

Rio Algom Mining LLC

July 30, 2015

CERTIFIED MAIL

Mr. Tom McLaughlin
11555 Rockville Pike
Rockville, MD 20852

Re: **Ambrosia Lake Facility**
License SUA-1473, Docket No. 40-8905
License Condition #34
First Half 2015 Groundwater Stability Monitoring Report

Dear Mr. McLaughlin:

Pursuant to license condition #34 of SUA-1473, the semi-annual groundwater stability monitoring report for the first half of 2015 is attached. This report presents the results of the groundwater monitoring as established by Amendment #56. A digital copy is included on the enclosed disc. If you have any questions or need additional information, please call me or Theresa Ballaine at (209)736-4803.

Sincerely,



Anthony Baus
Site Manager

Attachment: As stated
cc: NRC Document Control (certified mail)
NMED, David Mayerson
T. Ballaine
D. Murray



RIO ALGOM LLC AMBROSIA LAKE FACILITY

License SUA-1473 Docket 40-8905

Groundwater Stability Monitoring Report First Half 2015

July 30, 2015

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**RIO ALGOM MINING LLC
AMBROSIA LAKE FACILITY
GROUNDWATER STABILITY MONITORING REPORT – FIRST HALF 2015**

Nuclear Regulatory Commission (NRC) source material license SUA-1473, Condition #34(D), requires Rio Algom Mining LLC (RAML) to submit semiannual groundwater monitoring reports associated with the facility's groundwater stability monitoring plan established by Amendment 56. Condition 34.D states:

Submit, by February 1 and August 1 of each year groundwater monitoring reports to include a minimum of the following: potentiometric surface maps for each aquifer; time vs. concentration plots for all parameters for which ACLs have been issued, hydrographs for the downgradient most trend well or POE well in each aquifer, hydraulic gradient calculations, and tabulated analytical data for each ACL parameter for each well.

1.0 BACKGROUND

RAML's Ambrosia Lake facility (Site) is located in McKinley County, approximately 24 miles due north of Grants, New Mexico, in the Ambrosia Lake valley. Uranium milling activities started at the Site in 1957. The waste management structures were Tailings Impoundments 1 and 2, Decantation Pond 3, and Evaporation Ponds 4 through 10. Tailings Impoundments 1 and 2 were built in 1958, along with Pond 3 at the eastern toe of Tailings Impoundment 1, to accept decanted tailings liquids. Tailings were first produced at the Site in November 1958. In 1976, RAML diverted the natural course of the Arroyo del Puerto east of Ponds 4, 5, and 6, and lined Ponds 9 and 10. The solids fraction was disposed through a slurry transfer system to the tailings impoundments, while the liquids fraction was transferred to the evaporation ponds. Evaporation Pond residues from Ponds 3, 4, 5, 6, 7, and 8 were placed in Tailings Impoundments 1 and 2 prior to final reclamation. All the aforementioned tailings impoundments and ponds were unlined. Seepage from the tailings impoundments and Evaporation Ponds 3 through 6, along with seepage from unrelated mining and milling operations, saturated and impacted the Alluvium of the Arroyo del Puerto (Alluvium). Seepage from the tailings impoundments and Evaporation Ponds 7 and 8 recharged and impacted the Tres Hermanos B sandstones within the Mancos Formation shale, and the Dakota Sandstone, which underlies the Mancos Formation.

Consequently, in 1983, RAML entered into an Assurance of Discontinuance (AOD) with the State of New Mexico to minimize the future impact of mill tailings solutions seepage on groundwater. The approved AOD remedial action required the construction and maintenance of an interceptor trench (IT-1) and the cessation of discharges to unlined Ponds 4 through 8. These

ponds were taken out of service in 1983. In the late 1990s, RAML added interceptor trenches IT-2, IT-3, and IT-4 south of Pond 10 to collect seepage potentially missed by IT-1.

In 1986, after the State of New Mexico relinquished its licensing authority over uranium mill activities, NRC reasserted jurisdiction at the Site and required that the Site begin a groundwater detection monitoring program. Data from this program were the basis for the groundwater protection standards (GPSs) established for the Site by NRC, and a corrective action program (CAP) for the groundwater was developed based on this information. The CAP required pumping and treating groundwater to remove certain constituents. RAML implemented the CAP beginning in the mid-1980s. However, the CAP and, thus, the requirement to pump and treat, were removed when the alternate concentration limit (ACL) petition was granted by the NRC in 2006.

Mining and milling operations in the area have had two notable hydrologic effects: creation and maintenance of a saturated zone at the base of the Alluvium, and creation of a cone of depression in bedrock aquifers due to dewatering of underground mines. The saturated zone in the Alluvium has continued to decrease since the mine dewatering and milling processes stopped. Water quality in the Alluvium and the units into which the Alluvium drains has also been affected by other mining operations in the area.

2.0 FIRST HALF 2015 ACTIVITIES

Activities associated with the groundwater monitoring program at the mill facility during the first half of 2015 consisted of performing sampling pursuant to the approved groundwater stability monitoring plan. The well network was designed to track and assess groundwater impacts between the tailings impoundment and the long-term surveillance and maintenance boundary and point of exposure (POE). NRC required more frequent monitoring during the beginning of the compliance monitoring program because of uncertainties in the hydrogeologic and transport models. The approved ACLs for the Site are presented in Table 1 below.

**Table 1. Rio Algom Mining – Ambrosia Lake Operation
Approved Alternate Concentration Limits**

Parameter	Dakota	Tres Hermanos A	Tres Hermanos B	Alluvium
U-nat (mg/L)	1.6	No ACL	1.6	23
Th-230 (pCi/L)	945	945	945	13,627
Ra-226 and -228 (pCi/L)	218	218	218	3,167
Pb-210 (pCi/L)	88	88	88	1,274
Gross Alpha (pCi/L)	No ACL	No ACL	No ACL	8,402
Molybdenum (mg/L)	No ACL	No ACL	No ACL	176
Nickel (mg/L)	6.8	No ACL	6.8	98
Selenium (mg/L)	No ACL	No ACL	No ACL	49
Chloride (mg/L)	3,200	1,070	2,810	7,110
Nitrate (mg/L)	22.8	9.2	7.7	351
Sulfate (mg/L)	6,480	2,584	4,760	12,000
Total Dissolved Solids (mg/L)	14,100	6,400	11,700	26,100

mg/L = milligrams per liter

pCi/L = picocuries per liter

Appendix 1 of this report contains the analytical data for the Dakota, Tres Hermanos A, Tres Hermanos B, and Alluvial units. Appendix 2 contains the time versus concentration plots for the ACL parameters for the Dakota, Tres Hermanos A, Tres Hermanos B, and Alluvial units.

Appendix 3 contains the hydrographs for the most downgradient monitoring well for the Dakota, Tres Hermanos A, Tres Hermanos B, and Alluvial units. The most notable observation in the data is that the potentiometric surface in the Alluvium continues to decline. For example, RAML has observed a decline of over 30 feet at monitoring well 32-69 since February of 2005. This drop is attributable to the discontinuance of the Alluvial CAP, which was maintaining the artificial water mound in the vicinity of the Site. RAML's groundwater flow model projected a 65- to 100-year period for the Alluvium to dewater following cessation of the CAP. This water table drop acts to slow the lateral migration rate of milling-related seepage.

RAML determined the hydraulic gradients by calculating the difference in groundwater elevation between the most upgradient point of compliance (POC) well in each unit and the farthest downgradient trend or POE well in the same unit. That value was then divided by the distance along a flow path between the two wells. Results of these calculations are summarized below:

- Dakota Sandstone – 0.036 foot per foot
- Tres Hermanos A Sandstone – 0.002 foot per foot
- Tres Hermanos B Sandstone – 0.015 foot per foot
- Alluvium – 0.008 foot per foot

Appendix 4 contains the potentiometric surface maps for the Dakota, Tres Hermanos A, Tres Hermanos B, and Alluvial units.

3.0 IMPROVEMENTS TO THE MONITORING PROGRAM

Improvements to the groundwater monitoring program include replacing monitoring wells that had actual measurements that differed from their proposed or stated measurements in construction logs, or wells with visible or suspected damage. The ACL wells that have been replaced are alluvial wells 5-03, 5-08, and 5-73; Dakota wells 30-48 KD and 32-45 KD; Tres Hermanos A well 31-01 TRA; and Tres Hermanos B well 31-02 TRB. The well replacement program was completed in 2013. Original well time-concentration plots are included in this report as Appendix 5. A map showing original and replacement well locations is included in Appendix 6. Analytical data and time-concentration plots for the replacement wells are included in Appendices 1 and 2, respectively, and sampling results are discussed in Section 4.0.

Dedicated pumps have been installed in 17 of the NRC groundwater monitoring network wells including 5-03 ALL-R, 5-08 ALL-R, 5-73 ALL-R, 30-48 KD-R, 31-02 TRB-R, 32-45KD-R, 32-50 TRB-R, 36-06 KD, 33-01 TRA, 19-77 TRB, 31-67 TRB, 36-02 TRB, 32-59 ALL, 31-61 ALL, 31-65 ALL, and 5-04 ALL. A dedicated electric submersible pump was installed in 17-01 KD due to its depth.

3.1 Wells Requiring Further Investigation

Monitoring wells 30-02 KD and 30-01 TRA have not contained sufficient water to collect a sample since 2012 and 2009, respectively. Review of the well construction diagrams for 30-02 KD and 30-01 TRA revealed 20 feet of solid casing (or sump) below the bottom of the screened interval in each well.

Desaturation of the alluvium and upper bedrock units due to the termination in 2006 of surface water discharge associated with the groundwater CAP is expected at the Site. Evidence of declining saturation is important data in itself. The unusual well construction of 30-02 KD and 30-01 TRA creates uncertainty in groundwater elevation measurements. 30-02 KD is one of five compliance wells and six total monitoring wells in the Dakota aquifer. According to available screen depth and depth to water measurements, the last sample collected from within the screened interval of 30-02KD was in 1988. Similarly, a representative groundwater sample from within the screened interval for 30-01 TRA was last collected in 1998. For these reasons, RAML proposes to review historic data for these wells and present justification for plugging and abandoning these wells in a request for a license amendment.

4.0 DATA EVALUATION

As a component of the ACL approval process, NRC not only established ACLs for specific parameters, but also maintained the GPSs for those constituents for which ACLs were not proposed. During the time from initial ACL submission for the bedrock units (February 2000) to ACL approval (2006), the Site maintained the groundwater CAP. Data collected during the first half of 2015 were compared to ACLs and GPSs. Notable results are described in detail in the following sections.

4.1 Dakota Sandstone

Dakota monitoring wells 36-06 KD and 32-45 KD-R have been subject to increased monitoring, generally on a monthly basis. The results of the accelerated monitoring are discussed below.

4.1.1 36-06 KD

Monitoring well 36-06 KD has been monitored on an accelerated basis for beryllium, cadmium, gross alpha, and uranium. RAML has discussed the changes in concentration in samples of groundwater from monitoring well 36-06 KD during past meetings with NRC, and both parties concurred that fluctuations in well water quality appear to be linked to surface reclamation work. Elevated beryllium concentrations were identified in 2006 in Dakota POC monitoring well 36-06 KD. As a result of this condition, RAML submitted a proposed CAP on January 15, 2007, to address the beryllium concentrations present within monitoring well 36-06 KD. This CAP was approved by NRC on April 30, 2007.

The previously increasing trend in beryllium concentration correlated with surface field work in the vicinity of the well. The increasing trend in beryllium has stabilized and concentrations trended downward after 2007. RAML proposed to continue monthly monitoring of well 36-06 KD for beryllium so that additional data would be available for evaluating the beryllium concentrations. Although the beryllium concentration in groundwater samples from monitoring well 36-06 KD continues to exceed the GPS of 0.01 mg/L, it continues to exhibit an overall downward trend from a ten-year high of near 0.04 mg/L in April of 2007 (Table 2 and Figure 1).

Table 2. First Half 2015 Analytical Summary for Beryllium and Cadmium in Monitoring Well 36-06 KD

Date	Beryllium (mg/L)	Cadmium (mg/L)
GPS (mg/L)	0.01	0.01
1/19/2015	0.018	0.0053
2/11/2015	0.0201	0.0064
3/16/2015	0.0164	0.0124
4/21/2015	0.0167	0.0146
5/5/2015	0.0143	0.0111
6/2/2015	0.0218	0.009

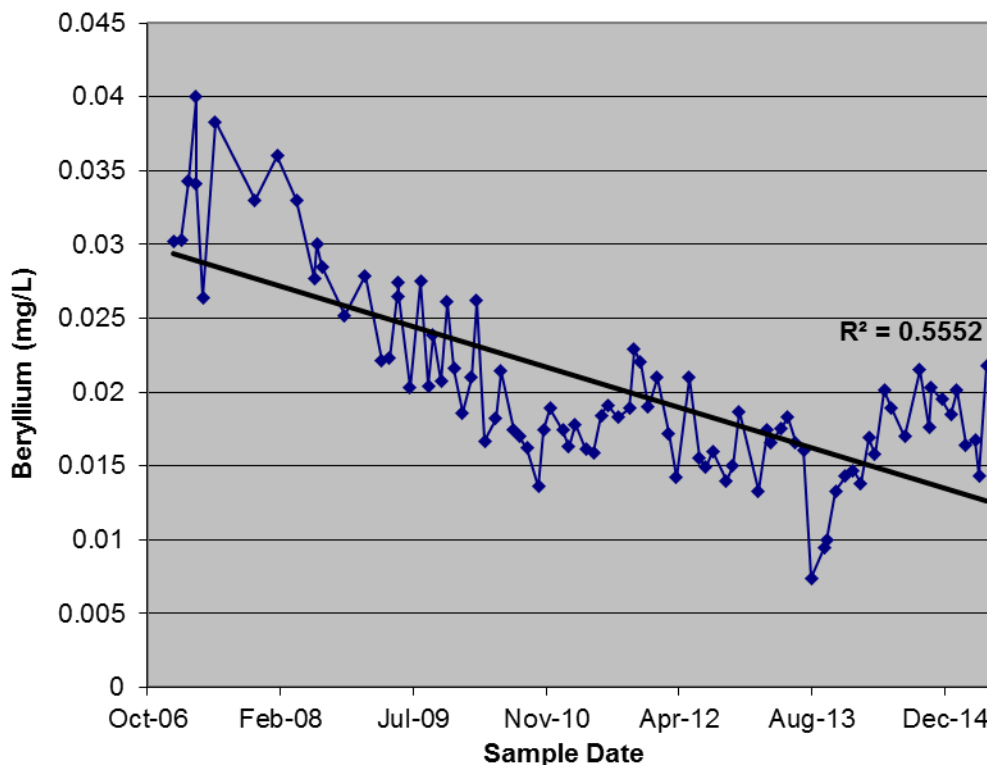


Figure 1. Beryllium Concentrations in Dakota Monitoring Well 36-06 KD

Because of previous inadvertent omissions in reporting values that exceeded a GPS, in 2009 RAML instituted a policy of third-party review of laboratory data within five working days of receiving it. As a result of this policy, RAML was made aware that cadmium concentrations in the samples of groundwater from monitoring well 36-06 KD had exceeded the GPS of 0.01 mg/L during several sampling rounds beginning in November 2007 (Figure 2). Cadmium concentrations in monitoring well 36-06 KD follow a pattern that is very similar to both uranium and beryllium concentrations in the same well. These constituents increase when pH decreases and decrease when

pH increases. As with uranium and beryllium, cadmium concentrations continue to exhibit an overall decreasing trend and were below the GPS in samples collected during the January, February, and June monthly sampling events for monitoring well 36-06 KD (Table 2 and Figure 2).

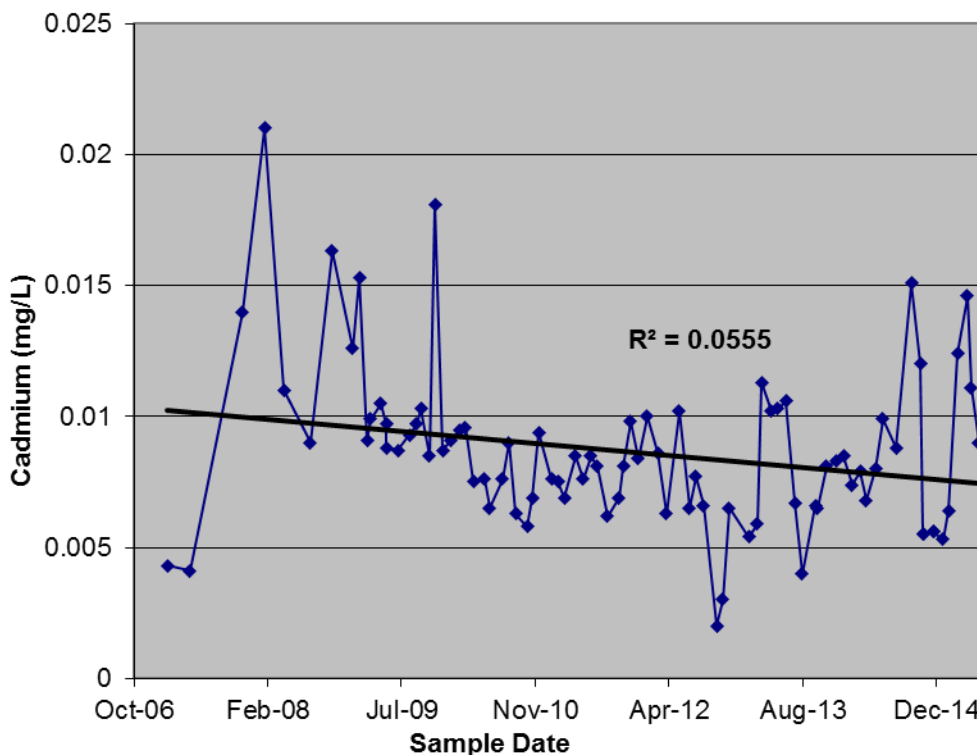


Figure 2. Cadmium Concentrations in Dakota Monitoring Well 36-06 KD

Groundwater samples from 36-06 KD were analyzed for gross alpha. The corrected gross alpha values (gross alpha – gross alpha derived from uranium) were below the GPS of 56 pCi/L for the first half of 2015. The corrected gross alpha values are presented in Table 3.

Table 3. First Half 2015 Analytical Summary for Gross Alpha in Monitoring Well 36-06 KD

Date	Corrected Gross Alpha Value (pCi/L)
GPS (pCi/L)	56
1/19/2015	-131
2/11/2015	-39.4
3/16/2015	-58.4
4/21/2015	-59
5/5/2015	-123
6/2/2015	-161

4.1.2 32-45 KD-R

Nitrate concentrations in monitoring well 32-45 KD-R, which have exceeded the ACL of 22.8 mg/L since sampling began in 2013, have continued to decrease over the first half of 2015 from 28.5 mg/L in January 2015 to 16.5 mg/L in June 2015, indicating that nitrate concentrations may be decreasing as the well continues to stabilize. Concentrations of molybdenum in 32-45 KD-R reached a maximum concentration of 0.505 mg/L in March of 2015, and continue to exceed the GPS of 0.06 mg/L. Table 4 presents nitrate and molybdenum concentrations in 32-45 KD-R during the first half of 2015.

Table 4. First Half 2015 Analytical Result Summary for Nitrate and Molybdenum in Monitoring Well 32-45 KD-R

Sample Date	Nitrate (mg/L)	Molybdenum (mg/L)
	ACL 22.8 mg/L	GPS 0.06 mg/L
1/19/2015	28.5	0.456
2/17/2015	26.7	0.46
3/6/2015	22.9	0.505
4/21/2015	21.4	0.46
5/5/2015	17.8	0.478
6/2/2015	16.5	0.451

Pursuant to Condition 34.F and Criterion 5D of 10 CFR part 40 Appendix A, RAML proposed a CAP to address the exceedances of molybdenum and nitrate in 32-45 KD-R in the Second Half of 2014 Groundwater Stability Monitoring Report. Since 32-45 KD-R is a replacement well, RAML proposes the continuation of monthly monitoring for these parameters through 2015 to gather more information as the well continues to stabilize.

The results of the monthly sampling will be presented in the quarterly and semiannual Groundwater Stability Monitoring Reports. When the well has clearly stabilized, recommendations for an appropriate path forward will be presented. Alternatives for corrective action may include, but are not limited to, continuation of accelerated monitoring, revision of the ACL/GPS for nitrate and molybdenum in the Dakota aquifer, or development of an ACL for molybdenum in the Dakota Aquifer.

Well 32-45 KD-R is a replacement well for well 32-45 KD. Although the replacement well was intended to duplicate the conditions in the original well, evidence of temporal and spatial geochemical variability indicates that the ACLs and GPSs established for the Dakota aquifer and original well 32-45 KD may not be appropriate for compliance in replacement well 32-45 KD-R.

4.2 Tres Hermanos B

Noteworthy analytical results for TRB monitoring wells are discussed below. Well 36-01 TRB was last sampled in 2009 and has not contained enough water for a sample since then. Well 36-02 TRB contained enough water during the February monitoring event to collect field measurements and a grab sample; however, since the well did not meet the recharge requirements outlined in the RAML Groundwater Monitoring Standard Operating Procedure (SOP) (RAML, 2015), the sample was not submitted for analysis. Total depth and depth to water are measured during each monitoring event. If sufficient water and recharge conditions exist, a sample is collected and submitted for laboratory analysis.

4.2.1 31-02 TRB-R

Uranium concentrations in groundwater samples collected from former monitoring well 31-02 TRB from July through November of 2011 exceeded the ACL of 1.6 mg/L. RAML continued monthly sampling, resulting in uranium concentrations below the ACL throughout 2012. As part of the site-wide well replacement program, monitoring well 31-02 TRB was identified for replacement and a new well (31-02 TRB-R) was installed on December 14, 2012. Monthly sampling and analysis for uranium and gross alpha in well 31-02 TRB-R continued. Results from the first half of 2015 are presented in Table 5. Uranium concentrations in this replacement well have never exceeded the ACL, and gross alpha has been below the GPS of 21 pCi/L with the exception of three results (December 2013, December 2014, and February 2015). Since 31-02 TRB-R is a newly installed replacement well, collecting and analyzing monthly samples for gross alpha as the well continues to stabilize is proposed through the end of 2015 to gather enough information to select an appropriate path forward.

Table 5. First Half 2015 Analytical Summary for Uranium and Gross Alpha in Monitoring Well 31-02 TRB-R

Date	U-nat (mg/L)	Gross Alpha Corrected (pCi/L)
	ACL 1.6 mg/L	GPS 21 pCi/L
1/19/2015	0.0039	-15.6
2/11/2015	0.0039	21.4
3/6/2015	0.0048	-14.2
4/21/2015	0.0044	-0.448
5/5/2015	0.0038	12.5
6/2/2015	0.0047	-11.6

4.2.2 19-77 TRB

Background well 19-77 TRB is one of the most stable wells in the monitoring network, as demonstrated by the time-concentration plots provided in Appendix 2. An elevated concentration of molybdenum was reported in a groundwater sample collected and analyzed during the fourth quarter 2014 sampling event. The result, 0.088 mg/L, is an order of magnitude greater than the previously reported result of 0.004 mg/L. The sample was re-analyzed by the lab to attempt to identify potential errors in rounding, unit conversions, or dilutions; however, the re-analyzed sample result for molybdenum was similarly elevated. Sampling results for molybdenum in background well 19-77 TRB for January and February 2015 showed concentrations of 0.021 mg/L and 0.02 mg/L, respectively, which are well below the GPS of 0.08mg/L.

5.0 CONCLUSIONS

The following table summarizes the notable results from the first half of 2015 groundwater monitoring.

**Table 6. Rio Algom Mining – Ambrosia Lake
First Half 2015 Summary and Path Forward**

Well	Summary	Status	Path Forward
36-06 KD	Beryllium, cadmium, and gross alpha above GPSs	CAP submitted for beryllium 2007; monthly monitoring (plus uranium)	Continue with monthly monitoring until concentrations remain consistently below GPS; quarterly reporting
32-45 KD-R	Molybdenum above GPS; nitrate above ACL	Replacement well stabilizing, monthly monitoring	Continue with monthly monitoring and quarterly reporting until well stabilizes
30-02 KD	Low/no recharge well; unknown water source	Unrepresentative sample; stagnant/unknown source	Continue with semiannual monitoring for total depth and depth to water; sample if recharge requirements are met; Review historic data and propose plugging and abandoning if appropriate.
30-01 TRA	Dry or low/no recharge well; unknown source; molybdenum above GPS	Unrepresentative sample; stagnant/unknown source	Continue with semiannual monitoring for total depth and depth to water; sample if recharge requirements are met; Review historic data and propose plugging and abandoning if appropriate.
19-77 TRB	Molybdenum above GPS	Background well; resampling confirmed result below GPS	Resume semiannual sampling
31-02 TRB-R	Gross alpha above GPS	Replacement well stabilizing; monthly monitoring	Continue monthly monitoring and quarterly reporting until well stabilizes

RAML proposes to continue monthly sampling of constituents exceeding their respective GPS or ACL. Replacement wells that are in the process of stabilization will also be sampled on a monthly basis for constituents exceeding GPSs or ACLs. If exceedances continue to occur after wells have stabilized, a CAP will be proposed and submitted to NRC. Wells with construction specifications that allow for collection of samples that may not be representative of formation conditions will be monitored for total depth and depth to water, and sampled only if the well meets the recharge criteria of 90% within 24 hours as specified in the RAML Groundwater Sampling SOP.

Monitoring of the well network is required on a semiannual basis, with the exception of the wells involved in accelerated monthly sampling. RAML will continue to conduct monthly and semiannual monitoring in accordance with the requirements in Condition #34 of the License.

6.0 REFERENCES

Rio Algom Mining LLC (RAML), 2015. *Groundwater Monitoring Standard Operating Procedure*.

APPENDIX 1

Stability Monitoring Plan
Analytical Results

RIO ALGOM MINING LLC
1st HALF 2015
DAKOTA WELL RESULTS - ACL PARAMETERS

Well	Date		Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH s.u.	Chloride (mg/L)	Nitrate (mg/L)	T.D.S. (mg/L)	Sulfate (mg/L)
17-01 KD	2015/02/17	Q1 2015	-	-	1841	17.68	11.03	16	<0.02	1110	832
30-02 KD	2015/02/13	Q1 2015	309.64	313.37			Insufficient Water				
30-48 KD-R	2015/02/17	Q1 2015	325.81	358.73	5727	13.37	7.08	525	<0.02	4350	2070
32-45 KD-R	2015/02/17	Q1 2015	257.23	278.65	3180	1325	7.12	133	26.7	2260	1120
36-06 KD	2015/02/11	Q1 2015	181.15	205.55	8880	12.93	4.09	1290	<0.2	8770	4560
5-02 KD	2015/02/18	Q1 2015	186.88	190.18			Insufficient Water				
ACL								3200	22.8	14100	6480

Well	Date		Ni (mg/L)	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226+Ra-228 (pCi/L)
17-01 KD	2015/02/17	Q1 2015	<0.0006	<0.0001	0.16	-0.75	1.9 y
30-02 KD	2015/02/13	Q1 2015			Insufficient Water		
30-48 KD-R	2015/02/17	Q1 2015	<0.003	<0.0005	0.12	0.05	9.5 y
32-45 KD-R	2015/02/17	Q1 2015	0.003 B	0.0687	-0.06	-1.4	5.9 y
36-06 KD	2015/02/11	Q1 2015	0.228	0.7454	30	0.57	24 y
5-02 KD	2015/02/18	Q1 2015			Insufficient Water		
ACL			6.8	1.6	945	88	218

Well 30-02KD and 5-02KD contained insufficient water for sample collection.
< = constituent was not detected above the method detection limit.

RIO ALGOM MINING LLC
1st HALF 2015
TRA WELL RESULTS - ACL PARAMETERS

Well	Date		Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH s.u.	Chloride (mg/L)	Sulfate (mg/L)	T.D.S. (mg/L)	Nitrate (mg/L)
30-01 TRA	2015/02/12	Q1 2015	205.9	207.55			Insufficient Water				
31-01 TRA-R	2015/02/18	Q1 2015	204.72	213.59	2022	14.14	7.51	38.7	963	1790	0.03 B
33-01 TRA	2015/02/10	Q1 2015	118.67	181.3	3442	13.06	7.76	31.9	1850	2710	0.02 B
ACL								1070	2584	6400	9.2

Well	Date		Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226+Ra-228 (pCi/L)
30-01 TRA	2015/02/12	Q1 2015		Insufficient Water	
31-01 TRA-R	2015/02/18	Q1 2015	-0.21	-0.44	1.16 y
33-01 TRA	2015/02/10	Q1 2015	0.28	1.3	4.57 y
ACL			945	88	218

< = constituent was not detected above the method detection limit.
Well 30-01 TRA contained insufficient water for sample collection.

RIO ALGOM MINING LLC
1st HALF 2015
TRB WELL RESULTS - ACL PARAMETERS

Well	Date		Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH s.u.	Chloride (mg/L)	Sulfate (mg/L)	T.D.S. (mg/L)	Nitrate (mg/L)
19-77 TRB	2015/02/13	Q1 2015	275.5	288.4	4138	12.88	7.22	16.4	2110	3290	0.35
31-02 TRB-R	2015/02/11	Q1 2015	96.11	128.35	8811	12.27	6.31	1200	3830	7740	<0.02
31-67 TRB	2015/02/17	Q1 2015	33.63	96.3	9087	11.88	6.22	1080	3450	7120	<0.02
36-01 TRB	2013/08/13	Q1 2015	-	58.58				Dry			
36-02 TRB	2015/02/11	Q1 2015	52.81	57.49	9637	11.1	5.48		Insufficient Water		
ACL								2810	4760	11700	7.7

Well	Date		Ni (mg/L)	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226+Ra-228 (pCi/L)
19-77 TRB	2015/02/13	Q1 2015	0.004 B	0.0056	-0.49	-4.6	1.54 y
31-02 TRB-R	2015/02/11	Q1 2015	<0.003	0.0039	0.21	-1.6	11.2 y
31-67 TRB	2015/02/17	Q1 2015	0.006 B	0.0124	0.29	-1	13.4 y
36-01 TRB	2013/08/13	Q1 2015			Insufficient Water		
36-02 TRB	2015/02/11	Q1 2015			Insufficient Water		
ACL			6.8	1.6	945	88	218

< = constituent was not detected above the method detection limit.
Monitor Well 36-01TRB contained insufficient water for sample collection.

RIO ALGOM MINING LLC
1st HALF 2015
ALLUVIAL WELL RESULTS - ACL PARAMETERS

Well	Date		Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH s.u.	Chloride (mg/L)	Sulfate (mg/L)	T.D.S. (mg/L)	Nitrate (mg/L)
5-73 ALL-R	2015/02/10	Q1 2015	20.05	27.05	7748	12.21	6.64	1530	2140	6100	4.5
5-03 ALL-R	2015/02/10	Q1 2015	25	55.87	4960	12.41	6.92	527	2220	4200	0.39
5-04 ALL	2015/02/10	Q1 2015	23.34	60.1	6018	12.58	8.09	807	2850	5180	<0.02
5-08 ALL-R	2015/02/10	Q1 2015	36.13	76.50	4130	12.68	7.11	240	2200	3770	12.3
31-61 ALL	2015/02/13	Q1 2015	16.07	29.04	14927	12.9	6.01	2300	5890	14100	2.69
31-65 ALL	2015/02/11	Q1 2015	13.04	41.43	15562	11.1	5.9	2400	6500	14000	<0.02
32-59 ALL	2015/02/10	Q1 2015	20.22	28.31	5399	12.78	7.22	567	2380	4660	0.55
MW-24 ALL	2015/02/11	Q1 2015	50.25	50.33			Insufficient Water				
ACL								7110	12000	26100	351

< = constituent was not detected above the method detection limit.

RIO ALGOM MINING LLC
1st HALF 2015
ALLUVIAL WELL RESULTS - ACL PARAMETERS

Well	Date		Mo (mg/L)	Ni (mg/L)	Se (mg/L)	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226+Ra-228 (pCi/L)	Gross Alpha (pCi/L)
5-73 ALL-R	2015/02/10	Q1 2015	0.006 B	0.009 B	0.0745	1.280	-0.24	-1.6	4 y	-647 y
5-03 ALL-R	2015/02/10	Q1 2015	<0.003	<0.003	<0.001	0.0874	-0.35	-0.69	4.23 y	-7 y
5-04 ALL	2015/02/10	Q1 2015	0.003 B	<0.003	0.0011 B	0.0009 B	0.17	-3.5	1.05 y	-5 y
5-08 ALL-R	2015/02/10	Q1 2015	0.004 B	0.001 B	0.0017 B	0.0203	0.22	-1	0.64 y	-6.0 y
31-61 ALL	2015/02/13	Q1 2015	<0.005	0.056	0.0056	0.588	0.05	0.32	3.29 y	-153 y
31-65 ALL	2015/02/11	Q1 2015	<0.005	0.113	0.0020 B	0.094	0.24	-1.1	5.03 y	-45 y
32-59 ALL	2015/02/10	Q1 2015	0.006 B	<0.003	0.0101	0.1437	0.1	-0.96	3.62 y	-35 y
MW-24 ALL	2015/02/11	Q1 2015				Insufficient Water				
ACL			176	98	49	23	13627	1274	3167	8402

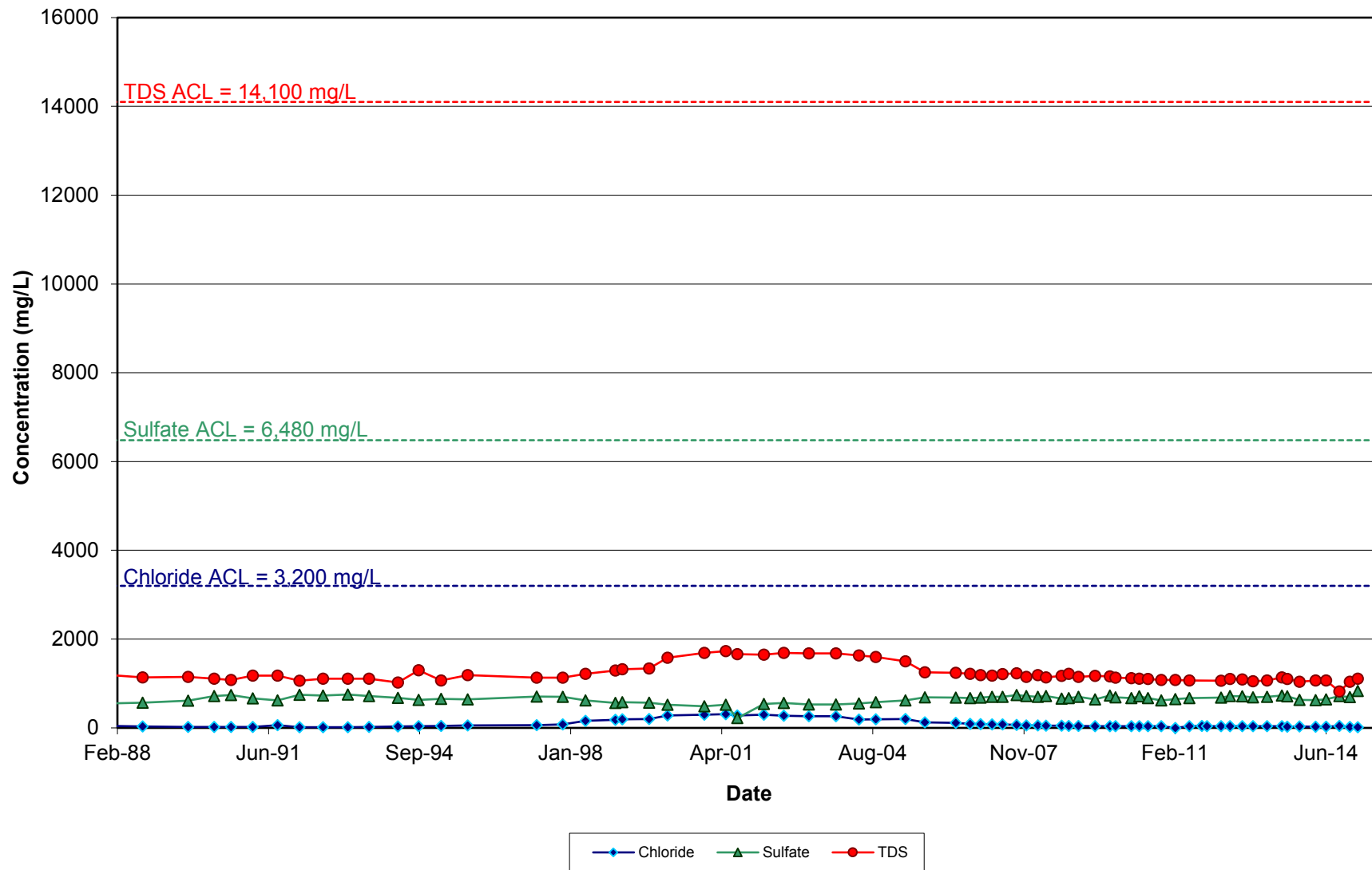
< = constituent was not detected above the method detection limit.

APPENDIX 2

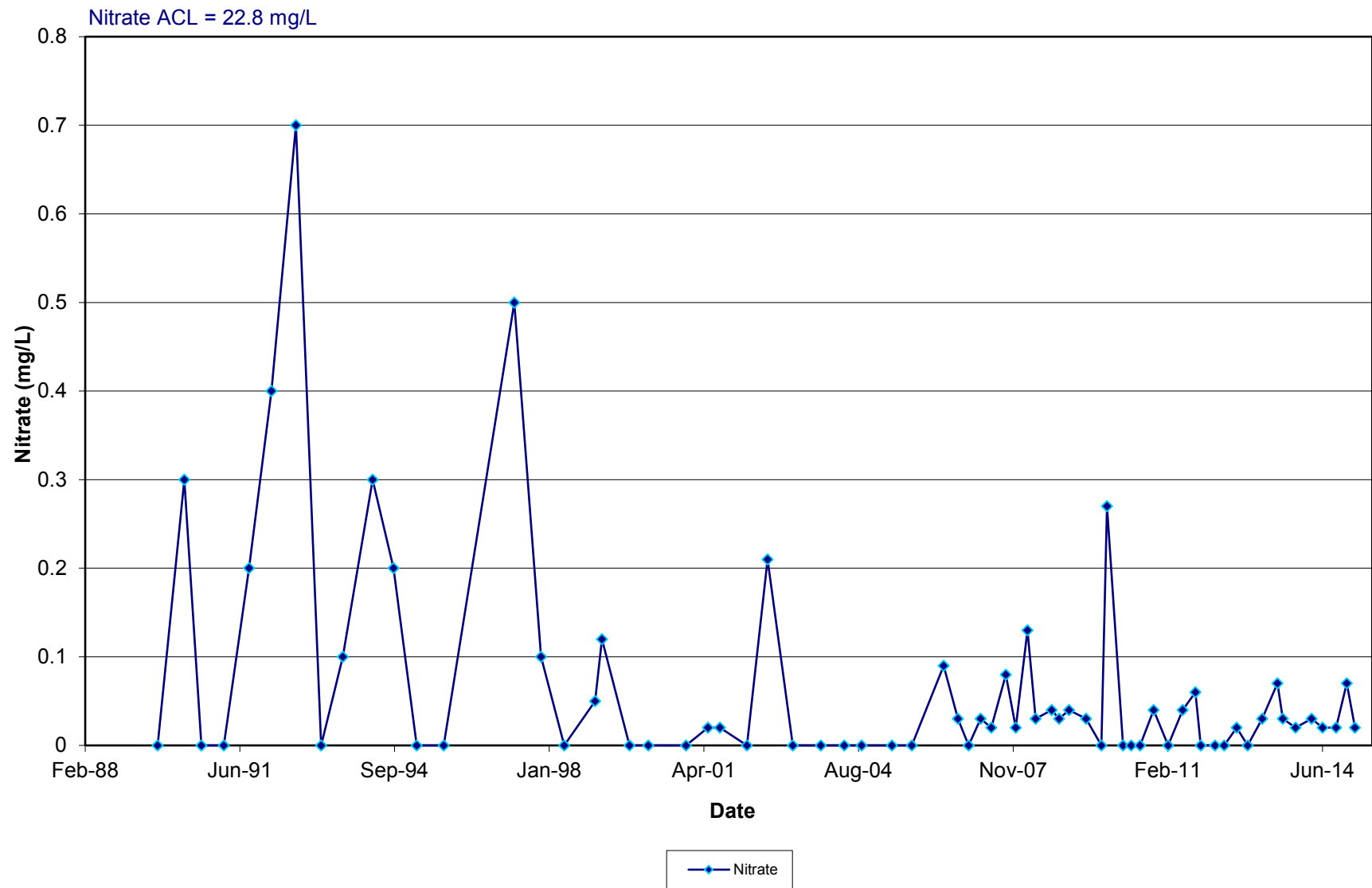
Stability Monitoring Plan
Time Versus Concentration Plots

Stability Monitoring Plan
Time Versus Concentration Plots
Dakota

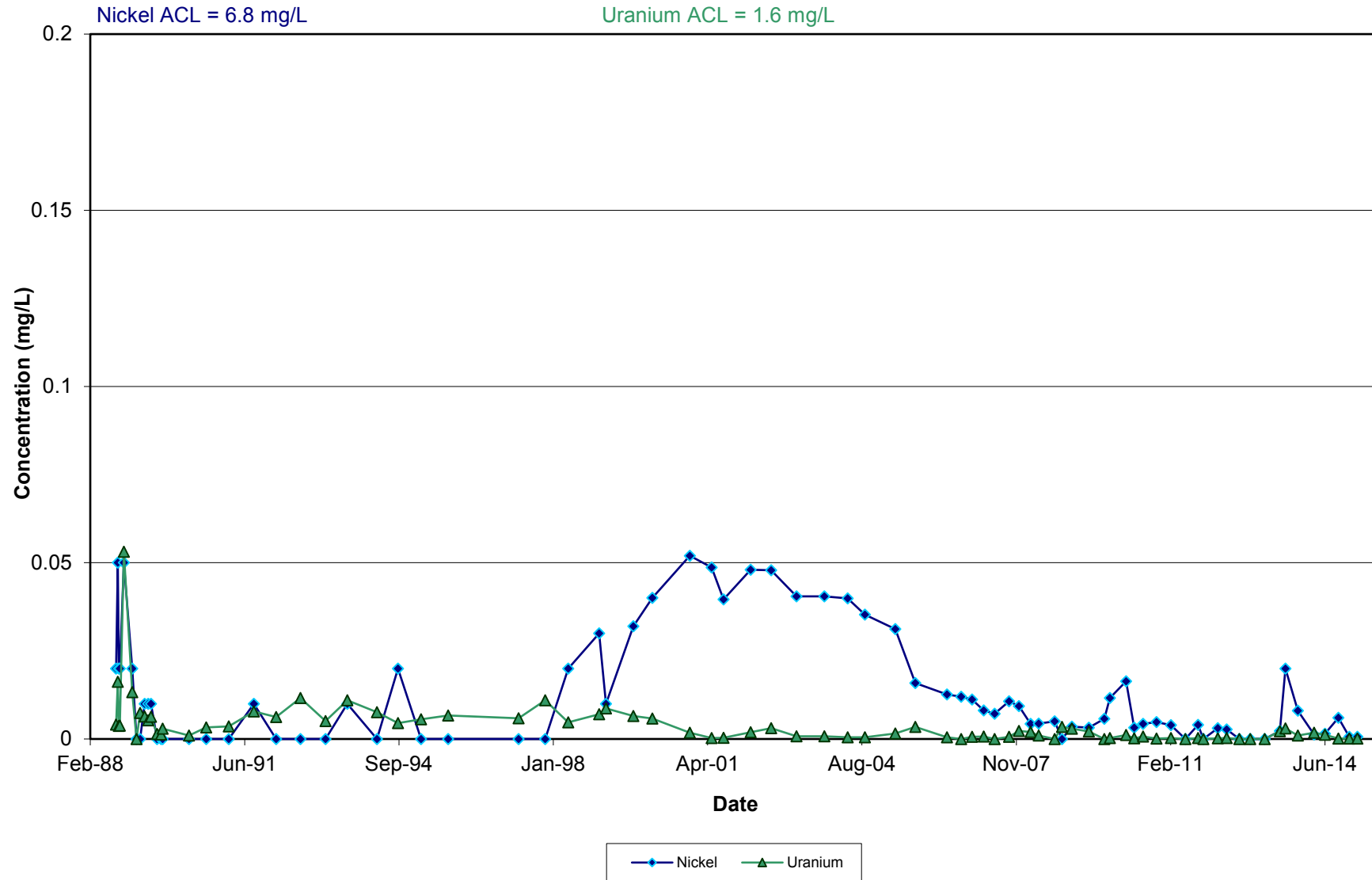
Anions and TDS in Monitoring Well 17-01KD



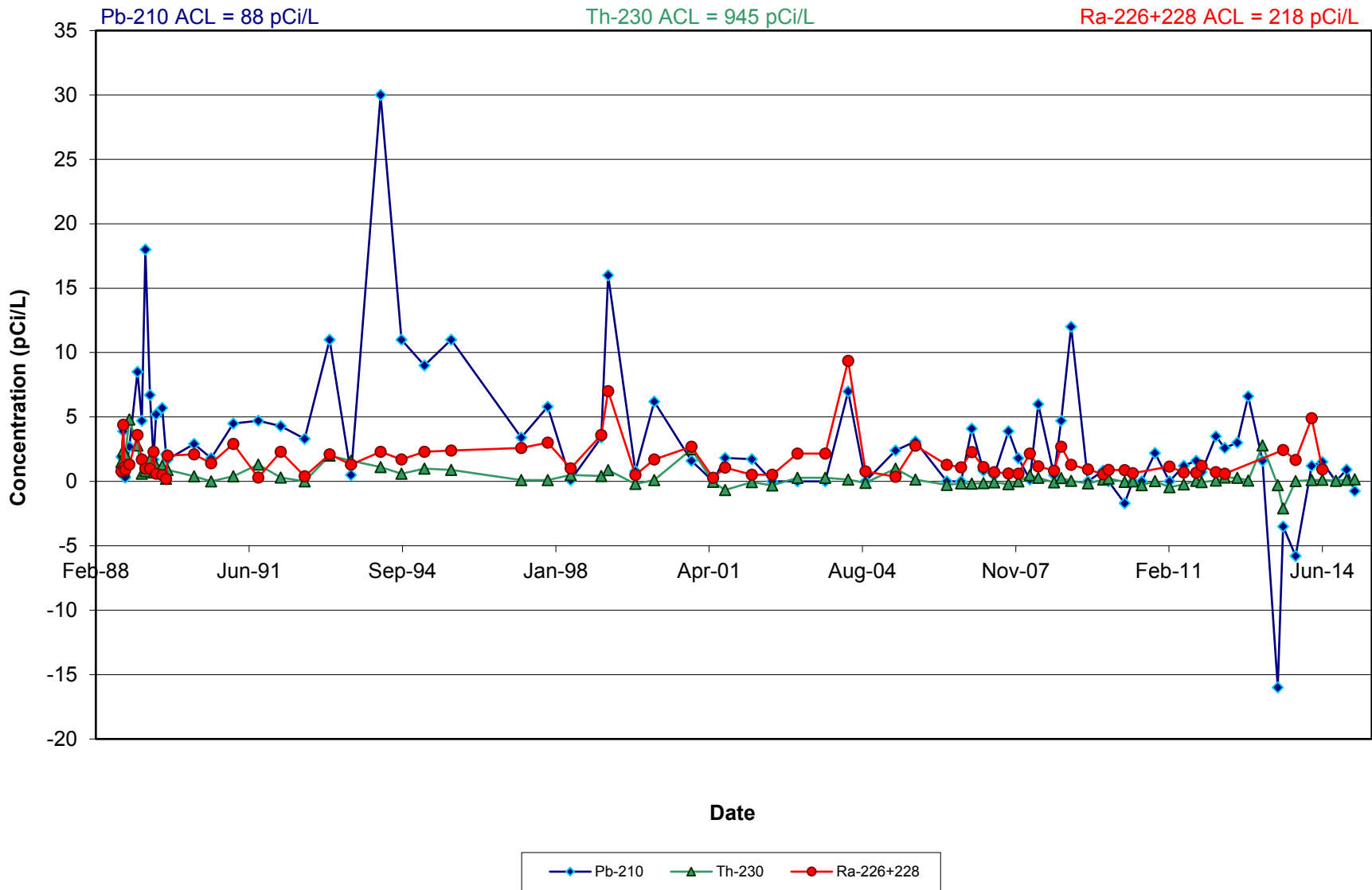
Nitrate in Monitoring Well 17-01KD



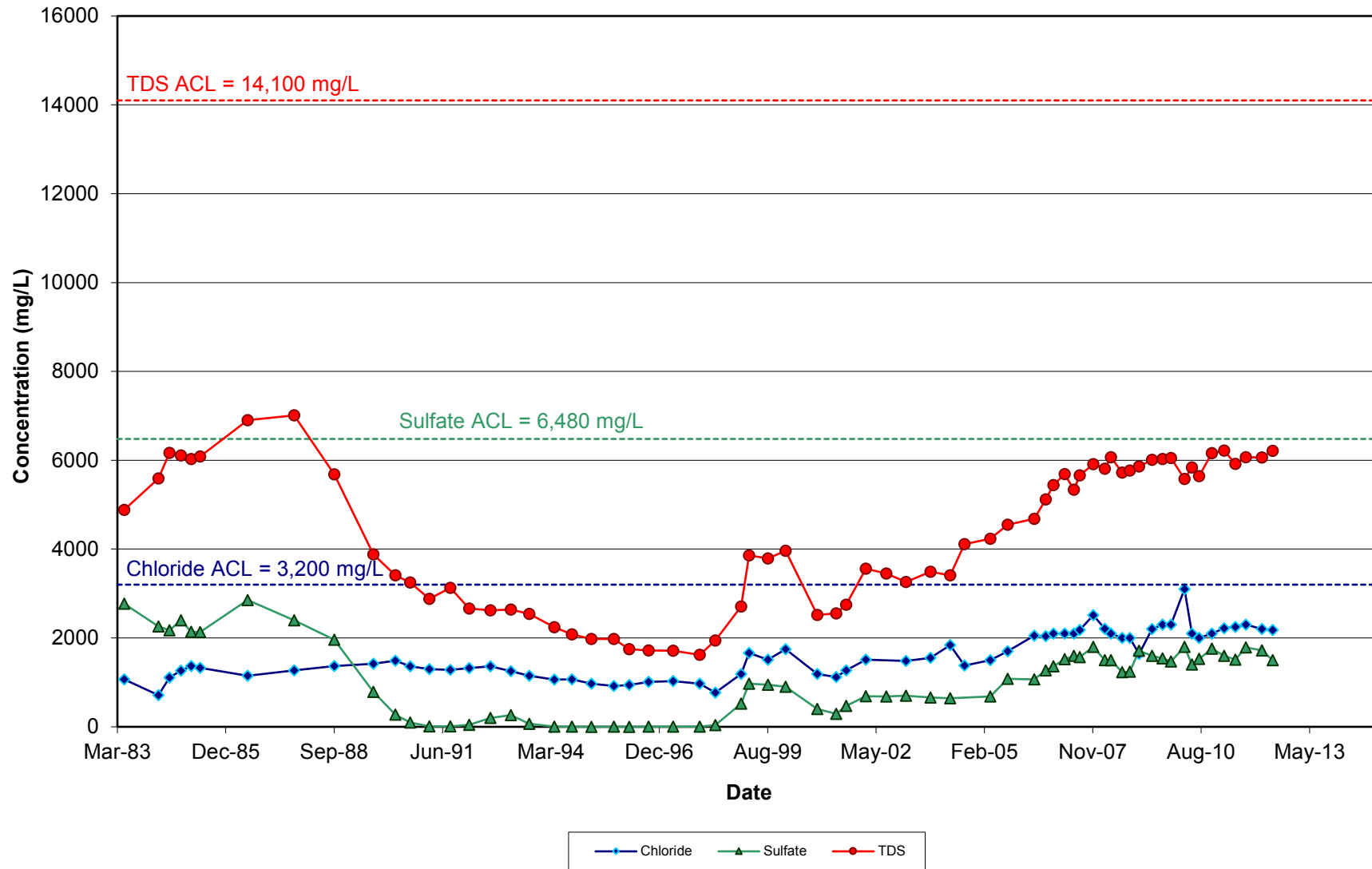
Metals in Monitoring Well 17-01KD



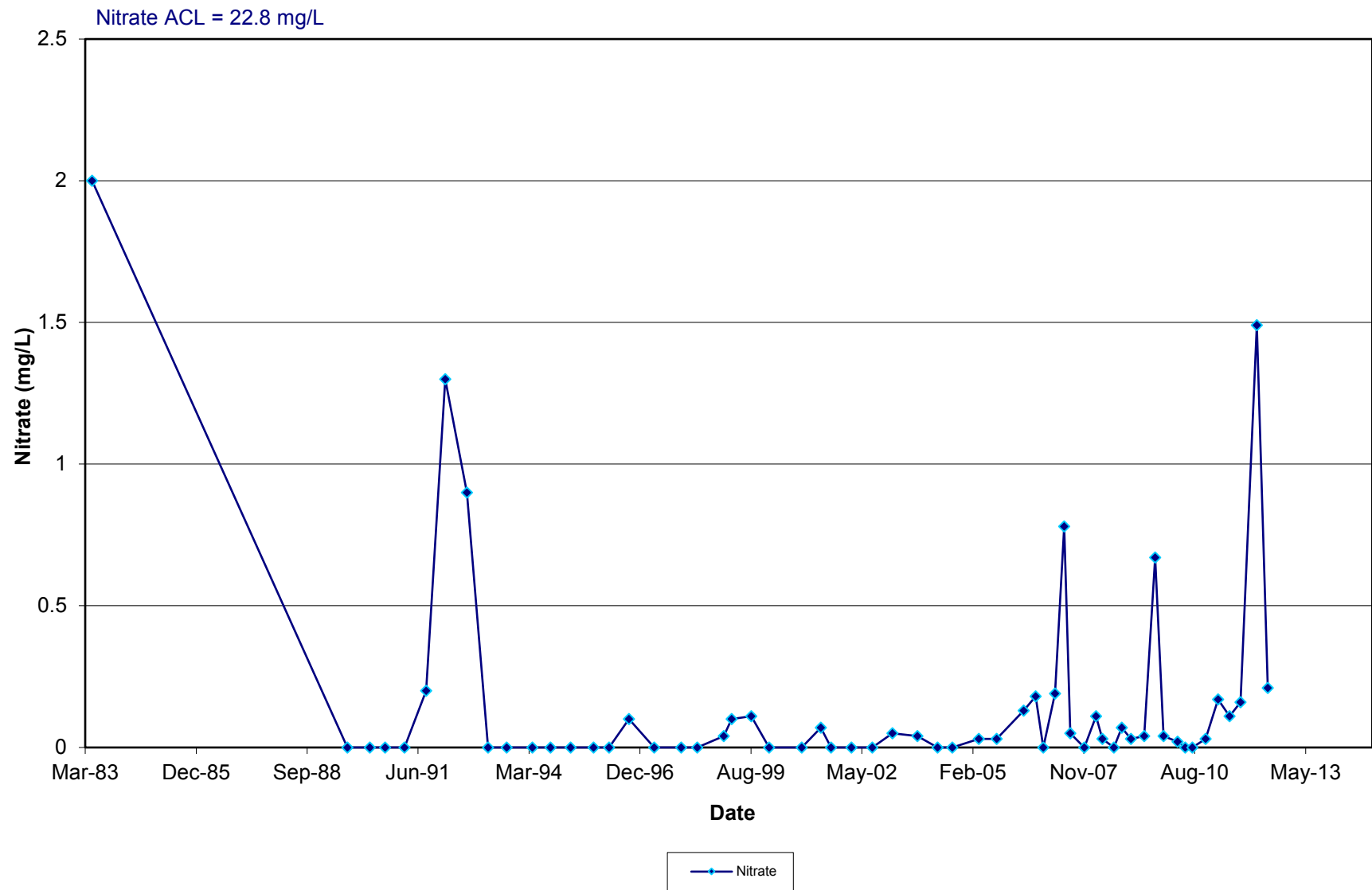
Radionuclides in Monitoring Well 17-01KD



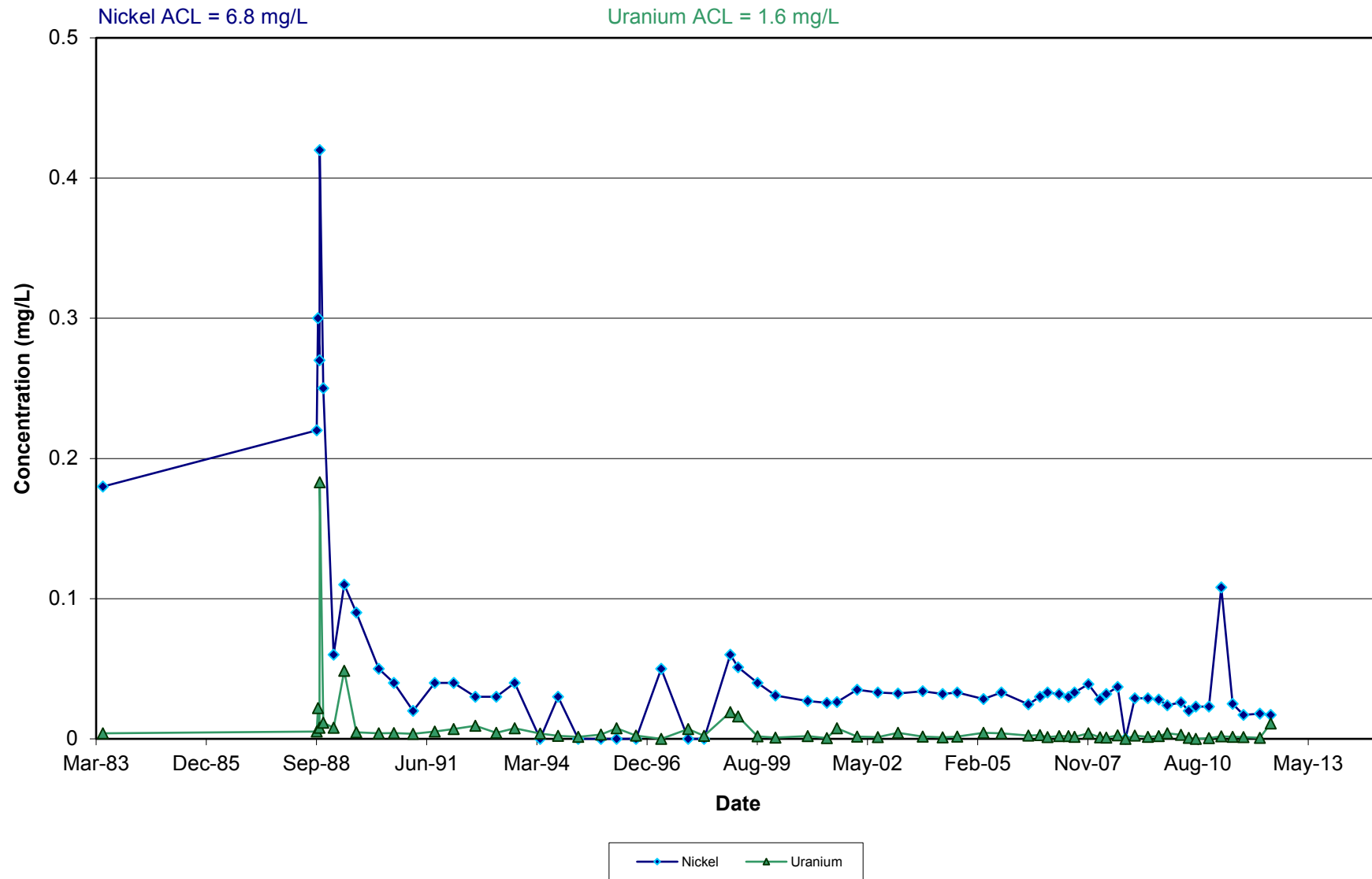
Anions and TDS in Monitoring Well 30-02KD



