Deloitte & Touche

Gartner Lee Limited

Anvil Range Mine Complex

2002 Baseline Environmental Information

Volume 2 of 2
Anvil Range Mining Corporation
(Interim Receivership)
2002 Project Description
May 2002

Fannin Sheep photo provided by Frank Nice

Anvil Range Mine Complex
2002 Baseline Environmental Information

Submitted by Deloitte & Touche Inc.
In their capacity of Interim Receiver for

Anvil Range Mining Corporation

May 2002

Produced by:

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1 INTRODUCTION

1.1 REPORT OBJECTIVES AND ACKNOWLEDGEMENTS

This report includes a summary of baseline information, as of 2002, regarding the Anvil Range property at Faro, Yukon Territory. This summary is intended to accompany the Project Description submitted to the Yukon Territory Water Board in May 2002.

This report provides a description of the Anvil Range Mining Complex history, facilities and operations, environmental information (atmospheric, physical, chemical and biological) representing the current conditions at the mine site as well as a summary of traditional use and heritage / archaeology resources. The primary references for this compilation of information were:

1. Annual Environmental Reports for the Years 2000 and 2001 for the Faro and Vangorda Plateau Mine Sites as prepared by Gartner Lee Limited (GLL) for submission to the Yukon Territory Water Board by Deloitte & Touche Inc. (in their capacity as Interim Receiver for Anvil Range Mining Corporation (ARMC)) (GLL 2002a and GLL 2002b) and that included:
   a) Annual inspections of mine facilities by BGC Engineering Inc. (BGC) for the Faro Mine site and Steffen Robertson Kirsten (Canada) Inc. (SRK) for the Vangorda Plateau Mine site.
   b) Bi-Annual Biological Investigations for Rose and Vangorda Creeks completed by Laberge Environmental Services of Whitehorse for the years 2000 (Rose Creek) and 2001 (Vangorda Creek).
2. Phase 1 Environmental Site Assessment completed in 1999 by GLL for the Ross River Dena Council and DIAND Contaminants/Waste Program (GLL 2001).
3. Integrated Comprehensive Abandonment Plan (ICAP) completed by Robertson Geoconsultants Inc. in 1996 and filed by ARMC with the Yukon Territory Water Board (RGC 1996).

In addition to the information contained in existing reports, direct contributions to this document were provided by BGC, SRK and Laberge Environmental Services.

1.2 MINE LOCATION

The Anvil Range Mining Complex is located approximately 200 km north northeast of Whitehorse, the capital of the Yukon Territory. The Faro Mine site, which includes a mill and tailings facilities, is located approximately 15 km north of the town of Faro. The Vangorda Plateau Mine site, which includes two open pits and associated) mine facilities, is located approximately 9 km northeast of the town of Faro and can be reached by a heavy haul road (approximately 13 km) in length from the Faro Mine site (Figure 1.1).

1.3 SITE AND OPERATIONAL OVERVIEW

1.3.1 OVERVIEW OF MINE COMPLEX

The Anvil Range mining complex consists of the Faro Mine site, which was in production from 1969 to 1992 and the Vangorda Plateau Mine site, which was in production from 1986 to 1998. Lead, zinc, silver and gold were the minerals of economic importance and were produced in lead and zinc concentrates. Production was halted at several times due to low metal prices or changes in ownership. The present owner, ARMC entered into receivership in April 1998 and the mine sites have been under the management of Deloitte & Touche Inc., acting as court appointed Interim Receiver, since that time.

The first exploration work was conducted on the Vangorda Deposit between 1953 and 1955 by Prospector Airways, a predecessor of Kerr Addison Mines. The deposit was considered to be too small and remote to be mined at that time. The Faro Deposit was discovered in 1964 and brought into production in 1969 by Anvil Mining Corporation. Additional nearby deposits were subsequently discovered in 1964 (Swim), 1973 (Grum) and 1976 (Dy/Grizzly). The development history of the three mined deposits is outlined below.

The Faro and associated ore bodies are Sedimentary Exhalative (Sedex) type deposits which consist of gently dipping stratiform massive sulphide zones that have been offset by faults. Quartz and pyrite are the dominant minerals of these ore bodies. Secondary minerals include sphalerite, galena, pyrrhotite, chalcopyrite and marcasite. The surrounding rock consists of altered phyllites and schists. with some associated calc-silicate and calcareous rock as well as a baritic unit.

The Faro mine was first operated by the Anvil Mining Corporation in 1969, then taken over by the Cyprus Anvil Mining Corporation in 1975. Ownership changed again when Curragh Resources restarted operations in 1986 after a shut down of approximately 2 years. ARMC, the current owner, acquired the property in 1994 after a shut down of approximately 2 years. Economic ore reserves accessible by open pit were depleted in 1992 and further extraction took place via an underground mining program that accessed deep ore from near the pit bottom. Mill tailings were deposited into surface impoundments in the Rose Creek valley behind water retaining earth dams from 1969 to 1992. Subsequent to completion of mining in the Faro Main pit in 1992, mill tailings were deposited underwater into this pit.

Development of the Vangorda Plateau mine site began in the late 1980's and production began in 1992. Two open pits were developed, Vangorda and Grum. All ore was hauled by truck to the mill at the Faro Mine site (a distance of approximately 15 to 20 km) and all milling activities (including tailings deposition) took place at the Faro Mine site. The Vangorda deposit was depleted of economic reserves in 1998. Some ore remains in the Grum Pit, which was only partially depleted at the time of mine shut down in 1998.

Since mine shut down in 1998, care, maintenance and environmental protection activities have been implemented. The activities were centred around a seasonal pumping and water treatment program for the Faro Main pit from 1998 to 2001. In 2002, a second seasonal pumping and water treatment program is scheduled for implementation at the Vangorda open pit. Other environmental protection activities that are conducted include:

1. Inspections and maintenance of water retention and water diversion structures.
2. Monitoring of surface and groundwater quality.
3. Submission of monthly and annual environmental reports to the Yukon Territory Water Board.

1.3.2 FARO SITE OPERATIONAL HISTORY

An overview plan of the Faro Mine site, which includes the location of the open pits, waste rock dumps, mill, tailings facility and freshwater reservoir is illustrated on Figure 1.2.

The Faro Mine began production in 1969 at a milling rate of 5,000 tonnes of ore per day. In 1970, production was increased to 6,000 tonnes per day. In 1974, a mill expansion allowed an increase in ore production to 9,300 tonnes per day. In 1975, Anvil Mining Corporation was reorganized to form Cyprus Anvil Mining Corporation. In 1979, Cyprus Anvil purchased the Kerr Addision mineral deposits and claims including Grum, Vangorda and Swim. Also in 1979, Cyprus Anvil discovered and acquired the Faro No. 2 Zone, adjacent to Faro No. 1 Zone, resulting in additional ore reserves. Exploitation of the Zone 2 reserves was initiated soon after and was completed in 1981. Cyprus Anvil then embarked on a program of expansion to bring the Vangorda Plateau deposits (Vangorda and Grum) into production to supplement the mill feed. Cyprus Anvil ceased production in 1982 although waste stripping was carried out between June 1983 and October 1984.

The Faro mine was shut down and remained idle until the operation was acquired by Curragh Resources in November 1985. The mine facilities were reactivated in December 1985 and waste stripping in the Faro Pit commenced in January 1986 for a mill start up in June 1986. Mining was conducted primarily in Zone 3 of the Faro Pit with remnants being mined from Zone 1. The production rate was 13,500 tonnes per day. An underground mining program to access deep ore from near the pit bottom was undertaken late in the life of the open pit. The deposit was depleted of economic ore reserves in 1992.

1.3.3 VANGORDA PLATEAU SITE OPERATIONAL HISTORY

The Vangorda Plateau Mine site consists of the Vangorda Pit and Dump, the Grum Pit and Dumps, the Water Treatment Plant and offices, shops and miscellaneous buildings, as illustrated on Figure 1.3.

The Vangorda Deposit was discovered in 1953. Two smaller occurrences, Champ and Firth, were also discovered at that time. In 1973, the Grum Deposit was discovered between these two occurrences. During the years 1975 to 1977, extensive work programs, including an underground exploration program, were carried out at Grum to delineate the ore deposit. The deposit was accessed by a ramp from a portal with an elevation of about 1265 m. Twin declines followed the ore zone for approximately 700 m and extensive definition drilling was undertaken from these declines.

The current Vangorda Plateau Mine facilities were first developed in 1988, when de-watering of the overburden of the Vangorda and Grum Deposits began. Several drainage ditches were excavated and a small lake within the Grum Pit development area (Doal Lake) was drained.

Mining of the Vangorda Deposit began in 1990. A redesign of the Vangorda open pit shortly after production began resulted in substantial changes to the anticipated volumes of soil and waste rock to be excavated and the rock dump was also redesigned at that time.

Stripping was carried out intermittently at the Grum Deposit from 1990 to 1992, resulting in the excavation of approximately 22 million tonnes of glacial overburden and rock. Only a small amount of ore was mined from the Grum Pit by Curragh Resources prior to a temporary mine shut down in 1993.

The site was under temporary closure from 1993 to late 1994. During this time, DIAND undertook construction projects at the Vangorda Rock Dump that included a seepage collection ditch, groundwater monitoring wells, and reclamation (sloping and covering) of a portion of the dump.

ARMC assumed ownership of the mine site in November 1994 and resumed pre-production stripping at the Grum Pit and mining in the Vangorda open pit. At the commencement of the current mine shut down in 1998, mining in the Vangorda open pit was completed, construction of the Vangorda Rock Dump was competed, mining in the Grum Pit was partially completed, the Grum Overburden Dump was completed, and the Grum Rock Dump was partially constructed.

1.3.4 LICENSES AND LEASES

The Faro Minesite occupies Federal Crown mineral leases under the Yukon Quartz Mining Act. The Vangorda Plateau Mine site occupies mining claims but no Federal or Territorial leases. Water use, tailings disposal and effluent discharge at the Faro and Vangorda mine sites are governed by two separate Water Licenses: QZ95-003 (Faro) and IN890-002 (Vangorda Plateau).

A detailed listing of the leases held and of the history of amendments to the Water Licenses is provided in the Project Description to which this document is an accompaniment.

2 FARO MINE SITE FACILITIES

2.1 OVERVIEW OF STRUCTURES

The Faro Mine site consists of the following primary structures:

1. Faro Main Pit.
2. Faro Zone 2 Pit.
3. Faro Rock Dumps.
4. Rose Creek Tailings Facility including Original, Second and Intermediate Dams.
5. Cross Valley Pond and Dam.
6. Mill and Other Buildings.
7. Water Treatment Facilities.
8. Faro Creek Diversions.
9. Fresh Water Supply Dam and Reservoir.
10. Pumphouse Pond and Dam.
11. North Fork Rose Creek Diversion.
12. North Wall Interceptor Ditch.
13. Rose Creek Diversion Canal.

This section of the report discusses the development and operational history of the Faro Mine site and provides a description of each of the key facilities. A general arrangement plan of the site is provided in Figure 1.2. Some information regarding earth structures and water diversions contained in this section was provided directly by BGC Engineering Inc.

2.2 DEVELOPMENT AND OPERATIONS HISTORY

The Faro Mine was first operated by the Anvil Mining Corporation in 1969, then taken over by the Cyprus Anvil Mining Corporation in 1975. Ownership changed again when Curragh Resources restarted operations in 1986. ARMC, the current owner, acquired the property in 1994.

Stripping of the pit began in 1968 and commercial milling of ore began in September 1969. The initial production rate was 5,000 tonnes of ore per day, increasing to 6,000 tonnes in 1970 and 9,300 tonnes in 1974. The Faro Pit was mined as a conventional truck and shovel operation. Initially, 58.5 tonne trucks were utilized, which were replaced with 108 tonne trucks in 1977.

The first pit mined was Zone 1, from which waste rock was dumped in the Faro Valley and Northwest Dumps. The pit was initially developed as a narrow, northwesterly elongate cut into the hill slope northwest of Faro Creek. The pit was then broadened to the southwest in the early 1970's, with the waste dumped to the west side of the Northwest Dumps and into the west Main Dump. The pit was extended to the southeast across Faro Creek following establishment of the initial Faro Creek diversion in the mid 1970's. Waste rock was deposited in the Main Dump and also the Northeast Dumps, which were started at that time. Zone 1 was mined into the early 1980's and was essentially completed by Cyprus Anvil.

Curragh Resources mined several small remnants of ore from the pit walls between 1986 and 1992, with waste dumps internal to the pit. Cyprus Anvil deposited several million tonnes of oxidized ore from Zone 1 and Zone 2 near the mill.

In the late 1970's and early 1980's, Zone 2 was mined as a smaller, satellite pit and the Intermediate Dumps were started. It is believed that during the initial stripping of oxidized ore, metal-enriched overburden and sulphide waste rock from the Zone 2 Pit were deposited on the Intermediate Dump. Thus the lower lift of this dump likely contains a significant quantity of potentially acid generating material.

The Zone 3 area of the Main pit was a down-dropped block of ore, which required considerable stripping of waste rock. This stripping was begun by Cyprus Anvil in the mid-1970's, in conjunction with mining of Zone 1, using the Northeast Dumps. During the mid-1980's shutdown, Cyprus Anvil conducted a major stripping effort, with waste rock being deposited in the Main and Intermediate Dumps. The southeast slot access to the Zone 3 area of the Main pit was developed at that time. Non acid generating calc-silicate and schist waste from the Zone 3 stripping was segregated on top of the east Main Dump for possible future use. Waste from the Zone 3 stripping was also deposited by Cyprus Anvil in the mined-out Zones 2 Pit and in the Intermediate Dump.

Curragh Resources mined primarily in Zone 3 where considerable stripping was required. Waste rock was deposited in the Main and Intermediate Dumps and the Zone 2 Pit. Curragh Resources deposited most of their sulphide waste rock in a cell on the upper lift of the Intermediate Dump, but later also deposited sulphide waste rock on top of the calc-silicate and schist placed by Cyprus Anvil on the upper lift of the Main Dump. Calc-silicate breccia, stripped from Zone 3, was used for the North Fork of Rose Creek rock drain. Schist, calc-silicate breccia and minor intrusive rock was used to build the haul road to Vangorda Plateau and a haul road to the mill on the southwest side of the Main and Intermediate Dumps. Rock placed in the haul road southeast of the North Fork of Rose Creek was derived from stripping in Zone 3 and, therefore, the southeast section of the haul road is believed to be constructed of non-sulphide waste rock, as that was all that was reportedly being mined in that part of the pit at the time. Curragh Resources also placed a considerable amount of waste rock, much of which was sulphide bearing in the previously mined portions of the Zone 1 and Zone 3 Pits. The Ramp Zone, a small extension of Zone 2, was mined by Curragh Resources in 1986 and then backfilled. The Ramp Zone was immediately southwest of the southeast slot access to the Zone 3 Pit. Thus the pit wall between the slot and the Ramp Zone is thin.

Curragh Resources deposited low-grade ore (3 to 5% lead and zinc) in two stockpiles, A and C, beside the main haul road from the Zone 1 Pit. Curragh Resources processed the oxidized ore stockpiled by Cyprus Anvil after screening out the fine fraction of the ore. The oxidized fines are still present near the mill.

Curragh Resources mined 1.7 million tonnes of ore from an underground room and pillar mine developed through a portal into the southwest wall of the Main Pit. All openings into this mine were internal to the Faro Pit and are now flooded.

Tailings were deposited into the mined out Faro Main Pit from August 1992 to mine closure in 1998.

2.3 FARO MINE SITE FEATURES

2.3.1 OPEN PITS

2.3.1.1 Faro Main Pit

The Faro ore deposit has been described as an ellipsoidal and somewhat tabular mass having a major axis of approximately 1,220 m and a minor axis of 370 m. The vertical thickness was up to 100 m. The ore zone was covered by waste rock and alluvium up to a depth of 170 m.

The Faro Main Pit (Zone 1 and 3) measures approximately 1675 m long by 975 m wide. Its circumference is 4.2 km covering a surface area of approximately 1.06 km^2. The lowest point in the Faro pit has an elevation of 975 mASL, which is 335 m below the highest point on the west pit wall.

The Faro pit has two access ramps which constitute low points in the pit perimeter. One access ramp was located in the southwest wall in proximity of the old Faro Creek channel with an invert elevation at 1180.5 mASL. The second access ramp is located in the southeast corner of the pit and has a lower invert at an elevation of 1174.5 mASL.

The pit was allowed to flood from runoff, seepage inflows and tailings inflows from 1992 to 1997. In 1997, the water elevation had reached the desired maximum range, as defined in Kilborn 1991 at approximately 15 m below the lowest overflow elevation. Subsequent to mine shut down in early 1998, the recycle water system has been incorporated into a seasonal pumping program that maintains the in-pit water elevation within the desired range.

2.3.1.2 Zone 2 Pit

The Zone 2 pit is located immediately southeast of the Faro Main Pit and was excavated into the west valley wall of North Fork Rose Creek to mine a small, faulted extension of the Faro ore body. The ultimate surface area of the excavation was 0.27 km^2 with the pit reaching 100 m at the deepest point and a total volume of 6.8 million m^3 of material removed (total waste rock, ore and overburden). Following excavation, the pit was backfilled with waste rock.

The low point in the pit perimeter is in the southeast area such that uncontrolled filling would result in an overflow of water into the North Fork of Rose Creek.

Subsequent to a brief overflow from the pit into North Fork Rose Creek during backfilling in 1983, several control measures were implemented. These included construction of an external rock drain to collect water from the pit with an overflow pipe to provide a discreet discharge towards North Fork Rose Creek, installation of a well to monitor water level and installation of a pumping well to pump water from the backfilled pit to surface.

The pit volume up to the elevation at which overflow would occur to the North Fork of Rose Creek is 1.6 million m^3. Assuming an average porosity of 30% for the backfilled mine rock, the maximum storage capacity available for water collecting in the pit would be approximately 480,000 m^3. The pumping well is utilized to maintain the water elevation in the backfilled pit below the overflow elevation by pumping water to surface and into the Main pit. The water is then incorporated into the seasonal water pumping/treatment process and, ultimately, discharged to Rose Creek.

2.3.2 ROCK DUMPS

The waste dumps were developed over the sequence of the mining of the Faro pits. Generally, the Faro Valley and the Northwest Dumps were the first to be developed, from 1968 to the early 1970's, receiving waste from the early stripping and mining of the Faro Zone 1 pit. The other rock piles developed during this period were marginal ore or low grade stockpiles. In the 1970's, the Northeast Dumps were built, primarily with waste from the Zone 1 and Zone 2 pits. The third section of the Northwest Dump, the Lower Northwest Dump, was also built from about 1970 to 1971. The two largest dumps on the Faro site, the Main and the Intermediate Dumps, were also started during the 1970's. These dumps continued to be used until 1990, when mining at Faro was almost finished. The "Parking Lot Dumps" were built in the mid-1970's.

Dump construction in the early 1980's was primarily in the Zone 2 East Dump. In the later 1980's several smaller dumps were built (<10,000 tonnes). The majority of the waste was deposited in the Outer Haul Road West dump, with continued deposition on the Main and Intermediate dumps.

In the 1990's, deposition continued on the Main and Intermediate dumps, and on the low-grade stockpiles. In addition, waste was placed on some of the smaller dumps that were started in the late 1980's.

Tables 2.1 and 2.2, repeated from RGC 1996, provide a listing of the individual rock dumps, the years of construction, their dimensions and tonnages. The individual dumps are illustrated on Figures 2.1 and 2.2 and a section through the perimeter of the dumps is illustrated on Figure 2.3. RGC 1996 provides a detailed listing of the estimated composition of the individual rock dumps according to rock type, which is not repeated here.

2.3.2.1 Geochemistry

The Integrated Comprehensive Abandonment Plan (ICAP) study (RGC 1996) describes the geochemistry of the rock dumps, which is not repeated here. The methodology that was used for describing the geochemistry of the dumps was generally as follows:

1. Description of the history of dump construction identifying the total tonnage in each dump, the timing of construction and the estimated source area of the open pits which produced the dump material.
2. Estimated composition of each dump per rock type.
3. Collection of samples representative (as practical) of the rock types contained within the dumps.
4. Design and performance of a kinetic testing program to determine contaminant generation characteristics for dump materials.
5. Estimation of possible contaminant loading from each dump based on kinetic test results per rock type applied according to proportional content of each dump.

Table 2.1. Period of Construction of Faro Waste Rock Dumps

Dump Symbol	Name	Age of Dump	
		start	end
NWU	Upper Northwest Dump	1968	1969
NWM	Middle Northwest Dump	1969	1970
NWL	Lower Northwest Dump	1970	1971
UPL	Upper Parking Lot Dump	1975	1976
LPL	Lower Parking Lot Dump	1975	1976
FVN	Faro Valley North	1968	1970
FVS	Faro Valley South	1968	1975
MDW	Main Dump West	1974	1990
MDE	Main Dump East	1972	1990
ID	Intermediate Dump	1979	1990
NEU	Upper Northeast Dump	1974	1977
NEL	Lower Northeast Dump	1975	1979
NEO	Outer Northeast Dump	1975	1980
ZIIW	Zone II West	1987	1990
ZIIE	Zone II East	1980	1985
RZD	Ramp Zone Dump	1989	1990
RD	Ranch Dump	1989	1990
SWPWD	Southwest Pit Wall Dump	1990	1991
LGSPA	Low Grade Stockpile A	1987	1990
LGSPC	Low Grade Stockpile C	1987	1990
FTW	Fuel Tank DumpW	1969	1971
FTE	Fuel Tank Dump E	1969	1971
MMW	Mt. Mungly West	1969	1970
MME	Mt. Mungly East	1969	1970
SPB	Stockpiles Base	1969	1975
OXSP	Oxide Fines Stockpile	1969	1974
MGSP	Medium Grade Stockpile	n/a	1998
CHSP	Crusher Stockpile	n/a	1998
OHRW	Outer Haul Road West	1987	1989
OHRE	Outer Haul Road East	1983	1989
NFRD	North Fork Rock Drain	1988	1988

Table 2.2. Estimated Size of Faro Waste Rock Dumps

Dump Symbol	Name	Area (m^2)	Max Height (m)	Average Height (m)	Volume (m^3)	Tonnage (tonnes)
NWU	Upper Northwest Dump	128,833	15	10	1,332,833	2,665,666
NWM	Middle Northwest Dump	158,069	30	18	2,861,748	5,723,496
NWL	Lower Northwest Dump	105,653	37	31	3,279,066	6,558,131
UPL	Upper Parking Lot Dump	53,716	27	21	1,111,427	2,222,855
LPL	Lower Parking Lot Dump	32,724	12	10	338,540	677,080
FVN	Faro Valley North	135,869	23	13	1,757,025	3,514,051
FVS	Faro Valley South	32,605	18	9	303,583	607,166
MDW	Main Dump West	220,861	76	57	12,566,943	25,133,886
MDE	Main Dump East	436,065	85	78	33,834,525	67,669,051
ID	Intermediate Dump	421,463	82	62	26,161,236	52,322,473
NEU	Upper Northeast Dump	254,309	67	31	7,892,780	15,785,561
NEL	Lower Northeast Dump	290,351	61	39	11,264,246	22,528,492
NEO	Outer Northeast Dump	12,787	9	8	99,211	198,423
ZIIW	Zone II West	89,315	67	34	3,003,004	6,006,008
ZIIE	Zone II East	126,084	137	65	8,152,422	16,304,843
RZD	Ramp Zone Dump	60,265	18	18	1,091,072	2,182,144
RD	Ranch Dump	42,305	8	6	262,597	525,195
SWPWD	Southwest Pit Wall Dump	78,294	15	10	809,981	1,619,962
LGSPA	Low Grade Stockpile A	29,353	18	16	455,502	911,003
LGSPC	Low Grade Stockpile C	34,537	11	11	393,034	786,069
FTW	Fuel Tank DumpW	8,372	6	5	43,308	86,615
FTE	Fuel Tank Dump E	95,879	21	13	1,239,888	2,479,775
MMW	Mt. Mungly West	20,287	8	6	125,927	251,853
MME	Mt. Mungly East	34,130	34	13	441,364	882,728
SPB	Stockpiles Base	91,250	21	16	1,416,028	2,832,056
OXSP	Oxide Fines Stockpile	20,793	9	8	161,335	322,670
MGSP	Medium Grade Stockpile	33,899	-	-	-	-
CHSP	Crusher Stockpile	22,917	-	-	-	-
OHRW	Outer Haul Road West	186,942	46	34	6,285,461	12,570,923
OHRE	Outer Haul Road East	86,644	49	26	2,240,913	4,481,826
NFRD	North Fork Rock Drain		-	-	-	-
	Total	**3,344,570**			**128,925,000**	**257,850,000**

The estimated contaminant loadings were suggested to be considered as maximum loadings in the absence of any attenuation or other controlling factors.

2.3.2.2 Faro Northwest Dumps

The Northwest Dumps are located northwest of the Main Pit, and north of the plant site area. The dumps were constructed primarily by end-dumping. There are three major lifts to the dump, referred to as the Upper, Middle and Lower Northwest Dumps.

These dumps cover a total area of about 393,000 m^2, and have an average height of 21 m. The total tonnage of waste rock is estimated at about 15 million tonnes.

These dumps were used as "boneyards" for storage of used and spare equipment subsequent to their completion. These boneyards were the focus of a scrap steel reclamation project funded by DIAND in 1999 and 2000. This project removed all scrap steel from the boneyards off the mine site and also removed all other garbage and buildings such that the rock benches were left clear of mining debris.

There are two other dumps located immediately to the north of the mill site and south of Northwest Dumps which are described as the "Lower Parking Lot Dump" and the "Upper Parking Lot Dump". These dumps were constructed between 1975 and 1976. The two dumps are reported to contain about 2.9 million tonnes of rock and cover an area of about 0.1 km^2. The dumps were also used as boneyards over the life of the mine but were not cleared of scrap in the manner of the upper Northwest dumps.

These dumps were constructed at their angle of repose on moderately sloping well-drained terrain. These dumps have been stable since construction, over 30 years ago, and there are no signs of instability. There is no significant upstream water source that could cause elevated pore pressures in the dumps. Over time, as the surficial rock weathers, some shallow slope creep and slumping of the surficial layers on the angle of repose dump faces may be anticipated. Very little water flows from the dumps and there is no significant erosion from surface water flows.

2.3.2.3 Faro Valley Dump

The Faro Valley Dump was constructed during the same period as the Northwest Dumps, from the early development of the Faro Main Pit. This dump is located north of the open pit, in the original channel of Faro Creek. Faro Creek was diverted around the pit to the northeast to minimize the flow of clean water into the pit during mining. The dump fills the original creek channel and is, in part, draped over the edge of the pit resulting in a variable dump height, with a maximum of 23 m and an average of 11 m. The Faro Valley Dump is described in two sections: the larger Faro Valley North Dump covers an area of approximately 136,000 m^2 and the smaller Faro Valley South Dump covers an area of about 32,600 m^2. The two dumps contain a combined total of about 4.1 million tonnes of waste rock.

The Faro Valley dumps are located on the Faro valley alluvium immediately adjacent to the Faro pit north slope. The dump currently acts as a rock drain for the old Faro Creek channel and impounds a shallow pool of water on its upstream side. Stability of the southern slopes of this dump is dependent on the stability of the north wall of Faro pit in the Faro Valley alluvium. The valley alluvium is an aquifer and has a relatively high water table, which is drawn down as seepage occurs into the Faro pit. The alluvium has, over time, slumped and raveled into the pit and this may be expected to progress with time. The performance of the Faro Creek Diversion Channel could impact the stability of the dump and the local pit slope since a failure of the diversion could allow a large flow of water which would exacerbate this progressive erosion.

2.3.2.4 Faro Main and Intermediate Dumps

The Main and Intermediate Dumps are the largest waste rock dumps, and were used for waste rock disposal over a period of about 18 years. The Main Dump East was the first to be constructed, beginning in 1972. The Main Dump West was initiated in 1974. Deposition of waste rock in the Intermediate Dump began in 1979. The Main and Intermediate Dumps are located south and southwest of the open pit, covering a total area of about 1.1 km^2. With a combined total of 145 million tonnes, the two dumps together contain over half of the total waste rock on site.

These dumps were constructed at their angle of repose on moderately sloped well-drained terrain. The outer slopes of these dumps have been stable since construction and there are no signs of instability. There is no significant upstream water source that could cause elevated pore pressures in the dumps. Over time, as the surficial rock weathers, some shallow slope creep and slumping of the surficial layers on the angle of repose dump faces may be anticipated. Very little water flows from the dumps and there is no significant erosion from surface water flows.

A portion of these rock dumps overlooks the North Fork of Rose Creek at the upstream side of the haul road rock drain. The stability of this slope is of increased importance because of the potential for a slope failure to compromise the performance of the rock drain and, as a result, is specifically inspected on an annual basis by a qualified geotechnical engineer. The slope displays signs of minor surficial slumping and settlement.

2.3.2.5 Faro Northeast Dumps

The Northeast Waste Dumps are considered in three areas: the Outer Northeast Dump, the Upper Northeast Dump, and the Lower Northeast Dump. These dumps are located to the southeast of the main pit. The western portion of the Upper and Lower Dumps infill the Zone 2 pit. The Upper and Lower Northeast dumps are relatively large, containing a total of 38.3 million tonnes of waste rock. Since these dumps are located within the pit, the dumps are high and average 31 and 39 m, respectively. They cover an area of approximately 0.5 km^2. The Outer Northeast Dump is small by comparison, containing about 0.2 million tonnes of rock, with an average dump height of 8 m and an area of 0.01 km^2.

These dumps were constructed at angle of repose on moderately sloped well-drained terrain. The outer slopes of these dumps have been generally stable since construction although the slope displays signs of minor surficial slumping and settlement. There is no significant upstream water source that could cause elevated pore pressures in the dumps. Over time, as the surficial rock weathers, some shallow slope creep and slumping of the surficial layers on the angle of repose dump faces may be anticipated. Very little water flows from the dumps and there is no significant erosion from surface water flows.

2.3.2.6 Zone 2 Dumps

The Zone 2 dumps are located mostly within the backfilled Zone 2 pit, to the southeast of the Main Pit. The dumps were built as the pit was mined, with the Zone 2 East Dump built first in the early 1980's, and the Zone 2 West Dump build in the late 1980's. In total, the two dumps comprise approximately 2.3 million tonnes of waste rock. The Zone 2 East Dump is the larger of the two in terms of tonnage and covers an area of about 0.1 km^2. The Zone 2 West Dump covers a slightly smaller area, at about 0.09 km^2. The difference in the two dumps is the height of each dump, as a result of the configuration of the area of the pit and surrounding topography into which each was dumped. The Zone 2 East Dump has a maximum height of 137 m and an average height of 65 m, compared to values 67 m and 34 m, respectively, for the Zone 2 West Dump.

These dumps were constructed at angle of repose. The outer slopes of these dumps have been stable since construction and there are no signs of instability. Over time, as the surficial rock weathers, some shallow slope creep and slumping of the surficial layers on the angle of repose dump faces may be anticipated.

2.3.2.7 Near Pit Dumps

The Near Pit Dumps are considered to include the Ramp Zone Dump, the Ranch Dump, and the Southwest Pit Wall Dump. Other nearby dumps are included in "Low Grade Stockpiles". The Near Pit Dumps are located immediately to the south and southwest of the pit, and just north of the Main and Intermediate Dumps. The three were constructed between 1989 and 1991 and are relatively small dumps comprising a total of about 4.3 million tonnes of rock. Since the dumps are located at the edge of the pit and on the ramp, the dumps are high with a maximum height of 60 m. The total area of the dumps is comparatively low at about 0.2 km^2.

The near pit dumps were developed on well-drained terrain sloping away from the pit. The outer slopes of these dumps have been stable since construction and there are no signs of instability. There is no significant upstream water source that could cause elevated pore pressures in the dumps. Over time, as the surficial rock weathers, some shallow slope creep and slumping of the surficial layers on the angle of repose dump faces may be anticipated. Very little water flows from the dumps and there is no significant erosion from surface water flows.

2.3.2.8 Low Grade Stockpiles

Various types of low grade ore and high sulphide waste rock are located in small piles near the crusher and the Faro Main Pit. These are identified as six stockpiles:

1. low grade 'A'.
2. low grade 'C'.
3. Crusher Stockpile Base.
4. Mt. Mungley Dumps.
5. Oxide Fines Dumps.
6. Fuel Tank Dumps.

Two large stockpiles have been developed near the main haul entrance to the Faro Pit. These stockpiles, low grade "A" and "C", are between the lube shack and the Ranch Dump, and behind the lube shack, respectively. These stockpiles were built from 1987 to 1990 with low grade ore from the Zone 3 pit. Some of the material originally placed in these stockpiles has been removed and milled, and the stockpiles currently contain an estimated 1.7 million tonnes. The residual material is now oxidized and was determined by ARMC to be unsuitable for processing through the mill.

An active ore stockpile was maintained near the mill during mine operations. Ore that was economic to process was passed through the mil prior to mine shut down in 1998. The crusher stockpile base remains, however, as a wide ramp that was used to dump ore and is thought to be constructed of various rock types that may include low grade and regular grade ore.

About 400 m northeast of the Crusher Stockpile in the west Mt. Mungly Dump is material brought from the bulk terminal in Skagway during a cleanup of that site. The material was delivered by Curragh and characterized as "concentrate contaminated with soil returned for reprocessing". The material appears to consist of sand, gravel and cobbles but also contains lead and zinc concentrates and plastic sheet remnants.

Immediately east of the Crusher Stockpile are several piles of fines originating from the processing of a former large stockpile of oxidized ore from the sub-crop of the Faro Deposit. The oxidized ore was screened with the coarse fraction processed through the mill. A small amount of this fine material is also present across the Main Haul road in the west Fuel Tank Dump.

The stockpile dumps are small relative to the other rock dumps and are generally located on flat ground and, therefore, do not appear to present any physical stability concerns.

2.3.2.9 Haul Road, Haul Road Dumps and Rock Drain

The North Fork Rock Drain was built between 1986 and 1988 and forms part of the haul road between the Faro and the Vangorda Plateau Mine sites. The haul road is constructed from mine rock and has similar stability characteristics to small rock dumps. No substantial stability problems have been experienced on the haul road since construction although surface cracking is visible in some locations and some slopes display signs of minor surficial slumping and settlement.

The two Haul Road Dumps were built between 1983 (East dump) and 1989 (West dump). The Outer Haul Road East dump is located between the Intermediate Dump and the North Fork Rock Drain and the Outer Haul Road West dump forms the haul road around the south of the Intermediate and Main Dumps. These dumps are commonly considered to be a part of the Main/Intermediate rock dump assemblage.

The physical stability of the rock drain will depend on the long term maintenance of permeability through the drain. The drain was formed by end dumping coarse durable mine rock from the top of the haul road embankment as it was advanced over the North Fork of Rose Creek. As rock rolled down the dump slope the coarse boulders segregated from the finer materials and rolled to the base of the slope. This has resulted in the accumulation of the largest boulders (typically from 0.5 to 1.5 m in diameter) at the base with the fines remaining higher up the slope. The permeability of the drain is demonstrated by its ability to pass the full flow of the North Fork of Rose Creek with only a modest rise in the water level on the inlet side.

2.3.3 TAILINGS IMPOUNDMENTS

2.3.3.1 Rose Creek Surface Impoundments

Mill tailings were deposited in three separate surface impoundments: the Original Impoundment, the Second Impoundment and the Intermediate Impoundment as follows:

1. The Original Impoundment contains tailings that were deposited between 1969 and 1975.
2. Tailings were deposited in the Second Impoundment from 1975 until 1982, and for approximately 5 months in 1986. Mine production was suspended from 1982 to 1986 and, therefore, no tailings were deposited.
3. The Intermediate Impoundment contains tailings that were deposited between 1986 and 1992. From 1992 to mine closure in 1998, tailings were deposited under water in the mined-out Faro Pit and not in the surface impoundments.

In total, the surface impoundments contain an estimated 54.4 million tonnes of tailings (28.6 million cubic metres), as listed in Table 2.3, repeated from RGC 1996. The tailings are up to 25 metres thick and overlie native soils comprised largely of sand/gravel of glacial outwash origin with some glaciolacustrine sediments. Native soils may extend to 60 m below ground surface. A basal silt till overlies bedrock beneath the sand and gravel.

Table 2.3 Rose Creek Tailings Facility, Tailings Volumes and Impoundment Surface Areas

Impoundment	Periods of Tailings Deposition	Surface Area (ha)		Tailings Volume (m^3)	
		As of Sept. 1990	Estimated Current	As of Sept. 1990	Estimated Current
Original	1969 to 1975	41.7	41.7	6,300,000	6,300,000
Secondary	mid 1975 to June 1982, June 1986 to Oct. 1986	54.5	54.5	10,400,000	10,400,000
Intermediate Dam	Oct. 1986 to July 1992	88	99	7,600,000	11,900,000
Total		**184.3**	**195.7**	**24,300,000**	**28,600,000**

Original Tailings Impoundment

The Original Impoundment covers an area of approximately 42 ha, located on the north side of Rose Creek at the mouth of the old Faro Creek channel. It was initially developed by raising a 7.5 to 9 m high waste rock starter dyke. The initial decant system consisted of a vertical riser leading to a 1.2 m diameter pre-stressed concrete pipe culvert placed in the space of the starter dyke. The starter dyke was raised in the winter of 1969 using un-compacted pit run waste rock with no impervious core. Dyke raising continued each summer until 1975, when a breach occurred. After a survey by DIAND was concluded following the breach, it was estimated that 247,000 m^3 of frozen slurry, containing approximately 12,300 m^3 of tailings solids, had been deposited between the tailings impoundment and the mouth of Rose Creek (RGC, 1996).

Second Tailings Impoundment

The Second Impoundment was constructed in 1974 by building a second dam around the perimeter of the original dam using, in part, spilled tailings. Construction on this impoundment began in 1974 and was completed in 1975 after the breach in the original tailings impoundment. The second tailings impoundment consists of a west dam, with a height of nearly 27 m and an east dam, with a typical height of 4.3 m.

During winter months, tailings were deposited into the Second Impoundment from a single point discharge originating from various locations along the Original Tailings Dam. Excess surface water was decanted via a surface decant spillway located at the right abutment of the West Dam. During summer months, tailings were spigotted from multipoint discharges along the crest of the new (Second) tailings dam, until 1978. From 1978 to 1982, tailings were deposited from the hillside to the north of the impoundment, or from the Original Tailings Dam. Tailings deposition was suspended in June 1982, when the mine halted operations, and resumed in June 1986 when the mine reopened. For a few months afterward, tailings were deposited in the Second Tailings Impoundment. Following that, tailings were placed in the Intermediate Dam Impoundment, with only occasional (emergency) discharge into the Second Impoundment.

Tailings were deposited in 1986 in the western part of the impoundment and have been shown (Steffen Robertson Kirsten (Canada) Inc., 1991) to grade in thickness from about 1m to zero m. An east/west cross-section of the Second Impoundment would show the 1986 tailings pinching out toward the east. Thus, the eastern half of the impoundment contains surface tailings at least six years older than the western area.

Intermediate Tailings Impoundment

A third dam was built downstream of the Second Impoundment across the valley of Rose Creek. This dam, the Intermediate Dam, retains seepage water and tailings solids. Native ground on the north, the Rose Creek Diversion channel on the south, and the Intermediate Dam on the west contain the Intermediate Impoundment. Beached tails below the downstream toe of the Secondary Tailings Dam forms the eastern portion of the impoundment. Submerged tailings extend to the upstream toe of the Intermediate Dam. Water is passed by siphons or spillway overflow from the Intermediate Pond into a polishing pond that is retained by the Cross Valley Dam.

The Intermediate Dam was initially constructed in 1981 and was raised in 1988, 1989 and 1991 to a maximum vertical height of approximately 34.4 m. Upstream and downstream slopes were constructed at 2H:1V. The downstream slope also includes a 20 m wide bench at the toe that provides an overall slope of 2.1H:1V at its maximum section.

As a result of mine shutdown in 1982, no tailings were placed in the Intermediate Impoundment until October 1986 and deposition continued until 1992. Tailings were deposited in the Intermediate Dam Impoundment from a single discharge at the northeast corner of the impoundment (near the north abutment of the Second Tailings Dam). This resulted in a sloped tailings surface, with the apex at the discharge point and the low point at the Intermediate Dam. Baffles were constructed across the tailings surface in 1990 and 1991 to steepen the tailings surface, but these were later inundated with tailings.

Cross Valley Pond

The Cross Valley Dam was constructed during 1980 and 1981 approximately 500 m downstream of the Intermediate Dam. The dam is a zoned earthfill dam with a low permeability core that is founded on permeable valley bottom sands and gravels and that incorporates both a low permeability core and an upstream blanket of glacial till to control seepage. The dam has a maximum vertical height of approximately 19 m. It has a 6 m crest width, and upstream and downstream slopes of 2H:1V. The crest elevation is approximately 1033.4 mASL. A granular toe drain was added in 1991.

The purpose of the dam is to create a polishing pond for water discharged from the Intermediate Impoundment prior to release into Rose Creek. The polishing pond contains lime treatment sediments but does not hold tailings.

The Cross Valley Dam is equipped with a riprap-lined outflow spillway on the north abutment of similar dimensions and capacity as the Intermediate Dam spillway. Water is discharged via syphon pipes or spillway overflow into Rose Creek.

2.3.3.2 Faro Main Pit Tailings Impoundment

The Faro Pit was used between August 1992 and April 1993 and again from August 1995 until shutdown in 1998 for tailings deposition from the Grum and Vangorda deposits. Tailings entered the pit near the southern corner. The distribution of tailings at depth in the pit bottom has not been accurately determined but settlement was observed to be rapid (pers. com., ARMC). A water pumping station was operated beginning in 1997 to provide process water to the mill and this pumping station did not experience problems with silt in the intake.

Since the shutdown in 1998, the main pit has undergone a seasonal dewatering program that maintains the water level within an acceptable range. Inflow to the main pit comes from several sources, such as rock dump seepage, surface run-off, groundwater inflow and water pumped from the Zone 2 pit. The water level management plan is to draw down the main pit water elevation during the summer to such a level that the water does not rise to a critical elevation by the start of the following season.

2.3.4 BUILDINGS AND INFRASTRUCTURE

The Faro Mill was designed to produce lead and zinc concentrates. The concentrator began operation in September 1969 with a capacity of 5,000 tonnes of ore per day. This was increased to 6,000 tonnes in 1970, to 9,300 tonnes in 1974 and to 13,500 tonnes in 1986.

The following facilities are located at the Faro mill site:

1. Primary crusher and coarse ore storage.
2. Mill and concentrate loadout.
3. Offices and warehouses.
4. Heavy duty equipment repair shops.
5. Guardhouse and administration building.
6. Tire shop and light vehicle repair shops.

In addition, a lube station and core shacks are located near the Faro Pit. Other buildings not located directly at the mill site include the Copper Sulphate Plant, the Bulk Explosives Plant and the Pump House, located on the mine access road.

2.3.4.1 Process Buildings

The primary crusher was originally fed directly by dump trucks hauling from the pits. During the mining of the Grum Deposit, tractor/trailer combinations were used to haul the ore to the crusher. Difficulties associated with dumping the trailers necessitated the use of an ore stockpile adjacent to the crusher. The ore was then fed to the crusher by a front-end-loader.

The primary crusher is a 1.37 m x 1.88 m gyratory crusher, crushing material to a size of minus 15 cm. The crusher discharge was screened, with the minus 1.27 cm material conveyed directly to the fine ore bins. Oversize material was conveyed to the coarse ore storage building, which had a live capacity of 14,400 tonnes. An estimated 8,000 to 10,000 wet metric tons of crushed ore remains in the coarse ore building.

Ore was withdrawn from the bottom of the coarse ore storage by vibrating feeders and fed by conveyor to the 17.8 cm Symons standard secondary crusher set at 3.175 cm. The crushed product was screened, with the minus 1.27 cm material conveyed to the fine ore bin and the oversize material fed to the two 17.8 cm Symons shorthead tertiary crushers set at 0.95 cm. Discharge from the tertiary crushers was screened, with the undersize material conveyed to the fine ore bin and the oversize material recycled. The fine ore bin consists of three circular silos each with a capacity of 1,550 tonnes.

Feed from the three fine ore bin silos was delivered to three parallel grinding circuits. Each circuit consisted of a rod mill, ball mill and a tertiary ball mill.

Flotation equipment consists of conventional flotation cells, column flotation cell, air compressors, pumps, pipes and regrind (ball) mills. The general flotation process that was employed was the addition of pH modifiers and various reagents that promoted the formation of a surface froth containing the minerals of economic interest. Residual solids ("tailings") passed out the bottom of the flotation cells and, ultimately, to the tailings impoundments. Some flotation equipment was converted and some additional equipment was added in 2001 to serve as a water treatment system for water pumped from the Faro Main Pit. That treatment process is described elsewhere in this document.

The lead and zinc concentrates were thickened in four large rake thickeners, using Percol 351 (1975) as a settling aid. This was followed by filtering through disc filters.

The concentrates were dried in five rotary kilns. Four of these kilns were originally coal fired. The coal was mined near Ross River and Carmacks and hauled to the mill as required. The other kiln was originally oil fired. The kilns were converted to combination oil and propane burner systems in 1995/96. The rotary kiln dryers were equipped with wet scrubbers and are exterior discharge with the discharges and filtrates pumped to the appropriate thickeners.

A lime mixing and distribution system is contained within the mill, which consists of an external dumping for dry lime, a storage silo for dry lime, a ball mill for pulverizing coarse lime, a mixing system to slake lime and two lime slurry distribution tanks.

A boiler/heat plant, metallurgical laboratory and sample preparation/bucking room are located within the mill. A reagent storage and reagent mixing building is attached to the mill, which is currently empty of residual reagents except for those that may be required for environmental purposes.

Mineral concentrates were conveyed to a storage building where they were placed onto piles. Originally a front-end loader was used to load truck mounted containers that were transported to the railway in Whitehorse. Following closure of the railway, the concentrates were trucked to Skagway, Alaska using tractor-trailer combinations with a capacity of about 50 tonnes ("muffin trucks"). These trucks were loaded through a conveyor/bin system, with the trucks weighed during loading on a horizontal truck scale. From Skagway, the concentrates were shipped by ocean going vessel to various international smelters.

2.3.4.2 Offices, Warehouse, Storage and Shops

Immediately adjacent to the mill complex is an office and warehouse facility. This complex was utilized by technical and administrative staff but has been largely unused since mine shut down in 1998. All warehouse inventory and office supplies that were not directly required for care and maintenance activities or that were not directly related to the fixed equipment in the mill were removed from the site in 1998 and 1999 and sold.

The warehouse and office complex is constructed mainly from structural steel with lesser amounts of dimension lumber and other building materials. Reinforced concrete is used for foundation footings and basement walls and floors. The warehouse has a floor space of approximately 18,000 ft^2, with 4,000 ft^2 of second floor office space.

A heavy equipment shop, used for repairing haul trucks and other heavy equipment, is semi-attached to the office/warehouse facility. A second equipment repair shop, utilized for lighter-duty trucks and construction equipment, is located near the office and warehouse building to the south.

The repair shop consists of 10 bays for mobile equipment, including two lubrication bays. A general shop located in a 13,400 ft^2 housing includes an electric shop, a welding bay, a carpenter shop and a machine shop. The "Wabco repair shop" consists of 6 bays on 10,000 ft^2. Southwest of the heavy duty equipment repair shops is the tire shop, a steel framed, two storage metal clad building with a concrete slab.

The Guardhouse is located at the entrance to Faro Mine's main operational area. This facility is currently utilized as the mine office.

There are a few buildings outside of the mill area, including several core shacks on the Mt. Mungly Dump and the lube shack near the Main Pit Haul Road entrance.

Some scrap yards are present on the tops of various dumps around the Faro site. The scrap includes materials from mill expansions, old mobile equipment (shovels, trucks), old light vehicles, tires, etc. The major sites include the east Main Dump, the north end of the west Main Dump (possibly a long term parking area), the east Tank Farm Dump and the upper and lower Parking Lot Dumps.

Two contractor-owned buildings are present at a small yard located immediately upstream of the Rose Creek Tailings Facility. One building is owned by Bulk Explosives Limited and consists of one large and two smaller metal pre-fabricated buildings which house chemicals and machinery utilized for the manufacture and delivery of bulk explosives (ANFO). One building is owned by Brenntag Canada Inc.

and consists of several reactor tanks used to manufacture copper sulphate (mill reagent). A small, lined collection pond is located between the copper sulphate plant and the North Fork Rose Creek Diversion.

There are several above ground storage tanks on the minesite that were used to store diesel and gasoline. The tanks are inactive except for one tank that is utilized for storage and dispensing of diesel fuel and one tank that is utilized for storage and dispensing of gasoline.

Electrical power is supplied to the Faro site via a 38 kV power line connected to the Whitehorse Aishihik Faro Grid. Transformers at the Faro Mill step the power down for on-site distribution. A standby EMD diesel generator is present that could provide an emergency power supply. A 27 kV overhead power line runs from the Faro mill site to the Vangorda Plateau site.

2.3.5 WATER TREATMENT FACILITIES

2.3.5.1 Water Treatment - General

The Intermediate Impoundment was used for tailings deposition from 1986 to 1992. Following the cessation of tailings deposition in 1992 and until 1997, there was a general increase in the concentration of zinc in water flowing through the Intermediate Pond. This was the anticipated trend attributed to:

1. The removal of a large inflow of alkalinity that previously entered the pond via the tailings slurry.
2. The continued inflow of contaminated rock dump seepage water via location X23.
3. The continued flushing of contaminants by run off over beached (exposed) tailings in the upstream portion of the Intermediate Impoundment.

Water treatment in the Rose Creek Valley was started in 1992 to ensure that surface outflow from the Cross Valley pond met the maximum allowable discharge limits. The practice of treating outflow from the Intermediate Pond for the removal of zinc continued through 2001. The methods employed for the treatment have involved raising the pH of the Intermediate Pond effluent with lime or sodium hydroxide and subsequently utilizing the Cross Valley Pond for settlement of the treatment sediments. The pH modification has been accomplished at various times by:

1. Hauling lime slurry mixed in the mill to a gravity feed tank for addition into the outflow spillway.
2. Delivering lime slurry mixed in the mill to the outflow spillway via an overland pipeline.
3. Hauling lime slurry mixed in the Grum/Vangorda Water Treatment Plant to the south abutment of the dam for addition into a syphon line.
4. Adding sodium hydroxide into a syphon line at the south abutment.
5. Inflow into the upstream end of the Intermediate pond of water pumped from the Faro Main Pit that was pre-treated with lime at the mill.

The latter method, inflow of pre-treated water from the Faro Main Pit, began in fall 1997 and continued in 2001 in conjunction with lime treatment in the outflow spillway.

The Faro pit pumping/treatment program was initiated in 1997 and has been established as an annual seasonal (summer) program that utilizes a water pumping system that was installed in 1997 to provide an estimated minimum 95% of the water required for processing while the mill was operating prior to February 1998. Since mine shut down in 1998, the system has been used exclusively to pump water from the Faro Main Pit to the mill for treatment to maintain the in-pit water level within the pre-determined range. The recycle water system is made up of the following primary components:

1. Three electric pumps mounted on a floating barge in the pit rated at providing 5,000 USgpm each to the mill (only one or occasionally two pumps are utilized for effluent discharge.
2. 30" sclair pipeline from the barge to the mill with flexible sections near the barge which prevent damage to the pipeline which might otherwise result from vertical movement of the barge.

In 1997 and 1998, effluent from the Intermediate Pond (location X4) became compliant with the Water License (<0.5 mg/L zinc) following approximately 4 to 6 weeks of inflow of pre-treated Faro pit water and treatment of the effluent in the outflow spillway was discontinued for the remainder of those pumping/treatment programs. This was as expected given the need for displacement of non-compliant water that was in the pond initially. In 1999, 2000 and 2001, the concentration of zinc in the Intermediate Pond effluent (location X4) was reduced but not to the license limit and, therefore, treatment of the effluent in the outflow spillway was continued for the duration of the pumping/treatment program.

2.3.5.2 2001 Mill Conversion

Certain fixed equipment in the mill was converted for use as a water treatment system in 2001. New equipment was also installed, where necessary. The purpose of the new system is to provide efficient treatment of water pumped from the Faro Main Pit such that the effluent can be released to the Polishing Pond or to Rose Creek. The system was operated in 2001 on a start up basis and is scheduled for full operation in 2002.

The general concept behind the design of the system is to remove zinc from the Faro pit water such that the plant effluent is compliant with the Water License (0.5 mg/L total zinc) at a flow rate that allows the continuation of a seasonal pumping program (approximately 5,000 USgpm/19 m^3). Compliant effluent would be discharged either into the Cross Valley Pond or into Rose Creek via the Cross Valley Dam outflow spillway (existing license location X5). In the event of an upset condition in the plant that resulted in temporarily non-compliant effluent, the effluent could be pumped back to the Faro Main Pit via the existing tailings pumping/pipeline system. Treatment sediments would be re-circulated from settlement tanks into the lime conditioning stage to aid in settlement of sediments and would be periodically removed from the system to the Faro Main Pit as required to maintain desired solids density.

This new system presents many potential benefits over the previous treatment methods that include:

1. Reduction in lime consumption (and resultant cost savings).
2. Increased confidence in achieving objectives.
3. Improved control on operating parameters including automated controls.
4. Incorporation of contingency/emergency procedures.
5. Reduction in deposition of treatment sediments in Cross Valley Pond.
6. Productive use of existing infrastructure.
7. Substantial reduction in the volume of water requiring treatment at the Cross Valley Pond.

The system consists of these primary components:

1. 24-inch influent pipeline.
2. Existing lime handling, storage and mixing system.
3. Lime conditioning in two sets of flotation cells operated in parallel with automated control on lime addition.
4. 24-inch pipeline to settlement tanks.
5. Two settlement tanks (previous thickeners) operated in series or in parallel with optional lime and flocculent addition.
6. Instrumentation and control systems.
7. Flocculent mixing and distribution system.
8. Sediment pump and re-circulation pipe.
9. 24-inch effluent pipeline with optional discharge into the Cross Valley Pond or the Cross Valley dam outflow spillway.

It is anticipated that some water treatment will continue to be required at the Cross Valley Pond for runoff water that passes through the Intermediate Impoundment in 2002 and beyond. The volume requiring treatment will be greatly reduced, however, compared to recent years as a result of treatment in the mill of water pumped from the Faro Main Pit and its bypass around the Intermediate Pond.

2.3.6 DAMS AND DIVERSIONS

2.3.6.1 Faro Creek Diversion

The original channel of Faro Creek passed through the center of the Faro Main Pit, past the mill site, and joined Rose Creek at what is currently the toe of the Original Tailings Embankment. As part of mine development, the Faro Creek Diversion Channel was constructed.

The Faro Creek Diversion Channel collects water from the original Faro Creek channel upstream of the Main pit and diverts the water around the northeast side of the Main pit and into the North Fork of Rose Creek. Some flow in the old Faro Creek drainage area cannot be collected by gravity into the Faro Creek Diversion and continues to flow directly into the Faro Main Pit. During operations, this excess flow was pumped around the pit perimeter.

The diversion starts approximately 1,370 m upstream of the Main Pit, follows the eastern side of the Faro Creek valley, passes along the northern crest of the pit past the Northeast Waste Dumps and empties into the North Fork of Rose Creek, approximately 2,100 m upstream of the Vangorda Haul Road near the upstream toe of the Northeast Rock Dumps. The total length of the diversion is approximately 3,350 m.

The diversion has an average bottom width of approximately 3.7 m and an average gradient (from the inlet to the up to the point where it passes the Northeast Waste Dumps) of approximately 0.5%. In the upper portion of the channel (from its origin to the Faro Valley Rock Dump), the downgradient bank is formed by a dyke constructed of rock fill placed at an angle of approximately 1.5H:1V and the upgradient bank by shallow excavation into native soil cut to an angle generally around 2H:1V. Downgradient of the Faro Valley Rock Dump, the depth of cut increases reaching a maximum depth of approximately 7.6 m. Side slopes are typically excavated at 1H:2V in rock, and 2H:1V in soil. Beyond the Northeast Waste

Rock Dumps, the gradient increases sharply (to as steep as 35%) as it plunges into the valley of the North Fork of Rose Creek.

The Faro Creek Diversion leaks water into the Main pit along the northeast wall of the pit. The initial diversion channel directed water into the North Fork of Rose Creek immediately below the Zone 2 Pit. This operation is believed to have resulted in the deposition of some mineralized surface rock in the area between the Zone 2 Pit and the North Fork of Rose Creek. This temporary diversion was replaced shortly afterwards by the current Faro Creek Diversion.

2.3.6.2 Faro Valley Interceptor Ditch

Runoff from the hillsides north and northwest of the Faro Valley Rock Dump is intercepted by the Faro Valley Interceptor Ditch and directed into the Faro Creek Diversion. No reviewed records identify the design, construction, or as-built details of the Faro Valley Interceptor Ditch . The ditch consists of a small excavation into surficial soils. It is currently (2002) considered to be conveying a small amount of water compared to its available capacity.

2.3.6.3 Fresh Water Supply Dam and Reservoir

The Fresh Water Supply (FWS) Dam and Reservoir are original (1969) mine structures that were required prior to 1997 to provide water for ore processing. The Reservoir was used to store fresh water for use in the milling process through the winter season. A recycle water system constructed in 1997 replaced the Reservoir as the primary supply of water to the processing plant. The Reservoir is not required for the current care and maintenance activities and would not be required for future mine operations (Gartner Lee Limited, 2000).

The FWS Dam was constructed in 1969 by the prime consultant, H.A. Simons International Ltd., supported by the geotechnical consulting company of Ripley, Klohn and Leonoff Ltd. Shortly after construction, a small toe berm was placed due to concerns regarding seepage and related cracking at the toe. Following a stability assessment by Golder Associates Ltd. in 1989, another toe berm lift, including toe drainage measures, was placed for enhancement of the downstream face stability and in response to concerns over seismic stability of the dam.

The FWS Dam is a zoned, earthfill dam, approximately 410 m long, 20 m high at its highest point and 6 m wide at the crest. The slope of the upstream face of the dam is approximately 2.5H:1V and the slope of the downstream face of the dam is 2H:1V. The dam has a sloping, low permeability core that connects to an upstream blanket and cut-off trench. A plan view is illustrated on Figure 2.4 and a cross section illustrated on Figure 2.5.

Water is released from the Reservoir by two means: an overflow spillway located on the crest of the dam near the north abutment and a low-level outlet pipe, which runs through the base of the dam neqra the south abutment.

The overflow spillway is located near the north abutment of the dam and consists of a 30 metre wide concrete structure with 3.2 m high wing walls. In 1976, steel I-beams were placed within the spillway to allow the addition of stop logs. Stop logs were typically placed across the spillway in fall to provide an increased water storage capacity for provision of water to the mill through the winter season. The stop logs system was removed in 1999 due to concerns that excess water pressure caused by a higher reservoir elevation could lead to increased seepage at the downstream toe and exacerbate cracking of the crest. The spillway empties into a discharge channel that is excavated through rock and overburden. The spillway channel bed is composed of cobbles over bedrock. Discharge from the spillway passes through two culverts situated under the access road. Outflow water falls approximately 50 feet from the culverts to the Rose Creek valley floor. The discharge capacity of these two culverts is lower than the discharge capacity of the spillway.

The low level outlet pipe (42-inch diameter) runs through the base of the dam near the south abutment. The system is composed of a submerged drop inlet pipe with outlet control valves. The valve house is located within an excavated channel along the south abutment downstream from the toe of the dam. The flow is then directed into an excavated channel into the natural Rose Creek channel. An internal visual inspection of the pipe in 2001 indicated the presence a bend in the pipe near the middle of the dam. Measurements of the pipe wall thickness indicated a reduction of approximately 40% in some locations.

The FWS Dam has a well-documented operational history that involved raising the water level in the reservoir to as high as practical in the fall in order to provide as much water as possible for winter use. It is thought that, on occasion, the water level in the reservoir was raised above the elevation of the top of the core of the dam. The water level in the reservoir at the end of winter was typically very low due to the release of water from the reservoir for mill processing purposes via the low level outlet pipe.

This operating history is likely to have contributed to general concerns regarding the physical condition of the dam. Significant longitudinal cracking has been documented on the upstream side of the dam crest for nearly 20 years and has been professionally investigated on two occasions. The cracking appears to be related to frost action on the upstream side and crest of the dam. Investigations by Golder Associates Ltd. in 1994 traced the cracks to just less than 2 m depth while a thermistor in the crest indicates a frost penetration depth of approximately 4 m.

A recent (2001) stability assessment of the dam by BGC Engineerign Inc. provided the following results, based on assumed frictional values and the measured location of the phreatic surface within the dam:

Stability Aspect	Factors of Safety for the Upstream Side	Factors of Safety for the Downstream Side
Static	1.5 to 2.1	1.7 to 1.9
Pseudo-static (PGA = 0.13 g)	0.8 to 1.2	1.1 to 1.2

Based on these results, the dam appears to be stable under static conditions for the conditions and assumptions made within the assessment. However, the FWS Dam does not meet the minimum required Factors of Safety based on a Peak Ground Acceleration value of 0.13g, that was estimated to be the MDE for the structure.

A failure of the dam would result in significant environmental impacts such as sedimentation and flood disruption of aquatic habitat and the breach of both the downstream Intermediate and Cross Valley dams with a resulting release of tailings solids and non-compliant water into Rose Creek. The potential for failure of the downstream dams is of critical importance because these dams retain non-compliant water, tailings solids and treatment sediments that would be released into aquatic habitat in the event of dam failure.

An extensive amount of risk assessment, geotechnical investigation and spillway design work was initiated in 2001. It is currently planned to lower the reservoir level retained behind the FWS Dam by constructing a new spillway that is approximately 6 m lower than the current elevation. This construction work is scheduled to be initiated by the end of 2002.

The South Fork of Rose Creek provided freshwater fisheries habitat prior to construction of the dam. Arctic grayling and slimy sculpin have been captured within and upstream of the Reservoir. The FWS Dam and Reservoir represent two fundamental changes to the creek. The first change is the creation of good winter habitat in the reservoir upstream of the dam. The second change is the blockage of fish passage from downstream of the dam up into the reservoir by two hanging culverts below the overflow spillway. The consequences of these changes are that fish resident in the creek downstream of the dam do not have access to the high quality winter habitat in the reservoir and fish resident in the reservoir do not have access to the high quality spawning habitat below the dam. Nonetheless, based on a number a fisheries studies, the resident population of arctic grayling appears to have been able to sustain itself by use of spawning grounds in Rose Creek upstream of the reservoir.

The FWS Dam is instrumented with thermistors and pneumatic piezometers that are routinely monitored on a minimum twice per year basis. The monitoring results are reviewed by a qualified geotechnical engineer.

2.3.6.4 Pumphouse Pond Dam

During 1969, a pumphouse pond was constructed by building a small dam in the Rose Creek channel just downstream of the confluence of the North and South Fork of Rose Creek. The pumphouse supplied water from this pond to the mill via a 2 km long insulated steel pipe.

Construction of the Second Tailings Impoundment in 1974, necessitated raising the tailwater elevation at the pumphouse dam. This required diversion of the North Fork of Rose Creek and rebuilding of the pumphouse and pumphouse pond dam.

2.3.6.5 North Fork Rose Creek Diversion

The North Fork of Rose Creek downstream of the mine access road crossing consists of two separate channels.

The primary flow channel approximately follows the natural stream course through a series of small, constructed ponds prior to joining with the South Fork of Rose Creek immediately upstream of the pumphouse pond. The small ponds are intended to allow surface water to recharge the groundwater system through the sand/gravel surface soils. This was an operating concern for the mine because groundwater wells local for that area were utilized during the winter season to augment the supply of water for processing (prior to 1997).

A secondary channel passes high flow water around the groundwater recharge ponds and into the South Fork of Rose Creek immediately downstream of the pumphouse pond. This channel was constructed in response to previous mine operating concerns regarding excess sediment entering the pumphouse pond during freshet and to allow fish passage to the North Fork (possible only prior to construction of the haul road rock drain in 1986). A common operating practice (prior to 1997) was to open up this secondary channel in spring to avoid sedimentation and to close this secondary channel in fall in order to maximize the water supply to the pumphouse pond through winter. There have not been any recent (post 1996) alterations to the channel configuration.

2.3.6.6 Intermediate Dam

The primary purpose of the Intermediate Dam is to retain tailings. The dam was initially constructed in 1981 to an elevation of 1068 mALS, approximately 20 m higher than the underlying native ground. The entire foundation area beneath the ultimate dam footprint was prepared and raised to 1064 mASL at that time as preparation for scheduled future raising of the dam. The dam was raised in 1988 (to 1073 m) and the emergency spillway situated at the south abutment was moved to the north abutment. The dam was further raised in 1989 to 1078 m and in 1991 to 1081.7 m, resulting in a height of approximately 34 m.

The dam is a zoned earthfill dam and initially, included a vertical, low permeability core excavated down into the foundation. The core is provided with granular filter zones on either side and a drainage blanket extends under the entire downstream side. A portion of the Intermediate Dam was located on terrace material and a 5 m wide blanket of till was placed on the excavation slopes to assist with seepage reduction. After the initial construction, the dam was raised in a downstream manner such that the vertical core became a sloping element. Upstream and downstream slopes were constructed at 2H:1V. The downstream slope also includes a 20m wide bench at 1064 m elevation to give it an overall slope of 2.1H:1V at its maximum section (Figure 2.6).

Little information currently exists with regard to stability assessments for the Intermediate Dam. By extension of the initial design work in 1980 for the Cross Valley Dam, it is assumed that the dam was designed to the same seismic criteria (1 in 200-year event) as that dam. Upstream sloping core elements can represent increased stability concerns and this is a consideration regarding the portion of the dam above the initial height.

The Intermediate Dam is equipped with a riprap-lined spillway channel on the north abutment with a bottom width of 30 m and a depth of 1.5 m (to top of riprap). Golder Associates Ltd. (1992) note that this spillway has a discharge capacity of approximately 100 m^3/s, equivalent to a 1:500 year flood event.

The Intermediate Dam appears to be performing in a satisfactory manner. Some cracking has occurred on the crest, likely in reaction to either frost action on the core or due to saturation effects from recent years in which excessive precipitation occurred. Visual seepage has been observed at the toe of the dam, at its south abutment. The seepage is considered to be related to seepage originating from the uphill Rose Creek Diversion Canal and to the presence of the backfilled initial spillway channel at this abutment.

The Intermediate Dam is instrumented with thermistors and pneumatic piezometers that are routinely monitored on a twice per year basis. The monitoring results are reviewed by a qualified geotechnical engineer.

2.3.6.7 Cross Valley Dam

The Cross Valley Dam is a water retaining structure built to contain water discharged from the Intermediate Impoundment. The retention pond formed by the dam, also referred to as the polishing pond, was designed to contain 1.4 million m^3 of water. The pond contains no tailings but it does contain lime treatment sediments. Compliant water is released from the pond via syphon pipes or spillway overflow.

The Cross Valley Dam was constructed in 1981 to a maximum vertical height of approximately 20 to 21 metres (Figure 2.7). The dam is a zoned earthfill dam with a low permeability core of silty till, a downstream chimney drain/filter and a downstream side blanket drain. In addition, an upstream side low permeability blanket was placed to approximately 60 m upstream from the upstream toe. A new toe drain and a toe berm configuration were designed and constructed by Golder Associates Ltd. in 1991 to reduce the heavy seepage that was observed along the toe of the dam. The work included widening of collector ditches, installation of drains, construction of berms and installation of monitoring weirs.

The dam is founded on permeable valley bottom sands and gravels. Some fine-grained permafrost existed in a small portion of the footprint. The dam has a crest width of 6 m and the upstream and downstream slopes are 2H:1V. Stability analyses were undertaken by Golder Associates Ltd. and reported in the 1980 design document. A 200-year return event of 0.097g was used as the PGA for the pseudo-static analyses and the following Factors of Safety were provided:

Stability Aspect	Factors of Safety for the Upstream Side	Factors of Safety for the Downstream Side
Static	2.4 to >3	1.46 to 2.0
Pseudo-static (PGA = 0.097g)	1.5 to 2.2	1.05 to 1.6

The stability of the dam under MDE conditions (PGA=0.13g) has not been undertaken.

The Cross Valley Dam is equipped with a riprap-lined emergency spillway (and smaller pilot channel) on the north abutment of similar dimensions and capacity as the Intermediate Dam spillway. The 1992 as-built report by Golder Associates Ltd. notes that the discharge capacity of the 1991 Intermediate Dam spillway was 100 m^3/s, approximately the discharge expected from the 1:500 year flood.

The dam has performed in a satisfactory manner over its history. The higher level of seepage encountered after construction was handled with the construction of a toe berm with drainage. The seepage amount measured by the weir system at the toe appears to be decreasing over time. Some minor cracking of the crest has occurred, possibly induced by frost.

The Cross Valley Dam is instrumented with thermistors and pneumatic piezometers that are routinely monitored on a twice per year basis. The monitoring results are reviewed by a qualified geotechnical engineer.

2.3.6.8 North Wall Interceptor Ditch

The North Wall Interceptor Ditch intercepts clean runoff from the north side of the Rose Creek Valley and diverts it around the north abutment of the Cross Valley Dam.

The diversion consists of three segments:

1. The "mine leg" begins just north of the guardhouse within the drainage of Upper Guardhouse Creek and diverts flow from that drainage area into the adjacent drainage to the west.

2. The "Borrow Area F leg" conveys the flow to the northwest above the Intermediate Impoundment.
3. The outfall section conveys the flow under the mine site access road and around the north abutment of the Cross Valley Dam.

The North Wall Interceptor Ditch is excavated in a variety of materials, ranging from silty sand and gravel till to coarse sand and gravel alluvium and bedrock. The ditch was not lined with erosion protection measures. The ditch has performed reasonably well although erosion and sedimentation have caused partial blocking of this ditch at times. Periodic maintenance and repairs have been completed as follows:

1. The containment berm on the downstream side of the ditch was upgraded (height and width increased) in 2000 near its upper portion just north of the mine heavy equipment shops.
2. The containment berm near a corner just below the borrow area was upgraded in 2001 to prevent potential seepage from occurring.
3. The two culverts placed under the haul road are prone to icing in the winter and, as a result, these culverts are closely monitored and icing is removed as required. The culverts have an estimated discharge capacity of 4 to 8 m^3/s, which is below the design requirements of 17.7 m^3/s (Hydrocon 1980) and the culverts are monitored closely in high flow conditions.

2.3.6.9 Rose Creek Diversion Canal

The Rose Creek Diversion Canal passes Rose Creek water around the tailings impoundments. The Diversion was developed in two stages, referred to as the Upper and Lower Diversions. The Upper Diversion was constructed in 1974 in conjunction with the development of the Second Tailings Impoundment. The Lower Diversion is an extension of the Upper Diversion. It was constructed in 1980-81 in conjunction with the development of the Intermediate Impoundment.

Water from both the South and North Forks of Rose Creek enters the upper section of the Rose Creek Diversion Channel. The upper section is a predominantly straight channel that is constrained by natural slopes on the south side and by a constructed dyke augmented by tailings on the north side. The channel was excavated with a bottom width of 15 m, and side slopes of 2H:1V and lined with riprap for erosion protection. The channel has an initial gradient of 0.23% that increases to 2% and the channel includes a number of drop weirs in addition to riprap for erosion protection. Initially, the gradient increased to 5% where it rejoined the original channel of Rose Creek below the toe of the Second Tailings Embankment. This last section was abandoned with the development of Lower Diversion.

The lower section passes water along the south side of the Intermediate Impoundment and returns flow into the natural Rose Creek Channel downstream of the Cross Valley Dam. The lower section includes a series of boulder-lined drop structures and a sharp corner at the downstream end. The lower section is constrained by natural slopes on the south side and by a till dyke on the north side. Most of the Lower Diversion channel has a gradient of 0.19%, with two drop weir sections with a 5% gradient. The channel has a bottom width of 12.2 m and side slopes of 2H:1V in soil and 0.5H:1V in rock. The low gradient (0.19%) sections of the channel included a pilot channel 3.65 m wide by 0.6 m deep to control glaciation during low winter flows. The crest of diversion dam, which diverts the flow from the upper section into the lower section, was constructed approximately 1 m lower than the crest of the adjacent diversion canal dyke, and armoured with riprap. This was done to ensure that any flows in excess of the design flow overtop the diversion dam at that location into the Intermediate Impoundment. The Lower Section is designed to pass the 1:50 year flood event safely (Golder, 1980) and to pass the 1:500 year flood event with no freeboard. The design value provided by Hydrocon (1980) was 160 m^3/s.

The water level in the lower section of the diversion canal is higher than the water level in the Intermediate and Cross Valley Ponds. Water seeps through and/or under the containment dyke into the ponds at two locations.

There is one primary tributary (natural drainage) that enters the upper section of the canal from the south side, just downstream of the pumphouse pond. Another primary tributary enters the lower section of the canal from the south side near the downstream end.

The canal is prone to ice build up over the winter and clearing of ice has been required on occasion. The water license requires the provision of a minimum flow (controlled largely via manual operation of the low level outlet pipe at the Fresh Water Supply Dam) through the winter with the intention of preserving flow for fisheries habitat. The provision of winter flow also minimizes the risk of ice daming in the channel (complete freezing to bottom). Visual inspection and instrumentation have been used to monitor the condition of the canal. Generally, most of the permafrost in the backslope has been thawed and no significant deformations have occurred. One portion of the canal dike just upstream from the Intermediate Dam is still underlain by permafrost. As a result of continued thawing of the ice lens, cracking and deformations still occur within this area of the dike.

The Rose Creek Diversion Canal containment dyke and backslope are instrumented with themistors, pneumatic piezometers and slope indicators that are routinely monitored on a twice per year basis. The monitoring results are reviewed by a qualified geotechnical engineer.

3 VANGORDA PLATEAU MINE SITE FACILITIES

3.1 OVERVIEW OF STRUCTURES

The Vangorda Plateau Mine site consists of the following primary structures:

1. Vangorda Pit.
2. Vangorda Rock Dump including Seepage Collection System.
3. Grum Pit.
4. Grum Rock Dump and Overburden Dump.
5. Little Creek Dam.
6. Vangorda Creek Diversion.
7. Water Treatment Plant and the Sludge Pond Embankments.
8. Office, Heavy Equipment Shop and Other Buildings.
9. Grum Interceptor Ditch.
10. Sheep Pad Sediment Ponds.

This section of the report discusses the development and operational history of the Vangorda Plateau Mine site and provides a description of each of the key facilities. A general arrangement plan of the site is provided on Figure 1.3. Some information regarding earth structures and water diversions contained in this section was provided directly by Steffen Robertson Kirsten (Canada) Inc.

3.2 DEVELOPMENT AND OPERATIONS HISTORY

The Vangorda Deposit was discovered in 1953 and drilled on several occasions through to the late 1980's when it was developed for production. During that time, two small occurrences, Champ and Firth, were also discovered. The Grum Deposit was later found between these two minor occurrences. From 1975 to 1977, extensive work programs were carried out at Grum to delineate the deposit, including an underground exploration program. The deposit was accessed by a ramp from a portal elevation of about 1265 m and twin declines followed the ore zone for 700 m. Extensive definition drilling was done from these declines.

Development of the Vangorda Plateau site for mine operation was initiated in 1988 with dewatering of surface ponds. Several drainage ditches were dug at Vangorda and Doal Lake, a shallow pond overlying the (future) Grum Pit, was drained. Stripping at the Grum site began first with the wet soils from the vicinity of Doal Lake being placed in the "wet dump" area of the Grum Rock Dump, immediately southwest of the pit area.

Mining in the Vangorda Pit commenced in 1990 following issuance of a Water License from the Yukon Territory Government. Between 1990 and 1993, Curragh Inc. mined 5.7 million tonnes of ore from the Vangorda Pit. Stripping was carried out intermittently at Grum during this time, resulting in the excavation of approximately 22 million tonnes of glacial till overburden and rock and 52,000 tonnes of ore. Waste rock from the Vangorda Pit was placed at the Vangorda Rock Dump. The rock dump was redesigned from the initial application to accommodate increased volumes of waste rock and reduced volumes of till.

Mining activities were suspended from 1993 to late 1994 due to insolvency of the mine owner. During this time, DIAND commissioned the construction of the Vangorda Seepage Collector Ditch, re-sloped a 200 m section of the Vangorda Rock Dump and installed five groundwater monitoring wells at the toe of the Vangorda Rock Dump. A 2-m thick cover of compacted glacial till was placed on a 75 m section of the re-sloped area of the dump.

Anvil Range Mining Corporation (ARMC) took ownership of the mine site in November 1994 and resumed pre-production stripping at Grum. Loose soil and broken rock was placed in the Overburden Dump located on the southeast side of the Grum Pit. The Grum Rock Dump was redesigned in response to higher than anticipated amounts of waste rock and sulphide bearing material. Mining at the Grum and Vangorda Open Pits were suspended in January 1998 and the shut down continued through 2001. Known economic ore reserves in the Vangorda open pit had been depleted at the time of the shut down.

Ore from all phases of mining on the Vangorda Plateau Mine site was trucked approximately 13 km to the Faro concentrator plant from the Ore Transfer Pad. There have been no milling operations and no tailings deposition at the Vangorda Plateau Minesite.

3.3 VANGORDA PLATEAU MINE SITE FEATURES

3.3.1 OPEN PITS

3.3.1.1 Vangorda Pit

The Vangorda Pit is 1.15 km in length, 200 to 350 metres wide and 150m at the deepest point. The longitudinal axis of the pit is approximately northwest/southeast with the deepest portion to the northwest end of the pit. The southeast half of the pit is a narrower slot about 200 m wide and only 50 m deep. Access to the pit was by a ramp. The entrance was at the southeast end of the pit and led to the deeper northwest area where the thickest ore was located.

Vangorda Creek, which originally passed directly over the thickest part of the ore body, is diverted around the north perimeter of the pit in an open 2.4 m diameter corrugated metal pipe half round flume.

Two small rock dumps were placed in the pit by ARMC on either side of the haul road near the pit entrance. The size of these dumps is estimated to be in the order of a few tens of thousands of tonnes each (RGC, 1996). The dumps are estimated to contain 50% sulphides and 50% phyllites.

The Vangorda Pit walls have experienced local instability. In particular, the northwest end of the pit, which is in the carbonaceous phyllites and is near several faults, has experienced wall failures that were related to a pit expansion that required the Vangorda Creek Diversion channel to be moved soon after construction. The northeast walls, particularly in the slot area, are more stable.

Economic ore reserves in the Vangorda Pit were depleted in early 1998. The pit was not dewatered subsequent to the completion of mining activities. The in-pit water level is monitored and is anticipated to rise to a maximum desired elevation early in 2002. The sources of water entering the pit are runoff and precipitation, groundwater inflows and water pumped or syphoned into the pit from external sources. A seasonal water pumping and treatment program is scheduled to commence in 2002.

Sulphide-bearing rock is exposed in the Vangorda Pit walls and are observed to be highly oxidized in some locations. For example, copper precipitates and iron staining are visible on the north walls. The effects of acid rock drainage (ARD) from the pit walls are mitigated by diversion of uncontaminated water around the pit. No other in-pit mitigative measures have been implemented to date.

A cleared area at the southern end of the pit was used for temporary storage and transfer of ore through the life of the operation. Economic quantities of ore were removed and processed during the mine operation. However, residual ore remains in the area and the area has been demonstrated as a source of contaminants entering the pit pond.

3.3.1.2 Grum Pit

The Grum Pit is located approximately 2 km northwest of the Vangorda Pit. The Grum Deposit consists of several horizons that form a complex fold pattern. Due to the local geometry of the deposit, there are two separate zones that comprise the surface mineable Grum Deposit: the Main Zone and the Champ Zone. The Champ Zone was not mined and the Main Zone was partially mined at the time of mine shut down in 1998. The future mine plan for the Grum Pit (Anvil Range Mining Corp.) called for the expansion of the pit towards the northwest in 2 or 3 additional stages and for the possible completion of mining by underground methods accessed from the pit.

The Grum Pit was planned to be mined in two or more phases. The Phase 1 Pit was essentially completed at the time of mine shut down in 1998 and the Phase 2 expansion was underway with some pre-stripping completed. An estimated 3-6 years of mine life remains in the Grum Pit at the mining rates established by ARMC. The ultimate pit is designed to be approximately 1,100 m long, 700 m wide and up to 200 m deep, with a volume of 42.6 million m^3 or 47 million m^3 with mining of the Champ Zone. A new access slot (nearly complete at the time of mine shutdown) was excavated at the southeast end of the pit that would provide more efficient access to the pit.

Mining of the lower benches of the Phase 1 pit intersected the underground exploration workings. This created a direct hydraulic connection such that the water level in the pit controls the water elevation in the underground workings. The elevation of the adit above the elevation of the pit perimeter precludes any future discharge of water from the adit provided tat the hydraulic connection remains.

Rocks exposed on the walls and the floor of the Grum Pit are largely calcareous phyllite with minor exposed sulphides. This provides better physical stability of rock walls and better water quality than observed in the Vangorda Pit.

The Phase 1 Grum Pit has a well-developed slope failure on the northeast till wall. The Grum Pit intersected a bedrock valley that is infilled with glacial till at this location that is up to approximately 100 m in depth. Water flow at the base of the till is thought to be the cause of the instability. Till has slumped into the pit bottom that currently prevents access to the Phase 1 pit bottom.

Surface water is diverted around the Grum Pit via the Grum Interceptor Ditch. Although there was not a well defined creek passing over the Grum Pit prior to development, the area was generally "wet" and supported Doal Lake and is thought to have contained shallow groundwater flow. Dewatering of the Grum Pit has not taken place since mine shut down in 1998 and water from intercepted shallow groundwater flow, runoff and precipitation has accumulated. The in-pit water elevation is monitored and has increased slowly relative to the Vangorda Pit due to the large storage volume and low inflow volumes.

3.3.2 ROCK DUMPS

3.3.2.1 Vangorda Rock Dump

The Vangorda Rock Dump is located directly southwest of the Vangorda Pit. The rock dump is located on a topographic high with the original ground surface sloping west toward Shrimp Creek and northwest toward Vangorda Creek. The southern area of the rock dump is underlain by shallow soil or bedrock. The soil thickness increases towards the west and northwest and can be greater than 35 m thick at the toe of the dump. The soil profile consists of a thin veneer of organic soil overlying a fine grained glacial till and a thin basal sand unit overlying bedrock.

The Vangorda Rock Dump was constructed from May 1990 to January 1998 and contains glacial till overburden and waste rock excavated from the Vangorda Pit. A stockpile of till overburden is located in the southeast area of the rock dump. Waste rock was classified as either "sulphide" or "phyllite" for placement into the rock dump. Geochemical analyses indicated that both rock types have the potential to generate acid rock drainage (ARD). The Vangorda main dump contains approximately 16 million tonnes of rock (Table 3.1 and Figures 3.1 and 3.2).

Sulphide rock has a higher potential for acid generation than phyllite and the design of the rock dump called for the segregation of sulphides into a sulphide cell. The arrangement provided for a more direct collection of seepage from the sulphide cell into Little Creek Dam storage pond. Segregation of the seepage from the sulphide cell might also allow the effluent to be treated separately. It is believed that that the segregation of the two rock classifications was largely followed through the life of the operation.

The original closure plan for the facility required the resloping and encapsulation of the mined rock with glacial till that would be stripped during development of the pit. The closure plan was to be implemented progressively as the rock pile expanded. The design required a starter dyke to be constructed from compacted glacial till, to 1135 m elevation. Till berms were to be constructed as extensions to the starter dyke around the perimeter of the rock pile. The berms were to be located to ensure an overall slope of 3:1 (Horizontal to Vertical). A till cap would then be placed over the top of the pile. Construction of the starter dyke was initiated in May 1990 and completed in the same year. No additional lifts were constructed.

The design of the dump was modified in 1992 to accommodate changes to the projected volumes of rock and overburden. A greater quantity of rock and a reduced quantity of overburden were predicted in a revised mine plan. The footprint of the dump was not enlarged but the height was increased to the current elevation.

The near surface zone of the Vangorda Deposit was oxidized and could not be economically processed in its' entirety. This oxidized ore was screened such that the coarse fraction was processed and the fine fraction, which contained the majority of the oxidation products, was placed into the rock dump in an area of shallow bedrock east of the extensive till blanket that underlies the bulk of the Vangorda dump. This material (approximately 225,000 tonnes) is generally referred to as "oxidized fines" and occupies an area

Table 3.1. Composition of Vangorda Plateau Mine Site Dumps

Dump	Composition	As-built (tonnes)	% of Total
Vangorda Main	**Phyllites**		
	Phyllite, including calcareous, non-calcareous and chloritic	213,200	1%
	carbonaceous phyllite	882,700	6%
	Vangorda Formation	1,095,900	7%
	Mt. Mye non-calcareous phyllite	7,295,600	46%
	altered phyllites	4,608,500	29%
	subtotal phyllites	***13,000,000***	***81%***
	Sulphides		
	massive pyritic quartzite	422,577	0%
	pyritic quartzites	845,155	1%
	banded carbonaceous quartzites	1,732,268	1%
	subtotal sulphides	***3,000,000***	***19%***
	Total Main Dump	**16,000,000**	
Vangorda North Pit Dump	Phyllite	10,000	50%
	Sulphide	10,000	50%
	Total North Pit Dump	**20,000**	
Vangorda South Pit Dump	Phyllite	25,000	50%
	Sulphide	25,000	50%
	Total North Pit Dump	**50,000**	
Vangorda Pit Stockpile	Sulphide	510,000	100%
Oxide Fines	Vangorda Oxide Fines	225,000	100%
Grum Main	**Phyllites**		
	Phyllite, including calcareous, non-calcareous and chloritic	76,053,018	
	carbonaceous phyllite	15,906,892	
	Vangorda Formation	91,959,910	85%
	Mt. Mye non-calcareous phyllite	10,146,190	9%
	altered phyllites	2,193,370	2%
	subtotal phyllites	***104,299,470***	***96%***
	Sulphides		
	massive pyritic quartzite	164,020	0%
	pyritic quartzites	688,850	1%
	banded carbonaceous quartzites	2,969,360	3%
	subtotal sulphides	***3,822,230***	***4%***
	Total Grum Main Dump	**108,121,700**	
Southwest Dump	calcareous phyllites	42,000,000	100%

of the sulphide cell where some of the material is exposed to surface and some is covered with waste rock. This material has been shown to generate and release substantial concentrations of contaminants.

In November 1993, Government Services of Canada (GSC) commissioned Pelly Construction Limited (PCL) to rehabilitate the Vangorda dump seepage collection system and initiate work on the resloping and capping of the rock dump. Steffen Robertson Kirsten (Canada) Inc. (SRK) was retained by GSC to provide engineering consulting services for the work.

The work involved the upgrading of the existing seepage collection system located around the perimeter of the containment facility, recontouring rock slopes within a section of the rock pile, and providing instrumentation to monitor both the physical stability of the rock pile and any impact on the groundwater quality. The work took place from March 1994 to June 1994. The configuration of the rock dump and collection facility has not changed since that time.

Six transverse gravel drains were installed beneath the till starter dyke during its construction in 1994 to allow release of water from the dump and to allow sampling of seepage flow. The drains were equipped with V-notch weirs for flow measurement. Five of the weirs remain operational and three of the weirs consistently have flow. However, the observed seepage flow rates are substantially less than predicted from water balance calculations, which may be related to high rates of water storage and evaporation from dump surfaces.

In 1994, five groundwater monitoring wells were installed around the perimeter of the dump in order to monitor the quality of the groundwater seepage at the toe of the dump. Four of these wells remain operational. In 2001, two additional monitoring wells were installed, one at bedrock. The wells were located at a location of deep bedrock as identified from a surface seismic reflection survey. Additional details are described in Section 4.

3.3.2.2 Grum Dumps

There are three Grum Waste Dumps: the Overburden Dump, the Southwest Rock Dump and the Main Rock Dump. The Main and Overburden Dumps are being built on the moderate northwest slope of the Vangorda Creek valley and the Southwest Dump is in a relatively flat saddle on the crest of the ridge between the two branches of Vangorda Creek southwest of the Grum Pit. The Overburden Dump is complete but the other two dumps are not, pending a resumption of mining in the Grum Pit. The composition of each dump is described below and the rock dumps are illustrated on Figures 3.3 and 3.4.

Overburden Dump

The Overburden Dump contains glacial till stripped from Phase 1 of the Grum Pit. The dump has been built in five 15 m lifts with setbacks resulting in gentle slopes suitable for resloping to 3H to 1V. A portion of the northeast side of the dump was resloped by Anvil Range Mining Corporation. The Overburden Dump contains approximately 24 million tonnes of glacial till.

Southwest Rock Dump

The Southwest Dump consists of mainly calcareous phyllite with about one third of the dump designed to contain non-calcareous phyllite. The volume of the dump is approximately 20 million m^3. This dump drains primarily to the south towards the main stem of Vangorda Creek. However, the west edge of the dump extends into the drainage of the West Fork of Vangorda Creek. Only rock from the pre-stripping of Phase 3 of the Grum Pit is located in this dump, which is believed to consist entirely of calcareous phyllite and include no sulphide waste. The design for the Southwest Rock Dump was enlarged from the initial design by extending 200 m to the west and increasing the height by approximately 10 m.

Main Rock Dump

The largest of the three dumps, the Main Rock Dump was built on a moderate slope dipping 6 to 10 degrees southeast to south. Local areas vary from as steep as 12 degrees to flat. Permafrost was not identified on this slope. The main dump covers two minor areas of groundwater seepage. The more significant of these areas, the Grum Creek valley, was not incorporated into the design of the dump because of stability concerns related to near saturated surface soils. The surface of this southwest slope is mantled by variable thickness of glacial till (0.1 to 6.7 m). The till is generally overlain by fluvial sand and gravel which varies from 0.3 to 5.5 m in thickness. A thin organic soil layer (0.2 to 0.7 m deep) covers most of the area. Bedrock is generally within 7 or 8 m of ground surface and in many places bedrock is immediately beneath the thin organic soil layer.

The Main Rock Dump was designed to consist of seven lifts, mostly 30 m high each. The lifts were designed to be constructed as a series of overlapping lifts wedging out against the hillside, each providing a foundation and buttress for the lift above it with an overall slope of 2.5H to 1V or flatter. The dump is currently only partially constructed according to the proportional composition of the Grum Pit. The lifts, as constructed, largely follow this design although one lift contains a substantial quantity of glacial till excavated from the slough at the southeast pit wall. Each lift was end dumped at the angle of repose and a setback was provided for each lift to reach the overall design slope.

Sulphide waste rock was placed into the central area of the rock dump (the "sulphide cell") per the dump design. Sulphides were dumped on a minimum base of 10 m of phyllite to isolate the sulphides from the original ground surface and to provide buffering capacity for seepage through the sulphide cell. The sulphides were dumped 45 m back from the final dump face to allow for future placement of phyllite and till as a reclamation cover.

The ultimate size of the Main Rock Dump, dependent on the ultimate size of the Grum Pit, was designed to hold 108 million tonnes of rock, most (92 million tonnes) of which was to be calcareous phyllite, and about 5.2 million tonnes would be sulphides and altered phyllite.

3.3.2.3 Ore Transfer Pad

The Ore Transfer Pad is at the north end of the Grum Pit. The pad was used as an ore transfer point from pit trucks to the long-haul trucks that carried ore to the Faro mill. The pad was built on a base of calcareous phyllite and is located on the drainage divide between the main stem of Vangorda Creek and the West Fork of Vangorda Creek.

Economic volumes of ore were removed from the ore transfer pad to the Faro mill during mine operations. However, residual quantities of low, regular and high grade ore are thought to be present on the pad.

3.3.2.4 Haul Road

The Vangorda Plateau Haul Road is a heavy haul road developed for use by 154 tonne off-highway trucks hauling ore from the Ore Transfer Pad to the Faro mill, a distance of 13 km. The road extends an additional 3 km past the transfer pad along the south side of the Grum Pit to the pit entrance on the south side of the Vangorda Pit (refer to Figures 1.2, 1.3, 1.4). The road was built by Curragh Resources starting in October 1986 and was completed in 1989. There has been significant upgrading of the road surface over the years.

The road surface is up to 30 m wide and there is a 2 m high safety berm on either side of the road. The bulk of the road was built as a fill road and is up to 30 m high. There are two minor cut areas, one on the east side of the West Fork of Vangorda Creek and the other on the west side of the South Fork of Rose Creek. The road was built from rock selected for non-acid generating characteristics. The central 2 km of the road was built from locally borrowed surficial deposits. Most of the rock on the Faro side of the haul road (8 km) is schist with lesser calc-silicate and minor intrusive rock, all from the Faro Pit. The rock on the Vangorda Plateau side is calcareous phyllite from the Grum Pit.

The haul road crosses several major streams including the North and South Forks of Rose Creek as well as the West Fork and main stem of Vangorda Creek. The North Fork of Rose Creek crossing is a rock drain. A second, smaller rock drain crosses Reservoir Creek, a tributary to the fresh water reservoir. The other crossings are corrugated metal pipes of 600 to 1600 mm diameter and 600 mm overflow culverts exist at most crossings. Culvert crossings were sized for a 1:25 year return period flood and were not designed to allow for fish passage. The two largest fills over these culverts are the West Fork of Vangorda Creek and the main stem near the Vangorda Pit. Side slopes are 2 horizontal to 1 vertical for sections built from overburden and 1.5 horizontal to 1 vertical for sections built from pit rock.

3.3.3 BUILDINGS AND INFRASTRUCTURE

A 27 kV overhead power line runs to the Vangorda Plateau area from the Faro mill site. This line feeds a 4160 V distribution system for the Grum and Vangorda mine site. Poles on this grid are single log poles. A distribution of overhead 4167-volt lines feeds power to various substations around the site where temporary ground lines are used to connect to equipment.

The following facilities are located at the Grum and Vangorda mine sites:

1. Grum office/dry complex.
2. Grum shop building.
3. Water Treatment Plant.
4. Grum exploration portal buildings.
5. Old exploration camp.
6. Grum ore haul contractors office and shop.
7. Explosives magazine.
8. Grum lube/fuel building.
9. Grum ore storage pad.

The primary building is the office and dry complex. This is a two-story building of approximately 1,500 m^2 per floor. It is of wood frame construction on a concrete slab. Exterior cladding is sheet steel.

There is a shop building of similar size and construction nearby. There is also a small water well house, ambulance garage, and trailer building used for miscellaneous storage near the office building.

The Water Treatment Plant is housed in a steel frame building on a concrete pad. The site also includes a lime bin and related structures and a few small temporary buildings or sheds used for storage, office and lunchroom space. A Butler building with a wooden extension is located at the old Grum exploration portal. This building was formerly used as a shop for the underground project and then became a truck maintenance shelter used during the early days of the Grum stripping. Currently, the building is unused.

Several small temporary wood frame buildings, some of which are modified trailers, core racks and a wood frame core logging building of about 300 m^2 floor space are located near the fuel station.

The explosives magazine for the pit area is a small wood frame building in a clearing on the ridge running along the northwest side of Vangorda Creek near treeline. There is also a small blaster's shack near the Water Treatment Plant that was used for minor maintenance and office purposes.

There are several large fuel and glycol tanks in bermed areas, which are all currently inactive. Fuel and lube distribution was via several pumps housed in a small building near the major fuel tanks at the main exit from the Grum Pit. The contractors hauling ore from the Grum Transfer Pad to the Faro Mill use a shop and scale facility along the haul road near the ore transfer pad.

3.3.4 WATER TREATMENT FACILITIES

The Water Treatment Plant (WTP) was constructed in 1989/90 during the initial development of the Vangorda Plateau Mine site. During mine operations from about 1990 to 1993 and from 1995 to 1998, the plant was used to treat water from the Grum Pit, Vangorda Pit and Little Creek Dam.

Water from the Grum Pit was pumped to the WTP via the Grum Pit water holding pond. Water was pumped from the Vangorda Pit into Little Creek Dam where it mixed with runoff from the Vangorda Rock Dump and the mixed water was then pumped directly to the WTP via a long (>2 km) buried pipeline.

The conventional lime neutralization plant with flocculant addition produces a low density sludge. Effluent exiting the WTP passes through a clarification pond prior to discharge. The design capacity of the plant is 2,000 Usgpm/75.7 m^3/min based on the design influent characteristics from the Grum and Vangorda Pits. The discharge from the sludge settling pond passes into the Grum Interceptor Ditch and into Vangorda Creek via the Sheep Pad Settlement Ponds.

The WTP has not been operated during the current mine shut down that began in January 1998. Runoff water has been allowed to accumulate in the Grum and Vangorda Pits and run off water from Little Creek Dam has been pumped into the Vangorda Pit.

The water level in the Vangorda Pit is predicted to reach an elevation where active intervention is desired in 2002. In preparation for scheduled reactivation of the WTP in 2002, an overland piping and pumping system was installed to pump water directly from the Vangorda Pit to the plant. The system consists of a barge mounted pump in the pit, a booster pump located out of the pit on the south side and high pressure steel pipe in the lower sections grading to plastic (sclair) pipe towards the Water Treatment Plant.

The water level in the Grum Pit is not expected to reach an elevation where active intervention is desired for many years due to lower inflows and larger storage volume compared to the Vangorda Pit.

3.3.5 SETTLEMENT PONDS

3.3.5.1 Moose Pond

The Moose Pond is a natural depression on the northwest side of Vangorda Creek that was prepared for use as a settling pond for Grum Creek water in response to elevated levels of total suspended solids in Grum Creek during 1995. A diversion ditch that delivers part of the Grum Creek flow into the Moose Pond was constructed in 1996 and is currently in place.

The Moose pond is located on the top of a gravel bank overlooking Vangorda Creek and influent water has been observed to continually seep into the ground. There has not been any observed accumulation of water in the pond due to the infiltration.

3.3.5.2 Clarification Pond

The Clarification Pond is a settlement pond for effluent exiting the Water Treatment Plant. Treatment sediments are intended to settle in the pond such that the discharge from the pond (license location X25) is compliant with the terms of the Water License.

The dimensions of the pond are approximately 120 m by 80 m by approximately 4 m deep. The pond is excavated into surficial soil. Water enters the pond via a horizontal header pipe that intended to distribute inflow evenly across the width of the pond. The original header pipe was replaced in 2001 with a modified design. The pond was designed to release water via either a gravel underdrain or an outlet pipe buried in the embankment fed by a horizontal exit drain. The design anticipated that the underdrain would become plugged with sediments over time and this is believed to have occurred. The discharge header pipe was replaced in 2002.

The embankment exhibits cracking and surficial slumping in some locations such that the crest width is currently less than design. The downstream face of the embankment on the north side was treated with geomembrane and rip rap rock in 1995 in response to observed seepage. The recommended maximum pond water elevation is 2 metres below the crest of the embankment, which is intended to prevent excessive water pressures within the embankment.

3.3.5.3 Sheep Pad Ponds

The Sheep Pad ponds were constructed in 1995 in conjunction with upgrading of the Grum Interceptor Ditch as a means of mitigating elevated levels of suspended sediments entering Vangorda Creek. Two ponds were constructed with the intention of allowing settlement of suspended sediments prior to discharge into Vangorda Creek via the Plunge Pool at the lower end of the Vangorda Creek Diversion Flume.

A coarse settlement pond receives the initial inflow and allows initial settling of coarse sediment. Accumulated sediment has been excavated from the pond on occasion since 1995. The inflow channel into this pond from the Grum Interceptor Ditch was upgraded in 2001 with a rip rap apron. Water flows to the second pond via a short (approximately 15 m) half-culvert flume. The two ponds are separated by an earth dyke.

The second, larger pond is the main settlement pond and is commonly referred to as the "Sheep Pad Pond". This pond is contained on three sides by an earth dyke on the fourth side by natural ground. Water flows out of this pond via a riprap-lined exit channel.

In 1996 and 1997, fine, clayey sediment in suspension was observed not to settle completely in the pond during freshet and early summer such that the concentration of total suspended solids was out of compliance with the Water License. Flocculants were added into the flume between the ponds as a settlement aid. Two flocculants, Ferric sulphate and Percol E10, were utilized. From 1998 to 2001, water was syphoned from the Sheep Pad Pond into the Vangorda Pit for brief periods during freshet as a means of preventing a discharge of non-compliant water.

3.3.6 DAMS AND DIVERSIONS

3.3.6.1 Water Management Overview

During previous mine operations, dewatering of the Grum Pit was accomplished in several ways. Water was pumped from deep wells located around the eastern perimeter of the pit in an attempt to intercept groundwater prior to its' entering the pit. Water pumped from these deep wells was directed into the Grum Interceptor Ditch. Dewatering of the underground exploration workings below the Grum Pit was performed via wells into the workings drilled from within the pit. In 1997 and 1998, some of the underground workings were intercepted by pit development and it was subsequently unnecessary to dewater the workings. Water pumped from the underground exploration workings and any other water that accumulated in the pit was pumped to the Water Treatment Plant holding pond prior to pumping into the plant for treatment.

Grum Creek contains water from only a portion of its' original watershed due to re-routing of surface water and interception of groundwater in the Grum Pit. A portion of the remaining Grum Creek flow has been diverted, since 1996, towards a settlement pond referred to as the Moose Pond which is a natural swale in sandy gravely soil that is bermed at the downstream end. Use of this diversion is intended to minimize suspended sediment loadings entering Vangorda Creek via Grum Creek. To date when the Moose Pond diversion has been in-place, the diverted Grum Creek water has seeped into the ground and there has been no accumulation of water in the Moose Pond.

Water is diverted around the Vangorda Pit via the Vangorda northeast and northwest interceptor ditches as well as through a diversion of Vangorda Creek. The Vangorda northeast interceptor ditch passes water from the slopes to the north east of the pit into Shrimp Creek which, in turn, reports to the Main Fork of Vangorda Creek. The northwest interceptor ditch diverts water from the north west slopes into a settlement/groundwater recharge basin with overflow from the basin entering the plunge pool above the haul road. Vangorda Creek is diverted around its' natural channel via a half culvert flume which discharges into the plunge pool above the haul road. Vangorda Creek is then returned into its' original channel below the haul road.

Prior to the depletion of economic ore reserves in the Vangorda open pit in 1998, the Vangorda open pit was dewatered into Little Creek Dam from which location water was subsequently pumped to the Water Treatment Plant. Since the depletion of known economic ore reserves and during the current cessation of mining activities, the Vangorda open pit has not been dewatered and run off water which accumulates in Little Creek Dam has been pumped into the mined out Vangorda open pit in order to maintain an appropriate water level in Little Creek Dam. The run off water which accumulates in Little Creek Dam is typically non-compliant for levels of zinc required under the Water License and other parameters due to the presence of surface run off from the Vangorda Rock Dump which enters Little Creek Dam via a dump seepage collector ditch.

A pumping system was installed in 2001 to pump water from the Vangorda Pit to the Water Treatment Plant at the Grum Pit. The system consists of an overland pipeline, floating pump/barge assembly in the pit and booster pump located outside of the pit.

3.3.6.2 Little Creek Dam

The Little Creek collection facility is located immediately northwest of the Vangorda Rock Dump, at an approximate elevation of 1100 mASL, in the side valley of Little Creek, a small tributary to Vangorda Creek. Upstream of the facility, Little Creek is intersected by the Vangorda Pit and by the access road to the Vangorda Rock Dump. The facility is located approximately 90 m upstream of Vangorda Creek.

The Little Creek collection facility was constructed in 1990 to collect water pumped from the Vangorda Pit and seepage from the Vangorda rock pile. A detailed as-built report was prepared by SRK. The Little Creek collection facility consists of Little Creek Dam, an earth embankment built from local compacted till and a storage pond (Little Creek Pond) with a reservoir capacity of approximately 120,000 m^3 (Figures 3.5 and 3.6). Other associated facilities include a wet well, pump house, and pipeline system to direct the water in Little Creek Pond to the Water Treatment Plant near Grum Pit.

The crest elevation of Little Creek Dam varies from 1114.5 to 1120 mASL, i.e., some 10 m above natural ground. The side slopes are 2:1 (H:V) on the downstream side and 2:5:1 (H:V) on the upstream side.

An emergency overflow spillway was constructed in 1999 that consists of a 0.61 m diameter CMP culvert pipe buried into the crest of the dam near the south abutment. Pipe discharge falls into a rip rap lined channel prior to discharging downhill into Vangorda Creek. Since mine shut down in 1998, the water elevation in Little Creek Dam has been controlled by periodic pumping into Vangorda Pit.

Little Creek Dam is instrumented with thermistors and pneumatic piezometers that are routinely monitored on a twice per year basis. The monitoring results are reviewed by a qualified geotechnical engineer.

3.3.6.3 Vangorda Creek Headworks Dam

The headworks of the diversion is constructed around an existing stream crossing on the Blind Creek Road which consisted of an 1,800 mm diameter CMP culvert embedded in an earth embankment. The work involved raising the embankment and extending the culvert using a smaller 1500 mm diameter corrugated metal pipe.

The dam shows no signs of settlement or cracking of the headworks embankment nor any evidence of instability or surficial movement of either the upstream or downstream faces.

3.3.6.4 Grum Interceptor Ditch

The Grum Interceptor Ditch runs for a length of approximately 2,500 m from the above the northeast corner of the Grum Pit to Vangorda Creek. The ditch collects surface runoff in the upper reaches above the Water Treatment Plant. During mine operations, dewatering pumps installed into the aquifer upgradient of the Grum Pit also delivered water into the ditch. The ditch receives effluent from the Water Treatment Plant clarification pond and passes this combined flow around the west and south perimeter of the Grum Overburden Dump where water passes into the Sheep Pad Ponds (post 1995). Prior to construction of the Sheep Pad Ponds in 1995, the Grum Interceptor Ditch passed water through a culvert in the haul road and into the Grum Creek channel.

The initial routing of the ditch into Grum Creek, combined with the nature of the ditch as a shallow, steep-walled excavation in surficial soils, was identified as the cause of high levels of suspended sediment in Grum Creek. In response, the Sheep Pad Ponds were constructed and the Grum Interceptor Ditch was upgraded to include some rip rap protection in steeper sections.

The Grum Interceptor Ditch was upgraded further in 2001. Sloughed soil was cleaned from the ditch and rip rap rock was placed along the length of the ditch. The work also included placement of a rip rap apron at the inlet to the Sheep Pad Pond.

3.3.6.5 Vangorda Creek Diversion

The development of the Vangorda Pit in 1991 required the construction of a 1,000 m long diversion of Vangorda Creek around the ultimate perimeter of the pit. The diversion was built between January and April 1991 and consisted of a number of components including the headworks, a partially lined open channel, a plunge pool, culverts, and drop structures. Design objectives for this facility required a system that would accommodate the 100-year storm event, would minimize seepage losses into the pit, and would be stable.

A 250 m long realigned section of the channel was completed in early 1992 to accommodate an extension of the ultimate pit perimeter to the west.

The diversion consists of an open channel lined with 2,400 mm diameter half-round culvert. Riprap is used to protect sideslopes of the channel from erosion. The channel is seated on the north wall of the Vangorda Pit. A portion of the channel is underlain by a french drain that collects and passes leakage from the flume to the downstream culvert.

At the downstream end of the open channel, flow discharges into a riprap lined plunge pool, which serves as an energy dissipater. Flow then enters a 2,000 mm diameter culvert, which feeds a vertical, 3,000 mm diameter drop box structure located just north of the Vangorda haul road. The drop box redirects the flow into a 1,600 mm diameter pipe to the outfall on the south side of the haul road and back into Vangorda Creek (Figures 3.7 and 3.8).

The half-round culvert has not suffered any major structural damage except for a fall of rock in 1999 that damaged and required replacement of approximately 35 m length of the flume. Minor damage to the flume has occurred over the life of the operation due to ice clearing and less severe sloughing of rock and soil into the flume.

A program of controlled blasting was executed at the Vangorda Creek Diversion flume in March 2001. The work removed some overhanging blocks in the location of a fall of rock in 1999 that damaged the flume and compromised its performance.

3.3.6.6 Vangorda Rock Dump Seepage Collection Ditch

The Vangorda Rock Dump Seepage Collector ditch collects toe seepage and surface runoff from the dump and passes this water into Little Creek Dam. The ditch was constructed in 1994, is approximately 2 m wide at the base and has 2.5H:1V side slopes. The ditch walls and bottom are armoured with riprap.

3.3.6.7 Vangorda Pit Diversion Ditches

Surface run off is diverted around the Vangorda Pit via the Vangorda northeast and northwest interceptor ditches. The Vangorda northeast interceptor ditch passes water from the slopes to the north east of the pit into Shrimp Creek which, in turn, reports to the Main Fork of Vangorda Creek. The northwest interceptor ditch diverts water from the northwest slopes into a settlement/groundwater recharge basin with overflow from the basin entering the plunge pool above the haul road.

These ditches are shallow, narrow ditches excavated into surficial soils. The design parameters used for construction of these ditches are not known.

4 ENVIRONMENTAL SETTING

4.1 CLIMATE AND ATMOSPHERE

4.1.1 STUDY AREA

The station locations, information collected at each one and the period of collection record is outlined below in Table 4.1.

Table 4.1 Climate Stations

Station ID	Location	Temp.	Precip.	Snowpack	Wind	Lake Evaporation	Evapotrans-piration	From	To
Anvil	Faro Mine site	✓						1967	1980
Rose Creek	Faro Mine site			✓				1975	1985
Faro Airport	Faro Airport		✓					1978	2001
Faro Airport	Faro Airport				✓			1975	1985
Whitehorse Airport	Whitehorse Airport				✓	✓	✓	unk.	unk.

Temperature and snowpack data from the Faro airport station was not available at the time of writing this baseline report, so data collected from the Anvil Range station and Rose Creek station was used.

4.1.2 STUDIES COMPLETED

Data for this section has been compiled from the following sources:

- Environment Canada, Atmospheric Environment Service. 1982. Canadian Climate Normals, Temperature and Precipitation. 1951-1980, The North - Yukon Territory and Northwest Territory (From the Integrated Comprehensive Abandonment Plan (ICAP).
- BGC Engineering Inc., 2002. 2001 Annual Inspection of Facilities at the Faro Mine Site. Report prepared for Deloitte & Touche Inc.
- Andrew Pape-Salmon, P.Eng., MRM Sustainergy Consulting, Jean-Paul Pinard, P.Eng., M.Sc., Ph.D. Candidate. 2002. Report on Renewable Energy Opportunities for the Operations of the Interim Receivership of Anvil Range Mining Corporation.

4.1.3 LOCAL METEOROLOGY

4.1.3.1 Temperature

The Anvil (Environment Canada) climate station was located at an elevation of 1158 mASL at the mine site. The station is not operable but temperatures were recorded from 1967 to 1980 (RGC 1996). The mean monthly temperatures are shown in Figure 4.1, and listed in Table 4.2 below:

Table 4.2 Mean Monthly Temperatures (°C) at Anvil Climate Station (1967-1980)

Parameter	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Daily Max. Temp. (°C)	-15.1	-8.3	-5.3	2.2	9.3	16.0	17.5	15.2	9.6	1.6	-7.0	-12.6	1.9
Daily Min. Temp (°C)	-24.9	-18.8	-17.3	-8.7	-1.8	3.0	5.0	3.3	-0.9	-8.1	-16.7	-22.4	-9.0
Daily Temp. (°C)	-19.8	-13.9	-11.2	-3.2	4.0	9.9	11.5	9.5	4.6	-3.1	-11.6	0	-3.4

The 1967 to 1980 temperature normals for the Anvil station show a mean annual temperature of -3.4°C. July is the warmest month, with a mean daily temperature of 11.5°C, and January is the coldest month, with a mean daily temperature of -19.8°C. Over the period of record, temperature extremes of 29.4 and -46.1°C have been measured.

4.1.3.2 Precipitation

The mean annual precipitation (MAP) at the Faro airport station is 304.7 mm, according to the 1978-2001 data (BGC, 2002). This total comprises roughly equal proportions of rainfall and snowfall as water equivalent. The mean monthly distribution of precipitation is plotted in Figure 4.2 and is listed in Table 4.3 below. The driest and wettest months are typically April and July, respectively, over the period of record. The greatest monthly precipitation measured over the period of record was 116.2 mm in August 2000.

Table 4.3 Monthly Mean Precipitation (mm) at Faro Airport, Yukon (1978-2001)

Month	Mean (mm)
January	14.3
February	12.1
March	10.5
April	7.2
May	24.3
June	35.8
July	58.9
August	46.8
September	38.2
October	24.9
November	17.2
December	14.6
Annual Total	**304.7**

4.1.3.3 Snowpack

The Rose Creek snow course at the site was operated by DIAND from 1975 to 1985. The snow course was located near and at a similar elevation (1080 m) as the tailings impoundment area. The accumulation of snow at the tailings impoundment typically begins in October, and the snow has generally melted by the end of April, although in 1985 it persisted into May. At maximum snowpack in March or April the density of the snowpack is about 200 kg/m^3.

4.1.3.4 Wind

Using wind data measured at the Faro airport, and weather balloon data from the Whitehorse station, wind speeds at the Faro Minesite and Vangorda minesite (at Mt Mye shelf and Grum Rock Dump) were estimated.

Wind data from the Faro airport indicates that the prevailing wind direction is from the southeast, following the Tintina Trench. Table 4.4 and Figure 4.3 (RGC 1996) show the long-term monthly mean wind speed data collected at the Faro airport. The wind data was collected from an anemometer on a 10m tower near the airport terminal. The data is measured at each hour of the day, 365 days of the year. (dates not provided).

Table 4.4 Long-term Monthly Mean of Wind Speed (m/s) at the Faro Airport

Month	Mean (m/s)
January	1.4
February	1.7
March	2.2
April	2.6
May	2.7
June	2.7
July	2.6
August	2.1
September	2.1
October	2.2
November	1.7
December	1.5

Figure 4.3 also shows the vertical wind speed profile from the Whitehorse weather balloon station scaled to elevations above the valley floor. The Mt. Mye shelf varies in elevation between 1800 and 2000 masl, while the Grum Rock Dump elevation is at 1325 masl. The transposed mean wind speeds at the Mt. Mye shelf and the Grum Rock Dump are 7 m/s and 6 m/s, respectively. The lowest predicted wind month at the Mt. Mye shelf and the Grum Rock Dump is in July, during which the speeds are 5.1 and 5.6 m/s, respectively. The highest mean wind speeds (8.9 m/s Mt. Mye shelf, and 7.3 m/s Grum Rock Dump) are predicted to occur in January.

4.1.3.5 Lake Evaporation and Evapotranspiration

Lake evaporation refers to evaporation from a free-water surface. The rate of lake evaporation was estimated from meteorological data using a computer program known as WREVAP which was developed by the National Hydrology Research Institute (Morton, 1985). Since no trend in lake evaporation with elevation was evident, the calculated lake evaporation at the Whitehorse Airport was arbitrarily selected to represent conditions at the mine site. The average lake evaporation was determined to be 490 mm.

Evapotranspiration refers to evaporation from a land surface including transpiration from plants, and appears to decrease with increasing elevation. The rate of evapotranspiration was also estimated from meteorological data using a computer program known as WREVAP, developed by the National Hydrology Research Institute. As the best estimate, the calculated evapotranspiration values of 190 mm per annum, or 38% of lake evaporation, at the highest elevation station, Whitehorse Airport, were adopted for the mine site. Insufficient information is available, however, to extrapolate this trend to the mine site with more than a low degree of certainty.

4.2 PHYSICAL ENVIRONMENT

4.2.1 GEOLOGY

4.2.1.1 Regional Geology

The geology of the Anvil District has been described in detail in RGC 1996. A regional geology map, repeated from RGC 1996, is provided in Figure 4.4.

The stratigraphy of the Anvil District consists of regionally metamorphosed sedimentary bedrock, ranging in age from late Precambrian to Permian (approximately 900 to 250 million years ago). The degree of metamorphism ranges from moderate (schist) to low (phyllite). The lower part of the sequence, Silurian aged and earlier, as represented primarily by the Mt. Mye and Vangorda Formations, is the most important with respect to the ore bodies. During the Cretaceous, the meta-sediments were intruded by the Anvil Batholith, a granitic pluton that varies in composition from granite to granodiorite to quartz monzonite. A higher degree of metamorphism is generally observed near the Anvil Batholith contact. The meta-sediment rocks dip northeast and southwest, away from the Batholith.

The Mt. Mye Formation is represented by schists, with the dominant rock type being grey, non-calcareous, weakly carbonaceous phyllite with lesser interlayered black carbonaceous phyllite and schists. Mafic meta-igneous rocks, now amphibolites, are present locally but are volumetrically minor. A white, calc-silicate and marble marker horizon occurs about 500 to 700 m below the top of the Mt. Mye Formation, which has a structural thickness of at least 2,000 m (the base is not exposed).

The Vangorda Formation is represented by light to medium grey to greenish-grey calcareous phyllites. At higher metamorphic grade (amphibolite facies), the calcareous phyllite is transformed to calc-silicate rocks. Major interbanded units in the Vangorda Formation include meta–igneous greenstone, which is more common near the top of the Formation and carbonaceous pelite. The Vangorda Formation varies from 0.5 to 2 km in apparent thickness.

Five ore deposits have been identified in the area: Faro, Grum, Vangorda, Grizzly (previously DY) and Swim (northwest to southeast). Mining is complete (depletion of known economic reserves) in two of these (Faro and Vangorda), partially complete in one of these (Grum) and has not occurred in two (Grizzly and Swim). The three deposits at which mining has taken place are described below.

4.2.1.2 Faro Orebody

Rocks of the Faro Mine site were metamorphosed in the amphibolite facies of regional metamorphism. The result is that schists are more important at Faro than elsewhere, and the calc-silicate gneiss, a rock type not seen at other sites, is widespread as the major rock of the Vangorda Formation. The increased metamorphism generally tended to coarsen mineral grain sizes, including sulphide minerals.

Deformation is so complex and flattening into the metamorphic foliation is so pronounced at the Faro site that the geology appears to be a simple layer cake of stratigraphy. The ore-body is concordant to formational boundaries and is stratigraphically approximately 75 m below the top of the Mt. Mye Formation. It consists of a gently dipping, stratiform zinc-lead-silver massive sulphide deposit, offset by faults. The main deposit (Zones 1 and 3) was approximately 1.5 km long, 500 m wide and averaged 46 m thick. The satellite Zone 2 deposit was approximately 300 m long, 180 m wide and average 24 m thick.

The main orebody was composed of two zones (Zones 1 and 3) vertically offset by a normal fault as illustrated on Figure 4.5. This northeast trending fault, the Faro fault, is sub-vertical and bisects the main ore-body. The east block is down dropped approximately 50 m. A diorite dyke is intruded along the fault zone. The satellite Zone 2 ore body was geologically part of the same sulphide lens but was separated by normal fault offset. The Big-Indian – North Fork fault system separates Zone 2 from Zone 3. This fault set consists of several strands with a throw of roughly 75 m, west block down.

The Zone 2 pit was one of the few areas where the Faro deposit was exposed on surface. Thus, a weathered mantle was present over part of the deposit. The Zone 2 ore body was at the edge of the overall Faro deposit and was rich in ribbon banded quartzite ore. Massive sulphide was limited and the ore grade was low compared to Zone 1 and 3 in the Main pit. Anvil Batholith instrusives were found along the northeast side of the Zone 2 ore body.

4.2.1.3 Vangorda Orebody

The Vangorda Deposit is a small deposit for this area and has a number of characteristics that make it unusual. These include:

1. Shallow depth and a greater degree of weathering.
2. Abundance of foot wall sulphides.
3. Degree of development of strongly altered phyllites.

The Vangorda Deposit was relatively close to the ground surface and was more affected by weathering than the other ore deposits of the district. The thickest part of the ore body occurred below a ridge of highly compacted till east of Vangorda Creek.

The Vangorda Deposit consisted of one major sulphide horizon located about 50 to 120 m beneath the basal carbonaceous member of the Vangorda Formation. The host rocks for the deposit were dominantly non-calcareous phyllites. A number of thin horizons occurred above the sulphide horizon. These horizons were too thin or of too low a grade to be economically mineable, with the exception of the south-east end of the deposit where the ore horizons were shallow (resulting in a low stripping ratios). The deposit itself contains the same sulphide rock types as the other deposits in the Anvil District.

A major fault is found at the northwest end of the Vangorda Pit as illustrated in Figure 4.6. This fault truncated the ore body and juxtaposed the black graphitic phyllite of the basal member of the Vangorda Formation against the ore body.

4.2.1.4 Grum Orebody

The Grum Deposit, with mineable reserves of approximately 25 million tonnes, has a number of characteristics that make it unique. These include:

1. The high proportion of disseminated sulphide ore types compared to massive ores.
2. The generally weak alteration overprint.
3. The complex, large scale, fold structure.

The deposit was covered by up to 100 m of till and glaciofluvial silt, sand and gravel. The material fills a buried channel trending north-south through the southeast pit area. No notable weathering features are present at Grum as were observed at Vangorda.

The Grum Deposit consists of three to five highly contorted layers of massive and disseminated sulphide mineralization within a 150 m thick section of phyllite. The most important mineralized horizon occurs just beneath the basal carbonaceous member of the Vangorda Formation. There are thin low-grade horizons with the Vangorda Formation and more important horizons in the upper part of the Mt. Mye Formation. A unique feature of the geology of the Grum orebody is the presence of quartoze ore types, which formed up to 50% of the reserves. The other ore types are similar to the other deposits.

The Vangorda Formation at the Grum Deposit consists primarily of soft calcareous phyllites. They are not as strongly altered as at the Vangorda Deposit and are strongly calcareous. The Mt. Mye Formation at the Grum Deposit also consists of phyllites, which are non-calcareous and less distinctly banded than those of the Vangorda Formation.

There are several important faults at the Grum Deposit. The largest displacements occur on moderately dipping structures that truncate the deposit at both its northwest and southeast ends but do not crop out in the pit. A steeply north-west dipping fault set down drops the deposit about 60 m on the north-west. A myriad of smaller steeply dipping faults has also been mapped both underground and in the pit. Figure 4.7 illustrates geology for the ultimate design Grum Pit, which is larger than the existing excavation.

4.2.2 TERRAIN

4.2.2.1 Physiography

The physical geography of the Faro area can be broadly divide into three main areas (Bond 2001) and are illustrated on Figure 4.8:

1. The broad, linear southeast-northwest trending **Tintina Trench**. The Trench is the dominant structural feature of the area and is occupied by the northward flowing Pelly River. The Pelly River floodplain has an elevation of approximately 600 m ASL.

2. The upland areas of the Swim Basin (not shown) and the **Vangorda Plateau**. The bulk of the mine facilities are located on the Plateau. The Plateau generally parallels the Tintina Trench and is drained by the Vangorda Creek watershed to the south and Rose Creek to the northwest. The Plateau ranges in elevation from 1,000 to 1,400 mASL. A ridge of hills and mountains divide the Plateau from the Tintina Trench, most significant of these is Sheep Mountain to the southeast and Faro Peak to the northwest.

3. The third physiographic region is the **Anvil Range** mountains. The Anvil Range is located to the northeast of the Vangorda Plateau and rises to a series of peaks over 2000 mASL. The Range is characterized by steep, U-shaped alpine valleys terminating in cirques, and shattered rock and felsenmeer above 1770 m. Major summits in the Anvil range include Mount Mye, east of the Grum and Vangorda open pits and Mount Aho, north of the Faro Main Pit.

4.2.2.2 Surficial Geology

The landforms and surficial deposits of the Vangorda Plateau have been shaped and are attributable to the last ice age which is estimated to have existed in the Yukon between 35,000 and 10,000 years ago. The southern Yukon was covered by at least four Cordilleran (i.e. mountain) ice sheets. These glaciations, from oldest to the youngest, are named the Nansen, the Kalza, the Reid and the McConnell. (Bond 2001). The landforms of the Faro area are for the most part attributed to the youngest of the Yukon glaciations, the McConnell.

Significant surficial material in the study area consists of bedrock and associated colluvium, glacial till, and glaciofluvial outwash sands and gravels (Figure 4.9). Glaciolacustarine, modern alluvial and organic deposits, are found sporadically but are not discussed in detail herein. The following discussion of surficial materials is derived from the *Quaternary geology and till geochemistry of the Anvil district, central Yukon Territory* (Bond 2001):

Bedrock – bedrock and/or frost shattered bedrock (felsenmeer) is frequently found at surface in the alpine areas of the Anvil Range. Elsewhere, mountain slopes are covered in thin veneer of colluvium (materials derived from slope movement processes) derived from the local bedrock. Glacial deposits are relatively absent above 1,500 m, although meltwater channels were identified as high as 1,700 m. Solifluction is common above the tree line.

Morainal Deposits (Till) – glacial till is poorly sorted deposits of clay, silt, sand, gravel and angular boulders which is deposited directly from glacial ice. A thick blanket of till is found covering the Vangorda Plateau. In some locations were pre-glacial valley existed, the till deposits can be over 100 m thick (e.g. Grum valley). Generally till deposits thin to a veneer (<1 m) along the valley walls and are generally absent above 1,500 m. Till also commonly underlies glaciofluvial deposits in areas of former meltwater drainage. The area surrounding the Grum and Vangorda Deposits is characterized by a thick till blanket overlying bedrock.

Glaciofluvial Deposits – during the retreat of the glaciers, melting water derived from the decaying ice transported and deposited sand and gravel in the valley bottoms and associated lateral meltwater channels. These deposits are typically stratified to crudely stratified deposits varying from sand with some silt to cobble gravels. These materials are found as significant valley fills as in the Rose Creek valley, as kame terraces at the mouth of alpine valleys or as glacial terraces and complexes associated with the Vangorda Creek valley and the Tintina Trench. Glaciofluvial deposits host the Rose Creek aquifer which underlies the Faro Mine tailings facility. The Faro townsite is located on a major glaciofluvial (and glaciolacustarine) terrace with a well developed stagnant ice (i.e. hummocky terrain) glacial fluvial complex to the northwest of the townsite. The valley bottom glaciofluvial deposits are frequently covered by silts, sands and gravel derived from contemporary stream.

4.2.3 GEOLOGICAL HAZARDS AND SEISMICITY

4.2.3.1 Geological Hazards Overview

Geological hazards resulting from natural conditions have the potential to significantly impact facilities and infrastructure at a mine site. An assessment of hazards at the Anvil Range Mine Complex was described by BGC based on a review of surficial and bedrock geological information coupled with an assessment of climatic and topographic conditions related to mine infrastructure locations. The assessment utilized information provided in BGC 2001, which was a qualitative risk assessment for structures situated in the Rose Creek valley.

Some potential geological hazards that may exist at the site consist of the following:

1. Landslides, in either soil or rock.
2. Falls.
3. Debris torrents.
4. Fault movements.

The three types of slope movements, landslides, falls and debris torrents, have essentially similar consequences. Failure debris that travels into the mine complex area may impact either a pond of water, a water channel, the access roads or some other component of the mine infrastructure such as a pipeline, dam or treatment facility. If the debris falls into a pre-existing body of water, a wave could be generated that would overtop the water retention structure (a dam or dike). If the debris falls into a channel, then the channel could be blocked, or if the volume of debris is small, the hydraulic capacity of the channel will be changed. If the debris falls on the road, then access could be blocked. Other component specific consequences (e.g. complete damage to a water treatment pipeline) are possible as well.

Fault movements, a hazard related to the seismic risk assessment for a site, consists of the rapid movement of the ground beneath one of the site structures or channels.

4.2.3.2 Surficial and Bedrock Geology

The surficial geology and topography of the mine area is illustrated on Figures 4.8 and 4.9. Regional and local geology of the mine area and the three mined pits are illustrated on Figures 4.4 to 4.7.

The mine area is situated within an area of discontinuous permafrost. At the mine site, north facing slopes and areas with older forest cover are more likely to contain permafrost. Permafrost ground, with varying degrees of ground ice content, was encountered during the construction of the Cross Valley Dam and the Rose Creek Diversion Channel. Felsenmeer is formed near the top of high hills due to frost action effects on exposed bedrock.

The surficial geology of the Rose Creek valley generally consists of colluvial, fluvial and morainal deposits forming a discontinuous cover over the bedrock. On the valley sides, bedrock is discontinuously covered with a veneer of morainal and colluvial deposits that increases in thickness towards Rose Creek. A complex assemblage of fan and outwash sand and gravels, dissected by stream channel and lacustrine materials fill Rose Creek Valley. Terraces and fans are prominent on the north side of the valley, where they, in part, underlie the existing tailings area.

The surficial geology in the area surrounding the Vangorda and Grum Pits generally consists of morainal deposits forming a near continuous cover within the area of the pits. The deposit thins out to a veneer at the limits of the plateau. Minor fluvial deposits are located along the Vangorda Creek.

Bedrock underlying the Rose Creek valley consists primarily of the Cambrian to Ordovician rocks of the Vangorda Formation. This formation is described as a "soft silvery grey calcareous phyllite with interbands of medium crystalline grey marble" (RGC 1996). This formation has been locally intruded by granodiorites and quartz monzonites of the Anvil Batholith. Foliation in the bedrock underlying the Rose Creek valley is mapped as generally parallel with the valley axis (west northwest to east southeast and dipping shallowly to the southwest (15 to 30 degrees) (Pigage 2001). The competence of the bedrock varies but in most cases is poor. Exposures were found to be easily eroded by freeze –thaw and stream flow processes. In places, the schist is reported as being weathered up to 2 m depth (Golder 1980).

Bedrock in the area of Vangorda and Grum Pits also consists primarily of Cambrian to Ordovician rocks of the Vangorda Formation. North of the two pits, the bedrock consists of Upper Proterozoic-Cambrian rocks of the Mount Mye Formation. These formations consist either of phyllite or muscovite-biotite schists.

4.2.3.3 Slope Movement and Falls

As outlined previously, the majority of the natural soil located in the Anvil Range Mining Complex consist of granular soils; *i.e.* locally derived tills, glacial outwash deposits and fluvial deposits. These soils are not particularly prone to slope stability hazards, except for the mechanism of river erosion and within active fluvial fans. Even in these two cases, slope stability issues will likely be confined to local failures due to oversteepening and eroding water.

The colluvial deposits that have been mapped at the Faro Mine are either soils that are actively moving or soils that have moved downslope into their current position. The colluvial soils should be considered to be quasi-stable or in an active state of movement. These materials are typically located on the steeper sections of the surrounding Rose Creek or Vangorda Creek valleys and could provide erratic rockfalls into the valley or local small slides.

Unless in very weak rock masses, rockslides are controlled by the discontinuities within the rock mass. Most rock slopes failures can be classified as either: planar failures, wedge failures, toppling failures or circular failures. The initiation of failures would be dependent upon site-specific geological controls (foliation planes, joints, etc.) and the orientation and height of exposed surfaces.

For rock falls to occur, there needs to be exposed rock faces, steep slopes on the exposed faces and adverse geological controls. The areas of the Faro Mine site that are the most likely candidates for exposure to rock fall hazards are the exposures located above the FWS Dam reservoir and the Rose Creek Diversion Canal. The steepness of the overall slopes in the area of the Anvil Range Complex range up to 30 degrees (based on Figure 4.9). Some local oversteepening in the area surrounding the creeks and rivers is likely. In addition, the exposed rock slopes are likely locally steeper than the general overall slope angles.

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Earthquake loading should also be considered as part of any slope stability assessment. Earthquakes can have two main effects on the stability of the slopes; increased horizontal force in the slope that decreases the stability and liquefaction of soil within the slope or at the foundation. As noted for soil slides, the addition of earthquake loading will adversely affect the stability of rock slopes.

4.2.3.4 Debris Flows

Debris flows consist of a spatially continuous movement where the soil/rock moves as a viscous liquid. This type of failure may occur in the upper reaches of the surrounding mountains and feed soil and rock into the Anvil Range Mine Complex. This type of failure would require steep slopes and debris within the steep area. It is envisioned that only in the high altitudes along some headwaters of the creeks that this type of failure could occur.

4.2.3.5 Fault Movements

Faults occur throughout the Anvil Range Complex site area. A major regional fault is the Tintina Trench, located close to the study area. The major geological hazard related to faults is related to fault movements that induce earthquakes. If the fault is located in the immediate vicinity, then the direct movements of the fault can impact structures and slopes. The secondary geological hazard related to faults is in the local control of slides within the rock mass. The rockmass, located at a fault zone, can generally be recognized by a zone of intense shearing, fracturing and brittleness of the rock. These factors combine to potentially form the boundaries of rock slides or falls.

Known faults within the Mine complex include the Rose Creek Fault, Vangorda Fault, Blind Creek Fault, and the Tie Fault.

4.2.3.6 Seismicity

Earthquakes can produce both ground ruptures and seismic shaking of the ground, depending upon the magnitude (M) of the earthquake, the distance from the epicenter and the local site-specific conditions. Both of these resultant occurrences have potential impacts on engineered structures, such as dams and other water diversion structures. Before any impact analyses can be undertaken on the various engineered structures, it is necessary to estimate the level of seismic shaking that a structure may undergo. This task is generally referred to as a seismic hazard assessment. Peak ground acceleration (PGA) values resulting from seismic events are stated as a percentage of gravity (g).

Vick 1983 noted that there are three main approaches to seismic risk assessment that will likely result in different estimates of potential site acceleration values:

1. Historical seismicity approach – examination and summary of historic earthquake record proximal to the site in question.

2. Probabilistic approach – refinement of the historical approach where the historical record is the basis of a probabilistic analyses to determine a unique probability of occurrence for each possible level of seismic acceleration.
3. Deterministic approach – where an estimate of the maximum seismic acceleration is based on an assessment of available geological data without regards for past historic events. The geological data is used to determine the nearest fault and then to estimate the magnitude of the earthquake that would result on this fault. This approach is commonly applied in areas where active earthquake-generating faults exist. Generally, the acceleration estimated by this method is termed as "maximum" or "maximum credible".

A range of PGA's have been used for designing various facilities at the Faro Mine.

In the "Abandonment Plan for Faro Mine Tailings" report, dated September 1981, Klohn Leonoff (Klohn) estimated PGA values based on two different approaches as follows:

1. 0.07g for a 475 year return period.
2. 0.10g for a 900 year return period.
3. 0.32g for a 10,000 year return period.
4. 0.40g for Maximum Credible Earthquake (MCE).

Klohn noted that the closure design criteria would be much different than the values used for an operating mine. Therefore, Klohn recommended that the MCE be used for the design criteria. The data available at that time was very limited and a conservative approach was taken.

Based on the historical movement rates within the Tintina Trench, Klohn estimated that an earthquake with a magnitude of M6.5 could occur. Using an empirical formula that included the distance from the site to the location of the earthquake, a peak ground acceleration of 0.40g was estimated. Using the same methodology and an estimated M6.0 earthquake within the local faults of the Rose Creek Valley, a peak ground acceleration of 0.36 g was estimated for the site facilities.

Statistical analysis was also performed by Klohn, based on earthquake analysis provided by GSC Pacific Geoscience Centre (PGC). The 10,000-year event resulted in a peak ground acceleration of 0.32 g. The analysis was also performed to estimate the 475-year return period earthquake, which was determined to be 0.07g. The report noted that one method used to estimate the MCE was by doubling the magnitude of the 475 year event and that this would result in an MCE of 0.14 g.

In a Dome Petroleum memo dated September 1984, based on information supplied by the PGC, the seismic risk for the Faro area was calculated to be 0.063g for a 475-year return period and 0.08g for the 1,000-year return period event.

In a report dated March 1986, "Report on design and proposed construction, Rose Creek Water Reservoir Dam Raising" Kilborn Engineering performed pseudo-static analysis on the proposed dam raise. It was noted that the analysis was performed using a "conservative design earthquake" value of 0.15g. No quantification of the method used to determine this earthquake loading was made, nor was the return period for this earthquake mentioned.

In a report dated February 1989, Appendix I of the report entitled "1988 Performance Monitoring and Additional work on the Down Valley Tailings project: Faro Mine", Golder Associates Ltd. used a PGA value of 0.08g (475-year return period) as part of an analysis of the geotechnical stability of the FWS Dam. It was noted that the earthquake parameters used for this analysis of the FWS Dam were based on the values employed in the 1980 design of the Down Valley Tailings containment project. The design earthquakes for that project were a PGA of 0.052 g (100-year return period) and 0.097g (200-year return period). The determination of these design earthquakes were based on a statistical analysis of historical earthquakes, based on data provided from the Pacific Geoscience Centre.

In a report dated November 1996, Appendix A of the report "Anvil Range Mining Complex – Integrated Comprehensive Abandonment Plan (ICAP)" Robertson Geoconsultants had an assessment of the seismic ground motions for the Faro area performed. This was based on historical data and the assumption that earthquake loading would be transmitted through rock. The PGA was estimated as follows:

1. 0.05g for a 475 year return period and
2. 0.13g for a 10,000 year return period event.

The Robertson report noted that "there is no evidence of more recent displacement along the Tintina Fault and the fault is not included as an earthquake source zone in either the H or R zonations given in the GSC report, i.e. the fault is not considered active and no maximum magnitude has been defined for the fault. Thus, it is unrealistic to consider a deterministic estimate of seismic ground motions at Faro in which an earthquake is assumed to occur on the Tintina."

In a report dated November 2001, entitled "Physical Stability Assessment of the Fresh Water Supply Dam" undertaken by BGC, the seismic loading values were as follows:

1. 0.063g for 475 year return period.
2. 0.080g for 1,000 year return period.

This estimate was based on information provided by the Pacific Geoscience Center, which estimated these parameters on the basis of historical earthquake loading and the 1990 NBCC seismic zoning maps.

The majority of the analysis performed in order to determine the seismic design parameters for the Faro Mine were based on historical records (statistical method) and later regional seismic zones (H and R models). The only deterministic estimation of the earthquake size performed was by Klohn. As listed in Table 4.5, the deterministic analysis resulted in a much larger PGA than any of the statistical analysis.

Table 4.5 Summary of Earthquake Loading

	Return Period Event				
Study	**475**	**1,000**	**10,000**	**Estimated MCE (based on twice the 475 Year Event)**	**MCE**
Klohn Leonoff (1981)	0.07g	0.10g	0.32g (probabilistic)	0.14g	0.40g (deterministic)
Dome/PGC (1984)	0.063g	0.08g		0.126g	
Golder (1989)	0.08g			0.16g	
Robertson (1996)	0.05g		0.13g	0.10g	
BGC/PGC (2001)	0.063g	0.080g		0.126g	

The above information indicates that the seismic loading design criteria have been quite variable in the 20 years that have been reviewed for the Faro area. It should be noted that the design horizontal acceleration determined for the 475-year return period has been relatively consistent in this period from 0.05g to 0.08g. Using the suggestion provided in Klohn 1981 that the maximum credible earthquake (MCE) is twice the magnitude of the 475 year event, relatively consistent values emerge for the magnitude of this event, from 0.10g to 0.16g even though the single deterministic analysis resulted in a larger magnitude.

4.2.4 HYDROLOGY AND WATER BALANCE

Anvil Creek (including Rose Creek drainage) and Vangorda Creek are both tributaries to the Pelly River. The Rose Creek watershed is a tributary of approximately 340 km^2 to the 980 km^2 Anvil Creek watershed, which drains the southeast slopes of the Anvil Range Mountains. The Faro Mine site facilities are within the Rose Creek watershed. Vangorda Creek drains an area of approximately 90 km^2 as an east (mainstem) and west fork. Drainage from the south slope of Mount Mye flows into the main stem and drainage from the northwest slope flows into the west fork. The two forks join together just above the town of Faro. The Vangorda Plateau Mine site is located within the Vangorda Creek watershed.

Hydrological investigations that have been undertaken throughout the mine life have generally focussed on the mine sites and their immediate receiving environments. The majority of these studies focussed on one area only, such as the design flood for a proposed diversion channel or the minimum size of reservoir required to provide a reliable water supply to the Faro mill.

The streamflow monitoring network in the vicinity of the Anvil Range Mining Complex was increased beginning around 1990 with the installation of automatic water level recorders and by expanding the number of flow measurement stations. As well, the Yukon Territory Government added three new stations (Drury Creek, Tay River and Blind Creek) in the mine region. Drury Creek is located approximately 50 km west of the mine area. Tay River shares its catchment divide (on the north side) with Anvil Creek and Vangorda Creek, and Blind Creek shares its catchment (on the south side) with Vangorda Creek.

Two hydrological studies are most relevant:

1. 1996 Integrated Comprehensive Abandonment Plan Study (RGC, 1996).
2. 2002 Water Balance and Contaminant Loading Study (Gartner Lee Limited, 2002).

4.2.4.1 1996 (ICAP) Study

The ICAP study (RGC, 1996) provided a comprehensive hydrological assessment of the Faro and Vangorda Plateau Mine site areas. Flows were measured using a variety of techniques (viz., weir, bucket and stopwatch, current meter, staff gauge, and pressure transducer). The following sources of information were used in the 1996 hydrological assessment:

1. The series of Annual Reports prepared for Water License IN89-001 (water quality and quantity data presented and evaluated at the Faro Mine and area).
2. The series of Annual Reports prepared for Water License IN89-002 (water quality and quantity data presented and evaluated at the Vangorda Plateau development).
3. Streamflow records collected by the Water Survey of Canada (WSC) at 16 streamflow gauging stations.
4. Streamflow records collected at 3 hydrometric stations operated by the Water Resources Division of DIAND.
5. Records of spot flow measurements made by DIAND personnel at water quality monitoring sites throughout both Faro and Vangorda Plateau developments.
6. Environmental reports prepared by Steffen Robertson Kirsten (Canada) Inc. (SRK) and Laberge Environmental Services.
7. Unpublished data gathered by mine personnel, such as raw data extracted from the mine's automatic water level recorders.

Mean Annual Runoff

For the 1996 hydrological assessment, data collected by the WSC and DIAND were used to characterize the minesite hydrology by employing a regional analysis technique which involved deriving empirical relationships between the measured streamflow of the regional stations and the physical characteristics of the catchments which generated the streamflow. These empirical relationships then formed the basis for estimating flows at ungauged points around the Faro and Vangorda Plateau Minesites.

Elevation generally accounts for a large proportion of the variation in mean annual precipitation within a mountainous region; hence, mean annual runoff (MAR) was also assumed to be a function of elevation. The following sources of data were assembled to determine this relationship:

1. Nineteen pairs of MAR and median elevation data provided by the WSC and DIAND stations.
2. Four pairs of MAR and median elevation values provided by four incremental catchments monitored by the WSC.

To assemble data source 1, the streamflow records with missing data were patched, then the series of annual average discharges for each station were averaged to arrive at a preliminary estimate of MAR. Next, the preliminary MAR estimates were adjusted so they were all representative of a common 30-year period from 1966 to 1995. Finally, the median elevations for all the stations were measured from topographic maps.

The second source of data is, in effect, a subset of the first source. It was obtained from those streams in the region that are monitored by two streamflow gauging stations. The data from these paired stations were collectively used to characterize the MAR and median elevation of the intervening catchment between the stations.

Once all the data were assembled and processed, a curve was fitted to the data to develop a relationship that was believed to represent hydrological conditions for various median elevations at the mine site.

Site Water Balance

To complete the water balance, the minesite was described as a system of elements and associated flow paths between the elements. The amount of water generated by each element and the amount of water flowing along each flow path was then quantified. The coverage of the water balance was extended over the entire watersheds of Anvil Creek and Vangorda Creek. The outlets of the subcatchments were dictated by the locations of water quality monitoring stations, tributary confluences, open pits, and dams. A total of 36 subcatchment areas, 20 for Anvil Creek and 16 for Vangorda Creek, were identified. Table 4.6 provides a description of each subcatchment, together with its measured drainage area and estimated mean annual runoff for its median elevation for the period 1990 to 1995. The subcatchment areas are illustrated on Figures 4.10, 4.11 and 4.12.

Extreme Flood Estimation

Flood estimates were developed in 1996 for several key points around the minesite to provide the basis for the conceptual design of spillways and diversion channels.

Two extreme flood events were examined for each point of interest, namely the 500-year peak instantaneous flood and the Probable Maximum Flood (PMF). The former is a rare event which is expected to only be exceeded once every 500 years on average (or roughly once in 6 lifetimes). The latter event is defined as "the flood that may be expected from the most severe combination of meteorologic and hydrologic conditions that are considered to be reasonably possible in the geographical region encompassing the basin under study" (USACE, 1980). The PMF for the study area has a likely return period in excess of several thousand years.

The magnitude of a 500-year peak instantaneous flood was estimated using the Rational Method. The magnitude of PMF events was estimated using the Creager Curve. Results of these analyses are presented in Table 4.7.

Table 4.6 Details of Subcatchments for Historical Water Balance Analysis

Subcatchment ID No.	Subcatchment Description	Catchment Area (km2)	Catchment Median Elevation (m)	MAR for Period 1990-1995* (mm)
ANVIL CREEK WATERSHED				
1	Faro Creek at Diversion Inlet	13	1540	396
2	Faro Valley Interceptor Ditch at outlet	1.28	1420	342
3	Incremental catchment of Faro creek Division Channel (FCD)	1.94	1370	320
4	Main Pit catchment (zone I/III)	2.15	1260	270
5	Zone II Pit catchment (excluding area commanded by Zone II interceptor ditch)	0.33	1170	230
6	North Fork of Rose Creek above Faro Creek Diversion Channel (station R7)	95	1470	365
7	North Fork catchment above X2 and below R7 and FCD	9.1	1220	252
8	Incremental Catchment of North Fork Diversion Channel	1.04	1110	203
9	South Fork of Rose Creek at Fresh Water Reservior Dam	67	1420	342
10	Incremental catchment of Pumphouse Reservior	8.6	1230	257
11	Old Faro Creek channel above X23 (incremental)	0.9	1160	225
12	Old Faro Creek Channel above X7 and X23	0.9	1160	225
13	Incremental catchment of Down Valley Tailings Impoundment	4.3	1050	176
14	Incremental catchment of Rose Creek Diversion Channel	17.6	1300	288
15	Gaurdhouse Creek below wast rock dumps	1.86	1480	369
16	Incremental catchment of North Wall Interceptor Ditch (NWID)	4.5	1190	239
17	Rose Creek above X14 and below NWID, X5 and X10	2.1	1130	212
18	Rose Creek between mouth and Station X14	105	1280	279
19	Anvil Creek above Rose Creek	322	1450	356
20	Anvil Creek between mouth and Rose Creek	321	1170	230
VANGORDA CREEK WATERSHED				
21	Vangorda Creek above station V1	18.7	1590	419
22	Subcatchment of Blind Creek road	1.4	1330	302
23	Subcatchment of Vangorda Northeast interceptor ditch	0.6	1200	243
24	Subcatchment of Vangorda Pit	0.8	1160	225
25	Subcatchment of Little Creek Dam	0.44	1130	212
26	Subcatchment of Vangorda Waste Dump	0.28	1130	212
27	Subcatchment of Grum Northeast Interceptor Ditch	1.8	1350	311
28	Subcatchment of Grum Pit	1	1300	288
29	Subcatchment of Overburden Dump	1.4	1240	261
30	Grum Creek between V2 and the haul road	1.2	1200	243
31	Vangorda creek above V27 and below V2 and the plunge pool	3.7	1160	225
32	Shrimp Creek between V4 and V20	12.6	1150	221
33	AEX Creek above V6A	4.4	1360	315
34	West Fork Vangorda Creek between V5and V6A	27	1190	239
35	Vangorda Creek above 29BC003 and below V27, V4 and V5	12.7	960	135
36	Vangorda Creek between V8 and 29BC003	12	700	18
PELLY RIVER WATERSHED				
37	Blind Creek above DIAND Station 29BC004	618	1180	231
38	Pelly River above WSC Station 09BC004 and below 29BC004 and V8	21400	1210	318
39	Pelly River between Anvil Creek and WSC Station 09BC004	454	800	63
40	Tay River above WSC Station 09BC005	3810	1160	228
41	MacMillan River above WSC Station 09BB002	13800	1130	336
42	Pelly River above 09BC001 and below Anvil Creek, 09BC005 and 09BB002	7860	880	109

* MAR = mean annual runoff. The period 1990-1995 was relatively wet (approximately 10% greater than the MAR experienced in the preceding 25 years).

Table 4.7 Estimated Peak Instantaneous Flood Discharges for Various Structures

Structure	Catchment Area (km^2)	500-Year Return Period (m^3/s)	Probable Maximum Flood (m^3/s)
Faro Creek Diversion Channel	15.3	27	150
Intermediate Dam Spillway	221	190	840
Vangorda Creek Diversion Channel	20.1	31	180

4.2.4.2 2002 Water Balance

The installation of several continuous streamflow recorders from 1996 to 2002 provided additional data that was combined with the results of the 1996 water balance study to create new water balances for Rose and Vangorda Creeks. The detailed methodology for the 2002 study is provided in the Preliminary Water Balance and Contaminant Loading Study for Rose and Vangorda Creeks that is provided as Appendix A.

The new data collected from 1996 to 2000 included spot flow measurements around the minesite and, most importantly, three new flow recorders (pressure transducers with dataloggers) as follows:

1. At location R7 in the North Fork of Rose Creek, installed in 1996.
2. At location X14 in Rose Creek below the tailings facility, installed in 1998 as a replacement to an older, malfunctioning unit.
3. At location V8 in lower Vangorda Creek, installed in 1998.

New water balances were described for the 1996 subcatchment areas (Figures 4.10 to 4.12) that were based on the actual measurements to as great a degree as practical. Flows at ungauged locations were extrapolated from gauged locations in proportion to the MAR's calculated in 1996 (Table 4.7). The water balance was presented in terms of two seasons (winter and fall) defined as November to April and May to October as a means of capturing seasonal effects.

The 2002 water balance for Rose Creek provides the following observations for the period from November 1995 to April 2001:

1. Of the flow in Rose Creek below the tailings facility, an average of 55% originated from the North Fork of Rose Creek, 25% originated from the South Fork (drainage area above the tailings facility) and 9% originated from effluent released from the Cross Valley Pond (toe seepage and surface outflow).
2. Of the flow in the North Fork of Rose Creek, an average 83% originated from natural runoff unaffected by mine activities (drainage area upstream of the mine site).

The 2002 water balance for Vangorda Creek provides the following observations for the period from November 1997 to April 2001:

1. The flow in lower Vangorda Creek originates, on average, 34% from the West Fork and 66% from the main stem (drainage including most mine facilities).
2. Of the flow in the main stem, an average 54% originates from natural runoff in Vangorda Creek unaffected by mine activities (drainage area upstream of the mine site).

A detailed report on the 2002 study is provided in Appendix A.

4.2.5 HYDROGEOLOGY

4.2.5.1 Natural Environment

The area surrounding the Anvil Range mine sites is underlain by metamorphic and volcanic bedrock. The Proterozoic and Paleozoic schists and phyllites were intruded by the Anvil Batholith, which consists of granite, granodiorite and quartz monzonite. The crystalline nature of these rocks typically creates a very low primary porosity (0-10%), therefore and groundwater flow through the bedrock likely occurs along planes of weakness or deformation, such as fractures, faults or shear zones. Predicting the occurrence of groundwater and its flow direction in this type of rock is difficult at best, and there is little information available for the Anvil District.

Bedrock is overlain by various types of surficial deposits (or overburden) consisting primarily of glacial till, glaciofluvial sediments and alluvium. In topographically elevated areas, these surficial deposits are thin and irregularly distributed. Surficial deposits are generally thickest in the valley bottoms, although significant thicknesses of till have been documented in the uplands of the Vangorda Plateau.

The presence, characteristics and thickness of surficial deposits are likely to be the primary control to the occurrence and flow of groundwater in the study area. Known groundwater flow occurs primarily in the overburden, or through the upper most weathered surface of the bedrock. Flow direction is controlled mainly by surficial and bedrock topography. Recharge occurs via infiltration of precipitation and the groundwater migrates downward, following topography to discharge zones into local creeks or shallow depressions. The bedrock valley sides act as recharge sites and groundwater flow progresses to the valley floors as a discharge zone. Recharge to valley aquifers may also occur locally through the beds of streams occupying the valley.

Large glaciated valleys, including the Pelly River, Rose Creek, and Blind Creek valleys, have been filled with significant thickness of glacial sediments. Where these deposits are primarily glaciofluvial sands and gravel, they represent relatively high yield aquifers. Valley aquifers are usually unconfined, with shallow depths to water and significant groundwater yields. However, if confining layers, such as glacial till or other fine-grained deposits extend across the valley floor and partially up the valley sides, confined aquifers, with significant hydraulic heads may be encountered.

4.2.5.2 Changes as a Result of Mining Activities

Mining activities have affected the local groundwater flow in several ways, including the following:

1. Interception of groundwater in open pits.
2. Increased permeability in the rock mass through blasting of open pit walls.
3. Interception of groundwater in diversion ditches.

4. Alterations to the Rose Valley aquifer from development and operation of the Rose Creek Tailings Impoundments.
5. Increased infiltration through unvegetated and poorly drained areas (e.g. free dumps) as well as leakage from diversions.

Interception of Groundwater and Other Effects of Open Pits

The Faro Main Pit was developed on the north side of the Rose Creek valley. Much of the area was covered by a thin layer of compacted till over bedrock. The pit was excavated to a depth of approximately 365 metres below the original ground surface at its deepest point and now intercepts both shallow groundwater flow at the soil/bedrock interface and deeper groundwater flow in faults and fractures. Leakage from the Faro Creek Diversion Ditch into the pit via the northeast pit wall is know to contribute to groundwater inflows. Groundwater inflow rates are not specifically monitored and separated from surface inflows. However, mine dewatering pumping records indicate pumping rates between 40 and 55 L/s were required to keep the pit drained from 1986 to 1990 (RGC, 1996).

The Faro Zone 2 pit similarly intercepts both shallow and deeper groundwater flow, although at a smaller scale than the Faro Main Pit. The presence of substantial faulting in the southern area of the Main pit creates the possibility for subsurface flow of water from the Main pit into the Zone 2 Pit. Annual monitoring of volumes dewatered for the Zone 2 pit, as reported in annual environmental reports, indicates that seepage from the Main pit did not increase substantially with an increase in the water level in the Main pit. The groundwater inflows into the Zone 2 pit were estimated at 13 L/s during mine operations (RGC 1996).

The Vangorda Pit is located on a south side of Vangorda Creek. The overburden encountered consisted primarily of compacted glacial till up to approximately 30 metres in thickness. Groundwater inflow into the Vangorda Pit was estimated at 0.14 L/s during mine operations (RGC 1996). A net inflow of groundwater into the Vangorda Pit was also suggested by a geochemical study conducted in 2000 (SRK, 2000b) that indicated an unidentified source of alkalinity that could be attributed to groundwater influx.

The Grum Pit is located on the north side of Vangorda Creek and was developed in a small depression in the hillside. A small lake (Doal Lake) was present prior to the development of the pit. The surficial deposits at the Grum Pit were thicker than at the other pits. A north-south trending bedrock valley was intersected in the southeast corner of the pit that was filled with approximately 100 m of glacial till over a basal layer of sand and gravel. This aquifer was dewatered by pumping wells during mine operations prior to 1997 and has subsequently flowed directly into the Grum Pit. The effect of the interception of this flow is also observed in changes observed in the degree of saturation of surface soils downgradient of the Grum Pit in the Grum Creek area. Prior to development of the Grum Pit, this area was observed to be largely saturated near surface with some test pits reported as filling with water during excavation whereas the area is currently observed to be drier near surface (ARMC, pers. comm.).

Other effects of open pits may relate to the increased permeability (compared to natural bedrock) of blasted rock walls which may allow increased passage of groundwater.

Interception of Groundwater in Diversion Ditches

Diversion ditches that are seated in bedrock, or that intersect other shallow groundwater zones, will alter the pre-existing flow regime. For example, the Rose Creek Diversion Canal is interpreted to largely intercept and re-direct shallow groundwater flow from the south side of the Rose Creek Valley that previously flowed into the valley aquifer (GLL 2002c).

Alternately, diversion ditches may result in groundwater recharge (through ditch leakage). For example, the Faro Creek diversion ditch is known to leak water into the shallow aquifer above the Faro Main Pit.

Development and Operation of the Rose Creek Tailings Impoundments

Prior to development of the tailings impoundments, the local Rose Creek Valley hosted an, unconfined aquifer that produced an estimated 3,000 to 4,000 m^3 of groundwater per day (GLL 2002c). Development of the tailings impoundments introduced a confining surface layer (tailings), additional groundwater recharge (tailings slurry water) and surface ponds that have had a substantial effect on local groundwater flow. An interpretation and numerical model of the current groundwater flow regime are described in GLL 2002c.

Increased Recharge through Rock Dumps

Some rock dumps may promote increased infiltration (groundwater recharge) compared to the original ground conditions where free dump piles or other lose materials are present.

Alternately, hard packed and compacted surfaces of rock dumps may restrict groundwater recharge and promote increased surface runoff compared to the original ground conditions.

4.2.6 FARO MINE SITE SURFACE WATER QUALITY

4.2.6.1 Overview

Surface water associated with the Faro Mine site is routinely sampled to assess water quality. Analytical results from the sampling events are documented in a computer database (EQWin). Some of the sampling stations (illustrated on Figure 4.13) have been sampled since 1986 or 1987. Some stations are sampled regularly on a monthly schedule (even through the shut down) while others are sampled on a seasonal or annual (freshet) basis. Table 4.8 lists the sampling stations that are described in this report. Tables 4.9 to 4.12 provide statistical summaries of water quality at these stations that complement the subsequent descriptions. Graphs representing concentrations of selected parameters, pH, total sulphate, total zinc, total lead, total iron and total nickel, are provided in Appendix B. Tables listing the complete analytical results for all parameters over time are provided in Appendix C.

Table 4.8 Surface Water Sampling Stations

Location	Description
Background	
FC	Faro Creek upstream of diversion channel
SRC	South Fork of Rose Creek upstream of reservoir
SMC	tributary to fresh South Fork of Rose Creek upstream of reservoir
R6	Anvil Creek upstream of Rose
R7	North Fork of Rose Creek upstream of Faro Creek diversion
W10	Upper Guardhouse Creek upstream of the Northwest rock dumps
Pits and Dumps	
A30	Seepage into the Main pit from the Faro Valley Rock Dump
X22b	Main pit water – surface grab
NE1, NE2	Surface seeps below the Northeast rock dumps
SP5-6	Seepage from North east rock dumps to Main pit
X26	Zone 2 pit water – as pumped to surface
X23	Old Faro Creek channel near the toe of the Main rock dumps
Rose Creek	
FAROCR	Faro Creek upstream of confluence of the North Fork of Rose Creek
R8	North Fork of Rose Creek, 100 metres downstream of confluence with Faro Creek diversion
R9	North Fork of Rose Creek, adjacent to BH-1 & BH-2
R10	North Fork of Rose Creek, at least 100 metres upstream from maximum elevation of water impounded behind North Fork rock drain and 100 metres downstream of R9
NF1	North Fork of Rose Creek upstream of haul road
NF2	North Fork of Rose Creek downstream of haul road
X2	North Fork of Rose Creek upstream of mine access road
X3	South Fork of Rose Creek at the pump house reservoir
X10	Rose Creek Diversion Channel, below weirs
X14	Rose Creek, downstream of diversion channel
Tailings Impoundments	
X5	Cross Valley Pond Outflow
X13	Combined seepage from Cross Valley Dam
WEIR3	Seepage from central area of Cross Valley Dam
X11	Seepage from central area of Cross Valley Dam
X12	Seepage from south toe of Cross Valley Dam
X4	Intermediate Dam decant
X7	Emergency Tailings Area

Table 4.9 Statistical Summary of Background Surface Water Quality - Faro Mine Site

STATION: FC, Faro Creek above diversion channel									
	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7	12.85	1.86	0.2	0.002	0.068	0.01	0.015	0.02
Std. Deviation	0	4.33	0.97	0	0.002	0.032	0.007	0.018	0
Minimum Value	7	1	0.9	0.2	0.001	0.018	0.002	0.005	0.02
Maximum Value	7	20	4	0.2	0.01	0.1	0.023	0.05	0.02
Median	7	13	1.78	0.2	0.002	0.081	0.007	0.005	0.02
Num. Values	1	15	13	1	13	8	15	7	1
STATION: SRC, S Fork of Rose Cr									
	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.66	nr	8	0.02	0.002	1.45	0.02	0.02	0.005
Std. Deviation	0	nr	0	0	0	0	0	0	0
Minimum Value	7.66	nr	8	0.02	0.002	1.45	0.02	0.02	0.005
Maximum Value	7.66	nr	8	0.02	0.002	1.45	0.02	0.02	0.005
Median	7.66	nr	8	0.02	0.002	1.45	0.02	0.02	0.005
Num. Values	1	nr	1	1	1	1	1	1	1
STATION: R6 - Anvil Creek upstream of Rose Creek									
	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	8.01	127.7	22	0.013	0.0076	0.206	0.0228	0.009	0.0049
Std. Deviation	0.4	17.3	20	0.009	0.0101	0.165	0.0314	0.008	0.0021
Minimum Value	7.4	89	6	0.001	0.001	0.05	0.001	0.001	0.0022
Maximum Value	8.44	151	91	0.02	0.036	0.62	0.118	0.03	0.009
Median	7.95	124.5	18	0.02	0.0031	0.137	0.01	0.005	0.005
Num. Values	7	12	15	9	17	11	17	17	9
STATION: R7 - N Fork of Rose Creek above Faro Ck Diversion									
	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.69	77.7	9.2	0.017	0.0076	0.355	0.0194	0.016	0.0055
Std. Deviation	0.41	39.1	7.1	0.011	0.0095	0.453	0.0222	0.009	0.0022
Minimum Value	6.86	11	2	0.001	0.001	0.04	0.001	0.001	0.0002
Maximum Value	8.79	166	52	0.068	0.045	2.12	0.14	0.05	0.014
Median	7.65	75	9	0.02	0.0025	0.153	0.01	0.02	0.005
Num. Values	41	47	68	51	72	64	71	59	51
STATION: W10 - Upper Guardhouse Ck u/s of NW Dump									
	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.83	27	5.8	0.044	0.01	0.22	0.031	0.02	0.007
Std. Deviation	0.21	0	6	0.077	0.008	0.32	0.025	0.02	0.006
Minimum Value	7.46	27	3	0.005	0.002	0.01	0.005	0.01	0.005
Maximum Value	8	27	18	0.2	0.024	0.86	0.07	0.05	0.02
Median	7.92	27	3.5	0.015	0.009	0.11	0.025	0.01	0.005
Num. Values	6	1	6	6	6	6	6	6	6

NOTE: nr = no reading available.

Table 4.10 Statistical Summary of Surface Water Quality of Pits and Dumps - Faro Mine Site

STATION: A30, Upper Pit Wall Zone MPA6 Sump

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	nr	4.06	nr	432	0.045	1.116	20.3	68.38	0.5	0.151
Std. Deviation	nr	1.98	nr	228	0.039	1.145	32.03	35.64	0.58	0.103
Minimum Value	nr	2.69	nr	182	0.005	0.022	0.13	16.4	0.01	0.005
Maximum Value	nr	7.5	nr	639	0.09	2.693	68.02	97.49	1.28	0.236
Median	nr	3.09	nr	576	0.042	0.873	6.53	79.83	0.35	0.182
Num. Values	nr	5	nr	5	4	4	4	4	4	4

STATION: X22B, Faro Pit water while filling with tailings

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.714	7.46	112	532.91	0.027	0.072	0.28	7.208	0.045	0.077
Std. Deviation	1.631	0.33	11	233.13	0.044	0.091	0.38	7.362	0.055	0.04
Minimum Value	0.001	6.5	98	72	0.005	0.003	0.01	0.251	0.01	0.005
Maximum Value	5.0	8.33	126	1735	0.2	0.479	2.33	46.5	0.27	0.3
Median	0.015	7.51	111	548.5	0.02	0.04	0.16	4.2	0.02	0.071
Num. Values	28	48	7	58	58	63	58	63	62	58

STATION: NE1, flow to N.Fork from NE Dumps (closer to R7)

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	nr	7.71	244	214	0.047	0.012	0.48	0.49	0.02	0.021
Std. Deviation	nr	0.42	0	317	0.075	0.013	0.91	1.13	0.01	0.034
Minimum Value	nr	7.21	244	69	0.005	0.002	0.01	0.02	0.01	0.005
Maximum Value	nr	8.11	244	930	0.2	0.034	2.33	2.79	0.05	0.09
Median	nr	7.9	244	102	0.02	0.006	0.14	0.02	0.02	0.005
Num. Values	nr	5	1	7	6	6	6	6	6	6

STATION: NE2, flow to N.Fork from NE Dumps (mid NE1&3)

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	nr	7.57	nr	330	0.012	0.02	0.11	0.04	0.02	0.006
Std. Deviation	nr	0.32	nr	290	0.008	0.017	0.06	0.03	0.01	0.002
Minimum Value	nr	7.01	nr	79	0.005	0.002	0.05	0.01	0.01	0.005
Maximum Value	nr	7.9	nr	791	0.02	0.049	0.22	0.07	0.03	0.01
Median	nr	7.69	nr	186	0.012	0.016	0.1	0.04	0.02	0.005
Num. Values	nr	7	nr	8	6	6	6	6	6	6

STATION: SP5-6, Ditch to Main pit from NE Dumps

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	nr	7.16	198	495	0.084	0.012	0.59	3.236	0.042	0.044
Std. Deviation	nr	0.75	86	276	0.096	0.009	1.004	1.678	0.032	0.024
Minimum Value	nr	5.75	18	213	0.005	0.001	0.03	1.63	0.01	0.018
Maximum Value	nr	8.2	321	973	0.2	0.037	3.62	7.14	0.11	0.081
Median	nr	7.2	181	406	0.02	0.01	0.115	2.43	0.04	0.043
Num. Values	nr	7	10	15	8	14	14	14	8	8

Table 4.10 Statistical Summary of Surface Water Quality of Pits and Dumps - Faro Mine Site

STATION: X26, Zone II Pit water (from well)										
	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.008	6.26	414.2	1808	0.056	0.066	58.75	69.737	0.123	1.332
Std. Deviation	0.013	0.26	174.7	456	0.094	0.204	36.222	22.506	0.148	0.222
Minimum Value	0.001	5.77	73	715	0.005	0.001	7.08	4.63	0.002	0.854
Maximum Value	0.04	6.77	607	3350	0.4	1.1	143.5	104.18	0.45	1.832
Median	0.003	6.24	478	1751	0.02	0.021	50.54	69.7	0.055	1.359
Num. Values	8	25	19	37	24	28	25	29	28	24
STATION: X23, Old Faro Creek channel at toe of waste dumps										
	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.008	6.84	367.3	1877.252	0.075	0.032	13.588	64.925	0.144	0.456
Std. Deviation	0.007	0.34	181.1	1176.131	0.109	0.064	40.252	138.8739	0.45	0.3114
Minimum Value	0.001	5.88	56	1.6	0.005	0.001	0.005	0.08	0.003	0.17
Maximum Value	0.034	7.7	630	10571	0.443	0.646	250.6	1170	3.8	1.973
Median	0.005	6.83	429.5	1560	0.02	0.01	0.3	28.61	0.03	0.326
Num. Values	101	68	107	272	86	299	139	299	275	98

NOTE: nr = no reading available.

Table 4.11 Statistical Summary of Surface Water Quality of Rose Creek - Faro Mine Site

STATION: FAROCR, Faro Cr u/s of confluence NFRose

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.001	7.47	19	32	0.013	0.016	1.31	0.17	0.04	0.011
Std. Deviation	0	0.65	0	64	0.007	0.014	2.05	0.29	0.1	0.016
Minimum Value	0.001	6.58	19	1	0.005	0.002	0.03	0.01	0.01	0.005
Maximum Value	0.001	8.7	19	239	0.02	0.052	6.37	1.02	0.4	0.066
Median	0.001	7.39	19	6	0.02	0.011	0.58	0.07	0.02	0.005
Num. Values	1	12	1	16	15	15	15	15	15	15

STATION: R8, N Fork of Rose Creek 900 m below Faro Ck Div.

