Rio Algom Mining LLC
P.O. Box 218, Grants, NM USA 87020 (505)287-8851

July 21, 2003

Certified mail
Return Receipt (7001 1940 0000 5345 9583)

Ms. Susan Frant , Chief
Fuel Cycle Licensing Branch, NMSS
Mail Stop T-8-A-33
One White Flint North
11555 Rockville Pike
Rockville, MD 20850

Re: **License SUA-1473, Docket No. 40-8905**
Annual Report, Corrective Action Plan

Dear Ms. Frant,

Pursuant to license condition #34 of the above referenced license, please find attached the annual Corrective Action Plan (CAP) review for the above referenced facility. The review describes the groundwater corrective action implemented and associated results subsequent to the plan's approval on December 29, 1989.

If you have any questions concerning this submittal, please contact me at (505) 287-8851, extension 205.

Regards

Peter Luthiger
Supervisor, Radiation Safety
and Environmental Affairs

Enclosure

xc: P. Goranson
NMED - GWPB
NRC-Arlington
file

NM5501

RIO ALGOM MINING LLC
AMBROSIA LAKE OPERATION

License SUA-1473 Docket No. 40-8905

CORRECTIVE ACTION PLAN ANNUAL REPORT

July 21, 2003

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RIO ALGOM MINING LLC
AMBROSIA LAKE FACILITY
CORRECTIVE ACTION PLAN - ANNUAL REPORT

In accordance with Rio Algom Mining LLC's NRC source material license SUA-1473, condition #34(D), the licensee is to review and submit on or before August 1 of each year, a progress report on the facility's Corrective Action Plan (CAP). This report reviews those effects and the progress of the Ambrosia Lake CAP. This report also contains the semi annual monitoring results for the alluvium, Tres Hermanos A, Tres Hermanos B, and Dakota monitoring wells in accordance with license condition #34(A).

General Hydrogeologic Setting

Rio Algom's mill and tailings facility are located north of the Zuni Uplift portion within the San Juan Basin. The basin is characterized by broad areas of relatively flat lying sedimentary rocks, dipping to the northeast, with portions of the basin covered with alluvium and basalt flows. The site is within the Ambrosia Lake valley that extends from the western side of Mount Taylor. The stratigraphic sequence of hydrologic significance at the site consists, in descending order, of the alluvium, the Mancos shale and the Tres Hermanos sandstones, the Dakota Sandstone, the Brushy Basin and the Westwater Canyon members of the Morrison Formation. The ore bearing unit in the vicinity is the Westwater Canyon. The bedrock formations above the Westwater Canyon Member of the Morrison Formation have essentially been dewatered by ventilation holes and mine shafts located to the north of Rio Algom's mill and tailings facility. The units that have been affected by milling activities are the alluvium, Tres Hermanos B sandstone, and the Dakota sandstone.

Tailings were first produced at the site in 1958. Tailings impoundment #1 encompasses 260 acres and contains approximately 30 million tons of uranium mill tailings, while tailings impoundment #2 consists of approximately 90 acres and contains three million tons of mill tailings. Both tailings impoundments have been reclaimed in

accordance with license requirements. Tailings effluents were also previously placed into unlined evaporation ponds (ponds 4, 5, 6, 7, and 8). The use of these unlined ponds were discontinued in 1983 pursuant to the Assurance of Discontinuance with the State of New Mexico.

The CAP for the Dakota and Tres Hermanos B sandstones consists of continued pumping of the Section 30 and 30 West mines which intercepts the impacted waters from the tailings facility through the cone of depression formed as a result of drainage from these units into the surrounding ventilation holes and mine shafts. These intercepted solutions commingle with ground water entering the mine workings and are then pumped to the mill facility and undergo mine water treatment prior to being available for discharge pursuant to the federal NPDES program. The remediation of the alluvium incorporates an interceptor trench to intercept, collect and remove impacted waters from the tailings impoundments. In addition to this, the treated mine water infiltrates and flushes the alluvium from the fresh water creek back towards the intercept trench resulting in the collection and removal of additional impacted waters from the alluvium. All solutions removed from the intercept trench are disposed into lined evaporation cells.

The CAP monitoring program consists of semi-annual monitoring of several wells within the alluvium, Tres Hermanos B sandstone, Tres Hermanos A sandstone, and the Dakota sandstone for specific parameters as outlined within condition #34 of the facility source material license.

Review of Corrective Action Plan - Bedrock Units

Dakota Sandstone

The Dakota formation is described as a sandstone unit deposited over an erosional surface developed on the Brushy Basin. The unit is dipping approximately three (3) degrees to the northeast and is characterized as a fine to medium grained, clean sandstone with fair to good permeability. The Dakota is approximately 80 feet

thick across most of the Ambrosia Lake area. Groundwater movement in the Dakota was generally down dip and down gradient to the north-northeast to areas of lower elevation and lower potentiometric head.

As a result of the uranium mining activity within the Ambrosia Lake area, much of the Dakota formation has been dewatered by drainage to the lower mining levels through the vast network of mine workings; creating a low pressure area or hydrologic depression trough in the area in the Dakota piezometric surface. In the vicinity of the Section 30 and Section 30 West mining areas, only a few feet at the base of the Dakota is saturated. This was verified in 1983, and again in 1989, through the downhole investigations performed by Rio Algom within the ventilation holes and mine shafts to determine the potentiometric surfaces and water quality in the Dakota formation. With the cessation of underground mining throughout the mining district, water recovery into the hydrologic depression has been occurring with the predominant inflow occurring from the northern perimeter of the depression.

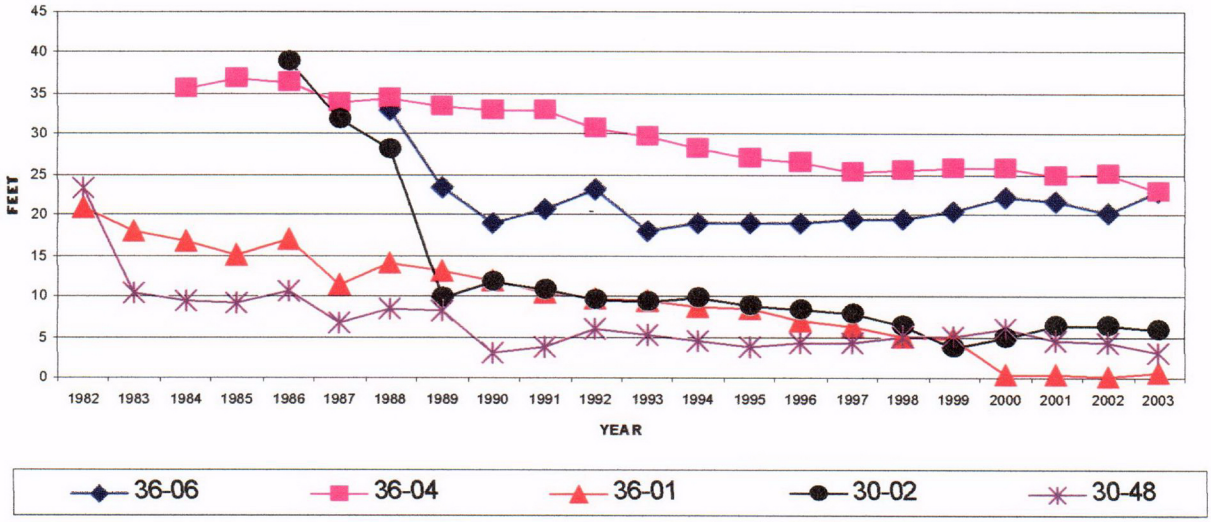
The Dakota formation has been impacted as a result of tailings solutions migrating into the Dakota formation in the vicinity of the unlined tailings evaporation pond #7. The Dakota formation in this area outcrops just south of this unlined evaporation pond and dips beneath the shallow alluvium near evaporation pond #7. The unlined evaporation pond #7 was constructed in 1961 and utilized for evaporating mill solutions until 1983. Its use was discontinued in 1983 pursuant to the Assurance of Discontinuance (AOD) with the State of New Mexico. The mill processing solutions were removed in 1983, thereby eliminating the source of recharge for the Dakota. Evaporation pond #7 has undergone reclamation efforts to minimize further leachate generation.

Analysis of the Dakota monitoring well data indicates that this seepage created a narrow plume that originated from pond #7. These solutions commingled with the minimal groundwater within the Dakota, and migrated down gradient towards the mining areas located north of the mill facility.

As a result of continued dewatering of the Section 30 and 30 West mines, remediation of the impacted areas of the Dakota formation continues with the interception, collection, and removal of the impacted waters. During the review period of July 2002 to June 2003, Section 30 and 30 West mines pumped 202 million gallons of water, containing minimal amounts of intercepted solutions from the Dakota formation.

Figure 1 demonstrates the reduction in the saturated thickness within the Dakota formation for the Dakota wells located along the path from pond 7 to the Section 30 and 30 West mines. This graph depicts that through elimination of the recharge source along with continued pumping of the downgradient mines continues to provide a dewatering mechanism for the Dakota.

FIGURE 1
SATURATION THICKNESS
DAKOTA FORMATION WELLS



In accordance with requirements of the license condition #34, contained within Appendix A are the July 2002 through June 2003 analytical results for the Dakota formation. Presented within Appendix B are time versus concentration plots for the NRC

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CAP program wells for the Dakota. Contained in Appendix C are areal plume plots based on the current analytical information for the Dakota unit.

Tres Hermanos A Unit

Analytical results for the Tres Hermanos A sandstone unit continue to indicate the formation has not been impacted from the operations. Monitoring results for this unit have remained constant and consistent with previous results. Analytical results on this unit are presented in Appendix A. Appendix B contains time versus concentration plots for the NRC CAP program wells for the Tres Hermanos A unit.

Tres Hermanos B Unit

The Tres Hermanos B unit is the middle of three sandstone units interbedded within the Mancos shale. The formation dips to the north-northeast at approximately three (3) degrees. The sands are characterized as consisting of fine grained material with low porosity and permeability. Due to their fine grained texture, the sands do not yield much water.

At the Ambrosia Lake milling facility, a large portion of the mill tailings were deposited in contact with or near to the Tres Hermanos B sandstone outcrop. As a result, tailings solutions have migrated into the Tres Hermanos B unit.

The Tres Hermanos B sandstone is continuous from the outcrop area near the mill facility toward the mining area to the north-northeast of the mill. As with the Dakota formation, seepage from the Tres Hermanos B sandstone migrated down gradient and down dip in a north-northeast direction. In the event these impacted waters are transported far enough within the Tres Hermanos B unit, they will be intercepted, collected and removed from the formation by the dewatering action of the down dip

ventilation holes, shafts, and mine workings similar to the Dakota. However, migration distance is expected to be curtailed due to the geologic characteristics of the Tres Hermanos B unit and the natural attenuation processes occurring within the formation

As required by the NRC approved CAP, remediation of the Tres Hermanos B formation consists of pumping and dewatering of the Section 30 and Section 30 West mines. As previously stated, during the review period of July 2002 through June 2003, the Section 30 and 30 West mines pumped 202 million gallons of water.

Reclamation associated with tailings impoundments #1 and #2 have resulted in essentially eliminating recharge into the impacted areas of the Tres Hermanos B unit. On tailings impoundment #2, this has been achieved by the removal of ponded solutions, placement of an impermeable barrier over the entire surface of the impoundment, and continued operation and maintenance of the dewatering trench located on the west side of pond #2. To date, the dewatering trench for tailings impoundment #2, constructed in May 1989, has pumped a total of approximately 85.5 million gallons of water to lined evaporation ponds for disposal. During this report period, the dewatering trench was inactive due to other reclamation activities in the vicinity of the pump station precluding its use.

Recharge potential via tailings impoundment #1 has been minimized by the removal of ponded solutions, placement of an impermeable barrier upon the impoundment, and collection of impacted water migrating from tailings impoundment #1 into the intercept trench.

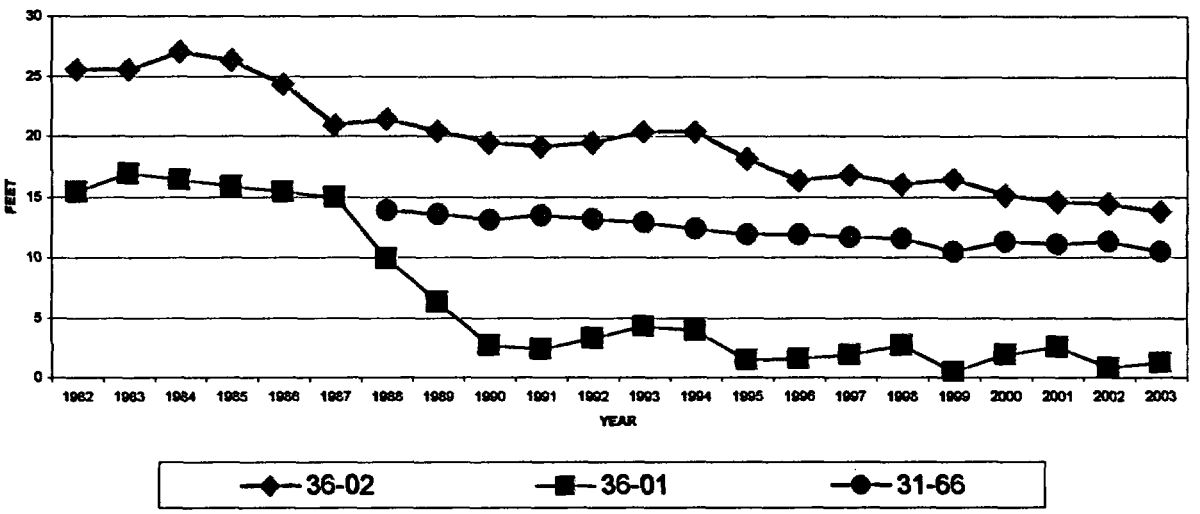
Since the Tres Hermanos B sandstone is stratigaphically above the Dakota formation, the Tres Hermanos B has also been dewatered due to mining operations in the area. Monitoring well data indicates that the saturated zone within the Tres Hermanos B sandstone continues to decrease. This is due to the removal of the recharge source at the tailings impoundments along with continued pumping of the downgradient mines.

Figure 2 provides a graphical presentation of the reduction in the saturated thickness within the Tres Hermanos B formation. This graph depicts that through elimination of the recharge source of contamination along with continued pumping of the downgradient mines continues to provide a dewatering mechanism for the Tres Hermanos B formation resulting in continued capture, collection and removal of water from the unit.

FIGURE 2

SATURATION THICKNESS

TRES HERMANOS B FORMATION WELLS



In accordance with license condition #34, presented in Appendix A are the July 2002 through June 2003 analytical results for the Tres Hermanos B unit. Appendix B contains time versus concentration plots for Tres Hermanos B unit wells. Appendix C contains the areal plume plots, based on current analytical information, for the Tres Hermanos B sandstone.

Effectiveness of CAP - Bedrock Units

Rio Algom believes that continuation of mine pumping is not necessary to accomplish the interception of the minimal groundwater that remains within the bedrock units. Regional groundwater modeling studies have shown that it will take

hundreds of years for the dewatering centers to recover following termination of mine pumping in order for resaturation to occur at potential point of exposure (POE) locations within the Dakota and Tres Hermanos units. Continued mine pumping has not dewatered the Dakota unit at the potential POE location downgradient of former evaporation pond 7 and 8. Nevertheless, removal of solutions and byproduct material from these ponds has been effective in reducing concentrations at the point of compliance locations in the Dakota sufficiently to protect groundwater in the Dakota at all potential POE locations.

Evaluation of alternative corrective actions (enhanced tailings dewatering and groundwater interception and treatment) indicated that these actions will not significantly improve groundwater concentrations in the bedrock units. A cost-effectiveness evaluation of the CAP alternatives was performed with results indicating that either alternative would cost approximately $1.7 million for averting one person-rem. Rio Algom believes that this cost, which is far in excess of the NRC ALARA guidance cost estimates ($2,000 to $20,000 per person-rem averted), demonstrates that groundwater concentrations within the bedrock units are ALARA. Rio Algom submitted an application to the NRC on February 19, 2000 requesting alternate concentration limits ("ACL") for the bedrock units (Dakota and Tres Hermanos units), which is presently under review by NRC.

Review of Corrective Action Plan - Alluvial Unit

Alluvium

Prior to mining, the alluvium within the Ambrosia Lake valley was dry. With the commencement of mining and milling activities in the area during the 1950's by numerous mining companies, dewatering of the mines resulted in two actions: 1) development of a cone of depression within the underlying geologic units (Tres Hermanos, Dakota, and Westwater); 2) recharge into the alluvium. As milling activities were initiated, solutions from the unlined tailings impoundments seeped into the

alluvium. This resulted in a gradual commingling of the two sources of recharge to the alluvium.

Corrective actions that have been initiated to mitigate water migration were: 1)re-alignment of the Arroyo del Puerto in 1976 to divert surface water flows around the evaporation ponds; 2)discontinued use and removal of ponded solutions from all unlined evaporation ponds; 3)construction of an intercept trenches adjacent to tailings impoundment #1. As a result of the intercept trench forming a reverse hydraulic gradient within the alluvium, the treated mine water infiltrates and flushes the alluvium from the creek towards the intercept trench improving water quality within the impacted alluvium.

During the period of July 2002 through June 2003, more than 41 million gallons of water consisting of impacted water and treated mine water were recovered and removed from the alluvium via the intercept trenches and disposed within lined evaporation ponds.

In addition to the flushing action, resulting in the dilution and collection of water into the intercept trench, geochemical processes also act upon the water present within the alluvium. This results in neutralization of the water and reduced solubility of the parameters. In accordance with requirements of the license condition #34, contained within Appendix A are the July 2002 through June 2003 analytical results for the alluvial monitoring wells. Appendix B contains time versus concentration plots for the NRC alluvial wells. Contained in Appendix C are areal plume plots, based on the current analytical information, for the alluvium.

Effectiveness of CAP - Alluvium Units

Recently a groundwater modeling effort was performed involving the assessment of the current CAP, modeling of the life expectancy of the program, including alternatives, and the feasibility of applying for alternate concentration limits in the alluvial units. The modeling effort indicated that the tailings pile will continue to

drain for the next 50 to 100 years, however, it is expected that the seepage from the pile will naturally attenuate before reaching the institutional control boundary proposed in the Bedrock unit ACL application.

Additionally, the modeling effort indicated that in order to continue to actively collect the impacted water, the existing CAP would have to be continued for a period twice as long after the time the pile completely drains. Rio Algom submitted an ACL application for the alluvial unit in May 2001, which is currently under review by NRC.

APPENDIX A

ANALYTICAL RESULTS

DAKOTA, TRES HERMANOS A, TRES HERMANOS B, ALLUVIUM

RIO ALGOM MINING LLC
2003 CAP REPORT
DAKOTA WELL RESULTS

Well	Date	Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	As (mg/L)	Be (mg/L)	Cd (mg/L)
17-01KD	26-Aug-02	685.3	808.4	3480	23.9	11.17	277	560	0.21	0.005	-0.0002	-0.0002
17-01Kd	11-Mar-03	687.50	810.2	3250	21.8	11.71	263	530	-0.02	0.0075	-0.0002	-0.0001
30-02KD	27-Aug-02	307.9	314.2	6470	18.1	7.13	163	680	-0.01	-0.003	-0.0005	-0.0005
30-02KD	24-Feb-03	309.30	315.1	5600	14.5	7.51	1480	700	0.05	-0.001	-0.0002	0.0003
30-48KD	9-Sep-02	337.6	341.7	6810	18.8	7.7	480	2490	-0.02	-0.003	-0.0005	0.0006
30-48KD	11-Mar-03	339.20	342.5	6820	18.8	7.63	530	2230	0.02	0.005	-0.0005	-0.0005
32-45KD	27-Aug-02	252.6	278.5	2420	19	7.75	212	830	-0.02	0.001	-0.0002	-0.0002
32-45KD	10-Mar-03	253.90	279.7	2230	14.8	7.29	213	830	-0.02	0.0011	-0.0001	-0.0001
36-06KD	19-Aug-02	176.75	198.6	9350	190	4.05	1200	4590	-2	-0.005	0.019	0.009
36-06KD	23-Feb-03	176.50	199.6	8900	13.4	4.04	1130	4980	0.1	-0.003	0.0213	0.008

Well	CN (mg/L)	Pb (mg/L)	Mo (mg/L)	Ni (mg/L)	Se (mg/L)	Sb (mg/L)	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226 (pCi/L)	Ra-228 (pCi/L)	Gross Alpha (pCi/L)
17-01KD	-0.01	0.0006	0.0846	0.0479	-0.001	0.0005	0.0031	-0.31	0	0.41	0.11	8.6
17-01Kd	0.01	-0.0001	0.142	0.0405	-0.001	0.0006	0.00078	0.28	0	0.01	2.15	11.2
30-02KD	-0.01	-0.0005	0.0051	0.033	-0.001	-0.001	0.0013	-0.25	0	1.34	0.01	0.0
30-02KD	-0.01	0.0003	0.0019	0.0323	-0.001	-0.0004	0.0044	-0.11	3.27	1.81	0.24	0.0
30-48KD	-0.01	0.0007	0.005	0.014	-0.001	-0.001	0.0301	-0.98	7.8	1.89	2.02	14.8
30-48KD	-0.01	-0.0005	0.0074	0.012	-0.001	-0.001	0.0479	-0.05	0	3.71	18.9	21.4
32-45KD	-0.01	-0.0002	0.0213	0.0097	-0.001	-0.0004	0.0006	-0.41	3.17	0.8	0.6	0.3
32-45KD	-0.01	-0.0001	0.0181	0.0078	-0.001	-0.0002	0.00361	-0.02	0	1.72	2.35	3.8
36-06KD	-0.01	0.05	-0.001	0.229	-0.001	-0.002	0.837	25.5	0	28.2	4.07	0.0
36-06KD	-0.01	0.0384	0.0008	0.0236	0.005	-0.001	1.08	44.7	0	43.2	0.2	0.0

A negative sign corresponds to "less than"

RIO ALGOM MINING LLC
2003 CAP REPORT
TRA WELL RESULTS

Well	Date	Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Mo (mg/L)	Ni (mg/L)	Se (mg/L)
31-01	28-Aug-02	203.2	251.5	3980	17.4	7.36	330	1540	0.06	0.0019	0.015	-0.001
31-01	10-Mar-03	204.00	252.7	2980	14.3	7.51	194	1260	-0.02	0.0009	0.0108	-0.001
33-01TRA	19-Aug-02	119	181.55	3940	17.2	7.51	44	1810	0.17	0.0032	0.005	-0.001
33-01TRA	23-Feb-03	118.62	181.73	3660	12.9	7.61	55	1840	0.15	0.0031	0.0025	-0.001

Well	CN (mg/L)	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226 (pCi/L)	Ra-228 (pCi/L)	Gross Alpha (pCi/L)
31-01	-0.01	0.0027	-1	0.2	1.54	0.54	7.9
31-01	-0.01	0.0027	0.23	0	1.57	7.82	10.6
33-01TRA	-0.01	0.0052	-0.24	0.13	0.99	0.06	10.9
33-01TRA	-0.01	0.0074	0.4	4.58	0.58	16.8	6.4

A negative sign corresponds to "less than"

RIO ALGOM MINING LLC
2003 CAP REPORT
TRB WELL RESULTS

Well	Date	Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Mo (mg/L)	Ni (mg/L)	Se (mg/L)
19-77	26-Aug-02	272.3	288.4	5190	20.9	7.09	20	2170	0.43	0.0189	0.008	-0.001
19-77	24-Feb-03	273.30	289.5	4650	15.1	7.18	20	2130	0.32	0.0092	0.0053	-0.001
31-66	13-Aug-02	112.82	123.3	> 40000	19.7	6.01	18200	5540	1	-0.005	0.2	0.015
31-66	23-Feb-03	112.67	123.15	40000	12.9	5.94	18900	5420	0.95	0.007	0.163	0.008
31-67	12-Aug-02	18.09	96.45	6700	17.8	6.61	720	3230	0.86	0.002	0.028	-0.001
36-01TRB	29-Aug-02	57.65	58.85									
36-01TRB	23-Feb-03	57.52	58.82									
36-02	12-Aug-02	44.2	58.1	10640	17.7	7.02	2320	3750	0.18	-0.002	0.015	-0.001
36-02	23-Feb-03	44.25	58.12	10260	13.3	7.27	2200	3490	0.24	-0.0005	0.01	-0.001

Well	CN (mg/L)	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226 (pCi/L)	Ra-228 (pCi/L)	Gross Alpha (pCi/L)
19-77	-0.01	0.0222	0.25	0.37	1.24	1.01	27.1
19-77	-0.01	0.0304	-0.13	1.03	1.95	1.25	15.5
31-66	-0.01	0.183	-0.44	1.3	7.98	6.92	665.1
31-66	-0.01	0.18	-0.11	3.5	6.24	9.59	6.1
31-67	-0.01	0.0048	-0.01	11.5	1.89	1.35	3.0
36-01TRB							
36-01TRB							
36-02	-0.01	0.003	-0.04	2.42	1.07	1.18	34.5
36-02	-0.01	0.0043	0	26.5	0.84	0.34	1.4

A negative sign corresponds to "less than"
Monitor Well 36-01TRB contained insufficient water for sample collection.

