

Rio Algom Mining LLC

April 26, 2005

Mr. Kevin Myers
Groundwater Section
New Mexico Environment Department
P.O. Box 26110
Santa Fe, NM 87502

Re: **Discharge Plan - 169**
2004 Annual Report

Dear Mr. Myers,

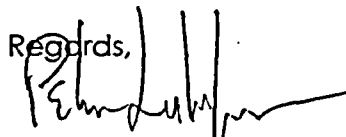
Please find attached Rio Algom Mining LLC's 2004 annual groundwater monitoring report for the Ambrosia Lake facility for the above referenced discharge plan. This annual report was prepared pursuant to the New Mexico Environment Department (NMED) approved plan, Discharge Plan - 169, dated November 15, 1995.

This report reviews the remediation progress on the alluvium as a result of continued implementation of Discharge Plan - 169 and the U.S. Nuclear Regulatory Commission approved Corrective Action Plan.

Submittal of this information does not prejudice Rio Algom's contention that NMED may have no jurisdiction over activities associated with discharge permit DP-169 as a result of the federal Nuclear Regulatory Commission having primacy over 11e.(2) byproduct material.

If you have any questions or need additional information, please call me at 287-8851.

Regards,



Peter Luthiger
Supervisor, Radiation Safety
and Environmental Affairs

Attachment: As stated

xc: NRC (MD) - License SUA-1473, Docket No. 40-8905
file

**RIO ALGOM MINING LLC
AMBROSIA LAKE FACILITY**

**DISCHARGE PERMIT
DP-169
2004 ANNUAL REPORT**

April 26, 2005

RIO ALGOM MINING LLC
AMBROSIA LAKE FACILITY
DISCHARGE PLAN - 169
2004 ANNUAL REPORT

Submittal of this information does not prejudice Rio Algom's contention that NMED may have no jurisdiction over activities associated with discharge permit DP-169 as a result of the federal Nuclear Regulatory Commission having primacy over 11e.(2) byproduct material.

Review of Discharge Plan - 169

Progress towards remediation of the alluvium continued throughout 2004. The interceptor trench continues to function as designed and approved by the NMED in the 1983 Assurance of Discontinuance (AOD) and Discharge Plan - 169. The approved remedial action plan was designed to prevent further tailings solution seepage from entering the alluvium from the tailings impoundments. With a total length of approximately 6,200 feet and a maximum depth of 36 feet, the interceptor trench has effectively isolated the tailings impoundment and its solutions from the down dip alluvial material.

During 2004, the interceptor trench collected and pumped 28.5 million gallons of water to lined evaporation cells. The interceptor trench has been effective as a "collection and pump back system". The trench has created a reversed hydrologic gradient within the alluvium due to the dewatering action along the trench, thereby causing solutions east of the trench to flow back towards it where they are collected and pumped to lined evaporation ponds for disposal.

The collection and pump back system developed by the construction of the interceptor trench is assisted by the recharge of fresh water along the eastern mill perimeter. During 2004, a total volume of approximately 117 million gallons of fresh water infiltrated into the alluvium along the fresh water creek and was utilized in the ground water sweep in conjunction with the interceptor trench. The ground water sweep and reversed gradient caused by the interceptor trench has resulted in solutions

underlying the unlined evaporation ponds #4, #5, #6 and nearby areas to be flushed and swept to the interceptor trench for collection and removal from the alluvial system.

This reversed hydraulic gradient can be seen on the water level contour map contained in Appendix E. The water levels and groundwater flow patterns show that groundwater within the alluvium is controlled by the interceptor trench over a large area. Presented in Table 1 are the monthly concentrations for chloride, sulfate, and total dissolved solids (TDS) within the fresh water utilized for alluvial recharge.

TABLE 1
2004 ALLUVIAL RECHARGE WATER CONCENTRATION (mg/L)

Month	Chloride	Sulfate	TDS
January	420	1380	3140
February	401	2020	3760
March	410	1870	3620
April	426	2020	3670
May	450	1840	3690
June	453	1920	3770
July	450	1990	3870
August	570	2030	3910
September	442	2010	3750
October	490	1890	3740
November	435	1950	3680
December	452	1810	3580

In addition to the continued operation of the main interceptor trench, Rio Algom maintained and operated the three additional intercept trenches in the area southeast of tailings impoundment #1. Since pumping was initiated from these trenches in mid 1996, approximately 32 million gallons of ground water in the vicinity of impoundment #1 has been intercepted, collected, and disposed within lined evaporation ponds.

The 2004 monitoring results for the alluvium are contained in Appendix A. These results contain the required information as specified within the November 15, 1995

approved Discharge Plan - 169. Additionally, a computer diskette containing the 2004 data for the alluvial wells is included.

Presented within Appendix B are time versus concentration plots for the parameters chloride, sulfate, and total dissolved solids (TDS) for the alluvial monitoring wells.

Review of the data and charts indicates that initially, there was an increase in the concentrations of indicator parameters in the alluvium wells west of the discharge creek. However, the concentrations have subsequently continued to decrease with time as the fresh water, which is recharged into the alluvium, has flushed and transported the impacted solutions towards the interceptor trench for collection and removal. The initial higher levels were attributable to concentrated solutions from the unlined evaporation ponds #4, #5, and #6, being flushed and swept past the monitor wells on their way to collection in the interceptor trench.

Although the effect has not been to the same degree as wells located to the west of the fresh water creek; wells located to the east also have had a noticeable improvement in the indicator concentrations and remain within compliance of the established ground water standards for the alluvium. Specific requirement #10 of the approved discharge plan requires compliance with the ground water standards established in the 1983 AOD. These ground water standards are presented within Appendix C.

Contained in Appendix D is the current water level contour map for the alluvial unit. The water level map was developed using the depth to water measurements from the alluvial monitoring wells and the groundwater saturation limits. Appendix F contains the current TDS contour map for the alluvium as required by the Discharge Plan.

APPENDIX A

ANALYTICAL RESULTS - 2004 ALLUVIAL WELLS

RIO ALGOM MINING LLC
DISCHARGE PLAN DP-169
First Half 2004 Report

	Well	Date	DTW	TD	Cond.	Temp	pH	Cl (mg/l)	NO3 (mg/l)	SO4 (mg/l)	TDS (mg/l)
#	30-03	27-May-04		18.59							
	30-04	26-Apr-04	34.20	88.56	3610	13.3	8.41	540	0.04	1290	2900
#	30-46	27-May-04		38.39							
	30-47	11-May-04	31.10	79.05	4610	13.3	7.26	810	0.06	2190	4310
	30-48	26-Apr-04	32.10	79.21	4280	13.9	7.25	690	0.13	1880	4200
	30-49	26-Apr-04	44.21	68.48	4260	14.2	7.31	630	0.73	2280	4530
#	30-53	27-May-04		50.19							
#	30-68	27-May-04		62.62							
	31-05	07-Jun-04	28.37	74.10	4780	14.7	7.69	460	0.05	2650	4830
	31-61	16-Feb-04	17.30	27.00	6180	12.8	7.01	500	1.09	3790	6640
	31-63	04-May-04	19.14	30.57	10230	14.4	6.32	2590	1.3	6670	14700
	31-65	04-May-04	16.34	46.23	7070	13.9	7.04	770	1.13	5230	9480
	31-70	10-May-04	18.00	30.90	7.97	12.5	6.52	6.9	9.9	4820	8860
	31-71	04-May-04	17.82	63.35	4070	15.2	7	540	0.18	1670	4110
	32-01	11-May-04	15.79	52.46	4160	12	8.39	450	0.12	1580	3000
	32-02	07-Jun-04	31.05	76.72	4610	14.9	7.48	560	0.06	2250	4170
	32-41	27-Apr-04	23.23	58.43	5860	13.3	7.43	1340	0.03	2250	5360
	32-42	27-Apr-04	22.80	28.68	4050	12.3	8.21	472	0.14	1870	3810
	32-43	04-May-04	17.50	76.80	5960	10.6	7.17	380	340	2730	7400
	32-50	27-Apr-04	34.29	91.13	3920	12.1	7.35	353	0.03	2060	3740
	32-51	04-May-04	24.58	75.50	4460	13.4	7.62	220	4.4	3160	5050
	32-52	27-Apr-04	26.63	66.64	37.7	14.7	8.6	174	-0.02	1940	3140
#	32-56	11-May-04		57.56							
	32-57	11-May-04	37.47	53.96	5360	14.4	7.33	780	0.66	2560	4930
	32-58	27-Apr-04	10.08	34.45	4150	13	7.16	490	-0.02	2000	4130
	32-59	16-Feb-04	13.04	39.37	4490	12.4	7.26	432	0.24	2010	4030
	32-60	11-May-04	16.10	27.69	6500	12	6.84	650	6.7	3980	6940
	32-69	27-Apr-04	22.61	66.51	3830	12.4	7.41	410	0.23	1850	3640
	32-72	27-Apr-04	9.81	40.08	4780	12.9	7.2	740	13	2080	4710
	5-01	03-May-04	21.91	45.04	3530	14.5	8.42	240	0.02	2580	4000
	5-02	04-May-04	20.69	20.69	4540	13.9	6.82	760	0.49	2270	4500
	5-03	16-Feb-04	18.24	40.34	4090	14.1	8.82	391	0.12	1580	3200
	5-04	03-May-04	16.41	64.80	3240	13.5	8.68	550	0.07	1160	2480
	5-08	03-May-04	28.24	87.89	4530	14.6	7.34	690	0.08	2550	4660
	5-73	03-May-04	11.81	31.55	4070	13.5	7.77	530	0.06	2040	4000
	AW-1	26-Apr-04	34.27	81.32	3790	12.5	7.35	437	0.77	1770	3650
	AW-2	27-Apr-04	28.32	82.05	3800	14.4	7.65	250	0.24	2160	4000
#	C-3	21-May-04		12.15							
*	D-4	21-May-04	20.98	22.13							
	E-5	10-May-04	11.25	15.99	10210	11.8	7.19	2600	0.29	4400	10900
*	MW-24	27-May-04	50.15	50.24							
	S-12	11-May-04	13.70	28.69	7240	12	6.72	810	0.38	4230	7830
	S-9	10-May-04	10.75	23.43	8610	12.5	8.66	1920	0.33	4410	10700

- Dry Well.

* - Well contained insufficient water for sample collection.

RIO ALGOM MINING LLC
DISCHARGE PLAN DP-169
Second Half 2004 Report

	Well	Date	DTW	TD	Cond.	Temp	pH	Cl (mg/l)	NO3 (mg/l)	SO4 (mg/l)	TDS (mg/l)
#	30-03	14-Sep-04		18.55							
	30-04	13-Sep-04	34.65	88.55	3910	14.2	8.48	570	0.21	1370	3020
#	30-46	12-Oct-04		38.42							
	30-47	4-Oct-04	32.61	79.23	4490	12.5	7.56	860	0.09	2260	4450
	30-48	14-Sep-04	32.10	79.42	4350	12.7	7.73	660	0.03	1880	4110
	30-49	13-Sep-04	44.35	68.69	4580	14.0	7.54	640	< 0.02	2280	4600
#	30-53	12-Oct-04		50.18							
#	30-68	12-Oct-04		63.34							
	31-05	14-Sep-04	28.98	73.97	4860	12.8	7.75	479	0.07	2560	4640
	31-61	9-Aug-04	17.65	27.14	6770	13.5	7.06	530	1.35	3740	6640
	31-63	5-Oct-04	18.93	30.63	11020	13.4	6.57	2520	4.51	6670	14700
	31-65	5-Oct-04	16.20	46.18	7230	12.5	7.16	680	0.98	5430	9220
	31-70	28-Sep-04	18.22	32.92	6970	12.9	6.68	630	3.97	4720	8150
	31-71	14-Sep-04	19.40	103.35	4310	12.9	7.38	476	0.3	1820	3880
	32-01	5-Oct-04	15.85	52.69	4350	13.3	7.93	498	< 0.02	1750	3710
	32-02	14-Sep-04	31.47	72.46	4300	14.0	7.64	560	0.02	2130	4150
	32-41	14-Sep-04	20.79	58.33	6070	13.4	8.30	1650	0.18	2250	5790
	32-42	27-Sep-04	22.80	28.73	3920	14.0	7.89	570	0.22	1810	3580
	32-43	5-Oct-04	17.39	76.98	6140	12.2	7.43	381	351	3150	7270
	32-50	27-Sep-04	34.37	91.15	3910	13.7	7.76	430	0.08	2160	3910
	32-51	28-Sep-04	25.33	76.57	4480	12.9	8.14	237	7.1	3030	5040
	32-52	27-Sep-04	27.24	66.80	3320	14.4	8.75	193	< 0.02	1980	3150
#	32-56	12-Oct-04		57.61							
	32-57	12-Oct-04	37.90	53.98	5340	13.2	7.72	870	1.1	2490	4760
	32-58	28-Sep-04	12.42	34.60	4270	12.9	7.26	470	< 0.02	2030	3800
	32-59	9-Aug-04	14.36	39.43	5000	13.1	6.62	450	0.12	2050	4130
	32-60	5-Oct-04	16.65	27.69	6930	13.2	6.33	610	4.18	3880	7140
	32-69	14-Sep-04	22.49	66.62	3900	13.5	7.54	451	0.76	1860	3600
	32-72	28-Sep-04	11.50	40.21	4890	15.8	7.80	570	12.4	2210	4840
	5-01	12-Oct-04	22.88	45.15	3780	12.9	7.85	242	< 0.02	2480	3950
	5-02	11-Oct-04	21.60	38.75	4960	12.9	7.75	980	< 0.1	2320	4680
	5-03	9-Aug-04	19.20	40.25	4350	15.2	8.51	470	0.09	1710	3360
	5-04	11-Oct-04	17.38	65.65	3550	13.1	8.37	690	0.04	1140	2630
	5-08	11-Oct-04	30.13	87.86	4750	12.7	7.73	760	0.13	2350	4370
	5-73	11-Oct-04	13.15	31.60	4060	13.2	7.40	600	0.04	2010	3820
	AW-1	13-Sep-04	34.63	81.29	4140	13.1	7.75	473	0.75	1800	3650
	AW-2	28-Sep-04	29.00	86.00	3810	13.8	7.82	247	0.03	2220	4050
#	C-3	12-Oct-04		62.18							
*	D-4	12-Oct-04	21.01	22.16							
	E-5	11-Oct-04	11.20	15.95	9780	14.8	6.98	2920	0.6		
*	MW-24	31-Aug-04	50.13	50.27							
	S-12	5-Oct-04	14.34	27.40	6930	13.3	6.92	850	0.12	4360	8180
	S-9	28-Sep-04	11.25	23.52	8440	15.2	8.45	2300	0.03	4080	10600

- Dry Well.

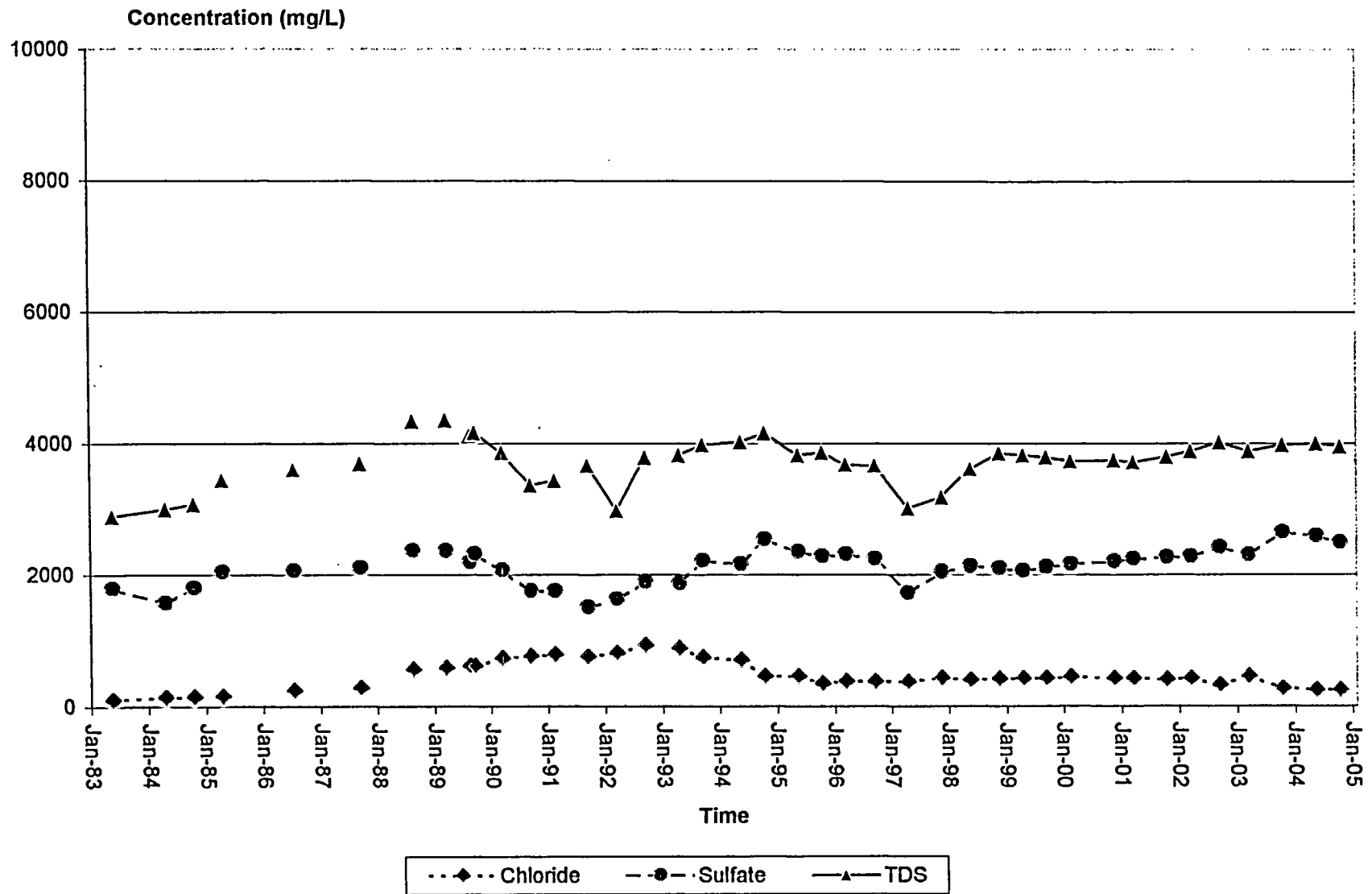
* - Well contained insufficient water for sample collection.