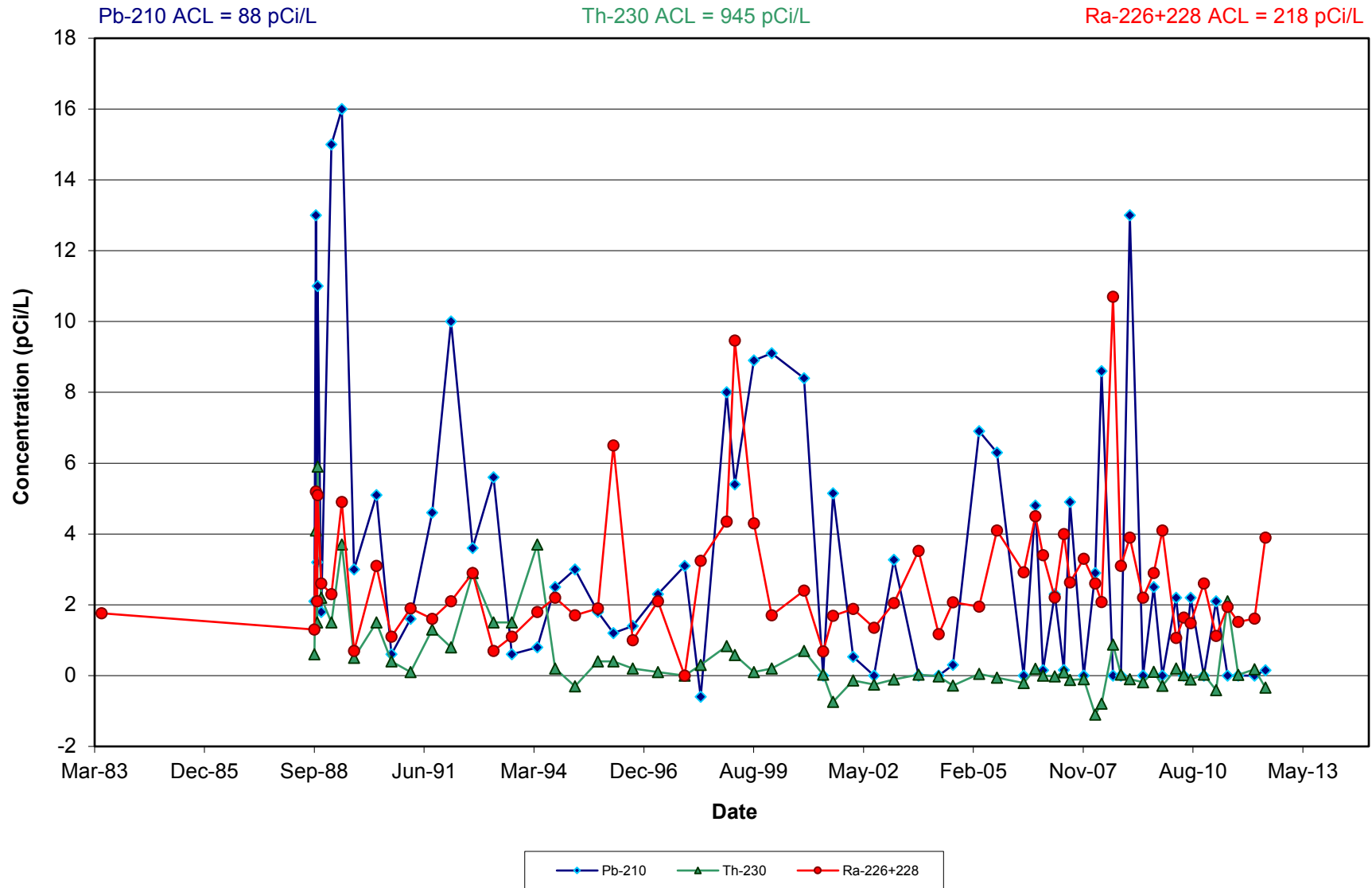
Nitrate in Monitoring Well 30-02KD



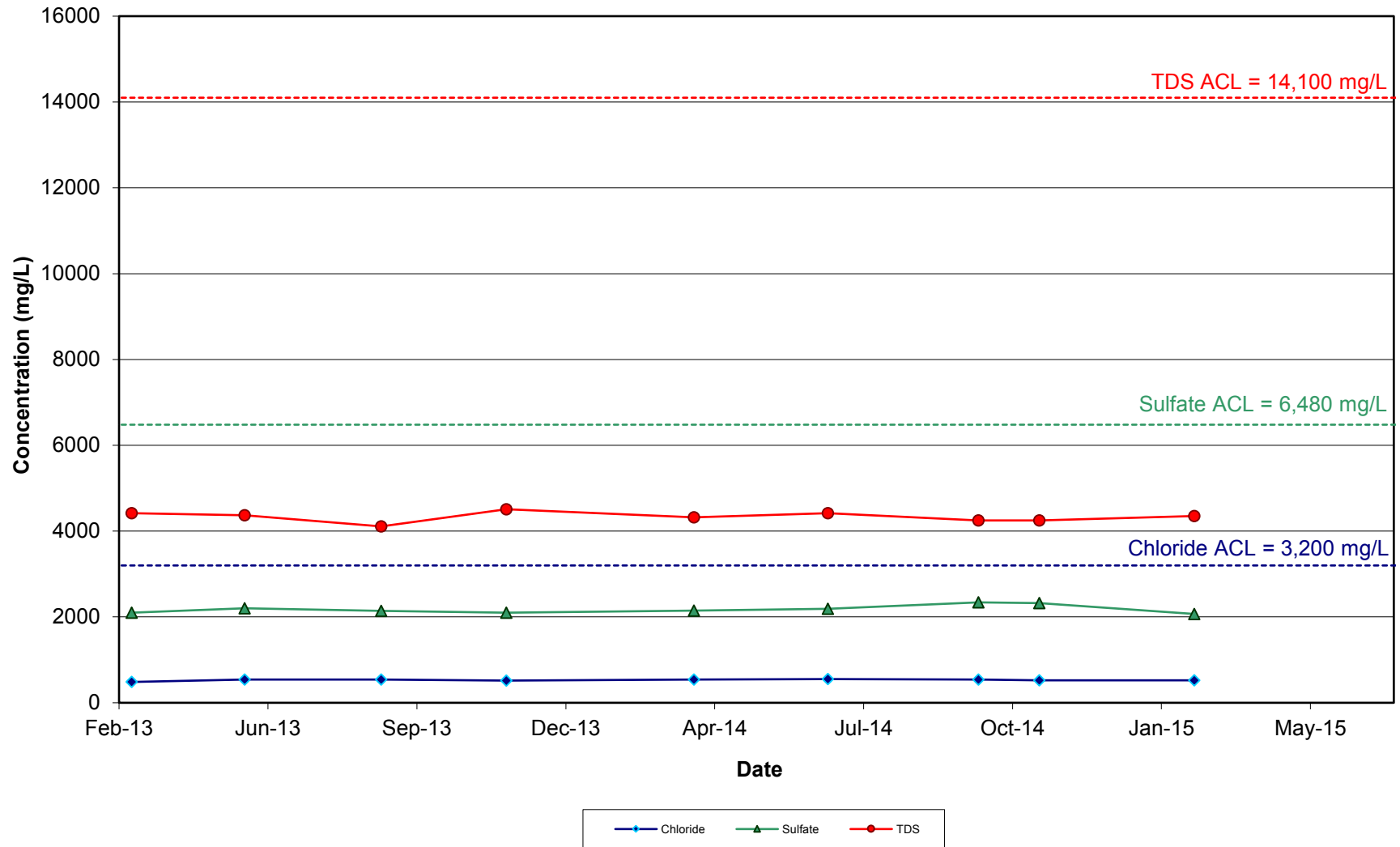
Metals in Monitoring Well 30-02KD



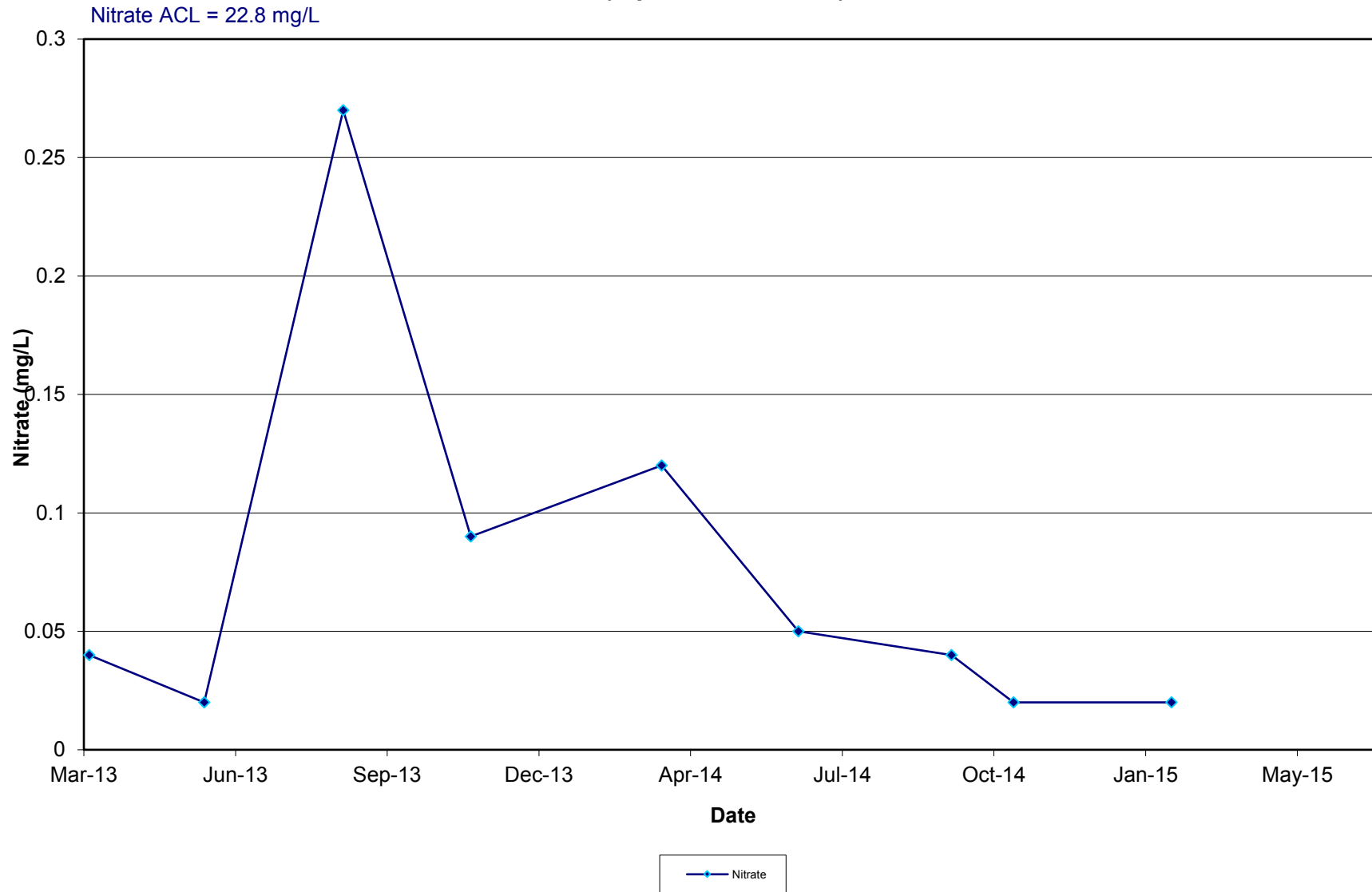
Radionuclides in Monitoring Well 30-02KD



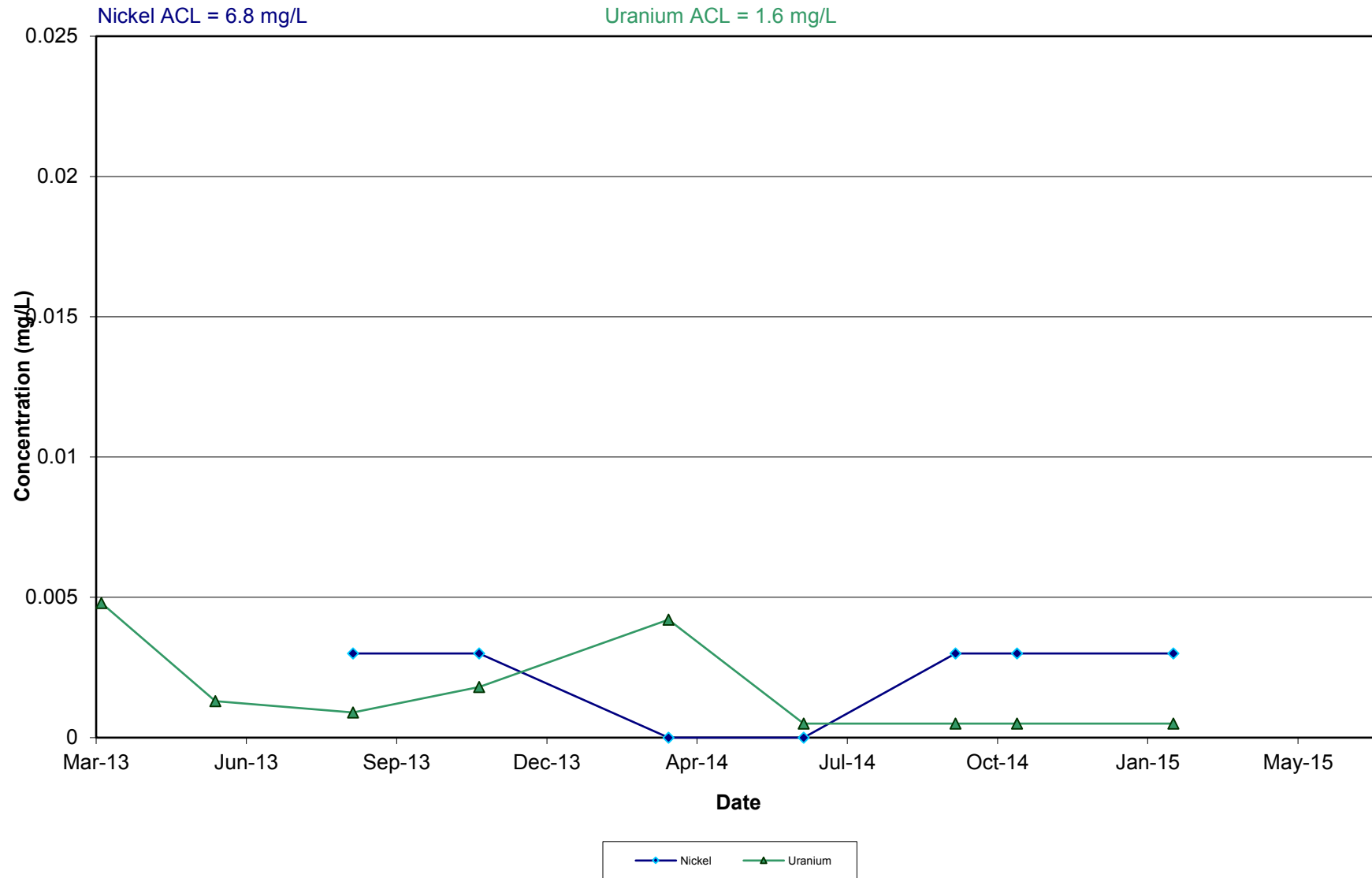
**Anions and TDS in Monitoring Well 30-48KD-R
(replaced 12/5/2012)**



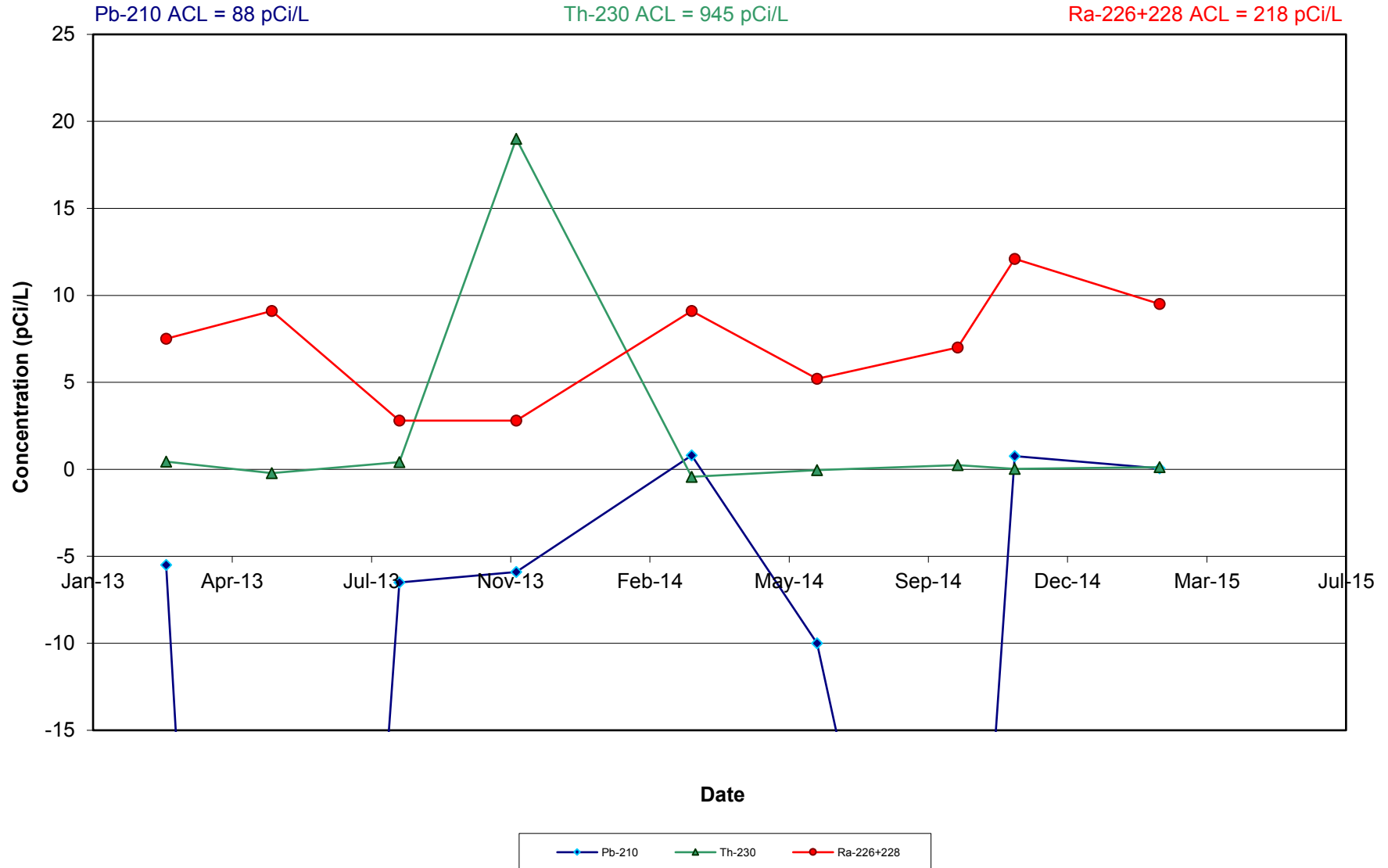
Nitrate in Monitoring Well 30-48KD-R (replaced 12/5/2012)



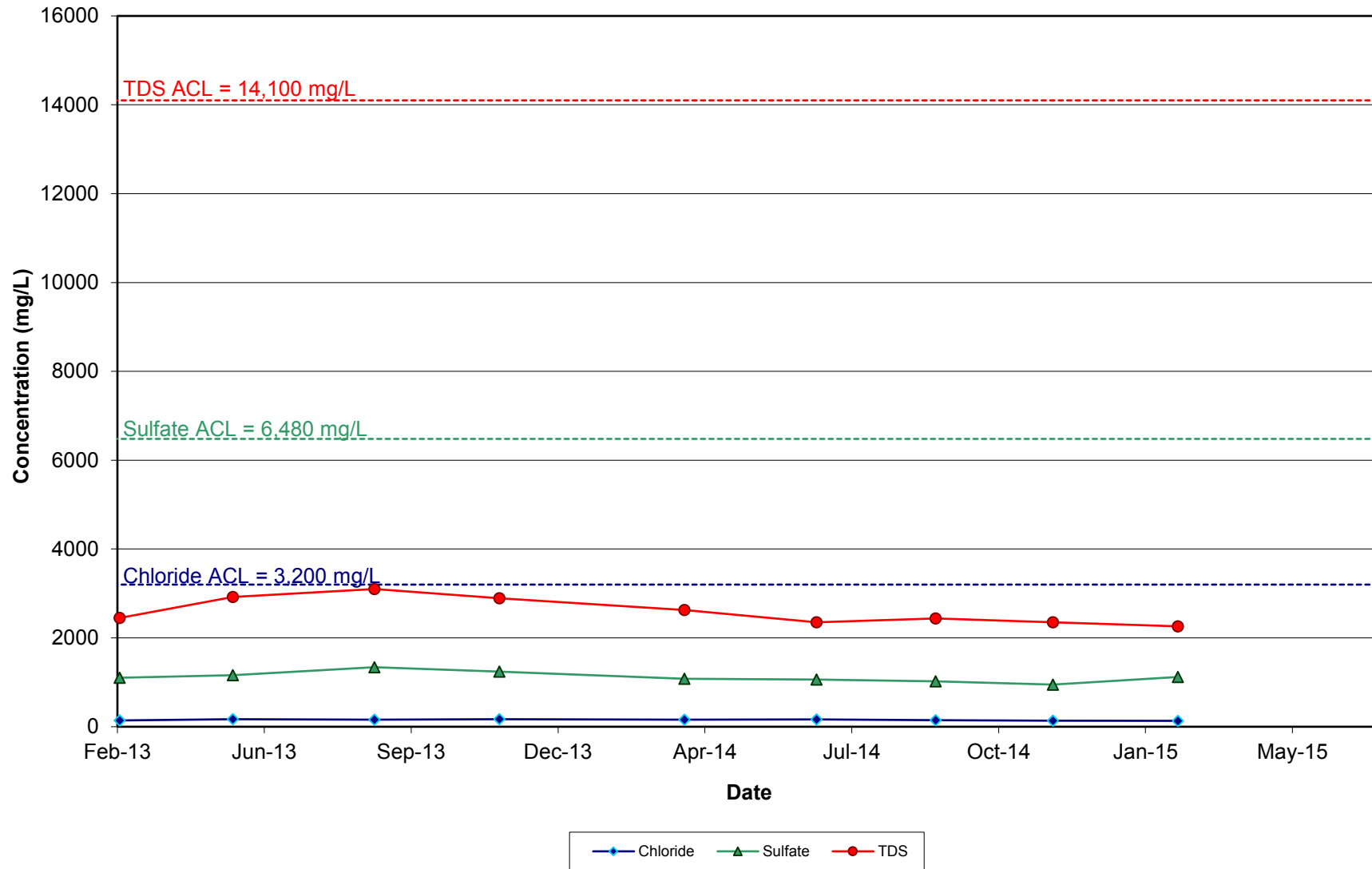
**Metals in Monitoring Well 30-48KD-R
(replaced 12/5/2012)**



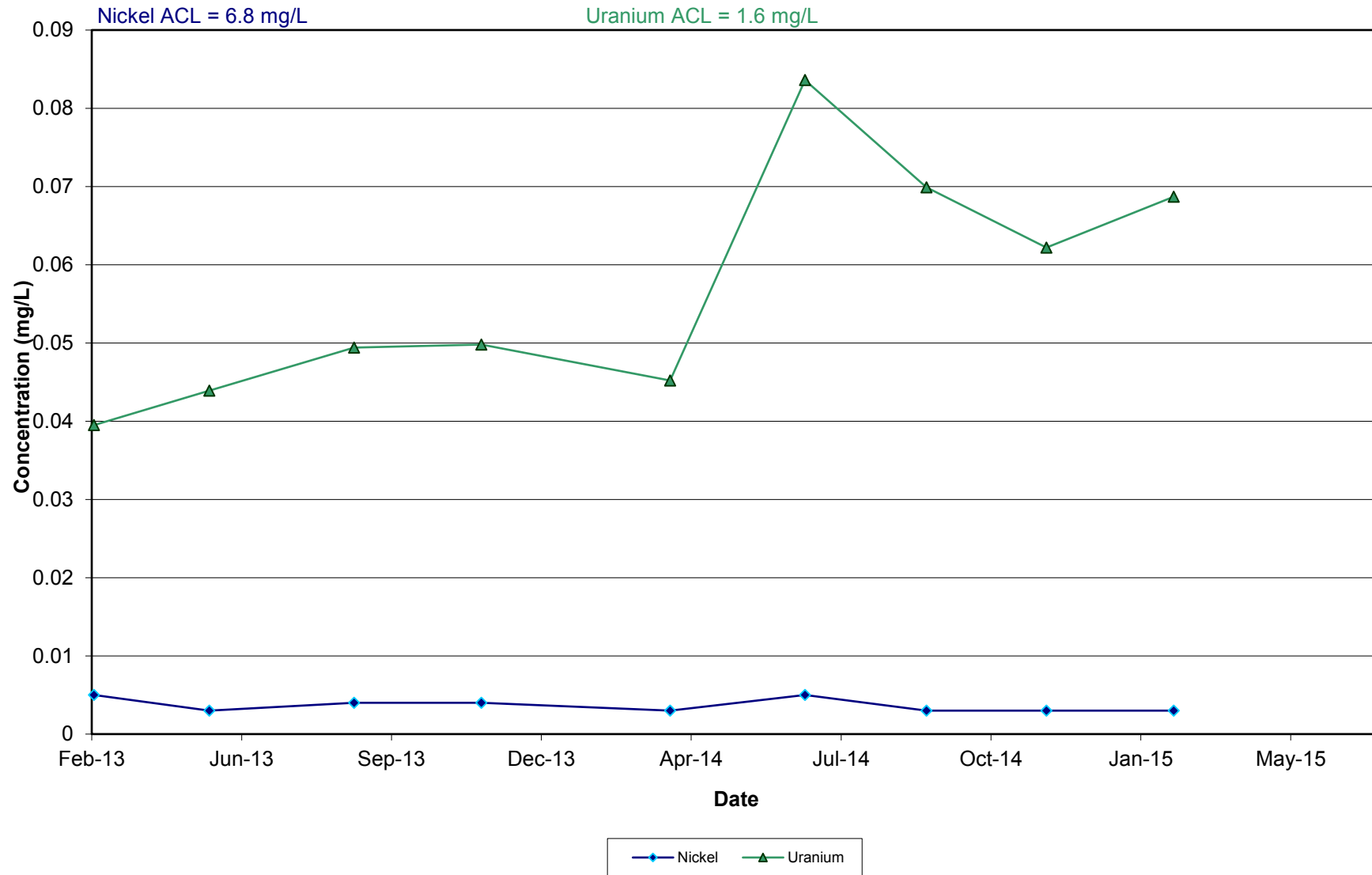
Radionuclides in Monitoring Well 30-48KD-R (replaced 12/5/2012)



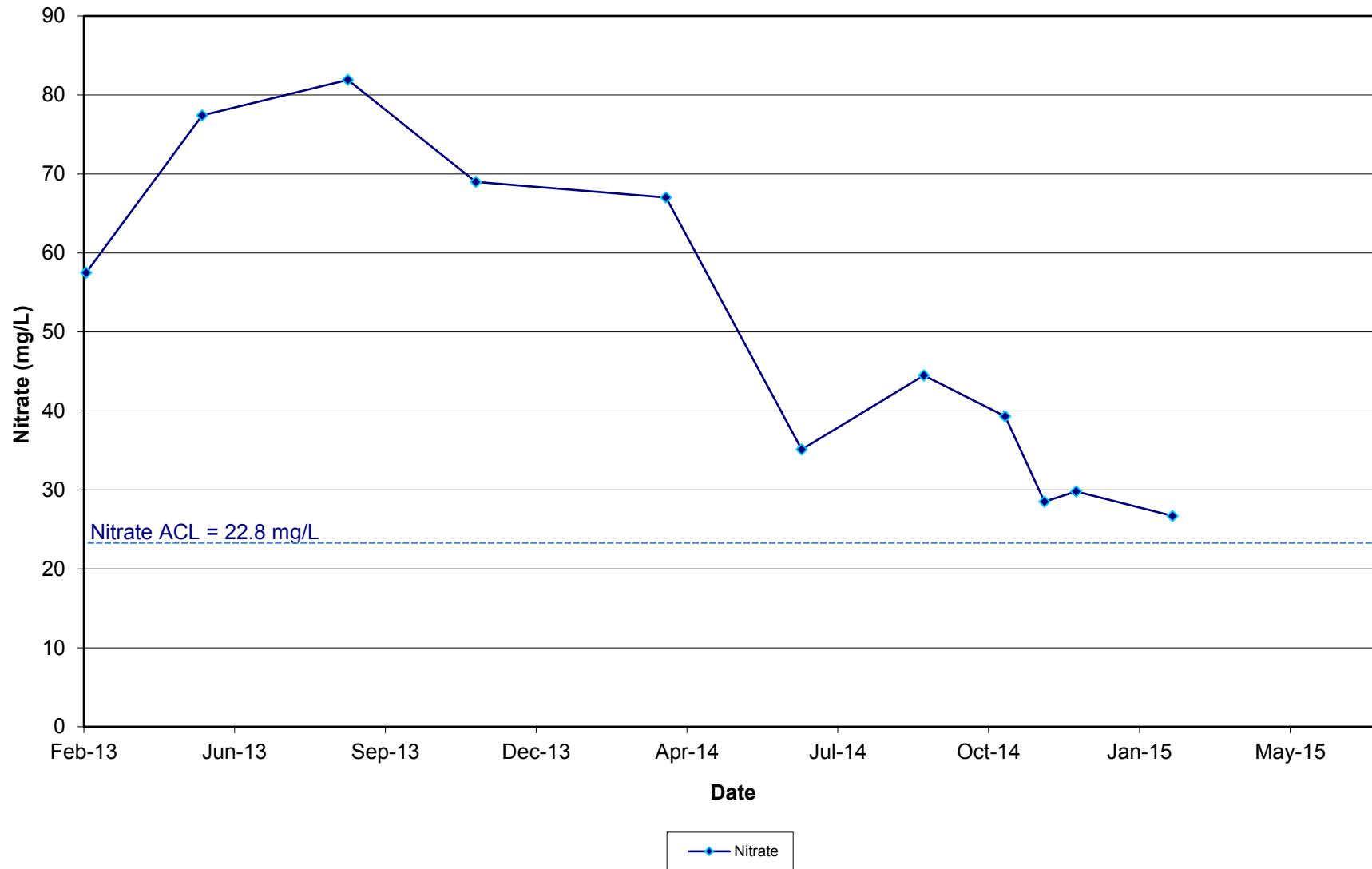
**Anions and TDS in Monitoring Well 32-45KD-R
(replaced 11/28/12)**



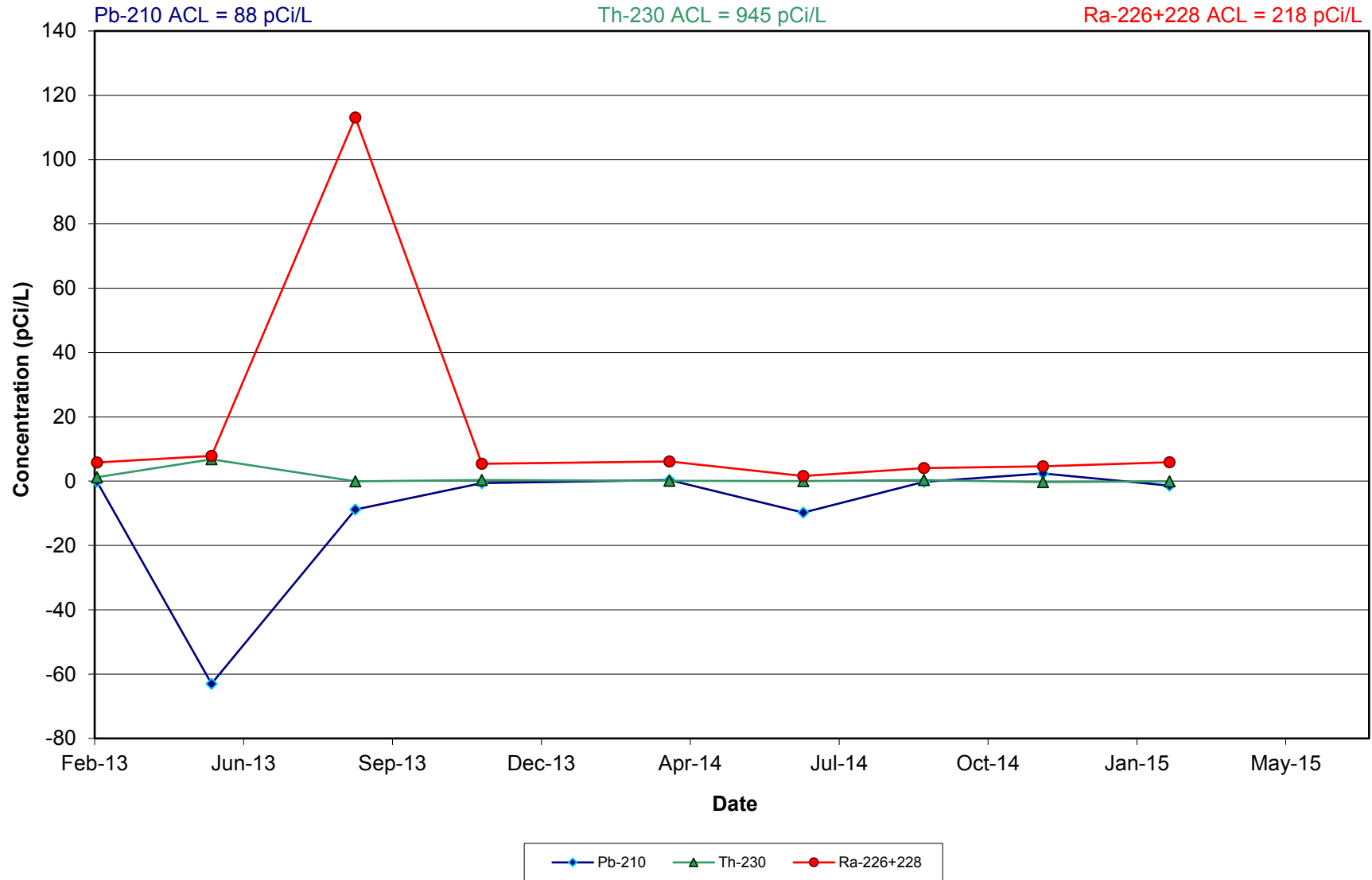
Metals in Monitoring Well 32-45KD-R (replaced 11/28/12)



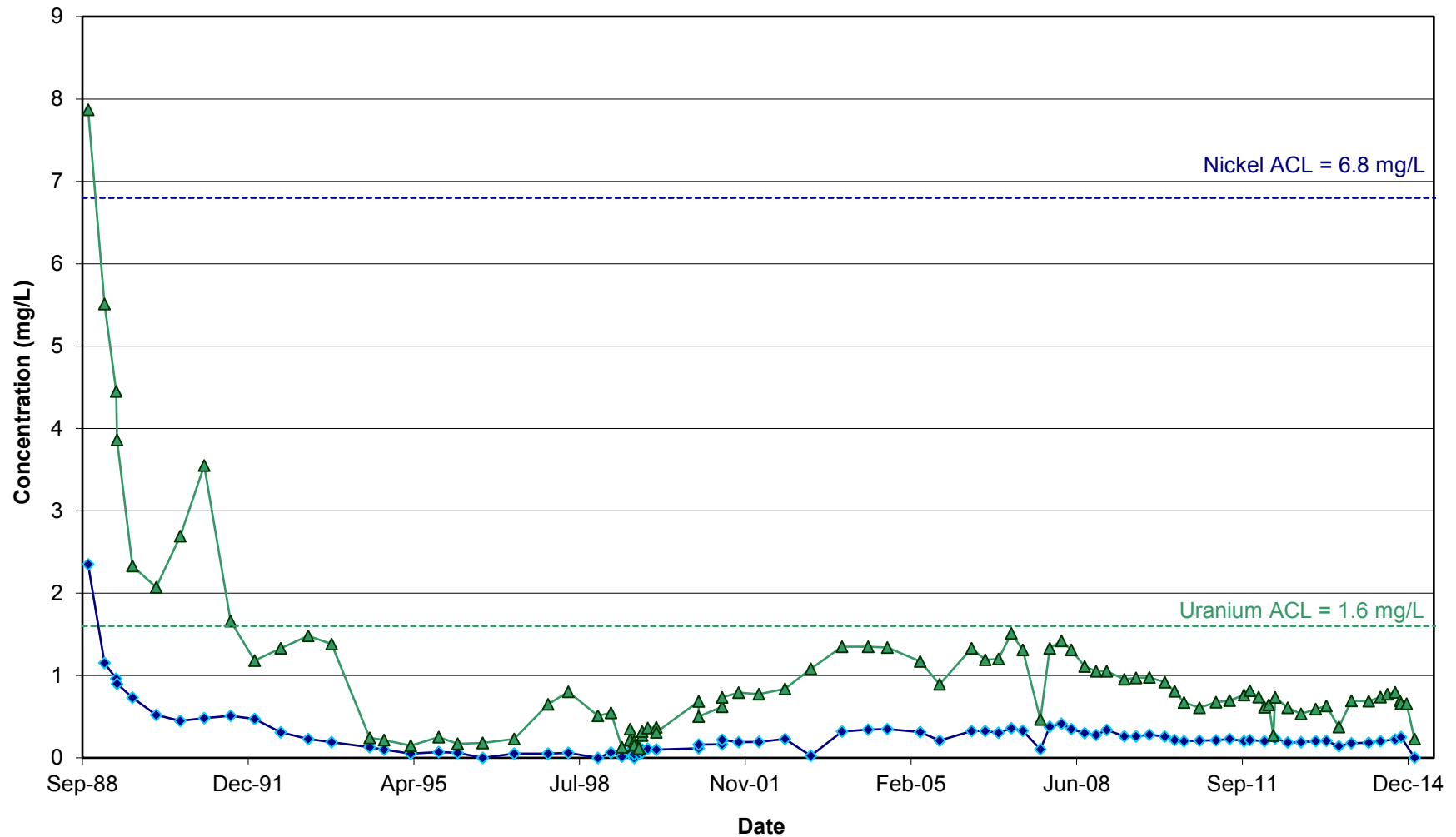
**Nitrate in Monitoring Well 32-45KD-R
(replaced 11/28/12)**



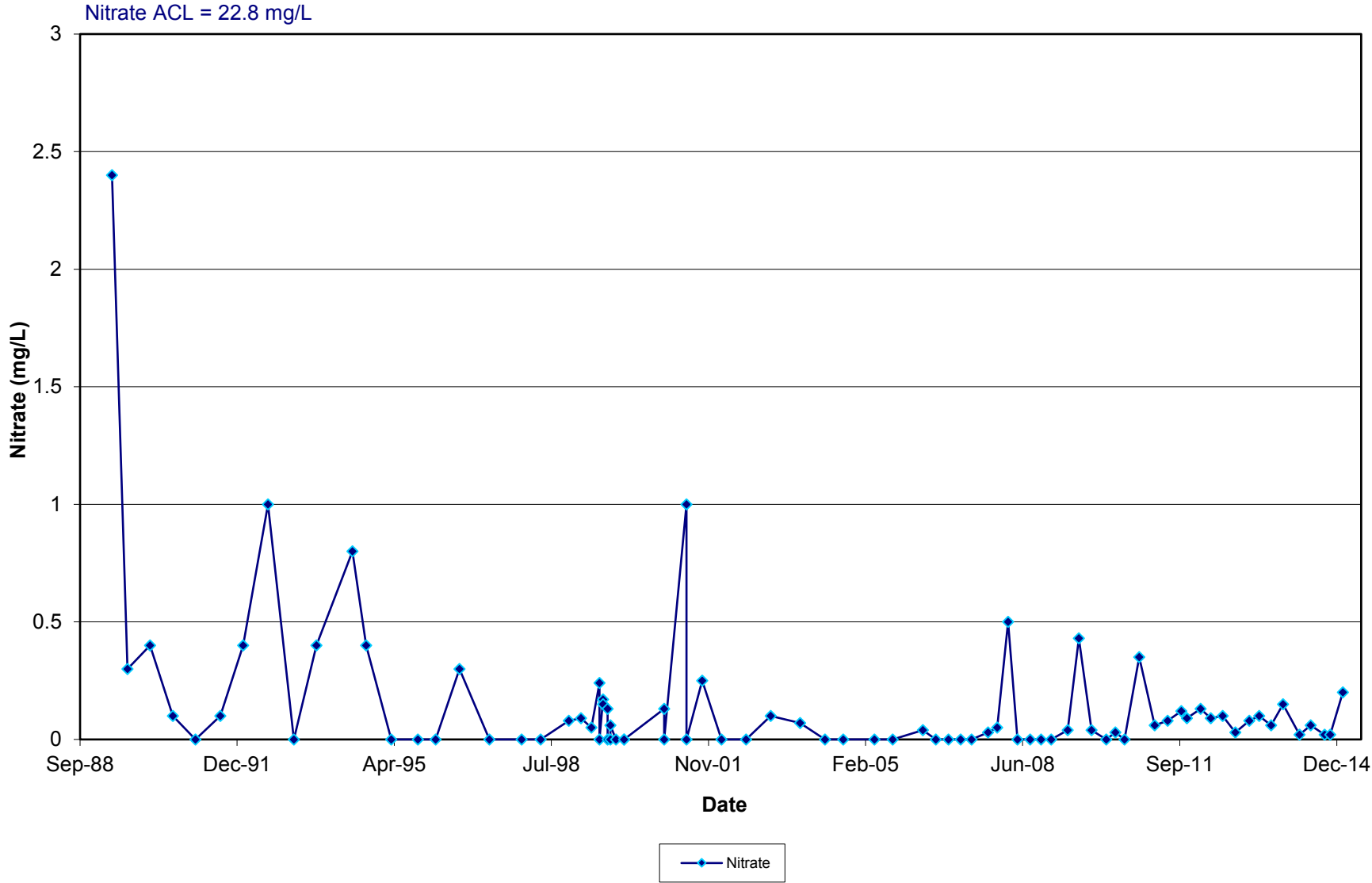
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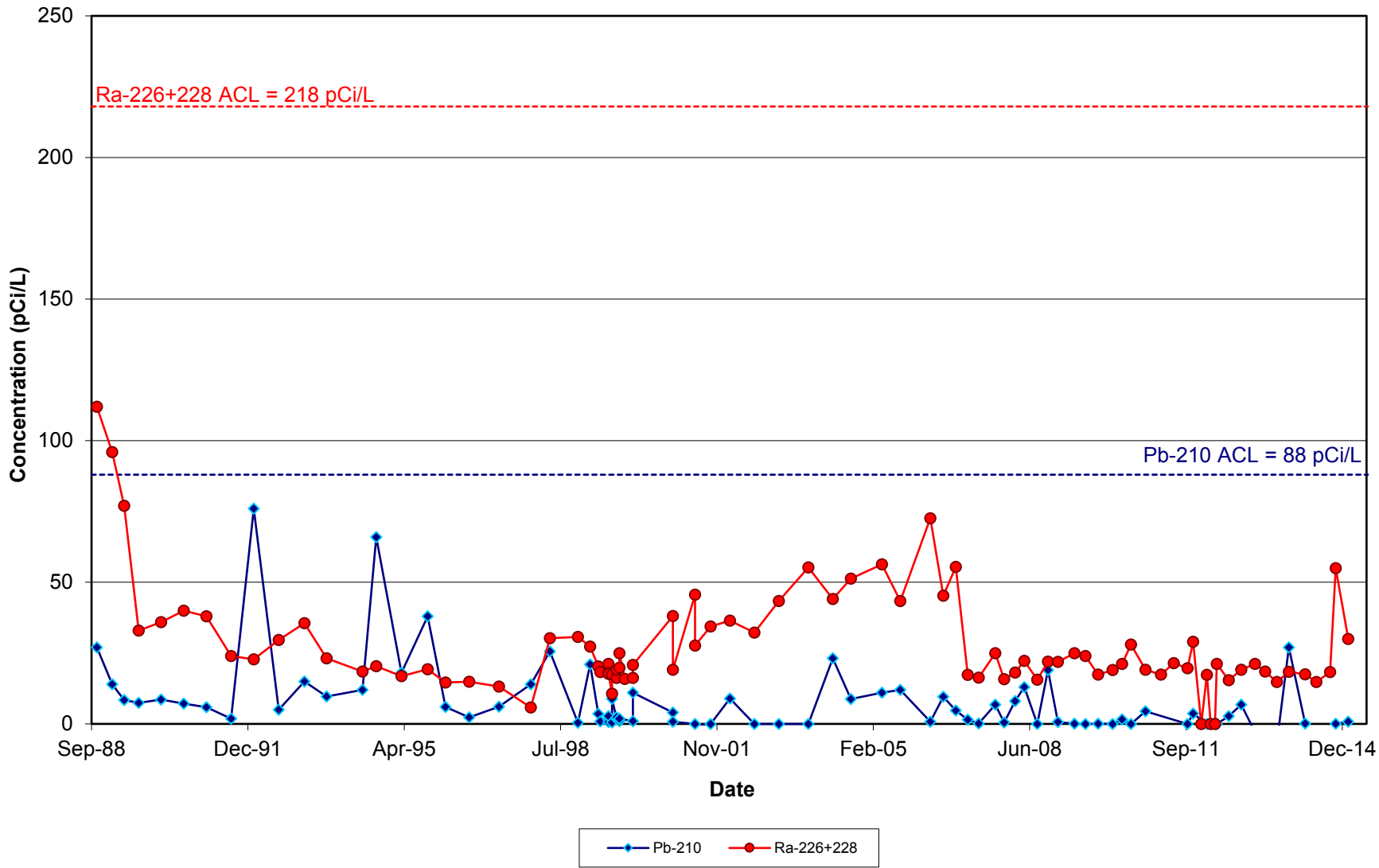
Metals in Monitoring Well 36-06KD



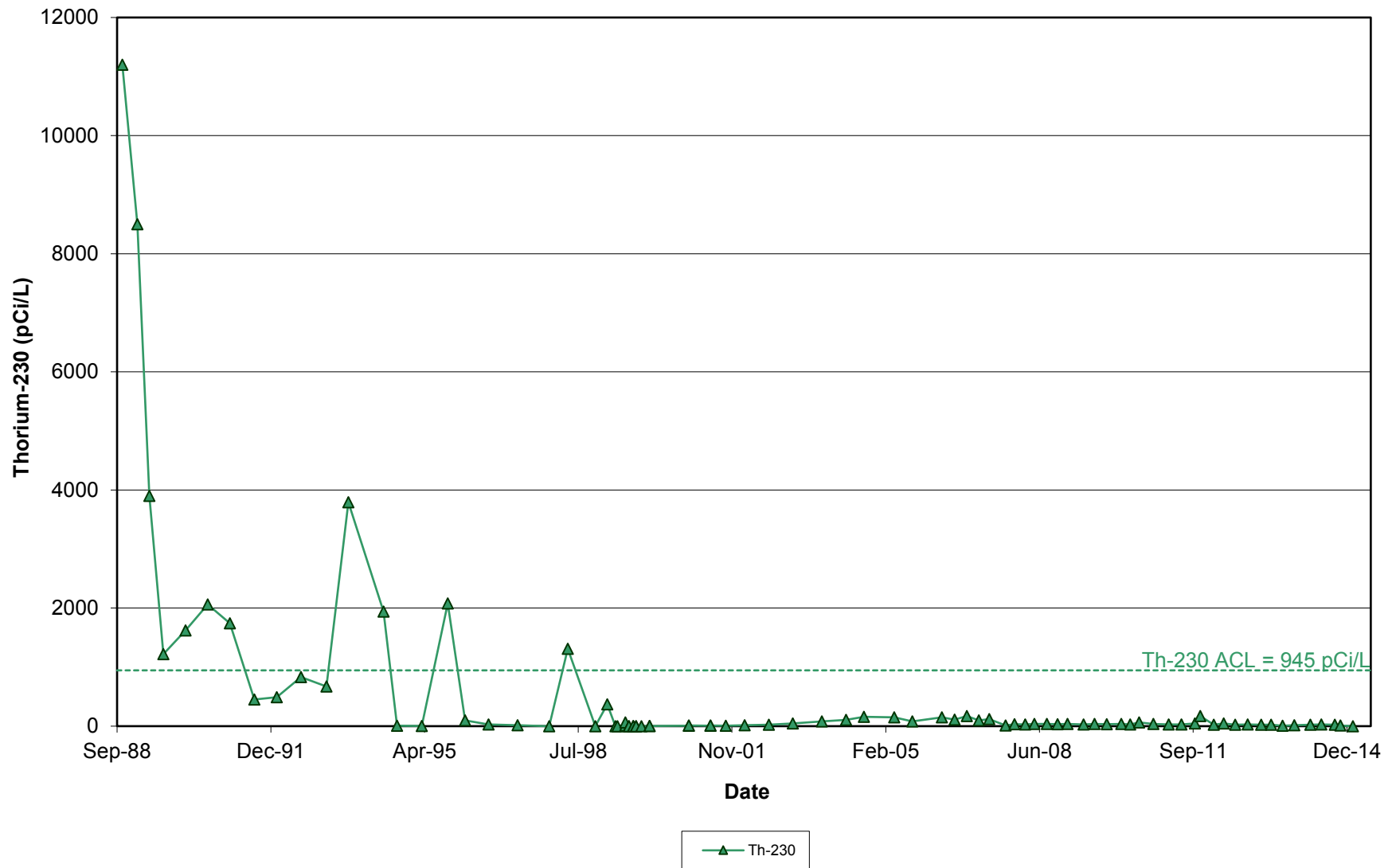
Nitrate in Monitoring Well 36-06KD



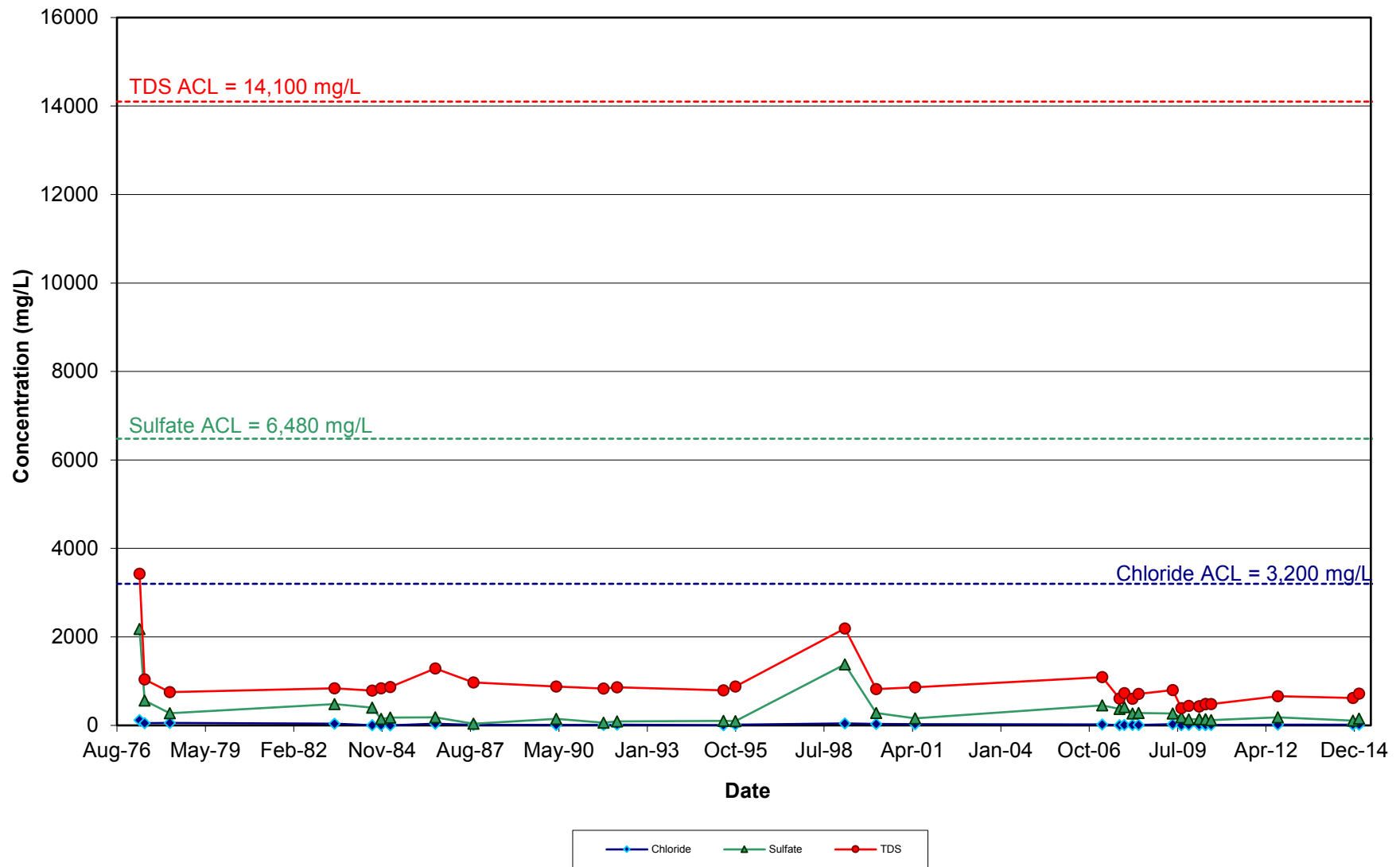
Radionuclides in Monitoring Well 36-06KD



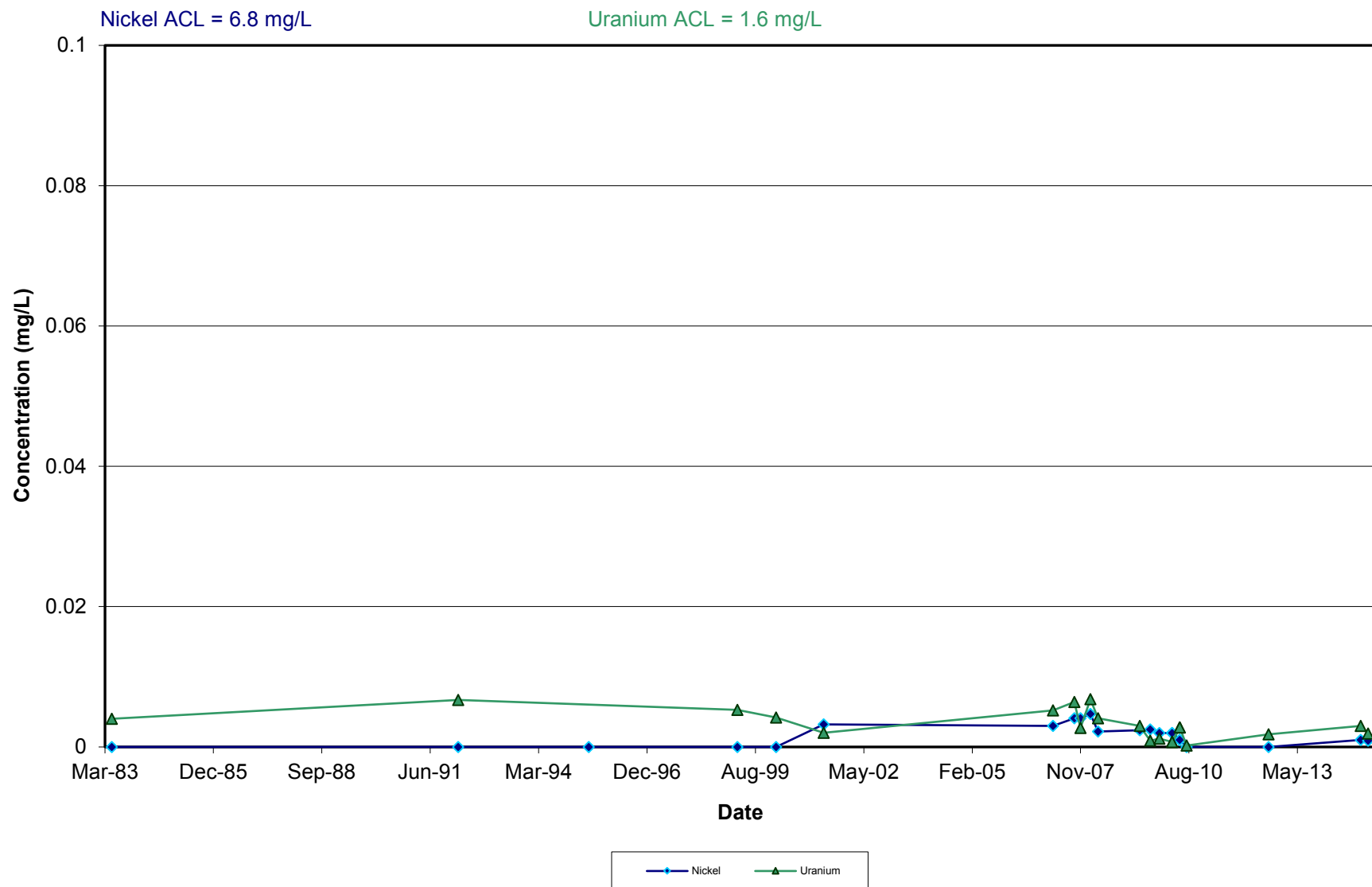
Thorium-230 in Monitoring Well 36-06KD



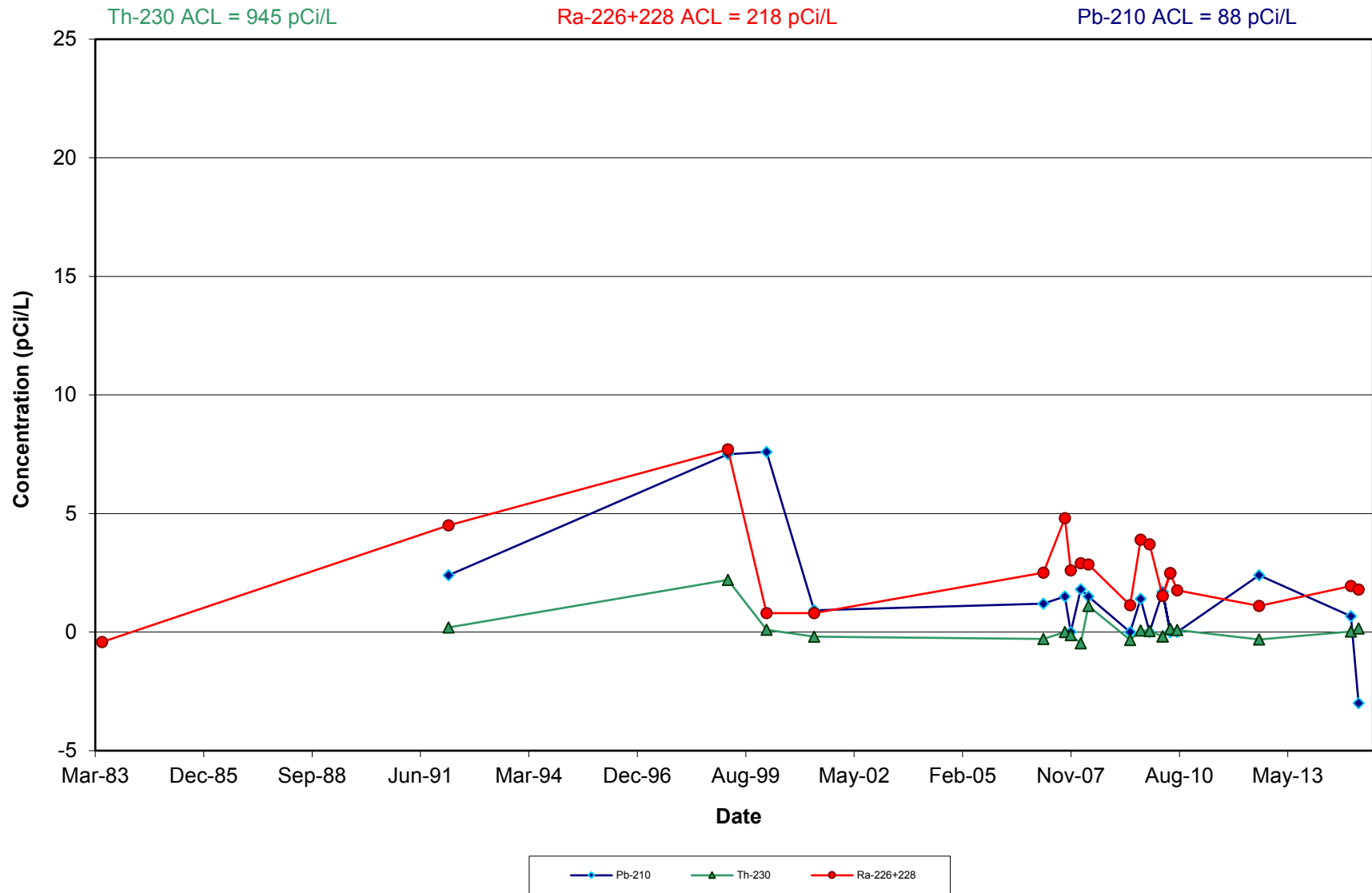
Anions and TDS in Monitoring Well 5-02KD



