1340	* 1825	1.05
	2/6/2013	HMC	145	33.3	4.40	188	308	< 5.00	73.0	593	1270	1750	0.931
	10/29/2013	ENER	---	---	---	---	---	---	87.0	602	1300	---	---
	2/25/2014	ENER	154	36.7	4.50	189	283	< 5.00	87.0	556	1240	* 1747	1.01
	8/26/2014	ENER	---	---	---	---	---	---	105	600	1350	* 1859	---
	2/19/2015	ENER	198	47.2	5.50	190	357	< 5.00	120	639	1440	* 1977	0.976
	2/21/2017	ENER	181	45.5	4.80	178	365	< 5.00	115	571	1350	---	0.970
	2/21/2017	ENER	---	---	---	---	---	---	---	---	---	1877	---
0687	10/4/1995	ENER	165	41.4	5.80	143	315	< 0.100	96.0	450	1151	* 1728	1.04
	12/13/1995	ENER	212	54.5	6.40	238	332	< 0.100	0.0900	703	1677	* 2326	1.27
	3/12/1996	ENER	254	63.8	6.20	213	332	< 0.100	198	802	1581	* 2326	0.986
	7/29/1996	ENER	200	48.9	6.50	190	326	< 0.100	146	592	1460	* 2208	1.03
	11/11/1996	ENER	199	50.1	6.50	211	329	< 0.100	156	607	1520	* 2208	1.04
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	6/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/8/1997	ENER	---	---	---	---	---	---	---	701	1640	---	---
	3/24/1998	ENER	225	57.0	6.70	238	355	< 1.000	168	709	1740	---	1.04
	3/24/1998	ENER	# 231	# 58.7	# 6.90	# 238	# 356	# < 1.000	# 176	# 723	# 1720	---	# 1.04
	9/29/1998	ENER	---	---	---	---	---	---	---	648	1590	---	---
	9/29/1999	ENER	---	---	---	---	---	---	---	748	1690	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0687	9/6/2000	ENER	---	---	---	---	---	---	---	741	1810	---	---
	9/25/2001	ENER	---	---	---	---	---	---	---	720	1850	---	---
	7/24/2002	ENER	---	---	---	---	---	---	---	817	1880	---	---
	9/18/2003	ENER	---	---	---	---	---	---	128	657	1500	* 2000	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	2040	---
	9/14/2004	ENER	---	---	---	---	---	---	---	641	1480	* 1968	---
	3/28/2005	ENER	---	---	---	---	---	---	---	554	1320	* 1875	---
	9/26/2005	ENER	---	---	---	---	---	---	92.0	549	1380	* 1871	---
	5/1/2007	ENER	---	---	---	---	---	---	---	593	1410	* 1892	---
0855	3/31/1995	ENER	125	30.0	5.30	281	233	< 0.100	87.0	729	1467	* 2068	0.982
	3/31/1995	ENER	120	29.0	5.20	279	220	< 0.100	86.0	725	1437	* 2081	0.977
	11/17/1995	ENER	116	27.0	5.00	281	209	< 0.100	86.0	705	1393	* 2119	0.992
	1/11/1996	ENER	125	28.0	5.20	288	209	< 0.100	86.0	756	1489	* 2053	0.982
	5/8/1996	ENER	127	28.3	5.70	290	205	< 0.100	96.2	759	1503	* 2197	0.979
	11/19/1996	ENER	131	29.3	5.33	301	207	< 0.100	91.1	771	1500	* 2197	1.01
	7/10/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/10/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/10/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/10/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/10/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/11/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/14/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/14/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/21/1997	ENER	---	---	---	---	---	---	---	798	1550	---	---
	1/21/1998	ENER	---	---	---	---	---	---	---	799	1540	---	---
	8/10/1998	ENER	---	---	---	---	---	---	---	787	1610	---	---
	9/1/1999	ENER	---	---	---	---	---	---	---	754	1590	---	---
	8/23/2000	ENER	---	---	---	---	---	---	---	725	1640	---	---
	8/23/2001	ENER	---	---	---	---	---	---	---	700	1770	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0855	7/24/2002	ENER	---	---	---	---	---	---	---	791	1670	---	---
	8/19/2002	ENER	---	---	---	---	---	---	---	793	1720	---	---
	8/21/2003	ENER	---	---	---	---	---	---	131	878	1630	* 1969	---
	8/19/2004	ENER	---	---	---	---	---	---	---	863	1680	* 2269	---
	2/7/2005	ENER	---	---	---	---	---	---	---	761	1620	* 2255	---
	7/18/2007	ENER	---	---	---	---	---	---	---	767	1590	---	---
	9/12/2007	ENER	---	---	---	---	---	---	---	820	1570	* 2240	---
0862	6/1/1995	ENER	209	57.0	5.30	312	451	< 0.100	174	824	1935	---	0.978
	6/1/1995	HMC	---	---	---	---	---	---	---	---	---	2714	---
	11/13/1995	ENER	200	53.0	5.40	320	384	< 0.100	170	844	1973	* 2649	0.991
	1/26/1996	ENER	229	56.6	5.60	334	381	< 0.100	178	949	1965	* 2646	0.991
	5/7/1996	ENER	210	53.6	5.80	318	377	< 0.100	182	858	1943	* 2587	0.989
	12/2/1996	ENER	211	55.3	5.80	342	406	< 0.100	178	855	1930	* 2782	1.02
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/14/1997	ENER	---	---	---	---	---	---	---	1230	1920	---	---
	8/17/1998	ENER	---	---	---	---	---	---	---	817	1880	---	---
	9/1/1999	ENER	---	---	---	---	---	---	---	756	1890	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	687	1930	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	660	1980	---	---
	8/19/2002	ENER	---	---	---	---	---	---	---	766	1980	---	---
	8/21/2003	ENER	---	---	---	---	---	---	212	855	1950	* 2592	---
	8/19/2004	ENER	---	---	---	---	---	---	219	847	1950	* 2609	---
	2/2/2005	ENER	---	---	---	---	---	---	213	727	1950	* 2564	---
	9/27/2005	ENER	---	---	---	---	---	---	166	789	1950	* 2652	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0862	1/10/2006	ENER	---	---	---	---	---	---	182	769	1870	* 2565	---
	8/16/2006	ENER	---	---	---	---	---	---	105	912	1800	* 2539	---
	1/31/2007	ENER	---	---	---	---	---	---	185	831	2010	* 2625	---
	9/12/2007	ENER	---	---	---	---	---	---	187	783	1850	* 2575	---
	1/14/2008	ENER	---	---	---	---	---	---	187	773	1870	* 2554	---
	10/1/2008	ENER	---	---	---	---	---	---	177	769	1840	* 2560	---
	1/13/2009	ENER	---	---	---	---	---	---	185	804	1950	* 2621	---
	7/20/2009	ENER	---	---	---	---	---	---	178	749	1870	* 2550	---
	3/1/2010	ENER	194	52.1	5.80	322	531	< 5.00	181	773	1760	* 2637	0.935
	5/25/2010	ENER	---	---	---	---	---	---	185	838	1970	* 2695	---
	1/12/2011	ENER	---	---	---	---	---	---	185	839	1880	* 2055	---
	10/19/2011	ENER	---	---	---	---	---	---	184	781	1820	* 2572	---
	5/22/2012	ENER	---	---	---	---	---	---	177	736	1910	* 2557	---
	5/3/2013	ENER	---	---	---	---	---	---	181	736	1870	* 2733	---
	1/28/2014	ENER	---	---	---	---	---	---	186	777	1850	* 2570	---
	6/11/2014	ENER	---	---	---	---	---	---	184	1540	1860	* 2572	---
	10/17/2014	ENER	---	---	---	---	---	---	174	719	1820	* 2543	---
	5/14/2015	ENER	---	---	---	---	---	---	192	749	1850	* 2539	---
	5/6/2016	ENER	197	53.4	5.80	305	434	< 5.00	185	711	1820	2485	1.01
	8/4/2016	ENER	---	---	---	---	---	---	142	568	1480	2045	---
	10/24/2016	ENER	176	48.5	5.50	259	407	< 5.00	157	640	1600	2233	0.983
	11/30/2016	ENER	---	---	---	---	---	---	145	675	1590	---	---
	3/21/2017	ENER	163	44.2	6.10	238	356	< 5.00	137	685	1510	2183	0.923
0863	6/1/1995	ENER	209	58.0	5.90	322	378	< 0.100	178	800	1907	* 2877	1.05
	11/13/1995	ENER	201	54.0	5.90	330	459	< 0.100	176	832	1998	* 2715	0.972
	1/26/1996	ENER	229	58.0	6.10	345	456	< 0.100	180	922	1994	* 2782	0.988
	5/7/1996	ENER	211	55.7	6.50	339	453	< 0.100	180	835	1995	* 2833	1.00
	12/2/1996	ENER	216	57.5	6.50	357	475	< 0.100	185	848	1960	* 2782	1.02
	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0863	7/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/22/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	ENER	---	---	---	---	---	---	---	840	1950	---	---
	8/17/1998	ENER	---	---	---	---	---	---	---	826	1950	---	---
	8/17/1998	ENER	---	---	---	---	---	---	---	# 826	# 1940	---	---
	9/1/1999	ENER	---	---	---	---	---	---	---	776	1950	---	---
	8/25/2000	ENER	---	---	---	---	---	---	---	789	1960	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	670	1980	---	---
	8/19/2002	ENER	---	---	---	---	---	---	---	761	1960	---	---
	2/2/2006	HMC	---	---	---	---	---	---	---	---	---	2349	---
	8/16/2006	ENER	---	---	---	---	---	---	97.0	893	1660	* 2465	---
	9/12/2007	ENER	---	---	---	---	---	---	174	732	1660	* 2388	---
	9/20/2012	ENER	---	---	---	---	---	---	179	674	1720	* 2120	---
0865	6/5/1995	ENER	263	60.0	7.10	322	240	< 0.100	165	1123	2281	* 2967	1.01
	11/10/1995	ENER	257	56.2	6.90	334	251	< 0.100	160	1125	2297	* 3053	1.00
	1/26/1996	ENER	284	60.5	6.90	314	254	< 0.100	174	1148	2283	* 2990	1.00
	5/7/1996	ENER	270	56.7	7.30	328	245	< 0.100	168	1157	2274	* 2767	0.992
	12/2/1996	ENER	275	58.6	7.50	342	264	< 0.100	170	1160	2230	* 2986	1.01
	7/24/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/24/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/28/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/28/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/28/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	7/28/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	ENER	---	---	---	---	---	---	---	1100	2180	---	---
	8/17/1998	ENER	---	---	---	---	---	---	---	1060	2090	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0865	8/31/1999	ENER	---	---	---	---	---	---	---	986	2040	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	842	1970	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	760	1970	---	---
	8/20/2002	ENER	---	---	---	---	---	---	---	790	1810	---	---
	1/18/2006	HMC	---	---	---	---	---	---	---	---	---	2030	---
	9/11/2007	ENER	---	---	---	---	---	---	151	708	1590	* 2205	---
	10/1/2008	ENER	---	---	---	---	---	---	161	748	1630	* 2220	---
	8/10/2009	ENER	---	---	---	---	---	---	178	780	1780	* 2550	---
	3/1/2010	ENER	159	36.0	5.80	304	360	< 5.00	157	753	1570	* 2368	0.927
	5/25/2010	ENER	---	---	---	---	---	---	172	837	1860	* 2399	---
	8/28/2010	ENER	---	---	---	---	---	---	181	769	1900	* 2490	---
	10/19/2011	ENER	---	---	---	---	---	---	165	764	1680	* 2398	---
	9/20/2012	ENER	---	---	---	---	---	---	164	737	1710	* 1818	---
	10/17/2014	ENER	---	---	---	---	---	---	179	724	1800	* 2545	---
	5/14/2015	ENER	---	---	---	---	---	---	199	737	1840	* 2541	---
	8/20/2015	ENER	---	---	---	---	---	---	193	743	1830	* 2491	---
	4/28/2016	ENER	200	45.3	7.90	323	425	< 5.00	200	780	1790	---	0.964
	8/4/2016	ENER	---	---	---	---	---	---	175	698	1740	2440	---
0866	6/8/1995	ENER	220	59.0	6.90	334	519	< 0.100	187	887	2032	* 2687	0.947
	11/10/1995	ENER	210	55.0	6.90	338	516	< 0.100	174	813	2046	* 2847	0.986
	1/26/1996	ENER	235	59.9	6.80	326	521	< 0.100	192	854	2045	* 2782	0.977
	5/7/1996	ENER	224	55.6	7.20	339	490	< 0.100	185	849	2024	* 2839	0.992
	11/22/1996	ENER	228	57.1	6.80	335	515	< 0.100	177	854	1990	* 2847	0.987
	8/5/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/5/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/5/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/5/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/5/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/5/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0866	8/12/1997	ENER	---	---	---	---	---	---	---	821	2000	---	---
	8/17/1998	ENER	---	---	---	---	---	---	---	817	1960	---	---
	8/31/1999	ENER	---	---	---	---	---	---	---	821	1980	---	---
	8/31/1999	ENER	---	---	---	---	---	---	---	# 782	# 1970	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	716	1970	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	# 720	# 1960	---	---
	8/23/2001	ENER	---	---	---	---	---	---	---	670	1940	---	---
	8/19/2002	ENER	---	---	---	---	---	---	---	748	1870	---	---
	1/18/2006	HMC	---	---	---	---	---	---	---	---	---	2338	---
	9/11/2007	ENER	---	---	---	---	---	---	144	724	1660	* 2322	---
	10/1/2008	ENER	---	---	---	---	---	---	167	874	1940	* 2598	---
	7/20/2009	ENER	---	---	---	---	---	---	168	721	1720	* 2400	---
	9/11/2009	ENER	---	---	---	---	---	---	173	759	1780	* 2410	---
	3/1/2010	ENER	165	38.5	7.30	308	464	< 5.00	168	706	1620	* 2419	0.918
	5/25/2010	ENER	---	---	---	---	---	---	176	716	1760	* 2478	---
	10/19/2011	ENER	---	---	---	---	---	---	184	749	1740	* 2574	---
	9/20/2012	ENER	---	---	---	---	---	---	182	718	1860	* 1960	---
	5/3/2013	ENER	---	---	---	---	---	---	173	674	1790	* 2713	---
	8/5/2014	ENER	---	---	---	---	---	---	182	731	1830	* 2521	---
	9/11/2014	ENER	---	---	---	---	---	---	183	723	1820	* 2521	---
	10/17/2014	ENER	---	---	---	---	---	---	174	699	1790	---	---
	10/21/2014	ENER	---	---	---	---	---	---	181	724	1830	* 2502	---
	11/13/2014	ENER	---	---	---	---	---	---	178	708	1800	* 2522	---
	12/23/2014	ENER	---	---	---	---	---	---	181	717	1810	* 2528	---
	8/20/2015	ENER	---	---	---	---	---	---	184	742	1820	* 2432	---
	8/4/2016	ENER	---	---	---	---	---	---	183	836	1950	2618	---
	11/30/2016	ENER	---	---	---	---	---	---	159	754	1900	---	---
	3/3/2017	ENER	262	74.5	7.70	302	444	< 5.00	196	1050	2200	---	0.934
	3/21/2017	ENER	194	51.3	6.40	294	443	< 5.00	168	811	1810	2488	0.924

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0869	7/20/1995	ENER	208	52.0	6.90	368	235	< 0.100	157	1018	2060	* 2813	1.05
	11/13/1995	ENER	189	48.0	6.50	356	228	< 0.100	155	1003	2072	* 2779	1.00
	1/12/1996	ENER	199	49.2	6.50	350	222	< 0.100	164	1055	2086	* 2715	0.971
	5/8/1996	ENER	197	48.2	6.80	350	220	< 0.100	165	1033	2044	* 2843	0.981
	11/19/1996	ENER	198	48.9	6.45	355	233	< 0.100	160	1021	2000	* 2781	0.997
	4/17/1997	ENER	---	---	---	---	---	---	---	985	1980	---	---
	8/11/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/12/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/14/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/14/1997	ENER	194	45.8	6.80	354	245	< 0.100	181	978	1980	---	0.984
	4/14/1998	ENER	---	---	---	---	---	---	---	1010	1960	---	---
	8/17/1998	ENER	180	45.2	7.20	350	264	< 1.000	161	891	1910	---	1.02
	9/2/1999	ENER	---	---	---	---	---	---	---	912	1890	---	---
	8/22/2000	ENER	---	---	---	---	---	---	---	800	1910	---	---
	8/20/2001	ENER	---	---	---	---	---	---	---	690	1650	---	---
	8/19/2002	ENER	---	---	---	---	---	---	---	862	1960	---	---
	8/21/2003	ENER	---	---	---	---	---	---	190	970	1930	* 2571	---
	8/19/2004	ENER	---	---	---	---	---	---	205	960	1910	* 2523	---
	2/7/2005	ENER	---	---	---	---	---	---	181	845	1800	* 2493	---
	11/18/2005	ENER	---	---	---	---	---	---	171	867	1860	* 2561	---
	12/11/2006	ENER	---	---	---	---	---	---	159	878	1870	* 2522	---
	4/30/2007	ENER	---	---	---	---	---	---	159	871	1930	* 2558	---
	9/12/2007	ENER	---	---	---	---	---	---	171	880	1800	* 2550	---
	3/31/2008	ENER	---	---	---	---	---	---	---	---	1760	* 2486	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0869	10/1/2008	ENER	---	---	---	---	---	---	167	834	1820	* 2484	---
	7/21/2009	ENER	---	---	---	---	---	---	167	791	1820	* 2510	---
	5/25/2010	ENER	---	---	---	---	---	---	171	783	1780	* 2500	---
	8/28/2010	ENER	---	---	---	---	---	---	176	764	1740	* 2460	---
	10/19/2011	ENER	---	---	---	---	---	---	174	744	1690	* 2398	---
	5/23/2012	ENER	---	---	---	---	---	---	164	689	1760	* 2425	---
	9/20/2012	ENER	---	---	---	---	---	---	179	752	1760	* 1874	---
	3/18/2013	HMC	---	---	---	---	---	---	185	757	1770	2466	---
	6/17/2013	ENER	---	---	---	---	---	---	167	682	1770	* 2444	---
	7/18/2014	ENER	---	---	---	---	---	---	181	754	1770	* 1890	---
0943	8/28/1956	UNK	---	---	---	378	305	< 0.100	88.0	563	---	---	---
	6/15/1995	ENER	22.6	4.50	2.30	620	262	< 0.100	71.5	1066	2012	* 3102	1.00
	6/15/1995	ENER	22.5	4.40	2.30	615	261	< 0.100	73.2	1053	2095	* 3102	1.00
	6/12/1996	ENER	29.6	6.00	2.30	628	249	< 0.100	81.0	1189	2130	---	0.943
	10/23/1996	ENER	31.4	6.60	2.60	641	320	< 0.100	83.5	1170	2080	* 3189	0.940
	8/21/1997	ENER	9.20	5.60	2.90	654	215	5.80	91.0	1180	2040	---	0.954
	10/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/20/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/21/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/21/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	10/21/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	8/18/1998	ENER	8.40	6.50	4.30	623	222	< 1.000	83.9	1100	1980	---	0.973
	9/2/1999	ENER	---	---	---	---	---	---	---	1170	2070	---	---
	9/2/1999	ENER	---	---	---	---	---	---	---	# 1100	# 2020	---	---
	8/23/2000	ENER	---	---	---	---	---	---	---	1070	2010	---	---
	8/29/2001	ENER	---	---	---	---	---	---	---	1000	2040	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0943	8/29/2001	ENER	---	---	---	---	---	---	---	# 1000	# 2030	---	---
	11/13/2002	ENER	---	---	---	---	---	---	---	1080	2010	---	---
	10/27/2003	ENER	---	---	---	---	---	---	---	1090	2030	* 2899	---
	3/9/2004	ENER	166	52.9	8.80	314	391	< 1.000	188	793	1830	* 2505	0.939
	12/8/2004	ENER	---	---	---	---	---	---	---	690	1720	* 2315	---
	4/19/2005	ENER	165	54.3	8.80	282	399	< 1.000	181	712	1680	* 2365	0.951
	12/5/2005	ENER	---	---	---	---	---	---	---	658	1690	* 2314	---
	3/16/2006	ENER	167	54.8	10.2	261	412	< 1.000	161	695	1670	* 2551	0.948
	12/19/2006	ENER	191	62.4	9.80	282	298	< 1.000	188	716	1710	---	1.08
	3/8/2007	ENER	178	58.5	9.20	310	403	< 1.000	175	753	1790	* 2420	1.01
	12/3/2007	ENER	---	---	---	---	---	---	---	649	1700	* 2356	---
	3/5/2008	ENER	181	56.2	9.40	288	422	< 1.000	177	742	1640	* 2411	0.965
	9/16/2008	ENER	206	64.1	9.20	293	401	< 1.000	168	689	1650	* 2312	1.11
	12/1/2008	ENER	---	---	---	---	---	---	---	666	1700	* 2344	---
	6/15/2009	ENER	162	55.4	12.2	263	413	< 1.000	182	696	1670	* 2402	0.923
	12/7/2009	ENER	---	---	---	---	---	---	---	733	1670	* 2440	---
	3/3/2010	ENER	176	56.0	8.70	302	467	< 5.00	171	697	1710	* 2494	0.985
	6/22/2010	ENER	52.0	13.3	3.40	670	330	< 5.00	144	1150	2200	* 3378	0.980
	8/5/2010	ENER	62.0	15.6	3.30	788	347	< 5.00	160	1330	2390	* 3502	1.02
	9/21/2010	ENER	---	---	---	---	---	---	187	724	1700	* 2425	---
	10/27/2010	ENER	---	---	---	---	---	---	187	725	1740	* 2446	---
	12/6/2010	ENER	---	---	---	---	---	---	---	731	1770	* 2085	---
	4/13/2011	ENER	195	60.6	10.00	316	439	< 5.00	185	713	1750	* 2497	1.05
	11/7/2011	ENER	---	---	---	---	---	---	---	686	1620	* 2384	---
	8/16/2012	ENER	133	42.3	7.60	371	403	< 5.00	176	818	1850	* 2564	0.919
	11/30/2012	ENER	---	---	---	---	---	---	182	784	1810	* 2480	---
	2/19/2014	ENER	194	61.8	8.90	292	---	---	193	726	1760	* 2532	---
	11/17/2014	ENER	195	61.3	8.90	283	449	< 5.00	200	737	1760	* 2497	0.958
	2/17/2015	ENER	---	---	---	---	---	---	194	734	1790	* 2472	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0943	4/30/2015	ENER	189	58.6	9.30	283	444	< 5.00	205	746	1760	* 2434	0.932
	8/7/2015	ENER	197	59.1	9.00	283	428	< 5.00	184	741	1730	* 2397	0.980
	10/8/2015	ENER	---	---	---	---	---	---	---	1410	2640	---	---
	12/10/2015	ENER	---	---	---	---	---	---	---	740	1780	* 2487	---
	1/26/2016	ENER	189	61.4	8.50	283	446	< 5.00	191	722	1760	2521	0.968
	2/25/2016	ENER	---	---	---	---	---	---	197	734	1770	2572	---
	9/15/2016	ENER	---	---	---	---	---	---	181	1010	2010	2904	---
	10/18/2016	ENER	---	---	---	---	---	---	---	980	1970	2857	---
	2/10/2017	ENER	---	---	---	---	---	---	---	964	1920	3141	---
	2/17/2017	ENER	---	---	---	---	---	---	167	948	1940	4217	---
	2/28/2017	ENER	131	40.1	6.20	418	384	< 5.00	167	806	1950	2673	1.01
0996	9/18/1995	ENER	183	49.0	6.10	179	348	< 0.100	104	579	1346	* 1877	1.02
	12/13/1995	ENER	219	57.6	6.80	227	372	< 0.100	116	748	1670	* 2251	1.03
	3/12/1996	ENER	268	69.1	7.10	217	376	< 0.100	159	906	1687	* 2391	0.972
	11/11/1996	ENER	228	59.0	6.90	229	378	< 0.100	136	794	1710	* 2391	0.993
	9/8/1997	ENER	206	50.0	6.00	178	325	< 0.100	98.1	656	1420	---	1.02
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/8/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/19/1998	ENER	191	48.7	5.90	172	333	< 1.000	103	601	1490	---	1.01
	9/29/1999	ENER	---	---	---	---	---	---	---	683	1470	---	---
	9/29/1999	ENER	---	---	---	---	---	---	---	# 642	# 1430	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	697	1670	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	# 701	# 1690	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0996	11/3/2000	ENER	215	58.1	6.10	178	332	< 1.000	103	748	1490	---	0.977
	9/25/2001	ENER	---	---	---	---	---	---	---	610	1560	---	---
	7/24/2002	ENER	---	---	---	---	---	---	---	712	1570	---	---
	9/18/2003	ENER	---	---	---	---	---	---	131	711	1560	* 2035	---
	9/14/2004	ENER	---	---	---	---	---	---	119	646	1530	* 2030	---
	9/26/2005	ENER	---	---	---	---	---	---	121	643	1490	* 2048	---
	8/30/2006	ENER	---	---	---	---	---	---	124	614	1470	* 1890	---
	8/22/2007	ENER	---	---	---	---	---	---	101	606	1500	* 1960	---
	9/16/2009	ENER	---	---	---	---	---	---	122	655	1470	* 2018	---
	9/16/2009	EPA6	# 211	# 54.8	# 5.74	# 200	---	---	# 117	# 672	# 1470	---	---
	11/9/2009	ENER	---	---	---	---	---	---	122	666	1470	* 2061	---
	4/21/2010	ENER	---	---	---	---	---	---	123	674	1570	* 2103	---
	8/27/2010	ENER	---	---	---	---	---	---	125	682	1530	* 2090	---
	11/9/2011	ENER	---	---	---	---	---	---	124	684	1520	* 2044	---
	9/20/2012	ENER	---	---	---	---	---	---	120	655	1550	* 1670	---
	8/8/2013	ENER	---	---	---	---	---	---	134	602	1560	---	---
	12/15/2016	ENER	---	---	---	---	---	---	143	591	1540	2117	---
CW29	6/5/1995	ENER	88.0	28.0	4.70	298	399	< 0.100	67.0	519	1417	* 1997	1.03
	6/7/1995	ENER	71.0	22.8	4.00	269	291	< 0.100	62.0	535	1059	* 1783	0.975
	6/9/1995	ENER	73.0	22.7	3.90	260	233	< 0.100	57.3	546	1182	* 1808	1.01
	11/13/1995	ENER	60.0	19.0	3.80	282	248	< 0.100	61.0	531	1148	---	1.00
	11/13/1995	HMC	---	---	---	---	---	---	---	---	---	1809	---
	10/14/1996	ENER	66.0	19.6	3.70	279	251	< 0.100	56.8	568	1160	* 1829	0.977
	5/30/1997	ENER	---	---	---	---	---	---	---	537	1100	---	---
	11/8/1997	ENER	64.7	19.7	4.30	279	253	< 0.100	59.0	537	1130	---	1.01
	5/19/1998	ENER	---	---	---	---	---	---	---	543	1080	---	---
	10/22/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/22/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW29	10/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/5/1998	ENER	59.3	19.3	4.10	278	250	< 1.000	60.0	517	1080	---	1.01
	6/3/1999	ENER	---	---	---	---	---	---	---	526	1140	---	---
	6/21/2000	ENER	---	---	---	---	---	---	---	557	1100	---	---
	6/6/2001	ENER	---	---	---	---	---	---	---	503	1050	---	---
	6/24/2002	ENER	---	---	---	---	---	---	---	479	1080	---	---
	7/10/2003	ENER	103	28.4	4.50	300	232	< 1.000	79.5	612	1260	* 1828	1.10
	2/5/2004	ENER	---	---	---	---	---	---	108	698	1430	* 2070	---
	7/13/2004	ENER	115	30.5	5.50	323	243	< 1.000	127	741	1430	* 2040	0.975
	5/17/2005	ENER	---	---	---	---	---	---	103	668	1450	* 2035	---
	8/14/2006	ENER	118	32.9	5.00	313	260	< 1.000	110	665	1420	* 2064	1.05
	4/30/2007	ENER	---	---	---	---	---	---	121	675	1530	* 2096	---
	9/12/2007	ENER	130	35.6	5.30	312	287	< 1.000	126	728	1440	* 2088	0.986
	3/31/2008	ENER	---	---	---	---	---	---	129	750	1500	* 2194	---
	6/15/2009	ENER	124	33.7	5.00	324	300	< 1.000	134	703	1580	* 2185	0.992
	5/25/2010	ENER	132	35.4	5.00	315	360	< 5.00	148	723	1630	* 2296	0.922
	8/28/2010	ENER	---	---	---	---	---	---	147	704	1670	* 2270	---
	4/18/2011	ENER	---	---	---	---	---	---	156	728	1610	* 2272	---
	7/18/2011	ENER	154	41.4	5.80	355	358	< 5.00	154	720	1610	* 2294	1.05
	5/22/2012	ENER	---	---	---	---	---	---	167	681	1800	* 2323	---
	3/19/2013	ENER	---	---	---	---	---	---	163	722	1630	* 2340	---
	6/17/2013	ENER	151	41.1	5.40	324	373	< 5.00	160	720	1640	* 2330	0.975
	10/3/2014	ENER	154	42.1	5.50	325	384	< 5.00	164	702	1680	* 2552	0.989
	3/19/2015	ENER	---	---	---	---	---	---	---	712	1690	* 2419	---
	8/19/2015	ENER	---	---	---	---	---	---	170	723	1690	* 2389	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW29	5/6/2016	ENER	149	41.0	5.00	274	320	< 5.00	142	604	1490	2186	1.04
	3/20/2017	ENER	---	---	---	---	---	---	---	---	---	2339	---
	3/20/2017	ENER	---	---	---	---	---	---	167	714	1650	---	---
CW42	11/11/1996	ENER	220	54.0	6.50	350	334	< 0.100	169	979	2070	* 2718	1.01
	11/12/1996	ENER	152	40.8	5.20	300	275	< 0.100	115	787	1630	* 2045	0.999
	1/23/1997	ENER	210	52.3	6.25	343	333	< 0	168	946	1890	---	0.999
	4/23/1997	ENER	226	54.6	6.50	351	349	0	174	1009	2101	---	0.986
	9/29/1997	ENER	---	---	---	---	---	---	---	975	2060	---	---
	4/14/1998	ENER	218	54.0	6.00	343	362	< 1.000	174	982	2070	---	0.970
	9/28/1998	ENER	---	---	---	---	---	---	---	941	2050	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/6/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1999	ENER	---	---	---	---	---	---	---	957	1990	---	---
	9/6/2000	ENER	---	---	---	---	---	---	---	833	2000	---	---
	9/27/2001	ENER	---	---	---	---	---	---	---	770	1980	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	851	1920	---	---
	7/17/2003	ENER	201	51.9	6.90	339	348	< 1.000	176	898	1930	* 2533	0.994
	8/4/2004	ENER	---	---	---	---	---	---	---	836	1810	* 2384	---
	2/21/2005	ENER	---	---	---	---	---	---	---	744	1720	* 2347	---
	12/13/2005	ENER	---	---	---	---	---	---	150	718	1720	* 2380	---
	8/16/2006	ENER	---	---	---	---	---	---	168	722	1630	* 2354	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW42	4/30/2007	ENER	---	---	---	---	---	---	---	635	1600	* 2166	---
	9/13/2007	ENER	---	---	---	---	---	---	137	719	1540	* 2126	---
	3/31/2008	ENER	---	---	---	---	---	---	---	741	1670	* 2417	---
	10/1/2008	ENER	---	---	---	---	---	---	134	676	1480	* 2093	---
	6/15/2009	ENER	---	---	---	---	---	---	148	687	1740	* 2242	---
	8/19/2009	ENER	---	---	---	---	---	---	167	710	1690	* 2388	---
	5/25/2010	ENER	---	---	---	---	---	---	177	737	1750	* 2467	---
	2/28/2011	ENER	---	---	---	---	---	---	---	743	1750	* 2445	---
	7/18/2011	ENER	---	---	---	---	---	---	180	743	1770	* 2438	---
	5/22/2012	ENER	---	---	---	---	---	---	---	638	1690	* 2483	---
	6/17/2013	ENER	---	---	---	---	---	---	176	706	1720	* 2451	---
	11/14/2013	ENER	---	---	---	---	---	---	175	701	1730	---	---
	10/10/2014	ENER	---	---	---	---	---	---	185	730	1810	* 2441	---
	8/18/2015	ENER	---	---	---	---	---	---	147	593	1450	* 2250	---
	8/9/2016	ENER	---	---	---	---	---	---	183	710	1770	2476	---
	8/24/2016	ENER	---	---	---	---	---	---	170	666	1650	2343	---
	3/21/2017	ENER	---	---	---	---	---	---	---	732	1740	2418	---
CW44	2/26/1997	ENER	243	65.1	6.10	355	529	0	186	860	2040	---	1.04
	4/22/1997	ENER	238	60.3	5.80	331	540	0	184	844	2059	---	0.993
	5/15/1997	ENER	242	60.7	5.90	338	542	0	198	860	2050	---	0.986
	9/12/1997	ENER	251	64.0	6.20	348	531	< 0.100	208	909	2060	---	0.988
	4/13/1998	ENER	233	61.0	6.00	333	540	< 1.000	186	849	2050	---	0.984
	9/28/1998	ENER	---	---	---	---	---	---	---	834	2040	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW44	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/7/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/17/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/17/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/17/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	12/28/1998	ENER	---	---	---	---	---	---	---	---	---	---	---
	10/28/1999	ENER	---	---	---	---	---	---	---	826	1970	---	---
	5/9/2000	ENER	---	---	---	---	---	---	---	816	1930	---	---
	5/9/2000	ENER	---	---	---	---	---	---	---	# 866	# 1950	---	---
	8/15/2000	ENER	---	---	---	---	---	---	---	693	1930	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	# 718	# 2010	---	---
	5/4/2001	ENER	---	---	---	---	---	---	---	723	2010	---	---
	9/17/2001	ENER	---	---	---	---	---	---	---	695	1950	---	---
	5/8/2002	ENER	---	---	---	---	---	---	---	822	1970	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	783	1970	---	---
	5/27/2003	ENER	---	---	---	---	---	---	195	780	1970	---	---
	7/9/2003	ENER	237	65.0	5.70	334	533	< 1.000	197	777	1950	* 2590	1.04
	7/22/2004	ENER	---	---	---	---	---	---	---	767	2070	* 2630	---
	12/12/2005	ENER	---	---	---	---	---	---	163	712	1850	* 2549	---
	8/14/2006	ENER	---	---	---	---	---	---	177	701	1740	* 2479	---
	9/11/2007	ENER	---	---	---	---	---	---	174	722	1840	* 2498	---
	6/9/2009	ENER	---	---	---	---	---	---	184	732	1840	* 2470	---
	5/26/2010	ENER	---	---	---	---	---	---	181	732	1840	* 2523	---
	8/9/2011	ENER	---	---	---	---	---	---	179	736	1800	* 2464	---
	10/9/2012	ENER	---	---	---	---	---	---	180	718	1850	* 2505	---
	11/14/2013	ENER	---	---	---	---	---	---	183	705	1830	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW44	6/11/2014	ENER	---	---	---	---	---	---	199	789	1840	* 2526	---
	9/9/2014	ENER	---	---	---	---	---	---	192	768	1860	* 2560	---
	7/29/2015	ENER	---	---	---	---	---	---	199	887	2010	* 2705	---
	7/5/2016	ENER	232	56.9	6.00	294	458	< 5.00	171	848	1970	2569	0.968
	12/1/2016	ENER	---	---	---	---	---	---	163	808	1840	2508	---
CW45	2/26/1997	ENER	255	63.3	5.80	364	445	0	180	984	2130	---	1.03
	4/22/1997	ENER	235	56.3	5.30	346	460	0	172	946	2084	---	0.983
	9/29/1997	ENER	---	---	---	---	---	---	---	848	1920	---	---
	4/13/1998	ENER	222	56.0	5.00	333	447	< 1.000	175	899	2000	---	0.977
	9/28/1998	ENER	---	---	---	---	---	---	---	837	1910	---	---
	12/28/1998	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/7/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/7/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/7/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/7/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/7/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/19/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/19/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/19/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/19/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/19/1999	ENER	---	---	---	---	---	---	---	---	---	---	---
	9/29/1999	ENER	---	---	---	---	---	---	---	778	1860	---	---
	9/29/1999	ENER	---	---	---	---	---	---	---	# 826	# 1860	---	---
	8/15/2000	ENER	---	---	---	---	---	---	---	682	1780	---	---
	9/26/2001	ENER	---	---	---	---	---	---	---	650	1730	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	720	1810	---	---
	7/16/2003	ENER	184	49.1	5.30	314	465	< 1.000	175	707	1740	* 2383	0.989
	4/17/2004	HMC	---	---	---	---	---	---	---	---	---	2560	---
	7/22/2004	ENER	---	---	---	---	---	---	---	744	1950	* 2465	---

Signifies Quality Control Sample
* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW45	4/11/2005	ENER	---	---	---	---	---	---	---	679	1720	* 2416	---
	8/14/2006	ENER	---	---	---	---	---	---	186	665	1720	* 2500	---
	3/26/2007	ENER	---	---	---	---	---	---	---	663	1580	* 2261	---
	9/11/2007	ENER	---	---	---	---	---	---	183	713	1830	* 2560	---
	3/31/2008	ENER	---	---	---	---	---	---	---	792	1600	* 2398	---
	10/1/2008	ENER	---	---	---	---	---	---	185	721	1810	* 2501	---
	6/2/2009	ENER	---	---	---	---	---	---	---	695	1680	* 2437	---
	5/26/2010	ENER	---	---	---	---	---	---	186	697	1820	* 2530	---
	4/18/2011	ENER	---	---	---	---	---	---	---	706	1730	* 2485	---
	8/9/2011	ENER	---	---	---	---	---	---	183	686	1710	* 2465	---
	5/7/2012	ENER	---	---	---	---	---	---	---	670	1770	* 2492	---
	11/7/2012	ENER	187	49.1	5.00	358	548	< 5.00	183	681	1780	* 2516	1.02
	3/6/2013	ENER	---	---	---	---	---	---	---	679	1710	* 2475	---
	6/17/2013	ENER	---	---	---	---	---	---	171	645	1690	* 2452	---
	11/14/2013	ENER	---	---	---	---	---	---	173	645	1730	* 2393	---
	11/13/2014	ENER	---	---	---	---	---	---	163	630	1660	* 2373	---
	12/23/2014	ENER	---	---	---	---	---	---	157	614	1620	* 2352	---
	3/31/2015	ENER	177	44.5	4.80	330	558	< 5.00	163	637	1670	* 2311	0.993
	8/19/2015	ENER	---	---	---	---	---	---	---	638	1670	* 2368	---
	3/4/2016	ENER	169	45.4	5.20	339	522	< 5.00	160	636	1660	2349	1.02
	8/26/2016	ENER	---	---	---	---	---	---	---	617	1610	2304	---
	3/24/2017	ENER	153	39.9	4.20	283	516	< 5.00	145	625	1530	2278	0.907
CW53	1/22/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	1/26/1999	ENER	---	---	---	---	---	---	---	---	---	---	---
	6/28/2004	ENER	59.2	15.0	3.30	484	446	< 1.000	129	784	1740	* 2518	0.928
	12/12/2005	ENER	---	---	---	---	---	---	174	641	1800	* 2504	---
	10/11/2006	ENER	---	---	---	---	---	---	190	657	1810	* 3051	---
	11/13/2007	ENER	---	---	---	---	---	---	190	698	1790	* 2827	---
	6/2/2008	ENER	---	---	---	---	---	---	195	745	1800	* 2894	---

* Signifies Specific Conductivity from HMC

TABLE A.1-3 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
CW53	7/20/2009	ENER	---	---	---	---	---	---	202	697	1980	* 3990	---
	6/15/2010	ENER	---	---	---	---	---	---	158	601	1630	* 2435	---
	3/1/2011	ENER	---	---	---	---	---	---	179	665	1700	* 2650	---
	9/20/2012	ENER	---	---	---	---	---	---	185	716	1910	* 2185	---
	11/14/2013	ENER	---	---	---	---	---	---	186	705	1860	---	---
	4/15/2014	ENER	---	---	---	---	---	---	190	707	1860	* 2894	---
	9/10/2014	ENER	---	---	---	---	---	---	197	727	1900	* 2847	---
	5/12/2016	ENER	61.9	14.5	2.60	643	681	< 5.00	191	704	1940	2840	1.03
	10/21/2016	ENER	52.0	12.1	2.30	640	680	< 5.00	189	661	1970	5258	1.04

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0482	5/14/1979	EID	---	---	---	0.300	---	---	---	---	---
	11/19/1980	HMC	---	6.53	---	0.800	---	---	---	---	---
	10/14/1981	HMC	---	2.95	2.35	0.440	4.20	0.600	---	---	---
	3/1/1982	HMC	---	3.31	1.73	0.490	2.60	1.90	---	---	---
	3/22/1982	EID	---	2.59	1.47	0.245	2.10	---	---	---	---
	3/22/1982	HMC	7.65	3.10	1.28	0.220	2.40	0.900	---	---	---
	1/20/1983	HMC	---	---	0.640	0.0800	3.40	---	---	---	---
	9/6/1983	HMC	8.00	1.33	0.460	0.120	1.80	0.200	---	0.0100	---
	10/27/1983	HMC	7.40	1.53	0.460	0.0900	2.20	---	---	---	---
	11/10/1994	ENER	7.71	0.221	0.100	0.0240	1.79	< 0.200	2.10	< 0.0100	< 0.200
	4/11/1996	ENER	8.04	0.252	< 0.0300	0.0180	1.78	< 0.200	< 1.000	< 0.0100	< 0.200
	7/25/2002	ENER	---	0.297	0.0800	0.0230	---	---	---	---	---
	9/4/2003	ENER	7.96	0.282	0.0800	0.0200	2.00	0.500	---	---	---
	12/12/2003	ENER	---	0.326	0.0800	0.0200	---	---	---	---	---
	5/25/2005	ENER	---	0.168	0.0600	0.0230	2.40	---	---	---	---
	9/21/2005	ENER	7.37	0.180	0.0660	0.0250	2.30	< 1.000	< 1.000	0.0040	< 1.000
	10/11/2006	ENER	---	0.236	0.0600	0.0300	2.40	---	---	---	---
	6/4/2007	ENER	---	0.150	0.0600	0.0230	2.40	---	---	---	---
	6/23/2008	ENER	---	0.144	0.0500	0.0260	2.80	---	---	---	---
	10/1/2008	ENER	---	0.121	0.0400	0.0280	3.20	---	---	---	---
	6/23/2009	ENER	---	0.124	0.0500	0.0240	2.60	---	---	---	---
	5/26/2010	ENER	---	0.139	0.0600	0.0200	1.80	---	---	---	---
	8/30/2010	ENER	---	0.135	0.190	0.0230	1.90	---	---	---	---
	11/3/2011	ENER	---	0.180	0.0700	0.0350	1.80	---	---	---	---
	9/24/2012	ENER	---	0.129	0.0500	0.0240	2.40	---	---	---	---
	7/9/2013	ENER	---	0.144	0.0600	0.0240	1.90	---	---	---	---
	5/14/2014	ENER	7.31	0.145	0.0600	0.0210	1.80	0.140	1.30	< 0.0100	0.0080
0483	4/13/1978	EID	---	---	---	1.22	---	---	---	---	---
	7/13/1978	EID	---	---	---	0.870	---	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0483	8/8/1978	EID	---	---	---	1.58	0.570	---	---	---	---
	9/5/1978	EID	---	---	---	1.40	---	---	---	---	---
	9/17/1979	EID	---	---	---	---	4.58	---	---	---	---
	9/19/1979	EID	7.35	2.60	0.0800	1.60	---	---	---	---	---
	12/10/1979	EID	7.71	12.3	3.80	0.852	3.47	---	---	---	---
	3/19/1980	EID	6.29	11.4	2.86	1.08	4.65	---	---	---	---
	8/7/1980	EID	7.44	11.3	4.93	1.28	---	---	---	---	---
	7/13/1981	HMC	7.40	7.59	2.81	1.18	5.30	0.800	---	---	---
	9/9/1981	HMC	7.50	6.53	2.63	0.750	4.50	0.400	---	---	---
	10/14/1981	HMC	---	6.36	2.63	0.590	4.20	1.40	---	---	---
	2/24/1982	HMC	7.60	2.90	2.46	0.550	2.60	0.500	---	---	---
	3/1/1982	HMC	---	3.31	1.73	0.490	2.60	1.90	---	---	---
	3/22/1982	HMC	7.50	* 3.62	1.67	0.340	2.70	1.10	---	---	---
	12/6/1982	HMC	7.40	2.32	0.830	0.150	4.00	---	---	---	---
	9/6/1983	HMC	6.91	1.39	0.620	0.0700	1.37	0.900	---	0.0100	---
	7/24/1996	ENER	8.07	0.219	0.0800	0.0360	1.10	< 0.200	---	---	---
	8/9/2005	ENER	---	0.176	0.0600	0.0310	2.30	---	---	---	---
	9/20/2005	ENER	7.43	0.184	0.0700	0.0290	2.50	< 1.000	< 1.000	0.0040	< 1.000
	10/11/2006	ENER	---	0.210	0.0800	0.0300	2.20	---	---	---	---
	6/4/2007	ENER	---	0.193	0.0700	0.0270	2.40	---	---	---	---
	6/2/2008	ENER	---	0.167	0.0600	0.0300	2.80	---	---	---	---
	10/1/2008	ENER	---	0.130	0.0500	0.0350	3.20	---	---	---	---
	7/20/2009	ENER	---	0.186	0.0600	0.0320	2.70	---	---	---	---
	10/6/2009	ENER	---	0.148	0.0500	0.0310	3.30	---	---	---	---
	6/15/2010	ENER	---	0.134	0.0600	0.0200	1.70	---	---	---	---
	8/30/2010	ENER	---	0.136	0.0800	0.0240	1.70	---	---	---	---
	11/7/2011	ENER	---	0.140	0.0600	0.0340	1.70	---	---	---	---
	9/24/2012	ENER	---	0.134	0.0500	0.0270	2.70	---	---	---	---
	11/14/2013	ENER	---	0.143	0.0400	0.111	12.0	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0483	6/11/2014	ENER	---	0.134	0.0500	0.0280	---	---	---	---	---
	9/10/2014	ENER	---	0.115	0.0500	0.0240	---	---	---	---	---
	5/12/2016	ENER	7.40	0.205	0.0500	0.0330	1.90	0.360	0.400	< 0.0100	0.0200
0490	12/30/1981	HMC	8.00	2.34	0.100	0.260	6.80	0.800	---	---	---
	12/30/1981	HMC	8.00	2.43	0.120	0.270	7.20	0.800	---	---	---
	2/5/1982	HMC	---	3.52	1.97	0.470	3.40	---	---	---	---
	2/5/1982	HMC	---	3.10	2.12	3.65	3.70	0.800	---	---	---
	2/5/1982	HMC	---	3.20	1.91	0.390	3.50	0.800	---	---	---
	3/22/1982	HMC	7.50	4.62	1.93	0.270	4.10	2.00	---	---	---
	5/27/1982	HMC	7.60	3.27	1.03	0.320	3.70	---	---	---	---
	12/30/1982	HMC	7.40	2.48	0.940	0.130	3.50	---	---	---	---
	2/11/1983	HMC	7.70	2.28	1.80	0.0600	3.00	0.800	---	---	---
	4/27/1983	HMC	7.90	2.18	1.18	0.0700	3.70	---	---	---	---
	6/27/1983	HMC	7.20	2.06	1.20	0.0700	* 1.48	0.900	---	---	---
	9/2/1983	HMC	7.70	1.95	1.06	0.0600	2.80	---	---	---	---
	10/6/1983	HMC	7.50	1.85	1.05	0.0600	2.50	---	---	---	---
	1/6/1984	HMC	7.20	1.66	0.960	0.0700	2.80	1.30	---	---	---
	4/10/1984	HMC	7.60	1.85	1.18	0.130	7.50	---	---	---	---
	6/14/1984	HMC	7.20	1.72	1.06	0.0900	13.6	---	---	---	---
	10/23/1984	HMC	7.20	1.42	0.740	0.0800	13.1	---	---	---	---
	1/30/1985	HMC	7.40	1.38	0.680	0.0600	2.90	1.10	---	---	---
	4/2/1985	HMC	7.10	1.35	0.620	0.0600	4.00	---	---	---	---
	7/8/1985	HMC	7.00	1.26	0.500	0.0200	5.40	---	---	---	---
	10/14/1985	HMC	7.40	1.09	0.450	0.0600	5.80	---	---	---	---
	1/14/1986	HMC	7.10	0.899	0.410	0.0600	3.70	0.400	---	---	---
	4/9/1986	HMC	7.70	0.907	0.380	0.0500	6.60	---	---	---	---
	7/14/1986	HMC	7.30	0.755	0.340	0.0200	6.30	---	---	---	---
	10/21/1986	HMC	7.50	0.729	0.350	0.0100	3.20	---	---	---	---
	10/21/1986	HMC	7.60	0.746	0.320	0.0100	5.70	1.70	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0490	1/28/1987	HMC	7.10	0.687	0.290	0.0500	5.40	0.300	---	---	---
	4/14/1987	HMC	7.60	0.628	0.320	0.0500	2.00	---	---	---	---
	7/15/1987	HMC	7.20	0.585	0.300	0.0400	3.00	---	---	---	---
	10/20/1987	HMC	7.70	0.602	0.270	0.0400	3.10	---	---	---	---
	11/19/1987	EID	---	0.720	0.370	0.0210	---	---	---	< 0.100	---
	11/19/1987	HMC	7.20	0.509	0.270	0.0400	2.60	0.200	---	---	---
	2/9/1988	HMC	7.20	0.492	0.230	0.0400	2.20	0.900	---	---	---
	8/17/1988	HMC	7.30	0.466	0.260	0.0200	1.40	---	---	---	---
	10/12/1988	HMC	7.50	0.466	0.290	0.0300	2.20	0.600	---	---	---
	1/23/1989	HMC	7.50	0.297	0.210	0.0200	2.00	0.200	---	---	---
	6/15/1989	HMC	7.50	0.441	0.190	< 0.0100	1.50	---	---	---	---
	8/31/1989	HMC	7.90	0.254	0.220	0.0100	2.50	0.100	---	< 0.0100	* 0.200
	4/4/1990	HMC	---	0.246	---	0.0100	---	---	---	---	---
	10/23/1990	HMC	7.60	0.297	0.190	0.0100	3.00	*< 0	---	---	---
	4/30/1991	HMC	---	0.280	---	0.0300	---	---	---	---	---
	10/10/1991	HMC	7.20	0.237	0.160	0.0300	5.40	* 0	---	---	---
	4/30/1992	HMC	---	0.263	---	0.0300	---	---	---	---	---
	10/22/1992	HMC	7.60	0.195	0.0200	0.0300	5.60	---	---	---	---
	10/22/1992	ENER	---	---	---	---	---	< 0.200	---	---	---
	3/8/1993	HMC	7.40	0.271	0.170	0.0300	5.80	---	---	---	---
	3/8/1993	ENER	---	---	---	---	---	< 0.200	---	---	---
	10/7/1993	ENER	---	0.350	---	---	---	---	---	---	---
	3/17/1994	ENER	7.42	0.288	0.220	0.0140	1.65	< 0.200	< 1.000	< 0.0100	< 0.200
	9/29/1994	ENER	---	0.256	---	0.0290	---	---	---	---	---
	3/28/1995	ENER	7.69	0.251	0.140	0.0230	1.44	< 0.200	---	---	---
	10/19/1995	ENER	---	0.276	---	0.0300	---	---	---	---	---
	3/13/1996	ENER	7.39	0.267	0.190	0.0390	1.77	0.300	---	---	---
	10/14/1996	ENER	---	0.264	---	0.0350	---	---	---	---	---
	3/17/1997	ENER	7.82	0.377	0.120	0.0400	1.38	< 0.200	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0490	10/16/1997	ENER	---	0.297	---	0.0220	---	---	---	---	---
	3/10/1998	ENER	7.80	0.357	0.140	0.0410	1.65	< 0.200	---	---	---
	3/10/1998	ENER	# 7.95	# 0.339	# 0.140	# 0.0400	# 1.57	# < 0.200	---	---	---
	10/6/1998	ENER	---	0.376	---	0.0310	---	---	---	---	---
	3/3/1999	ENER	7.82	0.325	0.140	0.0190	1.70	< 0.200	---	---	---
	10/13/1999	ENER	---	0.287	---	0.0270	---	---	---	---	---
	3/8/2000	ENER	8.00	0.263	0.120	0.0100	1.51	0.500	---	---	---
	3/8/2000	ENER	# 7.91	# 0.306	# 0.130	# 0.0050	# 1.83	# < 0.200	---	---	---
	10/18/2000	ENER	---	0.228	---	0.0300	---	---	---	---	---
	10/18/2000	ENER	---	# 0.229	---	# 0.0276	---	---	---	---	---
	6/5/2001	ENER	---	0.245	0.109	0.0270	---	---	---	---	---
	6/11/2002	ENER	---	0.254	0.120	0.0310	---	---	---	---	---
	6/4/2003	ENER	7.36	0.288	0.110	0.0320	2.00	< 0.200	< 1.000	< 0.0100	0.300
	6/4/2003	ENER	# 7.44	# 0.278	# 0.100	# 0.0320	# 2.00	# < 0.200	# 2.70	# < 0.0100	# 0.300
	5/20/2004	ENER	7.67	0.324	0.120	0.0250	1.78	< 0.200	< 1.000	< 0.0100	< 0.200
	5/25/2005	ENER	7.59	0.186	0.0800	0.0260	2.70	< 0.200	1.000	< 0.0100	< 0.200
	9/19/2005	ENER	# 7.64	# 0.227	# 0.0820	# 0.0290	# 2.80	# < 1.000	# < 1.000	# 0.0030	# < 1.000
	9/19/2005	ENER	7.50	0.230	0.0810	0.0290	2.80	< 1.000	< 1.000	0.0030	< 1.000
	5/18/2006	ENER	8.40	0.229	0.0900	0.0320	2.40	< 0.200	< 1.000	< 0.0100	< 0.200
	6/19/2006	ENER	7.42	0.262	0.0800	0.0330	2.60	< 0.200	< 1.000	< 0.0100	< 0.200
	6/19/2006	ENER	# 7.72	# 0.215	# 0.0900	# 0.0350	# 2.60	# < 0.200	# < 1.000	# < 0.0100	# < 0.200
	10/11/2006	ENER	---	0.316	0.0700	0.0370	---	---	---	---	---
	6/4/2007	ENER	7.70	0.280	0.0790	0.0330	2.90	< 0.200	< 1.000	< 0.0100	< 0.200
	10/1/2007	ENER	---	0.238	0.0700	0.0590	---	---	---	---	---
	10/1/2007	ENER	---	# 0.233	# 0.0800	# 0.0590	---	---	---	---	---
	6/2/2008	ENER	7.60	0.337	0.0800	0.0400	4.20	0.100	-0.100	< 0.0100	0.100
	6/2/2008	ENER	# 7.54	# 0.329	# 0.0800	# 0.0390	# 4.00	# 0.0700	# 0.0200	# < 0.0100	# 0
	10/1/2008	ENER	---	0.287	0.0700	0.0420	---	---	---	---	---
	6/1/2009	ENER	7.21	0.148	0.0600	0.0220	2.10	0.250	0.400	< 0.0100	0.0600

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0490	9/14/2009	EPA6	# 0.0068	# 0.356	# 0.0787	# 0.0560	* 3.50	*< 0.130	*< 0.220	# < 0.0100	*< -0.0430
	9/14/2009	ENER	---	0.316	0.0800	0.0400	---	---	---	---	---
	6/15/2010	ENER	7.65	0.250	0.100	0.0310	1.90	0.0400	0.300	< 0.0100	-0.0400
	8/30/2010	ENER	---	0.267	0.0900	0.0330	2.00	---	---	---	---
	10/27/2010	ENER	---	0.273	0.0700	0.0380	---	---	---	---	---
	6/8/2011	ENER	7.87	0.199	0.0600	0.0320	2.20	0.200	0.500	< 0.0100	0.0700
	10/11/2011	ENER	---	0.211	0.0600	0.0320	---	---	---	---	---
	6/13/2012	ENER	7.52	0.220	0.0600	0.0340	2.30	- 0.0200	0.300	< 0.100	0.0500
	10/3/2012	ENER	---	0.209	0.0700	0.0560	---	---	---	---	---
	11/4/2013	ENER	---	0.0932	0.0400	0.110	---	---	---	---	---
	11/22/2013	ENER	---	0.225	0.130	0.0370	---	---	---	---	---
	6/11/2014	ENER	---	0.223	0.0600	0.0490	---	---	---	---	---
	5/21/2015	ENER	7.46	0.129	< 0.0300	0.0470	4.20	0.100	0.600	< 0.0100	0.0600
	10/15/2015	ENER	---	0.0718	< 0.0300	0.0290	---	---	---	---	---
	5/12/2016	ENER	7.34	0.0848	0.0700	0.0330	2.40	0.220	0.200	< 0.0100	0.0080
	10/21/2016	ENER	7.60	0.254	< 0.0400	0.0330	2.20	0.0500	0.400	< 0.0100	0.0300
	3/9/2017	ENER	---	0.493	< 0.0300	0.0350	---	---	---	---	---
0491	12/30/1981	HMC	7.90	3.88	2.03	0.450	3.50	1.80	---	---	---
	12/30/1981	HMC	8.00	3.99	2.00	0.420	3.50	1.80	---	---	---
	12/30/1981	HMC	7.90	4.03	0.890	0.460	3.70	0.500	---	---	---
	3/22/1982	HMC	7.55	3.10	0.220	0.180	5.30	1.10	---	---	---
	10/25/1983	HMC	7.40	2.54	0.290	0.350	6.00	---	---	---	---
	4/3/1990	HMC	---	0.577	---	0.0200	---	---	---	---	---
	11/10/1994	ENER	7.79	0.955	0.170	0.0320	1.41	< 0.200	< 1.000	< 0.0100	< 0.200
	3/25/1996	ENER	7.88	1.45	0.110	0.0720	3.29	0.500	< 1.000	< 0.0100	< 0.200
	12/4/1996	ENER	7.85	0.735	0.100	0.106	6.89	< 0.200	< 1.000	< 0.0100	< 0.200
	3/25/1997	ENER	---	0.791	< 0.100	0.108	---	---	---	---	---
	8/27/1997	ENER	7.88	0.918	0.0800	0.0900	5.58	< 0.200	---	---	---
	3/26/1998	ENER	---	1.58	0.270	0.0520	---	---	---	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0491	8/24/1998	ENER	7.93	1.000	0.130	0.190	1.59	0.500	---	---	---
	8/22/2001	ENER	---	0.660	0.0600	0.0960	---	---	---	---	---
	7/25/2002	ENER	---	0.898	0.0700	0.0680	---	---	---	---	---
	9/4/2003	ENER	---	0.913	0.0700	0.0240	1.80	---	---	---	---
	12/12/2003	ENER	---	0.966	0.0900	0.0150	---	---	---	---	---
	8/23/2004	ENER	---	0.860	0.0800	0.0190	1.67	---	---	---	---
	5/25/2005	ENER	---	0.777	0.0800	0.0230	2.30	---	---	---	---
	9/21/2005	ENER	7.52	0.725	0.0760	0.0220	2.10	< 1.000	< 1.000	0.0030	< 1.000
	5/18/2006	ENER	8.38	0.601	0.0700	0.0270	2.30	< 0.200	< 1.000	< 0.0100	< 0.200
	6/4/2007	ENER	---	0.522	0.0700	0.0320	2.20	---	---	---	---
	6/4/2007	ENER	---	# 0.508	# 0.0700	# 0.0320	# 2.30	---	---	---	---
	6/23/2008	ENER	---	0.328	< 0.0300	0.173	12.5	---	---	---	---
	10/1/2008	ENER	---	0.325	0.0500	0.0400	2.00	---	---	---	---
	6/23/2009	ENER	---	0.318	0.0600	0.0380	1.60	---	---	---	---
	10/7/2009	ENER	---	0.292	0.0500	0.0360	---	---	---	---	---
	5/26/2010	ENER	---	0.258	0.0500	0.0310	1.50	---	---	---	---
	8/30/2010	ENER	---	0.277	0.100	0.0280	1.60	---	---	---	---
	6/13/2011	ENER	---	0.265	0.0500	0.0220	1.60	---	---	---	---
	11/3/2011	ENER	---	0.230	0.0400	0.0220	---	---	---	---	---
	9/24/2012	ENER	---	0.269	0.0500	0.0200	1.70	---	---	---	---
	7/9/2013	ENER	---	0.291	0.0500	0.0230	1.80	---	---	---	---
	5/14/2014	ENER	---	0.269	< 0.0300	0.233	13.0	---	---	---	---
	9/18/2014	ENER	---	0.203	0.0900	0.210	18.0	---	---	---	---
	9/18/2014	ENER	---	# 0.198	# < 0.0300	# 0.208	# 16.0	---	---	---	---
0493	9/5/1984	HMC	7.60	< 0.0100	< 0.0100	< 0.0100	7.90	0.400	---	---	---
	1/16/1985	HMC	8.00	< 0.0100	< 0.0100	0.0100	1.90	---	---	---	---
	4/2/1985	HMC	7.90	< 0.0100	0.0200	0.0100	2.90	0.400	---	---	---
	7/8/1985	HMC	7.40	< 0.0100	0.0200	0.0200	3.50	---	---	---	---
	10/11/1985	HMC	8.00	< 0.0100	0.0100	0.0100	3.60	---	---	---	---

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0493	1/14/1986	HMC	7.90	< 0.0100	0.0100	0.0400	3.50	---	---	---	---
	4/9/1986	HMC	8.10	< 0.0100	0.0200	0.0200	5.20	---	---	---	---
	7/14/1986	HMC	8.00	0.305	0.0200	0.0200	7.60	0.300	---	---	---
	10/20/1986	HMC	8.20	< 0.0100	0.0100	0.0100	6.30	---	---	---	---
	10/20/1986	HMC	8.10	< 0.0100	0.0200	0.0100	6.30	---	---	---	---
	1/28/1987	HMC	7.70	< 0.0100	0.0100	0.0400	4.70	---	---	---	---
	4/14/1987	HMC	8.30	< 0.0100	0.0100	0.0300	1.80	---	---	---	---
	7/16/1987	HMC	7.20	0.0848	0.0100	0.0400	3.60	0.300	---	---	---
	10/20/1987	HMC	8.10	< 0.0100	0.0200	0.0400	2.50	---	---	---	---
	11/19/1987	EID	---	0.0090	< 0.0100	0.0410	---	---	---	< 0.100	---
	11/19/1987	HMC	7.90	< 0.0100	0.0100	0.0500	2.40	0.200	---	---	---
	2/9/1988	HMC	8.00	< 0.0100	0.0100	0.0500	1.90	---	---	---	---
	4/27/1988	HMC	8.10	< 0.0100	0.0200	0.0500	1.000	---	---	---	---
	7/20/1988	HMC	8.00	0.0339	0.0200	0.0300	1.10	0.0200	---	---	---
	10/27/1988	HMC	8.80	0.0254	0.0300	0.0600	1.000	---	---	---	---
	1/19/1989	HMC	8.60	0.0678	0.0100	0.0600	1.000	---	---	---	---
	6/15/1989	HMC	8.30	0.0424	0.0200	0.0100	0.700	---	---	---	---
	8/31/1989	HMC	8.60	0.0170	< 0.0100	0.0100	0.800	0.100	---	< 0.0100	* 0
	4/4/1990	HMC	---	0.0170	---	0.0300	---	---	---	---	---
	10/22/1990	HMC	7.80	0.0678	0.0100	0.0600	4.20	* 0.100	---	---	---
	4/30/1991	HMC	---	0.0594	---	0.0600	---	---	---	---	---
	10/10/1991	HMC	8.00	0.0254	0.0100	0.0600	4.20	---	---	---	---
	10/10/1991	BARR	7.69	0.0135	0.0200	0.0500	1.10	0.200	---	---	---
	4/13/1992	HMC	---	0.0254	---	0.120	---	---	---	---	---
	4/30/1992	HMC	---	0.0254	---	0.110	---	---	---	---	---
	11/2/1992	HMC	7.80	0.0254	0.0100	0.0900	4.80	* 1.50	---	---	---
	3/8/1993	HMC	8.20	0.0148	0.0100	0.110	5.60	*< 0.200	---	---	---
	3/15/1994	ENER	8.12	0.0180	0.100	0.0660	1.43	< 0.200	< 1.000	< 0.0100	< 0.200
	9/29/1994	HMC	---	---	---	0.129	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0493	9/29/1994	ENER	---	0.0210	---	0.168	---	---	---	---	---
	11/14/1994	ENER	8.25	0.0190	< 0.0300	0.0530	1.26	< 0.200	< 1.000	< 0.0100	< 0.200
	11/21/1994	ENER	8.27	0.0260	< 0.0300	0.172	1.28	0.400	3.00	< 0.0100	< 0.200
	3/28/1995	ENER	8.47	0.0220	< 0.0300	0.111	1.41	< 0.200	---	---	---
	10/16/1995	ENER	---	0.0220	---	0.102	---	---	---	---	---
	3/13/1996	ENER	8.48	0.291	< 0.0300	0.155	1.67	< 0.200	---	---	---
	10/14/1996	ENER	---	0.0276	< 0.0300	0.136	1.66	---	---	---	---
	3/17/1997	ENER	8.25	0.0270	< 0.0300	0.144	1.49	< 0.200	---	---	---
	4/15/1997	ENER	8.29	0.0340	0.0300	0.180	1.58	< 0.200	---	---	---
	10/16/1997	ENER	---	0.0280	---	0.0880	---	---	---	---	---
	3/10/1998	ENER	8.29	0.0420	< 0.0300	0.210	1.70	1.10	---	---	---
	10/6/1998	ENER	---	0.0630	---	0.225	---	---	---	---	---
	3/3/1999	ENER	8.43	0.0562	< 0.0300	0.231	1.77	< 0.200	---	---	---
	10/13/1999	ENER	---	0.0552	---	0.261	---	---	---	---	---
	10/13/1999	ENER	---	# 0.0560	---	# 0.240	---	---	---	---	---
	3/8/2000	ENER	8.16	0.0436	< 0.0300	0.179	1.68	0.200	---	---	---
	10/18/2000	ENER	---	0.0307	---	0.148	---	---	---	---	---
	3/13/2001	ENER	---	0.0500	< 0.0300	0.200	---	---	---	---	---
	6/5/2001	ENER	---	0.0430	0.0500	0.178	---	---	---	---	---
	3/27/2002	ENER	---	0.0560	< 0.0300	0.189	---	---	---	---	---
	6/11/2002	ENER	---	0.0530	< 0.0300	0.169	---	---	---	---	---
	3/20/2003	ENER	---	0.108	< 0.0300	0.229	---	---	---	---	---
	3/20/2003	ENER	---	# 0.106	# < 0.0300	# 0.216	---	---	---	---	---
	6/4/2003	ENER	8.32	0.0929	< 0.0300	0.222	1.80	< 0.200	< 1.000	< 0.0100	0.300
	3/11/2004	ENER	---	0.133	< 0.0300	0.190	---	---	---	---	---
	3/11/2004	ENER	---	# 0.126	# < 0.0300	# 0.184	---	---	---	---	---
	5/20/2004	ENER	8.27	0.151	< 0.0300	0.196	1.86	< 0.200	< 1.000	< 0.0100	< 0.200
	2/8/2005	ENER	---	0.185	< 0.0300	0.153	---	---	---	---	---
	5/25/2005	ENER	8.07	0.159	< 0.0300	0.166	2.10	< 0.200	< 1.000	< 0.0100	< 0.200

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0493	5/25/2005	ENER	# 8.08	# 0.162	# < 0.0300	# 0.168	# 2.10	# < 0.200	# < 1.000	# < 0.0100	# < 0.200
	9/19/2005	ENER	8.55	0.158	0.0040	0.171	2.00	< 1.000	< 1.000	0.0040	< 1.000
	2/13/2006	ENER	---	0.216	< 0.0300	0.188	---	---	---	---	---
	2/13/2006	ENER	---	# 0.216	# < 0.0300	# 0.184	---	---	---	---	---
	6/19/2006	ENER	8.25	0.195	< 0.0300	0.176	2.00	< 0.200	< 1.000	< 0.0100	< 0.200
	2/5/2007	ENER	---	0.250	< 0.0300	0.167	---	---	---	---	---
	5/10/2007	ENER	8.25	0.225	< 0.0300	0.162	2.00	2.00	< 1.000	< 0.0100	< 0.200
	2/5/2008	ENER	---	0.292	< 0.0300	0.134	---	---	---	---	---
	6/23/2008	ENER	7.89	0.271	< 0.0300	0.135	2.00	0.100	0.100	< 0.0100	0
	10/1/2008	ENER	---	0.170	< 0.0300	0.133	---	---	---	---	---
	7/20/2009	ENER	8.00	0.242	< 0.0300	0.132	2.20	-0.0020	0.300	< 0.0100	0.0500
	9/14/2009	ENER	8.15	0.230	< 0.0300	0.131	* 2.10	*< -0.0340	*< 0.130	< 0.0100	*< 0.0380
	9/14/2009	EPA6	# 0.0080	# 0.268	# < 0.0500	# 0.172	---	---	---	# < 0.0100	---
	2/8/2010	ENER	---	0.321	< 0.0300	0.109	---	---	---	---	---
	6/15/2010	ENER	8.01	0.397	< 0.0300	0.112	2.10	-0.0300	0.400	< 0.0100	0.0200
	10/27/2010	ENER	---	0.250	< 0.0300	0.125	---	---	---	---	---
	2/7/2011	ENER	---	0.302	< 0.0300	0.110	---	---	---	---	---
	2/7/2011	ENER	---	# 0.295	# < 0.0300	# 0.111	---	---	---	---	---
	6/8/2011	ENER	8.24	0.332	< 0.0300	0.117	2.20	0.210	0.300	< 0.0100	0.0300
	3/6/2012	ENER	---	0.171	0.0500	0.0310	---	---	---	---	---
	6/13/2012	ENER	7.95	0.330	< 0.0300	0.104	2.10	0.0300	- 0.100	< 0.100	- 0.0040
	9/20/2012	ENER	---	0.290	< 0.0300	0.121	---	---	---	---	---
	2/8/2013	HMC	---	0.308	< 0.0300	0.119	---	---	---	---	---
	7/8/2013	ENER	8.26	0.309	< 0.0300	0.0970	2.20	0.770	-0.300	< 0.0100	0.300
	2/12/2014	ENER	---	0.383	< 0.0300	0.100	---	---	---	---	---
	2/12/2014	ENER	---	# 0.383	# < 0.0300	# 0.0980	---	---	---	---	---
	6/16/2014	ENER	8.25	0.290	< 0.0300	0.200	2.10	0.150	-0.0500	< 0.0100	0.200
	3/4/2015	ENER	---	< 0.0003	< 0.0300	0.117	---	---	---	---	---
	3/4/2015	ENER	---	# 0.188	# < 0.0300	# 0.117	---	---	---	---	---

Signifies Quality Control Sample
* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0493	5/21/2015	ENER	7.88	0.142	< 0.0300	0.110	2.20	-0.0200	1.10	< 0.0100	0.0040
	2/15/2016	ENER	---	0.189	< 0.0300	0.115	---	---	---	---	---
	7/11/2016	ENER	8.30	0.277	< 0.0300	0.103	2.10	0.340	4.60	< 0.0100	0.0020
	3/1/2017	ENER	---	0.158	< 0.0300	0.105	---	---	---	---	---
0496	2/5/1997	ENER	7.90	0.900	0.0600	0.168	2.08	1.30	< 1.000	< 0.0100	< 0.200
	4/22/1997	ENER	7.95	0.954	< 0.0300	0.103	1.57	< 0.200	---	---	---
	8/18/1997	ENER	---	0.828	< 0.0300	0.141	---	---	---	---	---
	4/13/1998	ENER	7.86	0.805	< 0.0300	0.137	1.63	0.200	---	---	---
	8/10/1998	ENER	---	0.814	< 0.0300	0.107	---	---	---	---	---
	8/31/1999	ENER	---	0.780	---	0.0960	---	---	---	---	---
	8/22/2000	ENER	---	0.904	---	0.137	---	---	---	---	---
	8/22/2000	ENER	---	# 0.893	---	# 0.121	---	---	---	---	---
	8/20/2001	ENER	---	0.520	---	0.0750	---	---	---	---	---
	8/20/2001	ENER	---	# 0.520	---	# 0.0800	---	---	---	---	---
	8/12/2002	ENER	---	0.433	---	0.0920	---	---	---	---	---
	8/12/2002	ENER	---	# 0.435	---	# 0.0930	---	---	---	---	---
	8/21/2003	ENER	---	0.326	< 0.0300	0.0650	1.70	---	---	---	---
	8/17/2004	ENER	---	0.173	---	0.0630	1.87	---	---	---	---
	3/28/2005	ENER	---	0.113	< 0.0300	0.0640	1.80	---	---	---	---
	9/26/2005	ENER	---	0.0960	< 0.0300	0.0770	1.80	---	---	---	---
	3/15/2006	ENER	---	0.0985	< 0.0300	0.102	1.70	---	---	---	---
	3/26/2007	ENER	---	0.0606	< 0.0300	0.0800	1.80	---	---	---	---
	9/11/2007	ENER	---	0.0940	< 0.0300	0.0760	1.70	---	---	---	---
	3/31/2008	ENER	---	0.0629	< 0.0300	0.0610	2.36	---	---	---	---
	3/23/2009	ENER	---	0.124	0.0600	0.0200	2.28	---	---	---	---
	8/12/2009	ENER	---	0.101	< 0.0300	0.0390	1.90	---	---	---	---
	10/6/2010	ENER	---	0.128	< 0.0300	0.0520	1.80	---	---	---	---
	10/27/2010	ENER	---	0.139	< 0.0300	0.0490	---	---	---	---	---
	4/18/2011	ENER	---	0.104	< 0.0300	0.0460	---	---	---	---	---

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0496	10/19/2011	ENER	---	0.123	< 0.0300	0.0500	1.90	---	---	---	---
	5/7/2012	ENER	---	0.128	< 0.0300	0.0460	---	---	---	---	---
	9/20/2012	ENER	---	0.168	< 0.0300	0.0380	2.10	---	---	---	---
	3/6/2013	ENER	---	0.156	< 0.0300	0.0360	---	---	---	---	---
	11/14/2013	ENER	---	0.117	< 0.0300	0.0370	2.20	---	---	---	---
	4/1/2014	ENER	---	0.125	< 0.0300	0.0320	---	---	---	---	---
0497	2/27/1997	ENER	7.60	1.49	< 0.0300	0.0600	1.52	< 0.200	< 1.000	< 0.0100	< 0.200
	4/22/1997	ENER	7.95	1.34	< 0.0300	0.0380	1.30	< 0.200	---	---	---
	8/18/1997	ENER	---	1.17	< 0.0300	0.0490	---	---	---	---	---
	4/13/1998	ENER	7.99	1.15	< 0.0300	0.0560	1.60	< 0.200	---	---	---
	8/10/1998	ENER	---	1.21	< 0.0300	0.0470	---	---	---	---	---
	8/31/1999	ENER	---	1.22	---	0.0560	---	---	---	---	---
	8/15/2000	ENER	---	0.892	---	0.0690	---	---	---	---	---
	8/20/2001	ENER	---	0.860	---	0.0590	---	---	---	---	---
	8/12/2002	ENER	---	0.907	---	0.0670	---	---	---	---	---
	8/25/2003	ENER	---	1.25	< 0.0300	0.0660	1.90	---	---	---	---
	8/17/2004	ENER	---	1.46	< 0.0300	0.0480	1.76	---	---	---	---
	11/8/2004	ENER	---	1.35	< 0.0300	0.0430	---	---	---	---	---
	2/2/2005	ENER	---	1.37	< 0.0300	0.0420	---	---	---	---	---
	9/26/2005	ENER	---	1.33	< 0.0300	0.0450	1.90	---	---	---	---
	1/10/2006	ENER	---	1.26	< 0.0300	0.0410	---	---	---	---	---
	8/14/2006	ENER	---	1.04	< 0.0300	0.0420	1.80	---	---	---	---
	9/11/2007	ENER	---	1.05	< 0.0300	0.0370	1.90	---	---	---	---
	10/1/2008	ENER	---	0.911	< 0.0300	0.0330	2.20	---	---	---	---
	7/20/2009	ENER	---	0.988	< 0.0300	0.0360	2.30	---	---	---	---
	5/26/2010	ENER	---	1.10	< 0.0300	0.0390	2.20	---	---	---	---
	10/19/2011	ENER	---	0.814	< 0.0300	0.0350	2.10	---	---	---	---
	10/9/2012	ENER	---	0.773	< 0.0300	0.0390	2.30	---	---	---	---
	11/7/2012	ENER	7.73	0.750	0.0500	0.0380	2.40	0.240	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0497	6/17/2013	ENER	---	0.893	0.0300	0.0340	2.20	---	---	---	---
	11/14/2013	ENER	---	0.859	< 0.0300	0.0370	5.20	---	---	---	---
	4/1/2014	ENER	---	0.749	< 0.0300	0.0440	---	---	---	---	---
	6/11/2014	ENER	---	0.833	< 0.0300	0.0450	---	---	---	---	---
	7/10/2014	ENER	---	0.766	< 0.0300	0.0430	---	---	---	---	---
	11/13/2014	ENER	---	0.800	< 0.0300	0.0440	---	---	---	---	---
	12/23/2014	ENER	---	0.805	< 0.0300	0.0450	---	---	---	---	---
	3/4/2016	ENER	7.29	0.596	< 0.0300	0.0550	3.00	0.190	1.000	< 0.0100	0.0800
	3/17/2017	ENER	7.35	0.530	< 0.0300	0.0410	2.90	0.0001	0.0005	< 0.0100	0.0000
0498	1/19/2004	ENER	7.87	0.714	< 0.0300	0.0750	1.68	< 0.200	< 1.000	< 0.0100	< 0.200
	9/13/2004	ENER	---	0.824	< 0.0300	0.0680	---	---	---	---	---
	9/26/2005	ENER	---	0.660	< 0.0300	0.0710	1.80	---	---	---	---
	8/14/2006	ENER	---	0.474	< 0.0300	0.0810	1.60	---	---	---	---
	6/4/2007	ENER	---	0.193	0.0500	0.0410	2.20	---	---	---	---
	6/23/2008	ENER	---	0.420	< 0.0300	0.0630	2.20	---	---	---	---
	10/1/2008	ENER	---	0.236	< 0.0300	0.0580	1.80	---	---	---	---
	6/15/2009	ENER	---	0.339	< 0.0300	0.0460	1.80	---	---	---	---
	5/26/2010	ENER	---	0.275	< 0.0300	0.0420	1.80	---	---	---	---
	6/13/2011	ENER	---	0.394	< 0.0300	0.0390	1.90	---	---	---	---
	7/9/2012	ENER	---	0.392	< 0.0300	0.0370	2.00	---	---	---	---
	11/14/2013	ENER	---	0.504	< 0.0300	0.0390	1.90	---	---	---	---
	6/11/2014	ENER	---	0.521	< 0.0300	0.0400	---	---	---	---	---
	6/9/2015	ENER	---	0.205	< 0.0300	0.0520	1.80	---	---	---	---
	7/5/2016	ENER	7.56	0.353	< 0.0300	0.0300	1.90	0.570	0.400	< 0.0100	0.100
0538	1/19/2004	ENER	7.95	0.906	< 0.0300	0.129	2.34	< 0.200	< 1.000	< 0.0100	< 0.200
	9/13/2004	ENER	---	0.538	< 0.0300	0.157	---	---	---	---	---
	2/7/2005	ENER	---	0.664	---	0.0840	3.70	---	---	---	---
	12/11/2006	ENER	---	0.302	---	0.0500	4.90	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0538	4/30/2007	ENER	---	0.324	---	0.0730	4.30	---	---	---	---
	3/31/2008	ENER	---	0.222	---	0.0430	4.20	---	---	---	---
	6/15/2009	ENER	---	0.205	---	0.0400	4.00	---	---	---	---
	5/25/2010	ENER	---	0.141	---	0.0320	4.10	---	---	---	---
	8/28/2010	ENER	---	0.142	< 0.0300	0.0300	3.80	---	---	---	---
	4/18/2011	ENER	---	0.163	---	0.0350	4.20	---	---	---	---
	5/9/2012	ENER	---	0.187	---	0.0390	3.90	---	---	---	---
	9/20/2012	ENER	---	0.188	< 0.0300	0.0330	---	---	---	---	---
	3/18/2013	HMC	---	0.174	---	0.0220	4.00	---	---	---	---
	4/1/2014	ENER	---	0.211	---	0.0270	3.90	---	---	---	---
	7/18/2014	ENER	---	0.223	< 0.0300	0.0270	---	---	---	---	---
	8/9/2016	ENER	---	0.203	< 0.0300	0.0260	---	---	---	---	---
0540	1/20/2004	ENER	8.00	1.09	< 0.0300	0.129	1.82	0.400	< 1.000	< 0.0100	< 0.200
	9/13/2004	ENER	---	0.756	< 0.0300	0.0720	---	---	---	---	---
	9/27/2005	ENER	---	0.543	< 0.0300	0.0800	3.60	---	---	---	---
	9/12/2007	ENER	---	0.586	< 0.0300	0.0670	3.70	---	---	---	---
	10/1/2008	ENER	---	0.398	< 0.0300	0.0470	4.70	---	---	---	---
	9/11/2009	ENER	---	0.305	< 0.0300	0.0450	4.10	---	---	---	---
	3/1/2010	ENER	7.41	0.303	< 0.0300	0.0350	3.50	---	---	---	---
	5/25/2010	ENER	---	0.346	< 0.0300	0.0360	3.60	---	---	---	---
	8/28/2010	ENER	---	0.263	< 0.0300	0.0340	2.90	---	---	---	---
	10/19/2011	ENER	---	0.321	< 0.0300	0.0420	3.40	---	---	---	---
	9/20/2012	ENER	---	0.504	< 0.0300	0.0340	3.10	---	---	---	---
	5/3/2013	ENER	---	0.480	< 0.0300	0.0370	---	---	---	---	---
	11/14/2013	ENER	---	0.486	< 0.0300	0.0350	2.90	---	---	---	---
	10/3/2014	ENER	---	0.111	< 0.0300	0.0250	0.100	---	---	---	---
	5/14/2015	ENER	---	0.0515	0.0300	0.0290	---	---	---	---	---
	4/28/2016	ENER	7.63	0.0231	< 0.0300	0.0070	1.20	0.230	1.40	< 0.0100	0.0200
	8/4/2016	ENER	---	0.144	< 0.0300	0.0300	---	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0541	2/9/2004	ENER	7.18	0.0619	< 0.0300	0.0140	2.90	0.700	< 1.000	< 0.0100	0.500
	9/13/2004	ENER	---	0.0550	< 0.0300	0.0320	---	---	---	---	---
	9/26/2005	ENER	---	0.0732	< 0.0300	0.0390	4.60	---	---	---	---
	8/30/2006	ENER	---	0.0759	< 0.0300	0.0310	4.10	---	---	---	---
	8/22/2007	ENER	---	0.0787	< 0.0300	0.0300	4.30	---	---	---	---
	10/2/2008	ENER	---	0.0748	< 0.0300	0.0290	4.30	---	---	---	---
	7/21/2009	ENER	---	0.0926	< 0.0300	0.0340	4.80	---	---	---	---
	4/20/2010	ENER	---	0.180	< 0.0300	0.0450	5.20	---	---	---	---
	6/15/2010	ENER	---	0.207	< 0.0300	0.0420	5.40	---	---	---	---
	10/27/2010	ENER	---	0.142	< 0.0300	0.0340	---	---	---	---	---
	9/20/2012	ENER	---	0.116	< 0.0300	0.0300	4.70	---	---	---	---
	8/8/2013	ENER	---	0.0975	< 0.0300	0.0260	4.20	---	---	---	---
	7/21/2015	ENER	---	0.0963	< 0.0300	0.0220	4.20	---	---	---	---
	12/28/2016	ENER	---	0.0946	< 0.0300	0.0270	---	---	---	---	---
0631	3/30/1999	ENER	7.90	0.0233	< 0.0300	0.282	2.17	< 0.200	< 1.000	< 0.0100	0.600
	3/31/1999	ENER	7.93	0.0228	< 0.0300	0.265	2.02	< 0.200	1.10	< 0.0100	1.10
	10/28/1999	ENER	---	0.0284	---	0.250	---	---	---	---	---
	9/6/2000	ENER	---	0.0300	---	0.190	---	---	---	---	---
	5/4/2001	ENER	---	0.0280	---	0.223	---	---	---	---	---
	9/17/2001	ENER	---	0.0260	---	0.229	---	---	---	---	---
	5/8/2002	ENER	---	0.0240	---	0.211	---	---	---	---	---
	10/2/2002	ENER	---	0.0390	---	0.194	---	---	---	---	---
	5/27/2003	ENER	---	0.0313	0.650	0.178	2.20	---	---	---	---
	9/18/2003	ENER	---	0.0280	< 0.0300	0.207	2.20	---	---	---	---
	5/13/2004	ENER	---	0.0290	< 0.0300	0.213	---	---	---	---	---
	9/14/2004	ENER	---	0.0253	---	0.202	2.01	---	---	---	---
	3/28/2005	ENER	---	0.0265	< 0.0300	0.214	---	---	---	---	---
	9/26/2005	ENER	---	0.0270	< 0.0300	0.234	2.40	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0631	3/15/2006	ENER	---	0.103	< 0.0300	0.143	---	---	---	---	---
	10/10/2006	ENER	---	0.0369	< 0.0300	0.236	2.70	---	---	---	---
	5/1/2007	ENER	---	0.0342	< 0.0300	0.203	---	---	---	---	---
	9/12/2007	ENER	---	0.0390	< 0.0300	0.196	3.10	---	---	---	---
	3/31/2008	ENER	---	0.0779	< 0.0300	0.162	---	---	---	---	---
	6/16/2009	ENER	---	0.0467	< 0.0300	0.139	---	---	---	---	---
	7/21/2009	ENER	---	0.0500	< 0.0300	0.145	4.10	---	---	---	---
	4/21/2010	ENER	---	0.0680	< 0.0300	0.115	---	---	---	---	---
	8/28/2010	ENER	---	0.0687	< 0.0300	0.0980	4.00	---	---	---	---
	4/18/2011	ENER	---	0.0932	< 0.0300	0.0920	---	---	---	---	---
	5/9/2012	ENER	---	0.0875	< 0.0300	0.0780	---	---	---	---	---
	9/20/2012	ENER	---	0.101	< 0.0300	0.0860	4.10	---	---	---	---
	11/7/2012	ENER	7.69	0.104	< 0.0300	0.0850	3.70	0.0300	---	---	---
	3/6/2013	ENER	---	0.0908	< 0.0300	0.0790	---	---	---	---	---
	4/1/2014	ENER	---	0.117	< 0.0300	0.0710	---	---	---	---	---
	12/27/2016	ENER	---	0.154	< 0.0300	0.0460	---	---	---	---	---
0632	3/25/1999	ENER	7.66	0.0236	< 0.0300	0.330	2.48	0.200	< 1.000	< 0.0100	< 0.200
	3/26/1999	ENER	7.73	0.0237	< 0.0300	0.327	2.48	< 0.200	< 1.000	< 0.0100	< 0.200
	10/28/1999	ENER	---	0.0229	---	0.331	---	---	---	---	---
	9/6/2000	ENER	---	0.0250	---	0.229	---	---	---	---	---
	9/17/2001	ENER	---	0.0220	---	0.277	---	---	---	---	---
	10/2/2002	ENER	---	0.0260	---	0.248	---	---	---	---	---
	9/18/2003	ENER	---	0.0289	< 0.0300	0.281	2.70	---	---	---	---
	9/14/2004	ENER	7.35	0.0299	< 0.0300	0.267	2.47	0.400	< 1.000	< 0.0100	< 0.200
	2/3/2005	ENER	7.47	0.0328	< 0.0300	0.275	2.90	< 0.200	2.00	< 0.0100	< 0.200
	5/1/2007	ENER	---	0.0322	< 0.0300	0.253	3.00	---	---	---	---
	9/12/2007	ENER	---	0.0312	< 0.0300	0.247	2.90	---	---	---	---
	3/31/2008	ENER	---	0.0348	< 0.0300	0.212	3.00	---	---	---	---
	6/23/2009	ENER	---	0.0411	< 0.0300	0.198	3.50	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0632	7/21/2009	ENER	---	0.0456	< 0.0300	0.186	3.30	---	---	---	---
	4/21/2010	ENER	---	0.0541	< 0.0300	0.166	3.30	---	---	---	---
	8/28/2010	ENER	---	0.0599	< 0.0300	0.144	3.30	---	---	---	---
	4/18/2011	ENER	---	0.0706	< 0.0300	0.141	3.60	---	---	---	---
	5/9/2012	ENER	---	0.0757	< 0.0300	0.124	3.50	---	---	---	---
	9/20/2012	ENER	---	0.0800	< 0.0300	0.139	---	---	---	---	---
	3/6/2013	ENER	---	0.0851	< 0.0300	0.132	3.60	---	---	---	---
	4/1/2014	ENER	---	0.0912	< 0.0300	0.112	3.60	---	---	---	---
0644	10/22/1996	ENER	8.02	0.0261	< 0.0300	0.456	2.49	< 0.200	< 1.000	0.0100	< 0.200
	5/15/1997	ENER	7.68	0.0150	< 0.0300	0.335	3.58	< 0.200	---	---	---
	9/12/1997	ENER	7.85	0.0150	< 0.0300	0.382	2.72	< 0.200	< 1.000	< 0.0100	< 0.200
	10/16/1997	ENER	---	0.0180	---	0.439	---	---	---	---	---
	5/14/1998	ENER	7.94	0.0175	< 0.0300	0.357	3.37	< 0.200	---	---	---
	10/20/1998	ENER	---	0.0220	---	0.363	---	---	---	---	---
	10/19/1999	ENER	---	0.0212	---	0.385	---	---	---	---	---
	10/31/2000	ENER	---	0.0216	---	0.322	---	---	---	---	---
	10/15/2001	ENER	---	0.0210	---	0.305	---	---	---	---	---
	10/16/2002	ENER	---	0.0347	---	0.296	---	---	---	---	---
	1/7/2004	ENER	---	0.0342	< 0.0300	0.226	3.74	---	---	---	---
	6/22/2004	ENER	---	0.0445	< 0.0300	0.244	3.80	---	---	---	---
	7/6/2005	ENER	---	0.100	< 0.0300	0.197	4.20	---	---	---	---
	8/30/2006	ENER	---	0.203	< 0.0300	0.0700	5.20	---	---	---	---
	9/12/2007	ENER	---	0.155	< 0.0300	0.0420	4.70	---	---	---	---
	10/1/2008	ENER	---	0.0928	< 0.0300	0.0370	4.76	---	---	---	---
	8/10/2009	ENER	---	0.0831	< 0.0300	0.0360	4.50	---	---	---	---
	5/25/2010	ENER	---	0.0743	< 0.0300	0.0300	4.20	---	---	---	---
	8/28/2010	ENER	---	0.0682	< 0.0300	0.0310	4.20	---	---	---	---
	7/11/2011	ENER	---	0.0642	< 0.0300	0.0330	---	---	---	---	---
	9/20/2012	ENER	---	0.0686	< 0.0300	0.0360	---	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0644	10/10/2014	ENER	---	0.0570	< 0.0300	0.0310	---	---	---	---	---
	8/1/2016	ENER	---	0.0431	< 0.0300	0.0270	---	---	---	---	---
0647	1/10/1997	ENER	7.72	0.0680	< 0.0300	0.0510	2.50	1.30	< 1.000	< 0.0100	< 0.200
	3/4/1997	ENER	7.72	0.178	0.0600	0.0750	5.15	< 0.200	< 1.000	< 0.0100	< 0.200
	4/17/1997	ENER	---	0.167	< 0.0300	0.0670	---	---	---	---	---
	7/9/1997	ENER	8.12	0.167	< 0.0300	0.0680	4.90	< 0.200	---	---	---
	1/21/1998	ENER	---	0.0959	< 0.0300	0.0630	---	---	---	---	---
	7/21/1998	ENER	7.82	0.160	< 0.0300	0.0590	4.52	0.800	---	---	---
	12/17/1998	ENER	8.02	0.180	< 0.0300	0.0640	4.22	0.200	---	---	---
	7/21/1999	ENER	---	0.149	< 0.0300	0.0570	5.26	---	---	---	---
	3/7/2000	ENER	---	0.0884	---	0.0510	---	---	---	---	---
	9/6/2000	ENER	---	0.0580	---	0.0510	3.98	---	---	---	---
	8/12/2002	ENER	---	0.0200	---	0.0560	3.33	---	---	---	---
	8/21/2003	ENER	---	0.0302	< 0.0300	0.0460	3.50	---	---	---	---
	8/19/2004	ENER	---	0.0376	< 0.0300	0.0390	---	---	---	---	---
	8/10/2005	ENER	---	0.0388	< 0.0300	0.0380	2.80	---	---	---	---
	10/4/2006	ENER	---	0.0552	< 0.0300	0.0380	2.60	---	---	---	---
	8/22/2007	ENER	---	0.0387	< 0.0300	0.0320	2.70	---	---	---	---
	10/2/2008	ENER	---	0.0274	< 0.0300	0.0310	2.67	---	---	---	---
	7/21/2009	ENER	---	0.0294	< 0.0300	0.0320	2.76	---	---	---	---
	11/6/2009	ENER	---	0.0408	< 0.0300	0.0290	2.70	---	---	---	---
	6/15/2010	ENER	---	0.0540	< 0.0300	0.0380	3.30	---	---	---	---
	8/28/2010	ENER	---	0.0431	< 0.0300	0.0390	3.10	---	---	---	---
	10/30/2010	ENER	---	0.0492	< 0.0300	0.0400	---	---	---	---	---
	2/9/2011	ENER	---	0.0505	< 0.0300	0.0450	---	---	---	---	---
	5/11/2011	ENER	7.65	0.0482	< 0.0300	0.0440	3.70	0.0060	---	---	---
	8/16/2011	ENER	---	0.0484	< 0.0300	0.0440	---	---	---	---	---
	9/20/2012	ENER	---	0.0466	< 0.0300	0.0440	---	---	---	---	---
	2/6/2013	HMC	7.38	0.0456	< 0.0300	0.0520	3.40	0.100	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0647	8/8/2013	ENER	---	0.0439	< 0.0300	0.0370	---	---	---	---	---
	8/27/2014	ENER	---	0.0429	< 0.0300	0.0300	---	---	---	---	---
0648	1/10/1997	ENER	7.74	0.0280	< 0.0300	0.0260	1.62	0.700	< 1.000	< 0.0100	< 0.200
	3/4/1997	ENER	7.79	0.0440	< 0.0300	0.0370	2.55	< 0.200	< 1.000	< 0.0100	< 0.200
	4/17/1997	ENER	---	0.0490	< 0.0300	0.0380	---	---	---	---	---
	7/9/1997	ENER	8.01	0.0640	< 0.0300	0.0410	3.76	< 0.200	---	---	---
	11/24/1997	ENER	---	0.0700	---	0.0480	---	---	---	---	---
	1/21/1998	ENER	---	0.0718	< 0.0300	0.0490	---	---	---	---	---
	7/21/1998	ENER	7.94	0.105	< 0.0300	0.0280	3.85	< 0.200	---	---	---
	12/17/1998	ENER	7.93	0.0671	< 0.0300	0.0410	3.15	< 0.200	---	---	---
	7/21/1999	ENER	---	0.0861	< 0.0300	0.0280	2.97	---	---	---	---
	10/28/1999	ENER	---	0.0533	---	0.0530	---	---	---	---	---
	1/24/2000	ENER	---	0.0790	---	0.0400	---	---	---	---	---
	9/6/2000	ENER	---	0.0540	---	0.0400	3.66	---	---	---	---
	5/4/2001	ENER	---	0.0535	---	0.0397	---	---	---	---	---
	5/4/2001	ENER	---	# 0.0528	---	# 0.0382	---	---	---	---	---
	8/15/2001	ENER	---	0.0600	---	0.0420	3.44	---	---	---	---
	5/8/2002	ENER	---	0.0250	---	0.0400	---	---	---	---	---
	8/12/2002	ENER	---	0.0230	---	0.0320	2.55	---	---	---	---
	5/27/2003	ENER	---	0.0243	0.210	0.0330	2.50	---	---	---	---
	8/21/2003	ENER	---	0.0165	< 0.0300	0.0220	2.40	---	---	---	---
	5/13/2004	ENER	7.58	0.0157	< 0.0300	0.0310	2.33	< 0.200	< 1.000	< 0.0100	< 0.200
	8/19/2004	ENER	---	0.0135	---	0.0240	2.01	---	---	---	---
	3/23/2005	ENER	7.85	0.0168	< 0.0300	0.0330	2.40	< 0.200	< 1.000	< 0.0100	0.600
	8/10/2005	ENER	---	0.0132	---	0.0310	2.40	---	---	---	---
	10/4/2006	ENER	---	0.0142	---	0.0350	2.40	---	---	---	---
	5/1/2007	ENER	7.96	0.0140	< 0.0300	0.0330	2.50	< 0.200	< 1.000	< 0.0100	< 0.200
	8/22/2007	ENER	---	0.0152	---	0.0350	2.30	---	---	---	---
	4/10/2008	ENER	7.61	0.0131	< 0.0300	0.0370	2.20	-0.0500	-0.300	< 0.0100	0

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0649	1/16/1997	ENER	7.89	0.0120	< 0.0300	0.0070	0.930	< 0.200	< 1.000	< 0.0100	< 0.200
	3/4/1997	ENER	7.65	0.0110	< 0.0300	0.0250	2.65	0.700	< 1.000	< 0.0100	< 0.200
	4/17/1997	ENER	---	0.0100	< 0.0300	0.0210	---	---	---	---	---
	7/9/1997	ENER	8.13	0.0110	< 0.0300	0.0200	2.66	< 0.200	---	---	---
	1/21/1998	ENER	---	0.0756	< 0.0300	0.0310	---	---	---	---	---
	1/21/1998	ENER	---	# 0.0204	# < 0.0300	# 0.0260	---	---	---	---	---
	7/21/1998	ENER	7.98	0.0121	< 0.0300	0.0210	2.94	< 0.200	---	---	---
	12/17/1998	ENER	8.03	0.0149	< 0.0300	0.0220	2.42	0.200	---	---	---
	7/21/1999	ACZ	---	# 0.0145	---	# 0.0200	---	---	---	---	---
	7/21/1999	ENER	---	0.0129	---	0.0240	---	---	---	---	---
	7/21/1999	ENER	---	# 0.0132	---	# 0.0230	---	---	---	---	---
	10/28/1999	ENER	---	0.0160	---	0.0240	---	---	---	---	---
	9/6/2000	ENER	---	0.0530	---	0.0500	---	---	---	---	---
	8/15/2001	ENER	---	0.0440	---	0.0240	---	---	---	---	---
	8/15/2001	ENER	---	# 0.0450	---	# 0.0310	---	---	---	---	---
	8/12/2002	ENER	---	0.0150	---	0.0280	---	---	---	---	---
	8/21/2003	ENER	---	0.0156	< 0.0300	0.0140	2.10	---	---	---	---
	8/19/2004	ENER	7.66	0.0160	< 0.0300	0.0170	2.23	< 0.200	< 1.000	< 0.0100	< 0.200
	3/28/2005	ENER	---	0.438	< 0.0300	0.0930	---	---	---	---	---
	8/10/2005	ENER	7.92	0.0174	< 0.0300	0.0230	2.00	< 0.200	< 1.000	< 0.0100	0.500
	10/4/2006	ENER	7.49	0.0385	< 0.0300	0.0310	2.20	< 0.200	< 1.000	< 0.0100	< 0.200
	5/1/2007	ENER	---	0.0246	< 0.0300	0.0250	---	---	---	---	---
	8/22/2007	ENER	7.67	0.0589	< 0.0300	0.0290	1.90	0.700	---	---	---
	10/22/2007	ENER	7.54	0.0894	< 0.0300	0.0290	2.20	0.700	---	< 0.0100	< 0.200
	4/10/2008	ENER	---	0.0273	< 0.0300	0.0300	---	---	---	---	---
	6/3/2008	ENER	---	0.0219	---	0.0270	---	---	---	---	---
	10/2/2008	ENER	7.84	0.0254	< 0.0300	0.0320	2.30	-0.0400	-0.0700	< 0.0100	0.0600
	5/6/2009	ENER	---	0.0184	< 0.0300	0.0300	---	---	---	---	---
	6/16/2009	ENER	---	0.0195	---	0.0370	---	---	---	---	---

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0649	11/13/2009	ENER	7.65	0.0235	< 0.0300	0.0380	2.40	-0.200	0.400	< 0.0100	0.0400
	4/20/2010	ENER	---	0.0197	< 0.0300	0.0300	1.40	---	---	---	---
	6/28/2010	ENER	---	0.0190	---	0.0320	---	---	---	---	---
	8/28/2010	ENER	7.70	0.0246	< 0.0300	0.0520	1.80	0.0300	-0.0600	< 0.0100	0.0800
	2/9/2011	ENER	---	0.0194	< 0.0300	0.0350	---	---	---	---	---
	4/18/2011	ENER	---	0.0210	< 0.0300	0.0320	---	---	---	---	---
	5/11/2011	ENER	7.78	0.0199	< 0.0300	0.0320	1.50	0.0900	---	---	---
	6/13/2011	ENER	---	0.0232	---	0.0350	---	---	---	---	---
	8/16/2011	ENER	8.01	0.0211	< 0.0300	0.0340	1.70	0.0800	0.700	< 0.0100	0.0800
	3/13/2012	ENER	7.45	0.0331	0.0400	0.0370	1.60	-0.0400	---	---	---
	5/9/2012	ENER	---	0.0233	< 0.0300	0.0300	---	---	---	---	---
	7/9/2012	ENER	---	0.0210	---	0.0350	---	---	---	---	---
	8/1/2012	ENER	---	0.0225	< 0.0300	0.0400	---	---	---	---	---
	9/20/2012	ENER	---	0.0230	< 0.0300	0.0330	---	---	---	---	---
	2/6/2013	HMC	7.37	0.0262	< 0.0300	0.0450	1.70	0.180	---	---	---
	3/6/2013	ENER	---	0.0248	0.0500	0.0320	---	---	---	---	---
	8/15/2013	ENER	---	0.0239	< 0.0300	0.0370	---	---	---	---	---
	4/1/2014	ENER	---	0.0308	< 0.0300	0.0410	---	---	---	---	---
	3/4/2015	ENER	7.66	0.0290	< 0.0300	0.0380	3.50	0.190	0.800	< 0.0100	0.0400
	2/22/2016	ENER	7.55	0.0302	< 0.0300	0.0360	2.40	3.50	0.700	< 0.0100	0.0800
	3/15/2017	ENER	7.52	0.0261	< 0.0300	0.0280	2.90	0.0001	0.0004	< 0.0100	0.0001
0653	4/22/1997	ENER	8.05	0.806	< 0.0300	0.156	2.18	< 0.200	< 1.000	< 0.0100	< 0.200
	6/2/1997	ENER	9.78	0.804	< 0.0300	0.215	2.31	< 0.200	---	---	---
	4/15/1998	ENER	7.85	0.961	< 0.0300	0.196	2.64	0.500	---	---	---
	10/19/1998	ENER	---	1.12	---	0.164	---	---	---	---	---
	7/12/2000	ENER	---	1.08	---	0.142	---	---	---	---	---
	9/6/2000	ENER	---	1.12	---	0.160	---	---	---	---	---
	9/6/2000	ENER	---	# 1.09	---	# 0.163	---	---	---	---	---
	5/4/2001	ENER	---	1.12	---	0.129	---	---	---	---	---

\# Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0653	9/17/2001	ENER	---	0.965	---	0.186	---	---	---	---	---
	5/8/2002	ENER	---	0.968	---	0.151	---	---	---	---	---
	10/10/2002	ENER	---	0.921	---	0.209	---	---	---	---	---
	5/27/2003	ENER	---	0.0677	0.0700	0.0490	3.30	---	---	---	---
	9/18/2003	ENER	---	0.950	< 0.0300	0.150	2.20	---	---	---	---
	5/13/2004	ENER	---	1.02	< 0.0300	0.156	---	---	---	---	---
	9/27/2004	ENER	---	0.873	---	0.156	1.92	---	---	---	---
	2/7/2005	ENER	---	0.897	< 0.0300	0.128	---	---	---	---	---
	3/23/2005	ENER	7.70	0.541	< 0.0300	0.0830	1.90	0.200	< 1.000	< 0.0100	0.500
	12/11/2006	ENER	---	0.735	< 0.0300	0.0770	---	---	---	---	---
	9/12/2007	ENER	---	0.626	---	0.0690	3.80	---	---	---	---
	10/1/2008	ENER	---	0.471	---	0.0530	4.10	---	---	---	---
	7/21/2009	ENER	---	0.454	---	0.0490	4.20	---	---	---	---
	5/25/2010	ENER	---	0.419	---	0.0430	4.20	---	---	---	---
	10/19/2011	ENER	---	0.340	---	0.0490	2.00	---	---	---	---
	10/22/2012	ENER	---	0.291	---	0.0310	3.80	---	---	---	---
	6/17/2013	ENER	---	0.280	---	0.0320	4.00	---	---	---	---
	11/14/2013	ENER	---	0.284	< 0.0300	0.0310	3.80	---	---	---	---
	7/18/2014	ENER	---	0.256	< 0.0300	0.0280	---	---	---	---	---
	8/1/2016	ENER	---	0.266	< 0.0300	0.0310	---	---	---	---	---
0657	8/5/1999	ENER	7.99	0.0450	< 0.0300	0.0340	1.79	< 0.200	< 1.000	< 0.0100	< 0.200
	10/28/1999	ENER	---	0.0726	---	0.0440	---	---	---	---	---
	9/6/2000	ENER	---	0.0690	---	0.0520	3.89	---	---	---	---
	5/4/2001	ENER	---	0.0714	---	0.0514	---	---	---	---	---
	9/17/2001	ENER	---	0.0590	---	0.0580	3.40	---	---	---	---
	5/8/2002	ENER	---	0.0560	---	0.0510	---	---	---	---	---
	10/2/2002	ENER	---	0.0480	---	0.0550	3.26	---	---	---	---
	5/27/2003	ENER	---	1.10	0.100	0.161	2.40	---	---	---	---
	9/18/2003	ENER	---	0.0530	< 0.0300	0.0440	3.00	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0657	5/13/2004	ENER	---	0.0498	< 0.0300	0.0500	---	---	---	---	---
	9/14/2004	ENER	---	0.0680	---	0.0390	4.49	---	---	---	---
	5/9/2005	ENER	---	0.0536	< 0.0300	0.0400	---	---	---	---	---
	9/26/2005	ENER	---	0.0689	---	0.0420	4.30	---	---	---	---
	8/30/2006	ENER	---	0.0689	---	0.0360	3.10	---	---	---	---
	5/1/2007	ENER	---	0.0566	< 0.0300	0.0320	---	---	---	---	---
	8/22/2007	ENER	---	0.130	---	0.0310	2.90	---	---	---	---
	10/22/2007	ENER	---	0.0641	---	0.0310	2.90	---	---	---	---
	4/10/2008	ENER	---	0.0497	< 0.0300	0.0300	---	---	---	---	---
	5/6/2009	ENER	---	0.0474	< 0.0300	0.0340	---	---	---	---	---
	9/16/2009	ENER	---	0.0489	---	0.0400	3.50	---	---	---	---
	9/16/2009	EPA6	# 0.0073	# 0.0582	# < 0.0500	# 0.0441	* 3.40	*< 0.0910	*< 0.290	# < 0.0100	*< 0.0520
	11/6/2009	ENER	---	0.0477	< 0.0300	0.0380	3.70	---	---	---	---
	4/21/2010	ENER	---	0.0517	< 0.0300	0.0440	3.70	---	---	---	---
	8/28/2010	ENER	---	0.0476	< 0.0300	0.0440	3.90	---	---	---	---
	5/11/2011	ENER	---	0.0534	< 0.0300	0.0460	---	---	---	---	---
	5/9/2012	ENER	---	0.0592	< 0.0300	0.0350	---	---	---	---	---
	5/13/2013	ENER	---	0.0622	< 0.0300	0.0390	---	---	---	---	---
	8/8/2013	ENER	---	0.0568	---	0.0360	3.70	---	---	---	---
0658	4/13/1999	ENER	8.10	0.0073	< 0.0300	0.0200	0.440	< 0.200	2.30	< 0.0100	< 0.200
	10/28/1999	ENER	---	0.0101	---	0.0350	---	---	---	---	---
	9/2/2000	ENER	---	0.0140	---	0.0420	3.53	---	---	---	---
	9/17/2001	ENER	---	0.0120	---	0.0530	2.60	---	---	---	---
	10/2/2002	ENER	---	0.0110	---	0.0500	2.14	---	---	---	---
	9/18/2003	ENER	---	0.0141	< 0.0300	0.0440	2.10	---	---	---	---
	9/14/2004	ENER	---	0.0111	< 0.0300	0.0350	---	---	---	---	---
	9/26/2005	ENER	---	0.0118	< 0.0300	0.0380	1.90	---	---	---	---
	10/4/2006	ENER	---	0.0559	< 0.0300	0.0410	1.90	---	---	---	---
	8/22/2007	ENER	---	0.0630	< 0.0300	0.0310	3.40	---	---	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0658	6/3/2008	ENER	---	0.0161	---	0.0370	---	---	---	---	---
	10/2/2008	ENER	---	0.0129	< 0.0300	0.0360	1.83	---	---	---	---
	6/16/2009	ENER	---	0.0143	---	0.0430	---	---	---	---	---
	9/16/2009	ENER	---	0.0158	< 0.0300	0.0480	2.23	---	---	---	---
	9/16/2009	EPA6	# 0.0074	# 0.0205	# < 0.0500	# 0.0575	* 2.20	*< 0.0890	*< 0.0830	# < 0.0100	*< 0.0710
	11/9/2009	ENER	---	0.0170	< 0.0300	0.0510	2.60	---	---	---	---
	4/20/2010	ENER	---	0.0157	< 0.0300	0.0500	2.20	---	---	---	---
	8/28/2010	ENER	---	0.0358	< 0.0300	0.0390	3.00	---	---	---	---
	10/27/2010	ENER	---	0.0156	< 0.0300	0.0460	---	---	---	---	---
	2/9/2011	ENER	---	0.0140	< 0.0300	0.0410	---	---	---	---	---
	5/11/2011	ENER	7.79	0.0111	< 0.0300	0.0380	1.90	0.0600	---	---	---
	6/13/2011	ENER	---	0.0126	---	0.0390	---	---	---	---	---
	3/13/2012	ENER	7.46	0.0113	< 0.0300	0.0380	2.00	0.0900	---	---	---
	7/9/2012	ENER	---	0.0119	---	0.0350	---	---	---	---	---
	8/1/2012	ENER	---	0.0101	< 0.0300	0.0400	---	---	---	---	---
	8/1/2012	ENER	---	# 0.0103	# < 0.0300	# 0.0420	---	---	---	---	---
	9/20/2012	ENER	---	0.0104	< 0.0300	0.0390	---	---	---	---	---
	11/7/2012	ENER	7.65	0.0120	< 0.0300	0.0400	1.90	0.230	---	---	---
	2/6/2013	HMC	7.40	0.0110	< 0.0300	0.0400	2.20	0.0200	---	---	---
	10/29/2013	ENER	---	0.0102	< 0.0300	0.0340	---	---	---	---	---
	2/25/2014	ENER	7.50	0.0098	< 0.0300	0.0310	2.60	0.0600	---	---	---
	8/26/2014	ENER	---	0.0128	< 0.0300	0.0350	---	---	---	---	---
	2/19/2015	ENER	7.49	0.0192	< 0.0300	0.0330	2.90	1.90	---	---	---
	2/21/2017	ENER	7.49	0.0149	< 0.0300	0.0260	3.70	0.0000	0.0000	< 0.0100	0.0000
0687	10/4/1995	ENER	7.95	0.0830	< 0.0300	0.0240	5.75	< 0.200	< 1.000	< 0.0100	< 0.200
	12/13/1995	ENER	7.84	0.0740	< 0.0100	0.0370	11.5	< 0.200	< 1.000	< 0.0100	0.600
	3/12/1996	ENER	7.74	0.0830	< 0.0300	0.0660	11.2	< 0.200	---	---	---
	7/29/1996	ENER	7.57	0.141	0.0300	0.0440	9.73	0.200	1.000	0.0100	1.20
	11/11/1996	ENER	8.02	0.142	< 0.0300	0.0540	10.6	< 0.200	< 1.000	< 0.0100	< 0.200