RIO ALGOM MINING LLC
2003 CAP REPORT
ALLUVIUM WELL RESULTS

Well	Date	Depth To Water	Total Depth	Spec. (Cond.)	Temp C	pH	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Mo (mg/L)	Ni (mg/L)	Se (mg/L)
31-61	13-Aug-02	17.52	27.12	8160	16	6.72	580	3900	1.58	0.001	0.035	-0.001
31-61	18-Feb-03	17.52	27.06	7180	12.3	6.7	570	3800	1.4	0.003	0.027	-0.001
32-59	12-Aug-02	11.85	39.82	5050	16.1	6.89	510	2010	0.06	0.007	0.024	-0.001
32-59	11-Feb-03	11.36	39.45	5070	11.7	7.13	530	1900	0.09	0.0043	0.011	-0.001
5-03	12-Aug-02	15.25	40.25	4680	16.8	8.41	460	1860	-0.02	0.0027	0.005	-0.001
5-03	11-Feb-03	16.55	39.59	4730	12.3	8.86	397	1920	-0.2	0.002	0.0029	0.006
MW-24	12-Aug-02	49.83	50.3									
MW-24	11-Feb-03	50.00	50.35									

Well	U-nat (mg/L)	Th-230 (pCi/L)	Pb-210 (pCi/L)	Ra-226 (pCi/L)	Ra-228 (pCi/L)	Gross Alpha (pCi/L)
31-61	0.129	-0.18	10.3	1.12	0.45	64.7
31-61	0.147	-0.02	24.6	0.11	0.59	46.5
32-59	0.15	-0.12	11.6	0.5	0	16.5
32-59	0.157	0.27	8.34	0.76	0.73	0.0
5-03	0.0072	-0.11	6.74	0.5	0	0.3
5-03	0.0123	-0.13	5.05	0.87	1.17	52.4
MW-24						
MW-24						

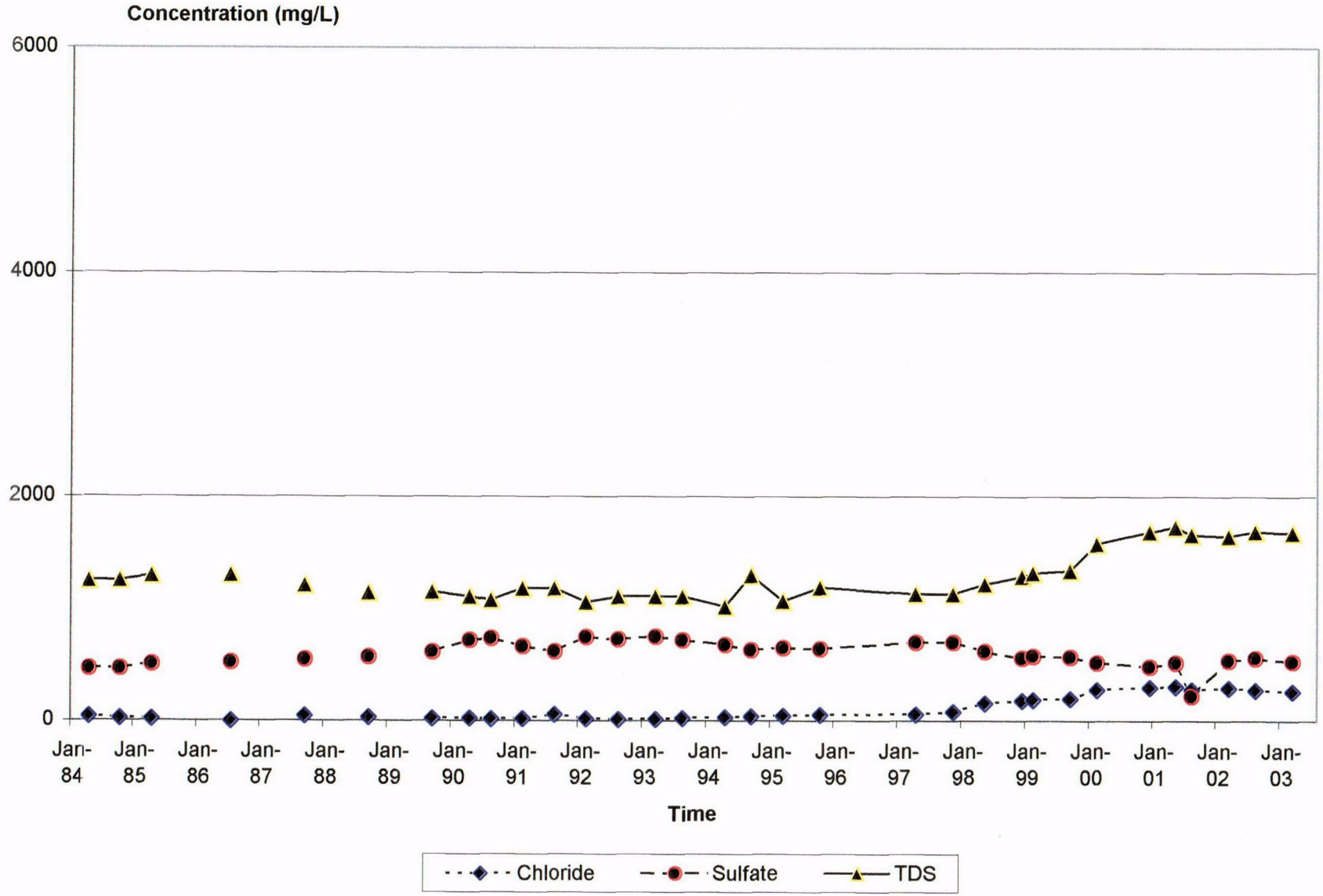
A negative sign corresponds to "less than"
Monitor Well MW-24 contained insufficient water for sample collection.