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		7.6	77	9	0.018	0.008	0.28	0.022	0.018	0.006
Std. Deviation		0.39	58	4	0.008	0.009	0.26	0.021	0.006	0.002
Minimum Value		6.86	8	2	0.005	0.002	0.01	0.01	0.004	0.005
Maximum Value		8.6	251	17	0.04	0.033	1.06	0.1	0.03	0.013
Median		7.6	69	9	0.02	0.004	0.18	0.01	0.02	0.005
Num. Values		35	29	45	46	48	46	47	47	46

STATION: R9, N Fork of Rose Creek adjacent BH1 and BH2

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.076	7.35	82.7	11.8	0.02	0.007	0.29	0.026	0.02	0.006
Std. Deviation	0	0.44	56.6	6.1	0.009	0.009	0.35	0.029	0.01	0.003
Minimum Value	0.076	6.15	10	3	0.005	0.001	0.01	0.002	0.002	0.005
Maximum Value	0.076	8.4	277	39	0.04	0.04	1.89	0.14	0.07	0.023
Median	0.076	7.39	73.5	12	0.02	0.002	0.17	0.01	0.02	0.005
Num. Values	1	35	34	49	47	50	48	50	49	48

STATION: R10, North Fork of Rose Creek u/s of rock drain

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.04	7.46	82.7	11.5	0.022	0.012	0.27	0.026	0.019	0.008
Std. Deviation	0.054	0.4	57.3	6	0.012	0.028	0.25	0.023	0.008	0.006
Minimum Value	0.001	6.58	10	3	0.005	0.002	0.04	0.01	0.003	0.005
Maximum Value	0.078	8.4	277	38	0.07	0.199	1.17	0.11	0.05	0.035
Median	0.04	7.46	77.2	12	0.02	0.003	0.18	0.019	0.02	0.005
Num. Values	2	33	34	49	49	50	49	50	49	49

STATION: NF1, North Fork Rose Creek Site 1 u/s of Haul Road

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		7.31	67	7.2	0.01	0.008	0.392	0.04	0.01	0.007
Std. Deviation		0.59	15	4.9	0.008	0.01	0.264	0.031	0.01	0.005
Minimum Value		6.65	48	3	0.005	0.001	0.12	0.006	0.01	0.005
Maximum Value		8.2	90	18	0.02	0.031	0.92	0.109	0.02	0.018
Median		7.28	63	6	0.005	0.002	0.281	0.03	0.01	0.005
Num. Values		6	6	13	6	13	13	13	6	6

STATION: NF2, North Fork Rose Creek Site 2 d/s of Haul Road

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		7.59	75.5	9.5	0.034	0.008	0.251	0.03	0.02	0.01
Std. Deviation		0.67	27.7	5.6	0.067	0.01	0.251	0.02	0.01	0.008
Minimum Value		6.65	39.3	3	0.005	0.001	0.01	0.01	0.01	0.005
Maximum Value		8.58	132	22	0.2	0.03	1.03	0.08	0.05	0.026
Median		7.64	77	8	0.008	0.002	0.177	0.025	0.01	0.005
Num. Values		7	8	15	8	15	15	15	8	8

Table 4.11 Statistical Summary of Surface Water Quality of Rose Creek - Faro Mine Site

STATION: X2, N Fork of Rose Creek u/s of mine access road										
	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.006	7.46	98.35	17.946	0.022	0.01	0.622	0.05	0.018	0.009
Std. Deviation	0.005	0.45	108.96	31.293	0.036	0.022	0.815	0.062	0.017	0.009
Minimum Value	0.001	6.61	24	2	0.005	0.001	0.01	0	0.001	0.005
Maximum Value	0.048	8.4	765	374	0.2	0.253	5	0.5	0.17	0.05
Median	0.005	7.42	77	14	0.02	0.004	0.27	0.03	0.02	0.005
Num. Values	111	67	43	151	84	180	111	180	153	96

STATION: X3, S Fork Rose Creek at the pumphouse reservoir										
	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.005	7.61	90.81	16.193	0.022	0.011	0.301	0.13	0.014	0.009
Std. Deviation	0.004	0.42	38.33	8.779	0.038	0.024	0.271	0.318	0.009	0.009
Minimum Value	0.001	6.42	39	2	0.005	0.001	0.01	0	0.001	0.005
Maximum Value	0.01	8.4	268	60	0.2	0.274	1.32	1.85	0.05	0.05
Median	0.005	7.6	93.5	15	0.02	0.005	0.2	0.02	0.01	0.005
Num. Values	66	68	38	135	80	142	94	142	127	80

STATION: X10, Rose Creek Diversion Channel below weirs										
	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.026	7.87	91.63	48.413	0.025	0.006	0.349	0.044	0.013	0.01
Std. Deviation	0.055	0.4	28.83	106.226	0.045	0.007	0.356	0.051	0.01	0.011
Minimum Value	0.001	6.43	23	1	0.005	0.001	0.005	0.002	0.003	0.005
Maximum Value	0.236	8.4	138.3	440	0.2	0.038	2.25	0.339	0.05	0.05
Median	0.005	7.85	103	15	0.02	0.004	0.26	0.03	0.01	0.005
Num. Values	55	42	32	109	51	115	65	115	106	51

STATION: X14, Rose Cr downstream of the diversion channel										
	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.02	7.7	114.3	175.031	0.022	0.016	0.511	0.0844	0.029	0.0099
Std. Deviation	0.026	0.46	34.9	138.71	0.034	0.02	0.286	0.0799	0.023	0.0135
Minimum Value	0.001	5.94	49	4.4	0.005	0.001	0.11	0	0.003	0.002
Maximum Value	0.133	8.63	195	762	0.2	0.159	1.47	0.64	0.12	0.103
Median	0.01	7.77	115	132	0.02	0.01	0.44	0.062	0.02	0.005
Num. Values	124	76	51	156	92	185	105	191	182	92

Table 4.12 Statistical Summary of Surface Water Quality of the Rose Creek Tailings Impoundments - Faro Mine Site

STATION: X5, Cross Valley Pond outflow

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.039	7.93	99.8	436.185	0.023	0.033	0.405	0.241	0.088	0.01
Std. Deviation	0.049	0.68	36.56	140.372	0.028	0.051	0.488	0.196	0.45	0.009
Minimum Value	0.001	6.74	47	152	0.002	0.001	0.01	0.001	0.001	0.004
Maximum Value	0.356	9.55	355	1425	0.2	0.291	3.61	1.23	9.999	0.05
Median	0.017	7.86	98.9	404	0.02	0.012	0.27	0.18	0.05	0.006
Num. Values	490	126	184	352	154	495	195	498	495	154

STATION: X13, Combined seepage from Cross Valley Dam

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	2.249	7.24	202.33	479.058	0.026	0.011	2.013	0.025	0.015	0.012
Std. Deviation	46.982	0.24	34.61	110.859	0.028	0.057	0.761	0.053	0.045	0.01
Minimum Value	0.001	6.15	8	52	0.005	0.001	0.02	0	0.001	0.005
Maximum Value	999.999	7.8	461	1220	0.2	1.11	6.81	0.67	1	0.059
Median	0.011	7.3	202	465	0.02	0.003	2.03	0.01	0.01	0.01
Num. Values	453	169	187	381	181	536	229	536	535	188

STATION: X11, Seepage from north toe of Cross Valley Dam

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	11.178	7.24	189.97	520.841	0.029	0.009	2.53	0.03	0.016	0.023
Std. Deviation	104.814	0.3	18.72	143.141	0.052	0.016	0.76	0.14	0.064	0.02
Minimum Value	0.001	6.31	165	213	0.005	0.001	0.19	0	0.003	0.005
Maximum Value	999.999	7.9	317	1247	0.2	0.202	4.22	2	1	0.11
Median	0.048	7.3	186	464	0.005	0.003	2.5	0.01	0.006	0.02
Num. Values	181	59	95	233	45	254	99	254	249	57

STATION: WEIR3, seepage from central area of X-Valley Dam

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.005	7.37		370	0.017	0.022	1.11	0.03	0.02	0.017
Std. Deviation	0.005	0.22		130	0.015	0.017	0.91	0.03	0.01	0.022
Minimum Value	0.001	6.94		154	0.005	0.002	0.04	0.01	0.01	0.004
Maximum Value	0.01	7.9		666	0.06	0.053	3.4	0.09	0.02	0.085
Median	0.005	7.33		371	0.02	0.022	0.81	0.02	0.02	0.011
Num. Values	6	34		12	12	12	12	12	12	12

STATION: X12, Seepage from south toe of Cross Valley Dam

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.008	7.42	191.05	292.08	0.026	0.009	0.517	0.02	0.012	0.015
Std. Deviation	0.01	0.42	11	103.538	0.052	0.039	1.326	0.046	0.011	0.016
Minimum Value	0.001	5.81	141	124	0.005	0.001	0.005	0	0.003	0.005
Maximum Value	0.103	8.1	216	605	0.2	0.605	11	0.46	0.06	0.085
Median	0.005	7.43	192	274.5	0.005	0.003	0.06	0.01	0.005	0.01
Num. Values	206	53	95	224	39	247	93	247	242	51

STATION: X4, Intermediate Dam decant

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.061	7.54	86.81	421.699	0.024	0.066	0.781	1.821	0.116	0.02
Std. Deviation	0.092	0.54	34.82	177.917	0.033	0.184	1.012	3.068	0.181	0.016
Minimum Value	0.001	6.15	16.5	14	0.005	0.001	0.01	0.002	0.003	0.005
Maximum Value	1.08	9.68	214	1161	0.2	1.42	5.48	19.62	1.72	0.104
Median	0.032	7.55	82	383	0.02	0.016	0.419	0.309	0.056	0.016
Num. Values	395	101	156	335	124	408	159	410	325	125

STATION: X7, Emergency Tailings Area

	CN-T	PH-F	ALK-T	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	mg/L	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	0.029	5.85	151.9	1039.951	0.092	0.433	497.309	43.678	3.899	0.149
Std. Deviation	0.042	0	78.1	923.099	0.075	2.026	1105.17	39.337	13.28	0.067
Minimum Value	0.005	5.85	13	403	0.005	0.002	0.096	3.6	0.005	0.099
Maximum Value	0.194	5.85	319	4289	0.14	12.8	4000	183.69	69	0.225
Median	0.011	5.85	128	817	0.13	0.03	17.5	33.5	0.225	0.122
Num. Values	39	1	18	41	3	41	13	41	41	3

4.2.6.2 Background Water Quality

Water chemistry data have been collected for the Faro Mine through the mine life but no data is available for pre-existing conditions. Therefore, tributaries upstream of the mine area are used to represent background water quality conditions. Actual pre-mine surface water chemistry may have contained a higher concentration of metals, however, since surface water originally passed over mineralized areas.

There are six surface water quality stations that represent "natural" or upstream conditions:

1. FC – Faro Creek, upstream of the diversion
2. SRC – South Fork of Rose Creek
3. SMC – Small Creek, upstream of the Fresh Water Dam
4. R6 – Anvil Creek, immediately upstream of Rose Creek
5. R7 – North Fork of Rose Creek, upstream of the confluence with the Faro Creek Diversion
6. W10 – Upper Guardhouse Creek, upstream of the waste dumps

Faro Creek (FC)

Station FC is located in Faro Creek upstream of the Faro Creek diversion. This station has been sampled as part of special or annual sampling programs. Data for this station is available for 1988 through 1991, 1995 and 1996. The station was moved downstream in 1990, to a point just upstream of the confluence with the Faro Valley Interceptor drain, and the start of the constructed Faro Creek Diversion Channel.

Faro Creek is observed to be consistently neutral to alkaline, with pH values averaging 7.6 over the periods of record and a peak measurement of 9.8 in 1989. Low concentrations of sulphate (<4 mg/L) are observed. Total zinc concentrations are low and occasionally measurable (i.e. greater than detection limits).

South Rose Creek Upstream of Fresh Water Reservoir (SRC, SMC)

The South Fork of Rose Creek was monitored at two stations (SMC and SRC). Prior 1990, station SRC was located just upstream of the Fresh Water Reservoir. The second station (SMC) was located on Small Creek, which is a tributary of the South Fork of Rose Creek. Both of these stations were sampled by mine staff in the early 1970's and in 1989 and 1990. These data may not be representative as there are some errors in the data set, specifically, the values for the dissolved metal concentrations exceed the values for the total metal concentrations.

Generally, water at these sampling stations is alkaline (~ 8 pH units). The average alkalinity was 33.9 mg/L for SRC (which drains granitic rocks) and 215 mg/L for SMC. Total sulphate and zinc concentrations were low at both sampling stations ranging from 4 to 47 mg/L and 0.002 to 0.029 mg/L, respectively.

Anvil Creek (R6)

Station R6 is located on Anvil Creek, just upstream of Rose Creek. This station has been sampled on a number of occasions from 1990 to 2001. Field pH values are neutral (7.4 pH units) to alkaline (8.4 pH units). Alkalinity concentration averages 128 mg/L $CaCO_3$, and ranges from 89 to 151 mg/L. The average sulphate concentration is 22 mg/L with an elevated concentration of 91 mg/L observed in 1991. Total zinc concentrations average 0.023 mg/L and range from below detection (0.01 mg/L) to 0.118 mg/L. No clear temporal trends are apparent.

North Fork of Rose Creek (R7)

Background water quality in North Fork Rose Creek is measured at location R7. This station has been monitored regularly since 1986 with some data gaps from 1993 and 1994. The mean field pH value for this station is 7.69. Alkalinity concentrations range from 11 to 166 mg/L and total sulphate concentrations from 2 to 52 mg/L. Total zinc concentrations average 0.019 mg/L and range from less than detection to 0.14 mg/L.

Upper Guardhouse Creek (W10)

Sample station W10 is located in Upper Guardhouse Creek upstream of Northwest rock dumps. This station has been monitored annually since 1996. Field pH values are slightly alkaline ranging from 7.5 to 8.0 pH units. Total sulphate concentrations are low and average 6 mg/L. Total zinc concentrations range from below detection (<0.005 mg/L) to 0.007 mg/L.

4.2.6.3 Faro Pits and Dumps

There are seven locations that directly monitor surface water quality associated with the Faro pits and rock dumps:

1. A30 – Seepage into the Main pit from the Faro Valley Rock Dump.
2. X22B - Main pit water – surface grab.
3. NE1 & NE2 – Surface seeps below the Northeast rock dumps.
4. SP5-6 – Seepage from North east rock dumps to Main pit.
5. X26 – Zone 2 pit water – as pumped to surface.
6. X23 – Old Faro Creek channel near the toe of the Main rock dumps.

Main Pit: X22B, A30

Surface water in the Main pit has been sampled at sampling station X22B since 1996 (subsequent to the completion of mining in the pit in 1992). Sampling from 1992 to 1996 was not practical due to concerns regarding safe access to low water levels. From 1987 to 1992 (during mining), pit water was sampled as sample station X22. From 1987 to 1992, the average pH, sulphate and total zinc of the pit sump water were 7.0, 586 mg/L and 45 mg/L, respectively. From 1996 to 2001, the average pH, sulphate and total zinc of the surface pit water were 7.5, 533 and 7.2 mg/L, respectively. The concentration of zinc has increased slightly since 1998, coincidental with the elimination of the high pH inflow of tailings slurry.

Water chemistry information at depth in the Faro Main Pit was collected by DIAND in 1994, 1996, 1998 and 1999 and by Anvil Range Mining Corporation (Interim Receivership) in 2000. This information was compiled and is shown in graphical form (Appendix B). The water column was consistently stratified. The upper 5 metres was well saturated with dissolved oxygen (generally greater than 55%) and the degree of saturation decreased to generally less than 20% by 10 m to 20 m depth. Dissolved oxygen saturation was generally less than 5% below about 30 m depth (to 85 m). The temperature profile showed uniform temperatures just greater than 4°C below about 25 m depth. Water pH generally decreased with depth. No clear trends with depth were observed for metals with the exception of total iron, which increased with slightly over the depth of sampling (40 m). Sulphate and total dissolved solids also increased slightly over the depth of sampling (40 m). The available data does not allow for an assessment of the stability or seasonal variations of the chemocline.

Sample station A30 was sampled during mine operations (1988 to 1991) as a pumping sump located on the north pit wall below the Faro Valley Rock Dump. During this period, the average pH, sulphate and total zinc of the sump water were 7.3, 264 and 12.8 mg/L, respectively. Post mining (1997 to 2001), the same flow that now flows directly into the Main pit has been sampled annually during freshet. During freshet from 1997 to 2001, the average pH, sulphate and total zinc of the sump water were 4.1, 432 mg/L and 68.4 mg/L, respectively. Note that this does not necessarily represent degrading water quality with time since samples have been collected only during freshet since 1997.

Northeast waste dump: NE1, NE2 and SP5-6

Stations NE1, NE2 and SP5-6 monitor seeps from the Northeast Waste Dump.
Stations NE1 and NE2 have been monitored annually since 1997 at intermittent streams that flow from the toe of the rock dump towards the North Fork of Rose Creek. Average pH values for these sampling stations are 7.71 and 7.57, respectively. Total zinc concentrations have ranged from below detection (0.01 mg/L) to 2.79 mg/L and sulphate concentrations from 69 mg/L to 930 mg/L.

Station SP5-6 has been monitored since 1989. Average pH for sampling station SP-5 is 7.16 and varies between 5.75 to 8.2. Total zinc concentrations have ranged from 1.6 mg/L to 7.1 mg/L and sulphate from 213 mg/L to 973 mg/L. The concentrations of zinc and sulphate display an increasing trend with time, which is more pronounced for sulphate than for zinc.

Zone 2 Pit: X26

Sampling station X26 represents water that accumulates in the backfilled Zone 2 pit as sampled from the dewatering well, when pumping. This sampling station has been sampled since 1991. The average pH is 6.2 in a range from 5.8 to 6.8. Total zinc concentrations range from 4.6 mg/L to 104.2 mg/L and an increasing trend is apparent in recent years. Total iron concentrations range from 7.1 mg/L to 143.5 mg/L. Sulphate concentrations range from 715 mg/L to 3,350 mg/L (average 1,808 mg/L) with a slight increasing trend in recent years. Alkalinity has not been routinely measured in recent years, but a slight decreasing trend was apparent to 1998.

Main/Intermediate Waste Dump: X23

Station X23 represents seepage from the Main and Intermediate Waste Dumps that exits at the dump toe in the old Faro Creek channel. This station has been generally monitored on a monthly basis since 1986. The average pH over the period of record is 6.84 and has decreased slightly with time. Sulphate concentrations vary in a wide range from 1.6 mg/L to 10,571 mg/L with an average concentration of 1,877 mg/L over the period of record. A stepped increase in the concentration of sulphate is observed from around 1,500 mg/L during the period from 1986 to 1991 to around 2,500 mg/L from 1993 to 1998. An increasing trend for sulphate is apparent since about 1998 to a range from 2,568 mg/L to 5,476 mg/L in 2001. The concentration of zinc was generally stable in a range from about 30 to 40 mg/L prior to about 1998 with some erratic spikes up to about 125 mg/L. An increasing trend for zinc is apparent since 1998 to a range from 209 mg/L to 960 mg/L in 2001.

4.2.6.4 Rose Creek

Seven locations monitor surface water quality in the North Fork of Rose Creek and three locations that monitor surface water quality in Rose Creek to the mixing zone downstream of mine facilities:

1. FAROCR – Faro Creek Diversion Channel entering the North Fork.
2. R8, R9, R10, NF1 – North Fork above the haul road.
3. NF2, X2 – North Fork below the haul road.
4. X3, X10 – Upstream and Downstream ends of the Rose Creek Diversion Canal.
5. X14 – Rose Creek downstream of the effluent mixing zone.

North Fork of Rose Creek: FAROCR, R8, R9, R10, NF1, NF2, X2

The surface water quality in the North Fork of the Rose Creek is monitored at sampling stations (listed from upstream to downstream) FAROCR, R8, R9, R10, NF1, NF2 and X2. Location R8 is located downstream of the confluence of the North Fork with the Faro Creek Diversion (location FAROCR) and upstream of the Zone 2 pit area. Station R9 is located approximately adjacent to the area of the Zone 2 pit. Station R10 is located downstream of the Zone 2 pit area and upstream of the rock drain in the Vangorda ore haul road. Stations NF1 and NF2 are immediately upstream and downstream, respectively, of the haul road rock drain. Station X2 is located at the crossing of the mine access road downstream of the rock drain and the rock dumps.

Sampling station FAROCR (Faro Creek Diversion Channel entering the North Fork) has been sampled in spring and summer since 1997. Water quality displays a seasonal trend with greater concentrations of most parameters generally observed in freshet. Concentrations of total zinc and sulphate have ranged from 0.01 mg/L to 1.02 mg/L and 1 to 239 mg/L, respectively, over the period of record.

Sampling station R8 is located downstream of the mixing zone with the Faro Creek Diversion Channel. Water quality displays a slight but observable influence attributed to freshet inflows from the Faro Creek Diversion Channel in some years. Concentrations of total zinc and sulphate have ranged from 0.01 mg/L to 0.10 mg/L and 2 mg/L to 17 mg/L, respectively, over the period of record.

Sample stations R9, R10 and NF1 are used to monitor the North Fork of Rose Creek along the Northeast, Zone 2 and Main/Intermediate rock dumps. Station NF1 is typically sampled only during spring whereas stations R9 and R10 have been sampled more frequently. Water quality is similar at these locations. Sulphate concentrations for these stations are below 40 mg/L (average 10 mg/L). Zinc concentrations have displayed a seasonal trend with generally greater concentrations observed in the spring and summer up to a maximum of 0.14 mg/L (average 0.03 mg/L).

Sample stations NF2 and X2 monitor the North Fork of Rose Creek downstream of the Haul Road. Station NF2 is typically sampled only during freshet whereas station X2 has typically been sampled monthly since 1988 and provides the longest continuous water quality record in the North Fork of Rose Creek. The pH at station X2 is neutral (range from 6.6 to 8.4) and has not displayed any clear trends over time. Sulphate concentrations have been less than 50 mg/L except for two isolated anomalous measurements. Although relatively low, the record of sulphate concentrations since 1988 displays a general seasonal trend wherein higher concentrations are observed in the winter season. This observation suggests the signature of ground water entering the creek, which is masked in the summer season by higher dilution flows. Total zinc concentrations have varied consistently within a range from detection limit to typically about 0.10 mg/L. The variations in zinc concentrations are not typically seasonal as is observed for sulphate.

Rose Creek Diversion Channel: X3 and X10

Sample stations X3 and X10 are located at the upstream and downstream ends, respectively, of the Rose Creek Diversion Canal. Station X3 includes all flow from the North and South Forks of Rose Creek except for some partial North Fork flow at times when the North Fork Diversion has been in use. Station X10 includes the influences of two tributary inflows from the south side of the Rose Creek valley and possible lateral seepage from the Second tailings impoundment.

Water pH at stations X3 and X10 is similar and has been steady over time, with average values of 7.6 and 7.9, respectively. Sulphate concentrations are also similar and have generally been less than 60 mg/L with several isolated spikes. Total zinc concentrations have generally been less than 0.10 mg/L with occasional higher spikes. The concentration of total zinc at location X10 has generally been slightly greater than location X3 since 1995. The record of total zinc concentrations for station X3 displays seasonally (winter) elevated concentrations up to 1.85 mg/L form 1987 to 1991 that is attributed to the capture in pumping wells of groundwater containing elevated zinc concentrations. The elevated zinc concentrations were not observed at downstream location X10. The practice of augmenting the winter water supply from those pumping wells adjacent to the tailings impoundment was subsequently discontinued.

Rose Creek Downstream of the Effluent Mixing Zone: X14

Sample station X14 is located in Rose Creek downstream of the mine facilities. Water quality data is available on a primarily monthly basis since 1984.

Water quality is influenced by the discharge of treated (and compliant) effluent from the tailings facility (station X5) and seepage from the Cross Valley Dam (station X13). This relationship is most evident for sulphate, which displays a wide range from 4 mg/L to 762 mg/L with a range in pH from 5.9 to 8.6. Total zinc concentrations have ranged from 0.01 mg/L to 0.64 mg/L and averaged 0.08 mg/L over the period of record. Since 1998, total zinc concentrations have generally been less than about 0.11 mg/L with several isolated higher spikes.

4.2.6.5 Rose Creek Tailings Impoundments

Cross Valley Pond: X5, X13, X11, WEIR3, X12

There are two sampling stations that monitor water quality exiting or within the Cross Valley Pond: surface outflow from the Cross Valley Pond (location X5) and seepage discharge at the toe of the Cross Valley Dam (location X13). Both stations have been sampled on a regular basis since 1986. The database for station X5 includes monitoring results for outflows as well as pond water during periods of no outflow. Therefore, the database and statistical summaries provided herein are not considered to represent a compliance record but as water quality record of the Cross Valley Pond. Interested readers are referred to the annual environmental reports and monthly data reports that are filed with the Yukon Territory Water Board for a compliance summary.

Water quality in the Cross Valley Pond (station X5) 1992 has been controlled by the various water treatment methods employed for treatment of water from the Intermediate Impoundment. Prior to 1992, water quality was controlled largely by the characteristics of the settled tailings supernatant from upsteam deposition of mill tailings. Over the entire period of record available, pondwater pH has ranged from 6.7 to 9.6. Total zinc concentrations for station X5 have ranged from 0.001 mg/L to 1.23 mg/L, over the entire period of record, with an average of 0.24 mg/L. Note again that these values include standing pondwater when no effluent was released and do not represent a compliance record. Sulphate concentrations have ranged from 152 mg/L to 1,425 mg/L with an average of 436 mg/L. Sulphate concentrations since 1998 have varied directly with inflows of water pumped from the Faro Main Pit.

Seepage water (station X13) pH values are slightly lower than at station X5 and range from 6.1 to 7.8 over the period of record, and total zinc concentrations are lower and range from 0.01 mg/L to 0.67 mg/L. Total iron concentrations are higher at station X13 than at station X5 with an average concentration of 2.0 mg/L. The seepage flow channel at location X13 is visibly stained with iron precipitates. Sulphate concentrations are similar to station X5 with an average of 479 mg/L.

Sampling stations X11, WEIR3 and X12 are individual seepage streams that direct seepage from the north, central and south areas, respectively, of the Cross Valley Dam toe area to sampling station X13. The individual seepage streams have generally been sampled on a once or twice per year basis only. Water quality is generally similar to that at station X13. Flow has typically been greatest from the north abutment area (station X11) and this flow has the largest direct influence on water quality at station X13. Flow at station X11 is also thought to include some lateral seepage from the overflow spillway during times when overflow water is present.

Intermediate Pond: X4

Water quality exiting or within the Intermediate Pond is monitored at sampling station X4. Outflow may be via either surface overflow or siphon. Water treatment in the Down Valley was started in 1992 in order to ensure that surface outflow from the Cross Valley pond met the maximum allowable discharge limits. The practice of treating outflow from the Intermediate Pond for the removal of zinc continued, on an as-required basis, through 2001.

Sampling station X4 has been monitored continuously since 1986. Monitoring results are primarily related to surface outflow from the pond (via syphon or spillway overflow) but also include results for standing pond water at times when there was no surface outflow.

Water quality in the Intermediate Pond has undergone several stages over the period of record. From 1992 to late 1997, zinc concentrations increased substantially (from average 0.25 mg/L to average 3.89 mg/L) due to the elimination of the inflow of high pH tailings slurry. From late 1997 to 2000, water quality was influenced by the periodic inflow of lime treated water pumped from the Faro Main Pit and this has resulted in variable but generally lower zinc concentrations (average 2.2 mg/L). In 2001, zinc concentrations increased sharply (to average 12.7 mg/L), which may be attributed to the partial bypass of Faro Pit water around the Intermediate Pond related to initiation of the "new" water treatment system in the mill.

Over the entire period of record, pond water pH has varied from 6.2 to 9.7 with an average of 7.5. Sulphate concentrations have varied from 14 mg/L to 1,161 mg/L total zinc concentrations have varied from below detection (0.01 mg/L) to 19.6 mg/L.

Emergency Tailings Area: X7

Station X7 is a seep that emerges to surface just below the mine access road and the emergency tailings area. This water is thought to originate largely as shallow subsurface seepage through the emergency tailings area and enters the Intermediate Impoundment where it is incorporated into the water treatment system. Water quality is available from 1986 to 2000 although most data was collected prior to 1990. The range in the concentration of sulphate over the period of record is from 403 mg/L to 4,289 mg/L with an average of 1,040 mg/L. A substantial increase in the concentration of sulphate occurred from 1990 to 1995. The range in the concentration of total zinc is from 3.60 mg/L to 183.7 mg/L with a average of 43.7 mg/L. The concentration of total zinc also appears to have generally increased from 1990 to 1995 although this increase is not as pronounced as for sulphate.

4.2.7 FARO MINE SITE GROUNDWATER QUALITY

Groundwater monitoring data is available on a primarily twice per year basis since 1995 with some data available as early as 1981. The locations of groundwater monitoring wells are provided on Figure 4.13 and listed in Table 4.13. The monitoring wells in the vicinity of the Faro Rock Dumps are illustrated in section showing the depth of monitoring installations, topography and other land features on Figures 2.3. Monitoring wells in the Rose Creek Tailings Facility are similarly illustrated in section on Figures 4.17 and 4.18. Analytical results from the sampling events are documented in a computerized database (EQWin). Tables 4.14 to 4.20 provide statistical summaries of groundwater quality at the stations sampled over the available period of record. Graphs representing concentrations of selected parameters of concern: pH, total sulphate, dissolved zinc, lead, iron, nickel, arsenic and copper are provided in Appendix D. Tables listing the complete analytical results for the groundwater monitoring points are provided in Appendix E.

Table 4.13 Groundwater Monitoring Locations

Monitoring Well	*Description*
Background	
TH86-26	Upgradient of Tailings Impoundment
North East Rock Dump	
BH12A,B	West of Zone 2 by North Fork of Rose Creek – at 2.85 and 8.05 m depth
BH13B	West of Zone 2 by North Fork of Rose Creek – at 4.25 m depth
BH14A,B	West of Zone 2 by North Fork of Rose Creek – at 6.22 and 10 m depth
Zone 2 Pit	
BH1	West of Zone 2 by North Fork of Rose Creek – at 5.18 m depth
BH2	West of Zone 2 by North Fork of Rose Creek – at 5.55 m depth
BH4	West of Zone 2 by North Fork of Rose Creek – at 3.2 m depth
Monitoring Well	*Description*
Main/Intermediate Rock Dumps	
P96-6	Toe of Intermediate Dump above rock drain – at 20.85 m depth
S1B	South of Sulphide Waste Dump – at 5.37 m depth
S2A, B	South of Sulphide Waste Dump – at 8.04 and 10.6 m depth
S3	South of Sulphide Waste Dump – at 6.56 m depth
P96-7	Toe of Main Dump below Haul Road – at 9.9 m depth
P96-8A,B	Old Faro Creek Channel by X23 – at 4.87 and 9.30 m depth
Original Impoundment	
P01-10 A,B	at 15.2 and 21 m depth
P01-08A,B,C	At 15.5, 25.6 and 29.7 m depth
Second Impoundment	
BH83-4B,C	At 12 and 8.5 metres depth
BH88-2.2 A, B, C	
BH88 – 2.5	At 13.5 metres depth
P01-09A-D	At 11.7, 18.0 and 23.5 m depth
P01-07 A-E	
Intermediate Impoundment	
X21 A,B,C	At 9.22, 15.43 and 30.18 m depth
P01-06A	At 10.7 m depth
P01-05A, B	At 10.5 and 16.4 m depth

Continued...

Table 4.13 Groundwater Monitoring Locations

Continued...

Intermediate Dam	
X24A, B, C, C	At 5.9,10.8, 15.87, 28.22 m depth
X25A, B	At 9.65 and 19.8 m depth
P01-03	At 9.3 m depth
P01-04 A, B	At 34 and 53.4 m depth
Downgradient of Polishing Pond	
X16A,B	By Rose Creek downstream of dam – 5 and 30 m depth
X17A,B	Downstream of dam and upstream of X14 – 5 and 20 m depth
X18A,B	North of dam and right of access road – 10 and 20 m depth
X19A,B	Downstream of dam by X13 – 12 and 27 m depth
P01-02A,B	At 14.1 and 28.4 m depth
P01-01A,B	At 21.4 and 35.5 m depth

4.2.7.1 Pre-mining groundwater quality in the Rose Creek Valley Aquifer

Data on pre-mine groundwater quality in the Rose Creek Valley Aquifer is limited to a groundwater investigation undertaken by International Water Supply in 1967 (Robertson Geoconsultants, 1996). Only a few selected parameters were analyzed in the very first groundwater investigation. Groundwater pH ranged from 6.5 to 7.5 and hardness from 85 mg/L to 187 mg/L. Iron was less than 0.5 mg/L in all wells. The data suggest that the shallow unconfined groundwater was similar in composition to that of Rose Creek.

4.2.7.2 Background Groundwater Quality

Rose Creek Tailings Impoundment

Groundwater monitoring well TH86-26 has a depth of 23.2 m and represents groundwater quality upgradient of the Original tailings impoundment. Groundwater analyses of a sample collected in 2001 indicated a zinc concentration below detection (<0.005 mg/L) and sulphate concentration of 16 mg/L. Groundwater pH was slightly basic (7.6 units) and alkalinity was 95 mg/L $CaCO_3$. The concentration of Fe was 0.5 mg/L.

Groundwater pumping wells in the immediate vicinity of TH86-26 were used for a brief period in 1990 to supplement the winter water supply for the mill. At that time, it was found that the pumping wells were drawing poor quality groundwater (presumably originating from the Original or Second Impoundments) containing elevated concentrations of zinc. Pumping was subsequently halted. Groundwater quality in the pumping wells was confirmed to be unaffected by tailings pore water in 1997 at a time when no pumping had taken place for about 7 years. This information confirms that, in the absence of pumping, groundwater at this location can be considered to be representative of background conditions.

Table 4.14 Statistical Summary of Groundwater Quality of the North East Rock Dump - Faro Mine Site

SHALLOW WELLS

STATION: BH12A, W of Zone II, by NFR Cr. (2.85m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.012	0.009	0.08	0.009	0.014	434	6.79	0.13
Std. Deviation	0.008	0.008	0.11	0.005	0.006	151	0.38	0.19
Minimum Value	0.001	0.002	0.01	0.005	0.003	159	6.2	0.01
Maximum Value	0.020	0.029	0.29	0.019	0.020	583	7.29	0.64
Median	0.012	0.007	0.02	0.008	0.010	509	6.85	0.06
Num. Values	9	9	11	9	9	10	8	11

STATION: BH14A, W of Zone II, by NFR Cr. (6.22m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.021	0.021	0.07	0.008	0.01	813	6.77	0.12
Std. Deviation	0.022	0.013	0.13	0.004	0.01	442	0.69	0.24
Minimum Value	0.005	0.002	0.01	0.005	0.01	96	5.35	0.01
Maximum Value	0.060	0.035	0.39	0.014	0.02	1674	7.85	0.71
Median	0.012	0.024	0.01	0.007	0.01	804	6.9	0.02
Num. Values	8	8	8	8	8	8	8	8

DEEP WELLS

STATION: BH12B, W of Zone II, by NFR Cr. (8.05m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.013	0.021	0.08	0.008	0.01	538	6.92	0.12
Std. Deviation	0.010	0.021	0.14	0.004	0.01	161	0.44	0.15
Minimum Value	0.005	0.002	0.01	0.005	0.01	257	6.43	0.01
Maximum Value	0.030	0.064	0.41	0.015	0.02	805	7.7	0.44
Median	0.005	0.017	0.03	0.009	0.01	525	6.81	0.03
Num. Values	7	7	9	7	7	8	7	9

STATION: BH13B, W of Zone II, by NFR Cr. (4.25m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.010	0.031	0.33	0.009	0.012	459	6.92	0.03
Std. Deviation	0.009	0.052	0.35	0.006	0.008	97	0.18	0.02
Minimum Value	0.001	0.002	0.01	0.005	0.002	379	6.68	0.01
Maximum Value	0.020	0.123	0.84	0.020	0.020	603	7.15	0.05
Median	0.005	0.007	0.24	0.007	0.01	416	6.9	0.02
Num. Values	5	5	5	5	5	5	5	5

STATION: BH14B, W of Zone II, by NFR Cr. (10.00m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.012	0.017	0.04	0.009	0.018	994	6.74	0.03
Std. Deviation	0.008	0.010	0.05	0.005	0.013	531	0.43	0.02
Minimum Value	0.005	0.002	0.01	0.005	0.005	93	5.79	0.01
Maximum Value	0.020	0.031	0.15	0.022	0.050	2000	7.14	0.05
Median	0.005	0.017	0.01	0.008	0.020	948	6.92	0.04
Num. Values	9	9	9	9	9	9	9	9

Table 4.15 Statistical Summary of Groundwater Quality of the Zone 2 Rock Dumps - Faro Mine Site

STATION: BH1, W of Zone II, by NFR Cr. (5.18m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.022	0.024	2.85	0.02	0.18	160	6.35	3.18
Std. Deviation	0.011	0.061	11.08	0.032	0.63	169	0.32	7.22
Minimum Value	0.005	0.002	0.01	0.005	0.01	21	5.75	0.02
Maximum Value	0.060	0.305	57.92	0.145	3.14	847	6.9	29.92
Median	0.020	0.009	0.12	0.006	0.02	125	6.34	0.82
Num. Values	24	24	27	24	24	23	17	27

STATION: BH2, W of Zone II, by NFR Cr. (5.55m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.019	0.011	2.09	0.042	0.052	233	6.2	6.69
Std. Deviation	0.014	0.019	8.42	0.029	0.141	119	0.37	6.52
Minimum Value	0.003	0.002	0.01	0.005	0.007	58	5.44	0.11
Maximum Value	0.070	0.084	42.38	0.106	0.68	615	6.7	26.2
Median	0.020	0.006	0.24	0.035	0.02	223	6.35	4.19
Num. Values	22	22	25	22	22	22	19	25

STATION: BH4, W of Zone II, by NFR Cr. (3.20m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.0365	0.253	1.7	0.152	0.0643	477	4.9	15.07
Std. Deviation	0.0375	0.466	3.83	0.203	0.0965	622	0.99	18.09
Minimum Value	0.0005	0.002	0.01	0.005	0.0046	68	3.45	1.16
Maximum Value	0.112	1.597	14.85	0.562	0.33	2159	6.25	49.11
Median	0.020	0.029	0.09	0.036	0.02	202	4.7	4.75
Num. Values	15	15	17	15	15	16	15	17

Table 4.16 Statistical Summary of Groundwater of the Main/Intermediate Rock Dumps - Faro Mine Site

SHALLOW WELLS

STATION: S1B, S of Sulphide Waste Dump (5.37m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.012	0.013	0.27	0.008	0.013	785	6.63	0.06
Std. Deviation	0.008	0.007	0.32	0.004	0.006	390	0.46	0.03
Minimum Value	0.003	0.004	0.03	0.005	0.003	306	6.12	0.01
Maximum Value	0.02	0.024	0.98	0.018	0.02	1528	7.66	0.11
Median	0.009	0.013	0.12	0.005	0.01	842	6.54	0.05
Num. Values	10	10	10	10	10	10	9	10

STATION: S2A, S of Sulphide Waste Dump (8.04m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.012	0.024	0.58	0.011	0.02	1092	6.43	0.16
Std. Deviation	0.008	0.015	0.5	0.011	0.01	386	0.27	0.24
Minimum Value	0.005	0.002	0.01	0.005	0.01	505	6.1	0.01
Maximum Value	0.02	0.039	1.47	0.035	0.02	1491	7	0.76
Median	0.005	0.029	0.43	0.005	0.02	1263	6.4	0.05
Num. Values	9	9	9	9	9	9	10	9

STATION: S3, S of Sulphide Waste Dump (6.56m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.013	0.036	20.07	0.028	0.03	1784	6.32	0.8
Std. Deviation	0.008	0.061	32.79	0.039	0.05	763	0.42	1.57
Minimum Value	0.005	0.002	0.07	0.005	0.005	708	5.55	0.03
Maximum Value	0.02	0.214	114.99	0.127	0.18	3210	7.1	4.18
Median	0.018	0.02	10.55	0.007	0.02	1862	6.33	0.1
Num. Values	11	11	11	11	11	11	10	11

STATION: P96-8A, Old Faro Cr channel by X23 (4.87m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.02	0.026	1.2	0.307	0.04	2258	6.42	87.38
Std. Deviation	0.019	0.015	3.67	0.45	0.06	1029	0.32	175.28
Minimum Value	0.005	0.004	0.01	0.035	0.01	135	5.9	3.05
Maximum Value	0.071	0.05	12.25	1.39	0.2	3900	6.96	539
Median	0.02	0.024	0.07	0.103	0.02	2290	6.31	11.15
Num. Values	11	11	11	11	11	11	11	11

DEEP WELLS

STATION: S1A, S of Sulphide Waste Dump (12.80m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.015	0.023	1.15	0.092	0.015	2012	6.62	1.27
Std. Deviation	0.012	0.015	2.74	0.136	0.007	848	0.3	2.44
Minimum Value	0.005	0.004	0.01	0.005	0.005	583	6.11	0.1
Maximum Value	0.04	0.044	9.72	0.45	0.03	3380	7.24	8.37
Median	0.012	0.021	0.17	0.029	0.01	2354	6.63	0.23
Num. Values	12	12	12	12	12	12	11	12

Table 4.16 Statistical Summary of Groundwater of the Main/Intermediate Rock Dumps - Faro Mine Site

STATION: S2B, S of Sulphide Waste Dump (10.60m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.016	0.027	7.7	0.009	0.015	836	6.36	0.25
Std. Deviation	0.014	0.031	12.77	0.007	0.007	549	0.5	0.36
Minimum Value	0.005	0.002	0.01	0.005	0.005	345	5.56	0.05
Maximum Value	0.042	0.09	45.9	0.023	0.03	2210	7.4	1.37
Median	0.012	0.016	2.95	0.005	0.015	696	6.26	0.15
Num. Values	12	12	12	12	12	11	10	12

STATION: P96-6, Toe Int Dump above Rock Drain (20.85m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.02	0.011	2.75	0.02	0.014	240	5.96	0.81
Std. Deviation	0.018	0.006	5.92	0.013	0.006	112	0.26	0.75
Minimum Value	0.001	0.002	0.01	0.005	0.001	85	5.6	0.1
Maximum Value	0.055	0.019	19.59	0.05	0.02	428	6.54	2.77
Median	0.02	0.012	0.14	0.021	0.01	246	5.92	0.54
Num. Values	13	13	13	13	13	13	10	13

STATION: P96-7, Toe Main Dump, below Haul Road (9.90m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.032	0.054	49.87	0.056	0.048	974	7.22	0.2
Std. Deviation	0.048	0.118	154.8	0.155	0.103	499	0.29	0.48
Minimum Value	0.005	0.002	0.01	0.005	0.005	362	6.81	0.01
Maximum Value	0.16	0.389	490.4	0.497	0.34	1800	7.67	1.55
Median	0.017	0.017	0.04	0.005	0.015	938	7.18	0.03
Num. Values	10	10	10	10	10	10	10	10

STATION: P96-8B, Old Faro Cr channel by X23 (9.30m)

	AS-D	CU-D	FE-D	NI-D	PB-D	SO4-T	PH-F	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH unit	mg/L
Mean	0.018	0.053	15.9	0.227	0.16	3167	6.52	49.16
Std. Deviation	0.015	0.062	46.87	0.333	0.3	904	0.19	96.83
Minimum Value	0.005	0.005	0.03	0.005	0.01	2092	6.18	0.94
Maximum Value	0.052	0.224	149.22	0.88	0.79	4690	6.77	285
Median	0.02	0.043	0.23	0.074	0.02	3100	6.58	4.2
Num. Values	10	10	10	10	10	10	10	10

Table 4.17 Statistical Summary of Historical Groundwater Quality for the Second Tailings Impoundment - Faro Mine Site

STATION: BH83-4B, 2ND IMPOUNDMENT, 12.0 m depth

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean			11828	0.53	0.352	2823.59	0.74	0.62	0.8
Std. Deviation			5130	0.67	0.491	1094.03	0.34	0.54	0.4
Minimum Value			8200	0.05	0.005	2050	0.5	0.24	0.5
Maximum Value			15455	1	0.7	3597.19	0.98	1	1
Median			11828	0.53	0.352	2823.59	0.74	0.62	0.8
Num. Values			2	2	2	2	2	2	2

STATION: BH83-4C, 2ND IMPOUNDMENT, 8.5 metres depth

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean			20837	1.57	0.28	3731.2	255.46	2.12	1.2
Std. Deviation			3588	2.02	0.04	4580.4	12.08	1.24	0.3
Minimum Value			18300	0.14	0.25	492.4	246.91	1.24	1
Maximum Value			23374	3	0.3	6970	264	3	1.4
Median			20837	1.57	0.28	3731.2	255.46	2.12	1.2
Num. Values			2	2	2	2	2	2	2

STATION: BH88-2.2A, 2ND IMPOUNDMENT TAILINGS

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		466	168	0.2	0.031	14.58	0.359	0.27	0.08
Std. Deviation		115	168	0.26	0.017	22.36	0.41	0.23	0.1
Minimum Value		349	4	0.05	0.016	1.35	0.086	0.05	0.02
Maximum Value		578	340	0.5	0.05	40.4	0.83	0.5	0.2
Median		470	159	0.05	0.028	1.99	0.16	0.25	0.02
Num. Values		3	3	3	3	3	3	3	3

STATION: BH88-2.2B, 2ND IMPOUNDMENT TAILINGS

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
.	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		328	42	0.05	0.005	65.8	0.045	0.05	0.02
Std. Deviation		436	33	0	0	46.3	0	0	0
Minimum Value		20	19	0.05	0.005	33	0.045	0.05	0.02
Maximum Value		637	65	0.05	0.005	98.5	0.045	0.05	0.02
Median		328	42	0.05	0.005	65.8	0.045	0.05	0.02
Num. Values		2	2	2	2	2	1	2	2

STATION: BH88-2.2C, 2ND IMPOUNDMENT TAILINGS

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		1	17228	0.5	0.05	4835	23.6	3.2	0.6
Std. Deviation		0	10080	0	0	757	9.4	2.5	0.1
Minimum Value		1	10100	0.5	0.05	4300	16.9	1.4	0.5
Maximum Value		1	24355	0.5	0.05	5370	30.2	4.9	0.6
Median		1	17228	0.5	0.05	4835	23.6	3.2	0.6
Num. Values		2	2	2	2	2	2	2	2

STATION: BH88-2.5, 2ND IMPOUNDMENT TAILINGS, 13.5 m depth

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean		1	25239	2.18	0.28	8788	1420	2.4	1.2
Std. Deviation		0	7192	2.26	0.18	2457	594	2	0.6
Minimum Value		1	18300	0.22	0.05	6530	899	0.6	0.6
Maximum Value		1	35300	5	0.5	12200	2130	5	2
Median		1	23678	1.75	0.28	8210	1325	2	1
Num. Values		2	4	4	4	4	4	4	4

Table 4.18 Statistical Summary of Historical Groundwater Quality of the Intermediate Impoundment - Faro Mine Site

SHALLOW WELLS									
STATION: X21A-96, Toe 2nd Impoundment (9.22m), P96-5A									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.1	22	14082	0.355	0.07	538	583.3	1.869	4.74
Std. Deviation	0	6	5579	0.559	0.113	289	210.7	2.551	5.12
Minimum Value	6.1	18	8920	0.015	0.005	338	367	0.156	0.42
Maximum Value	6.1	26	20000	1.00	0.20	869	787.9	4.8	10.4
Median	6.1	22	13325	0.05	0.005	406	595	0.65	3.4
Num. Values	1	2	3	3	3	3	3	3	3
STATION: X21B-96, Toe 2nd Impoundment (15.43m), P96-5B									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.04	197	467	0.015	0.011	19.5	0.11	0.021	0.02
Std. Deviation	0.38	14	174	0.014	0.01	53.74	0.197	0.016	0.033
Minimum Value	6.25	176	149	0.003	0.002	0.01	0.01	0.001	0.005
Maximum Value	7.69	215	767	0.05	0.031	243	0.828	0.05	0.132
Median	7.08	197	464	0.012	0.006	2.37	0.01	0.015	0.005
Num. Values	10	9	20	20	19	20	19	20	20
DEEP WELLS									
STATION: X21C-96, Toe 2nd Impoundment (30.18m), P96-5C									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.65	187	67	0.0162	0.009	1.93	0.048	0.0411	0.009
Std. Deviation	0.38	12	206	0.0102	0.014	5.07	0.077	0.0789	0.008
Minimum Value	6.98	167	6	0.005	0.001	0.01	0.006	0.0023	0.001
Maximum Value	8.3	203	942	0.05	0.047	16.74	0.25	0.27	0.029
Median	7.66	187	12	0.02	0.004	0.24	0.01	0.015	0.005
Num. Values	10	9	20	20	19	20	19	20	20

Table 4.19 Statistical Summary of Historical Groundwater Quality at the Intermediate Dam - Faro Mine Site

SHALLOW WELLS

STATION: X24A-96, N abutment Int Dam (5.88m), P96-4A

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.56	308	624	0.021	0.056	18.34	0.351	0.032	0.069
Std. Deviation	0.52	105	167	0.042	0.122	51.82	0.784	0.044	0.126
Minimum Value	5.68	216	281	0.001	0.002	0.02	0.005	0.001	0.005
Maximum Value	7.3	527	835	0.19	0.531	215.3	2.5	0.15	0.566
Median	6.58	283	665	0.005	0.017	0.19	0.01	0.01	0.032
Num. Values	8	7	18	19	19	19	19	19	19

STATION: X24B-96, N abutment Int Dam (10.80m), P96-4B

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.98	196	694	0.017	0.024	4.01	0.03	0.02	0.042
Std. Deviation	0.54	157	220	0.007	0.011	4.78	0.01	0	0.023
Minimum Value	6.59	60	306	0.005	0.006	0.01	0.02	0.02	0.005
Maximum Value	7.6	332	825	0.02	0.034	9.19	0.04	0.03	0.062
Median	6.75	196	758	0.02	0.023	1.65	0.03	0.02	0.041
Num. Values	3	4	5	5	5	5	5	5	5

STATION: X25A-96, S abutment Int Dam (9.65m),P96-3A

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.92	225	260	0.013	0.012	1.1	0.087	0.02	0.007
Std. Deviation	0.52	30	51	0.007	0.009	2.41	0.175	0.01	0.003
Minimum Value	5.98	166	194	0.005	0.002	0.01	0.003	0.01	0.005
Maximum Value	7.8	252	404	0.02	0.03	6.74	0.57	0.02	0.015
Median	6.85	236	269	0.012	0.011	0.06	0.01	0.02	0.005
Num. Values	10	7	21	19	19	19	19	19	19

DEEP WELLS

STATION: X24C-96, N abutment Int Dam (15.87), P96-4C

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.61	384	797	0.013	0.017	1.04	0.075	0.015	0.047
Std. Deviation	0.33	106	226	0.008	0.009	1.95	0.132	0.006	0.022
Minimum Value	6.01	331	1	0.003	0.002	0.01	0.009	0.003	0.005
Maximum Value	7.05	622	1005	0.02	0.029	6.59	0.41	0.02	0.08
Median	6.67	338	808	0.02	0.017	0.24	0.02	0.02	0.051
Num. Values	7	7	17	17	17	17	17	17	17

STATION: X24D-96, N abutment Int Dam (28.22m), P96-4D

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.59	420	901	0.015	0.019	0.506	0.348	0.016	0.073
Std. Deviation	0.57	143	194	0.012	0.013	1.49	0.907	0.01	0.066
Minimum Value	5.8	341	447	0.003	0.002	0.01	0.01	0.003	0.005
Maximum Value	7.7	708	1084	0.05	0.041	6.45	2.84	0.05	0.29
Median	6.51	369	974	0.019	0.021	0.11	0.029	0.01	0.075
Num. Values	8	6	18	18	18	18	18	18	18

STATION: X25B-96, S abutment Int Dam (19.80m),P96-3B

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.35	243	350	0.013	0.013	0.847	0.06	0.016	0.009
Std. Deviation	0.34	40	105	0.011	0.009	1.774	0.137	0.01	0.014
Minimum Value	6.98	184	96	0.001	0.002	0.01	0.005	0.001	0.002
Maximum Value	7.9	283	468	0.05	0.031	7.04	0.47	0.05	0.069
Median	7.21	250	372	0.005	0.013	0.2	0.01	0.02	0.005
Num. Values	11	8	22	21	21	21	21	21	21

Table 4.20 Statistical Summary of Historical Groundwater Quality Downgradient of the Polishing Pond - Faro Mine Site

	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
SHALLOW WELLS									
STATION: X16A, By Rose Cr d/s CVDam (5m)									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.4	127.4	37.9	0.015	0.006	0.175	0.067	0.018	0.006
Std. Deviation	0.31	37.3	25.7	0.011	0.011	0.177	0.176	0.02	0.002
Minimum Value	6.97	29	15	0.001	0.001	0.01	0.006	0.001	0.002
Maximum Value	8	151	137	0.04	0.06	0.57	0.85	0.11	0.009
Median	7.36	141.5	29.1	0.02	0.003	0.083	0.01	0.02	0.005
Num. Values	14	18	42	21	26	24	26	26	21
STATION: X17A, d/s CVdam & u/s of X14 across diversion (5m)									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.54	169.9	30.4	0.024	0.005	0.971	0.033	0.017	0.006
Std. Deviation	0.35	21.4	19.2	0.019	0.004	2.02	0.085	0.008	0.002
Minimum Value	6.9	134	13	0.005	0.001	0.01	0.002	0.004	0.005
Maximum Value	8.13	202	107	0.06	0.014	6.62	0.45	0.04	0.011
Median	7.56	167	25	0.02	0.004	0.06	0.01	0.02	0.005
Num. Values	15	16	44	22	27	25	27	27	22
STATION: X18A,N of CVDam, & right of access rd to X14 (10m)									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.95	214.1	301	0.015	0.009	1.166	0.317	0.02	0.009
Std. Deviation	0.38	27.7	111	0.011	0.007	1.262	0.981	0.023	0.01
Minimum Value	6.28	157	40	0.001	0.001	0.01	0.002	0.001	0.005
Maximum Value	7.6	248	455	0.04	0.025	3.15	3.57	0.11	0.039
Median	7	224	318	0.02	0.008	0.477	0.016	0.02	0.007
Num. Values	15	16	40	21	27	24	25	27	21
DEEP WELLS									
STATION: X16B, By Rose Cr d/s CVDam (30m)									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
Date	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.51	165.2	25.6	0.0181	0.004	0.088	0.023	0.0211	0.006
Std. Deviation	0.24	44.8	15.2	0.0128	0.004	0.102	0.029	0.0287	0.003
Minimum Value	7.09	68	9	0.0005	0.001	0.01	0.002	0.0005	0.001
Maximum Value	7.9	246	87	0.05	0.02	0.388	0.15	0.16	0.02
Median	7.49	172	24	0.02	0.002	0.055	0.01	0.02	0.005
Num. Values	14	19	45	23	28	26	28	28	23
STATION: X17B,d/s CVDam & u/s of X14 across diversion (20m)									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.39	227.1	36.1	0.015	0.004	0.547	0.028	0.015	0.006
Std. Deviation	0.32	117	29.9	0.011	0.003	0.803	0.045	0.008	0.001
Minimum Value	7	136	16	0.005	0.005	0.005	0.005	0.005	0.005
Maximum Value	8.14	421	143	0.04	0.01	2.99	0.21	0.04	0.009
Median	7.33	154.5	24	0.02	0.003	0.38	0.01	0.02	0.005
Num. Values	14	16	40	20	25	23	25	25	20
STATION: X18B,N of CVDam, & right of access rd to X14 (20m)									
	PH-F	ALK-T	SO4-T	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.05	226.9	307	0.013	0.0089	0.722	0.052	0.023	0.006
Std. Deviation	0.53	27.8	104	0.012	0.0066	1.042	0.136	0.031	0.003
Minimum Value	5.75	190	60	0.001	0.001	0.014	0.0004	0.001	0.001
Maximum Value	8.03	299	475	0.04	0.02	2.87	0.65	0.13	0.01
Median	7.15	224	304	0.005	0.009	0.26	0.01	0.017	0.005
Num. Values	13	13	37	16	22	19	23	22	16

4.2.7.3 Pits and Rock Dumps

Northeast Rock Dump: BH12, BH13, BH14

Groundwater wells BH12, BH13 and BH14 are below the toe of the Northeast rock dump between the rock dump and the North Fork of Rose Creek. Two nested wells at each location are all less than 10 metres deep. Groundwater wells BH12A, BH13A and BH14A are the shallower installations at each location.

Data is available for the shallower wells on a once or twice per year basis since 1995. No analytical data is available for shallow well BH13A, which has consistently been reported as dry or frozen. Sulphate concentrations for BH12A and BH14A have been less than 600 mg/L and 1,000 mg/L, respectively, with the exception of one isolated spike at BH14A in fall 2001. The average sulphate concentrations at BH12A and BH14A over the period of record are 434 mg/L and 813 mg/L, respectively. Groundwater pH ranges from 6.2 to 7.3 and from 5.4 to 7.8, respectively, and dissolved zinc concentrations from 0.01 mg/L to 0.64 mg/L and from 0.01 mg/L to 0.71 mg/L, respectively, with average zinc concentrations of 0.13 mg/L and 0.12 mg/L, respectively.

Data is available for the deeper installations on a once or twice per year basis since 1995. Sulphate concentrations for BH12B, BH13B and BH14B have been less than 805 mg/L, 603 mg/L and 1,100 mg/L, respectively, with the exception of one isolated spike at BH14B in fall 2001. The average sulphate concentrations at BH12B, BH13B and BH14B over the period of record are 538 mg/L, 459 mg/L and 994 mg/L, respectively. Sulphate in well BH14B displays a generally increasing tend over time. Groundwater pH ranges from 6.4 to 7.7, from 6.7 to 7.2 and from 5.8 to 7.1, respectively for BH12B, BH13B and BH14B, and dissolved zinc concentrations from 0.01 mg/L to 0.44 mg/L, from 0.01 mg/L to 0.05 mg/L and from 0.01 mg/L to 0.05 mg/L, respectively, with average zinc concentrations of 0.12 mg/L, 0.03 mg/L and 0.03 mg/L, respectively. Dissolved zinc in well BH12B is highly erratic but does not display any clear temporal trends.

Zone 2 Pit: BH1, BH2, BH4

Groundwater wells BH1, BH2 and BH4 are located directly between the Zone 2 pit and the North Fork of Rose Creek adjacent to the shore of the creek. These wells are shallow and are all less than 5.2 m. Regular monitoring data is available since 1995 for wells BH1 and BH2 and since 1996 for well BH4.

Sulphate concentrations for BH1, BH2 and BH4 have ranged from 21 mg/L to 847 mg/L, from 58 mg/L to 615 mg/L and from 68 mg/L to 2,1591 mg/L, respectively, with averages of 160 mg/L, 233 mg/L and 477 mg/L, respectively. A seasonal trend is apparent for well BH4 wherein greater concentrations are observed in spring than fall.

Dissolved zinc concentrations for BH1, BH2 and BH4 have ranged from 0.02 mg/L to 29.9 mg/L, from 0.11 mg/L to 26.2 mg/L and from 1.16 mg/L to 49.1 mg/L, respectively, with averages of 3.18 mg/L, 6.69 mg/L and 15.07 mg/L, respectively. A seasonal trend is apparent for well BH4 and, to lesser degrees, wells BH1 and BH2 wherein greater concentrations of dissolved zinc (and some other metals including copper, nickel and lead) are observed in spring than fall.

Main & Intermediate Rock Dumps: P96-6, S1, S2, S3, P96-7, P96-8

Groundwater monitoring well P96-6 is located below the toe of the Intermediate rock dump just upstream of the haul road near the rock drain head pond. This well was installed at 20.8 m depth in fall 1996 and has been monitored on a twice per year basis since. The average concentrations of sulphate and dissolved zinc are 240 mg/L and 0.81 mg/L, respectively. A seasonal trend is apparent for zinc wherein concentrations are typically greater in spring than fall but no clear temporal trends are apparent for sulphate or zinc.

Groundwater monitoring wells S1A, S1B, S2A, S2B and S3 are located below the toe of the Intermediate rock dump adjacent to the North Fork of Rose Creek just below the haul road. These wells range in depth from 5.4 meters to 12.8 meters. Regular (twice per year) monitoring data is available since 1995. The shallower wells are S1B, S2A and S3 (depths from 5.4 m to 8.0 m) and the deeper wells are S1A and S2B (depths of 12.8 m and 10.6 m).

Sulphate concentrations in the shallower wells (S1B, S2A and S3) have ranged from 306 mg/L to 3,210 mg/L with average concentrations over the period of record of 785 mg/L, 1,092 mg/L and 1,784 mg/L, respectively. The sulphate concentration in well S3 displays and increasing trend from around 1,000 mg/L in 1996 to 3,210 mg/L in 2001. Groundwater pH in the three wells has ranged from 5.6 to 7.7. Dissolved zinc concentrations have ranged from 0.01 mg/L to 4.18 mg/L with average concentrations of 0.06 mg/L, 0.16 mg/L and 0.80 mg/L, respectively for S1B, S2A and S3. The highest zinc concentrations in well S3 are due to two isolated spikes. In the absence of these two spikes, zinc concentrations in well S3 would be similar to well S1B. Elevated zinc concentrations in well S2B occurred in 2000 and 2001, which identify an increasing trend.

Sulphate concentrations in the deeper wells (S1A and S2B) have ranged from 345 mg/L to 3,380 mg/L with average concentrations over the period of record of 2,012 mg/L and 836 mg/L, respectively. Sulphate concentrations in these wells display increasing trends since 1997 and since 2000, respectively. Groundwater pH these wells has ranged from 5.6 to 7.4. Dissolved zinc concentrations have ranged from 0.05 mg/L to 8.37 mg/L with average concentrations of 1.27 mg/L and 0.25 mg/L, respectively. Zinc concentrations in well S1A increased substantially in 2001 from less than 1.25 pre-2001 to 3.6 mg/L and 8.4 mg/L in spring and fall, respectively, of 2001.

Groundwater monitoring well P96-7 is located at the toe of the Main rock dump approximately mid-way between the North Fork of Rose Creek and the millsite. This well was installed at 9.9 m depth in fall 1996 and has been monitored on a twice per year basis since. The average concentrations of sulphate and dissolved zinc are 974 mg/L and 0.20 mg/L, respectively. Two elevated zinc concentrations were reported for 1997 and, in the absence of these elevated concentrations, zinc has been less than 0.08 mg/L. No clear temporal trends are apparent for sulphate or zinc.

Groundwater monitoring wells P96-8A and P96-8B are installed at the toe of the Main rock dump in the old Faro Creek channel near the millsite. These wells were installed at depths of 4.9 m and 9.3 m, respectively, in fall 1996 and have been monitored on a twice per year basis since. These wells are considered to monitor a large portion of the subsurface seepage from the dump that collects in the (now) buried Faro Creek valley. This collection area is considered to include the landfill site and groundwater quality in wells P96-8A/B is interpreted to currently contain seepage from the landfill site.

Sulphate concentrations in wells P96-8A/B have ranged from 135 mg/L to 4,690 mg/L with averages of 2,258 mg/L and 3,167 mg/L, respectively, although the low concentration of 135 mg/L reported for well P96-8A in spring 1997 is anomalously low. Sulphate concentrations in both wells display an increasing trend over the period of record. Dissolved zinc concentrations have ranged from 0.94 mg/L to 539 mg/L with averages of 87.4 mg/L and 49.2 mg/L, respectively for P96-8A and P96-8B. Zinc concentrations were all less than 17 mg/L prior to fall 2000 and increased substantially through spring and fall 2001. Observations have been made of a slight sheen and a slight hydrocarbon odour in these wells.

4.2.7.4 Rose Creek Tailings Facility: Historical (pre-2001) Groundwater Quality

Original and Second Impoundments

No groundwater quality data is available for the Original impoundment.

Data for groundwater wells in the second impoundment are limited and in many instances only two or three measurements are available since 1993. All older wells (BH83-4B and C, BH88 2.2A to D and BH88 2.5) in the second impoundment were shallow (<15 m depth) and primarily screened within the tailings. Dissolved zinc concentrations ranged from 0.05 mg/L to 2,130 mg/L and sulphate concentrations from 4 mg/L to 35,300 mg/L. The highest concentrations were reported for well BH88-5, which was directly replaced in 2001 with well P01-09 (Figure 5.15) as described herein in a subsequent section.

The available information indicates that water quality at the base of the tailings in the upstream areas of the Second Impoundment was poor and, at location BH88-5, acidic. Water quality within the saturated zone of the Second Impoundment was suggested to improve in the downgradient direction

Intermediate Impoundment

Monitoring well X21 is located in the Intermediate Impoundment and was installed in 1996 as a replacement to a previously destroyed installation. Well X21 is screened at three intervals: X21A at 9.2 metres depth in tailings, X21B at 15.43 m depth and X21C at 30.18 m depth.

In well X21A, pH was slightly acidic, sulphate concentrations ranged from 8,920 mg/L to 20,000 mg/L and dissolved zinc concentrations ranged from 367 mg/L to 788 mg/L. Sulphate concentrations decreased with depth and averaged 467 mg/L and 67 mg/L in wells X21B and X21C, respectively. Dissolved zinc concentrations averaged 0.11 mg/L and 0.05 mg/L in wells X21B and X21C, respectively.

Intermediate Dam

Groundwater water quality data from monitoring wells X24 and X25 date from installation in fall 1996. These 1996 wells were replacements for previously destroyed installations. These wells are located at the toe of the Intermediate Dam adjacent to the Polishing Pond and represent the downgradient extent of the tailings deposit.

Data from shallow wells X24A, X24B and X25A (depths 5.9 m, 10.8 m and 9.65 m respectively) indicate that concentrations of sulphate decreased over time in X24A (ranging from 281 to 885 mg/L) and B (ranging from 306 to 825 mg/L) but remained relatively stable in X25A (ranging from 194 to 404 mg/L). No consistent trends were apparent for dissolved zinc concentrations over time in any of the shallow wells.

Data from deeper wells X24C, X24D and X24B did not display consistent trends in sulphate or dissolved zinc concentrations. However, sulphate concentrations in wells X24C and X24D (average 797 mg/L and 901 mg/L, respectively) were generally higher than in X25B (average 350 mg/L). Dissolved zinc concentrations in the deeper wells ranged from below detection (0.05 mg/L) to 2.84 mg/L.

Downgradient of Polishing Pond

Historical groundwater quality data from monitoring points downgradient of the Polishing Pond date back to 1981. Wells X16, X17 and X19 are located in the valley centre with well X16 farthest from the tailings and well X19 closest. Well X18 is located to the north side of the valley. Well X19 is currently inoperable but it is not known when the wells became disabled and, therefore, data is not included in this report.

Well X18 consistently displayed different groundwater quality than the other wells with generally higher concentrations of sulphate and dissolved zinc. Sulphate concentrations in wells X18A (shallow) and X18B (deep) ranged from 40 mg/L to 475 mg/L, respectively, and increasing trends over time were apparent in both wells. Dissolved zinc concentrations ranged from 0.0004 mg/L to 3.57 mg/L. However, since 1991, zinc concentrations have generally been less than 0.03 mg/L when two isolated spikes are removed from the data.

Historical data from the shallow wells in the valley "centre" (X16A and X17A) indicate no clear temporal trends. Dissolved zinc concentrations were relatively stable over time and ranged from 0.002 mg/L to 0.85 mg/L. However, zinc concentrations have generally been less than 0.05 mg/L when isolated spikes are removed from the data. Sulphate concentrations were relatively stable over time and ranged from 13 mg/L to 137 mg/L. However, sulphate has generally been less than 50 mg/L when isolated spikes are removed from the data.

Historical data from the deep wells in the valley "centre" (X16B and X17B) indicate no clear temporal trends. Dissolved zinc concentrations were relatively stable over time and ranged from 0.002 mg/L to 0.21 mg/L. However, zinc concentrations have generally been less than 0.05 mg/L when isolated spikes are removed from the data. Sulphate concentrations were relatively stable over time and ranged from 9 mg/L to 143 mg/L. However, sulphate has generally been less than 35 mg/L when isolated spikes are removed from the data. Slight increasing trends with time were apparent for sulphate.

4.2.7.5 Rose Creek Tailings Facility: 2001 Hydrogeological Investigation

Summary of 2001 Investigation

In 2001, a comprehensive hydrogeological and geochemical investigation of Rose Creek Tailings Facility was undertaken that included the installation and monitoring of new groundwater monitoring wells (GLL 2002). Groundwater analytical results from the initial (fall 2001) samples are listed in Table 4.21.

Concentrations of sulphate and dissolved zinc are illustrated in plan on Figures 4.15 and 4.16 and in section on Figures 4.17 and 4.18.

A summary of the groundwater quality interpretation, as repeated from GLL 2002 is as follows:

1. Porewater within the tailings contains elevated concentrations of zinc and sulphate.
2. Based on observed concentrations of sulphate, porewater migration extends downgradient of the tailings deposit to the toe of the Cross Valley Dam but has not been observed in the monitoring wells in the valley centre located approximately 1,000 metres downgradient of the tailings deposit.
3. Zinc is not transported within the aquifer in substantial concentrations, as is sulphate. This is thought to be due to attenuation of zinc within the tailings and the aquifer.
4. Tailings porewater migration appears to be restricted to the sand and gravel portion of the aquifer. The basal till unit that overlies bedrock does not appear to be impacted.
5. Greater concentrations of sulphate are observed along the north side of the valley than in the valley centre. This has been observed consistently since 1996.
6. Oxidation products (represented by sulphate and zinc) are distributed throughout the aquifer beneath the tailings and concentrations in groundwater increase with depth in the aquifer at some locations.

A more detailed description of groundwater quality is provided below.

Original Impoundment

Wells P01-10A and B and wells P01-08 A, B and C were drilled in the Original Impoundment. The depths of these monitoring wells vary from 15.2 to 25.7 m. Groundwater wells P01-10A (15.2 m) and P01-08A (15.5 m) are screened in the tailings. The remaining wells (P01-10B, P01-08B and C) are screened in the native soil below the tailings.

Analytical results indicate that groundwater collected from wells P01-08B and P01-08C, installed in the native aquifer, contain the highest zinc (0.69 and 0.73 mg/L) and sulphate (344 and 482 mg/L) concentrations reported in the Original Impoundment. These samples also have relatively low alkalinity concentrations (37 and 135.5 mg/L, respectively). The concentrations of zinc and sulphate in well P01-08A, in tailings, were less than in the native aquifer at 0.024 mg/L and 206 mg/L, respectively. The specific reasons for the increases in concentrations with depth in the aquifer at location P01-08 are not understood but the observations suggest that contaminants released from the tailings are present to substantial depths in the native aquifer.

Analytical results from wells P01-10A and P01-10B display poorer groundwater quality in the tailings than in the upper zone of the native aquifer. The concentrations of dissolved zinc and sulphate in well P01-10A, screened in the tailings, were 0.284 mg/L and 298 mg/L, respectively. The concentrations of dissolved zinc and sulphate in well P01-10B, screened in the upper zone of the aquifer, were 0.009 mg/L and 94 mg/L, respectively. These concentrations were less than those observed at location P01-08.

Table 4.21 Current Groundwater Quality of the Rose Creek Tailings Facility - Faro Mine Site

	Upgradient	Original Impoundment					Second Impoundment								
MonitorName	TH86-26	P01-10A	P01-10B	P01-08A	P01-08B	P01-08C	P01-09A	P01-09B	P01-09C	P01-09D	P01-07A	P01-07B	P01-07C	P01-07D	P01-07E
MonitorID	86261	21101	21102	21081	21082	21083	21091	21092	21093	21094	21071	21072	21073	21074	21075
Depth of Monitor (m)		15.2	21	15.5	25.6	29.7	11.7	16.5	22.1	28.4	18	23.5	27.8	34.2	40.4
Date Sampled	9/10/01	9/10/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/11/01	9/10/01	9/10/01
Field Chemistry															
Field pH	7.6	8	7.6	7.3	6.9	6.7	7.1	6.4	6.9	6	9.5	9.7	7.6	6.9	6.9
Field Conductivity	214	1097	643	660	935	972	4710	1220	1097	1640	1154	1508	992	1013	1013
Temperature degrees C	3.7	4	3.8	5.4	2.2	2.6	3.7	3.5	3.5	3.5	3.6	4	3.2	4.1	4.1
Physical Tests															
Total Dissolved Solids	118	661	432	427	637	770	33850	1080	922	1760	760	968	768.5	778	960
Hardness CaCO3	79	52.3	249	150	382	427	3300	554	537	691	15.7	13.6	403.5	552	560
pH	7.67	8.52	8.06	7.66	7.17	6.34	3.635	3.74	6.15	4.47	9.13	9.78	7.585	7.21	7.09
Dissolved Anions															
Alkalinity-Total CaCO3	95	225	286	129	135.5	37	12.5	7	19	5	237	415	223	159	110
Sulphate SO4	16	298	94	206	344	482	20300	711	623	1180	349	360	376	433	580
Total Cyanide CN	<0.005	0.026	0.015	2.39	0.577	-0.005	0.82	0.007	<0.005	0.084	0.99	3.16	0.1005	<0.005	<0.005
Dissolved Metals															
Aluminum D-Al	<0.005	0.1	0.015	0.014	0.012	0.07	<0.3	0.05	0.11	0.31	0.05	0.11	<0.01	<0.01	<0.01
Antimony D-Sb	0.0016	0.053	0.0093	0.07	0.0069	0.0012	<0.05	0.004	0.001	0.002	0.054	0.097	0.005	0.004	0.001
Arsenic D-As	<0.0005	<0.003	0.01	0.0029	0.002	0.0013	<0.03	<0.001	<0.001	<0.001	0.009	0.008	0.014	0.002	<0.001
Barium D-Ba	0.05	0.11	0.25	<0.02	<0.02	0.04	<0.4	0.02	0.06	0.04	<0.02	0.02	0.06	0.07	0.02
Beryllium D-Be	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.05	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002
Boron D-B	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium D-Cd	<0.00005	0.0012	0.00006	<0.00005	<0.00005	0.045	<0.003	0.0095	0.0081	0.0135	<0.0001	<0.0003	<0.0001	0.0033	0.0043
Calcium D-Ca	24.1	12.6	80.4	49.2	116	124	387.5	165	162	196	4.5	3.5	117	156	164
Chromium D-Cr	<0.001	<0.005	<0.002	<0.002	<0.001	<0.001	<0.05	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002
Cobalt D-Co	<0.0003	<0.002	0.0016	0.0005	0.0164	0.136	<0.02	0.309	0.117	0.383	0.0034	0.01	0.0056	0.0174	0.0659
Copper D-Cu	<0.001	0.018	0.001	0.002	0.001	0.005	<0.05	<0.002	0.008	0.021	0.002	<0.005	<0.002	<0.002	<0.002
Iron D-Fe	0.5	0.23	4.19	0.22	24.65	35	10850	55.6	49.4	252	0.04	0.18	12.3	2.26	0.36
Lead D-Pb	<0.0005	0.047	0.0016	0.01	0.00645	<0.0005	0.35	0.016	0.002	0.005	0.011	0.286	0.007	<0.001	<0.001
Lithium D-Li	<0.005	<0.03	<0.005	0.018	0.016	0.024	0.4	0.06	0.04	0.1	<0.01	<0.03	-0.01	<0.01	0.02
Magnesium D-Mg	4.5	5.1	11.8	6.6	22.35	28.4	565.5	34.7	31.9	48.9	1.1	1.2	26.9	39.3	36.5
Manganese D-Mn	0.0147	0.094	9.67	0.397	7.025	28.8	60.45	53.5	33.3	50.3	0.0277	0.006	22.55	24.8	34.2
Mercury D-Hg	<0.00005	<0.00005	<0.00005	<0.00005	0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum D-Mo	<0.001	0.069	0.013	0.051	0.003	<0.001	<0.05	<0.002	<0.002	<0.002	0.147	0.142	0.002	<0.002	<0.002
Nickel D-Ni	<0.001	<0.005	0.001	0.002	0.018	0.106	<0.05	0.369	0.18	0.328	<0.002	<0.005	0.0055	0.029	0.082
Potassium D-K	<2	9	3	8	4.5	3	75	4	4	6	8	7	3.5	4	4
Selenium D-Se	<0.001	<0.005	<0.001	0.003	<0.001	<0.001	<0.05	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002
Silver D-Ag	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.001	<0.001	<0.001
Sodium D-Na	<2	305	54	90	31	15	152.5	19	17	16	267	363	40.5	30	30
Thallium D-Tl	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	<0.0004	<0.0004	<0.0004	<0.0004	<0.001	<0.0004	<0.0004	<0.0004
Tin D-Sn	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.03	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.001	<0.001
Titanium D-Ti	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium D-U	0.0012	0.002	0.0153	0.0005	0.003	0.0012	<0.01	<0.0004	<0.0004	<0.0004	0.0014	0.003	0.00515	0.0032	0.0013
Vanadium D-V	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.6	0.03	0.03	<0.05	<0.03	<0.03	<0.03	0.03	<0.04
Zinc D-Zn	<0.005	0.284	0.009	0.024	0.686	0.73	640	12.4	13.4	43.7	<0.005	<0.005	0.006	0.011	0.017

Notes: Results are expressed as milligrams per litre except where noted.
< indicates less than the detection limit indicated.
* indicates average value of two samples (field replicates)

Table 4.21 Current Groundwater Quality of the Rose Creek Tailings Facility - Faro Mine Site

	Downgradient of Polishing Pond									
MonitorName	P01-01A	P01-01B	P01-02A	P01-02B	X18A	X18B	X16A	X16B	X17A	X17B
MonitorID	21011	21012	21021	21022	81031	81032	81011	81012	81021	81022
Depth of Monitor (m)	21.4	35.3	14.1	28.4	10.6	28.7	6	34	6.2	25
Date Sampled	9/10/01	9/10/01	9/10/01	9/10/01	9/5/01	9/5/01	9/5/01	9/5/01	9/5/10	9/5/10
Field Chemistry										
Field pH	8	7.8	7.9	8	7.7	7.8	7.8	8	8	7.9
Field Conductivity	1140	981	591	54	1104	1131	395	320	388	436
Temperature degrees C	2.5	2.7	4	4.2	3.8	4.1	4.3	6.6	4.3	4.1
Physical Tests										
Total Dissolved Solids	872	708	402	346	797	870	250	222	233	263
Hardness CaCO3	741	530	312	275	708	669	264	198	227	240
pH	7.83	7.81	7.84	7.99	7.67	7.83	8.25	8	8.26	8.25
Dissolved Anions										
Alkalinity-Total CaCO3	217	249	201	206	222	225	211	160	203	229
Sulphate SO4	480	289	156	119	392	438	26	33	31	35
Total Cyanide CN	<0.005	<0.005	<0.005	<0.005	0.006	0.006	<0.005	<0.005	<0.005	<0.005
Dissolved Metals										
Aluminum D-Al	<0.01	<0.01	<0.005	0.012	0.01	0.02	0.02	0.011	0.714	<0.005
Antimony D-Sb	0.001	0.035	0.0043	0.0081	0.007	0.005	0.007	0.0067	<0.0005	<0.0005
Arsenic D-As	<0.001	0.026	0.0008	0.0027	<0.001	0.01	<0.001	<0.0005	0.0013	<0.0005
Barium D-Ba	0.12	0.16	0.06	0.05	0.15	0.2	0.16	0.11	0.2	0.2
Beryllium D-Be	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron D-B	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium D-Cd	0.0001	0.0001	0.00007	<0.00005	0.0002	<0.0001	<0.0001	0.0001	0.00017	<0.00005
Calcium D-Ca	211	158	86.3	64.8	202	188	70.5	57.6	62.2	66.2
Chromium D-Cr	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Cobalt D-Co	<0.0006	0.0053	0.0014	0.0017	<0.0006	<0.0006	<0.0006	<0.0003	0.0015	<0.0003
Copper D-Cu	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	0.008	<0.001
Iron D-Fe	<0.03	0.12	<0.03	<0.03	0.06	2.51	<0.03	<0.03	0.84	0.64
Lead D-Pb	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	0.0066	0.0006
Lithium D-Li	0.01	0.01	0.006	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	0.016
Magnesium D-Mg	51.7	32.8	23.4	27.5	49.5	48.6	21.3	13.2	17.3	18.1
Manganese D-Mn	0.0731	0.0744	0.692	0.215	2.3	0.453	0.0007	0.0046	0.19	0.209
Mercury D-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum D-Mo	0.003	0.125	0.002	0.002	<0.002	<0.002	0.002	0.002	<0.001	0.001
Nickel D-Ni	<0.002	0.037	0.013	0.023	0.009	<0.002	<0.002	<0.001	0.002	<0.001
Potassium D-K	7	5	4	4	6	6	<2	<2	<2	2
Selenium D-Se	<0.002	0.011	0.001	<0.001	<0.002	<0.002	<0.002	0.001	<0.001	<0.001
Silver D-Ag	<0.003	<0.001	<0.0005	<0.0005	<0.00004	<0.00004	<0.00004	<0.00002	<0.00002	<0.00002
Sodium D-Na	32	28	23	22	19	27	2	2	3	6
Thallium D-Tl	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0002
Tin D-Sn	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Titanium D-Ti	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium D-U	0.0105	0.077	0.022	0.0465	0.0067	0.0043	0.0022	0.0015	0.0025	0.0017
Vanadium D-V	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc D-Zn	<0.005	0.006	<0.005	<0.005	0.016	0.008	0.006	0.018	0.022	<0.005

Notes:

Notes: Results are expressed as milligrams per litre except where noted.
< indicates less than the detection limit indicated.
* indicates average value of two samples (field replicates)

Table 4.21 Current Groundwater Quality of the Rose Creek Tailings Facility - Faro Mine Site

	Intermediate Impoundment						Intermediate Valley Dam								
MonitorName	P96-5A	P96-5B	P96-5C	P01-06A	P01-05A	P01-05B	P01-03	P01-04A	P01-04B	P96-3A	P96-3B	P96-4A	P96-4C	P96-4D
MonitorID	96051	96052	96053	21061	21051	21052	21031	21041	21042	96031	96032	96041	96043	96044
Depth of Monitor (m)	8.5	14.7	29.4	10.7	10.5	16.4	9.3	34	53.4	9	19.2	6.5	16.5	28.3
Date Sampled	9/6/01	9/6/01	9/6/01	9/10/01	9/10/01	9/10/01	9/10/01	9/10/01	9/10/01	9/5/10	9/5/01	9/6/01	9/6/01	9/6/01
Field Chemistry														
Field pH	6.1	7.3	8.3	7.1	8	7.8	7.5	7.8	7.5	7.7	7.9	7.6	7.3	7.6
Field Conductivity	3204	2106	3316	3189	1948	1475	1573	1055	1045	985	1050	1324	1595	1929
Temperature degrees C	3.9	2.8	2.3	3.3	3.5	3.1	3.5	3.8	4	3.7	3.2	3.4	3	3
Physical Tests														
Total Dissolved Solids	12650	2330	202	4220	1630	1240	1380	763	602	684	746	1070	1370	1800
Hardness CaCO3	5855	933	171	1990	611	582	993	575	478	466	501	683	936	1100
pH	5.41	4.81	8.2	6.02	7.32	7.22	6.98	7.77	8.11	8.16	8.22	8.15	8.1	8.12
Dissolved Anions														
Alkalinity-Total CaCO3	22	42	191	106	37	239	322	311	623	271	299	284	333	358
Sulphate SO4	8900	149	9	2610	1210	780	769	331	30	298	334	579	764	1020
Total Cyanide CN	0.7	0.007	<0.005	0.072	1.51	0.234	0.009	<0.005	<0.005	0.005	0.019	<0.005	0.032	<0.005
Dissolved Metals														
Aluminum D-Al	0.06	<0.01	0.014	0.04	<0.03	<0.01	<0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.03	<0.03
Antimony D-Sb	0.005	0.001	0.0029	0.005	0.038	0.005	<0.003	0.001	0.004	0.009	0.001	0.003	0.004	<0.003
Arsenic D-As	0.014	0.003	0.0217	0.013	<0.003	0.005	<0.003	0.001	0.009	<0.001	<0.001	<0.001	<0.003	<0.003
Barium D-Ba	<0.1	0.02	0.18	<0.02	<0.02	-0.02	0.02	0.03	0.49	0.04	0.03	0.03	<0.02	0.02
Beryllium D-Be	<0.005	<0.002	<0.001	<0.005	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005
Boron D-B	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium D-Cd	0.0258	<0.0001	<0.00005	<0.0003	<0.0003	<0.0001	<0.0003	<0.0001	<0.0001	<0.0001	<0.0001	0.0005	0.0005	0.0023
Calcium D-Ca	426.5	172	54	335	170	175	297	181	117	134	157	209	285	339
Chromium D-Cr	<0.005	<0.002	<0.001	<0.005	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005
Cobalt D-Co	0.106	0.0419	<0.0003	0.2	0.003	0.0067	0.029	<0.0006	0.001	0.0056	<0.0006	0.0147	0.029	0.014
Copper D-Cu	<0.005	<0.002	<0.001	<0.005	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005
Iron D-Fe	879	243	0.5	676	0.57	4.09	0.33	3.35	0.86	0.05	0.5	<0.03	0.04	<0.03
Lead D-Pb	0.164	<0.001	0.0023	0.005	0.045	0.032	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003
Lithium D-Li	0.17	<0.01	<0.005	<0.03	0.05	<0.01	<0.03	0.01	0.16	<0.01	<0.01	<0.01	<0.03	<0.03
Magnesium D-Mg	1160	123	8.8	281	45.2	35.3	61.3	29.6	45.5	31.9	26.6	39.3	54.5	61.4
Manganese D-Mn	338	23.6	0.261	104	0.494	19.7	22.1	0.464	0.232	6.86	0.195	15.5	24.9	24.9
Mercury D-Hg	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum D-Mo	<0.005	<0.002	0.004	<0.005	<0.005	<0.002	<0.005	<0.002	0.009	<0.002	<0.002	<0.002	<0.005	<0.005
Nickel D-Ni	0.388	0.014	<0.001	0.06	0.008	0.005	0.049	<0.002	0.006	0.004	<0.002	0.024	0.052	0.098
Potassium D-K	24	5	<2	17	14	4	7	4	3	4	3	5	5	6
Selenium D-Se	<0.005	<0.002	<0.001	<0.005	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005
Silver D-Ag	<0.0001	<0.00004	<0.00002	<0.01	<0.003	<0.001	<0.006	<0.001	<0.001	<0.00004	<0.00004	<0.00004	<0.0001	<0.0001
Sodium D-Na	32.5	56	3	39	173	47	39	44	69	26	53	29	33	43
Thallium D-Tl	<0.001	<0.0004	<0.0002	<0.001	<0.001	<0.0004	<0.001	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.001	<0.001
Tin D-Sn	<0.003	<0.001	<0.0005	<0.003	<0.003	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003
Titanium D-Ti	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium D-U	<0.001	0.0029	<0.0002	0.004	<0.001	0.0044	0.004	0.0024	0.0073	0.0096	0.0052	0.0057	0.004	0.004
Vanadium D-V	<0.2	<0.03	<0.03	0.06	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc D-Zn	370	0.828	0.006	1.02	0.145	0.074	0.009	<0.005	<0.005	0.005	<0.005	0.005	0.009	0.028

Notes:

Notes: Results are expressed as milligrams per litre except where noted.
< indicates less than the detection limit indicated.
* indicates average value of two samples (field replicates)

Second Impoundment

Groundwater wells P01-09A, B, C and D and P01-07 A, B, C, D and E are located in the Second Impoundment. P01-09 is located close to the upstream extent of the southeast arm of the impoundment at the location of "old" monitoring well BH88-5. Well P01-07 is located near the mid-section of the Second Impoundment Dam on the upstream side. Groundwater monitoring wells P01-09A (11.7 m), P01-07A (18.0 m) and P01-07B (23.5 m depth) are screened in the tailings. All other wells are screened in the native soil below the tailings (16.5 to 40.4 m). Tailings are approximately 10 m thicker at P01-07 relative to P01-09.

Analytical results indicate that well P01-09A, screened in the tailings, contained the highest concentrations of dissolved zinc (640 mg/L) and sulphate (20,300 mg/L) from the entire 2001 sample suite. The wells screened below P01-09A in the native sediments (P01-09 B to D) also contained elevated concentrations of dissolved zinc (12.4 to 43.7 mg/L with depth) and sulphate (623 to 1180 mg/L with depth). The data indicate that contaminants are distributed to significant depths in the native aquifer at this location.

Groundwater in wells P01-07A to E contained relatively low concentrations of dissolved zinc and sulphate in both the tailings and the native soils ranging from below detection (<0.005 mg/L) to 0.017 mg/L and from 349 to 580 mg/L, respectively.

Intermediate Impoundment

Groundwater wells P01-06A (10.7 m depth) and P01-05A and B (10.5 and 16.4 m depth, respectively) were completed in the Intermediate Impoundment. Well P01-06 is located close to X21 in the northeast corner of the Intermediate Impoundment and location P01-05 is located approximately 300 metres downgradient of the Second Impoundment Dam. Well P01-05A is screened in the tailings. All other wells are screened in the native sediments below the tailings.

Concentrations of dissolved zinc and sulphate in well P01-05A, screened in tailings, were 0.145 mg/L and 1,210 mg/L, respectively. Groundwater from the wells screened in the upper zone of the aquifer immediately below the tailings (P01-06 and P01-05B) contained 0.074 and 1.02 mg/L zinc and 780 mg/L and 2,610 mg/L sulphate, respectively.

Intermediate Dam

Groundwater wells P01-03 (9.3 m depth) and P01-04 A and B (34 m and 53.4 m depth, respectively) were completed at the toe of the Intermediate Dam (the downstream extent of the tailings deposit). All wells are screened in native sediments as tailings are restricted to the upstream side of the Intermediate Dam. The deepest well, P01-04B, is installed in the deepest part of the Rose Creek channel within the basal till unit that overlies the bedrock contact.

The analytical data indicate that dissolved zinc concentrations were low relative to most of the upstream wells and ranged from below detection limit (<0.005 mg/L) to 0.028 mg/L. Sulphate concentrations ranged from 30 mg/L (P01-04B) to 769 mg/L (P01-03). Zinc and sulphate concentrations were greater on the north side of the valley (P01-03) than near the centre (P01-04A). The concentrations were lowest in the deepest well (P01-04B), installed in the basal till. The greater concentrations of zinc and sulphate on the north side of the valley correspond to a consistent trend in the historical data.

Downgradient of Polishing Pond

Monitoring wells P01-02A and B (14.1 and 28.4 m depth, respectively) were completed at the toe of the Cross Valley Dam near the south abutment and wells P01-01A and B (21.4 and 35.5 m depth, respectively) were completed on the north side of the valley approximately 500 m downgradient of the Cross Valley Dam. The deepest well, P01-02B, was installed just above the basal till unit that overlies the bedrock contact. Existing wells X16, X17 and X18 (described previously herein) were also sampled in fall 2001.

Dissolved zinc concentrations ranged from below detection (0.005 mg/L) to 0.022 mg/L (X17A). Sulphate concentrations ranged from 26 mg/L (X16A) to 480 mg/L (P01-01A). The greater concentrations of zinc and sulphate on the north side of the valley (P01-01 and X18) correspond to a consistent trend in the historical data.

4.2.8 VANGORDA PLATEAU MINE SITE SURFACE WATER QUALITY

4.2.8.1 Overview

Surface water at the Vangorda Plateau Mine site is routinely sampled to assess water quality. The locations for the monitoring points are provided on Figure 4.14. Analytical results are documented in a computer database (EQWin). Some of the sampling stations have been sampled since 1986 or 1987. Since mine shut down in 1998, sampling has been generally been conducted on a monthly or quarterly basis. Table 4.22 lists the sampling stations that are described in this report.

Tables 4.23 to 4.29 provide statistical summaries of water quality at the stations sampled. Graphs representing concentrations of selected parameters of environmental concern including field pH, total suspended solids, total sulphate, total zinc, lead, iron, nickel, arsenic and copper are provided in Appendix F. Tables listing the analytical results for the groundwater monitoring points are provided in Appendix G.

Table 4.22 Vangorda Plateau Surface Water Quality Monitoring Locations

Location	Description
Background	
V20	Vangorda northeast diversion ditch
V4	Shrimp Creek
V1	Vangorda Creek upstream of mine activities
Pits and Dumps	
V7	Underground Portal
V23/V23A	Grum Pit
V14/V15/V16	Grum Rock Dump toe seepage
V22	Vangorda Pit
LCD	Little Creek Dam
V28-V33	Vangorda Rock Dump toe drains nos. 1 through 6
V21/V21A	Vangorda Rock Dump seepage collector ditch
Entering Vangorda Creek	
V18	Grum Interceptor Ditch
V25	Water Treatment Plant Effluent
V2/V2A	Grum Creek
V19	Vangorda northwest diversion ditch
V25BSP	Outflow from Sheep Pad Pond
V17A	Ore Transfer Pad runoff
V6A	AEX Creek
Receiving Water	
V27	Main Stem Vangorda Creek (Upper)
VGMAIN	Main Stem Vangorda Creek (Lower)
V5	West Fork Vangorda Creek
V8	Lower Vangorda Creek

4.2.8.2 Background Water Quality

Shrimp Creek (V20, V4)

Location V20 is near the downstream end of the Vangorda northeast interceptor ditch, which passes clean run off water that would originally have flowed directly into Vangorda Creek around the east and south sides of the Vangorda Pit and rock dump area. The station has been sampled since construction of the ditch in 1991 on a limited basis. Flow at location V20 has, historically, been intermittent.

The average concentration of total zinc at location V20 is 0.062 mg/L with a range from below detection (<0.001 mg/L) to 0.47 mg/L. Sulphate concentrations at this station range from 3 mg/L to 75 mg/L with an average of 13 mg/L. No clear temporal trends are apparent. Flow is slightly alkaline with an average pH of 7.8 over the period of record.

Table 4.23 Statistical Summary of Background Surface Water Quality - Vangorda Plateau Mine Site

STATION: V20, Vangorda Northeast Interceptor Ditch										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.79	87.8	134	13	0.043	0.018	7	0.062	0.025	0.0396
Std. Deviation	0.37	22.7	538	18	0.062	0.038	28.089	0.1362	0.03	0.0941
Minimum Value	7.1	57	1	3	0.005	0.001	0.009	0.001	0.004	0.004
Maximum Value	8.3	122	2290	75	0.28	0.165	116	0.467	0.13	0.29
Median	7.85	87	5	8	0.02	0.006	0.12	0.0115	0.02	0.005
Num. Values	8	13	18	14	18	18	17	18	18	9
STATION: V4, Shrimp Creek										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.58	265.5	12	50	0.0245	0.0124	0.424	0.0279	0.018	0.008
Std. Deviation	1.98	98.6	22	32	0.0205	0.0133	0.533	0.0382	0.012	0.006
Minimum Value	0	98	1	7	0.0005	0.001	0.025	0.001	0.004	0.001
Maximum Value	8.42	437	98	134	0.08	0.063	2.56	0.18	0.056	0.024
Median	8.09	268	5	43	0.02	0.009	0.305	0.01	0.02	0.005
Num. Values	17	13	30	27	31	31	30	31	31	23
STATION: V1, Vangorda Creek Upstream of Mine Activities										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.55	34.9	5	9.6	0.028	0.0091	3.11	0.333	0.161	0.0092
Std. Deviation	0.42	20.8	3	5.2	0.02	0.0158	19.712	2.336	1.04	0.0077
Minimum Value	6.7	2	1	1	0.001	0.001	0.006	0.001	0.001	0.0002
Maximum Value	8.6	98	17	26	0.06	0.103	141	17.5	7.8	0.023
Median	7.54	29	5	10	0.02	0.005	0.098	0.01	0.02	0.005
Num. Values	36	37	56	45	51	56	51	56	56	37

Table 4.24 Statistical Summary of Surface Water Quality of Grum Pit - Vangorda Plateau Mine Site

STATION: Grum exploration portal decant (V7)										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.3	237.8	7	91.4	0.069	0.004	1.702	1.1098	0.035	0.0267
Std. Deviation	0.2	63.1	2	29	0.036	0.003	1.436	0.429	0.027	0.0052
Minimum Value	7.1	38	5	9	0.05	0.001	0.316	0.03	0.004	0.02
Maximum Value	7.6	265	10	116	0.18	0.012	4.84	2.01	0.071	0.03
Median	7.2	254.5	5	98	0.06	0.003	1.345	1.07	0.05	0.03
Num. Values	6	12	13	11	13	13	12	13	13	6
STATION: V23, Grum Pit Water										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.77	154	7	258	0.012	0.017	0.178	5.53	0.02	0.167
Std. Deviation	0.34	68	4	151	0.009	0.013	0.134	4.9	0.01	0.08
Minimum Value	7.12	24	3	49	0.005	0.002	0.05	0.01	0.01	0.005
Maximum Value	8.3	249	14	488	0.03	0.051	0.49	13.8	0.04	0.275
Median	7.71	160	6	266	0.005	0.014	0.14	5.91	0.01	0.177
Num. Values	9	10	12	13	13	13	13	13	13	13
STATION: V23A, Grum Pit Water Holding Pond										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.84	197.8	84.3	181	0.055	0.013	5.08	0.6588	0.072	0.1107
Std. Deviation	0.31	129.3	240.4	101	0.056	0.018	12.195	1.2852	0.137	0.0767
Minimum Value	7.26	1	3	25	0.02	0.001	0.012	0.01	0.002	0.034
Maximum Value	8.3	485	1160	445	0.21	0.061	50.5	4.49	0.61	0.295
Median	7.9	166	8	181	0.03	0.005	0.635	0.184	0.02	0.0845
Num. Values	16	21	28	24	29	30	26	30	30	16

Table 4.25 Statistical Summary of Surface Water Quality of the Grum Rock Dump - Vangorda Plateau Mine Site

STATION: V14, Grum Dump southwest sump										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.5	27	10	872	0.031	0.007	0.216	0.03	0.03	0.052
Std. Deviation	0.2	0	3	1228	0.027	0	0.249	0.0141	0.03	0.045
Minimum Value	7.3	27	8	4	0.012	0.007	0.04	0.02	0.01	0.02
Maximum Value	7.6	27	12	1740	0.05	0.007	0.392	0.04	0.05	0.084
Median	7.5	27	10	872	0.031	0.007	0.216	0.03	0.03	0.052
Num. Values	2	1	2	2	2	2	2	2	2	2
STATION: V15, Sulphide cell sump, Grum Dump										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
Date	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.79	376	124	297	0.015	0.031	3.2	0.13	0.03	0.015
Std. Deviation	0.31	135.9	267	342	0.008	0.04	8.25	0.52	0.042	0.023
Minimum Value	7.03	48	1	29	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	8.48	472	1213	1052	0.03	0.226	44	2.94	0.19	0.103
Median	7.74	459	9	124	0.02	0.025	0.23	0.03	0.02	0.005
Num. Values	24	11	29	31	31	31	31	31	31	29
STATION: V16, Grum Dump, southeast sump										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
Date	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.84	234	16	119	0.018	0.009	0.48	0.02	0.019	0.006
Std. Déviation	0.16	16	21	128	0.006	0.012	0.6	0.01	0.004	0.002
Minimum Value	7.61	212	4	19	0.005	0.002	0.07	0.01	0.01	0.005
Maximum Value	8.1	256	66	381	0.02	0.035	1.78	0.04	0.02	0.009
Median	7.82	235	7	62	0.02	0.004	0.23	0.01	0.02	0.005
Num. Values	8	7	8	10	7	7	7	7	7	5

Table 4.26 Statistical Summary of Surface Water Quality of the Vangorda Pit and Rock Dump - Vangorda Plateau Mine Site

STATION: V22, Vangorda pit water										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.37	124.4	91.6	531.1	0.045	2.868	4.965	29.6816	0.282	0.289
Std. Deviation	0.56	60.6	494.6	487.5	0.059	17.86	22.431	61.7641	1.174	0.3828
Minimum Value	6.3	11	1	98	0.005	0.001	0.03	0.01	0.01	0.005
Maximum Value	9.05	235	3140	3020	0.32	113	135	396	7.48	2.1
Median	7.4	121.5	8.5	430	0.022	0.018	0.483	16.85	0.055	0.208
Num. Values	24	30	40	37	38	40	36	40	40	28
STATION: LCD, Little Creek Dam										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.44	nr	7	465	0.028	0.026	0.39	7.7	0.11	0.06
Std. Deviation	0.32	nr	2	432	0.021	0.013	0.14	2.15	0.14	0.017
Minimum Value	7	nr	5	144	0.005	0.014	0.22	5.79	0.02	0.044
Maximum Value	7.78	nr	9	1102	0.056	0.045	0.52	10.78	0.32	0.084
Median	7.49	nr	7	306	0.025	0.022	0.42	7.12	0.05	0.057
Num. Values	4	nr	3	4	4	4	4	4	4	4
STATION: V28, Vangorda Dump drain #1										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	nr	167.79	82	543.648	nr	0.039	4.24	40.918	0.273	nr
Std. Deviation	nr	55.95	207	259.078	nr	0.112	3.97	29.423	1.015	nr
Minimum Value	nr	13	1	21	nr	0.003	0.78	0.061	0.005	nr
Maximum Value	nr	306	1670	1485	nr	0.93	19.3	135	10	nr
Median	nr	180.05	23	502.5	nr	0.01	2.81	38	0.084	nr
Num. Values	nr	64	128	128	nr	129	23	127	126	nr
STATION: V29, Vangorda Dump drain #2										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.13	76.8	289	318	nr	0.123	2.429	12.9601	0.049	1.667
Std. Deviation	0.15	61.72	1222	288	nr	0.426	10.005	14.5064	0.126	0.3509
Minimum Value	6	11	1	169	nr	0.002	0.078	0.33	0.005	1.361
Maximum Value	6.3	323	9530	1540	nr	3.35	60.5	86.5	0.904	2.05
Median	6.1	60.5	9	226	nr	0.02	0.333	8.8	0.015	1.59
Num. Values	3	76	77	80	nr	80	36	77	76	3
STATION: V30, Vangorda Dump drain #3										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.03	76.59	3046	1365.03	0.05	0.116	46.479	61.6657	0.7	4.8463
Std. Deviation	0.31	93.65	6527	929.898	0.08	0.507	47.216	79.7339	2.065	0.8648
Minimum Value	5.14	2	5	8	0.02	0.002	0.019	0.012	0.005	3.918
Maximum Value	6.7	650	40400	4575	0.28	4.63	181.45	457.98	16.1	6.46
Median	6.09	57	337	977	0.02	0.01	30.7	38.5	0.099	4.556
Num. Values	25	58	77	129	11	112	31	112	110	11

Table 4.26 Statistical Summary of Surface Water Quality of the Vangorda Pit and Rock Dump - Vangorda Plateau Mine Site

STATION: V31, Vangorda Dump drain #4										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.82	2670.35	1	540	0.02	0.01	15.263	6.928	0.041	1.544
Std. Deviation	0.4	8310.1	1	997	0	0.02	21.45	20.765	0.084	0
Minimum Value	6.54	1	1	1	0.02	0.002	0.095	0.002	0.005	1.544
Maximum Value	7.1	26320	2	2172	0.02	0.056	30.43	62.3	0.23	1.544
Median	6.82	13.3	1	2	0.02	0.002	15.263	0.007	0.005	1.544
Num. Values	2	10	3	8	1	7	2	9	7	1
STATION: V32, Vangorda Dump drain #5										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	4.3	8.25	42	7937	0.14	0.049	30.706	582.271	1.806	6.7287
Std. Deviation	0.75	5.87	39	5562	0.24	0.057	38.047	671.455	2.678	2.4032
Minimum Value	3.04	0	1	1	0.02	0.002	0.095	0.003	0.005	3.261
Maximum Value	5.82	16	116	17040	0.62	0.138	112	1680	6.98	10.8
Median	4.17	5	38	7110	0.02	0.002	22.21	363.04	0.23	6.4905
Num. Values	22	15	11	25	6	9	7	12	9	6
STATION: V33, Vangorda Dump drain #6										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	6.63	144	158	4267	0.09	0.054	34.749	575.908	1.005	4.6307
Std. Deviation	0.46	68	142	4267	0.17	0.06	27.497	229.058	1.206	1.7214
Minimum Value	6	41	16	470	0.02	0.002	1.24	99.08	0.01	0.795
Maximum Value	7.23	236	456	17098	0.51	0.175	78.7	857	3.08	7.22
Median	6.7	140	124	3755	0.02	0.041	40.1	601.515	0.315	4.68
Num. Values	17	10	11	20	8	8	10	10	8	10

NOTE: nr = no reading available

Table 4.27 Statistical Summary of Surface Water Quality Entering Vangorda Creek - Vangorda Plateau Mine Site

STATION: V18, Grum Dump, SE interceptor ditch										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
Date	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.83	110.9	44	24	0.031	0.007	1.812	0.0414	0.028	0.0139
Std. Deviation	0.43	55.2	110	32	0.018	0.008	3.975	0.0925	0.039	0.0206
Minimum Value	7	37	1	1	0.002	0.001	0.044	0.001	0.003	0.001
Maximum Value	8.38	323	628	196	0.06	0.036	21.9	0.61	0.25	0.095
Median	7.88	102.5	6	17	0.02	0.004	0.31	0.02	0.02	0.005
Num. Values	20	38	43	36	41	43	39	43	43	20
STATION: V25, Effluent from treatment plant										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	8.62	84.8	7	427.4	0.0298	0.008	0.17	0.1716	0.022	0.0194
Std. Deviation	1.42	58	5	136.2	0.0228	0.01	0.196	0.1762	0.035	0.0127
Minimum Value	0	1	1	69	0.0005	0.001	0.003	0.001	0.001	0.001
Maximum Value	10.1	392	56	786	0.12	0.052	1.43	0.807	0.4	0.066
Median	8.9	81	5	440	0.02	0.004	0.12	0.11	0.02	0.02
Num. Values	50	87	162	79	117	180	107	185	179	54
STATION: V2, Grum Creek, upstr. of Vangorda Ck										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.67	179.1	200	172.2	0.044	0.024	7.006	0.1903	0.09	0.0218
Std. Deviation	1.17	79.8	711	169.1	0.104	0.047	28.238	0.6119	0.325	0.0427
Minimum Value	0	26	1	24	0.005	0.001	0.01	0.001	0.001	0.002
Maximum Value	8.6	341	5330	849	0.91	0.381	207	4.43	2.92	0.29
Median	7.84	182.5	7	112	0.02	0.009	0.29	0.025	0.02	0.005
Num. Values	50	48	90	72	79	89	73	89	89	58
STATION: V2A, Grum Creek Diversion to Moose Pond										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.96	107	5	260	0.016	0.025	0.2	0.35	0.02	0.019
Std. Deviation	0.53	92	2	224	0.008	0.012	0.23	1	0	0.045
Minimum Value	7.09	42	1	76	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	8.47	172	10	836	0.03	0.041	0.81	3.37	0.02	0.156
Median	8.24	107	5	195	0.02	0.029	0.15	0.05	0.02	0.005
Num. Values	10	2	9	11	11	11	11	11	11	11

Table 4.27 Statistical Summary of Surface Water Quality Entering Vangorda Creek - Vangorda Plateau Mine Site

STATION: V19, Vangorda Pit, NW Inceptor Ditch										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
Date	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	8	60	19	40	0.019	0.007	0.6	0.127	0.023	0.005
Std. Deviation	0.04	26	30	32	0.014	0.006	0.59	0.09	0.006	0
Minimum Value	7.95	12	1	5	0.0005	0.002	0.05	0.01	0.01	0.005
Maximum Value	8.03	88	116	110	0.04	0.017	1.76	0.28	0.03	0.005
Median	8.02	60	6	29	0.02	0.003	0.39	0.08	0.02	0.005
Num. Values	3	10	15	13	14	15	12	15	15	3
STATION: V25BSP, Below Sheep Pond at the weir										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.67	62	24.59	187	0.025	0.021	1.33	0.14	0.03	0.009
Std. Deviation	0.45	14	54.78	162	0.034	0.019	2.96	0.125	0.04	0.01
Minimum Value	6.65	16	0.4	1	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	9.6	102	293	641	0.2	0.112	15.05	0.84	0.23	0.05
Median	7.67	63	5	114	0.02	0.016	0.23	0.1	0.02	0.005
Num. Values	83	26	88	88	87	87	87	87	87	87
STATION: V17A, Runoff from ore transfer pad										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.68	34	11	12	0.019	0.011	0.55	0.09	0.03	0.005
Std. Deviation	0.47	16	14	11	0.011	0.009	0.55	0.2	0.05	0.001
Minimum Value	6.77	4	1	3	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	8.5	54	56	48	0.06	0.033	2.03	0.98	0.25	0.008
Median	7.64	36	5	8	0.02	0.009	0.28	0.03	0.02	0.005
Num. Values	22	10	21	23	23	23	23	23	23	23
STATION: V6A, AEX Creek										
	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.65	83.7	12	30.6	0.026	0.008	1.084	0.0362	0.026	0.0083
Std. Deviation	0.38	71.6	23	117.2	0.019	0.01	5.575	0.0523	0.023	0.0089
Minimum Value	6.39	21	1	3	0.001	0.001	0.01	0.001	0.003	0.001
Maximum Value	8.5	514.9	152	990	0.09	0.064	48.3	0.34	0.13	0.05
Median	7.66	66	5	13	0.02	0.005	0.17	0.02	0.02	0.005
Num. Values	53	51	80	70	78	81	75	81	81	57

Table 4.28 Statistical Summary of Receiving Surface Water Quality - Vangorda Plateau Mine Site

STATION: V27, Vangorda Creek, just upstr. of Shrimp

	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.83	72.2	18	44	0.02	0.0081	0.349	0.0643	0.016	0.006
Std. Deviation	0.46	54.6	67	33	0.016	0.008	0.614	0.0702	0.009	0.0046
Minimum Value	6.66	5	1	5	0.001	0.001	0.005	0.012	0.001	0.0009
Maximum Value	8.6	247	405	127	0.05	0.0261	2.84	0.44	0.037	0.024
Median	7.8	63	5	34	0.02	0.006	0.152	0.05	0.02	0.005
Num. Values	16	23	36	26	34	37	32	37	37	22

STATION: VGMAIN, Main Fork Vangorda Creek

	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.99	92	11.4	81		0.0161	0.335	0.054	0.017	0.01
Std. Deviation	0.33	0	24.9	59		0.0114	0.486	0.051	0.011	0.012
Minimum Value	7.21	92	0.2	7		0.002	0.01	0.01	0.005	0.002
Maximum Value	8.6	92	125	254		0.047	2.12	0.32	0.05	0.05
Median	8.01	92	3.5	74		0.012	0.11	0.04	0.01	0.005
Num. Values	34	1	46	46		45	45	45	45	45

STATION: V5, west fork Vangorda Creek

	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	8.03	192.6	55.8	118	0.028	0.0354	1.748	0.0482	0.023	0.0115
Std. Deviation	0.37	103	162.1	101	0.043	0.1954	4.964	0.1392	0.029	0.0123
Minimum Value	7.09	5	1	15	0.001	0.001	0.005	0.0004	0.001	0.0002
Maximum Value	8.78	487	1020	532	0.23	1.945	37.6	1.31	0.22	0.07
Median	8.05	174	10	82	0.02	0.012	0.27	0.0155	0.01	0.005
Num. Values	68	34	98	85	89	98	89	98	98	77

STATION: V8, lower Vangorda Creek

	PH-F	ALK-T	TSS	SO4-T	AS-T	CU-T	FE-T	ZN-T	PB-T	NI-T
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.94	131.5	34.8	95	0.031	0.0163	1.166	0.0453	0.035	0.0165
Std. Deviation	0.37	68.1	83.2	87	0.037	0.0276	3.704	0.0502	0.059	0.0458
Minimum Value	7	5	1	0	0.001	0.001	0.01	0.0054	0.001	0.0002
Maximum Value	8.6	286	590	703	0.2	0.235	31.1	0.364	0.46	0.425
Median	8	124	6	85	0.02	0.011	0.21	0.03	0.02	0.006
Num. Values	78	61	138	96	113	137	111	136	136	87

Table 4.29 Statistical Summary of Groundwater Quality - Vangorda Plateau Mine Site

STATION: P96-9A, Grum Rock Dump									
	PH-F	ALK-T	SO4-D	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.02	146	338	0.017	0.011	1.34	0.02	0.01	0.007
Std. Deviation	0.3	67	300	0.014	0.01	3.66	0.03	0.01	0.004
Minimum Value	6.51	50	52	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	7.43	203	948	0.04	0.029	11.76	0.07	0.02	0.017
Median	7.09	166	192	0.015	0.007	0.19	0.01	0.01	0.005
Num. Values	8	4	10	10	10	10	10	10	10

STATION: P96-9B, Grum Rock Dump									
	PH-F	ALK-T	SO4-D	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.79	112	175	0.013	0.005	0.13	0.02	0.02	0.006
Std. Deviation	0.32	48	61	0.008	0.005	0.1	0.01	0.01	0.002
Minimum Value	7.31	58	96	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	8.31	154	321	0.02	0.017	0.31	0.04	0.02	0.009
Median	7.79	119	159	0.02	0.004	0.12	0.01	0.02	0.005
Num. Values	7	4	9	9	9	9	9	9	9

STATION: V34, groundwater well GW94-01									
	PH-F	ALK-T	SO4-D	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.68	455	47	0.015	0.007	1.75	0.033	0.023	0.007
Std. Deviation	0.4	137	93	0.011	0.007	6.15	0.049	0.028	0.006
Minimum Value	6.79	339	21	0.001	0.002	0.01	0.01	0.001	0.002
Maximum Value	8.14	888	470	0.04	0.031	23.98	0.16	0.12	0.023
Median	7.81	426	26	0.02	0.005	0.09	0.01	0.02	0.005
Num. Values	18	14	23	15	15	15	15	15	15

STATION: V35, groundwater well GW94-02									
	PH-F	ALK-T	SO4-D	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.31	444	241	0.017	0.01	0.25	0.028	0.015	0.008
Std. Deviation	0.33	58	217	0.022	0.008	0.49	0.033	0.006	0.006
Minimum Value	6.77	365	57	0.002	0.002	0.01	0.01	0.001	0.002
Maximum Value	7.83	589	805	0.09	0.032	1.92	0.11	0.02	0.021
Median	7.4	433	156	0.02	0.008	0.09	0.01	0.02	0.005
Num. Values	18	14	23	15	15	15	15	15	15

STATION: V36, groundwater well GW94-03									
	PH-F	ALK-T	SO4-D	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.24	424	320	0.029	0.01	0.35	0.021	0.014	0.008
Std. Deviation	0.41	28	88	0.025	0.005	0.7	0.017	0.006	0.008
Minimum Value	6.27	394	217	0.005	0.002	0.01	0.01	0.001	0.005
Maximum Value	7.78	484	509	0.09	0.019	2.68	0.06	0.02	0.033
Median	7.29	426	296	0.02	0.01	0.12	0.01	0.015	0.005
Num. Values	13	8	16	14	14	14	14	14	14

STATION: V37, groundwater well GW94-04									
	PH-F	ALK-T	SO4-D	AS-D	CU-D	FE-D	ZN-D	PB-D	NI-D
	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mean	7.94	404	79	0.015	0.006	0.94	0.022	0.017	0.006
Std. Deviation	0.7	82	52	0.01	0.004	3.12	0.038	0.006	0.004
Minimum Value	6.07	261	12	0.005	0.002	0.01	0.01	0.01	0.005
Maximum Value	8.8	523	279	0.04	0.015	12.2	0.159	0.029	0.02
Median	8.02	426	69	0.02	0.005	0.08	0.01	0.02	0.005
Num. Values	15	12	21	15	15	15	15	15	15

Location V4 is in Shrimp Creek just upstream of the confluence with the main stem of Vangorda Creek. Sulphate concentrations are less than 134 mg/L with an average of 50 mg/L. The concentration of total zinc has been less than 0.18 mg/L with an average of 0.028 mg/L. PH has averaged 7.58 over the period of record. Sulphate generally fluctuates seasonally with higher concentrations observed in the winter season.

Upper Vangorda Creek (V1)

"Upper" Vangorda Creek is sampled upstream of mine activities at V1. Specifically, location V1 is in Vangorda Creek immediately upstream of the headworks to the Vangorda Creek Diversion flume.

Water quality has been consistent at location V1 over the life of the mine. PH is slightly alkaline and has ranged from 6.7 to 8.6. The average pH, sulphate and total zinc concentrations over the period of record (1988 to 2001) are 7.55, 9.5 mg/L and 0.34 mg/L, respectively.

4.2.8.3 Open Pits and Rock Dumps

Grum Pit (V7, V23, V23A)

Location V7 is outflow from the underground exploration workings. Some limited water quality data is available from 1989 to 1992. The average pH, sulphate and total zinc concentrations were 7.3, 91.4 mg/L and 1.1 mg/L, respectively. Mining in the Grum Pit intersected the underground workings in 1997, which created a hydraulic connection that effectively drains the underground workings into the pit. Given that the elevation of the portal is higher than the overflow elevation from the open pit, there is no possibility of outflow from the portal (V7) provided that the hydraulic connection with the pit remains in place.

Water quality in the Grum Pit has been monitored at locations V23 (pit pond) and location V23A (Grum Pit water holding pond). Location V23A was sampled routinely during mine operations because it represented the combination of all sources in the pit such as various collection sumps and the underground workings. Location V23 was sampled sporadically through mine operations and regularly since mine shut down (February 1998) because it represents the accumulation of water in the pit in the absence of dewatering activities.

The concentrations of total zinc and sulphate have increased since mine shut down, which is attributed to the flushing of oxidation products from mineralized material on pit benches. The average concentrations of total zinc prior and subsequent to mine closure were 0.66 mg/L and 6.15 mg/L, respectively. The average concentrations of sulphate prior and subsequent to mine closure were 181 mg/L and 316 mg/L, respectively.

Grum Rock Dump (V14, V15, V16)

Locations V14, V15 and V16 are surface seepages at the toe of the Grum Rock Dump area. Locations V14 and V16 are not specifically located in the field but are defined as part of possible future construction of a toe seepage collector ditch. Location V15 is located in a small draw which naturally collects some surface flow below the rock dump including the area occupied by the sulphide cell. Flow from this location enters Grum Creek upstream of monitoring location V2.

Locations V14 and V16 have been sampled primarily in freshet in locations where flow is present. Location V14 (southwest toe area) has been sampled twice with concentrations of total zinc and sulphate of 0.02/0.04 mg/L and 4/1,740 mg/L, respectively. Station V16 (located on a north tributary of Grum Creek) has been sampled sporadically. The average concentrations of sulphate and total zinc are 119 mg/L and 0.02 mg/L, respectively.

Samples have been collected from Station V15 several times a year since 1995. The average concentration of total zinc is 0.13 mg/L with a range from 0.01 mg/L to 2.94 mg/L. PH is neutral to slightly alkaline in a range from 7.03 to 8.48 with an average of 7.79. The average concentration of sulphate is 297 mg/L with a range from 29 mg/L to 1052 mg/L. An increasing trend is apparent for sulphate.

Vangorda Open Pit (V22)

Vangorda Pit water is monitored at location V22. During the period of active mining (pre-1998) when pit dewatering was underway, location V22 was sampled at the outflow of the dewatering pipe. Following the suspension of mining activities (and dewatering) in February 1998, location V22 has been sampled in the pit pond. The water that has accumulated in the Vangorda open pit since mine shut down has included natural inflows and periodic inflows from Little Creek Dam and the Sheep Pad pond.

The average pH, sulphate and total zinc concentrations over the period of record (1991 to 2001) are 7.1, 531 mg/L and 29.7 mg/L, respectively. The highest concentration of total zinc is anomalous and zinc has generally been less than 50 mg/L. However an increasing trend is observed for zinc since mine shut down in 1998. Total zinc concentrations were observed to increase with depth in a 2000 pit survey and it is possible that the wide range in zinc concentrations in surface grab samples may be affected by seasonal effects such as pond turnover. Sulphate concentrations range from 98 mg/L to 3,020 mg/L although sulphate has generally been less than 1,000 mg/L.

Vangorda Rock Dump (LCD, V28 to V38, V21/V21A)

Little Creek Dam (sample LCD) is the collection point for local area run off and precipitation and run off from the Vangorda Rock Dump. Prior to mine shut down in 1998, the Vangorda Pit was dewatered directly into Little Creek Dam and all water was pumped from Little Creek Dam to the Water Treatment Plant for treatment and discharge. Since the mine shut down, the Vangorda Pit has not been dewatered and run off water that has accumulated in Little Creek Dam has been pumped into the Vangorda Pit on a seasonal (summer) basis. The water that has accumulated in Little Creek Dam has been non-compliant for total zinc and, therefore, can not be discharged into Vangorda Creek. Little Creek Dam was sampled annually from 1997 to 2000 with average pH, sulphate and total zinc concentrations of 7.44, 465 mg/L and 7.70 mg/L, respectively. No clear temporal trends are apparent.

Six transverse drains were constructed in 1994 that pass toe seepage from the Vangorda Rock Dump through the till containment berm that rings the dump. These six drains are monitoring locations V28 through V33 for drain nos. 1 through 6, respectively. Only three drains, nos. 3, 5 and 6, have consistent flows and sampling has occurred on a several times per year basis since 1994 at these three drains. Flows at these drains have been uniformly low compared to water balance estimates. Repairs were made to drain no. 6 in 2000 and 2001 that may have affected flow at this location. Drain no.1 has never passed any flow and drain nos. 2 and 4 have been sampled during occasional freshets only. Water quality at drain nos. 5 and 6 has been generally poorer than drain no. 3, which is attributed to the preferential collection of seepage from the sulphide cell to drain nos. 5 and 6 and from the phyllite cell to drain no. 3.

The average pH values for drain nos. 3, 5 and 6 (stations V30, V32 and V33, respectively) are 6.03, 4.30 and 6.63, respectively. The pH at drain no.5 has decreased over time from around 5.5 in 1995 to around 3.6 in 2001. The average sulphate concentrations for these three drains are 2,906 mg/L, 9,019 mg/L and 4,267 mg/L, respectively. The average concentrations of dissolved zinc are 279 mg/L, 2,118 mg/L and 1,030 mg/L, respectively. The concentrations of sulphate and zinc display clear increasing trends since 1997 at drain no. 5 and since 2000 at drain no. 6 but no clear temporal trends at drain no. 3.

Location V21/V21A is the Vangorda Dump seepage collector ditch. Flow from the ditch into Little Creek Dam is typically nil. Water has been sampled during freshet in some previous years but the flow consisted largely of local snow melt and not dump seepage and, therefore, the analytical results are not representative or relevant.

4.2.8.4 Water Entering Vangorda Creek

Grum Interceptor Ditch (V18)

Location V18 is in the Grum Interceptor Ditch immediately below the point of entry of water pumped from a series of deep dewatering wells around the eastern perimeter of the Grum Pit (pre-1998) and upstream of the entry of effluent from the Water Treatment Plant. Samples were collected onm an occasional basis from 1991 to 1998.

The average pH, sulphate and total zinc concentrations are 7.8, 10.5 mg/L and 0.41 mg/L, respectively. Sulphate concentrations were generally below 50 mg/L although one anomalously high concentration was reported in 1997.

Water Treatment Plant Effluent (V25)

Station V25 is water released from the Water Treatment Plant Clarification Pond. This location is specifically required to be compliant with the terms of the Water License. Data is available for periods of effluent discharge from 1991 to 1997. The average pH, sulphate and total zinc concentrations are 8.62, 427 mg/L and 0.17 mg/L, respectively.

Grum Creek (V2, V2A)

Location V2 is in Grum Creek upstream of entry into Vangorda Creek. The changes to the water management system implemented during 1995 diverted a large portion of the Grum Creek catchment area into the Sheep Pad Pond and this, in combination with the interception of shallow ground water by the Grum Pit, reduced the flow in Grum Creek substantially from its original levels. A portion of Grum Creek is diverted (since 1996) into the Moose Pond, which is a groundwater recharge zone, and is sampled as station V2A.

Data is available for station V2 from 1988 to 2001. Water quality improved substantially in 1995 through reduced concentrations of total suspended solids and some metals. Over the entire period of record, the average pH, sulphate and total zinc concentrations are 7.7, 172 mg/L and 0.19 mg/L, respectively. Distinct increasing trends are apparent since 1998 for sulphate and since 2000 for total zinc.

Sampling at station V2A commenced in 1997 subsequent to installation of the Moose Pond diversion. The averages for pH, sulphate and total zinc concentrations are 7.96, 260 mg/L and 0.35 mg/L, respectively. Distinct increasing trends are apparent since 1998 for sulphate and since 2000 for total zinc.

Vangorda Creek Plunge Pool (V19, V25BSP)

Location V19 is the Vangorda northwest interceptor ditch, which drains into Vangorda Creek at the plunge pool. A sump was built in 1996 near the discharge end of the ditch that acts as a groundwate recharge area. Samples were collected on an intermittent basis from Station V19 from 1996 to 1998. The average pH, sulphate and total zinc concentrations are: 8.0, 40 mg/L and 0.13 mg/L, respectively.

Location V25BSP ("Below Sheep Pond") consists of all water that enters Vangorda Creek via the Sheep Pad Pond including water discharged from the Water Treatment Plant/clarification pond and natural run off that is collected in the Grum Interceptor Ditch. Typically there is no flow at this station during the winter season. Station V25BSP has been sampled regularly from 1996 to 2001. The average pH, sulphate and total zinc concentrations are 7.7, 187 mg/L and 0.14 mg/L, respectively. Sulphate concentrations have fluctuated widely with periods of higher concentrations corresponding to periods of effluent release from the Water Treatment Plant. Variations in the concentration of total zinc also correlate with periods of effluent release from the Water Treatment Plant, although this is less pronounced than sulphate.

AEX Creek (V17A, V6A)

Location V17A is a small stream that contains natural run off from the slopes north of the Grum Pit as well as surface run off from the north side of the Ore Transfer Pad. This stream then passes into AEX Creek. Location V6A is AEX Creek immediately upstream of its entry into the West Fork of Vangorda Creek. This water includes the tributary sampled at location V17A.

Sampling of location V17A was initiated in 1996 and has continued regularly since that time. The average pH, sulphate and total zinc concentrations are 7.68, 12 mg/L and 0.09 mg/L, respectively, including one anomalously high zinc concentration of 0.98 mg/L.

Station V6A has been sampled since 1989. The average pH, sulphate and total zinc concentrations are 7.66, 31 mg/L and 0.033 mg/L.

4.2.8.5 Receiving Water

Main Stem (V27, VGMAIN)

Location V27 is the main stem of Vangorda Creek upstream of the confluence with Shrimp Creek and represents the initial receiving water quality downstream of the mine site. All surface water from the Grum Rock Dump, the Grum Interceptor Ditch/Sheep Pad Pond, and the Vangorda north east interceptor ditch reports to location V27.

Station V27 has been sampled since 1991. The average pH, sulphate and total zinc concentrations over the period of record are 7.83, 44 mg/L and 0.064 mg/L, respectively. Variations in sulphate concentrations generally correspond to periods of effluent release from the Water Treatment Plant wherein higher concentrations are observed during periods of effluent release.

Location VGMAIN is located in the main stem of Vangorda Creek immediately upstream of the confluence with the West Fork. This location provides important information regarding the relative impacts of the main stem and West Fork on the fish rearing habitat in lower Vangorda Creek.

Station VGMAIN has been sampled routinely since 1997. Water quality is generally similar to locaiton V5. The concentrations of total zinc range from below detection (0.01 mg/L) to 0.32 mg/L and average 0.054 mg/L. PH ranges from 7.21 to 8.6 with an average of 7.99. Sulphate concentrations average 81 mg/L and show a seasonal trend with higher concentrations observed in the winter season.

West Fork (V5)

Location V5 is the West Fork of Vangorda Creek just upstream of the confluence with the Main Fork. Location V5 receives drainage from AEX Creek (location V6A) and, thereby, potential influences from surface drainage from the north portion of the Ore Transfer Pad. Both AEX Creek and the West Fork of Vangorda Creek receive run off from the Vangorda ore haul road and the mine access road. Road maintenance activities such as re-surfacing or application of dust suppression products or spills could potentially affect water quality at V5. There is a small portion of the Grum northwest rock dump (calcareous phyllite) that drains into the West Fork of Vangorda Creek between AEX Creek and location V5. This portion of the Grum Rock Dump does not include any part of the sulphide cell.

Station V5 has been sampled routinely since 1988. PH ranges from 7.09 to 8.78 with an average of 8.03. Total zinc concentrations range from 0.0004 mg/L to 1.31 mg/L with an average of 0.0482 mg/L. The concentration of total suspended solids ranges from below detection (<1 mg/L) to 1,020 mg/L and varies seasonally with greater concentrations generally observed in spring. Sulphate concentrations range from 15 to 532 mg/L. The concentrations of sulphate exhibit a general seasonal trend in which concentrations are generally greater during the winter season.

Lower Vangorda Creek (V8)

Location V8 is in the juvenile fish rearing habitat in the first 1 to 2 km above the Pelly River and downstream of the confluence of the West and Main Forks.

Station V8 has been sampled routinely since 1988. The average pH, sulphate and total zinc concentrations over the entire period of record are 7.94, 95 mg/L and 0.045 mg/L, respectively. Sulphate concentrations mirrored the trend observed at upstream locations V5 and VGMAIN, with greater concentrations observed in the winter season.

Water quality in Lower Vangorda Creek (V8) appears to display the influences of mining activities. The following analysis is repeated from GLL 2002.

The long-term trends in water quality in lower Vangorda Creek (location V8) from 1988 to 1999 indicate that mining activities on the Vangorda Plateau have had an observable influence on concentrations of total suspended solids, total SO_4 and total Zn, in the lower Vangorda Creek. It is also evident that water quality in the West Fork has a significant effect on water quality in the fish-rearing habitat, particularly in terms of total suspended solids and SO_4. The information also confirms that there are significant concentrations of suspended sediments that can enter the Main Fork of Vangorda Creek downstream of the mine site that are not related to mine activities.

During the period from 1988 to 1990 (3 years), there was a relatively small amount of work done in overburden stripping for the Grum Pit. Although relatively few water samples were collected during this period, water quality at location V8 during this period could be taken as representative of conditions largely unaffected by mine operations. This is evident through relatively low concentrations of total suspended solids, total Zn, total lead and arsenic although the concentration of total zinc was recorded at or just greater than the federal recommended guideline for the protection of freshwater aquatic life (CCME) on two occasions. The average concentration of total suspended solids during this period was 12 mg/L with a peak value of 30 mg/L. The average and peak concentrations of total zinc were 0.02 mg/L and 0.04 mg/L, respectively.

During 1991 and 1992, a substantial overburden stripping program was carried out on the Vangorda Plateau, mining was performed in the Vangorda Open Pit and the Vangorda ore haul road was constructed. The mining activity is reflected in the water quality in lower Vangorda Creek. The concentrations of TSS, total Zn, Fe, Pb, As and Cu all show an increase in average and peak values during this period. The average concentration of total suspended solids during this period was 62 mg/L with a peak value of 590 mg/L. The average and peak concentrations of total zinc were 0.06 mg/L and 0.36 mg/L, respectively.

During 1993 and 1994, no mining operations were performed on the Vangorda Plateau. Although fewer water samples were collected during this period than during the previous operating period, reduced levels of total suspended solids and total zinc were observed in lower Vangorda Creek although the reduced levels were generally greater than those observed during the period preceding mine activities (1988 to 1990). The average concentration of total suspended solids during 1993 and 1994 was 40 mg/L with a peak value of 112 mg/L. The average and peak concentrations of total Zn were 0.03 mg/L and 0.11 mg/L, respectively.

During 1995, 1996 and 1997, mining activities on the Vangorda Plateau were resumed including discharge of treated effluent from the Water Treatment Plant. Even in light of the resumption of mine operations, water chemistry in lower Vangorda Creek during this period did not show a return to the chemistry observed during the previous period of mine operations on the Vangorda Plateau (1991 and 1992). The concentrations of TSS, total Zn, Pb and As observed from 1995 through 1997 remained similar to those observed during the shut down period of 1993 and 1994 with the exception of a peak concentration of total suspended solids. During the period from 1995 to 1997, the average concentration of total suspended solids was 29 mg/L with a peak value of 271 mg/L. The average and peak concentrations of total Zn were 0.04 mg/L and 0.12 mg/L, respectively.

During the period from 1998 to 2001, mining activities were again suspended including cessation of discharge of treated effluent from the Water Treatment Plant. Water quality in lower Vangorda Creek from 1998 to 2001 was generally similar to that observed during the two preceding periods (mine shut down in 1993/1994 and mine operation from 1995 to 1997) although some isolated high peak concentrations of total suspended solids, total zinc and total arsenic were observed. During the period from 1998 to 2001, the average concentration of total suspended solids was 16 mg/L with a peak value of 184 mg/L. The average and peak concentrations of total zinc were 0.04 mg/L and 0.26 mg/L, respectively, excluding the unexplained extreme result reported for March 2001.

4.2.9 VANGORDA PLATEAU MINE SITE GROUNDWATER QUALITY

4.2.9.1 Overview

Groundwater at the Vangorda Plateau Mine site is routinely sampled to assess water quality. The locations for the monitoring points are provided on Figure 4.14. Analytical results are documented in a computer database (EQWin). The following groundwater sampling stations (nested wells) are generally sampled twice per year basis beginning with their installation dates:

- P96-9A/B - located at toe of Grum Rock Dump near V15
- GW94-01 to 04 - located at perimeter of Vangorda Rock Dump
- P2001-2/3 - located at "nose" of Vangorda Rock Dump

Table 4.29 provides statistical summaries of water quality at these wells. Graphs representing concentrations of selected parameters of environmental concern including field pH, total suspended solids, total sulphate, total zinc, lead, iron, nickel, arsenic and copper are provided in Appendix H. Tables listing the analytical results for the groundwater monitoring points are provided in Appendix I.

4.2.9.2 Grum Rock Dump

Groundwater wells P96-9A and P96-9B are nested in one drill hole in a bedrock valley at least 20 metres deep near surface monitoring location V15 at the toe of the Grum Rock Dump. The ground water wells allow monitoring of ground water flow that is assumed to originate, in part, from the portion of the Grum Rock Dump that includes the sulphide cell.

The deeper installation (P96-9B) which is screened over the interval from 16.5 to 18.0 metres below surface typically flows during summer and fall (i.e. piezometric head higher than the ground elevation). These wells have been sampled approximately twice a year since 1996. The average pH's for P96-9A and 96-9B are 7.02 and 7.79, respectively, with ranges from 6.51 to 7.43 and 7.31 to 8.31, respectively. Concentrations of dissolved zinc for P96-9AS and P96-9B range from 0.01 mg/L to 0.07 mg/L and 0.01 mg/L to 0.04 mg/L, respectively, with averages of 0.02 mg/L each. Sulphate concentrations for P96-9A and P96-9B range from 52 mg/L to 948 mg/L and 96 mg/L to 321 mg/L, respectively, with averages of 338 mg/L and 175 mg/L, respectively. Sulphate concentrations display an increasing trend through 2000 and 2001 in the shallow well (96-9A).

4.2.9.3 Vangorda Rock Dump

Standpipe piezometers labeled GW94-01 through GW94-04 are located around the toe of the Vangorda Rock Dump and allow monitoring of ground water seeping below the collector ditch. These peizometers have been sampled since 1996. The concentrations of sulphate in these wells range from 12 mg/L to 805 mg/L and do not display any clear temporal trends. The concentrations of dissolved zinc in these wells range from <0.01 mg/L to 0.16 mg/L and do not display any clear temporal trends.

Standpipe piezometers P2001-02 and P2001-03 were installed in 2001 below the "nose" of the dump and these were sampled once in 2001 (their initial sampling) in September. The screened interval in P2001-03 is at the bedrock interface at 61.6 metres depth. The initial samples for these wells contained less than 0.014 mg/L dissolved zinc. The concentration of sulphate in the deep well (P2001-03) was 89 mg/L and was 511 mg/L in P2001-02B (installed at 13.9 metres). Additional sampling will be required to determine consistency or trends at these locations.

4.2.10 2002 PRELIMINARY CONTAMINANT LOADING STUDY

A preliminary contaminant loading study was completed in 2002 for sulphate and total zinc in Rose and Vangorda Creeks. The details of this study are provided in Appendix A and a summary is provided below.

The three water balances (North Fork of Rose Creek, Rose Creek at X14 and Vangorda Creek) that are summarized in Section 4.2.4 and described in Appendix A were combined with measured and extrapolated concentrations of sulphate and zinc to provide calculated loadings for each of the time steps defined in the water balances. Total zinc was used for this study (rather than dissolved zinc) because the record of analysis for total zinc is much more extensive.

Loadings for the three areas were calculated in two ways:

1. A "predicted" loading was calculated as the sum of the individual source terms.
2. An "observed" loading was calculated from sulphate and zinc concentrations and extrapolated flows at the downstream monitoring location for each area: location X2 for the North Fork of Rose Creek, location X14 for Rose Creek and location V8 for Vangorda Creek.

The predicted and observed loadings were compared as a means of assessing the ability of the model to adequately predict the actual loadings.

The loading calculations for the North Fork of Rose Creek provide the following observations:

1. The model predicts 111% of the observed sulphate loading at location X2, which is considered to be an excellent correlation for this stage of study.
2. The model predicts 77% of the observed zinc loading at location X2; however, the model predicts 90% of the observed loading when one poorly correlated time step (time step no. 10) is excluded, which is considered to be an excellent correlation for this stage of study.
3. The largest source sulphate loading (over the entire period of study) was natural runoff upstream of location R7 (43% of total) followed by the Faro Creek Diversion and the Intermediate Rock Dump (23% and 22%).

4. Given item no. 2 above, the largest source of zinc loading (over the entire period of study) was natural runoff upstream of location R7 (52% of total) followed by the Faro Creek Diversion (31%).

The loading calculations for Rose Creek at location X14 provide the following observations:

1. The model predicts 61% of the observed sulphate loading and 68% of the observed zinc loading at location X14, which suggests an imprecise or unknown source term that requires further investigation.
2. The trends in loadings indicate summer peaks corresponding to periods of surface release from the Cross Valley Pond (X5).
3. The largest source of predicted sulphate loading (over the entire period of study) was surface release from the Cross Valley Pond (47%) followed by seepage from the Cross Valley Dam (29%).
4. The largest source of predicted zinc loading (over the entire period of study) was the North Fork of Rose Creek (50%) followed by surface release from the Cross Valley Pond (32%).

The loading calculations for Vangorda Creek at location V8 provide the following observations:

1. The model predicts 73% of the observed sulphate loading at location V8, which is considered adequate for this stage of study but should be followed with further investigation.
2. The model predicts 74% of the observed zinc loading at location V8, which is considered adequate for this stage of study but should be followed with further investigation.
3. The largest source of sulphate loading (over the entire period of study) was the West Fork of Vangorda Creek (56%) followed by the Grum Rock Dump via Grum Creek (18%).
4. The largest sources of zinc loading (over the entire period of study) were the West Fork of Vangorda Creek (25%) and the Grum Rock Dump via Grum Creek (23%) followed by the Vangorda Creek Diversion Channel (19%) and the Grum Interceptor Ditch (17%).

4.2.11 SOLIDS GEOCHEMISTRY / ACID ROCK DRAINAGE

4.2.11.1 Rose Creek Tailings Facility

Summary of Acid Generating Potential

The Rose Creek Tailings Facility contains tailings with demonstrated strong acid generating potential (i.e. surface tailings with pH less than 1.5). Oxidation of the exposed tailings over the life of the mine has produced a store of soluble oxidation products, including sulphates, soluble metal salts and acidity. A large portion of the oxidation products appear to be stored in the tailings, due to the buffering of underlying unoxidized tailings.

A comprehensive hydrogeological and geochemical investigation of the tailings facility was conducted in 2001 (GLL 2002c) that included the collection of in-situ samples of tailings and subsequent analysis by static and kinetic test procedures. The study included a comparison of the 2001 information to similar geochemical information that had been collected 11 to 15 years earlier (1986 to 1990) through several studies. A summary of the conclusions of the 2001 geochemical interpretation as repeated from GLL 2002c is as follows:

1. Oxidation of tailings in the unsaturated zone has increased since the 1988-1990 studies as displayed primarily by lower paste pH to greater depths.
2. The water level within the tailings controls the extent of oxidation. This is an important consideration for reclamation since lowering the water elevation in the Intermediate Pond will lower the water level in the tailings upgradient of the pond.
3. Oxidation products (represented by sulphate and zinc) have reached the tailings/native soil interface at most locations. The sulphate "front" has migrated deeper than the zinc "front". This is interpreted to be due to attenuation of zinc enabled by neutral pH within the saturated zone of tailings.
4. Tailings in the southeast end of the Second Impoundment and unsaturated tailings in the northern area of the Original Impoundment are highly oxidized relative to other areas. This is considered to be due to the predominantly coarse particle size and well-drained, unsaturated conditions that have existed at times over the life of the operation.
5. The southeast end of the Second Impoundment and the northern area of the Original Impoundment are calculated to be the source of approximately 75% of the sulphate load in the aquifer. These two areas occupy only approximately 20% of the total surface area of the tailings impoundments. This suggests that surface remediation of these areas may represent an efficient means of substantially reducing contaminant loading to the aquifer.

Additional excerpts from the 2001 geochemical interpretation are provided below and complete details are contained in GLL 2002c.

Oxidation Over Time

The location of the water table and/or degree of saturation of the tailings is limiting the depth of oxidation in the tailings. In general, field rinse pH data suggests that tailings located above the current water table elevation and/or capillary fringe have undergone a substantial decrease in pH in comparison to values measured in 1988. At locations where the water table is absent, the tailings have undergone oxidation throughout the entire profile. In addition, the largest decreases in NP levels have also typically occurred above the water table (i.e. in the unsaturated zone), suggesting the consumption of buffering minerals by acid generated from oxidation of the tailings. Small decreases in NP, in comparison to the 1988 data, are generally observed below the water table, which may be the result of the downward movement of acidity from the unsaturated zone into the saturated zone of the tailings. Thus, it appears that the most significant changes in the geochemistry of the tailings, compared to the 1988 data, have occurred above the water table. Given the large AP available in the tailings, it is anticipated that oxidation and the associated production of soluble contaminants will continue to occur in the unsaturated portion of the tailings.

Oxidation Front

The levels of sulphate and zinc salts present in the oxidized zone of the tailings vary with depth and area within the tailings impoundments. The variability is likely the result of differences in the rate of oxidation of the tailings. Factors such as the grain size of the tailings, the changing water table elevation in the areas over time, location relative to historic tailings discharge points, the frequency of fresh tailings coverage, lime addition rates, the location of historic and current surface ponds, as well as other factors, would all have influenced the rate of oxidation of the tailings.

The location of the sulphate salt front typically defines the furthest extent of significant contamination in the tailings. The zinc salt front generally appears to be located above the sulphate front, which indicates slower release of zinc relative to sulphate. The zinc salt front is observed to be closely related to the location of the acidity front, suggesting that retardation of the zinc front may be related to the pH of the tailings.

Oxidation Breakthrough

Active oxidation, and the subsequent transport of soluble products downward through the tailings is a progressive process. In the absence of remedial action, oxidation of tailings resulting in the further depletion of NP and the production of addition soluble products will continue. Thus, it is reasonable to conclude those soluble levels of sulphate and zinc present in the tailings will continue to increase with depth over time. These increases will not be uniform but will vary depending upon the location of the tailings, amount of oxidation of the tailings, grain size, location of the water table, historic operating practices and infiltration rates of water for transport of oxidation products.

The shake flask extraction data indicate that elevated levels of sulphate salts are present at the bottom of the tailings (i.e. breakthrough) at locations P01-09, P01-07, P01-05, and A7-1 (unsaturated tailings in north corner of Original Impoundment), with soluble sulphate levels of 3060 mg/kg, 1131 mg/kg, and 2646 mg/kg, and 7050 mg/kg, respectively. The extraction data also suggests that breakthrough of zinc fronts to the bottom of the tailings has occurred at locations P01-09 and A7-1 with soluble zinc levels of 303 mg/kg and 1044 mg/kg, respectively.

The extraction data suggests that locations P01-09 and A7-1 appear to be the most significant sources of sulphate and zinc to the underlying native sediments at the present time. Location P01-05 may also be contributing elevated levels of sulphate to the native sediments.

Effects of Historical Operating Practices

The greater degree of oxidation observed at location P01-09 relative location P01-07 may be due to the deposition of relatively younger and finer grained tailings in surface in the western area of the Second Impoundment in 1986.

The construction of the Intermediate Impoundment in 1981, and subsequent raises in 1988, 1989, and 1991, would have resulted in an increase in the elevation of the water table in the Original and Second Impoundments. Unsaturated tailings, that had been undergoing active oxidation, would have been submerged effectively preventing further oxidation. This may explain the observed decrease in rinse pH below the current water table elevation at location P01-09.

Locations where the tailings tended to remain wetter over time could be expected to undergo less oxidation resulting in the production of lower levels of soluble products. Areas where the tailings tended to be dryer over time could be expected to undergo a greater degree of oxidation resulting in the production of higher levels of soluble products. As a result, although oxidation of tailings has been observed to be occurring in all three impoundments, the rate of oxidation, and thus the level of soluble products, appears to vary significantly depending on the location and conditions, and not just on the length of time the tailings have been in the impoundments.

Links with Groundwater Quality

In general, groundwater quality data appear to correlate with the shake flask extraction data. Elevated levels of aqueous sulphate and zinc are typically associated with elevated levels of sulphate and zinc salts in the tailings. It also appears that the sulphate and zinc salts become more soluble (i.e. higher aqueous concentrations) at lower pH values.

Groundwater quality in monitoring wells screened near the base of the tailings at locations P01-10, P01-08 and P01-07 is relatively good as compared to other wells screened in tailings. These wells are all also located below the oxidation front (as determined from sulphate salts) at each location. The relatively good groundwater quality may be directly related to the determination that the oxidation front has not progressed to the depths of the monitoring wells at those locations.

Native Sediments

As characterized by test pit sample TP9, the native sediments at the site are net acid consuming and contain no significant levels of soluble products. Sorption testing conducted during the 1988 program suggested that the sediments have significant attenuation potential. The results of 2001 sorption testing confirm that the native sediments have significant attenuation potential. However, some aspects of the 2001 sorption testing appear to be anomalous and it is recommended that additional testwork be conducted in this area.

4.2.11.2 Faro Mine Site Rock Dumps

Source of Information

The geochemistry and ARD potential of the Faro Rock Dumps was evaluated as part of the development of the 1996 closure plan (RGC, 1996). The evaluation consisted of both a static and kinetic testing program. A summary of the geochemical information, as repeated from RGC 1996, is provided below.

A sampling program was completed to collect representative samples of each of the four major rock types and various waste dumps. The samples were collected from the different dumps and pits in an attempt to address the variability in:

1. rock types (units).
2. "ages" of material (i.e., time since mining or deposition).
3. geochemical composition within the rock unit.
4. weathering over time within each rock type.
5. weathering over time compared for different rock units.

Dump Composition and Description

The five main rock units identified in the Faro Main Pits and, thereby, in the rock dumps were as follows:

1. Non-Calcareous Schists (Unit 1): Includes schist and altered schist from Faro, phyllite from Vangorda Plateau, and carbonaceous phyllite and schist.

2. Sulphides (Unit 2): Includes massive and disseminated sulphides and also ribbon banded graphic quartzite from Faro.
3. Calc-Silicate (Unit 3): Includes calc-silicate found primarily at Faro but elsewhere in the district and calcareous phyllite from Vangorda Plateau but also elsewhere in the district.
4. Intrusives (Unit 4): Includes both intrusives from Faro and meta-intrusives which can be massive or foliated.
5. Overburden (Unit 5).

The overall dump composition at the Faro Site comprises:

1. Non-calcareous biotite-muscovite-garnet-staurolite schists (Unit 1);
2. Intrusives - hornblende diorite, quartz feldspar porphyry, granite (Unit 4);
3. Meta - intrusives – basaltic greenstone from Grum (Unit 4);
4. Disseminated sulphides, quartzites w/ varying sulphide content (Unit 2); and
5. Calc-silicate (Unit 3).

The Faro Main and Intermediate Dumps are primarily schists to the north, with schists and calc-silicates to the south. These dumps also contain two "sulphide cells" where the massive and disseminated sulphides were deliberately deposited, and then covered on top and on the sides with calc-silicates and schist.

The Northeast Dumps are reported to be primary schists and calc-silicates with some diorites. The western portion of the dump fills the Zone 2 pit. There are also overburden piles on these dumps. Sulphides are not a major component of these dumps, however minor sulphides are evident in localized piles.

The Northwest Dumps are the oldest dumps, and comprise primarily intrusives (i.e., diorite) and calc-silicates with free dumped sulphides evident on the surface in one area.

The waste rock deposited in the Faro Valley Dump was reported to be primarily diorites, with some schists, calc-silicates and sulphides. The sulphides were dumped in three main areas. The Faro Valley Dump is know to be potentially acid generating, and drains to the Faro Main Pit.

The distribution of samples, by rock type, for each of the dumps is summarized in Table 4.30.

Table 4.30 Summary of Faro Area Waste Dump Rock Samples.

Waste Dump	Rock Unit			
	Schist Unit 1	Sulphide Unit 2	Calc-Silicate Unit 3	Intrusives Unit 4
Main & Intermediate	11	25	8	-
Northeast	3	5	5	3
Zone 2 Dump	4	2	2	2
Northwest	-	4	-	2
Faro Valley Dump	8	6	1	7

Summary of Rock Dump Geochemistry

Based upon the results of the static and kinetic cell testing programs the following was concluded:

1. The Unit 1 rock type (i.e., non-calcareous schists) could be initially classified as a potentially weak acid generator. However, based on the results of the static and kinetic testing programs it is unclear if this rock type will become significantly acidic in the future. Further kinetic cell testing is required to determine the long-term pH drainage characteristics of this rock type. The testing also indicated that long-term metal leaching, primarily zinc, would occur from this material.
2. The Unit 2 rock type (i.e., sulphide and pyritic quartzite) could be characterized as a relatively strong acid generator with significant levels of associated metal production. Production of acid and various metals from this rock type was considered likely to be rapid due to the high levels of contained sulphur and the lack of any significant levels of neutralizing capacity.
3. The Unit 3 rock type (i.e., calc-silicate) could be classified as a relatively strong acid consumer with the potential for the long-term release of low levels of soluble zinc.
4. The Unit 4 rock type (i.e., intrusives) could be classified as generally inert. No significant levels of acid producing or acid consuming minerals were present in the intrusives. In addition, no significant levels of leachable metals were present in this rock type.

In summary, strong acid generation is only anticipated from approximately 10% to the total waste rock in the Faro Rock Dumps (i.e., sulphides). The potential for weak acid generation from the schists is a possibility and could potentially increase the acid drainage problem at the site if it were to occur. Metal leaching, primarily zinc, is anticipated to occur at various rates from greater than 90% of the waste rock in the Faro Area.

The acid consuming properties of the calc-silicates may provide an opportunity to control the acid generation from the site through blending with/capping of acid generating waste. However, this strategy may not significantly improve the leaching of metals from the various rock types.

From an ARD point of view the intrusives appear to be the best material available for construction at the site due to their minimal acid generating and metal leaching characteristics.

Static Testing Results

The static testing program for the rock samples included solids analysis for metals, acid base accounting (ABA), extraction testing, mineralogy, and particle size determinations.

The schists, which were estimated to comprise approximately 51% of the Faro Rock Dumps, had zinc concentrations ranging from 100 to 8,900 ppm. The highest concentrations were in the samples collected from the Main Dump. These samples were also the samples with the highest total sulphide sulphur. However, the next highest sulphide samples from the main dump had relatively low zinc content, ranging from 368 to 720 ppm. The range in lead and copper concentrations was also high with lead ranging from 32 to 3,751 ppm and copper ranging from 3 to 2,029 ppm.

The acid base account testing on the schist samples indicated that the schists would typically be considered net acid generating, although the paste pH values generally ranged from 6.0 to 8.4. Total sulphur contents ranged from 0.05% to 3.5%, with sulphate sulphur representing up to 40% of the total sulphur. Neutralization potential was generally low, with an average of 11 kg $CaCO_3$ equivalent/tonne, and a median value of 5.7 $CaCO_3$ equivalent/tonne for the 20 samples tested. Thus, the ratio of neutralization potential to acid potential (NP:AP) was less than 2:1 for all but one of the samples tested. The schist samples did not contain any significant carbonate minerals.

In the extraction tests, a few of the samples showed acidic solution pH values. These samples also displayed acidic paste pH values in the ABA testing. Calculations based on the calcium and magnesium concentrations in solution indicated that all of the residual NP in the solids was available, however the available NP was insufficient to neutralize all of the acidity in solution. Samples from the main dump and sulphide cell showed comparatively high soluble zinc content in the extraction tests with concentrations up to 314 mg/L in solution. In addition these samples all displayed high levels of sulphur, sulphate, and dissolved acidity. Zinc dissolution appeared to be more strongly related to sulphur content and extent of oxidation than to either the pH or zinc content of the solids. With decreasing pH there was increasing acidity as well as increasing dissolution of sulphate, calcium, and zinc into the extraction water. In addition, the data showed that these samples were also associated with higher levels of dissolved magnesium, copper, cobalt, and iron.

The sulphides, which are estimated to comprise approximately 11% of the Faro Rock Dumps, had metal contents typical of the sulphide material with economic levels of zinc, lead, and iron content (i.e., ore). Arsenic, cobalt and nickel were also present in elevated levels in the sulphide samples.

The results of the acid base accounting on the sulphide samples showed that the sulphide samples are strongly acid generating having essentially no neutralization potential. The total sulphur contents ranged from 0.8% to 42%. Sample pH values tended to be acidic ranging from pH 7.7 to a low of 1.8. Typically the lower pH samples corresponded with higher sulphate contents and lower sulphide contents.

Like the schist samples, the sulphide samples also displayed elevated levels of sulphate, calcium, and zinc into the extraction water. Other elements such as magnesium, copper, cobalt, and iron were also elevated in these samples.

The calc-silicates, which were estimated to comprise approximately 33% of the Faro Rock Dumps, showed relatively low metal contents for elements of potential environmental concern such as zinc, lead, arsenic, cobalt, and nickel. ICP analysis on the solid samples indicated that, for this rock type, the calcium and magnesium content was higher and the iron content lower when compared to the other rock types.

The calc-silicate material was generally acid consuming with NP values ranging from 12 to 136 kg $CaCO_3$ equivalent/tonne. The sulphide content of the calc-silicate samples varied from 0.2 to 0.6% sulphur, with sulphate contents of 0% in all but a few of the samples. The acid consuming nature of the rock was further supported by the paste pH values that were neutral to alkaline. The calcium concentrations in the samples correlated well with the measured NP values and with the geologic description of these calcareous materials. Alkalinity in these samples was determined to be derived from calcium and magnesium carbonate minerals. In general the calc-silicate samples were strongly acid consuming with NP:AP ratios of 5:1 and higher.

Extraction testing completed on calc-silicates samples resulted in alkaline test solutions with pH values ranging from greater than 8 to about pH 7.5 over the 24 hour test period. The conductivity values increased slightly over the test period, but in general remained relatively low reflecting the low concentration of sulphate (65 mg/L) in the test solution. The extraction solutions showed very little soluble metal associated with these samples. The highest zinc and sulphate concentrations in solution were 0.021 mg/L and 65 mg/L respectively.

The intrusives are estimated to comprise approximately 7% of the Faro Rock Dumps. The two metals of specific concern with respect to leaching from the intrusives were initially believed to be nickel and cobalt. Nickel values were generally higher in these samples than in other rock types, however the cobalt values were not. Overall the analysis of the metals in the solids showed a range of metal contents typical of the waste rock on site. Metal contents ranged between 3.4 and 6% for iron, 35 and 2382 ppm for lead, and 70 to 3400 ppm for zinc. The samples from the Northwest Dump, which were weathered diorites mixed with some sulphides, showed the influence of the sulphides as a much higher zinc concentration in the solids than the "pure" diorite samples from other sites. In addition, there is a higher percentage of the sulphur occurring as sulphate than in the other diorite samples.

The intrusive samples from the Faro Rock Dumps were primarily diorites, however, they also included quartz feldspar porphyry rocks (QFP). The acid generation potential of the QFP samples was determined to be very low, with sulphur levels less than 0.13%, no sulphate, and low metals in the solids. There was effectively no NP in the QFP samples.

Extraction testing on the QFP sample with the highest metal contents confirmed that the leaching potential of the QFP was very low. The extraction solution had a neutral pH, low conductivity, sulphate concentrations of less than 10 mg/L, and very low metal concentrations.

Kinetic Testing Results

The majority of the kinetic cell testwork for the Faro Rock Dumps focused on the Unit 2 rock types (i.e., sulphide and pyritic quartzite). The results of the kinetic cell testing for the sulphide and pyritic quartzite samples confirmed the results of the static testing program. In general, all of the Unit 2 samples were relatively strong acidic producers with essentially no buffering capacity (i.e., minimal NP). In addition, the samples displayed elevated levels of sulphate, copper, iron, lead, manganese, and zinc.

The kinetic cell testing on the Unit 1 rock type (i.e., non-calcareous schists) also supported the results of the static testing program. The schists were determined to be relatively weak acid producers as indicated by the relatively low sulphate production for this sample. During the testing period, approximately 11 weeks, the schist sample did not release any significant amounts of metals into solution. It appears that there was still sufficient alkalinity in the sample to prevent any significant drop in the pH of the solution, as thus, prevent the mobilization of metals into solution.

The Unit 3 (i.e., calc-silicate) kinetic cell also performed as predicted by the static testing program. The cell essentially produced no significant acidity and had relatively elevated alkalinity levels compared to kinetic cells containing other rock types. The solution from the calc-silicate kinetic cell did contain a small amount of zinc.

4.2.11.3 Vangorda and Grum Rock Dumps

Overview of Studies

Two acid rock drainage assessment programs were conducted that characterized rock groups mined in the Grum and Vangorda Pits. The 1989 Initial Environmental Evaluation (IEE) report (Curragh 1989) that was prepared as part of the water licensing process included a geochemical characterization of sulphides and phyllites. The 1996 ICAP study (RGC 1996) included geochemical testing that was intended to complement the earlier work and fill in data gaps. The ICAP study included a summary presentation of the earlier test results that was used for this overview. Both studies included both static and kinetic testing.

The 1989 study tested samples of sulphides and phyllite that were collected from the area of the Vangorda Pit. The test results for phyllite were considered unsuitable for direct application to the Grum Rock Dump because ABA and ICP analyses indicated that calcareous phyllite from the Grum Pit was distinct from phyllite from Vangorda Pit. Specifically, Grum phyllite was observed to have less sulphide mineralization than Vangorda. The 1996 study suggested that a correction factor of 12.5% could be applied to the test results for Vangorda phyllites for application to the Grum Rock Dump.

The 1996 study conducted static testing on sulphides from the Grum and Vangorda Rock Dumps and phyllite from the Grum Rock Dump. Kinetic testing was carried out on sulphides but not phyllites. Testing of the oxidized fines in the Vangorda Rock Dump was also carried out in 1995.

The 1996 geochemical characterization of the Grum and Vangorda Rock Dumps utilized:

1. Adjusted results (12.5%) of the 1989 test results for Vangorda phyllite to represent Grum phyllites.
2. The 1996 test results for Grum sulphides and 1989 test results for Vangorda sulphides to represent Grum sulphides.
3. The 1989 test results for Vangorda phyllite to represent Vangorda phyllites.
4. The 1996 test results for Vangorda sulphides and the 1989 test results for Vangorda sulphides to represent Vangorda sulphides.
5. 1996 Extraction test results to represent the oxidized fines.

Summary of Results

The following are the primary observations provided in RGC 1996 regarding the available geochemical information:

1. Sulphides from both the Grum and Vangorda Rock Dumps are potentially acid generating and capable of releasing metals over a wide pH range including neutral pH.
2. Vangorda phyllites are slightly acid generating and capable of releasing metals over a wide pH range.
3. Test results for Vangorda Pit phyllites are not directly applicable to the Grum Rock Dump but a correction factor of 12.5% may be appropriate.
4. Application of the suggested correction factor to Vangorda phyllite test results suggests that Grum phyllites might not be acid generating and might not release metals in significant quantities.
5. The oxidized fines (Vangorda rock dump) is completely depleted of neutralization potential and contains a relatively high acid production potential, in a range similar to sulphides. The oxidized fines contain a ready store of soluble oxidation products and extraction testing confirmed that metals are readily leached from this material in high concentrations. Several metals were extracted from the oxidized fines in concentrations at least one order of magnitude higher than extracted from a sample of fresh (unoxidized) massive sulphide.

4.2.12 SOIL QUALITY

A Phase 1 Environmental Site Assessment was conducted in fall 1999 (GLL 2001) that included the collection and analysis of 58 surficial soil samples from various locations on the Faro and Vangorda Plateau Mine sites (Figures 4.19 and 4.20). On the basis of known industrial activities that have occurred at the site, the potential chemicals of concern and their sources were identified as follows:

1. *Petroleum Hydrocarbons* from diesel fuel, gasoline, hydraulic and lubricating oils from the storage, use and disposal of fuels and oils.
2. *Mill and Laboratory Chemicals* from cyanide, xanthates, glycols and others.
3. *Heavy Metals* from mining, milling and processing of mineralized rock as well as naturally occurring concentrations due to natural geochemistry.
4. *Transformer and Capacitor Fluids* potentially contributed from the former presence of PCB-containing electrical equipment.

Soil samples were collected as surface grab samples. The majority of the soil samples were analyzed to determine concentrations of extractable petroleum hydrocarbons (EPHs) and heavy metals (lead and zinc) with selected soil samples analyzed to determine concentrations of non-halogenated volatiles (BTEX compounds and VPH) polycyclic aromatic hydrocarbons (PAHs), metals and PCBs. One soil sample, collected beneath an area of treated timber storage, was analyzed to determine the concentration of chlorinated phenols and PAHs. Samples were submitted for chemical analysis to provide confirmation for contaminant observations during the site inspection.

4.2.12.1 Summary of Results

The following conclusions regarding surficial soil quality are repeated from GLL 2001:

1. Petroleum hydrocarbon contamination appears to be localized within the source areas for storage and dispensing of fuel and oil products.
2. Concentrations of LEPH were greatest at several fuel and oil storage and dispensing areas at the Faro and Vangorda Plateau Mine sites. PAHs and BTEX compounds were not present at elevated concentrations.
3. Levels of petroleum hydrocarbon contamination in soils are higher at the Faro Mine site than at the Vangorda Plateau, likely due to the longer history of mine operations.
4. High concentrations of residual oils in surface soils were noted at the Faro Pit Lube Shop and Grum Lube Shop, which may be migrating from the source area via surface runoff.
5. The concentrate load-out area represents an area of concern with respect to the presence of residual concentrate and the associated elevated metal concentrations in surficial soils.

4.2.12.2 Petroleum Hydrocarbons

As indicated on Tables 4.31 and 4.32, elevated concentrations of petroleum hydrocarbons were noted in soil samples collected at the following locations:

1. *Faro mill site*: volatile petroleum hydrocarbon (VPH) and xylene from one sample of the berm, which are indicative of gasoline contamination.
2. *The Emergency Diesel Generator and Fuel Supply:* LEPH from one surface soil sample collected downslope of a historical fuel spill and two surface soil samples collected near the pumphouse and fuelling nozzle for the primary fuel tank, also evidence of small scale spills.
3. *Faro Lube Building*: LEPH concentrations in all of four samples and HEPH in one sample, with the source likely being diesel and heavy oils.
4. *Diesel Storage Tanks for Lube Shack Fuel Pump*: Samples LEPH in samples collected from the west side of the gravel berm and at the NE corner of the bermed area.
5. *Historic Fuel Storage Near the Core Shacks and at Scrap Area to NW of Faro Pit*: LEPH in samples collected directly adjacent to the tank pads and dispensing area.
6. *Waste Oil Handling Area*: LEPH and HEPH in the sample collected at the shipping container.
7. *Partially Buried Waste Oil Tank and Washbay Diesel Tank*: LEPH in the sample taken at the front of the washbay.
8. *Reagent Mix Building*: HEPH in one sample taken in front of the loading doors for the building.
9. *Grum Ore Haul Maintenance Shop*: LEPH in samples from the weigh scale and the east exit of the area.
10. *Grum Lube Shop and Diesel Storage Tanks*: LEPH in two of the soil samples collected in the near a former aboveground fuel tank location at the lube shop and downslope of the lube shop area in the direction of surface runoff.

Table 4.31 Extractable Petroleum Hydrocarbons and BTEX Compounds in Soil (ug/g)

Sample Location	CCME[a]	YCSR[b]	Truck Laydown Area			Temporary Drum Storage			Waste Oil Handling Area		Tank Cradle	Tank & Pumphouse		Emergency Generator &	
Location Number			1			2			2a		3	4		5	
Sample ID			TLA 1	TLA 2	TLA 3	TDS 1A	TDS 2A	TDS 3A	WHA 2	WHA 3	TC 2	TP 1	TP 2	EG 1	EG 2
Sample Depth (m)			0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Extractable Hydrocarbons															
EPH (C10-19)	-	2000	<200	<200	<200	<200	<200	<200	569	**7940**	<200	**30500**	<200	<200	**5400**
EPH (C19-32)	-	5000	556	272	732	512	<200	<200	2810	**9340**	306	3480	<200	<200	1310

Sample Location	CCME[a]	YCSR[b]	Reagent Mix Bldg.		Waste Oil & Wash Bay Tanks			Lube Bldg.		Gasoline Tank Near Guardhouse			
Location Number			6		7			8		10			
Sample ID			RMB 1	RMB 2	WOT 1	WOT 2	WOT 3	LB 1	LB 2	GT 1A	GT 1B	GT 2A	GT 3A
Sample Depth (m)			0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Extractable Hydrocarbons													
EPH (C10-19)	-	2000	227	<200	<200	<200	**4640**	788	298	-	1340	-	-
EPH (C19-32)	-	5000	**5350**	1200	251	920	310	3990	4100	-	<200	-	-
Non-halogenated Volatiles													
Benzene	5	8	-	<0.04	-	-	-	-	-	0.08	-	0.14	0.97
Ethylbenzene	20	50	-	<0.05	-	-	-	-	-	4.89	-	0.09	0.89
Styrene	50	50	-	<0.05	-	-	-	-	-	<0.05	-	<0.05	<0.05
Total Xylenes	20	50	-	0.09	-	-	-	-	-	**95.4**	-	0.51	7.84
VPH	-	200	-	-	-	-	-	-	-	**741**	-	<100	<100

Sample Location	CCME[a]	YCSR[b]	Faro Lube Shack				Tank Farm				Coreshack Area		Tank Pad	
Location Number			11				12				13		14	
Sample ID			FLS 1	FLS 2	FLS 3	FLS 4	TF 1	TF 2	TF 3	TF 4	CA 1	CA 3	TAP 1	TAP 2
Sample Depth (m)			0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Extractable Hydrocarbons														
EPH (C10-19)	-	2000	**2300**	**3690**	**10000**	**3480**	**9340**	<200	<200	**26200**	**12400**	**2540**	404	1870
EPH (C19-32)	-	5000	1070	1490	4670	**6790**	1420	463	<200	737	3570	2310	<200	254
Non-halogenated Volatiles														
Benzene	5	8	-	-	0.01	-	-	-	-	-	-	-	-	-
Ethylbenzene	20	50	-	-	<0.01	-	-	-	-	-	-	-	-	-
Styrene	50	50	-	-	<0.01	-	-	-	-	-	-	-	-	-
Toluene	0.8	30	-	-	0.04	-	-	-	-	-	-	-	-	-
Total Xylenes	20	50	-	-	0.09	-	-	-	-	-	-	-	-	-
VPH	-	200	-	-		-	-	-	-	-	-	-	-	-

Notes: *"<" = less than the analytical detection limit*

[a] *CCME. 1999. Canadian Soil Quality Guidelines for Protection of Environmental Quality and Human Health*

[b] *Government of Yukon. 1997. Contaminated Sites Regulation. Generic and Matrix Numerical Soil Standards*

Bold *Exceeds the Yukon CSR standards for industrial land use*

Table 4.31 Extractable Petroleum Hydrocarbons and BTEX Compounds in Soil (ug/g)

Sample Location	CCME[a]	YCSR[b]	Grum Orehaul Maintenance Area			Grum Administration Area		Lube Shop & Diesel Tanks				Old Shop & Grum Portal	
			15			16		17				18	
Sample ID			OMS 2	OMS 3	OMS 4	GAA 2	GAA 3	GLS 1	GLS 2	GLS 3	GLS 5	OS 1	OS 4
Sample Depth (m)			0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Extractable Hydrocarbons													
EPH (C10-19)	-	2000	1980	**7980**	**4150**	-	<200	248	<200	**3550**	**9280**	<200	<200
EPH (C19-32)	-	5000	2870	4070	2250	-	<200	<200	<200	376	444	<200	<200
Non-halogenated Volatiles													
Benzene	5	8	-	-	-	<0.04	<0.04	-	-	-	-	-	-
Ethylbenzene	20	50	-	-	-	<0.05	<0.05	-	-	-	-	-	-
Styrene	50	50	-	-	-	<0.05	<0.05	-	-	-	-	-	-
Toluene	0.8	30	-	-	-	<0.05	<0.05	-	-	-	-	-	-
Total Xylenes	20	50	-	-	-	<0.05	<0.05	-	-	-	-	-	-
VPH	-	200	-	-	-	<100	<100	-	-	-	-	-	-

Notes: *"<" = less than the analytical detection limit*

[a] CCME. 1999. Canadian Soil Quality Guidelines for Protection of Environmental Quality and Human Health

[b] Government of Yukon. 1997. Contaminated Sites Regulation. Generic and Matrix Numerical Soil Standards

Bold *Exceeds the Yuko Exceeds CCME Industrial Guidelines*

Table 4.32 PAHs, PCBs and Chlorinated Phenols in Soil (ug/g)

Sample Location	CCME[a] Industrial Guideline	YCSR[b] Industrial Standard	Old Shop & Grum Portal		Faro Lube Shack	Orehaul Maintenance Shop
Location Number			18		11	15
Sample ID			OS 3	OS 4	FLS 3	OMS 1
Physical Tests						
pH			7.94	7.87	-	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	-	-	0.01	-	<0.8	-
Acenaphthylene	-	-	0.01	-	<0.2	-
Anthracene	-	-	0.03	-	0.3	-
Benz(a)anthracene	10	10	0.01	-	<0.1	-
Benzo(a)pyrene	0.7	10	<0.01	-	0.02	-
Benzo(b & k)fluoranthene	10	10	0.01	-	<0.01	-
Dibenz(a,h)anthracene	10	10	<0.01	-	<0.01	-
Benzo(g,h,i)perylene	-	-	<0.01	-	<0.01	-
Benzo(k)fluoranthene	-	10	0.12	-	<0.1	-
Chrysene	-	-	<0.01	-	<0.01	-
Fluoranthene	-	-	0.17	-	0.1	-
Fluorene	-	-	0.05	-	1.2	-
Indeno(12,3)pyrene	10	10	<0.01	-	<0.01	-
Naphthalene	22	50	<0.01	-	<0.8	-
Phenanthrene	50	50	1.15	-	2.2	-
Pyrene	100	100	0.55	-	0.8	-
Total Polychlorinated Biphenyls	33	15	-	-	-	<0.05
Chlorinated Phenolics						
2,3,4-Trichlorophenol	5	5	<0.02	-	-	-
2,3,5-Trichlorophenol	5	5	<0.02	-	-	-
2,4,5-Trichlorophenol	5	5	<0.02	-	-	-
2,4,6-Trichlorophenol	5	5	<0.02	-	-	-
2,3,4,5-Tetrachlorophenol	5	5	0.08	-	-	-
2,3,4,6-Tetrachlorophenol	5	5	0.2	-	-	-
2,3,5,6-Tetrachlorophenol	5	5	0.08	-	-	-
Pentachlorophenol	7.6	50	**24.5**	-	-	-

Notes: "<" = denotes less than the analytical detection limit

[a] CCME. 1999. Canadian Soil Quality Guidelines for Protection of Environmental Quality and Human Health.