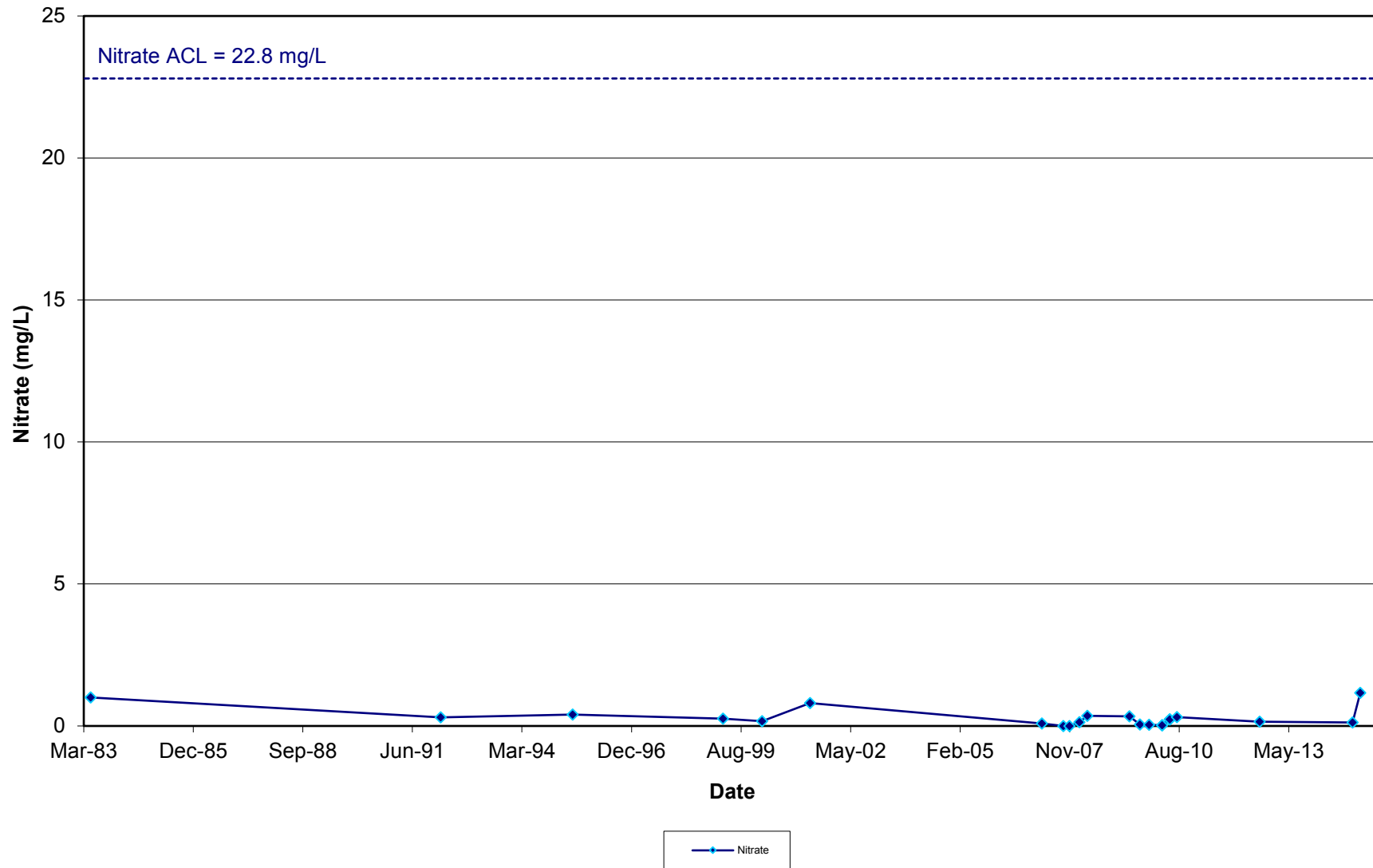
Metals in Monitoring Well 5-02KD



Radionuclides in Monitoring Well 5-02KD

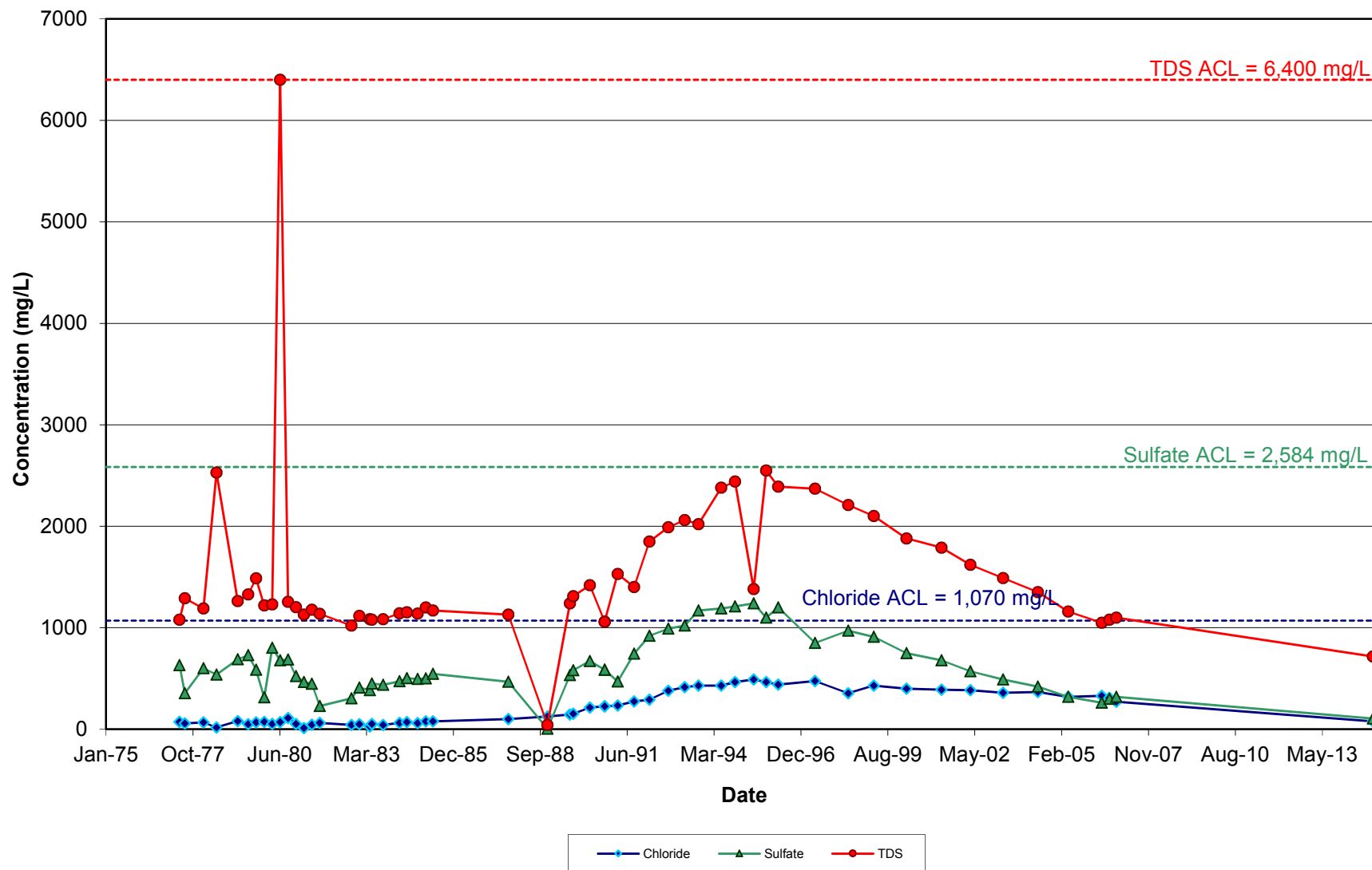


Nitrate in Monitoring Well 5-02KD

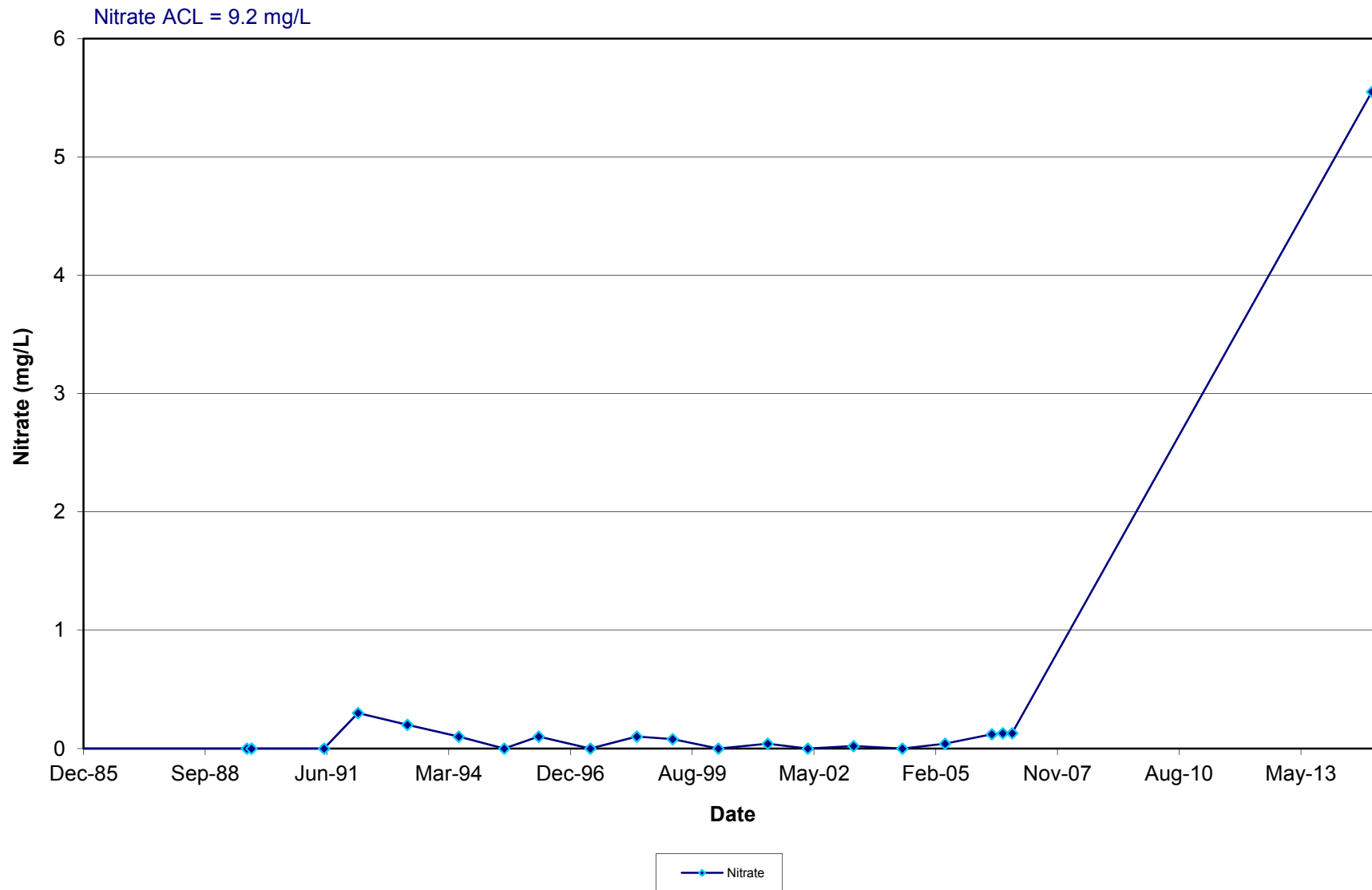


Stability Monitoring Plan
Time Versus Concentration Plots
Tres Hermanos A

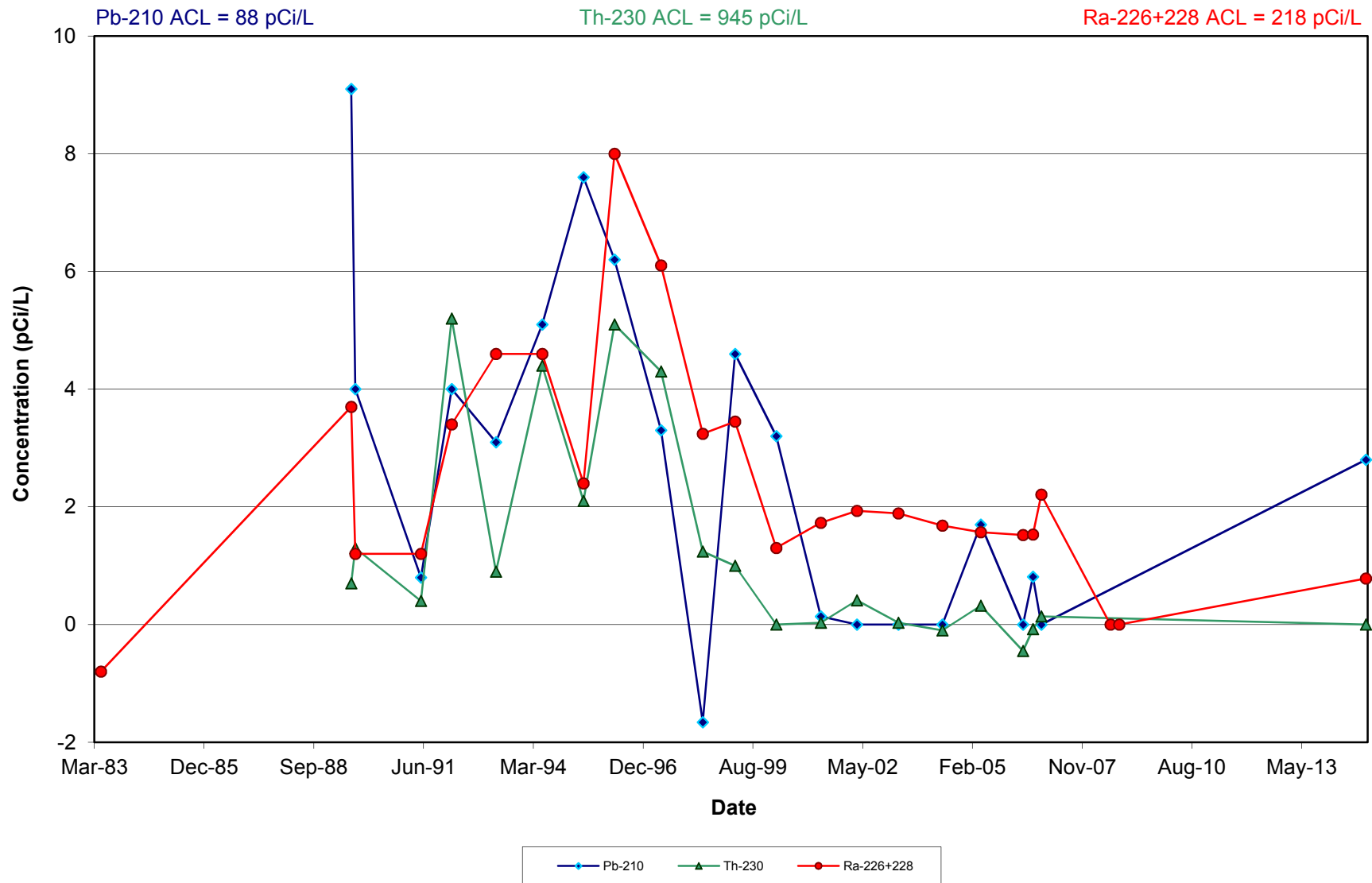
Anions and TDS in Monitoring Well 30-01



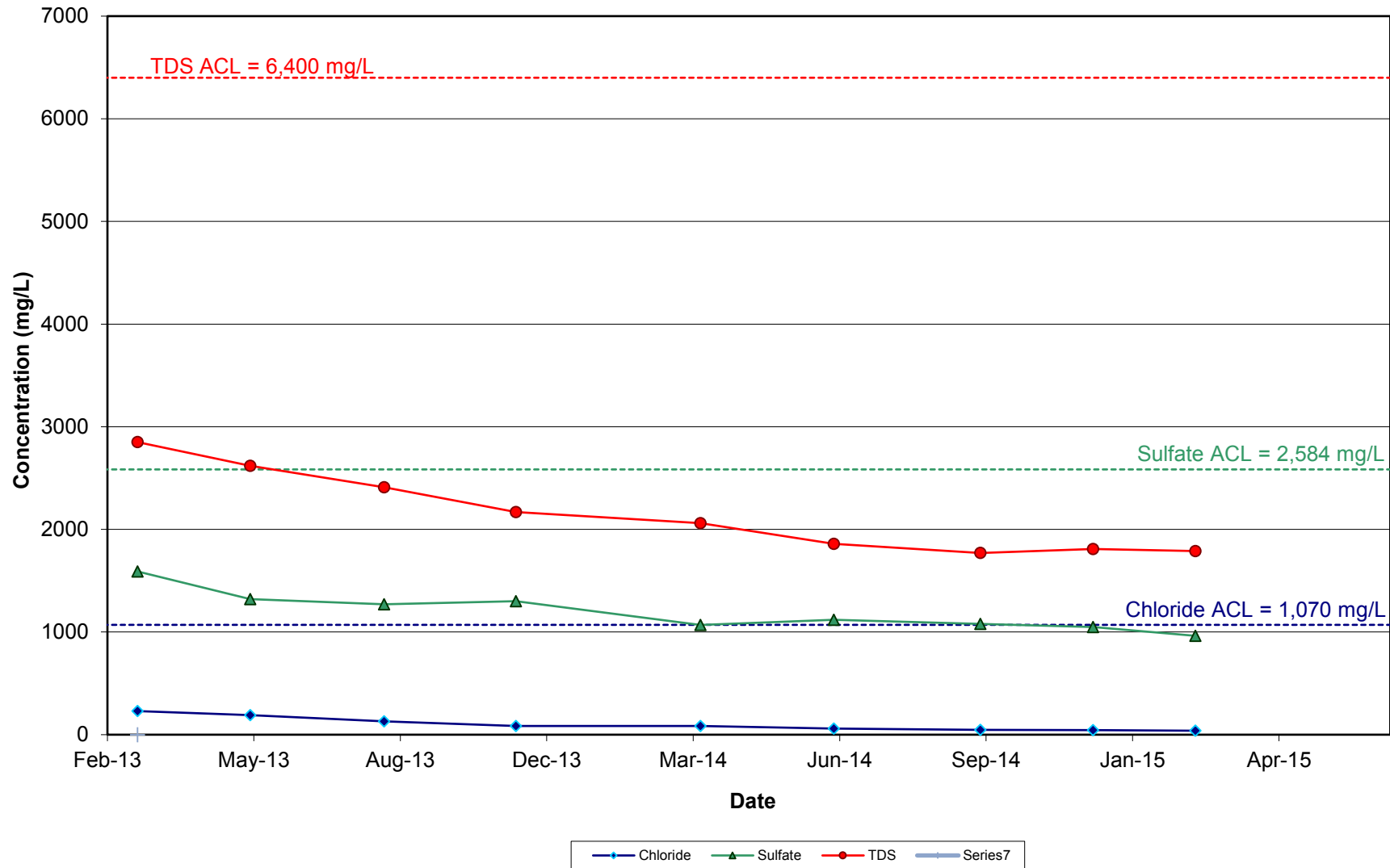
Nitrate in Monitoring Well 30-01



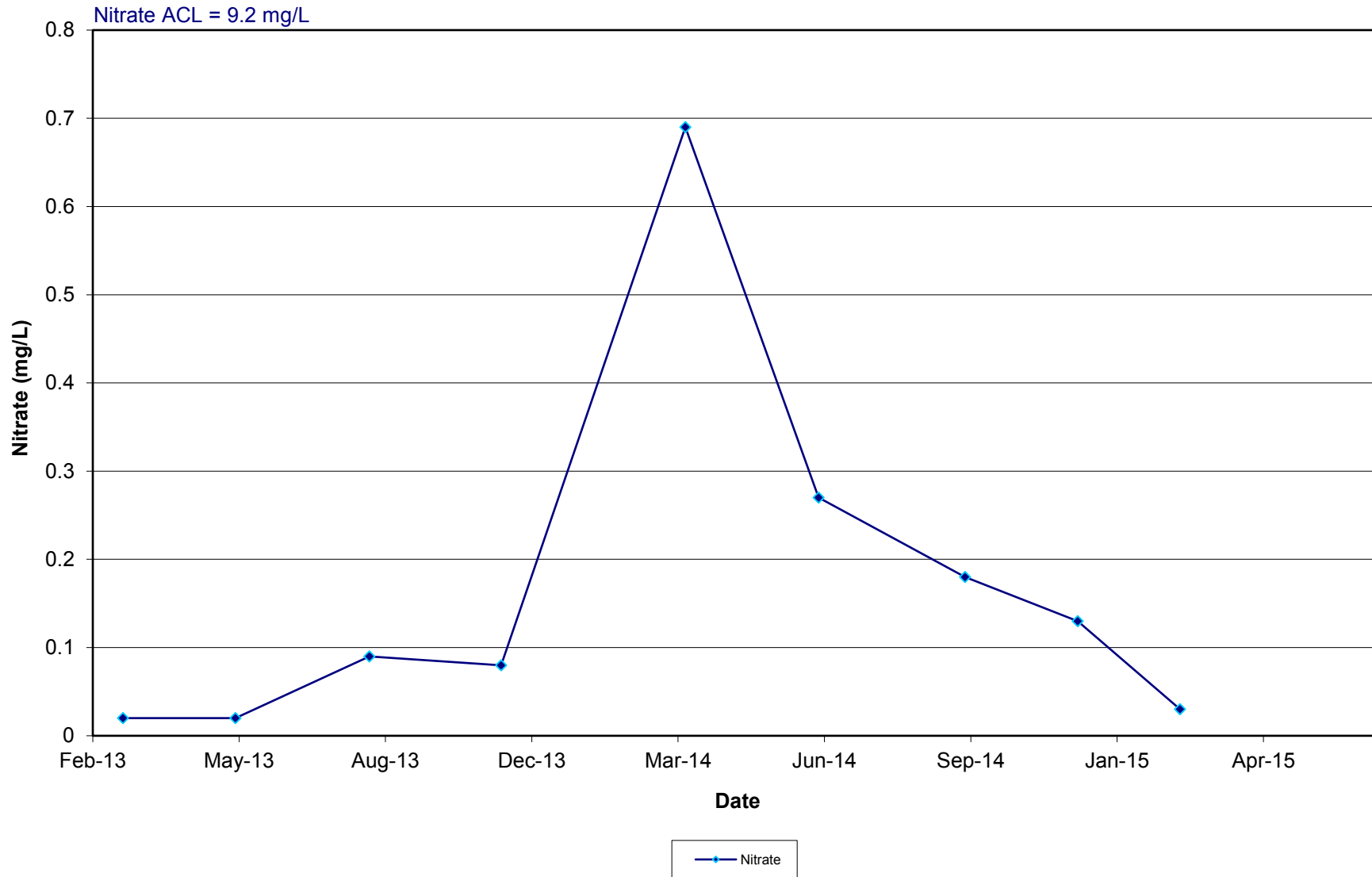
Radionuclides in Monitoring Well 30-01



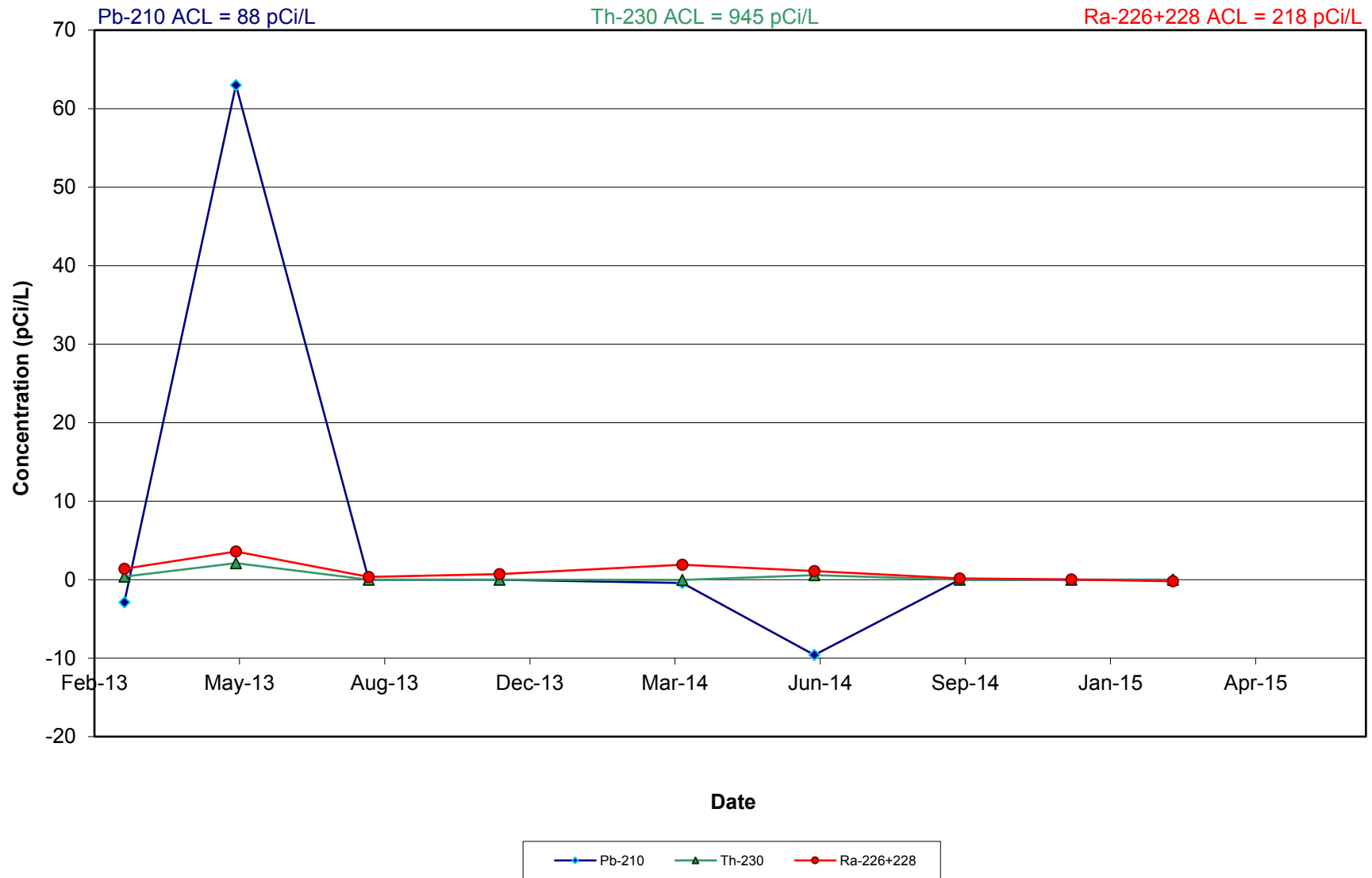
Anions and TDS in Monitoring Well 31-01R TRA
(replaced 12/12/2012)



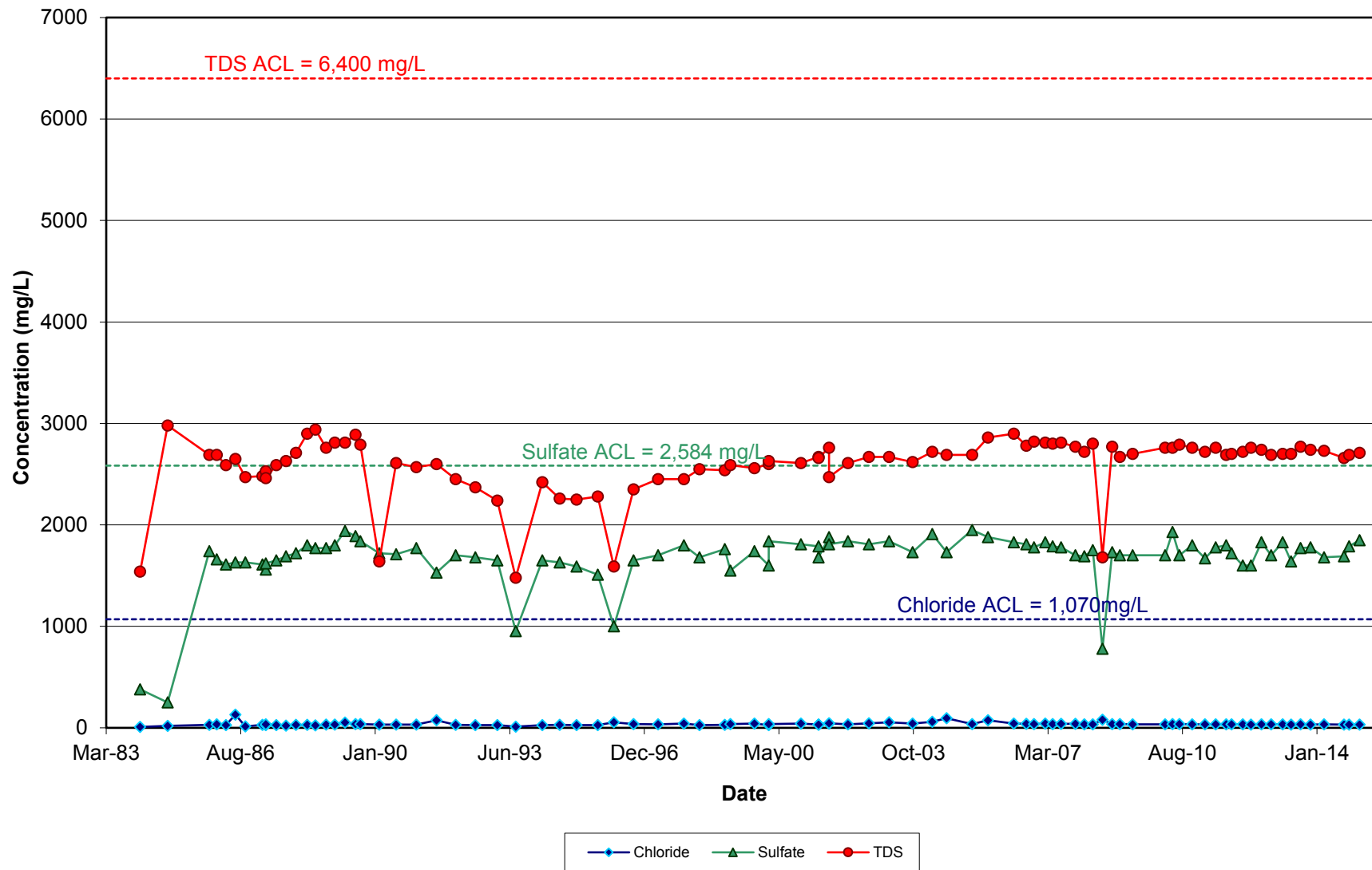
**Nitrate in Monitoring Well 31-01R TRA
(replaced 12/12/2012)**



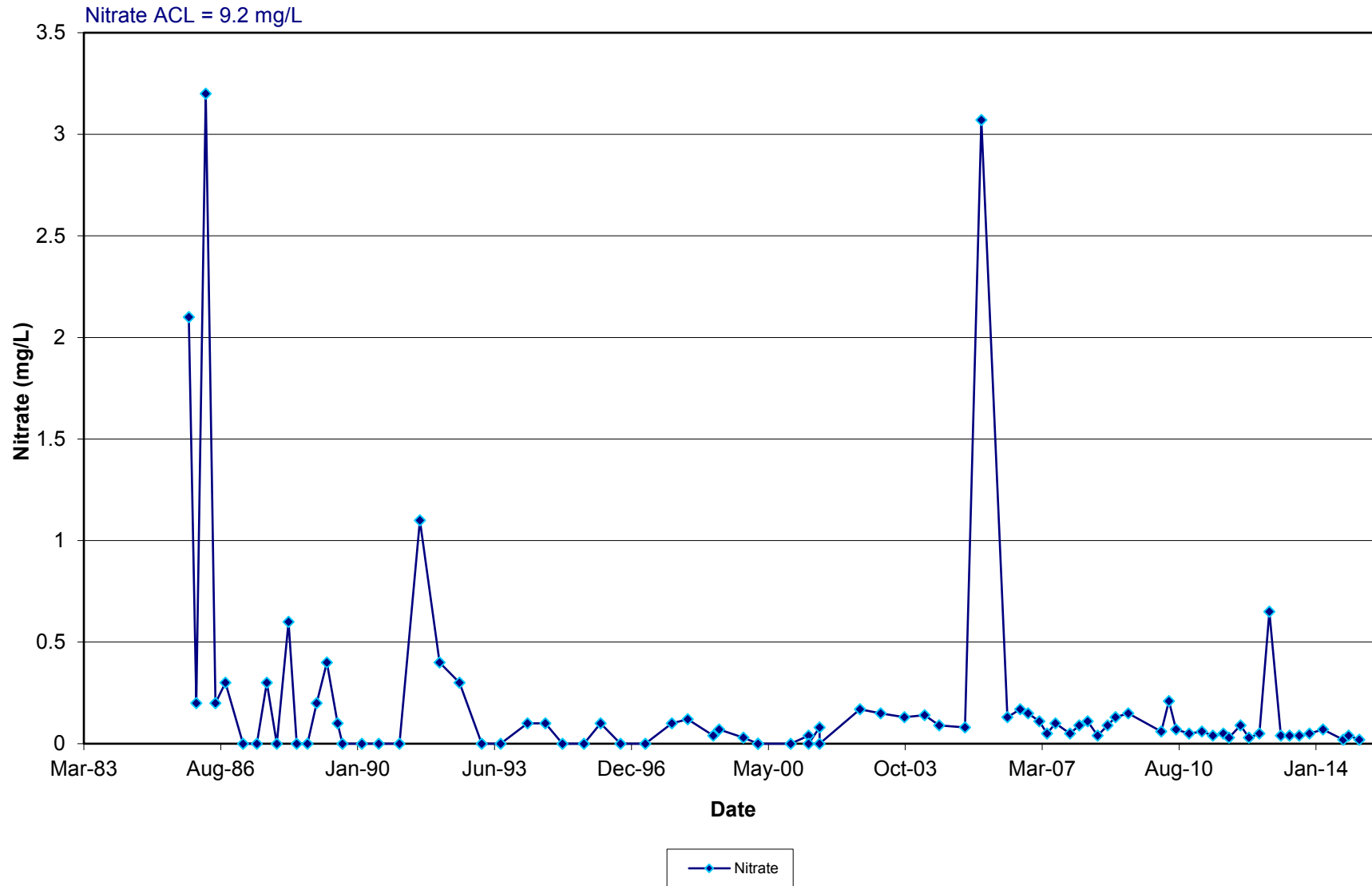
**Radionuclides in Well 31-01R TRA
(replaced 12/12/2012)**



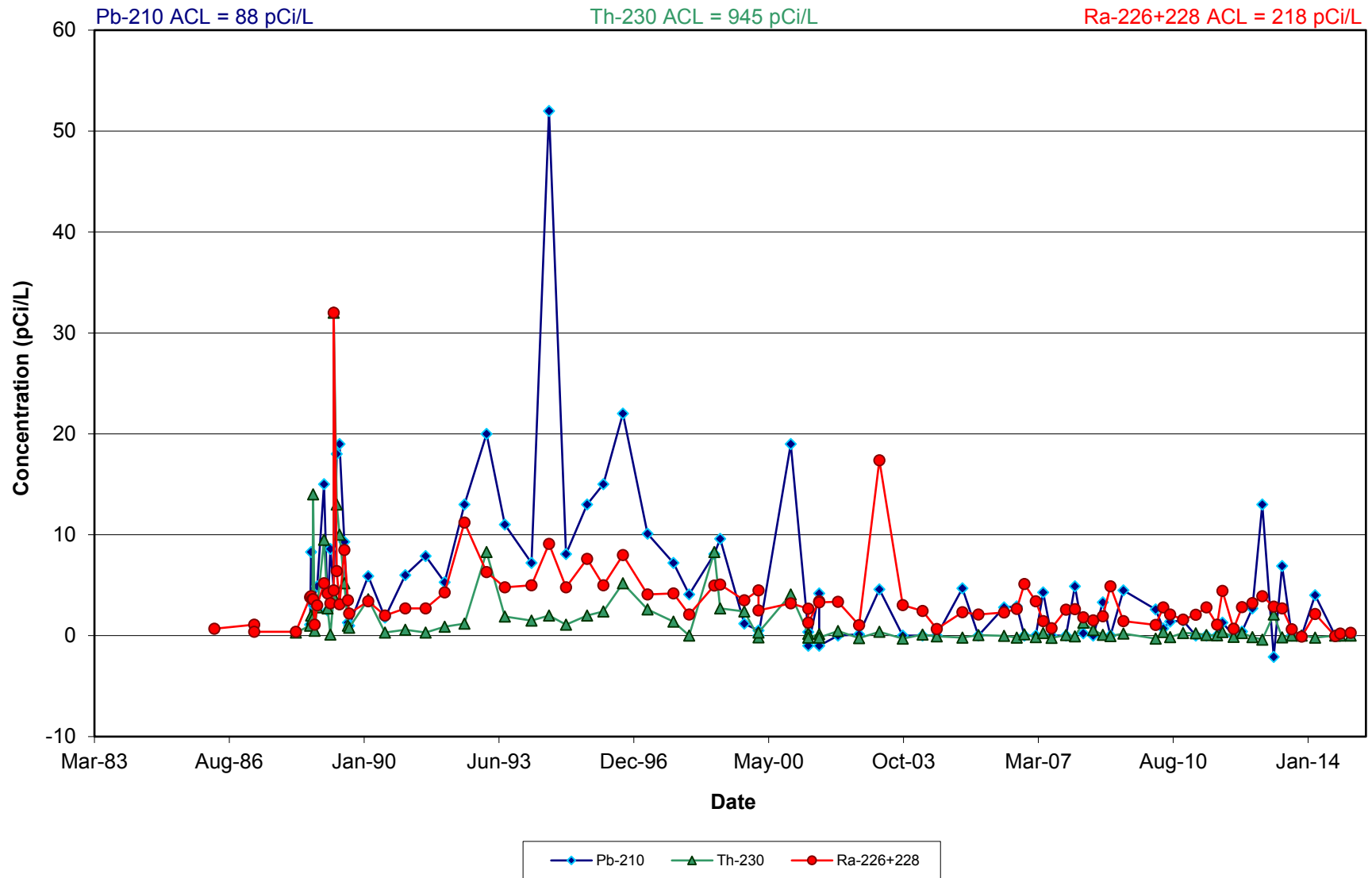
Anions and TDS in Monitoring Well 33-01TRA



Nitrate in Monitoring Well 33-01TRA

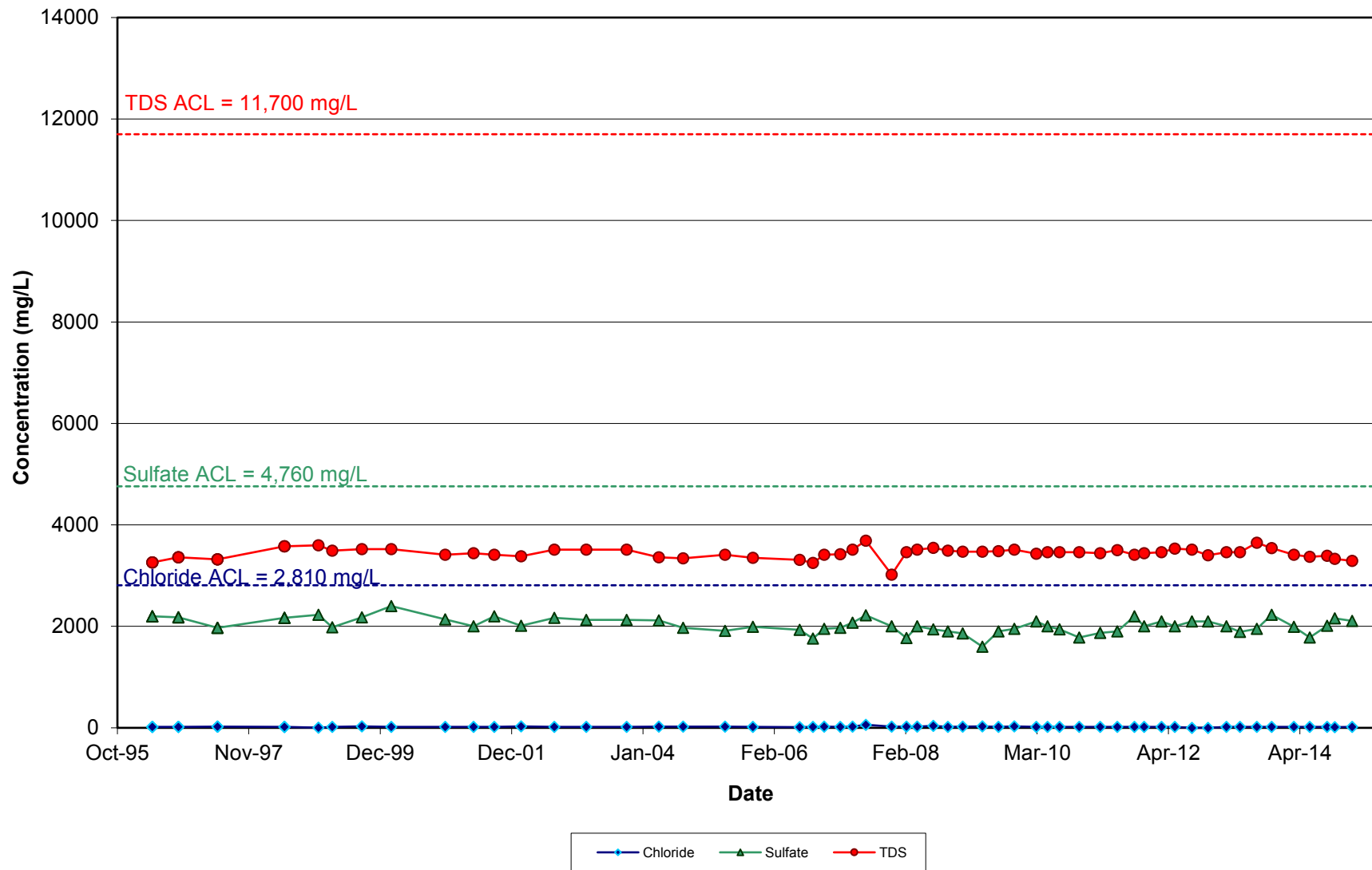


Radionuclides in Monitoring Well 33-01TRA

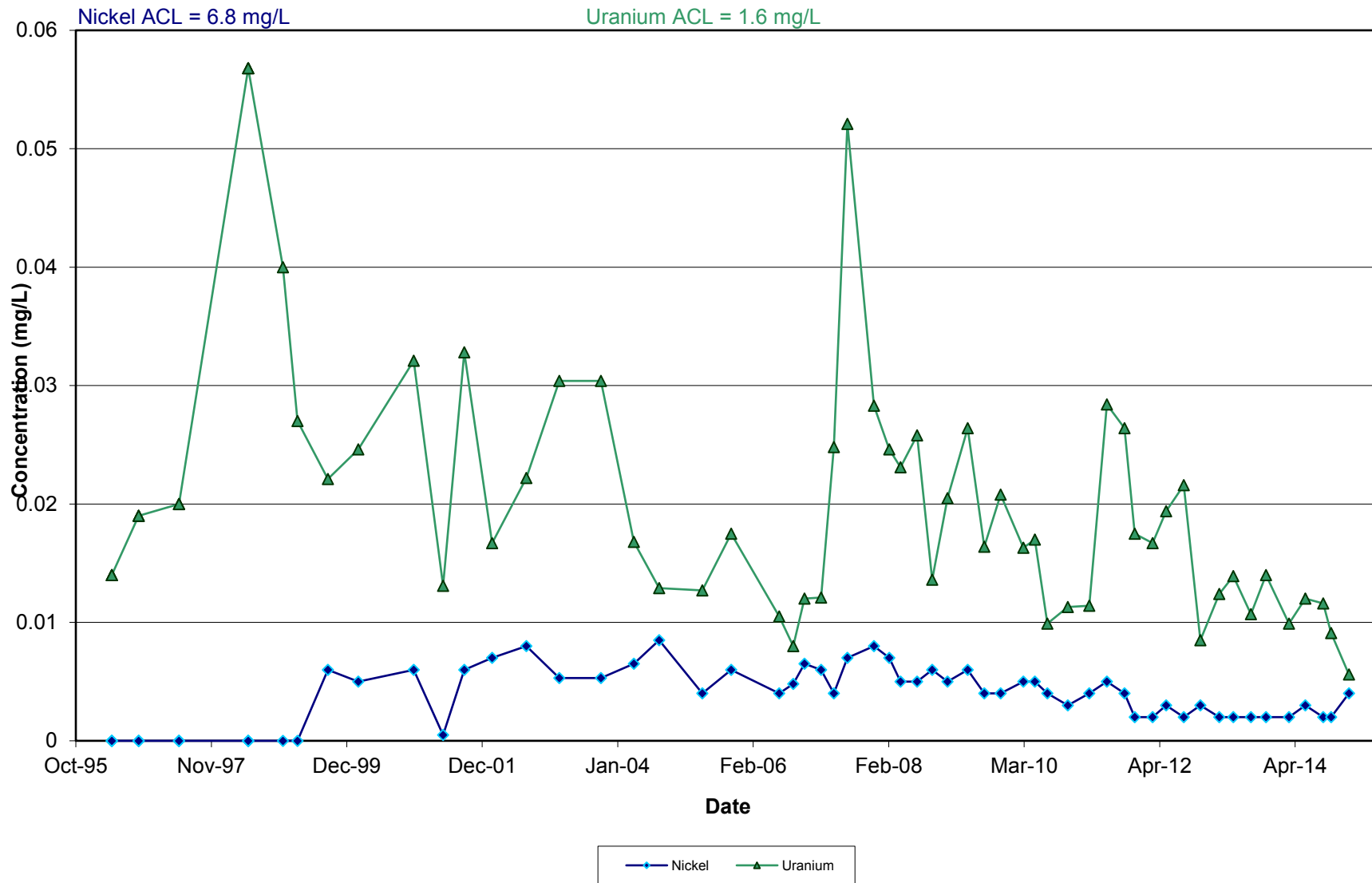


Stability Monitoring Plan
Time Versus Concentration Plots
Tres Hermanos B

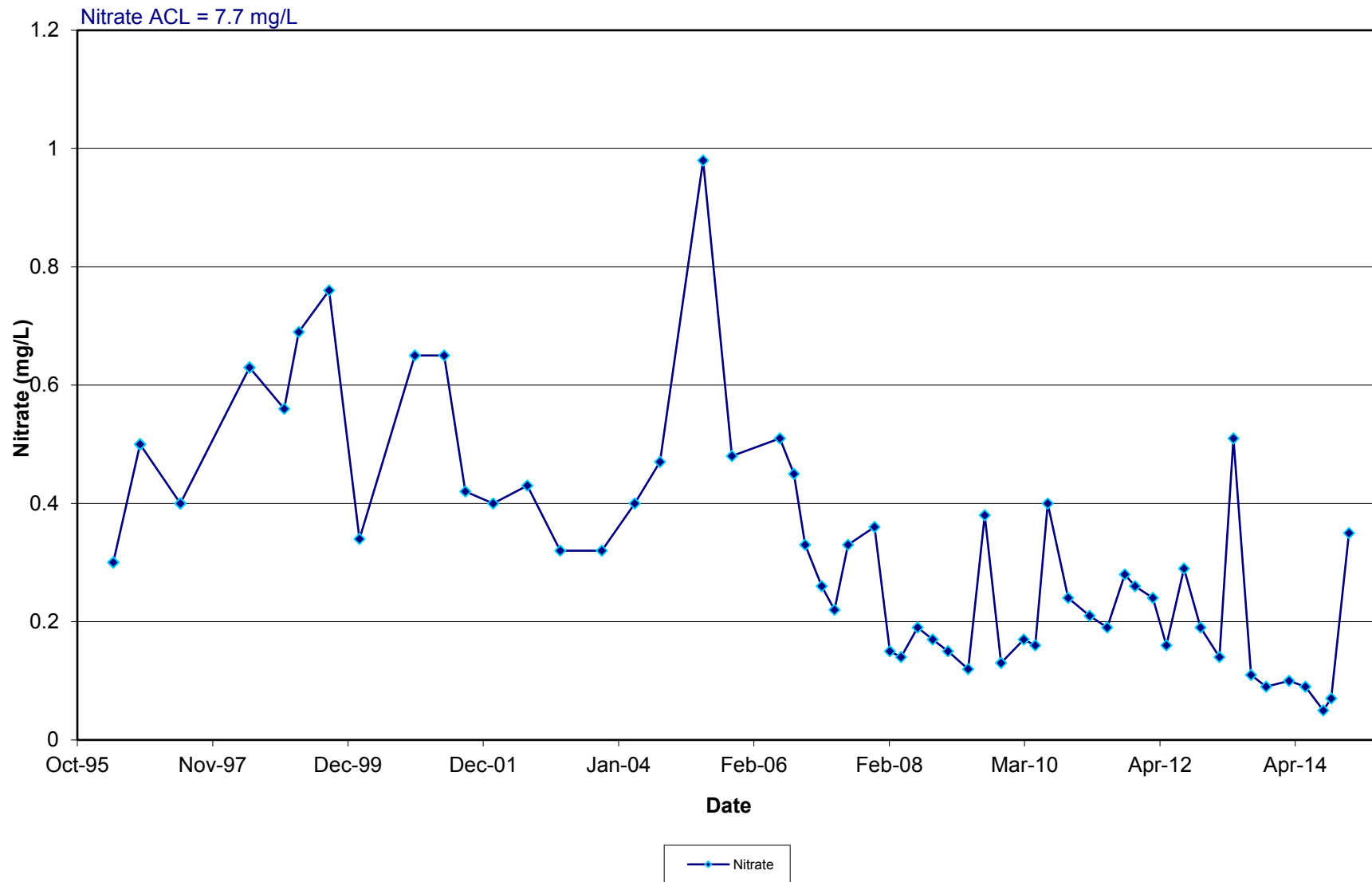
Anions and TDS in Monitoring Well 19-77



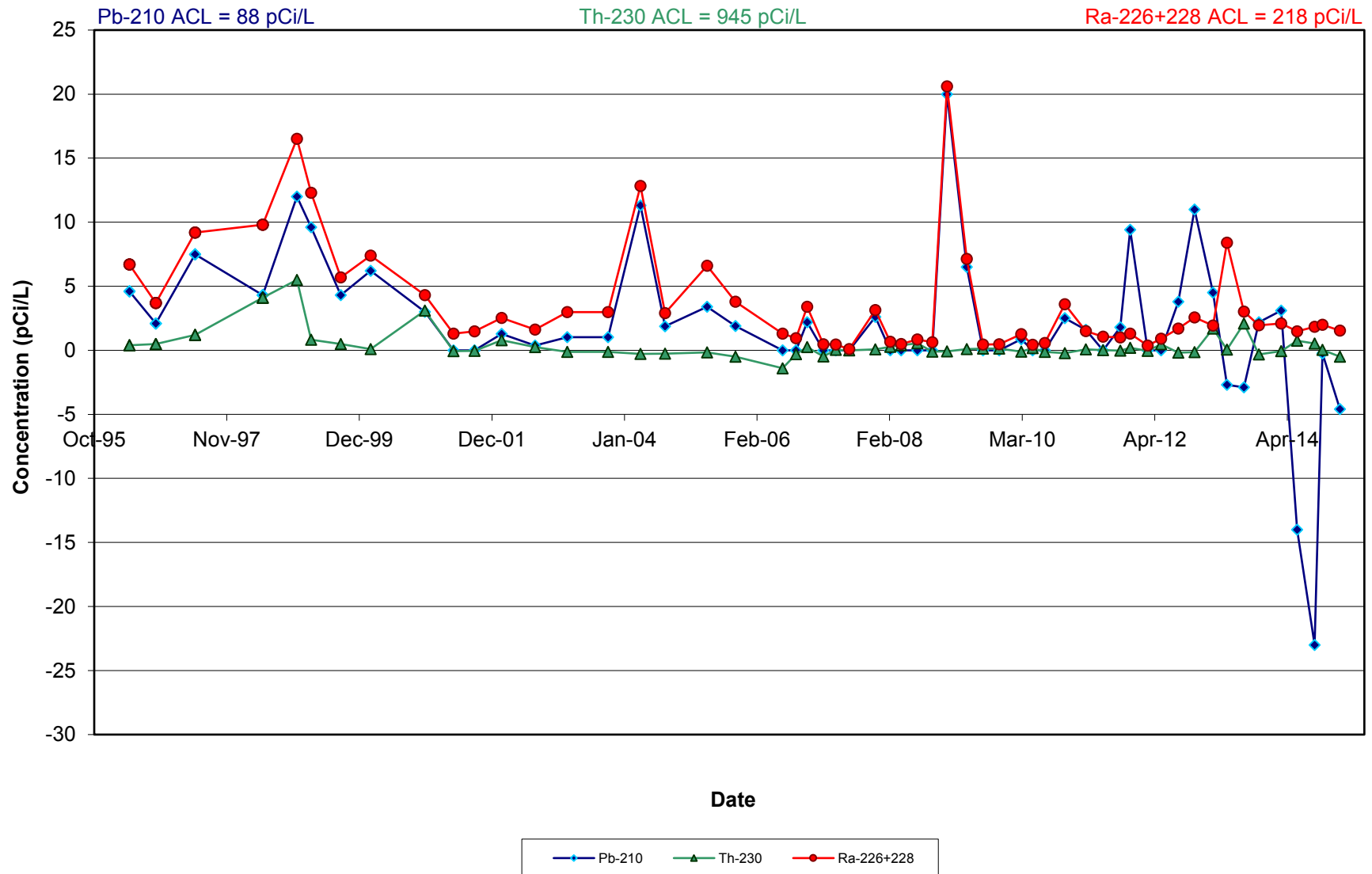
Metals in Monitoring Well 19-77



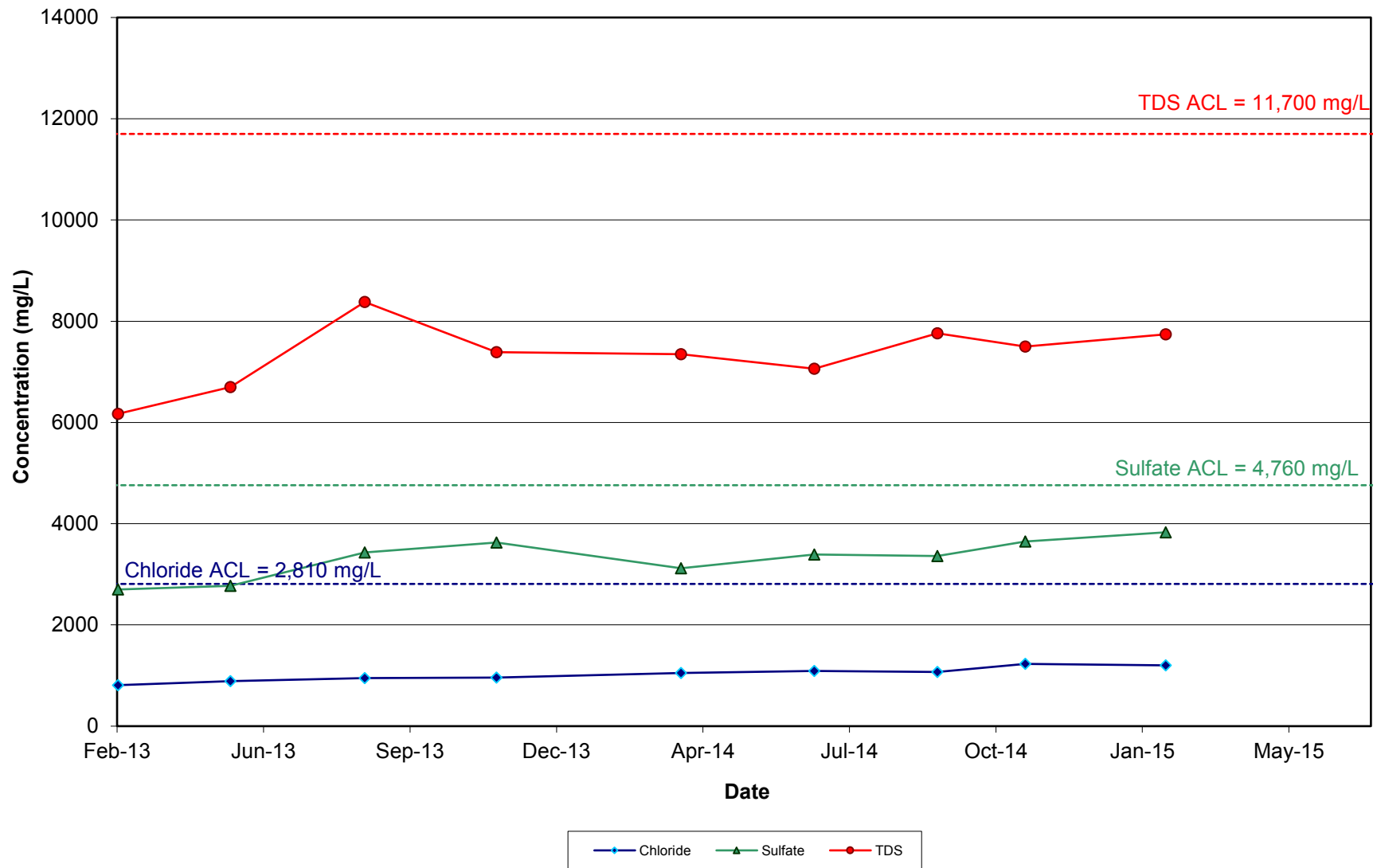
Nitrate in Monitoring Well 19-77



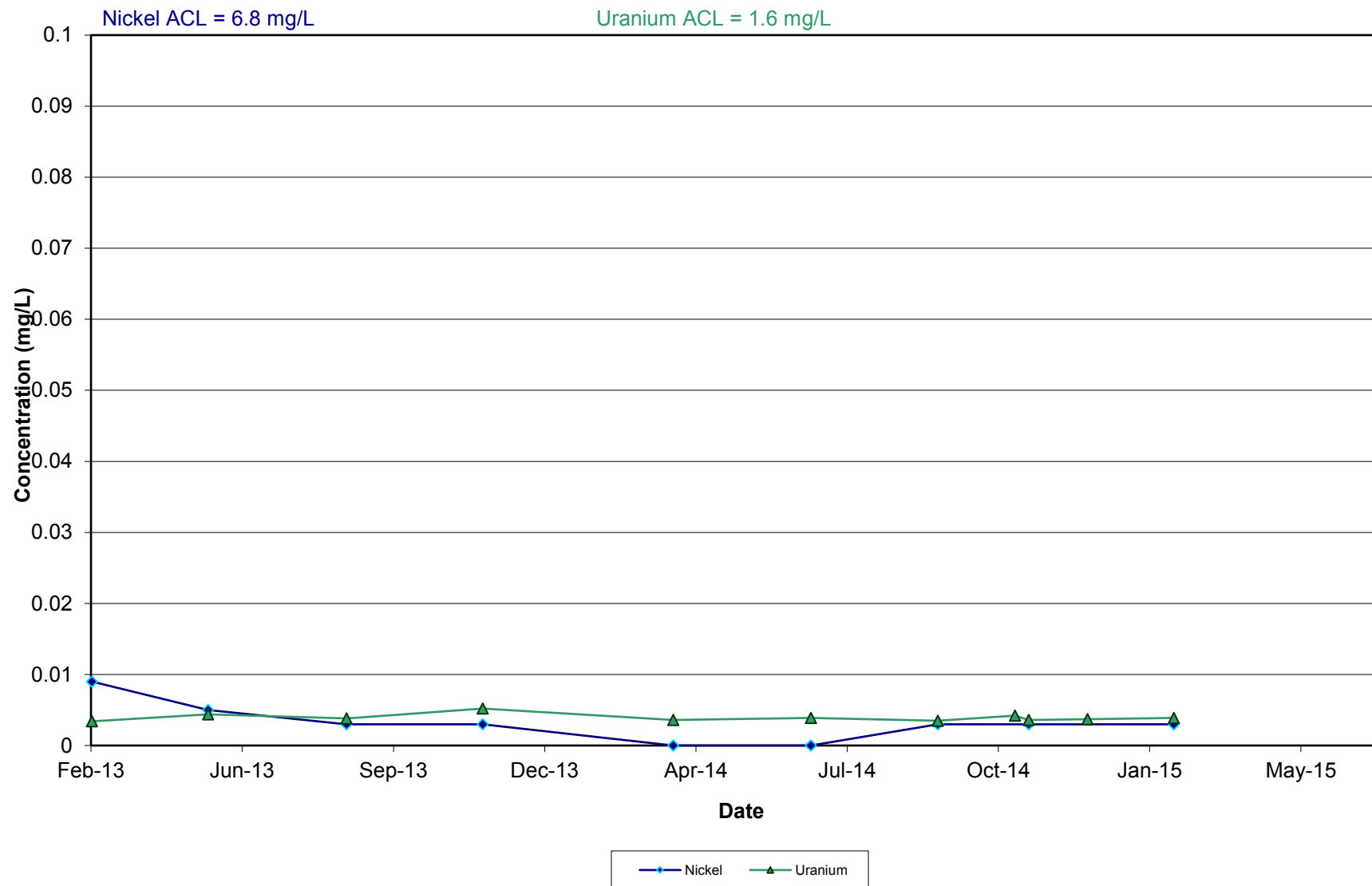
Radionuclides in Monitoring Well 19-77



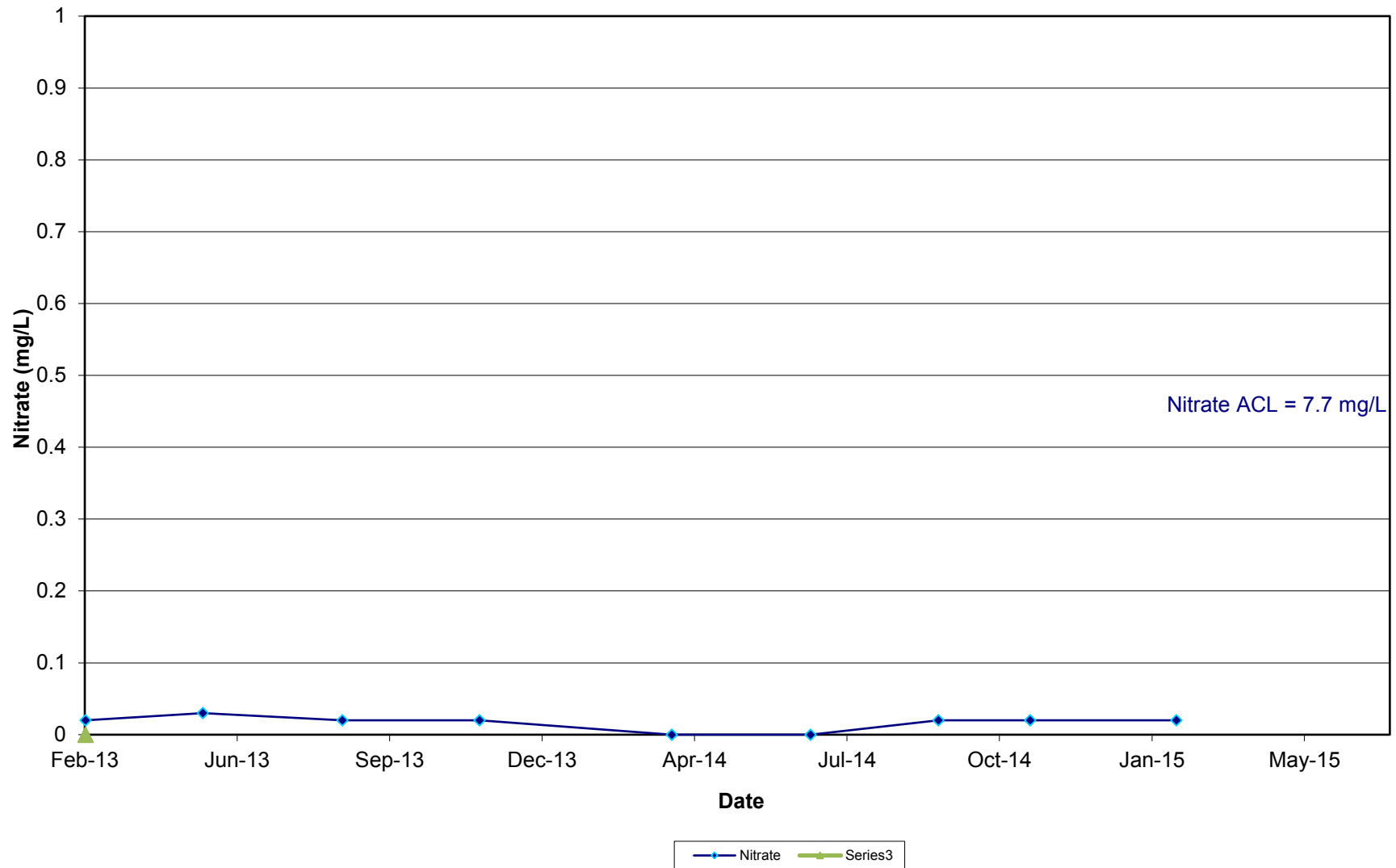
**Anions and TDS in Monitoring Well 31-02R
(replaced 12/14/2012)**



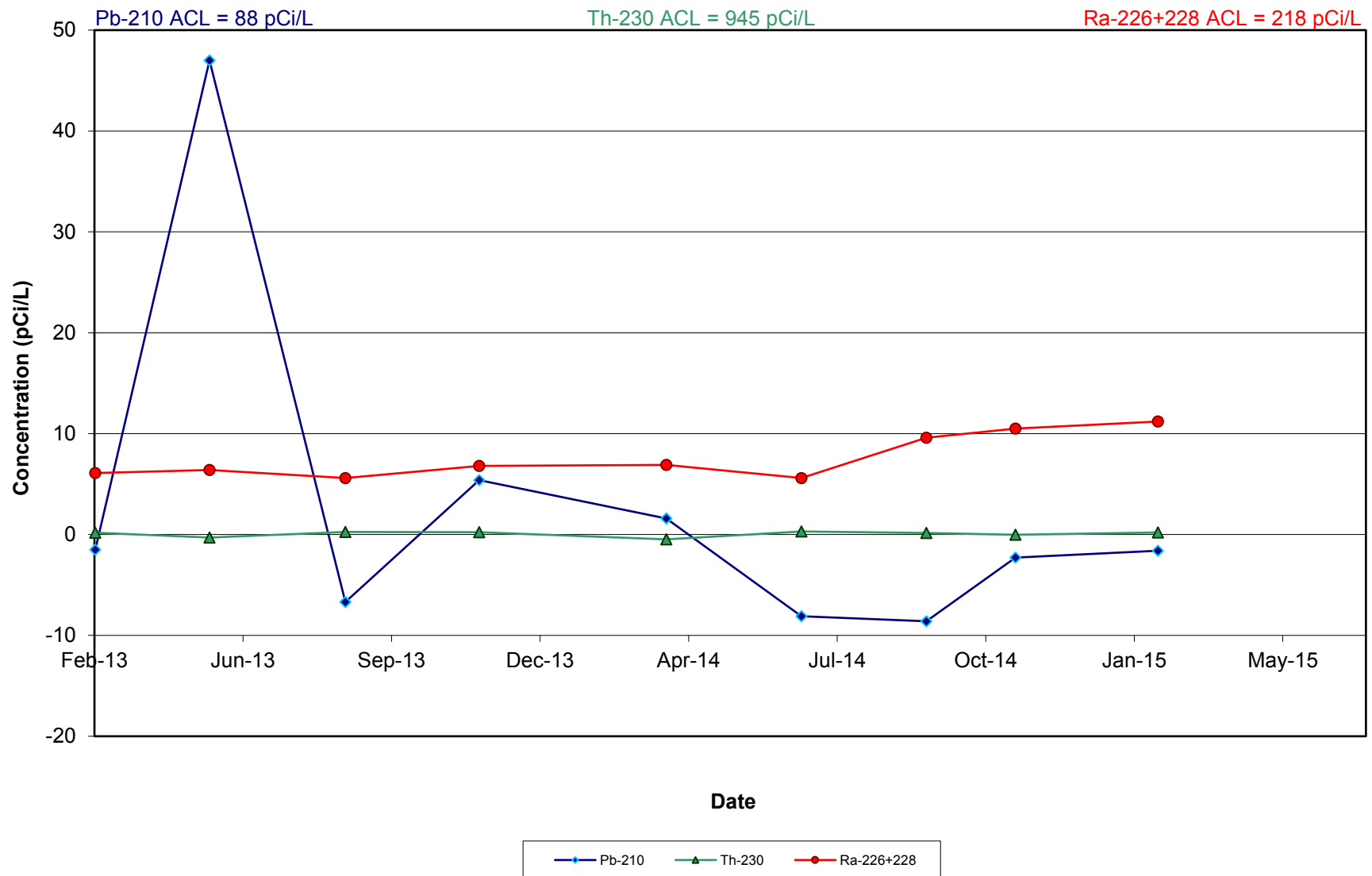
Metals in Monitoring Well 31-02R (replaced 12/14/2012)



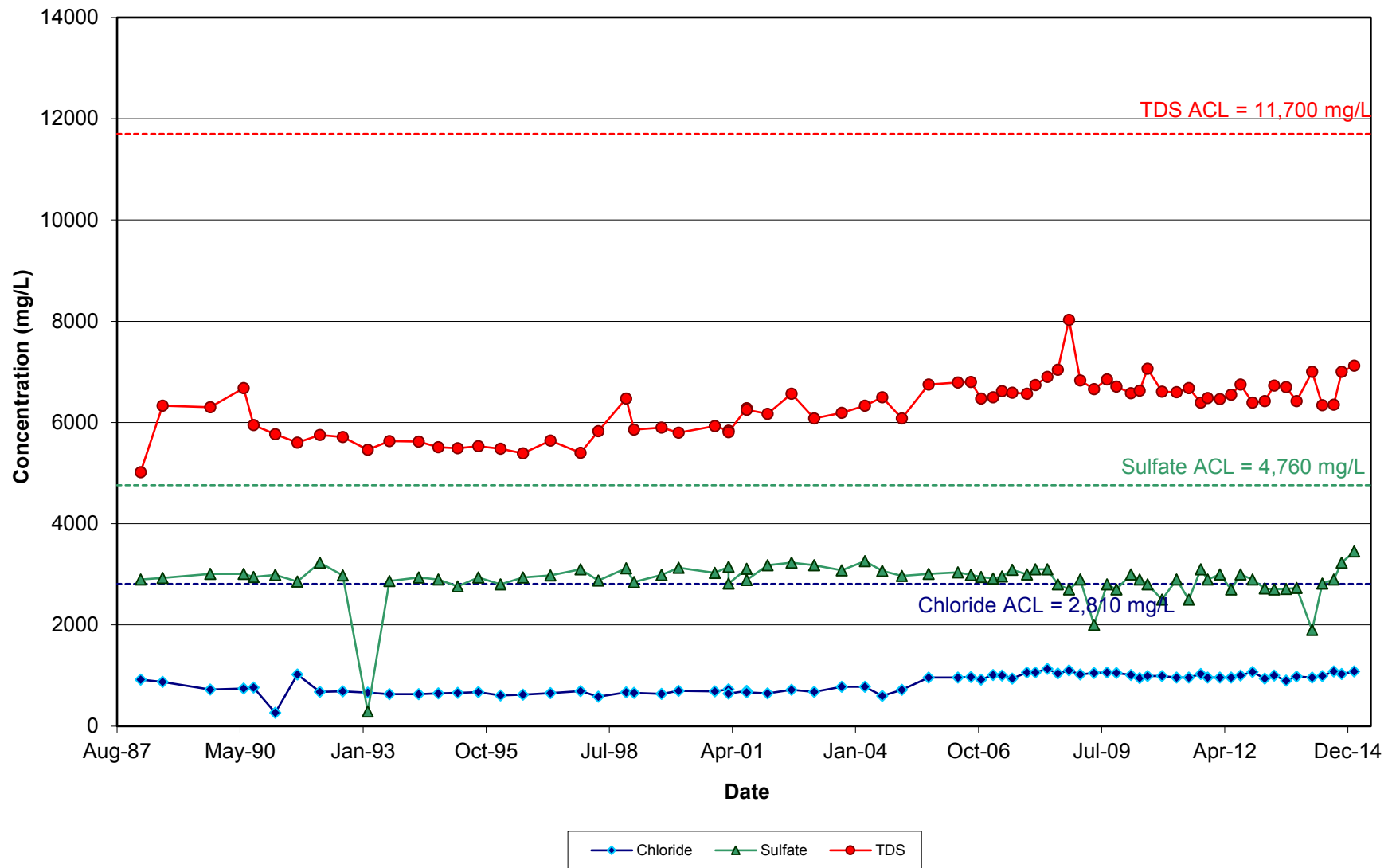
**Nitrate in Monitoring Well 31-02R
(replaced 12/14/2012)**