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0687	9/8/1997	ENER	---	0.145	---	0.0630	---	---	---	---	---
	3/24/1998	ENER	7.96	0.175	< 0.0300	0.0830	10.1	< 0.200	---	---	---
	3/24/1998	ENER	# 7.91	# 0.162	# < 0.0300	# 0.0750	# 10.7	# < 0.200	---	---	---
	9/29/1998	ENER	---	0.0270	---	0.0560	---	---	---	---	---
	9/29/1999	ENER	---	0.219	---	0.0660	7.23	---	---	---	---
	9/6/2000	ENER	---	0.206	---	0.0740	9.02	---	---	---	---
	9/25/2001	ENER	---	0.173	---	0.0710	8.40	---	---	---	---
	7/24/2002	ENER	---	0.121	---	0.0870	7.33	---	---	---	---
	9/18/2003	ENER	---	0.106	< 0.0300	0.0490	6.70	---	---	---	---
	9/14/2004	ENER	---	0.0983	---	0.0440	4.79	---	---	---	---
	3/28/2005	ENER	---	0.108	< 0.0300	0.0390	---	---	---	---	---
	9/26/2005	ENER	---	0.102	< 0.0300	0.0440	5.30	---	---	---	---
	5/1/2007	ENER	---	0.117	< 0.0300	0.0380	---	---	---	---	---
0855	3/31/1995	ENER	7.74	0.0160	< 0.0300	0.215	1.61	< 0.200	< 1.000	0.0100	< 0.200
	3/31/1995	ENER	7.75	0.0160	< 0.0300	0.222	1.84	< 0.200	< 1.000	0.0100	< 0.200
	11/17/1995	ENER	8.01	0.0210	< 0.0300	0.256	2.89	0.300	< 1.000	< 0.0100	< 0.200
	1/11/1996	ENER	7.99	0.0240	< 0.0300	0.241	3.22	< 0.200	< 1.000	< 0.0100	< 0.200
	5/8/1996	ENER	7.89	0.0200	< 0.0300	0.252	2.52	< 0.200	< 1.000	< 0.0100	1.30
	11/19/1996	ENER	7.94	0.0203	< 0.0300	0.222	2.50	1.30	< 1.000	< 0.0100	< 0.200
	8/21/1997	ENER	---	0.0260	---	0.256	---	---	---	---	---
	1/21/1998	ENER	---	0.0228	< 0.0300	0.281	---	---	---	---	---
	8/10/1998	ENER	---	0.0228	---	0.242	---	---	---	---	---
	9/1/1999	ENER	---	0.0273	---	0.283	---	---	---	---	---
	8/23/2000	ENER	---	0.0290	---	0.330	---	---	---	---	---
	8/23/2001	ENER	---	0.0300	---	0.290	---	---	---	---	---
	7/24/2002	ENER	---	0.0360	---	0.300	---	---	---	---	---
	8/19/2002	ENER	---	0.0370	---	0.307	---	---	---	---	---
	8/21/2003	ENER	---	0.0383	< 0.0300	0.254	2.50	---	---	---	---
	8/19/2004	ENER	---	0.0432	---	0.261	2.85	---	---	---	---

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0855	2/7/2005	ENER	---	0.0421	---	0.251	3.00	---	---	---	---
	7/18/2007	ENER	---	0.0672	---	0.215	3.30	---	---	---	---
	9/12/2007	ENER	---	0.0638	---	0.200	3.00	---	---	---	---
0862	6/1/1995	ENER	7.73	0.287	< 0.0300	0.123	2.94	0.600	< 1.000	< 0.0100	< 0.200
	11/13/1995	ENER	7.72	0.261	< 0.0300	0.104	2.94	0.900	< 1.000	< 0.0100	< 0.200
	1/26/1996	ENER	8.03	0.312	< 0.0300	0.112	3.16	< 0.200	< 1.000	< 0.0100	< 0.200
	5/7/1996	ENER	7.83	0.433	< 0.0300	0.116	3.37	< 0.200	< 1.000	< 0.0100	< 0.200
	12/2/1996	ENER	8.05	0.309	< 0.0300	0.109	2.93	0.300	< 1.000	< 0.0100	< 0.200
	8/14/1997	ENER	---	0.320	---	0.0980	---	---	---	---	---
	8/17/1998	ENER	---	0.367	---	0.0850	---	---	---	---	---
	9/1/1999	ENER	---	0.417	---	0.0800	---	---	---	---	---
	8/22/2000	ENER	---	0.574	---	0.0760	---	---	---	---	---
	8/20/2001	ENER	---	0.480	---	0.0580	---	---	---	---	---
	8/19/2002	ENER	---	0.600	---	0.0720	---	---	---	---	---
	8/21/2003	ENER	---	0.732	< 0.0300	0.0700	2.40	---	---	---	---
	8/19/2004	ENER	---	0.832	< 0.0300	0.0690	---	---	---	---	---
	2/2/2005	ENER	---	0.509	< 0.0300	0.0480	---	---	---	---	---
	9/27/2005	ENER	---	0.664	< 0.0300	0.0590	3.90	---	---	---	---
	1/10/2006	ENER	---	0.467	< 0.0300	0.0540	3.00	---	---	---	---
	8/16/2006	ENER	---	0.594	< 0.0300	0.0540	3.80	---	---	---	---
	1/31/2007	ENER	---	0.376	< 0.0300	0.0430	2.90	---	---	---	---
	9/12/2007	ENER	---	0.625	< 0.0300	0.0470	3.20	---	---	---	---
	1/14/2008	ENER	---	0.385	< 0.0300	0.0410	2.80	---	---	---	---
	10/1/2008	ENER	---	0.462	< 0.0300	0.0390	3.55	---	---	---	---
	1/13/2009	ENER	---	0.321	< 0.0300	0.0370	3.10	---	---	---	---
	7/20/2009	ENER	---	0.480	< 0.0300	0.0450	3.39	---	---	---	---
	3/1/2010	ENER	7.41	0.322	< 0.0300	0.0370	3.10	---	---	---	---
	5/25/2010	ENER	---	0.300	< 0.0300	0.0420	3.70	---	---	---	---
	1/12/2011	ENER	---	0.253	0.0300	0.0430	---	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0862	10/19/2011	ENER	---	0.265	< 0.0300	0.0460	---	---	---	---	---
	5/22/2012	ENER	---	0.286	< 0.0300	0.0370	---	---	---	---	---
	5/3/2013	ENER	---	0.288	< 0.0300	0.0420	---	---	---	---	---
	1/28/2014	ENER	---	0.269	< 0.0300	0.0390	---	---	---	---	---
	6/11/2014	ENER	---	0.288	< 0.0300	0.0380	---	---	---	---	---
	10/17/2014	ENER	---	0.179	< 0.0300	0.0290	---	---	---	---	---
	5/14/2015	ENER	---	0.189	< 0.0300	0.0300	---	---	---	---	---
	5/6/2016	ENER	7.42	0.125	< 0.0300	0.0230	3.70	0.210	1.90	< 0.0100	-0.0200
	8/4/2016	ENER	---	0.0970	< 0.0300	0.0240	---	---	---	---	---
	10/24/2016	ENER	7.57	0.111	< 0.0300	0.0270	3.20	0.220	0.200	< 0.0100	0.0100
	11/30/2016	ENER	---	0.0996	< 0.0300	0.0250	---	---	---	---	---
	3/21/2017	ENER	7.46	0.0942	< 0.0300	0.0220	2.30	0.150	1.000	< 0.0100	0.200
0863	6/1/1995	ENER	7.86	1.18	< 0.0300	0.142	2.54	1.000	< 1.000	< 0.0100	< 0.200
	11/13/1995	ENER	7.83	1.06	< 0.0300	0.112	2.07	3.60	< 1.000	< 0.0100	< 0.200
	1/26/1996	ENER	8.08	1.27	< 0.0300	0.107	2.49	< 0.200	< 1.000	< 0.0100	0.800
	5/7/1996	ENER	7.70	1.81	< 0.0300	0.148	2.46	< 0.200	< 1.000	< 0.0100	< 0.200
	12/2/1996	ENER	8.16	1.26	< 0.0300	0.101	2.02	< 0.200	< 1.000	< 0.0100	< 0.200
	8/12/1997	ENER	---	1.19	---	0.0970	---	---	---	---	---
	8/17/1998	ENER	---	1.25	---	0.0830	---	---	---	---	---
	8/17/1998	ENER	---	# 1.22	---	# 0.0820	---	---	---	---	---
	9/1/1999	ENER	---	1.29	---	0.0820	---	---	---	---	---
	8/25/2000	ENER	---	1.41	---	0.160	---	---	---	---	---
	8/20/2001	ENER	---	1.20	---	0.110	---	---	---	---	---
	8/19/2002	ENER	---	0.868	---	0.101	---	---	---	---	---
	8/16/2006	ENER	---	0.134	< 0.0300	0.0470	4.60	---	---	---	---
	9/12/2007	ENER	---	0.0287	< 0.0300	0.0270	4.30	---	---	---	---
	9/20/2012	ENER	---	0.0350	< 0.0300	0.0220	---	---	---	---	---
0865	6/5/1995	ENER	7.65	0.183	< 0.0300	0.608	4.63	< 0.200	1.50	< 0.0100	< 0.200

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0865	11/10/1995	ENER	7.99	0.188	< 0.0300	0.508	5.28	17.5	< 1.000	< 0.0100	0.200
	1/26/1996	ENER	7.87	0.193	< 0.0300	0.535	4.64	< 0.200	< 1.000	< 0.0100	< 0.200
	5/7/1996	ENER	7.64	0.305	< 0.0300	0.455	4.69	< 0.200	< 1.000	< 0.0100	< 0.200
	12/2/1996	ENER	8.00	0.218	< 0.0300	0.466	4.27	< 0.200	< 1.000	< 0.0100	< 0.200
	8/12/1997	ENER	---	0.293	---	0.423	---	---	---	---	---
	8/17/1998	ENER	---	0.397	---	0.339	---	---	---	---	---
	8/31/1999	ENER	---	0.460	---	0.306	---	---	---	---	---
	8/22/2000	ENER	---	0.198	---	0.366	---	---	---	---	---
	8/20/2001	ENER	---	0.170	---	0.250	---	---	---	---	---
	8/20/2002	ENER	---	0.125	---	0.255	---	---	---	---	---
	9/11/2007	ENER	---	0.151	< 0.0300	0.131	2.60	---	---	---	---
	10/1/2008	ENER	---	0.128	< 0.0300	0.110	3.30	---	---	---	---
	8/10/2009	ENER	---	0.242	< 0.0300	0.0770	3.10	---	---	---	---
	3/1/2010	ENER	7.44	0.164	< 0.0300	0.0990	3.30	---	---	---	---
	5/25/2010	ENER	---	0.216	< 0.0300	0.0720	3.80	---	---	---	---
	8/28/2010	ENER	---	0.193	< 0.0300	0.0500	2.80	---	---	---	---
	10/19/2011	ENER	---	0.204	< 0.0300	0.0850	3.00	---	---	---	---
	9/20/2012	ENER	---	0.200	< 0.0300	0.0930	2.50	---	---	---	---
	10/17/2014	ENER	---	0.172	< 0.0300	0.0430	---	---	---	---	---
	5/14/2015	ENER	---	0.103	< 0.0300	0.0260	---	---	---	---	---
	8/20/2015	ENER	---	0.0749	< 0.0300	0.0260	3.90	---	---	---	---
	4/28/2016	ENER	7.60	0.0541	< 0.0300	0.0230	3.60	0.240	-0.0300	0.0100	0.0600
	8/4/2016	ENER	---	0.0626	< 0.0300	0.0330	---	---	---	---	---
0866	6/8/1995	ENER	8.04	2.34	< 0.0300	0.165	0.500	0.300	1.70	< 0.0100	< 0.200
	11/10/1995	ENER	7.99	1.91	< 0.0300	0.129	2.03	1.80	1.70	< 0.0100	0.600
	1/26/1996	ENER	7.83	1.96	< 0.0300	0.167	2.06	< 0.200	1.20	< 0.0100	< 0.200
	5/7/1996	ENER	8.00	2.24	< 0.0300	0.142	2.28	< 0.200	< 1.000	< 0.0100	0.500
	11/22/1996	ENER	7.79	1.91	< 0.0300	0.133	1.53	< 0.200	< 1.000	< 0.0100	< 0.200
	8/12/1997	ENER	---	1.95	---	0.128	---	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0866	8/17/1998	ENER	---	2.13	---	0.106	---	---	---	---	---
	8/31/1999	ENER	---	2.12	---	0.101	---	---	---	---	---
	8/31/1999	ENER	---	# 2.13	---	# 0.103	---	---	---	---	---
	8/22/2000	ENER	---	2.06	---	0.162	---	---	---	---	---
	8/22/2000	ENER	---	# 2.09	---	# 0.159	---	---	---	---	---
	8/23/2001	ENER	---	1.40	---	0.130	---	---	---	---	---
	8/19/2002	ENER	---	0.933	---	0.163	---	---	---	---	---
	9/11/2007	ENER	---	0.501	< 0.0300	0.0890	2.00	---	---	---	---
	10/1/2008	ENER	---	0.302	< 0.0300	0.0590	4.40	---	---	---	---
	7/20/2009	ENER	---	0.398	< 0.0300	0.0580	3.00	---	---	---	---
	9/11/2009	ENER	---	0.380	< 0.0300	0.0510	3.20	---	---	---	---
	3/1/2010	ENER	7.41	0.310	< 0.0300	0.0520	3.30	---	---	---	---
	5/25/2010	ENER	---	0.450	< 0.0300	0.0450	2.80	---	---	---	---
	10/19/2011	ENER	---	0.188	< 0.0300	0.0330	3.70	---	---	---	---
	9/20/2012	ENER	---	0.684	< 0.0300	0.0370	2.10	---	---	---	---
	5/3/2013	ENER	---	0.657	< 0.0300	0.0420	---	---	---	---	---
	8/5/2014	ENER	---	0.636	< 0.0300	0.0370	2.60	---	---	---	---
	9/11/2014	ENER	---	0.595	< 0.0300	0.0370	---	---	---	---	---
	10/17/2014	ENER	---	0.564	< 0.0300	0.0370	---	---	---	---	---
	10/21/2014	ENER	---	0.586	< 0.0300	0.0380	---	---	---	---	---
	11/13/2014	ENER	---	0.520	< 0.0300	0.0360	---	---	---	---	---
	12/23/2014	ENER	---	0.458	< 0.0300	0.0350	---	---	---	---	---
	8/20/2015	ENER	---	0.608	< 0.0300	0.0380	2.80	---	---	---	---
	8/4/2016	ENER	---	0.600	< 0.0300	0.0460	---	---	---	---	---
	11/30/2016	ENER	---	0.453	< 0.0300	0.0460	---	---	---	---	---
	3/3/2017	ENER	7.44	0.292	0.0400	0.0460	4.40	0.320	0.700	< 0.0100	0.0600
	3/21/2017	ENER	7.40	0.355	< 0.0300	0.0340	3.50	0.170	0.500	< 0.0100	0.100
0869	7/20/1995	ENER	7.91	0.0300	< 0.0300	0.421	0.440	< 0.200	< 1.000	< 0.0100	0.500
	11/13/1995	ENER	7.74	0.0290	< 0.0300	0.246	2.86	4.20	< 1.000	< 0.0100	0.500

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0869	1/12/1996	ENER	8.16	0.0330	< 0.0300	0.337	3.05	0.300	< 1.000	< 0.0100	< 0.200
	5/8/1996	ENER	8.03	0.0370	< 0.0300	0.376	2.89	< 0.200	< 1.000	< 0.0100	< 0.200
	11/19/1996	ENER	8.06	0.0488	< 0.0300	0.292	3.06	2.10	< 1.000	< 0.0100	0.800
	4/17/1997	ENER	---	0.0630	---	0.232	---	---	---	---	---
	8/14/1997	ENER	7.87	0.0910	< 0.0300	0.273	2.91	< 0.200	---	---	---
	4/14/1998	ENER	---	0.168	---	0.265	---	---	---	---	---
	8/17/1998	ENER	7.75	0.230	< 0.0300	0.213	2.45	< 0.200	---	---	---
	9/2/1999	ENER	---	0.408	---	0.190	---	---	---	---	---
	8/22/2000	ENER	---	0.322	---	0.271	---	---	---	---	---
	8/20/2001	ENER	---	0.0290	---	0.210	---	---	---	---	---
	8/19/2002	ENER	---	0.427	---	0.242	---	---	---	---	---
	8/21/2003	ENER	---	0.431	< 0.0300	0.226	2.60	---	---	---	---
	8/19/2004	ENER	---	0.431	< 0.0300	0.180	---	---	---	---	---
	2/7/2005	ENER	---	0.216	< 0.0300	0.168	2.70	---	---	---	---
	11/18/2005	ENER	---	0.228	< 0.0300	0.139	3.10	---	---	---	---
	12/11/2006	ENER	---	0.253	< 0.0300	0.113	4.80	---	---	---	---
	4/30/2007	ENER	---	0.315	< 0.0300	0.0960	5.00	---	---	---	---
	9/12/2007	ENER	---	0.288	< 0.0300	0.0950	4.80	---	---	---	---
	3/31/2008	ENER	---	0.302	< 0.0300	0.0700	5.81	---	---	---	---
	10/1/2008	ENER	---	0.312	< 0.0300	0.0660	5.00	---	---	---	---
	7/21/2009	ENER	---	0.337	< 0.0300	0.0570	5.20	---	---	---	---
	5/25/2010	ENER	---	0.301	< 0.0300	0.0500	4.40	---	---	---	---
	8/28/2010	ENER	---	0.310	< 0.0300	0.0440	4.10	---	---	---	---
	10/19/2011	ENER	---	0.263	< 0.0300	0.0480	4.30	---	---	---	---
	5/23/2012	ENER	---	0.254	< 0.0300	0.0470	---	---	---	---	---
	9/20/2012	ENER	---	0.322	< 0.0300	0.0410	4.30	---	---	---	---
	3/18/2013	HMC	---	0.280	< 0.0300	0.0320	---	---	---	---	---
	6/17/2013	ENER	---	0.293	< 0.0300	0.0360	4.40	---	---	---	---
	7/18/2014	ENER	---	0.276	0.0400	0.0550	3.40	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0943	8/28/1956	UNK	7.80	---	---	---	0.600	---	---	---	---
	6/15/1995	ENER	8.04	0.0171	< 0.0300	0.0530	8.56	< 0.200	3.00	< 0.0100	< 0.200
	6/15/1995	ENER	8.04	0.0171	< 0.0300	0.0490	8.29	11.2	1.60	< 0.0100	0.800
	6/12/1996	ENER	8.13	0.0290	< 0.0300	0.0620	9.36	< 0.200	< 1.000	< 0.0100	< 0.200
	10/23/1996	ENER	8.25	0.0245	< 0.0300	0.0690	8.64	< 0.200	< 1.000	< 0.0100	< 0.200
	8/21/1997	ENER	8.68	0.0070	0.0500	< 0.0050	0.210	< 0.200	---	---	---
	8/18/1998	ENER	8.29	0.0006	< 0.0300	< 0.0050	< 0.100	< 0.200	---	---	---
	9/2/1999	ENER	---	0.0024	---	0.0060	---	---	---	---	---
	9/2/1999	ENER	---	# < 0.0003	---	# 0.0070	---	---	---	---	---
	8/23/2000	ENER	---	0.0017	---	< 0.0050	---	---	---	---	---
	8/29/2001	ENER	---	< 0.0003	---	< 0.0050	---	---	---	---	---
	8/29/2001	ENER	---	# 0.0010	---	# 0.0050	---	---	---	---	---
	11/13/2002	ENER	---	0.0010	---	< 0.0050	---	---	---	---	---
	10/27/2003	ENER	---	0.0005	---	< 0.0050	---	---	---	---	---
	3/9/2004	ENER	7.43	0.0180	< 0.0300	0.0290	5.25	0.300	---	---	---
	12/8/2004	ENER	---	0.0136	---	0.0200	---	---	---	---	---
	4/19/2005	ENER	7.66	0.0136	< 0.0300	< 0.0500	4.20	< 0.200	---	---	---
	12/5/2005	ENER	---	0.0160	---	0.0270	---	---	---	---	---
	3/16/2006	ENER	7.80	0.0179	< 0.0300	0.0290	4.00	0.400	---	---	---
	12/19/2006	ENER	7.12	0.0149	< 0.0300	0.0220	3.80	< 0.200	---	---	---
	3/8/2007	ENER	7.57	0.0184	< 0.0300	0.0280	4.20	0.600	---	---	---
	12/3/2007	ENER	---	0.0185	---	0.0230	---	---	---	---	---
	3/5/2008	ENER	7.48	0.0217	< 0.0300	0.0290	4.00	-0.0600	---	---	---
	9/16/2008	ENER	7.40	0.0182	< 0.0300	0.0220	4.20	1.20	---	---	---
	12/1/2008	ENER	---	0.0162	---	0.0220	---	---	---	---	---
	6/15/2009	ENER	7.26	0.0187	< 0.0300	0.0220	4.00	0.180	---	---	---
	12/7/2009	ENER	---	0.0199	< 0.100	0.0240	---	---	---	---	---
	3/3/2010	ENER	7.52	0.0229	< 0.0300	0.0290	5.20	0.120	---	---	---
	6/22/2010	ENER	7.74	0.0724	< 0.0300	0.0870	6.80	-0.0500	---	---	---

\# Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0943	8/5/2010	ENER	8.09	0.0753	< 0.0300	0.0870	9.40	0.0900	---	---	---
	9/21/2010	ENER	---	0.0208	< 0.0300	0.0240	4.40	---	---	---	---
	10/27/2010	ENER	---	0.0248	< 0.0300	0.0240	---	---	---	---	---
	12/6/2010	ENER	---	0.0239	---	0.0220	---	---	---	---	---
	4/13/2011	ENER	7.46	0.0220	< 0.0300	0.0250	4.20	0.330	---	---	---
	11/7/2011	ENER	---	0.0197	---	0.0200	---	---	---	---	---
	8/16/2012	ENER	7.39	0.0484	< 0.0300	0.0470	4.30	0.560	- 0.400	< 0.0100	0.0200
	11/30/2012	ENER	---	0.0402	< 0.0300	0.0340	---	---	---	---	---
	2/19/2014	ENER	7.19	0.0330	< 0.0300	0.0230	3.90	2.60	---	---	---
	11/17/2014	ENER	7.26	0.0326	< 0.0300	0.0210	3.70	0.810	2.30	< 0.0100	0.0050
	2/17/2015	ENER	---	0.0306	< 0.0300	0.0220	---	---	---	---	---
	4/30/2015	ENER	7.30	0.0307	< 0.0300	0.0190	3.60	0.330	-0.200	< 0.0100	0.100
	8/7/2015	ENER	7.38	0.0280	< 0.0300	0.0240	3.50	0.800	1.90	< 0.0100	0.0200
	10/8/2015	ENER	---	0.0798	< 0.0300	0.0730	---	---	---	---	---
	12/10/2015	ENER	---	0.0303	< 0.0300	0.0220	---	---	---	---	---
	1/26/2016	ENER	7.35	0.0354	< 0.0300	0.0240	3.90	0.410	0.100	< 0.0100	0.200
	2/25/2016	ENER	---	0.0356	< 0.0300	0.0260	---	---	---	---	---
	9/15/2016	ENER	---	0.0805	< 0.0300	0.0550	---	---	---	---	---
	10/18/2016	ENER	---	0.0960	< 0.0300	0.0760	---	---	---	---	---
	2/10/2017	ENER	---	0.0861	< 0.0300	0.0570	---	---	---	---	---
	2/17/2017	ENER	---	0.0898	< 0.0300	0.0600	---	---	---	---	---
	2/28/2017	ENER	7.34	0.0707	< 0.0300	0.0420	4.30	0.330	1.20	< 0.0100	0.200
0996	9/18/1995	ENER	7.85	0.134	< 0.0300	0.0400	5.66	< 0.200	< 1.000	< 0.0100	0.300
	12/13/1995	ENER	7.88	0.149	< 0.0100	0.0350	5.12	< 0.200	< 1.000	< 0.0100	< 0.200
	3/12/1996	ENER	7.81	0.146	< 0.0300	0.0790	5.38	< 0.200	---	---	---
	11/11/1996	ENER	8.00	0.168	< 0.0300	0.0830	4.75	< 0.200	< 1.000	< 0.0100	< 0.200
	9/8/1997	ENER	7.98	0.0620	< 0.0300	0.0600	3.79	< 0.200	---	---	---
	11/19/1998	ENER	8.08	0.0640	< 0.0300	0.0620	3.59	< 0.200	---	---	---
	9/29/1999	ENER	---	0.0754	---	0.0530	3.08	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0996	9/29/1999	ENER	---	# 0.0670	---	# 0.0540	# 3.12	---	---	---	---
	9/6/2000	ENER	---	0.172	---	0.0660	5.42	---	---	---	---
	9/6/2000	ENER	---	# 0.172	---	# 0.0700	# 5.55	---	---	---	---
	11/3/2000	ENER	7.51	0.0795	< 0.0300	0.0769	4.85	< 0.200	< 1.000	< 0.0100	< 0.200
	9/25/2001	ENER	---	0.0690	---	0.0840	5.20	---	---	---	---
	7/24/2002	ENER	---	0.0350	---	0.0940	5.15	---	---	---	---
	9/18/2003	ENER	---	0.0430	< 0.0300	0.0550	4.80	---	---	---	---
	9/14/2004	ENER	---	0.0454	< 0.0300	0.0440	---	---	---	---	---
	9/26/2005	ENER	---	0.0516	< 0.0300	0.0430	3.70	---	---	---	---
	8/30/2006	ENER	---	0.0450	< 0.0300	0.0390	4.10	---	---	---	---
	8/22/2007	ENER	---	0.0567	< 0.0300	0.0330	4.10	---	---	---	---
	9/16/2009	ENER	---	0.0418	< 0.0300	0.0390	4.95	---	---	---	---
	9/16/2009	EPA6	# 0.0073	# 0.0526	# < 0.0500	# 0.0478	* 4.70	*< 0.360	*< 0.170	# < 0.0100	*< -0.0140
	11/9/2009	ENER	---	0.0412	< 0.0300	0.0420	11.3	---	---	---	---
	4/21/2010	ENER	---	0.0433	< 0.0300	0.0460	4.80	---	---	---	---
	8/27/2010	ENER	---	0.0423	< 0.0300	0.0460	4.60	---	---	---	---
	11/9/2011	ENER	---	0.0508	< 0.0300	0.0470	---	---	---	---	---
	9/20/2012	ENER	---	0.0627	< 0.0300	0.0390	---	---	---	---	---
	8/8/2013	ENER	---	0.0793	< 0.0300	0.0310	---	---	---	---	---
	12/15/2016	ENER	---	0.0792	< 0.0300	0.0250	---	---	---	---	---
CW29	6/5/1995	ENER	7.86	0.0114	< 0.0300	0.0110	0.360	0.600	4.10	< 0.0100	< 0.200
	6/7/1995	ENER	7.99	0.0155	< 0.0300	0.0340	0.830	0.400	< 1.000	< 0.0100	< 0.200
	6/9/1995	ENER	7.98	0.0170	< 0.0300	0.0790	1.60	0.300	< 1.000	< 0.0100	0.600
	11/13/1995	ENER	8.02	0.0110	< 0.0300	0.0230	0.390	1.000	---	---	---
	10/14/1996	ENER	7.79	0.0144	< 0.0300	0.0160	0.460	0.400	< 1.000	< 0.0100	< 0.200
	5/30/1997	ENER	---	0.0090	---	< 0.0140	---	---	---	---	---
	11/8/1997	ENER	7.93	0.0120	< 0.0300	0.0170	0.430	< 0.200	---	---	---
	5/19/1998	ENER	---	0.0164	---	0.0280	---	---	---	---	---
	11/5/1998	ENER	7.85	0.0098	< 0.0300	0.0120	0.410	< 0.200	---	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
CW29	6/3/1999	ENER	---	0.0123	---	0.0200	---	---	---	---	---
	6/21/2000	ENER	---	0.0101	---	0.0272	---	---	---	---	---
	6/6/2001	ENER	---	0.0150	---	0.0300	---	---	---	---	---
	6/24/2002	ENER	---	0.0150	---	0.0310	---	---	---	---	---
	7/10/2003	ENER	8.16	0.0532	< 0.0300	0.155	1.80	< 0.200	< 1.000	< 0.0100	< 0.200
	2/5/2004	ENER	---	0.135	< 0.0300	0.173	---	---	---	---	---
	7/13/2004	ENER	7.54	0.117	< 0.0300	0.170	2.21	< 0.200	---	---	---
	5/17/2005	ENER	---	0.161	< 0.0300	0.152	2.30	---	---	---	---
	8/14/2006	ENER	7.76	0.213	< 0.0300	0.155	2.40	< 0.200	---	---	---
	4/30/2007	ENER	---	0.218	< 0.0300	0.133	2.80	---	---	---	---
	9/12/2007	ENER	7.63	0.262	< 0.0300	0.125	2.50	< 0.200	---	---	---
	3/31/2008	ENER	---	0.264	< 0.0300	0.117	3.22	---	---	---	---
	6/15/2009	ENER	7.63	0.272	< 0.0300	0.103	2.90	0.150	---	---	---
	5/25/2010	ENER	7.45	0.249	< 0.0300	0.0850	3.20	0.200	---	---	---
	8/28/2010	ENER	---	0.237	< 0.0300	0.0830	3.20	---	---	---	---
	4/18/2011	ENER	---	0.238	< 0.0300	0.0720	---	---	---	---	---
	7/18/2011	ENER	7.97	0.239	< 0.0300	0.0630	3.10	0.0400	---	---	---
	5/22/2012	ENER	---	0.298	< 0.0300	0.0370	---	---	---	---	---
	3/19/2013	ENER	---	0.223	< 0.0300	0.0590	---	---	---	---	---
	6/17/2013	ENER	7.80	0.212	< 0.0300	0.0530	3.40	2.80	---	---	---
	10/3/2014	ENER	7.61	0.220	< 0.0300	0.0510	3.20	0.180	---	---	---
	3/19/2015	ENER	---	0.206	< 0.0300	0.0440	---	---	---	---	---
	8/19/2015	ENER	---	0.186	< 0.0300	0.0510	3.30	---	---	---	---
	5/6/2016	ENER	7.46	0.155	< 0.0300	0.0330	2.80	0.330	2.10	< 0.0100	0.0200
	3/20/2017	ENER	---	0.180	< 0.0300	0.0390	---	---	---	---	---
CW42	11/11/1996	ENER	7.75	0.737	< 0.0300	0.368	2.25	< 0.200	< 1.000	< 0.0100	< 0.200
	11/12/1996	ENER	7.83	0.401	< 0.0300	0.246	2.11	< 0.200	< 1.000	< 0.0100	< 0.200
	1/23/1997	ENER	7.74	0.740	< 0.0300	0.313	2.58	0.400	---	---	---
	4/23/1997	ENER	7.84	0.879	< 0.0300	0.288	2.67	< 0.200	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
CW42	9/29/1997	ENER	---	0.755	< 0.0300	0.175	---	---	---	---	---
	4/14/1998	ENER	8.10	1.01	< 0.0300	0.302	2.77	0.500	---	---	---
	9/28/1998	ENER	---	1.18	< 0.0300	0.280	---	---	---	---	---
	9/2/1999	ENER	---	1.02	---	0.220	---	---	---	---	---
	9/6/2000	ENER	---	1.27	---	0.199	---	---	---	---	---
	9/27/2001	ENER	---	1.18	---	0.215	---	---	---	---	---
	10/2/2002	ENER	---	1.01	---	0.232	---	---	---	---	---
	7/17/2003	ENER	7.89	0.985	< 0.0300	0.247	2.50	< 0.200	< 1.000	< 0.0100	< 0.200
	8/4/2004	ENER	---	0.813	< 0.0300	0.189	2.21	---	---	---	---
	2/21/2005	ENER	---	0.736	< 0.0300	0.137	---	---	---	---	---
	12/13/2005	ENER	---	0.746	< 0.0300	0.110	3.20	---	---	---	---
	8/16/2006	ENER	---	0.621	< 0.0300	0.0920	3.80	---	---	---	---
	4/30/2007	ENER	---	0.454	< 0.0300	0.109	---	---	---	---	---
	9/13/2007	ENER	---	0.350	< 0.0300	0.108	3.20	---	---	---	---
	3/31/2008	ENER	---	0.579	< 0.0300	0.0650	---	---	---	---	---
	10/1/2008	ENER	---	0.249	< 0.0300	0.0980	3.10	---	---	---	---
	6/15/2009	ENER	---	0.309	< 0.0300	0.0820	3.20	---	---	---	---
	8/19/2009	ENER	---	0.220	< 0.0300	0.0540	4.40	---	---	---	---
	5/25/2010	ENER	---	0.397	< 0.0300	0.0350	4.10	---	---	---	---
	2/28/2011	ENER	---	0.330	< 0.0300	0.0350	---	---	---	---	---
	7/18/2011	ENER	---	0.355	< 0.0300	0.0370	3.80	---	---	---	---
	5/22/2012	ENER	---	0.221	< 0.0300	0.0620	---	---	---	---	---
	6/17/2013	ENER	---	0.282	< 0.0300	0.0380	3.70	---	---	---	---
	11/14/2013	ENER	---	0.318	< 0.0300	0.0390	3.00	---	---	---	---
	10/10/2014	ENER	---	0.324	< 0.0300	0.0330	---	---	---	---	---
	8/18/2015	ENER	---	0.246	< 0.0300	0.0300	2.40	---	---	---	---
	8/9/2016	ENER	---	0.269	< 0.0300	0.0290	---	---	---	---	---
	8/24/2016	ENER	---	0.228	< 0.0300	0.0250	4.00	---	---	---	---
	3/21/2017	ENER	---	0.205	< 0.0300	0.0240	---	---	---	---	---

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
CW44	2/26/1997	ENER	7.68	1.11	< 0.0300	0.0880	2.33	< 0.200	< 1.000	< 0.0100	< 0.200
	4/22/1997	ENER	8.05	1.21	< 0.0300	0.0640	2.18	< 0.200	---	---	---
	5/15/1997	ENER	7.68	1.41	< 0.0300	0.0800	2.36	< 0.200	---	---	---
	9/12/1997	ENER	8.00	1.01	< 0.0300	0.0870	2.09	< 0.200	< 1.000	< 0.0100	0.600
	4/13/1998	ENER	7.78	1.11	< 0.0300	0.0790	2.48	0.200	---	---	---
	9/28/1998	ENER	---	1.29	< 0.0300	0.0790	---	---	---	---	---
	10/28/1999	ENER	---	1.02	---	0.0960	---	---	---	---	---
	5/9/2000	ENER	---	0.911	---	0.0880	---	---	---	---	---
	5/9/2000	ENER	---	# 0.973	---	# 0.102	---	---	---	---	---
	8/15/2000	ENER	---	0.926	---	0.106	---	---	---	---	---
	5/4/2001	ENER	---	# 1.01	---	# 0.0730	---	---	---	---	---
	5/4/2001	ENER	---	1.01	---	0.0730	---	---	---	---	---
	9/17/2001	ENER	---	0.848	---	0.103	---	---	---	---	---
	5/8/2002	ENER	---	0.846	---	0.0770	---	---	---	---	---
	10/2/2002	ENER	---	0.824	---	0.0750	---	---	---	---	---
	5/27/2003	ENER	---	1.05	0.0400	0.0690	2.10	---	---	---	---
	7/9/2003	ENER	8.11	0.772	< 0.0300	0.0650	2.10	< 0.200	< 1.000	< 0.0100	< 0.200
	7/22/2004	ENER	---	0.797	< 0.0300	0.0600	2.03	---	---	---	---
	12/12/2005	ENER	---	0.636	< 0.0300	0.0470	2.80	---	---	---	---
	8/14/2006	ENER	---	0.662	< 0.0300	0.0520	2.70	---	---	---	---
	9/11/2007	ENER	---	0.677	< 0.0300	0.0450	2.60	---	---	---	---
	6/9/2009	ENER	---	0.492	< 0.0300	0.0330	0.600	---	---	---	---
	5/26/2010	ENER	---	0.423	< 0.0300	0.0340	3.00	---	---	---	---
	8/9/2011	ENER	---	0.384	< 0.0300	0.0320	3.10	---	---	---	---
	10/9/2012	ENER	---	0.360	< 0.0300	0.0340	3.20	---	---	---	---
	11/14/2013	ENER	---	0.319	< 0.0300	0.0340	0.600	---	---	---	---
	6/11/2014	ENER	---	0.303	< 0.0300	0.0340	---	---	---	---	---
	9/9/2014	ENER	---	0.263	< 0.0300	0.0320	---	---	---	---	---
	7/29/2015	ENER	---	0.248	< 0.0300	0.0400	3.30	---	---	---	---

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
CW44	7/5/2016	ENER	7.47	0.265	< 0.0300	0.0380	3.00	0.180	0.600	< 0.0100	0.0040
	12/1/2016	ENER	---	0.221	< 0.0300	0.0350	---	---	---	---	---
CW45	2/26/1997	ENER	7.64	1.80	< 0.0300	0.274	1.07	< 0.200	< 1.000	< 0.0100	< 0.200
	4/22/1997	ENER	8.03	1.79	< 0.0300	0.219	1.63	< 0.200	---	---	---
	9/29/1997	ENER	---	1.68	< 0.0300	0.219	---	---	---	---	---
	4/13/1998	ENER	8.02	1.90	< 0.0300	0.240	1.95	0.600	---	---	---
	9/28/1998	ENER	---	2.05	< 0.0300	0.207	---	---	---	---	---
	9/29/1999	ENER	---	1.88	---	0.176	---	---	---	---	---
	9/29/1999	ENER	---	# 1.95	---	# 0.167	---	---	---	---	---
	8/15/2000	ENER	---	1.76	---	0.160	---	---	---	---	---
	9/26/2001	ENER	---	1.71	---	0.115	---	---	---	---	---
	10/2/2002	ENER	---	1.62	---	0.105	---	---	---	---	---
	7/16/2003	ENER	8.07	1.52	< 0.0300	0.0720	1.10	< 0.200	< 1.000	< 0.0100	< 0.200
	7/22/2004	ENER	---	0.984	< 0.0300	0.107	1.85	---	---	---	---
	4/11/2005	ENER	---	1.09	< 0.0300	0.0750	---	---	---	---	---
	8/14/2006	ENER	---	1.04	< 0.0300	0.0400	1.80	---	---	---	---
	3/26/2007	ENER	---	0.559	< 0.0300	0.0730	---	---	---	---	---
	9/11/2007	ENER	---	1.04	< 0.0300	0.0380	2.00	---	---	---	---
	3/31/2008	ENER	---	0.605	< 0.0300	0.0620	---	---	---	---	---
	10/1/2008	ENER	---	0.900	< 0.0300	0.0360	2.10	---	---	---	---
	6/2/2009	ENER	---	0.520	< 0.0300	0.0510	---	---	---	---	---
	5/26/2010	ENER	---	0.608	< 0.0300	0.0430	1.70	---	---	---	---
	4/18/2011	ENER	---	0.505	< 0.0300	0.0310	---	---	---	---	---
	8/9/2011	ENER	---	0.440	< 0.0300	0.0220	1.000	---	---	---	---
	5/7/2012	ENER	---	0.469	< 0.0300	0.0280	---	---	---	---	---
	11/7/2012	ENER	7.64	0.509	< 0.0300	0.0180	0.700	0.260	---	---	---
	3/6/2013	ENER	---	0.476	< 0.0300	0.0300	---	---	---	---	---
	6/17/2013	ENER	---	0.454	< 0.0300	0.0440	1.80	---	---	---	---
	11/14/2013	ENER	---	0.482	< 0.0300	0.0390	1.80	---	---	---	---

Signifies Quality Control Sample

TABLE A.1-4 WATER QUALITY FOR THE SOUTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
CW45	11/13/2014	ENER	---	0.354	< 0.0300	0.0420	---	---	---	---	---
	12/23/2014	ENER	---	0.354	< 0.0300	0.0410	---	---	---	---	---
	3/31/2015	ENER	7.57	0.435	< 0.0300	0.0440	1.80	0.220	0.300	< 0.0100	0.0050
	8/19/2015	ENER	---	0.386	< 0.0300	0.0320	---	---	---	---	---
	3/4/2016	ENER	7.43	0.396	< 0.0300	0.0320	1.40	0.200	1.000	< 0.0100	0.100
	8/26/2016	ENER	---	0.391	< 0.0300	0.0310	---	---	---	---	---
	3/24/2017	ENER	7.46	0.352	< 0.0300	0.0370	1.70	0.340	1.40	< 0.0100	0.100
CW53	6/28/2004	ENER	7.76	0.303	< 0.0300	0.0730	0.540	0.700	< 1.000	< 0.0100	< 0.200
	12/12/2005	ENER	---	0.794	< 0.0300	0.0340	1.80	---	---	---	---
	10/11/2006	ENER	---	0.0972	< 0.0300	0.0200	1.80	---	---	---	---
	11/13/2007	ENER	---	0.115	< 0.0300	0.0170	1.80	---	---	---	---
	6/2/2008	ENER	---	0.0461	< 0.0300	0.0120	1.80	---	---	---	---
	7/20/2009	ENER	---	0.0622	< 0.0300	0.0150	1.40	---	---	---	---
	6/15/2010	ENER	---	0.244	< 0.0300	0.0250	1.80	---	---	---	---
	3/1/2011	ENER	---	0.194	< 0.0300	0.0210	1.50	---	---	---	---
	9/20/2012	ENER	---	0.119	< 0.0300	0.0270	---	---	---	---	---
	11/14/2013	ENER	---	0.116	< 0.0300	0.0220	1.40	---	---	---	---
	4/15/2014	ENER	---	0.0874	< 0.0300	0.0200	---	---	---	---	---
	9/10/2014	ENER	---	0.102	< 0.0300	0.0180	---	---	---	---	---
	5/12/2016	ENER	7.75	0.0850	< 0.0300	0.0180	1.40	0.230	0.500	< 0.0100	0.0080
	10/21/2016	ENER	7.91	0.0640	< 0.0400	0.0160	1.70	0.130	0.500	< 0.0100	-0.0050

Table A.2-1 Water Quality of the North Irrigation

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
IRR 28	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/15/1999	HMC	---	---	---	---	---	---	---	---	---	---	---
	10/2/2002	ENER	---	---	---	---	---	---	---	881	2070	---	---
	5/14/2003	ENER	---	---	---	---	---	---	184	936	2070	---	---
	5/4/2004	ENER	---	---	---	---	---	---	190	933	2120	* 2701	---
	5/27/2004	ENER	---	---	---	---	---	---	170	950	2110	* 2733	---
	8/18/2004	ENER	---	---	---	---	---	---	---	956	2140	* 2726	---
	10/6/2004	ENER	---	---	---	---	---	---	194	838	2090	* 2723	---
	4/12/2005	ENER	---	---	---	---	---	---	176	955	2220	* 2867	---
	5/6/2005	ENER	---	---	---	---	---	---	192	1010	2230	* 2887	---
	5/20/2005	ENER	---	---	---	---	---	---	194	916	2120	* 2693	---
	5/27/2005	ENER	---	---	---	---	---	---	176	907	2050	* 2678	---
	6/3/2005	ENER	---	---	---	---	---	---	182	926	2040	---	---
	6/10/2005	ENER	---	---	---	---	---	---	186	943	2000	* 2672	---
	6/17/2005	ENER	---	---	---	---	---	---	167	899	2100	* 2635	---
	10/11/2005	ENER	---	---	---	---	---	---	170	863	2110	* 2751	---
	3/1/2006	ENER	---	---	---	---	---	---	197	926	2230	* 2210	---
	4/10/2006	ENER	---	---	---	---	---	---	185	985	2150	* 3061	---
	6/26/2006	ENER	---	---	---	---	---	---	158	645	1550	* 2310	---
	8/14/2006	ENER	---	---	---	---	---	---	---	928	1980	* 2671	---
	10/2/2006	ENER	---	---	---	---	---	---	161	925	2020	---	---
	10/2/2006	HMC	---	---	---	---	---	---	---	---	---	2824	---
	4/11/2007	ENER	---	---	---	---	---	---	173	904	2130	* 2718	---
	4/30/2007	ENER	---	---	---	---	---	---	164	980	2240	* 2828	---
	6/26/2007	ENER	---	---	---	---	---	---	163	856	2010	* 2684	---
	8/17/2007	ENER	---	---	---	---	---	---	---	978	2130	* 2734	---
	10/10/2007	ENER	---	---	---	---	---	---	184	885	2100	* 2763	---
	4/1/2008	ENER	---	---	---	---	---	---	90.0	1020	2050	* 2785	---
	6/2/2008	ENER	---	---	---	---	---	---	152	893	1750	* 2523	---

* Signifies Specific Conductivity from HMC

Table A.2-1 Water Quality of the North Irrigation (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
IRR 28	9/24/2008	ENER	---	---	---	---	---	---	157	867	1950	* 2547	---
	4/20/2009	ENER	---	---	---	---	---	---	170	912	2020	* 2697	---
	4/20/2009	ENER	---	---	---	---	---	---	# 171	# 913	# 2050	---	---
	6/2/2009	ENER	---	---	---	---	---	---	175	874	1980	* 2610	---
	6/2/2009	ENER	---	---	---	---	---	---	# 173	# 868	# 1980	---	---
	7/24/2009	ENER	---	---	---	---	---	---	---	852	2020	* 2636	---
	9/28/2009	ENER	---	---	---	---	---	---	177	940	2080	* 2753	---
	6/17/2011	ENER	---	---	---	---	---	---	135	672	1490	* 2093	---
	6/23/2011	ENER	---	---	---	---	---	---	138	685	1570	* 2200	---
	6/29/2011	ENER	---	---	---	---	---	---	138	676	1490	* 2145	---
	7/7/2011	ENER	---	---	---	---	---	---	110	532	1290	---	---
	7/15/2011	ENER	---	---	---	---	---	---	87.0	455	1160	* 1630	---
	7/19/2011	ENER	---	---	---	---	---	---	109	559	1360	---	---
	7/28/2011	ENER	---	---	---	---	---	---	104	523	1270	* 1790	---
	8/3/2011	ENER	---	---	---	---	---	---	103	522	1230	* 1785	---
	8/18/2011	ENER	---	---	---	---	---	---	118	682	1450	* 2045	---
	8/24/2011	ENER	---	---	---	---	---	---	---	629	1460	* 1986	---
	8/30/2011	ENER	---	---	---	---	---	---	114	604	1390	---	---
	9/6/2011	ENER	---	---	---	---	---	---	127	612	1420	---	---
	9/13/2011	ENER	---	---	---	---	---	---	125	607	1410	* 1944	---
	9/20/2011	HMC	---	---	---	---	---	---	130	626	1470	---	---
	9/27/2011	ENER	---	---	---	---	---	---	138	676	1530	* 2151	---
	10/7/2011	ENER	---	---	---	---	---	---	133	639	1490	---	---
	10/12/2011	ENER	210	59.9	7.10	204	384	< 5.00	132	636	1470	* 2107	1.04
	8/7/2012	ENER	---	---	---	---	---	---	187	744	1750	* 2406	---
	8/15/2012	ENER	---	---	---	---	---	---	198	857	2010	* 2665	---
	8/22/2012	ENER	---	---	---	---	---	---	183	738	1830	* 2450	---
	8/27/2012	ENER	---	---	---	---	---	---	179	714	1780	* 2443	---
	8/28/2012	ENER	---	---	---	---	---	---	172	686	1780	* 2427	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

Table A.2-1 Water Quality of the North Irrigation (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
Irr 28	8/28/2012	ENER	---	---	---	---	---	---	171	681	1750	* 2438	---
	8/28/2012	ENER	---	---	---	---	---	---	181	719	1760	* 2422	---
	8/28/2012	ENER	---	---	---	---	---	---	184	730	1720	* 2423	---
	8/28/2012	ENER	---	---	---	---	---	---	181	717	1740	* 2423	---
	9/5/2012	ENER	---	---	---	---	---	---	180	706	1770	* 2364	---
	9/12/2012	ENER	---	---	---	---	---	---	186	744	1860	* 2472	---
	9/18/2012	ENER	---	---	---	---	---	---	184	755	1800	* 2462	---
	9/25/2012	ENER	---	---	---	---	---	---	170	672	1810	* 2442	---
	10/2/2012	ENER	247	71.0	9.00	245	460	< 5.00	195	768	1830	* 2475	0.995
	10/11/2012	ENER	---	---	---	---	---	---	189	741	1860	* 2519	---
	10/17/2012	ENER	---	---	---	---	---	---	200	770	1880	* 2522	---
	10/24/2012	ENER	---	---	---	---	---	---	200	796	1920	* 2564	---
	10/31/2012	ENER	---	---	---	---	---	---	206	814	1920	* 2502	---

* Signifies Specific Conductivity from HMC

Table A.2-2 Water Quality of the North Irrigation

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
IRR 28	10/2/2002	ENER	---	0.233	---	0.0780	---	---	---	---	---
	5/14/2003	ENER	---	0.237	< 0.0300	< 0.0050	4.20	---	---	---	---
	5/4/2004	ENER	---	0.234	< 0.0300	0.0690	---	---	---	---	---
	5/27/2004	ENER	---	0.294	< 0.0300	0.0700	---	---	---	---	---
	8/18/2004	ENER	---	0.270	---	0.0640	4.73	---	---	---	---
	10/6/2004	ENER	---	0.265	< 0.0300	0.0630	---	---	---	---	---
	4/12/2005	ENER	---	0.478	0.0900	0.106	1.60	---	---	---	---
	5/6/2005	ENER	---	0.510	0.110	0.118	7.80	---	---	---	---
	5/20/2005	ENER	---	0.331	< 0.0300	0.0780	6.90	---	---	---	---
	5/27/2005	ENER	---	0.262	< 0.0300	0.0620	6.70	---	---	---	---
	6/3/2005	ENER	---	0.328	< 0.0300	0.0820	6.60	---	---	---	---
	6/10/2005	ENER	---	0.326	< 0.0300	0.0720	6.40	---	---	---	---
	6/17/2005	ENER	---	0.307	< 0.0300	0.0820	6.00	---	---	---	---
	10/11/2005	ENER	---	0.277	< 0.0300	0.0630	6.70	---	---	---	---
	3/1/2006	ENER	---	0.354	0.0400	0.0780	6.90	---	---	---	---
	4/10/2006	ENER	---	0.350	0.0500	0.0850	6.80	---	---	---	---
	6/26/2006	ENER	---	0.302	< 0.0300	0.0670	2.70	---	---	---	---
	8/14/2006	ENER	---	0.357	---	0.0880	5.80	---	---	---	---
	10/2/2006	ENER	---	0.377	0.0700	0.0870	5.50	---	---	---	---
	4/11/2007	ENER	---	0.318	< 0.0300	0.0760	6.00	---	---	---	---
	4/30/2007	ENER	---	0.414	0.0400	0.0890	8.10	---	---	---	---
	6/26/2007	ENER	---	0.317	< 0.0300	0.0760	7.50	---	---	---	---
	8/17/2007	ENER	---	0.380	---	0.0830	7.70	---	---	---	---
	10/10/2007	ENER	---	0.389	0.0400	0.0900	7.40	---	---	---	---
	4/1/2008	ENER	---	0.465	0.0500	0.0830	8.49	---	---	---	---
	6/2/2008	ENER	---	0.285	< 0.0300	0.0590	6.20	---	---	---	---
	9/24/2008	ENER	---	0.318	0.0300	0.0560	6.05	---	---	---	---
	4/20/2009	ENER	---	0.389	0.0500	0.0650	7.10	---	---	---	---
	4/20/2009	ENER	---	# 0.387	# 0.0500	# 0.0650	# 6.80	---	---	---	---

Signifies Quality Control Sample

Table A.2-2 Water Quality of the North Irrigation (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
IRR 28	6/2/2009	ENER	---	0.307	< 0.0300	0.0630	6.28	---	---	---	---
	6/2/2009	ENER	---	# 0.310	# 0.0300	# 0.0660	# 6.06	---	---	---	---
	7/24/2009	ENER	---	0.369	---	0.0610	6.80	---	---	---	---
	9/28/2009	ENER	---	0.450	0.0700	0.0790	6.30	---	---	---	---
	6/17/2011	ENER	---	0.198	< 0.0300	0.0420	4.40	---	---	---	---
	6/23/2011	ENER	---	0.251	< 0.0300	0.0430	4.50	---	---	---	---
	6/29/2011	ENER	---	0.222	< 0.0300	0.0490	4.20	---	---	---	---
	7/7/2011	ENER	7.90	0.113	< 0.0300	0.0280	4.20	---	---	---	---
	7/15/2011	ENER	---	0.0837	< 0.0300	0.0150	4.40	---	---	---	---
	7/19/2011	ENER	---	0.155	< 0.0300	0.0280	4.20	---	---	---	---
	7/28/2011	ENER	---	0.130	< 0.0300	0.0210	4.50	---	---	---	---
	8/3/2011	ENER	---	0.132	< 0.0300	0.0220	4.50	---	---	---	---
	8/18/2011	ENER	---	0.0944	< 0.0300	0.0240	4.70	---	---	---	---
	8/24/2011	ENER	---	0.114	---	0.0270	4.50	---	---	---	---
	8/30/2011	ENER	---	0.107	< 0.100	0.0250	4.80	---	---	---	---
	9/6/2011	ENER	---	0.124	< 0.0300	0.0270	4.50	---	---	---	---
	9/13/2011	ENER	---	0.104	< 0.0300	0.0260	4.20	---	---	---	---
	9/20/2011	HMC	---	0.128	< 0.0300	0.0330	4.40	---	---	---	---
	9/27/2011	ENER	---	0.128	< 0.0300	0.0340	4.40	---	---	---	---
	10/7/2011	ENER	---	0.127	< 0.0300	0.0290	4.20	---	---	---	---
	10/12/2011	ENER	7.86	0.122	< 0.0300	0.0320	4.40	0.390	-0.400	< 0.100	0.0500
	8/7/2012	ENER	---	0.149	< 0.0300	0.0330	4.20	---	---	---	---
	8/15/2012	ENER	---	0.176	< 0.0300	0.0390	4.30	---	---	---	---
	8/22/2012	ENER	---	0.146	< 0.0300	0.0340	4.00	---	---	---	---
	8/27/2012	ENER	---	0.142	< 0.0300	0.0320	< 0.100	---	---	---	---
	8/28/2012	ENER	---	0.145	< 0.0300	0.0310	---	---	---	---	---
	8/28/2012	ENER	---	0.141	< 0.0300	0.0320	---	---	---	---	---
	8/28/2012	ENER	---	0.135	< 0.0300	0.0310	---	---	---	---	---
	8/28/2012	ENER	---	0.136	< 0.0300	0.0310	---	---	---	---	---

Signifies Quality Control Sample

Table A.2-2 Water Quality of the North Irrigation (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
Irr 28	8/28/2012	ENER	---	0.134	< 0.0300	0.0300	---	---	---	---	---
	9/5/2012	ENER	---	0.123	< 0.0300	0.0300	4.30	---	---	---	---
	9/12/2012	ENER	---	0.158	0.0500	0.0380	4.20	---	---	---	---
	9/18/2012	ENER	---	0.147	< 0.0300	0.0330	4.00	---	---	---	---
	9/25/2012	ENER	---	0.132	< 0.0300	0.0340	4.40	---	---	---	---
	10/2/2012	ENER	7.29	0.145	< 0.0300	0.0350	3.90	0.0800	0.100	< 0.0100	0.0500
	10/11/2012	ENER	---	0.129	0.0300	0.0380	---	---	---	---	---
	10/17/2012	ENER	---	0.131	< 0.0300	0.0440	4.40	---	---	---	---
	10/24/2012	ENER	---	0.132	< 0.0300	0.0350	< 0.100	---	---	---	---
	10/31/2012	ENER	---	0.133	< 0.0300	0.0380	4.50	---	---	---	---

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0634	3/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	3/19/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	3/19/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	8/5/1999	ENER	243	66.6	9.20	279	509	< 1.000	189	780	2080	---	---
	9/12/2000	ENER	---	---	---	---	---	---	---	914	2090	---	---
	9/20/2001	ENER	---	---	---	---	---	---	---	812	2040	---	---
	10/9/2002	ENER	---	---	---	---	---	---	---	984	2330	---	---
	1/5/2004	ENER	---	---	---	---	---	---	200	872	2000	* 2654	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	2740	---
	9/14/2004	ENER	---	---	---	---	---	---	---	831	1890	* 2504	---
	10/11/2005	ENER	---	---	---	---	---	---	---	858	2030	* 2694	---
	10/3/2006	ENER	---	---	---	---	---	---	---	870	1910	* 2657	---
	10/10/2007	ENER	---	---	---	---	---	---	---	827	1980	* 2630	---
	8/24/2008	ENER	---	---	---	---	---	---	---	751	1660	* 2220	---
	7/22/2009	ENER	---	---	---	---	---	---	---	734	1760	* 2330	---
	5/18/2010	ENER	---	---	---	---	---	---	---	906	1960	* 2602	---
	6/14/2010	ENER	---	---	---	---	---	---	157	838	1890	* 2546	---
	4/26/2011	ENER	---	---	---	---	---	---	223	1200	2460	* 3373	---
	7/5/2011	ENER	---	---	---	---	---	---	180	921	2030	* 2910	---
	7/28/2011	ENER	---	---	---	---	---	---	184	941	2010	* 2220	---
	10/12/2011	ENER	---	---	---	---	---	---	219	1080	2310	* 3115	---
	4/12/2012	ENER	---	---	---	---	---	---	212	962	2210	* 2934	---
	8/27/2012	ENER	---	---	---	---	---	---	234	1150	2490	* 3244	---
	11/23/2013	ENER	---	---	---	---	---	---	---	910	2050	* 2718	---
	7/29/2014	ENER	---	---	---	---	---	---	206	902	2060	* 2190	---
	4/22/2015	ENER	---	---	---	---	---	---	199	865	2000	* 2644	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0634	5/5/2015	ENER	---	---	---	---	---	---	209	932	2020	* 2691	---
	6/16/2015	ENER	---	---	---	---	---	---	200	887	2040	* 2662	---
	8/19/2015	ENER	---	---	---	---	---	---	204	888	2000	* 2665	---
	9/29/2015	ENER	---	---	---	---	---	---	209	888	1980	* 2622	---
	1/11/2016	ENER	---	---	---	---	---	---	203	839	1940	---	---
	2/18/2016	ENER	---	---	---	---	---	---	179	746	1810	2489	---
	4/5/2016	ENER	203	58.6	7.20	231	388	< 5.00	161	700	1660	---	---
	7/23/2016	ENER	---	---	---	---	---	---	92.0	391	1860	2461	---
	10/21/2016	ENER	237	64.2	7.70	265	423	< 5.00	181	786	1820	2441	---
	11/30/2016	ENER	---	---	---	---	---	---	167	777	1740	---	---
	3/20/2017	ENER	---	---	---	---	---	---	162	695	1620	2168	---
0659	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	5/13/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	8/5/1999	ENER	244	66.4	9.40	278	500	< 1.000	198	791	2070	---	---
	9/12/2000	ENER	---	---	---	---	---	---	---	893	2060	---	---
	9/20/2001	ENER	---	---	---	---	---	---	---	806	2010	---	---
	10/9/2002	ENER	---	---	---	---	---	---	---	800	2070	---	---
	1/5/2004	ENER	---	---	---	---	---	---	211	859	1990	* 2617	---
	9/14/2004	ENER	267	71.9	8.80	288	459	< 1.000	196	983	2070	* 2690	---
	10/12/2005	ENER	243	67.3	7.90	286	479	< 1.000	179	811	1940	* 2580	---
	10/3/2006	ENER	252	65.7	8.00	292	451	< 1.000	160	859	2020	* 2793	---
	10/10/2007	ENER	234	62.3	8.50	295	463	< 1.000	157	839	2050	* 2674	---
	10/1/2008	ENER	213	60.4	7.10	273	408	< 1.000	140	756	1700	* 2310	---
	7/22/2009	ENER	223	59.7	7.10	278	431	< 1.000	169	766	1810	* 2430	---
	5/19/2010	ENER	245	67.8	7.60	288	469	< 5.00	174	916	1960	* 2603	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0659	6/14/2010	ENER	---	---	---	---	---	---	164	872	1950	* 2591	---
	4/26/2011	ENER	---	---	---	---	---	---	247	1340	2710	* 3641	---
	7/5/2011	ENER	---	---	---	---	---	---	186	939	2020	* 2877	---
	7/28/2011	ENER	---	---	---	---	---	---	190	952	2040	* 2204	---
	10/12/2011	ENER	282	79.6	9.20	356	447	< 5.00	225	1060	2270	* 3078	---
	4/12/2012	ENER	---	---	---	---	---	---	208	896	2110	* 2922	---
	8/27/2012	ENER	---	---	---	---	---	---	195	796	2370	* 3170	---
	4/22/2015	ENER	---	---	---	---	---	---	200	897	2060	* 2778	---
	5/5/2015	ENER	---	---	---	---	---	---	213	945	2070	* 2761	---
	6/16/2015	ENER	---	---	---	---	---	---	204	923	2090	* 2753	---
	8/19/2015	ENER	---	---	---	---	---	---	200	855	1960	* 2660	---
	9/29/2015	ENER	---	---	---	---	---	---	216	934	2040	* 2611	---
	2/18/2016	ENER	---	---	---	---	---	---	201	886	2030	2715	---
	2/23/2016	ENER	262	71.4	7.70	288	490	< 5.00	206	891	2050	---	---
	4/5/2016	ENER	248	68.6	7.90	277	469	< 5.00	200	857	1990	---	---
	7/23/2016	ENER	---	---	---	---	---	---	185	744	1950	2589	---
	10/21/2016	ENER	252	68.1	8.10	286	475	< 5.00	196	838	1970	2622	---
	3/20/2017	ENER	---	---	---	---	---	---	189	806	1860	2427	---
0881	8/4/1995	ENER	244	61.0	6.90	276	472	< 0.100	171	823	1886	---	---
	12/5/1995	ENER	240	60.5	6.70	264	479	< 0.100	155	791	1895	---	---
	2/29/1996	ENER	260	64.8	7.30	273	481	< 0.100	188	892	1890	---	---
	10/25/1996	ENER	262	67.1	7.50	279	490	< 0.100	175	873	1980	---	---
	3/13/1997	ENER	---	---	---	---	---	---	---	841	1960	---	---
	8/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/18/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0881	8/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/19/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/19/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	8/27/1997	ENER	288	68.6	7.70	297	477	< 0.100	189	951	2070	---	---
	3/11/1998	ENER	---	---	---	---	---	---	---	862	2050	---	---
	9/26/1998	ENER	259	67.8	7.30	271	508	< 1.000	177	833	2080	---	---
	9/28/1999	ENER	---	---	---	---	---	---	---	892	2110	---	---
	9/27/2000	ENER	---	---	---	---	---	---	---	675	2090	---	---
	9/20/2001	ENER	---	---	---	---	---	---	---	819	2050	---	---
	10/3/2002	ENER	---	---	---	---	---	---	---	871	2100	---	---
	1/5/2004	ENER	---	---	---	---	---	---	207	856	2010	* 2656	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	2710	---
	9/14/2004	ENER	---	---	---	---	---	---	---	897	2070	* 2738	---
	5/17/2005	ENER	---	---	---	---	---	---	---	759	1910	* 2556	---
	10/11/2005	ENER	---	---	---	---	---	---	186	772	1910	* 2578	---
	10/2/2006	ENER	---	---	---	---	---	---	168	800	1850	* 2683	---
	10/10/2007	ENER	---	---	---	---	---	---	183	857	2040	* 2713	---
	4/1/2008	ENER	---	---	---	---	---	---	---	972	1950	* 2614	---
	8/24/2008	ENER	---	---	---	---	---	---	148	781	1780	* 2370	---
	4/20/2009	ENER	---	---	---	---	---	---	---	857	1890	* 2550	---
	5/19/2010	ENER	---	---	---	---	---	---	162	915	2000	* 2629	---
	2/9/2011	ENER	---	---	---	---	---	---	177	964	2170	* 2820	---
	4/26/2011	ENER	---	---	---	---	---	---	208	1140	2370	* 3197	---
	5/11/2011	ENER	270	77.0	8.70	318	471	< 5.00	196	1030	2210	* 2918	---
	7/11/2011	ENER	---	---	---	---	---	---	183	960	2110	* 2739	---
	7/28/2011	ENER	---	---	---	---	---	---	191	969	2080	* 2246	---
	10/12/2011	ENER	288	78.8	9.20	348	447	< 5.00	229	1060	2300	* 3065	---
	3/13/2012	ENER	---	---	---	---	---	---	204	969	2270	* 2950	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0881	7/27/2012	ENER	281	80.4	8.30	333	461	< 5.00	222	1070	2190	* 2935	---
	11/1/2012	ENER	307	89.4	9.60	392	478	< 5.00	276	1260	2740	* 3557	---
	2/8/2013	HMC	---	---	---	---	---	---	226	1060	2370	3075	---
	10/30/2013	ENER	272	77.5	8.80	337	446	< 5.00	209	967	2120	---	---
	2/11/2014	ENER	---	---	---	---	---	---	202	913	2040	* 2790	---
	8/26/2014	ENER	266	72.1	8.10	300	462	< 5.00	207	960	2160	* 2804	---
	2/26/2015	ENER	276	73.6	7.80	296	467	< 5.00	202	950	1750	* 2844	---
	2/18/2016	ENER	273	73.5	8.20	304	500	< 5.00	204	935	2110	2862	---
	2/23/2017	ENER	250	68.0	7.90	289	475	< 5.00	196	856	2000	2640	---
0886	8/14/1995	ENER	286	76.0	7.70	334	511	< 0.100	177	1056	2282	---	---
	12/5/1995	ENER	279	73.9	7.20	311	505	< 0.100	155	1007	2274	---	---
	2/29/1996	ENER	318	82.6	8.00	325	498	< 0.100	198	1185	2284	---	---
	10/25/1996	ENER	291	78.1	7.70	331	482	< 0.100	177	1100	2300	---	---
	3/13/1997	ENER	---	---	---	---	---	---	---	1000	2220	---	---
	6/23/1997	ENER	---	---	---	---	---	---	181	1030	2290	---	---
	7/1/1997	ENER	---	---	---	---	---	---	171	919	2050	---	---
	7/11/1997	ENER	---	---	---	---	---	---	193	718	1680	---	---
	7/21/1997	ENER	277	72.4	7.80	327	483	< 0.100	175	945	2360	---	---
	8/5/1997	ENER	---	---	---	---	---	---	178	970	2210	---	---
	8/12/1997	ENER	286	66.5	7.50	312	450	< 0.100	182	1008	2270	---	---
	8/19/1997	ENER	---	---	---	---	---	---	172	1030	2230	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0886	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/26/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/27/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	8/27/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	8/27/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	9/10/1997	ENER	292	73.9	8.00	320	505	< 0.100	196	1030	2240	---	---
	9/12/1997	ENER	302	75.5	8.10	322	484	< 0.100	203	1069	2250	---	---
	9/15/1997	ENER	---	---	---	---	---	---	---	1020	2240	* 2820	---
	9/19/1997	ENER	---	---	---	---	---	---	---	1040	2200	* 2850	---
	9/29/1997	ENER	---	---	---	---	---	---	158	981	2090	---	---
	10/6/1997	ENER	---	---	---	---	---	---	---	1040	2110	---	---
	10/6/1997	HMC	---	---	---	---	---	---	---	---	---	2760	---
	10/15/1997	ENER	---	---	---	---	---	---	179	1020	2200	* 2870	---
	10/21/1997	ENER	---	---	---	---	---	---	178	841	2200	* 2820	---
	10/29/1997	ENER	---	---	---	---	---	---	198	1060	2290	* 2900	---
	3/11/1998	ENER	---	---	---	---	---	---	---	1050	2370	---	---
	9/26/1998	ENER	294	79.5	7.50	314	489	< 1.000	180	1040	2420	---	---
	9/28/1999	ENER	---	---	---	---	---	---	---	1110	2400	---	---
	9/27/2000	ENER	---	---	---	---	---	---	---	824	2370	---	---
	9/20/2001	ENER	---	---	---	---	---	---	---	1050	2440	---	---
	10/9/2002	ENER	---	---	---	---	---	---	---	1050	2480	---	---
	1/5/2004	ENER	---	---	---	---	---	---	210	1190	2440	* 3086	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	3080	---
	9/14/2004	ENER	---	---	---	---	---	---	---	1090	2360	* 2996	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0886	10/11/2005	ENER	---	---	---	---	---	---	---	935	2170	* 2745	---
	7/23/2006	ENER	---	---	---	---	---	---	181	1160	2390	* 2930	---
	10/2/2006	ENER	---	---	---	---	---	---	---	1100	2250	* 3085	---
	10/10/2007	ENER	---	---	---	---	---	---	150	874	1900	* 2580	---
	8/24/2008	ENER	---	---	---	---	---	---	---	717	1530	* 2090	---
	6/3/2009	ENER	---	---	---	---	---	---	99.0	680	1440	* 869	---
	7/23/2009	ENER	---	---	---	---	---	---	---	654	1510	* 2050	---
	5/18/2010	ENER	---	---	---	---	---	---	110	701	1530	* 2085	---
	2/9/2011	ENER	---	---	---	---	---	---	147	904	1930	* 2593	---
	4/26/2011	ENER	---	---	---	---	---	---	159	898	1990	* 2747	---
	5/11/2011	ENER	254	66.2	7.50	282	439	< 5.00	160	939	1980	* 2638	---
	7/11/2011	ENER	---	---	---	---	---	---	162	953	2000	* 2666	---
	10/12/2011	ENER	285	77.0	8.00	322	398	< 5.00	177	1050	2150	* 2797	---
	3/13/2012	ENER	---	---	---	---	---	---	176	991	2230	* 2864	---
	7/27/2012	ENER	274	69.8	7.70	305	420	< 5.00	178	1020	2060	* 2745	---
	11/1/2012	ENER	277	77.4	8.20	321	431	< 5.00	229	1060	2410	* 3068	---
	2/8/2013	HMC	---	---	---	---	---	---	190	970	2140	2803	---
	11/15/2013	ENER	198	48.9	7.20	325	529	< 5.00	178	684	1800	---	---
	2/11/2014	ENER	---	---	---	---	---	---	167	751	1760	* 2414	---
	10/16/2014	ENER	250	66.2	7.00	281	445	< 5.00	178	865	1980	* 2626	---
	2/26/2015	ENER	250	66.8	7.10	278	429	< 5.00	179	863	1570	* 2600	---
	2/18/2016	ENER	284	77.8	7.90	311	488	< 5.00	193	1030	2210	2908	---
	7/7/2016	ENER	279	73.7	7.70	302	466	< 5.00	192	978	2100	2826	---
	3/3/2017	ENER	---	---	---	---	---	---	---	---	---	2798	---
0890	8/25/1995	ENER	210	54.0	7.00	241	406	< 0.100	144	738	1653	---	---
	12/11/1995	ENER	232	56.0	6.60	255	397	< 0.100	141	791	1800	---	---
	3/4/1996	ENER	235	58.4	6.50	235	401	< 0.100	160	859	1809	---	---
	10/25/1996	ENER	245	61.7	7.10	265	437	< 0.100	161	843	1860	---	---
	3/13/1997	ENER	---	---	---	---	---	---	---	825	1870	---	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0890	8/27/1997	ENER	266	63.5	7.40	274	443	< 0.100	179	876	1920	---	---
	8/28/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/2/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/3/1997	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/3/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	9/3/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	3/11/1998	ENER	---	---	---	---	---	---	---	808	1930	---	---
	9/25/1998	ENER	240	61.7	6.90	254	460	< 1.000	165	782	2000	---	---
	3/10/1999	ENER	256	64.4	8.40	264	472	< 1.000	187	863	1960	---	---
	3/11/1999	ENER	259	65.5	8.50	269	474	< 1.000	185	875	2000	---	---
	9/28/1999	ENER	---	---	---	---	---	---	---	837	1990	---	---
	9/27/2000	ENER	---	---	---	---	---	---	---	647	2010	---	---
	9/20/2001	ENER	---	---	---	---	---	---	---	798	1970	---	---
	10/9/2002	ENER	---	---	---	---	---	---	---	734	1920	---	---
	1/5/2004	ENER	---	---	---	---	---	---	199	839	1930	* 2563	---
	4/23/2004	HMC	---	---	---	---	---	---	---	---	---	2520	---
	9/14/2004	ENER	---	---	---	---	---	---	173	818	1860	* 2464	---
	10/11/2005	ENER	---	---	---	---	---	---	161	772	1890	* 2507	---
	7/23/2006	ENER	---	---	---	---	---	---	170	861	1780	* 2410	---
	10/3/2006	ENER	---	---	---	---	---	---	139	710	1790	* 2485	---
	10/10/2007	ENER	---	---	---	---	---	---	183	776	1870	* 2582	---
	8/20/2008	ENER	---	---	---	---	---	---	164	802	1790	* 2300	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0890	7/22/2009	ENER	---	---	---	---	---	---	174	787	1890	* 2460	---
	5/18/2010	ENER	---	---	---	---	---	---	176	870	1950	* 2633	---
	6/14/2010	ENER	---	---	---	---	---	---	177	850	1960	* 2626	---
	4/26/2011	ENER	---	---	---	---	---	---	212	1060	2260	* 3190	---
	7/5/2011	ENER	---	---	---	---	---	---	187	861	1960	* 2848	---
	7/28/2011	ENER	---	---	---	---	---	---	190	863	1950	* 2168	---
	10/12/2011	ENER	---	---	---	---	---	---	224	1060	2270	* 3066	---
	4/12/2012	ENER	---	---	---	---	---	---	214	969	2200	* 2973	---
	8/27/2012	ENER	---	---	---	---	---	---	238	1090	2420	* 3159	---
	4/30/2013	ENER	---	---	---	---	---	---	226	949	2250	* 3014	---
	7/29/2014	ENER	---	---	---	---	---	---	205	859	1980	* 2110	---
	4/22/2015	ENER	---	---	---	---	---	---	193	796	1890	* 2490	---
	5/5/2015	ENER	---	---	---	---	---	---	207	844	1900	* 2566	---
	6/16/2015	ENER	---	---	---	---	---	---	195	812	1870	* 2500	---
	8/19/2015	ENER	---	---	---	---	---	---	198	807	1880	* 2494	---
	9/29/2015	ENER	---	---	---	---	---	---	204	821	1890	* 2421	---
	1/11/2016	ENER	---	---	---	---	---	---	167	670	1610	---	---
	2/18/2016	ENER	---	---	---	---	---	---	170	675	1660	2315	---
	4/5/2016	ENER	166	47.6	6.10	191	334	< 5.00	135	549	1360	---	---
	7/23/2016	ENER	---	---	---	---	---	---	167	670	1880	2226	---
	10/21/2016	ENER	196	55.1	7.00	210	338	< 5.00	151	654	1550	2108	---
0951R	10/29/1997	ENER	---	---	---	---	---	---	---	---	---	---	---
	4/24/2012	ENER	---	---	---	---	---	---	147	536	1410	---	---
	6/11/2012	ENER	---	---	---	---	---	---	139	520	1380	* 1973	---
	8/16/2012	ENER	182	61.3	9.20	167	438	< 5.00	156	548	1490	* 2027	---
	8/27/2012	ENER	---	---	---	---	---	---	156	555	1420	* 2045	---
	3/6/2013	ENER	205	67.3	9.60	195	425	< 5.00	169	581	1490	* 2107	---
	12/18/2014	ENER	---	---	---	---	---	---	172	599	1530	* 2120	---
	2/17/2015	ENER	---	---	---	---	---	---	171	582	1510	* 2107	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
0951R	4/30/2015	ENER	208	58.8	9.20	169	426	< 5.00	176	590	1490	* 2106	---
	8/7/2015	ENER	204	64.8	9.30	182	414	< 5.00	167	579	1500	* 2091	---
	8/10/2015	ENER	212	65.2	9.60	182	418	< 5.00	168	582	1490	* 2117	---
	10/8/2015	ENER	---	---	---	---	---	---	---	601	1520	* 2113	---
	2/19/2016	ENER	---	---	---	---	---	---	169	586	1480	2136	---
	9/1/2016	ENER	---	---	---	---	---	---	166	572	1480	2146	---
	10/17/2016	ENER	---	---	---	---	---	---	---	600	1490	2211	---
	2/16/2017	ENER	---	---	---	---	---	---	166	588	1490	2150	---
M9	9/6/2000	ENER	---	---	---	---	---	---	---	---	---	---	---
	12/8/2003	ENER	---	---	---	---	---	---	84.5	1610	2970	* 3670	---
	6/21/2004	ENER	---	---	---	---	---	---	177	1220	2700	* 3488	---
	11/8/2004	ENER	---	---	---	---	---	---	152	1330	2870	* 3583	---
	4/12/2005	ENER	---	---	---	---	---	---	175	1300	2740	* 3542	---
	9/26/2005	ENER	---	---	---	---	---	---	162	1230	2740	* 3479	---
	2/21/2006	ENER	---	---	---	---	---	---	179	1300	2580	* 3420	---
	9/14/2006	ENER	---	---	---	---	---	---	158	1240	2580	* 3518	---
	5/30/2007	ENER	---	---	---	---	---	---	200	1130	2590	* 3327	---
	9/18/2007	ENER	---	---	---	---	---	---	186	1300	2570	* 3368	---
	3/5/2008	ENER	---	---	---	---	---	---	181	1330	2570	* 3442	---
	9/22/2009	ENER	---	---	---	---	---	---	191	1370	2750	* 3532	---
	9/22/2010	ENER	---	---	---	---	---	---	195	1310	2730	* 3538	---
	2/22/2011	ENER	---	---	---	---	---	---	194	1290	2630	* 3438	---
	8/2/2011	ENER	298	88.5	6.20	618	558	< 5.00	225	1560	3050	* 3911	---
	5/17/2012	ENER	---	---	---	---	---	---	212	1240	2630	---	---
	7/30/2012	ENER	342	90.0	6.90	404	482	< 5.00	224	1380	2720	* 3431	---
	2/20/2013	ENER	---	---	---	---	---	---	215	1270	2730	* 3431	---
	11/23/2013	ENER	---	---	---	---	---	---	272	1780	3760	* 4904	---
	12/17/2013	ENER	---	---	---	---	---	---	228	1380	2920	* 3688	---
	9/29/2014	ENER	---	---	---	---	---	---	269	1850	3500	* 4389	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
M9	3/3/2015	ENER	---	---	---	---	---	---	220	1280	2670	* 3331	---
	6/11/2015	ENER	339	85.6	6.10	390	517	< 5.00	225	1290	2710	* 3378	---
	10/1/2015	ENER	---	---	---	---	---	---	214	1420	2780	* 3545	---
	3/16/2016	ENER	---	---	---	---	---	---	239	1330	2570	3282	---
M16	9/19/2006	ENER	399	105	9.10	340	411	< 1.000	191	1450	3000	* 3756	---
	10/10/2007	ENER	---	---	---	---	---	---	200	1330	2800	* 3412	---
	8/28/2008	ENER	---	---	---	---	---	---	195	1430	2780	* 3410	---
	4/3/2009	ENER	---	---	---	---	---	---	203	1400	2850	* 3466	---
	7/22/2009	ENER	374	94.9	8.50	374	444	< 1.000	195	1360	2770	* 3420	---
	5/18/2010	ENER	---	---	---	---	---	---	221	1470	2830	* 3474	---
	10/1/2015	ENER	---	---	---	---	---	---	225	1280	2570	* 3201	---
MO	7/7/1995	ENER	411	96.0	7.30	393	372	< 0.100	128	1626	3153	---	---
	12/4/1995	ENER	399	98.0	7.10	376	362	< 0.100	116	1642	3119	---	---
	6/24/1996	ENER	---	---	---	---	---	---	---	1755	3270	---	---
	8/22/1996	ENER	---	---	---	---	---	---	---	1160	2540	---	---
	12/20/1996	ENER	---	---	---	---	---	---	---	915	2350	---	---
	3/12/1997	ENER	---	---	---	---	---	---	---	935	2190	---	---
	10/21/1997	ENER	329	83.1	7.90	355	386	< 0.100	171	1350	2600	---	---
	1/20/1998	ENER	---	---	---	---	---	---	---	1270	2530	---	---
	1/20/1998	ENER	---	---	---	---	---	---	---	# 1270	# 2520	---	---
	7/21/1998	ENER	306	76.8	7.60	345	418	< 1.000	180	1200	2720	---	---
	1/19/1999	ENER	---	---	---	---	---	---	---	1260	2550	---	---
	1/19/1999	ENER	---	---	---	---	---	---	---	# 1300	# 2580	---	---
	7/21/1999	ACZ	# 312	# 82.3	# 7.70	# 352	# 400	# < 2.00	# 190	# 1220	# 2630	---	---
	7/21/1999	ENER	280	72.7	9.70	316	478	< 1.000	188	1020	2490	---	---
	7/21/1999	ENER	# 286	# 74.8	# 9.70	# 325	# 477	# < 1.000	# 191	# 1020	# 2490	---	---
	1/27/2000	ENER	---	---	---	---	---	---	---	1180	2480	---	---
	1/27/2000	ENER	---	---	---	---	---	---	---	# 1160	# 2480	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
MO	7/18/2000	ENER	299	76.9	7.47	304	493	< 1.000	185	1020	2510	---	---
	9/6/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/6/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/7/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/7/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/7/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/7/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/11/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/11/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/12/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/12/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/12/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/12/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/20/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/20/2000	ENER	---	---	---	---	---	---	---	---	---	---	---
	3/12/2001	ENER	---	---	---	---	---	---	---	1090	2210	---	---
	10/9/2001	ENER	---	---	---	---	---	---	---	911	2380	---	---
	3/20/2002	ENER	---	---	---	---	---	---	---	1180	2460	---	---
	3/20/2002	ENER	---	---	---	---	---	---	---	# 1190	# 2460	---	---
	10/14/2002	ENER	---	---	---	---	---	---	---	1050	2460	---	---
	3/10/2003	ENER	---	---	---	---	---	---	---	1140	2530	---	---
	3/10/2003	ENER	---	---	---	---	---	---	---	# 1100	# 2520	---	---
	10/13/2003	ENER	---	---	---	---	---	---	204	1190	2530	* 3127	---
	3/11/2004	ENER	---	---	---	---	---	---	---	1210	2600	* 3198	---
	10/13/2004	ENER	---	---	---	---	---	---	---	1220	2650	* 3260	---
	3/14/2005	ENER	---	---	---	---	---	---	---	1380	2710	* 3341	---
	10/11/2005	ENER	---	---	---	---	---	---	180	1280	2680	* 3326	---
	3/2/2006	ENER	---	---	---	---	---	---	---	1410	2910	* 3585	---
	7/20/2006	ENER	318	85.7	8.90	356	403	< 1.000	181	1210	2580	* 3270	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
MO	10/2/2006	ENER	---	---	---	---	---	---	162	1470	2820	* 3660	---
	3/8/2007	ENER	---	---	---	---	---	---	---	1440	2880	* 3446	---
	10/10/2007	ENER	---	---	---	---	---	---	198	1360	2870	* 3513	---
	3/10/2008	ENER	---	---	---	---	---	---	---	1300	2420	* 3253	---
	8/28/2008	ENER	---	---	---	---	---	---	168	1390	2640	* 1310	---
	3/4/2009	ENER	---	---	---	---	---	---	---	1230	2430	* 3110	---
	7/22/2009	ENER	---	---	---	---	---	---	186	1460	2970	* 3500	---
	3/8/2010	ENER	---	---	---	---	---	---	---	1460	2740	* 3560	---
	5/18/2010	ENER	---	---	---	---	---	---	184	1440	2870	* 3558	---
	3/15/2011	ENER	---	---	---	---	---	---	---	996	2180	* 2839	---
	10/10/2011	ENER	---	---	---	---	---	---	190	1020	2180	* 2833	---
	10/2/2012	ENER	---	---	---	---	---	---	219	986	2170	* 2850	---
	10/2/2012	ENER	---	---	---	---	---	---	# 216	# 966	# 2160	---	---
	3/4/2013	ENER	---	---	---	---	---	---	---	926	2170	* 2936	---
	11/1/2013	ENER	---	---	---	---	---	---	213	917	2100	* 2822	---
	3/19/2014	ENER	---	---	---	---	---	---	---	850	1980	* 2691	---
	3/12/2015	ENER	---	---	---	---	---	---	---	1220	2550	* 3164	---
	10/15/2015	ENER	---	---	---	---	---	---	224	1450	2660	* 3291	---
	3/15/2016	ENER	---	---	---	---	---	---	---	1380	2650	3346	---
	10/26/2016	ENER	---	---	---	---	---	---	208	1390	2640	3303	---
	3/17/2017	ENER	---	---	---	---	---	---	---	1370	2700	3268	---
MQ	6/29/1995	ENER	278	76.0	6.40	373	404	< 0.100	174	1289	2680	---	---
	5/15/1996	ENER	---	---	---	---	---	---	---	1288	2769	---	---
	9/11/1996	ENER	280	80.0	8.10	369	459	< 0.100	181	1170	2580	---	---
	12/20/1996	ENER	---	---	---	---	---	---	---	1110	2560	---	---
	3/12/1997	ENER	---	---	---	---	---	---	---	1291	2730	---	---
	10/21/1997	ENER	415	126	9.80	364	512	< 0.100	223	1500	3090	---	---
	3/4/1998	ENER	---	---	---	---	---	---	---	1500	3020	---	---
	10/22/1998	ENER	356	103	9.30	334	538	< 1.000	191	1200	2860	---	---

Signifies Quality Control Sample

* Signifies Specific Conductivity from HMC

[redacted]

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
MQ	10/20/1999	ENER	---	---	---	---	---	---	---	1160	2530	---	---
	9/20/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/20/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/20/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/20/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/20/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	ENER	---	---	---	---	---	---	---	---	---	---	---
	11/1/2000	ENER	---	---	---	---	---	---	---	1440	2730	---	---
	10/22/2001	ENER	---	---	---	---	---	---	---	1180	2940	---	---
	10/17/2002	ENER	---	---	---	---	---	---	---	1270	2850	---	---
	1/12/2004	ENER	---	---	---	---	---	---	203	1420	2820	* 3471	---
	10/15/2004	ENER	---	---	---	---	---	---	199	1370	2830	* 3514	---
	4/12/2005	ENER	---	---	---	---	---	---	209	1270	2690	* 3387	---
	9/26/2005	ENER	---	---	---	---	---	---	175	994	2290	* 3036	---
	2/21/2006	ENER	---	---	---	---	---	---	183	1240	2520	* 3340	---
	7/23/2006	ENER	---	---	---	---	---	---	190	1180	2410	* 3610	---
	5/30/2007	ENER	---	---	---	---	---	---	206	1140	2590	* 3277	---
	9/17/2007	ENER	---	---	---	---	---	---	190	1230	2380	* 3220	---
	3/5/2008	ENER	---	---	---	---	---	---	197	1350	2630	* 3380	---
	9/22/2009	ENER	---	---	---	---	---	---	205	1280	2580	* 3342	---
	9/22/2010	ENER	---	---	---	---	---	---	211	1380	2820	* 3467	---
	2/22/2011	ENER	---	---	---	---	---	---	212	1370	2690	* 3408	---
	8/2/2011	ENER	339	85.4	7.30	388	442	< 5.00	210	1310	2540	* 3309	---
	7/18/2012	ENER	378	93.0	8.50	382	464	< 5.00	209	1320	2770	* 3401	---
	2/20/2013	ENER	---	---	---	---	---	---	206	1300	2780	* 3417	---
	11/23/2013	ENER	---	---	---	---	---	---	227	1390	2930	* 3584	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
MQ	9/29/2014	ENER	---	---	---	---	---	---	234	1380	2710	* 3360	---
	3/3/2015	ENER	---	---	---	---	---	---	217	1230	2580	* 3315	---
	6/11/2015	ENER	348	86.6	7.70	354	481	< 5.00	227	1250	2650	* 3260	---
	10/1/2015	ENER	---	---	---	---	---	---	234	1300	2640	* 3260	---
	3/16/2016	ENER	---	---	---	---	---	---	226	1180	2430	3154	---
	3/24/2017	ENER	---	---	---	---	---	---	207	1120	2330	3113	---
MR	7/14/1995	ENER	275	69.0	7.20	294	536	< 0.100	173	854	2077	---	---
	12/4/1995	ENER	275	71.2	7.20	284	517	< 0.100	171	907	2090	---	---
	8/22/1996	ENER	---	---	---	---	---	---	---	931	2190	---	---
	12/20/1996	ENER	---	---	---	---	---	---	---	939	2190	---	---
	3/12/1997	ENER	---	---	---	---	---	---	---	886	2130	---	---
	10/21/1997	ENER	300	77.5	8.10	323	508	< 0.100	197	1040	2270	---	---
	3/4/1998	ENER	---	---	---	---	---	---	---	1070	2320	---	---
	10/22/1998	ENER	296	82.4	8.40	330	507	< 1.000	179	1000	2440	---	---
	10/20/1999	ENER	---	---	---	---	---	---	---	1060	2380	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/26/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	ENER	---	---	---	---	---	---	---	---	---	---	---
	11/1/2000	ENER	---	---	---	---	---	---	---	1180	2370	---	---
	10/22/2001	ENER	---	---	---	---	---	---	---	900	2370	---	---
	11/11/2002	ENER	---	---	---	---	---	---	---	977	2380	---	---
	1/19/2004	ENER	---	---	---	---	---	---	191	1080	2390	* 3005	---
	11/10/2004	ENER	---	---	---	---	---	---	166	992	2390	* 2994	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
MR	4/11/2005	ENER	---	---	---	---	---	---	---	983	2210	* 2880	---
	10/11/2005	ENER	---	---	---	---	---	---	196	801	1990	* 2664	---
	4/10/2006	ENER	---	---	---	---	---	---	---	933	2080	* 3010	---
	4/30/2007	ENER	---	---	---	---	---	---	---	1140	2500	* 3135	---
	10/10/2007	ENER	---	---	---	---	---	---	189	1080	2460	* 3135	---
	3/3/2009	ENER	---	---	---	---	---	---	---	1020	1960	* 2695	---
	7/22/2009	ENER	---	---	---	---	---	---	159	968	2180	* 2750	---
	3/10/2015	ENER	---	---	---	---	---	---	---	1050	2310	* 3007	---
	4/14/2015	ENER	---	---	---	---	---	---	---	1000	2280	* 3000	---
	8/7/2015	ENER	302	78.4	8.50	306	472	< 5.00	207	1120	2340	* 3001	---
	3/15/2016	ENER	---	---	---	---	---	---	---	1110	2290	3015	---
	9/8/2016	ENER	---	---	---	---	---	---	217	1100	2240	2865	---
	3/20/2017	ENER	---	---	---	---	---	---	---	1010	2170	2914	---
MS	7/10/1995	ENER	249	64.0	7.80	266	567	< 0.100	181	679	1845	---	---
	12/4/1995	ENER	239	65.4	7.60	250	583	< 0.100	173	670	1825	---	---
	8/22/1996	ENER	---	---	---	---	---	---	---	835	2120	---	---
	12/20/1996	ENER	---	---	---	---	---	---	---	808	2160	---	---
	3/12/1997	ENER	---	---	---	---	---	---	---	787	1950	---	---
	10/21/1997	ENER	263	72.1	8.60	281	544	< 0.100	206	823	2010	---	---
	3/4/1998	ENER	---	---	---	---	---	---	---	779	1960	---	---
	10/22/1998	ENER	238	69.6	8.70	269	552	< 1.000	187	705	1950	---	---
	10/20/1999	ENER	---	---	---	---	---	---	---	720	1900	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	9/27/2000	HMC	---	---	---	---	---	---	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.2-3 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
MS	9/28/2000	HMC	---	---	---	---	---	---	---	---	---	---	---
	11/1/2000	ENER	---	---	---	---	---	---	---	810	1890	---	---
	10/22/2001	ENER	---	---	---	---	---	---	---	616	1890	---	---
	11/11/2002	ENER	---	---	---	---	---	---	---	677	1890	---	---
	1/19/2004	ENER	---	---	---	---	---	---	193	725	1880	* 2509	---
	11/10/2004	ENER	---	---	---	---	---	---	210	702	1890	* 2511	---
	10/11/2005	ENER	---	---	---	---	---	---	176	629	1820	* 2432	---
	10/2/2006	ENER	---	---	---	---	---	---	176	717	1790	* 2602	---
	10/10/2007	ENER	---	---	---	---	---	---	201	664	1790	* 2477	---
	8/28/2008	ENER	---	---	---	---	---	---	189	767	1820	* 2530	---
	7/22/2009	ENER	---	---	---	---	---	---	186	698	1820	* 2450	---
	6/8/2011	ENER	---	---	---	---	---	---	198	956	2130	* 2804	---
	7/5/2011	ENER	---	---	---	---	---	---	189	835	1920	* 2716	---
	7/28/2011	ENER	---	---	---	---	---	---	189	748	1740	* 2060	---
	10/12/2011	ENER	---	---	---	---	---	---	189	760	1850	* 2554	---
	4/12/2012	ENER	---	---	---	---	---	---	182	712	1810	* 2512	---
	8/27/2012	ENER	---	---	---	---	---	---	195	799	1940	* 2623	---
	4/30/2013	ENER	---	---	---	---	---	---	193	820	2040	* 2753	---
	11/23/2013	ENER	---	---	---	---	---	---	206	954	2170	* 2909	---
	6/30/2016	ENER	232	59.1	8.20	242	512	< 5.00	193	683	1840	2510	---
	3/29/2017	ENER	---	---	---	---	---	---	188	685	1770	2445	---

* Signifies Specific Conductivity from HMC

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0634	8/5/1999	ENER	7.93	0.313	< 0.0300	0.0580	2.55	< 0.200	< 1.000	< 0.0100	< 0.200
	9/12/2000	ENER	---	0.302	---	0.0590	3.91	---	---	---	---
	9/20/2001	ENER	---	0.217	---	0.0560	3.20	---	---	---	---
	10/9/2002	ENER	---	0.396	---	0.113	7.10	---	---	---	---
	1/5/2004	ENER	---	0.223	< 0.0300	0.0520	3.54	---	---	---	---
	9/14/2004	ENER	---	0.154	---	0.0470	3.03	---	---	---	---
	10/11/2005	ENER	---	0.266	---	0.0600	4.80	---	---	---	---
	10/3/2006	ENER	---	0.226	---	0.0750	5.30	---	---	---	---
	10/10/2007	ENER	---	0.279	---	0.0810	6.00	---	---	---	---
	8/24/2008	ENER	---	0.215	---	0.0470	5.20	---	---	---	---
	7/22/2009	ENER	---	0.202	---	0.0480	5.10	---	---	---	---
	5/18/2010	ENER	---	0.426	---	0.0650	6.30	---	---	---	---
	6/14/2010	ENER	---	0.421	0.0400	0.0610	5.70	---	---	---	---
	4/26/2011	ENER	---	0.373	0.0400	0.0900	---	---	---	---	---
	7/5/2011	ENER	7.93	0.336	< 0.0300	0.0730	5.20	---	---	---	---
	7/28/2011	ENER	---	0.379	0.0500	0.0630	---	---	---	---	---
	10/12/2011	ENER	---	0.273	0.0300	0.0750	5.30	---	---	---	---
	4/12/2012	ENER	---	0.305	0.0300	0.0940	---	---	---	---	---
	8/27/2012	ENER	---	0.339	0.0400	0.0740	---	---	---	---	---
	11/23/2013	ENER	---	0.258	---	0.105	5.10	---	---	---	---
	7/29/2014	ENER	---	0.254	< 0.0300	0.0520	---	---	---	---	---
	4/22/2015	ENER	---	0.230	< 0.0300	0.0500	---	---	---	---	---
	5/5/2015	ENER	---	0.265	< 0.0300	0.0500	---	---	---	---	---
	6/16/2015	ENER	---	0.235	< 0.0300	0.0460	---	---	---	---	---
	8/19/2015	ENER	---	0.246	< 0.0300	0.0430	---	---	---	---	---
	9/29/2015	ENER	---	0.254	< 0.0300	0.0460	---	---	---	---	---
	1/11/2016	ENER	---	0.224	0.0400	0.0430	---	---	---	---	---
	2/18/2016	ENER	---	0.186	< 0.0300	0.0330	---	---	---	---	---
	4/5/2016	ENER	7.50	0.192	< 0.0300	0.0410	2.80	6.70	0.500	< 0.0100	0.200

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0634	7/23/2016	ENER	---	0.215	< 0.0300	0.0410	---	---	---	---	---
	10/21/2016	ENER	7.68	0.187	< 0.0400	0.0360	2.70	0.130	1.20	< 0.0100	-0.0400
	11/30/2016	ENER	---	0.145	< 0.0300	0.0340	---	---	---	---	---
	3/20/2017	ENER	---	0.155	< 0.0300	0.0280	---	---	---	---	---
0659	8/5/1999	ENER	7.93	0.301	< 0.0300	0.0610	3.44	< 0.200	< 1.000	< 0.0100	< 0.200
	9/12/2000	ENER	---	0.275	---	0.0549	3.46	---	---	---	---
	9/20/2001	ENER	---	0.200	---	0.0510	3.20	---	---	---	---
	10/9/2002	ENER	---	0.234	---	0.0730	3.90	---	---	---	---
	1/5/2004	ENER	---	0.216	< 0.0300	0.0470	3.28	---	---	---	---
	9/14/2004	ENER	7.19	0.186	< 0.0300	0.0540	3.27	< 0.200	< 1.000	< 0.0100	< 0.200
	10/12/2005	ENER	7.72	0.168	< 0.0300	0.0390	3.00	< 0.200	< 1.000	< 0.0100	< 0.200
	10/3/2006	ENER	7.47	0.278	< 0.0300	0.0760	5.50	< 0.200	< 1.000	< 0.0100	< 0.200
	10/10/2007	ENER	7.60	0.286	< 0.0300	0.0820	5.80	< 0.200	< 1.000	< 0.0100	< 0.200
	10/1/2008	ENER	7.62	0.218	< 0.0300	0.0480	5.00	0.340	-0.100	< 0.0100	-0.300
	7/22/2009	ENER	7.82	0.251	< 0.0300	0.0510	4.40	-0.200	1.50	< 0.0100	-0.0200
	5/19/2010	ENER	7.82	0.415	0.0400	0.0650	5.80	-0.0500	0.200	< 0.0100	0.0600
	6/14/2010	ENER	---	0.450	0.0400	0.0620	5.60	---	---	---	---
	4/26/2011	ENER	---	0.342	0.0400	0.0990	---	---	---	---	---
	7/5/2011	ENER	8.00	0.351	0.0400	0.0700	4.70	---	---	---	---
	7/28/2011	ENER	---	0.388	0.0500	0.0660	---	---	---	---	---
	10/12/2011	ENER	7.88	0.271	0.0300	0.0710	5.70	0.410	-0.200	< 0.0100	0.200
	4/12/2012	ENER	---	0.202	< 0.0300	0.0800	---	---	---	---	---
	8/27/2012	ENER	---	0.319	0.0300	0.0720	---	---	---	---	---
	4/22/2015	ENER	---	0.267	< 0.0300	0.0600	---	---	---	---	---
	5/5/2015	ENER	---	0.296	< 0.0300	0.0530	---	---	---	---	---
	6/16/2015	ENER	---	0.276	< 0.0300	0.0560	---	---	---	---	---
	8/19/2015	ENER	---	0.269	< 0.0300	0.0490	---	---	---	---	---
	9/29/2015	ENER	---	0.278	< 0.0300	0.0500	---	---	---	---	---
	2/18/2016	ENER	---	0.257	< 0.0300	0.0480	---	---	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0659	2/23/2016	ENER	7.45	0.253	0.0400	0.0460	3.60	0.0400	0.700	< 0.0100	-0.0010
	4/5/2016	ENER	7.39	0.248	< 0.0300	0.0480	3.10	0.120	-0.300	< 0.0100	0.0300
	7/23/2016	ENER	---	0.224	0.0300	0.0450	---	---	---	---	---
	10/21/2016	ENER	7.72	0.208	< 0.0400	0.0390	2.70	0.0800	1.000	< 0.0100	0.0300
	3/20/2017	ENER	---	0.194	< 0.0300	0.0370	---	---	---	---	---
0881	8/4/1995	ENER	7.84	0.173	< 0.0300	0.0570	2.80	< 0.200	1.000	< 0.0100	< 0.200
	12/5/1995	ENER	7.59	0.165	< 0.0300	0.0450	2.69	< 0.200	2.00	< 0.0100	< 0.200
	2/29/1996	ENER	7.89	0.170	< 0.0300	0.0510	2.74	< 0.200	---	---	---
	10/25/1996	ENER	8.12	0.250	< 0.0300	0.0780	3.52	0.400	< 1.000	< 0.0100	< 0.200
	3/13/1997	ENER	---	0.311	---	0.0700	---	---	---	---	---
	8/27/1997	ENER	7.92	0.253	< 0.0300	0.0630	3.63	< 0.200	---	---	---
	3/11/1998	ENER	---	0.393	---	0.0870	---	---	---	---	---
	9/26/1998	ENER	7.88	0.350	< 0.0300	0.0860	4.19	0.300	---	---	---
	9/28/1999	ENER	---	0.426	---	0.0710	4.04	---	---	---	---
	9/27/2000	ENER	---	0.341	---	0.0820	4.07	---	---	---	---
	9/20/2001	ENER	---	0.237	---	0.0610	3.40	---	---	---	---
	10/3/2002	ENER	---	0.242	---	0.0720	4.15	---	---	---	---
	1/5/2004	ENER	---	0.227	< 0.0300	0.0490	3.66	---	---	---	---
	9/14/2004	ENER	---	0.214	---	0.0540	3.26	---	---	---	---
	5/17/2005	ENER	---	0.190	< 0.0300	0.0360	---	---	---	---	---
	10/11/2005	ENER	---	0.170	< 0.0300	0.0390	2.70	---	---	---	---
	10/2/2006	ENER	---	0.192	< 0.0300	0.0440	3.20	---	---	---	---
	10/10/2007	ENER	---	0.347	< 0.0300	0.0960	6.60	---	---	---	---
	4/1/2008	ENER	---	0.435	0.0400	0.0860	---	---	---	---	---
	8/24/2008	ENER	---	0.276	0.0300	0.0580	5.70	---	---	---	---
	4/20/2009	ENER	---	0.412	0.0500	0.0640	---	---	---	---	---
	5/19/2010	ENER	---	0.482	0.0600	0.0690	6.50	---	---	---	---
	2/9/2011	ENER	---	0.400	0.0400	0.0790	---	---	---	---	---
	4/26/2011	ENER	---	0.417	0.0400	0.0880	---	---	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0881	5/11/2011	ENER	7.59	0.463	0.0500	0.0790	6.00	0.0900	---	---	---
	7/11/2011	ENER	---	0.394	0.0500	0.0710	5.00	---	---	---	---
	7/28/2011	ENER	---	0.433	0.0600	0.0710	---	---	---	---	---
	10/12/2011	ENER	7.82	0.297	0.0400	0.0780	5.30	6.80	---	---	---
	3/13/2012	ENER	---	0.403	0.0500	0.0790	---	---	---	---	---
	7/27/2012	ENER	7.40	0.373	0.0400	0.0820	6.00	0.0500	0.900	0.0100	0
	11/1/2012	ENER	7.35	0.320	0.0400	0.0920	7.00	- 0.100	1.10	< 0.0100	0.0090
	2/8/2013	HMC	---	0.370	0.0500	0.0960	---	---	---	---	---
	10/30/2013	ENER	7.28	0.340	< 0.0300	0.0680	5.20	1.10	---	---	---
	2/11/2014	ENER	---	0.279	< 0.0300	0.0580	---	---	---	---	---
	8/26/2014	ENER	7.53	0.325	0.0400	0.0560	4.80	0.210	---	---	---
	2/26/2015	ENER	7.46	0.347	0.0300	0.140	5.10	0.230	---	---	---
	2/18/2016	ENER	7.38	0.308	0.0300	0.0420	7.90	0.0600	2.40	< 0.0100	0.200
	2/23/2017	ENER	7.36	0.229	< 0.0300	0.0390	2.80	0.0001	0.0005	< 0.0100	0.0000
0886	8/14/1995	ENER	7.80	0.471	< 0.0300	0.0870	6.30	0.300	1.30	< 0.0100	< 0.200
	12/5/1995	ENER	7.61	0.466	< 0.0300	0.0940	4.28	< 0.200	2.00	< 0.0100	< 0.200
	2/29/1996	ENER	7.93	0.477	< 0.0900	0.118	6.78	< 0.200	---	---	---
	10/25/1996	ENER	8.06	0.478	< 0.0300	0.126	6.34	0.600	< 1.000	< 0.0100	< 0.200
	3/13/1997	ENER	---	0.583	---	0.0930	---	---	---	---	---
	6/23/1997	ENER	---	0.543	---	0.0930	---	---	---	---	---
	7/1/1997	ENER	---	0.347	---	0.0820	---	---	---	---	---
	7/11/1997	ENER	---	0.0410	< 0.0300	0.0970	---	---	---	---	---
	7/21/1997	ENER	8.17	0.505	< 0.0300	0.0840	5.23	< 0.200	---	---	---
	8/5/1997	ENER	---	0.369	0.0700	0.0850	---	---	---	---	---
	8/12/1997	ENER	7.79	0.350	< 0.0300	0.0670	4.34	0.500	---	---	---
	8/19/1997	ENER	---	0.468	---	0.0750	---	---	---	---	---
	9/10/1997	ENER	7.92	0.478	< 0.0300	0.0960	5.69	< 0.200	---	---	---
	9/12/1997	ENER	7.97	0.457	0.0400	0.0930	5.76	< 0.200	---	---	---
	9/15/1997	HMC	7.40	* 0.370	---	* 0.0820	---	---	---	---	---

* Signifies Specific Conductivity from HMC

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0886	9/19/1997	HMC	7.80	* 0.360	---	* 0.129	---	---	---	---	---
	9/29/1997	ENER	---	0.286	---	0.0730	---	---	---	---	---
	10/6/1997	ENER	7.79	0.311	---	0.0810	---	---	---	---	---
	10/15/1997	ENER	7.86	0.387	---	0.0800	---	---	---	---	---
	10/21/1997	ENER	7.99	0.369	---	0.0800	---	---	---	---	---
	10/29/1997	ENER	7.80	0.490	---	0.0890	---	---	---	---	---
	3/11/1998	ENER	---	0.614	---	0.113	---	---	---	---	---
	9/26/1998	ENER	7.89	0.611	0.0400	0.127	7.68	0.400	---	---	---
	9/28/1999	ENER	---	0.693	---	0.112	7.52	---	---	---	---
	9/27/2000	ENER	---	0.595	---	0.111	8.22	---	---	---	---
	9/20/2001	ENER	---	0.484	---	0.148	8.30	---	---	---	---
	10/9/2002	ENER	---	0.495	---	0.133	8.70	---	---	---	---
	1/5/2004	ENER	---	0.542	0.0400	0.130	9.26	---	---	---	---
	9/14/2004	ENER	---	0.493	---	0.104	7.02	---	---	---	---
	10/11/2005	ENER	---	0.408	---	0.0810	6.10	---	---	---	---
	7/23/2006	ENER	---	0.607	0.0800	0.129	8.60	---	---	---	---
	10/2/2006	ENER	---	0.508	---	0.117	9.00	---	---	---	---
	10/10/2007	ENER	---	0.396	0.0300	0.102	8.30	---	---	---	---
	8/24/2008	ENER	---	0.244	---	0.0490	6.60	---	---	---	---
	6/3/2009	ENER	---	0.318	0.0300	0.0520	7.30	---	---	---	---
	7/23/2009	ENER	---	0.238	---	0.0460	5.20	---	---	---	---
	5/18/2010	ENER	---	0.294	0.0400	0.0410	5.80	---	---	---	---
	2/9/2011	ENER	---	0.353	0.0500	0.0590	---	---	---	---	---
	4/26/2011	ENER	---	0.398	0.0500	0.0680	---	---	---	---	---
	5/11/2011	ENER	7.64	0.428	0.0400	0.0640	6.00	0.0700	---	---	---
	7/11/2011	ENER	---	0.397	0.0500	0.0630	5.70	---	---	---	---
	10/12/2011	ENER	7.90	0.409	0.0500	0.0750	5.70	1.40	---	---	---
	3/13/2012	ENER	---	0.433	0.0600	0.0750	---	---	---	---	---
	7/27/2012	ENER	7.45	0.324	0.0300	0.0680	5.00	- 0.100	0.0100	< 0.0100	0.0100

* Signifies Specific Conductivity from HMC

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0886	11/1/2012	ENER	7.33	0.352	0.0400	0.0890	7.00	0.110	1.80	< 0.0100	0.0600
	2/8/2013	HMC	---	0.306	< 0.0300	0.0870	---	---	---	---	---
	11/15/2013	ENER	7.49	0.628	< 0.0300	0.0370	2.60	1.80	---	---	---
	2/11/2014	ENER	---	0.156	< 0.0300	0.0340	---	---	---	---	---
	10/16/2014	ENER	7.52	0.215	< 0.0300	0.0600	4.50	0.570	---	---	---
	2/26/2015	ENER	7.51	0.229	0.0300	0.0370	4.40	0.160	---	---	---
	2/18/2016	ENER	7.43	0.316	< 0.0300	0.0570	5.40	0.130	1.10	< 0.0100	0.0700
	7/7/2016	ENER	7.55	0.320	< 0.0300	0.0540	4.70	0.680	1.20	< 0.0100	-0.0300
0890	8/25/1995	ENER	8.14	0.101	< 0.0300	0.0370	2.26	0.300	< 1.000	< 0.0100	< 0.200
	12/11/1995	ENER	7.89	0.133	< 0.0300	0.0450	2.65	0.200	< 1.000	< 0.0100	< 0.200
	3/4/1996	ENER	7.99	0.109	< 0.0300	0.0460	2.72	< 0.200	---	---	---
	10/25/1996	ENER	8.08	0.145	< 0.0300	0.0640	3.07	0.600	< 1.000	< 0.0100	< 0.200
	3/13/1997	ENER	---	0.214	---	0.0590	---	---	---	---	---
	8/27/1997	ENER	7.91	0.168	< 0.0300	0.0540	2.70	< 0.200	---	---	---
	3/11/1998	ENER	---	0.265	---	0.0770	---	---	---	---	---
	9/25/1998	ENER	7.71	0.242	< 0.0300	0.0600	3.40	< 0.200	---	---	---
	3/10/1999	ENER	7.78	0.250	< 0.0300	0.0630	3.13	0.700	< 1.000	< 0.0100	< 0.200
	3/11/1999	ENER	8.04	0.254	< 0.0300	0.0550	< 0.100	0.200	< 1.000	< 0.0100	< 0.200
	9/28/1999	ENER	---	0.274	---	0.0550	3.27	---	---	---	---
	9/27/2000	ENER	---	0.226	---	0.0510	2.95	---	---	---	---
	9/20/2001	ENER	---	0.165	---	0.0450	2.70	---	---	---	---
	10/9/2002	ENER	---	0.132	---	0.0460	2.70	---	---	---	---
	1/5/2004	ENER	---	0.161	< 0.0300	0.0420	2.90	---	---	---	---
	9/14/2004	ENER	---	0.145	< 0.0300	0.0430	---	---	---	---	---
	10/11/2005	ENER	---	0.155	< 0.0300	0.0420	3.40	---	---	---	---
	7/23/2006	ENER	---	0.156	< 0.0300	0.0520	3.50	---	---	---	---
	10/3/2006	ENER	---	0.151	< 0.0300	0.0510	3.20	---	---	---	---
	10/10/2007	ENER	---	0.203	< 0.0300	0.0620	4.20	---	---	---	---
	8/20/2008	ENER	---	0.196	< 0.0300	0.0530	3.97	---	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0890	7/22/2009	ENER	---	0.179	< 0.0300	0.0470	3.82	---	---	---	---
	5/18/2010	ENER	---	0.324	< 0.0300	0.0580	5.10	---	---	---	---
	6/14/2010	ENER	---	0.340	< 0.0300	0.0560	4.70	---	---	---	---
	4/26/2011	ENER	---	0.281	< 0.0300	0.0760	---	---	---	---	---
	7/5/2011	ENER	7.94	0.216	< 0.0300	0.0580	3.60	---	---	---	---
	7/28/2011	ENER	---	0.242	< 0.0300	0.0510	---	---	---	---	---
	10/12/2011	ENER	---	0.176	< 0.0300	0.0600	4.10	---	---	---	---
	4/12/2012	ENER	---	0.296	< 0.0300	0.0920	---	---	---	---	---
	8/27/2012	ENER	---	0.213	< 0.0300	0.0590	---	---	---	---	---
	4/30/2013	ENER	---	0.267	< 0.0300	0.0700	---	---	---	---	---
	7/29/2014	ENER	---	0.209	0.0400	0.0440	---	---	---	---	---
	4/22/2015	ENER	---	0.177	< 0.0300	0.0440	---	---	---	---	---
	5/5/2015	ENER	---	0.207	< 0.0300	0.0380	---	---	---	---	---
	6/16/2015	ENER	---	0.183	< 0.0300	0.0350	---	---	---	---	---
	8/19/2015	ENER	---	0.192	0.0400	0.0360	---	---	---	---	---
	9/29/2015	ENER	---	0.202	< 0.0300	0.0370	---	---	---	---	---
	1/11/2016	ENER	---	0.139	< 0.0300	0.0280	---	---	---	---	---
	2/18/2016	ENER	---	0.151	< 0.0300	0.0280	---	---	---	---	---
	4/5/2016	ENER	7.35	0.139	< 0.0300	0.0290	2.10	2.00	-0.300	< 0.0100	0.100
	7/23/2016	ENER	---	0.163	< 0.0300	0.0330	---	---	---	---	---
	10/21/2016	ENER	7.50	0.113	< 0.0300	0.0260	2.60	0.150	0.100	< 0.0100	0.200
0951R	4/24/2012	ENER	---	0.0317	< 0.0300	0.0090	---	---	---	---	---
	6/11/2012	ENER	---	0.0228	< 0.0300	0.0090	---	---	---	---	---
	8/16/2012	ENER	7.45	0.0302	< 0.0300	0.0090	4.00	0.950	0.600	< 0.0100	0.100
	8/27/2012	ENER	---	0.0286	< 0.0300	0.0070	3.20	---	---	---	---
	3/6/2013	ENER	7.25	0.0377	0.0800	0.0090	4.00	1.70	---	---	---
	12/18/2014	ENER	---	0.0796	0.0800	0.0120	---	---	---	---	---
	2/17/2015	ENER	---	0.0502	< 0.0300	0.0100	---	---	---	---	---
	4/30/2015	ENER	7.25	0.0374	< 0.0300	0.0070	3.90	0.610	0.100	< 0.0100	0.0500