[b] Government of Yukon. 1997. Contaminated Sites Regulation. Generic and Matrix Numerical Soil Standards

Bold	*Sample exceeds CCME Industrial Guideline*
Bold	*Sample exceeds Yukon CSR Industrial Standard*

Table 4.33 Metal Concentrations in Soil (ug/g)

Sample Location	CCME[a] Industrial Guideline	YCSR[b] Industrial Standard	Rose Creek			Emergency Tailings Disposal Area			Truck Laydown Area		Temporary Drum Storage Area	Emergency Generator	Reagent Mix Bldg.	Lube Bldg.
Location Number						20			1		2	5	6	8
Sample ID			RC#1	RC#2	RCB#3	TD#1	TD#2	TD#3	TLA 1	TLA 3	TDS 3A	EG 2	RMB 2	LB 1
Sample Depth (m)											0.1-0.2m			
Physical Tests														
pH			3.06	3.67	5.52	8.09	2.16	3.21			6.23			
Total Metals														
Antimony	40	40	<20	<20	<20	<20	<40	<20			26			
Arsenic	12	60	**53**	**18**	**16**	**16**	**346**	**16**			**53**			
Barium	2000	2000	146	669	362	178	4	373			34			
Beryllium	8	8	1.2	0.8	0.8	0.7	<1	<0.5			0.6			
Cadmium	22	8-650[c]	<0.5	<0.5	1.2	1.9	2.1	0.9			14.1			
Chromium	87	60	55	36	56	40	8	12			23			
Cobalt	300	300	11	10	14	10	103	4			10			
Copper	91	250	**95**	36	38	52	**864**	64			**195**			
Lead	600	2000	**723**	98	60	**1240**	209	553	**3530**	**2110**	**9550**	164	492	**2210**
Mercury	50	10	0.553	0.094	0.052	0.95	8.23	0.252			5.87			
Molybdenum	40	40	<4	<4	4	<4	<8	<4			<4			
Nickel	50	500	35	25	50	29	<10	8			22			
Selenium	10	10	<2	<2	<2	<2	<2	<2			<2			
Silver	40	20	<2	<2	<2	<2	16	<2			12			
Tin	300	300	<10	<10	<10	<10	<20	<10			<10			
Vanadium	130	-	64	46	75	37	20	27			34			
Zinc	360	600	**433**	108	198	**1280**	**2670**	**568**	**4760**	**2730**	**10500**	**4590**	**16600**	**3250**

Notes: "<" = denotes less than the analytical detection limit

a. CCME. 1999. Canadian Soil Quality Guidelines for Protection of Environmental Quality and Human Health.

b. Government of Yukon. 1997. Contaminated Sites Regulation. Generic and Matrix Numerical Soil Standards.

c. Standard varies with soil pH

Bold	*Sample exceeds CCME Industrial Guideline*
Bold	*Sample exceeds Yukon CSR Industrial Standard*

Table 4.33 Metal Concentrations in Soil (ug/g)

Sample Location	CCME[a] Industrial Guideline	YCSR[b] Industrial Standard	Waste Oil & Wash Bay Tanks	Gasoline Tank Near Guardhouse	Faro Lube Shack		Oil Tank Farm	Coreshack Area	Orehaul Maintenance Shop	Grum Lube Shop & Diesel Tanks		Old Shop & Grum Portal
Location Number			7	10	11		12	13	15	17		18
Sample ID			WOT 2	GT 3B	FLS 1	FLS 4	TF 2	CA 3	OMS 4	GLS 1	GLS 2	OS 4
Sample Depth (m)				0.2-0.3								
Physical Tests												
pH												7.87
Total Metals												
Antimony	40	40										<20
Arsenic	12	60										**52**
Barium	2000	2000										224
Beryllium	8	8										0.5
Cadmium	22	8-650[c]										1.4
Chromium	87	60										44
Cobalt	300	300										16
Copper	91	250										47
Lead	600	2000	81	**4800**	**1140**	**2370**	**805**	**1220**	**636**	547	152	257
Mercury	50	10										**0.264**
Molybdenum	40	40										<4
Nickel	50	500										48
Selenium	10	10										<2
Silver	40	20										<2
Tin	300	300										<10
Vanadium	130	-										35
Zinc	360	600	223	**4150**	**1890**	**10100**	**2340**	**1150**	**1220**	**825**	174	**570**

Notes: "<" = denotes less than the analytical detection limit

[a] CCME. 1999. Canadian Soil Quality Guidelines for Protection of Environmental Quality and Human Health.

[b] Government of Yukon. 1997. Contaminated Sites Regulation. Generic and Matrix Numerical Soil Standards.

[c] Standard varies with soil pH

Bold	*Sample exceeds CCME Industrial Guideline*
Bold	*Sample exceeds Yukon CSR Industrial Standard*

4.2.12.3 Lead and Zinc

Lead and zinc concentrations were also determined in selected soil samples collected from various areas Generally, the concentrations of lead and zinc detected in the soil samples are indicative of metal contamination from mining and milling activities.

As noted on Table 4.33 soil samples collected at the Faro Mine site contain higher concentrations of lead and zinc that samples collected at the Grum mine site due, likely to the presence of milling operations and the longer operating history. The highest concentrations of lead and particularly zinc were found in soil samples collected near the concentrate load-out on the Faro Mine site. The major source of metal contamination in surface soils within the Faro mill area was attributed to the presence of concentrate storage areas and vehicle tracking within the mine and mill site areas.

4.2.13 CREEK SEDIMENT QUALITY

Sediment has been collected and analysed in the Anvil and Vangorda watersheds from 1973 to 2001 as indicated in Table 4.34 below.

Table 4.34 Creek Sediment Studies Completed

Study Topic	Location	Study Date	Reference
Metals in stream sediment	Anvil, Rose	1973	Hoos & Holman (Env. Can), 1973
Metals in stream sediment	Anvil, Rose	1985	Godin & Osler (Env. Can), 1985
Metals in stream sediment	Vangorda	1993	Laberge, 1993
Metals in stream sediment	Vangorda	1996	Davidge (Env. Can.), 1996
Metals in stream sediment	Vangorda	1996	Laberge, 1996
Metals in stream sediment	Vangorda	1997	Laberge, 1997
Metals in stream sediment	Vangorda	1999	Laberge, 1999
Metals in stream sediment	Rose	1999	Env. Can. Unpublished
Metals in stream sediment	Vangorda	2001	Laberge, 2001

Most recently, sediment sampling in Vangorda Creek and analyses for metals has been conducted every two years since 1993 (plus during 1996) as required by the Water License. The following stations have been sampled over the period of record (Figures 4.21 and 4.22):

1. EP1 (R1) - Rose Creek south fork d/s of pumphouse (reference)
2. EP2 - diversion channel near new tailings pond
3. EP3 - combined seepage flows upstream of decant confluence
4. EP4 (R2) - Rose Creek at confluence of diversion and tailings outlet
5. 4401 - Downstream of R2
6. 4400 - Downstream of R2
7. 4398 - Downstream of R2
8. 4396 - Downstream of R2
9. 4395 - Downstream of R2
10. 4399 - tributary entering Rose Creek downstream of R2
11. 4397 - tributary entering Rose Creek downstream of R2
12. 4394 - tributary entering Rose Creek downstream of R2

13. EP5 (R3) - Rose Creek between tailings and Anvil Creek
14. EP6a (R4) - Rose Creek at mouth
15. EP7a (R6) - Anvil Creek u/s of Rose Creek (reference)
16. EP6 - Anvil Creek u/s of confluence with the North Fork of Anvil Creek
17. EP7 - Anvil Creek north fork u/s of confluence with Anvil Creek (reference)
18. EP8 - Anvil Creek at mouth
19. V1 - Vangorda Creek upstream of diversion (reference)
20. V5 - Vangorda Creek west fork downstream of mine activity
21. V27 - Vangorda Creek downstream of mine activity
22. V8 - Vangorda Creek at mouth
23. EP6-V - Vangorda Creek d/s of haul road

A generally consistent collection methodology has been utilized over time that included targeting fine grain size on the bed surface to represent recently transported bed load. A trowel or shovel has been used to collect triplicate samples from each site during all but the 1973 sampling event, when a single sample was collected at each site. All samples were submitted to a laboratory for metals analysis. Copper, iron, lead and zinc have been isolated for review herein as these are compounds found in the ore deposits that can be toxic to aquatic organisms at high concentrations. Mean copper, iron, lead and zinc results for each triplicate sample are outlined on Tables 4.35, 4.36, 4.37 and 4.38, respectively by sampling station and year. These tables also compare the concentrations of copper, lead and zinc to the corresponding CCME (1999) interim freshwater sediment quality guidelines (ISQG) and to the probable effects level (PEL). In general, concentrations greater than the PEL have a 50% incidence of creating adverse biological effects on aquatic life. No ISQG or PEL has been set for iron.

Anvil watershed data from 1973 and 1983 (two seasons) were contrasted in the 1996 closure plan (RGC 1996) to show a comparison before and after significant development (some notable spills, including a 2.45×10^5 m^3 of tailings slurry and a $CuSO_4$ spill into Rose Creek, occurred during this time as well). The notable trends summarized in the ICAP for the Anvil watershed include the following:

1. Copper concentrations from the two sampling events in 1983 (July and September) were similar for seven of the eight stations sampled. The exception was concentrations at station EP6a (R4), immediately upstream of the confluence with Anvil Creek, which reported a July average concentration 87% greater than the September average concentration and more than twice that of the other 1983 values at sites further upstream along Rose Creek. The concentration at EP6a (R4) was an average of three triplicate samples with a standard deviation near 100, so it might not be representative of the general area.

2. The lead concentrations from the 1983 samplings were similar except for EP6a (R4) where the September result average was 50% greater than the July result average. The high lead concentrations were attributed to naturally high lead levels in the sediment since none of the other metals showed this trend at his site.

Table 4.35 Copper Concentartions in Creek Sediment

Creek	Station	Mean Copper Concentration (mg/kg)									
		1973	1983	1983	1991	1993	1995	1996	1997	1999	2001
Rose South Fork (R)	EP1 (R1)	**64**	26	25							
Rose North Fork	EP2	**68**	**54**	**45**							
Rose Cr.	EP3	**48**	**43**	**46**							
Rose Cr.	EP4 (R2)	24	**130**	**102**							
Rose Cr.	4401									**63**	
Rose Cr.	4400									**182**	
Rose Cr.	4398									**67**	
Rose Cr.	4396									**87**	
Rose Cr.	4395									**84**	
Rose Tributary	4394									**81**	
Rose Tributary	4397									**45**	
Rose Tributary	4399									**42**	
Rose Cr.	EP5 (R3)	**44**	**119**	**114**							
Rose Cr.	EP6a (R4)		**224**	**120**							
Anvil Cr. (R)	EP7a (R6)		**119**	**116**							
Anvil Cr.	EP6	**93**									
Anvil North Fork (R)	EP7	**40**									
Anvil Cr.	EP8		29	31							
Vangorda Cr. (R)	V1					24	33	23	**53**	**39**	19
Vangorda Cr.	EP6-V					**137**					
Vangorda Cr.	V27					**52**	**59**	**80**	**88**	**129**	**102**
Vangorda West Fork	V5					28	36	29	36	25	28
Vangorda Cr.	V8				57	37	**48**	**54**	36	29	34

ISQG 36 bolded values exceed ISQG (CCME interim sediment quality guideline)

PEL 197 bolded and shaded values exceed PEL (CCME probable effects level)

(R) - reference station

Table 4.36 Iron Concentrations in Creek Sediment

Creek	Station	Mean Iron Concentration (mg/kg)									
		1973	1983	1983	1991	1993	1995	1996	1997	1999	2001
Rose South Fork (R)	EP1 (R1)	34,000	25,633	25,450							
Rose North Fork	EP2	71,000	25,367	26,600							
Rose Cr.	EP3	28,000	35,187	29,300							
Rose Cr.	EP4 (R2)	29,000	66,400	53,050							
Rose Cr.	4401									42,367	
Rose Cr.	4400									57,867	
Rose Cr.	4398									40,000	
Rose Cr.	4396									40,867	
Rose Cr.	4395									38,733	
Rose Tributary	4394									37,950	
Rose Tributary	4397									28,700	
Rose Tributary	4399									33,533	
Rose Cr.	EP5 (R3)	34,000	68,067	66,050							
Rose Cr.	EP6a (R4)		39,500	35,400							
Anvil Cr. (R)	EP7a (R6)		50,100	54,700							
Anvil Cr.	EP6	45,000									
Anvil North Fork (R)	EP7	27,000									
Anvil Cr.	EP8		23,000	27,800							
Vangorda Cr. (R)	V1					37,000					
Vangorda Cr.	EP6-V					62,025					
Vangorda Cr.	V27					31,667					
Vangorda West Fork	V5					22,433					
Vangorda Cr.	V8				29,500	27,767					

(R) - reference station

Table 4.37 Lead Concentrations in Creek Sediment

Creek	Station	Mean Lead Concentration (mg/kg)									
		1973	1983	1983	1991	1993	1995	1996	1997	1999	2001
Rose South Fork (R)	EP1 (R1)	**280**	**124**	**198**							
Rose North Fork	EP2	**830**	**368**	**338**							
Rose Cr.	EP3	**274**	**93**	**88**							
Rose Cr.	EP4 (R2)	**83**	**775**	**554**							
Rose Cr.	4401									**164**	
Rose Cr.	4400									**788**	
Rose Cr.	4398									**198**	
Rose Cr.	4396									**260**	
Rose Cr.	4395									**262**	
Rose Tributary	4394									**202**	
Rose Tributary	4397									**54**	
Rose Tributary	4399									**95**	
Rose Cr.	EP5 (R3)	**280**	**681**	**682**							
Rose Cr.	EP6a (R4)		**585**	**899**							
Anvil Cr. (R)	EP7a (R6)		**510**	**504**							
Anvil Cr.	EP6	**650**									
Anvil North Fork (R)	EP7	<45									
Anvil Cr.	EP8		**46**	**54**							
Vangorda Cr. (R)	V1					30	**43**	**40**	**58**	**45**	**18**
Vangorda Cr.	EP6-V					**1,136**					
Vangorda Cr.	V27					**587**	**1,305**	**870**	**1,492**	**2,069**	**2,801**
Vangorda West Fork	V5					23	**52**	25	35	30	32
Vangorda Cr.	V8				**1,801**	**214**	**218**	**201**	**114**	**89**	**110**

ISQG **35** bolded values exceed ISQG (CCME interim sediment quality guideline)
PEL **91** bolded and shaded values exceed PEL (CCME probable effects level)

(R) - reference station

Table 4.38 Zinc Concentrations in Creek Sediment

Creek	Station	Mean Zinc Concentration (mg/kg)									
		1973	1983	1983	1991	1993	1995	1996	1997	1999	2001
Rose South Fork (R)	EP1 (R1)	**270**	**215**	**304**							
Rose North Fork	EP2	**2,000**	**300**	**298**							
Rose Cr.	EP3	**290**	**282**	**327**							
Rose Cr.	EP4 (R2)	**180**	**967**	**868**							
Rose Cr.	4401									**517**	
Rose Cr.	4400									**1,603**	
Rose Cr.	4398									**629**	
Rose Cr.	4396									**1,064**	
Rose Cr.	4395									**716**	
Rose Tributary	4394									**489**	
Rose Tributary	4397									**156**	
Rose Tributary	4399									**203**	
Rose Cr.	EP5 (R3)	**440**	**1,000**	**992**							
Rose Cr.	EP6a (R4)		**1,020**	**750**							
Anvil Cr. (R)	EP7a (R6)		**977**	**778**							
Anvil Cr.	EP6	**1,100**									
Anvil North Fork (R)	EP7	**130**									
Anvil Cr.	EP8		**133**	**156**							
Vangorda Cr. (R)	V1					119	**177**	118	**132**	**141**	88
Vangorda Cr.	EP6-V					**1,512**					
Vangorda Cr.	V27					**435**	**519**	**732**	**652**	**921**	**868**
Vangorda West Fork	V5					97	**129**	102	100	81	116
Vangorda Cr.	V8				**321**	**251**	**391**	**466**	**221**	**148**	**248**

ISQG 123 bolded values exceed ISQG (CCME interim sediment quality guideline)
PEL 315 bolded and shaded values exceed PEL (CCME probable effects level)

(R) - reference station

An updated summary of this data, including comparisons to the CCME ISQG and PEL levels, is as follows:

1. Copper concentrations in sediment have been above the ISQG for copper (36 mg/kg) at all Rose Creek, Rose tributary and Anvil Creek reference stations (EP1, 4394, 4397, 4399, R6 and EP7), indicating an elevated background level.
2. The highest copper concentrations are noted in Rose Creek downstream of the tailings (particularly R2, 4400, R3 and R4). However, these values are also comparable to levels at reference site R6 in Anvil Creek.
3. Average iron levels at all stations ranged from 23,000 mg/kg to 71,000 mg/kg. Average levels at reference sites were in the 25,000 mg/kg to 45,000 mg/kg range. The highest values are from the North Fork Rose Creek and Rose Creek downstream of the tailings.
4. Concentrations of lead exceed the PEL of 91 mg/kg in almost all results from all sites. A few exceptions include results from one of three dates collected at Rose Creek sites downstream of the tailings (EP3 in 1983 fall and R2 in 1973) and within one of the tributaries (4397) where average results still exceed the ISQG of 35 mg/kg.
5. The highest lead concentrations are noted in Rose Creek at some sites downstream of the tailings (EP2, R2, 4400, R3 and R4) and Anvil Creek (EP6). However, these values are also comparable to levels at reference sites R6 in Anvil Creek.
6. Zinc concentrations in sediment have been above the ISQG (123 mg/kg) at all Rose Creek, Rose tributary and Anvil Creek reference stations (EP1, 4394, 4397, 4399, R6 and EP7), indicating an elevated background level.
7. One of three Rose Creek North Fork results, many Rose Creek results from stations downstream of the tailings (R2, 4401, 4400, 4398, 4396, 4395, R3 and R4) and the one EP6 result (Anvil Creek) represent the greatest values, which exceed the PEL of 315 mg/kg. Sediment samples collected from Rose Creek reference tributary station 4394 and Anvil Creek reference station R6 are also above the PEL.

Routine sampling has been conducted at four Vangorda watershed stations from 1993 to 2001 as required by the Water License. Trends are graphed on Figure 4.23 and provided the following summary observations:

1. Concentrations of copper, lead and zinc at locations V1 (reference station) and V5 have generally been just below or just above the ISQG levels. The levels at V1 indicate natural elevations.
2. Over time, copper, lead and zinc levels at V5 have remained fairly consistent.
3. Concentrations of copper, lead and zinc at location V27 have generally been the highest of all sampled locations. Concentrations of lead and zinc at location V27 have consistently exceeded the PEL level and concentrations of copper have.
4. An unexplained increasing trend for copper, lead and zinc at location V27 is evident.

5. At station V8 (where fish are present) concentrations of copper have been around the ISQG, lead concentrations have been above the PEL and zinc concentrations have been either above the ISQG or the PEL. One anomalously high lead concentration is recorded for location V8 in 1991.
6. Over time, a decreasing trend for copper, lead and zinc is evident at V8.

4.3 TERRESTRIAL RESOURCES

4.3.1 VEGETATION

The area summarized for vegetation includes the Pelly River Valley to north of the Faro, Vangorda and Grum developments.

The Anvil Range Mining Complex is located within the Yukon Plateau (North) Ecoregion, in the Boreal Cordillera Ecozone (Yukon Conservation Society, 1995). The region lies within the zone of discontinuous, widespread permafrost. Depressional areas consist of peat bogs, fens and local palsas. Lowlands frequently contain hummocks and sedge tussocks. Upland areas commonly include scree slopes and steep south-facing slopes with vegetation dominated by grasses. Treeline occurs at 1350 to 1500 m above sea level.

Six vegetation zones were mapped within the study area, based on the field studies and mapping undertaken by Montreal Engineering in 1975 (Figure 4.24). The vegetation zones include flood plain forest, upland forest, bog forest, alpine tundra, subalpine transition, and alluvial plain shrub. The structure and species composition of these vegetation zones is outlined below.

Flood Plain Forest

The flood plain forest zone in the study area is restricted to the alluvial landforms along the Pelly River and the lower reaches of Blind Creek, and represents the most developed forest stands in the study area. White spruce (*Picea glauca*) forests occur where flooding is less common and alpine fir (*Abies lasiocarpa*) stands occur in frequently flooded areas. Lodgepole pine (*Pinus contorta*), balsam poplar (*Populus balsamifera*), trembling aspen (*Populus tremloides*) and paper birch (*Betula papyrifera*) also occur in the flood plain forest zone. Dense shrub stands, consisting primarily of willow (*Salix* spa.) and balsam poplar, are common in riparian zones where active deposition is occurring. Feathermoss layers are extensive within the older stands of white spruce.

Upland Forest

Upland forests are found on the morainal landforms above the Pelly River and the upper Vangorda Creek area. Much of this forest was burned in a 1969 fire. Upland forest is also found on the glaciofluvial landforms along Rose Creek. The upland forest zone is dominated by stands of either white spruce, lodgepole pine, or alpine fir. A well developed layer of tall and medium shrubs includes trembling aspen, shrub birch (*Betula glandulosa*), Scouler's willow (*Salix scouleriana*), and other willow species. The dwarf shrub strata of the upland forest consists of dwarf dogwood (*Cornus canadensis*), crowberry (*Empetrum nigrum*), Labrador tea (*Ledum groenlandicum*), blueberry (*Vaccinium uliginosum*), low-bush cranberry (*Vaccinium vitis-idaea*), prickly rose (*Rosa acicularis*), arctic willow (*Salix arctica*) and net-veined willow (*Salix reticulata*). Herb development is not extensive in the upland forest zone. Herb species in this zone include fireweed (*Epilobium angustifolium*), arctic lupine (*Lupinus arcticus*), arrow-leafed coltsfoot (*Patentees sagittatus*), and sedges (*Carex spp.*). The moss layer, particularly feathermoss, is extensive in the closed-canopy portions of the upland forest. Lichens include spotted dog lichen (*Peltigera aphthosa*), coral lichen (*Stereocaulon paschale*) and *Cladonia spp*.

Bog Forest

The bog forest is limited to the organic landforms adjacent to the Pelly River. It is characterized by peat accumulation and stunted black spruce (*Picea mariana*). Black spruce is commonly the only tree species found in the bog forest. Shrub species include shrub birch, northern Labrador tea (*Ledum decumbens*) and cloudberry (*Rubus chamaemorous*). The herb layer is poorly developed in the bog forest zone. It consists mainly of sedges. A characteristic feature of the bog forest is the extensive layers of moss, usually *Sphagnum* spp. It is these moss layers that accumulate into peat. Bog forests are commonly underlain by permafrost.

Alpine Tundra

The alpine tundra vegetation zone occurs above the treeline, primarily on the upper slopes of Mount Mye and Rose Mountain. Smaller communities of alpine tundra vegetation are found in areas such as Sheep Mountain (the mountain just north of the Blind Creek Bridge). Alpine tundra consists of vegetation communities dominated by dwarf shrubs and lichens. Shrubs include dwarf birch (*Betula pumila*), mountain avens (*Dryas octopetala* and *Dryas integrifolia*), crowberry, low-bush cranberry, blueberry, arctic willow, snow-bed willow (*Salix polaris*) and other willow species. Lichens, predominantly *Cetraria spp*., are prevalent in well-drained rocky sites. A variety of herb species occur in the alpine tundra zone, including arctic lupine, Langsdorf's lousewort (*Pedicularis langsdorffii*), alpine harebell (*Campanula lasiocarpa*), black-tipped groundsel (*Senecio lugens*), wormwood (*Artemisia sp.*) grass (*Arctagrostis latifolia*) and sedges.

Subalpine Transition

The subalpine transition, associated with colluvial landforms, occurs on the steep upper mountain slopes between the upland forest and the alpine tundra. It is also found at lower elevations where there are steep slopes and shallow soil. The mid-slopes of Mount Mye and Rose Mountain (below the treeline), as well as the uplands adjacent to Rose Creek alluvial plain, are included in this zone. Well developed forests of white spruce and feathermoss occur at lower elevations in the subalpine transition zone. Tall and medium shrubs in these lower elevation forests include shrub birch and Scouler's willow, and the dwarf shrub layer consists of arctic willow, crowberry, Labrador tea and blueberry. The herb layer, not well developed at lower elevations, is limited to sedges and shade-tolerant species such as arctic lupine and bluebell (*Mertensia paniculata*).

At higher elevations in the subalpine transition zone, vegetation is dominated by tall and medium shrub strata containing such as species as trembling aspen, shrub birch, Scouler's willow and other willow species. Alpine fir, lodgepole pine, white spruce and black spruce are also found in the upper subalpine transition zone. Dwarf shrubs include crowberry, Labrador tea, blueberry, net-veined willow and kinnikinick (*Arctostaphylos uva-ursi*). The herb layer at higher elevations in the subalpine transition zone is much more developed. It includes fireweed, arrow-leafed coltsfoot, Labrador lousewort (*Pedicularis labradorica*), dwarf dogwood, one-sided wintergreen (*Pyrola secunda*), rayless alpine butterweed (*Senecio pauciflorus*), aster (*Aster sp.*), running clubmoss (*Lycopodium clavatum*), grass (*Arctagrostis* *latifolia*), and sedges. Lichens in the subalpine transition zone include spotted dog lichen and *Cladonia* spp.

Alluvial Plain Shrub

The upper reaches of the Vangorda Creek valley and the south fork of Rose Creek and its tributaries are included in the alluvial plain shrub vegetation zone. Shrub birch, shrubby cinquefoil *(Potentilla fruiticosa*), Scouler's willow and other willow species dominate the vegetation communities in the alluvial plain shrub zone. Scattered stands of white spruce and alpine fir also occur. Dwarf shrubs consist of crowberry, Labrador tea, low-bush cranberry, dwarf dogwood, dwarf blueberry (*Vaccinium caespitosum*) and arctic willow. Herbs species include arrow-leafed senecio (*Senecio triangularis*), tall Jacob's ladder (*Polemonium acutiflorum*), sweet coltsfoot (*Petasites hyperboreus*), alpine harebell, wormwood, arctic lupine, clubmoss, common horsetail (*Equisetum arvense*), grass (*Arctagrostis* sp.) and sedges. Feathermoss may form extensive mats in the alluvial plain shrub zone. Lichens, not well represented in this zone, include *Cladonia alpina* and other *Cladonia* species.

4.3.2 WILDLIFE STUDIES

The area summarized for wildlife includes the Pelly River Valley to north of the Faro, Vangorda and Grum developments (including Mount Mye), with Rose Mountain to the west and Sheep Mountain to the east. A summary of the wildlife studies utilized directly or indirectly is provided in Table 4.39.

Table 4.39 Vegetation and Wildlife Studies Completed

Study Topic	Location	Study Date	Reference
Wildlife	Vangorda site	1971	Montreal Engineering Co. 1971
Migration patterns of sheep	Mt. Mye	1981	McCleod, 1981
Fannin sheep mitigation	Vangorda site	1987	Curragh Resources Inc. 1987
Stone sheep impact assessment	Vangorda site	1988	Horesji, 1988
Fannin sheep management	Sheep Mountain		Hoefs, 1988
Sheep	Faro area	1990	Schweinsburg, 1990
Sheep winter range forage	Faro area	1991	Schweinsburg, 1991
Moose	Faro area	1997	Ward, 1997
Moose	Faro area	1998	Ward, 1998
Moose	Faro area	1999	Ward, 1999
Wildlife Habitat	Includes Faro area	1999	YTG Renewable Resources
Sheep winter and summer range	Faro area	1980 - 2000	YTG Renewable Resources

4.3.3 WILDLIFE PRESENCE

4.3.3.1 Pre Mining Information

Information regarding wildlife use of the mine area prior to mine development is anecdotal and largely available in a retrospective study of traditional use of the area by the Ross River Dene (Weinstein, 1992). Several studies of Fannin sheep were conducted in the 1980's prior to development of the current Vangorda Plateau Mine facilities but subsequent to development of the Faro Mine site and subsequent to exploration and underground mining activities at the Vangorda Plateau site.

4.3.3.2 Sheep

A herd of thinhorn (Fannin) sheep reside in the Faro area and pass through the Vangorda Plateau Mine site during their seasonal (typically June and September) migrations between winter and summer use areas. Habitat use areas are illustrated on Figure 4.25.

Sheep Mountain, located about 10 km east of the town of Faro near the mouth of Blind Creek, provides winter and spring lambing habitat for a "nursery" herd consisting of ewes and lambs. This area contains mineral licks, winter food supply and lambing areas, which are critical to the health of the sheep (Schweinsburg, 1991). This area was designated as a game management subzone in 1989 and closed to recreational hunting. Additional protection was provided for the lambing area by diversion of the Blind Creek road around the lambing area. In 2001, a soil slide destroyed a portion of the "new" Blind Creek road and vehicle access returned to the original route through the lambing area. Sheep viewing huts with interpretive information have been constructed in the wintering area as part of local tourism and public education initiatives.

The Mount Mye area to the northeast of the Vangorda Plateau Mine site is used as summer habitat for the nursery herd.

Rams utilize more extensive summer and winter areas. Winter and spring use areas include Sheep Mountain and the area to the east and north of the Town of Faro. This includes an area referred to as "the Fingers" on the north slope of the West Fork of Vangorda Creek where a sheep viewing station and interpretive information have been constructed. The primary summer use area is Rose Mountain, above and west of the Faro Mine site.

Studies conducted prior to development of the Vangorda Plateau Mine site (including McCleod, 1981) identified several possible migration routes between summer and winter use areas that may have been utilized by the nursery herd. All of the routes passed through the mine area. Attempts were made in the late 1980's to direct the sheep migration onto "preferred" routes that bypassed the primary mine use areas. However, these efforts were unsuccessful and the migrations continued on the "primary" trail that generally traversed from Sheep Mountain to the confluence of Shrimp and Vangorda Creeks, the Grum Creek channel to the haul road, the Sheep Pad Pond area to the Grum Overburden Dump/Water Treatment Plant and, subsequently, to Mt. Mye. This is the migration trail that continues to be utilized by the herd (ARMC, pers. comm.).

The migration through the mine site was routinely observed by mine operators and there have been no documented or anecdotal fatalities to sheep related to mine activities.

A recent winter survey was conducted between October 1999 and April 2000 to assess the numbers of sheep utilizing the winter range habitat in the Faro area. The result of this survey was that the population has neither significantly increased nor decreased over the past ten years and, therefore, the population was concluded to be stable. Surveys conducted between 1980 and 1990 indicated that reproduction was excellent and lamb mortality was low. The finite availability of winter forage is thought to be a primary factor in limiting the potential size of the herd. (Schweinsburg, 1990).

4.3.3.3 Moose

Moose can be found across the Faro study area. They are located in the flat lands down by the lakes for most of the year and move up to the alpine zone in late summer. The Yukon Government Department of Renewable Resources initiated the first moose survey of this area in December of 1997 due to local concerns about moose harvest levels. The Game Management Subzone (GMS) 4-45 north of the town of Faro was found to have one of the highest moose abundance in the Yukon, which could make them vulnerable to overharvesting (Ward, 1997).

Studies carried out in November 1998 and December 1999 (Ward, 1998 and 1999) were expanded to include several areas adjacent to GMS 4-45. Results confirmed the high density counts from the previous survey. However, concerns of overharvesting were supported by observations of fewer moose seen near easily accessible corridors than in more remote locations of the survey area and relatively few bulls.

4.3.3.4 Caribou

The Anvil Range and Mount Mye area has two types of caribou, a resident population which summers here, and migratory herds which summer in the Mackenzie Mountains and move south to the Pelly drainage area for the winter. The resident Tay woodland caribou population are known to range in summer in the alpine and sub-alpine zones of the Anvil Range, including Mt. Mye and adjacent plateaus and ridges. A 1991 caribou census study located a concentration of caribou within 10 km of Faro. Harvest of the Tay River herd is mostly limited by access and is presently within sustainable numbers (Kuzyk et. al, 1997).

4.3.3.5 Grizzly and Black Bear

The Faro town dump attracted a significant number of bears to the area until the early 1990's, when upgraded waste management and landfill operating procedures were successfully implemented. Chinook salmon runs in Blind Creek and Tay River are important seasonal local food sources for grizzly and black bear. Both grizzly and black bear are observed frequently on and near the mine sites (ARMC, pers. comm.). Grizzly bear numbers are suspected to be increasing following previous years of suspected illegal hunting (RGC, 1997)

4.3.3.6 Fur Bearers, Small Mammals and Upland Game Birds

The Vangorda development lies wholly within the Ross River group trapping area. While no annotated list of species from these faunal groups has been compared, generally speaking the area is rich and diverse. Development of the mine facilities has had no documented effect on the abundance and distribution of species from these groups.

4.4 AQUATIC RESOURCES

4.4.1 STUDY AREA

The aquatic resource studies have been conducted throughout Rose Creek and Vangorda Creek, tributaries to the Pelly River. The Faro Mine site was developed within the Rose Creek watershed is approximately 400 km^2 of the 1,100 km^2 Anvil Creek watershed, which drains the southeast slopes of the Anvil Range Mountains. Additional tributaries to Anvil Creek include the north fork, a large unnamed tributary and a number of small tributaries. Rose Creek is comprised of a mainstem that branches into a north fork and south fork. A number of tributaries enter each section of the creek, including Faro Creek, which has been diverted around the Faro pit to enter the north fork, rather than the mainstem. The Faro pit and associated dumps are located north of the mainstem, just west of the north fork. In addition to the diversion of Faro Creek, additional alterations to the Rose Creek watershed associated with the Anvil Range Mine Complex include:

1. Diversion of the mainstem around the Rose Creek tailings.
2. Creation of the pumphouse pond on the mainstem.
3. Diversion of the lower north fork.
4. Construction of the fresh water supply dam (FWSD) and associated spillway and downstream culverts, which resulted in creation of a reservoir.
5. Placement of the haul road over the north fork, all tributaries to the east and the upper south fork.

Vangorda Creek drains an area of approximately 93 km^2 as an east (mainstem) and west fork. Drainage from the south slope of Mount Mye flows into the east fork and the west fork originates near the headwaters of south fork Rose Creek. Other tributaries include Grum Creek and Shrimp Creek.. The Vangorda Pit and dump are located on the east side of the east fork, upslope of Shrimp Creek and the Grum Pit and dump are located between the two branches, over Grum Creek. A portion of Vangorda Creek has been diverted around Vangorda Pit.

4.4.2 STUDIES COMPLETED

The following aquatic resource studies have been completed within the watershed study area:

Table 4.40 Aquatic Resource Studies Completed

Study Topic	Drainages	Study Date	Reference
Fish presence, metal in fish tissue	Rose, Anvil	1974	S.A. Baker, 1979
Fish presence, metal in fish tissue	Rose, Anvil	1975	S.A. Baker, 1979
Fish presence, metal in fish tissue	Rose, Anvil, Vangorda	1975	Mtl. Engineering Co., 1976
Fish presence, metal in fish tissue	Rose, Anvil	1976	S.A. Baker, 1979
Fish presence, metal in fish tissue	Vangorda	1976	Mtl. Engineering Co., 1977
Fish presence, metal in fish tissue	Vangorda	1977	Mtl. Engineering Co., 1978
Fisheries impact of Rose diversion	Rose, Anvil	1981	K. Weagle, 1981a
Arctic grayling survey	Rose, Anvil	1981	K. Weagle, 1981b
Fisheries	Rose	1986	Leverton & Associates, 1986
Fish presence and habitat	Vangorda	1987	P.A. Harder & Associates, 1987

Table 4.40 Aquatic Resource Studies Completed

Continued...

Study Topic	Drainages	Study Date	Reference
Fish spawning survey	Rose	1988	P.A. Harder & Associates, 1988
Fish production and overwintering	Vangorda	1989	P.A. Harder & Associates, 1989
Fish habitat, production and feeding	Rose, Anvil	1989 / 1990	P.A. Harder & Associates, 1991
Fish feeding, growth and population	Vangorda	1990	P.A. Harder & Associates, 1992
Fish habitat, metal in fish tissue	Rose, Anvil	1992	P.A. Harder & Associates, 1993
Fish habitat use	Vangorda	1996	P.A. Harder & Associates, 1996
Metal in fish tissue		1997	Yukon Territorial Government
Fish habitat associated with FWSD	Rose	2000	Gartner Lee Ltd., 2000
Benthic invertebrate sampling	Rose, Anvil	1973	Hoos & Holman, 1973
Benthic invertebrate sampling	Rose, Anvil	1974	S.A. Baker, 1979
Benthic invertebrate sampling	Rose, Anvil	1975	S.A. Baker, 1979
Benthic invertebrate sampling	Rose, Anvil, Blind, Vangorda	1975	Mtl. Engineering Co., 1976
Benthic invertebrate sampling	Rose, Anvil	1976	S.A. Baker, 1979
Benthic invertebrate sampling	Rose, Blind, Vangorda	1976	Mtl. Engineering Co., 1977
Benthic invertebrate sampling	Rose, Anvil	1977	K. Weagle, 1981
Benthic invertebrate sampling	Rose, Vangorda, Shrimp	1977	Mtl. Engineering Co., 1978
Benthic invertebrate sampling	Rose, Anvil	1978	K. Weagle, 1980
Benthic invertebrate sampling	Rose, Anvil, Blind, Vangorda	1980	K. Weagle, 1980
Benthic invertebrate sampling	Rose, Anvil	1981	K. Weagle, 1981
Benthic invertebrate sampling	Rose, Anvil	1982	K. Weagle, 1982
Benthic invertebrate sampling	Rose, Anvil	1983	B. Gotin & T. Osler, 1985
Benthic invertebrate sampling	Rose, Anvil	1983	K. Weagle, 1983
Benthic invertebrate sampling	Rose, Anvil	1984	K. Weagle, 1984
Benthic invertebrate sampling	Rose, Anvil	1986	Leverton & Associates, 1987
Benthic invertebrate sampling	Rose, Anvil	1986	EPS, unpublished
Benthic invertebrate sampling	Rose, Anvil	1988	Laberge, 1989
Benthic invertebrate sampling	Rose, Anvil, Vangorda	1990	P.A. Harder & Associates, 1992
Benthic invertebrate sampling	Vangorda	1991	Laberge, 1991
Benthic invertebrate sampling	Rose, Anvil, Blind	1992	P.A. Harder & Associates, 1993
Benthic invertebrate sampling	Vangorda	1993	Laberge, 1993
Benthic invertebrate sampling	Rose, Anvil	1994	Laberge, 1994
Benthic invertebrate sampling	Vangorda	1995	Laberge, 1995
Benthic invertebrate sampling	Rose, Anvil	1996	Laberge, 1996
Benthic invertebrate sampling	Vangorda	1997	Laberge, 1997
Benthic invertebrate sampling	Rose, Anvil	1998	Laberge, 1998
Benthic invertebrate sampling	Vangorda	1999	Laberge, 1999
Benthic invertebrate sampling	Rose, Anvil	2000	Laberge, 2000
Benthic invertebrate sampling	Vangorda	2001	Laberge, 2002

4.4.3 FISH PRESENCE

Studies regarding fish presence and habitat use have been conducted at the Anvil Range Mine Complex between 1974 and 1996 and results of fish capture are noted on Figures 4.26 and 4.27 and for the Anvil watershed and Figure 4.28 for the Vangorda watershed. Fish species present in the upper Pelly River watershed include chinook and chum salmon, lake trout, lake, broad, humpback and round whitefish, least cisco, inconnu, arctic grayling, northern pike, burbot, longnose sucker and slimy sculpin. The following summary is from the 1996 ICAP as well as Harder, 1991 and Harder, 1987:

1. Arctic grayling (*Thymallus arcticus*), burbot (*Lota lota*), chinook salmon (*Oncorohynchus tshawytscha*), slimy sculpin (*Cottus cognatus*), longnose sucker (*Catastomas catostomus*) and round whitefish (*Prosopium cylindraceum)* are present in the Anvil and Vangorda watersheds.

2. Based on fish sampling within the Rose Creek branch of the Anvil watershed, arctic grayling are the dominant species and adult chinook salmon have not been reported, although juvenile chinook have been noted in the first reach..

3. Chinook have been noted spawning within lower Anvil Creek during some years surveyed (in relatively low numbers when compared regionally) and juveniles have been noted in the lower 23 km of Anvil Creek in moderate numbers, when compared regionally.

4. Overall fish production in Anvil Creek above Rose Creek is considered extremely low.

5. The presence of arctic grayling and sculpin in lower Rose Creek declined throughout the sampling period (1974 - 1996).

6. Arctic grayling have been captured throughout the Rose Creek mainstem, north fork and south fork, including within the upper reaches of the north and south forks, several kilometers upstream of the Faro Mine infrastructure. A large population of grayling reside in the headwater area of the north fork.

7. Once they reach maturity (age three to four in the study area), arctic grayling spawn annually between early May and early June in the Rose Creek drainage (Weagle 1981, Harder 1988).

8. Despite the creation of a barrier to upstream fish migration at the FWS dam spillway culverts (some fish will be carried or choose to move downstream), it has been determined that the arctic grayling populations both upstream and downstream of the FWS dam within the study area are in good biological condition. In both areas, sufficient habitat exists to support all life phases of arctic grayling (Weagle, 1981).

9. Juvenile chinook are the dominant species in lower Vangorda Creek (reaches 1,2,3), where they are present in high numbers.

10. Chinook fry move to lower Vangorda in the spring or early summer where they rear until outmigration in the fall.

11. No fish have been captured in Vangorda Creek upstream of Faro Road (where the east and west branches meet).

12. Grayling is only species fished for sport in Rose Creek and fishing is most popular in the lower end of the south fork and within the reservoir (Harder, 1991).

The following have been noted as potential alterations to fish populations as a result of the Anvil Range Mine Complex:

1. The decline of arctic grayling and sculpin in lower Rose Creek may be the result of historical tailings spills and effluent discharge from the mine workings.

2. The south fork Rose Creek is one of the most productive areas in the Anvil watershed, which may be the result of the overwintering habitat created by the fresh water supply dam.

4.4.4 PHYSICAL FISH HABITAT

A classification of fish habitat in the Anvil watershed was conducted in 1989 and 1990 (P.A. Harder & Associates, 1991) (Figure 4.29) and a classification of baseline fish habitat in the Vangorda watershed was completed in 1987 (P.A. Harder & Associates, 1987, Figure 4.30). Additional fish habitat studies (noted in Table 4.40, above) have added to this data. Based on a review of some of these reports, fish habitat within the Anvil watershed is outlined below:

1. Within Anvil Creek, spawning habitat for Chinook is present downstream of Rose Creek.

2. Within the Rose Creek mainstem, spawning habitat for arctic grayling is found at the upper end of the diversion channel. Some rearing and overwintering habitat is present in the created diversion channel.

3. Within Rose Creek south fork, ample rearing and overwintering habitat is available within the beaver ponds, pumphouse pond where water flows continue below the ice as a result of control at the FWSD. The FWSD reservoir also provides ample winter and summer habitat.

4. Patches of spawning habitat are present in the north fork and the headwater provides ample summer and winter habitat for resident grayling.

5. There are three major barrier points to fish migration within Rose Creek. These include the FWSD along with two hanging culverts that convey flows from the FWS dam overflow spillway within the south fork, the haul road at the north fork and a section of the south fork from the access road crossing to the haul road crossing (where the access road culvert, the stream gradient and the haul road each pose a barrier). The diversion channel may pose a barrier to juvenile fish during some flow conditions.

Fish habitat within the Vangorda watershed is outlined below from Harder, 1987:

1. Lower Vangorda Creek (Reaches 1,2 and 3 on Figure 4.30) provide important rearing habitat for the species present and some overwintering habitat for the resident arctic grayling.

2. The main channel of Vangorda Creek is of lowest gradient (1.5% to 2.7%) with large gravels, cobbles and boulders in the lower 3 reaches. Spawning habitat is available in this section (reach 1) and rearing and summer habitat is offered by the pools and cover (reaches 2 and 3)

3. The culvert under the access road to the mine sites is a barrier to upstream migration.

4. The channel gradient becomes progressively steeper above the Faro Road (4% in the mid section and 6% in the headwaters) with larger substrate and log debris from adjacent burn areas.

5. Harder (1987) predicted that impacts to fish habitat from the Vangorda Plateau Mine site were could result if sediment was released from the development and operations. With effective drainage and diversion channels constructed, impacts could be minimized. During stripping at the pits, sediment was released into Vangorda Creek. Fish sampling in 1996 by Harder confirmed that fish were still utilizing the spawning are rearing habitat available in the lower creek

4.4.5 METALS IN FISH TISSUE

Samples of tissue from arctic grayling, burbot, chinook salmon, slimy sculpin, longnose sucker and round whitefish in the Anvil and Vangorda systems were collected in studies carried out in 1974, 1975, 1976, 1977, 1992 and 1997. Analysis for metals included some or all of: mercury, copper, lead, zinc, nickel, manganese and iron during each study. Tissues analyzed include muscle, liver and whole fish. Table 4.41 summarizes the data collected, focusing on the data (in µg/g wet weight) for zinc, iron, lead and nickel as these are key parameters of concern.. Mercury has also been included as this is the only metal for which Health Canada has set consumption guidelines.

It is unclear, from the available information, if any of the fish collected are from populations that are unaffected by mine operations. Therefore, it is difficult to determine if metals in fish tissue are elevated in the project area and if conditions have changed over the life of the mine. The 1993 Harder report did include samples collected from Blind Creek which were identified as control specimens but collection from this site has only occurred in 1993 and composite samples (whole body) were analyzed rather than specific tissue types (muscle or liver). Also, in the case of arctic grayling, only one specimen was captured making it difficult to generate meaningful comparisons to data collected from Anvil and Vangorda Creeks.

Table 4.41 Results of Metal Analyses in Fish Tissue

Year Sampled	Location	Species	Tissue	Number of Samples	Concentrations of Metals (ug/g) Wet Weight Mercury	Copper	Iron	Manganese	Nickel	Lead	Zinc	Reference
lind Creek												
1992	Lower Blind Creek	Chinook	Whole Tissue	22	-	3.7	-	-	-	<2	135	P.A. Harder, 1993
1992	Lower Blind Creek	Slimy Sculpin	Whole Tissue	8	-	3.1	-	-	-	<2	160	P.A. Harder, 1993
1992	Lower Blind Creek	Arctic grayling	Whole Tissue	1	-	4.2	-	-	-	<2	106	P.A. Harder, 1993
Anvil Drainage												
1975	Rose Drainage	Sculpin	Muscle	4	0.08	0.35	21.9	3.07	1.80	1.90	29.0	Montreal Engineering Company Limited, 1976.
1975	L. Anvil (EP8)	Arctic grayling	Muscle	1	-	0.40	-	-	-	0.20	4.0	S. Baker, Environment Canada, 1979.
1975	L. Anvil (EP8)	Arctic grayling	Liver	1	-	1.80	-	-	-	0.20	20.0	S. Baker, Environment Canada, 1979.
1976	Rose (EP1)	Arctic grayling	Muscle	2	0.07	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Rose (EP1)	Arctic grayling	Liver	2	0.20	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Sucker	Muscle	2	0.07	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Sucker	Liver	2	0.42	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Whitefish	Muscle	2	0.31	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Whitefish	Liver	2	0.18	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Whitefish	Eggs	1	0.05	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Arctic grayling	Muscle	2	0.11	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	Anvil (EP7)	Arctic grayling	Liver	1	0.26	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	L. Anvil (EP8)	Arctic grayling	Muscle	na	0.10	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1976	L. Anvil (EP8)	Arctic grayling	Liver	na	0.11	-	-	-	-	-	-	S. Baker, Environment Canada, 1979.
1992	Rose Diversion	Burbot	Whole Tissue	1	-	5.2	-	-	-	5	155	P. A. Harder, 1993
1992	Rose Diversion	Arctic grayling	Whole Tissue	4	-	3.9	-	-	-	-	110	P. A. Harder, 1993
1992	Rose Reservoir	Arctic grayling	Muscle	10	0.082 [2]	2.6	-	-	-	-	21.7	P. A. Harder, 1993
1992	Rose Reservoir	Arctic grayling	Liver	10	-	7.4	-	-	-	-	83.3	P. A. Harder, 1993
1992	Rose/Pump house Pond	Arctic grayling	Muscle	10	<0.05 [2]	2.3	-	-	-	-	25.7	P. A. Harder, 1993
1992	Rose/Pump house Pond	Arctic grayling	Liver	10	-	9.2	-	-	-	-	96.2	P. A. Harder, 1993
1992	L. Anvil (EP8)	Chinook	Whole Tissue	composite	-	8	-	-	-	<2	108	P. A. Harder, 1993
1992	L. Anvil (EP8)	Arctic grayling	Whole Tissue	composite	-	6.9	-	-	-	<2	113	P. A. Harder, 1993
1992	L. Anvil (EP8)	Sculpin	Whole Tissue	composite	-	3.7	-	-	-	<2	138	P. A. Harder, 1993
1992	Anvil (EP7)	Sculpin	Whole Tissue	composite	-	3.8	-	-	-	2	127	P. A. Harder, 1993
1997	Rose Creek @ reservoir	Arctic grayling	Liver	5	0.106	1.99	94.7	20.4	<3 [1]	<7 [1]	20.4	1997 YTG data, unpublished
1997	Rose Creek @ reservoir	Arctic grayling	Muscle	5	0.058	0.32	7.3	5.0	<2	<4	17.9	1997 YTG data, unpublished
1997	Rose Creek below tailings	Arctic grayling	Liver	5	0.072	2.76	99.5	5.7	<3 [1]	<6 [1]	26.6	1997 YTG data, unpublished
1997	Rose Creek below tailings	Arctic grayling	Muscle	5	0.052	1.38	7.5	8.0	<2	<4 [1]	18.3	1997 YTG data, unpublished
1997	Rose Creek d/s tailings	Slimy Sculpin	Whole Body	5	0.013	1.04	138.1	30.0	<10 [1]	2.2	44.5	1997 YTG data, unpublished
1997	Rose Creek @ water reservoir	Slimy Sculpin	Whole Body	5	0.020	1.26	180.7	13.7	<6 [1]	3.6	28.4	1997 YTG data, unpublished
Vangorda Drainage												
1975	L. Vangorda	Burbot	Muscle	na	0.14	0.33	11.6	0.7	5.6	0.5	6.4	Montreal Engineering Company Limited, 1977
1975	L. Vangorda	Arctic grayling	Muscle	na	0.08	0.75	26.5	1.5	3.5	1.1	11.8	Montreal Engineering Company Limited, 1977
1975	L. Vangorda	Sculpin	Muscle	na	0.19	0.73	30.9	5.1	3.6	1.9	26.8	Montreal Engineering Company Limited, 1977
1975	L. Vangorda	Whitefish	Muscle	na	0.12	0.72	14.2	0.8	0.52	0.4	14.1	Montreal Engineering Company Limited, 1977
1976	L. Vangorda	Chinook	Muscle	14	0.008	1.3	39.7	3.2	0.72	0.6	27.3	Montreal Engineering Company Limited, 1977
1976	L. Vangorda	Arctic grayling	Muscle	12	0.01	0.96	28.3	2.9	0.69	0.9	14.6	Montreal Engineering Company Limited, 1977
1976	L. Vangorda	Sculpin	Muscle	15	0.02	1.90	57.8	7.0	1.30	2.8	39.3	Montreal Engineering Company Limited, 1977
1977	L. Vangorda	Arctic grayling	Muscle	na	<0.06	1.39	18.5	<1.3	<1.0	<1.0	16.8	Montreal Engineering Company Limited, 1978
1977	L. Vangorda	Sculpin	Muscle	na	<0.05	2.93	23.0	5.50	<1.0	<1.0	29.3	Montreal Engineering Company Limited, 1978
1989	Vangorda Crnear Pelly River	Sculpin		6	0.019	1.26	37.78	4.7	<2	0.4	27.4	1989 EP
1992	L. Vangorda	Chinook	Whole Tissue	1	-	6.70	-	-	-	5.0	131.0	P.A. Harder, 1993
1992	L. Vangorda	Arctic grayling	Whole Tissue	8	-	4.3	-	-	-	6.0	142.0	P.A. Harder, 1993
1992	L. Vangorda	Sculpin	Whole Tissue	1	-	4.9	-	-	-	23.0	184.0	P.A. Harder, 1993
1992	L. Vangorda	Whitefish	Whole Tissue	3	-	3.8	-	-	-	12.7	90.3	P.A. Harder, 1993
1997	Vangorda Cr near Pelly River	Arctic grayling	Liver	5	0.056	3.01	75.5	4.4	<9 [1]	<46 [1]	45.9	1997 YTG data, unpublished
1997	Vangorda Cr near Pelly River	Arctic grayling	Muscle	5	0.020	0.83	11.9	3.6	<2	1.0	27.3	1997 YTG data, unpublished
1997	Vangorda Cr near Pelly River	Slimy Sculpin	Whole Body	5	0.031	<4	92.4	13.6	<20	<40	52.4	1997 YTG data, unpublished
1997	Vangorda Cr near Pelly River	Burbot	Whole Body	1	0.030	0.44	9.8	1.2	<2	0.3	12.8	1997 YTG data, unpublished

Values are averages of individual sample results
Shaded value indicates exceedance of Health Canada Consumptive Guideline
na - not available

[1] Sample results were less than detection limits - could not be converted into wet weight
[2] Sample size was 5 for mercury only

Various reports have made considerable comment on the potential for mercury contamination in fish living in the Rose Creek Reservoir. RGC 1996 and Harder 1993 report an average value of 0.8 μg/g wet weight in the muscle tissue of five arctic grayling collected from the reservoir. A review of the data provided in Harder 1993 indicates an error in the calculation of the mean value, which is correctly stated as 0.082 μg/g. This level of mercury in fish tissue is not identified as posing a health risk. However, the level in one specimen was 0.12 μg/g, above the 0.1 μg/g level at which Health Canada sets consumption guidelines for the protection of human health. The guideline states that the safe consumption level for fish with this concentration of mercury should not exceed 1,050 g per week. The levels of mercury from fish collected from the Rose Creek Reservoir were consistent with concentrations found in fish tissue collected from other areas of the Anvil/Rose Creek watershed in 1976.

A rigorous review of historical information, such as laboratory detection limits, techniques used for analysis, size and weight of fish analyzed, has not been completed. However, the following qualitative statements can be made:

1. Copper levels in tissue appear to have increased in Anvil and Vangorda from1975 to 1992 and 1997.
2. Zinc levels are also higher in 1992 and 1997 when compared to 1975 and 1976 data in fish from Anvil and Vangorda Creeks.
3. Detection limits for nickel in the 1997 data are too high to make comparisons over time.
4. The Vangorda Creek samples appear to have increased levels of lead between 1975 and 1992.
5. The Vangorda Creek samples appear to have increased iron and manganese levels in the 1997 samples compared to the 1975/76 samples.

Although the concentrations of metals in fish tissues appear to have increased between 1975 and 1992, this possible trend can not be assessed without adequate data from a control site and an overall assessment of the historical quality control program.

4.4.6 BENTHIC INVERTEBRATES

Benthic Invertebrates include insects, crustaceans, aquatic worms and mollusks that reside in stream bottoms. Benthic invertebrate community structures are often used as measure of ecosystem health. Impacts to watercourses such as substrate composition, water flows and, in particular, water quality can affect benthic organisms. Sampling has been conducted at the following stations in the Anvil and Vangorda watersheds and can be found on Figures 4.21 and 4.22:

1. R1 - Rose Creek south fork d/s of pumphouse, a reference site.
2. R2 - Rose Creek at confluence of diversion channel and tailings outlet
3. R3 - Rose Creek between tailings and Anvil Creek
4. R4 - Rose Creek at mouth
5. R5 - Anvil Creek d/s of Rose Creek
6. R6 - Anvil Creek u/s of Rose Creek, a reference site
7. V1 - Vangorda Creek upstream of diversion a reference site
8. V5 - Vangorda Creek west fork downstream of mine activity
9. V27 - Vangorda Creek downstream of mine activity
10. V8 - Vangorda Creek at mouth

Sampling was initiated at some of these sites in 1973 within the Anvil system and in 1975 within the Vangorda system. From 1991 on, benthic invertebrate population monitoring has been conducted at each of these sites every second year as per the requirements of the water licenses. Artificial substrates were used for the majority of the sampling events, allowing consistency across much of the data set. Triplicate samples were collected at each site during each sampling event and the results pooled to report community structure.

Sampling results have been summarized as abundance (total number of organisms) and richness (number of taxa), as noted on Tables 4.42 and 4.43, as a means of comparing the benthic invertebrate community health over time and throughout the watersheds. Graphical trends for species abundance at each site, over time, are represented on Figures 4.31 and 4.32.

Measures of abundance and richness have fluctuated at each sampled site over time. This fluctuation may be attributed to natural factors including climate, water flow, species life cycles, sample timing as well as differences in sampling methodology and changes in water quality. No statistical analysis has been applied to the benthic data. The following observations can be drawn for the Anvil Creek data:

1. Abundance has increased over time at reference station R1.
2. Prior to 2000, abundance and richness were typically lower at stations R2, R3 and R4 downstream of the Rose Valley tailings than at R1 located upstream.

The historical reduced productivity in lower Rose Creek as compared with the control sites indicates a negative response to mine effluent discharge.

The following observations can be drawn for the Vangorda Creek data:

1. The 1996 ICAP summary of the benthic data from the Vangorda watershed stated that at stations V27 and V8, located downstream of mine facilities, benthic invertebrate communities have generally had a greater abundance and richness than the upstream reference site V1.
2. The general trend at all stations is an increase in benthic invertebrate abundance over time, however, the stations downstream of the mine operations have shown greater increases than the upstream reference stations.
3. The results of the 2001 program indicated that mining activities and some elevated sediment metal concentrations have not had an observable impact on benthic communities in Vangorda Creek and that "overall the community structure appears to be stable over time".

More recent data shows an overall increase in the abundance of organisms at all Anvil and Vangorda watershed sites beginning around 1993/94. Both abundance and taxanomic richness increased in 1994 and have generally been high since then. This trend is generally evident at all sites, control and impact, an indicator that communities have become more diverse and thus healthier.

In order to allow a meaningful comparison over time of data regarding taxonomic richness, the data for the years 1995, 1997, 1999 and 2001 were modified, where necessary, to correspond to the less detailed enumerations previously performed to the family level only.

Table 4.42 Comparison of Benthic Data over a 12 Year Period from the Anvil Creek Watershed

Site	Year	Total Abundance (organism/m^2)	Taxonomic Richness	Source
R1	1974	25	7	S.A. Baker, 1979
	1975	182	9	S.A. Baker, 1979
	1976	137	16	S.A. Baker, 1979
	1976	215	30	Montreal Engineering Co., 1977
	1977	398	23	K. Weagle, 1981 (EPS)
	1978	74	10	K. Weagle, 1981 (EPS)
	1980	333	34	K. Weagle, 1980 (EPS)
	1981	2457	35	K. Weagle, 1981 (EPS)
	1982	784	40	K. Weagle, 1982 (EPS)
	1983	2906	56	B. Godlin & T. Osler, 1985
	1983	1226	40	K. Weagle, 1983 (EPS)
	1984	1736	na	K. Weagle, 1984 (EPS)
	1986	469	na	EPS printout
	1986	156	29	Leverton & Associates, 1987
	1987	374	na	EPS, unpublished
	1988	128	24	Laberge, 2000
	1990	1,373	21	Laberge, 2000
	1992	1,141	27	P.A. Harder & Assoc. 1993
	1994	5,489	60	Laberge, 2000
	1996	1,629	57	Laberge, 2000
	1998	50,808	57	Laberge, 2000
	2000	5,368	57	Laberge, 2000
R2	1974	33	7	S.A. Baker, 1979
	1975	213	6	S.A. Baker, 1979
	1976	32	6	S.A. Baker, 1979
	1977	99	10	K. Weagle, 1981 (EPS)
	1978	5	3	K. Weagle, 1981 (EPS)
	1980	191	13	K. Weagle, 1980 (EPS)
	1981	634	21	K. Weagle, 1981 (EPS)
	1982	2,193	30	K. Weagle, 1982 (EPS)
	1983	5,187	41	B. Godlin & T. Osler, 1985
	1983	1,709	29	K. Weagle, 1983 (EPS)
	1984	320	na	K. Weagle, 1984 (EPS)
	1986	2,736	na	EPS printout
	1986	911	58	Leverton & Associates, 1987
	1987	93	na	EPS, unpublished
	1988	115	24	Laberge, 2000
	1990	4,564	20	Laberge, 2000
	1992	400	14	P.A. Harder & Assoc. 1993
	1994	920	47	Laberge, 2000
	1996	991	37	Laberge, 2000
	1998	1,945	47	Laberge, 2000
	2000	6,611	48	Laberge, 2000

Table 4.42 Comparison of Benthic Data over a 12 Year Period from the Anvil Creek Watershed

Site	Year	Total Abundance (organism/m^2)	Taxonomic Richness	Source
R3	1974	3	4	S.A. Baker, 1979
	1975	65	7	S.A. Baker, 1979
	1976	45	11	S.A. Baker, 1979
	1977	47	13	K. Weagle, 1981 (EPS)
	1978	8	4	K. Weagle, 1981 (EPS)
	1980	6	3	K. Weagle, 1980 (EPS)
	1981	166	19	K. Weagle, 1981 (EPS)
	1983	5,436	47	B. Godlin & T. Osler, 1985
	1983	517	28	K. Weagle, 1983 (EPS)
	1984	101	na	K. Weagle, 1984 (EPS)
	1986	3,250	na	EPS printout
	1986	1,083	48	Leverton & Associates, 1987
	1987	1,619	na	EPS, unpublished
	1988	32	8	Laberge, 2000
	1990	2,455	20	Laberge, 2000
	1992	321	12	P.A. Harder & Assoc. 1993
	1994	54,875	49	Laberge, 2000
	1996	144	25	Laberge, 2000
	1998	13,491	39	Laberge, 2000
	2000	18,929	42	Laberge, 2000
R4	1980	37	10	K. Weagle, 1980 (EPS)
	1981	274	20	K. Weagle, 1981 (EPS)
	1982	1,856	28	K. Weagle, 1982 (EPS)
	1983	2,336	38	B. Godlin & T. Osler, 1985
	1983	907	31	K. Weagle, 1983 (EPS)
	1984	4,780	na	K. Weagle, 1984 (EPS)
	1986	5,903	na	EPS printout
	1986	1,973	50	Leverton & Associates, 1987
	1987	1,106	na	EPS, unpublished
	1988	116	15	Laberge, 2000
	1990	2,175	20	Laberge, 2000
	1992	312	14	P.A. Harder & Assoc. 1993
	1994	2,366	53	Laberge, 2000
	1996	666	35	Laberge, 2000
	1998	8,148	48	Laberge, 2000
	2000	na	na	Laberge, 2000

Table 4.42 Comparison of Benthic Data over a 12 Year Period from the Anvil Creek Watershed

Site	Year	Total Abundance (organism/m^2)	Taxonomic Richness	Source
R5	1974	24	7	S.A. Baker, 1979
	1975	466	10	S.A. Baker, 1979
	1976	190	17	S.A. Baker, 1979
	1977	226	17	K. Weagle, 1981 (EPS)
	1978	375	17	K. Weagle, 1981 (EPS)
	1980	434	24	K. Weagle, 1980 (EPS)
	1981	4,126	33	K. Weagle, 1981 (EPS)
	1982	777	26	K. Weagle, 1982 (EPS)
	1983	2,401	39	K. Weagle, 1983 (EPS)
	1984	161	na	K. Weagle, 1984 (EPS)
	1986	4,702	na	EPS printout
	1986	1,605	51	Leverton & Associates, 1987
	1987	2,226	na	EPS, unpublished
	1988	425	22	Laberge, 2000
	1990	3,470	25	Laberge, 2000
	1992	1,263	25	P.A. Harder & Assoc. 1993
	1994	4,115	55	Laberge, 2000
	1996	2,726	43	Laberge, 2000
	1998	7,974	44	Laberge, 2000
	2000	66,975	54	Laberge, 2000
R6	1974	247	9	S.A. Baker, 1979
	1975	547	15	S.A. Baker, 1979
	1976	328	23	S.A. Baker, 1979
	1988	na	na	Laberge, 2000
	1990	3,477	25	Laberge, 2000
	1992	3,911	31	P.A. Harder & Assoc. 1993
	1994	15,431	46	Laberge, 2000
	1996	2,741	45	Laberge, 2000
	1998	26,944	43	Laberge, 2000
	2000	39,344	56	Laberge, 2000
R7	1988	na	na	Laberge, 2000
	1990	2,467	26	Laberge, 2000
	1992	1,053	22	P.A. Harder & Assoc. 1993
	1994	14,756	44	Laberge, 2000
	1996	7,029	45	Laberge, 2000
	1998	39,292	44	Laberge, 2000
	2000	4,574	40	Laberge, 2000

na - not a vailable for this study

Table 4.43 Comparison of Benthic Data Collected from Vangorda Creek

Site	Year	Total Abundance (organisms/m^2)	Taxonomic Richness	Total Number of Sensitive Taxa	Source
V1	1976	136	15	na	Montreal Engineering Co., 1977
	1980	350	24	na	K. Weagle, 1980 (EPS)
	1990	300	7	na	P.A. Harder & Associates, 1992
	1991	763	17	6	Laberge, 2001
	1993	3,090	19	7	Laberge, 2001
	1995	1,758	26	8	Laberge, 2001
	1997	1,663	29	9	Laberge, 2001
	1999	1,025	20	7	Laberge, 2001
	2001	707	21	9	Laberge, 2001
V27	1980	216	21	na	K. Weagle, 1980 (EPS)
	1990	1,299	7	na	P.A. Harder & Associates, 1992
	1991	953	24	6	Laberge, 2001
	1993	5,952	17	5	Laberge, 2001
	1995	4,929	28	9	Laberge, 2001
	1997	11,751	29	8	Laberge, 2001
	1999	1,061	23	7	Laberge, 2001
	2001	3,698	24	7	Laberge, 2001
V5	1990	2,985	15	na	P.A. Harder & Associates, 1992
	1991	1,298	29	7	Laberge, 2001
	1993	2,193	21	6	Laberge, 2001
	1995	1,550	28	8	Laberge, 2001
	1997	9,291	38	9	Laberge, 2001
	1999	1,284	32	8	Laberge, 2001
	2001	17,232	40	10	Laberge, 2001
V8	1980	133	26	na	K. Weagle, 1980 (EPS)
	1990	3,162	16	na	P.A. Harder & Associates, 1992
	1991	594	22	6	Laberge, 2001
	1993	3,024	19	6	Laberge, 2001
	1995	8,340	35	8	Laberge, 2001
	1997	904	25	6	Laberge, 2001
	1999	1,061	28	9	Laberge, 2001
	2001	5,867	28	7	Laberge, 2001

na - not available for this summary

5 TRADITIONAL USE AND HERITAGE/ARCHAEOLOGICAL RESOURCES

5.1 BACKGROUND AND STUDY AREA

The following information is taken directly from the Phase 1 Environmental Site Assessment conducted in 1999 (Gartner Lee Limited, 2001) and consists of data assembled on heritage resources located in the Anvil Range Mining Complex area and First Nations traditional use of these resources. Additionally, impacts by the mine development and operation have been addressed. As no consideration was given to impacts on heritage resources or on traditional uses of the mine area prior to development, no baseline information on traditional use and heritage resources in the Faro and Anvil Range was collected at that time. The Ross River Dena, part of the Kaska Nation, have documented their traditional use of the mine area.

The geographical area for this study is broadly defined as the Anvil Range area, north of the Pelly River and Campbell Highway, west of the Ross River and east and south of the Tay River. Thus, it includes the mine sites, the Faro townsite area and various roads on the north side of the Pelly River. The area also includes an extensive amount of surrounding country, including the Rose, Anvil and Vangorda Creek basins, as well as major parts of the Blind Creek and Tay Creek drainages.

A broadly defined study area was necessary as the resources upon which traditional land use is based (i.e. caribou, sheep, moose) and which have also been affected by the mine development, can be widely scattered across the landscape, not necessarily localized in their distribution. In addition, traditional land use has been affected by the extensive mineral staking activity that has taken place in the greater Faro area (Weinstein, 1992).

5.2 INFORMATION SOURCES

Consideration of the mine's effect on traditional use is largely based on a retrospective study completed by anthropologist Martin Weinstein (Weinstein, 1992). Described as "an attempt at a retrospective assessment of impacts to the Ross River Band's land use due to the mining development" (Weinstein, 1992:5), the report is a detailed reconstruction of traditional land use in the mine area and changes to the traditional land use that have occurred as a result of the mine. An anthropology thesis (McDonnell, 1975) concerning the traditional land use activities of the Ross River and Kaska people offered additional information.

Data in the Council for Yukon Indians (CYI) Resource Atlas for map sheet 105K (Tay River) that was assembled in the 1970s for land claims purposes has been used to determine the location of land use areas. Aboriginal language toponyms, or place names, are another significant data source and is available for map sheet 105K (Tay River).

Two databases containing heritage site information were consulted, the CHIN (Canadian Heritage Inventory Network), which is the register for archaeological sites and is maintained by the Canadian Museum of Civilization (available at the Yukon Heritage Branch), and the Yukon Historic Sites Inventory database which is maintained by the Yukon Heritage Branch.

A series of interviews were held with selected elders of the Ross River Dena community in Ross River in December of 1999. The purpose of these interviews was to confirm if the findings of the Weinstein study were still considered valid, and to record any additional information regarding land use in the area that individuals wanted to offer. It was also hoped that the interview sessions would give insight into the heritage site potential of the Anvil Range area. Past heritage studies have shown the close link or correspondence between traditional First Nations land use sites and heritage site locations in the Yukon (Gotthardt, 1993; Greer, 1997).

Staff of the Ross River Dena Council Land Claims office suggested individuals who would be appropriate to interview. Sessions were held, over a three day period, with Robertson Dick, Charlie Dick, Grady Sterriah, Betty Souza, Doris Bob, Doris Etzel, Gracie Tom, Tootsie Charlie, Mary Charlie, Robert Etzel, Frank Shorty and Margaret Shorty. Regrettably, Arthur John Sr. whose family traditionally used the Faro/Anvil Range area, and who has continued to use it himself, was not available for an interview.

Topographic and computer generated maps were used as research aids and for documenting spatial information. Most of the interview sessions were tape-recorded. Notes were taken for interviews that were not tape-recorded. Most interview sessions lasted between one and three hours

An open-ended format was employed in the interview sessions. The elders were asked to discuss their use of and their knowledge of important resources in the Anvil Range area. They were also asked about their knowledge of heritage sites in the region, such as hunting blinds, hunting fences, graves, campsites and caches. Considerable information was offered on land use and heritage sites in other parts of the traditional territory as well. Information on traditional use and heritage sites in the Ketza mine area was documented during these same sessions.

5.3 TRADITIONAL USE

Traditional use is considered when reviewing the potential socio-economic impacts of a proposed development under the *Canadian Environmental Assessment Act* (CEAA) and related legislation. Traditional use refers to First Nations activities such as hunting, trapping, fishing, and gathering of plant resources. Social activities such as gatherings, teaching of skills and cultural values, are also part of traditional use activities. This is an important consideration, as it is also now recognized that for First Nation societies, hunting and harvesting activities are not just the means to make a living. Land use and animal harvesting are also critical elements of satisfaction and giving meaning to one's life (Usher and Weinstein, 1991).

Traditional use is most commonly established through the mapping of traditional use sites and areas. Traditional use sites are geographically defined places, on land or water, where such activities take place (i.e. hunting locale, berry picking area, game lick, campsite). These sites may lack the physical evidence of human-made artifacts or structures, yet maintain cultural significance to a living community of people. Trails and travel routes would also be considered traditional use areas.

Traditional use sites are usually documented through oral, historical and archival sources. A summation of the various types of traditional use activities of the Ross River Dena and how these have changed during the past century can be found in Weinstein (1992:49-67).

There are some data in the Council for Yukon Indians (CYI) Resource Atlas for map sheet 105K (Tay River) that was assembled in the 1970s for land claims purposes. The location of sites is known to be very approximate and the explanatory information is basic. Nonetheless, it is the oldest set of land use information with any significant level of locational detail. A listing of the cabin and gravesite locations noted in the CYI Resource Atlas is listed in Table 5.1. The McDonnell anthropology thesis (1975) helps outsiders understand organizational principles of Kaska social groups, the importance of food and resource sharing within Kaska society and how and why family groups moved throughout the course of a year. It does not feature detailed traditional land use data, showing the areas used, which families were using these areas, when they were using them and for what purposes. Nor does it consider in any detail of how land use patterns changed for the Ross River people with the opening of the Faro Mine.

Table 5.1 Council for Yukon Indians Land Use Data

#	Location	Description
G-1	Pelly River, at Blind Creek area	Gravesite, there are 6 to 7 people resting here
G-2	Pelly River, below Rose Mountain	Gravesite, there are several people resting here
C-1	Cabin, mouth of Tenas Creek, on Pelly River	Arthur John, fishing and trapping
C-2	Cabin, Pelly River, below Rose Mountain	Sid Atkinson, old trapping cabin
C-3	Cabin, Pelly River, below Rose Mountain	Rose cabin, built by a white man
C-4	Cabin, Pelly River, at Van Gorder Creek	Arthur John, trapping
C-5	Cabin, Pelly River, at Blind Creek	Hoole McLeod and Jack Sterriah
C-6	Cabin, Pelly River, at Grew Creek	Jack Ladue, located on Blind Creek
C-7	Cabin, Blind Lake	Arthur John
C-8	Cabin, Blind Lake area	4 cabins, located on the mountain creek, the people used to hunt sheep from these cabins
C-9	Cabin, Orchay Lake	"Old Jules" very old site
C-10	Cabin, lake on Orchay system [Ta\ges Lu\ge; ']	Trapping
Source: CYI Resource Atlas, files RRDC Land Claims Office		

Aboriginal language toponyms, or place names, often encode historical information and are also an important source of traditional land use data, as key land use and important resource locales are usually named (Andrews, 1990; Cruikshank, 1990; Greer, 1990; Hanks and Winters, 1983). Toponymic data for map sheet 105K (Tay River) has been published (Kaska Tribal Council, 1997; Moore, 1999), and is reproduced in Table 5.2. This list of names indicates the Kaska familiarity with the Anvil Range study area.

Table 5.2 Kaska Place Names, Anvil Range Area (Map Sheet 105k)

Name	Description
Be;de Lu\ge; : or Me;de Lu\ge; :	Lake, at 62°13'N 132°46'W; one of sources of Blind Creek; means fish food
Dech ; ue Ki;' ;	Mountain, at 62°18'N 132°53'W; means porcupine den
Desdele Mene; :	Series of lakes called Swim Lakes on map; means red sucker lakes
Desdele Cho\ Mene; :	Laforce Lake, at 62°41'N 132°22'W; means big red sucker lake
Dzeh Tsedle Cho\	Mountain, Mount Kulan on maps, at 62°20'N 132°32'W; roughly means bigger standing alone mountain
Dzeh Tsedle Zo˜'ze	Mountain, at 62°16'N 132°34'W; roughly means smaller, standing alone mountain; hunters were usually successful here
DzeÂ Jede; : or He;s Jede;	Mountain, at 62°28'N 133°07'W; means old mountain, refer to the quality of the rocks on the mountain
Du\ Ne;stlo\n	Olgie Lakes on maps, at 62°05'N 132°30'W; means lots of islands lake
Du\ Ese	Lake at 62°20'N, 132°13'W; also known as Poison Lake; means numerous scattered islands.
Egha; : Da\ :o˜li	Blind Lake, at 62°17'N 132°25'W; means hair floating, referring to moose hair in lake
Eki;□ :	Hill on north side of Pelly River opposite Ross River townsite; means food cache.
Ele˜s Tue; :	Creek originating north of Mount Mye, flowing east then northeast into Tay River, between 62°23-28'N 132°05-44'W; name means lick creek, referring to sheep lick that the creek passes by.
Ele˜sga\	Mountain at 62°24'N 132°58'N; small mountain south of the creek by the sheep lick
Eya\n Lue; :	Lake at 62°08'N 132°01'W; means downstream people/enemies lake, referring to long ago battle
K :e;sk :ale He;s	Mountain at 62°25'N 133°27'W, named Mount Aho on recent maps; means ptarmigan mountain.
ña˜□ Nenesja\	Mountain, at 62°35'N 133°50'W; refers to hunting sheep by chasing them to ledge
Kuk :e;h Lu\ge; :	Lake, at 62°35'N 132°31'W; means next behind fish
Kuk :e;h Lu\ge; : He;s	Mountain, at 62°32'N 132°25'W; means next behind fish lake mountain
Kut :a˜ge; :	Tenas Creek on maps, between 62°08-10'N 132°20'W; means cut in, referring to the deep and narrow channel cut by the river
Men Te\le	Lake at 62°11'N 132°14'W, known as Big Orchay Lake; means flat lake.
Me;sga[□ T 'oh	Hill at 62°02'N 132°20'W; means raven's nest
Ne;gha\ Tsi; :	Mountain at 62°33'N 133°50'W; means wolverine head
Ta\ges Lu\ge; :	Lake at 62°09'N 132°20'W; means middle or in between fish lake
Te;da\gi Lu\ge; :	Small lake at 62°05'N 132°44'W; means fish lake on the hill.
Te;da\gi Tue; :	Creek at 62°04-04N 132°44'W; name comes from the name of the lake above

Table 5.2 Kaska Place Names, Anvil Range Area (Map Sheet 105k)

Name	Description
Tse\ Nehts :at	Mountain at 62°26'N 132°13'W; meaning of name is unclear, but has something to do with rock
Tu\ Dega\	Lake at 62°33'N 132°12'W, also known as Connolly Lake; means white water, referring to windy conditions on the lake
Tse\ Zu\l	Mount Mye at 62°18'N 133°06'W; means hollow rocks
Ugets : ene;hte\ts	Mountain at. 62°45'N 132°50'W; means some one camped on it
Ya\do\ye Mene; :	Lake at 62°23'N 132°02'W; meaning of name is unclear, but has something to do with sky
Ya\do\ye He;s	Mountain, at 62°25'N 132°05'W; meaning of name is unclear, but has something to do with sky
Source: Kaska Tribal Council 1997. Note: some of the Kaska place names in Weinstein (1992) differ from those above; the above list is more reliable as these names have received detailed study by a linguist.	

The Weinstein report examined how the establishment and operation of the Faro Mine has affected the subsistence economy of the Ross River people. Subsistence economy is defined as "food production (hunting, fishing and plant gathering); fur production; the use of natural materials as tools, for structural purposes; and non-food resources; the distribution and consumption of these resources; and the set of social relations, specific to native communities, through which the production, distribution and consumption of these resources are organized" (Weinstein, 1992: 16).

In the Weinstein study, land use at different periods is mapped to build a composite picture of changes to use of the area during the second half of the 20th century. Due to a lack of other information sources, re-call information was the major way by which land use data were gathered. Many members of the Ross River community, representing a range of ages, completed extensive questionnaires on individual land use patterns during the 1980s and early 1990s. Detailed maps of land use activities and patterns for 1990 were assembled. The study also incorporated in-depth map data collected during an earlier land use and occupancy study of the Ross River traditional use area (Dimitrov et al., 1984).

The Weinstein report includes thorough discussions of several topics that are key to understanding Kaska land use in the Faro area, including:

1. An introduction or orientation to the land use history of the Ross River Dena over the past century. This includes consideration of how they have been affected by such things as rising and falling fur prices, the opening and closing of fur trade posts, and the construction of the Canol Road.
2. A discussion of the Kaska system of land and harvesting access. This review shows that the Kaska system is a flexible one that is based on notions of sharing and mutual aid and ensuring the needs of the community are met. Rules for access and land use are based on social affiliation, with informally defined limits. The consequence of this system is that it is hard to identify individuals and families who were, and who were not, affected by the development.

3. A discussion of the importance of detailed knowledge of the land and its resources in the subsistence economy of the Kaska people. This section of the report includes a summation of the extensive Kaska ecological knowledge of Mount Mye region, including a discussion of the habitat and behavior of key species such as sheep, caribou, moose and whistler/marmot.
4. Locational data on cabins, salmon fishing camps, and main trails in the Faro study area that were used prior to mine development. Locations for hunting camps or "dry meat camps" as Weinstein refers to them, as well as other fish camps, are only generally described. This data is summarized in Table 5.3, Table 5.4 and Table 5.5.

Table 5.3 Cabins - Pre Mine Development (Weinstein, 1992: 81).

Location	Description
Mouth of Blind Creek, on the Pelly River	Associated with Blind Creek salmon fishery; cabins belonging to Jack Sterriah and Old Man Jules; latter now decayed.
Present Faro Bridge Site, on the Pelly River	At the time of Faro fire, 3 cabins, belonging to Joe Ladue, Joe Etzel, Arthur John. After fire, cabins rebuilt by Lydia Glada, Gordon Etzel and Arthur John.
Fish Hook, near mouth of Anvil Creek on the Pelly River	Home base for the Ladue family; cabins belonging to Arthur John, Peter Ladue, Jack Ladue and Joe Ladue.
Swim Lake	There had been a complex of 3 cabins at Swim Lake, but they were destroyed during a fire. Mid-century, tent camps in area.
Blind Lake	Cabin belonging to Joe Ladue.
Tay Lake	Three cabins, belonging to Jack Ollie, Arthur John and Jack Sterriah.
Poison Lake	Two cabins, belonging to Jack Sterriah and Long Hair John.
Lake Near Tenas Creek	Cabin belonging to Duck Johnnie.
Near Tenas Creek	Cabin belonging to Old Johnnie.
Northeast slope of Mount Mye	Cabins belonging to Long Hair John and Jack Sterriah.
West slopes of DzeÂ Jede; (mountain north of Mt. Nye, spelled Ktl Jhet by Weinstein)	Cabins belonging to Joe Ladue and Pat Pelly.
Laforce Lake	Cabin belonging to Jack Ollie.

Table 5.4 Fish Camps - Pre Mine Development (Weinstein, 1992).

Location	Description
Blind Creek	Salmon fishing; used extensively by Hoole McLeod and family, Joe Ladue and family, Sid Atkinson and family, Oldman Jules and family, Arthur John and family, Jack Ladue and family, Jack Sterriah and family, Alec Shorty and family, Jack Ollie and family, and Skumballah Jack.
Faro Bridge Site	Salmon fishing
Old Rose	Salmon fishing

Table 5.5 Trails - Pre Mine Development (Weinstein, 1992).

Anvil Creek, from mouth at Pelly River to Rose Creek
Anvil Creek, upstream from junction with Rose Creek
Rose Creek, upstream from mouth at Anvil Creek, southeast and over to Blind Creek
Pelly River, downstream from Pelly, north through valley on west side of Mount Mye to upper Anvil Creek
Pelly River, near Faro, north over Mount Mye and continuing north to upper Anvil Creek and DzeÂ Jede area
Blind Creek, from near mouth on the Pelly, up the south face of Mount Mye and north to upper Blind Creek area
Blind Creek, upstream to Swim Lakes and northeast to Blind Lakes area and beyond
Swim Lake, southeast to Orchay Lakes, to Tenas Creek

According to Weinstein (1992), prior to the development of the Faro Mine, the Anvil Range study area was one of two "core" land use areas utilized by the Ross River people. The other is further to the east, in the Pelly Banks/Pelly Lakes/Frances Lakes area. Several key resources were drawing the Ross River people to the Anvil Range area. These include:

1. **Salmon**: Fish camps were located on Blind Creek, around where the Faro bridge is located today, in the Rose Slough area below Rose Mountain, and at Fish Hook, which is near the mouth of Anvil Creek. Of these four fish camps, the largest was on Blind Creek. Here fish traps were placed in the creek so that large quantities of chinook salmon were harvested during their annual salmon run. According to the Kaska Tribal Council (1997: 362), Joe Ladue was the last Ross River community member to put a fish trap in Blind Creek, although the year is not stated.
2. **Sheep**: Various places around Mount Mye were known as important sheep hunting areas. This includes the animal lick that is located between Blind and Vangorda Creeks, south of Mount Mye, and animal lick or licks up the tributary of Blind Creek that flows from northeast of Mount Mye.
3. **Caribou**: The Anvil Range and Mount Mye area has two types of caribou, a resident population which summers here, and migratory herds which summer in the Mackenzie Mountains and move south to the Pelly drainage area for the winter.
4. **Moose**: This important species can be found across the Faro study area. They are located in the flat lands down by the lakes for most of the year but move up to the alpine zone in late summer.
5. **Fur-bearers**: Trapping activities tended to focus on valley bottom areas of the Pelly River and Blind, Anvil and Rose Creeks. Cabins at such places as Fish Hook, the Faro Bridge, Blind Creek, Swim Lake and Blind Lake were used as bases from which trapping and hunting activities took place.

In assessing changes to this pattern of use of the Faro/Anvil Range area by the Ross River Dena, Weinstein (1992) then considers a number of important factors. These include:

1. The Kaska response to the different phases of the project. This section includes a good summation of the history of the Faro Mine, and notes, for example, that families continued to use the area throughout the development phase of the project.

2. How Kaska perception of resource quality affects their use of a resource. Traditional foods were abandoned because they were perceived as contaminated by toxic substances, whether or not they actually were. This section includes a summation of the various environmental problems (tailings spills, habitat disturbance, etc.) that have occurred in the mine area.
3. How resource abundance has changed in the development area due to the mine, and the consequences of these shifts for the Kaska.
4. Problems with authority over the area, as the Ross River people were informed they were no longer allowed to hunt in the area, or were harassed about their guns, etc.
5. The conflicts with other resources users (i.e., recreational hunting and fishing) that the Ross River people have experienced.
6. Vandalism that occurred to Kaska property such as cabins, trap lines, etc.

The Weinstein study shows that the geographic distribution of the contemporary land use patterns of the Ross River people has changed as a result of mine development. It indicates that some individuals, whose family lands were located in the mine and town development areas, have shifted their primary harvest effort to other accessible western areas of the band's territory (Weinstein, 1992). Though connection to the Mye Mountain/Blind Creek areas are still powerfully felt by the people with historic family ties to that country, the move to other areas was an economic necessity. The author writes:

> *People persisted in the use of the Faro area for harvesting, but the intensity of use changed as harvesters encountered the impacts of the development: problems of restricted access and firearms use prohibitions; declines in local animal populations which resulted from disturbance, habitat loss and degradation, and increased competition from recreational hunters and fishers; fears of health risks from consumption of wild meat exposed to toxic substances; and increased amounts of disturbance. Disturbance ranged from simple curiosity of Faro residents, for whom the activities of Ross River Indians on the land were interesting anachronisms, to the malicious destruction of trapping sets, poaching of furs, theft of gear and vandalism of cabins. (Weinstein, 1992: 156)*

The study offers quite specific examples as to the effect of the mine on subsistence or traditional use activities. For example, it is noted that areas downstream of the mine and townsite, such as Fish Hook, were largely abandoned for fish harvesting, as the condition of the fish downstream was now suspect. The use of the traditional productive fisheries at Swim Lakes declined because that area was being used by Faro residents and the Ross River people avoided such conflicts (Weinstein, 1992: 146). Hunting in the area has largely been abandoned, due to the concerns over the quality and safety of the meat of the animals frequenting the tailings ponds and related features. The exception to the pattern of abandonment is trapping which has continued to a limited extent in the mine development area by a few individuals.

Those families for whom the Mye Mountain/Anvil Creek/Blind Creek areas were primary resource lands at the time of the development were most heavily affected by it. These families included the direct descendents of: Selkirk Billy, Aklack, Billy Atkinson, Long Hair John, Gumbala, Nahlier, Pat Johnnie and Sue Bill. During the period immediately prior to mine construction, Joe Ladue, Hoole McLeod, Jack Sterriah, Old Man Jules and Jack Ollie's wife and some of their family members regularly trapped in the affected area (Weinstein, 1992: 88).

Weinstein (1992) concludes, however, that given the Kaska system of land tenure and use, all Ross River Dena families were in some way affected by the Faro Mine development.

No information came forward in the December 1999 interviews which would contradict Weinstein's summation of how traditional use of the Faro area has been affected by the development and operation of the mine. As discussed below, the Ross River people have largely, but not entirely, stopped using the area.

The interview sessions confirmed the significance of the Faro area in the subsistence economy of the Kaska people. The importance of the Blind Creek valley, as a travel route, and for accessing important hunting areas was mentioned. One source referred to the many old stumps one could see in the Blind Creek area, as evidence of how heavily used the area was. The salmon fishery at Blind Creek was recounted in detail. Similarly, people talked about the numerous lakes east of Mount Mye (Blind Lake, Swim Lakes, Tenas Lake, Orchay Lakes, etc.) as being important fishing lakes and areas for hunting and trapping.

Looking downstream from the Faro Mine site, the importance of the locale known as "Fish Hook" at the mouth of Anvil Creek, prior to mine development, was also mentioned. Fish Hook was the base camp of the Ladues from which they hunted and trapped in the surrounding area including Anvil Creek and Rose Creek.

During the interview sessions, no attempt was made to confirm the location of the cabins documented by Weinstein (1992), or in the CYI Resource Atlas data. Nonetheless, the information shared suggested that the Kaska people had many cabins in the Anvil Range study area.

Great concern was also expressed during the interviews over the quality of the environment in the mine area and in the basin downstream from the mine. Individuals recounted having seen or killed diseased animals (moose, beaver) in the area. The lack of fencing around tailings ponds was seen as particularly dangerous for animals.

New information on the role of the Ross River Dena in the mineral discovery that led to the Faro Mine development was recorded during the interview sessions. Mrs. Grady Sterriah recounted a family story about the discovery:

> *When he knew he was dying, my Daddy's Dad showed Daddy (Jack Sterriah) where he had found a special, heavy type of rock. My Daddy's Dad wanted him to know about it. He (grandfather) predicted that something to do with that funny rock was going to happen in the future. Then, in 1960s, Kulan came around. He stayed with the people, made friends. Kulan said he's prospecting and he's going to help people who know this special rock, who help him find it. They trusted him, so Daddy told Arthur John to make a map to show Kulan that place that his dad had shown him. Then Arthur John took him to that place. After that, Kulan gave Daddy grocery, case by case. We don't what's going on - then we heard. [Mrs. Grady Sterriah with Sheila Greer, December 2, 1999; paraphrased].*

Mrs. Sterriah concluded the story by adding, "that's how things got away" referring to how the Ross River Dena lost control of their lands. Feelings of injustice over the Faro discovery, and the fortunes that were made by some, while Kaska people lost so much, continue to be strongly felt.

Major changes to the use of the Anvil Range area by the Ross River First Nation included abandonment of traditional foods, now perceived as contaminated due to mining activities, the change in resource abundance and conflicts with other resource users. The creation of new roads is not benign, but has severe consequences. In the Mount Mye area, the existing trail system was severely affected by road development.

The Faro Mine development and operation would have contributed to broader social and economic impacts on the Ross River First Nations community besides impacts on traditional use activities. Various reports have discussed the broader impacts of mine development on the Ross River First Nation community (Dimitrov et al., 1984; Miller, 1972; Reid, Crowther and Partners, 1983; Sharp, 1977; Weinstein, 1992). While such broader socio-economic impacts are beyond the scope of an assessment of impacts directly and solely related to the mine, they are significant and should be acknowledged. They include such things as increased rates of alcoholism, violence, sexual exploitation, premature deaths, and the transformation of the community.

The cumulative socio-economic impact of various mine developments on the Ross River community should also be acknowledged..

5.4 HERITAGE RESOURCES

The term heritage resource most often is used to refer to material remains that relate to human history. Of present concern are locale-specific resources where artifacts or structures are found. Natural landscape features, such as legend places and named places that are of historic or cultural significance can also be considered heritage resources even though they may not have material remains. This is because they have heritage value to a group, such as the First Nations, who have traditionally lived in the area.

Archaeological sites are the most commonly recognized heritage resources in Yukon. They are an important part of the Yukon's human history record, since for the Territory's First Nations, they represent the material remains of their ancestor's way of life in pre-contact or prehistoric times. Some prehistoric sites include above ground structures such as caches and hunting blinds.

Historic sites, featuring buildings or structures, have also been documented in the Yukon Territory. The upper cut-off or most recent date for historic sites varies, but currently the Heritage Branch of the Yukon Territory Government is using a date of ca. 1950. Historic sites most often consist of above-ground remains or structures.

The Yukon Land Claim formally recognizes First Nations interests in the region's archaeological and heritage sites. Under the terms of the Yukon Land Claim agreement, First Nations own all heritage sites on Settlement Lands and own all artifacts from sites that have a direct connection to their history. In the Yukon Territory, a definition of heritage resources also potentially includes paleontological sites. There are no known paleontological sites in the Faro Mine area.

Based on the Canadian Heritage Inventory Network and the Yukon Historic Sites Inventory database, there are no registered archaeological sites within the Anvil Range study area (i.e., between 62°05' to 62°40'N and 132°05' to 132°50'W). Archaeological sites are known around the Ross River settlement and elsewhere along the Campbell Highway. A lack of registered sites in the study area does not mean that sites may not have been affected by the Faro development, as no site inventory and assessment work was completed prior to mine development.

A number of historic sites are registered in the Yukon Historic Sites Inventory database, which are within the study area, as noted in Table 5.6.

Table 5.6 Study Area Historic Sites Registered in the Yukon Historic Sites Inventory

YHSI #	Name/Label	Location	Description/Comment*
105K/03/001	Pelly River Cabin Remains	Pelly River at Blind Creek	Believed to be associated with nearby Sawmill
105K/03/002	Pelly River Sawmill Remains	Pelly River at Blind Creek	Heavy timber frames
105K/03/003	Blind Creek Cabin & Dog Houses	Pelly River at Blind Creek	Abandoned; may have belonged to either Joe Ladue or Jack Sterriah
105K/03/004	Sawmill Buildings	Pelly River at Blind Creek	Equipment shed, 2 residence buildings
105K/03/005	Pelly River Foundation	Pelly River at Blind Creek	Related to lumbering, milling activities
105K/03/006	Blind Creek Grave Site	Pelly River at Blind Creek	5 standing grave fences, and "as many as 25 grave mounds"
Source: Yukon Heritage Branch, Historic Sites Office. * Note: little or no oral history research regarding these sites has been completed.			

This list represents only the registered historic sites. There may well be others that have been affected by the Faro development.

During the community interviews, two gravesite locales were reported within the study area. One is the Blind Creek graveyard, which is registered in the Yukon Historic Sites Inventory as #105K/03/006. A second gravesite was also mentioned but its location is not certain. It was identified as the place where Jack Sterriah's father was buried, and reported as being on Jackfish Lake, which is also known as Johnson Lake, and near the airport. Two different lakes, however, were indicated on the recording map as being Jackfish/Johnson Lake. Further research is therefore needed to confirm the location of this gravesite. Note that another gravesite location in the study area is indicated in the CYI Land Use data, where a grave is reported along the Pelly River below Rose Mountain (see Table 5.1). Yet another gravesite was mentioned in the 1999 interviews, but it is located well away from the mine area, north of Orchay Lakes.

The available land use evidence suggests that the Anvil Range area has heritage site potential. There likely are both archaeological and historic period sites here that have not been documented. Given that the Faro area was not checked for sites prior to development, a recommendation was provided in GLL 2001 that a post-development heritage impact assessment be undertaken to document any existing sites before they suffer damage through such things as artifact collecting and erosion.

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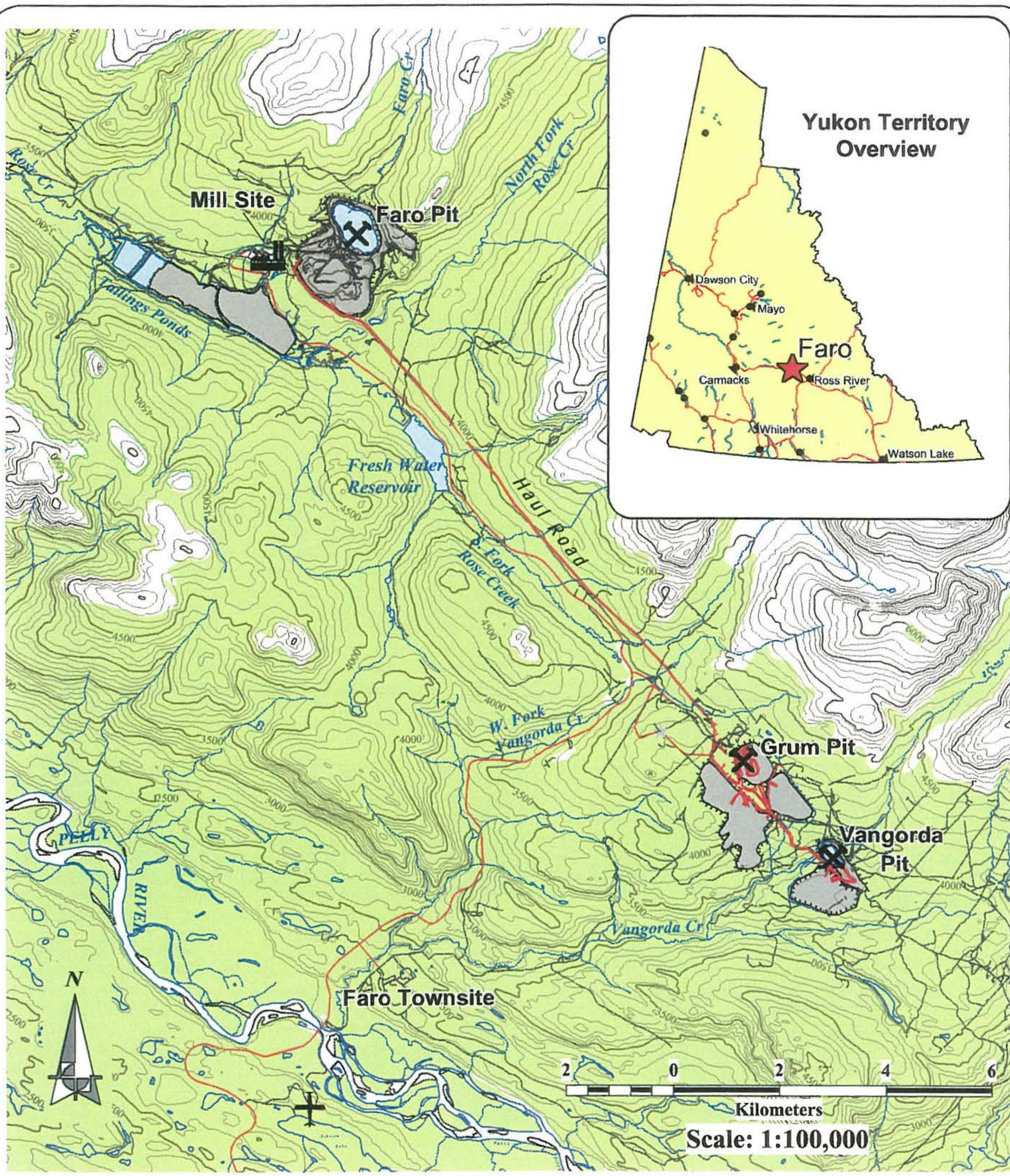
Figures



Site Name:	FARO
File Name:	21906-F1_2.WOR

Gartner Lee Limited

Scale: 1: 100,000

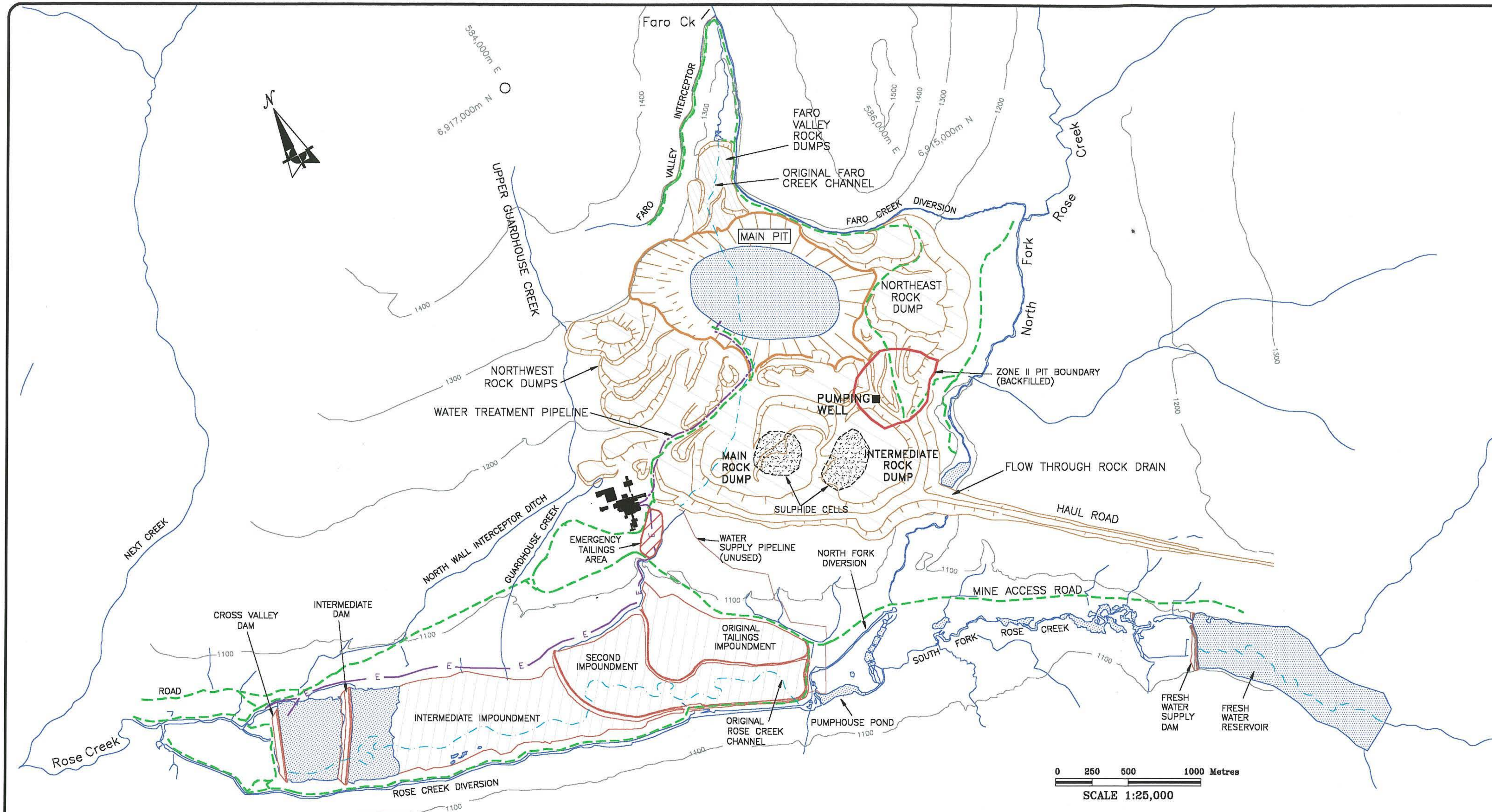
DELOITTE & TOUCHE INC.

Anvil Range Mine Complex
2002 Environmental Baseline Information

Project Location Map

Project No:	22943
Date Issued:	MAR. 2002

Figure 1.1



SOURCE OF FIGURE:

DRAWING NO. 4.1 "OVERVIEW OF FARO MINESITE" DIAND WASTE MANAGEMENT PROGRAM BY GARTNER LEE LIMITED
03/16/01 ADAPTED FROM ROBERTSON GEOCONSULTANTS INC.

Notes:

Base Map supplied by the Orthoshop, January 1991
North American Datum 1927
Contour Interval 100 m
Universal Transverse Mercator Projection
Map is a composite of 9 basemaps,
it was redigitized to simplify planimetric features.

LEGEND:

- ROADS
- EXISTING DRAINAGE
- ORIGINAL DRAINAGE
- EFFLUENT PIPELINE
- PIPELINE

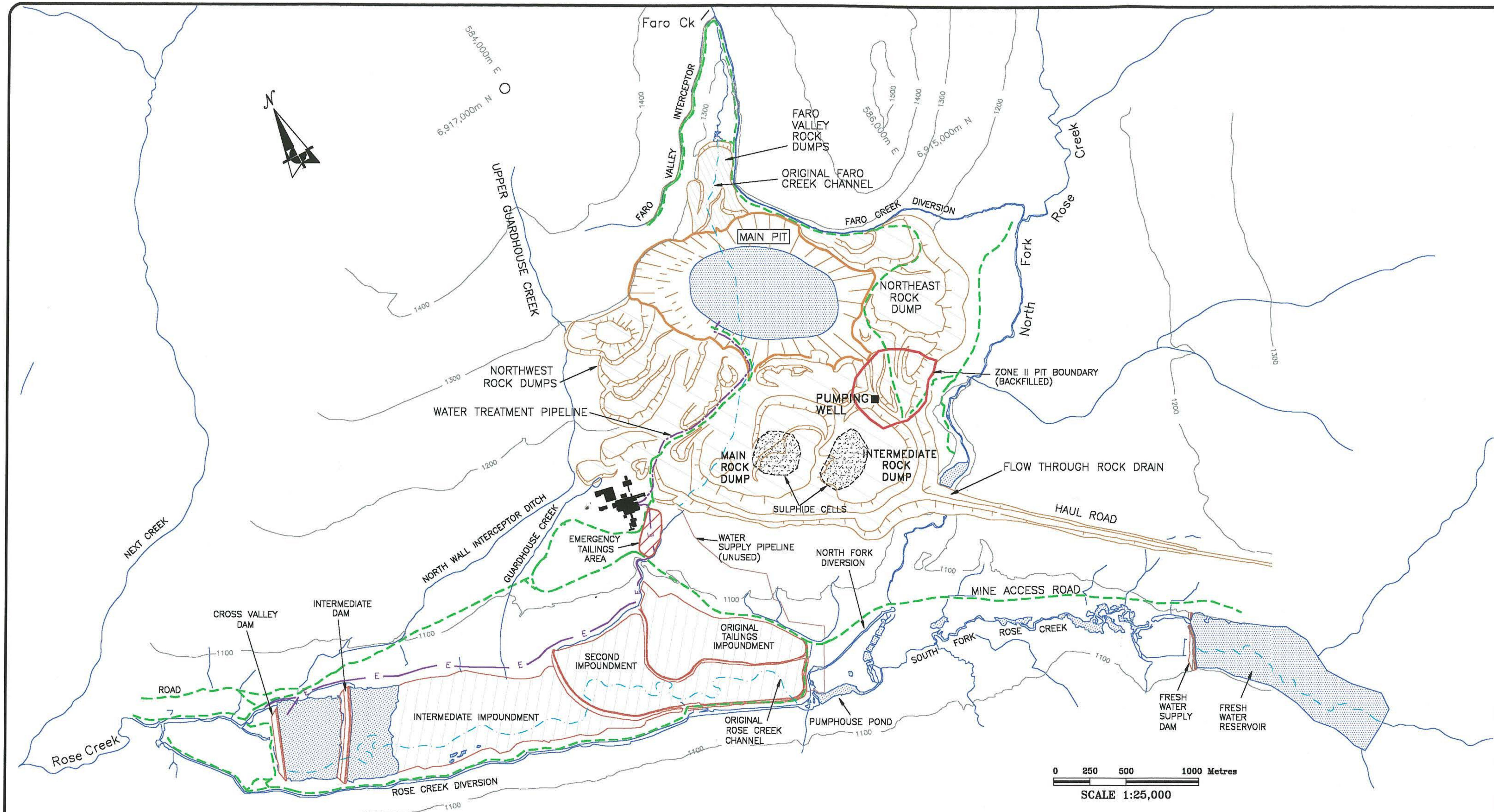
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-20r1.DWG
REVISION:	1

FARO MINE SITE OVERVIEW

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 1.2



SOURCE OF FIGURE:

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LEGEND:

- - - -	ROADS
———	EXISTING DRAINAGE
—·—·—	ORIGINAL DRAINAGE
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FILE NAME:	22943-D1-20r1.DWG
REVISION:	1

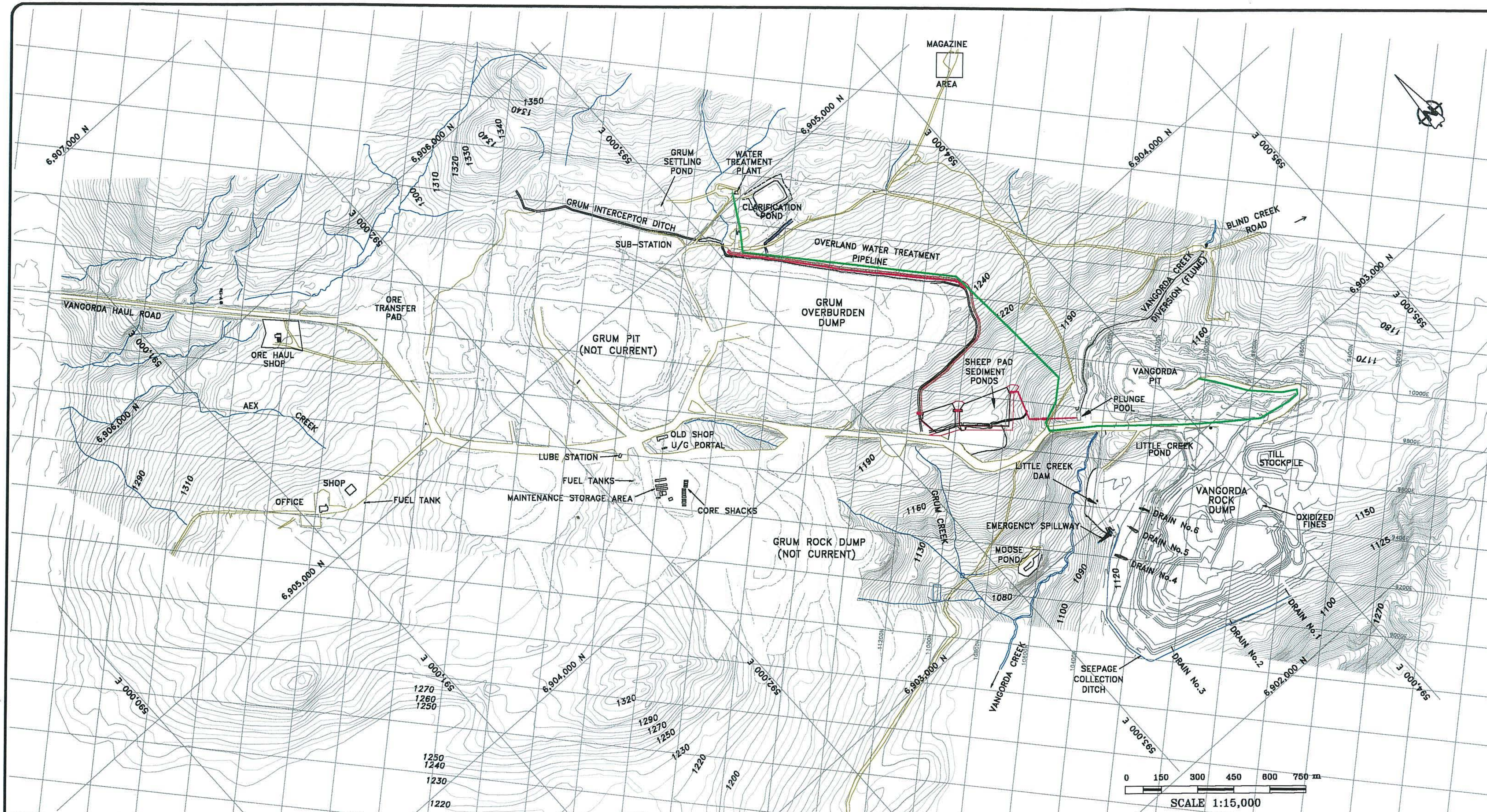
FARO MINE SITE OVERVIEW

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No. 1.2



NOTES:

1. TOPOGRAPHIC MAP PROVIDED BY ANVIL RANGE MINING CORPORATION

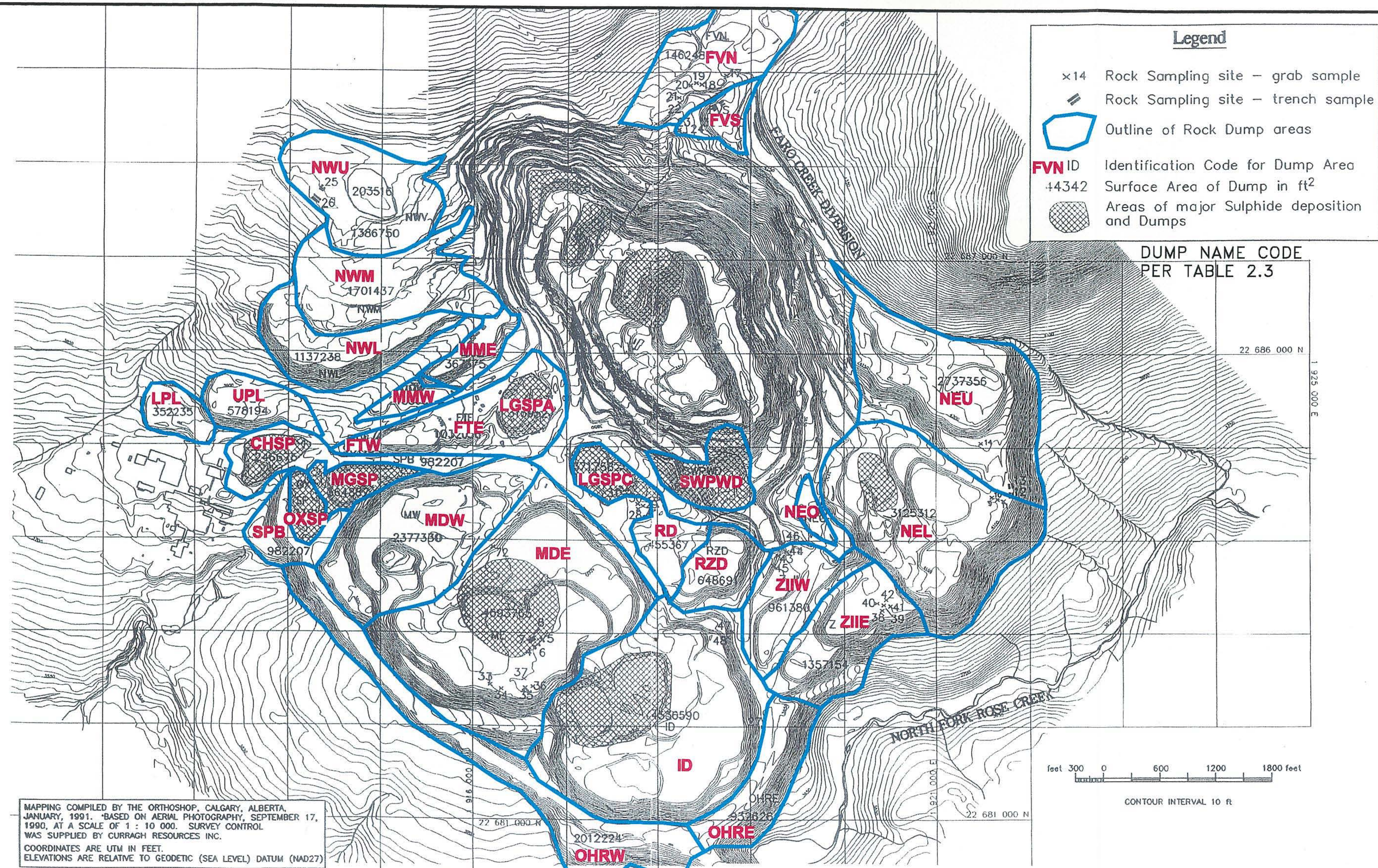
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-31R1.DWG
REVISION:	1

VANGORDA PLATEAU MINESITE OVERVIEW

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No.
1.3



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan
Faro Dumps Sampling Sites and Dump Classification

PROJECT NO.	DATE	APPROVED	FIGURE
033001	Oct. 1996		4-5

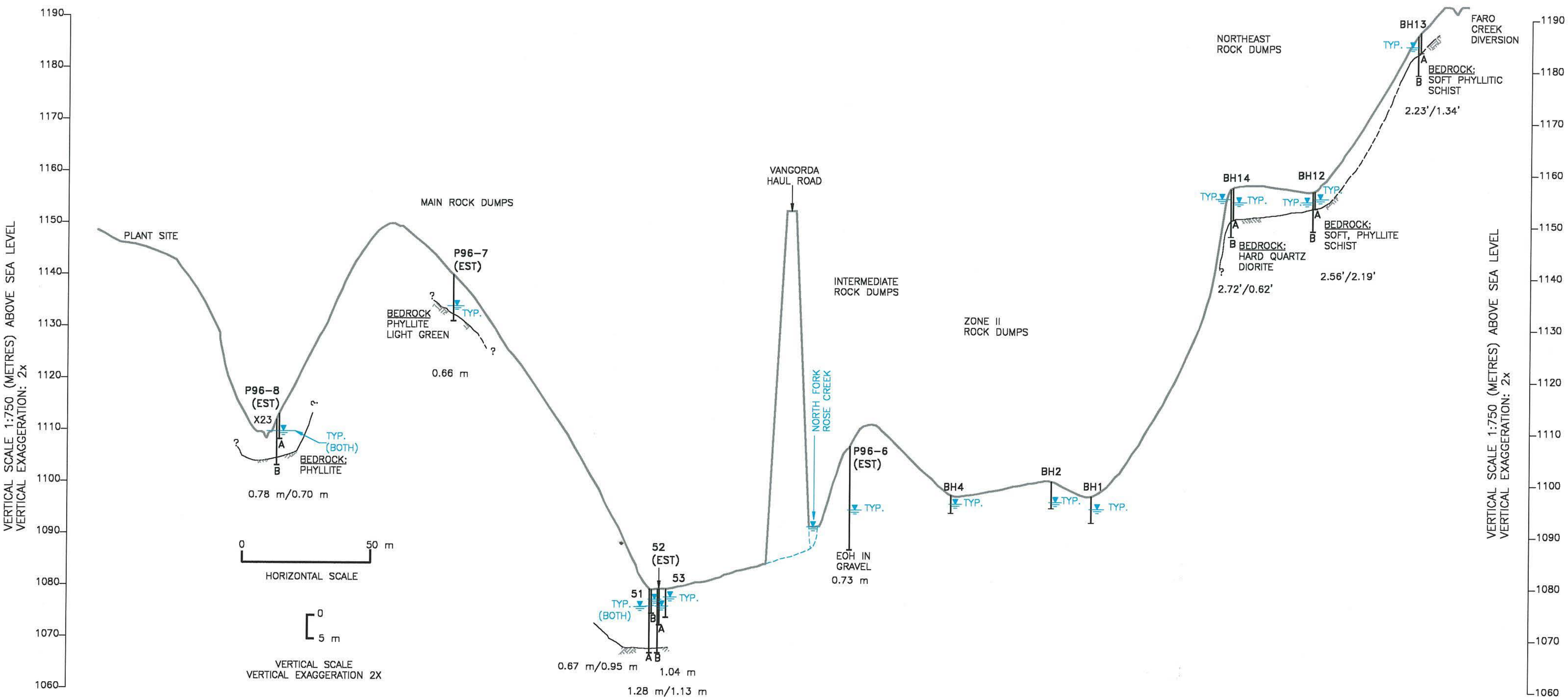
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-15r1.DWG
REVISION:	1

FARO DUMPS NAMING CONVENTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 2.1



SECTION LOCATION: FIGURE 2.3

HORIZONTAL SCALE 1:1500 (metres)

SOURCE OF FIGURE:
SKETCH BY ERIC DENHOLM, GARTNER LEE LIMITED

MEASURED GROUNDWATER ELEVATION (DATE ____) (m)

STRATIGRAPHY BOUNDARY

INTERPRETED STRATIGRAPHY BOUNDARY

P96-8 (EST)

0.78 m/0.70 m ← STICKUP ABOVE GROUND FOR EACH WELL

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-33r1.DWG
REVISION:	1

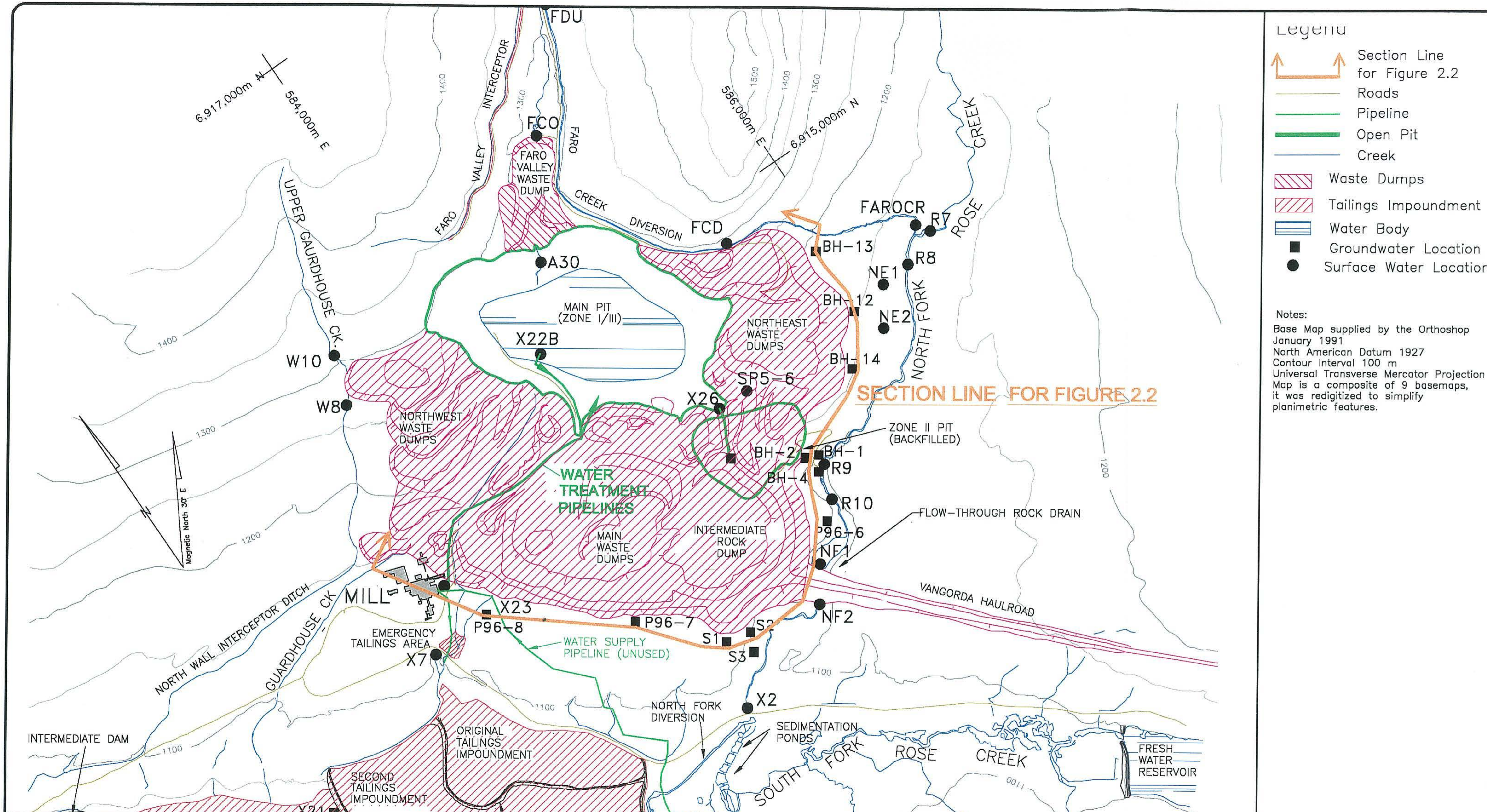
FARO DUMPS PERIMETER SECTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No. 2.2



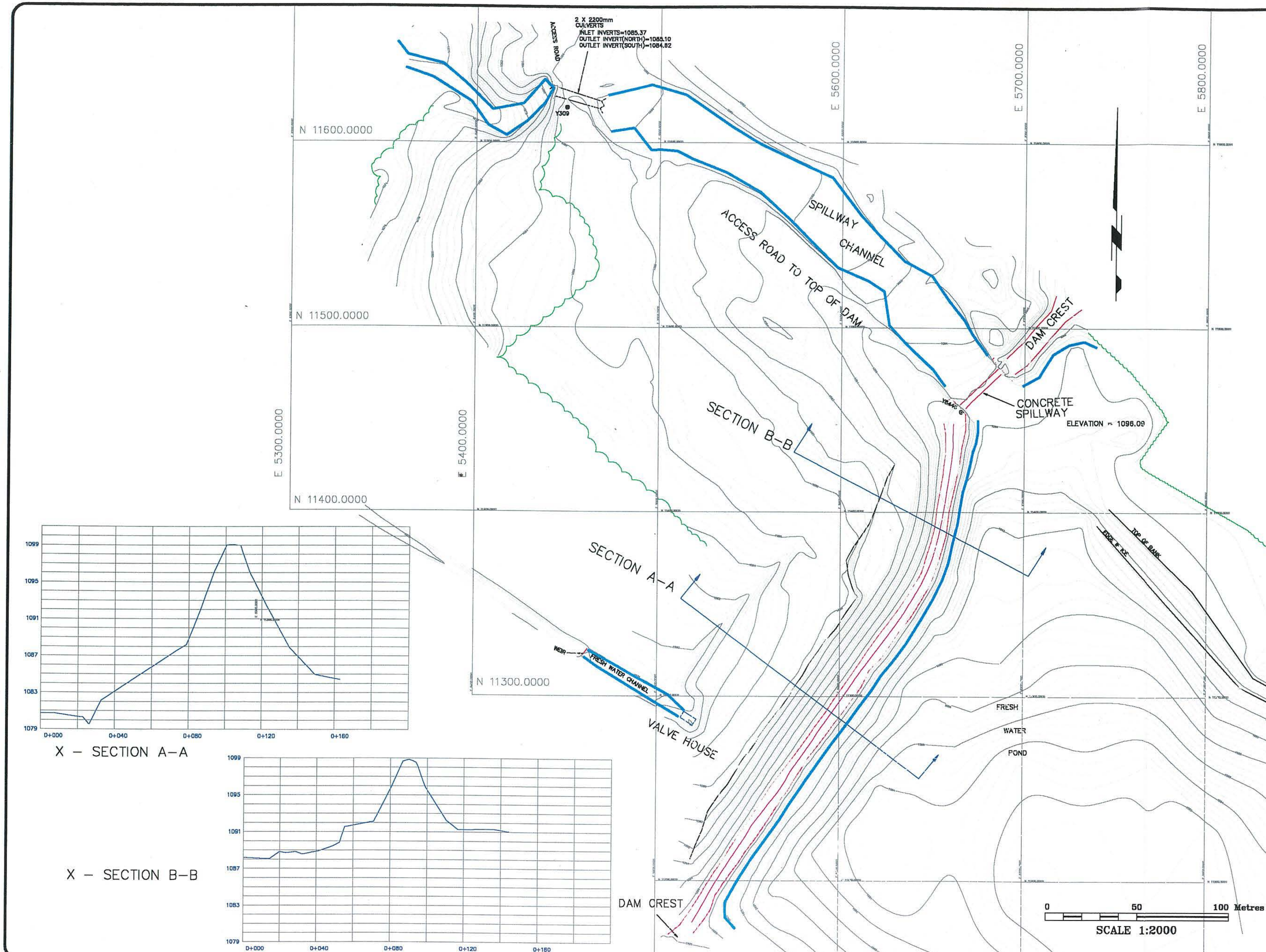
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-32r1.DWG
REVISION:	1

FARO DUMPS DETAIL

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 2.3



LEGEND

CENTRE OF DAM

EDGE OF WATER

SHOULDER OF DAM

NOTES:

CONTOUR INTERVAL = 0.5m

COORDINATES ARE UTM NAD 83 ZONE 8 DERIVED FROM 72Y237 LOCATED ALONG THE CAMPBELL HIGHWAY.

ELEVATIONS ARE GEODETIC.

COORDINATES AND ELEVATIONS

CP Y6447

NORTH 6911255.799
EAST 585568.951
ELEVATION 1099.286

CP Y6446

NORTH 6911454.513
EAST 585665.492
ELEVATION 1099.579

SOURCE OF DRAWING:
DRAWING BY BGC ENGINEERING & YUKON ENGINEERING SERVICES
"SITE PLAN FRESH WATER DAM, FARO, YUKON"
DATED OCT 01. 01045\FWDUTM.DWG REV 1

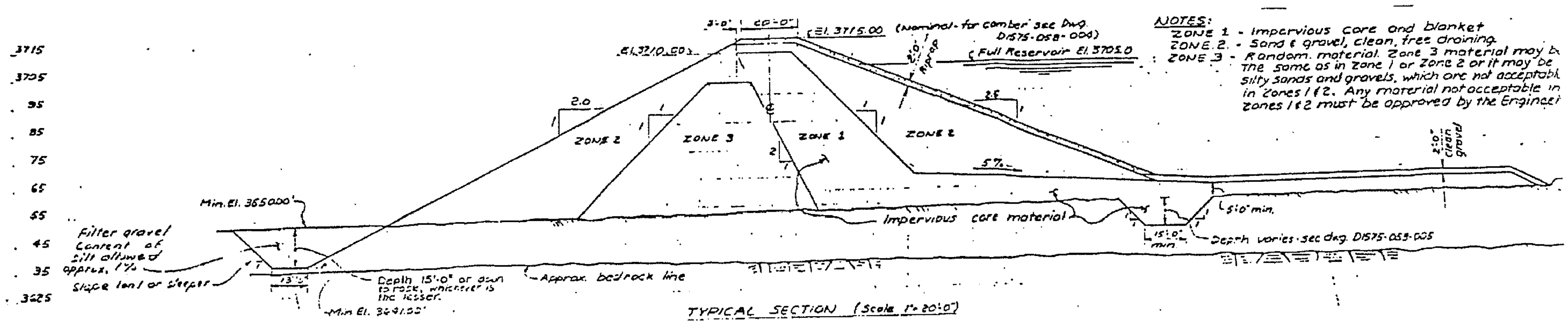
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-01r1.DWG
REVISION:	1

FRESH WATER SUPPLY DAM – PLAN

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Figure No. 2.4



SCALE: NTS	Date of Original: Nov. 2000	DRAWN: SLF
DESIGNED: JWC	CHECKED: JWC	APPROVED:

SOURCE:
Faro Fresh Water Supply Dam
Evaluation of Reclamation Approaches
Gartner Lee Limited Report, 2000.

PROJECT No. 22-943

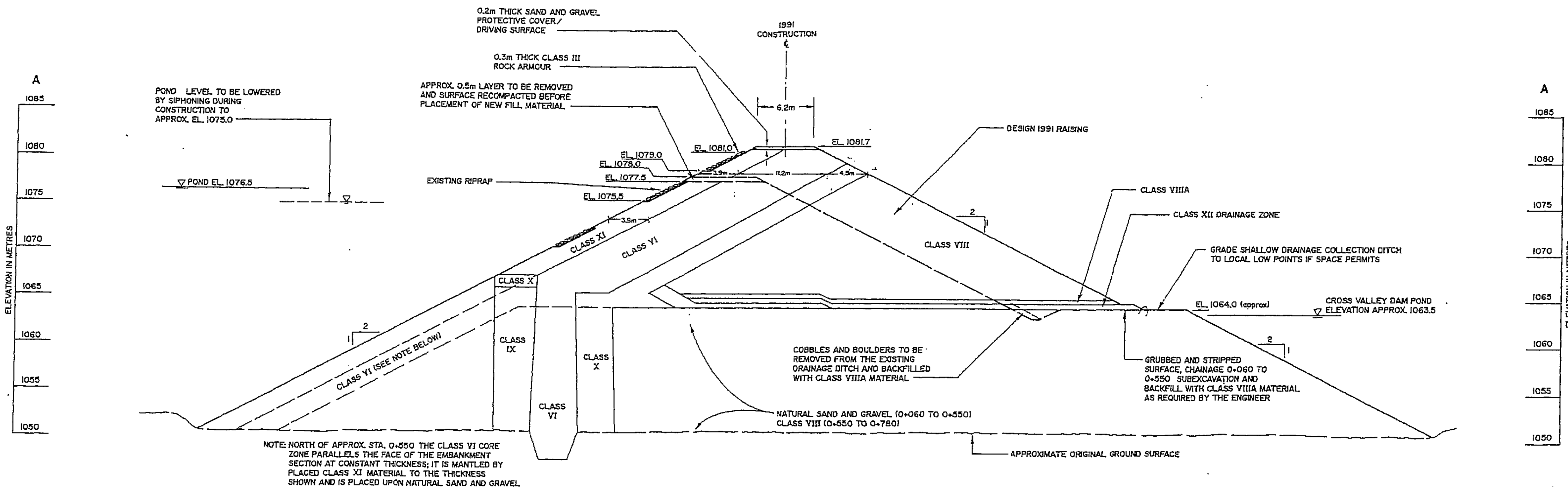
FRESH WATER SUPPLY DAM SECTION

Anvil Range Mine Complex
2002 Baseline Environmental Information

Gartner Lee Limited

Deloitte & Touche

DWG. No. 2.5



SECTION A-A
SCALE : 1 : 250, HORIZONTAL AND VERTICAL

(SEE DETAILED PLAN BELOW)

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY GOLDER ASSOCIATES LTD.
REPORT NO. 912-2402
DATED: JULY 1991
"INT. DAM RAISING & CV DAM TOE DRAIN"

CURRAGH RESOURCES INC
Faro
Yukon Territory
CROSS SECTION AND DETAILED PLAN
INT. DAM RAISING & CV DAM TOE DRAIN
Golder Associates Ltd.

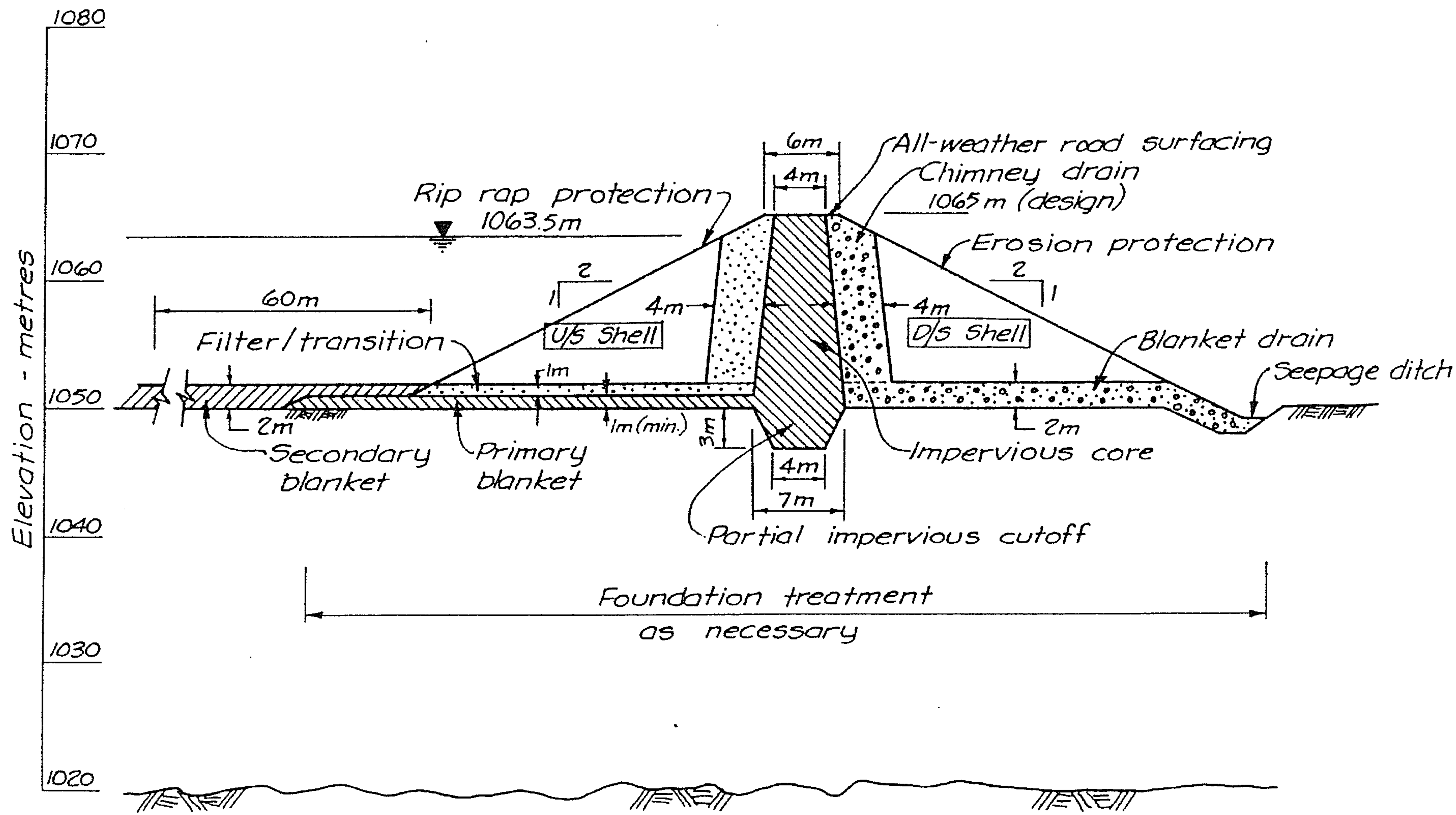
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-01-30.DWG
REVISION:	0

INTERMEDIATE DAM SECTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 2.6



SOURCE OF FIGURE:
GOLDER GEOTECHNICAL CONSULTANTS LTD., 1980
REPORT TITLED "DOWN-VALLEY TAILINGS CONTAINMENT FACILITY
REPORT TO CYPRUS ANVIL MINING LTD." JUNE 6, 1980 3 VOLS.

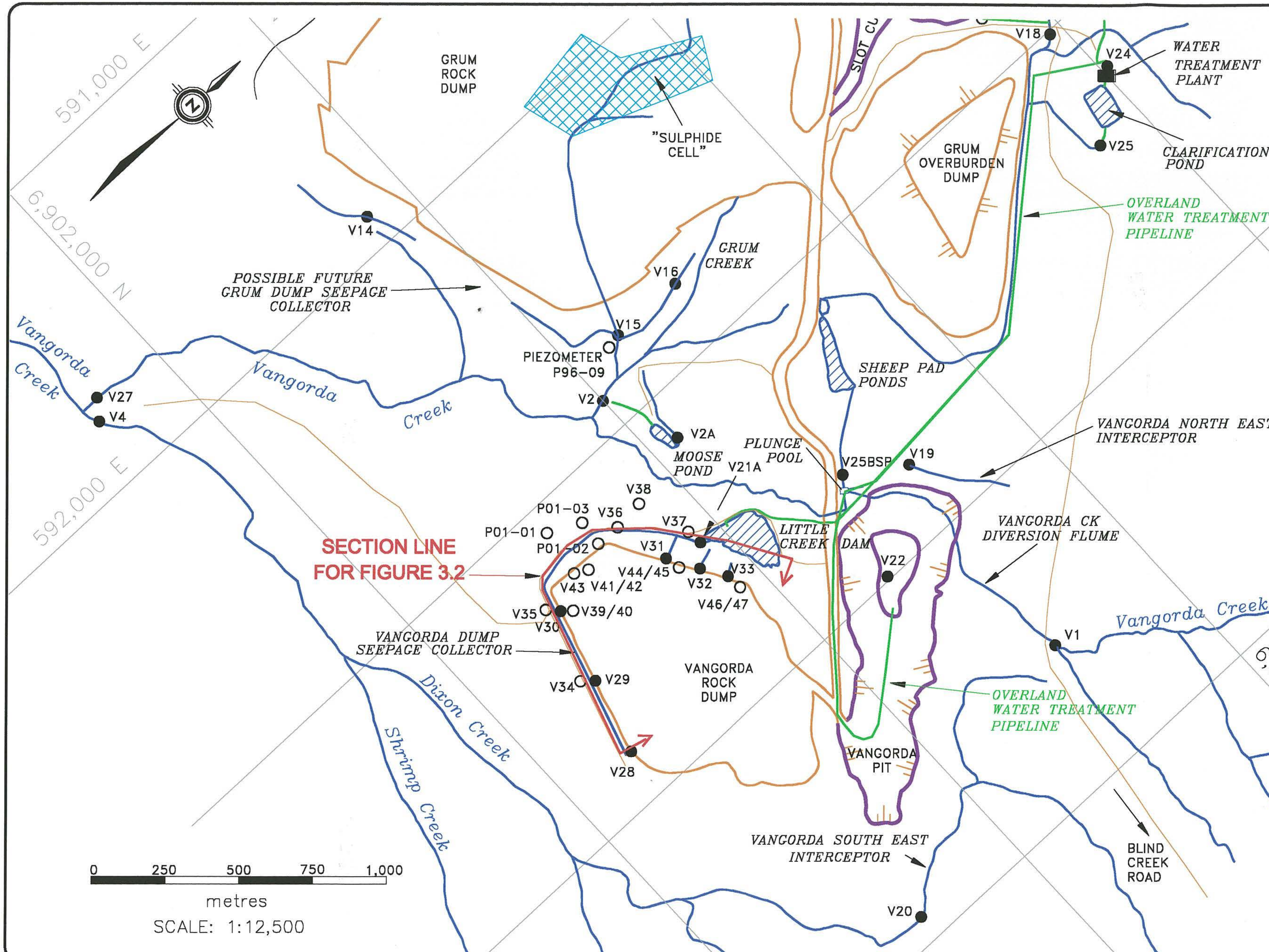
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-01-29r1.DWG
REVISION:	1

CROSS VALLEY DAM
SECTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 2.7



LEGEND

- Creek or Ditch
- Pipeline
- Rock Dump or Road
- Open Pit
- Drainage Divide
- Sulphide Cell (approx.)
- ○ ground water location
- ● surface water location

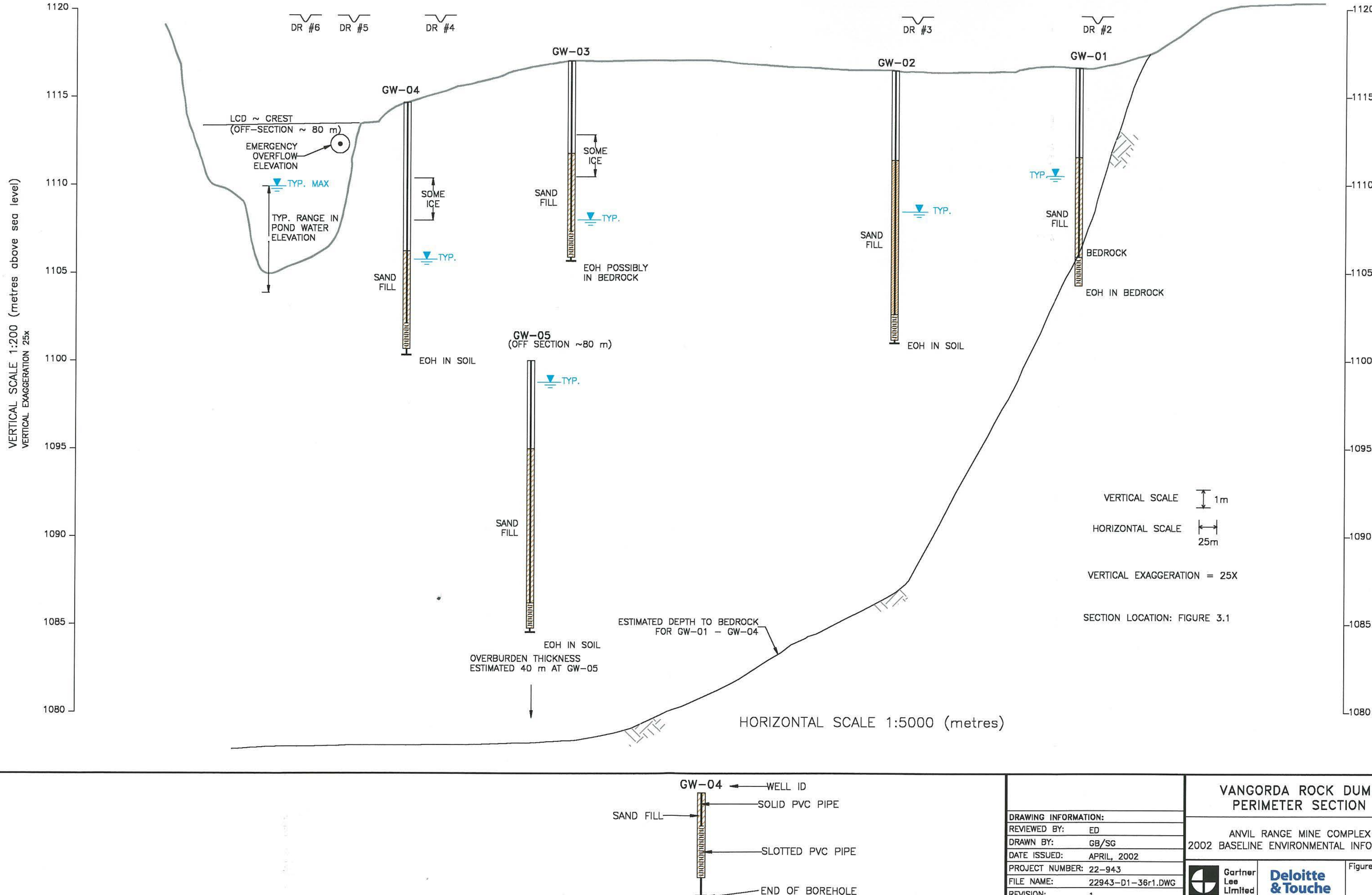
SOURCE OF DRAWING:
ANVIL RANGE MINING CORPORATION
VANGORDA PLATEAU MINESITE
DRAWING VANGORDA.DWG
OCTOBER, 1995

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-14r1.DWG
REVISION:	1

COMPOSITION OF VANGORDA DUMPS

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited | Deloitte & Touche | Figure No. 3.1



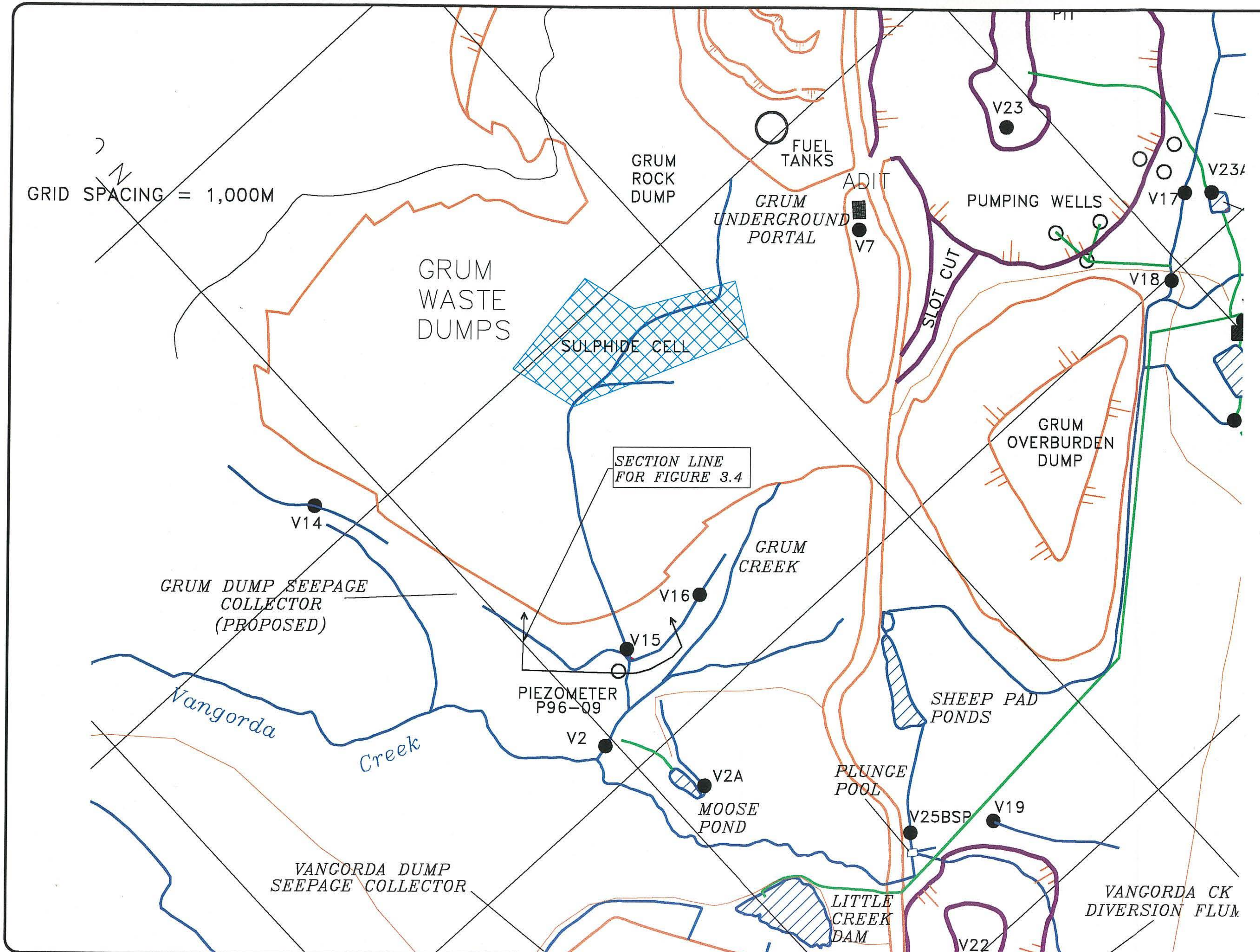
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	GB/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-36r1.DWG
REVISION:	1

VANGORDA ROCK DUMP PERIMETER SECTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 3.2



LEGEND

- Creek or Ditch
- Pipeline
- Rock Dump or Road
- Open Pit
- Drainage Divide
- Sulphide Cell (approx.)
- ground water location
- surface water location

VANGORDA ROCK DUMP LEGEND

DRAIN #1 = V28
DRAIN #2 = V29
DRAIN #3 = V30
DRAIN #4 = V31
DRAIN #5 = V32
DRAIN #6 = V33

GROUNDWATER WELLS = V34 TO V38

PIEZOS. IN TOE BERM = V39 TO V47

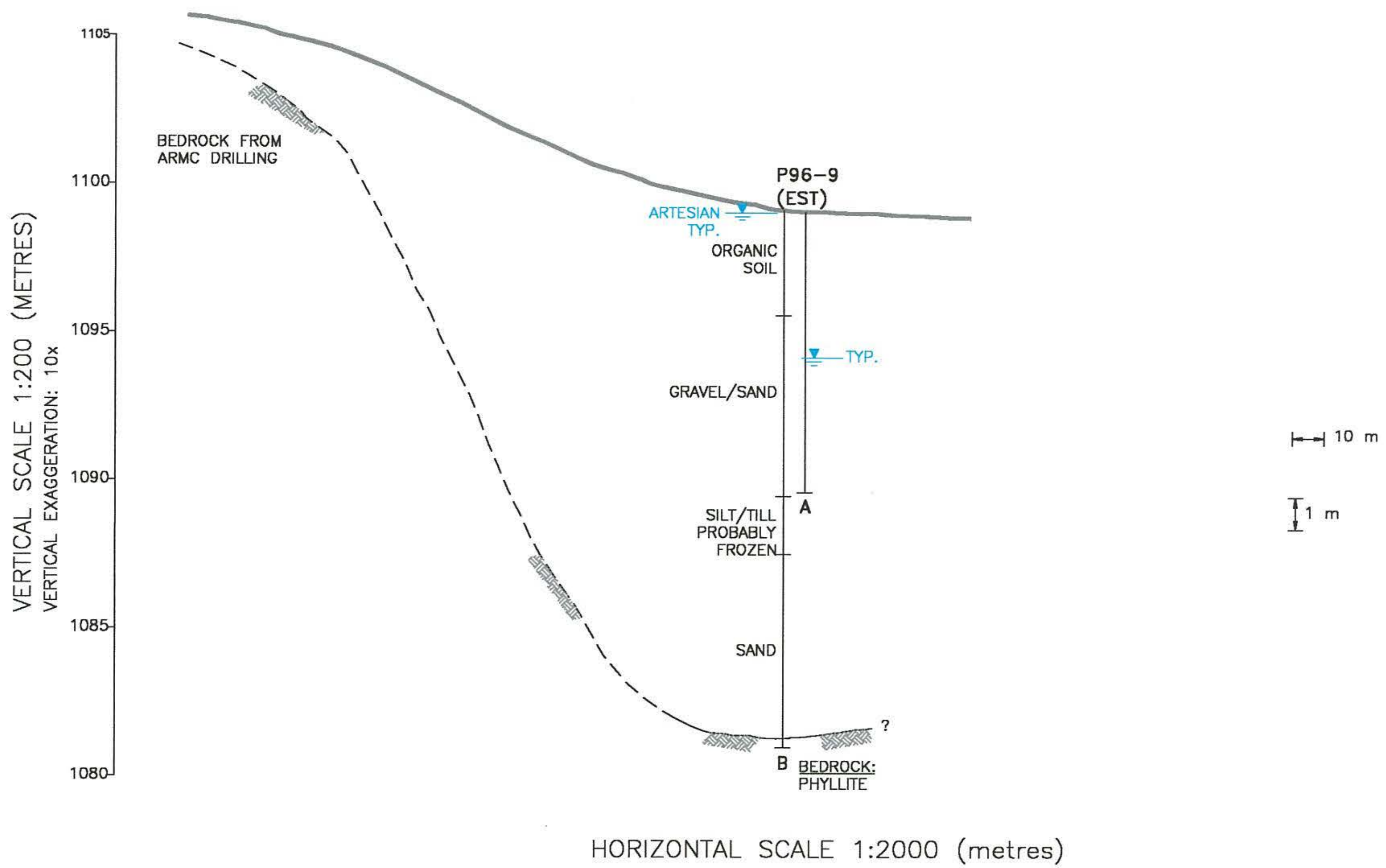
SOURCE OF DRAWING:
ANVIL RANGE MINING CORPORATION
VANGORDA PLATEAU MINESITE
DRAWING VANGORDA.DWG
OCTOBER, 1995

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	GB
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-34r1.DWG
REVISION:	1

GRUM ROCK DUMP DETAIL

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited | Deloitte & Touche | Figure No. 3.3



SOURCE OF FIGURE:
SKETCH BY ERIC DENHOLM, GARTNER LEE LIMITED

MEASURED GROUNDWATER ELEVATION (DATE ____) (m)

STRATIGRAPHY BOUNDARY

INTERPRETED STRATIGRAPHY BOUNDARY

P96-9
(EST)

NOTES:
1. SECTION LOCATION: FIGURE 3.3
2. ELEVATIONS ARE IN METRES ABOVE SEA LEVEL

REVIEWED BY:	ED
DRAWN BY:	GB/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-35r1.DWG
REVISION:	1

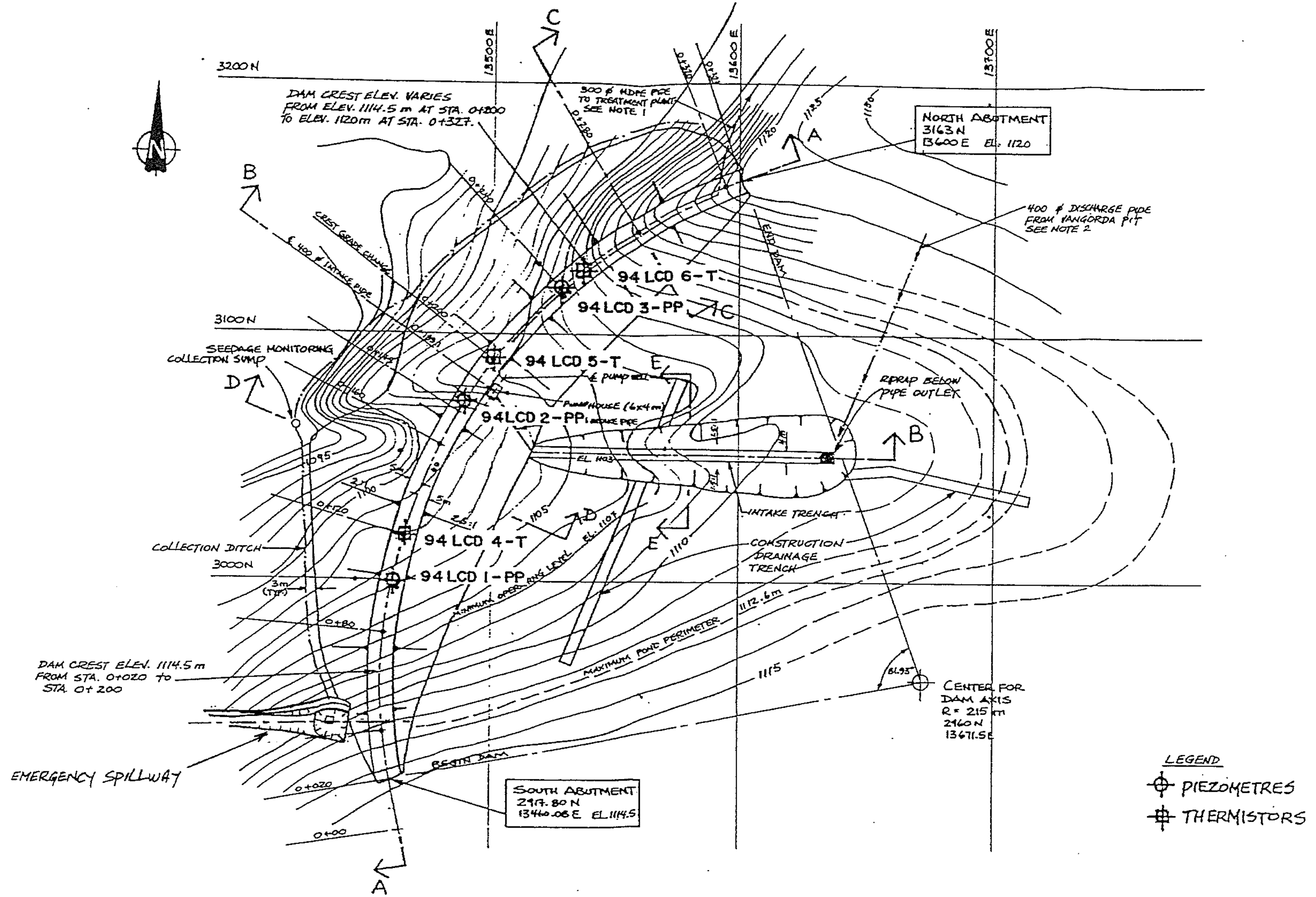
GRUM ROCK DUMP TOE
SECTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
3.4



GENERAL ARRANGEMENT PLAN

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY STEFFEN, ROBERTSON KIRSTEN (CANADA) INC. (SRK, 2002)

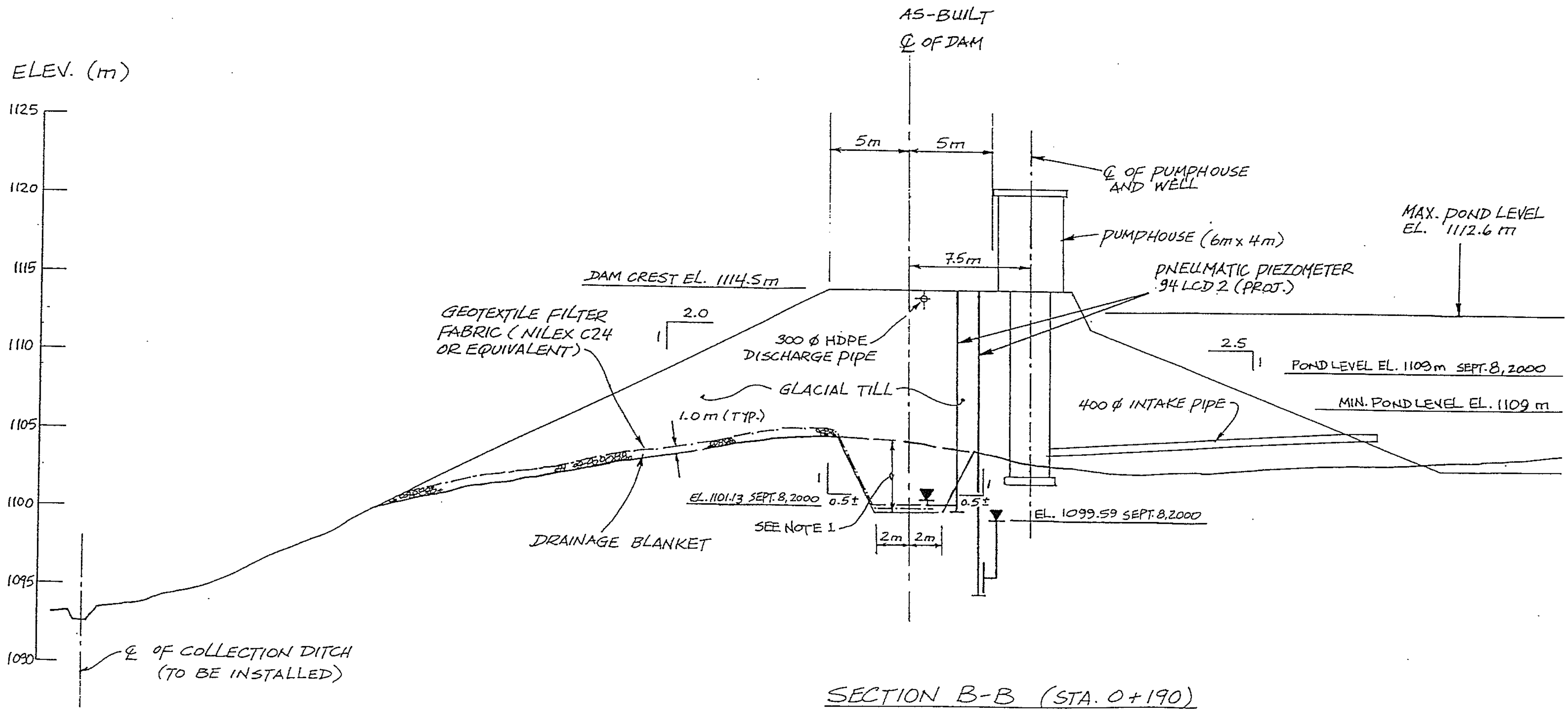
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-18.DWG
REVISION:	0

LITTLE CREEK DAM
PLAN

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 3.5



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY STEFFEN, ROBERTSON KIRSTEN (CANADA) INC. (SRK, 2002)

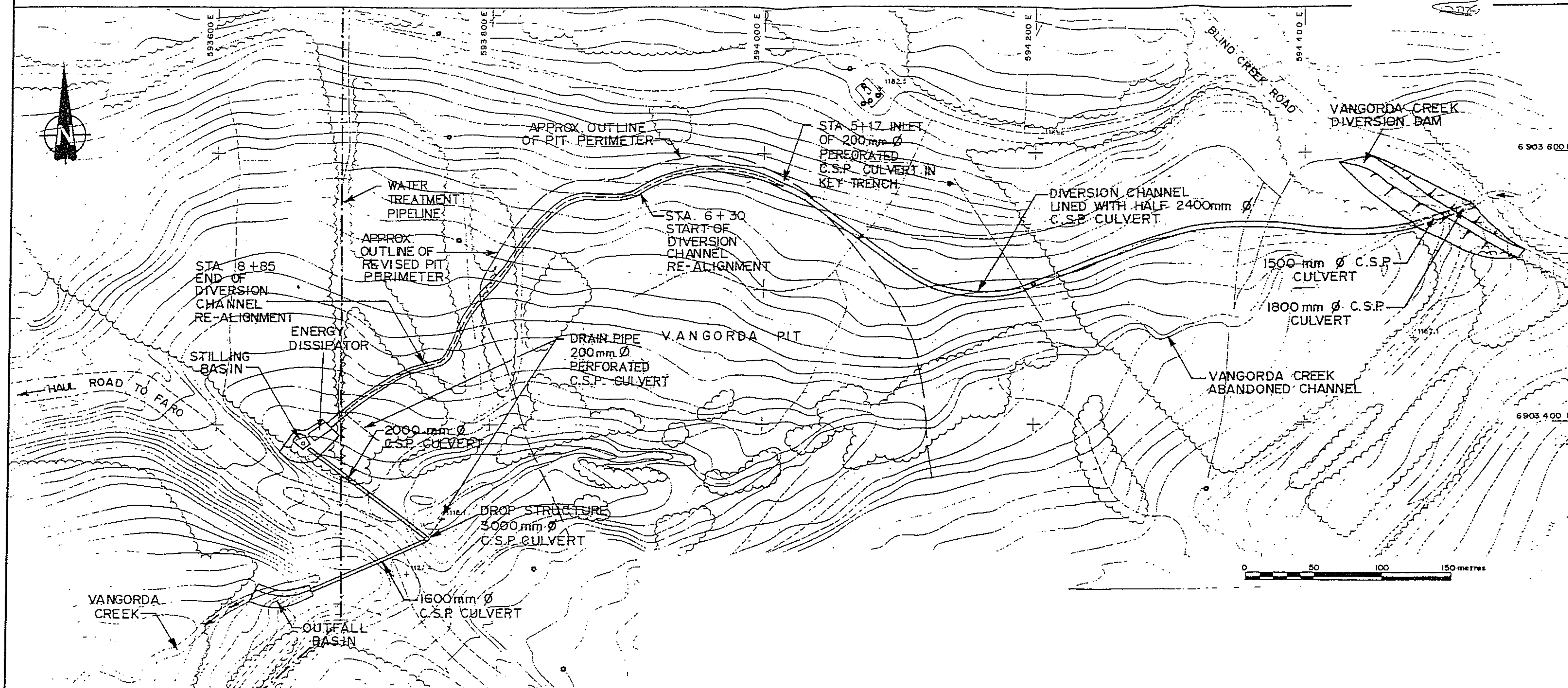
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-17.DWG
REVISION:	0

LITTLE CREEK DAM
SECTION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No.
3.6



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY STEFFEN, ROBERTSON KIRSTEN (CANADA) INC.
REPORT NO. 60647 DATED MAY 1992
"CONSTRUCTION REPORT VANGORDA CREEK DIVERSION REALIGNMENT VANGORDA PLATEAU DEVELOPMENT"

CURRAGH RESOURCES INC. VANGORDA CREEK DIVERSION	DATE APRIL 1992
	PROJ. No. 60647
GENERAL ARRANGEMENT	APPROVED
	NO. 2
STEFFEN ROBERTSON & KIRSTEN, Consulting Engineers	

NOTES:

1. BASE TOPOGRAPHIC PLAN IS TAKEN FROM CURRAGH RESOURCES LTD. 1:2000 SCALE DRAWING ENTITLED " FARO PLATEAU ".
2. LOCATION OF WATER TREATMENT PIPELINE IS TAKEN FROM COMINCO ENGINEERING SERVICES LTD. CONSTRUCTION DRAWING P682-B-130 Rev. 1 ENTITLED " VANGORDA DEWATERING PROJECT, W.T. PLANT TO VANGORDA SUMP - PLAN AND SECTIONS " DATED 90/08/07.
3. LOCATION OF VANGORDA CREEK DIVERSION RELOCATION IS TAKEN FROM SURVEY DATA PROVIDED BY CURRAGH RESOURCES, APRIL 1992.