APPENDIX B

TIME vs CONCENTRATION CHARTS

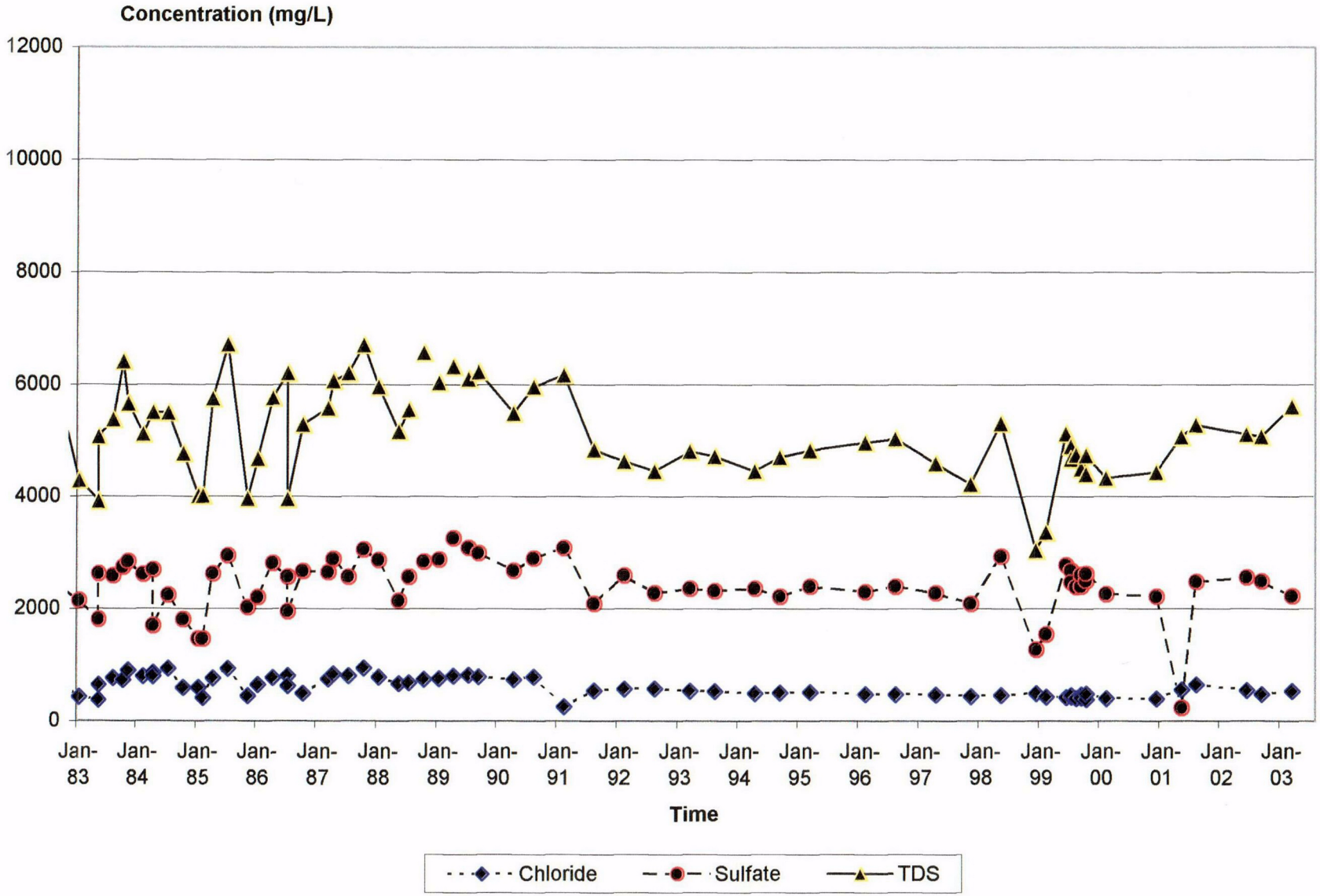
DAKOTA, TRES HERMANOS A, TRES HERMANOS B, ALLUVIUM

Monitor Well 17-01KD



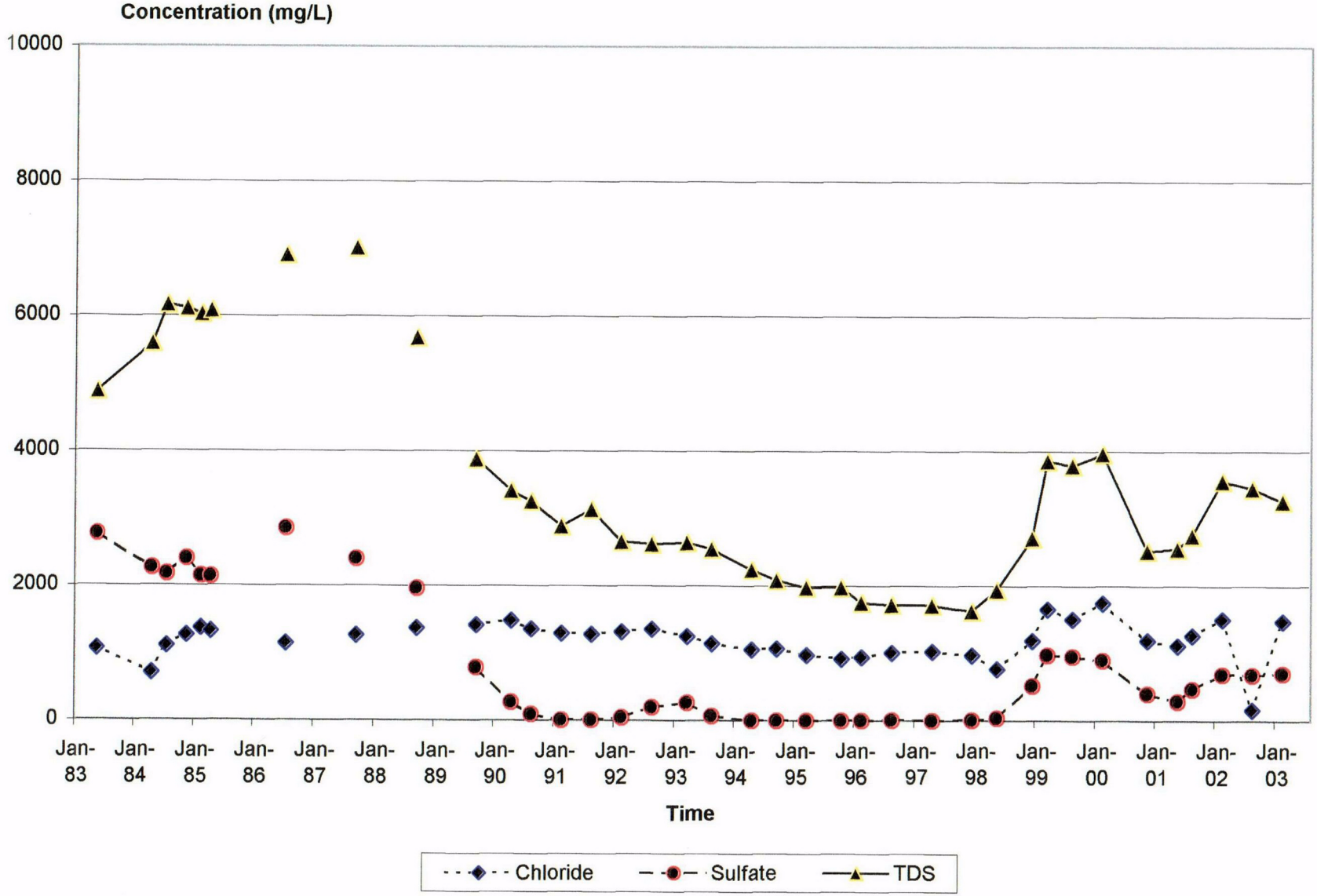
C02

Monitor Well 30-48KD



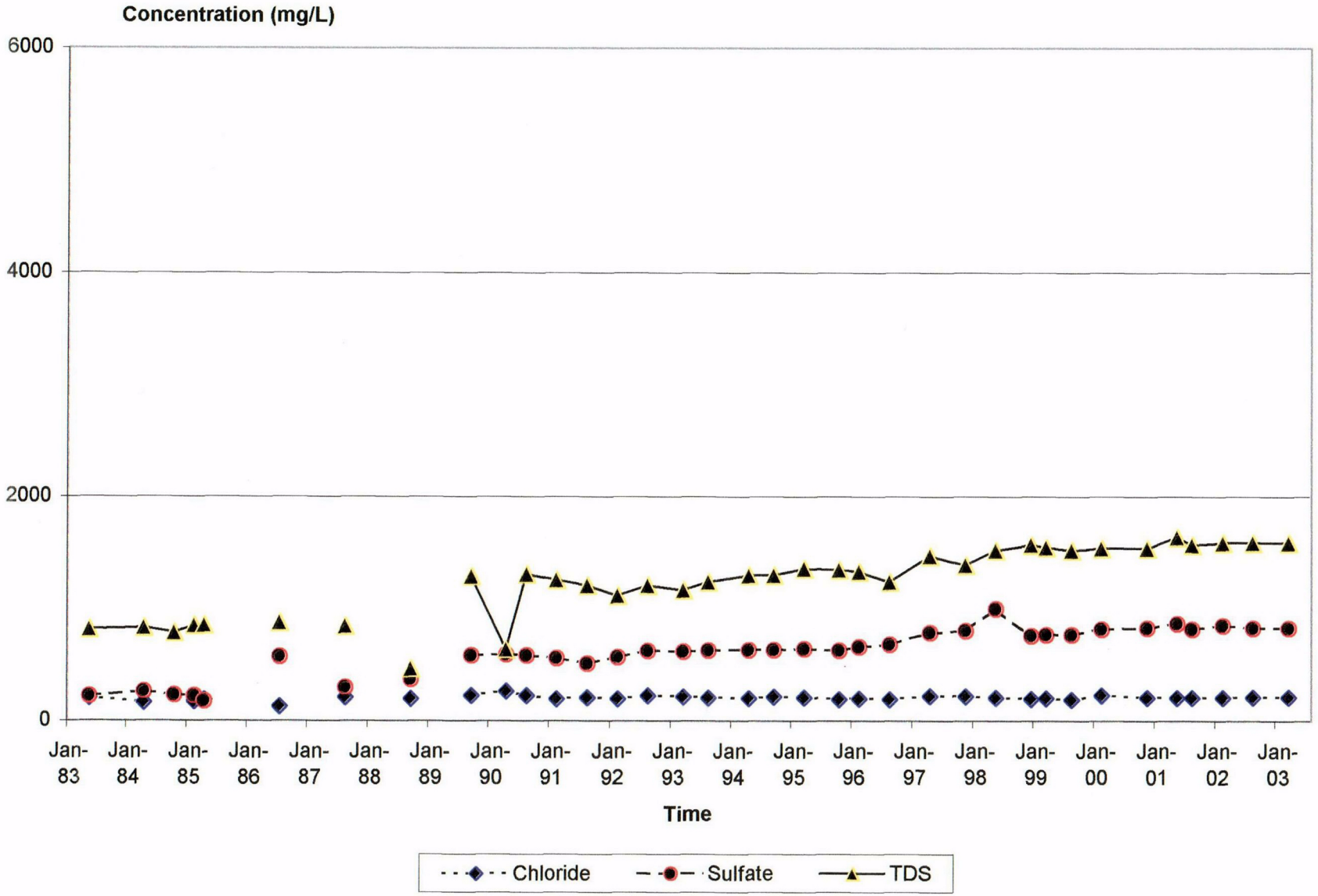
C03

Monitor Well 30-02KD

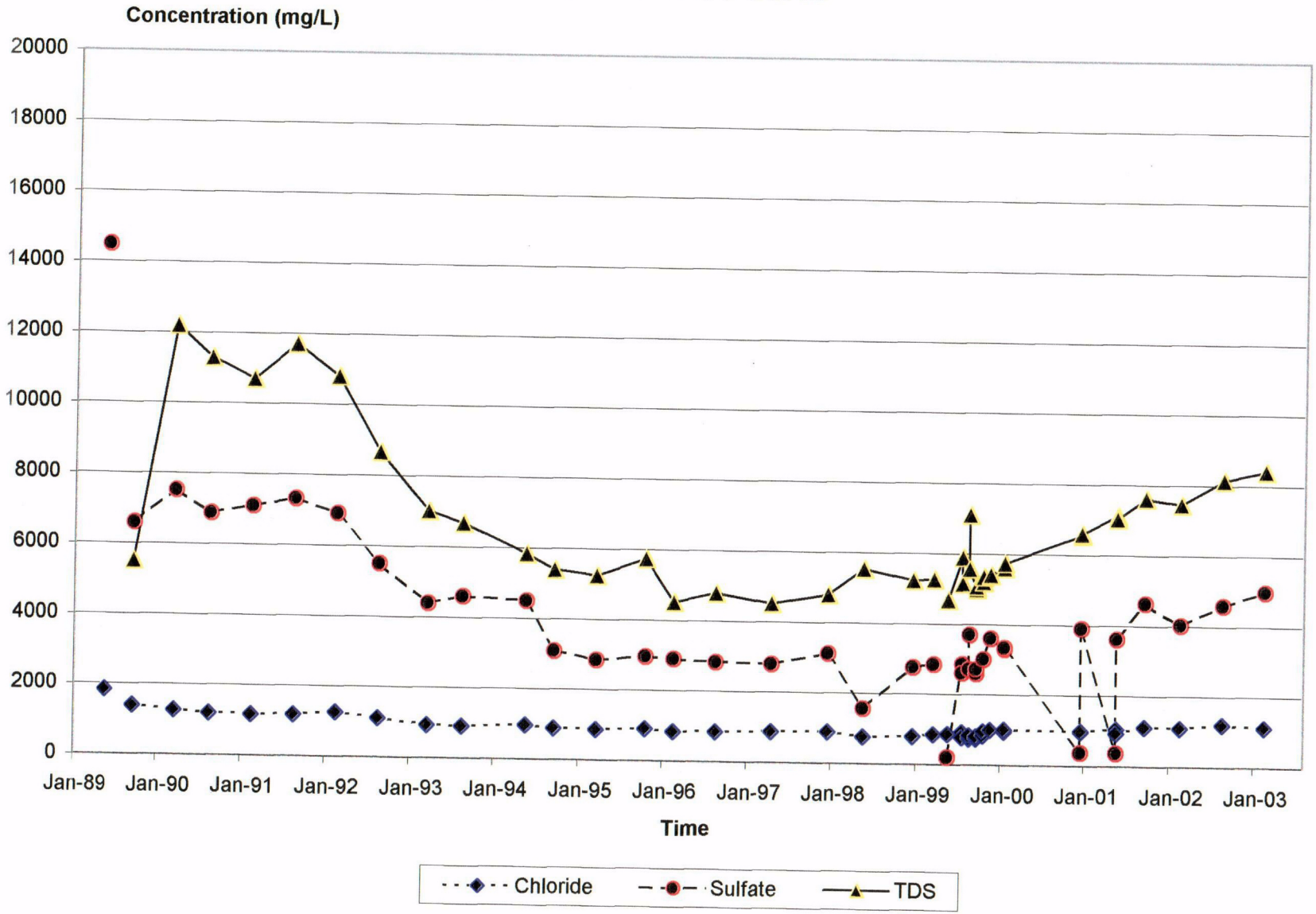


C04

Monitor Well 32-45KD

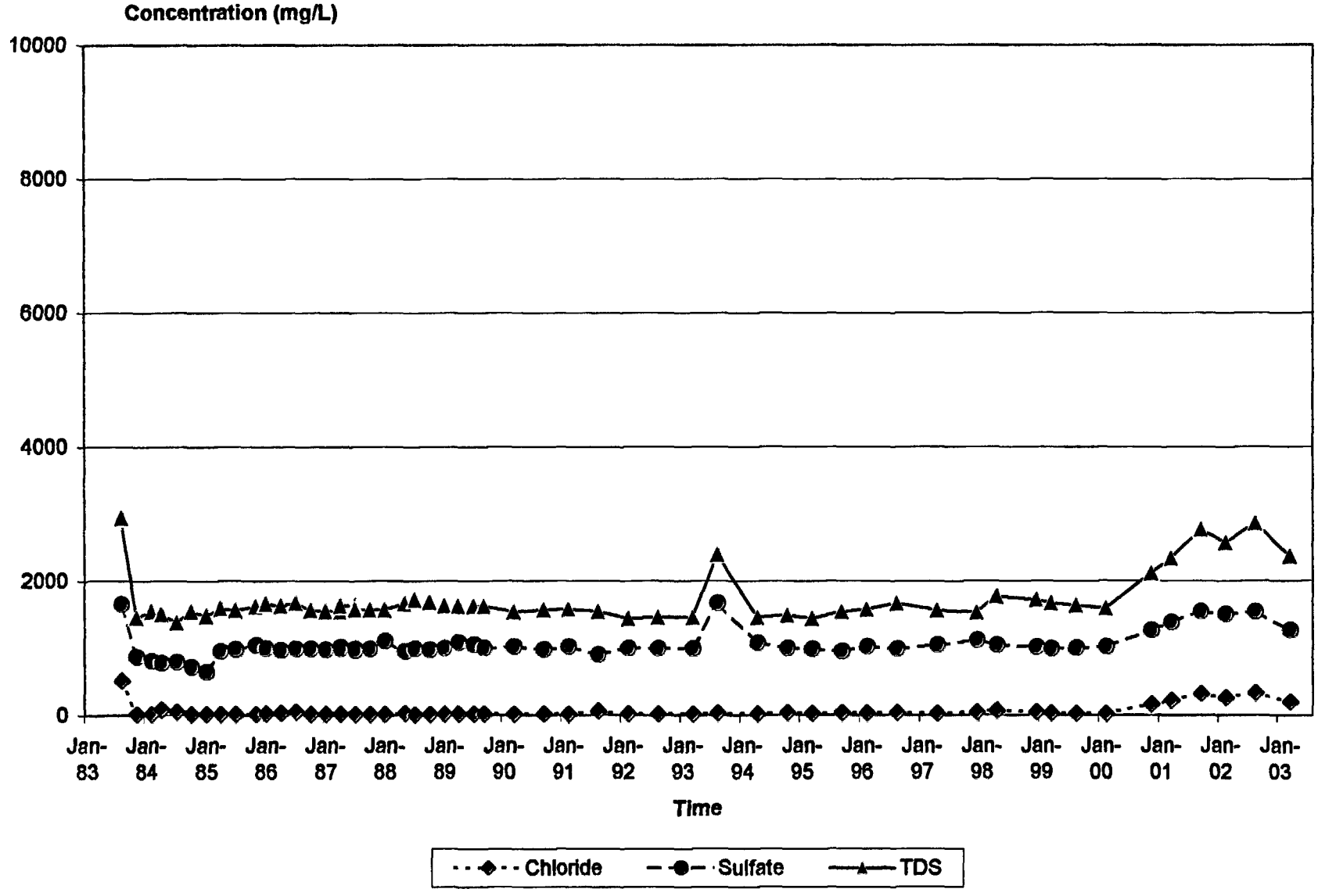


Monitor Well 36-06KD

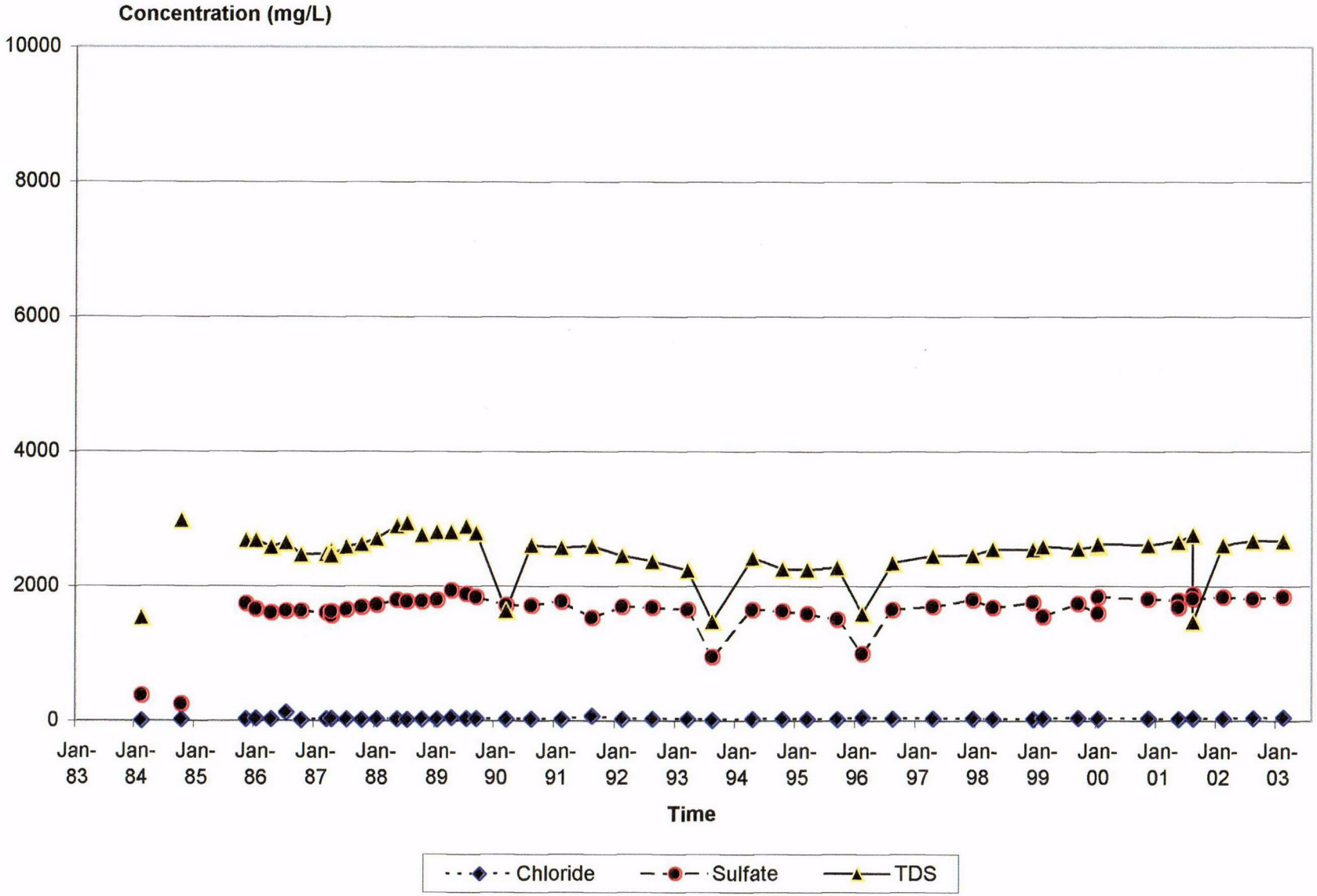


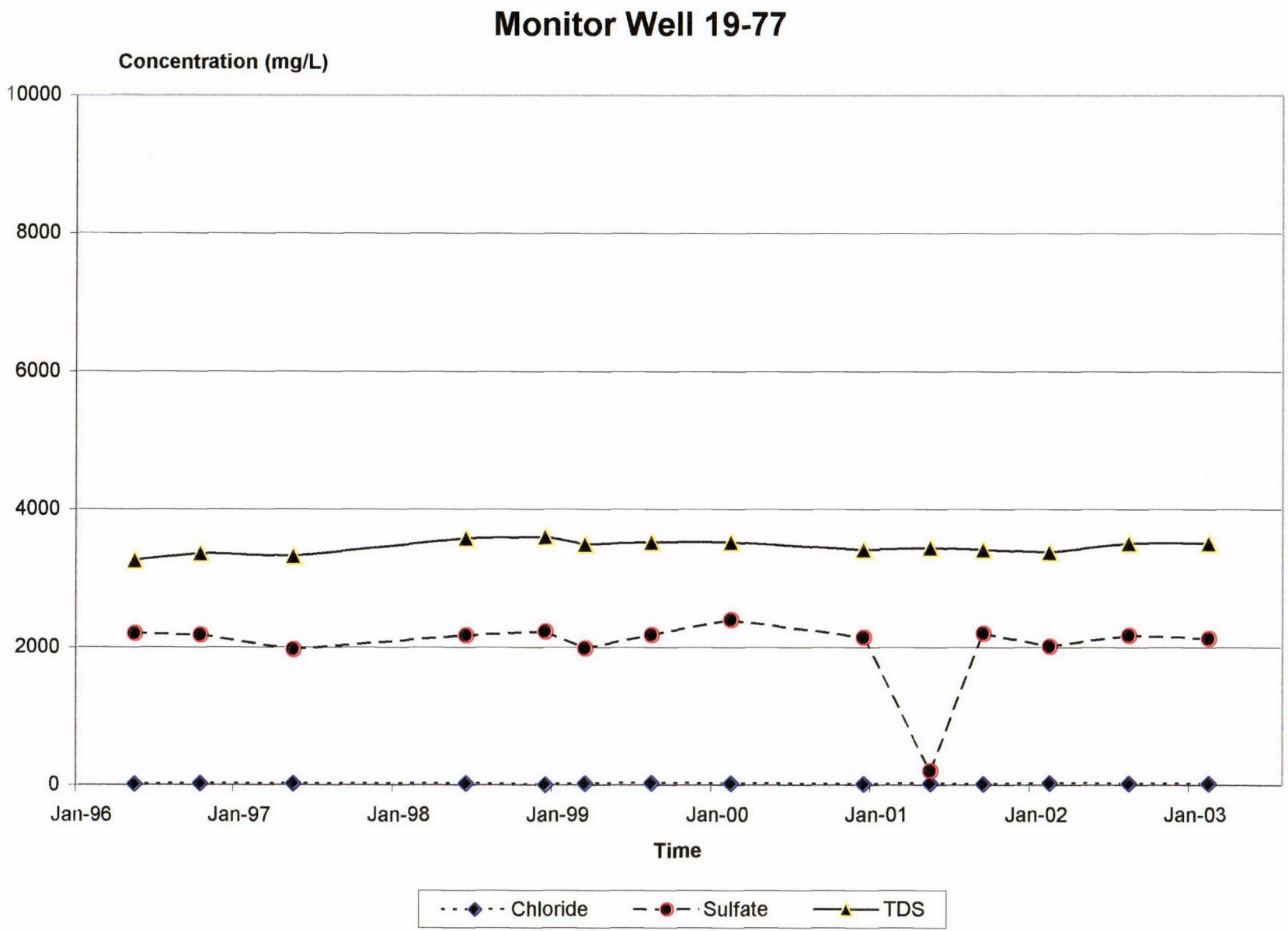
C06

Monitor Well 31-01TRA

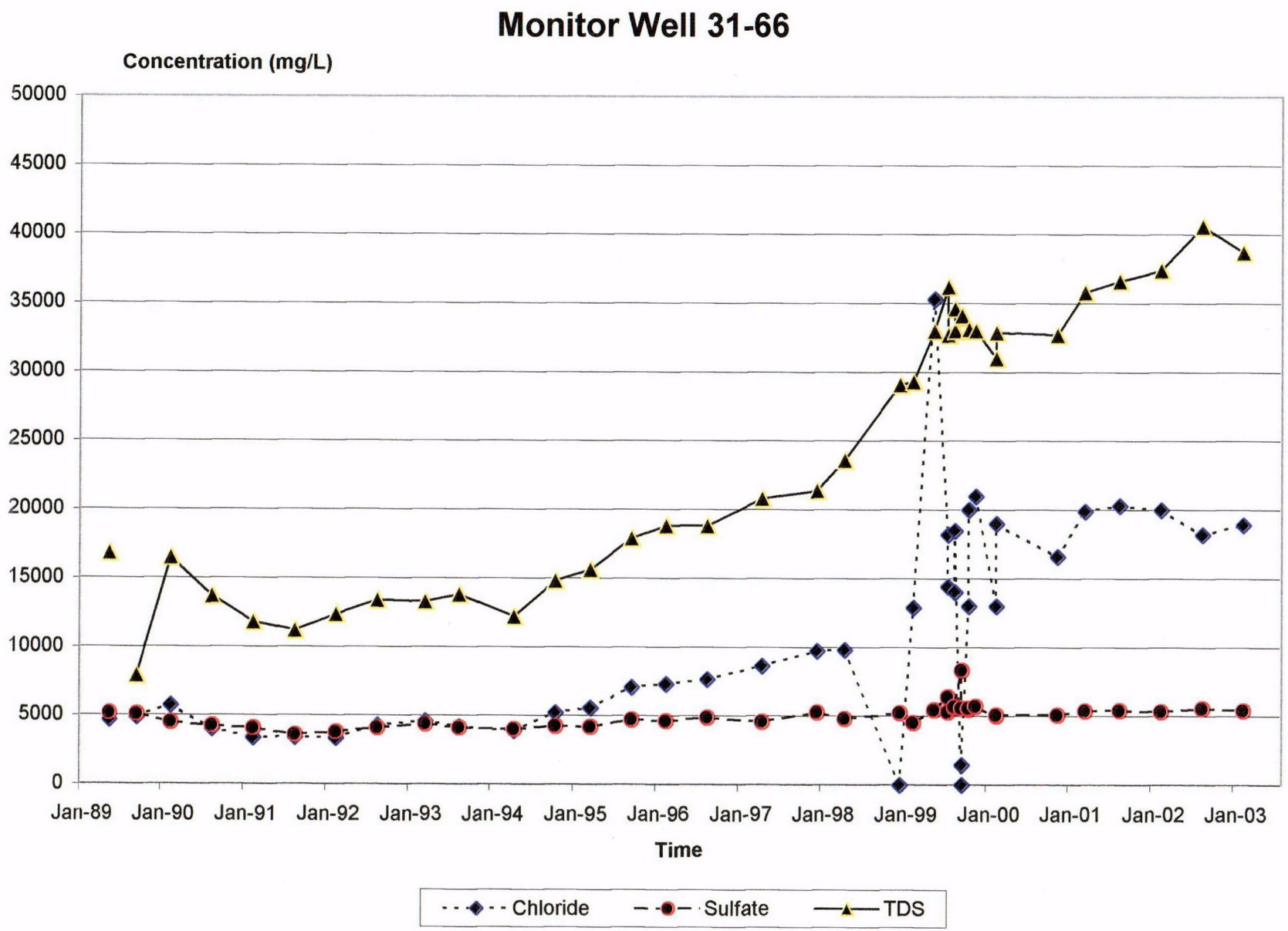


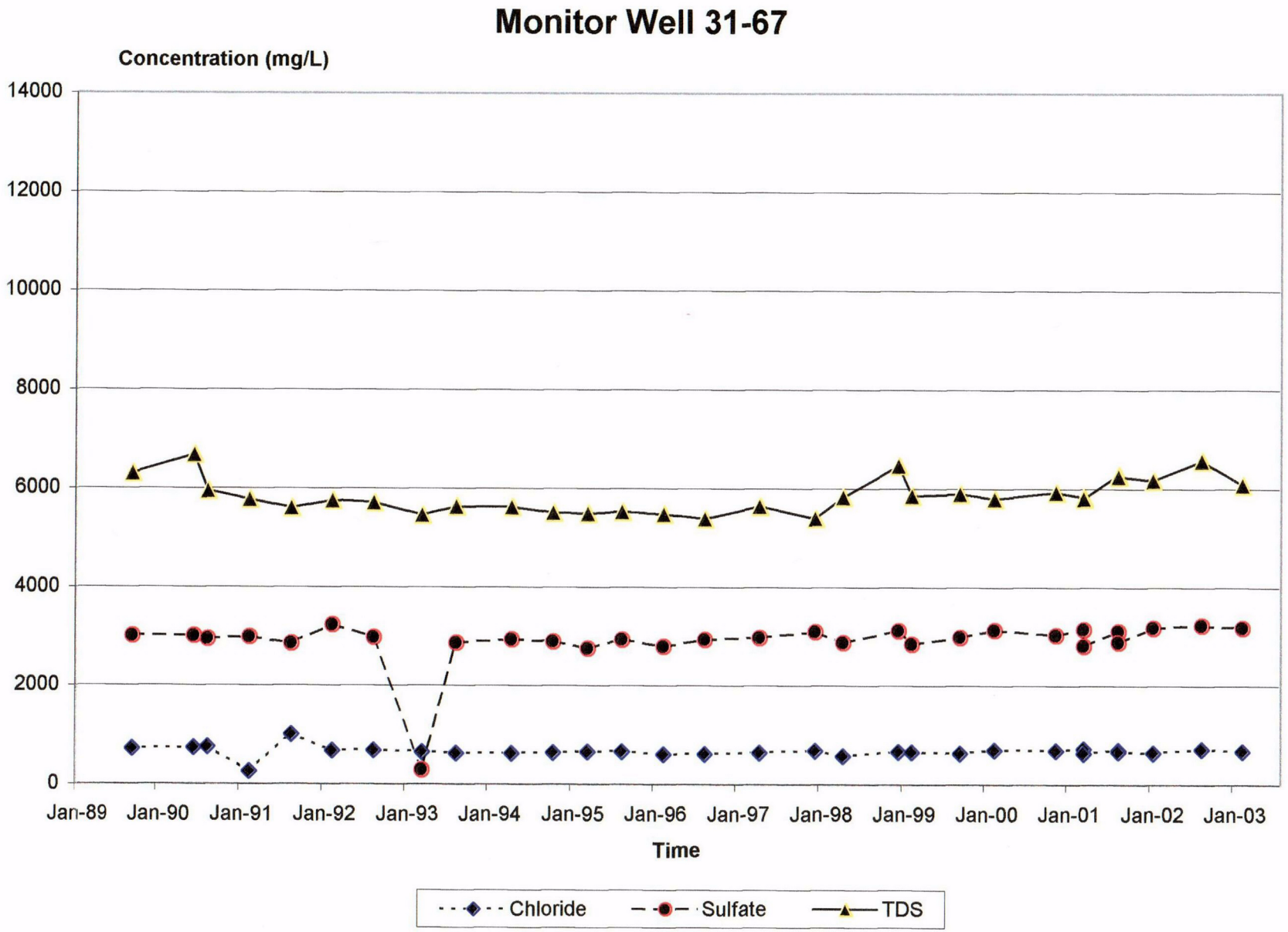
Monitor Well 33-01TRA



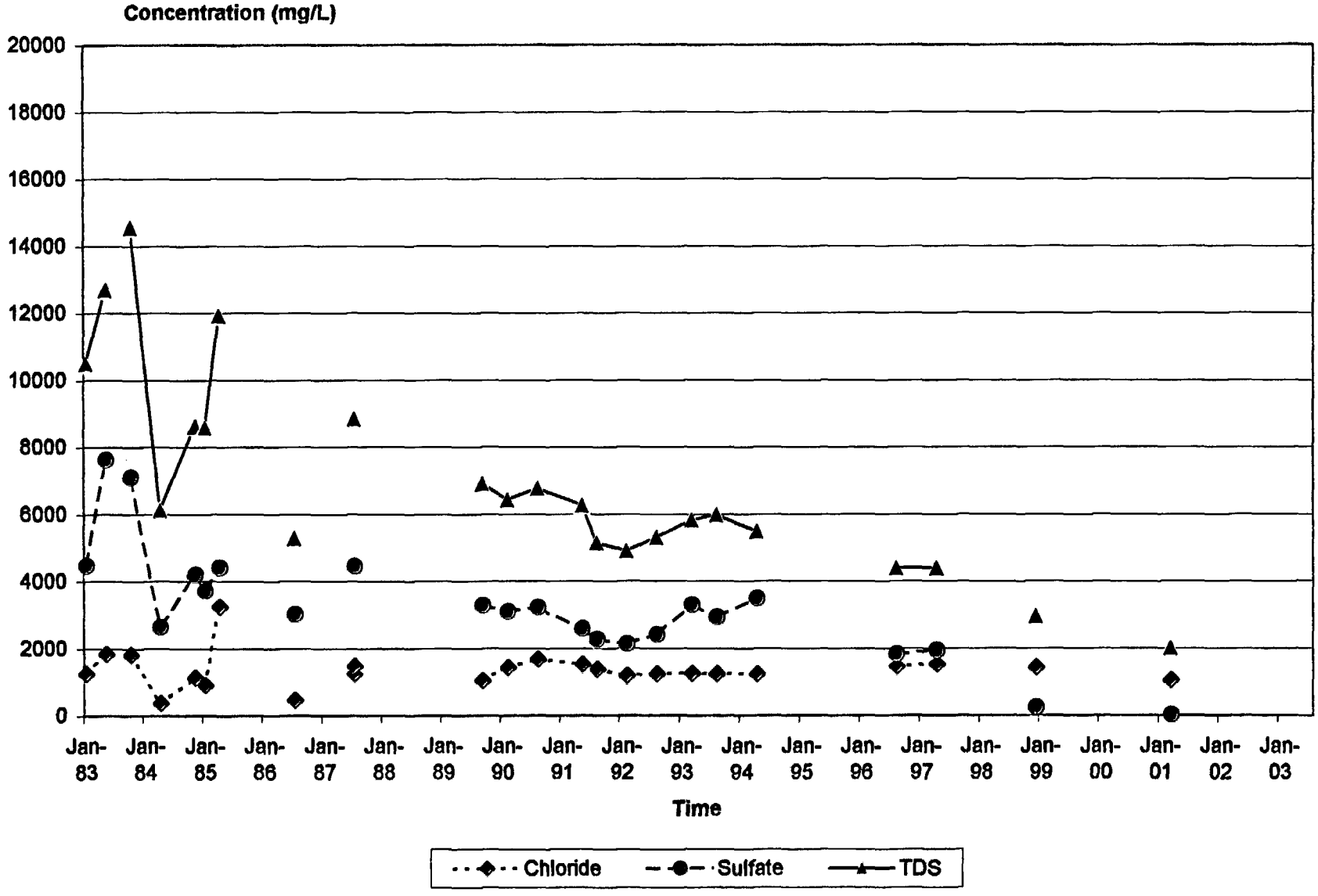

Monitor Well 19-77
Concentration (mg/L)
10000
8000
6000
4000
2000
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Time
Chloride
Sulfate
TDS

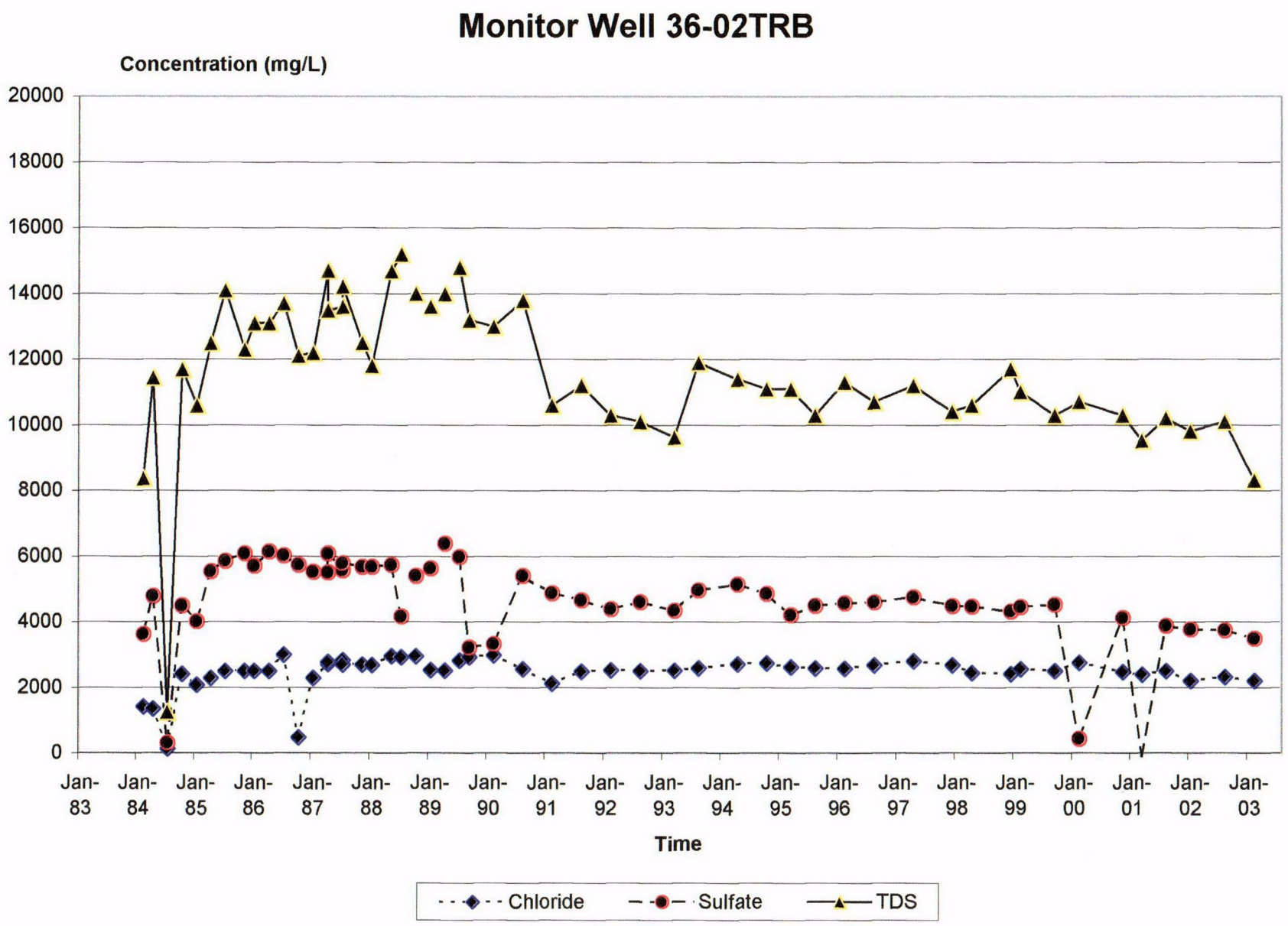
C08

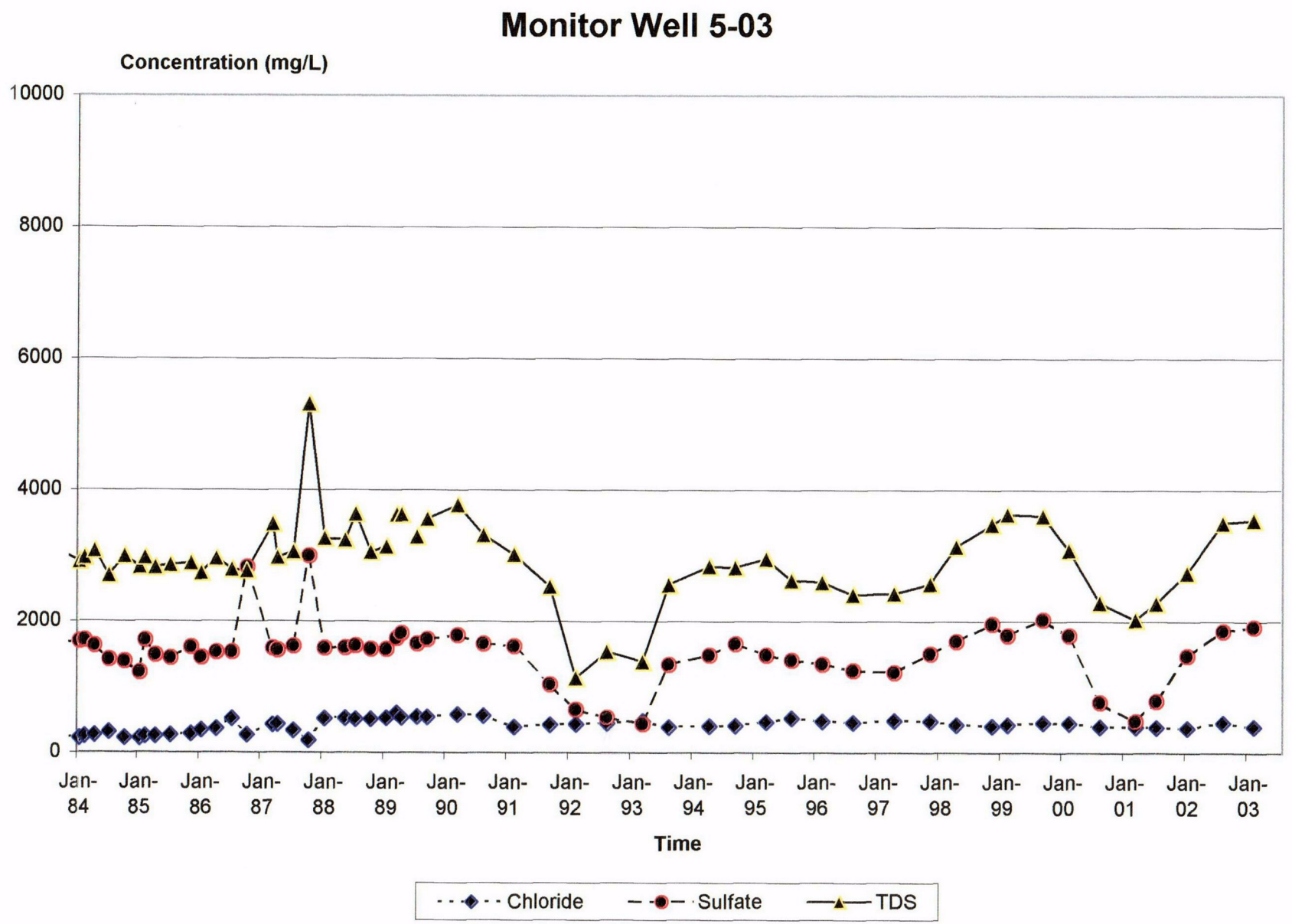

Monitor Well 31-66
Concentration (mg/L)
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Time
Chloride
Sulfate
TDS


Monitor Well 31-67
Concentration (mg/L)
14000
12000
10000
8000
6000
4000
2000
0
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Time
Chloride
Sulfate
TDS