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
0951R	8/7/2015	ENER	7.37	0.0312	< 0.0300	0.0080	3.70	1.30	2.10	< 0.0100	0.0006
	8/10/2015	ENER	7.24	0.0323	< 0.0300	0.0090	4.00	0.730	2.20	< 0.0100	0.0600
	10/8/2015	ENER	---	0.0304	< 0.0300	0.0080	---	---	---	---	---
	2/19/2016	ENER	---	0.0339	< 0.0300	0.0080	---	---	---	---	---
	9/1/2016	ENER	---	0.0358	< 0.0300	0.0100	---	---	---	---	---
	10/17/2016	ENER	---	0.0362	< 0.0300	0.0070	---	---	---	---	---
	2/16/2017	ENER	---	0.0348	< 0.0300	0.0070	---	---	---	---	---
M9	12/8/2003	ENER	---	5.68	3.71	0.383	---	---	---	---	---
	6/21/2004	ENER	---	4.52	3.41	0.0530	< 0.100	---	---	---	---
	11/8/2004	ENER	---	4.20	3.78	0.300	---	---	---	---	---
	4/12/2005	ENER	---	4.62	3.76	0.298	4.20	---	---	---	---
	9/26/2005	ENER	---	4.97	3.50	0.300	3.80	---	---	---	---
	2/21/2006	ENER	---	4.87	3.82	0.260	3.60	---	---	---	---
	9/14/2006	ENER	---	4.62	3.73	0.254	4.90	---	---	---	---
	5/30/2007	ENER	---	4.68	3.42	0.234	3.80	---	---	---	---
	9/18/2007	ENER	---	4.72	3.57	0.255	4.00	---	---	---	---
	3/5/2008	ENER	---	4.01	2.90	0.267	4.60	---	---	---	---
	9/22/2009	ENER	---	3.49	2.59	0.232	7.30	---	---	---	---
	9/22/2010	ENER	---	3.80	2.75	0.225	5.10	---	---	---	---
	2/22/2011	ENER	---	3.61	2.98	0.204	---	---	---	---	---
	8/2/2011	ENER	7.92	3.85	3.04	0.207	5.70	0.410	---	---	---
	5/17/2012	ENER	---	1.27	0.660	0.134	---	---	---	---	---
	7/30/2012	ENER	7.70	1.59	1.02	0.134	8.20	9.40	---	---	---
	2/20/2013	ENER	---	1.35	0.670	0.116	---	---	---	---	---
	11/23/2013	ENER	---	5.12	7.02	0.201	---	---	---	---	---
	12/17/2013	ENER	---	2.29	2.09	0.135	---	---	---	---	---
	9/29/2014	ENER	---	3.60	3.55	0.220	---	---	---	---	---
	3/3/2015	ENER	---	1.19	0.870	0.133	---	---	---	---	---
	6/11/2015	ENER	7.44	1.66	1.16	0.154	5.90	0.260	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
M9	10/1/2015	ENER	---	2.63	1.89	0.207	---	---	---	---	---
	3/16/2016	ENER	---	1.08	0.770	0.112	---	---	---	---	---
M16	9/19/2006	ENER	7.51	0.904	0.100	0.146	18.4	< 0.200	---	---	---
	10/10/2007	ENER	---	1.07	0.170	0.149	14.7	---	---	---	---
	8/28/2008	ENER	---	1.09	0.170	0.124	12.9	---	---	---	---
	4/3/2009	ENER	---	1.11	0.170	0.119	10.3	---	---	---	---
	7/22/2009	ENER	7.11	1.10	0.180	0.123	13.6	0.250	1.80	< 0.0100	0.0400
	5/18/2010	ENER	---	1.18	0.220	0.117	6.10	---	---	---	---
	10/1/2015	ENER	---	0.673	0.140	0.0780	---	---	---	---	---
MO	7/7/1995	ENER	7.82	0.620	0.0500	0.264	20.6	0.600	< 1.000	< 0.0100	< 0.200
	12/4/1995	ENER	7.64	0.529	0.0600	0.199	27.5	< 0.200	< 1.000	< 0.0100	< 0.200
	6/24/1996	ENER	---	0.741	0.0600	0.250	---	< 0.200	---	---	---
	8/22/1996	ENER	---	0.910	0.130	0.157	---	---	---	---	---
	12/20/1996	ENER	---	0.523	0.110	0.0710	---	---	---	---	---
	3/12/1997	ENER	---	0.445	0.0600	0.0730	---	---	---	---	---
	10/21/1997	ENER	7.98	0.337	< 0.0300	0.106	12.3	< 0.200	---	---	---
	1/20/1998	ENER	---	0.380	---	0.107	---	---	---	---	---
	1/20/1998	ENER	---	# 0.381	---	# 0.107	---	---	---	---	---
	7/21/1998	ENER	7.85	0.374	0.0400	0.0870	10.00	< 0.200	---	---	---
	1/19/1999	ENER	---	0.374	---	0.0930	---	---	---	---	---
	1/19/1999	ENER	---	# 0.376	---	# 0.0930	---	---	---	---	---
	7/21/1999	ACZ	# 7.70	# 0.343	# 0.0200	# 0.0710	# 10.2	# 0.140	---	---	---
	7/21/1999	ENER	7.71	0.355	< 0.0300	0.0830	11.0	< 0.200	---	---	---
	7/21/1999	ENER	# 7.69	# 0.353	# < 0.0300	# 0.0800	# 10.4	# < 0.200	---	---	---
	1/27/2000	ENER	---	0.376	---	0.0720	---	---	---	---	---
	1/27/2000	ENER	---	# 0.399	---	# 0.0740	---	---	---	---	---
	7/18/2000	ENER	7.97	0.395	< 0.0300	0.0752	9.90	0.200	---	---	---
	3/12/2001	ENER	---	0.280	< 0.0300	0.0600	---	---	---	---	---

Signifies Quality Control Sample

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
MO	10/9/2001	ENER	---	0.284	< 0.0300	0.0673	---	---	---	---	---
	3/20/2002	ENER	---	0.336	< 0.0300	0.0770	---	---	---	---	---
	3/20/2002	ENER	---	# 0.342	# < 0.0300	# 0.0700	---	---	---	---	---
	10/14/2002	ENER	---	0.318	< 0.0300	0.0660	---	---	---	---	---
	3/10/2003	ENER	---	0.408	< 0.0300	0.0680	---	---	---	---	---
	3/10/2003	ENER	---	# 0.389	# < 0.0300	# 0.0700	---	---	---	---	---
	10/13/2003	ENER	---	0.353	< 0.0300	0.0550	15.1	---	---	---	---
	3/11/2004	ENER	---	0.401	< 0.0300	0.0650	---	---	---	---	---
	10/13/2004	ENER	---	0.410	< 0.0300	0.0730	17.1	---	---	---	---
	3/14/2005	ENER	---	0.417	< 0.0300	0.0890	---	---	---	---	---
	10/11/2005	ENER	---	0.445	< 0.0300	0.100	18.8	---	---	---	---
	3/2/2006	ENER	---	0.726	< 0.0300	0.118	---	---	---	---	---
	7/20/2006	ENER	7.61	0.262	< 0.0300	0.0820	14.4	< 0.200	---	---	---
	10/2/2006	ENER	---	0.476	< 0.0300	0.101	23.1	---	---	---	---
	3/8/2007	ENER	---	0.417	< 0.0300	0.0920	---	---	---	---	---
	10/10/2007	ENER	---	0.502	< 0.0300	0.103	22.8	---	---	---	---
	3/10/2008	ENER	---	0.352	< 0.0300	0.0860	---	---	---	---	---
	8/28/2008	ENER	---	0.474	< 0.0300	0.0880	19.5	---	---	---	---
	3/4/2009	ENER	---	0.314	< 0.0300	0.0720	---	---	---	---	---
	7/22/2009	ENER	---	0.564	< 0.0300	0.0890	22.5	---	---	---	---
	3/8/2010	ENER	---	0.498	< 0.0300	0.0870	---	---	---	---	---
	5/18/2010	ENER	---	0.530	< 0.0300	0.0890	18.0	---	---	---	---
	3/15/2011	ENER	---	0.395	0.0400	0.0670	---	---	---	---	---
	10/10/2011	ENER	---	0.326	0.0300	0.0710	5.50	---	---	---	---
	10/2/2012	ENER	---	0.308	< 0.0300	0.0660	5.20	---	---	---	---
	10/2/2012	ENER	---	# 0.294	# < 0.0300	# 0.0680	# 5.30	---	---	---	---
	3/4/2013	ENER	---	0.266	< 0.0300	0.0630	---	---	---	---	---
	11/1/2013	ENER	---	0.264	< 0.0300	0.0580	4.80	---	---	---	---
	3/19/2014	ENER	---	0.236	0.0300	0.0480	---	---	---	---	---

Signifies Quality Control Sample

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
MO	3/12/2015	ENER	---	0.251	< 0.0300	0.0900	---	---	---	---	---
	10/15/2015	ENER	---	0.267	< 0.0400	0.0650	10.00	---	---	---	---
	3/15/2016	ENER	---	0.276	0.0800	0.0680	---	---	---	---	---
	10/26/2016	ENER	---	0.243	< 0.0300	0.0680	9.40	---	---	---	---
	3/17/2017	ENER	---	0.193	< 0.0300	0.0500	---	---	---	---	---
MQ	6/29/1995	ENER	7.55	1.02	0.120	0.562	13.8	< 0.200	< 1.000	< 0.0100	< 0.200
	5/15/1996	ENER	---	0.947	0.170	0.599	---	---	---	---	---
	9/11/1996	ENER	7.88	0.789	0.140	0.397	14.3	1.10	< 1.000	< 0.0100	0.600
	12/20/1996	ENER	---	0.674	0.110	0.383	---	---	---	---	---
	3/12/1997	ENER	---	0.810	0.100	0.593	---	---	---	---	---
	10/21/1997	ENER	7.83	1.16	0.380	0.159	11.3	< 0.200	---	---	---
	3/4/1998	ENER	---	1.42	0.280	0.231	---	---	---	---	---
	10/22/1998	ENER	7.66	1.03	0.280	0.195	8.08	< 0.200	---	---	---
	10/20/1999	ENER	---	0.965	0.300	0.133	---	---	---	---	---
	11/1/2000	ENER	---	0.895	0.260	0.158	---	---	---	---	---
	10/22/2001	ENER	---	1.55	0.360	0.335	---	---	---	---	---
	10/17/2002	ENER	---	1.88	0.560	0.320	---	---	---	---	---
	1/12/2004	ENER	---	2.61	0.970	0.341	7.65	---	---	---	---
	10/15/2004	ENER	---	2.52	1.10	0.332	---	---	---	---	---
	4/12/2005	ENER	---	1.63	0.700	0.327	10.4	---	---	---	---
	9/26/2005	ENER	---	2.16	0.910	0.247	3.50	---	---	---	---
	2/21/2006	ENER	---	2.31	1.24	0.271	7.40	---	---	---	---
	7/23/2006	ENER	---	2.07	1.03	0.238	5.20	---	---	---	---
	5/30/2007	ENER	---	2.66	1.55	0.278	6.60	---	---	---	---
	9/17/2007	ENER	---	2.71	1.51	0.255	5.40	---	---	---	---
	3/5/2008	ENER	---	2.01	0.900	0.202	8.60	---	---	---	---
	9/22/2009	ENER	---	2.18	1.08	0.184	8.29	---	---	---	---
	9/22/2010	ENER	---	1.61	0.560	0.139	9.40	---	---	---	---
	2/22/2011	ENER	---	1.49	0.590	0.124	---	---	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
MQ	8/2/2011	ENER	7.90	1.19	0.460	0.145	8.50	0.310	---	---	---
	7/18/2012	ENER	7.31	0.991	0.190	0.107	9.10	- 0.100	---	---	---
	2/20/2013	ENER	---	0.956	0.170	0.105	---	---	---	---	---
	11/23/2013	ENER	---	1.37	0.990	0.104	---	---	---	---	---
	9/29/2014	ENER	---	0.938	0.410	0.108	---	---	---	---	---
	3/3/2015	ENER	---	0.823	0.320	0.0930	---	---	---	---	---
	6/11/2015	ENER	7.40	0.874	0.380	0.110	5.60	0.320	---	---	---
	10/1/2015	ENER	---	0.884	0.320	0.0990	---	---	---	---	---
	3/16/2016	ENER	---	0.754	0.340	0.0830	---	---	---	---	---
	3/24/2017	ENER	---	0.727	0.310	0.0680	---	---	---	---	---
MR	7/14/1995	ENER	7.74	0.453	< 0.0300	0.102	4.43	0.300	< 1.000	< 0.0100	< 0.200
	12/4/1995	ENER	7.59	0.367	< 0.0300	0.137	4.54	0.400	< 1.000	< 0.0100	0.400
	8/22/1996	ENER	---	0.605	< 0.0300	0.124	---	---	---	---	---
	12/20/1996	ENER	---	0.523	< 0.0300	0.114	---	---	---	---	---
	3/12/1997	ENER	---	0.555	< 0.0300	0.108	---	---	---	---	---
	10/21/1997	ENER	7.97	0.552	< 0.0300	0.102	6.13	< 0.200	---	---	---
	3/4/1998	ENER	---	0.646	0.0300	0.128	---	---	---	---	---
	10/22/1998	ENER	7.78	0.573	0.0400	0.146	8.08	< 0.200	---	---	---
	10/20/1999	ENER	---	0.648	0.0300	0.111	7.11	---	---	---	---
	11/1/2000	ENER	---	0.612	---	0.102	6.90	---	---	---	---
	10/22/2001	ENER	---	0.499	---	0.132	7.80	---	---	---	---
	11/11/2002	ENER	---	0.458	---	0.126	6.70	---	---	---	---
	1/19/2004	ENER	---	0.530	0.0500	0.131	7.42	---	---	---	---
	11/10/2004	ENER	---	0.546	0.0500	0.107	---	---	---	---	---
	4/11/2005	ENER	---	0.509	0.0500	0.100	---	---	---	---	---
	10/11/2005	ENER	---	0.318	< 0.0300	0.0630	3.40	---	---	---	---
	4/10/2006	ENER	---	0.463	0.0400	0.0930	---	---	---	---	---
	4/30/2007	ENER	---	0.750	0.0900	0.131	---	---	---	---	---
	10/10/2007	ENER	---	0.757	0.0900	0.142	10.4	---	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
MR	3/3/2009	ENER	---	0.595	0.0800	0.0760	---	---	---	---	---
	7/22/2009	ENER	---	0.675	0.0900	0.0890	10.9	---	---	---	---
	3/10/2015	ENER	---	0.385	0.0500	0.0770	---	---	---	---	---
	4/14/2015	ENER	---	0.410	0.0500	0.0710	---	---	---	---	---
	8/7/2015	ENER	7.48	0.434	0.0600	0.0790	5.90	0.310	2.70	< 0.0100	0.0090
	3/15/2016	ENER	---	0.503	0.0800	0.0730	---	---	---	---	---
	9/8/2016	ENER	---	0.430	0.0600	0.0650	4.50	---	---	---	---
	3/20/2017	ENER	---	0.391	0.0500	0.0530	---	---	---	---	---
MS	7/10/1995	ENER	7.74	0.0650	< 0.0300	0.0210	0.320	< 0.200	1.60	< 0.0100	< 0.200
	12/4/1995	ENER	7.66	0.0525	< 0.0300	0.0170	1.51	< 0.200	< 1.000	< 0.0100	0.400
	8/22/1996	ENER	---	0.373	< 0.0300	0.0890	---	---	---	---	---
	12/20/1996	ENER	---	0.329	0.0400	0.0550	---	---	---	---	---
	3/12/1997	ENER	---	0.368	0.0300	0.0560	---	---	---	---	---
	10/21/1997	ENER	7.86	0.292	0.0500	0.0570	3.15	< 0.200	---	---	---
	3/4/1998	ENER	---	0.217	< 0.0300	0.0440	---	---	---	---	---
	10/22/1998	ENER	7.81	0.192	0.0200	0.0480	1.76	< 0.200	---	---	---
	10/20/1999	ENER	---	0.150	< 0.0300	0.0320	---	---	---	---	---
	11/1/2000	ENER	---	0.125	< 0.0300	0.0402	---	---	---	---	---
	10/22/2001	ENER	---	0.0860	< 0.0300	0.0330	---	---	---	---	---
	11/11/2002	ENER	---	0.0583	< 0.0300	0.0340	---	---	---	---	---
	1/19/2004	ENER	---	0.0582	< 0.0300	0.0480	2.12	---	---	---	---
	11/10/2004	ENER	---	0.0610	< 0.0300	0.0490	---	---	---	---	---
	10/11/2005	ENER	---	0.0544	< 0.0300	0.0380	2.40	---	---	---	---
	10/2/2006	ENER	---	0.0758	< 0.0300	0.0490	2.40	---	---	---	---
	10/10/2007	ENER	---	0.0779	< 0.0300	0.0600	2.10	---	---	---	---
	8/28/2008	ENER	---	0.114	< 0.0300	0.0530	2.54	---	---	---	---
	7/22/2009	ENER	---	0.104	< 0.0300	0.0460	2.17	---	---	---	---
	6/8/2011	ENER	---	0.462	0.0700	0.0910	---	---	---	---	---
	7/5/2011	ENER	7.94	0.302	0.0300	0.0690	3.30	---	---	---	---

TABLE A.2-4 WATER QUALITY FOR THE NORTH IRRIGATION SUPPLY WELLS (cont'd.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
MS	7/28/2011	ENER	---	0.284	0.0400	0.0490	---	---	---	---	---
	10/12/2011	ENER	---	0.188	< 0.0300	0.0490	2.60	---	---	---	---
	4/12/2012	ENER	---	0.243	< 0.0300	0.0650	---	---	---	---	---
	8/27/2012	ENER	---	0.288	< 0.0300	0.0500	---	---	---	---	---
	4/30/2013	ENER	---	0.434	0.0500	0.0720	---	---	---	---	---
	11/23/2013	ENER	---	0.0555	0.170	0.137	---	---	---	---	---
	6/30/2016	ENER	7.41	0.175	< 0.0300	0.0260	1.30	0.390	0.100	< 0.0100	-0.0700
	3/29/2017	ENER	---	0.162	< 0.0300	0.0230	---	---	---	---	---

APPENDIX B
SOIL CONCENTRATIONS

APPENDIX B

TABLE OF CONTENTS

SOIL CONCENTRATIONS

Page Number

FIGURES

TABLES

APPENDIX B

TABLE OF CONTENTS

SOIL CONCENTRATIONS

TABLES (CONTINUED)

B.0 Irrigation Soils

The soil data collected during the irrigation program are separated into the soils by area data for the South irrigation areas, Section 33 and 34 in Section B.1 and the North irrigation area, Section 28 in Section B.2. HMC (2013a) should be consulted for details of the soil data.

B.1 South Irrigation Soils

The soil information for the Section 33 center pivot is presented first in Tables B.1-1 and B.1-2 and the soil data for the Sections 33 and 34 flood areas area presented in Table B.1-3 and Table B.1-4. The irrigated soil concentrations are presented in Table B.1-5 for the Section 33 center pivot while the Sections 33 and 34 flood area soils data are in Tables B.1-6 and B.1-7, respectively. Soil meteoric water mobility tests were conducted in 2015 on the Sections 33 and 34 soils and these results are presented in Table B.1-8 (see HMC 2016 for details on soil meteoric water mobility tests).

Figure B.1-1 compares the background uranium soil concentrations with depth to the 2006, 2008, 2010 and 2012 irrigated soils concentrations in the Section 33 center pivot. This plot shows that uranium concentrations increased in the upper 6 feet of the soil profile but there was essentially no change below that depth. The soil selenium concentration also increased only in the upper 6 feet of the soil profile indicating that selenium is not moving downward in the Section 33 center pivot soils (see Figure B.1-2).

Figure B.1-3 compares the background soil uranium concentrations with depth to the 2006, 2008, 2010 and 2012 irrigated soils concentrations in the Section 34 flood area. This plot shows that uranium concentrations increased in the upper 3 feet of these clay soils but are essentially unchanged below that depth. The soil selenium concentration in Figure B.1-4 also only increased in the upper 3 feet of the soil profile showing that selenium is not moving downward in the Section 34 soils beyond this depth.

B.2 North Irrigation Soils

The Section 28 center pivot soil data are presented in Tables B.2-1 and B.2-2. Table B.2-3 lists the soil concentrations for the Section 28 irrigated sandy soils. Soil meteoric water mobility tests were conducted in 2015 on the Section 28 soils and these results are presented in Table B.2-4 (see HMC 2016).

Figure B.2-1 compares the background uranium soil concentrations with depth to the 2006, 2008, 2010 and 2012 irrigated soils concentrations in the Section 28 center pivot. This plot shows that uranium concentrations increased in the upper 6 feet of the soil profile but are essentially unchanged below that depth. Figure B.2-2 shows the soil selenium concentration also increased in the upper 6 feet of the soil profile in the Section 28 center pivot soils.

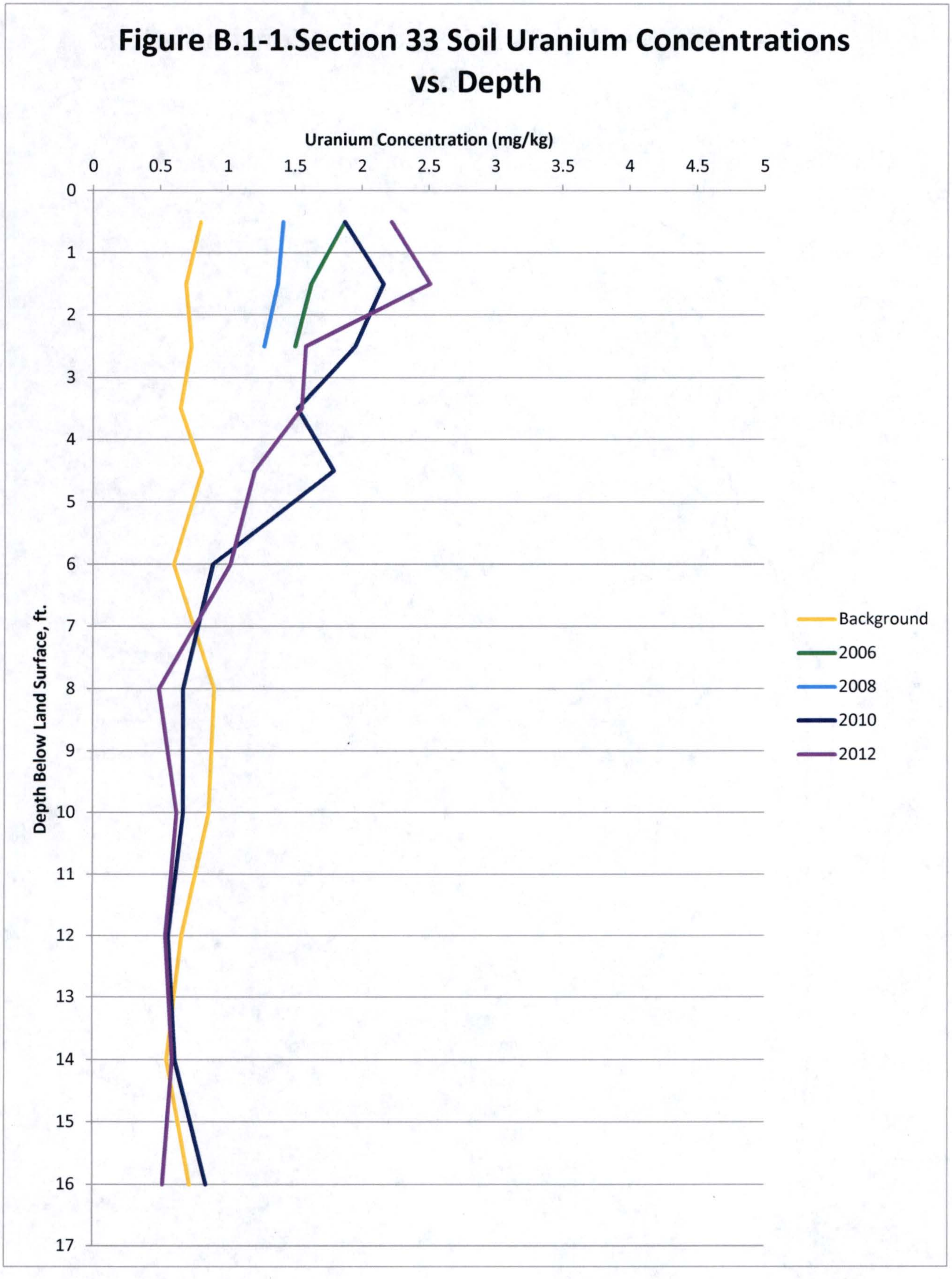


Figure B.1-1.Section 33 Soil Uranium Concentrations vs. Depth
Uranium Concentration (mg/kg)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Depth Below Land Surface, ft.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Background
2006
2008
2010
2012

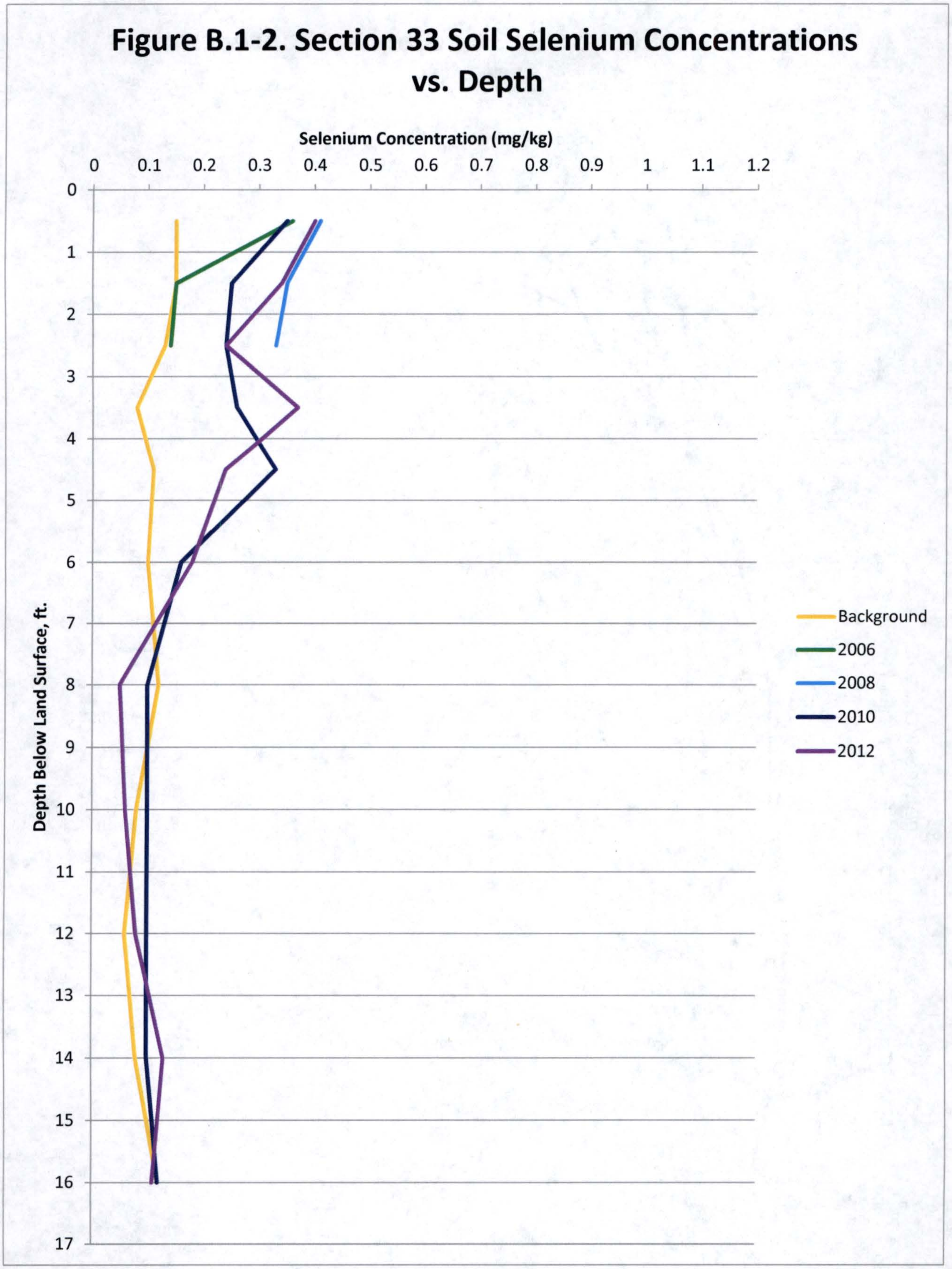


Figure B.1-2. Section 33 Soil Selenium Concentrations vs. Depth
Selenium Concentration (mg/kg)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
Depth Below Land Surface, ft.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Background
2006
2008
2010
2012

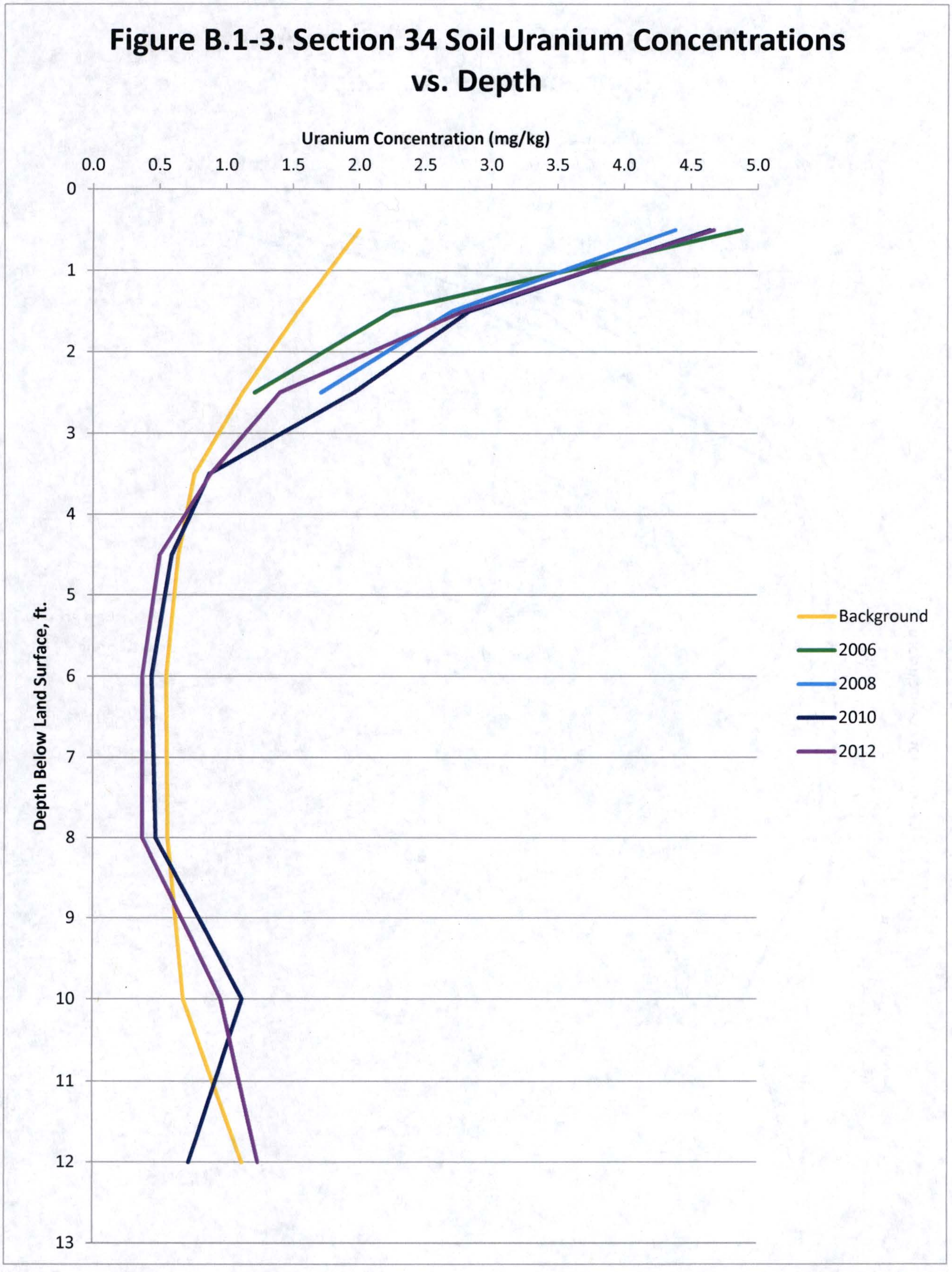


Figure B.1-3. Section 34 Soil Uranium Concentrations vs. Depth
Uranium Concentration (mg/kg)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Depth Below Land Surface, ft.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Background
2006
2008
2010
2012

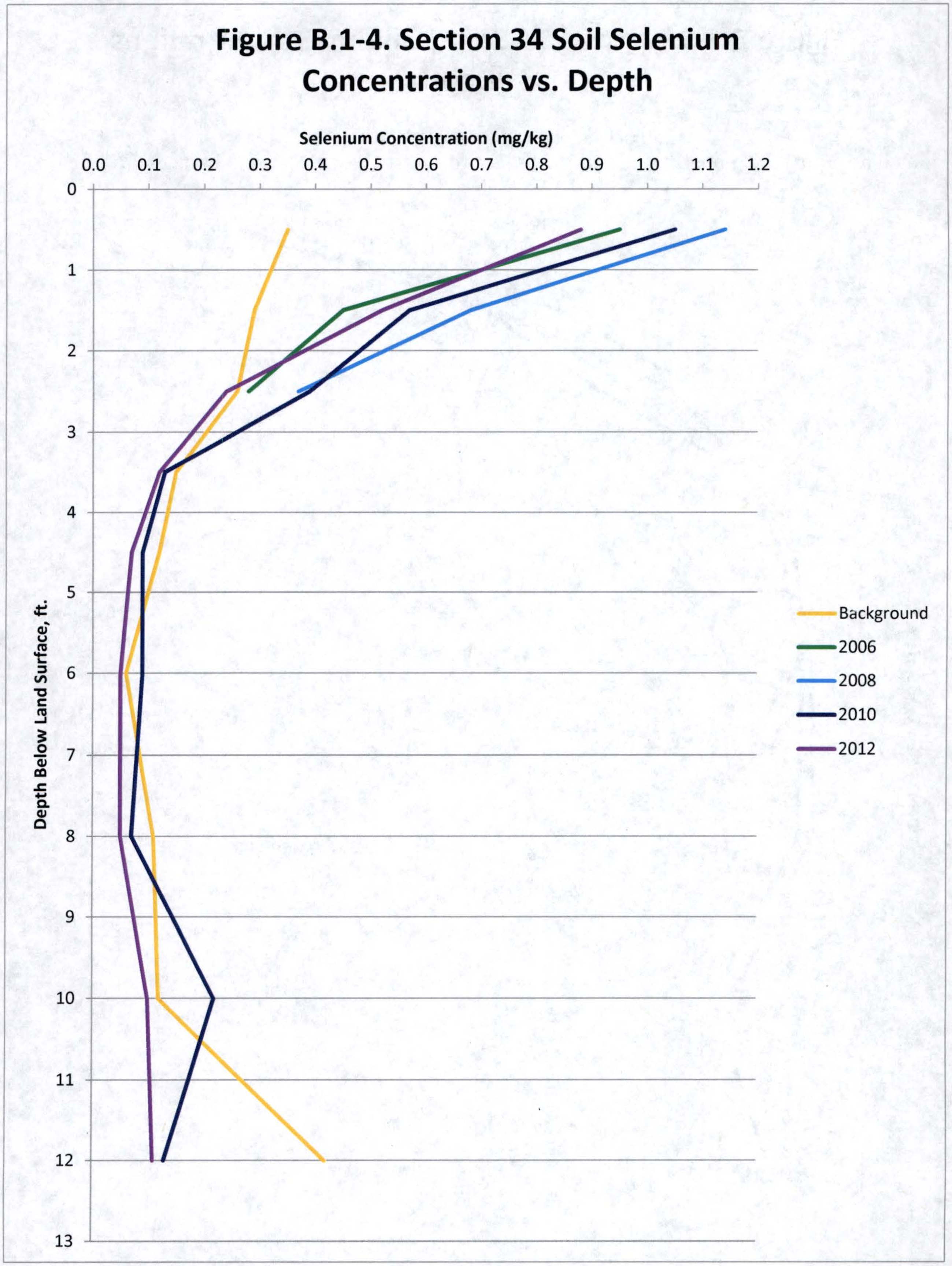


Figure B.1-4. Section 34 Soil Selenium Concentrations vs. Depth
Selenium Concentration (mg/kg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Depth Below Land Surface, ft.
Background
2006
2008
2010
2012

Table B.1-1.
Pre-Operations and Background Soil Samples Results for Section 33

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
0-1	S33-4	Treated	0-6	0.37	0.55	0.03	----	*1998
	S33-4	Treated	6-48	0.36	0.53	0.03	----	*1998
	S33-7	Treated	0-24	0.30	0.44	0.03	----	*1998
	S33-8	Treated	0-20	0.58	0.86	0.07	----	1998
	S33-9	Untreated	0-24	0.56	0.83	0.15	----	1998
	S33-10	Untreated	0-12	0.70	1.03	0.05	----	1998
	33A	Treated	0-6	0.24	0.36	0.10	13	1999
	33B	Treated	0-6	0.56	0.82	0.20	7	1999
	33C	Treated	0-6	0.44	0.65	0.05	35	**1999
	33D	Untreated	0-6	0.49	0.73	0.20	22	1999
	33D1	Untreated	0-6	0.77	1.14	0.20	18	2000
	BG-1	Untreated	0-12	0.66	0.98	0.10	32	2001
	BG-1	Untreated	0-12	0.58	0.85	----	2	&#2002
	BG-1	Untreated	0-12	0.53	0.78	0.12	21	2003
	BG-1	Untreated	0-12	0.60	0.88	0.27	28	2004
	BG-1	Untreated	0-12	0.53	0.78	0.18	27	2005
	BG-1	Untreated	0-12	0.60	0.88	0.18	18	2006
	BG-1	Untreated	0-12	0.60	0.89	0.39	68	2007
	BG-1	Untreated	0-12	0.49	0.72	0.21	@170	2008
	BG-1	Untreated	0-12	0.69	1.02	0.19	33	2009
	BG-1	Untreated	0-12	0.68	1.00	0.17	60	2010
			Mean	0.54	0.80	0.15	27.43	
			SDV	0.14	0.20	0.09	18.27	
			CV	25.28	25.28	64.28	67	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
1-2	S33-4	Treated	6-48	0.36	0.53	0.03	----	*1998
	S33-7	Treated	0-24	0.30	0.44	0.03	----	*1998
	S33-8	Treated	0-20	0.58	0.86	0.07	----	1998
	S33-9	Untreated	0-24	0.56	0.83	0.15	----	1998
	S33-10	Untreated	12-30	0.38	0.56	0.03	----	*1998
	BG-2	Untreated	12-24	0.51	0.76	0.20	29	2001
	BG-2	Untreated	12-24	0.40	0.59	----	8	#2002
	BG-2	Untreated	12-24	0.35	0.52	0.12	25	2003
	BG-2	Untreated	12-24	0.53	0.79	0.24	32	2004
	BG-2	Untreated	12-24	0.47	0.69	0.15	71	2005
	BG-2	Untreated	12-24	0.60	0.88	0.16	21	2006
	BG-2	Untreated	12-24	0.60	0.89	0.44	73	2007
	BG-2	Untreated	12-24	0.41	0.61	0.23	@160	2008
	BG-2	Untreated	12-24	0.49	0.73	0.15	25	2009
	BG-2	Untreated	12-24	0.50	0.74	0.14	80	2010
			Mean	0.47	0.69	0.15	40.44	
			SDV	0.10	0.14	0.11	26.62	
			CV	20.71	20.71	72.04	66	

Table B.1-1.
Pre-Operations and Background Soil Samples Results for Section 33 (cont.)

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
2-3	S33-4	Treated	6-48	0.36	0.53	0.03	----	*1998
	S33-7	Treated	24-48	0.24	0.35	0.03	----	*1998
	S33-8	Treated	20-48	0.35	0.52	0.03	----	*1998
	S33-9	Untreated	24-48	0.70	1.03	0.10	----	1998
	S33-10	Untreated	12-30	0.38	0.56	0.03	----	*1998
	S33-10	Untreated	30-60	0.40	0.59	0.03	----	*1998
	BG-3	Untreated	24-36	0.56	0.83	0.30	41	2001
	BG-3	Untreated	24-36	0.45	0.66		8	#2002
	BG-3	Untreated	24-36	0.45	0.67	0.12	22	2003
	BG-3	Untreated	24-36	0.55	0.81	0.26	31	2004
	BG-3	Untreated	24-36	0.53	0.79	0.15	@222	2005
	BG-3	Untreated	24-36	0.74	1.09	0.15	16	2006
	BG-3	Untreated	24-36	0.58	0.86	0.27	63	2007
	BG-3	Untreated	24-36	0.49	0.72	0.20	@180	2008
	BG-3	Untreated	24-36	0.56	0.82	0.13	70	2009
	BG-3	Untreated	24-36	0.58	0.86	0.19	40	2010
			Mean	0.49	0.73	0.13	36.38	
			SDV	0.13	0.19	0.10	21.81	
			CV	26.64	26.61	72.64	60	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
3-4	S32-2	Untreated	24-48	0.26	0.39	<0.05	----	*1998
	S33-2	Untreated	24-48	0.27	0.4	0.09	----	*1998
	S33-4	Treated	6-48	0.36	0.53	0.03	----	*1998
	S33-7	Treated	24-48	0.24	0.35	0.03	----	*1998
	S33-8	Treated	20-48	0.35	0.52	0.03	----	*1998
	S33-9	Untreated	24-48	0.70	1.03	0.10	----	1998
	S33-10	Untreated	30-60	0.40	0.59	0.03	----	*1998
	BG-4	Untreated	36-48	0.68	1.01	0.15	60	2009
	BG-4	Untreated	36-48	0.70	1.03	0.18	50	2010
			Mean	0.44	0.65	0.08	55.00	
			SDV	0.20	0.29	0.06	7.07	
			CV	44.64	44.64	80.80	12.86	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
4-5	S33-10	Untreated	30-60	0.40	0.59	0.03	----	*1998
	BG-5	Untreated	48-60	0.61	0.90	0.12	60	2009
	BG-5	Untreated	48-60	0.64	0.94	0.17	60	2010
			Mean	0.55	0.81	0.11	60.00	
			SDV	0.13	0.19	0.07	0.00	
			CV	23.58	23.65	70.15	0.00	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
5-7	BG-5-7	Untreated	60-72	0.35	0.52	0.08	70	2009
	BG-5-7	Untreated	60-72	0.46	0.68	0.11	50	2010
			Mean	0.41	0.60	0.10	60.00	
			SDV	0.08	0.11	0.02	14.14	
			CV	18.86	18.86	22.33	23.57	

Table B.1-1.
Pre-Operations and Background Soil Samples Results for Section 33 (cont.)

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
7-9	BG-7-9	Untreated	72-96	0.54	0.80	0.09	30	2009
	BG-7-9	Untreated	72-96	0.67	0.99	0.14	40	2010
			Mean	0.61	0.90	0.12	35.00	
			SDV	0.09	0.13	0.04	7.07	
			CV	15.01	15.01	30.74	20.20	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
9-11	BG-9-11	Untreated	96-120	0.49	0.72	0.05	32	2009
	BG-9-11	Untreated	96-120	0.67	0.99	0.11	<30	2010
			Mean	0.58	0.86	0.08	31.00	
			SDV	0.13	0.19	0.04	1.41	
			CV	22.33	22.33	53.03	4.56	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
11-13	BG-11-13	Untreated	120-144	0.51	0.76	<0.05	40	2009
	BG-11-13	Untreated	120-144	0.38	0.56	0.06	<30	2010
			Mean	0.45	0.66	0.03	35.00	
			SDV	0.10	0.14	0.02	7.07	
			CV	21.43	21.43	98.99	20.20	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
13-15	BG-13-15	Untreated	144-168	0.46	0.68	0.10	70	2009
	BG-13-15	Untreated	144-168	0.28	0.42	0.06	<30	2010
			Mean	0.37	0.55	0.08	50.00	
			SDV	0.12	0.18	0.03	28.28	
			CV	33.43	33.43	35.36	56.57	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
15-17	BG-15-17	Untreated	168-192	0.67	0.99	0.14	70	2009
	BG-15-17	Untreated	168-192	0.30	0.45	0.09	<30	2010
			Mean	0.49	0.72	0.12	50.00	
			SDV	0.26	0.38	0.04	28.28	
			CV	53.03	53.03	30.74	56.57	

@ = considered an outlier, did not use
* = 1998 Se Reported as less than LLD of 0.05 mg/kg, used
** = 1999 Se MDL= 0.1 Reported as less than MDL, used 0.05 mg/kg
# = 2002 Se MDL= 0.8 All data reported as < MDL, did not use
CV = coefficient of variation
SDV = standard deviation

B.1-2. Background Soil Analyses, 2000-2010, for Section 33 Center Pivot

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 33 CENTER PIVOT												
BG-1	12/7/2000	1.14	0.20	<1	7.6	1.240	9.07	2.64	0.64	0.26	18	<50
	6/20/2001	0.98	0.10	1	7.9	0.231	1.51	0.48	0.43	0.43	32	<300
	11/20/2002	0.85	<0.6	<1	7.8	0.450	3.51	0.98	0.69	0.46	<4	<100
	11/18/2003	0.78	0.12	<1	7.8	0.700	4.13	1.15	0.60	0.36	21	160
	11/8/2004	0.88	0.27	<1	7.7	0.980	6.22	1.94	1.83	0.91	28	60
	11/5/2005	0.78	0.18	<1	8.1	0.835	5.20	1.54	1.60	0.87	27	570
	10/21/2006	0.88	0.18	<1	7.9	1.060	6.04	1.69	1.87	0.95	18	160
	11/10/2007	0.89	0.39	<1	7.7	1.510	7.57	2.80	2.03	0.89	68	280
	11/22/2008	0.72	0.21	1	8.0	0.883	6.13	2.12	1.81	0.89	170	820
	10/22/2009	1.02	0.19	<1	7.5	1.08	7.32	2.21	1.78	0.81	33	230
	12/1/2010	1.00	0.17	2	7.8	0.98	6.35	2.22	2.25	1.09	60	440
BG-2	6/20/2001	0.76	0.20	<1	7.9	0.321	1.83	0.92	0.57	0.48	29	<300
	11/20/2002	0.59	<0.6	<1	7.7	1.250	7.58	3.04	3.56	1.54	8	<100
	11/18/2003	0.52	0.12	<1	7.7	0.670	4.27	1.28	0.70	0.42	25	90
	11/8/2004	0.79	0.24	<1	7.8	0.690	4.05	1.45	1.22	0.74	32	70
	11/5/2005	0.69	0.15	<1	8.1	0.745	4.24	1.45	1.41	0.83	71	2140
	10/21/2006	0.88	0.16	<1	8.0	0.757	3.63	1.60	1.47	0.90	21	120
	11/10/2007	0.89	0.44	<1	7.7	1.550	9.46	3.44	2.42	0.95	73	350
	11/22/2008	0.61	0.23	2	8.0	0.809	5.05	2.21	1.73	0.90	160	680
	10/22/2009	0.73	0.15	<1	7.6	1.07	7.78	2.81	1.01	0.43	25	220
	12/1/2010	0.74	0.14	<1	7.9	0.63	3.62	1.65	0.87	0.53	80	320
BG-3	6/20/2001	0.83	0.30	<1	7.9	0.385	2.41	1.12	0.48	0.36	41	300
	11/20/2002	0.66	<0.6	<1	7.9	0.580	3.39	1.32	1.79	1.17	8	300
	11/18/2003	0.67	0.12	<1	7.7	0.620	3.77	1.39	0.70	0.43	22	70
	11/8/2004	0.81	0.26	<1	7.8	0.720	4.13	1.54	1.50	0.89	31	80
	11/5/2005	0.79	0.15	2	8.3	0.607	3.39	1.26	1.23	0.80	222	6770
	10/21/2006	1.09	0.15	<1	8.0	1.080	5.54	2.55	2.20	1.09	16	200
	11/10/2007	0.86	0.27	<1	7.7	1.740	10.60	3.73	2.81	1.05	63	300
	11/22/2008	0.72	0.20	3	8.0	0.877	5.06	2.27	2.37	1.24	180	870
	10/22/2009	0.82	0.13	1	7.7	0.600	3.48	1.36	0.87	0.55	70	370
	12/1/2010	0.86	0.19	1	8.0	0.529	2.55	1.36	1.14	0.81	40	200
BG-4	10/22/2009	1.01	0.15	<1	7.7	0.578	3.33	1.40	0.95	0.61	60	370
	12/1/2010	1.03	0.18	2	8.0	0.656	3.32	1.59	1.58	1.01	50	340
BG-5	10/22/2009	0.90	0.12	<1	7.7	0.692	4.09	1.66	1.15	0.67	60	390
	12/1/2010	0.94	0.17	2	8.0	0.920	4.71	2.31	2.47	1.32	60	330
BG-5-7	10/22/2009	0.52	0.08	<1	7.9	0.508	2.86	1.09	0.80	0.56	70	350
	12/1/2010	0.68	0.11	<1	7.9	0.635	3.53	1.48	1.34	0.84	50	360
BG-7-9	10/22/2009	0.80	0.09	<1	7.6	0.442	2.57	0.87	0.65	0.49	30	240
	12/1/2010	0.99	0.14	1	8.0	0.730	3.96	1.56	2.02	1.22	40	320
BG-9-11	10/22/2009	0.76	0.05	<1	7.6	0.426	2.47	0.81	0.63	0.49	32	230
	12/1/2010	0.99	0.11	2	7.7	1.260	8.78	3.15	2.91	1.19	<30	380
BG-11-13	10/22/2009	0.56	<0.05	<1	7.7	0.335	1.96	0.59	0.55	0.48	40	300
	12/1/2010	0.56	0.06	1	7.7	0.953	5.48	2.08	3.09	1.59	<30	380
BG-13-15	10/22/2009	0.68	0.10	<1	7.6	0.318	1.69	0.50	0.57	0.54	70	540
	12/1/2010	0.42	0.06	1	7.9	0.593	3.13	1.24	1.89	1.28	<30	290
BG-15-17	10/22/2009	0.99	0.14	1	7.7	0.387	2.06	0.68	0.87	0.74	70	530
	12/1/2010	0.45	0.09	1	7.9	0.501	2.74	1.00	1.48	1.08	<30	290

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.1-3. Pre-Operational and Background Soil Samples for Sections 33 and 34 Flood Areas

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
0-1	S33-1	Untreated	0-6	0.96	1.42	0.13	----	1998
	S33-1	Untreated	6-24	1.23	1.82	0.19	----	1998
	S33-2	Untreated	0-6	1.12	1.65	0.18	----	1998
	S33-2	Untreated	6-24	1.02	1.51	0.19	----	1998
	S3-1	Untreated	0-14	0.70	1.03	0.11	----	1998
	S34-1	Untreated	3-24	@5.85	@8.77	0.10	----	1998
	S34-3	Treated	4-26	1.03	1.52	0.11	----	1998
	S34-5	Untreated	3-40	0.84	1.24	0.14	----	1998
	S34-7	Untreated	3-28	0.78	1.15	0.06	----	1998
	S34-8	Untreated	2-30	1.26	1.86	0.31	----	1998
	S34-10	Untreated	3-28	1.01	1.49	0.13	----	1998
	S34-11	Untreated	3-15	1.36	2.01	0.03	----	*1998
	S34-13	Untreated	4-18	@3.93	@5.81	0.11	----	1998
	S34-14	Treated	4-24	0.79	1.17	0.19	----	1998
	34A	Treated	0-6	1.84	2.72	0.40	36	1999
	34B	Treated	0-6	1.60	2.36	0.40	54	1999
	34C	Treated	0-6	1.18	1.75	0.30	79	1999
	34D	Treated	0-6	2.44	3.60	0.60	36	1999
	34E	Treated	0-6	1.56	2.31	0.40	25	1999
	34F	Treated	0-6	2.05	3.03	0.80	68	1999
	34G	Treated	0-6	1.25	1.85	0.30	13	1999
	34H	Treated	0-6	2.29	3.38	0.70	43	1999
	34I	Treated	0-6	0.67	0.99	0.10	42	1999
	BG-1-34	Untreated	0-12	1.67	2.47	0.30	100	2001
	BG-1-34	Untreated	0-12	0.30	0.45		7	#2002
	BG-1-34	Untreated	0-12	1.58	2.33	0.42	83	2003
	BG-1-34	Untreated	0-12	1.89	2.79	0.75	151	2004
	BG-1-34	Untreated	0-12	1.63	2.41	0.53	@400	2005
	BG-1-33F	Untreated	0-12	1.06	1.56	0.47	30	2004
	BG-1-33F	Untreated	0-12	0.76	1.12	0.25	76	2005
	BG-1-33F	Untreated	0-12	1.05	1.55	0.56	24	2006
	BG-1-34	Untreated	0-12	2.07	3.06	0.69	@253	2006
	BG-1-33F	Untreated	0-12	1.21	1.79	0.38	64	2007
	BG-1-34	Untreated	0-12	2.23	3.30	0.74	@267	2007
	BG-1-33F	Untreated	0-12	0.97	1.44	0.32	@220	2008
	BG-1-34	Untreated	0-12	1.71	2.52	0.57	@289	2008
	BG-1-33F	Untreated	0-12	0.83	1.22	0.23	50	2009
	BG-1-34	Untreated	0-12	2.27	3.35	0.59	135	2009
	BF-1-33F	Untreated	0-12	0.96	1.42	0.27	150	2010
	BF-1-34	Untreated	0-12	2.21	3.27	0.58	199	2010
			Mean	1.35	2.00	0.35	69.76	
			SDV	0.55	0.81	0.22	51.23	
			CV	40.34	40.37	63.10	73	

Table B.1-3. Pre-Operational and Background Soil Samples for Sections 33 and 34 Flood Areas (cont.)

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
	S33-1	Untreated	6-24	1.23	1.82	0.19	----	1998
	S33-2	Untreated	6-24	1.02	1.51	0.19	----	1998
	S3-1	Untreated	14-38	0.71	1.05	0.09	----	1998
	S34-1	Untreated	3-24	@5.85	@8.77	0.10	----	1998
	S34-3	Treated	4-26	1.03	1.52	0.11	----	1998
	S34-5	Untreated	3-40	0.84	1.24	0.14	----	1998
	S34-7	Untreated	3-28	0.78	1.15	0.06	----	1998
	S34-8	Untreated	2-30	1.26	1.86	0.31	----	1998
	S34-10	Untreated	3-28	1.01	1.49	0.13	----	1998
	S34-11	Untreated	15-60	0.58	0.86	0.03	----	*1998
	S34-13	Untreated	4-18	@3.93	@5.81	0.11	----	1998
	S34-13	Untreated	18-30	0.68	1.00	0.14	----	1998
	S34-14	Treated	4-24	0.79	1.17	0.19	----	1998
	BG-2	Untreated	12-24	1.30	1.92	0.20	120	2001
1-2	BG-2	Untreated	12-24	0.36	0.53		4	#2002
	BG-2	Untreated	12-24	0.99	1.46	0.35	131	2003
	BG-2-34	Untreated	12-24	1.38	2.04	0.68	----	2004
	BG-2-34	Untreated	12-24	1.65	2.44	0.69	----	2005
	BG-2-33F	Untreated	12-24	0.88	1.30	0.39	35	2004
	BG-2-33F	Untreated	12-24	0.62	0.92	0.20	103	2005
	BG-2-33F	Untreated	12-24	0.78	1.15	0.35	20	2006
	BG-2-34	Untreated	12-24	@2.66	@3.93	@0.87	@219	2006
	BG-2-33F	Untreated	12-24	0.87	1.29	0.31	57	2007
	BG-2-34	Untreated	12-24	1.87	2.67	0.78	@271	2007
	BG-2-33F	Untreated	12-24	0.80	1.18	0.31	90	2008
	BG-2-34	Untreated	12-24	1.48	2.19	0.48	@257	2008
	BG-2-33F	Untreated	12-24	1.08	1.60	0.29	70	2009
	BG-2-34	Untreated	12-24	1.46	2.15	0.39	168	2009
	BG-2-33F	Untreated	12-24	0.99	1.46	0.27	120	2010
	BG2-34	Untreated	12-24	1.77	2.61	0.56	284	2010
			Mean	1.04	1.54	0.29	100.17	
			SDV	0.38	0.55	0.20	75.64	
			CV	35.99	35.57	69.20	76	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
	S33-1	Untreated	24-48	1.32	1.95	0.23	----	1998
	S3-1	Untreated	14-38	0.71	1.05	0.09	----	1998
	S34-1	Untreated	24-36	0.43	0.64	0.13	----	1998
	S34-5	Untreated	3-40	0.84	1.24	0.14	----	1998
	S34-7	Untreated	28-40	0.43	0.64	0.41	----	1998
	S34-8	Untreated	30-60	0.69	1.02	0.34	----	1998
	S34-13	Untreated	18-30	0.68	1.00	0.14	----	1998
	S33-2	Untreated	24-48	0.40	0.59	0.09	----	1998
	S34-11	Untreated	15-60	0.58	0.86	0.03	----	*1998
	S34-14	Treated	30-90	0.20	0.30	0.03	----	*1998
	BG-3	Untreated	24-36	0.53	0.79	0.20	120	2001
	BG-3	Untreated	24-36	0.27	0.40		4	#2002
	BG-3	Untreated	24-36	1.12	1.66	0.36	141	2003
2-3	BG-3-34	Untreated	24-36	0.93	1.38	0.40	@169	2004
	BG-3-33F	Untreated	24-36	0.90	1.33	0.42	30	2004
	BG-3-34	Untreated	24-36	1.44	2.13	0.51	@354	2005
	BG-3-33F	Untreated	24-36	0.61	0.90	0.19	81	2005
	BG-3-33F	Untreated	24-36	0.71	1.05	0.34	14	2006
	BG-3-34	Untreated	24-36	1.55	2.29	0.54	@259	2006
	BG-3-33F	Untreated	24-36	0.84	1.24	0.35	43	2007
	BG-3-34	Untreated	24-36	1.11	1.64	0.53	@246	2007
	BG-3-33F	Untreated	24-36	0.66	0.97	0.25	@170	2008
	BG-3-34	Untreated	24-36	0.85	1.26	0.27	@210	2008
	BG-3-33F	Untreated	24-36	0.41	0.61	0.10	40	2009
	BG-3-34	Untreated	24-36	0.43	0.63	0.17	159	2009
	BG-3-33F	Untreated	24-36	0.58	0.86	0.17	110	2010
	BG-3-34	Untreated	24-36	1.14	1.69	0.42	265	2010
			Mean	0.75	1.12	0.26	91.55	
			SDV	0.35	0.52	0.16	77.99	
			CV	46.26	46.20	58.99	85	

Table B.1-3. Pre-Operational and Background Soil Samples for Sections 33 and 34 Flood Areas (cont.)

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
3-4	S34-11	Untreated	15-60	0.58	0.86	<0.05	----	1998
	S34-1	Untreated	36-60	0.39	0.58	0.068	----	1998
	S34-8	Untreated	30-60	0.69	1.02	0.34	----	1998
	S33-1	Untreated	24-48	1.32	1.95	0.23	----	1998
	S33-8	Untreated	20-48	0.35	0.52	<0.05	----	1998
	S33-9	Untreated	24-48	0.70	1.03	0.10	----	1998
	S33-10	Untreated	30-60	0.40	0.59	<0.05	----	1998
	S34-14	Treated	30-90	0.2	0.3	<0.05	----	1998
	S34-5	Untreated	40-53	0.3	0.44	0.08	----	1998
	S33-2	Untreated	24-48	0.40	0.59	0.09	----	1998
	S32-2	Treated	24-48	0.39	0.58	<0.05	----	1998
	BG-43-33F	Untreated	24-36	0.59	0.87	0.12	12	2009
	BG-4-34	Untreated	24-36	0.37	0.55	0.10	135	2009
	BG-4-33F	Untreated	36-48	0.64	0.94	0.16	40	2010
	BG-4-34	Untreated	36-48	0.38	0.56	0.17	105.00	2010
			Mean	0.51	0.76	0.15	73.00	
			SDV	0.27	0.40	0.08	56.80	
			CV	52.25	52.12	57.54	77.81	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
4-5	S34-11	Untreated	15-60	0.58	0.86	<0.05	----	1998
	S34-1	Untreated	36-60	0.39	0.58	0.068	----	1998
	S34-8	Untreated	30-60	0.69	1.02	0.34	----	1998
	S33-10	Untreated	30-60	0.40	0.59	<0.05	----	1998
	S34-3	Treated	50-90	0.2	0.3	<0.05	----	1998
	S34-14	Treated	30-90	0.2	0.3	<0.05	----	1998
	S34-5	Treated	40-53	0.76	1.12	0.07	----	1998
	BG-5-33F	Untreated	24-36	0.59	0.87	0.12	30	2009
	BG-5-34	Untreated	24-36	0.22	0.33	0.04	55	2009
	BG-5-33F	Untreated	48-60	0.39	0.58	<0.05	30	2010
	BG-5-34	Untreated	48-60	0.35	0.52	0.11	156.00	2010
			Mean	0.43	0.64	0.12	67.75	
			SDV	0.20	0.29	0.11	60.00	
			CV	45.04	44.75	87.85	88.56	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
5-7	S34-5	Untreated	53-73	0.76	1.12	0.07	----	1998
	S34-11	Untreated	60-90	0.26	0.38	<0.05	----	1998
	BG 5-7-33F	Untreated	60-72	0.28	0.42	0.05	60	2009
	BG 5-7-34	Untreated	60-72	0.21	0.31	0.04	33	2009
	BG 5-7-33F	Untreated	60-72	0.35	0.52	<0.05	50	2010
	BG 5-7-34	Untreated	60-72	0.35	0.52	0.09	79.00	2010
			Mean	0.37	0.55	0.06	55.50	
			SDV	0.20	0.29	0.02	19.23	
			CV	53.80	53.81	35.43	34.64	

Table B.1-3. Pre-Operational and Background Soil Samples for Sections 33 and 34 Flood Areas (cont.)

				Natural Uranium				
Interval (ft)	Location ID	Area	Depth (in)	(pCi/g)	mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
7-9	S34-11	Untreated	60-90	0.26	0.38	<0.05	----	1998
	BG 7-9-33F	Untreated	72-96	0.24	0.35	<0.05	70	2009
	BG 7-9-34	Untreated	72-96	0.63	0.93	0.09	84	2009
	BG 7-9-33F	Untreated	72-96	0.22	0.33	<0.05	40	2010
	BG 7-9-34	Untreated	72-96	0.55	0.81	0.12	51.00	2010
			Mean	0.38	0.56	0.11	61.25	
			SDV	0.19	0.29	0.02	19.59	
			CV	51.01	51.20	20.20	31.98	

				Natural Uranium				
Interval (ft)	Location ID	Area	Depth (in)	(pCi/g)	mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
9-11	BG 9-11-33F	Untreated	96-120	0.30	0.44	0.07	40	2009
	BG 9-11-34	Untreated	96-120	0.75	1.11	0.17	139	2009
	BG 9-11-33F	Untreated	96-120	0.18	0.27	<0.05	40	2010
	BG 9-11-34	Untreated	96-120	0.62	0.91	0.11	100	2010
			Mean	0.46	0.68	0.12	79.75	
			SDV	0.27	0.39	0.05	48.58	
			CV	57.59	57.59	43.14	60.92	

				Natural Uranium				
Interval (ft)	Location ID	Area	Depth (in)	(pCi/g)	mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
11-13	BG 11-13-33F	Untreated	120-144	0.90	1.33	0.14	60	2009
	BG 11-13-34	Untreated	120-144	0.85	1.26	1.31	150	2009
	BG 11-13-33F	Untreated	120-144	0.44	0.65	0.07	<30	2010
	BG 11-13-34	Untreated	120-144	0.83	1.23	0.14	63	2010
			Mean	0.76	1.12	0.42	91.00	
			SDV	0.21	0.31	0.60	51.12	
			CV	28.14	28.14	143.99	56.17	

				Natural Uranium				
Interval (ft)	Location ID	Area	Depth (in)	(pCi/g)	mg/kg	Selenium (mg/kg)	Chloride (mg/kg)	Comment
13-15	BG 13-15-34	Untreated	144-168	0.65	0.96	0.53	57	2009
15-17	BG 15-17-34	Untreated	168-192	0.66	0.97	0.27	62	2009

@ = considered an outlier, did not use
* = 1998 Se Reported as less than LLD of 0.05 mg/kg, used 0.025
# = 2002 Se MDL= 0.8 All data reported as < MDL, did not use
CV = coefficient of variation
SDV = standard deviation

Table B.1-4. Background Soil Analyses, 2000-2010, for Sections 33 and 34 Flood Areas

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 33 FLOOD												
BG-1	11/5/2004	1.56	0.47	1	7.8	0.770	3.49	1.40	2.51	1.60	30	110
	11/8/2005	1.12	0.25	<1	7.8	0.962	5.16	1.84	2.29	1.22	76	2720
	10/28/2006	1.55	0.56	<1	7.9	0.702	2.93	1.04	1.98	1.41	24	100
	11/10/2007	1.79	0.38	<1	7.8	0.800	4.30	1.55	1.96	1.15	64	140
	12/3/2008	1.44	0.32	<1	7.9	1.150	6.04	2.29	4.20	2.06	220	1200
	10/27/2009	1.22	0.23	<1	8.0	0.464	2.66	0.96	0.97	0.72	50	250
	11/30/2010	1.42	0.27	<1	7.7	0.728	3.25	1.18	3.17	2.13	150	730
BG-2	11/5/2004	1.30	0.39	<1	7.8	0.820	4.42	1.70	2.28	1.30	35	120
	11/8/2005	0.92	0.20	<1	7.8	0.829	4.13	1.52	2.41	1.43	103	1960
	10/28/2006	1.15	0.35	<1	7.8	0.470	1.94	0.71	1.37	1.19	20	210
	11/10/2007	1.29	0.31	<1	7.8	0.810	4.24	1.65	1.79	1.04	57	160
	12/3/2008	1.18	0.32	<1	7.8	0.840	4.92	1.90	2.58	1.40	90	660
	10/27/2009	1.60	0.29	<1	8.0	0.651	2.53	1.06	2.86	2.13	70	390
	11/30/2010	1.46	0.27	1	7.7	0.755	3.17	1.19	3.54	2.40	120	780
BG-3	11/5/2004	1.33	0.42	<1	7.8	0.940	5.13	2.06	2.79	1.47	30	160
	11/8/2005	0.90	0.19	<1	7.8	1.110	5.74	2.20	3.55	1.78	81	3200
	10/28/2006	1.05	0.34	<1	7.9	0.677	2.88	1.05	1.84	1.31	14	190
	11/10/2007	1.24	0.35	<1	7.8	0.710	3.80	1.41	1.96	1.21	43	260
	12/3/2008	0.97	0.25	<1	7.8	0.840	4.66	1.85	3.09	1.71	170	900
	10/27/2009	0.61	0.10	1	7.9	0.93	3.66	1.94	3.68	2.20	40	400
	11/30/2010	0.86	0.17	1	7.8	0.987	3.29	1.43	5.31	3.46	110	680
BG-4	10/27/2009	0.87	0.12	<1	8.0	1.11	4.99	2.62	3.65	1.87	12	240
	11/30/2010	0.94	0.16	2	7.7	0.635	2.98	1.28	2.57	1.76	40	210
BG-5	10/27/2009	0.46	0.06	<1	7.9	0.739	3.15	1.65	2.25	1.45	30	320
	11/30/2010	0.58	<0.05	1	7.8	0.702	2.66	0.99	3.65	2.70	30	160
BG-5-7	10/27/2009	0.42	0.05	<1	8.1	0.603	2.42	1.13	1.81	1.36	60	470
	11/30/2010	0.52	<0.05	<1	7.9	0.471	1.75	0.60	2.48	2.29	50	340
BG-7-9	10/27/2009	0.35	<0.05	<1	8.1	0.667	2.89	1.24	2.00	1.39	70	480
	11/30/2010	0.33	<0.05	<1	8.1	0.453	1.43	0.56	2.59	2.60	40	230
BG-9-11	10/27/2009	0.44	0.07	<1	8.2	0.617	2.85	1.24	1.68	1.17	40	280
	11/30/2010	0.27	<0.05	<1	8.2	0.435	1.28	0.51	2.63	2.78	40	230
BG-11-13	10/27/2009	1.33	0.14	2	8.1	0.623	2.68	1.54	1.50	1.03	60	450
	11/30/2010	0.65	0.07	1	8.0	0.475	1.82	0.79	2.15	1.88	<30	140

Table B.1-4. Background Soil Analyses, 2000-2010, for Sections 33 and 34 Flood Areas (cont.)

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 34 FLOOD												
BG-1	8/8/2001	2.47	0.30	2	7.6	4.160	5.86	1.75	2.87	1.47	100	800
	11/22/2002	0.45	<0.6	<1	7.8	0.460	3.52	0.79	0.37	0.25	7	<100
	11/26/2003	2.33	0.42	<1	7.8	1.680	5.70	2.22	9.60	4.82	83	850
	11/3/2004	2.79	0.75	<1	7.8	2.320	8.67	2.05	13.30	5.74	151	490
	11/19/2005	2.41	0.53	2	7.7	3.230	12.80	3.50	15.40	5.39	400	1360
	10/28/2006	3.06	0.69	<1	7.8	2.200	9.53	2.22	10.60	4.37	253	810
	11/10/2007	3.30	0.74	2	7.7	3.650	19.10	4.81	19.60	5.67	267	800
	12/3/2008	2.52	0.57	1	7.8	2.740	13.70	3.37	15.00	5.13	289	810
	10/30/2009	3.35	0.59	<1	7.8	1.77	7.75	1.77	8.97	4.11	135	570
	11/4/2010	3.27	0.58	3	7.5	2.48	14.00	3.57	9.68	3.27	199	680
BG-2	8/8/2001	1.92	0.20	2	7.5	4.730	7.94	2.60	4.53	1.97	120	300
	12/4/2002	0.53	<0.6	<1	7.8	0.410	3.03	1.06	0.32	0.22	4	<100
	11/26/2003	1.46	0.35	1	7.8	3.290	18.70	8.07	16.90	4.62	131	670
	11/3/2004	2.04	0.68	<1	7.7	4.040	19.70	4.51	26.10	7.50	220	280
	11/19/2005	2.44	0.39	2	7.9	4.460	20.80	4.99	23.90	6.66	349	1040
	10/28/2006	3.93	0.87	<1	7.7	2.400	12.30	2.59	10.90	3.99	219	810
	11/10/2007	2.67	0.78	2	7.7	4.280	21.00	5.02	25.80	7.15	271	1240
	12/3/2008	2.19	0.48	2	7.8	3.260	17.90	4.59	18.50	5.52	257	1040
	10/30/2009	2.15	0.39	1	7.7	2.98	18.50	3.41	14.00	4.23	168	830
	11/4/2010	2.61	0.56	4	7.6	2.34	12.20	2.37	10.60	3.93	284	800
BG-3	8/8/2001	0.79	0.20	<1	7.6	8.200	6.35	2.12	2.77	1.35	120	100
	11/22/2002	0.40	<0.6	<1	7.9	0.360	2.51	1.14	0.35	0.25	4	<100
	11/26/2003	1.66	0.36	<1	7.7	2.460	12.80	5.95	10.70	3.49	141	370
	11/3/2004	2.04	0.40	<1	7.5	4.200	25.90	5.95	24.50	6.14	169	230
	11/19/2005	2.13	0.51	2	7.9	4.160	20.50	5.74	19.00	5.25	354	1280
	10/28/2006	2.29	0.54	<1	7.8	3.000	15.00	3.17	15.40	5.11	259	1040
	11/10/2007	1.64	0.53	<1	7.6	4.420	19.80	5.26	27.60	7.80	246	950
	12/3/2008	1.26	0.27	<1	7.7	3.990	22.30	6.24	24.60	6.51	210	1480
	10/30/2009	0.63	0.17	1	7.3	3.33	20.90	4.32	13.40	3.77	159	410
	11/4/2010	1.69	0.42	3	7.5	2.28	11.60	2.66	9.78	3.66	265	560
BG-4	10/30/2009	0.55	0.10	<1	7.4	3.73	27.50	5.50	12.90	3.18	135	1720
	11/4/2010	0.56	0.17	1	7.5	2.06	8.65	2.55	10.10	4.27	105	200
BG-5	10/30/2009	0.33	0.04	<1	7.8	1.65	9.96	2.54	5.51	2.20	55	189
	11/4/2010	0.52	0.11	1	7.5	4.12	30.00	9.14	14.10	3.19	156	810
BG-5-7	10/30/2009	0.31	0.04	<1	7.9	1.04	4.76	1.53	4.18	2.36	33	190
	11/4/2010	0.52	0.09	2	7.6	3.04	16.80	9.48	11.00	3.03	79	330
BG-7-9	10/30/2009	0.93	0.09	<1	7.8	2	7.60	5.49	8.97	3.51	84	360
	11/4/2010	0.81	0.12	1	7.7	1.83	7.24	5.11	7.77	3.13	51	230
BG-9-11	10/30/2009	1.11	0.17	<1	7.7	3.95	18.90	12.40	17.60	4.45	139	520
	11/4/2010	0.91	0.11	2	7.8	2.48	7.39	4.99	14.00	5.63	100	360
BG-11-13	10/30/2009	1.26	1.31	<1	7.8	5.2	22.10	15.90	28.90	6.63	150	1610
	11/4/2010	1.23	0.14	3	7.7	4.12	19.70	10.60	23.40	6.01	63	790
BG-13-15	10/30/2009	0.96	0.53	<1	7.8	3.33	12.60	9.96	18.80	5.60	57	400
BG-15-17	10/30/2009	0.97	0.27	<1	7.9	4.38	21.30	14.70	23.70	5.59	62	950

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.1-5. Irrigation Soil Analyses, 2000-2013, for Section 33 Center Pivot

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
						SECTION 33 CENTER PIVOT						
P-1	12/7/2000	0.93	0.37	<1	7.9	0.987	4.00	1.27	5.67	3.40	26	98
	6/15/2001	0.94	0.30	<1	8.0	1.230	3.77	1.48	7.48	4.84	123	500
	11/20/2002	0.98	<0.6	<1	7.8	1.610	7.71	2.80	8.10	3.53	13	300
	11/18/2003	1.36	0.28	<1	7.8	2.200	7.99	3.25	13.50	5.69	55	590
	11/9/2004	1.78	0.45	<1	7.6	3.780	19.70	8.73	21.40	5.67	101	190
	11/5/2005	1.45	0.31	<1	8.1	2.060	9.35	4.02	11.20	4.33	51	460
	10/21/2006	1.87	0.36	<1	7.8	3.560	15.80	6.36	20.40	6.13	109	1020
	11/10/2007	1.67	0.44	<1	7.7	3.280	12.40	5.91	19.10	6.31	85	600
	11/22/2008	1.41	0.41	1	8.0	2.630	10.70	5.07	17.10	6.09	80	500
	10/6/2009	2.03	0.41	2	7.8	3.472	14.63	6.95	22.75	6.71	147	1059
	12/2/2010	1.87	0.35	<1	8.0	3.900	18.00	7.96	23.70	6.58	101	910
	10/17/2011	1.56	0.42	2	7.7	5.240	17.30	10.10	37.40	10.10	202	940
	11/14/2012	2.22	0.40	<1	8.3	4.230	21.70	10.70	22.90	5.69	69	2100
	12/16/2013	2.20	<1	<1	7.6	4.450	24.40	12.10	21.40	5.00	51	1310
P-2	12/7/2000	0.81	0.45	<1	7.8	1.480	6.30	1.88	7.77	3.84	46	290
	6/15/2001	0.60	0.30	<1	7.9	1.120	4.32	1.45	6.11	3.60	109	500
	11/20/2002	0.89	<0.6	<1	7.8	2.190	10.10	3.78	13.10	4.97	14	600
	11/18/2003	1.14	0.19	<1	7.9	2.690	10.30	3.86	16.10	6.05	82	710
	11/9/2004	1.52	0.39	<1	7.6	4.300	19.40	10.80	27.50	7.07	155	200
	11/5/2005	1.15	0.21	2	8.1	3.940	15.10	7.68	27.30	8.09	94	420
	10/21/2006	1.62	0.15	<1	7.7	3.320	14.20	5.93	17.90	5.64	142	900
	11/10/2007	1.34	0.30	<1	7.7	5.300	19.60	11.00	37.00	9.46	187	900
	11/22/2008	1.37	0.35	1	8.0	3.600	13.40	6.30	25.80	8.22	114	1130
	10/6/2009	1.84	0.29	2	7.9	3.906	14.45	7.40	30.01	8.53	243	1405
	12/2/2010	2.16	0.25	<1	8.0	4.000	17.40	7.66	25.60	7.23	102	850
	10/17/2011	1.19	0.19	2	7.8	3.900	13.80	7.36	24.80	7.62	177	950
	11/14/2012	2.51	0.34	<1	8.1	4.490	13.00	8.02	32.70	10.10	195	3700
	12/16/2013	1.60	<1	<1	7.8	5.610	21.80	14.20	36.00	8.50	133	1530
P-3	12/7/2000	1.03	0.25	<1	7.6	1.720	8.35	2.29	8.33	3.71	36	210
	6/15/2001	0.54	0.10	<1	7.8	1.020	4.74	2.18	4.27	2.30	67	400
	11/20/2002	0.68	<0.6	<1	7.7	2.400	11.70	5.34	11.60	3.97	34	1000
	11/18/2003	1.00	0.18	<1	7.8	2.970	15.50	5.67	17.30	5.32	106	570
	11/9/2004	1.15	0.38	<1	7.6	3.440	15.90	9.31	19.30	5.43	137	220
	11/5/2005	1.00	0.30	1	8.0	4.500	18.70	10.50	147.00	38.50	197	580
	10/21/2006	1.05	0.14	<1	7.8	3.500	13.90	6.17	19.70	6.22	126	780
	11/10/2007	1.30	0.39	<1	7.6	4.670	20.30	10.60	26.40	6.72	174	670
	11/22/2008	1.27	0.33	3	7.9	3.600	14.80	7.10	23.10	6.98	184	1220
	10/6/2009	1.52	0.28	2	7.8	4.271	16.22	7.79	28.20	7.85	279	972
	12/2/2010	1.95	0.24	<1	8.0	3.910	17.00	8.06	24.40	6.89	154	1360
	10/17/2011	0.86	0.18	2	7.8	4.660	14.20	7.77	33.30	10.00	179	570
	11/14/2012	1.58	0.24	<1	7.9	3.950	14.40	7.64	25.00	7.53	302	1600
	12/16/2013	1.20	<1	<1	7.8	5.870	22.70	16.40	38.90	8.80	139	2590

Table B.1-5. Irrigation Soil Analyses, 2000-2013, for Section 33 Center Pivot (cont.)

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
P-4	10/6/2009	1.32	0.27	2	7.8	4.113	17.19	7.87	24.92	7.17	258	911
	12/2/2010	1.52	0.26	<1	8.0	3.750	18.90	7.76	20.80	5.70	170	870
	10/17/2011	0.66	0.18	2	7.8	3.150	13.90	6.25	17.40	5.48	93	670
	11/14/2012	1.55	0.37	<1	7.9	3.650	17.20	7.90	19.20	5.42	550	2300
	12/16/2013	1.40	<1	<1	7.6	4.580	25.40	11.20	16.70	3.90	531	982
P-5	10/6/2009	1.20	0.27	2	7.9	3.426	14.81	7.20	19.76	6.10	163	884
	12/2/2010	1.79	0.33	<1	8.0	3.720	17.10	7.85	21.00	5.95	167	1640
	10/17/2011	0.79	0.17	2	77.0	3.030	15.10	7.89	14.20	4.19	89	300
	11/14/2012	1.20	0.24	<1	7.8	2.660	17.10	7.14	7.64	2.19	299	860
	12/16/2013	1.50	<1	<1	7.5	5.030	35.30	12.40	11.70	2.40	612	1210
P-5-7	10/6/2009	0.95	0.20	2	7.9	2.799	11.03	5.33	17.07	5.78	145	696
	12/2/2010	0.89	0.16	<1	8.0	2.640	12.50	5.72	13.00	4.31	91	670
	10/17/2011	0.51	0.10	2	7.9	1.040	4.16	1.88	4.11	2.37	133	600
	11/14/2012	1.02	0.18	<1	7.9	2.040	12.70	4.97	6.13	2.06	212	870
	12/16/2013	<1	<1	<1	7.6	2.630	15.60	5.40	7.30	2.30	227	407
P-7-9	10/6/2009	0.85	0.22	2	7.8	2.198	11.01	5.23	10.78	3.71	85	557
	12/2/2010	0.67	0.10	<1	8.1	1.850	8.26	3.23	8.05	3.36	72	400
	10/17/2011	0.48	0.07	2	8.1	1.42	3.76	2.77	7.36	4.07	126	350
	11/14/2012	0.49	<0.05	<1	8.1	0.649	2.96	0.97	2.08	1.48	90	620
	12/16/2013	<1	<1	<1	7.7	1.49	7.59	2.50	5.62	2.50	29	204
P-9-11	10/6/2009	0.93	0.19	2	7.9	2.086	13.89	6.24	6.12	1.97	86	619
	12/2/2010	0.67	0.10	1	7.9	2.680	13.10	4.05	4.63	1.58	59	370
	10/17/2011	0.58	0.11	2	7.9	2.800	9.66	7.28	14.10	4.84	87	420
	11/14/2012	0.62	0.06	<1	8.0	0.632	2.78	0.97	2.36	1.74	110	700
	12/16/2013	<1	<1	<1	7.6	1.670	9.24	3.00	5.63	2.30	35	251
P-11-13	10/6/2009	0.96	0.12	1	8.0	1.449	9.25	4.13	2.86	1.20	83	393
	12/2/2010	0.56	0.10	<1	8.0	1.140	6.69	1.86	2.70	1.31	51	270
	10/17/2011	0.52	0.10	2	7.9	1.15	4.36	2.27	4.68	2.57	122	670
	11/14/2012	0.54	0.08	<1	8.0	1.59	8.60	3.32	6.01	2.46	47	340
	12/16/2013	<1	<1	<1	7.6	1.82	9.67	3.20	6.22	2.50	60	251
P-13-15	10/6/2009	0.80	0.14	1	8.0	1.435	9.42	4.24	2.72	1.11	90	329
	12/2/2010	0.61	0.10	<1	8.0	1.440	9.12	2.58	3.47	1.43	36	180
	10/17/2011	0.43	0.12	3	7.5	1.420	6.54	3.23	5.67	2.57	52	420
	11/14/2012	0.59	0.13	<1	7.8	1.250	7.73	3.26	2.64	1.13	120	360
	12/16/2013	<1	<1	<1	7.7	1.310	6.05	2.60	4.85	2.30	42	208
P-15-17	10/6/2009	0.83	0.19	1	8.0	1.847	14.18	5.62	3.13	1.01	70	345
	12/2/2010	0.84	0.12	<1	8.0	1.380	9.83	2.73	3.17	1.26	30	160
	10/17/2011	0.50	0.10	2	7.7	1.710	8.29	3.88	6.75	2.74	44	360
	11/14/2012	0.52	0.11	<1	7.9	0.749	3.58	1.62	1.89	1.17	161	250
	12/16/2013	<1	<1	<1	7.8	2.160	9.65	4.90	8.04	3.00	118	305

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.1-6. Irrigation Soil Analyses, 2000-2013, for Section 33 Flood Area

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
						SECTION 33 FLOOD						
F-1	11/5/2004	1.78	0.56	<1	7.6	2.810	19.10	7.21	11.30	3.11	114	190
	11/8/2005	1.35	0.31	1	7.8	2.690	16.80	6.23	10.20	3.01	66	1210
	10/28/2006	1.76	0.41	<1	7.8	1.480	8.25	2.91	4.79	2.03	72	1070
	11/10/2007	1.69	0.45	<1	7.8	2.000	9.35	3.60	8.85	3.48	98	450
	12/3/2008	1.70	0.43	2	8.0	1.780	7.42	2.68	11.20	4.98	89	910
	10/5/2009	1.17	0.10	<1	8.1	0.493	1.37	0.48	3.03	3.15	120	<50
	11/30/2010	1.84	0.36	1	8.0	1.61	6.69	2.73	7.75	3.57	150	840
	10/18/2011	1.63	0.33	2	7.7	1.71	7.98	3.23	7.35	3.10	201	820
F-2	11/5/2004	1.67	0.47	1	7.7	2.360	13.70	5.09	10.40	3.39	115	150
	11/8/2005	1.14	0.24	<1	7.8	2.260	13.30	4.68	9.22	3.08	57	620
	10/28/2006	1.24	0.26	<1	7.7	2.320	16.00	5.15	8.33	2.56	46	970
	11/10/2007	1.55	0.40	<1	7.8	3.070	16.90	6.58	13.00	3.79	63	390
	12/3/2008	1.53	0.39	<1	7.7	2.650	21.70	7.48	13.70	3.59	46	1670
	10/5/2009	1.17	0.09	<1	8.1	0.727	1.98	0.85	4.15	3.49	80	<50
	11/30/2010	1.96	0.41	<1	7.9	1.17	4.63	1.76	5.61	3.14	150	890
	10/18/2011	1.53	0.33	3	7.6	1.64	10.50	3.62	5.50	2.07	163	850
F-3	11/5/2004	1.68	0.49	<1	7.7	2.400	18.40	6.52	11.60	3.28	115	150
	11/8/2005	1.00	0.20	<1	7.8	2.670	17.80	5.91	10.70	3.11	41	350
	10/28/2006	1.62	0.21	<1	7.7	1.840	10.90	3.38	5.93	2.22	52	970
	11/10/2007	1.51	0.40	<1	7.7	2.010	11.50	4.06	7.97	2.86	52	470
	12/3/2008	0.96	0.23	<1	7.7	2.890	19.90	6.91	12.00	3.28	50	860
	10/5/2009	0.67	0.08	3	8.2	0.705	2.13	0.98	4.10	3.29	80	500
	11/30/2010	1.76	0.41	3	7.6	2.53	15.10	5.18	9.79	3.07	184	1070
	10/18/2011	1.62	0.30	2	7.6	1.89	10.90	4.22	6.74	2.45	106	920
F-4	10/5/2009	0.38	<0.05	<1	8.5	0.528	1.23	0.86	2.87	2.81	70	680
	11/30/2010	0.32	<0.05	1	7.5	2.28	15.60	3.81	7.78	2.50	40	430
	10/18/2011	0.41	0.06	1	7.6	2.04	13.10	3.42	7.94	2.76	61	400
F-5	10/5/2009	0.33	<0.05	<1	8.4	0.538	1.22	1.02	2.81	2.66	50	500
	11/30/2010	0.40	<0.05	<1	7.5	2.65	20.40	4.68	8.77	2.48	21	750
	10/18/2011	0.26	<0.05	2	7.6	1.35	6.76	1.71	6.66	3.24	28	290
F-5-7	10/5/2009	0.35	<0.05	<1	8.4	0.71	1.57	1.57	3.65	2.91	60	500
	11/30/2010	0.20	<0.05	<1	7.7	1.91	13.20	3.07	7.10	2.49	21	350
	10/18/2011	0.13	<0.05	<1	8.1	0.502	2.41	0.53	2.43	2.00	18	158
F-7-9	10/5/2009	0.27	<0.05	<1	8.6	0.44	1.01	0.86	2.19	2.26	20	170
	11/30/2010	0.19	<0.05	<1	7.9	0.837	3.22	0.78	4.54	3.21	30	220
	10/18/2011	0.19	<0.05	1	8.0	0.717	3.41	0.81	3.25	2.24	20	174
F-9-11	10/5/2009	0.52	0.06	<1	8.5	0.534	1.13	1.00	2.78	2.69	40	230
	11/30/2010	0.23	<0.05	<1	8.0	0.733	3.02	0.80	3.71	2.68	38	240
	10/18/2011	0.21	<0.05	<1	8.1	0.628	2.70	0.69	2.86	2.20	37	200
F-11-13	11/30/2010	0.27	<0.05	<1	8.1	0.569	2.35	0.65	2.79	2.28	40	250
	10/18/2011	0.21	<0.05	2	8.2	0.43	1.91	0.48	1.88	1.72	19	120

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.1-7. Irrigation Soil Analyses, 2000-2013, for Section 34 Flood Area

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
						SECTION 34 FLOOD						
F-1	12/7/2000	3.35	0.68	<1	7.7	2.594	11.95	4.66	14.58	5.03	56	767
	8/8/2001	2.72	0.50	2	7.8	5.090	10.90	3.17	13.50	5.09	182	900
	11/22/2002	0.69	<0.6	<1	7.9	1.050	4.73	1.47	5.26	2.99	18	800
	11/26/2003	3.72	0.82	1	7.8	4.570	22.50	9.62	31.60	7.89	284	2620
	11/4/2004	4.43	1.15	2	7.7	5.220	20.50	8.98	40.40	10.52	398	680
	11/19/2005	3.94	1.10	2	8.0	5.420	20.80	8.64	37.60	9.80	416	5190
	10/28/2006	4.88	0.95	<1	7.9	3.500	12.20	5.72	22.90	7.65	445	5210
	11/10/2007	5.02	1.32	2	7.8	4.910	17.50	8.05	35.00	9.79	429	4400
	12/3/2008	4.38	1.14	1	7.7	4.430	19.40	9.10	33.40	8.85	392	7700
	10/8/2009	4.06	0.97	4	7.8	4.64	19.34	8.50	30.29	8.03	279	4002
	11/5/2010	4.64	1.05	5	7.8	4.11	18.90	8.52	24.30	6.56	219	7000
	10/19/2011	5.15	1.03	2	7.9	3.13	12.40	5.74	19.00	6.31	254	7700
	11/13/2012	4.67	0.88	1	7.9	3.96	14.80	6.75	27.30	8.32	317	7900
	12/18/2013	4.70	1.20	<1	7.8	6.56	25.80	10.80	49.50	11.60	276	4450
F-2	12/7/2000	2.22	0.37	<1	7.6	3.237	14.42	6.01	18.58	5.85	78	1497
	8/8/2001	1.88	0.40	2	7.6	4.970	8.20	2.25	8.57	3.75	139	1400
	11/22/2002	0.46	<0.6	<1	8.0	1.030	3.85	1.12	6.06	3.84	10	200
	11/26/2003	1.90	0.40	<1	7.8	5.020	25.20	8.01	33.60	8.25	396	2480
	11/4/2004	2.27	0.63	<1	7.6	5.370	23.80	7.90	40.50	10.17	390	370
	11/19/2005	1.41	0.38	1	7.9	4.890	20.50	5.55	32.60	9.03	352	3980
	10/28/2006	2.25	0.45	<1	7.6	3.610	12.90	4.34	23.30	7.94	478	4230
	11/10/2007	3.05	0.94	<1	7.7	5.770	21.20	8.24	40.60	10.60	560	4000
	12/3/2008	2.70	0.68	1	7.8	4.240	21.60	8.16	30.00	7.78	406	4900
	10/8/2009	2.59	0.63	3	7.8	4.62	20.06	7.64	29.49	7.85	388	4082
	11/5/2010	2.83	0.57	3	7.7	4.56	22.10	6.32	26.60	7.06	236	3600
	10/19/2011	2.90	0.57	<1	7.7	4.14	16.00	6.23	26.30	7.89	456	8200
	11/13/2012	2.78	0.52	<1	7.8	2.64	9.99	3.74	15.50	5.92	373	6300
	12/18/2013	3.10	<1	<1	7.6	6.83	28.30	9.30	50.10	11.50	465	3840
F-3	12/7/2000	1.62	0.03	<1	7.6	3.397	13.63	5.02	22.21	6.75	56	980
	8/8/2001	1.15	0.30	<1	7.6	5.960	10.10	3.25	9.83	3.80	170	1800
	11/22/2002	0.42	<0.6	<1	8.0	0.930	3.63	1.53	4.90	3.05	3	<100
	11/26/2003	1.08	0.19	<1	7.8	4.420	23.90	6.53	25.80	6.61	302	1550
	11/4/2004	1.40	0.37	<1	7.6	4.800	25.30	7.39	34.90	8.63	166	210
	11/19/2005	2.62	0.68	2	8.0	4.550	17.40	5.78	32.90	9.66	560	5840
	10/28/2006	1.21	0.28	<1	7.5	3.860	18.50	5.18	23.20	6.74	302	2340
	11/10/2007	1.75	0.64	<1	7.6	5.280	24.20	6.25	32.70	8.38	337	1700
	12/3/2008	1.71	0.37	<1	7.8	4.410	23.00	8.99	32.50	8.13	227	1810
	10/8/2009	1.82	0.46	3	7.7	4.66	23.09	7.41	26.51	6.83	430	3362
	11/5/2010	1.96	0.39	2	7.7	4.09	24.40	5.54	20.10	5.19	256	1500
	10/19/2011	1.13	0.22	<1	7.4	4.90	21.60	7.64	30.30	7.92	301	3400
	11/13/2012	1.40	0.24	<1	7.8	3.46	13.30	4.05	22.60	7.67	459	3300
	12/18/2013	1.40	<1	<1	7.6	7.21	33.90	8.20	46.70	10.20	565	2210

Table B.1-7. Irrigation Soil Analyses, 2000-2013, for Section 34 Flood Area

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
F-4	10/8/2009	0.95	0.21	3	7.7	3.49	19.12	5.37	17.90	5.32	268	2151
	11/5/2010	0.87	0.13	2	7.6	3.33	20.00	6.07	15.50	4.29	125	780
	10/19/2011	0.81	0.07	1	7.4	4.96	23.50	7.93	27.50	6.94	309	1700
	11/13/2012	0.88	0.12	<1	7.7	4.29	21.40	6.41	25.40	6.81	287	2400
	12/18/2013	<1	<1	<1	7.5	5.49	28.30	7.70	31.70	7.50	209	1340
F-5	10/8/2009	0.56	0.08	2	7.8	3.11	15.88	4.81	15.79	4.91	138	861
	11/5/2010	0.59	0.09	2	7.6	3.66	26.00	7.46	15.80	3.86	67	1800
	10/19/2011	0.44	<0.05	<1	7.6	3.78	20.70	8.38	17.10	4.48	199	1500
	11/13/2012	0.50	0.07	<1	7.7	3.30	19.00	5.58	16.40	4.68	171	860
	12/18/2013	<1	<1	<1	7.6	4.58	26.10	8.50	22.80	5.50	154	660
F-5-7	10/8/2009	0.35	0.05	1	8.1	1.92	9.71	3.13	9.09	3.90	70	459
	11/5/2010	0.44	0.09	1	7.8	1.83	8.66	3.48	9.02	3.66	33	184
	10/19/2011	0.36	<0.05	2	7.8	7.79	16.30	7.93	11.20	3.22	87	730
	11/13/2012	0.37	<0.05	<1	7.9	1.19	4.91	1.78	5.82	3.18	111	420
	12/18/2013	<1	<1	<1	7.7	2.40	11.10	4.10	10.80	3.90	62	207
F-7-9	10/8/2009	0.36	0.05	2	8.1	1.27	4.42	1.77	6.69	4.06	76	568
	11/5/2010	0.47	0.07	2	7.8	1.46	6.01	2.40	7.70	3.75	50	260
	10/19/2011	0.38	<0.05	2	8.1	8.05	3.64	2.09	5.03	2.97	56	177
	11/13/2012	0.37	<0.05	<1	7.6	1.63	6.31	3.19	8.10	3.72	116	430
	12/18/2013	<1	<1	<1	7.7	1.78	6.03	2.90	9.91	4.70	30	187
F-9-11	10/8/2009	0.52	0.10	2	7.9	1.70	7.56	3.13	8.10	3.78	61	540
	11/5/2010	1.12	0.22	2	7.6	2.84	16.40	9.50	11.10	3.08	69	400
	10/19/2011	0.73	0.12	<1	7.7	7.73	11.70	6.27	9.67	3.23	45	430
	11/13/2012	0.96	0.10	<1	7.8	2.18	12.20	6.90	8.31	2.69	97	1560
	12/18/2013	3.40	<1	4	7.6	3.94	24.90	12.80	15.00	3.50	48	1390
F-11-13	10/8/2009	1.06	0.11	2	7.9	2.32	12.66	7.85	8.29	2.85	76	1506
	11/5/2010	0.72	0.13	2	7.7	1.93	8.38	5.34	8.31	3.17	47	260
	10/19/2011	0.68	0.06	2	7.6	7.64	13.60	7.47	8.55	2.63	31	460
	11/13/2012	1.24	0.11	<1	7.8	3.21	19.70	12.50	11.10	2.77	69	2800
	12/18/2013	<1	<1	<1	7.5	4.08	25.50	11.80	17.10	3.90	48	1940
F-13-15	10/8/2009	0.61	0.10	2	7.9	1.51	8.60	2.41	5.93	2.53	50	490

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.1-8. Irrigation Soil Meteoric Water Mobility Test Results, 2015, for Sections 33 and 34

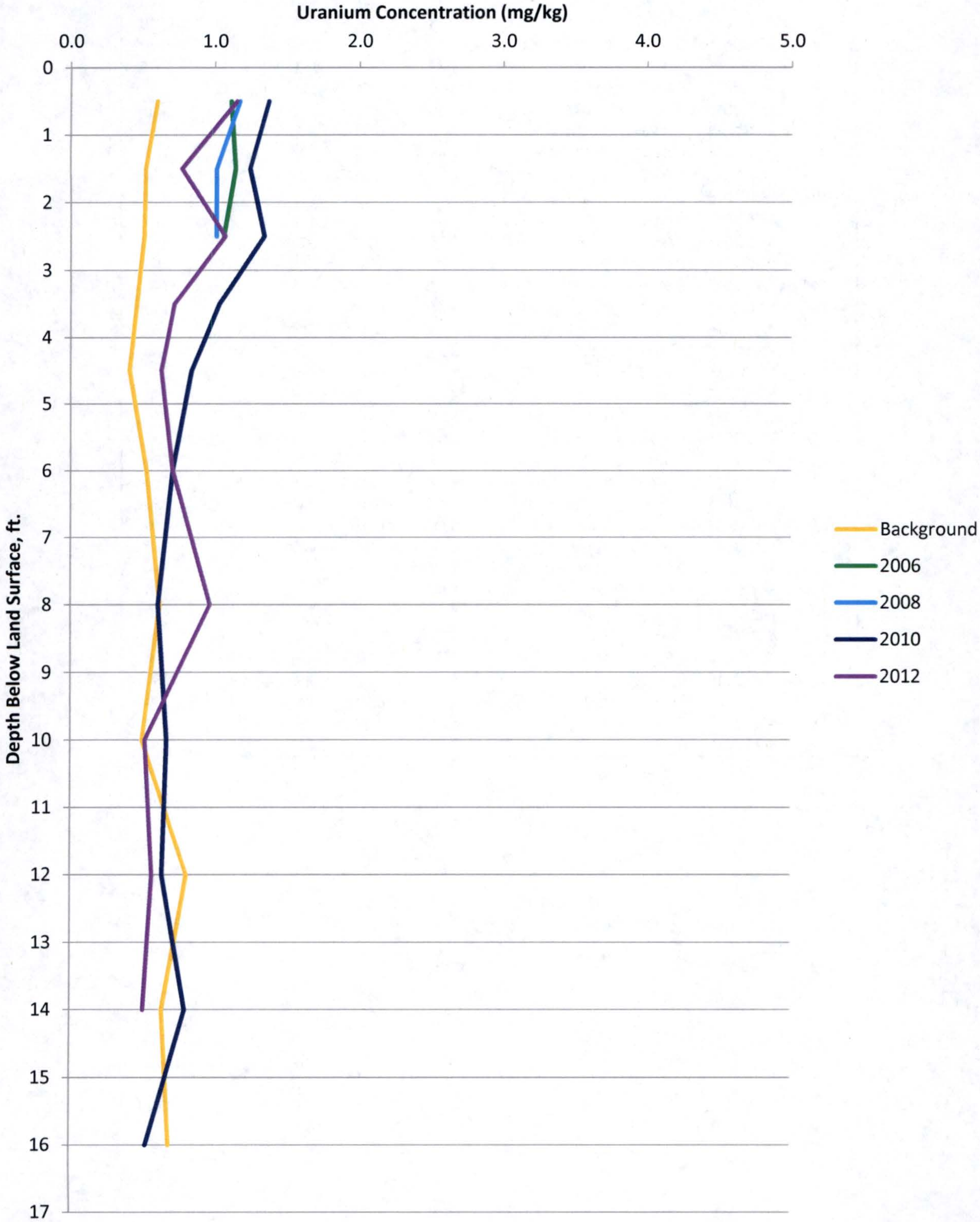
Sample Site	Date	U (mg/l)	Se (mg/l)	Mo (mg/l)	pH (units)	Nitrate/ Nitrite (mg/l)	TDS (mg/l)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 33 CENTER PIVOT									
1	8/25/2015	0.0468	0.0437	0.02	7.89	22.90	2240	115.0	1250
2	8/25/2015	0.0360	0.0265	<0.02	7.94	12.40	2180	126.0	1260
3	8/25/2015	0.0089	0.0857	<0.02	7.97	2.22	2140	243.0	1060
4	8/25/2015	0.0057	0.0691	<0.02	8.11	0.70	1360	238.0	580
5	8/25/2015	0.0052	0.0850	<0.02	7.87	0.50	2020	312.0	950
6	8/25/2015	0.0021	0.0209	<0.02	7.96	0.45	730	189.0	240
7	8/25/2015	0.0018	0.0086	<0.02	8.19	0.25	342	56.2	130
8	8/25/2015	0.0026	0.0098	<0.02	8.28	0.28	344	45.9	140
9	8/25/2015	0.0010	0.0091	<0.02	8.04	0.22	266	36.5	100
10	8/25/2015	0.0014	0.0079	<0.02	8.10	0.40	264	32.0	110
11	8/25/2015	0.0021	0.0128	<0.02	7.98	0.78	1460	43.0	840
12	8/25/2015	0.0015	0.0058	<0.02	8.26	0.65	448	28.5	230
13	8/25/2015	0.0013	0.0067	<0.02	8.03	0.80	384	20.9	180
14	8/25/2015	0.0014	0.0073	<0.02	8.26	0.92	380	22.0	210
15	8/25/2015	0.0014	0.0056	<0.02	8.20	0.62	328	32.1	150
16	8/25/2015	0.0015	0.0150	<0.02	8.24	0.26	316	49.7	120
17	8/25/2015	0.0010	0.0130	<0.02	8.20	0.41	278	40.9	110

Sample Site	Date	U (mg/l)	Se (mg/l)	Mo (mg/l)	pH (units)	Nitrate/ Nitrite (mg/l)	TDS (mg/l)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 33 FLOOD									
1	8/21/2015	0.0151	0.0084	<0.02	8.00	2.21	492	28.1	390
2	8/21/2015	0.0056	0.0088	<0.02	8.03	2.22	808	57.8	890
3	8/21/2015	0.0038	0.0068	<0.02	8.12	1.07	808	41.5	460
4	8/21/2015	0.0032	0.0041	<0.02	8.20	0.23	508	19.9	280
5	8/21/2015	0.0036	0.0036	<0.02	8.54	0.02	424	15.5	230
6	8/21/2015	0.0016	0.0043	<0.02	8.53	<0.02	326	17.7	160
7	8/21/2015	0.0012	0.0031	<0.02	8.73	<0.02	222	11.9	90
8	8/21/2015	0.0012	0.0016	<0.02	8.93	0.04	178	7.9	50
9	8/21/2015	0.0016	0.0018	<0.02	8.99	<0.02	152	7.9	40
10	8/21/2015	0.0018	0.0016	<0.02	8.87	<0.02	166	8.3	50
11	8/21/2015	0.0022	0.0013	<0.02	8.95	0.09	170	7.0	60
12	8/21/2015	0.0025	0.0015	0.02	8.88	<0.02	184	8.2	60
13	8/21/2015	0.0024	0.0014	0.05	8.67	<0.02	190	6.6	50
14	8/21/2015	0.0027	0.0014	0.04	8.73	<0.02	172	6.8	50
15	8/21/2015	0.0030	0.0015	0.04	8.75	<0.02	192	7.5	60
16	8/21/2015	0.0033	0.0014	0.03	8.76	0.02	188	7.0	60
17	8/21/2015	0.0023	0.0015	0.03	8.56	0.02	216	8.7	70
18	8/21/2015	0.0029	0.0018	0.03	8.72	<0.02	202	8.2	60
19	8/21/2015	0.0023	0.0018	0.02	8.65	<0.02	206	9.7	70
20	8/21/2015	0.0027	0.0019	0.02	8.67	<0.02	212	9.2	70
21	8/21/2015	0.0025	0.0020	0.02	8.63	0.08	214	9.0	70
22	8/21/2015	0.0028	0.0019	0.03	8.39	<0.02	224	9.7	80
23	8/21/2015	0.0023	0.0015	0.03	8.42	0.03	224	8.8	80
24	8/21/2015	0.0025	0.0018	0.02	8.31	<0.02	218	9.6	70
25	8/21/2015	0.0022	0.0012	0.02	8.48	<0.02	208	8.8	90
26	8/21/2015	0.0019	0.0023	0.03	8.36	<0.02	240	9.7	100
27	8/21/2015	0.0017	0.0017	0.03	8.46	0.04	240	10.6	100
28	8/21/2015	0.0018	0.0017	0.03	8.57	<0.02	236	10.1	100
29	8/21/2015	0.0017	0.0017	0.02	8.61	0.06	200	8.8	90
30	8/21/2015	0.0017	0.0015	<0.02	8.69	0.09	212	9.1	90
31	8/21/2015	0.0018	0.0015	0.02	8.68	<0.02	222	9.3	90
32	8/21/2015	0.0013	0.0020	<0.02	8.81	0.06	190	7.6	70
33	8/21/2015	0.0018	0.0011	<0.02	8.93	0.02	128	4.4	60

Table B.1-8. Irrigation Soil Meteoric Water Mobility Test Results, 2015, for Sections 33 and 34

Sample Site	Date	U (mg/l)	Se (mg/l)	Mo (mg/l)	pH (units)	Nitrate/ Nitrite (mg/l)	TDS (mg/l)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 34 FLOOD									
1	8/20/2015	0.0996	0.0227	<0.02	7.75	9.60	2640	107.0	1430
2	8/20/2015	0.0526	0.0242	<0.02	7.74	5.87	4500	255.0	2750
3	8/20/2015	0.0391	0.0128	<0.02	7.78	3.16	3660	269.0	2170
4	8/20/2015	0.0201	0.0086	<0.02	7.81	0.39	3130	212.0	1740
5	8/20/2015	0.0144	0.0063	<0.02	8.09	0.17	1590	131.0	860
6	8/20/2015	0.0071	0.0035	<0.02	8.34	<0.02	778	70.4	390
7	8/20/2015	0.0068	0.0034	0.02	8.50	<0.02	450	31.1	210
8	8/20/2015	0.0050	0.0027	0.02	8.49	<0.02	376	27.1	170
9	8/20/2015	0.0040	0.0028	0.02	8.71	<0.02	302	25.4	120
10	8/20/2015	0.0043	0.0027	0.03	8.68	<0.02	412	29.6	200
11	8/20/2015	0.0052	0.0047	0.04	8.53	<0.02	462	47.6	220
12	8/20/2015	0.0060	0.0052	0.04	8.25	<0.02	970	60.4	540
13	8/20/2015	0.0079	0.0066	0.03	8.33	0.12	588	53.6	280
14	8/20/2015	0.0060	0.0069	0.03	8.42	0.09	468	46.9	190
15	8/20/2015	0.0056	0.0072	0.03	8.41	<0.02	418	40.6	150
16	8/20/2015	0.0059	0.0061	0.03	8.40	<0.02	384	43.1	160
17	8/20/2015	0.0071	0.0068	0.03	8.53	<0.02	394	37.2	160
18	8/20/2015	0.0064	0.0053	0.03	8.63	<0.02	390	30.6	190
19	8/20/2015	0.0051	0.0057	0.02	8.61	<0.02	420	20.4	210
20	8/20/2015	0.0053	0.0057	<0.02	8.68	<0.02	380	20.5	180
21	8/20/2015	0.0044	0.0055	0.02	8.65	<0.02	364	11.8	250
22	8/20/2015	0.0043	0.0066	<0.02	8.73	<0.02	344	12.2	170
23	8/20/2015	0.0060	0.0052	0.03	8.74	<0.02	358	19.3	170
24	8/20/2015	0.0056	0.0048	0.02	8.64	<0.02	494	19.8	250
25	8/20/2015	0.0036	0.0056	0.02	8.66	<0.02	438	16.6	250
26	8/20/2015	0.0025	0.0060	0.03	8.44	0.65	460	16.7	240
27	8/20/2015	0.0029	0.0060	<0.02	8.38	0.53	772	19.1	450
28	8/20/2015	0.0025	0.0052	0.02	8.66	0.05	332	15.6	150
29	8/20/2015	0.0021	0.0050	0.02	8.76	0.02	322	17.0	160
30	8/20/2015	0.0023	0.0055	0.02	8.62	<0.02	308	17.8	130
31	8/20/2015	0.0026	0.0064	0.02	8.72	<0.02	326	23.3	150
32	8/20/2015	0.0027	0.0061	0.03	8.69	<0.02	338	24.8	160
33	8/20/2015	0.0030	0.0067	0.02	8.66	<0.02	392	28.5	190
34	8/20/2015	0.0027	0.0048	0.03	8.64	<0.02	384	23.7	200
35	8/20/2015	0.0025	0.0050	<0.02	8.67	<0.02	420	28.7	210

Figure B.2-1. Section 28 Soil Uranium Concentrations vs. Depth



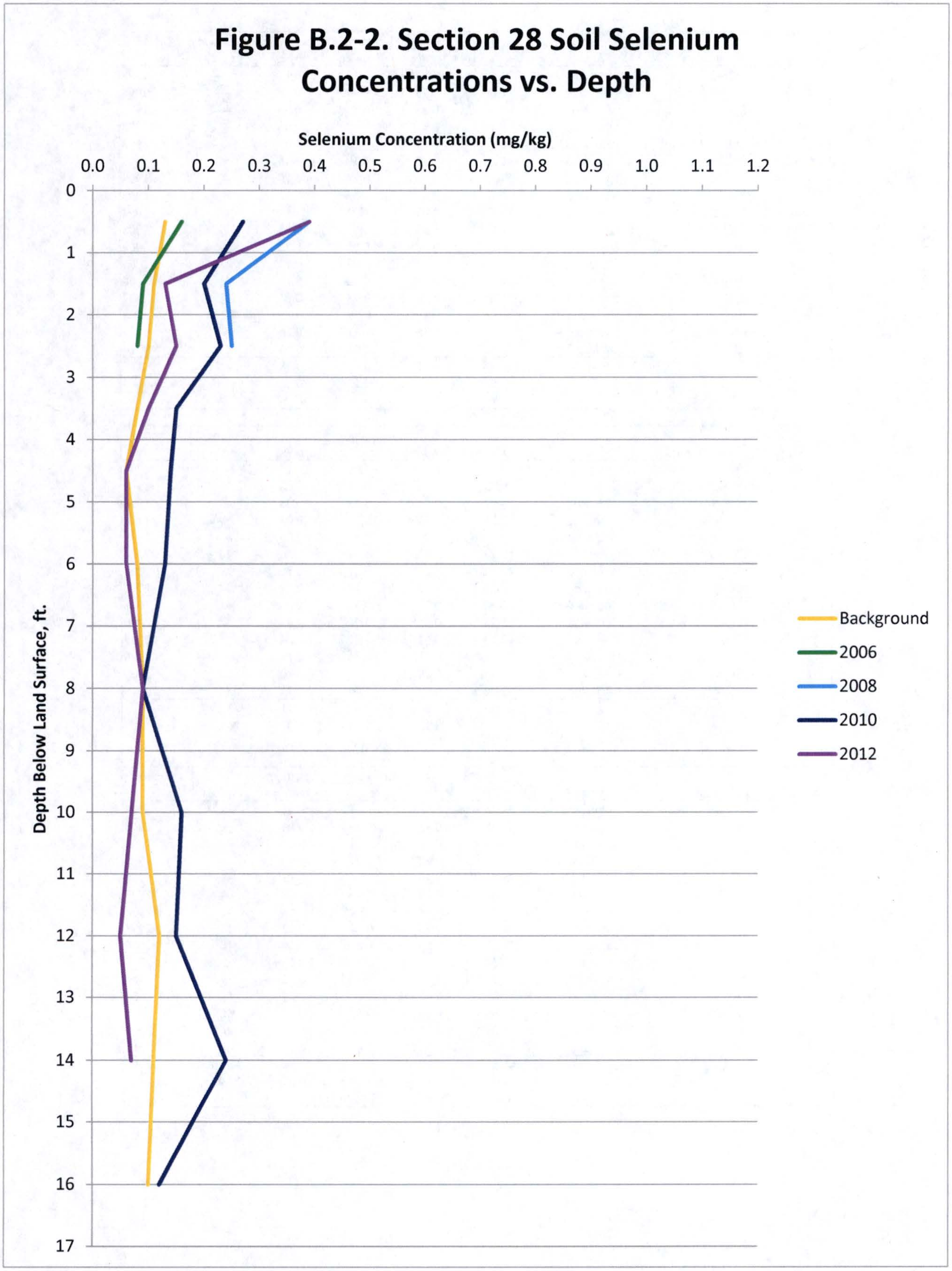


Figure B.2-2. Section 28 Soil Selenium Concentrations vs. Depth
Selenium Concentration (mg/kg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
Depth Below Land Surface, ft.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Background
2006
2008
2010
2012

Table B.2-1. Pre-Operational and Background Soil Sample Results for Section 28

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
0-1	S28-2	Untreated	0-40	@1.06	@1.57	0.14	----	1998
	S28-3	Untreated	4-22	0.23	0.34	0.18	----	1998
	S28-9	Treated	0-40	0.33	0.49	0.06	----	1998
	NE27-1	Untreated	0-6	0.34	0.50	0.03	----	*1998
	NE28-2	Untreated	0-6	0.24	0.35	0.03	----	*1998
	NE28-4	Untreated	0-8	0.13	0.19	0.16	----	1998
	NE28-5	Untreated	0-12	0.50	0.74	0.10	----	1998
	NE28-7	Untreated	0-8	0.51	0.75	0.12	----	1998
	BG-1	Untreated	0-12	2.02	@2.99		14	#2002
	BG-1	Untreated	0-12	0.35	0.51	0.15	6	2003
	BG-1	Untreated	0-12	0.60	0.88	0.22	12	2004
	BG-1	Untreated	0-12	0.32	0.47	0.12	@283	2005
	BG-1	Untreated	0-12	0.42	0.62	0.10	19	2006
	BG-1	Untreated	0-12	0.53	0.78	0.23	32	2007
	BG-1	Untreated	0-12	0.40	0.59	0.15	@220	2008
	BG-1	Untreated	0-12	0.75	1.11	0.16	60	2009
	BG-1	Untreated	0-12	0.44	0.65	0.16	30	2010
			Mean	0.41	0.60	0.13	24.71	
			SDV	0.16	0.23	0.06	18.19	
			CV	38.87	38.90	45.51	74	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
1-2	S28-2	Untreated	0-40	@1.06	@1.57	0.14	----	1998
	S28-3	Untreated	4-22	0.23	0.34	0.18	----	1998
	S28-9	Treated	0-40	0.33	0.49	0.06	----	1998
	NE28-4	Untreated	8-28	0.23	0.34	0.03	----	*1998
	NE28-7	Untreated	8-24	0.23	0.34	0.05	----	1998
	BG-2	Untreated	12-24	@1.10	@1.62		13	#2002
	BG-2	Untreated	12-24	0.41	0.61	0.10	6	2003
	BG-2	Untreated	12-24	0.52	0.77	0.22	14	2004
	BG-2	Untreated	12-24	0.32	0.47	0.07	----	2005
	BG-2	Untreated	12-24	0.35	0.51	0.03	14	2006
	BG-2	Untreated	12-24	0.62	0.91	0.24	26	2007
	BG-2	Untreated	12-24	0.31	0.46	0.15	@240	2008
	BG-2	Untreated	12-24	0.39	0.57	0.10	50	2009
	BG-2	Untreated	12-24	0.27	0.40	0.13	40	2010
			Mean	0.35	0.52	0.11	23.29	
			SDV	0.12	0.18	0.07	16.21	
			CV	34.20	34.19	60.66	70	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
2-3	S28-2	Untreated	0-40	@1.06	@1.57	0.14	----	1998
	S28-9	Treated	0-40	0.33	0.49	0.06	----	1998
	NE27-1	Untreated	24-80	0.14	0.21	0.03	----	*1998
	NE28-4	Untreated	28-84	0.22	0.32	0.03	----	*1998
	NE28-5	Untreated	25-84	0.44	0.65	0.03	----	*1998
	NE28-7	Untreated	24-48	0.14	0.21	0.03	----	*1998
	BG-3	Untreated	24-36	@0.98	@1.45		13	#2002
	BG-3	Untreated	24-36	0.36	0.53	0.12	11	2003
	BG-3	Untreated	24-36	0.55	0.81	0.19	10	2004
	BG-3	Untreated	24-36	0.37	0.55	0.07	@290	2005
	BG-3	Untreated	24-36	0.39	0.58	0.06	16	2006
	BG-3	Untreated	24-36	0.54	0.80	0.25	30	2007
	BG-3	Untreated	24-36	0.36	0.53	0.15	@270	2008
	BG-3	Untreated	24-36	0.38	0.56	0.11	70	2009
	BG-3	Untreated	24-36	0.30	0.45	0.13	60	2010
			Mean	0.35	0.51	0.10	30.00	
			SDV	0.13	0.19	0.07	24.99	
			CV	36.61	36.52	70.55	83	

Table B.2-1. Pre-Operational and Background Soil Sample Results for Section 28 (cont.)