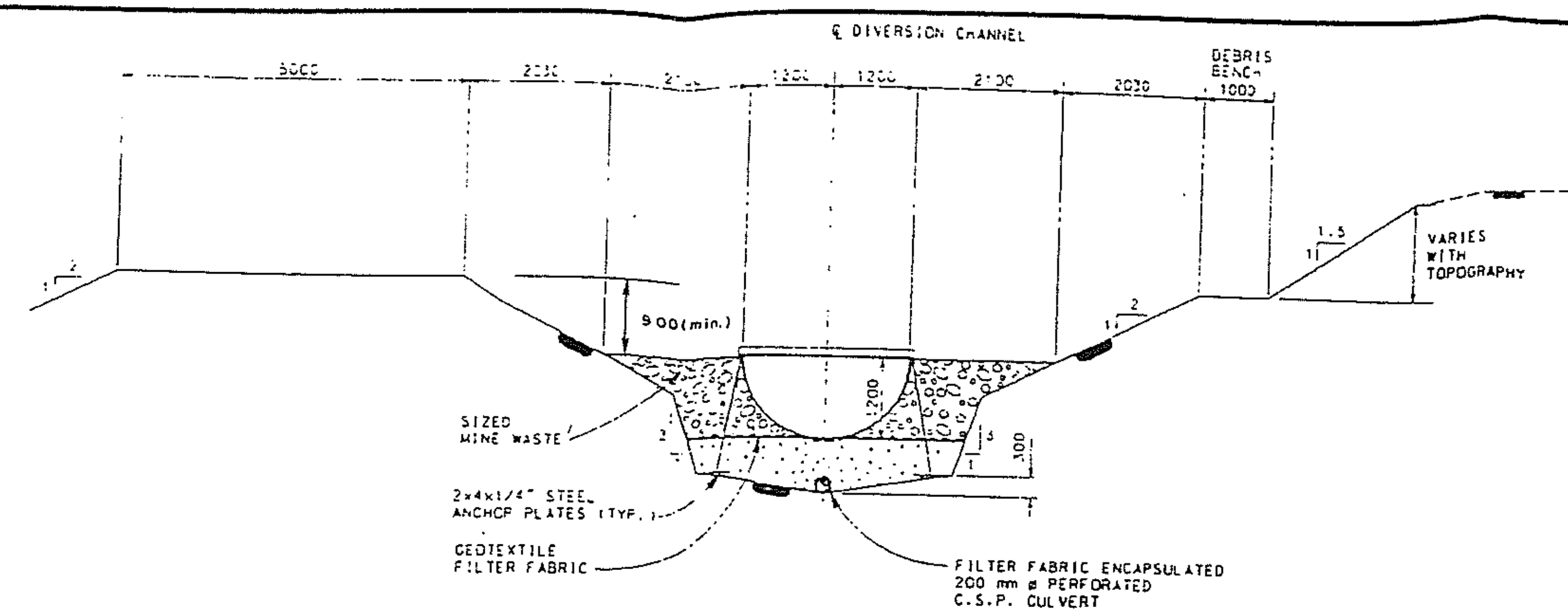
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-18.DWG
REVISION:	0

VANGORDA DIVERSION PLAN

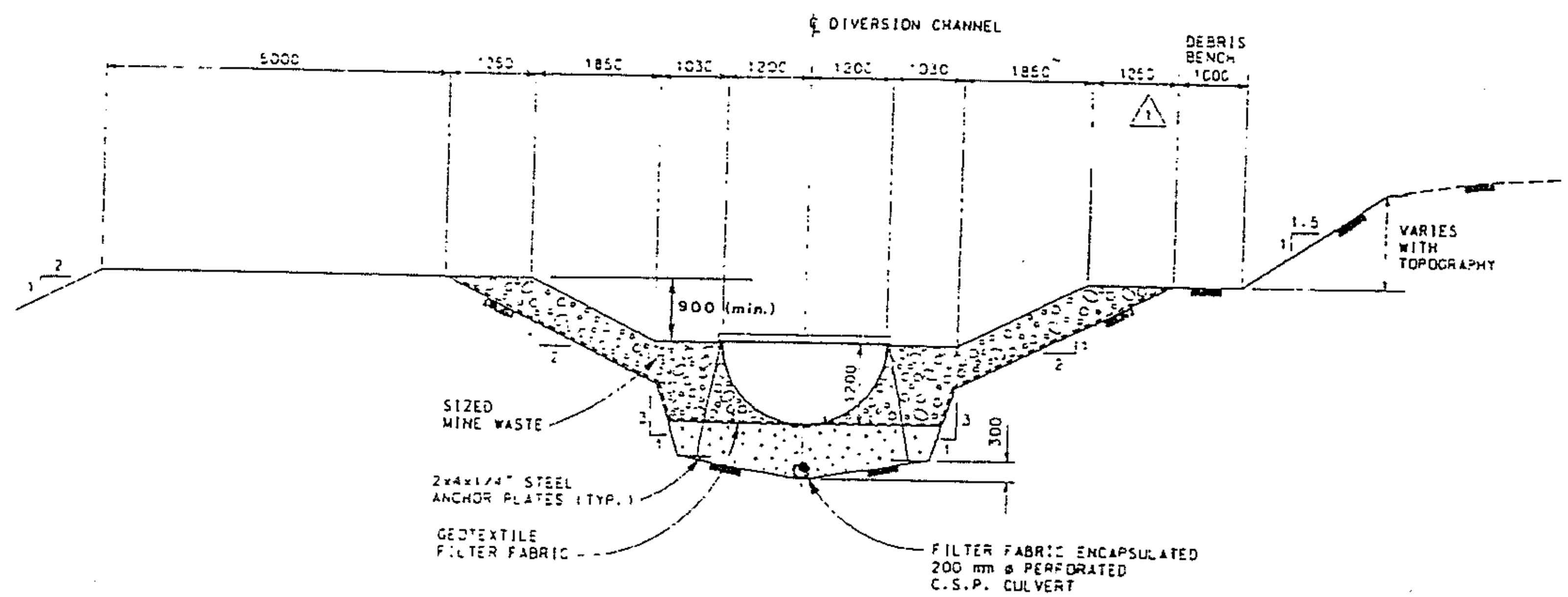
ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 3.7



TYPICAL SECTION ON ROCK CUT
FROM STA. 6+30 TO 7+50
TO STA. 7+90 TO 8+30



TYPICAL SECTION ON SOIL CUT
FROM STA. 7+50 TO 7+90
TO STA. 8+30 TO 8+85

SECTION A/05
SCALE: 1:50

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY STEFFEN, ROBERTSON KIRSTEN (CANADA) INC.
REPORT NO. 60647 DATED MAY 1992
"CONSTRUCTION REPORT VANGORDA CREEK DIVERSION REALIGNMENT VANGORDA PLATEAU DEVELOPMENT"

CLIENT CURRAGH RESOURCES INC.	TITLE	1003509.DGN
LOCATION FARO, YUKON TERRITORY	VANGORDA CREEK DIVERSION	ACCT No
KILBORN	TYPICAL SECTIONS AND DETAILS	PROJECT No 8444 / DIVISION No 25
	SHEET 2	DRAWING NUMBER 100-35-09 REV. 2

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-19.DWG
REVISION:	0

VANGORDA DIVERSION SECTIONS

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited | Deloitte & Touche

Figure No. 3.8

Figure 4.1 Mean Monthly Temperature at Anvil Climate Station (1967-1980)

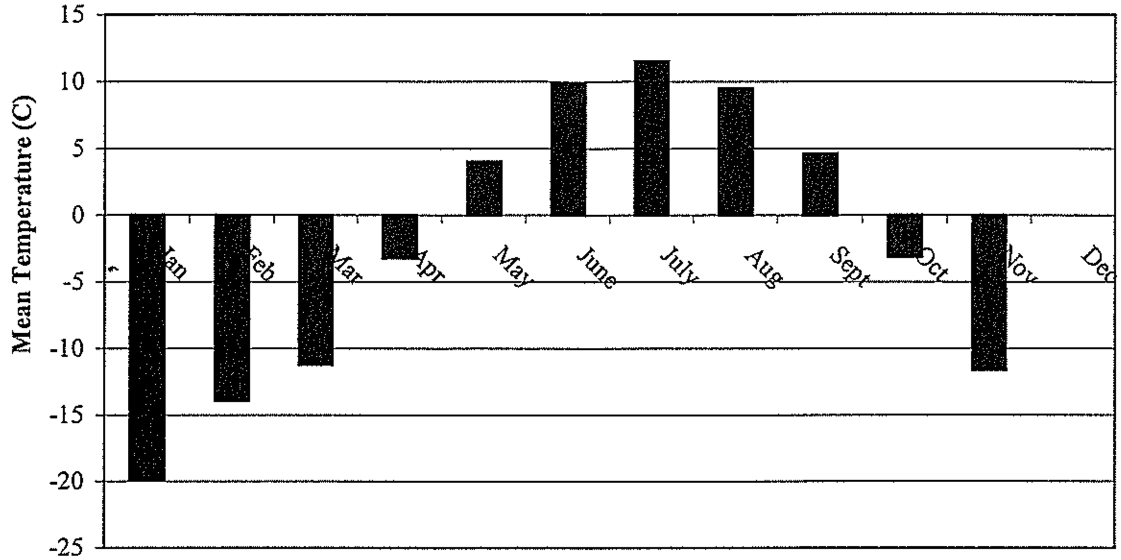


Figure 4.2 Monthly Mean Precipitation (mm) at Faro Airport, Yukon (1978-2001)

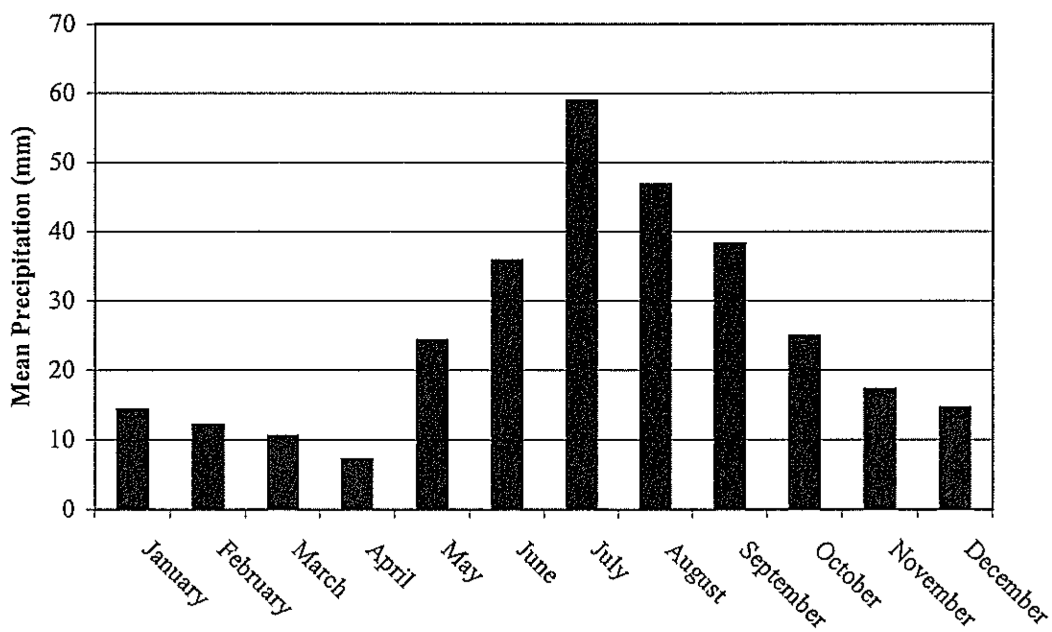
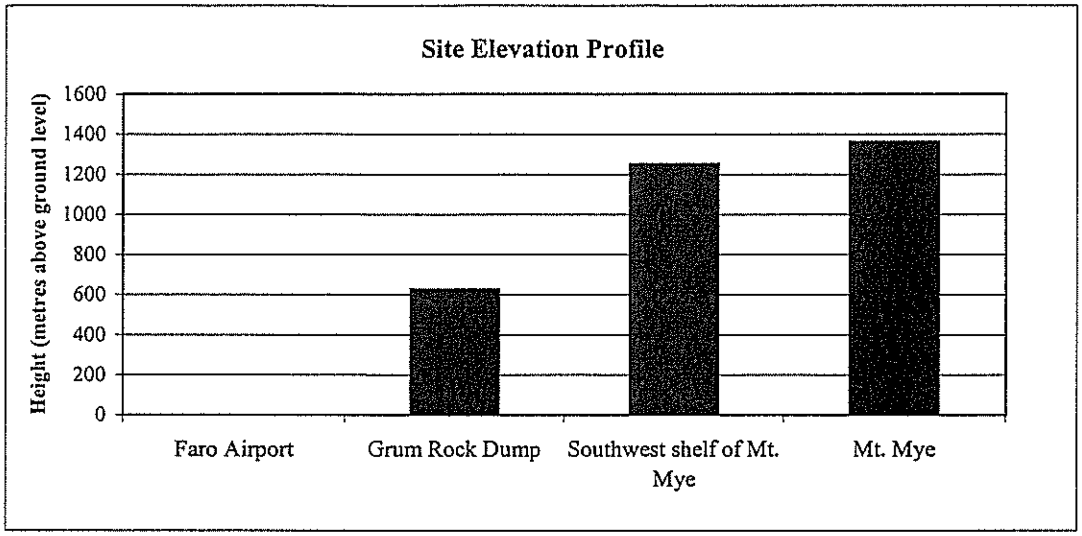
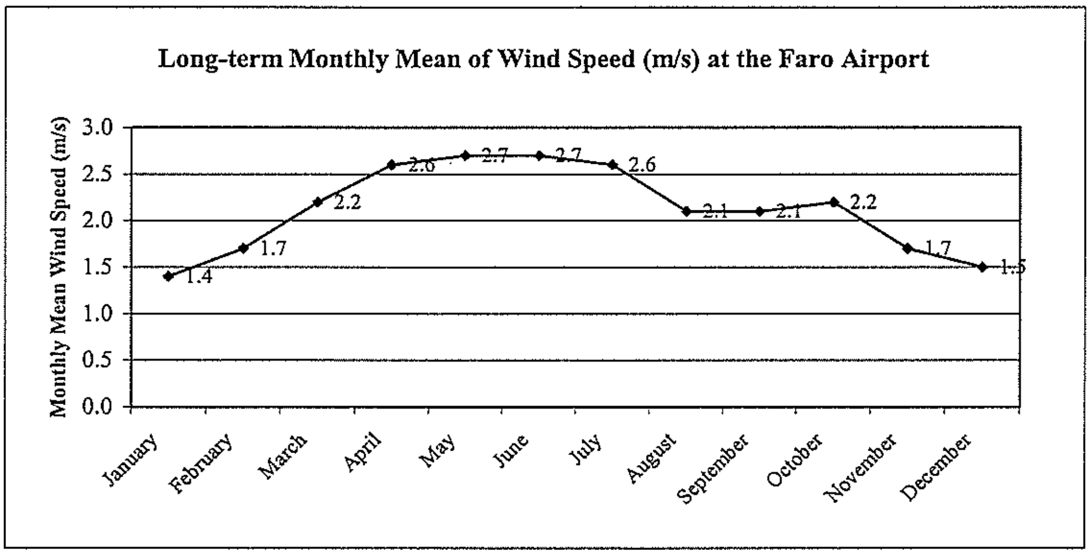
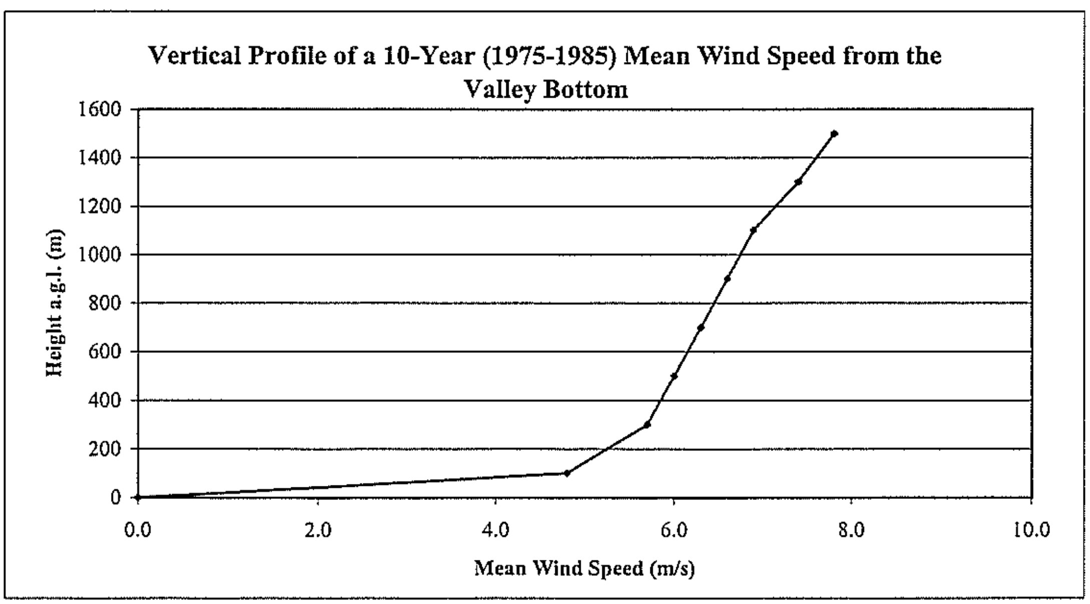
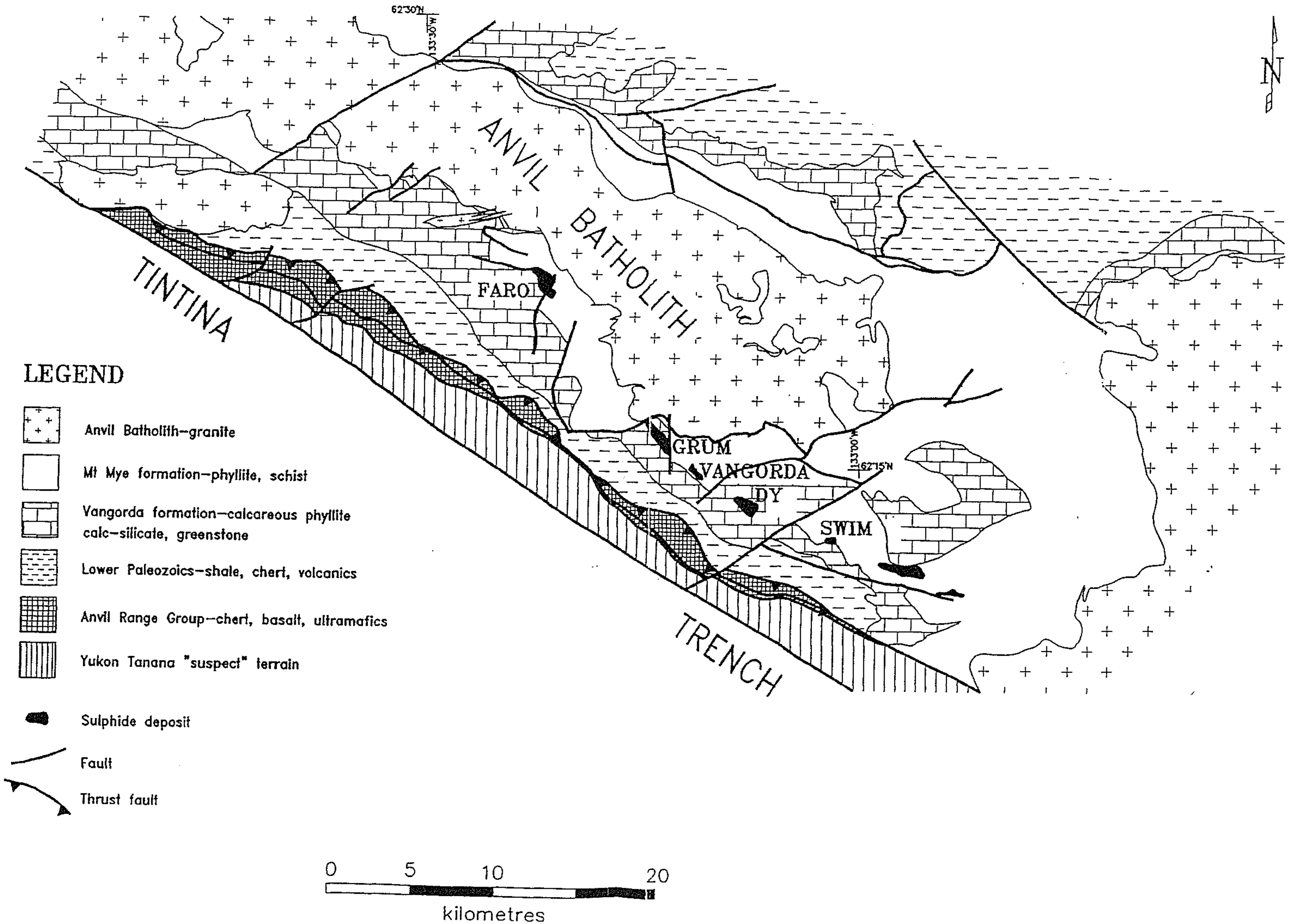


Figure 4.3 Wind Data for the Anvil Range Mining Complex









SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"
DRAWING TAKEN FROM ACCESS MINING, 1996

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan

Geological Map of the Anvil Range

033001 | Nov. 1996 | | 3–2

DRAWING INFORMATION:

REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22–943
FILE NAME:	22943–D1–02.DWG
REVISION:	0

REGIONAL GEOLOGY

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
4.4

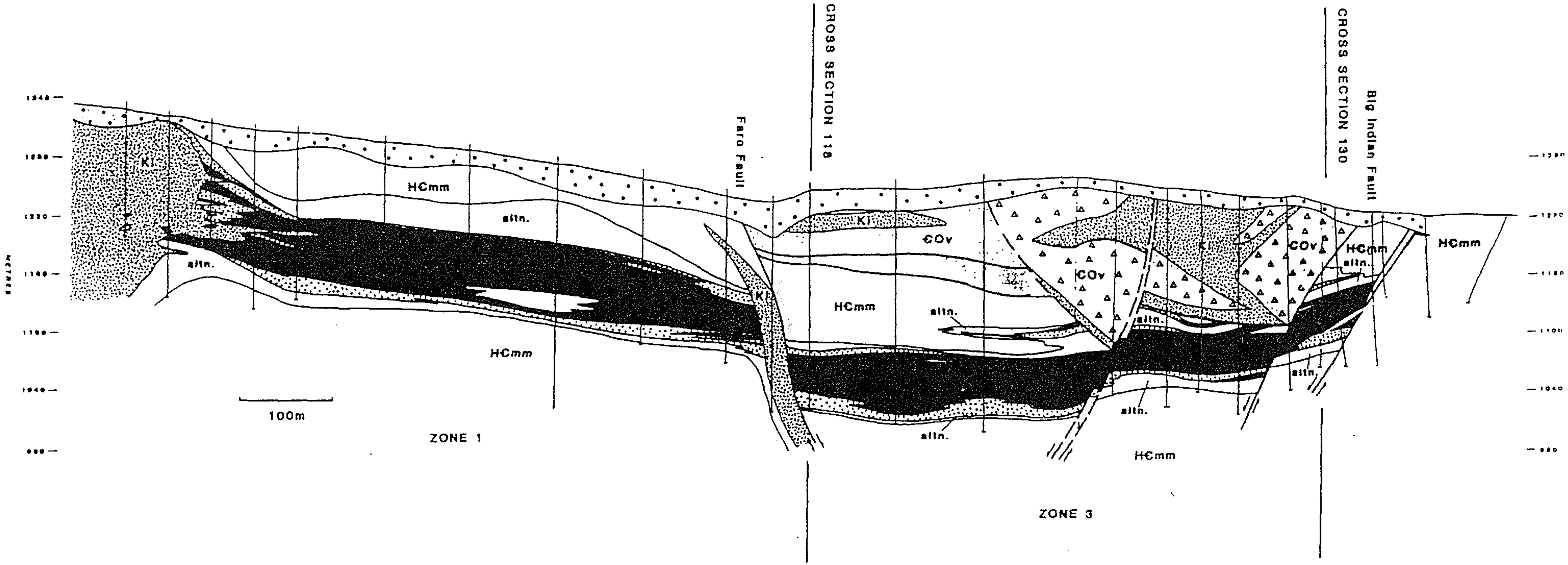


FIGURE Vertical longitudinal section 22 of the Faro deposit, looking northeast, no vertical exaggeration. Units are same as Figure 4-3 Zones 1 and 3 are indicated, the largely eroded northeast extension of zone 2 is just beneath the overburden southeast of the Big Indian Fault. Within about 150 m of the diorite dyke at the northwest end of the section, the massive sulphides are altered to pyrrhotite rich assemblages containing local large magnetite octahedra and partly reverted to pyrite. Adjacent to the diorite dyke along the Faro Fault massive magnetite is developed in the sulphides.

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

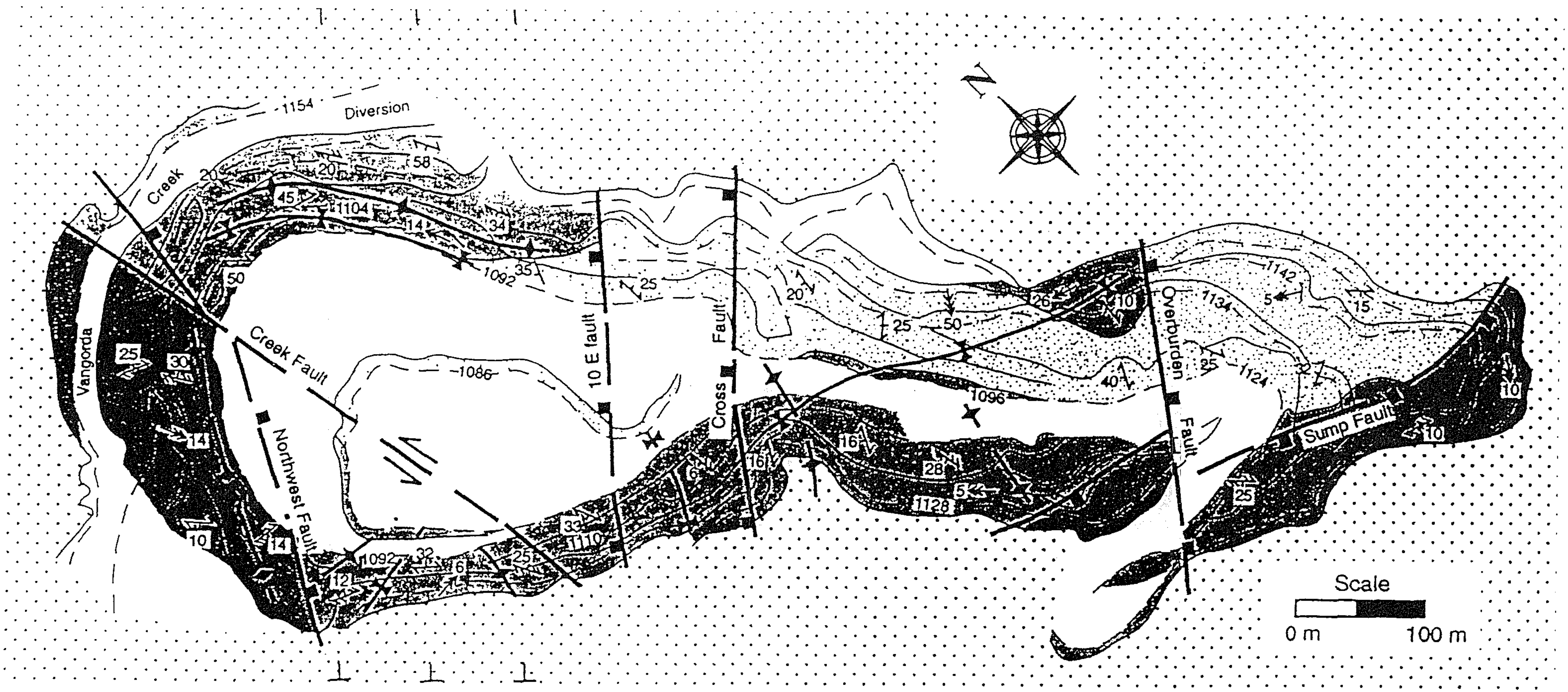
ROBERTSON GEOCONSULTANTS INC. Consulting Geotechnical and Environmental Engineers	Anvil Complex Closure Plan FARO DEPOSIT VERTICAL LONGITUDINAL SECTION 22
Anvil Range Mining Corporation	033001 | Nov. 1996 | | 4-4

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-26.DWG
REVISION:	0

FARO OREBODY

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited | Deloitte & Touche | Figure No. 4.5



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY STEFFEN, ROBERTSON KIRSTEN (CANADA) INC.
REPORT NO. 60647
DATED MAY 1992
"CONSTRUCTION REPORT VANGORDA CREEK DIVERSION REALIGNMENT VANGORDA PLATEAU DEVELOPMENT"

Vangorda fm
Mt. Mye fm.
Massive sulphides
Sc, S1, S2
Fold axes (F2, F3)
Bench Crest
Bench Toe
Extensional Fault
Strike-Slip Fault
Synformal antiform (F2)
Antiformal synform (F2)
Synform (F3)
Antiform (F3)

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CFW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-01-27.DWG
REVISION:	0

VANGORDA OREBODY

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 4.6

LEGEND

- glacial till and glacio–fluvial sands

Vangorda Formation

- unit 48 = 5D0, 5D4 mafic meta–igneous rocks, chlorite phyllite
- unit 40 = 5B0 calcareous phyllite
- unit 30 = 5A0 carbonaceous phyllite

Mt Mye Formation

- unit 20 = 3G0

Ore Deposit

- units 5 & 7 = 4E & 4G massive sulphides
- unit 15 = 4EC undifferentiated massive and disseminated sulphides
- unit 2 & 3 = 4A & 4C/4D disseminated sulphides in quartzite
- unit 56 = 4L0 altered (bleached) phyllite
- unit 77 = undifferentiated phyllite
- – – – – – water level of flooded pit at closure

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY STEFFEN, ROBERTSON KIRSTEN (CANADA) INC.
REPORT NO. 60647
DATED MAY 1992
"CONSTRUCTION REPORT VANGORDA CREEK DIVERSION REALIGNMENT VANGORDA PLATEAU DEVELOPMENT"

ROBERTSON GEOCONSULTANTS INC. Consulting Geotechnical and Environmental Engineers	Anvil Complex Closure Plan GRUM OPEN PIT GEOLOGY
Anvil Range Mining Corporation	033001 | Nov. 1996 | 5-5

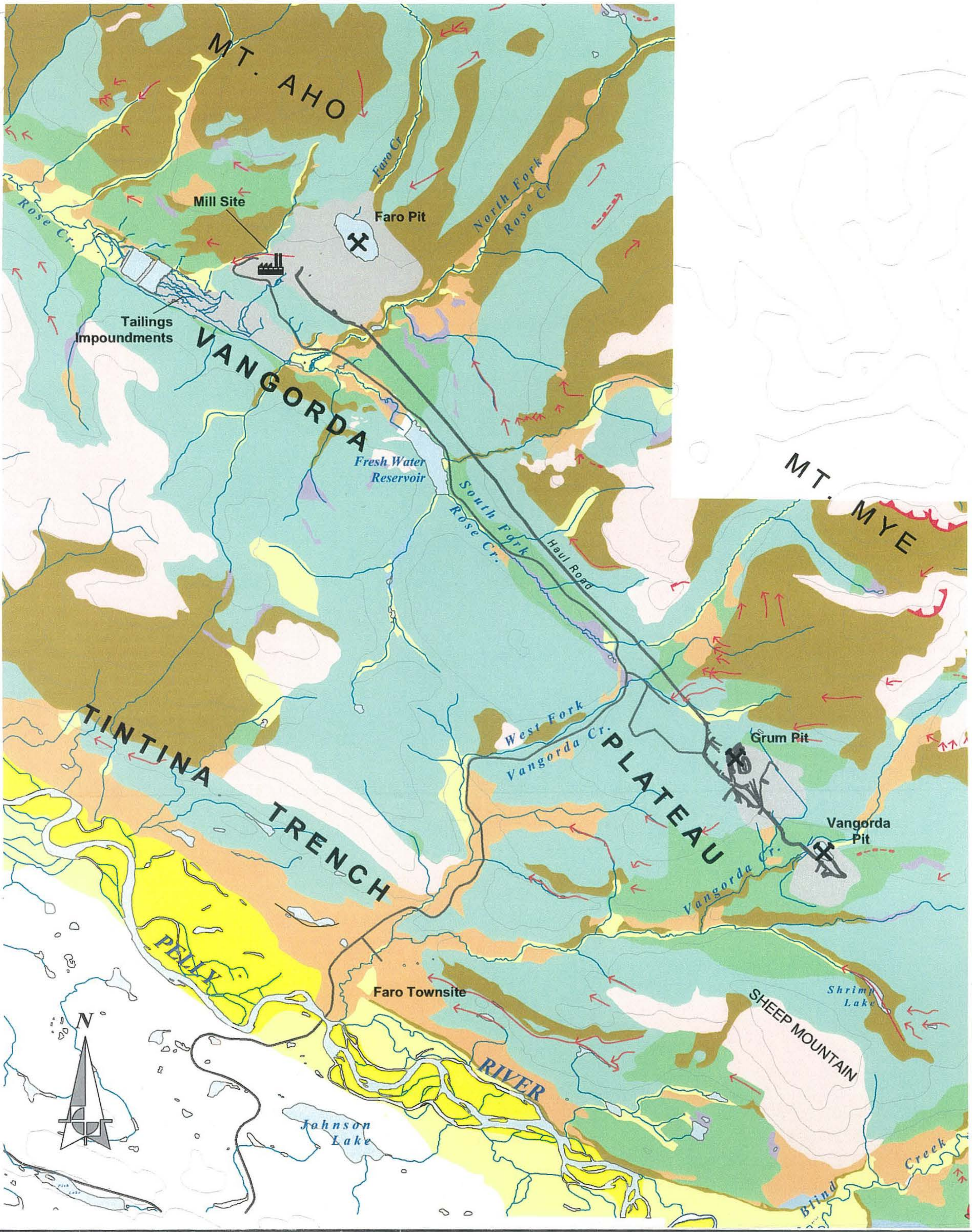
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-01-28.DWG
REVISION:	0

GRUM OREBODY

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited | Deloitte & Touche

Figure No. 4.7



LEGEND

SURFICIAL MATERIALS

- Anthropogenic
- Colluvium
- Fluvial (Active)
- Glaciofluvial
- Fluvial
- Glaciolacustrine
- Morainal Veneer (Till)
- Morainal Blanket (Till)
- Organic
- Bedrock

SYMBOLS

- Cirque
- Glacial meltwater channel
- Moraine ridge

1 0 1 2 3

Kilometers

Scale: 1:75,000

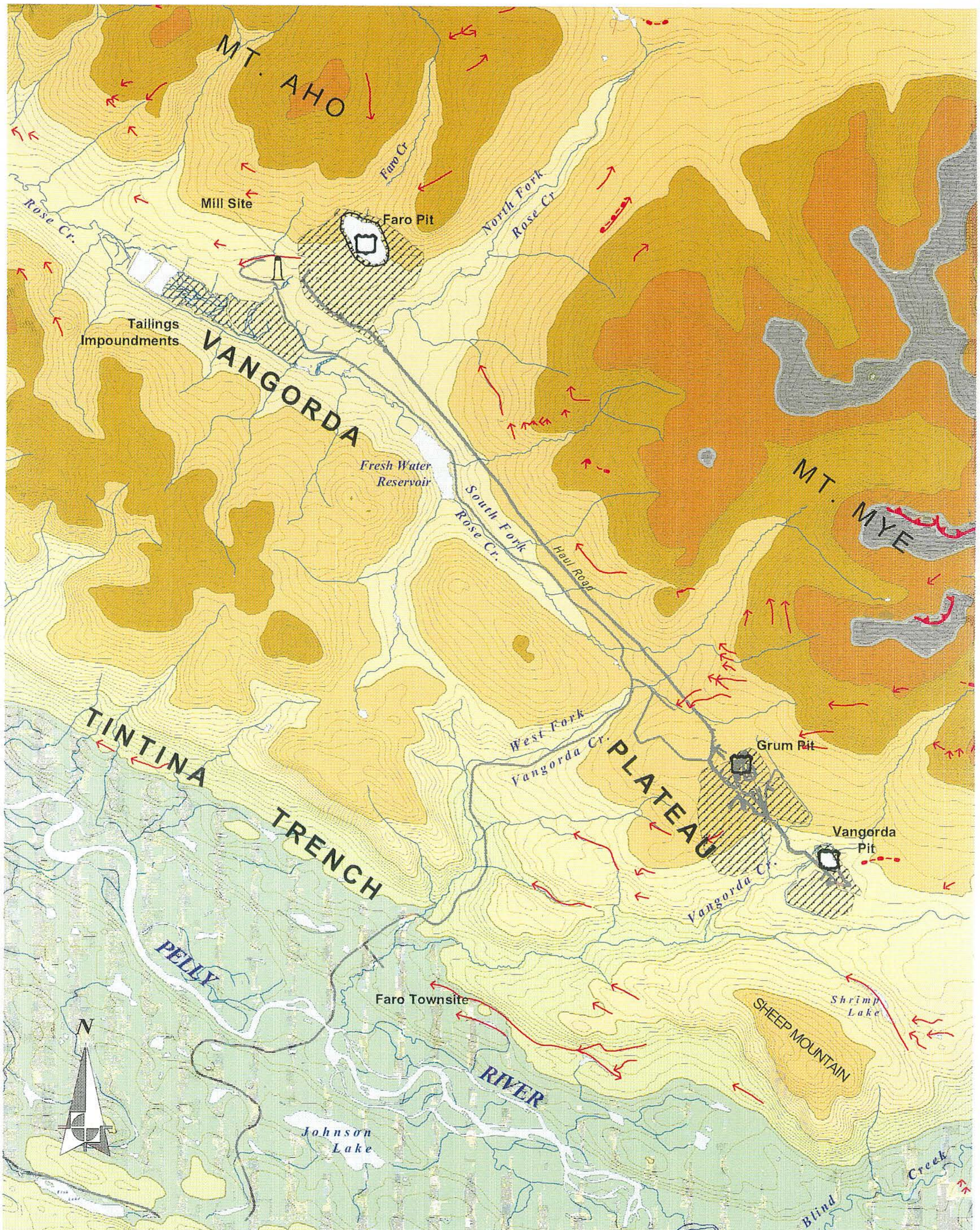
SOURCE: Surficial Geology from "Quaternary geology and till geochemistry of the Anvil District, central Yukon Territory (Bulletin 11)" Bond, J.D., 2001.

Anvil Range Mine Complex
2002 Baseline Environmental Information

Surficial Geology and Landforms

Drawn By: F.K.P.	Reviewed By: E.J.D.
Revision No.: 0	Project No: 22-943
Date Issued: APR. 2002	Projection: UTM Z8, NAD83
Site Name: FARO	File Name: 22943-F49.wor

Gartner Lee Limited | Deloitte & Touche | Figure No. **4.8**



LEGEND

ELEVATION RANGES
(metres ASL)

- below 800 m
- 800-1,000 m
- 1,000-1,200 m
- 1,200-1,400 m
- 1,400-1,600 m
- 1,600-1,800 m
- above 1,800 m

SYMBOLS

- Cirque
- Glacial meltwater channel
- Moraine ridge

1 0 1 2 3
Kilometers
Scale: 1:75,000

SOURCE: Surficial Geology from "Quaternary geology and till geochemistry of the Anvil District, central Yukon Territory (Bulletin 11)" Bond, J.D., 2001.

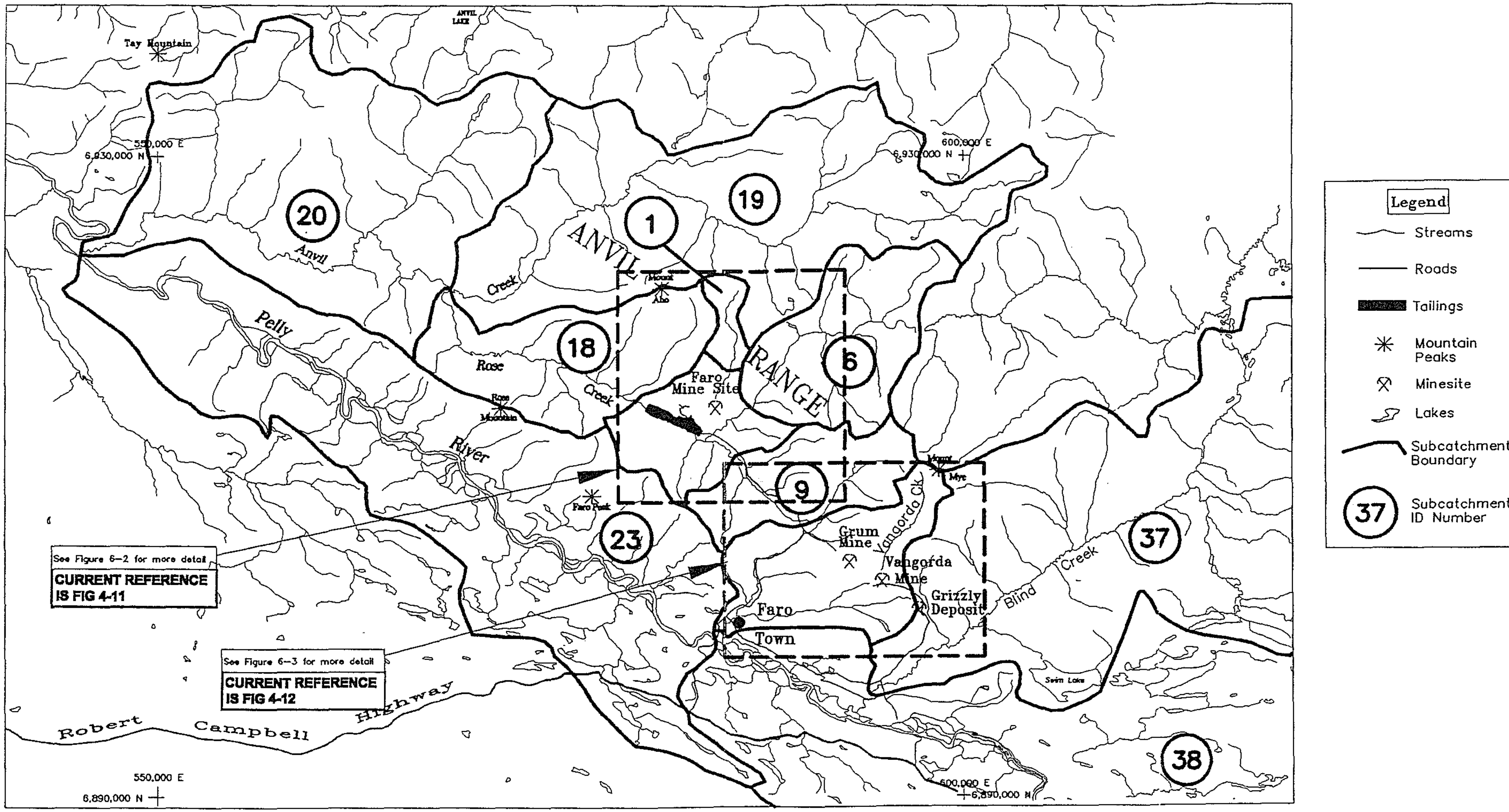
Anvil Range Mine Complex
2002 Baseline Environmental Information

Physiographic Setting

Drawn By: F.K.P.	Reviewed By: E.J.D.
Revision No.: 0	Project No: 22-943
Date Issued: APR. 2002	Projection: UTM Z8, NAD83
Site Name: FARO	File Name: 22943-F49.wor

Gartner Lee Limited
Deloitte & Touche

Figure No.
4.9



Notes: Map derived from 1:250,000 scale
NTS Mapsheet 105 K
North American Datum 1927
Transverse Mercator Projection

0 2500 5000 7500 10,000 12,500 METRES

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan

MINESITE CATCHMENTS

PROJECT NO.	DATE	APPROVED	FIGURE
033001	Nov. 1996		6-1

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-03.DWG
REVISION:	0

OVERVIEW MINESITE CATCHMENTS

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No.
4.10

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX — INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan

Minesite Subcatchments in Vicinity of Faro Development

033001 | Nov. 1996 | 6-2

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-04.DWG
REVISION:	0

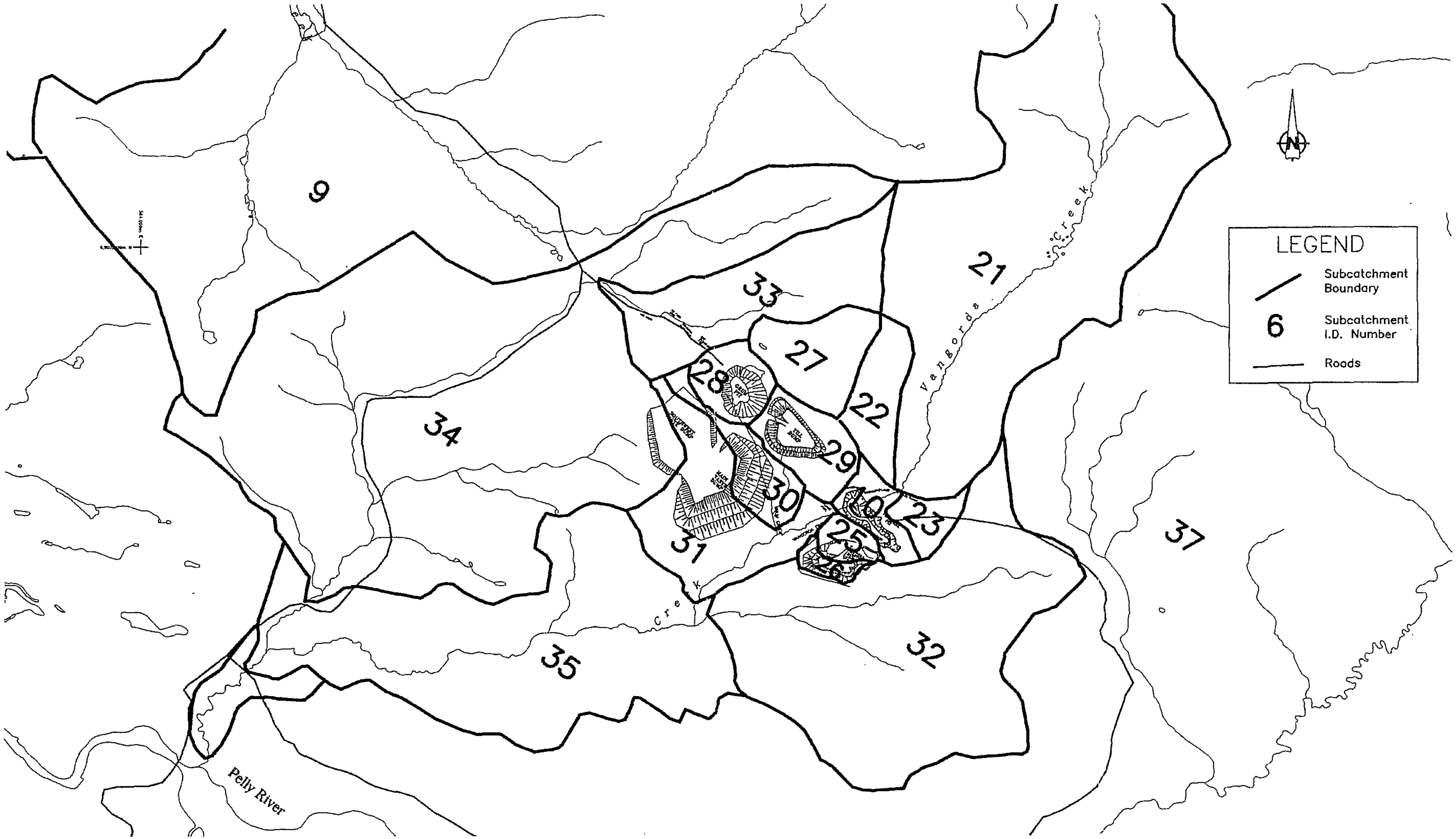
MINESITE SUBCATCHMENTS IN VICINITY OF FARO DEVELOPMENT

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
4.11



ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan

Minesite Subcatchments in the Vicinity of Vangorda Plateau Development

033001 | Nov. 1996 | 6-3

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-05.DWG
REVISION:	0

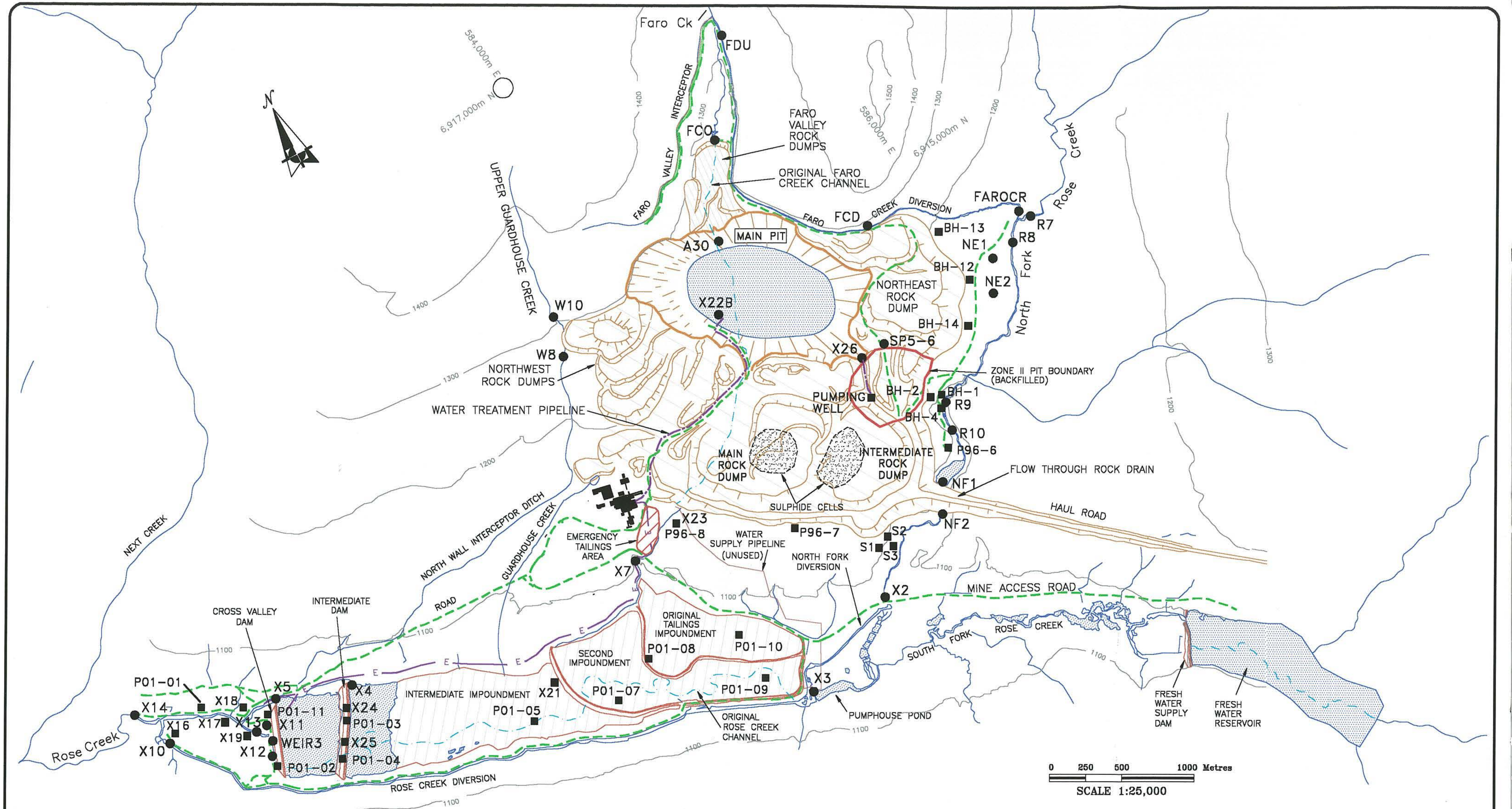
MINESITE SUBCATCHMENTS IN VICINITY OF VANGORDA PLATEAU DEVELOPMENT

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
4.12



SOURCE OF FIGURE:

DRAWING NO. 4.1 "OVERVIEW OF FARO MINESITE" DIAND WASTE MANAGEMENT PROGRAM BY GARTNER LEE LIMITED
03/16/01 ADAPTED FROM ROBERTSON GEOCONSULTANTS INC.

Notes:

Base Map supplied by the Orthoshop, January 1991
North American Datum 1927
Contour Interval 100 m
Universal Transverse Mercator Projection
Map is a composite of 9 basemaps, it was redigitized to simplify planimetric features.

LEGEND:

- ROADS
- EXISTING DRAINAGE
- ORIGINAL DRAINAGE
- EFFLUENT PIPELINE
- PIPELINE
- ■ Groundwater Location
- ● Surface Water Location

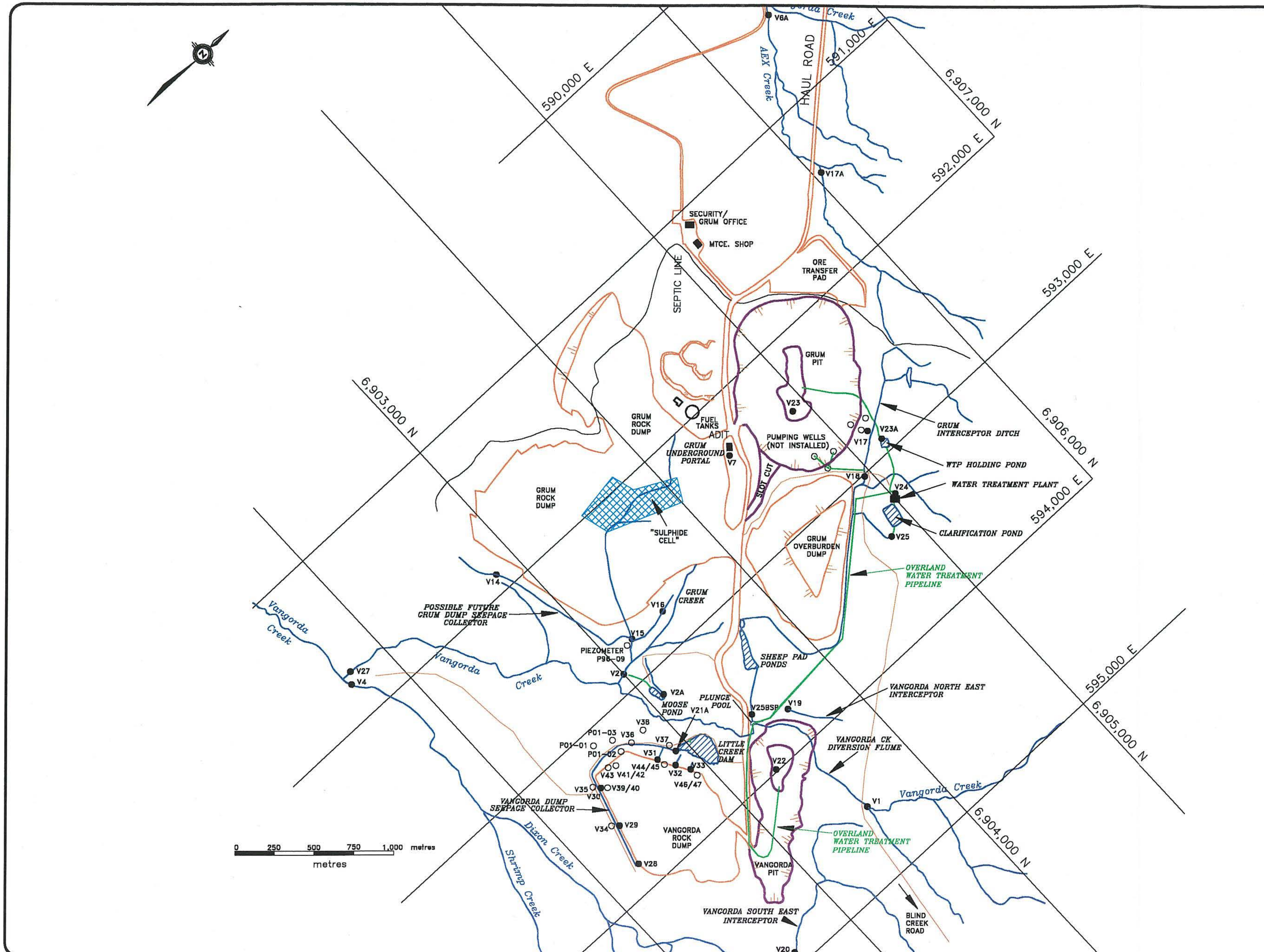
DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-24r1.DWG
REVISION:	1

SURFACE AND GROUNDWATER SAMPLING LOCATIONS – FARO MINE SITE

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 4.13



LEGEND

- Creek or Ditch
- Pipeline
- Rock Dump or Road
- Open Pit
- Drainage Divide
- Sulphide Cell (approx.)
- o ground water location
- • surface water location

VANGORDA ROCK DUMP LEGEND

DRAIN #1 = V28
DRAIN #2 = V29
DRAIN #3 = V30
DRAIN #4 = V31
DRAIN #5 = V32
DRAIN #6 = V33

GROUNDWATER WELLS = V34 TO V38

PIEZOS. IN TOE BERM = V39 TO V47

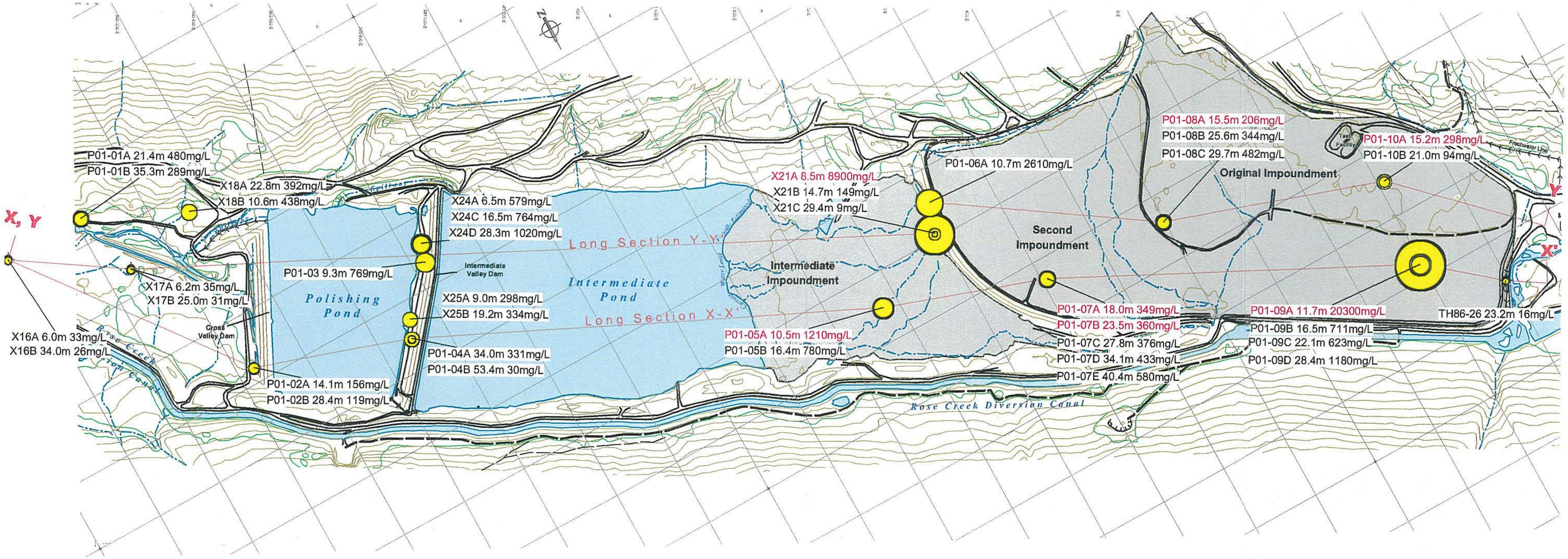
SOURCE OF DRAWING:
ANVIL RANGE MINING CORPORATION
VANGORDA PLATEAU MINESITE
DRAWING VANGORDA.DWG
OCTOBER, 1995

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-25r1.DWG
REVISION:	1

SURFACE AND GROUNDWATER SAMPLING LOCATIONS – VANGORDA PLATEAU MINE SITE

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited | Deloitte & Touche | Figure No. 4.14



EXAMPLE LABEL

P01-05A 10.5m 1210mg/L — Upper monitor (Red indicates screen in tailings)
P01-05B 16.4m 780mg/L — Lower Monitor(s)

Monitor ID | Monitor Depth | Sulphate Concentration

SULPHATE CONCENTRATIONS
(mg/L)

10,000
5,000
1,000

NOTE: Figure modified from "2001 Hydrogeological & Geochemical Investigations of the Rose Creek Tailings Facility", Gartner Lee Ltd. 2002, Figure 6.1

Data Sources:

- Groundwater chemistry based on samples collected Sept. 6-11, 2001

200 0 200 400 600
Meters

Scale: 1:11,500

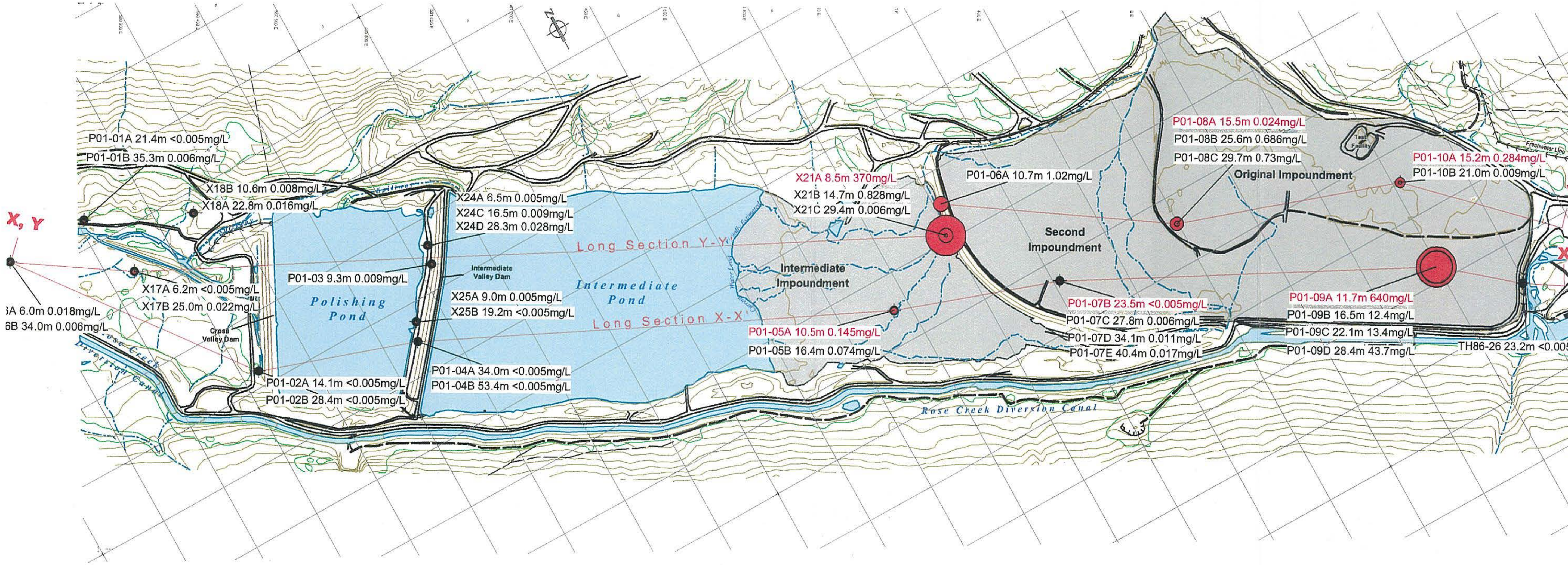
Rose Creek Tailings Facility

Sulphate Concentrations in Groundwater

Anvil Range Mine Complex
2002 Baseline Environmental Information

Drawn By:	F.K.P.	Approved By:	E.J.D.
Revision No.:	3	Project No.:	GLL 22-943
Date Issued:	Apr. 11/2002	Projection:	UTM Z8, NAD27
Site Name:	Faro	File Name:	22943-F415_16.wor

Gartner Lee Limited | Deloitte & Touche | Figure No. 4.15



EXAMPLE LABEL

P01-05A 10.5m 0.145mg/L — Upper monitor (Red indicates screen in tailings)

P01-05B 16.4m 0.074mg/L — Lower Monitor(s)

Monitor ID — Monitor Depth — Zinc Concentration

ZINC CONCENTRATIONS (mg/L)

10

5

1

NOTE: Figure modified from "2001 Hydrogeological & Geochemical Investigations of the Rose Creek Tailings Facility", Gartner Lee Ltd. 2002, Figure 6.2

Data Sources:

- Groundwater chemistry based on samples collected Sept. 6-11, 2001

200 0 200 400 600

Meters

Scale: 1:11,500

Rose Creek Tailings Facility

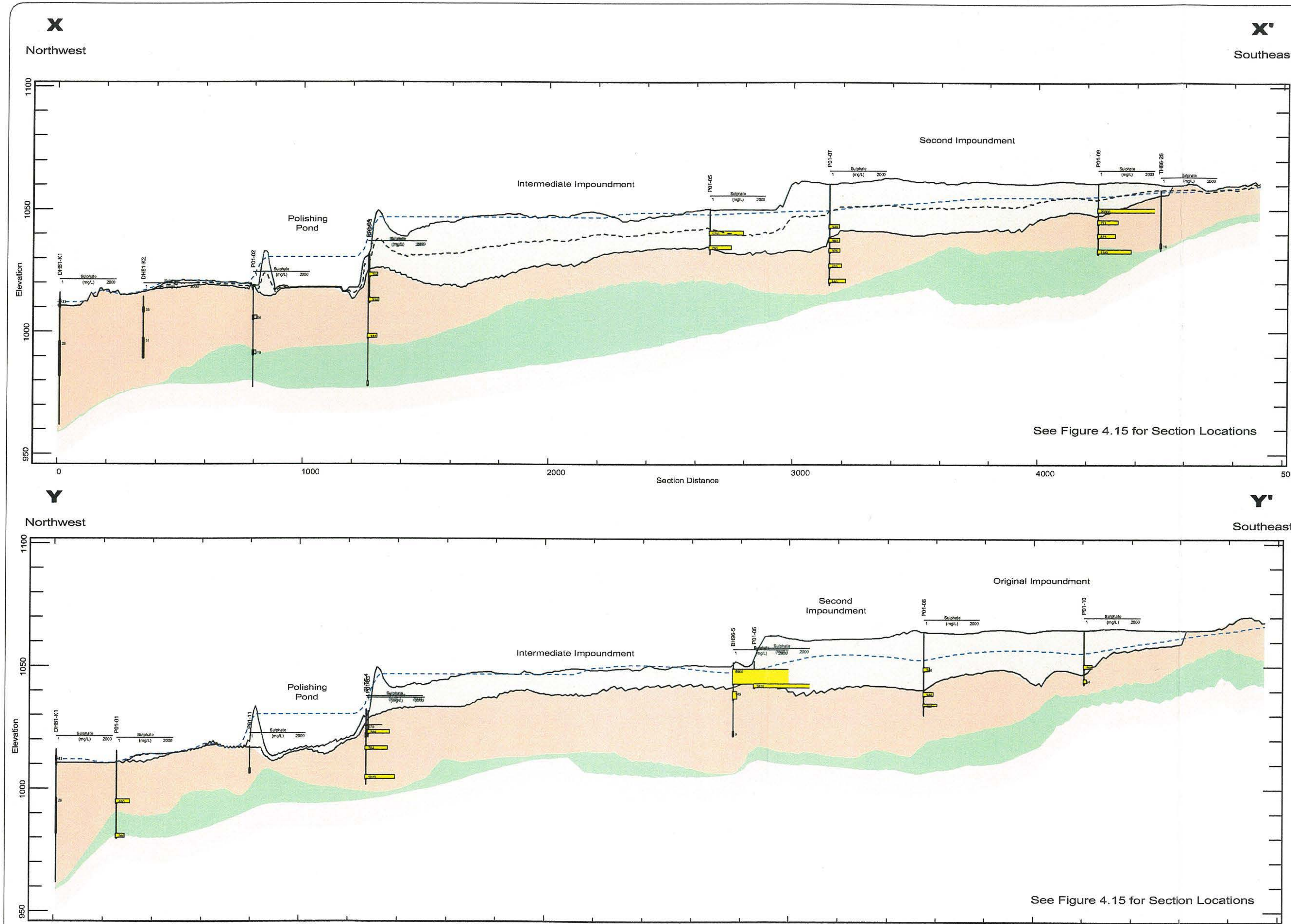
Zinc Concentrations in Groundwater

Anvil Range Mine Complex
2002 Baseline Environmental Information

Drawn By:	F.K.P.	Approved By:	E.J.D.
Revision No.:	3	Project No.:	GLL 22-943
Date Issued:	Apr. 11/2002	Projection:	UTM Z8, NAD27
Site Name:	Faro	File Name:	22943-F415_16.wor

Gartner Lee Limited — Deloitte & Touche

Figure No. **4.16**



NOTE: Figure modified from "2001 Hydrogeological & Geochemical Investigations of the Rose Creek Tailings Facility", Gartner Lee Ltd. 2002, Figure 6.3

LEGEND:

- Weathered Bedrock
- Till
- Glaciofluvial Sand & Gravel
- Tailings
- Water Table (Sept. 2001)

EXAMPLE MONITOR:

- Concentration Range
- Parameter Concentration Over Screened Interval

- Height of concentration bar represents length of monitor screen
- Sulphate concentrations > 2000 mg/L not shown

NOTES:

- Based on groundwater samples collected Sept. 2001
- Statigraphy interpreted from boreholes shown and may vary from that shown.
- Original drawing produced in colour

SCALES: 1:15000 Scale

0 200 400 600 metres

Vertical Exaggeration: 10 X

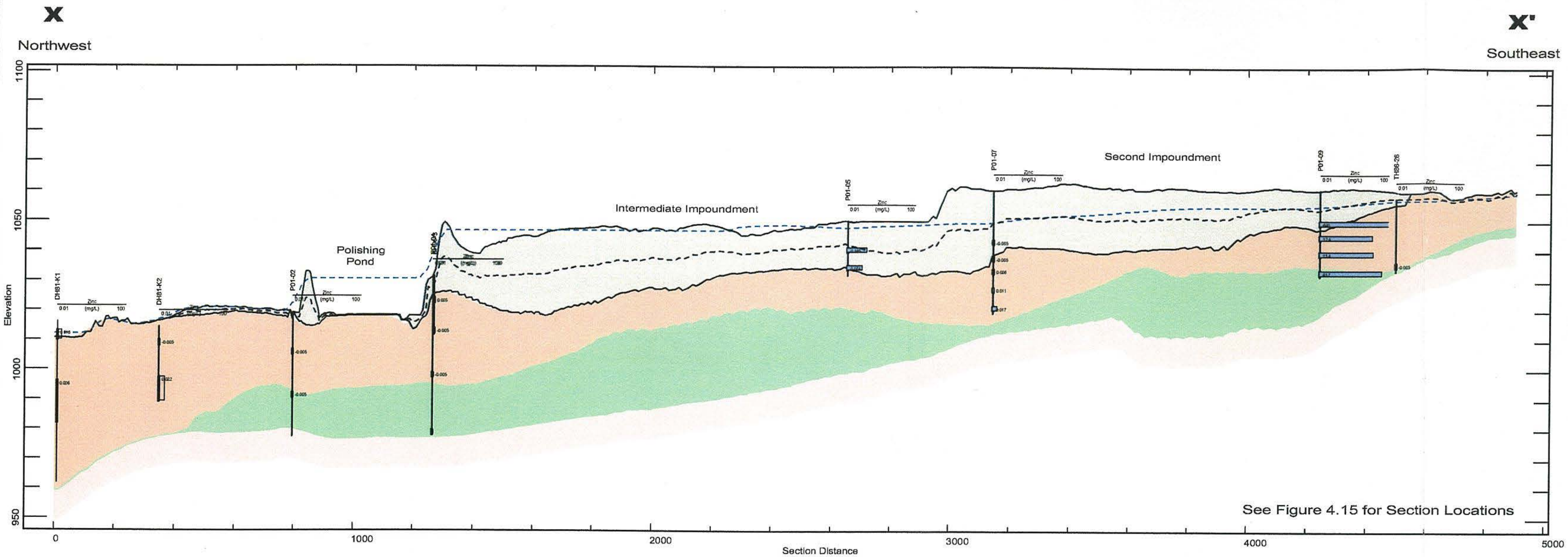
Rose Creek Tailings Facility
Sulphate Concentrations in Section

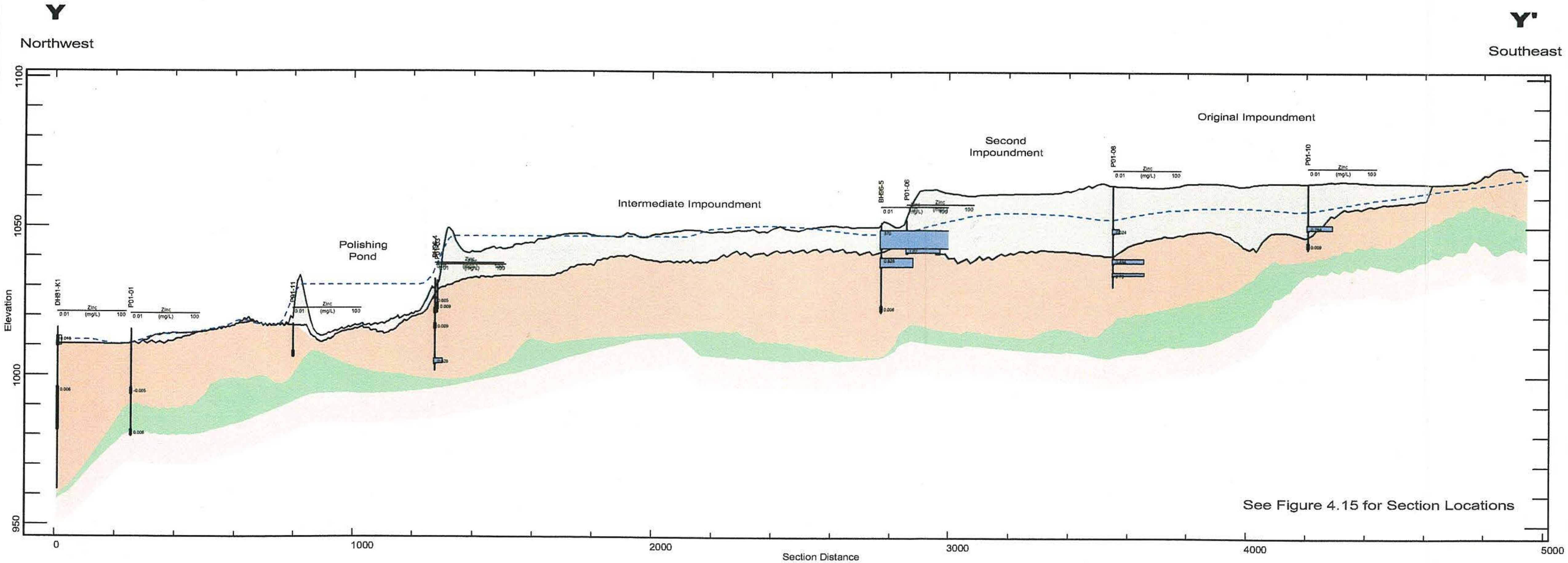
Anvil Range Mine Complex
2002 Baseline
Environmental Information

Drawn By:	F.K.P.	Reviewed By:	E.J.D.
Version No.:	1	Project No.:	22-943
Date Issued:	12/04/2002	Projection:	UTM z8 NAD27
Site Name:	FARO	File:	21906F63_4b.MAP

Gartner Lee Limited

Drawing No. 4.17





NOTE: Figure modified from "2001 Hydrogeological & Geochemical Investigations of the Rose Creek Tailings Facility", Gartner Lee Ltd. 2002, Figure 6.3

LEGEND:

- Weathered Bedrock
- Till
- Glaciofluvial Sand & Gravel
- Tailings
- Water Table (Sept. 2001)

EXAMPLE MONITOR:

Zinc (mg/L) 0.01 100 — Concentration Range

Parameter Concentration Over Screened Interval

- Height of concentration bar represents length of monitor screen
- Concentration scale is LOGARITHMIC
- Zinc concentrations > 100 mg/L not shown
- Negative indicates less than method detection limit.

NOTES:

- Based on groundwater samples collected Sept. 2001
- Statigraphy interpreted from boreholes shown and may vary from that shown.
- Original drawing produced in colour

SCALES

1:15000 Scale

0 200 400 600 metres

Vertical Exaggeration: 10 X

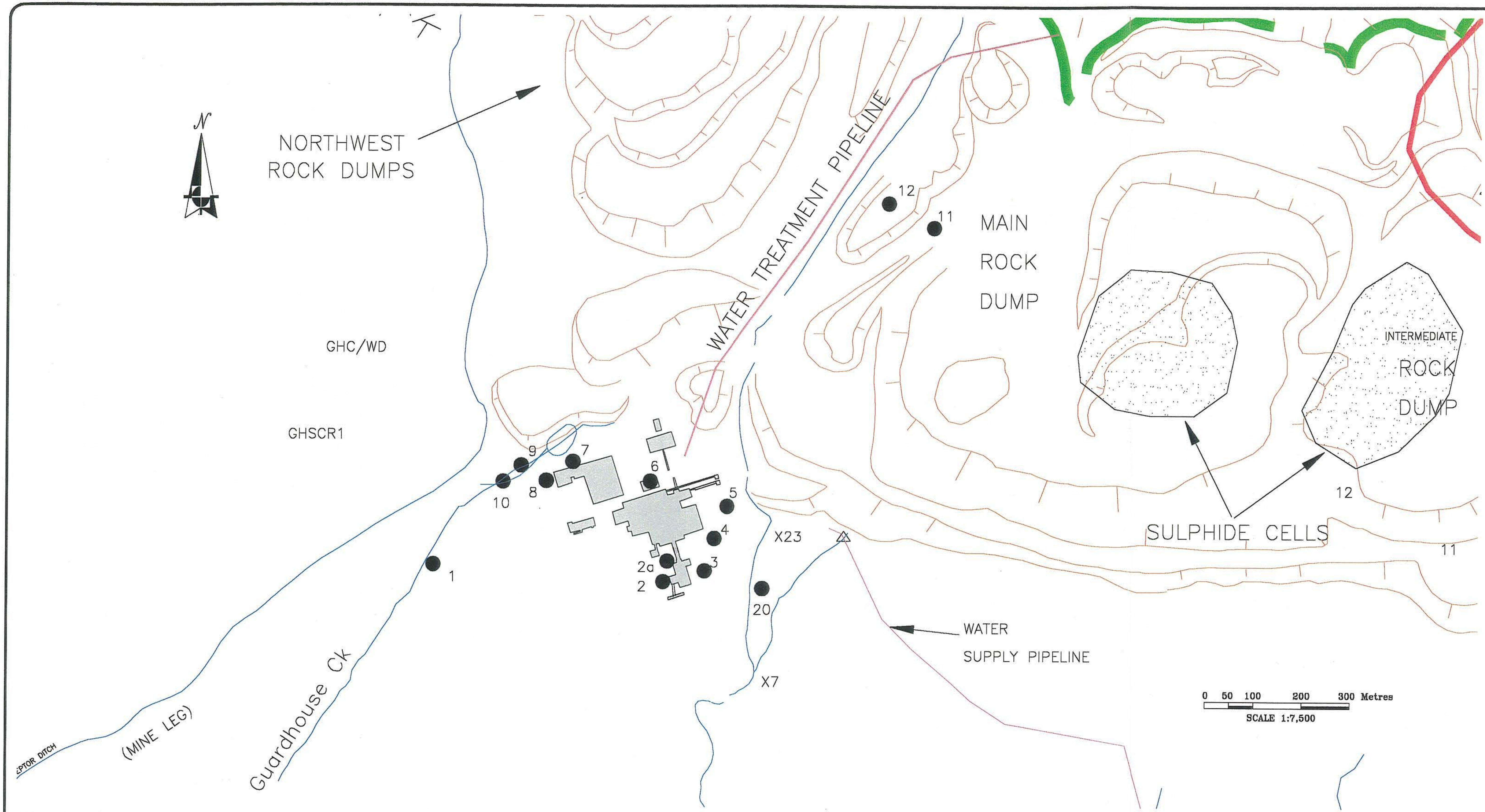
Rose Creek Tailings Facility
Zinc Concentrations in Section

Anvil Range Mine Complex
2002 Baseline
Environmental Information

Drawn By:	F.K.P.	Reviewed By:	E.J.D.
Version No.:	1	Project No.:	22-943
Date Issued:	12/04/2002	Projection:	UTM z8 NAD27
Site Name:	FARO	File:	21906F63_4b.MAP

Gartner Lee Limited

Drawing No. 4.18



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY GARTNER LEE LIMITED

DIAND Waste Management Program

Sample Sites Around Faro Mine Site

Designed By:	D.L.	Drawn By:	D.L.
Checked By:	L.G.	Approved By:	L.G.
Date Issued:	03.16.01	Project No.	99-913
Site Name:	Faro Mine	File Name:	FARO_10.DWG

Scales

Gartner Lee Limited

Figure No. 7.1

Legend:

● Soil sample sites

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-21.DWG
REVISION:	0

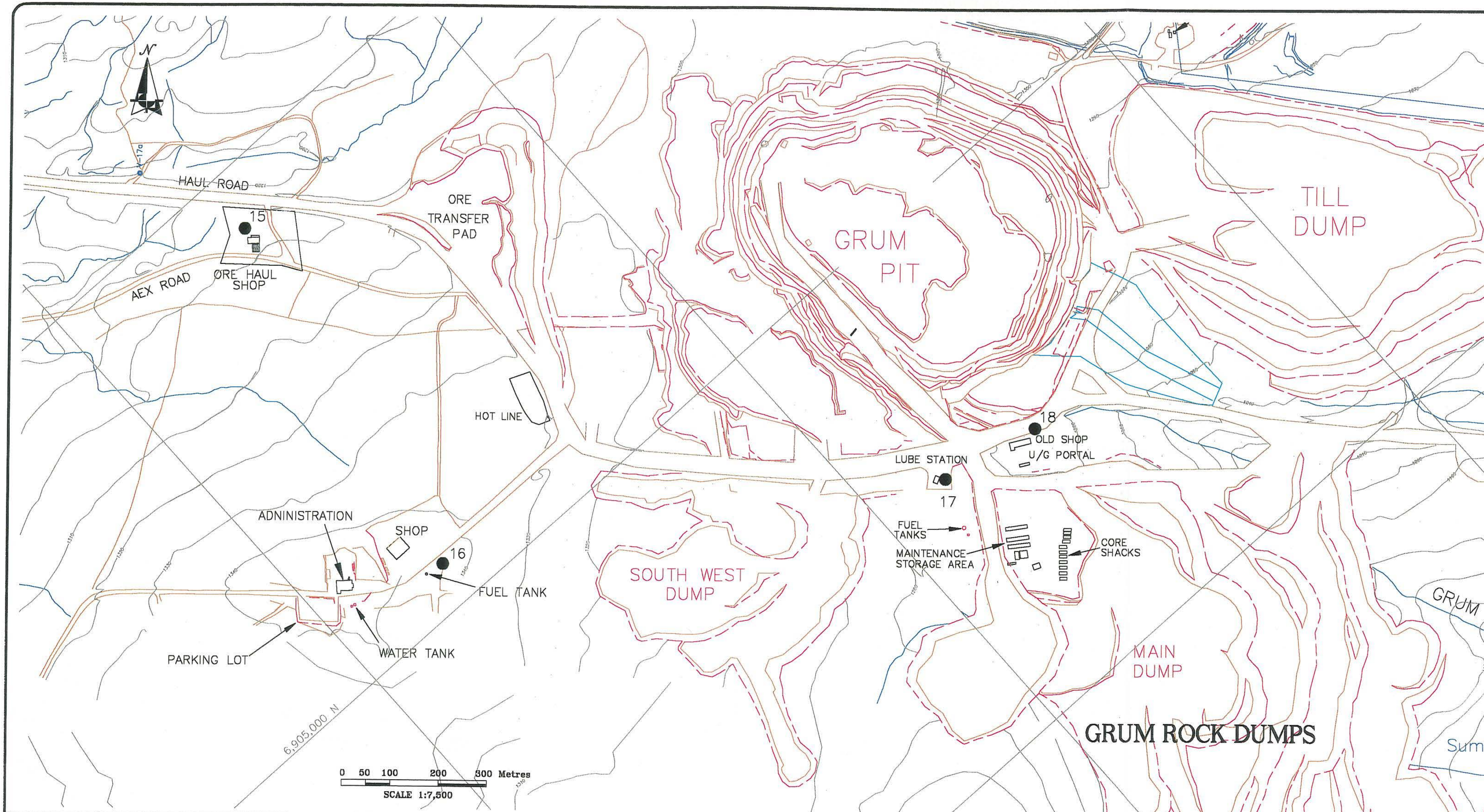
SOIL SAMPLING SITES AROUND FARO MINE SITE

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No. 4.19



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY GARTNER LEE LIMITED

Designed By:	D.L.	Drawn By:	D.L.
Checked By:	L.G.	Approved By:	L.G.
Date Issued:	03.18.01	Project No.	99-913
Site Name:	Vangorda Plateau	File Name:	fig4_2.dwg

DIAND Waste Management Program

Sample Sites on Vangorda Plateau

Gartner Lee Limited

Figure No. 7.3

Legend:

● Soil sampling sites

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-22.DWG
REVISION:	0

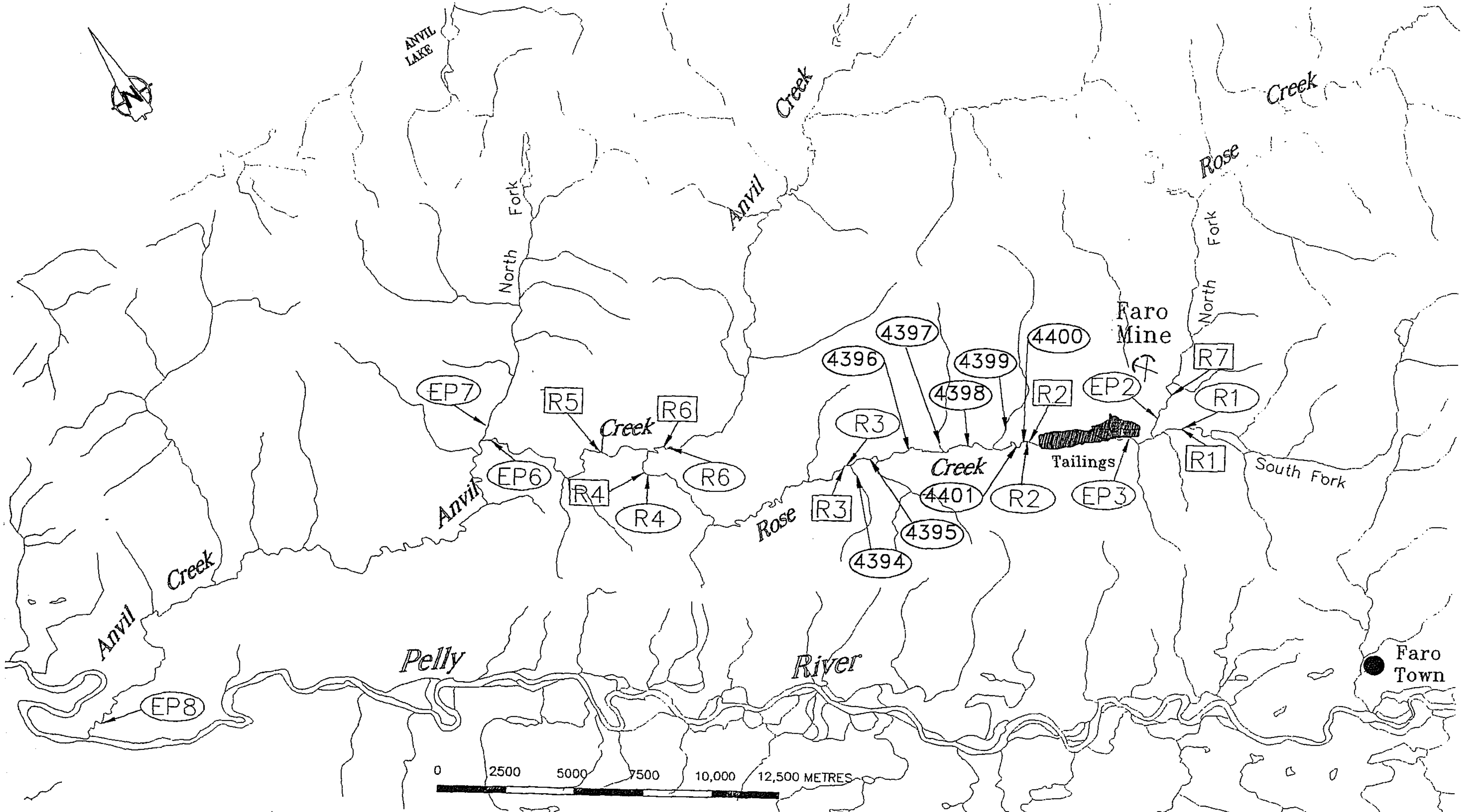
SOIL SAMPLING SITES AROUND VANGORDA PLATEAU MINE SITE

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No. 4.20



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan

ROSE/ANVIL CREEK
BENTHIC INVERTEBRATE AND
SEDIMENT SAMPLING LOCATIONS

033001 | Nov. 1996 | | 3-44

4394 SEDIMENT SAMPLING LOCATIONS

R4 BENTHIC INVERTEBRATE SAMPLING LOCATIONS

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-01-06.DWG
REVISION:	0

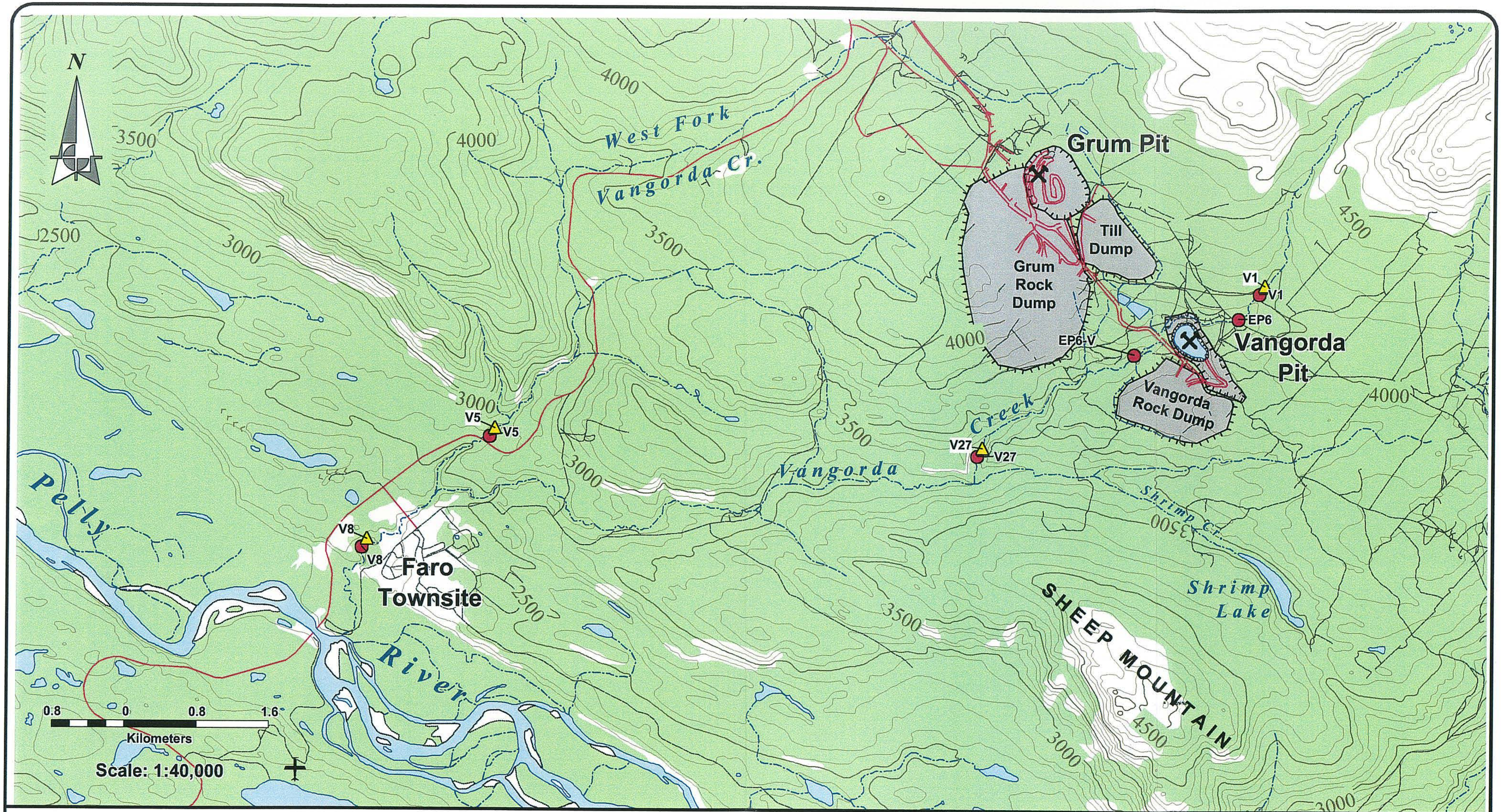
SEDIMENT AND BENTHIC
INVERTEBRATE SAMPLING LOCATIONS
ANVIL CREEK WATERSHED

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
4.21



LEGEND:

- Benthic Invertebrate sampling location
- Sediment sampling location

SOURCE OF FIGURE:
Sampling locations from Figure 3-47 of "Anvil Range Mining Complex - Integrated Comprehensive Abandonment Plan" Robertson Geoconsultants Inc., 1996 (Report No. 033001/3)

DRAWING INFORMATION

Reviewed By:	ED
Drawn By:	PW/FKP
Date Issued:	May, 2002
Project Number:	22-943
File Name:	22943-F4-22.WOR
Revision:	1

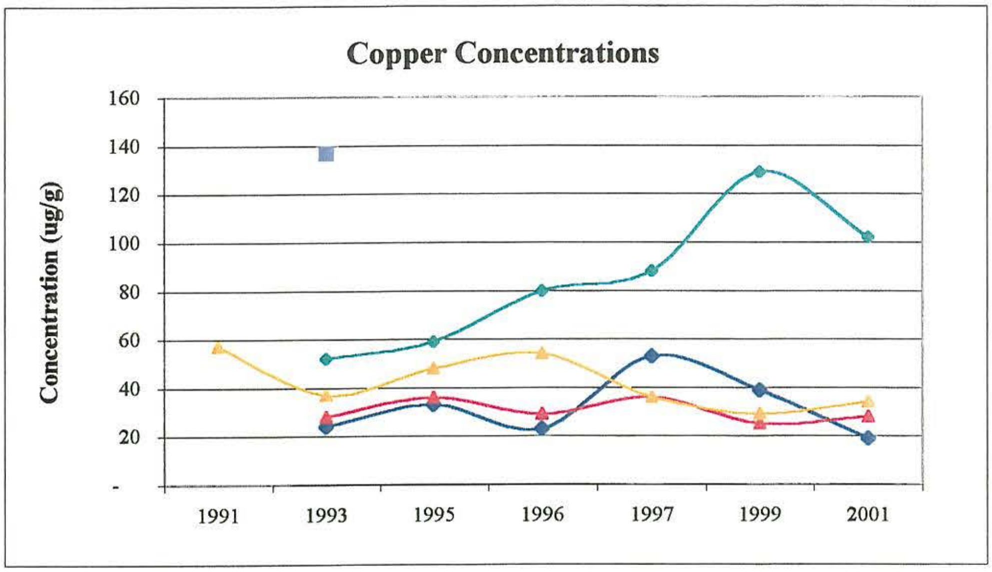
SEDIMENT AND BENTHIC INVERTEBRATE SAMPLING LOCATIONS VANGORDA CREEK WATERSHED

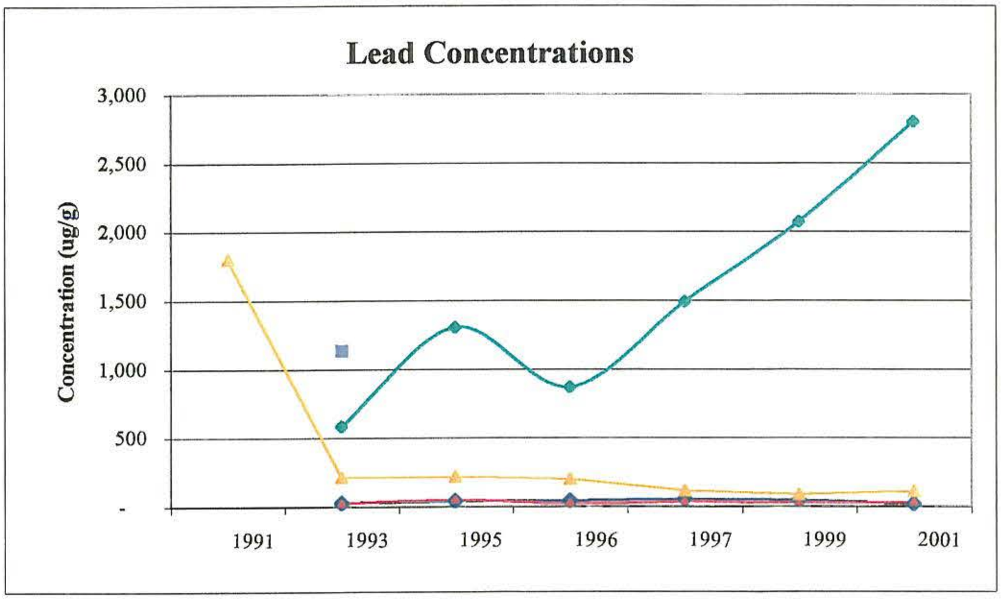
ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

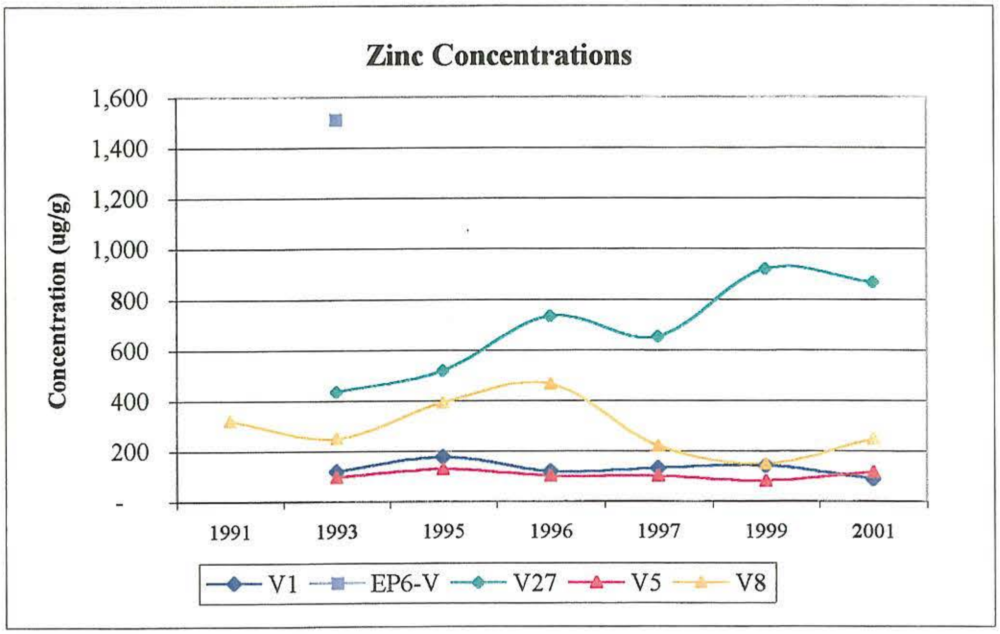
Gartner Lee Limited | Deloitte & Touche

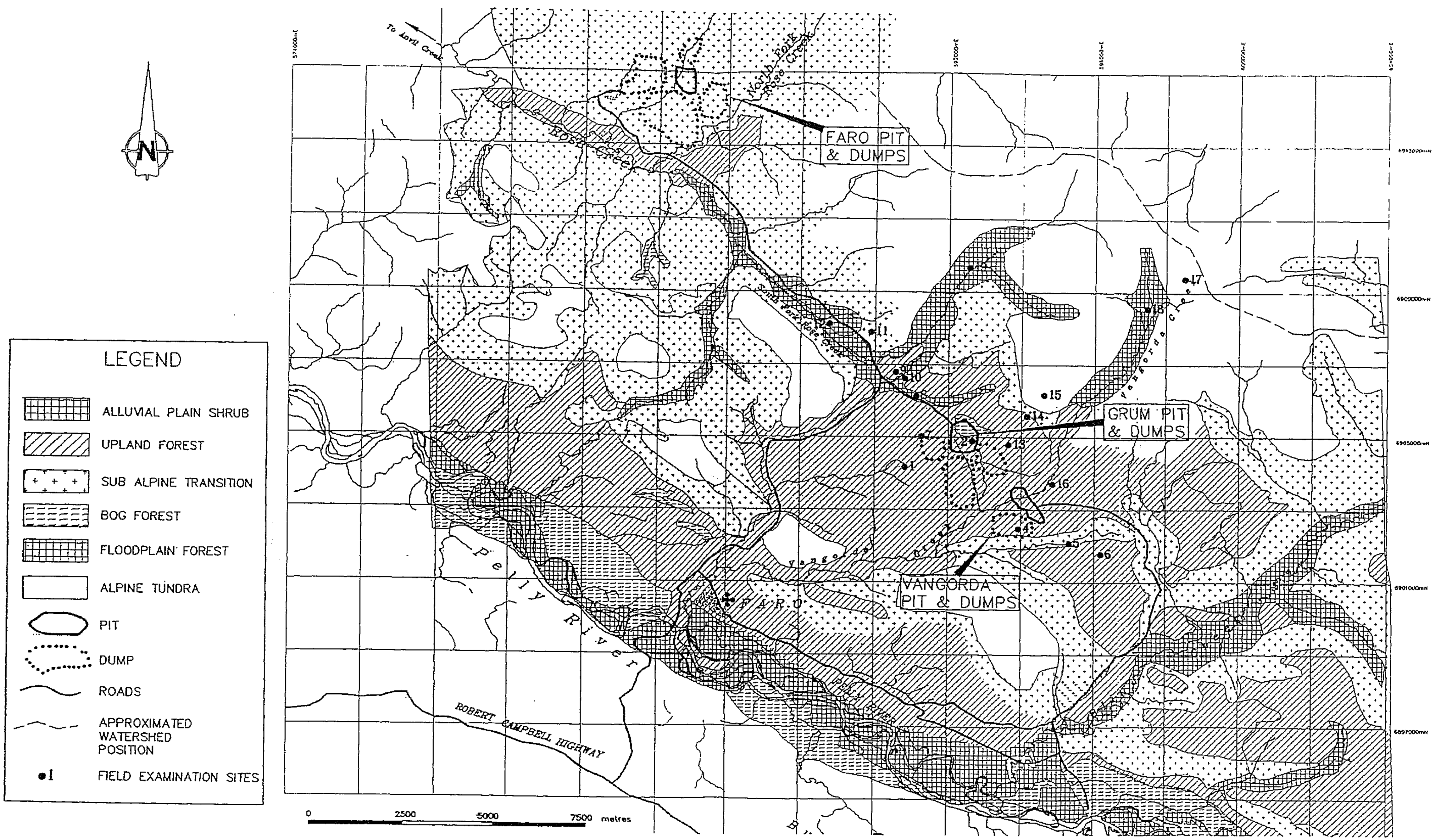
Figure No. 4.22

Figure 4.23 Copper, Lead and Zinc Concentrations in Vangorda Creek Sediment 1991-2001









SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan			
Regional Vegetation			
033001	Nov. 1996		3-7

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-08.DWG
REVISION:	0

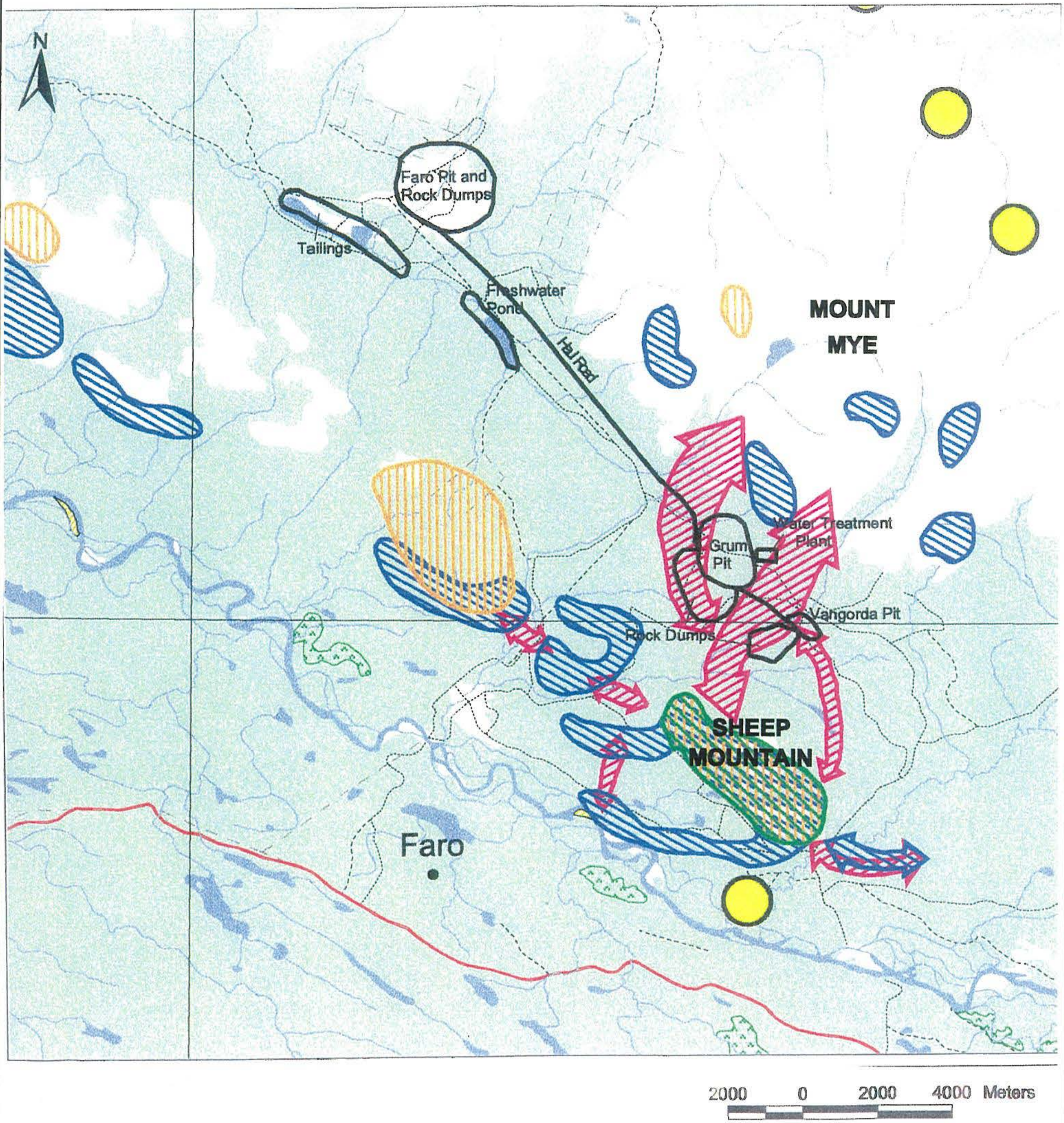
REGIONAL VEGETATION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
4.24



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY GARTNER LEE LIMITED DATED MARCH 2001. "FARO MINESITE – PHASE I ENVIRONMENTAL SITE ASSESSMENT FINAL REPORT"

Drawn By: K. Svec and N. Guy
Site Name: Faro / Vangorda Mine
Project: 99-913
Date: 23 March 2000
DATA SOURCE:
Key Habitats Areas compiled by Fish and Wildlife Branch of Yukon Renewable Resources at 1:250,000.

Figure 3.1 Gartner Lee Limited

Legend
- Thinhorn Sheep (early winter rutting)
- Thinhorn Sheep (spring lambing)
- Thinhorn Sheep (winter range)
- Thinhorn Sheep (migration corridor)
- Mineral Lick

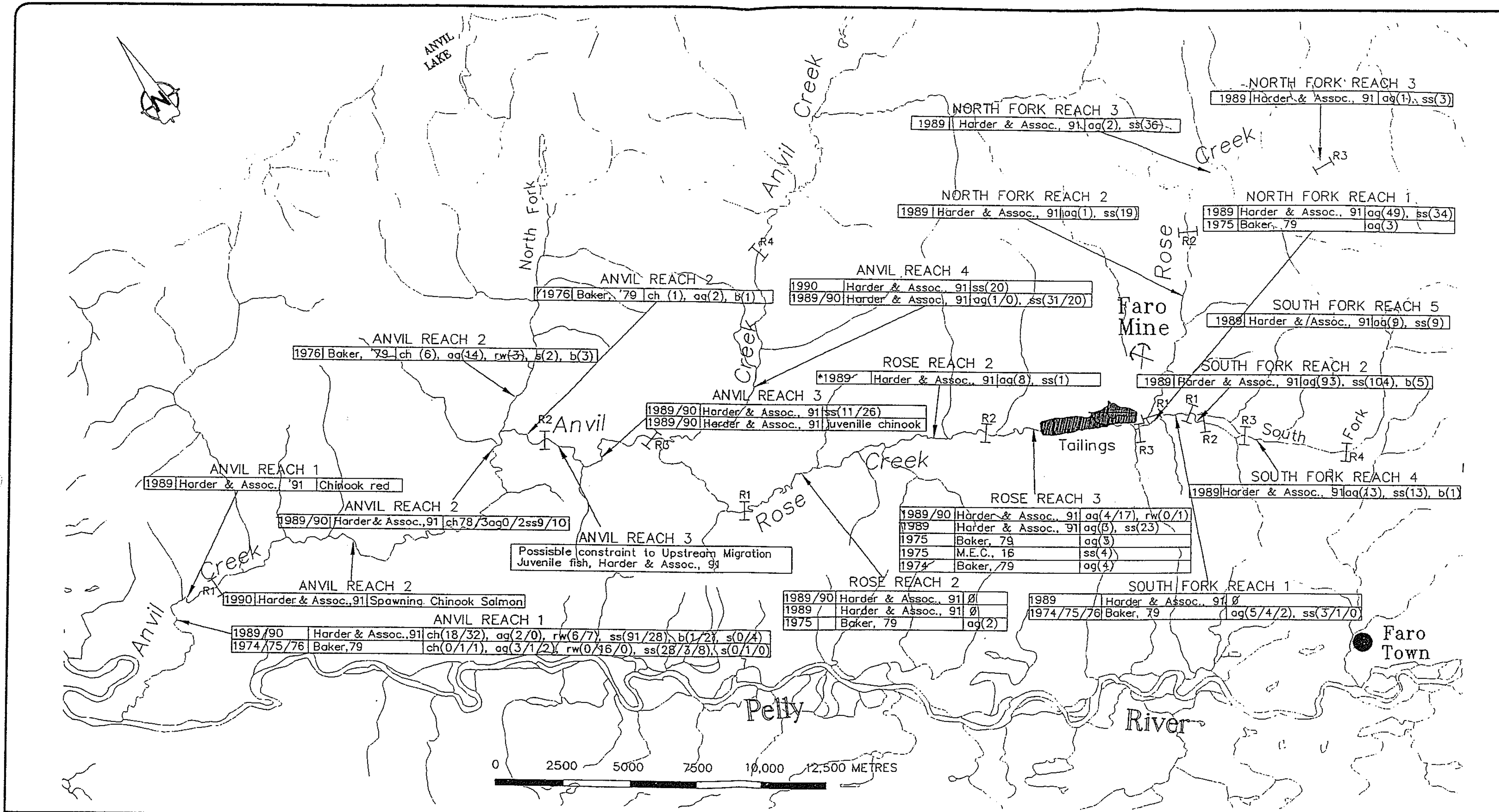
REVIEWED BY:	ED
DRAWN BY:	CPW
DATE ISSUED:	APRIL, 2002
PROJECT NUMBER:	22-943
FILE NAME:	22943-D1-23.DWG
REVISION:	0

FARO AREA SHEEP HABITAT AND MIGRATION

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 4.25



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan
ROSE/ANVIL CREEK DRAINAGE FISHERIES SURVEY SUMMARY
033001 | Nov. 1996 | 3-40

LEGEND:

YEAR	REFERENCE	FISH SPECIES (NO. CAUGHT)

FISH SPECIES
ch = chinook salmon
ag = arctic grayling
rw = round whitefish
s = sucker
b = burbot
ss = slimy sucker
Ø = no fish
R = Reach Break
* = Combination of two sample sites from same year and source
For Reference list see Table
Note: After Harder & Associates Ltd.

DRAWING INFORMATION:	
REVIEWED BY:	ED
DRAWN BY:	CPW/SG
DATE ISSUED:	APRIL, 2002
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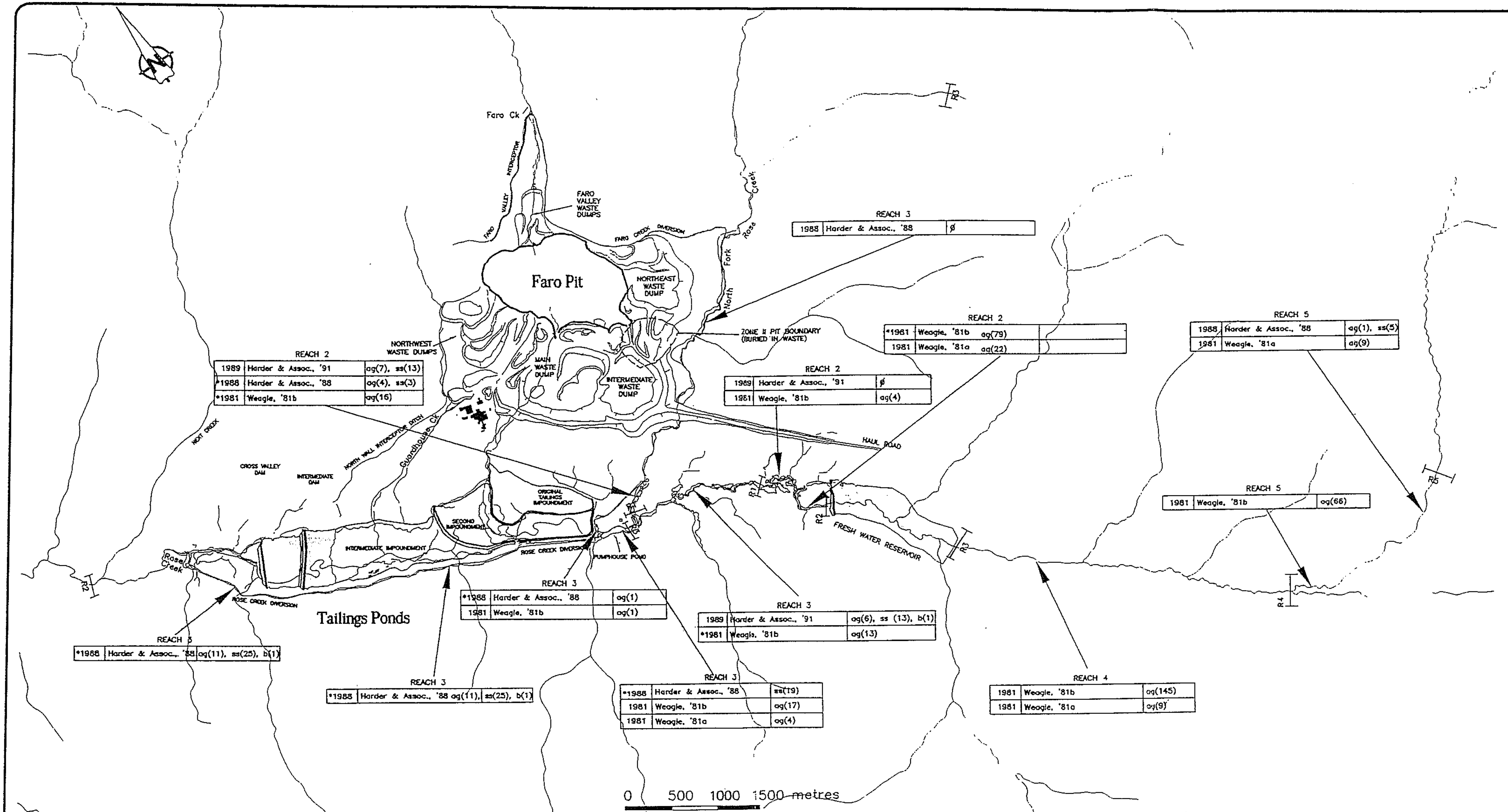
SUMMARY OF FISH SAMPLING IN ANVIL CREEK WATERSHED

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 4.26



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

ROBERTSON GEOCONSULTANTS INC.
Consulting Geotechnical and Environmental Engineers

Anvil Range Mining Corporation

Anvil Complex Closure Plan
ROSE CREEK AT FARO MINE SITE
FISHERIES SURVEY SUMMARY
PROJECT NO. 033001 DATE Nov. 1996 FIGURE 3-41

LEGEND

YEAR	REFERENCE	FISH SPECIES (NO. CAUGHT)

FISH SPECIES
ch = chinook slamon
ag = arctic grayling
rw = round whitefish
s = sucker
b = burbot
ss = slimy sculpin
ø = no fish

R = Reach Break
• Combination of two or more sample sites from same year and source

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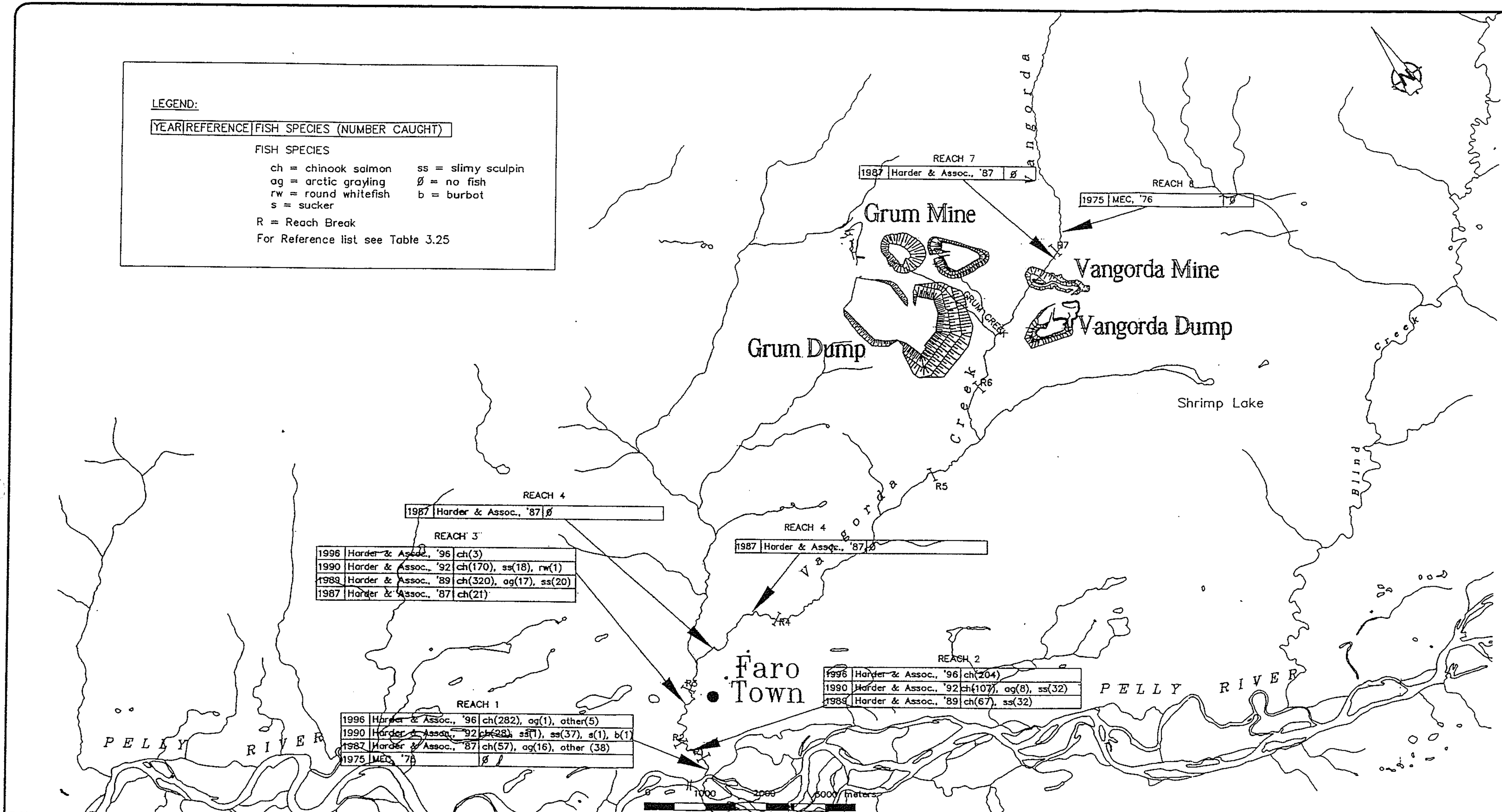
SUMMARY OF FISH SAMPLING AROUND THE FARO MINE SITE

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
Deloitte & Touche

Figure No. 4.27



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

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Anvil Range Mining Corporation

Anvil Complex Closure Plan

VANGORDA CREEK FISHERIES SURVEY

033001 | Nov. 1996 | | 3-43

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SUMMARY OF FISH SAMPLING AROUND THE VANGORDA PLATEAU MINE SITE

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

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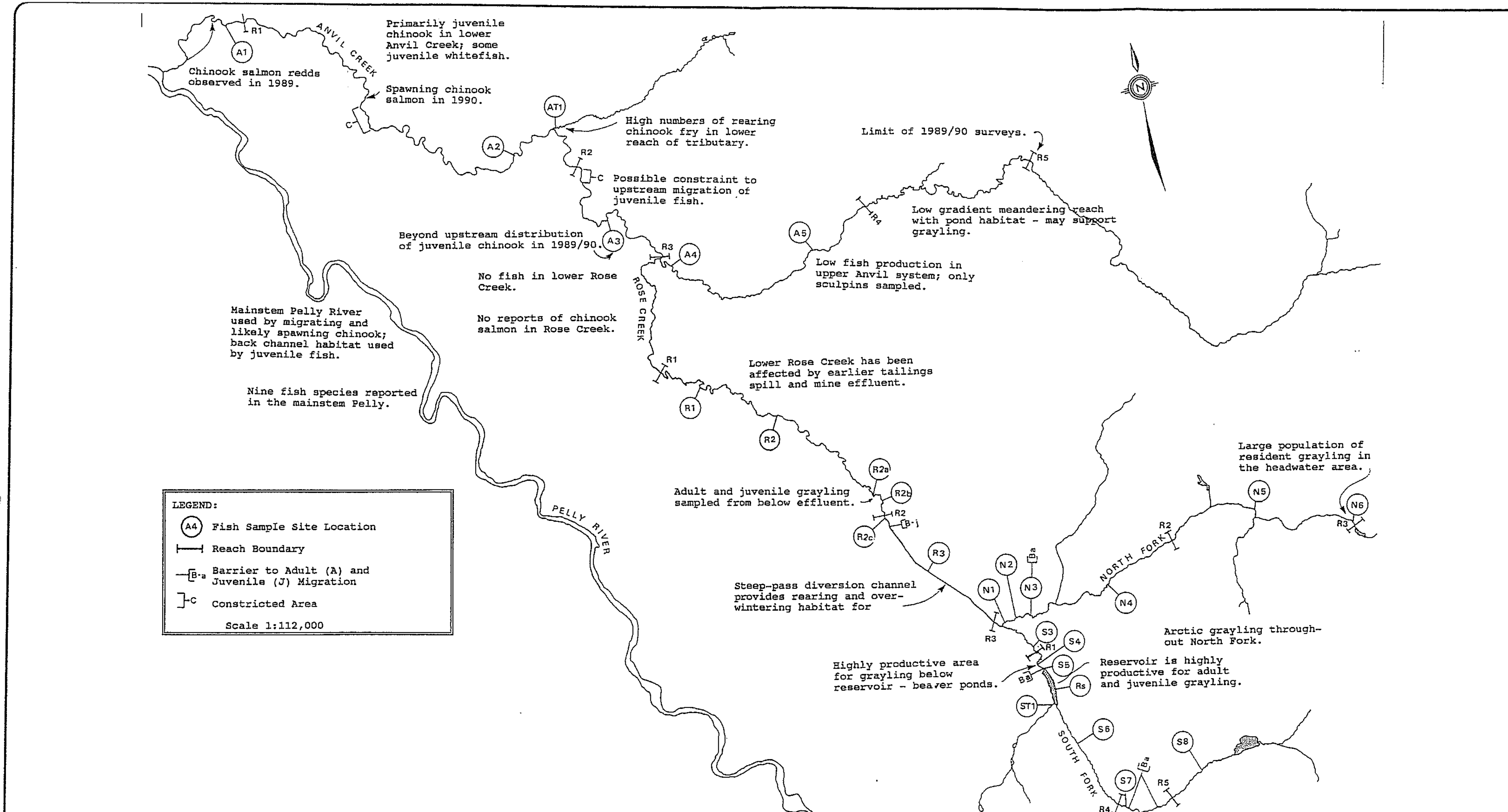
Figure No. 4.28



SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY P.A. HARDER AND ASSOCIATES LTD. FOR CURRAGH RESOURCES INC. DATED APRIL, 1991. "OVERVIEW ASSESSMENT OF FISH RESOURCES IN ANVIL AND ROSE CREEKS"

FIGURE 1.1 Location of fish sample sites (1989/90), reach boundaries and annotations on fish habitat use in the Anvil/Rose drainage.

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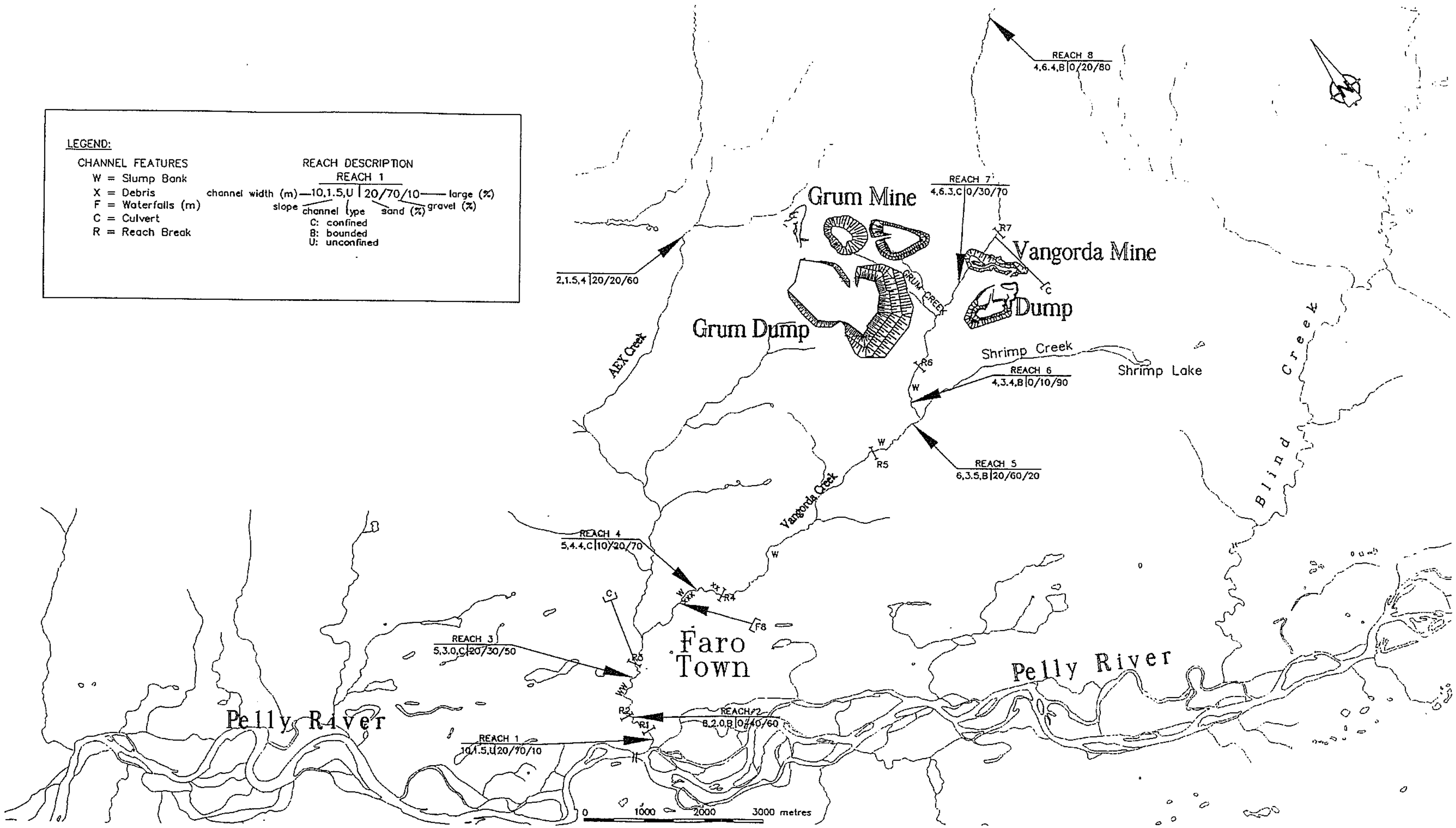
ANVIL/ROSE CREEK WATERSHED
FISH HABITAT

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited

Deloitte & Touche

Figure No.
4.29



Note: After Harder & Associates Ltd., 1987

SOURCE OF FIGURE:
DRAWING SHOWN BELOW DRAWN FROM REPORT BY ROBERTSON GEOCONSULTANTS INC.
REPORT NO. 033001/3 DATED NOVEMBER 1996
"ANVIL RANGE MINING COMPLEX – INTEGRATED COMPREHENSIVE ABANDONMENT PLAN"

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Anvil Range Mining Corporation

Anvil Complex Closure Plan
VANGORDA CREEK DRAINAGE
BIOPHYSICAL STREAM
SUMMARY

PROJECT NO.	DATE	APPROVED	FIGURE
033001	Nov. 1996		3-42

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VANGORDA CREEK WATERSHED
FISH HABITAT

ANVIL RANGE MINE COMPLEX
2002 BASELINE ENVIRONMENTAL INFORMATION

Gartner Lee Limited
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Figure No.
4.30

Figure 4.31 Benthic Invertebrate Abundance - Anvil Creek Watershed Samples

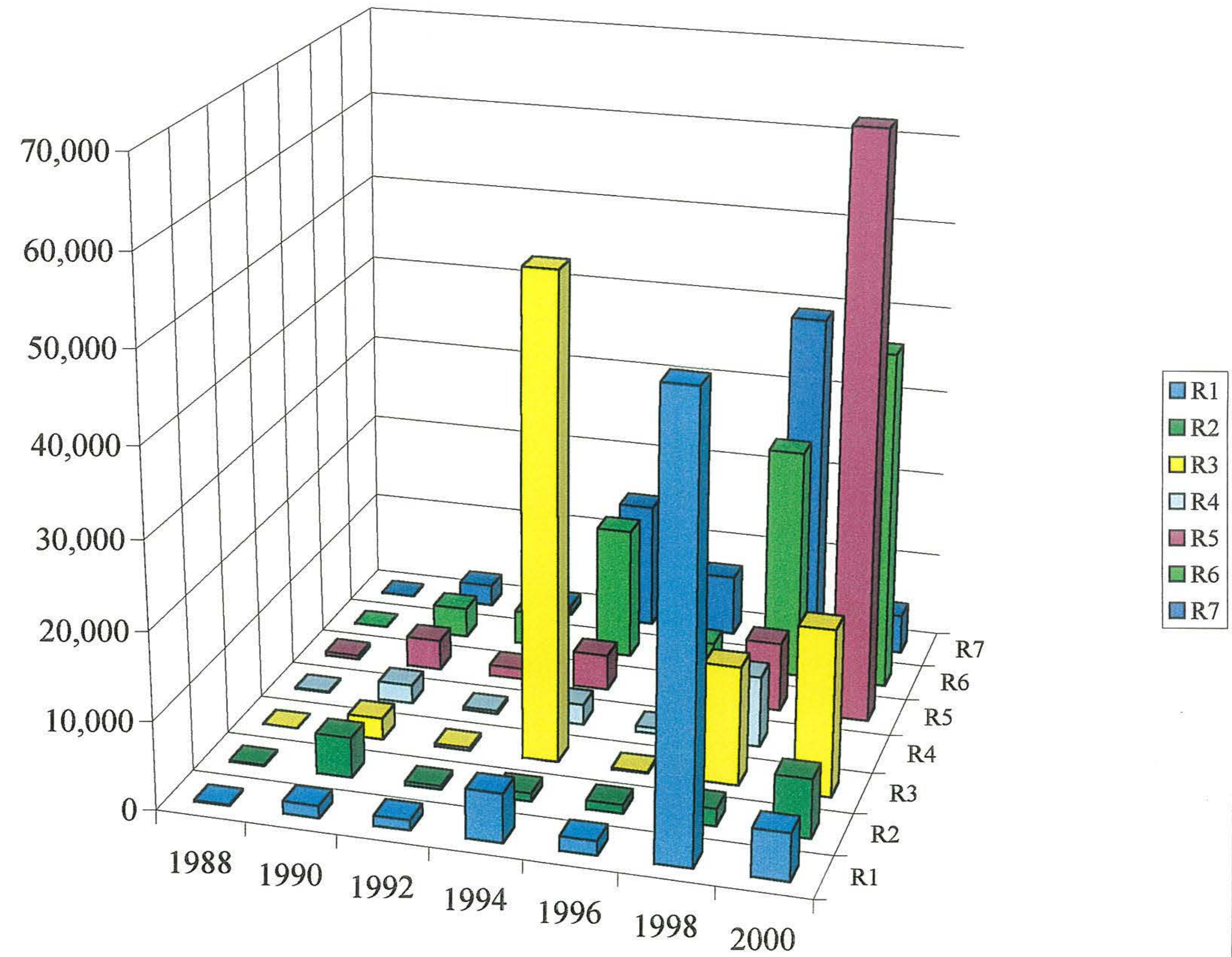
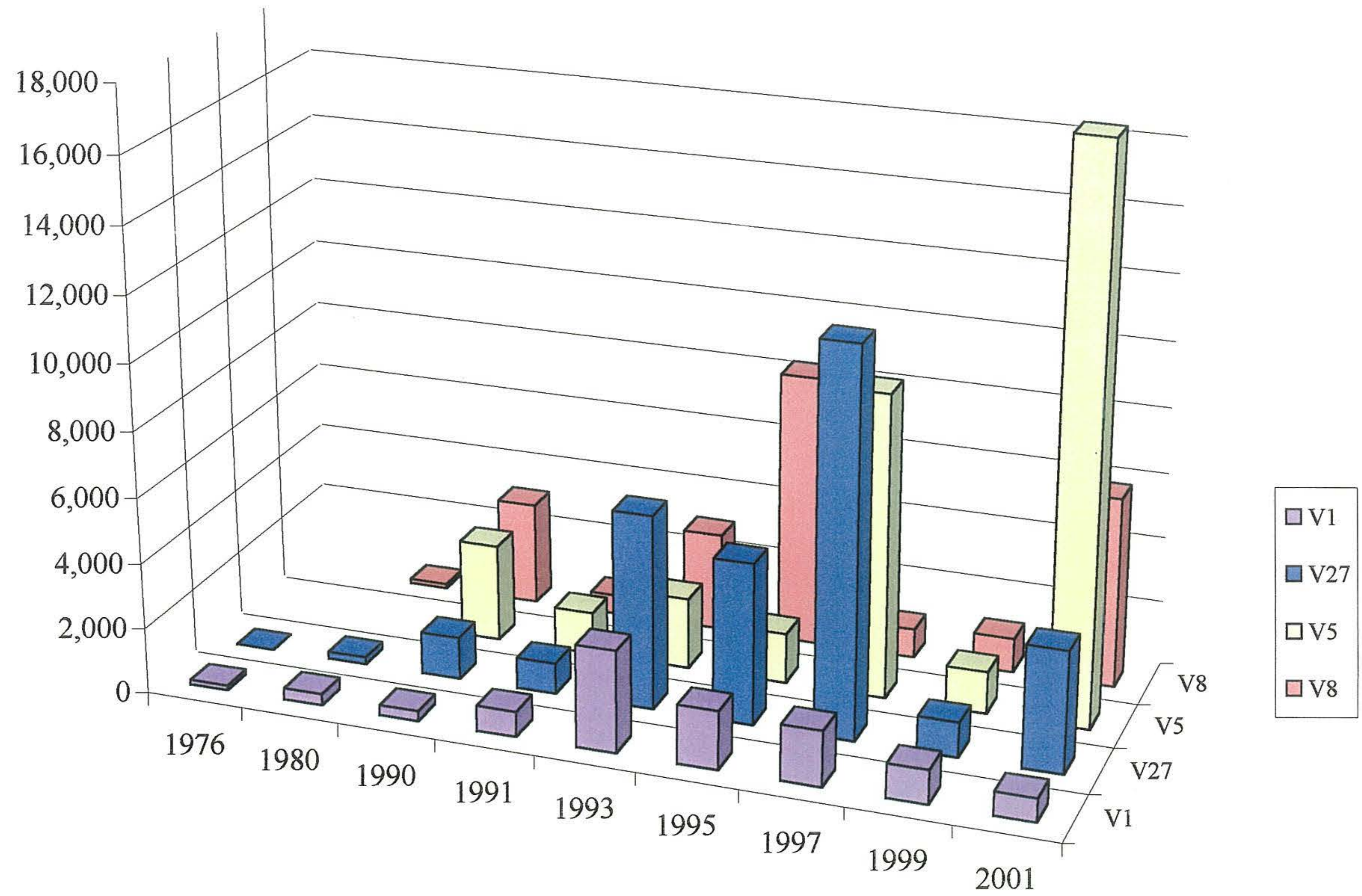


Figure 4.32 Benthic Invertebrate Abundance - Vangorda Creek Watershed Samples



Appendices

Appendix A

Appendix A. Preliminary Water Balance and Contaminant Loading in Rose and Vangorda Creeks

Gartner Lee

Anvil Range Mine Complex
Preliminary Water Balance and Contaminant Loading Study in Rose and Vangorda Creeks

APPENDIX A TO "2002 BASELINE ENVIRONMENTAL INFORMATION"

Prepared for

Deloitte & Touche Inc.

Prepared by:

Gartner Lee Limited

and

Patrick Bryan

GLL 22-943 Water Balance

May 2002

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Tables

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Back of Report

1. Introduction

1.1 Report Objectives

The objectives of this study are to:

1. Provide details of the analytical work behind the water and load balance summaries presented in the report entitled "2002 Baseline Environmental Information".
2. Describe water balances for Rose and Vangorda Creeks that allow for calculations of contaminant loadings from various sources on the minesites.
3. Calculate current loadings of sulphate and zinc from various sources on the minesites.

This study directly utilizes information provided from these sources:

1. 2002 Baseline Environmental Information (the "Baseline Report"), May 2002, Gartner Lee Limited for Deloitte & Touche Inc. (in their capacity as interim receiver for Anvil Range Mining Corporation)
2. Rose Creek Mass Balance for Sulphate and Zinc at Locations X2 and X14, May 2000, E. Denholm, Anvil Range Mining Corporation (Interim Receivership)
3. Integrated Comprehensive Abandonment Plan (the "ICAP"), November 1996, Robertson Geoconsultants Inc. for Anvil Range Mining Corporation.
4. Continuous streamflow monitoring records for three local locations (R7, X14 and V8) and one regional station (Ross River at Ross River).

2. Catchment Areas and Mean Annual Runoff

The catchment areas used in the water balances were obtained from the ICAP. These catchment areas represent source terms that can be characterized by available flow and water quality monitoring data and are illustrated on Figures 4.10, 4.11 and 4.12 of the Baseline Report.

In the ICAP, regional streamflow records from 1966 to 1995 were used to develop a correlation between median elevation of a catchment and mean annual runoff (MAR) as described in the Baseline Report and in the ICAP. The correlation shows that MAR tends to increase with increasing median elevation, as illustrated on Figure A1.

Table 4.7 of the Baseline Report lists the minesite subcatchments, together with their drainage area, median elevation and calculated mean annual runoff for 1990-1995.

3. Water Balances

3.1 Rose Creek

3.1.1 Streamflow Record at R7

The streamflow record for location R7 in the North Fork of Rose Creek upstream of mine activities (Figure 4.13 of the Baseline Report) provides the most continuous recording of local flow in recent years. These data were measured by a datalogger and pressure transducer installed in September 1996.

A stage-discharge curve was developed for location R7 based on available spot flow measurements. The rating curve is illustrated on Figure A2 and is represented by the equation: $Q = 5.76 (S - 0.3)^{1.95}$, where Q is discharge in m^3/s and S is the pressure transducer reading in m. The curve was used to convert the pressure transducer readings (height of water) to equivalent flow rates. These pressure readings were monitored by the datalogger at 45-minute intervals. To compute an accurate daily flow record, these readings were first converted into 45-minute flows and subsequently compiled into daily (24-hour) averages.

The daily flow rates at location R7 were screened for anomalous readings and, specifically, for artificial effects of ice. This was accomplished by overlaying the streamflow record for location R7 with a streamflow record operated by the Water Survey of Canada (WSC) on the Ross River at Ross River. This was a useful comparison because the WSC employ special processing techniques that account for the effect of ice on their stage measurements. Furthermore, the Ross River exhibits a similar streamflow pattern as the North Fork, as evidenced by a correlation of coincidental flow data at the two streams (see Figure A3).

The overlay of data (Figure A4) reveals a consistent early winter spike in the Rose Creek (R7) data that does not appear in the Ross River record. These peaks are attributed, at this time, to the effects of early freezing and ice formation and were removed from the database for Rose Creek such that the two flow records showed similar seasonal patterns (Figure A5).

The patched R7 streamflow record (Figure A5) was subsequently used as the primary reference for flows in the mine area.

3.1.2 Streamflow Record at X14

The streamflow record at location X14 (Figure 4.13 of the Baseline Report) is recorded by a datalogger and pressure transducer. However, the data record is not as continuous as at location R7. A new data logger and transducer were installed in July 1999 as replacements to the older installation, which had become inoperable. Gaps in the data record exist due to malfunctioning of the older installation and due to vandalism at the site.

The rating curve that is used to convert the pressure transducer readings into flow rates is illustrated on Figure A6 and is represented by the equation: $Q = 10\ (0.01 - S)^2$, where the two variables are the same as defined in Section 3.1.1. The curve was applied to hourly data which was subsequently compiled into daily (24-hour) averages. The daily average streamflow record is illustrated on Figure A7.

3.1.3 Water Balance – North Fork

The North Fork of Rose Creek is defined in this study as the area upstream of location X2 (Figure 4.13 of the Baseline Report). The North Fork was selected as a distinct component of Rose Creek because of the important source terms in the drainage area and because the available monitoring data was sufficient to support the assessment of these specific source terms.

The interactions between source terms to the North Fork of Rose Creek are illustrated on Figure A8. The resulting water balance is listed in Table A1. Some general comments that apply to development of the water balance are as follows:

1. Two seasonal periods (summer and winter) were selected in order to identify significant seasonal trends and in order to provide a flexible model for future sensitivity analyses.
2. The water balance was constructed beginning in winter 1995/1996 in order to correspond to the available flow data. Eleven time steps were defined to represent winter and summer seasons to winter 2000/2001.
3. Flows for ungauged subcatchments were extrapolated from the R7 streamflow record in proportion to the catchment areas and mean annual runoffs listed in Table 4.7 of the Baseline Report.
4. The combined Faro Valley and Faro Creek diversion system was assumed to pass 76% of its flow into the North Fork of Rose Creek (i.e. leaks 24% into Faro Main Pit).
5. The quantity of seepage from the Zone 2 Pit into the North Fork of Rose Creek is based upon calculations developed for the ICAP study.
6. No direct seepage from the Faro Main pit into the North Fork of Rose Creek is considered.

The water balance listed in Table A1 indicates that an estimated 83% of the flow in the North Fork of Rose Creek originated from natural runoff upstream of the mine site over the period of record.

3.1.4 Water Balance – Rose Creek

The water balance for Rose Creek (downstream of the Rose Creek Tailings Facility at location X14 as illustrated in Figure 4.13 of the Baseline Report) incorporates all of the known source terms from the mine site.

The interactions between source terms to Rose Creek at location X14 are illustrated on Figure A9. The resulting water balance is listed in Table A2. Some general comments that apply to development of the water balance are as follows:

1. Two seasonal periods (summer and winter) were selected in order to identify significant seasonal trends and in order to provide a flexible model for future sensitivity analyses.
2. The water balance was constructed beginning in winter 1995/1996 in order to correspond to the available flow data. Eleven time steps were defined to represent winter and summer seasons to winter 2000/2001.
3. Flows for ungauged subcatchments were extrapolated from the R7 streamflow record in proportion to the catchment areas and mean annual runoffs listed in Table 4.7 of the Baseline Report.
4. Flow from the North Fork of Rose Creek is represented as one source term taken from Table A1.
5. The rate of recharge to groundwater upstream of the tailings facility and beneath the Cross Valley Pond and the rate of groundwater discharge downstream of the Cross Valley Pond are taken from the 2001 hydrogeological model described in Rose Creek Tailings Facility, 2001 Hydrogeological and Geochemical Investigation, Draft Report, Gartner Lee Limited for Deloitte & Touche Inc., 2002.
6. Surface release from the Cross Valley Pond (X5) and seepage from the Cross Valley Pond (X13) are taken from Annual Environmental Reports for the Faro Mine Site for the years 1995 to 2001 as filed with the Yukon Territory Water Board.

The water balance listed in Table A2 indicates that an estimated 55% of the flow in Rose Creek below the tailings facility originated from the North Fork of Rose Creek, 25% originated from the South Fork (drainage area above the tailings facility) and 9% originated from effluent released from the Cross Valley Pond (toe seepage and surface outflow) over the period of record.

3.2 Vangorda Creek

3.2.1 Streamflow Record at V8

A datalogger and pressure transducer were installed at location V8 in lower Vangorda Creek (Figure 4.22 of the Baseline Report) in 1999. DIAND has operated a seasonal flow gauging station in lower Vangorda Creek in previous years. The datalogger recordings were used exclusively for this study.

A stage discharge curve was developed for location V8 based on available spot flow measurements. The rating curve is illustrated on Figure A10 and is represented by the equation: $Q = 7.37\ (S - 0.03)^{1.49}$, where Q and S are the same variables as defined in Section 3.1.1. The curve was used to convert the pressure transducer readings (height of water) to flow rates. The datalogger records the pressure data at 30-minute intervals. These raw pressure data were converted to equivalent flow rates and then averaged to compute a record of daily average flow rates. The data record contains gaps related to readings that are unusable due to unknown effects.

The daily flow rates at location V8 were assessed for anomalous readings and, specifically for artificial effects of ice. This was accomplished by overlaying the streamflow record for location V8 with the streamflow record for the Ross River at Ross River. These two streams exhibit similar seasonal flow patterns, as evidenced by a correlation between the coincidental daily flows at V8 and Ross River (see Figure A11).

The overlay of data does not display any discrepancies in the record for location V8 for the periods where usable data was collected (Figure A12).

Because of the substantial gaps in the data record for location V8, the streamflow record for location R7 (Figure A5) was subsequently used as the primary reference for flows in the Vangorda Creek catchment.

3.2.2 Water Balance

The water balance for Vangorda Creek at location V8 incorporates all of the known source terms from the mine site.

The interactions between source terms to Vangorda Creek at location V8 are illustrated on Figure A13. The resulting water balance is listed in Table A3. Some general comments that apply to development of the water balance are as follows:

1. Two seasonal periods (summer and winter) were selected in order to identify significant seasonal trends and in order to provide a flexible model for future sensitivity analyses.
2. The water balance was constructed beginning in winter 1997/1998 (Time Step 5 of the Rose Creek water balance) to be representative of current conditions post-mine closure.
3. Flows for ungauged subcatchment areas were extrapolated from the verified R7 streamflow record in proportion to the catchment areas and mean annual runoffs listed in Table 4.7 of the Baseline Report.
4. Seepage losses from the Vangorda Creek Diversion Flume to the Vangorda Pit are estimated based on the observed inflow rates into the pit.
5. Volumes extracted from the Sheep Pad Pond to the Vangorda pit are taken from the Annual Environmental Reports for the Vangorda Plateau mine site.
6. Seepage rates from Little Creek Dam and from the Vangorda Rock Dump to Shrimp and Vangorda Creeks are estimated based on judgement only.

Some general observations that can be drawn from the water balance in Table A3 are as follows:

1. The flow in lower Vangorda Creek originates, on average, 34% from the West Fork and 66% from the main stem (drainage including most mine facilities).
2. Of the flow in the main stem, an average 54% originates from natural runoff in Vangorda Creek unaffected by mine activities (drainage area upstream of the mine site).

4. Current Sulphate and Zinc Loadings

4.1 Methodology

The three water balances (North Fork of Rose Creek, Rose Creek at X14 and Vangorda Creek) were combined with measured and extrapolated concentrations of sulphate and zinc to provide calculated loadings for each of the time steps defined in the water balances. Total zinc was used for this study (rather than dissolved zinc) because the record of analysis for total zinc is much more extensive.

Concentrations of sulphate and total zinc for relevant sample locations were extracted from the water quality database for the calculation of loadings. The water quality database and summaries of water quality data are provided in the Baseline Report. The available concentrations for each time step were averaged.

Loadings for the three areas were calculated in two ways:

1. A "predicted" loading was calculated as the sum of the individual source terms.
2. An "observed" loading was calculated from sulphate and zinc concentrations and extrapolated flows at the downstream monitoring location for each area: location X2 for the North Fork of Rose Creek, location X14 for Rose Creek and location V8 for Vangorda Creek.

The predicted and observed loadings were compared as a means of assessing the ability of the model to adequately predict the actual loadings.

4.2 North Fork of Rose Creek

4.2.1 Concentrations

The following notes apply to the concentrations used for the North Fork of Rose Creek:

1. Concentrations for location R7 were applied to runoff areas unaffected by mine developments such as runoff form the south side of the North Fork valley.
2. Concentrations from database station FAROCR were applied to flow from the Faro Creek Diversion.
3. Concentrations for groundwater wells BH12, BH13 and BH14 were applied to flow from the Northeast rock dump. The shallow groundwater flow was used because this has been regularly collected (twice per year) whereas some intermittent freshet surface flows have been sampled in recent years but this data is sparse and irregular.
4. Concentrations for groundwater wells BH1, BH2 ad BH4 were applied to seepage from the Zone 2 Pit.

5. Concentrations for groundwater wells P96-6, S1, S2 and S3 were applied to runoff from the Intermediate Rock Dump.
6. Concentrations for database station X2 were applied to the combined flow at location X2.

For the time steps incorporated into this study, three sulphate concentrations and two zinc concentrations were extrapolated from neighbouring data to "patch" the record in places where no data was available.

4.2.2 Loadings

The loading calculations for the North Fork of Rose Creek are listed in Table A4, which provides the following observations:

1. The model predicts 111% of the observed sulphate loading at location X2, which is considered to be an excellent correlation for this stage of study.
2. The model predicts 77% of the observed zinc loading at location X2; however, the model predicts 90% of the observed loading when one poorly correlated time step (time step no. 10) is excluded, which is considered to be an excellent correlation for this stage of study.
3. The largest source sulphate loading (over the entire period of study) was natural runoff upstream of location R7 (43% of total) followed by the Faro Creek Diversion and the Intermediate Rock Dump (23% and 22%).
4. Given item no. 2 above, the largest source of zinc loading (over the entire period of study) was natural runoff upstream of location R7 (52% of total) followed by the Faro Creek Diversion (31%).

The incremental comparison of predicted and observed loadings of sulphate and zinc (per time step) are illustrated on Figures A14 and A15, respectively. The comparisons show that sulphate and zinc correlations are good with the exception of zinc in time step no. 10, as described above.

4.3 Rose Creek at X14

4.3.1 Concentrations

The following notes apply to the concentrations used for Rose Creek:

1. Flow from the North Fork of Rose Creek was treated as a single source using the measured concentrations at location X2 (i.e. corresponding to the "observed" loadings per section 4.2).
2. Concentrations for location R7 were applied to runoff areas unaffected by mine contaminants such as runoff from the South Fork of Rose Creek, the North Wall Interceptor Ditch and runoff from the south side of the Rose Creek Diversion Canal.
3. Concentrations for location X5 were applied to surface release from the Cross Valley Pond.
4. Concentrations for location X13 were applied to seepage at the toe of the Cross Valley Dam.

5. Groundwater concentrations in the aquifer as presented in the 2001 Tailings Investigation Study (GLL, 2002) were applied to groundwater discharge to surface between the Cross Valley Dam and location X14.
6. Surface runoff between the Cross Valley Dam and location X14 was provided as a separate line item to provide flexibility for future sensitivity analyses as regards the 1975 tailing spill; concentrations for location R7 were applied to this flow in this study.
7. Concentrations for database station X14 were applied to the combined flow at location X14.

One sulphate concentration for location X14 was increased slightly because the data set excluded samples during a period of release of higher sulphate water from the Cross Valley Pond.

4.3.2 Loadings

The loading calculations for Rose Creek at location X14 are listed in Table A5, which provides the following observations:

1. The model predicts 61% of the observed sulphate loading and 68% of the observed zinc loading at location X14, which suggests an imprecise or unknown source term that requires further investigation.
2. The trends in loadings indicate summer peaks corresponding to periods of surface release from the Cross Valley Pond (X5).
3. The largest source of predicted sulphate loading (over the entire period of study) was surface release from the Cross Valley Pond (47%) followed by seepage from the Cross Valley Dam (29%).
4. The largest source of predicted zinc loading (over the entire period of study) was the North Fork of Rose Creek (50%) followed by surface release from the Cross Valley Pond (32%).

The incremental comparison of predicted and observed loadings of sulphate and zinc (per time step) are illustrated on Figures A16 and A17, respectively. The comparisons show that sulphate and zinc correlations are good.

4.4 Vangorda Creek

4.4.1 Concentrations

The following notes apply to the concentrations used for Vangorda Creek:

1. Concentrations for location V1 were applied to runoff areas unaffected by mine contaminants such as the Vangorda Creek Diversion Flume and runoff from into Vangorda Creek below Shrimp Creek.
2. Concentrations for location V25BSP were applied to flow from the Grum Interceptor Ditch.
3. Concentrations for location V2 were applied to runoff from the majority of the Grum Rock Dump (approximating Grum Creek drainage area).

4. Line items for seepage from the Vangorda Rock Dump and Little Creek Dam were incorporated into the study to allow flexibility in future sensitivity analyses and assumed concentrations were applied for this study.
5. Concentrations for database location V4 were applied to flows from Shrimp Creek.
6. Concentrations for database stations V5 and V8 were applied to flow from the West Fork of Vangorda Creek and Lower Vangorda Creek, respectively.

One sulphate concentration for location V4 (Shrimp Creek) was extrapolated from other data for a time step where no data was available.

4.4.2 Loadings

The loading calculations for Vangorda Creek at location V8 are listed in Table A6, which provides the following observations:

1. The model predicts 73% of the observed sulphate loading at location V8, which is considered adequate for this stage of study but should be followed with further investigation.
2. The model predicts 74% of the observed zinc loading at location V8, which is considered adequate for this stage of study but should be followed with further investigation.
3. The largest source of sulphate loading (over the entire period of study) was the West Fork of Vangorda Creek (56%) followed by the Grum Rock Dump via Grum Creek (18%).
4. The largest sources of zinc loading (over the entire period of study) were the West Fork of Vangorda Creek (25%) and the Grum Rock Dump via Grum Creek (23%) followed by the Vangorda Creek Diversion Channel (19%) and the Grum Interceptor Ditch (17%).

The incremental comparison of predicted and observed loadings of sulphate and zinc (per time step) are illustrated on Figures A18 and A19, respectively. The comparisons show that sulphate and zinc correlations are good.

Tables

Table A1: Water Balance Calculations for North Fork Rose Creek

Catchment	Component	Time Step Season From To	1 W Nov-95 Apr-96	2 S May-96 Oct-96	3 W Nov-96 Apr-97	4 S May-97 Oct-97	5 W Nov-97 Apr-98	6 S May-98 Oct-98	7 W Nov-98 Apr-99	8 S May-99 Oct-99	9 W Nov-99 Apr-00	10 S May-00 Oct-00	11 W Nov-00 Apr-01	**Average of 11 Periods**
		No. days	182	184	181	184	181	184	181	184	182	184	181	
			Average Discharge for period (m^3/s):											
North Fork above R7	Local runoff (6)		0.245	1.587	0.172	1.454	0.298	1.113	0.224	1.829	0.255	2.010	0.324	0.865
Faro Creek Diversion	Local runoff (1+2+3)		0.044	0.284	0.031	0.260	0.053	0.199	0.040	0.327	0.046	0.360	0.058	0.155
	- Groundwater to Main Pit		0.011	0.068	0.007	0.062	0.013	0.048	0.010	0.079	0.011	0.086	0.014	0.037
	= Discharge to North Fork		0.033	0.216	0.023	0.198	0.041	0.151	0.030	0.249	0.035	0.273	0.044	0.118
NE Dump	Local runoff (7a)		0.00074	0.00481	0.00052	0.00441	0.00090	0.00337	0.00068	0.00554	0.00077	0.00609	0.00098	0.00262
Zone II Pit and Dump	Local runoff (5)		0.00051	0.00333	0.00036	0.00305	0.00063	0.00234	0.00047	0.00384	0.00054	0.00422	0.00068	0.00182
	- Estimated seepage to NF		0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058
	= Pumped to Main Pit (net)		0	0.00268	0	0.00225	0	0.00180	0	0.00315	0	0.00359	0	0.00122
Intermediate Dump	Local runoff (7b)		0.0011	0.0071	0.0008	0.0065	0.0013	0.0050	0.0010	0.0082	0.0011	0.0090	0.0015	0.0039
Remainder of NF catchment	Local runoff (7c)		0.014	0.092	0.010	0.084	0.017	0.065	0.013	0.106	0.015	0.117	0.019	0.050
North Fork at X2	**Total**		**0.295**	**1.908**	**0.207**	**1.748**	**0.358**	**1.338**	**0.270**	**2.199**	**0.307**	**2.416**	**0.389**	**1.039**

Notes:

1) The Faro Ck Diversion controls a total area of 16.2 km2. An estimated 24% of the yield from this catchment bypasses the diversion channel and reports to the Main Pit.
2) RGC estimated seepage from Zone II Pit to North Fork to be 18,400 m3/y with a water level in pit of 1110 m. No allowance made for overland flow from Zone II Dump to North Fork
3) Some flow bypasses R7 and X2 in the stream alluvium. This flow was assumed to be negligible.
4) Local runoff = combination of groundwater, interflow and overland flow.

Table A2: Water Balance Calculations for Rose Creek

Measured Flow Stream (1000 m³)	From / To	Nov-95 Apr-96	May-96 Oct-96	Nov-96 Apr-97	May-97 Oct-97	Nov-97 Apr-98	May-98 Oct-98	Nov-98 Apr-99	May-99 Oct-99	Nov-99 Apr-00	May-00 Oct-00	Nov-00 Apr-01
Dewatering of Main Pit		0	0	0	646	1011	2007	78	982	0	1800	0
Surface release from tailings impoundments (X5)		2319	772	1015	2164	2497	3922	0	1760	400	3000	1000
Measured seepage at toe of Cross Valley Dam (X13)		610	964	737	1256	1031	1273	759	978	700	800	700
Extractions from Pumphouse Reservoir to mill		5401	5198	5145	36	175	0	0	0	0	0	0
Extractions from Pumphouse Wells to Pumphouse Reservoir		1719	0	1565	0	0	0	0	0	0	0	0
	No days	182	184	181	184	181	184	181	184	182	184	181

Average Discharge for period (m^3/s):

Catchment or Aquifer	Component	Time Step / Season / From / To	1 W Nov-95 Apr-96	2 S May-96 Oct-96	3 W Nov-96 Apr-97	4 S May-97 Oct-97	5 W Nov-97 Apr-98	6 S May-98 Oct-98	7 W Nov-98 Apr-99	8 S May-99 Oct-99	9 W Nov-99 Apr-00	10 S May-00 Oct-00	11 W Nov-00 Apr-01	Average of 11 Periods
North Fork above R7	Reference flow record		0.245	1.587	0.172	1.454	0.298	1.113	0.224	1.829	0.255	2.010	0.324	0.865
Main Pit	Local runoff (4a+4b)		0.004	0.027	0.003	0.025	0.005	0.019	0.004	0.031	0.004	0.034	0.006	0.015
	+ Leakage from Faro Ck Diversion		0.011	0.068	0.007	0.062	0.013	0.048	0.010	0.079	0.011	0.086	0.014	0.037
	+ Pumped from Zone II Pit (net)		0.0000	0.0027	0.0000	0.0023	0.0000	0.0018	0.0000	0.0031	0.0000	0.0036	0.0000	0.0012
	+ Liquid fraction of tailings slurry		0.321	0.305	0.307	0.002	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.0861
	- Pumped to tailings impoundment		0.000	0.000	0.000	0.041	0.065	0.126	0.005	0.062	0.000	0.113	0.000	0.037
	= Change in storage of pit		0.336	0.403	0.317	0.051	-0.036	-0.058	0.008	0.051	0.015	0.011	0.019	0.102
NW & Main Dumps	To North Wall Interceptor Ditch (16a)		0.0005	0.0030	0.0003	0.0028	0.0006	0.0021	0.0004	0.0035	0.0005	0.0038	0.0006	0.0016
	+ To tailings impoundment (11+12+13a)		0.004	0.023	0.002	0.021	0.004	0.016	0.003	0.026	0.004	0.029	0.005	0.012
	+ To Rose Ck Diversion (8a)		0.00019	0.00121	0.00013	0.00111	0.00023	0.00085	0.00017	0.00139	0.00019	0.00153	0.00025	0.00066
	= Total runoff (8a+11+12+13a+16a)		0.004	0.027	0.003	0.025	0.005	0.019	0.004	0.031	0.004	0.034	0.005	0.015
North Fork above X2	Discharge at X2 (surface flow and gdw in alluvium)		0.295	1.908	0.207	1.748	0.358	1.338	0.270	2.199	0.307	2.416	0.389	1.039
	- Recharge to Rose Ck aquifer		0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
	= Discharge to Rose Ck Diversion Channel		0.255	1.868	0.167	1.708	0.318	1.298	0.230	2.159	0.267	2.376	0.349	0.999
South Fork	Local runoff (9+10)		0.177	1.149	0.124	1.053	0.216	0.806	0.162	1.324	0.185	1.455	0.234	0.626
	- Mill supply from reservoir and wells		0.343	0.327	0.329	0.002	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.092
	- Recharge to Rose Ck alluvium aquifer		0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039
	- Change in storage (reservoir + aquifer)		-0.206	0.206	-0.245	0.245	0	0	0	0	0	0	0	0.000
	= To Rose Ck Diversion		0.001	0.577	0.001	0.767	0.165	0.767	0.123	1.285	0.146	1.416	0.195	0.495
North Wall Interceptor	Local runoff (15+16b)		0.012	0.078	0.008	0.071	0.015	0.055	0.011	0.090	0.013	0.098	0.016	0.042
	+ Runoff from part of NW Dump		0.0005	0.0030	0.0003	0.0028	0.0006	0.0021	0.0004	0.0035	0.0005	0.0038	0.0006	0.0016
	= Total discharge at ditch outlet		0.012	0.081	0.009	0.074	0.015	0.057	0.011	0.093	0.013	0.102	0.016	0.044
Rose Ck Diversion	Local runoff (8b+14+17)		0.040	0.260	0.028	0.238	0.049	0.183	0.037	0.300	0.042	0.330	0.053	0.142
	+ Runoff from part of Main Dump		0.00019	0.00121	0.00013	0.00111	0.00023	0.00085	0.00017	0.00139	0.00019	0.00153	0.00025	0.00066
	+ North Fork at X2 (excl recharge to Rose Ck aquifer)		0.255	1.868	0.167	1.708	0.318	1.298	0.230	2.159	0.267	2.376	0.349	0.999
	+ South Fork runoff		0.001	0.577	0.001	0.767	0.165	0.767	0.123	1.285	0.146	1.416	0.195	0.495
	- Leakage to tailings impoundments (estimated)		0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
	Proportion of leakage originating from N Fork		*86%*	*69%*	*85%*	*63%*	*60%*	*58%*	*59%*	*58%*	*59%*	*58%*	*58%*	
	Proportion of leakage originating from S Fork		*0%*	*21%*	*1%*	*28%*	*31%*	*34%*	*32%*	*34%*	*32%*	*34%*	*33%*	
	Proportion of leakage originating from local runoff		*14%*	*10%*	*14%*	*9%*	*9%*	*8%*	*9%*	*8%*	*9%*	*8%*	*9%*	
	= Total discharge at channel outlet		0.201	2.612	0.101	2.619	0.438	2.153	0.295	3.650	0.360	4.028	0.503	1.542
Rose Creek Tailings Facility (excluding underlying alluvial aquifer)	Local runoff (13b) (yield assumed 50% > natural)		0.008	0.050	0.005	0.046	0.009	0.035	0.007	0.058	0.008	0.063	0.010	0.027
	+ Pumped from Main Pit		0.000	0.000	0.000	0.041	0.065	0.126	0.005	0.062	0.000	0.113	0.000	0.037
	+ Runoff from NW & Main Dumps		0.004	0.023	0.002	0.021	0.004	0.016	0.003	0.026	0.004	0.029	0.005	0.012
	+ Emergency release from mill (estimated)		0.022	0.022	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
	+ Leakage from Rose Ck Div (to make inflows match outflows)		0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
	- Surface release at X5		0.147	0.049	0.065	0.136	0.160	0.247	0.000	0.111	0.025	0.189	0.064	0.108
	- CVD seepage originating from Polishing Pond (part of X13)		0.032	0.054	0.040	0.072	0.059	0.073	0.042	0.055	0.038	0.043	0.038	0.049
	- Recharge to Rose Creek alluvial aquifer		0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
	= Change in storage (to smooth leakage from Rose Ck Div)		-0.071	0.068	0.000	-0.026	-0.065	-0.068	0.049	0.055	0.024	0.048	-0.012	0.000
Rose Ck alluvial aquifer	Recharge from North Fork (estimated)		0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
	+ recharge from South Fork (estimated)		0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039
	+ recharge from Rose Creek Tailings Facility (estimated)		0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
	- discharge at toe of CV Dam (remainder of flow at X13)		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
	- discharge to Old Faro Creek Channel below CVD		0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
	= groundwater flow in aquifer below X14		0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
Rose Creek at X14	**Total estimated surface flow (sum of component flowlines)**		**0.412**	**2.814**	**0.234**	**2.920**	**0.691**	**2.549**	**0.367**	**3.928**	**0.455**	**4.382**	**0.640**	**1.763**
	Total observed surface flow			**2.264**	**0.560**	**3.008**					**0.350**	**4.550**	**0.890**	
	Surface flow + groundwater in underlying aquifer		**0.492**	**2.894**	**0.314**	**3.000**	**0.771**	**2.629**	**0.447**	**4.008**	**0.535**	**4.462**	**0.720**	**1.843**

Notes:

1) Net pumpage from Zone II Pit to Main Pit was estimated by water balance analysis. It excludes volume of water that seeps from Main Pit to Zone II Pit.