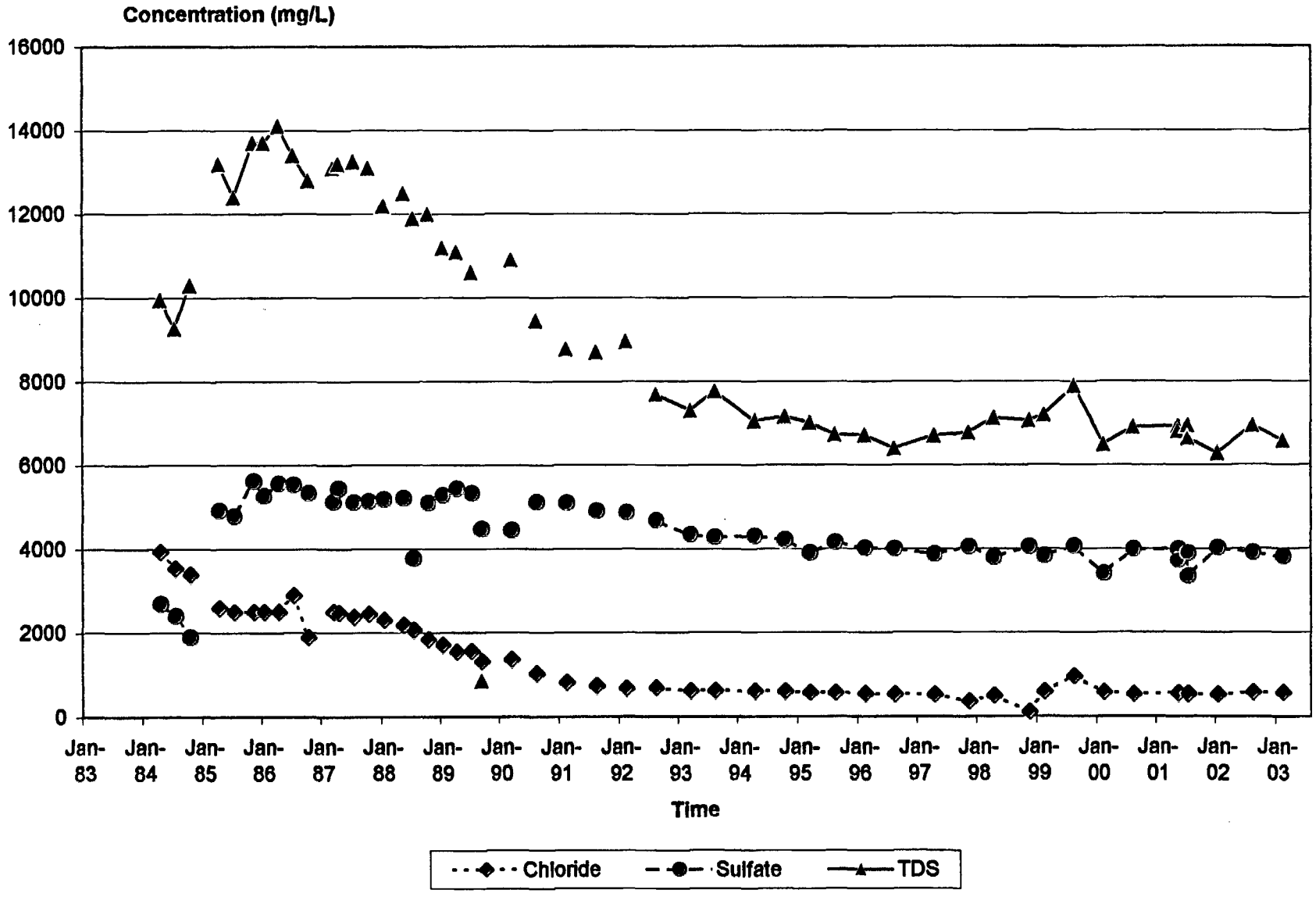
Monitor Well 36-01TRB



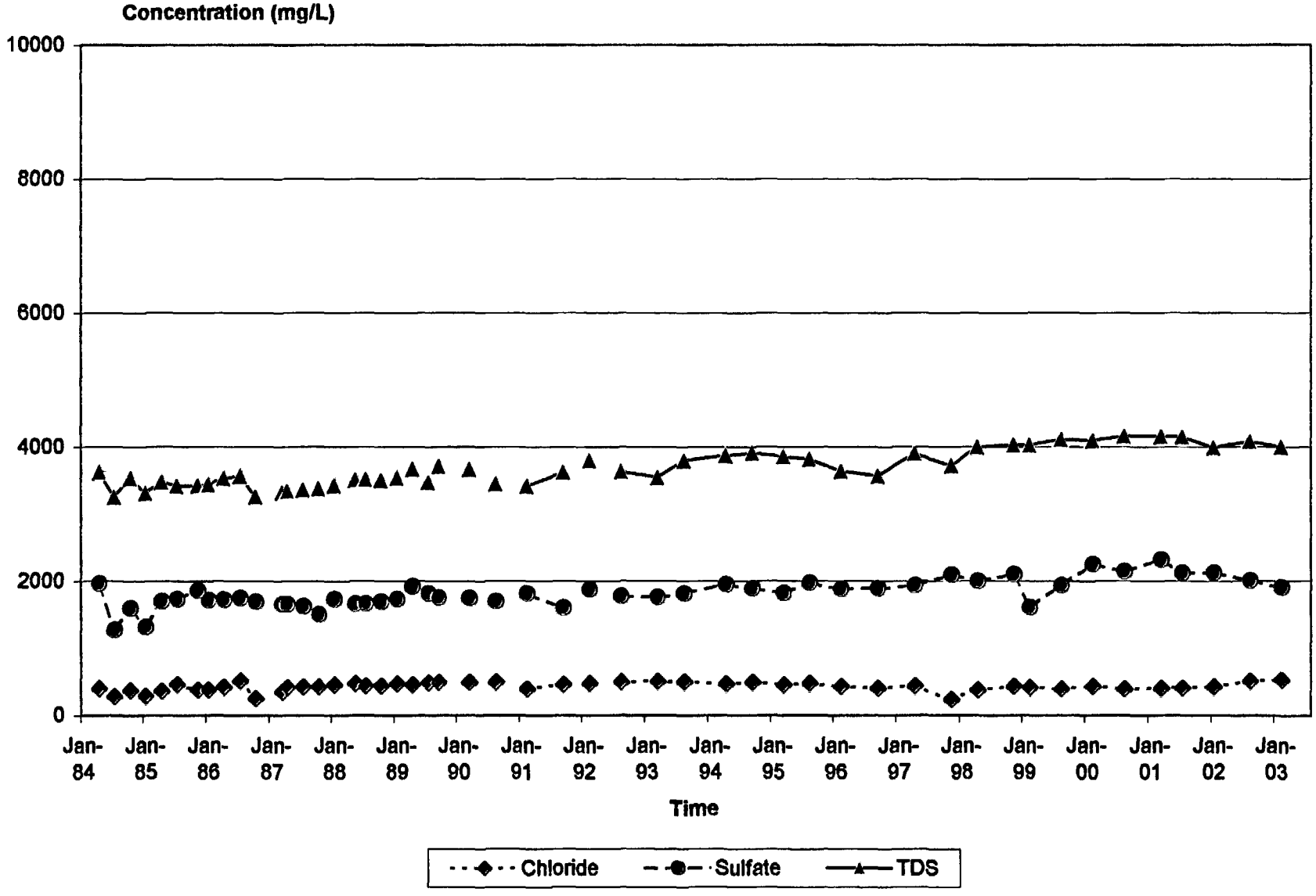

Monitor Well 36-02TRB
Concentration (mg/L)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Jan-83
Jan-84
Jan-85
Jan-86
Jan-87
Jan-88
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Time
Chloride
Sulfate
TDS

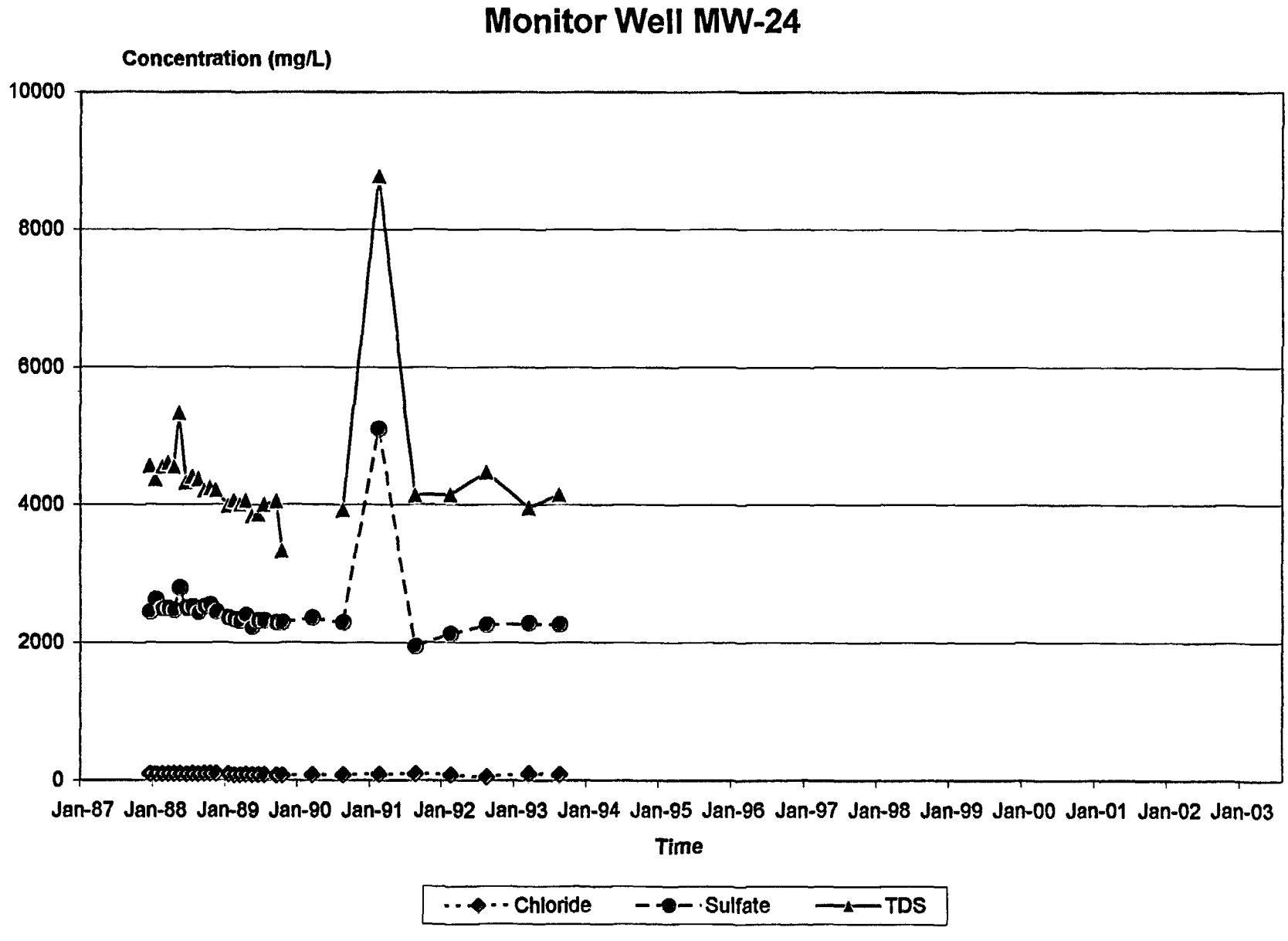

Monitor Well 5-03
Concentration (mg/L)
10000
8000
6000
4000
2000
0
Jan-84
Jan-85
Jan-86
Jan-87
Jan-88
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Time
Chloride
Sulfate
TDS

Monitor Well 31-61



Monitor Well 32-59



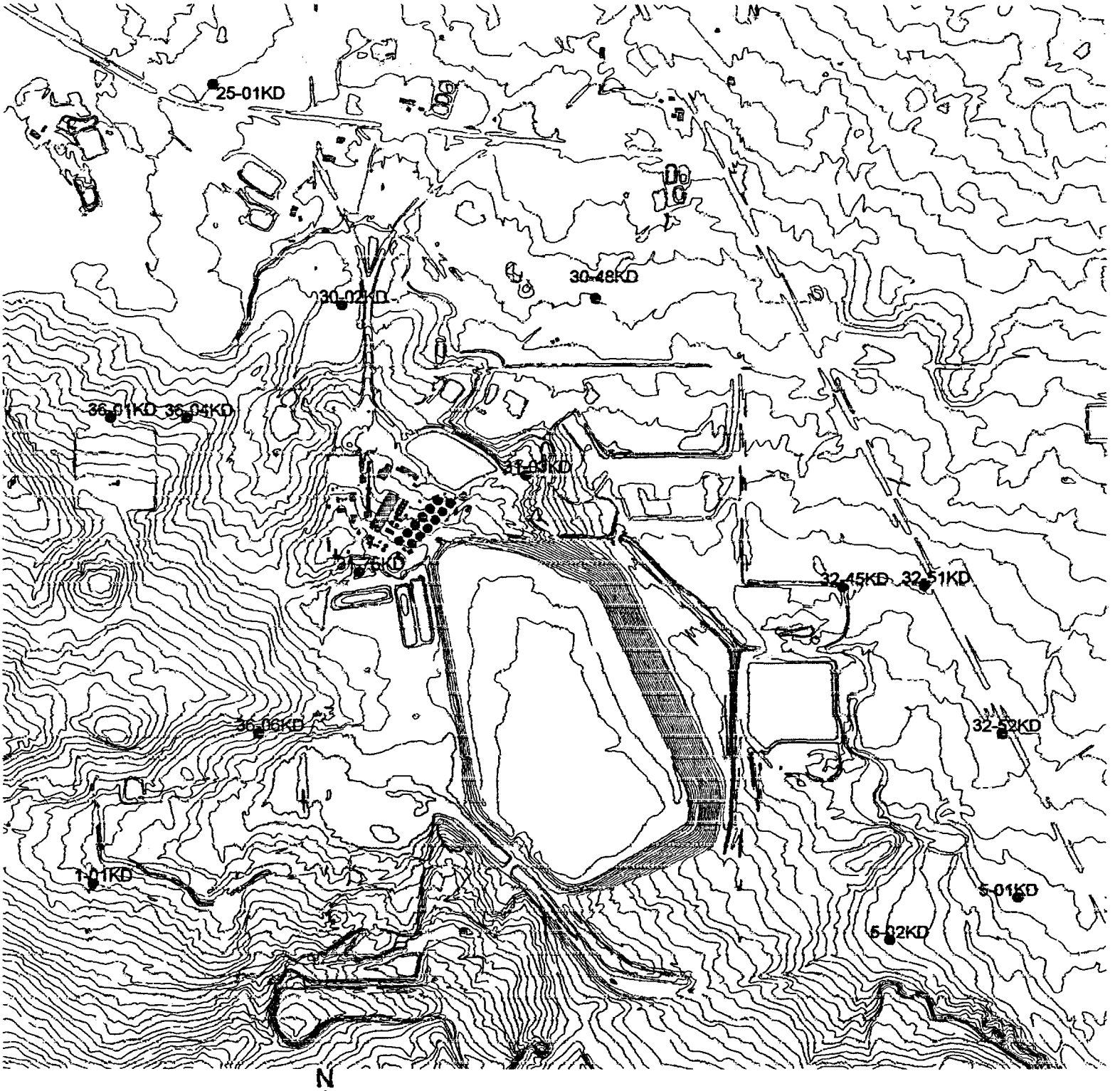

Monitor Well MW-24
Concentration (mg/L)
10000
8000
6000
4000
2000
0
Jan-87 Jan-88 Jan-89 Jan-90 Jan-91 Jan-92 Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03
Time
Chloride
Sulfate
TDS

PLUME PLOTS

DAKOTA, TRES HERMANOS B, ALLUVIUM

RIO ALGOM MINING LLC
LICENSE SUA-1473
ANTIMONY

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.05 mg/L

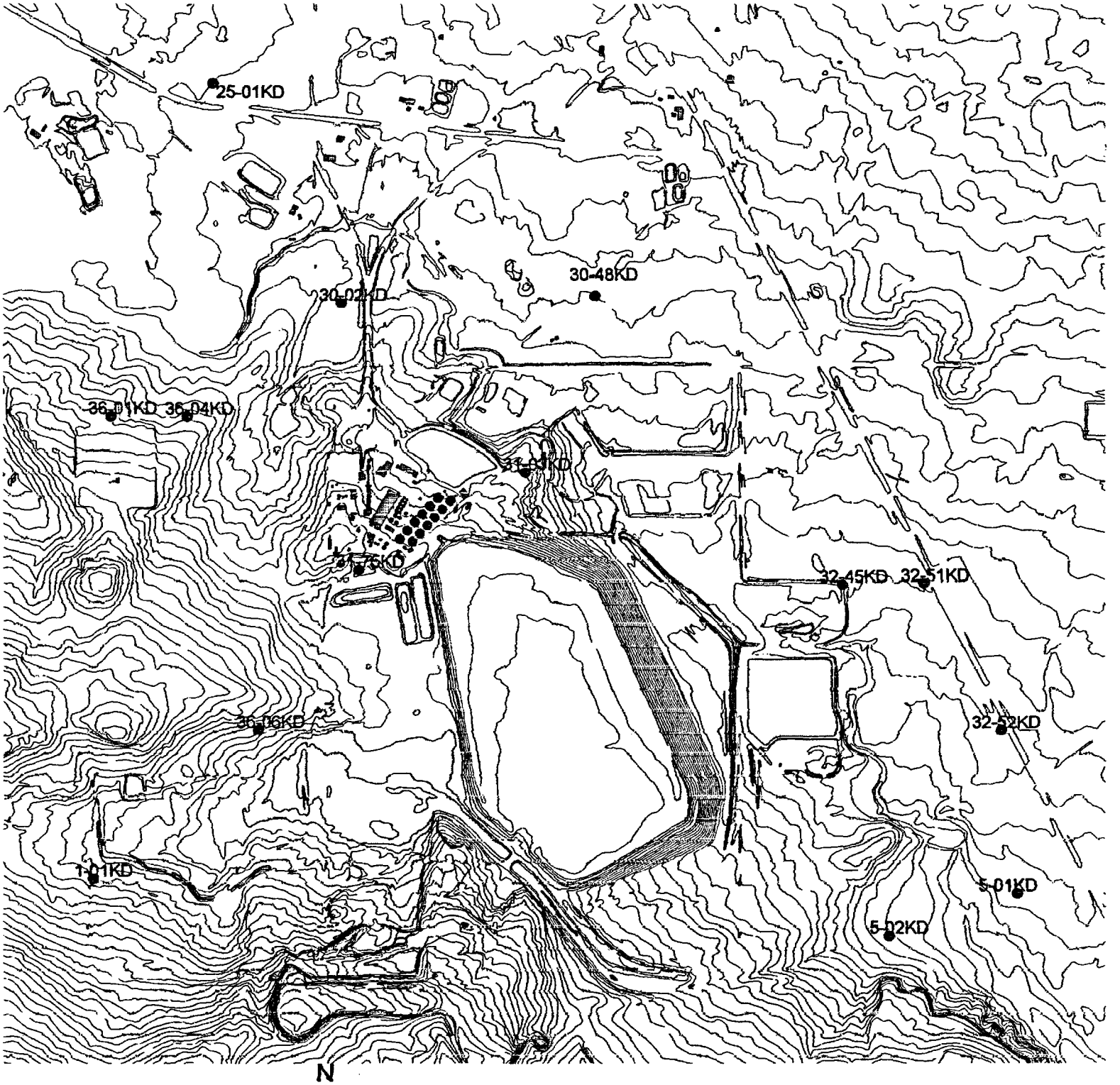


DAKOTA

1:20663

Antimony concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
ARSENIC
2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.1 mg/L



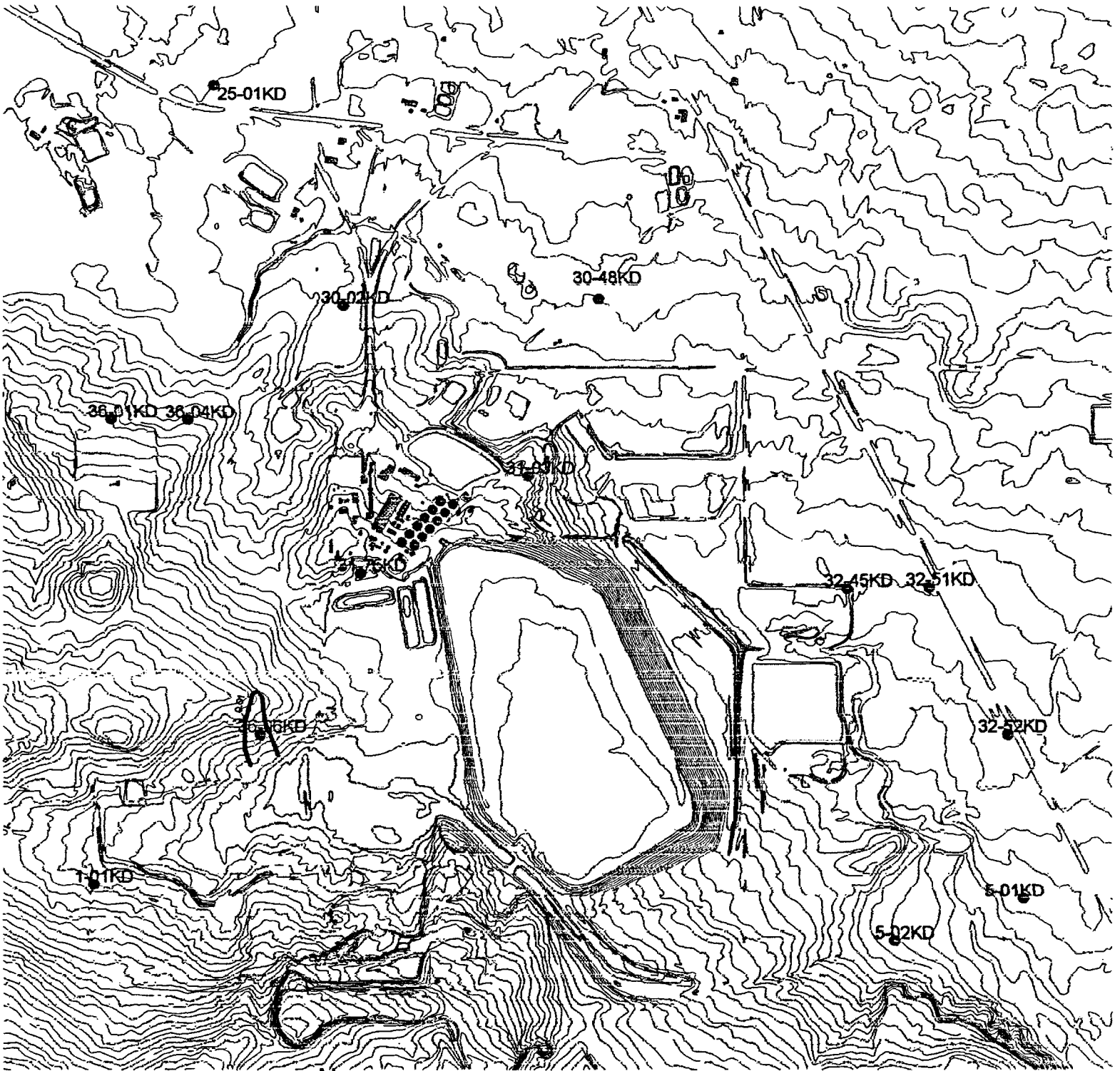
DAKOTA

1:20663

Arsenic concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
BERYLLIUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.01 mg/L

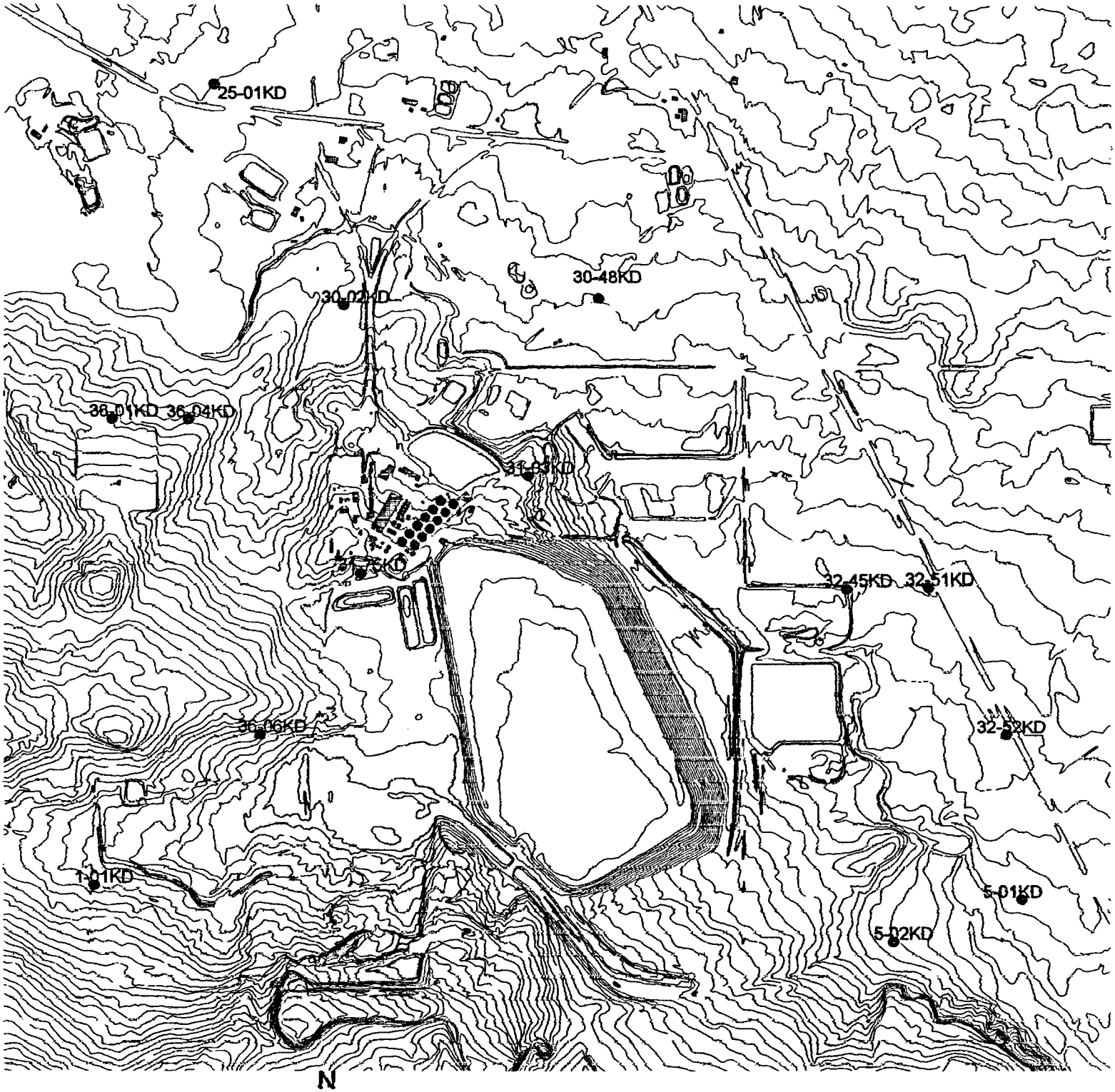


1:20663

DAKOTA

RIO ALGOM MINING LLC
LICENSE SUA-1473
CADMIUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.01 mg/L