Note: Laboratory ran out of sample volume on well E-5 and was unable to perform sulfate and TDS c

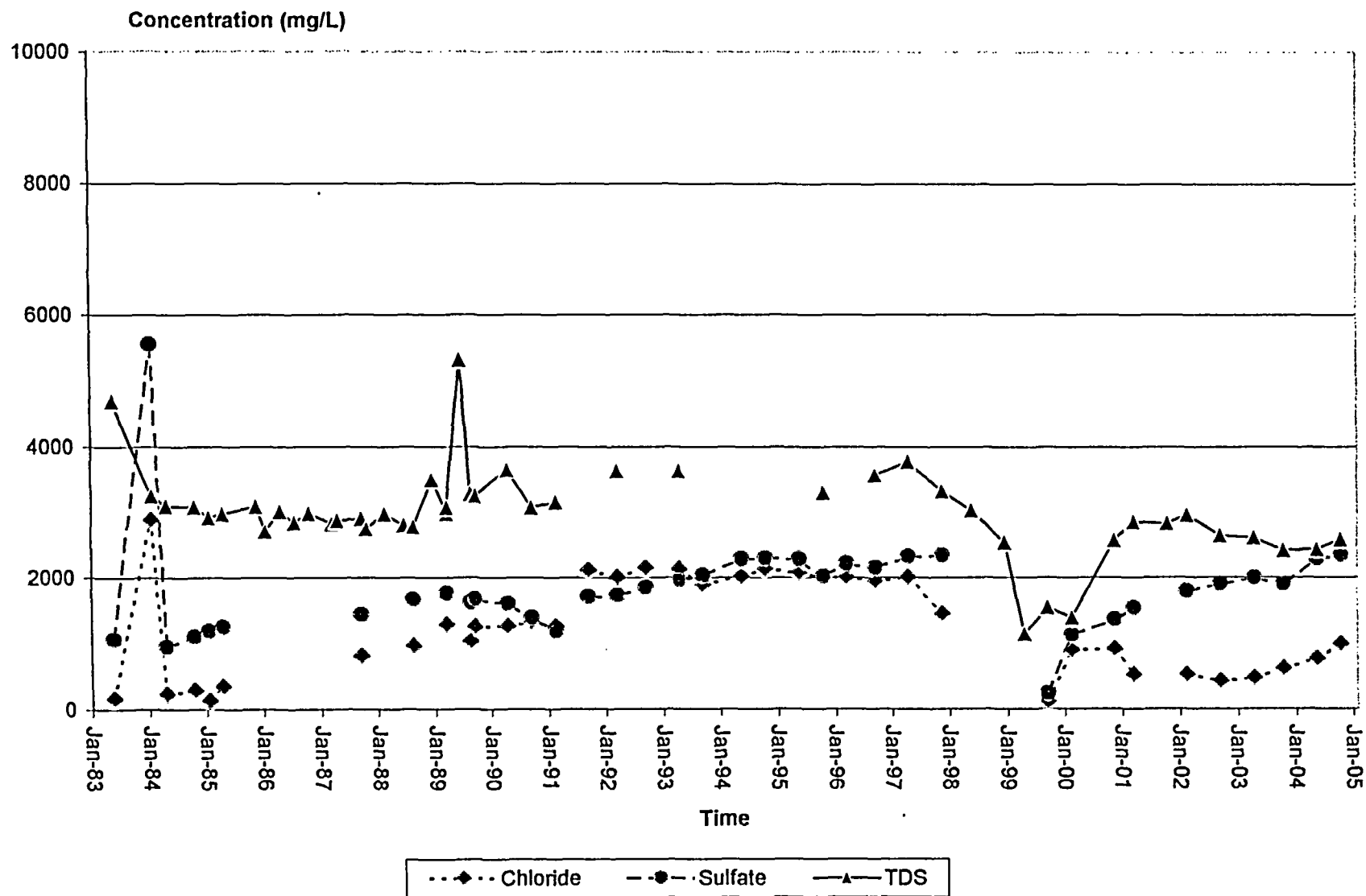
APPENDIX B

TIME vs CONCENTRATION PLOTS ALLUVIAL WELLS

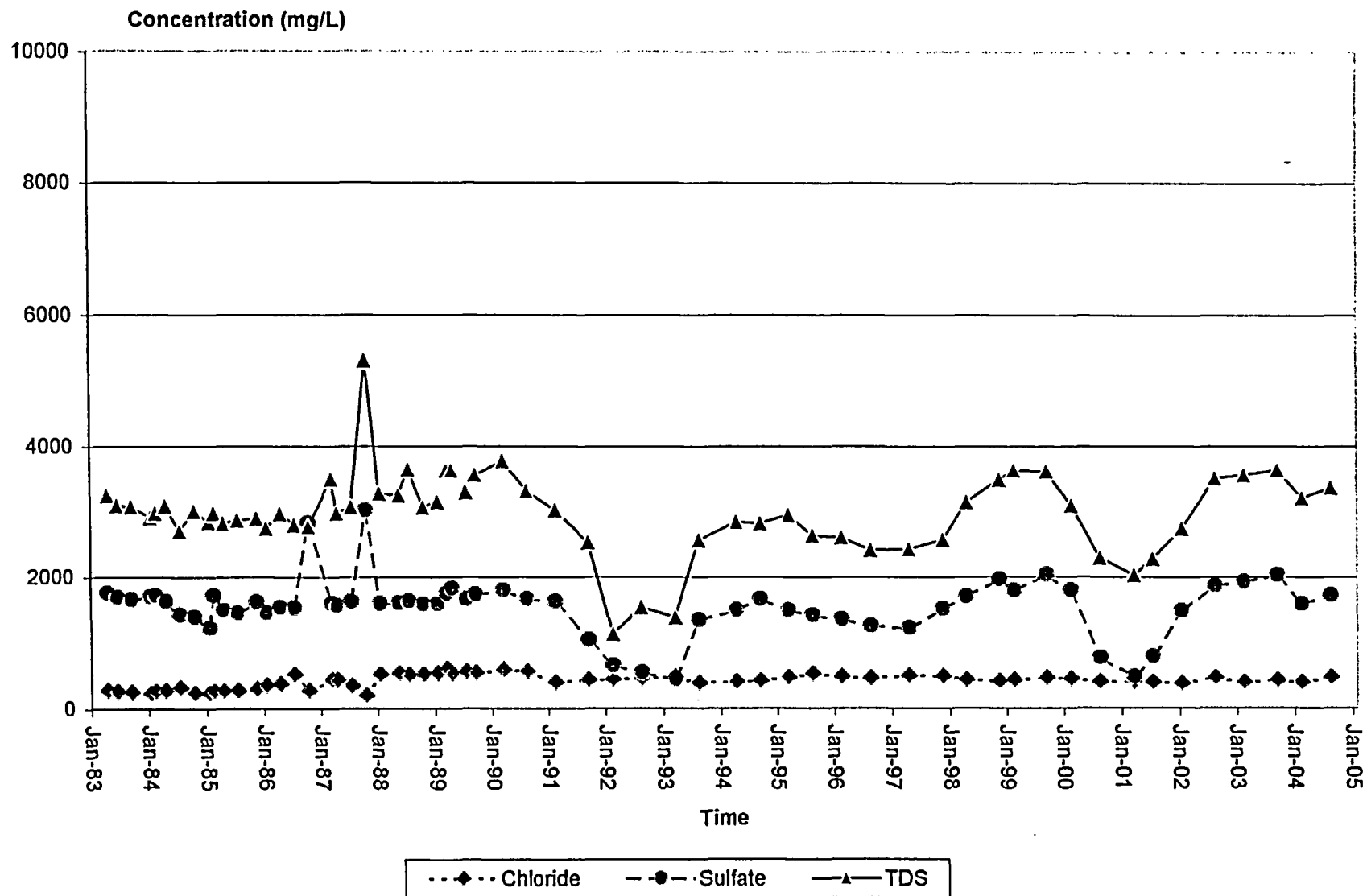
Monitor Well 5-01



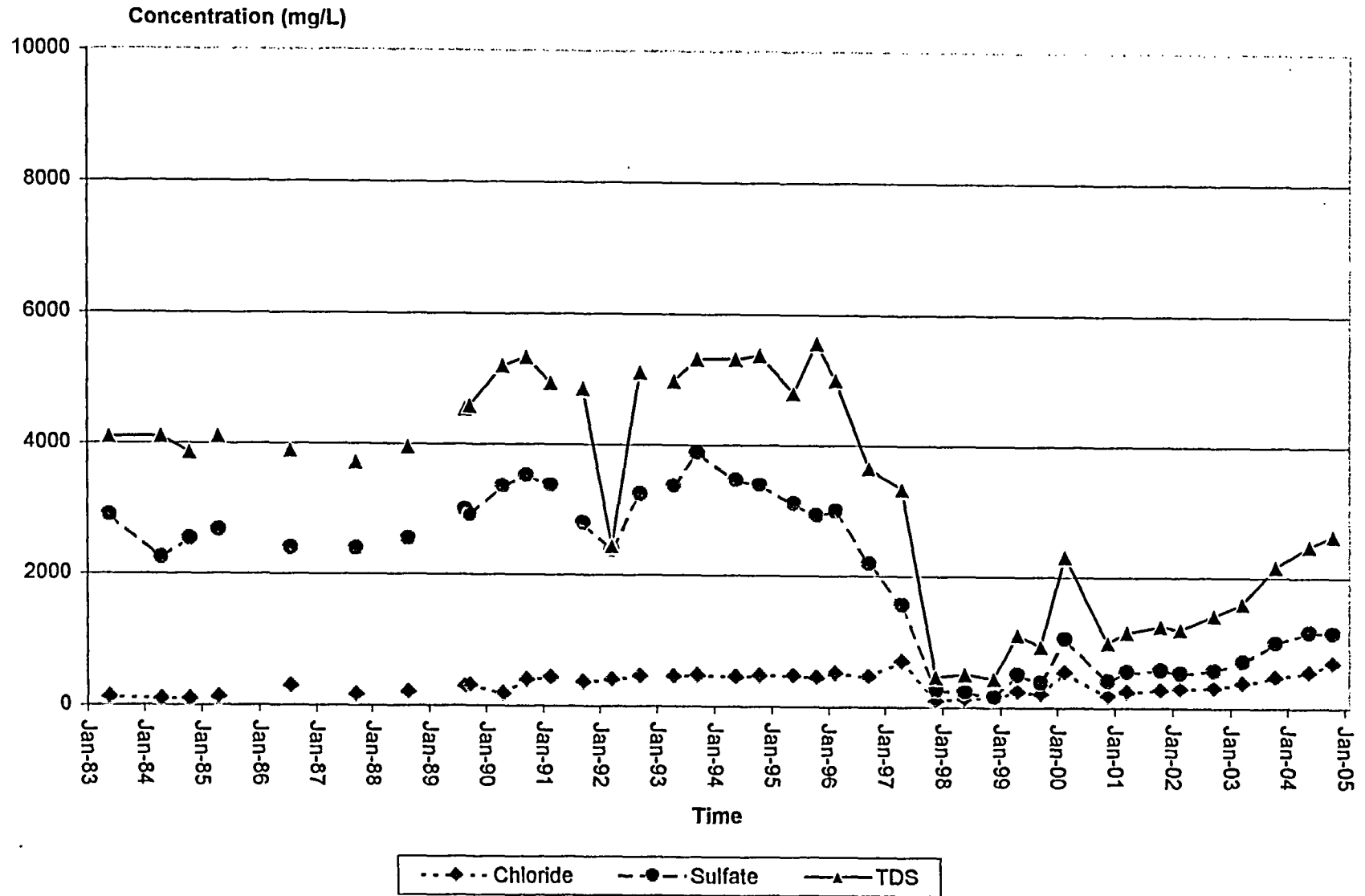
Monitor Well 5-02



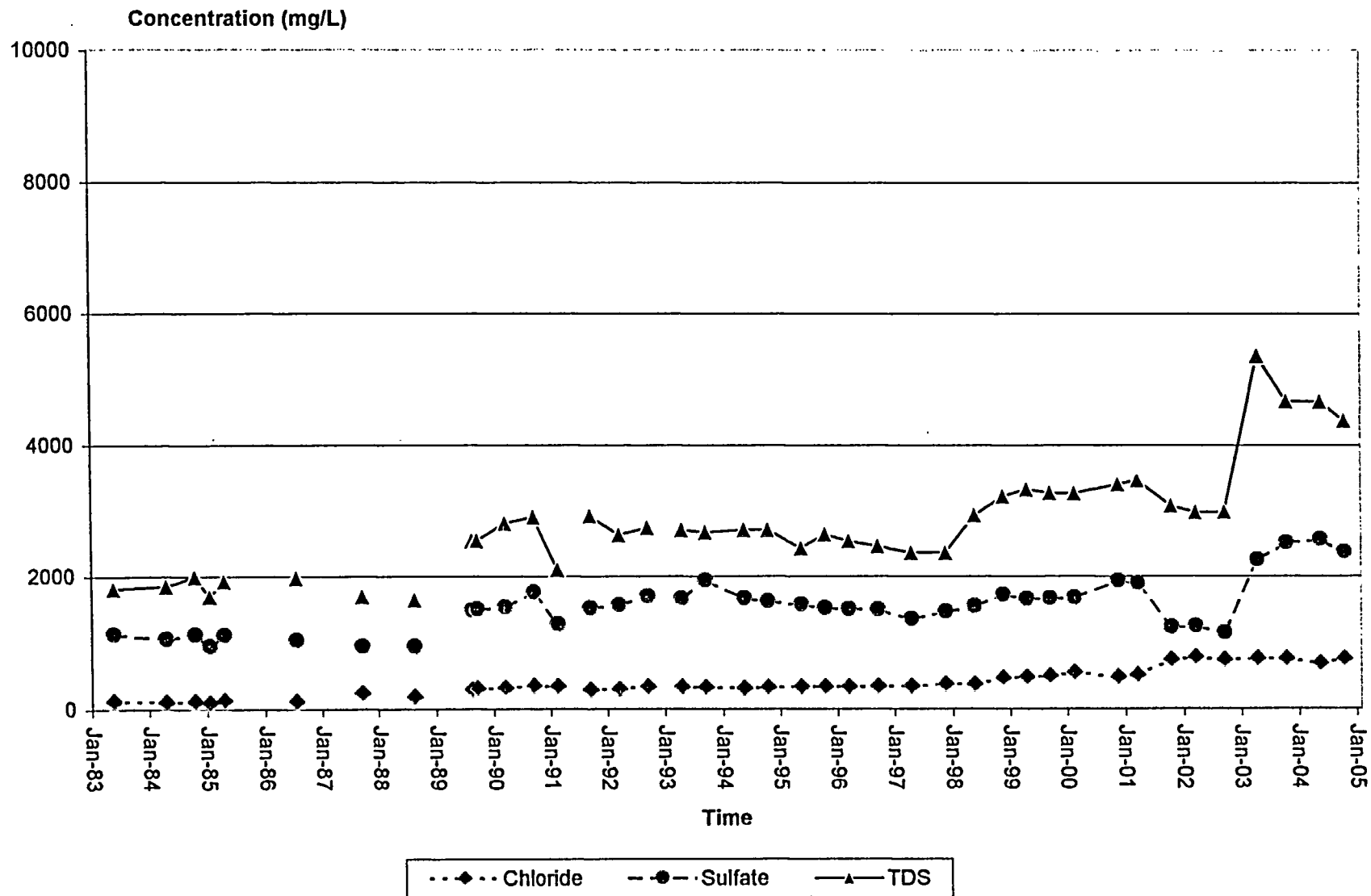
Monitor Well 5-03



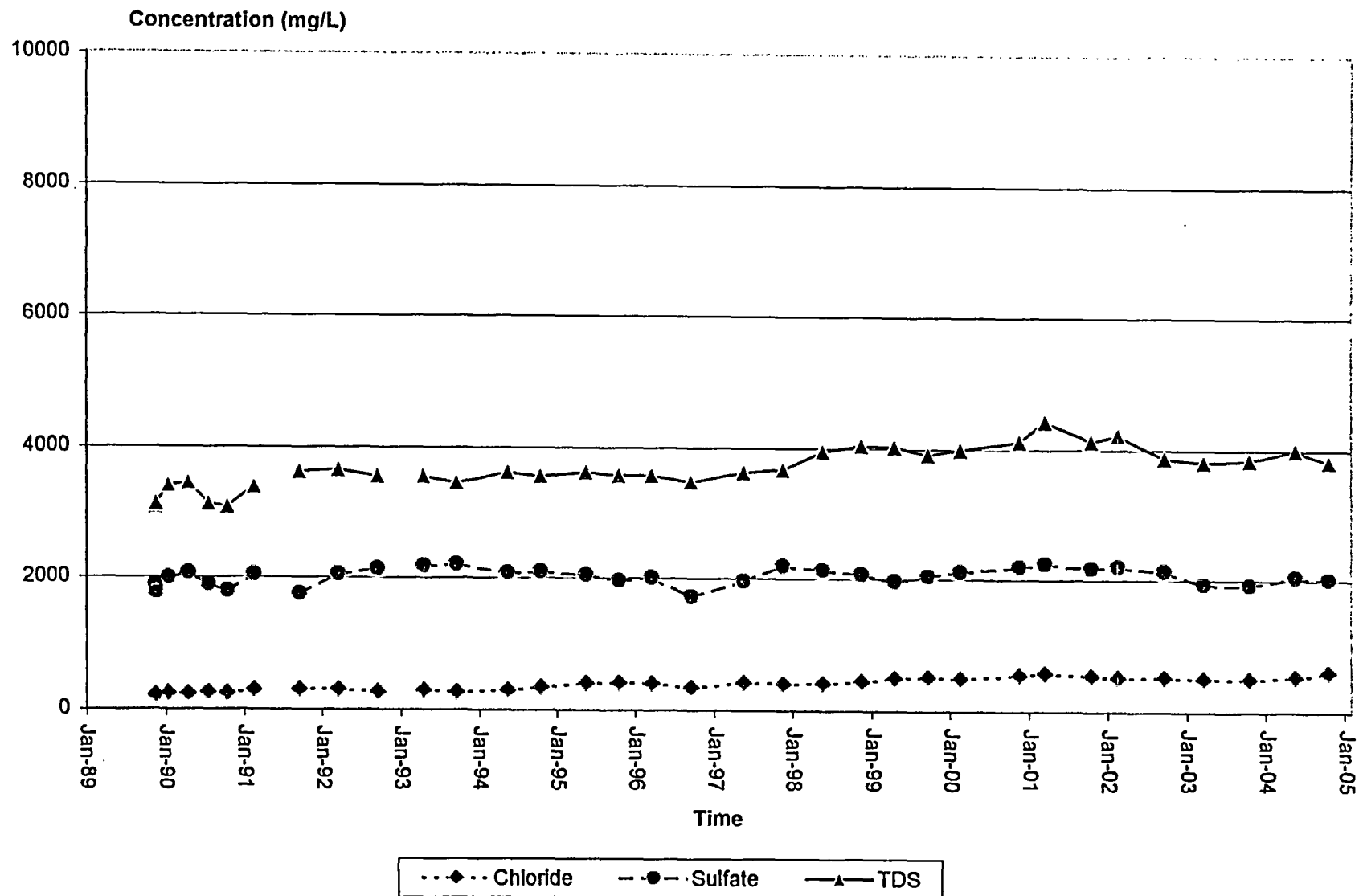
Monitor Well 5-04



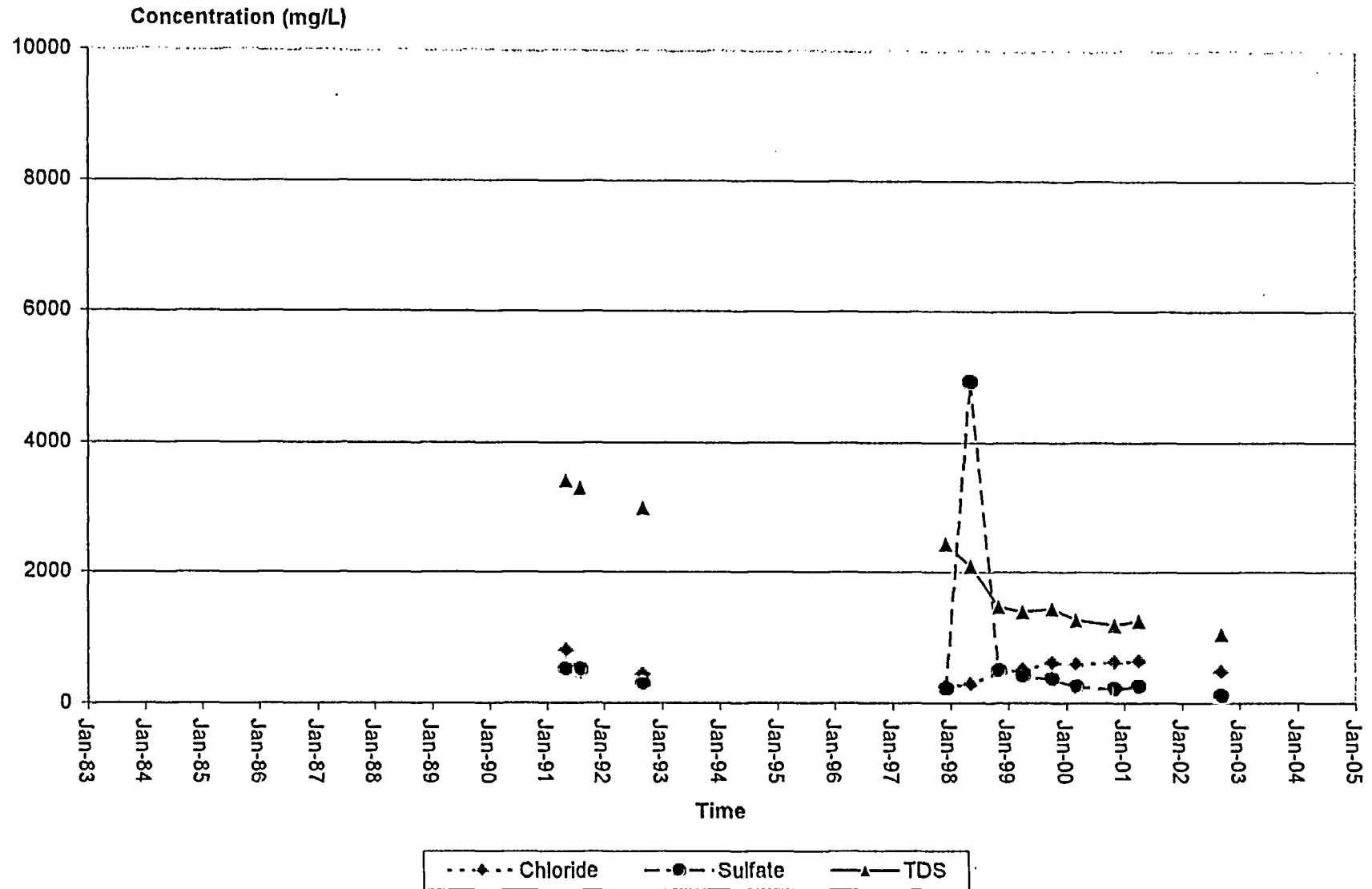