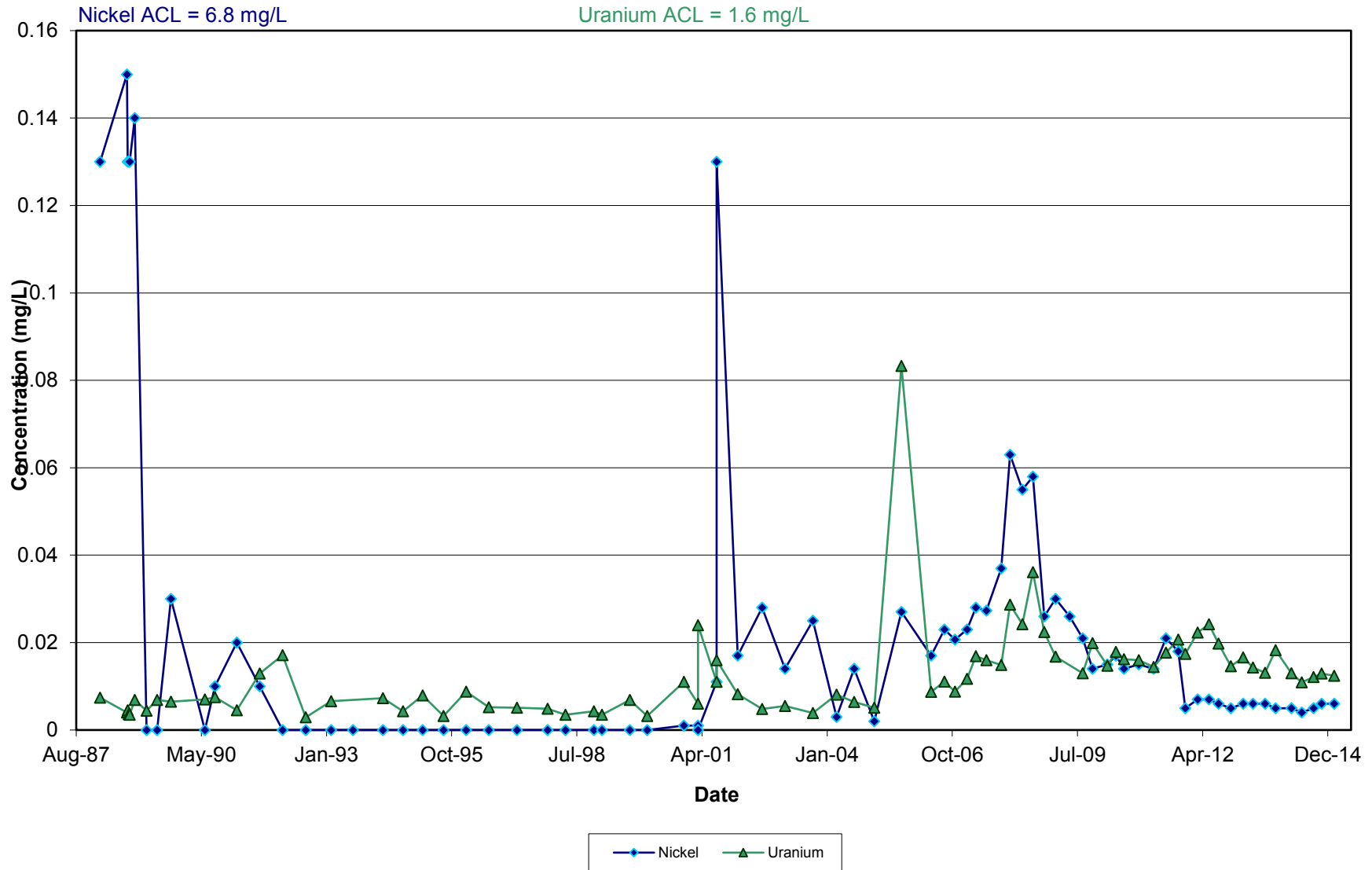
**Radionuclides in Monitoring Well 31-02R
(replaced 12/14/2012)**



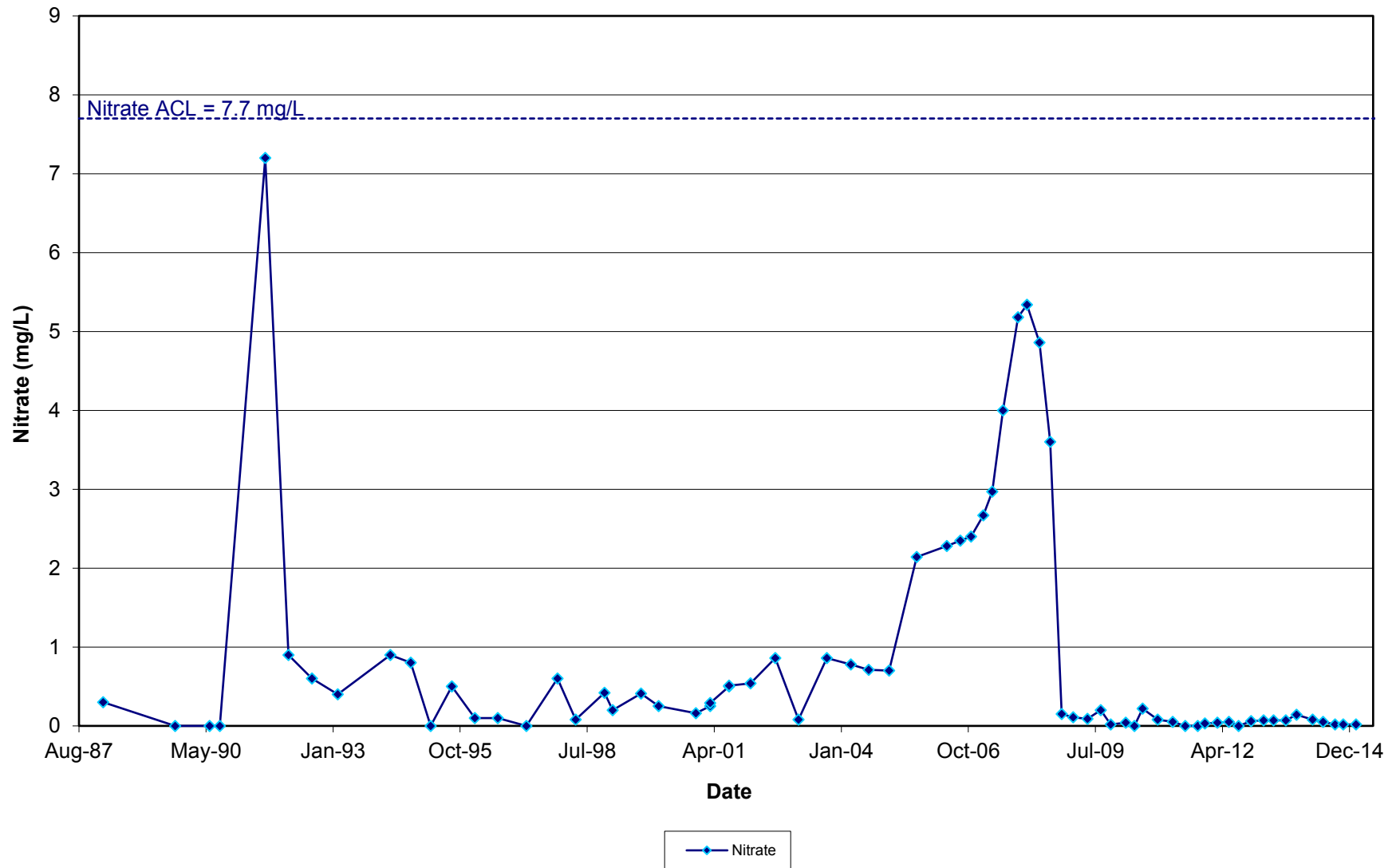
Anions and TDS in Monitoring Well 31-67



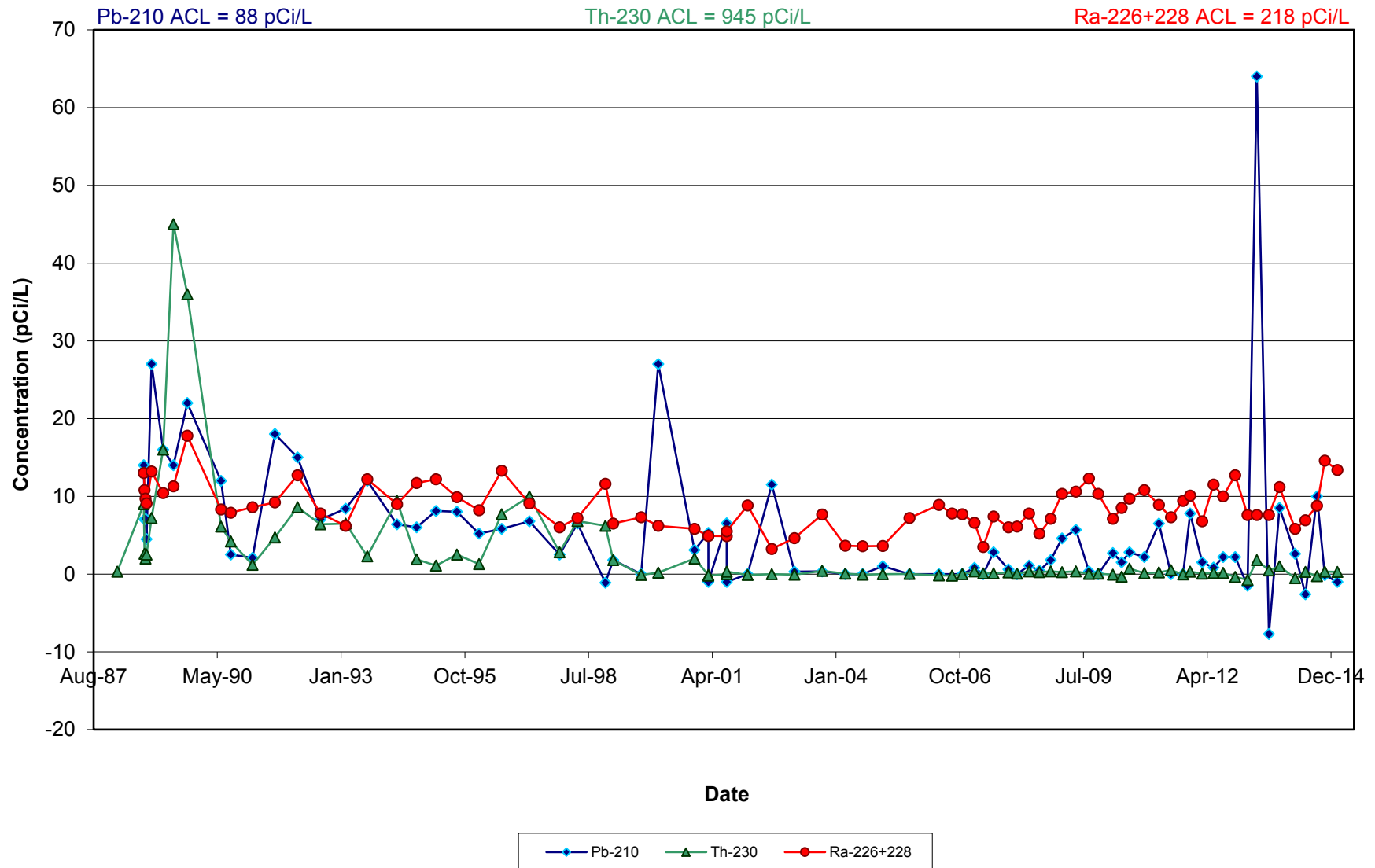
Metals in Monitoring Well 31-67



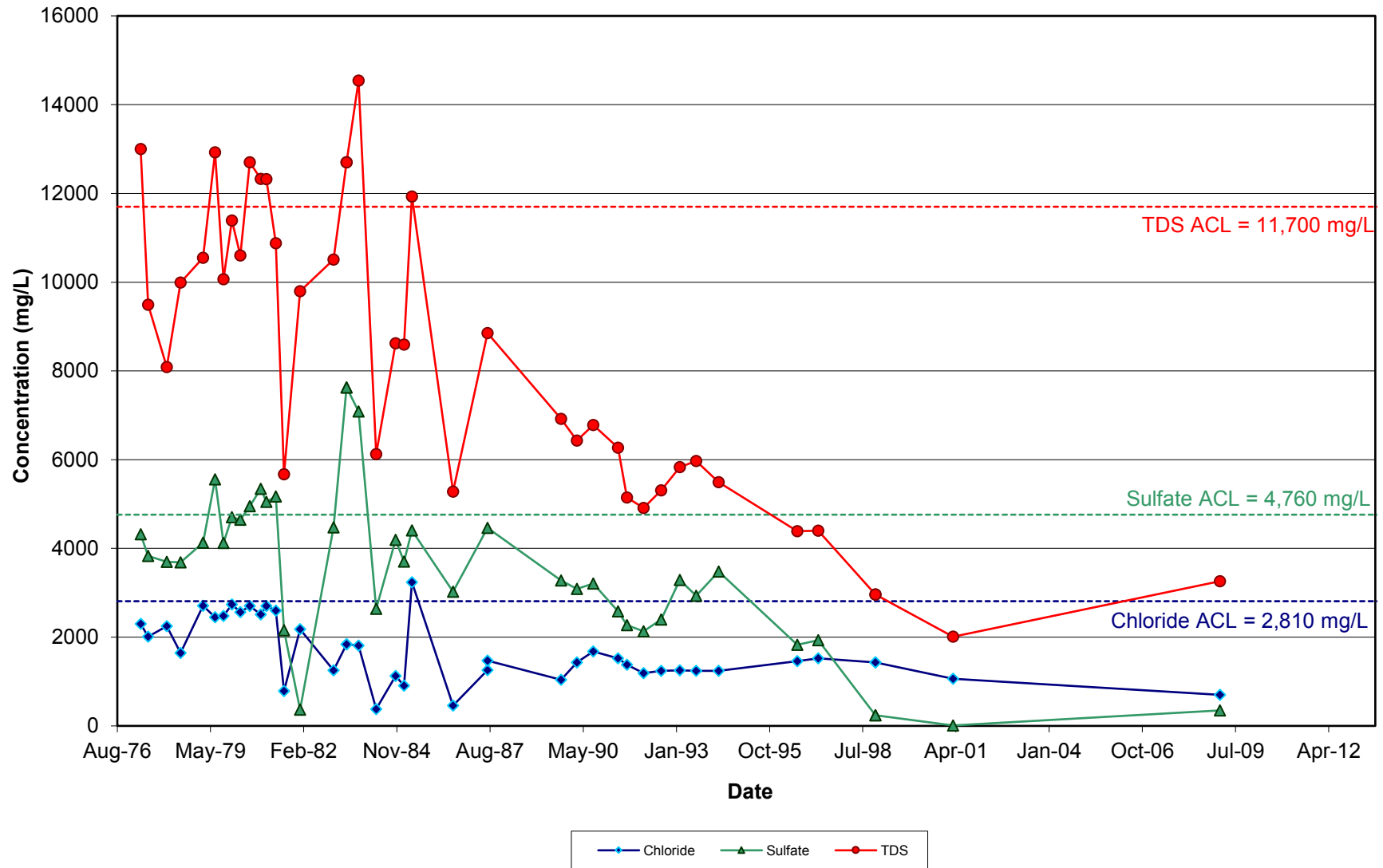
Nitrate in Monitoring Well 31-67



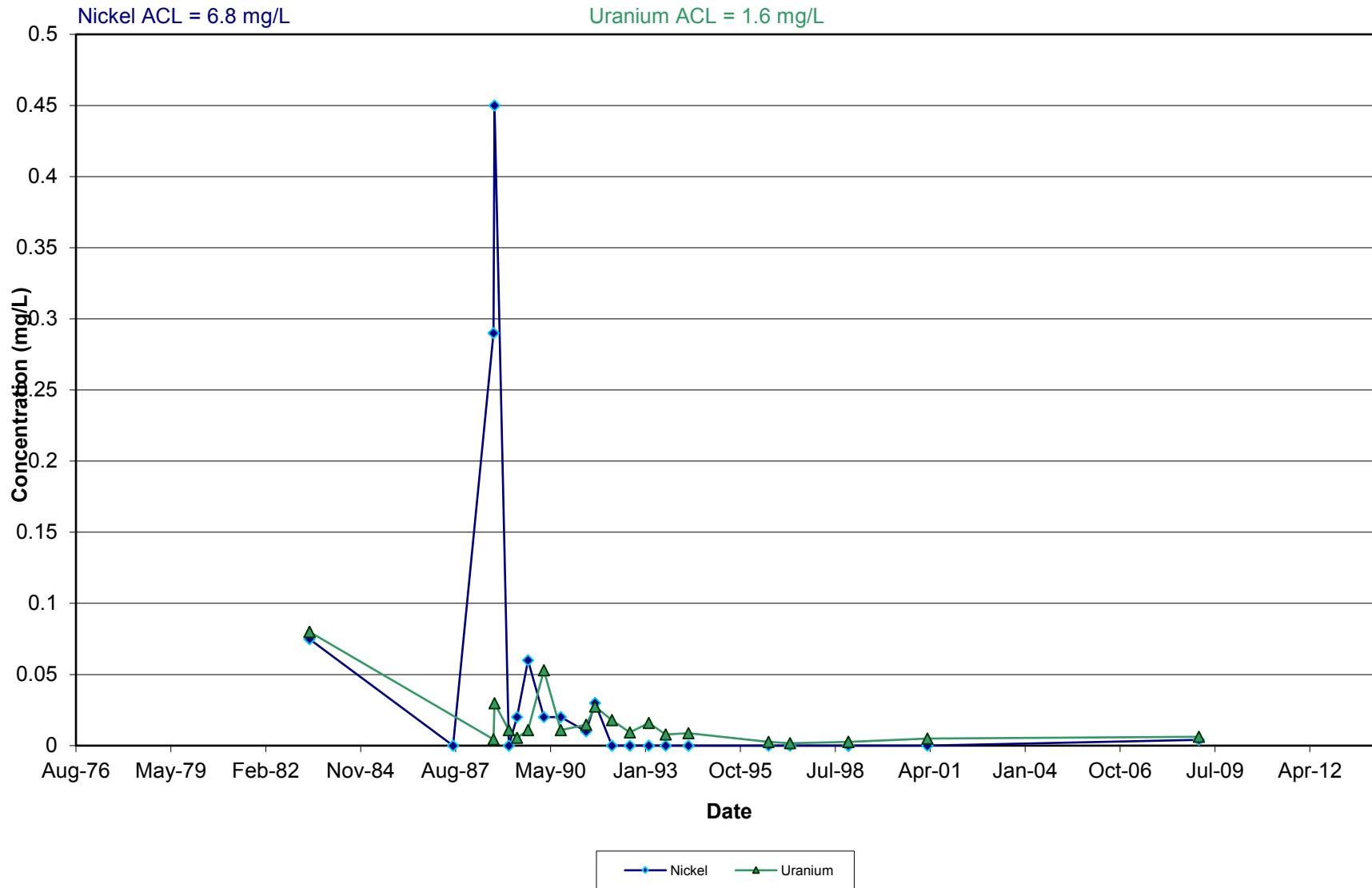
Radionuclides in Monitoring Well 31-67



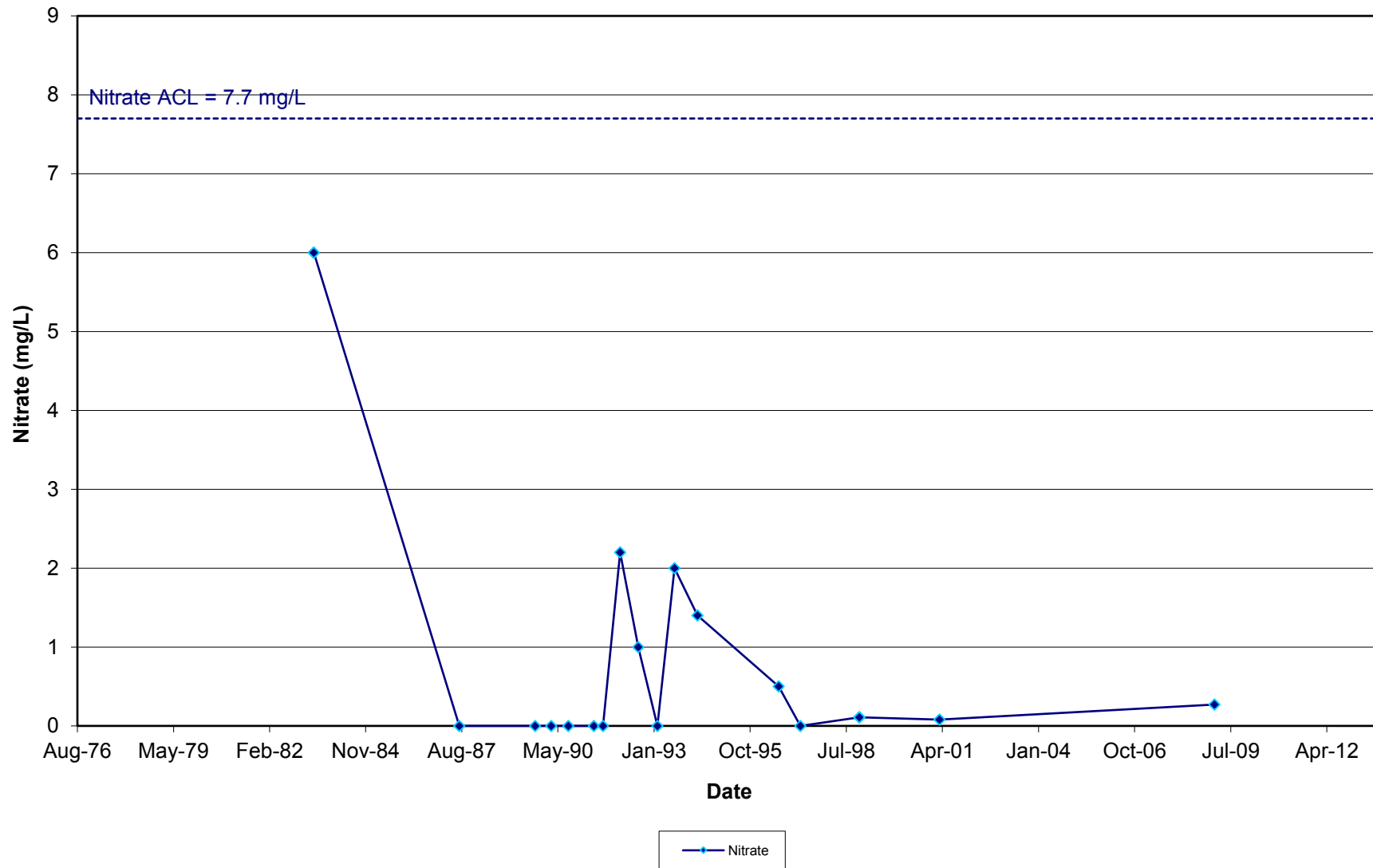
Anions and TDS in Monitoring Well 36-01TRB



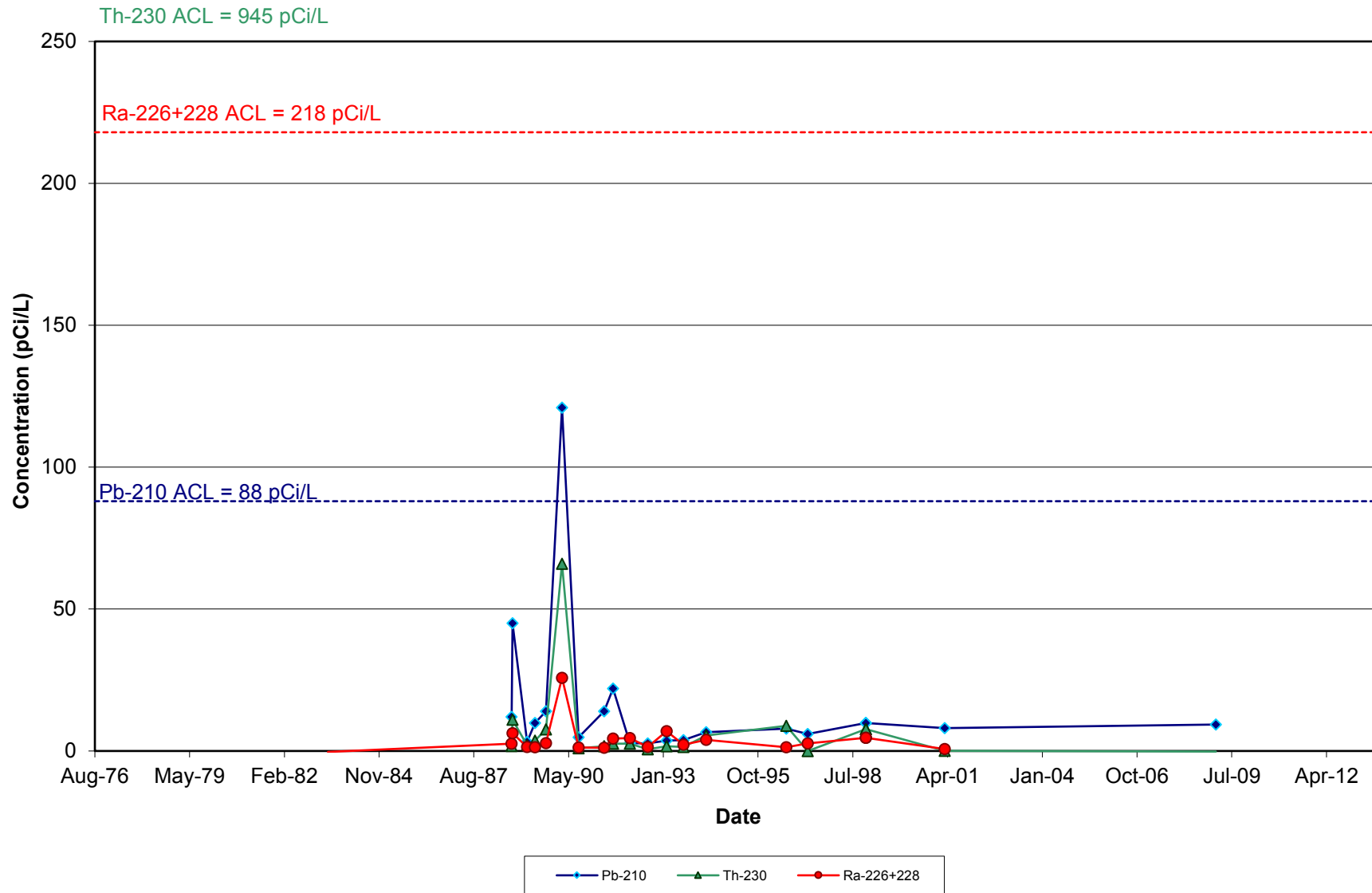
Metals in Monitoring Well 36-01TRB



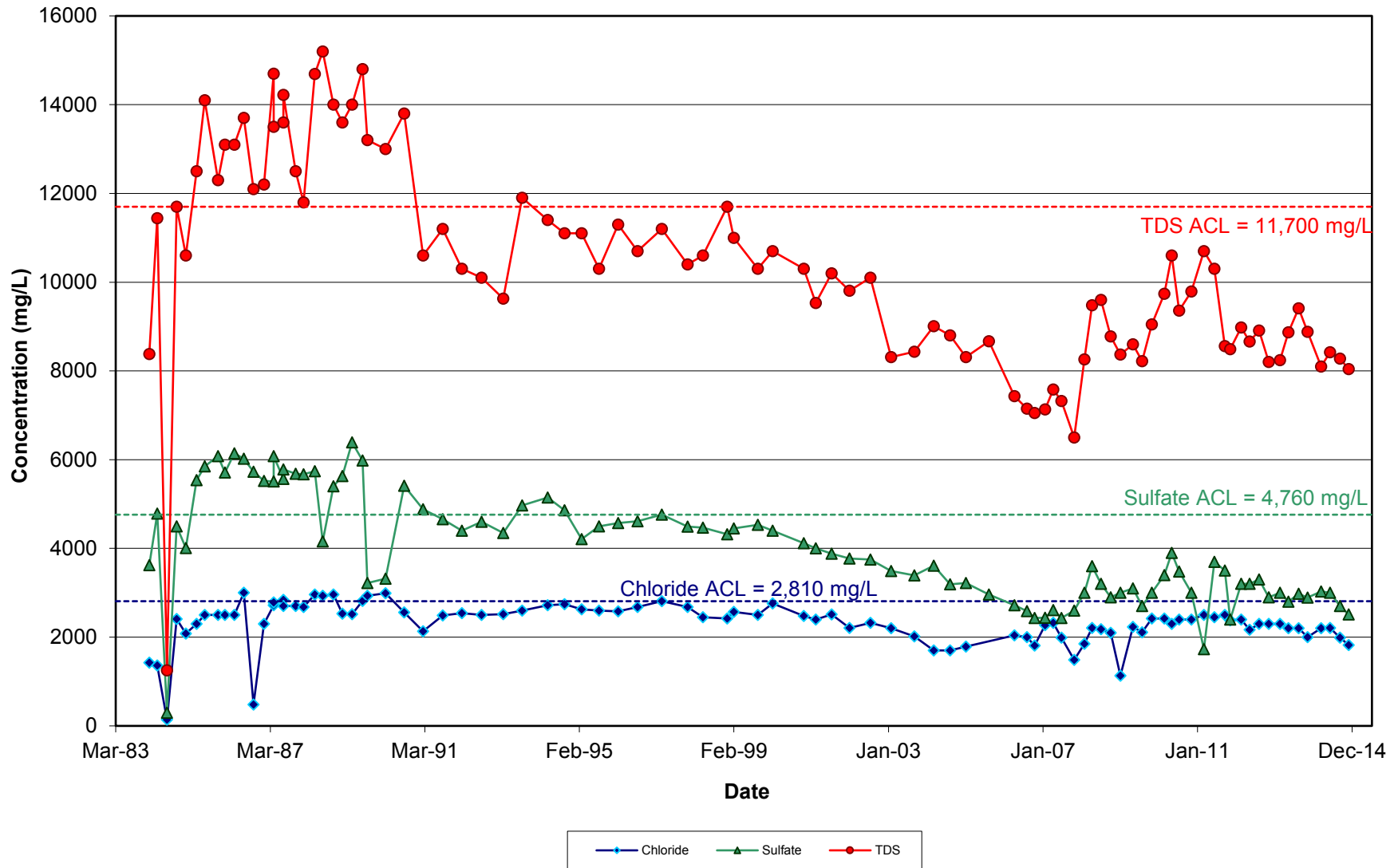
Nitrate in Monitoring Well 36-01TRB



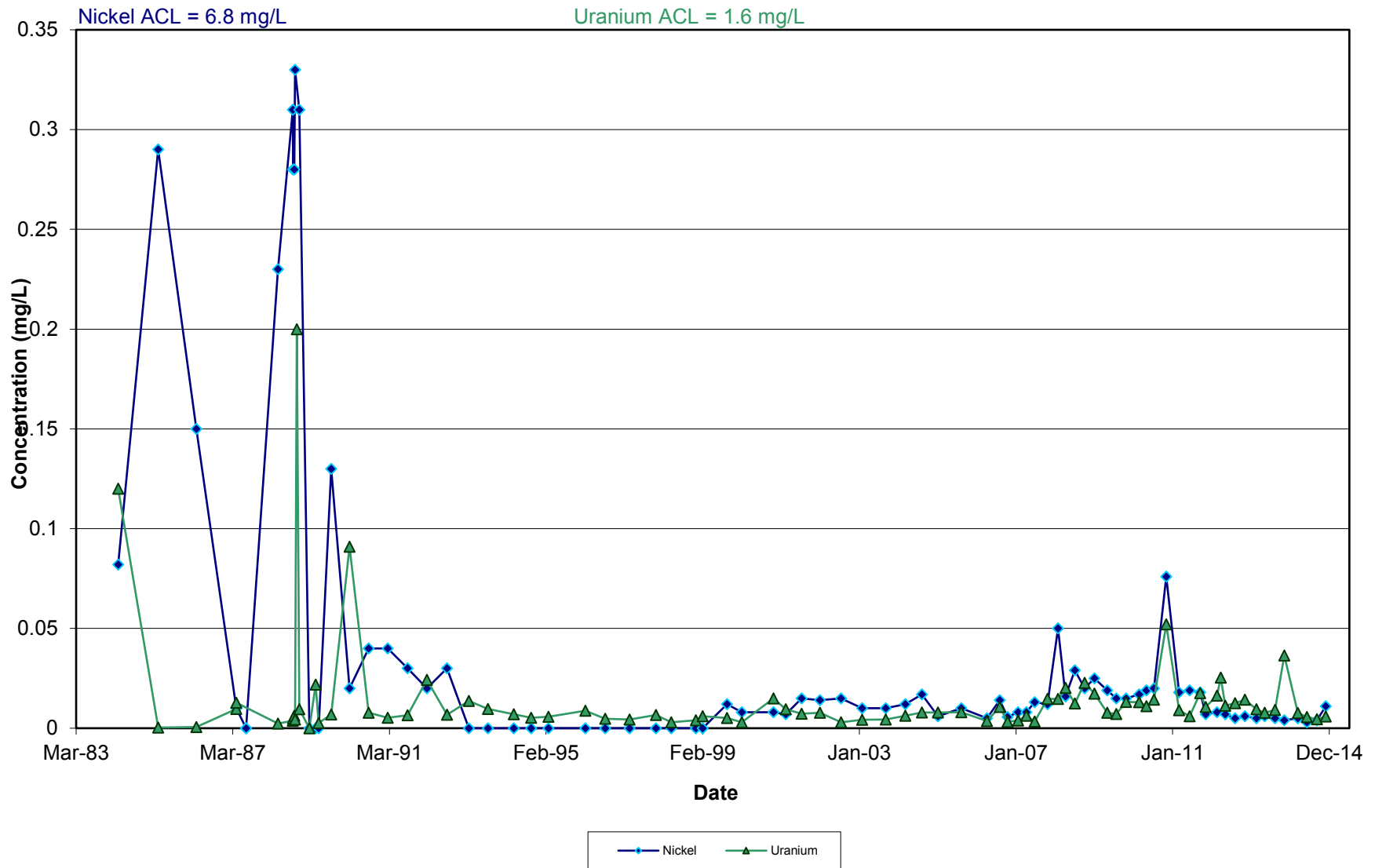
Radionuclides in Monitoring Well 36-01TRB



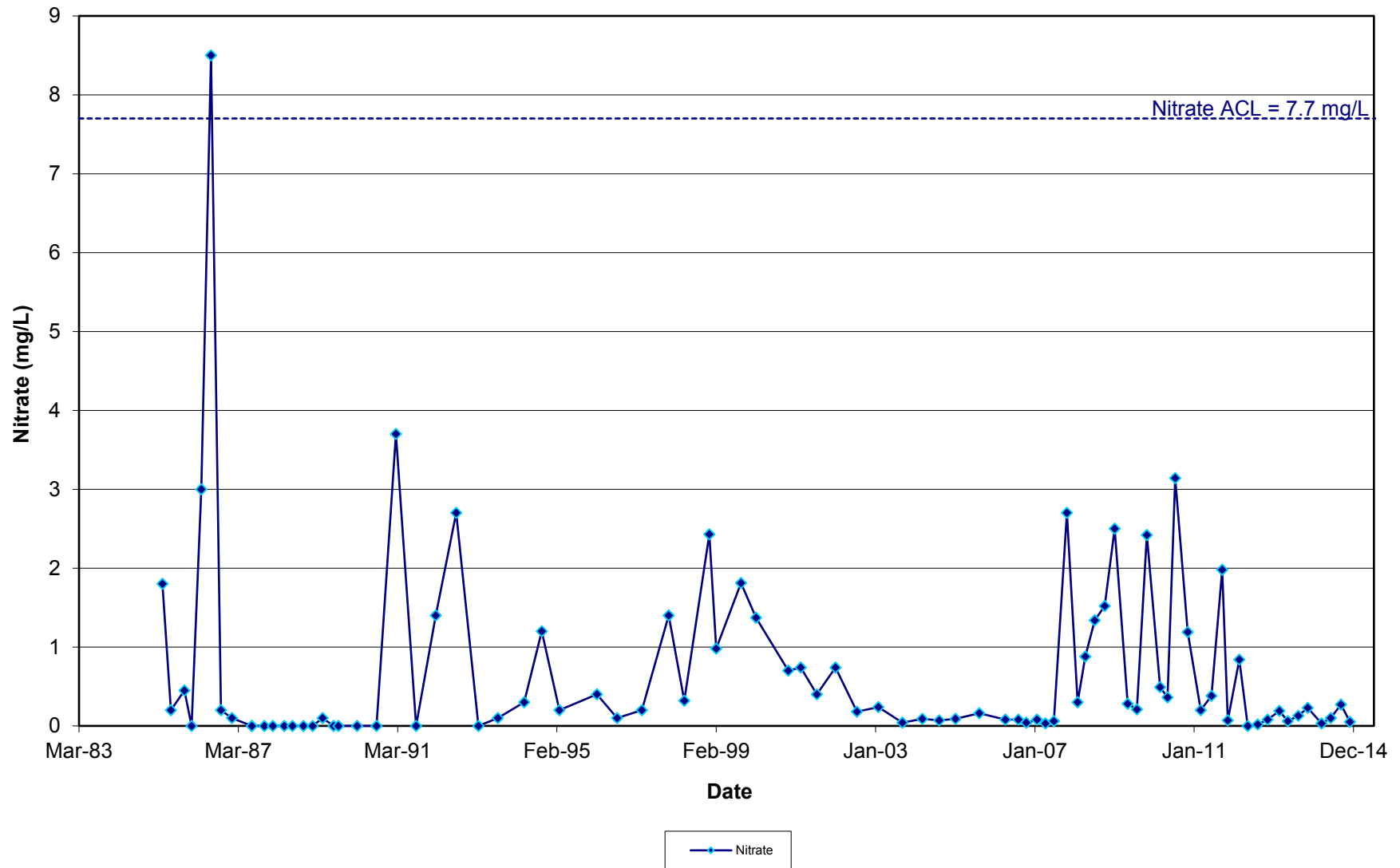
Chloride, Sulfate, and TDS in Monitoring Well 36-02



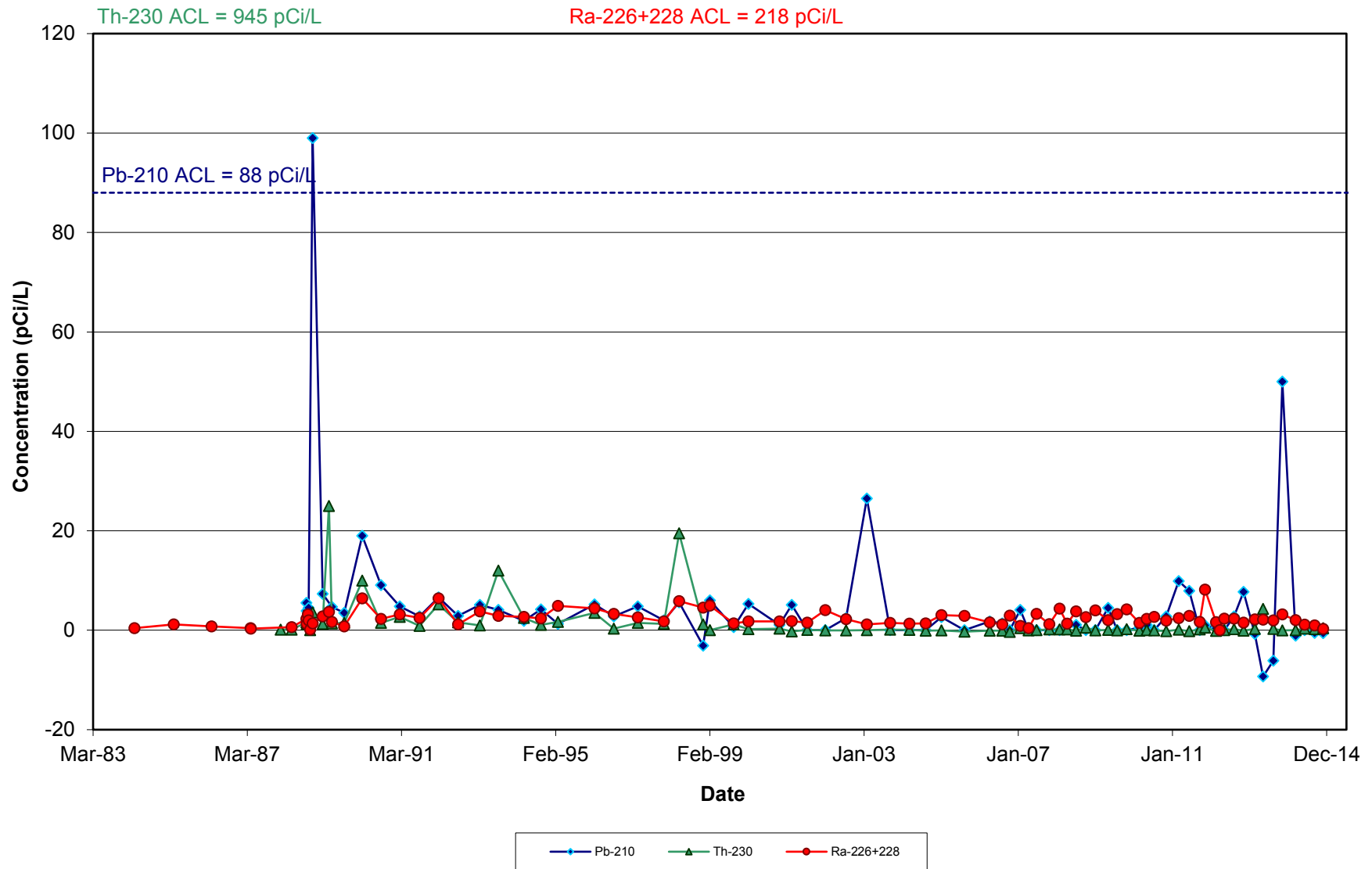
Metals in Monitoring Well 36-02



Nitrate in Monitoring Well 36-02



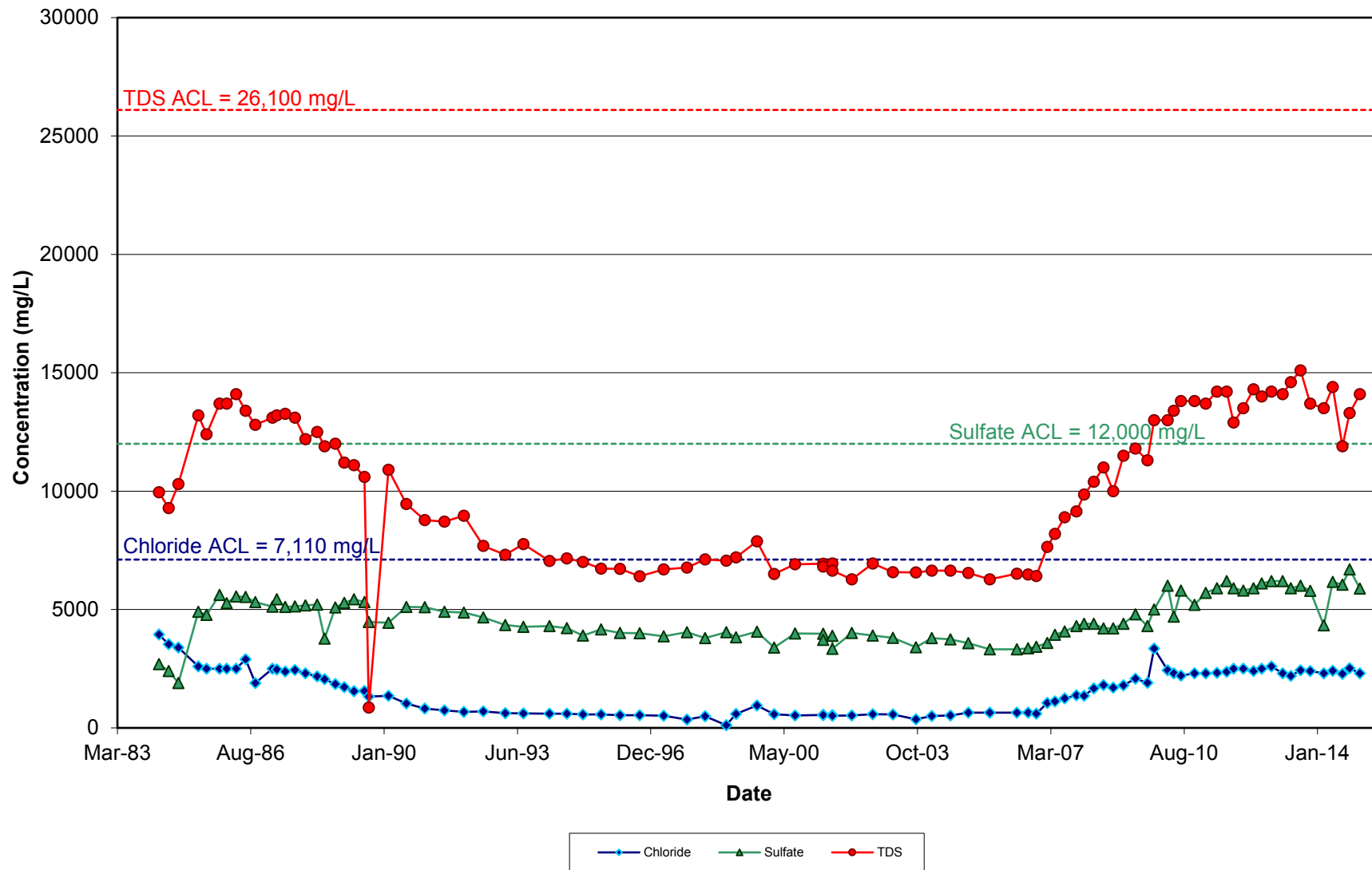
Radionuclides in Monitoring Well 36-02



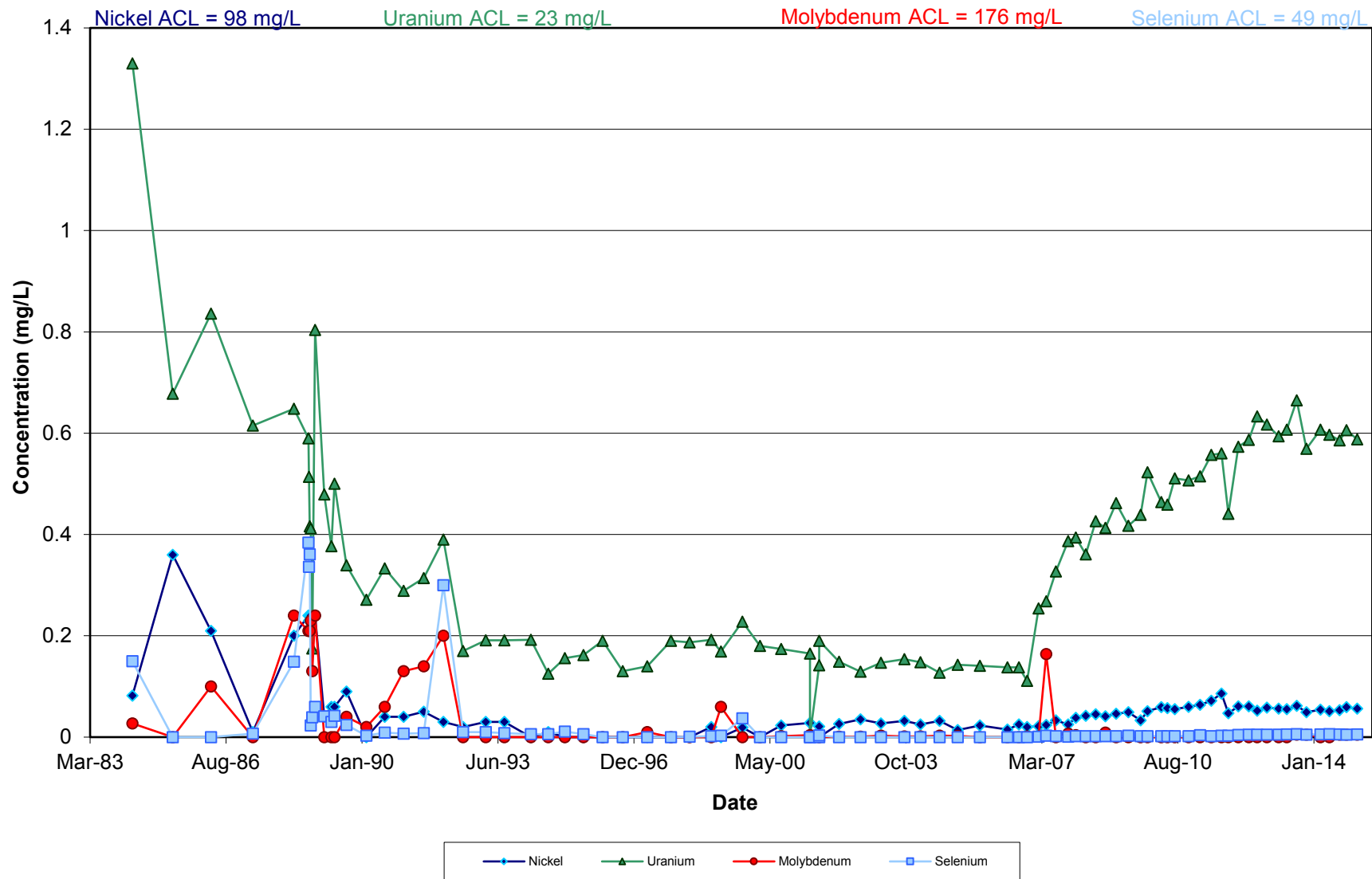
Stability Monitoring Plan
Time Versus Concentration Plots