N

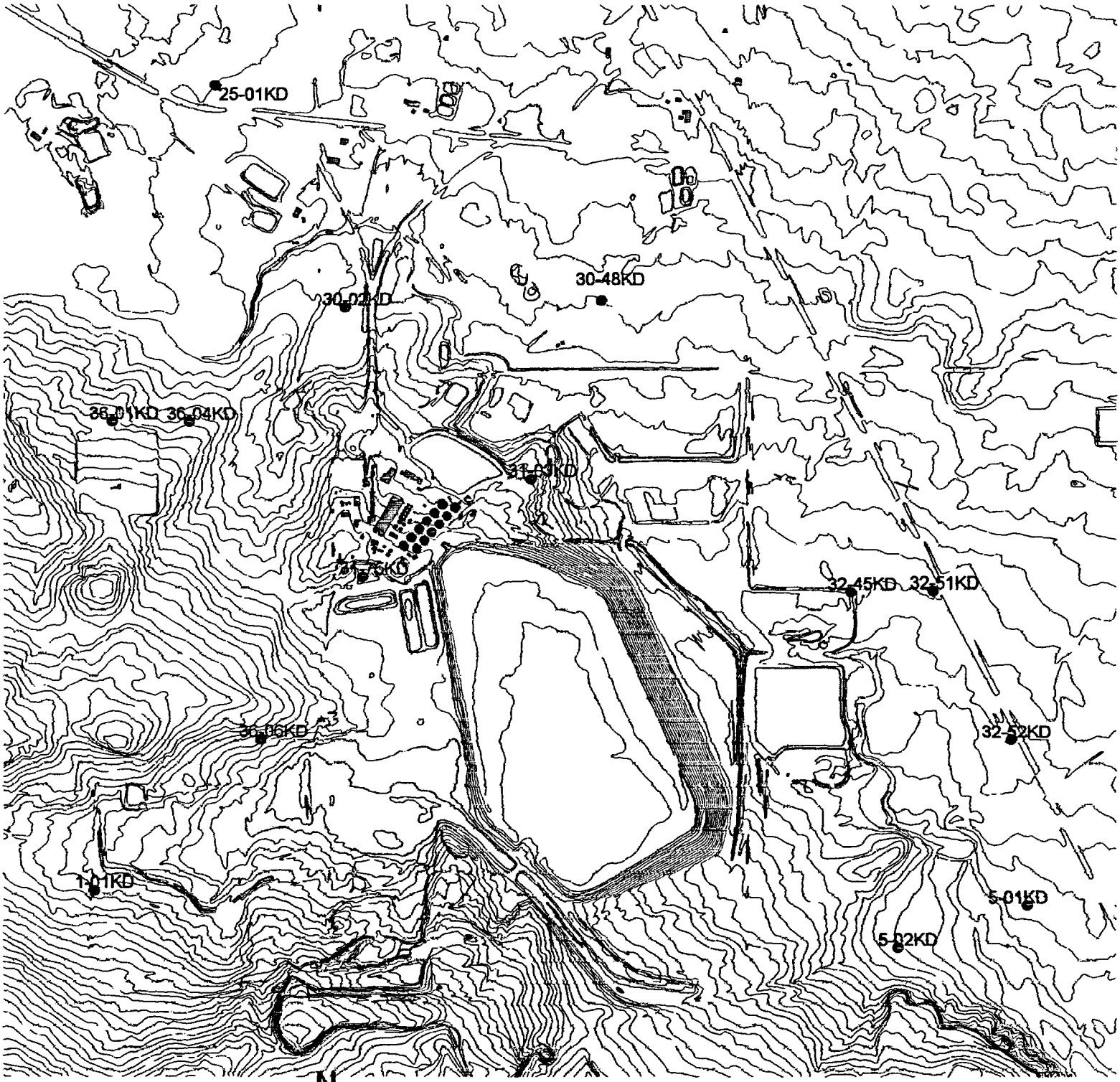
1:20663

DAKOTA

cadmium concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
CYANIDE

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.04 mg/L



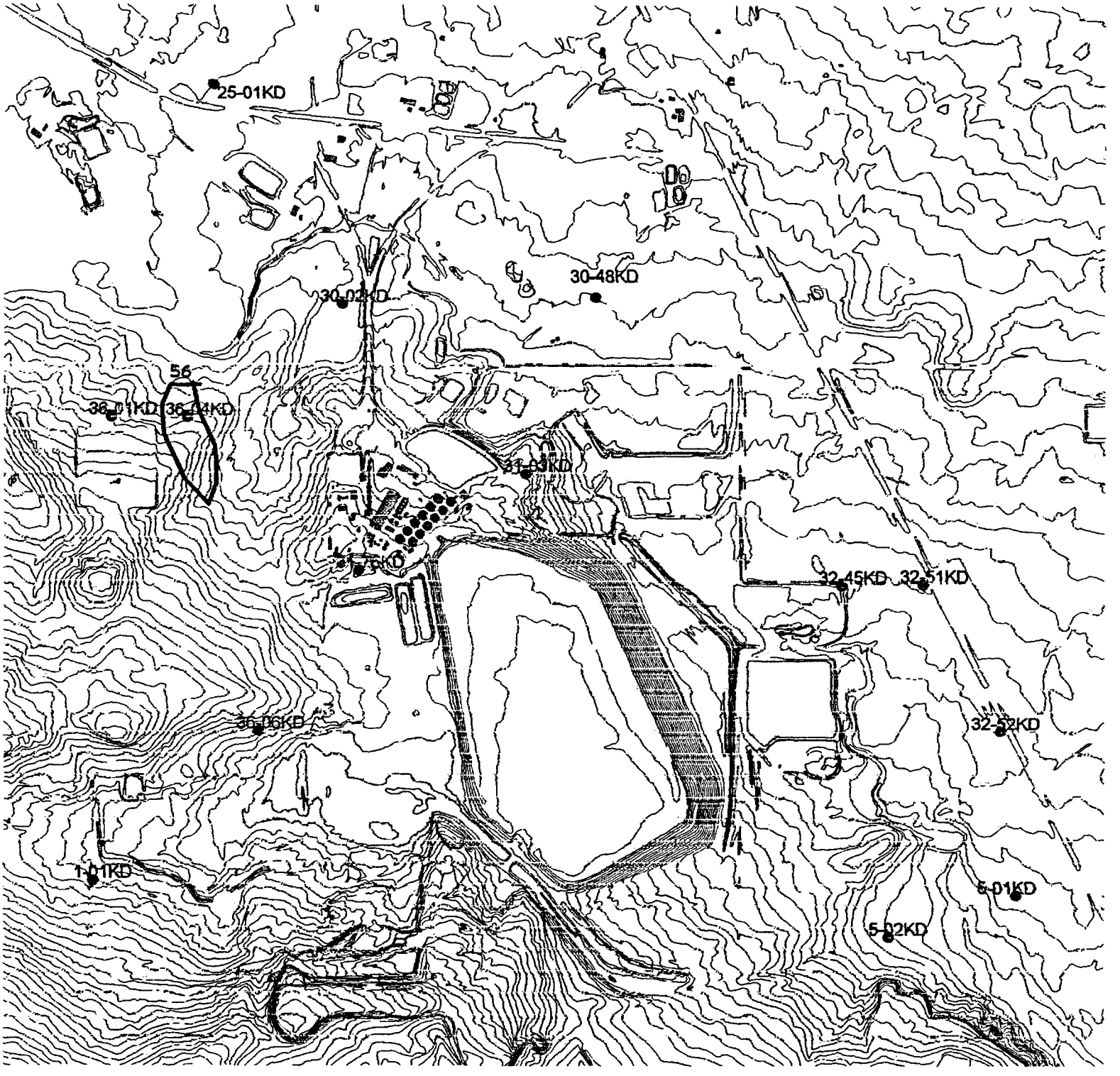
N

1:20663

DAKOTA

Cyanide concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
GROSS ALPHA
(EXCLUDES URANIUM AND RADON)
2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 56 pCi/L



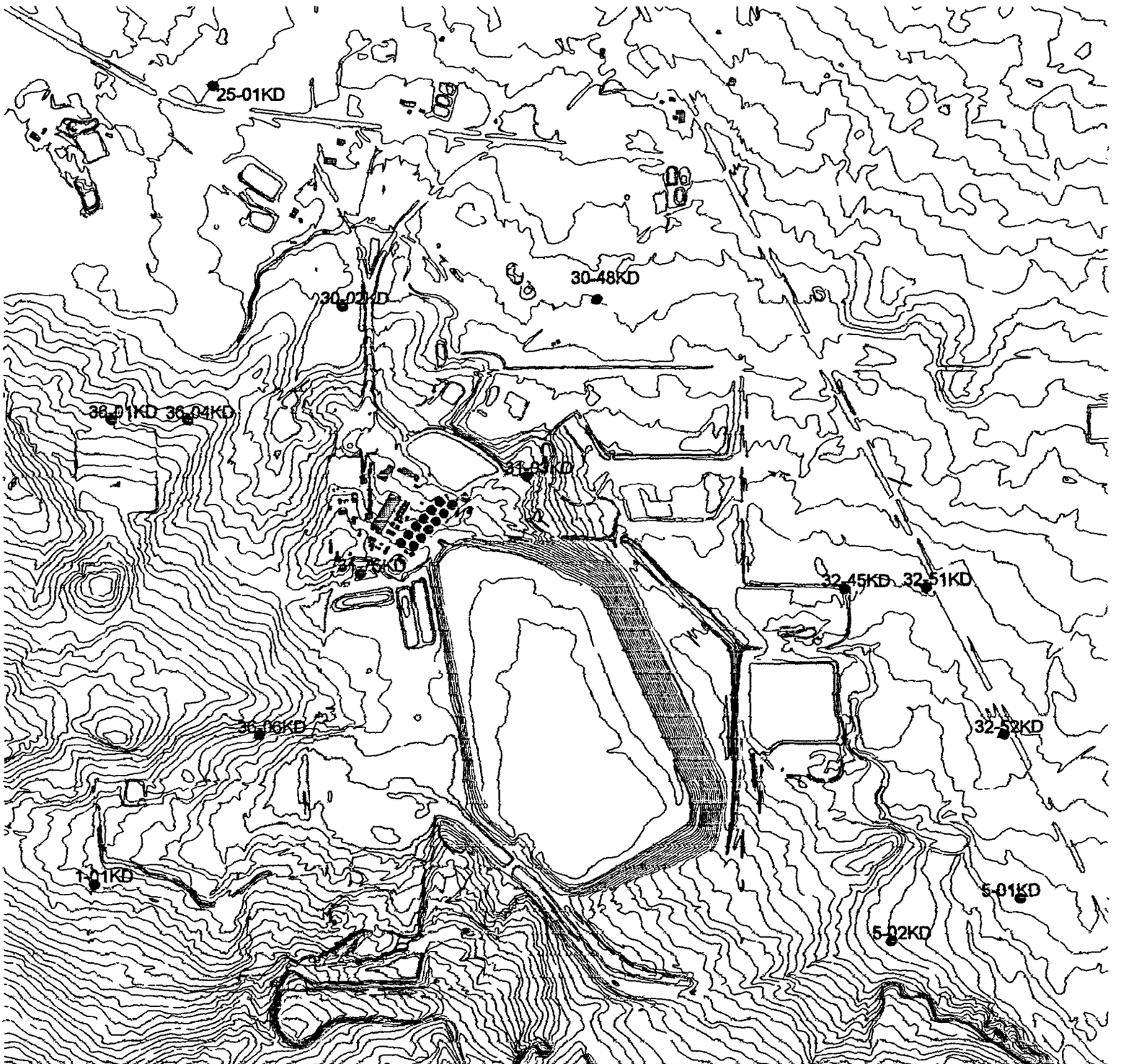
DAKOTA

N

1:20663

RIO ALGOM MINING LLC
LICENSE SUA-1473
LEAD

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.14 mg/L



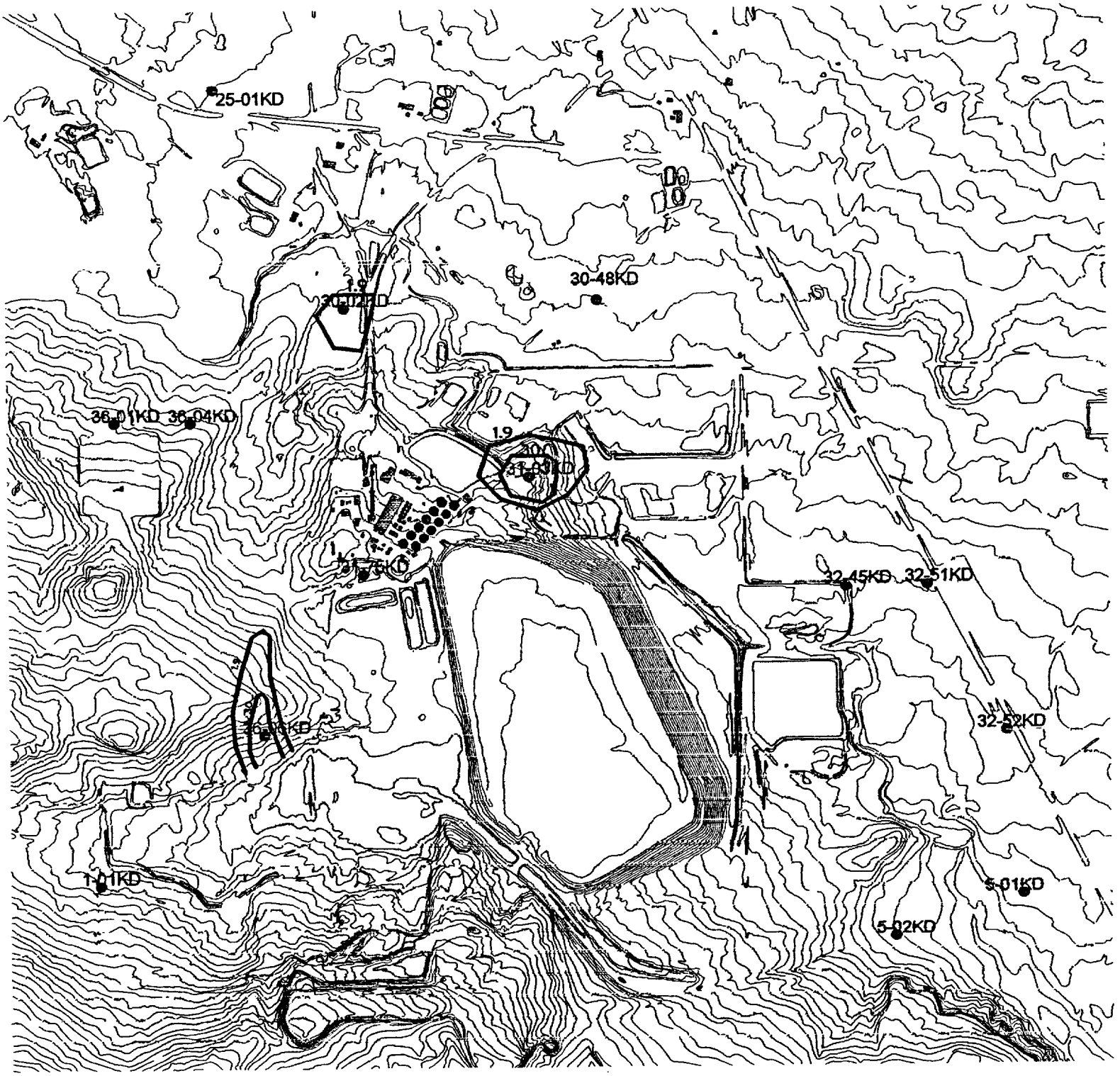
DAKOTA

1:20663

Lead concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
LEAD-210

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 1.9 pCi/L

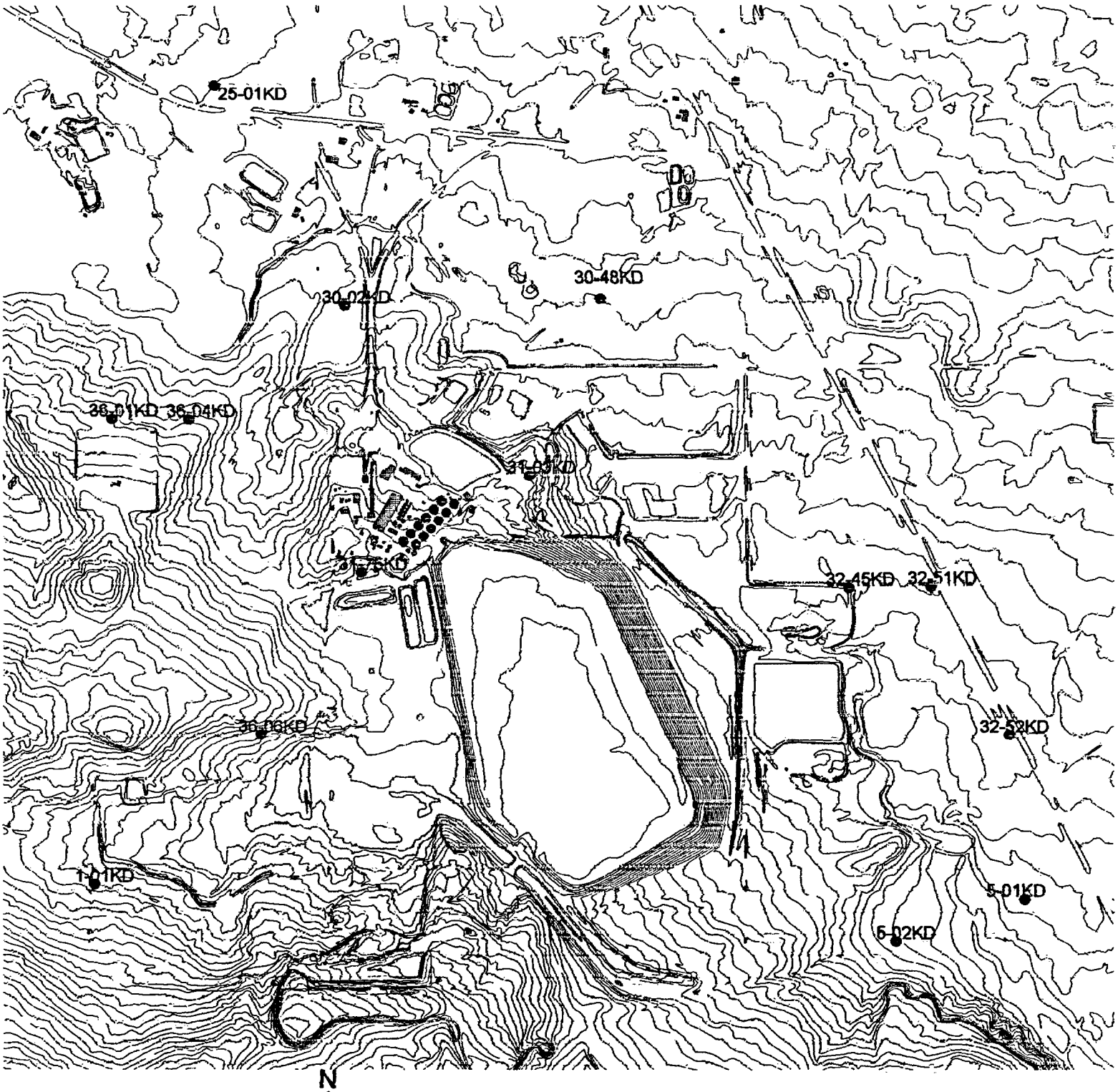


1:20663

N

DAKOTA

RIO ALGOM MINING LLC
LICENSE SUA-1473
MOLYBDENUM
2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.06 mg/L



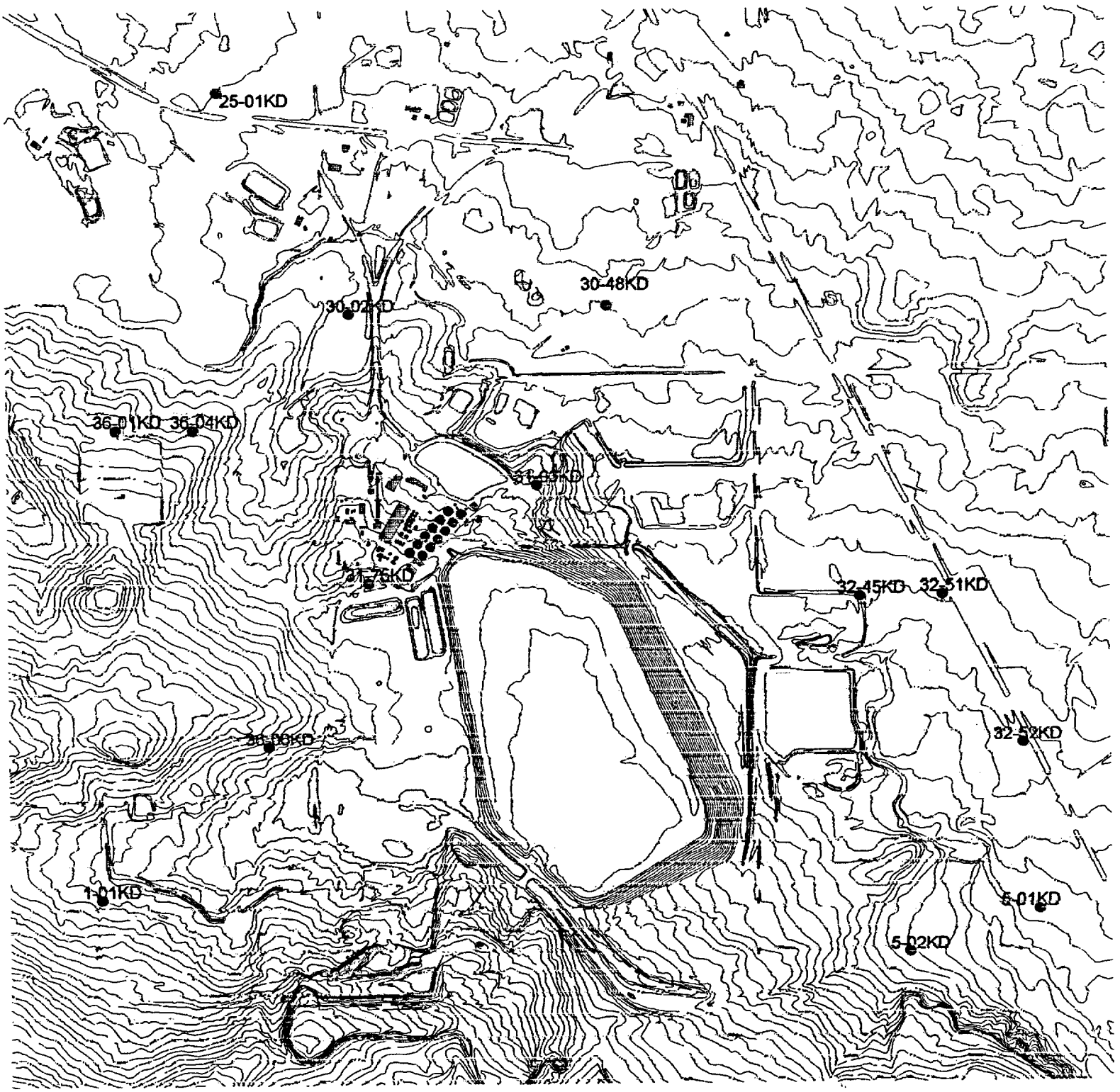
DAKOTA

1:20663

Molybdenum concentrations in all wells are at or below the groundwater protection standard, except NRC CAP background well 17-01KD = 0.14 mg/L.