Monitor Well 5-08



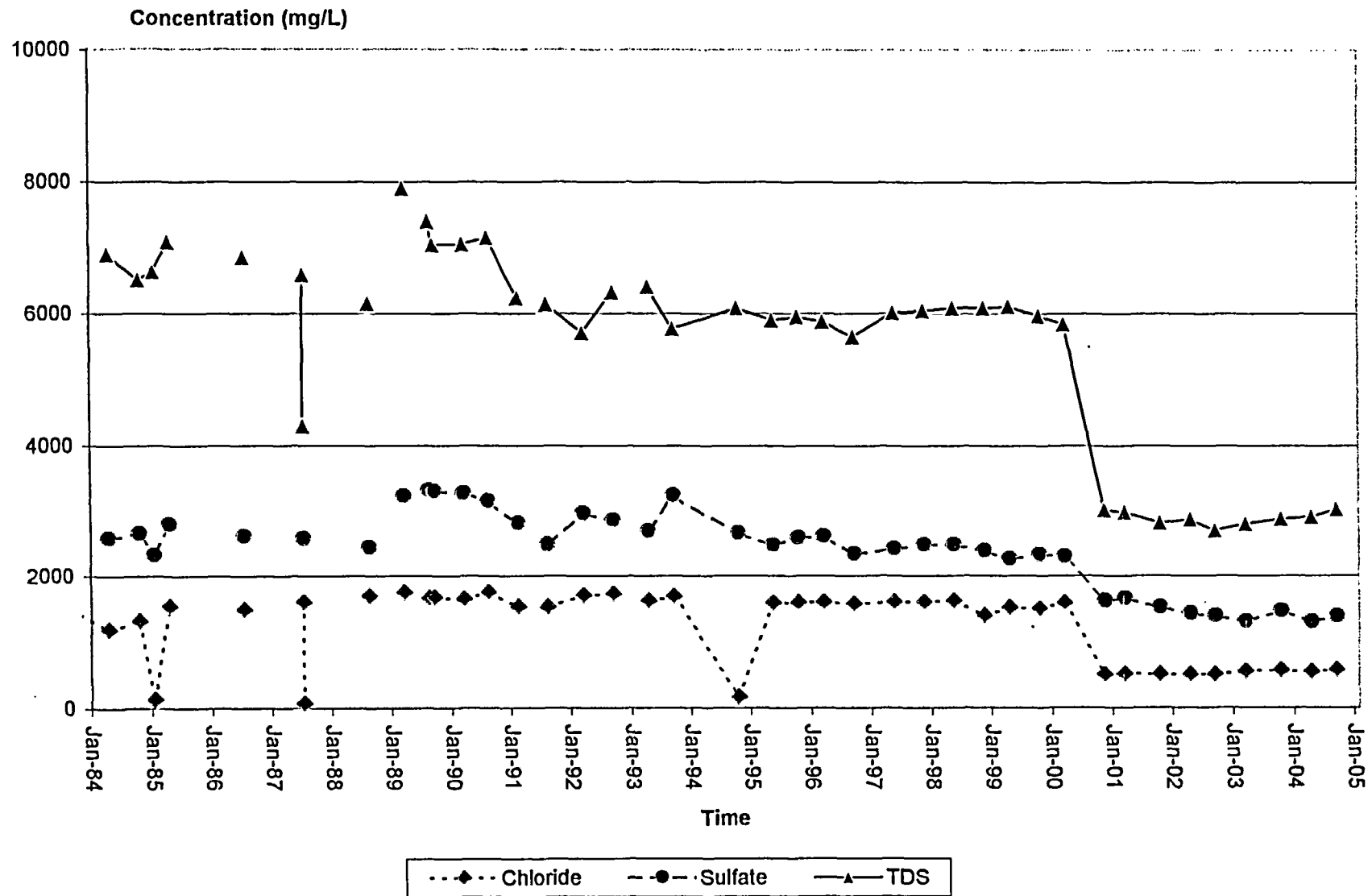
Monitor Well 5-73



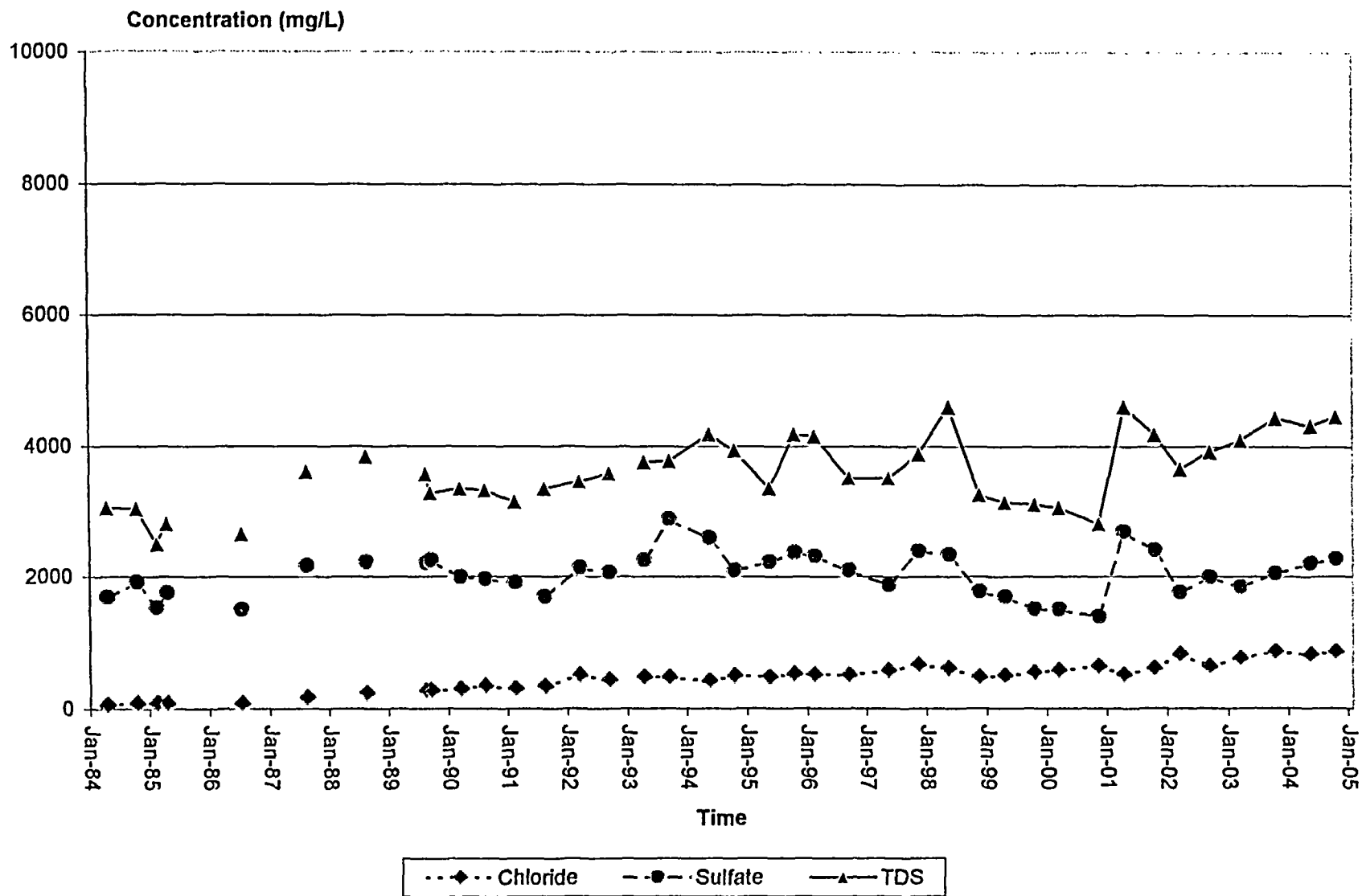
Monitor Well 30-03



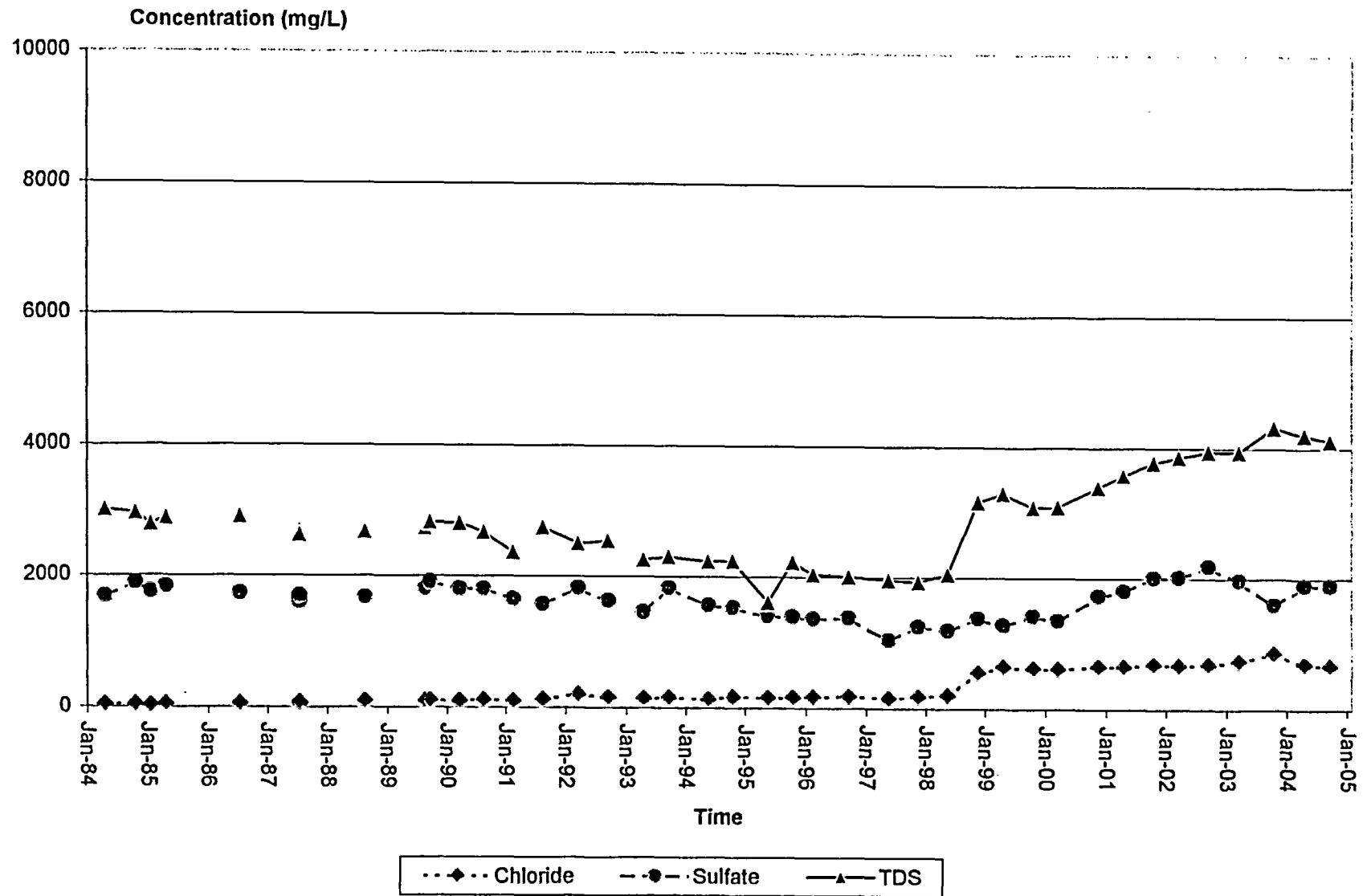
Monitor Well 30-04



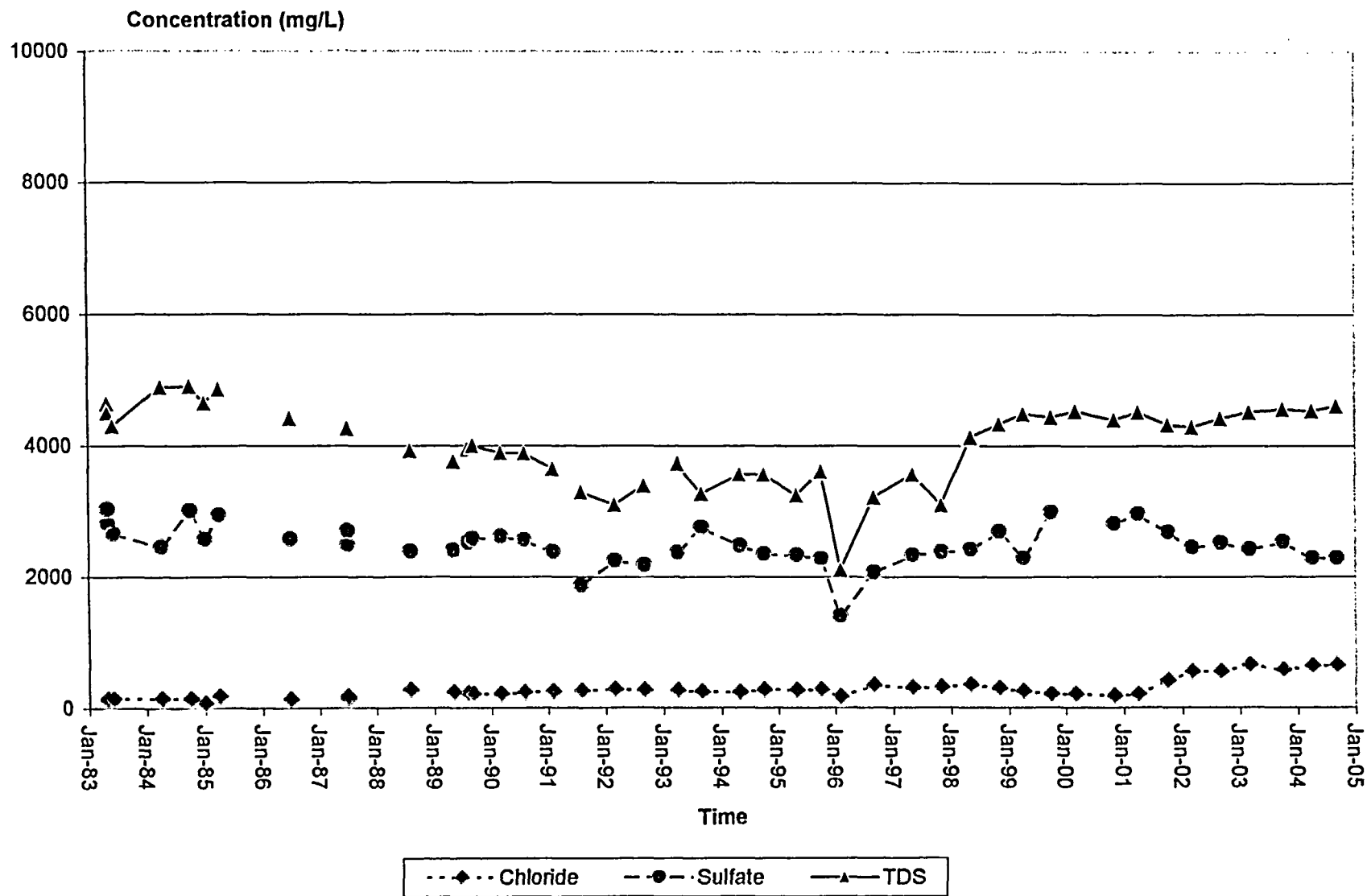
Monitor Well 30-47



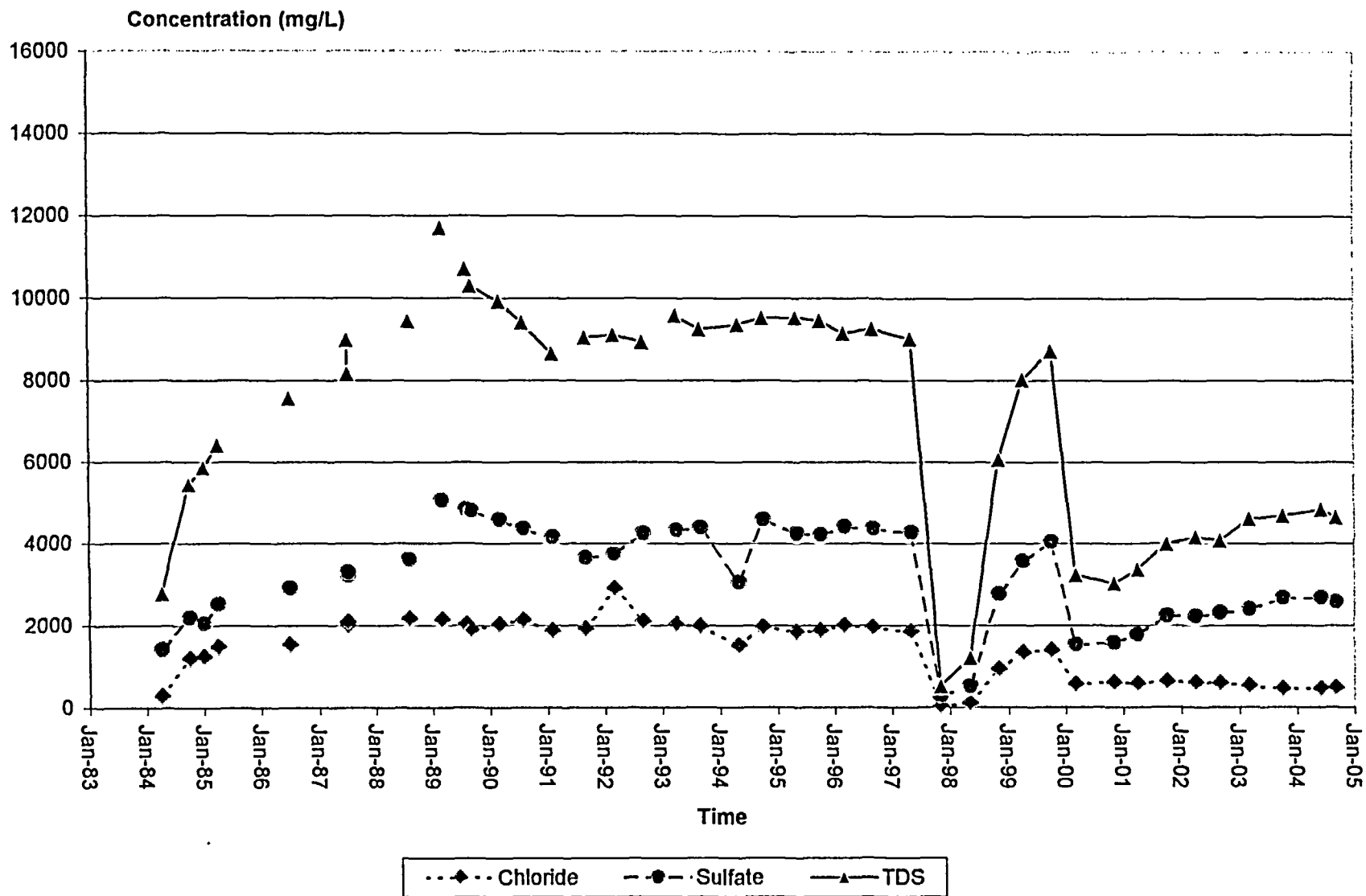
Monitor Well 30-48



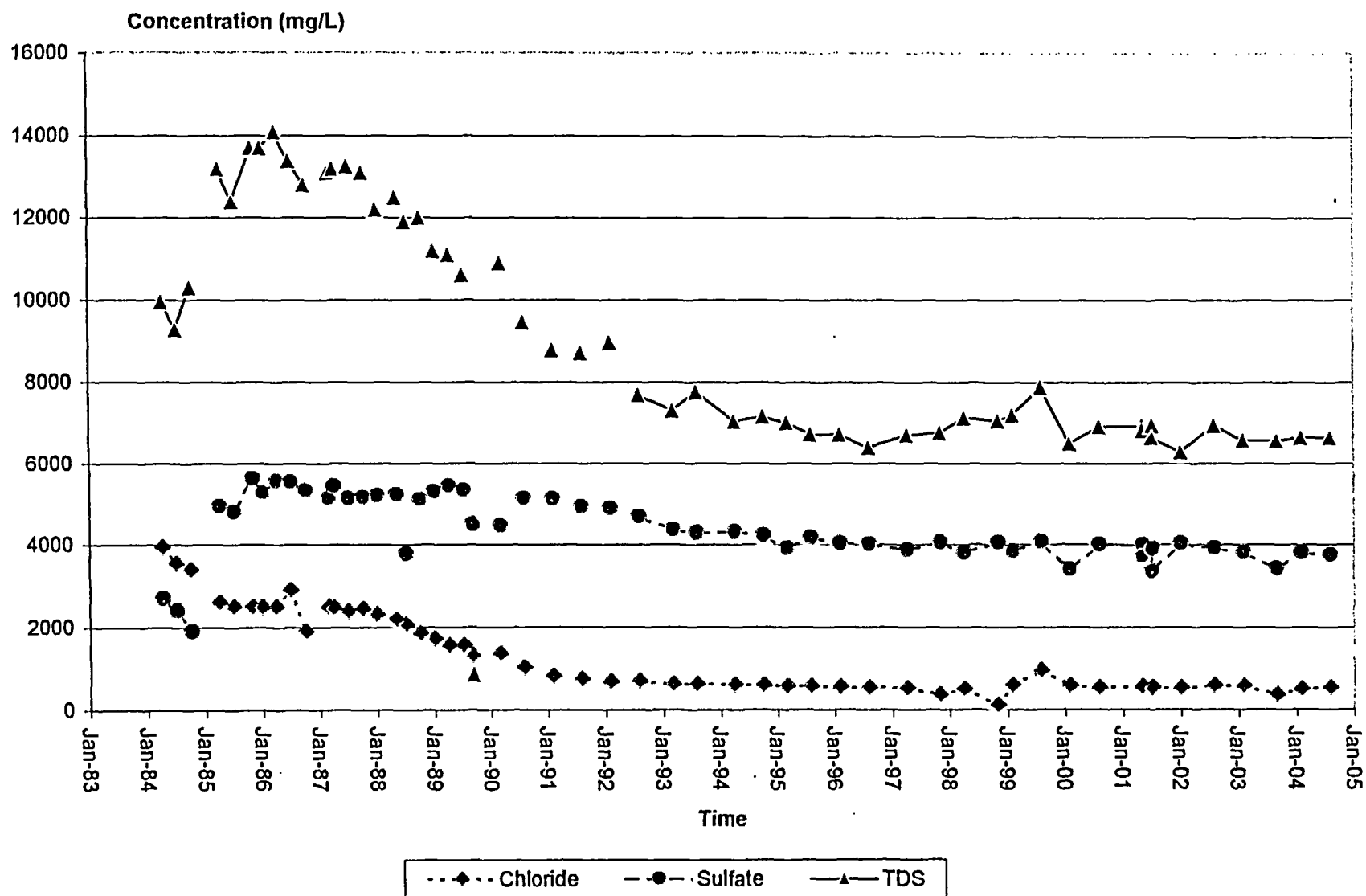
Monitor Well 30-49



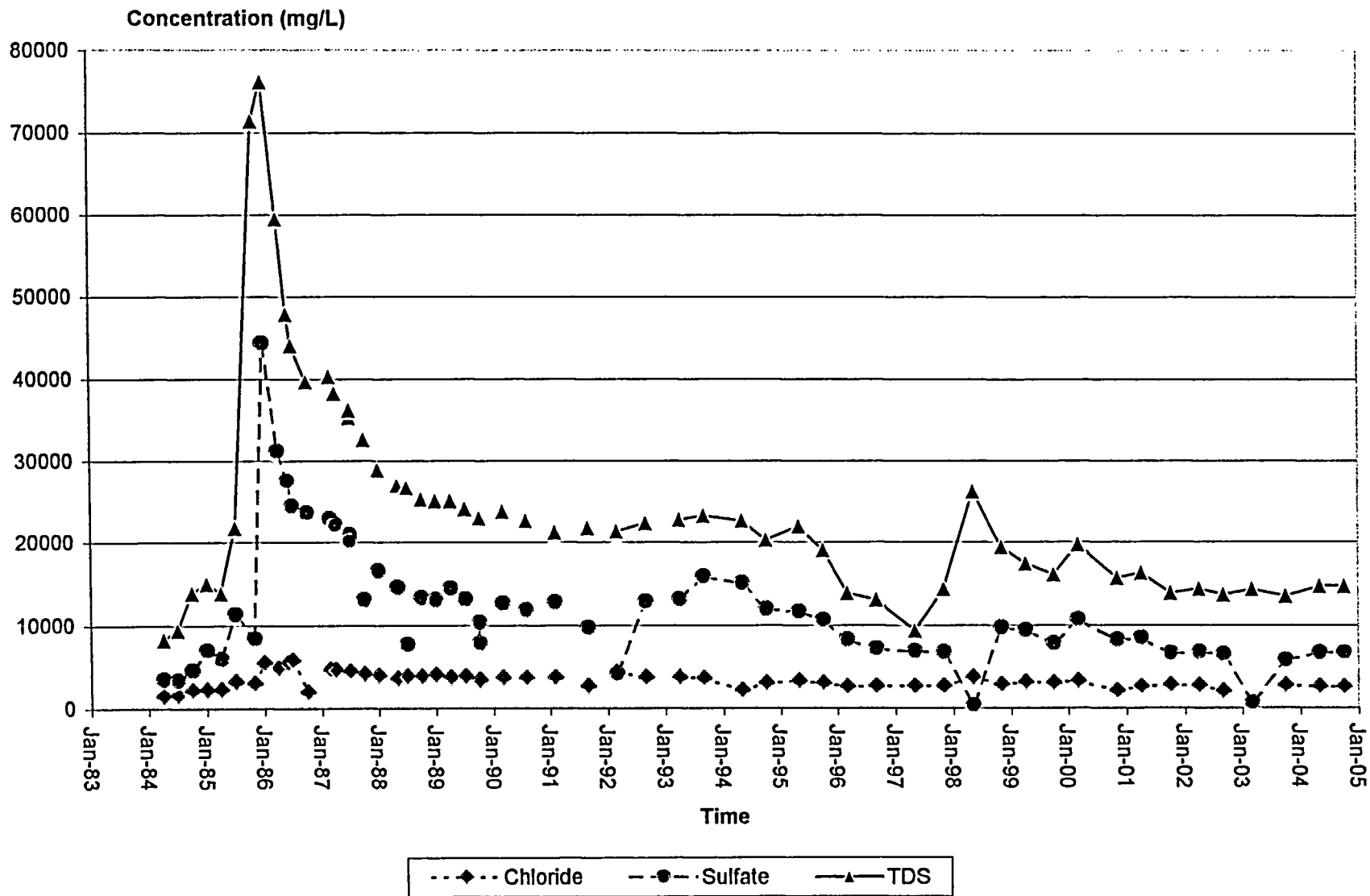
Monitor Well 31-05