Alluvium

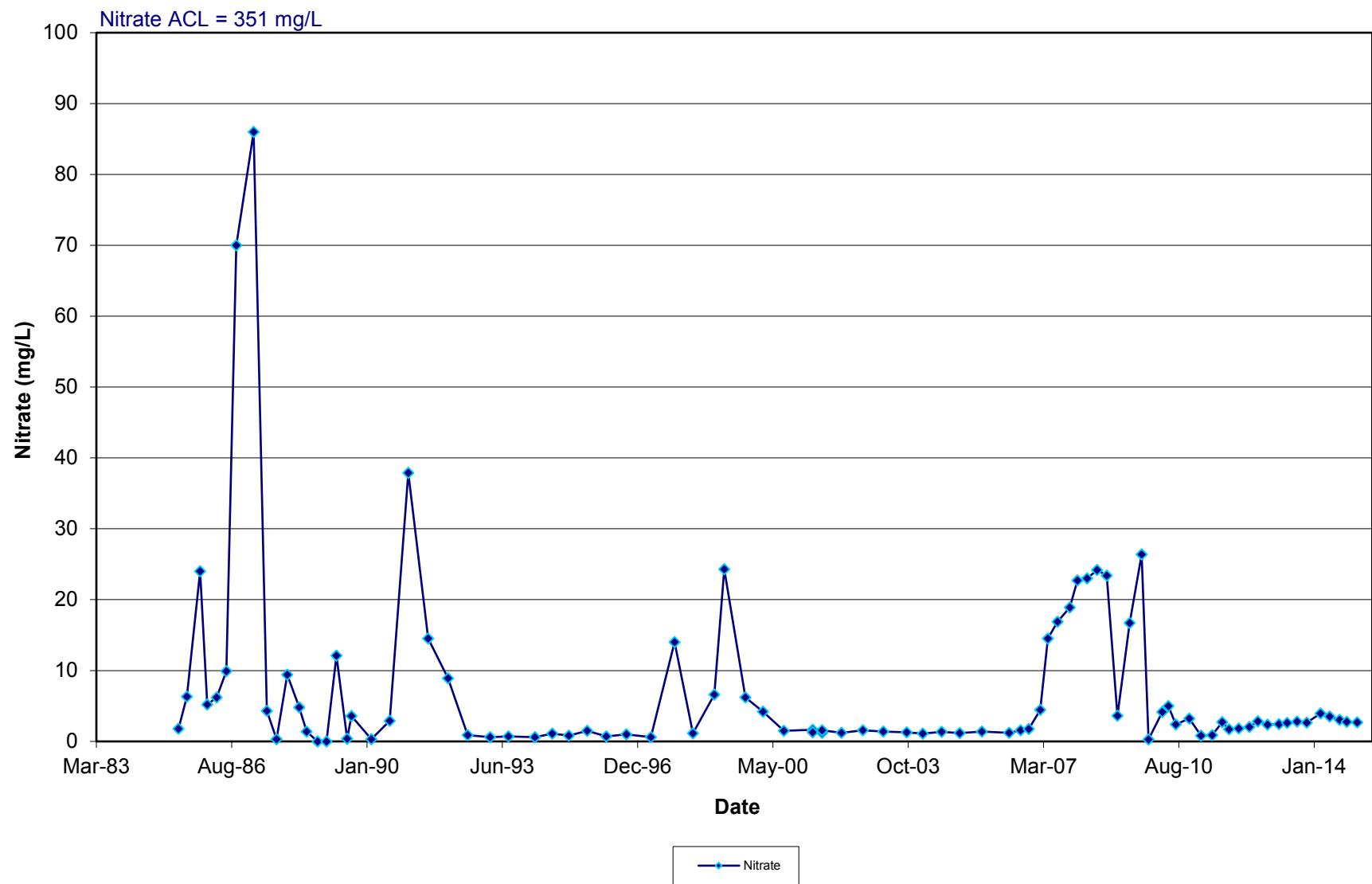
Anions and TDS in Monitoring Well 31-61



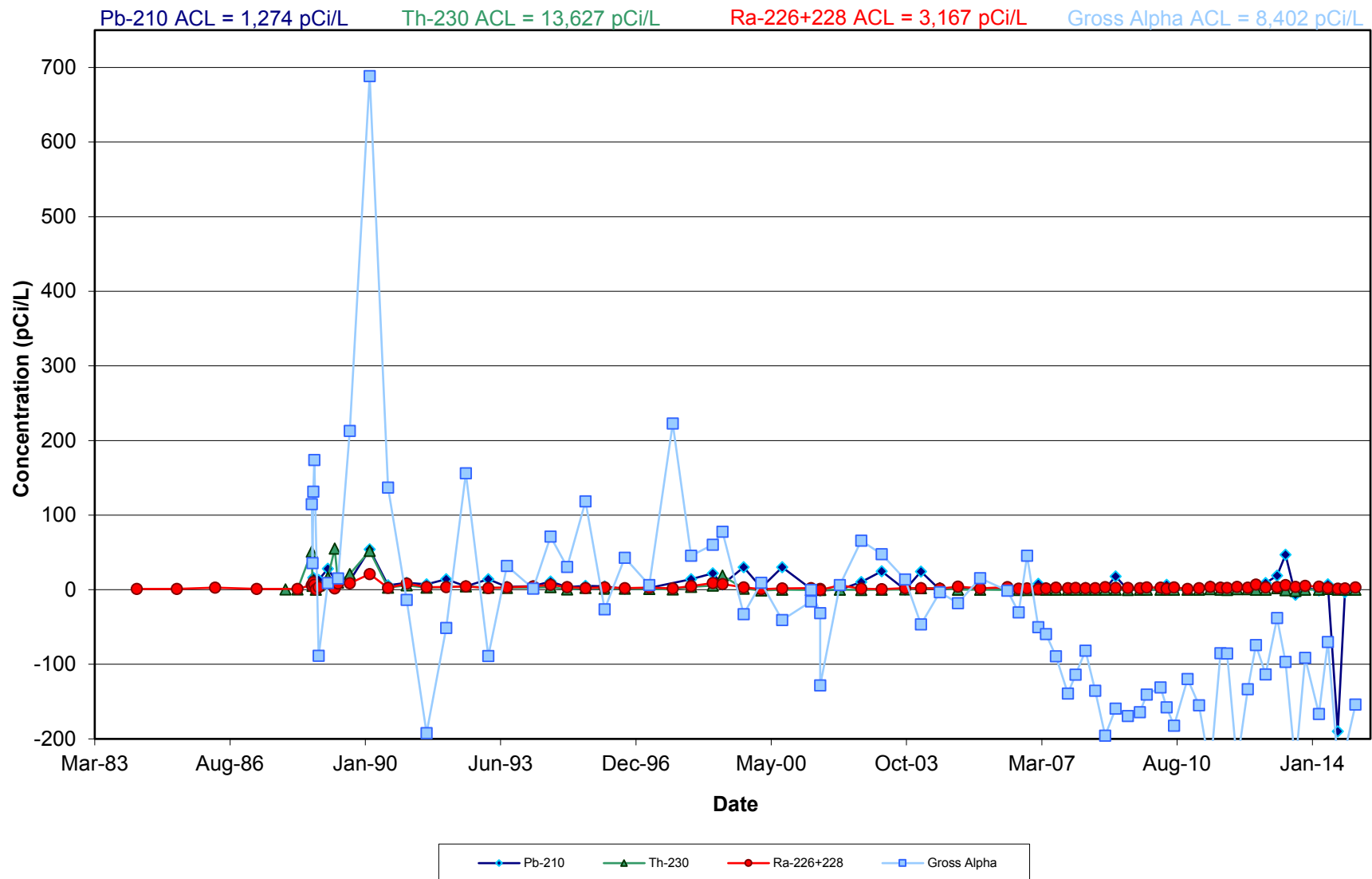
Metals in Monitoring Well 31-61



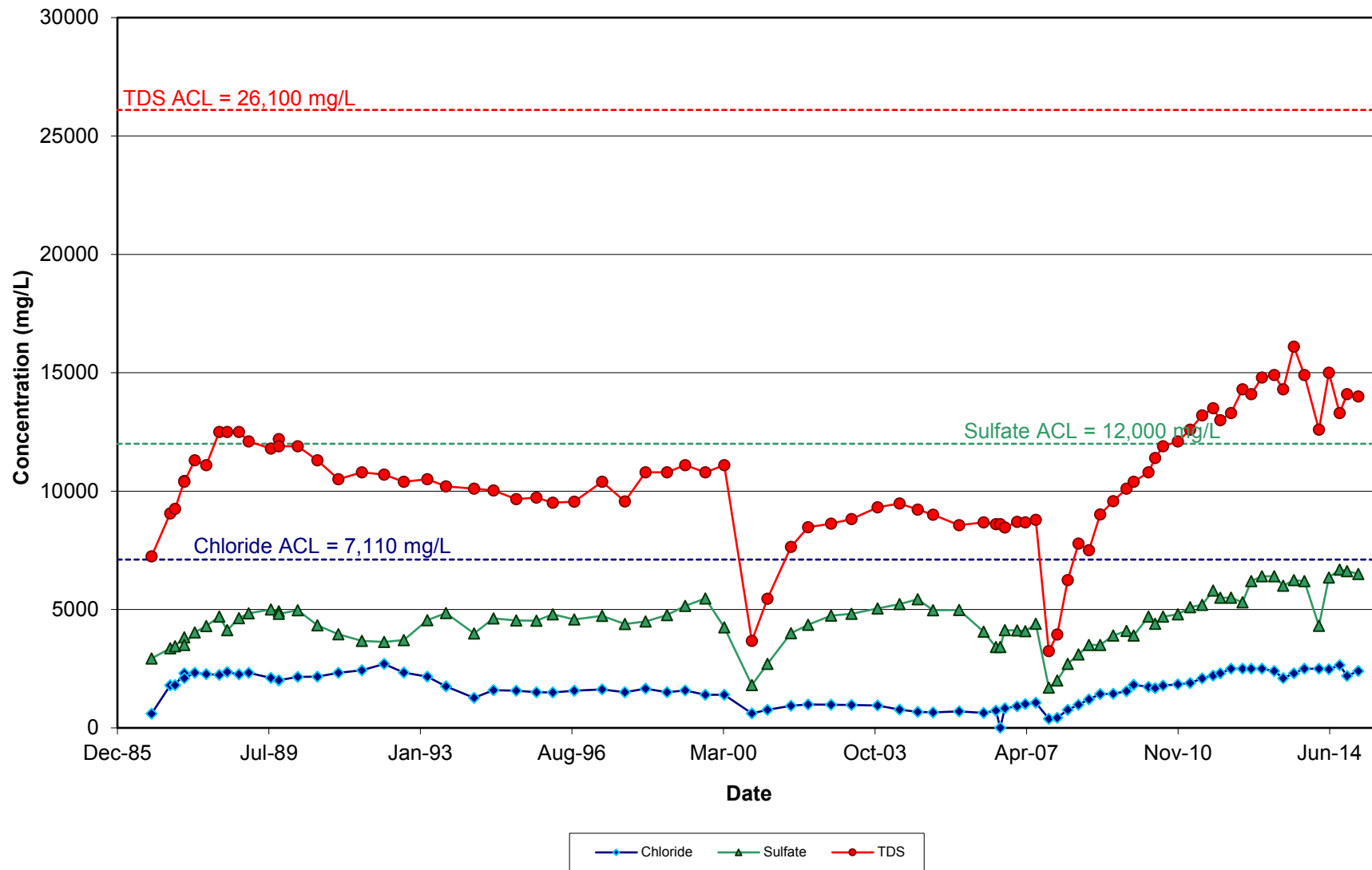
Nitrate in Monitoring Well 31-61



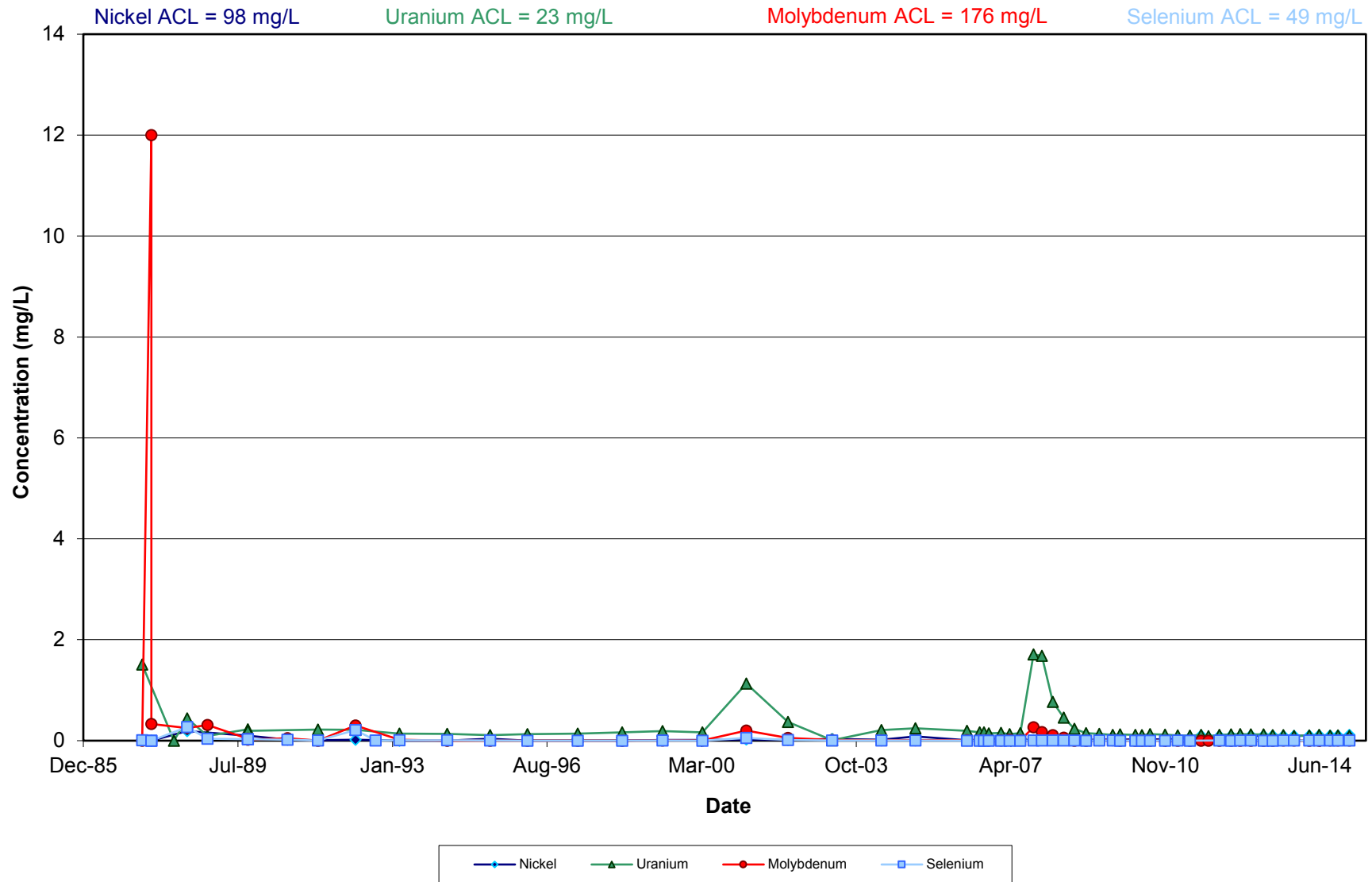
Radionuclides in Monitoring Well 31-61



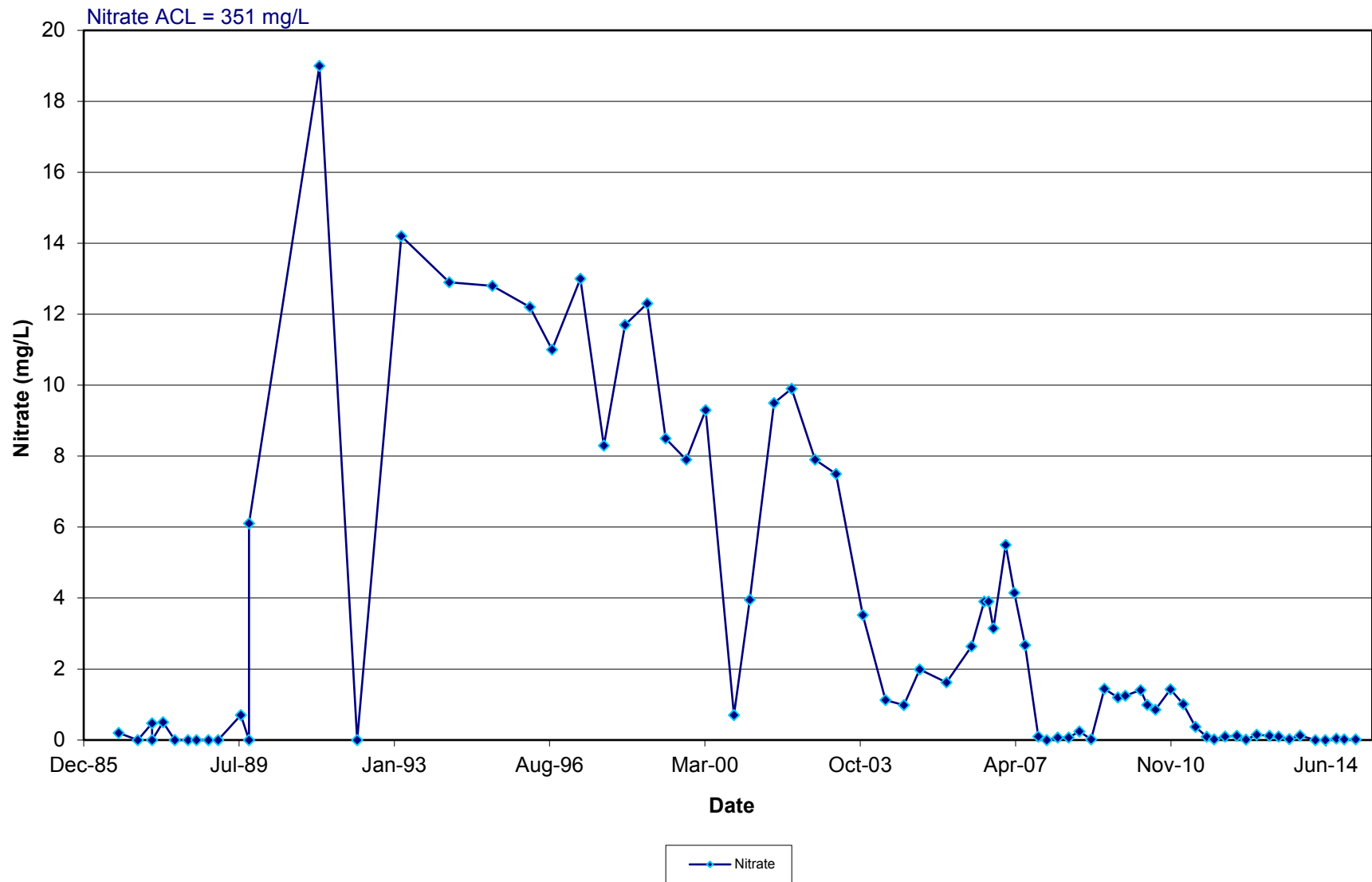
Anions and TDS in Monitoring Well 31-65



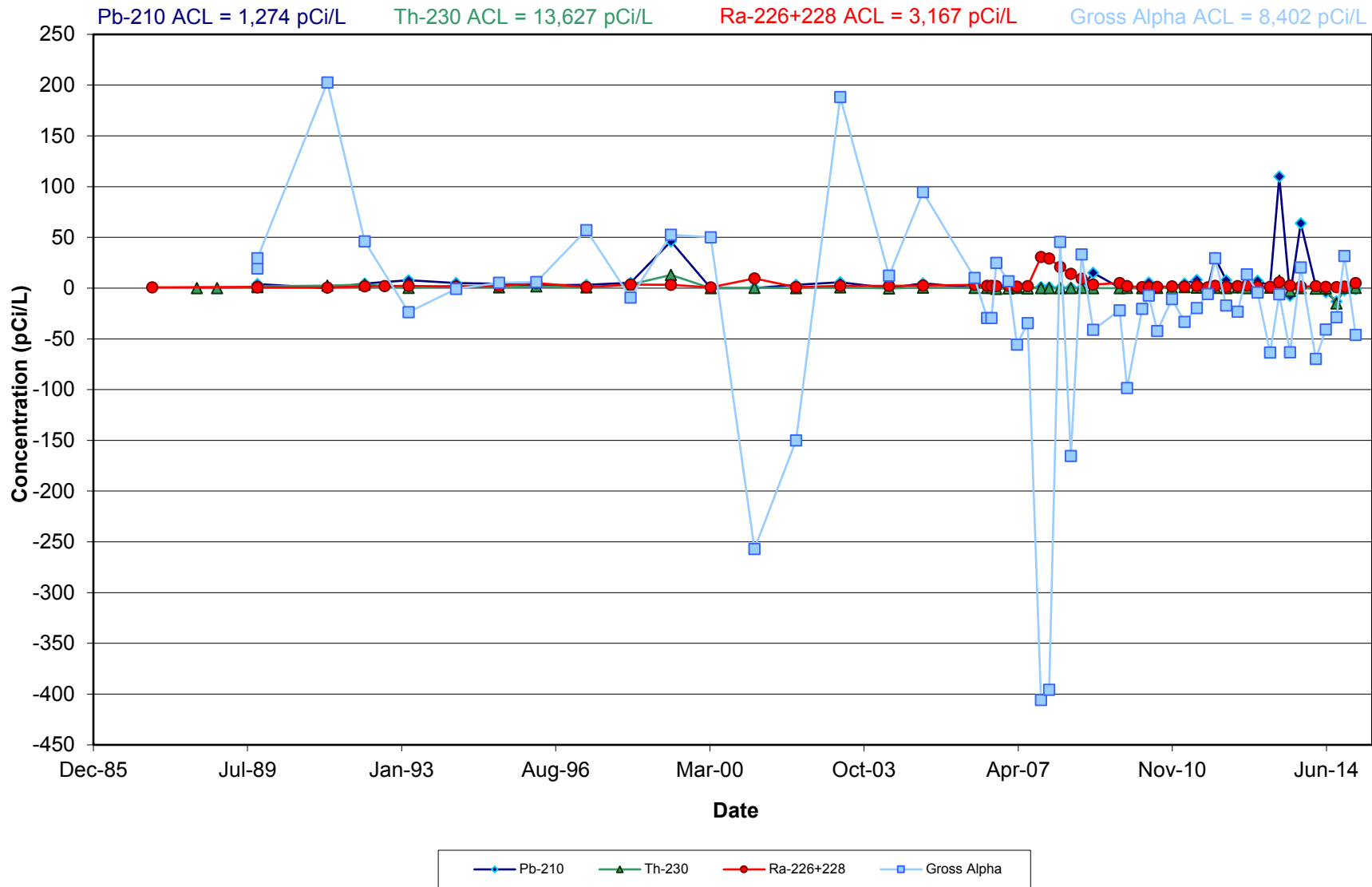
Metals in Monitoring Well 31-65



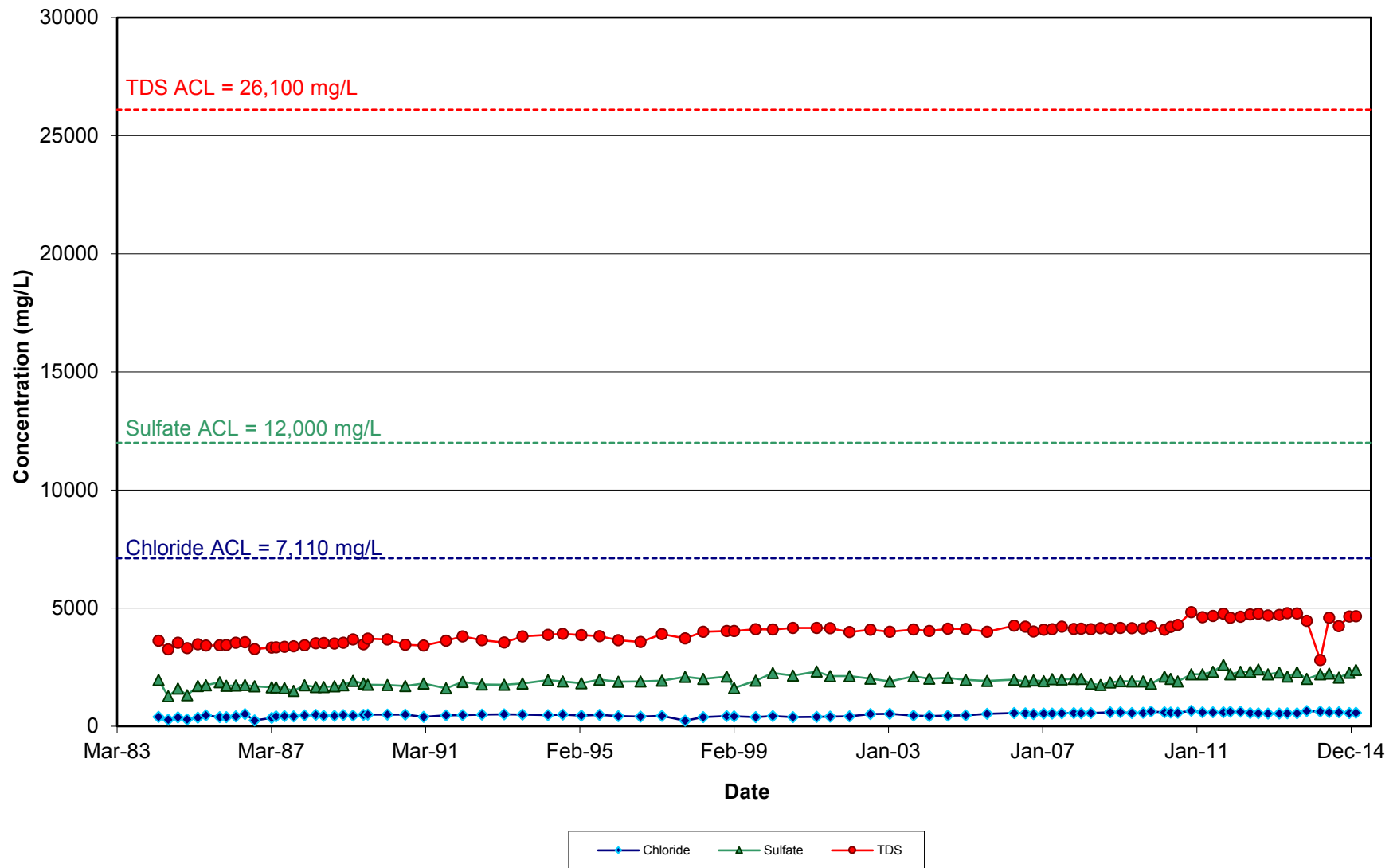
Nitrate in Monitoring Well 31-65



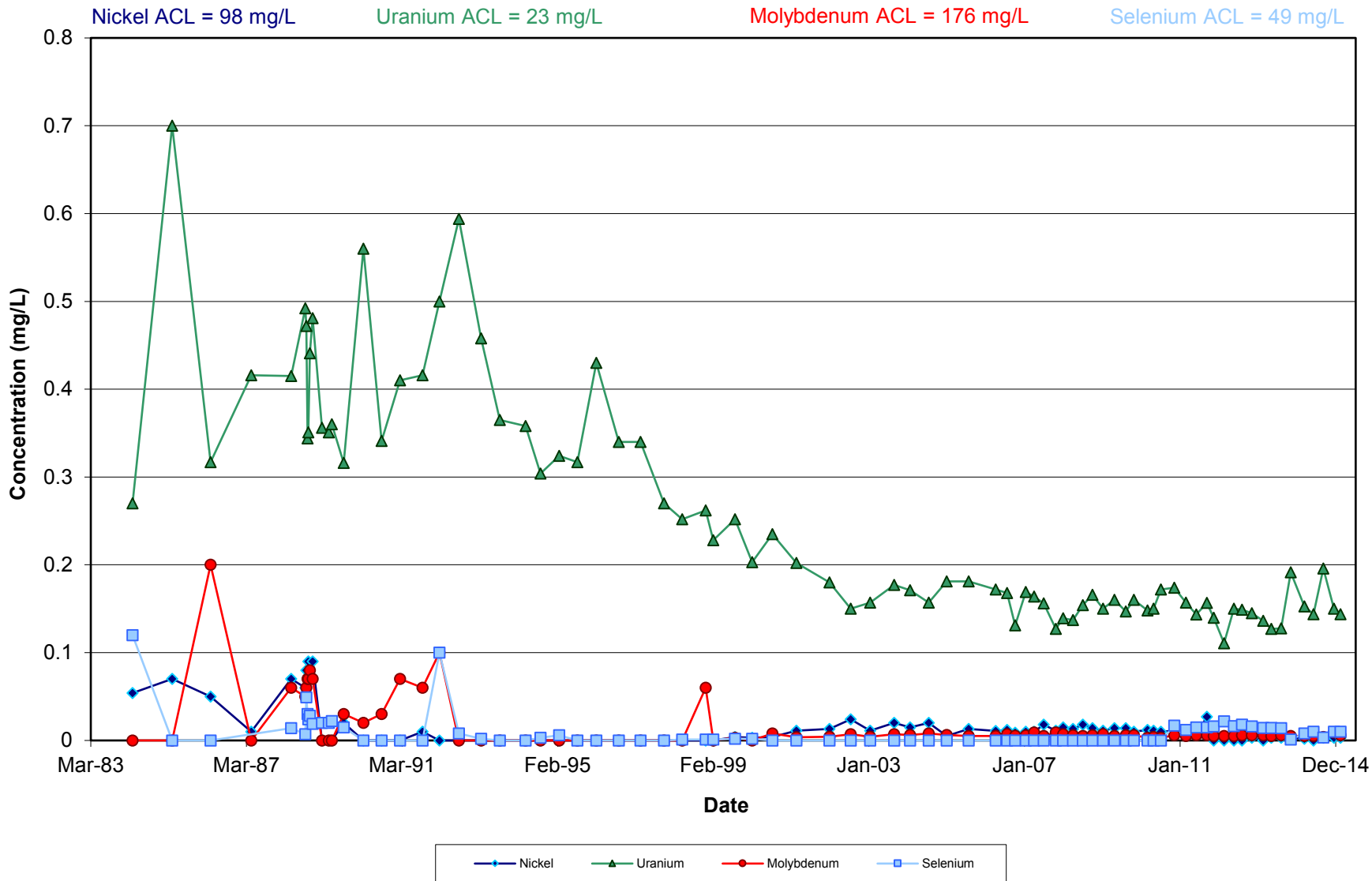
Radionuclides in Monitoring Well 31-65



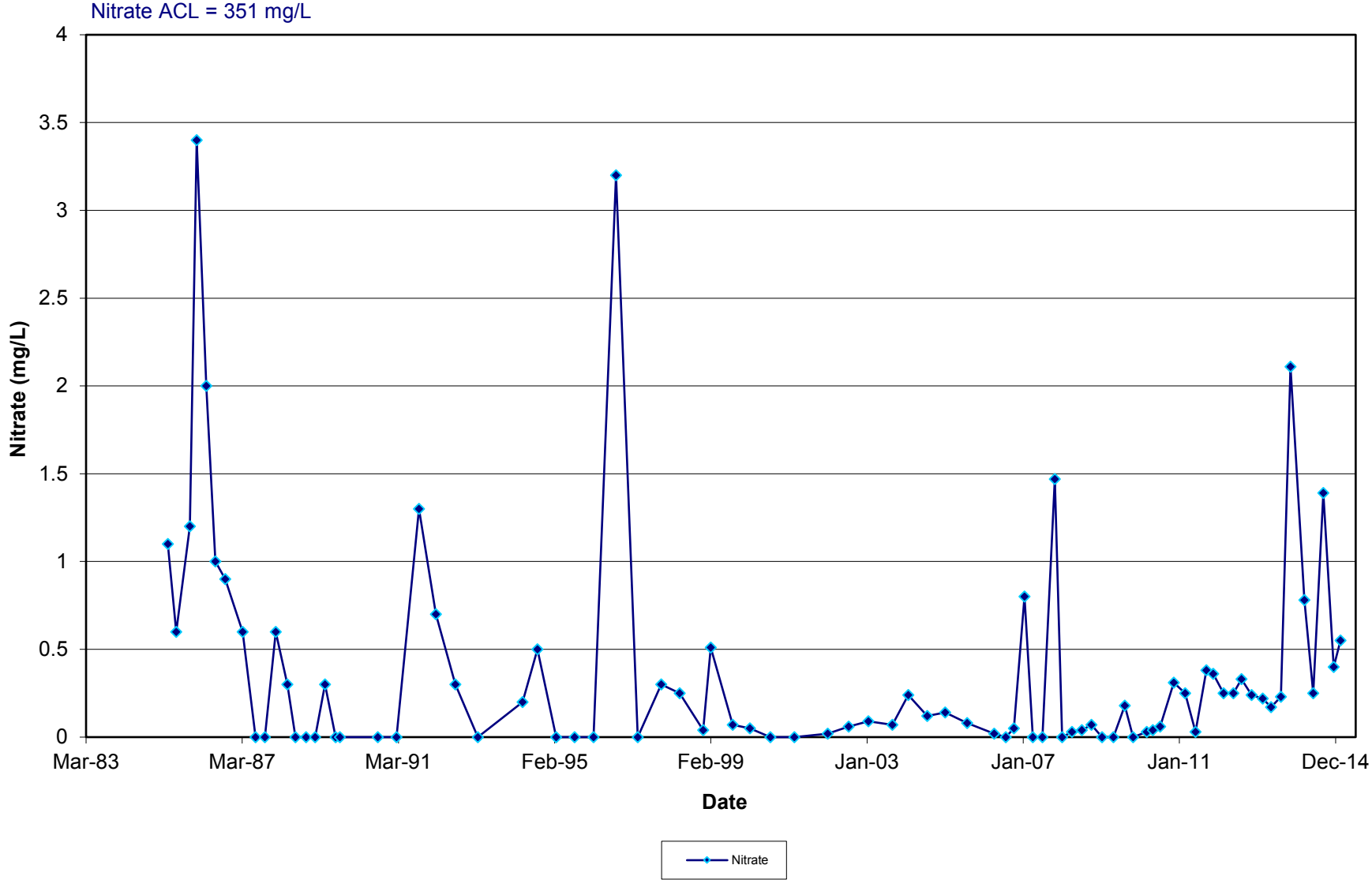
Anions and TDS in Monitoring Well 32-59



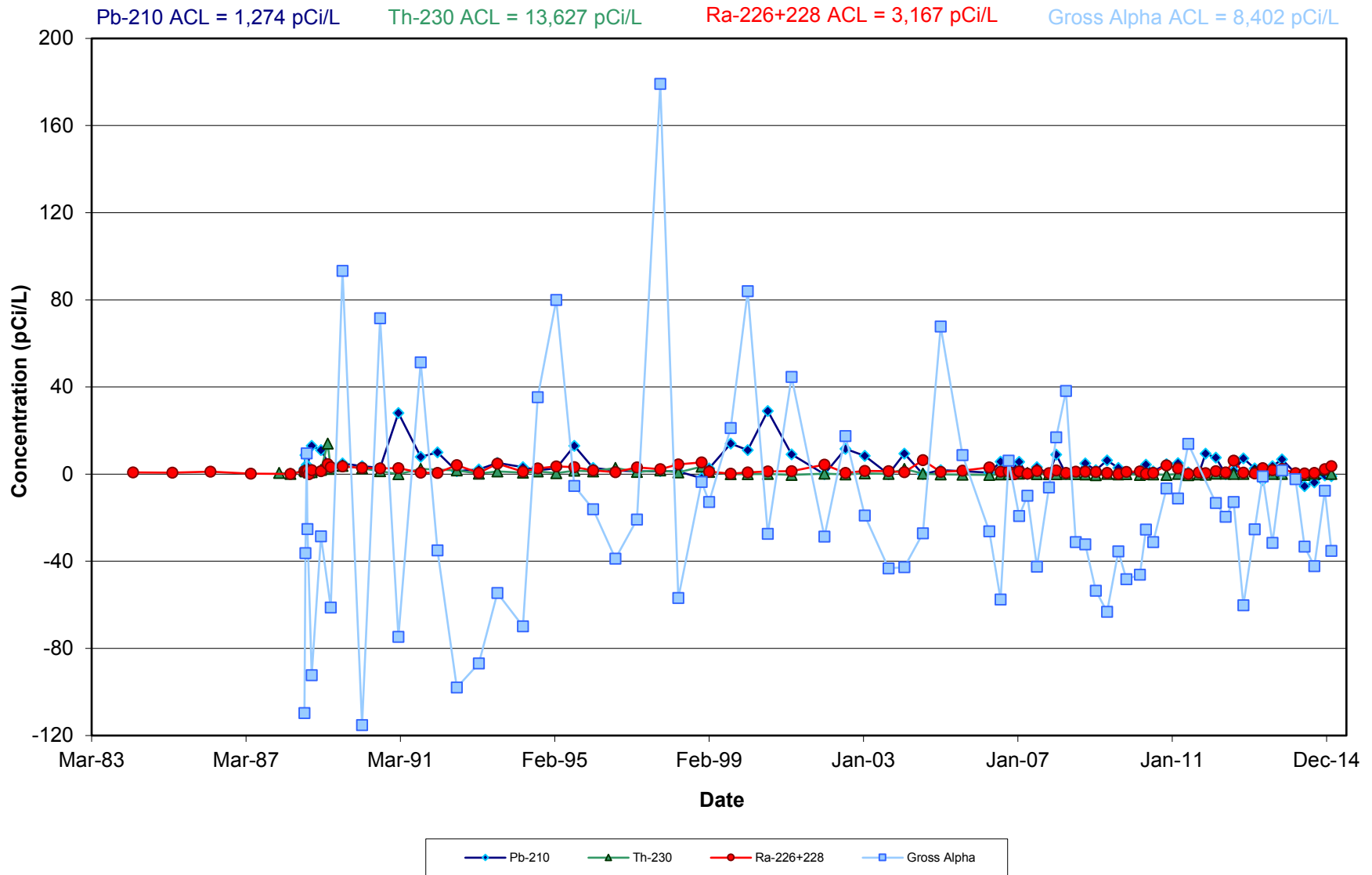
Metals in Monitoring Well 32-59



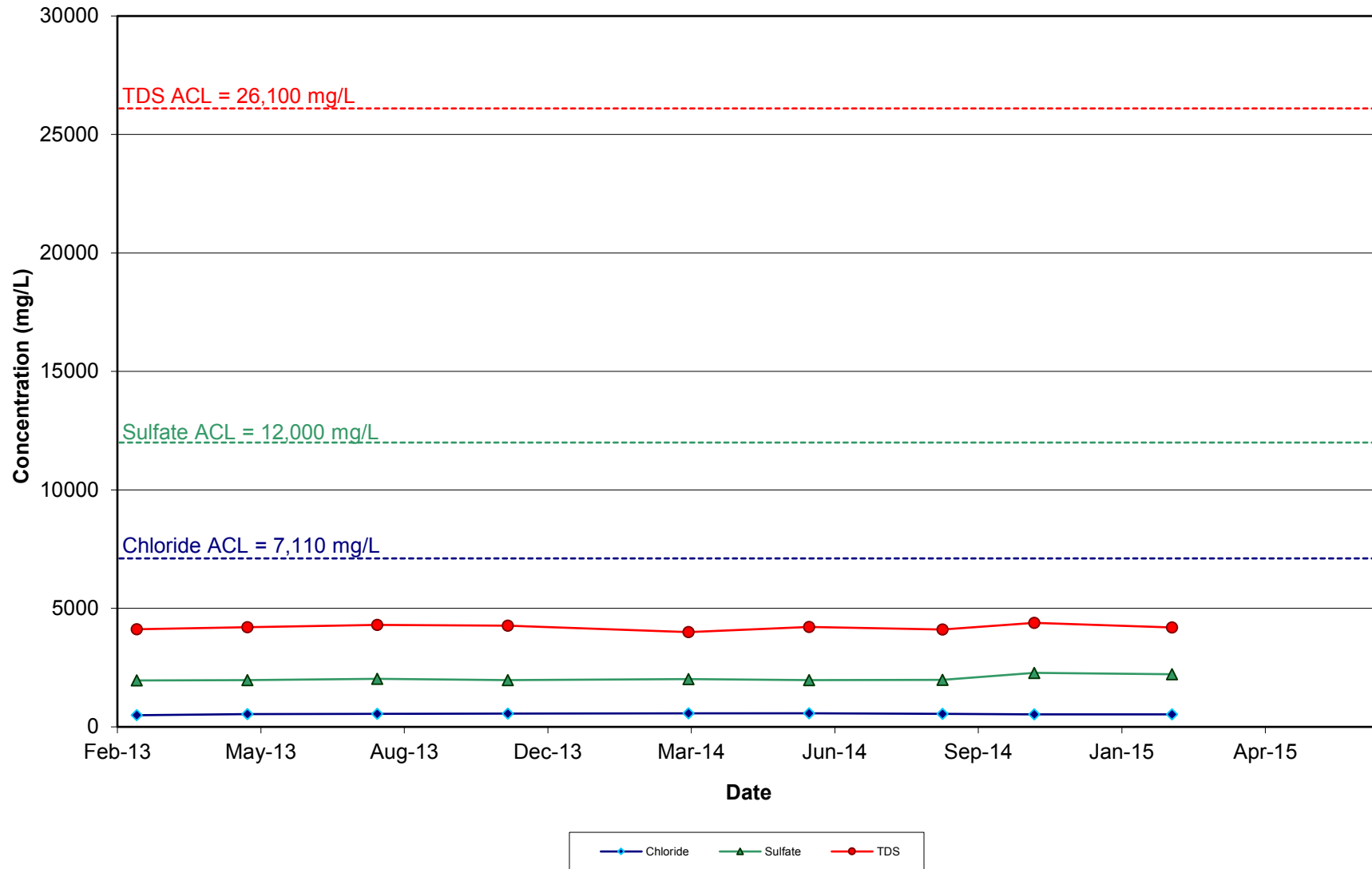
Nitrate in Monitoring Well 32-59



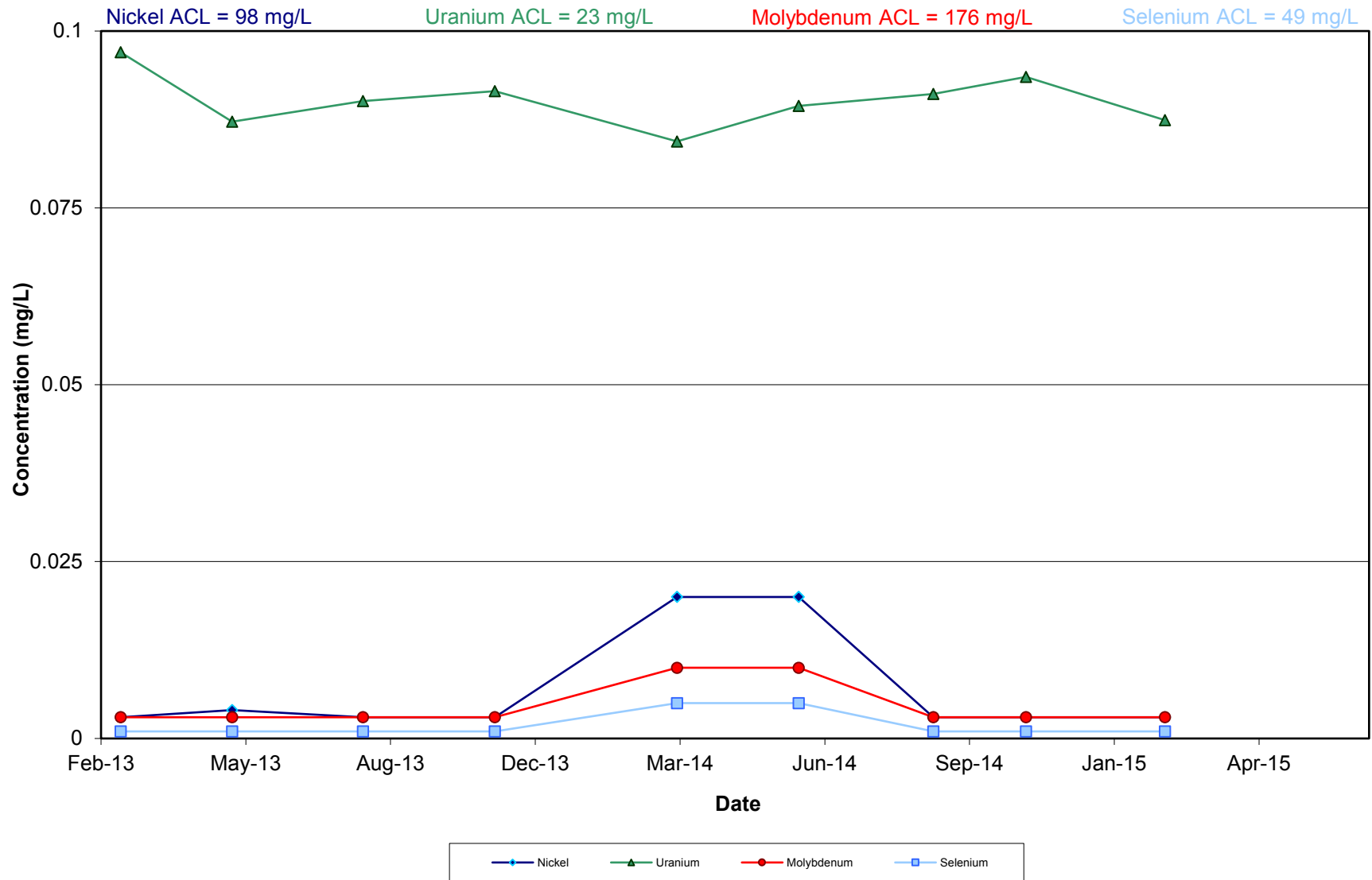
Radionuclides in Monitoring Well 32-59



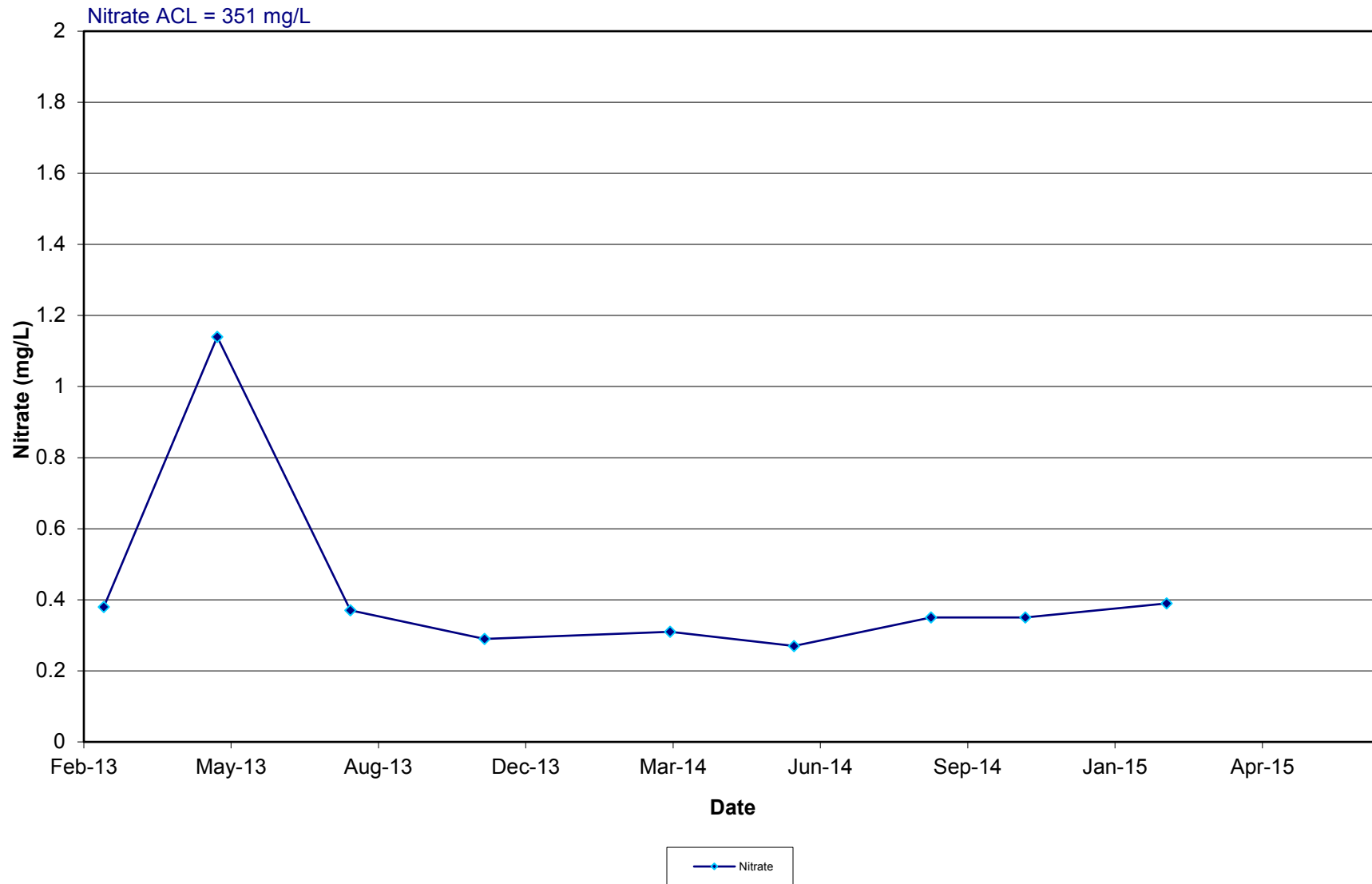
**Anions and TDS in Monitoring Well 5-03-R
(replaced 11/5/2012)**



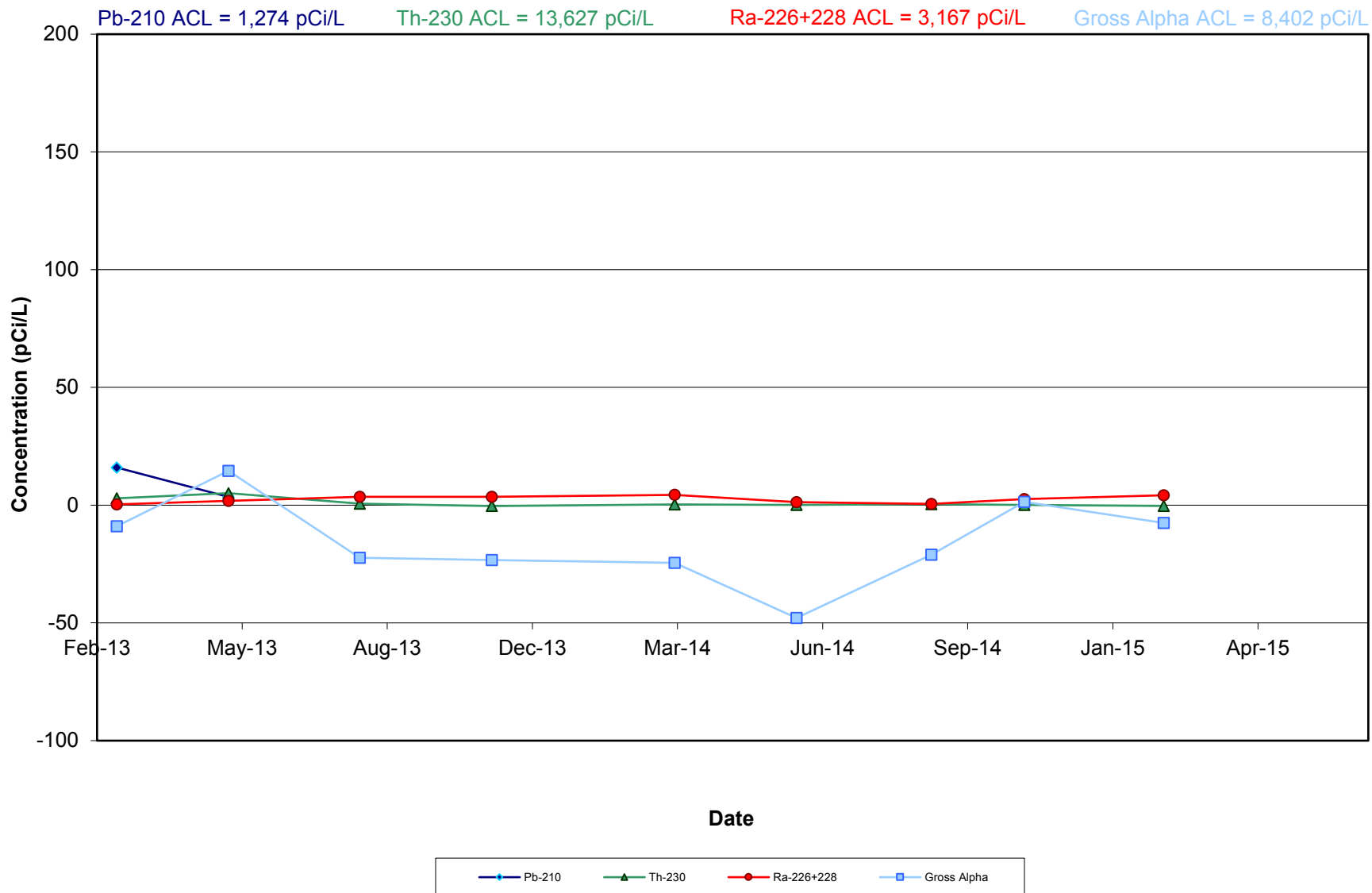
Metals in Monitoring Well 5-03-R (replaced 11/5/2012)



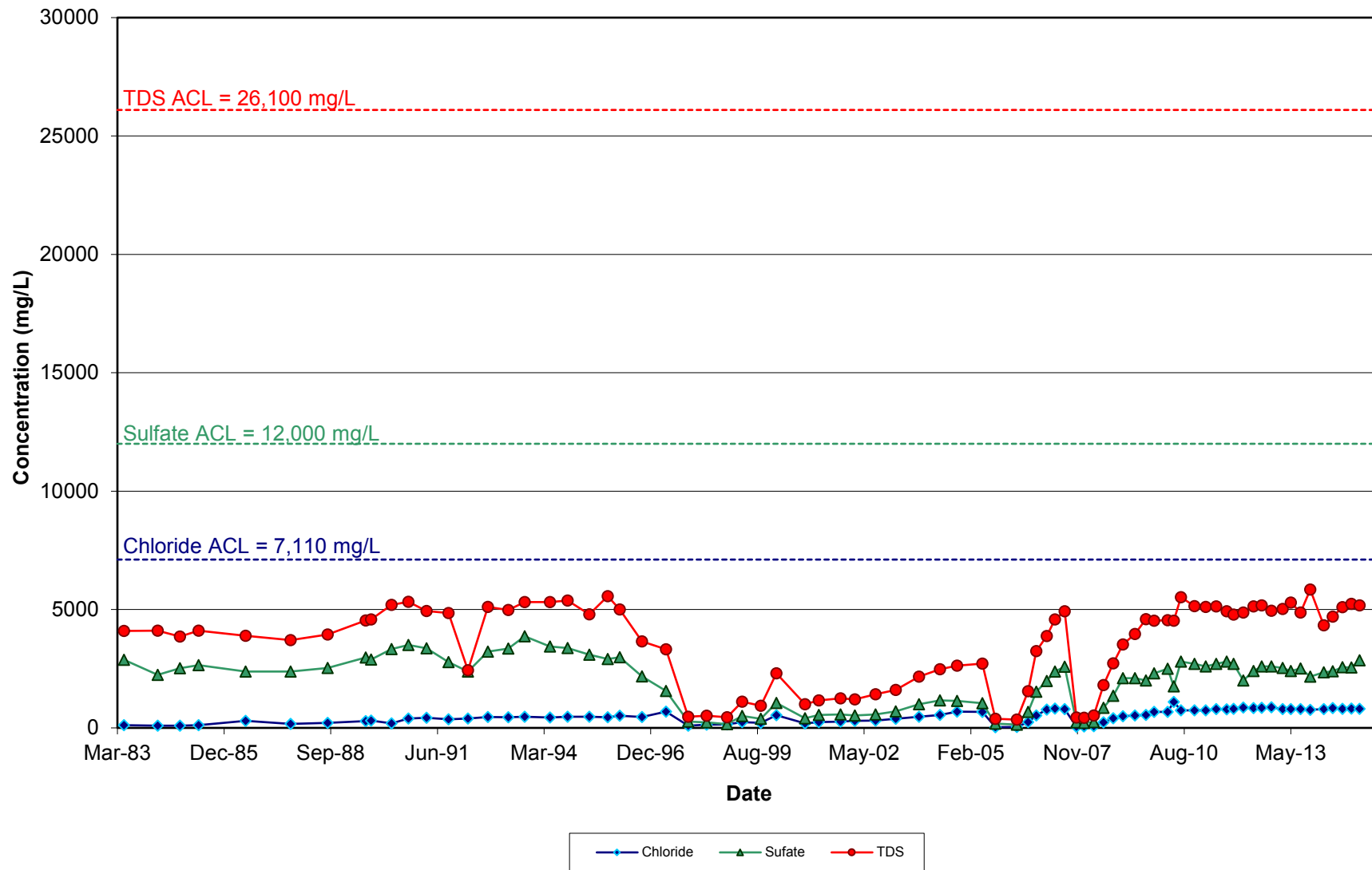
Nitrate in Monitoring Well 5-03-R (replaced 11/5/2012)



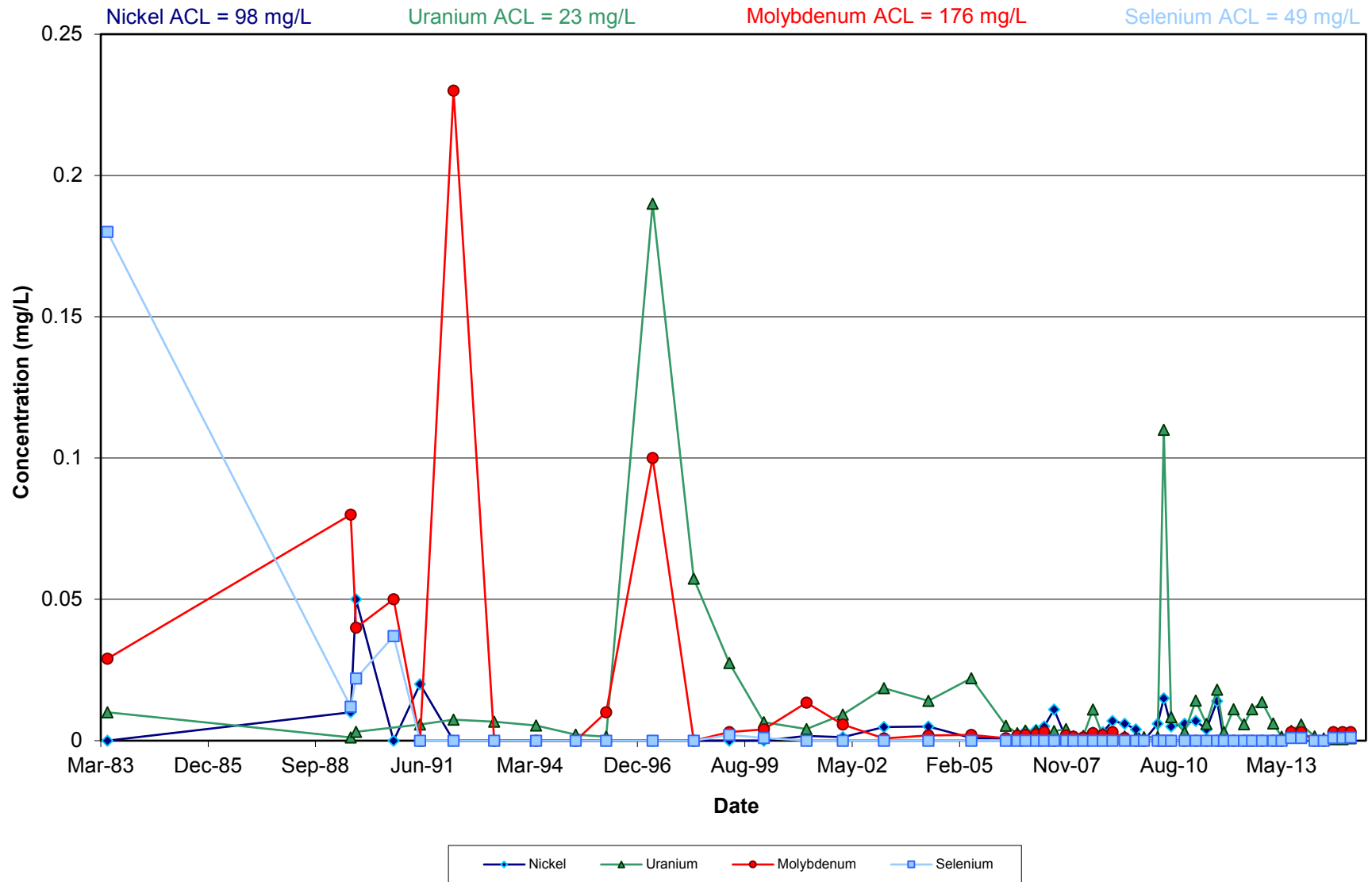
Radionuclides in Monitoring Well 5-03-R (replaced 11/5/2012)