RIO ALGOM MINING LLC
LICENSE SUA-1473
NICKEL

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.03 mg/L



DAKOTA

N

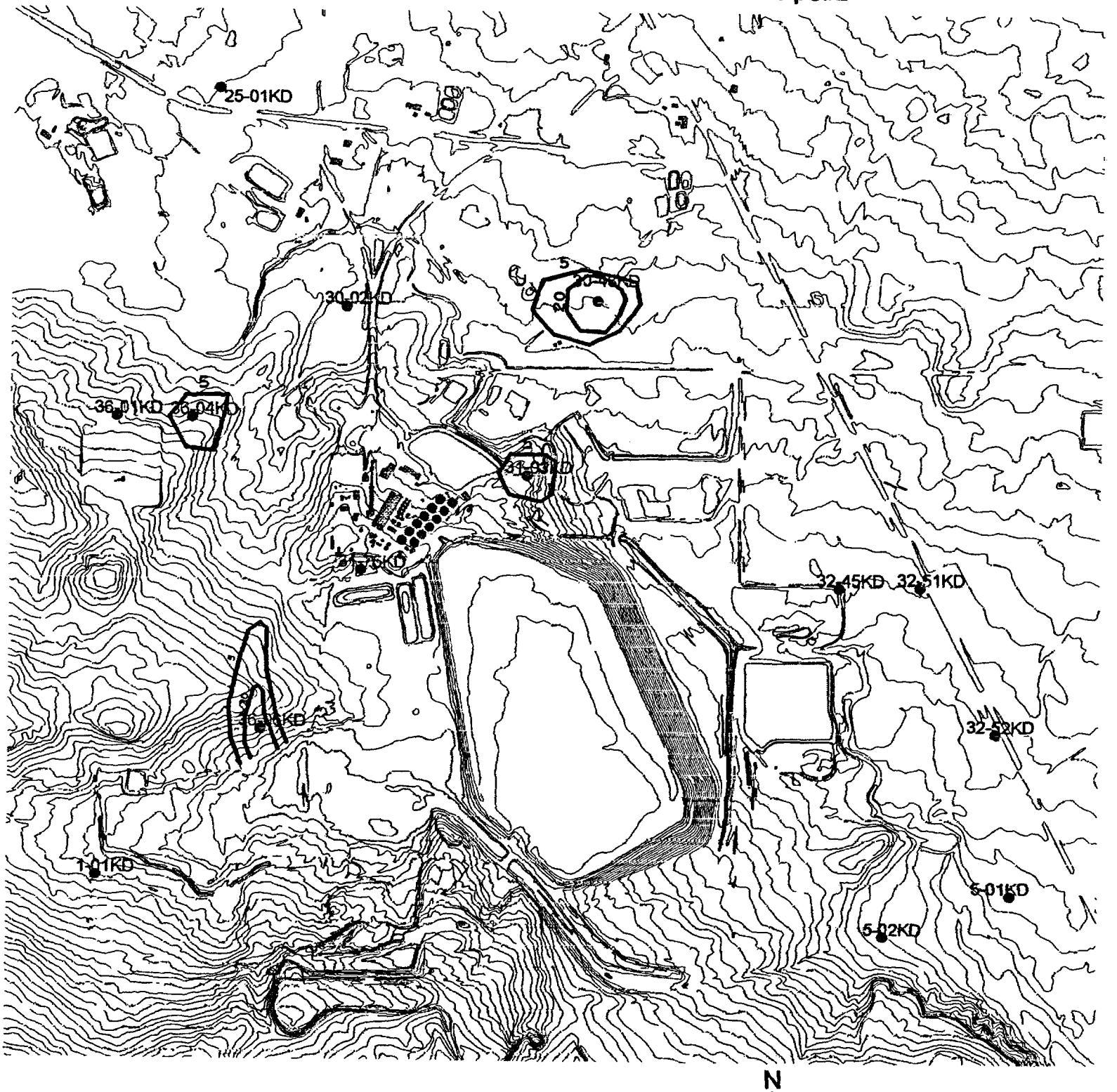
1:20335

Nickel concentrations in all wells are at or below the groundwater protection standard, except NRC CAP background well 17-01KD = 0.04 mg/L.

RIO ALGOM MINING LLC
LICENSE SUA-1473

RADIUM-226/228

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 5 pCi/L

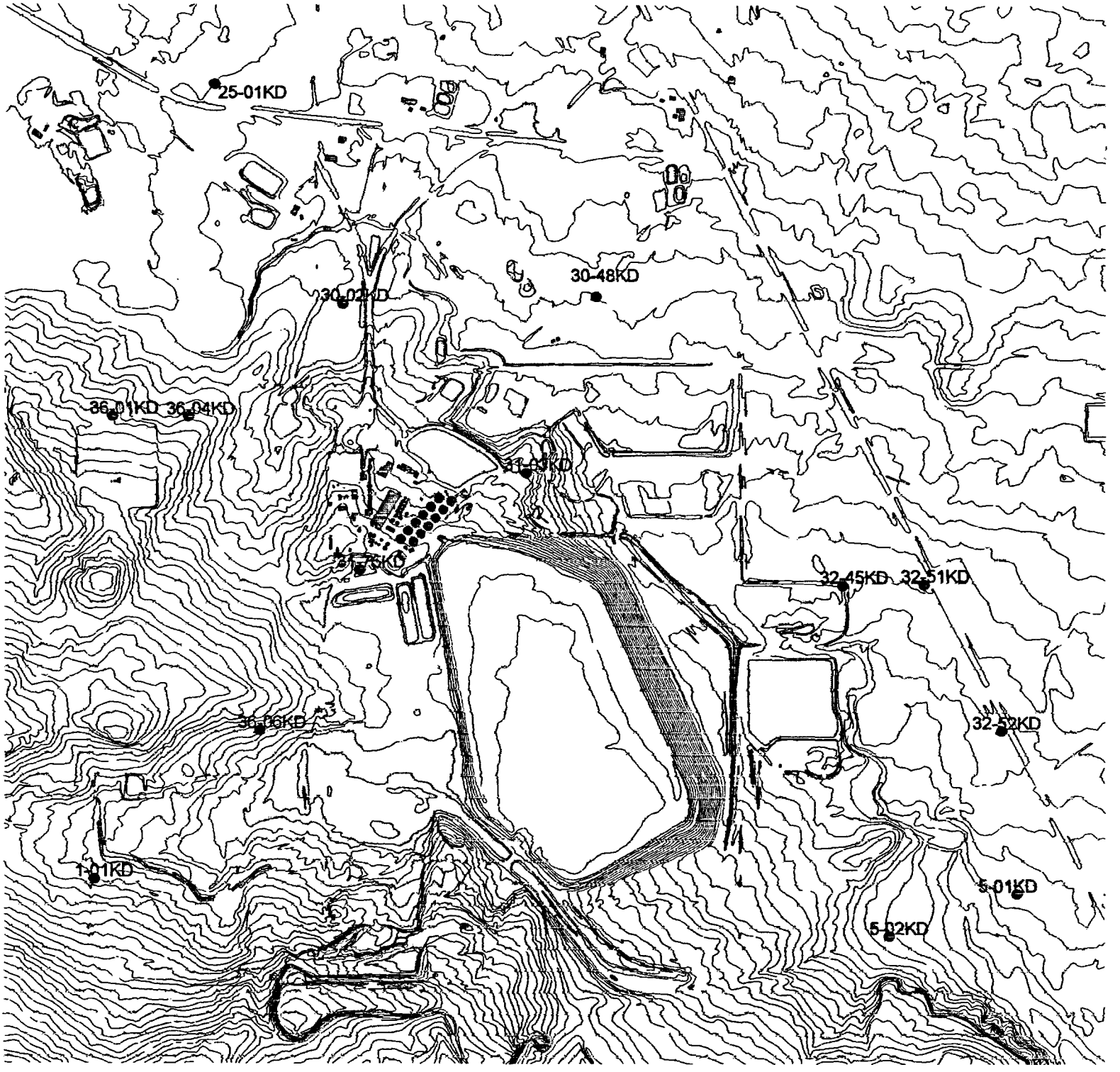


DAKOTA

1:20663

RIO ALGOM MINING LLC
LICENSE SUA-1473
SELENIUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.04 mg/L



DAKOTA

N

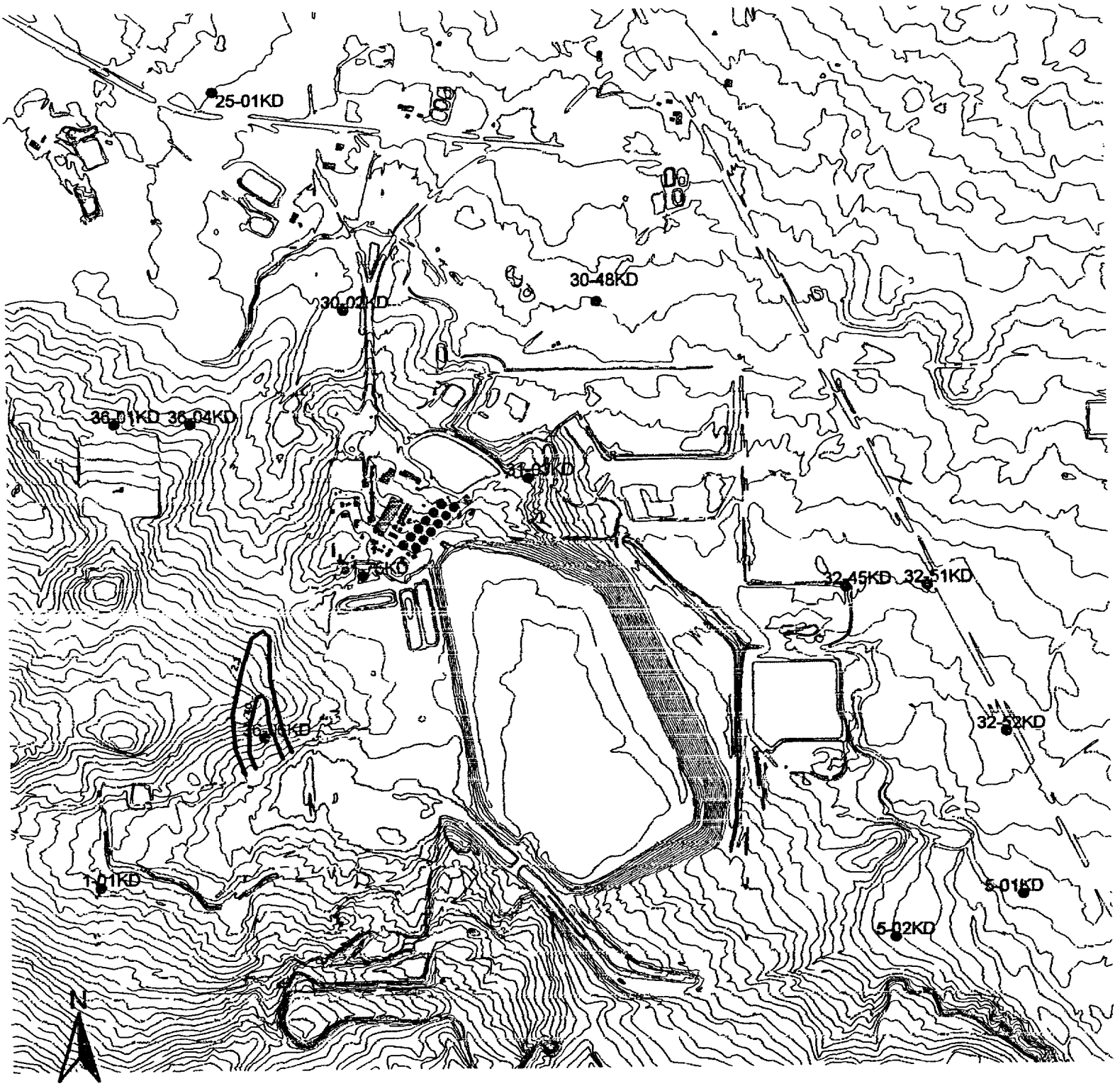
1:20663

Selenium concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473

THORIUM-230

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 2.3 pCi/L

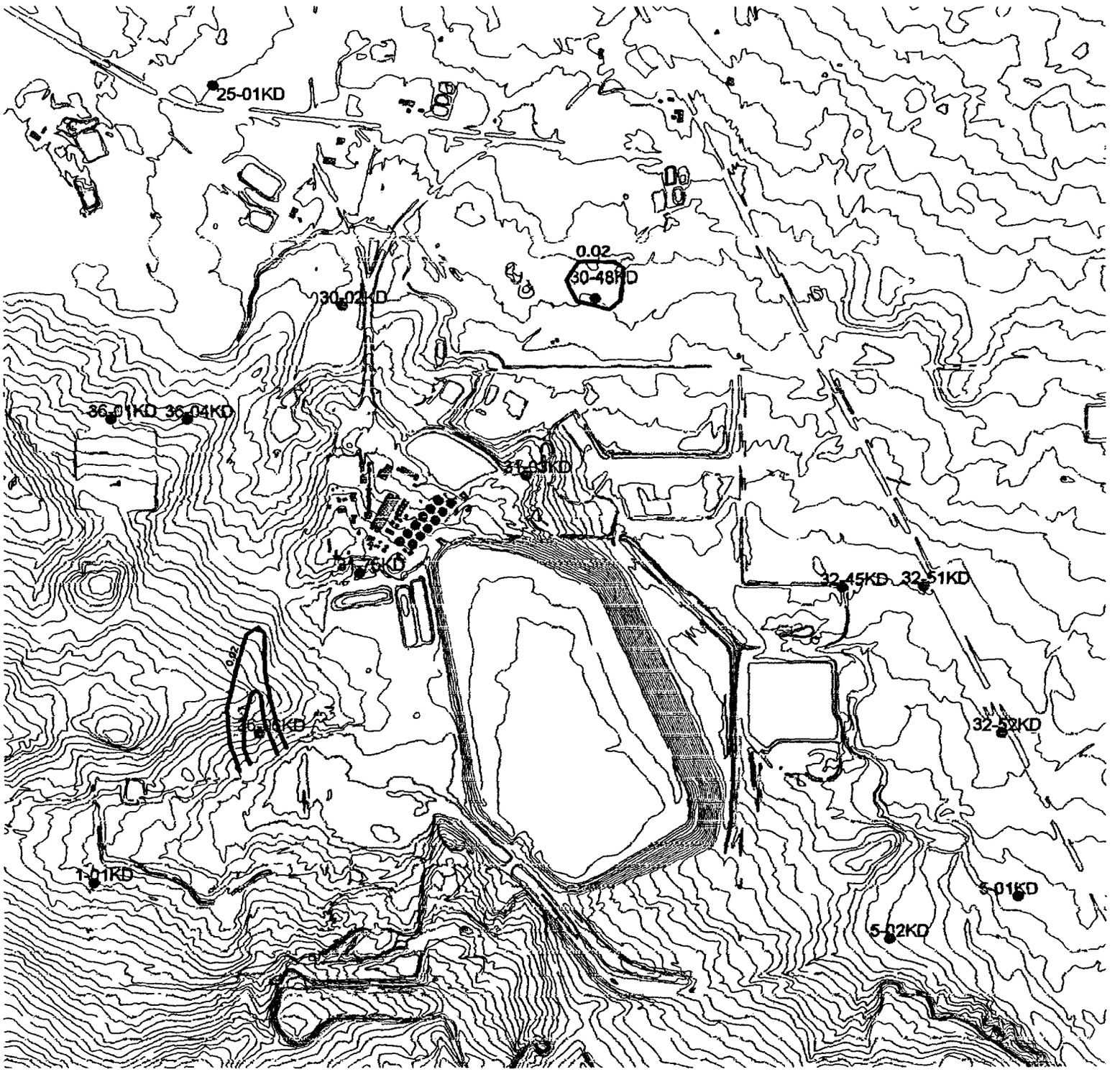


DAKOTA

1:20663

RIO ALGOM MINING LLC
LICENSE SUA-1473
URANIUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.02 mg/L

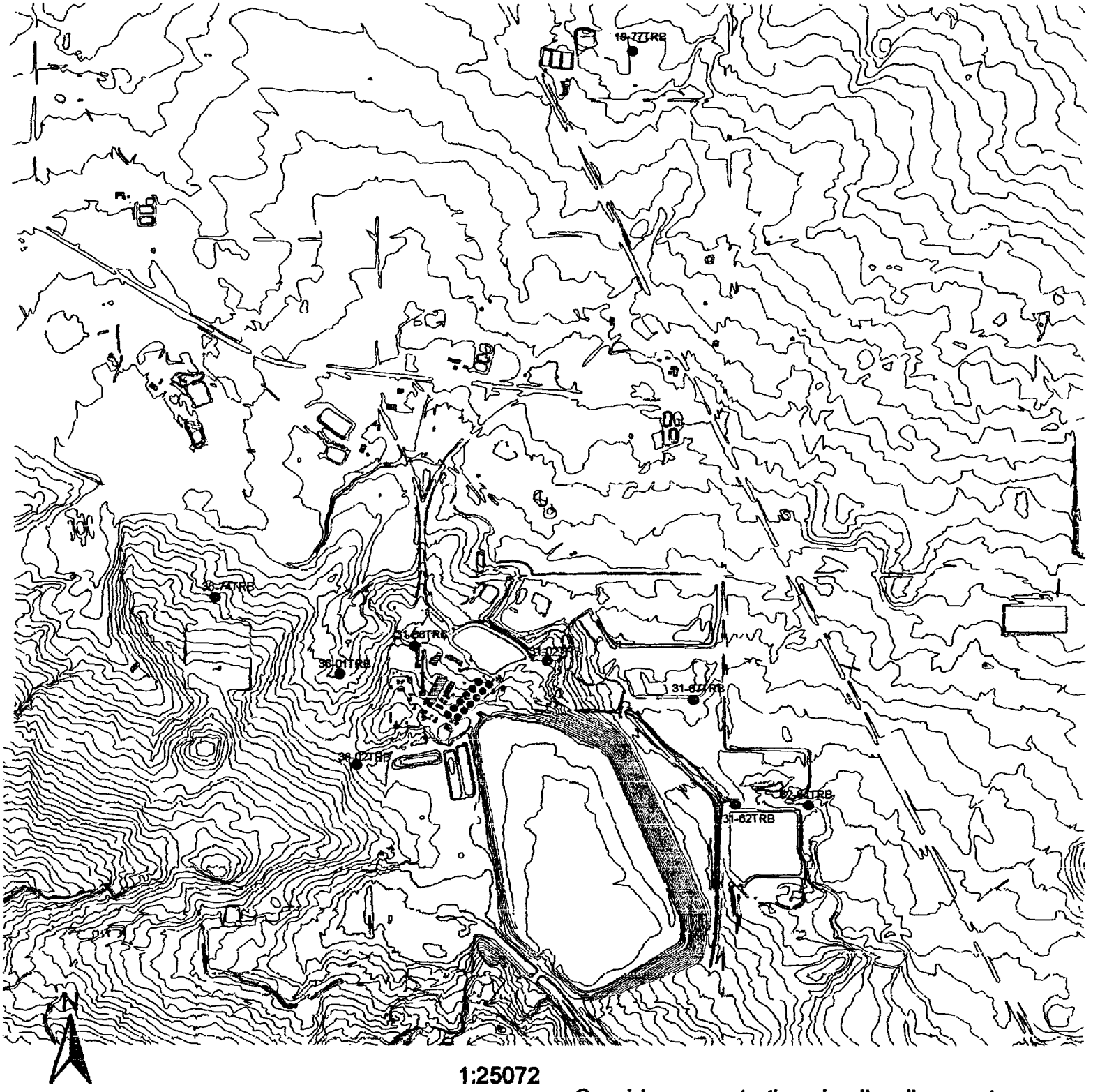


DAKOTA

1:20663

RIO ALGOM MINING LLC
LICENSE SUA-1473
CYANIDE

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.01 mg/L



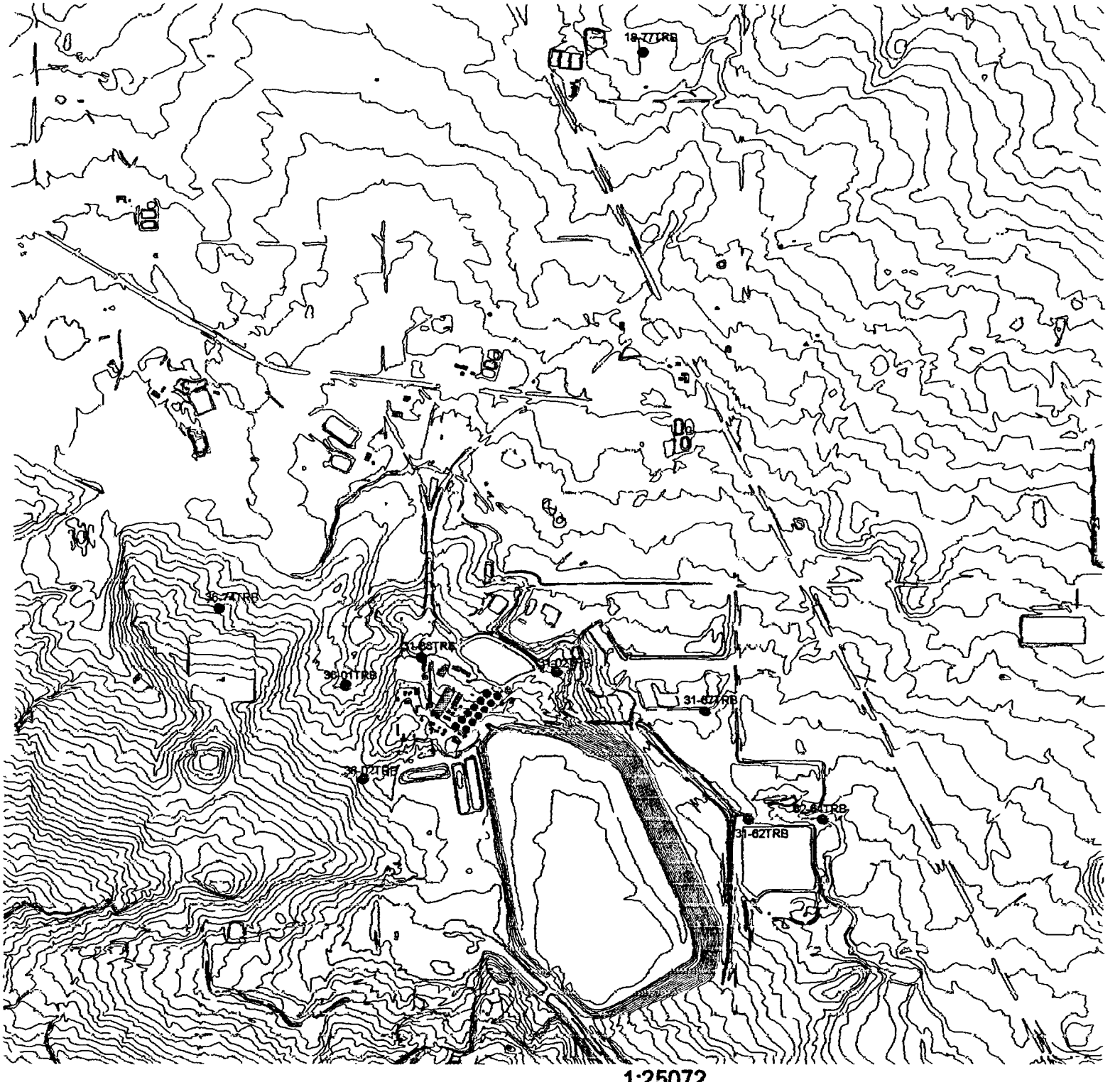
1:25072

TRES HERMANOS B

Cyanide concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
GROSS ALPHA
(EXCLUDES URANIUM AND RADON)