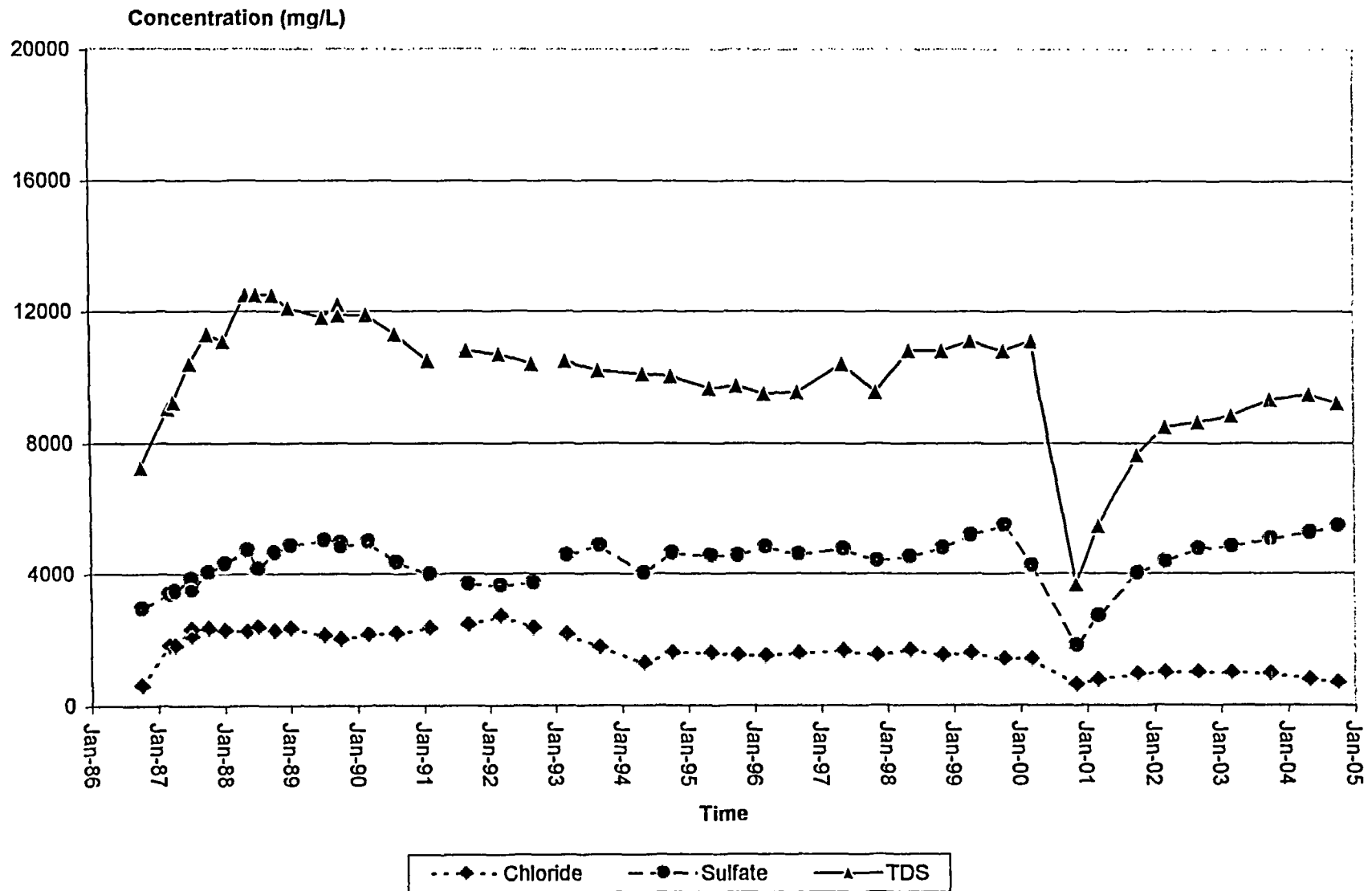
Monitor Well 31-61



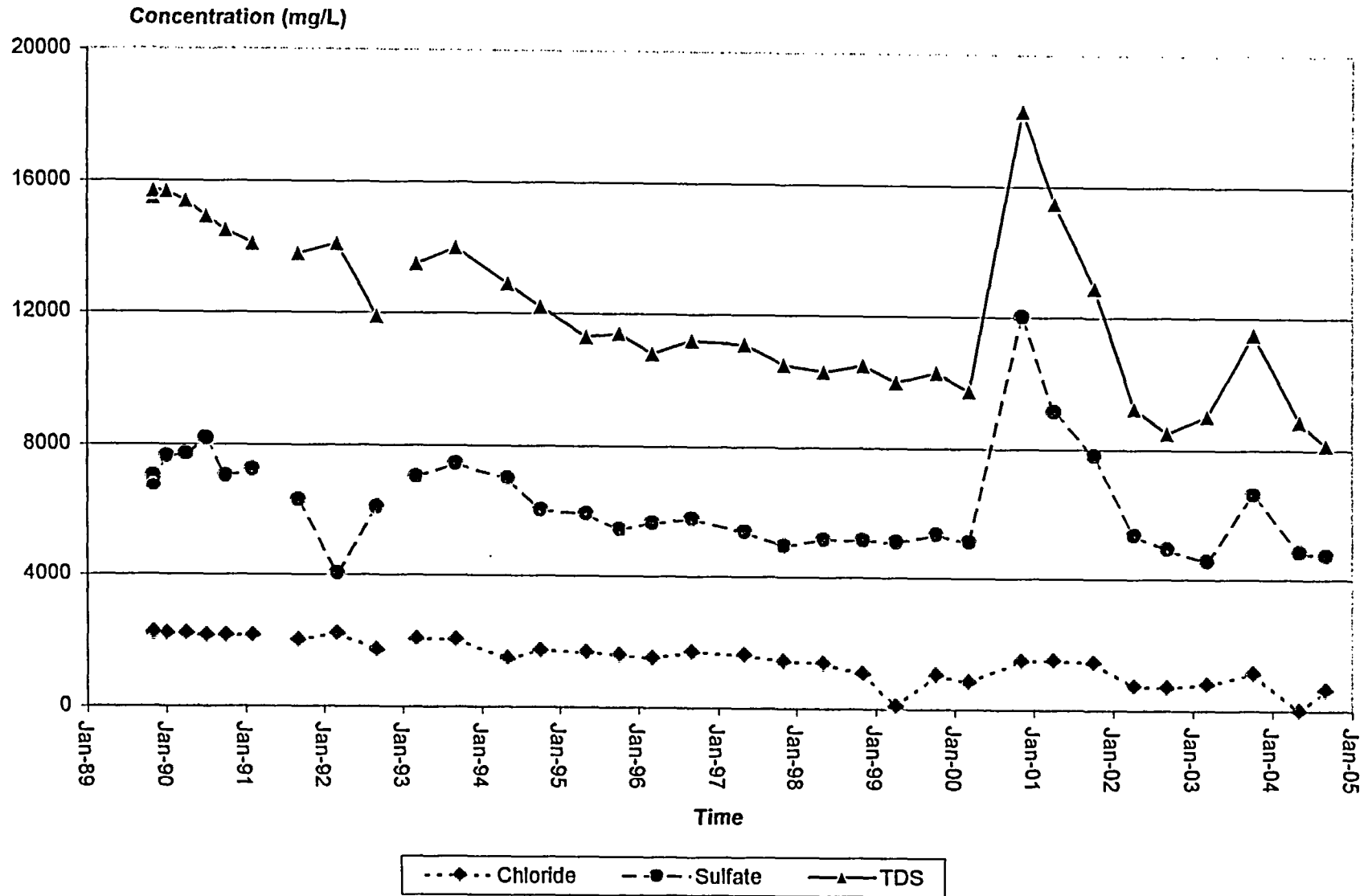
Monitor Well 31-63



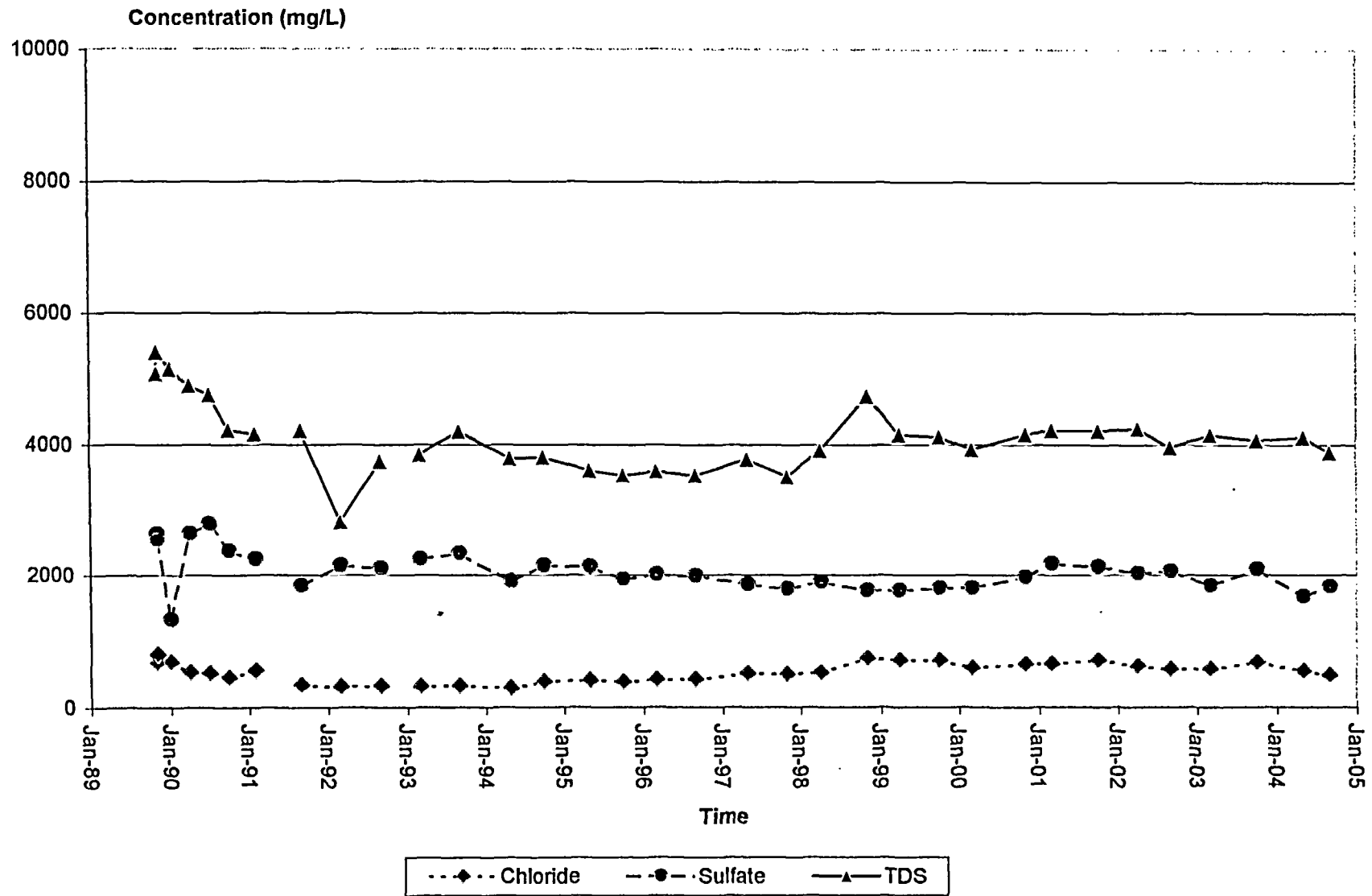
Monitor Well 31-65



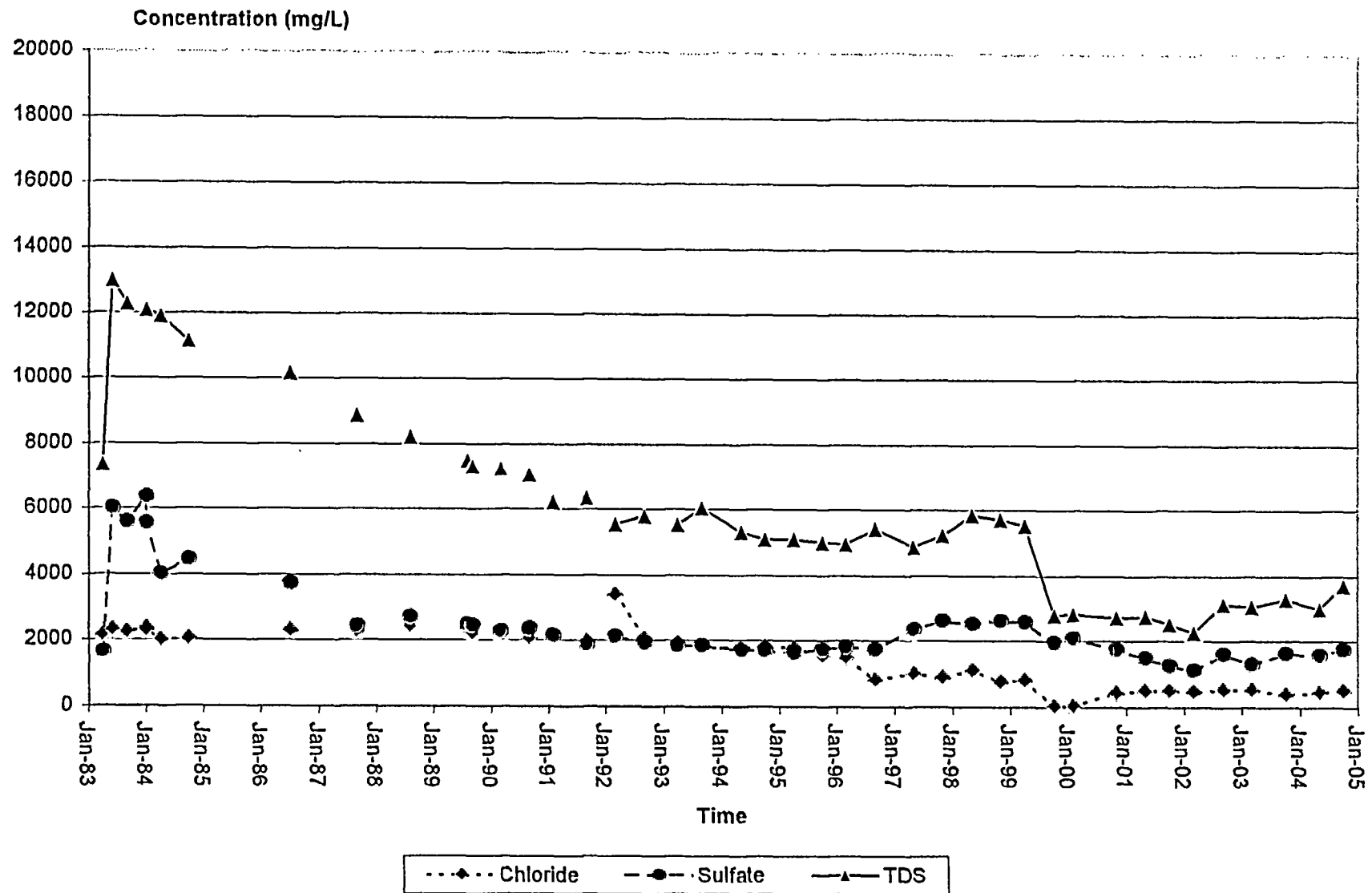
Monitor Well 31-70



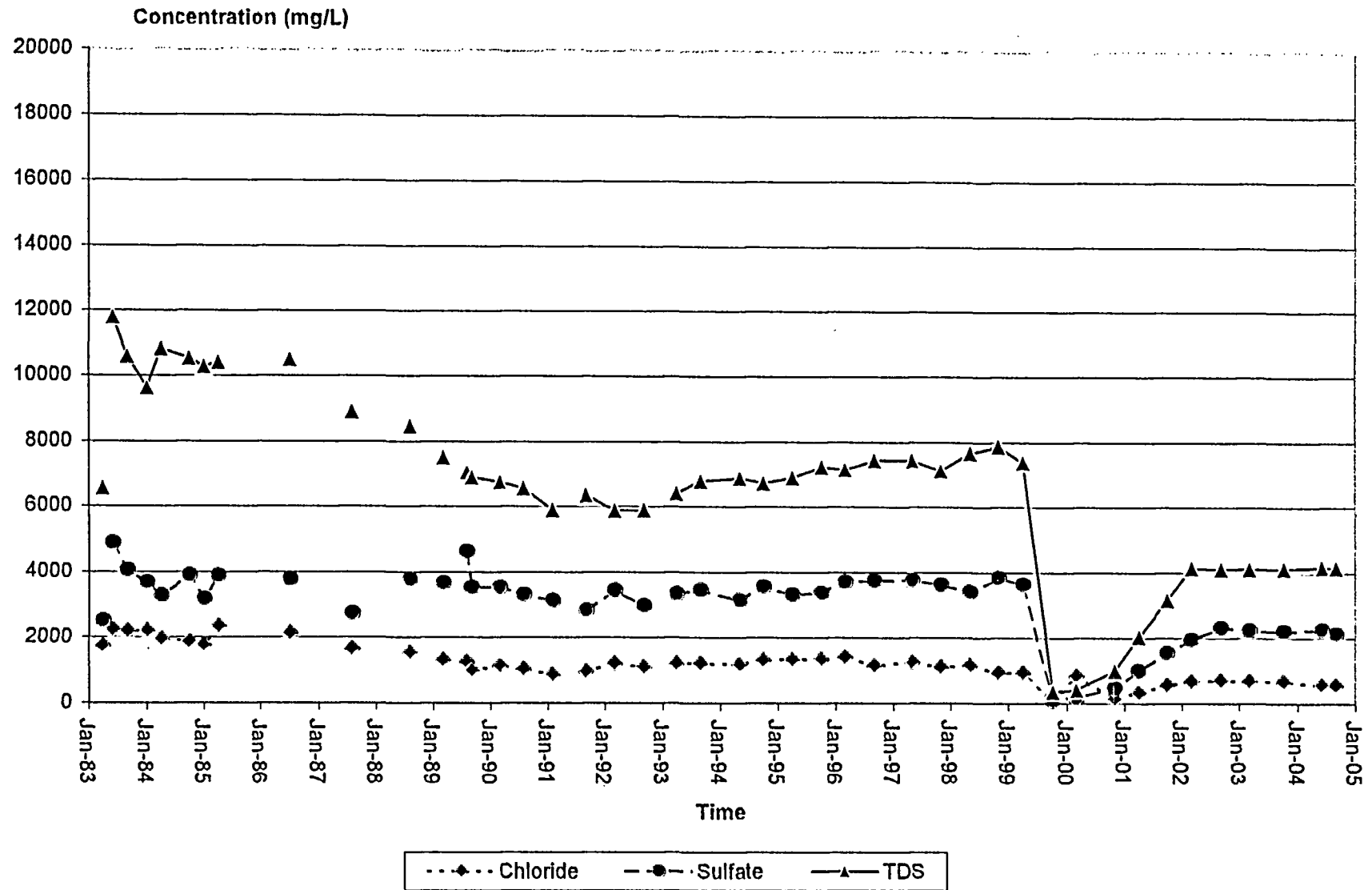
Monitor Well 31-71



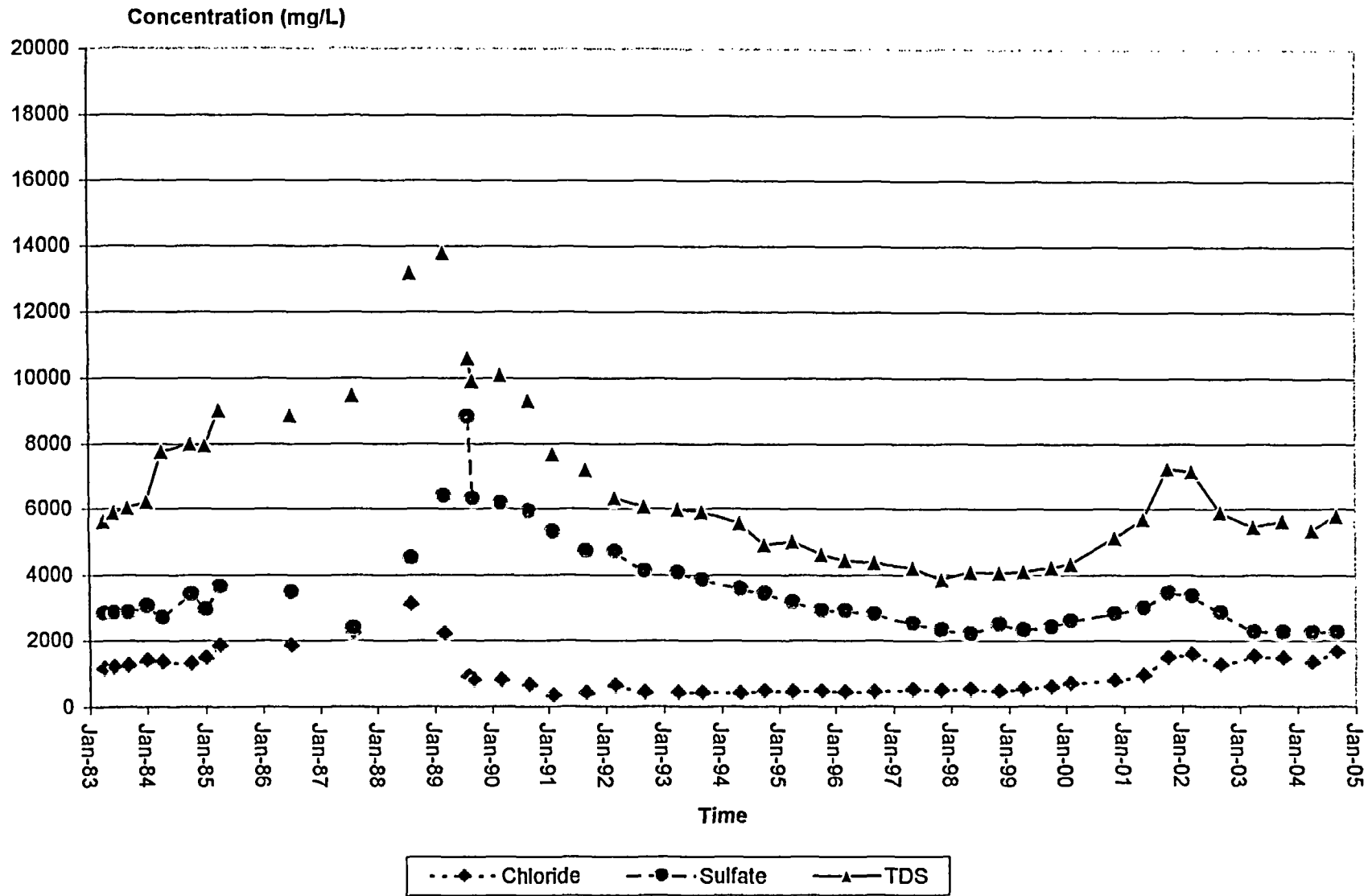
Monitor Well 32-01



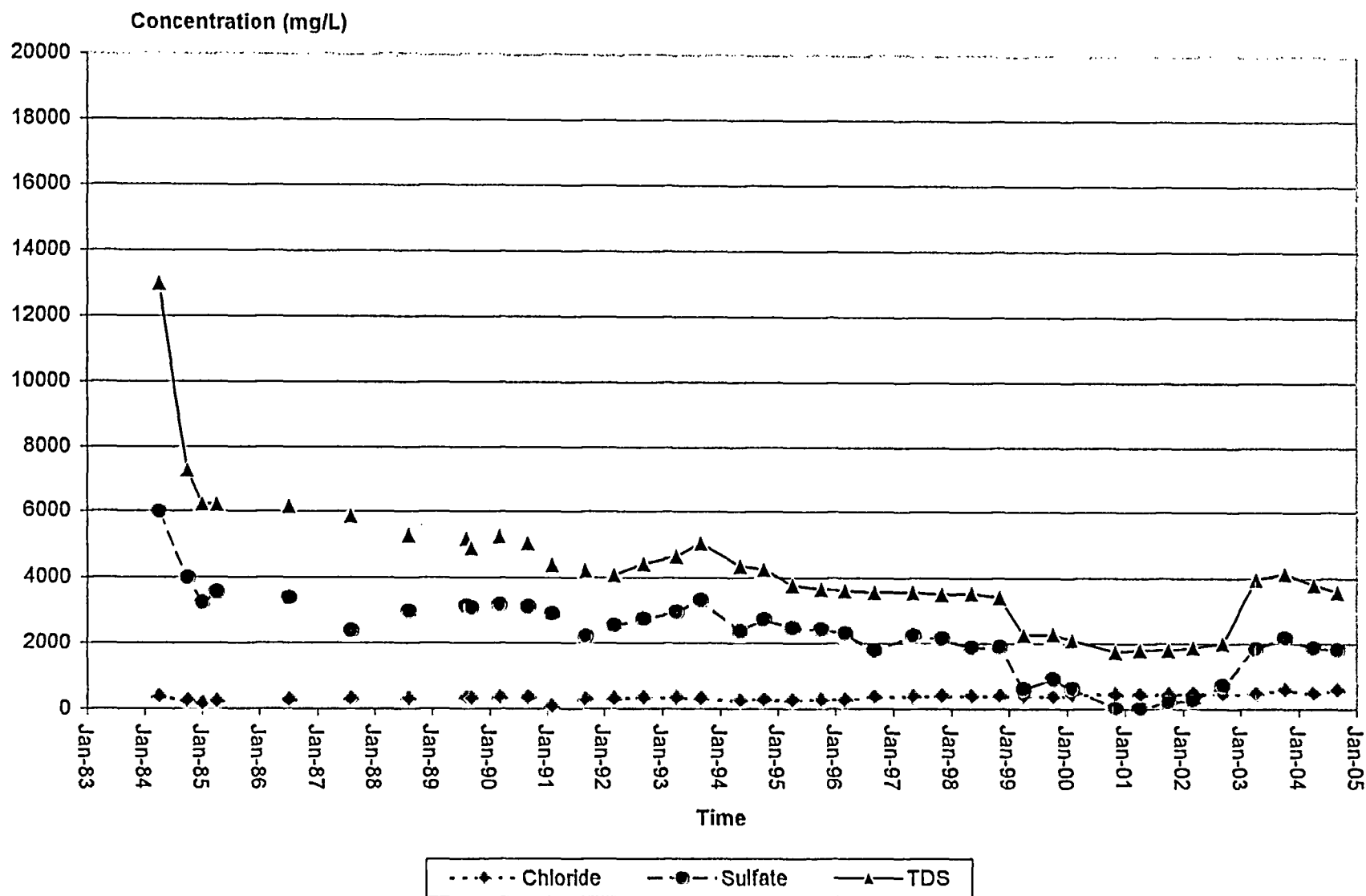
Monitor Well 32-02



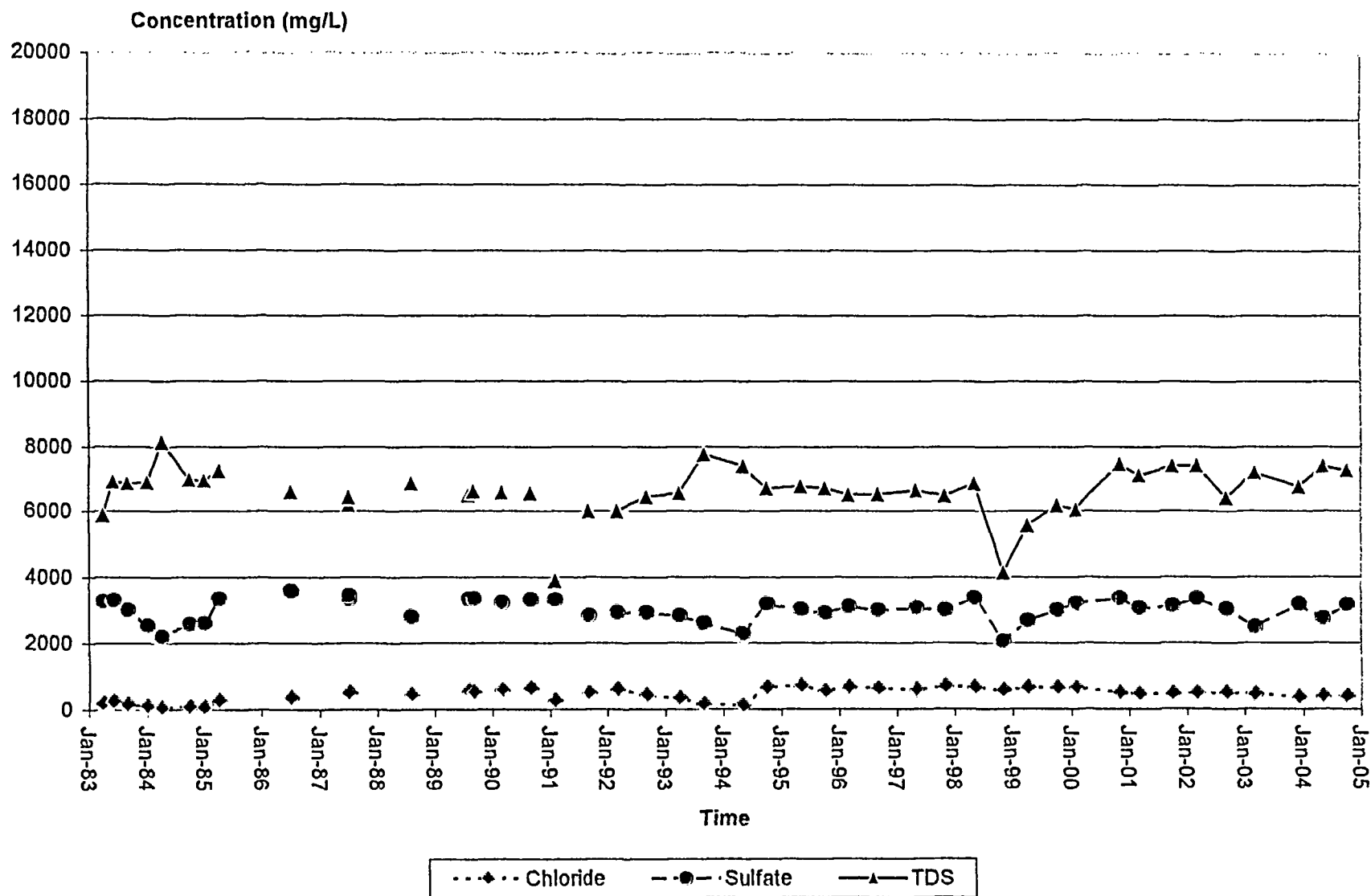