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
3-4	BG-4	Untreated	36-48	0.35	0.52	0.07	60	2009
	BG-4	Untreated	36-48	0.26	0.39	0.09	70	2010
			Mean	0.31	0.46	0.08	65.00	
			SDV	0.06	0.09	0.01	7.07	
			CV	20.20	20.20	17.68	11	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
4-5	BG-5	Untreated	48-60	0.30	0.45	0.06	90	2009
	BG-5	Untreated	48-60	0.24	0.36	0.07	80	2010
			Mean	0.27	0.41	0.06	85.00	
			SDV	0.04	0.06	0.01	7.07	
			CV	15.71	15.71	12.06	8	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
5-7	BG-5-7	Untreated	60-72	0.42	0.62	0.08	100	2009
	BG-5-7	Untreated	60-72	0.29	0.43	0.08	90	2010
			Mean	0.36	0.53	0.08	95.00	
			SDV	0.09	0.13	0.00	7.07	
			CV	25.59	25.59	0.00	7	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
7-9	BG-7-9	Untreated	72-96	0.53	0.79	0.08	61	2009
	BG-7-9	Untreated	72-96	0.30	0.44	0.09	140	2010
			Mean	0.42	0.62	0.09	100.50	
			SDV	0.17	0.25	0.01	55.86	
			CV	40.24	40.24	8.32	56	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
9-11	BG-9-11	Untreated	96-120	0.35	0.52	0.09	60	2009
	BG-9-11	Untreated	96-120	0.32	0.48	0.09	40	2010
			Mean	0.34	0.50	0.09	50.00	
			SDV	0.02	0.03	0.00	14.14	
			CV	5.66	5.66	0.00	28	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
11-13	BG-11-13	Untreated	120-144	0.66	0.97	0.12	15	2009
	BG-11-13	Untreated	120-144	0.44	0.65	0.12	30	2010
			Mean	0.55	0.81	0.12	22.50	
			SDV	0.15	0.23	0.00	10.61	
			CV	27.94	27.94	0.00	47	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
13-15	BG-13-15	Untreated	144-168	0.41	0.60	0.08	70	2009
	BG-13-15	Untreated	144-168	0.46	0.68	0.13	50	2010
			Mean	0.43	0.64	0.11	60.00	
			SDV	0.04	0.06	0.04	14.14	
			CV	8.84	8.84	33.67	24	

Interval (ft)	Location ID	Area	Depth (in)	Natural Uranium (pCi/g)	Natural Uranium mg/kg	Selenium mg/kg	Chloride (mg/kg)	Comment
15-17	BG-15-17	Untreated	168-192	0.57	0.84	0.10	70	2009
	BG-15-17	Untreated	168-192	0.37	0.54	0.09	40	2010
			Mean	0.47	0.69	0.10	55.00	
			SDV	0.14	0.21	0.01	21.21	
			CV	30.74	30.74	7.44	39	

@ = considered an outlier, did not use
* = 1998 Se Reported as less than LLD of 0.05 mg/kg, used 0.025
# = 2002 Se MDL= 0.8 All data reported as < MDL, did not use
CV = coefficient of variation
SDV = standard deviation

Table B.2-2. Background Soil Analyses, 2000-2010, for Section 28 Center Pivot

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
						SECTION 28 CENTER PIVOT						
BG-1	11/19/2002	2.99	<0.6	2	8.0	0.82	3.33	0.91	4.20	2.88	14	700
	11/24/2003	0.51	0.15	<1	7.9	0.33	1.94	0.61	0.30	0.26	6	60
	11/11/2004	0.88	0.22	<1	7.4	1.16	6.93	1.99	3.91	1.85	12	20
	11/15/2005	0.47	0.12	<1	7.8	1.01	6.37	2.00	2.32	1.13	283	4380
	10/21/2006	0.62	0.10	2	7.7	0.46	2.41	0.71	0.57	0.45	19	80
	11/10/2007	0.78	0.23	<1	7.7	0.71	4.19	1.35	0.95	0.57	32	118
	11/22/2008	0.59	0.15	1	7.8	0.44	2.56	0.77	0.88	0.68	220	1390
	10/15/2009	1.11	0.16	2	7.9	0.507	2.83	0.96	1.10	0.79	60	320
	11/2/2010	0.65	0.16	<1	7.6	1.1	6.39	2.17	2.68	1.30	30	90
BG-2	11/19/2002	1.62	<0.6	<1	7.7	2.00	14.90	3.27	6.88	2.28	13	500
	11/24/2003	0.61	0.10	<1	8.0	0.35	1.69	0.81	0.60	0.53	6	120
	11/11/2004	0.77	0.22	<1	7.4	0.66	4.22	1.42	1.01	0.60	14	<10
	11/15/2005	0.47	0.07	<1	8.0	0.73	3.71	1.58	1.50	0.92	405	5350
	10/21/2006	0.51	<.05	1	7.8	0.53	2.22	0.95	0.89	0.70	14	<50
	11/10/2007	0.91	0.24	<1	7.6	0.95	5.95	2.18	1.45	0.71	26	99
	11/22/2008	0.46	0.15	1	8.0	0.40	2.11	0.89	0.88	0.71	240	1300
	10/15/2009	0.57	0.10	<1	8.0	0.658	3.20	1.31	1.82	1.21	50	300
	11/2/2010	0.40	0.13	<1	7.8	0.53	3.41	1.41	0.71	0.45	40	110
BG-3	11/19/2002	1.45	<0.6	<1	7.8	1.51	9.24	1.95	6.29	2.66	13	500
	11/24/2003	0.53	0.12	<1	8.0	0.53	2.10	1.26	1.80	1.39	11	120
	11/11/2004	0.81	0.19	<1	7.5	0.80	4.74	2.03	1.60	0.86	10	10
	11/15/2005	0.55	0.07	<1	7.9	1.05	5.09	2.43	3.03	1.56	290	4340
	10/21/2006	0.58	0.06	1	7.9	0.44	1.33	0.68	1.25	1.25	16	70
	11/10/2007	0.80	0.25	<1	7.7	0.88	4.99	1.84	1.76	1.95	30	120
	11/22/2008	0.53	0.15	<1	8.1	0.493	1.96	0.95	1.95	1.62	270	1500
	10/15/2009	0.56	0.11	1	8.1	0.708	2.71	1.50	2.33	1.61	70	370
	11/2/2010	0.45	0.13	<1	7.9	0.509	2.72	1.45	0.99	0.68	60	340
BG-4	10/15/2009	0.52	0.07	<1	8.3	0.603	2.22	1.55	1.56	1.14	60	360
	11/2/2010	0.39	0.09	<1	8.0	0.53	2.28	1.44	1.72	1.26	70	440
BG-5	10/15/2009	0.45	0.06	<1	8.4	0.563	1.67	1.27	2.28	1.88	90	620
	11/2/2010	0.36	0.07	<1	8.1	0.34	1.43	0.92	1.09	1.01	80	520
BG-5-7	10/15/2009	0.62	0.08	1	8.3	0.867	2.25	1.74	4.22	2.99	100	600
	11/2/2010	0.43	0.08	<1	8.1	0.542	1.95	1.34	2.19	1.71	90	700
BG-7-9	10/15/2009	0.79	0.08	<1	8.1	1.51	3.73	3.01	7.83	4.27	61	370
	11/2/2010	0.44	0.09	<1	8.1	0.953	2.39	1.72	5.53	3.86	140	1180
BG-9-11	10/15/2009	0.52	0.09	<1	7.9	3.02	12.90	8.38	14.80	4.54	60	420
	11/2/2010	0.48	0.09	<1	7.9	1.51	5.89	3.71	7.19	3.28	40	400
BG-11-13	10/15/2009	0.97	0.12	1	7.8	2.82	19.70	10.40	6.74	1.74	15	540
	11/2/2010	0.65	0.12	<1	8.0	0.827	2.84	1.62	4.06	2.72	30	230
BG-13-15	10/15/2009	0.60	0.08	<1	7.9	0.636	2.77	1.15	1.93	1.38	70	480
	11/2/2010	0.68	0.13	<1	8.0	0.578	2.17	1.10	2.57	2.01	50	320
BG-15-17	10/15/2009	0.84	0.10	<1	7.9	1.27	4.48	1.79	6.25	3.53	70	560
	11/2/2010	0.54	0.09	<1	7.9	0.793	2.63	1.18	4.01	2.91	40	400

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.2-3. Irrigation Soil Analyses, 2000-2013, for Section 28 Center Pivot

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 28 CENTER PIVOT												
N-1	11/19/2002	2.99	<0.6	2	7.7	4.27	20.80	9.40	26.90	6.92	48	3700
	11/24/2003	0.81	0.18	<1	7.8	1.95	8.47	3.94	10.00	4.01	24	400
	11/11/2004	0.89	0.37	<1	7.6	2.67	14.60	6.38	14.00	4.32	28	70
	11/15/2005	0.68	0.17	<1	7.9	2.65	13.90	6.55	11.40	3.57	42	430
	10/21/2006	1.11	0.16	2	7.6	2.37	12.70	6.20	9.35	3.04	57	280
	11/10/2007	1.14	0.47	<1	7.7	2.50	14.00	6.18	10.90	3.43	34	490
	11/22/2008	1.17	0.39	1	7.9	2.90	16.90	8.44	13.40	3.73	48	760
	10/9/2009	1.62	0.41	2	7.8	3.69	18.18	8.96	18.14	4.87	117	895
	11/3/2010	1.37	0.27	2	7.8	4.29	23.00	11.50	24.00	5.78	24	230
	10/20/2011	0.73	0.22	<1	7.3	2.45	21.00	6.58	5.32	1.43	17	500
	11/12/2012	1.15	0.39	1	7.7	1.33	5.90	2.56	5.23	2.54	90	680
	12/17/2013	<1	<1	<1	7.6	4.10	29.20	10.20	13.30	3.00	54	1020
N-2	11/19/2002	1.47	<0.6	<1	7.7	4.51	20.60	7.60	29.00	7.72	68	3400
	11/24/2003	0.70	0.16	<1	7.9	2.42	9.47	3.73	15.70	6.11	49	450
	11/11/2004	0.80	0.23	<1	7.7	2.63	11.50	4.60	16.20	5.71	61	70
	11/15/2005	0.74	0.15	<1	7.9	4.09	15.70	7.75	26.60	7.77	87	330
	10/21/2006	1.14	0.09	2	7.7	2.56	12.50	6.43	12.90	4.16	18	610
	11/10/2007	1.01	0.34	<1	7.6	3.11	17.60	8.91	15.00	4.12	37	500
	11/22/2008	1.01	0.24	1	7.8	3.27	18.40	9.17	16.40	4.42	35	870
	10/9/2009	1.12	0.19	1	7.8	3.57	20.66	10.80	15.65	3.97	65	1011
	11/3/2010	1.24	0.20	2	7.5	4.13	22.00	11.00	20.60	5.07	121	890
	10/20/2011	0.78	0.13	<1	7.6	2.18	18.50	7.14	3.73	1.04	11	770
	11/12/2012	0.77	0.13	<1	7.7	1.88	11.70	4.71	5.59	1.95	29	580
	12/17/2013	<1	<1	<1	7.8	3.58	27.10	13.60	8.91	2.00	15	890
N-3	11/19/2002	0.74	<0.6	<1	7.6	4.51	22.90	7.57	26.40	6.76	39	1300
	11/24/2003	0.57	0.13	<1	7.8	2.55	13.20	5.28	13.40	4.41	74	380
	11/11/2004	0.70	0.23	<1	7.6	3.30	17.00	7.29	17.40	4.99	134	70
	11/15/2005	0.58	0.12	<1	7.9	4.29	14.90	7.44	6.00	1.80	118	420
	10/21/2006	1.06	0.08	2	7.8	3.58	15.20	8.21	26.00	7.60	37	670
	11/10/2007	0.92	0.25	<1	7.8	3.46	16.30	8.70	20.60	5.83	37	540
	11/22/2008	1.01	0.25	1	8.0	3.11	15.20	8.55	17.50	5.08	60	910
	10/9/2009	1.24	0.20	1	8.0	4.13	18.94	12.63	23.56	5.72	65	1054
	11/3/2010	1.34	0.23	1	7.7	4.16	18.90	13.80	23.60	5.84	60	720
	10/20/2011	0.75	0.08	1	7.7	2.50	18.90	10.60	5.45	1.42	13	690
	11/12/2012	1.07	0.15	<1	7.6	2.53	16.80	5.89	9.16	2.72	38	930
	12/17/2013	1.30	<1	<1	7.9	4.92	25.20	17.00	26.40	5.70	21	1570

Table B.2-3. Irrigation Soil Analyses, 2000-2013, for Section 28 Center Pivot (cont.)

Sample Site	Date	U (mg/kg)	Se (mg/kg)	Mo (mg/kg)	pH (units)	Cond. mmhos/cm	Ca (meq/l)	Mg (meq/l)	Na (meq/l)	SAR (ratio)	Cl (mg/kg)	SO4 (mg/kg)
N-4	10/9/2009	0.78	0.10	1	8.1	3.47	12.67	9.14	22.18	6.39	50	683
	11/3/2010	1.03	0.15	1	7.9	2.98	11.70	6.84	17.50	5.75	44	560
	10/20/2011	0.76	0.15	<1	7.8	2.75	15.00	10.70	10.70	2.98	19	620
	11/12/2012	0.72	0.10	<1	7.8	1.88	9.28	3.97	7.50	2.91	35	460
	12/17/2013	<1	<1	<1	7.9	4.10	21.20	13.10	20.10	4.90	23	778
N-5	10/10/2009	0.83	0.12	3	8.2	3.77	11.46	8.43	27.17	9.22	100	783
	11/3/2010	0.84	0.14	1	7.9	3.26	10.10	5.11	22.80	8.27	60	710
	10/20/2011	0.62	<0.05	<1	8.0	2.49	8.29	6.90	14.50	5.26	40	560
	11/12/2012	0.63	0.06	<1	8.0	1.33	4.37	2.64	6.65	3.55	90	610
	12/17/2013	<1	<1	<1	8.2	1.52	3.28	2.60	9.69	5.60	10	188
N-5-7	10/11/2009	0.71	0.08	2	8.2	3.41	9.95	6.13	22.89	9.69	159	604
	11/3/2010	0.71	0.13	1	7.9	3.27	10.30	5.73	21.00	7.42	180	750
	10/20/2011	0.48	<0.05	1	8.0	2.69	7.56	5.29	17.60	6.94	67	690
	11/12/2012	0.71	0.06	<1	8.0	1.83	5.81	3.99	9.22	4.17	70	570
	12/17/2013	1.30	<1	<1	8.0	5.83	20.00	14.70	43.00	10.30	30	1090
N-7-9	10/12/2009	0.76	0.10	2	8.0	3.90	14.73	10.58	23.32	6.54	140	871
	11/3/2010	0.61	0.09	2	7.9	2.52	6.57	4.19	16.90	7.29	130	1000
	10/20/2011	0.38	<0.05	<1	8.0	2.66	10.70	7.25	14.40	4.81	58	680
	11/12/2012	0.97	0.09	<1	7.8	3.23	14.20	7.90	17.20	5.17	70	980
	12/17/2013	<1	<1	<1	7.9	4.42	13.50	9.00	31.00	9.20	54	550
N-9-11	10/13/2009	0.47	0.08	2	8.0	3.46	14.26	7.59	18.29	6.13	166	602
	11/3/2010	0.67	0.16	1	7.8	3.26	14.50	9.27	17.00	4.93	69	520
	10/20/2011	0.39	<0.05	<1	7.9	2.58	12.10	9.12	10.80	3.32	71	580
	11/12/2012	0.52	0.07	<1	7.7	2.75	11.50	6.24	13.90	4.67	49	640
	12/17/2013	<1	<1	<1	7.8	6.11	23.70	16.60	41.40	9.20	64	1550
N-11-13	10/14/2009	0.53	0.12	1	7.9	2.68	10.01	4.34	15.14	5.88	145	747
	11/3/2010	0.64	0.15	2	7.7	3.35	16.60	7.81	15.00	4.29	151	370
	10/20/2011	0.35	<0.05	<1	7.9	1.86	7.72	3.80	9.00	3.75	83	630
	11/12/2012	0.57	<0.05	<1	7.5	2.48	12.40	5.94	10.40	3.43	28	2700
	12/17/2013	<1	<1	<1	7.7	5.60	26.20	9.10	35.60	8.50	95	777
N-13-15	10/15/2009	1.02	0.28	2	7.8	3.40	14.01	6.45	19.97	6.17	136	948
	11/3/2010	0.80	0.24	2	7.7	2.74	13.20	4.90	13.60	4.52	90	440
	10/20/2011	0.40	0.08	<1	7.7	2.29	11.50	4.65	10.30	3.62	84	520
	11/12/2012	0.51	0.07	<1	7.5	2.72	13.20	5.21	13.00	4.28	93	680
	12/17/2013	<1	<1	<1	7.5	4.99	25.10	7.90	31.70	7.80	62	847
N-15-17	10/16/2009	0.41	0.20	2	7.8	3.04	14.16	6.43	16.08	4.75	92	620
	11/3/2010	0.53	0.12	1	7.8	2.08	9.00	3.35	4.51	4.51	70	500
	12/17/2013	<1	<1	<1	7.8	2.41	8.96	2.90	16.00	6.60	54	311

NOTE: 2000 Sample: 1 = 0 - 6 inches, 2 = 6 - 18 inches and 3 = 18 - 36 inches
2001 through 2008 Sample: 1 = 0 - 1 ft, 2 = 1 - 2 ft and 3 = 2 - 3 ft; BG samples are background.

Table B.2-4. Irrigation Soil Meteoric Water Mobility Test Results, 2015, for Section 28

Sample Site	Date	U (mg/l)	Se (mg/l)	Mo (mg/l)	pH (units)	Nitrate/ Nitrite (mg/l)	TDS (mg/l)	Cl (mg/kg)	SO4 (mg/kg)
SECTION 28 CENTER PIVOT									
1	8/24/2015	0.0225	0.0094	0.03	8.11	3.58	232	2.6	60
2	8/24/2015	0.0214	0.0053	0.04	8.41	1.38	526	13.7	290
3	8/24/2015	0.0241	0.0205	<0.02	8.26	1.93	940	30.8	550
4	8/24/2015	0.0214	0.0090	<0.02	8.49	0.59	570	18.0	340
5	8/24/2015	0.0130	0.0051	<0.02	8.18	0.50	626	19.6	380
6	8/24/2015	0.0135	0.0032	<0.02	8.41	0.53	386	16.9	230
7	8/24/2015	0.0141	0.0067	<0.02	8.19	0.31	552	44.5	280
8	8/24/2015	0.0167	0.0124	<0.02	8.15	0.81	636	67.6	320
9	8/24/2015	0.0086	0.0100	<0.02	8.27	0.74	478	74.2	180
10	8/24/2015	0.0063	0.0050	<0.02	8.39	0.63	344	69.7	120
11	8/24/2015	0.0054	0.0050	<0.02	8.30	1.19	558	133.0	180
12	8/24/2015	0.0111	0.0058	0.02	7.96	0.83	756	96.5	350
13	8/24/2015	0.0078	0.0049	<0.02	8.29	0.56	608	71.0	580
14	8/24/2015	0.0017	0.0100	0.02	8.35	0.95	630	75.1	290
15	8/24/2015	0.0020	0.0130	0.03	8.21	1.55	760	72.7	390
17	8/24/2015	0.0032	0.0099	0.02	8.18	1.71	668	28.6	380

APPENDIX C

SOIL MOISTURE CONCENTRATIONS FROM IRRIGATION LYSIMETERS

APPENDIX C

TABLE OF CONTENTS

SOIL MOISTURE CONCENTRATIONS FROM IRRIGATION LYSIMETERS

Page Number

FIGURES

APPENDIX C

TABLE OF CONTENTS

SOIL MOISTURE CONCENTRATIONS FROM IRRIGATION LYSIMETERS

Page Number

FIGURES (continued)

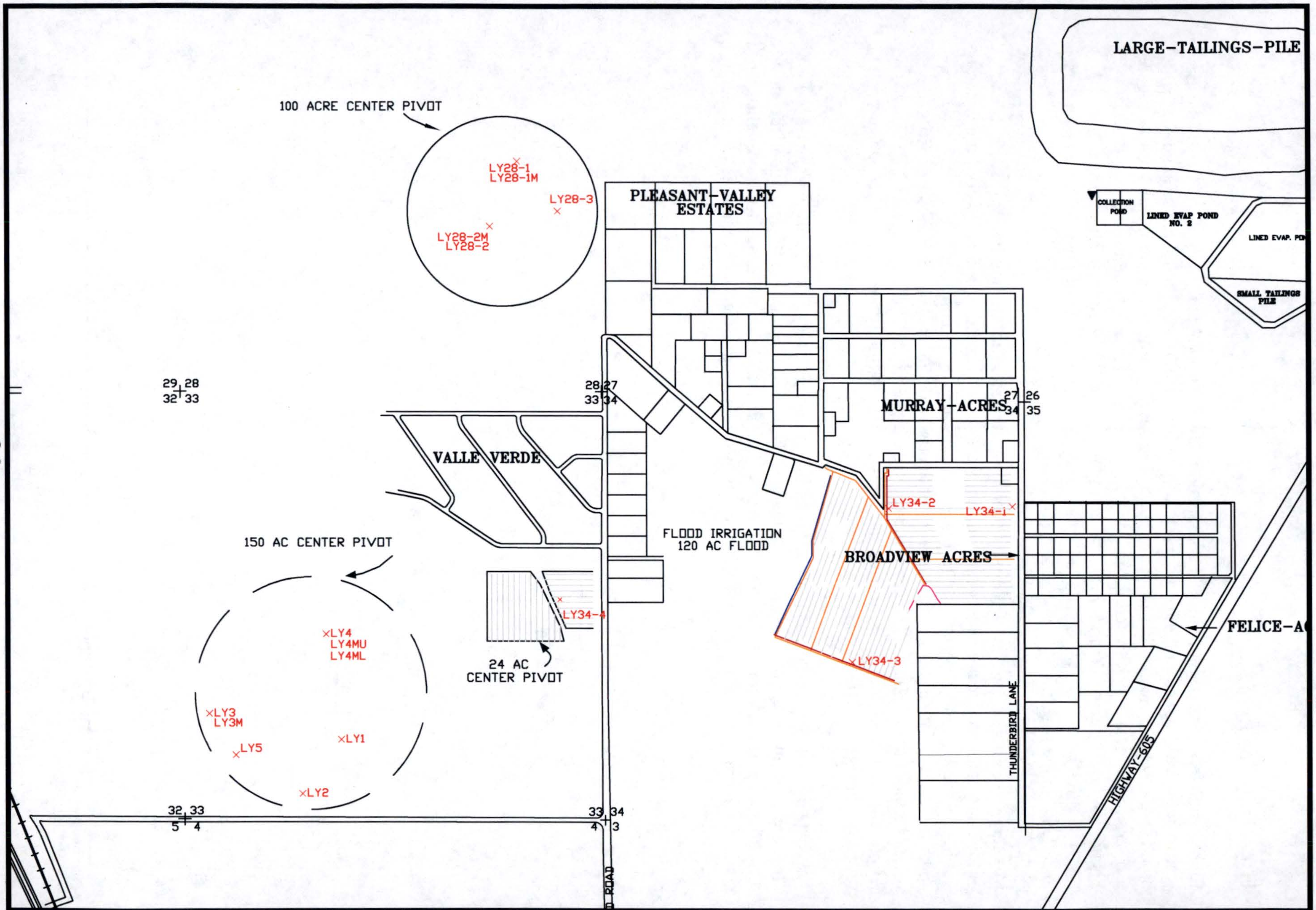
TABLES

C.0 Irrigation Lysimeters

Eight lysimeters were initially installed in Section 33 center pivot area in 2009. Three of these lysimeters were installed in the basalt and five were installed in the alluvial material above the basalt (see HMC 2013a or other irrigation report for details in the lysimeter installations). Figure C-1 shows the locations of the eight Section 33 lysimeters. Three lysimeters were installed in Section 34 flood area while one was installed in the Section 33 flood area which was labeled LY34-4. Five lysimeters were installed in the Section 28 pivot area with two of these lysimeters installed into the basalt.

Monthly or quarterly sampling frequency was conducted after installation through 2015. Some of the lysimeters produced water most sampling periods while others produced very little water. Table C-1 presents the water quality results of the soil moisture samples for the major constituents, presenting the data in the order of Sections 33, 28 and 34. The minor constituents which includes the uranium and selenium data is presented in Table C-2. Figures C-2 through C-23 present plots of soil moisture concentrations with time for the lysimeters that produced several samples.

This data defines concentrations in the alluvial soil moisture but are not a measurement of soil moisture concentration entering the ground water. The ground water monitoring data is the most direct data that is collected to define the impacts of the irrigation on the ground-water quality. In general, the uranium concentrations in the soil moisture have declined since the ceasing of the irrigation.



HOMESTAKE MILL AND ADJACENT PROPERTIES ~ GRANTS, NM ~ TOWNSHIP-11&12N, RANGE-10W

FIGURE C-1 LOCATIONS OF THE SOIL MOISTURE LYSIMETERS IN THE IRRIGATION AREAS

DATE: 9/6/17

SCALE: 1"=1600'

PAGE:

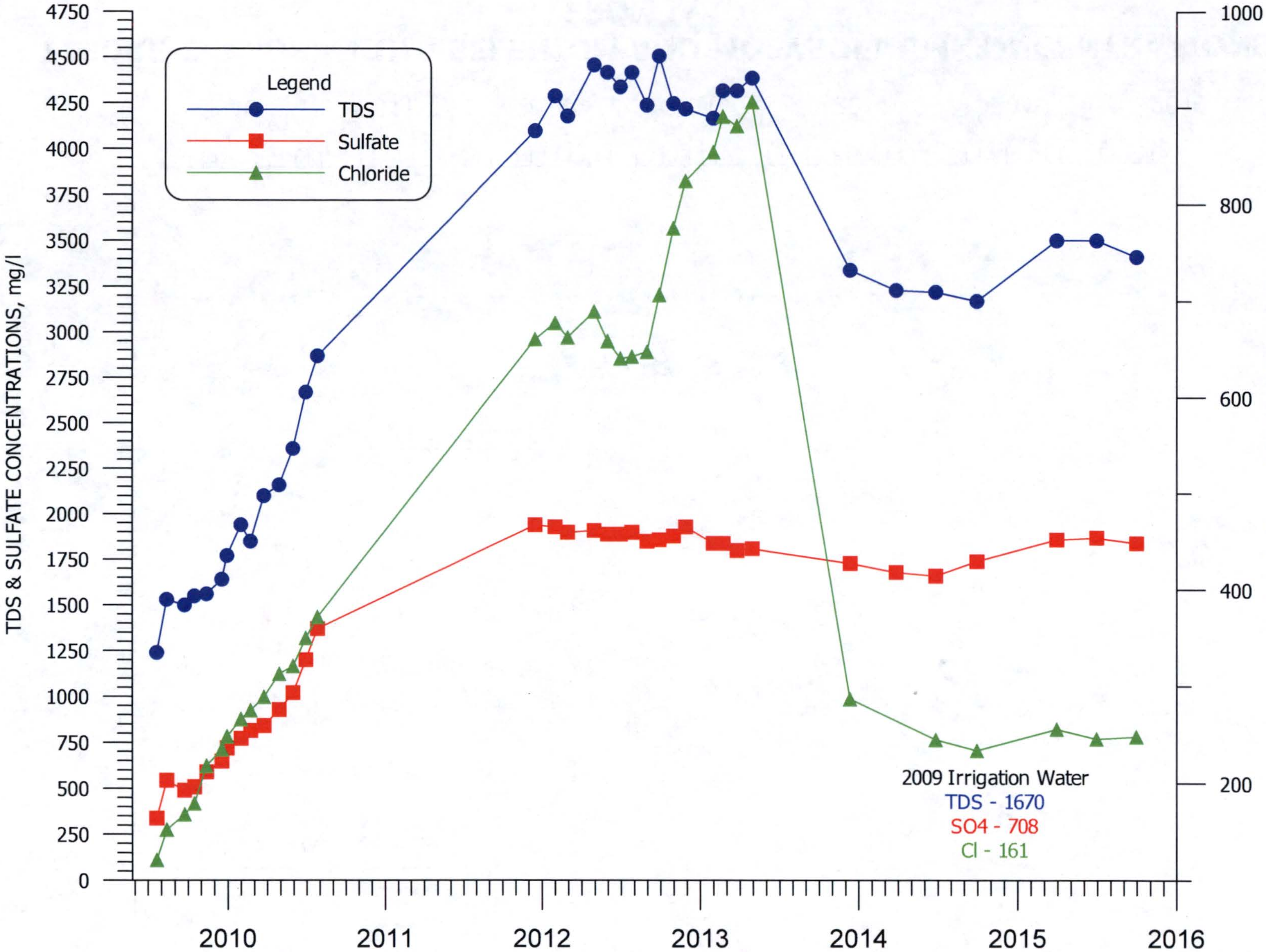


FIGURE C-2. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY1.

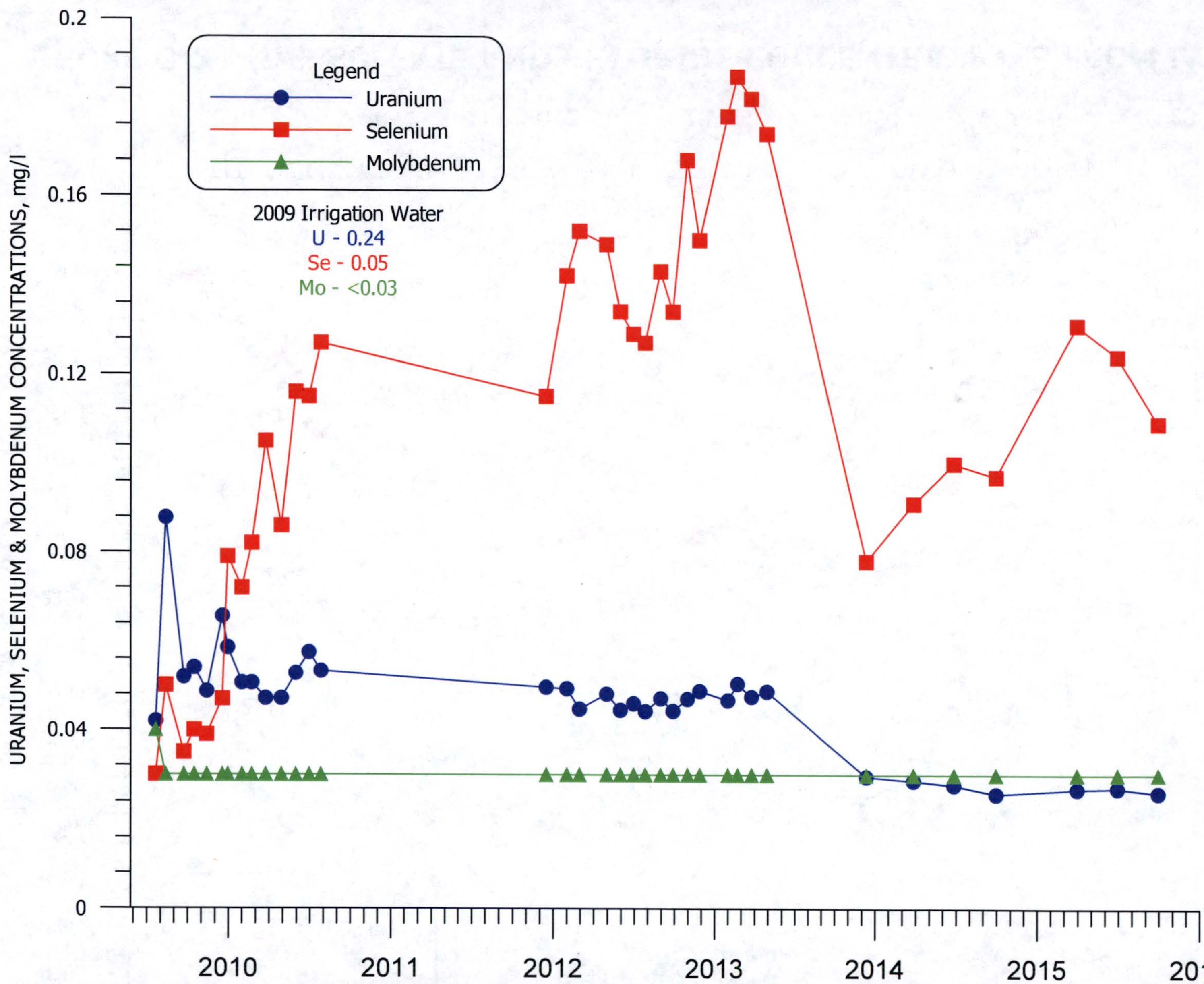


FIGURE C-3. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY1.

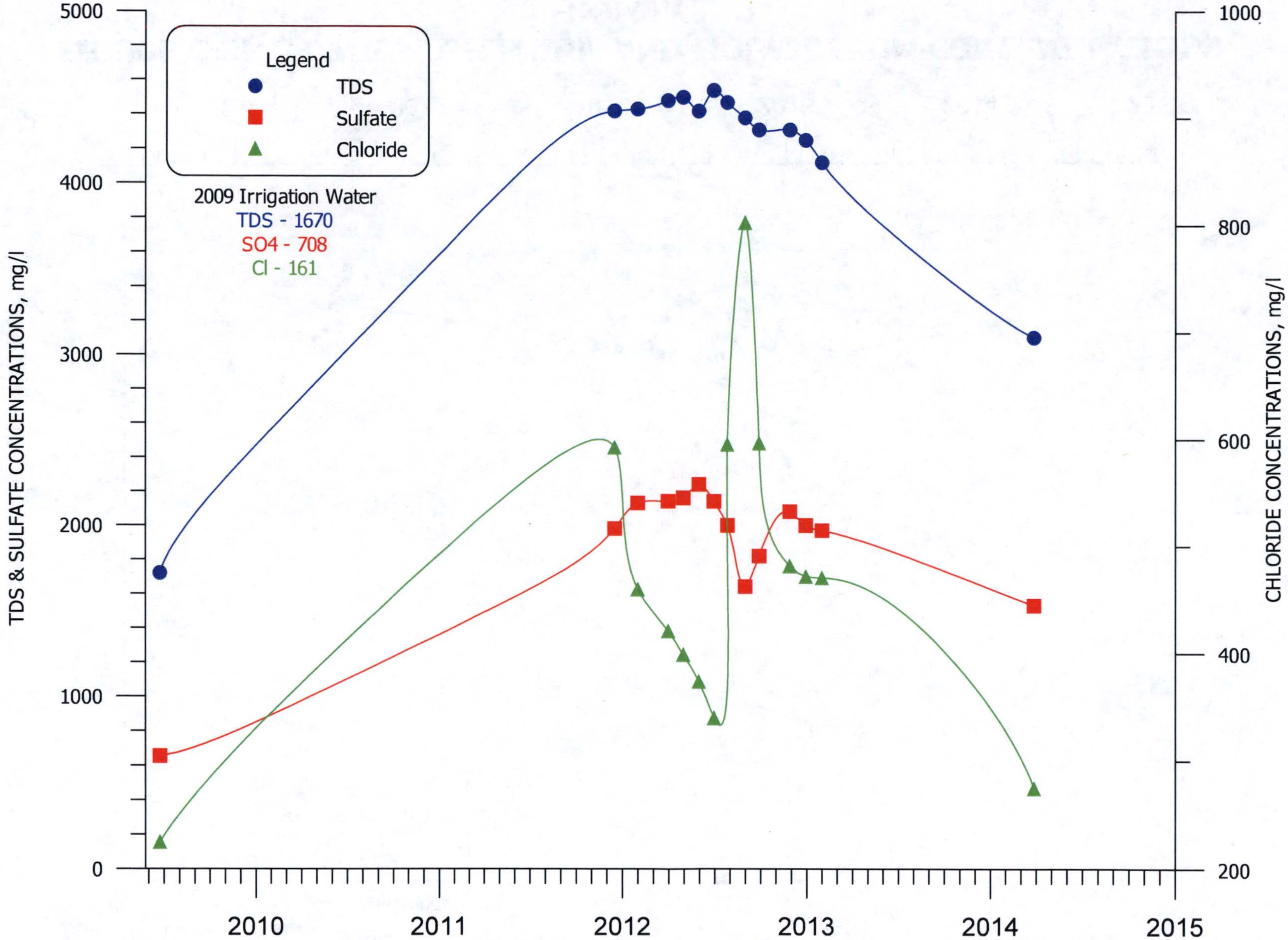


FIGURE C-4. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY2.

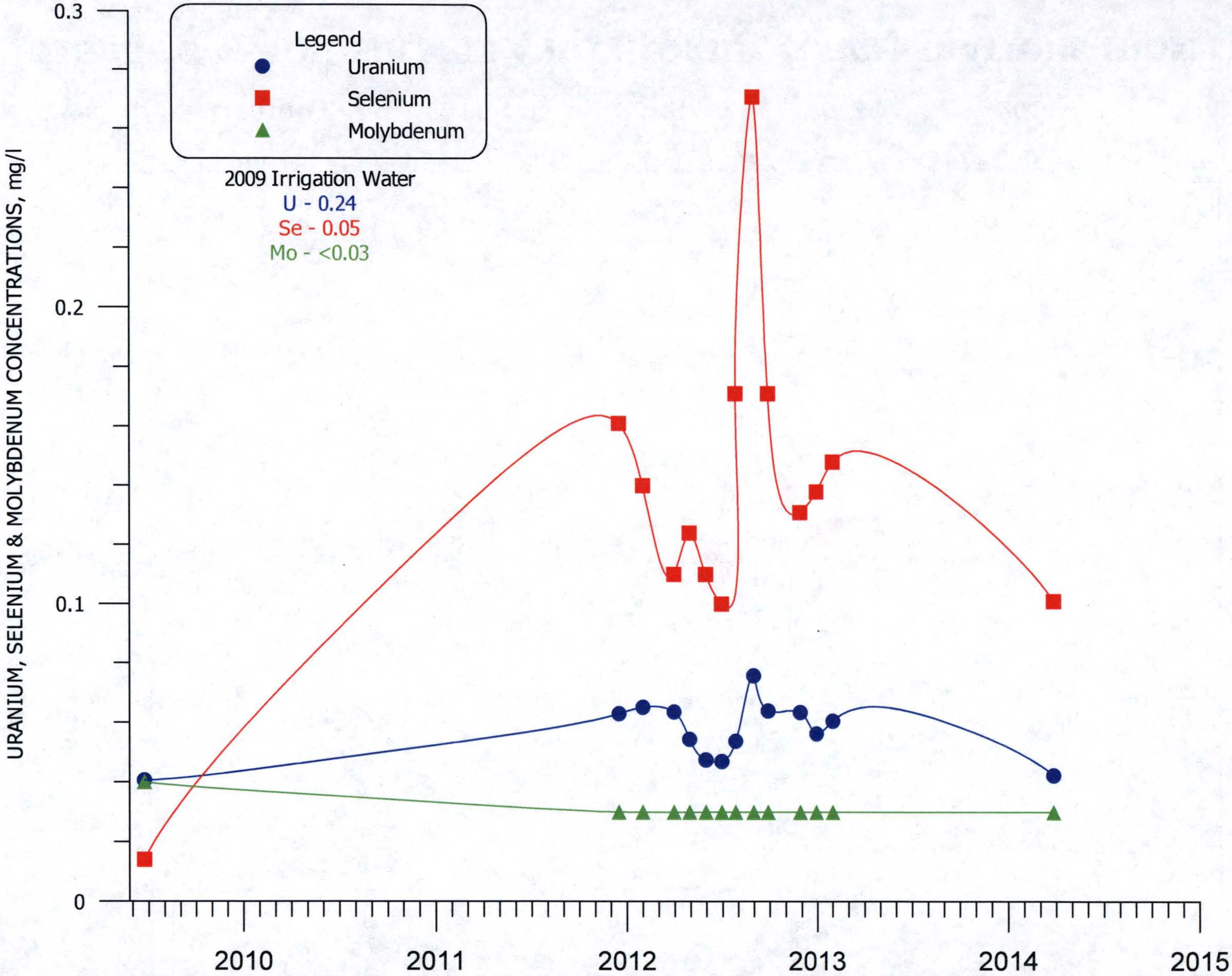


FIGURE C-5. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY2.

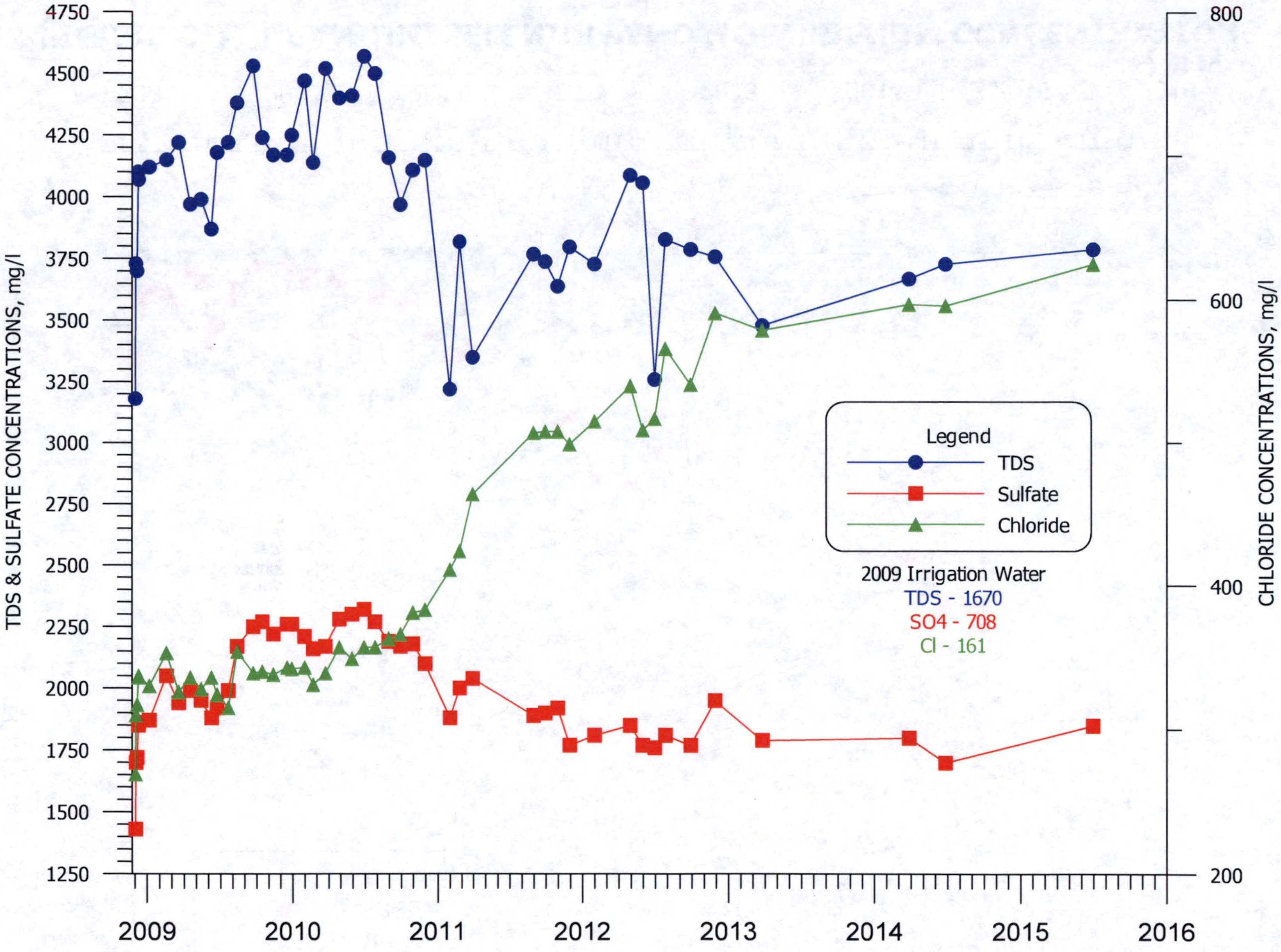


FIGURE C-6. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY4.

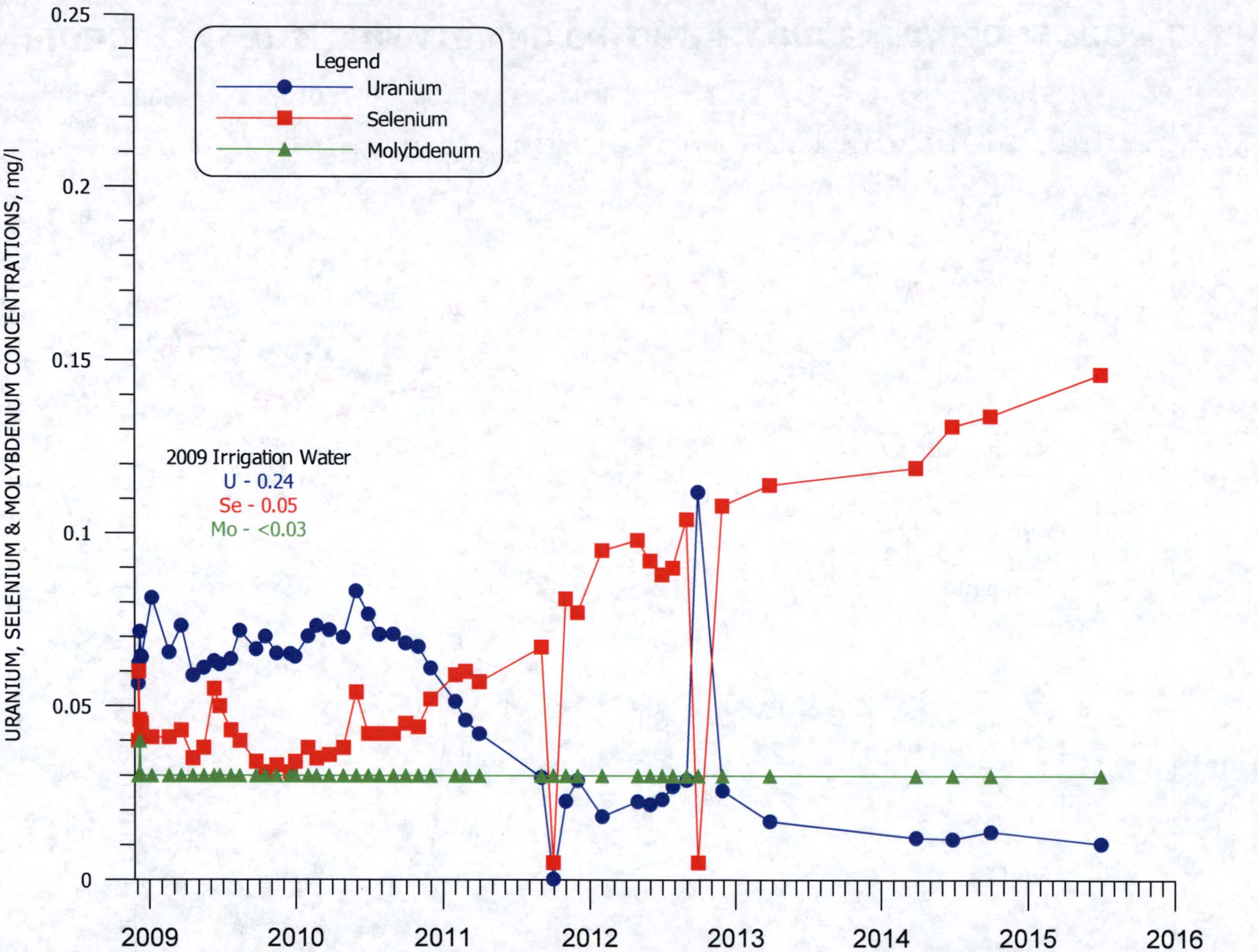


FIGURE C-7. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY4.

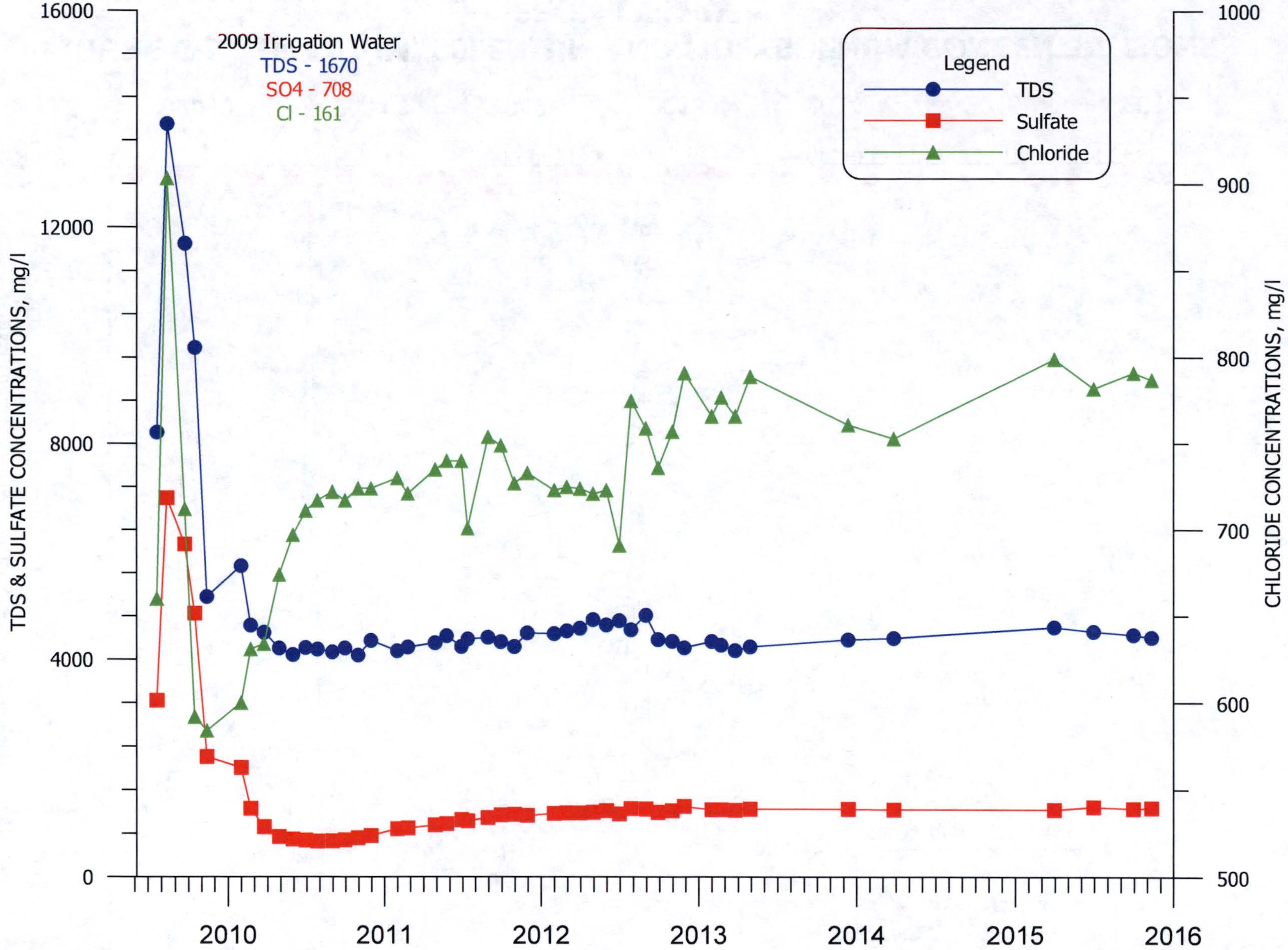


FIGURE C-8. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY4MU.

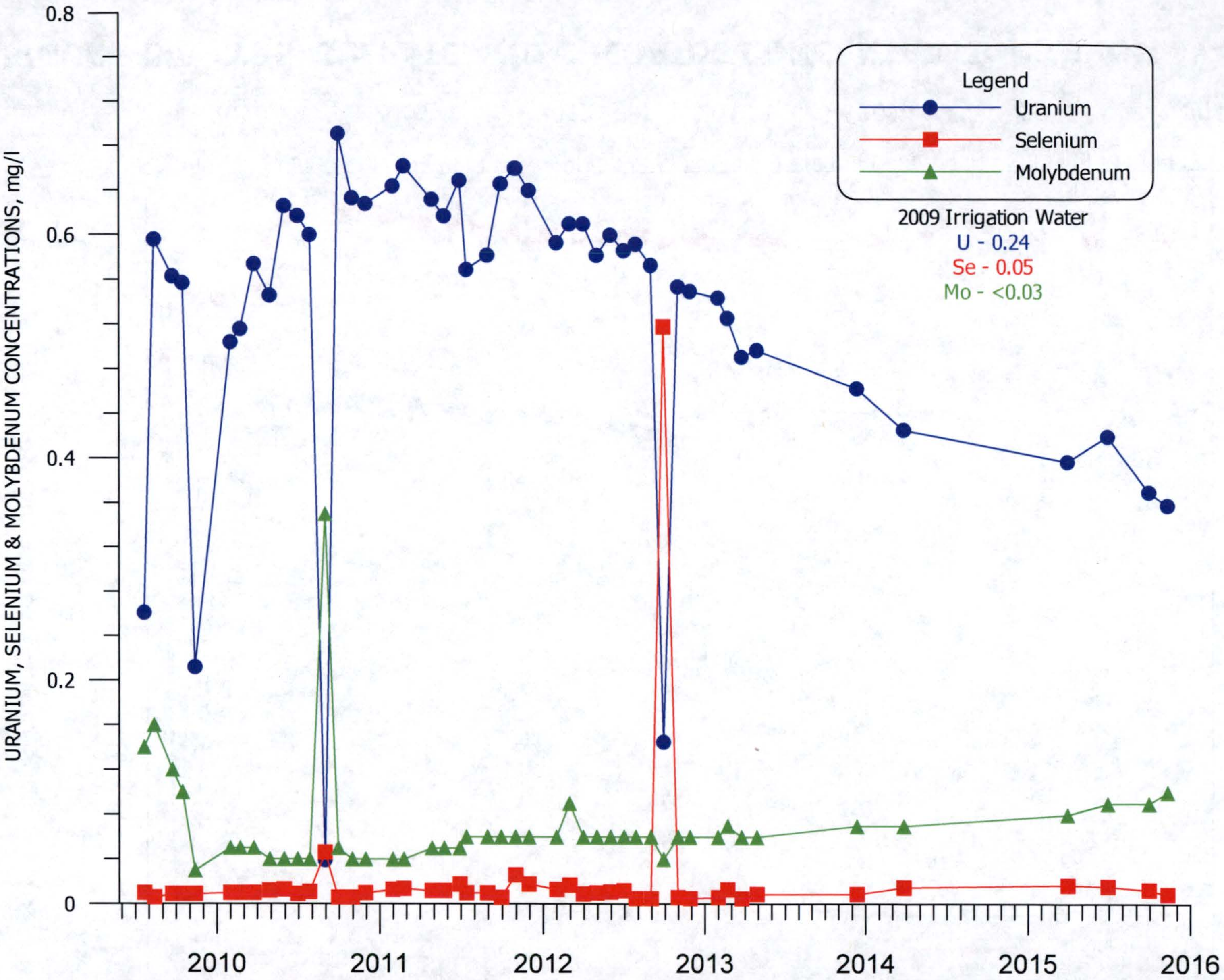


FIGURE C-9. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY4MU.

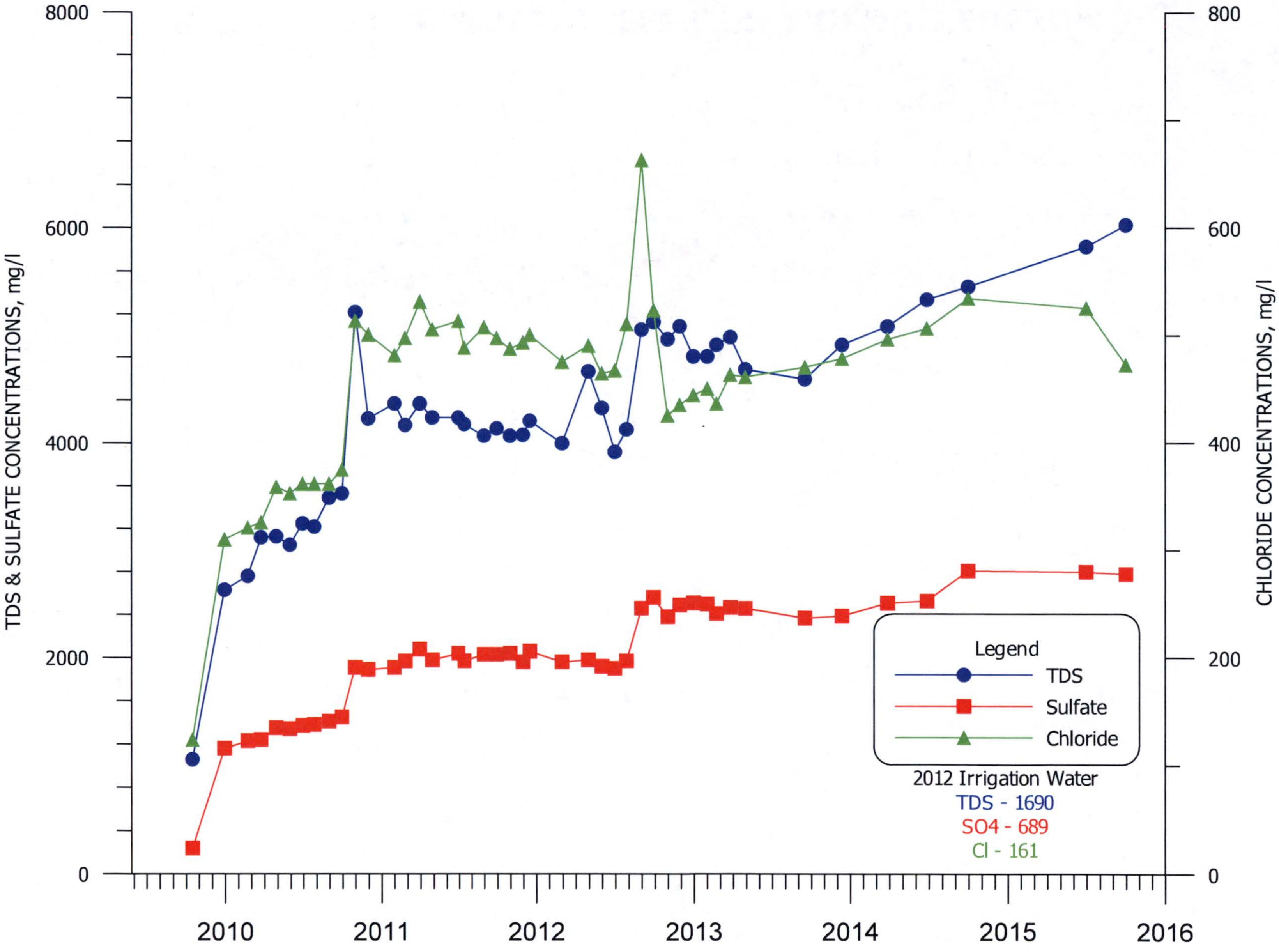


FIGURE C-10. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY34-1.

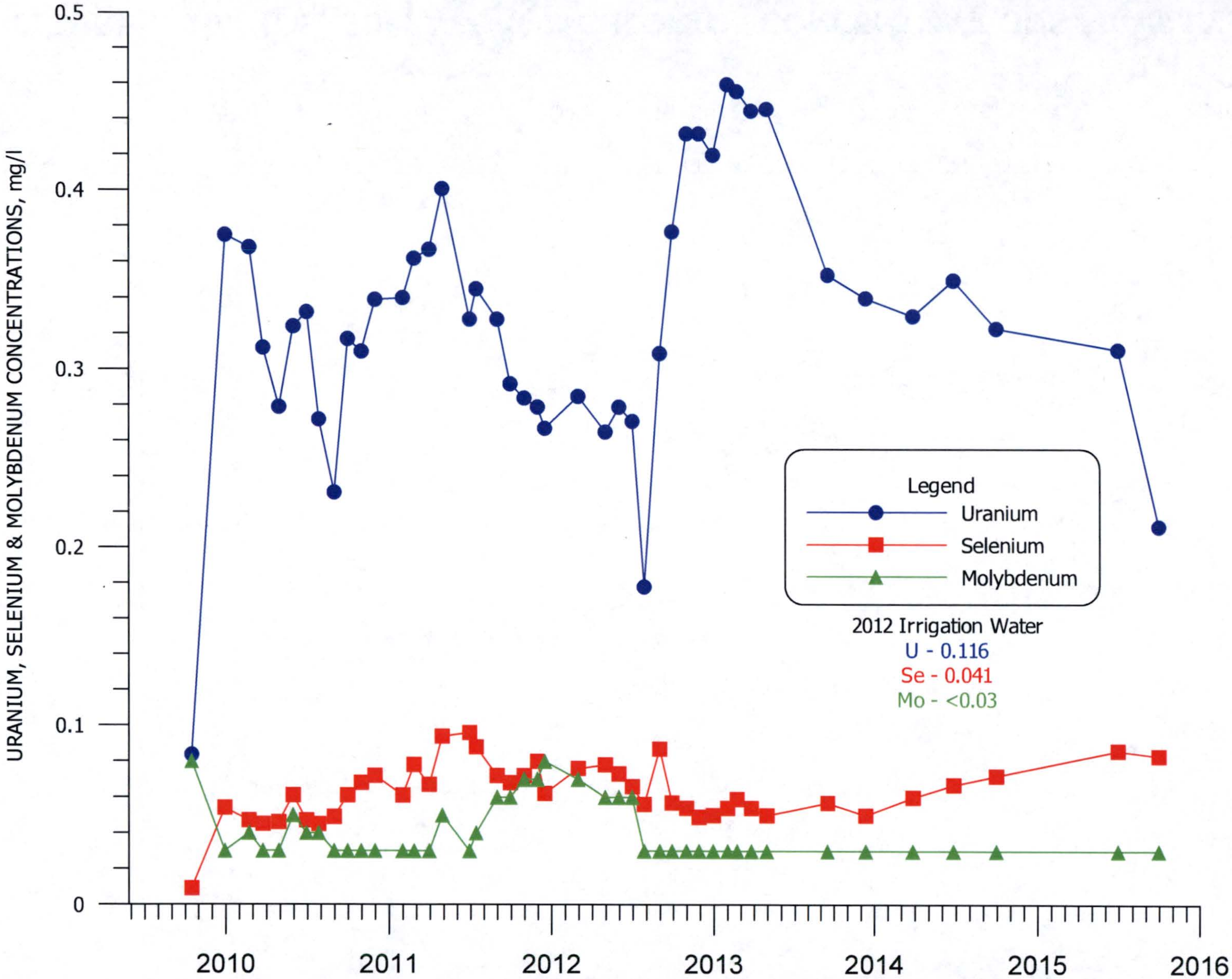


FIGURE C-11. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY34-1.

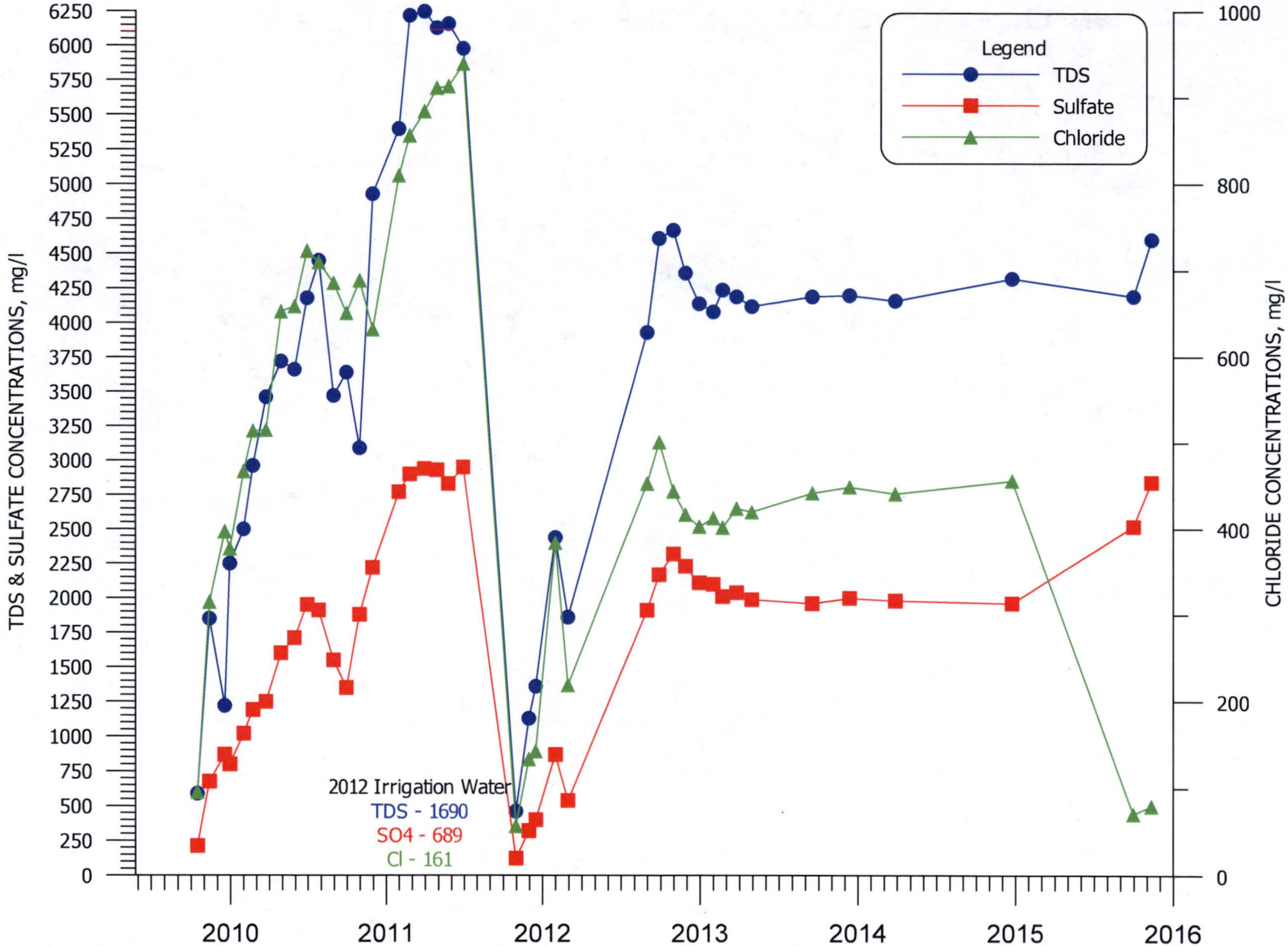


FIGURE C-12. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY34-2.

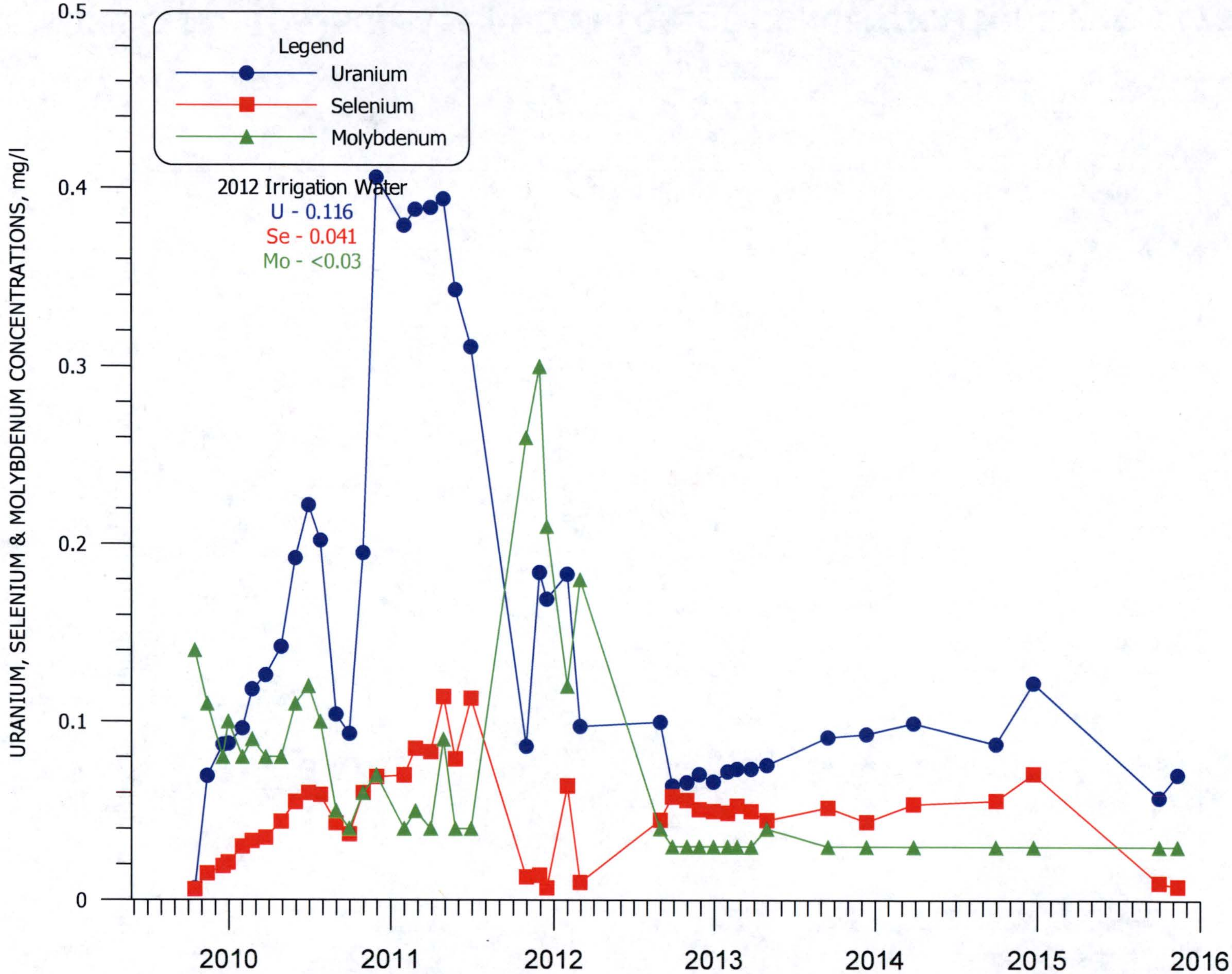


FIGURE C-13. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY34-2.

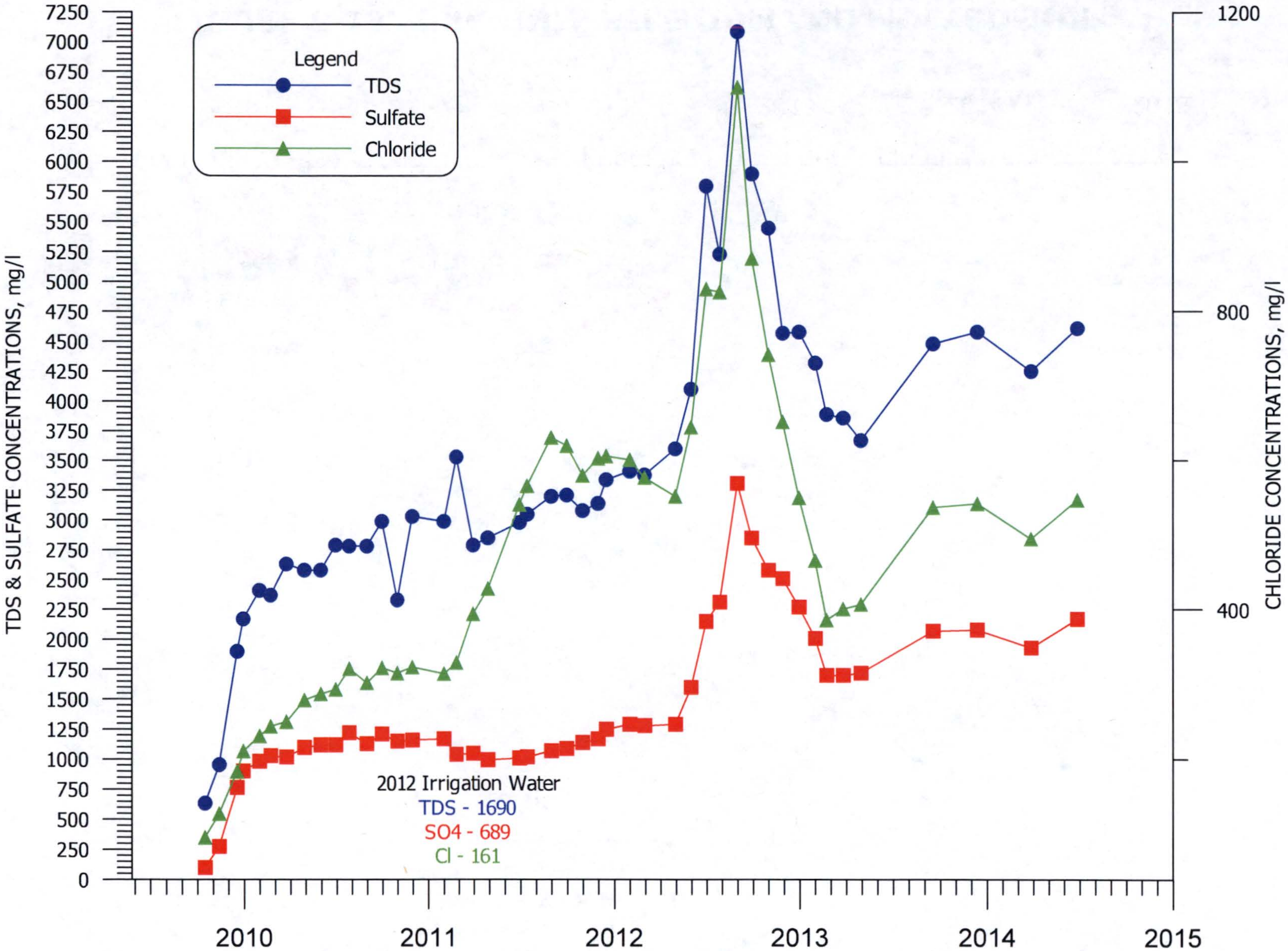


FIGURE C-14. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY34-3.

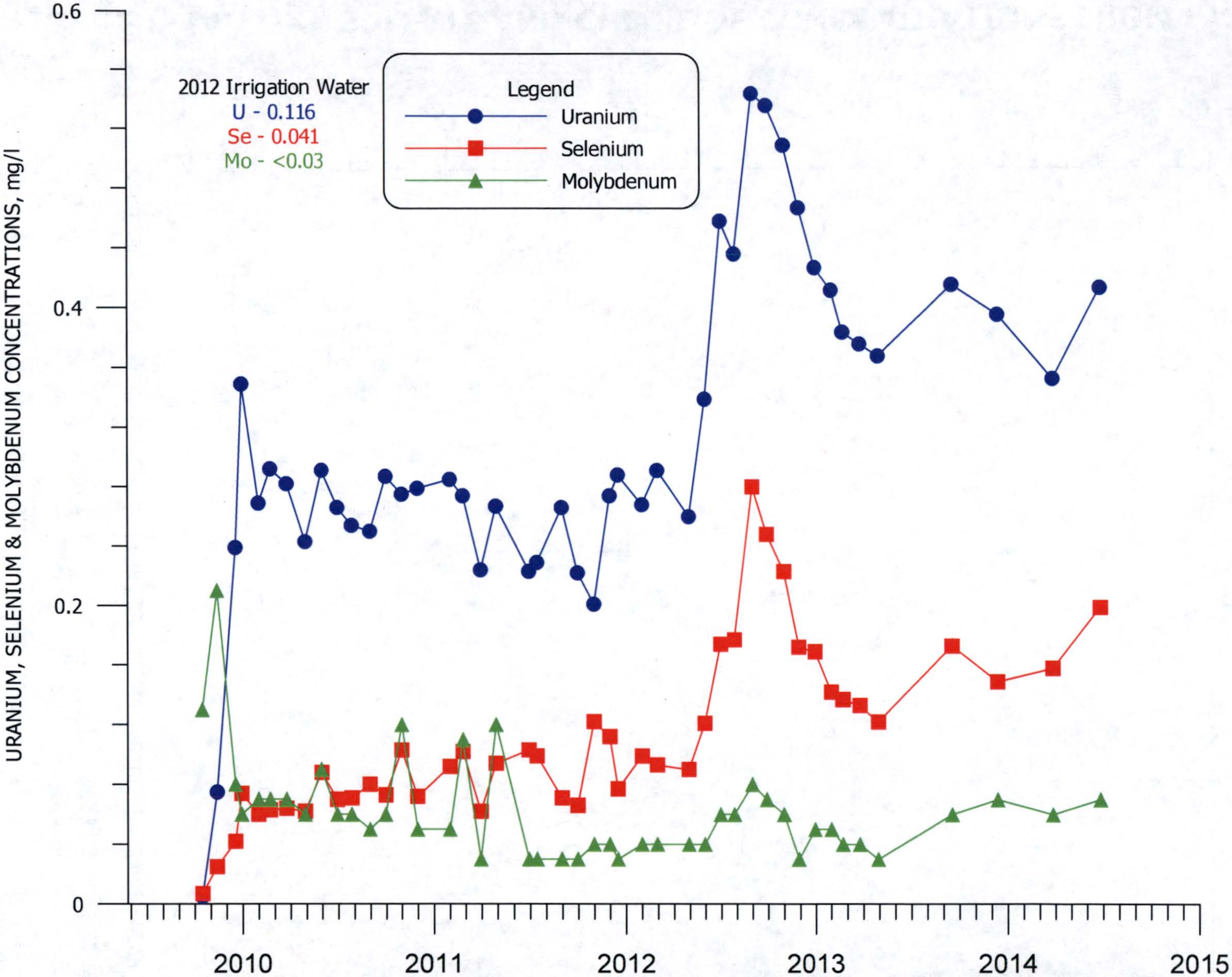


FIGURE C-15. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY34-3.

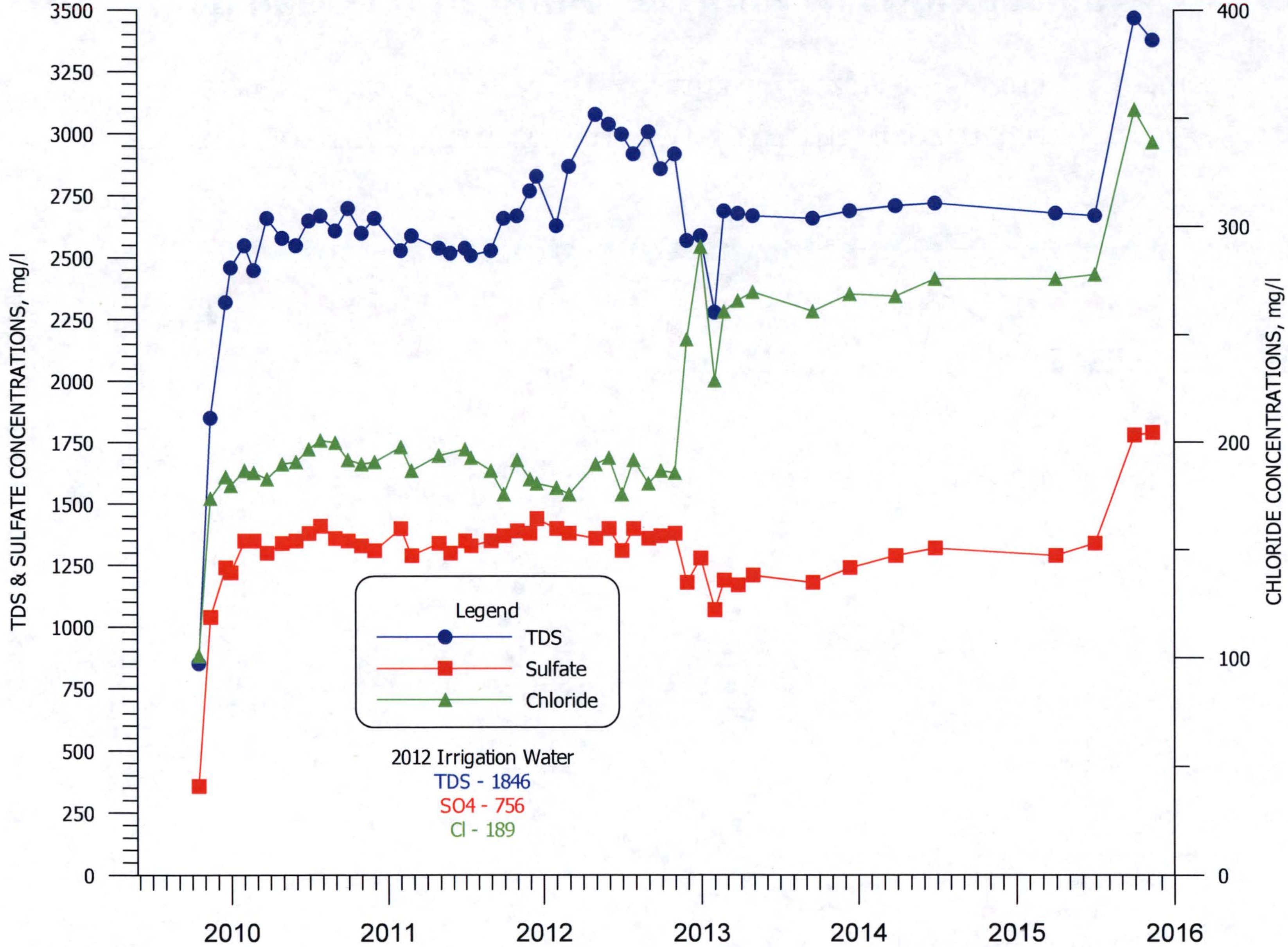


FIGURE C-16. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-1.

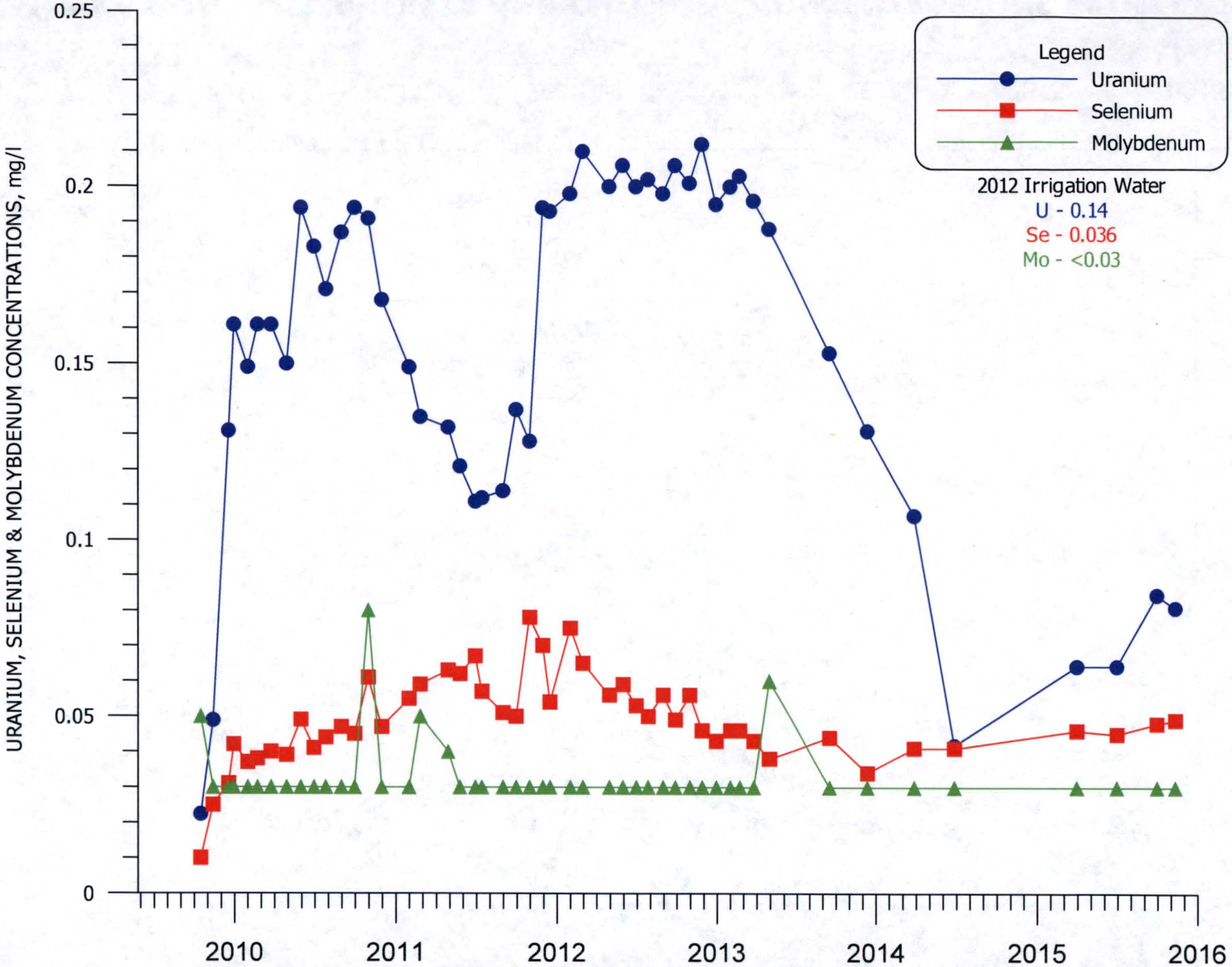


FIGURE C-17. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-1.

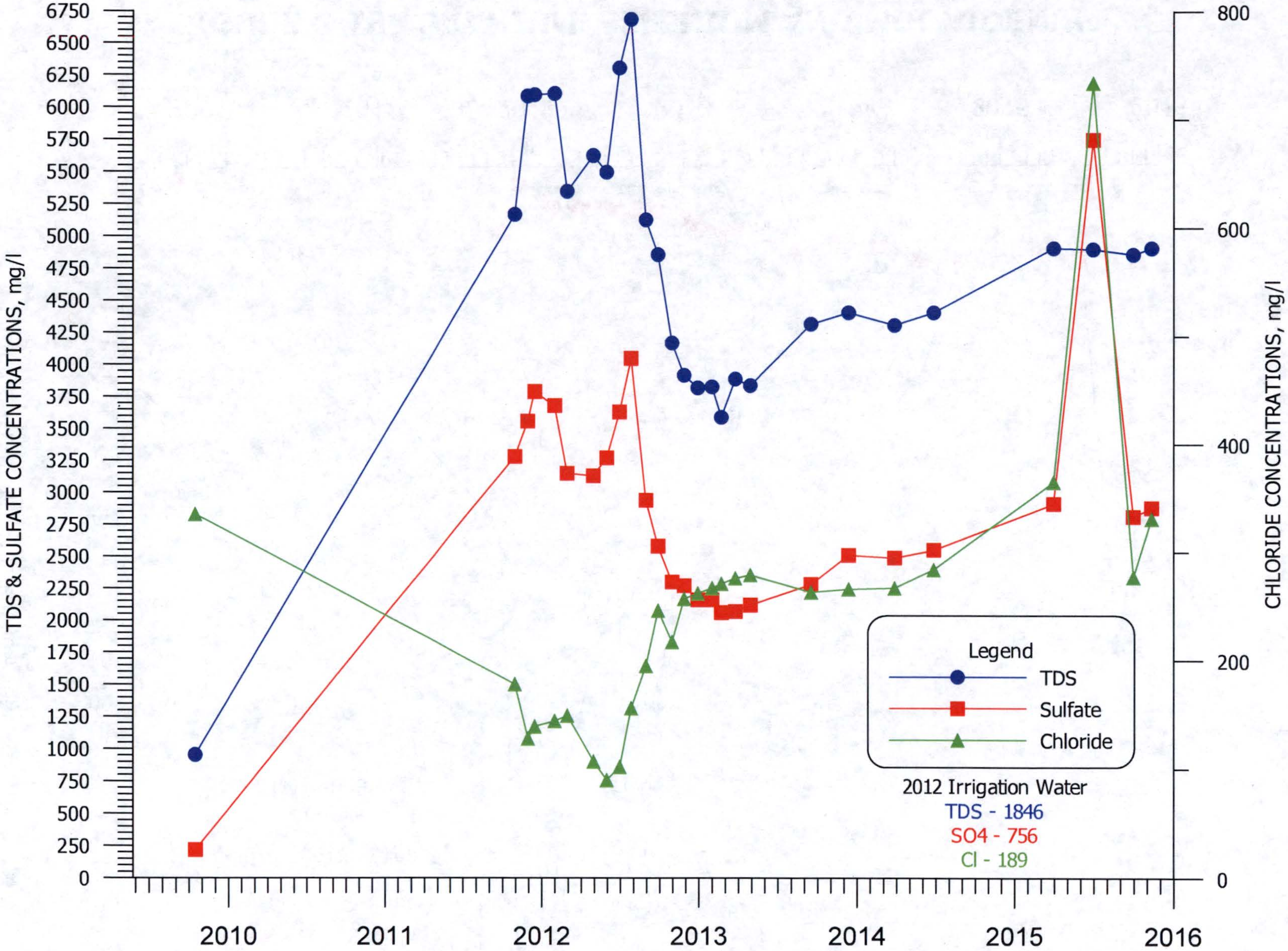


FIGURE C-18. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-2.

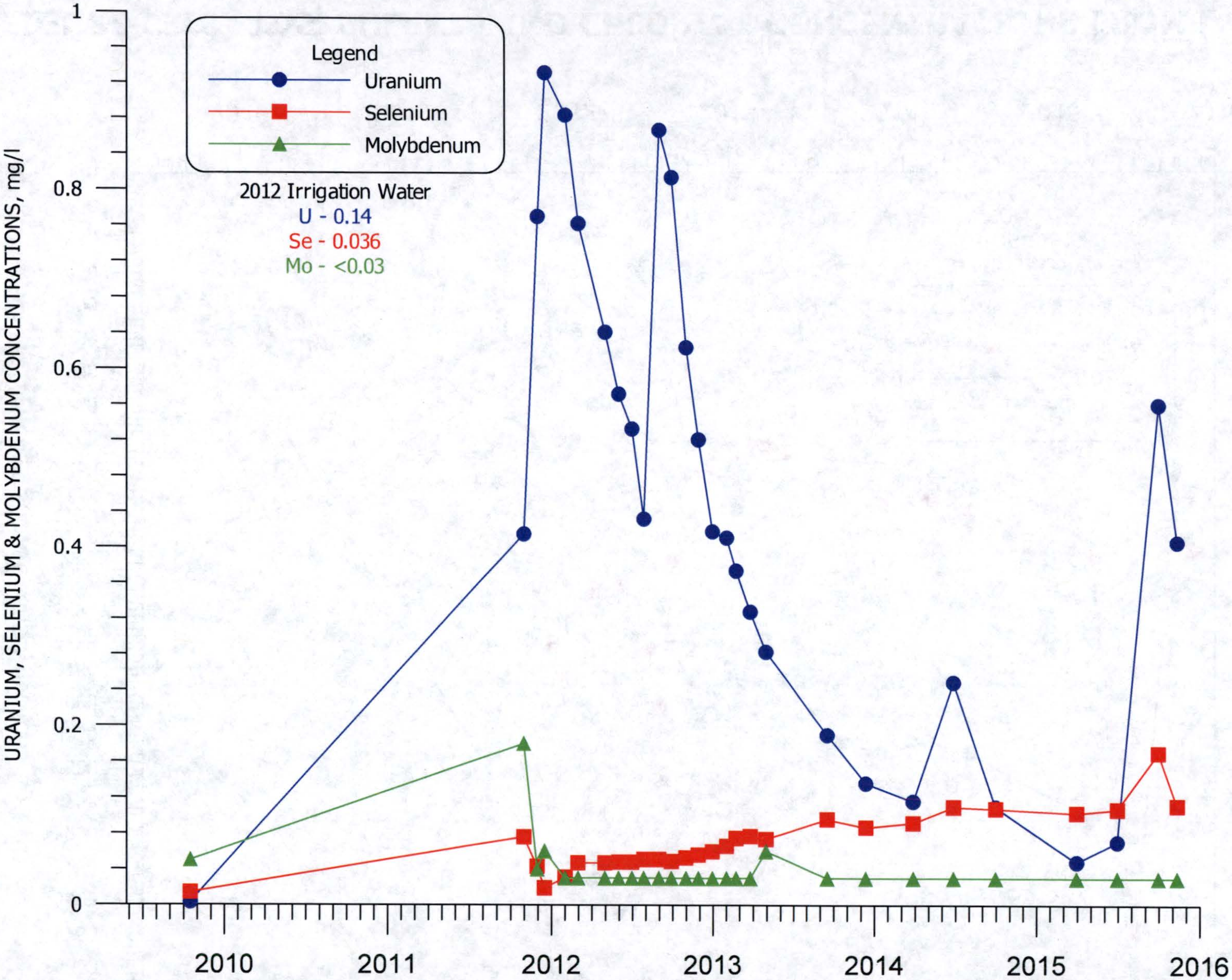


FIGURE C-19. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-2.

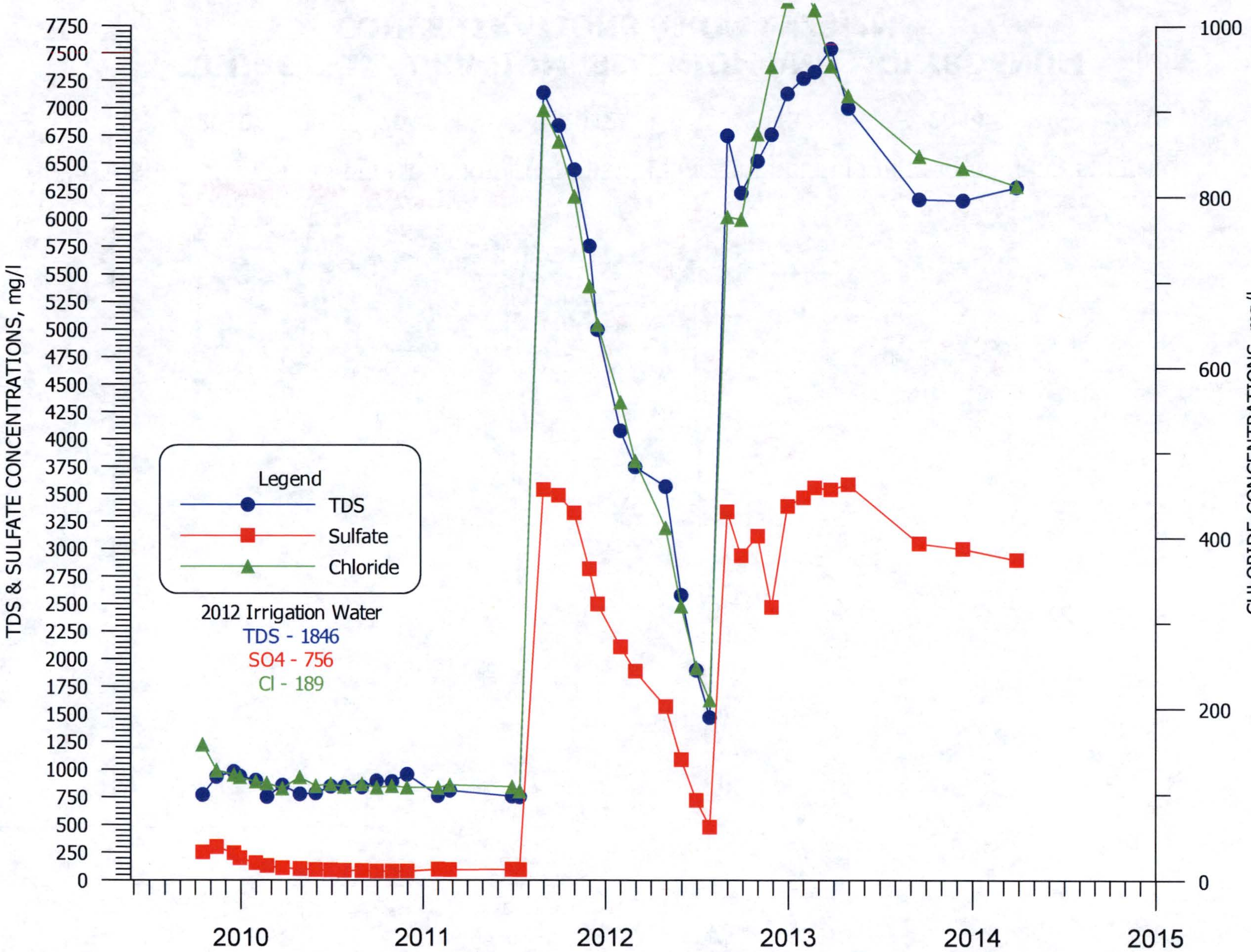


FIGURE C-20. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-2M.

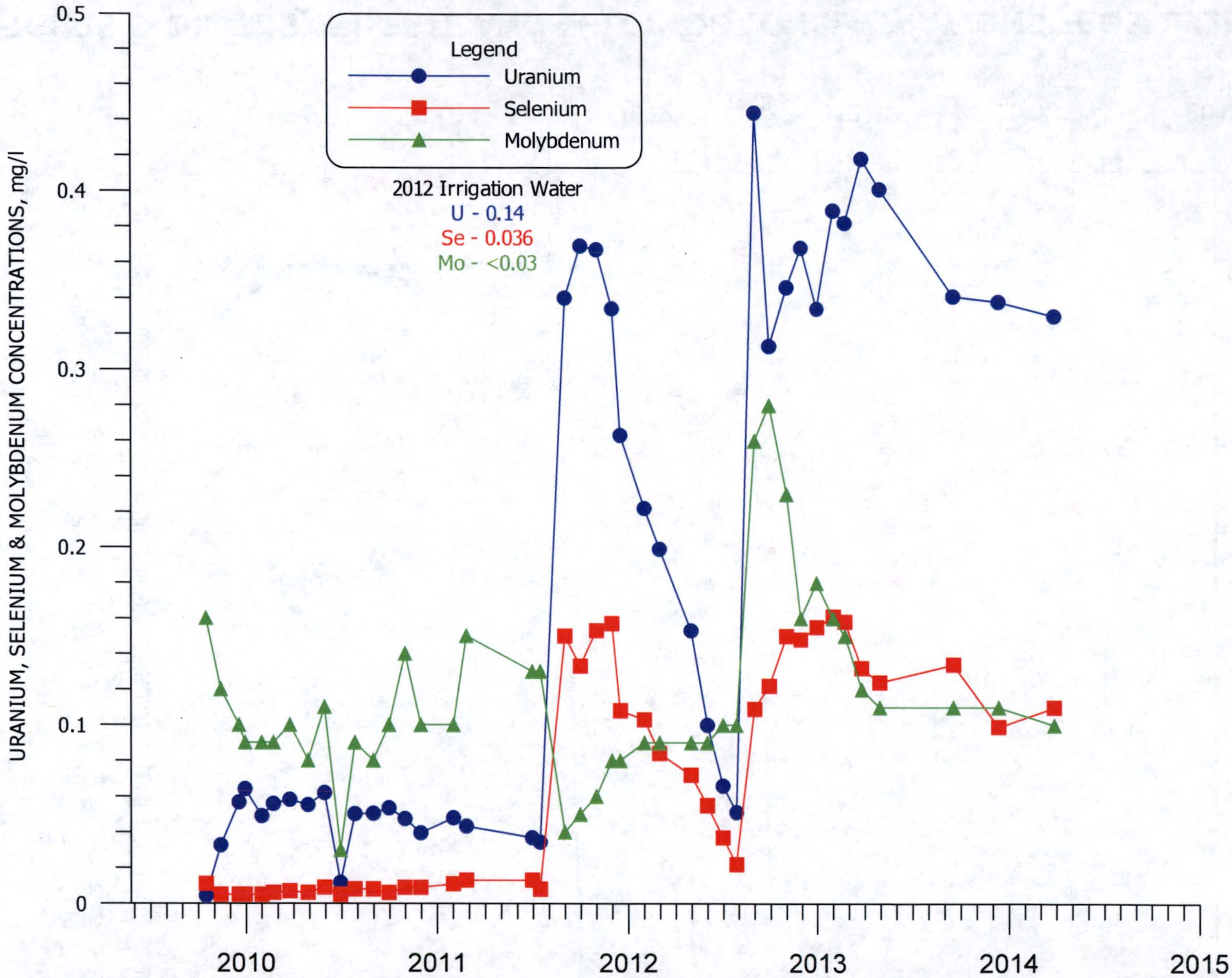


FIGURE C-21. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-2M.

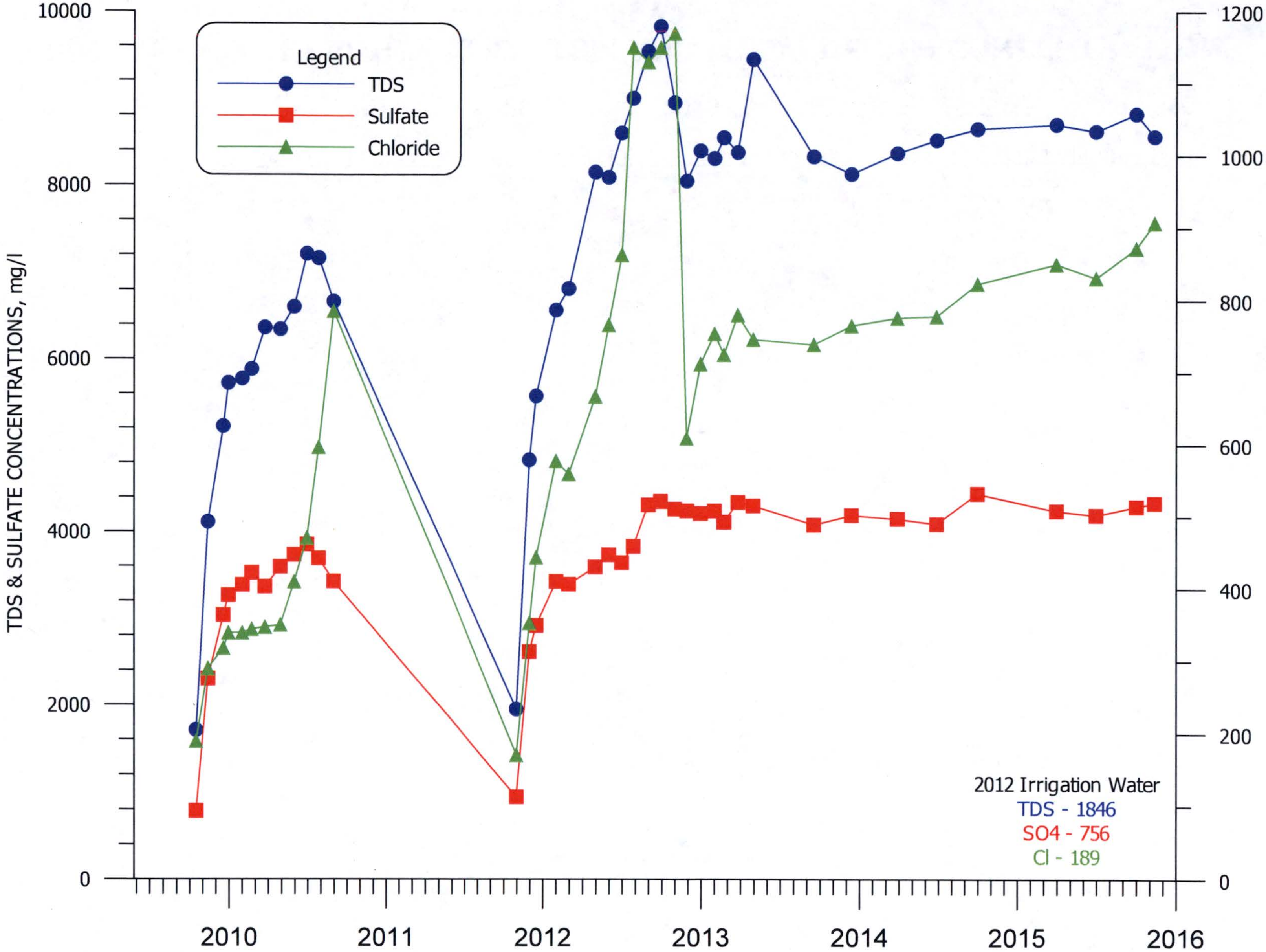


FIGURE C-22. TDS, SULFATE AND CHLORIDE CONCENTRATIONS FROM LY28-3.