2) Influence of storage in Fresh Water Reservoir and the Rose Ck alluvium aquifer is simplified. Also, some of the mill supply was obtained from North Fork flows diverted into Pumphouse Reservoir. This diversion was not directly accounted for in this spreadsheet

3) The measured and estimated outflows from the Rose Ck Tailings Facility exceeded the estimated inflows to this facility by an average of 95 L/s over the complete simulation period. This missing inflow was assumed to originate as ditch leakage from the Rose Creek Diversion Channel. As a first approximation, this ditch leakage was assumed to not exhibit a seasonal pattern

4) The Gartner Lee groundwater investigation (2001) estimated the groundwater flux in the Rose Creek alluvium aquifer to be about 79 L/s upstream of the tailings facility. For the purpose of this water balance, this groundwater was assumed to originate roughly half from the North Fork and half from the South Fork. The tailings facility itself was estimated to contribute 20 L/s to the underlying aquifer, largely from the the Intermediate and Polishing Ponds (under shutdown conditions). The aquifer was estimated to discharge approximately 12 L/s to Rose Creek between the CVD and Station X14

5) Some problems exist with observed X14 record. In early record, spot measurements are about 80% of computed flows. Also, erroneous peaks due to ice effects have not been removed

Table A3: Water Balance Calculations for Vangorda Creek

Average Discharge for period (1000 m^3):

	Time Step	5	6	7	8	9	10	11
	Season	W	S	W	S	W	S	W
	From	Nov-97	May-98	Nov-98	May-99	Nov-99	May-00	Nov-00
	To	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	30-Apr
Measured Flow Stream								
Flows pumped from Little Creek Dam to Vangorda Pit		0	38	0	44	0	53	0
Flows siphoned from Sheep Pad Pond to Vangorda Pit		0	0	0	20	0	30	0
Approximate total inflow to Vangorda Pit		40	198	40	272	40	860	40
	No. days	181	184	181	184	182	184	181

Average Discharge for period (m^3/s):

Catchment	Component	Time Step	5	6	7	8	9	10	11	Average
		Season	W	S	W	S	W	S	W	of 7
		From	Nov-97	May-98	Nov-98	May-99	Nov-99	May-00	Nov-00	Periods
		To	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	
North Fork above R7 (Reference)	Local runoff (6)		0.298	1.113	0.224	1.829	0.255	2.010	0.324	0.865
Vangorda Creek Diversion Channel	Local runoff (21+22)		0.071	0.266	0.054	0.437	0.061	0.480	0.077	0.207
	- Leakage to Vangorda Pit		0.001	0.004	0.001	0.003	0.001	0.035	0.001	0.007
	+ Recovered from pit cachment (partial 10)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	= Flows diverted around Vangorda Pit		0.070	0.262	0.052	0.434	0.060	0.445	0.077	0.200
Vangorda NE Interceptor Ditch	Local runoff (23)		0.0016	0.0061	0.0012	0.0101	0.0014	0.0111	0.0018	0.0048
	- Leakage to Vangorda Pit		0.0000	0.0001	0.0000	0.0001	0.0000	0.0012	0.0000	0.0002
	= Flows diverted to Shrimp Creek		0.0016	0.0060	0.0012	0.0100	0.0014	0.0099	0.0018	0.0045
Vangorda Pit	Local runoff (24)		0.002	0.006	0.001	0.010	0.001	0.010	0.002	0.0045
	+ Seepage from Vangorda Ck Diversion		0.001	0.004	0.001	0.003	0.001	0.035	0.001	0.0066
	+ Seepage from Till Dump catchment		0.0001	0.0003	0.0001	0.0002	0.0001	0.0023	0.0001	0.0004
	+ Seepage from Vangorda NE Interceptor		0.0000	0.0001	0.0000	0.0001	0.0000	0.0012	0.0000	0.0002
	+ Siphoned from Sheep Pad Pond		0.0000	0.0000	0.0000	0.0013	0.0000	0.0019	0.0000	0.0004
	+ Pumped from Little Creek Dam		0.0000	0.0024	0.0000	0.0028	0.0000	0.0033	0.0000	0.0012
	= Change in storage of pit		0.003	0.012	0.003	0.017	0.003	0.054	0.003	0.0134
Vangorda Dump & Little Creek Dam	Local runoff (25+26)		0.001	0.005	0.001	0.008	0.001	0.009	0.001	0.0038
	- Pumped to Vangorda Pit		0.0000	0.0024	0.0000	0.0028	0.0000	0.0033	0.0000	0.0012
	- Seepage to Vangorda/Shrimp Creeks		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	- Seepage from LCD to Vangorda Ck		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	= Unaccounted loss (storage in voids?)		0.0003	0.0015	0.0000	0.0043	0.0001	0.0045	0.0004	0.0016
Grum & Till Dump Interceptor Ditch	Local runoff (27+29)		0.008	0.030	0.006	0.049	0.007	0.054	0.009	0.023
	- Seepage to Vangorda Pit		0.0001	0.0003	0.0001	0.0002	0.0001	0.0023	0.0001	0.0004
	- Siphoned to Vangorda Pit		0.0000	0.0000	0.0000	0.0013	0.0000	0.0019	0.0000	0.0004
	- Seepage to Grum Pit		0.0005	0.0018	0.0004	0.0030	0.0004	0.0033	0.0005	0.0014
	= Flows diverted to Vangorda Creek		0.007	0.028	0.006	0.045	0.006	0.047	0.008	0.021
Grum Pit	Local runoff (28)		0.002	0.009	0.002	0.015	0.002	0.017	0.003	0.007
	+ Seepage from Grum Interceptor Ditch		0.0005	0.0018	0.0004	0.0030	0.0004	0.0033	0.0005	0.0014
	= Change in storage of pit		0.003	0.011	0.002	0.018	0.003	0.020	0.003	0.0086
Grum Dump	To West Fork Vangorda Ck (34a)		0.0006	0.0023	0.0005	0.0038	0.0005	0.0042	0.0007	0.0018
	+ To Vangorda Ck (30+31a+31b)		0.006	0.023	0.005	0.038	0.005	0.042	0.007	0.018
	= Total yield from Grum Dump		0.007	0.026	0.005	0.042	0.006	0.046	0.007	0.020
Shrimp Creek	Local runoff (32)		0.023	0.086	0.017	0.141	0.020	0.155	0.025	0.067
	+ Flows from Vangorda NE Interceptor		0.002	0.006	0.001	0.010	0.001	0.010	0.002	0.005
	+ Seepage from Vangorda Dump		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	= Flow to Vangorda Creek		0.025	0.092	0.019	0.151	0.022	0.165	0.027	0.072
West Fork Vangorda Creek	Local runoff (33+34b)		0.066	0.248	0.050	0.408	0.057	0.448	0.072	0.193
	+ Runoff from a portion of Grum Dump		0.0006	0.0023	0.0005	0.0038	0.0005	0.0042	0.0007	0.0018
	= Flow to Vangorda Creek		0.067	0.251	0.050	0.412	0.057	0.452	0.073	0.195
Lower Vangorda Ck Catchment	Local runoff (31c+35+36)		0.020	0.075	0.015	0.123	0.017	0.135	0.022	0.058
	+ Runoff from West Fork Vangorda Ck		0.067	0.251	0.050	0.412	0.057	0.452	0.073	0.195
	+ Runoff from majority of Grum Dump		0.006	0.023	0.005	0.038	0.005	0.042	0.007	0.018
	+ Outflow from Grum Interceptor Ditch		0.007	0.028	0.006	0.045	0.006	0.047	0.008	0.021
	+ Outflow from Vangorda Ck Diversion		0.070	0.262	0.052	0.434	0.060	0.445	0.077	0.200
	+ Seepage from Little Creek Dam		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	+ Outflow from Shrimp Creek		0.025	0.092	0.019	0.151	0.022	0.165	0.027	0.072
	= Total flow at V8		**0.197**	**0.731**	**0.148**	**1.203**	**0.168**	**1.287**	**0.214**	**0.564**

Notes

1) Total seepage into Vangorda Pit was estimated by subtracting i) an estimate of local runoff, ii) measured LCD flows and iii) measured Sheep Pad Pond diversions from measured annual accumulation of water in pit.
2) Total seepage into Vangorda Pit was apportioned to three sources (Vangorda Creek Diversion, Vangorda NE Interceptor and Till Dump catchment) according to their respective estimated long-term yields.
3) Leakages from LCD and Vangorda Dump Collection Ditch are crude estimates not based on data
4) The volume of water pumped from the LCD is significantly less than the estimated yield of the Vangorda Dump catchment. The difference may be attributed to the filling of void space within the Vangorda Dump and/or the dump results in enhanced evaporation.
5) Seepage from Grum Interceptor Ditch assumed to equal 10% of yield from Subcatchment 27

Table A4: Sulphate and Zinc Loadings for North Fork Rose Creek

Time Step	1	2	3	4	5	6	7	8	9	10	11	Sum	Percent
Season	W	S	W	S	W	S	W	S	W	S	W		
From	Nov-95	May-96	Nov-96	May-97	Nov-97	May-98	Nov-98	May-99	Nov-99	May-00	Nov-00		
To	Apr-96	Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01		
Flow Volume (1000 m^3)													
North Fork above R7	3851	25237	2684	23116	4657	17694	3505	29081	4012	31955	5060	150850	83%
Faro Creek Diversion (to NF)	524	3433	365	3145	633	2407	477	3956	546	4347	688	20522	11%
NE Dump	12	76	8	70	14	54	11	88	12	97	15	457	0%
Zone II Pit and Dump (seepage)	9	9	9	9	9	9	9	9	9	9	9	101	0%
Intermediate Dump	17	114	12	104	21	80	16	131	18	144	23	679	0%
Remainder of NF catchment	223	1464	156	1341	270	1026	203	1687	233	1853	293	8749	5%
Total: North Fork at X2	4636	30333	3234	27784	5604	21270	4220	34952	4830	38406	6089	181359	100%
Average Sulphate Concentration (mg/L)													
North Fork above R7	15	6	11	7	11	9	13	9	11	9	11		
Faro Creek Diversion (to NF)	239	131	7	4	54	7	34	4	6	3	1		
NE Dump	600	601	600	236	635	597	700	655	744	520	1102		
Zone II Pit and Dump (seepage)	150	429	90	276	87	136	276	329	151	204	305		
Intermediate Dump	1083	775	831	442	750	1151	342	1240	1264	1235	1666		
Remainder of NF catchment	15	6	11	7	11	9	13	9	11	9	11		
X2	24	27	20	8	18	14	29	10	25	9	30		
Sulphate Load (tonnes)													
North Fork above R7	58	151	30	162	51	159	46	262	44	288	56	1306	43%
Faro Creek Diversion (to NF)	125	450	3	13	34	17	16	16	3	13	1	690	23%
NE Dump	7	46	5	17	9	32	7	58	9	50	17	257	8%
Zone II Pit and Dump (seepage)	1	4	1	3	1	1	3	3	1	2	3	22	1%
Intermediate Dump	19	88	10	46	16	92	5	162	23	178	38	676	22%
Remainder of NF catchment	3	9	2	9	3	9	3	15	3	17	3	76	3%
Incremental Predicted SO4	**213**	**748**	**50**	**249**	**114**	**310**	**80**	**516**	**83**	**547**	**117**	**3027**	**100%**
Incremental Observed SO4	**111**	**819**	**65**	**222**	**101**	**298**	**122**	**350**	**121**	**346**	**183**	**2737**	
Incremental % of Observed SO4	**192%**	**91%**	**77%**	**112%**	**113%**	**104%**	**65%**	**148%**	**69%**	**158%**	**64%**	**111%**	
Cumulative Predicted SO4	**213**	**961**	**1011**	**1260**	**1374**	**1684**	**1764**	**2279**	**2363**	**2910**	**3027**		
Cumulative Observed SO4	**111**	**930**	**995**	**1217**	**1318**	**1616**	**1738**	**2088**	**2209**	**2554**	**2737**		
Cumulative % of Observed SO4	**192%**	**103%**	**102%**	**103%**	**104%**	**104%**	**101%**	**109%**	**107%**	**114%**	**111%**		
Average Zinc Concentration (mg/L)													
North Fork above R7	0.01	0.01	0.02	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.01		
Faro Creek Diversion (to NF)	0.25	0.25	0.15	0.05	0.16	0.03	0.10	0.09	0.01	0.08	0.03		
NE Dump	0.01	0.03	0.04	0.07	0.07	0.01	0.10	0.08	0.46	0.02	0.15		
Zone II Pit and Dump (seepage)	1.77	9.99	0.59	6.00	1.21	1.91	18.14	9.85	2.94	9.52	10.36		
Intermediate Dump	0.09	0.17	1.37	0.32	0.12	0.26	0.11	0.32	0.15	0.53	1.21		
Remainder of NF catchment	0.02	0.02	0.02	0.05	0.02	0.03	0.03	0.03	0.02	0.02	0.01		
X2	0.03	0.04	0.06	0.06	0.08	0.04	0.03	0.03	0.09	0.07	0.03		
Zinc Load (kg)													
North Fork above R7	39	252	54	925	186	354	105	872	80	639	51	3557	52%
Faro Creek Diversion (to NF)	131	858	55	157	101	72	48	356	5	348	21	2152	31%
NE Dump	0	2	0	5	1	1	1	7	6	2	2	27	0%
Zone II Pit and Dump (seepage)	16	93	5	56	11	18	166	91	27	88	95	665	10%
Intermediate Dump	2	19	17	33	3	21	2	42	3	76	28	244	4%
Remainder of NF catchment	4	29	3	67	5	31	6	51	5	37	3	241	4%
Incremental Predicted Zn	**192**	**1254**	**134**	**1243**	**308**	**496**	**327**	**1419**	**126**	**1190**	**199**	**6887**	**100%**
Incremental Observed Zn	**139**	**1213**	**194**	**1667**	**448**	**851**	**127**	**1049**	**435**	**2688**	**183**	**8994**	
Incremental % of Observed	**138%**	**103%**	**69%**	**75%**	**69%**	**58%**	**258%**	**135%**	**29%**	**44%**	**109%**	**77%**	
Cumulative Predicted Zn	**192**	**1446**	**1580**	**2823**	**3130**	**3626**	**3953**	**5373**	**5498**	**6689**	**6887**		
Cumulative Observed Zn	**139**	**1352**	**1546**	**3213**	**3662**	**4513**	**4639**	**5688**	**6123**	**8811**	**8994**		
Cumulative % of Observed	**138%**	**107%**	**102%**	**88%**	**85%**	**80%**	**85%**	**94%**	**90%**	**76%**	**77%**		
Excluding Time Step 10													
Incremental Predicted Zn (excl TS10	**192**	**1254**	**134**	**1243**	**308**	**496**	**327**	**1419**	**126**		**199**	**5697**	
Incremental Observed Zn (excl TS10	**139**	**1213**	**194**	**1667**	**448**	**851**	**127**	**1049**	**435**		**183**	**6305**	
Incremental % of Observed	**138%**	**103%**	**69%**	**75%**	**69%**	**58%**	**258%**	**135%**	**29%**		**109%**	**90%**	
Cumulative Predicted Zn	**192**	**1446**	**1580**	**2823**	**3130**	**3626**	**3953**	**5373**	**5498**		**5697**		
Cumulative Observed Zn	**139**	**1352**	**1546**	**3213**	**3662**	**4513**	**4639**	**5688**	**6123**		**6305**		
Cumulative % of Observed	**138%**	**107%**	**102%**	**88%**	**85%**	**80%**	**85%**	**94%**	**90%**		**90%**		

Table A5: Sulphate and Zinc Loadings for Rose Creek

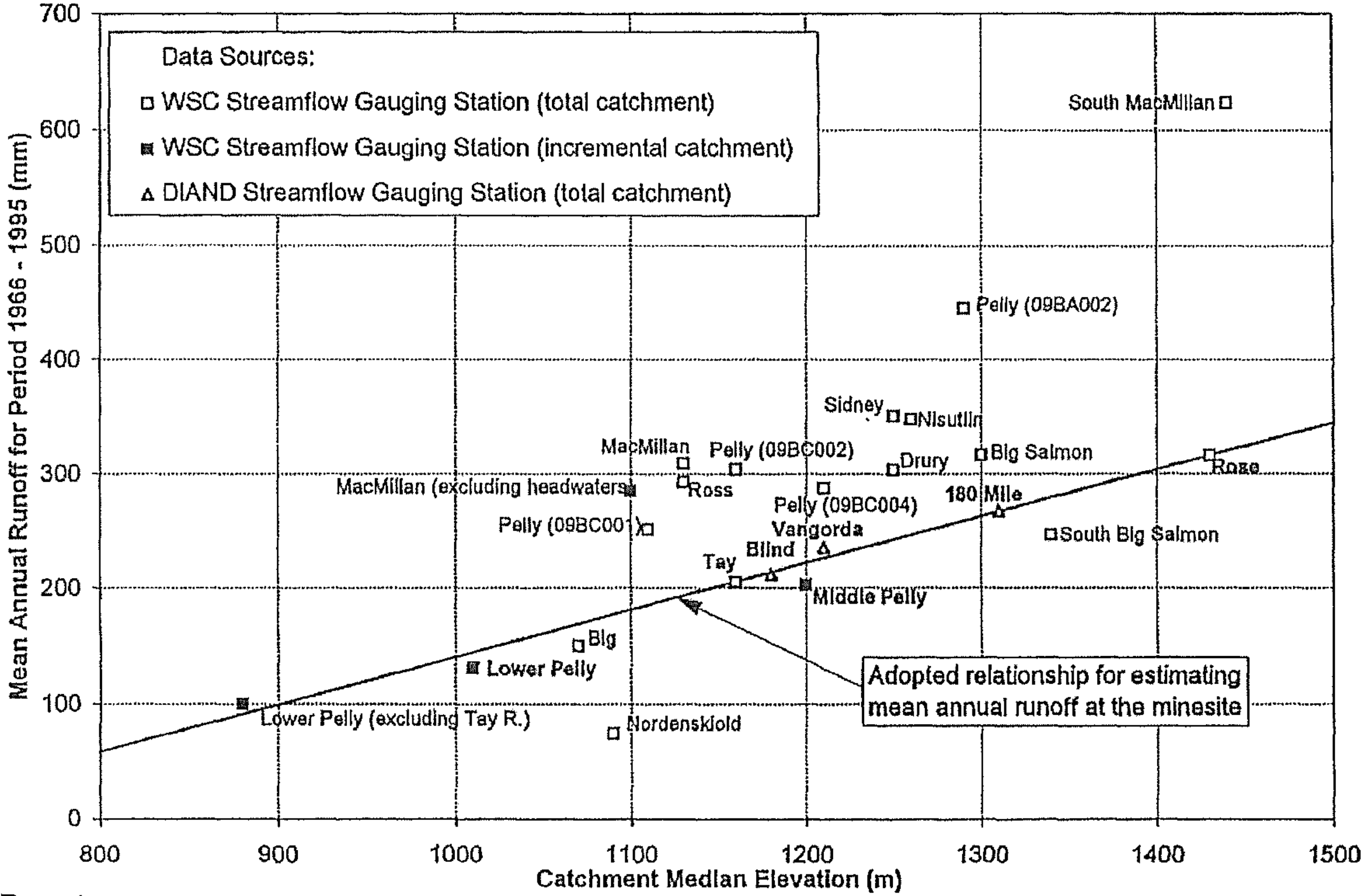
Time Step Season From To	1 W Nov-95 Apr-96	2 S May-96 Oct-96	3 W Nov-96 Apr-97	4 S May-97 Oct-97	5 W Nov-97 Apr-98	6 S May-98 Oct-98	7 W Nov-98 Apr-99	8 S May-99 Oct-99	9 W Nov-99 Apr-00	10 S May-00 Oct-00	11 W Nov-00 Apr-01	Sum	Percent
Flow Volume (1000 m^3)													
North Fork Rose Creek (X2)	2720	28655	1341	26198	4091	19762	2719	33446	3324	36899	4595	163748	53%
South Fork Rose Creek	9	8856	8	11762	2125	11675	1458	19916	1813	21997	2568	82187	27%
Local runoff into Rose Creek Diversion Canal	397	3787	204	3469	589	2634	406	4410	488	4858	656	21898	7%
Portion of Main Rock Dump (Subcatchment 8a)	3	19	2	18	4	13	3	22	3	24	4	115	0%
North Wall Interceptor Ditch	196	1285	137	1177	237	901	178	1480	204	1627	258	7678	2%
X-V Dam Surface Release (X5)	2319	772	1015	2164	2497	3922	0	1760	400	3000	1000	18849	6%
X-V Dam Seepage (X13)	610	964	737	1256	1031	1273	759	978	700	800	700	9808	3%
Groundwater discharge to Old Faro Ck Channel	189	191	188	191	188	191	188	191	189	191	188	2082	1%
Runoff Below X-V Dam (Est.)	32	207	22	190	38	145	29	238	33	262	41	1237	0%
Total: Rose Creek at X14	**6474**	**44735**	**3654**	**46422**	**10800**	**40516**	**5739**	**62441**	**7153**	**69657**	**10010**	**307601**	100%
Average Sulphate Concentration (mg/L)													
North Fork Rose Creek (X2)	24	27	20	8	18	14	29	10	25	9	30		
South Fork Rose Creek	15	6	11	7	11	9	13	9	11	9	11		
Rose Creek Diversion Canal Runoff	15	6	11	7	11	9	13	9	11	9	11		
Main Rock Dump	15	6	11	7	11	9	13	9	11	9	11		
North Wall Interceptor Ditch	15	6	11	7	11	9	13	9	11	9	11		
X-V Dam Surface Release (X5)	499	461	443	383	390	401	558	443	566	471	484		
X-V Dam Seepage (X13)	533	533	449	446	461	590	591	603	613	502	526		
Groundwater Discharge	422	422	422	422	422	422	422	422	422	422	422		
Runoff Below X-V Dam (Est.)	15	6	11	7	11	9	13	9	11	9	11		
X14	388	66	244	65	232	100	236	71	185	73	109		
Sulphate Load (tonnes)													
North Fork Rose Creek (X2)	65	774	27	210	74	277	79	334	83	332	138	2392	14%
South Fork Rose Creek	0	53	0	82	23	105	19	179	20	198	28	709	4%
Rose Creek Diversion Canal Runoff	6	23	2	24	6	24	5	40	5	44	7	187	1%
Main Rock Dump	0	0	0	0	0	0	0	0	0	0	0	1	0%
North Wall Interceptor Ditch	3	8	2	8	3	8	2	13	2	15	3	66	0%
X-V Dam Surface Release (X5)	1157	356	450	829	974	1573	0	780	226	1413	484	8241	47%
X-V Dam Seepage (X13)	325	514	331	560	475	751	449	590	429	402	368	5194	29%
Groundwater Discharge	80	81	79	81	79	81	79	81	80	81	79	879	5%
Runoff Below X-V Dam (Est.)	0	1	0	1	0	1	0	2	0	2	0	11	0%
Incremental Predicted SO4	**1637**	**1809**	**891**	**1795**	**1635**	**2819**	**634**	**2019**	**846**	**2486**	**1108**	**17679**	100%
Incremental Observed SO4	**2512**	**2953**	**891**	**3017**	**2506**	**4052**	**1354**	**4433**	**1323**	**5085**	**1091**	**29218**	
Incremental % of Observed SO4	**65%**	**61%**	**100%**	**59%**	**65%**	**70%**	**47%**	**46%**	**64%**	**49%**	**102%**	**61%**	
Cumulative Predicted SO4	**1637**	**3446**	**4336**	**6132**	**7767**	**10586**	**11219**	**13238**	**14084**	**16571**	**17679**		
Cumulative Observed SO4	**2512**	**5464**	**6356**	**9373**	**11879**	**15931**	**17285**	**21718**	**23042**	**28127**	**29218**		
Cumulative % of Observed SO4	**65%**	**63%**	**68%**	**65%**	**65%**	**66%**	**65%**	**61%**	**61%**	**59%**	**61%**		
Average Zinc Concentration (mg/L)													
North Fork Rose Creek (X2)	0.03	0.04	0.06	0.06	0.08	0.04	0.03	0.03	0.09	0.07	0.03		
South Fork Rose Creek	0.01	0.01	0.02	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.01		
Rose Creek Diversion Canal Runoff	0.01	0.01	0.02	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.01		
Main Rock Dump	0.01	0.01	0.02	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.01		
North Wall Interceptor Ditch	0.01	0.01	0.02	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.01		
X-V Dam Surface Release (X5)	0.26	0.24	0.15	0.21	0.12	0.35	0.31	0.34	0.32	0.34	0.37		
X-V Dam Seepage (X13)	0.01	0.02	0.02	0.04	0.02	0.04	0.03	0.02	0.04	0.04	0.02		
Groundwater Discharge	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
Runoff Below X-V Dam (Est.)	0.01	0.01	0.02	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.01		
X14	0.10	0.04	0.07	0.09	0.09	0.13	0.05	0.05	0.15	0.08	0.07		
Zinc Load (kg)													
North Fork Rose Creek (X2)	82	1146	80	1572	327	790	82	1003	299	2583	138	8103	50%
South Fork Rose Creek	0	89	0	470	85	234	44	597	36	440	26	2021	12%
Rose Creek Diversion Canal Runoff	4	38	4	139	24	53	12	132	10	97	7	519	3%
Main Rock Dump	0	0	0	1	0	0	0	1	0	0	0	3	0%
North Wall Interceptor Ditch	2	13	3	47	9	18	5	44	4	33	3	181	1%
X-V Dam Surface Release (X5)	603	185	152	454	300	1373	0	598	128	1020	370	5184	32%
X-V Dam Seepage (X13)	6	19	15	50	21	51	23	20	28	32	14	278	2%
Groundwater Discharge	2	2	2	2	2	2	2	2	2	2	2	21	0%
Runoff Below X-V Dam (Est.)	0	2	0	8	2	3	1	7	1	5	0	29	0%
Incremental Predicted Zn	**699**	**1494**	**257**	**2743**	**769**	**2523**	**168**	**2405**	**508**	**4212**	**559**	**16338**	100%
Incremental Observed Zn	**647**	**1789**	**256**	**4178**	**972**	**5267**	**287**	**3122**	**1073**	**5573**	**701**	**23865**	
Incremental % of Observed	**108%**	**84%**	**100%**	**66%**	**79%**	**48%**	**59%**	**77%**	**47%**	**76%**	**80%**	**68%**	
Cumulative Predicted Zn	**699**	**2193**	**2450**	**5193**	**5962**	**8485**	**8654**	**11059**	**11567**	**15779**	**16338**		
Cumulative Observed Zn	**647**	**2437**	**2693**	**6871**	**7843**	**13110**	**13397**	**16519**	**17592**	**23164**	**23865**		
Cumulative % of Observed	**108%**	**90%**	**91%**	**76%**	**76%**	**65%**	**65%**	**67%**	**66%**	**68%**	**68%**		

Table A6: Sulphate and Zinc Loadings for Vangorda Creek

Time Step	5	6	7	8	9	10	11	Sum	Percent
Season	W	S	W	S	W	S	W		
From	Nov-97	May-98	Nov-98	May-99	Nov-99	May-00	Nov-00		
To	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01		
Flow Volume (1000 m^3)									
Vangorda Creek Diversion Channel (V1)	1099	4167	818	6899	942	7081	1197	22202	35%
Grum Interceptor Ditch (V25BSP)	117	445	88	715	101	744	128	2337	4%
Grum Rock Dump (Grum Creek) (V2)	98	372	74	611	84	671	106	2015	3%
Seepage from Little Creek Dam	8	8	8	8	8	8	8	55	0%
Seepage from Vangorda Rock Dump	8	8	8	8	8	8	8	55	0%
Shrimp Creek (V4)	384	1458	288	2397	330	2618	417	7893	13%
Runoff from Lower Vangorda Creek Catchment (31c + 35 + 36)	312	1185	235	1948	269	2141	339	6430	10%
Discharge from West Fork Vangorda Creek (V5)	1048	3983	789	6546	903	7193	1139	21601	35%
Total: Vangorda Creek at V8	3073	11626	2307	19132	2645	20465	3341	62588	100%
Average Sulphate Concentration (mg/L)									
Vangorda Creek Diversion Channel	10	17	13	5	10	7	16		
Grum Interceptor Ditch	437	153	66	106	132	57	96		
Grum Rock Dump (Grum Creek)	72	158	178	180	165	605	462		
Seepage from Little Creek Dam	100	100	100	100	100	100	100		
Seepage from Vangorda Rock Dump	100	100	100	100	100	100	100		
Shrimp Creek	61	33	134	42	86	38	60		
Runoff from Lower Vangorda Creek Catchment (31c + 35 + 36)	10	17	13	5	10	7	16		
Discharge from West Fork Vangorda Creek	112	71	346	52	139	95	166		
V8	120	62	171	36	108	84	224		
Sulphate Load (tonnes)									
Vangorda Creek Diversion Channel	11	71	11	34	9	50	19	205	6%
Grum Interceptor Ditch	51	68	6	76	13	42	12	269	8%
Grum Rock Dump (Grum Creek)	7	59	13	110	14	406	49	658	18%
Seepage from Little Creek Dam	1	1	1	1	1	1	1	6	0%
Seepage from Vangorda Rock Dump	1	1	1	1	1	1	1	6	0%
Shrimp Creek	23	48	39	101	28	99	25	364	10%
Runoff from Lower Vangorda Creek Catchment (31c + 35 + 36)	3	20	3	10	3	15	5	59	2%
Discharge from West Fork Vangorda Creek	117	283	273	340	126	683	189	2011	56%
Incremental Predicted SO4	215	550	346	673	195	1297	302	3577	100%
Incremental Observed SO4	369	721	394	689	286	1719	748	4926	
Incremental % of Observed SO4	58%	76%	88%	98%	68%	75%	40%	73%	
Cumulative Predicted SO4	215	765	1111	1783	1978	3276	3577		
Cumulative Observed SO4	369	1090	1484	2173	2458	4177	4926		
Cumulative % of Observed SO4	58%	70%	75%	82%	80%	78%	73%		
Average Zinc Concentration (mg/L)									
Vangorda Creek Diversion Channel	0.01	0.02	0.05	0.00	0.01	0.04	0.02	0.03	
Grum Interceptor Ditch	0.21	0.12	0.15	0.24	0.31	0.13	0.10	0.09	
Grum Rock Dump (Grum Creek)	0.02	0.05	0.06	0.12	0.03	0.64	0.32	0.09	
Seepage from Little Creek Dam	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.09	
Seepage from Vangorda Rock Dump	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.08	
Shrimp Creek	0.03	0.04	0.05	0.04	0.01	0.02	0.02	9.85	
Runoff from Lower Vangorda Creek Catchment (31c + 35 + 36)	0.01	0.02	0.05	0.00	0.01	0.04	0.02	0.32	
Discharge from West Fork Vangorda Creek	0.07	0.03	0.04	0.02	0.03	0.03	0.02	0.03	
V8	0.06	0.04	0.04	0.04	0.02	0.08	0.03	0.03	
Zinc Load (kg)									
Vangorda Creek Diversion Channel	11	83	41	14	9	283	24	466	19%
Grum Interceptor Ditch	25	53	13	172	31	97	13	403	17%
Grum Rock Dump (Grum Creek)	2	19	4	73	3	429	34	564	23%
Seepage from Little Creek Dam	0	0	0	0	0	0	0	1	0%
Seepage from Vangorda Rock Dump	0	0	0	0	0	0	0	1	0%
Shrimp Creek	12	58	14	96	3	52	8	244	10%
Runoff from Lower Vangorda Creek Catchment (31c + 35 + 36)	3	24	12	4	3	86	7	138	6%
Discharge from West Fork Vangorda Creek	73	119	32	131	27	216	23	621	25%
Incremental Predicted Zn	126	357	116	489	76	1163	109	2437	100%
Incremental Observed Zn	184	465	92	765	53	1637	100	3297	
Incremental % of Observed	68%	77%	126%	64%	144%	71%	108%	74%	
Cumulative Predicted Zn	126	483	599	1089	1165	2328	2437		
Cumulative Observed Zn	184	649	742	1507	1560	3197	3297		
Cumulative % of Observed	68%	74%	81%	72%	75%	73%	74%		

Figures

Figure A1: **Regional Relationship Between Mean Annual Runoff and Catchment Median Elevation**



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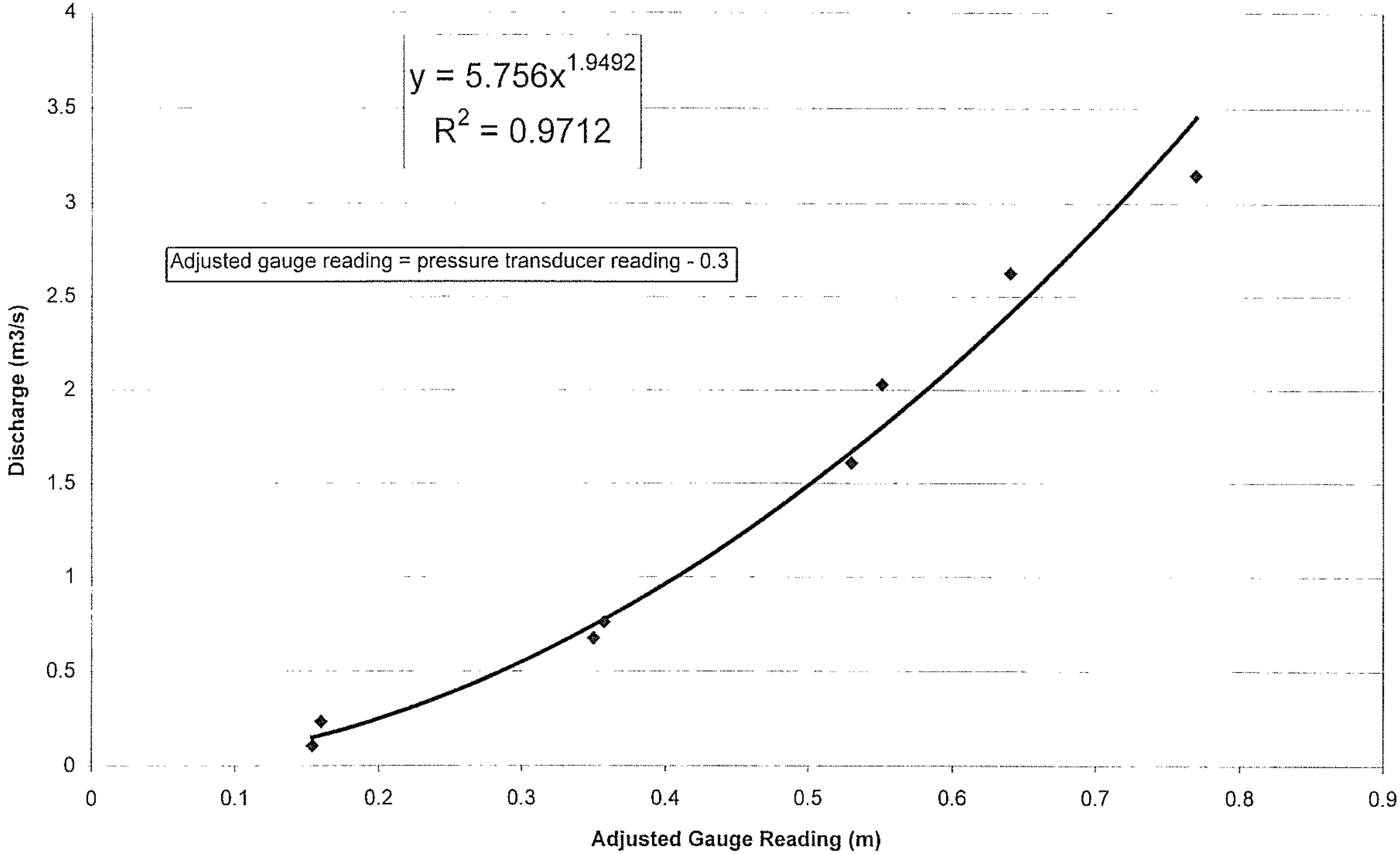
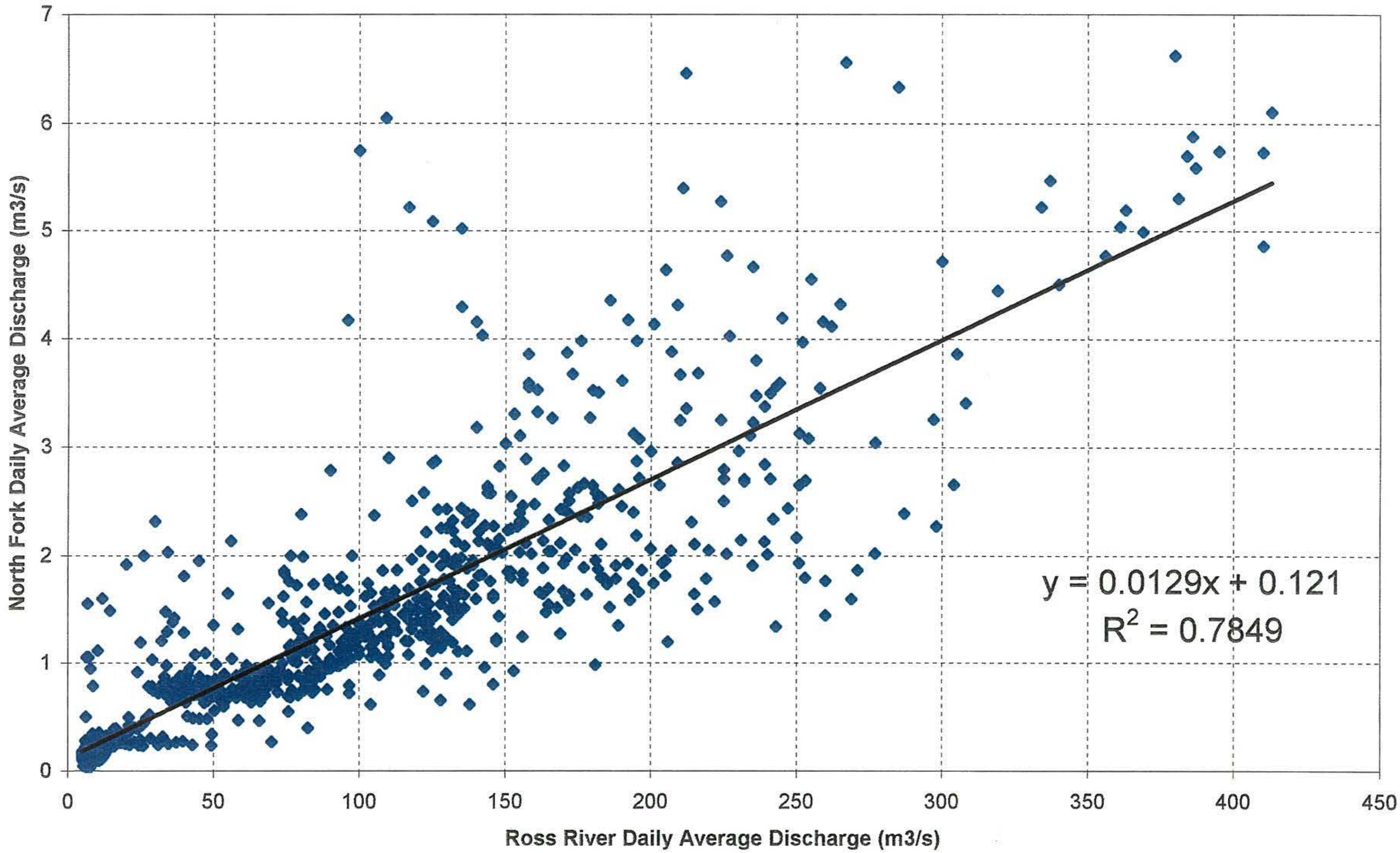
22943 A FigA1.PDF

Figure A2: R7, North Fork of Rose Creek, Streamflow Rating Curve

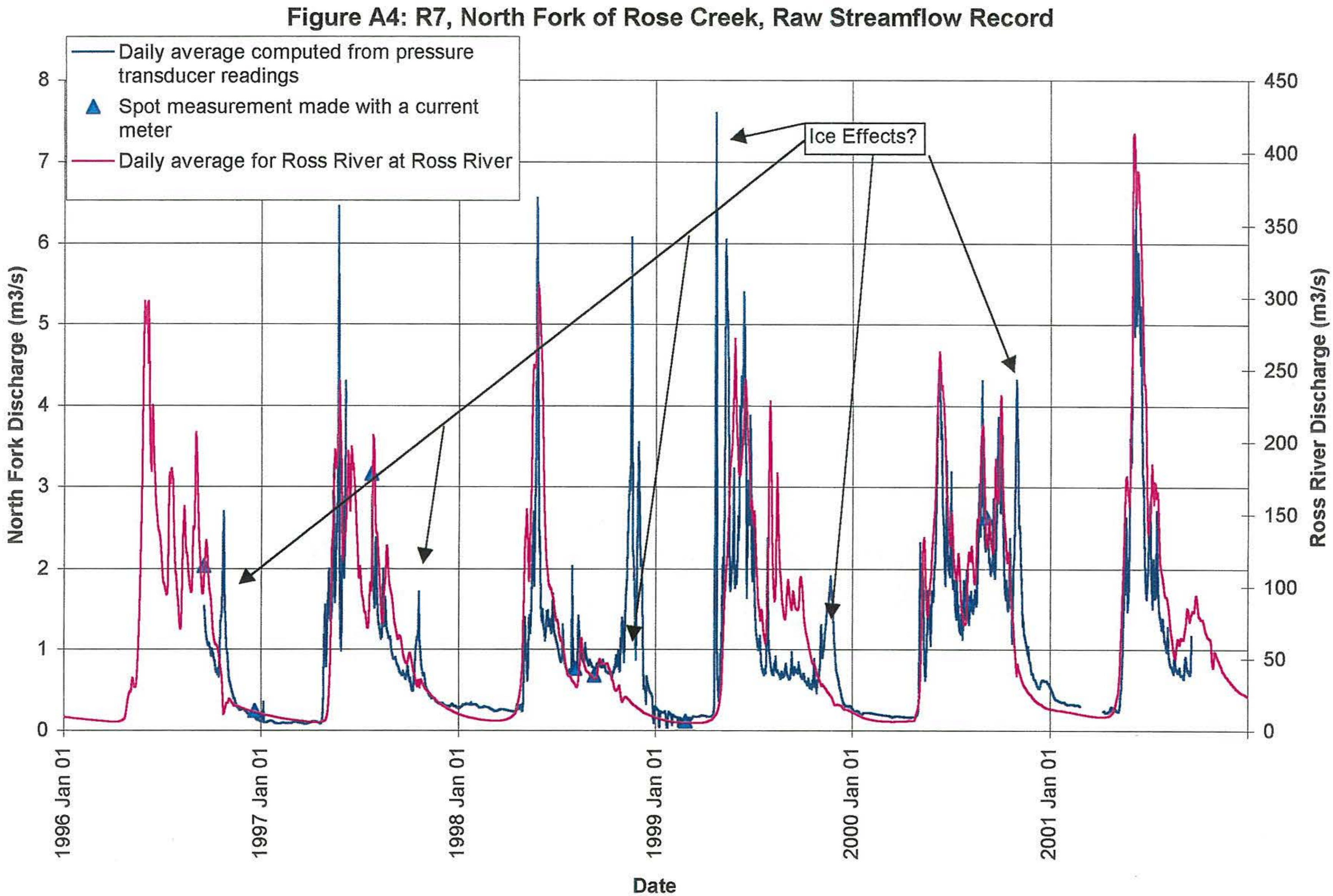


22943 A Figs A-2,3,4,5.xls-5/30/02-Rating Curve (FigA2)

Figure A3: R7, North Fork of Rose Creek, Ross River Correlation

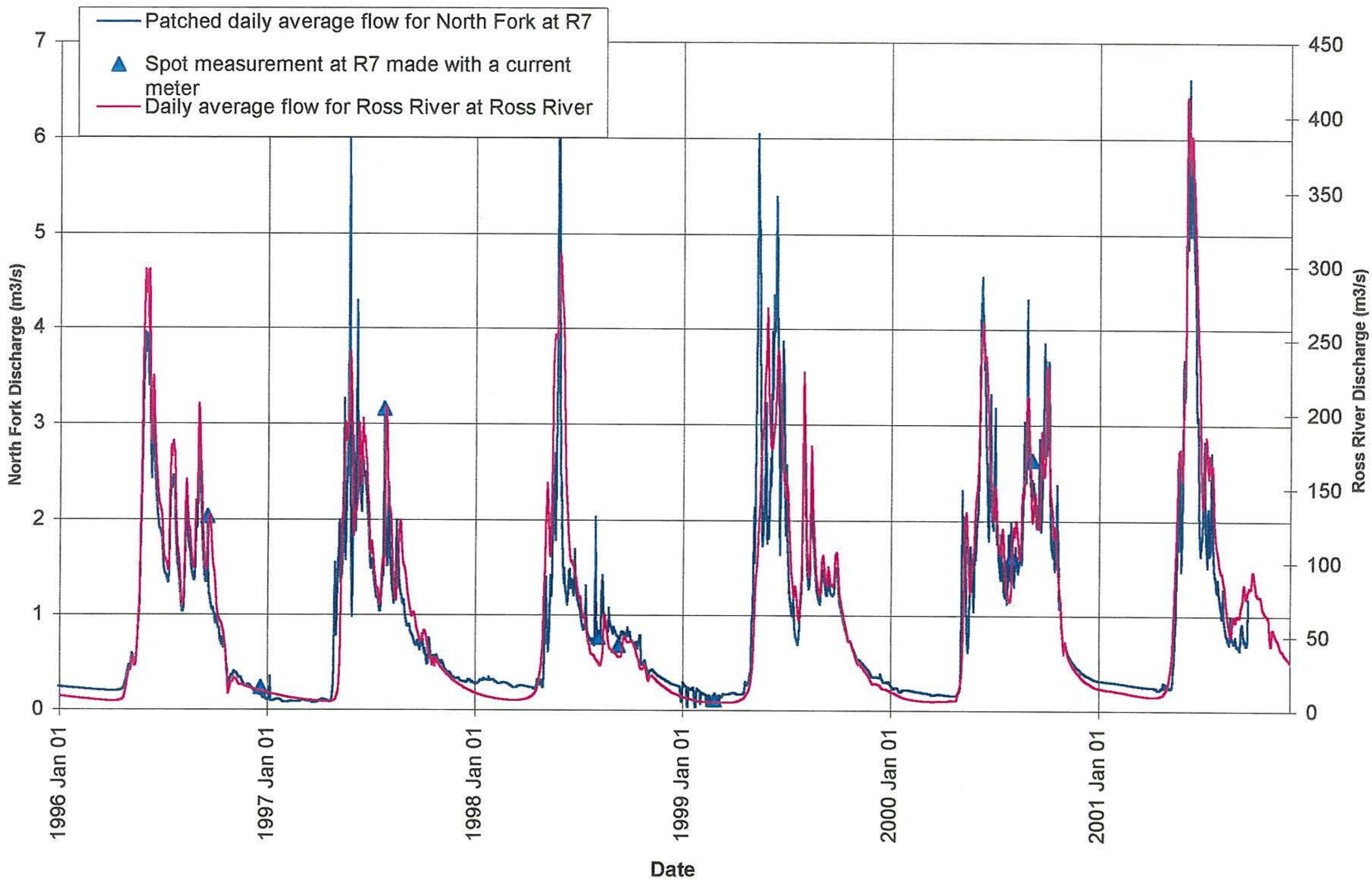


22943 A Figs A-2,3,4,5.xls-5/30/02-Regression for patching (FigA3)

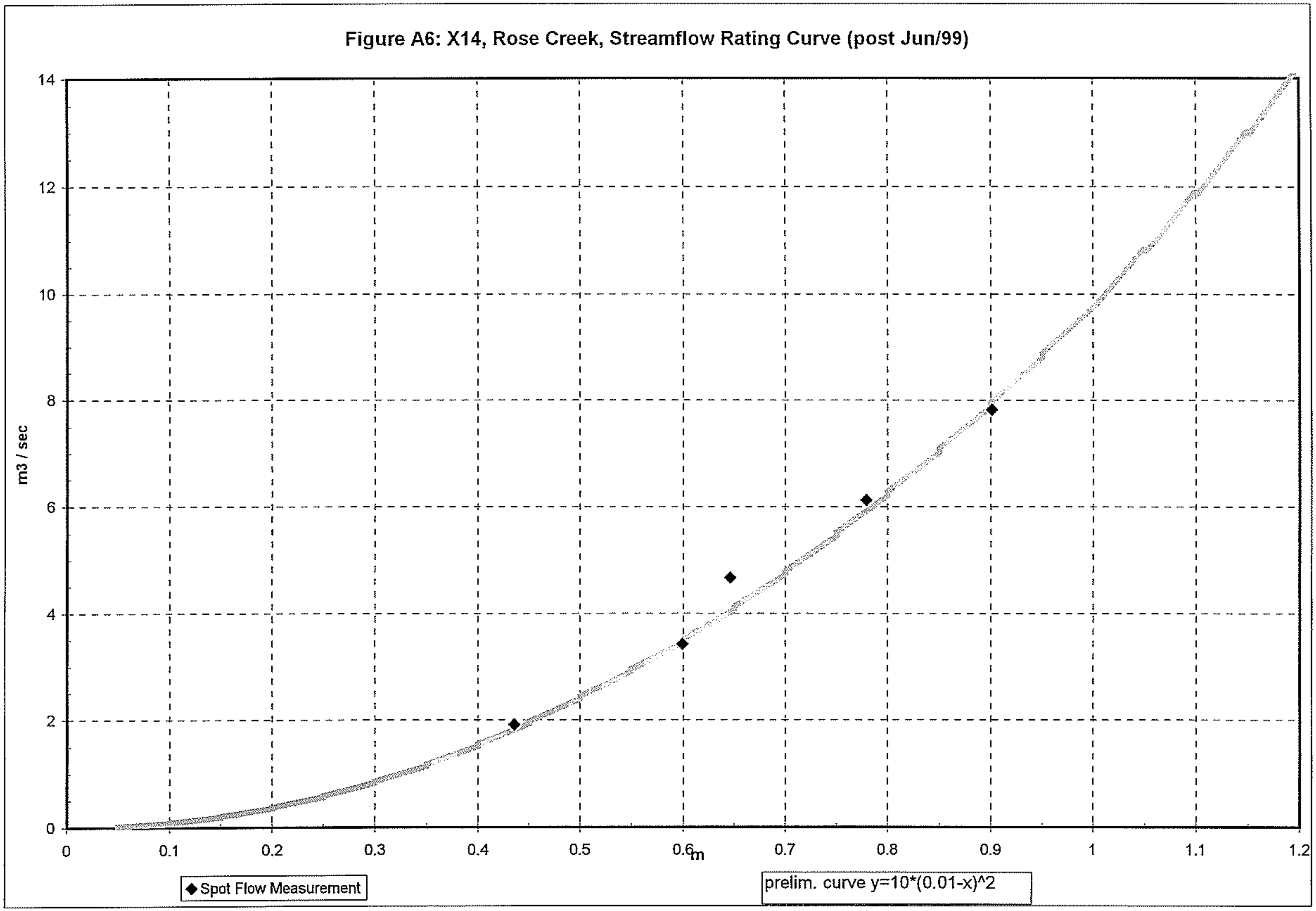


22943 A Figs A-2,3,4,5.xls-5/30/02-Raw Flow Plot (Fig A4)

Figure A5: R7, North Fork of Rose Creek, Verified Streamflow Record 1996 to 2001

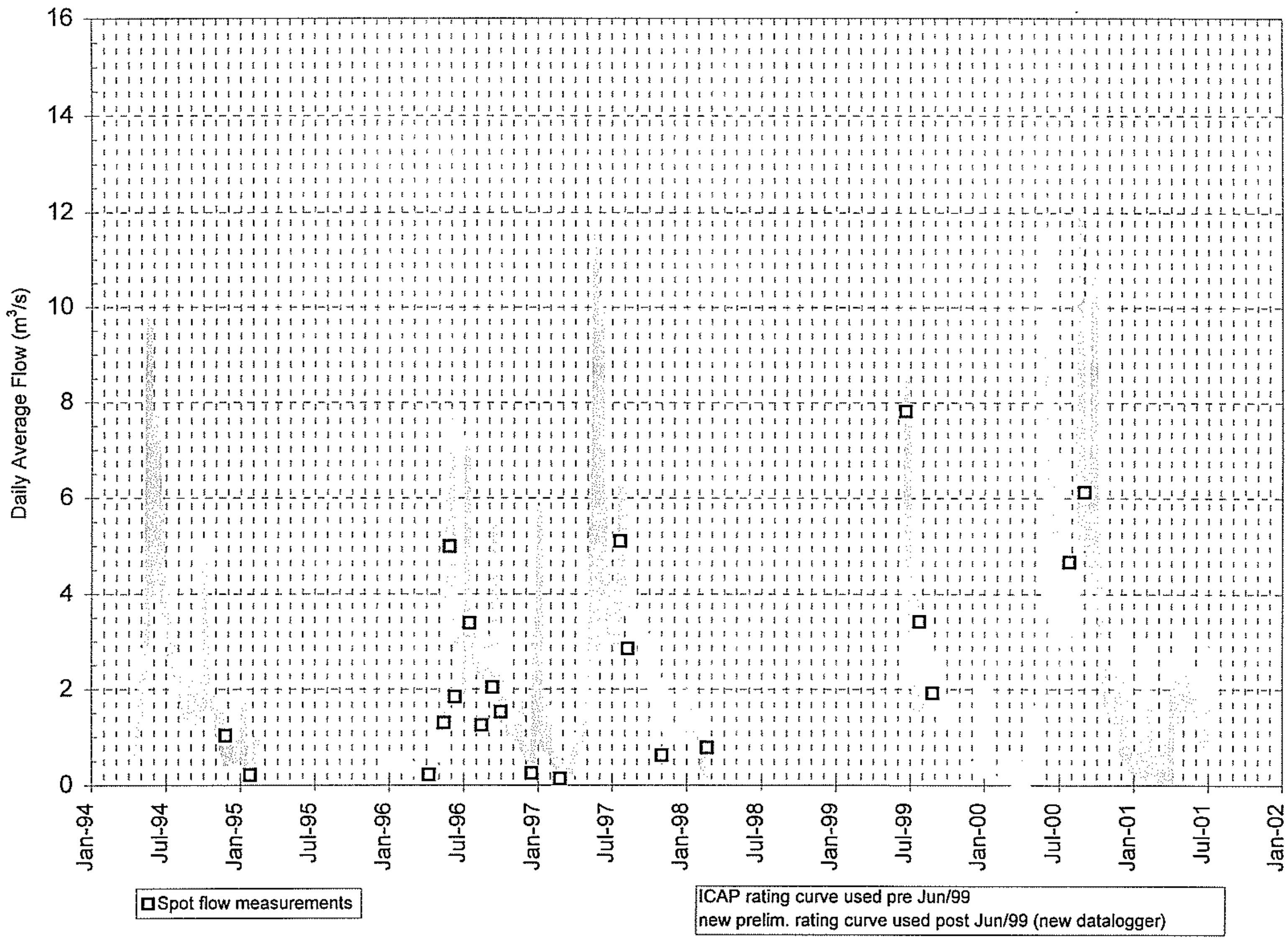


22943 A Figs A-2,3,4,5.xls-5/30/02-Patched Flow Plot (FigA5)



new rating (FigA6) Chart 1-5/30/02-new rating (FigA6) Chart 1

Figure A7: X14, Rose Creek, Daily Average Streamflow Record



22943 A Figs A6,A7.xls-5/30/02-Daily Flow Plot (FigA7)

Figure A8: North Fork Rose Creek Water Balance Representation

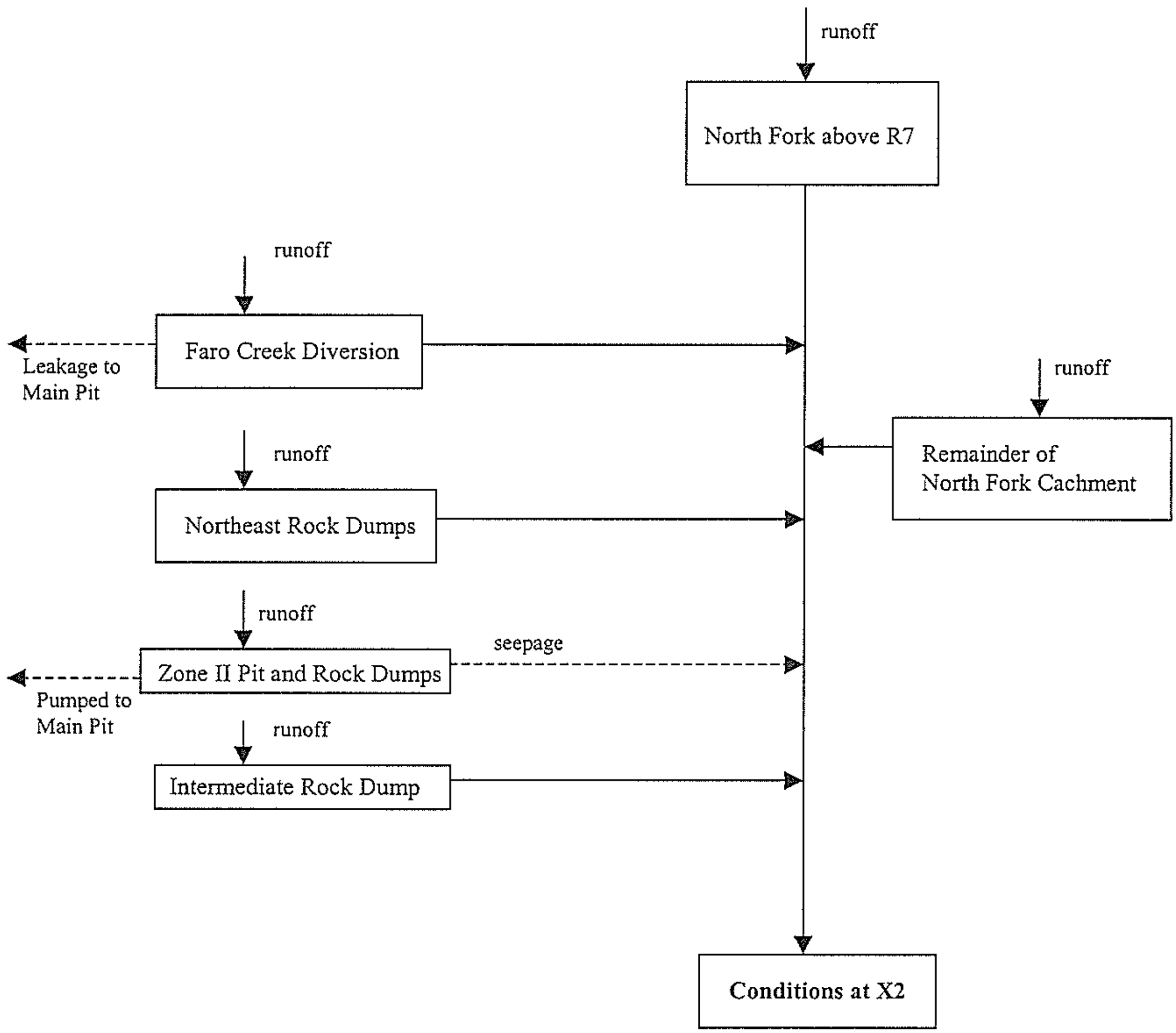
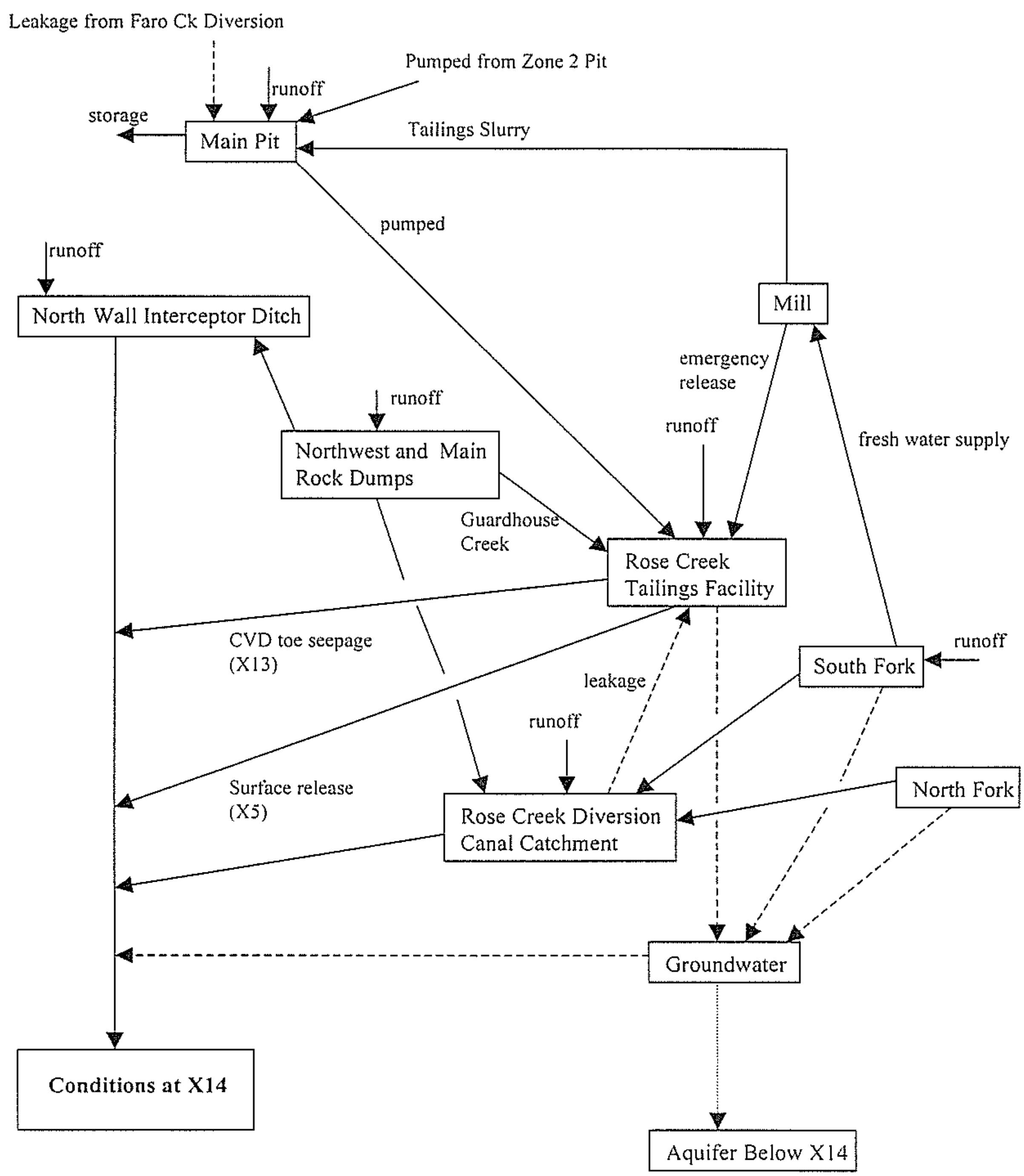
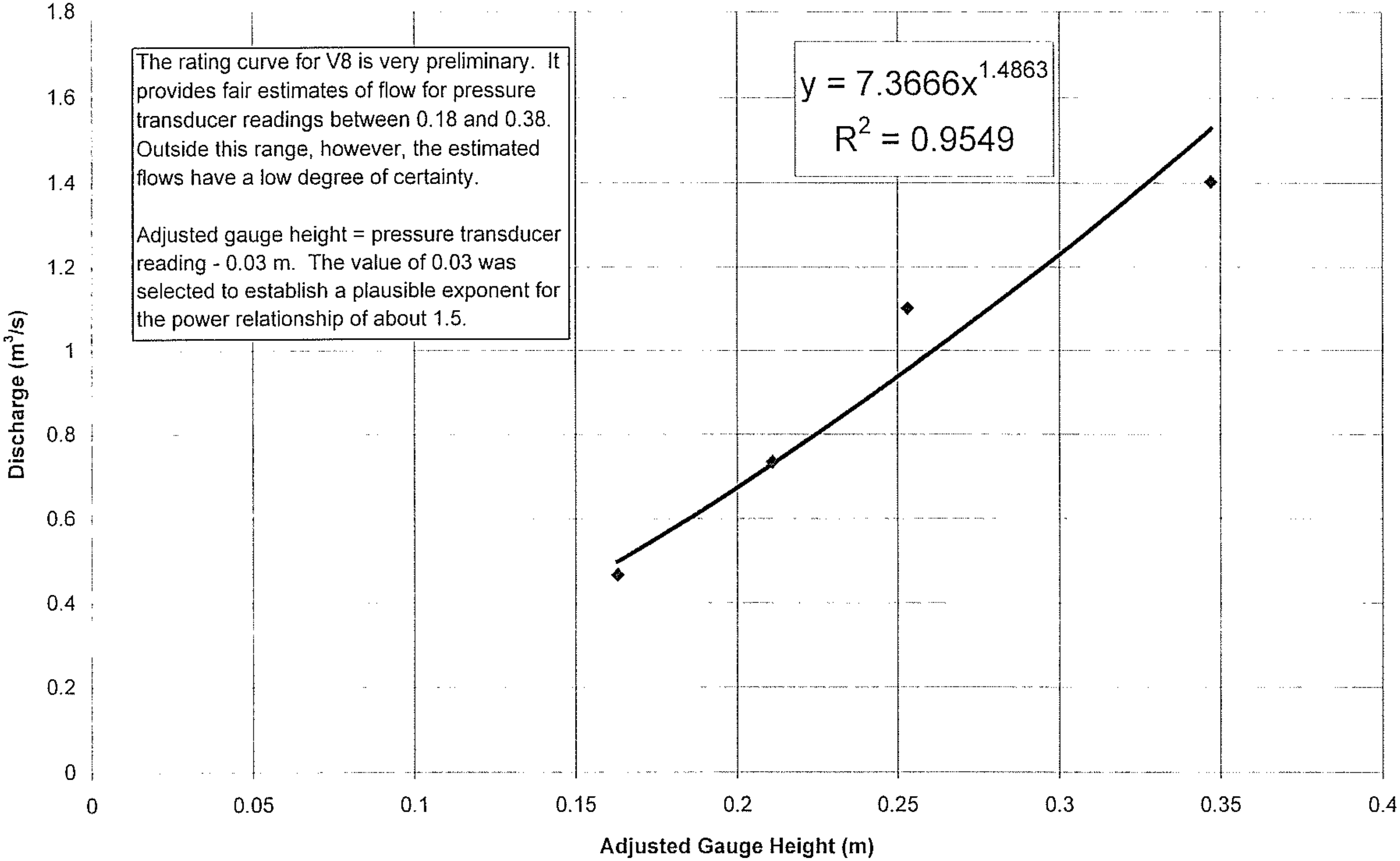


Figure A9: Rose Creek Water Balance Representation



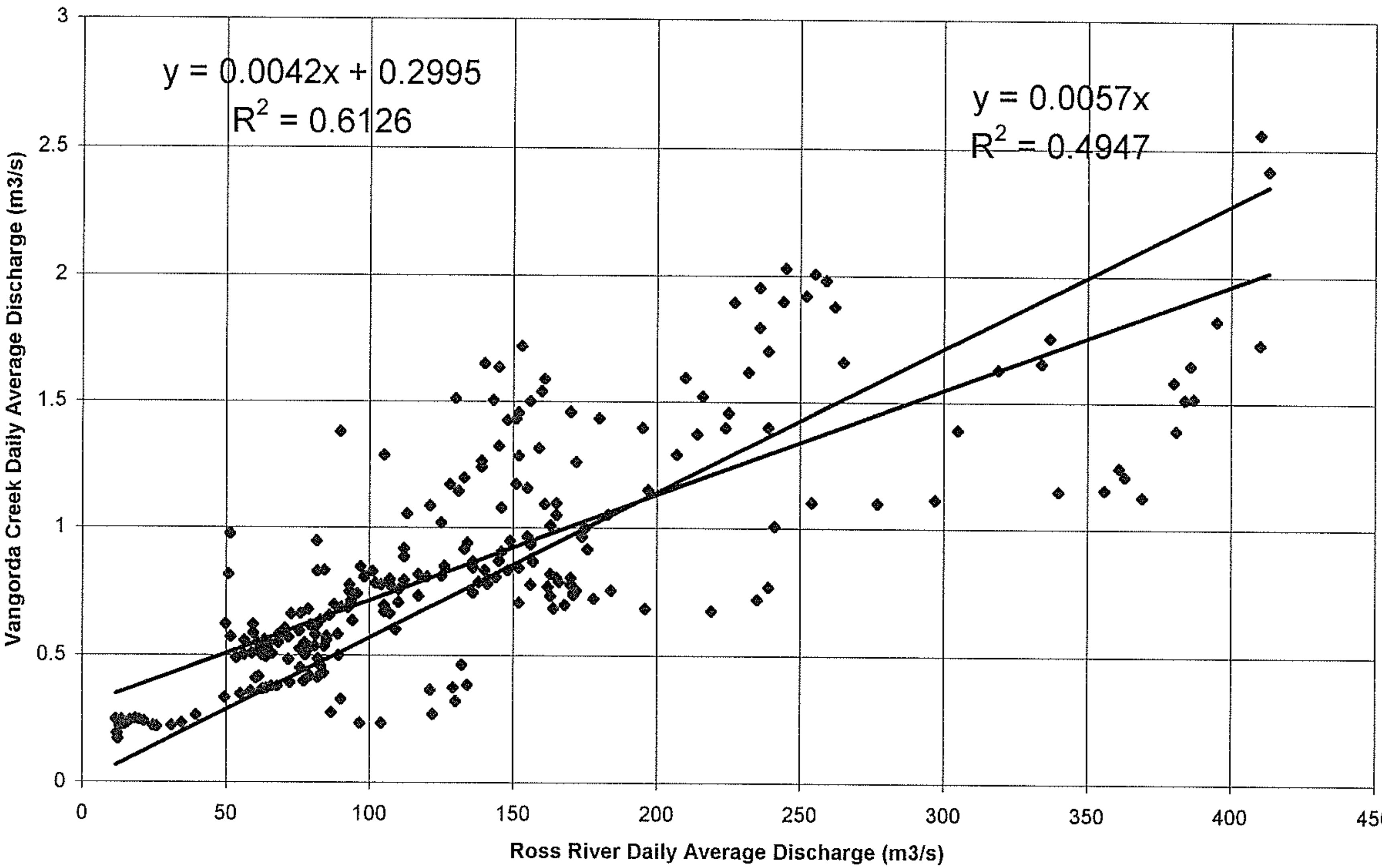
22943 Fig A9

Figure A10: V8, Vangorda Creek, Streamflow Rating Curve



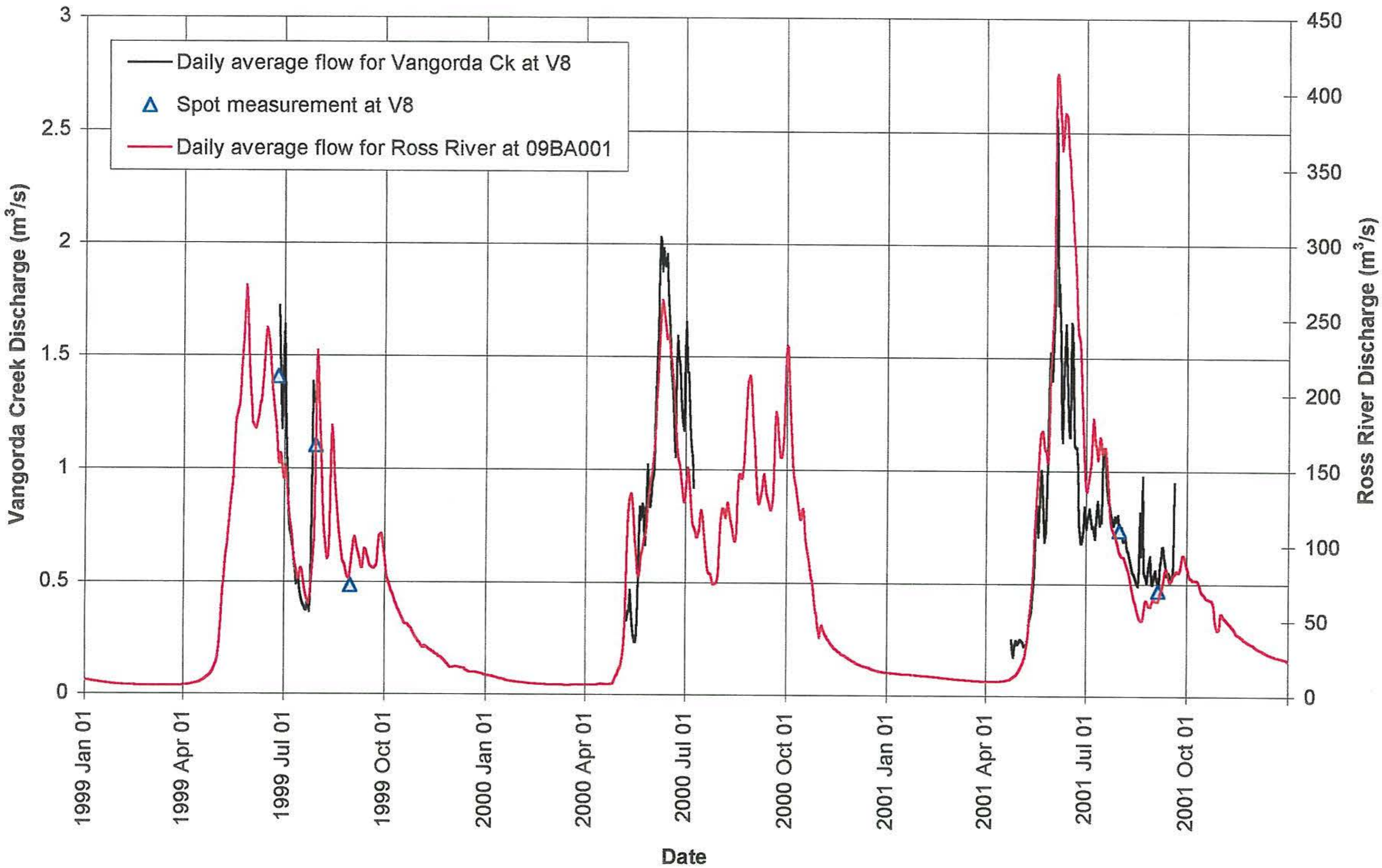
22943 A Figs A10,A11,A12.xls-5/30/02-Rating Curve (FigA10)

Figure A11: V8, Vangorda Creek, Correlation with Ross River



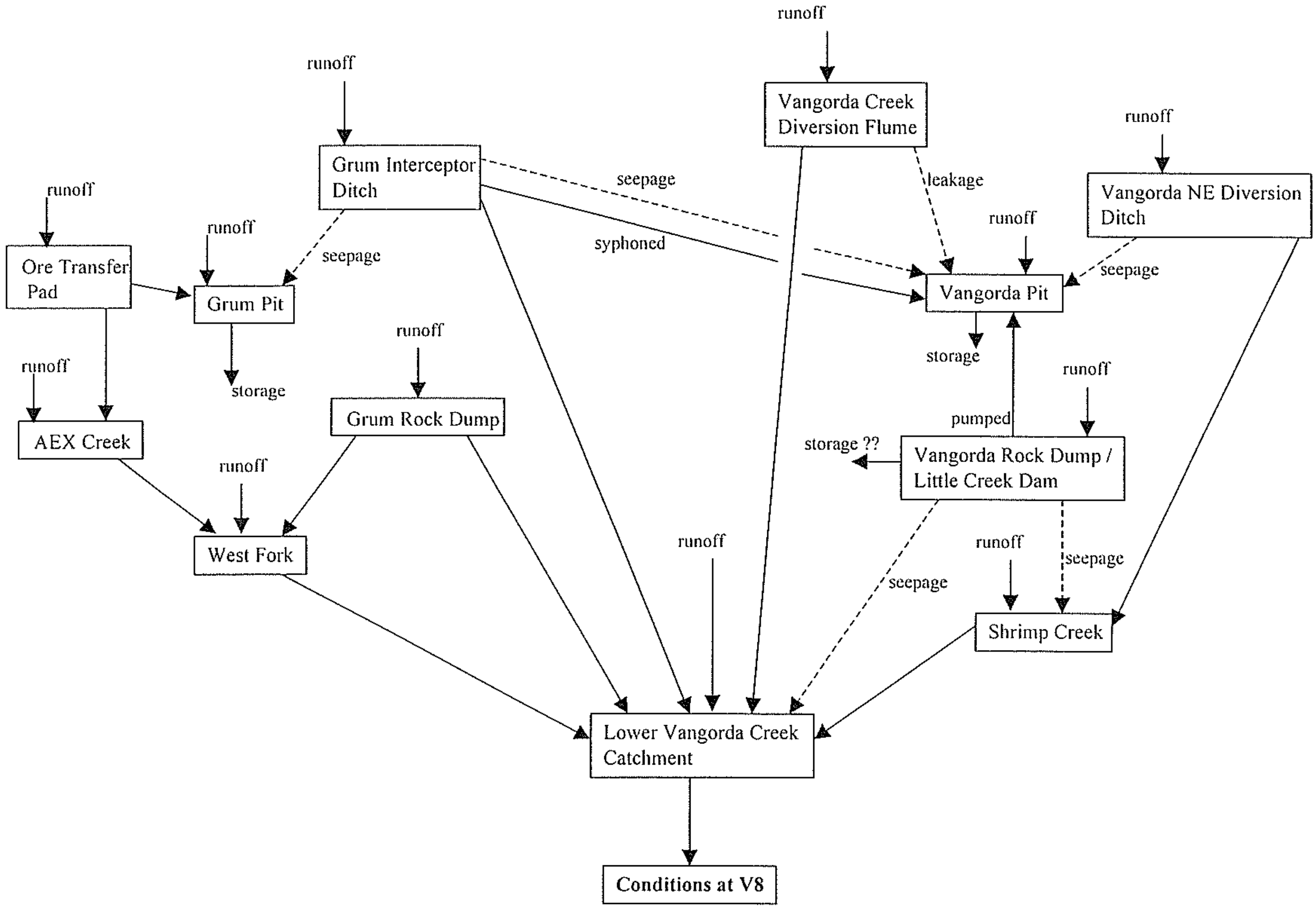
22943 A Figs A10,A11,A12.xls-5/30/02-Correlation 09BA001 (FigA11)

Figure A12: V8, Vangorda Creek, Raw Streamflow Record



22943 A Figs A10,A11,A12.xls-5/30/02-Compare Ross (Fig A12)

Figure A13: Vangorda Creek Water Balance Representation



22943 A FigA13

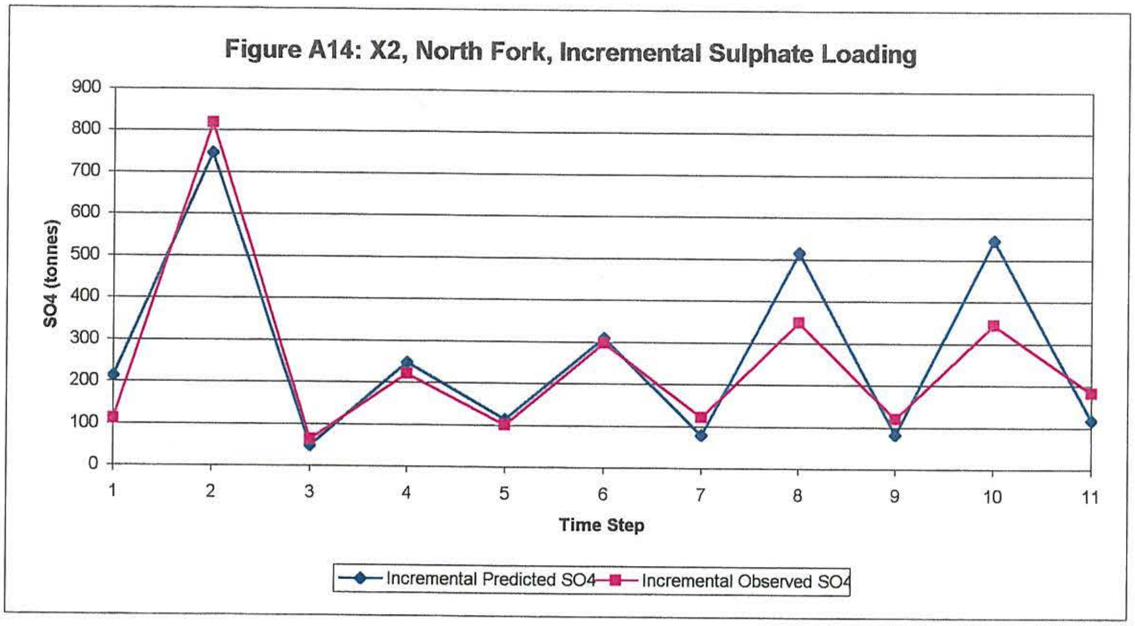


Figure A14: X2, North Fork, Incremental Sulphate Loading
SO4 (tonnes)
900
800
700
600
500
400
300
200
100
0
1
2
3
4
5
6
7
8
9
10
11
Time Step
Incremental Predicted SO4
Incremental Observed SO4

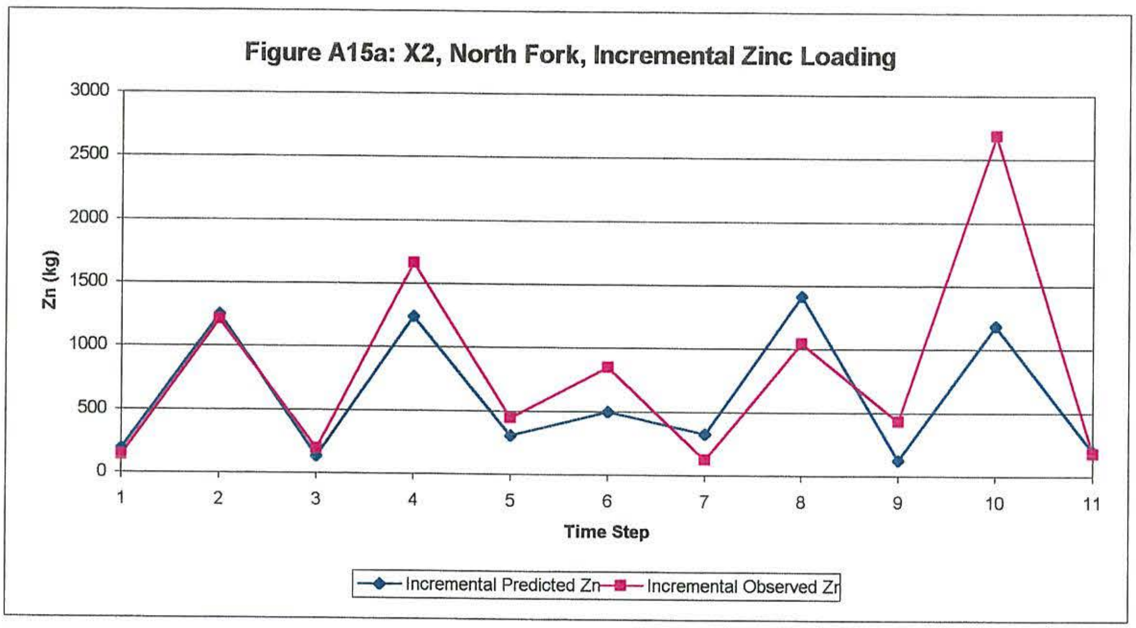


Figure A15a: X2, North Fork, Incremental Zinc Loading
Zn (kg)
3000
2500
2000
1500
1000
500
0
1
2
3
4
5
6
7
8
9
10
11
Time Step
Incremental Predicted Zn
Incremental Observed Zn

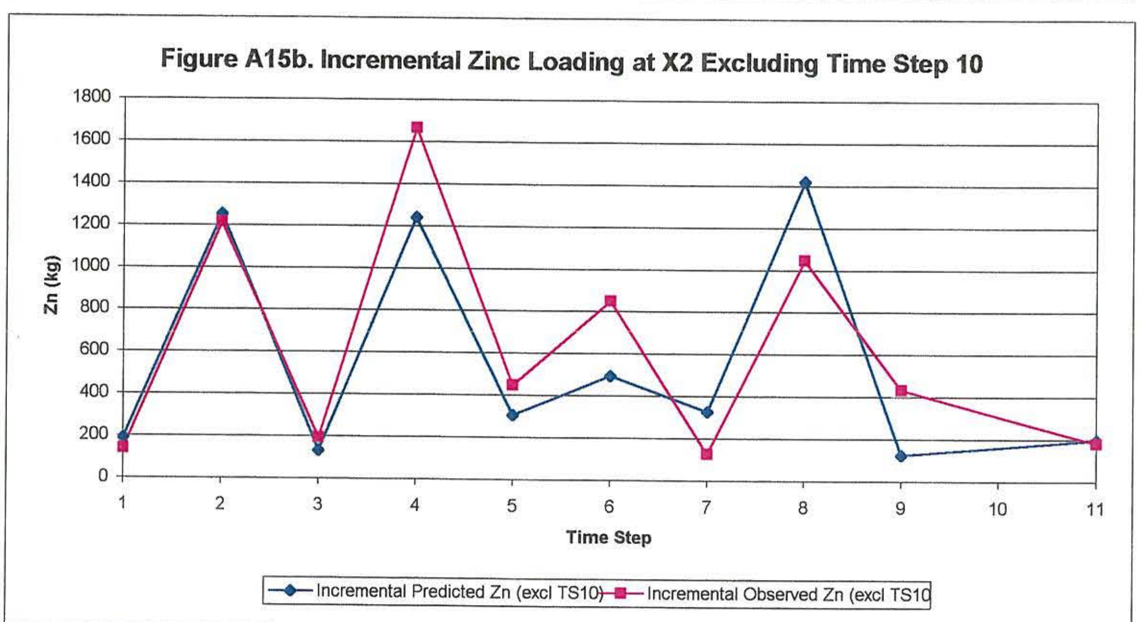


Figure A15b. Incremental Zinc Loading at X2 Excluding Time Step 10
Zn (kg)
1800
1600
1400
1200
1000
800
600
400
200
0
1
2
3
4
5
6
7
8
9
10
11
Time Step
Incremental Predicted Zn (excl TS10)
Incremental Observed Zn (excl TS10

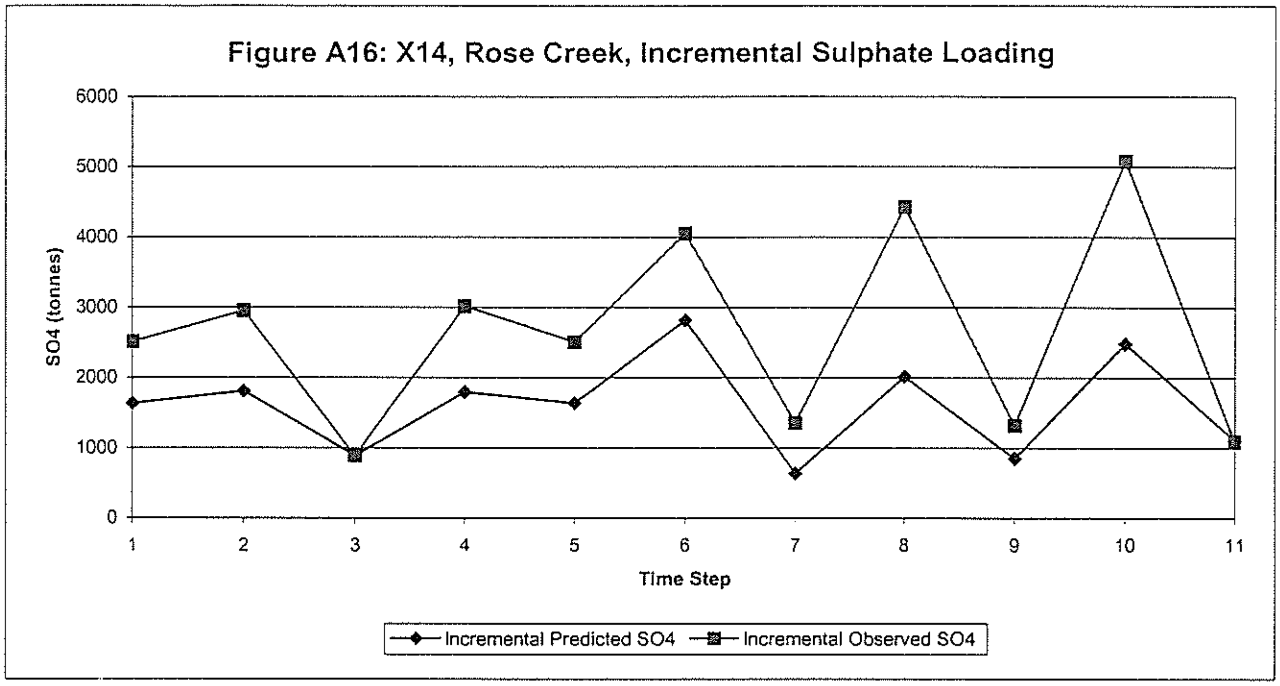


Figure A16: X14, Rose Creek, Incremental Sulphate Loading
6000
5000
4000
3000
2000
1000
0
SO4 (tonnes)
1
2
3
4
5
6
7
8
9
10
11
Time Step
Incremental Predicted SO4
Incremental Observed SO4

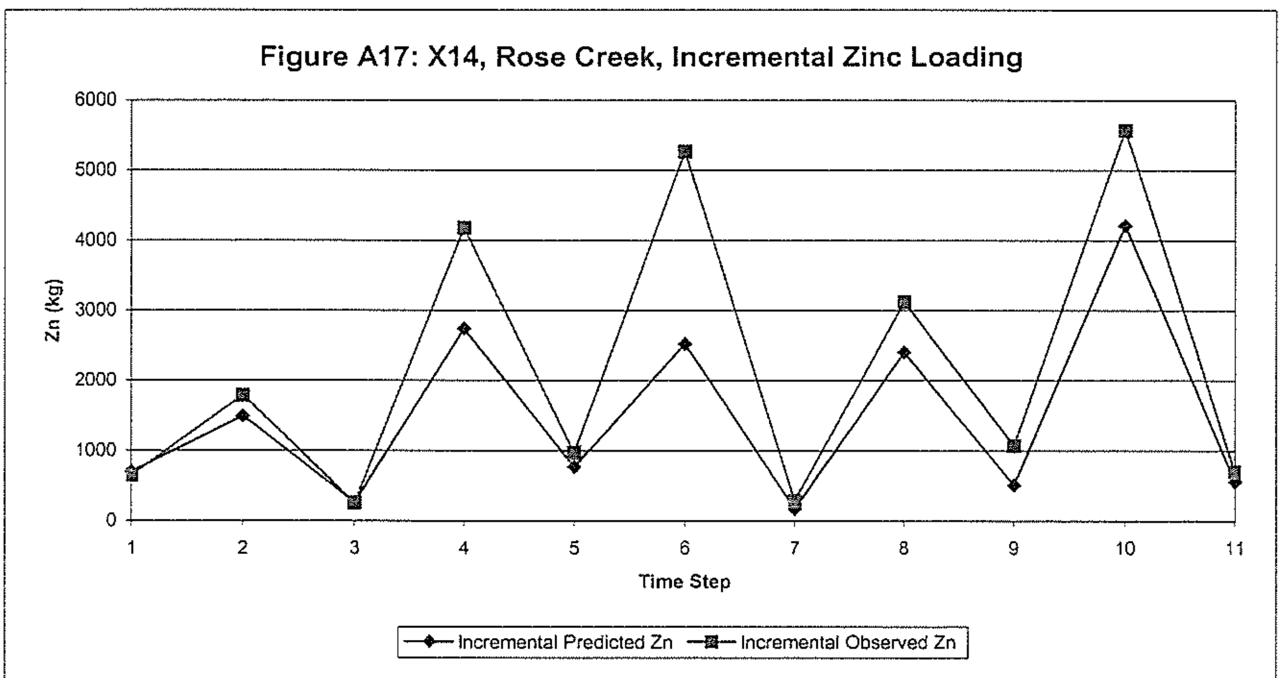


Figure A17: X14, Rose Creek, Incremental Zinc Loading
6000
5000
4000
3000
2000
1000
0
Zn (kg)
1
2
3
4
5
6
7
8
9
10
11
Time Step
Incremental Predicted Zn
Incremental Observed Zn

Figure A18: V8, Vangorda Creek, Incremental Sulphate Loading

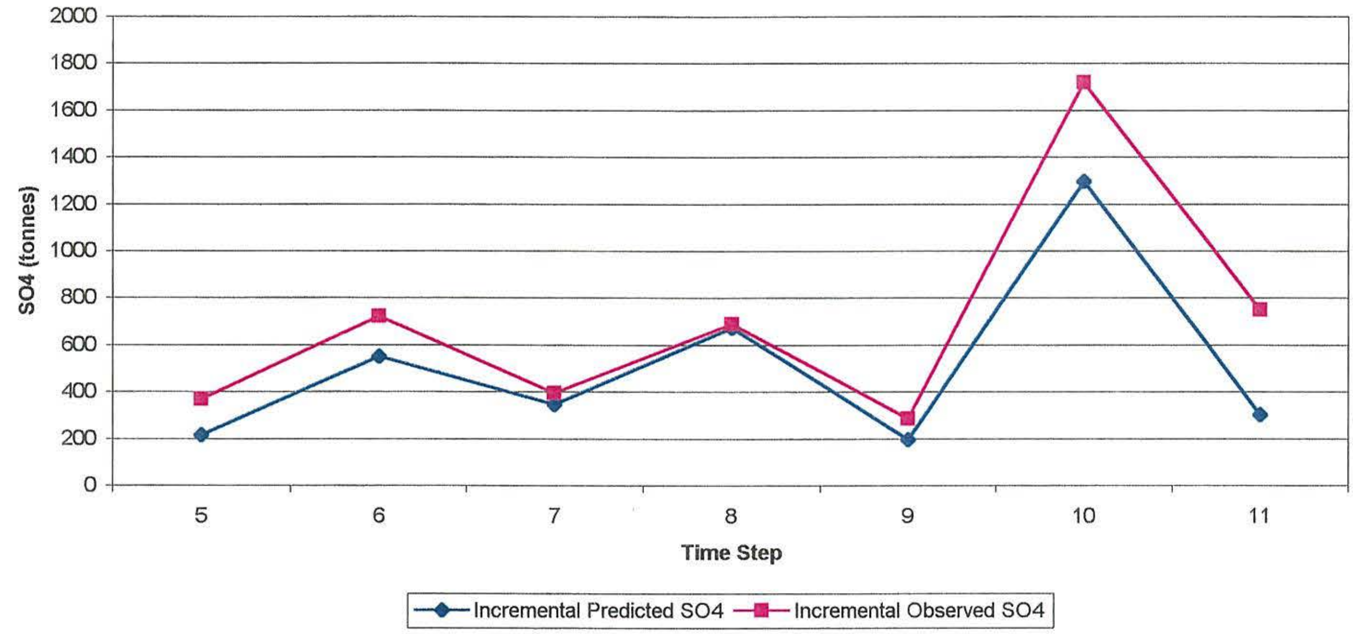
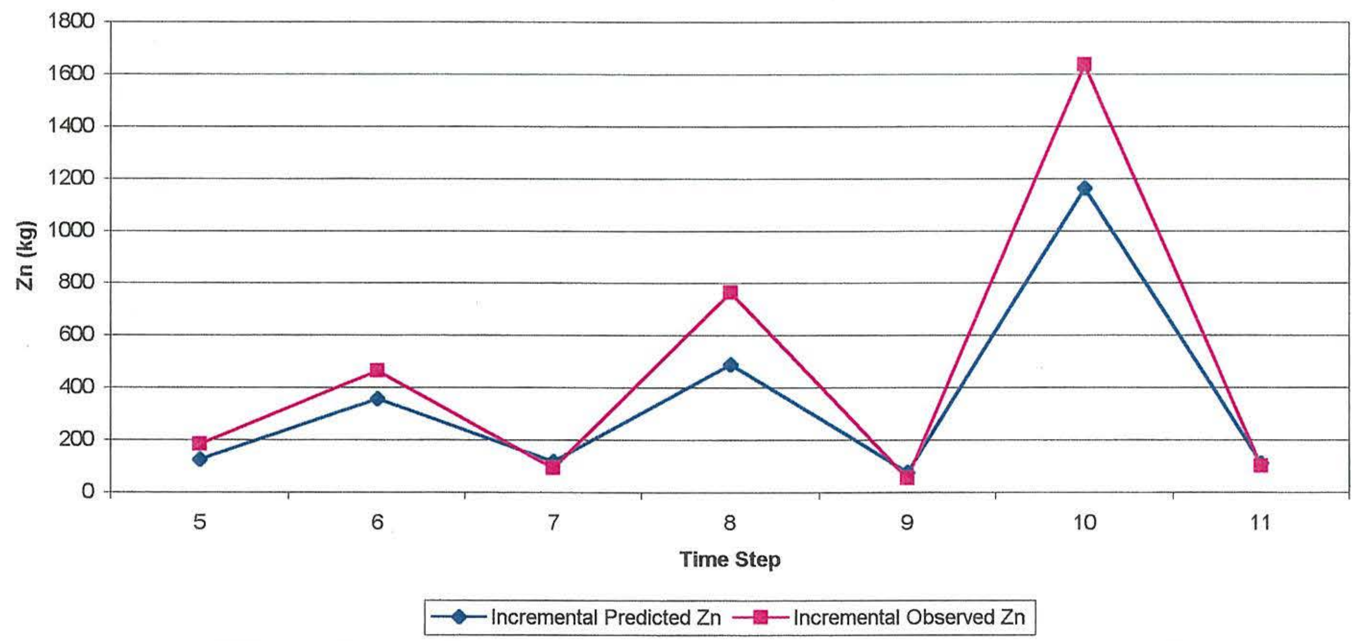


Figure A19: V8, Vangorda Creek, Incremental Zinc Loading



Appendix B

Faro Mine Site Surface Water Quality Graphs

List of color Figures – Appendix B
Surface Water Quality of the Faro Mine Site

Figure B1. Background Surface Water Quality
Anvil Creek, Rose Creek, Upper Guard House Creek

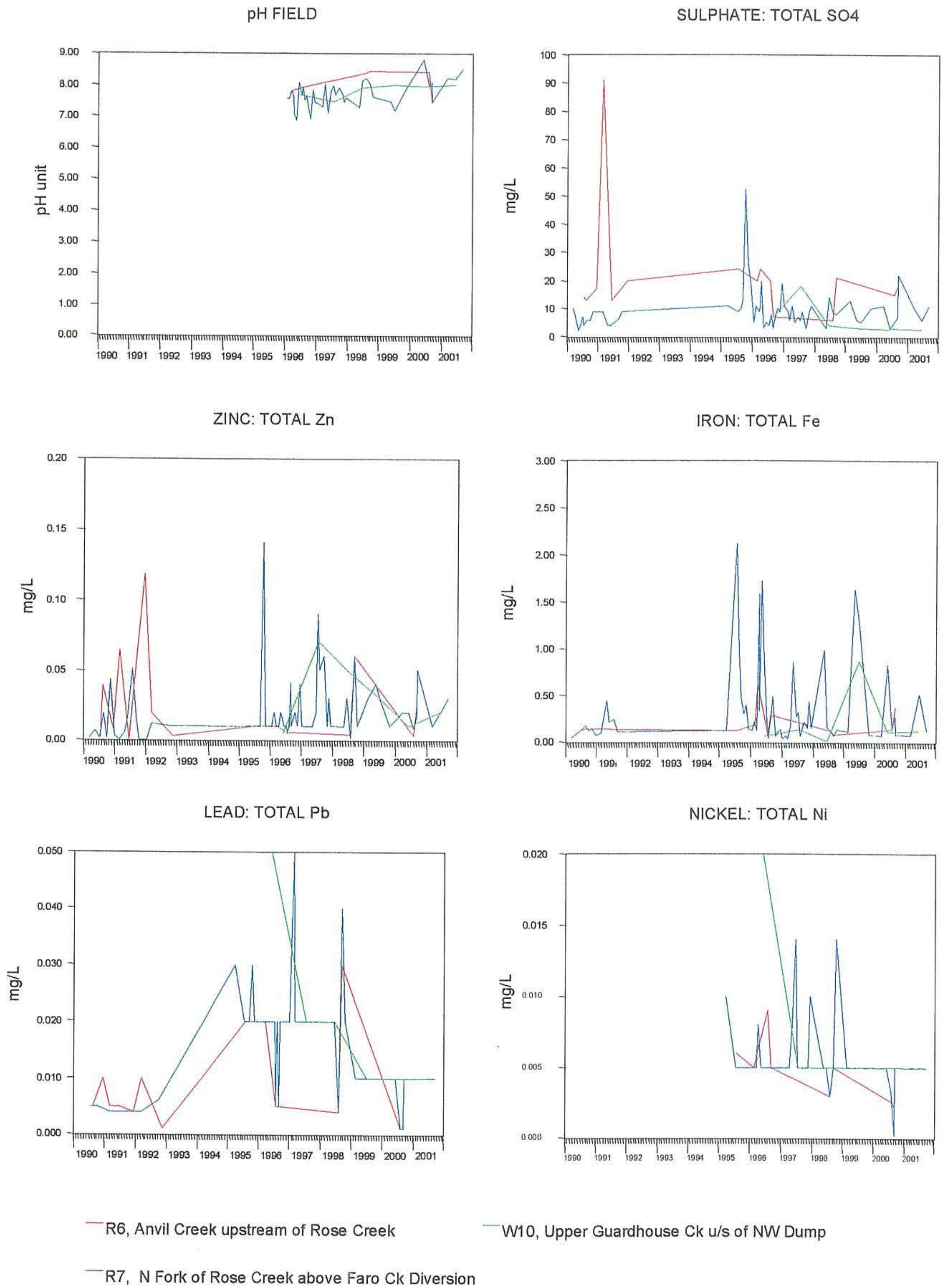
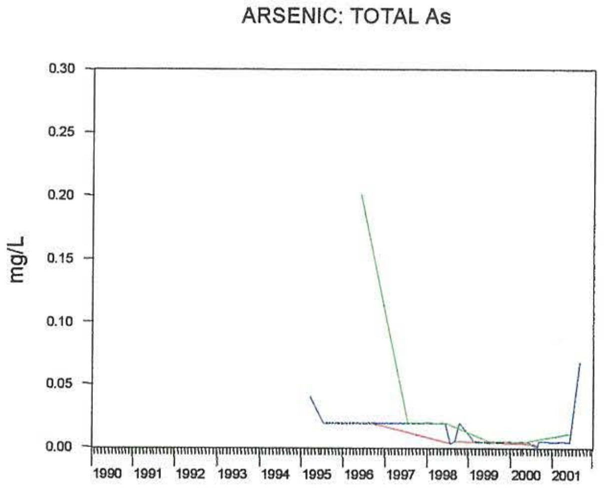
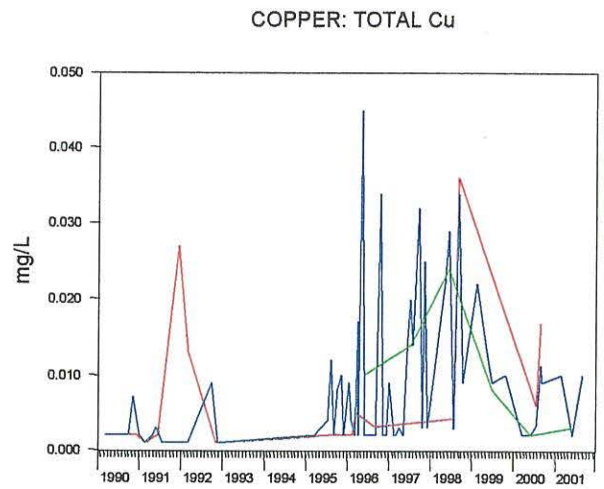


Figure B1. Background Surface Water Quality
Anvil Creek, Rose Creek, Upper Guard House Creek





R6, Anvil Creek upstream of Rose Creek

W10, Upper Guardhouse Ck u/s of NW Dump

R7, N Fork of Rose Creek above Faro Ck Diversion

Figure B2. Surface Water Quality of Faro Pits and Dumps
Faro Main Pit

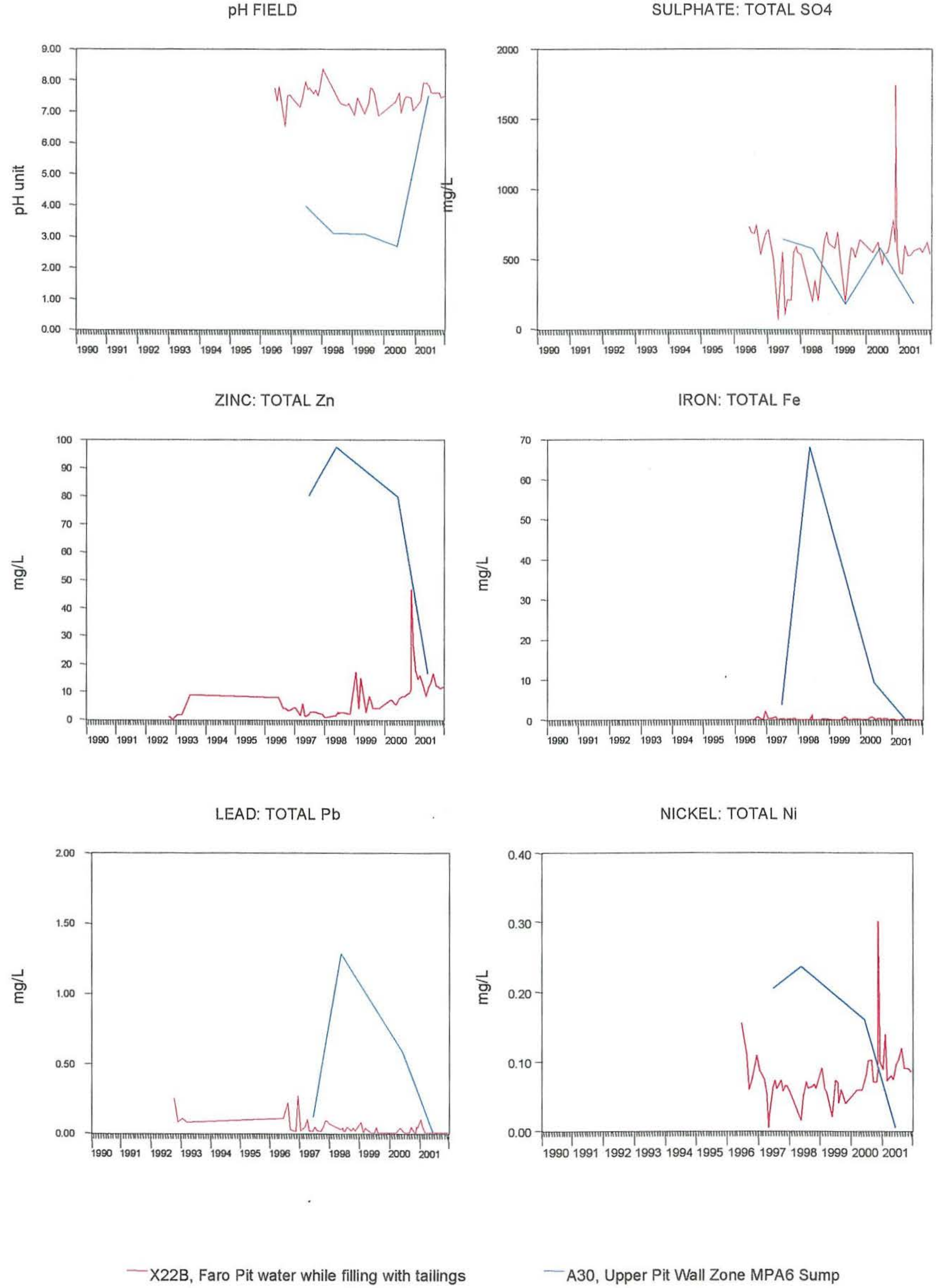
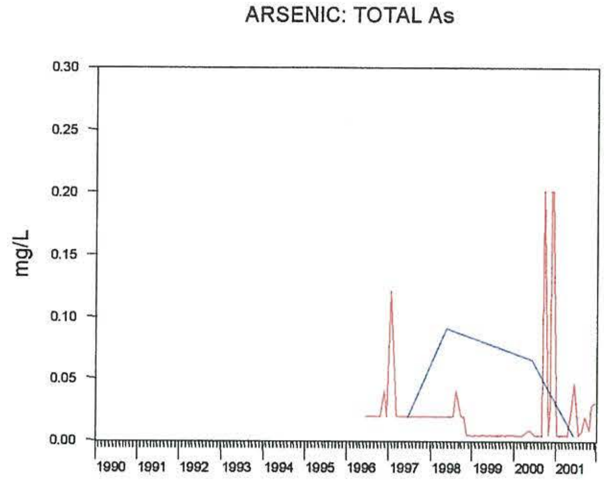
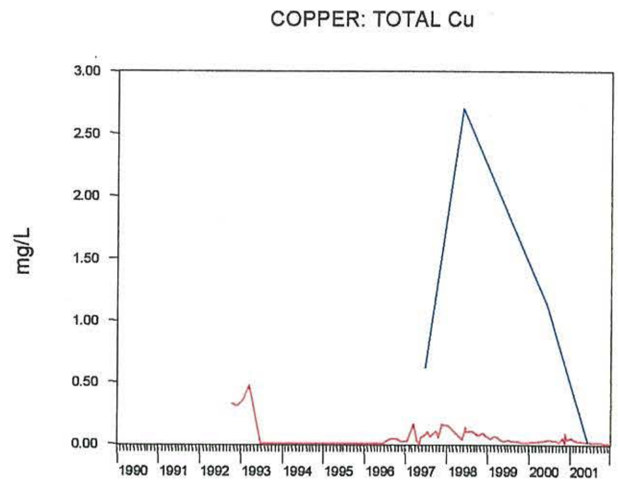


Figure B2. Surface Water Quality of Faro Pits and Dumps
Faro Main Pit





X22B, Faro Pit water while filling with tailings

A30, Upper Pit Wall Zone MPA6 Sump

Figure B3. Surface Water Quality of Faro Pits and Dumps
North East Waste Dump

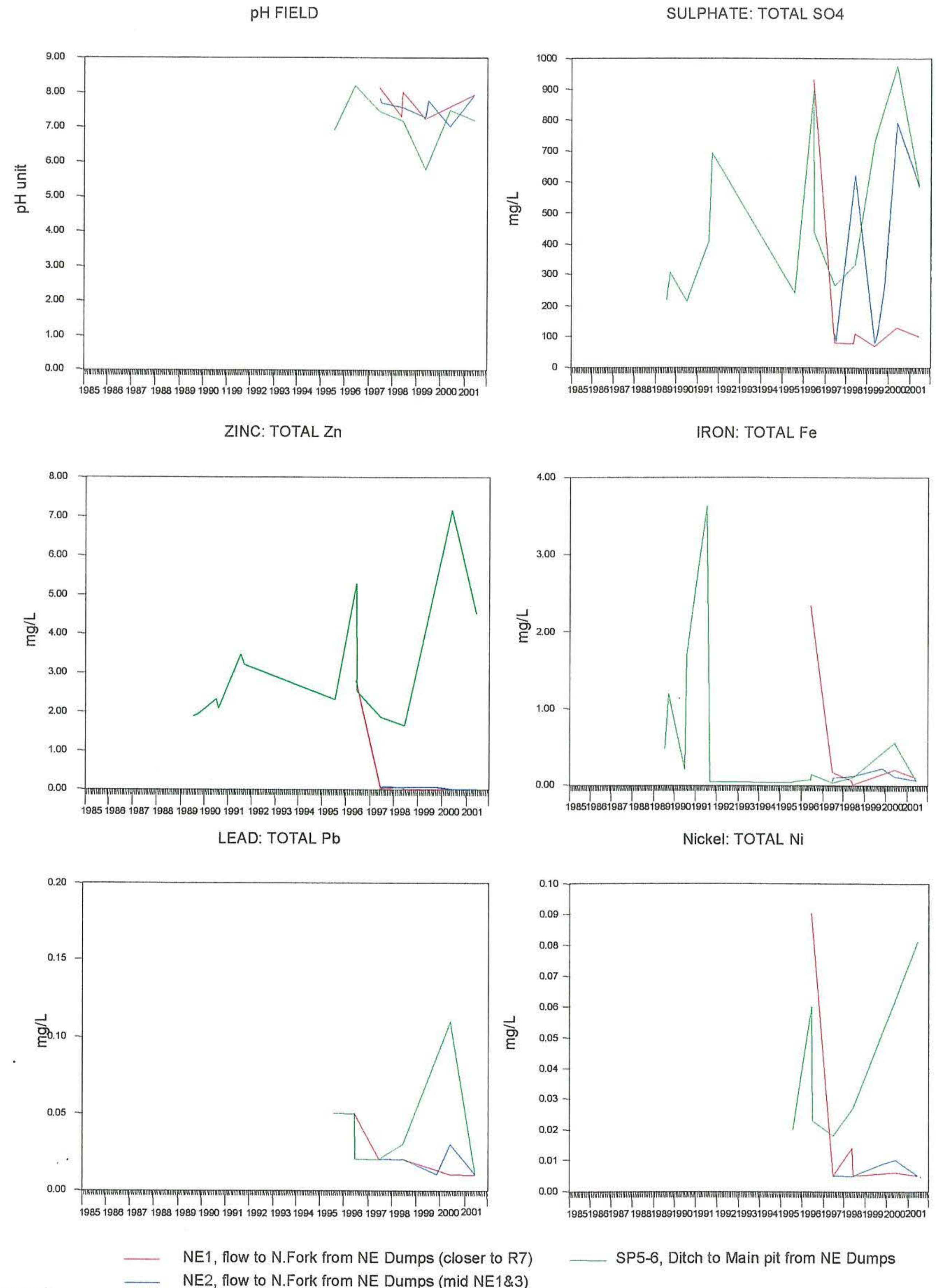


Figure B3. Surface Water Quality of Faro Pits and Dumps
North East Waste Dump

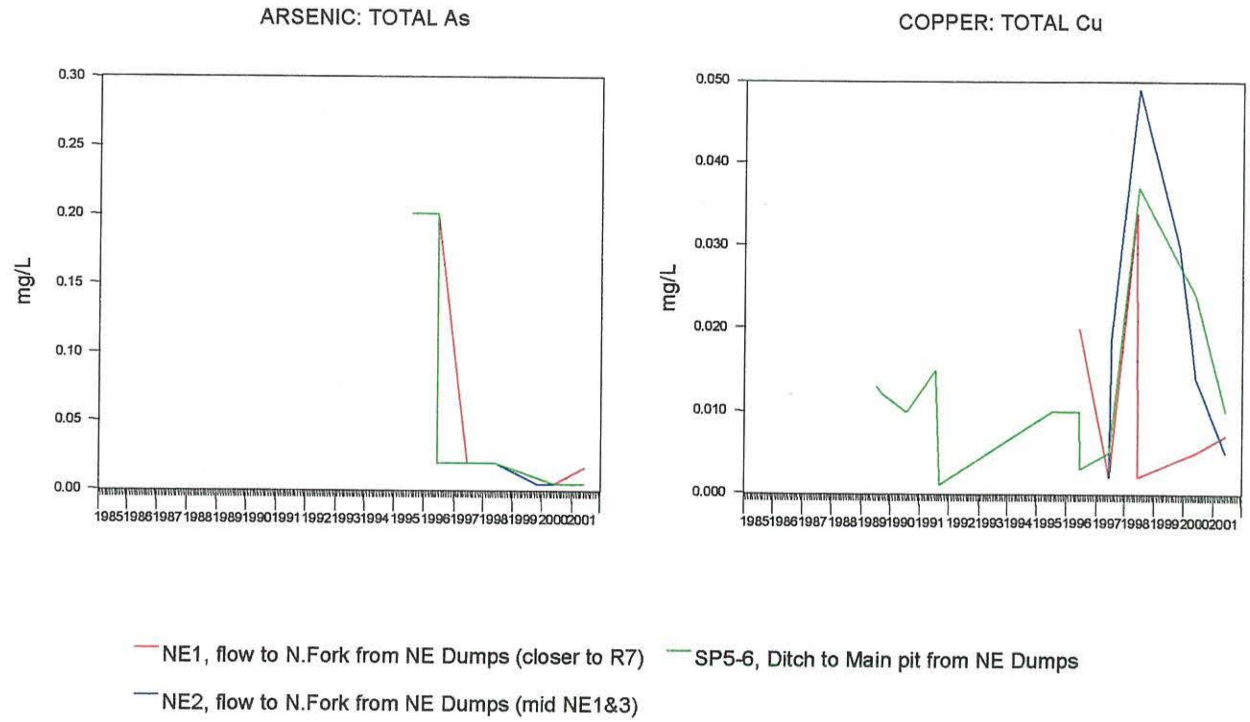
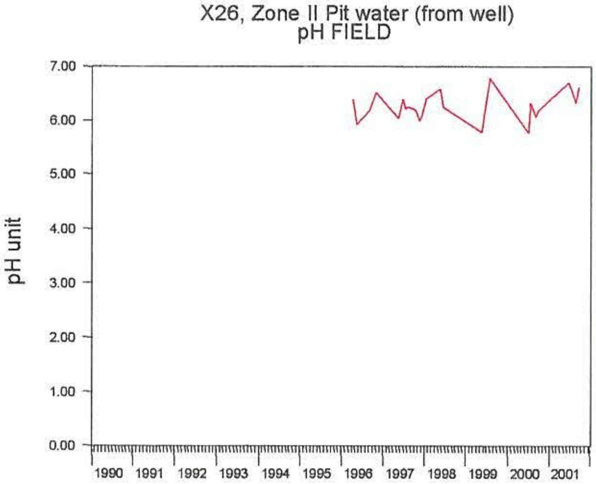
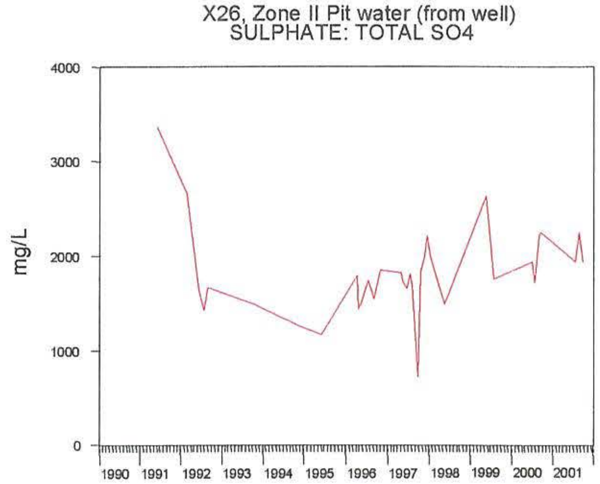
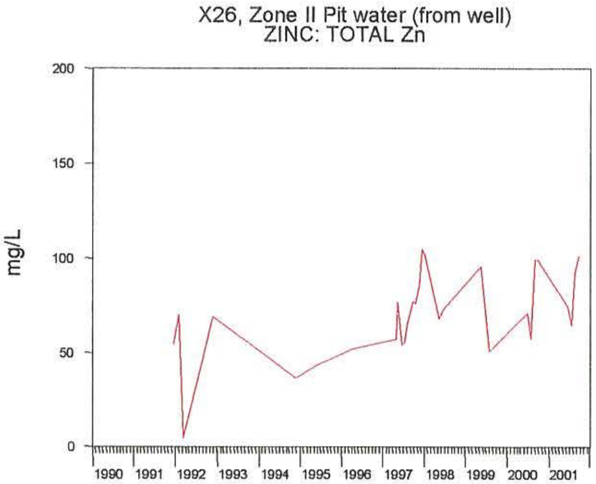
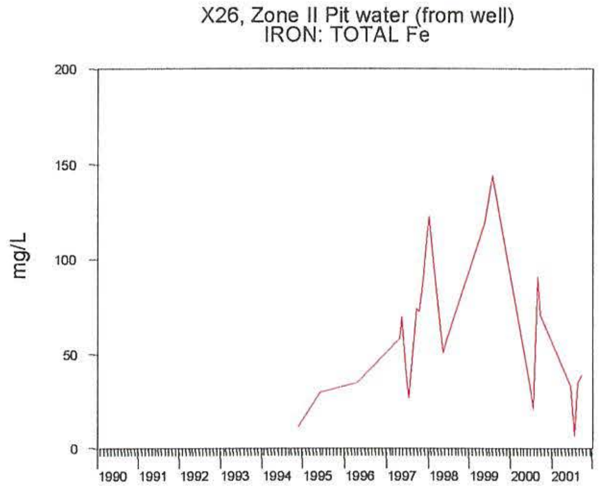


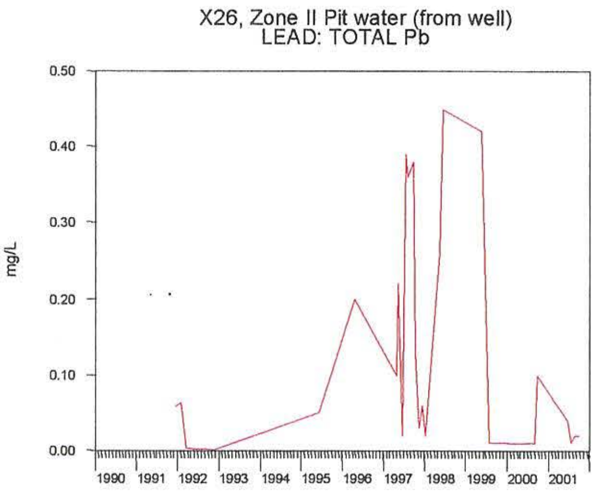
Figure B4. Surface Water Quality of Faro Pits and Dumps
Zone II Pit











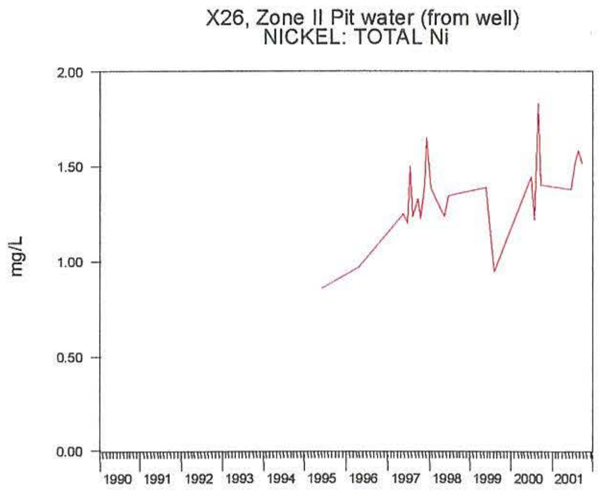
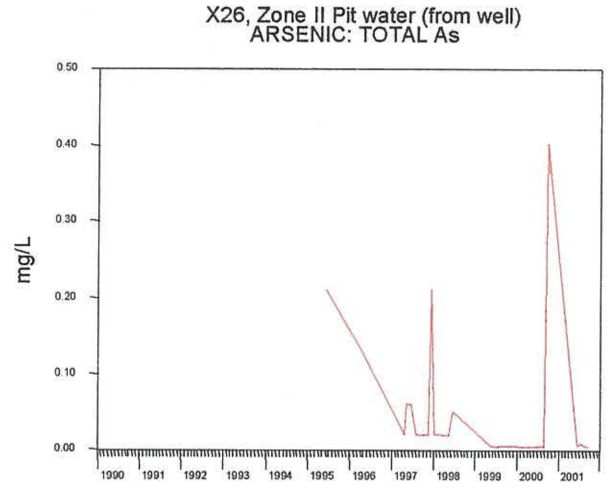


Figure B4. Surface Water Quality of Faro Pits and Dumps
Zone II Pit



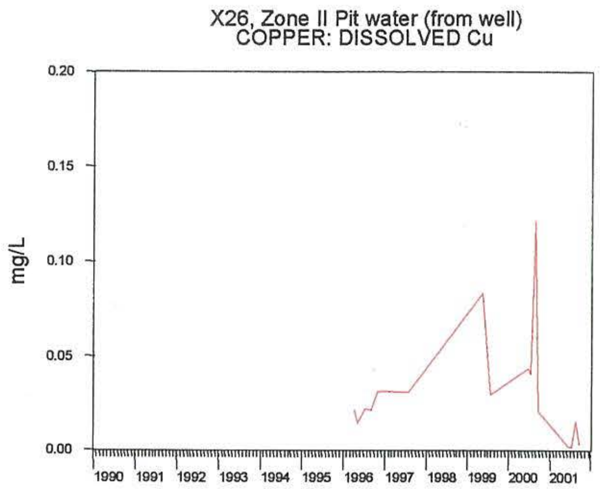
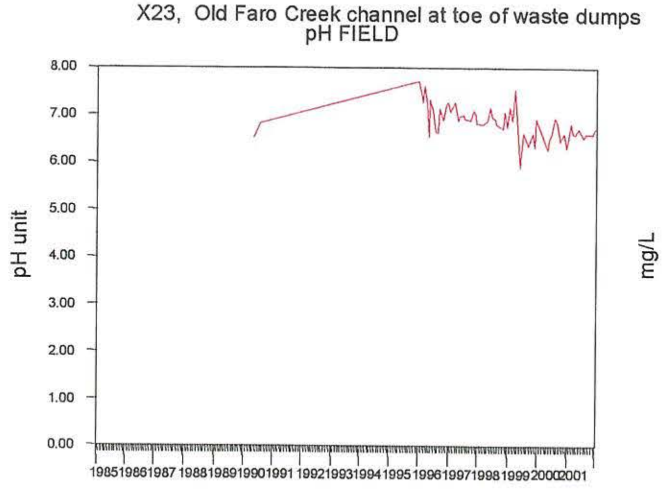
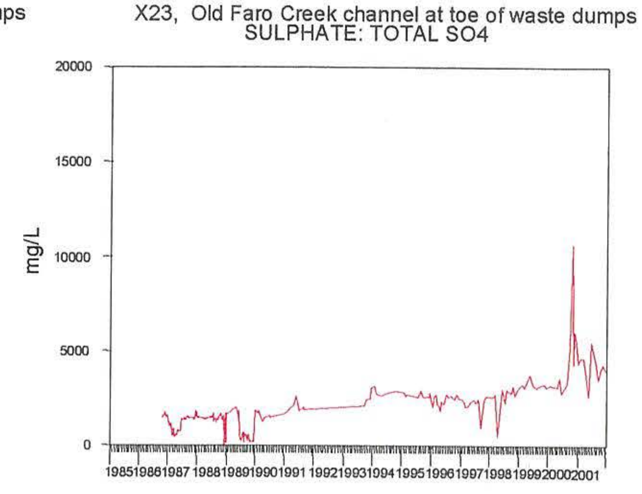
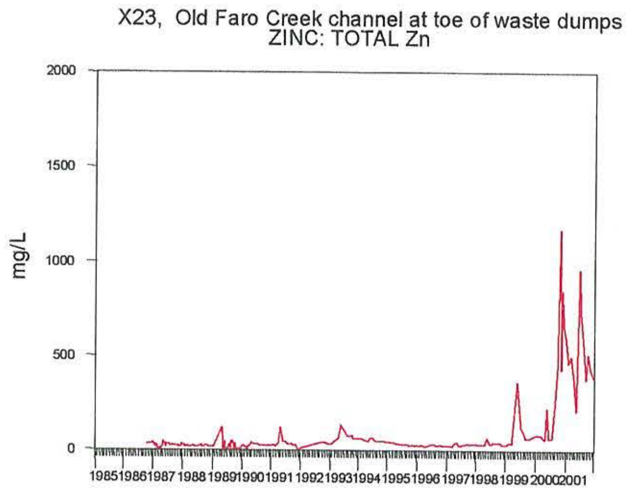
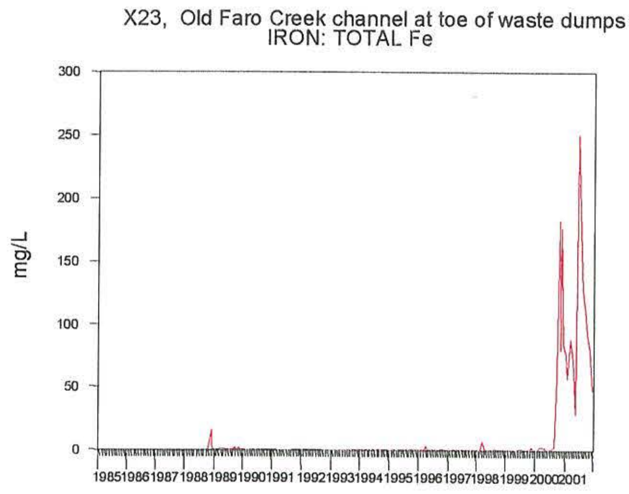


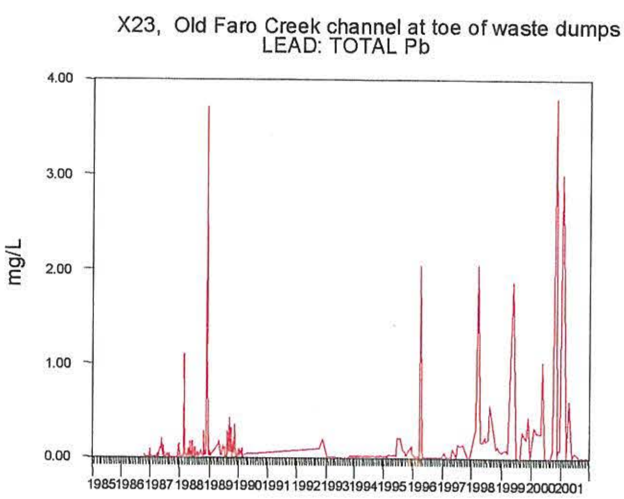
Figure B5. Surface Water Quality of Faro Pits and Dumps
Main/Intermediate Waste Dump











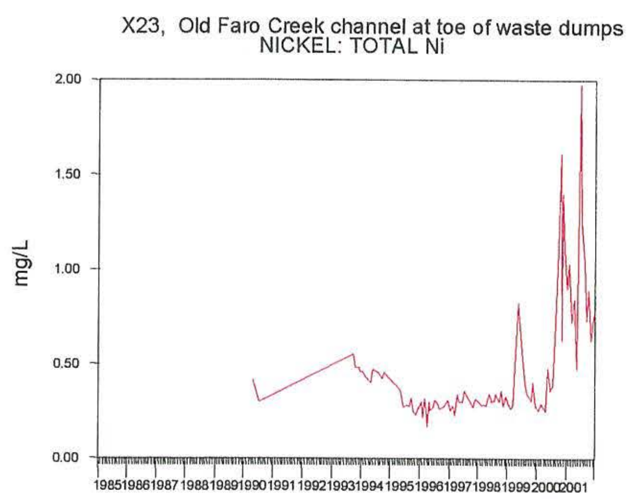
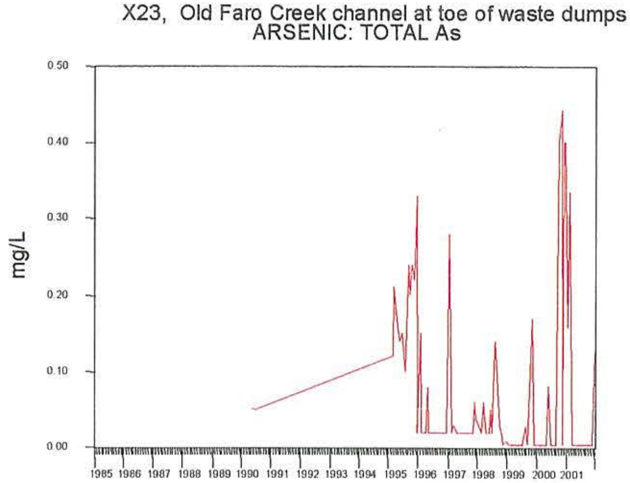


Figure B5. Surface Water Quality of Faro Pits and Dumps
Main/Intermediate Waste Dump



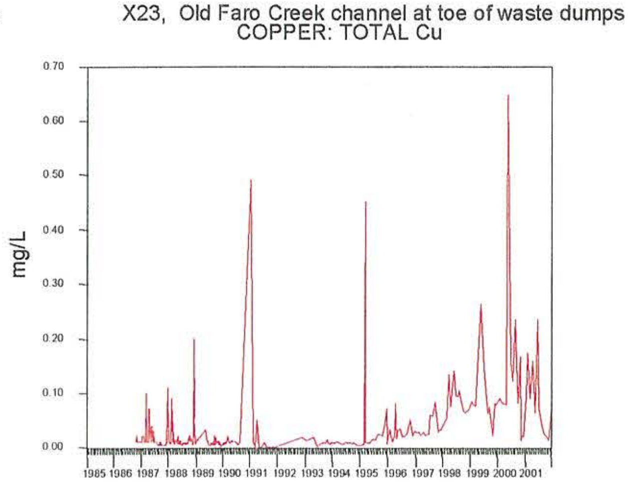


Figure B6. Surface Water Quality
North Fork of Rose Creek

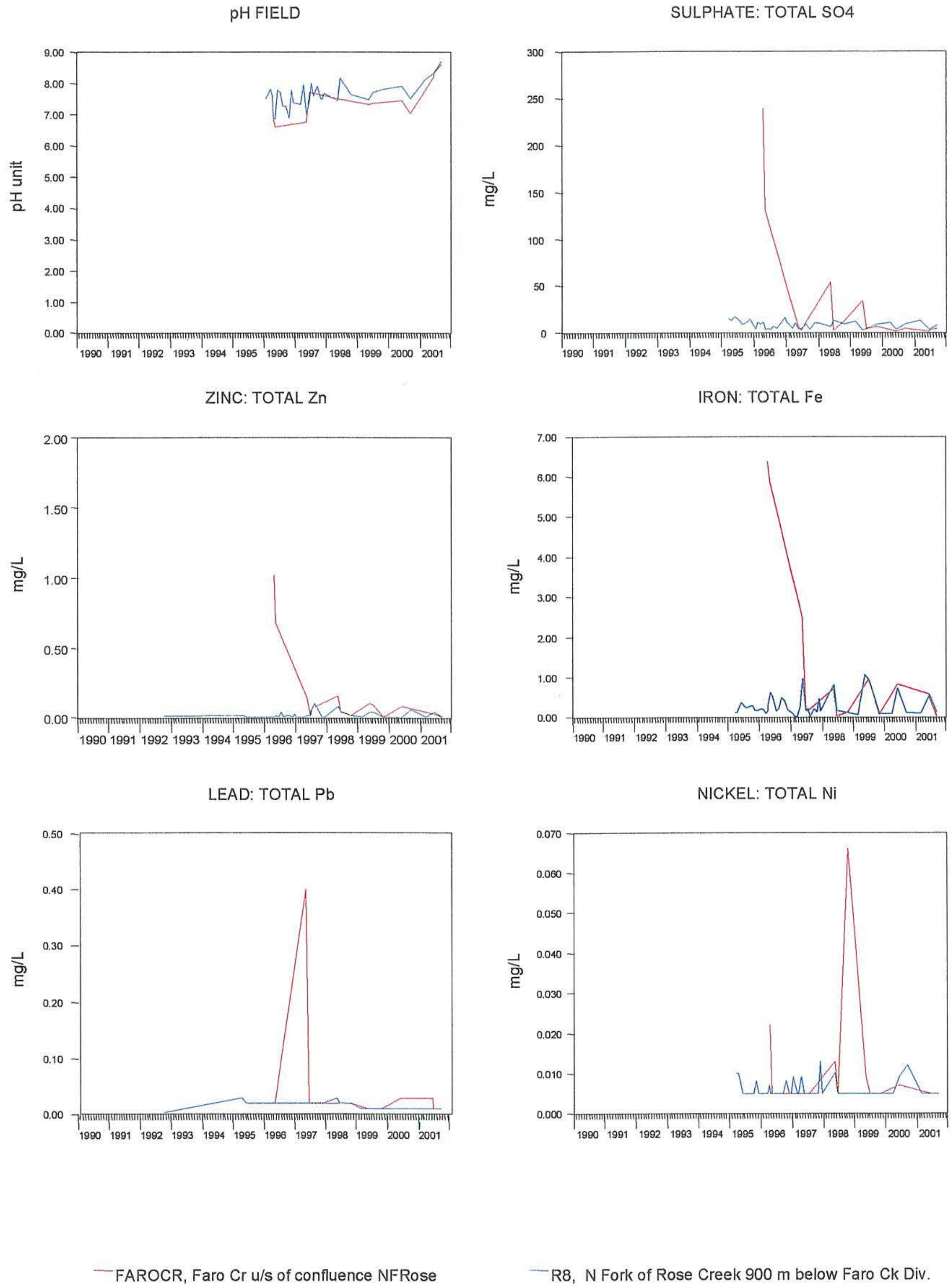
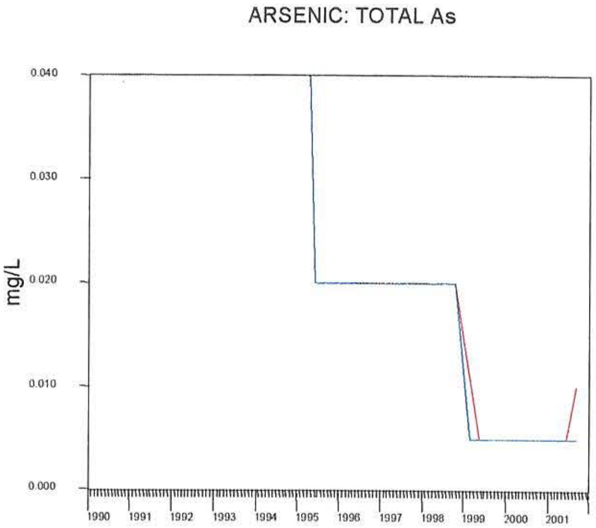
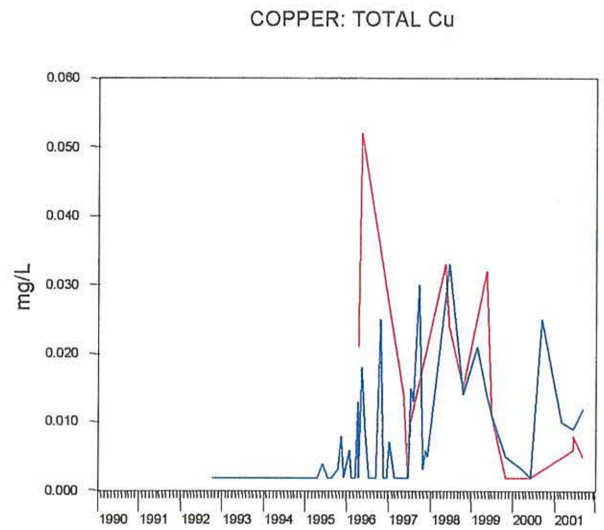


Figure B6. Surface Water Quality
North Fork of Rose Creek





FAROCR, Faro Cr u/s of confluence NFRose

R8, N Fork of Rose Creek 900 m below Faro Ck Div.

Figure B7. Surface Water Quality of Rose and Anvil Creek
North Fork of Rose Creek

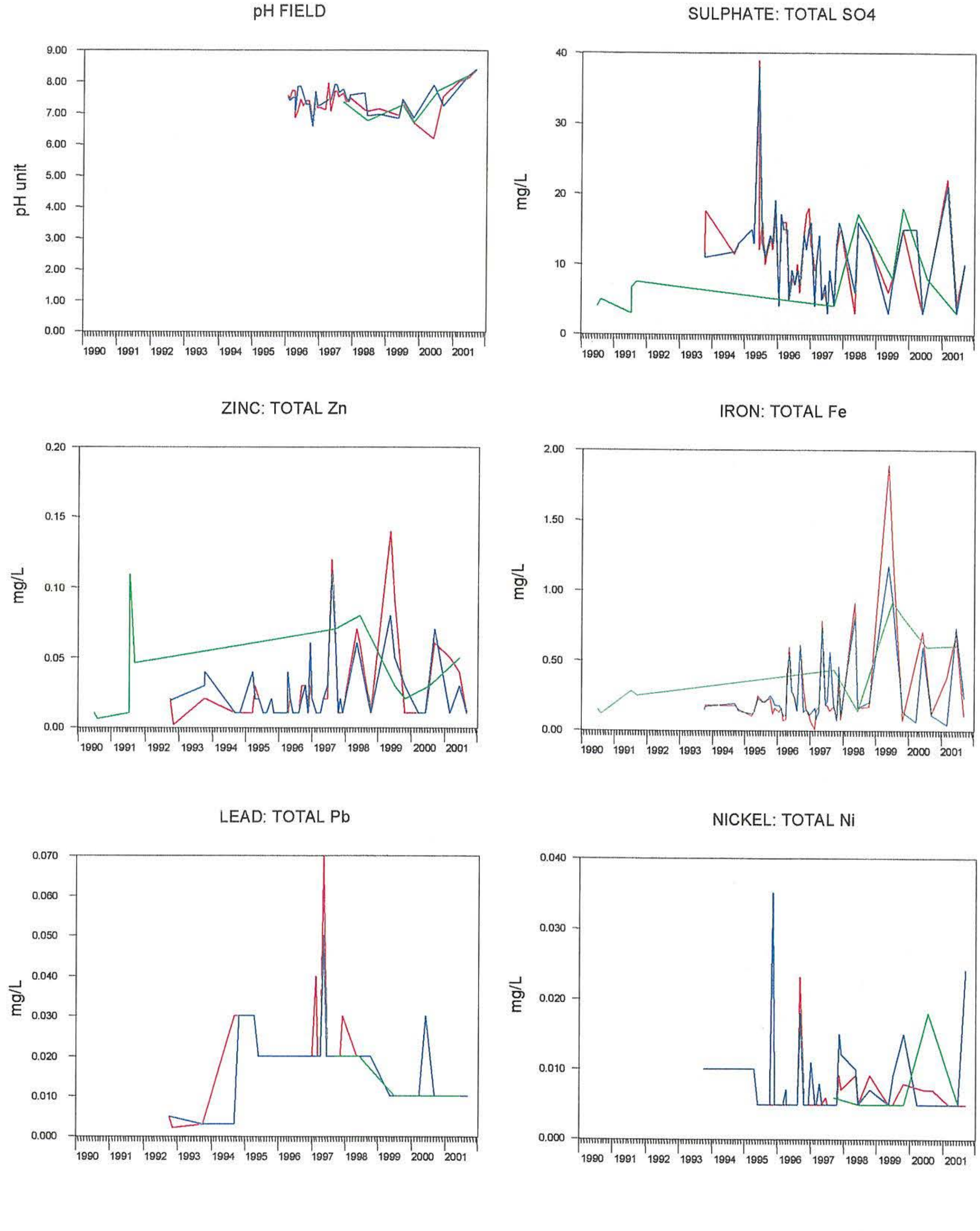
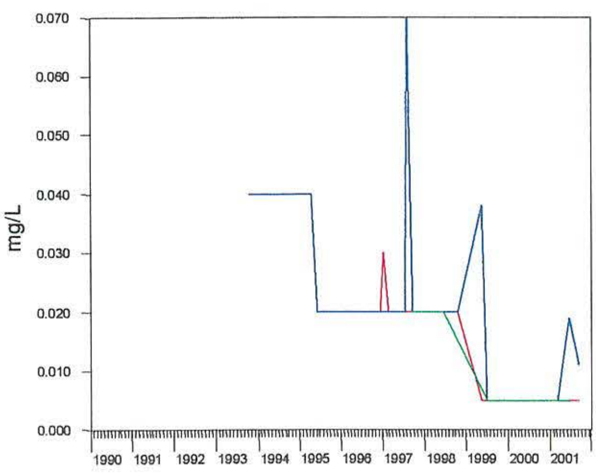
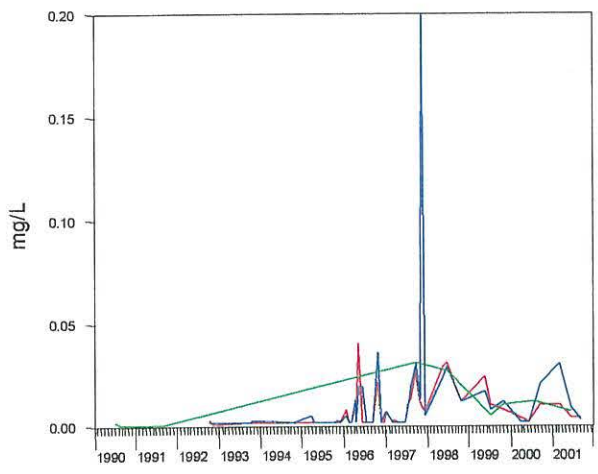


Figure B7. Surface Water Quality of Rose and Anvil Creek
North Fork of Rose Creek

ARSENIC: TOTAL As



COPPER: TOTAL Cu

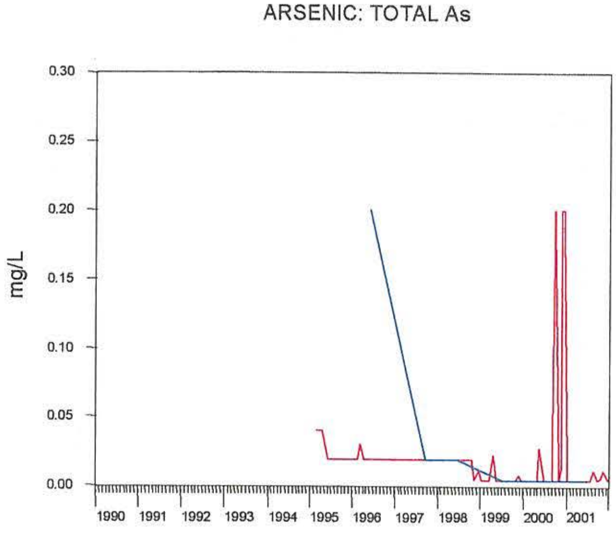


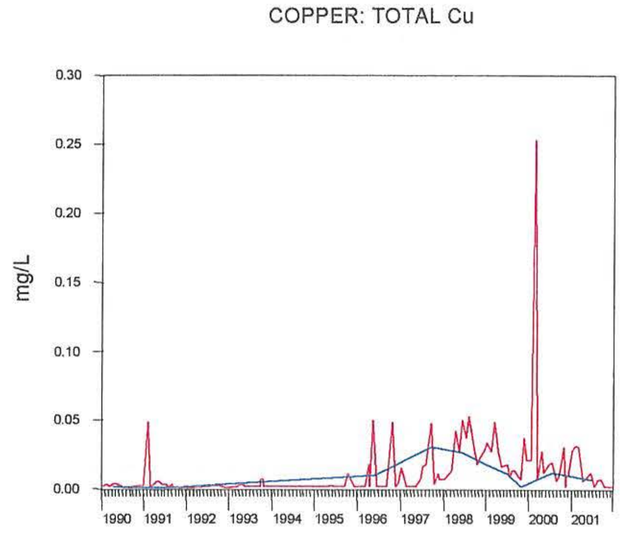
—R9, N Fork of Rose Creek adjacent BH1 and BH2

—R10, North Fork of Rose Creek u/s of rock drain

—NF1, North Fork Rose Creek Site 1 u/s of Haul Road

Figure B8. Surface Water Quality of Rose and Anvil Creek
North Fork of Rose Creek

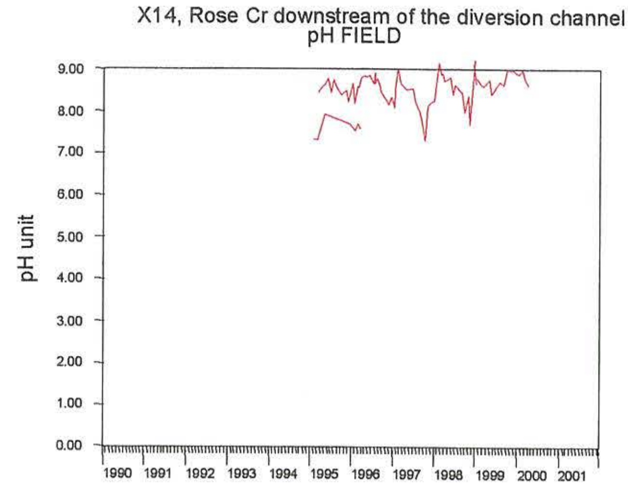


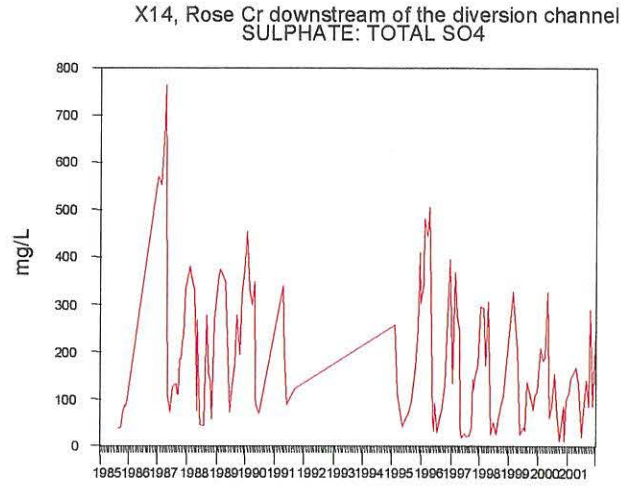


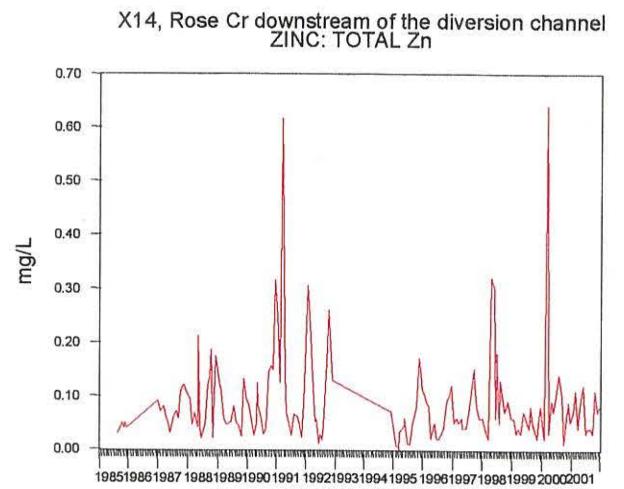
X2, N Fork of Rose Creek u/s of mine access road

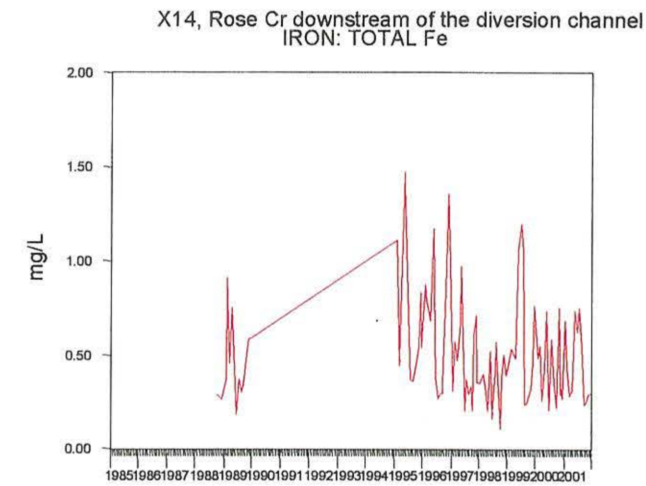
NF2, North Fork Rose Creek Site 2 d/s of Haul Road

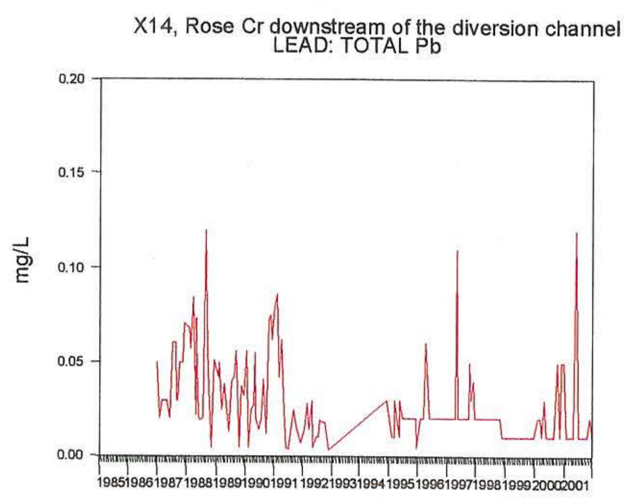
Figure B10. Surface Water Quality of the Rose and Anvil Creek Down Gradient of Cross Valley Dam











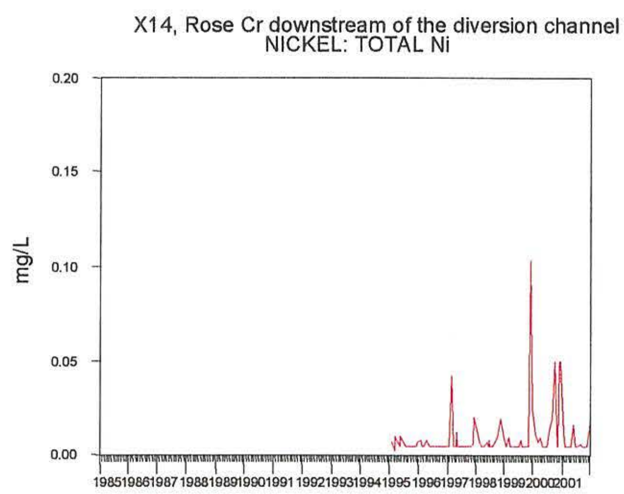
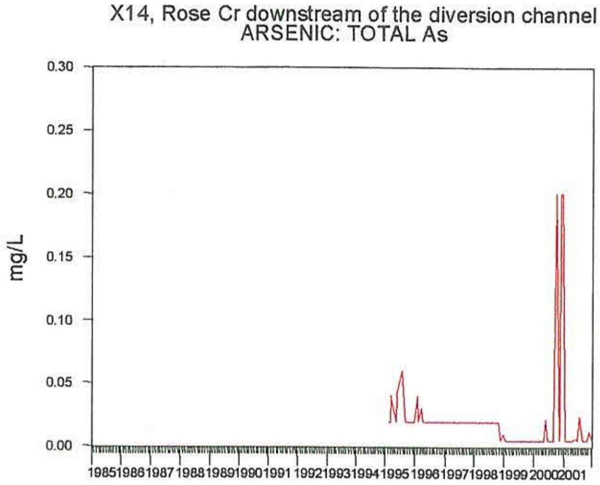


Figure B10. Surface Water Quality of the Rose and Anvil Creek Down Gradient of Cross Valley Dam



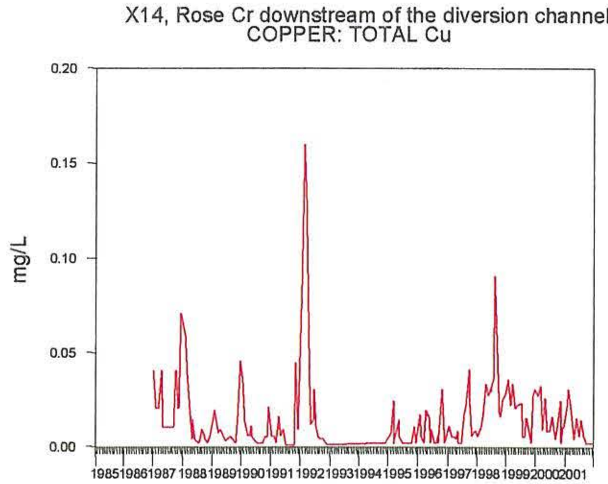


Figure B11. Surface Water Quality of Rose Creek Tailings Impoundment
North Fork of Rose Creek

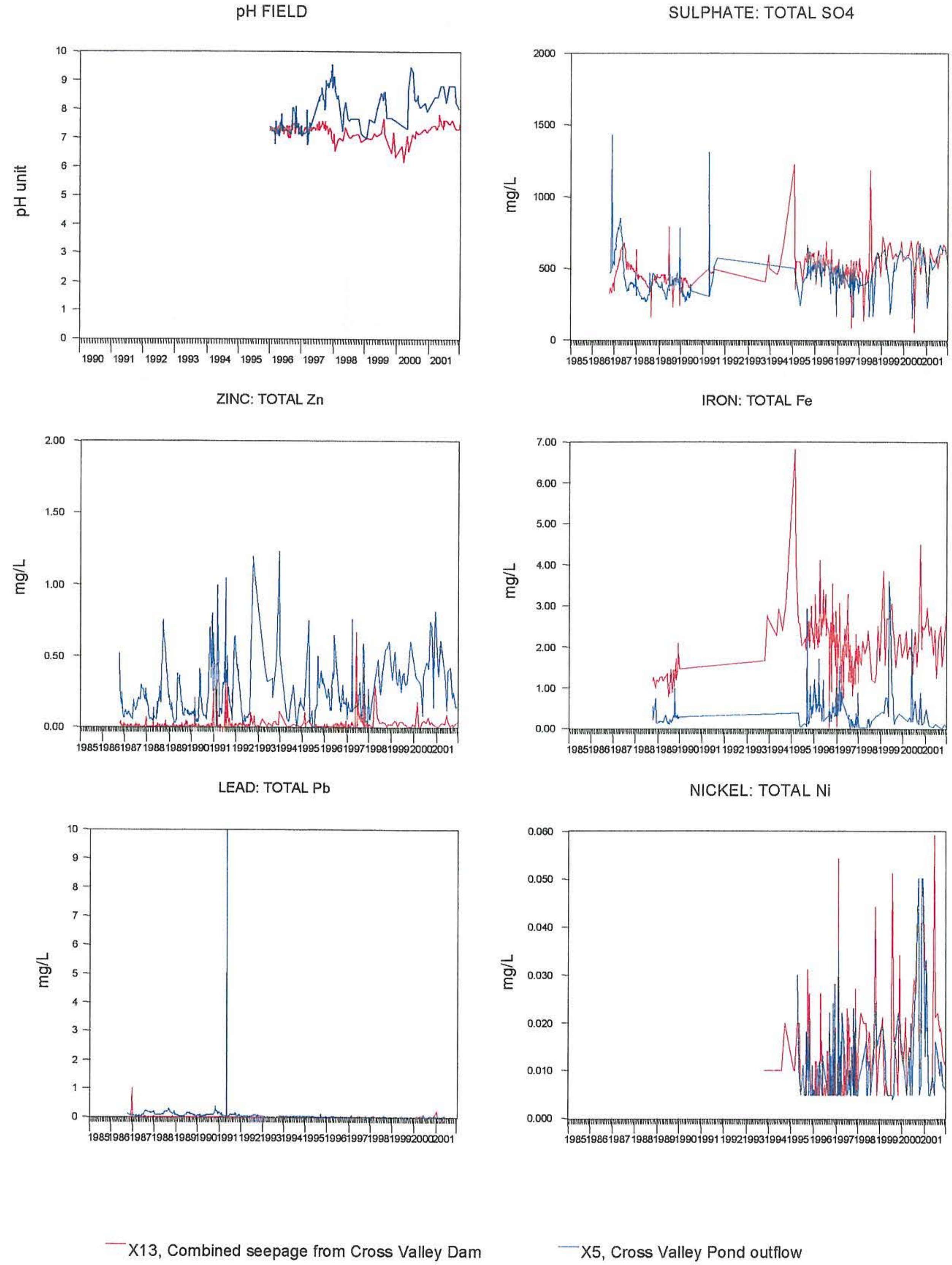


Figure B12. Surface Water Quality of the Rose Creek Tailings Impoundment
Cross Valley Dam

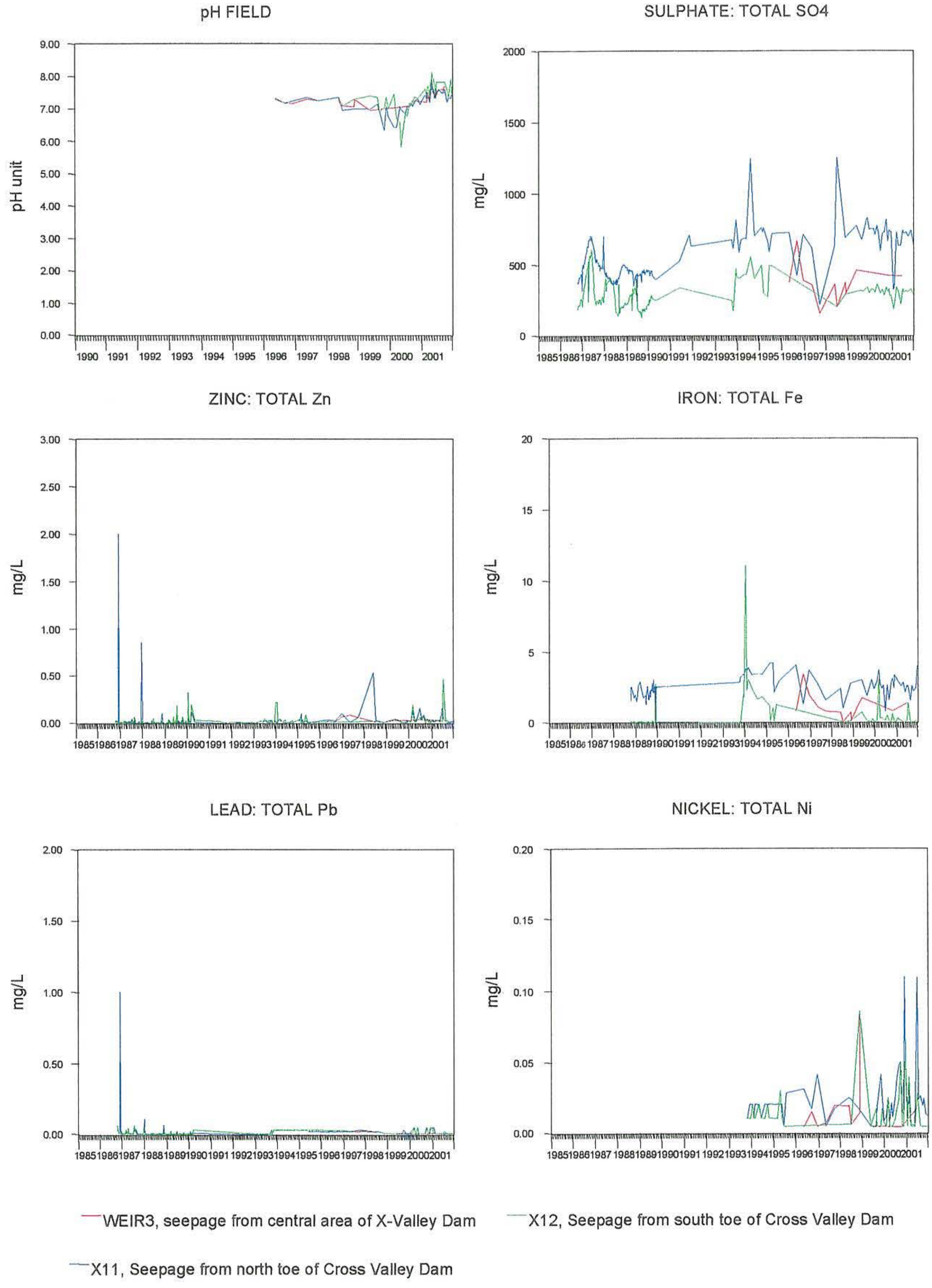
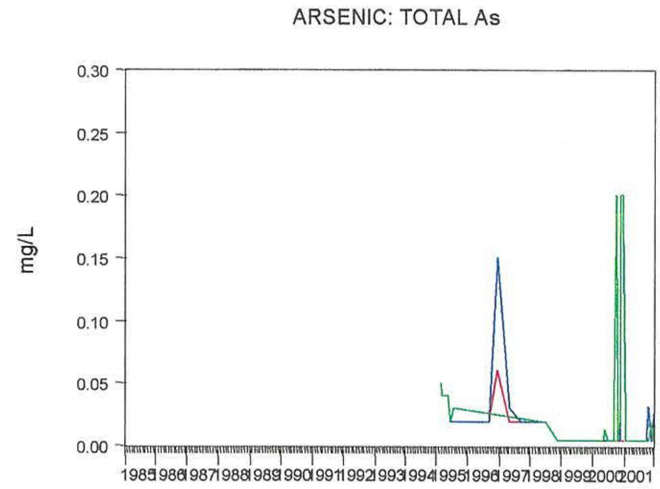
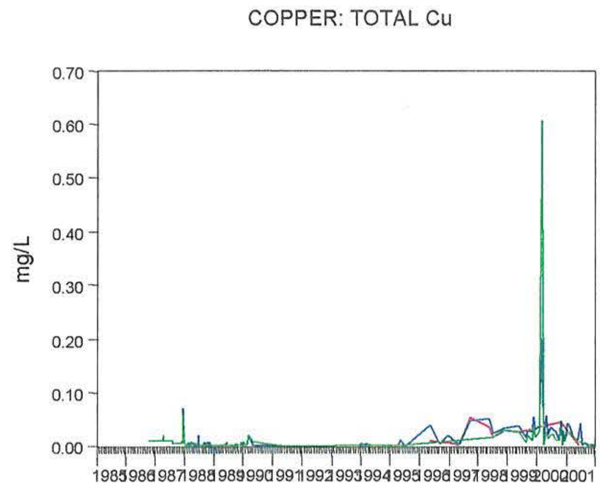


Figure B12. Surface Water Quality of the Rose Creek Tailings Impoundment
Cross Valley Dam





WEIR3, seepage from central area of X-Valley Dam
X12, Seepage from south toe of Cross Valley Dam
X11, Seepage from north toe of Cross Valley Dam