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 21 pCi/L



1:25072

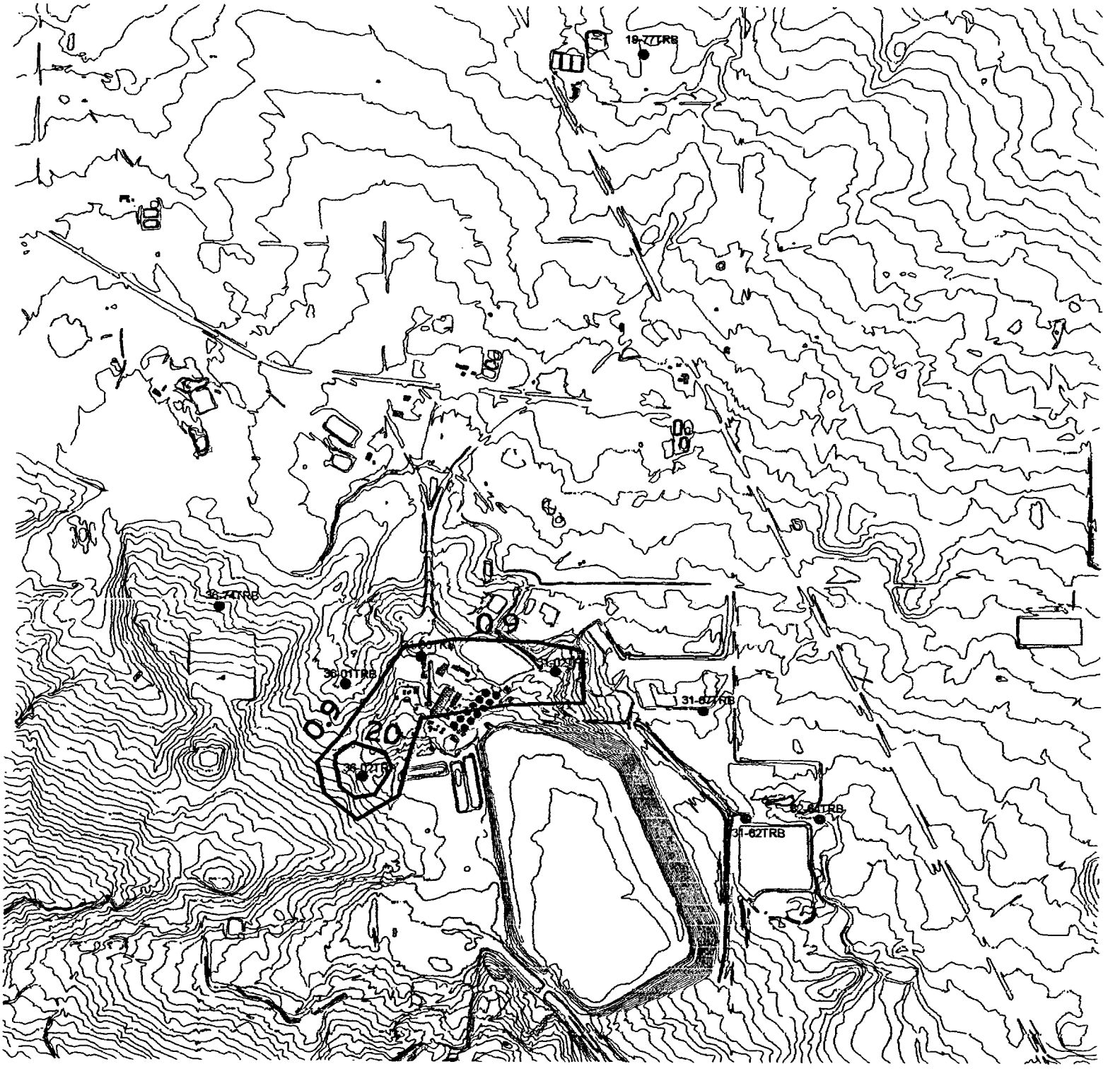
TRES HERMANOS B

N

Gross alpha concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
LEAD-210

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.9 pCi/L



1:25072

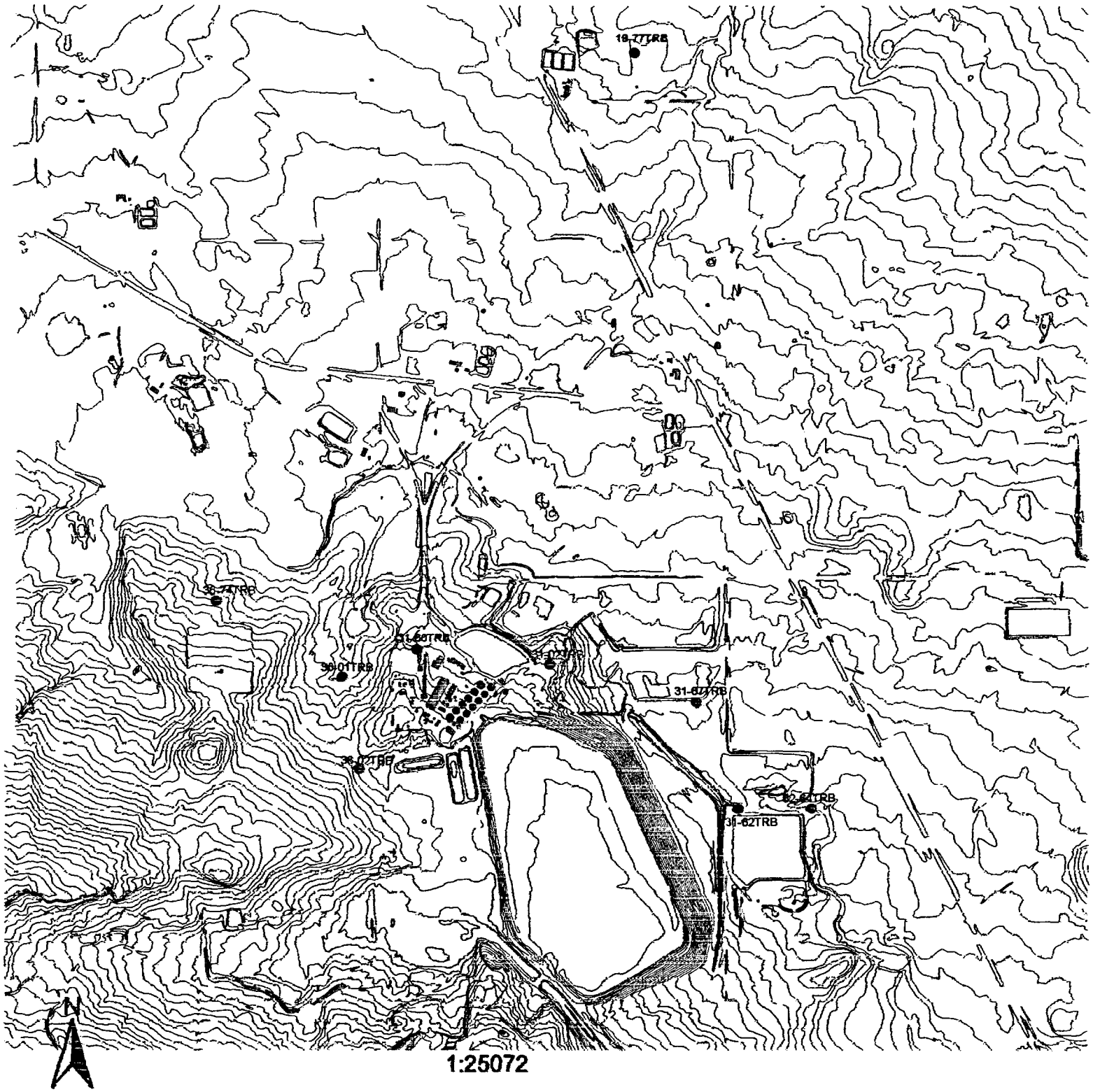
N

TRES HERMANOS B

RIO ALGOM MINING LLC
LICENSE SUA-1473

MOLYBDENUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.08 mg/L



1:25072

TRES HERMANOS B

Molybdenum concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
NICKEL

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.06 mg/L

TRES HERMANOS B

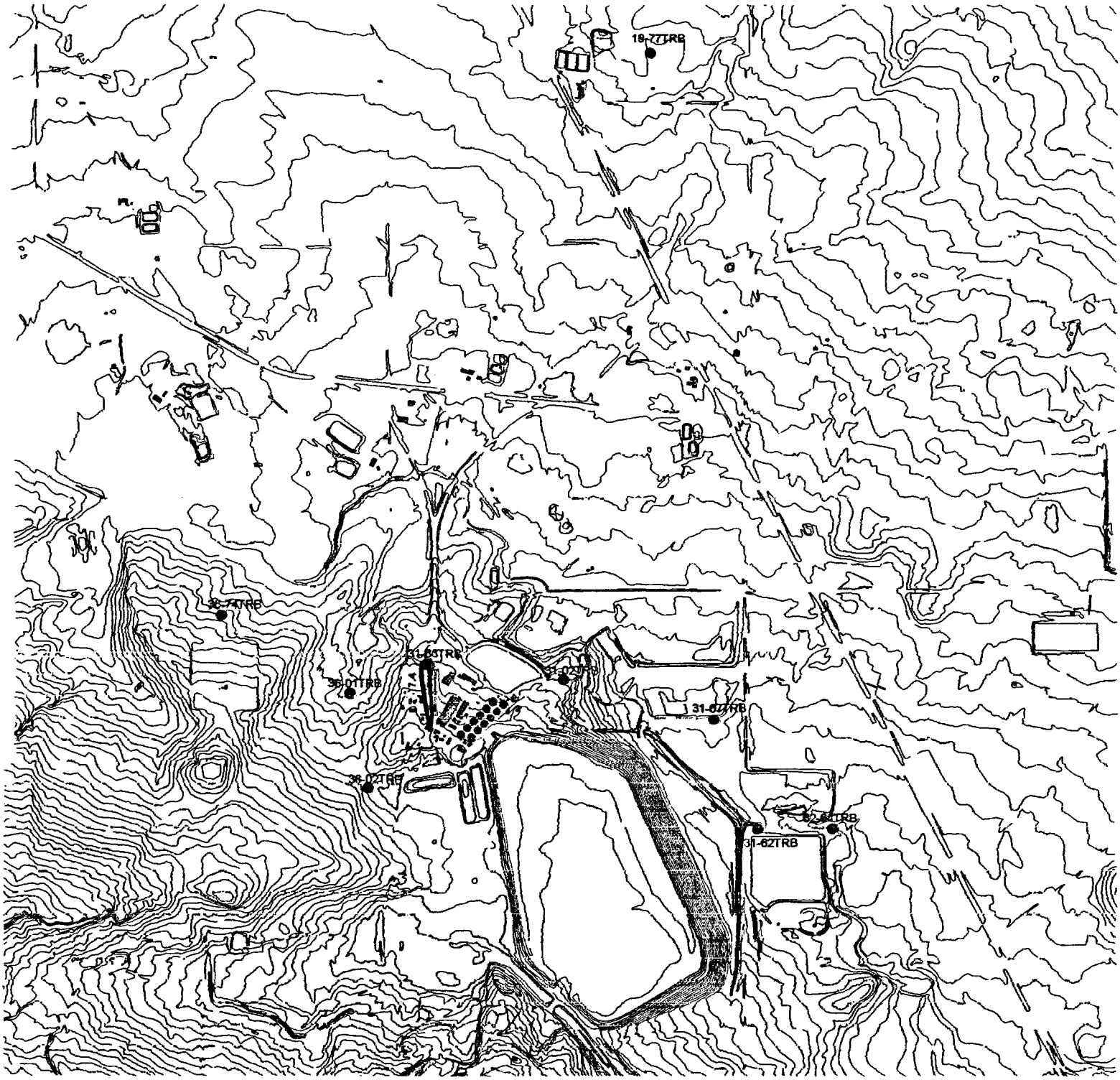
1:24675

N

RIO ALGOM MINING LLC
LICENSE SUA-1473

RADIUM-226/228

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 7.4 pCi/L

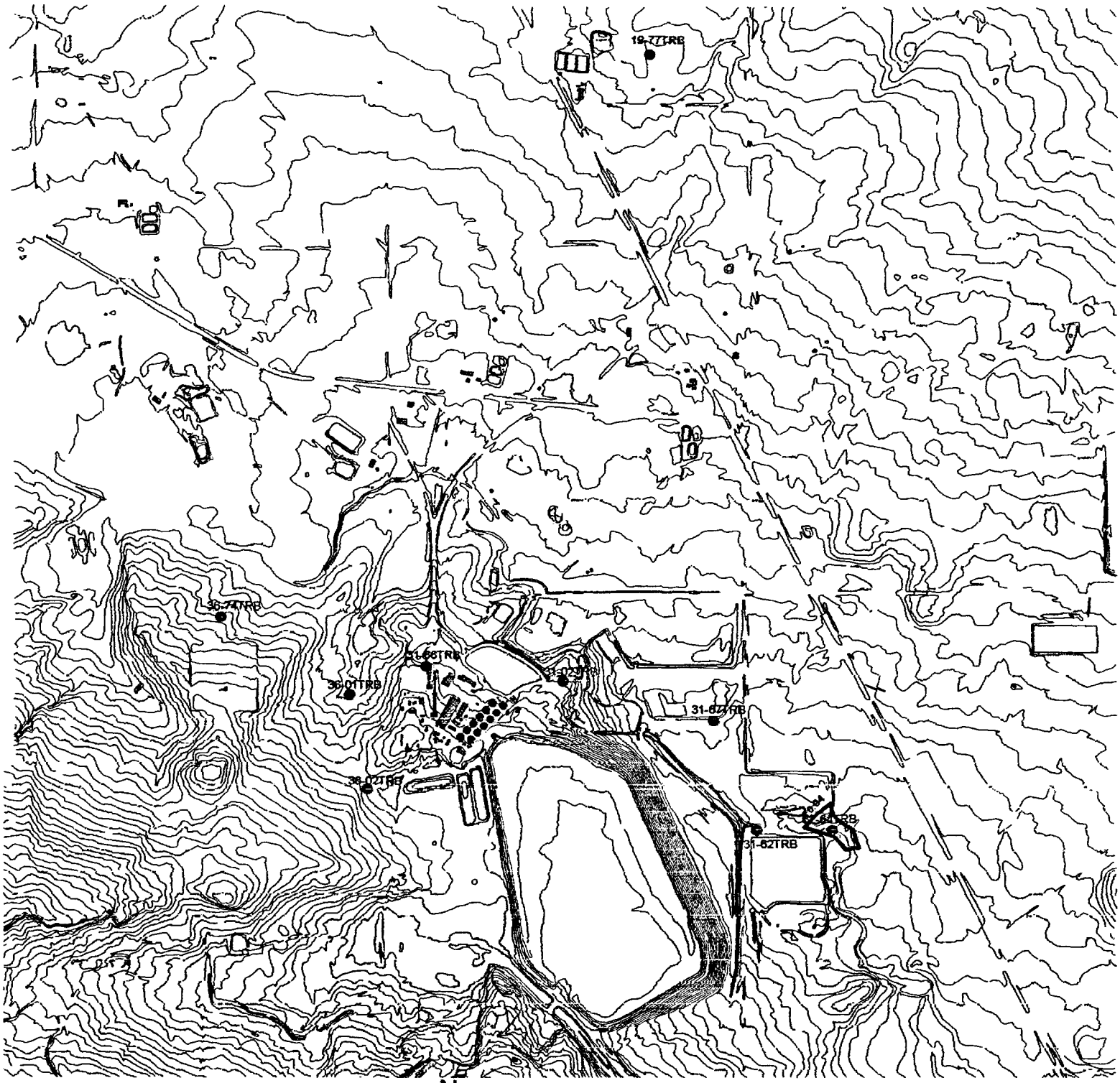


TRES HERMANOS B

1:25072

N

RIO ALGOM MINING LLC
LICENSE SUA-1473
SELENIUM
2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.04 mg/L



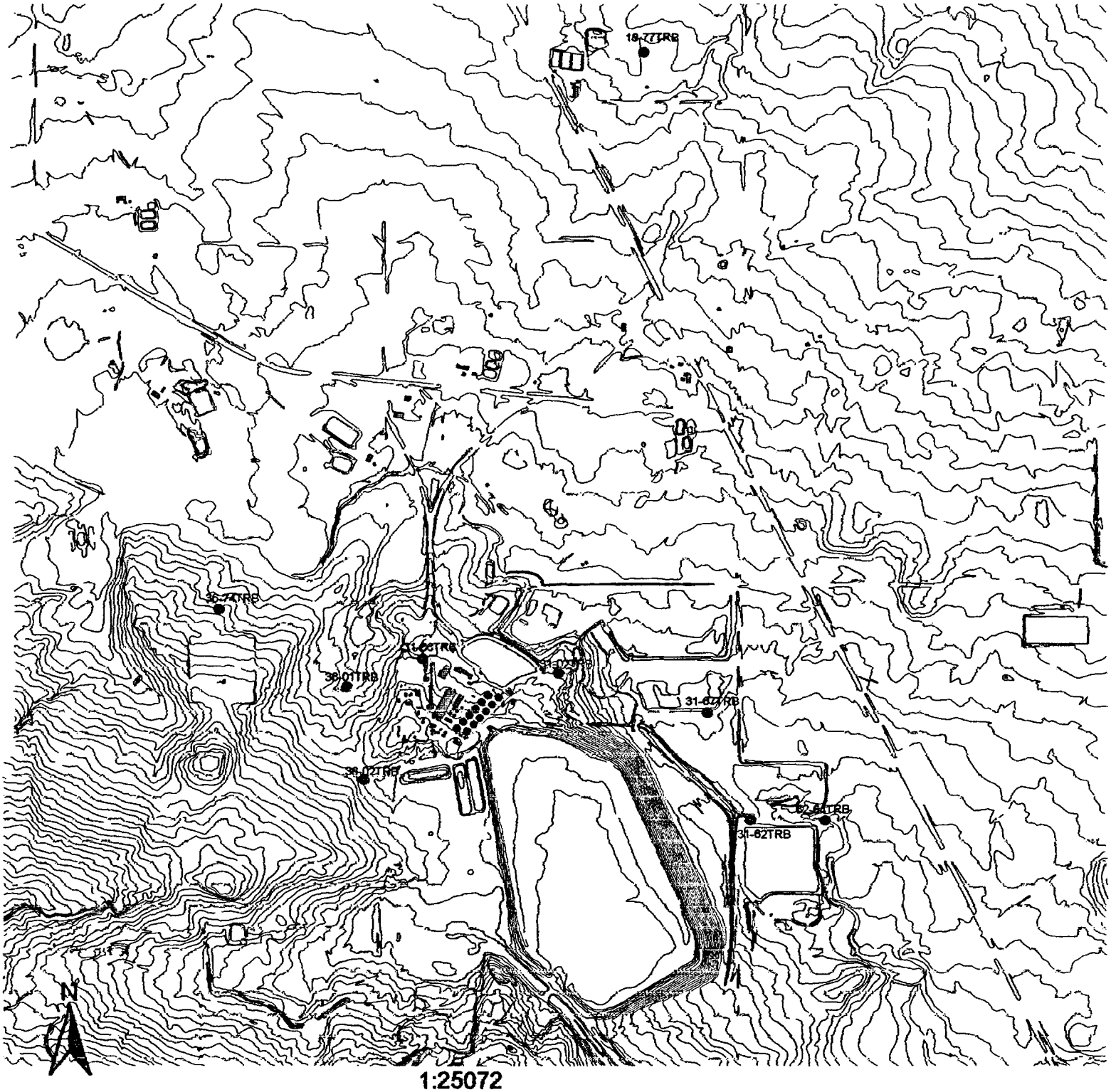
TRES HERMANOS B

1:25072

RIO ALGOM MINING LLC
LICENSE SUA-1473

THORIUM-230

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 2.2 pCi/L



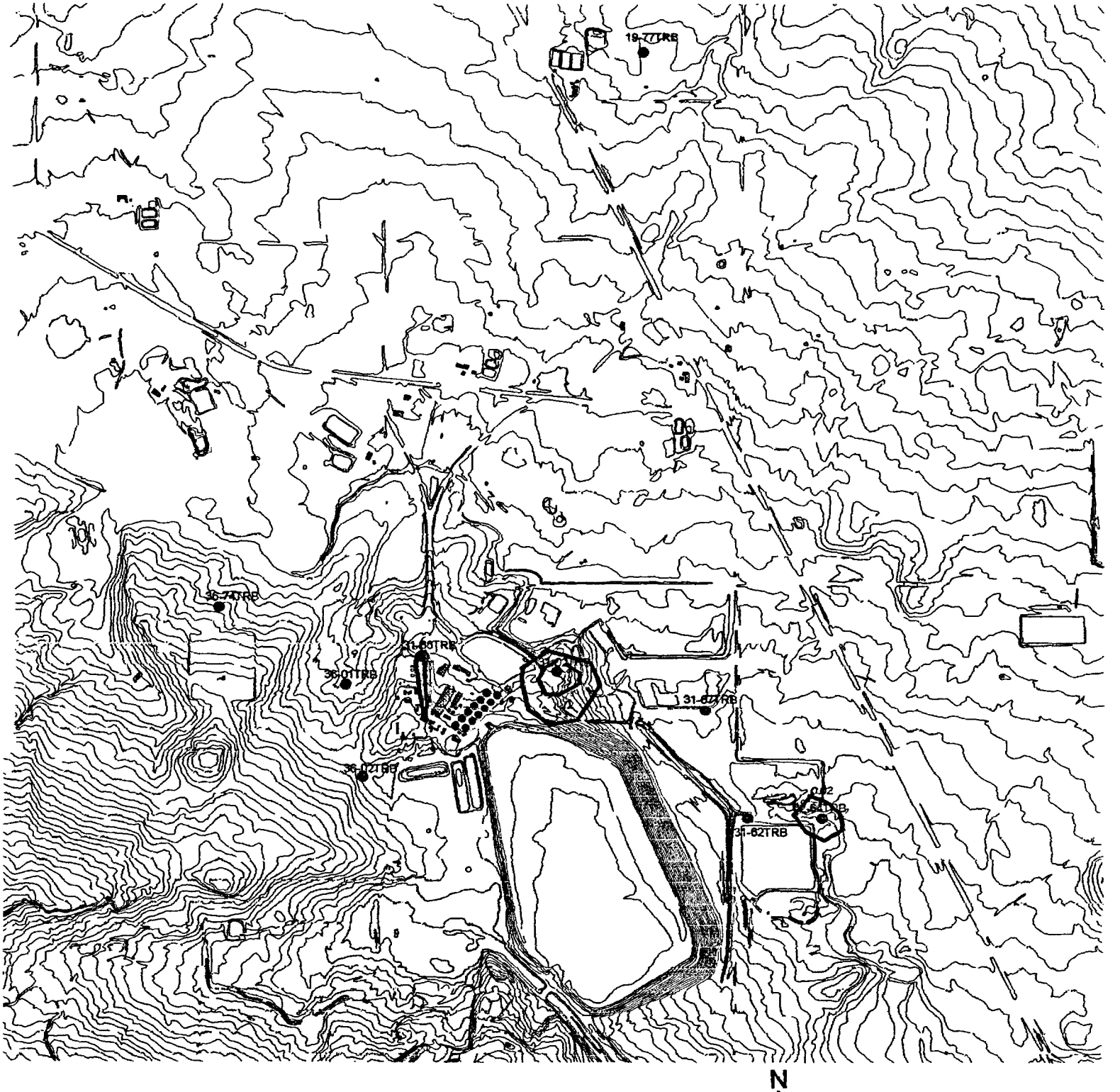
1:25072

TRES HERMANOS B

Thorium-230 concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
URANIUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.02 mg/L

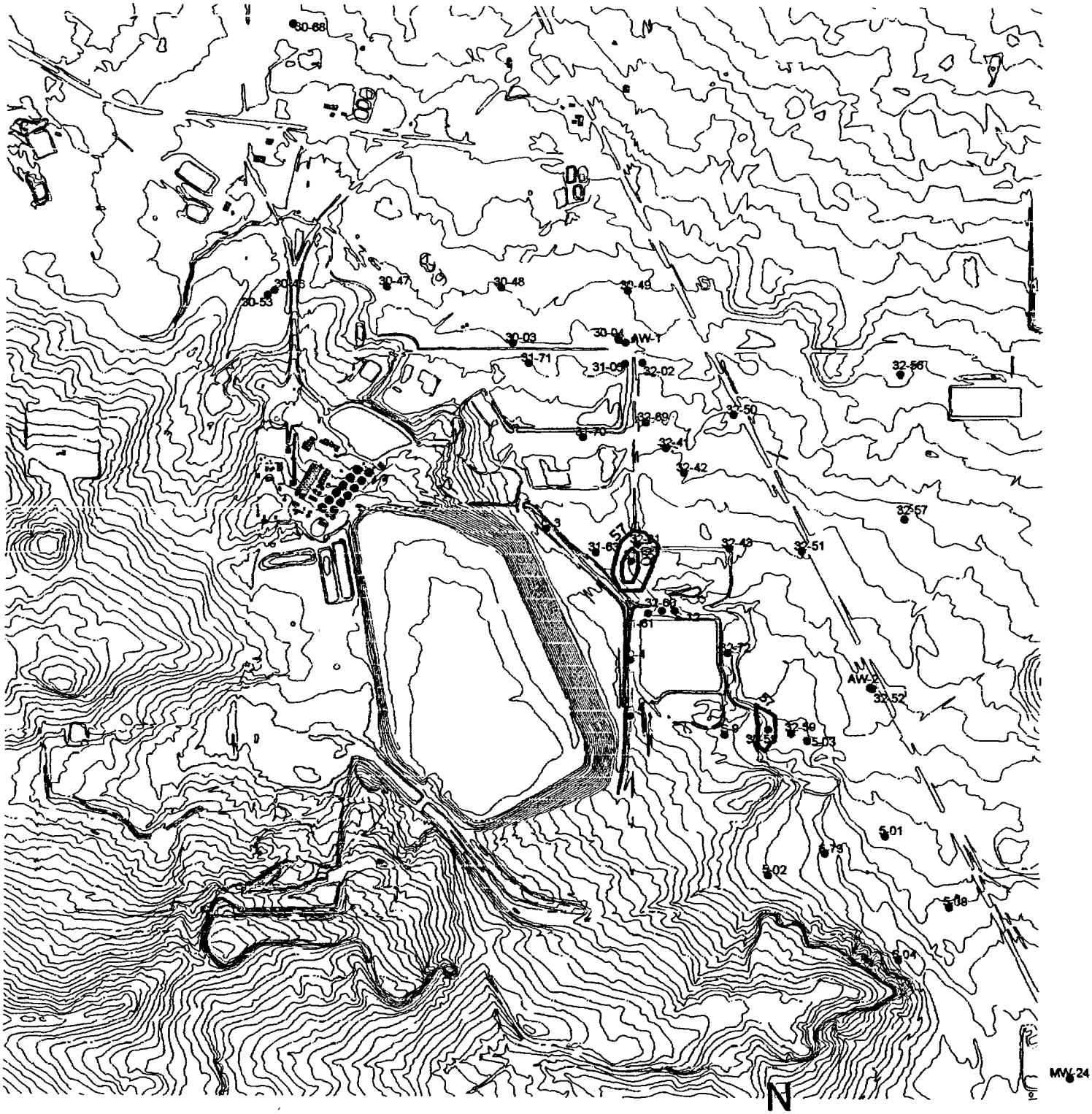


TRES HERMANOS B

1:25072

N

RIO ALGOM MINING LLC
LICENSE SUA-1473
GROSS ALPHA
(EXCLUDES URANIUM AND RADON)
2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 57 pCi/L