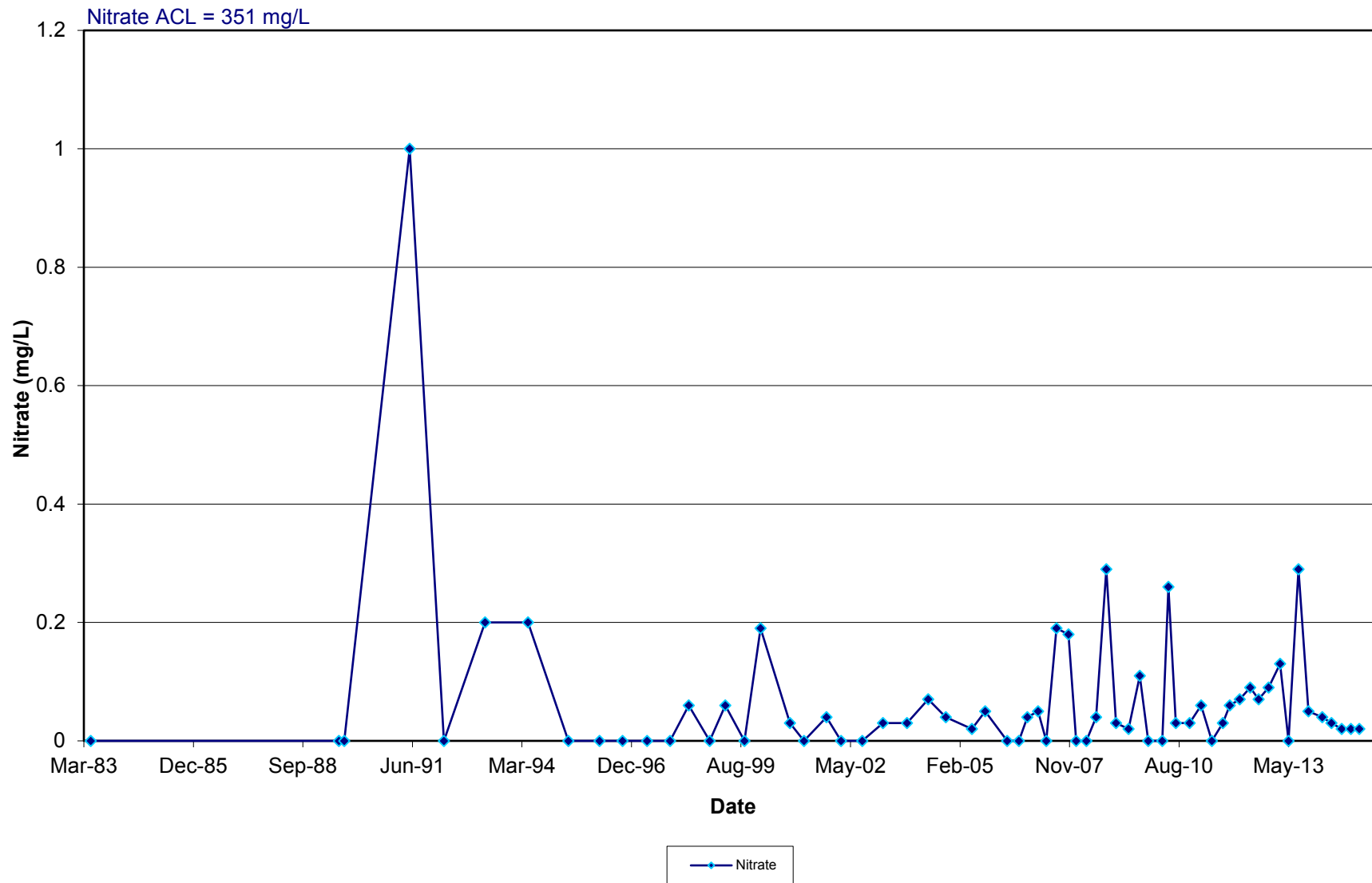
Anions and TDS in Monitoring Well 5-04



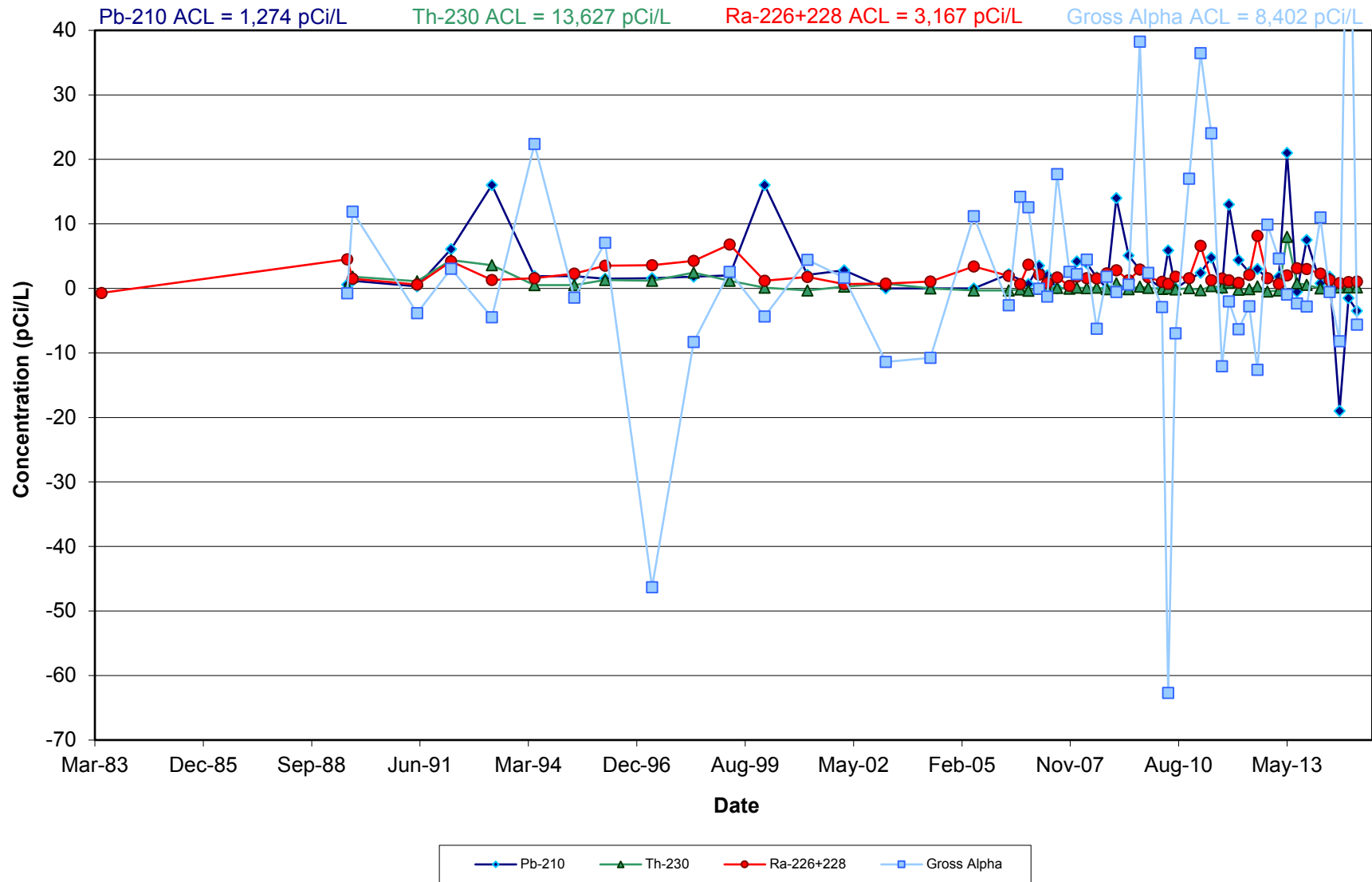
Metals in Monitoring Well 5-04



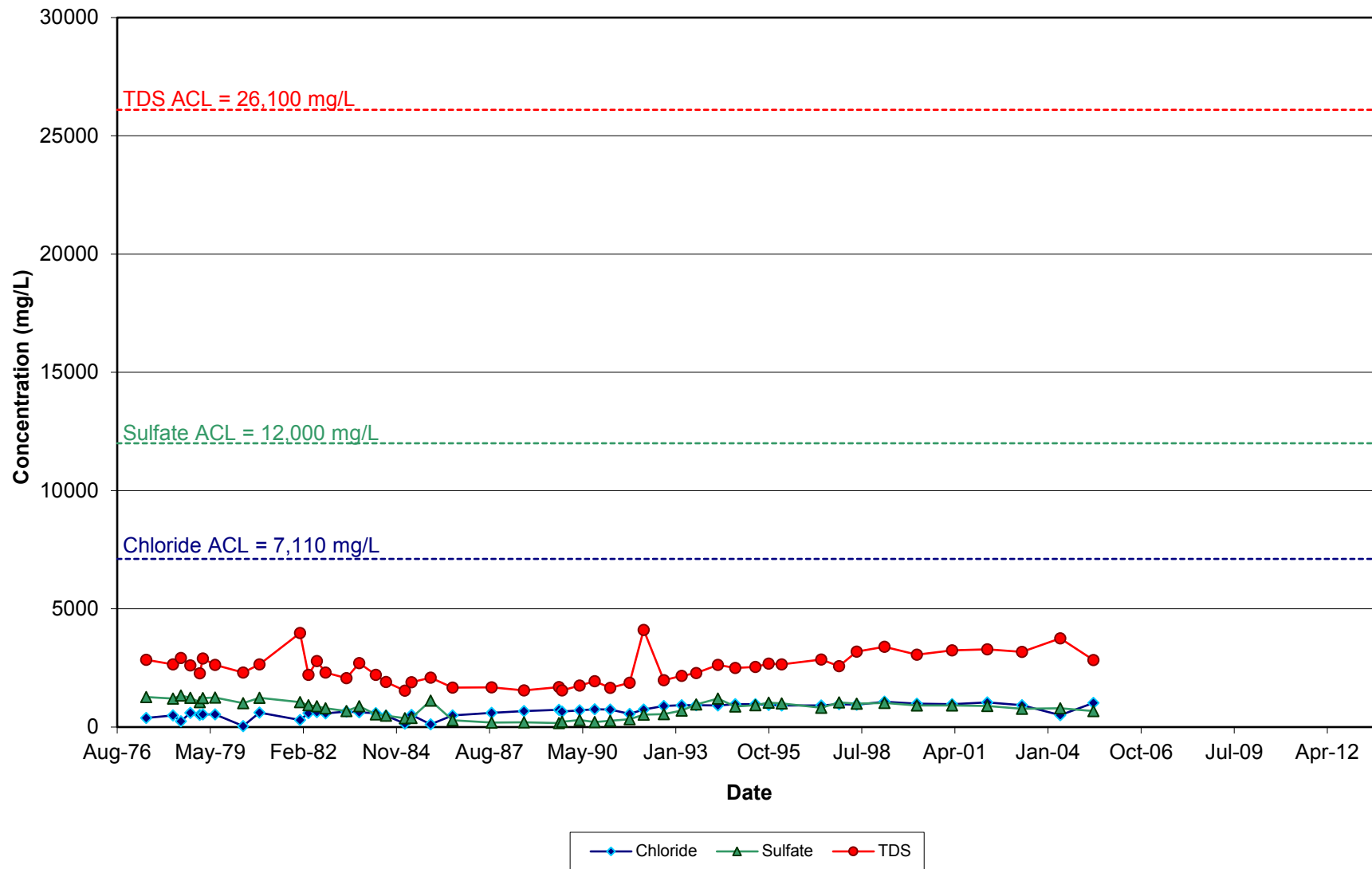
Nitrate in Monitoring Well 5-04



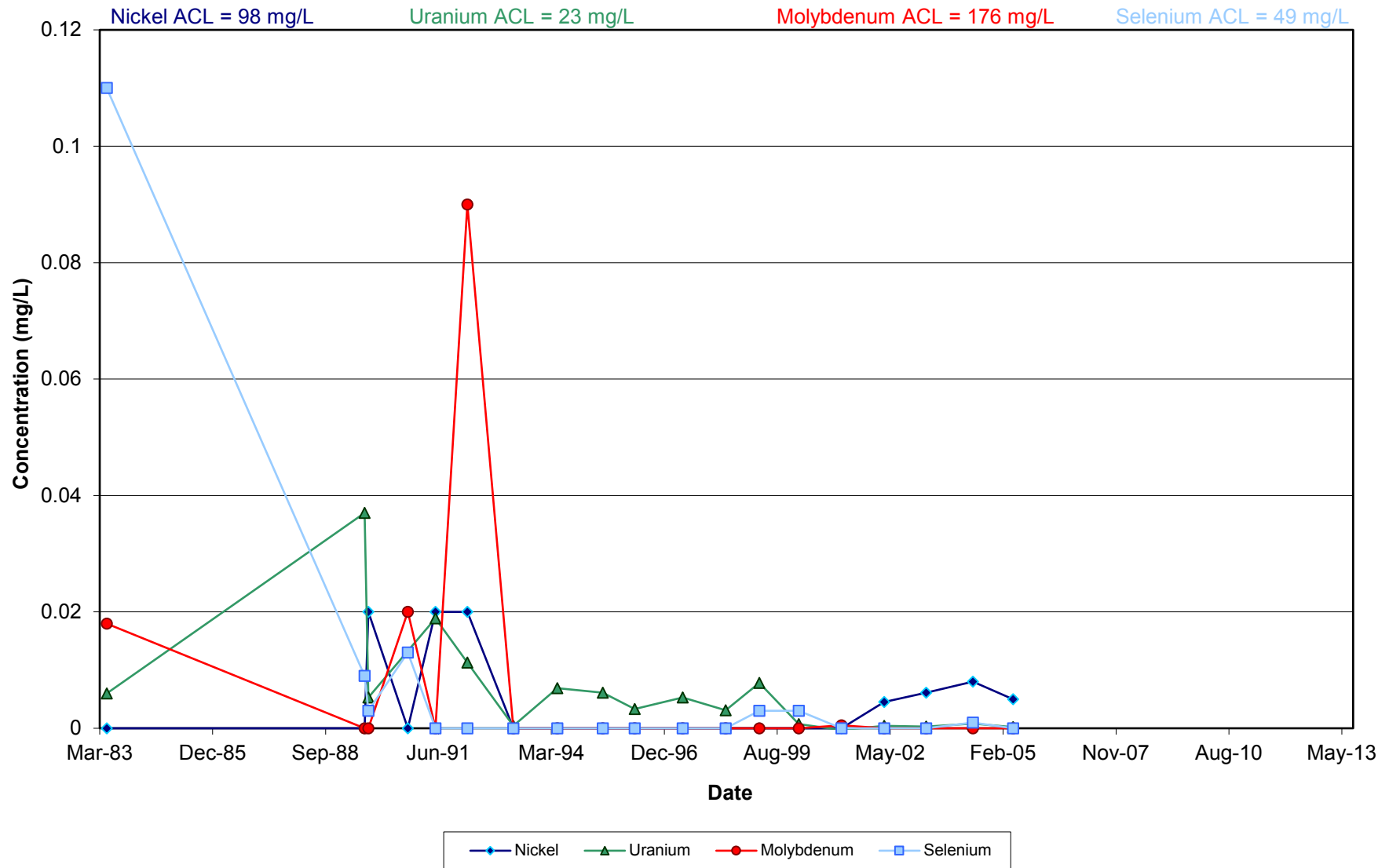
Radionuclides in Monitoring Well 5-04



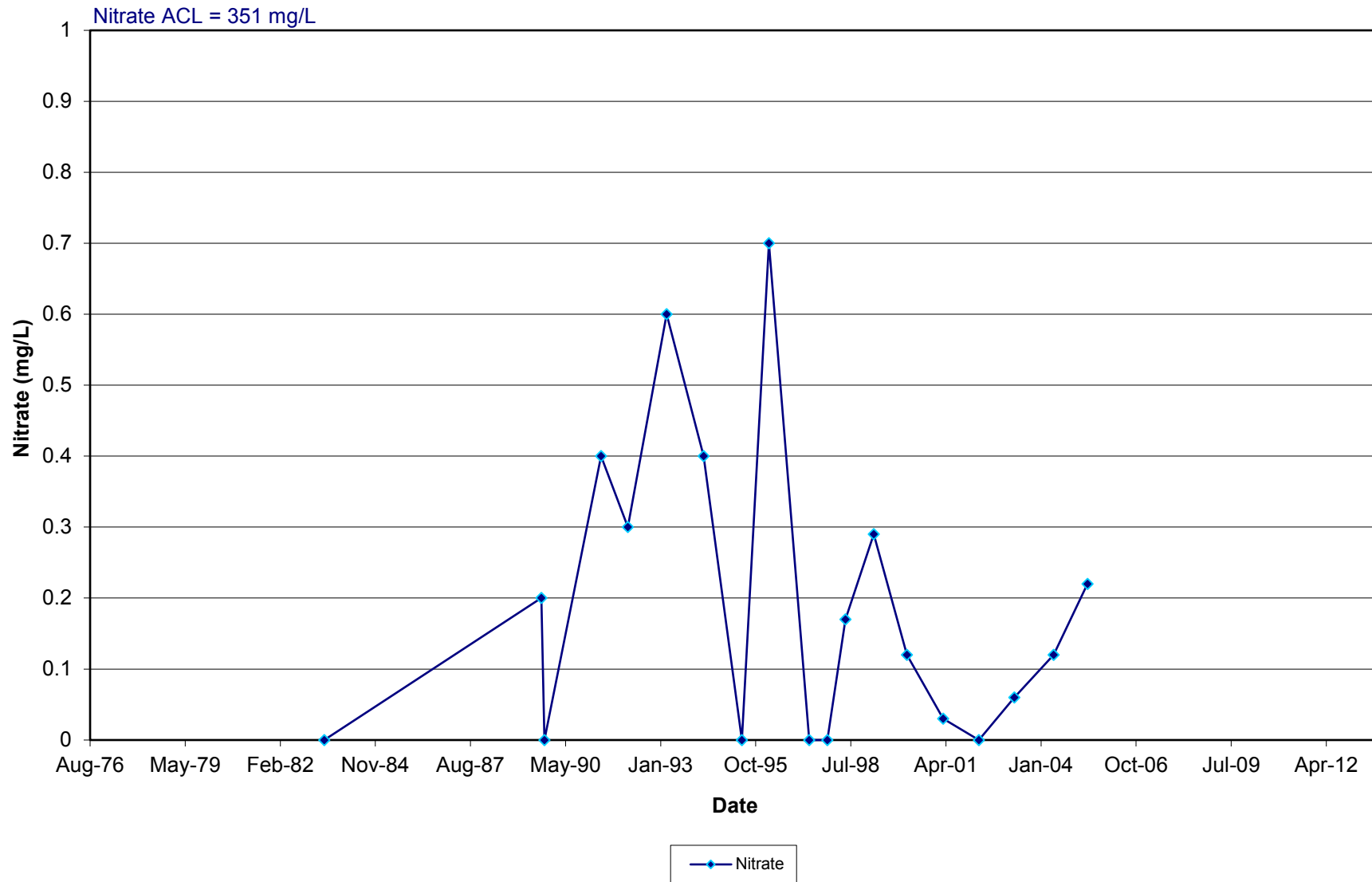
Anions and TDS in Monitoring Well 5-05



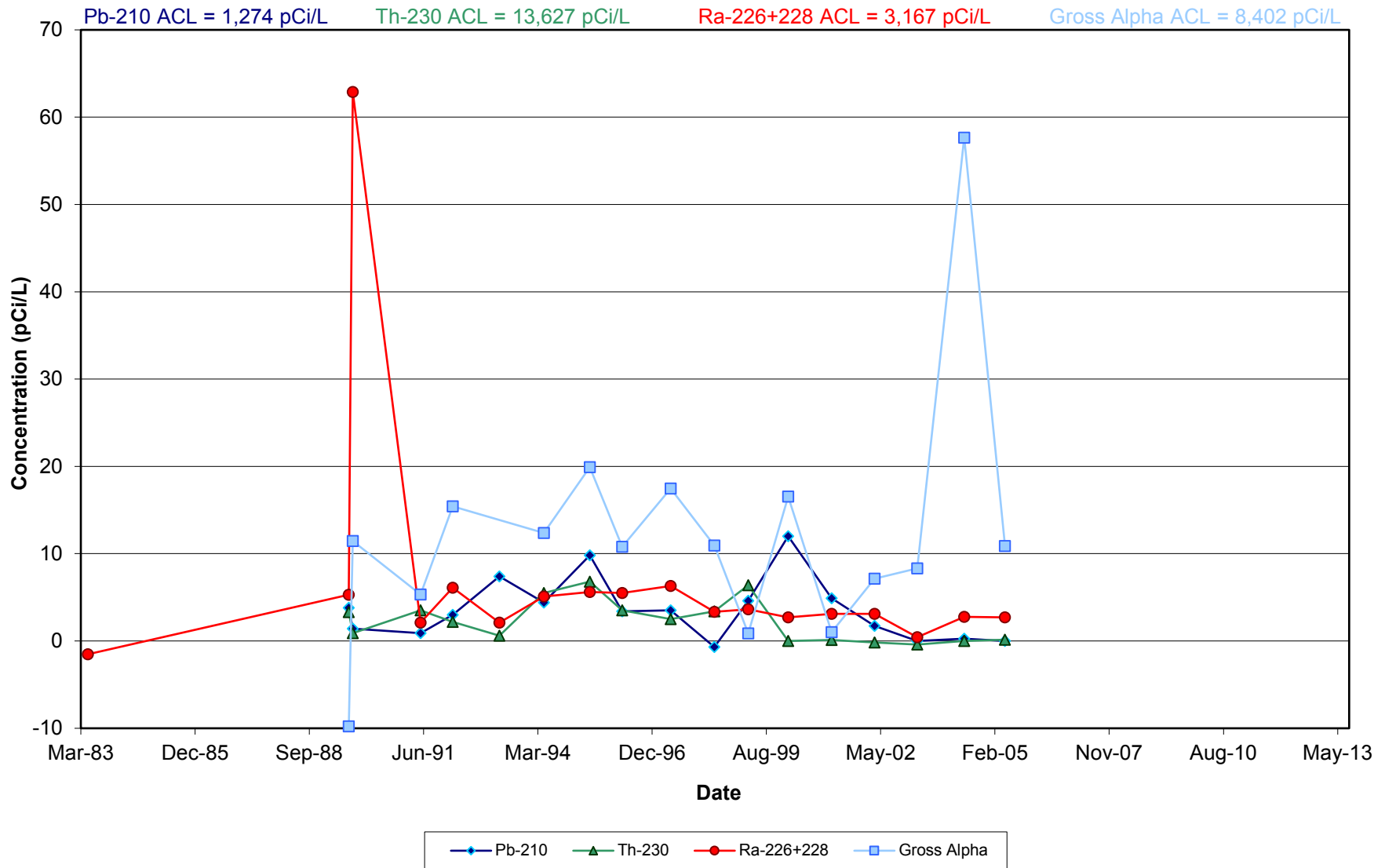
Metals in Monitoring Well 5-05



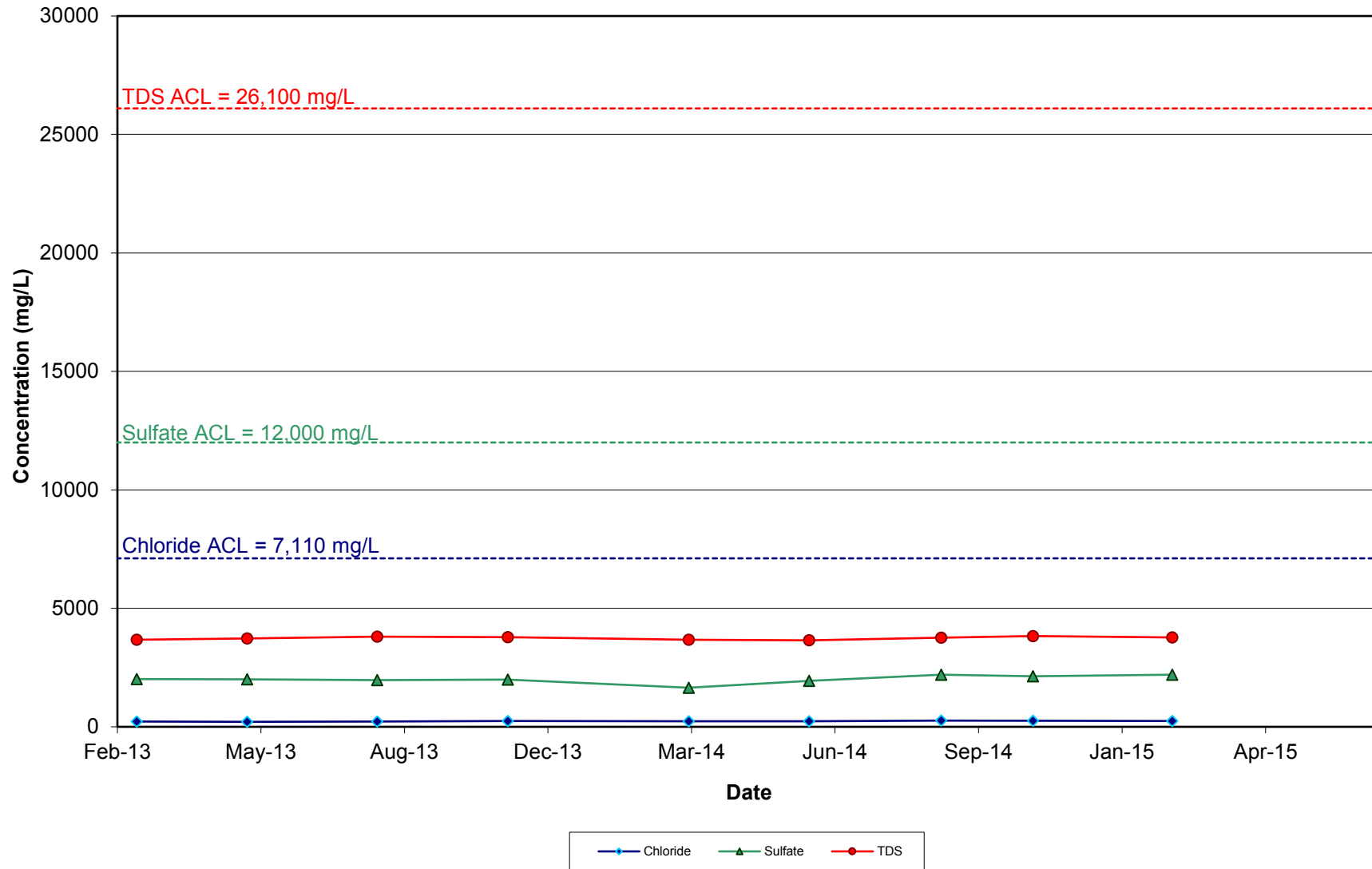
Nitrate in Monitoring Well 5-05



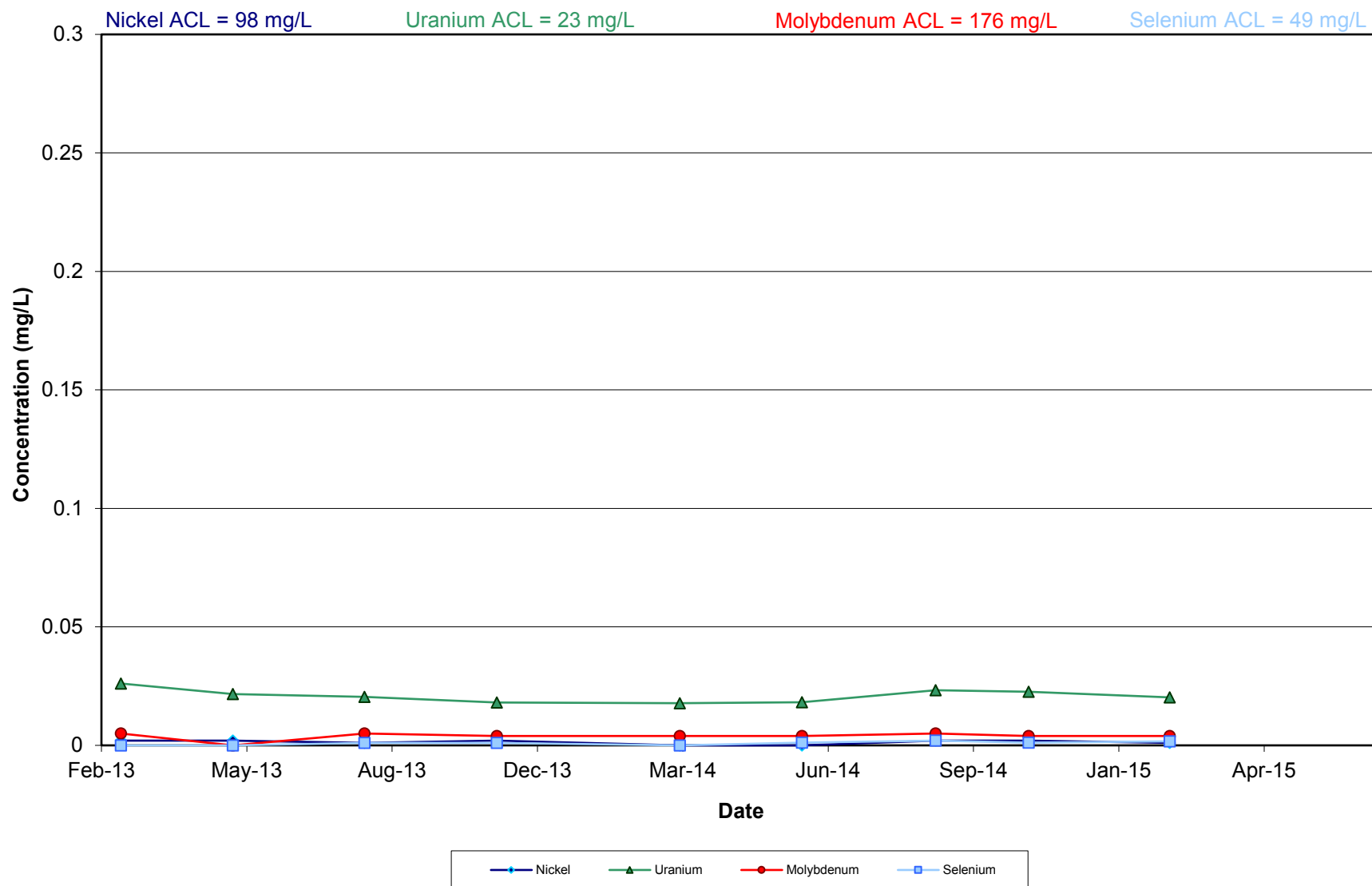
Radionuclides in Monitoring Well 5-05



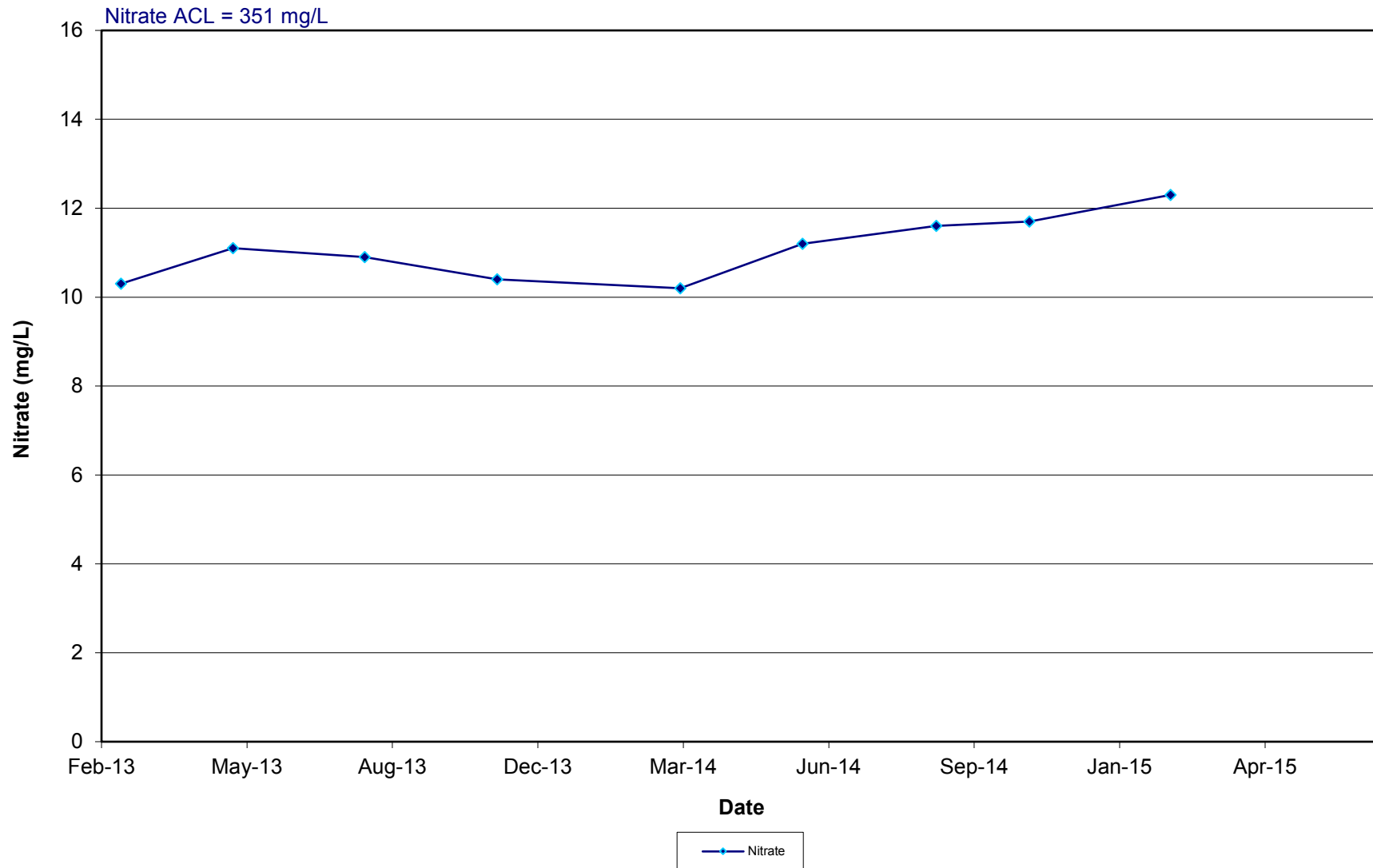
**Anions and TDS in Monitoring Well 5-08-R
(replaced 11/2/2012)**



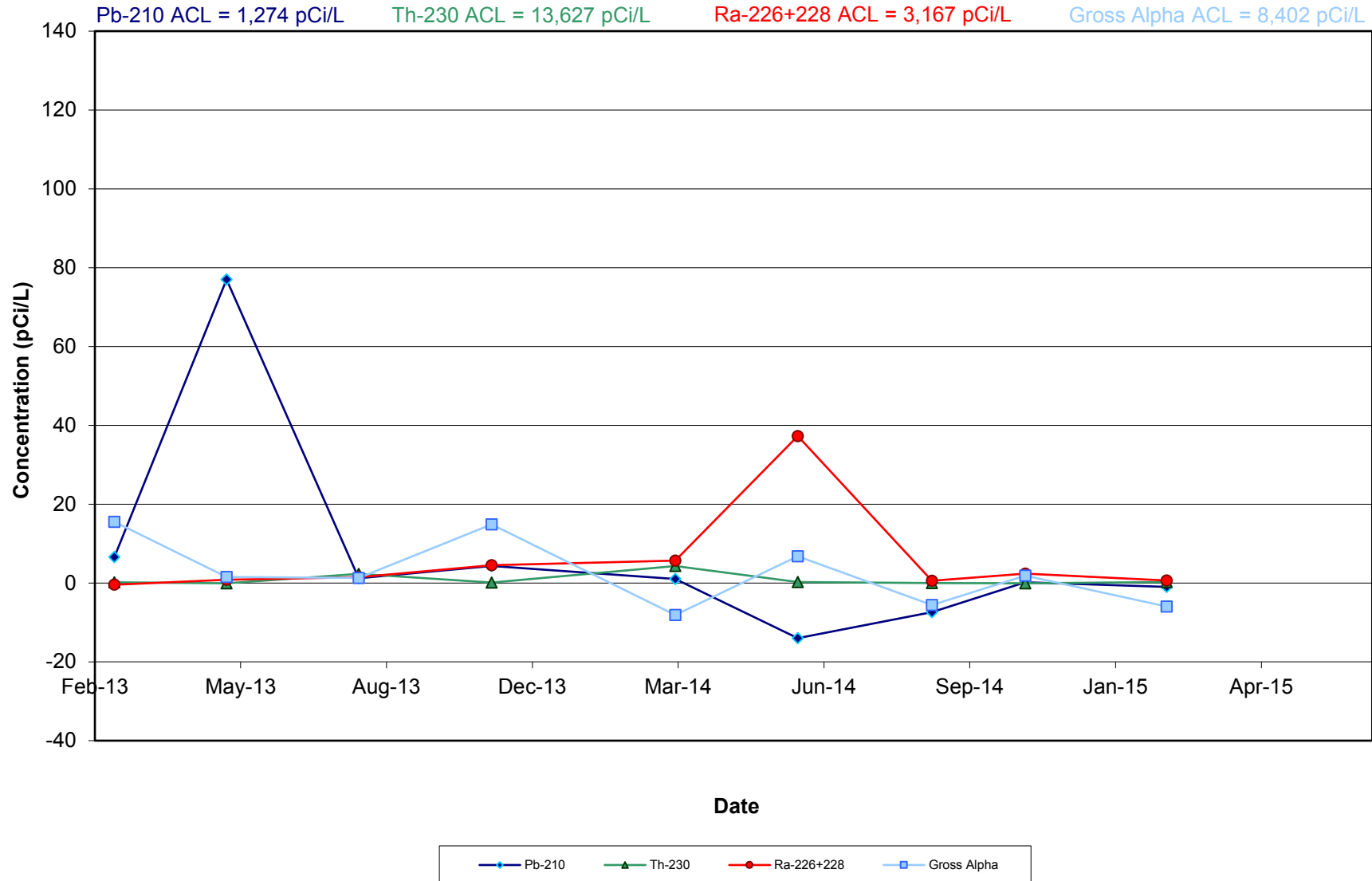
Metals in Monitoring Well 5-08-R (replaced 11/2/2012)



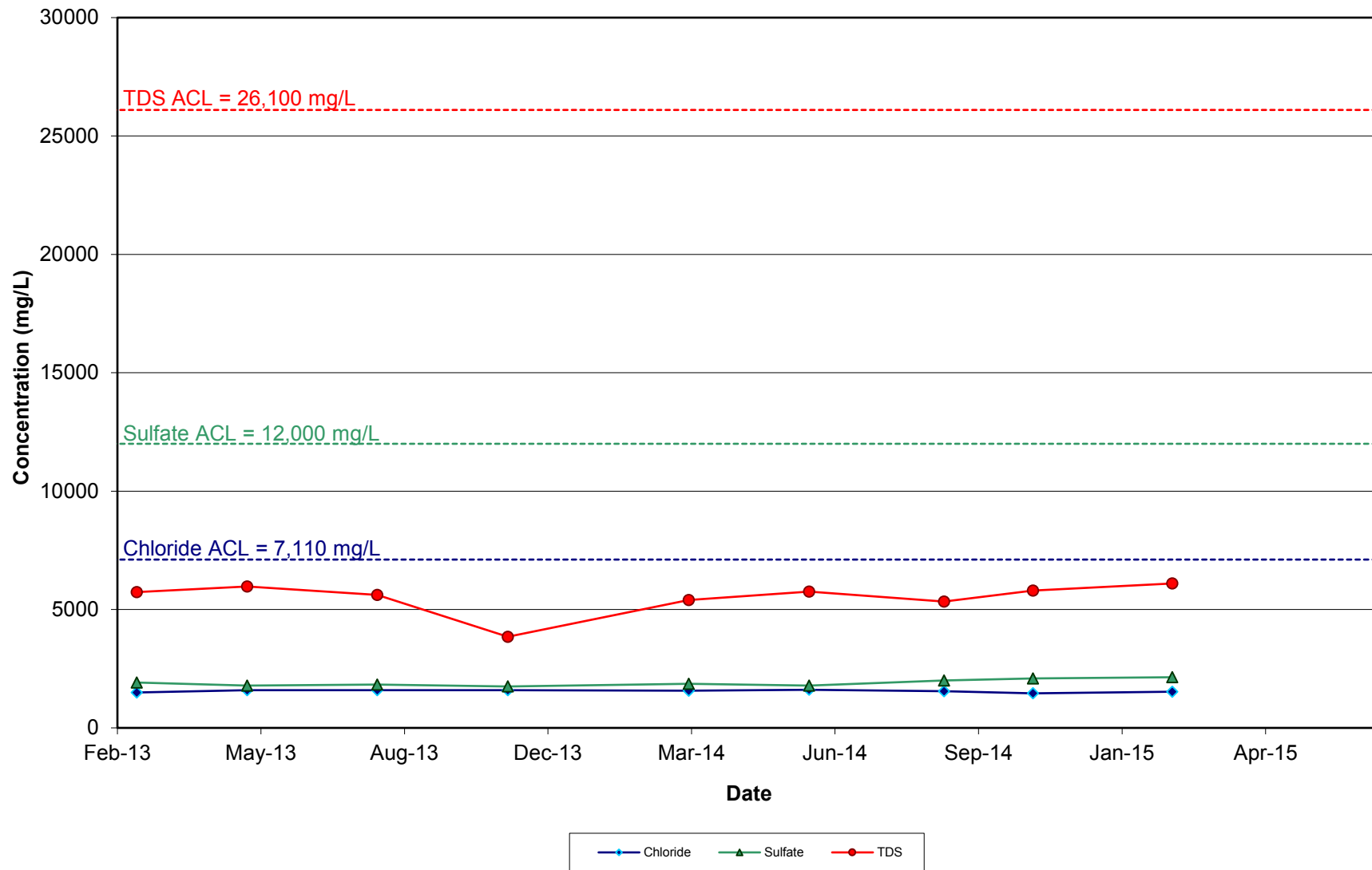
**Nitrate in Monitoring Well 5-08-R
(replaced 11/2/2012)**



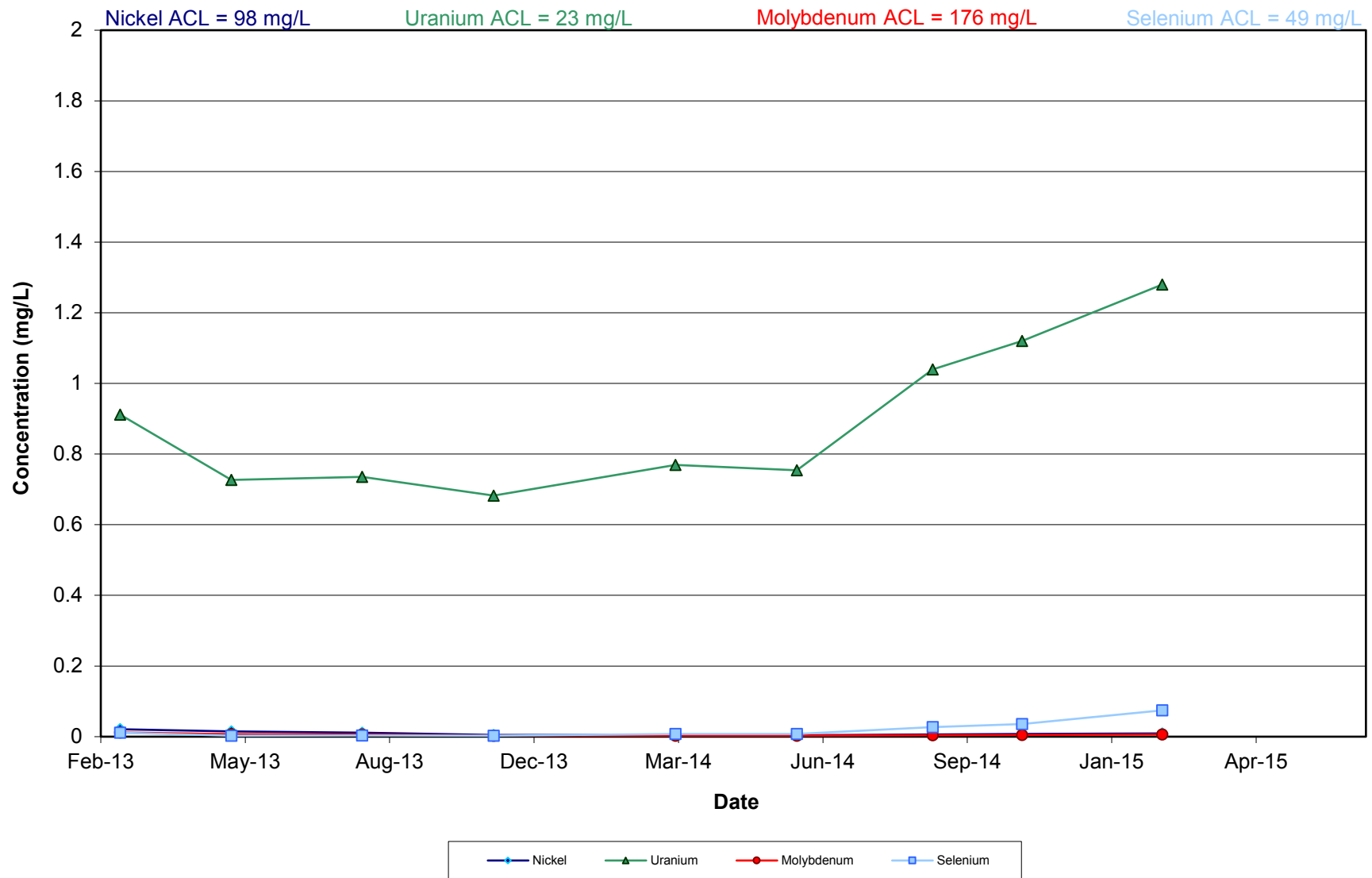
Radionuclides in Monitoring Well 5-08-R (replaced 11/2/2012)



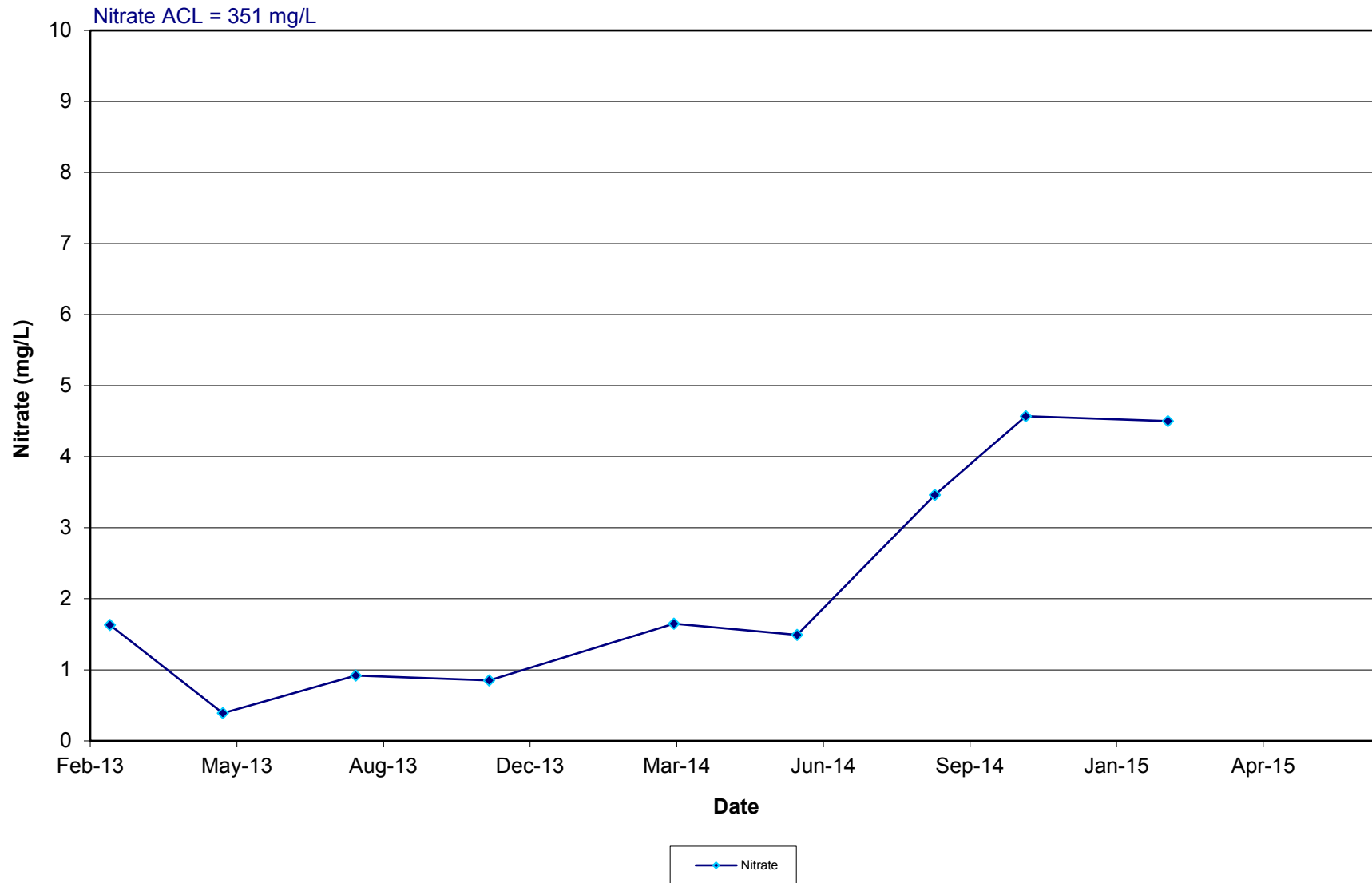
Anions and TDS in Monitoring Well 5-73-R (replaced 11/4/2012)



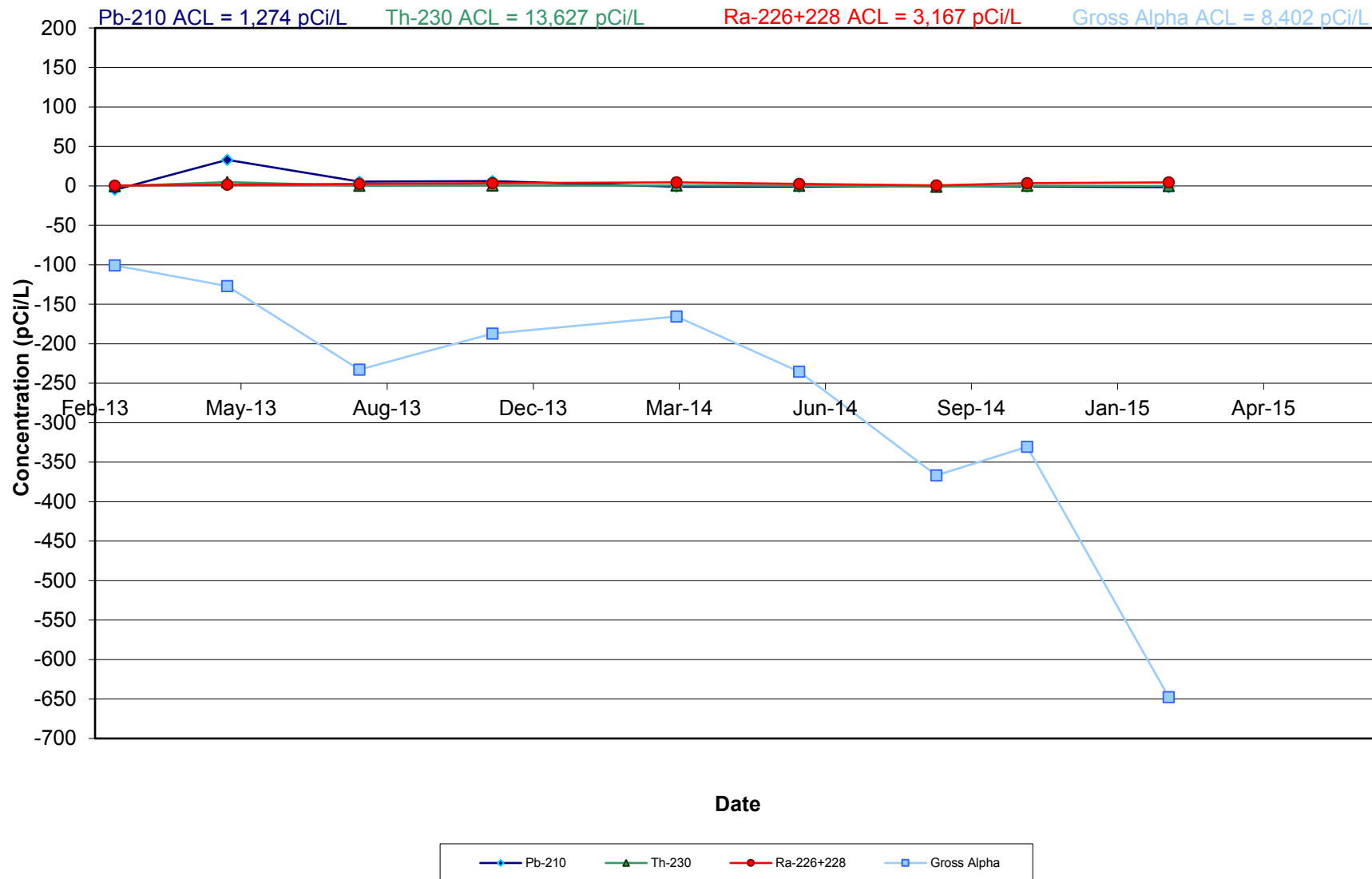
Metals in Monitoring Well 5-73-R (replaced 11/4/2012)



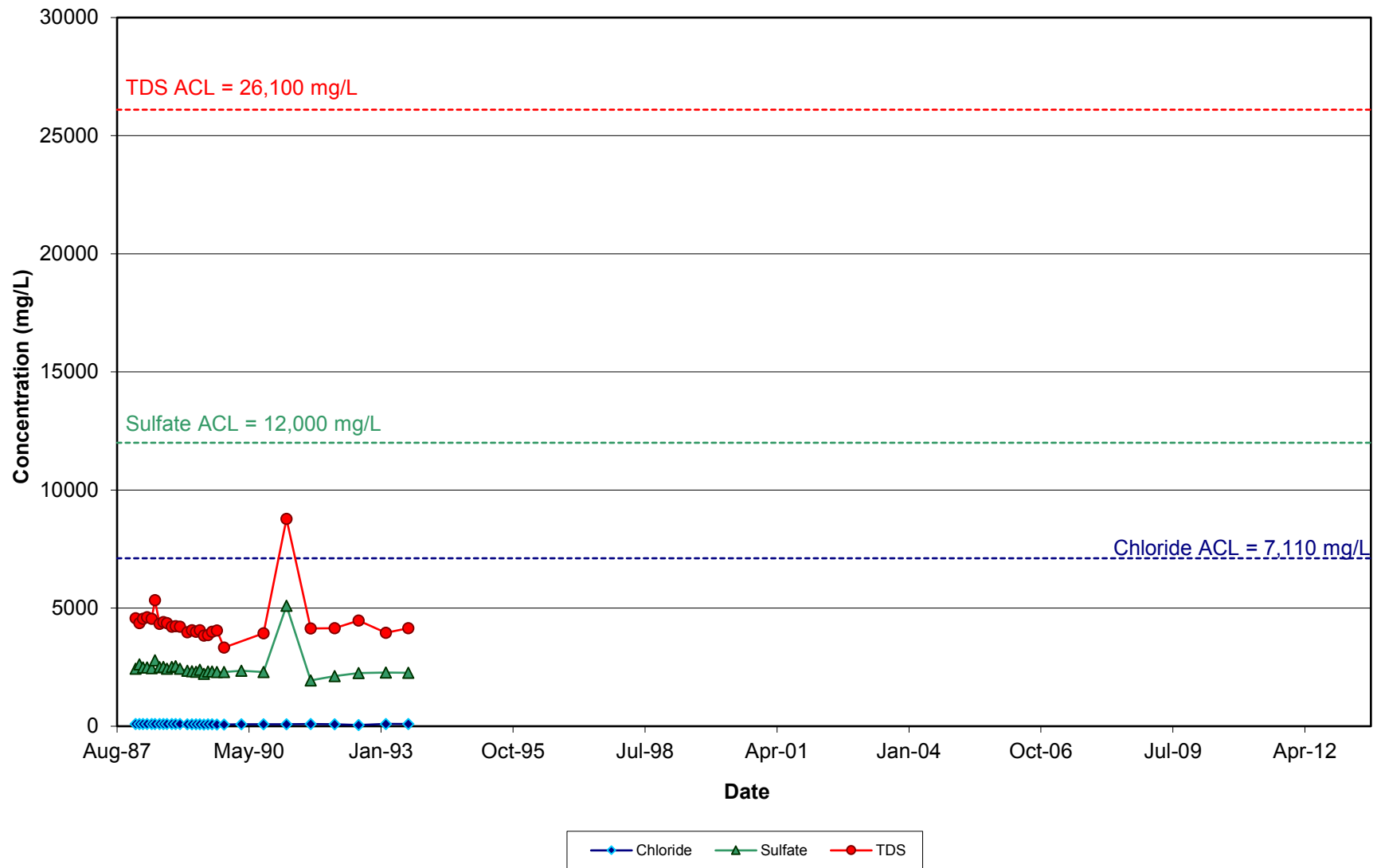
**Nitrate in Monitoring Well 5-73-R
(replaced 11/4/2012)**



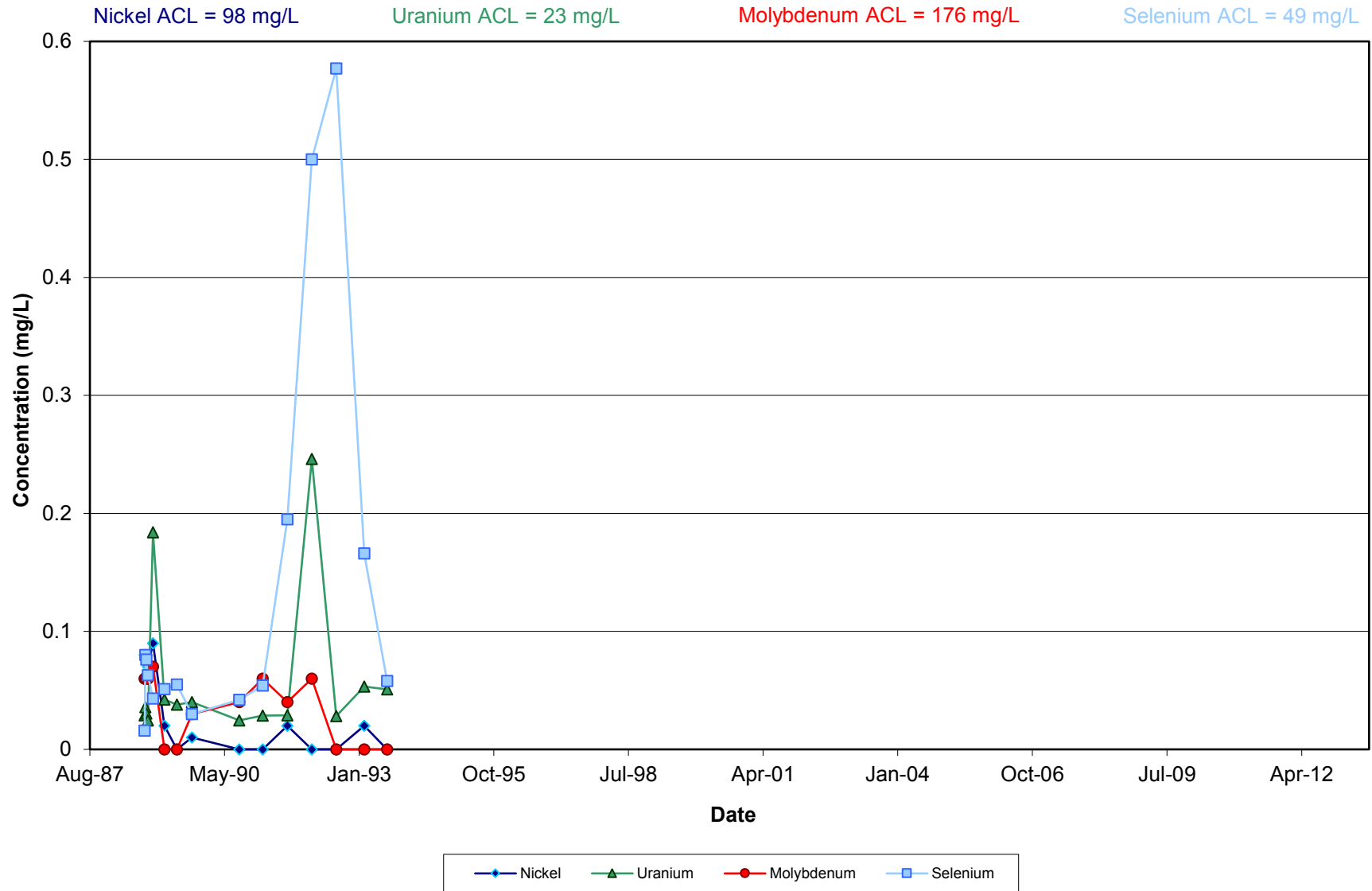
Radionuclides in Monitoring Well 5-73-R (replaced 11/4/2012)



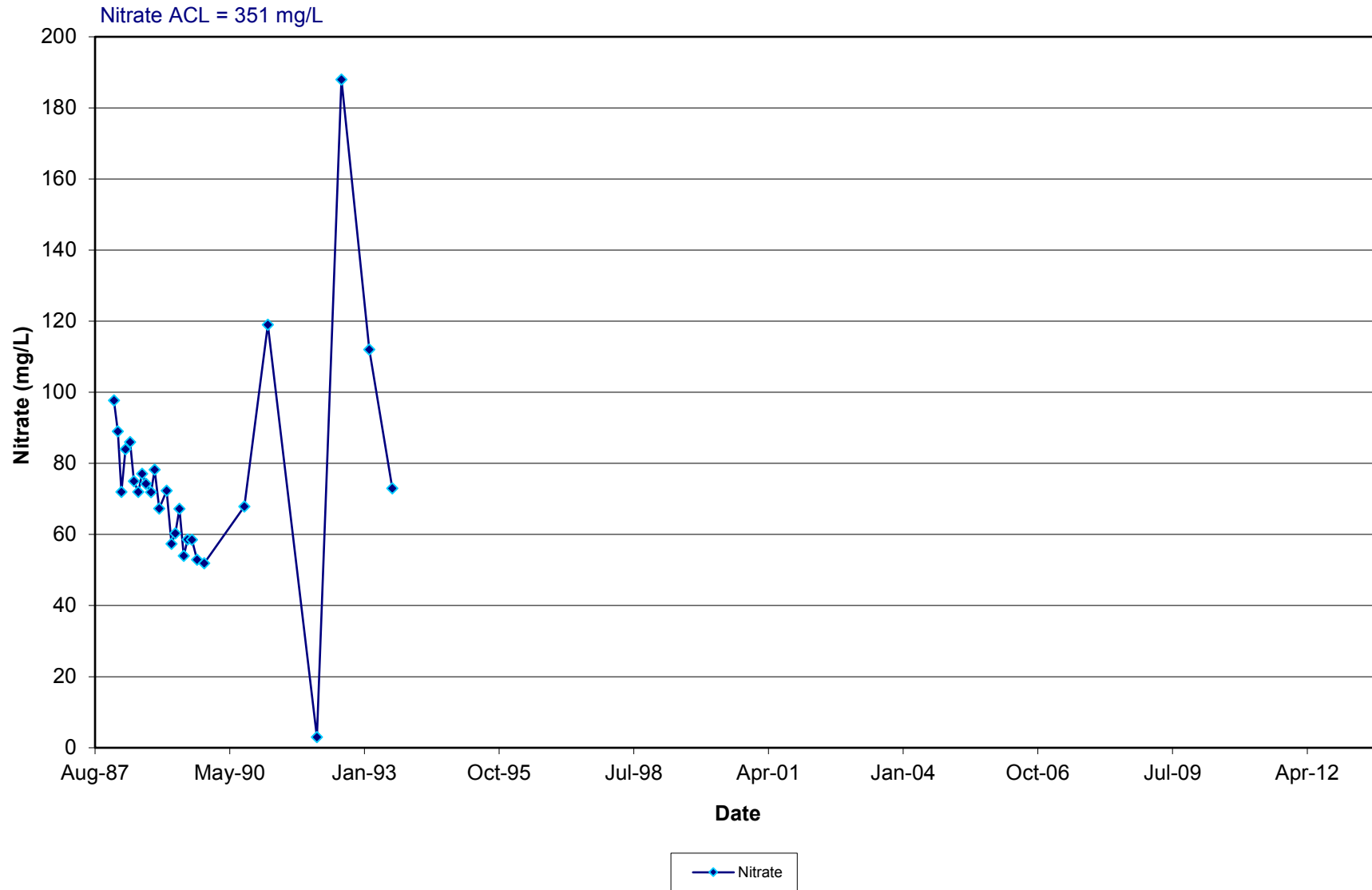
Anions and TDS in Monitoring Well MW-24



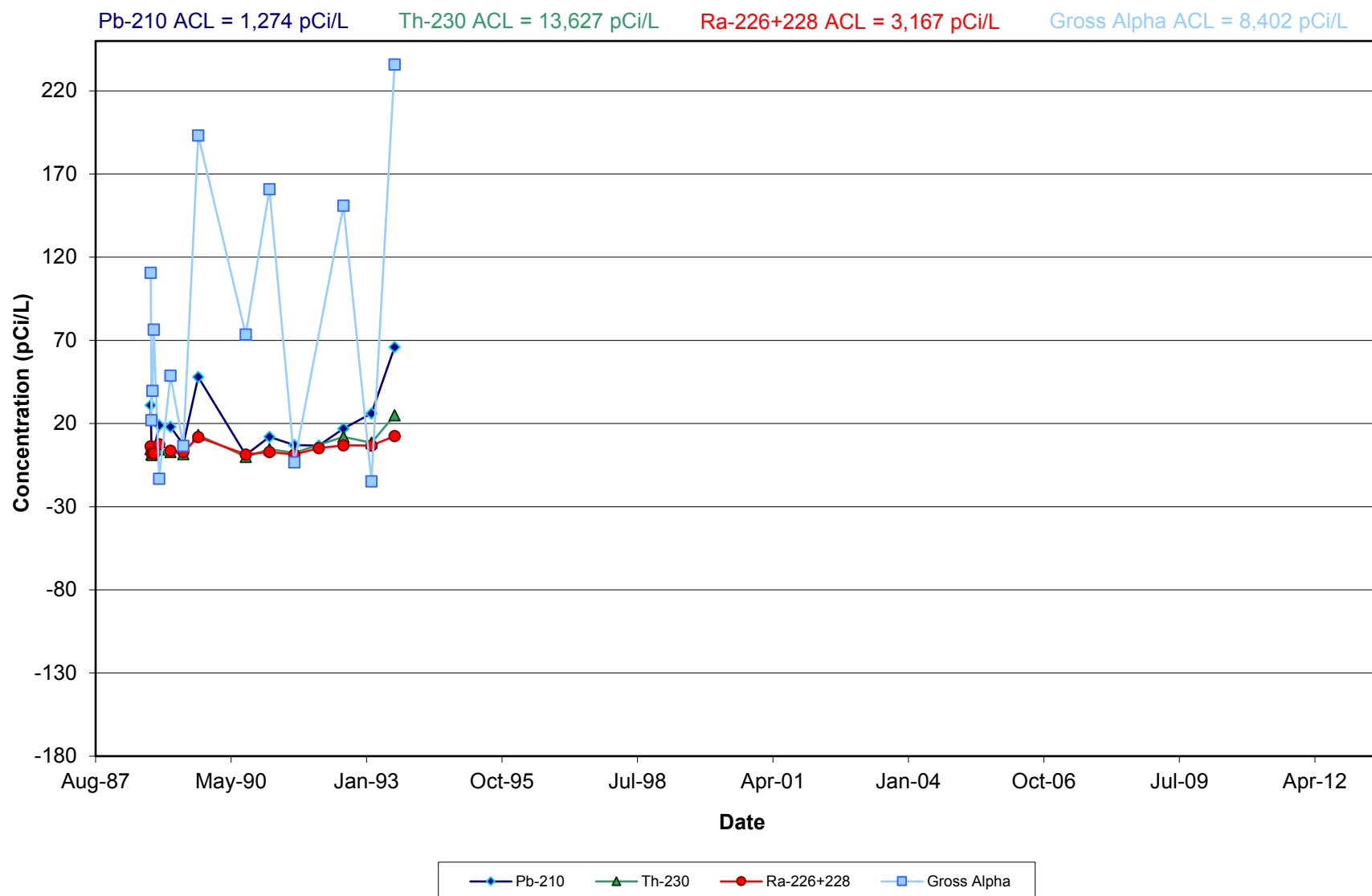
Metals in Monitoring Well MW-24



Nitrate in Monitoring Well MW-24



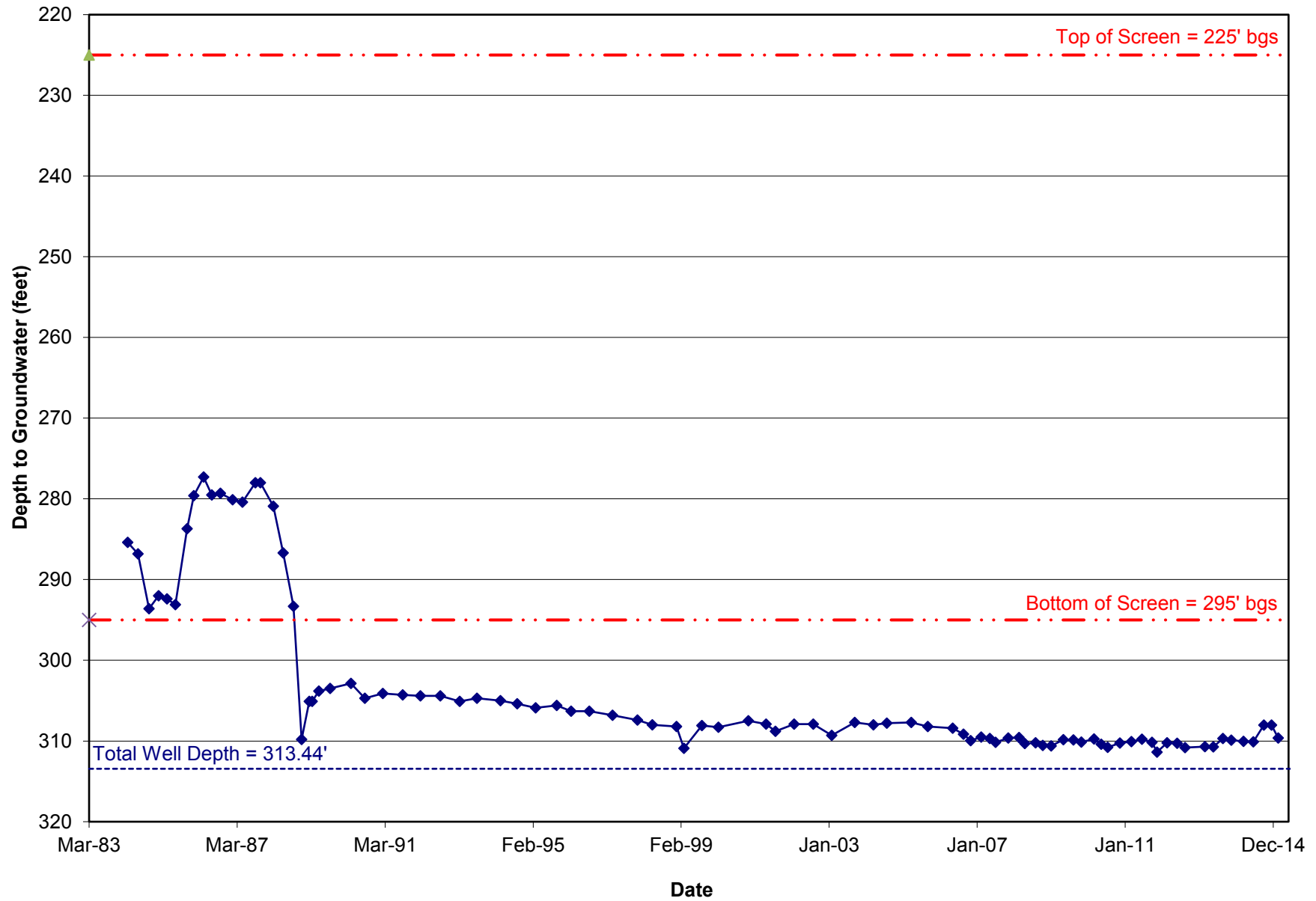
Radionuclides in Monitoring Well MW-24



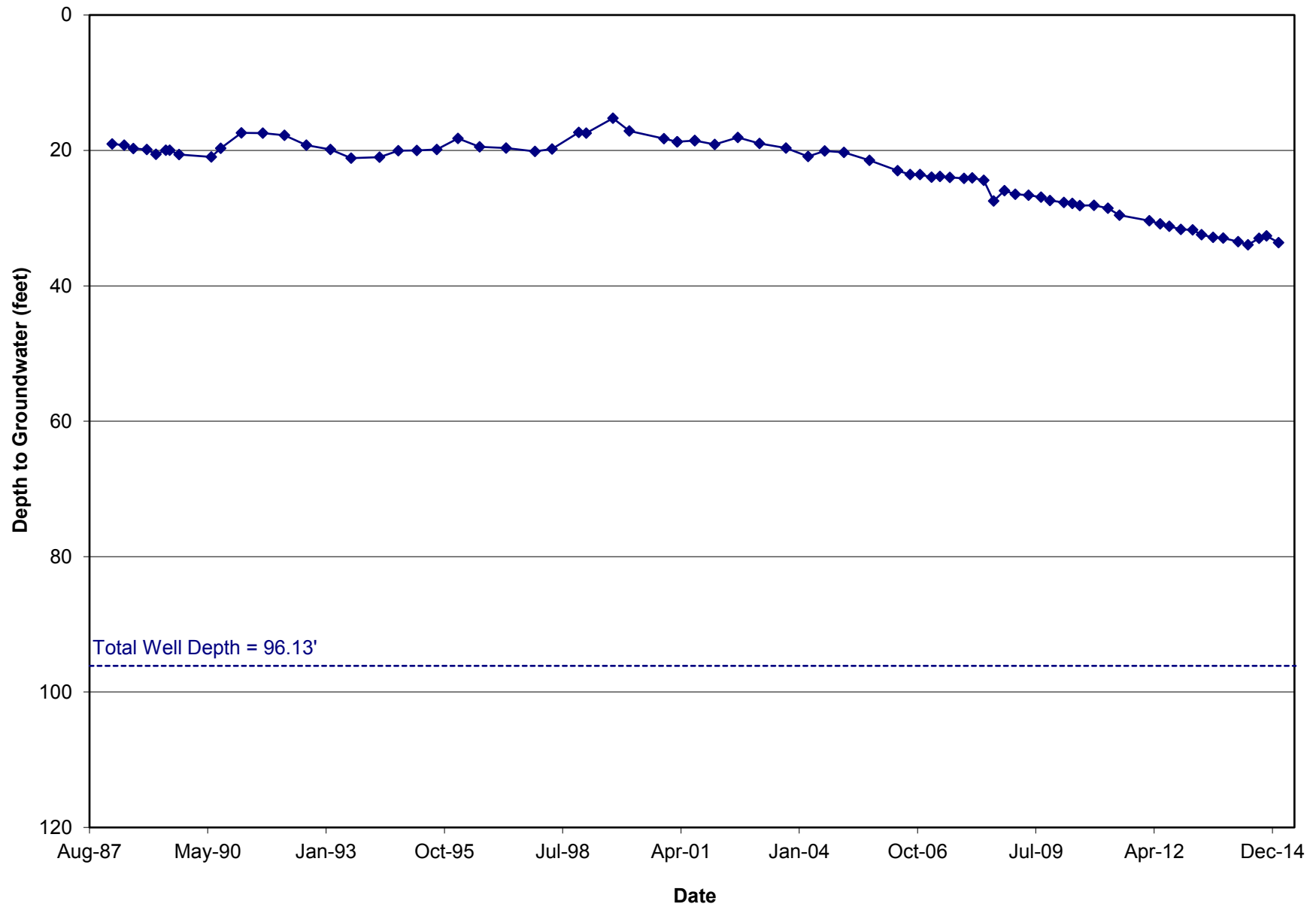
APPENDIX 3

Stability Monitoring Plan
Hydrographs

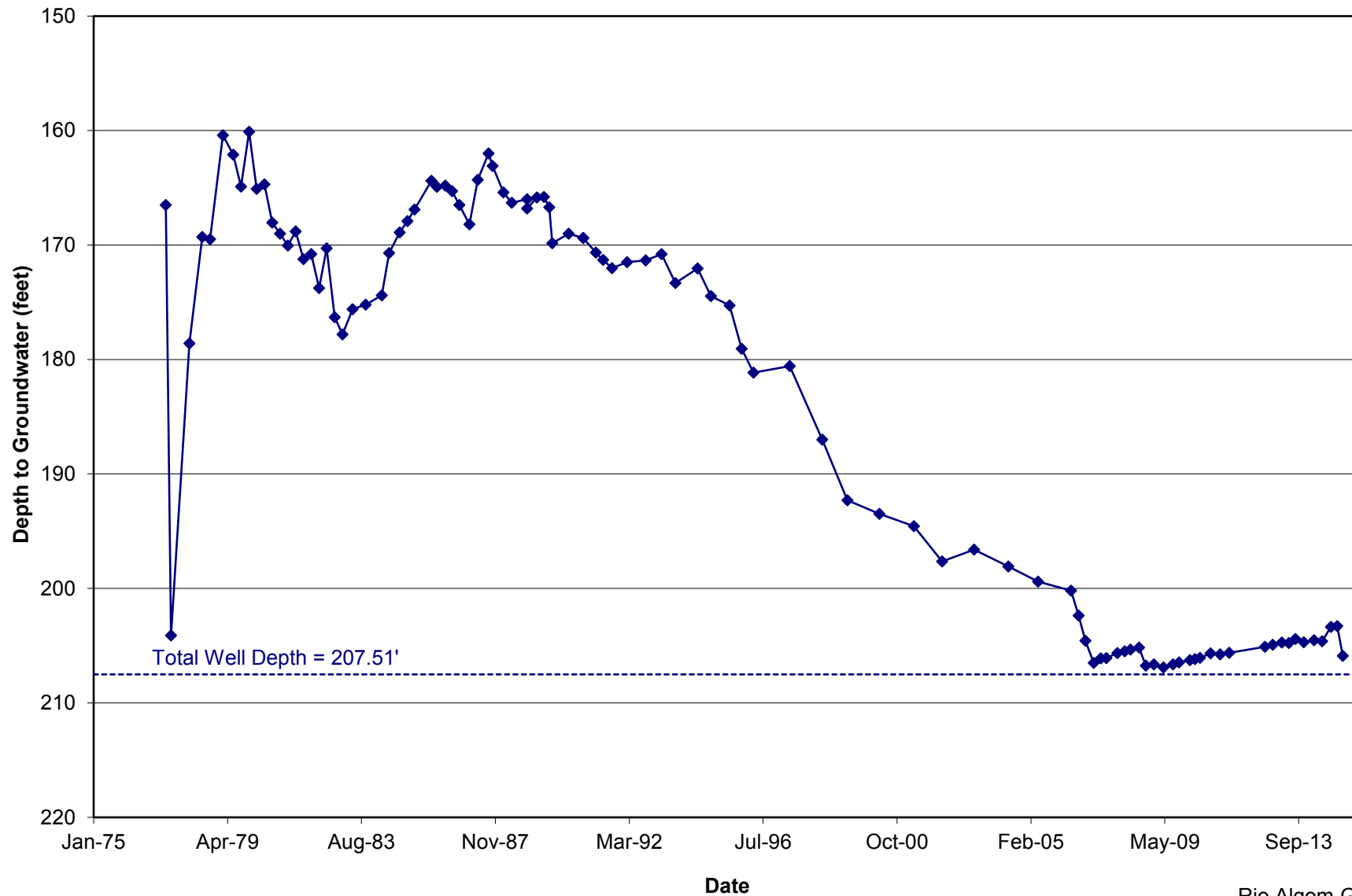
Hydrograph for Dakota Monitoring Well 30-02KD