List of Figures – Appendix B
Surface Water Quality of the Faro Mine Site

Appendix B. Faro Main Pit Profiles

Figure B13. Faro Main Pit Profiles - Sulphate

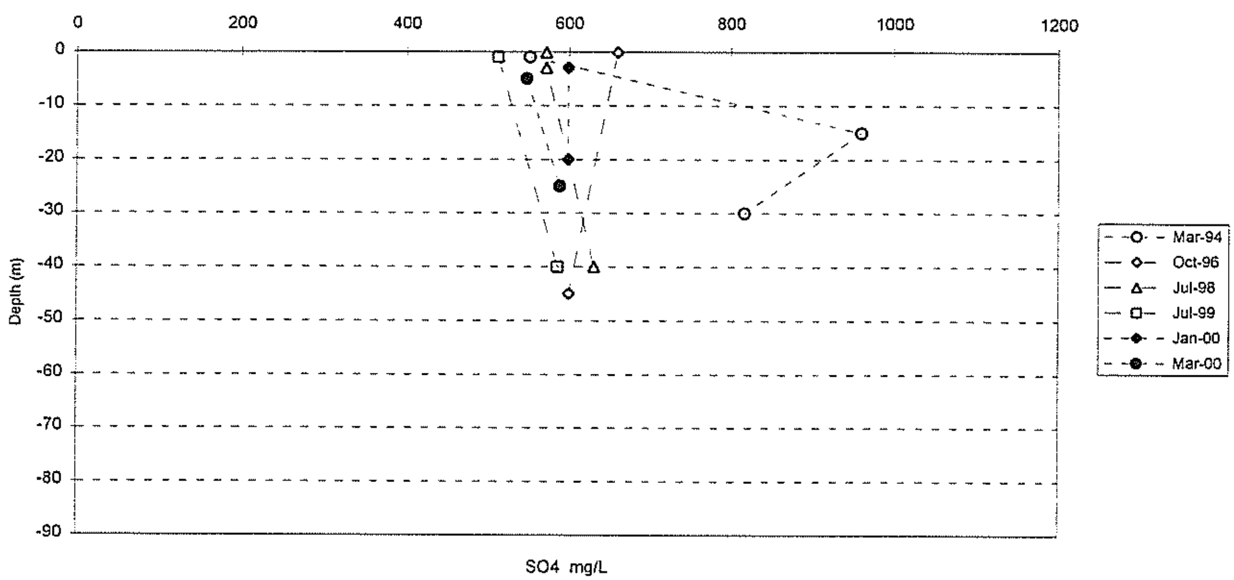
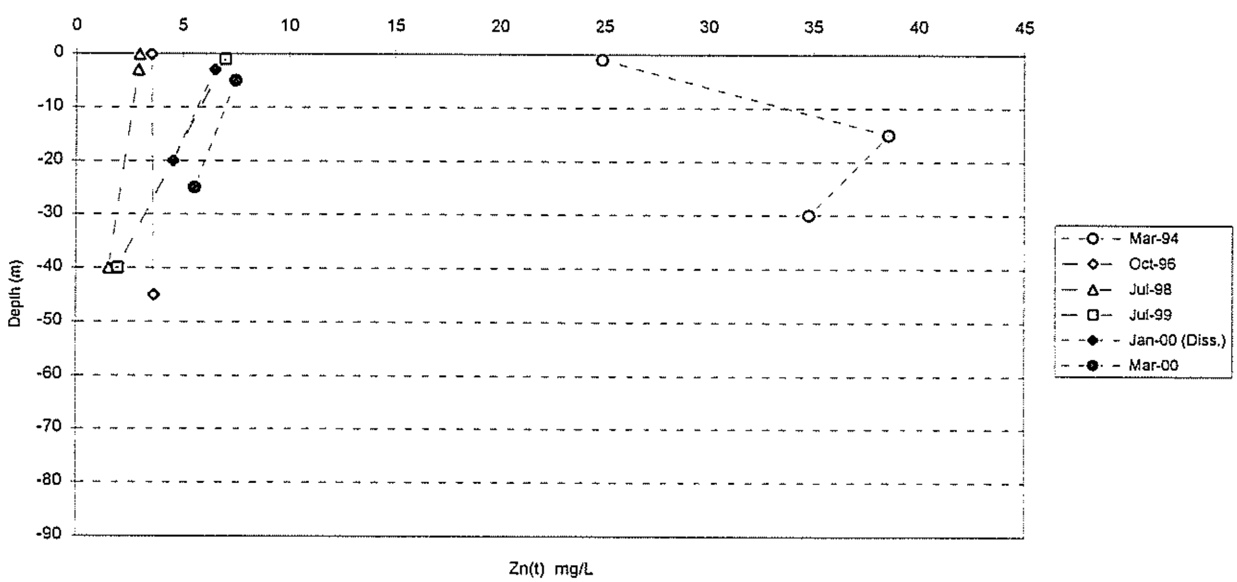


Figure B14. Faro Main Pit Profiles - Total Zinc



Appendix B. Faro Main Pit Profiles

Fibure B15. Faro Main Pit Profiles - Total Iron

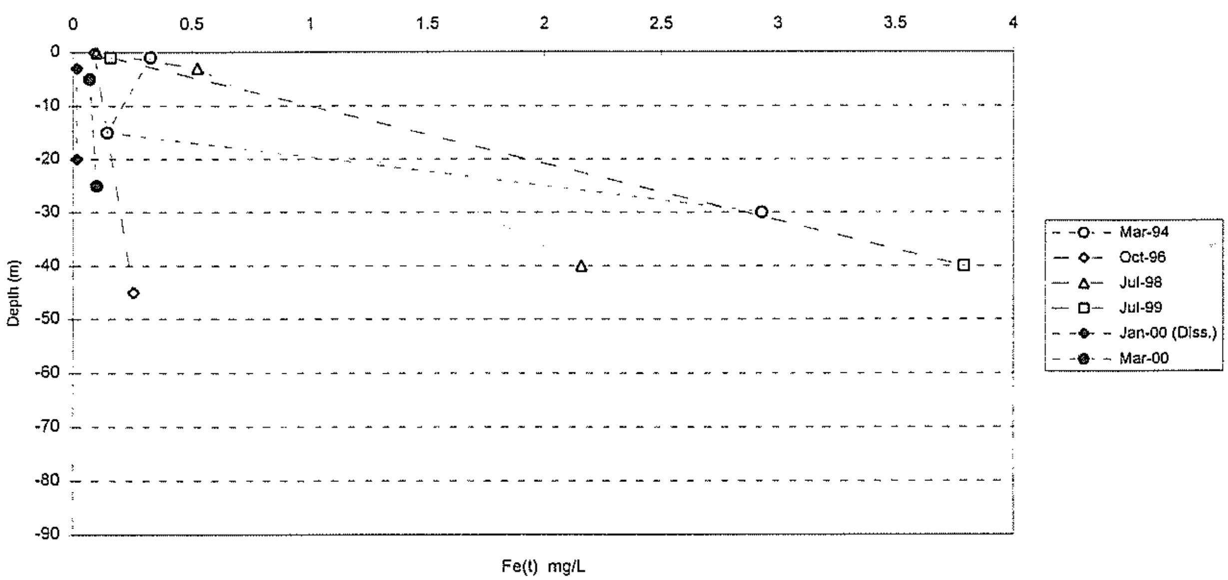
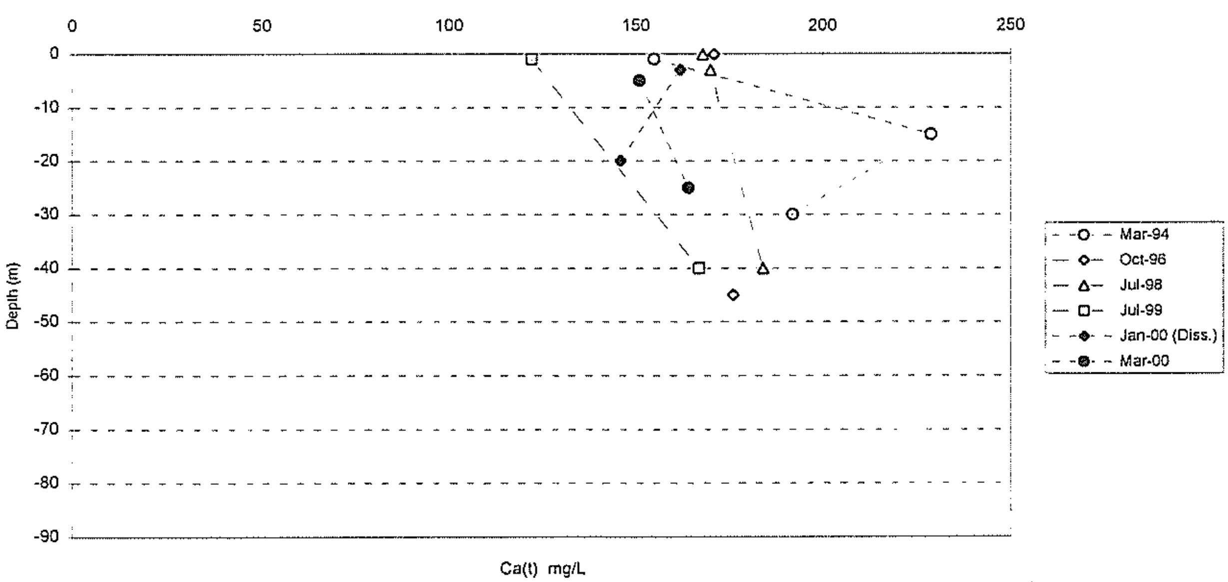


Figure B16. Faro Main Pit Profiles - Total Calcium



Appendix B. Faro Main Pit Profiles

Figure B17. Faro Main Pit Profiles - Total Magnesium

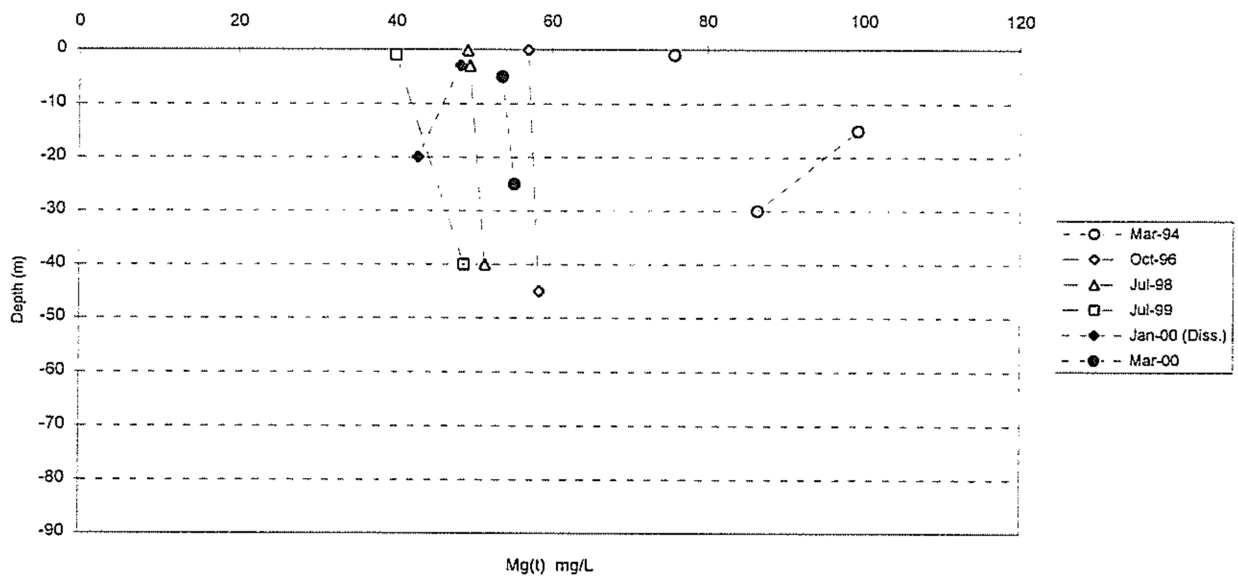
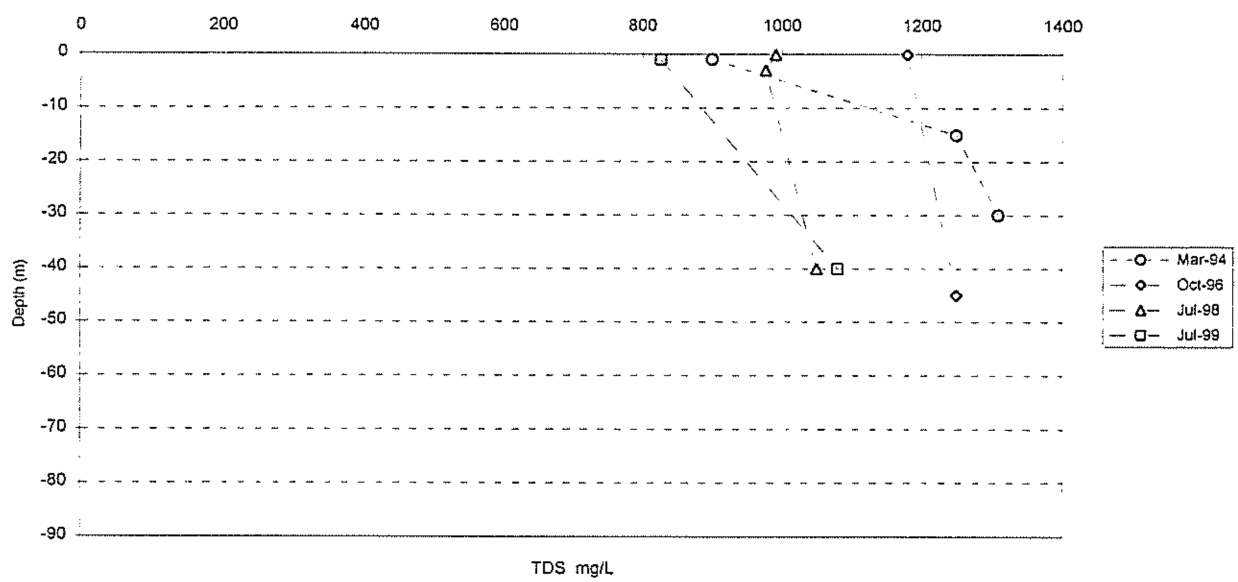
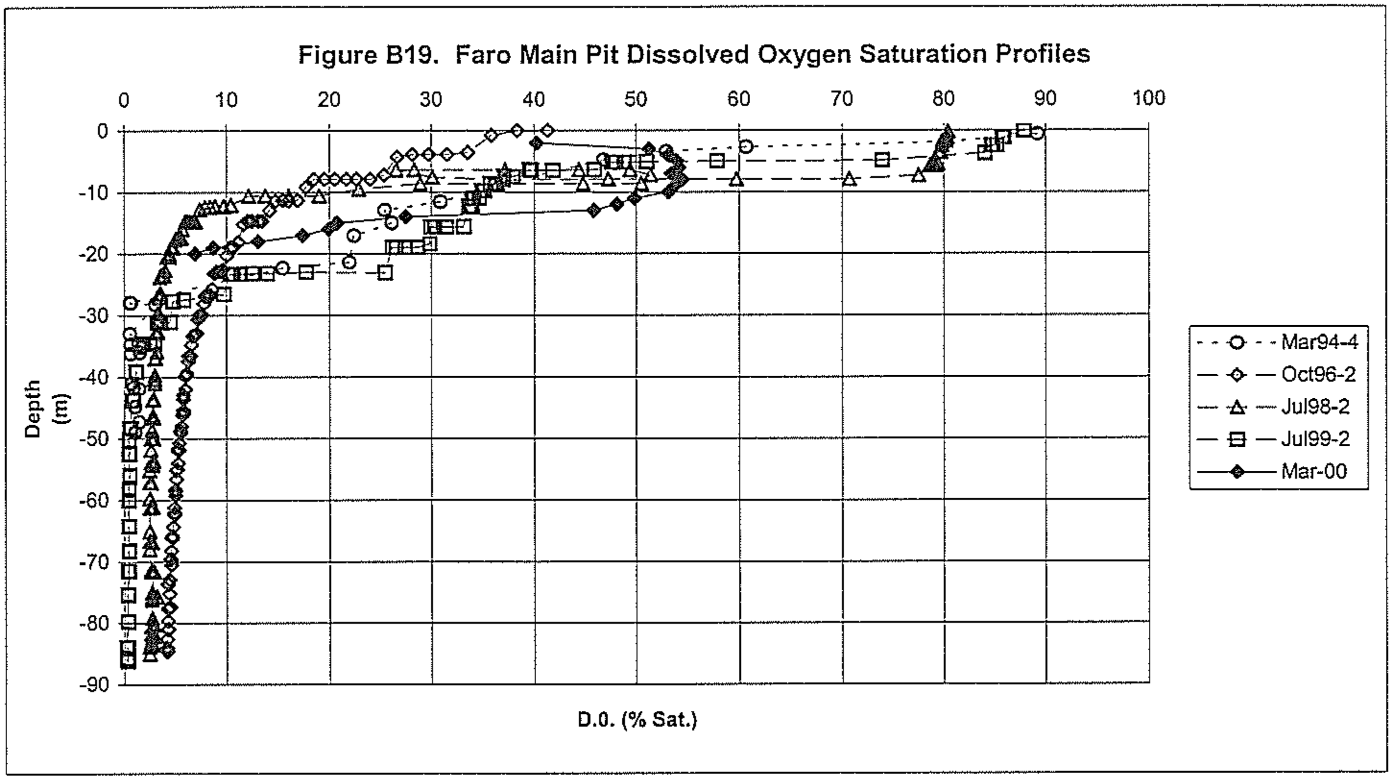
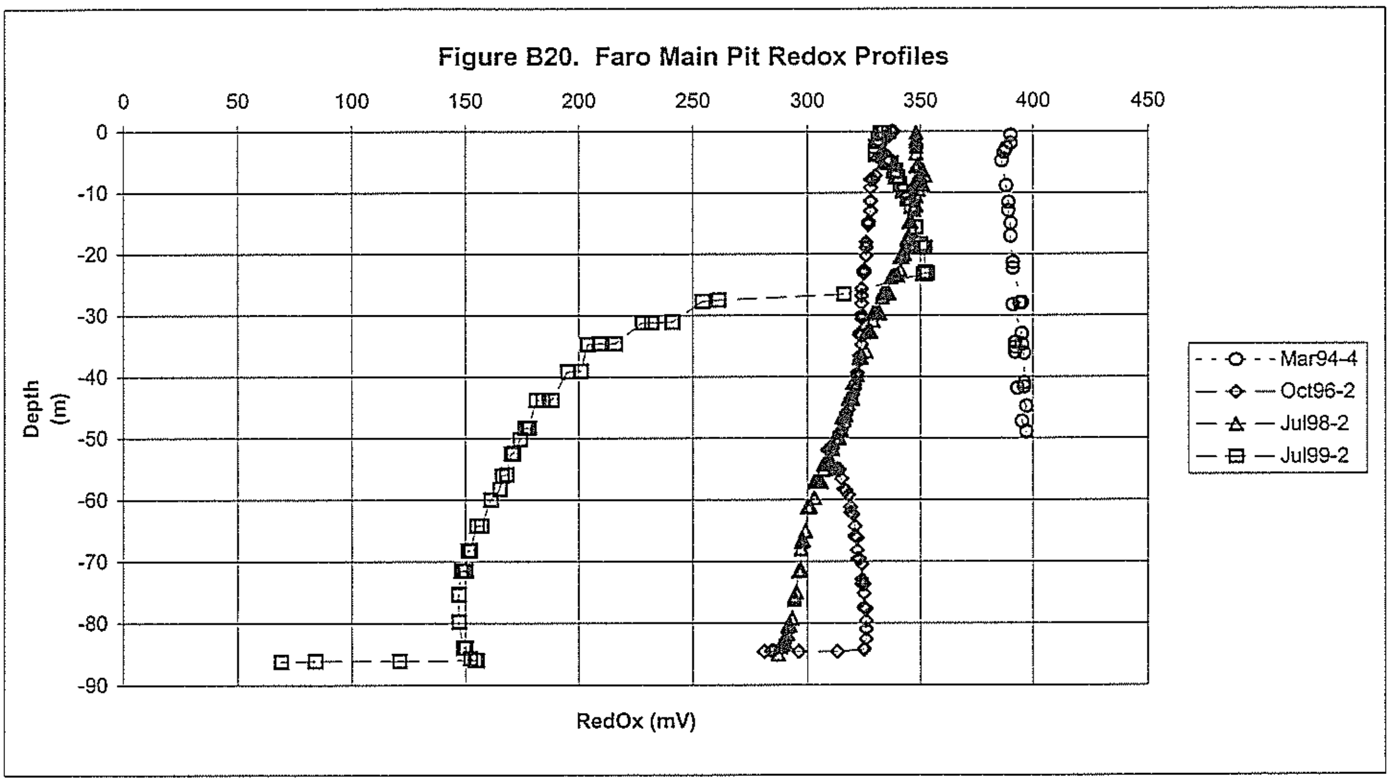


Figure B18. Faro Main Pit Profiles - Total Dissolved Solids

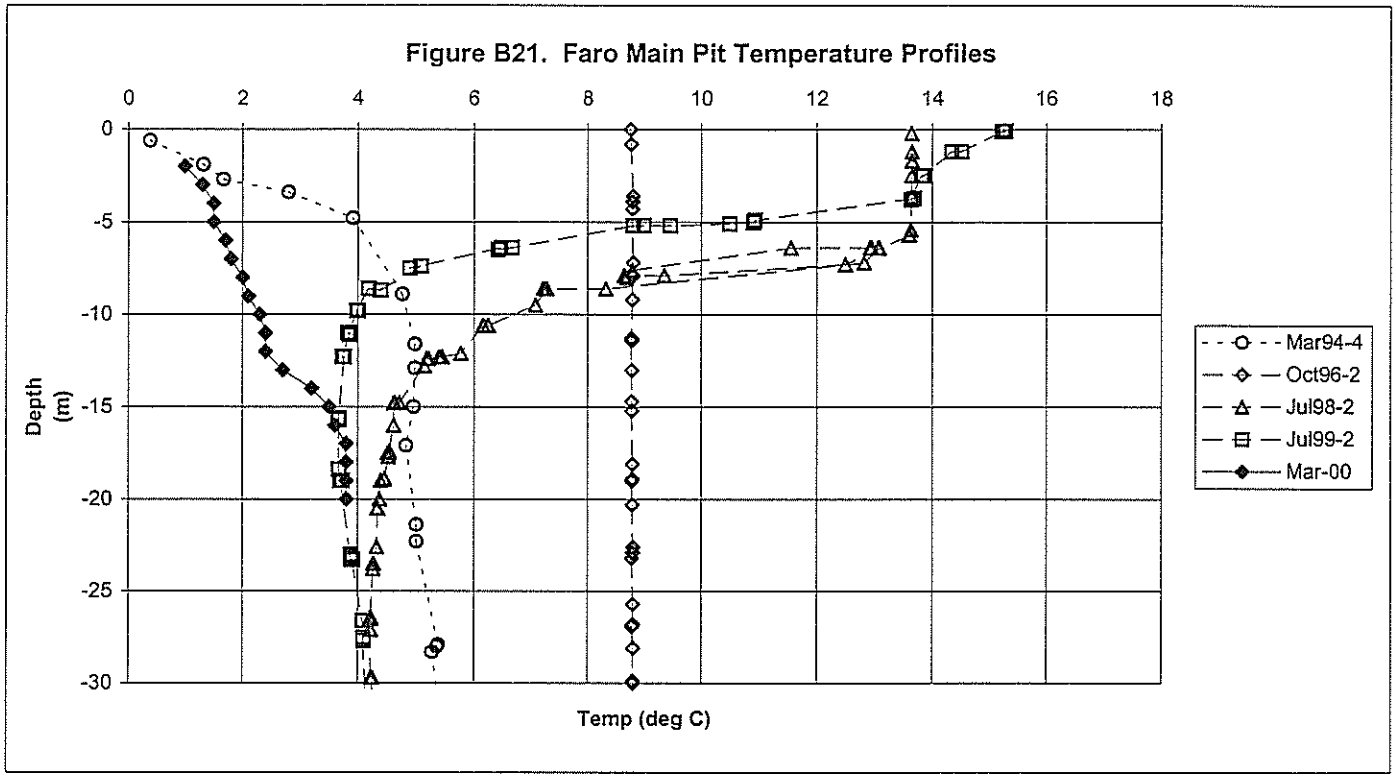


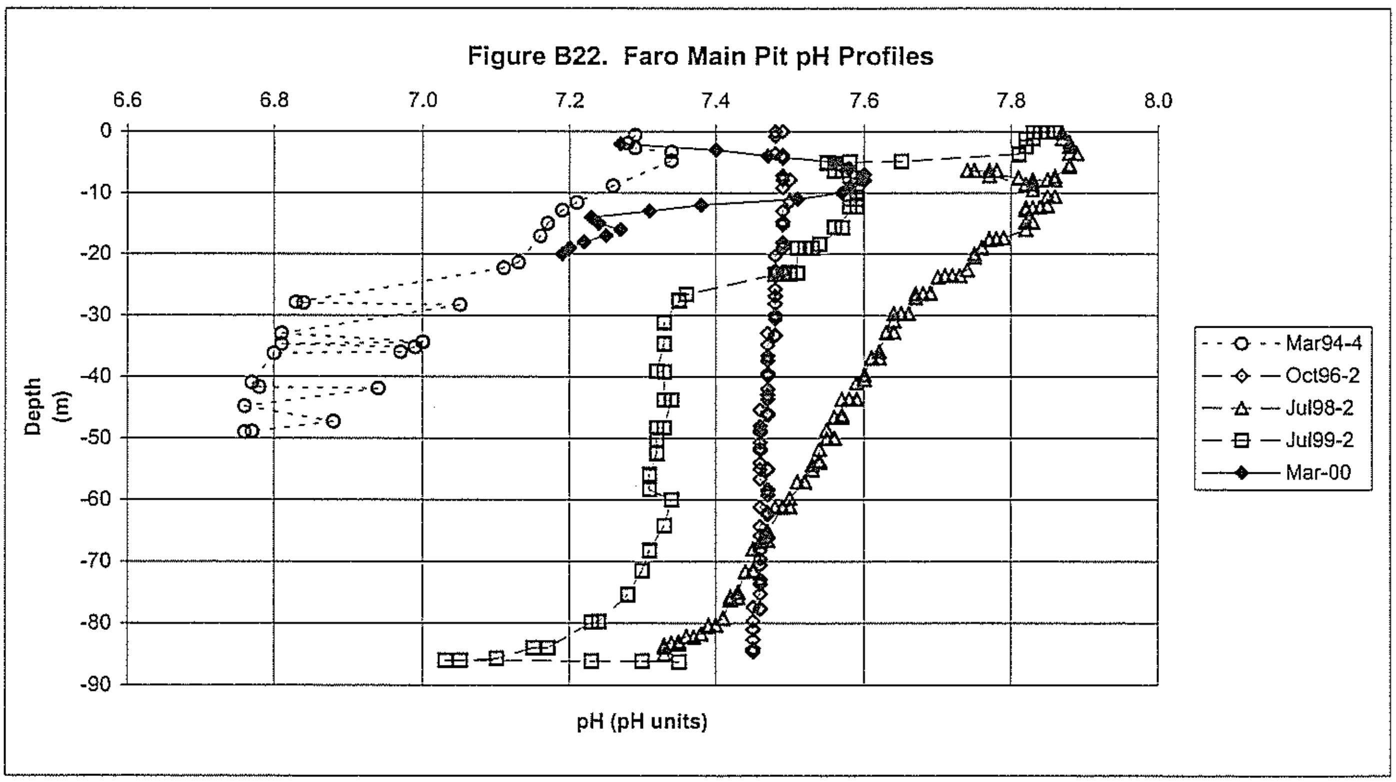
Appendix B. Faro Main Pit Profiles





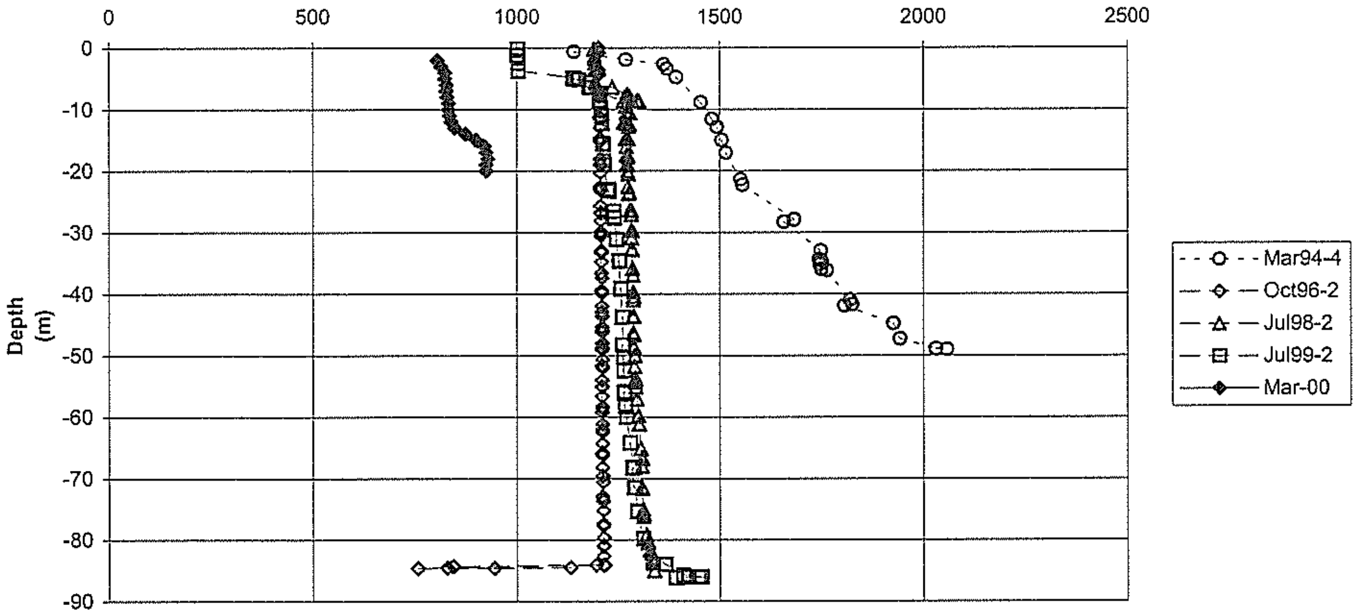
Appendix B. Faro Main Pit Profiles





Appendix B. Faro Main Pit Profiles

Figure B23. Faro Main Pit Conductivity Profiles



Specific Condutivity (micro Siemens / cm)

Appendix C

Faro Mine Site Surface Water Quality Data Tables

List of Tables – Appendix C
Surface Water Quality at the Faro Mine Site

C12: Surface Water Quality of the Area by Tailings Impoundment, Faro Mine Site – Total Metals X5, X13, X4, X12

Table C1. Surface Water Quality of Background Waters, Faro Mine Site - Dissolved Metals

Date	AG-D mg/L	AL-D mg/L	AS-D mg/L	B-D mg/L	BA-D mg/L	BE-D mg/L	BI-D mg/L	CA-D mg/L	CD-D mg/L	CO-D mg/L	CR-D mg/L	CU-D mg/L	FE-D mg/L	K-D mg/L	LA-D mg/L
STATION: Faro Creek Diversion Channel FC															
13/09/89												0.001	0.022		
5/7/1990												0.001	0.052		
7/8/1990												0.001	0.058		
8/9/1991												0.001	0.053		
6/6/1996	<0.01	<0.2	<0.2	<0.1	<0.01	<0.005	<0.1	2.17	<0.01	<0.01	<0.01	<0.01	0.07	<2	
STATION: R6															
24/02/96									<.0005						
30/03/96									<.0005						
1/8/1996	<.003	0.05	<.02		0.06	<.001	<.04	34.9	<.002	<.005	<.005	<.002	0.02		<.005
4/9/1996	<.003	<.05	<.02		0.059	<.001	<.04	35	<.0005	<.005	<.005	0.002	0.03		<.005
5/8/1998	0.0011	<.01	<.004	0.03	0.0648	0.0003	<.008	39.69	<.0004	<.001	0.002	0.0024	0.035	1.2	0.002
9/9/1998	<.001	<.05	<.005	<.05	0.038	<.001	<.04	39.6	0.001	<.005	0.023	0.004	<.01	<1	<.005
1/8/2000	<.0001	0.027	<.001	<.002	0.084	0.0002	<.001	30.7	<.0001	<.0002	<.0002	0.0038	0.047	0.77	0.0024
6/9/2000	<.0001	0.038	<.001	0.029	0.0653	0.0003	<.001	30.54	<.0001	<.0002	<.0002	<.0001	0.043	0.9	<.0002
STATION: H7															
1/8/1996	<.003	0.05	<.02		0.035	<.001	<.04	20.2	<.002	<.005	<.005	<.002	0.04		<.005
4/9/1996	<.003	<.05	<.02		0.036	0.002	<.04	18.7	<.0005	<.005	<.005	<.0005	0.13		<.005
5/8/1998	<.0006	<.01	<.004	0.12	0.0397	<.0002	<.008	22.1	<.0004	<.001	<.001	0.0019	0.035	0.5	<.001
9/9/1998	<.001	<.05	<.005	<.05	0.037	<.001	<.04	24.4	<.001	<.005	<.005	<.002	<.01	<1	<.005
25/02/99	<.003	<.05	<.005	0.22	0.017	<.001	<.04	41.2	<.001	<.005	<.005	0.008	<.01	1	<.005
17/05/99	<.003	<.05	0.011	<.05	0.02	0.002	<.04	6.1	0.002	<.005	<.005	0.081	0.1	1	0.012
4/7/1999	<.003	<.05	<.005	0.21	0.007	<.001	<.04	15.7	<.001	<.005	<.005	<.002	0.3	<1	<.005
30/10/99	<.003	<.05	<.005	<.05	0.084	<.001	<.04	27.6	<.001	<.005	<.005	0.006	<.01	3	<.005
26/03/00	<.003	<.05	<.005	<.05	0.156	<.001	<.05	40.4	<.001	<.005	<.005	<.002	<.01	2	<.005
3/6/2000	<.003	<.05	<.005	<.05	<.002	<.001	<.05	10	<.001	<.005	<.005	<.002	0.08	1	<.005
1/8/2000	<.0001	0.029	<.001	<.002	0.0795	<.0001	<.001	16.8	<.0001	<.0002	<.0002	0.0031	0.065	0.45	<.0002
6/9/2000	<.0001	0.015	<.001	0.011	0.054	0.0002	<.001	18.48	<.0001	<.0002	<.0002	0.0034	0.059	0.572	<.0002
12/9/2000	<.003	<.05	<.005	<.05	0.01	<.001	<.05	16.2	<.001	<.005	<.005	0.003	<.01	<1	<.005
5/3/2001	<.003	0.09	<.005	0.07	0.25	<.001	<.05	40	<.001	<.005	<.005	0.005	<.01	<1	<.005
13/06/01	<.003	<.05	<.005	0.06	0.112	<.001	<.05	9.5	<.001	<.005	<.005	<.002	0.17	<1	<.005
8/9/2001	<0.003	<0.05	0.033	<0.05	0.082	<0.001	<0.05	24.4	<0.001	<0.005	<0.005	<0.002	0.14	<1	0.011
STATION: W10															
6/6/1996	<0.01	<0.2	<0.2	<0.1	<0.01	<0.005	<0.1	9.1	<0.01	<0.01	<0.01	<0.01	0.03	<2	
3/7/1999	<.003	<.05	<.005	0.2	<.002	<.001	<.04	9	<.001	<.005	<.005	<.002	0.26	<1	<.005
3/6/2000	<.003	<.05	<.005	<.05	<.002	<.001	<.05	6.8	<.001	<.005	0.036	<.002	<.01	1	<.005
11/6/2001	<.003	<.05	<.005	0.08	0.049	<.001	<.05	8.3	0.001	<.005	<.005	<.002	0.03	<1	<.005

Date	MG-D mg/L	MN-D mg/L	MO-D mg/L	NA-D mg/L	NI-D mg/L	P-D mg/L	PB-D mg/L	S-D mg/L	SB-D mg/L	SE-D mg/L	SI-D mg/L	SN-D mg/L	SR-D mg/L	TI-D mg/L	V-D mg/L	W-D mg/L	ZN-D mg/L
STATION: Faro Creek Diversion Channel FC																	
13/09/89																	0.014
5/7/1990																	0.004
7/8/1990																	0.009
8/9/1991																	0.02
6/6/1996	0.447	<0.005	<0.03	<2	<0.02	<0.3	<0.05		<0.2	<0.2	3.38	<0.03	0.018	<0.01	<0.03		0.006
STATION: R6																	
24/02/96							<.005										
30/03/96							<.005										
1/8/1996	9.3	0.01	<.002	1	<.005	<.04	<.02	1	<.03		2.5		0.116	<.005	<.005	<.03	<.01
4/9/1996	9.1	0.01	<.002	7	<.005	0.07	<.005	<1	<.03		4.2		0.118	<.005	<.005	<.03	<.005
5/8/1998	10.63	0.004	0.0011	2.2	<.001	0.123	<.004	2	0.012	<.001	2.467	<.002	0.1245	<.001	<.001	<.006	<.002
9/9/1998	10.2	0.04	<.002	2	<.005	0.22	<.01	7	<.03	<.005	3.57	<.01	0.126	<.005	<.005	<.03	0.04
1/8/2000	8.275	0.0061	0.0023	1.73	0.0007	0.8	<.001	4.33	<.001	<.001	3.9	<.0004	0.0966	0.0014	0.0003	<.001	0.0013
6/9/2000	8.51	0.008	0.0004	2.105	<.0002	<2	<.001	5.955	<.001	<.001	4.109	<.0004	0.096	0.007	<.0002	<.001	<.0004
STATION: H7																	
1/8/1996	4.2	0.01	<.002	2	<.005	<.04	<.02	1	<.03		2.7		0.094	<.005	<.005	<.03	<.01
4/9/1996	3.9	<.01	<.002	7	<.005	0.2	<.005	1	<.03		4.9		0.091	<.005	<.005	<.03	0.006
5/8/1998	4.58	0.007	0.0012	2.6	<.001	<.008	<.004	<2	<.006	<.001	2.86	<.002	0.0965	<.001	0.003	<.006	<.002
9/9/1998	4.9	0.02	<.002	3	<.005	0.19	<.01	2.8	<.03	<.005	4.18	<.01	0.107	<.005	<.005	<.03	0.02
25/02/99	8.9	<.01	<.002	4	<.005	<.04	<.01	4	<.03	<.03	5.5	<.01	0.191	0.005	<.005	<.03	<.01
17/05/99	1.4	0.12	<.002	<1	0.022	0.54	<.01		<.03	<.03	0.6	<.01	0.039	<.005	0.018	<.03	0.02
4/7/1999	3.5	0.4	<.002	<1	<.005	<.04	<.01	2	<.03	<.03	3.5	<.01	0.023	<.005	<.005	<.03	<.01
30/10/99	5.6	0.02	<.002	3	<.005	0.04	<.01	3	<.03	<.005	4	<.01	0.13	<.005	<.005	<.03	0.28
26/03/00	8.2	<.01	<.002	4	<.005	<1	<.01	4	<.03	<.005	5.8	<.01	0.207	<.005	<.005	<.03	<.01
3/6/2000	1.8	0.03	<.002	1	<.005	<1	<.01	1	<.03	<.005	2.3	<.01	0.055	<.005	<.005	<.03	<.01
1/8/2000	3.207	0.0058	0.0028	1.66	0.0026	0.3	<.001	1.44	<.001	<.001	4.05	<.0004	0.0743	0.0008	0.002	<.001	0.006
6/9/2000	3.686	0.009	<.0001	1.859	<.0002	<.2	<.001	2.202	<.001	<.001	5.775	<.0004	0.078	0.008	<.0002	<.001	0.003
12/9/2000	<1	<.01	<.002	3	<.005	7	<.01	7	<.03	<.005	3.6	<.01	0.003	<.005	0.02	<.03	0.04
5/3/2001	8	0.01	<.002	7.48	<.005	<1	<.01	3.7	<.03	<.005	6.24	<.01	0.19	<.005	<.005	<.03	<.01
13/06/01	2.6	0.39	<.002	3	0.013	<1	<.01	2	<.03	0.038	3	<.01	0.044	<.005	<.005	<.03	<.01
8/9/2001	5.5	0.32	<0.002	5	<0.005	<1	<0.01	4	<0.03	<0.005	5.3	<0.01	0.124	<0.005	<0.005	<0.03	0.69
STATION: W10																	
6/6/1996	1.17	<0.005	<0.03	<2	<0.02	<0.3	<0.05		<0.2	<0.2	4.77	<0.03	0.035	<0.01	<0.03		0.005
3/7/1999	1.7	0.27	<.002	<1	<.005	<.04	<.01	<1	<.03	<.03	6.1	<.01	<.002	<.005	<.005	<.03	<.01
3/6/2000	1.4	<.01	<.002	2	<.005	<1	<.01	<1	<.03	<.005	3.5	<.01	0.041	<.005	<.005	<.03	<.01
11/6/2001	1.2	0.01	<.002	2	<.005	<1	<.01	<1	<.03	<.005	2.6	<.01	0.036	<.005	<.005	<.03	0.02

Table C2. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Dissolved Metals

Date	AG-D mg/L	AL-D mg/L	AS-D mg/L	B-D mg/L	BA-D mg/L	BE-D mg/L	BI-D mg/L	CA-D mg/L	CD-D mg/L	CO-D mg/L	CR-D mg/L	CU-D mg/L	FE-D mg/L
STATION: A30													
17/05/99	<.003	0.65	<.005	<.05	0.635	0.002	<.04	18.8	0.064	0.039	<.005	0.188	1.16
06-03-00	<.003	7.16	<.005	<.05	0.52	0.003	<.05	36.3	0.159	0.164	0.006	0.915	1.72
06-11-01	<.003	<.05	<.005	0.09	0.056	<.001	<.05	43.1	0.012	<.005	<.005	0.004	<.01
STATION: X22B													
17/07/96	0.004	<.05	0.04		<.002	0.006	<.04	163	0.014	0.064	<.005	0.014	0.05
05-04-97													
08-10-98													
19/10/98	<.003	<.05	<.02	<.05	0.033	0.002	<.04	170.2	0.002	0.02	<.005	0.024	<.01
18/01/99	<.003	<.05	<.005	<.05	0.037	<.001	<.04	124.2	0.013	0.017	0.148	0.018	<.01
22/02/99	<.003	0.11	<.005	0.13	0.031	<.001	<.04	151.6	0.004	0.017	0.074	0.014	<.01
22/03/99	<.003	0.1	<.005	<.05	0.009	<.001	<.04	115.8	0.009	0.035	0.017	0.024	<.01
17/05/99	<.003	<.05	<.005	<.05	0.025	0.002	<.04	23.8	<.001	<.005	<.005	<.002	<.01
07-03-99	<.003	0.09	<.005	0.08	0.054	<.001	<.04	119.1	0.001	0.02	<.005	0.015	0.23
27/07/99	<.003	0.12	<.005	<.05	0.019	<.001	<.04	103	0.003	0.019	<.005	0.008	0.01
08-12-99	<.003	<.05	<.005	0.06	0.102	<.001	<.04	147.4	0.003	0.038	<.005	0.01	0.04
09-10-99	<.003	0.08	<.005	<.05	0.028	<.001	<.04	118.1	<.001	0.02	<.005	0.014	<.01
30/10/99	<.003	<.05	<.005	<.05	0.063	<.001	<.04	147.7	0.005	0.014	<.005	0.01	<.01
23/03/00	<.003	0.21	<.005	<.05	0.049	<.001	<.05	145.7	0.002	0.028	<.005	<.002	<.01
15/05/00	<.003	0.15	<.005	<.05	0.032	<.001	<.05	144.9	<.001	0.032	<.005	0.013	0.08
26/06/00	<.003	<.05	<.005	<.05	0.043	0.002	<.05	128.8	<.001	0.018	<.005	0.015	<.01
25/07/00	<.003	<.05	<.005	<.05	0.045	0.002	<.05	125.9	0.004	0.04	<.005	0.018	0.15
29/08/00	<.003	0.19	<.005	<.05	0.034	<.001	<.05	142.2	<.001	0.025	<.005	0.011	<.01
25/09/00	<0.01	0.06	<0.2	<0.1	0.02	<0.005	<0.1	142	0.009	0.04	<0.01	<0.01	0.1
29/10/00	<.003	0.27	<.005	<.05	0.071	0.002	<.05	150	0.002	0.018	<.005	0.028	0.19
13/11/00	<0.003	<0.05	0.029	<0.05	0.032	<0.001	<0.05	150.6	0.01	0.051	<0.005	<0.002	0.01
18/11/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	522	0.054	0.15	<0.01	0.07	<0.01
14/12/00	<0.01	<0.05	<0.2	<0.1	0.02	<0.005	<0.1	134	0.026	0.04	<0.01	0.04	<0.01
13/01/01	<.003	0.16	<.005	<.05	0.029	0.002	<.05	132.9	0.005	0.014	<.005	0.038	0.19
02-10-01	<.003	0.07	<.005	<.05	0.026	0.003	<.05	127.6	0.004	0.02	<.005	0.029	0.02
03-10-01	<.003	0.49	<.005	0.07	0.07	<.001	<.05	142	0.015	<.005	<.005	0.016	<.01
16/04/01	<.003	0.07	<.005	<.05	0.01	<.001	<.05	145	0.003	0.031	<.005	0.008	0.03
14/05/01	<.003	0.27	<.005	<.05	0.074	<.001	<.05	155.4	0.002	0.014	<.005	0.005	0.03
17/06/01	<.003	<.05	0.023	0.09	0.042	<.001	<.05	152.8	0.01	0.036	<.005	<.002	0.01
14/07/01	<.003	<.05	<.005	0.17	0.016	<.001	<.05	148.9	0.007	0.043	<.005	<.002	<.01
14/08/01	<0.003	<0.05	0.029	<0.05	0.025	<0.001	<0.05	146.4	0.008	0.041	<0.005	0.002	<0.01
17/09/01	<0.003	<0.05	<0.005	<0.05	0.032	<0.001	<0.05	134	0.011	0.043	<0.005	<0.002	<0.01
15/10/01	<0.003	<0.05	<0.005	0.05	0.036	<0.001	<0.05	147.4	0.01	0.047	<0.005	<0.002	<0.01
13/11/01	<0.003	<0.05	0.029	<0.05	0.032	<0.001	<0.05	150.6	0.01	0.051	<0.005	<0.002	0.01
15/12/01	<0.001	<0.05	<0.005	<0.05	0.029	<0.001	<0.05	155	0.01	0.045	0.032	<0.002	0.02
STATION: NE1													
08-06-96	<0.01	<0.2	<0.2	<0.1	0.05	<0.005	0.2	262	<0.01	<0.01	<0.01	<0.01	<0.03
23/06/97													
17/05/99	<.003	0.21	<.005	<.05	0.05	0.002	<.04	32.7	<.001	<.005	<.005	<.002	0.1
06-03-00	<.003	<.05	<.005	<.05	0.039	<.001	<.05	53.1	<.001	<.005	<.005	<.002	<.01
06-11-01	<.003	<.05	0.021	0.06	0.049	<.001	<.05	49.8	<.001	<.005	<.005	0.003	<.01
STATION: NE2													
23/06/97													
17/05/99	<.003	<.05	<.005	<.05	0.04	0.002	<.04	32.4	<.001	<.005	<.005	<.002	<.01
07-04-99	<.003	<.05	<.005	0.2	0.034	<.001	<.04	51.6	<.001	<.005	<.005	0.008	0.31
30/10/99	<.003	<.05	<.005	<.05	0.067	<.001	<.04	90.6	<.001	<.005	<.005	<.002	<.01
08-03-00	<.003	0.09	<.005	<.05	0.079	<.001	<.05	185.1	0.006	<.005	<.005	0.008	0.03
06-11-01	<.003	<.05	<.005	0.06	0.095	<.001	<.05	162	<.001	<.005	<.005	<.002	<.01
STATION: SP5-6													
13/07/89												0.011	0.017
07-06-90												0.009	0.035
08-07-90												0.005	0.017
09-08-91												0.001	0.006
23/07/95	<0.015	<0.20	<0.20	<0.10	0.028	<0.005	<0.10	90.4	<0.010	<0.015	<0.015	<0.010	<0.030
08-08-96	<0.01	<0.2	<0.2	<0.1	0.03	<0.005	<0.1	231	<0.01	<0.01	<0.01	<0.01	<0.03
08-08-96	<0.01	<0.2	<0.2	<0.1	0.03	<0.005	0.1	231	<0.01	<0.01	<0.01	<0.01	<0.03
17/05/99	<.003	<.05	<.005	<.05	0.217	0.003	<.04	135.2	0.067	0.058	<.005	0.032	<.01
06-03-00	<.003	0.12	<.005	<.05	0.059	0.001	<.05	201	0.008	0.011	<.005	0.013	0.03
06-11-01	<.003	<.05	0.012	0.06	0.048	<.001	<.05	152.2	0.002	0.008	0.01	0.004	<.01
STATION: X26													
03-08-91													15.4
04-01-91													2.9
06-03-91													
26/02/92													18.4
16/06/92													8.22
30/07/92													4.55
27/08/92													17.1

Date	K-D mg/L	LA-D mg/L	MG-D mg/L	MN-D mg/L	MO-D mg/L	NA-D mg/L	NI-D mg/L	P-D mg/L	PB-D mg/L	S-D mg/L	SB-D mg/L	SE-D mg/L	SI-D mg/L	SN-D mg/L	SR-D mg/L	TI-D mg/L	V-D mg/L	W-D mg/L	ZN-D mg/L
STATION: A30																			
17/05/99	2	<.005	15.3	1.21	0.037	1	0.048	2.97	0.12		<.03	<.03	1.3	<.01	0.145	<.005	0.012	<.03	23.04
06-03-00	3	<.005	63.9	4.35	0.137	3	0.139	9	0.37	193	0.27	<.005	5.5	<.01	0.318	<.005	<.005	<.03	59.58
06-11-01	1	0.006	25.2	0.33	<.002	4	<.005	<1	<.01	62	0.06	<.005	4.8	<.01	0.18	<.005	<.005	<.03	11.4
STATION: X22B																			
17/07/96		<.005	58.8	5.49	0.014	30	0.179	0.2	0.11	412	0.09		3.2		0.275	<.005	<.005	0.04	8.56
05-04-97																			0.81
08-10-98																			0.83
19/10/98	15	<.005	54.7	2.81	0.005	34	0.053	6.44	<.02	164.5	0.05	<.03	1.3	<.01	0.385	0.007	0.008	<.03	1.02
18/01/99	7	<.005	60.4	2.65	0.015	16	0.079	<.04	0.04	208	0.06	<.03	7.6	<.01	0.464	<.005	<.005	<.03	9.79
22/02/99	12	<.005	48.6	2.98	0.012	27	0.028	1.99	<.01		<.03	<.03	1.6	<.01	0.377	0.011	<.005	<.03	0.65
22/03/99	7	<.005	46.2	2.06	0.004	18	0.047	0.58	<.01	171.4	0.03	<.03	4.1	<.01	0.295	<.005	<.005	<.03	8.35
17/05/99	2	<.005	8.6	0.74	0.008	4	<.005	<.04	<.01		0.05	<.03	<1	<.01	0.097	<.005	0.013	<.03	0.52
07-03-99	9	<.005	42.7	2.49	<.002	18	0.031	<.04	<.01	159	0.03	<.03	1.6	<.01	0.32	<.005	<.005	<.03	5.67
27/07/99	8	<.005	39.6	2.11	0.01	16	0.044	0.45	<.01	190	<.03	<.03	1.2	<.01	0.318	<.005	<.005	<.03	2.28
08-12-99	20	0.042	48	2.1	<.002	28	0.057	<.04	<.01	189	<.03	<.005	2.6	<.01	0.375	0.013	<.005	<.03	1.03
09-10-99	9	<.005	40.2	2.12	0.008	17	0.041	<.04	<.01	193	<.03	<.005	1	<.01	0.312	0.008	<.005	<.03	0.54
30/10/99	9	<.005	48.6	2.72	<.002	27	0.036	<.04	<.01	213	<.03	<.005	1.3	<.01	0.391	<.005	<.005	<.03	2.26
23/03/00	9	<.005	52.1	2.69	<.002	13	0.037	<1	<.01	183	<.03	<.005	2.8	<.01	0.435	<.005	<.005	<.03	2.58
15/05/00	11	0.047	52.2	2.09	<.002	24	0.038	<1	<.01		<.03	<.005	2.3	<.01	0.436	0.01	<.005	<.03	1.17
26/06/00	11	<.005	45.6	3.03	<.002	23	0.04	4	<.01	152	0.04	<.005	2	<.01	0.381	0.013	0.009	<.03	1.34
25/07/00	10	0.074	46.2	2.62	<.002	28	0.053	<1	<.01	179	<.03	<.005	1.5	<.01	0.454	0.013	0.01	<.03	0.54
29/08/00	11	<.005	50.1	2.27	<.002	25	0.065	1	<.01	187	<.03	<.005	2.5	<.01	0.412	<.005	<.005	<.03	7.06
25/09/00	10		54.5	2.6	0.01	25	0.07	<0.3	<0.05		<0.2	<0.2	2.9	<0.03	0.434	<0.01	<0.03		9.09
29/10/00	13	<.005	55	3.49	0.018	31	0.034	<1	<.01	260	<.03	<.005	3.2	<.01	0.5	0.014	0.006	<.03	1.87
13/11/00	15	0.021	60.4	3.57	0.011	30	0.078	0.03	0.02	207	<0.03	<0.005	4.4	0.12	0.501	<0.005	0.005	<0.03	10.75
18/11/00	41		221	9.53	0.03	93	0.29	<0.3	<0.05		<0.2	<0.2	12.5	<0.03	1.57	<0.01	<0.03		44.7
14/12/00	8		62.5	2.22	0.01	16	0.1	<0.3	<0.05		<0.2	<0.2	5.82	<0.03	0.481	<0.01	<0.03		26.2
13/01/01	9	<.005	55.4	2.49	0.004	23	0.072	<1	0.07	135	<.03	<.005	4.2	<.01	0.574	0.007	<.005	<.03	17.4
02-10-01	13	<.005	48.9	2.33	0.012	25	0.095	7	0.11	132	<.03	<.005	3.4	<.01	0.391	<.005	<.005	<.03	14.4
03-10-01	5	<.005	57.75	2.99	0.013	25.06	0.088	<1	<.01	199	<.03	<.005	3.89	<.01	0.47	<.005	<.005	<.03	16
16/04/01	<1	<.005	55.4	3.28	<.002	27	0.064	<1	<.01	175	<.03	<.005	2.9	<.01	0.471	<.005	<.005	<.03	6.07
14/05/01	20	<.005	53.9	2.5	<.002	29	0.049	<1	<.01	177	<.03	<.005	2.3	<.01	0.465	<.005	<.005	<.03	6.35
17/06/01	11	0.015	55.7	1.79	<.002	25	0.111	<1	<.01	188	<.03	<.005	1.9	0.18	0.463	<.005	<.005	<.03	2.91
14/07/01	11	<.005	54	3.10	<.002	23	0.076	<1	<.01	190	<.03	<.005	4.3	<.01	0.502	<.005	<.005	<.03	3.39
14/08/01	10	0.007	56	2.77	0.006	27	0.082	<1	<0.01	184	<0.03	<0.005	4.3	<0.01	0.538	<0.005	<0.005	<0.03	4.22
17/09/01	10	0.011	56.1	3.28	0.002	26	0.085	<1	<0.01	182	<0.03	<0.005	4.2	0.02	0.496	<0.005	<0.005	<0.03	7.67
15/10/01	13	0.037	58.8	3.48	0.005	29	0.095	<1	<0.01	195	0.04	<0.005	4.2	<0.01	0.508	<0.005	<0.005	<0.03	11.58
13/11/01	15	0.021	60.4	3.57	0.011	30	0.078	0.03	0.02	207	<0.03	<0.005	4.4	0.12	0.501	<0.005	0.005	<0.03	10.75
15/12/01	11	0.052	61.6	3.08	<0.002	22	0.09	<0.01	<0.01	178	<0.03	<0.005	4	<0.01	0.462	0.005	<0.005	<0.03	11.2
STATION: NE1																			
08-06-96	7		179	0.156	<0.03	14	0.08	<0.3	<0.05		<0.2	<0.2	4.93	<0.03	1.11	<0.01	<0.03		2.47
23/06/97																			<.01
17/05/99	2	<.005	8.8	0.13	0.017	2	0.017	<.04	<.01		<.03	<.03	3.4	<.01	0.163	<.005	0.023	<.03	0.05
06-03-00	4	<.005	17.4	0.02	0.003	4	<.005	<1	<.01	43	<.03	<.005	2.9	<.01	0.271	0.011	<.005	<.03	<.01
06-11-01	2	0.007	15.3	0.21	0.004	5	<.005	<1	<.01	34	<.03	<.005	2.2	<.01	0.251	<.005	<.005	<.03	0.05
STATION: NE2																			
23/06/97																			<.01
17/05/99	2	<.005	10.3	0.07	0.019	2	0.007	0.52	<.01		<.03	<.03	2.3	<.01	0.168	<.005	0.005	<.03	0.01
07-04-99	2	<.005	18.7	0.5	0.003	3	<.005	<.04	<.01	36	<.03	<.03	4.1	<.01	0.238	<.005	<.005	<.03	<.01
30/10/99	3	<.005	28	<.01	<.002	7	<.005	<.04	<.01	87	<.03	<.005	3.1	<.01	0.457	<.005	<.005	<.03	<.01
08-03-00	7	<.005	149.2	0.02	<.002	10	<.005	<1	<.01	264	<.03	<.005	4.4	<.01	0.889	0.007	<.005	<.03	<.01
06-11-01	4	0.018	120	0.31	0.005	10	0.017	<1	<.01	195	<.03	<.005	4.2	<.01	0.8	<.005	<.005	<.03	0.03
STATION: SP5-6																			
13/07/89																			1.67
07-06-90																			2.22
08-07-90																			1.77
09-08-91																			3.14
23/07/95	3.3		48.9	0.31	<0.030	5	0.025	<0.30	<0.050		<0.20	<0.20	5.03	<0.30	0.377	<0.010	<0.030		2.27
08-08-96	7		150	0.718	<0.03	11	0.06	<0.3	<0.05		<0.2	<0.2	4.36	<0.03	1.02	<0.01	<0.03		5.14
08-08-96	7		150	0.718	<0.03	11	0.06	<0.3	<0.05		<0.2	<0.2	4.36	<0.03	1.02	<0.01	<0.03		5.14
17/05/99	4	<.005	68	4.04	0.021	4	0.125	1.59	0.06		<.03	<.03	1.1	<.01	0.588	<.005	<.005	<.03	27.01
06-03-00	7	<.005	155.9	0.29	<.002	9	0.04	<1	0.02	324	<.03	<.005	2.4	<.01	0.899	0.007	<.005	<.03	0.54
06-11-01	8	0.021	116.4	0.31	0.007	9	0.028	<1	<.01	196	0.03	0.009	4.1	0.02	0.681	<.005	<.005	<.03	0.52
STATION: X26																			
03-08-91																			60.4
04-01-91																			56.3
06-03-91																			47.8
26/02/92																			22.9
16/06/92																			57.1
30/07/92																			46.2
27/08/92																			61.3

Table C2. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
26/11/94													0.486
04-10-96	<.003	1.14	<.02		0.095	0.005	<.04	422.1	0.039	0.42	<.005	0.021	38.8
15/05/96													34.64
15/05/96	<.003	1.2	<.02		0.101	0.004	<.04	451.3	0.028	0.408	<.005	0.014	34.64
15/07/96	0.005	0.5	0.04		<.002	0.015	<.04	480	0.028	0.524	<.005	0.022	9.64
09-11-96	0.012	0.4	<.02		0.123	0.011	<.04	430.4	0.024	0.34	<.005	0.021	26.66
17/09/96													28.68
31/10/96	0.023	0.64	0.03		0.062	0.016	<.04	445.1	0.032	0.598	0.014	0.031	45.99
28/04/97													
08-12-97	0.005	0.17	0.07	<.05	0.018	0.003	<.04	442.6	0.048	0.49	0.017	0.031	31.89
17/05/99	<.003	0.19	<.005	1.42	0.165	0.005	<.04	456.6	0.081	0.526	<.005	0.083	2.92
27/07/99	<.003	0.34	<.005	0.13	0.203	0.009	<.04	438	0.037	0.69	<.005	0.028	41.75
28/06/00	<.003	0.34	<.005	<.05	0.128	0.004	<.05	474.8	0.056	0.508	<.005	0.043	1.65
25/07/00	<.003	0.26	<.005	<.05	0.13	0.004	<.05	487.9	0.037	0.332	<.005	0.04	0.38
29/08/00	<.003	0.6	<.005	<.05	0.053	0.002	<.05	572.9	0.089	0.676	<.005	0.121	53.98
25/09/00	<0.02	<0.1	<0.4	<0.2	<0.02	<0.01	<0.2	570	0.028	0.65	<0.02	<0.02	68.3
17/06/01	<.003	<.05	<.005	0.07	0.043	<.001	<.05	499.8	0.02	0.512	<.005	0.002	0.08
14/07/01	<.003	<.05	<.005	0.18	0.016	<.001	<.05	517	0.024	0.502	<.005	<.002	<.01
14/08/01	0.003	<0.05	<0.005	<0.05	0.027	<0.001	<0.05	498.2	0.025	0.652	<0.005	0.015	22.05
17/09/01	<0.003	<0.05	<0.005	<0.05	0.027	<0.001	<0.05	382.3	0.021	0.607	<0.005	0.003	4.65

Date	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
26/11/94																			
04-10-96		<.005	143.9	11.37	<.002	29	1.058	0.56	<.02	547	<.03		2.6		2.474	0.011	<.005	<.03	>50
15/05/96																			62.5
15/05/96		<.005	133.8	10.93	<.002	24	1.028	0.17	<.02	477	0.13		2.42		2.205	<.005	<.005	<.03	62.5
15/07/96		<.005	169.2	12.64	0.011	31	1.248	0.39	0.04	837	0.11		5.8		2.735	0.009	<.005	<.03	63.62
09-11-96		0.021	127.3	9.27	0.002	29	0.773	0.04	0.02	581	<.03		6.6		2.088	<.005	<.005	0.26	51.75
17/09/96																			51.75
31/10/96		0.024	158.1	12.54	0.004	44	1.148	0.12	0.08	605	0.1		7.2		2.406	0.018	0.022	<.03	66.8
28/04/97																			52
08-12-97	15	0.025	154.9	11.63	0.075	29	1.13	7.1	0.29	56	0.2	<.03	4.8	<.01	2.428	0.019	<.005	<.03	57.84
17/05/99	16	<.005	234.6	16.94	0.027	56	1.096	7.02	0.32		<.03	<.03	3.2	<.01	2.802	0.008	<.005	<.03	68.48
27/07/99	16	0.038	198.4	12.71	0.054	38	1.42	1.34	<.01	699	0.22	0.07	4.8	<.01	3.227	0.016	0.043	0.32	64.42
28/06/00	16	<.005	199.8	12.84	<.002	40	1.186	11	<.01	843	0.24	<.005	4.3	<.01	2.633	0.041	<.005	<.03	52.29
25/07/00	14	0.033	172.1	10.82	0.039	35	0.839	<1	<.01	568	<.03	<.005	4.2	<.01	2.685	0.038	<.005	<.03	25.75
29/08/00	20	<.005	248	15.4	0.057	48	1.643	17	<.01	762	0.17	<.005	6.2	<.01	2.883	0.044	<.005	<.03	89.3
25/09/00	16		280	17.1	<0.02	48	1.6	<0.6	<0.1		<0.4	<0.4	6	<0.08	3.16	<0.02	<0.06		94
17/06/01	17	0.049	213.2	6.4	<.002	52	1.156	<1	<.01	654	0.03	<.005	7.8	<.01	3.248	0.015	<.005	<.03	48.8
14/07/01	16	0.017	202.8	12.07	<.002	38	1.499	<1	<.01	643	<.03	0.011	10.6	<.01	3.086	<.005	<.005	<.03	56.8
14/08/01	18	0.018	249.7	14.62	<0.002	56	1.583	<1	<0.01	745	<0.03	<0.005	10.4	<0.01	3.237	<0.005	<0.005	<0.03	93.08
17/09/01	14	0.026	215.3	18.05	<0.002	52	1.396	<1	<0.01	643	<0.03	0.006	8.1	<0.01	2.73	<0.005	<0.005	<0.03	91.1

STATION: X23

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D
18/09/89												0.006	0.128
04-05-90												0.004	0.073
07-05-90												0.009	0.031
08-11-90												0.004	0.027
08-10-98													
18/01/99	<.003	0.33	<.005	<.05	0.046	0.003	<.04	613.4	0.018	0.125	0.032	0.061	0.15
22/02/99	<.003	0.49	<.005	0.12	0.071	0.002	<.04	619.5	0.006	0.105	0.277	0.049	0.1
17/03/99	<.003	0.41	<.005	<.05	0.024	0.002	<.04	560.7	0.012	0.073	0.753	0.048	0.05
17/05/99	0.005	0.27	<.005	<.05	0.286	0.005	<.04	430.2	0.458	0.334	<.005	0.04	0.11
07-03-99	<.003	0.58	<.005	0.35	0.066	0.002	<.04	510.7	<.001	0.072	<.005	0.052	0.39
08-12-99	<.003	0.8	0.027	0.13	0.168	0.008	<.04	541.2	0.004	0.07	<.005	0.038	0.24
09-10-99	<.003	0.45	<.005	<.05	0.074	0.002	<.04	535.8	0.018	0.106	0.051	0.049	0.3
29/10/99	<.003	1.4	0.044	0.06	0.142	0.008	<.04	519.2	0.023	0.043	<.005	0.023	0.93
22/11/99	<.003	0.61	<.005	<.05	0.183	0.004	<.04	487.1	0.042	0.175	<.005	0.068	1.26
13/12/99	<.003	2.31	<.005	0.06	0.087	0.01	<.04	599.1	<.001	0.058	<.005	0.069	0.42
26/01/00	<.003	0.84	<.005	<.05	0.086	0.004	<.05	567.5	0.029	0.185	<.005	0.062	0.31
28/02/00	<.003	0.68	<.005	<.05	0.176	0.002	<.05	566.9	0.025	0.115	<.005	0.06	1.85
27/04/00	<.003	0.77	<.005	<.05	0.104	0.004	<.05	472.8	0.014	0.107	<.005	0.064	1.62
15/05/00	<.003	0.54	0.042	<.05	0.023	0.002	<.05	484.7	0.396	0.353	<.005	0.197	0.24
26/06/00	<.003	0.57	<.005	<.05	0.14	0.005	<.05	549.7	0.032	0.152	<.005	0.068	0.26
25/07/00	<.003	0.48	<.005	<.05	0.106	0.005	<.05	547.6	0.008	0.102	<.005	0.057	0.45
29/08/00	<.003	0.74	0.005	<.05	0.048	0.003	<.05	632.6	0.398	0.362	<.005	0.248	2.69
25/09/00	<0.02	<0.1	<0.4	<0.2	0.02	<0.01	<0.2	598	0.072	0.71	<0.02	0.03	11.7
29/10/00	0.005	1.32	0.409	0.12	1.05	0.008	0.21	533.8	0.607	1.2	<.005	0.185	104.6
13/11/00	<0.003	<0.05	<0.005	0.05	0.044	<0.001	<0.05	470.7	0.048	0.602	0.023	0.01	37.05
18/11/00	0.02	<0.1	<0.4	<0.2	<0.02	<0.01	<0.2	596	0.189	1.01	<0.02	0.03	97.5
14/12/00	<0.02	<0.1	<0.4	<0.2	<0.02	<0.01	<0.2	510	0.122	0.83	<0.02	<0.02	52.4
13/01/01	<.003	1.04	0.152	0.07	0.144	0.008	<.05	475	0.431	0.697	0.292	0.128	41.51
02-10-01	0.007	1.2	0.335	0.08	0.142	0.007	0.54	499.8	0.313	0.39	<.005	0.169	28.43
03-10-01	<.003	2.78	0.216	<.05	0.57	<.001	<.05	622	0.126	0.284	<.005	0.319	34.69
16/04/01	<.003	<.05	<.005	<.05	0.4	<.001	<.05	623.3	0.058	<.005	<.005	0.08	33.48
14/05/01	<.003	1.61	<.005	<.05	0.521	<.001	<.05	477.2	0.005	0.112	<.005	0.039	5.73
17/06/01	0.007	0.24	<.005	0.31	0.051	<.001	<.05	473.8	0.275	1.295	<.005	0.09	137.7
14/07/01	0.004	0.19	<.005	0.32	0.033	<.001	<.05	497.1	0.134	0.905	<.005	0.021	93.91
14/08/01	0.005	0.2	<0.005	<0.05	0.032	<0.001	<0.05	460	0.088	0.749	<0.005	0.039	48.68
17/09/01	0.005	<0.05	<0.005	<0.05	0.041	<0.001	<0.05	365.3	0.054	0.566	<0.005	0.008	5.4
15/10/01	0.006	<0.05	<0.005	<0.05	0.053	<0.001	<0.05	434.2	0.057	0.634	<0.005	0.074	46.3
13/11/01	<0.003	<0.05	<0.005	0.05	0.044	<0.001	<0.05	470.7	0.048	0.602	0.023	0.01	37.05
15/12/01	<0.001	0.89	0.054	0.29	0.323	0.005	<0.05	590	0.049	0.684	0.46	0.11	8.29

Date	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
18/09/89																			28.5
04-05-90																			26.8
07-05-90																			29.7
08-11-90																			25.9
08-10-98																			38.28
18/01/99	14	<.005	431.9	20.43	0.023	57	0.263	0.33	<.01	1078	<.03	<.03	7.7	<.01	3.602	0.03	0.027	<.03	21.51
22/02/99	13	0.01	424.5	20.41	0.03	54	0.204	8.04	0.01		<.03	<.03	6.2	<.01	3.74	0.034	<.005	<.03	10.07
17/03/99	12	0.012	359.8	18.26	<.002	48	0.163	2.63	<.01	1055	<.03	<.03	4.3	<.01	3.172	0.019	<.005	<.03	4.13
17/05/99	11	<.005	332.3	27.8	0.188	32	0.574	30.83	0.96		0.32	<.03	5	<.01	2.537	0.009	<.005	0.06	207.57
07-03-99	14	0.034	447.4	20.79	0.018	42	0.082	0.09	<.01	1060	<.03	<.03	5.1	<.01	3.49	<.005	<.005	<.03	97.76
08-12-99	26	0.046	412.3	21.21	<.002	50	0.326	<.04	<.01	1011	<.03	<.005	7.6	<.01	3.468	0.025	<.005	<.03	58.89
09-10-99	13	<.005	426.1	24.44	0.037	40	0.23	2.48	<.01	1095	<.03	<.005	5.4	<.01	3.107	0.028	<.005	<.03	23.79
29/10/99	12	0.008	412.3	28.68	<.002	50	0.281	0.27	<.01	1080	0.17	<.005	4.9	<.01	3.328	0.007	<.005	<.03	57.2
22/11/99	14	<.005	445.2	29.82	0.134	45	0.34	16.17	0.33	1091	0.38	<.005	6.8	<.01	2.901	0.034	<.005	0.26	63.52
13/12/99	15	<.005	420.9	28.57	<.002	48	0.273	0.07	<.01	1019	<.03	<.005	5.6	<.01	3.232	0.019	<.005	<.03	81.75
26/01/00	16	<.005	434.8	24.71	0.031	49	0.201	8	0.11	1068	<.03	<.005	6.5	<.01	3.332	0.058	<.005	<.03	79.7
28/02/00	16	0.015	447.4	23.88	0.049	53	0.233	1	0.08	1055	<.03	<.005	7.8	<.01	3.316	0.044	<.005	<.03	47.99
27/04/00	13	<.005	359.9	23.3	0.072	36	0.184	<1	0.1	1053	0.04	<.005	7.2	<.01	3.046	0.053	<.005	<.03	55.94
15/05/00	13	0.048	424.1	26.55	0.299	39	0.434	23	0.75		0.52	<.005	7.8	<.01	2.98	0.033	<.005	<.03	186.13
26/06/00	18	<.005	409.7	23.36	<.002	50	0.323	11	<.01	912	0.07	<.005	6.9	<.01	3.178	0.05	<.005	<.03	35.26
25/07/00	16	0.018	443.1	21.57	<.002	60	0.153	3	<.01	1022	<.03	<.005	8.1	<.01	3.604	0.044	<.005	<.03	5.25
29/08/00	19	<.005	495	30.71	0.223	50	0.695	31	<.01	1143	0.6	<.005	8.6	<.01	3.504	0.248	<.005	<.03	208.17
25/09/00	16		712	64.3	<0.02	58	1.1	<0.6	<0.1		<0.4	<0.4	7.1	<0.08	4.2	<0.02	<0.06		415
29/10/00	18	0.014	685	82.9	1.12	58	1.49	98	3.57	3524	2.74	<.005	8.6	<.01	3.903	0.448	0.315	0.07	1120
13/11/00	20	0.029	627.6	68.15	<0.002	60	0.633	0.01	<0.01	1439	<0.03	<0.005	10.1	<0.01	3.522	<0.005	<0.005	<0.03	410.08
18/11/00	15		876	88.5	<0.02	60	1.3	<0.6	<0.1		<0.4	<0.4	6.8	<0.08	3.73	<0.02	<0.06		812
14/12/00	14		704	76.6	<0.02	56	1.2	<0.6	<0.1		<0.4	<0.4	5.9	<0.08	3.5	<0.02	<0.06		625
13/01/01	17	0.023	585	58.16	0.909	54	0.935	62	2.98	1459	2.39	<.005	7.4	<.01	3.458	0.051	<.005	0.06	570
02-10-01	22	<.005	570.2	54.8	0.632	52	0.965	107	2.3	1540	2.2	<.005	7.7	<.01	2.765	0.14	0.037	<.03	440
03-10-01	16	<.005	653	77.39	0.09	82.83	0.907	2	<.01	1554	0.19	<.005	8.1	<.01	4.28	0.009	<.005	<.03	429
16/04/01	<1	<.005	635.1	72.76	<.002	40	0.633	2	<.01	1315	<.03	<.005	6.6	<.01	4.284	0.043	<.005	<.03	358.53
14/05/01	18	<.005	417.8	37.92	<.002	17	0.458	<1	<.01	856	0.21	<.005	4.6	<.01	2.894	0.052	<.005	<.03	208.09
17/06/01	20	0.044	761.3	51.49	<.002	54	1.723	<1	<.01	1825	<.03	<.005	8.6	<.01	3.716	0.126	<.005	<.03	970
14/07/01	20	0.033	687.5	83.57	<.002	58	1.132	<1	<.01	1680	<.03	<.005	11	<.01	3.662	<.005	<.005	<.03	661.47
14/08/01	18	0.029	657.4	61.9	<0.002	61	0.969	<1	<0.01	1480	<0.03	<0.005	10	<0.01	3.634	<0.005	<0.005	<0.03	528.87
17/09/01	15	0.034	550.4	61.06	<0.002	57	0.739	<1	<0.01	1168	<0.03	<0.005	8.1	<0.01	3.049	<0.005	<0.005	<0.03	386.16
15/10/01	21	0.045	647.6	69.06	<0.002	61	0.844	<1	<0.01	1306	<0.03	<0.005	9.6	<0.01	3.543	<0.005	<0.005	<0.03	499.14
13/11/01	20	0.029	627.6	68.15	<0.002	60	0.633	0.01	<0.01	1439	<0.03	<0.005	10.1	<0.01	3.522	<0.005	<0.005	<0.03	410.08
15/12/01	16	0.155	718.3	67.33	0.135	24	0.683	0.1	<0.01	1318	<0.03	0.059	11.2	1.65	3.647	<0.005	0.024	<0.03	363.43

Table C3. Surface Water Quality Rose Creek, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: FAROCR																
23/06/97																
17/05/99	<.003	0.1	0.005	<.05	0.047	0.002	<.04	15.8	<.001	<.005	<.005	0.017	0.3	1	0.031	3.1
07-04-99	<.003	<.05	<.005	0.28	0.005	<.001	<.04	5.9	<.001	<.005	<.005	0.004	0.35	<1	<.005	1.3
30/10/99	<.003	<.05	<.005	<.05	0.075	<.001	<.04	9.6	<.001	<.005	<.005	<.002	<.01	<1	<.005	2
06-03-00	<.003	0.07	<.005	<.05	0.003	<.001	<.05	2	<.001	<.005	<.005	<.002	0.14	1	<.005	0.4
06-12-01	<.003	0.05	<.005	0.08	0.041	<.001	<.05	1.8	<.001	<.005	<.005	0.002	0.08	<1	<.005	0.5
13/06/01	<.003	0.07	<.005	0.08	0.083	<.001	<.05	2.1	0.003	<.005	<.005	0.004	0.09	<1	<.005	0.5
09-08-01	<0.003	<0.05	0.028	<0.05	0.088	<0.001	<0.05	9.4	<0.001	<0.005	<0.005	0.003	<0.01	<1	<0.005	2.3
STATION: R8																
25/02/99	<.003	<.05	<.005	0.2	0.019	<.001	<.04	36.4	<.001	<.005	<.005	0.004	<.01	<1	0.016	7.1
17/05/99	<.003	<.05	0.03	<.05	0.021	0.002	<.04	8.4	<.001	0.014	<.005	<.002	0.08	2	<.005	1.7
07-04-99	<.003	<.05	<.005	0.18	0.011	<.001	<.04	15.7	<.001	<.005	<.005	<.002	0.31	<1	<.005	3.5
30/10/99	<.003	<.05	<.005	<.05	0.106	<.001	<.04	27	<.001	<.005	<.005	<.002	<.01	2	<.005	5.5
26/03/00	<.003	0.32	<.005	<.05	0.171	<.001	<.05	37	<.001	<.005	<.005	<.002	<.01	2	<.005	8
06-04-00	<.003	<.05	<.005	<.05	<.002	<.001	<.05	7.9	<.001	<.005	<.005	<.002	0.1	1	<.005	1.4
09-12-00	<.003	<.05	<.005	<.05	0.015	<.001	<.05	17.6	0.001	<.005	<.005	<.002	<.01	<1	<.005	3.4
03-05-01	<.003	0.07	<.005	0.07	0.24	<.001	<.05	41	<.001	<.005	<.005	<.002	<.01	<1	<.005	8.54
13/06/01	<.003	0.05	<.005	0.06	0.086	<.001	<.05	4.2	<.001	<.005	<.005	<.002	0.11	<1	<.005	1
09-08-01	<0.003	<0.05	<0.005	<0.05	0.101	<0.001	<0.05	23.2	<0.001	<0.005	<0.005	<0.002	0.01	<1	0.007	5
STATION: R9																
22/06/95	<0.003	0.37	<0.02		0.046	<0.001	<0.05	23.7	<0.002	<0.005	<0.005	0.002	0.23		<0.005	4.4
17/05/99	<.003	<.05	<.005	<.05	0.026	0.002	<.04	9.5	<.001	<.005	<.005	<.002	0.34	2	0.011	1.9
07-04-99	<.003	<.05	<.005	0.24	0.011	<.001	<.04	17	<.001	<.005	<.005	0.003	0.35	<1	<.005	3.9
30/10/99	<.003	<.05	<.005	<.05	0.105	<.001	<.04	29.7	<.001	<.005	<.005	0.007	<.01	3	<.005	6
06-04-00	<.003	<.05	<.005	<.05	0.003	<.001	<.05	7.7	<.001	<.005	<.005	<.002	0.1	1	<.005	1.5
09-12-00	<.003	<.05	<.005	<.05	0.021	<.001	<.05	17.6	<.001	<.005	<.005	<.002	<.01	<1	<.005	3.2
03-05-01	<.003	0.09	<.005	0.08	0.22	<.001	<.05	44	<.001	<.005	<.005	<.002	<.01	<1	<.005	9.65
13/06/01	<.003	<.05	<.005	0.06	0.103	<.001	<.05	8.4	<.001	<.005	<.005	<.002	0.08	<1	<.005	1.9
09-08-01	<0.003	<0.05	<0.005	<0.05	0.109	<0.001	<0.05	25.4	<0.001	<0.005	<0.005	<0.002	<0.01	<1	0.007	5.4
STATION: R10																
17/05/99	<.003	<.05	<.005	<.05	0.021	0.002	<.04	7.5	<.001	<.005	<.005	0.078	0.09	1	0.008	1.4
07-04-99	<.003	<.05	<.005	0.13	0.012	<.001	<.04	16.2	0.001	<.005	<.005	<.002	0.34	<1	<.005	3.6
30/10/99	<.003	<.05	<.005	<.05	0.093	<.001	<.04	29.3	<.001	<.005	<.005	<.002	<.01	1	<.005	6
26/03/00	<.003	0.11	<.005	<.05	0.101	<.001	<.05	42.8	<.001	<.005	<.005	<.002	<.01	10	<.005	9
08-03-00	<.003	<.05	<.005	<.05	0.008	<.001	<.05	7.2	<.001	<.005	<.005	<.002	0.09	1	<.005	1.3
09-12-00	<.003	<.05	<.005	<.05	0.022	<.001	<.05	20.2	<.001	<.005	<.005	0.005	<.01	<1	<.005	3.6
03-05-01	<.003	0.29	<.005	0.09	0.25	<.001	<.05	45	<.001	<.005	0.018	0.022	<.01	6	0.023	9.76
13/06/01	<.003	<.05	<.005	0.05	0.105	<.001	<.05	8.3	<.001	<.005	0.012	<.002	0.08	<1	<.005	1.9
09-08-01	<0.003	<0.05	0.019	<0.05	0.112	<0.001	<0.05	27.2	<0.001	<0.005	<0.005	<0.002	<0.01	<1	0.008	5.3
STATION: NF1																
28/07/89												0.001	0.13			
22/08/97	<.003	<.05	<.02	<.05	0.019	<.001	<.04	25.8	<.002	0.011	<.005	0.008	0.32	<1	<.005	5.8
07-04-99	<.003	<.05	<.005	0.07	0.008	<.001	<.04	14.2	0.002	<.005	<.005	<.002	0.38	<1	<.005	4.3
30/10/99	<.003	<.05	<.005	<.05	0.112	<.001	<.04	30.4	<.001	<.005	<.005	0.004	0.49	3	<.005	6.4
25/07/00	<.003	<.05	<.005	<.05	0.023	<.001	<.05	18.3	<.001	<.005	<.005	0.002	0.18	1	0.128	4.1
06-12-01	<.003	<.05	<.005	<.05	0.053	<.001	<.05	7.5	<.001	<.005	0.008	<.002	0.08	<1	<.005	1.7
STATION: NF2																
08-11-90												0.001	0.111			
06-08-96	<0.01	<0.2	<0.2	<0.1	0.04	<0.005	<0.1	14.8	<0.01	<0.01	<0.01	<0.01	0.16	<2		2.78
22/08/97	<.003	<.05	<.02	0.11	0.021	<.001	<.04	24.8	<.002	<.005	<.005	0.005	0.02	<1	<.005	5.3
21/12/98	<.003	<.05	0.007	0.09	0.018	<.001	<.04	45.6	0.001	<.005	<.005	0.007	<.01	1	<.005	10.1
07-03-99	<.003	<.05	<.005	0.15	0.01	<.001	<.04	15.7	<.001	<.005	<.005	0.002	0.4	<1	<.005	3.8
31/10/99	<.003	<.05	<.005	<.05	0.099	<.001	<.04	29.8	<.001	<.005	<.005	<.002	<.01	<1	<.005	6.1
25/07/00	<.003	<.05	<.005	<.05	0.012	<.001	<.05	13.6	0.005	<.005	<.005	0.005	0.19	2	0.063	4.2
06-12-01	<.003	<.05	<.005	<.05	0.057	<.001	<.05	7.4	<.001	<.005	<.005	<.002	0.09	<1	<.005	1.7
STATION: X2																
28/07/89												0.003	0.12			
21/12/98	<.003	<.05	0.013	0.21	0.024	<.001	<.04	59.8	0.004	<.005	<.005	0.009	<.01	2	<.005	13.5
18/01/99	<.003	<.05	<.005	0.07	0.023	<.001	<.04	44.2	<.001	<.005	0.201	0.003	<.01	<1	<.005	10.7
22/02/99	<.003	<.05	<.005	0.22	0.011	<.001	<.04	45.2	<.001	<.005	<.005	<.002	<.01	1	<.005	10.2
17/03/99	<.003	<.05	<.005	0.1	0.017	<.001	<.04	43.9	<.001	<.005	<.005	0.007	<.01	1	<.005	9.7
20/04/99	<.003	<.05	0.007	0.07	0.018	<.001	<.04	42.4	<.001	<.005	<.005	0.004	<.01	<1	<.005	10.6
17/05/99	<.003	<.05	<.005	<.05	0.018	0.001	<.04	6	<.001	<.005	<.005	<.002	0.12	1	<.005	1.4
07-03-99	<.003	<.05	<.005	0.23	0.002	<.001	<.04	12.6	<.001	<.005	<.005	<.002	0.22	<1	<.005	2.7
27/07/99	<.003	<.05	<.005	<.05	<.002	<.001	<.04	12.7	<.001	0.049	<.005	<.002	0.13	<1	<.005	3.2
08-12-99	<.003	<.05	<.005	<.05	0.057	<.001	<.04	21.9	<.001	<.005	<.005	<.002	0.06	3	<.005	4.7
09-10-99	<.003	<.05	<.005	<.05	0.02	<.001	<.04	15.8	<.001	<.005	<.005	<.002	0.03	<1	<.005	3.8
29/10/99	<.003	<.05	<.005	<.05	0.11	<.001	<.04	30.3	0.001	<.005	<.005	0.005	0.02	5	<.005	8.5
22/11/99	<.003	<.05	<.005	<.05	0.023	<.001	<.04	24.7	<.001	<.005	<.005	0.003	0.02	<1	<.005	6.6

Date	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: FAROCR																
23/06/97																0.05
17/05/99	0.04	0.015	1	0.01	<.04	<.01		<.03	<.03	1.4	<.01	0.087	<.005	0.03	<.03	0.08
07-04-99	0.11	<.002	<1	<.005	<.04	<.01	1	<.03	<.03	5.8	<.01	<.002	<.005	<.005	<.03	<.01
30/10/99	<.01	<.002	4	<.005	<.04	<.01	2	<.03	<.005	4.8	<.01	0.047	<.005	<.005	<.03	<.01
06-03-00	<.01	<.002	1	<.005	3	<.01	<1	<.03	<.005	2.9	<.01	0.024	<.005	<.005	<.03	<.01
06-12-01	<.01	0.004	2	<.005	<1	<.01	<1	<.03	<.005	0.4	<.01	0.014	<.005	<.005	<.03	0.02
13/06/01	0.03	<.002	3	<.005	<1	<.01	<1	<.03	<.005	2.8	0.02	0.015	<.005	<.005	<.03	<.01
09-08-01	<0.01	<0.002	4	<0.005	<1	<0.01	2	<0.03	<0.005	5.7	<0.01	0.08	0.005	<0.005	<0.03	0.01
STATION: R8																
25/02/99	<.01	<.002	4	<.005	<.04	<.01	3	<.03	<.03	4.2	<.01	0.187	<.005	<.005	<.03	<.01
17/05/99	0.11	0.011	<1	0.007	2.34	<.01		0.03	<.03	0.6	<.01	0.05	<.005	0.032	<.03	0.02
07-04-99	0.34	<.002	<1	<.005	<.04	<.01	2	<.03	<.03	3.8	<.01	0.025	<.005	<.005	<.03	<.01
30/10/99	<.01	<.002	3	<.005	<.04	<.01	3	<.03	<.005	4	<.01	0.128	<.005	<.005	<.03	0.02
26/03/00	<.01	<.002	6	<.005	<1	<.01	3	<.03	<.005	5.8	<.01	0.208	<.005	<.005	<.03	<.01
06-04-00	0.02	<.002	1	<.005	3	<.01	<1	<.03	<.005	2.4	<.01	0.055	<.005	<.005	<.03	<.01
09-12-00	0.14	<.002	3	0.006	5	<.01	3	<.03	<.005	3.7	<.01	0.013	<.005	<.005	<.03	0.06
03-05-01	0.01	<.002	6.77	<.005	<1	<.01	4.5	<.03	<.005	6.18	<.01	0.2	<.005	<.005	<.03	<.01
13/06/01	0.05	<.002	4	<.005	<1	<.01	<1	<.03	<.005	2.7	0.02	0.022	<.005	<.005	<.03	0.01
09-08-01	0.03	<0.002	6	<0.005	<1	<0.01	3	<0.03	<0.005	5.1	<0.01	0.113	<0.005	<0.005	<0.03	0.05
STATION: R9																
22/06/95	0.04	<0.002	1	0.008	0.04	<0.02		<0.02		2.56		0.101	<0.005	<0.005	<0.02	0.03
17/05/99	0.1	0.003	<1	0.013	0.05	<.01		<.03	<.03	0.7	<.01	0.055	<.005	0.01	<.03	0.04
07-04-99	0.31	<.002	<1	<.005	<.04	<.01	3	0.04	<.03	3.7	<.01	0.033	<.005	<.005	<.03	<.01
30/10/99	<.01	<.002	4	<.005	<.04	<.01	5	<.03	<.005	4.1	<.01	0.143	<.005	<.005	<.03	0.09
06-04-00	<.01	<.002	1	<.005	<1	<.01	<1	<.03	<.005	2.4	<.01	0.053	<.005	<.005	<.03	<.01
09-12-00	0.07	0.011	3	<.005	2	<.01	3	<.03	<.005	2.9	<.01	0.01	<.005	<.005	<.03	0.05
03-05-01	0.03	<.002	8.63	<.005	<1	<.01	7.4	<.03	<.005	5.78	<.01	0.22	<.005	<.005	<.03	<.01
13/06/01	0.07	<.002	3	<.005	<1	<.01	1	<.03	<.005	3	<.01	0.04	<.005	<.005	<.03	0.01
09-08-01	0.02	<0.002	4	<0.005	<1	<0.01	3	<0.03	<0.005	5.3	<0.01	0.137	<0.005	<0.005	<0.03	0.07
STATION: R10																
17/05/99	0.07	<.002	<1	0.009	1.02	<.01		<.03	<.03	0.5	<.01	0.044	<.005	0.011	<.03	0.03
07-04-99	0.26	<.002	<1	<.005	<.04	<.01	2	<.03	<.03	3.6	<.01	0.035	<.005	<.005	<.03	<.01
30/10/99	0.02	<.002	4	<.005	<.04	<.01	5	<.03	<.005	3.9	<.01	0.139	<.005	<.005	<.03	0.03
26/03/00	<.01	<.002	9	<.005	<1	<.01	5	<.03	<.005	5.9	<.01	0.22	<.005	<.005	<.03	<.01
08-03-00	<.01	<.002	1	<.005	1	<.01	<1	<.03	<.005	2.2	<.01	0.055	<.005	<.005	<.03	<.01
09-12-00	0.04	0.002	4	<.005	1	<.01	3	<.03	<.005	3.8	<.01	0.02	<.005	0.014	<.03	0.08
03-05-01	0.03	<.002	9.2	0.014	<1	0.03	7.2	<.03	<.005	6.12	<.01	0.21	0.011	<.005	<.03	0.02
13/06/01	0.05	<.002	3	0.018	<1	<.01	1	<.03	<.005	2.8	0.01	0.04	<.005	<.005	<.03	<.01
09-08-01	0.02	<0.002	5	<0.005	<1	<0.01	3	<0.03	<0.005	5	<0.01	0.125	<0.005	<0.005	<0.03	0.02
STATION: NF1																
28/07/89																0.024
22/08/97	0.04	0.007	2	<.005	0.12	<.02	5	<.03	<.03	4.3	<.01	0.124	<.005	<.005	0.09	0.18
07-04-99	0.05	<.002	<1	<.005	<.04	<.01	3	0.03	<.03	3.3	<.01	0.027	<.005	<.005	<.03	<.01
30/10/99	0.11	<.002	4	<.005	<.04	<.01	6	<.03	<.005	3.9	<.01	0.146	<.005	<.005	<.03	<.01
25/07/00	0.09	<.002	4	0.013	4	<.01	3	<.03	<.005	4	<.01	0.123	<.005	0.029	<.03	0.35
06-12-01	<.01	<.002	2	<.005	<1	<.01	<1	<.03	<.005	0.3	<.01	0.037	<.005	<.005	<.03	0.01
STATION: NF2																
08-11-90																0.011
06-08-96	0.014	<0.03	<2	<0.02	<0.3	<0.05		<0.2	<0.2	3.75	<0.03	0.071	<0.01	<0.03		0.031
22/08/97	<.01	<.002	2	<.005	<.04	<.02	5	<.03	<.03	4.4	<.01	0.119	<.005	0.005	0.05	0.08
21/12/98	0.03	<.002	4	0.007	3.67	<.01	7	0.04	<.03	5.1	<.01	0.194	<.005	0.062	<.03	<.01
07-03-99	0.06	<.002	<1	<.005	<.04	<.01	3	<.03	<.03	3.7	<.01	0.035	<.005	<.005	<.03	<.01
31/10/99	0.05	<.002	4	<.005	<.04	<.01	5	<.03	<.005	4	<.01	0.143	<.005	<.005	<.03	0.02
25/07/00	0.06	<.002	3	0.009	4	<.01	3	<.03	<.005	3.8	<.01	0.097	<.005	0.029	<.03	0.01
06-12-01	0.04	<.002	2	<.005	<1	<.01	<1	<.03	<.005	0.2	<.01	0.038	<.005	<.005	<.03	0.01
STATION: X2																
28/07/89																0.034
21/12/98	0.05	<.002	5	0.006	0.3	<.01	13	<.03	<.03	7.4	<.01	0.268	<.005	0.048	<.03	<.01
18/01/99	0.03	<.002	4	<.005	<.04	<.01	11	<.03	<.03	5.3	<.01	0.104	<.005	<.005	0.03	<.01
22/02/99	0.05	0.004	3	<.005	0.59	<.01		<.03	<.03	4.6	<.01	0.209	0.012	<.005	<.03	0.01
17/03/99	0.05	<.002	5	<.005	0.12	<.01	10	<.03	<.03	5.2	<.01	0.183	0.007	<.005	<.03	<.01
20/04/99	0.04	<.002	4	<.005	<.04	<.01	8	<.03	<.03	4.7	<.01	0.156	0.019	<.005	0.35	0.01
17/05/99	<.01	0.004	<1	0.007	3.16	0.02		<.03	<.03	0.5	<.01	0.036	<.005	0.029	<.03	0.03
07-03-99	0.02	<.002	<1	<.005	<.04	<.01	3	0.04	<.03	4	<.01	0.005	<.005	<.005	<.03	<.01
27/07/99	<.01	<.002	<1	<.005	<.04	<.01	3	<.03	<.005	3.7	<.01	0.069	<.005	<.005	<.03	<.01
08-12-99	<.01	<.002	4	<.005	<.04	<.01	4	<.03	<.005	5.4	<.01	0.099	<.005	<.005	<.03	<.01
09-10-99	<.01	<.002	3	<.005	<.04	<.01	4	<.03	<.005	3.9	<.01	0.068	<.005	0.014	<.03	<.01
29/10/99	0.06	0.004	5	0.029	0.07	<.01	6	<.03	<.005	4.1	0.02	0.144	<.005	0.011	<.03	<.01
22/11/99	0.02	0.012	4	<.005	<.04	<.01	8	<.03	<.005	4.2	<.01	0.161	<.005	<.005	<.03	<.01

Table C3. Surface Water Quality Rose Creek, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
14/12/99	<.003	<.05	<.005	<.05	0.081	<.001	<.04	41.2	<.001	<.005	<.005	<.002	<.01	<1	<.005	8	0.04	<.002	1	<.005	<.04	<.01	7	<.03	<.005	3.9	<.01	0.166	<.005	<.005	<.03	<.01
27/01/00	<.003	<.05	<.005	<.05	0.028	<.001	<.05	38.8	<.001	<.005	<.005	0.01	<.01	2	<.005	9	0.01	0.005	5	<.005	<1	<.01	11	<.03	<.005	4.6	<.01	0.156	<.005	0.006	<.03	0.02
28/02/00	<.003	0.06	<.005	<.05	0.031	<.001	<.05	36.6	<.001	<.005	0.033	0.005	<.01	2	0.014	9.2	0.01	<.002	5	<.005	<1	<.01	8	<.03	<.005	5.6	<.01	0.159	0.016	<.005	<.03	<.01
23/03/00	<.003	<.05	<.005	<.05	0.158	<.001	<.05	44.9	0.001	0.021	<.005	<.002	<.01	<1	<.005	9.6	0.06	<.002	<1	<.005	<1	<.01	8	<.03	<.005	6.4	<.01	0.232	<.005	<.005	<.03	<.01
27/04/00	<.003	<.05	<.005	<.05	0.039	<.001	<.05	28.4	<.001	<.005	<.005	0.007	0.08	<1	<.005	8.8	0.02	<.002	4	<.005	<1	<.01	9	<.03	<.005	4.1	<.01	0.039	<.005	<.005	<.03	<.01
15/05/00	<.003	<.05	<.005	<.05	0.019	<.001	<.05	11.9	<.001	<.005	<.005	<.002	0.27	<1	<.005	5.2	<.01	<.002	<1	<.005	<1	<.01		<.03	<.005	3.1	<.01	0.066	<.005	<.005	<.03	<.01
26/06/00	<.003	<.05	<.005	<.05	0.011	<.001	<.05	7.6	<.001	<.005	<.005	<.002	0.01	<1	<.005	2.2	<.01	<.002	<1	<.005	2	<.01	2	<.03	<.005	2.5	<.01	0.008	<.005	<.005	<.03	<.01
25/07/00	<.003	<.05	<.005	<.05	0.019	<.001	<.05	13.6	<.001	0.028	<.005	<.002	0.15	1	0.034	3.9	<.01	<.002	3	0.006	<1	<.01	3	<.03	<.005	3.7	<.01	0.115	<.005	0.022	<.03	<.01
29/08/00	<.003	0.14	<.005	<.05	0.016	<.001	<.05	12	<.001	<.005	<.005	<.002	0.06	<1	<.005	2.7	<.01	<.002	3	<.005	<1	<.01	3	<.03	<.005	4.7	<.01	0.058	0.011	<.005	<.03	<.01
25/09/00	<0.01	0.06	<0.2	<0.1	0.04	<0.005	<0.1	20.4	<0.001	<0.01	<0.01	<0.01	0.11	<2		4.1	0.009	<0.01	<2	<0.05	<0.3	<0.05		<0.2	<0.2	5.22	<0.03	0.085	<0.01	<0.03		0.009
29/10/00	<.003	0.07	0.015	<.05	0.03	<.001	<.05	18.3	<.001	<.005	<.005	0.002	0.15	1	<.005	4.8	0.04	<.002	5	<.005	2	<.01	4	<.03	<.005	5.2	<.01	0.061	<.005	<.005	<.03	<.01
13/11/00	<0.003	<0.05	<0.005	0.06	0.155	<0.001	<0.05	36	<0.001	<0.005	<0.005	<0.002	0.03	<1	0.011	8.3	0.08	<0.002	3	0.006	0.1	<0.01	7	0.09	<0.005	5.4	0.07	0.162	<0.005	<0.005	0.05	0.02
18/11/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	36.8	<0.001	<0.01	<0.01	<0.01	0.05	<2		7	0.047	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	5.46	<0.03	0.147	<0.01	<0.03		0.021
14/12/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	36.5	<0.001	<0.01	<0.01	<0.01	0.04	<2		7.6	0.047	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	5.25	<0.03	0.164	<0.01	<0.03		0.015
13/01/01	<.003	<.05	<.005	<.05	0.026	<.001	<.05	29.9	<.001	<.005	<.005	0.007	0.07	<1	<.005	7.4	0.09	<.002	4	<.005	<1	<.01	14	<.03	<.005	5.4	<.01	0.249	<.005	<.005	<.03	0.01
02-10-01	<.003	<.05	<.005	<.05	0.027	<.001	<.05	27.1	<.001	<.005	<.005	<.002	0.01	2	<.005	6.4	<.01	<.002	4	<.005	<1	<.01	17	<.03	<.005	4.6	<.01	0.087	<.005	<.005	<.03	<.01
03-10-01	<.003	0.11	<.005	0.06	0.17	<.001	<.05	47	<.001	<.005	<.005	0.003	<.01	<1	<.005	10.3	0.06	<.002	7.64	<.005	<1	<.01	9.6	<.03	<.005	5.41	<.01	0.22	<.005	<.005	<.03	<.01
16/04/01	<.003	<.05	<.005	<.05	0.16	<.001	<.05	45.1	<.001	<.005	<.005	<.002	0.02	<1	<.005	10	0.06	<.002	7	<.005	<1	<.01	8	<.03	<.005	6.1	<.01	0.216	<.005	<.005	<.03	<.01
14/05/01	<.003	0.08	<.005	<.05	0.104	<.001	<.05	24.9	<.001	<.005	<.005	<.002	0.1	4	<.005	5.3	<.01	0.003	<1	<.005	<1	<.01	4	<.03	<.005	3.1	<.01	0.11	<.005	<.005	<.03	<.01
17/06/01	<.003	0.06	<.005	0.11	0.092	<.001	<.05	10.4	<.001	<.005	<.005	<.002	0.03	<1	<.005	2.4	0.03	<.002	2	<.005	<1	<.01	2	0.06	<.005	1.2	0.03	0.048	0.013	<.005	<.03	<.01
14/07/01	<.003	<.05	<.005	2.21	0.099	<.001	<.05	20.8	<.001	<.005	<.005	<.002	0.02	<1	<.005	4.6	<.01	<.002	7	<.005	<1	<.01	3	<.03	<.005	5	<.01	0.106	0.006	<.005	<.03	0.04
14/08/01	<0.003	<0.05	<0.005	<0.05	0.137	<0.001	<0.05	28.9	<0.001	<0.005	<0.005	<0.002	<0.01	<1	<0.005	6.4	0.01	<0.002	2	<0.005	<1	<0.01	4	<0.03	<0.005	5.4	<0.01	0.135	<0.005	<0.005	<0.03	<0.01
17/09/01	<0.003	<0.05	<0.005	0.53	0.111	<0.001	<0.05	30.3	<0.001	<0.005	<0.005	<0.002	0.03	<1	0.007	6.7	0.02	<0.002	<1	<0.005	<1	<0.01	5	<0.03	<0.005	5.4	<0.01	0.149	<0.005	0.005	0.19	0.04
15/10/01	<0.003	<0.05	0.008	0.05	0.151	<0.001	<0.05	34.9	<0.001	<0.005	<0.005	<0.002	0.04	<1	0.013	7.9	0.17	<0.002	5	<0.005	<1	<0.01	7	<0.03	<0.005	5.4	<0.01	0.177	0.005	<0.005	0.2	<0.01
13/11/01	<0.003	<0.05	<0.005	0.06	0.155	<0.001	<0.05	36	<0.001	<0.005	<0.005	<0.002	0.03	<1	0.011	8.3	0.08	<0.002	3	0.006	0.1	<0.01	7	0.09	<0.005	5.4	0.07	0.162	<0.005	<0.005	0.05	0.02
15/12/01	<0.001	<0.05	<0.005	<0.05	0.101	<0.001	<0.05	41.9	<0.001	0.005	0.007	<0.002	0.04	<1	0.009	9.9	0.08	0.012	<1	0.01	<0.01	<0.01	7	<0.03	<0.005	5.1	<0.01	0.173	<0.005	<0.005	0.09	<0.01
STATION: X3																																
19/10/98	<.003	<.05	<.02	<.05	0.008	<.001	<.04	26.7	<.002	<.005	<.005	<.002	<.01	<1	<.005	5.9	0.02	0.01	3	<.005	<.04	<.02	3.2	<.03	<.03	2.5	<.01	0.121	<.005	<.005	<.03	0.08
21/12/98	<.003	<.05	0.015	0.14	0.014	<.001	<.04	40.6	<.001	<.005	<.005	0.006	<.01	1	<.005	9.1	0.03	<.002	3	<.005	3.69	<.01	8	<.03	<.03	4.2	<.01	0.196	<.005	0.063	<.03	<.01
18/01/99	<.003	<.05	<.005	0.06	0.019	<.001	<.04	40.3	<.001	<.005	0.147	0.005	<.01	<1	<.005	9.1	0.02	<.002	3	<.005	<.04	<.01	9	<.03	<.03	4.4	<.01	0.186	<.005	<.005	<.03	<.01
22/02/99	<.003	<.05	<.005	0.22	0.022	<.001	<.04	45.6	<.001	<.005	<.005	0.003	<.01	<1	<.005	10.2	0.04	<.002	3	<.005	0.33	<.01		<.03	<.03	4.6	<.01	0.223	0.007	<.005	<.03	<.01
17/03/99	<.003	<.05	<.005	0.07	0.015	<.001	<.04	37.8	<.001	<.005	0.278	0.005	<.01	<1	<.005	8.2	0.03	<.002	3	<.005	0.1	<.01	9	<.03	<.03	4.1	<.01	0.167	<.005	<.005	<.03	<.01
20/04/99	<.003	<.05	<.005	0.06	0.017	<.001	<.04	36	<.001	0.005	<.005	<.002	<.01	1	<.005	8.4	0.02	<.002	3	<.005	0.33	<.01	7	<.03	<.03	3.6	<.01	0.18	0.008	<.005	<.03	<.01
17/05/99	<.003	<.05	<.005	<.05	0.017	0.001	<.04	9.1	<.001	<.005	<.005	<.002	0.11	1	<.005	2	<.01	0.008	<1	0.008	<.04	<.01		<.03	<.03	0.5	<.01	0.052	<.005	0.015	<.03	0.03
07-03-99	<.003	<.05	<.005	0.26	0.006	<.001	<.04	15.7	<.001	<.005	<.005	<.002	0.23	<1	<.005	3.5	0.03	<.002	<1	<.005	<.04	<.01	3	<.03	<.03	3.4	<.01	0.016	<.005	<.005	<.03	<.01
27/07/99	<.003	<.05	<.005	<.05	0.024	<.001	<.04	15.1	<.001	0.024	<.005	<.002	0.07	<1	<.005	3.6	<.01	<.002	<1	<.005	<.04	<.01	3	<.03	<.005	2.8	<.01	0.089	<.005	<.005	<.03	<.01
08-12-99	<.003	<.05	<.005	<.05	0.071	<.001	<.04	20.3	<.001	<.005	<.005	<.002	0.03	1	<.005	4.1	<.01	<.002	5	<.005	<.04	<.01	3	<.03	<.005	4.7	<.01	0.103	<.005	<.005	<.03	<.01
31/10/99	0.004	<.05	<.005	<.05	0.13	<.001	<.04	28	<.001	0.01	0.005	0.011	<.01	6	0.014	5.9	0.03	0.004	4	0.026	0.05	<.01	6	<.03	<.005	3.5	0.01	0.14	<.005	0.006	<.03	<.01
22/11/99	<.003	<.05	<.005	<.05	0.028	<.001	<.04	26.6	<.001	<.005	<.005	0.003	0.03	<1	<.005	6.5	<.01	0.004	3	<.005	<.04	<.01	7	<.03	<.005	3.8	<.01	0.122	<.005	<.005	<.03	<.01
14/12/99	<.003	<.05	<.005	<.05	0.097	<.001	<.04	37.4	<.001	<.005	<.005	0.01	<.01	1	<.005	7.2	0.03	<.002	1	0.009	<.04	<.01	7	<.03	<.005	3.4	<.01	0.158	<.005	<.005	<.03	<.01
27/01/00	<.003	<.05	<.005	<.05	0.031	<.001	<.05	36.2	<.001	<.005	<.005	0.004	<.01	1	0.012	8.2	0.01	<.002	4	<.005	<1	<.01	8	<.03	<.005	3.8	<.01	0.153	<.005	<.005	<.03	<.01
28/02/00	<.003	<.05	<.005	<.05	0.036	<.001	<.05	36.8	<.001	<.005	0.056	0.004	<.01	2	<.005	6.6	<.01	0.003	4	<.005	<1	<.01	7	<.03	<.005	5.1	<.01	0.165	<.005	<.005	<.03	<.01
23/03/00	<.003	<.05	<.005	<.05	0.162	<.001	<.05	40.9	0.002	0.027	<.005	<.002	<.01	2	<.005	8.4	0.04	<.002	<1	<.005	<1	<.01	7	<.03	<.005	5.9	<.01	0.214	<.005	<.005	<.03	<.01
27/04/00	<.003	<.05	<.005	<.05	0.031	<.001	<.05	30	<.001	<.005	<.005	0.003	0.03	<1	<.005	6.9	0.01	<.002	3	<.005	<1	<.01	8	<.03	<.005	3.9	<.01	0.069	<.005	0.008	<.03	<.01
15/05/00	<.003	<.05	<.005	<.05	0.024	<.001	<.05	15.3	<.001	<.005	<.005	<.002	0.2	<1	0.027	3.9	<.01	<.002	<1	<.005	<1	<.01		<.03	<.005	3	<.01	0.096	<.005	<.005	<.03	<.01
26/06/00	<.003	<.05	<.005	<.05	0.009	<.001	<.05	11.7	<.001	0.008	<.005	<.002	<.01	1	<.005	2.7	<.01	<.002	<1	<.005	<1	<.01	2	<.03	<.005	2.3	<.01	0.004	<.005	<.005	<.03	<.01
25/07/00	<.003	<.05	<.005	<.05	0.021	<.001	<.05	14.9	<.001	0.017	<.005	<.002	0.14	<1	0.095	3.7	<.01	<.002	3	0.007	<1	<.01	3	<.03	<.005	2.9	<.01	0.128	<.005	<.005	<.03	<.01
29/08/00	<.003	0.1	<.005	<.05	0.016	<.001	<.05	18.6	<.001	<.005	<.005	<.002	<.01	<1	<.005	3.9	<.01	<.002	3	<.005	<1	<.01	4	<.03	<.005	4.2	<.01	0.075	0.006	<.005	<.03	<.01
25/09/00	<0.01	0.06	<0.2	<0.1	0.04	<0.005	<0.1	24.9	<0.001	<0.01	<0.01	<0.01	0.06	<2		5.1	0.01	<0.01	<2	<0.05	<0.3	<0.05		<0.2	<0.2	4.44	<0.03	0.125	<0.01	<0.03		0.011
29/10/00	<.003	0.08	<.005	<.05	0.038	<.001	<.05	29.7	<.001	<.005	<.005	0.012	0.17	2	<.005	7	0.05	<.002	5	<.005	<1	<.01	11	<.03	<.005	5.4	<.01	0.116	<.005	0.007	<.03	<.01
13/11/00	<0.003	<0.05	0.005	0.05	0.114	<0.001	<0.05	35.2	<0.001	<0.005	<0.005	<0.002	0.04	1	0.015	8	0.08	<0.002	2	<0.005	0.03	0.01	7	0.06	<0.005	4.9	0.01	0.168	0.007	<0.005	0.04	<0.01
18/11/00	<0.01	<0.05	<0.2	<0.1	0.05	<0.005	<0.1	39.6	<0.001	<0.01	<0.01	<0.01	0.06	<2		7.9	0.038	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	4.94	<0.03	0.168	<0.01	<0.03		0.008
14/12/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	38	<0.001	<0.01	<0.01	<0.01	0.03	<2		8	0.048	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	5.21	<0.03	0.173	<0.01	<0.03		0.012
13/01/01	<.003	<.05	<.005	<.05	0.027	<.001	<.05	34.9	<.001	<.005	<.005	0.013	0.09	<1	<.005	7.9	0.05	<.002	4	<.005	<1	0.02	16	<.03	<.005	5.1	<.01	0.304	<.005	<.005	<.03	<.01
02-10-01	<.003	<.05	<.005	<.05	0.035	<.001	<.05	32.2	<.001	<.005	<.005	0.007	0.07	1	<.005	7.5	0.03	<.002	5	<.005	3	<.01	20	<.03	<.005	4.7	<.01	0.128	<.005	<.005	<.03	<.01
03-10-01	<.003	0.11	<.005	<.05	0.18	<.001	<.05	46	<.001	<.005	<.005	0.006	<.01	<1	<.005	9.97	0.03	<.002	6.53	<.005	<1	<.01	9.5	<.03	<.005	5.21	<.01	0.23	<.005	<.005	<.03	<.01
16/04/01	<.003	<.05	<.005	0.06	0.18	<.001	<.05	42.7	<.001	<.005	<.005	<.002	0.03	2	<.005	9.3	0.03	<.002	10	<.005	<1	<.01	8	<.03	<.005	5.9	<.01	0.214	<.005	<.005	<.03	<.01
14/05/01	<.003	0.11	<.005	<.05	0.112	<.001	<.05	27.7	<.001	<.005	<.005	<.002	0.11	<1	<.005	5.7	0.02	<.002	<1	<.005	<1	<.01	5	<.03	<.005	3.2	<.01	0.124	<.005	<.005	0.04	<.01
17/06/01	<.003	<.05	<.005	0.12	0.093	<.001	<.05	14.1	<.001	<.005	<.005	<.002	0.07	<1	<.005	2.8	0.04	<.002	3	<.005	<1	<.01	2	0.03	<.005	1.2	<.01	0.075	<.005	<.005	<.03	<.01
14/07/01	<.003	<.05	<.005	1.49	0.091	<.001	<.05	20.3	<.001	<.005	<.005	<.002	0.01	<1	0.005	4.1	<.01	<.002	4	<.005	<1	<.01	3	<.03	<.005	4.7	<.01	0.118	<.005	<.005	<.03	0.01
14/08/01	<0.003	<0.05	<0.005	<0.05	0.143	<0.001	<0.05	27.9	<0.001	<0.005	<0.005	0.002	<0.01	<1	<0.005	6	<0.01	<0.002	2	<0.005	<1	<0.01	5	<0.03	<0.005	5.1	<0.01	0.153	<0.005	<0.005	<0.03	<0.01
17/09/01	<0.003	<0.05	<0.005	<0.05	0.111	<0.001	<0.05	28.7	<0.001	<0.005	<0.005	<0.002	0.03	<1	0.006	8.2	0.01	<0.002	<1	<0.005	<1	<0.01	5	<0.03	<0.005	4.8	<0.01	0.151	<0.005	<0.005	0.04	<0.01
15/10/01	<0.003	<0.05	<0.005	0.06	0.13	<0.001	<0.05	30.8	<0.001	<0.005	<0.005	<0.002	<0.01	1	0.013	8.3	0.04	<0.002	4	<0.005	<1	<0.01	6	0.06	<0.005	4.8	<0.01	0.165	<0.005	<0.005	0.04	<0.01
13/11/01	<0.003	<0.05	0.005	0.05	0.114	<0.001	<0.05	35.2	<0.001	<0.005	<0.005	<0.002	0.04	1	0.015	8	0.06	<0.002	2	<0.005	0.03	0.01	7	0.06	<0.005	4.9	0.01	0.168	0.007	<0.005	0.04	<0.01
15/12/01	<0.001	<0.05	<0.005	0.06	0.087	<0.001	<0.05	37.6	<0.001	0.006	<0.005	<0.002	0.04	<1	0.01	8.4	0.03	<0.002	<1	0.009	<0.01	<0.01	6	<0.03	<0.005	4.9	0.02	0.168	<0.005	<0.005	0.03	<0.01
STATION: X10																																
13/05/96			<.02																													
29/05/96			<.02																													
09-03-06												<.002																				
18/10/98	<.003	<.05	<.02	<.05	0.009	<.001	<.04	31.1	<.002	0.012	<.005	0.003	0.06	<1	<.005	7.2	0.33	<.002	3	<.005	<.04	<.02	3.9	<.03	<.03	2.7	<.01	0.128	<.005	<.005	<.03	0.04
21/12/98	<.003	<.05	0.017	0.07	0.014	<.001	<.04	41.5	<.001	<.005	<.005	0.006	<.01	1	<.005	9.2	0.05	<.002	3	<.005	7.14	<.01	10	<.03	<.03	3.6	<.01	0.193	<.005	0.048	<.03	0.02
17/05/99	<.003	<.05	<.005	<.05	0.025	0.002	<.04	10.3	<.001	<.005	<.005	<.002	0.09	1	<.005	2.2	0.04	<.002	<1	<.005	0.6	<.01		<.03	<.03	0.5	<.01	0.054	<.005	0.009	<.03	0.04
27/07/99	<.003	<.05	<.005	<.05	0.035	<.001	<.04	18.7	<.001	0.012	<.005	0.002	0.17	<1	<.005	4.7	0.08	<.002	<1	0.01	<.04	<.01	4	<.03	<.005	3.2	<.01	0.093	0.008	<.005	<.03	0.02
14/12/99	<.003	<.05	<.005	<.05	0.088	<.001	<.04	39.6	<.001	<.005	<.005	0.014	0.07	3	<.005	8	0.04	<.002	1	0.008	<.04	<.01	8	<.03	<.005	3.2	<.01	0.164	<.005	0.007	<.03	0.01
23/03/00	<.003	<.05	<.005	<.05	0.162	<.001	<.05	42.8	0.003	0.019	<.005	<.002	0.04	3	<.005	9.3	0.02	<.002	<1	<.005	<1	<.01	8	<.03	<.005	5.6	<.01	0.218	<.005	<.005	<.03	0.02
27/04/00	<.003	<.05	<.005	<.05	0.027	<.001	<.05	32.2	<.001	<.005	<.005	0.034	0.08	<1	<.005	7.5	0.04	<.002	3	<.005	<1	<.01	8	<.03	<.005	3.6	<.01	0.058	0.006	0.006	<.03	<.01
15/05/00	<.003	<.05	<.005	<.05	0.024	<.001	<.05	19	<.001	<.005	<.005	<.002	0.22	<1	<.005	4.1	<.01	<.002	<1	<.005	<1	<.01		<.03	<.005	3.2	<.01	0.112	<.005	<.005	<.03	0.03
28/06/00	<.003	<.05	<.005	<.05	0.011	<.001	<.05	14.9	<.001	<.005	<.005	<.002	<.01	2	<.005	3.4	0.08	<.002	<1	<.005	<1	<.01	3	<.03	<.005	2.3	<.01	0.038	<.005	<.005	<.03	0.03
25/07/00	<.003	<.05	<.005	<.05	0.014	<.001	<.05	19.6	<.001	0.009	0.012	<.002	0.19	1	0.04	5	0.15	<.002	3	0.01	<1	<.01	4	<.03	<.005	3.2	<.01	0.12	<.005	0.027	<.03	<.01
29/08/00	<.003	0.09	<.005	<.05	0.013	<.001	<.05	18.9	<.001	<.005	<.005	<.002	0.01	<1	<.005	4.5	<.01	<.002	3	<.005	<1	<.01	4	<.03	<.005	4.4	<.01	0.079	<.005	<.005	<.03	<.01

Table C3. Surface Water Quality Rose Creek, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/08/00	<0.01	<0.05	<0.2	<0.1	0.04	<0.005	<0.1	25.2	<0.001	<0.01	<0.01	<0.01
29/10/00	<.003	0.1	<.005	<.05	0.029	<.001	<.05	32.7	<.001	<.005	<.005	0.014
13/11/00	<0.003	<0.05	<0.005	<0.05	0.149	<0.001	<0.05	38.8	<0.001	<0.005	<0.005	<0.002
18/11/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	42.8	<0.001	<0.01	<0.01	<0.01
14/12/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	45.4	<0.001	<0.01	<0.01	<0.01
13/01/01	<.003	<.05	0.016	<.05	0.03	<.001	<.05	37.5	<.001	<.005	0.071	0.012
02-10-01	<.003	<.05	<.005	<.05	0.023	<.001	<.05	37.9	<.001	<.005	<.005	<.002
03-10-01	<.003	0.14	<.005	<.05	0.18	<.001	<.05	47	<.001	<.005	<.005	0.009
16/04/01	<.003	0.06	<.005	<.05	0.1	<.001	<.05	44.3	<.001	<.005	<.005	<.002
14/05/01	<.003	0.08	<.005	<.05	0.108	<.001	<.05	30.7	<.001	<.005	<.005	<.002
17/06/01	<.003	<.05	<.005	0.11	0.092	<.001	<.05	14.3	<.001	<.005	<.005	<.002
14/07/01	<.003	<.05	<.005	0.59	0.086	<.001	<.05	23.3	<.001	<.005	<.005	<.002
14/08/01	<0.003	<0.05	<0.005	<0.05	0.136	<0.001	<0.05	29.9	<0.001	<0.005	<0.005	0.004
17/09/01	<0.003	<0.05	<0.005	<0.05	0.104	<0.001	<0.05	30.5	<0.001	<0.005	<0.005	<0.002
15/10/01	<0.003	<0.05	0.011	<0.05	0.131	<0.001	<0.05	33.2	<0.001	<0.005	<0.005	<0.002
13/11/01	<0.003	<0.05	<0.005	<0.05	0.149	<0.001	<0.05	38.8	<0.001	<0.005	<0.005	<0.002
15/12/01	<0.001	<0.05	<0.005	0.08	0.088	0.001	<0.05	39.3	<0.001	<0.005	0.01	<0.002

Date	FE-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/08/00	0.1	<2		5.9	0.014	<0.01	<2	<0.05	<0.3	<0.05	
29/10/00	0.32	2	<.005	8	0.05	<.002	5	<.005	<1	<.01	16
13/11/00	0.07	1	0.017	9.4	0.08	<0.002	3	<0.005	0.05	<0.01	8
18/11/00	0.13	<2		9.3	0.052	<0.01	2	<0.05	<0.3	<0.05	
14/12/00	0.04	<2		10.3	0.051	<0.01	3	<0.05	<0.3	<0.05	
13/01/01	0.13	1	<.005	8.8	0.36	<.002	3	<.005	<1	<.01	16
02-10-01	0.06	2	<.005	8.9	0.35	<.002	4	<.005	28	<.01	24
03-10-01	0.04	<1	<.005	10.61	0.11	<.002	5.83	<.005	<1	<.01	10.2
16/04/01	0.05	<1	<.005	9.9	0.04	<.002	8	<.005	<1	<.01	9
14/05/01	0.37	3	<.005	6.5	0.1	<.002	<1	<.005	<1	<.01	6
17/06/01	0.09	<1	<.005	3.4	0.05	0.003	3	0.01	<1	<.01	2
14/07/01	0.05	<1	<.005	5.3	<.01	<.002	7	<.005	<1	<.01	4
14/08/01	0.04	<1	<0.005	6.9	<0.01	<0.002	<1	<0.005	<1	<0.01	5
17/09/01	0.14	<1	0.006	7.1	0.03	<0.002	<1	<0.005	<1	<0.01	5
15/10/01	0.09	1	0.012	7.7	0.07	<0.002	<1	<0.005	<1	<0.01	6
13/11/01	0.07	1	0.017	9.4	0.08	<0.002	3	<0.005	0.05	<0.01	8
15/12/01	0.06	<1	0.01	9.4	0.05	0.003	2	0.017	0.02	<0.01	7

Date	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/08/00	<0.2	<0.2	4.48	<0.03	0.112	<0.01	<0.03		<0.005
29/10/00	<.03	<.005	5.3	<.01	0.129	<.005	<.005	<.03	0.02
13/11/00	<0.03	<0.005	5.2	0.06	0.177	<0.005	0.006	<0.03	0.02
18/11/00	<0.2	<0.2	4.99	<0.03	0.179	<0.01	<0.03		0.029
14/12/00	<0.2	<0.2	5.66	<0.03	0.218	<0.01	<0.03		0.049
13/01/01	<.03	<.005	4.6	<.01	0.249	<.005	<.005	<.03	0.04
02-10-01	<.03	<.005	4.8	<.01	0.23	<.005	0.012	<.03	0.02
03-10-01	<.03	<.005	4.98	<.01	0.22	<.005	0.009	<.03	0.03
16/04/01	<.03	<.005	5.2	<.01	0.213	<.005	<.005	<.03	<.01
14/05/01	<.03	<.005	3.2	<.01	0.134	<.005	<.005	<.03	<.01
17/06/01	<.03	<.005	1.1	<.01	0.066	<.005	<.005	<.03	<.01
14/07/01	<.03	<.005	4.8	<.01	0.121	<.005	<.005	<.03	0.04
14/08/01	<0.03	<0.005	5.1	<0.01	0.148	<0.005	<0.005	<0.03	0.02
17/09/01	<0.03	<0.005	4.7	<0.01	0.154	<0.005	<0.005	<0.03	0.03
15/10/01	<0.03	<0.005	4.7	<0.01	0.169	<0.005	<0.005	<0.03	<0.01
13/11/01	<0.03	<0.005	5.2	0.06	0.177	<0.005	0.006	<0.03	0.02
15/12/01	<0.03	<0.005	4.8	<0.01	0.174	<0.005	<0.005	<0.03	0.02

Table C4. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: X5														
12/9/1991												<0.001		
6/5/1996			<.02											
13/05/96			<.02											
21/05/96			<.02											
27/05/96			<.02											
3/9/1996												<.002		
3/2/1997			<.02											
11/2/1997			<.02											
18/03/97			<.02											
24/03/97			<.02											
31/03/97			<.02											
9/4/1997			<.02											
15/07/97			<.02											
22/07/97	<.003	<.05	0.02	0.1	0.02	<.001	<.04	127.6	<.002	0.005	<.005	0.009	<.01	4
28/07/97			0.03											
4/8/1997			<.02											
12/8/1997			<.02											
19/08/97			<.01											
25/08/97			<.02											
2/9/1997			0.05											
9/9/1997			<.02											
16/09/97			<.02											
22/09/97			<.02											
30/09/97			<.02											
7/10/1997			<.02											
10/10/1997			0.03											
14/10/97			<.02											
20/10/97			<.02											
27/10/97			<.02											
4/11/1997			<.02											
13/11/97			<.02											
19/11/97			<.02											
25/11/97			<.02											
2/12/1997			<.02											
8/12/1997			<.02											
15/12/97			<.02											
23/12/97			<.02											
30/12/97			<.02											
5/1/1998	<.003	<.05	<.02	0.08	0.07	<.001	<.04	127.4	<.002	<.005	<.005	0.008	<.01	4
12/1/1998			<.02											
13/04/98	<.003	<.05	<.02	<.05	0.065	0.002	<.04	132.9	<.002	<.005	<.005	0.029	<.01	6
18/05/98	<.003	0.06	<.02	0.13	0.021	0.021	<.04	117.2	<.002	<.005	<.005	0.019	<.01	7
2/6/1998			<.02											
10/8/1998														
19/10/98	<.003	<.05	<.02	<.05	0.022	0.001	<.04	179.5	<.002	0.006	<.005	0.018	0.11	8
18/01/99	<.003	<.05	<.005	0.05	0.017	0.001	<.04	184.9	<.001	<.005	0.165	0.021	0.12	7
21/02/99	<.003	0.14	<.005	0.19	0.023	<.001	<.04	211.9	<.001	<.005	0.062	0.019	0.09	8
21/03/99	<.003	0.12	<.005	<.05	0.011	<.001	<.04	178.1	0.002	<.005	<.005	0.02	<.01	6
20/04/99	<.003	0.1	<.005	0.06	0.026	0.002	<.04	141.8	<.001	0.009	<.005	0.018	0.19	6
6/5/1999	<.003	<.05	<.005	<.05	<.002	0.001	<.04	125.2	0.004	0.007	<.005	<.002	<.01	6
17/05/99	<.003	<.05	<.005	<.05	0.007	<.001	<.04	56.2	<.001	<.005	0.061	0.008	0.01	3
27/05/99	<.003	<.05	<.005	<.05	0.008	<.001	<.04	80.7	<.001	<.005	<.005	0.008	0.02	4
3/7/1999	<.003	0.12	<.005	0.19	0.032	<.001	<.04	131.6	<.001	<.005	<.005	0.014	0.19	5
27/07/99	<.003	0.17	<.005	<.05	0.013	<.001	<.04	138.6	<.001	<.005	<.005	0.011	0.06	6
29/07/99	<.0003	0.05	<.002	0.02	0.031	<.001	<.004	155.8	<.0002	<.001	<.001	0.015	0.03	7.9
12/8/1999	<.003	<.05	<.005	<.05	0.087	<.001	<.04	159.9	<.001	0.019	<.005	0.01	<.01	10
10/9/1999	<.003	0.1	<.005	<.05	0.025	<.001	<.04	163.9	<.001	<.005	<.005	0.018	0.03	7
29/10/99	<.003	<.05	<.005	<.05	0.084	<.001	<.04	194.2	<.001	<.005	<.005	0.003	0.04	4
26/01/00														
25/03/00	<.003	0.41	<.005	<.05	0.089	<.001	<.05	196.6	<.001	<.005	<.005	0.002	0.06	12
27/04/00	<.003	0.19	<.005	<.05	0.058	0.001	<.05	148.9	<.001	<.005	<.005	0.021	0.06	4
15/05/00	<.003	<.05	<.005	<.05	0.058	<.001	<.05	47.1	<.001	<.005	<.005	<.002	0.03	1
4/6/2000	<.003	<.05	<.005	<.05	0.019	<.001	<.05	112.1	0.005	<.005	<.005	<.002	0.01	6
26/06/00	<.003	<.05	<.005	<.05	0.036	0.002	<.05	152.5	<.001	<.005	<.005	0.018	<.01	7
25/07/00	<.003	<.05	<.005	<.05	0.051	0.002	<.05	157.9	0.01	0.01	0.006	0.017	0.15	8
29/08/00	<.003	0.34	<.005	<.05	0.031	<.001	<.05	161.3	<.001	<.005	<.005	0.019	0.19	8
25/09/00	<0.01	<0.05	<0.2	<0.1	0.02	<0.005	<0.1	188	<0.001	<0.01	<0.01	<0.01	0.06	7
21/10/00	<.003	0.27	<.005	<.05	0.048	0.002	<.05	182.7	<.001	<.005	<.005	0.03	0.17	8
13/11/00	<0.003	<0.05	<0.005	<0.05	0.047	<0.001	<0.05	188.5	<0.001	0.01	<0.005	<0.002	0.03	9
18/11/00	<0.01	<0.05	<0.2	<0.1	0.02	<0.005	<0.1	220	<0.001	<0.01	<0.01	<0.01	<0.01	7
14/12/00	<0.01	<0.05	<0.2	<0.1	0.03	<0.005	<0.1	223	<0.001	<0.01	<0.01	<0.01	<0.01	8
13/01/01	<.003	0.12	<.005	<.05	0.029	0.002	<.05	159.1	<.001	0.011	<.005	0.024	0.15	6
10/2/2001	<.003	0.14	<.005	<.05	0.032	0.002	<.05	170.3	<.001	<.005	<.005	0.017	0.01	9
10/3/2001	<.003	0.64	<.005	<.05	0.09	<.001	<.05	197	<.001	<.005	<.005	0.009	<.01	3
16/04/01	<.003	0.1	<.005	<.05	0.04	<.001	<.05	180.3	<.001	<.005	<.005	0.006	0.02	2
14/05/01	<.003	0.39	<.005	<.05	0.074	<.001	<.05	189.9	<.001	<.005	<.005	0.002	<.01	4
17/06/01	<.003	<.05	<.005	0.12	0.069	<.001	<.05	176.5	<.001	<.005	<.005	<.002	<.01	6
14/07/01	<.003	<.05	<.005	0.77	0.027	<.001	<.05	186.5	<.001	<.005	<.005	<.002	<.01	6
14/08/01	<0.003	<0.05	<0.005	<0.05	0.038	<0.001	<0.05	198.9	<0.001	<0.005	<0.005	<0.002	<0.01	7
17/09/01	<0.003	<0.05	<0.005	<0.05	0.045	<0.001	<0.05	177.6	<0.001	<0.005	<0.005	<0.002	<0.01	8
15/10/01	<0.003	<0.05	<0.005	0.05	0.029	<0.001	<0.05	182	<0.001	0.005	<0.005	<0.002	<0.01	9
13/11/01	<0.003	<0.05	<0.005	<0.05	0.047	<0.001	<0.05	188.5	<0.001	0.01	<0.005	<0.002	0.03	9
15/12/01	<0.001	<0.05	<0.005	<0.05	0.027	0.001	<0.05	197.1	<0.001	0.011	0.006	<0.002	<0.01	7
STATION: X13														
6/5/1996			<.02											
13/05/96			<.02											
21/05/96			<.02											

Date	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: X5																		
12/9/1991								0.041										0.275
6/5/1996																		
13/05/96																		
21/05/96																		
27/05/96																		
3/9/1996																		
3/2/1997																		
11/2/1997																		
18/03/97																		
24/03/97																		
31/03/97																		
9/4/1997																		
15/07/97																		
22/07/97	<.005	20.9	2.19	0.003	26	<.005	0.52	<.02	164	<.03	<.03	3.3	<.01	0.439	0.007	<.005	<.03	0.14
28/07/97																		
4/8/1997																		
12/8/1997																		
19/08/97																		
25/08/97																		
2/9/1997																		
9/9/1997																		
16/09/97																		
22/09/97																		
30/09/97																		
7/10/1997																		0.07
10/10/1997																		
14/10/97																		
20/10/97																		
27/10/97																		
4/11/1997																		
13/11/97																		
19/11/97																		
25/11/97																		
2/12/1997																		
8/12/1997																		
15/12/97																		
23/12/97																		
30/12/97																		
5/1/1998	<.005	22	0.21	<.002	19	<.005	<.04	<.02	152	<.03	<.03	1.8	<.01	0.423	<.005	<.005	<.03	0.02
12/1/1998																		
13/04/98	<.005	23.6	1.14	0.011	21	0.011	<.04	<.02	118	<.03	<.03	3.6	<.01	0.308	0.007	<.005	<.03	0.01
18/05/98	<.005	19.6	0.82	<.002	18	0.009	1.18	<.02	140	0.03	<.03	2.3	<.01	0.325	0.005	0.031	<.03	0.23
2/6/1998																		0.11
10/8/1998																		0.15
19/10/98	<.005	37.8	4.5	0.012	33	0.021	0.71	<.02	146.9	0.04	<.03	2.3	<.01	0.499	0.007	0.012	<.03	0.46
18/01/99	<.005	38.3	4.91	0.017	34	0.011	<.04	<.01	208	<.03	<.03	4.7	<.01	0.501	0.007	<.005	<.03	0.16
21/02/99	<.005	42.6	5.21	0.007	38	<.005	1.91	<.01		<.03	<.03	4.6	<.01	0.599	0.015	<.005	<.03	0.18
21/03/99	<.005	34	5.87	<.002	31	<.005	0.65	<.01	175.6	<.03	<.03	4.6	<.01	0.464	<.005	<.005	<.03	0.09
20/04/99	0.041	31.2	3.3	<.002	26	<.005	0.38	<.01	147	<.03	<.03	3.2	<.01	0.422	0.023	0.014	<.03	0.08
6/5/1999	<.005	20	0.78	<.002	17	<.005	0.78	<.01	124	<.03	<.03	0.9	<.01	0.414	<.005	<.005	<.03	0.07
17/05/99	<.005	10.2	0.34	<.002	9	<.005	<.04	<.01		<.03	<.03	0.3	<.01	0.176	0.016	<.005	<.03	<.01
27/05/99	0.034	13.5	0.63	<.002	12	<.005	<.04	<.01	77	<.03	<.03	0.4	<.01	0.232	0.021	<.005	0.1	0.13
3/7/1999	<.005	23.7	1.53	<.002	18	<.005	<.04	<.01	143	0.03	<.03	2.6	<.01	0.37	<.005	<.005	<.03	0.09
27/07/99	<.005	29.7	2.29	0.005	21	<.005	0.59	<.01	173	<.03	<.03	2.6	<.01	0.451	0.015	<.005	<.03	0.1
29/07/99	<.001	30	2.44	<.0004	23	<.001	0.03	0.005	159.9	<.003	<.003	2.59	<.001	0.447	0.024	<.001	<.003	0.1
12/8/1999	<.005	30.1	1.88	<.002	26	0.019	<.04	<.01	164	<.03	<.005	3.5	<.01	0.457	0.006	0.024	<.03	0.07
10/9/1999	0.006	33.8	3.02	0.003	23	0.01	<.04	<.01	199	<.03	<.005	2.3	<.01	0.435	0.009	<.005	<.03	0.06
29/10/99	<.005	39.6	7.92	<.002	34	<.005	<.04	<.01	209	<.03	<.005	3.4	<.01	0.542	<.005	<.005	<.03	0.04
26/01/00																		0.05
25/03/00	0.005	40.9	5.53	<.002	28	<.005	<1	<.01	193	<.03	<.005	5.4	<.01	0.616	<.005	<.005	<.03	<.01
27/04/00	<.005	31.8	4.3	<.002	23	<.005	<1	<.01	184	<.03	<.005	4.6	<.01	0.404	0.019	<.005	<.03	0.04
15/05/00	0.033	7.1	0.36	<.002	2	<.005	<1	<.01		<.03	<.005	1.6	<.01	0.19	<.005	<.005	<.03	0.03
4/6/2000	<.005	21.9	0.63	<.002	15	<.005	<1	<.01	127	<.03	<.005	1.8	<.01	0.354	<.005	<.005	<.03	0.01
26/06/00	<.005	27.6	1.36	<.002	23	0.006	6	<.01	147	<.03	<.005	2.7	<.01	0.418	0.014	<.005	<.03	0.27
25/07/00	0.059	31.8	2.03	<.002	28	0.022	3	<.01	186	<.03	<.005	2.1	<.01	0.564	0.013	0.02	<.03	0.2
29/08/00	<.005	33.3	2.27	<.002	24	0.008	<1	<.01	199	<.03	<.005	2.9	<.01	0.437	0.027	<.005	<.03	0.22
25/09/00		39.8	4.36	<0.01	29	<0.05	<0.3	<0.05		<0.2	<0.2	3.23	<0.03	0.525	<0.01	<0.03		0.687
21/10/00	<.005	37.5	3.92	<.002	33	<.005	<1	<.01	169	<.03	<.005	3.7	<.01	0.55	0.015	<.005	<.03	0.44
13/11/00	0.012	44.8	3.56	<0.002	32	<0.005	0.05	<0.01	211	0.04	<0.005	4.9	0.01	0.524	0.014	0.008	<0.03	0.04
18/11/00		39.1	5.18	<0.01	32	<0.05	<0.3	<0.05		<0.2	<0.2	4.07	<0.03	0.58	<0.01	<0.03		0.424
14/12/00		46.1	5.52	<0.01	30	<0.05	<0.3	<0.05		<0.2	<0.2	4.3	<0.03	0.598	<0.01	<0.03		0.767
13/01/01	<.005	31.8	3.24	0.005	28	<.005	<1	<.01	76	<.03	<.005	3.7	<.01	0.625	0.007	<.005	<.03	0.36
10/2/2001	<.005	34.9	3.42	<.002	28	0.023	<1	0.07	94	<.03	<.005	4.1	<.01	0.383	<.005	0.062	<.03	0.32
10/3/2001	<.005	40.98	5.19	<.002	32.68	<.005	<1	<.01	192	<.03	<.005	4.14	<.01	0.6	<.005	<.005	<.03	0.23
16/04/01	<.005	38.3	4.42	<.002	32	<.005	<1	<.01	182	<.03	<.005	4.4	<.01	0.573	0.005	<.005	<.03	<.01
14/05/01	<.005	36.9	3.17	<.002	25	<.005	<1	<.01	171	<.03	<.005	2.9	<.01	0.565	<.005	<.005	<.03	0.04
17/06/01	0.02	35	1.42	<.002	22	0.057	<1	<.01	182	0.03	<.005	2.6	<.01	0.574	<.005	<.005	<.03	<.01
14/07/01	0.009	39.2	1.99	<.002	24	0.014	<1	<.01	196	<.03	<.005	4.7	<.01	0.607	<.005	<.005	<.03	0.05
14/08/01	0.008	45.5	1.28	<0.002	29	0.007	<1	<0.01	221	<0.03	<0.005	5.2	<0.01	0.652	<0.005	<0.005	<0.03	0.02
17/09/01	0.023	43.9	1.57	<0.002	28	0.009	<1	<0.01	210	<0.03	<0.005	4.8	<0.01	0.551	<0.005	<0.005	<0.03	<0.01
15/10/01	0.027	46.4	2.8	<0.002	77	0.009	<1	<0.01	211	<0.03	<0.005	4.3	0.01	0.547	<0.005	<0.005	<0.03	0.04
13/11/01	0.012	44.8	3.56	<0.002	32	<0.005	0.05	<0.01	211	0.04	<0.005	4.9	0.01	0.524	0.014	0.008	<0.03	0.04
15/12/01	0.02	45.9	3.1	0.007	24	0.007	0.05	<0.01	181	<0.03	<0.005	4.5	0.08	0.479	<0.005	0.009	<0.03	0.04
STATION: X13																		
6/5/1996																		
13/05/96																		
21/05/96																		

Table C4. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Dissolved Metals

	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
27/05/96			<02																													
25/05/98			<02																													
21/06/96			<02																													
3/2/1997			<02																													
11/2/1997			<02																													
18/03/97			<02																													
24/03/97			<02																													
31/03/97			<02																													
8/4/1997			<02																													
22/04/97			<02																													
28/04/97			<02																													
20/05/97	<003	<05	<02	0.23	0.093	0.001	0.05	217	<002	0.057	<005	0.009	0.09	7	0.055	42.8	10.1	<002	45	<005	0.04	0.02	200	<03	<03	6.2	0.02	0.659	0.006	<005	0.04	0.19
27/05/97			<02																													
3/6/1997			<02																													
10/6/1997			<02																													
17/06/97			<02																													
24/06/97			<02																													
1/7/1997			<02																													
8/7/1997			<02																													
15/07/97			<02																													
22/07/97	<003	0.06	<02	0.06	0.057	0.001	<04	162	<002	0.012	<005	0.013	<01	5	<005	33.9	3.67	0.008	46	<005	2.08	<02	161	<03	<03	6.7	<01	0.552	0.008	<005	<03	0.05
28/07/97			<02																													
4/8/1997			<02																													
12/8/1997			0.03																													
18/08/97			<02																													
25/08/97			<02																													
2/9/1997			<02																													
9/9/1997			<02																													
16/09/97			<02																													
22/09/97			<02																													
30/09/97			<02																													
7/10/1997			<02																													
14/10/97			<02																													
20/10/97			<02																													
28/10/97			<02																													
4/11/1997			<02																													
13/11/97			<02																													
19/11/97			0.02																													
25/11/97			0.03																													
2/12/1997			<02																													
8/12/1997			<02																													
16/12/97			<02																													
23/12/97			<02																													
30/12/97			<02																													
5/1/1998	<003	<05	<02	0.05	0.109	0.003	<04	200	<002	<005	<005	0.009	0.03	9	<005	39.2	7.17	<002	37	0.006	<04	<02	192	<03	0.039	5.8	0.05	0.602	<005	<005	<03	<01
12/1/1998			0.03																													
24/02/98			<02																													
17/03/98			<02																													
13/04/98			<02																													
18/05/98	<003	0.09	0.04	0.3	0.044	0.021	<04	203.9	<002	0.006	<005	0.025	<01	5	<005	41.7	4.76	<002	41	0.013	<04	<02	138	0.04	<03	6.5	<01	0.61	0.009	0.029	<03	0.05
18/01/99	<003	<05	<005	0.09	0.032	0.001	<04	238.7	<001	<005	0.124	0.022	<01	5	<005	45.6	8.68	0.005	41	0.014	<04	<01	250	<03	<03	6.7	<01	0.676	0.009	<005	<03	0.03
22/02/99	<003	0.14	<005	0.21	0.037	<001	<04	225.8	<001	0.008	0.244	0.019	0.06	5	<005	42.6	7.61	0.004	40	<005	2.03	<01		<03	<03	6.5	<01	0.659	0.017	<005	<03	0.03
17/03/99	<003	0.14	<005	0.07	0.034	<001	<04	175.6	<001	<005	0.264	0.021	<01	4	<005	32.4	4.53	<002	32	<005	0.85	<01	170	<03	<03	5.5	<01	0.483	0.017	<005	<03	<01
20/04/99	<003	<05	<005	<05	0.04	0.002	<04	219.8	<001	<005	<005	0.023	0.08	6	<005	44.5	8.98	<002	39	<005	1.1	<01	217	<03	<03	5.8	<01	0.643	0.024	<005	<03	<01
17/05/99	<003	<05	<005	<05	0.064	0.003	<04	202.3	<001	<005	<005	0.01	<01	5	<005	41.2	5.29	<002	40	<005	1.38	<01		<03	<03	6.1	<01	0.639	<005	<005	<03	0.03
3/7/1999	<003	0.14	<005	0.25	0.045	<001	<04	173.7	<001	<005	<005	0.017	0.21	5	<005	37.5	3.47	<002	31	<005	<04	<01	169	<03	<03	6.8	<01	0.539	<005	<005	<03	<01
27/07/99	<003	<05	<005	<05	0.132	0.002	<04	194.2	0.002	0.081	<005	0.012	0.68	6	0.014	41.5	8.79	0.003	36	0.034	0.13	<01	207	<03	<005	5.7	<01	0.716	0.014	0.009	<03	<01
12/8/1999	<003	<05	<005	<05	0.104	<001	<04	214.6	<001	<005	<005	0.005	0.02	6	<005	41.1	5.74	<002	37	<005	<04	<01	200	<03	<005	7.9	<01	0.638	<005	0.023	<03	0.05
29/10/99	<003	<05	<005	<05	0.117	<001	<04	197.4	<001	<005	<005	<002	<01	<1	<005	39.7	7.49	<002	38	<005	<04	<01	201	<03	<005	5.1	<01	0.606	<005	<005	<03	<01
22/11/99	<003	0.09	<005	<05	0.05	<001	<04	191.3	<001	<005	<005	0.027	0.02	6	<005	43.8	6.44	0.017	35	<005	<04	<01	228	<03	<005	5.7	<01	0.575	0.006	<005	<03	<01
14/12/99	<003	0.52	<005	<05	0.112	<001	<04	220.8	<001	<005	<005	0.014	0.11	4	<005	37.7	8.87	<002	34	<005	<04	<01	182	<03	<005	4.9	<01	0.569	<005	<005	<03	<01
27/01/00	<003	0.18	<005	<05	0.078	0.002	<05	218.1	<001	<005	<005	0.025	<01	6	0.017	41.1	8.95	<002	36	<005	3	<01	190	<03	<005	6	<01	0.509	0.028	<005	<03	<01
28/02/00	<003	0.24	<005	<05	0.056	<001	<05	214.7	<001	<005	<005	0.029	0.08	7	0.013	42.8	6.12	<002	40	<005	<1	<01	158	<03	<005	6.8	<01	0.601	0.014	<005	<03	<01
23/03/00	<003	0.43	<005	0.06	0.125	<001	<05	216	<001	0.023	<005	<002	0.01	7	<005	43.4	8.7	<002	25	<005	<1	<01	196	<03	<005	7.4	<01	0.676	<005	<005	<03	<01
27/04/00	<003	0.26	<005	<05	0.067	0.001	<05	206.4	<001	<005	<005	0.027	0.6	5	<005	41.5	8.92	<002	31	<005	<1	<01	231	<03	<005	6.2	<01	0.578	0.026	<005	<03	<01
15/05/00	<003	0.28	<005	<05	0.027	<001	<05	232.7	<001	0.007	<005	0.018	0.28	6	0.07	46	9.8	<002	37	<005	<1	<01		<03	<005	7.9	<01	0.732	0.038	<005	<03	<01
20/06/00	<003	0.24	<005	<05	0.13	0.002	<05	192	0.002	<005	<005	0.02	0.26	7	<005	43	4.54	<002	35	0.015	3	<01	165	<03	<005	6.7	<01	0.607	0.022	<005	<03	0.03
26/06/00	<003	0.09	<005	<05	0.038	0.002	<05	213.2	<001	<005	<005	0.022	0.07	7	<005	40.7	7.02	<002	37	0.006	<1	<01	17	<03	<005	5.7	<01	0.560	0.019	<005	<03	0.01
25/07/00	<003	<05	<005	<05	0.052	0.002	<05	207.8	<001	0.03	<005	0.021	0.21	7	0.06	44.8	5.84	<002	45	0.02	<1	<01	219	<03	<005	6.3	<01	0.734	0.018	0.017	<03	<01
29/08/00	<003	0.23	<005	<05	0.037	<001	<05	213.1	<001	<005	<005	0.018	<01	7	<005	45.1	3.58	<002	39	0.027	1	<01	238	<03	<005	6.6	<01	0.576	0.011	<005	<03	<01
25/09/00	<0.01	0.06	<0.2	<0.1	0.08	<0.005	<0.1	176	<0.001	<0.01	<0.01	<0.01	0.93	4		33.7	6.22	<0.01	32	<0.05	<0.3	<0.05		<0.2	<0.2	6.32	<0.03	0.483	<0.01	<0.03		0.007
19/10/00	<003	0.25	<005	<05	0.06	0.002	<05	190.4	0.003	<005	0.018	0.03	0.18	7	<005	39.3	5.17	<002	41	<005	<1	<01	178	<03	<005	6.7	<01	0.594	0.014	<005	<03	<01
13/11/00	<0.003	<0.05	0.021	<0.05	0.067	<0.001	<0.05	231.3	<0.001	0.011	0.007	<0.002	0.04	7	0.022	45.9	13.55	<0.002	43	<0.005	0.01	<0.01	215	<0.03	<0.005	8.6	<0.01	0.657	<0.005	0.009	<0.03	0.01
18/11/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	258	<0.001	0.01	<0.01	<0.01	<0.01	6		43.9	11	<0.01	41	<0.05	<0.3	<0.05		<0.2	<0.2	6.94	<0.03	0.683	<0.01	<0.03		0.007
14/12/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	252	<0.001	<0.01	<0.01	<0.01	0.02	6		45.8	10.1	<0.01	37	<0.05	<0.3	<0.05		<0.2	<0.2	6.68	<0.03	0.665	<0.01	<0.03		0.006
13/01/01	<003	0.23	<005	0.06	0.13	0.002	<05	216.9	<001	<005	0.037	0.082	0.32	7	0.011	40.9	9.86	0.009	39	<005	10	0.03	98	<03	<005	6.2	<01	0.844	0.03	<005	<03	<01
10/2/2001	<003	0.22	<005	<05	0.137	0.003	0.09	220.9	<001	<005	<005	0.046	0.38	8	<005	41.1	9.9	<002	35	0.052	<1	<01	111	<03	<005	6	<01	0.537	0.011	<005	<03	<01
10/3/2001	<003	0.8	<005	0.05	0.13	<001	<05	236	<001	<005	<005	0.005	<01	2	<005	45.18	12.68	<002	41.13	<005	<1	<01	212	<03	<005	6.29	<01	0.67	<005	<005	<03	0.04
16/04/01	<003	0.33	<005	0.07	0.06	<001	<05	233	<001	<005	<005	0.025	0.09	2	<005	44.8	12.96	<002	44	<005	<1	<01	189	<03	<005	6.2	<01	0.677	0.011	<005	<03	0.06
14/05/01	<003	0.52	<005	<05	0.163	<001	<05	232.4	<001	<005	<005	0.008	0.17	9	<005	44	10.61	<002	40	<005	<1	<01	181	<03	<005	5.5	<01	0.605	<005	<005	<03	<01
17/06/01	<003	<05	<005	0.12	0.126	<001	<05	220.5	<001	0.006	<005	<002	0.01	6	0.025	43.7	5.14	<002	39	0.058	<1	<01	194	<03	<005	7	<01	0.625	0.008	<005	<03	<01
14/07/01	<003	<05	0.019	0.28	0.107	<001	<05	200.5	<001	0.005	<005	<002	<01	5	0.023	38.8	9.3	<002	34	0.017	<1	<01	165	<03	<005	8.5	<01	0.574	<005	<005	<03	0.02
14/08/01	<0.003	<0.05	<0.005	<0.05	0.041	<0.001	<0.05	217.5	<0.001	0.008	<0.005	0.01	0.08	6	0.012	44.3	10.16	<0.002	43	0.018	<1	<0.01	203	<0.03	0.006	8.7	0.04	0.675	0.015	<0.005	<0.03	<0.01
17/09/01	<0.003	<0.05	<0.005	<0.05	0.076	<0.001	<0.05	206	<0.001	0.011	<0.005	<0.002	<0.01	6	0.022	44.7	13.14	<0.002	40	0.017	<1	<0.01	200	<0.03	<0.005	8.8	<0.01	0.655	<0.005	<0.005	<0.03	<0.01
15/10/01	<0.003	<0.05	0.009	0.09	0.112	<0.001	<0.05	227.2	<0.001	0.013	<0.005	<0.002	0.05	8	0.035	49	14.39	<0.002	42	0.016	<1	<0.01	221	0.04	<0.005	8.6	<0.01	0.708	<0.005	<0.005	<0.03	0.03
13/11/01	<0.003	<0.05	0.021	<0.05	0.067	<0.001	<0.05	231.3	<0.001	0.011	0.007	<0.002	0.04	7	0.022	45.9	13.55	<0.002	43	<0.005	0.01	<0.01	215	<0.03	<0.005	8.6	<0.01	0.657	<0.005	0.009	<0.03	0.01
15/12/01	<0.001	<0.05	0.059	<0.05	0.074	<0.001	<0.05	243.3	0.001	0.015	<0.005	<0.002	0.1	5	0.012	48.4	12	0.003	35	0.013	<0.01	<0.01	166	<0.03	<0.005	8.2	<0.01	0.609	0.006	<0.005	<0.03	<0.01

STATION: X4

20/05/97	<003	<05	<02	0.23	0.03	<001	0.06	114.1	0.007	<005	<005	0.003	0.03	3	<005	25.8	4.85	<002	11	0.013	<04	<02	135	<03	<03	0.9	<01	0.394	<005	<005	0.1	7.16
27/05/97			<02																													

Table C4. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
3/6/1997			<.02																													
10/6/1997			<.02																													
22/07/97	<.003	0.07	<.02	<.05	0.014	0.001	<.04	143.9	0.004	0.024	<.005	0.015	<.01	4	0.016	31.3	5.19	0.005	16	0.023	1.83	0.03	87	0.06	<.03	1.6	<.01	0.525	0.006	<.005	<.03	4.63
28/07/97			<.02																													
2/6/1998			<.02																													0.05
10/8/1998																																0.47
19/10/98	<.003	<.05	<.02	<.05	0.029	0.002	<.04	183.6	<.002	0.012	<.005	0.017	0.02	11	<.005	43.6	2.42	0.003	29	0.02	<.04	<.02	182.3	0.07	<.03	0.5	<.01	0.497	0.008	0.011	<.03	0.96
18/01/99	<.003	<.05	<.005	<.05	0.026	<.001	<.04	184.1	<.001	<.005	0.202	0.019	0.03	8	<.005	40.1	4.02	<.002	24	0.006	<.04	<.01	244	<.03	<.03	2.9	<.01	0.542	0.005	<.005	<.03	0.9
21/02/99	<.003	0.16	<.005	0.21	0.037	<.001	<.04	216.3	<.001	0.011	0.088	0.02	<.01	12	0.012	49.1	3.36	<.002	31	0.01	1.66	<.01		<.03	<.03	1.6	<.01	0.62	0.015	<.005	<.03	0.75
6/5/1999	<.003	<.05	<.005	<.05	<.002	0.001	<.04	143.4	0.009	0.01	<.005	<.002	0.18	7	<.005	27.5	1.86	<.002	17	0.015	1.16	<.01	170	<.03	<.03	0.8	<.01	0.437	0.005	<.005	<.03	3.19
17/05/99	<.003	<.05	<.005	<.05	0.026	0.002	<.04	14.7	<.001	<.005	<.005	<.002	<.01	<1	<.005	2.7	0.16	<.002	2	<.005	2.74	<.01		<.03	<.03	<1	<.01	0.06	<.005	0.008	<.03	0.46
3/7/1999	<.003	0.11	<.005	0.21	0.05	<.001	<.04	137.7	<.001	<.005	<.005	0.015	0.19	6	<.005	29.8	2.49	0.014	14	<.005	<.04	<.01	162	<.03	<.03	1.7	<.01	0.425	<.005	<.005	<.03	2.26
27/07/99	<.003	<.05	<.005	<.05	0.069	0.002	<.04	146.8	<.001	0.02	<.005	0.008	0.04	8	<.005	30.2	3.11	<.002	23	0.018	0.07	<.01	207	<.03	<.005	1	<.01	0.542	0.009	<.005	<.03	0.99
12/8/1999	<.003	<.05	<.005	<.05	0.084	<.001	<.04	161.3	<.001	<.005	<.005	0.005	<.01	9	0.012	37	2.37	<.002	22	<.005	<.04	<.01	182	<.03	<.005	2.1	<.01	0.454	<.005	0.011	<.03	0.43
10/9/1999	<.003	0.09	<.005	<.05	0.037	<.001	<.04	155.2	<.001	0.007	<.005	0.017	<.01	8	0.009	38.4	2.32	0.004	20	0.012	<.04	<.01	214	<.03	<.005	1.1	<.01	0.441	0.01	0.018	<.03	0.32
29/10/99	<.003	0.13	<.005	<.05	0.089	<.001	<.04	163.6	0.008	0.006	<.005	0.015	<.01	11	0.033	40.6	3.82	<.002	24	0.048	0.1	<.01	216	<.03	<.005	0.8	<.01	0.485	0.006	<.005	<.03	1.11
26/01/00																																1.95
25/03/00	<.003	0.39	<.005	<.05	0.059	<.001	<.05	170.3	<.001	<.005	<.005	<.002	0.14	15	<.005	37.6	5.48	<.002	25	<.005	<1	<.01	192	<.03	<.005	3.4	<.01	0.576	0.006	<.005	<.03	0.72
15/05/00	<.003	<.05	<.005	<.05	0.051	<.001	<.05	29	<.001	<.005	<.005	<.002	0.04	<1	<.005	5.6	0.61	<.002	<1	<.005	<1	<.01		<.03	<.005	0.8	<.01	0.136	<.005	<.005	<.03	1.14
26/06/00	<.003	<.05	<.005	<.05	0.049	0.001	<.05	153.4	0.001	<.005	<.005	0.015	<.01	8	<.005	33.5	3.14	<.002	18	0.005	<1	<.01	166	<.03	<.005	0.9	<.01	0.427	0.012	0.007	<.03	1.56
25/07/00	<.003	<.05	<.005	<.05	0.061	0.002	<.05	154.4	0.005	0.015	<.005	0.016	0.17	9	0.066	39.6	2.49	<.002	26	0.018	<1	<.01	199	<.03	<.005	1.1	<.01	0.587	0.014	<.005	<.03	0.82
29/08/00	<.003	0.29	<.005	<.05	0.039	<.001	<.05	158.8	<.001	<.005	<.005	0.018	0.11	9	<.005	42.4	2.48	<.002	23	0.023	4	<.01	211	<.03	<.005	2	<.01	0.437	0.021	<.005	<.03	1.09
25/09/00	<0.01	<0.05	<0.2	<0.1	0.01	<0.005	<0.1	160	0.003	0.02	<0.01	<0.01	0.21	8		47.3	4.31	<0.01	21	<0.05	<0.3	<0.05		<0.2	<0.2	1.84	<0.03	0.501	<0.01	<0.03		3.94
29/10/00	<.003	0.23	<.005	<.05	0.083	0.002	<.05	161.3	0.002	0.011	<.005	0.026	0.27	9	<.005	45.8	4.78	0.007	25	<.005	<1	<.01	212	<.03	<.005	2.5	<.01	0.55	0.013	<.005	<.03	2.63
13/11/00	<0.003	<0.05	0.007	0.05	0.035	<0.001	<0.05	194.9	0.006	0.046	<0.005	<0.002	0.07	9	0.01	66.5	10.64	<0.002	27	0.044	0.05	0.01	283	0.08	<0.005	4	0.12	0.708	<0.005	0.006	<0.03	16.46
18/11/00	<0.01	<0.05	<0.2	<0.1	0.01	<0.005	<0.1	191	0.004	0.02	<0.01	<0.01	<0.01	8		48.3	5.94	<0.01	23	<0.05	<0.3	<0.05		<0.2	<0.2	2.25	<0.03	0.562	<0.01	<0.03		5.92
14/12/00	<0.01	<0.05	<0.2	<0.1	0.01	<0.005	<0.1	199	0.004	0.02	<0.01	<0.01	0.05	8		54.3	6.52	<0.01	22	<0.05	<0.3	<0.05		<0.2	<0.2	2.39	<0.03	0.581	<0.01	<0.03		5.83
13/01/01	<.003	0.16	<.005	<.05	0.039	0.001	<.05	163.2	<.001	0.042	<.005	0.032	0.14	8	<.005	46.4	4.95	0.023	23	<.005	<1	<.01	112	<.03	<.005	2.4	<.01	0.731	0.008	<.005	<.03	6.8
10/2/2001	<.003	0.12	0.031	0.06	0.051	0.003	<.05	165.3	0.006	<.005	<.005	0.036	0.29	8	<.005	47.3	5.38	<.002	21	0.013	2	<.01	128	<.03	<.005	2.3	<.01	0.531	<.005	0.017	<.03	8.5
10/3/2001	<.003	0.57	<.005	<.05	0.05	<.001	<.05	196	<.001	0.013	<.005	0.003	<.01	4	<.005	55.6	9.44	<.002	26.44	<.005	<1	<.01	250	<.03	<.005	2.54	<.01	0.66	<.005	<.005	<.03	10
16/04/01	<.003	0.1	<.005	<.05	0.04	<.001	<.05	198.4	<.001	<.005	<.005	0.003	0.06	<1	<.005	47.4	9.17	<.002	28	<.005	<1	<.01	199	<.03	<.005	3.9	<.01	0.647	0.005	<.005	<.03	3.05
14/05/01	<.003	0.1	<.005	<.05	0.117	<.001	<.05	34.8	<.001	<.005	0.007	0.004	0.03	8	<.005	4.7	1.01	<.002	2	<.005	<1	0.02	27	<.03	<.005	0.6	<.01	0.096	<.005	0.013	<.03	0.36
17/06/01	<.003	<.05	<.005	0.13	0.04	<.001	<.05	142.4	0.008	0.042	0.009	<.002	0.04	4	0.017	46.6	4.36	<.002	15	0.105	<1	<.01	194	0.06	<.005	1.5	<.01	0.501	0.01	<.005	<.03	16.4
14/07/01	<.003	<.05	<.005	1.08	0.014	<.001	<.05	173.6	0.005	0.039	<.005	<.002	<.01	6	0.017	58.8	8.92	<.002	19	0.048	<1	<.01	231	<.03	<.005	3.5	<.01	0.603	<.005	<.005	<.03	15.57
14/08/01	<0.003	<0.05	<0.005	<0.05	0.031	<0.001	<0.05	200.5	0.003	0.034	<0.005	<0.002	<0.01	8	0.008	70.2	7.52	0.002	25	0.048	<1	<0.01	263	<0.03	<0.005	3.9	0.07	0.689	<0.005	<0.005	<0.03	9.93
17/09/01	<0.003	<0.05	<0.005	0.14	0.024	<0.001	<0.05	185.8	0.005	0.039	<0.005	<0.002	<0.01	8	0.016	67.3	9.38	<0.002	24	0.048	<1	<0.01	263	<0.03	0.007	3.9	<0.01	0.69	<0.005	<0.005	<0.03	14
15/10/01	<0.003	<0.05	0.009	<0.05	0.022	<0.001	<0.05	193.1	0.005	0.046	<0.005	<0.002	<0.01	8	0.035	69.2	10.87	<0.002	24	0.055	<1	<0.01	278	<0.03	<0.005	3.8	<0.01	0.737	<0.005	<0.005	<0.03	19.61
13/11/01	<0.003	<0.05	0.007	0.05	0.035	<0.001	<0.05	194.9	0.006	0.046	<0.005	<0.002	0.07	9	0.01	66.6	10.64	<0.002	27	0.044	0.05	0.01	283	0.08	<0.005	4	0.12	0.708	<0.005	0.006	<0.03	16.46
15/12/01	<0.001	<0.05	<0.005	0.05	0.027	0.001	<0.05	225.1	0.004	0.051	0.031	0.047	1.89	7	0.014	72.4	11.19	0.01	21	0.054	<0.01	<0.01	259	<0.03	<0.005	4.2	0.17	0.713	0.008	<0.005	<0.03	18.42
STATION: WEIR3																																
17/05/99	<.003	<.05	<.005	<.05	0.052	0.003	<.04	130.3	<.001	<.005	<.005	0.005	<.01	4	<.005	27.7	2.43	<.002	30	<.005	<.04	<.01		<.03	<.03	5	<.01	0.415	<.005	<.005	<.03	0.02
19/10/00	<.003	0.26	<.005	<.05	0.062	0.002	<.05	162.6	<.001	<.005	<.005	0.03	0.3	6	<.005	32.1	3.75	0.01	38	<.005	<1	<.01	141	<.03	<.005	6.7	<.01	0.531	0.014	<.005	<.03	0.03
11/6/2001	<.003	<.05	0.012	0.11	0.112	<.001	<.05	174.3	<.001	<.005	<.005	<.002	<.01	5	0.022	34.5	4.93	0.01	32	0.023	<1	0.01	141	<.03	<.005	5.8	<.01	0.518	0.01	<.005	<.03	0.02
STATION: X11																																
17/05/99	<.003	<.05	<.005	<.05	0.077	0.003	<.04	202.3	<.001	<.005	<.005	0.01	<.01	6	<.005	44.2	3.96	<.002	40	<.005	0.54	<.01		<.03	<.03	5.9	<.01	0.654	<.005	<.005	<.03	0.03
12/8/1999	<.003	<.05	<.005	0.06	0.131	0.002	<.04	233.7	<.001	<.005	<.005	0.009	0.05	10	<.005	44.3	7.05	<.002	38	0.008	<.04	<.01	223	<.03	<.005	7.9	<.01	0.695	0.008	0.017	<.03	0.01
29/10/99	<.003	0.05	<.005	<.05	0.142	<.001	<.04	250.2	<.001	<.005	<.005	<.002	<.01	3	<.005	48.3	12.23	<.002	44	<.005	0.05	<.01	270	<.03	<.005	5.6	<.01	0.752	<.005	<.005	<.03	<.01
22/11/99	<.003	0.11	<.005	<.05	0.069	0.001	<.04	214	<.001	<.005	<.005	0.032	0.05	6	<.005	50.5	7.74	<.002	39	<.005	<.04	0.01	275	<.03	<.005	6.1	<.01	0.664	0.008	<.005	<.03	<.01
14/12/99	<.003	0.8	<.005	<.05	0.104	<.001	<.04	278.8	<.001	<.005	<.005	0.03	0.14	5	<.005	47.1	12.87	<.002	35	0.007	0.11	<.01	246	<.03	<.005	5.2	<.01	0.699	0.009	<.005	<.03	0.02
27/01/00	<.003	0.23	<.005	<.05	0.086	0.002	<.05	271.5	0.006	0.011	<.005	0.032	<.01	8	<.005	51.1	9.85	<.002	43	<.005	<1	<.01	250	<.03	<.005	6.6	<.01	0.764	0.03	<.005	<.03	<.01
28/02/00	<.003	0.28	<.005	<.05	0.074	<.001	<.05	273.1	<.001	0.009	<.005	0.028	0.05	8	<.005	55	9.74	<.002	50	<.005	<1	<.01	250	<.03	<.005	7.7	<.01	0.782	0.02	<.005	<.03	<.01
23/03/00	<.003	0.5	<.005	<.05	0.102	<.001	<.05	241.8	<.001	0.018	<.005	<.002	0.12	6	<.005	50	9.78	<.002	30	<.005	<1	<.01	234	<.03	<.005	7.6	<.01	0.769	<.005	<.005	<.03	<.01
27/04/00	<.003	0.23	<.005	<.05	0.077	0.002	<.05	197.6	<.001	<.005	<.005	0.044	0.18	5	<.005	39.8	8.9	<.002	28	0.005	<1	<.01	257	<.03	<.005	5.6	<.01	0.575	0.024	<.005	<.03	<.01
15/05/00	<.003	0.13	<.005	<.05	0.056	<.001	<.05	257.7	<.001	0.022	<.005	0.02	0.31	6	0.027	50.8	11.75	<.002	39	0.008	<1	<.01		<.03	<.005	8	<.01	0.796	0.049	<.005	<.03	0.02
26/06/00	<.003	0.08	<.005	<.05	0.062	0.002	<.05	209.1	<.001	<.005	<.005	0.023	0.04	7	<.005	40.6	7.63	<.002	35	0.009	1	<.01	197	<.03	<.005	5.5	<.01	0.571	0.018	<.005	<.03	0.12
25/07/00	<.003	<.05	<.005	<.05	0.064	0.002	<.05	221.7	0.001	0.027	<.005	0.022	0.19	7	0.051	47.5	7.37	<.002	46	0.021	<1	<.01	238	<.03	<.005	6.4	<.01	0.762	0.02	0.008	<.03	0.03
29/08/00	<.003	0.28	<.005	<.05	0.039	<.001	<.05	223.7	<.001	<.005	<.005	0.022	<.01	7	<.005	47.3	4.07	<.002	40	0.031	<1	<.01	247	<.03	<.005	6.7	<.01	0.618	0.014	<.005	<.03	0.04
25/09/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	258	<0.001	0.01	<0.01	<0.01	1.26	6		48.4	11.3	<0.01	40	<0.05	<0.3	<0.05		<0.2	<0.2	6.84	<0.03	0.703	<0.01	<0.03		0.007
19/10/00	<.003	0.28	<.005	<.05	0.075	0.002	<.05	233.3	0.003	<.005	0.011	0.031	0.21	8	0.052	47.4	7.63	0.003	45	<.005	<1	<.01	220	<.03	<.005	6.9	<.01	0.711	0.017	<.005	<.03	0.01
13/11/00	<0.003	<0.05	<0.005	0.05	0.086	<0.001	<0.05	250.7	<0.001	0.016	0.015	<0.002	0.06	8	0.015	51	15.67	<0.002	46	0.009	0.01	<0.01	245	0.04	0.005	9	0.18	0.721	0.007	0.006	<0.03	0.02
18/11/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	281	<0.001	0.01	<0.01	<0.01	0.09	6		46.3	12.1	<0.01	42	<0.05	<0.3	<0.05		<0.2	<0.2	7.14	<0.03	0.719	<0.01	<0.03		<0.005
14/12/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	300	<0.001	0.02	<0.01	<0.01	0.07	6		54.7	12	<0.01	38	<0.05	<0.3	<0.05		<0.2	<0.2	7.14	<0.03	0.712	<0.01	<0.03		0.01
13/01/01	<.003	0.29	<.005	0.08	0.32	0.003	<.05	234.2	<.001	<.005	0.146	0.057	0.22	7	<.005	43.9	11.83	0.026	39	<.005	3	<.01	106	<.03	<.005	6.2	<.01	0.921	0.033	<.005	<.03	<.01
10/2/2001	<.003	0.41	<.005	0.05	0.29	0.003	<.05	238	<.001	0.007	<.005	0.04	0.83	9	<.005	44.6	11.69	<.002	37	0.052	<1	<.01	120	<.03	<.005	6.4	<.01	0.627	<.005	<.005	<.03	<.01
10/3/2001	<.003	0.92	<.005	0.07	0.13	<.001	<.05	261	<.001	<.005	<.005	0.008	<.01	3	<.005	50.29	15.12	<.002	43.62	<.005	<1	<.01	241	<.03	<.005	6.51	<.01	0.74	0.006	<.005	<.03	0.01
16/04/01	<.003	0.39	<.005	0.07	0.08	<.001	<.05	247.7	<.001	<.005	<.005	0.029	0.19	2	<.005	48	14.79	<.002	45	0.007	<1	<.01	211	<.03	<.005	6.2	<.01	0.727	0.014	<.005	<.03	0.04
14/05/01	<.003	0.64	<.005	<.05	0.156	<.001	<.05	250.6	<.001	<.005	<.005	0.013	0.14	11	<.005	49.7	12.88	<.002	42	<.005	<1	<.01	210	<.03	<.005	5.5	<.01	0.675	<.005	<.005	<.03	0.01
17/06/01	<.003	<.05	<.005	0.12	0.115	<.001	<.05	257.2	<.001	0.01	<.005	<.002	0.01	7	0.026	51.8	7.15	<.002	43	0.065	<1	<.01	245	<.03	<.005	7.6	<.01	0.725	0.016	<.005	<.03	<.01
14/07/01	<.003	<.05	0.014	0.43	0.082	<.001	<.05	257.3	<.001	0.013	<.005	<.002	<.01	7	0.012	50.1	12.26	<.002	41	0.023	<1	<.01	238	<.03	<.005	9.6	<.01	0.726	<.005	<.005	<.03	0.01
14/08/01	<0.003	<0.05	0.012	<0.05	0.061	<0.001	<0.05	245.8	<0.001	0.014	<0.005	0.009	0.03	7	0.011	52.5	13.6	<0.002	47	0.025	<1	<0.01	242	<0.03	<0.005	8.9	<0.01	0.76	0.01	<0.005	<0.03	0.02
17/09/01	<0.003	<0.05	<0.005	<0.05	0.075	<0.001	<0.05	229.2	<0.001	0.014	<0.005	<0.002	0.01	6	0.03	49.9	15.11	<0.002	44	0.017	<1	<0.01	231	<0.03	<0.005	9.3	<0.01	0.719	<0.005	<0.005	<0.03	0.04
15/10/01	<0.003	<0.05	<0.005	0.08	0.088	<0.001	<0.05	235	<0.001	0.015	<0.005	<0.002	0.1	8	0.034	50.5	15.6	<0.002	42	0.02	<1	<0.01	234	<0.03	0.037	8.7	0.04	0.737	<0.005	<0.005	<0.03	0.05
13/11/01	<0.003	<0.05	<0.005	0.05	0.086	<0.001	<0.05	250.7	<0.001	0.016	0.015	<0.002	0.06	8	0.015	51	15.67	<0.002	46	0.009	0.01	<0.01	245	0.04	0.005	9	0.18	0.721	0.007	0.006	<0.03	0.02
15/12/01	<0.001	<0.05	0.087	0.08	0.074	0.001	<0.05	273.1	<0.001	0.019	0.007	0.002	0.18	6	0.012	55.3	14.82	0.007	36	0.01	<0.01	<0.01	213	<0.03	0.122	8.4	0.09	0.704	0.008	<0.005	<0.03	0.03
STATION: X12																																
17/05/99	<.003	<.05	<.005	<.05	0.037	0.002	<.04	110.2	<.001	<.005	<.005	<.002	<.01	5	<.005	25.3	0.41	0.002	23	<.005	1.29	<.01		<.03	<.03	4.3	<.01	0.38	<.005	<.005	<.03	0.01
12/8/1999	<.003	<.05	<.005	<.05	0.087	<.001	<.04	127.7	<.001	<.005	<.005	0.004	<.01	6	<.005	27.4	0.15	<.002	24	<.005	<.04	<.01	104	<.03	<.005	6.4	<.01	0.426	<.005	0.016	<.03	<.01
29/10/99	<.003	<.05	<.005	<.05	0.084	<.001	<.04	124.7	<.001	<.005	<.005	<.002	<.01	2	<.005	27	0.93	<.002	25	<.005	<.04	<.01	110	<.03	<.005	4.2	<.01	0.407	<.005	<.005	<.03	<.01
22/11/99	<.003	<.05	0.015	<.05	0.028	<.001	<.04	111.8	<.001	<.005	<.005	0.018	<.01	3	<.005	28.8	1.14	0.006	24	<.005	<.04	<.01	113	<.03	<.005	4.7	<.01	0.352	<.005	<.005	<.03	<.01
14/12/99	<.003	0.24	<.005	<.05	0.081	<.001	<.04	132.7	<.001	<.005	<.005	0.008	<.01	4	<.005	27.1	0.65	<.002	22	<.005	<.04	<.01	98	<.03	<.005	3.7	<.01	0.388	<.005	<.005	<.03	<.01
27/01/00	<.003	0.09	<.005	<.05	0.046	<.001	<.05	124.4	0.004	<.005	<.005	0.017	<.01	5	0.037	27.7	0.65	<.002	24	<.005	<1	<.01	108	<.03	<.005	4.4	<.01	0.369	0.016	<.005	<.03	<.01
28/02/00	<.003	0.17	<.005	<.05	0.035	<.001	<.05	133	<.001	<.005	<.005	0.018	<.01	6	<.005	31.6	1.07	<.002	29	<.005	<1	<.01	107	<.03	<.005	5.5	<.01	0.42	0.007	<.005	<.03	<.01
23/03/00	<.003	0.22	<.005	<.05	0.126	<.001	<.05	131.2	<.001	0.02	<.005	<.002	<.01	4	<.005	30.1	0.37	<.002	15	<.005	<1	<.01	102	<.03	<.005	6.1	<.01	0.479	<.005	<.005	<.03	<.01
27/04/00	<.003	0.16	<.005	<.05	0.034	0.001	<.05	113.8	<.001	<.005	<.005	0.018	0.02	3	<.005	26.4	1.25	<.002	20	<.005	<1	<.01	120	<.03	<.005	4.4	<.01	0.318	0.014	<.005	<.03	<.01
15/05/00	<.003	0.11	<.005	<.05	0.024	<.001	<.05	113.6	<.001	0.015	<.005	0.009	0.04	4	0.02	26.9	0.27	<.002	21	<.005	<1	<.01		<.03	<.005	5.6	<.01	0.399	0.008	<.005	<.03	<.01
26/06/00	<.003	<.05	<.005	<.05	0.027	0.002	<.05	129.7	<.001	<.005	<.005	0.016	0.02	6	<.005	26.9	1.37	<.002	26	<.005	<1	<.01	97	<.03	<.005	4.9	<.01	0.375	0.011	0.005	<.03	0.03