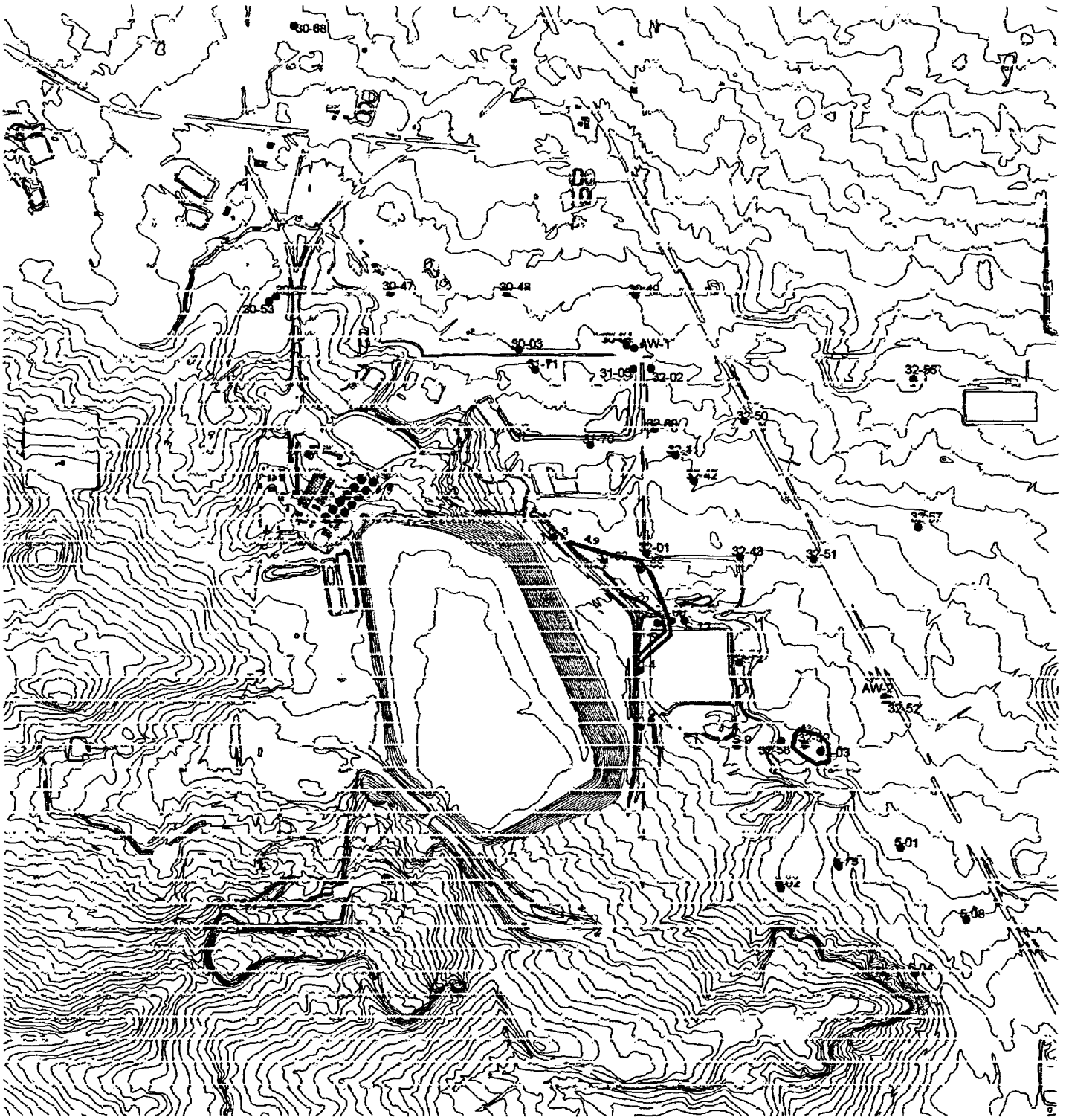


ALLUVIUM

1:23248

RIO ALGOM MINING LLC
LICENSE SUA-1473
LEAD-210

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 4.9 pCi/L



ALLUVIUM

1:23248

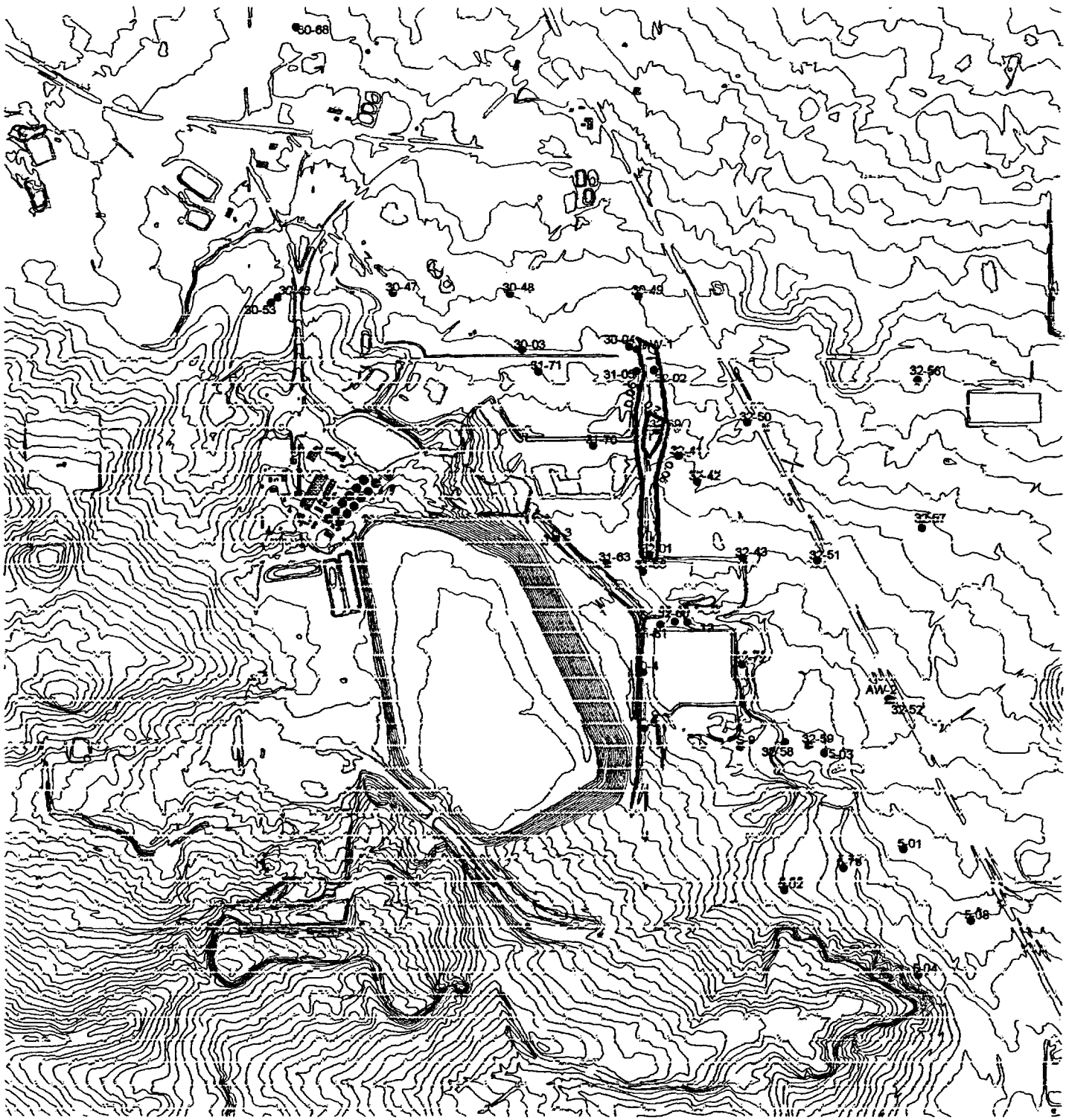
N

RIO ALGOM MINING LLC
LICENSE SUA-1473

MOLYBDENUM

2003 CONCENTRATION ISOPLETH

GROUND WATER PROTECTION STANDARD = 0.06 mg/L



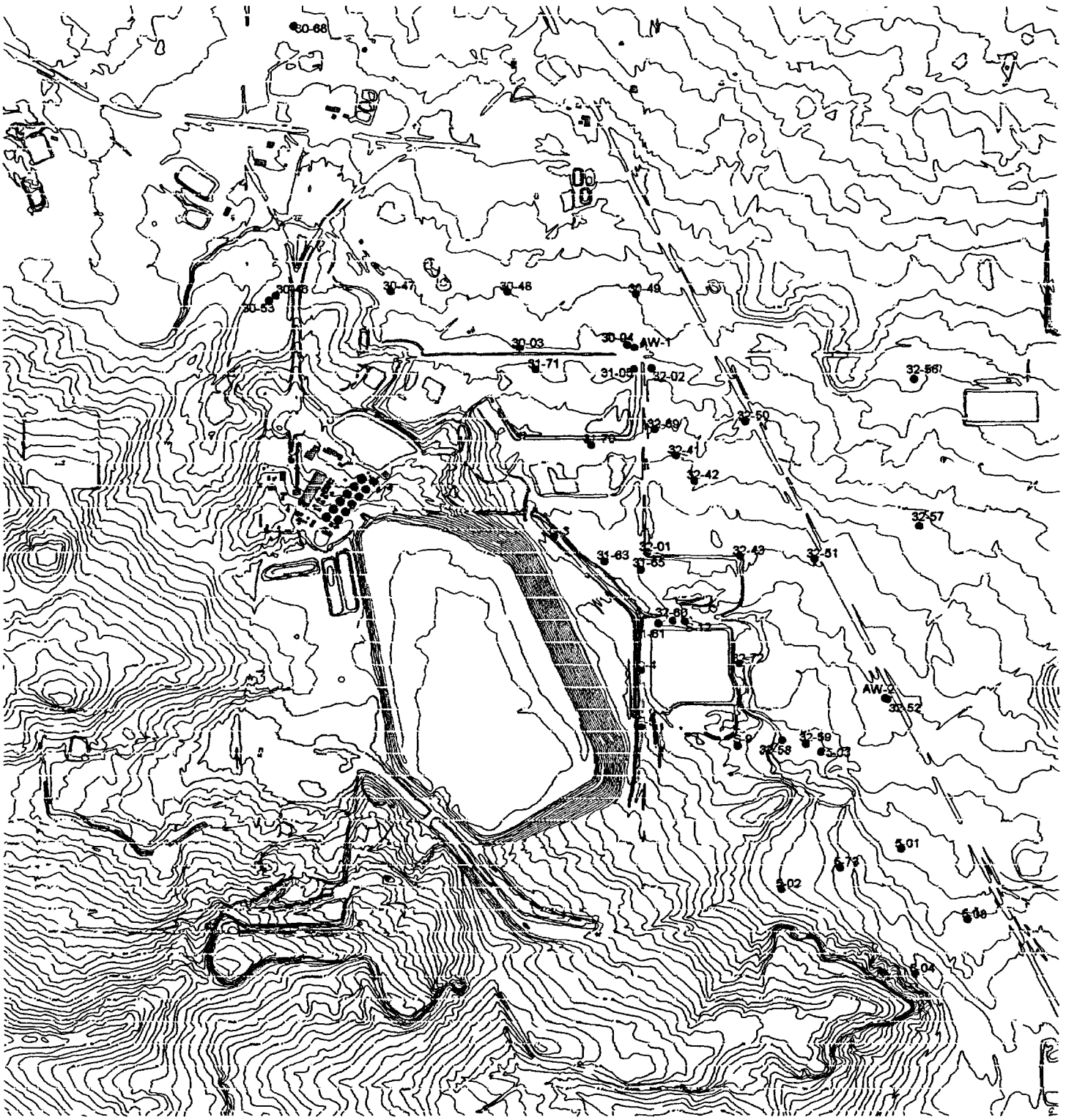
ALLUVIUM

1 inch = 2100 feet

N

RIO ALGOM MINING LLC
LICENSE SUA-1473
NICKEL

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.06 mg/L



ALLUVIUM

N

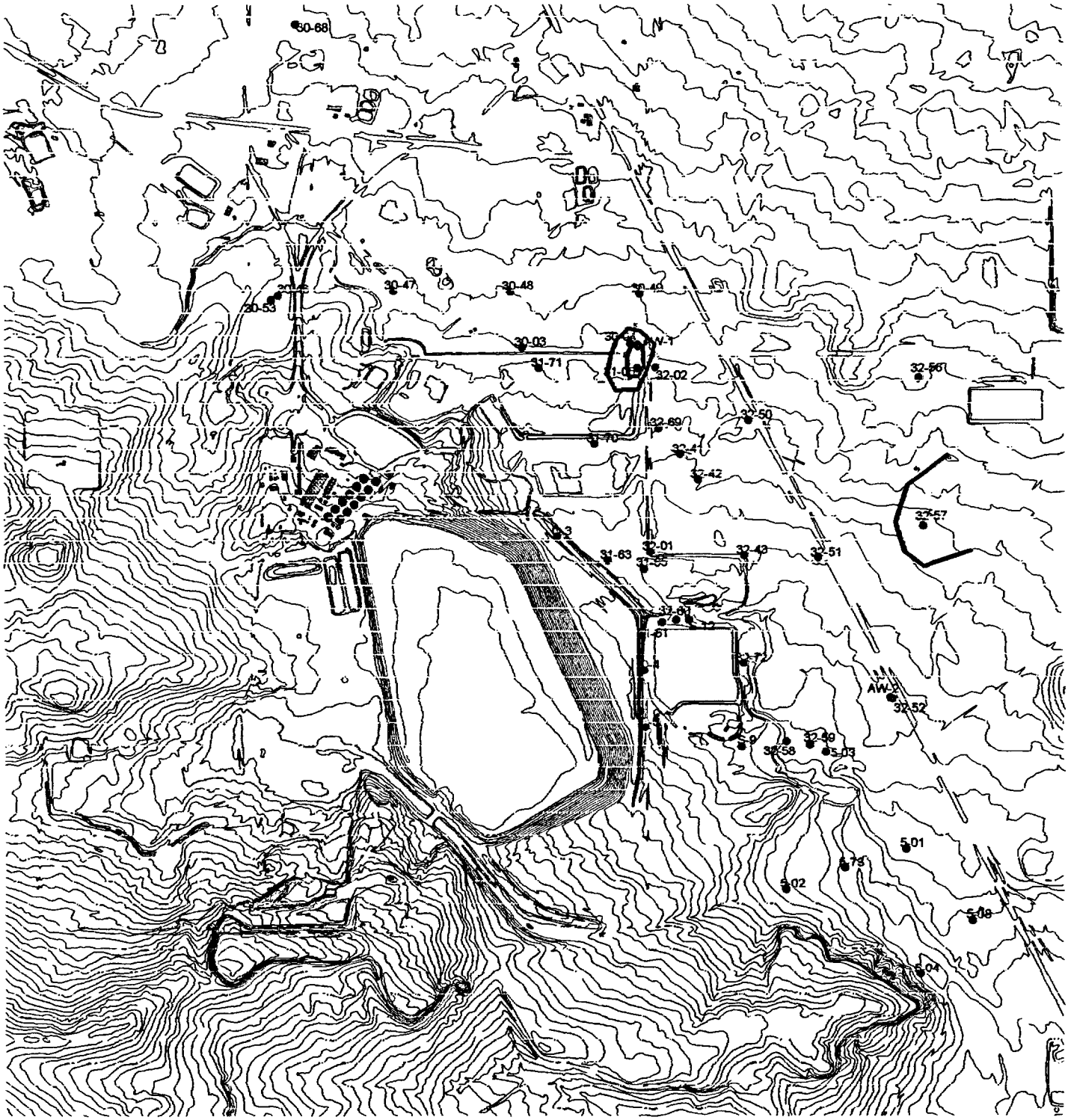
1:22880

Nickel concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473

RADIUM-226/228

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 5 pCi/L

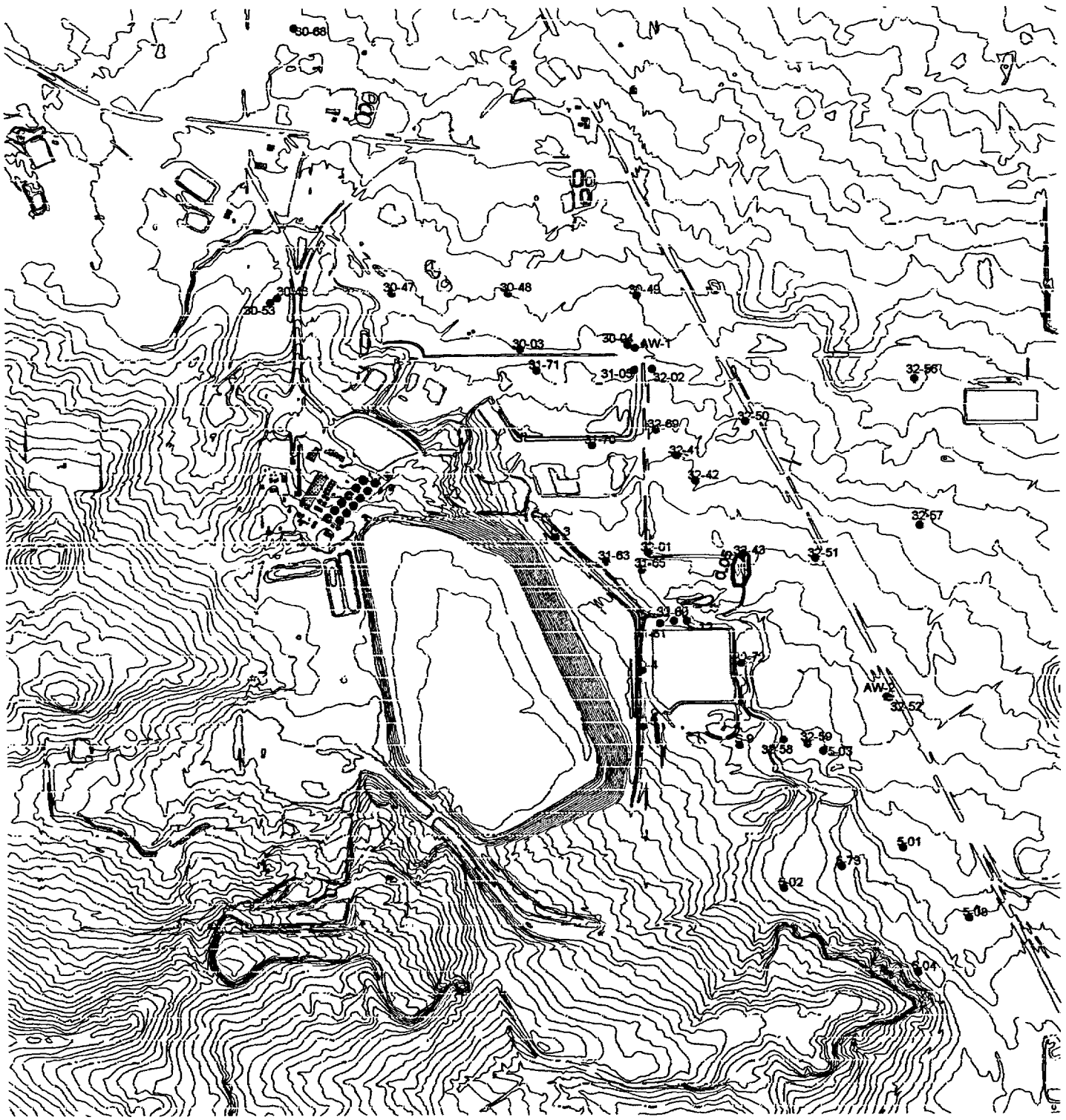


ALLUVIUM

1:23248

N

RIO ALGOM MINING LLC
LICENSE SUA-1473
SELENIUM
2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.05 mg/L



ALLUVIUM

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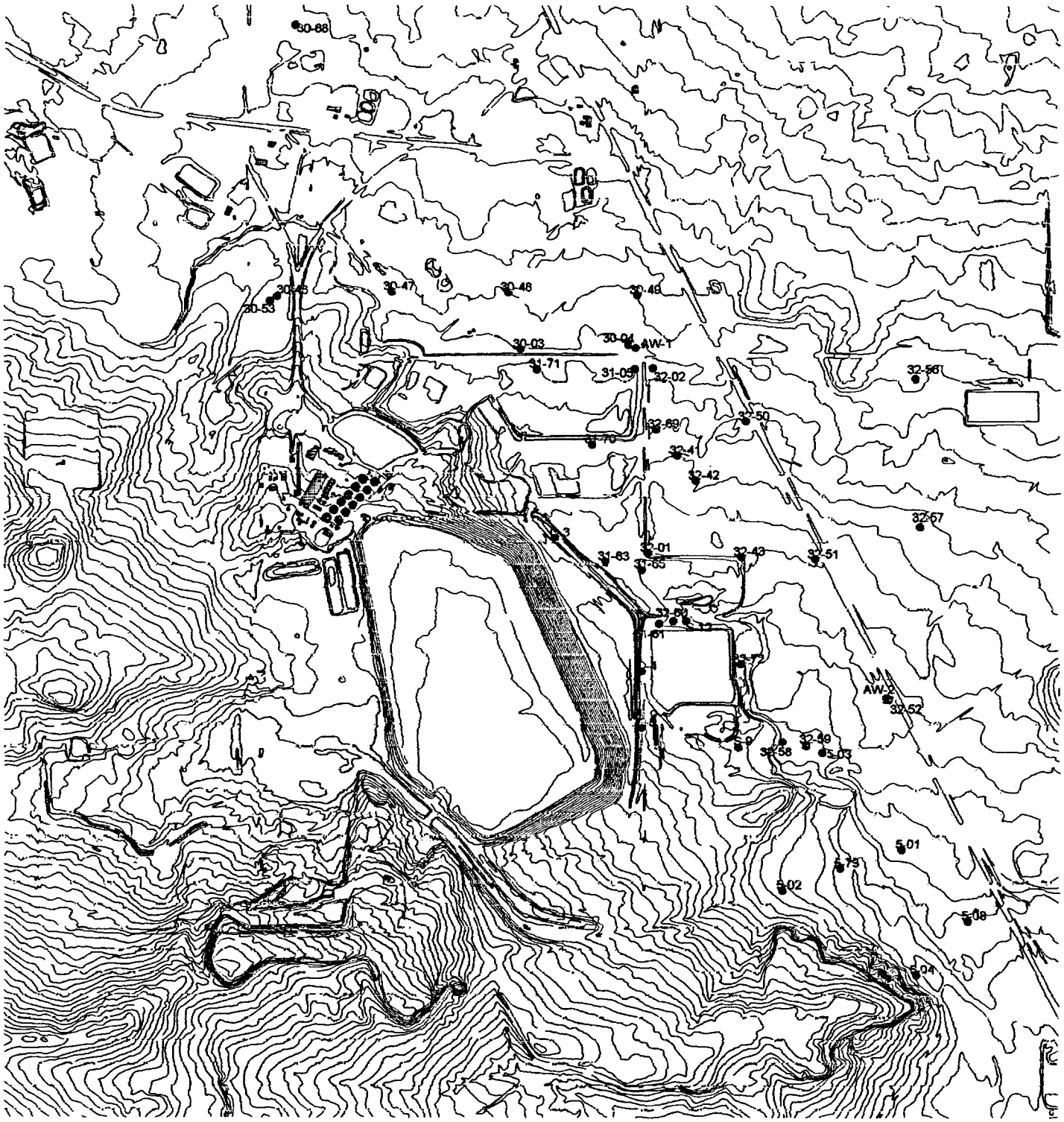
N

RIO ALGOM MINING LLC
LICENSE SUA-1473

THORIUM-230

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 3.1 pCi/L



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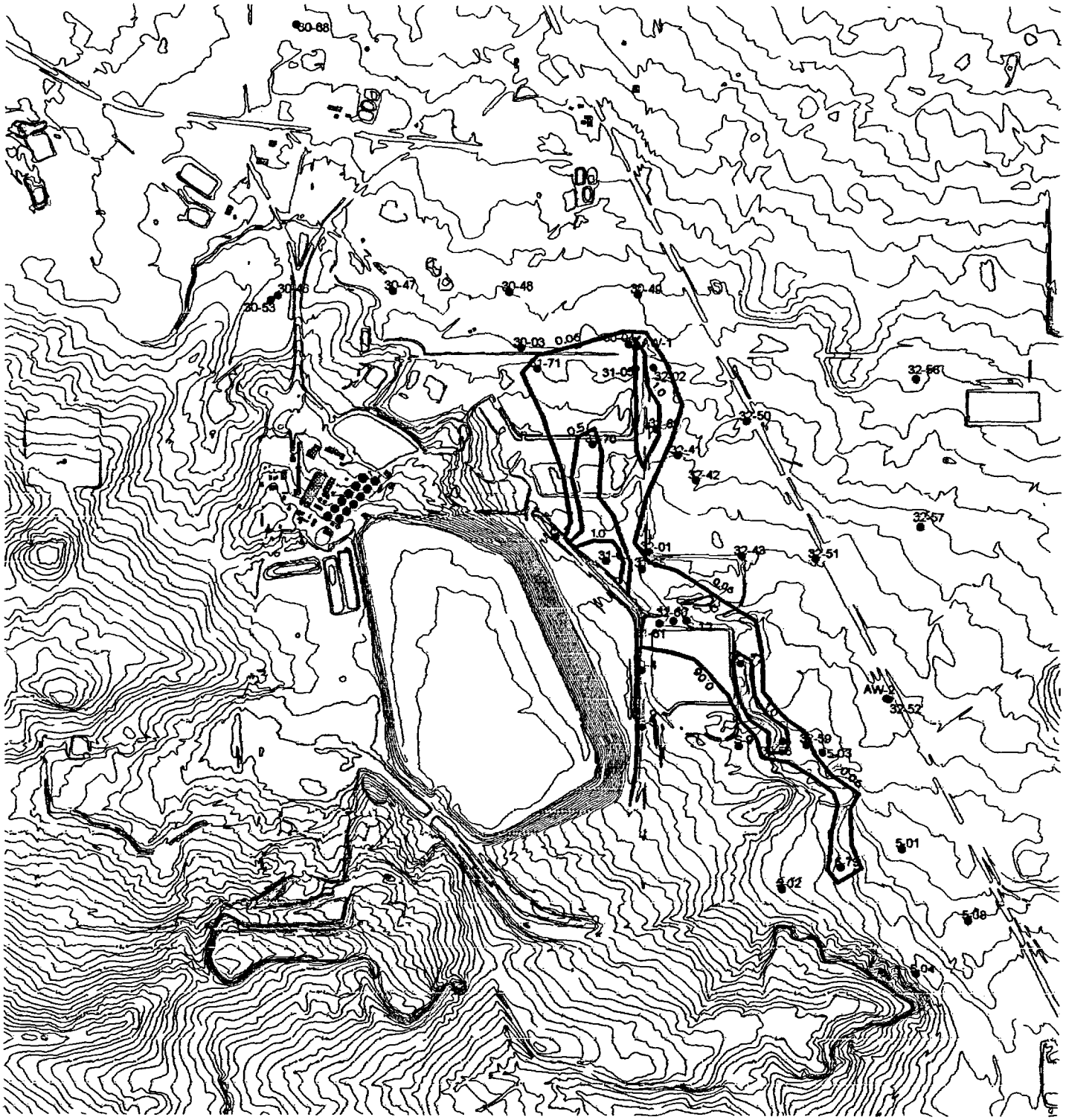
ALLUVIUM

N

Thorium-230 concentrations in all wells are at or below the groundwater protection standard.

RIO ALGOM MINING LLC
LICENSE SUA-1473
URANIUM

2003 CONCENTRATION ISOPLETH
GROUND WATER PROTECTION STANDARD = 0.06 mg/L



ALLUVIUM

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N