Monitor Well 32-41



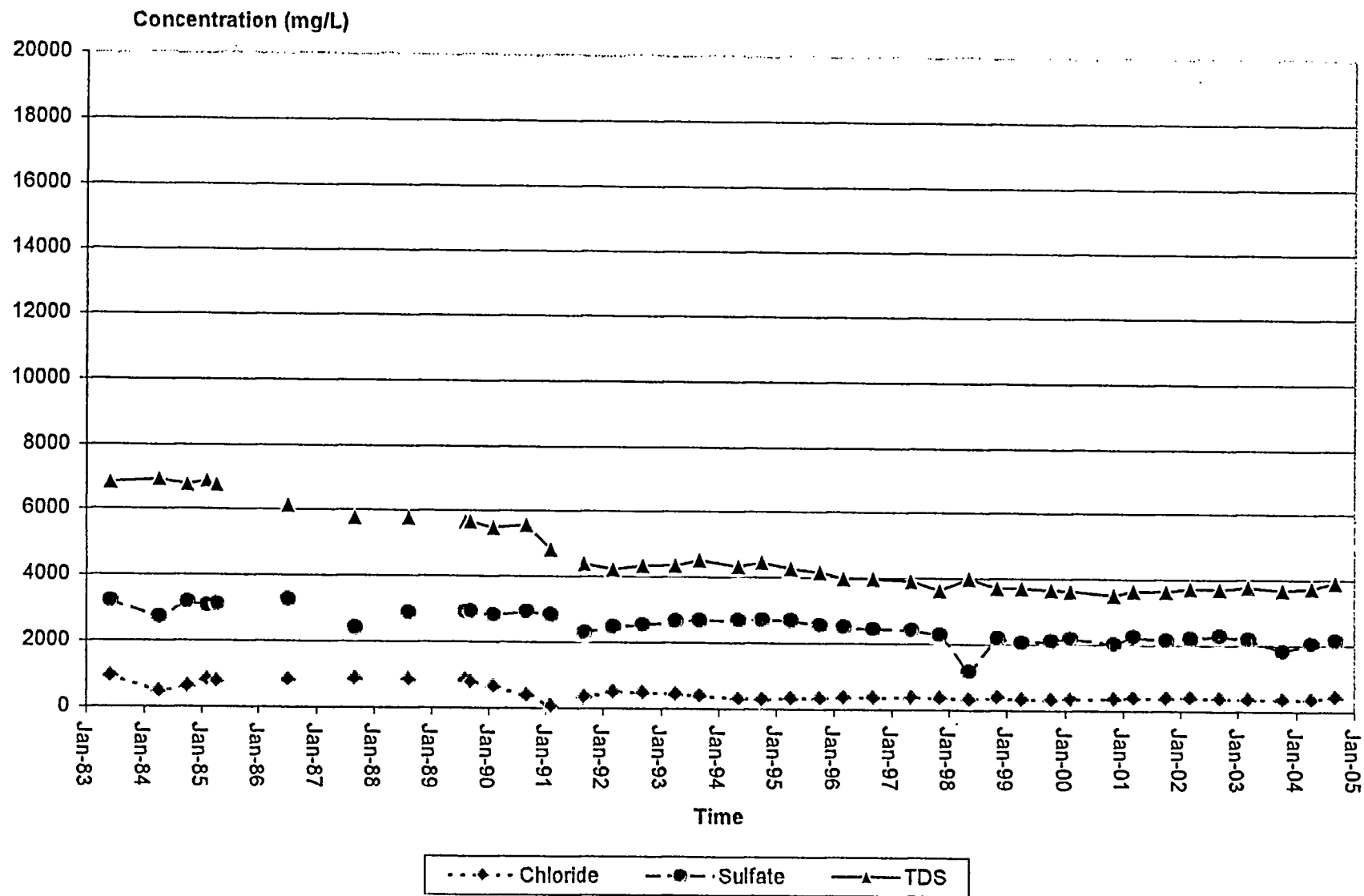
Monitor Well 32-42



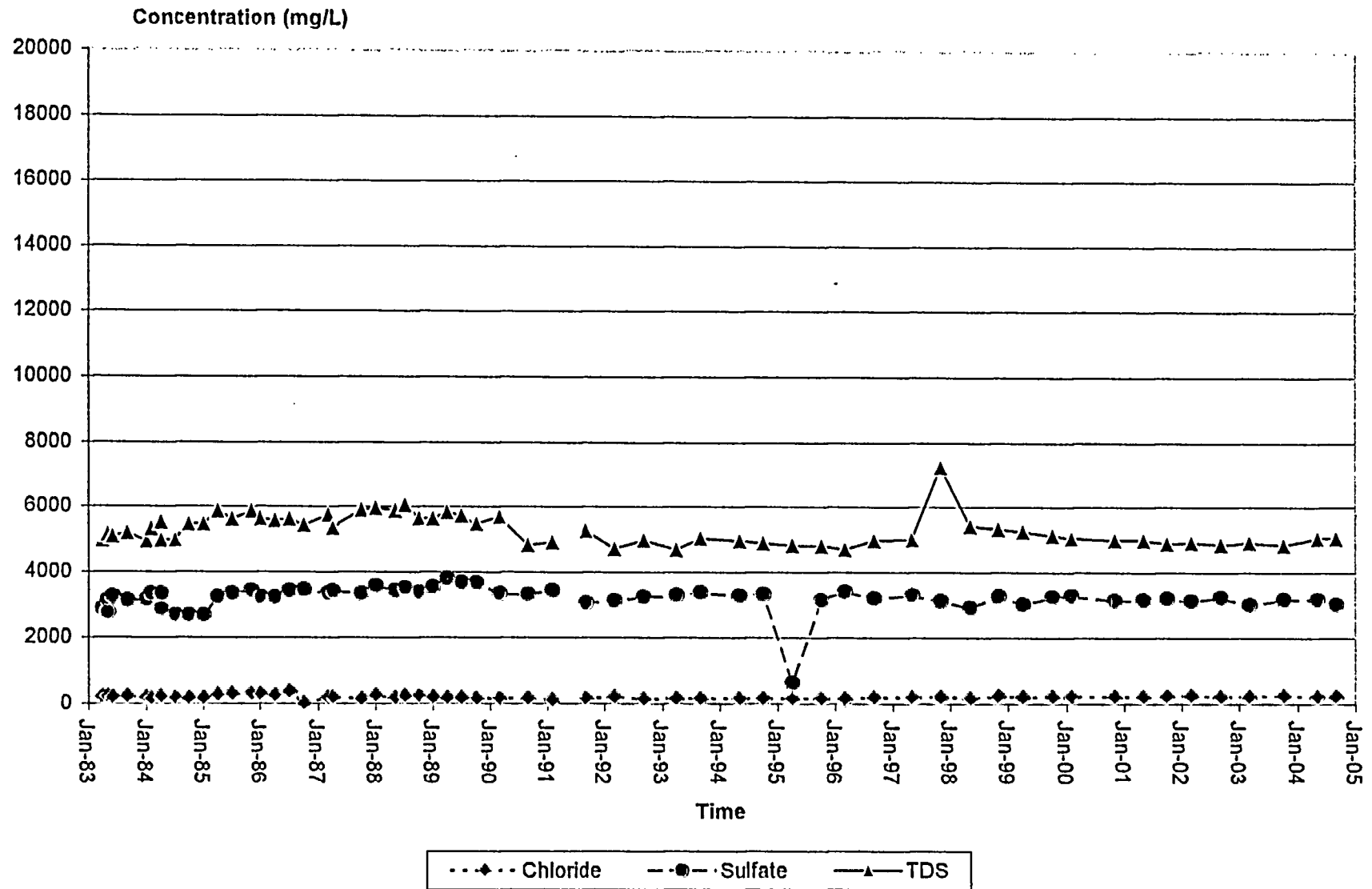
Monitor Well 32-43



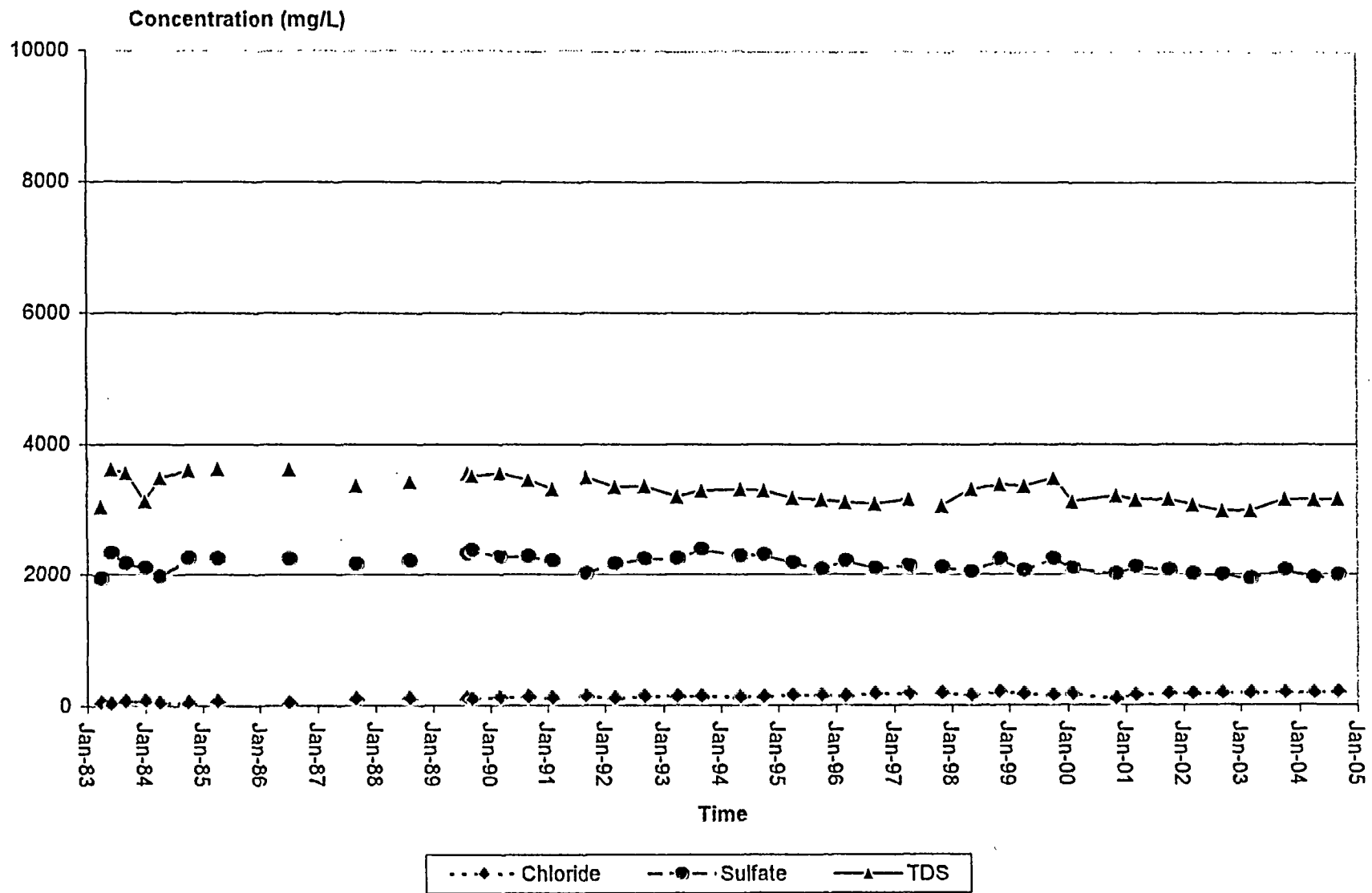
Monitor Well 32-50



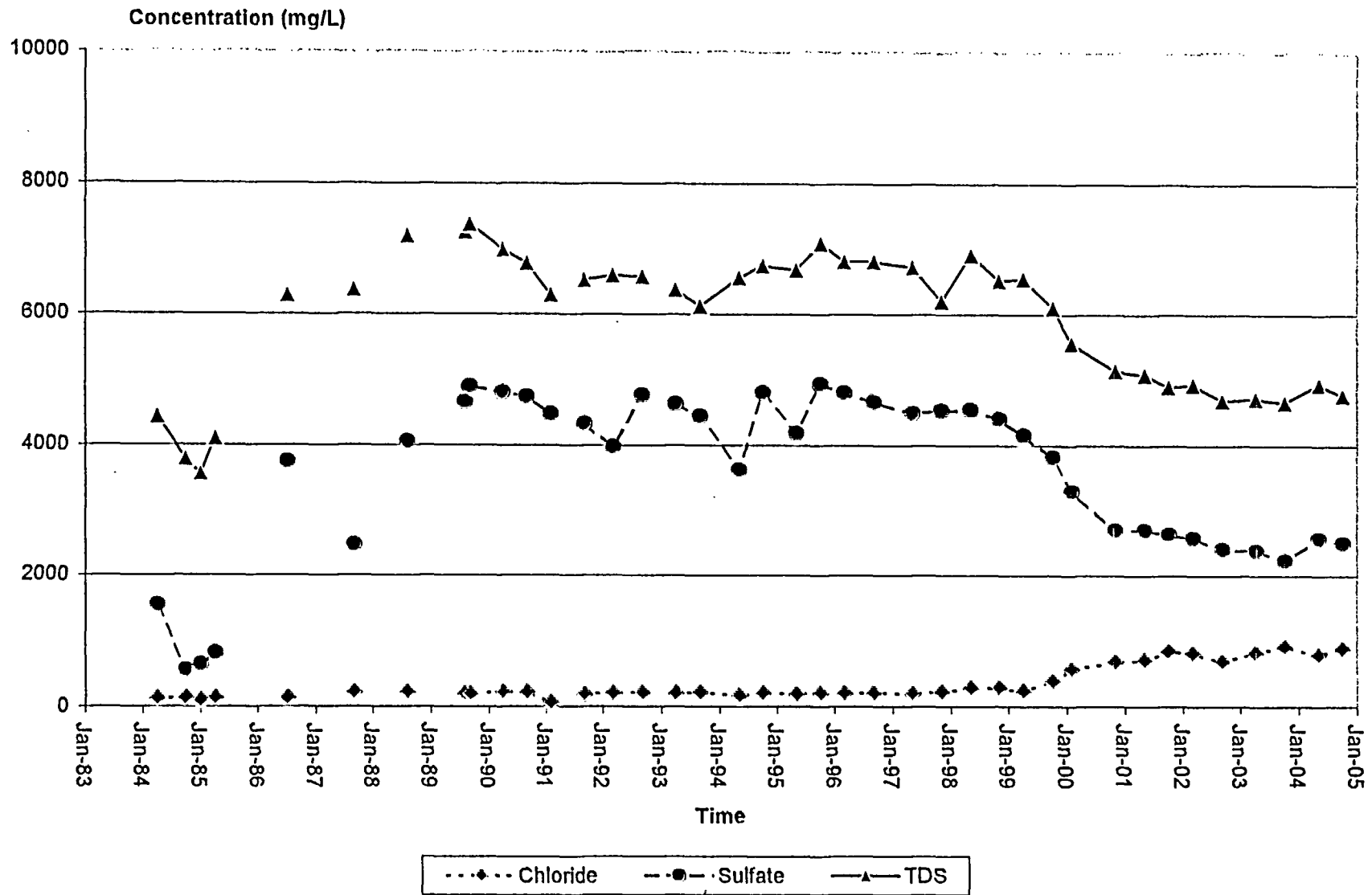
Monitor Well 32-51



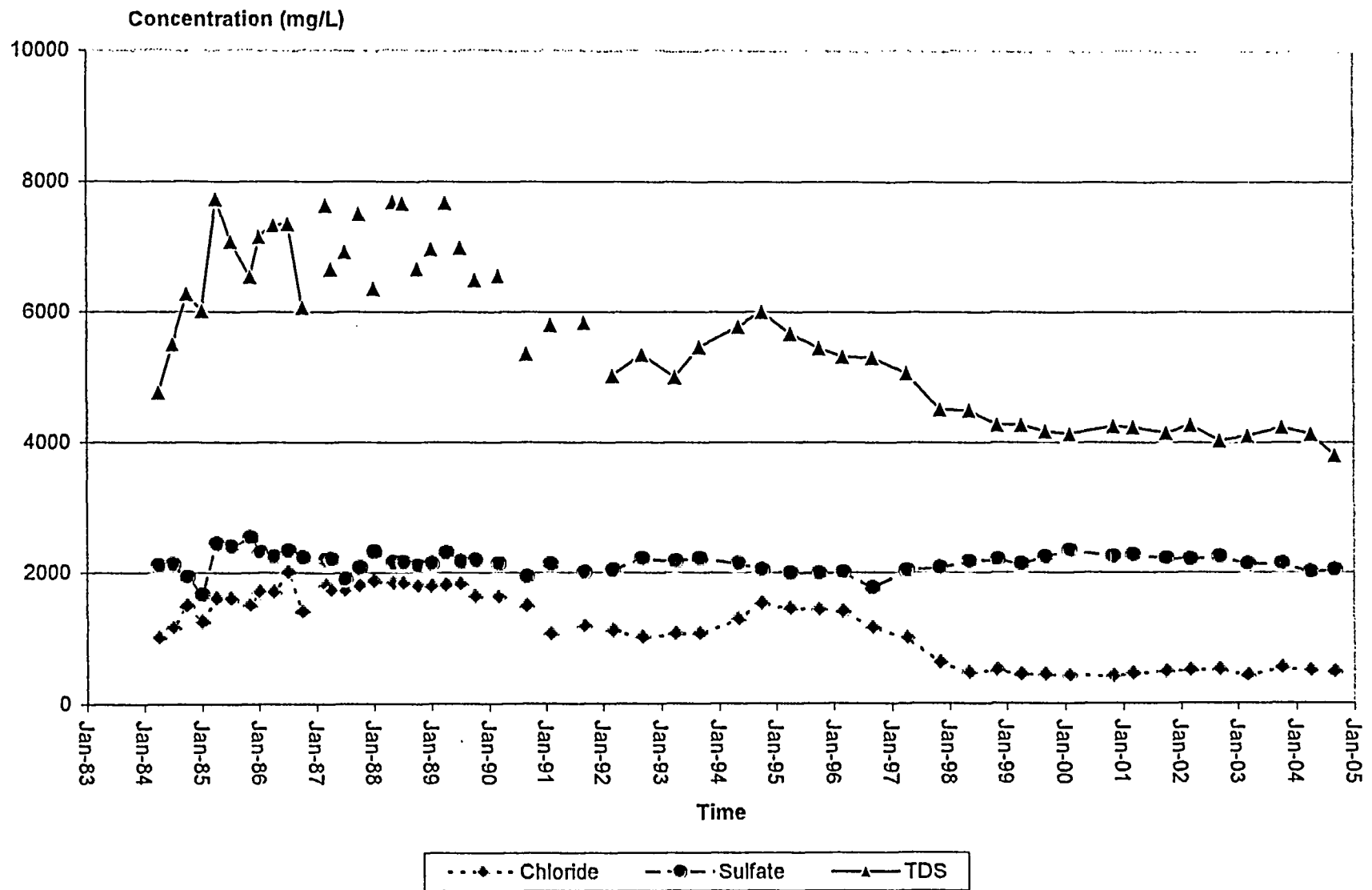
Monitor Well 32-52



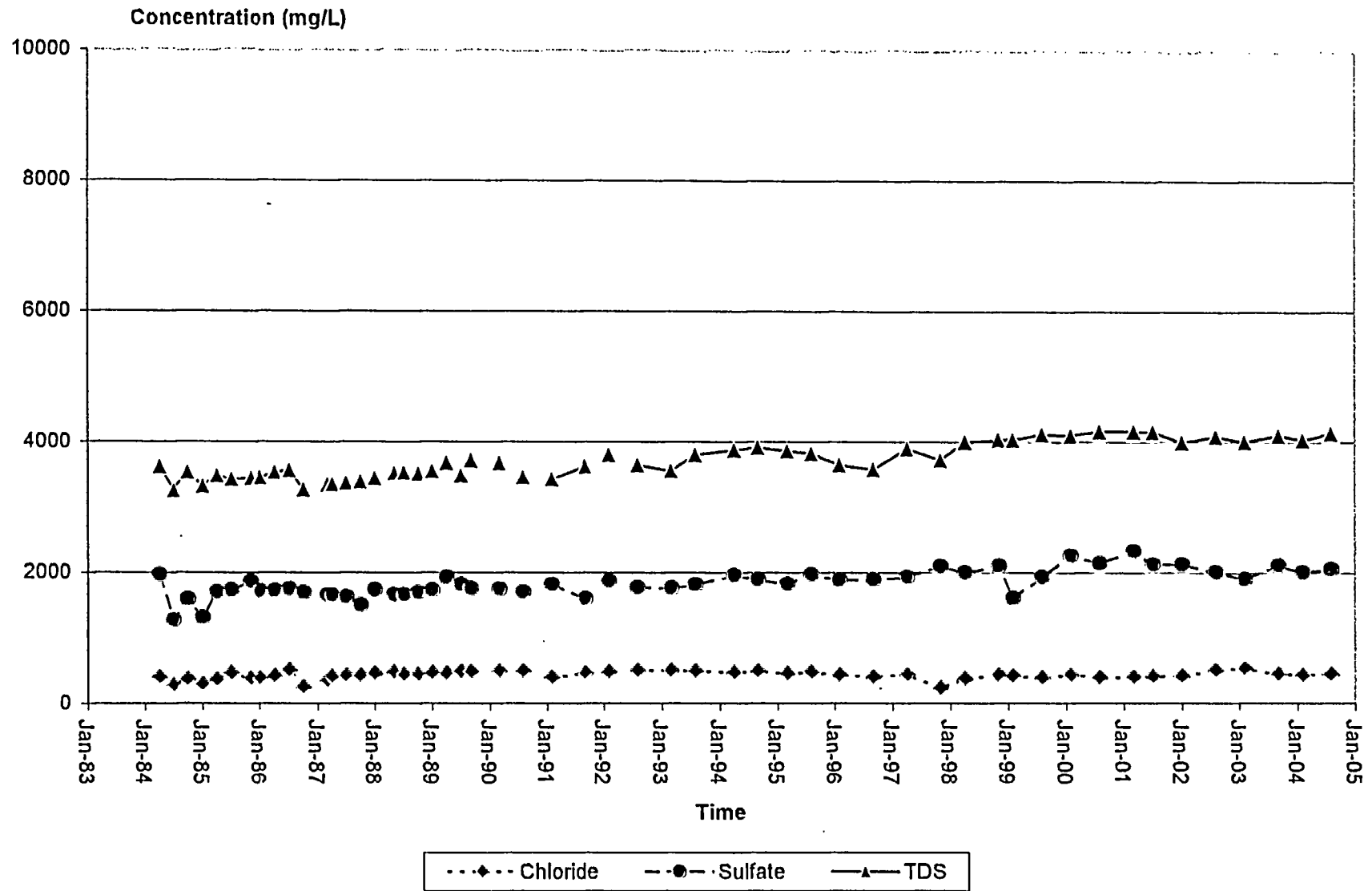
Monitor Well 32-57



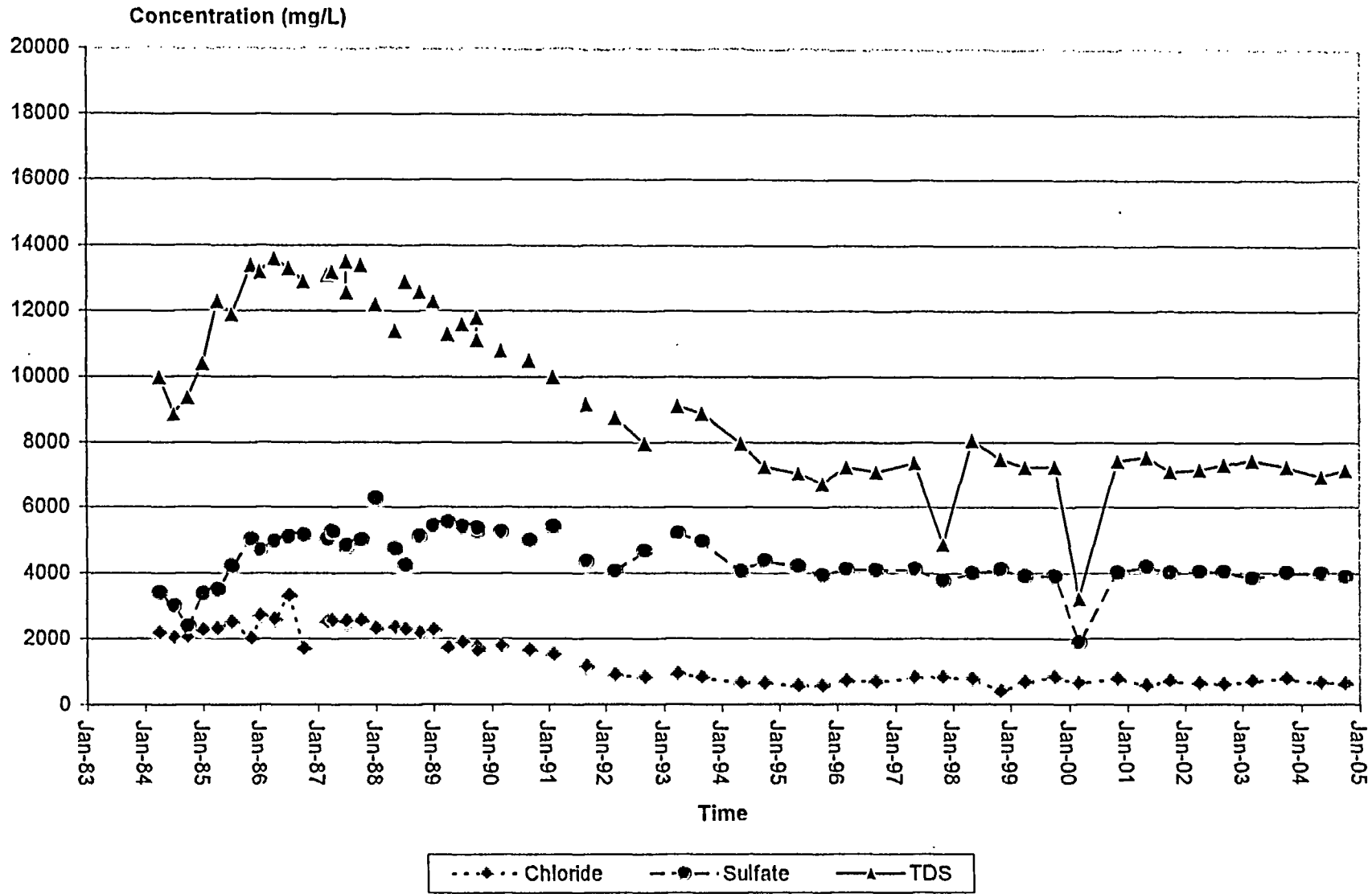
Monitor Well 32-58



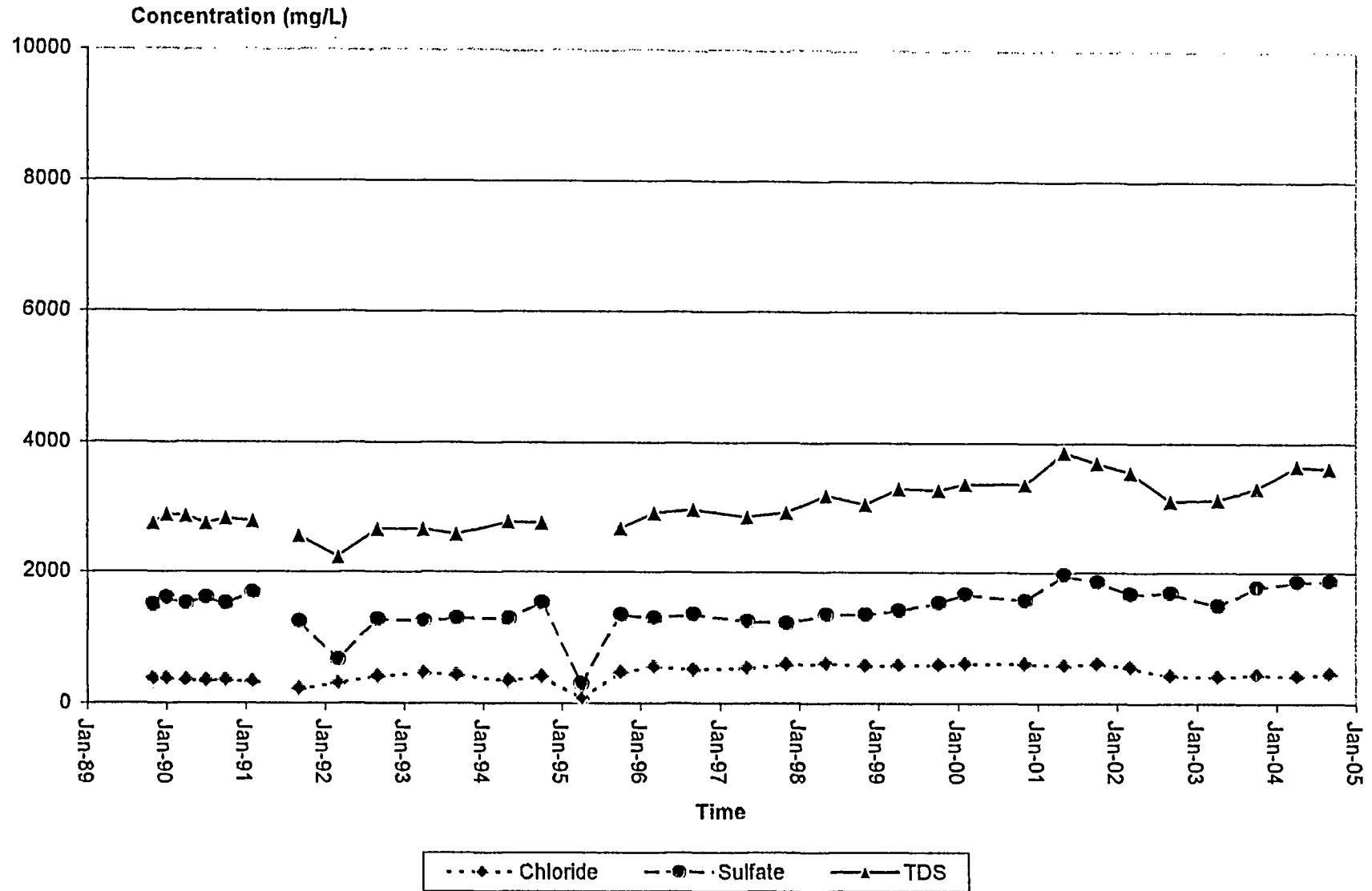