Table C4. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D	MN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/07/00	<.003	<.05	<.005	<.05	0.036	0.001	<.05	111.2	0.002	0.016	<.005	0.014	0.13	5	0.112	26.7	1.12
29/08/00	<.003	0.2	<.005	<.05	0.029	<.001	<.05	119.5	<.001	<.005	<.005	0.008	<.01	5	<.005	26.2	0.35
25/09/00	<0.01	<0.05	<0.2	<0.1	0.04	<0.005	<0.1	124	<0.001	<0.01	<0.01	<0.01	<0.01	4		27.3	0.232
10/10/00	<.003	0.15	<.005	<.05	0.052	0.001	<.05	108	<.001	<.005	0.008	0.02	0.12	5	<.005	24.7	0.4
13/11/00	<0.003	<0.05	0.005	<0.05	0.092	<0.001	<0.05	132.7	0.001	<0.005	0.016	<0.002	<0.01	6	0.009	30.4	0.93
18/11/00	<0.01	<0.05	<0.2	<0.1	0.04	<0.005	<0.1	138	<0.001	<0.01	<0.01	<0.01	<0.01	4		27.1	0.301
14/12/00	<0.01	<0.05	<0.2	<0.1	0.04	<0.005	<0.1	131	<0.001	<0.01	<0.01	<0.01	<0.01	5		27.4	0.31
13/01/01	<.003	0.09	<.005	<.05	0.026	0.002	<.05	114.1	<.001	<.005	<.005	0.022	0.09	5	<.005	26.7	0.42
10/2/2001	<.003	<.05	<.005	<.05	0.024	0.002	<.05	115.4	<.001	<.005	<.005	0.017	0.01	5	<.005	27.1	0.4
10/3/2001	<.003	0.5	<.005	0.06	0.15	<.001	<.05	142	<.001	<.005	<.005	0.005	<.01	3	<.005	32.44	0.71
16/04/01	<.003	0.08	<.005	0.07	0.19	<.001	<.05	139.2	<.001	<.005	<.005	<.002	0.02	4	<.005	31.9	0.63
14/05/01	<.003	0.18	<.005	<.05	0.114	<.001	<.05	100.2	<.001	<.005	<.005	0.004	<.01	10	<.005	23.8	0.28
17/06/01	<.003	<.05	0.007	0.15	0.125	<.001	<.05	144.9	<.001	<.005	<.005	<.002	<.01	8	0.018	31.8	0.44
14/07/01	<.003	<.05	<.005	0.34	0.094	<.001	<.05	134.8	<.001	<.005	<.005	<.002	<.01	5	0.015	29.7	0.23
14/08/01	<0.003	<0.05	<0.005	<0.05	0.135	<0.001	<0.05	134.5	<0.001	<0.005	0.011	<0.002	<0.01	5	<0.005	31.6	0.31
17/09/01	<0.003	<0.05	<0.005	<0.05	0.076	<0.001	<0.05	132.7	<0.001	<0.005	<0.005	<0.002	<0.01	5	0.015	31.1	0.48
15/10/01	<0.003	<0.05	0.034	0.06	0.088	<0.001	<0.05	133.8	<0.001	<0.005	<0.005	<0.002	<0.01	6	0.031	31	0.67
13/11/01	<0.003	<0.05	0.005	<0.05	0.092	<0.001	<0.05	132.7	0.001	<0.005	0.016	<0.002	<0.01	6	0.009	30.4	0.93
15/12/01	<0.001	<0.05	<0.005	0.05	0.044	<0.001	<0.05	139.2	<0.001	<0.005	0.01	<0.002	<0.01	4	0.024	33.2	0.84
STATION: X14																	
15/05/96			<.02														
11/6/1996			<.02														
3/9/1996												0.004					
10/2/1998																	
19/10/98	<.003	<.05	<.02	<.05	0.017	<.001	<.04	59.7	<.002	0.01	<.005	0.006	0.12	2	<.005	12.9	0.86
21/12/98	<.003	<.05	<.005	0.1	0.02	<.001	<.04	92.7	<.001	<.005	<.005	0.014	<.01	3	<.005	18.3	1.37
18/01/99	<.003	<.05	<.005	<.05	0.025	<.001	<.04	115.2	0.001	<.005	0.112	0.011	0.04	3	<.005	23.5	2.57
22/02/99	<.003	0.08	<.005	0.21	0.026	<.001	<.04	135.5	<.001	<.005	0.161	0.012	0.07	4	<.005	26.6	3.04
17/03/99	<.003	0.08	<.005	0.08	0.026	<.001	<.04	108.9	<.001	<.005	0.776	0.014	<.01	2	<.005	20.8	2.22
20/04/99	<.003	<.05	<.005	<.05	0.027	0.001	<.04	88.3	<.001	<.005	<.005	0.011	0.19	3	<.005	19.3	2.02
17/05/99	<.003	<.05	<.005	<.05	0.016	0.002	<.04	15.2	<.001	<.005	<.005	0.057	0.08	2	<.005	3.1	0.35
3/7/1999	<.003	<.05	<.005	0.24	0.01	<.001	<.04	25.2	<.001	<.005	<.005	<.002	0.3	<1	<.005	5.5	0.35
27/07/99	<.003	<.05	<.005	<.05	0.036	0.001	<.04	25	0.006	0.081	<.005	0.007	0.18	<1	<.005	6.5	0.27
12/8/1999	<.003	<.05	<.005	0.06	0.107	<.001	<.04	59.9	0.005	<.005	<.005	0.008	0.1	7	<.005	12	0.63
10/9/1999	<.003	<.05	<.005	<.05	0.021	<.001	<.04	52.7	<.001	<.005	<.005	0.006	0.05	2	<.005	11.1	0.78
29/10/99	<.003	<.05	<.005	<.05	0.083	<.001	<.04	48.7	<.001	<.005	<.005	<.002	0.09	<1	<.005	10.1	0.74
22/11/99	<.003	<.05	<.005	<.05	0.026	<.001	<.04	44.7	<.001	<.005	<.005	0.008	0.07	<1	<.005	10.5	1.08
14/12/99	<.003	0.06	<.005	<.05	0.086	<.001	<.04	73.8	<.001	<.005	<.005	0.009	0.13	4	<.005	13.7	1.16
27/01/00	<.003	<.05	<.005	<.05	0.048	<.001	<.05	89.6	0.001	<.005	<.005	0.009	0.05	3	<.005	18	2.13
28/02/00	<.003	0.14	<.005	<.05	0.033	<.001	<.05	89.3	<.001	<.005	<.005	0.015	0.18	4	0.018	19.1	1.72
23/03/00	<.003	0.13	<.005	<.05	0.146	<.001	<.05	96.9	<.001	0.031	<.005	<.002	0.07	2	<.005	20	2.18
27/04/00	<.003	0.15	<.005	<.05	0.042	0.001	<.05	107.4	<.001	<.005	<.005	0.016	0.19	2	<.005	22.9	2.49
15/05/00	<.003	<.05	0.009	<.05	0.012	<.001	<.05	29	<.001	<.005	<.005	0.002	0.28	<1	0.044	6.9	0.26
26/06/00	<.003	<.05	<.005	<.05	0.008	<.001	<.05	40.6	<.001	<.005	<.005	0.005	<.01	3	<.005	8.1	0.86
25/07/00	<.003	<.05	<.005	<.05	0.023	<.001	<.05	54.2	<.001	0.025	<.005	0.007	0.17	3	0.055	11.5	1
29/08/00	<.003	0.11	<.005	<.05	0.016	<.001	<.05	31.9	<.001	<.005	<.005	<.002	<.01	<1	<.005	7	0.34
25/09/00	<0.01	0.07	<0.2	<0.1	0.04	<0.005	<0.1	28.9	<0.001	<0.01	<0.01	<0.01	0.13	<2		6.5	0.108
29/10/00	<.003	0.13	<.005	<.05	0.029	<.001	<.05	40.5	<.001	<.005	<.005	0.011	0.32	2	<.005	9.4	0.41
13/11/00	<0.003	<0.05	0.01	<0.05	0.109	<0.001	<0.05	58.2	<0.001	<0.005	<0.005	<0.002	0.12	2	0.023	13.3	0.98
18/11/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	67.1	<0.001	<0.01	<0.01	<0.01	0.05	<2		13.7	0.885
14/12/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	73.5	<0.001	<0.01	<0.01	<0.01	<0.01	2		15.6	1.14
13/01/01	<.003	<.05	0.03	<.05	0.027	0.001	<.05	71.6	0.001	<.005	<.005	0.022	0.3	2	<.005	16.4	0.96
10/2/2001	<.003	<.05	<.005	<.05	0.027	<.001	<.05	80.2	<.001	<.005	<.005	0.007	0.14	3	<.005	17.6	1.3
10/3/2001	<.003	0.3	<.005	<.05	0.13	<.001	<.05	85	<.001	<.005	<.005	0.005	0.04	1	<.005	18.14	1.99
16/04/01	<.003	<.05	<.005	<.05	0.13	<.001	<.05	90.6	<.001	<.005	<.005	<.002	0.02	<1	<.005	19.2	1.94
14/05/01	<.003	0.19	<.005	<.05	0.126	<.001	<.05	72.3	<.001	0.016	<.005	0.01	0.32	14	0.016	14.3	1.13
17/06/01	<.003	<.05	<.005	0.1	0.085	<.001	<.05	19.2	<.001	<.005	<.005	<.002	0.1	<1	<.005	4.3	0.13
14/07/01	<.003	<.05	<.005	0.21	0.068	<.001	<.05	38.8	<.001	<.005	<.005	<.002	0.05	1	<.005	8.2	0.34
14/08/01	<0.003	<0.05	0.006	<0.05	0.108	<0.001	<0.05	68.4	<0.001	<0.005	<0.005	0.002	0.06	2	<0.005	15.2	0.6
17/09/01	<0.003	<0.05	0.028	<0.05	0.09	<0.001	<0.05	51.3	<0.001	<0.005	0.005	<0.002	0.1	2	0.008	11.4	0.64
15/10/01	<0.003	<0.05	<0.005	0.1	0.061	<0.001	<0.05	106.4	<0.001	<0.005	0.009	<0.002	<0.01	5	0.026	24.6	1.6
13/11/01	<0.003	<0.05	0.01	<0.05	0.109	<0.001	<0.05	58.2	<0.001	<0.005	<0.005	<0.002	0.12	2	0.023	13.3	0.98
15/12/01	<0.001	<0.05	<0.005	<0.05	0.059	<0.001	<0.05	113.1	<0.001	<0.005	<0.005	<0.002	0.05	3	0.037	26.5	1.04

Date	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/07/00	<.002	27	0.007	<1	<.01	108	<.03	<.005	4.7	<.01	0.447	0.011	0.017	<.03	<.01
29/08/00	<.002	22	0.014	2	<.01	96	<.03	<.005	5.4	<.01	0.349	0.007	<.005	<.03	<.01
25/09/00	<0.01	22	<0.05	<0.3	<0.05		<0.2	<0.2	4.92	<0.03	0.389	<0.01	<0.03		<0.005
10/10/00	<.002	25	<.005	2	<.01	103	<.03	<.005	5.4	<.01	0.35	0.006	<.005	<.03	0.03
13/11/00	<0.002	27	<0.005	0.01	<0.01	108	0.09	<0.005	6.5	0.08	0.425	<0.005	<0.005	<0.03	<0.01
18/11/00	<0.01	23	<0.05	<0.3	<0.05		<0.2	<0.2	5.3	<0.03	0.407	<0.01	<0.03		<0.005
14/12/00	<0.01	20	<0.05	<0.3	<0.05		<0.2	<0.2	4.73	<0.03	0.396	<0.01	<0.03		<0.005
13/01/01	<.002	23	<.005	<1	<.01	63	<.03	<.005	4.9	<.01	0.501	<.005	<.005	<.03	<.01
10/2/2001	<.002	23	<.005	16	<.01	73	<.03	<.005	4.8	<.01	0.313	<.005	<.005	<.03	<.01
10/3/2001	<.002	28.21	<.005	<1	<.01	114	<.03	<.005	5.37	<.01	0.48	<.005	<.005	<.03	0.02
16/04/01	<.002	31	<.005	<1	<.01	102	<.03	<.005	6.1	<.01	0.486	<.005	<.005	<.03	<.01
14/05/01	<.002	17	<.005	<1	<.01	72	<.03	<.005	3.6	<.01	0.333	<.005	<.005	<.03	<.01
17/06/01	<.002	25	0.067	<1	<.01	108	<.03	<.005	5.1	0.02	0.478	<.005	<.005	<.03	<.01
14/07/01	<.002	21	<.005	<1	<.01	101	<.03	<.005	7.3	<.01	0.467	<.005	<.005	<.03	0.03
14/08/01	<0.002	28	<0.005	<1	<0.01	104	<0.03	<0.005	7.3	<0.01	0.474	<0.005	<0.005	<0.03	0.02
17/09/01	<0.002	24	<0.005	<1	<0.01	102	<0.03	<0.005	8.7	<0.01	0.451	<0.005	<0.005	<0.03	<0.01
15/10/01	<0.002	23	<0.005	<1	<0.01	105	<0.03	0.031	6.5	<0.01	0.457	<0.005	<0.005	<0.03	<0.01
13/11/01	<0.002	27	<0.005	0.01	<0.01	108	0.09	<0.005	6.5	0.08	0.425	<0.005	<0.005	<0.03	<0.01
15/12/01	0.008	21	<0.005	<0.01	<0.01	95	<0.03	0.055	5.6	0.11	0.404	<0.005	<0.005	<0.03	<0.01
STATION: X14															
15/05/96															
11/6/1996															
3/9/1996															
10/2/1998															0.02
19/10/98	<.002	8	0.011	<.04	<.02	25.2	<.03	<.03	2.9	<.01	0.224	<.005	0.008	<.03	0.07
21/12/98	<.002	13	0.012	0.44	<.01	72	0.03	<.03	4	<.01	0.31	0.005	0.04	<.03	<.01
18/01/99	<.002	17	<.005	<.04	<.01	94	<.03	<.03	4.9	<.01	0.37	<.005	<.005	<.03	0.02
22/02/99	0.003	20	<.005	1.38	<.01		<.03	<.03	4.9	<.01	0.442	0.011	<.005	<.03	<.01
17/03/99	<.002	17	<.005	0.73	<.01	95	<.03	<.03	4.4	<.01	0.332	<.005	<.005	<.03	<.01
20/04/99	<.002	13	<.005	1.44	<.01	67	<.03	<.03	3.9	<.01	0.309	0.012	0.009	<.03	<.01
17/05/99	0.011	2	0.007	<.04	<.01		<.03	<.03	0.7	<.01	0.067	<.005	0.014	<.03	0.03
3/7/1999	<.002	2	<.005	<.04	<.01	13	<.03	<.03	3.3	<.01	0.042	<.005	<.005	<.03	<.01
27/07/99	<.002	2	0.008	<.04	<.01	13	<.03	<.005	3.2	<.01	0.118	0.013	0.011	<.03	0.02
12/8/1999	<.002	9	0.013	<.04	0.04	45	<.03	<.005	4.8	<.01	0.208	0.008	0.021	<.03	0.02
10/9/1999	<.002	7	<.005	0.55	<.01	45	<.03	<.005	3.1	<.01	0.175	<.005	<.005	<.03	<.01
29/10/99	<.002	6	<.005	<.04	<.01	25	<.03	<.005	3.6	<.01	0.199	<.005	<.005	<.03	<.01
22/11/99	0.011	6	<.005	0.38	0.02	35	<.03	<.005	3.4	<.01	0.106	<.005	<.005	<.03	<.01
14/12/99	<.002	7	0.008	<.04	<.01	38	<.03	<.005	3.5	<.01	0.242	<.005	0.011	<.03	0.01
27/01/00	<.002	13	<.005	<1	<.01	69	<.03	<.005	4.1	<.01	0.278	0.009	0.006	<.03	<.01
28/02/00	<.002	14	<.005	<1	<.01	60	<.03	<.005	5.4	<.01	0.292	<.005	<.005	<.03	<.01
23/03/00	<.002	6	<.005	<1	<.01	62	<.03	<.005	8	<.01	0.368	<.005	<.005	<.03	<.01
27/04/00	<.002	15	<.005	<1	<.01	108	<.03	<.005	4.5	<.01	0.289	0.016	0.006	<.03	<.01
15/05/00	<.002	<1	<.005	<1	<.01		<.03	<.005	3.4	<.01	0.145	<.005	<.005	<.03	<.01
26/06/00	<.002	5	<.005	3	<.01	28	<.03	<.005	2.5	<.01	0.112	<.005	<.005	<.03	0.03
25/07/00	<.002	9	0.011	<1	<.01	51	<.03	<.005	2.8	<.01	0.251	0.005	0.027	<.03	<.01
29/08/00	<.002	4	0.011	1	<.01	22	<.03	<.005	4	<.01	0.114	<.005	<.005	<.03	<.01
25/09/00	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	4.52	<0.03	0.125	<0.01	<0.03		0.007
29/10/00	<.002	7	<.005	<1	<.01	23	<.03	<.005	5	<.01	0.142	<.005	<.005	<.03	<.01
13/11/00	<0.002	7	<0.005	0.08	<0.01	28	0.06	0.013	5.4	0.16	0.228	<0.005	0.006	<0.03	<0.01
18/11/00	<0.01	6	<0.05	<0.3	<0.05		<0.2	<0.2	5.12	<0.03	0.246	<0.01	<0.03		0.081
14/12/00	<0.01	8	<0.05	<0.3	<0.05		<0.2	<0.2	5.46	<0.03	0.265	<0.01	<0.03		0.039
13/01/01	<.002	11	<.005	<1	0.08	37	<.03	<.005	5.7	<.01	0.38	<.005	0.022	<.03	0.03
10/2/2001	<.002	13	<.005	<1	<.01	47	<.03	<.005	4.2	<.01	0.222	<.005	<.005	<.03	0.09
10/3/2001	<.002	13.61	<.005	<1	<.01	50.9	<.03	<.005	5.15	<.01	0.32	<.005	<.005	<.03	<.01
16/04/01	<.002	17	<.005	<1	<.01	55	<.03	<.005	5.6	<.01	0.342	<.005	<.005	<.03	<.01
14/05/01	<.002	10	<.005	<1	<.01	43	<.03	<.005	3.3	<.01	0.244	<.005	<.005	<.03	0.02
17/06/01	<.002	3	<.005	<1	<.01	6	<.03	<.005	1.1	<.01	0.08	<.005	<.005	<.03	<.01
14/07/01	<.002	10	<.005	<1	<.01	19	<.03	<.005	4.7	<.01	0.157	<.005	<.005	<.03	<.01
14/08/01	<0.002	10	<0.005	<1	<0.01	46	<0.03	<0.005	5.1	<0.01	0.263	<0.005	<0.005	<0.03	<0.01
17/09/01	<0.002	4	<0.005	<1	<0.01	25	<0.03	<0.005	4.7	<0.01	0.209	<0.005	<0.005	<0.03	<0.01
15/10/01	<0.002	13	<0.005	<1	<0.01	96	<0.03	<0.005	4.5	<0.01	0.341	<0.005	<0.005	<0.03	<0.01
13/11/01	<0.002	7	<0.005	0.08	<0.01	28	0.06	0.013	5.4	0.16	0.228	<0.005	0.006	<0.03	<0.01
15/12/01	<0.002	12	<0.005	<0.01	<0.01	80	<0.03	<0.005	4.7	<0.01	0.33	<0.005	0.009	<0.03	0.03

Table C5. Surface Water Quality of Background Waters, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
STATION: Faro Creek Diversion Channel, FC										
1/6/1988						2		0.01		
15/06/88				15						
15/06/88	<1					2		0.29		
7/7/1988				7						
7/7/1988	12.08									
11/7/1988	12.6					3		0.2		
20/07/88	12.6									
27/07/88				7						
27/07/88	11.55									
24/08/88				4						
24/08/88	14.7					4	<1	0.34		
13/09/88				3						
13/09/88	14					<1	2	0.35		
6/10/1988				9						
6/10/1988	16					1	1	0.09		
12/7/1989	16			11		2				131.7
13/09/89	20			6.5		3				52
5/7/1990	14			8.2		1				239.7
7/8/1990	16			7.9		1				151.1
23/07/91	12			9		0.9				418
8/9/1991	13			4.5		1.78				324
6/6/1996	7.2	7.25	19.2	3	7	1.5				321
STATION: S Fork of Rose Creek, SRC										
13/05/96			84	3.5	7.66	8	40	<.05	<.001	
STATION: R6										
18/07/90	124					14	5	0.1		3898.6
23/08/90	118					13	5	0.1		3263
13/12/90	144			0		17	5	0.08	0.005	371
5/3/1991	141			1		91	5	0.25	0.011	1017
21/06/91	89			9		13	5	0.19	0.005	6347.6
26/09/91		142		3						
16/12/91						20				

Table C5. Surface Water Quality of Background Waters, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
16/12/91	143			0			5	0.05	0.005	1240
12/3/1992							5	0.05	0.005	872
22/07/92		126		7.2						
14/11/92							<4	0.01		3000
2/8/1995						24	2	<0.005	<0.001	
24/02/96			371	0.4	7.72	20	<5	<.05		1000
1/4/1996			369		7.81	24	<5	<.05		730
1/8/1996	125	135		7.9		20	<5	<.05		2786
4/9/1996	124	125		4.8	7.95	7	<5	<.05		2662
5/8/1998	141	158		7.5	8.37	6	2	<0.05		1878.5
9/9/1998	151	142				21	1	<0.05		
10/9/1998				3.5	8.44					1695
1/8/2000	118	99		7.2	8.4	15	1	<0.05		4800
6/9/2000	114	111		3.2	7.4	18	2	<0.05		

STATION: R7

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
3/8/1989	75			8.4		3				2494.7
14/09/89	82			4		7				468.51
14/03/90	130			2		10	5	0.12		151
18/05/90				2		2	10	0.27		
11/6/1990						4	<5	0.11		2479.3
9/7/1990	65			7.6		7	5	0.6		1632.6
18/07/90	84					4	5	0.1		1172.1
24/08/90	70					6	5	0.1		707
5/10/1990	87					6	5	0.35		1031
15/11/90	109			0		9	5	0.05		481
8/1/1991	121			0		9	5	0.03		
5/3/1991	129			1		9	5	0.07		322
1/5/1991	60			4		4	5	0.05		785.8
6/6/1991	45			5		4	5	0.14		
26/07/91	59			10		5				2092
11/9/1991	63			5		6.5				1807
18/10/91						9				
18/10/91	118			1			10	0.1		853.7
16/01/92							5	0.05		383
12/3/1992							5	0.05		279
6/10/1992							<4	0.018		602
30/11/92							<4	0.01		800

Table C5. Surface Water Quality of Background Waters, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
27/03/95						11				
20/07/95	93		150			9				
23/08/95	89		147			10	<1	<0.050		
18/09/95			174			13	<1	0.05		
16/10/95	115		188			52		0.09	0.001	
14/11/95			180			26	<5	<0.005		
11/12/1995	166		249			20	<5	<0.005		
25/01/96	156		312	0.8	7.56	5	<5	<.05		
14/02/96			276	2.1	7.53	11	<5	<.05		
22/03/96			272	1.2	7.82	9	<5	<.05		
10/4/1996	165		325	1.8	7.6	11	<5	<.05		
23/04/96	129		202		7.06	20	<5	<.05		
15/05/96	41		87	3	6.86	3	8	<.05		
13/06/96	55	43	104		8.05	5	<5	<0.05		
17/07/96	55		112	5	7.65	4	<5	<.05		
1/8/1996	75	72		10.8	7.9	6	<5	<.05		
14/08/96	75		140	4.5	7.5	8	<5	<.05		735
4/9/1996	69	63		5.4	7.64	3	<5	<.05		
17/09/96	57		110	4.5	7.5	5	7	<.05		2029
25/10/96	82		173	0	6.92	10	<5	<.05		
21/11/96	40	93	273		7.8	9	6	0.01		
19/12/96	69		255	0	7.42	19	<5	<0.05		234
14/01/97	43		296		7.42	11	9	<0.05		
26/02/97	86		298			9	<5	<0.05		
11/3/1997	63		315		7.29	6	<5	<0.05		
15/04/97	87		298	1.8	8.01	11	<5	<0.05		
13/05/97	25		59	4.6	7.08	5	19	<0.05		
23/06/97	11		102	10.8	7.78	7	55	<0.05		
15/07/97	12		157	9.9	7.96	6	<5	0.19		
23/07/97										3150
12/8/1997				8.9	7.65	9	<5	0.06		
22/09/97	14		166	5	7.88	3	<5	<0.05		
31/10/97	16		847	1.6	7.66	9	<5	<.05		
18/11/97	18		244	1.5	7.45	11	<5	0.1		
9/12/1997	125		227	1.7	7.57	10	<5	<0.05		
19/05/98		29			7.26	3	8	<0.05		
15/06/98					8.11	14	2	<0.05		
5/8/1998	92	83		9.2	8.19	9	16	<0.05		761
9/9/1998	102	82				8	3	<0.05		

Table C5. Surface Water Quality of Background Waters, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
10/9/1998				4.1	8.01					675
19/10/98					7.62	9	3	<0.05		
25/02/99		153				13	3	0.09		
17/05/99		21		2	7.46	6	16	<0.05		
4/7/1999		54		9	7.17	5				
30/10/99				0	7.82	10				
26/03/00						11	2	<.05		
3/6/2000				8	8.79	3	4			
1/8/2000	66	47		7.4	7.97	5	1	<0.05		1610
6/9/2000	66	61		3.2	8.06	7	3	<0.05		2625
12/9/2000				2.7	7.43	22	<1			
5/3/2001				1	8.2	11	<1			
13/06/01				2.2	8.2	6	8			
8/9/2001				3.1	8.5	11	683			

STATION: W10

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
6/6/1996	27	27.6	61.2	1.5	7.7	3.9				16
21/07/97			131	8.2	7.46	18	<5	<0.05		10
16/06/98					7.89	4				10
3/7/1999				7	7.98	3	3	<0.05		5
3/6/2000				4	7.95	3				
11/6/2001				3.7	8	3	<1			

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
STATION: A30										
23/06/97			1300	14	3.95	639	8	<0.05		10
19/05/98					3.09	576	198	0.26		30
17/05/99				2	3.06	182				>100
3/6/2000				6	2.69	578				
11/6/2001				8.7	7.5	185	1			
STATION: X22B										
6/10/1992							7	4.27	0.045	
25/11/92							<4	2.36	0.068	
21/01/93								2.47		
16/03/93							10	4.37	0.06	
24/06/93							<4	1.58		
20/06/96	123	338	1076		7.72	731		1.38	4.9	
17/07/96			1150	11	7.3	686	18	1.3	4.8	
15/08/96	122		1109		7.78	678	<5	0.07	5	
11/9/1996			1111			741	<5	1.11	0.116	
21/10/96	126		981		6.5	531	<5	0.87	3.589	
21/11/96			1038	2	7.51	636		0.82	1.06	
18/12/96				0	7.51					
19/12/96			1333	0	7.51	679	7	0.49	<.001	
20/01/97	102		1405			709	<5	0.1	<0.001	
11/3/1997			1322			493	<5	0.08		
15/04/97			564	3.4	7.12	232	12	0.88		
4/5/1997			241			72	<5	0.42		
12/5/1997			519	9	7.39	190	<5	0.61		
23/06/97			1244	15.3	7.93	549	<5	1.27		
15/07/97			1230	15.9	7.7	105	<5	1.41		
12/8/1997		530		15.7	7.74	208	10	1.21	<.01	
22/09/97		598		9.8	7.53	206	7	1.21	<.01	
20/10/97		525		4.9	7.68	541	<5	1.37	<.01	
18/11/97				4	7.5	591	<5	1.38		
8/12/1997				4	7.65	548	6	1.59		
13/01/98					8.33	529	6	1.54	<0.01	
18/05/98					7.68	195	2	0.28		
16/06/98	111				7.49	345	2	1.2	<0.01	
20/06/98									0.02	
21/07/98					7.31	202	3	1.28	0.06	
10/8/1998					7.23	342	6	1.24	0.02	
25/09/98						623	3	1.39	0.09	
19/10/98					7.15	693	2	1.29	<.01	
17/11/98					7.25	614	3	1.33	<0.01	

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
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19/01/99					6.87	574	<1	0.53		
22/02/99				0	7.42	692	6	1.35		
22/03/99						546		0.74	0.01	
17/05/99				2	6.91	190	2	0.33	<.01	
3/7/1999				13	7.26	478	6	0.94	0.01	
27/07/99				13	7.74	581	3	1.15	0.03	
12/8/1999				12	7.72	567				
10/9/1999	98			10	7.58	507				
30/10/99				1	6.85	638				
23/03/00	105			2		548	2	1.09	<0.01	
15/05/00				5	7.29	620	6	1.28		
26/06/00				16	7.58	457	5	1.1		
25/07/00				13.4	6.93	536	2			
15/08/00									<0.01	
29/08/00				9.8	7.37	545	3			
25/09/00				10.8	7.47	597	2.8			
28/10/00				1.9						
29/10/00						779	5			
13/11/00				0.2	7.4	620	2			
18/11/00						1735	1.2	2.52		
14/12/00					7.02	572	1.8			
13/01/01						404	4			
10/2/2001						396	3			
10/3/2001				-0.2	7.3	598	6			
16/04/01				2.2	7.9	526	4			
14/05/01				1.4	7.9	532	4			
17/06/01				7.5	7.8	565	8			
14/07/01				9.9	7.6	569	4			
14/08/01				9.9	7.6	582	1			
17/09/01				8.6	7.6	546	6			
15/10/01				3.9	7.6	586	6			
13/11/01				0.2	7.4	620	2			
15/12/01				-0.2	7.5	534	2			

STATION: NE1

6/6/1996	244	1390	2290			930				5
23/06/97			456	11.9	8.11	79				0.02
19/05/98					7.29	78	2			
15/06/98					8.02	110	1	<0.05		0.25
17/05/99					7.21	69				0.1
3/6/2000						128	7			0.1
11/6/2001				6.6	7.9	102	2			

STATION: NE2

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
23/06/97			445	9.8	7.82	111				0.25
15/07/97				8.5	7.69	84		<0.05		0.25
15/06/98					7.57	620	2	<0.05		0.25
17/05/99					7.27	79				0.5
4/7/1999				8	7.75	108				0.5
30/10/99						262				0.25
3/6/2000				5	7.01	791	14			1.5
11/6/2001				2.2	7.9	585	4			
STATION: SP5-6										
13/07/89	18			4		218				1.41
15/09/89	188			2.9		306				1.55
6/7/1990	170			4.4		213				0.2
7/8/1990	174			5.8		233				3
12/7/1991	169			7		406				4.5
8/9/1991	229			2.5		691				2
23/07/95	174			10	6.9	239				
6/6/1996	321	1190	1970	8.5	8.2	894				6
6/6/1996	321	1190				894				
20/06/96	213	528	1029			437				
23/06/97			913	9.1	7.45	266	<5	<0.05		
16/06/98					7.15	332				2
17/05/99					5.75	733				0.25
3/6/2000				9	7.49	973				0.05
11/6/2001				2.7	7.2	589	16			
STATION: X26										
8/3/1991	549									
1/4/1991	586									
3/6/1991	520					3350				
17/12/91	607			0				6.3		
3/2/1992								9.5		
26/02/92	381					2650				
10/3/1992								11		
16/06/92	248					1630				
30/07/92	512					1420				
27/08/92	485					1660				
24/11/92								1.1		
10/10/1993	524					1486				
26/11/94	471					1250				
7/6/1995			4393			1166	16	0.572	<0.001	
10/4/1996	607			2.1	6.36	1787		1.85		

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
Date	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
23/04/96			2830			1426	69	1.93	0.004	
15/05/96						1480				
15/05/96			2150	3	5.93	1480	35	1.98	<.001	
15/07/96	478		1194			1737		1.91	<.001	
11/9/1996	443	1600	4780	3	6.17	1535		1.3	<.001	
31/10/96	379	1666	1807		6.5	1840				
28/04/97			4210			1822	29	1.63		
12/5/1997	369		3970		6.04	1725	46	2.87		
23/06/97			3500	5.2	6.38	1648	<5	1.93		
15/07/97			3412	4.6	6.22	1803	17	2.08		
12/8/1997	79			4	6.25	1688	37	2	<.01	
22/09/97	73			4	6.19	715	29	1.88	0.04	
20/10/97	74			2.8	6.17	1828	33	2.14	<.01	
18/11/97				2.5	6	1998	23	2.48		
9/12/1997				2.6	6.1	2202	64	2.55		
12/1/1998					6.39	1990	28	2.63		
18/05/98					6.58	1488	10	<0.05		
16/06/98	485				6.24	1578	25	<0.05		
17/05/99				2	5.79	2630	81	2.29		
27/07/99				4	6.77	1751	133	1.72		
26/06/00				5	5.77	1928	46	1.96		
25/07/00				5.6	6.3	1703	45			
29/08/00				2.9	6.05	2220	60			
25/09/00				3.1	6.18	2236	56			
17/06/01				2.2	6.7	1963	41			
14/07/01				2.2	6.5	1928	19			
14/08/01				2.7	6.3	2235	44			
17/09/01				2.2	6.6	1928	68			

STATION: X23

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
10/10/1986						1555				
23/10/86						1550	4			
31/10/86						1555	3			
6/11/1986						1560	6			
13/11/86						1570	5			
21/11/86						1750	2			
28/11/86						1580	3			
4/12/1986						1560				
10/12/1986						1544				
16/12/86						1580	4			
23/12/86						1540	10			
31/12/86						1558	2	0.91	<0.01	
7/1/1987						1190	5	0.25	0.01	
15/01/87						1250	2	0.77	<0.01	

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
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20/01/87						1055	2	0.56	0.01	
28/01/87						1115	3	0.56	<0.01	
3/2/1987						1010	3	0.55	<0.01	
10/2/1987						1145	2	0.56	<0.01	
17/02/87						547	2	5.56	0.01	
24/02/87						641	4	1.76	0.01	
3/3/1987						644	3	0.58	<0.01	
10/3/1987						522	2	3.23	0.02	
17/03/87						837	10	1.47	0.01	
24/03/87						415	4	4.26	<0.01	
1/4/1987						487	14	9.8		
7/4/1987						546	5	4.46		
14/04/87						605	4	7.9		
20/04/87						559	4	5.62		
28/04/87						566	3	2.46		
5/5/1987						782	13	13.3	0.02	
12/5/1987						784	13	7.36	0.02	
19/05/87						749	148	8.5	0.01	
26/05/87						738	11	3.32	<0.01	
4/6/1987						748	6	1.89	<0.01	
11/6/1987						796	3	1.39	<0.01	
16/06/87						1040	38	1.9	<0.01	
26/06/87						1400	2	1.26	<0.01	
30/06/87						1385	2	0.95	<0.01	
6/7/1987						1380	1	0.78	<0.01	
13/07/87						1440	2	0.81	<0.01	
23/07/87						1410	2	0.79	<0.01	
28/07/87						1470	1	0.75	<0.01	
4/8/1987						1385	3	0.95	<0.005	
11/8/1987						1360	1	0.97	<0.005	
18/08/87						1435	1	0.89	<0.005	
25/08/87						1510	3	0.76	0.02	
1/9/1987						1505	1	0.83	0.02	
8/9/1987						1505	2	0.7	0.01	
15/09/87						1510	3	0.67	<0.01	
21/09/87						1485	1	0.84	<0.005	
2/10/1987						1470	2	0.63	<0.005	
6/10/1987						1500	1	0.67	0.03	
13/10/87						1500	1	0.76	<0.005	
20/10/87						1485	2	0.78	0.01	
27/10/87						1480	3	0.78	0.02	
3/11/1987						1490	2	0.74	<0.005	
10/11/1987						1480	1	1.29	<0.005	
17/11/87						1470	3	0.76	<0.005	
24/11/87						1350	2	0.85	<0.005	

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
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1/12/1987						1465	2	0.8	0.01	
9/12/1987						1455	3	0.5	<0.005	
15/12/87						1830	3	0.85	0.01	
23/12/87						1550	<1	0.78	<0.005	
30/12/87						1740	5	0.61	<0.005	
5/1/1988						1490	2	0.71	0.008	
12/1/1988						1530	1	1.09	<0.005	
19/01/88						1530	4	0.78	<0.005	
27/01/88						1515	3	1.02	<0.005	
2/2/1988						1495	3	0.69	<0.005	
11/2/1988						1480	2	1.2	0.021	
17/02/88						1455	2	0.47	<0.005	
24/02/88						1495	25	0.81	<0.005	
2/3/1988						1460	3	0.73	<0.005	
9/3/1988						1460	2	0.87		
16/03/88						1460	3	0.66	<0.005	
23/03/88						1440	2	0.87	<0.005	
29/03/88						1430	3	0.05	0.028	
5/4/1988						1435	2	0.77	<0.005	
12/4/1988						1405	15	0.83	0.034	
20/04/88						1370	3	0.72	0.019	
25/04/88	494					1455	4	0.75		
4/5/1988	531					1440	16	0.81		
11/5/1988	546					1465	3	1.53		
19/05/88	536					1485	11	0.95		
25/05/88	565					1480	5	1.29		
1/6/1988	571					1500	7	0.82		
7/6/1988	585					1500	2	0.96		
15/06/88	599					1515	2	0.29		
23/06/88	597					1525	2	0.49		
28/06/88	594.3					1510	2	0.88		
6/7/1988	567					1480	19	0.99		
11/7/1988	598.5					1550	8	1.03		
20/07/88	558.6					1675	5	1.88		
27/07/88	329.8					1275	4	0.41		
4/8/1988	394.8					1380	1	0.42		
10/8/1988	381.2					1340	4	0.57		
16/08/88	417.9					1405	2	0.65		
24/08/88	444.2					1425	2	0.75		
31/08/88						1185	<1	0.46		
9/9/1988						1350	<1	0.51		
13/09/88	380					1340	2	0.66		
22/09/88	411					1480	4	0.48		
29/09/88	404					1480	3	0.74		
6/10/1988	450					1560	<1	0.6		

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
14/10/88						1610	2	0.55		
19/10/88	261					1655	1	0.73		
26/10/88	519.5					1675	2	0.67		
1/11/1988	520					1650	2	0.74		
8/11/1988	378					1410	1	0.53		
14/11/88	369					1370	4	0.49		
21/11/88	407					1460	2	0.4		
30/11/88	502					1580	4	0.76		
7/12/1988	508					1.6	26	0.89		
21/12/88	533					1690	2	1.29		
28/12/88	489					162	1	0.11		
6/1/1989	535					1700	1	0.7		
11/1/1989	529					1665	2	0.67		
17/01/89	562.8					1670	2	0.7		
23/01/89	630					1660	4			
2/5/1989	101					1980	5	0.86		
8/5/1989	336					2000	12	0.34		
16/05/89	317					1898	2	1.32		
23/05/89	345					1810	1	1.4		
29/05/89	358					1745	2	0.91		
5/6/1989	416					1170	1	0.8		
12/6/1989	434					1799	2	0.32		
26/06/89	176					565	3240	3.33		
4/7/1989	62					289	12600	0.22		
10/7/1989	76					243	12	0.84		
17/07/89	134					298	272	1.65		
25/07/89	124					710	223	1.58		
31/07/89	138					600	129	1.29		9.5
7/8/1989	146					635	750	1.39		
14/08/89	56					222	9	0.03		
21/08/89	94					720	5	0.91		
28/08/89	136					560	217	1.16		
5/9/1989	140					462	39	0.57		
11/9/1989	146					610	373	0.7		
18/09/89	146			3		530				1.5
18/09/89	154					530	49	0.75		
25/09/89	62					228	7	0.03		
2/10/1989	152					540	49	1		
10/10/1989	136					560	2	1.28		
16/10/89	70					264	16	0.12		
23/10/89	92					228	23	0.01		
30/10/89	66					210	10	0.08		
6/11/1989	74					239	18	0.01		
15/11/89	68					235	33	0.03		
20/11/89	68					214	4	0.07		

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
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27/11/89	64					224	12	0.01		
4/12/1989	66					217	5	0.04		
11/12/1989	68					197	8	0.01		
18/12/89	66					221	5	0.1		
3/1/1990	552					1850	12	0.86		
8/1/1990	542					1850	11	0.89		
15/01/90	544					1790	<5	0.93		
22/01/90	548					1810	<5	0.89		
1/2/1990	542					1720	7	0.73		
5/2/1990	532					1760	<5	0.56		
12/2/1990	540					1750	8	0.63		
19/02/90	528					1790	<5	0.56		
26/02/90	480					1570	<5	0.2		
12/3/1990	526						<5	0.32		2.5
5/4/1990	248			2.4		1260				17
17/04/90	238						11	0.78		18
1/5/1990	315	1670	2660		6.5	1360	<5	0.68		
2/5/1990	304					1400	5	0.78		
14/05/90	346						5	0.65		4
11/6/1990	454					1555	5	0.78		0.1
5/7/1990	410			5.4		1590				
11/7/1990	458	113	3480		6.8	1490	<10	0.789		1.5
11/8/1990	428			5.8		1550				4
2/1/1991	486.1			0		1640	5	0.37		1.5
4/2/1991	433.5			0		1770	5	0.44		2
4/3/1991	429.5			3.5			5	0.59		2.5
4/4/1991	439			2.5		2000	5	0.73		5
1/5/1991	336			3		2110	17	0.84		10
3/6/1991	439			4.5		2600	6	0.82		5
2/7/1991	453			8		1840				5
2/7/1991	453			8		1840	18	1.2		5
5/8/1991	443			7		1900	5	0.76		6
3/9/1991	465			5.5		2000	5	1.85		5
8/9/1991	470			4		1930				5
7/10/1991	475			3.5			5	0.47		4
6/11/1991	476			1			5	0.54		4
2/12/1991	446			2			5	0.3		4
13/10/92							<4	0.57		2
25/11/92							10	0.62		3
20/01/93								0.64		2
26/04/93							4	0.56		
26/05/93							12	0.48		
24/06/93							5	0.64		
31/08/93							5	0.48		
1/9/1993								0.4		

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
30/09/93						2090				
25/10/93						2420				
1/11/1993								0.606		
1/12/1993						2470				
13/12/93						3020		0.586		
1/1/1994								0.478		
31/01/94						3130				
3/3/1994						2710				
26/04/94						2650		0.695		
31/05/94						2700	5	0.608		
10/8/1994						2800	6	0.521		
25/09/94							4	0.558		
15/10/94						2840				
25/11/94							11	0.453		2.9
31/01/95						2810	10	0.515		
1/2/1995							10	0.515		1.07
22/02/95							11	0.465	<0.001	1.1
24/02/95						2560	11	0.465	<0.001	
6/3/1995							7	0.45	<0.001	1.7
8/3/1995						2700	7	0.45	<0.001	
17/04/95							54	0.606	<0.001	2.2
8/5/1995			4520			2650	10	0.634	<0.001	1.6
7/6/1995			7327			2587	10	0.438	0.006	2.3
21/06/95							10	0.6	0.001	2
20/07/95			4250			2536	10	0.6	0.001	
23/08/95			4160			2891	2	0.68	0.003	2.21
18/09/95			4540			2574	<1	0.8	<0.001	2
16/10/95			3650			2541	<1	0.92	<0.001	1.1
14/11/95			4800			2561	7	<0.005	0.003	2
11/12/1995			4740			2611	5	0.47	0.002	
12/12/1995	455	3350	4100		7.7	2760	<5	0.21		2
25/01/96			4870	0.8	7.37	2053	6	0.5	<.001	1.67
14/02/96			4850	2.1	7.25	2597	5	0.56	<.001	1.5
5/3/1996	571	3330	4200		7.6	2700	<5	2.5		1.8
22/03/96			4770	2.3	7.31	2175	<5	0.56	0.002	1.1
9/4/1996			4130	4	7.22	2118	41	0.41	<.001	1.7
23/04/96			3750	4.3	6.52	1811	5	0.52	0.009	1.67
13/05/96			3740	5	7.3	2345	<5	0.74	<.001	1.6
11/6/1996			3680	6	7.08	2197	<5	0.5	0.002	
17/07/96			3210	7	6.64	2687	<5	0.6	0.001	1.45
15/08/96			3380	7	6.64	2520	<5	0.45	0.002	1.73
11/9/1996			3720	5.5	7.13	2656	8	0.58	<.001	1.1
21/10/96			6300	0	6.88	2407	<5	0.37	<.001	1.5
21/11/96			5956	0	7.17	2684	<5	0.2	<.001	1.5
18/12/96				0	7.25					

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
19/12/96			4258	0	7.25	2486	24	0.51	<.001	2.5
20/01/97			4700	1.5	7.06	2472	7	0.46	<0.001	2.3
24/02/97			4700	2.5		2310	<5	0.43	<0.001	2.4
18/03/97			4620		7.26	2034	<5	0.46	0.003	2.5
15/04/97			4100		6.86	2116	9	0.42		2.5
7/5/1997										1.1
13/05/97	615	2679	4752	9.9	6.97	2316	70	0.88		1.3
24/06/97			4610	11.4	6.99	2419	14	0.77		1.3
15/07/97			4610	9.1	6.91	2223	9	1		1.3
6/8/1997										1.5
12/8/1997				7.5	6.9	2476	19	0.74		1.3
22/09/97				6.8	6.85	978	6	0.86		2
28/10/97				2.4	7.08	2402	<5	0.34		2
4/11/1997										1.5
18/11/97				3.6	7	2565	<5	0.71		2
8/12/1997				3	6.81	2585	9	0.52		2
24/02/98					6.79	2568	16	0.63		2.55
17/03/98					6.84	2695	127	0.15		2.4
13/04/98					6.86	545	20	0.36		1.9
18/05/98					7.15	2184	6	0.37		1.3
15/06/98					6.94	2965	8	0.36	<0.01	1.2
20/06/98									0.01	
21/07/98					6.89	2231	1	0.33	0.01	1.1
10/8/1998					6.78	2961	13	0.42	<0.01	1.5
25/09/98						2752	6	0.75	<0.01	1.1
19/10/98					6.69	3135	4	0.74		1.1
17/11/98					7.05	2620	3	0.22	<0.01	1.5
21/12/98					6.74	2985	2	0.06		1.6
19/01/99					7.15	3132	3	0.21		1.5
22/02/99				0	6.87	3220	35	0.2		1.5
17/03/99				1	7.52	3074	8	0.2	0.02	1.1
17/05/99				6	5.88	3757	5	0.92		1.5
3/7/1999				7	6.61	3179	30	0.56	0.03	1.7
12/8/1999				11		3032	11	0.8		1.5
10/9/1999				4	6.34	3150	31	0.58		1.5
29/10/99	98			2	6.61	3239	48	0.59		1.6
22/11/99				2	6.32	3272	33	0.32		1.5
13/12/99					6.89	3056	30	1.49		1.7
26/01/00						3204	6	0.55		
28/02/00				0	6.49	3165	17	0.61		1.7
27/04/00				5	6.26	3159	40	<0.05		1.4
15/05/00				8	6.46	3594	21	0.55		
26/06/00				14	6.59	2735	6	0.7		
25/07/00				6.5	6.93	3067	42	0.73		2.5
29/08/00				6.5	6.79	3329	22	0.5		2.25

Table C6. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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25/09/00				5.9	6.44	5184	115	0.25		1.25
28/10/00				3.6						6
29/10/00						10571	258	0.5		
13/11/00				1.2	6.6	4316	138	0.07		2.25
18/11/00						6053	183			6
14/12/00					6.28	5786	149	0.43		6
13/01/01						4376	189	0.76		2.25
10/2/2001					6.8	4619	103	0.91		2.25
10/3/2001				3.9	6.6	4662	144	0.81		2.25
16/04/01				3.7	6.6	3944	142	0.79		
14/05/01				5.5	6.7	2568	58	0.66		2.25
17/06/01				5.5	6.6	5476	265	0.5		2.25
14/07/01				7.1	6.5	4979	226	0.59		2.25
14/08/01				8.4	6.6	4440	221	0.57		2.25
17/09/01				5.5	6.6	3497	242	0.9		
15/10/01				2.2	6.6	3918	154	<0.05		2.25
13/11/01				1.2	6.6	4316	138	0.07		2.25
15/12/01				0.2	6.7	3955	134	0.06		2.25

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
23/06/97	11		103	10.2	7.69	6	<5	<0.05		
15/07/97	10		163	10.5	7.7	3	<5	0.06		
12/8/97	14		159	8.5	7.48	9	<5	<0.05		
22/09/97	13		179	4	7.62	4	<5	<0.05		
27/10/97	18		240	1.9	7.33	12	8	0.06		
18/11/97	16		252	1	7.36	14	7	<0.05		
9/12/97	134		246	0.7	7.47	15	<5	<0.05		
19/05/98					7.1	3	8	<0.05		
15/06/98					7.03	16	1	<0.05		
20/10/98					7.11	13	1	<0.05		
17/05/99				1	6.91	6	35	<0.05		
4/7/99				7	7.38	8				
30/10/99				0	6.67	15				
4/6/00				5	6.15	3	6			
12/9/00				2.8	7.52	10	6			
5/3/01				1	8	22	7			
13/06/01				2.5	8.1	4	12			
8/9/01				3.3	8.4	10	2			
STATION: R10										
5/10/92							<4	0.008		
10/10/93	79.4					11.6	<4			
22/10/93	89.1					10.9	<4			
14/09/94	81.1					11.7	<4			
25/10/94	94.8					12.9				
27/03/95	149		276			15				
18/04/95	140		278			13				
7/6/95	45		99			38				
20/07/95	97		161			13				
23/08/95	92		148			11	<1	<0.005		
16/10/95	125		186			14		0.09	0.001	
14/11/95			225			13	<5	<0.005		
11/12/95	158		278			19	<5	<0.005		
25/01/96	166		334	0.8	7.49	4	<5	<.05		
14/02/96			341	1	7.39	17	<5	<.05		
12/3/96			347	2.4	7.47	15	<5	<.05		
10/4/96	153		335	2.6	7.5	15	<5	<.05		
23/04/96	129		213		7.06	15		<.05	0.078	
15/05/96	41		96		7.83	5	7	<.05		
13/06/96	48	45	104		7.83	9	<5	<0.05		
17/07/96	54		117			7	<5	<.05		
14/08/96	75		138	5	7.26	9	<5			
17/09/96	54		104	5	7.26	7	5	<.05		
25/10/96	74		186	0	6.58	14	<5	<.05		
21/11/96	44	99	303	0	7.65	12	<5	0.01		
19/12/96	71		273	0	7.24	15	<5	<0.05		
14/01/97	35	121	307		7.24	16	<5	<0.05		
26/02/97	84		300	0		4	6	<0.05		
11/3/97	61		314			10	<5	<0.05		
15/04/97	86		301	3.8	7.41	14	<5	<0.05		
13/05/97	277		57	3.8	7.41	5	22	<0.05		
23/06/97	10		104	10.6	7.91	7	<5	<0.05		

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
15/07/97	12		162	11.3	7.89	3	<5	0.05		
12/8/97	14		152	8.8	7.64	9	<5	<0.05		
22/09/97	13		180	4.5	7.76	4	<5	<0.05		
27/10/97	16		235	1.8	7.46	13	7	<0.05		
18/11/97	18		252	1.8	7.37	16	9	<0.05		
9/12/97	125		248	1.7	7.55	15	<5	<0.05		
19/05/98					7.61	6	8	<0.05		
15/06/98					6.88	16	3	<0.05		
20/10/98					6.95	13	1	<0.05		
17/05/99				1	6.81	3	28	<0.05		
4/7/99		55		7	7.42	7				
30/10/99				0	6.85	15				
26/03/00						15	2	<.05		
3/6/00				5	7.88	3	9			
12/9/00				2.9	7.21	10	4			
5/3/01				1	7.8	21	<1			
13/06/01				2.4	8.2	3	12			
8/9/01				3.3	8.4	10	2			
STATION: NF1										
28/07/89	66			10		4				851
18/09/89	90					6				783.03
5/7/90	59			7.7		4				2243.1
11/8/90	80			9.2		5				933
12/7/91						3				2051.4
25/07/91	60			10		6.7				2340
11/9/91	48			7		7.5				2259
22/09/97			190	6.4	7.33	4		<0.05		
15/06/98					6.73	17	<1	<0.05		
4/7/99				6	7.23	8	7			
30/10/99				0	6.65	18				
25/07/00				8.8	7.71	8	2			
12/6/01				2.7	8.2	3	6			
STATION: NF2										
4/8/89	80			8		8				
14/09/89	86			4.2		9				
5/4/90	132			0.8		16				
5/7/90	53			7.6		4				1562.3
11/8/90	76			8.5		6				900.8
25/07/91	60			10		7				2615
10/9/91	78			6		8				2722
6/6/96	39.3	48.5	88.5	5.6	8.58	4.8				1609
22/09/97			185	6	7.66	4		<0.05		
15/06/98					6.97	16	1	<0.05		
21/12/98		156				22	<1	<0.05		
3/7/99				7	7.64	8	7			
31/10/99				0	6.65	16				
25/07/00				7.6	7.41	10	<1			
12/6/01				2.7	8.2	3	3			

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
Date	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
25/01/96			349	0.9	7.42	29	<5	<.05	<.001	
14/02/96			377	1.2	7.39	26	<5	<.05	<.001	85
12/3/96			362	1.1	7.31	20	<5	0.14	<.001	
9/4/96			362	1.4	7.31	18	<5	<.05	<.001	
23/04/96			241	2	7.41	20	7	<.05	0.004	
13/05/96			119	3.5	7.6	6	7	<.05	<.001	
11/6/96			110	4	7.57	8	<5	<.05	<.001	
17/07/96			1120	6	7.47	109	<5	<.05	<.001	
15/08/96			146	5	7.82	11	<5	<.05	<.001	1024
11/9/96			144	4	7.91	11	<5	<.05	<.001	1221
21/10/96			192	0	7.58	16	<5	<.05	0.048	
21/11/96			202	0	7.44	27	<5	0.01	<.001	
17/12/96				0	7.4					
19/12/96			274	0	7.4	13	6	0.11	<.001	
14/01/97		143	342			21	<5	<0.05	<0.001	
26/02/97			272	0		25	<5	0.06	<0.001	
11/3/97	31		397		6.94	15	<5	<0.05	<0.001	
15/04/97		137	322		7.37	19	<5	<0.05	0.004	
12/5/97		28	69	3.4	7.2	5	<5	<0.05	0.004	
23/06/97			106	11.3	7.86	8	<5	0.08	0.009	
15/07/97			167	11	7.79	6	<5	0.12	0.004	
12/8/97				9.1	7.99	9	12	<0.05		
22/09/97				4.9	7.82	4	<5	0.06		
20/10/97				3.2	7.54	15	<5	0.14		
18/11/97				1.9	7.47	17	<5	0.05		
8/12/97				1.5	7.34	18	<5	<0.05		
12/1/98					7.19	21	<5	0.1		
24/02/98					6.89	24	2	<0.05		
17/03/98					7.03	7	3	<0.05		
13/04/98					6.74	22	<1	<0.05		
18/05/98		38			8	6	17	<0.05		
15/06/98		63			7.42	19	3	<0.05	<0.01	
21/07/98					7.68	6	4	<0.05		647.2
10/8/98					7.64	21	5	<0.05		
10/9/98										647.2
25/09/98						14	<1	<0.05		
19/10/98					7.24	18	2	<0.05		
17/11/98					6.98	28	<1	<0.05	<0.01	
21/12/98		211			6.99	32	4	<0.05		
18/01/99					6.73	31	<1	<0.05		
22/02/99				0	6.61	32	5	<0.05		
17/03/99				0	6.93	26	2	<0.05		
20/04/99				1	7.06	24	1	<.05		
17/05/99		21		1	7.35	4	4	<0.05		
3/7/99		43		7	7.71	8	7	<0.05	<0.01	
27/07/99				6	7.89	7	24	<0.05		
29/07/99										1561
12/8/99				12	7.68	11	4	<0.05	<0.01	
31/08/99										1004
10/9/99				4	7.58	10	2	<0.05	<0.01	
29/10/99	66			0	6.99	19	<1	<0.05	<0.01	
22/11/99				0	6.65	23	9	<0.05	<0.01	
14/12/99				0	7.21	21	1	<0.05	<0.01	

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
27/01/00						32	1	<0.05	<0.01	
28/02/00				0	6.85	24	1	<0.05	<0.01	
23/03/00				0	6.67	23	<1	<0.05	<0.01	
27/04/00				2	6.96	26	2	<0.05	<0.01	
15/05/00				3	6.74	8	2	<0.05	<0.01	
26/06/00				9	7.41	6	6	0.07	<0.01	
25/07/00				8.1	7.63	9	<1	<0.05	<0.01	
29/08/00				5	7.42	9	1	<0.05	<0.01	
25/09/00				3.4	7.69	11	3.6	0.02	<0.01	
28/10/00				2.3						
29/10/00						13	1	<0.05	<0.01	
13/11/00			240	-0.4	8	21	1	<0.05	<0.01	
18/11/00						19	1.6	<0.02	<0.01	
14/12/00					7.22	21	0.8	0.03	<0.01	
13/01/01						43	2	<0.05	<0.01	
10/2/01						52	2	<0.05	<0.01	
10/3/01				-0.2	7.7	29	3	<0.05	<0.01	
16/04/01				0	7.9	25	<1	<0.05	<0.01	
14/05/01				0.2	8.3	13	5	<0.05	<0.01	
17/06/01				3.3	8.4	5	8	<0.05	<0.01	
14/07/01				6.1	8.3	9	3	<0.05	<0.01	
14/08/01				6.9	8.1	13	2	<0.05	<0.01	
17/09/01				4.2	8.3	15	2	<0.05	<0.01	
15/10/01				-0.4	7.8	22	2	<0.05	<0.01	
13/11/01			240	-0.4	8	21	1	<0.05	<0.01	
14/12/01			285	-0.4	8.2	22	1	<0.05	<0.01	
STATION: X3										
1/1/87						12	<1	<0.01	<0.01	
1/2/87						33	<1	<0.01	<0.01	
1/3/87						16	1	0.01	<0.01	
1/4/87						15	<1	0.38		
1/5/87						14	2	0.17	<0.01	
1/6/87						2	4	0.18	<0.01	
1/7/87						6	2	0.25	<0.01	
1/8/87						8	1	0.52	<0.01	
11/8/87						8	1	0.52	<0.005	
1/9/87						11	1	0.28	<0.01	
8/9/87						11	1	0.28	<0.005	
1/10/87						11	2	0.03	<0.01	473.3333
6/10/87						11	2	0.03	<0.005	473
1/11/87						17	<1	0.16	<0.01	
10/11/87						17		0.16	<0.005	
1/12/87						19	1	<0.01	<0.01	
9/12/87						19	1	<0.005	<0.005	
27/01/88						21	1	0.4	<0.005	
17/02/88						27	1	0.1	0.006	
24/03/88						15	<1	0.21	<0.005	
25/04/88	104					19	5	0.21	<0.005	
25/05/88	66					3	1	0.19		
7/6/88	59					4	2	0.04		
11/7/88	43.58					8	1	0.12		

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
16/08/88	68.8					7	2	0.31		
13/09/88	72.7					6	2	0.37		
6/10/88	82					4	1	0.04		
1/11/88	87					9	1	0.009		
30/11/88	91					8	<1	0.17		
26/01/89	107.5					28	2			
13/02/89	96					34	2	0.08		
14/03/89	113					25	2	0.19		
12/4/89	115.5					23	<1	0.29		
9/5/89	44.8					5	9	0.07		
13/06/89	39					6	4	0.01		
10/7/89	66					10	1	0.14		
14/08/89	90					10	2	0.01		
11/9/89	268					9	2	0.06		
16/10/89	100					10	1	0.07		
6/11/89	100					30	2	0.06		
11/12/89	110					26	5	0.07		
15/01/90	104					22	<5	0.29		
12/2/90	100					26	9	0.03		
12/3/90	104					29	<5	0.09	<0.001	
17/04/90	114					22	5	0.1	0.005	
2/5/90	64					15	11	0.94	0.005	
14/05/90	98					23	5	0.16	0.005	
11/6/90	46					5	5	0.16	0.005	
2/1/91	110.5			0			5	0.01	0.005	
4/2/91	119			0		14	5	0.16	0.005	
4/3/91	112.8			1			5	0.17	0.005	
1/4/91	110.5			1.5		16	5	0.06	0.005	
1/5/91	76			3		12	6	0.27	0.005	
4/6/91	57			9		8	5	0.19	0.005	
2/7/91	57			13		7	5	0.05	0.005	
5/8/91	55			6		9	5	0.17	0.005	
3/9/91	78			6		12	5	0.53	0.005	
6/11/91				0.3						
21/01/92							5	0.05		
8/10/92							<4	0.01	0.005	
25/11/92							<4	0.01	0.005	
6/3/95							<4	<0.005	<0.001	
8/3/95						19	<4	<0.005	<0.001	
21/06/95							<1	<0.05	<0.001	
20/07/95			165			22	<1	<0.050	<0.001	
23/08/95			179			15	<1	<0.050	<0.001	
18/09/95			174			13	<1	0.06	<0.001	
16/10/95			151			15	<1	0.14	<0.001	
14/11/95			205			21	<5	0.37	<0.001	
6/12/95			229			18	<5	0.1	<0.001	
25/01/96			255	0.9	7.5	15	<5	<.05	<.001	
14/02/96			263	1.6	7.52	22	<5	<.05	<.001	
12/3/96			245	1.5	7.51	20	<5	<.05	0.001	
9/4/96			237	1.8	7.55	19	<5	<.05	<.001	
23/04/96			236	2	7.53	23	5	<.05	0.001	
13/05/96			140	2.5	7.56	9	<5	<.05	<.001	
11/6/96			107	5.5	7.5	9	<5	<.05	<.001	

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
17/07/96			114	9	7.75	11	<5	<.05	<.001	
15/08/96			138	7	7.86	12	<5	<.05	<.001	1233
11/9/96			148	5	7.95	12	<5	<.05	<.001	1159
21/10/96			173	0	7.6	15	<5	<.05	<.001	
21/11/96			177	0	7.2	21	<5	0.02	<.001	
17/12/96				0	7.48					
19/12/96			261	0	7.48	21	<5	<0.05	<.001	
14/01/97		80	184	1	7.52	15	<5	<0.05	<0.001	
17/02/97			252	0.5	7.72	41	<5	0.03	<0.001	
11/3/97		86	251		7.1	11	<5	<0.05		
15/04/97		135	307	2.7	7.84	21	9	0.44		
12/5/97		34	80	5.5	7.17	6	24	<0.05		
23/06/97			93	14	8	7	<5	<0.05		
15/07/97			146	13.1	8.25	9	<5	0.07		
12/8/97				11	7.91	9	12	<0.05		
22/09/97				6.7	7.9	5	<5	<0.05		
20/10/97				4.8	7.72	14	<5	0.05		
18/11/97				2.1	7.85	17	<5	<0.05		
8/12/97				1.5	7.34	19	<5	<0.05		
12/1/98					7.1	16	5	0.08		
24/02/98					7.16	18	7	<0.05		
17/03/98					7.33	5	4	<0.05		
13/04/98					7.39	16	2	<0.05		
18/05/98		48			8.01	6	6	<0.05	<0.01	
15/06/98		61			7.49	17	2	<0.05		
21/07/98					7.65	9	2	<0.05		
10/8/98					7.73	18	3	<0.05		
25/09/98						12	3	<0.05		
19/10/98					7.3	17	<1	<0.05	<.01	
17/11/98		162			7.52	24	<1	<0.05	<0.01	
21/12/98		145			6.91	21	3	<0.05		
18/01/99		154			6.91	26	2	<0.05		
22/02/99		180		0	6.62	27	3	<0.05		
17/03/99		144		0	7.41	23	2	<0.05	<0.01	
20/04/99				0	8.27	21	2	<.05	<.01	
17/05/99		31		1	6.99	4	2	<0.05		
3/7/99		53		9	7.95	8	3	<0.05	<0.01	
27/07/99		52		9	7.97	8	4	<0.05		
12/8/99				12	7.7	10				
31/10/99	121			0	7.18	18				
22/11/99				0	7.05	21	1	<0.05		
14/12/99				0	7.62	20	1			
27/01/00						24	<1	<0.05		
28/02/00				0	7.68	22	<1	<0.05		
23/03/00		137		1	7.29	21	1	<0.05		
27/04/00				2	6.42	23	1	<0.05		
15/05/00				2	7.54	10	<1	<0.05		
26/06/00				13	7.39	7	4	<0.05		
25/07/00				10.3	7.81	10	1			
29/08/00				6.8	7.61	12	2			
25/09/00				4.3	7.7	15	1.6			
28/10/00				1.8						
29/10/00						32	3			

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
13/11/00				-0.4	8.3	20	3			
18/11/00						23	2.6			
14/12/00					7.21	23	0.6			
13/01/01						47	3			
10/2/01						60	<1			
10/3/01				-0.2	7.6	28	1			
16/04/01				0.2	7.7	24	1			
14/05/01				0.6	8.2	15	2			
17/06/01				5.1	8.4	7	8			
14/07/01				8.7	8.3	10	2			
14/08/01				9.6	8.2	14	2			
17/09/01				5.5	8.3	15	3			
15/10/01				-0.2	8	17	2			
13/11/01				-0.4	8.3	20	3			
14/12/01				-0.4	7.9	19	1			
STATION: X10										
1/1/87				2						
1/1/87						12	<1	<0.01	0.03	
1/2/87				3						
1/2/87						19	<1	0.24	<0.01	
1/3/87				2						
1/3/87						18	<1	0.03	0.02	
1/4/87				3						
1/4/87						16	1	0.21		
1/5/87				0						
1/5/87						3	162	0.17	<0.01	
1/6/87				4						
1/6/87						<1	4	0.07	<0.01	
1/7/87				9						
1/7/87						6	<1	0.31	<0.01	
1/8/87				6						
1/8/87						13	<1	0.37	<0.01	
11/8/87				6						
11/8/87						13		0.37	<0.005	
1/9/87				2						
1/9/87						9	<1	0.08	<0.01	
8/9/87				2						
8/9/87						9		0.08	<0.005	
1/10/87				0						
1/10/87						13	1	0.05	<0.01	1231.166
6/10/87				0						
6/10/87						13	1	0.05	<0.005	1231
1/11/87				0						
1/11/87						16	<1	0.3	<0.01	
10/11/87				0						
10/11/87						16		0.3	<0.005	
1/12/87				0						
1/12/87						22	<1	0.08	0.01	
9/12/87				0						
9/12/87						22		0.08	0.01	
27/01/88				2						

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
27/01/88						9	2	0.28	0.007	
2/2/88				3						
2/2/88						440	4	1.18	0.116	13.8333
5/2/88				1						
10/2/88				2						
10/2/88						418	4	1.24	0.174	16.1667
17/02/88				2						
17/02/88						18	4	0.57	<0.005	16.1667
24/02/88				3						
24/02/88						411	3	1.16	0.089	16.1667
2/3/88				3						
2/3/88						395	4	1.09	0.129	13.8333
9/3/88				3						
9/3/88						407	4	1.03	0.236	16.1667
16/03/88				2						
16/03/88						406	5	1.01	0.143	13.8333
23/03/88				2						
23/03/88						11	<1	0.06	<0.005	
24/03/88				2						
24/03/88						11	<1	0.06	<0.005	
29/03/88				4						
29/03/88						408	4	1.17	0.223	12.6667
25/04/88				3						
25/04/88	103					21	6	0.23	<0.005	
25/05/88				4						
25/05/88	61					8	3	0.21		
16/06/88				9						
16/06/88	47					1	2	0.14		
11/7/88				9						
11/7/88	57.75					2	1	0.05		
16/08/88				10						
16/08/88	84					7	3	0.16		
13/09/88				5						
13/09/88	86					7	1	0.22		
6/10/88				8						
6/10/88	91					5	<1	0.12		4
1/11/88				9						
1/11/88	99.5					7	2	0.009		
30/11/88				1						
30/11/88	115					14	44	0.25		
27/01/89				2						
27/01/89	111					11	1			
7/2/89		130		2.8						
13/02/89				4						
13/02/89	111					12	5	0.07		
14/03/89				3						
14/03/89	105					16	<1	0.17		
12/4/89				4						
12/4/89	116.5					10	4	1.16		
9/5/89				3.5						
9/5/89	37					4	44	0.07		
31/05/89		45		8						
13/06/89				5						

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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13/06/89	59					9	1	0.11		
10/7/89				11						
10/7/89	76					8	1	0.12		
25/07/89		71		11						
14/08/89				12						
14/08/89	104					11	2	1.49		
6/9/89				9.5						
11/9/89				8						
11/9/89	114					13	2	0.14		
10/10/89				2						
10/10/89	126					15	1	0.04		
15/11/89				0						
15/11/89	124					28	1	0.04		
11/12/89				2						
11/12/89	118					11	5	0.01		
15/01/90				0						
15/01/90	114					3	<5	0.18		
12/2/90				2						
12/2/90	112					15	11	0.03		
17/04/90				6						
17/04/90	114					14	5	0.12	0.005	0.5
1/5/90		79		0.5						
11/6/90				9						
11/6/90	56					5	5	0.16	0.005	3180.9
11/7/90		77		11						
2/10/90		94		3.2						
2/1/91						20				
2/1/91	138.3			0			5	0.01	0.005	0.5
27/02/91		127		3.4						
4/3/91						17				
4/3/91	109			0.5			5	0.11	0.005	0.3
8/4/91										5
1/5/91	78			3		13	10	0.18	0.005	842
8/5/91		48		3.1						
3/6/91										3682
2/7/91	58			12		8	5	0.16	0.005	3361
24/07/91		65		10.9						
5/8/91										5594
3/9/91	81			4		10	5	0.42	0.005	1954
6/11/91		114		0.3		18				
6/11/91	103			0.5			5	0.19	0.005	1632
21/01/92		162		0.6						
20/02/92							5	0.05	0.005	50
12/3/92							5	0.05	0.013	98
29/04/92		131		0.2						
9/9/92		93		5.5						
6/10/92										765
24/11/92		137		0.3						
24/11/92							<4	0.01	0.005	172
27/04/93		105		1.5						
24/06/93		79		8.3						
2/8/93		90		14.2						
12/10/94				0.5						

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
25/11/94							<4	0.005		920
25/01/95				0.3						
8/5/95				1.1						
21/06/95							7	<0.05	0.002	
20/07/95			196			23	7	<0.050	0.002	
18/09/95			216			15	<1	0.05	<0.001	
16/10/95			219			273	2	0.14	<0.001	
14/11/95			256			57	<5	0.9	<0.001	
12/12/95				0.1						
25/01/96			267	2.4	7.72	10	<5	<.05	<.001	
6/3/96				1.9						
12/3/96			1276	2	7.76	50	<5	<.05	0.001	
13/05/96			156	4	8.05	56	6	<.05	<.001	
29/05/96			73	2.9	7.9	4	7	<.05	0.002	
11/6/96			124	5	8.24	63	<5	<.05	<.001	
17/07/96			133	7.5	7.78	12	<5	<.05	<.001	
11/9/96			165	5	8.08	9	<5	<.05	<.001	1349
21/10/96			208	0	7.84	20	<5	<.05	<.001	
19/12/96			364	0	7.75	40	6	<0.05	<.001	
4/3/97	23	109	288			403	<5	<.05		
15/04/97		130	315	2.7	7.84	23	5	<0.05		
12/5/97		33	836	3.1	7.81	6	15	<0.05		
23/06/97			112	13.4	8.17	9	<5	<0.05		
15/07/97				13.1	8.25			0.05		
6/8/97										2725
22/09/97				6.8	8.26	5	<5	<0.05		
18/11/97				2.1	7.85	22	<5	<0.05		
8/12/97				2.6	7.59	20	<5	<0.05		
18/05/98		52			8.02	3	8	<0.05	<0.01	
15/06/98									<0.01	
15/06/98		69			7.67	21	2	<0.05		
19/10/98					7.79	20	1	<0.05		
21/12/98		145			7.21	27	<1	<0.05		
17/05/99		35		1	8.09	5	7	<0.05		
27/07/99		61		8	8.1	11	22	<0.05		
14/12/99				0	7.49	23	2			
23/03/00		145		0	6.81	23	2	<0.05		
27/04/00				1	6.43	25	2	0.83		
15/05/00				1	7.5	12	<1	<0.05		
26/06/00		51		13	7.8	10	3	<0.05		
25/07/00				10.6	7.74	13	<1			
29/08/00				6.2	7.8	12	2			
25/09/00				5	7.95	16	2.4			
28/10/00				2						
29/10/00						47	3			
13/11/00				-0.4	7.7	24	<1			
18/11/00						26	2.6			
14/12/00					7.54	26	0.4			
13/01/01						54	<1			
10/2/01						72	3			
10/3/01				-0.2	7.9	31	2			
16/04/01				0.2	8.1	27	3			
14/05/01				0	8.4	18	3			

Table C7. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
17/06/01				4.4	8.4	7	8			
14/07/01				8.7	8.4	12	1			
14/08/01				9.6	8.4	14	1			
17/09/01				6.4	8.4	16	2			
15/10/01				-0.4	8.1	19	2			
13/11/01				-0.4	7.7	24	<1			
14/12/01				-0.4	8.2	21	<1			

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
STATION: X5										
10/10/86						469				
23/10/86						466	<1			
31/10/86						477	<1			
6/11/86						473	<1	<0.1		
13/11/86						1425	2	<0.1		
21/11/86						497	<1	<0.1		
28/11/86						512	2	1	<0.01	
4/12/86						519	1			
10/12/86						532				
16/12/86						548	2			
23/12/86						520	4			
31/12/86						616	<1	0.72	<0.01	
7/1/87						628	<1	0.86	<0.01	
15/01/87						629	<1	0.76	0.1	
20/01/87						639	2	0.55	0.02	
28/01/87						624	2	0.67	0.02	
3/2/87						659	<1	0.38	<0.01	
10/2/87						728	1	0.45	<0.01	
17/02/87						758	<1	0.26	0.01	
24/02/87						779	2	0.6	<0.01	
3/3/87						770	1	<0.01	<0.01	
10/3/87						767	2	0.51	0.15	
17/03/87						778	2	0.55	0.12	
24/03/87						823	1	0.8	0.16	
1/4/87						827	1	0.62		
7/4/87						847	1	0.8		
14/04/87						821	1	1		
20/04/87						765	2	0.76		
28/04/87						738	1	1.3		
5/5/87						663	3	1.06	0.05	
12/5/87						615	2	0.94	0.04	
19/05/87						554	1	0.8	0.03	
26/05/87						531	<1	0.84	0.02	
4/6/87						468	1	0.9	0.03	
11/6/87						426	1	0.93	0.03	
16/06/87						420	<1	0.78	0.03	
26/06/87						419	<1	1.09	0.05	
30/06/87						393	2	0.86	0.03	
6/7/87						379	1	0.92	0.02	
13/07/87						370	1	1.01	<0.01	
20/07/87						351	1	1.03	0.02	
28/07/87						334	1	1.32	0.01	
4/8/87						343	1	1.52	0.03	
11/8/87						361	1	1.33	0.07	
18/08/87						344	1	1.17	0.03	
25/08/87						360	1	1.2	0.01	
1/9/87						377	<1	1.07	0.07	
8/9/87						389	2	1.32	0.02	
15/09/87						399	1	1.21	0.09	
21/09/87						386	<1	0.97	0.07	
2/10/87						405	2	0.89	0.06	
6/10/87						399	2	0.76	0.08	
13/10/87						399	2	1.04	0.05	635.2
20/10/87						398	1	1.13	0.06	
27/10/87						386	1	1.02	0.04	
3/11/87						398	4	0.93	0.03	
10/11/87						360	1	1.04	0.06	
17/11/87						390	1	0.98	0.06	
24/11/87						385	1	0.93	0.07	
1/12/87						368	2	0.88	0.1	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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9/12/87						392	2	1.09	0.09	
15/12/87						471	1	1.7	0.14	
23/12/87						371	2	1.59	0.1	
30/12/87						310	1	1.54	0.17	
5/1/88						370	2	0.8	0.075	
12/1/88						370	2	1.26	0.089	
19/01/88						367	2	1.18	0.074	
27/01/88						347	1	1.1	0.139	
31/01/88									0.134	
1/2/88									0.096	
2/2/88						338	1	1.17	0.157	
3/2/88									0.131	
4/2/88									0.129	
5/2/88									0.137	
6/2/88									0.217	
7/2/88									0.159	
8/2/88									0.194	
9/2/88									0.211	
10/2/88						338	3	1.75	0.18	
11/2/88									0.22	
12/2/88									0.17	
13/02/88									0.137	
14/02/88									0.143	
15/02/88									0.182	
16/02/88									0.138	
17/02/88						329	1	0.28	0.184	
20/02/88									0.13	
22/02/88									0.192	
23/02/88									0.186	
24/02/88						319	1	0.85	0.144	
25/02/88									0.158	
29/02/88									0.175	
1/3/88									0.165	
2/3/88						309	2	0.72	0.137	
4/3/88									0.147	
7/3/88									0.126	
9/3/88						296	1	0.74	0.115	
11/3/88									0.112	
14/03/88									0.093	
16/03/88						290	1	0.85	0.03	
18/03/88									0.1	
22/03/88									0.117	
23/03/88						280	2	0.92	0.111	
29/03/88						285	3	0.91	0.097	
31/03/88									0.113	
5/4/88						285	4	0.51	0.084	
12/4/88						290	3	0.58	0.094	
15/04/88									0.062	
20/04/88						287	2	0.42	0.078	
22/04/88									0.036	
25/04/88	95					283	7	0.61	0.086	
29/04/88						287	2	0.42	0.078	
4/5/88	99					293	5	0.52	0.031	
6/5/88									0.073	
11/5/88	96					297	3	0.95	0.034	
13/05/88									0.02	
19/05/88	88					279	2	1.33	0.008	
25/05/88	99					266	2	1.57	0.005	
31/05/88									0.005	
1/6/88	97					285	2	0.86	0.007	
7/6/88	104					263	3	1.33	0.012	
10/6/88									0.019	
16/06/88	100					281	2	1.52	0.024	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
23/06/88	106					286	3	1.45	<0.005	
28/06/88	107.1					300	1	0.73	0.015	
6/7/88	109.2					302	1	0.37	0.029	
11/7/88	112.35					313	2	0.86	0.017	
20/07/88	116					308	2	0.56	0.05	
27/07/88	118.6					334	2	0.59	0.036	
4/8/88	119.7					469		0.67	0.027	
10/8/88	122.3					362	1	0.85	0.007	
16/08/88	121.3					337	2	0.85	0.007	
18/08/88									0.023	
19/08/88									0.044	
23/08/88						356	3	1.09	0.025	
24/08/88	120.8					356	4	1.07	0.054	
26/08/88								0.87	0.043	
31/08/88						371	2		0.035	
9/9/88						390	3	0.65	0.034	
13/09/88	119					423	5	0.74	0.045	
22/09/88	121					441	1	0.64	0.036	
29/09/88	117.5					462	3	1	0.057	
6/10/88	119					450	1	0.99	0.064	
14/10/88						450	1	0.97	0.056	
14/11/88	129					443	4	0.92	0.049	
21/11/88	131					405	2	0.81	0.045	
30/11/88	129					404	6	0.82	0.115	
7/12/88	129.5					399	1	0.99	0.029	
12/12/88	131						2	0.82	0.037	
21/12/88	131					385	<1	1.35	0.089	
28/12/88	129.2					370	1	1.08	0.023	
6/1/89	128					363	20	0.78	0.045	
10/1/89	128					367	2	0.89	0.097	
17/01/89	128.5					362	1	0.88	0.092	
25/01/89	131					376	3			
3/2/89	123.7					358	3	0.76	0.09	
7/2/89	126.5					366	1	0.8	0.066	
13/02/89	130					365	2	0.81	0.033	
20/02/89	131.5					405	<1	0.84	0.034	
27/02/89	127.7					364	1	0.85	0.059	
8/3/89	121.5					355	1	0.67	0.057	
14/03/89	113.5					342	1	0.75	0.048	
20/03/89	114					348	<1	0.86	0.075	
27/03/89	108					339	1	0.75	0.017	
3/4/89	98					323	1	0.73	0.073	
10/4/89	96					328	<1	0.68	0.033	
17/04/89	88					316	6	0.68	0.034	
26/04/89								0.75	0.035	
2/5/89	73					281	7	0.79	0.033	
8/5/89	73					281	6	0.55	0.032	
16/05/89	70					318	3	0.99	0.012	
23/05/89	74					350	2	1.23	0.046	
29/05/89	72.4					355	1	0.57	0.023	
5/6/89	71.2					362	1	1.03	0.035	
12/6/89	76					379	2	0.46	0.018	
20/06/89	86					368	3	0.76	0.057	
26/06/89	90					342	1	0.39	0.016	
3/7/89	96					530	2	0.67	0.026	
10/7/89	106					385	1	0.72	0.061	
17/07/89	106					374	1	0.6	0.031	
25/07/89	108					387	2	0.76	0.123	
31/07/89	122					388	3	0.59	0.005	
7/8/89	126					439	1	0.6	0.011	
14/08/89	124					393	1	0.74	0.005	
21/08/89	119					387	7	0.91	0.015	
28/08/89	126					417	8	1.04	0.035	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
5/9/89	126					371	1	0.85	0.032	
11/9/89	56					425	3	0.81	0.036	
18/09/89	122					429	3	0.97	0.015	
25/09/89	114					424	1	0.8	0.049	
2/10/89	116					437	2	0.94	0.051	
10/10/89	130					383	24	1.06	0.007	
16/10/89	124					431	4	1.08	0.023	
23/10/89	118					447	3	0.79	0.054	
30/10/89	134					471	2	0.84	0.069	
6/11/89	132					395	3	0.53	0.09	
15/11/89	112					404	2	0.81	0.061	
20/11/89	112					404	4	0.87	0.017	
27/11/89	106					398	4	1.02	0.016	
4/12/89	108					371	5	0.93	0.035	
11/12/89	106					778	5	0.85	0.005	
18/12/89	108					358	5	1.03	0.083	
28/12/89	102					321	5	0.94	0.023	
3/1/90	106			1		339	<5	1.37	0.091	
8/1/90	104			1		363	8	0.96	0.105	
15/01/90	108			2		344	<5	0.96	0.086	
22/01/90	106			4		340	<5	1.02	0.16	
1/2/90	92			3		305	<5	1.46	0.012	
5/2/90	104			2.5		343	<5	0.9	0.163	
12/2/90	104			3		303	11	0.88	0.133	
19/02/90	106			3		312	<5	0.84	0.084	
26/02/90	106			3.5		295	<5	0.7	0.029	
5/3/90	96			3		265	<5	0.97	0.095	461.1
12/3/90	92			3		275	<5	0.6	0.155	498.1
19/03/90	96			2.5		304	<5	0.55	0.177	455.1
26/03/90	96			3		286	<5	0.99	0.035	438.1
2/4/90	94			3		275	8	1.12	0.164	461.2
9/4/90	92			3		277	6	1.05	0.025	554.9
17/04/90	94			3.5		331	5	0.92	0.356	539.8
26/04/90	118			4		306	6	1.44	0.091	504.6
2/5/90	86			2.8		342	8	0.99	0.084	502.5
9/5/90	84			5		289	5	1	0.036	756.7
14/05/90	84			6		320	5	0.99	0.016	794
21/05/90	80			8		294	5	1.09	0.011	856.6
28/05/90	82			10		316	5	1.18	0.021	728.3
4/6/90	82			11		389	5	1.1	0.044	557
11/6/90	82			13		351	5	1.2	0.034	556.8
18/06/90	86			13		338	5	3	0.006	711.9
24/06/90	188			12.5		340	1	3.35	0.012	551.6
4/7/90	82			14			1	1.3	0.005	668.3
11/7/90	80			15			5	1.26	0.005	703.8
16/07/90	82			14			5	1.28	0.005	649.7
22/07/90	84			16			5	0.1	0.017	737
29/07/90	78			16			5	0.92	0.022	762.6
6/8/90	84			14			5	0.82	0.005	606
13/08/90	78			15			5	0.91	0.005	693.4
20/08/90	86			15			5	0.88	0.005	677.7
26/08/90	90			14			5	0.9	0.005	713.9
5/9/90	97			10.5			5	1.25	0.005	539.5
10/9/90	97			10			5	1.77	0.038	590.4
19/09/90	98.8			9			7	0.98	0.005	618.3
25/09/90	98.3			8			5	0.9	0.005	
2/10/90	102			7			5	0.84	0.005	459.3
11/10/90	108			4			5	1.69	0.005	672.3
18/10/90	114			3			5	2.02	0.007	
24/10/90				3			5	1.61	0.005	541.8
31/10/90	118			2			5	1.54	0.018	385.4
8/11/90	122.5			1			5	1.51	0.007	325.9
14/11/90	125.5			0.5			5	1.44	0.038	298.3

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
21/11/90	123			0			5	1.37	0.005	369.3
29/11/90	121.5			0.5			6	1.38	0.005	365.5
4/12/90	120.4			0			5	1.4	0.01	
10/12/90	121			0			5	1.38	0.043	408
17/12/90	308			0			5	0.22	0.005	312.7
24/12/90	109.9			0			193	1.23	0.02	491.1
1/1/91	101.1			0			5	1.26	0.026	438.1
7/1/91	97.5			0			5	1.18	0.025	441.7
14/01/91	97			0			5	1.13	0.011	414.7
21/01/91	93			0			5	1.33	0.016	311.3
29/01/91	99.5			0			5	1.44	0.005	516.2
4/2/91	104.5			0			5	1.41	0.005	457.8
11/2/91	103.5			0			5	1.39	0.007	495.8
18/02/91	98			0			5	1.51	0.028	568.8
27/02/91	87.3			1			5	1.79	0.006	564.7
4/3/91	83.7			2			5	1.69	0.005	403
11/3/91	76			1.5			5	1.56	0.053	537.2
18/03/91	71.5			2			5	1.61	0.039	551.9
25/03/91	69.5			2			8	1.53	0.067	591.5
1/4/91	68.5			2		305	5	1.48	0.064	493.1
8/4/91	65.5			2.5		1300	5	1.45	0.092	272.5
15/04/91	68			2.5		302	9	1.38	0.038	548.8
23/04/91	62			4		353	8	1.11	0.006	869
1/5/91	71			3			5	1.29	0.043	86.1
6/5/91	64			4.5			5	1	0.005	500
13/05/91	59			4			5	1.82	0.005	769
21/05/91	58			8			5	1.23	0.021	579
27/05/91	59			11.5			5	1.24	0.049	470
3/6/91	59			10		409	5	1.26	0.028	778
10/6/91	59			10		435	5	1.1	0.052	813
17/06/91	57			12		468	5	1.19	0.029	769
24/06/91	56			13		510	5	1.26	0.005	384
1/7/91	54			16.3			5	1.07	0.018	546
2/7/91	55			16			5	1.2	0.005	379
8/7/91	55			16			5	0.96	0.052	694
15/07/91	54			16.5			5	1.1	0.018	638
24/07/91	54			16.2			5	1.03	0.012	430
29/07/91	54			17			5		0.005	588
5/8/91	53			12			5	1.05	0.021	613
13/08/91	51			15			5	1.38	0.005	665
20/08/91	47			14			5	1.32	0.015	600
26/08/91	52			14		572	5	1.55	0.005	630
3/9/91	51			9.5			5	1.73	0.009	588
9/9/91	54			6			5	1.83	0.008	622
12/9/91				0						
16/09/91	54			0			5	1.66	0.046	
23/09/91	58			0			5	1.76	0.005	
30/09/91				7			5	0.1	0.041	611
7/10/91	59			6			5	1.48	0.005	453
8/10/91				4			5	1.44	0.014	
16/10/91	64			0.5			5	1.84	0.024	125
21/10/91	65			3			5	1.1	0.06	118
28/10/91	130			0.8			5	0.88	0.005	81
1/11/91	65			1.8			5		0.005	
6/11/91				0				1.06	<0.001	
20/11/91				0						
2/12/91	67			1			5	1.4	0.005	276
4/12/91				0						
8/12/91	74			4			5	1.6	0.005	251
15/12/91	74			1			5	1.4	0.005	217
22/12/91	82			1			5	1.5	0.005	
30/12/91	76			2			5	1.2	0.005	
7/1/92							5	0.74	0.005	285

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
14/01/92							5	1.7	0.06	300
21/01/92							5	1.7	0.04	500
27/01/92							5	1.9	0.005	375
4/2/92							5	1.4	0.024	552
13/02/92							5	0.95	0.024	554
18/02/92							5	1.4	0.052	554
2/3/92							5	1.7	0.092	422
9/3/92							5	1.8	0.057	410
16/03/92							5	2	0.12	417
24/03/92							5	1.5	0.103	437
30/03/92							5	1.6	0.118	504
6/4/92							5	1.9	0.118	575
13/04/92							5	1.9	0.083	550
20/04/92							6	1.6	0.122	625
29/04/92							19	1.5	0.097	669
4/5/92							15	1.6	0.063	720
11/5/92							5	1.6	0.076	615
19/05/92							5	1.7	0.083	625
25/05/92							5	1.6	0.032	635
1/6/92							18	1.2	0.027	709
9/6/92							7	1.5	0.042	575
15/06/92							5	1.6	0.016	665
23/06/92							5	1.9	0.017	645
26/06/92							5	2	0.021	
29/06/92							5	2	0.012	645
7/7/92							3	1.94	0.016	867
14/07/92							1	1.95	0.018	767
20/07/92							2	1.62	0.026	867
27/07/92							2	1.34	0.021	729
3/8/92							2	2.09	0.016	705
10/8/92							2	1	0.017	397
18/08/92							2	1.66	0.018	327
25/08/92							1	2.2	0.02	370
1/9/92							1	2.13	0.023	370
9/9/92							1	1.84	0.008	248
17/09/92							2	1.67	0.015	365
21/09/92							2	1.62	0.014	365
28/09/92							3	1.41	0.013	365
6/10/92							<4	1.5	0.012	365
13/10/92							<4	1.57	0.014	200
26/04/93							4	0.55		365
26/05/93							<4	0.4		
31/08/93							<4	0.56		
1/9/93								0.712		
1/11/93								1.1		
13/12/93								0.934		
1/1/94								0.977		
26/04/94								0.912		
31/05/94							<4	0.693		
10/8/94							<4	0.518		
25/09/94							<4	0.633		
18/11/94							<4	0.601		18.8
25/11/94							13	0.791		16.7
1/12/94							<4	0.746		40
8/12/94								0.631		40
15/12/94							<4	0.695		40
31/01/95						495	4	0.627	<0.001	
1/2/95							4	0.627	0.001	
17/04/95							12	0.458	<0.001	
8/5/95						236	9	0.216	0.024	
7/6/95			1256			386	2	0.416	0.021	
9/6/95							2	0.416	0.021	
21/06/95							5	<0.05	0.017	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
20/07/95			942			435	5	<0.050	0.017	
8/8/95			949				3	0.246	0.009	
9/8/95							3	0.246	0.009	
16/08/95			986			431	<1	0.11	0.013	
23/08/95			953			504	<1	0.11	0.013	
7/9/95			1064			447	1	0.25	0.014	0.12
12/9/95			1490			640	1	0.42	0.002	
13/09/95							1	0.42	0.002	0.12
18/09/95			1164			482	<1	0.25	0.013	0.12
3/10/95			1047			458	<1	0.07	0.014	
6/10/95							<1	0.07	0.014	0.2
10/10/95			1087			495	1	0.14	0.014	
11/10/95							1	0.14	0.014	0.2
16/10/95			972			616	<1	0.32	0.017	0.2
25/10/95			1072			421		0.39	0.017	
26/10/95							14	0.39	0.017	0.2
2/11/95		484	1122			472	<5	0.32	0.015	0.2
9/11/95			1144			519	<5	0.39	0.014	0.2
14/11/95			1142			502	<5	<0.005	0.016	0.2
21/11/95			1166			482	<5	0.21	0.017	0.12
30/11/95			1193			540	<5	0.34	0.011	0.12
6/12/95			1198			500	<5	0.41	0.012	
11/12/95	244	542	1160			494	<5	0.35	0.015	
20/12/95			1152			519	<5	0.06	0.011	
29/12/95			946			527	<5	0.447	0.008	
4/1/96			1229	2.8	7.38	530	<5	0.3	0.007	120
9/1/96			1215	3.3	7.36	462	<5	0.23	0.004	120
20/01/96			1235	3.3	7.28	412	<5	0.61	0.003	120
25/01/96			1247	2.7	7.21	416	<5	0.5	0.001	120
5/2/96			946	3.8	7.26	527	<5	0.45	0.008	80
14/02/96			1307	3.6	7.22	508	<5	0.61	<.001	80
23/02/96			1268	3.4	7.1	559	<5	0.61	<.001	80
28/02/96			1141	3.5	6.75	551	<1	0.59	0.001	80
5/3/96			1133	3.9	7.35	521	7	0.96	0.001	
12/3/96			1255	3.1	7.56	491	<5	0.61	0.001	
21/03/96			1304	4.1	7.33	441	<5	0.66	<.001	
1/4/96			1265	4	7.1	592	<5	0.45	<.001	
9/4/96			1286	2.9	7.28	520	<5	0.66	<.001	
16/04/96			1286	3	7.11	370	<5	0.57	<.001	
23/04/96			1195	4.5	7.03	503	<5	0.56	0.125	
29/04/96			1215	4.5	7.51	506	<5	0.68	<.001	
6/5/96			1150	4.5	7.4		<5	0.52	0.001	
13/05/96			1133	4.5	7.81	483	<5	0.54	<.001	
21/05/96			1125		7.23	505	<5	0.44	<0.001	
27/05/96			1118	0.1	7.2	476	<5	0.57	0.006	
29/05/96			1188	5.6	7.4	543	<5	0.49	0.003	
27/08/96			1148	9.5	7.11	499	<5	0.5	0.002	
3/9/96		568	1102			321	<5	0.47	0.002	
11/9/96			1090	9	7.29	549	<5	0.23	<.001	
17/09/96			1064	8.5	7.59	464	<5	0.21	0.005	
24/09/96			887	8	8.04	469	<5	0.28	0.008	
30/09/96			910	4.8	8.05	471	<5	0.53	0.002	
7/10/96			1203	4.1	7.89	457	<5	0.26	0.005	
15/10/96			848	3	7.83	395	<5	0.35	<.001	
21/10/96			874	2	7.34	437	<5	0.33	<.001	
29/10/96			876	0	8.09	378	<5	0.42	<.001	
5/11/96		448	997	0	7.71	476		0.25	<.001	
12/11/96			961	0	7.33	498	<5	0.21	0.007	
21/11/96			954	0	7.5	509	<5	0.2	<.001	
25/11/96			947	0	7.13	469	<5	0.23	<.001	
2/12/96			1075	0	7.09	455	<5	0.49	<.001	
11/12/96		462	1021	0	7.18	176	7	0.21	<.001	
19/12/96			1256			486	<5	0.24	<.001	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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20/12/96				1.5	7.11					
23/12/96			1259	0	7.4	436	<5	0.73	<.001	
30/12/96			1269	0	7.41	434	<5	0.55	<.001	
6/1/97	355		1257	2.5	7.07	520	6	0.31	0.004	60
14/01/97			1275	2.5	7.2	448	7	0.23	<0.001	60
20/01/97			1325	2.5	7.11	522	<5	0.65	<0.001	60
27/01/97			1300			502	<5	0.44	<0.001	60
3/2/97			1325			366	7	0.49	<0.001	60
11/2/97			1306	2	7.14	384	<5	0.53	<0.001	60
17/02/97			1285	2	7.16	497	<5	0.48	<0.001	60
24/02/97			1307	3	7.25	428	<5	0.53	<0.001	60
4/3/97			1327	1.5	7.95	393	<5	0.5	<0.001	60
11/3/97			1325		6.74	394	<5	0.53	0.002	60
18/03/97			1328		6.95	386	<5	0.45	<0.001	60
24/03/97			1309		7.12	525	<5	0.63	<0.001	60
31/03/97			1322		7.1	477	<5	0.51	<0.001	60
9/4/97			1320	3.6	7.51	399	<5	0.58	<0.001	60
15/04/97			1336	3.8	7.32	463	6	0.66	<0.001	60
15/07/97			890	17.6	8.26	366	<5	0.33	<.001	70
22/07/97			920	16.5	8.39	481	<5	0.19	<.001	70
28/07/97			927	18.6	8.25	301	3	0.32	<.01	70
4/8/97			953	17.5	8.37	352	<5	0.31	<.01	70
12/8/97				16	8.5	432	24	0.25	<.01	70
19/08/97				14.2	8.48	356	8	0.32	<.01	85
25/08/97				14.5	8.74	468	<5	0.4	<0.001	100
2/9/97				13.5	8.51	307	<5	0.29	<.01	332
9/9/97				12.9	8.31	361	<5	0.57	<.01	332
16/09/97				10.6	8.33	470	<5	0.48	<.01	332
22/09/97				9.3	7.97	160	<5	0.33	<.01	332
30/09/97				8	8.15	509	<5	0.38	<.01	343
7/10/97				6.3	8.65	347	<5	0.51	<0.01	240
10/10/97					9	380	<5	0.37	<0.01	220
14/10/97				4.9	8.93	385	<5	0.49	<0.01	195
20/10/97				5.5	8.86	396	<5	0.39	<.01	150
27/10/97				3.5	8.78	440	8	0.56	<0.001	100
4/11/97				0.8	8.89	426	9	0.45	<.01	129
13/11/97				4	8.75	424	<5	0.47	<.01	129
19/11/97				4.4	8.9	419	<5	0.47	<.01	129
25/11/97				3.5	9.03	390	8	0.45	<.01	129
2/12/97				4	8.95	381	<5	0.54	<0.01	129
8/12/97				3.8	9.07	386	<5	0.45	<0.01	129
19/12/97						320	12	0.58	<0.01	129
23/12/97					9.55	348	12	0.51	<0.01	129
30/12/97		387			8.71	378	<5	0.52	<0.01	175
5/1/98					9.09	438	<5	0.58	<0.01	265
12/1/98					9.13	378	8	0.7	<0.01	355
19/01/98					8.81					445
23/01/98					8.67					492
12/2/98					8.35					392
18/02/98					8.45					392
19/02/98										0
13/04/98					7.22	389	3	0.63	<0.01	0
22/04/98					7.65					182
24/04/98					7.62					105
26/04/98					7.81					124
30/04/98										211
1/5/98										211
9/5/98										235
18/05/98					8.24	414	2	0.5		
27/05/98										275
2/6/98					8	398	2	0.57	<.01	290
15/06/98		446			7.67	165	2	0.66		295
19/06/98									<0.01	0

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE	
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s	
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20/06/98									0.01	0	
25/06/98										0	
30/06/98					7.58	400	1	0.74	<0.01	295	
7/7/98										295	
9/7/98										295	
14/07/98										295	
16/07/98										1235	
21/07/98					7.65	468	3	0.93	0.04	0	
23/07/98										0	
28/07/98										363	
1/8/98										363	
10/8/98					7.63	162	6	0.05	<0.01	290	
28/08/98										137.5	
4/9/98										300	
7/9/98										300	
16/09/98										300	
21/09/98										300	
25/09/98						586	2	1.07	0.02	300	
2/10/98										300	
11/10/98										300	
14/10/98										300	
19/10/98					7.66	615	1	1.02	<.01	150	
20/10/98										0	
17/11/98					7.12	569	5	1.12	<0.01	0	
18/01/99					6.97	611	4	1.11		no	
21/02/99				0	7.62	629	10	1.15		0	no
21/03/99						538		1.03	0.01	no	
20/04/99				4	7.52	442	11	0.78	<.01	no	
6/5/99						377	1	0.56		0	no
17/05/99				2	7.94	181	2	0.31	<.01	0.5	se
27/05/99						228		0.27		40	bi
3/7/99				14	8.55	430	8	0.85	<0.01	126	bi
27/07/99				11	8.29	541	19	0.93	<0.01	163	
29/07/99				12	8.53	480	7	0.86	<0.01	163	
12/8/99				15	8.59	493	6	1.1	<0.01	197.5	
10/9/99	121			9	7.67	536	7	1.03	<0.01	325	bi
29/10/99				0	7.69	627	26	1.03	<0.01	0	
26/01/00						566	2	1.18	<0.01		
25/03/00						580	1	1.06		0	no
27/04/00				2	7.28	551	3	1	<0.01	200	
15/05/00				2	8.69	152	1	0.07	<0.01		
22/05/00										249	
4/6/00				9	9.47	380	8			265	
26/06/00				15	9.3	442	7	0.85	<0.01		
25/07/00				13.7	8.32	557	5	0.88		265	C
28/07/00				14.2	8.25					848.65	
15/08/00									<0.01		
29/08/00				11	8.5	581	5	0.97	0.01		
30/08/00				9	8.2					1000.25	
25/09/00				11.5	8.03	675	0.6	0.66	0.02	0	
21/10/00						507	7	0.67	<0.01	312	
28/10/00				2.8							
13/11/00				2	8.2	632	1	0.07	<0.01		
18/11/00						561	0.2	0.71	0.01		
28/11/00						525	1				
14/12/00					7.9	579	0.8	0.69	<0.01		
13/01/01						227	14	0.84	<0.01		
10/2/01						283	5	1	<0.01		
10/3/01				-0.2	8.4	577	8	0.69	<0.01		
16/04/01				0.6	8.4	486	1	1.03	<0.01		
14/05/01				2.2	8.8	512	2	0.8	<0.01		
17/06/01				11.9	8.8	545	3	0.49	<0.01		
25/06/01										358.2	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
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14/07/01				13.5	8.2	588	5	0.53	<0.01	
14/08/01				14	8.8	662	8	0.52	<0.01	
21/08/01										584
17/09/01				8.8	8.8	630	15	0.79	<0.01	
15/10/01				2.5	8.8	633	8	0.05	<0.01	
13/11/01				2	8.2	632	1	0.07	<0.01	
14/12/01				2.2	8	542	1	0.07	<0.01	
STATION: X13										
10/10/86						321				
23/10/86						363	1			111.8
31/10/86						352	1			111.8
6/11/86						348	2			111.8
13/11/86						323	1			111.8
21/11/86						366	1			111.8
28/11/86						379	1			104.5
4/12/86						391				97.3
10/12/86						391				97.3
16/12/86						396	1			97.3
23/12/86						340	1			97.3
31/12/86						411	1	0.26	0.04	97.3
7/1/87						434	1	<0.01	0.02	97.3
15/01/87						441	1	0.47	0.03	97.3
20/01/87						461	2	0.2	0.02	97.3
28/01/87						450	2	0.37	0.04	97.3
3/2/87						481	2	0.3	0.04	97.3
10/2/87						475	2	0.19	0.02	104
17/02/87						501	1	<0.01	0.02	97.3
24/02/87						515	4	0.33	0.05	97.3
3/3/87						511	2	0.05	<0.01	97.3
10/3/87						549	2	0.26	0.09	97.3
17/03/87						553	2	0.57	<0.01	97.3
24/03/87						570	1	0.69	<0.01	97.3
1/4/87						556	2	0.3		104.5
7/4/87						608	1	0.83		104.5
14/04/87						616	2	0.25		97.3
20/04/87						621	1	0.44		90.5
28/04/87						637	2	0.3		93.8
4/5/87						655	3	0.45		97.3333
5/5/87						636	4	0.38		90.5
12/5/87						656	3	0.41		93.8
19/05/87						623	3	0.45		93.8
26/05/87						667	2	0.55		90.5
11/6/87						675	2	0.51		101
16/06/87						654	2	0.46		104.5
26/06/87						637	2	0.53		108.1667
30/06/87						631	3	0.47		111.8333
6/7/87						604	2	0.47		119.5
13/07/87						537	3	0.47		123.6667
20/07/87						488	2	0.53		119.5
28/07/87						540	2	0.57		119.5
4/8/87						542	2	0.68		127.7
11/8/87						488	2	0.74		127.7
18/08/87						512	2	0.8		127.7
25/08/87						523	2	0.7		127.7
1/9/87						533	3	0.71		127.7
8/9/87						512	3	0.97		127.7
15/09/87						517	4	0.7		127.7
21/09/87						487	2	0.65		127.7
2/10/87						526	1	0.69		119.5
6/10/87						504	4	0.56		119.5
13/10/87						520	2	0.74	<999.999	119.5

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
20/10/87						499	3	0.75		119.5
27/10/87						484	2	0.7		116.2
3/11/87						492	4	0.74		116.2
10/11/87						495	2	0.65		108.2
17/11/87						475	2	0.63		104.5
24/11/87						480	3	0.75	0.171	104.6
1/12/87						467	3	0.68	0.126	104.5
9/12/87						469	2	0.53	0.181	104.5
15/12/87						490	3	0.67	0.1	111.8
23/12/87						483	1	0.73	0.15	111.8
30/12/87						625	2	0.72	0.12	104.5
5/1/88						460	2	0.63	0.158	104.5
12/1/88						459	2	0.92	0.115	97.4
19/01/88						437	7	0.8	0.092	97.4
27/01/88						453	2	0.87	0.162	104.5
2/2/88						419	2	0.77	0.188	97.4
10/2/88						456	3	1.12	0.065	104.5
17/02/88						433	2	0.76	0.141	104.5
24/02/88						439	1	0.68	0.175	104.5
2/3/88						443	1	0.8	0.123	97.4
9/3/88						443	2	1	0.209	97.4
16/03/88						439	2	0.74	0.183	97.4
23/03/88						432	2	0.84	0.189	87.4
29/03/88						442	3	0.77	0.155	90.5
5/4/88						422	3	0.67	0.12	90.5
12/4/88						431	2	0.67	0.057	93.9
20/04/88						423	2	0.89	0.178	101
25/04/88	156					412	3	0.85	0.128	104.5
4/5/88	168					412	2	0.82	0.069	104.5
11/5/88	168					410	2	1.13	0.066	101
19/05/88	165					414	1	1.57	0.029	104.5
25/05/88	108					411	1	0.4	0.084	101
1/6/88	173					400	3	1.77	0.141	101
7/6/88	182					392	4	0.92	0.129	8.3
16/06/88	178					379	2	0.99	0.09	108.2
23/06/88	180					372	2	0.42	0.023	111.9
28/06/88	180.1					373	1	0.88	0.2	93.9
6/7/88	178.5					367	2	0.95	0.086	116.2
11/7/88	181.65					362	2	0.93	0.05	116.2
20/07/88	180.6					362	2	0.78	0.191	180.6
27/07/88	182.7					347	2	0.78	0.179	119.5
4/8/88	180.6					367		0.2	0.004	
10/8/88	183.8					345	1	0.72	0.11	119.5
16/08/88	185.8					361	1	0.93	0.08	123.7
24/08/88	185.3					370	1	1.7	0.079	131.9
31/08/88						156	1	0.35	0.107	
9/9/88						382	1	0.91	<0.005	
13/09/88	182.5					382	4	1.11	0.051	
22/09/88	186					398	4	1.37	0.053	127.7
29/09/88	185					408	4	1.14	0.124	
6/10/88	183					416	2	1.07	0.165	119.5
14/10/88						424	2	0.97	0.112	111.9
19/10/88	196					418	5	0.99	0.135	108.2
26/10/88	193					439	2	0.88	0.148	108.2
1/11/88	194					418	4	0.92	0.124	6.3
8/11/88	192					400	2	1.16	0.156	104.5
14/11/88	197					444	4	1.31	0.186	111.9
21/11/88	199.5					434	3	0.9	0.116	104.5
30/11/88	202					421	4	1.09	0.123	104.5
7/12/88	203.5					454	4	1.05	0.094	111.9
12/12/88	195.5						4	0.99	0.019	
21/12/88	200					435	1	1.1	0.11	107.7
28/12/88	195.5					437	2	1	0.027	111.9

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
6/1/89	201.5					436	2	0.92	0.059	121.2
11/1/89	200.5					431	4	1.03	0.1	115.2
17/01/89	203.5					434	4	1.07	0.135	115.2
24/01/89										107.5
3/2/89	198.5					434	2	0.89	0.031	103
7/2/89	201					441	2	0.92	0.041	97.4
13/02/89	201					452	3	0.96	0.078	92.6
20/02/89	200					452	4	0.85	0.064	87.3
27/02/89	204.5					448	3	0.89	0.058	84
8/3/89	209.5					451	3	0.65	0.061	89.2
14/03/89	204					445	3	1.12	0.041	86
20/03/89	208					449	2	0.34	<0.005	89.2
27/03/89	208.5					456	3	1.04	<0.005	82.8
3/4/89	204.5					395	3	1.02	0.085	83.4
10/4/89	207					448	2	0.7	0.019	83.4
17/04/89	210					454	4	1	0.046	92.6
26/04/89								0.76	0.101	104.5
2/5/89	200					388	2	1.02	0.036	98.8
16/05/89	196					406	2	1.14	0.068	109.7
23/05/89	195					426	2	1.52	0.062	110.4
29/05/89	200					427	1	0.78	0.081	110.4
5/6/89	192					424	4	0.9	0.041	108.9
12/6/89	199					413	3	0.71	0.188	109.7
20/06/89	204					786	2	0.8	0.065	103
26/06/89	198					391	2	0.47	0.118	103
3/7/89	206					414	4	0.72	0.011	131.86
10/7/89	208					395	17	0.36	0.27	93.9
17/07/89	194					378	1	1.1	0.104	121.5
25/07/89	208					374	2	0.88	0.096	121.5
31/07/89	220					378	5	0.81	0.061	111.9
7/8/89	220					403	3	0.73	0.023	116.5
14/08/89	202					393	3	0.79	0.043	111.9
21/08/89	207					400	4	0.89	0.079	121.5
28/08/89	206					230	4	0.89	0.034	119.9
5/9/89	200					377	4	1.05	0.18	115.7
11/9/89	202					414	4	0.71	0.095	108.19
18/09/89	202					427	6	0.95	0.303	108.19
25/09/89	200					415	6	0.8	0.147	104.52
2/10/89	202					404	4	0.77	0.139	104.52
10/10/89	194					417	1	1.18	0.085	97.35
16/10/89	202					430	4	1.15	0.042	97.35
23/10/89	198					418	2	0.88	0.263	97.35
30/10/89	198					425	4	0.96	0.191	108.19
6/11/89	190					426	2	0.76	0.061	111.86
15/11/89	196					413	4	0.96	0.068	104.52
20/11/89	200					425	5	1.04	0.015	100.94
27/11/89	200					406	10	0.08	0.029	97.35
4/12/89	190					433	5	0.92	0.043	93.9
11/12/89	202					236	7	0.87	0.063	92.2
18/12/89	200					429	5	0.95	0.07	87.27
28/12/89	206					440	5	1.04	0.022	85.64
3/1/90	202			3		430	6	1.25	0.014	87.3
8/1/90	188			3.5		423	<5	0.94	0.018	87.3
15/01/90	202			2		426	<5	1.23	0.029	84
22/01/90	204			4		431	<5	1.07	0.029	84
1/2/90	204			3		299	<5	1.09	0.042	80.9
5/2/90	204			3		423	<5	1.23	0.053	80.9
12/2/90	204			5		421	10	1.23	0.017	84
19/02/90	206			4.5		430	<5	1.1	0.029	80.9
26/02/90	202			4.5		409	6	0.9	0.057	80.9
5/3/90	202			4		431	<5	1.06	0.016	77.9
12/3/90	204			4		423	<5	0.55	0.027	77.9
19/03/90	206			4		428	<5	0.61	0.082	77.9

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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26/03/90	202			5		425	<5	1.11	0.139	77.9
2/4/90	196			4		399	5	1.23	0.102	77.9
9/4/90	196			4.5		412	9	1.2	0.036	79.1
17/04/90	194			5		400	5	0.91	0.08	79.9
26/04/90	192			5.5		391	5	1.21	0.102	80.9
2/5/90	190			5.5		389	6	1.05	0.038	97.4
9/5/90	186			6		365	10	1.1	0.089	111.7
14/05/90	182			4.5		373	5	1.12	0.095	119.5
21/05/90	182			7		365	6	0.98	0.006	111.9
28/05/90	184			6		378	5	1.17	0.208	111.9
4/6/90	184			8		385	5	1.03	0.155	115.7
11/6/90	192			6		381	5	0.94	0.037	111.9
18/06/90	190			4.8		376	5	1.01	0.018	111.9
24/06/90	86			6.2		380	4	2.99	0.005	115.7
4/7/90	198			6			1	1.63	0.005	115.7
11/7/90	196			7			5	0.53	0.031	111.9
16/07/90	200			6			5	0.91	0.015	115.7
22/07/90	204			6			5	0.05	0.014	119.5
29/07/90	202			6			5	0.72	0.057	118
6/8/90	188			5			5	0.42	0.024	115.7
13/08/90	192			7			5	1.45	0.109	119.5
20/08/90	199			12			5	0.63	0.035	111.9
26/08/90	206			6			5	0.89	0.005	119.5
5/9/90	197			7			5	0.91	0.036	119.5
10/9/90	198			8			5	0.62	0.121	123.6
19/09/90	199.8			6			6	0.88	0.005	127.7
25/09/90	200			7			5	0.62	0.005	
2/10/90	207			7			5	0.2	0.123	115.7
11/10/90	207			5.5			5	1.12	0.005	115.7
18/10/90	208.5			7.4			5	1.32	0.012	111.8
24/10/90				6			5	1.1	0.029	108.2
31/10/90	199			7.4			5	0.95	0.058	93.9
8/11/90	119.5			4			5	1.19	0.031	93.9
14/11/90	201			3			12	1.02	0.166	93.9
21/11/90	203			4			8	1.37	0.005	90.5
29/11/90	200			4			5	0.95	0.005	87.3
4/12/90	239			4			6	1.46	0.015	84
10/12/90	207.5			3.5			6	0.41	0.197	84
17/12/90	213			3			5	1.03	0.175	87.3
24/12/90	207			3			5	0.87	0.07	93.9
1/1/91	239			3.5			5	0.3	0.078	100.9
7/1/91	207			2.5			6	1	0.176	97.3
14/01/91	205.5			3			5	0.94	0.005	93.9
21/01/91	204			5			5	1.07	0.06	90.5
29/01/91	207.5			2.5			5	1.09	0.006	90.5
4/2/91	209.5			3			79	1.05	0.028	93.9
11/2/91	209.5			2.5			10	1.02	0.026	93.9
18/02/91	207			2			5	0.92	0.075	90.5
27/02/91	208			3			5	1.11	0.017	90.5
4/3/91	211.5			4			5	1.01	0.005	93.9
11/3/91	213			3.5			5	0.97	0.063	93.9
18/03/91	213			4			5	1.02	0.078	90.5
25/03/91	207			4			5	0.99	0.072	87.3
1/4/91	224.5			5		498	5	1.1	0.066	87
8/4/91	211.9			4		508	5	1.01	0.007	84
15/04/91	218			6		476	5	1.14	0.069	90.5
23/04/91	213.5			6.5		476	5	0.92	0.02	100.9
1/5/91	222			6.5			5	1.02	0.157	105
6/5/91	208			6			5		0.027	112
13/05/91	205			5.5			5	1.09	0.021	101
17/05/91	195			7.5		461	5	1.08	0.008	97
21/05/91	200			6.5			5	1.13	0.061	101
3/6/91	196			6.5		478	16	1.43	0.056	112

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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10/6/91	202			6		465	5	1.05	0.029	105
17/06/91	208			6		476	5	1.03	0.029	105
25/06/91	202			6		490	5	1.08	0.023	112
1/7/91	207			7.3			5	0.87	0.056	108
2/7/91	209			7			5	0.98	0.005	108
8/7/91	200			9			5	0.7	0.091	108
15/07/91	207			6.5			6	0.82	0.074	108
24/07/91	211			8			5	1.11	0.022	105
29/07/91	209			6			5	0.74	0.089	112
5/8/91	212			8			5	0.89	0.076	112
13/08/91	222			6.5			5	1.02	0.005	105
20/08/91	461			5.5			5	0.87	0.005	108
26/08/91	220			6			5	1.14	0.005	105
3/9/91	223			6			5	1.32	0.005	108
9/9/91	228			4			5	1.03	0.038	108
16/09/91	206			0			15	1.14	0.041	
23/09/91	202			0			23	2.01	0.056	
30/09/91				5			5	2.26	0.005	105
7/10/91	208			5			9	1.38	0.005	101
16/10/91	213			3.5			5	0.66	0.24	108
17/10/91	228			0			5	1.38	0.018	105
21/10/91	219			0			16	0.55	0.011	59
28/10/91	277			4			13	1.22	0.005	86
1/11/91	231			4			6	1.09	0.042	102
2/12/91	234			4			6	0.58	0.02	86
8/12/91	237			3			7	1.1	0.027	75
15/12/91	238			1			5	0.96	0.088	92
22/12/91	246			2			40	0.9	0.005	
30/12/91	231			3			5	0.8	0.142	
7/1/92							8	1.2	0.074	
15/01/92							5	1.1	0.005	
21/01/92							10	1.1	0.105	76
27/01/92							5	1.2	0.014	
4/2/92							30	1	0.12	79
11/2/92							6	1.1	0.09	73
18/02/92							5	0.96	0.12	73
24/02/92							7	1	0.126	57
2/3/92							8	0.76	0.005	70
9/3/92							5	0.99	0.005	84
16/03/92							6	1.2	0.005	95
24/03/92							5	0.9	0.017	88
30/03/92							5	1.1	0.005	
6/4/92							6	1.15	0.005	92
13/04/92							5	1.1	0.005	85
20/04/92							58	1.05	0.02	87
29/04/92							44	1.15	0.005	96
4/5/92							74	1.3	0.005	115
11/5/92							16	1.2	0.005	102
19/05/92							12	1.1	0.017	105
25/05/92							10	1.3	0.005	111
1/6/92							15	1	0.023	116
9/6/92							12	1.03	0.017	110
16/06/92							5	1	0.008	105
23/06/92							7	1	0.01	103
26/06/92							5	0.95	0.039	
29/06/92							8	1.05	0.01	101
7/7/92							14	0.95	0.005	50
14/07/92							8	0.84	0.019	67
20/07/92							11	0.67	0.006	108
27/07/92							8	0.71	0.005	237
3/8/92							8	1.3	0.01	0
10/8/92							12	0.55	0.007	0
18/08/92							6	0.83	0.011	0

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
25/08/92							8	1.21	0.008	0
1/9/92							8	1.15	<0.005	0
9/9/92							9	1.08	0.025	84
17/09/92							21	0.96	0.006	52
21/09/92							11	0.97	0.012	70
28/09/92							12	1.05	0.01	70
6/10/92							11	1.13	0.024	70
13/10/92							8	1.16	0.005	77
19/10/92							8	1.26	0.014	70
26/10/92							13	1.21	0.017	62
2/11/92							6	0.76	0.013	67
9/11/92							8	1.35	0.019	67
17/11/92							8	0.86	0.025	67
25/11/92							6	0.97	0.005	67
5/1/93								0.95		67
11/1/93								0.94		67
20/01/93								1.2		67
27/01/93								1.27		67
16/03/93							11	0.589	0.057	67
26/04/93							19	0.77		80
26/05/93							8	0.98		
24/06/93							5	0.67		
31/08/93							6	0.7		
1/9/93								0.445		
1/10/93								0.71		
25/10/93						405				
1/11/93								1.02		
1/12/93						594				
13/12/93						497		1.04		
26/04/94						455		0.674		
31/05/94						491	12	0.924		
10/8/94						658	8	0.985		
25/09/94							8	1.09		
18/11/94							7	1.03		70
25/11/94							8	1.08		70
1/12/94							12	1.27		
8/12/94							9	1.01		
15/12/94							8	1.12		
31/01/95						1220	8	1.03	<0.001	
1/2/95							8	1.03	<0.001	44
22/02/95							16	0.948	<0.001	4308
24/02/95						350	16	0.948	<0.001	
6/3/95							12	0.806	<0.001	51
8/3/95						547	12	0.806	<0.001	
17/04/95							<4	0.784	<0.001	1.7
8/5/95						540	8	0.798	<0.001	63
7/6/95			1772			395	9	0.788	<0.001	
9/6/95							8.5	0.788	<0.001	63.4
21/06/95							10	<0.05	0.001	53
20/07/95			1309			582	10	<0.050	0.001	
8/8/95			1250				6	0.843	0.001	
9/8/95							6	0.843	0.001	53.5
16/08/95	8		1303			536	2	0.61	0.001	51.9
23/08/95			1296			656	4	0.68	<0.001	61.9
7/9/95			1337			545	6	0.88	<0.001	53
12/9/95			1382			530	5	0.99	<0.001	
13/09/95							5	0.99	<0.001	51
18/09/95			1446			541	<1	0.85	<0.001	53
28/09/95			1341			607	<1	0.98	<0.001	53
3/10/95			1441			615	3	0.77	0.001	
6/10/95							3	0.77	0.001	60
10/10/95			1307			551	3	0.63	0.001	
11/10/95							3	0.63	0.001	50

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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16/10/95			1203			501	9	0.92	<0.001	48.5
25/10/95			1370			512		1.23	<0.001	
26/10/95							16	1.23	<0.001	43.8
2/11/95		650	1324			555	8	1.08	<0.001	44
9/11/95			1373			601	7	1.16	<0.001	39
14/11/95			1220			584	5	0.16	<0.001	39
21/11/95			1376			595	5	0.82	0.003	39
30/11/95			1335			578	<5	0.97	<0.001	31
6/12/95			1331			578	6	1.07	<0.001	
11/12/95	309	581	1355			608	8	1.06	0.002	
20/12/95			1319			497	5	0.24	<0.001	
29/12/95			1345			551	8	0.866	<0.001	
4/1/96			1293	2.5	7.25	538	6	0.47	<0.001	31
9/1/96			1310	2.4	7.35	490	<5	0.57	0.002	31
20/01/96			1288	2	7.35	385	6	1.02	<.001	31
25/01/96			1385	0.9	7.32	480	8	1.15	<.001	31
5/2/96			1345	3	7.33	551	8	0.87	<.001	27
14/02/96			1330	3	7.28	538	7	1.03	<.001	29
23/02/96			932	1.7	7.18	620	6	1.22	0.001	30
28/02/96			1264	2	6.89	620	<1	1.08	0.001	30
5/3/96			1147	1.9	7.33	517	12	1.01	0.002	
12/3/96			1280	1.7	7.11	503	14	0.99	0.001	
21/03/96			1363	2	7.38	465	6	0.97	<.001	
30/03/96			1287	3.2	7.3	534	5	0.94	<.001	
9/4/96			1287	3.4	7.39	534	5	0.94	<.001	
16/04/96			1346	4	7.26	403	10	0.76	<.001	
23/04/96			1262	1.5	7.05	501	13	0.85	0.002	
29/04/96			1251	2	7.26	511	8	0.86	<.001	
6/5/96			1287	10.5	7.35		7	0.95	<.001	
13/05/96			1259	8	7.4	561	7	0.93	<.001	
21/05/96			1278	6	7.25	589	8	0.8	<0.001	
27/05/96			1220	6	7.2	498	6	0.99	0.001	
29/05/96			1305	5.5	7.4	544	7	0.72	0.001	
4/6/96			1292	6	7.4	542	7	0.74	<.001	
11/6/96			1328	5	7.1	447	<5	0.72	<.001	
21/06/96			1209	7	7.28	592	<5	0.72	<0.001	
2/7/96			1320	5	7.28	686	5	0.71	<.001	
8/7/96			1259	6.5	7.2	572	6	0.79	<.001	
15/07/96			1260	4.5	7.39	582	7	1.09	<.001	
23/07/96			1111	7	7.41	526	<5	0.76	<.001	
29/07/96			1060	18	7.08	530	5	0.88	0.001	
5/8/96			1158	4.5	6.99		5	0.81	0.007	
14/08/96			1168	6	7.4	563	6	0.71	0.005	
20/08/96			1168	8	6.99	530	5	0.65	<.001	
27/08/96			1125	6	7.19	446	6	1.24	0.002	
3/9/96		616	1166			481	6	1.3	0.002	
11/9/96			1135	5	7.29	557	7	0.25	<.001	
17/09/96			1261	5	7.26	538	5	0.62	<.001	
24/09/96			1078	5	7.48	631	8	0.52	<.001	
7/10/96			1166	5.1	7.48					
15/10/96			965	4.5	7.43	500	<5	0.86	0.014	
21/10/96			983	0.5	7.13	398	7	0.7	<.001	
29/10/96			972	0	7.43	422	<5	0.81	<.001	
5/11/96		523	1164	0	7.37	509	6	0.67	0.005	
12/11/96			1098	0	7.49	475	<5	0.45	0.015	
21/11/96			999	0	7.42	496	6	0.58	<.001	
25/11/96			1020	0	7.17	501	<5	0.55	0.006	
2/12/96			1423	0		522	7	0.96	<.001	
11/12/96		482	1053	0	7.36	164	<5	0.68	<.001	
19/12/96			1427	0	7.23	513	8	0.84	<.001	
23/12/96			1355	0	7.31	470	7	0.97	<.001	
30/12/96			1483	0	7.27	433	<5	0.87	<.001	
6/1/97	397		1389	2.5	7.26	525	<5	0.42	<0.001	44

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
14/01/97			1420			466	<5	0.65	<0.001	45
20/01/97			1400	3	7.03	524	6	0.92	<0.001	45
27/01/97			1522			562	6	0.67	<0.001	38
3/2/97			1370			379	9	0.61	<0.001	38
11/2/97			1407	2.5	7.33	394	<5	0.7	<0.001	38
17/02/97			1326	3	7.36	471	<5	1.11	<0.001	38
24/02/97			1445	4	7.28	481	<5	0.92	<0.001	38
4/3/97			1420	1.5	7.38	406	8	0.99	<.001	38
11/3/97			1395		6.79	392	<5	0.87	<0.001	38
18/03/97			1376		7.18	392	7	0.92	<0.001	38
24/03/97			1400		7.3	444	<5	0.87	<0.001	36
31/03/97			1307		7.33	495	<5	0.83	<0.001	36
9/4/97			1335	3.7	7.38	405	<5	0.73	<0.001	36
15/04/97			1400	4	7.45	476	9	0.52	0.003	37
22/04/97			1322	6.5	7.23	425	6	0.47	0.002	36
28/04/97			750	5.2	7.26	360	8	0.77	0.004	37
7/5/97										27
10/5/97			1415			474	<5	1.04	0.009	38
13/05/97			1384	7.3	7.36	447	<5	1.16	<0.001	38
20/05/97			1537	9.4	7.3	501	29	0.05	0.011	38
27/05/97			1415	5.3	7.36	455	<5	1.27	0.011	40
3/6/97			1528	6	7.31	525	10	1.38	<0.001	53
10/6/97			1416	9.1	7.33	477	<5	1.41	0.018	53
17/06/97			1316	6.4	7.27	406	<5	1.31	0.005	57
24/06/97			1363	7.1	7.32	507	<5	0.96	0.013	61
1/7/97			1444	8.7	7.47	467	<5	0.96		61
8/7/97			1320	7	7.26	487	5	0.9	0.003	66
15/07/97			1284	8.5	7.31	459	5	1.48	0.008	66
22/07/97			1298	8	7.53	464	7	0.62	<.001	66
28/07/97			1355	9.7	7.32	501	10	1.04	<.01	69
4/8/97			1367	10.5	7.27	410	<5	0.89	<.01	73
6/8/97										54
12/8/97				8.4	7.38	558	20	1	<.01	88
19/08/97				7.5	7.37	448	14	0.98	<.01	110
25/08/97				9.7	7.43	78	<5	0.94	0.003	97
2/9/97				8.6	7.56	400	<5	0.68	<.01	123
9/9/97				9.4	7.46	454	<5	0.91	<.01	132
16/09/97				7.6	7.31	533	<5	0.89	<.01	123
22/09/97				7.8	7.33	172	8	0.92	<.01	114
30/09/97		596		7.5	7.54	545	<5	0.86	<.01	114
7/10/97				6.8	7.27	410	7	0.92	<0.01	108
14/10/97				4.9	7.37	422	5	1.01	<0.01	93
20/10/97				5.8	7.4	458	5	0.92	<.01	90
28/10/97				3.4	7.29	528	7	1.01	<0.001	90
4/11/97				5.6	7.23	548	12	0.98	<.01	81
13/11/97				3.6	7.11	545	<5	1	<.01	71
19/11/97				4.5	7.3	478	<5	0.8	0.11	66
25/11/97				3.4	7.31	453	<5	0.85	<.01	61
2/12/97				3.5	7.22	450	<5	0.91	<0.01	57
8/12/97				4.2	7.24	442	9	0.87	<0.01	54
16/12/97					7.01	441	6	0.7	<0.01	57
23/12/97					6.93	435	6	0.94	<0.01	61
30/12/97					6.8	513	9	0.99	<0.01	66
5/1/98					6.84	567	8	1.04	<0.01	71
12/1/98					7.13	485	16	1.07	<0.01	71
23/01/98					6.51					86
24/02/98					6.89	465	10	0.94	<0.01	62
13/03/98										63
17/03/98										61
17/03/98					6.98	132	8	0.83	<0.01	60
3/4/98										61
13/04/98					6.88	493	9	0.81	<0.01	60
30/04/98										62

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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7/5/98										62
18/05/98					7.35	405	6	0.84	<0.01	81
15/06/98									<0.01	
15/06/98		706			7.09	489	8	0.76		97
30/06/98					7.01	1181	5	0.79	<0.01	
21/07/98					7	419	8	0.84	<0.01	81
10/8/98					7.07	486	12	0.79		119
7/9/98										73
25/09/98						582	6	0.81		60
19/10/98					7.1	567	6	0.71		53
13/11/98										53
17/11/98					6.85	600	9	0.83	<0.01	53
15/12/98										49
21/12/98					6.89	441	11	0.73		49
18/01/99					6.99	717	8	0.9		45
27/01/99										45
22/02/99				2		642	15	0.9		45
17/03/99				1	6.93	493	8	0.7	<0.01	49 bi
24/03/99										49
3/4/99										49
20/04/99				4	7.16	650	8	0.76		49
17/05/99				4	7.05	682	13	0.97		70
4/6/99										70
8/6/99										62
3/7/99				7	7.16	566	7	0.9		82 bi
27/07/99				6	7.64	588	12	0.87		70
12/8/99				8	7.09	600	10	1.16	<0.01	63
10/9/99				4	6.91	580	10	0.83	<0.01	52 bi
28/09/99										44
29/10/99				1	6.46	603	10	0.72	<0.01	49
22/11/99				0	7.18	684	12	0.51	<0.01	49
14/12/99				0	6.33	547	7	1.37	<0.01	50
27/01/00						569	7	0.7	<0.01	47
28/02/00				0	6.72	594	19	0.79	<0.01	47
23/03/00				2	6.15	587	11	0.72	<0.01	49
27/04/00				3	7.08	694	11	0.45	<0.01	47
15/05/00				5	6.52	623	5	0.8	<0.01	
20/06/00						496	5			
26/06/00				8	7.09	52	9	0.81	<0.01	44.6
19/07/00										44.6
25/07/00				6.4	6.99	656	8	0.85	<0.01	49
28/07/00				6.4	6.99					54.5
3/8/00				5.6	7.12					46.65
10/8/00				5.1	7.25					51.1
18/08/00				4.9	7.14					49
24/08/00				4.9	7.18					55
29/08/00				5.3	7.1	694	11	0.67	<0.01	55
8/9/00				5	7.13					49
12/9/00				5.5	7.15					55
25/09/00				5.3	7.15	459	6.4	0.66	<0.01	49
19/10/00				4.3	7.24	534	20	0.73	<0.01	55
28/10/00				3.9						49
13/11/00				1.8	7.3	646	12	0.07	<0.01	47
18/11/00						620	5.2	0.7	<0.01	35
14/12/00					7.19	585	5.8	0.61	<0.01	35
13/01/01						295	8	0.8	<0.01	35
10/2/01					7.4	333	12	0.88	<0.01	35
1/3/01				2	7.4					47
10/3/01				2.2	7.4	637	11	0.69	<0.01	47
15/03/01				2.2	7.4					49
27/03/01				2	7.3					49
5/4/01				2.2	7.3					48
11/4/01				2.2	7.4					48

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
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16/04/01				2.2	7.4	568	15	0.85	<0.01	49
23/04/01				2.8	7.4					49
30/04/01				3.1	7.8					49
8/5/01				2.4	7.6					49
14/05/01				3.7	7.6	544	9	0.81	<0.01	48
23/05/01				2.8	7.5					48
30/05/01				4.3	7.4					48
8/6/01				4	7.4					49
14/06/01				6.2	7.3					49
17/06/01				4.1	7.6	582	10	0.61	<0.01	49
21/06/01				4.8	7.4					49
29/06/01				4.1	7.6					49
14/07/01				4.4	7.6	495	11	0.54	<0.01	49
14/08/01				4.9	7.5	608	14	<0.05	<0.01	49
12/9/01				3.6	7.5					49
17/09/01				4.3	7.6	599	13	0.7	<0.01	
24/09/01				3.9	7.6					49
15/10/01				2.8	7.4	664	10	<0.05	<0.01	49
13/11/01				1.8	7.3	646	12	0.07	<0.01	47
8/12/01				2.2	7.3					47
14/12/01				2.2	7.3	559	16	0.07	<0.01	47
20/12/01				2.2	7.5					47
28/12/01				2.2	7.5					47

STATION: X4

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
10/10/86						518				
23/10/86						502	6			
31/10/86						498	4			
6/11/86						494	<1			
13/11/86						464	1			
21/11/86						652	1			
28/11/86						595	1			
4/12/86						577	1			
10/12/86						644				
16/12/86						699	<1			
23/12/86						760	2			
31/12/86						775	2	1	<0.01	
7/1/87						682	4	0.25	<0.01	
15/01/87						631	4	0.74	0.03	
20/01/87						593	4	0.6	0.02	
28/01/87						667	2	0.9	0.01	
3/2/87						995	2	0.68	<0.01	
10/2/87						1010	3	0.66	<0.01	
17/02/87						906	5	0.47	0.01	
24/02/87						823	5	0.59	<0.01	
3/3/87						738	2	0.53	<0.01	
10/3/87						789	2	0.63	0.02	
17/03/87						914	1	0.89	0.02	
24/03/87						1045	9	0.81	0.25	
1/4/87						871	6	0.82		
7/4/87						800	19	0.92		
14/04/87						716	2	0.77		
20/04/87						617	2	1.25		
28/04/87						556	2	1.45		
5/5/87						500	9	1.17	0.01	
12/5/87						459	4	1.09	<0.01	
19/05/87						419	4	0.88	<0.01	
26/05/87						417	5	1.16	0.04	
4/6/87						386	1	0.95	0.05	
11/6/87						386	4	0.9	0.01	
16/06/87						357	16	0.87	0.02	
26/06/87						358	8	1.28	0.04	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
Date	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
30/06/87						346	4	1.43	0.04	
6/7/87						326	2	1.2	0.03	
13/07/87						339	3	1.1	0.05	
20/07/87						336	8	1.13	0.05	
28/07/87						350	2	1.23	0.01	
4/8/87						361	8	1.11	0.09	
11/8/87						355	3	1.34	0.06	
18/08/87						373	18	1.55	0.27	
25/08/87						385	20	1.27	0.13	
1/9/87						398	8	1.23	0.06	
8/9/87						439	19	1.19	0.01	
15/09/87						430	13	1.07	0.07	
21/09/87						418	8	1.02	0.09	
1/10/87						405	20	1.02	0.16	
2/10/87						429	14	1.16	0.18	
6/10/87						407	24	0.93	0.25	
13/10/87						409	7	0.84	0.22	
20/10/87						398	40	1.04	0.11	
27/10/87						382	13	1.13	0.05	
3/11/87						356	17	0.86	0.06	
10/11/87						364	8	0.97	0.06	
17/11/87						379	17	0.89	0.04	
24/11/87						397	10	0.86	0.23	
1/12/87						365	12	0.97	0.3	
9/12/87						368	5	1.02	0.15	
15/12/87						490	14	1.31	0.19	
23/12/87						401	5	1.3	0.11	
30/12/87						405	7	1.29	0.11	
5/1/88						357	13	0.78	0.068	
12/1/88						360	8	1.11	0.102	
19/01/88						337	18	0.95	0.149	
27/01/88						301	17	0.9	0.354	
31/01/88									0.409	
1/2/88									0.21	
2/2/88						304	4	1.05	0.345	
3/2/88									0.314	
4/2/88									0.277	
6/2/88									0.309	
7/2/88									0.193	
8/2/88									0.204	
9/2/88									0.171	
10/2/88						286	13	1.27	0.183	
11/2/88									0.176	
12/2/88									0.323	
13/02/88									0.116	
14/02/88									0.203	
15/02/88									0.091	
16/02/88									0.166	
17/02/88						295	18	0.65	0.172	
20/02/88									0.067	
22/02/88									0.103	
23/02/88									0.083	
24/02/88						275	27	0.95	0.049	
25/02/88									0.069	
29/02/88									0.041	
1/3/88									0.053	
2/3/88						250	39	0.45	0.05	
4/3/88									0.029	
7/3/88									0.038	
9/3/88						256	48	0.54	0.067	
11/3/88								0.17		
14/03/88									0.104	
16/03/88						249	18	0.45	0.058	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
18/03/88									0.163	
22/03/88									0.067	
23/03/88						259	56	0.37	0.06	
29/03/88						260	48	0.53	0.018	
31/03/88									<0.005	
5/4/88						267	54	0.49	<0.005	
12/4/88						300	26	0.6	<0.005	
15/04/88									0.074	
20/04/88						308	25	1.13	0.067	
22/04/88									0.056	
25/04/88	87					314	17	0.65	0.078	
29/04/88									0.046	
4/5/88	93					305	43	0.53	0.025	
6/5/88									0.015	
11/5/88	89					309	37	1.02	0.05	
13/05/88									0.098	
19/05/88	96					329	48	1.87	0.019	
25/05/88	107					360	30	0.64	0.016	
31/05/88									0.046	
1/6/88	109					310	50	1.27	0.055	
7/6/88	101					303	53	1.63	0.022	
10/6/88									0.033	
15/06/88	115					282	7	1.48	0.04	
23/06/88	128					361	15	1.5	0.02	
28/06/88	124.95					347	3	0.66	0.041	
6/7/88	126					334	11	0.01	0.072	
11/7/88	129.68					353	4	1.56	0.07	
20/07/88	131.25					376	8	0.4	0.05	
27/07/88	129.7					407	17	0.69	0.053	
4/8/88	130.2					432	12	0.44	0.045	
10/8/88	128.6						31	0.96	0.113	
16/08/88	139.6					371	21	0.96	0.113	
24/08/88	109.2					358	134	1.25	0.039	
31/08/88						374	5900	1.02	0.084	
9/9/88						182	4	0.78	0.047	
13/09/88	129					630	37	0.72	0.138	
22/09/88	138.3					535	6	0.79	0.106	
26/10/88	137					81	<1	0.36	0.005	
1/11/88	137					100	2	0.42	<0.005	
8/11/88	102.5					313	3	1.3	0.199	
14/11/88	114					328	5	1	0.063	
21/11/88	126					312	2	1.01	0.076	
30/11/88	120					326	11	1	0.052	
6/12/88	121					312	3	1.07	0.045	
12/12/88	119						2	1.08	0.125	
21/12/88	115					327	3	1.34	0.195	
28/12/88	115.5					337	3	1.15	0.105	
5/1/89	113					346	2	0.79	0.107	
10/1/89	92.7					323	5	0.94	0.116	
17/01/89	107					280	4	0.85	0.146	
23/01/89	111					307	4			
1/2/89	105.5					259	7	1.13	0.087	
7/2/89	99					278	1	1.09	0.057	
13/02/89	107					285	6	0.66	0.058	
20/02/89	87.5					286	1	0.53	0.057	
27/02/89	100					275	3	0.69	0.008	
8/3/89	82.5					280	5	0.64	0.052	
14/03/89	92.5					272	8	0.63	0.061	
20/03/89	92					260	3	0.98	0.025	
27/03/89	80.5					280	2	1.01	0.041	
3/4/89	64.2					248	2	0.78	0.104	
10/4/89	72.5					244	12	0.66	0.053	
17/04/89	77.5					280	17	0.33	0.043	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
26/04/89								0.64	0.101	
2/5/89	77					327	9	0.96	0.022	
8/5/89	72.6					336	6	0.43	0.006	
16/05/89	76					381	10	1.32	0.025	
23/05/89	75					418	7	1.02	0.036	
29/05/89	75					401	5	1.25	0.008	
5/6/89	78					389	4	0.81	0.026	
12/6/89	85					365	3	0.63	0.016	
20/06/89	92					352	5	0.67	0.009	
26/06/89	108					374	10	0.71	0.014	
3/7/89	128					540	18	0.67	0.006	
10/7/89	144					351	2	0.68	0.005	
17/07/89	128					545	4	0.65	0.039	
25/07/89	112					393	5	0.65	0.008	
31/07/89	122					383	10	0.87	0.01	
7/8/89	132					384	1	0.6	0.007	
14/08/89	136					406	9		0.005	
21/08/89	137					454	36000	1.12	0.012	
18/09/89	76					398	5	0.96	0.086	
25/09/89	64					375	1	0.82	0.09	
10/10/89	72					306	6	1.09	0.067	
16/10/89	82					385	8	1.62	0.063	
23/10/89	76					315	4	1.09	0.613	
30/10/89	66					313	21	0.91	0.084	
15/11/89	78					299	2	1.17	0.085	
20/11/89	82					284	1	1.19		
27/11/89	80					275	56	1	0.146	
4/12/89	90					296	7	0.93	0.071	
11/12/89	94					271	5	0.87	0.094	
18/12/89	82					250	5	1.48	0.012	
28/12/89	66					223	5	1.03	0.075	
3/1/90	74					230	10	0.74	0.046	
8/1/90	96					301	68	0.93	0.011	
15/01/90	92					299	20	0.94	0.076	
22/01/90	92					299	10	0.91	0.03	
1/2/90	56					279	83	1.11	0.023	
5/2/90	90					309	32	0.95	0.08	
12/2/90	84					257		1	0.05	
19/02/90	88					255	21	1.1	0.032	
26/02/90	62					148	7	1.3	0.089	
5/3/90	56					187	<5	1.12	0.015	
12/3/90	50					191	<5	0.59	0.073	
19/03/90	44					206	<5	0.62	0.054	
26/03/90	52					196	6			
2/4/90	46					187	27	1.27	0.127	
9/4/90	52					215	5	1.61	0.038	
17/04/90	38					120	5	0.73	0.092	
26/04/90	26					14	5	0.19	0.005	
2/5/90	62					242	11	1.01	0.02	
9/5/90	70					272	5	1.06	0.007	
14/05/90	64					299	11	1.12	0.005	
21/05/90	70					312	5	1.19	0.009	
28/05/90	74					310	42	1.46	0.007	
4/6/90	84					332	10	1.28	0.005	
11/6/90	72					333	6	1.3	0.008	
18/06/90	78					342	20	2.75	0.005	
24/06/90	76					334	14	2.14	0.005	
1/1/91	137			0			43	1.07	0.005	
7/1/91	141			0			37	0.18	0.005	
14/01/91	146.5			0			5	0.27	0.007	
21/01/91	139.8			0			5	0.6	0.005	
29/01/91	158			0			5	0.6	0.008	
4/2/91	158			0		101	5	0.58	0.005	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T	HARD	COND-L	TEMP-C	PH-F	SO4-T	TSS	NH3-N	CN-T	FLOW RATE
	mg/L	mg/L	S/cm	deg C	pH unit	mg/L	mg/L	mg/L	mg/L	L/s
11/2/91	179			0		130	29	0.55	0.011	
18/02/91	158			0		173	13	1.15	0.025	
27/02/91	86.5			0		332	5	1.53	0.005	
4/3/91	81.3			3			5	1.61	0.032	
11/3/91	72			0.5			5	1.35	0.044	
18/03/91	71			1.5			11	1.98	0.046	
25/03/91	71			2			5	1.58	0.108	
1/4/91	58.5			2		294	5	1.46	0.118	
8/4/91	72			2.5		290	5	1.36	0.086	
15/04/91	100.5			2.5		243	5	1.17	0.005	
23/04/91	16.5			3.5		15	9	0.28	0.005	
1/5/91	43			2		465	16	1.04	0.005	
6/5/91	34			4		504	5	1.24	0.043	
13/05/91	31			4		517	5	1.36	0.01	
21/05/91	47			6		501	9	1.15	0.04	
27/05/91	44			10		526	7	1.28	0.023	
3/6/91	75			4.5		320	13	0.9	0.024	
10/6/91	72			5.2		360	5	0.9	0.005	
17/06/91	53			12		451	5	1.14	0.021	
24/06/91	47			6		580	5	1.18	0.065	
2/7/91	35			9.5		733	5	1.5	0.005	
8/7/91	36			16		721	5	1.13	0.005	
15/07/91	34			13		669	5	1.17	0.032	
24/07/91	34			13		678	5	1.11	0.023	
29/07/91	34			10		593	5	1.17	0.02	
5/8/91	45			12.5		536	5	1.6	0.013	
13/08/91	39			12.5		452	5	1.48	0.005	
20/08/91	37			10		443	5	1.73	0.005	
26/08/91	43			10		443	5	1.42	0.005	
3/9/91	46			11.5		388	6	2.23	0.005	
9/9/91	67			9		412	5	1.79	0.005	
16/09/91	48					372	31	2.06	0.005	
23/09/91	49					344	32	1.74	0.005	
30/09/91				6		379	5	0.1	0.278	
7/10/91	51			5			5	1.85	0.52	
16/10/91	76			2			5	1.71	0.005	
21/10/91	37			0			21	1.42	0.031	
28/10/91	214			0			66	0.64	0.005	
6/11/91	52			1.5			5	2.86	0.026	
12/11/91	77			0			18	4	0.005	
18/11/91	91			0.5			21	4.5	0.122	
25/11/91	79			0			29	2.7	0.005	
2/12/91	61			0			27	1.3	0.005	
8/12/91	94			0			6	3.8	0.005	
15/12/91	64			0			5	3.1	0.005	
22/12/91	50			1			35	2.3	0.005	
30/12/91	38			3			6	1.8	0.005	
7/1/92							20	1.7	0.005	
15/01/92							5	0.74	0.07	
21/01/92							5	2	0.005	
29/01/92							5	1.8	0.005	
4/2/92							5	1.9	0.005	
13/02/92							5	1.8	0.017	
18/02/92							5	1.9	0.012	
24/02/92							5	2.4	0.045	
2/3/92							5	2.3	0.147	
9/3/92							5	2.1	0.101	
16/03/92							5	2	0.078	
24/03/92							5	1.45	0.092	
30/03/92							5	1.55	0.074	
5/10/92							<4	1.25	0.012	
13/10/92							27	1.17	0.039	
20/10/92							54	1.25	0.009	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
21/02/99				0	7.47	776	9	1.43		
6/5/99						509	6	0.74		180
17/05/99				2	7.86	51	7	0.1	<.01	
3/7/99				15	7.52	487	6	0.89	<0.01	
27/07/99				12	8.05	563	3	1.11	<0.01	179
12/8/99				15	8.49	545	16	1.2	0.01	169
10/9/99	66			9	7.15	552	4	1.22	<0.01	
29/10/99				0	7.79	647	24	1.11	<0.01	1
26/01/00						677	2	1.39	<0.01	
25/03/00						575	8	0.93		
15/05/00				1	7.09	100	2	0.08	<0.01	100
26/06/00				16	7.98	499	5	0.92	0.01	
25/07/00				14.7	7.55	596	3	0.94		
15/08/00									<0.01	
29/08/00				10.9	7.38	614	3	1.02	0.01	
25/09/00				8.5	7.81	611	0.8	0.71	0.01	
28/10/00				2.8						
29/10/00						635	7	0.83	<0.01	
13/11/00				-0.4	7.4	849	3	0.06	<0.01	
18/11/00						653	0.4	0.86	0.02	
14/12/00					6.97	668	0.4	0.72	0.01	
13/01/01						336	4	0.93	<0.01	
10/2/01						383	2	1.09	<0.01	
10/3/01				2.2	7.7	749	9	0.84	<0.01	
16/04/01				0.2	7.3	597	14	1.06	<0.01	
14/05/01				2.4	8.2	80	1	<0.05	<0.01	
17/06/01				14.3	7.5	582	12	0.29	<0.01	
14/07/01				13.7	7.6	692	5	0.52	<0.01	
14/08/01				16.3	7.5	790	9	0.62	<0.01	
17/09/01				9.5	7.4	788	12	0.88	<0.01	
15/10/01				1	7.4	834	12	0.08	<0.01	
13/11/01				-0.4	7.4	849	3	0.06	<0.01	
15/12/01				-0.2	7.5	776	8	0.05	<0.01	
STATION: WEIR3										
12/3/96										3.2
9/4/96										3.2
16/04/96										3.2
23/04/96										3.2
29/04/96										3.8
6/5/96										3.2
13/05/96			1077	5	7.32	370	<5	0.78	<.001	3.2
21/05/96										3.2
27/05/96										3.8
4/6/96										4.4
11/6/96										5.2
21/06/96										6.8
26/06/96										6.8
2/7/96										6.8
8/7/96										7.7
15/07/96										7.7
22/07/96										4.4
29/07/96										6.8
5/8/96										6.8
12/8/96										7.7
20/08/96										7.7
9/9/96										16.4
11/9/96			1261	4.5	7.17	666	9	0.72	<.001	
24/09/96										8.6
30/09/96										8.6
17/12/96				0	7.15					8.3
19/12/96			1174			388	7	0.75	<.001	

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
12/5/97			1146	6.6	7.29	353	<5	1.13		
22/09/97				6.5	7.24	154	<5	0.78		
18/05/98					7.34	357	4	0.72	<0.01	9
30/06/98					7.09	195	2	<0.05		
17/11/98					7.05	372	7	0.62	<0.01	10
17/11/98					7.28	286	<1	<0.05	<0.01	2
17/05/99				4	6.94	460	10	0.86		10
18/08/00				4.7	7.08					12
24/08/00				5.1	7.08					12
19/10/00				3.4	7.23	422	7	0.49		12
18/11/00										12
14/12/00										27
1/3/01				2	7.2					10
10/3/01				2.2	7.3					10
15/03/01				2.2	7.5					10
27/03/01				2.2	7.3					10
5/4/01				2.2	7.3					9.75
11/4/01				2.2	7.4					9.75
16/04/01				2.2	7.4					10
23/04/01				2.7	7.5					10
30/04/01				3	7.9					10
8/5/01				2.5	7.7					10
14/05/01				3.2	7.6					10
23/05/01				2.6	7.6					10
30/05/01				4	7.4					10
8/6/01				4	7.5					10.5
11/6/01				4.3	7.5	422	7			11
14/06/01				5.5	7.3					10.5
21/06/01				4.9	7.5					10.5
29/06/01				4.3	7.5					10.5
14/08/01				4.8	7.6					12
12/9/01				3.3	7.6					12
24/09/01				3.3	7.7					12

STATION: X11

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
10/10/86						369				
23/10/86						363	<1			15
6/11/86						411	<1			13.8333
13/11/86						399	2			13.8
21/11/86						413	<1			13.8
28/11/86						414	<1			11.7
4/12/86				4						
4/12/86						416				11.7
10/12/86				4						
10/12/86						429				11.7
16/12/86				4						
16/12/86						435	1			13.8
23/12/86				4						
23/12/86						316	1			13.8
31/12/86				4						
31/12/86						448	1	0.43	<0.01	13.8
7/1/87				5						
7/1/87						496	1	0.24	<0.01	11.7
15/01/87				3						
15/01/87						474	2	0.6	0.05	11.7
20/01/87				4						
20/01/87						494	3	0.6	0.03	13.8
28/01/87				3						
28/01/87						506	1	0.4	0.02	12.8
3/2/87				2						
3/2/87						511	2	1.32	0.04	12.8
10/2/87				4						

Table C8. Surface Water Quality in Area of Tailings Impoundment, Faro Mine Site - Physical Parameters

Date	ALK-T mg/L	HARD mg/L	COND-L S/cm	TEMP-C deg C	PH-F pH unit	SO4-T mg/L	TSS mg/L	NH3-N mg/L	CN-T mg/L	FLOW RATE L/s
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28/10/00				3.2						
29/10/00		141				70	6			
13/11/00		200		-0.4	8	83	3			
18/11/00		99				11	1.6			
14/12/00		246			7.48	96	1.2			
13/01/01		246				111	4			
10/2/01		266				142	9			
10/3/01		291.33		0.6	7.9	153	7			
16/04/01		430		0.2	7.8	166	6			
14/05/01		233		1	8.3	130	6			
17/06/01		65		4.7	8.3	18	9			
14/07/01		128		9.1	8.3	56	3			
14/08/01		627		10.3	8.2	138	9			
17/09/01		175		6.7	8.2	83	7			
15/10/01		367		0.6	8.3	288	9	<0.05	<0.01	
13/11/01		200		-0.4	8	83	3			
14/12/01		392		0.2	7.8	241	4			

C9. Water Quality of Background Waters, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: FC Faro Creek Diversion Channel													
1/6/1988												<0.002	
15/06/88												<0.002	
7/7/1988													
11/7/1988												<0.002	
20/07/88													
24/08/88												<0.002	
13/09/88												<0.002	
6/10/1988												<0.002	0.095
12/7/1989												0.001	0.018
13/09/89												0.002	0.023
5/7/1990												0.001	0.08
7/8/1990												0.003	0.083
23/07/91												0.001	0.061
8/9/1991												0.002	0.058
6/6/1996	<0.01	<0.2	<0.2	<0.1	0.01	<0.005	<0.1	2.18	<0.01	<0.01	<0.01	<0.01	0.1
STATION: SRC, South Fork of Rose Creek													
13/05/96	<.003	0.66	<.02		0.033	<.001	<.04	10.9	<.002	<.005	<.005	0.002	1.45
STATION: R6													
18/07/90												0.002	0.125
23/08/90												0.002	0.143
13/12/90												0.002	
5/3/1991												0.001	
21/06/91												0.002	
16/12/91												0.027	
12/3/1992												0.013	
14/11/92												<0.001	
2/8/1995	<0.003	0.24	<0.02		0.068	<0.001	<0.05	32	0.002	<0.005	<0.005	<0.002	0.13
24/02/96	<.003	0.04	<.02		0.093	<.001	<.04	51.6	<.002	<.005	<.005	<.002	0.19
30/03/96	<.003	0.13	<.02		0.075	<.001	0.04	32.8	<.002	<.005	<.005	0.005	0.62
1/8/1996	<.003	0.05	<.02		0.056	<.001	<.04	37.9	<.0005	<.005	<.005	0.0035	0.05
4/9/1996	<.003	<.05	<.02		0.072	<.001	<.04	35	<.0005	<.005	<.005	0.0031	0.29
5/8/1998	<.0006	0.04	<.004	0.03	0.0839	<.0002	<.008	43.28	<.0004	<.001	0.008	0.0043	0.119
9/9/1998	0.001	0.11	<.005	<.05	0.161	<.001	<.04	40.4	0.002	<.005	0.044	0.036	0.09
1/8/2000	<.0001	0.081	0.003	0.017	0.064	0.0003	<.001	32.5	<.0001	<.0002	<.0002	0.0059	0.137
6/9/2000	<.0001	0.148	<.001	0.048	0.0731	0.0003	<.001	32.218	<.0001	0.0021	<.0002	0.0167	0.374
STATION: R7													
3/8/1989												0.001	0.11
14/09/89												0.003	0.069
14/03/90												0.002	0.049
18/05/90												0.002	
11/6/1990												<0.002	
9/7/1990												0.002	
18/07/90												0.002	0.141
24/08/90												0.002	0.173
5/10/1990												0.002	0.12
15/11/90												0.007	0.144
8/1/1991												0.002	0.071
5/3/1991												0.001	0.094
1/5/1991												0.002	0.447
6/6/1991												0.003	0.211
26/07/91												0.001	0.25
11/9/1991												0.001	0.116
18/10/91												0.001	
16/01/92												0.001	
12/3/1992												0.001	
6/10/1992												0.009	
30/11/92												0.001	
27/03/95	<0.030	<0.08	<0.04		0.079	<0.001	<0.02	48	<0.002	<0.004	<0.002	<0.002	0.13
20/07/95	<0.003	0.1	<0.02		0.006	<0.001	<0.04	18.4	<0.002	<0.005	<0.005	0.004	2.12
23/08/95	<0.003	0.32	<0.02		0.035	<0.001	<0.04	17.9	<0.002	<0.005	<0.005	0.012	0.97
18/09/95	<0.003	1.7	<0.02		0.051	<0.001	<0.04	17.7	<0.002	<0.005	0.014	0.002	0.48
16/10/95	<0.003	0.24	<0.02		0.05	<0.001	<0.04	28.9	<0.002	<0.005	<0.005	0.008	0.3
14/11/95	<0.003	0.22	<0.02		0.063	0.001	<0.04	35.5	<0.002	<0.005	<0.005	0.01	0.4
11/12/1995	<0.003	0.02	<0.02		0.064	<0.001	<0.04	37.7	0.002	<0.005	<0.005	<0.002	0.14
25/01/96	<.003	0.07	<.02		0.063	<.001	<.04	33.5	<.002	<.005	<.005	0.039	0.14
14/02/96	<.003	0.04	<.02		0.07	0.001	<.04	31.2	<.002	<.005	<.005	0.004	0.22
22/03/96	<.003	<.05	<.02		0.059	<.001	<.04	31.9	<.002	<.005	<.005	<.002	0.13
10/4/1996	<.003	0.11	<.02		0.068	<.001	<.04	30.8	<.002	<.005	<.005	0.017	1.58
23/04/96	<.003	<.05	<.02		0.067	<.001	<.04	26	<.002	<.005	<.005	<.002	0.34
15/05/96	<.003	0.31	<.02		0.031	<.001	<.04	10.2	<.002	<.005	<.005	0.045	1.72
14/06/96	<.003	<.05	<.02		0.034	<.001	<.04	13.2	<.002	<.005	<.005	0.002	0.87
17/07/96	<.003	<.05	<.02		0.068	0.002	<.04	12.6	<.002	<.005	<.005	<.002	0.21
1/8/1996	<.003	0.05	<.02		0.038	<.001	<.04	21.5	<.0005	<.005	<.005	0.0022	0.08
14/08/96	<.003	0.05	<.02		0.066	0.005	<.04	18.2	<.002	<.005	<.005	0.002	0.22
4/9/1996	<.003	<.05	<.02		0.044	<.001	<.04	18.6	<.0005	<.005	<.005	0.002	0.31
17/09/96	<.003	0.05	<.02		0.065	<.001	<.04	14.3	<.002	<.005	<.005	<.002	0.49
25/10/96	<.003	0.05	<.02		0.11	0.005	<.04	25.2	<.002	<.005	<.005	0.034	0.06
21/11/96	<.003	<.05	<.02		0.073	<.001	<.04	29.2	<.002	<.005	<.005	<.002	0.12
19/12/96	<.003	0.03	<.02		0.137	<.001	<.04	37.1	<.002	<.005	<.005	0.002	0.14
14/01/97	0.004	0.05	<.02	<.05	0.131	<.001	<.04	34.1	<.002	<.005	<.005	0.009	0.04
26/02/97	<.003	0.05	<.02	<.05	0.113	<.001	<.04	41.8	<.002	<.005	0.005	<.002	0.07