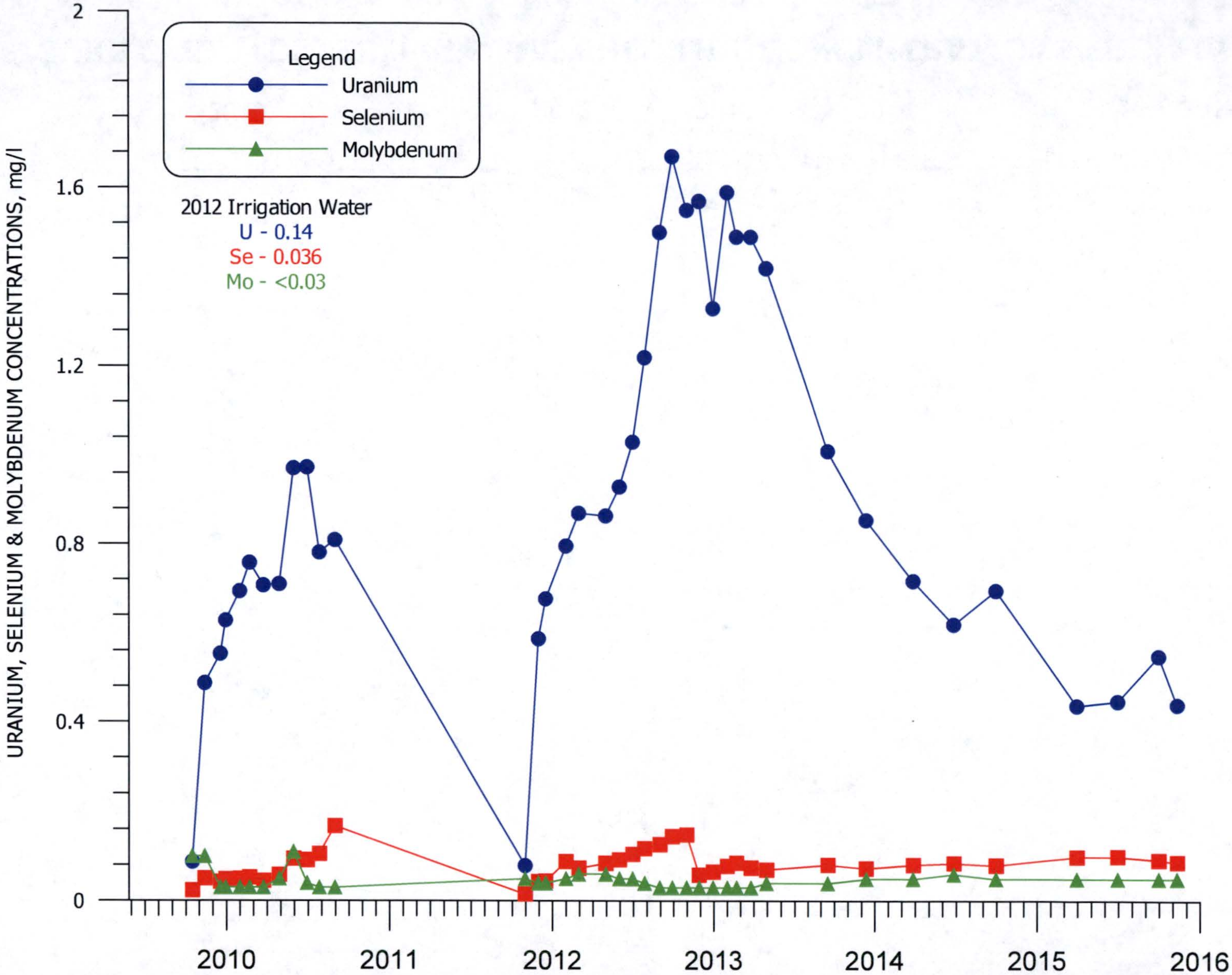


FIGURE C-23. URANIUM, SELENIUM AND MOLYBDENUM CONCENTRATIONS FROM LY28-3.

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY1	7/22/2009	ENER	---	---	---	---	---	---	121	337	1240	---	---
	8/13/2009	ENER	---	---	---	---	---	---	152	543	1530	---	---
	9/23/2009	ENER	201	118	2.90	61.3	529	< 1.000	168	489	1500	* 2010	0.951
	10/16/2009	ENER	---	---	---	---	---	---	179	508	1550	* 2082	---
	11/13/2009	ENER	189	154	2.80	61.5	488	< 5.00	218	590	1560	* 2270	0.934
	12/18/2009	ENER	230	141	2.60	60.1	467	< 5.00	235	647	1640	* 2338	0.922
	12/30/2009	ENER	286	127	2.40	61.2	430	< 5.00	248	719	1770	* 2075	0.940
	1/31/2010	ENER	---	---	---	---	---	---	266	770	1940	---	---
	2/22/2010	ENER	---	---	---	---	---	---	275	814	1850	* 2560	---
	3/25/2010	ENER	---	---	---	---	---	---	289	840	2100	* 2650	---
	4/29/2010	ENER	---	---	---	---	---	---	313	927	2160	* 2750	---
	5/31/2010	ENER	---	---	---	---	---	---	321	1020	2360	* 2870	---
	6/30/2010	ENER	---	---	---	---	---	---	350	1200	2670	* 3136	---
	7/27/2010	ENER	---	---	---	---	---	---	372	1370	2870	* 3310	---
	12/16/2011	ENER	---	---	---	---	---	---	661	1940	4100	* 4640	---
	1/31/2012	ENER	---	---	---	---	---	---	678	1930	4290	* 5036	---
	2/29/2012	ENER	---	---	---	---	---	---	663	1900	4180	* 5012	---
	4/30/2012	ENER	---	---	---	---	---	---	690	1910	4460	* 5033	---
	5/31/2012	ENER	---	---	---	---	---	---	659	1890	4420	* 4993	---
	6/30/2012	ENER	---	---	---	---	---	---	641	1890	4340	* 4941	---
	7/27/2012	ENER	---	---	---	---	---	---	643	1900	4420	* 4910	---
	8/31/2012	ENER	---	---	---	---	---	---	648	1850	4240	* 4944	---
	9/28/2012	ENER	---	---	---	---	---	---	707	1860	4510	* 5017	---
	10/31/2012	ENER	---	---	---	---	---	---	776	1880	4250	* 5082	---
	11/28/2012	ENER	---	---	---	---	---	---	825	1930	4220	* 5174	---
	1/31/2013	ENER	---	---	---	---	---	---	855	1840	4170	* 5245	---
	2/22/2013	ENER	---	---	---	---	---	---	892	1840	4320	* 5239	---
	3/26/2013	HMC	---	---	---	---	---	---	882	1800	4320	5292	---
	4/30/2013	ENER	---	---	---	---	---	---	907	1810	4390	* 5297	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY1	12/12/2013	ENER	---	---	---	---	---	---	287	1730	3340	* 3810	---
	3/28/2014	ENER	---	---	---	---	---	---	266	1680	3230	---	---
	6/27/2014	ENER	---	---	---	---	---	---	245	1660	3220	---	---
	9/30/2014	ENER	---	---	---	---	---	---	234	1740	3170	---	---
	12/23/2014	ENER	---	---	---	---	---	---	233	1720	3350	---	---
	3/31/2015	ENER	---	---	---	---	---	---	256	1860	3500	* 3870	---
	6/30/2015	ENER	---	---	---	---	---	---	246	1870	3500	* 2932	---
	9/30/2015	ENER	---	---	---	---	---	---	248	1840	3410	* 3819	---
LY2	6/24/2009	ENER	---	---	---	---	---	---	225	654	1720	* 2308	---
	12/16/2011	ENER	---	---	---	---	---	---	593	1980	4420	* 5068	---
	1/31/2012	ENER	---	---	---	---	---	---	460	2130	4430	* 5013	---
	3/31/2012	ENER	---	---	---	---	---	---	421	2140	4480	* 4920	---
	4/30/2012	ENER	---	---	---	---	---	---	399	2160	4500	* 4988	---
	5/31/2012	ENER	---	---	---	---	---	---	374	2240	4420	* 4871	---
	6/30/2012	ENER	---	---	---	---	---	---	340	2140	4540	* 4844	---
	7/27/2012	ENER	---	---	---	---	---	---	596	2000	4470	* 5090	---
	8/31/2012	ENER	---	---	---	---	---	---	803	1640	4380	* 5351	---
	9/28/2012	ENER	---	---	---	---	---	---	597	1820	4310	* 4984	---
	11/28/2012	ENER	---	---	---	---	---	---	482	2080	4310	* 4831	---
	12/30/2012	ENER	---	---	---	---	---	---	472	2000	4250	* 4892	---
	1/31/2013	ENER	---	---	---	---	---	---	471	1970	4120	* 4777	---
	3/28/2014	ENER	---	---	---	---	---	---	275	1530	3100	---	---
LY4	12/4/2008	ENER	---	---	---	---	---	---	269	1430	3180	---	---
	12/5/2008	ENER	---	---	---	---	---	---	310	1700	3730	---	---
	12/8/2008	ENER	---	---	---	---	---	---	317	1720	3700	---	---
	12/11/2008	ENER	---	---	---	---	---	---	336	1850	4100	---	---
	12/12/2008	ENER	---	---	---	---	---	---	337	1860	4070	---	---
	1/7/2009	ENER	---	---	---	---	---	---	330	1870	4120	---	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY4	2/18/2009	ENER	702	138	5.20	412	783	< 1.000	353	2050	4150	---	0.984
	3/20/2009	ENER	---	---	---	---	---	---	326	1940	4220	---	---
	4/18/2009	ENER	---	---	---	---	---	---	336	1990	3970	* 4522	---
	5/15/2009	ENER	---	---	---	---	---	---	328	1950	3990	---	---
	6/10/2009	ENER	---	---	---	---	---	---	336	1880	3870	* 4370	---
	6/24/2009	ENER	---	---	---	---	---	---	324	1920	4180	* 4503	---
	7/22/2009	ENER	---	---	---	---	---	---	315	1990	4220	---	---
	8/13/2009	ENER	---	---	---	---	---	---	354	2170	4380	---	---
	9/23/2009	ENER	728	142	3.50	392	842	< 1.000	339	2250	4530	* 4870	0.928
	10/16/2009	ENER	---	---	---	---	---	---	340	2270	4240	* 5040	---
	11/13/2009	ENER	652	147	3.80	430	634	< 5.00	338	2220	4170	* 5100	0.957
	12/18/2009	ENER	757	149	4.00	425	712	< 5.00	343	2260	4170	* 5096	1.00
	12/30/2009	ENER	699	153	4.00	468	837	< 5.00	342	2260	4250	* 3091	0.962
	1/31/2010	ENER	---	---	---	---	---	---	343	2210	4470	---	---
	2/22/2010	ENER	---	---	---	---	---	---	331	2160	4140	* 5020	---
	3/25/2010	ENER	---	---	---	---	---	---	339	2170	4520	* 5020	---
	4/29/2010	ENER	---	---	---	---	---	---	357	2280	4400	* 5040	---
	5/31/2010	ENER	---	---	---	---	---	---	349	2300	4410	* 5100	---
	6/30/2010	ENER	---	---	---	---	---	---	357	2320	4570	* 5100	---
	7/27/2010	ENER	---	---	---	---	---	---	357	2270	4500	* 4900	---
	8/31/2010	ENER	---	---	---	---	---	---	363	2190	4160	* 4900	---
	9/30/2010	ENER	---	---	---	---	---	---	366	2170	3970	---	---
	10/31/2010	ENER	---	---	---	---	---	---	381	2180	4110	* 4670	---
	11/30/2010	ENER	---	---	---	---	---	---	383	2100	4150	* 4660	---
	1/31/2011	ENER	---	---	---	---	---	---	411	1880	3220	* 4510	---
	2/25/2011	ENER	---	---	---	---	---	---	424	2000	3820	* 4490	---
	3/31/2011	ENER	---	---	---	---	---	---	464	2040	3350	---	---
	5/26/2011	HMC	---	---	---	---	---	---	---	---	---	4490	---
	8/31/2011	ENER	---	---	---	---	---	---	507	1890	3770	* 4515	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY4	9/30/2011	ENER	---	---	---	---	---	---	508	1900	3740	---	---
	10/31/2011	ENER	---	---	---	---	---	---	508	1920	3640	---	---
	11/30/2011	ENER	---	---	---	---	---	---	499	1770	3800	---	---
	1/31/2012	ENER	---	---	---	---	---	---	515	1810	3730	---	---
	4/30/2012	ENER	---	---	---	---	---	---	540	1850	4090	---	---
	5/31/2012	ENER	---	---	---	---	---	---	509	1770	4060	---	---
	6/30/2012	ENER	---	---	---	---	---	---	517	1760	3260	---	---
	7/27/2012	ENER	---	---	---	---	---	---	566	1810	3830	---	---
	9/28/2012	ENER	---	---	---	---	---	---	541	1770	3790	---	---
	11/28/2012	ENER	---	---	---	---	---	---	591	1950	3760	---	---
	12/30/2012	HMC	---	---	---	---	---	---	---	---	---	4513	---
	3/26/2013	HMC	---	---	---	---	---	---	579	1790	3480	---	---
	3/28/2014	ENER	---	---	---	---	---	---	597	1800	3670	---	---
	6/27/2014	ENER	---	---	---	---	---	---	596	1700	3730	---	---
	6/30/2015	ENER	---	---	---	---	---	---	625	1850	3790	---	---
LY4ML	4/18/2009	ENER	---	---	---	---	---	---	142	409	---	---	---
	6/24/2009	ENER	---	---	---	---	---	---	684	5510	12000	---	---
	7/22/2009	ENER	---	---	---	---	---	---	650	5460	11600	---	---
	8/13/2009	ENER	---	---	---	---	---	---	663	5050	10400	---	---
	9/23/2009	ENER	180	29.6	6.00	2180	1140	< 1.000	629	3460	7340	* 9310	0.981
	10/16/2009	ENER	---	---	---	---	---	---	568	2570	5840	* 7904	---
	11/13/2009	ENER	166	98.2	11.0	2820	1570	72.0	591	3930	7830	* 7250	1.10
	12/18/2009	ENER	113	25.5	5.00	1520	1190	< 5.00	562	1760	4520	* 6490	1.03
	4/29/2010	ENER	---	---	---	---	---	---	571	1070	3700	* 5330	---
	5/31/2010	ENER	---	---	---	---	---	---	567	917	3080	---	---
	6/30/2010	ENER	---	---	---	---	---	---	581	907	3130	---	---
	7/27/2010	ENER	---	---	---	---	---	---	574	866	3190	* 4860	---
	8/31/2010	ENER	---	---	---	---	---	---	588	851	3080	* 4820	---
	9/30/2010	ENER	---	---	---	---	---	---	580	805	2980	---	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY4ML	10/31/2010	ENER	---	---	---	---	---	---	575	777	2970	* 4660	---
	11/30/2010	ENER	---	---	---	---	---	---	566	751	3180	* 4670	---
	4/29/2011	ENER	---	---	---	---	---	---	597	763	2520	---	---
	10/31/2011	ENER	---	---	---	---	---	---	727	1150	4240	---	---
LY4MU	7/22/2009	ENER	---	---	---	---	---	---	660	3240	8210	---	---
	8/13/2009	ENER	---	---	---	---	---	---	903	6990	13900	---	---
	9/23/2009	ENER	263	90.0	14.0	3510	1580	< 1.000	712	6130	11700	* 13860	1.000
	10/16/2009	ENER	---	---	---	---	---	---	592	4850	9780	---	---
	11/13/2009	ENER	100.0	31.7	5.00	1790	1030	< 5.00	584	2210	5160	* 10600	1.08
	1/31/2010	ENER	---	---	---	---	---	---	600	2010	5730	---	---
	2/22/2010	ENER	---	---	---	---	---	---	631	1260	4630	* 6740	---
	3/25/2010	ENER	---	---	---	---	---	---	634	920	4500	* 6390	---
	4/29/2010	ENER	---	---	---	---	---	---	674	742	4210	* 6200	---
	5/31/2010	ENER	---	---	---	---	---	---	697	694	4090	* 6160	---
	6/30/2010	ENER	---	---	---	---	---	---	711	675	4220	* 6150	---
	7/27/2010	ENER	---	---	---	---	---	---	717	657	4190	* 6050	---
	8/31/2010	ENER	---	---	---	---	---	---	722	662	4140	* 6140	---
	9/30/2010	ENER	---	---	---	---	---	---	717	679	4210	---	---
	10/31/2010	ENER	---	---	---	---	---	---	724	718	4080	* 6170	---
	11/30/2010	ENER	---	---	---	---	---	---	724	760	4350	* 6280	---
	1/31/2011	ENER	---	---	---	---	---	---	730	885	4160	* 6300	---
	2/25/2011	ENER	---	---	---	---	---	---	721	898	4230	* 6340	---
	4/29/2011	ENER	---	---	---	---	---	---	735	955	4310	---	---
	5/26/2011	HMC	---	---	---	---	---	---	---	---	---	6410	---
	6/30/2011	ENER	---	---	---	---	---	---	740	1050	4240	* 6460	---
	7/15/2011	ENER	---	---	---	---	---	---	701	1030	4380	* 6460	---
	8/31/2011	ENER	---	---	---	---	---	---	754	1090	4410	* 6582	---
	9/30/2011	ENER	---	---	---	---	---	---	749	1140	4330	* 6500	---
	10/31/2011	HMC	---	---	---	---	---	---	---	---	---	6600	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY4MU	11/30/2011	ENER	---	---	---	---	---	---	733	1130	4490	---	---
	1/31/2012	ENER	---	---	---	---	---	---	723	1170	4480	* 6667	---
	2/29/2012	ENER	---	---	---	---	---	---	725	1180	4530	* 6600	---
	3/31/2012	HMC	---	---	---	---	---	---	---	---	---	6585	---
	4/30/2012	ENER	---	---	---	---	---	---	721	1190	4740	* 6600	---
	5/31/2012	ENER	---	---	---	---	---	---	723	1220	4640	* 6589	---
	6/30/2012	ENER	---	---	---	---	---	---	691	1160	4720	---	---
	7/27/2012	ENER	---	---	---	---	---	---	775	1260	4550	* 6568	---
	8/31/2012	ENER	---	---	---	---	---	---	759	1250	4820	* 6554	---
	9/28/2012	ENER	---	---	---	---	---	---	736	1190	4370	* 6519	---
	10/31/2012	ENER	---	---	---	---	---	---	757	1220	4340	* 6476	---
	11/28/2012	ENER	---	---	---	---	---	---	791	1300	4220	* 6513	---
	1/31/2013	ENER	---	---	---	---	---	---	766	1240	4340	* 6540	---
	2/22/2013	ENER	---	---	---	---	---	---	777	1240	4270	* 6416	---
	3/26/2013	HMC	---	---	---	---	---	---	766	1230	4170	5467	---
	4/30/2013	ENER	---	---	---	---	---	---	789	1250	4240	* 5137	---
	12/12/2013	ENER	---	---	---	---	---	---	761	1250	4370	* 6454	---
	3/28/2014	ENER	---	---	---	---	---	---	753	1240	4400	---	---
	12/23/2014	ENER	---	---	---	---	---	---	731	1220	4510	---	---
	3/31/2015	ENER	---	---	---	---	---	---	799	1240	4600	---	---
	6/30/2015	ENER	---	---	---	---	---	---	782	1290	4520	* 5097	---
	9/30/2015	ENER	---	---	---	---	---	---	791	1260	4460	* 6404	---
	11/11/2015	ENER	---	---	---	---	---	---	787	1270	4410	---	---
LY28-1	10/16/2009	ENER	---	---	---	---	---	---	101	358	852	* 1286	---
	11/13/2009	ENER	187	74.2	3.80	331	232	< 5.00	174	1040	1850	* 2650	0.980
	12/18/2009	ENER	308	61.7	3.40	345	399	< 5.00	184	1240	2320	* 3130	0.942
	12/30/2009	ENER	298	61.4	3.20	354	378	< 5.00	180	1220	2460	* 3163	0.961
	1/31/2010	ENER	---	---	---	---	---	---	187	1350	2550	---	---
	2/22/2010	ENER	---	---	---	---	---	---	186	1350	2450	* 3250	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY28-1	3/25/2010	ENER	---	---	---	---	---	---	183	1300	2660	* 3240	---
	4/29/2010	ENER	---	---	---	---	---	---	190	1340	2580	* 3250	---
	5/31/2010	ENER	---	---	---	---	---	---	191	1350	2550	* 3270	---
	6/30/2010	ENER	---	---	---	---	---	---	197	1380	2650	* 3280	---
	7/27/2010	ENER	---	---	---	---	---	---	201	1410	2670	* 3250	---
	8/31/2010	ENER	---	---	---	---	---	---	200	1360	2610	* 3270	---
	9/30/2010	ENER	---	---	---	---	---	---	192	1350	2700	---	---
	10/31/2010	ENER	---	---	---	---	---	---	190	1330	2600	* 3290	---
	11/30/2010	ENER	---	---	---	---	---	---	191	1310	2660	* 3300	---
	1/31/2011	ENER	---	---	---	---	---	---	198	1400	2530	* 3260	---
	2/25/2011	ENER	---	---	---	---	---	---	187	1290	2590	* 3240	---
	3/29/2011	HMC	---	---	---	---	---	---	---	---	---	3410	---
	4/29/2011	ENER	---	---	---	---	---	---	194	1340	2540	* 3220	---
	5/26/2011	HMC	---	---	---	---	---	---	---	---	---	3200	---
	6/30/2011	ENER	---	---	---	---	---	---	197	1350	2540	* 3220	---
	7/15/2011	ENER	---	---	---	---	---	---	193	1330	2510	* 3200	---
	8/31/2011	ENER	---	---	---	---	---	---	187	1350	2530	* 3200	---
	9/30/2011	ENER	---	---	---	---	---	---	176	1370	2660	* 3290	---
	10/31/2011	ENER	---	---	---	---	---	---	192	1390	2670	* 3470	---
	11/30/2011	ENER	---	---	---	---	---	---	183	1380	2770	---	---
	12/16/2011	ENER	---	---	---	---	---	---	181	1440	2830	* 3575	---
	1/31/2012	ENER	---	---	---	---	---	---	179	1400	2630	* 3568	---
	2/29/2012	ENER	---	---	---	---	---	---	176	1380	2870	* 3540	---
	4/30/2012	ENER	---	---	---	---	---	---	190	1360	3080	* 3658	---
	5/31/2012	ENER	---	---	---	---	---	---	193	1400	3040	* 3594	---
	6/30/2012	ENER	---	---	---	---	---	---	176	1310	3000	* 3547	---
	7/27/2012	ENER	---	---	---	---	---	---	192	1400	2920	* 3538	---
	8/31/2012	ENER	---	---	---	---	---	---	181	1360	3010	* 3542	---
	9/28/2012	ENER	---	---	---	---	---	---	187	1370	2860	* 3526	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY28-1	10/31/2012	ENER	---	---	---	---	---	---	186	1380	2920	* 3558	---
	11/28/2012	ENER	---	---	---	---	---	---	248	1180	2570	* 3297	---
	12/30/2012	ENER	---	---	---	---	---	---	291	1280	2590	* 3524	---
	1/31/2013	ENER	---	---	---	---	---	---	229	1070	2280	* 3295	---
	2/22/2013	ENER	---	---	---	---	---	---	261	1190	26900	* 33.5	---
	3/26/2013	HMC	---	---	---	---	---	---	266	1170	2680	3332	---
	4/30/2013	ENER	---	---	---	---	---	---	270	1210	2670	* 3382	---
	9/17/2013	ENER	---	---	---	---	---	---	261	1180	2660	* 3377	---
	12/12/2013	ENER	---	---	---	---	---	---	269	1240	2690	* 3380	---
	3/28/2014	ENER	---	---	---	---	---	---	268	1290	2710	---	---
	6/27/2014	ENER	---	---	---	---	---	---	276	1320	2720	---	---
	12/23/2014	ENER	---	---	---	---	---	---	264	1240	2650	---	---
	3/31/2015	ENER	---	---	---	---	---	---	276	1290	2680	* 3350	---
	6/30/2015	ENER	---	---	---	---	---	---	278	1340	2670	* 2510	---
	9/30/2015	ENER	---	---	---	---	---	---	354	1780	3470	* 4100	---
	11/11/2015	ENER	---	---	---	---	---	---	339	1790	3380	---	---
LY28-1M	10/16/2009	ENER	---	---	---	---	---	---	114	84.0	440	* 698	---
LY28-2	10/16/2009	ENER	---	---	---	---	---	---	335	218	954	* 1580	---
	5/26/2011	HMC	---	---	---	---	---	---	---	---	---	1240	---
	10/31/2011	ENER	---	---	---	---	---	---	178	3280	5170	* 6660	---
	11/30/2011	ENER	---	---	---	---	---	---	128	3560	6090	---	---
	12/16/2011	ENER	---	---	---	---	---	---	139	3790	6100	* 7151	---
	1/31/2012	ENER	---	---	---	---	---	---	144	3680	6110	* 6988	---
	2/29/2012	ENER	---	---	---	---	---	---	149	3150	5350	* 6110	---
	4/30/2012	ENER	---	---	---	---	---	---	107	3130	5630	* 6062	---
	5/31/2012	ENER	---	---	---	---	---	---	90.0	3270	5500	* 6165	---
	6/30/2012	ENER	---	---	---	---	---	---	102	3630	6310	* 6761	---
	7/27/2012	ENER	---	---	---	---	---	---	156	4050	6690	* 7611	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY28-2	8/31/2012	ENER	---	---	---	---	---	---	195	2940	5130	* 5980	---
	9/28/2012	ENER	---	---	---	---	---	---	246	2580	4860	* 5437	---
	10/31/2012	ENER	---	---	---	---	---	---	217	2300	4170	* 4840	---
	11/28/2012	ENER	---	---	---	---	---	---	257	2270	3920	* 4641	---
	12/30/2012	ENER	---	---	---	---	---	---	262	2160	3820	* 4591	---
	1/31/2013	ENER	---	---	---	---	---	---	267	2160	3830	* 4594	---
	2/22/2013	ENER	---	---	---	---	---	---	271	2060	3590	* 4429	---
	3/26/2013	HMC	---	---	---	---	---	---	276	2070	3890	4470	---
	4/30/2013	ENER	---	---	---	---	---	---	279	2120	3840	* 4509	---
	9/17/2013	ENER	---	---	---	---	---	---	263	2280	4320	* 4894	---
	12/12/2013	ENER	---	---	---	---	---	---	266	2510	4410	* 4964	---
	3/28/2014	ENER	---	---	---	---	---	---	267	2490	4310	---	---
	6/27/2014	ENER	---	---	---	---	---	---	284	2550	4410	---	---
	12/23/2014	ENER	---	---	---	---	---	---	310	2710	4720	---	---
	3/31/2015	ENER	---	---	---	---	---	---	365	2910	4910	---	---
	6/30/2015	ENER	---	---	---	---	---	---	734	5750	4900	---	---
	9/30/2015	ENER	---	---	---	---	---	---	277	2810	4860	* 5392	---
	11/11/2015	ENER	---	---	---	---	---	---	331	2880	4910	---	---
LY28-2M	10/16/2009	ENER	---	---	---	---	---	---	158	255	773	* 1176	---
	11/13/2009	ENER	147	60.5	7.80	106	414	6.00	128	304	937	* 1560	1.01
	12/18/2009	ENER	150	54.5	6.90	83.6	447	< 5.00	123	247	980	* 1482	0.980
	12/30/2009	ENER	143	51.5	7.30	80.2	438	< 5.00	120	202	939	* 1544	1.01
	1/31/2010	ENER	---	---	---	---	---	---	115	156	901	---	---
	2/22/2010	ENER	---	---	---	---	---	---	113	132	756	* 1280	---
	3/25/2010	ENER	---	---	---	---	---	---	107	111	858	* 1260	---
	4/29/2010	ENER	---	---	---	---	---	---	120	106	778	* 1250	---
	5/31/2010	ENER	---	---	---	---	---	---	110	95.0	787	* 1300	---
	6/30/2010	ENER	---	---	---	---	---	---	112	93.0	847	* 1290	---
	7/27/2010	ENER	---	---	---	---	---	---	109	89.0	842	* 1230	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY28-2M	8/31/2010	ENER	---	---	---	---	---	---	112	88.0	841	* 1260	---
	9/30/2010	ENER	---	---	---	---	---	---	108	83.0	896	---	---
	10/31/2010	ENER	---	---	---	---	---	---	110	84.0	891	* 1200	---
	11/30/2010	ENER	---	---	---	---	---	---	108	83.0	956	* 1220	---
	1/31/2011	ENER	---	---	---	---	---	---	108	99.0	763	* 1230	---
	2/25/2011	ENER	---	---	---	---	---	---	111	96.0	813	* 1210	---
	6/30/2011	ENER	---	---	---	---	---	---	109	99.0	760	* 1190	---
	7/15/2011	ENER	---	---	---	---	---	---	104	97.0	753	* 1160	---
	8/31/2011	ENER	---	---	---	---	---	---	902	3540	7150	* 8320	---
	9/30/2011	ENER	---	---	---	---	---	---	865	3490	6850	* 8060	---
	10/31/2011	ENER	---	---	---	---	---	---	801	3330	6450	* 7780	---
	11/30/2011	ENER	---	---	---	---	---	---	696	2820	5760	---	---
	12/16/2011	ENER	---	---	---	---	---	---	651	2500	5000	* 5995	---
	1/31/2012	ENER	---	---	---	---	---	---	560	2110	4080	* 5476	---
	2/29/2012	ENER	---	---	---	---	---	---	491	1890	3750	* 4986	---
	4/30/2012	ENER	---	---	---	---	---	---	412	1570	3570	* 4284	---
	5/31/2012	ENER	---	---	---	---	---	---	320	1090	2580	* 3305	---
	6/30/2012	ENER	---	---	---	---	---	---	248	725	1900	* 2587	---
	7/27/2012	ENER	---	---	---	---	---	---	210	483	1470	* 2044	---
	8/31/2012	ENER	---	---	---	---	---	---	777	3340	6760	* 8112	---
	9/28/2012	ENER	---	---	---	---	---	---	774	2940	6240	* 7836	---
	10/31/2012	ENER	---	---	---	---	---	---	874	3120	6530	* 8181	---
	11/28/2012	ENER	---	---	---	---	---	---	953	2470	6770	* 8672	---
	12/30/2012	ENER	---	---	---	---	---	---	1030	3390	7140	* 1344	---
	1/31/2013	ENER	---	---	---	---	---	---	1050	3470	7280	* 9181	---
	2/22/2013	ENER	---	---	---	---	---	---	1020	3560	7340	* 9070	---
	3/26/2013	HMC	---	---	---	---	---	---	954	3540	7550	8840	---
	4/30/2013	ENER	---	---	---	---	---	---	919	3590	7010	* 7171	---
	9/17/2013	ENER	---	---	---	---	---	---	848	3050	6180	* 8350	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY28-2M	12/12/2013	ENER	---	---	---	---	---	---	834	3000	6170	* 7816	---
	3/28/2014	ENER	---	---	---	---	---	---	813	2900	6290	---	---
LY28-3	10/16/2009	ENER	---	---	---	---	---	---	190	781	1710	* 2476	---
	11/13/2009	ENER	306	96.9	10.00	983	421	< 5.00	290	2300	4110	* 5560	1.05
	12/18/2009	ENER	392	126	11.0	1200	399	< 5.00	318	3030	5220	* 6638	1.05
	12/30/2009	ENER	426	126	11.0	1260	394	< 5.00	339	3260	5720	* 6961	1.03
	1/31/2010	ENER	---	---	---	---	---	---	339	3380	5770	---	---
	2/22/2010	ENER	---	---	---	---	---	---	344	3520	5880	* 7360	---
	3/25/2010	ENER	---	---	---	---	---	---	347	3360	6360	* 7320	---
	4/29/2010	ENER	---	---	---	---	---	---	350	3590	6340	* 7470	---
	5/31/2010	ENER	---	---	---	---	---	---	410	3730	6600	* 7920	---
	6/30/2010	ENER	---	---	---	---	---	---	471	3850	7210	* 8340	---
	7/27/2010	ENER	---	---	---	---	---	---	597	3690	7160	* 8200	---
	8/31/2010	ENER	---	---	---	---	---	---	786	3420	6660	---	---
	10/31/2011	ENER	---	---	---	---	---	---	171	943	1950	* 2760	---
	11/30/2011	ENER	---	---	---	---	---	---	353	2610	4830	---	---
	12/16/2011	ENER	---	---	---	---	---	---	444	2910	5570	* 6614	---
	1/31/2012	ENER	---	---	---	---	---	---	578	3420	6560	* 7946	---
	2/29/2012	ENER	---	---	---	---	---	---	560	3390	6810	* 7983	---
	4/30/2012	ENER	---	---	---	---	---	---	668	3590	8150	* 8922	---
	5/31/2012	ENER	---	---	---	---	---	---	767	3730	8090	* 9556	---
	6/30/2012	ENER	---	---	---	---	---	---	864	3640	8600	* 9967	---
	7/27/2012	ENER	---	---	---	---	---	---	1150	3830	9000	* 10950	---
	8/31/2012	ENER	---	---	---	---	---	---	1130	4310	9540	* 11460	---
	9/28/2012	ENER	---	---	---	---	---	---	1150	4350	9830	* 11790	---
	10/31/2012	ENER	---	---	---	---	---	---	1170	4260	8950	* 11370	---
	11/28/2012	ENER	---	---	---	---	---	---	610	4240	8050	* 10000	---
	12/30/2012	HMC	---	---	---	---	---	---	---	---	---	9920	---
	1/31/2013	ENER	---	---	---	---	---	---	755	4240	8310	* 10330	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY28-3	2/22/2013	ENER	---	---	---	---	---	---	726	4110	8550	* 10250	---
	3/26/2013	HMC	---	---	---	---	---	---	781	4340	8380	10240	---
	4/30/2013	ENER	---	---	---	---	---	---	747	4300	9450	* 8585	---
	9/17/2013	ENER	---	---	---	---	---	---	740	4080	8330	* 10180	---
	12/12/2013	ENER	---	---	---	---	---	---	766	4190	8130	* 10090	---
	12/30/2013	ENER	---	---	---	---	---	---	713	4210	8400	---	---
	3/28/2014	ENER	---	---	---	---	---	---	777	4150	8370	---	---
	6/27/2014	ENER	---	---	---	---	---	---	779	4090	8520	---	---
	9/30/2014	ENER	---	---	---	---	---	---	824	4440	8650	---	---
	12/23/2014	ENER	---	---	---	---	---	---	803	4090	8590	---	---
	3/31/2015	ENER	---	---	---	---	---	---	851	4240	8700	* 10230	---
	6/30/2015	ENER	---	---	---	---	---	---	832	4190	8620	* 8582	---
	9/30/2015	ENER	---	---	---	---	---	---	873	4290	8820	* 10400	---
	11/11/2015	ENER	---	---	---	---	---	---	908	4330	8560	---	---
LY34-1	10/16/2009	ENER	---	---	---	---	---	---	124	239	1060	* 1620	---
	12/30/2009	ENER	292	77.1	2.50	543	667	< 5.00	310	1160	2630	* 3763	1.01
	2/22/2010	ENER	---	---	---	---	---	---	321	1230	2760	* 3940	---
	3/25/2010	ENER	---	---	---	---	---	---	326	1240	3120	* 4030	---
	4/29/2010	ENER	---	---	---	---	---	---	359	1350	3130	* 4090	---
	5/31/2010	ENER	---	---	---	---	---	---	353	1340	3050	* 4140	---
	6/30/2010	ENER	---	---	---	---	---	---	362	1370	3250	* 4190	---
	7/27/2010	ENER	---	---	---	---	---	---	362	1380	3220	* 3920	---
	8/31/2010	ENER	---	---	---	---	---	---	362	1410	3490	* 4190	---
	9/30/2010	ENER	---	---	---	---	---	---	375	1450	3530	---	---
	10/31/2010	ENER	---	---	---	---	---	---	514	1910	5220	* 5390	---
	11/30/2010	ENER	---	---	---	---	---	---	501	1890	4230	* 5360	---
	1/31/2011	ENER	---	---	---	---	---	---	482	1910	4370	* 5310	---
	2/25/2011	ENER	---	---	---	---	---	---	498	1970	4170	* 5400	---
	3/31/2011	ENER	---	---	---	---	---	---	532	2080	4370	* 5400	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY34-1	4/29/2011	ENER	---	---	---	---	---	---	506	1980	4240	* 5420	---
	6/30/2011	ENER	---	---	---	---	---	---	514	2040	4240	* 5430	---
	7/15/2011	ENER	---	---	---	---	---	---	489	1970	4180	* 5640	---
	8/31/2011	ENER	---	---	---	---	---	---	508	2030	4070	* 5760	---
	9/30/2011	ENER	---	---	---	---	---	---	498	2030	4140	* 5580	---
	10/31/2011	ENER	---	---	---	---	---	---	488	2040	4070	* 6620	---
	11/30/2011	ENER	---	---	---	---	---	---	494	1960	4080	---	---
	12/16/2011	ENER	---	---	---	---	---	---	501	2060	4210	* 5590	---
	2/29/2012	ENER	---	---	---	---	---	---	476	1960	4000	* 5560	---
	4/30/2012	ENER	---	---	---	---	---	---	491	1980	4670	* 5623	---
	5/31/2012	ENER	---	---	---	---	---	---	465	1920	4330	---	---
	6/30/2012	ENER	---	---	---	---	---	---	468	1900	3920	* 5598	---
	7/27/2012	ENER	---	---	---	---	---	---	511	1970	4130	* 5254	---
	8/31/2012	ENER	---	---	---	---	---	---	663	2460	5060	* 6475	---
	9/28/2012	ENER	---	---	---	---	---	---	524	2560	5130	* 6571	---
	10/31/2012	ENER	---	---	---	---	---	---	426	2380	4970	* 6012	---
	11/28/2012	ENER	---	---	---	---	---	---	436	2490	5090	* 6046	---
	12/30/2012	ENER	---	---	---	---	---	---	445	2510	4810	* 6102	---
	1/31/2013	ENER	---	---	---	---	---	---	451	2500	4810	* 6091	---
	2/22/2013	ENER	---	---	---	---	---	---	437	2410	4920	* 6017	---
	3/26/2013	HMC	---	---	---	---	---	---	464	2470	4990	4990	---
	4/30/2013	ENER	---	---	---	---	---	---	462	2460	4690	* 4814	---
	9/17/2013	ENER	---	---	---	---	---	---	471	2370	4600	* 6153	---
	12/12/2013	ENER	---	---	---	---	---	---	479	2390	4920	* 6044	---
	3/28/2014	ENER	---	---	---	---	---	---	497	2510	5090	---	---
	6/27/2014	ENER	---	---	---	---	---	---	507	2530	5340	---	---
	9/30/2014	ENER	---	---	---	---	---	---	535	2810	5460	---	---
	12/23/2014	ENER	---	---	---	---	---	---	493	2640	5530	---	---
	6/30/2015	ENER	---	---	---	---	---	---	526	2800	5830	* 5454	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY34-1	9/30/2015	ENER	---	---	---	---	---	---	473	2780	6030	* 6996	---
LY34-2	10/16/2009	ENER	---	---	---	---	---	---	96.0	214	590	* 1000	---
	11/13/2009	ENER	175	69.4	12.3	354	457	< 5.00	315	676	1850	* 2950	0.985
	12/18/2009	ENER	231	84.8	10.8	387	372	< 5.00	397	868	1220	* 3413	1.00
	12/30/2009	ENER	192	85.6	11.8	436	567	< 5.00	377	799	2250	* 3339	0.977
	1/31/2010	ENER	---	---	---	---	---	---	467	1020	2500	---	---
	2/22/2010	ENER	---	---	---	---	---	---	514	1190	2960	* 4160	---
	3/25/2010	ENER	---	---	---	---	---	---	515	1250	3460	* 4710	---
	4/29/2010	ENER	---	---	---	---	---	---	653	1600	3720	---	---
	5/31/2010	ENER	---	---	---	---	---	---	659	1710	3660	---	---
	6/30/2010	ENER	---	---	---	---	---	---	723	1950	4180	---	---
	7/27/2010	ENER	---	---	---	---	---	---	710	1910	4450	* 5660	---
	8/31/2010	ENER	---	---	---	---	---	---	686	1550	3470	---	---
	9/30/2010	ENER	---	---	---	---	---	---	651	1350	3640	---	---
	10/31/2010	ENER	---	---	---	---	---	---	689	1880	3090	* 5650	---
	11/30/2010	ENER	---	---	---	---	---	---	632	2220	4930	* 6060	---
	1/31/2011	ENER	---	---	---	---	---	---	810	2770	5400	* 6970	---
	2/25/2011	ENER	---	---	---	---	---	---	856	2900	6220	* 7500	---
	3/31/2011	ENER	---	---	---	---	---	---	884	2940	6250	* 7620	---
	4/29/2011	ENER	---	---	---	---	---	---	911	2930	6130	---	---
	5/26/2011	HMC	---	---	---	---	---	---	---	---	---	7860	---
	6/30/2011	ENER	---	---	---	---	---	---	939	2950	5980	* 7880	---
	7/13/2011	HMC	---	---	---	---	---	---	---	---	---	5640	---
	10/31/2011	ENER	---	---	---	---	---	---	57.0	124	464	* 786	---
	11/30/2011	ENER	---	---	---	---	---	---	134	321	1130	* 7740	---
	12/16/2011	ENER	---	---	---	---	---	---	143	400	1360	* 1913	---
	1/31/2012	ENER	---	---	---	---	---	---	384	868	2440	---	---
	2/29/2012	ENER	---	---	---	---	---	---	219	537	1860	---	---
	8/31/2012	ENER	---	---	---	---	---	---	453	1910	3930	* 5085	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY34-2	9/28/2012	ENER	---	---	---	---	---	---	501	2170	4610	* 5584	---
	10/31/2012	ENER	---	---	---	---	---	---	444	2320	4670	* 5557	---
	11/28/2012	ENER	---	---	---	---	---	---	417	2230	4360	* 5307	---
	12/30/2012	ENER	---	---	---	---	---	---	403	2110	4140	* 5077	---
	1/31/2013	ENER	---	---	---	---	---	---	413	2100	4080	* 5168	---
	2/22/2013	ENER	---	---	---	---	---	---	402	2010	4240	* 5080	---
	3/26/2013	HMC	---	---	---	---	---	---	424	2040	4190	5052	---
	4/30/2013	ENER	---	---	---	---	---	---	420	1990	4120	* 4023	---
	9/17/2013	ENER	---	---	---	---	---	---	442	1960	4190	* 5288	---
	12/12/2013	ENER	---	---	---	---	---	---	449	2000	4200	* 5246	---
	3/28/2014	ENER	---	---	---	---	---	---	441	1980	4160	---	---
	12/23/2014	ENER	---	---	---	---	---	---	456	1960	4320	---	---
	9/30/2015	ENER	---	---	---	---	---	---	71.0	2520	4190	* 4926	---
	11/11/2015	ENER	---	---	---	---	---	---	80.0	2840	4600	---	---
LY34-3	10/16/2009	ENER	---	---	---	---	---	---	96.0	102	637	* 920	---
	11/13/2009	ENER	90.9	44.0	4.30	229	488	6.00	128	277	956	* 1660	1.04
	12/18/2009	ENER	178	78.0	3.90	338	648	< 5.00	184	766	1900	* 2760	0.943
	12/30/2009	ENER	234	105	4.70	456	680	< 5.00	211	904	2170	* 3030	1.12
	1/31/2010	ENER	---	---	---	---	---	---	231	983	2410	---	---
	2/22/2010	ENER	---	---	---	---	---	---	244	1030	2370	* 3350	---
	3/25/2010	ENER	---	---	---	---	---	---	250	1020	2630	* 3460	---
	4/29/2010	ENER	---	---	---	---	---	---	279	1100	2580	* 3520	---
	5/31/2010	ENER	---	---	---	---	---	---	287	1120	2580	* 3610	---
	6/30/2010	ENER	---	---	---	---	---	---	293	1120	2790	* 3680	---
	7/27/2010	ENER	---	---	---	---	---	---	321	1220	2780	* 3700	---
	8/31/2010	ENER	---	---	---	---	---	---	302	1130	2780	* 3780	---
	9/30/2010	ENER	---	---	---	---	---	---	322	1210	2990	---	---
	10/31/2010	ENER	---	---	---	---	---	---	315	1150	2330	* 3850	---
	11/30/2010	ENER	---	---	---	---	---	---	323	1160	3030	* 3920	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY34-3	1/31/2011	ENER	---	---	---	---	---	---	314	1170	2990	* 3960	---
	2/25/2011	ENER	---	---	---	---	---	---	329	1040	3530	* 3880	---
	3/31/2011	ENER	---	---	---	---	---	---	394	1050	2790	* 3860	---
	4/29/2011	ENER	---	---	---	---	---	---	428	996	2850	* 3950	---
	6/30/2011	ENER	---	---	---	---	---	---	541	1010	2980	* 4100	---
	7/15/2011	ENER	---	---	---	---	---	---	566	1020	3050	* 4380	---
	8/31/2011	ENER	---	---	---	---	---	---	631	1070	3200	* 4570	---
	9/30/2011	ENER	---	---	---	---	---	---	620	1090	3210	* 4540	---
	10/31/2011	ENER	---	---	---	---	---	---	580	1140	3080	* 45.1	---
	11/30/2011	ENER	---	---	---	---	---	---	603	1170	3140	---	---
	12/16/2011	ENER	---	---	---	---	---	---	606	1250	3340	* 4640	---
	1/31/2012	ENER	---	---	---	---	---	---	601	1290	3410	* 4748	---
	2/29/2012	ENER	---	---	---	---	---	---	577	1280	3380	* 4610	---
	4/30/2012	ENER	---	---	---	---	---	---	552	1290	3600	* 4591	---
	5/31/2012	ENER	---	---	---	---	---	---	645	1600	4100	* 5226	---
	6/30/2012	ENER	---	---	---	---	---	---	830	2150	5800	* 6719	---
	7/27/2012	ENER	---	---	---	---	---	---	826	2310	5230	* 6765	---
	8/31/2012	ENER	---	---	---	---	---	---	1100	3310	7090	* 8925	---
	9/28/2012	ENER	---	---	---	---	---	---	871	2850	5900	* 7942	---
	10/31/2012	ENER	---	---	---	---	---	---	742	2580	5450	* 6955	---
	11/28/2012	ENER	---	---	---	---	---	---	652	2510	4570	* 6417	---
	12/30/2012	ENER	---	---	---	---	---	---	550	2270	4580	* 6023	---
	1/31/2013	ENER	---	---	---	---	---	---	466	2010	4320	* 5469	---
	2/22/2013	ENER	---	---	---	---	---	---	386	1700	3890	* 48.5	---
	3/26/2013	HMC	---	---	---	---	---	---	401	1700	3860	4830	---
	4/30/2013	ENER	---	---	---	---	---	---	407	1720	3670	* 3763	---
	9/17/2013	ENER	---	---	---	---	---	---	537	2070	4480	* 5968	---
	12/12/2013	ENER	---	---	---	---	---	---	542	2080	4580	* 5830	---
	3/28/2014	ENER	---	---	---	---	---	---	495	1930	4250	---	---

* Signifies Specific Conductivity from HMC

Table C-1 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Major Constituents

Sample Point Name	Date	Lab	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Na (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	Cl (mg/l)	SO4 (mg/l)	TDS (mg/l)	Cond(calc.) (micromhos/	Ion_B (ratio)
LY34-3	6/27/2014	ENER	---	---	---	---	---	---	547	2170	4610	---	---
LY34-4	10/16/2009	ENER	---	---	---	---	---	---	74.0	322	854	* 1245	---
	11/13/2009	ENER	58.4	18.3	4.20	289	335	6.00	106	384	977	* 1660	1.03
	12/18/2009	ENER	80.3	20.7	3.70	347	329	13.0	130	501	1260	* 1996	1.05
	12/30/2009	ENER	110	22.6	3.40	331	295	8.00	146	608	1470	* 2038	0.998
	1/31/2010	ENER	---	---	---	---	---	---	163	763	1630	---	---
	7/27/2010	HMC	---	---	---	---	---	---	---	---	---	4850	---
	8/31/2010	ENER	---	---	---	---	---	---	259	1350	2960	* 3930	---
	9/30/2010	ENER	---	---	---	---	---	---	269	1480	3450	---	---

* Signifies Specific Conductivity from HMC

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY1	7/22/2009	ENER	---	0.0420	0.0400	0.0300	1.14	---	---	---	---
	8/13/2009	ENER	---	0.0878	< 0.0300	0.0500	1.10	---	---	---	---
	9/23/2009	ENER	7.77	0.0519	0.0300	0.0350	1.90	---	---	---	---
	10/16/2009	ENER	---	0.0540	< 0.0300	0.0400	1.70	---	---	---	---
	11/13/2009	ENER	8.17	0.0487	< 0.0300	0.0390	2.80	---	---	---	---
	12/18/2009	ENER	7.81	0.0656	< 0.0300	0.0470	2.20	---	---	---	---
	12/30/2009	ENER	7.80	0.0585	< 0.0300	0.0790	1.80	---	---	---	---
	1/31/2010	ENER	---	0.0506	< 0.0300	0.0720	1.60	---	---	---	---
	2/22/2010	ENER	---	0.0506	< 0.0300	0.0820	1.50	---	---	---	---
	3/25/2010	ENER	---	0.0471	< 0.0300	0.105	1.40	---	---	---	---
	4/29/2010	ENER	---	0.0471	< 0.0300	0.0860	1.30	---	---	---	---
	5/31/2010	ENER	---	0.0527	0.0300	0.116	1.20	---	---	---	---
	6/30/2010	ENER	---	0.0574	< 0.0300	0.115	1.30	---	---	---	---
	7/27/2010	ENER	---	0.0532	< 0.0300	0.127	1.30	---	---	---	---
	12/16/2011	ENER	---	0.0496	< 0.0300	0.115	---	---	---	---	---
	1/31/2012	ENER	---	0.0493	< 0.0300	0.142	---	---	---	---	---
	2/29/2012	ENER	---	0.0447	< 0.0300	0.152	---	---	---	---	---
	4/30/2012	ENER	---	0.0481	< 0.0300	0.149	---	---	---	---	---
	5/31/2012	ENER	---	0.0445	< 0.0300	0.134	---	---	---	---	---
	6/30/2012	ENER	---	0.0460	< 0.0300	0.129	---	---	---	---	---
	7/27/2012	ENER	---	0.0442	< 0.0300	0.127	---	---	---	---	---
	8/31/2012	ENER	---	0.0471	< 0.0300	0.143	---	---	---	---	---
	9/28/2012	ENER	---	0.0443	< 0.0300	0.134	---	---	---	---	---
	10/31/2012	ENER	---	0.0470	< 0.0300	0.168	---	---	---	---	---
	11/28/2012	ENER	---	0.0488	< 0.0300	0.150	---	---	---	---	---
	1/31/2013	ENER	---	0.0467	< 0.0300	0.178	---	---	---	---	---
	2/22/2013	ENER	---	0.0504	< 0.0300	0.187	4.70	---	---	---	---
	3/26/2013	HMC	---	0.0475	< 0.0300	0.182	5.00	---	---	---	---
	4/30/2013	ENER	---	0.0487	< 0.0300	0.174	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY1	12/12/2013	ENER	---	0.0296	< 0.0300	0.0780	7.80	---	---	---	---
	3/28/2014	ENER	---	0.0287	< 0.0300	0.0910	8.40	---	---	---	---
	6/27/2014	ENER	---	0.0277	< 0.0300	0.100	8.10	---	---	---	---
	9/30/2014	ENER	---	0.0257	< 0.0300	0.0970	---	---	---	---	---
	12/23/2014	ENER	---	0.0262	< 0.0300	0.103	---	---	---	---	---
	3/31/2015	ENER	---	0.0268	< 0.0300	0.131	9.60	---	---	---	---
	6/30/2015	ENER	---	0.0270	< 0.0300	0.124	9.30	---	---	---	---
	9/30/2015	ENER	---	0.0259	< 0.0300	0.109	8.60	---	---	---	---
LY2	6/24/2009	ENER	---	0.0406	0.0400	0.0140	3.31	---	---	---	---
	12/16/2011	ENER	---	0.0630	< 0.0300	0.161	---	---	---	---	---
	1/31/2012	ENER	---	0.0652	< 0.0300	0.140	---	---	---	---	---
	3/31/2012	ENER	---	0.0636	< 0.0300	0.110	---	---	---	---	---
	4/30/2012	ENER	---	0.0544	< 0.0300	0.124	---	---	---	---	---
	5/31/2012	ENER	---	0.0475	< 0.0300	0.110	---	---	---	---	---
	6/30/2012	ENER	---	0.0470	< 0.0300	0.100	---	---	---	---	---
	7/27/2012	ENER	---	0.0538	< 0.0300	0.171	---	---	---	---	---
	8/31/2012	ENER	---	0.0758	< 0.0300	0.271	---	---	---	---	---
	9/28/2012	ENER	---	0.0640	< 0.0300	0.171	---	---	---	---	---
	11/28/2012	ENER	---	0.0635	< 0.0300	0.131	---	---	---	---	---
	12/30/2012	ENER	---	0.0563	< 0.0300	0.138	---	---	---	---	---
	1/31/2013	ENER	---	0.0606	< 0.0300	0.148	---	---	---	---	---
	3/28/2014	ENER	---	0.0423	< 0.0300	0.101	16.0	---	---	---	---
LY4	12/4/2008	ENER	---	0.0566	< 0.0300	0.0400	1.20	---	---	---	---
	12/5/2008	ENER	---	0.0624	< 0.0300	0.0600	0.900	---	---	---	---
	12/8/2008	ENER	---	0.0715	0.0400	0.0460	0.600	---	---	---	---
	12/11/2008	ENER	---	0.0644	< 0.0300	0.0450	0.660	---	---	---	---
	12/12/2008	ENER	---	0.0641	< 0.0300	0.0440	0.650	---	---	---	---
	1/7/2009	ENER	---	0.0813	< 0.0300	0.0410	0.870	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY4	2/18/2009	ENER	7.44	0.0655	< 0.0300	0.0410	1.40	---	---	---	---
	3/20/2009	ENER	---	0.0732	< 0.0300	0.0430	1.72	---	---	---	---
	4/18/2009	ENER	---	0.0589	< 0.0300	0.0350	0.800	---	---	---	---
	5/15/2009	ENER	---	0.0611	< 0.0300	0.0380	1.46	---	---	---	---
	6/10/2009	ENER	---	0.0630	< 0.0300	0.0550	0.800	---	---	---	---
	6/24/2009	ENER	---	0.0621	< 0.0300	0.0500	0.560	---	---	---	---
	7/22/2009	ENER	---	0.0636	< 0.0300	0.0430	0.460	---	---	---	---
	8/13/2009	ENER	---	0.0718	< 0.0300	0.0400	0.600	---	---	---	---
	9/23/2009	ENER	7.29	0.0664	< 0.0300	0.0340	0.500	---	---	---	---
	10/16/2009	ENER	---	0.0701	< 0.0300	0.0310	0.500	---	---	---	---
	11/13/2009	ENER	7.84	0.0652	< 0.0300	0.0330	0.600	---	---	---	---
	12/18/2009	ENER	7.58	0.0651	< 0.0300	0.0310	0.500	---	---	---	---
	12/30/2009	ENER	7.60	0.0643	< 0.0300	0.0340	0.600	---	---	---	---
	1/31/2010	ENER	---	0.0702	< 0.0300	0.0380	0.500	---	---	---	---
	2/22/2010	ENER	---	0.0732	< 0.0300	0.0350	0.500	---	---	---	---
	3/25/2010	ENER	---	0.0720	< 0.0300	0.0360	0.500	---	---	---	---
	4/29/2010	ENER	---	0.0699	< 0.0300	0.0380	0.600	---	---	---	---
	5/31/2010	ENER	---	0.0833	< 0.0300	0.0540	0.600	---	---	---	---
	6/30/2010	ENER	---	0.0766	< 0.0300	0.0420	0.600	---	---	---	---
	7/27/2010	ENER	---	0.0707	< 0.0300	0.0420	0.700	---	---	---	---
	8/31/2010	ENER	---	0.0708	< 0.0300	0.0420	0.800	---	---	---	---
	9/30/2010	ENER	---	0.0682	< 0.0300	0.0450	1.10	---	---	---	---
	10/31/2010	ENER	---	0.0672	< 0.0300	0.0440	---	---	---	---	---
	11/30/2010	ENER	---	0.0610	< 0.0300	0.0520	---	---	---	---	---
	1/31/2011	ENER	---	0.0514	< 0.0300	0.0590	---	---	---	---	---
	2/25/2011	ENER	---	0.0460	< 0.0300	0.0600	---	---	---	---	---
	3/31/2011	ENER	---	0.0421	< 0.0300	0.0570	---	---	---	---	---
	8/31/2011	ENER	---	0.0295	< 0.0300	0.0670	---	---	---	---	---
	9/30/2011	ENER	---	< 0.0003	< 0.0300	< 0.0050	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY4	10/31/2011	ENER	---	0.0227	< 0.0300	0.0810	---	---	---	---	---
	11/30/2011	ENER	---	0.0287	< 0.0300	0.0770	---	---	---	---	---
	1/31/2012	ENER	---	0.0183	< 0.0300	0.0950	---	---	---	---	---
	4/30/2012	ENER	---	0.0226	< 0.0300	0.0980	---	---	---	---	---
	5/31/2012	ENER	---	0.0217	< 0.0300	0.0920	---	---	---	---	---
	6/30/2012	ENER	---	0.0232	< 0.0300	0.0880	---	---	---	---	---
	7/27/2012	ENER	---	0.0270	< 0.0300	0.0900	---	---	---	---	---
	8/31/2012	ENER	---	0.0288	< 0.0300	0.104	---	---	---	---	---
	9/28/2012	ENER	---	0.112	< 0.0300	< 0.0050	---	---	---	---	---
	11/28/2012	ENER	---	0.0258	< 0.0300	0.108	---	---	---	---	---
	3/26/2013	HMC	---	0.0169	< 0.0300	0.114	1.10	---	---	---	---
	3/28/2014	ENER	---	0.0122	< 0.0300	0.119	1.10	---	---	---	---
	6/27/2014	ENER	---	0.0118	< 0.0300	0.131	1.20	---	---	---	---
	9/30/2014	ENER	---	0.0139	< 0.0300	0.134	---	---	---	---	---
	6/30/2015	ENER	---	0.0105	< 0.0300	0.146	1.90	---	---	---	---
LY4ML	4/18/2009	ENER	---	0.0188	0.120	0.0050	0.200	---	---	---	---
	6/24/2009	ENER	---	0.358	0.110	<. 0.0050	10.00	---	---	---	---
	7/22/2009	ENER	---	0.552	0.0900	0.0100	0.0200	---	---	---	---
	8/13/2009	ENER	---	0.421	0.0600	< 0.0050	< 0.100	---	---	---	---
	9/23/2009	ENER	7.76	0.268	0.0400	0.0100	< 0.100	---	---	---	---
	10/16/2009	ENER	---	0.244	0.0400	0.0060	< 0.100	---	---	---	---
	11/13/2009	ENER	8.35	0.508	0.0900	0.0110	< 0.100	---	---	---	---
	12/18/2009	ENER	7.55	0.214	< 0.0300	0.0050	< 0.100	---	---	---	---
	4/29/2010	ENER	---	0.292	0.0500	0.0110	< 0.100	---	---	---	---
	5/31/2010	ENER	---	0.463	0.0900	0.0150	< 0.100	---	---	---	---
	6/30/2010	ENER	---	0.482	0.110	0.0120	< 0.100	---	---	---	---
	7/27/2010	ENER	---	0.375	0.0900	0.0170	< 0.100	---	---	---	---
	8/31/2010	ENER	---	0.366	0.0900	0.0150	< 0.100	---	---	---	---
	9/30/2010	ENER	---	0.394	0.100	0.0130	< 0.100	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY4ML	10/31/2010	ENER	---	0.394	0.100	0.0140	---	---	---	---	---
	11/30/2010	ENER	---	0.453	0.140	0.0180	---	---	---	---	---
	4/29/2011	ENER	---	0.461	0.570	0.0430	---	---	---	---	---
	10/31/2011	ENER	---	0.660	0.0600	0.0260	---	---	---	---	---
LY4MU	7/22/2009	ENER	---	0.261	0.140	0.0100	0.0200	---	---	---	---
	8/13/2009	ENER	---	0.596	0.160	0.0060	< 0.100	---	---	---	---
	9/23/2009	ENER	7.68	0.563	0.120	0.0090	< 0.100	---	---	---	---
	10/16/2009	ENER	---	0.557	0.100	0.0090	< 0.100	---	---	---	---
	11/13/2009	ENER	8.04	0.212	0.0300	0.0090	< 0.100	---	---	---	---
	1/31/2010	ENER	---	0.504	0.0500	0.0100	< 0.100	---	---	---	---
	2/22/2010	ENER	---	0.516	0.0500	0.0100	0.800	---	---	---	---
	3/25/2010	ENER	---	0.574	0.0500	0.0100	1.80	---	---	---	---
	4/29/2010	ENER	---	0.546	0.0400	0.0120	2.30	---	---	---	---
	5/31/2010	ENER	---	0.626	0.0400	0.0130	3.20	---	---	---	---
	6/30/2010	ENER	---	0.617	0.0400	0.0090	3.50	---	---	---	---
	7/27/2010	ENER	---	0.600	0.0400	0.0110	3.50	---	---	---	---
	8/31/2010	ENER	---	0.0395	0.350	0.0460	4.10	---	---	---	---
	9/30/2010	ENER	---	0.691	0.0500	0.0060	3.80	---	---	---	---
	10/31/2010	ENER	---	0.633	0.0400	0.0060	---	---	---	---	---
	11/30/2010	ENER	---	0.628	0.0400	0.0100	---	---	---	---	---
	1/31/2011	ENER	---	0.644	0.0400	0.0130	---	---	---	---	---
	2/25/2011	ENER	---	0.662	0.0400	0.0140	---	---	---	---	---
	4/29/2011	ENER	---	0.632	0.0500	0.0120	---	---	---	---	---
	6/30/2011	ENER	---	0.649	0.0500	0.0180	---	---	---	---	---
	7/15/2011	ENER	---	0.569	0.0600	0.0100	---	---	---	---	---
	8/31/2011	ENER	---	0.582	0.0600	0.0100	---	---	---	---	---
	9/30/2011	ENER	---	0.646	0.0600	0.0060	---	---	---	---	---
	11/30/2011	ENER	---	0.640	0.0600	0.0180	---	---	---	---	---
	1/31/2012	ENER	---	0.593	0.0600	0.0130	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY4MU	2/29/2012	ENER	---	0.610	0.0900	0.0170	---	---	---	---	---
	4/30/2012	ENER	---	0.582	0.0600	0.0100	---	---	---	---	---
	5/31/2012	ENER	---	0.600	0.0600	0.0110	---	---	---	---	---
	6/30/2012	ENER	---	0.586	0.0600	0.0120	---	---	---	---	---
	7/27/2012	ENER	---	0.592	0.0600	0.0050	---	---	---	---	---
	8/31/2012	ENER	---	0.573	0.0600	< 0.0050	---	---	---	---	---
	9/28/2012	ENER	---	0.145	0.0400	0.518	---	---	---	---	---
	10/31/2012	ENER	---	0.554	0.0600	0.0060	---	---	---	---	---
	11/28/2012	ENER	---	0.550	0.0600	< 0.0050	---	---	---	---	---
	1/31/2013	ENER	---	0.544	0.0600	0.0060	---	---	---	---	---
	2/22/2013	ENER	---	0.526	0.0700	0.0130	7.10	---	---	---	---
	3/26/2013	HMC	---	0.491	0.0600	0.0050	7.10	---	---	---	---
	4/30/2013	ENER	---	0.497	0.0600	0.0090	---	---	---	---	---
	12/12/2013	ENER	---	0.463	0.0700	0.0090	9.90	---	---	---	---
	3/28/2014	ENER	---	0.426	0.0700	0.0150	8.90	---	---	---	---
	12/23/2014	ENER	---	0.449	0.0600	0.0140	---	---	---	---	---
	3/31/2015	ENER	---	0.397	0.0800	0.0170	9.10	---	---	---	---
	6/30/2015	ENER	---	0.420	0.0900	0.0160	8.80	---	---	---	---
	9/30/2015	ENER	---	0.370	0.0900	0.0130	8.10	---	---	---	---
	11/11/2015	ENER	---	0.358	0.100	0.0090	8.50	---	---	---	---
LY28-1	10/16/2009	ENER	---	0.0224	0.0500	0.0100	2.60	---	---	---	---
	11/13/2009	ENER	8.19	0.0489	< 0.0300	0.0250	4.40	---	---	---	---
	12/18/2009	ENER	7.77	0.131	< 0.0300	0.0310	0.900	---	---	---	---
	12/30/2009	ENER	7.83	0.161	< 0.0300	0.0420	6.60	---	---	---	---
	1/31/2010	ENER	---	0.149	< 0.0300	0.0370	6.70	---	---	---	---
	2/22/2010	ENER	---	0.161	< 0.0300	0.0380	6.10	---	---	---	---
	3/25/2010	ENER	---	0.161	< 0.0300	0.0400	7.90	---	---	---	---
	4/29/2010	ENER	---	0.150	< 0.0300	0.0390	7.50	---	---	---	---
	5/31/2010	ENER	---	0.194	0.0300	0.0490	7.60	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY28-1	6/30/2010	ENER	---	0.183	< 0.0300	0.0410	7.20	---	---	---	---
	7/27/2010	ENER	---	0.171	< 0.0300	0.0440	8.00	---	---	---	---
	8/31/2010	ENER	---	0.187	< 0.0300	0.0470	7.50	---	---	---	---
	9/30/2010	ENER	---	0.194	< 0.0300	0.0450	7.30	---	---	---	---
	10/31/2010	ENER	---	0.191	0.0800	0.0610	---	---	---	---	---
	11/30/2010	ENER	---	0.168	< 0.0300	0.0470	---	---	---	---	---
	1/31/2011	ENER	---	0.149	< 0.0300	0.0550	---	---	---	---	---
	2/25/2011	ENER	---	0.135	0.0500	0.0590	---	---	---	---	---
	4/29/2011	ENER	---	0.132	0.0400	0.0630	---	---	---	---	---
	6/30/2011	ENER	---	0.111	< 0.0300	0.0670	---	---	---	---	---
	7/15/2011	ENER	---	0.112	< 0.0300	0.0570	---	---	---	---	---
	8/31/2011	ENER	---	0.114	< 0.0300	0.0510	---	---	---	---	---
	9/30/2011	ENER	---	0.137	< 0.0300	0.0500	---	---	---	---	---
	10/31/2011	ENER	---	0.128	< 0.0300	0.0780	---	---	---	---	---
	11/30/2011	ENER	---	0.194	< 0.0300	0.0700	---	---	---	---	---
	12/16/2011	ENER	---	0.193	< 0.0300	0.0540	---	---	---	---	---
	1/31/2012	ENER	---	0.198	< 0.0300	0.0750	---	---	---	---	---
	2/29/2012	ENER	---	0.210	< 0.0300	0.0650	---	---	---	---	---
	4/30/2012	ENER	---	0.200	< 0.0300	0.0560	---	---	---	---	---
	5/31/2012	ENER	---	0.206	< 0.0300	0.0590	---	---	---	---	---
	6/30/2012	ENER	---	0.200	< 0.0300	0.0530	---	---	---	---	---
	7/27/2012	ENER	---	0.202	< 0.0300	0.0500	---	---	---	---	---
	8/31/2012	ENER	---	0.198	< 0.0300	0.0560	---	---	---	---	---
	9/28/2012	ENER	---	0.206	< 0.0300	0.0490	---	---	---	---	---
	10/31/2012	ENER	---	0.201	< 0.0300	0.0560	---	---	---	---	---
	11/28/2012	ENER	---	0.212	< 0.0300	0.0460	---	---	---	---	---
	12/30/2012	ENER	---	0.195	< 0.0300	0.0430	---	---	---	---	---
	1/31/2013	ENER	---	0.200	< 0.0300	0.0460	---	---	---	---	---
	2/22/2013	ENER	---	0.203	< 0.0300	0.0460	21.0	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY28-1	3/26/2013	HMC	---	0.196	< 0.0300	0.0430	21.0	---	---	---	---
	4/30/2013	ENER	---	0.188	0.0600	0.0380	---	---	---	---	---
	9/17/2013	ENER	---	0.153	< 0.0300	0.0440	21.0	---	---	---	---
	12/12/2013	ENER	---	0.131	< 0.0300	0.0340	21.0	---	---	---	---
	3/28/2014	ENER	---	0.107	< 0.0300	0.0410	21.0	---	---	---	---
	6/27/2014	ENER	---	0.0418	< 0.0300	0.0410	19.0	---	---	---	---
	12/23/2014	ENER	---	0.0875	< 0.0300	0.0440	---	---	---	---	---
	3/31/2015	ENER	---	0.0642	< 0.0300	0.0460	23.0	---	---	---	---
	6/30/2015	ENER	---	0.0642	< 0.0300	0.0450	22.0	---	---	---	---
	9/30/2015	ENER	---	0.0845	< 0.0300	0.0480	14.2	---	---	---	---
	11/11/2015	ENER	---	0.0808	< 0.0300	0.0490	15.0	---	---	---	---
LY28-1M	10/16/2009	ENER	---	0.0009	0.160	0.0070	1.40	---	---	---	---
LY28-2	10/16/2009	ENER	---	0.0031	0.0500	0.0140	1.10	---	---	---	---
	10/31/2011	ENER	---	0.415	0.180	0.0760	---	---	---	---	---
	11/30/2011	ENER	---	0.770	0.0400	0.0430	---	---	---	---	---
	12/16/2011	ENER	---	0.932	0.0600	0.0190	---	---	---	---	---
	1/31/2012	ENER	---	0.884	0.0300	0.0310	---	---	---	---	---
	2/29/2012	ENER	---	0.762	< 0.0300	0.0470	---	---	---	---	---
	4/30/2012	ENER	---	0.641	< 0.0300	0.0470	---	---	---	---	---
	5/31/2012	ENER	---	0.572	< 0.0300	0.0480	---	---	---	---	---
	6/30/2012	ENER	---	0.533	< 0.0300	0.0480	---	---	---	---	---
	7/27/2012	ENER	---	0.432	< 0.0300	0.0510	---	---	---	---	---
	8/31/2012	ENER	---	0.867	< 0.0300	0.0510	---	---	---	---	---
	9/28/2012	ENER	---	0.814	< 0.0300	0.0490	---	---	---	---	---
	10/31/2012	ENER	---	0.624	< 0.0300	0.0530	---	---	---	---	---
	11/28/2012	ENER	---	0.521	< 0.0300	0.0560	---	---	---	---	---
	12/30/2012	ENER	---	0.418	< 0.0300	0.0600	---	---	---	---	---
	1/31/2013	ENER	---	0.411	< 0.0300	0.0660	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY28-2	2/22/2013	ENER	---	0.374	< 0.0300	0.0750	21.0	---	---	---	---
	3/26/2013	HMC	---	0.328	< 0.0300	0.0770	22.0	---	---	---	---
	4/30/2013	ENER	---	0.283	0.0600	0.0740	---	---	---	---	---
	9/17/2013	ENER	---	0.190	< 0.0300	0.0960	32.0	---	---	---	---
	12/12/2013	ENER	---	0.136	< 0.0300	0.0870	30.0	---	---	---	---
	3/28/2014	ENER	---	0.116	< 0.0300	0.0920	26.0	---	---	---	---
	6/27/2014	ENER	---	0.249	< 0.0300	0.110	28.0	---	---	---	---
	9/30/2014	ENER	---	0.110	< 0.0300	0.108	---	---	---	---	---
	12/23/2014	ENER	---	0.0619	< 0.0300	0.112	---	---	---	---	---
	3/31/2015	ENER	---	0.0483	< 0.0300	0.103	31.0	---	---	---	---
	6/30/2015	ENER	---	0.0706	< 0.0300	0.107	32.0	---	---	---	---
	9/30/2015	ENER	---	0.560	< 0.0300	0.170	< 0.100	---	---	---	---
	11/11/2015	ENER	---	0.406	< 0.0300	0.111	10.00	---	---	---	---
LY28-2M	10/16/2009	ENER	---	0.0044	0.160	0.0110	1.80	---	---	---	---
	11/13/2009	ENER	8.15	0.0327	0.120	< 0.0050	2.30	---	---	---	---
	12/18/2009	ENER	7.73	0.0567	0.100	< 0.0050	5.90	---	---	---	---
	12/30/2009	ENER	7.87	0.0641	0.0900	< 0.0050	6.30	---	---	---	---
	1/31/2010	ENER	---	0.0489	0.0900	< 0.0050	6.40	---	---	---	---
	2/22/2010	ENER	---	0.0558	0.0900	0.0060	7.10	---	---	---	---
	3/25/2010	ENER	---	0.0581	0.100	0.0070	7.40	---	---	---	---
	4/29/2010	ENER	---	0.0552	0.0800	0.0060	7.60	---	---	---	---
	5/31/2010	ENER	---	0.0619	0.110	0.0090	8.70	---	---	---	---
	6/30/2010	ENER	---	0.0117	< 0.0300	< 0.0050	9.00	---	---	---	---
	7/27/2010	ENER	---	0.0502	0.0900	0.0080	10.00	---	---	---	---
	8/31/2010	ENER	---	0.0504	0.0800	0.0080	9.70	---	---	---	---
	9/30/2010	ENER	---	0.0534	0.100	0.0060	9.70	---	---	---	---
	10/31/2010	ENER	---	0.0475	0.140	0.0090	---	---	---	---	---
	11/30/2010	ENER	---	0.0396	0.100	0.0090	---	---	---	---	---
	1/31/2011	ENER	---	0.0480	0.100	0.0110	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY28-2M	2/25/2011	ENER	---	0.0433	0.150	0.0130	---	---	---	---	---
	6/30/2011	ENER	---	0.0368	0.130	0.0130	---	---	---	---	---
	7/15/2011	ENER	---	0.0344	0.130	0.0080	---	---	---	---	---
	8/31/2011	ENER	---	0.340	0.0400	0.150	---	---	---	---	---
	9/30/2011	ENER	---	0.369	0.0500	0.133	---	---	---	---	---
	10/31/2011	ENER	---	0.367	0.0600	0.153	---	---	---	---	---
	11/30/2011	ENER	---	0.334	0.0800	0.157	---	---	---	---	---
	12/16/2011	ENER	---	0.263	0.0800	0.108	---	---	---	---	---
	1/31/2012	ENER	---	0.222	0.0900	0.103	---	---	---	---	---
	2/29/2012	ENER	---	0.199	0.0900	0.0840	---	---	---	---	---
	4/30/2012	ENER	---	0.153	0.0900	0.0720	---	---	---	---	---
	5/31/2012	ENER	---	0.100	0.0900	0.0550	---	---	---	---	---
	6/30/2012	ENER	---	0.0659	0.100	0.0370	---	---	---	---	---
	7/27/2012	ENER	---	0.0512	0.100	0.0220	---	---	---	---	---
	8/31/2012	ENER	---	0.444	0.260	0.109	---	---	---	---	---
	9/28/2012	ENER	---	0.313	0.280	0.122	---	---	---	---	---
	10/31/2012	ENER	---	0.346	0.230	0.150	---	---	---	---	---
	11/28/2012	ENER	---	0.368	0.160	0.148	---	---	---	---	---
	12/30/2012	ENER	---	0.334	0.180	0.155	---	---	---	---	---
	1/31/2013	ENER	---	0.389	0.160	0.161	---	---	---	---	---
	2/22/2013	ENER	---	0.382	0.150	0.158	54.0	---	---	---	---
	3/26/2013	HMC	---	0.418	0.120	0.132	45.0	---	---	---	---
	4/30/2013	ENER	---	0.401	0.110	0.124	---	---	---	---	---
	9/17/2013	ENER	---	0.341	0.110	0.134	45.0	---	---	---	---
	12/12/2013	ENER	---	0.338	0.110	0.0990	38.0	---	---	---	---
	3/28/2014	ENER	---	0.330	0.100	0.110	32.0	---	---	---	---
LY28-3	10/16/2009	ENER	---	0.0875	0.100	0.0230	21.0	---	---	---	---
	11/13/2009	ENER	8.11	0.487	0.100	0.0500	43.5	---	---	---	---
	12/18/2009	ENER	7.87	0.553	< 0.0300	0.0420	53.7	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY28-3	12/30/2009	ENER	7.90	0.628	< 0.0300	0.0480	55.3	---	---	---	---
	1/31/2010	ENER	---	0.694	< 0.0300	0.0490	60.0	---	---	---	---
	2/22/2010	ENER	---	0.758	< 0.0300	0.0520	63.7	---	---	---	---
	3/25/2010	ENER	---	0.707	< 0.0300	0.0450	58.9	---	---	---	---
	4/29/2010	ENER	---	0.710	0.0500	0.0580	52.0	---	---	---	---
	5/31/2010	ENER	---	0.971	0.110	0.0940	54.0	---	---	---	---
	6/30/2010	ENER	---	0.973	0.0400	0.0910	62.0	---	---	---	---
	7/27/2010	ENER	---	0.781	< 0.0300	0.105	72.0	---	---	---	---
	8/31/2010	ENER	---	0.809	< 0.0300	0.167	74.0	---	---	---	---
	10/31/2011	ENER	---	0.0790	0.0500	0.0150	---	---	---	---	---
	11/30/2011	ENER	---	0.587	0.0400	0.0430	---	---	---	---	---
	12/16/2011	ENER	---	0.677	0.0400	0.0440	---	---	---	---	---
	1/31/2012	ENER	---	0.796	0.0500	0.0880	---	---	---	---	---
	2/29/2012	ENER	---	0.870	0.0600	0.0730	---	---	---	---	---
	4/30/2012	ENER	---	0.864	0.0600	0.0840	---	---	---	---	---
	5/31/2012	ENER	---	0.929	0.0500	0.0920	---	---	---	---	---
	6/30/2012	ENER	---	1.03	0.0500	0.104	---	---	---	---	---
	7/27/2012	ENER	---	1.22	0.0400	0.117	---	---	---	---	---
	8/31/2012	ENER	---	1.50	< 0.0300	0.126	---	---	---	---	---
	9/28/2012	ENER	---	1.67	< 0.0300	0.144	---	---	---	---	---
	10/31/2012	ENER	---	1.55	< 0.0300	0.148	---	---	---	---	---
	11/28/2012	ENER	---	1.57	< 0.0300	0.0580	---	---	---	---	---
	1/31/2013	ENER	---	1.59	< 0.0300	0.0780	---	---	---	---	---
	2/22/2013	ENER	---	1.49	< 0.0300	0.0850	151	---	---	---	---
	3/26/2013	HMC	---	1.49	< 0.0300	0.0740	147	---	---	---	---
	4/30/2013	ENER	---	1.42	0.0400	0.0700	---	---	---	---	---
	9/17/2013	ENER	---	1.01	0.0400	0.0810	156	---	---	---	---
	12/12/2013	ENER	---	0.855	0.0500	0.0730	156	---	---	---	---
	12/30/2013	ENER	---	1.33	< 0.0300	0.0650	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY28-3	3/28/2014	ENER	---	0.718	0.0500	0.0810	160	---	---	---	---
	6/27/2014	ENER	---	0.620	0.0600	0.0850	162	---	---	---	---
	9/30/2014	ENER	---	0.696	0.0500	0.0800	---	---	---	---	---
	12/23/2014	ENER	---	0.559	0.0600	0.0930	---	---	---	---	---
	3/31/2015	ENER	---	0.437	0.0500	0.0990	175	---	---	---	---
	6/30/2015	ENER	---	0.447	0.0500	0.100	177	---	---	---	---
	9/30/2015	ENER	---	0.548	0.0500	0.0920	154	---	---	---	---
	11/11/2015	ENER	---	0.439	0.0500	0.0870	154	---	---	---	---
LY34-1	10/16/2009	ENER	---	0.0837	0.0800	0.0090	2.80	---	---	---	---
	12/30/2009	ENER	7.80	0.375	< 0.0300	0.0540	10.1	---	---	---	---
	2/22/2010	ENER	---	0.368	0.0400	0.0470	11.7	---	---	---	---
	3/25/2010	ENER	---	0.312	< 0.0300	0.0450	13.7	---	---	---	---
	4/29/2010	ENER	---	0.279	< 0.0300	0.0460	14.5	---	---	---	---
	5/31/2010	ENER	---	0.324	0.0500	0.0610	15.2	---	---	---	---
	6/30/2010	ENER	---	0.332	0.0400	0.0470	14.8	---	---	---	---
	7/27/2010	ENER	---	0.272	0.0400	0.0450	15.0	---	---	---	---
	8/31/2010	ENER	---	0.231	< 0.0300	0.0490	15.9	---	---	---	---
	9/30/2010	ENER	---	0.317	< 0.0300	0.0610	30.0	---	---	---	---
	10/31/2010	ENER	---	0.310	< 0.0300	0.0680	---	---	---	---	---
	11/30/2010	ENER	---	0.339	< 0.0300	0.0720	---	---	---	---	---
	1/31/2011	ENER	---	0.340	< 0.0300	0.0610	---	---	---	---	---
	2/25/2011	ENER	---	0.362	< 0.0300	0.0780	---	---	---	---	---
	3/31/2011	ENER	---	0.367	< 0.0300	0.0670	---	---	---	---	---
	4/29/2011	ENER	---	0.401	0.0500	0.0940	---	---	---	---	---
	6/30/2011	ENER	---	0.328	< 0.0300	0.0960	---	---	---	---	---
	7/15/2011	ENER	---	0.345	0.0400	0.0880	---	---	---	---	---
	8/31/2011	ENER	---	0.328	0.0600	0.0720	---	---	---	---	---
	9/30/2011	ENER	---	0.292	0.0600	0.0680	---	---	---	---	---
	10/31/2011	ENER	---	0.284	0.0700	0.0720	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY34-1	11/30/2011	ENER	---	0.279	0.0700	0.0800	---	---	---	---	---
	12/16/2011	ENER	---	0.267	0.0800	0.0620	---	---	---	---	---
	2/29/2012	ENER	---	0.285	0.0700	0.0760	---	---	---	---	---
	4/30/2012	ENER	---	0.265	0.0600	0.0780	---	---	---	---	---
	5/31/2012	ENER	---	0.279	0.0600	0.0730	---	---	---	---	---
	6/30/2012	ENER	---	0.271	0.0600	0.0660	---	---	---	---	---
	7/27/2012	ENER	---	0.178	< 0.0300	0.0560	---	---	---	---	---
	8/31/2012	ENER	---	0.309	< 0.0300	0.0870	---	---	---	---	---
	9/28/2012	ENER	---	0.377	< 0.0300	0.0570	---	---	---	---	---
	10/31/2012	ENER	---	0.432	< 0.0300	0.0540	---	---	---	---	---
	11/28/2012	ENER	---	0.432	< 0.0300	0.0490	---	---	---	---	---
	12/30/2012	ENER	---	0.420	< 0.0300	0.0500	---	---	---	---	---
	1/31/2013	ENER	---	0.460	< 0.0300	0.0540	---	---	---	---	---
	2/22/2013	ENER	---	0.456	< 0.0300	0.0590	69.0	---	---	---	---
	3/26/2013	HMC	---	0.445	< 0.0300	0.0540	68.0	---	---	---	---
	4/30/2013	ENER	---	0.446	< 0.0300	0.0500	---	---	---	---	---
	9/17/2013	ENER	---	0.353	< 0.0300	0.0570	72.0	---	---	---	---
	12/12/2013	ENER	---	0.340	< 0.0300	0.0500	72.0	---	---	---	---
	3/28/2014	ENER	---	0.330	< 0.0300	0.0600	78.0	---	---	---	---
	6/27/2014	ENER	---	0.350	< 0.0300	0.0670	78.0	---	---	---	---
	9/30/2014	ENER	---	0.323	< 0.0300	0.0720	---	---	---	---	---
	12/23/2014	ENER	---	0.317	< 0.0300	0.0820	---	---	---	---	---
	6/30/2015	ENER	---	0.311	< 0.0300	0.0860	115	---	---	---	---
	9/30/2015	ENER	---	0.212	< 0.0300	0.0830	148	---	---	---	---
LY34-2	10/16/2009	ENER	---	0.0067	0.140	0.0060	< 0.100	---	---	---	---
	11/13/2009	ENER	8.34	0.0695	0.110	0.0150	2.40	---	---	---	---
	12/18/2009	ENER	7.94	0.0871	0.0800	0.0190	7.50	---	---	---	---
	12/30/2009	ENER	7.98	0.0876	0.100	0.0210	8.30	---	---	---	---
	1/31/2010	ENER	---	0.0962	0.0800	0.0300	12.5	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY34-2	2/22/2010	ENER	---	0.118	0.0900	0.0330	9.40	---	---	---	---
	3/25/2010	ENER	---	0.126	0.0800	0.0350	14.0	---	---	---	---
	4/29/2010	ENER	---	0.142	0.0800	0.0440	12.0	---	---	---	---
	5/31/2010	ENER	---	0.192	0.110	0.0550	11.4	---	---	---	---
	6/30/2010	ENER	---	0.222	0.120	0.0600	12.8	---	---	---	---
	7/27/2010	ENER	---	0.202	0.100	0.0590	12.1	---	---	---	---
	8/31/2010	ENER	---	0.104	0.0500	0.0430	8.00	---	---	---	---
	9/30/2010	ENER	---	0.0932	0.0400	0.0370	6.20	---	---	---	---
	10/31/2010	ENER	---	0.195	0.0600	0.0600	---	---	---	---	---
	11/30/2010	ENER	---	0.406	0.0700	0.0690	---	---	---	---	---
	1/31/2011	ENER	---	0.379	0.0400	0.0700	---	---	---	---	---
	2/25/2011	ENER	---	0.388	0.0500	0.0850	---	---	---	---	---
	3/31/2011	ENER	---	0.389	0.0400	0.0830	---	---	---	---	---
	4/29/2011	ENER	---	0.394	0.0900	0.114	---	---	---	---	---
	6/30/2011	ENER	---	0.311	0.0400	0.113	---	---	---	---	---
	10/31/2011	ENER	---	0.0861	0.260	0.0130	---	---	---	---	---
	11/30/2011	ENER	---	0.184	0.300	0.0140	---	---	---	---	---
	12/16/2011	ENER	---	0.169	0.210	0.0070	---	---	---	---	---
	1/31/2012	ENER	---	0.183	0.120	0.0640	---	---	---	---	---
	2/29/2012	ENER	---	0.0973	0.180	0.0100	---	---	---	---	---
	8/31/2012	ENER	---	0.0998	0.0400	0.0450	---	---	---	---	---
	9/28/2012	ENER	---	0.0642	< 0.0300	0.0580	---	---	---	---	---
	10/31/2012	ENER	---	0.0660	< 0.0300	0.0560	---	---	---	---	---
	11/28/2012	ENER	---	0.0706	< 0.0300	0.0510	---	---	---	---	---
	12/30/2012	ENER	---	0.0664	< 0.0300	0.0500	---	---	---	---	---
	1/31/2013	ENER	---	0.0722	< 0.0300	0.0490	---	---	---	---	---
	2/22/2013	ENER	---	0.0737	< 0.0300	0.0530	10.7	---	---	---	---
	3/26/2013	HMC	---	0.0737	< 0.0300	0.0500	10.00	---	---	---	---
	4/30/2013	ENER	---	0.0758	0.0400	0.0450	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY34-2	9/17/2013	ENER	---	0.0913	< 0.0300	0.0520	12.0	---	---	---	---
	12/12/2013	ENER	---	0.0932	0.0300	0.0440	16.0	---	---	---	---
	3/28/2014	ENER	---	0.0993	< 0.0300	0.0540	17.1	---	---	---	---
	9/30/2014	ENER	---	0.0877	0.0300	0.0560	---	---	---	---	---
	12/23/2014	ENER	---	0.122	0.0300	0.0710	---	---	---	---	---
	9/30/2015	ENER	---	0.0576	< 0.0300	0.0100	1.50	---	---	---	---
	11/11/2015	ENER	---	0.0704	< 0.0300	0.0080	1.80	---	---	---	---
LY34-3	10/16/2009	ENER	---	0.0051	0.130	0.0070	1.50	---	---	---	---
	11/13/2009	ENER	8.24	0.0749	0.210	0.0250	3.60	---	---	---	---
	12/18/2009	ENER	7.91	0.239	0.0800	0.0420	7.10	---	---	---	---
	12/30/2009	ENER	7.92	0.349	0.0600	0.0740	7.60	---	---	---	---
	1/31/2010	ENER	---	0.269	0.0700	0.0600	9.20	---	---	---	---
	2/22/2010	ENER	---	0.292	0.0700	0.0630	0.500	---	---	---	---
	3/25/2010	ENER	---	0.282	0.0700	0.0640	10.5	---	---	---	---
	4/29/2010	ENER	---	0.243	0.0600	0.0620	9.60	---	---	---	---
	5/31/2010	ENER	---	0.291	0.0900	0.0880	9.60	---	---	---	---
	6/30/2010	ENER	---	0.266	0.0600	0.0700	8.80	---	---	---	---
	7/27/2010	ENER	---	0.254	0.0600	0.0710	8.20	---	---	---	---
	8/31/2010	ENER	---	0.250	0.0500	0.0800	6.70	---	---	---	---
	9/30/2010	ENER	---	0.287	0.0600	0.0730	5.00	---	---	---	---
	10/31/2010	ENER	---	0.275	0.120	0.103	---	---	---	---	---
	11/30/2010	ENER	---	0.279	0.0500	0.0720	---	---	---	---	---
	1/31/2011	ENER	---	0.285	0.0500	0.0920	---	---	---	---	---
	2/25/2011	ENER	---	0.274	0.110	0.102	---	---	---	---	---
	3/31/2011	ENER	---	0.224	0.0300	0.0620	---	---	---	---	---
	4/29/2011	ENER	---	0.267	0.120	0.0940	---	---	---	---	---
	6/30/2011	ENER	---	0.223	< 0.0300	0.103	---	---	---	---	---
	7/15/2011	ENER	---	0.229	< 0.0300	0.0990	---	---	---	---	---
	8/31/2011	ENER	---	0.266	0.0300	0.0710	---	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY34-3	9/30/2011	ENER	---	0.222	0.0300	0.0660	---	---	---	---	---
	10/31/2011	ENER	---	0.201	0.0400	0.122	---	---	---	---	---
	11/30/2011	ENER	---	0.274	0.0400	0.112	---	---	---	---	---
	12/16/2011	ENER	---	0.288	0.0300	0.0770	---	---	---	---	---
	1/31/2012	ENER	---	0.268	0.0400	0.0990	---	---	---	---	---
	2/29/2012	ENER	---	0.291	0.0400	0.0930	---	---	---	---	---
	4/30/2012	ENER	---	0.260	0.0400	0.0900	---	---	---	---	---
	5/31/2012	ENER	---	0.339	0.0400	0.121	---	---	---	---	---
	6/30/2012	ENER	---	0.458	0.0600	0.174	---	---	---	---	---
	7/27/2012	ENER	---	0.436	0.0600	0.177	---	---	---	---	---
	8/31/2012	ENER	---	0.544	0.0800	0.280	---	---	---	---	---
	9/28/2012	ENER	---	0.536	0.0700	0.248	---	---	---	---	---
	10/31/2012	ENER	---	0.509	0.0600	0.223	---	---	---	---	---
	11/28/2012	ENER	---	0.467	0.0300	0.172	---	---	---	---	---
	12/30/2012	ENER	---	0.427	0.0500	0.169	---	---	---	---	---
	1/31/2013	ENER	---	0.412	0.0500	0.142	---	---	---	---	---
	2/22/2013	ENER	---	0.384	0.0400	0.137	15.9	---	---	---	---
	3/26/2013	HMC	---	0.376	0.0400	0.133	16.0	---	---	---	---
	4/30/2013	ENER	---	0.368	< 0.0300	0.122	---	---	---	---	---
	9/17/2013	ENER	---	0.416	0.0600	0.173	15.0	---	---	---	---
	12/12/2013	ENER	---	0.396	0.0700	0.149	19.6	---	---	---	---
	3/28/2014	ENER	---	0.353	0.0600	0.158	15.7	---	---	---	---
	6/27/2014	ENER	---	0.414	0.0700	0.199	5.30	---	---	---	---
LY34-4	10/16/2009	ENER	---	0.0261	0.280	0.0050	1.40	---	---	---	---
	11/13/2009	ENER	8.38	0.0613	0.310	0.0110	4.20	---	---	---	---
	12/18/2009	ENER	8.34	0.0714	0.280	0.0130	12.4	---	---	---	---
	12/30/2009	ENER	8.36	0.0671	0.230	0.0180	15.8	---	---	---	---
	1/31/2010	ENER	---	0.0574	0.270	0.0220	22.9	---	---	---	---
	8/31/2010	ENER	---	0.0397	0.320	0.0480	49.0	---	---	---	---

TABLE C-2 WATER QUALITY ANALYSIS FOR LYSIMETERS (cont.)

Minor Constituents

Sample Point Name	Date	Lab	pH (std. units)	Unat (mg/l)	Mo (mg/l)	Se (mg/l)	NO3 (mg/l)	Ra226 (pCi/l)	Ra228 (pCi/l)	V (mg/l)	Th230 (pCi/l)
LY34-4	9/30/2010	ENER	---	0.0749	0.460	0.0510	53.0	---	---	---	---

APPENDIX D
GROUND WATER SECTION 33 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

APPENDIX D

TABLE OF CONTENTS

GROUND WATER SECTION 33 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES

TABLE OF CONTENTS

GROUND WATER SECTION 33 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES (CONTINUED)

GROUND WATER SECTION 33 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES (CONTINUED)

TABLES

D.0 Ground Water Section 33

Section 33 has two irrigated areas, the 150 acre center pivot and 24 acres of flood area. The Section 33 pivot existed over the Rio San Jose alluvium while the Section 33 flood area exists over both San Mateo and Rio San Jose alluvium. The 24 acre flood area is typically included in the Section 34 analysis because the soil properties in the Section 33 flood area are similar to those in the Section 34 flood area. However, the ground-water evaluation for the Section 33 flood is included in the Section 33 ground-water evaluation. Figure D-1 shows the location of the 3 new monitoring wells; 551, 553 and 554. These wells were added in 2009 to further define the ground-water concentrations in this area. Wells 551, 553, 554, 647, 649, 657 and 658 are used in evaluating the ground-water concentrations adjacent to the 150 acre center pivot while alluvial well 650 is used to monitor the Section 33 flood area (see Table D-1 for well completion information). Well 648 has not had enough water in it the last few years to collect a sample.

Table D-1. Section 33 Monitoring Well Data

WELL NAME	NORTH. COORD.	EAST COORD.	WELL DEPTH (FT-MSP)	CASING DIAM. (IN)	WATER LEVEL DATE	WATER LEVEL DEPTH (FT-MSP)	WATER LEVEL ELEV. (FT-MSL)	MP ABOVE LSD (FT)	MP ELEV. (FT-MSL)	BASE OF ALLUVIUM (FT-LSD)	BASE OF ALLUVIUM (FT-MSL)		PERFORATIONS (FT-LSD)	SATURATED THICKNESS
EXISTING ALLUVIAL WELLS														
541	1539831	477236	120	5	12/5/2011	91	6464.62	2	6555.62	---	---	A	78-118	---
551	1536280	4798001	130	5	12/5/2011	99.31	6447.99	2	6547.3	120	6433	A	90-130	18
553	1534840	480510	120	5	12/5/2011	104.22	6443.26	2	6547.48	110	6433	A	80-120	15
554	1534840	479110	140	5	12/5/2011	105.89	6441.28	2	6547.17	130	6411	A	100-140	29
647	1536623	478308	140	4.5	12/5/2011	105.09	6446.82	1.4	6551.91	132	6418.5	A	80-140	26.7
648	1534730	478343	120	4.5	12/5/2011	130.2	6417.59	2	6547.79	120	6425.8	A	80-120	6.3
649	1534730	479798	124	4.5	12/5/2011	102.87	6440.42	0.3	6543.29	115	6428	A	84-124	12.5
650	1536779	482135	109	4.5	8/9/2011	82.74	6464.37	2.2	6547.11	103	6441.9	A	89-109	21.3
657	1537497	478392	128	6	12/5/2011	101.03	6450.78	2.2	6551.81	120	6429.6	A	87-128	17.3
658	1535922	478436	130	6	12/5/2011	107.3	6442.88	0.4	6550.18	129	6420.8	A	89-130	20.9
685	1539098	478170	100	4.5	12/5/2011	97.3	6459.27	1.7	6556.57	116	6438.9	A	60-100	17.5
687	1539011	477276	102	6	12/5/2011	95.85	6460.11	2.2	6555.96	120	6433.8	A	62-102	23.1
996	1537621	477989	138	5	12/5/2011	49.6	6502.92	1.7	6552.52	136	6414.8	A	126-136	32.7

D.1 Sulfate Concentrations

The sulfate concentrations for the alluvial aquifer are presented in Figure D-1 for the Section 33 area. This figure shows the locations of all of the alluvial wells in this area and the 2016 alluvial sulfate concentrations in Section 33. The 2016 contour is presented in blue which shows sulfate concentrations greater than 500 mg/l to the east of this contour. Sulfate concentration data (2016) is also posted on the figure adjacent to each of the wells. The Section 33 center pivot is located in the Rio San Jose alluvial system. The Rio San Jose alluvial system receives water from the San Mateo alluvial system in the western portion of Section 28. The Rio San Jose alluvial system typically has a concentration gradient from the west-southwest to the east-northeast. The location of the 500 mg/l sulfate concentration in 2016 was similar in Sections 32 and 33 to contours in previous years. The movement of the concentration contour line to the east varies due to the amount of natural recharge to the Rio San Jose alluvial system on the west side. The San Andres aquifer also has a direct connection with the alluvial aquifer in the southeast portion of Section 32 and therefore has caused a sink to develop in the alluvial aquifer in this area due to the movement of alluvial groundwater into the San Andres aquifer. This would also tend to shift the sulfate contour to the west.

Figure D-2 shows the sulfate concentrations for alluvial wells 551, 647, 649, 650 and 658 compared to the Grants site standard of 1500 mg/l. The small decrease in concentration in alluvial well 551, which is located in the center of the pivot, was observed in 2015 and 2016 which is thought to show the dissipating of effects of the Section 33 irrigation on the ground water in this area. Sulfate concentration in alluvial well 649, which is on the south side of the center pivot, slightly decreased in 2016 and is likely still showing a very small effect from the irrigation. Sulfate concentrations prior to the irrigation in 2000 and during the early years of irrigations were slightly lower in wells 647, 649 and 658 than those observed in the last nine years.

Figure D-3 shows the sulfate concentrations upgradient of the Section 33 irrigation area for alluvial wells 541, 657, 685, 687 and 996 compared to the Grants site standard of 1500 mg/l. This plot shows very similar sulfate concentrations in these alluvial wells to those that have been observed in the Section 33 irrigation area, indicating that the water entering the Section 33 area should not change these sulfate concentrations.

This monitoring is thought to show a very small effect in sulfate concentrations on the Section 33 ground water due to the Section 33 irrigation. The very small increase in sulfate concentration could also easily be from the slightly higher sulfate concentrations that exist to the northwest in the Rio San Jose alluvial system, or also the shifting of higher concentrations to the west in Section 33. The sulfate concentration in well 551 was slightly higher than most of the Section 33 monitoring wells and likely shows sulfate increase due to the Section 33 irrigation. Fairly steady concentrations had been observed in alluvial well 650 until an increase was observed in 2010. Well 650 is located on the southwest side of Section 33 flood area. This small increase could possibly be due to the Section 33 flood irrigation.

D.2 TDS Concentrations

TDS concentrations have been monitored in Section 33 since 1997 when the original monitoring wells were drilled. Figure D-4 presents the TDS concentrations for 2016. This figure shows the 2016 data and these values are listed adjacent to the wells. The 1,000 mg/l contour for TDS in 2016 is generally in the area of its location for previous years. The TDS concentrations to the north of Section 33 irrigation in the Rio San Jose alluvial system are similar to those in Section 33 center pivot area. This indicates that the area to the north should not increase the alluvial TDS concentrations in the Section 33 center pivot area as this water moves to the south.

Figure D-5 presents the TDS concentrations for wells 551, 647, 649, 650 and 658 with the TDS site standard of 2734 mg/l. This data shows that, in general, the TDS concentrations for well 649 gradually decreased in 2016, but there had been an overall increase in well 649 over the previous nine years. This very small increase could possibly be showing an effect on TDS in the alluvial aquifer from the Section 33 center pivot, along with the slightly higher concentrations observed in well 551 prior to 2015. Therefore, the small effect on the TDS concentrations in the alluvial ground water in Section 33 likely is defined by the slightly larger concentrations in wells 551 and 649. The slightly smaller TDS values in well 551 in 2015 and 2016 and the smaller TDS in well 649 in 2016 show that the small increase due to the Section 33 irrigation will be dissipated in the very near future. TDS concentrations were fairly steady in well 650 prior to a small increase since 2010 which could be due to this flood irrigation.

The TDS concentrations upgradient of the Section 33 irrigation area for alluvial wells 541, 657, 685, 687 and 996 are presented in Figure D-6. This plot shows very similar TDS concentrations in these alluvial wells to those that have been observed in the Section 33 irrigation area.

D.3 Chloride Concentrations

The alluvial chloride concentrations are presented in Figure D-7 for 2016. This map shows that the 2016 chloride concentrations of >100 mg/l extend to the south of the southern edge of the center pivot. The chloride concentrations above 100 mg/l contour in 2016 are thought to be from the higher concentrations upgradient to the northwest of the pivot in the alluvial aquifer, and that only the chloride concentrations from wells 553 and 649 still show a small effect from the Section 33 irrigation.

Figure D-8 presents the chloride concentrations for the monitoring wells in the Section 33 area compared to the site standard of 250 mg/l. This figure shows fairly steady chloride concentrations but does show a small increase in chloride concentrations for the last nine years in well 649. A small decrease was observed in 2015 and 2016 in well 551 which is likely due to the ceasing of the Section 33 irrigation. The 2016 chloride concentrations in well 649 indicates the effects from the Section 33 irrigation will be over in this ground water in the very near future. The higher chloride concentrations in well 551 likely define the small increase due to Section 33 center pivot irrigation. The chloride concentrations in alluvial well 650 could possibly be showing the effects on the ground water from the Section 33 flood irrigation but the value is well within natural range of this constituent.

Figure D-9 shows the chloride concentrations upgradient of the Section 33 irrigation area for alluvial wells 541, 657, 685, 687 and 996 compared to the Grants site standard of 250 mg/l. This plot shows very similar chloride concentrations in these alluvial wells to those that have been observed in the Section 33 irrigation area.

D.4 Uranium Concentrations

Uranium is an important parameter because it is the main hazardous constituent of concern in the irrigation water. Figure D-10 presents the 2016 uranium concentrations for the alluvial aquifer in the Section 33 area. The blue contours show that the uranium concentrations of 0.05 mg/l extended down to the western edge of Section 33 center pivot in 2016. A decrease in the area of significant uranium concentrations has occurred in the Section 33 with time due to the restoration efforts upgradient of this area.

Figure D-11 presents the uranium concentrations versus time for the Section 33 alluvial wells and the alluvial site standard of 0.16 mg/l. This plot shows that the uranium concentrations for the ten years during the operation of the Section 33 center pivot and seven years after ceasing irrigation have been relatively steady. Uranium concentrations in well 647 declined by the start of the irrigation program to concentrations observed recently. The observed uranium concentrations do not indicate any measurable effect on the ground-water quality that is attributable to the Section 33 center pivot irrigation. The small and steady concentrations from alluvial well 650 do not indicate any uranium effects from the Section 33 flood system.

The uranium concentrations upgradient of the Section 33 irrigation area for alluvial wells 541, 657, 685, 687 and 996 are presented in Figure D-12. Recent uranium concentrations in these upgradient wells are slightly higher than those that have been observed in the Section 33 irrigation area but are not expected to significantly change the uranium concentrations in Section 33.

D.5 Selenium Concentrations

Figure D-13 presents the 2016 selenium concentrations for the alluvial aquifer in the Section 33 area. No iso-concentration contours exist on this figure for 2016 concentrations because the selenium concentrations are all very low. The 2016 concentrations are posted by each well.

Figure D-14 presents the selenium concentrations for the Section 33 monitoring wells. Selenium concentrations in the Section 33 monitoring wells have varied from 0.02 to 0.05 over this period of time with no consistent trends. These selenium concentration changes are not significant enough to determine if the Section 33 irrigation has had any effect on the selenium concentrations in the alluvial aquifer. Selenium concentrations have been steady in well 650.

Figure D-15 shows the selenium concentrations upgradient of the Section 33 irrigation area for alluvial wells 541, 657, 685, 687 and 996 compared to the Grants site standard of 0.32 mg/l. This plot shows very similar and small selenium concentrations in these alluvial wells to those that have been observed in the Section 33 irrigation area.

D.6 Molybdenum Concentrations

The molybdenum concentrations for 2016 are presented in Figure D-16 with all of these concentrations less than the detection limit for the molybdenum, which is 0.03 mg/l. This figure and Figures D-17 and D-18, which shows the molybdenum concentrations with time and the site standard of 0.1 mg/l, shows that no effect on molybdenum concentrations has been observed from the Section 33 irrigation or upgradient of this area.

D.7 Nitrate Concentrations

The nitrate concentrations for 2016 are presented in Figure D-19. The highest measured concentration in 2016 in this area was 6.2 mg/l from well 650. Figures D-20 and D-21 present the nitrate concentrations (site standard of 12 mg/l) with time and shows that the nitrate concentrations generally have been fairly steady except for a gradual decline in nitrate concentrations in well 647. These nitrate concentrations do not indicate any observable impacts on alluvial nitrate concentrations as a result of the Section 33 irrigation.

D.8 Radium-226 plus Radium-228

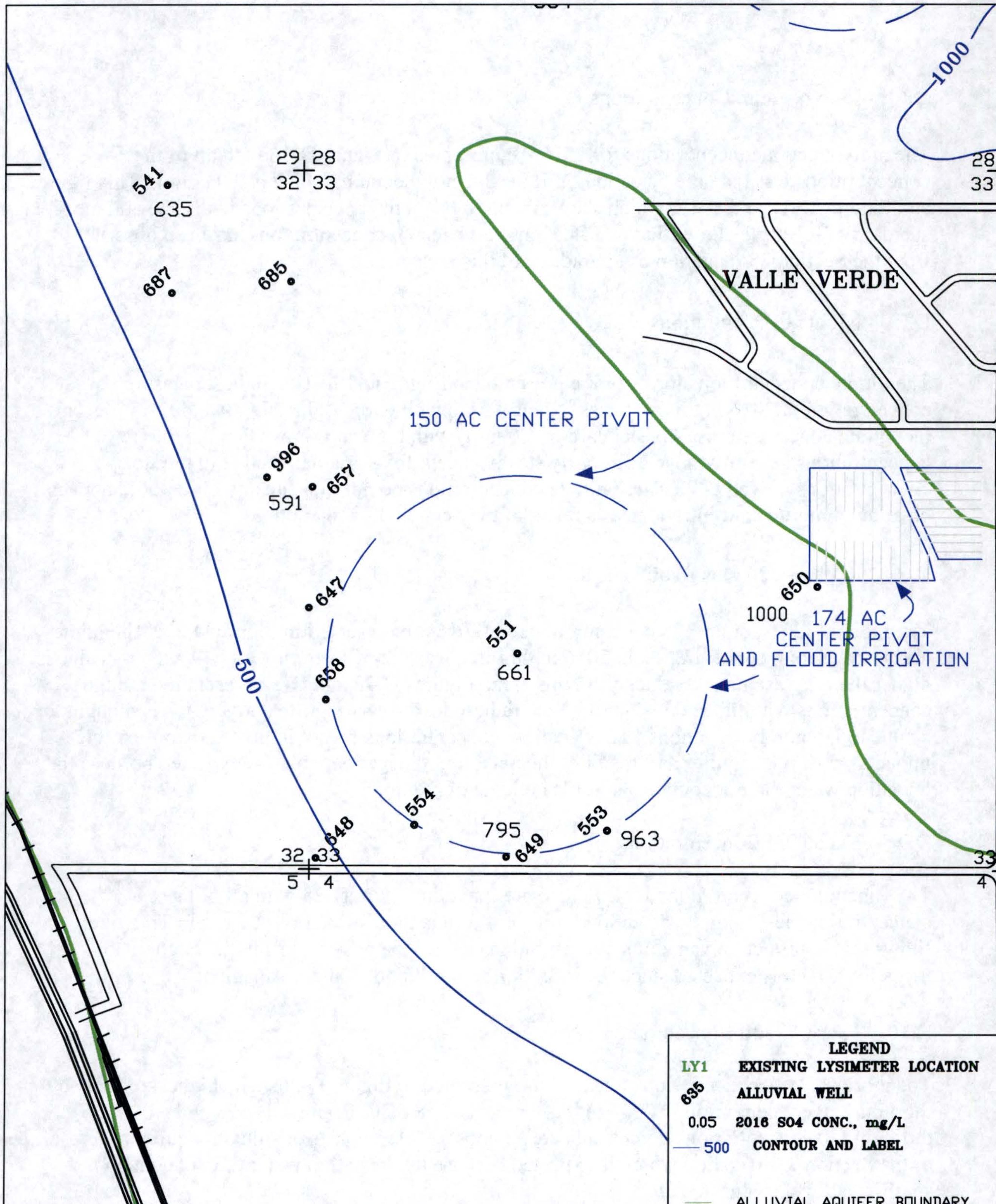
The radium-226+radium-228 concentrations for 2016 are presented in Figure D-22. The highest measured radium concentration in 2016 in this area was 4.2 pCi/l from well 649 and this value is higher than representative values from this area. Figures D-23 and D-24 present the radium concentrations with time and shows that the radium levels vary significantly which is thought to be due to laboratory variations. These radium concentrations do not indicate any observable impacts on alluvial aquifer as a result of the Section 33 irrigation which is expected because the irrigation water did not contain a significant level of radium.

D.9 Vanadium Concentrations

The vanadium concentrations for 2016 are presented in Figure D-25 with all of these concentrations less than the detection limit for the vanadium, which is 0.01 mg/l. This figure shows that no effect on vanadium concentrations have been observed from the Section 33 irrigation which is expected since the irrigation water did not contain vanadium.

D.10 Thorium-230 Concentrations

The thorium-230 concentrations for 2016 are presented in Figure D-26. The highest measured thorium-230 concentration in 2016 in this area was 0.08 pCi/l from wells 553 and 649. These thorium-230 concentrations do not indicate any observable impacts on alluvial aquifer as a result of the Section 33 irrigation which is expected because the irrigation water did not contain a significant level of thorium.