Monitor Well 32-59



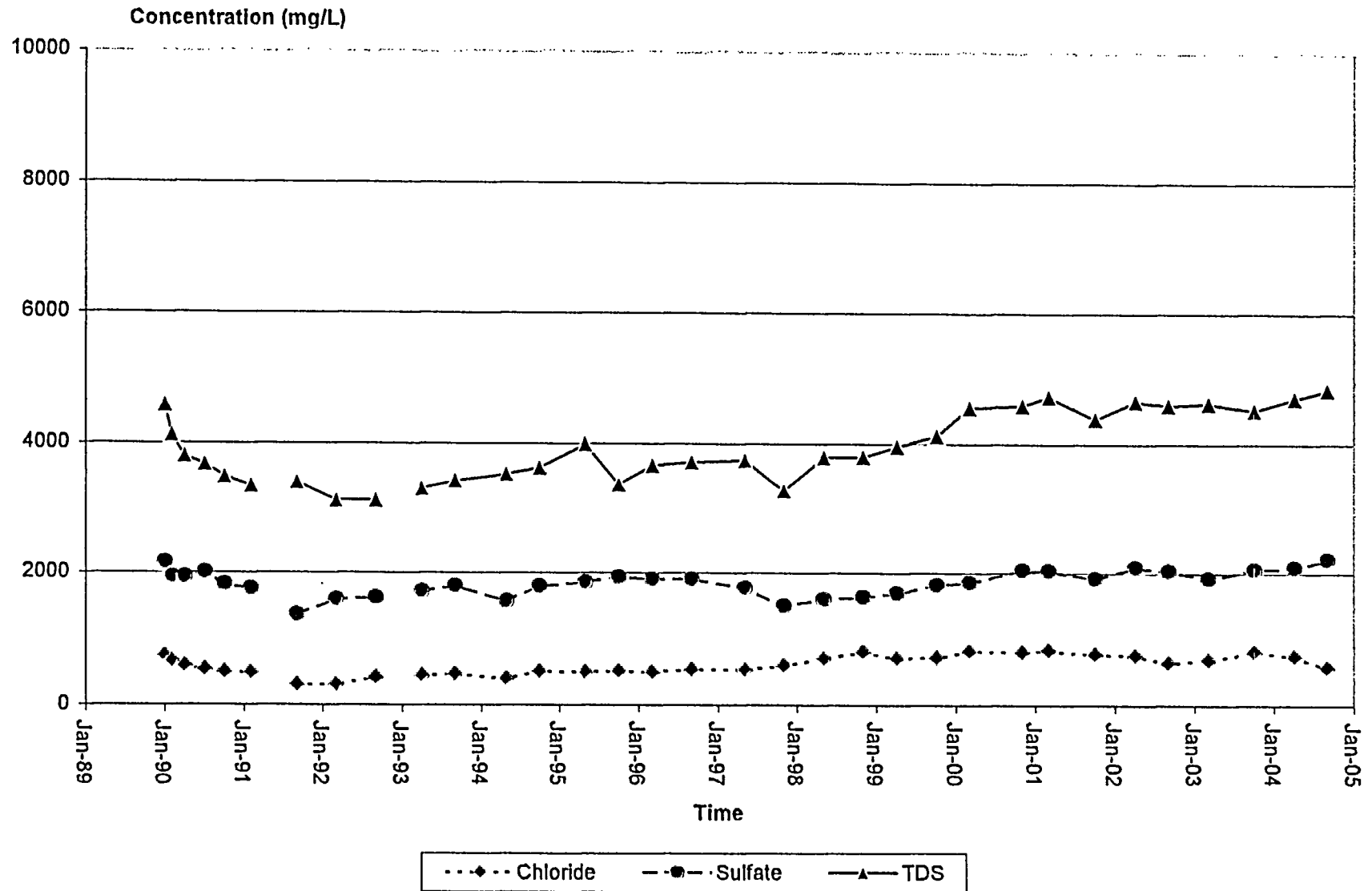
Monitor Well 32-60



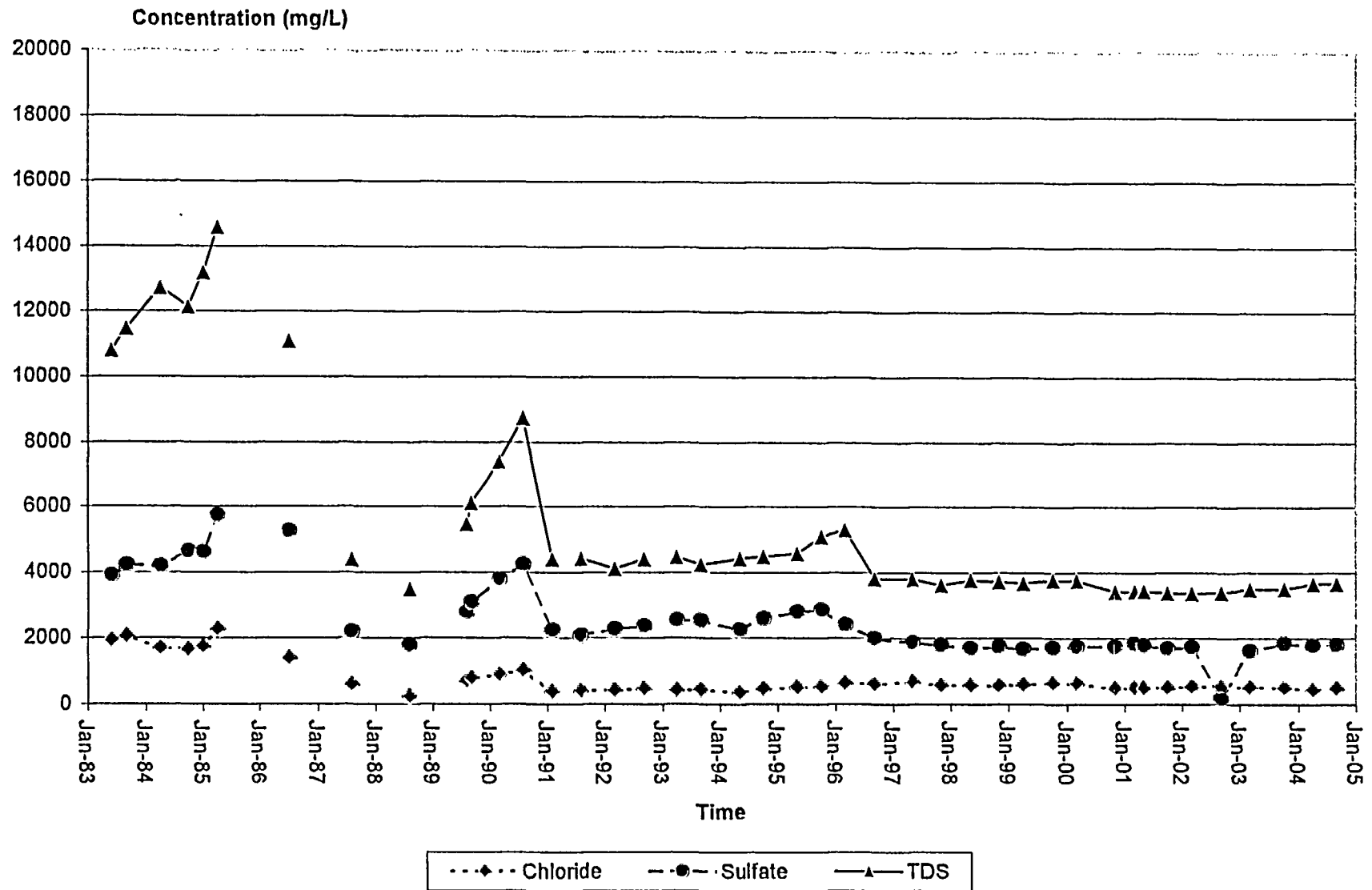
Monitor Well 32-69



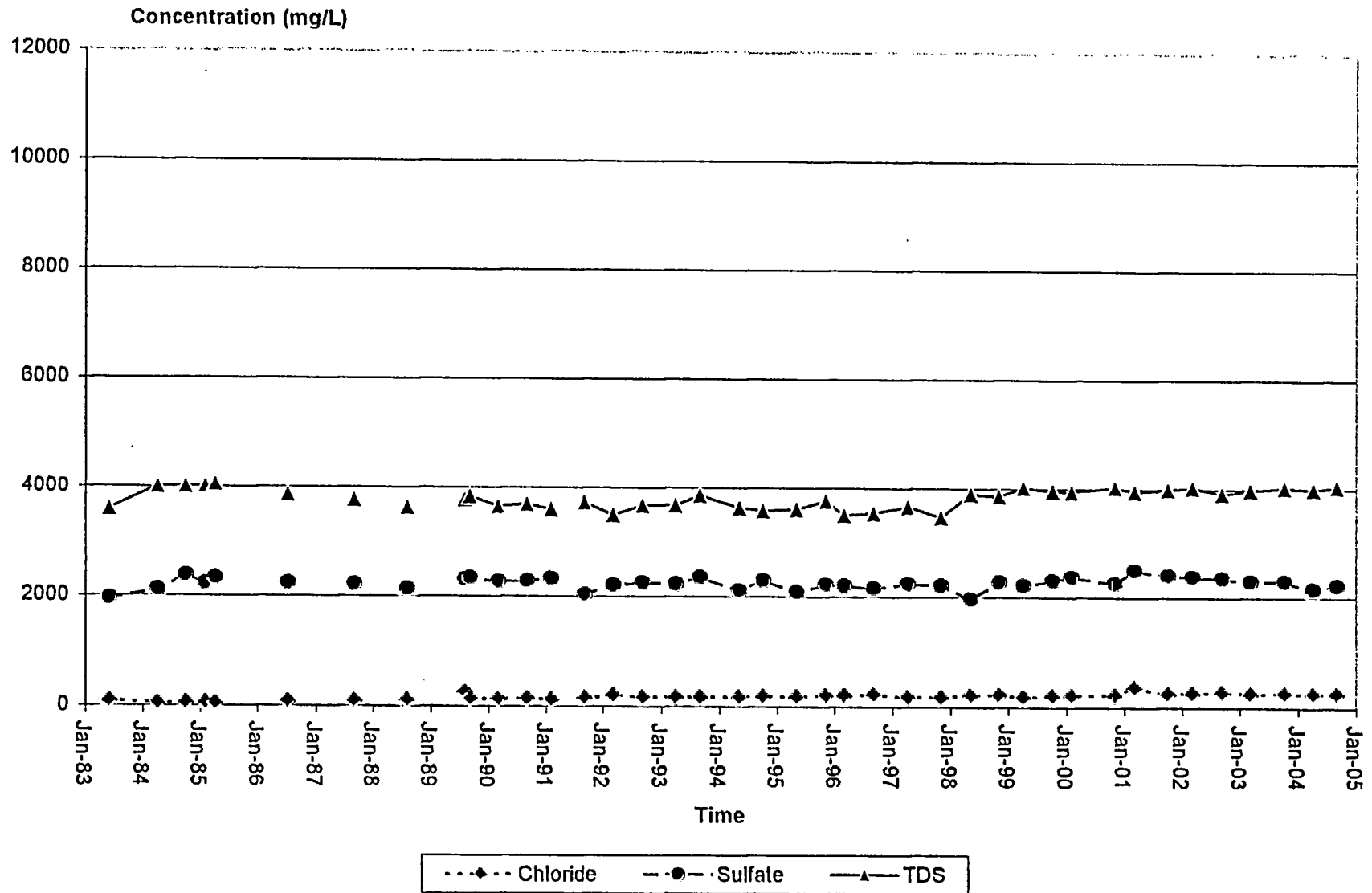
Monitor Well 32-72



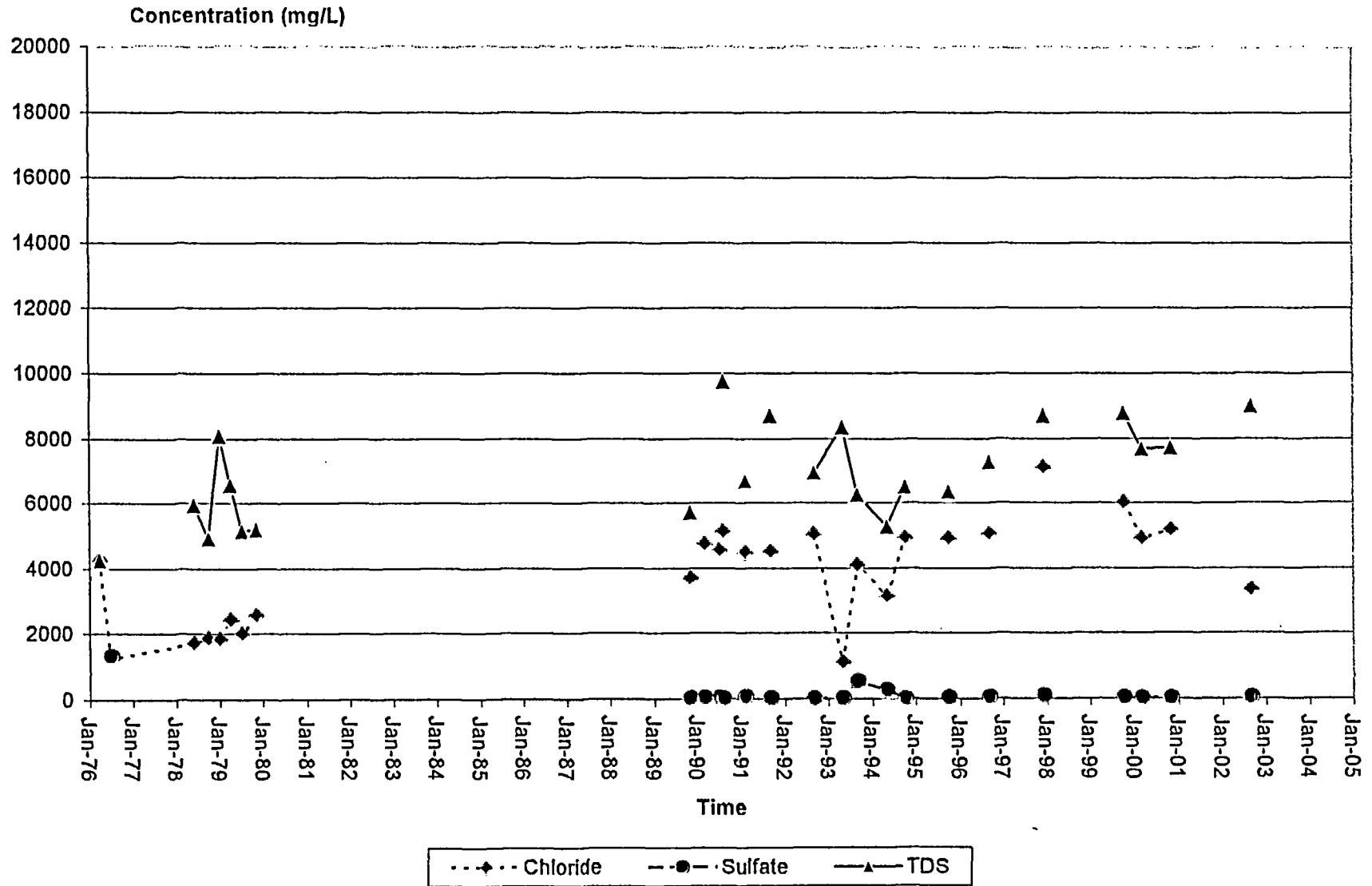
Monitor Well AW-1



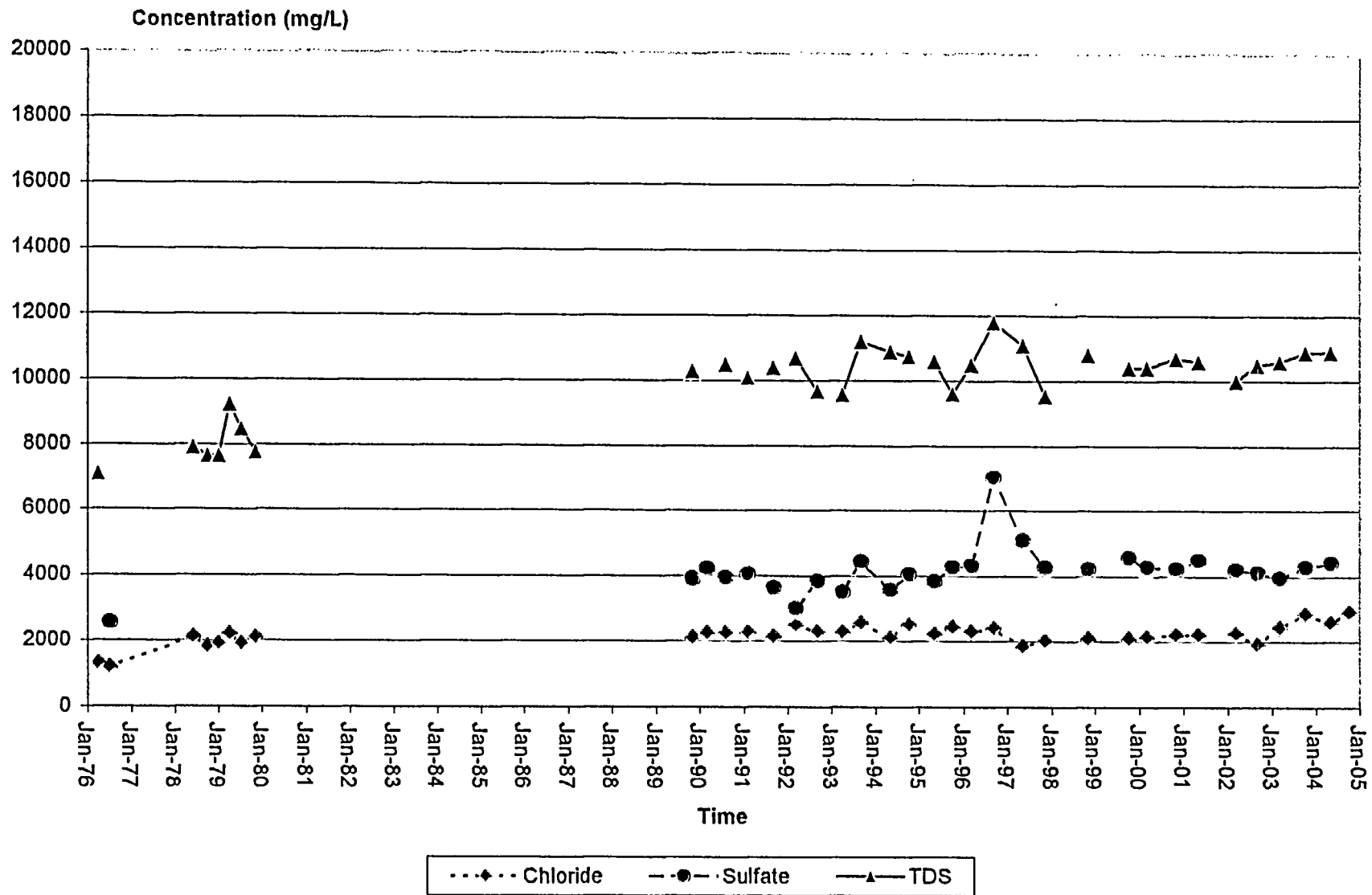
Monitor Well AW-2



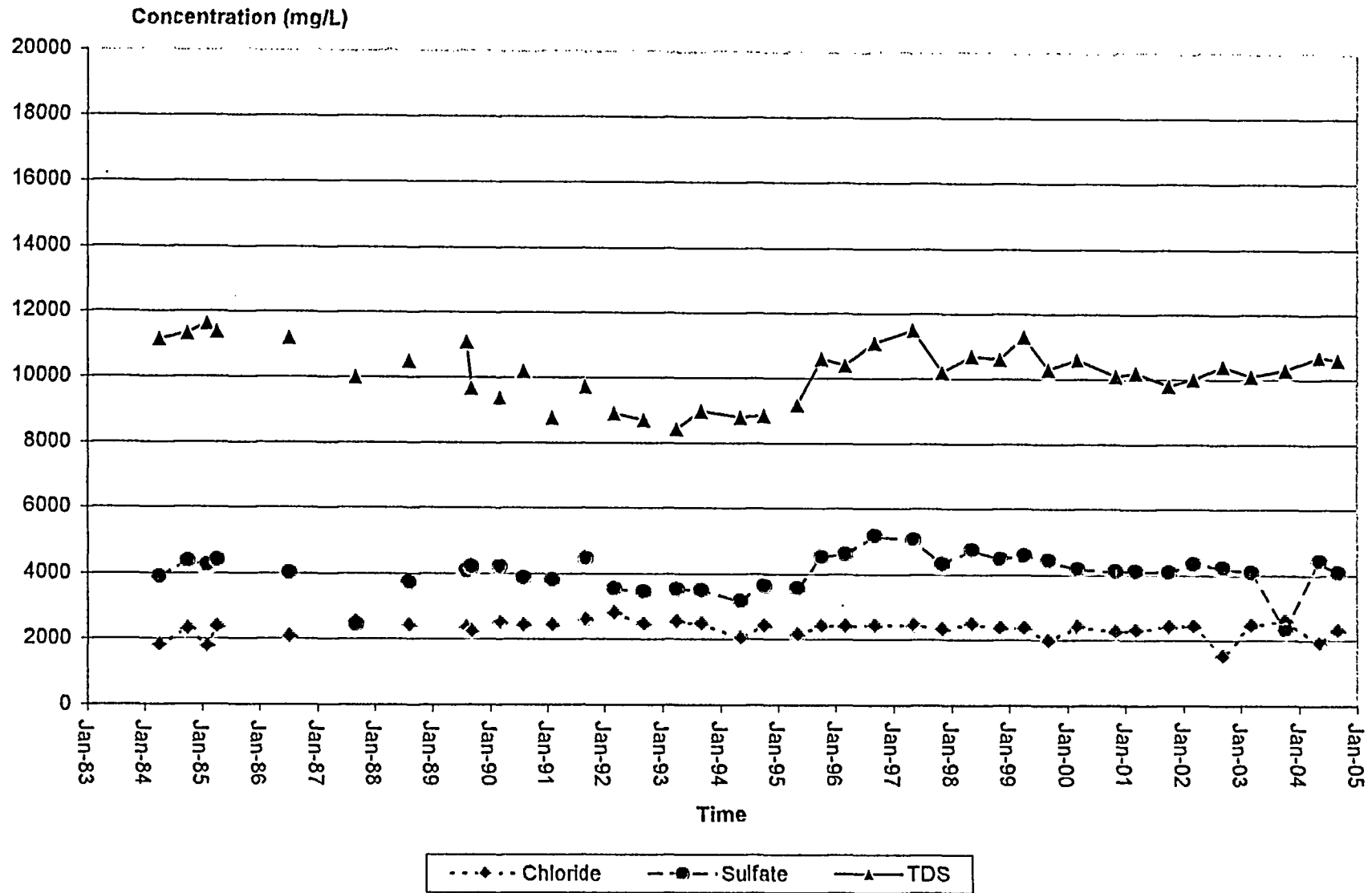
Monitor Well D-4



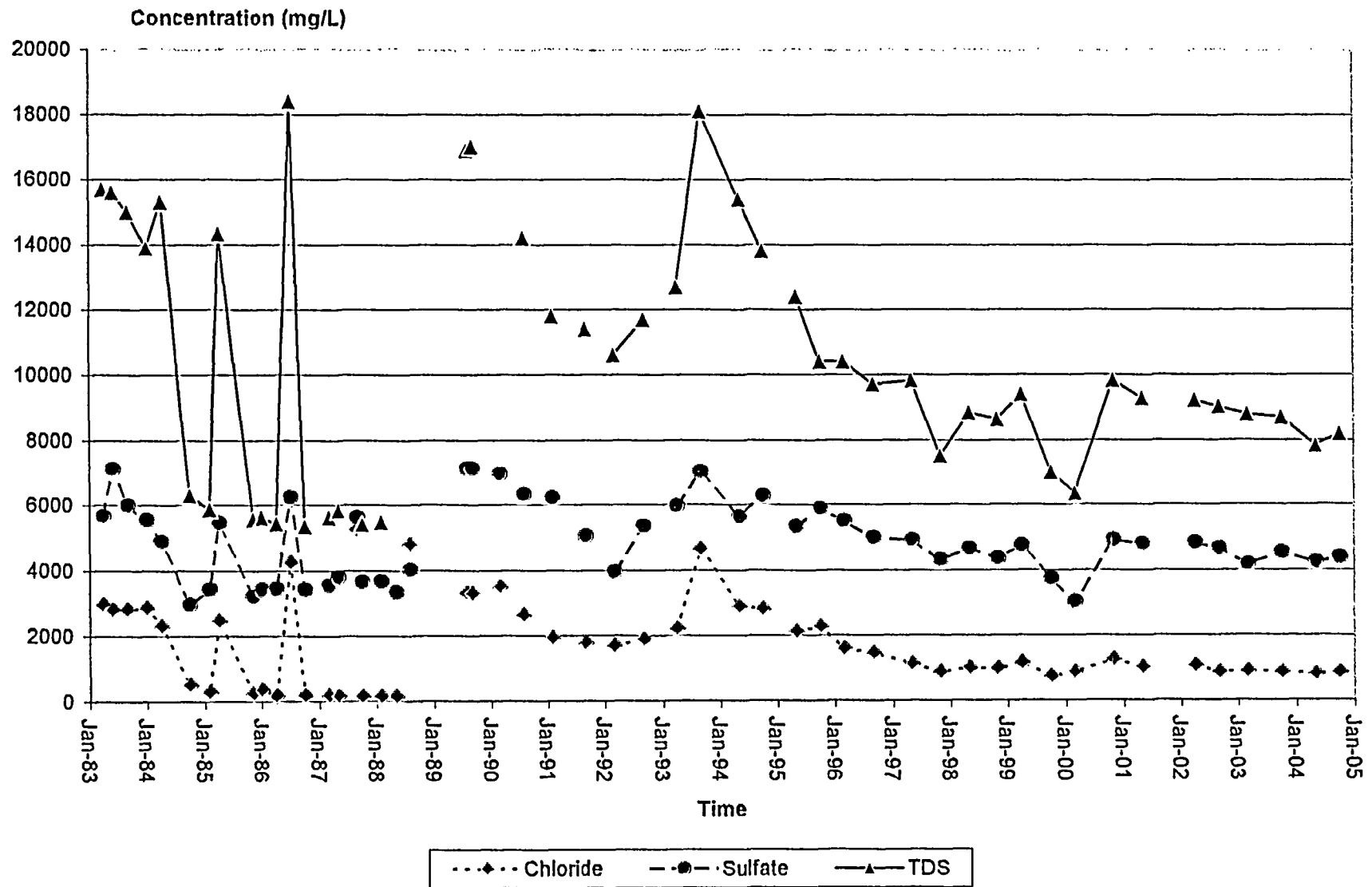
Monitor Well E-5