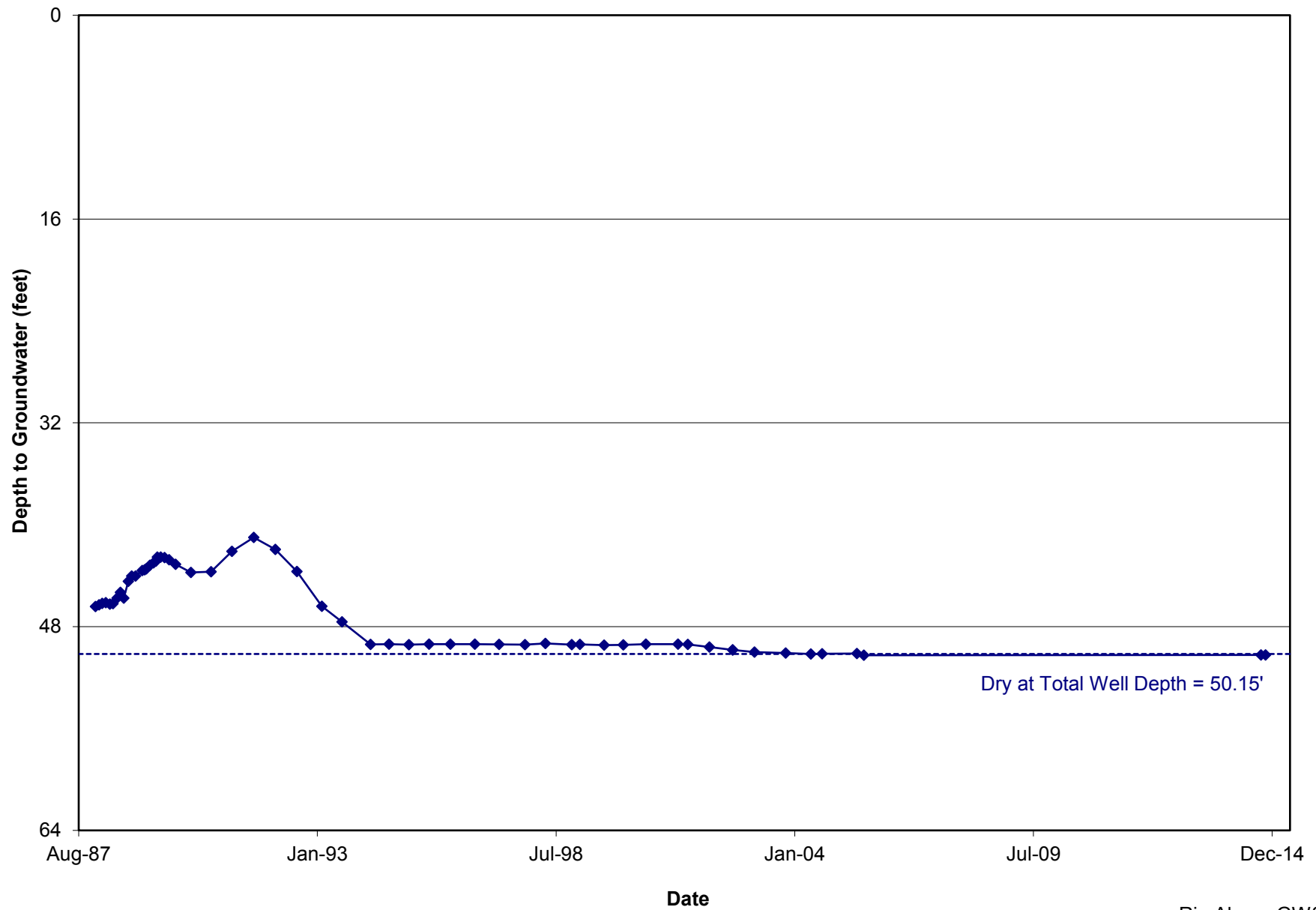
Hydrograph for TRB Monitoring Well 31-67



Hydrograph for TRA Monitoring Well 30-01

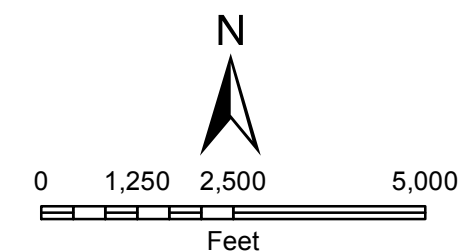
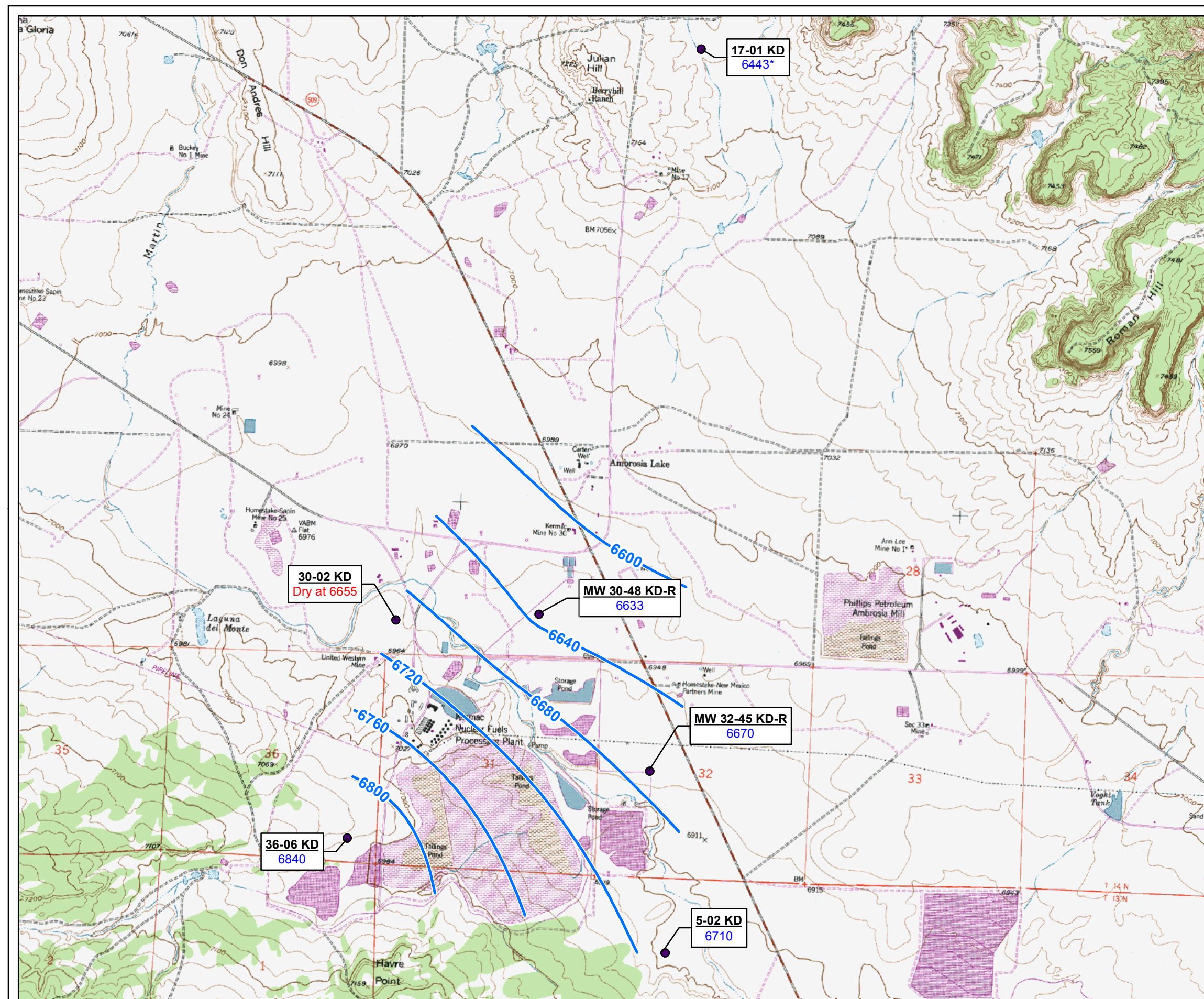


Hydrograph for Alluvial Monitoring Well MW-24



APPENDIX 4

Stability Monitoring Plan
Potentiometric Surface Maps



USGS 7.5 Minute Topographic Maps:
Ambrosia Lake Quadrangle, 1957/rev.1980;
Contour Interval 20 Feet

Legend

- Dakota Monitoring Well Location
- Dakota Potentiometric Iso-Contours (ft amsl)

Well ID

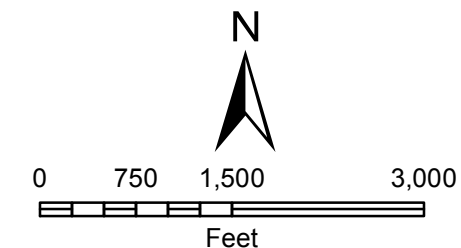
Groundwater Surface Elevation (ft amsl)

* indicates well 17-01 KD reading was taken 9/23/14, prior to pump install

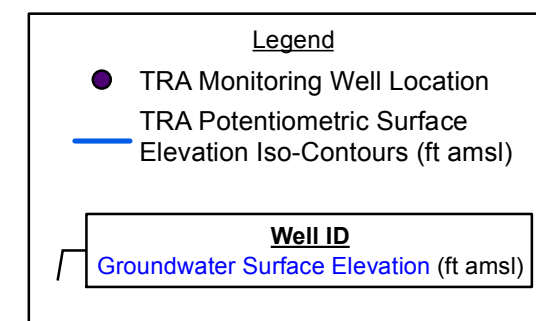
Note: All data collected 1st quarter, 2015 except 17-01 KD

Gradient calculation:
(Difference in Groundwater Elevation Between Point of Compliance Well 36-06 KD and Trend Well 30-48 KD-R = 6,840 - 6,633 = 207 feet) Divided by (Distance Along a Flow Path Between Point of Compliance Well 36-06 KD and Trend Well 30-48 KD-R = 5711 feet)
= 0.036 feet per foot

1st Half 2015 Dakota Potentiometric
Surface Elevation Iso-Contours
Rio Algom DP-169 ACL
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USGS 7.5 Minute Topographic Maps:
Ambrosia Lake Quadrangle, 1957/rev.1980;
Contour Interval 20 Feet

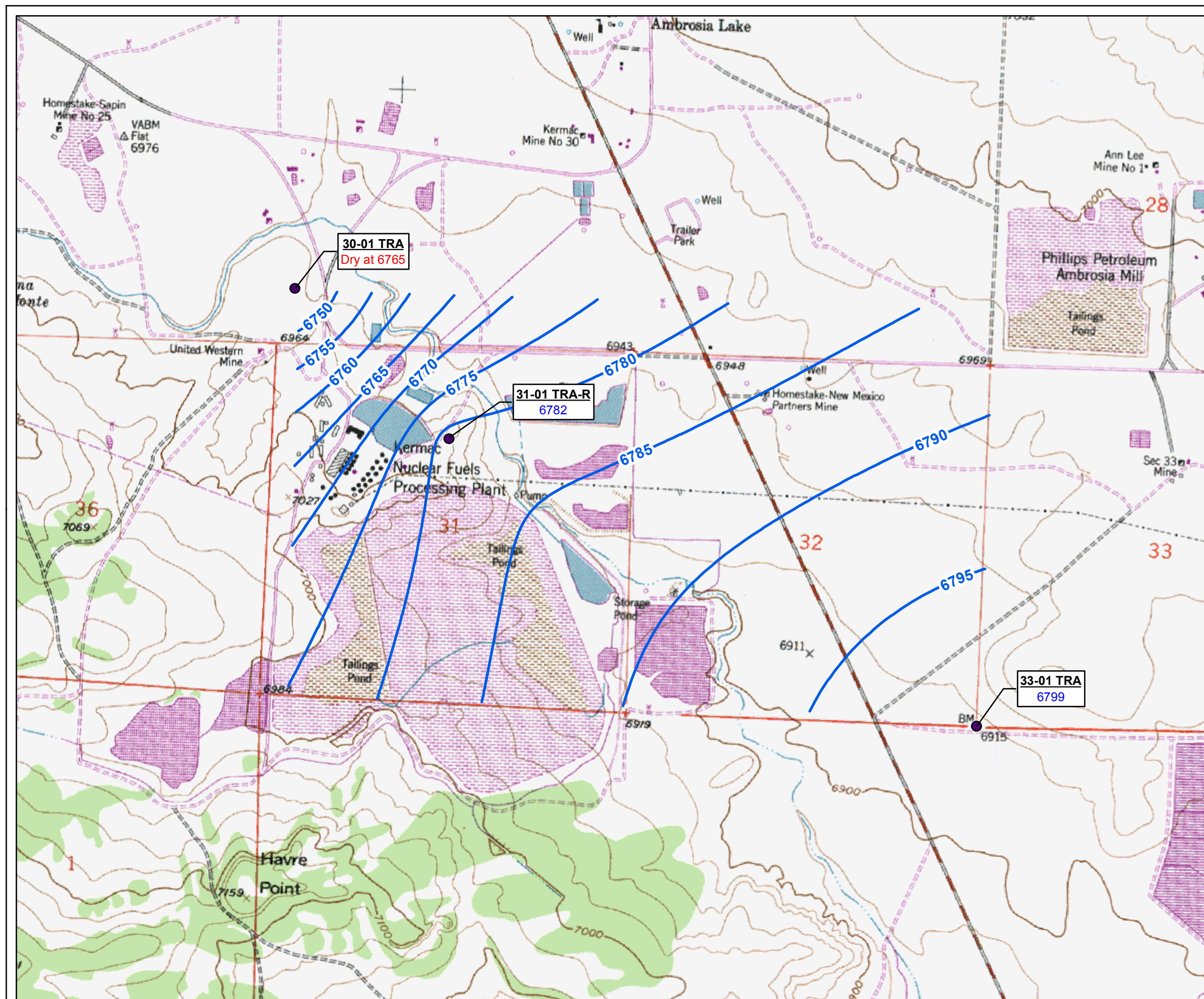


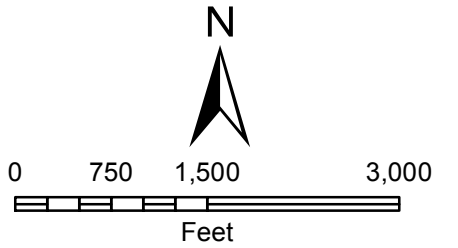
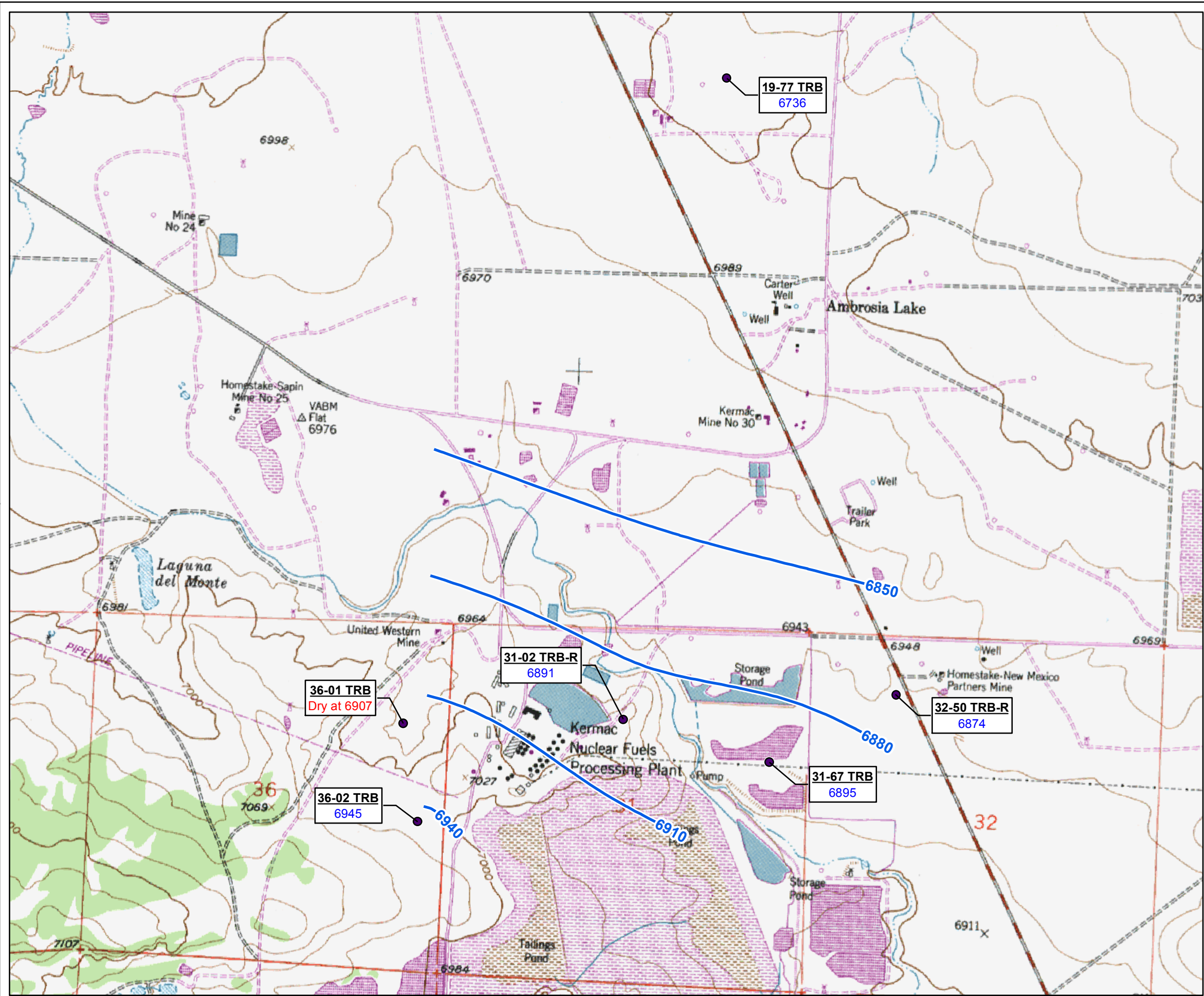
Note: All data collected 1st quarter, 2015

Gradient calculation:
(Difference in Groundwater Elevation
Between Point of Compliance Well
MW 31-01 TRA-R and Trend Well 33-01 =
6,799 - 6,782 = 17 feet) Divided by
(Distance Along a Flow Path Between
Point of Compliance Well MW 31-01 TRA-R
and Trend Well 33-01= 8947 feet)

= 0.002 feet per foot

1st Half 2015 TRA Potentiometric
Surface Elevation Iso-Contours
Rio Algom DP-169 ACL
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USGS 7.5 Minute Topographic Maps:
Ambrosia Lake Quadrangle, 1957/rev.1980;
Contour Interval 20 Feet

Legend

- TRB Monitoring Well Location
- TRB Potentiometric Surface Elevations (ft amsl)

Well ID

Groundwater Surface Elevation (ft amsl)

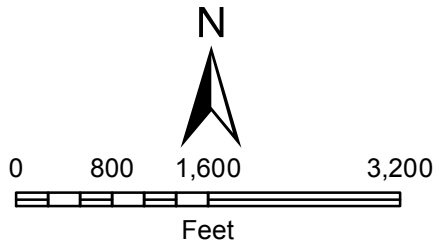
* = Values from 2005

Note: All data collected 1st quarter, 2015

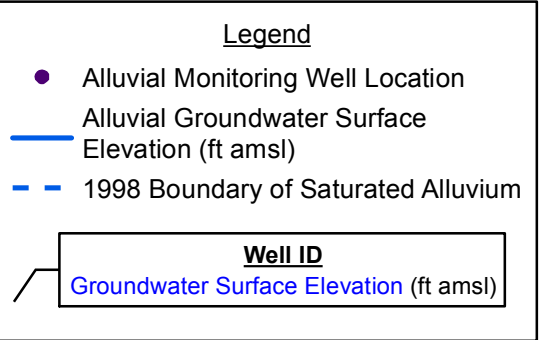
Gradient calculation:
(Difference in Groundwater Elevation
Between Point of Compliance Well
MW 31-02 TRB-R and far downgradient
Well 19-77 = 6,891 - 6,736 = 155 feet)
Divided by (Distance Along a Flow Path
Between Point of Compliance Well
MW 31-02 TRB-R and far downgradient
Well 19-77 = 10,367 feet)

= 0.015 feet per foot

1st Half 2015 TRB Potentiometric
Surface Elevation Iso-Contours
Rio Algom DP-169 ACL
Semi-Annual Report



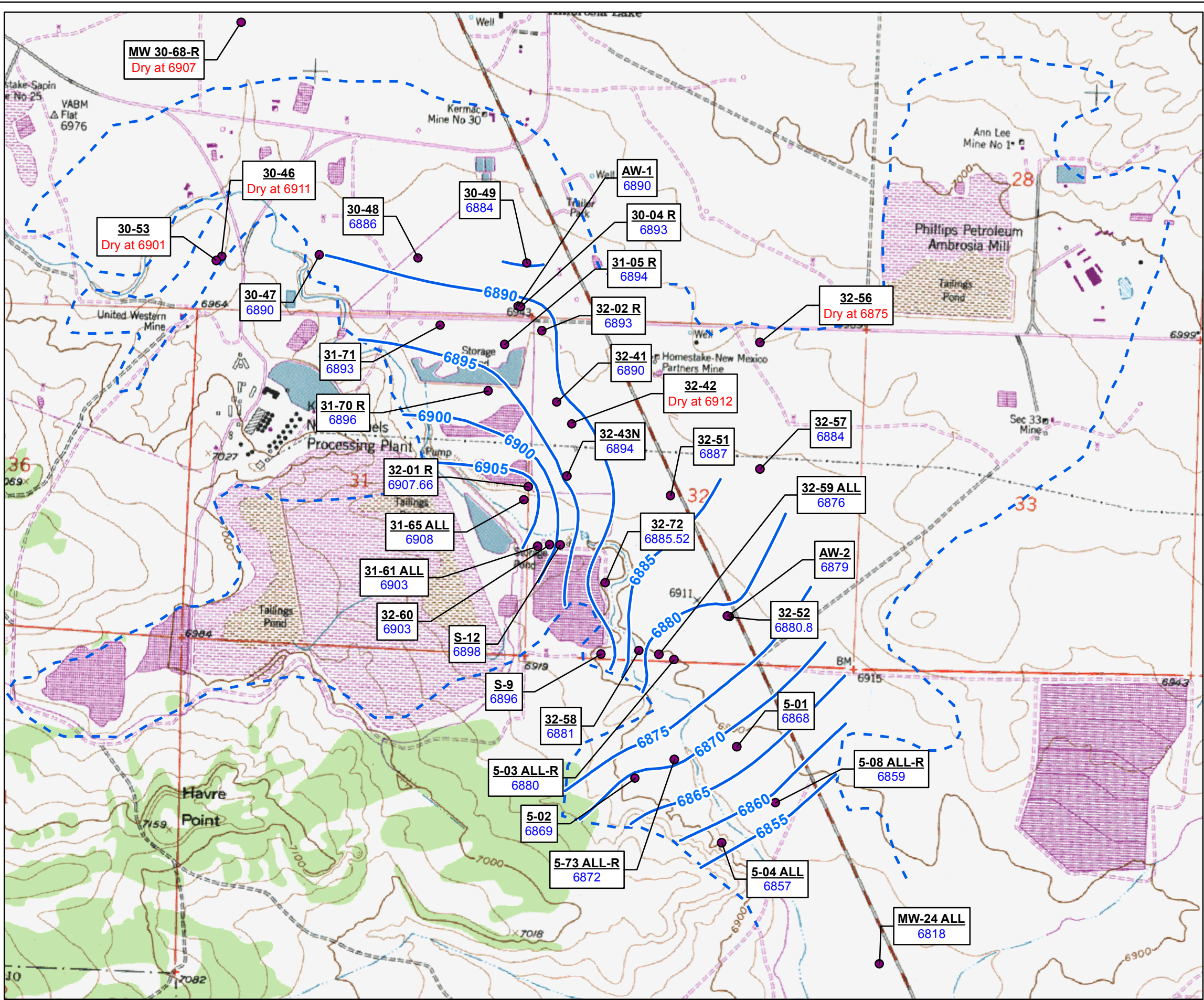
USGS 7.5 Minute Topographic Maps:
Ambrosia Lake Quadrangle, 1957/rev.1980;
Contour Interval 20 Feet



Note: All data collected 1st quarter, 2015

Gradient calculation:
(Difference in Groundwater Elevation Between Point of Compliance Well 31-61 and Trend Well 5-08 ALL-R = 6,903 - 6,859 = 44 feet) Divided by (Distance Along a Flow Path Between Point of Compliance Well 31-61 and Trend Well 5-08 = 5225 feet)
= 0.008 feet per foot

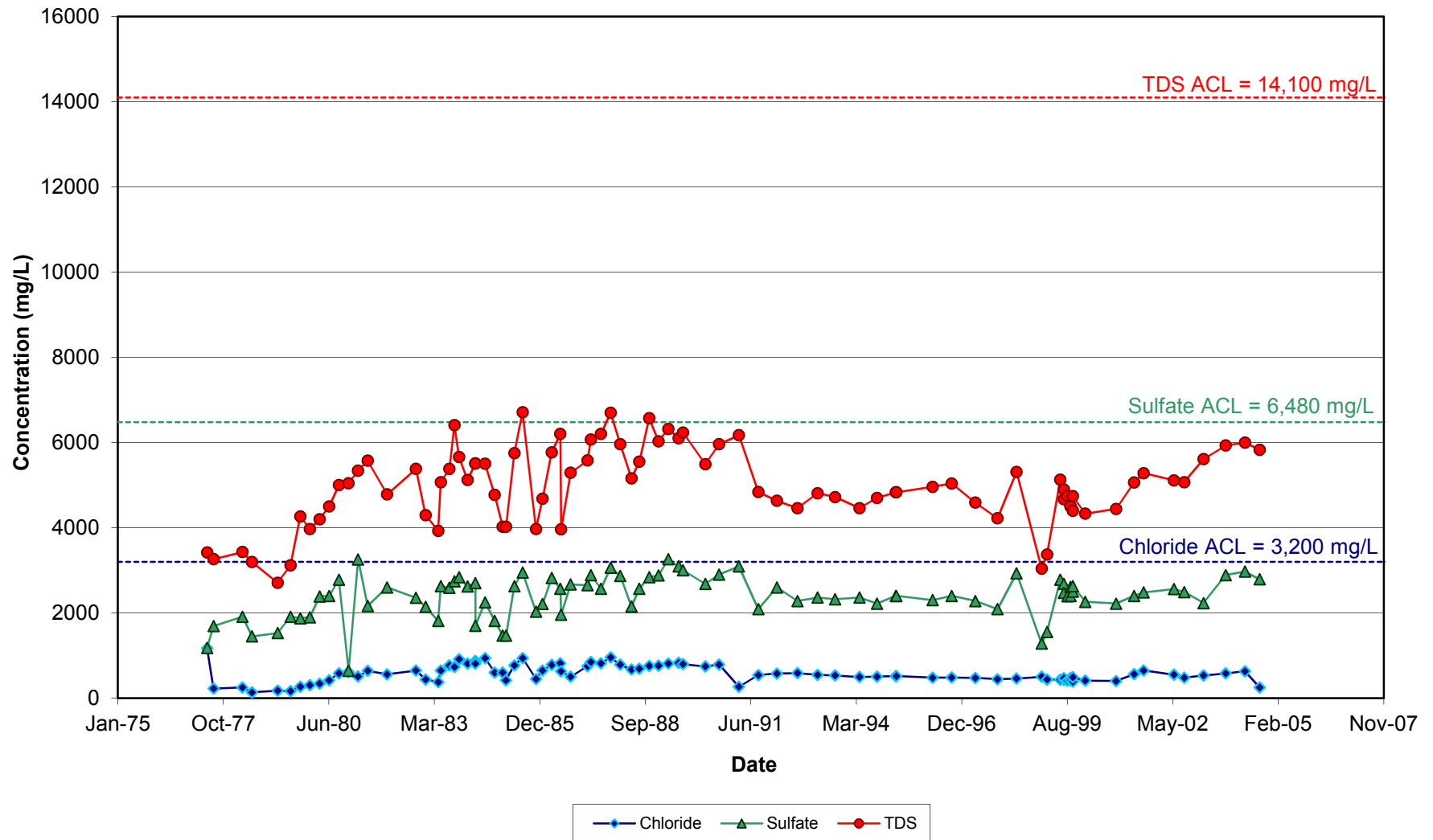
1st Half 2015 Alluvial Groundwater
Surface Elevation Iso-Contours
Rio Algom DP-169 ACL
Semi-Annual Report



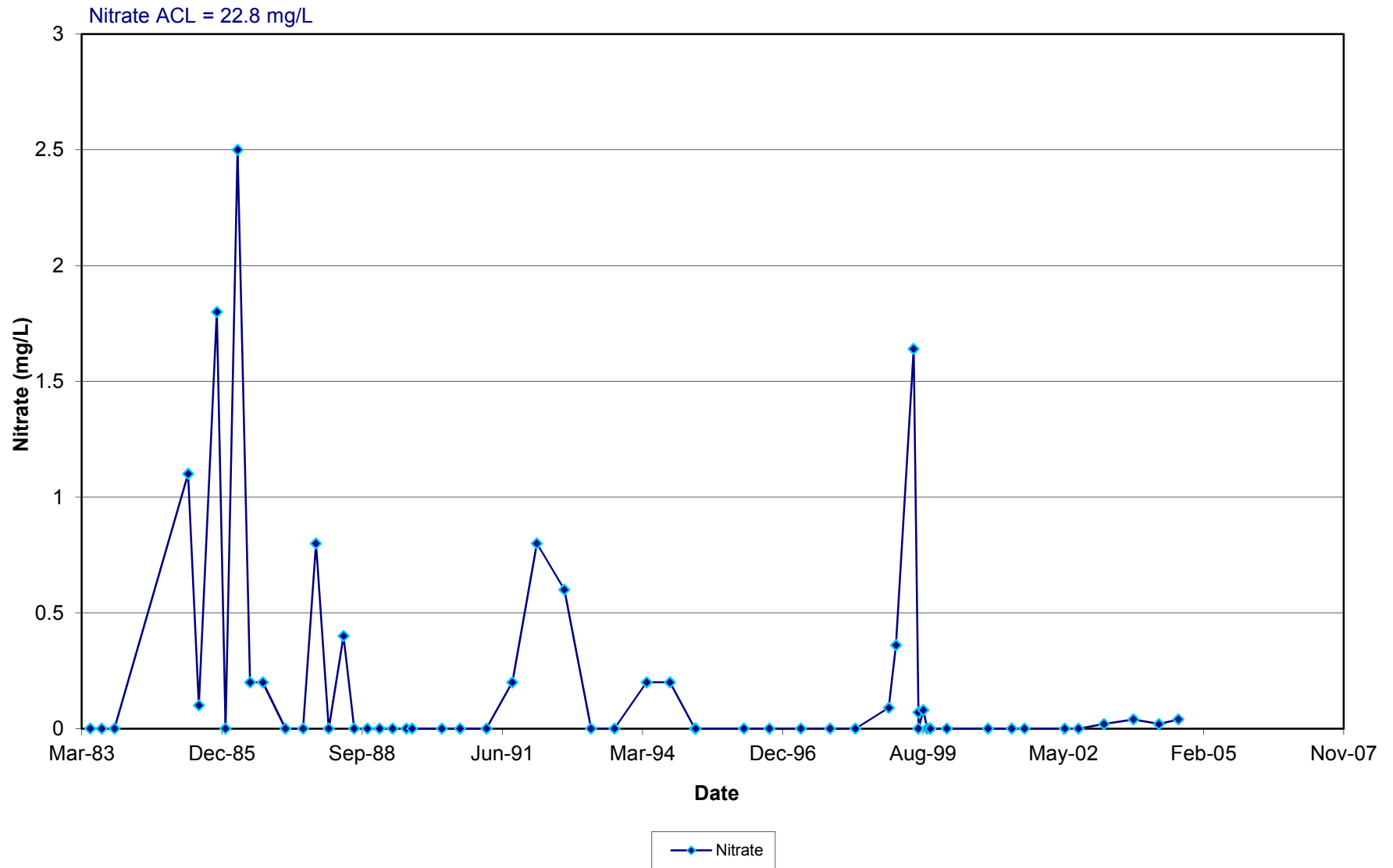
APPENDIX 5

Stability Monitoring Plan
Time Versus Concentration Plots,
Discontinued Wells

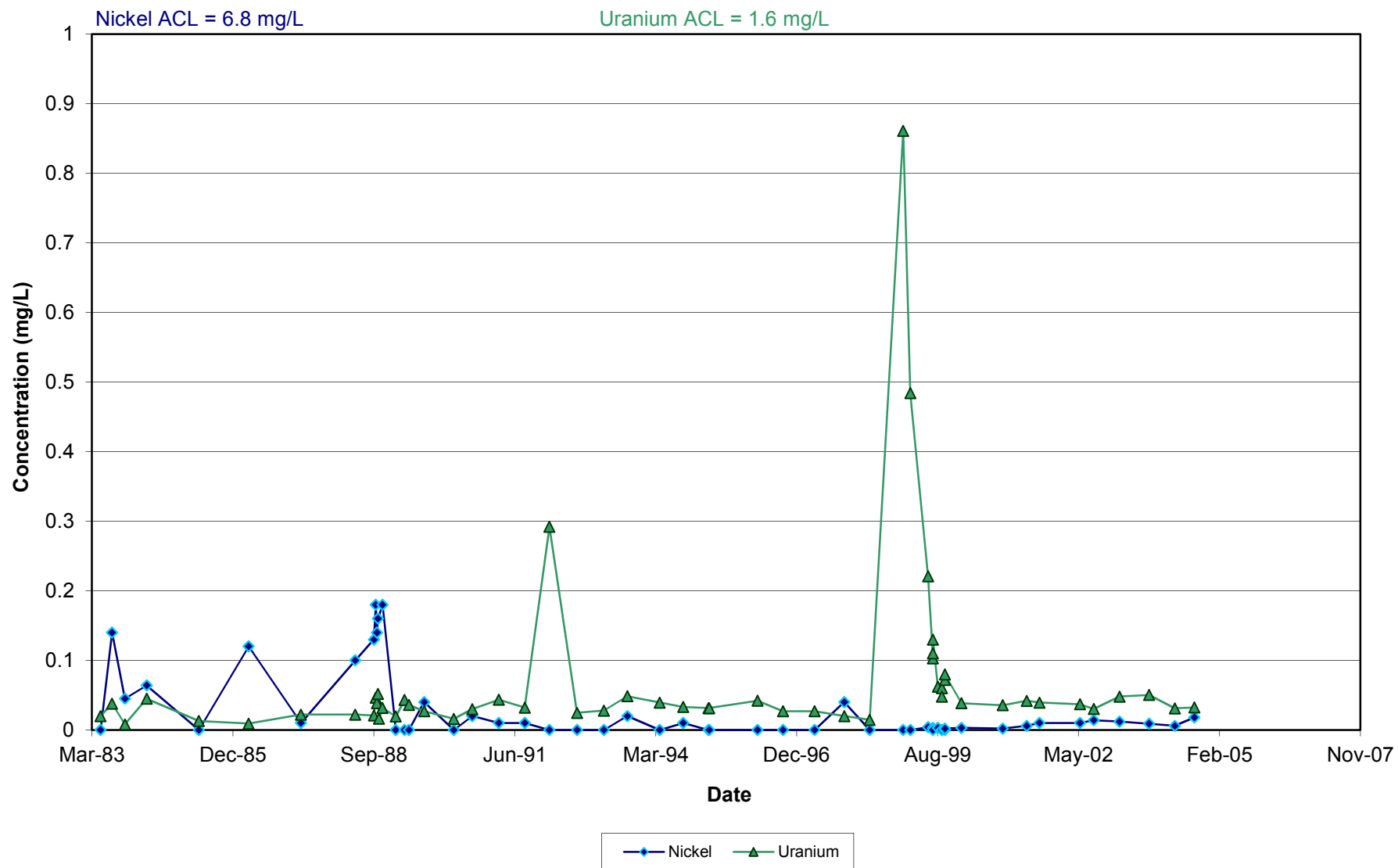
Anions and TDS in Monitoring Well 30-48KD



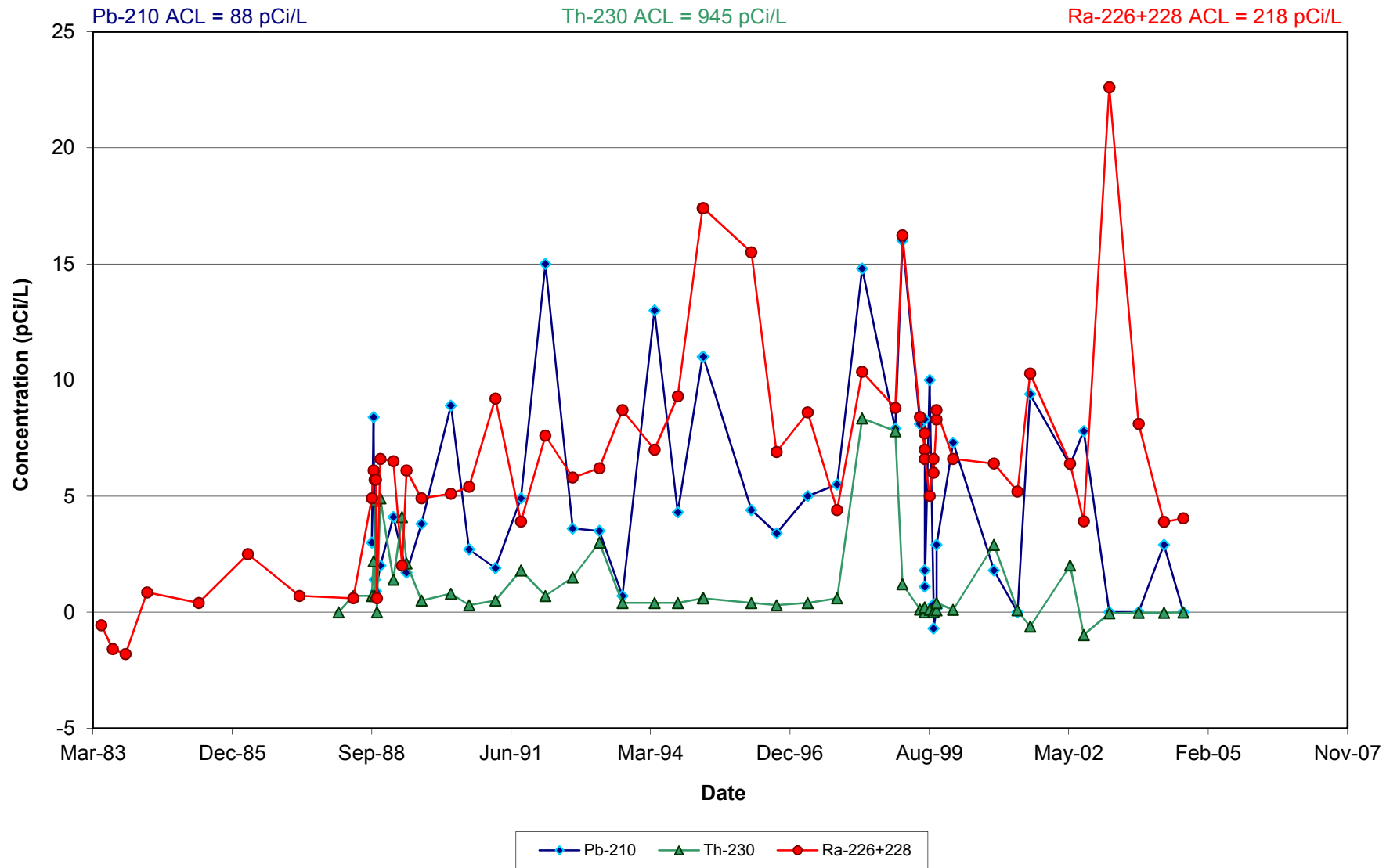
Nitrate in Monitoring Well 30-48KD



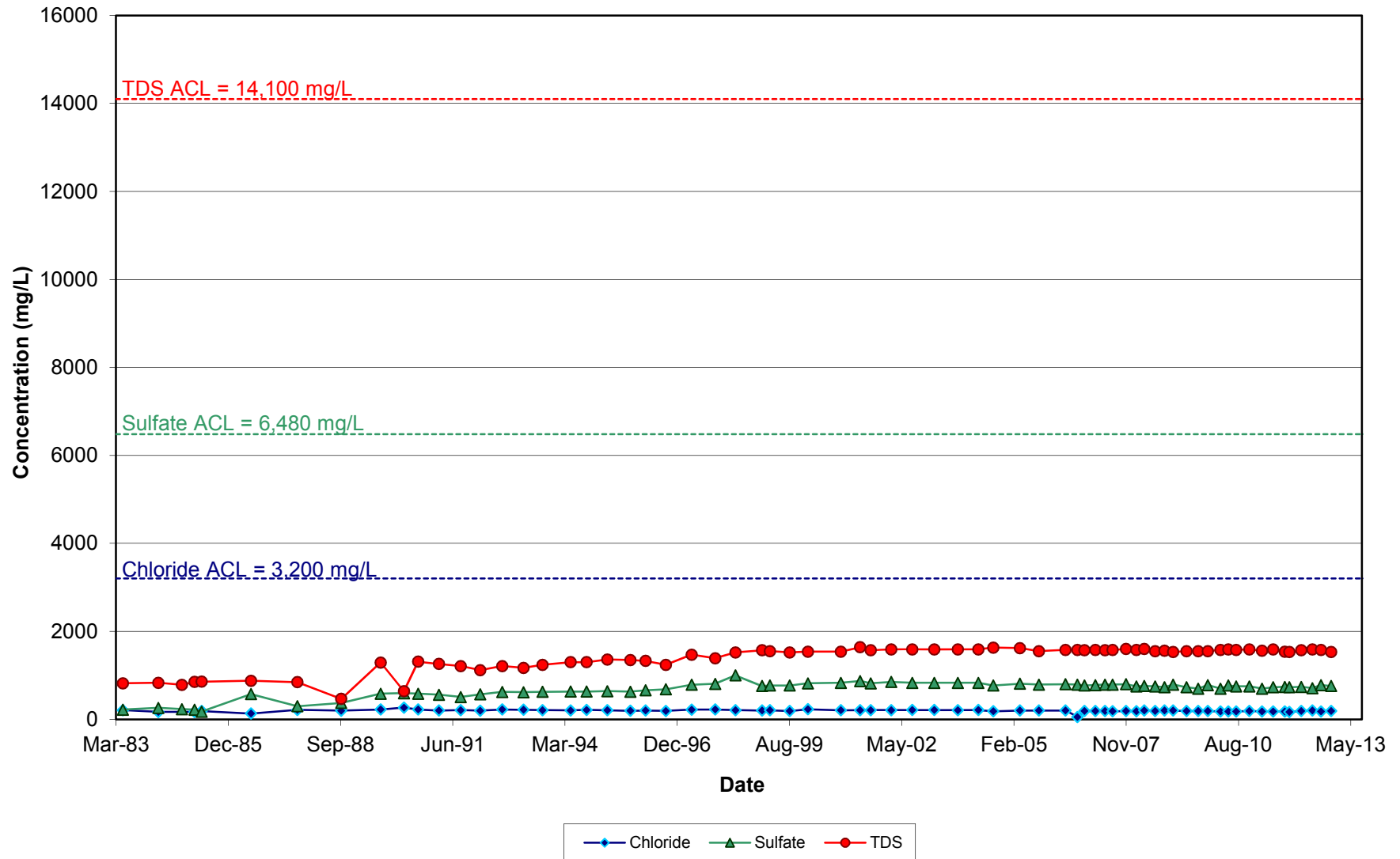
Metals in Monitoring Well 30-48KD



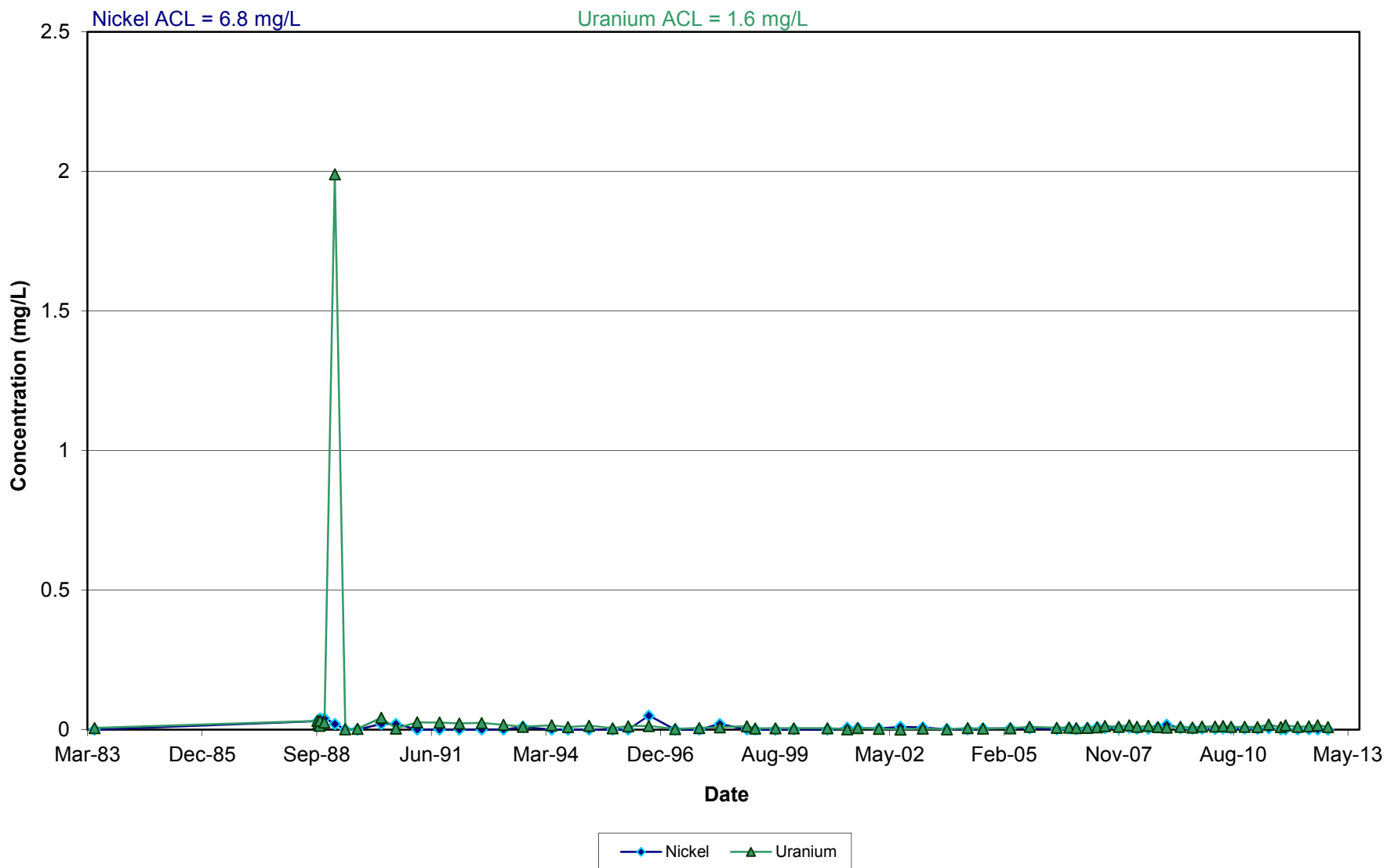
Radionuclides in Monitoring Well 30-48 KD



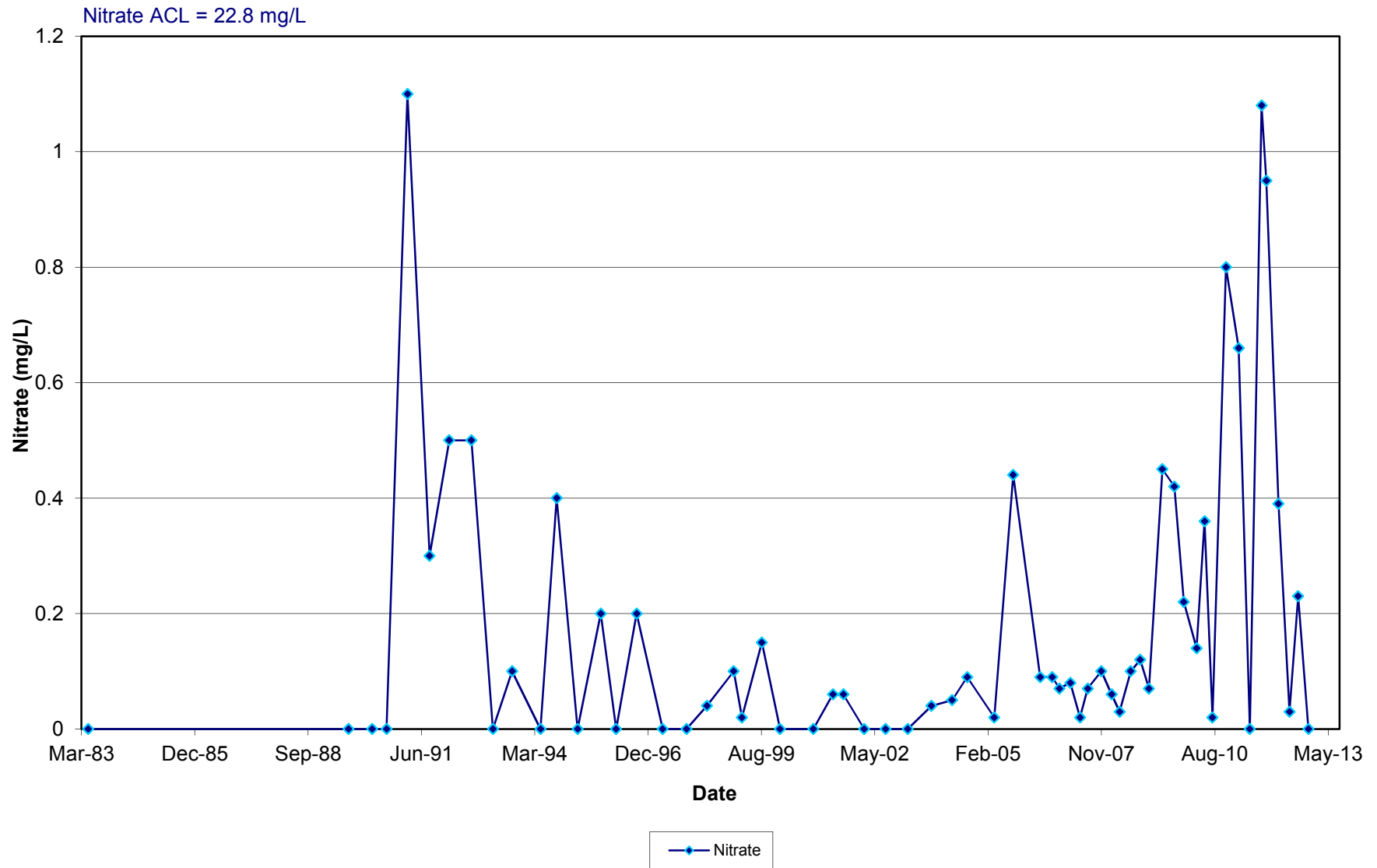
Anions and TDS in Monitoring Well 32-45KD



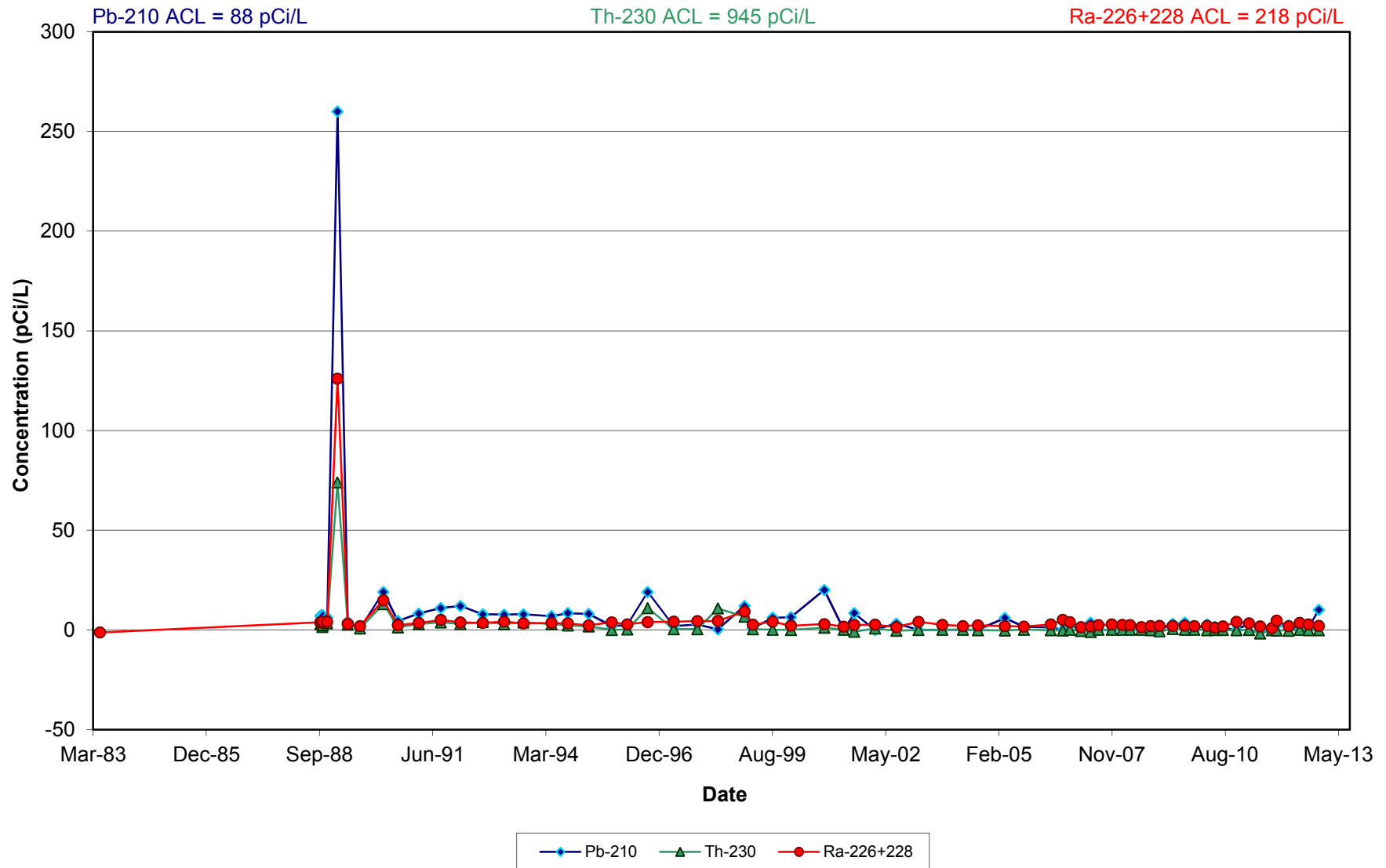
Metals in Monitoring Well 32-45KD



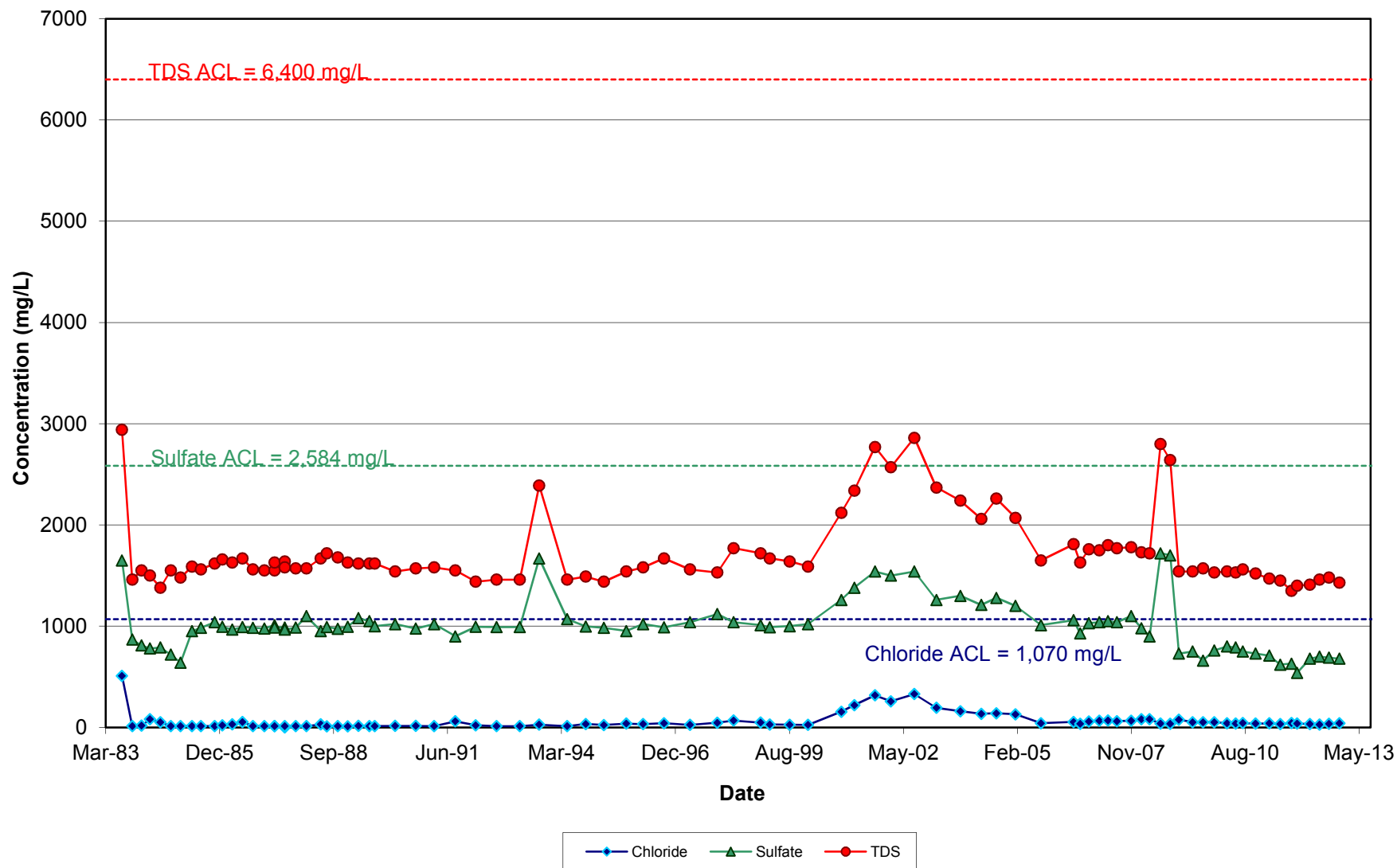
Nitrate in Monitoring Well 32-45KD



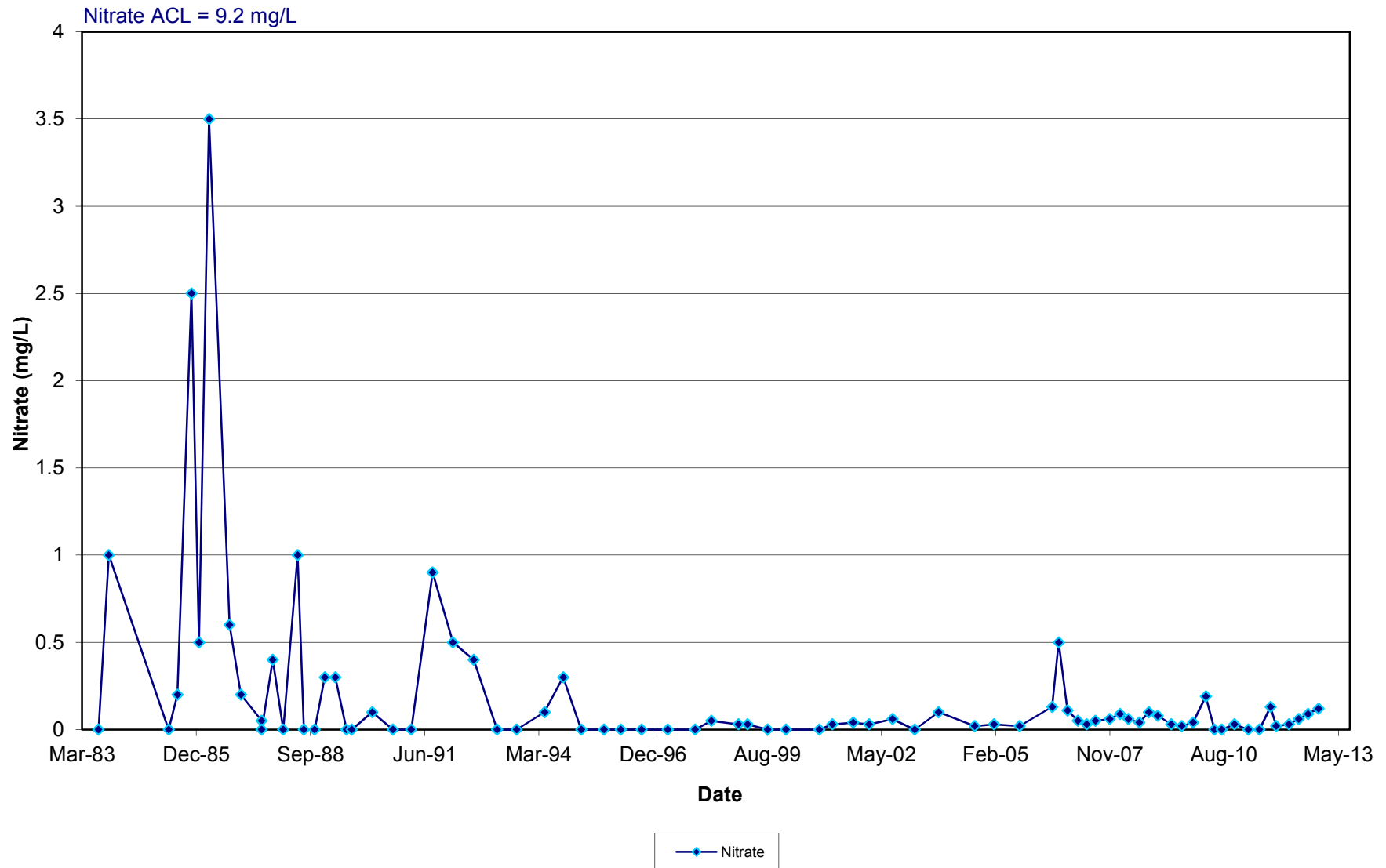
Radionuclides in Monitoring Well 32-45KD