SCALE: 1" = 1000'

C:\PROJECTS\2017-06\1600GAL-IRRIGATION

DATE: 8/30/2017

FIGURE D-1. 2016 SULFATE ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

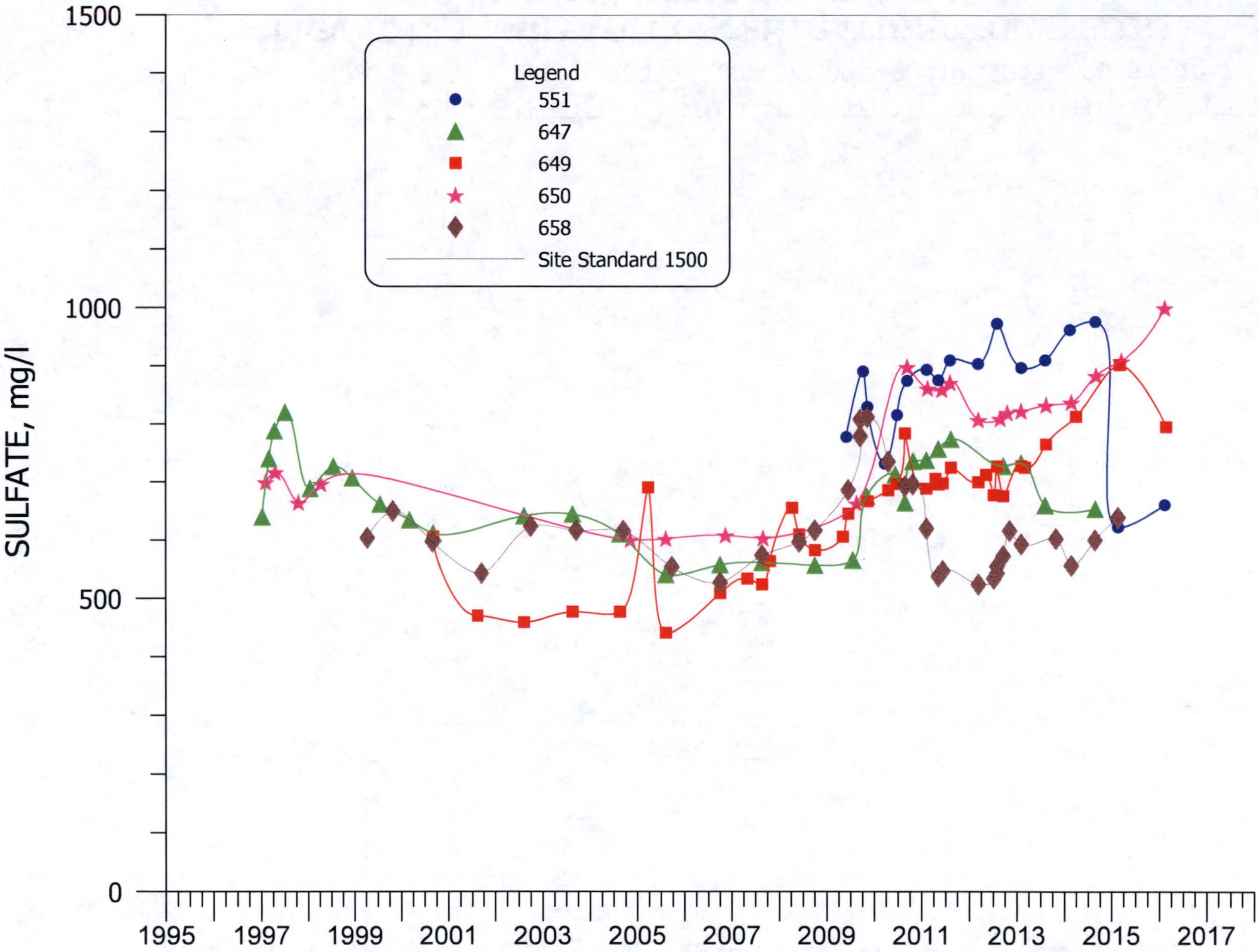


FIGURE D-2. SULFATE CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

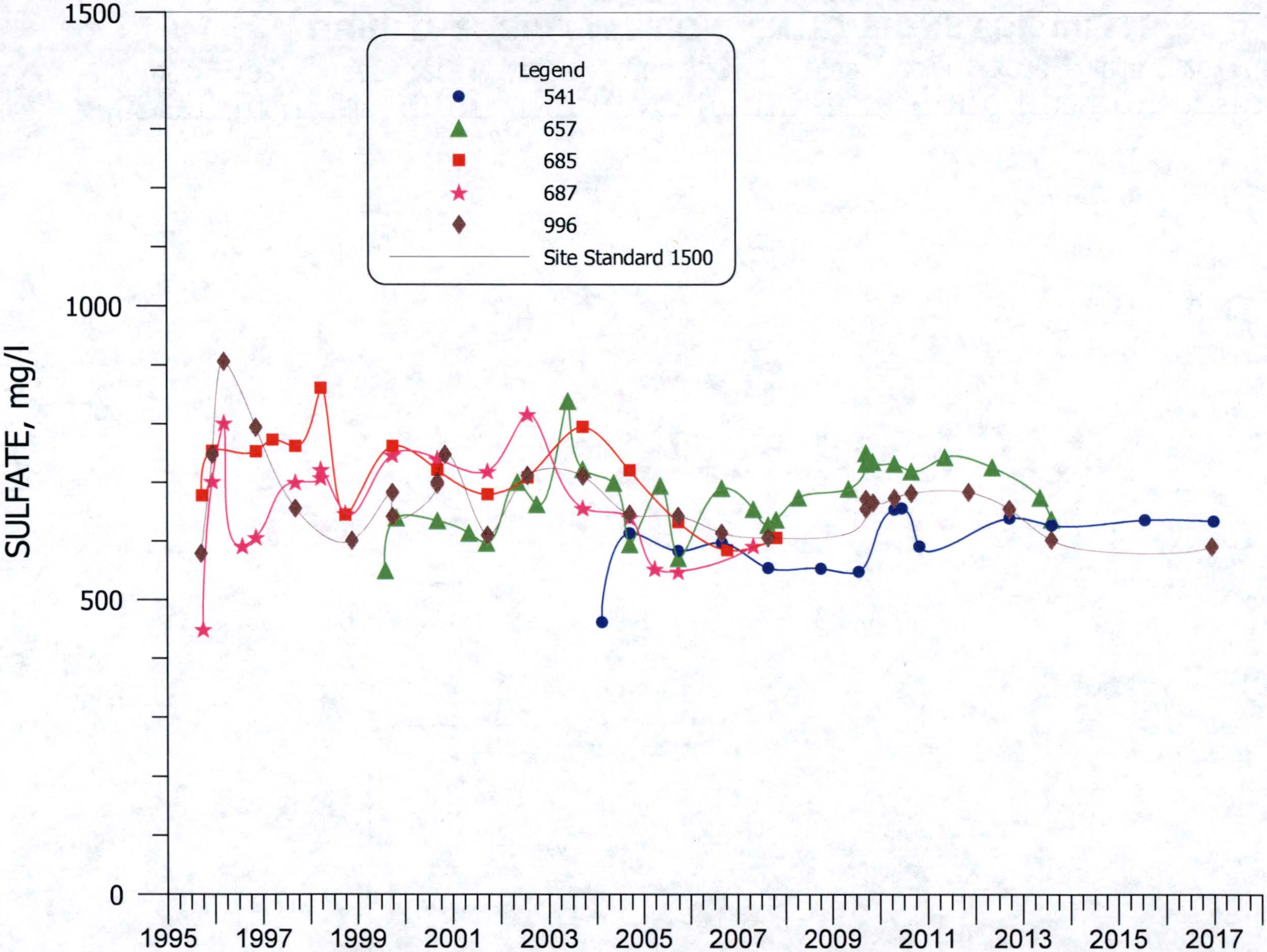
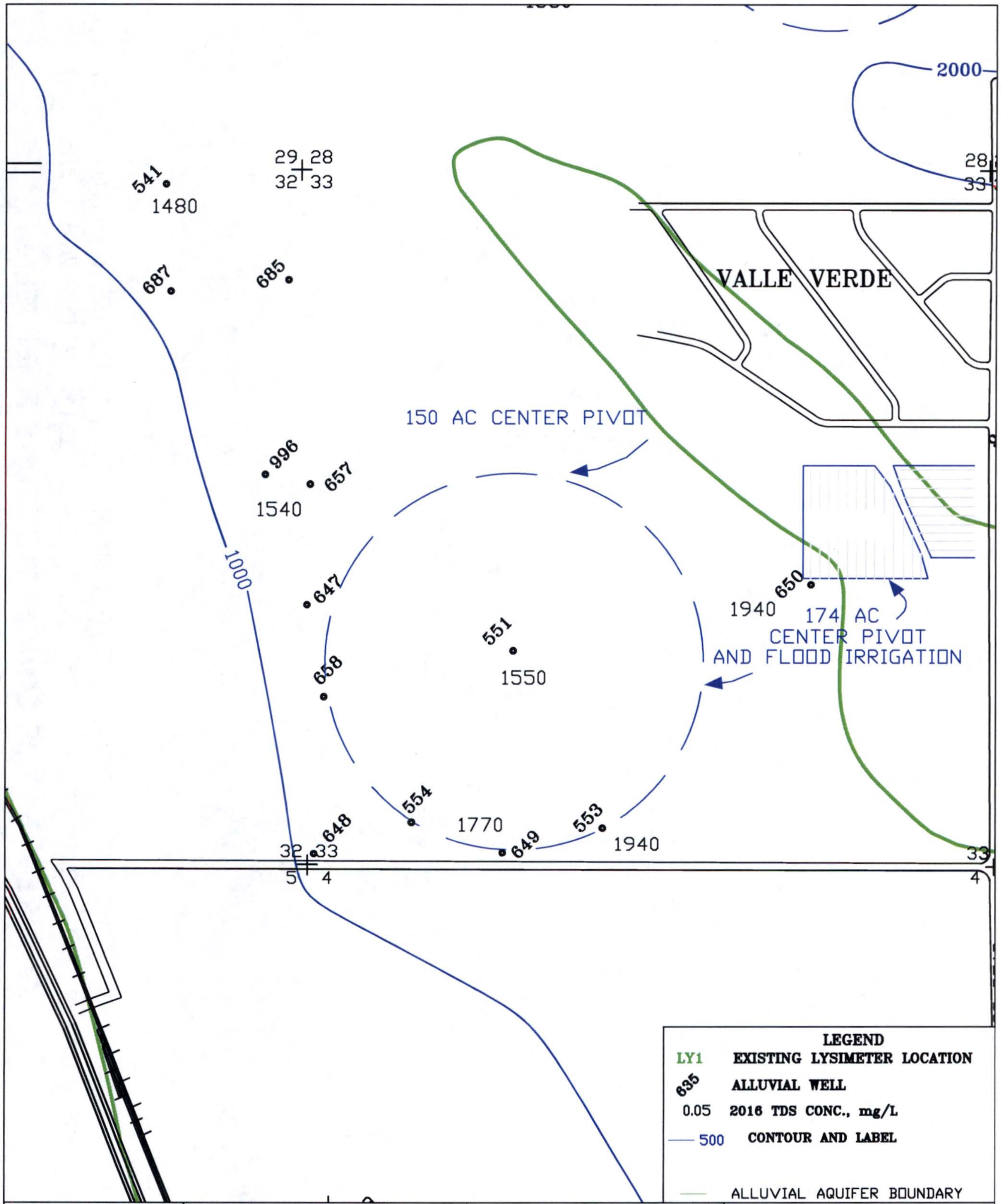


FIGURE D-3. SULFATE CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600GAL-IRRIGATION DATE: 9/14/2017	**FIGURE D-4. 2016 TDS ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

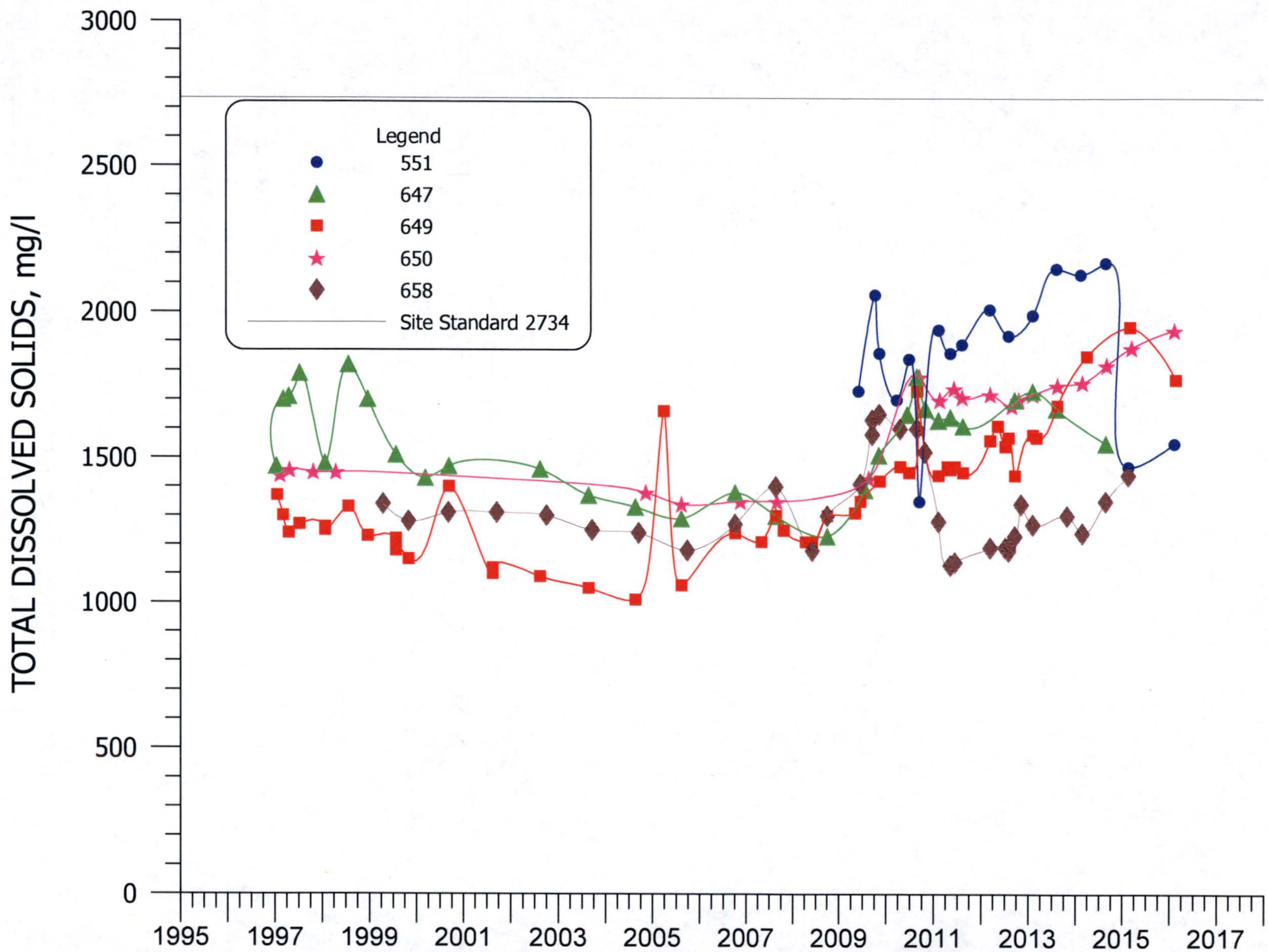


FIGURE D-5. TDS CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

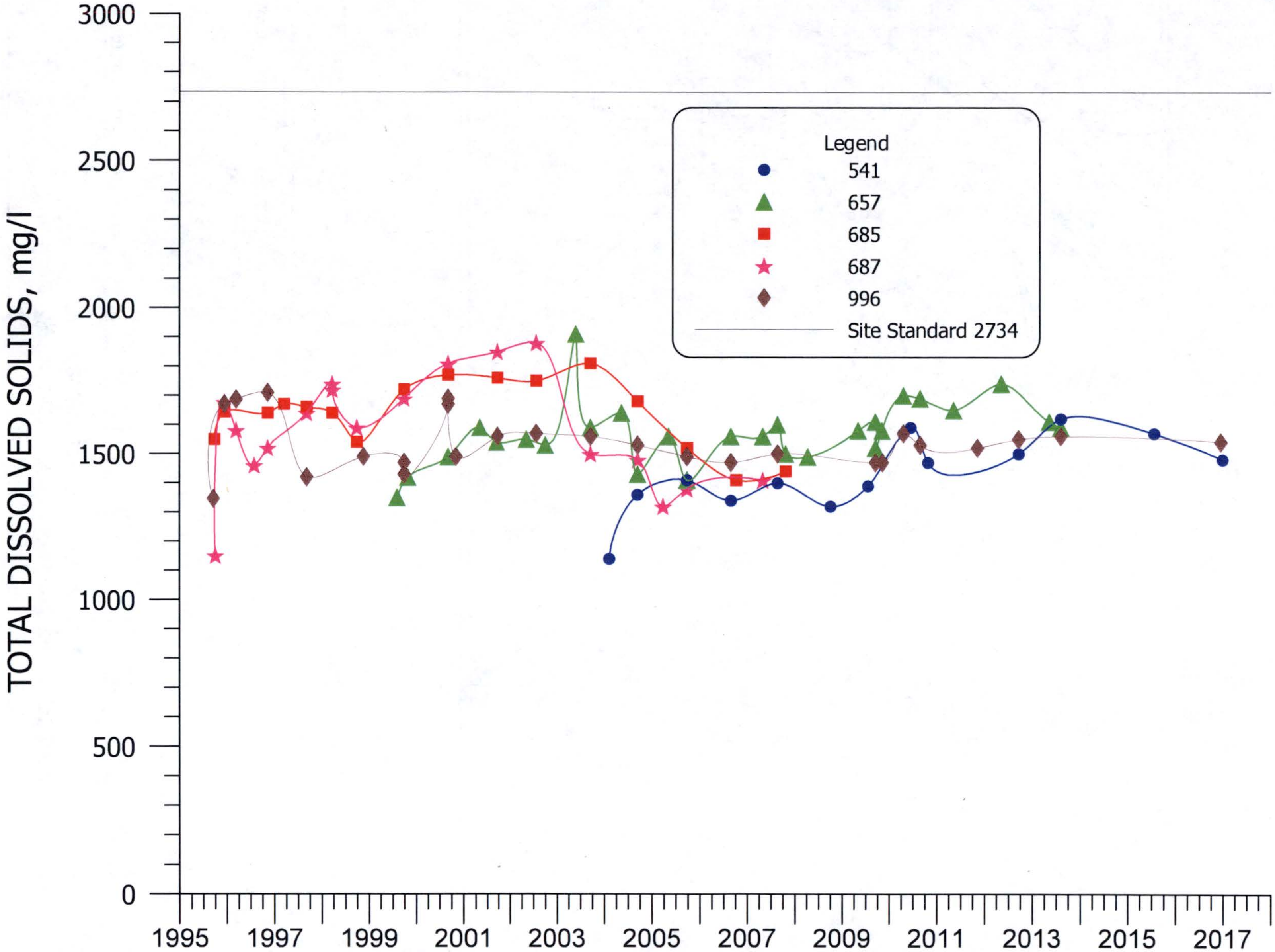
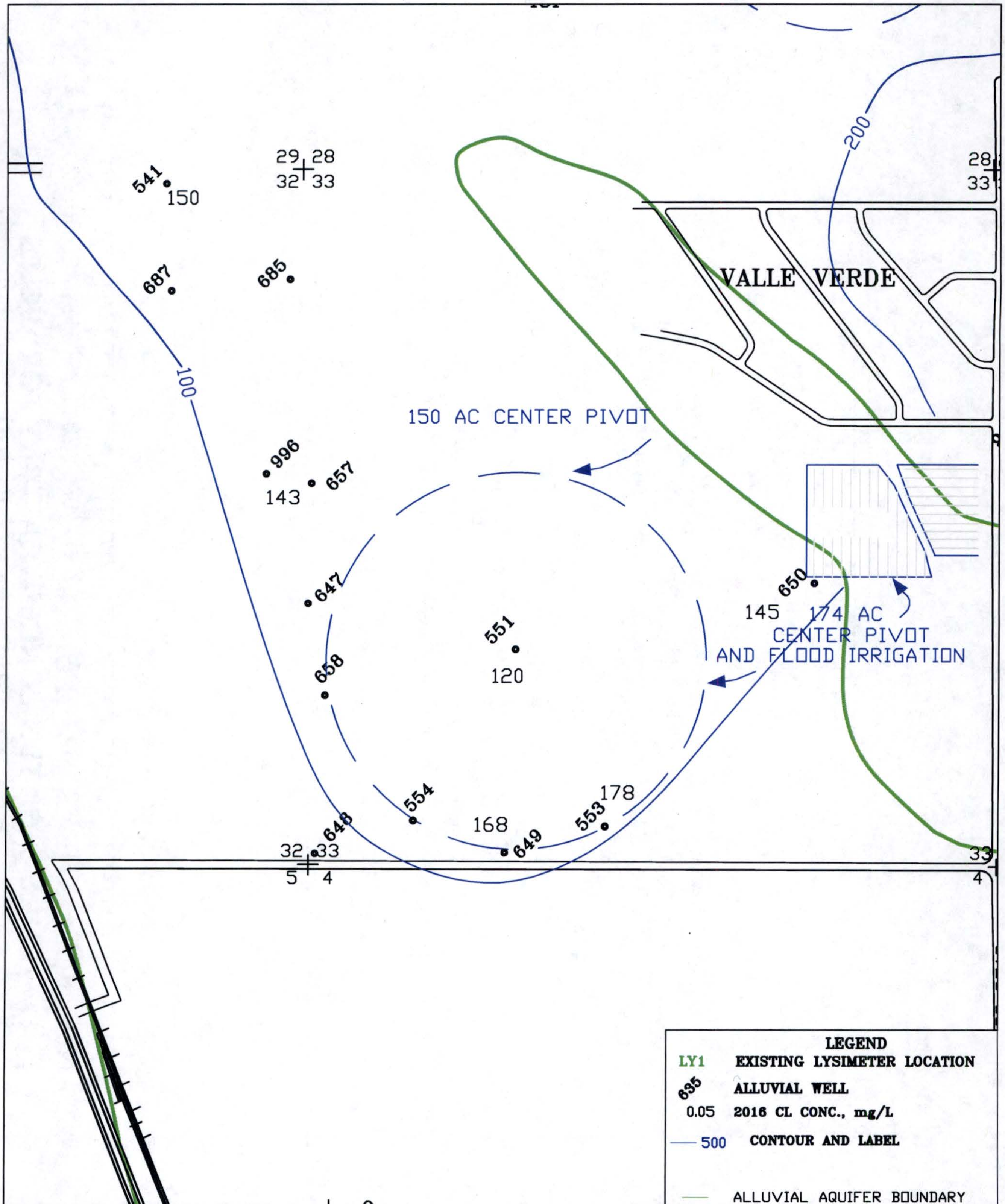


FIGURE D-6. TDS CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.



SCALE: 1" = 1000'	**FIGURE D-7. 2016 CHLORIDE ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L**	HOMESTAKE MINING COMPANY
C:\PROJECTS\2017-06\1600QAL-IRRIGATION		GRANTS, NEW MEXICO
DATE: 9/14/2017		

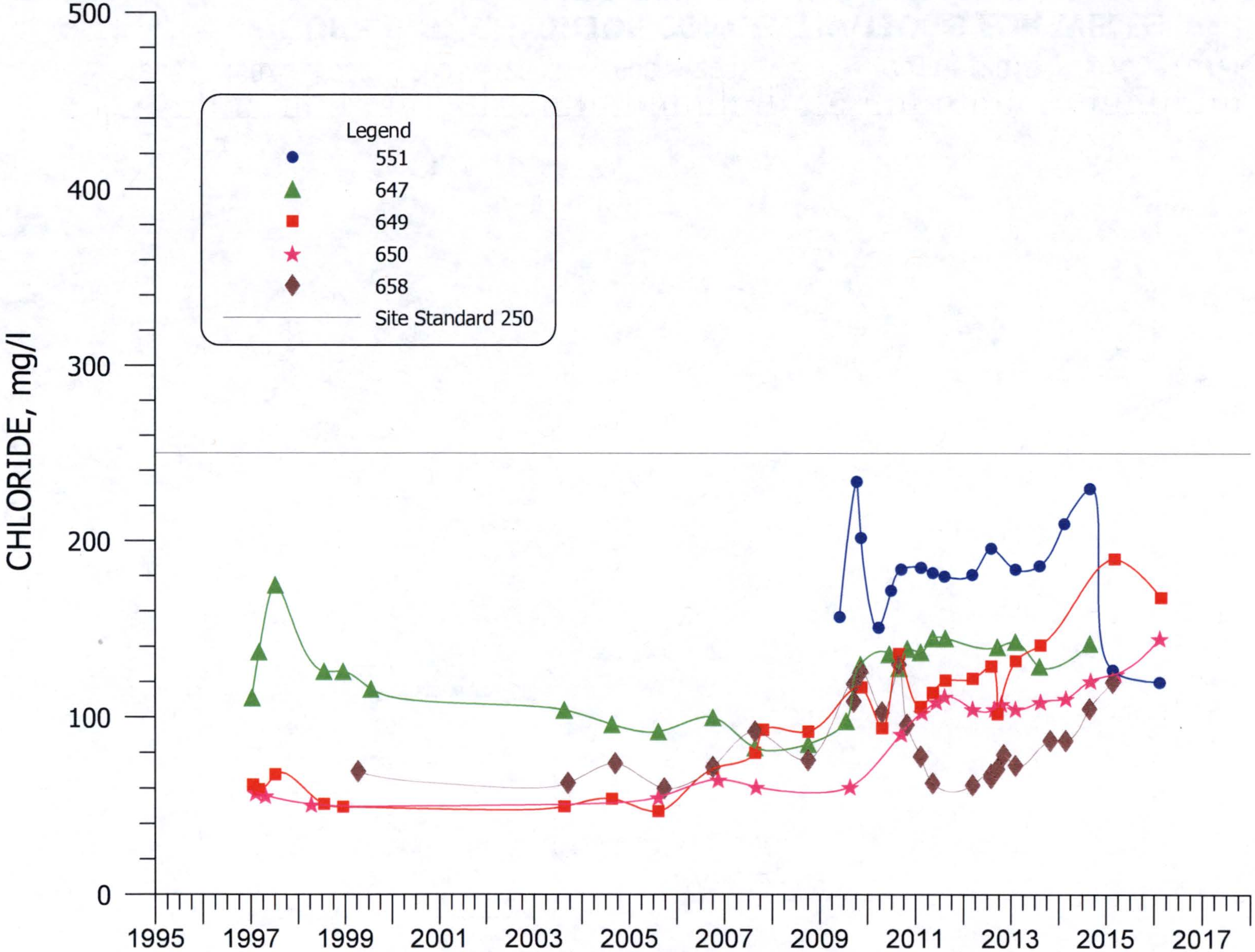


FIGURE D-8. CHLORIDE CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

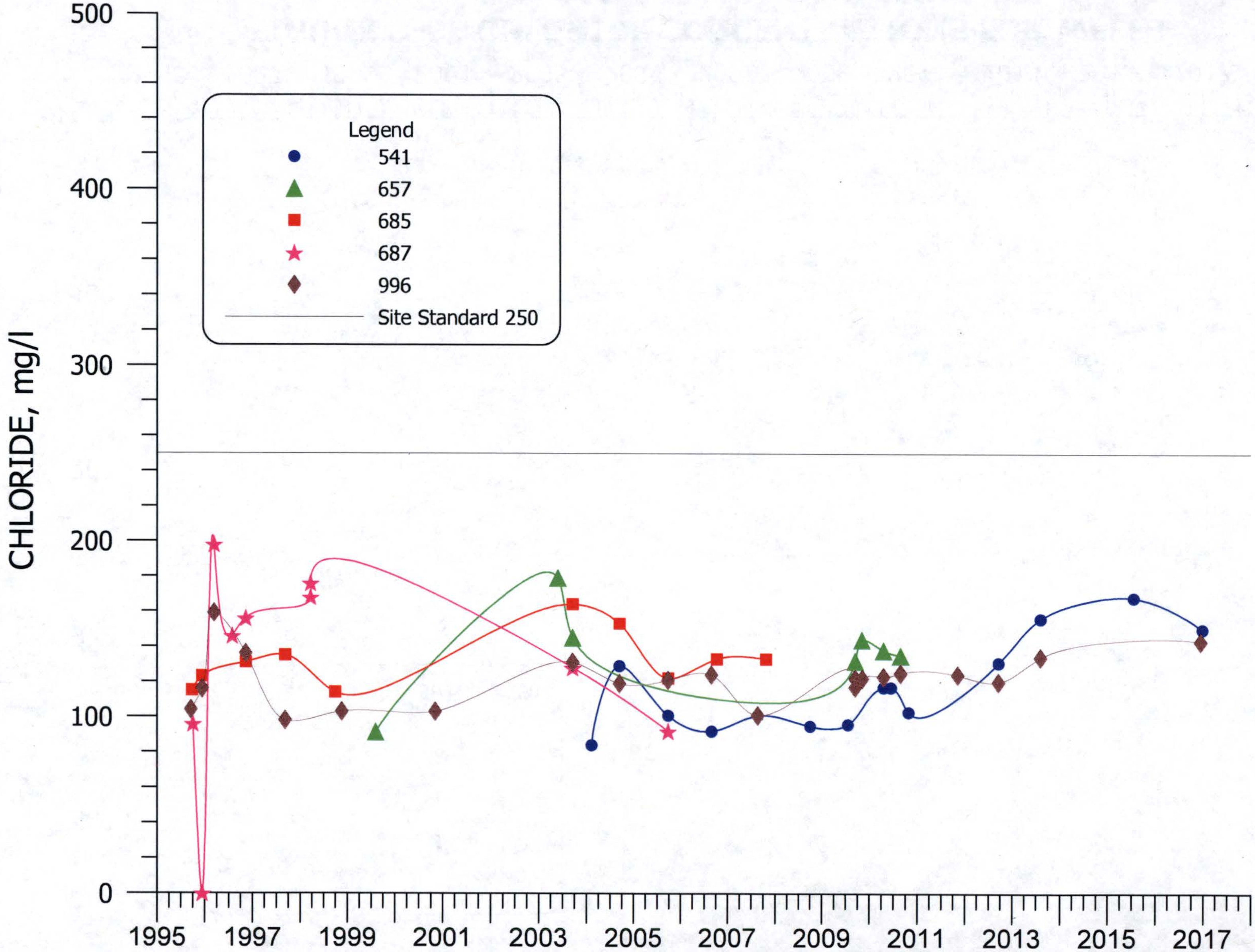
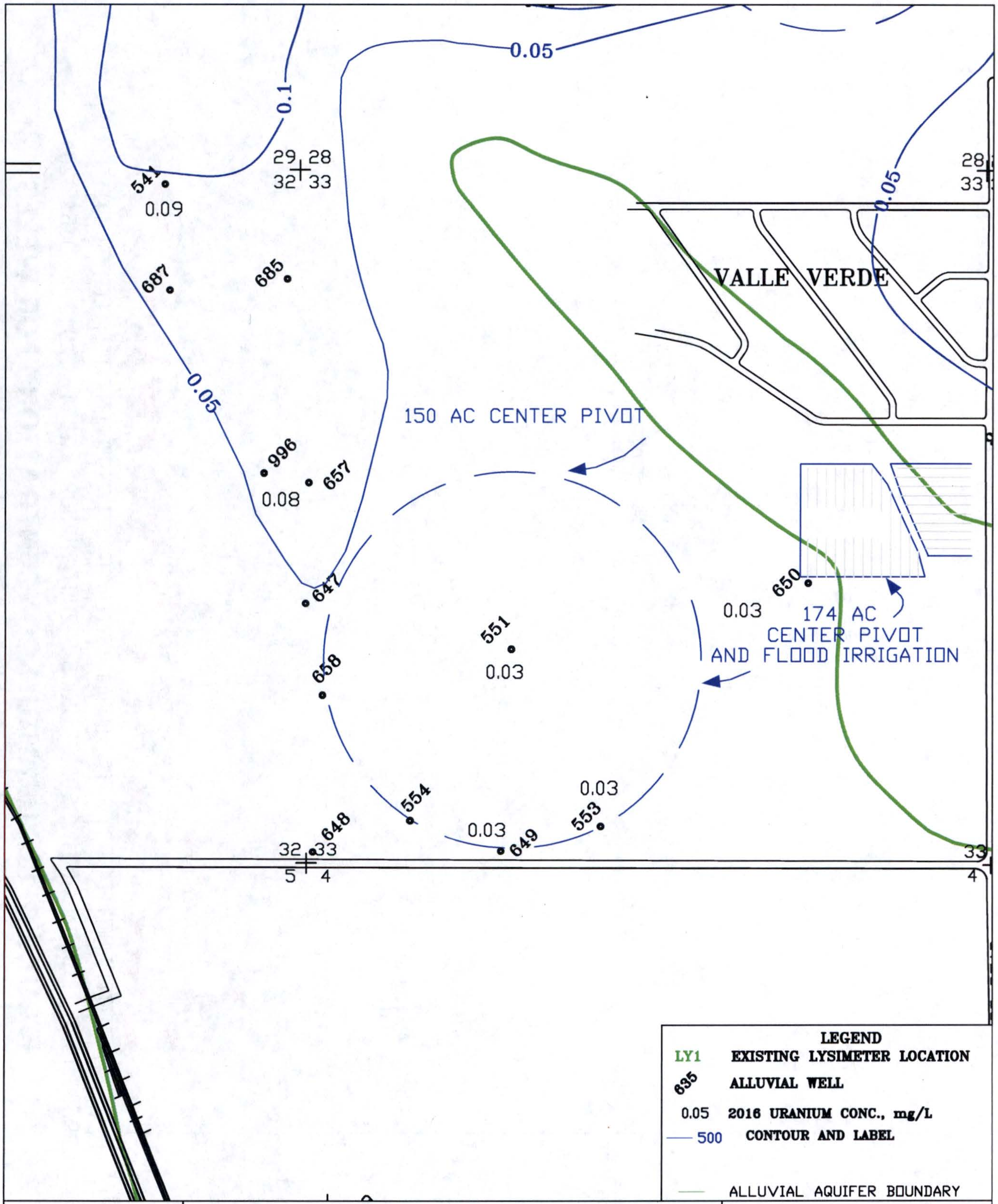


FIGURE D-9. CHLORIDE CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATION DATE: 9/14/2017	**FIGURE D-10. 2016 URANIUM ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

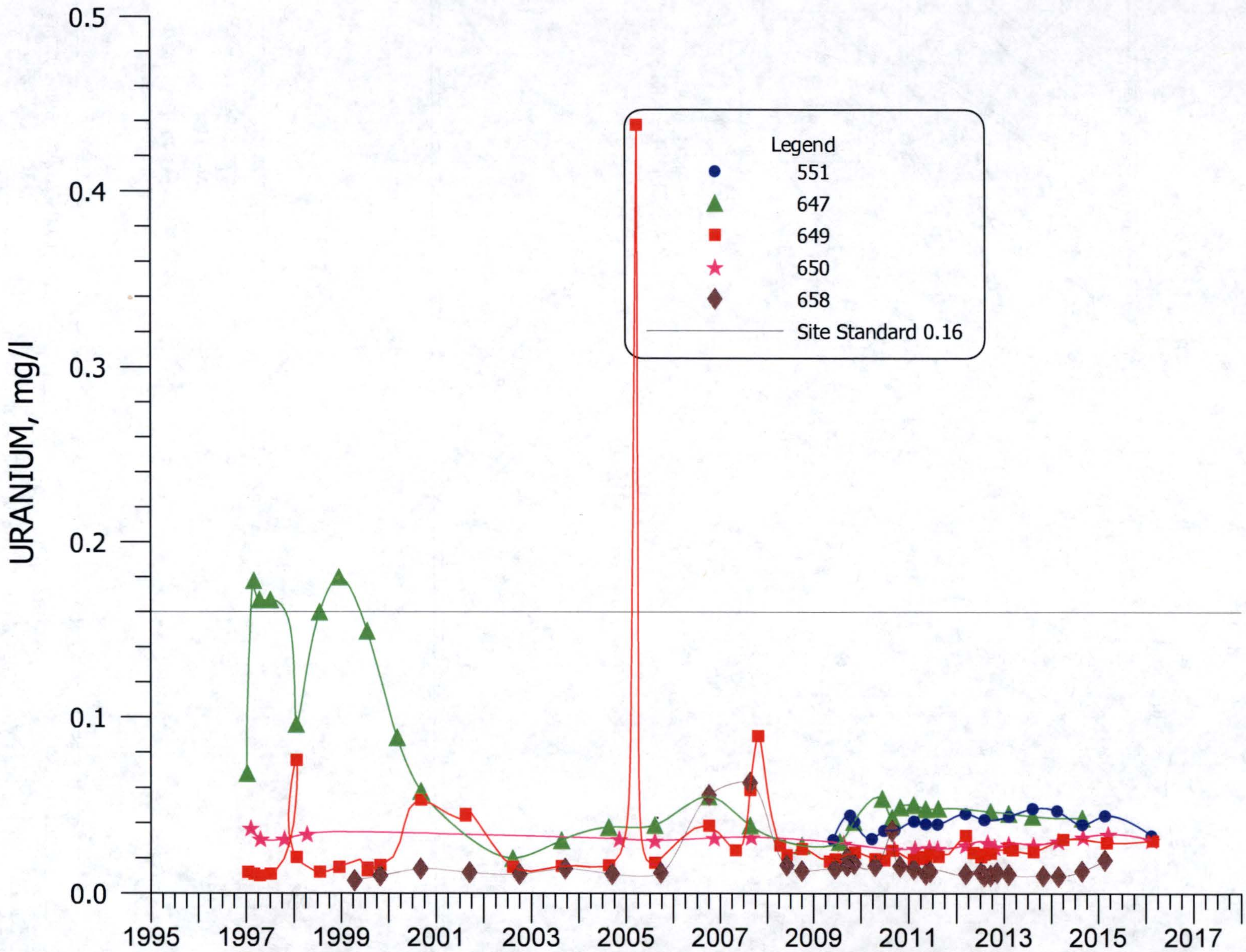


FIGURE D-11. URANIUM CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

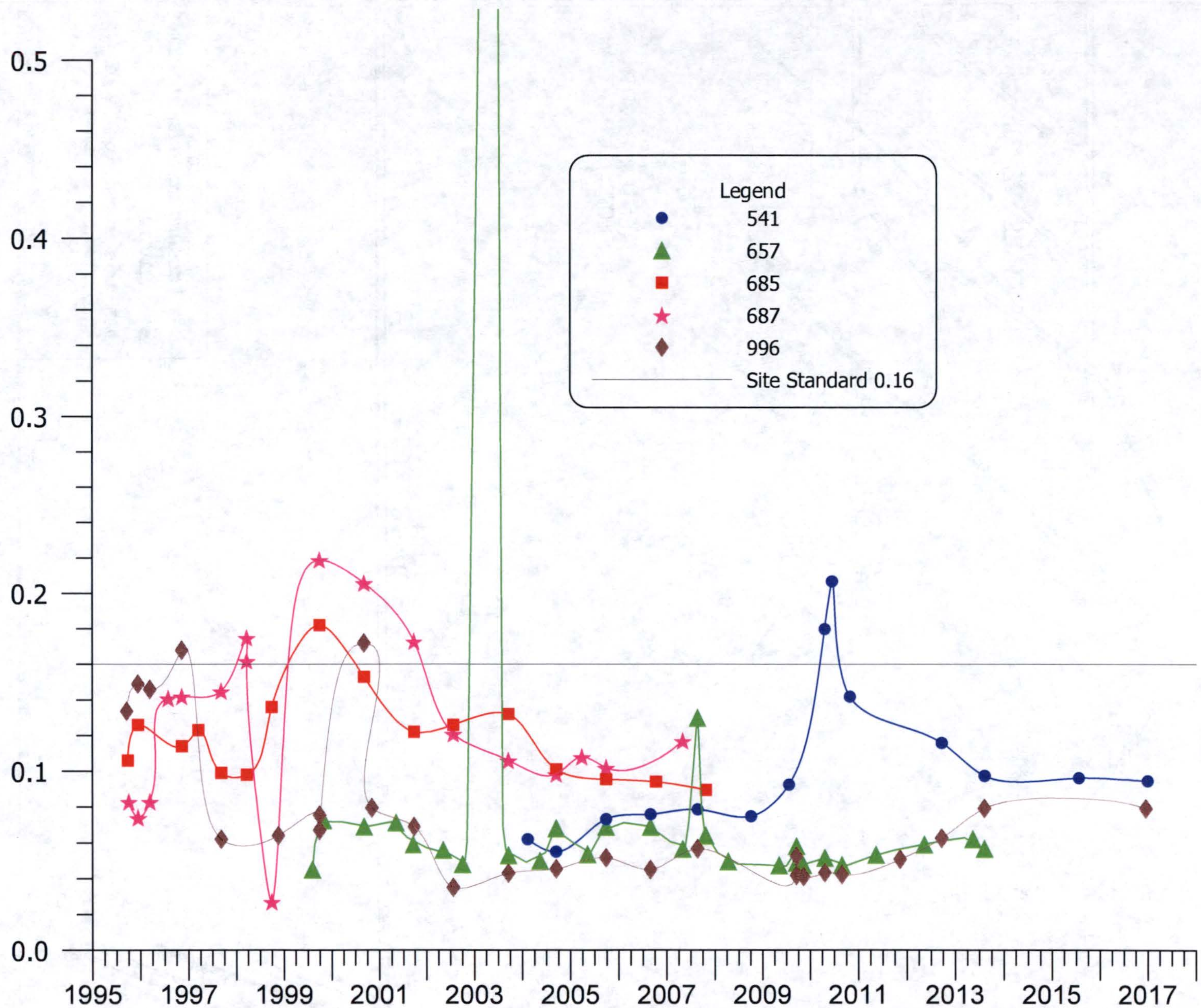


FIGURE D-12. URANIUM CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996

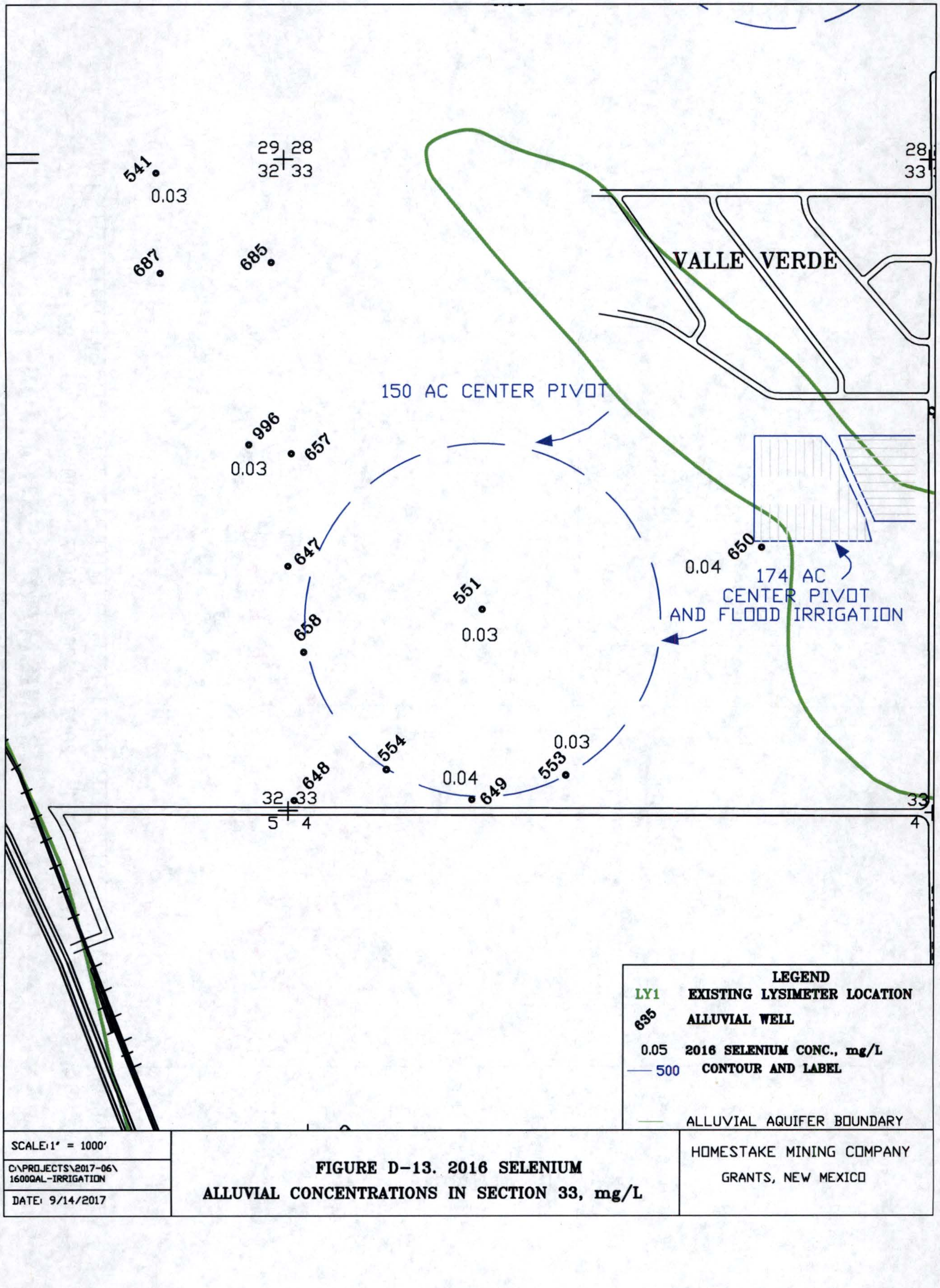


FIGURE D-13. 2016 SELENIUM ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L

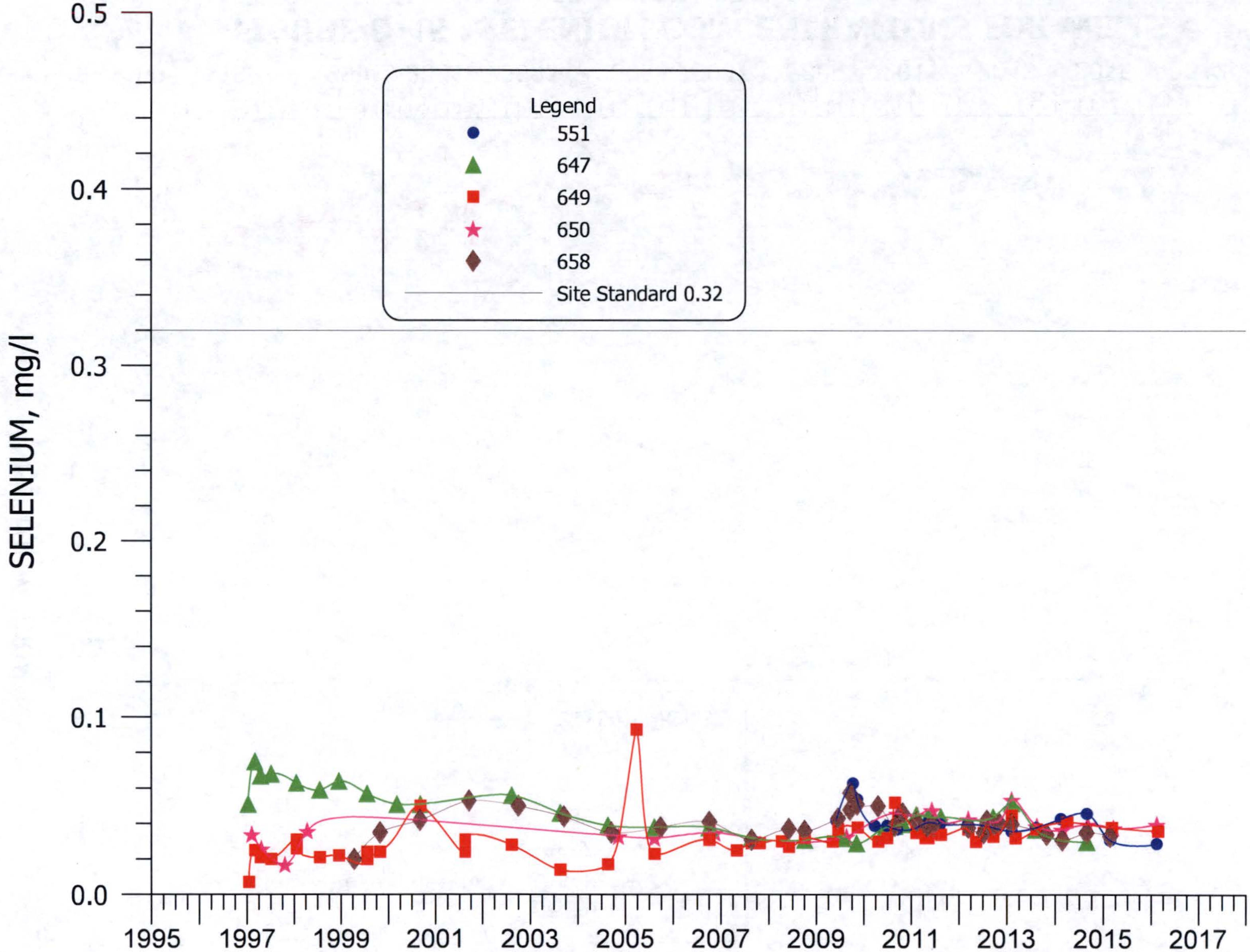


FIGURE D-14. SELENIUM CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

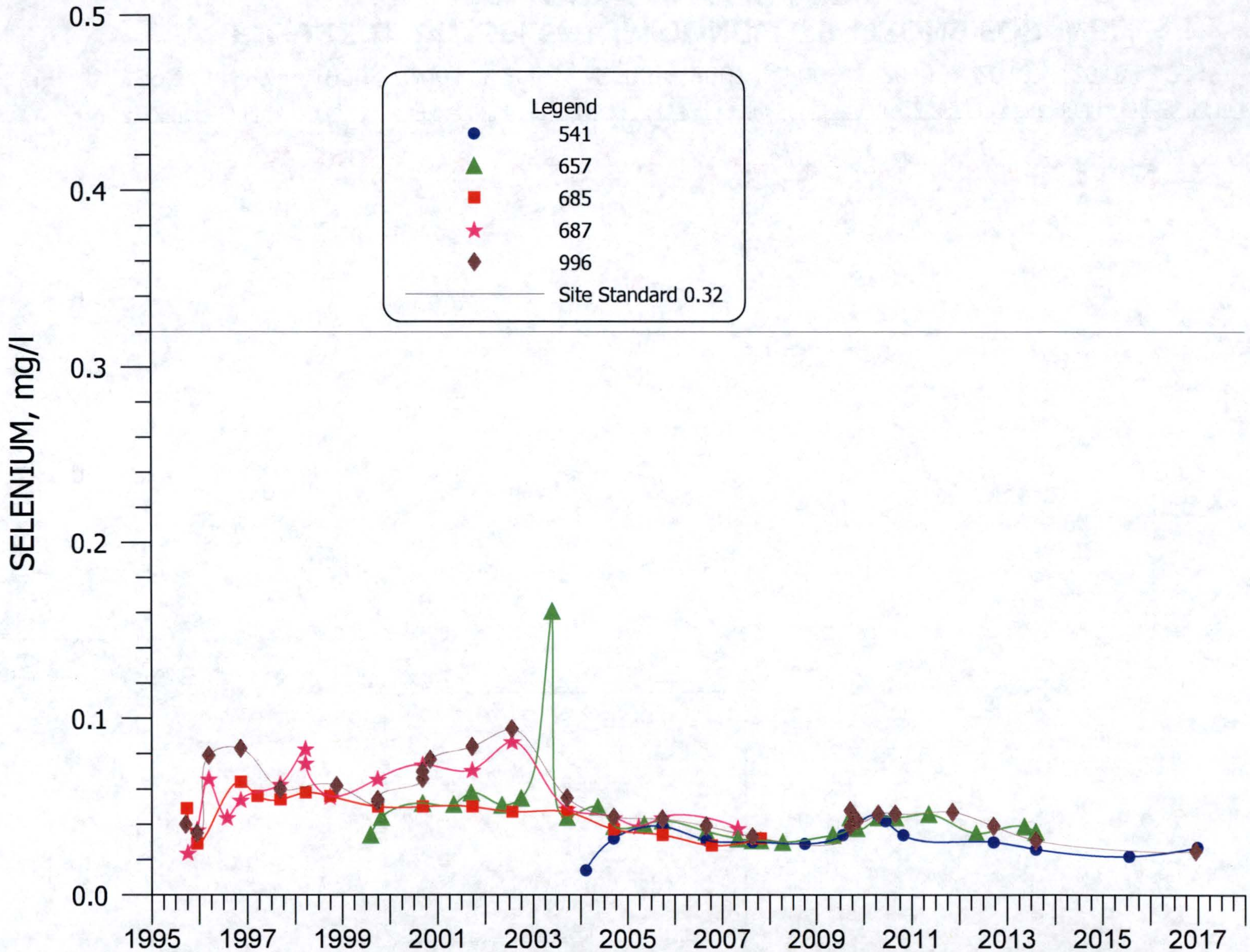
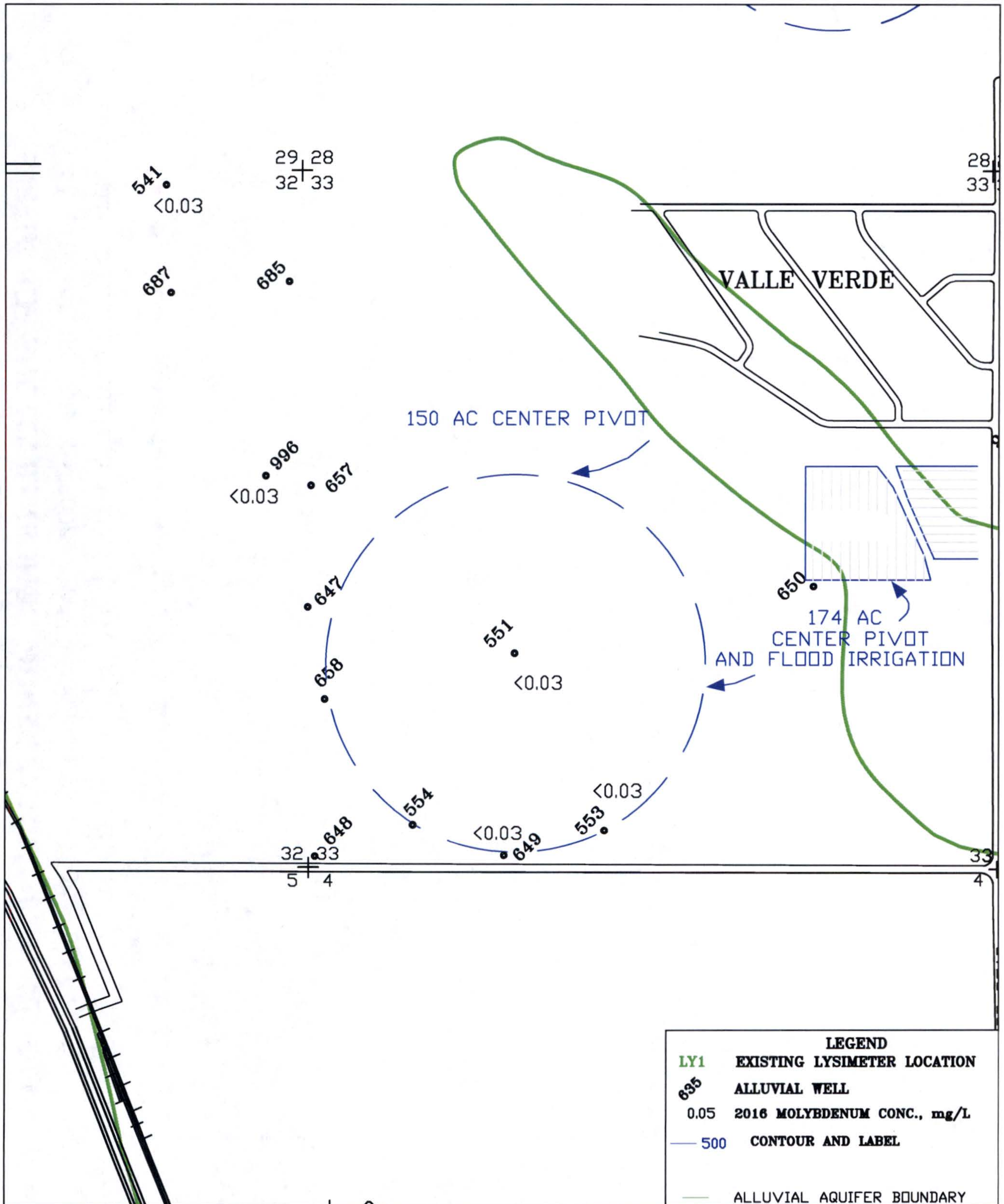


FIGURE D-15. SELENIUM CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600GAL-IRRIGATION DATE: 9/14/2017	**FIGURE D-16. 2016 MOLYBDENUM ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

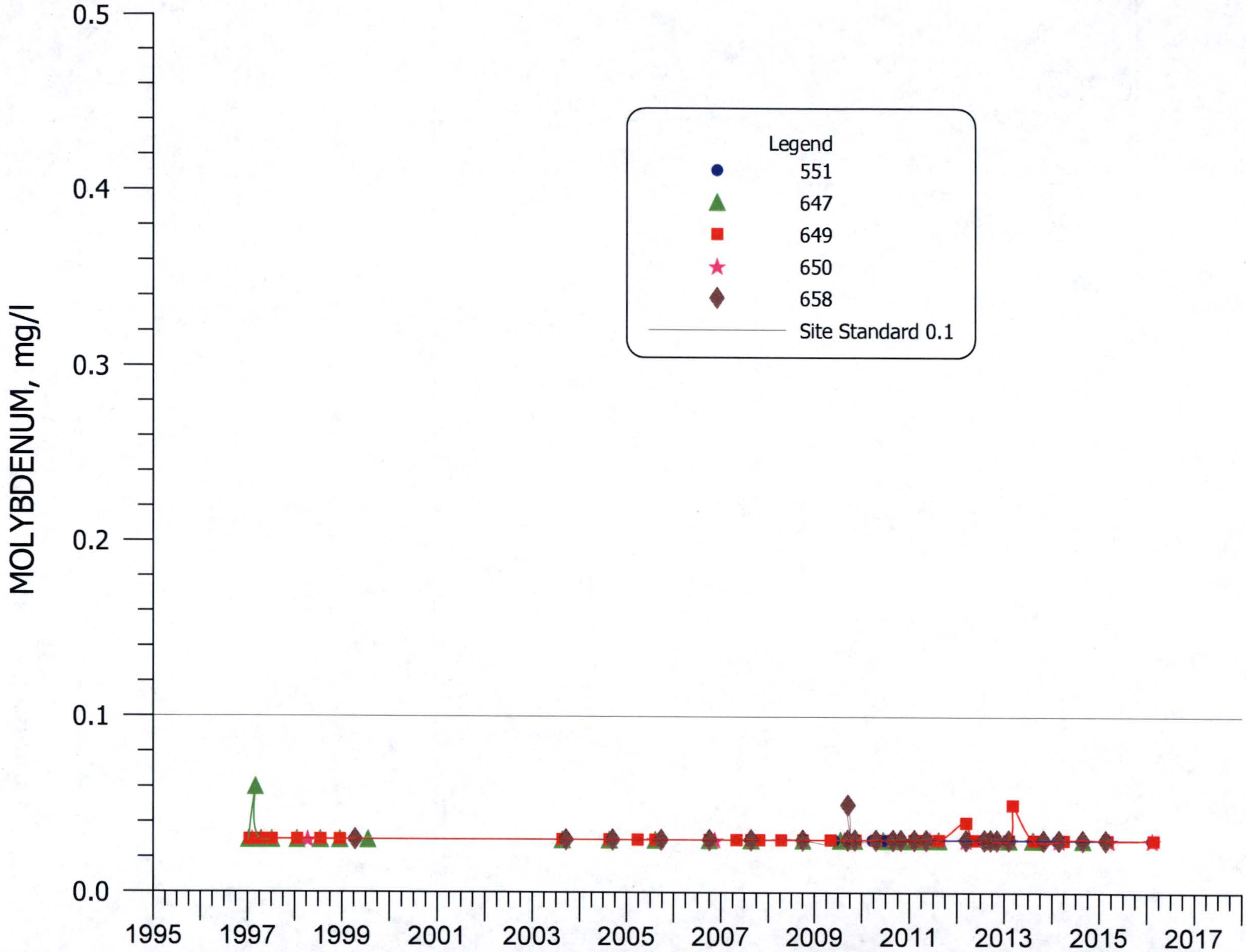


FIGURE D-17. MOLYBDENUM CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

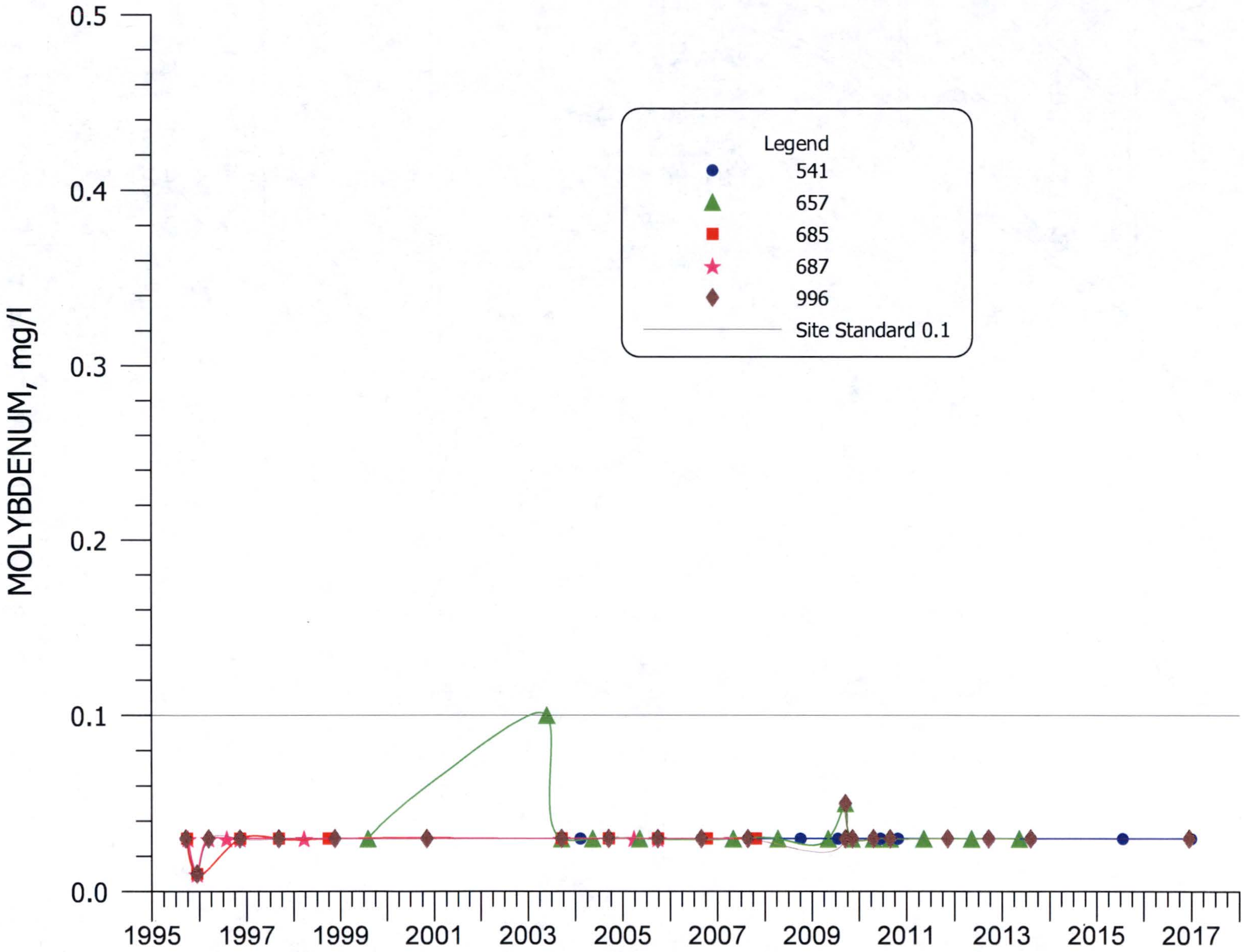
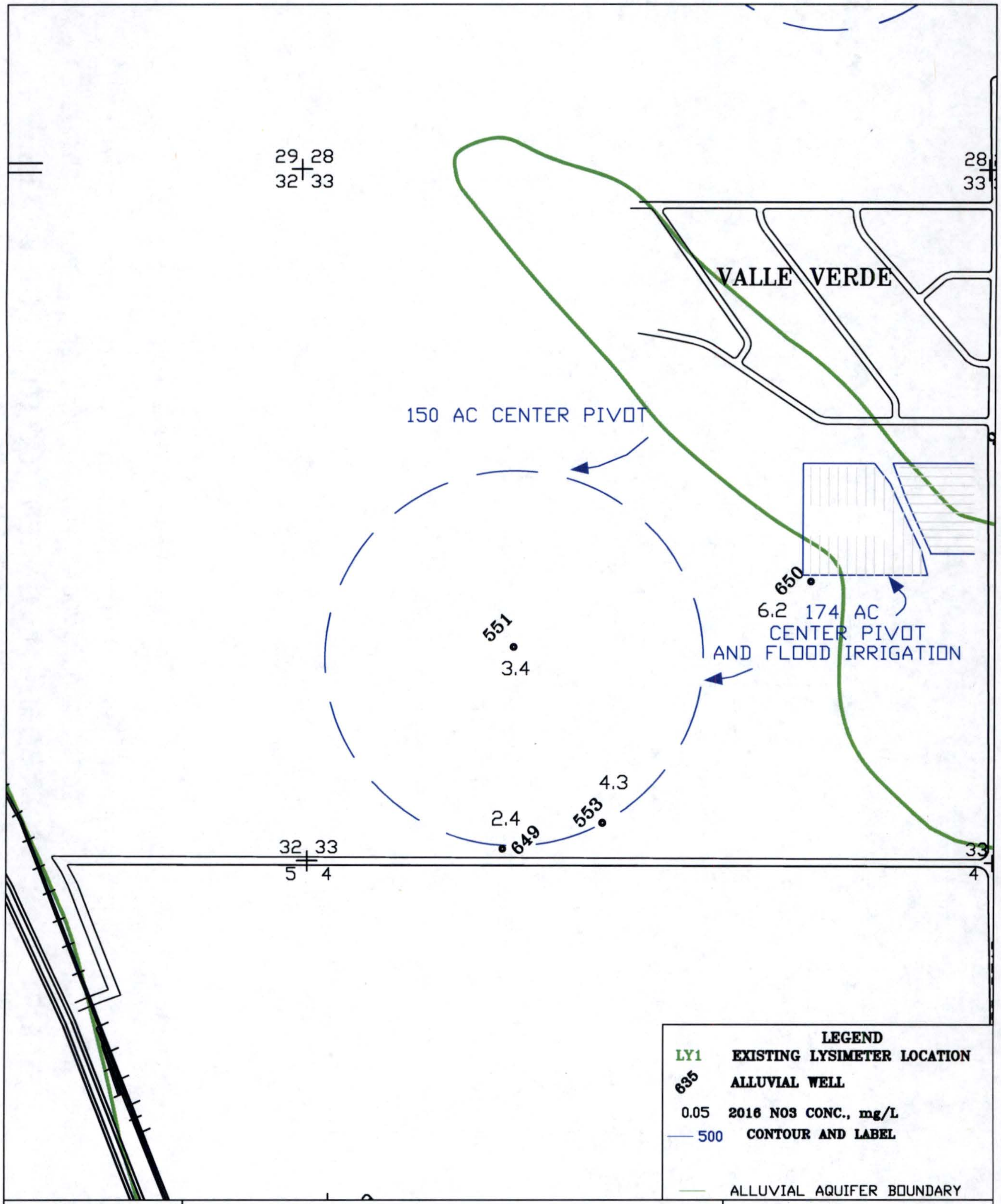


FIGURE D-18. MOLYBDENUM CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.



SCALE: 1" = 1000'

C:\PROJECTS\2017-06\1600QAL-IRRIGATION

DATE: 9/14/2017

FIGURE D-19. 2016 NITRATE ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

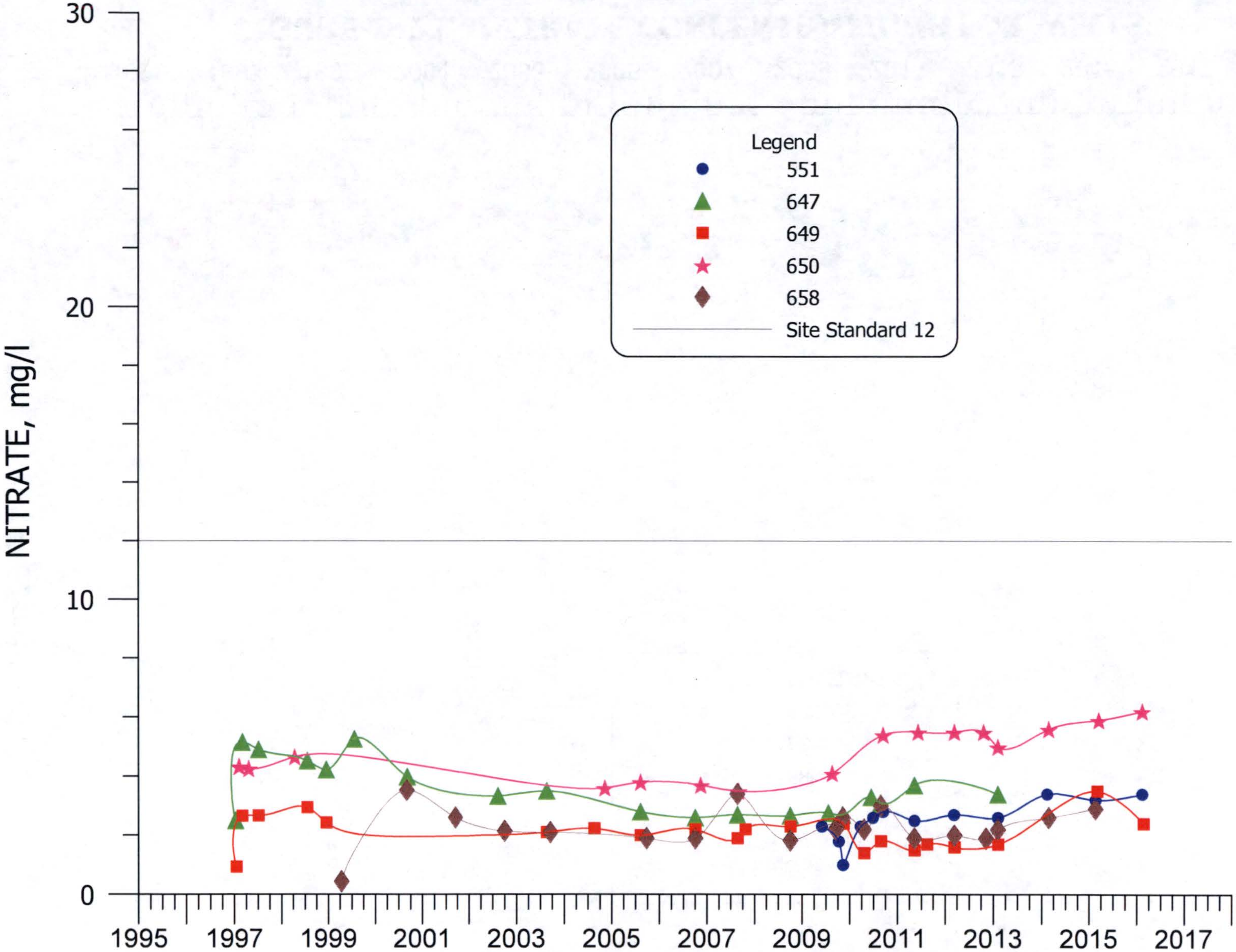


FIGURE D-20. NITRATE CONCENTRATIONS FOR WELLS 551, 647, 649, 650 AND 658.

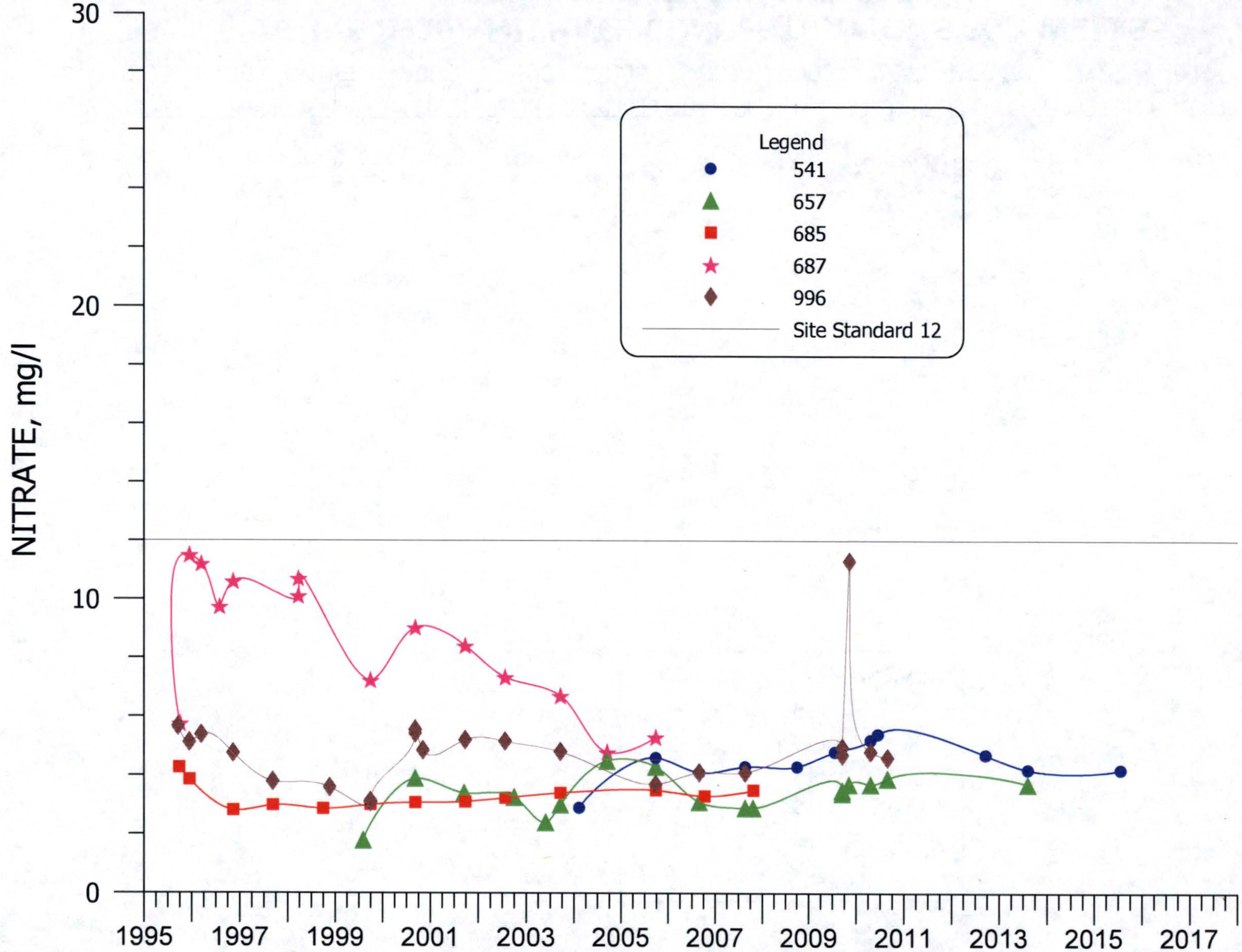


FIGURE D-21. NITRATE CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.

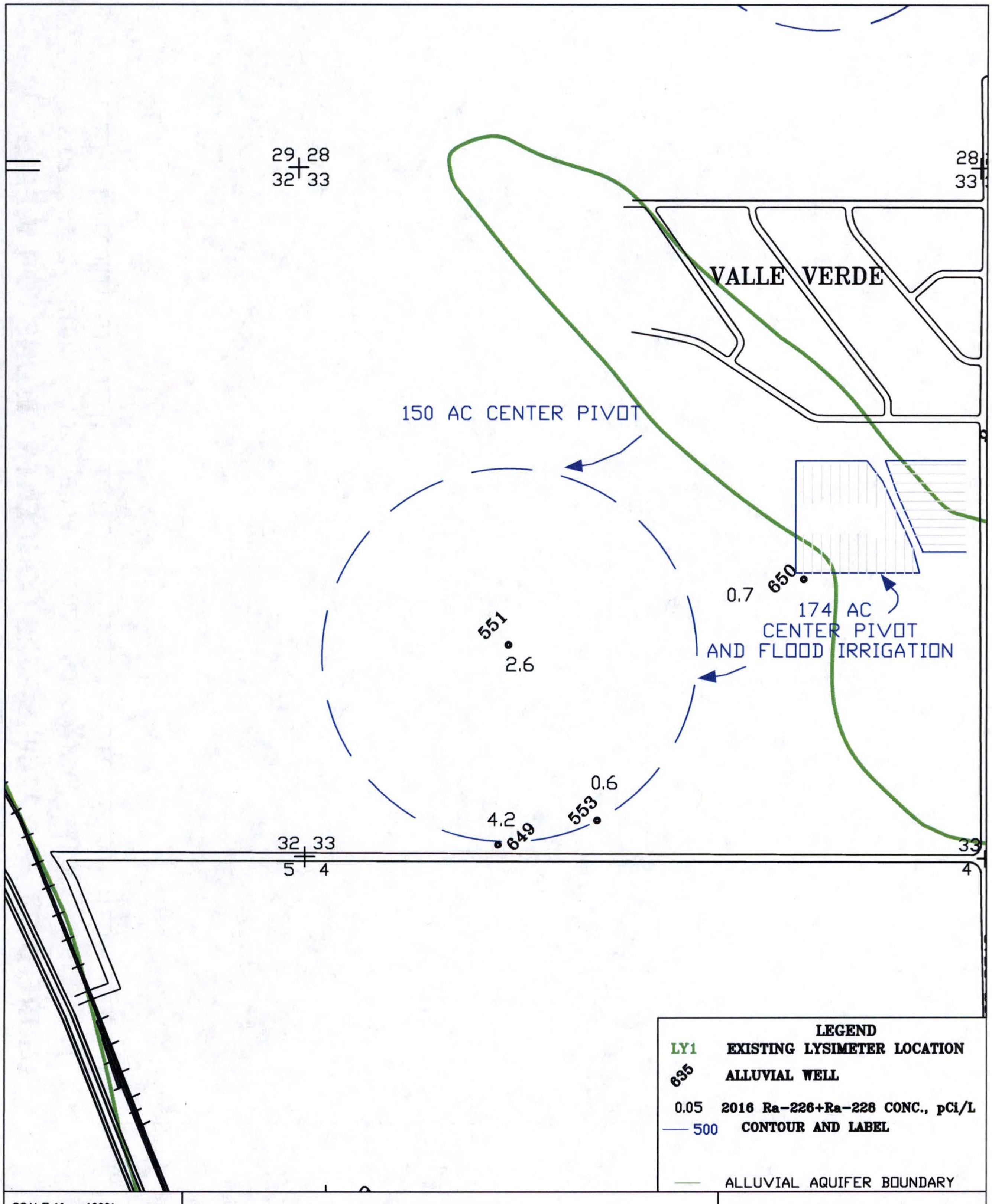


FIGURE D-22. 2016 Ra-226+Ra-228 ALLUVIAL CONCENTRATIONS IN SECTION 33, pCi/L

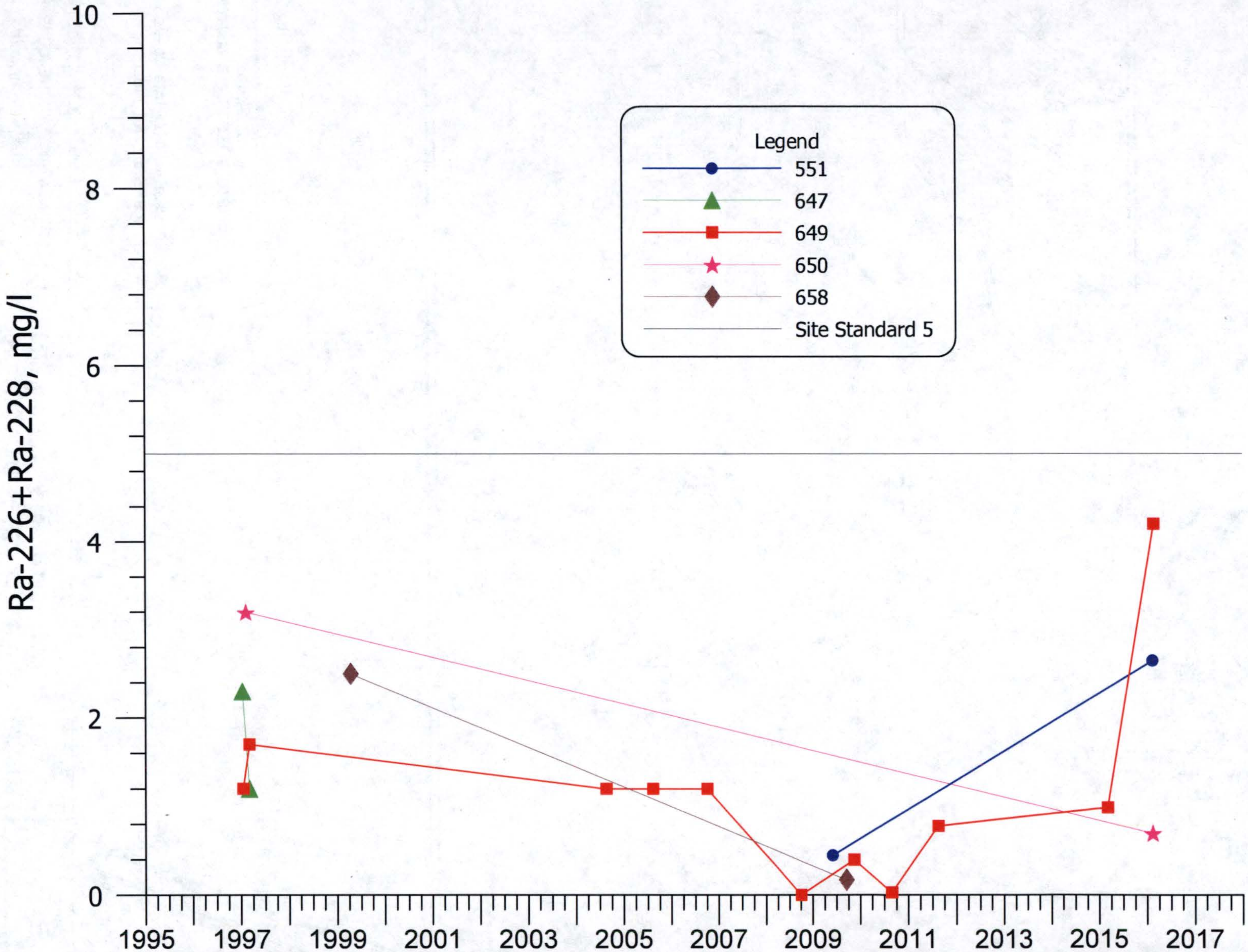


FIGURE D-23. Ra-226+Ra-228 CONCENTRATIONS FOR WELLS 551, 647, 649, 650, AND 658.

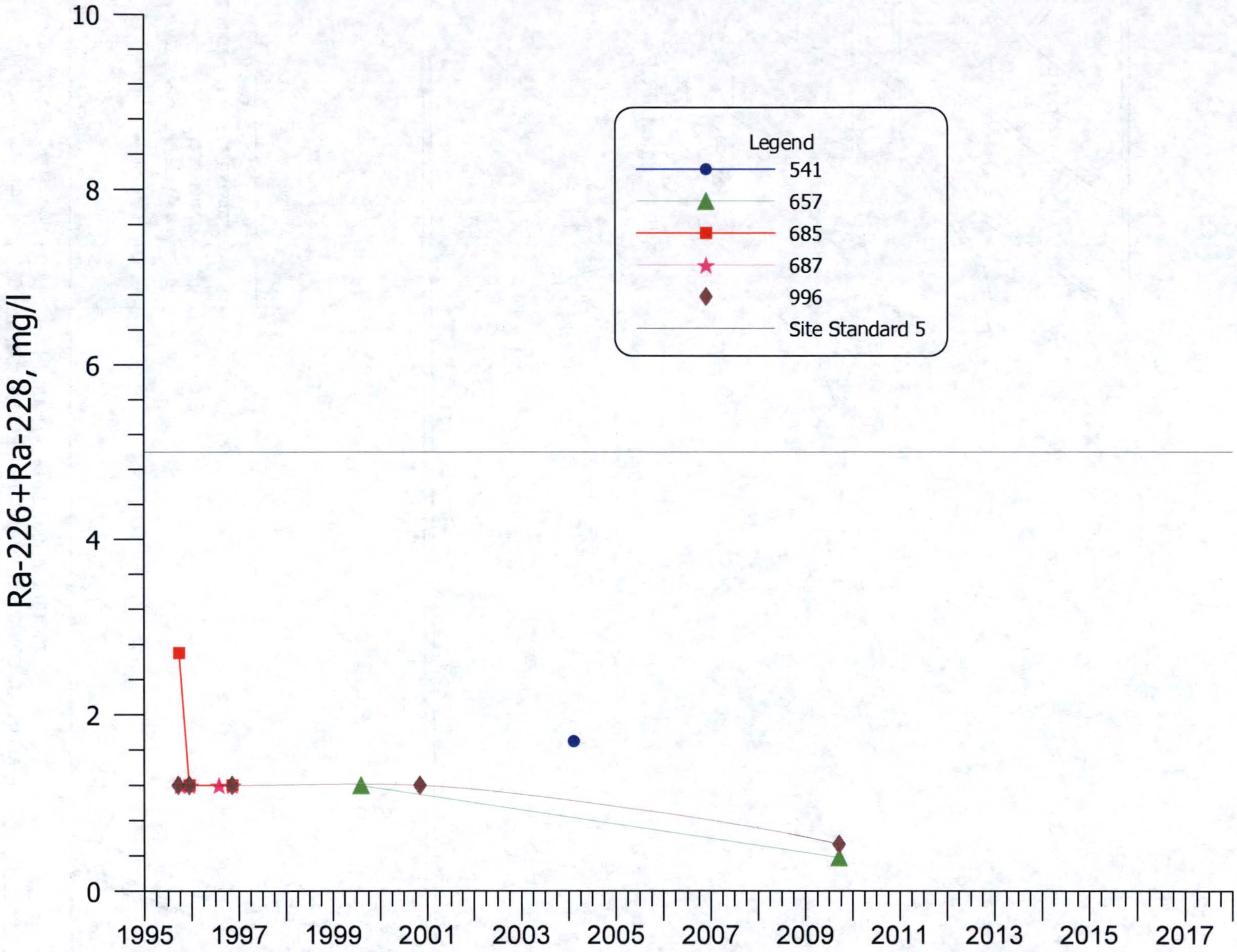
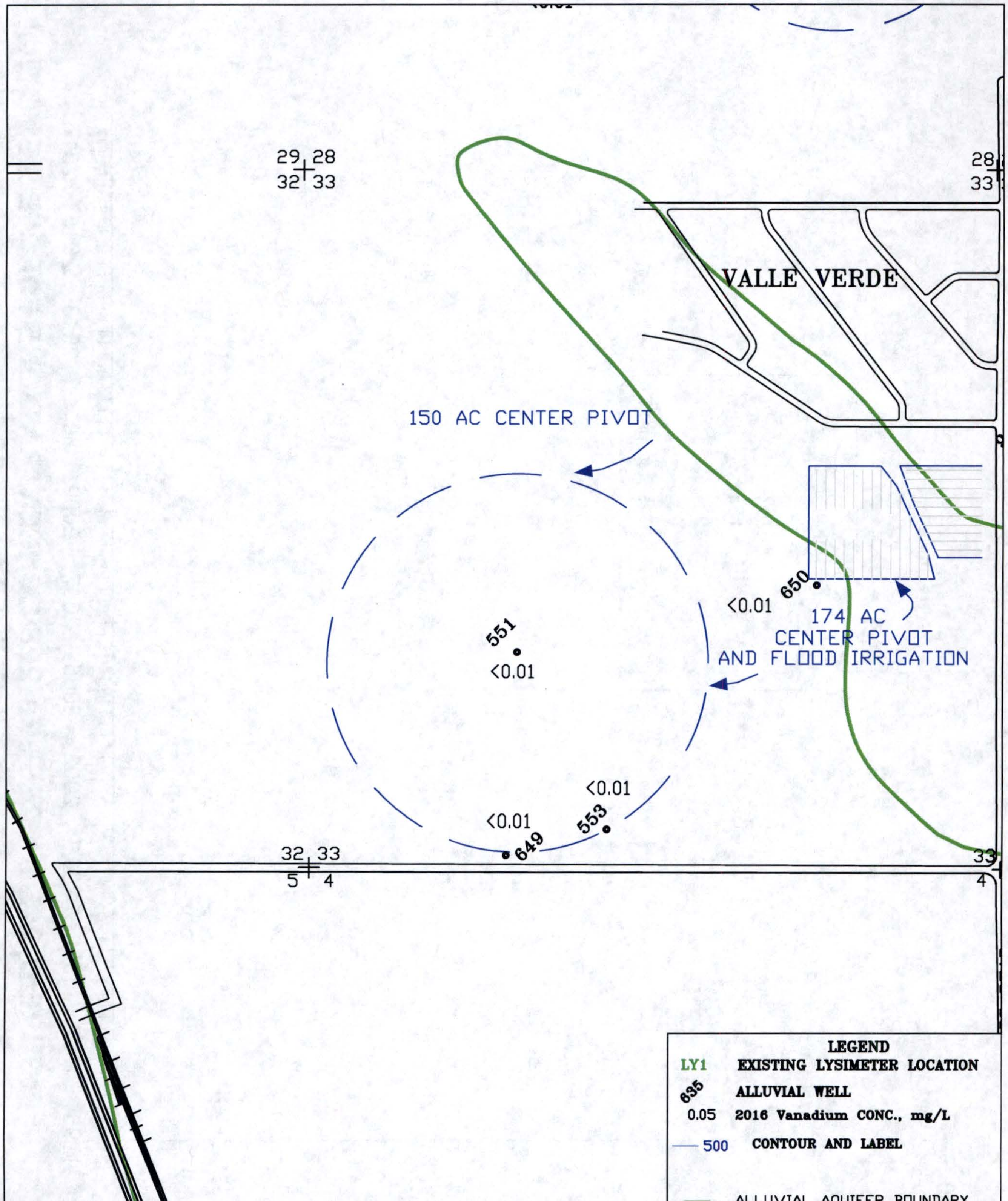


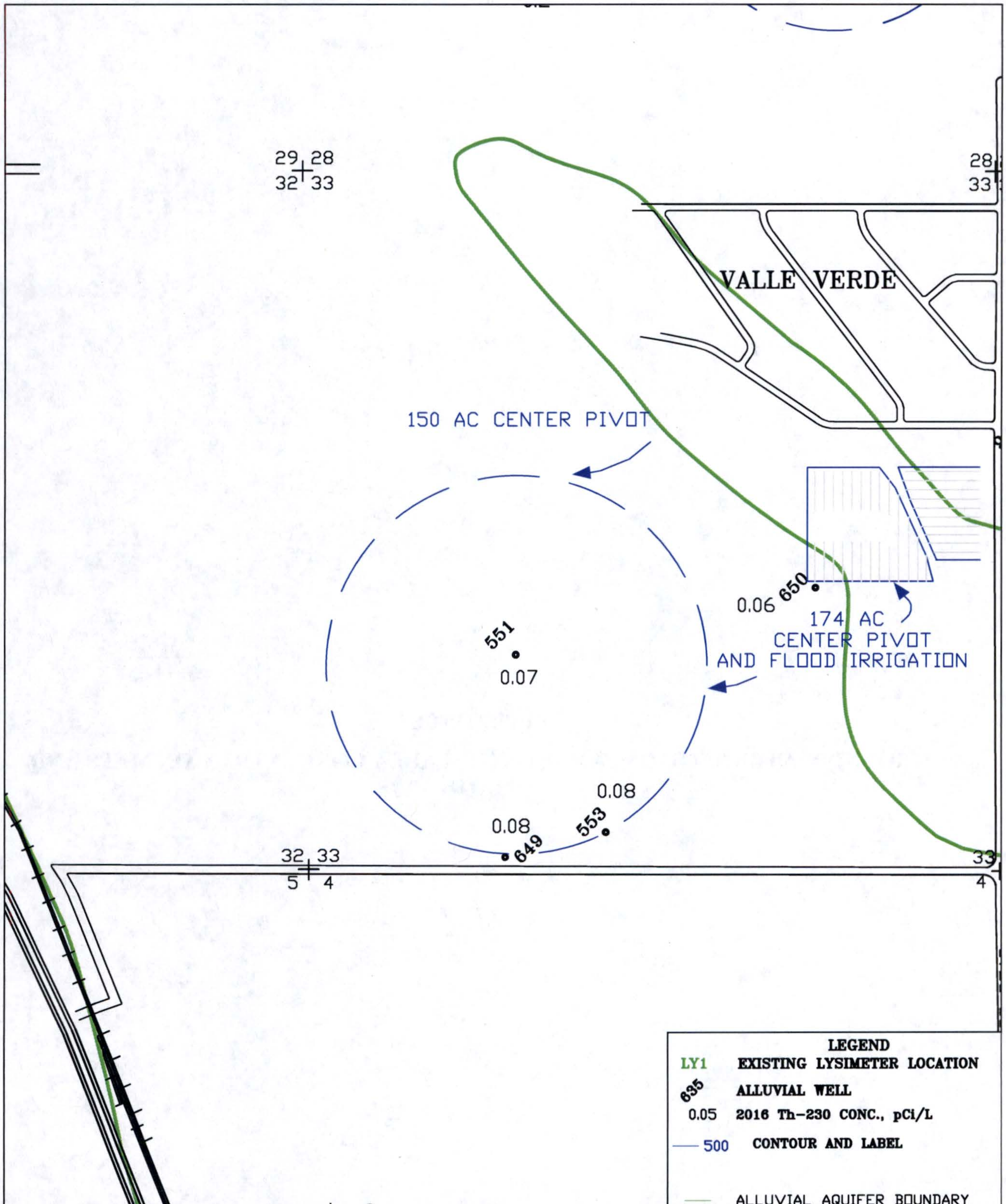
FIGURE D-24. Ra-226+Ra-228 CONCENTRATIONS FOR WELLS 541, 657, 685, 687 AND 996.



SCALE: 1" = 1000'
C:\PROJECTS\2017-06\ 1600QAL-IRRIGATION
DATE: 9/14/2017

FIGURE D-25. 2016 VANADIUM ALLUVIAL CONCENTRATIONS IN SECTION 33, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600GAL-IRRIGATION DATE: 9/14/2017	**FIGURE D-26. 2016 Th-230 ALLUVIAL CONCENTRATIONS IN SECTION 33, pCi/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

APPENDIX E

GROUND WATER SECTION 34 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

APPENDIX E

TABLE OF CONTENTS

GROUND WATER SECTION 34 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

FIGURES

TABLE OF CONTENTS

GROUND WATER SECTION 34 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES (CONTINUED)

TABLE OF CONTENTS

GROUND WATER SECTION 34 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES (CONTINUED)

TABLES

E.0 Section 34

The Section 34 irrigation consists of 120 acres of flood irrigation in the northeastern portion in Section 34. This irrigation is mainly in the northeast quarter of Section 34 and extends slightly into the other 3 quarters of Section 34 as shown in Figure E-1. The Section 34 flood area all exists over the San Mateo alluvial aquifer. Established background concentrations for the alluvial aquifer are therefore the appropriate ground-water standards for this irrigation area and are shown on the time plots. Ground-water monitoring wells 555, 556 and 557 were added in 2010. Existing monitoring wells 844, 845 and 846 have been used to monitor the ground-water quality in this area (see Table E-1 for well data). Figure E-1 shows that a zero saturation zone for the alluvial aquifer exists to the south of the Section 34 irrigation area, and San Mateo alluvial ground-water in this area is forced to move toward the west. The alluvial aquifer exists in the northern portion of Section 3 to the south of the Section 34 irrigation but these two areas are only connected around the zero saturation boundary to the east of Felice Acres. The range of data from the South Felice Acres alluvial wells in the southwestern portion of Section 35 and the northeastern portion of Section 3 are presented in a box for each of these areas to give additional water quality data in the area. Time plots of wells AW, F, FB, GH and SUB3 are included with the time plot of the Section 34 monitoring wells to show changes with concentrations upgradient of the Section 34 irrigation area (see Figure 4-1 for locations of wells used in the two time series plots).

Table E-1. Section 34 Monitoring Well Data

WELL NAME	NORTH. COORD.	EAST. COORD.	WELL DEPTH (FT-MP)	CASING DIAM (IN)	WATER LEVEL DATE	WATER LEVEL DEPTH (FT-MP)	WATER LEVEL ELEV. (FT-MSL)	MP ABOVE LSD (FT)	MP ELEV. (FT-MSL)	DEPTH TO BASE OF ALLUVIUM (FT-LSD)	ELEV. TO BASE OF ALLUVIUM (FT-MSL)	CASING PERFOR-ATIONS (FT-LSD)	SATURATED THICKNESS
SUB3	1538280	489420	84.0	6.0	11/3/2015	23.35	6533.72	0.0	6557.07	72	6485.1 A	56-72	48.6
F	1539908	489554	63.8	4.0	12/13/2016	30.14	6534.68	1.2	6564.82	62	6501.6 A	45-65	33.1
FB	1540417	488857	62.0	4.0	9/19/2016	31.41	6534.25	2.0	6565.66	58	6505.7 A	43-58	28.6
GH	1538807	489509	69.2	4.0	12/12/2016	30.20	6532.56	1.3	6562.76	67	6494.5 A	55-65	38.1
0844	1538376	487002	75.0	4.0	12/13/2016	35.84	6520.29	1.2	6556.13	70	6484.9 A	35-75	35.4
0845	1537280	487833	65.0	4.0	12/13/2016	32.96	6524.09	1.7	6557.05	55	6500.4 A	45-65	23.7
AW	1540235	488015	156.0	6.0	12/19/2016	32.15	6531.28	0.1	6563.43	63	6500.3 A	-	30.9
										63	6463.3 U	66-155	67.9
0555	1538572	486236	100.0	5.0	2/16/2016	40.95	6513.39	30.0	6554.34	100	6424.3 A	60-90	89.0
0556	1538006	486184	100.0	5.0	2/10/2016	47.19	6508.83	2.8	6556.02	95	6458.2 A	60-90	50.6
0557	1537204	486000	65.0	5.0	2/10/2016	41.55	6512.22	2.5	6553.77	55	6496.3 A	45-65	16.0
0846	1537219	484730	75.0	4.0	12/13/2016	43.84	6505.08	0.8	6548.92	65	6483.1 A	40-65	22.0

E.1 Sulfate Concentrations

The sulfate concentrations for 2016 for the alluvial aquifer in Section 34 are presented in Figure E-1. The blue contour shows the 2016 sulfate concentrations with concentrations exceeding 1000 mg/l in the majority of the Section 34 Flood area. The 2016 sulfate concentrations are listed adjacent to each of the monitoring wells. A light green pattern is shown on Figure E-1 where 2016 concentrations exceed the site standard of 1,500 mg/l.

The sulfate concentrations in alluvial wells 844 and 845 prior to the start of the irrigation in 2000 were gradually declining with time while sulfate concentrations in monitoring well 846 were gradually increasing with time prior to the start of the irrigation program (see Figure E-2 for the 1995 through 2016 data and the sulfate site standard). Sulfate concentrations in wells 844 and 845 have since exhibited a general increase during the period of irrigation, but their concentrations are significantly less than those observed prior to the mid-1990s. Overall sulfate concentrations in monitoring well 846 have increased during the operation of the irrigation program. Sulfate concentrations in monitoring wells 555 and 844, which are adjacent to the flood irrigation area were both above the site standard of 1,500 mg/l in 2016. An increasing trend starting in late 2011 through 2012 has been observed in wells 844 and 845. This abrupt change in concentrations may be caused by the Section 34 irrigation. A decreasing trend has been observed in well 845 since 2012 while the concentrations in well 844 have been steady. The sulfate concentrations are thought to be slightly affected by the Section 34 flood irrigation. The higher sulfate concentrations in well 846 are not thought have been influenced at all by the irrigation in Section 34.

The sulfate concentrations with time for the alluvial aquifer upgradient of the Section 34 irrigation are presented in Figure E-3. This figure shows that the recent concentrations upgradient of Section 34 are smaller and fairly constant.

E.2 TDS Concentrations

The TDS concentrations for 2016 are shown on the alluvial aquifer in Section 34 (see Figure E-4) with a blue contour. A light green pattern is shown on Figure E-4 where 2016 concentrations exceed the site standard of 2,734 mg/l. The TDS patterns versus time have shown fairly similar patterns to those of sulfate concentrations (see Figure E-5 which shows the site standard of 2734 mg/l). The TDS concentrations of monitoring wells 844 and 845 were 3500 and 2600 mg/l in 2016. The TDS concentrations in wells 844 and 845 show an increase in 2012 similar to the sulfate increase. These increases in TDS concentrations are thought to be caused by the Section 34 irrigation. TDS concentrations in monitoring well 846 increased prior to irrigation and during the first five years of irrigation. They became fairly steady from 2004 through 2009 and then increased at a higher rate for three years prior to becoming fairly steady. The irrigation in Section 34 is not thought to have affected the TDS in well 846 due to its distance from the irrigation area.

The TDS concentrations with time for the upgradient wells east and northeast of the Section 34 irrigation are presented in Figure E-6. This figure shows that the recent concentrations upgradient of Section 34 are smaller and fairly constant.

E.3 Chloride Concentrations

The chloride concentrations for 2016 are presented in Figure E-7 for the alluvial aquifer in this area. The chloride concentrations in alluvial wells 844, 845 and 555 exceeded the site standard of 250 mg/l as shown by the light green pattern in Figure E-7 in the area of these wells. These exceedances are thought to be caused by the Section 34 irrigation.

Figure E-8 shows the chloride concentrations for monitoring wells 555, 556, 557, 844, 845 and 846 along with the chloride site standard of 250 mg/l. This figure shows chloride concentrations with time for each of these wells. These chloride concentrations were similar to the freshwater injection concentration and were thought to be due to the freshwater injection that occurred to the east of this area. The chloride concentrations in monitoring wells 555, 844 and 845 had been relatively steady during the operation of the Section 34 flood irrigation, but increased in 2012. The abrupt increase in chloride concentrations are thought to be from the Section 34 irrigation. A decline in chloride concentration in wells 844 and 845 were observed in 2016. Chloride concentrations in these three wells are expected to decline to below 250 mg/l in the near future after the affects from the irrigation have dissipated. Chloride concentrations have increased since 2000 in monitoring well 846. This increase is thought to be due to the alluvial ground-water moving to the west and not a function of the irrigation program.

The chloride concentrations with time for the upgradient wells east and northeast of the Section 34 irrigation are presented in Figure E-9. The upgradient concentrations have been fairly constant in recent years.

E.4 Uranium Concentrations

Figure E-10 presents 2016 uranium concentrations in the alluvial aquifer near the Section 34 irrigation area. Changes in uranium concentration have been small during the irrigation period.

Figure E-11 presents the uranium concentrations versus time for wells 555, 556, 557, 844, 845 and 846. This shows fairly small uranium concentrations changes with a slight increase in 2004 through 2012 in well 844. This small increase could be due to higher levels moving into this area or it could be due to the Section 34 irrigation but all values in 2016 are less than the site standard of 0.16 mg/l except well 556. The decline in uranium concentrations since the ceasing of irrigation indicates that the Section 34 irrigation caused the uranium increases in well 844. The higher value from well 556 in 2016 is thought to be an outlier and should not be given any significance until it is confirmed.

Figure E-12 presents the uranium concentrations versus time for upgradient wells AW, F, FB, GH and SUB3. This plot shows fairly similar uranium concentrations changes for the upgradient wells.

E.5 Selenium Concentrations

The selenium concentrations for 2016 are presented in Figure E-13 for the alluvial aquifer in the area of the Section 34 irrigation. Selenium concentrations were all less than 0.1 mg/l in 2016 in the irrigation area with the exception of well 846. Figure E-14 presents the selenium concentrations showing an increase in selenium concentrations in 2002 and 2003 in wells 844 and 845, respectively. The selenium site standard of 0.32 mg/l is shown on this figure for comparison with the observed data. An increase in selenium concentrations was observed in well 846 starting in 1996. The selenium concentrations are thought to be caused by variations in water coming into this area but the small increases in wells 844 and 845 could plausibly be a result of the irrigation program. Figure E-15 presents the selenium concentrations versus time for upgradient wells and shows smaller selenium concentrations with time in the upgradient wells.

E.6 Molybdenum Concentrations

The molybdenum concentrations for 2016 are presented in Figure E-16 for the Section 34 area. All of the concentrations near the Section 34 irrigation are less than 0.03 mg/l, except for a value of 0.05 mg/l in well 846. Figures E-17 and E-18 shows the molybdenum concentrations versus time and shows that these concentrations have been low since the start of irrigation in 2000 and that the higher value in well 846 in 2016 is likely an outlier. Higher but declining molybdenum concentrations are shown in upgradient well AW which are not expected to affect the Section 34 irrigation area.

E.7 Nitrate Concentrations

The nitrate concentrations are presented in Figures E-13, E-14 and E-15. Nitrate concentrations had stayed fairly steady and low in wells 844 and 845 during the irrigation operation but slightly increased after 2012. If this small increase is due to the irrigation it should dissipate in the near future. The nitrate concentrations in well 846 were on a significant increasing trend prior to irrigation and this trend has continued with the recent values some lower. Because the increasing trend predates irrigation, these changes are not thought to be a function of the irrigation program. The upgradient nitrate concentrations are small.

E.8 Radium-226 plus Radium-228 Concentrations

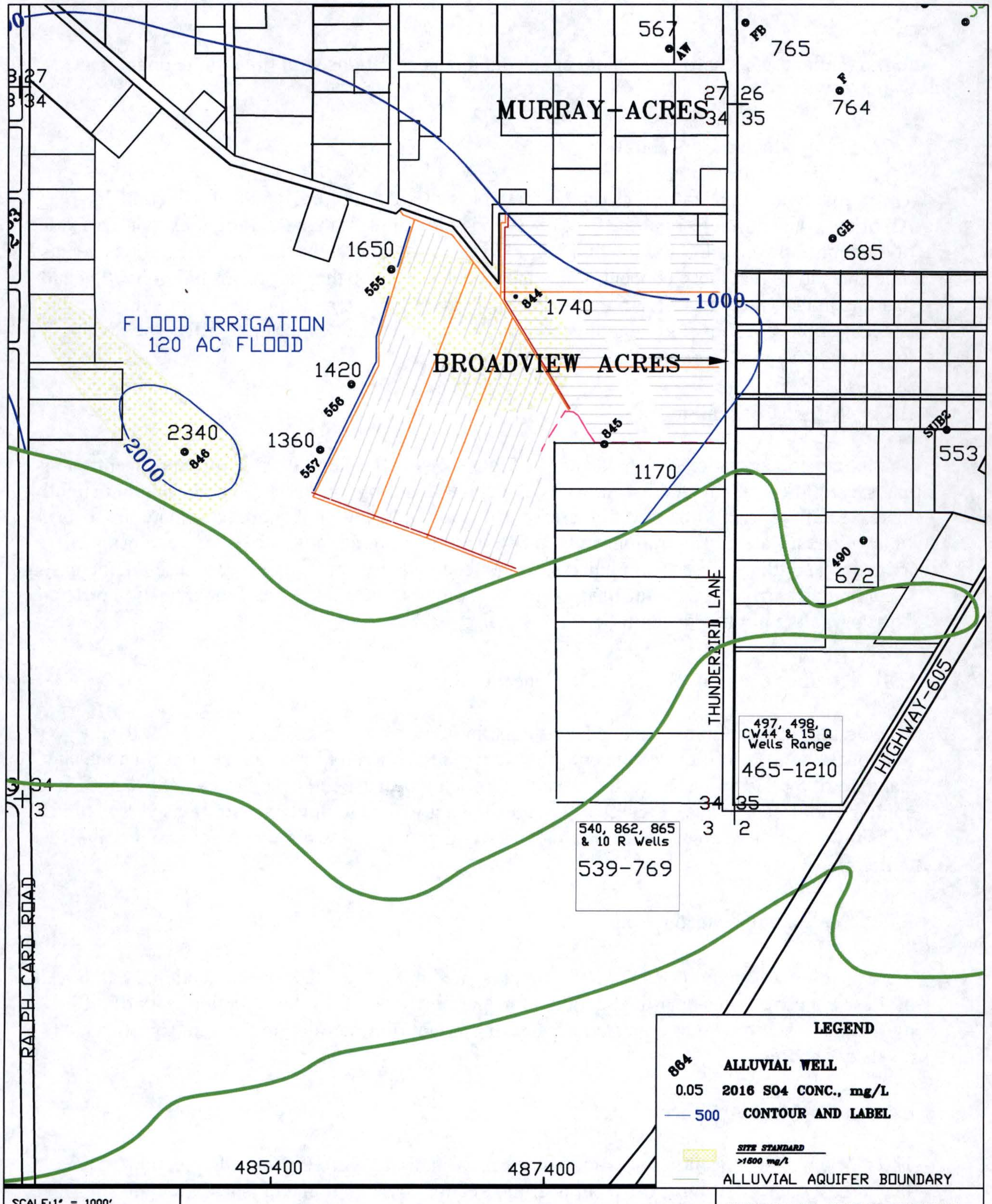
The radium-226 + radium-228 concentrations for 2016 are presented in Figure E-22 for the Section 34 area. All of these concentrations near the Section 34 irrigation are less than the site standard of 5 pCi/l and as expected are not significant because the irrigation water did not contain significant levels. Figures E-17 and E-18 show the radium concentrations versus time and shows that these concentrations are generally low with a few higher values that are likely outliers.

E.9 Vanadium Concentrations

The vanadium concentrations for 2016 are presented in Figure E-25 for the Section 34 area. All of these concentrations near the Section 34 irrigation are less than the detection level of 0.01 mg/l and not significant as expected because the irrigation water did not contain significant levels of vanadium.