Monitor Well S-9



Monitor Well S-12



APPENDIX C

SITE GROUND WATER STANDARDS
ALLUVIUM

AMBROSIA LAKE
ALLUVIAL UNIT - GROUNDWATER PROTECTION STANDARDS (mg/l)

Parameter	Existing Baseline	WQCC Numeric Standard	Site GW Protection Standard
Ag	0.04	0.05	0.05
Al	0.17	5.0	5.0
As	0.18	0.1	0.18
B	0.48	0.75	0.75
Ba	0.02	1.0	1.0
Cd	0.02	0.01	0.02
CN	1	0.2	1.0
Co	0.04	0.05	0.05
Cr	0.06	0.05	0.06
Cu	0.04	1.0	1.0
Fe	40	1.0	40
Hg	0.002	0.002	0.002
Mn	2.6	0.2	2.6
Mo	0.04	1.0	1.0
Ni	0.06	0.2	0.2
Pb	0.16	0.05	0.16
Se	0.29	0.05	0.29
V	0.03	10.0	10.0
Zn	0.4	10.0	10.0
F	1.5	1.6	1.6
Cl	1343	250	1343
CN	<1	0.2	<1
NH ₃	46	10.0	46
NO ₃	54	10.0	54
SO ₄	3865	600	3865
TDS	8322	1000	8322
pH	7.4	6-9	6-9
Ra226/228	3.2	30	30 pCi/l
U	0.09	5.0	5.0
Benzene	<0.001	0.01	0.01

APPENDIX D

WATER LEVEL ELEVATION MAP
ALLUVIUM

APPENDIX E

TDS CONTOUR MAP
ALLUVIUM

APPENDIX D

WATER LEVEL ELEVATION MAP
ALLUVIUM



APPENDIX E

TDS CONTOUR MAP
ALLUVIUM

DP-169 -- 2004 TDS Contour Map