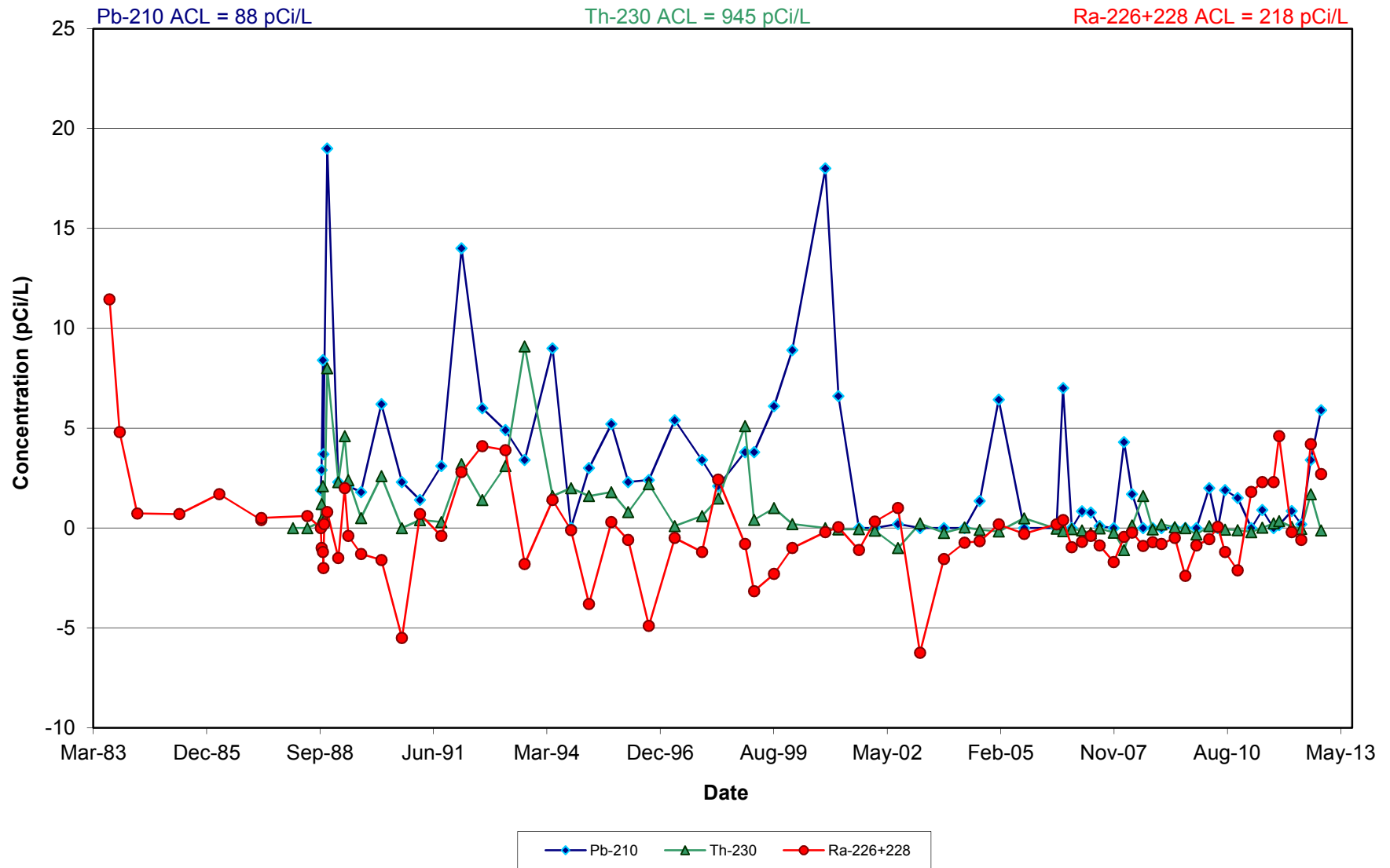
Anions and TDS in Monitoring Well 31-01 TRA



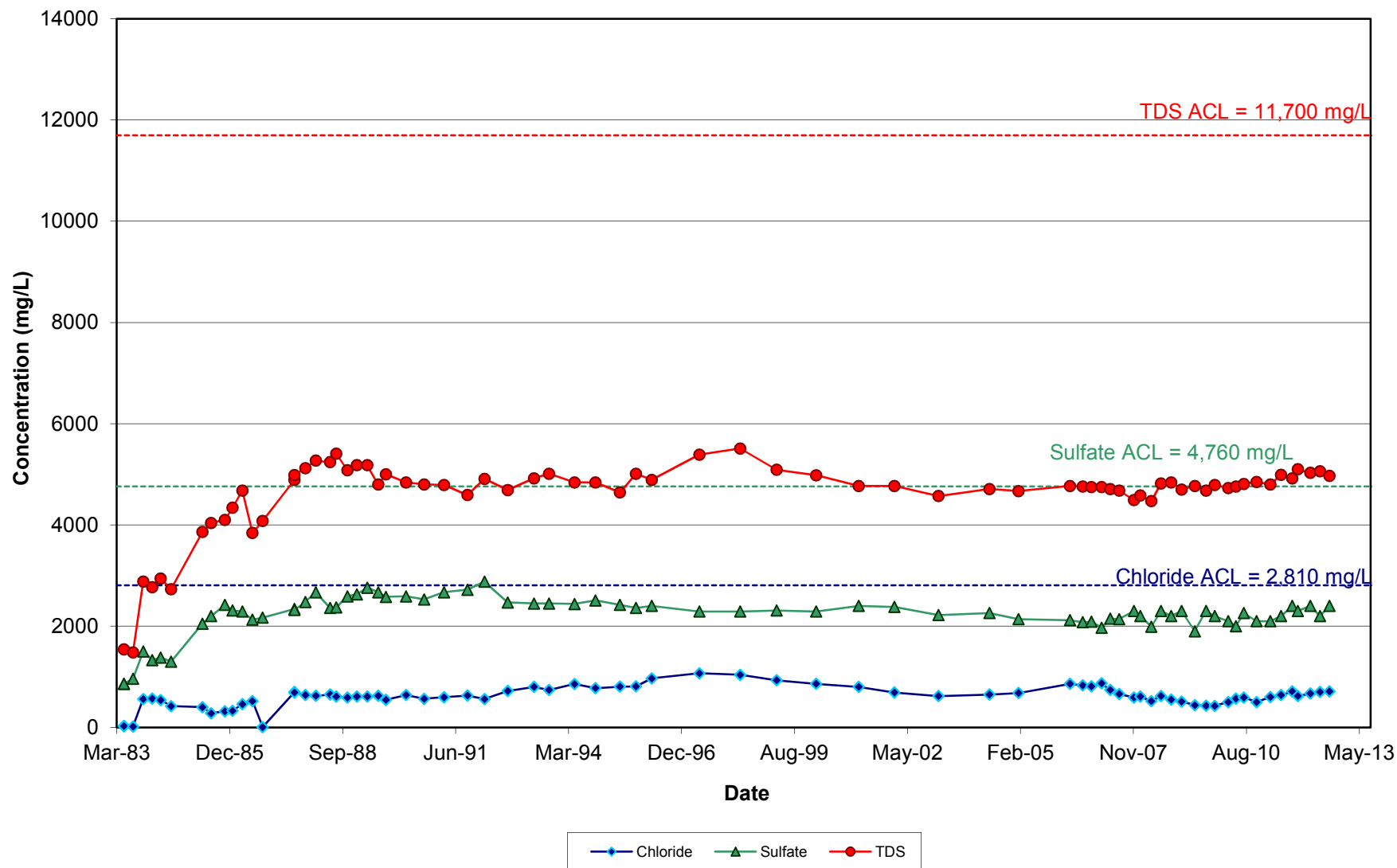
Nitrate in Monitoring Well 31-01 TRA



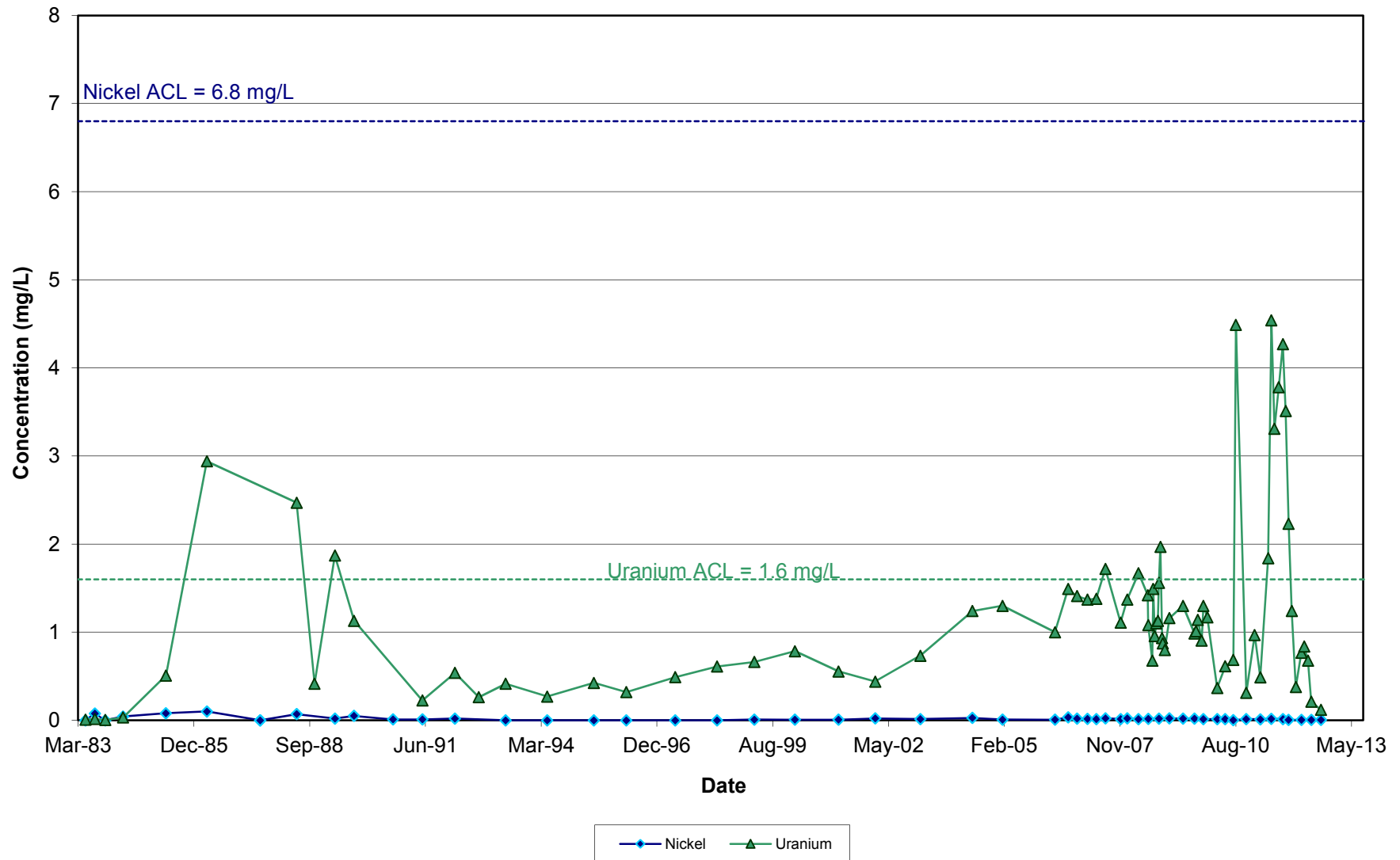
Radionuclides in Well 31-01TRA



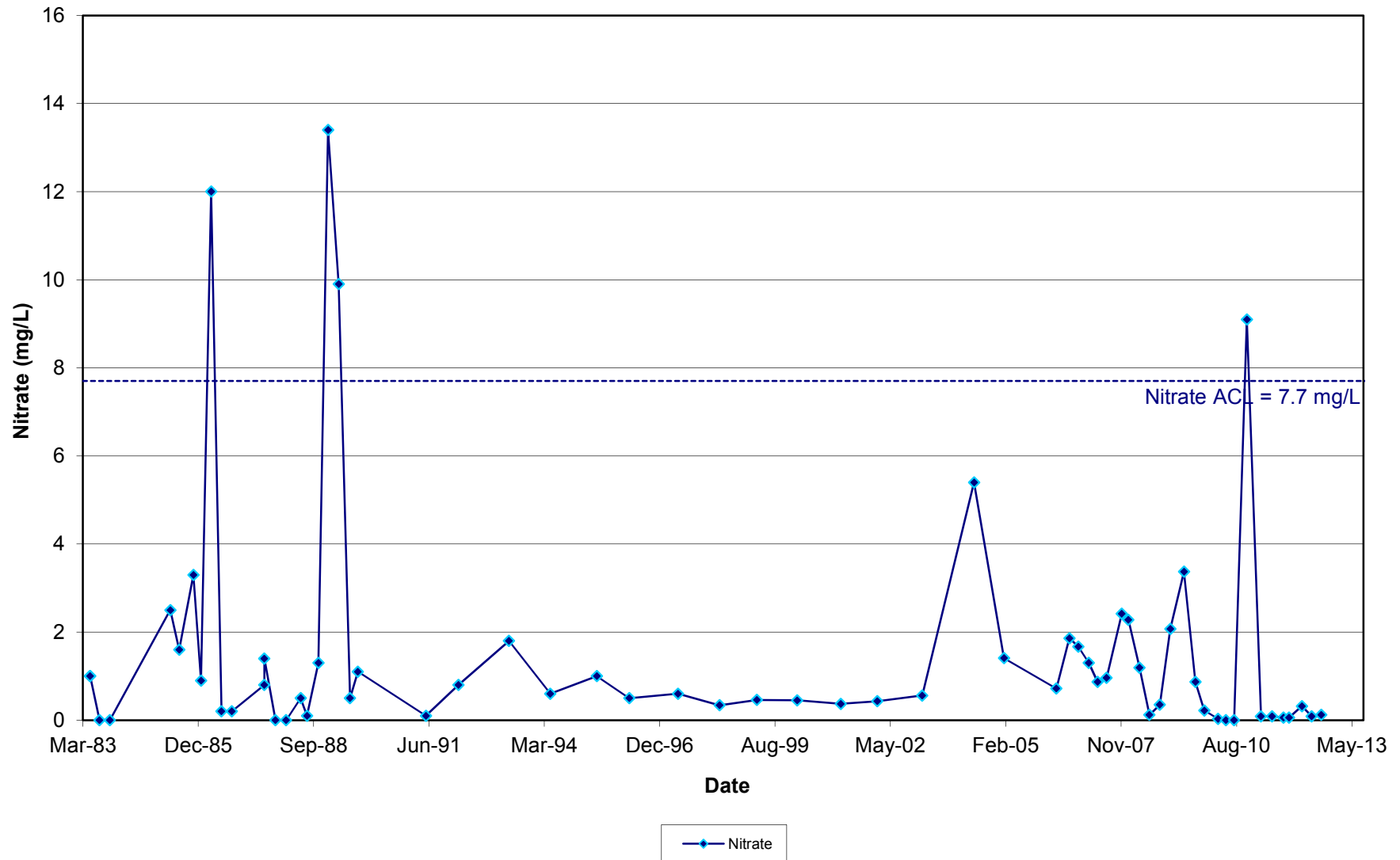
Anions and TDS in Monitoring Well 31-02



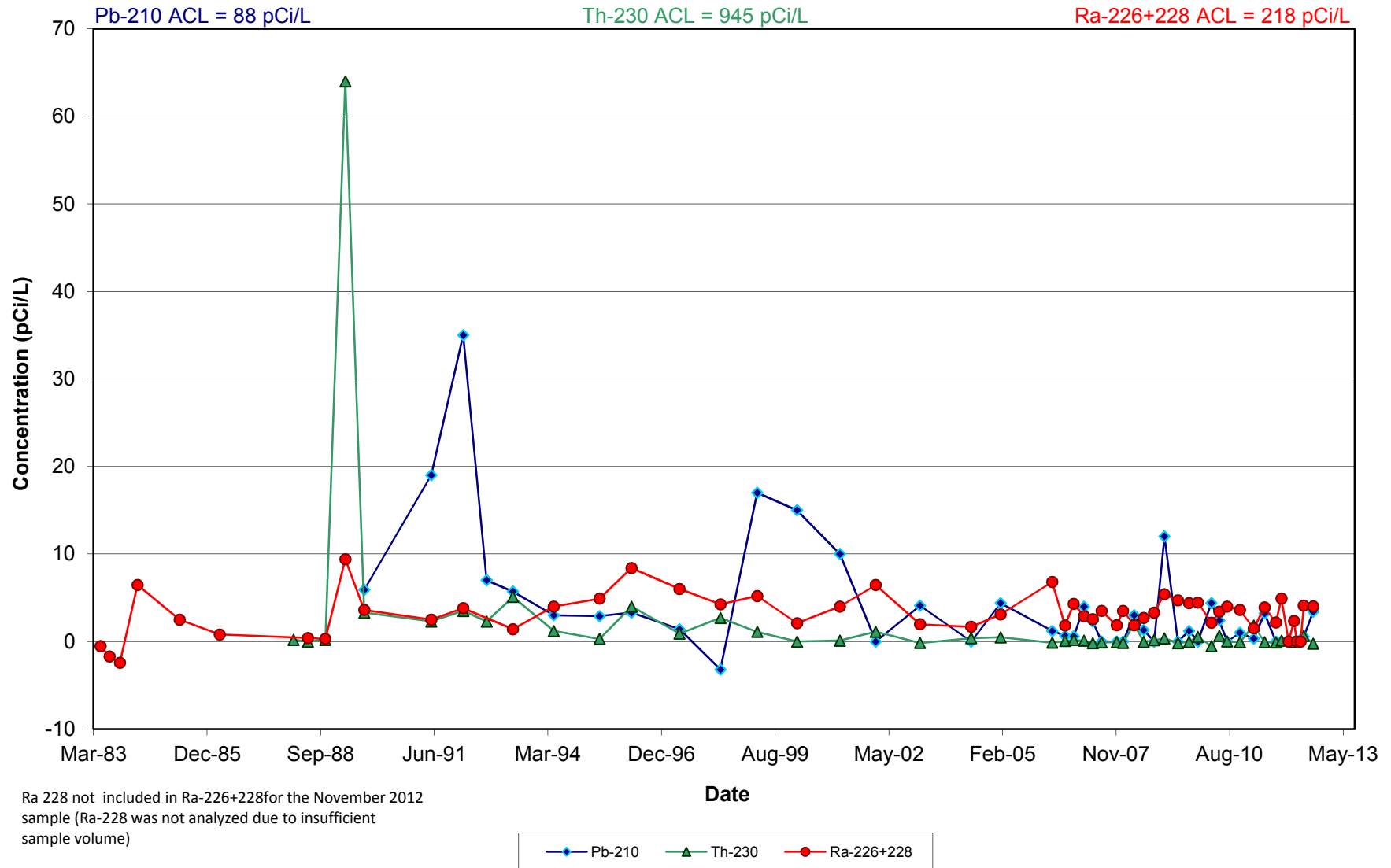
Metals in Monitoring Well 31-02



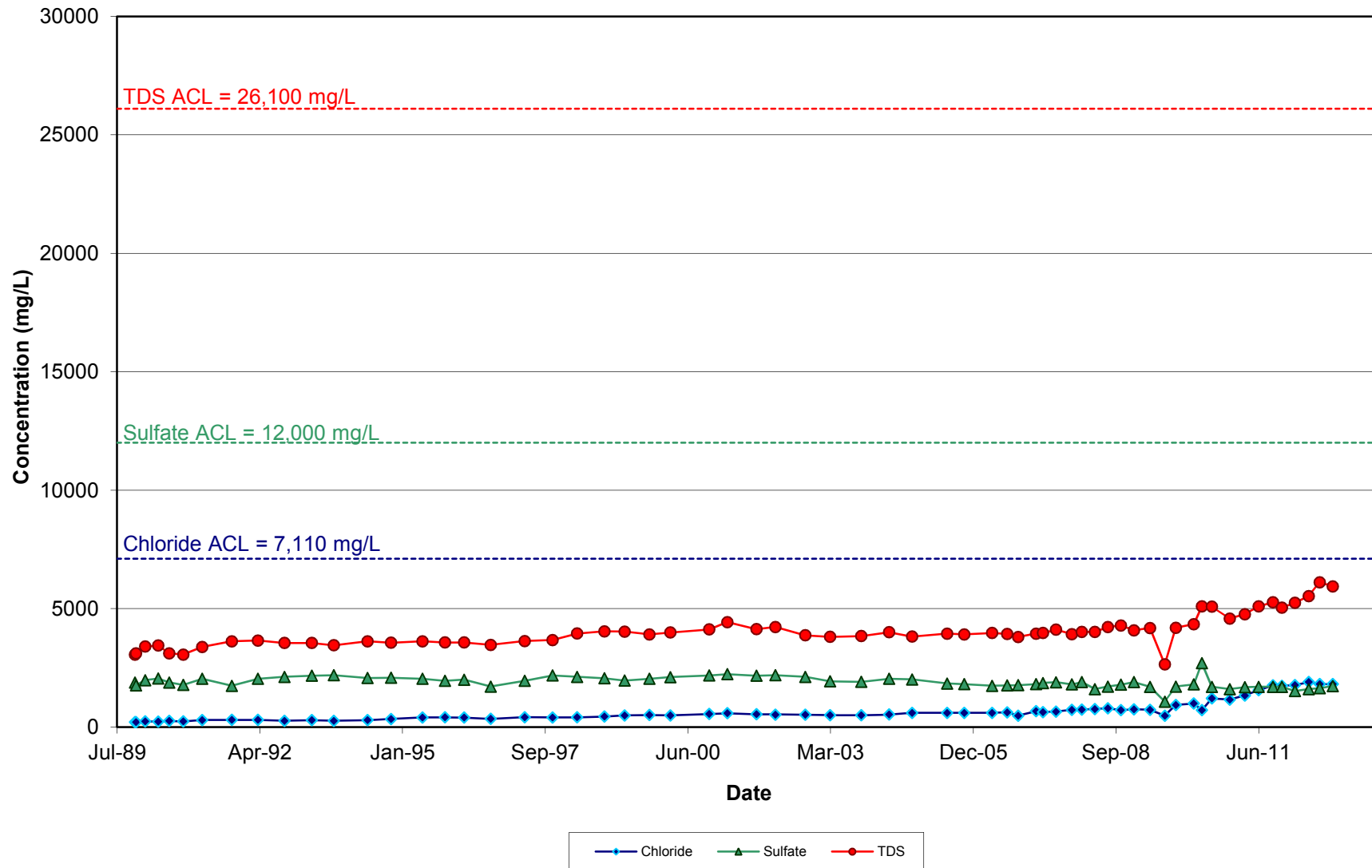
Nitrate in Monitoring Well 31-02



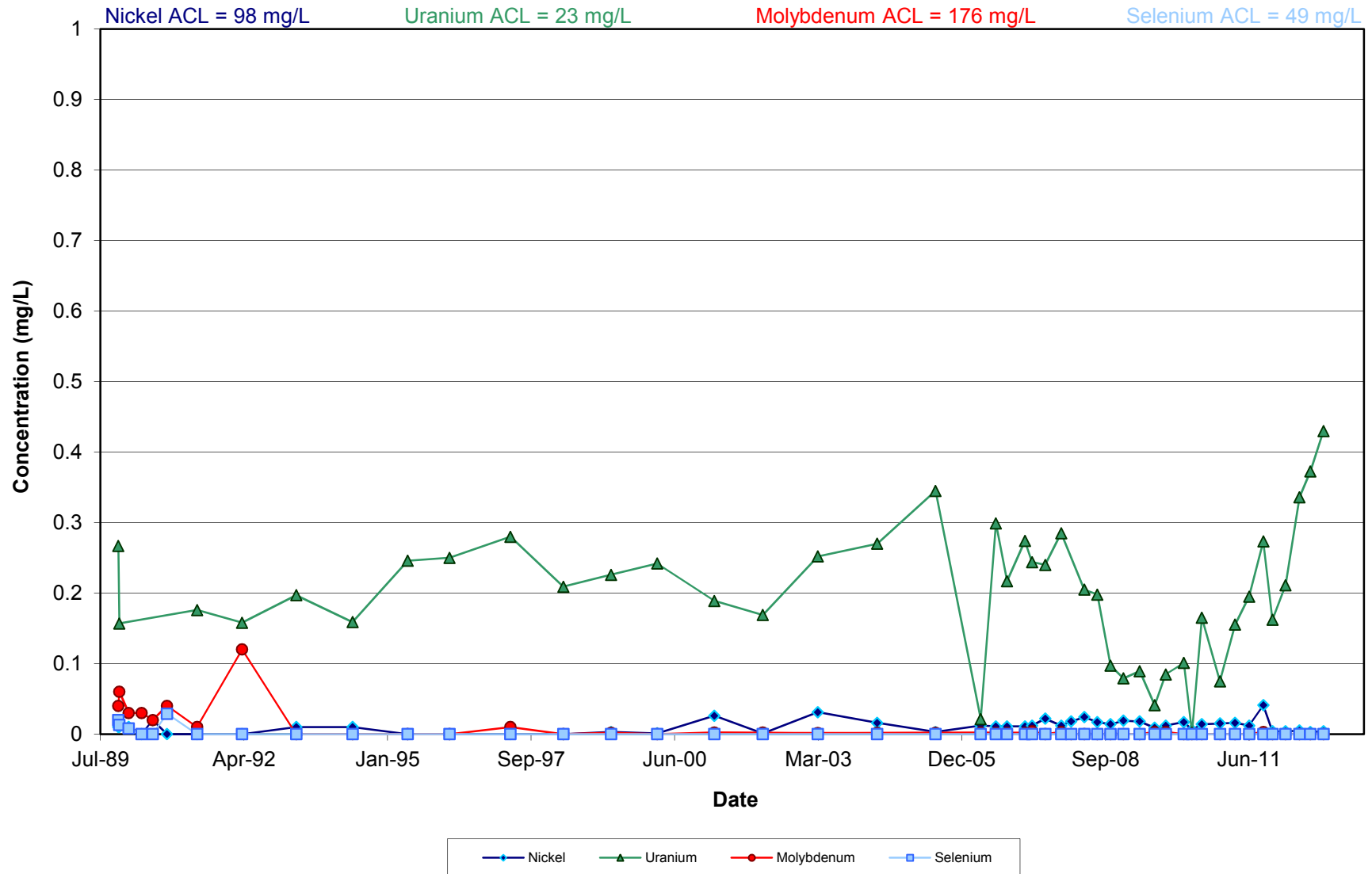
Radionuclides in Monitoring Well 31-02



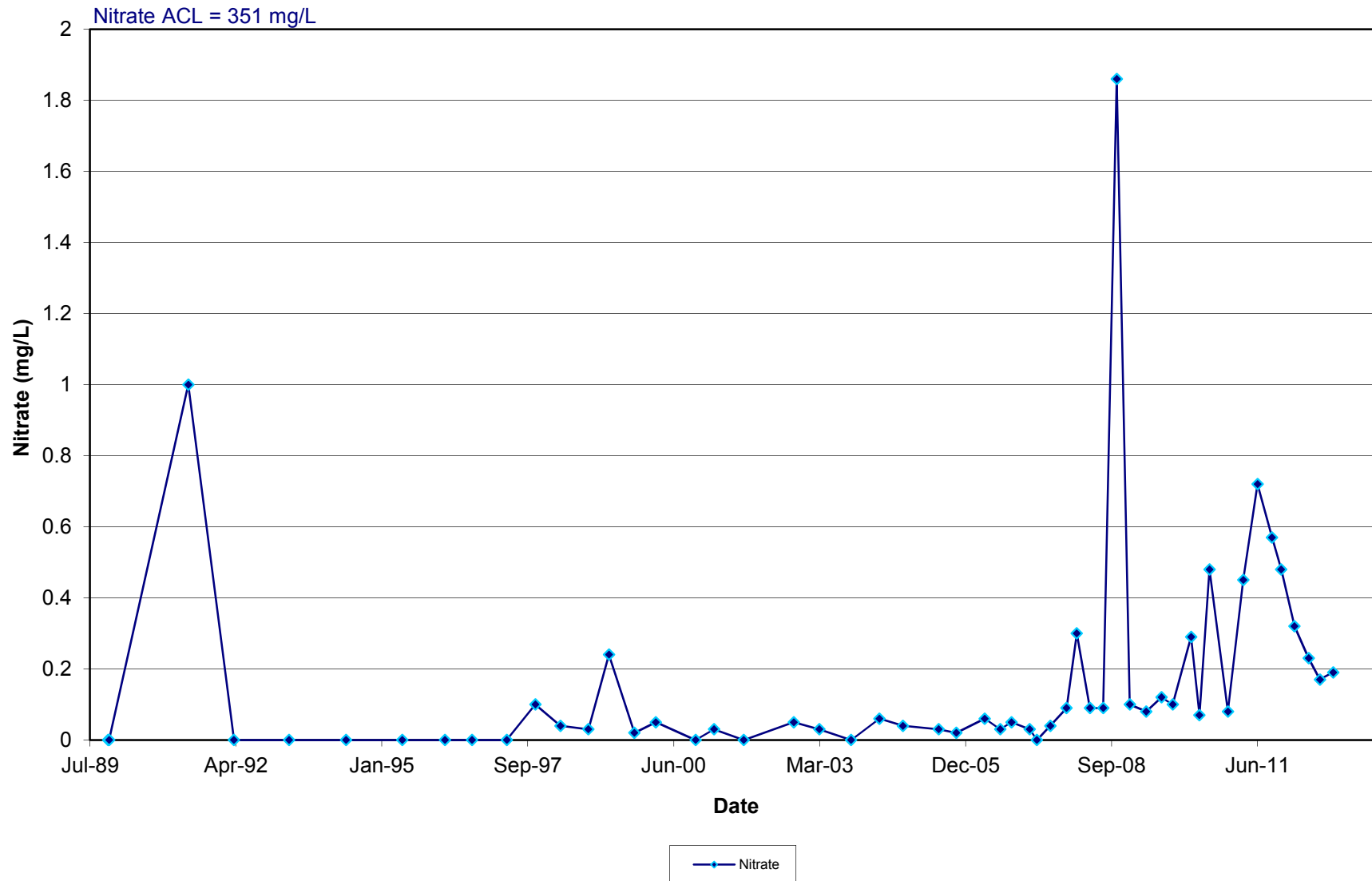
Anions and TDS in Monitoring Well 5-73



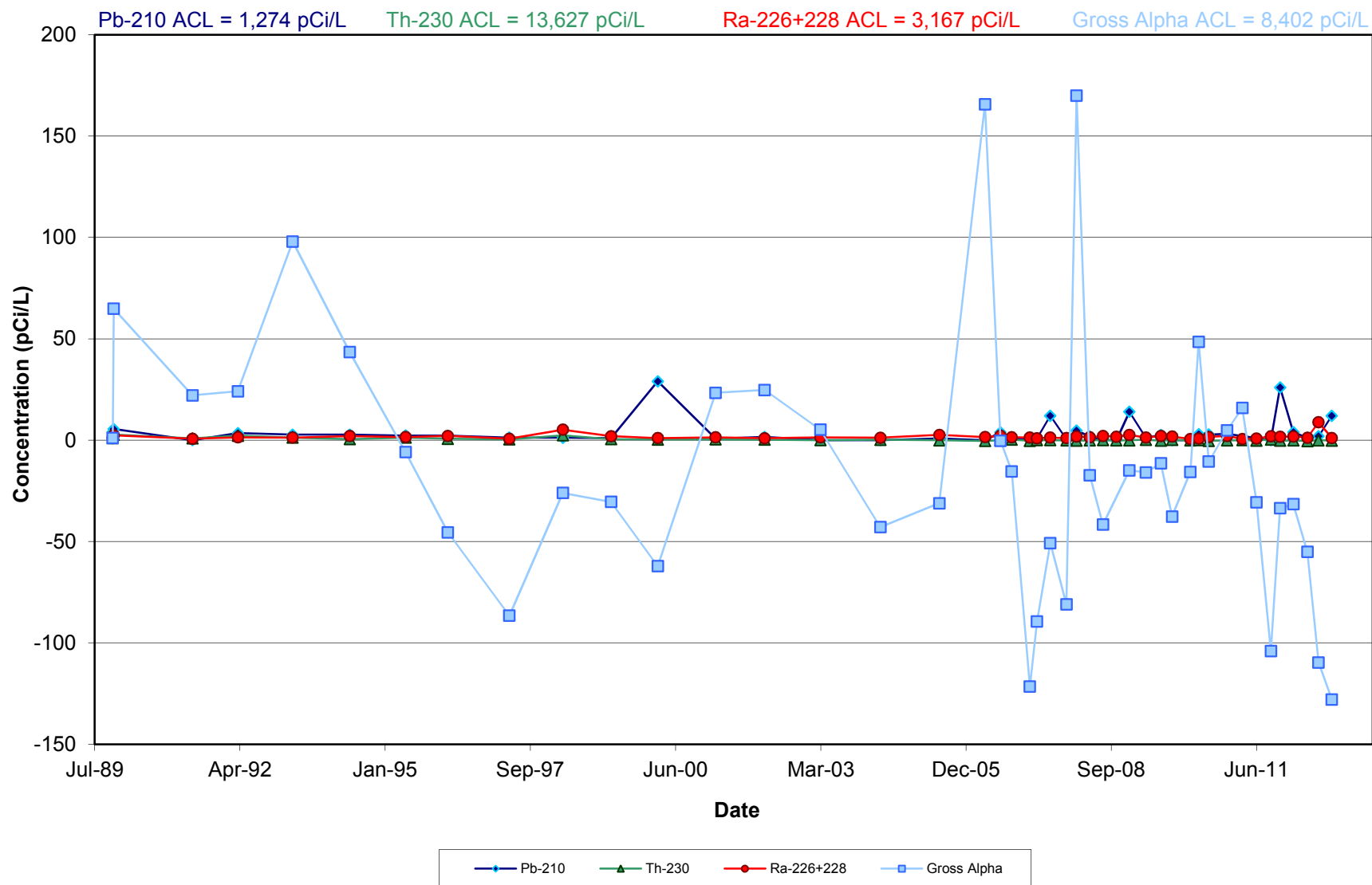
Metals in Monitoring Well 5-73



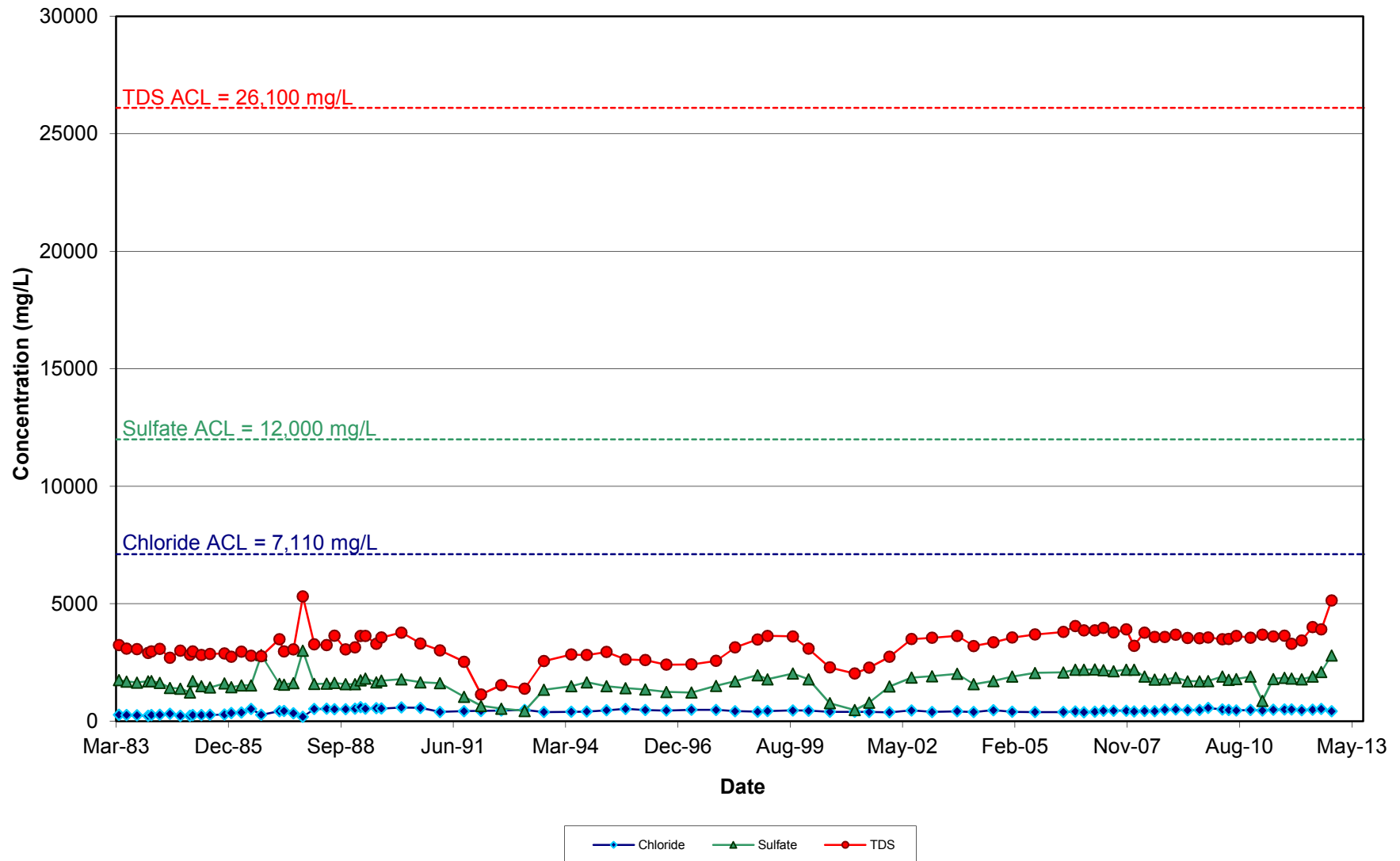
Nitrate in Monitoring Well 5-73



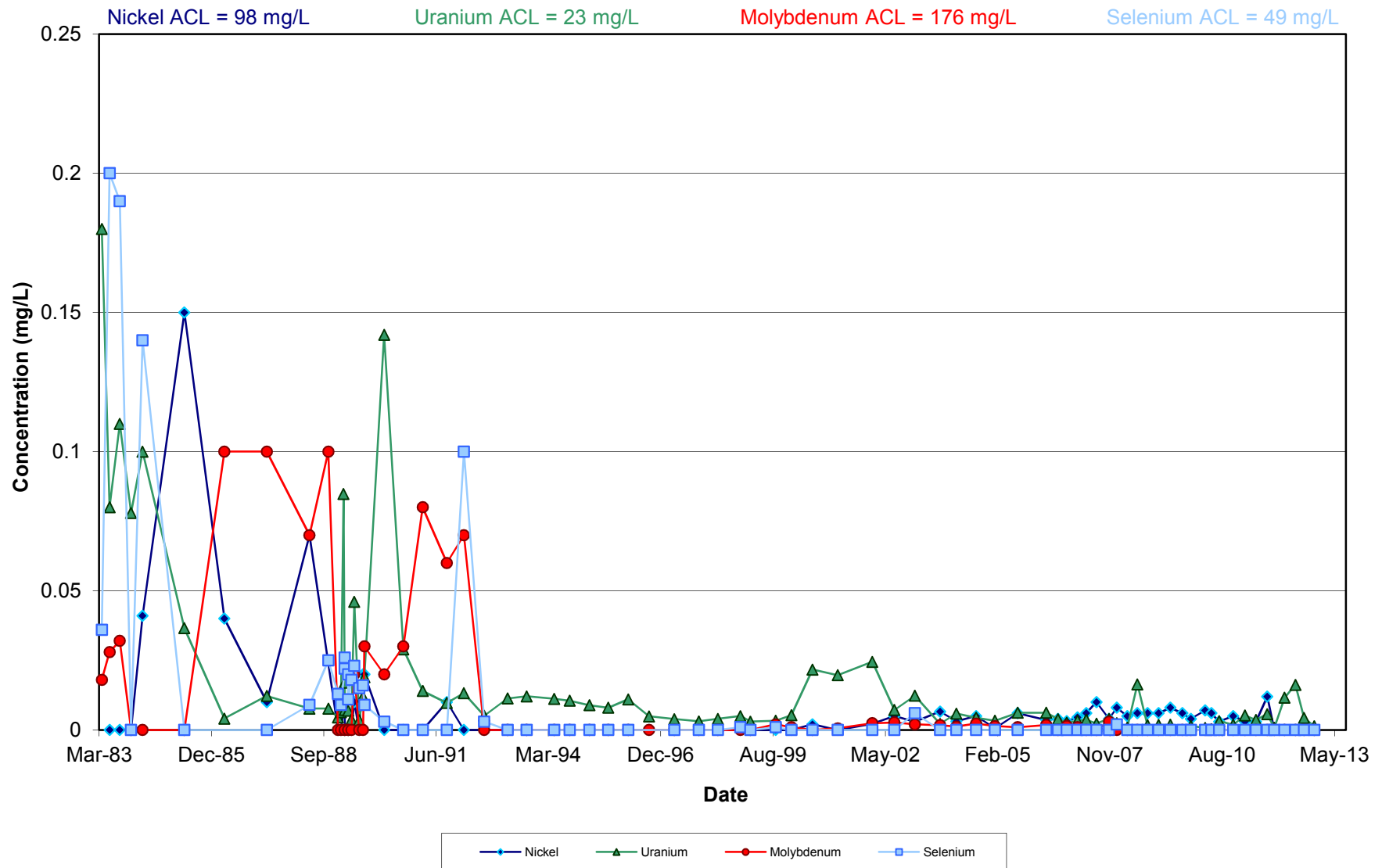
Radionuclides in Monitoring Well 5-73



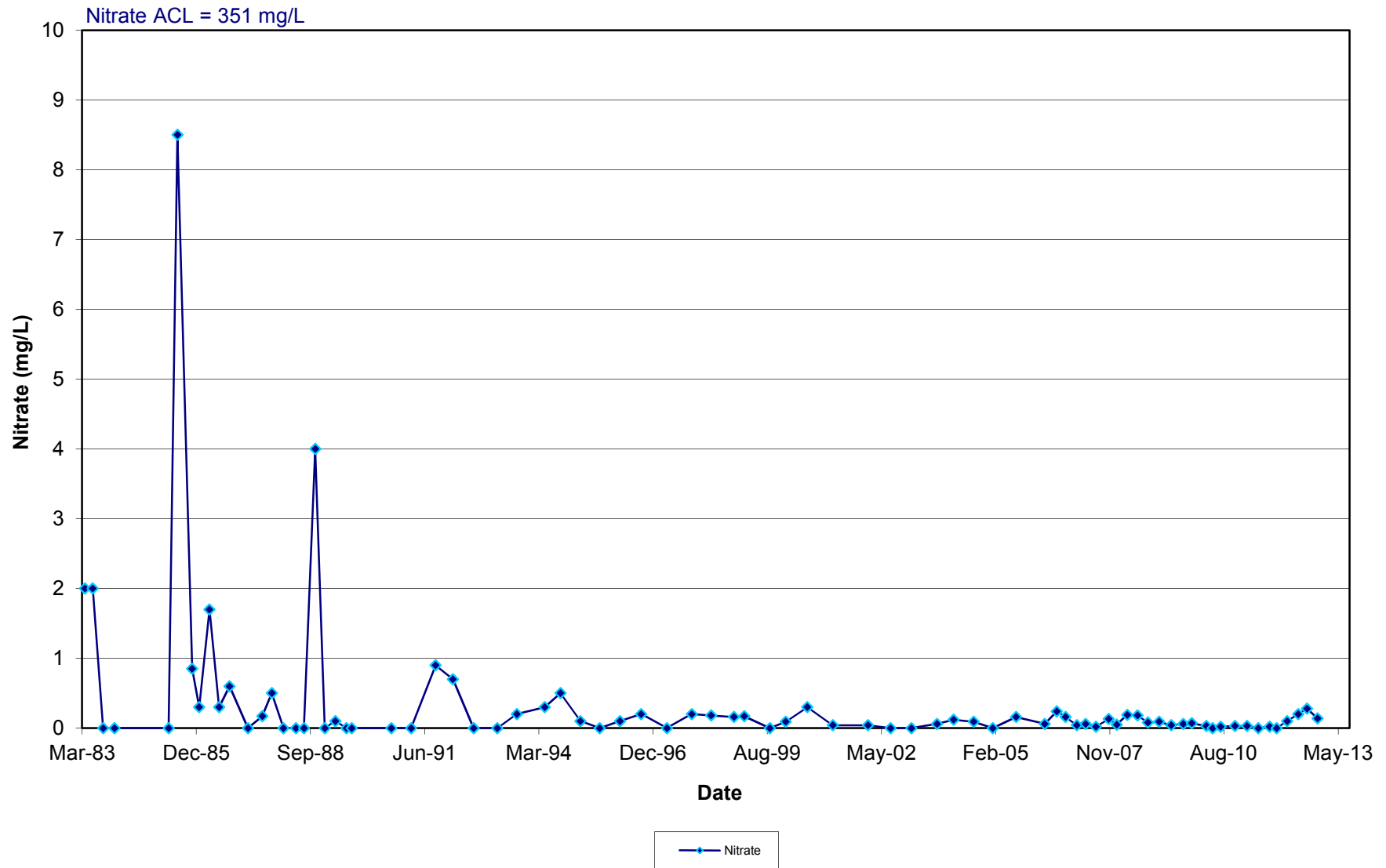
Anions and TDS in Monitoring Well 5-03



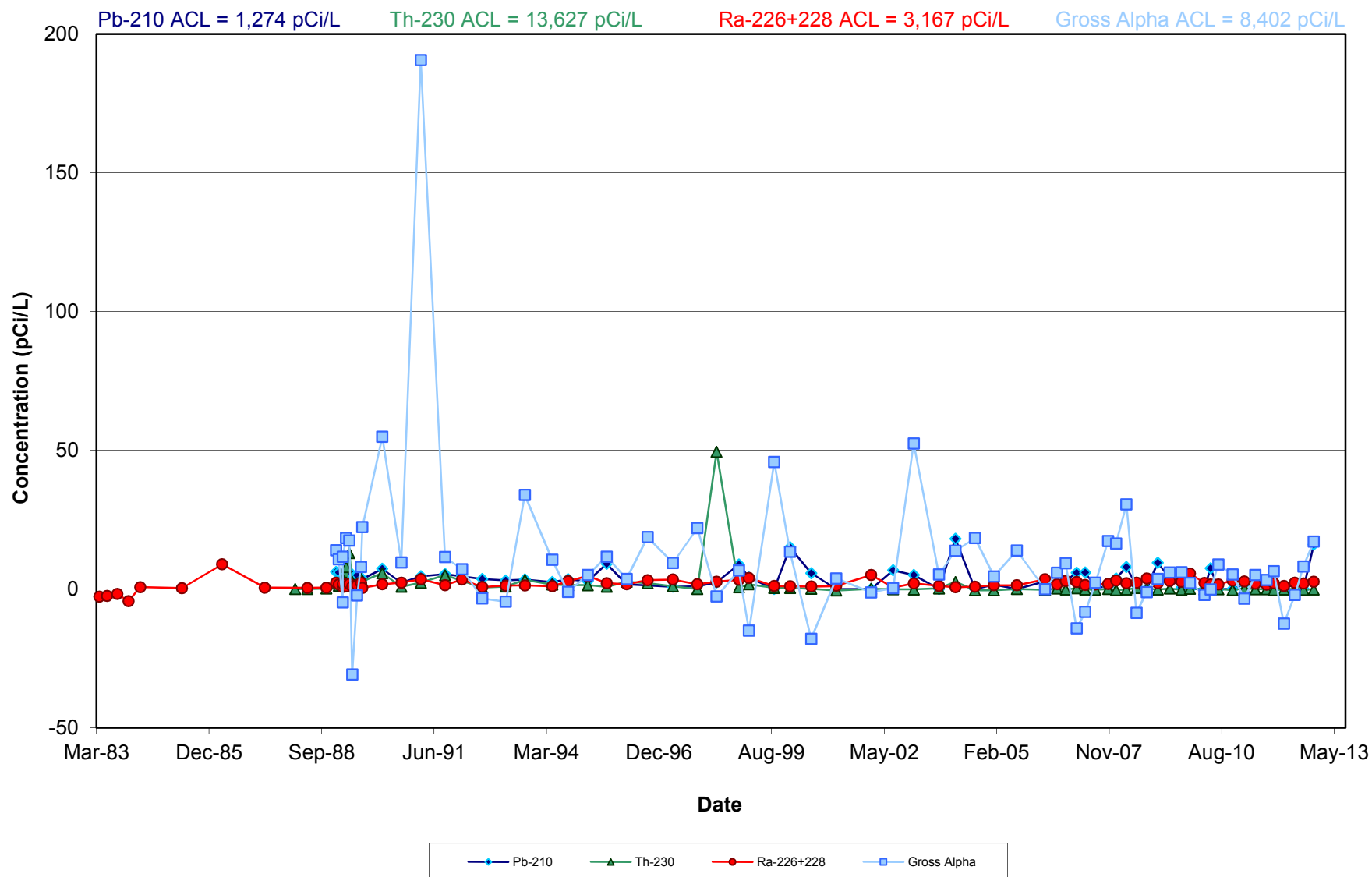
Metals in Monitoring Well 5-03



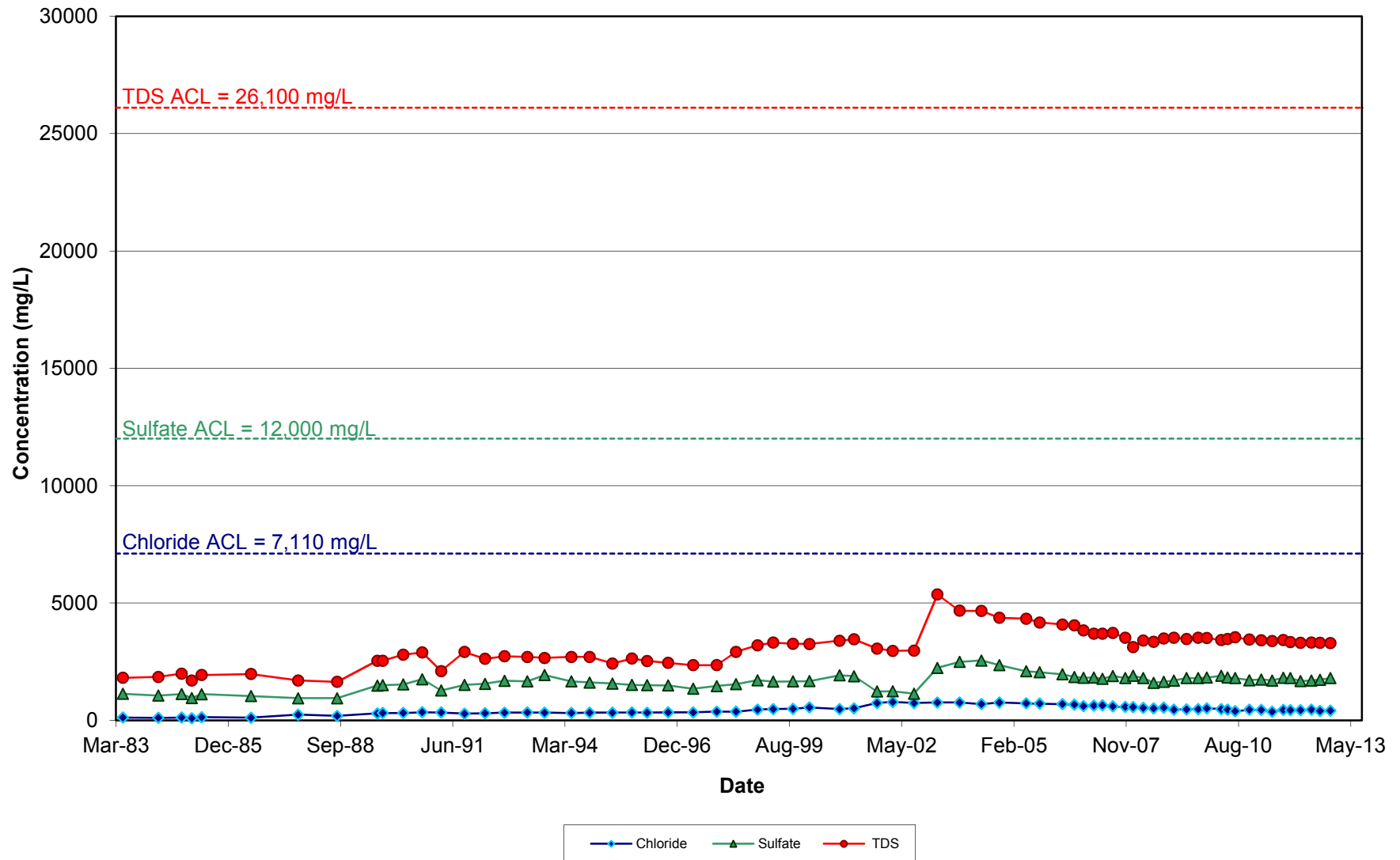
Nitrate in Monitoring Well 5-03



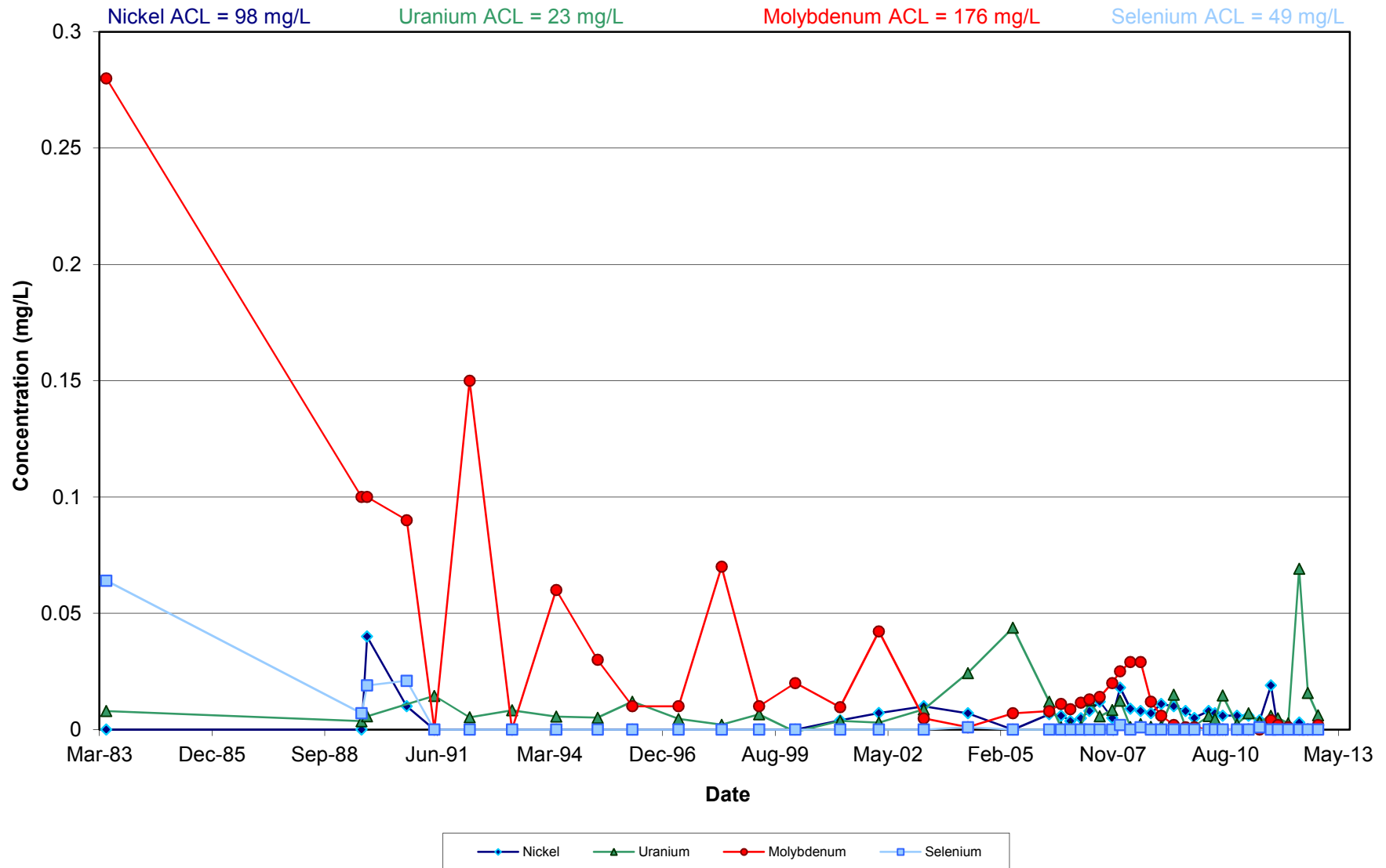
Radionuclides in Monitoring Well 5-03



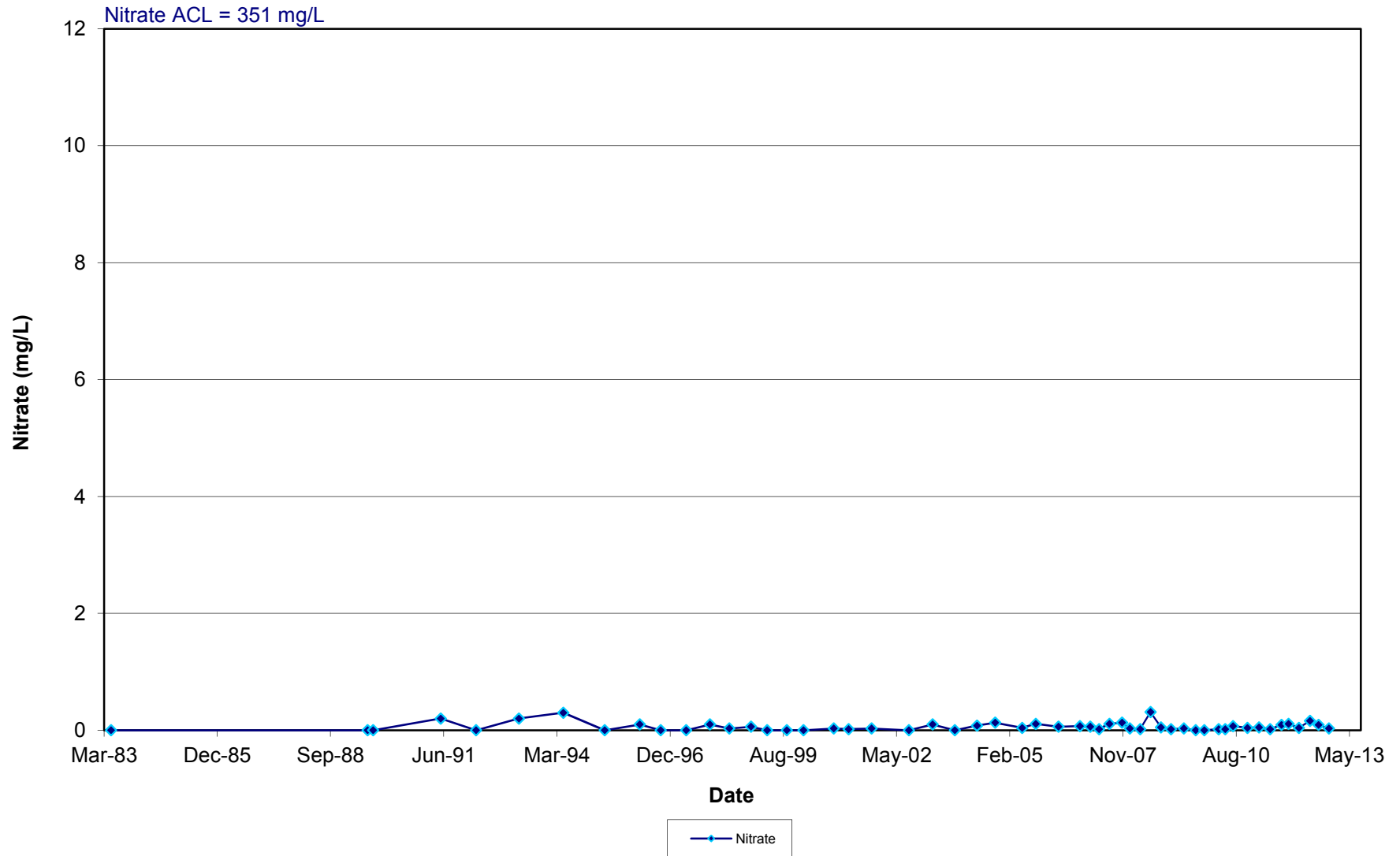
Anions and TDS in Monitoring Well 5-08



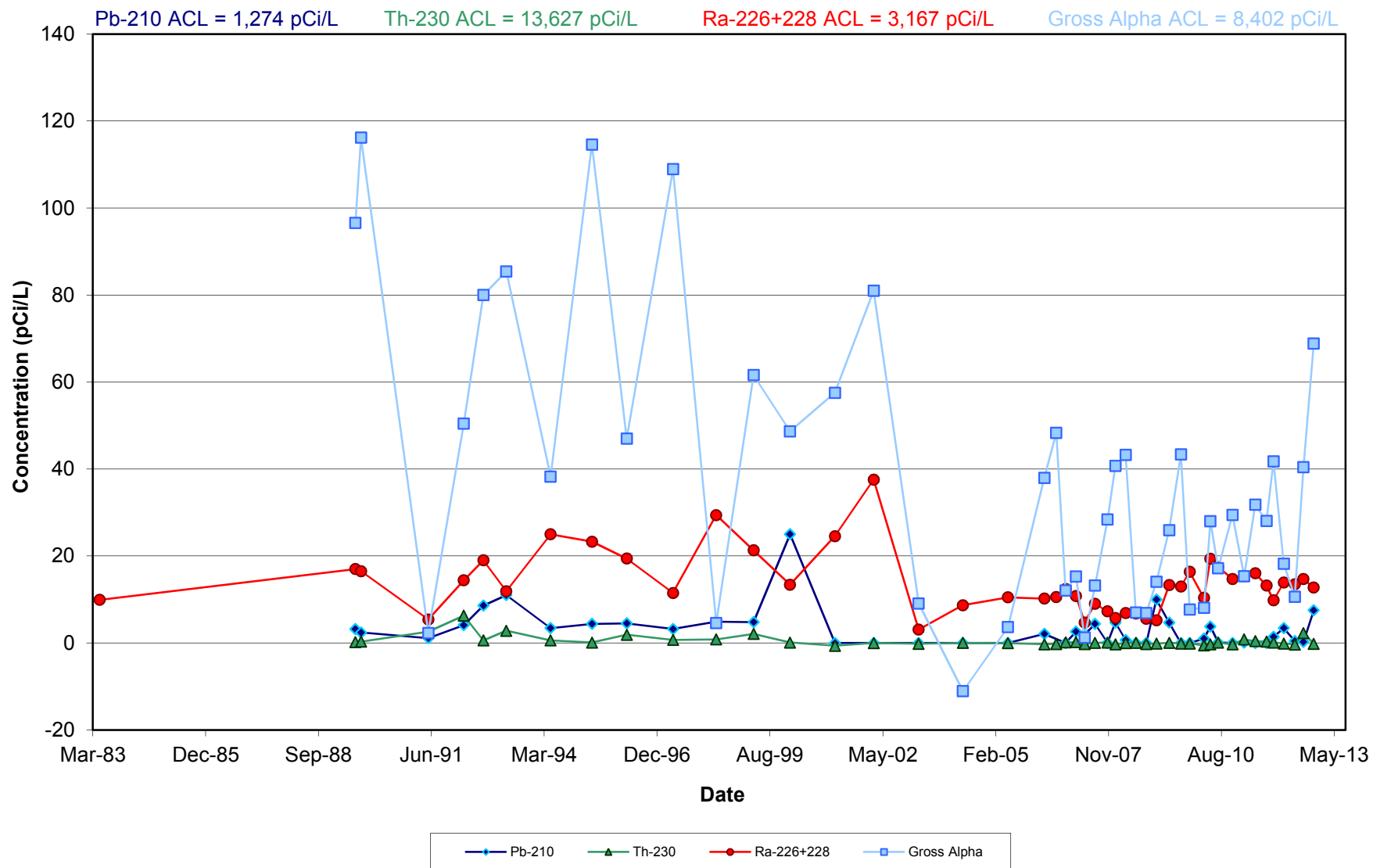
Metals in Monitoring Well 5-08



Nitrate in Monitoring Well 5-08

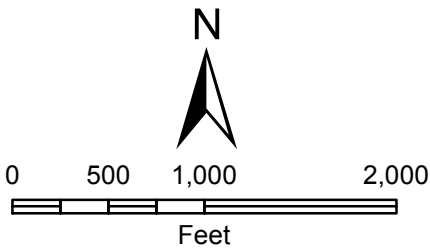


Radionuclides in Monitoring Well 5-08



APPENDIX 6

Stability Monitoring Plan
Replacement Well Map



Legend

- Replacement Monitoring Well
- Monitoring Well, Plug and Abandon
- ⊕ Monitoring Well, Plug and Replace

Note: "R" in well name denotes replacement well.



Sources: Aerial – RGIS website, dated 2009;
Point locations – Rio Algom, Bowman, 3/20/2013

2nd Half 2013
Replacement Well Map
Rio Algom DP-169 ACL
Semi-Annual Report