E.10 Thorium-230 Concentrations

The thorium-230 concentrations for 2016 are presented in Figure E-26 for the Section 34 area. The largest concentration is 0.1 pCi/l near the Section 34 irrigation and is less than the site standard of 0.3 pCi/l and not significant as expected because the irrigation water did not contain significant levels.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 6/15/2017	**FIGURE E-1. 2016 SULFATE ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

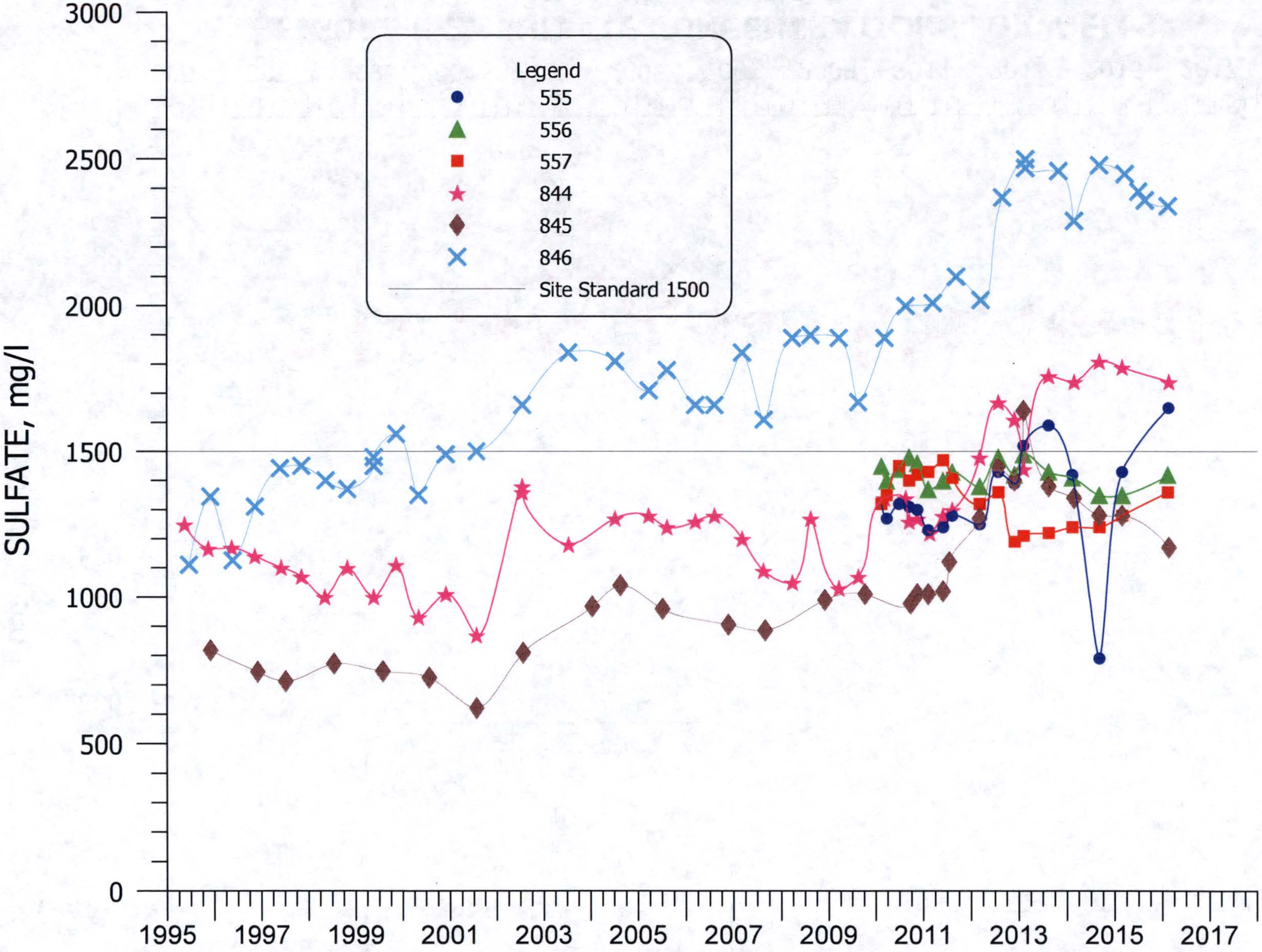


FIGURE E-2. SULFATE CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

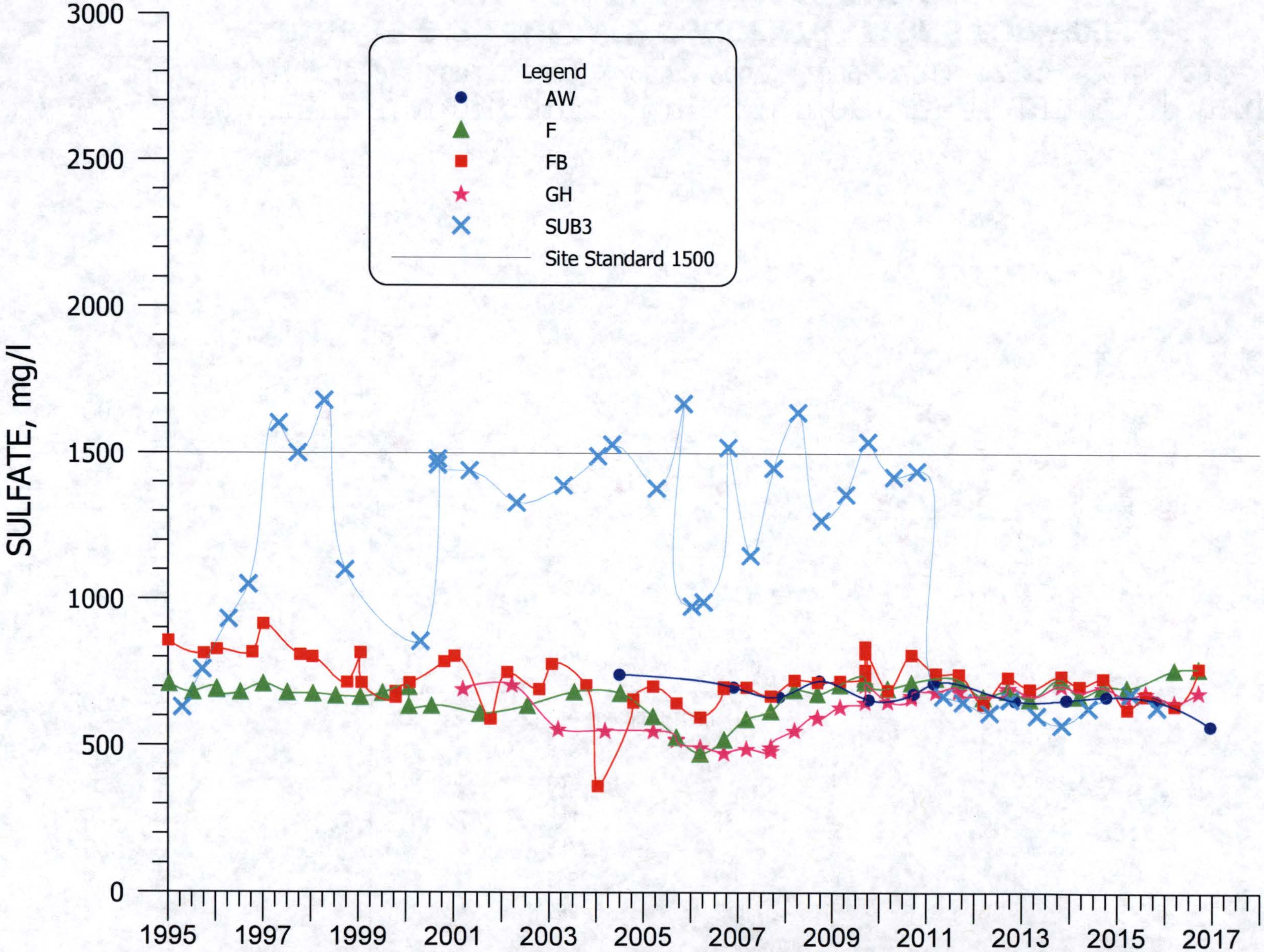
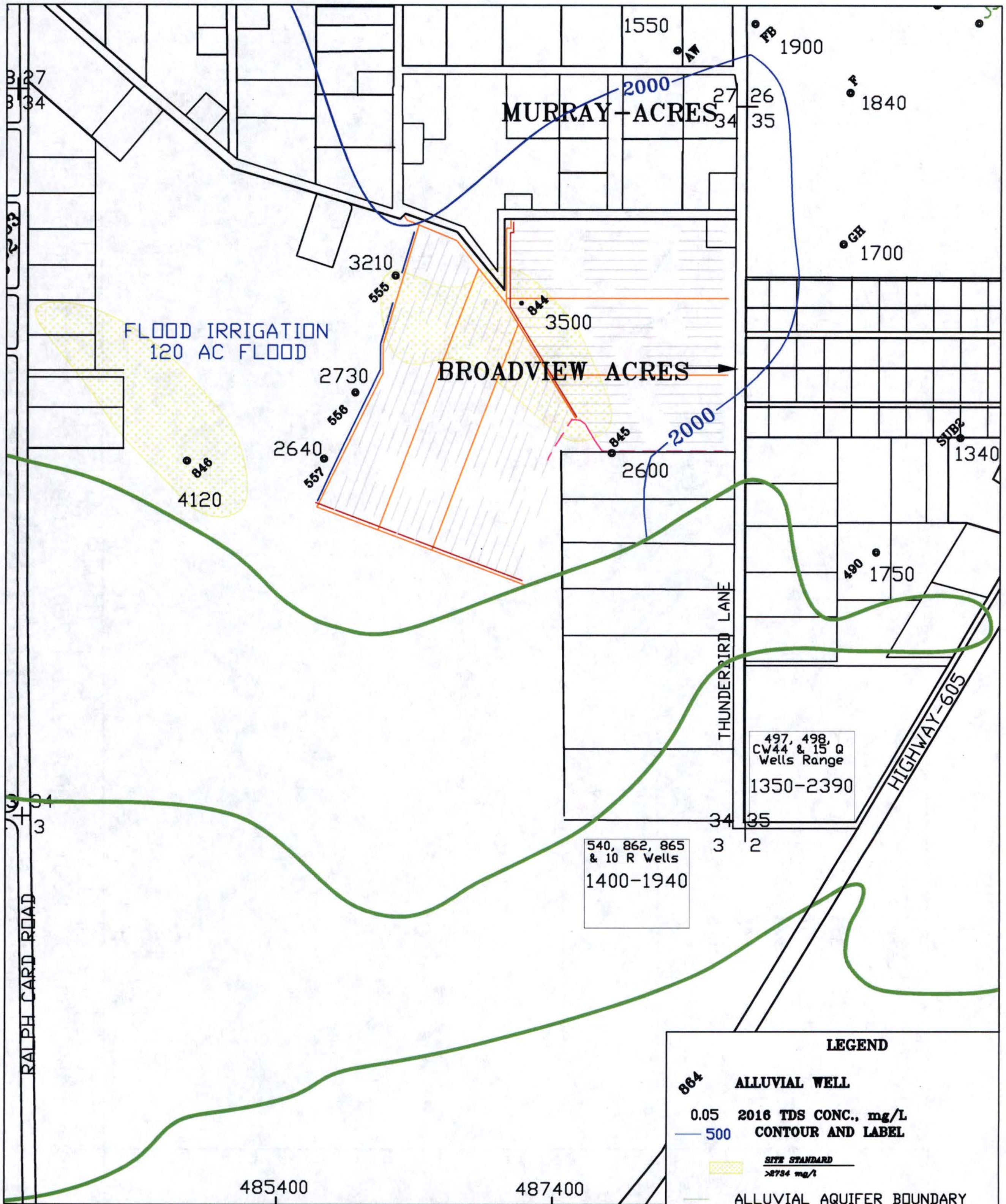


FIGURE E-3. SULFATE CONCENTRATIONS FOR WELLS AW, F ,FB, GH AND SUB3.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-4. 2016 TDS ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

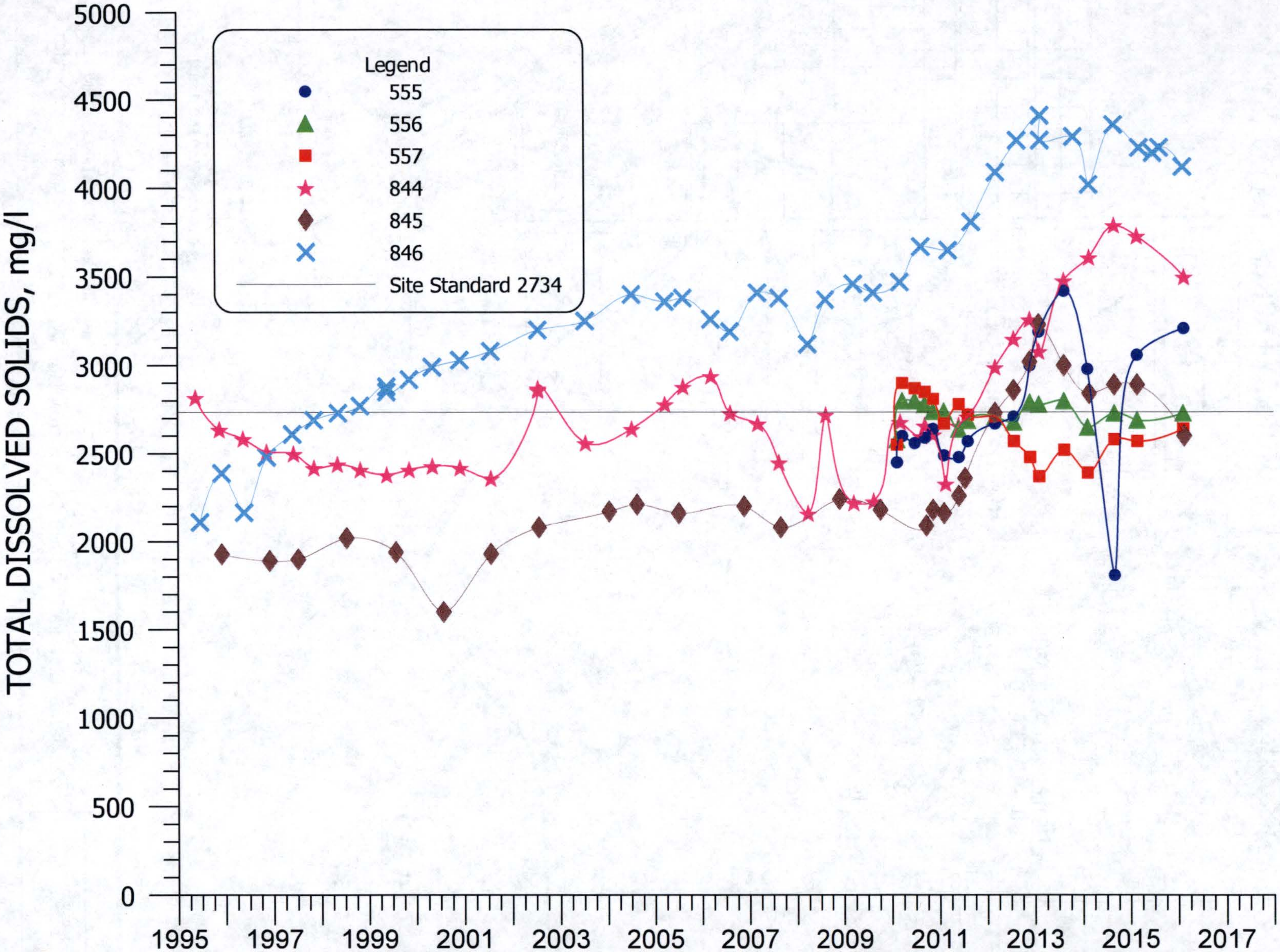


FIGURE E-5. TDS CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

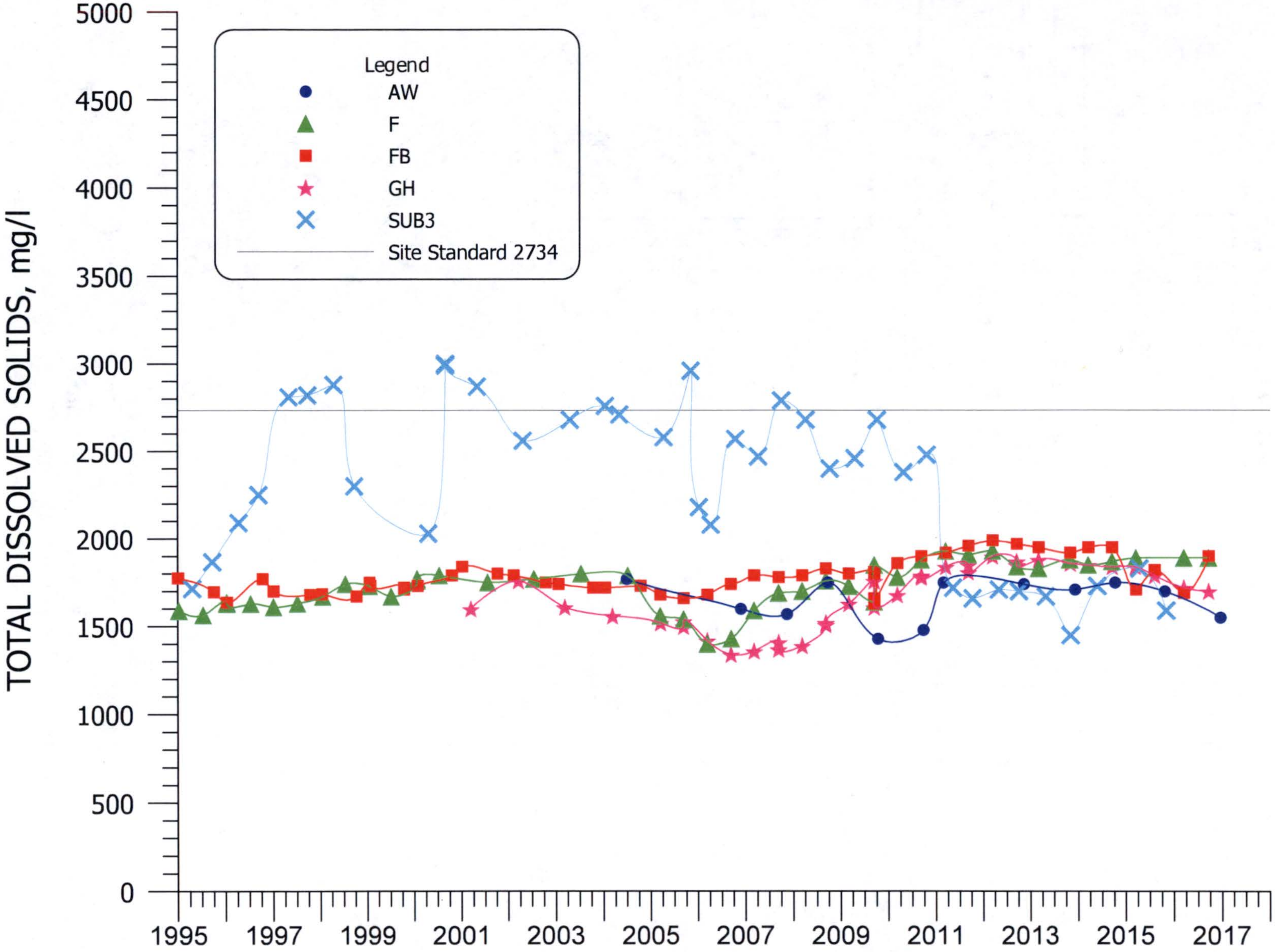
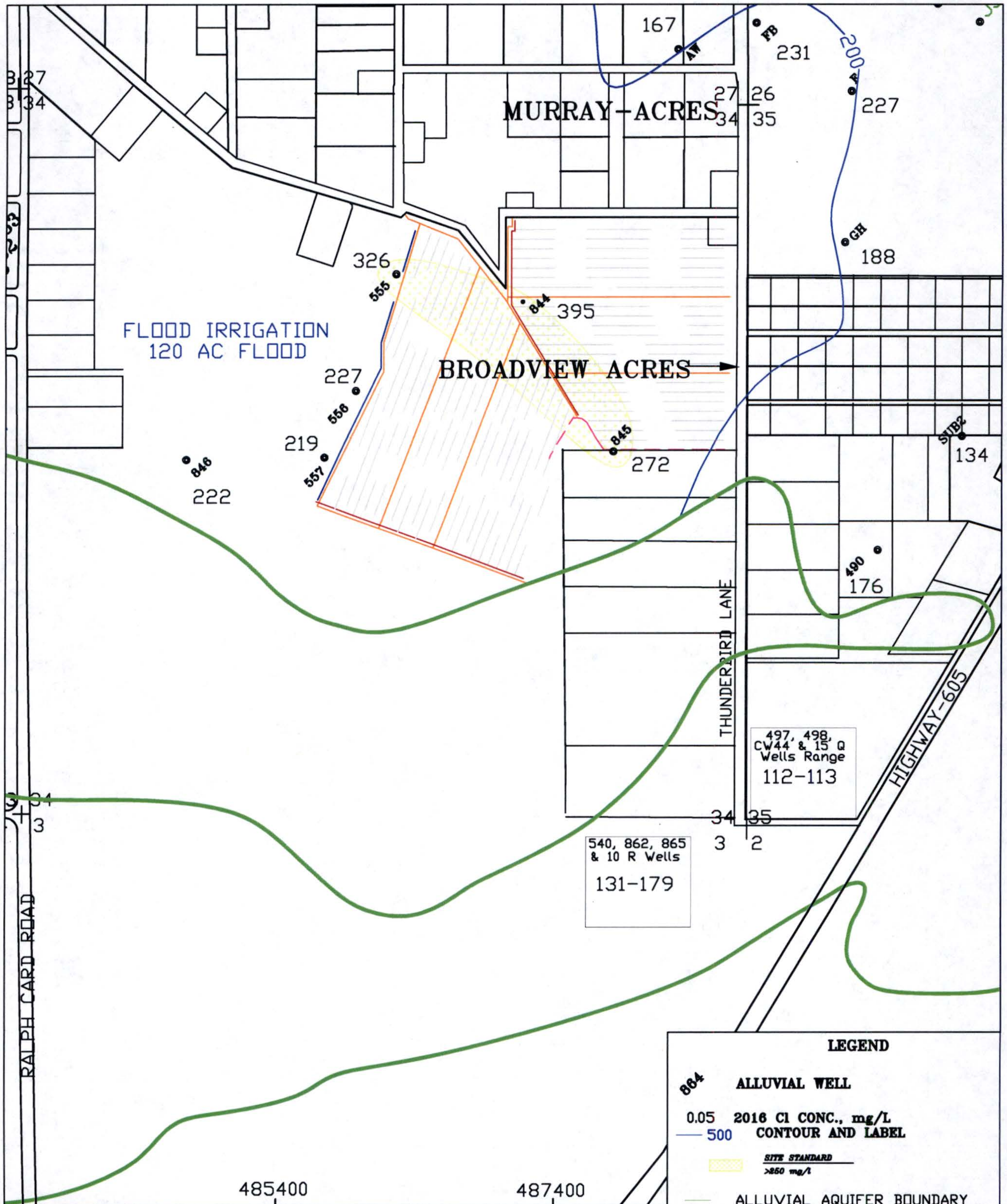


FIGURE E-6. TDS CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-7. 2016 CHLORIDE ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

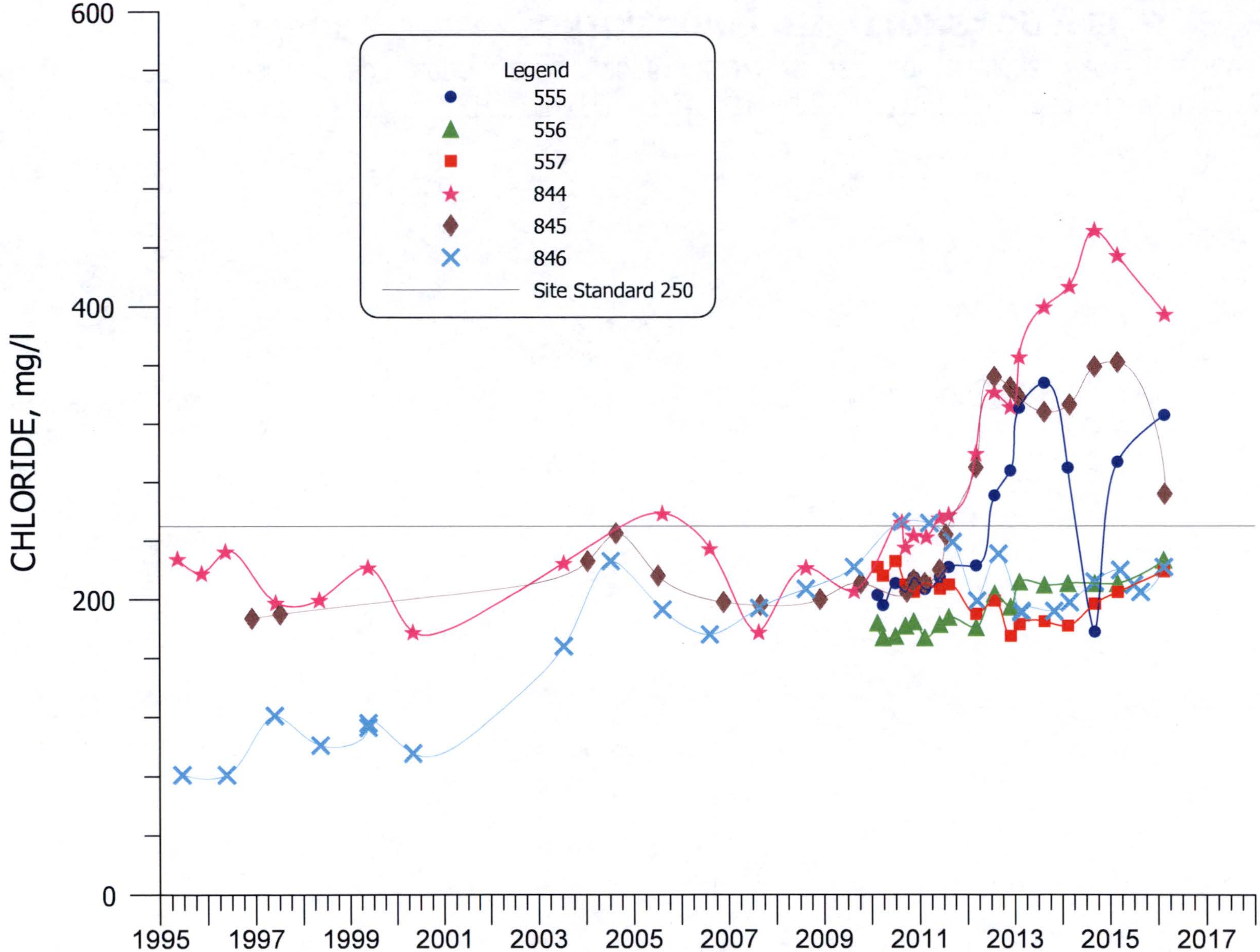


FIGURE E-8. CHLORIDE CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

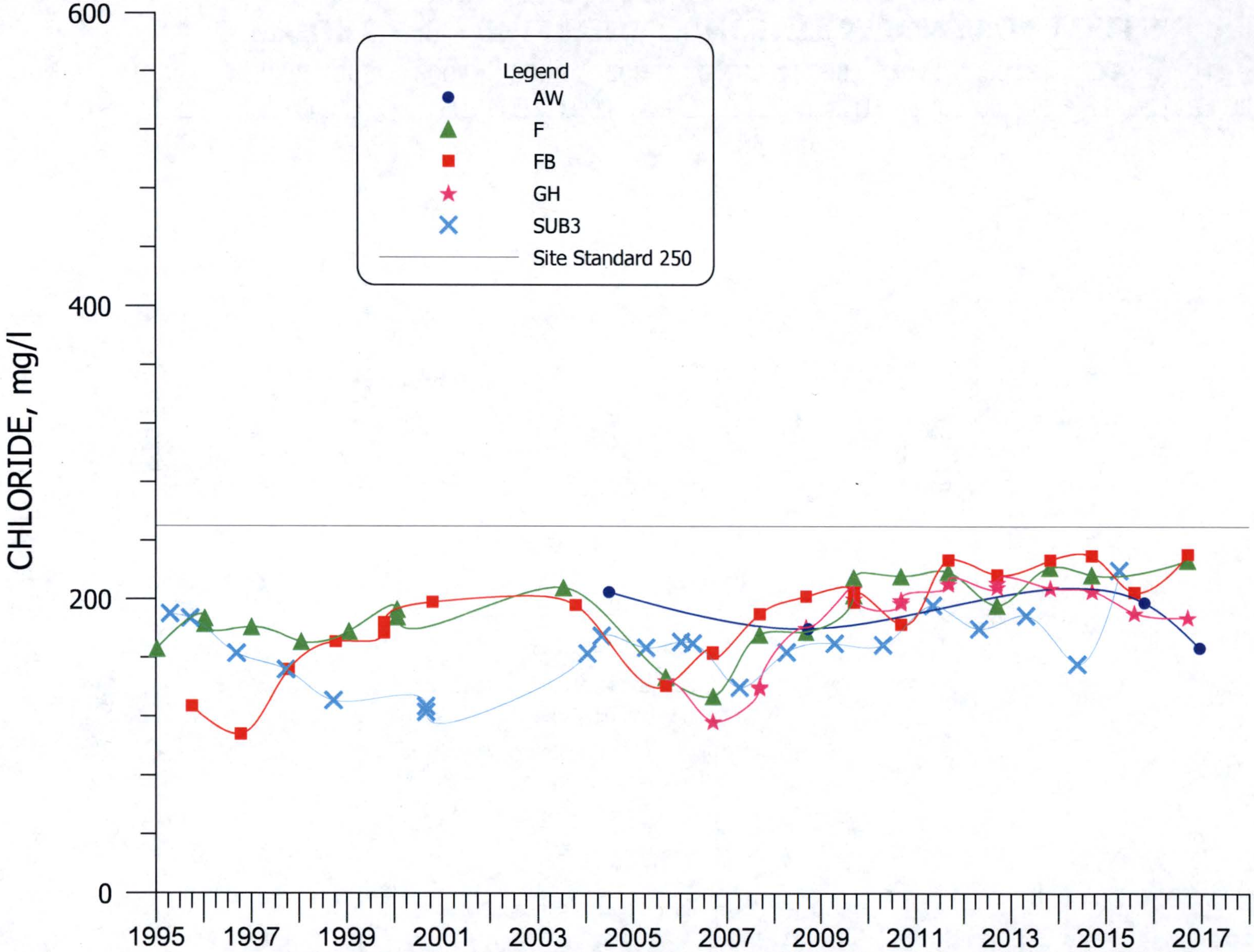
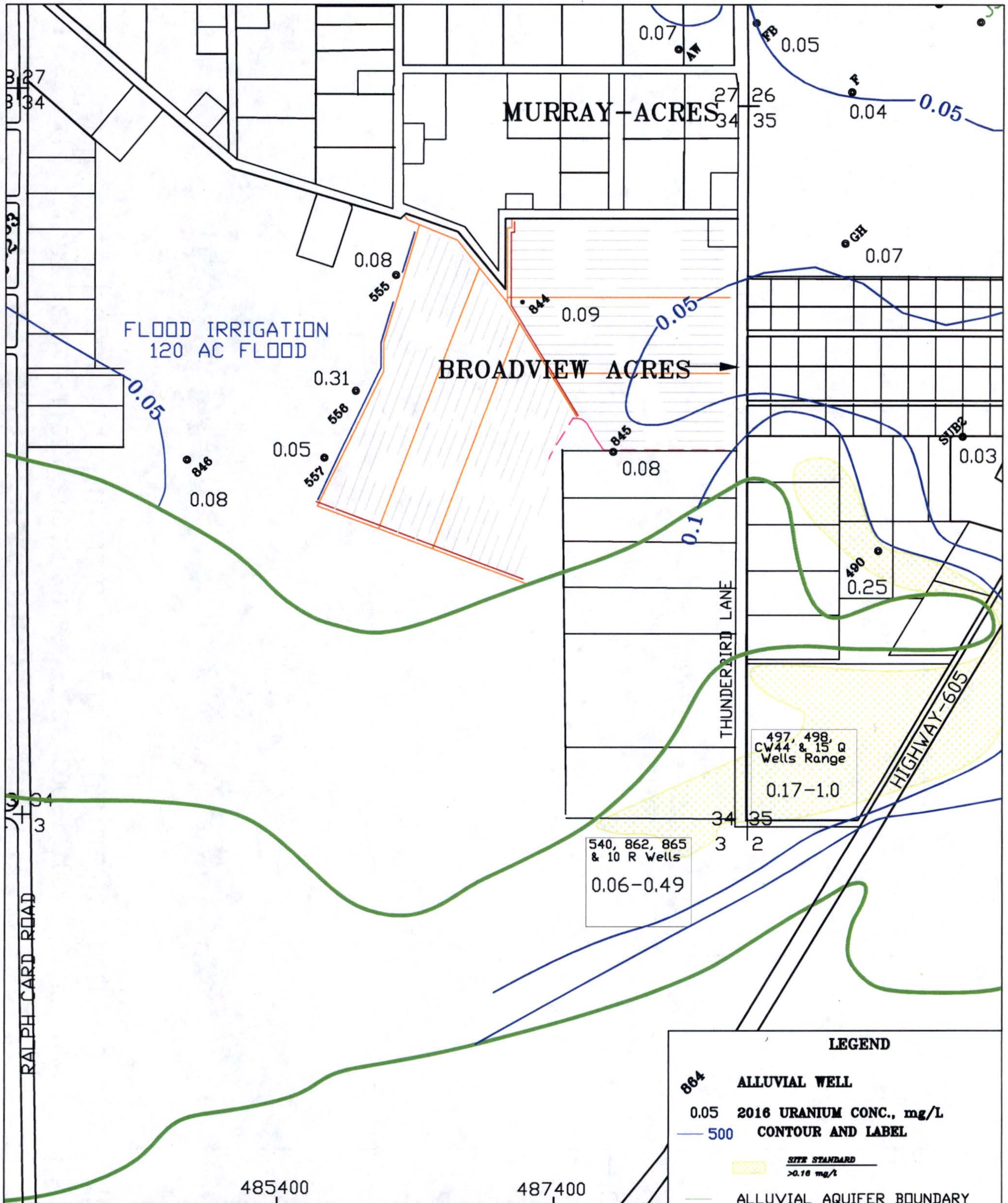


FIGURE E-9. CHLORIDE CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-10. 2016 URANIUM ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

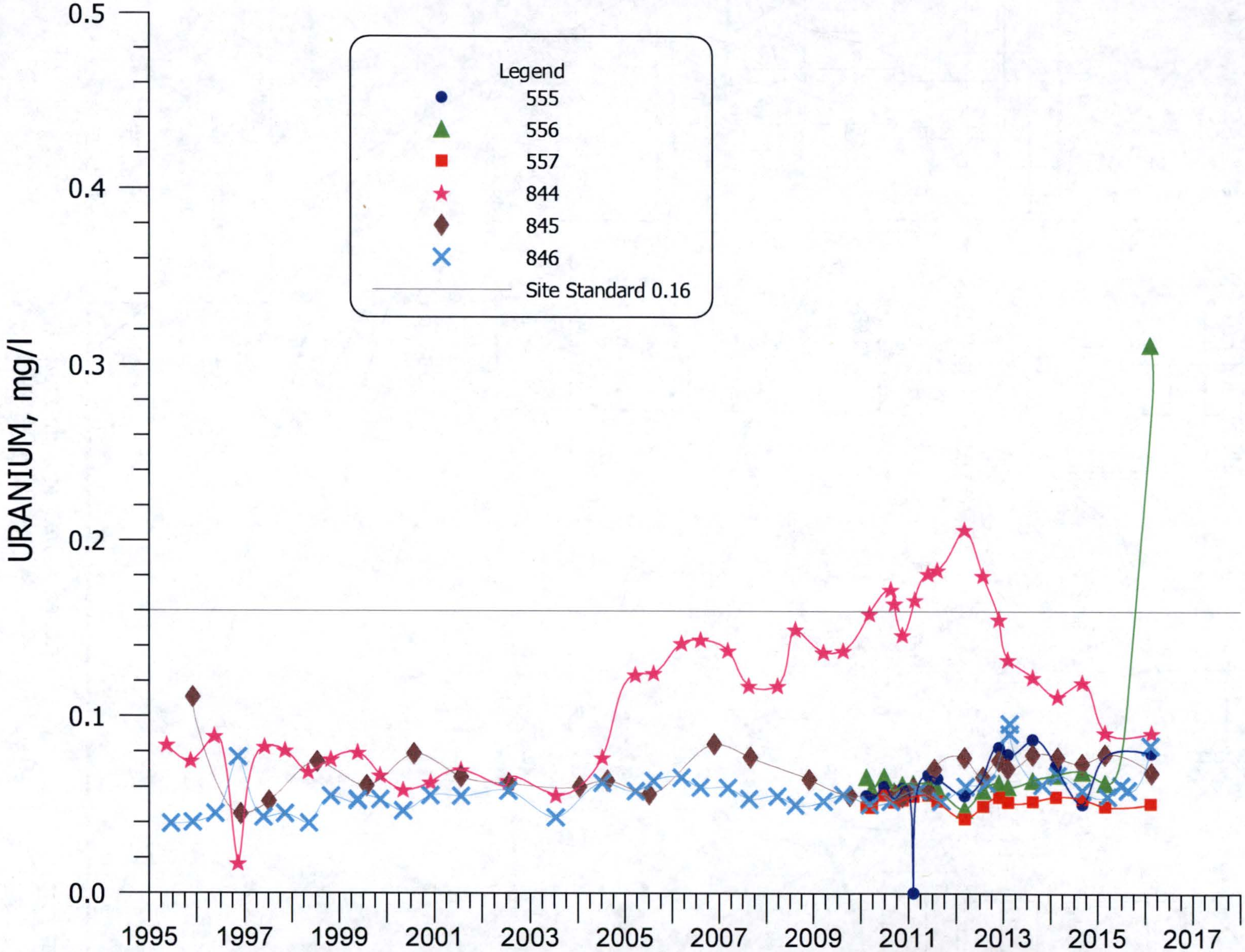


FIGURE E-11. URANIUM CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

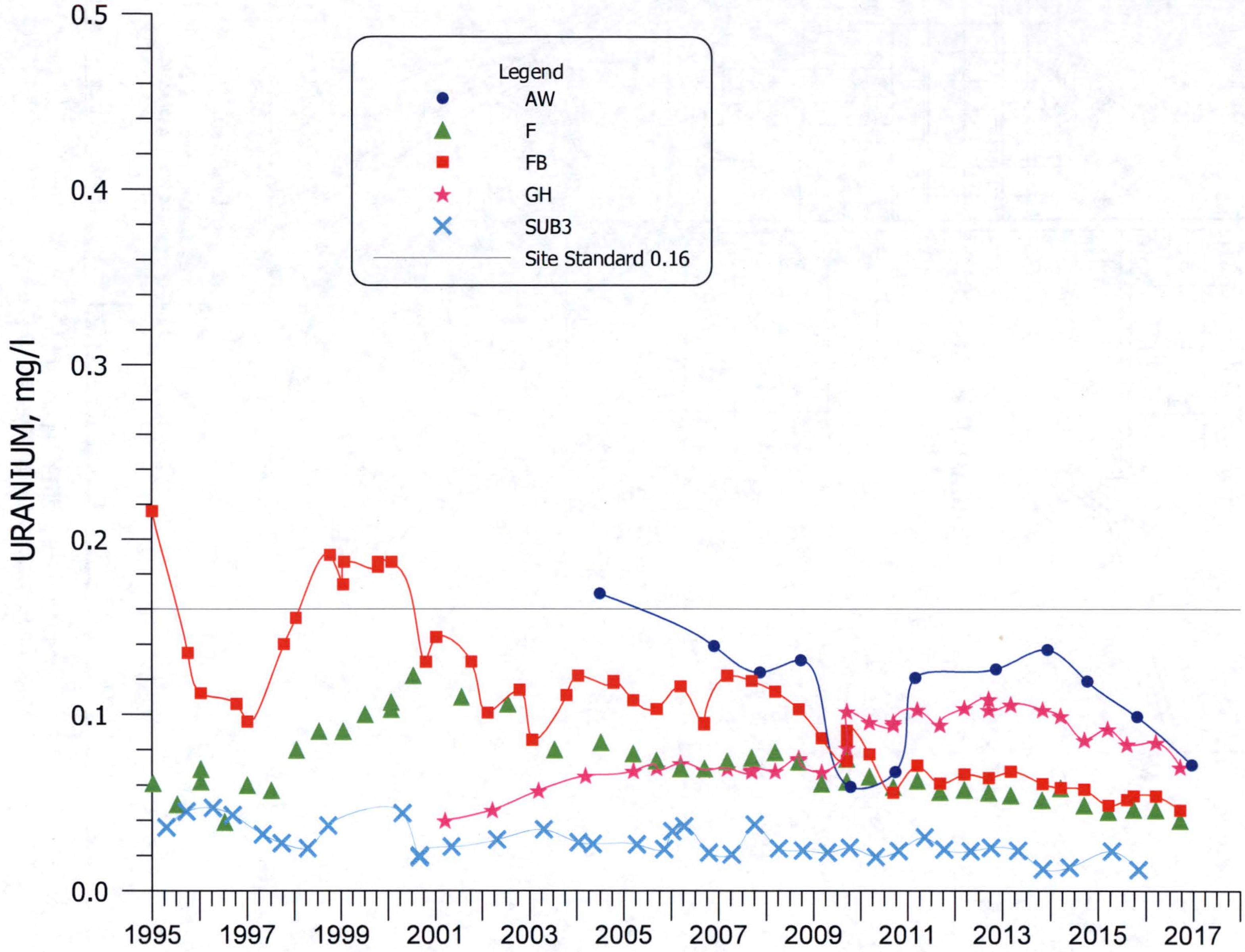
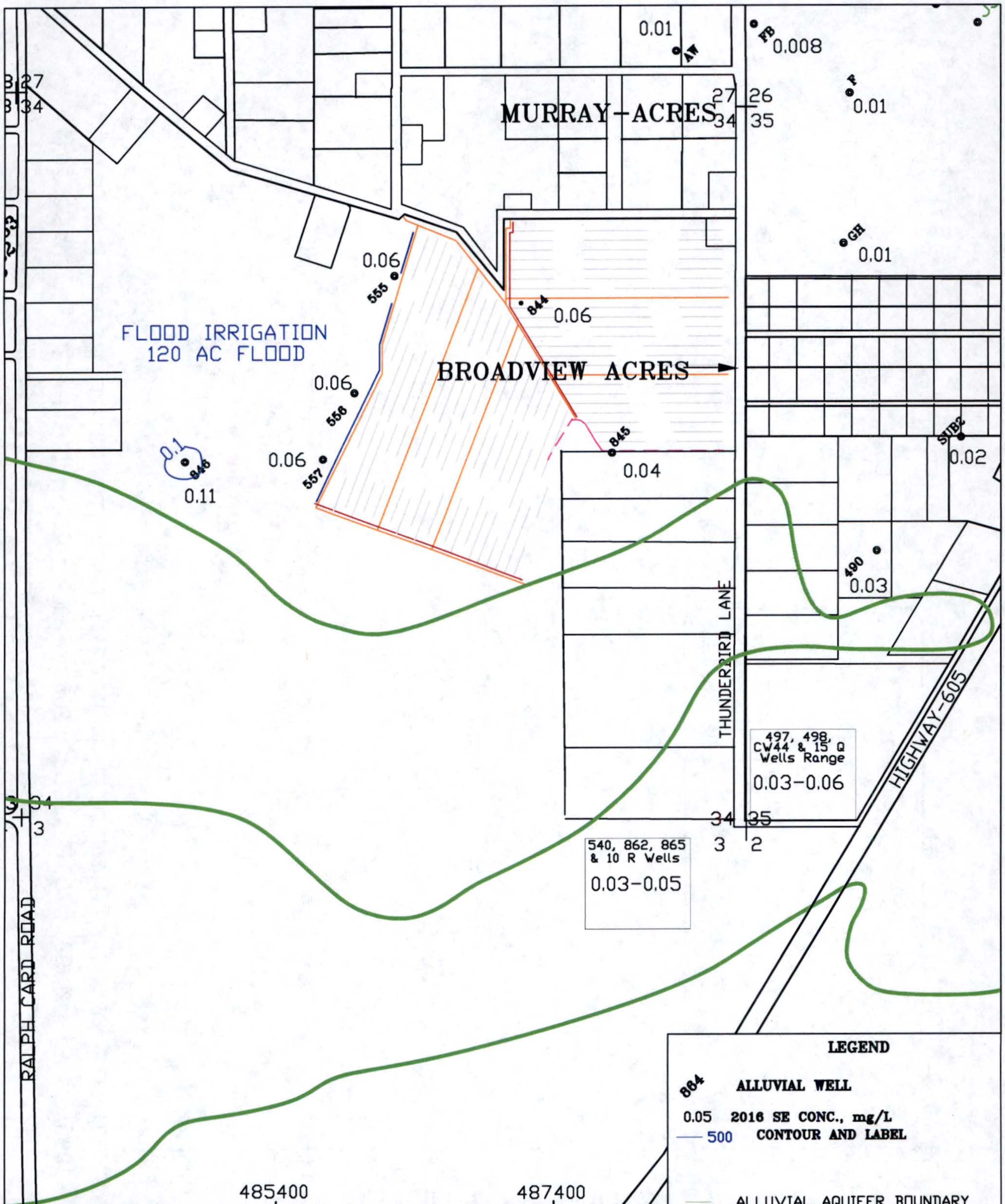


FIGURE E-12. URANIUM CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-13. 2016 SELENIUM ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

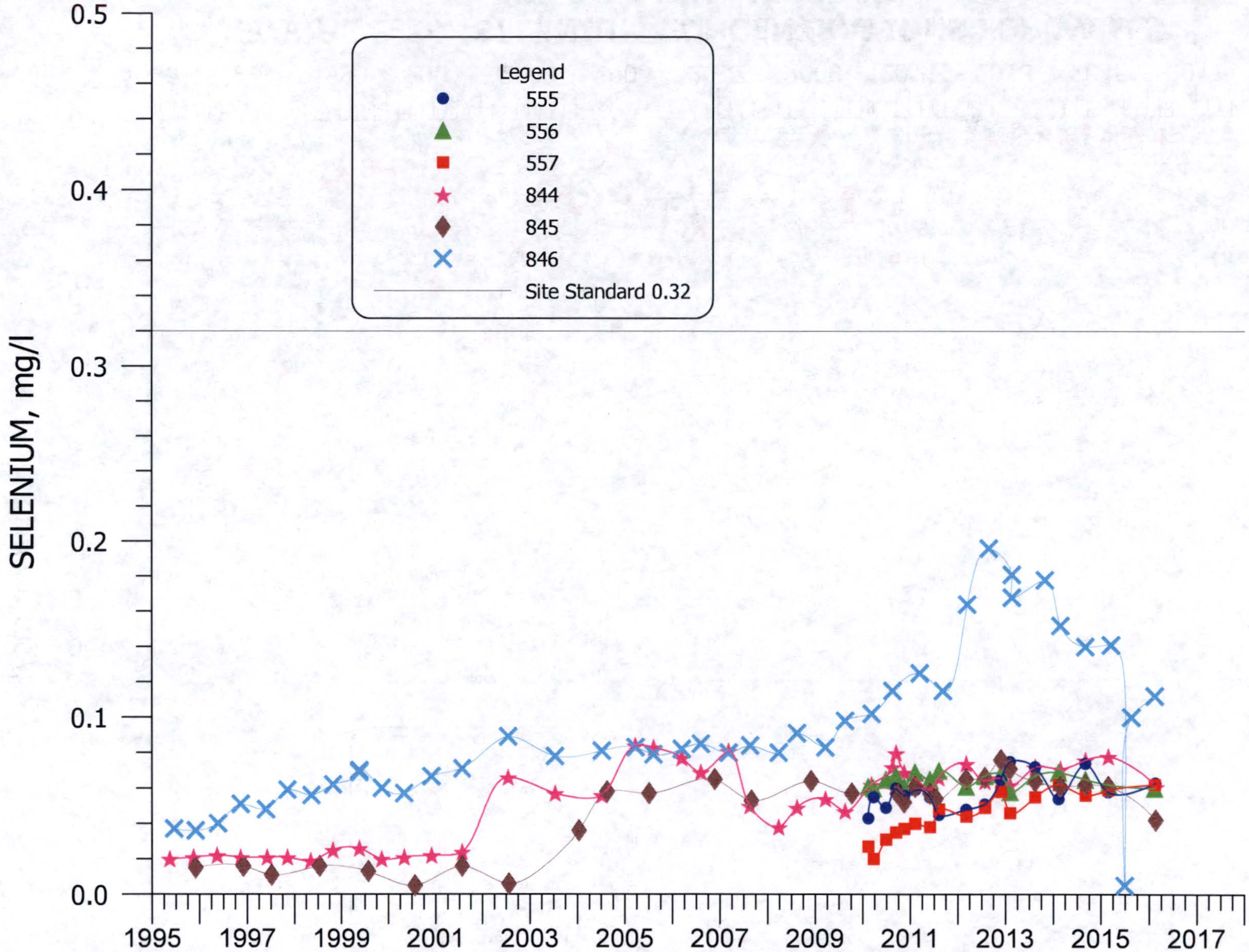


FIGURE E-14. SELENIUM CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

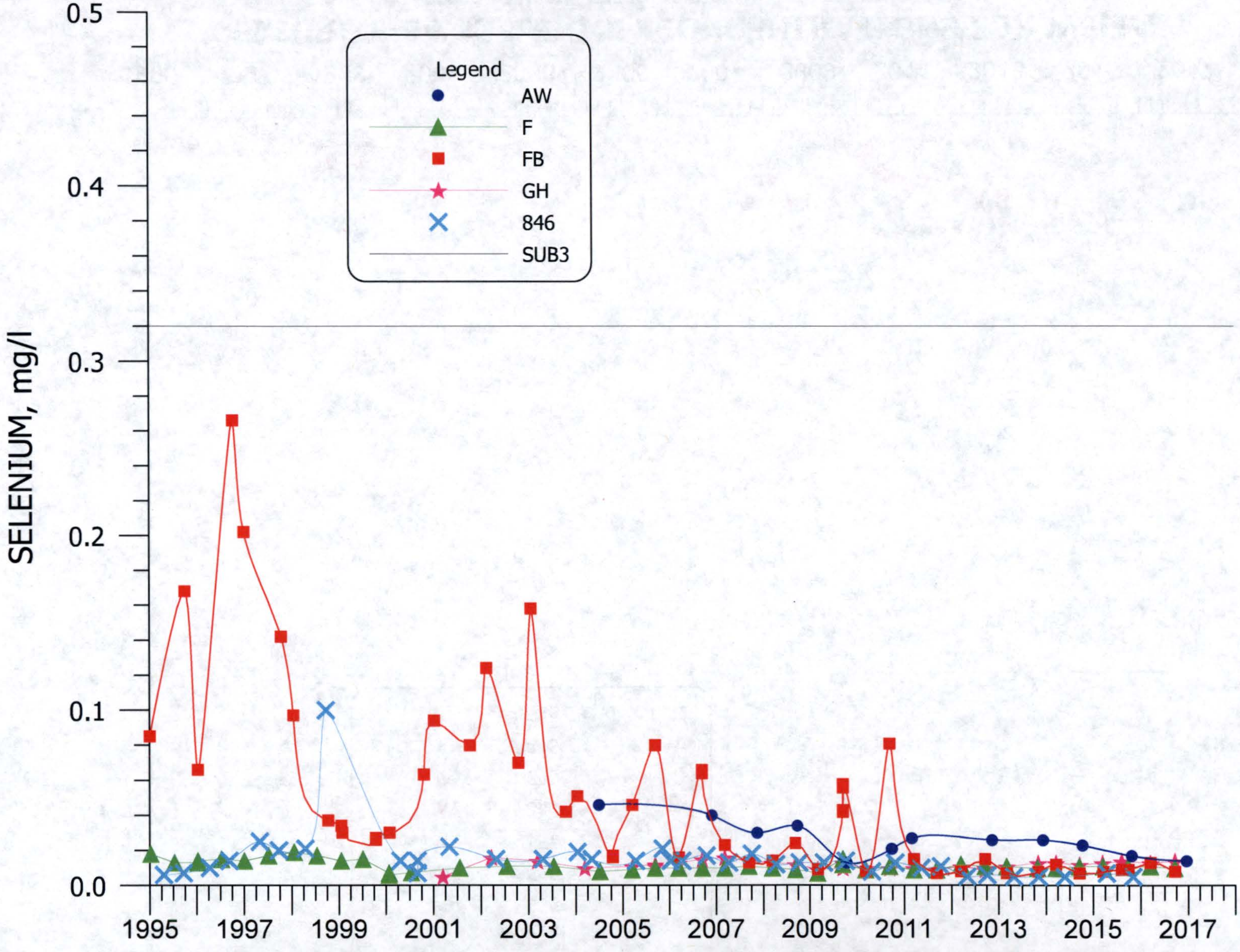
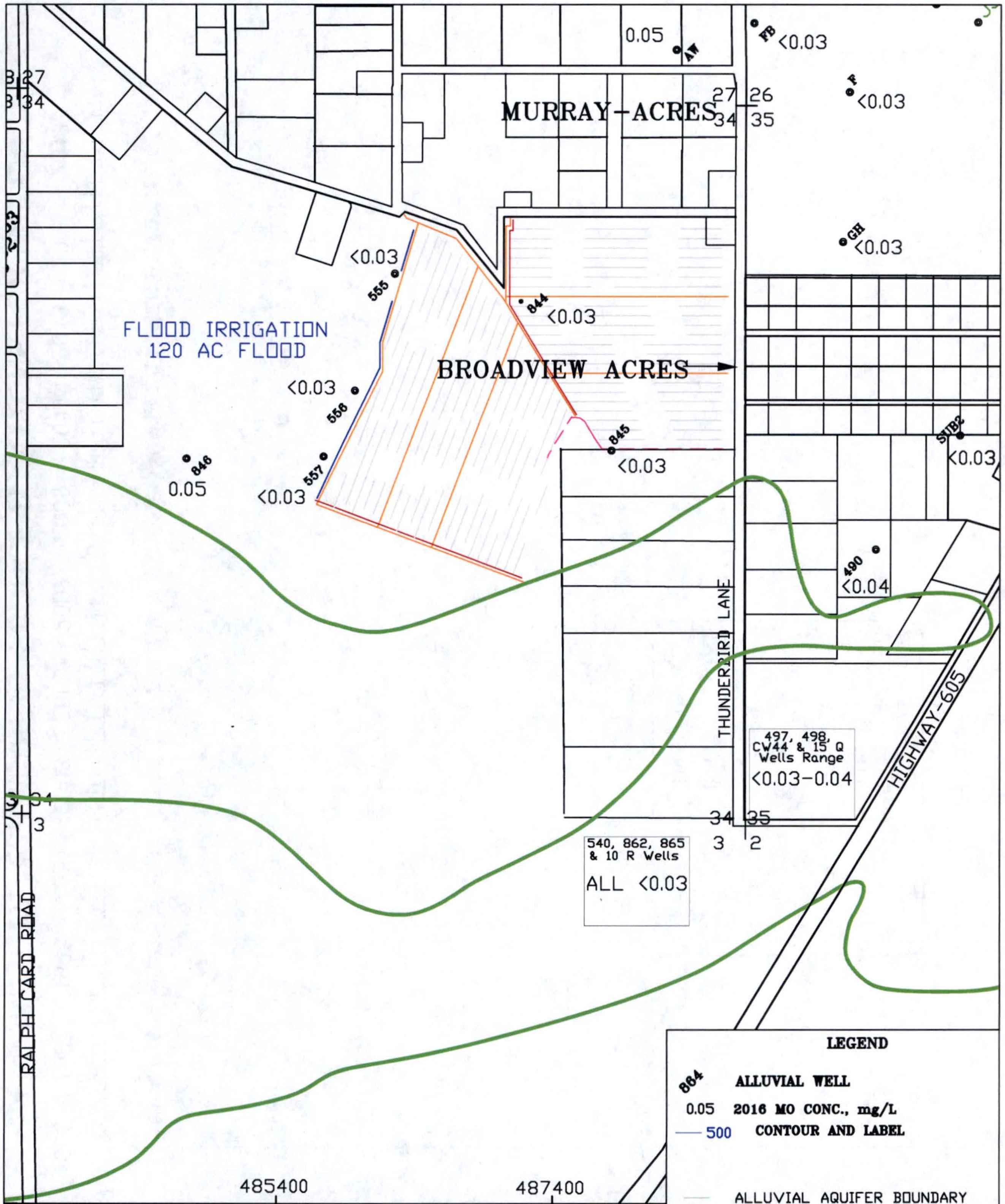


FIGURE E-15. SELENIUM CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-16. 2016 MOLYBDENUM ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

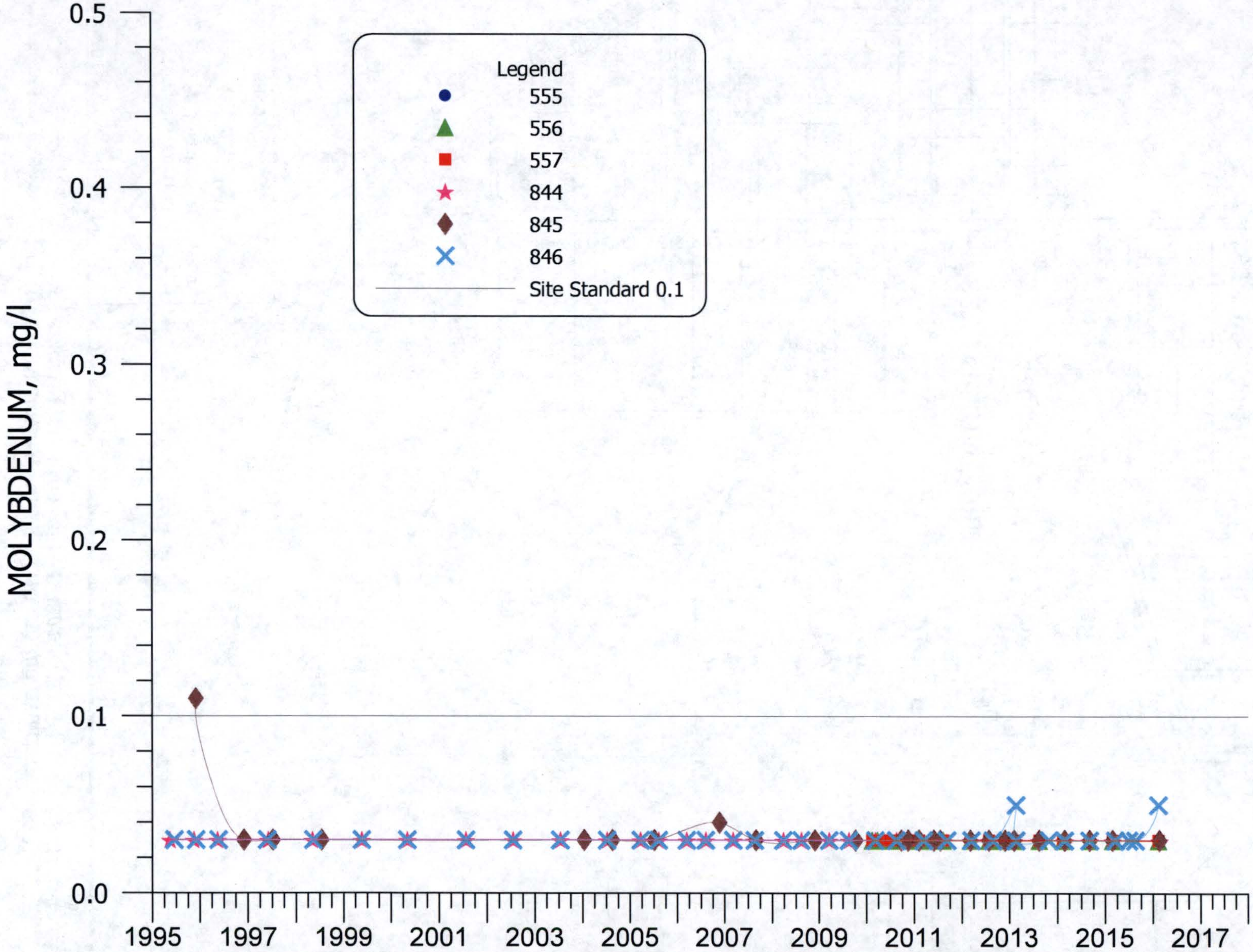


FIGURE E-17. MOLYBDENUM CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

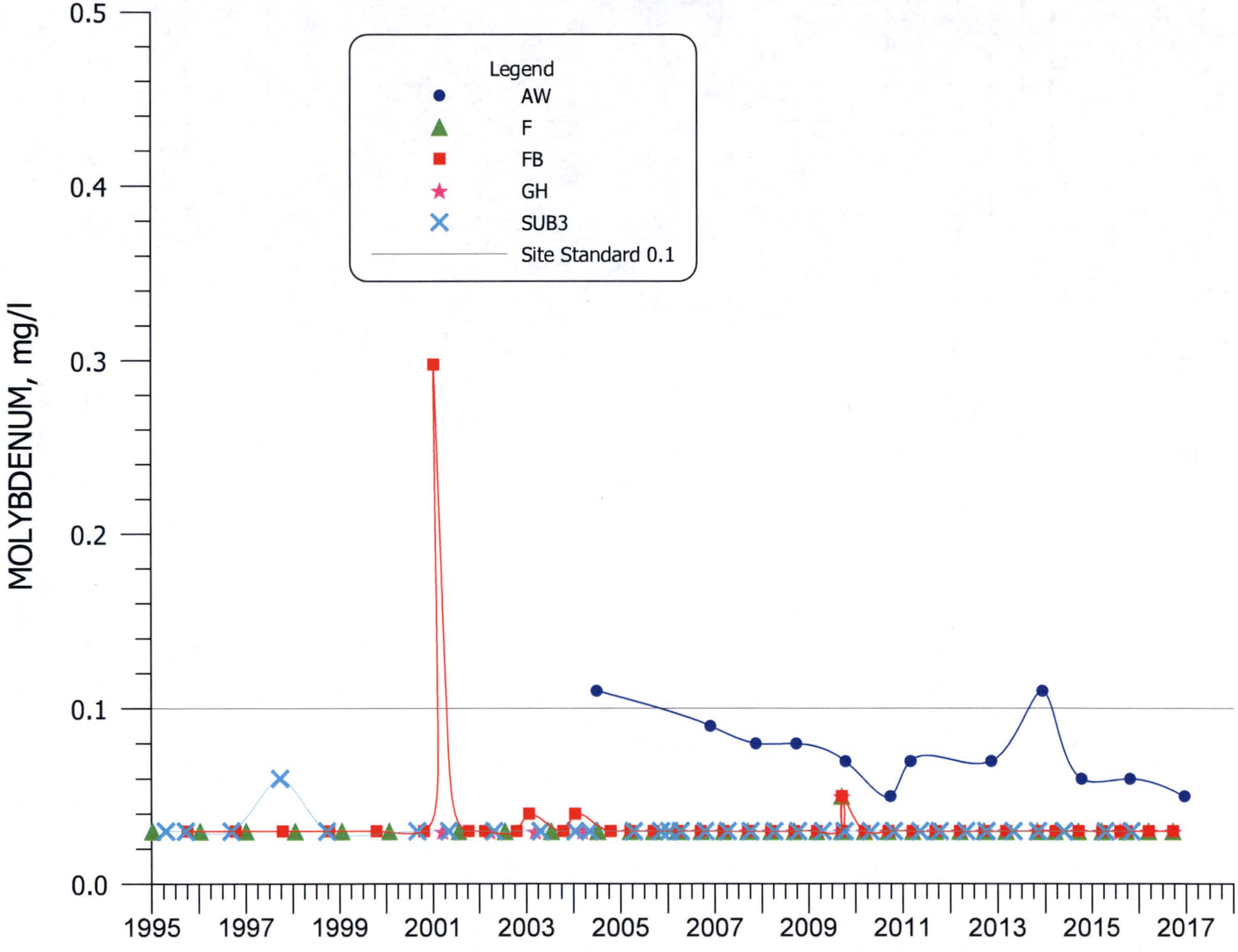
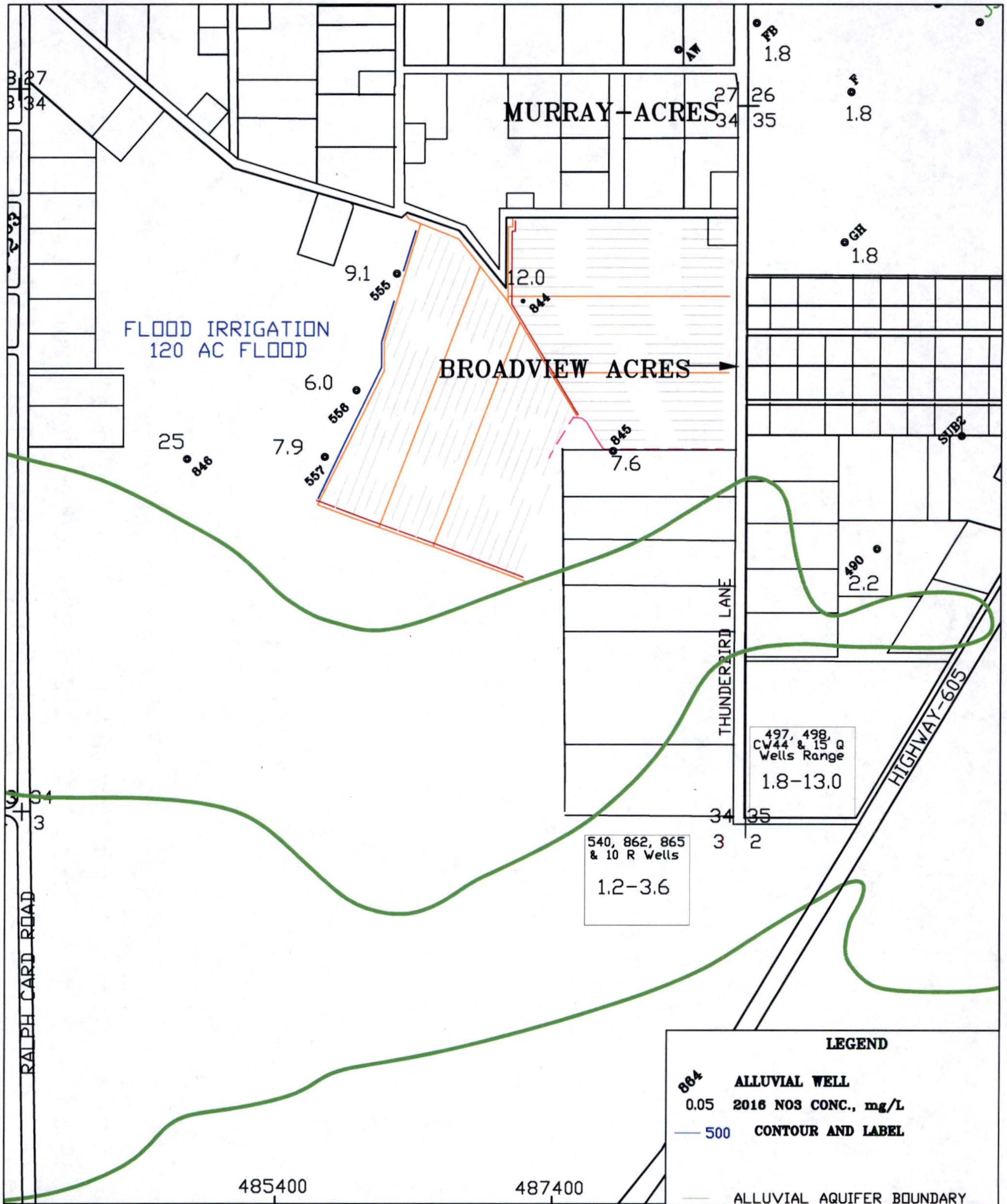


FIGURE E-18. MOLYBDENUM CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



SCALE: 1" = 1000'

C:\PROJECTS\2017-06\
1600QAL-IRRIGATIONsec34

DATE: 8/14/2017

FIGURE E-19. 2016 NO3 ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

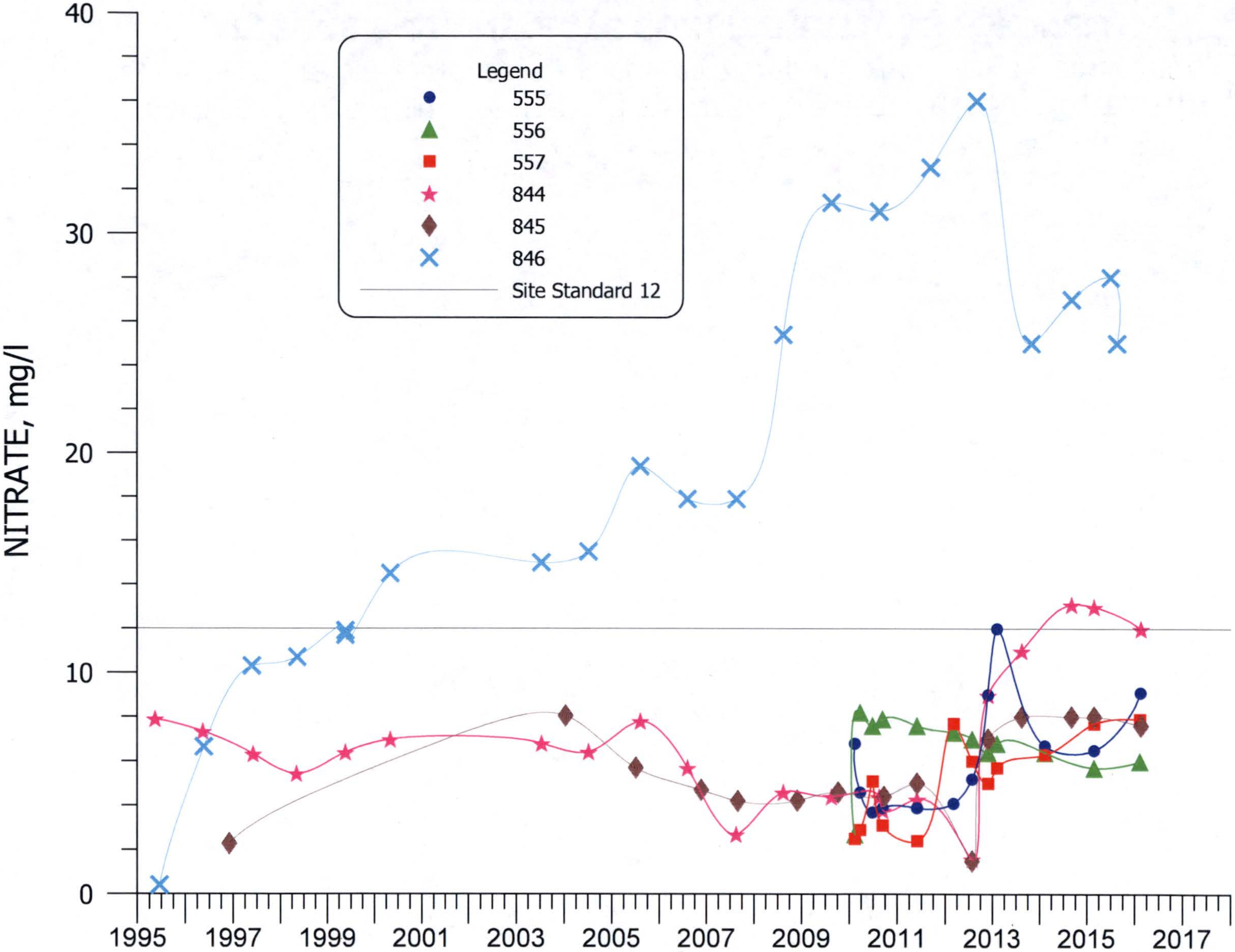


FIGURE E-20. NITRATE CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

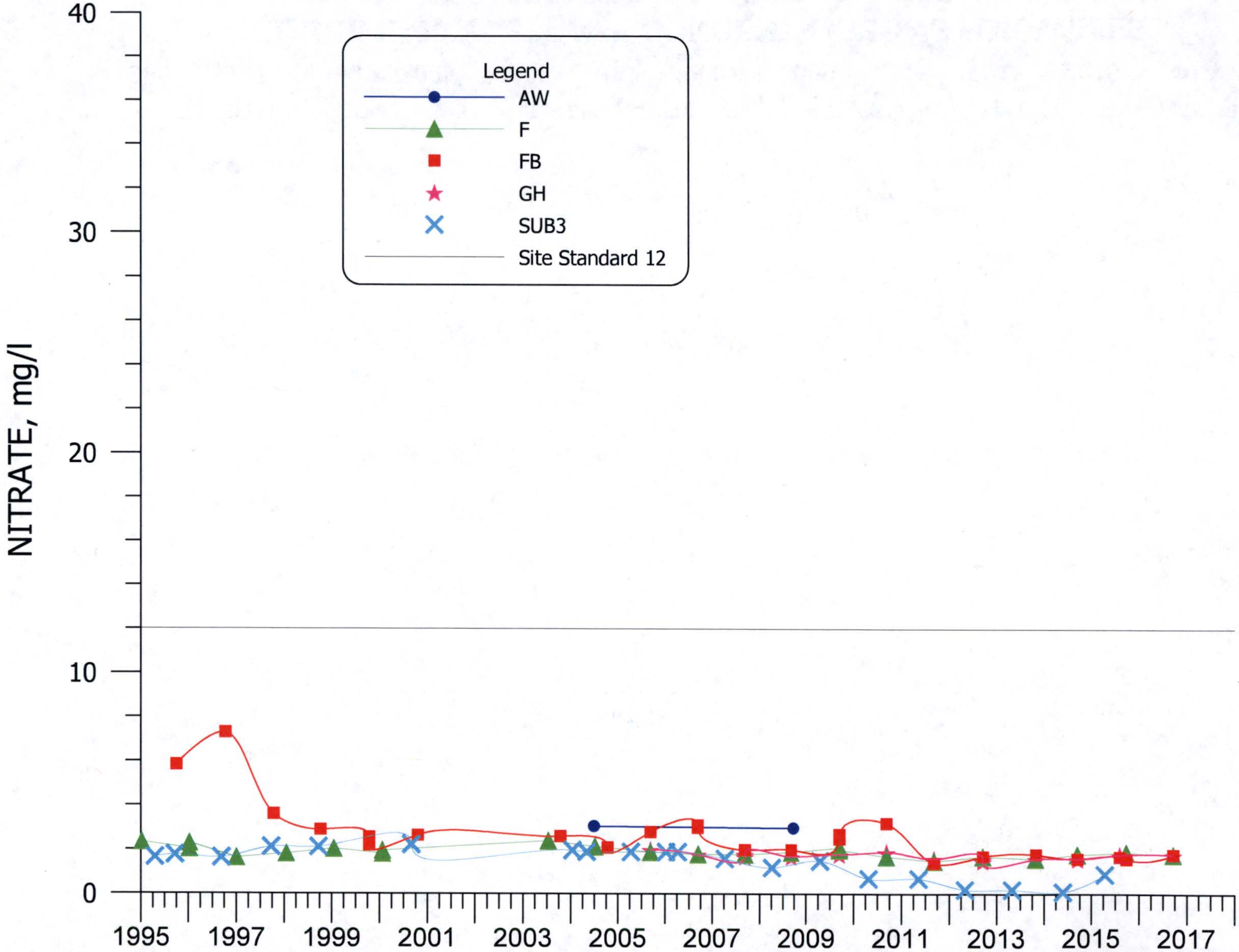
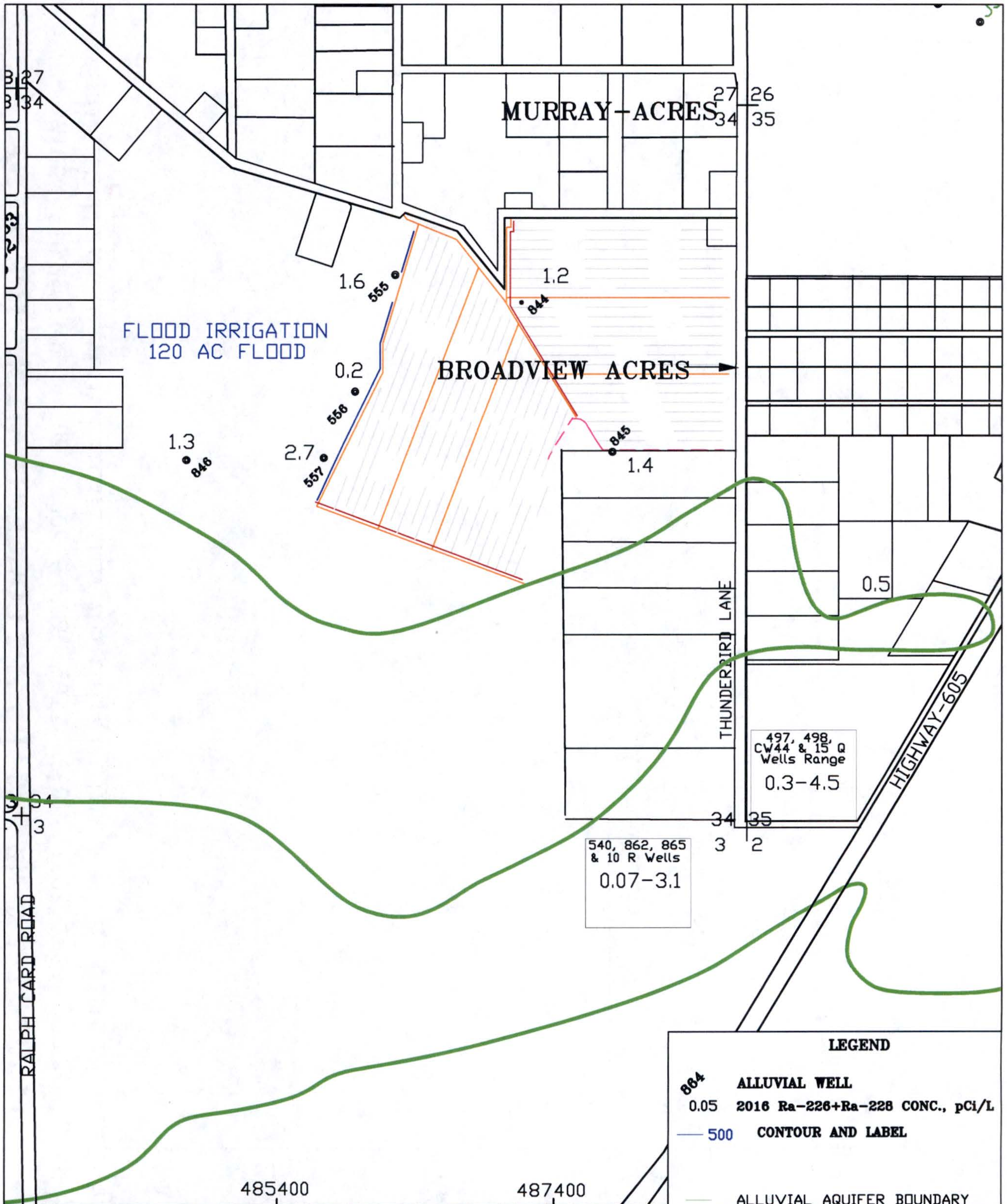


FIGURE E-21. NITRATE CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



SCALE: 1" = 1000' C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-22. 2016 Ra-226+Ra-228 ALLUVIAL CONCENTRATIONS IN SECTION 34, pCi/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

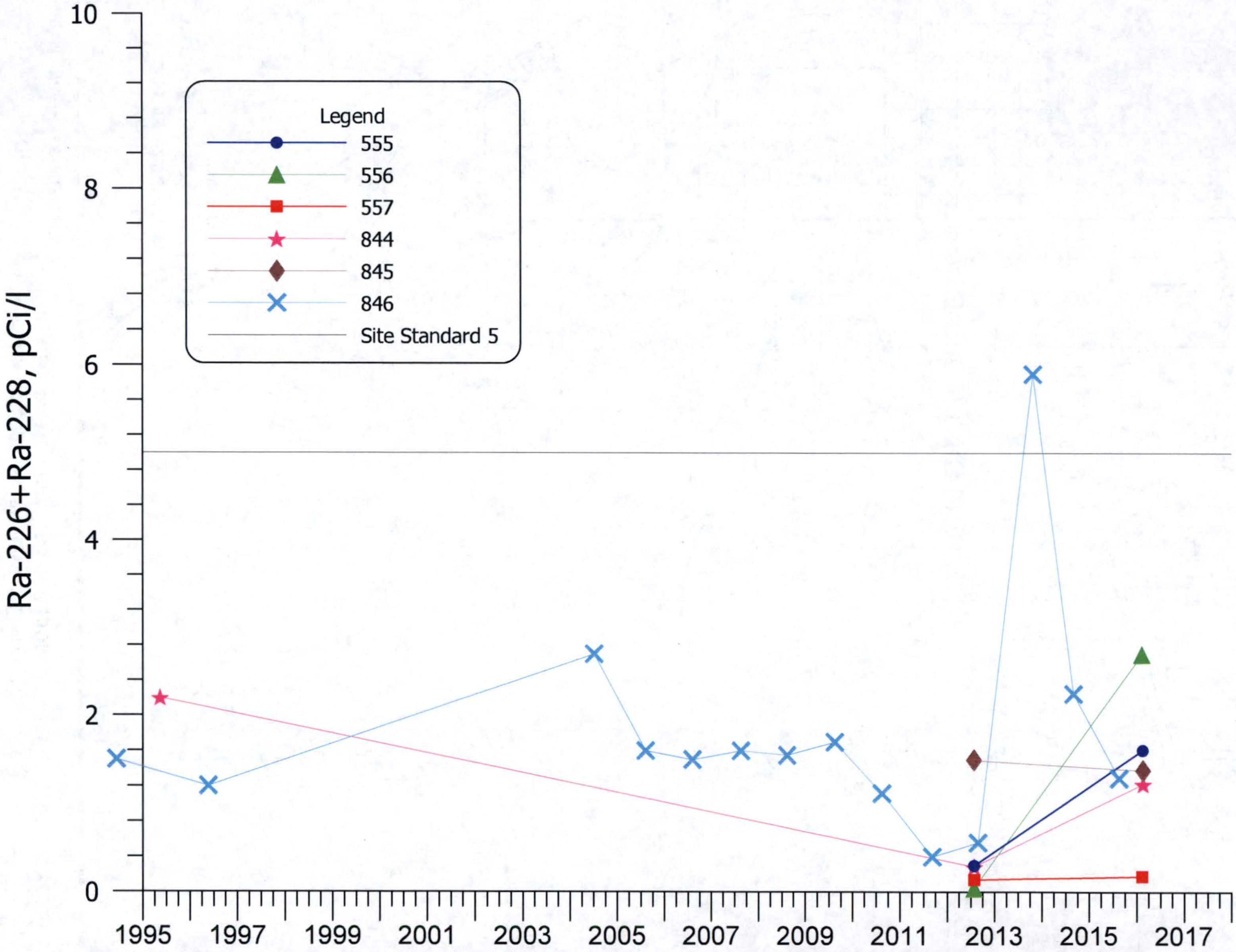


FIGURE E-23. Ra-226+Ra-228 CONCENTRATIONS FOR WELLS 555, 556, 557, 844, 845 AND 846.

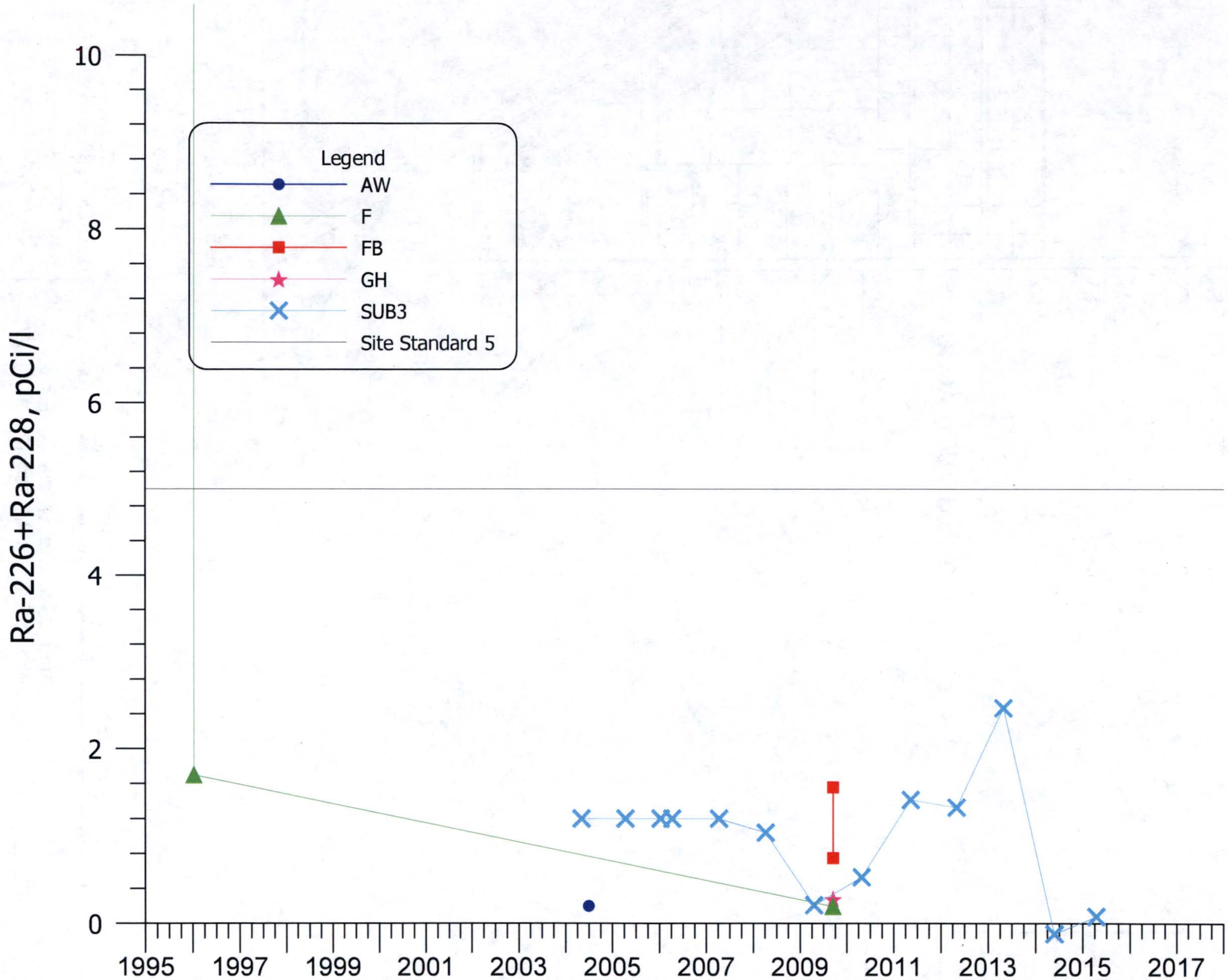
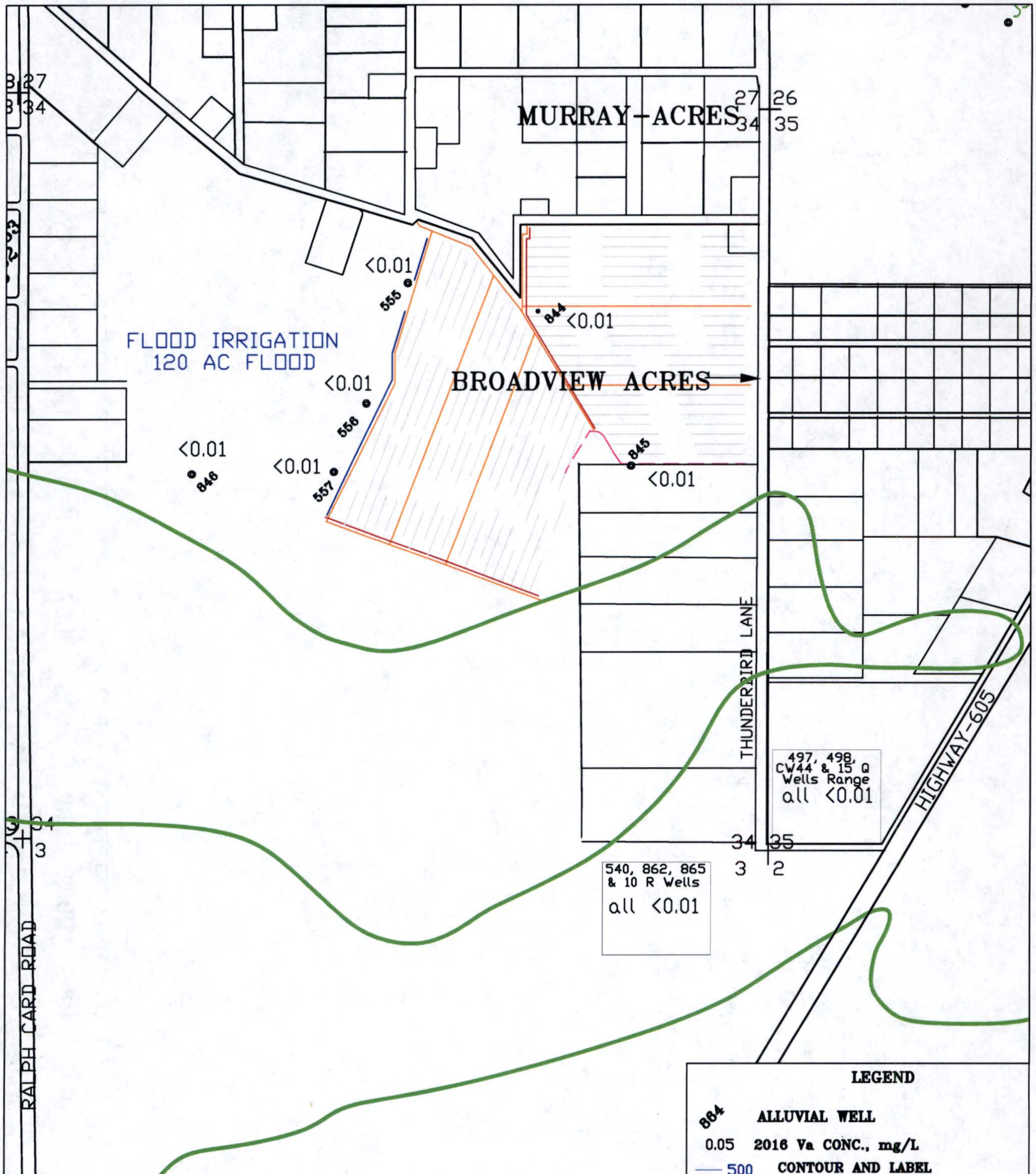


FIGURE E-24. Ra-226+Ra-228 CONCENTRATIONS FOR WELLS AW, F, FB, GH AND SUB3.



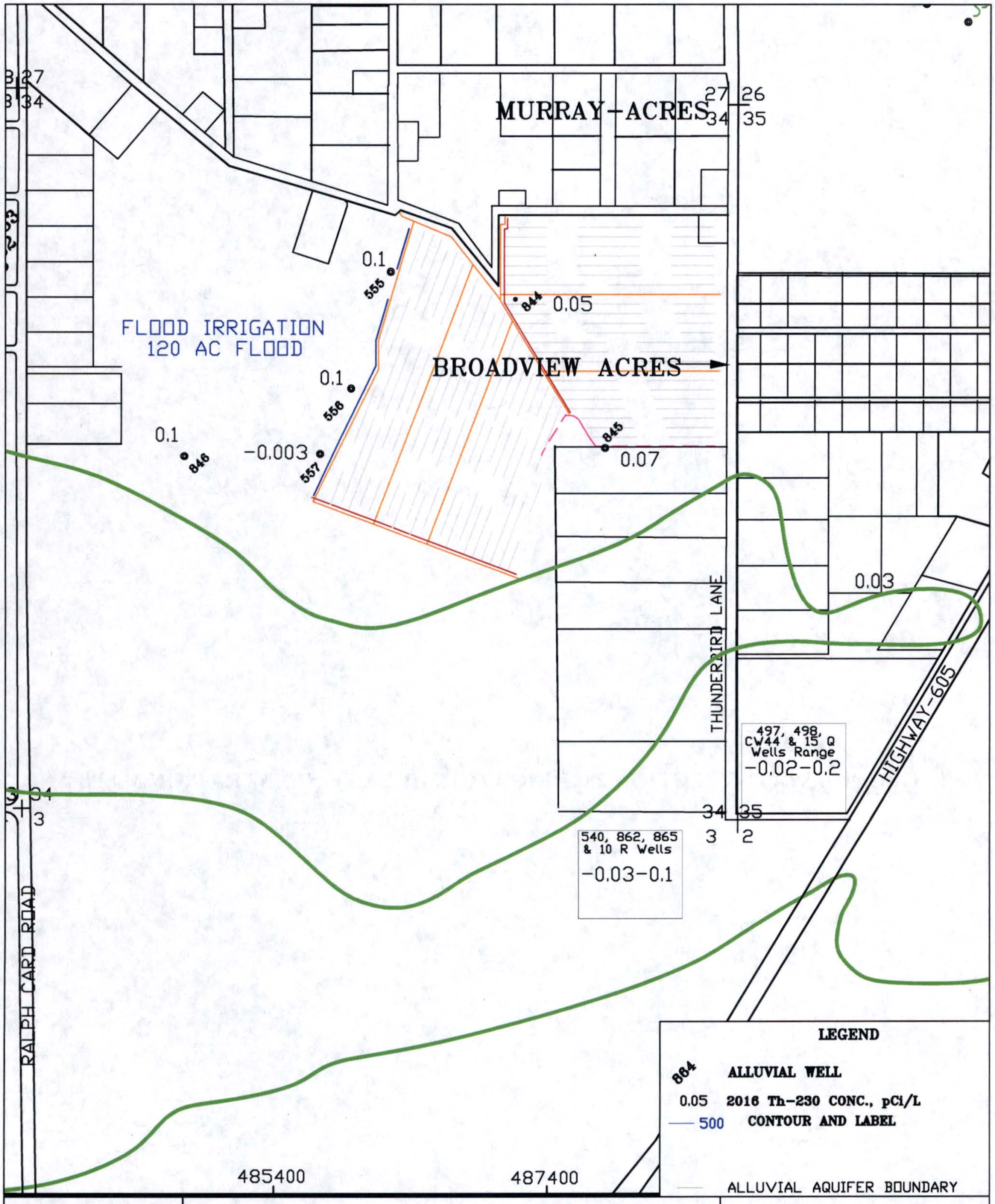
SCALE: 1" = 1000'

C:\PROJECTS\2017-06\1600QAL-IRRIGATIONsec34

DATE: 8/14/2017

FIGURE E-25. 2016 Vanadium ALLUVIAL CONCENTRATIONS IN SECTION 34, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO



SCALE: 1" = 1000' C:\PROJECTS\2017-06\ 1600QAL-IRRIGATIONsec34 DATE: 8/14/2017	**FIGURE E-26. 2016 Th-230 ALLUVIAL CONCENTRATIONS IN SECTION 34, pCi/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO

APPENDIX F

GROUND WATER SECTION 28 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

APPENDIX F

TABLE OF CONTENTS

GROUND WATER SECTION 28 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

FIGURES

TABLE OF CONTENTS

GROUND WATER SECTION 28 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES (CONTINUED)

TABLE OF CONTENTS

GROUND WATER SECTION 28 IRRIGATION AREA CONCENTRATION MAPS AND PLOTS

Page Number

FIGURES (CONTINUED)

TABLES

F.0 Section 28

The Section 28 area has consisted of 60 acres of center pivot irrigation from 2002 through 2004, and, after expansion of the center pivot area, 100 irrigated acres from 2005 through 2009 and in 2011 and 2012. Figure F-1 shows the location of the 100 acre center pivot. The Section 28 irrigation area exists over the San Mateo alluvial aquifer which extends to the western portion of Section 28. The San Mateo alluvium joins the Rio San Jose alluvium in the western portion of Section 28 and the background concentrations in the alluvial aquifer are the appropriate ground-water standards for the Section 28 irrigation zone. Numerous monitoring wells exist in this area and have been used to define the water quality changes with time (see Table F-1). Usage of San Andres well 951R for fresh water injection replaced well 951 in 2012. The TDS, sulfate, and chloride concentrations in well 951R are naturally higher than the values in well 951. The main monitoring wells for the North irrigation area are wells 881, 882, 884, 886 and 893. Additional wells are monitored for water quality changes down gradient of the center pivot which has very similar water quality to the alluvial aquifer in the center pivot area. Several wells are also monitored to define the water quality upgradient and to the east of the center pivot. The well data for the numerous new H wells added to the area are not included in the Table F-1 but are presented in the Annual Performance Report.

Table F-1. Section 28 Monitoring Well Data

WELL NAME	NORTH. COORD.	EAST. COORD.	WELL DEPTH (FT-MP)	CASING DIAM (IN)	WATER LEVEL DATE	WATER LEVEL DEPTH (FT-MP)	WATER LEVEL ELEV. (FT-MSL)	MP ABOVE LSD (FT)	MP ELEV. (FT-MSL)	DEPTH TO BASE OF ALLUVIUM (FT-LSD)	ELEV. TO BASE OF ALLUVIUM (FT-MSL)	CASING PERFOR-ATIONS (FT-LSD)	SATURATED THICKNESS
MQ	1543173	486326	98.0	5.0	3/16/2016	69.99	6504.31	1.6	6574.30	88	6484.7 A	58-98	19.6
0688	1541257	483955	105.0	5.0	12/13/2016	58.56	6504.06	2.9	6562.62	95	6464.7 A	65-105	39.3
0633	1541467	479642	83.0	8.0	12/6/2011	32.40	6525.16	0.0	6557.56	95	6462.6 A	11-83	62.6
0634	1541652	480362	103.0	4.5	12/12/2016	70.82	6489.25	2.8	6560.07	95	6462.3 A	80-100	27.0
0654	1541994	478636	120.0	4.5	12/12/2016	71.45	6479.05	1.4	6550.50	106	6443.1 A	60-120	36.0
0655	1541620	479830	96.0	8.0	4/15/2010	72.30	6485.88	---	6558.18	88	--- A	21-84	---
0656	1542578	478333	88.0	8.0	12/12/2016	72.00	6482.07	---	6554.07	88	--- A	6-88	---
0659	1541689	480772	101.0	4.5	12/12/2016	86.70	6473.47	2.0	6560.17	97	6461.2 A	61-101	12.3
0680	1543850	478746	80.0	4.5	12/12/2016	73.25	6485.62	2.0	6558.87	75	6481.9 A	50-80	3.8
0681	1540676	482734	117.0	6.0	12/13/2016	63.03	6497.49	2.1	6560.52	111	6447.4 A	67-117	50.1
0684	1540273	478499	143.0	6.0	10/13/2015	80.50	6472.78	2.0	6553.28	118	6433.3 A	83-143	39.5
0881	1542034	481478	96.0	4.5	12/12/2016	71.18	6493.86	2.0	6565.04	103	6460.0 A	76-96	33.8
0882	1541404	482396	110.0	4.5	2/18/2016	61.30	6499.86	2.0	6561.16	98	6461.2 A	70-110	38.7
0883	1540097	483039	100.0	5.0	11/30/2015	57.08	6500.05	1.9	6557.13	96	6459.3 A	60-90	40.8
0884	1542677	481498	90.0	5.0	2/18/2016	68.26	6497.84	1.0	6566.10	85	6480.2 A	58-88	17.7
0885	1541919	483474	100.0	5.0	12/12/2016	63.80	6500.84	1.5	6564.64	95	6468.1 A	70-100	32.7
0886	1542327	482487	90.0	5.0	12/12/2016	67.40	6497.15	1.5	6564.55	87	6476.1 A	60-90	21.1
0887	1543063	482469	67.0	5.0	12/12/2016	59.54	6508.19	1.5	6567.73	60	6506.2 A	42-67	2.0
0888	1542285	479335	105.0	5.0	12/12/2016	74.43	6482.90	1.1	6557.33	90	6466.2 A	75-105	16.7
0889	1540047	480222	65.0	5.0	11/30/2015	62.40	6487.23	1.5	6549.63	60	6488.2 A	35-65	0.0
M16	1543252	485112	93.3	5.0	12/12/2016	59.38	6511.21	1.4	6570.59	100	6469.2 A	60-100	42.0
MO	1543620	485518	88.0	4.5	12/12/2016	60.41	6512.48	2.0	6572.89	80	6490.9 A	45-85	21.6
MR	1542609	483574	100.0	5.0	12/12/2016	66.49	6499.77	1.8	6566.26	100	6464.5 A	54-94	35.3
MS	1542607	485570	82.0	5.0	6/30/2016	59.60	6511.07	1.5	6570.67	89	6480.2 A	52-82	30.9
MT	1543221	483531	98.0	4.5	12/12/2016	62.00	6505.43	2.3	6567.43	87	6478.1 A	34-94	27.3
MV	1542618	484418	105.0	4.5	12/12/2016	64.51	6505.27	1.3	6569.78	95	6473.5 A	75-105	31.8

Note: additional H wells have been added in the Section 28 area, see Annual Performance Report.

F.1 Sulfate Concentrations

Figure F-1 shows the sulfate concentrations for 2016 and the 1000 mg/l contour extends to the eastern edge of Section 28. In 2012, the 1000 sulfate contour extended through the central portion of Section 28 pivot but has been reduced by the ground water restoration in this area.

The sulfate concentration plots for wells 881, 882, 884, 886, 890 and 893 are shown on Figure F-2 with the site standard of 1500 mg/l. Well 890 is included with the North pivot monitoring wells because it shows the restoration that has occurred during the recent ground-water restoration west of the pivot. This figure shows that the sulfate concentrations were decreased significantly in monitoring wells 884 and 886 in 2006 through 2008. These two wells are located in the north half of the pivot in Section 28 and show the reduction of the sulfate concentrations along the northern edge in Section 28 due to fresh water injection to the north of these wells. Sulfate concentrations increased in these wells in 2011 and 2012 due to variation in the fresh water injection. It is difficult to determine if the Section 28 center pivot irrigation had any effect on the sulfate concentrations in the alluvial aquifer in this area because higher concentrations exist in the North plume ground water.

Sulfate concentration plots for wells MQ, MR, MS, MV and 885 which are upgradient of the Section 28 irrigation are shown on Figure F-3 with the site standard of 1500 mg/l. Concentrations from wells 885 and MS are similar to those in the Section 28 irrigation area while concentrations are some higher in the remainder of the wells in this plot. This figure shows that the sulfate concentrations upgradient of Section 28 could cause the concentrations to slightly increase in Section 28 with time.

F.2 TDS Concentrations

TDS concentrations for the alluvial aquifer in Section 28 are presented in Figure F-4 and shows the 2000 mg/l contour extending to the west side of the center pivot in 2016. The 2000 mg/l contour existed farther to the west prior to the start of the irrigation. Figure F-5 shows similar declines in TDS concentrations relative to the site standard of 2734 mg/l in wells 884 and 886 as those observed for sulfate concentrations. Some decrease in the last few years has occurred after the increases in 2011 and 2012 due to the ground water restoration program (see the recent decline in well 890).

Figure F-6 presents the TDS concentration plots for wells MQ, MR, MS, MV and 885 which are upgradient of Section 28. Concentrations from wells MQ and MR are slightly higher than those in the Section 28 irrigation area and could cause the concentrations to slightly increase in Section 28 with time.

F.3 Chloride Concentrations

The chloride concentrations in Section 28 are presented in Figure F-7 for 2016. The chloride contour of 200 mg/l extends to the western edge of the Section 28 pivot. The fresh water injection in this area (see Figures F-8 and F-9 for the time plots and the site standard of 250 mg/l) decreased the chloride concentrations in wells 884 and 886 in 2007 through 2009. The chloride concentrations in the fresh water injection supply increased from 60 to 150 mg/l in 2012 due to switching from well 951 to 951R. The recent decline in well 890 is due to using the post treatment tank (PTT) water for ground-water restoration in this area. These plots also show that the chloride concentrations are only slightly higher upgradient of the irrigation area.

F.4 Uranium Concentrations

The uranium concentrations for the alluvial aquifer in Section 28 are presented in Figure F-7. This figure shows a green pattern which is the area where concentrations exceed the site standard of 0.16 mg/l in 2016. The pre-irrigation contour and pattern extended further to the west and southwest of the area than in the more recent 2016 mapping which reflects the Off-site restoration system operation in Section 28. Figure F-11 shows the decrease in concentrations that have been observed in monitoring well 884. The recent decreases in uranium concentrations observed in North collection supply well 890 shows the uranium restoration that has occurred near the western limit of the North plume. The North plume uranium concentrations make it very difficult to determine if any change in ground water uranium concentration is due to the center pivot irrigation.

Figure F-12 presents the uranium concentration plots for wells MQ, MR, MS, MV and 885 which are upgradient of Section 28. Uranium concentrations from well MQ are higher than those in the Section 28 irrigation area and could cause the concentrations to slightly increase in Section 28 with time.

F.5 Selenium Concentrations

Figure F-13 presents the 2016 selenium concentrations for the Section 28 area. The selenium concentration contour of 0.1 mg/l extended to the western edge of Section 28 prior to irrigation and has been restored to the point where the contour does not extend to the western half of Section 27 in 2016.

Figure F-14 presents the selenium concentration time plot for the Section 28 monitoring wells and shows the site standard of 0.32 mg/l. This plot shows a decline in the selenium concentrations in wells 884 and 886. Selenium concentrations are presently small in all of these wells. If any selenium effects on the ground water from the Section 28 irrigation occurred, they have dissipated. The selenium plot of the wells upgradient of Section 28 shows some values slightly higher than the Section 28 values but are not significant relative to the site standard (see Figure F-15).

F.6 Molybdenum Concentrations

The molybdenum concentrations for the alluvial aquifer are presented in Figure F-16. This area shows very low molybdenum concentrations except for a small value in well MR and the area in western portion of Section 27 where the site standard is exceeded in a small area. Figures F-17 and F-18 show the molybdenum concentrations have been very small in the Section 28 monitoring wells relative to the site standard of 0.1 mg/l but have been higher in upgradient well MQ (see Figure 4-1 for location of well MQ). This data shows that the alluvial ground-water molybdenum concentrations in the Section 28 area have not been affected by the application of water to this irrigation area.

F.7 Nitrate Concentrations

The nitrate concentrations in 2016 only exceeded 10 mg/l to the northeast of Figure F-19 in a portion of the eastern half of Section 27 and adjacent to the zero saturation boundary. The nitrate concentrations that are slightly higher in the center pivot area are thought to be remnants from the higher values that existed in the northern portion of Section 28 prior to irrigation. Figures F-20 and F-21 present the nitrate concentrations with time and shows very small changes in nitrate concentrations except for the decreases in Section 28 wells 884 and 886 and upgradient wells MQ and MR. No effects on the ground water nitrate concentrations from the center pivot irrigation have been observed.

F.8 Radium-226 plus Radium-228 Concentrations

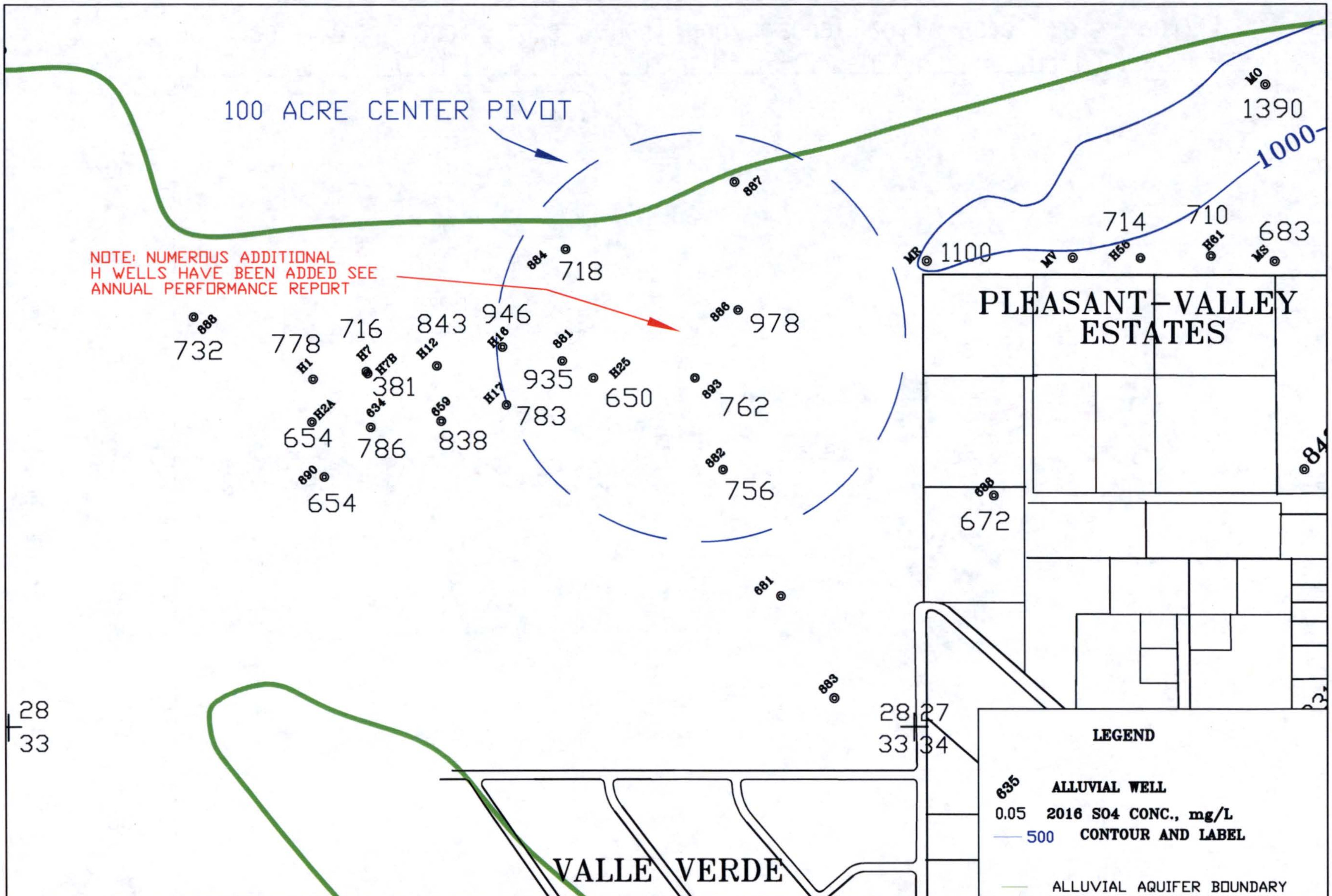
The radium-226 plus radium-228 concentrations for the alluvial aquifer are presented in Figure F-22. This map shows very low radium levels except for a few slightly higher values which are thought to be laboratory outliers. Figures F-23 and F-24 show the radium concentrations have been small in the Section 28 and upgradient monitoring wells. This data shows that the alluvial ground-water radium concentrations in Section 28 have not been affected by the application of water to this irrigation area as expected because the irrigation water contained only low levels of radium.

F.9 Vanadium Concentrations

The vanadium concentrations in 2016 only exceeded the detection limit in one well in the Section 28 wells and this value is thought to be an outlier because values before and after this value are less than this value (see Figure F-25). The monitoring of vanadium concentrations in Section 28 show that vanadium in the alluvial ground water has not been affected by the Section 28 irrigation as expected since vanadium concentrations in the irrigation water were very small.

F.10 Thorium-230 Concentrations

The thorium-230 concentrations for the alluvial aquifer are presented in Figure F-26. This map shows very low thorium levels except for a few slightly higher values which are thought to be laboratory outliers. The slightly higher values are below the site standard and not supported by previous values from the wells. This data shows that the alluvial ground-water thorium levels in Section 28 have not been affected by the application of water to this irrigation area as expected because the thorium levels in the irrigation water were not significant.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\ 1600QAL-IRRIGATION

DATE: 6/16/17

FIGURE F-1. 2016 SULFATE ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY

GRANTS, NEW MEXICO

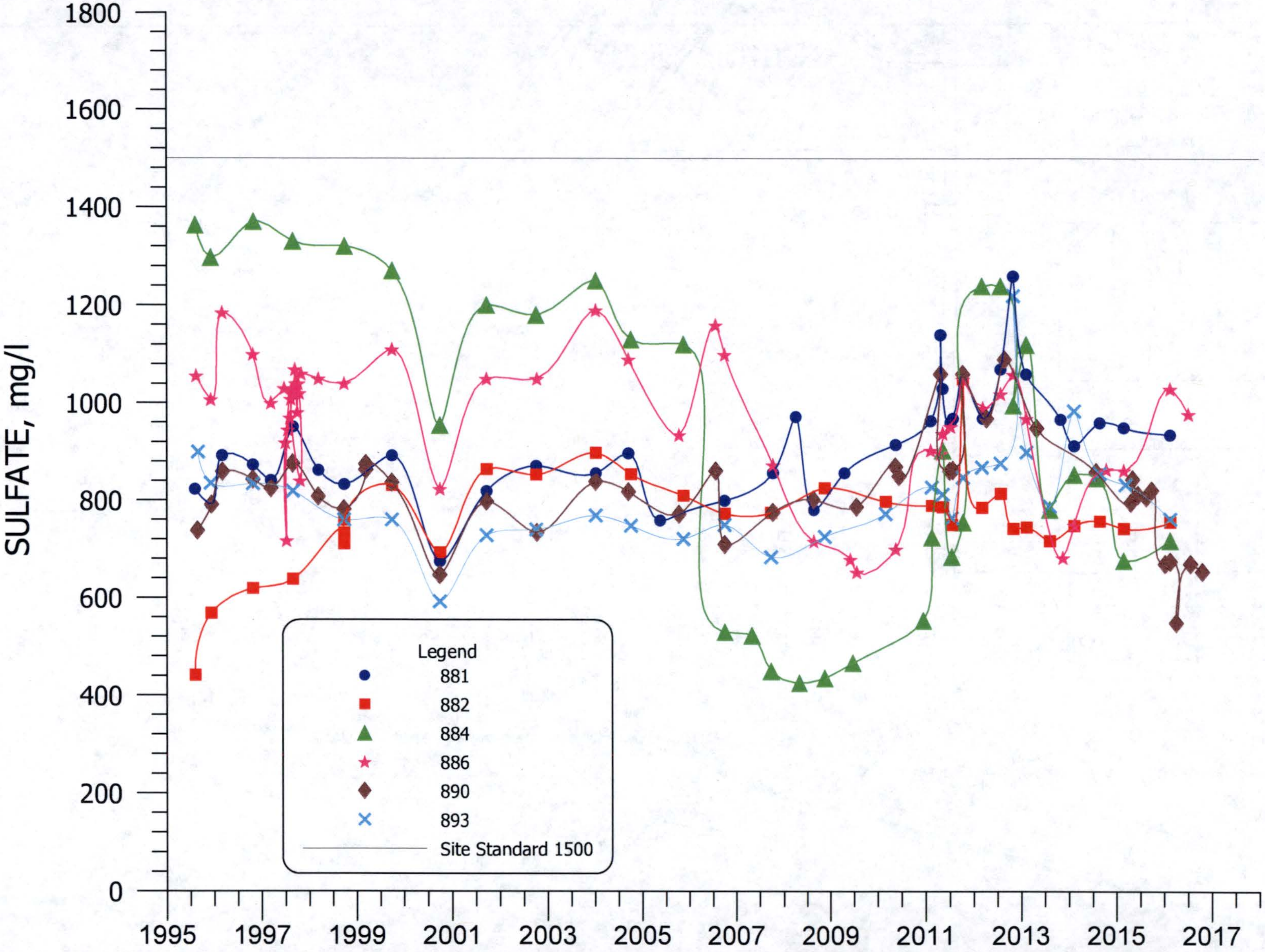


FIGURE F-2. SULFATE CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

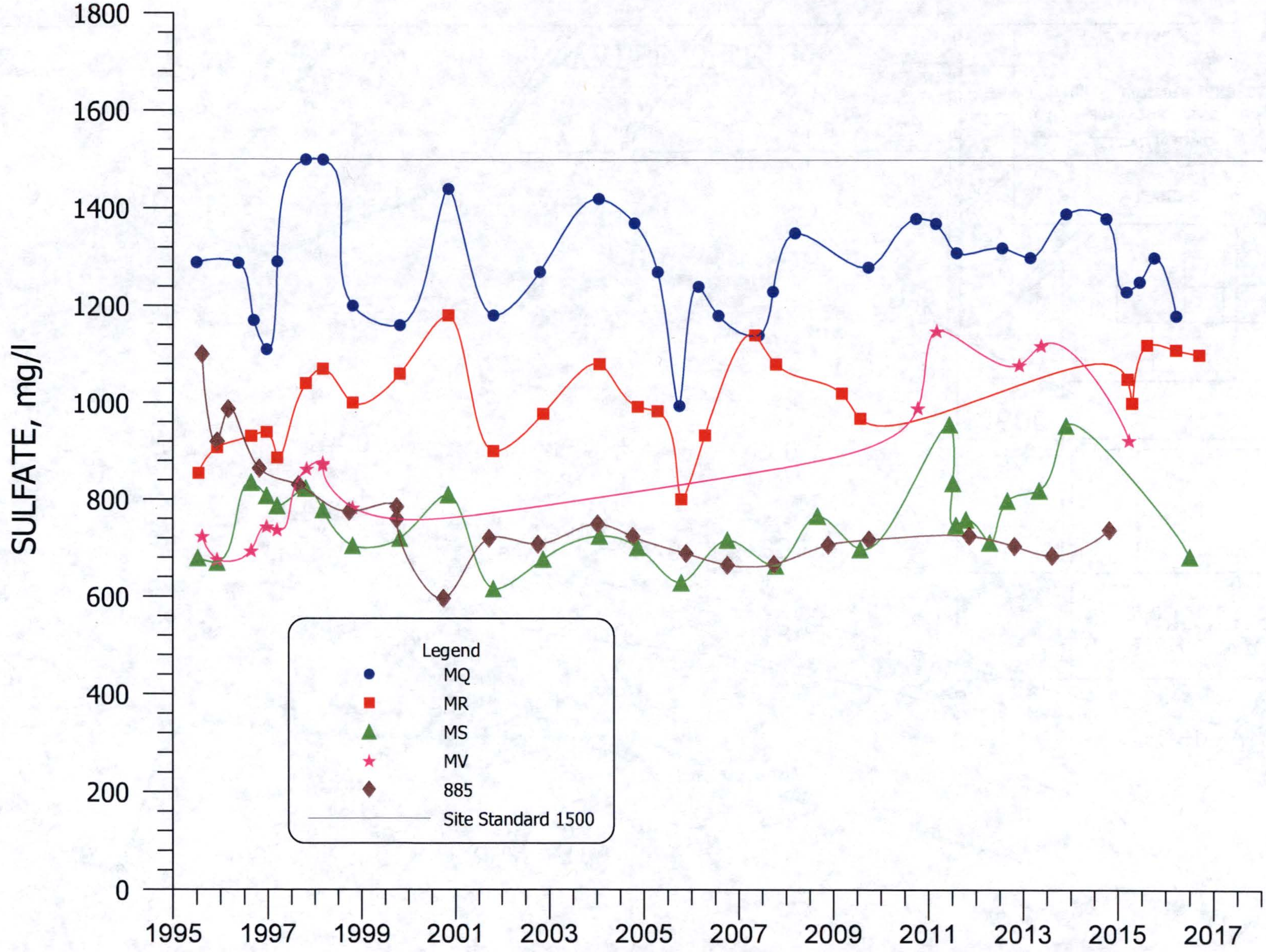
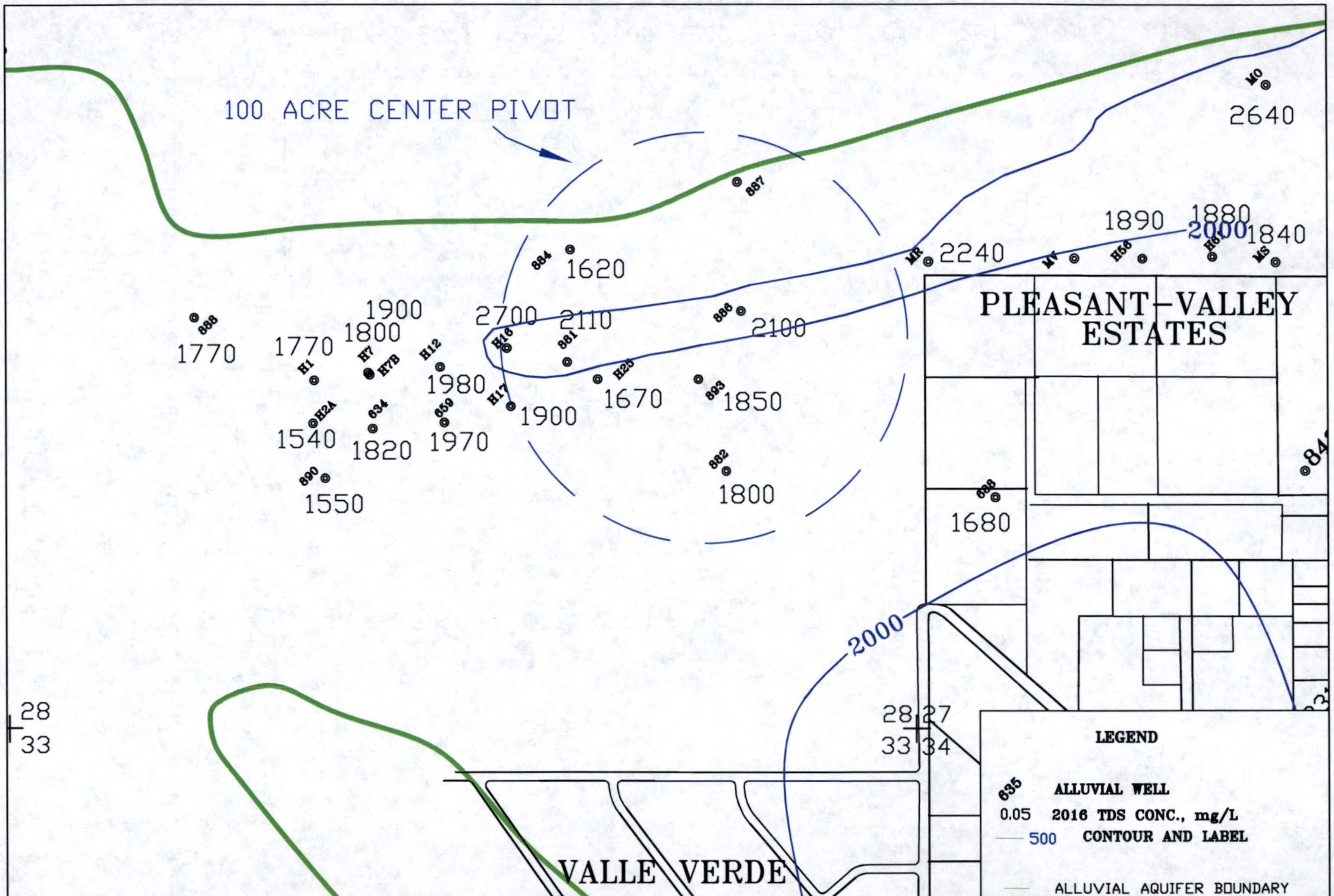


FIGURE F-3. SULFATE CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\1600GAL-IRRIGATION

DATE: 9/18/17

FIGURE F-4. 2016 TDS ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

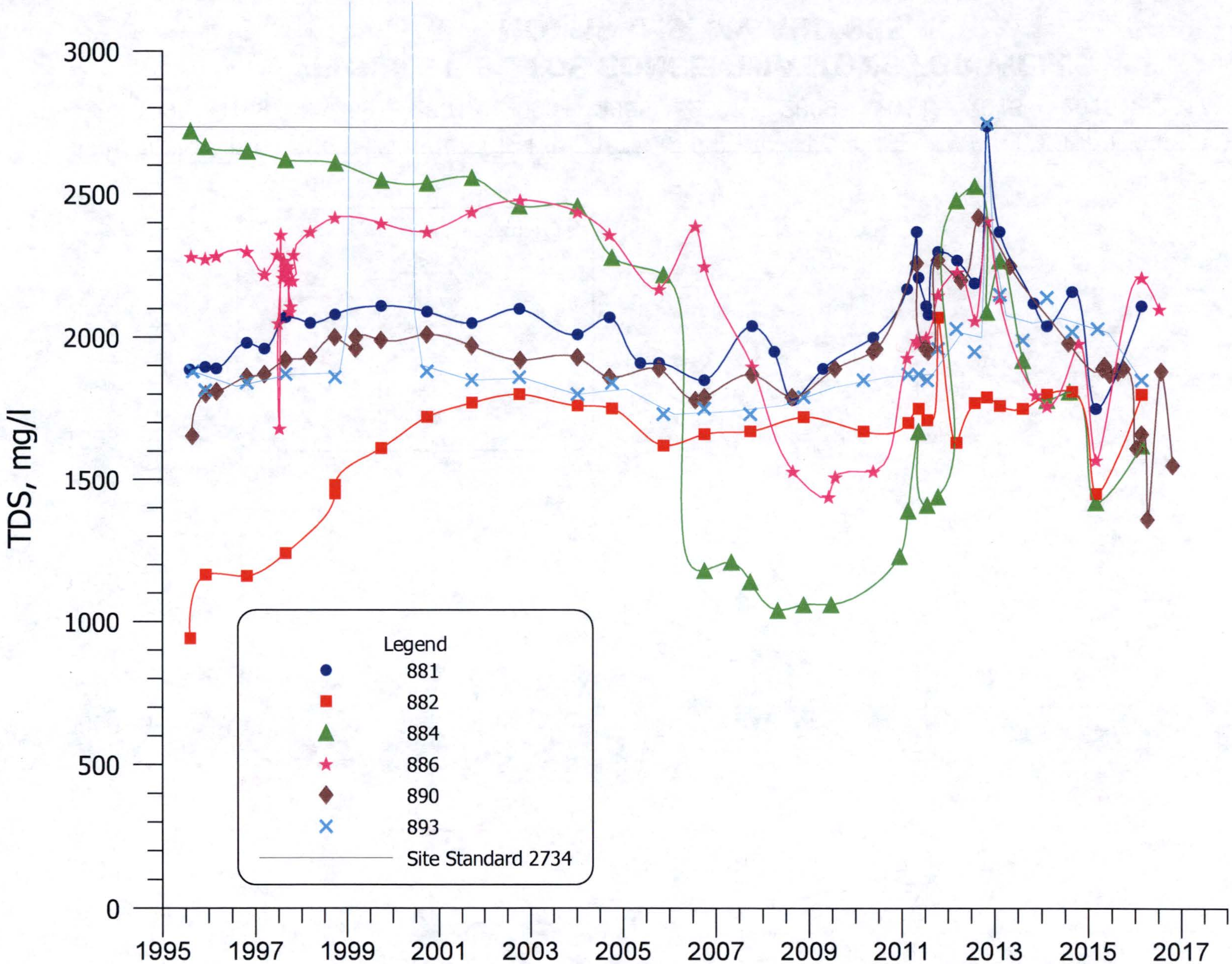


FIGURE F-5. TDS CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

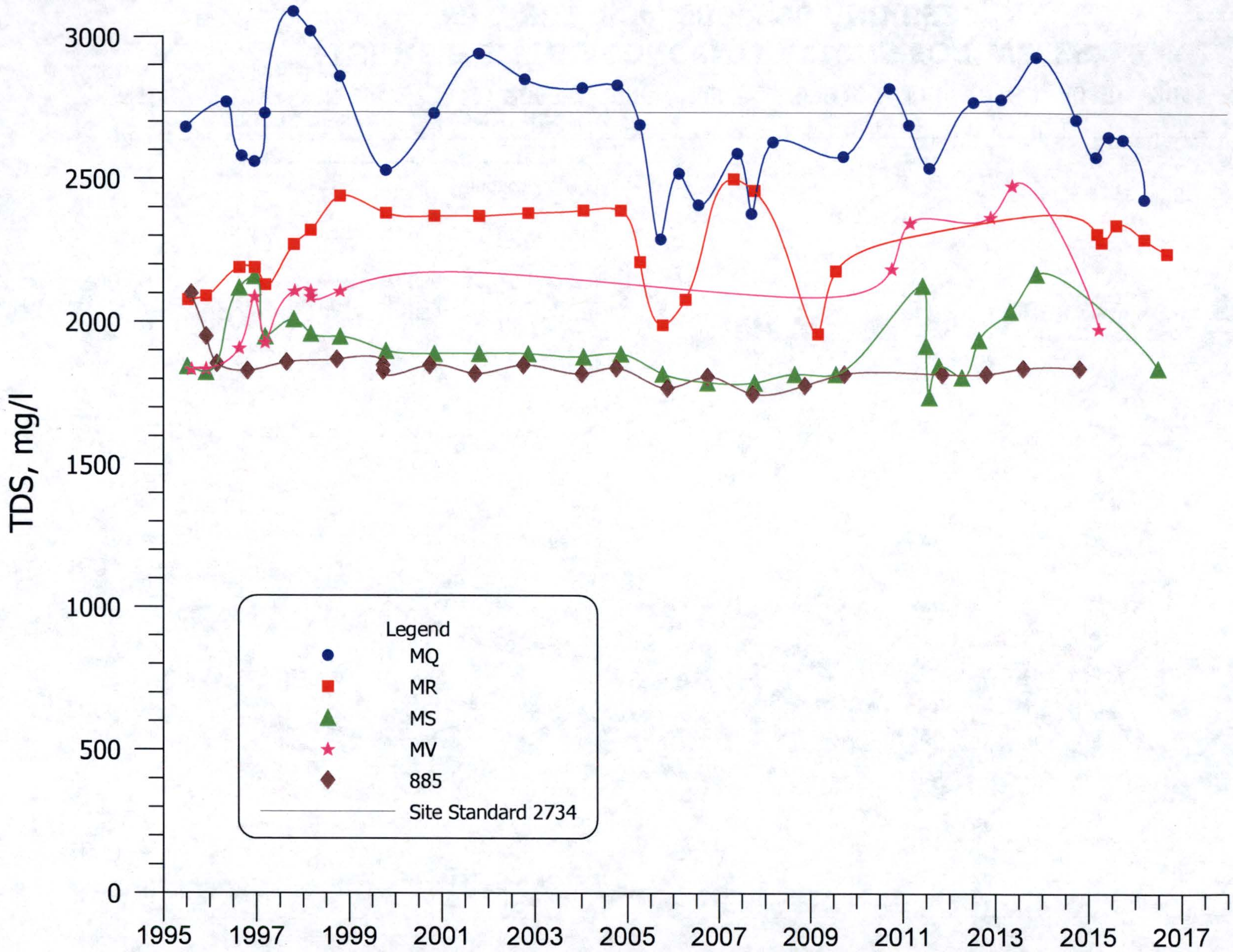
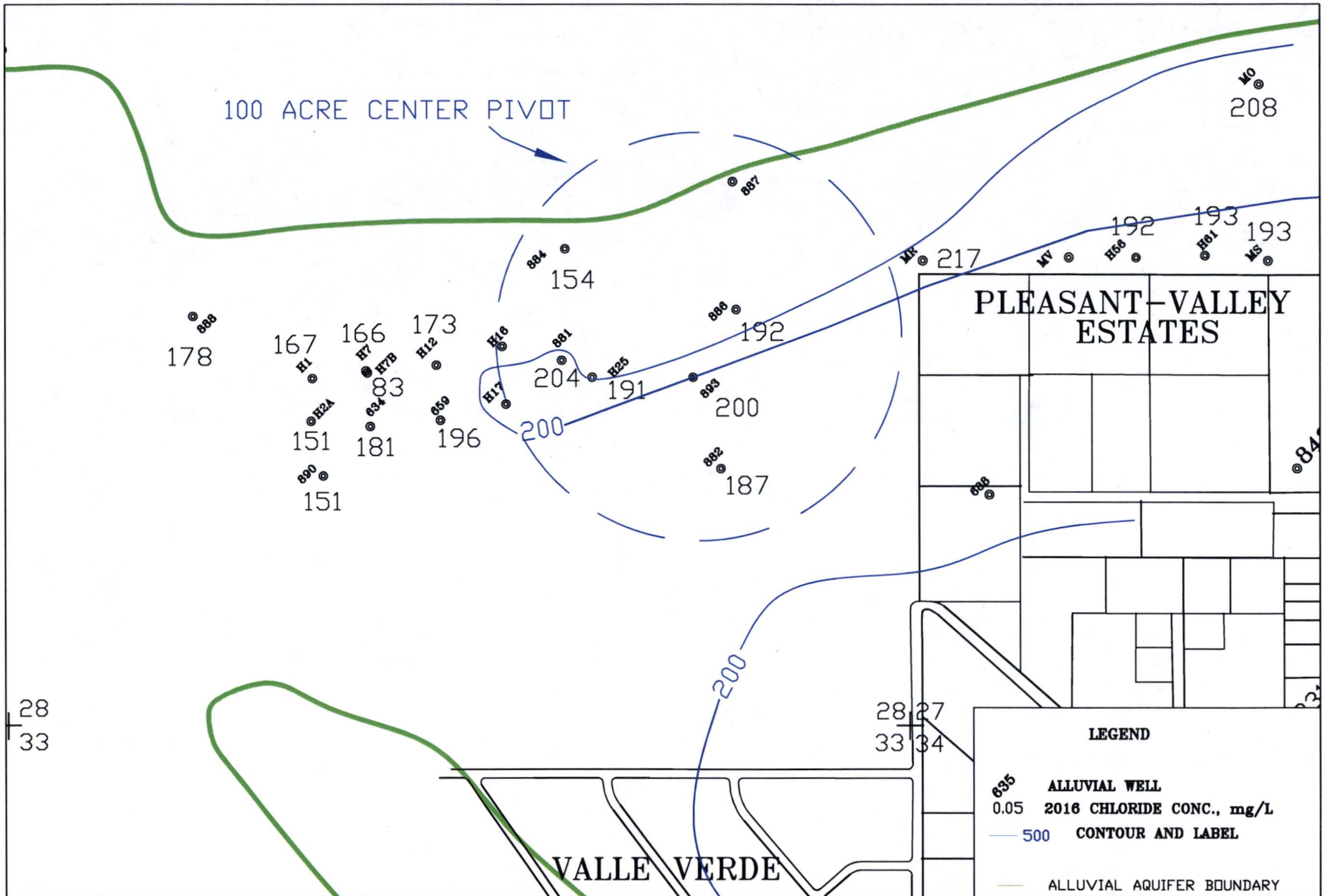


FIGURE F-6. TDS CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\ 1600QAL-IRRIGATION

DATE: 9/18/17

FIGURE F-7. 2016 CHLORIDE ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY

GRANTS, NEW MEXICO

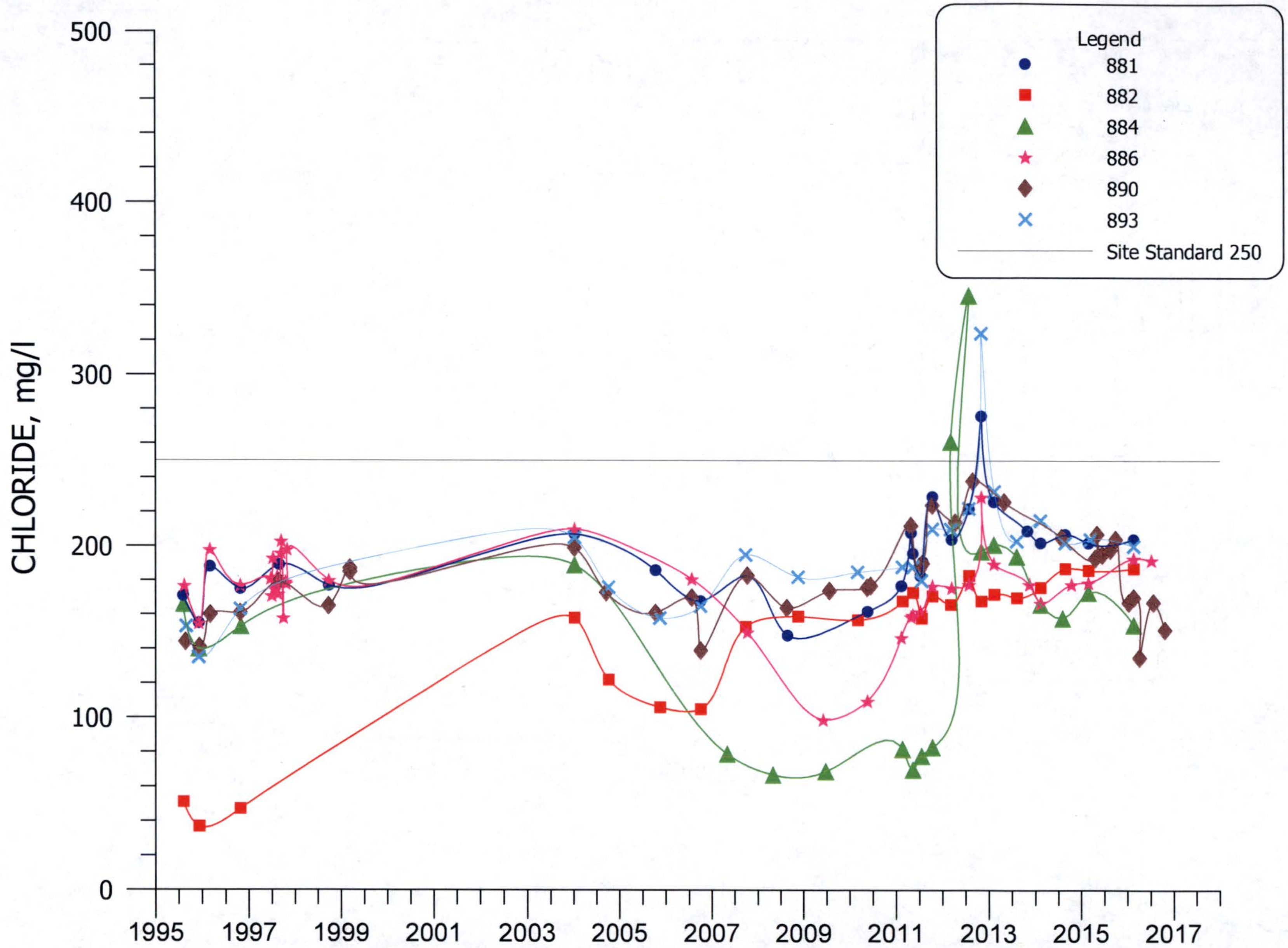


FIGURE F-8. CHLORIDE CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

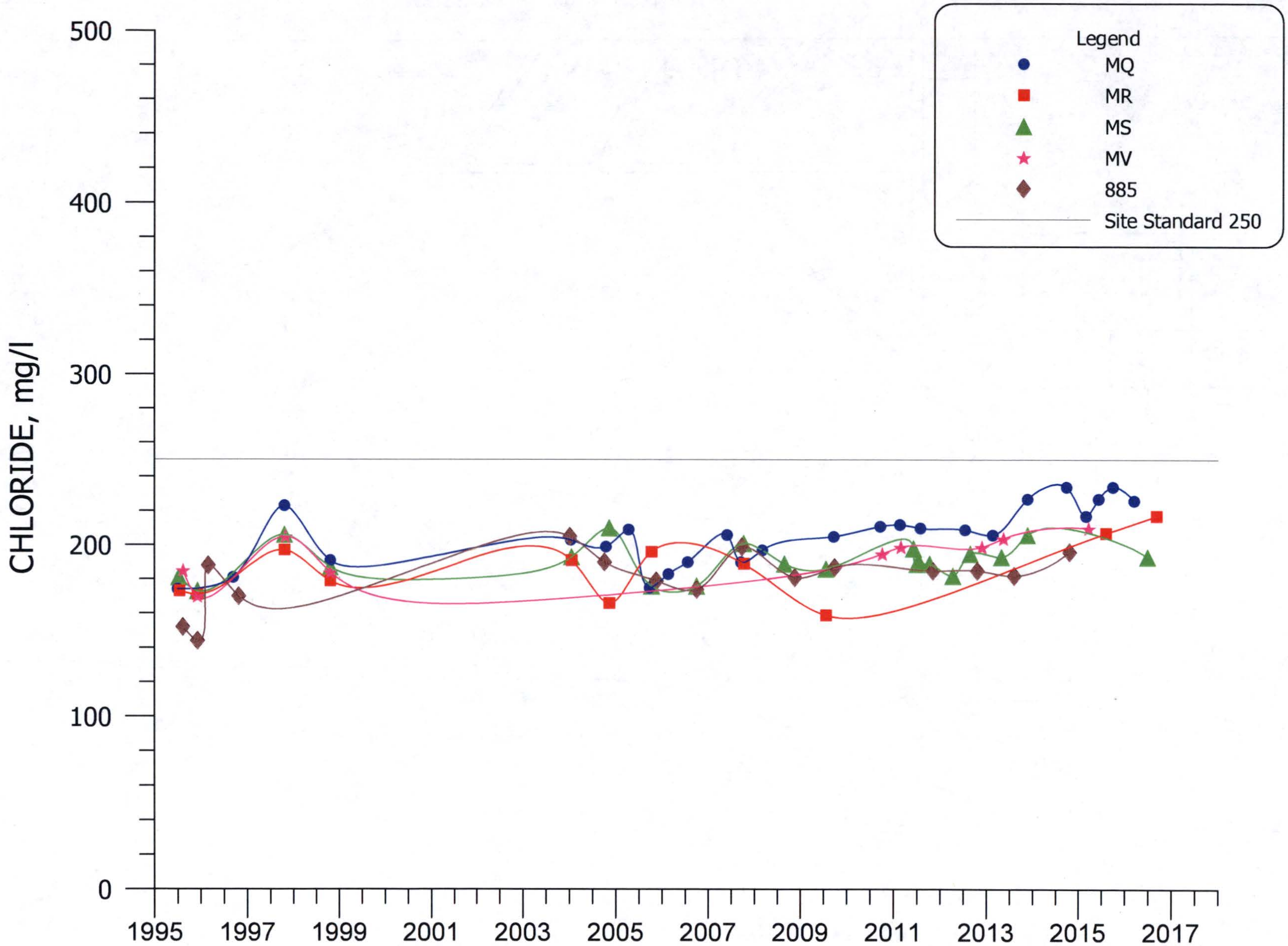
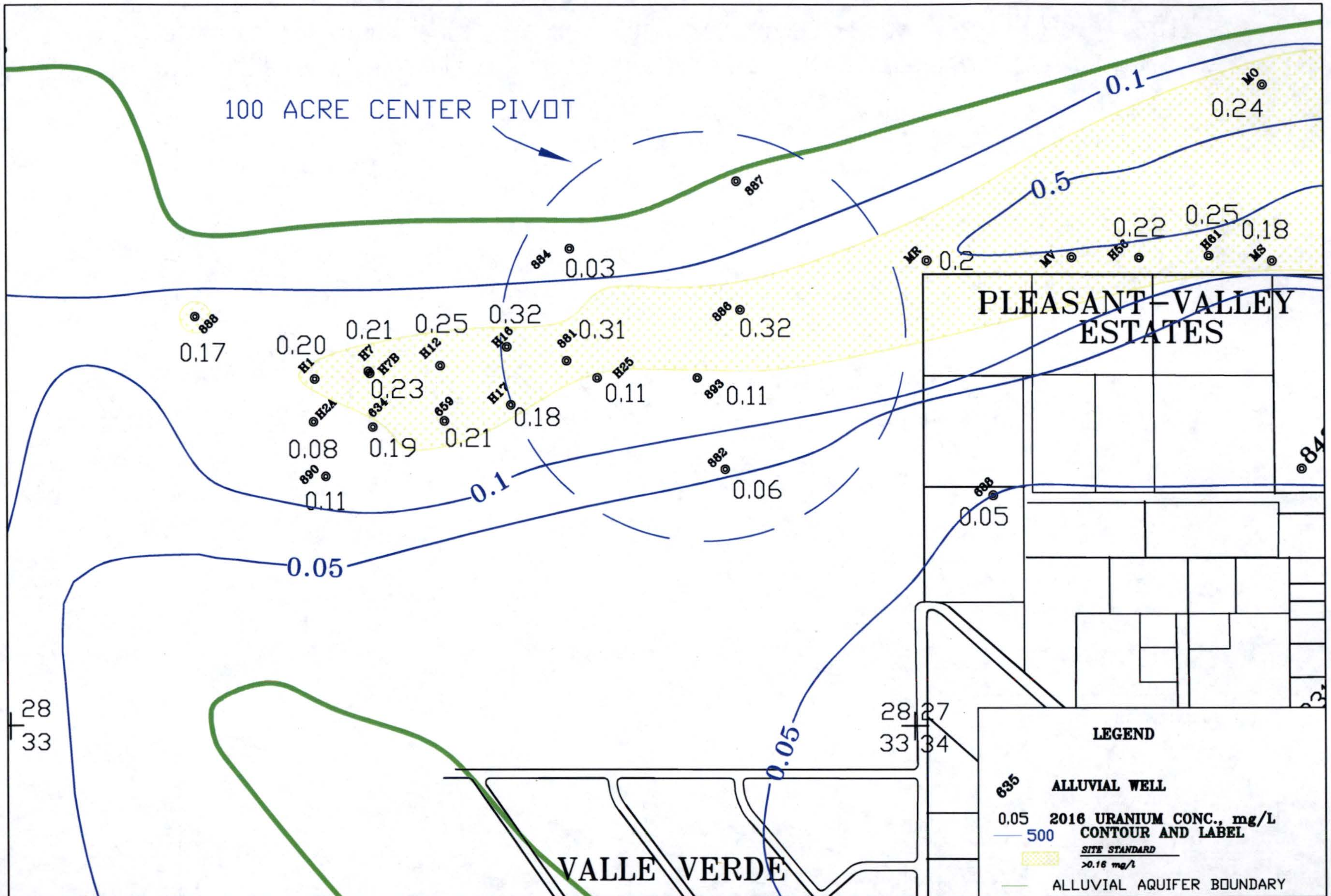


FIGURE F-9. CHLORIDE CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\
1600QAL-IRRIGATION

DATE: 9/18/17

FIGURE F-10. 2016 URANIUM ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

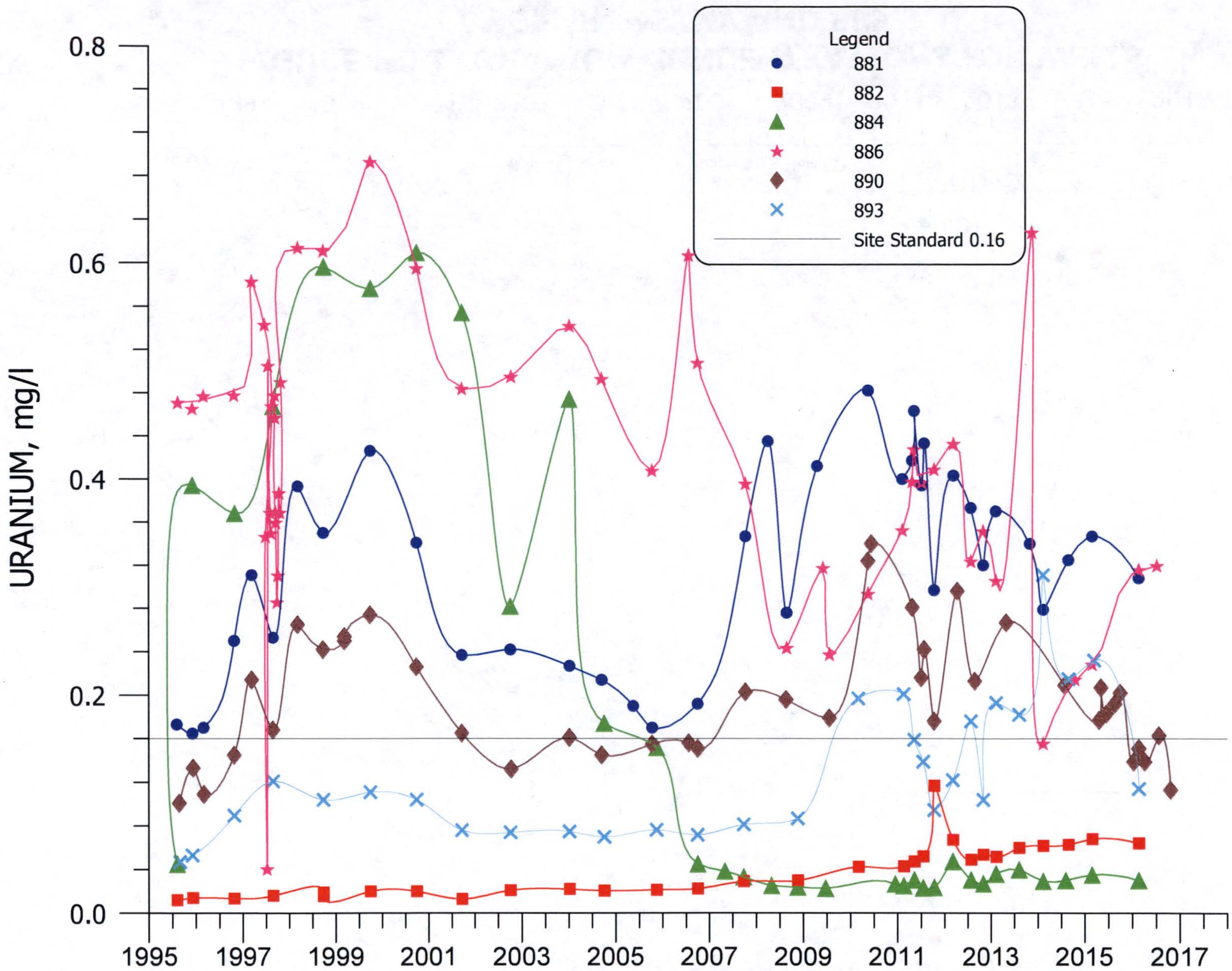


FIGURE F-11. URANIUM CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

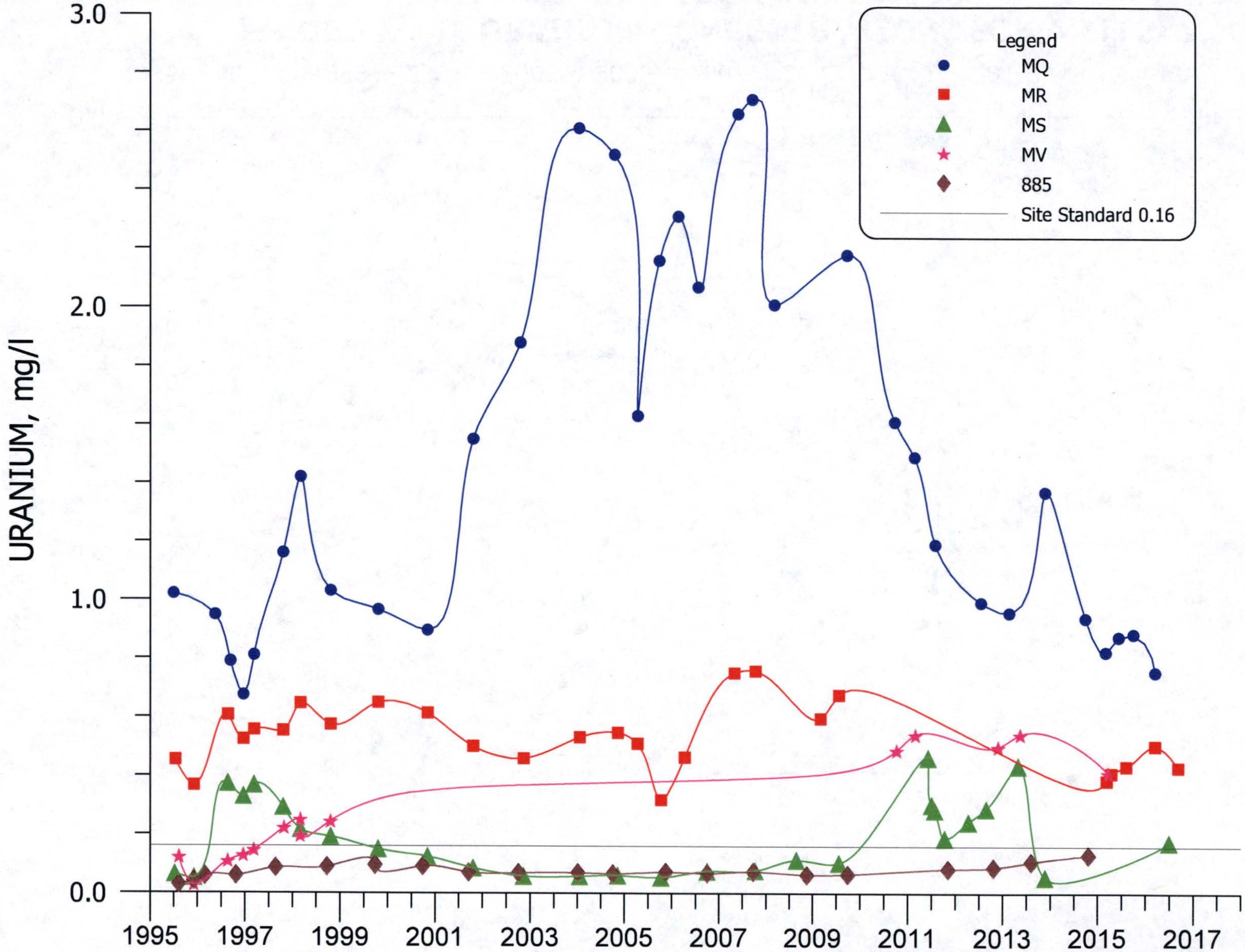
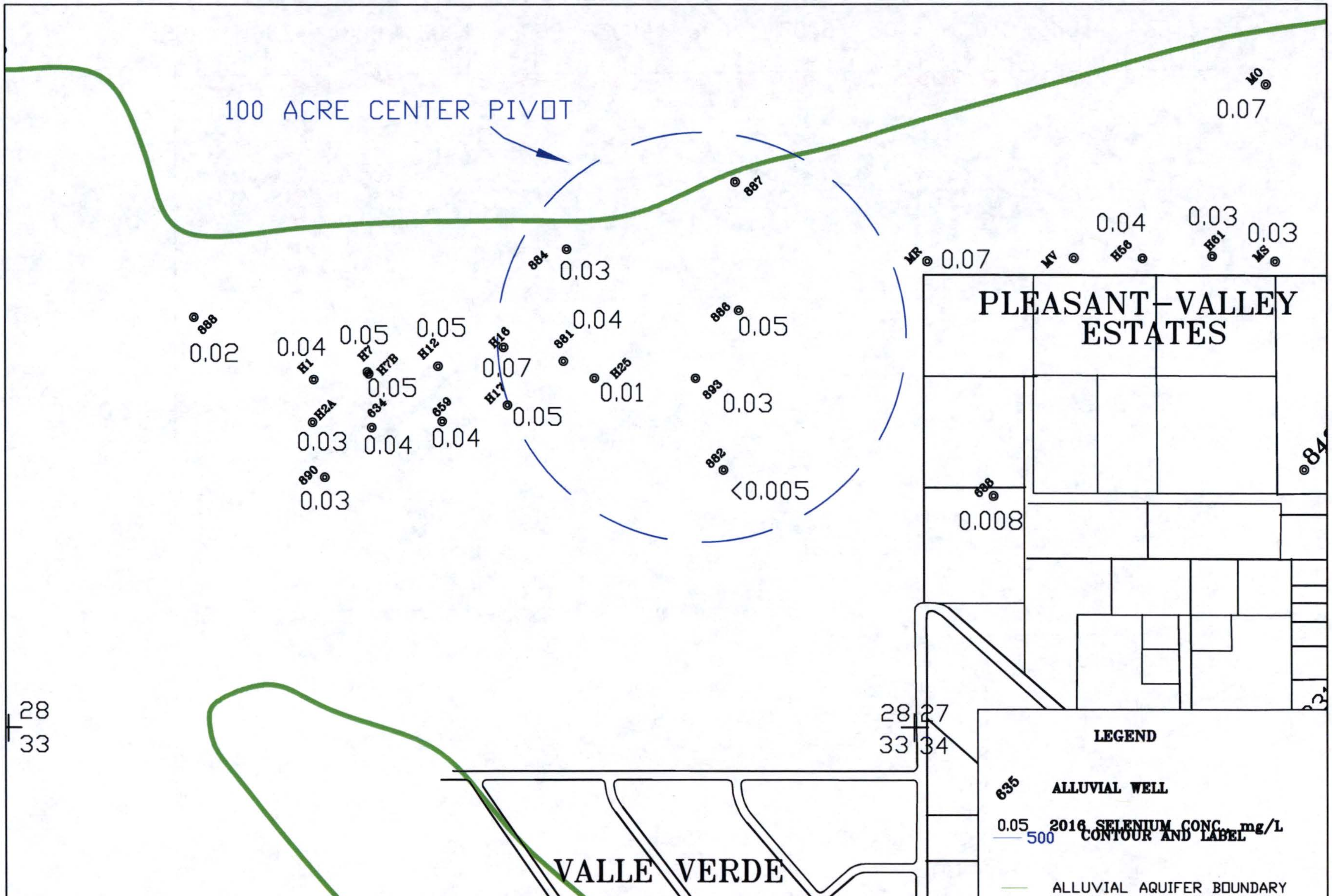


FIGURE F-12. URANIUM CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\1600QAL-IRRIGATION

DATE: 9/18/17

FIGURE F-13. 2016 SELENIUM ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

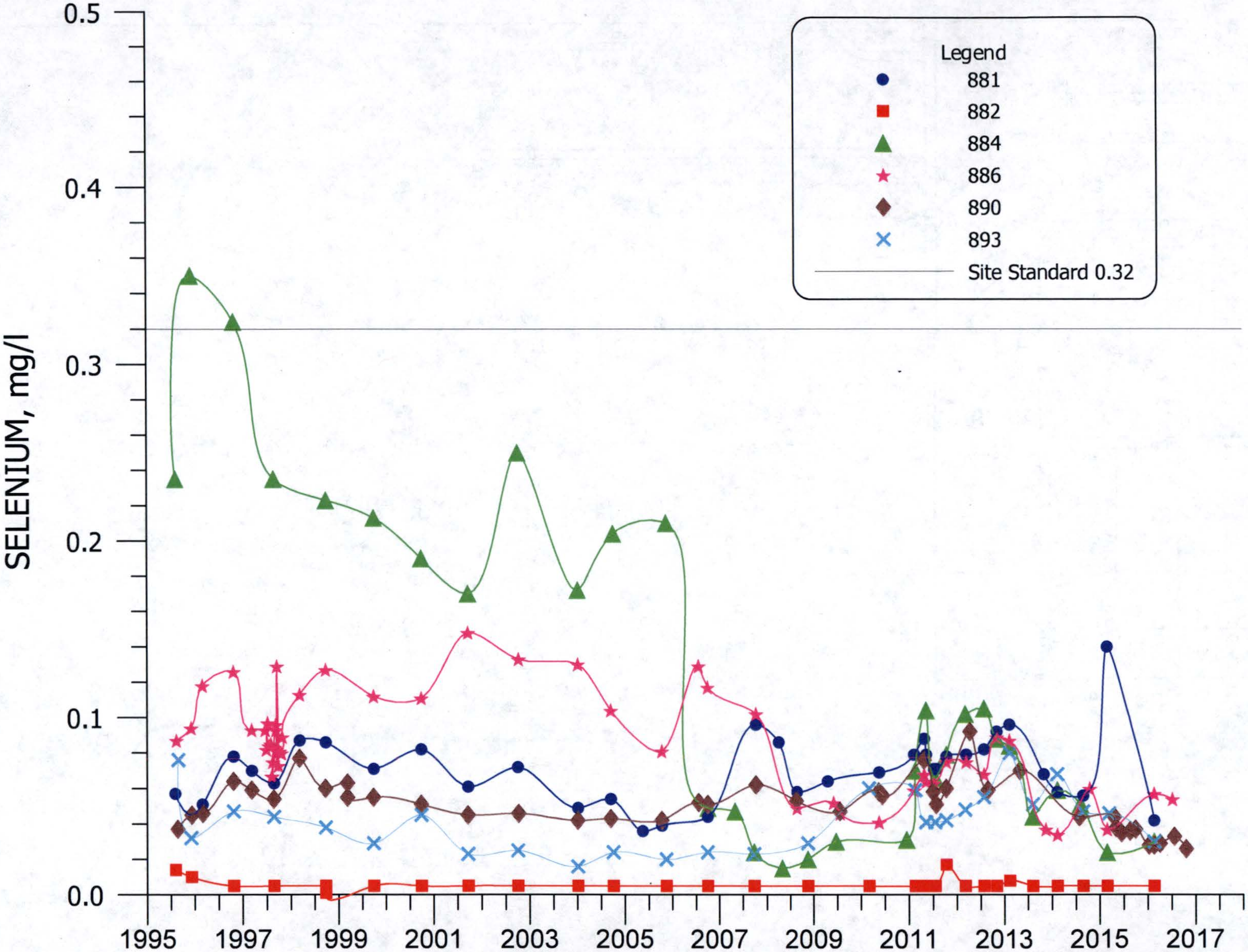


FIGURE F-14. SELENIUM CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

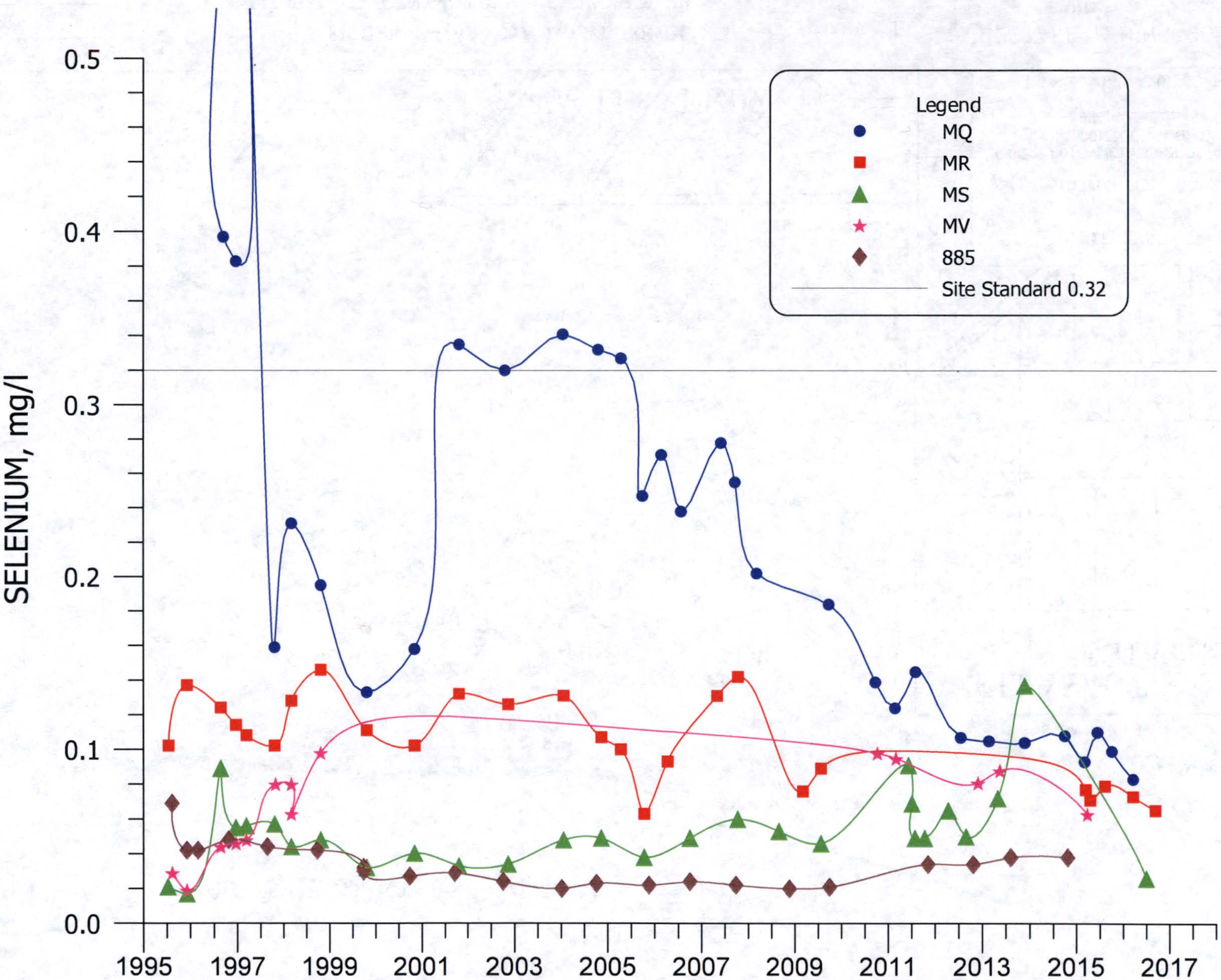
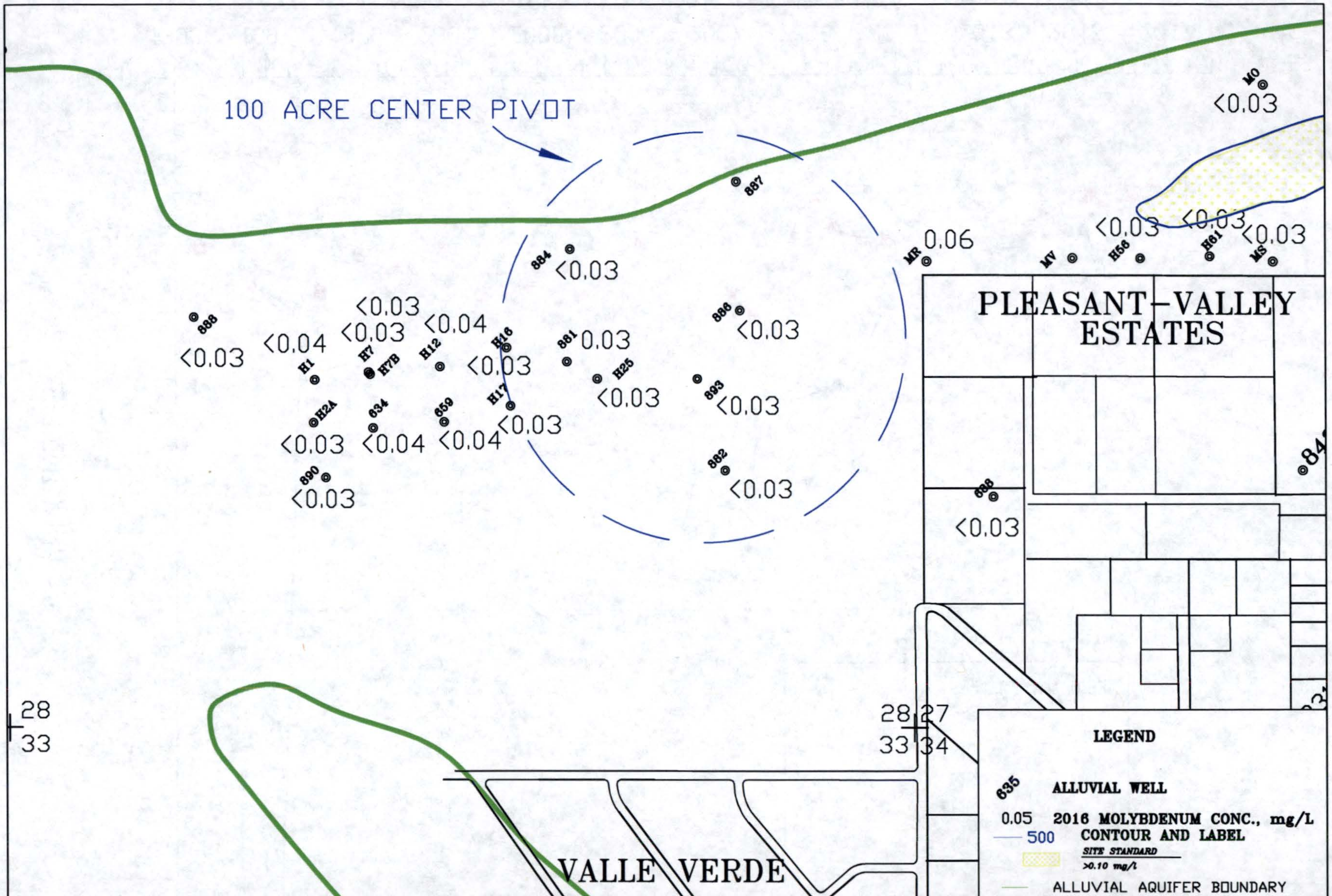


FIGURE F-15. SELENIUM CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\ 1600GAL-IRRIGATION

DATE: 9/18/17

FIGURE F-16. 2016 MOLYBDENUM ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

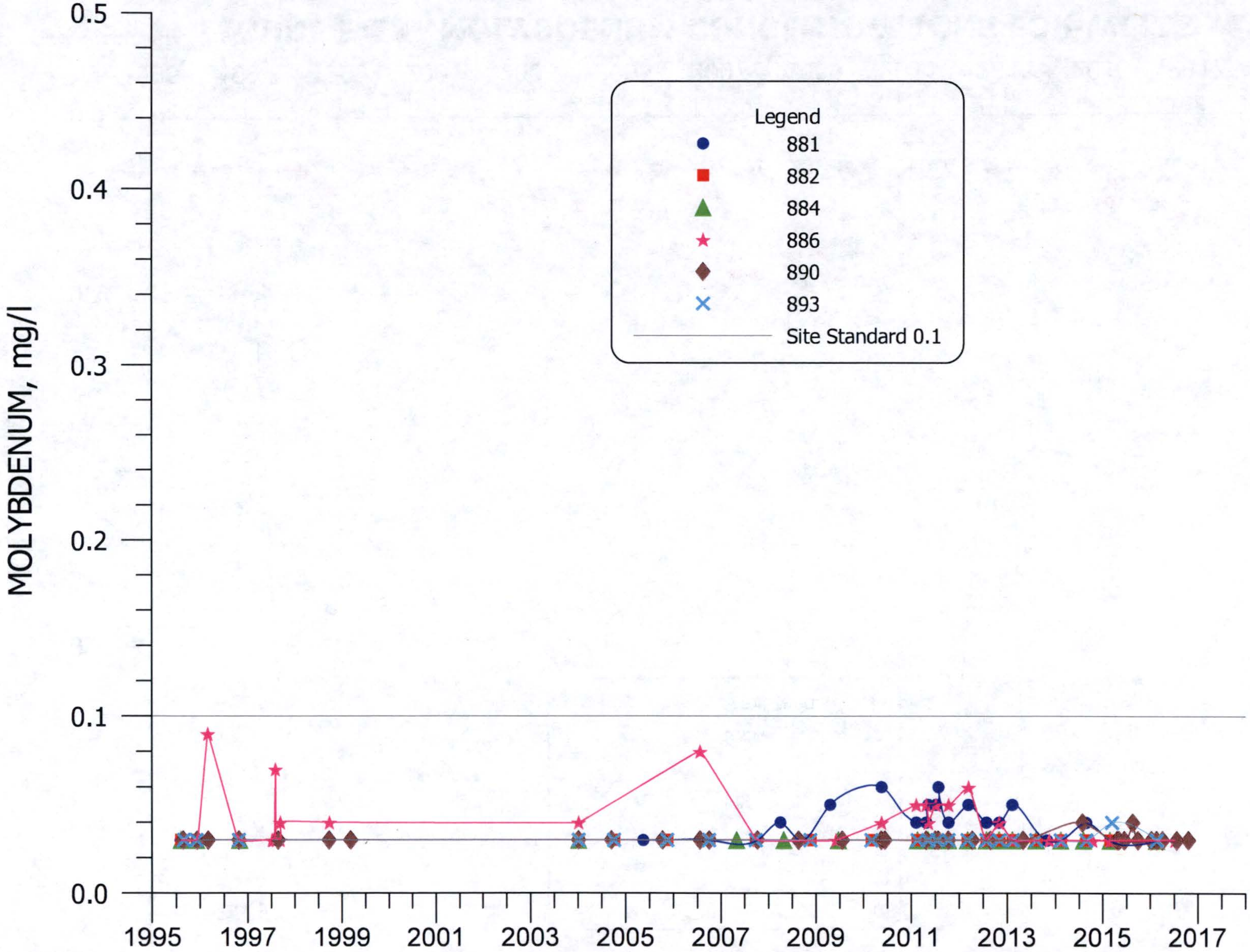


FIGURE F-17. MOLYBDENUM CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

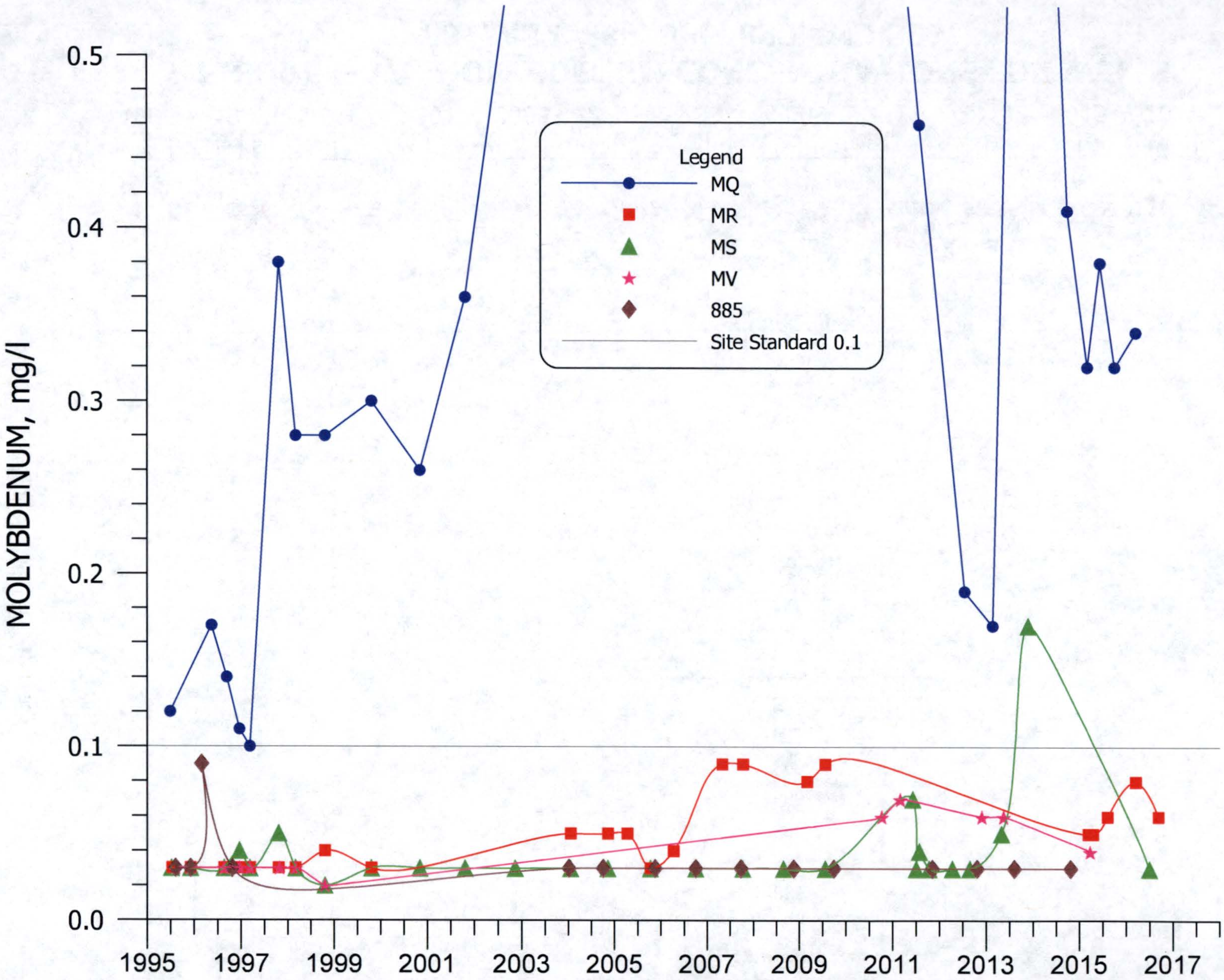
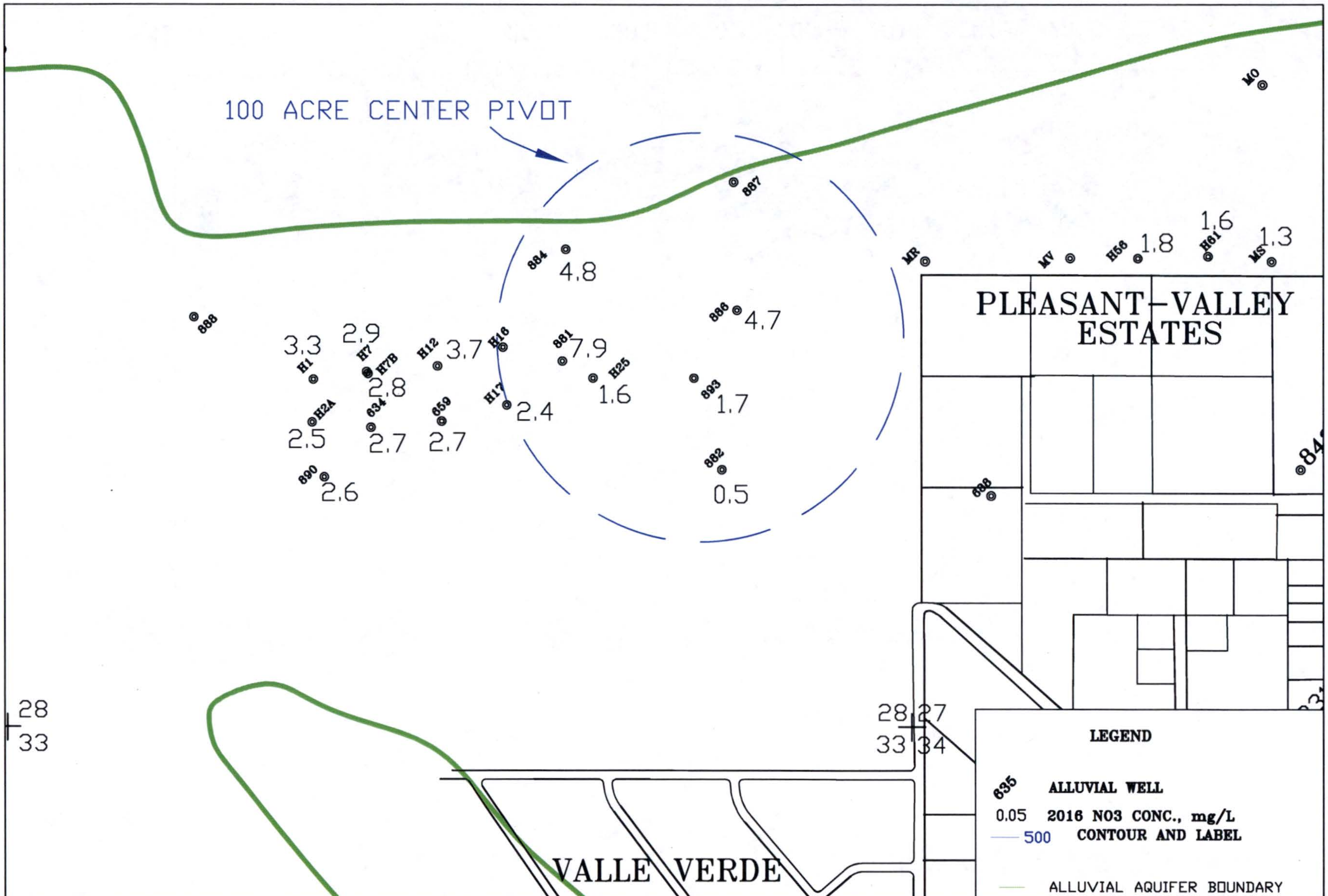


FIGURE F-18. MOLYBDENUM CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\
1600QAL-IRRIGATION

DATE: 9/18/17

FIGURE F-19. 2016 NITRATE ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

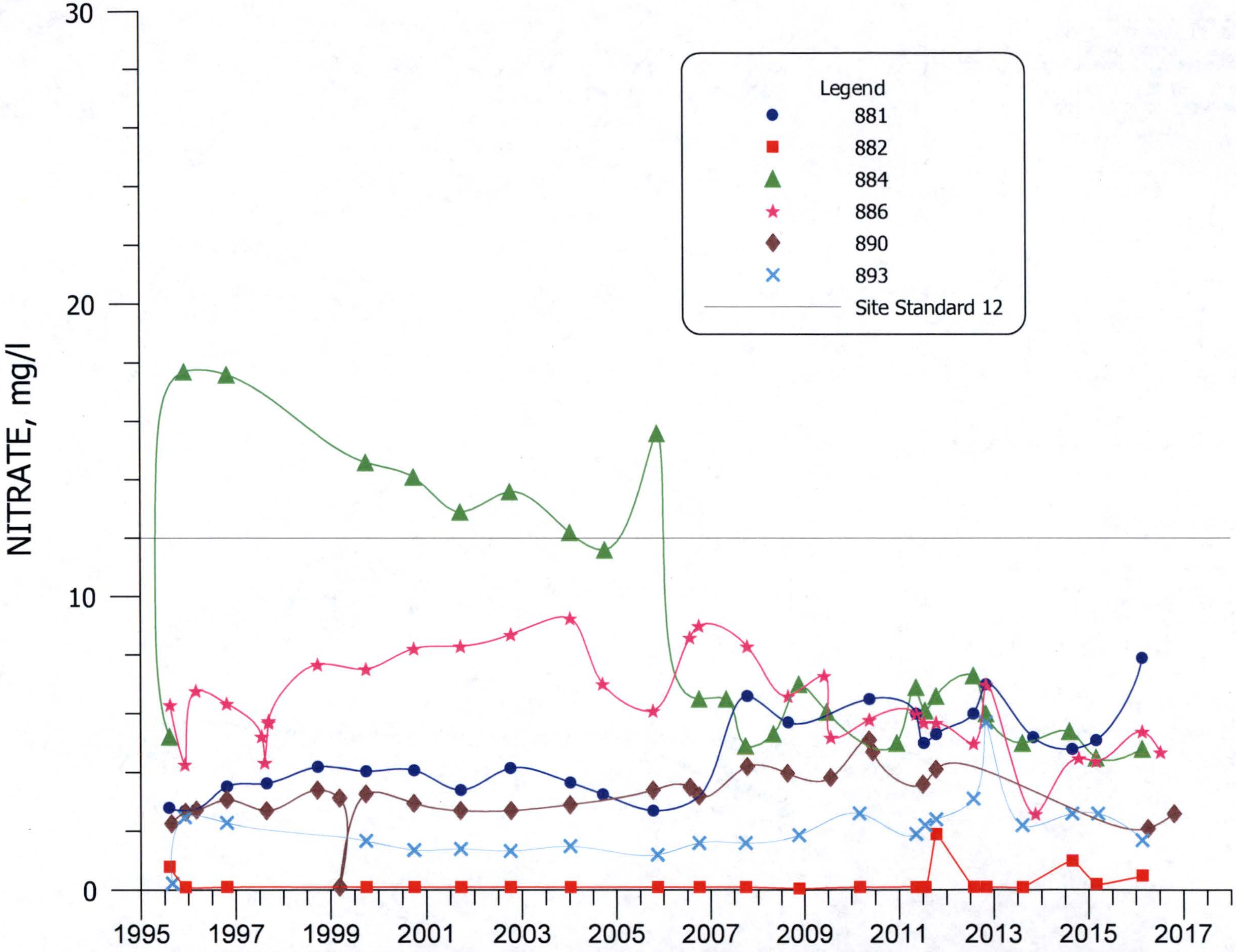


FIGURE F-20. NITRATE CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

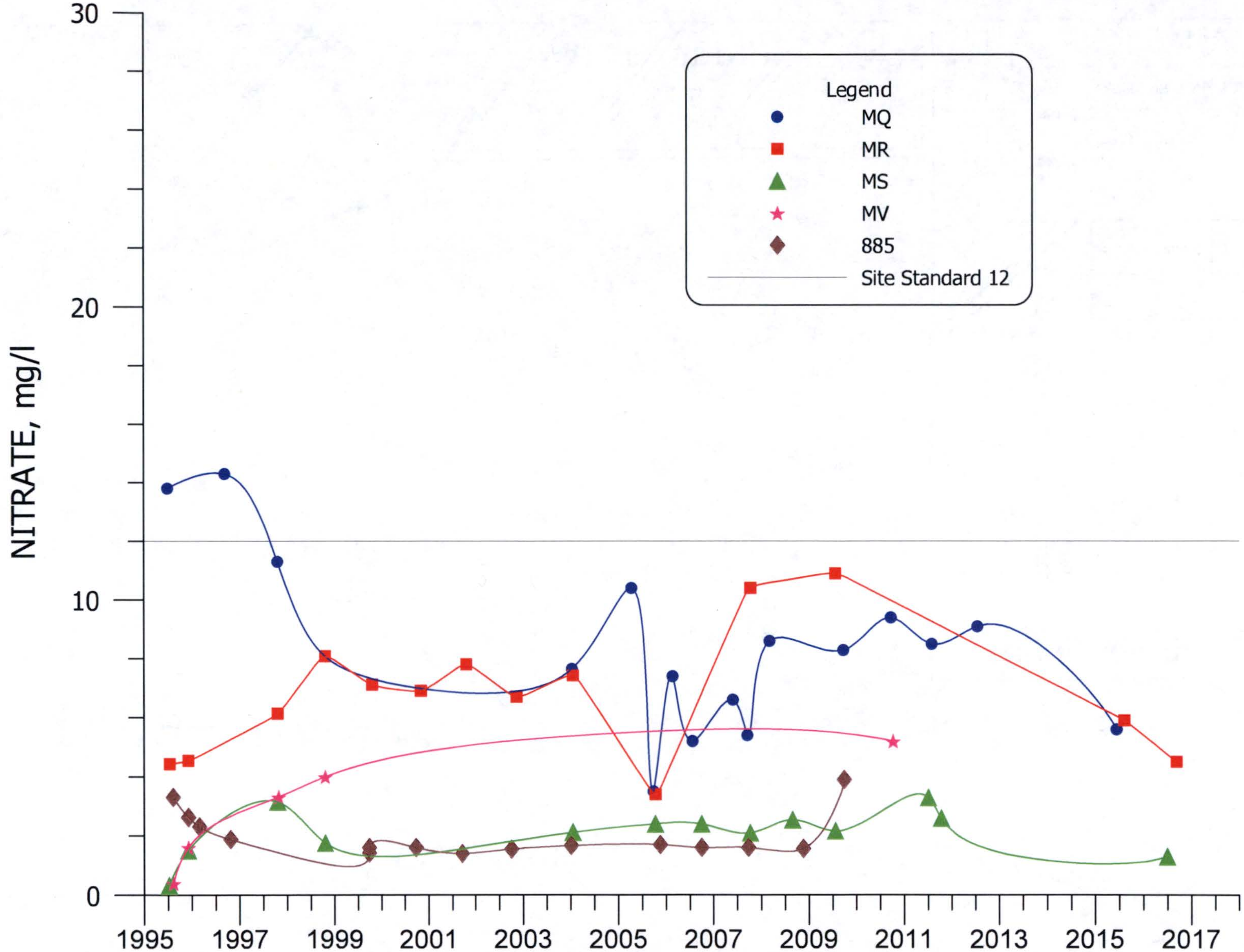
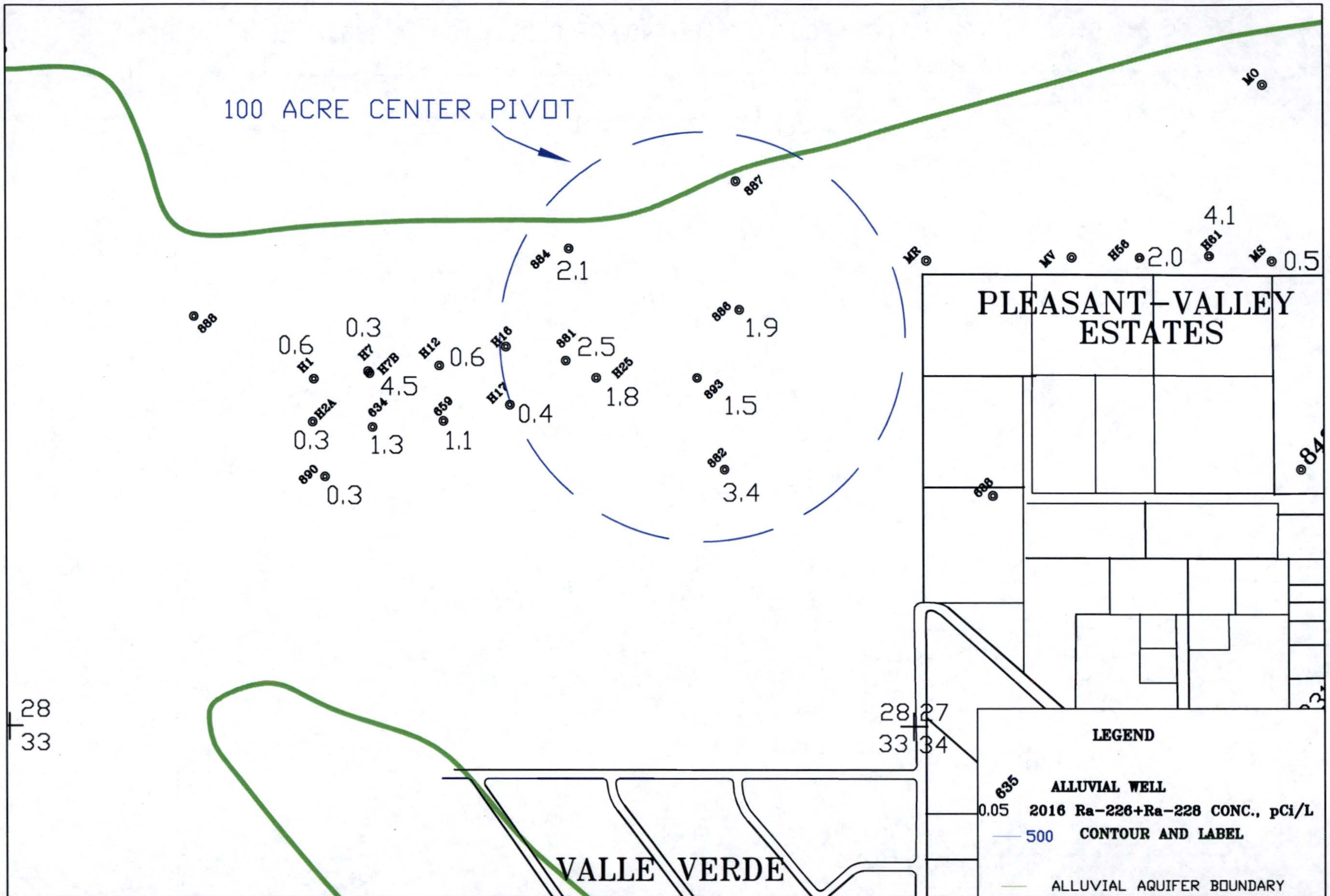


FIGURE F-21. NITRATE CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800'

C:\PROJECTS\2017-06\1600QAL-IRRIGATION

DATE: 9/18/17

FIGURE F-22. 2016 Ra-226+Ra-228 ALLUVIAL CONCENTRATIONS IN SECTION 28, pCi/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

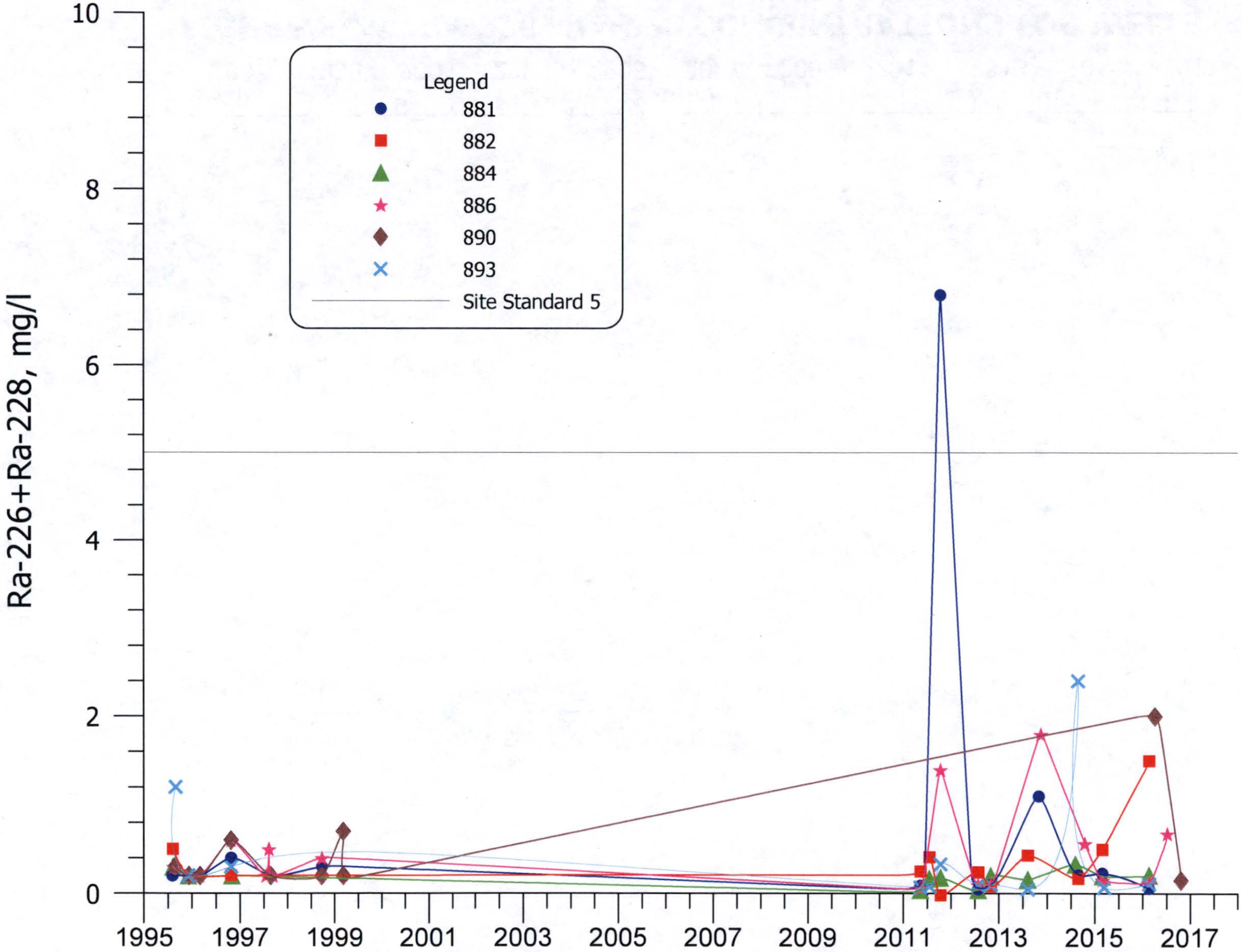


FIGURE F-23. Ra-226+Ra-228 CONCENTRATIONS FOR WELLS 881, 882, 884, 886, 890 AND 893.

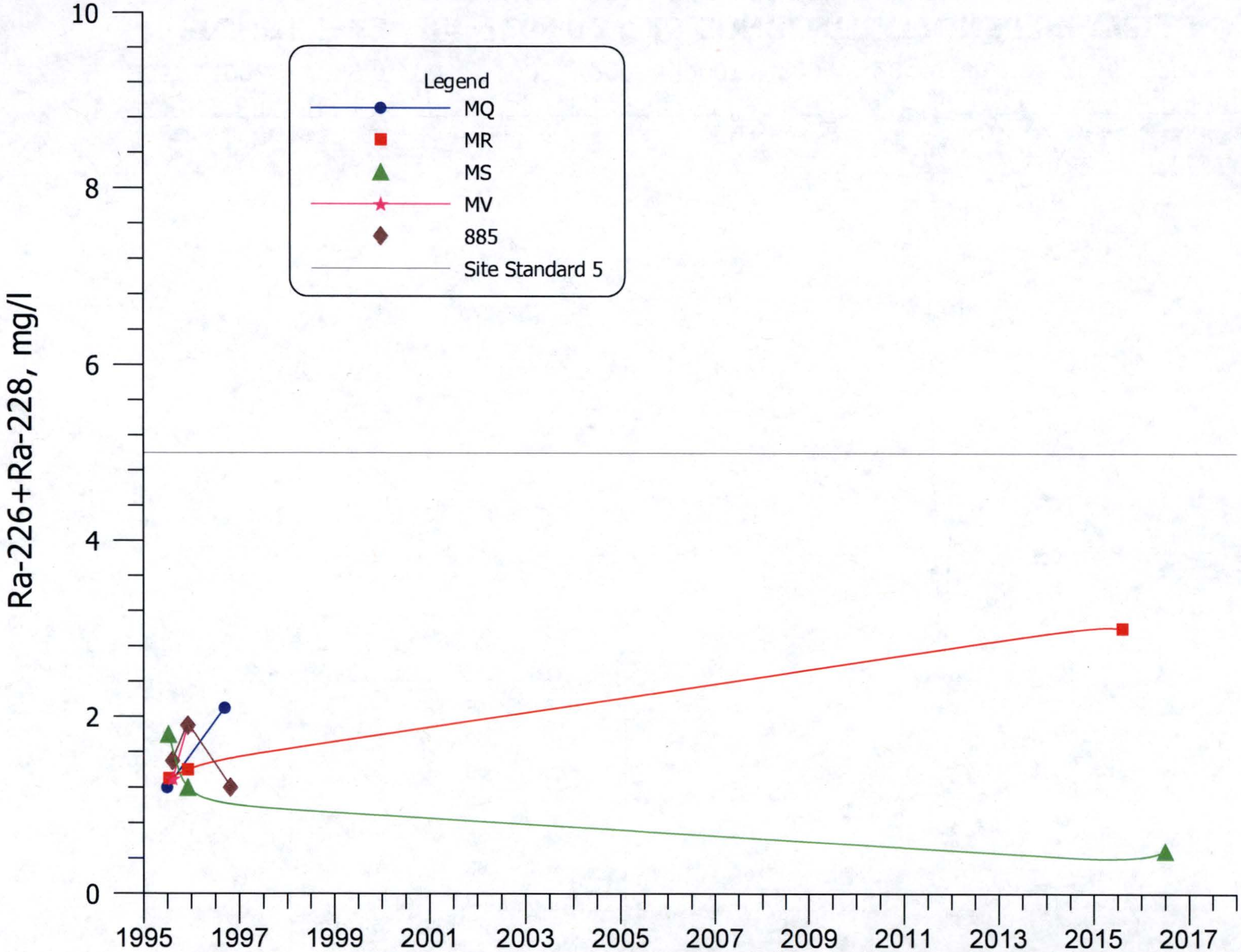
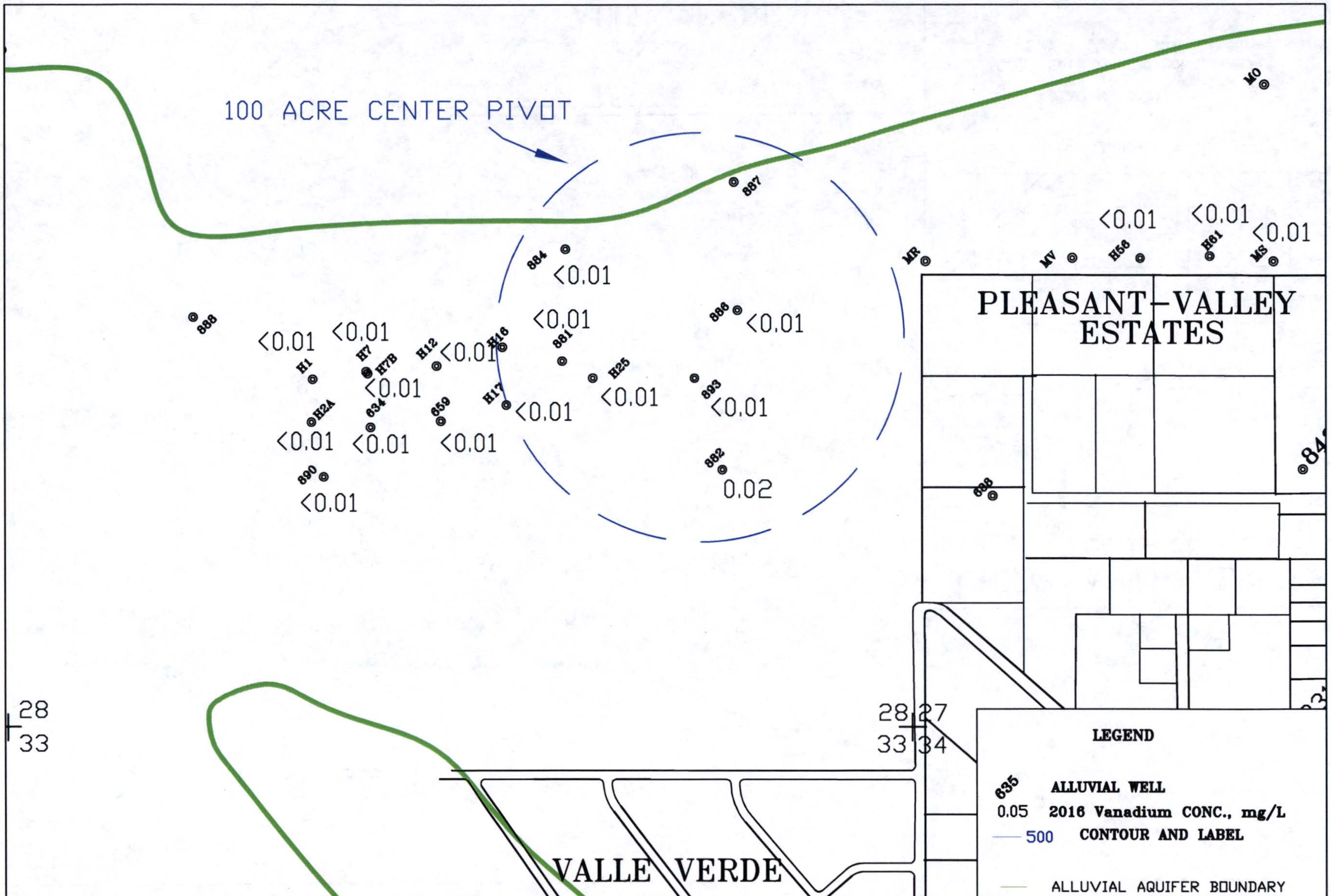
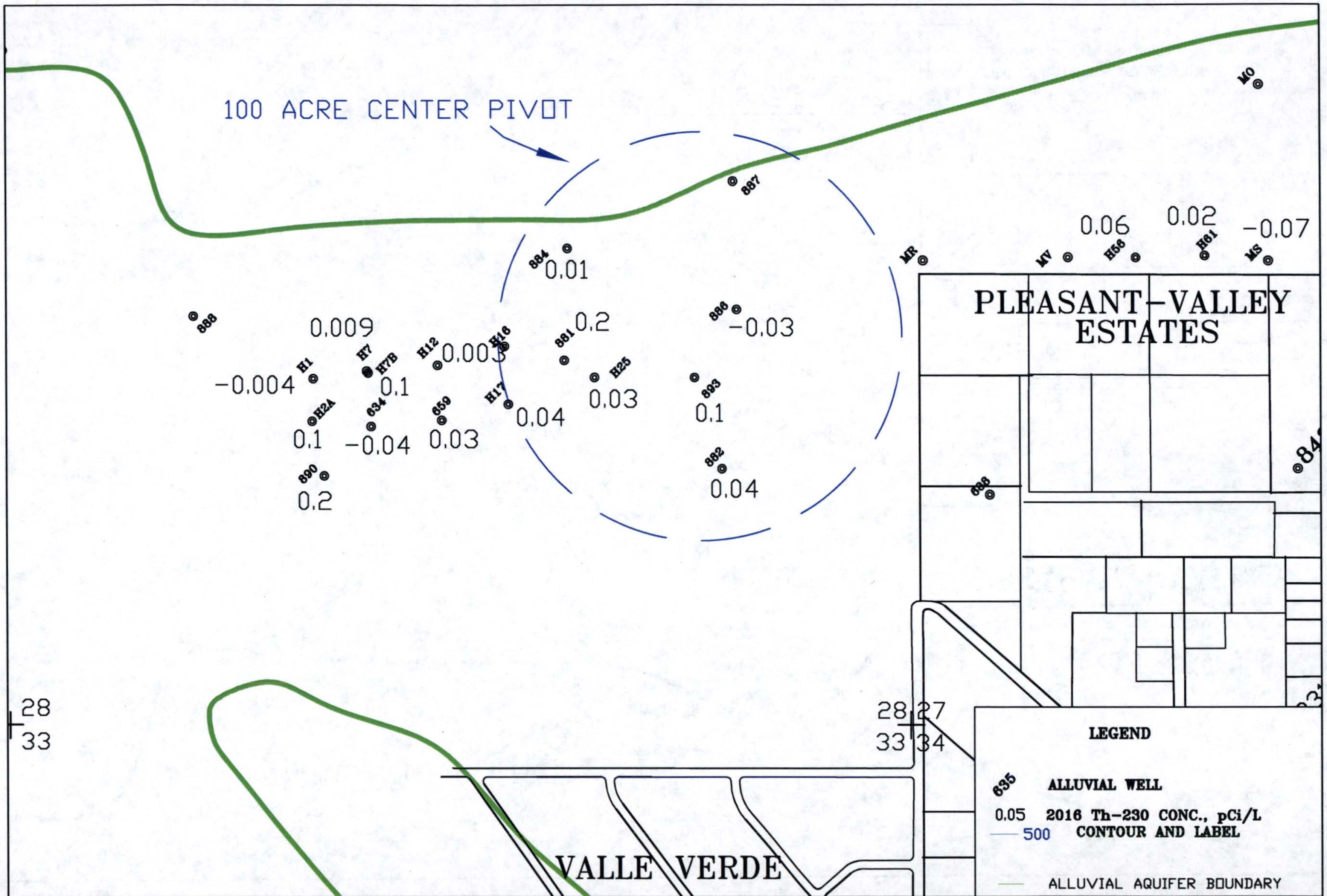


FIGURE F-24. Ra-226+Ra-228 CONCENTRATIONS FOR WELLS MQ, MR, MS, MV AND 885.



SCALE: 1" = 800' C:\PROJECTS\2017-06\ 1600QAL-IRRIGATION DATE: 9/18/17	**FIGURE F-25. 2016 VANADIUM ALLUVIAL CONCENTRATIONS IN SECTION 28, mg/L**	HOMESTAKE MINING COMPANY GRANTS, NEW MEXICO



SCALE: 1' = 800'

C:\PROJECTS\2017-06\1600QAL-IRRIGATION

DATE: 9/18/17

FIGURE F-26. 2016 Th-230 ALLUVIAL CONCENTRATIONS IN SECTION 28, pCi/L

HOMESTAKE MINING COMPANY
GRANTS, NEW MEXICO

APPENDIX G

DOSE ASSESSMENT FOR SECTION 34 FLOOD IRRIGATION AREA

APPENDIX G

TABLE OF CONTENTS

DOSE ASSESSMENT FOR SECTION 34 FLOOD IRRIGATION AREA

FIGURES

G.0 Introduction

This Appendix provides an assessment of potential radiological impacts to the public associated with land application irrigation activities, and includes modeling of doses for two conservative (worst-case) exposure scenarios, each involving the Section 34 flood irrigation area (approximately 120 acres) as the uranium concentrations in soils across this area averaged higher than other irrigation areas at the termination of the land application program. A summary presentation of modeling results are provided in Section 5.0 of the main Report.

G.1 Methods

Doses to a member of the public due to assumed maximum net (above background) soil concentrations of uranium and its decay products, along with radium-228, were modeled using the RESRAD-OFFSITE computer code (ANL, 2016) (hereafter referred to as "RESRAD" for brevity) for a rural residential farming scenario (considered to be the most conservative plausible receptor scenario). Aerial imagery and shape files of land application irrigation fields were used to create two site-specific receptor scenario layouts in RESRAD for the Section 34 flood irrigation area as shown in Figure G-1.

For Scenario 1, it was assumed that the nearest resident resides just outside (and downwind relative the strongest prevailing wind directions) of the irrigated contamination zone (Figure G-1). Scenario 1 is conservatively representative of maximum potential exposure conditions during the history of the land application project. Scenario 2 is the most conservative receptor scenario as it assumes that in the future, a resident farmer establishes a dwelling at the center of the contaminated zone and cultivates crops entirely within the contamination zone (Figure G-2).

G.2 Model Input Parameters

Exposure/Dose Pathways

The dose pathways used for the RESRAD modeling included external gamma radiation, inhalation of air particulates and radon, dietary ingestion of plants, meat and well water, and incidental ingestion of soil. Although most local residents obtain municipal (treated) water for domestic use, the drinking water pathway was included as it is conceptually possible that somebody could use well water for domestic purposes (past, present or future). Milk and aquatic food pathways were not used as these pathways are unrealistic for the site-specific receptor scenarios considered.

Occupancy Factors

Outdoor occupancy working in the contaminated zone for the resident farmer receptor was conservatively assumed to be 2,000 hours/yr (22.8% of the time). Indoor occupancy inside the resident farmer's dwelling was assumed to be the RESRAD default of 4,380 hours/yr (50% of the time). Ten percent of the time was assumed to be spent away from the site, and the remainder was distributed between agricultural fields and time outdoors near the dwelling location.

Contaminated Zone Soil Parameters

The 2012 surface soil data for the four irrigated areas indicates that the Section 34 flood irrigation area had the highest average uranium concentration in the top one-foot layer. The maximum concentration was 4.67 mg/kg, and the respective net (above background) concentration was 2.67 mg/kg (equivalent to a radiometric concentration of 1.81 pCi/g). This maximum net concentration (1.81 pCi/g) was used to determine the U-238, U-234 and U-235 soil concentrations. Uranium-238 and U-234 each account for 48.9% of the radioactivity in natural uranium, while U-235 accounts for 2.2%. Using these natural isotopic abundances, the concentrations of U-238, U-234 and U-235 in contaminated zone soils were calculated to be 0.89 pCi/g for U-238 and U-234, and 0.04 pCi/g for U-235. For conservatism, these concentrations were assumed to occur uniformly in the upper 2 meters of the soil profile across the 120-acre contaminated zone (this is the default contaminated soil thickness in RESRAD).

Since Th-230, Ra-226 and Ra-228 were not measured in soil samples from the Section 34 flood irrigation area, these values were calculated based on average concentrations measured in the irrigation water applied using the following steady-state equation:

$$\left[{}^{226}Ra\right]_{soil} = I_{Ra} x \; {}^{1}\!/_{\rho_{soil}} \; x \; {}^{1}\!/_{0.4} \, x 1 x 10^{-3} \; \textit{(Equation 1)}$$

Where:

I_{Ra} = Concentration of radium in irrigation water, 0.2 picocuries per liter (pC/L) for Ra-226 and 1.0 pCi/L for Ra-228
ρ_{soil} = Density of soil using the RESRAD default of 1.5 g/cm^3
1×10^{-3} = conversion factor (cm^3 to liters)
0.4 = Primary soil porosity (RESRAD default)

The resulting estimated steady-state soil concentrations as used in the model were as follows:

- Th-230 = 0.00006 pCi/g
- Ra-226 = 0.0003 pCi/g
- Ra-228 = 0.002 pCi/g

Long-lived decay products of these radionuclides (half-lives greater than 6 months) were assumed to be in equilibrium with the indicated parent radionuclide.

RESRAD default values were used for all other physical or hydrological model parameters relating to soil characteristics.

Hydrological and Meteorological Parameters

The average precipitation used for the modeling was 0.27 meters/yr (10.5 inches) based on site-specific meteorological station (MET) data. Irrigation applied to the contaminated zone was assumed to be 0.3 meters/yr. MET data from 2014 was used for atmospheric transport modeling in RESRAD in the form of a "Star File" joint frequency distribution, a three-dimensional array describing atmospheric wind direction, speed, and stability (This Star File was previously used for MILDOS modeling at the site in response to December 16, 2015 Requests for Additional Information from HMC by the NRC). RESRAD default values were used for all other hydrological and meteorological model parameters.

Other Model Parameters

RESRAD default values were used for all model input parameters not noted above.

G.3 Modeling Results

Receptor Scenario 1

Scenario 1 modeling results are shown in Figures G-2 and G-3. Figure G-2 shows the total dose by radionuclide from all exposure pathways to the rural resident farmer living just outside, and generally downwind from, the contaminated zone (representative of the Section 34 flood irrigation area). The maximum total dose occurs at time zero (t = 0 years) and is exceedingly small (≈ 0.1 mrem/yr), subsequently decreasing as wind and water erosion gradually removes contaminated topsoil from the contamination zone.

The largest contributor radionuclide to the total dose is U-328, primarily from external gamma radiation (Figure G-3) associated with its short-lived Th-234 and Pa-234 decay products (half-lives ranging from approximately 1 minute to 24 days). The dose from ingestion of plant-based foods and meat is only slightly higher than that from incidental ingestion of soil and inhalation of radionuclides in air particulates, all of which are negligible. Radon dose is essentially absent given the extremely low concentrations of Ra-226 introduced to soil by flood irrigation.

Scenario 1 modeling results indicate that the maximum potential dose to any member of the public living adjacent to any of the land application areas during the period that irrigation was conducted (between 2000 and 2012) would have been insignificant relative to the operational public dose limit given in 10 CFR 20.1301 (100 mrem/yr). For further comparison, the average radiation dose to the U.S. population from exposure to natural background radiation sources, estimated at 320 mrem/yr. The maximum modeled dose received by the resident farmer (≈ 0.1 mrem/yr) is comparable to the average radiation dose to the public from cooking with natural gas.

Receptor Scenario 2

Scenario 2 modeling results are shown in Figures G-4 and G-5. Figure G-4 shows the total dose by radionuclide from all exposure pathways to the rural resident farmer living at the center of the contaminated zone (representative of the Section 34 flood irrigation area). The maximum total dose occurs at time zero (t = 0 years) and while this dose (≈ 0.3 mrem/yr) is about 3 times higher than results for Scenario 1, this dose is still exceedingly small relative to average doses to the U.S. public from natural background radiation sources (approximately 320 mrem/yr).

The largest contributor radionuclide to the total dose is U-328, primarily from external gamma radiation (Figure G-5) associated with its short-lived Th-234 and Pa-234 decay products (half-lives ranging from approximately 1 minute to 24 days). The dose from ingestion of plant-based foods is more pronounced under Scenario 2 versus Scenario 1, but again these doses are not significant. Doses from incidental ingestion of soil, inhalation of radionuclides in air particulates, and radon are negligible.

Scenario 2 modeling results indicate that the maximum potential dose to any future member of the public that may decide to build a dwelling within any of the land application areas and engage in sustenance farming would be insignificant relative to the dose limit for license termination and unrestricted future land use as given in 10 CFR 20.1402 (25 mrem/yr).

G.4 Conclusion

RESRAD-OFFSITE modeling results based on very conservative assumptions indicates that the radiological dose to any member of the public from irrigation under the land application program in the HMC Grants Reclamation Project area (2000 – 2012) would have been negligible, and the future potential for radiological doses to any member of the public from residual byproduct radionuclides in soil in any land application area is insignificant relative to the public dose limit given in 10 CFR 20.1301.

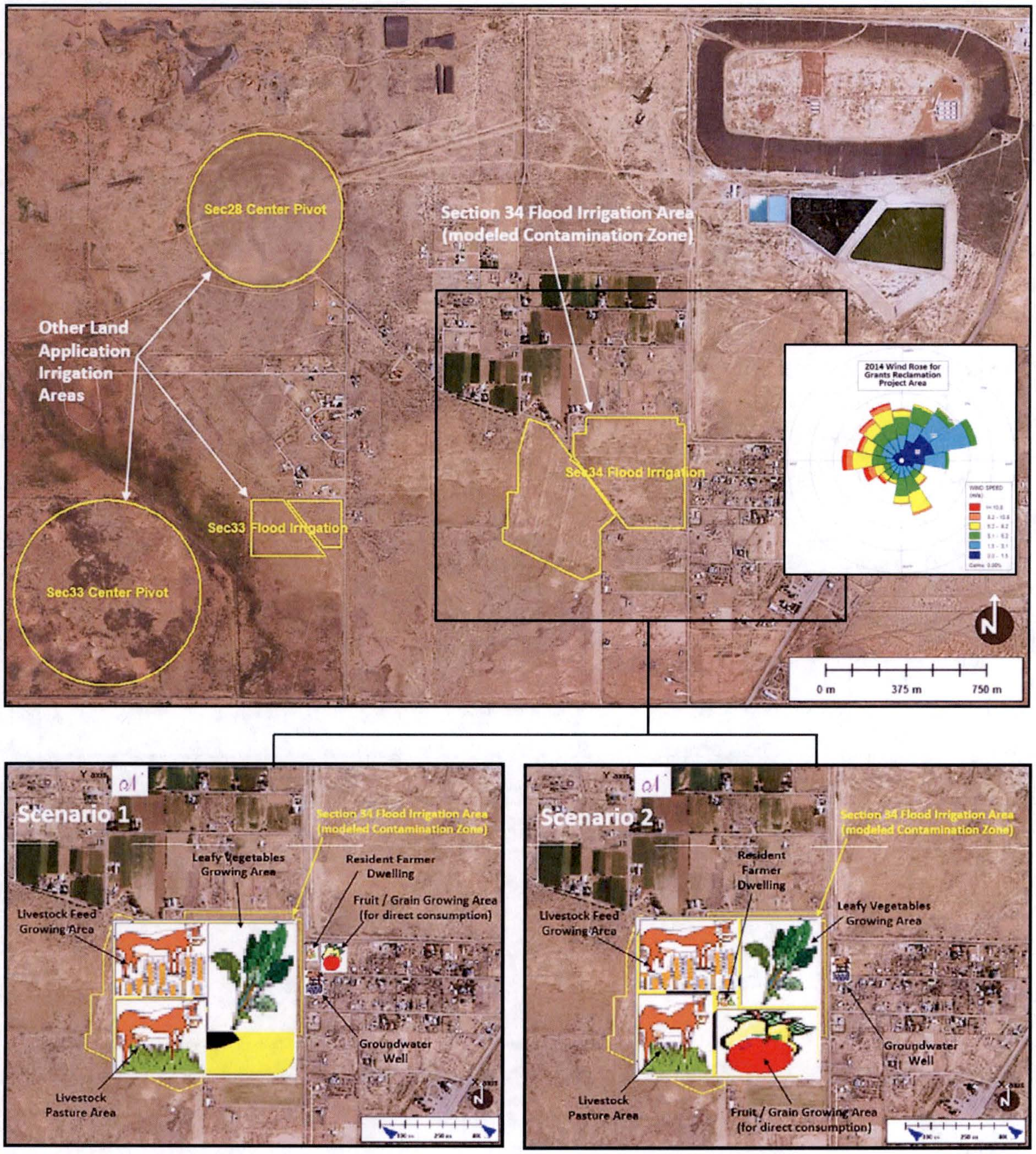


Figure G-1: Map of land application irrigation project areas and 2014 wind rose (top), Scenario 1 RESRAD modeling layout (bottom left), and Scenario 2 RESRAD modeling layout (bottom right).

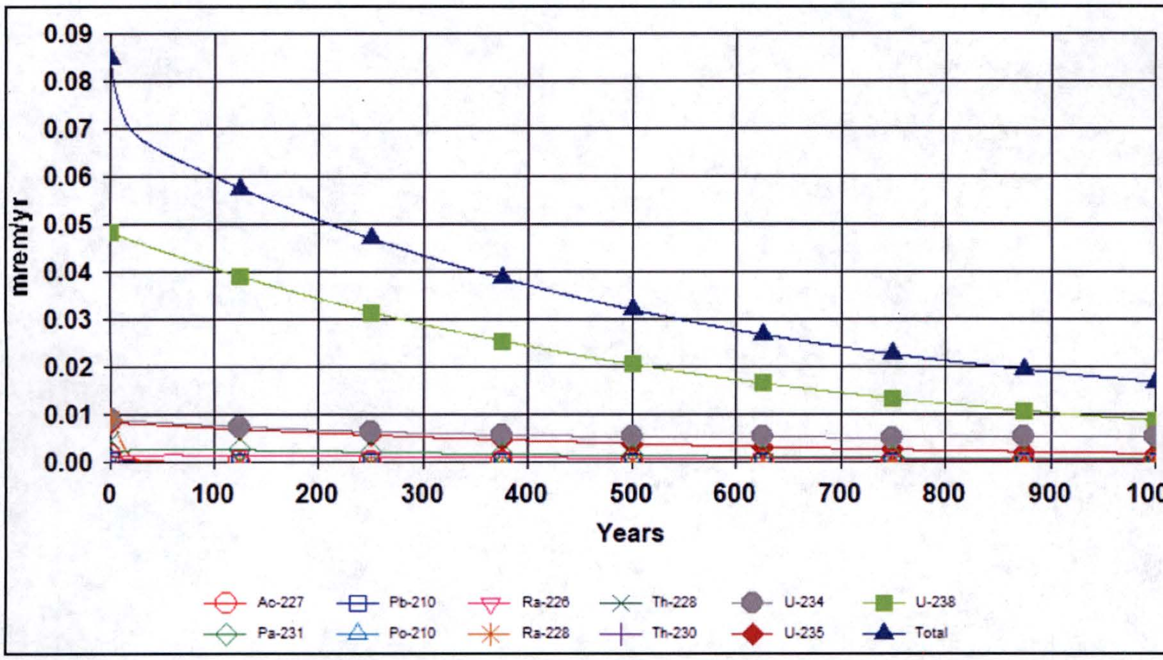


Figure G-2: Scenario 1 RESRAD modeling results – dose by radionuclide, all pathways summed.

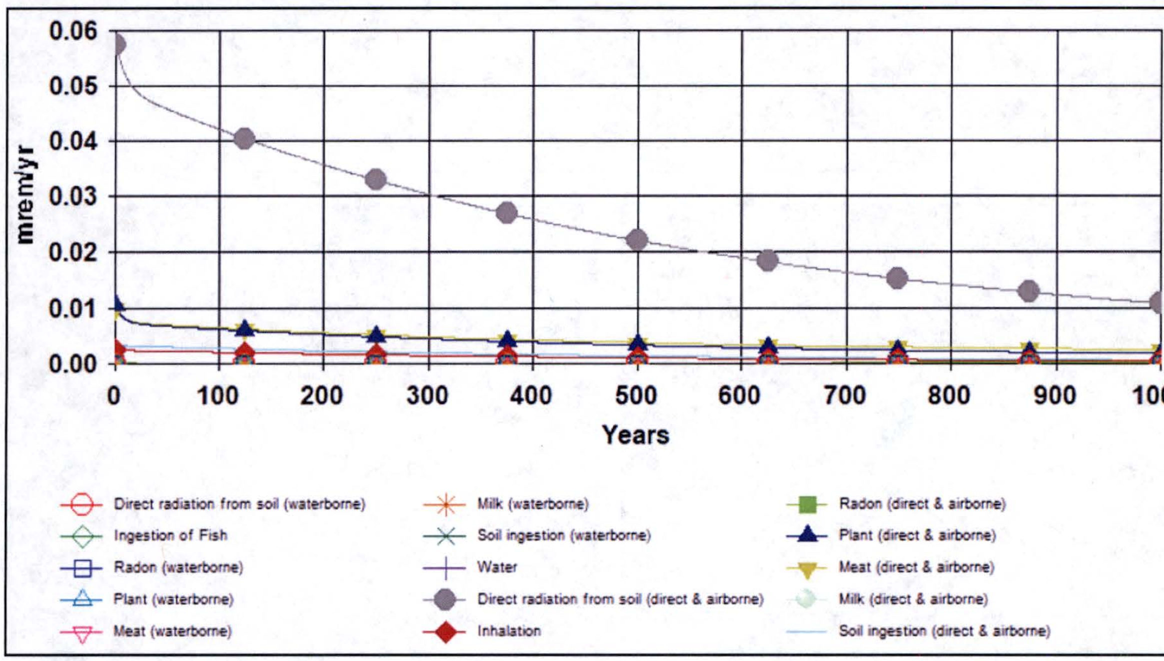


Figure G-3: Scenario 1 RESRAD modeling results – dose by pathway, all radionuclides summed.

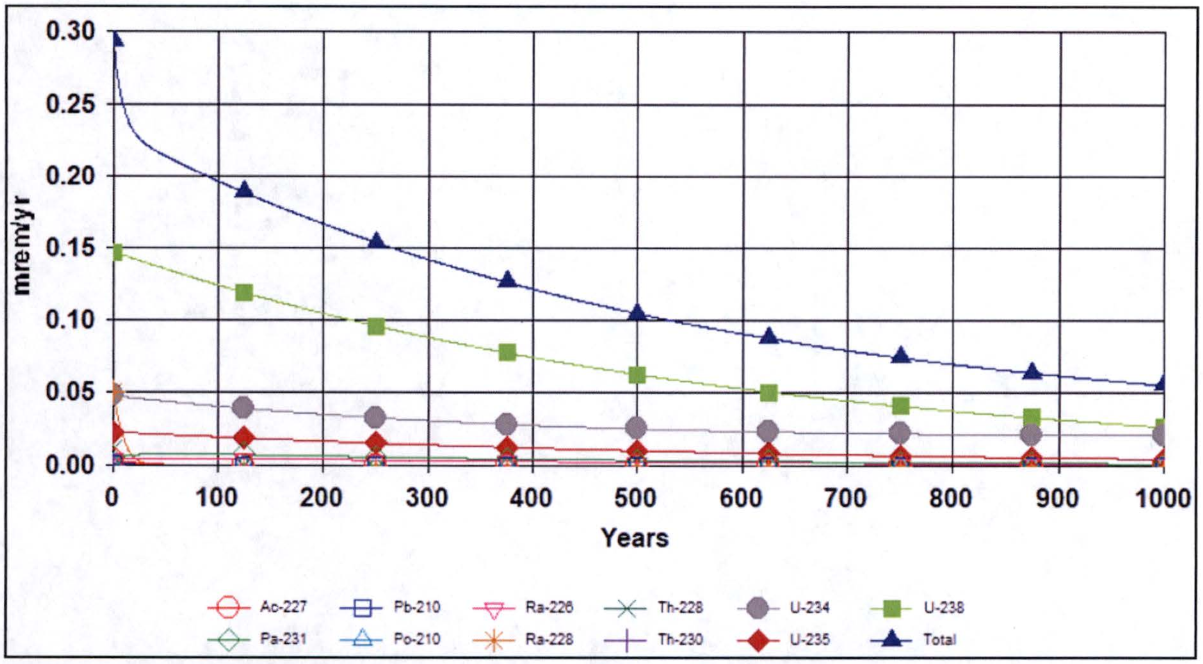


Figure G-4: Scenario 2 RESRAD modeling results – dose by radionuclide, all pathways summed.

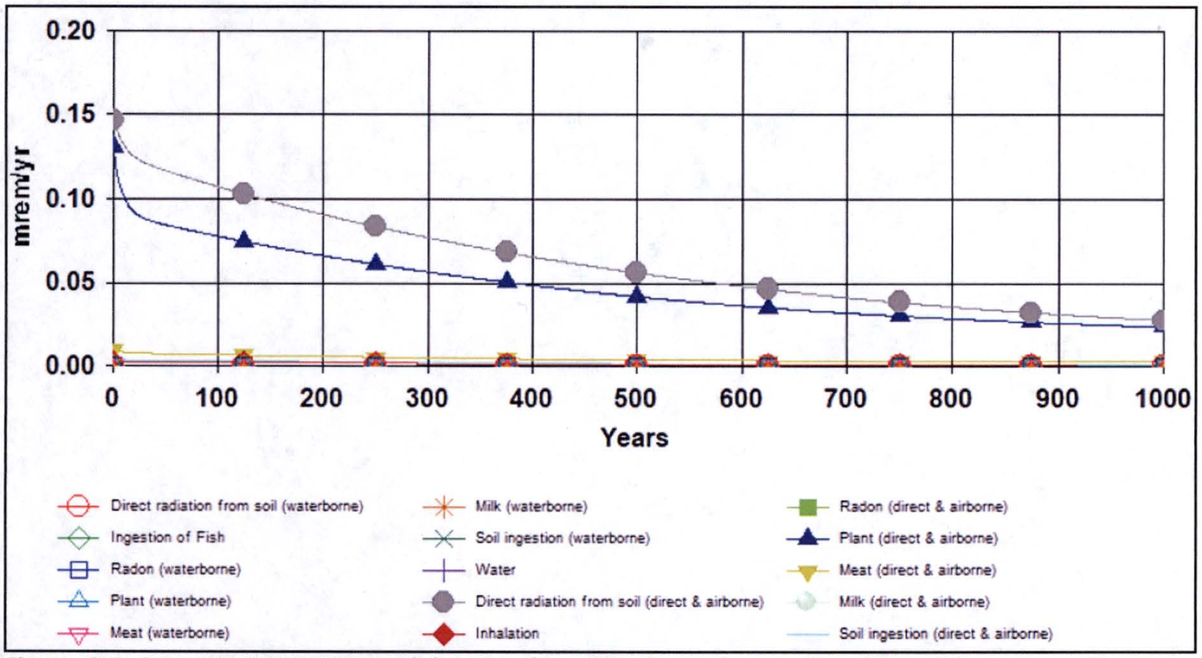


Figure G-5: Scenario 2 RESRAD modeling results – dose by pathway, all radionuclides summed.