Date	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: FC Faro Creek Diversion Channel																			
1/6/1988				0.002		1.2			<0.005										0.007
15/06/88				0.006		1.4			0.032										0.009
7/7/1988																			<0.002
11/7/1988				0.002		1.6			<0.005										0.008
20/07/88																			0.007
24/08/88				0.002		1.7			<0.005										0.003
13/09/88				0.002		1.6			<0.005										0.005
6/10/1988				0.002		1.5			<0.005										0.007
12/7/1989																			0.003
13/09/89																			0.022
5/7/1990																			0.005
7/8/1990																			0.023
23/07/91																			0.017
8/9/1991																			0.022
6/6/1996	<2		0.46	<0.005	<0.03	<2	<0.02	<0.3	<0.05		<0.2	<0.2	3.51	<0.03	0.019	<0.01	<0.03		<0.005
STATION: SRC, South Fork of Rose Creek																			
13/05/96		<.005	1.6	0.12	<.002	<1	<.005	<.04	<.02	2	<.03		1.58		0.067	0.024	<.01	<.03	0.02
STATION: R6																			
18/07/90									0.005										0.002
23/08/90									0.005										0.039
13/12/90									0.01										0.008
5/3/1991									0.005										0.064
21/06/91									0.005										0.001
16/12/91									0.004										0.118
12/3/1992									0.01										0.019
14/11/92									0.001										0.003
2/8/1995		<0.005	8.9	0.01	<0.002	1	0.006	<0.05	<0.02	5.4	<0.02		0.89		0.107	<0.005	<0.005	<0.02	<0.010
24/02/96		<.005	11.6	<.01	<.002	1	<.005	<.04	<.02	18	<.02		1.5		0.15	<.005	<.005	<.02	<.01
30/03/96		<.005	7.2	0.01	0.004	<1	0.006	<.04	<.02	10	<.03		2.11		0.114	<.005	<.005	<.03	<.01
1/8/1996		<.005	9.6	0.02	<.002	1	0.009	0.09	<.005	1	<.03		3		0.125	<.005	<.005	<.03	<.005
4/9/1996		<.005	9.5	0.01	<.002	11	<.005	0.09	<.005	1	<.02		4.36		0.12	<.005	<.005	<.03	0.006
5/8/1998	0.9	0.01	11.66	0.009	0.0069	2.3	0.003	0.464	<.004	2	<.006	<.001	4.102	<.002	0.1451	0.002	<.001	<.006	0.004
9/9/1998	<1	<.005	10	<.01	0.002	3	<.005	<.04	0.03		<.03	<.005	2.89	<.01	0.131	0.014	<.005	<.03	0.06
1/8/2000	0.88	0.0101	8.529	0.0127	0.0039	1.42	0.0026	0.6	<.001	4.76	0.003	<.001	3.73	<.0004	0.0929	0.013	0.0005	<.001	0.0035
6/9/2000	1.03	<.0002	8.902	0.0152	0.0029	2.23	0.0022	<.2	<.001	6.07	<.001	<.001	5.841	<.0004	0.111	0.0283	<.0002	<.001	0.0258
STATION: R7																			
3/8/1989																			0.004
14/09/89																			0.015
14/03/90																			0.002
18/05/90																			0.007
11/6/1990																			0.005
9/7/1990																			0.002
18/07/90									0.005										0.004
24/08/90									0.005										0.019
5/10/1990									0.005										0.002
15/11/90																			0.043
8/1/1991																			0.003
5/3/1991									0.004										0.001
1/5/1991																			0.006
6/6/1991																			0.016
26/07/91																			0.051
11/9/1991																			0.017
18/10/91									0.004										0.001
16/01/92									0.004										0.001
12/3/1992									0.004										0.012
6/10/1992									0.006										0.01
30/11/92																			
27/03/95			8.97	0.017	<0.004	3.8	<0.010	<0.04	<0.03	3.7	<0.02		6.7		0.198	<0.003	<0.003		<0.010
20/07/95		<0.005	4.3	0.01	<0.002	1	<0.005	<0.04	<0.02	6.6	<0.02		1.35		0.088	<0.005	<0.005	<0.02	<0.010
23/08/95		<0.005	3.4	0.02	<0.002	1	<0.005	<0.04	<0.02	3.7	<0.02		1.61		0.078	<0.005	<0.005	<0.02	<0.010
18/09/95		<0.005	5.6	0.02	<0.002	3	<0.005	<0.04	<0.02	4	<0.02		10.53		0.079	0.013	<0.005	<0.02	<0.010
16/10/95		<0.005	6	0.06	<0.002	1	<0.005	<0.04	0.03	4	<0.02		1.28		0.116	<0.005	<0.005	<0.02	0.14
14/11/95		<0.005	6.7	<0.010	<0.002	1	<0.005	<0.04	<0.02	11	<0.02		2.63		0.136	<0.005	<0.005	<0.02	<0.010
11/12/1995		<0.005	7.1	0.02	<0.002	2	<0.005	<0.04	<0.02	15	<0.02		2.47		0.139	<0.005	<0.005	<0.02	<0.010
25/01/96		<.005	6.6	0.01	<.002	2	<.005	<.04	<.02	2	<.02		2.48		0.167	<.005	<.005	<.02	0.01
14/02/96		<.005	6.5	0.02	<.002	1	<.005	<.04	<.02	6	<.02		2.59		0.153	<.005	<.005	<.02	0.02
22/03/96		<.005	6.4	<.01	<.002	1	<.005	0.1	<.02	2	<.03		1.47		0.142	<.005	<.005	<.03	<.01
10/4/1996		<.005	6.2	0.01	0.014	2	0.008	0.11	<.02	5	<.03		2.47		0.16	0.014	0.007	<.03	<.01
23/04/96		<.005	5.6	0.02	<.002	<1	0.007	<.04	<.02	10	<.03		2.33		0.128	<.005	<.005	<.03	<.01
15/05/96		<.005	1.7	0.03	<.002	<1	<.005	0.09	<.02	1	<.03		1.67		0.052	0.012	<.005	<.03	0.02
14/06/96		<.005	2.6	<.01	<.002	<1	<.005	<.04	<.02	3	<.03		0.76		0.06	<.005	<.005	<.03	<.01
17/07/96		<.005	2.2	0.02	<.002	<1	<.005	<.04	<.02	1	<.03		3.6		0.052	<.005	<.005	<.03	<.01
1/8/1996		<.005	4.4	0.01	<.002	1	<.005	<.04	<.005	1	<.03		3.1		0.1	<.005	<.005	<.03	0.006
14/08/96		<.005	3.8	0.01	<.002	<1	<.005	<.04	<.02	3	<.03		3.9		0.087	<.005	<.005	<.03	<.01
4/9/1996		<.005	3.8	0.01	<.002	9	<.005	<.04	<.005	1	<.03		4.6		0.091	<.005	<.005	<.03	0.041
17/09/96		<.005	2.7	<.01	<.002	1	<.005	0.07	<.02	1	<.03		4.8		0.065	<.005	<.005	<.03	<.01
25/10/96		<.005	5.3	0.02	<.002	4	<.005	<.04	<.02	2	<.03		5.5		0.12	<.005	<.005	<.03	0.02
21/11/96		<.005	5.8	<.01	<.002	2	<.005	<.04	<.02	3	<.03		4		0.137	<.005	<.005	<.03	0.01
19/12/96		<.005	7.3	0.02	<.002	5	<.005	0.07	<.02	6	<.03		4.4		0.174	<.005	<.005	<.03	0.04
14/01/97		<.005	7	0.01	0.005	1	<.005	<.04	<.02	7	<.03		4.03		0.164	<.005	<.005	<.03	0.01
26/02/97		<.005	8.3	<.01	0.005	3	<.005	<.04	0.05	4	<.02		6.72		0.205	0.017	<.03	<.02	0.01

C9. Water Quality of Background Waters, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/3/1997	<.003	0.26	<.02	<.05	0.066	<.001	<.04	36.8	<.002	<.005	<.005	<.002	0.04	
15/04/97	<.003	<.05	<.02	0.16	0.078	<.001	<.04	43.6	<.002	<.005	<.005	0.003	0.18	<1
13/05/97	<.003	0.25	<.02	0.1	0.033	<.001	<.04	7.8	<.002	<.005	<.005	<.002	0.85	<1
23/06/97	<.003	<.05	<.02	0.17	0.024	0.001	<.04	12.8	0.003	0.032	<.005	0.015	0.28	<1
15/07/97	<.003	0.11	<.02	0.27	0.051	<.001	<.04	24.8	<.002	<.005	0.014	0.02	0.33	1
12/8/1997	<.003	<.05	<.02	0.18	0.044	<.001	<.04	20	<.002	<.005	0.018	0.014	0.06	2
22/09/97	<.003	<.05	<.02	<.05	0.049	<.001	<.04	23.9	<.002	0.006	0.023	0.032	0.22	<1
31/10/97	<.003	<.05	<.02	<.05	0.11	<.001	<.04	30.2	<.002	<.005	<.005	0.003	0.15	<1
18/11/97	0.007	<.05	<.02	<.05	0.119	<.001	<.04	31.8	<.002	<.005	<.005	0.025	0.44	4
9/12/1997	<.003	<.05	<.02	<.05	0.109	<.001	<.04	35	<.002	0.027	<.005	0.003	0.15	<1
19/05/98	<.003	0.36	<.02	0.21	0.036	<.001	<.04	8.3	<.002	<.005	0.02	0.022	0.09	<1
15/06/98	<.003	<.05	<.02	<.05	0.116	<.001	<.04	16.8	<.002	<.005	<.005	0.029	0.18	<1
5/8/1998	<.0006	0.04	<.004	0.03	0.0506	<.0002	<.008	24.31	0.0016	0.002	<.001	0.0029	0.122	0.4
9/9/1998	<.001	0.14	<.005	<.05	0.138	<.001	<.04	25.4	<.001	<.005	0.025	0.034	0.07	<1
19/10/98	<.003	0.07	<.02	0.12	0.056	<.001	<.04	28.2	<.002	0.011	<.005	0.009	0.14	<1
25/02/99	<.003	0.18	<.005	0.24	0.103	<.001	<.04	46	<.001	<.005	<.005	0.022	0.11	<1
17/05/99	<.003	0.25	<.005	<.05	0.134	0.002	<.04	5.4	<.001	<.005	<.005	0.013	1.63	2
4/7/1999	<.003	0.35	<.005	0.27	0.053	<.001	<.04	18.1	0.025	<.005	<.005	0.009	1.28	<1
30/10/99	<.003	0.08	<.005	0.05	0.159	<.001	<.04	24.2	<.001	<.005	<.005	0.01	0.09	2
26/03/00	<.003	0.06	<.005	0.06	0.199	<.001	<.05	40.6	<.001	0.02	<.005	0.002	0.07	2
3/6/2000	<.003	0.18	<.005	<.05	0.106	<.001	<.05	11	<.001	<.005	0.013	<.002	0.83	2
1/8/2000	<.0001	0.07	<.001	<.002	0.0511	0.0001	<.001	16.5	<.0001	<.0002	<.0002	0.0033	0.156	0.36
6/9/2000	<.0001	0.04	<.001	0.031	0.0565	0.0002	<.001	19.716	<.0001	0.0021	<.0002	0.0112	0.279	0.7
12/9/2000	<.003	0.09	<.005	<.05	0.133	<.001	<.05	23	<.001	<.005	<.005	0.009	0.09	<1
5/3/2001	<.003	0.35	<.005	0.15	0.25	<.001	<.05	42	<.001	<.005	<.005	0.01	0.08	1.95
13/06/01	<.003	0.32	<.005	<.05	0.148	<.001	<.05	8.2	<.001	<.005	<.005	0.002	0.51	<1
8/9/2001	<0.003	0.06	0.068	2.26	0.149	<0.001	<0.05	26.6	<0.001	<0.005	<0.005	0.01	0.13	<1
STATION: W10														
6/6/1996	<0.01	<0.2	<0.2	<0.1	0.01	<0.005	<0.1	9.24	<0.01	<0.01	<0.01	<0.01	0.06	<2
21/07/97	<.003	0.08	<.02	<.05	0.016	<.001	<.04	13.6	<.002	<.005	<.005	0.014	0.14	<1
16/06/98	<.003	<.05	<.02	<.05	0.091	<.001	<.04	13.7	<.002	<.005	<.005	0.024	<.01	<1
3/7/1999	<.003	0.31	<.005	0.34	0.018	<.001	<.04	11.7	0.003	<.005	<.005	0.008	0.88	<1
3/6/2000	<.003	<.05	<.005	<.05	0.063	<.001	<.05	7.4	<.001	<.005	0.048	<.002	0.11	2
11/6/2001	<.003	0.14	0.011	0.08	0.119	<.001	<.05	9.4	0.003	<.005	<.005	0.003	0.12	<1

Date	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/3/1997	<.005	7.3	0.1	0.007	3	<.005	0.24	<.02	3	<.03	<.005	3.6	<.01	0.163	<.005	<.005	<.03	<.01
15/04/97	<.005	8.2	<.01	<.002	3	<.005	<.04	<.02	4	<.03	<.03	5.9	<.01	0.197	<.005	<.005	<.03	<.01
13/05/97	<.005	1.5	0.06	<.002	<1	0.008	0.04	<.02	<1	<.03	<.03	1	<.01	0.035	<.005	<.005	<.03	0.01
23/06/97	<.005	2.6	<.01	<.002	1	0.014	0.14	<.02	2	<.03	<.03	1.9	<.01	0.053	<.005	<.005	<.03	0.02
15/07/97	<.005	5.2	<.01	<.002	3	<.005	0.44	0.02	2	<.03	<.03	4.2	<.01	0.109	<.005	<.005	<.03	0.09
12/8/1997	<.005	4.6	<.01	<.002	3	<.005	0.38	<.02	3	<.03	<.03	4.9	<.01	0.09	<.005	0.009	<.03	0.05
22/09/97	<.005	4.8	<.01	<.002	2	<.005	1.07	<.02	3	<.03	<.03	4.2	<.01	0.112	<.005	<.005	<.03	0.06
31/10/97	<.005	5.8	0.01	0.007	2	<.005	<.04	<.02	3	<.03	<.03	4.1	<.01	0.123	<.005	<.005	<.03	<.01
18/11/97	0.007	6.4	<.01	<.002	2	<.005	0.18	<.02	4	<.03	<.03	3.7	0.03	0.137	<.005	0.005	<.03	0.03
9/12/1997	<.005	6.8	<.01	<.002	3	0.01	<.04	<.02	3	<.03	<.03	4	<.01	0.154	<.005	<.005	<.03	0.01
19/05/98	0.022	1.9	0.05	<.002	1	<.005	1.32	<.02	1	0.04	<.03	1.7	<.01	0.033	0.006	<.005	<.03	<.01
15/06/98	<.005	3.3	<.01	<.002	<1	<.005	1.2	<.02	6	<.03	<.03	2.6	<.01	0.067	<.005	<.005	<.03	0.03
5/8/1998	<.001	6.1	0.011	0.0035	2.3	0.003	1.66	<.004	3	0.008	<.001	4.376	<.002	0.1138	0.002	<.001	<.006	<.002
9/9/1998	<.005	4.9	<.01	<.002	3	<.005	0.25	0.04		<.03	<.005	3.96	<.01	0.12	0.008	<.005	<.03	0.06
19/10/98	<.005	5.7	0.01	<.002	3	0.014	12.35	0.02	3	<.03	<.03	3.5	<.01	0.125	0.014	<.005	<.03	0.01
25/02/99	<.005	9.4	0.02	<.002	4	<.005	0.36	<.01	4	<.03	<.03	5.6	<.01	0.237	0.006	<.005	<.03	0.03
17/05/99	<.005	1.2	0.03	0.015	1	<.005	<.04	<.01		<.03	<.03	1.5	<.01	0.048	<.005	0.012	<.03	0.04
4/7/1999	<.005	4.2	0.03	<.002	<1	<.005	0.08	0.01	2	<.03	<.03	4.4	<.01	0.076	<.005	<.005	<.03	0.03
30/10/99	<.005	4.9	0.01	<.002	4	<.005	<.04	<.01	3	<.03	<.005	4	<.01	0.115	<.005	<.005	<.03	<.01
26/03/00	<.005	8.1	0.21	<.002	8	<.005	<1	<.01	4	<.03	<.005	4.9	<.01	0.205	<.005	<.005	<.03	0.02
3/6/2000	<.005	2	0.02	0.002	1	<.005	<1	<.01		<.03	<.005	2.7	<.01	0.054	0.061	0.048	<.03	0.02
1/8/2000	0.0164	3.119	0.0129	0.0029	1.47	0.0033	1.4	<.001	1.72	<.001	<.001	3.84	<.0004	0.074	0.0082	0.0009	<.001	0.009
6/9/2000	<.0002	3.979	0.0164	0.0015	2.24	<.0002	<.2	<.001	2.25	<.001	<.001	6.629	<.0004	0.0935	0.018	<.0002	<.001	0.0169
12/9/2000	<.005	4	0.02	<.002	3	<.005	4	<.01		<.03	<.005	4	<.01	0.03	<.005	<.005	<.03	0.05
5/3/2001	<.005	8.39	0.01	<.002	7.9	<.005	<1	<.01	4	<.03	<.005	5.39	<.01	0.2	0.006	<.005	<.03	<.01
13/06/01	<.005	1.9	0.07	0.008	2	<.005	<1	<.01	<1	<.03	<.005	2.4	<.01	0.038	0.013	0.005	<.03	0.02
8/9/2001	0.009	5.1	0.02	<0.002	<1	<0.005	<1	<0.01	2	<0.03	<0.005	4.9	<0.01	0.118	<0.005	<0.005	<0.03	0.03
STATION: W10																		
6/6/1996		1.18	<0.005	<0.03	<2	<0.02	<0.3	<0.05		<0.2	<0.2	4.83	<0.03	0.035	<0.01	<0.03		<0.005
21/07/97	<.005	2	<.01	<.002	2	<.005	1.55	<.02	6	<.03	<.03	6.5	<.01	0.061	<.005	0.006	<.03	0.07
16/06/98	<.005	1.8	<.01	<.002	<1	<.005	<.04	<.02	1	<.03	<.03	4.9	<.01	0.046	<.005	<.005	<.03	0.05
3/7/1999	<.005	1.6	0.01	<.002	1	<.005	0.1	<.01	1	<.03	<.03	8.2	<.01	0.039	<.005	0.008	<.03	0.03
3/6/2000	<.005	1.5	<.01	<.002	1	<.005	<1	<.01		<.03	<.005	3.6	<.01	0.047	0.006	<.005	<.03	<.01
11/6/2001	<.005	1.4	0.02	<.002	3	<.005	<1	<.01	<1	<.03	<.005	3.2	<.01	0.038	<.005	<.005	<.03	0.02

Table C10. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: A30												
23/06/97	<.003	3.69	<.02	0.07	0.051	0.007	<.04	53	0.147	0.262	<.005	0.62
19/05/98	<.003	19.13	0.09	0.21	0.476	0.028	<.04	47.3	0.239	0.281	<.005	2.693
3/6/2000	<.003	9.19	0.065	<.05	0.126	0.004	<.05	41.7	0.176	0.193	0.008	1.127
11/6/2001	<.003	0.1	<.005	0.07	0.128	<.001	<.05	50.2	0.015	<.005	0.023	0.022
STATION: X22B												
6/10/1992												0.332
25/11/92												0.313
21/01/93												0.363
16/03/93												0.479
24/06/93												0.003
21/06/96	<.003	<.05	<.02		0.02	0.006	<.04	135.2	0.012	0.041	<.005	0.009
15/08/96	<.003	0.05	<.02		0.047	0.005	<.04	130.2	0.012	0.04	<.005	0.045
12/9/1996	<.003	0.13	<.02		0.077	0.006	<.04	163.8	0.013	0.049	<.005	0.045
21/10/96	<.003	0.05	<.02		0.037	0.004	<.04	128.9	0.01	0.043	<.005	0.047
21/11/96	<.003	<.05	0.04		0.05	0.003	<.04	130.3	0.006	0.032	<.005	0.023
19/12/96	<.003	0.4	<.02		0.274	0.006	<.04	153	0.006	0.029	<.005	0.032
20/01/97	<.003	0.4	0.12	0.97	0.056	<.001	<.04	144.4	0.008	0.028	<.005	0.019
11/3/1997	<.003	0.93	<.02	<.05	0.06	0.004	<.04	138.8	0.006	0.037	<.005	0.161
15/04/97	<.003	0.07	<.02	0.17	0.162	0.002	<.04	58.8	0.003	0.009	<.005	0.028
4/5/1997	<.003	<.05	<.02	0.08	0.074	<.001	<.04	20.3	0.002	0.006	<.005	0.006
12/5/1997	<.003	<.05	<.02	<.05	0.033	<.001	<.04	53.1	0.003	<.005	<.005	0.055
23/06/97	<.003	<.05	<.02	0.09	0.023	<.001	<.04	140.8	0.003	0.017	<.005	0.081
15/07/97	<.003	0.24	<.02	0.22	0.025	<.001	<.04	166.5	0.006	0.033	<.005	0.107
12/8/1997	<.003	0.1	<.02	0.15	0.022	0.001	<.04	135.3	0.007	0.034	0.015	0.059
22/09/97	<.003	0.1	<.02	<.05	0.024	0.001	<.04	152.6	0.005	0.039	<.005	0.113
20/10/97	<.003	<.05	<.02	<.05	0.091	<.001	<.04	144	0.003	0.024	0.008	0.053
18/11/97	0.004	<.05	<.02	<.05	0.107	0.003	<.04	157.9	0.01	<.005	<.005	0.165
8/12/1997	<.003	<.05	<.02	<.05	0.071	<.001	<.04	154.6	<.002	<.005	<.005	0.158
13/01/98	<.003	<.05	<.02	<.05	0.1	<.001	<.04	144.6	<.002	0.014	<.005	0.152
18/05/98	<.003	0.11	0.02	0.21	0.05	<.001	<.04	25.8	<.002	<.005	0.012	0.038
15/06/98	<.003	0.42	<.02	<.05	0.11	0.001	<.04	153.1	0.008	0.021	0.066	0.137
20/06/98	<.003	0.12	<.02	<.05	0.082	<.001	<.04	139.7	0.003	0.02	0.013	0.107
21/07/98	<.003	0.12	<.02	<.05	0.092	0.001	<.04	164.9	0.007	0.037	0.007	0.108
10/8/1998	<.003	0.25	0.04	0.24	<.002	0.001	<.04	168.9	0.007	0.022	<.005	0.111
25/09/98	<.003	0.17	<.02	<.05	0.157	0.002	<.04	172.4	0.003	0.029	0.046	0.082
19/10/98	<.003	0.29	<.02	0.18	0.027	0.001	<.04	163.1	<.002	0.032	<.005	0.075
17/11/98	<.003	0.19	<.005	<.05	0.108	<.001	<.04	194.9	0.008	0.025	0.044	0.099
19/01/99	<.003	0.13	<.005	0.13	0.027	<.001	<.04	119.7	0.03	0.013	0.13	0.05
22/02/99	0.014	0.41	<.005	0.4	0.027	<.001	<.04	188	0.01	0.035	<.005	0.066
22/03/99	<.003	0.3	<.005	0.14	0.023	<.001	<.04	130.7	0.025	0.037	0.402	0.062
17/05/99	<.003	<.05	<.005	<.05	0.08	0.002	<.04	19.3	<.001	<.005	<.005	0.02
3/7/1999	<.003	0.37	<.005	0.29	0.027	<.001	0.05	125.2	0.009	0.042	<.005	0.04
27/07/99	<.003	0.25	<.005	<.05	0.111	<.001	<.04	120.5	0.005	0.051	<.005	0.033
12/8/1999	<.003	<.05	<.005	0.15	0.089	<.001	<.04	155.2	<.001	0.048	<.005	0.018
10/9/1999	<.003	0.2	<.005	<.05	0.095	<.001	<.04	123.3	0.008	0.019	0.074	0.027
30/10/99	<.003	0.12	<.005	<.05	0.14	<.001	<.04	131	<.001	<.005	<.005	0.013
23/03/00	<.003	0.38	<.005	0.11	0.155	<.001	<.05	151	0.008	0.069	<.005	0.018
15/05/00	<.003	0.52	0.009	<.05	0.088	<.001	<.05	153.8	0.01	0.041	0.101	0.026
26/06/00	<.003	0.26	<.005	<.05	0.086	0.002	<.05	136.3	0.008	0.042	<.005	0.037
25/07/00	<.003	0.13	<.005	<.05	0.11	0.002	<.05	130.8	0.017	0.062	0.088	0.033
29/08/00	<.003	0.31	<.005	<.05	0.093	<.001	<.05	153.3	0.016	0.039	<.005	0.03
25/09/00	<0.01	0.09	<0.2	<0.1	0.02	<0.005	<0.1	142	0.009	0.04	<0.01	<0.01
29/10/00	<.003	0.42	<.005	0.07	0.17	0.002	<.05	135.6	0.016	0.031	<.005	0.051
13/11/00	<0.003	0.06	0.028	0.08	0.065	<0.001	<0.05	152.3	0.012	0.051	<0.005	0.008
18/11/00	<0.01	0.1	<0.2	<0.1	0.08	<0.005	<0.1	540	0.055	0.16	<0.01	0.09
14/12/00	<0.01	<0.05	<0.2	<0.1	0.02	<0.005	<0.1	134	0.027	0.04	<0.01	0.04
13/01/01	<.003	0.14	<.005	<.05	0.107	0.002	<.05	127	0.025	<.005	<.005	0.057
10/2/2001	<.003	0.16	<.005	0.08	0.125	0.002	<.05	124.9	0.006	<.005	<.005	0.03
10/3/2001	<.003	0.47	<.005	0.1	0.2	<.001	<.05	130	0.014	<.005	<.005	0.03
16/04/01	<.003	<.05	<.005	<.05	0.04	<.001	<.05	146.4	0.009	<.005	<.005	0.023
14/05/01	<.003	0.3	0.025	<.05	0.155	<.001	<.05	146.2	0.011	0.015	<.005	0.022
17/06/01	<.003	0.12	0.046	0.09	0.144	<.001	<.05	152.6	0.014	0.046	<.005	0.022
14/07/01	<.003	0.12	<.005	0.16	0.198	<.001	<.05	150.7	0.011	0.048	<.005	0.014
14/08/01	<0.003	0.1	0.007	<0.05	0.2	<0.001	<0.05	160.8	0.013	0.053	<0.005	0.014
17/09/01	<0.003	0.06	0.02	<0.05	0.134	<0.001	<0.05	125.6	0.012	0.045	<0.005	0.009
15/10/01	<0.003	<0.05	0.008	0.15	0.159	<0.001	<0.05	141.2	0.01	0.043	<0.005	0.01
13/11/01	<0.003	0.06	0.028	0.08	0.065	<0.001	<0.05	152.3	0.012	0.051	<0.005	0.008
15/12/01	<0.001	<0.05	0.031	<0.05	0.026	0.001	<0.05	156.1	0.01	0.057	0.04	0.015
STATION: HE1												
6/6/1996	<0.01	2.2	<0.2	<0.1	0.08	<0.005	0.2	273	<0.01	<0.01	<0.01	0.02
23/06/97	<.003	<.05	<.02	0.1	0.031	<.001	<.04	58.1	<.002	<.005	<.005	0.002
19/05/98	<.003	0.18	<.02	0.23	0.016	0.02	<.04	44.6	<.002	<.005	0.032	0.034
15/06/98	<.003	<.05	<.02	0.18	0.018	<.001	<.04	37.3	<.002	<.005	<.005	<.002
3/6/2000	<.003	0.1	<.005	<.05	0.078	<.001	<.05	56.8	<.001	<.005	0.019	0.005
11/6/2001	<.003	0.11	0.016	0.06	0.102	<.001	<.05	53	<.001	<.005	0.007	0.007
STATION: HE2												
23/06/97	<.003	<.05	<.02	0.07	0.006	<.001	<.04	55.7	<.002	<.005	<.005	<.002
15/07/97	<.003	0.14	<.02	0.28	0.017	<.001	<.04	60.5	<.002	<.005	<.005	0.019
15/06/98	<.003	0.17	<.02	<.05	0.155	0.002	<.04	104.7	0.002	<.005	0.02	0.049
30/10/99	<.003	4.14	<.005	0.1	0.173	<.001	<.04	85.8	<.001	<.005	<.005	0.03
3/6/2000	<.003	0.2	<.005	<.05	0.22	0.001	<.05	198.3	0.008	<.005	0.033	0.014

Date	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: A30										
23/06/97	3.79	<1	0.009	83.9	6.9	<.002	3	0.205	0.69	0.12
19/05/98	68.02	3	0.028	88	6.21	0.082	3	0.236	9.88	1.28
3/6/2000	9.27	3	0.011	70.9	4.95	0.132	3	0.159	9	0.58
11/6/2001	0.13	2	0.008	28.9	0.23	0.003	4	<.005	<1	<0.01
STATION: X22B										
6/10/1992										0.25
25/11/92										0.08
21/01/93										0.1*
16/03/93										0.08
24/06/93										
21/06/96	0.18		<.005	50.3	4.19	0.004	27	0.155	0.1	0.11
15/08/96	0.15		<.005	46	3.77	0.006	27	0.111	<.04	0.22
12/9/1996	0.96		<.005	56.5	5.05	0.019	43	0.059	0.25	0.03
21/10/96	0.24		<.005	45.1	3.28	<.002	37	0.077	0.29	<.02
21/11/96	0.16		<.005	45.3	3.23	0.003	40	0.094	<.04	0.02
19/12/96	2.33		<.005	52.9	3.78	0.011	37	0.108	0.23	0.27
20/01/97	0.37		<.005	49	4.05	0.024	36	0.087	0.07	<.02
11/3/1997	0.51		0.037	44.6	3.33	0.024	28	0.074	0.83	0.05
15/04/97	0.6	12	<.005	21.8	0.86	<.002	4	0.054	<.04	0.1
4/5/1997	0.03	3	<.005	5.5	0.4	<.002	3	<.005	<.04	<.02
12/5/1997	0.04	<1	<.005	17.9	1.23	<.002	11	0.025	<.04	<.02
23/06/97	0.22	5	<.005	44.1	2.81	0.008	25	0.063	<.04	<.02
15/07/97	0.27	13	<.005	53.9	3.58	0.026	33	0.073	0.82	0.05
12/8/1997	<.01	13	0.015	46.5	3.16	<.002	29	0.061	0.55	<.02
22/09/97	0.21	12	0.031	49.7	3.14	0.009	29	0.073	2.37	<.02
20/10/97	0.13	11	<.005	47.2	2.76	0.004	27	0.057	<.04	0.04
18/11/97	0.5	15	<.005	47.3	3.48	<.002	28	0.065	0.1	0.09
8/12/1997	0.11	15	<.005	47.1	3.11	0.009	28	0.065	<.04	0.09
13/01/98	0.13	9	<.005	42.3	2.73	0.003	27	0.055	<.04	0.07
18/05/98	<.01	2	<.005	8.2	0.38	<.002	7	0.015	2.64	0.03
15/06/98	1.18	12	0.005	45.6	2.58	0.012	27	0.052	0.92	0.04
20/06/98	0.12	13	<.005	44.4	2.37	0.016	28	0.05	1.11	<.02
21/07/98	0.09	14	0.006	54	2.72	0.013	31	0.071	<.04	<.02
10/8/1998	0.12	14	0.026	52.7	2.88	<.002	31	0.062	<.04	0.05
25/09/98	0.06	14	<.005	55.1	2.87	0.031	33	0.064	2.12	<.02
19/10/98	0.27	15	<.005	53.6	2.74	0.014	34	0.067	3.65	0.04
17/11/98	0.2	19	<.005	60.1	2.78	0.025	35	0.061	2.21	0.02
19/01/99	0.08	7	<.005	58.4	1.42	0.041	16	0.09	0.07	0.08
22/02/99	0.02	15	0.019	60.7	2.95	0.024	34	0.062	2.02	<.01
22/03/99	0.17	9	0.01	50.8	2.8	0.027	20	0.056	1.55	0.04
17/05/99	0.03	2	<.005	7.4	0.31	0.015	3	0.02	<.04	<.01
3/7/1999	0.95	11	0.029	46.1	2.55	0.028	20	0.073	<.04	<.01
27/07/99	0.24	10	<.005	46.6	2.52	0.031	19	0.069	0.58	0.05
12/8/1999	0.11	12	<.005	50.1	2.26	0.004	27	0.041	<.04	<.01
10/9/1999	0.13	10	0.015	42.6	2.25	0.019	19	0.06	0.2	<.01
30/10/99	0.29	6	<.005	43.8	2.56	<.002	25	0.039	<.04	<.01
23/03/00	0.07	15	0.01	53.6	2.72	0.006	20	0.059	<1	<.01
15/05/00	0.79	12	0.026	54.6	2.53	0.016	23	0.058	2	0.04
26/06/00	0.16	12	<.005	48.4	2.36	<.002	22	0.081	12	<.01
25/07/00	0.55	11	0.116	47.2	2.4	0.03	25	0.101	3	<.01
29/08/00	0.28	13	<.005	53.7	2.47	<.002	25	0.102	3	<.01
25/09/00	0.2	10		53.9	2.51	0.01	24	0.07	<0.3	<0.05
29/10/00	0.43	12	<.005	50.6	2.69	0.014	28	0.071	7	<.01
13/11/00	0.12	13	0.018	56.9	3.63	0.015	29	0.059	0.1	0.01
18/11/00	0.15	42		229	9.84	0.03	98	0.3	<0.3	<0.05
14/12/00	0.05	7		61.9	2.21	<0.01	15	0.1	<0.3	<0.05
13/01/01	0.3	10	0.087	52.8	2.32	0.06	21	0.088	2	0.1
10/2/2001	0.07	9	<.005	48.8	2.32	0.08	21	0.138	26	0.05
10/3/2001	0.06	1.15	<.005	53.25	2.71	<.002	22.76	0.072	<1	<.01
16/04/01	0.09	<1	<.005	55.3	3.36	<.002	23	0.079	<1	<.01
14/05/01	0.56	9	<.005	50.4	2.31	<.002	22	0.074	<1	<.01
17/06/01	0.18	11	0.022	56	1.92	<.002	28	0.096	<1	<.01
14/07/01	0.38	11	0.007	56.1	3.25	<.002	24	0.102	<1	<.01
14/08/01	0.1	10	<0.005	67.3	3.19	0.01	25	0.119	<1	<0.01
17/09/01	0.04	9	0.017	52.5	3.14	0.003	25	0.091	<1	0.01
15/10/01	<0.01	12	0.025	55.1	3.31	0.006	23	0.091	<1	<0.01
13/11/01	0.12	13	0.018	56.9	3.63	0.015	29	0.089	0.1	0.01
15/12/01	0.06	10	0.02	60.7	3.02	0.024	22	0.085	<0.01	0.01
STATION: HE1										
6/6/1996	2.33	7		184	0.238	<0.03	15	0.09	<0.3	<0.05
23/06/97	0.17	1	<.005	15.6	<.01	<.002	2	<.005	0.13	<.02
19/05/98	0.06	2	<.005	14.7	0.01	<.002	4	0.014	0.46	0.02
15/06/98	<.01	3	<.005	19.4	<.01	<.002	4	<.005	<.04	<.02
3/6/2000	0.19	4	<.005	17.8	<.01	0.034	4	0.005	4	<.01
11/6/2001	0.1	2	0.007	18.2	0.21	0.009	5	<.005	<1	<.01
STATION: HE2										
23/06/97	0.05	<1	<.005	17.2	<.01	<.002	3	<.005	<.04	<.02
15/07/97	0.09	3	<.005	21.6	<.01	<.002	6	<.005	0.89	<.02
15/06/98	0.12	4	<.005	104.2	<.01	0.003	8	<.005	1.09	<.02
30/10/99	0.22	1	<.005	27.3	0.1	<.002	6	0.009	<.04	<.01
3/6/2000	0.11	6	<.005	154.8	0.02	<.002	10	0.01	<1	0.03

Date	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: A30										
23/06/97	192	0.07	0.036	5.7	<.01	0.205	<.005	<.005	<.03	79.97
19/05/98	192	0.27	<.03	11	<.01	0.269	0.185	0.023	<.03	97.49
3/6/2000		0.31	<.005	6.3	<.01	0.275	0.022	<.005	<.03	79.68
11/6/2001	69	<.03	<.005	6.3	<.01	0.214	0.006	<.005	<.03	16.4
STATION: X22B										
6/10/1992										1.3
25/11/92										0.251
21/01/93										1.83
16/03/93										1.73
24/06/93										8.94
21/06/96	240	<.03		1.62		0.234	<.005	<.005	<.03	7.8
15/08/96	208	0.06		1.4		0.231	<.005	<.005	<.03	4.08
12/9/1996	250	<.03		2.3		0.294	0.018	<.005	<.03	4.01
21/10/96	178	<.03		2.8		0.241	<.005	<.005	<.03	3.33
21/11/96	213	<.03		1.8		0.257	<.005	<.005	<.03	3.7
19/12/96	218	0.07		2		0.314	0.007	<.005	<.03	4.26
20/01/97	157	<.03		2.1		0.337	0.009	<.005	<.03	4.2
11/3/1997	165	0.04	<.005	1	0.01	0.246	<.005	0.01	0.05	1.57
15/04/97	77	0.05	<.03	1.1	<.01	0.24	<.005	<.005	<.03	5.82
4/5/1997	25	<.03	<.005	<.1	<.01	0.055	<.005	<.005	<.03	1.57
12/5/1997	64	<.03	<.03	<.1	<.01	0.099	<.005	<.005	<.03	1.28
23/06/97	165	0.03	<.03	1.1	<.01	0.268	<.005	<.005	<.03	1.85
15/07/97	35	<.03	<.03	2.7	<.01	0.332	0.015	<.005	0.1	2.51
12/8/1997	69	<.03	<.03	2.4	<.01	0.306	<.005	<.005	<.03	2.85
22/09/97	206	0.04	<.03	2.5	<.01	0.358	0.012	<.005	<.03	2.7
20/10/97	180	0.05	<.03	1.1	0.03	0.285	<.005	0.008	<.03	2.25
18/11/97	197	<.03	<.03	1	<.01	0.302	0.007	<.005	<.03	2.04
8/12/1997	183	<.03	<.03	1.1	0.01	0.297	0.006	<.005	<.03	1.95
13/01/98	176	<.03	<.03	0.9	<.01	0.277	<.005	<.005	0.03	1.11
18/05/98	65	0.04	<.03	<.1	<.01	0.093	<.005	<.005	<.03	1.58
15/06/98	115	<.03	<.03	1.4	<.01	0.297	0.046	<.005	<.03	2.85
20/06/98		<.03	<.03	1.4	<.01	0.274	0.01	0.014	<.03	2.11
21/07/98	67	0.07	<.03	1.5	<.01	0.361	0.01	<.005	<.03	2.67
10/8/1998	114	0.07	<.03	1.8	<.01	0.379	0.011	0.016	<.03	2.51
25/09/98	207.5	0.09	<.03	1.9	<.01	0.399	0.033	0.008	<.03	2.46
19/10/98	230.8	0.04	<.03	2.2	<.01	0.372	0.03	<.005	<.03	2.16
17/11/98	205	0.13	<.03	1.7	<.01	0.361	0.016	<.005	<.03	2.2
19/01/99	191	0.06	<.03	8	<.01	0.427	0.017	<.005	<.03	16.95
22/02/99	231	<.03	<.03	2.9	<.01	0.45	0.027	<.005	<.03	3.92
22/03/99	200.1	0.09	<.03	5	<.01	0.329	0.007	<.005	<.03	14.98
17/05/99		<.03	<.03	<.1	<.01	0.07	<.005	<.005	<.03	2.56
3/7/1999	172	0.12	<.03	2.8	<.01	0.359	<.005	<.005	<.03	8.5
27/07/99	194	<.03	<.03	2.1	<.01	0.371	0.033	<.005	<.03	5.56
12/8/1999	195	<.03	<.005	4.1	<.01	0.4	0.008	<.005	<.03	4.19
10/9/1999	169	0.05	<.005	2.1	<.01	0.329	0.019	0.008	<.03	4.11
30/10/99	187	<.03	<.005	2	<.01	0.354	<.005	<.005	<.03	4.31
23/03/00	191	<.03	<.005	3.8	<.01	0.452	<.005	<.005	<.03	7.49
15/05/00		<.03	<.005	3.7	<.01	0.494	0.039	<.005	<.03	5.51
26/06/00		0.11	<.005	2.8	<.01	0.369	0.044	0.036	<.03	7.64
25/07/00		<.03	<.005	2.4	<.01	0.504	0.032	0.032	<.03	8.09
29/08/00		<.03	<.005	3.7	<.01	0.413	0.027	0.019	<.03	8.56
25/09/00		<0.2	<0.2	2.9	<0.03	0.429	<0.01	<0.03		9.02
29/10/00	237	<.03	<.005	3.4	<.01	0.441	0.057	<.005	<.03	9.83
13/11/00	205	0.07	<0.005	4.4	0.16	0.516	<0.005	<0.005	<0.03	11.29
18/11/00		<0.2	<0.2	13.1	<0.03	1.63	<0.01	<0.03		46.5
14/12/00		<0.2	<0.2	5.83	<0.03	0.451	<0.01	<0.03		20.2
13/01/01	128	<.03	<.005	5.3	<.01	0.504	0.042	<.005	<.03	17.7
10/2/2001	132	0.03	<.005	3.7	<.01	0.244	0.017	<.005	<.03	14.5
10/3/2001	180.9	<.03	<.005	3.77	<.01	0.44	<.005	<.005	<.03	16
16/04/01	175	<.03	<.005	3	<.01	0.47	<.005	<.005	<.03	12.17
14/05/01	169	<.03	<.005	2.2	<.01	0.433	<.005	<.005	<.03	8.42
17/06/01	192	<.03	<.005	2.6	0.02	0.48	<.005	<.005	<.03	11.6
14/07/01	192	<.03	<.005	4.8	<.01	0.511	0.006	<.005	<.03	13.18
14/08/01	219	<0.03	<0.005	5.2	<0.01	0.609	0.006	<0.005	<0.03	16.53
17/09/01	175	0.03	<0.005	4.2	<0.01	0.48	<0.005	<0.005	<0.03	12.21
15/10/01	187	<0.03	<0.005	4	<0.01	0.497	0.007	<0.005	<0.03	11.89
13/11/01	205	0.07	<0.005	4.4	0.16	0.516	<0.005	<0.005	<0.03	11.29
15/12/01	175	<0.03	<0.005	3.8	0.07	0.462	<0.005	<0.005	<0.03	11.93
STATION: HE1										
6/6/1996		<0.2	<0.2	6.71	<0.03	1.15	0.05	<0.03		2.79
23/06/97	24	<.03	<.03	2.8	0.02	0.263	<.005	<.005	<.03	0.03
19/05/98	26	<.03	<.03	3.5	<.01	0.209	<.005	<.005	<.03	0.06
15/06/98	37	<.03	<.03	5.6	<.01	0.242	<.005	<.005	<.03	0.02
3/6/2000		<.03	<.005	2.9	<.01	0.312	0.019	<.005	<.03	0.02
11/6/2001	35	<.03	<.005	2.7	<.01	0.28	<.005	<.005	<.03	0.02
STATION: HE2										
23/06/97	33	<.03	<.03	2.4	<.01	0.267	<.005	<.005	<.03	<.01
15/07/97	28	<.03	<.03	4.2	<.01	0.327	0.007	0.012	<.03	0.07
15/06/98	207	<.03	<.03	4	<.01	0.745	0.018	<.005	0.05	0.06
30/10/99	82	<.03	<.005	9.4	<.01	0.441	0.164	<.005	<.03	0.06
3/6/2000		<.03	<.005	4.6	<.01	0.978	0.026	<.005	<.03	<.01

Table C10. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/6/2001	<.003	0.06	<.005	0.06	0.141	<.001	<.05	164.3	<.001	<.005	0.011	0.005	0.06	4	0.022	119.3	0.44	0.011	10	<.005	<1	<.01	195	0.05	<.005	4.4	<.01	0.817	<.005	<.005	<.03	0.02
STATION: SP5-4																																
13/07/89												0.013	0.475																			1.87
15/09/89												0.012	1.18																			1.93
6/7/1990												0.01	0.211																			2.33
7/8/1990												0.01	1.69																			2.08
12/7/1991												0.015	3.62																			3.45
8/9/1991												0.001	0.044																			3.2
23/07/95	<0.015	<0.20	<0.20	<0.10	0.025	<0.005	<0.10	91	<0.010	<0.015	<0.015	<0.010	0.044	3.5		49	0.313	<0.030	5	<0.020	<0.30	<0.050		<0.20	<0.20	5.13	<0.30	0.376	<0.010	<0.030		2.3
6/6/1996	<0.01	<0.2	<0.2	<0.1	0.03	<0.005	0.2	235	<0.01	<0.01	<0.01	<0.01	0.07	7		151	0.722	<0.03	11	0.06	<0.3	<0.05		<0.2	<0.2	4.42	<0.03	1.02	<0.01	<0.03		5.25
6/6/1996	<0.01	<0.2	<0.2	<0.1	0.03	<0.005	0.2	235	<0.01	<0.01	<0.01	<0.01	0.07	7		151	0.722	<0.03	11	0.06	<0.3	<0.05		<0.2	<0.2	4.42	<0.03	1.02	<0.01	<0.03		5.25
21/06/96	<.003	<.05	<.02		0.02	0.004	<.04	107.8	<.002	<.005	<.005	0.003	0.14		<.005	62.8	0.14	<.002	4	0.023	<.04	<.02	145	<.03		2.45		0.506	<.005	<.005	<.03	2.53
23/06/97	<.003	<.05	<.02	0.09	0.021	<.001	<.04	91.1	0.002	0.007	<.005	0.005	0.03	<1	<.005	51.6	0.39	<.002	4	0.018	0.16	<.02	80	<.03	<.03	3.3	0.02	0.4	<.005	<.005	<.03	1.85
16/06/98	<.003	0.16	<.02	<.05	0.038	0.001	<.04	99.3	<.002	<.005	0.087	0.037	0.09	4	0.014	55.2	0.23	0.006	4	0.027	1.68	0.03	111	<.03	<.03	4.1	<.01	0.406	0.009	<.005	<.03	1.63
3/6/2000	<.003	0.61	<.005	<.05	0.095	0.001	<.05	218.8	0.02	0.01	0.033	0.024	0.55	8	<.005	169.3	0.47	0.006	10	0.062	2	0.11		<.03	<.005	3.7	<.01	0.994	0.035	<.005	<.03	7.14
11/6/2001	<.003	0.11	<.005	0.16	0.099	<.001	<.05	156.7	0.003	0.01	0.02	0.01	0.05	6	0.02	120.4	0.75	<.002	10	0.081	<1	<.01	204	0.05	<.005	4.4	<.01	0.719	<.005	<.005	<.03	4.5
STATION: X26																																
17/12/91												0.001										0.059										54.3
3/2/1992												0.001										0.063										69.7
10/3/1992												0.001										0.004										4.63
24/11/92												1.1										0.002										68.5
26/11/94													11.5																			36.5
7/6/1995	<0.003	2.1	0.21		0.048	<0.001	<0.04	442.5	0.013	0.356	0.006	0.008	29.7		<0.005	136	7.57	<0.002	21	0.854	1.56	0.05		0.03		2.82		2.08	0.008	0.007	<0.02	43.53
23/04/96	<.003	1.64	0.13		0.076	0.004	<.04	395.6	0.035	0.334	<.005	0.008	34.86		<.005	125.7	10.15	<.002	22	0.962	<.04	0.2	489	0.1		2.56		2.16	0.007	<.005	<.03	52.13
28/04/97	<.003	0.05	<.02	<.05	0.172	0.005	<.04	371.5	0.047	0.66	<.005	0.017	58.26	10.4	0.025	171.6	14.17	<.002	39	1.232	0.45	0.1	600	0.1	<.03	3.55	0.01	2.342	0.009	<.005	<.03	57
12/5/1997	<.003	0.41	0.06	<.05	0.068	0.004	0.05	453.7	0.033	0.455	<.005	0.004	68.93	12	<.005	203.1	15.33	<.002	30	1.25	0.13	0.22	584	<.03	<.03	3.7	<.01	2.666	0.012	<.005	0.18	76.59
23/06/97	0.006	0.76	0.06	0.16	0.036	0.005	<.04	470.3	0.049	0.415	<.005	0.036	39.08	14	0.02	159.3	9.9	<.002	26	1.198	0.79	<.02	496	0.06	<.03	4	0.01	2.524	0.011	<.005	<.03	53.63
15/07/97	0.013	0.45	0.04	0.23	0.013	0.002	<.04	603.6	0.061	0.519	<.005	0.051	26.38	14	0.031	184.1	11.64	0.074	32	1.495	7.95	0.39	601	0.13	<.03	6.9	<.01	2.97	0.033	<.005	1.49	55.47
12/8/1997	0.003	0.31	<.02	<.05	0.011	0.003	<.04	478.5	0.057	0.521	0.019	0.05	41.88	15	0.021	171.8	12.21	0.08	32	1.23	7.42	0.36	563	0.16	<.03	7.2	<.01	2.6	0.018	<.005	<.03	64.42
22/09/97	0.008	0.31	<.02	<.05	0.012	0.002	0.06	501.1	0.072	0.553	<.005	0.074	73.55	15	0.043	186.8	13.26	0.107	33	1.324	8.04	0.38	715	0.35	<.03	6.1	<.01	2.744	0.03	0.02	2.04	77.06
20/10/97	0.004	0.32	<.02	<.05	0.104	0.006	<.04	445.9	0.043	0.481	<.005	0.023	71.92	18	<.005	177.5	12.14	<.002	34	1.218	0.19	0.13	609	0.16	<.03	3.8	<.01	2.326	0.009	<.005	<.03	75.97
18/11/97	<.003	0.37	<.02	<.05	0.117	0.014	<.04	491.7	0.051	0.603	<.005	0.022	89.01	24	0.009	196.9	15.65	<.002	39	1.398	0.52	0.03	666	0.1	<.03	4.1	<.01	2.722	0.016	<.005	0.49	85.39
9/12/1997	0.025	0.57	0.21	0.15	0.103	0.011	<.04	535.4	0.043	0.72	<.005	0.026	106	28	<.005	226.6	16.99	0.011	46	1.646	0.32	0.06	734	0.16	0.58	5.3	0.1	3.222	0.014	<.005	0.72	104.18
12/1/1998	<.003	<.05	<.02	0.06	0.104	0.002	<.04	403.4	0.043	0.653	<.005	0.007	121.83	13	<.005	193	16.6	<.002	40	1.379	0.18	<.02	663	0.07	<.03	4	<.01	2.477	<.005	<.005	0.03	100.8
18/05/98	<.003	0.44	<.02	0.23	0.014	0.002	<.04	516.7	0.081	0.493	<.005	0.067	50.54	14	<.005	190.6	11.53	0.05	35	1.233	6.6	0.26	496	0.13	<.03	6.4	<.01	2.759	0.024	0.016	<.03	67.43
16/06/98	<.003	0.38	0.05	<.05	0.093	0.003	<.04	510	0.064	0.599	0.112	0.069	57.96	15	<.005	199.5	12.91	0.067	38	1.343	14.46	0.45	526	0.14	<.03	5.2	<.01	2.644	0.035	<.005	0.56	72.36
17/05/99	0.005	0.27	<.005	<.05	0.092	0.005	<.04	413.3	0.073	0.594	<.005	0.047	118.65	14	<.005	204.8	15.51	0.058	40	1.386	15.09	0.42		0.04	<.03	5	<.01	2.547	0.011	<.005	<.03	95.45
27/07/99	<.003	0.2	0.005	0.12	0.174	0.005	<.04	429.1	0.011	0.571	<.005	0.019	143.5	6	<.005	180.5	11.08	0.011	30	0.944	1.72	<.01	642	<.03	<.005	5	<.01	3.112	<.005	<.005	0.06	50.11
26/06/00	<.003	0.62	<.005	<.05	0.082	0.005	<.05	525.5	0.072	0.623	<.005	0.056	30.64	18	<.005	217.8	14.01	<.002	43	1.443	17	<.01		0.41	<.005	5.7	<.01	2.718	0.074	0.028	<.03	70.56
25/07/00	<.003	0.39	<.005	<.05	0.087	0.005	<.05	505.1	0.071	0.45	<.005	0.056	21.05	15	0.106	169.9	9.81	0.066	34	1.212	11	<.01		0.07	<.005	5.6	<.01	2.656	0.058	0.034	<.03	57.7
29/08/00	<.003	0.71	<.005	<.05	0.071	0.003	<.05	626.8	0.108	0.767	<.005	0.061	90.11	20	<.005	266.1	16.74	0.08	50	1.832	13	<.01		0.32	<.005	7.5	<.01	3.07	0.053	<.005	<.03	99.04
25/09/00	<0.02	<0.1	<0.4	<0.2	<0.02	<0.01	<0.2	529	0.025	0.6	<0.02	<0.02	70.3	15		260	15.8	<0.02	44	1.4	<0.6	<0.1		<0.4	<0.4	5.6	<0.06	2.98	<0.02	<0.06		99
17/06/01	<.003	0.19	<.005	0.12	0.115	<.001	<.05	505.3	0.024	0.539	<.005	0.007	33.22	16	0.04	211.6	6.23	<.002	53	1.375	<1	0.04	645	<.03	<.005	8.5	0.01	3.286	0.014	<.005	<.03	74
14/07/01	<.003	0.07	0.009	0.11	0.142	<.001	<.05	510.6	0.027	0.494	<.005	<.002	7.08	15	0.022	209.3	12.48	<.002	38	1.518	<1	0.01	639	<.03	<.005	11.2	<.01	3.081	<.005	<.005	<.03	64.39
14/08/01	<0.003	0.19	<0.005	<0.05	0.122	<0.001	<0.05	458	0.024	0.639	<0.005	0.016	33.99	17	0.014	261.3	15.12	<0.002	56	1.578	<1	0.02	745	<0.03	<0.005	10.7	<0.01	3.291	<0.005	<0.005	<0.03	91.81
17/09/01	<0.003	0.14	<0.005	<0.05	0.089	<0.001	<0.05	414.1	0.026	0.653	<0.005	<0.002	38.81	15	0.031	234	18.43	<0.002	58	1.516	<1	0.02	694	<0.03	<0.005	9.2	<0.01	2.969	<0.005	<0.005	<0.03	100.72
STATION: X23																																
10/10/1986												0.01					12.7		42			0.04										30
23/10/86												0.02										0.02										30
31/10/86												0.01										0.02										34.7
6/11/1986												0.01										0.02										37.7
13/11/86												0.01										0.02										34.7
21/11/86												0.01										0.01										35
28/11/86												0.01										0.02										35.7
4/12/1986												0.01					14.85		45			0.01										34.5
10/12/1986												0.01					14.8		45			0.01										36
16/12/86												0.01					17.2		43.9			0.02										35.1
23/12/86												0.01					15		52			0.09										35.9
31/12/86												0.02					13.8		46			0.02										40.4
7/1/1987												0.02					8.31		29			0.03										37.5
15/01/87												0.02					11.3		34			<0.01										31.3
20/01/87												0.02					8.95		29.5			<0.01										31
28/01/87												0.02					9.18		29			0.02										26.5
3/2/1987												0.01					7.33		24.5			0.01										22.1
10/2/1987												<0.01					10.3		33.5			0.01										29.8
17/02/87												<0.01					2.6		16.4			0.02										12
24/02/87												0.01					3.8		16.9			0.02										14
3/3/1987												0.1					4.02		15.5			0.02										13.8
10/3/1987												<0.01					2.88		17.3			<0.01										10.3
17/03/87												<0.01					6.87		22.5			<0.01										15.6
24/03/87												<0.01					1.98		14.4			0.03										8.5
1/4/1987												0.01					2.31		19.8			0.05										9.4
7/4/1987												0.07					3.45		15.4			0.02										11.4
14/04/87												0.02					3.86		20			0.05										19.8
20/04/87												0.02					3.4		18			0.04										20.4
28/04/87												0.04					8.6		18.5			0.08										20.6
5/5/1987												0.02					4.7		18.7			0.13										40
12/5/1987												0.01					5.05		20			0.09										44.9
19/05/87												0.04					4.56		19.5			0.2										37.4
26/05/87												0.01					4.63		14.7			0.1										37.3
4/6/1987												<0.01					4.74		19.6			0.03										25.1
11/6/1987												0.01					4.75		22			0.05										21.8
16/06/87												0.03					5.2		27			0.13										35.8
26/06/87												<0.01					10.7		33.5			0.01										32.4

Table C10. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
30/06/87												0.01					11.5		33.5			0.01										30.8
6/7/1987												0.01					10.8		34.5			0.01										28.4
13/07/87												0.01					11.95		36			0.03										28
23/07/87												<0.01					11.7		37			0.03										28.6
28/07/87												<0.01					12.25		37.5			0.03										27.9
4/8/1987												<0.005					11		34			0.05										26.1
11/8/1987												<0.005					9.95		34			0.02										24.7
18/08/87												<0.005					11.25		39			0.02										26.5
25/08/87												0.01					11.85		41.5			0.05										28.7
1/9/1987												<0.005					11.6		41.6			0.01										27.9
8/9/1987												<0.005					12.15		41			0.01										27
15/09/87												<0.01					12.35		42			0.01										26.6
21/09/87												<0.005					12.45		42			<0.005										26.5
2/10/1987												<0.005					12.7		41.5			<0.005										25.1
8/10/1987												<0.005					15.3		42			<0.005										25.5
13/10/87												<0.005					12.7		41.5			0.01										24.9
20/10/87												<0.005					13.15		42			<0.005										24.7
27/10/87												<0.005					13		42			<0.005										24.5
3/11/1987												<0.005					12.75		43			<0.005										24.1
10/11/1987												<0.005					13.1		42			<0.005										23.5
17/11/87												<0.005					13		40.5			<0.005										21.9
24/11/87												<0.005					13.15		40.5			<0.005										22.2
1/12/1987												0.01					13		39.5			0.01										20.9
9/12/1987												0.01					12.75		40.5			0.01										19.6
15/12/87												0.11					13		34.3			0.12										27.6
23/12/87												0.02					12.8		33.3			0.15										37.5
30/12/87												0.02					12.6		28.7			0.15										27.5
5/1/1988												0.009					13.3		38			0.01										24.5
12/1/1988												0.01					13.95		39.5			0.013										25.1
19/01/88												0.007					14.1		39			0.01										27.8
27/01/88												0.008					12.7		39			0.01										22.5
2/2/1988												0.009					12		37			0.01										18.5
11/2/1988												0.09					12.1		36			0.032										18.5
17/02/88												0.01					11.7		35.5			0.032										20.4
24/02/88												0.045					12.4		36			1.1										22.7
2/3/1988												0.011					12		35.5			0.055										22.5
9/3/1988												0.012					12.4		36.5			0.033										21.8
16/03/88												0.007					12.3		37			0.025										20
23/03/88												0.014					12.6		37.5			0.02										19.9
29/03/88												0.013					13.2		37.5			0.034										20.2
5/4/1988												0.011					12.7		38			0.032										18.9
12/4/1988												0.015					13.4		37			0.101										19.9
20/04/88												0.009					11.4		33.5			0.023										16.3
25/04/88												0.01					12.6		36			0.055										23.4
4/5/1988												0.021					13.3		36			0.171										23
11/5/1988												0.006					14		37			0.02										26.5
19/05/88												0.009					13.7		39			0.077										22.5
25/05/88												0.006					12.3		39.5			0.022										19.7
1/6/1988												0.013					11.9		37			0.173										18.2
7/6/1988												0.006					13.5		41			0.023										18.5
15/06/88												0.006					12.4		44			0.017										17.5
23/06/88												0.005					14.7		39.5			0.01										19.5
28/06/88												0.005					14.2		39			0.022										17.7
6/7/1988												0.008					13.9		38			0.121										17.8
11/7/1988												0.007					16.9		41			0.016										21
20/07/88												0.008					14.5		40.5			0.026										23
27/07/88												0.008					7.1		28.5			0.039										26
4/8/1988												0.007					8.05		31.5			0.026										22.5
10/8/1988												0.008					8.65		29.5			0.058										24
16/08/88												0.007					12.8		32			0.029										28.5
24/08/88												0.007					10.05		32			0.032										22.1
31/08/88												0.009					6.4		29.5			0.04										18
9/9/1988												0.006					8.15		29.5			0.042										18.7
13/09/88												0.01					8.2		30.5			0.083										19.5
22/09/88												0.014					8.65		30			0.065										22
29/09/88												0.022					8.25		29.5			0.05										22.5
6/10/1988												0.011	0.35				9.3		31			0.035										22.5
14/10/88												0.012	0.12				13.8		38.5			0.023										22.5
19/10/88												0.014					14.4		30			0.033										22.6
26/10/88												0.019	0.95				12.2		38.5			0.28										23
1/11/1988												0.014					10.7		40			0.025										23.5
8/11/1988												0.013					7.15		31			0.056										19.5
14/11/88												0.007					6.3		30			0.05										18.5
21/11/88												0.008					7.75		31.5			0.043										17.5
30/11/88												0.2	16.5				10.7		36.5			3.7										22
7/12/1988												0.053	3.95				10.7		35.5			1.2										20.6
21/12/88												0.01					12.3		41.5			0.05										20
28/12/88												0.006	0.08				10		39			0.036										18.7
6/1/1989												0.011					12.2		40.5			0.033										18.9
11/1/1989												0.015					11.4		40			0.067										19.2
17/01/89												0.014	0.115				12.3		39.5			0.03										19
23/01/89												0.012	0.17				13.5		40.5			0.033										17.6
2/5/1989												0.03					22.5		44			0.15										118
8/5/1989												0.032	0.9				15.3		39.5			0.18										81
16/05/89												0.015					13.85		40			0.047										0.08
23/05/89												0.014					13.8		36.5			0.03										5.72
29/05/89												0.013					12.8		36			0.038										26.2
5/6/1989												0.01					12.1		35			0.034										45.9
12/6/1989												0.013	0.1				13.4		34			0.044										4.91
26/06/89												0.004	0.039				2.4		37			0.134										15

Table C10. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/7/1989												0.005	0.017				0.543		4.9			0.081										7.54
10/7/1989												0.002	0.005				0.478		4			0.113										5.53
17/07/89												0.005	0.005				0.9		11.9			0.02										7.2
25/07/89												0.009	0.05				3.88		39			0.031										33.3
31/07/89												0.005	0.068				3.04		30.5			0.011										32.1
7/8/1989												0.005	0.031				2.72		39.5			0.279										24.7
14/08/89												0.008	0.011				0.262		3.5			0.034										8.55
21/08/89												0.01	0.008				4.47		34.5			0.27										43.7
28/08/89												0.004	0.009				2.6		46			0.075										51.6
5/9/1989												0.022	1.65				2.85		33			0.431										34
11/9/1989												0.004	0.034				3.1		40			0.064										44.6
18/09/89												0.019	2.15																			32.5
18/09/89												0.019	2.15				2.75		34			0.282										32.5
25/09/89												0.006	0.53				0.095		3.6			0.057										7.22
2/10/1989												0.012	2.07				2.34		32.5			0.321										3.25
10/10/1989												0.01	0.069				2.51		28.5			0.022										33.7
16/10/89												0.008	1.52				0.296		5			0.169										9.59
23/10/89												0.012	1.62				0.061		3.3			0.098										7.02
30/10/89												0.004	0.459				0.04		3.3			0.045										7.04
6/11/1989												0.007	0.85				0.058		3.2			0.087										6.94
15/11/89												0.01	1.99				0.148		3.3			0.349										8.58
20/11/89												0.003	0.176				0.031		3.1			0.011										6.63
27/11/89												0.003	0.46				0.035		3			0.011										6.84
4/12/1989												0.002	0.15				0.27		2.9			0.019										6.12
11/12/1989												0.004	0.167				0.032		2.7			0.02										5.85
18/12/89												0.003	0.185				0.028		4			0.028										5.74
3/1/1990												0.009										0.111										23.5
8/1/1990												0.005										0.029										23.8
15/01/90												0.009										0.03										25.6
22/01/90												0.007										0.075										24.6
1/2/1990												0.008										0.061										20.8
5/2/1990												0.007										0.03										20.7
12/2/1990												0.01										0.103										20.1
19/02/90												0.006										0.01										20.4
26/02/90												0.02										0.03										0.35
12/3/1990												0.009																				20.2
5/4/1990												0.009	0.214																			26.8
17/04/90												0.011																				33.2
1/5/1990	<0.01	<0.05	<0.05	0.02	0.029	<0.001		403	0.022	0.167	<0.005	0.011	0.253	10		166	10.7	<0.01	37.9	0.41	<0.1	<0.05		<0.05	<0.05	6.8	<0.05	2.01	<0.002	<0.01		41.5
2/5/1990												0.013																				35.5
14/05/90												0.011																				35.5
11/6/1990												0.011																				32
5/7/1990												0.009	0.083																			30
11/7/1990	<0.01	<0.05	<0.05	0.03	0.027	<0.001		505	0.018	0.125	<0.005	0.005	0.096	9		183	11.9	<0.01	37.3	0.3	0.1	<0.05		<0.05	<0.05	7.73	<0.05	2.17	<0.002	<0.01		29.1
11/8/1990												0.008	0.108																			26.8
2/1/1991												0.49																				22.7
4/2/1991												0.011																				30.7
4/3/1991												0.001																				21.3
4/4/1991												0.05																				36.8
1/5/1991												0.001																				120
3/6/1991												0.001																				45.3
2/7/1991												0.009																				40.2
2/7/1991												0.009																				40.2
5/8/1991												0.001																				30.7
3/9/1991												0.001																				32.1
8/9/1991												0.001	0.07																			35
7/10/1991												0.001																				26.7
6/11/1991												0.001																				32.1
2/12/1991												0.001																				7.11
13/10/92												0.017										0.11										42.8
25/11/92												0.019										0.21										35.7
20/01/93												0.012										0.017										31.3
26/04/93												0.018										0.02										65.2
26/05/93												<0.002										<0.003										135
24/06/93												0.003										0.003										112
31/08/93												0.008										0.003										78.5
1/9/1993												0.009										0.004										74.6
30/09/93								685		0.23		0.009	0.19			385				0.55		0.004										74.6
25/10/93								659		0.206		0.014	0.25			375				0.48		0.01										78.3
1/11/1993												0.007										<0.03										64.7
1/12/1993								678		0.195		0.007	0.24			365				0.48		<0.03										64.7
13/12/93								663		0.188		0.008	0.12			373				0.46		<0.03										62.2
1/1/1994												0.009										<0.03										65.6
17/01/94								771		0.192		0.009	0.17			382				0.46		<0.03										65.5
31/01/94								793		0.187		0.009	0.14			385				0.45		<0.03										63.4
3/3/1994								787		0.177		0.011	0.22			358				0.43		0.03										59
26/04/94								733		0.161		0.007	0.2			345				0.4		<0.03										48.2
31/05/94								659		0.198		0.006	0.12			342				0.47		<0.03										62.1
27/06/94												0.008										<0.03										67.6
10/8/1994								660		0.17		0.008	0.09			350				0.45		<0.03										51.1
25/09/94								724		0.175		0.007	0.11			365				0.42		<0.03										47.7
15/10/94								680		0.185		0.008	0.11			397				0.45		<0.03										52.1
25/11/94												<0.002																				47.3
31/01/95												0.005					20.9					<0.03										40.6
1/2/1995												0.005										<0.03										40.6
22/02/95												0.007										<0.03										41.2
24/02/95	<0.030	<0.06	0.12		0.019	<0.001	0.02	666	0.009	0.158	<0.002	0.007	0.14			369	22.3	<0.004	51.9	0.39	0.21	<0.03	888	0.03		7.1		3.09	0.004	<0.003		41.2
6/3/1995												0.45										0.04										42.7
8/3/1995	<0.030	0.08	0.21		0.022	<0.001	<0.02	677	0.009	0.168	<0.002	0.009	0.13			373	24.3	<0.004	53.5	0.39	0.18	0.04	951	0.03		8.2		3.39	<0.003	<0.003		42.7
17/04/95	<0.030	<0.06	0.16		0.025	<0.001	<0.02	665	0.007	0.153	<0.002	0.008	0.16			350	19.7	<0.004	50.4	0.37	0.18	<0.03	850	<0.02		7.9		3.28	0.011	<0.003		35.5

Table C10. Surface Water Quality of Main Pits and Dumps, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
8/5/1995	<0.030	<0.06	0.14		0.024	<0.001	<0.02	671	0.007	0.147	<0.002	0.008	0.17			369	21.4	<0.004	62.3	0.36	0.19	0.04	873	0.03		7.8		3.33	0.016	<0.003		34.9
7/6/1995	<0.003	2.61	0.15		0.075	<0.001	<0.04	576.2	0.007	0.096	0.006	0.015	0.07		<0.005	318.3	17.84	<0.002	54	0.269	1.59	0.03		<0.02		3.45		2.978	0.009	0.006	<0.02	29.24
21/06/95												0.015										0.22										31.75
20/07/95	<0.003	3.01	0.1		0.084	0.01	<0.04	536.5	0.013	0.107	0.009	0.015	0.23		<0.005	299.3	15.72	<0.002	54	0.278	<0.04	0.22	854.4	<0.02		2.21		3.029	0.012	<0.005	<0.02	31.75
23/08/95	<0.003	3.65	0.24		0.066	0.008	<0.04	515.9	0.018	0.079	<0.005	0.025	0.16		<0.005	270.9	16.46	<0.002	46	0.276	0.94	0.08	969	0.14		2.19		2.822	0.009	<0.005	<0.02	29.3
18/09/95	<0.003	3.38	0.2		0.065	0.006	<0.04	477.6	0.032	0.121	<0.005	0.024	0.26		<0.005	270	17.33	0.006	48	0.32	0.64	0.07	806	0.07		5.15		2.822	0.015	<0.005	<0.02	32.78
16/10/95	<0.003	3.41	0.24		0.08	0.006	<0.04	536.4	0.01	0.093	<0.005	0.02	0.28		<0.005	317.5	15	<0.002	53	0.25	0.44	0.03	799	<0.02		2.23		3	0.015	<0.005	0.17	25.84
14/11/95	<0.003	2.62	0.22		0.089	0.007	<0.04	590.4	0.016	0.092	<0.005	0.038	0.39		<0.005	332.6	17.48	<0.002	51	0.23	0.5	0.1	789	0.07		3.5		2.98	0.011	<0.005	<0.02	28.03
11/12/1995	<0.003	3.2	0.33		0.086	0.006	0.18	504.7	0.017	0.143	<0.005	0.071	0.34		0.005	261.2	18.1	<0.002	41	0.271	<0.04	0.13	897	0.03		2.98		2.341	0.012	<0.005	<0.02	23.22
12/12/1995	<0.001	<0.01	<0.02		0.0236	<0.0002		609	0.006	0.11	<0.001	0.006	0.11	10		398	20.4	<0.005	55.1	0.265	1.1	0.064	920	<0.02	<0.02	8.02	<0.005	2.43	0.002	0.008		31.4
25/01/96	<.003	2.29	0.15		0.079	0.006	<.04	502.5	0.016	0.112	<.005	0.032	0.3		<.005	288.6	15.03	<.002	46	0.296	<.04	<.02	733	0.13		3.24		2.91	0.015	0.01	0.03	24.43
14/02/96	<.003	2.49	<.02		0.09	0.007	<.04	491.1	0.006	0.066	<.005	0.023	0.23		<.005	282.2	19.82	<.002	45	0.216	<.04	<.02	814	<.02		3.45		2.839	0.021	<.005	<.02	24.21
5/3/1996	<0.001	<0.01	<0.02		0.0241	<0.0002		873	0.0055	0.124	<0.001	0.01	0.202	12		389	23.9	<0.005	56.8	0.313	<0.06	0.029	888	<0.02	<0.02	9.51	<0.005	3.02	<0.001	0.029		32.9
22/03/96	0.004	1.56	0.02		0.101	0.005	<.04	472.3	0.022	0.101	<.005	0.023	0.4		<.005	266.8	19.22	<.002	42	0.257	0.11	0.02	704	0.03		2.25		2.644	0.017	0.007	<.03	24.15
9/4/1996	<.003	2.08	<.02		0.459	0.005	<.04	368	0.009	0.054	<.005	0.08	4.09		<.005	200.1	14.61	<.002	32	0.17	<.04	2.03	711	<.03		2.86		2.136	0.034	<.005	<.03	21.84
23/04/96	<.003	1.65	0.08		0.093	0.004	<.04	395	0.018	0.104	<.005	0.017	0.16		<.005	215.4	15.81	<.002	35	0.235	0.11	0.11	604	0.06		2.92		2.302	0.009	0.005	<.03	23.88
13/05/96	0.009	1.43	<.02		0.092	0.005	0.05	407	0.051	0.108	<.005	0.032	0.55		<.005	237.6	17.5	<.002	37	0.255	<.04	<.02	740	<.03		2.39		2.312	0.016	0.014	<.03	23.4
11/6/1996	<.003	0.74	<.02		0.081	0.024	<.04	496.1	<.002	0.074	<.005	0.034	0.31		<.005	293.2	21.92	<.002	48	0.272	<.04	<.02	745	<.03		3.35		2.906	0.019	<.005	<.03	30.49
17/07/96	<.003	0.4	<.02		0.093	0.017	<.04	495	0.008	0.118	<.005	0.018	0.32		<.005	283.7	20.02	0.008	44	0.311	<.04	<.02	1296	<.03		7.8		2.809	0.008	0.005	0.11	28.61
15/08/96	<.003	0.34	<.02		0.083	0.019	<.04	473.4	0.021	0.122	<.005	0.022	0.15		<.005	282.3	17.98	<.002	45	0.234	<.04	<.02	842	0.03		6.3		2.745	0.016	<.005	<.03	28.86
11/9/1996	0.01	0.59	<.02		0.144	0.016	<.04	472.1	<.002	0.095	<.005	0.025	0.58		0.012	285.5	19.69	<.002	42	0.259	<.04	<.02	894	<.03		8.4		2.609	0.009	0.006	0.13	27.41
21/10/96	<.003	0.07	<.02		0.099	0.018	<.04	531.8	0.022	0.212	<.005	0.049	0.88		<.005	315.7	18.49	<.002	57	0.272	<.04	<.02	823	<.03		8.4		3.039	0.012	0.008	<.03	28.19
21/11/96	0.031	0.19	<.02		0.118	0.016	0.12	478.5	0.011	0.119	0.005	0.021	0.17		<.005	297.5	16.73	<.002	58	0.287	<.04	<.02	895	<.03		6.7		2.831	0.007	<.005	<.03	24.87
19/12/96	<.003	0.05	<.02		0.126	0.022	<.04	547.5	0.007	0.116	<.005	0.03	0.24		<.005	339	19.65	<.002	55	0.31	<.04	<.02	822	<.03		7.6		3.254	0.014	<.005	<.03	27.74
20/01/97	<.003	1.79	0.28	3.79	0.113	0.007	<.04	487.6	0.012	0.1	0.013	0.026	0.23		<.005	297	20.35	<.002	47	0.247	0.19	0.06	650	0.03		6.53		2.852	0.022	<.005	<.03	27.69
24/02/97	0.006	1.15	<.02	5.32	0.12	0.007	<.04	581.8	0.008	0.094	0.014	0.028	0.19		<.005	344.6	15.8	0.021	57	0.273	0.18	<.02	719	<.02		9.48		3.285	0.02	<.03	<.02	23.02
18/03/97	0.015	2.91	0.03	<.05	0.052	0.018	<.04	501	0.014	0.139	0.008	0.023	0.21		0.108	302.6	18.92	0.028	42	0.225	1.12	0.02	688	0.11	<.005	5.3	0.06	2.698	0.009	<.005	0.71	21.01
15/04/97	0.006	0.33	<.02	0.09	0.056	0.011	<.04	495.6	0.01	0.068	<.005	0.029	0.21	13	<.005	278.1	17.7	<.002	38	0.338	0.07	0.02	705	<.03	<.03	6.2	<.01	2.769	0.006	<.005	<.03	43.09
13/05/97	<.003	0.63	<.02	<.05	0.081	0.006	<.04	553.4	0.03	0.091	<.005	0.023	0.15	9	<.005	370.2	23.36	<.002	48	0.298	<.04	0.11	784	<.03	<.03	5.8	<.01	2.998	0.008	<.005	0.03	42.01
23/06/97	0.01	1	<.02	0.21	0.058	0.01	<.04	519.6	0.022	0.038	<.005	0.025	0.4	13	0.02	324.5	18.33	0.009	41	0.299	0.91	<.02	726	0.05	<.03	5.6	<.01	2.866	0.017	<.005	<.03	27.62
15/07/97	<.003	0.51	<.02	0.15	0.027	0.003	<.04	603.1	0.031	0.139	<.005	0.06	0.37	14	0.042	369.7	22.9	0.025	53	0.357	5.02	0.15	741	<.03	<.03	8.7	<.01	3.33	0.034	<.005	0.93	31.11
12/8/1997	0.005	0.43	<.02	<.05	0.024	0.003	<.04	518	0.023	0.134	0.059	0.057	<.01	14	0.027	350.4	21.52	0.004	47	0.323	4.6	0.13	825	<.03	<.03	8.4	<.01	3.042	0.021	<.005	<.03	32.05
22/09/97	0.006	0.43	<.02	<.05	0.027	0.003	<.04	586.5	0.028	0.126	0.016	0.082	0.3	14	0.041	383.1	21.7	0.046	49	0.311	5.74	0.15	978	0.14	<.03	8.9	<.01	3.52	0.034	0.017	0.96	35.74
28/10/97	<.003	0.26	<.02	<.05	0.118	0.009	<.04	524.1	0.009	0.162	<.005	0.028	0.56	18	<.005	325.6	18.17	<.002	40	0.268	0.09	<.02	801	<.03	<.03	5.5	0.04	2.74	0.015	<.005	<.03	29.37
18/11/97	<.003	0.51	0.06	0.07	0.121	0.019	<.04	587.4	0.019	0.175	<.005	0.032	0.56	20	0.007	356.8	23.37	<.002	48	0.305	<.04	<.02	855	0.06	<.03	6.3	<.01	3.112	0.021	<.005	0.18	33.58
8/12/1997	<.003	0.64	0.04	0.08	0.101	0.014	<.04	579.1	<.002	0.16	<.005	0.032	0.37	17	<.005	373.6	22.49	<.002	49	0.312	<.04	<.02	862	0.05	<.03	6.9	0.03	3.252	0.017	<.005	0.14	36.26
24/02/98	0.009	0.66	<.02	0.29	0.045	0.003	<.04	540.4	0.021	0.135	0.094	0.054	0.64	12	0.029	373.7	19.42	0.02	48	0.28	3.12	0.32	856	0.13	<.03	8.1	<.01	3.058	0.034	<.005	<.03	29.68
17/03/98	0.019	1.26	0.06	<.05	0.427	0.003	<.04	592.9	0.025	0.147	0.116	0.134	6.79	12	0.041	396	20.19	0.036	52	0.284	2.97	2.04	2695	0.15	<.03	9.2	<.01	3.337	0.066	<.005	0.12	31.88
13/04/98	<.003	0.51	<.02	<.05	0.09	0.003	<.04	549.6	0.022	0.131	0.077	0.074	0.27	12	<.005	362	19.54	<.002	50	0.274	1.89	0.17	183	<.03	<.03	8.2	<.01	3.423	0.038	<.005	0.61	28.92
18/05/98	<.003	0.5	<.02	0.15	0.028	0.002	<.04	542	0.181	0.143	<.005	0.14	0.17	13	<.005	368.9	19.56	0.041	45	0.342	6.21	0.17	728	0.2	<.03	7.6	<.01	2.963	0.024	0.015	<.03	71.36
15/06/98	<.003	0.48	0.05	<.05	0.098	0.004	<.04	575.2	0.052	0.159	0.123	0.117	0.31	14	<.005	392.8	20.45	0.023	51	0.327	6.81	0.23	988	<.03	<.03	7.5	<.01	3.205	0.037	<.005	<.03	43.19
20/06/98	<.003	0.37	<.02	0.05	0.079	0.003	<.04	458.7	0.04	0.139	<.005	0.094	0.15	12	<.005	333.9	16.97	0.051	41	0.298	6.01	0.17		0.15	<.03	5.9	<.01	2.58	0.027	0.016	<.03	33.37
21/07/98	0.003	0.43	0.13	<.05	0.091	0.003	0.05	560.5	0.031	0.18	<.005	0.094	0.2	12	0.023	381.6	18.32	0.007	47	0.301	5.23	0.21	744	0.11	<.03	6.7	<.01	3.148	0.032	<.005	0.86	33.75
10/8/1998	0.018	0.68	0.14	<.05	0.014	0.003	<.04	563	0.072	0.168	<.005	0.104	0.93	13	0.094	367.9	19.5	0.049	45	0.342	5.88	0.56	987	0.23	<.03	7.1	<.01	3.181	0.03	<.005	0.07	41.65
25/09/98	0.005	0.38	0.03	<.05	0.13	0.003	0.04	616.6	0.034	0.139	<.005	0.066	0.25	14	0.04	422.3	21.48	0.034	52	0.3	8.38	0.25	917.2	0.11	<.03	8.6	<.01	3.739	0.044	0.028	0.67	40.5
19/10/98	0.008	0.46	<.02	0.12	0.03	0.003	<.04	558.8	0.031	0.142	<.005	0.063	0.37	14	<.005	417.5	20.71	0.013	54	0.359	6.27	0.09	1044.9	0.06	<.03	7.4	<.01	3.516	0.045	<.005	<.03	40.12
17/11/98	0.02	0.49	<.005	<.05	0.094	0.002	0.07	609.4	0.013	0.114	0.056	0.068	0.33	14	<.005	402.9	18.17	0.035	47	0.274	8.4	0.13	873	0.04	<.03	6.3	<.01	2.889	0.04	<.005	<.03	32.37
21/12/98	0.011	0.48	0.009	0.21	0.026	0.003	<.04	632.9	0.029	0.112	<.005	0.069	0.06	14	<.005	421.7	25.02	<.002	52	0.325	5.83	0.07	995	<.03	<.03	8.6	<.01	3.606	0.046	<.005	<.03	32.44
19/01/99	0.016	0.62	<.005	0.29	0.03	0.003	<.04	615.3	0.03	0.132	<.005	0.084	0.38	14	<.005	430	20.73	0.036	53	0.288	0.71	0.07	1044	<.03	<.03	8.7	<.01	3.582	0.047	0.01	<.03	32.56
22/02/99	<.003	0.79	<.005	0.27	0.034	0.003	<.04	712.2	0.032	0.139	0.011	0.077	0.21	15	0.057	465.3	23.81	0.069	60	0.262	8.44	0.1	1073	<.03	<.03	9.5	<.01	4.248	0.049	<.005	<.03	30.62
17/03/99	<.003	0.69	<.005	0.24	0.029	0.002	<.04	637.9	0.042	0.122	0.581	0.076	0.39	14	0.051	394	22.58	0.04	50	0.232	6.33	0.06	1025	<.03	<.03	8.4	<.01	3.442	0.043	<.005	<.03	35.69
17/05/99	<.003	0.42	<.005	<.05	0.105	0.006	<.04	509.7	0.755	0.444	<.005	0.263	0.48	14	<.005	401.3	31.95	0.419	39	0.818	48.74	1.86		0.85	<.03	7.6	<.01	3.093	0.021	<.005	0.12	363.43
3/7/1999	<.003	0.9	<.005	0.26	0.036	0.003	<.04	500.4	0.07	0.358	<.005	0.146	1.11	16	0.059	504	31.06	0.195	47	0.572	0.09	0.01	1148	0.04	<.03	10	<.01	4.052	0.025	<.005	<.03	123.96
12/8/1999	<.003	0.69	0.028	0.18	0.192	0.008	<.04	573.7	0.01	0.134	<.005	0.061	0.32	21	<.005	432.6	23	<.002	51	0.391	<.04	<.01	1042	<.03	<.005	9.3	<.01	3.683	0.019	<.005	<.03	84.41
10/9/1999	<.003	0.55	<.005	<.05	0.089	0.002	<.04	546.3	0.058	0.152	0.088	0.074	0.48	13	<.005	435.9	26.12	0.149	41	0.344	6.91	0.28	1080	0.2	<.005	6.9	<.01	3.172	0.038	0.006	<.03	64.97
29/10/99	<.003	1.4	0.169	0.06	0.208	0.009	<.04	489.6	0.01	0.038	<.005	0.023	0.23	11	0.032	384	27.59	0.007	46	0.304	0.33	0.21	987	0.22	<.005	6.1	<.01	3.111	0.011	<.005	<.03	70.81
22/11/99	<.003	0.79	<.005	<.05	0.114	0.004	<.04	458.9	0.049	0.168	<.005	0.081	2.68	15	<.005	423.4	27.07	0.159	44	0.402	16.45	0.44	1021	0.31	<.005	8.1	<.01	2.795	0.051	<.005	0.43	76.04
13/12/99	<.003	2.32	<.005	0.09	0.126	0.009	<.04	593.9	<.001	0.061	<.005	0.079	0.57	15	0.006	414.9	28.14	<.002	47	0.278	0.23	<.01	1007	<.03	<.005	5.6	<.01	3.172	0.024	<.005	<.03	81.15
26/01/00	<.003	0.83	<.005	<.05	0.112	0.004	<.05	597.8	0.059	0.227	<.005	0.09	0.5	18	<.005	458.1	25.77	0.109	50	0.254	12	0.33		<.03	<.005	7.8	<.01	3.416	0.07	<.005	0.23	81.04
28/02/00	<.003	0.92	<.005	0.08	0.1	0.003	<.05	580.6	0.046	0.129	<.005	0.08	2.82	18	<.005	463.8	23.93	0.111	56	0.294	1	0.27	1012	0.06	<.005	9.4	<.01	3.389	0.079	<.005	<.03	80.21
27/04/00	<.003	0.93	<.005	<.05	0.12	0.004	<.05	498.4	0.04	0.139	<.005	0.078	2.3	14	<.005	381.8	23.94	0.103	38	0.249	<1	0.26		0.13	<.005	8.2	<.01	3.198	0.088	<.005	<.03	57.45
15/05/00	<.003	0.64	0.081	<.05	0.092	0.002	<.05	516.8	0.458	0.306	<.005	0.646	0.64	14	0.106	449.8	28.1	0.379	40	0.473	26	1.02		0.7	<.005	8.6	<.01	3.164	0.048	<.005	<.03	222.61
26/06/00	<.003	0.78	<.005	<.05	0.089	0.006	<.05	568.5	0.059	0.169	<.005	0.158	0.31	17	<.005	422.8	24	<.002	51	0.359	13	<.01		0.27	<.005	7.9	<.01	3.285	0.082	0.029	<.03	61.64
25/07/00	<.003	0.61	<.005	<.05	0.097	0.005	<.05	570.6	0.071	0.214	0.005	0.121	0.84	16	0.091	432.7	25.53	0.115	57	0.335	11	<.01		0.09	<.005	8.1	<.01	3.635	0.069	<.005	<.03	70.73
29/08/00	<.003	0.91	0.005	<.05	0.096	0.004	<.05	669.6	0.448	0.386	<.005	0.235	3.2	20	<.005	523.7	30.98	0.245	53	0.722	36	<.01		0.7	<.005	9.4	<.01	3.582	0.061	<.005	<.03	223.56
25/09/00	<0.02	<0.1	<0.4	<0.2	0.02	<0.01	<0.2	616	0.078	0.74	<0.02	0.08	60	16		741	65.8	<0.02	58	1.1	<0.6	<0.1		<0.4	<0.4	8.1	<0.06	4.02	<0.02	<0.06		437
29/10/00	0.009	1.27	0.443	0.11	0.16	0.007	0.26	562.5	0.655	1.3	<.005	0.167	162.1	19	0.045	747	88.8	1.23	61	1.607	107	3.8	3848	2.78	<.005	10.7	<.01	4.155	0.124	<.005	0.09	1170
13/11/00	<0.003	0.21	<0.005	0.18	0.063	<0.001	<0.05	477.1	0.051	0.616	<0.005	0.012	79.82	19	0.032	628.1	69.45	<0.002	59	0.627	0.05	0.02	1438	<0.03	0.028	11.3	<0.01	3.626	<0.005	<0.005	0.04	432.12
18/11/00	<0.02	<0.1	<0.4	<0.2	<0.02	<0.01	<0.2	615	0.184	1.04	<0.02	0.02	176	15		907	93	<0.02	62	1.4	<0.6	<0.1		<0.4	<0.4	8.4	<0.06	4	<0.02	<0.06		845
14/12/00	<0.02	<0.1	<0.4	<0.2	0.02	<0.01	<0.2	560	0.13	0.85	<0.02	<0.02	84.5	15		718	79.2	<0.02	57	1.1	<0.6	<0.1		<0.4	<0.4	6.8	<0.06	3.64	<0.02	<0.06		648
13/01/01	0.013	1.12	0.157	0.08	0.107	0.007	<.05	471.1	0.424	0.656	0.072	0.093	76.4	17	0.101	587	58.31	0.887	54	0.9	87	2.99	1463	2.44	<.005	8.4	<.01	3.375	0.086	<.005	0.06	590
10/2/2001	0.007	1.38	0.338	0.13	0.145	0.01	0.46	529.9	0.332	0.452	<.005	0.175	57.17	22	<.005	609.9	58.53	0.808	56	1.025	106	2.32	1647	2.35	<.005	9.3	<.01	2.751	0.155	0.032	<.03	465
10/3/2001	<.003	2.24	<.005	0.56	0.95	<.001	<.05	691	0.084	0.179	<.005	0.09	88.05	5.85	<.005	728.06	85.87	<.002	89.19	0.718	2	<.01	1732.4	<.03	<.005	10.19	<.01	4.8	<.005	<.005	<.03	497
18/04/01	<.003	0.31	<.005	0.45	0.706	<.001	<.05	650.8	0.077	0.353	<.005	0.159	72.08	12	0.179	662.3	76.05	0.061	70	0.842	2	0.61	1378	1.13	<.005	8.6	0.14	4.49	0.101	<.005	<.03	383.16
14/05/01	<.003	1.08	<.005	<.05	1.111	<.001	<.05	474.2	0.003	<.005	<.005	0.083	28.82	25	<.005	418.6	37.54	0.171	18	0.474	<1	<.01	860	0.19	<.005	5	<.01	2.904	0.015	<.005	<.03	209.49
17/06/01	0.009	0.98	<.005	0.48	0.139	<.001	<.05	484	0.286	1.32	<.005	0.234	250.6	19	0.048	764.1	51.17	<.002	54	1.973	<1	0.06	1850	<.03	<.005	10.6	<.01	3.709	0.124	<.005	<.03	900
14/07/01	0.005	0.72	<.005	0.43	0.168	<.001	<.05	550.2	0.153	0.985	<.005	0.07	190.32	20	0.021	747.2	90.08	<.002	60	1.245	<1	0.04	1813	<.03	<.005	14	<.01	4.008	<.005	<.005	<.03	719.76
14/08/01	0.005	0.54	<0.005	<0.05	0.141	<0.001	<0.05	490.6	0.101	0.795	<0.005	0.037	127.46	18	0.024	710.1	66.05	<0.002	60	1.037	<1	<0.01	1577	<0.03	<0.005	12.3	<0.01	3.92	<0.005	<0.005	<0.03	562.91
17/09/01	0.004	0.37	<0.005	<0.05	0.09	<0.001	<0.05	358.4	0.061	0.558	<0.005	0.024	111	14	0.035	528.1	57.96	<0.002	54	0.733	<1	0.02	1147	<0.03	<0.005	9.9	<0.01	2.962	<0.005	0.005	<0.03	375.85
15/10/01	0.007	0.21	<0.005	0.27	0.123	<0.001	<0.05	455.2	0.063	0.67	<0.005	0.02	91.95	21	0.037	667.4	71.25	0.003	63	0.888	<1	0.01	1366	<0.03	<0.005	11.4	<0.01	3.731	<0.005	<0.005	<0.03	505.89
13/11/01	<0.003	0.21	<0.005	0.18	0.063	<0.001	<0.05	477.1	0.051	0.616	<0.005	0.012	79.82	19	0.032	628.1	69.45	<0.002	59	0.627	0.05	0.02	1439	<0.03	0.028	11.3	<0.01	3.626	<0.005	<0.005	0.04	432.12
15/12/01	0.008	1.21	0.125	0.19	0.802	0.005	<0.05	620.9	0.039	0.751	0.445	0.066	47.78	17	0.132	748.7	66.9	0.122	39	0.787	0.3	<0.01	1384	<0.03	0.044	11.4	0.54	3.852	<0.005	0.048	<0.03	387.41

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: FAROCR																																
23/04/96	<.003	3.24	<.02		0.097	<.001	<.04	22.6	0.003	<.005	<.005	0.021	6.37		<.005	7.1	0.28	0.003	<1	0.022	0.16	<.02	22	<.03		3.05		0.102	0.149	0.012	<.03	1.02
15/05/96	<.003	3.82	<.02		0.103	<.001	<.04	15.1	<.002	<.005	<.005	0.052	5.86		<.005	4.2	0.13	<.002	<1	<.005	0.09	<.02	44	<.03		3.77		<.002	0.137	<.005	<.03	0.65
13/05/97	<.003	1.13	<.02	0.15	0.058	<.001	<.04	4.7	<.002	<.005	<.005	0.014	2.49	<1	<.005	1.4	0.05	<.002	<1	<.005	0.08	0.4	2	<.03	<.03	1.9	<.01	0.027	0.034	<.005	<.03	0.15
23/06/97	<.003	<.05	<.02	0.1	0.004	<.001	<.04	4	<.002	<.005	<.005	<.002	0.21	<1	<.005	0.8	<.01	<.002	<1	<.005	0.31	<.02	<1	<.03	<.03	3.6	<.01	0.022	<.005	<.005	<.03	0.03
15/07/97	<.003	0.1	<.02	0.25	0.027	<.001	<.04	9	<.002	<.005	0.014	0.01	0.15	<1	<.005	2.1	<.01	<.002	3	<.005	0.38	<.02	2	<.03	<.03	5.7	<.01	0.052	<.005	<.005	<.03	0.07
19/05/98	<.003	0.54	<.02	0.21	0.034	0.02	<.04	4.3	<.002	<.005	0.045	0.033	0.71	1	0.03	1.6	0.02	<.002	2	0.013	0.94	0.02	18	<.03	<.03	1.9	<.01	0.022	0.009	<.005	<.03	0.16
15/06/98	<.003	<.05	<.02	<.05	0.104	<.001	<.04	8	<.002	<.005	0.025	0.024	0.03	<1	0.005	1.4	<.01	<.002	<1	<.005	0.34	<.02	<1	<.03	<.03	4.2	<.01	0.033	<.005	<.005	<.03	0.04
19/10/98	<.003	0.18	<.02	0.22	0.037	<.001	<.04	17.4	<.002	<.005	<.005	0.015	0.1	<1	<.005	3.1	<.01	<.002	3	0.066	3.11	<.02	3.9	<.03	<.03	5.1	<.01	0.074	0.015	<.005	<.03	0.02
17/05/99	<.003	0.26	<.005	<.05	0.128	0.002	<.04	15.7	<.001	<.005	<.005	0.032	0.79	<1	<.005	3	0.01	0.01	1	0.009	0.93	<.01		<.03	<.03	1.7	<.01	0.051	<.005	<.005	<.03	0.1
4/7/1999	<.003	0.35	<.005	0.28	0.022	<.001	<.04	6.1	0.005	<.005	<.005	0.011	0.04	<1	<.005	1.5	<.01	<.002	<1	<.005	0.06	<.01	2	0.04	<.03	6.2	<.01	0.034	<.005	0.009	<.03	0.09
30/10/99	<.003	0.07	<.005	0.05	0.112	<.001	<.04	9.3	<.001	0.008	<.005	<.002	0.07	<1	<.005	2.4	<.01	<.002	3	<.005	<.04	<.01	2	<.03	<.005	5	<.01	0.046	<.005	<.005	<.03	<.01
3/6/2000	<.003	0.66	<.005	<.05	0.083	<.001	<.05	3.3	<.001	<.005	0.037	<.002	0.83	2	<.005	0.9	0.01	<.002	<1	0.007	<1	0.03		<.03	<.005	3.8	<.01	0.043	0.038	<.005	<.03	0.08
12/6/2001	<.003	0.43	<.005	0.08	0.116	<.001	<.05	2.2	<.001	<.005	<.005	0.006	0.58	<1	<.005	0.7	<.01	<.002	2	<.005	<1	0.03	<1	<.03	<.005	1.1	<.01	0.019	0.006	<.005	<.03	0.03
13/06/01	<.003	0.34	<.005	<.05	0.164	<.001	<.05	2.3	0.002	<.005	<.005	0.008	0.49	<1	<.005	0.7	0.03	<.002	2	<.005	<1	<.01	<1	<.03	<.005	2.9	0.02	0.017	0.01	<.005	<.03	0.03
8/9/2001	<0.003	0.09	0.01	1.61	0.109	<0.001	<0.05	10.4	<0.001	<0.005	0.006	0.005	0.03	<1	<0.005	2.4	<0.01	<0.002	3	<0.005	<1	<0.01	2	<0.03	<0.005	6.1	<0.01	0.065	<0.005	<0.005	<0.03	<0.01
STATION: R8																																
6/10/1992												0.002										0.004										0.015
30/11/92												0.002																				
27/03/95	<0.030	<0.06	<0.04		0.077	<0.001	<0.02	48.6	<0.002	<0.004	<0.002	0.002	0.11			9.2	0.014	<0.004	3.7	<0.010	<0.04	<0.03	4.9	<0.02		6.4		0.2	<0.003	<0.003		0.02
18/04/95	<0.030	<0.06	<0.04		0.076	<0.001	<0.02	47.2	<0.002	<0.004	<0.002	<0.002	0.13			8.62	0.012	<0.004	3.6	<0.010	<0.04	<0.03	4.3	<0.02		6		0.189	<0.003	<0.003		0.02
7/6/1995	<0.003	0.1	<0.02		0.034	<0.001	<0.04	12.9	<0.002	<0.005	<0.005	0.004	0.35		<0.005	3.1	0.01	<0.002	1	0.005	<0.04	<0.02		<0.02		2.14		0.056	<0.005	0.012	<0.02	<0.010
20/07/95	<0.003	0.03	<0.02		0.012	<0.001	<0.04	19.4	<0.002	<0.005	<0.005	<0.002	0.25		<0.005	4.7	0.01	<0.002	1	<0.005	<0.04	<0.02	6.2	<0.02		1.59		0.092	<0.005	<0.005	<0.02	<0.010
23/08/95	<0.003	0.26	<0.02		0.042	<0.001	<0.04	19.1	<0.002	<0.005	<0.005	<0.002	0.25		<0.005	3.5	<0.010	<0.002	1	<0.005	<0.04	<0.02	3.7	<0.02		1.65		0.085	<0.005	<0.005	<0.02	0.01
16/10/95	<0.003	0.21	<0.02		0.049	<0.001	<0.04	27.3	<0.002	<0.005	<0.005	0.003	0.28		<0.005	5.6	0.03	<0.002	1	<0.005	<0.04	<0.02	8	<0.02		1.14		0.124	<0.005	<0.005	<0.02	0.01
14/11/95	<0.003	0.09	<0.02		0.074	0.001	<0.04	38.9	<0.002	<0.005	<0.005	0.008	0.17		<0.005	7.7	0.03	<0.002	1	0.008	<0.04	0.02	1	<0.02		2.74		0.164	<0.005	<0.005	<0.02	0.01
11/12/1995	<0.003	0.02	<0.02		0.054	<0.001	<0.04	35.5	<0.002	<0.005	<0.005	<0.002	0.17		<0.005	6.3	0.02	<0.002	2	<0.005	<0.04	<0.02	18	<0.02		2.41		0.129	<0.005	<0.005	<0.02	<0.010
25/01/96	<.003	0.02	<.02		0.073	<.001	<.04	32.4	<.002	<.005	<.005	0.006	0.21		<.005	6.5	0.02	<.002	2	<.005	<.04	<.02	1	<.02		2.37		0.163	<.005	<.005	<.02	0.01
14/02/96	<.003	0.05	<.02		0.079	<.001	<.04	34.6	<.002	<.005	<.005	<.002	0.19		<.005	7.1	0.01	<.002	1	<.005	<.04	<.02	8	<.02		2.74		0.172	<.005	<.005	<.02	<.01
22/03/96	<.003	0.06	<.02		0.068	<.001	<.04	32.6	<.002	<.005	<.005	<.002	0.09		<.005	6.6	<.01	<.002	2	0.005	0.09	<.02	3	<.03		1.51		0.162	<.005	0.006	<.03	<.01
10/4/1996	<.003	0.1	<.02		0.075	<.001	<.04	32.3	<.002	<.005	<.005	0.013	0.14		<.005	6.5	0.01	0.003	2	0.007	<.04	<.02	6	<.03		2.49		0.165	<.005	0.006	<.03	<.01
23/04/96	<.003	0.13	<.02		0.06	<.001	<.04	28	<.002	<.005	<.005	<.002	0.32		<.005	5.5	0.02	<.002	<1	<.005	<.04	<.02	7	<.03		2.34		0.128	<.005	<.005	<.03	<.01
15/05/96	<.003	0.19	<.02		0.031	<.001	<.04	9.7	<.002	<.005	<.005	0.018	0.62		<.005	1.8	0.03	<.002	<1	<.005	<.04	<.02	2	<.03		1.61		0.048	<.005	<.005	<.03	0.02
14/06/96	<.003	<.05	<.02		0.03	<.001	0.04	12.2	<.002	<.005	<.005	0.009	0.48		<.005	2.3	0.01	<.002	<1	<.005	<.04	<.02	3	<.03		0.84		0.06	<.005	<.005	<.03	0.01
17/07/96	<.003	<.05	<.02		0.004	<.001	<.04	4.9	<.002	<.005	<.005	<.002	0.14		<.005	1	<.01	<.002	<1	<.005	<.04	<.02	<1	<.03		5.2		0.027	<.005	<.005	<.03	0.04
14/08/96	<.003	0.05	<.02		0.04	<.001	<.04	16.8	<.002	<.005	<.005	<.002	0.23		<.005	3.5	0.02	0.003	1	<.005	<.04	<.02	3	<.03		3.9		0.08	<.005	0.005	<.03	<.01
17/09/96	<.003	0.05	<.02		0.086	<.001	<.04	11.9	<.002	<.005	<.005	0.002	0.48		<.005	2.3	0.02	<.002	1	0.005	<.04	<.02	1	<.03		6.3		0.058	<.005	<.005	<.03	0.02
25/10/96	<.003	0.05	<.02		0.039	<.001	<.04	23.6	<.002	<.005	<.005	0.025	0.4		<.005	4.8	0.04	<.002	4	0.008	0.11	<.02	3	<.03		5.3		0.114	<.005	<.005	<.03	0.02
21/11/96	<.003	<.05	<.02		0.103	0.003	<.04	29.3	<.002	<.005	<.005	<.002	0.19		<.005	6	0.04	<.002	2	<.005	<.04	<.02	2	<.03		4.1		0.142	<.005	<.005	<.03	<.01
19/12/96	<.003	0.05	<.02		0.081	<.001	<.04	36.5	<.002	<.005	0.01	<.002	0.15		<.005	7.2	0.01	<.002	5	<.005	0.05	<.02	4	<.03		4.4		0.17	<.005	<.005	<.03	0.03
14/01/97	<.003	0.05	<.02	<.05	0.15	<.001	<.04	33.2	<.002	<.005	<.005	0.007	0.11		<.005	7	0.02	<.002	2	0.009	<.04	<.02	8	<.03		4.36		0.161	<.005	<.005	<.03	<.01
26/02/97	<.003	0.05	<.02	<.05	0.086	<.001	<.04	39.2	<.002	<.005	<.005	<.002	<.01		<.005	8.1	<.01	<.002	3	<.005	<.04	<.02	3	<.02		6.49		0.191	<.005	<.03	<.02	<.01
11/3/1997	<.003	0.23	<.02	<.05	0.068	<.001	<.04	34.8	<.002	<.005	<.005	<.002	<.01		<.005	6.9	<.01	0.003	3	<.005	0.27	<.02	3	<.03	<.005	3.4	<.01	0.157	<.005	<.005	<.03	<.01
15/04/97	<.003	<.05	<.02	0.19	0.07	0.002	<.04	42	<.002	<.005	<.005	<.002	0.26	<1	<.005	7.9	<.01	<.002	3	0.009	<.04	<.02	3	<.03	<.03	5.8	<.01	0.188	<.005	0.005	<.03	<.01
13/05/97	<.003	0.36	<.02	0.12	0.032	<.001	<.04	7.4	<.002	<.005	<.005	<.002	0.97	<1	<.005	1.8	0.07	<.002	<1	<.005	0.04	0.02	<1	<.03	<.03	1.1	<.01	0.034	0.009	<.005	<.03	0.02
23/06/97	<.003	<.05	<.02	0.17	0.025	<.001	<.04	12.5	0.003	0.026	<.005	<.002	0.16	<1	<.005	2.5	<.01	<.002	<1	<.005	<.04	<.02	2	<.03	<.03	2	<.01	0.052	<.005	<.005	<.03	0.02
15/07/97	<.003	0.12	<.02	0.23	0.045	<.001	<.04	22.1	<.002	<.005	0.005	0.015	0.23	<1	<.005	4.6	<.01	0.009	3	<.005	<.04	<.02	2	<.03	<.03	4	<.01	0.096	<.005	<.005	<.03	0.07
12/8/1997	<.003	<.05	<.02	0.16	0.041	<.001	<.04	18.2	<.002	<.005	0.018	0.013	<.01	3	<.005	4.2	0.01	<.002	3	<.005	0.28	<.02	3	<.03	<.03	5.4	<.01	0.085	<.005	0.009	<.03	0.1
22/09/97	<.003	<.05	<.02	0.05	0.052	<.001	<.04	24.4	<.002	0.006	0.02	0.03	0.2	<1	<.005	4.9	<.01	<.002	2	<.005	0.94	<.02	3	<.03	<.03	4.4	<.01	0.114	<.005	<.005	<.03	0.06
31/10/97	<.003	<.05	<.02	<.05	0.1	<.001	<.04	29.6	<.002	<.005	<.005	0.003	0.13	<1	<.005	5.7	0.02	0.009	2	<.005	<.04	<.02	3	<.03	<.03	4.1	<.01	0.122	<.005	<.005	<.03	<.01
18/11/97	0.005	0.1	<.02	0.07	0.124	<.001	0.05	30.6	<.002	0.029	<.005	0.006	0.45	3	<.005	6	<.01	<.002	3	0.013	0.14	<.02	3	<.03	<.03	3.7	0.05	0.131	<.005	0.018	0.05	0.01
9/12/1997	<.003	<.05	<.02	<.05	0.119	<.001	<.04	33.3	0.004	0.045	<.005	0.005	0.15	1	<.005	6.6	0.02	<.002	4	<.005	<.04	<.02	3	<.03	<.03	3.9	<.01	0.146	<.005	<.005	<.03	<.01
19/05/98	<.003	0.39	<.02	0.22	0.037	<.001	<.04	8.5	<.002	<.005	0.015	0.028	0.6	1	<.005	2.2	0.07	<.002	2	0.01	<.04	0.03	2	0.06	<.03	1.7	<.01	0.035	0.008	<.005	<.03	0.06
15/06/98	<.003	<.05	<.02	<.05	0.105	<.001	<.04	15.4	<.002	<.005	<.005	0.033	0.16	<1	<.005	3.1	<.01	<.002	<1	<.005	1.87	<.02	4	<.03	<.03	3	<.01	0.062	<.005	<.005	<.03	0.05
19/10/98	<.003	0.18	<.02	0.2	0.058	<.001	<.04	27.1	<.002	<.005	<.005	0.014	0.11	<1	<.005	5.6	0.02	<.002	3	<.005	2.49	<.02	3.1	<.03	<.03	4.4	<.01	0.124	0.011	<.005	<.03	0.02
25/02/99	<.003	0.18	<.005	0.28	0.077	<.001	<.04	37.6	<.001	<.005	<.005	0.021	0.05	1	0.024	7.4	0.02	0.004	3	<.005	0.59	<.01	4	<.03	<.03	4.2	<.01	0.189	0.005	<.005	<.03	0.01
17/05/99	<.003	0.28	<.005	<.05	0.143	0.001	<.04	10.1	<.001	<.005	<.005	0.014	1.06	2	<.005	1.8	0.07	0.008	2	<.005	1.33	<.01		<.03	<.03	1.6	<.01	0.058	<.005	0.027	<.03	0.04
4/7/1999	<.003	0.37	<.005	0.49	0.047	<.001	<.04	17.8	<.001	<.005	<.005	0.011	0.93	<1	<.005	4.1	0.01	<.002	1	<.005	<.04	<.01	2	0.05	<.03	5.1	<.01	0.078	<.005	0.014	<.03	0.04
30/10/99	<.003	0.07	<.005	0.09	0.151	<.001	<.04	24.2	<.001	<.005	<.005	0.005	0.09	<1	0.023	4.9	0.02	<.002	4	<.005	<.04	<.01	3	<.03	<.005	4.1	<.01	0.115	<.005	<.005	<.03	0.01
26/03/00	<.003	0.41	<.005	0.07	0.18	<.001	<.05	41.5	<.001	0.015	<.005	0.003	0.08	4	<.005	8.3	0.06	<.002	7	<.005	<1	0.01	4	<.03	<.005	5.2	<.01	0.21	<.005	<.005	<.03	0.01
4/6/2000	<.003	0.34	<.005	<.05	0.102	<.001	<.05	9.1	<.001	<.005	0.028	<.002	0.73	2	<.005	1.7	0.02	<.002	1	0.009	<1	<.01		<.03	<.005	3.1	<.01	0.059	0.048	0.013	<.03	<.01
12/9/2000	<.003	0.14	<.005	<.05	0.133	<.001	<.05	21.4	<.001	<.005	<.005	0.025	0.1	<1	<.005	3.6	<.01	<.002	3	0.012	<1	<.01		<.03	<.005	4.6	<.01	0.036	<.005	<.005	<.03	0.06
5/3/2001	<.003	0.29	<.005	0.15	0.23	<.001	<.05	43	<.001	<.005	0.005	0.01	0.08	1.75	0.011	8.66	0.02	<.002	7.31	<.005	<1	<.01	4	<.03	<.005	5.51	<.01	0.21	0.007	0.005	<.03	<.01
13/06/01	<.003	0.36	<.005	<.05	0.157	<.001	<.05	4.1	0.003	<.005	<.005	0.009	0.55	<1	<.005	1	0.04	<.002	2	<.005	<1	<.01	<1	<.03	<.005	2.7	0.03	0.025	0.011	0.006	<.03	0.04
8/9/2001	<0.003	0.06	<0.005	1.99	0.148	<0.001	<0.05	25.8	<0.001	<0.005	<0.005	0.012	0.13	<1	0.009	4.8	0.03	<0.002	3	<0.005	<1	<0.01	2	<0.03	<0.005	4.8	<0.01	0.121	<0.005	<0.005	<0.03	<0.01
STATION: R9																																
5/10/1992												0.003										0.005										0.02
19/11/92												<0.001										0.002										<0.002
10/10/1993			<0.04					24.5		<0.004		<0.002	0.16			4.61	0.029			<0.01		<0.003										0.02
25/10/93								27.5		<0.004		<0.002	0.18			5.17				<0.01												0.02
14/03/94			<0.04					31		<0.004		<0.002	0.18			5.58	0.022			<0.01		<0.03										<0.01
25/10/94			<0.04					33.9		<0.004		<0.002	0.15			6.04	0.03			<0.01		<0.03										<0.01
27/03/95	<0.030	<0.06	<0.04		0.075	<0.001	<0.02	46.9	<0.002	<0.004	<0.002	<0.002	0.1			8.8	0.016	<0.004	3.6	<0.010	<0.04	<0.03	4.5	<0.02		5.9		0.191	<0.003	<0.003		<0.010
18/04/95	<0.030	<0.06	<0.04		0.079	<0.001	<0.02	50	<0.002	<0.004	<0.002	<0.002	0.13			9.11	0.024	<0.004	3.8	<0.010	<0.04	<0.03	4.8	<0.02		6.3		0.199	<0.003	<0.003		0.03
7/6/1995	<0.003	0.09	<0.02		0.033	<0.001	<0.04	13.9	<0.002	<0.005	<0.005	<0.002	0.25		<0.005	2.2	<0.010	<0.002	1	<0.005	<0.04	<0.02		<0.02		2.49		0.063	<0.005	<0.005	<0.02	0.02
20/07/95	<0.003	0.07	<0.02		0.004	<0.001	<0.04	21	<0.002	<0.005	<0.005	<0.002	0.21		<0.005	5.2	0.01	<0.002	1	<0.005	<0.04	<0.02	7.7	<0.02		1.93		0.1	<0.005	<0.005	<0.02	<0.010
23/08/95	<0.003	0.22	<0.02		0.036	<0.001	<0.04	19.1	<0.002	<0.005	<0.005	<0.002	0.21		<0.005	3.4	<0.010	<0.002	1	<0.005	<0.04	<0.02	2.5	<0.02		1.64		0.087	<0.005	<0.005	<0.02	0.01
16/10/95	<0.003	0.23	<0.02		0.054	<0.001	<0.04	27.8	<0.002	<0.005	<0.005	<0.002	0.23		<0.005	5.7	0.03	<0.002	1	<0.005	<0.04	<0.02	9	<0.02		1.23		0.125	<0.005	<0.005	<0.02	0.02
14/11/95	<0.003	0.11	<0.02		0.071	<0.001	<0.04	38.9	<0.002	<0.005	<0.005	<0.002	0.12		<0.005	7.7	0.03	0.004	1	0.005	0.04	<0.02	1	<0.02		2.7		0.157	<0.005	<0.005	<0.02	0.01
11/12/1995	<0.003	0.02	<0.02		0.061	<0.001	<0.04	38.7	<0.002	<0.005	<0.005	<0.002	0.16		<0.005	7.2	0.02	<0.002	1	<0.005	<0.04	<0.02	17	<0.02		2.46		0.147	<0.005	<0.005	<0.02	<0.010
25/01/96	<.003	0.02	<.02		0.063	<.001	<.04	34.7	<.002	<.005	<.005	0.008	0.13		<.005	7.4	0.01	<.002	2	<.005	<.04	<.02	1	<.02		2.39		0.174	<.005	<.005	<.02	<.01
14/02/96	<.003	0.04	<.02		0.075	<.001	<.04	35	<.002	<.005	<.005	<.002	0.16		<.005	7.4	0.02	<.002	1	<.005	<.04	<.02	6	<.02		2.63		0.174	<.005	<.005	<.02	<.01
12/3/1996	<.003	0.13	<.02		0.064	<.001	<.04	35.6	<.002	<.005	<.005	<.002	0.07		<.005	7.3	0.01	<.002	2	<.005	<.04	<.02	10	<.03		1.68		0.183	<.005	<.005	<.02	<.01
10/4/1996	<.003	0.06	<.02		0.073	<.001	<.04	33.6	<.002	<.005	<.005	0.01	0.08		<.005	6.9	0.01	0.007	2	<.005	0.18	<.02	7	<.03		2.5		0.173	<.005	0.005	<.03	<.01
23/04/96	<.003	0.13	<.02		0.058	<.001	<.04	27.9	<.002	<.005	<.005	<.002	0.3		<.005	6.1	0.03	<.002	<1	<.005	<.04	<.02	11	<.03	<.02	2.35		0.139	<.005	<.005	<.03	<.01
15/05/96	<.003	0.24	<.02		0.03	<.001	<.04	11.2	<.002	<.005	<.005	0.04	0.59		<.005	2.1	0.05	<.002	<1	<.005	<.04	<.02	2	<.03		2.08		0.057	<.005	<.005	<.03	0.02
14/06/96	<.003	<.05	<.02		0.035	<.001	0.05	13.5	<.002	<.005	<.005	<.002	0.28		<.005	3	<.01	<.002	<1	<.005	<.04	<.02	3	<.03		0.87		0.069	<.005	<.005	<.03	0.01
17/07/96	<.003	<.05	<.02		0.022	<.001	<.04	13.4	<.002	<.005	<.005	<.002	0.23		<.005	2.6	0.01	<.002	<1	<.005	0.06	<.02	3	<.03		4.2		0.061	<.005	<.005	<.03	0.01
14/08/96	<.003	0.05	<.02		0.039	<.001	<.04	16.3	<.002	<.005	<.005	<.002	0.14		<.005	4	0.01	0.002	<1	<.005	<.04	<.02	3	<.03		4		0.09	<.005	<.005	<.03	<.01
17/09/96	<.003	0.05	<.02		0.125	0.003	<.04	15.2	<.002	<.005	<.005	<.002	0.61		<.005	3.1	0.03	<.002	1	0.023	<.04	<.02	1	<.03		5.5		0.078	<.005	<.005	<.03	0.03
25/10/96	<.003	0.05	<.02		0.043	<.001	<.04	25	<.002	<.005	<.005	0.022	0.31		<.005	5	0.02	0.003	4	<.005	0.1	<.02	2	<.03		4.9		0.123	<.005	<.005	<.03	0.03

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21/11/96	<.003	<.05	<.02		0.078	0.003	<.04	33.1	<.002	<.005	<.005	<.002	0.14		<.005	6.9	0.02	<.002	2	<.005	<.04	<.02	2	<.03		4.5		0.16	<.005	<.005	<.03	0.01
19/12/96	<.003	0.05	<.02		0.089	<.001	<.04	36.9	<.002	<.005	0.009	<.002	0.13		<.005	7.4	0.02	<.002	5	<.005	<.04	<.02	4	<.03		4.2		0.175	<.005	<.005	<.03	0.03
14/01/97	<.003	0.06	0.03	<.05	0.133	<.001	<.04	38.5	<.002	<.005	<.005	0.007	0.07		<.005	8.1	0.02	0.008	1	<.005	<.04	<.02	5	<.03		4.62		0.186	<.005	<.005	<.03	0.02
26/02/97	<.003	0.05	<.02	<.05	0.087	<.001	<.04	39.9	<.002	<.005	0.007	<.002	0.01		<.005	8.7	0.01	<.002	3	<.005	<.04	0.04	4	<.02		6.85		0.197	<.005	<.03	<.02	0.01
11/3/1997	<.003	0.3	<.02	<.05	0.07	<.001	<.04	38.8	<.002	<.005	<.005	0.003	0.14		<.005	7.8	0.06	0.009	3	<.005	0.19	<.02	4	<.03	<.005	3.7	<.01	0.17	<.005	0.005	<.03	0.01
15/04/97	<.003	<.05	<.02	0.16	0.076	0.001	<.04	45.5	<.002	<.005	<.005	<.002	0.17	<1	<.005	8.7	<.01	<.002	3	<.005	<.04	<.02	5	<.03	<.03	5.8	<.01	0.205	<.005	<.005	<.03	<.01
13/05/97	<.003	0.28	<.02	0.06	0.03	<.001	<.04	8.4	<.002	<.005	<.005	<.002	0.78	<1	<.005	1.6	0.05	<.002	<1	<.005	0.06	0.07	<1	<.03	<.03	1.1	<.01	0.039	0.006	<.005	<.03	0.02
23/06/97	<.003	<.05	<.02	0.1	0.021	<.001	<.04	13.2	0.004	0.007	<.005	<.002	0.18	<1	<.005	2.8	<.01	0.003	<1	0.008	<.04	<.02	2	<.03	<.03	2	<.01	0.056	<.005	<.005	<.03	0.02
15/07/97	<.003	0.1	<.02	0.24	0.047	<.001	<.04	23.7	<.002	<.005	0.012	0.011	0.18	<1	<.005	5.2	<.01	<.002	3	<.005	0.4	<.02	1	<.03	<.03	4.1	<.01	0.108	<.005	0.005	<.03	0.07
12/8/1997	<.003	<.05	<.02	0.12	0.042	<.001	<.04	20.4	<.002	<.005	0.01	0.013	0.14	3	<.005	4.8	<.01	<.002	3	<.005	<.04	<.02	3	<.03	<.03	5.3	<.01	0.098	<.005	0.012	<.03	0.12
22/09/97	<.003	<.05	<.02	0.07	0.051	<.001	<.04	25.3	<.002	<.005	0.013	0.027	0.17	<1	0.008	5.2	<.01	<.002	2	<.005	0.44	<.02	4	<.03	<.03	4.3	<.01	0.121	<.005	<.005	<.03	0.06
27/10/97	<.003	<.05	<.02	<.05	0.111	<.001	<.04	29.8	<.002	<.005	<.005	0.012	0.09	<1	<.005	6.1	0.02	0.004	2	<.005	<.04	<.02	4	<.03	<.03	3.4	<.01	0.127	<.005	<.005	<.03	<.01
18/11/97	<.003	<.05	<.02	<.05	0.109	<.001	0.05	33.7	<.002	<.005	<.005	0.009	0.35	<1	<.005	6.7	<.01	0.004	3	0.009	0.06	<.02	5	<.03	<.03	3.8	0.05	0.148	<.005	0.016	0.04	<.01
9/12/1997	<.003	<.05	<.02	<.05	0.112	<.001	<.04	35.2	0.003	0.011	<.005	0.007	0.08	1	<.005	7.2	0.02	0.002	4	0.007	<.04	0.03	5	<.03	<.03	3.8	<.01	0.156	<.005	<.005	<.03	<.01
19/05/98	<.003	0.43	<.02	0.2	0.04	<.001	<.04	9.6	<.002	<.005	0.029	0.029	0.91	<1	<.005	2.4	0.06	<.002	2	0.009	<.04	<.02	1	0.05	<.03	2.1	<.01	0.042	0.009	<.005	<.03	0.07
15/06/98	<.003	<.05	<.02	<.05	0.111	<.001	<.04	17.3	<.002	<.005	0.03	0.031	0.16	<1	0.019	3.7	<.01	<.002	<1	<.005	0.78	<.02	5	<.03	<.03	2.8	<.01	0.071	<.005	<.005	<.03	0.06
20/10/98	<.003	0.22	<.02	0.18	0.054	<.001	<.04	27.2	<.002	<.005	<.005	0.012	0.17	<1	<.005	5.7	0.02	<.002	3	0.009	<.04	<.02	4.4	<.03	<.03	3.6	<.01	0.122	0.016	<.005	<.03	<.01
17/05/99	<.003	0.76	<.005	<.05	0.124	0.002	<.04	10.2	<.001	<.005	<.005	0.024	1.89	2	<.005	2	0.09	0.008	1	<.005	<.04	<.01		<.03	<.03	2	<.01	0.059	0.012	0.021	<.03	0.14
4/7/1999	<.003	0.41	<.005	0.28	0.048	<.001	<.04	19.3	<.001	<.005	0.021	0.01	1.32	<1	0.008	4.5	0.02	<.002	<1	<.005	<.04	<.01	3	<.03	<.03	4.7	<.01	0.083	<.005	0.01	<.03	0.09
30/10/99	<.003	0.14	<.005	0.13	0.151	0.001	<.04	25.8	<.001	<.005	<.005	0.008	0.07	3	0.039	5.3	0.02	<.002	4	0.008	<.04	<.01	4	<.03	<.005	4.2	<.01	0.123	<.005	<.005	<.03	0.01
4/6/2000	<.003	0.36	<.005	<.05	0.095	<.001	<.05	8.9	<.001	<.005	0.061	<.002	0.7	3	<.005	1.7	0.03	<.002	1	0.007	<1	<.01		<.03	<.005	3	<.01	0.056	0.042	0.012	<.03	<.01
12/9/2000	<.003	0.16	<.005	<.05	0.124	<.001	<.05	22.9	<.001	<.005	<.005	0.01	0.12	<1	<.005	3.9	0.02	<.002	3	0.007	4	<.01		<.03	<.005	4.4	<.01	0.058	<.005	<.005	<.03	0.06
5/3/2001	<.003	0.34	<.005	0.16	0.28	<.001	<.05	45	<.001	<.005	<.005	0.01	0.38	1.55	<.005	9.26	0.04	<.002	8.85	<.005	<1	<.01	6.5	<.03	<.005	6.37	<.01	0.21	0.008	<.005	<.03	0.05
13/06/01	<.003	0.52	<.005	0.05	0.102	<.001	<.05	6.1	<.001	<.005	<.005	0.004	0.69	<1	<.005	1.9	0.05	<.002	3	<.005	<1	<.01	1	0.03	0.026	2.9	0.03	0.041	0.017	<.005	<.03	0.04
8/9/2001	0.039	0.07	<0.005	1.88	0.131	<0.001	<0.05	27.7	<0.001	<0.005	<0.005	0.004	0.1	<1	0.011	5.3	0.02	<0.002	<1	<0.005	<1	<0.01	3	<0.03	<0.005	4.7	<0.01	0.133	<0.005	<0.005	<0.03	0.01
STATION: R10																																
5/10/1992												0.002										0.005										0.019
10/10/1993			<0.04					24.4		<0.004		<0.002	0.15			4.8	0.036			<0.01		<0.003										0.03
22/10/93			<0.04					28.4		<0.004		0.003	0.17			5.35	0.032			<0.01												0.04
14/09/94			<0.04					32.3		<0.004		<0.002	0.19			6.81	0.027			<0.01		<0.003										<0.01
25/10/94			<0.04					33.3		<0.004		<0.002	0.14			5.94	0.034			<0.01		<0.03										<0.01
27/03/95	<0.030	<0.06	<0.04		0.079	<0.001	<0.02	49.6	<0.002	<0.004	<0.002	0.005	0.12			9.33	0.021	<0.004	3.9	0.01	<0.04	<0.03	4.8	<0.02		6.2		0.202	<0.003	<0.003		0.04
18/04/95	<0.030	<0.06	<0.04		0.077	<0.001	<0.02	47.7	<0.002	<0.004	<0.002	<0.002	0.13			8.68	0.017	<0.004	3.6	<0.010	<0.04	<0.03	4.4	<0.02		6		0.192	<0.003	<0.003		0.02
7/6/1995	<0.003	0.12	<0.02		0.03	<0.001	<0.04	12.9	<0.002	<0.005	<0.005	<0.002	0.23		<0.005	2.4	<0.010	<0.002	1	<0.005	<0.04	<0.02		<0.02		2.5		0.063	<0.005	<0.005	<0.02	0.02
20/07/95	<0.003	0.05	<0.02		0.005	<0.001	<0.04	21.5	<0.002	<0.005	<0.005	<0.002	0.2		<0.005	5.2	0.01	<0.002	1	<0.005	<0.04	<0.02	4.6	<0.02		1.99		0.104	<0.005	<0.005	<0.02	<0.010
23/08/95	<0.003	0.21	<0.02		0.045	<0.001	<0.04	19.6	<0.002	<0.005	<0.005	<0.002	0.2		<0.005	3.5	<0.010	<0.002	1	<0.005	<0.04	<0.02	4.1	<0.02		1.65		0.089	<0.005	<0.005	<0.02	0.01
16/10/95	<0.003	0.26	<0.02		0.05	0.001	<0.04	27.5	<0.002	<0.005	<0.005	<0.002	0.25		<0.005	5.6	0.03	<0.002	1	<0.005	<0.04	<0.02	9	<0.02		1.29		0.125	<0.005	<0.005	<0.02	0.02
14/11/95	<0.003	0.12	<0.02		0.068	0.001	<0.04	36.2	0.004	<0.005	0.005	0.003	0.22		<0.005	7.1	0.03	<0.002	1	0.035	<0.04	<0.02	5	<0.02		2.55		0.142	<0.005	<0.005	<0.02	0.01
11/12/1995	<0.003	0.05	<0.02		0.054	<0.001	<0.04	37.6	<0.002	<0.005	<0.005	<0.002	0.18		<0.005	7	0.02	<0.002	2	<0.005	<0.04	<0.02	15	<0.02		2.44		0.14	<0.005	<0.005	<0.02	<0.010
25/01/96	<.003	0.02	<.02		0.063	<.001	<.04	36.4	<.002	<.005	<.005	0.005	0.18		<.005	7.6	0.02	<.002	2	<.005	<.04	<.02	1	<.02		2.44		0.184	<.005	<.005	<.02	0.01
14/02/96	<.003	0.07	<.02		0.073	0.001	<.04	33.6	<.002	<.005	<.005	<.002	0.15		<.005	7.1	0.02	<.002	1	<.005	<.04	<.02	7	<.02		2.57		0.168	<.005	<.005	<.02	<.01
12/3/1996	<.003	0.15	<.02		0.073	<.001	<.04	40.2	<.002	<.005	<.005	<.002	0.1		<.005	8.2	0.02	<.002	2	<.005	<.04	<.02	6	<.03		1.88		0.209	<.005	<.005	<.02	0.01
10/4/1996	<.003	0.07	<.02		0.069	<.001	<.04	32.8	<.002	<.005	<.005	0.013	0.11		<.005	6.8	0.01	0.008	2	0.007	0.12	<.02	4	<.03		2.46		0.169	<.005	0.006	<.03	<.01
23/04/96	<.003	0.31	<.02		0.06	<.001	<.04	27.8	<.002	<.005	<.005	<.002	0.4		<.005	6.2	0.03	0.003	<1	<.005	0.1	<.02	14	<.03	<.02	2.37		0.139	<.005	<.005	<.03	0.04
15/05/96	<.003	0.09	<.02		0.033	<.001	<.04	11.8	<.002	<.005	<.005	0.019	0.54		<.005	2.2	0.03	<.002	<1	<.005	0.06	<.02	2	<.03		1.48		0.06	<.005	<.005	<.03	0.02
14/06/96	<.003	<.05	<.02		0.03	<.001	<.04	13.2	<.002	0.006	<.005	0.019	0.28		<.005	2.9	<.01	<.002	<1	<.005	<.04	<.02	2	<.03		0.95		0.066	<.005	0.006	<.03	0.01
17/07/96	<.003	<.05	<.02		0.018	<.001	<.04	13.8	<.002	<.005	<.005	<.002	0.22		<.005	2.7	0.01	<.002	<1	<.005	<.04	<.02	<1	<.03		4.1		0.064	<.005	<.005	<.03	<.01
14/08/96	<.003	0.05	<.02		0.092	<.001	<.04	17.8	<.002	<.005	<.005	<.002	0.14		<.005	3.9	0.01	<.002	<1	<.005	<.04	<.02	3	<.03		4		0.088	<.005	<.005	<.03	<.01
17/09/96	<.003	0.05	<.02		0.1	0.001	<.04	15	<.002	<.005	<.005	<.002	0.61		<.005	2.9	0.03	<.002	1	0.018	<.04	<.02	1	<.03		5.3		0.079	<.005	<.005	<.03	0.02
25/10/96	<.003	0.05	<.02		0.059	<.001	<.04	27.7	<.002	<.005	<.005	0.036	0.13		<.005	5.7	0.02	<.002	4	<.005	<.04	<.02	2	<.03		5.9		0.134	<.005	<.005	<.03	0.03
21/11/96	<.003	<.05	<.02		0.066	0.003	<.04	30.8	<.002	<.005	<.005	<.002	0.15		<.005	6.4	0.02	<.002	2	<.005	<.04	<.02	5	<.03		4.2		0.149	<.005	<.005	<.03	0.01
19/12/96	<.003	0.05	<.02		0.086	<.001	<.04	37.9	<.002	<.005	0.007	0.006	0.11		<.005	7.7	0.01	<.002	5	<.005	<.04	<.02	3	<.03		4.4		0.18	<.005	<.005	<.03	0.06
14/01/97	<.003	0.11	<.02	<.05	0.123	0.002	<.04	37.5	<.002	<.005	<.005	0.007	0.12		<.005	7.7	0.02	0.006	1	0.011	0.06	<.02	4	<.03		4.44		0.184	<.005	<.005	<.03	0.02
26/02/97	<.003	0.05	<.02	0.33	0.092	<.001	<.04	39.9	<.002	<.005	<.005	<.002	0.16		<.005	8.1	0.02	0.009	3	<.005	<.04	<.02	3	<.02		6.89		0.195	<.005	<.03	<.02	0.01
11/3/1997	<.003	0.28	<.02	<.05	0.07	<.001	<.04	37.6	<.002	0.007	<.005	<.002	0.05		<.005	7.6	0.01	0.009	3	<.005	0.26	<.02	4	<.03	<.005	3.7	<.01	0.165	<.005	0.008	<.03	0.01
15/04/97	<.003	<.05	<.02	0.18	0.108	0.003	<.04	41.5	<.002	<.005	0.019	<.002	0.14	<1	<.005	7.9	<.01	0.004	3	0.008	<.04	<.02	5	<.03	<.03	5.3	<.01	0.187	<.005	<.005	<.03	<.01
13/05/97	<.003	0.24	<.02	0.16	0.024	<.001	<.04	8.4	<.002	<.005	<.005	<.002	0.73	<1	<.005	1.6	0.05	<.002	<1	<.005	<.04	0.05	<1	<.03	<.03	1.1	<.01	0.04	0.006	<.005	<.03	0.02
23/06/97	<.003	<.05	<.02	<.05	0.02	<.001	<.04	14.2	<.002	<.005	<.005	<.002	0.18	<1	<.005	2.9	<.01	0.002	<1	<.005	0.13	<.02	2	<.03	<.03	2.2	<.01	0.062	<.005	<.005	<.03	0.03
15/07/97	<.003	0.1	<.02	0.22	0.045	<.001	<.04	22.9	<.002	<.005	0.011	0.01	0.21	<1	<.005	5	<.01	0.013	3	<.005	1.88	<.02	1	<.03	<.03	3.8	<.01	0.105	<.005	0.007	0.29	0.06
12/8/1997	<.003	<.05	0.07	0.14	0.041	<.001	0.04	19.9	<.002	<.005	0.059	0.019	0.56	3	<.005	4.7	<.01	<.002	3	<.005	1.11	<.02	3	<.03	<.03	5	<.01	0.094	<.005	0.005	<.03	0.11
22/09/97	<.003	<.05	<.02	<.05	0.053	<.001	<.04	26.6	<.002	<.005	0.017	0.03	0.16	<1	<.005	5.4	<.01	<.002	2	<.005	0.38	<.02	4	<.03	<.03	4.5	<.01	0.127	<.005	<.005	<.03	0.06
27/10/97	<.003	<.05	<.02	<.05	0.109	<.001	0.05	30.6	<.002	<.005	<.005	0.013	0.07	<1	<.005	6.2	0.02	0.004	2	<.005	<.04	<.02	4	<.03	<.03	3.5	<.01	0.13	<.005	0.011	<.03	0.01
18/11/97	<.003	0.06	<.02	<.05	0.134	0.001	0.05	35.2	<.002	<.005	<.005	0.199	0.45	1	<.005	6.9	<.01	0.002	3	0.015	0.13	<.02	5	<.03	<.03	3.9	0.01	0.152	<.005	0.021	0.04	0.02
9/12/1997	<.003	<.05	<.02	<.05	0.119	<.001	<.04	37.5	<.002	0.023	0.007	0.005	0.1	2	<.005	7.5	0.02	<.002	4	0.012	<.04	<.02	5	<.03	<.03	4.1	<.01	0.165	<.005	<.005	<.03	0.01
19/05/98	<.003	0.39	<.02	0.17	0.038	<.001	<.04	8.9	<.002	<.005	<.005	0.024	0.81	<1	<.005	2.3	0.06	<.002	2	0.01	<.04	<.02	2	<.03	<.03	1.8	<.01	0.039	<.005	<.005	<.03	0.06
15/06/98	<.003	<.05	<.02	<.05	0.122	<.001	<.04	17.5	<.002	<.005	<.005	0.029	0.16	<1	<.005	3.7	<.01	0.004	<1	<.005	<.04	<.02	5	<.03	<.03	2.9	<.01	0.072	<.005	<.005	<.03	0.05
20/10/98	<.003	0.11	<.02	0.07	0.056	<.001	<.04	29.3	<.002	<.005	<.005	0.012	0.2	<1	<.005	5.7	0.02	<.002	3	0.007	<.04	<.02	4.4	<.03	<.03	3.3	<.01	0.126	0.011	<.005	<.03	<.01
17/05/99	<.003	0.43	0.038	<.05	0.12	0.002	<.04	10.3	<.001	<.005	<.005	0.017	1.17	2	<.005	2	0.07	0.017	1	<.005	<.04	<.01		<.03	<.03	1.6	<.01	0.059	<.005	0.02	<.03	0.08
4/7/1999	<.003	0.3	<.005	0.3	0.042	<.001	<.04	17.5	0.001	<.005	0.019	0.008	0.94	<1	0.016	4.1	0.02	<.002	<1	0.009	<.04	<.01	3	<.03	<.03	4.3	<.01	0.074	<.005	<.005	<.03	0.05
30/10/99	<.003	0.15	<.005	0.13	0.156	<.001	<.04	26.4	<.001	<.005	0.006	0.012	0.13	3	0.02	5.4	0.02	<.002	4	0.015	<.04	<.01	4	<.03	<.005	4.5	<.01	0.127	<.005	<.005	<.03	0.03
26/03/00	<.003	0.26	<.005	0.08	0.181	<.001	<.05	42.5	<.001	<.005	<.005	<.002	0.08	10	<.005	8.7	0.03	<.002	7	<.005	<1	<.01	5	<.03	<.005	5.4	<.01	0.217	<.005	<.005	<.03	0.01
3/6/2000	<.003	0.33	<.005	<.05	0.084	<.001	<.05	8.4	<.001	<.005	0.045	<.002	0.59	2	<.005	1.7	0.03	<.002	<1	<.005	<1	0.03		<.03	<.005	2.8	<.01	0.067	0.028	0.01	<.03	0.01
12/9/2000	<.003	0.23	<.005	0.07	0.122	<.001	<.05	22.7	0.001	<.005	<.005	0.021	0.11	<1	<.005	4.1	0.03	<.002	3	<.005	8	<.01		<.03	<.005	5.4	<.01	0.058	<.005	<.005	<.03	0.07
5/3/2001	<.003	0.37	<.005	0.12	0.25	<.001	<.05	45	<.001	<.005	0.012	0.03	0.04	3.25	0.008	9.49	0.04	<.002	8.33	<.005	<1	<.01	6.6	<.03	<.005	5.46	<.01	0.22	0.011	0.008	<.03	<.01
13/06/01	<.003	0.47	0.019	<.05	0.156	<.001	<.05	8	<.001	<.005	0.011	0.009	0.73	<1	<.005	1.9	0.11	<.002	3	<.005	<1	<.01	1	0.04	<.005	2.9	0.04	0.038	0.018	<.005	<.03	0.03
8/9/2001	0.011	0.06	0.011	1.7	0.125	<0.001	<0.05	26.3	<0.001	<0.005	0.036	0.003	0.23	<1	0.007	5.4	0.02	<0.002	3	0.024	<1	<0.01	3	<0.03	<0.005	4.7	<0.01	0.132	<0.005	<0.005	<0.03	<0.01
STATION: NF1																																
28/07/89												0.002	0.161																			0.051
18/09/89												0.002	0.38																			0.014
5/7/1990												0.002	0.149																			0.01
11/8/1990												0.001	0.12																			0.006
12/7/1991												0.001	0.251																			0.01
25/07/91												0.001	0.274																			0.109
11/9/1991												0.001	0.245																			0.046
22/09/97	<.003	<.05	<.02	<.05	0.05	<.001	<.04	24.9	<.002	0.011	0.028	0.031	0.43	<1	0.007	5.2	0.06	<.002	2	0.006	<.04	<.02	4	<.03	<.03	4.1	<.01	0.119	<.005	0.011	<.03	0.07
15/06/98	<.003	<.05	<.02	<.05	0.117	<.001	<.04	18.1	<.002	<.005	<.005	0.027	0.14	<1	<.005	3.8	<.01	0.004	<1	<.005	0.91	<.02	6	<.03	<.03	3	<.01	0.074	<.005	<.005	0.09	0.08
4/7/1999	<.003	0.19	<.005	0.19	0.032	<.001	<.04	14.5	0.003	<.005	<.005	0.005	0.92	<1	<.005	3.4	0.03	<.002	<1	<.005	<.04	<.01	3	0.05	<.03	3	<.01	0.07	<.005	<.005	<.03	0.03
30/10/99	<.003	<.05	<.005	<.05	0.153	<.001	<.04	26.2	<.001	<.005	<.005	0.01	0.81	<1	<.005	5.4	0.12	<.002	3	<.005	<.04	<.01	5	<.03	<.005	3.4	<.01	0.128	<.005	<.005	<.03	0.02
25/07/00	<.003	0.06	<.005	<.05	0.126	0.001	<.05	17.3	<.001	0.025	0.178	0.012	0.59	3	0.155	4.1	0.02	0.005	3	0.018	5	<.01		<.03	<.005	4	<.01	0.201	0.015	0.02	<.03	0.03
12/6/2001	<.003	0.34	<.005	0.05	0.109	<.001	<.05	8.6	<.001	<.005	0.005	0.007	0.6	<1	<.005	1.9	0.03	0.008	2	<.005	<1	<.01	<1	<.03	<.005	0.6	<.01	0.041	0.014	<.005	<.03	0.05
STATION: NF2																																

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/8/1989												0.001	0.093																			0.013
14/09/89												0.001	0.1																			0.02
5/4/1990												0.001	0.079																			0.051
5/7/1990												0.002	0.177																			0.01
11/8/1990												0.001	0.172																			0.011
25/07/91												0.001	0.295																			0.025
10/9/1991												0.001	0.115																			0.018
6/6/1996	<0.01	<0.2	<0.2	<0.1	0.04	<0.005	<0.1	14.8	<0.01	<0.01	<0.01	<0.01	0.29	<2		2.79	0.019	<0.03	<2	<0.02	<0.3	<0.05		<0.2	<0.2	3.68	<0.03	0.071	<0.01	<0.03		0.013
22/09/97	<.003	<.05	<.02	<.05	0.05	<.001	<.04	25.3	<.002	0.008	0.025	0.03	0.2	<1	<.005	5.2	<.01	<.002	2	<.005	<.04	<.02	4	<.03	<.03	4.1	<.01	0.124	<.005	<.005	<.03	0.08
15/06/98	<.003	<.05	<.02	<.05	0.129	<.001	<.04	17.2	<.002	<.005	0.021	0.026	0.13	<1	0.006	3.7	<.01	0.006	<1	<.005	1.27	<.02	5	<.03	<.03	2.7	<.01	0.072	<.005	<.005	<.03	0.05
21/12/98	<.003	0.07	0.012	0.29	0.09	<.001	<.04	46.1	<.001	<.005	0.053	0.019	<.01	1	<.005	9.9	0.06	<.002	4	0.007	1.72	<.01	6	<.03	<.03	5.2	<.01	0.224	0.012	0.045	<.03	0.04
3/7/1999	<.003	0.32	<.005	0.28	0.047	<.001	<.04	17.7	<.001	<.005	<.005	0.011	1.03	<1	<.005	4.1	0.02	<.002	<1	<.005	<.04	<.01	3	<.03	<.03	4.8	<.01	0.088	<.005	<.005	<.03	0.03
31/10/99	<.003	<.05	<.005	<.05	0.137	<.001	<.04	26.7	<.001	<.005	<.005	<.002	0.18	<1	<.005	5.5	0.06	<.002	3	<.005	<.04	<.01	5	<.03	<.005	3.4	<.01	0.129	<.005	<.005	<.03	<.01
25/07/00	<.003	<.05	<.005	<.05	0.1	0.001	<.05	17.5	<.001	0.021	0.148	0.012	0.51	3	0.085	4	0.02	<.002	3	0.026	4	<.01		<.03	<.005	3.8	<.01	0.216	0.015	0.042	<.03	0.05
12/6/2001	<.003	0.23	<.005	0.06	0.121	<.001	<.05	9.3	<.001	<.005	<.005	0.007	0.38	<1	<.005	2	<.01	0.006	2	<.005	<1	<.01	1	<.03	<.005	0.9	<.01	0.044	0.009	<.005	<.03	0.03
STATION: X2																																
1/1/1987												<0.01					0.11		3.1			<0.01										0.05
1/2/1987												<0.01					0.13		3.3			<0.01										0.07
1/3/1987												<0.01					0.14		3.6			0.02										0.06
1/4/1987												<0.01					0.12		3.4			<0.01										0.04
1/5/1987												0.03					0.11		0.77			0.17										0.1
1/6/1987												<0.01					0.02		1.1			<0.01										0.03
1/7/1987												<0.01					0.03		1.7			0.04										0.03
1/8/1987												<0.01					0.03		1.7			0.01										0.05
11/8/1987												<0.005					0.03		1.7			0.01										0.05
1/9/1987												<0.01					0.03		2.3			<0.01										0.04
8/9/1987												<0.005					0.03		2.3			<0.005										0.04
1/10/1987												<0.01					0.07		2.5			<0.01										0.06
6/10/1987												<0.005					0.07		2.5			<0.005										0.06
1/11/1987												<0.01					0.07		2.6			<0.01										0.05
10/11/1987												<0.005					0.07		2.6			<0.005										0.05
1/12/1987												<0.01					0.05		2.8			<0.01										0.02
9/12/1987												<0.005					0.05		2.8			<0.005										0.02
27/01/88												0.003					0.089		3.4			0.015										0.045
17/02/88												0.004					0.108		3.6			<0.005										0.036
24/03/88												<0.002					0.111		3.6			<0.005										0.035
25/04/88												0.006					0.087		3.5			0.021										0.15
25/05/88												0.003					0.021		1.5			0.005										0.017
7/6/1988												0.002					0.014		1			0.005										0.016
11/7/1988												0.002					0.017		1.5			0.01										0.027
16/08/88												<0.002					0.025		1.9			<0.005										0.013
13/09/88												0.002					0.038		1.9			0.042										0.025
6/10/1988												0.003	0.73				0.047		1.7			0.061										0.082
1/11/1988												<0.002					0.045		2.4			<0.005										0.021
30/11/88												<0.002	0.145				0.05		2.8			0.005										0.022
9/5/1989												0.005	1.15				0.029		<1			0.033										0.024
13/06/89												0.003	0.181				0.014		1.2			0.015										0.024
10/7/1989												0.002	0.092				0.017		1.7			0.005										0.037
26/07/89												0.004	0.143																			0.042
14/08/89												0.002	0.157				0.034		2.2			0.005										0.017
11/9/1989												0.002	0.132				0.037		2.2			0.005										0.013
18/09/89												0.001	0.132																			0.013
16/10/89												0.002	0.122				0.076		2.5			0.005										0.017
6/11/1989												0.002	0.121				0.059		2.4			0.005										0.021
11/12/1989												0.002	0.15				0.063		2.2			0.005										0.024
15/01/90												0.002										<0.005										0.029
12/2/1990												0.004										<0.005										0.057
12/3/1990												<0.002																				0.097
17/04/90												0.005																				0.003
14/05/90												0.004																				0.035
11/6/1990												0.003																				0.013
6/7/1990												0.001	0.133																			0.01
8/8/1990												0.001	0.162																			0.011
2/1/1991												0.003																				0.016
4/2/1991												0.049																				0.017
4/3/1991												0.001																				0.025
1/4/1991												0.005																				0.047
1/5/1991												0.006																				0.096
4/6/1991												0.004																				0.013
2/7/1991												0.004																				0.068
17/07/91												0.004																				0.068
5/8/1991												0.001																				0.034
3/9/1991												0.004																				0.022
10/9/1991												0.001	0.128																			0.069
7/10/1991												0.001																				0.025
6/11/1991												0.001																				0.023
3/12/1991												0.001																				0.022
10/1/1992												0.001																				0.023
21/01/92												0.001																				0.025
20/02/92												0.001																				0.055
12/3/1992												0.001																				0.044
8/10/1992												0.003										0.001										0.026
25/11/92												<0.001										<0.003										0.02
20/01/93												<0.001										0.012										0.035
15/03/93												<0.002										0.005										0.04
26/04/93												0.004										0.006										0.08
26/05/93												0.002										0.002										0.01
24/06/93												<0.002										0.006										0.01
31/08/93												<0.002										0.003										0.02
1/9/1993												<0.002										<0.003										0.03
30/09/93								25.8		<0.004		<0.002	0.19			4.99				<0.01		<0.03										0.03
1/10/1993												0.007										0.003										0.04
25/10/93								30.8		<0.004		0.007	0.36			5.65				<0.01		0.003										0.04
1/11/1993												<0.002										<0.03										0.05
1/12/1993								36.8		<0.004		<0.002	0.24			6.94				<0.01		<0.03										0.05

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/12/93								37.1		<0.004		<0.002	0.16
1/1/1994												<0.002	
17/01/94								46.6		<0.004		<0.002	0.17
31/01/94								45.2		<0.004		<0.002	0.15
3/3/1994								52		<0.004		<0.002	0.26
26/04/94								164		0.005		<0.002	0.12
31/05/94								13.1		<0.004		<0.002	0.25
27/08/94												<0.002	
10/8/1994								32.8		<0.004		<0.002	0.25
25/09/94								30.7		<0.004		<0.002	0.5
15/10/94								30.5		<0.004		<0.002	0.35
25/11/94												<0.002	
31/01/95												<0.002	
1/2/1995												<0.002	
22/02/95												<0.002	
24/02/95	<0.030	<0.06	<0.04		0.081	<0.001	<0.02	52.7	<0.002	<0.004	<0.002	<0.002	0.2
6/3/1995												<0.002	
8/3/1995	<0.030	<0.06	<0.04		0.084	<0.001	<0.02	51.2	<0.002	<0.004	0.006	<0.002	0.15
17/04/95	<0.030	<0.06	<0.04		0.079	<0.001	<0.02	49.9	<0.002	<0.004	<0.002	<0.002	0.24
7/6/1995	<0.003	0.18	<0.02		0.029	<0.001	<0.04	13.9	<0.002	<0.005	<0.005	0.003	0.32
21/06/95												<0.002	
20/07/95	<0.003	0.06	<0.02		0.014	<0.001	<0.04	21.2	<0.002	<0.005	<0.005	<0.002	0.22
23/08/95	<0.003	0.22	<0.02		0.044	<0.001	<0.04	20.5	<0.002	<0.005	<0.005	<0.002	0.22
18/09/95	<0.003	1	<0.02		0.044	<0.001	<0.04	18.3	<0.002	<0.005	<0.005	<0.002	0.82
16/10/95	<0.003	0.31	<0.02		0.051	0.001	<0.04	29.8	<0.002	<0.005	0.023	0.011	0.7
14/11/95	<0.003	0.18	<0.02		0.073	<0.001	<0.04	35.7	<0.002	<0.005	<0.005	0.006	0.92
5/12/1995	<0.003	0.17	<0.02		0.076	<0.001	<0.04	40.8	<0.002	<0.005	<0.005	<0.002	0.19
25/01/96	<.003	0.02	<.02		0.071	<.001	<.04	35	<.002	<.005	0.008	0.002	0.24
14/02/96	<.003	0.1	<.02		0.081	0.001	<.04	39.4	<.002	<.005	<.005	<.002	0.32
12/3/1996	<.003	0.13	0.03		0.074	<.001	<.04	36.8	<.002	<.005	<.005	<.002	0.33
9/4/1996	<.003	0.08	0.02		0.073	<.001	<.04	36.6	<.002	<.005	<.005	0.018	0.17
23/04/96	<.003	0.24	<.02		0.059	<.001	<.04	26.9	<.002	<.005	<.005	<.002	1.12
13/05/96	<.003	0.25	<.02		0.033	<.001	<.04	14.6	<.002	<.005	<.005	0.05	1.66
11/6/1996	<.003	0.07	<.02		0.032	<.001	<.04	13.9	<.002	<.005	<.005	<.002	1.57
17/07/96	<.003	0.2	<.02		0.037	<.001	<.04	13.8	<.002	<.005	<.005	<.002	0.46
15/08/96	<.003	0.05	<.02		0.038	0.004	<.04	20.1	<.002	<.005	<.005	0.002	0.2
11/9/1996	<.003	0.05	<.02		0.073	<.001	<.04	21.2	<.002	<.005	<.005	<.002	0.21
21/10/96	<.003	0.17	<.02		0.075	0.005	<.04	29.5	<.002	<.005	<.005	0.049	0.27
21/11/96	<.003	<.05	<.02		0.073	<.001	<.04	30.1	<.002	<.005	<.005	<.002	0.2
19/12/96	<.003	0.14	<.02		0.112	0.002	<.04	36.3	0.002	<.005	<.005	0.005	0.43
14/01/97	<.003	0.19	<.02	0.35	0.114	0.002	<.04	43	<.002	<.005	<.005	0.015	0.23
26/02/97	<.003	0.05	<.02	<.05	0.063	<.001	<.04	45.3	<.002	<.005	0.007	<.002	0.2
11/3/1997	<.003	0.28	<.02	<.05	0.076	<.001	<.04	40.9	<.002	0.008	<.005	<.002	0.15
15/04/97	<.003	<.05	<.02	0.19	0.069	<.001	<.04	42.7	<.002	<.005	0.005	<.002	0.26
12/5/1997	<.003	0.07	<.02	0.07	0.019	<.001	<.04	8.8	<.002	<.005	<.005	<.002	0.4
23/06/97	<.003	0.2	<.02	0.11	0.031	0.002	<.04	13.9	<.002	<.005	<.005	0.008	1.2
15/07/97	<.003	0.14	<.02	0.26	0.055	<.001	<.04	24.6	<.002	<.005	0.01	0.016	0.67
12/8/1997	<.003	0.08	<.02	0.27	0.043	<.001	<.04	21.4	<.002	<.005	0.009	0.018	<.01
22/09/97	<.003	<.05	<.02	0.07	0.048	<.001	<.04	24	<.002	0.005	0.035	0.048	0.33
20/10/97	<.003	<.05	<.02	<.05	0.125	<.001	<.04	31.2	<.002	<.005	<.005	0.004	0.16
18/11/97	<.003	<.05	<.02	0.13	0.132	<.001	<.04	35.8	<.002	0.028	<.005	0.011	0.17
6/12/1997	<.003	<.05	<.02	<.05	0.105	<.001	<.04	36.9	<.002	0.028	0.007	0.007	0.27
12/1/1998	0.005	<.05	<.02	<.05	0.169	<.001	0.05	38.3	0.003	0.025	0.007	0.007	0.06
24/02/98	<.003	0.23	<.02	0.4	0.069	<.001	<.04	41.5	<.002	<.005	<.005	0.011	0.83
17/03/98	<.003	0.06	<.02	0.1	0.145	<.001	<.04	43	<.002	<.005	0.007	0.014	1.14
13/04/98	<.003	<.05	<.02	<.05	0.17	<.001	<.04	43.5	0.002	<.005	0.16	0.042	0.33
18/05/98	<.003	0.29	<.02	0.24	0.037	<.001	<.04	10.9	<.002	<.005	0.007	0.027	0.48
15/06/98	<.003	0.05	<.02	0.08	0.13	<.001	<.04	19.8	<.002	<.005	0.086	0.05	1.27
21/07/98	<.003	<.05	<.02	<.05	0.126	<.001	<.04	30.6	<.002	<.005	<.005	0.037	0.19
10/8/1998	<.003	0.16	<.02	0.29	0.029	0.001	<.04	27.8	<.002	<.005	<.005	0.053	0.33
25/09/98	<.003	0.09	<.02	<.05	0.223	<.001	<.04	30.4	<.002	<.005	<.005	0.028	1.52
19/10/98	<.003	0.19	<.02	0.35	0.069	<.001	<.04	32.9	<.002	<.005	<.005	0.018	1.65
17/11/98	<.003	<.05	<.005	<.05	0.197	0.001	<.04	55.5	0.004	<.005	<.005	0.023	0.16
21/12/98	<.003	0.09	0.011	0.24	0.119	<.001	<.04	62.8	<.001	<.005	<.005	0.028	0.06
18/01/99	<.003	0.06	<.005	0.18	0.098	<.001	<.04	52.3	0.001	<.005	0.066	0.034	0.17
22/02/99	0.03	0.32	<.005	0.48	0.147	<.001	<.04	59.1	0.002	<.005	0.101	0.027	1.77
17/03/99	<.003	0.33	<.005	0.28	0.091	<.001	<.04	49.4	<.001	<.005	0.299	0.049	1.58
20/04/99	<.003	0.15	0.023	0.26	0.087	<.001	<.04	44.4	<.001	<.005	<.005	0.026	2.12
17/05/99	<.003	<.05	<.005	<.05	0.118	0.002	<.04	9.7	<.001	<.005	0.019	0.018	0.51
3/7/1999	<.003	0.29	<.005	0.35	0.043	<.001	<.04	13.9	<.001	<.005	<.005	0.018	1.38
27/07/99	<.003	0.38	<.005	<.05	0.121	<.001	<.04	13.8	0.006	0.118	<.005	0.009	1.16
12/8/1999	<.003	<.05	<.005	0.24	<.002	0.001	<.04	25.6	0.009	0.094	0.021	0.014	0.34
10/9/1999	<.003	0.15	<.005	<.05	0.161	<.001	<.04	19.5	<.001	0.005	0.043	0.014	0.27
29/10/99	<.003	<.05	<.005	0.14	0.156	<.001	<.04	31.9	<.001	<.005	<.005	0.007	0.23
22/11/99	<.003	0.08	0.009	<.05	0.163	<.001	<.04	30.5	<.001	<.005	<.005	0.037	1.18
14/12/99	<.003	0.14	<.005	0.07	0.143	<.001	<.04	37	0.001	<.005	<.005	0.021	0.25
27/01/00	<.003	0.11	<.005	<.05	0.162	<.001	<.05	46.1	0.002	<.005	<.005	0.021	0.12
28/02/00	<.003	0.81	<.005	<.05	0.179	<.001	<.05	42.2	<.001	<.005	0.053	0.253	1.62
23/03/00	<.003	0.11	<.005	<.05	0.196	<.001	<.05	47.4	0.004	0.035	<.005	0.007	0.11
27/04/00	<.003	0.17	<.005	<.05	0.199	0.003	<.05	40.3	<.001	<.005	<.005	0.027	1.06
15/05/00	<.003	0.28	0.028	0.06	0.139	<.001	<.05	16.6	0.001	<.005	0.171	0.012	1.04
26/06/00	<.003	0.15	<.005	<.05	0.146	0.001	<.05	14.3	<.001	<.005	<.005	0.018	2.13
25/07/00	<.003	0.1	<.005	<.05	0.199	0.001	<.05	21.4	<.001	0.007	<.005	0.02	5
29/08/00	<.003	0.31	<.005	<.05	0.134	<.001	<.05	19.3	<.001	<.005	<.005	0.006	3.18
25/09/00	<0.01	0.17	<0.2	<0.1	0.04	<0.005	<0.1	18.8	<0.001	<0.01	<0.01	<0.01	0.22
29/10/00	<.003	0.32	<.005	0.05	0.269	0.001	<.05	30.1	<.001	<.005	<.005	0.03	3.14
13/11/00	<0.003	0.12	0.011	0.69	0.14	<0.001	<0.05	39.1	<0.001	<0.005	<0.005	<0.002	0.29
18/11/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	38	<0.001	<0.01	<0.01	<0.01	0.22
14/12/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	36.4	<0.001	<0.01	<0.01	<0.01	0.17
13/01/01	<.003	<.05	<.005	0.05	0.176	0.002	<.05	35.8	<.001	<.005	<.005	0.025	3.63
10/2/2001	<.003	<.05	<.005	0.07	0.2	0.002	<.05	38.8	<.001	<.005	<.005	0.031	2.63
10/3/2001	<.003	0.28	<.005	0.09	0.22	<.001	<.05	41	<.001	<.005	<.005	0.03	0.17
16/04/01	<.003	<.05	<.005	<.05	0.159	<.001	<.05	45.1	<.001	<.005	<.005	0.006	0.03
14/05/01	<.003	0.28	<.005	<.05	0.193	<.001	<.05	26.1	<.001	0.029	0.008	0.009	0.78
17/06/01	<.003	0.38	<.005	0.13	0.197	<.001	<.05	10.7	<.001	<.005	0.041	0.012	0.48
14/07/01	<.003	0.19	<.005	0.59	0.263	<.001	<.05	22	<.001	<.005	<.005	0.002	0.5
14/08/01	<0.003	0.08	0.011	<0.05	0.225	<0.001	<0.05	32.1	<0.001	<0.005	<0.005	0.007	0.33

Date	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/12/93			7.11				<0.01		<0.03										0.12
1/1/1994									<0.03										0.05
17/01/94			9.14				<0.01		<0.03										0.05
31/01/94			8.61				<0.01		<0.03										0.05
3/3/1994			10.4				<0.01		<0.03										0.11
26/04/94			27.7				0.02		<0.03										0.17
31/05/94			2.67				<0.01		<0.03										0.02
27/08/94									<0.03										0.01
10/8/1994			6.26				<0.01		<0.03										0.02
25/09/94			5.99				<0.01		<0.03										0.03
15/10/94			5.66				<0.01		<0.03										0.04
25/11/94																			0.01
31/01/95				0.06		3.5			<0.03										0.05
1/2/1995									<0.03										0.05
22/02/95									<0.03										0.1
24/02/95			9.78	0.095	<0.004	4.3	<0.010	<0.04	<0.03	7.5	<0.02		5.8		0.217	<0.003	<0.003		0.1
6/3/1995									<0.03										0
8/3/1995			10.3	0.086	<0.004	4.2	<0.010	<0.04	<0.03	7.2	<0.02		6.3		0.225	<0.003	<0.003		0.03
17/04/95			9.89	0.079	<0.004	4	<0.010	<0.04	<0.03	7.1	<0.02		6.4		0.207	<0.003	<0.003		0.07
7/6/1995		<0.005	4.1	0.04	<0.002	1	<0.005	0.04	<0.02		<0.02		2.45		0.055	<0.005	0.072	<0.02	0.01
21/06/95									<0.02										<0.01
20/07/95		<0.005	4.6	0.02	<0.002	1	<0.005	<0.04	<0.02	3.2	<0.02		0.68		0.111	<0.005	<0.005	<0.02	<0.010
23/08/95		<0.005	4.1	0.02	<0.002	1	<0.005	<0.04	<0.02	2.9	<0.02		1.63		0.092	<0.005	<0.005	<0.02	0.01
18/09/95		<0.005	4	0.02	<0.002	6	<0.005	<0.04	<0.02	7	<0.02		9.02		0.092	0.057	<0.005	<0.02	<0.010
16/10/95		<0.005	6.5	0.1	<0.002	1	0.021	<0.04	<0.02	8	<0.02		1.27		0.137	<0.005	0.016	<0.02	0.04
14/11/95		<0.005	7.2	0.07	0.003	1	<0.005	<0.04	<0.02	10	<0.02		2.57		0.137	<0.005	<0.005	<0.02	0.02
5/12/1995		<0.005	7.9	0.06	<0.002	1	<0.005	<0.04	<0.02	8	<0.02		3.12		0.148	<0.005	<0.005	<0.02	0.02
25/01/96		<.005	7.7	0.02	<.002	2	<.005	<.04	<.02	12	<.02		2.35		0.177	<.005	<.005	<.02	0.02
14/02/96		<.005	8.8	0.09	<.002	2	<.005	<.04	<.02	10	<.02		2.87		0.199	<.005	<.005	<.02	0.02
12/3/1996		<.005	7.9	0.07	0.002	2	<.005	<.04	<.02	7	<.03		1.67		0.194	0.007	<.005	<.02	0.02
9/4/1996		<.005	7.7	0.07	<.002	2	0.008	0.12	<.02	4	<.03		2.57		0.185	<.005	<.005	<.03	<.01
23/04/96		<.005	6.1	0.07	<.002	1	<.005	0.06	<.02	19	0.04		2.26		0.142	0.006	<.005	<.03	0.08
13/05/96		<.005	3.1	0.07	0.004	<1	<.005	0.25	<.02	2	<.03		1.51		0.078	0.012	<.01	<.03	0.04
11/6/1996		0.011	2.9	0.02	0.003	<1	<.005	<.04	<.02	2	<.03		1.84		0.069	0.036	0.007	<.03	0.02
17/07/96		<.005	2.8	0.03	0.007	<1	<.005	0.08	<.02	10	<.03		4.2		0.066	<.005	<.005	<.03	0.09
15/08/96		<.005	4.2	0.03	<.002	<1	<.005	<.04	<.02	4	<.03		3		0.097	<.005	<.005	<.03	0.01
11/9/1996		<.005	4.2	0.03	<.002	2	<.005	<.04	<.02	5	<.03		4.8		0.098	<.005	<.005	<.03	0.01
21/10/96		<.005	6.1	0.08	<.002	4	<.005	<.04	<.02	5	<.03		5.7		0.144	<.005	<.005	<.03	0.09
21/11/96		<.005	6.3	0.04	<.002	2	<.005	<.04	<.02	5	<.03		3.7		0.147	<.005	<.005	<.03	0.06
19/12/96		<.005	7.8	0.05	<.002	5	0.006	0.09	0.05	6	<.03		4.5		0.178	0.005	<.005	<.03	0.12
14/01/97		<.005	9.7	0.1	0.003	2	<.005	0.21	<.02	5	<.03		5.21		0.21	0.009	0.007	<.03	0.04
26/02/97		<.005	9.3	0.06	0.003	4	<.005	0.13	<.02	6	<.02		7.08		0.221	<.005	<.03	<.02	0.03
11/3/1997		<.005	8.7	0.09	<.002	3	<.005	0.25	<.02	6	<.03	<.005	4	<.01	0.184	<.005	<.005	<.03	0.05
15/04/97	<1	<.005	8.6	0.02	0.002	3	<.005	<.04	<.02	6	<.03	<.03	5.4	<.01	0.193	<.005	<.005	<.03	0.05
12/5/1997	<1	<.005	1.7	0.02	0.003	<1	0.005	<.04	<.02	1	<.03	<.03	0.9	<.01	0.044	<.005	<.005	<.03	0.02
23/06/97	1	<.005	3	0.04	0.004	1	<.005	<.04	<.02	3	<.03	<.03	2.3	<.01	0.062	0.03	<.005	<.03	0.02
15/07/97	<1	<.005	5.1	0.21	<.002	3	<.005	0.45	<.02	2	<.03	<.03	3.9	<.01	0.109	0.033	<.005	<.03	0.12
12/8/1997	2	<.005	4.9	<.01	<.002	3	<.005	0.19	<.02	3	<.03	<.03	6.8	<.01	0.102	<.005	<.005	<.03	0.11
22/09/97	<1	<.005	5	<.01	<.002	2	<.005	0.34	<.02	4	<.03	<.03	4.2	<.01	0.12	0.009	<.005	<.03	0.07
20/10/97	1	<.005	6.6	0.05	0.007	2	0.007	<.04	0.04	5	<.03	<.03	3.5	0.02	0.132	<.005	0.012	<.03	0.02
18/11/97	<1	<.005	7.4	0.01	<.002	3	<.005	<.04	<.02	6	<.03	<.03	4	0.02	0.157	<.005	<.005	<.03	0.03
6/12/1997	<1	0.012	7.7	0.04	0.004	3	<.005	<.04	<.02	6	<.03	<.03	3.9	0.01	0.164	<.005	<.005	<.03	0.02
12/1/1998	<1	<.005	8	0.05	0.002	3	0.006	<.04	<.02	7	<.03	<.03	3.7	0.03	0.177	<.005	<.005	<.03	0.03
24/02/98	<1	0.014	9.3	0.07	0.013	4	<.005	0.66	<.02	8	<.03	<.03	5.6	<.01	0.201	0.027	0.007	<.03	0.05
17/03/98	<1	0.01	9.6	0.07	0.016	5	<.005	<.04	<.02	7	<.03	<.03	4.8	<.01	0.206	0.028	0.011	<.03	0.02
13/04/98	<1	0.007	9.3	0.07	0.013	5	0.01	0.93	<.02	6	<.03	<.03	5.4	<.01	0.222	0.017	<.005	<.03	0.35
18/05/98	1	<.005	2.4	0.01	<.002	2	<.005	<.04	<.02	2	<.03	<.03	2.2	<.01	0.048	<.005	<.005	<.03	0.05
15/06/98	<1	<.005	4	0.03	0.018	<1	<.005	3.85	<.02	6	<.03	<.03	3.1	<.01	0.081	0.036	<.005	<.03	0.06
21/07/98	<1	<.005	6.8	0.03	<.002	4	<.005	0.48	<.02	2	<.03	<.03	3.5	<.01	0.135	0.008	<.005	<.03	0.04
10/8/1998	<1	<.005	5.8	0.03	<.002	2	<.005	1.86	<.02	7	<.03	<.03	3.9	<.01	0.128	<.005	0.009	<.03	0.03
25/09/98	<1	<.005	6.1	0.01	0.016	5	<.005	0.57	<.02	4.5	<.03	<.03	4.8	<.01	0.152	0.081	0.097	<.03	0.04
19/10/98	<1	<.005	7	0.06	0.029	4	<.005	0.62	<.02	6	<.03	<.03	4.4	<.01	0.158	0.079	0.008	<.03	0.03
17/11/98	5	<.005	11.7	0.09	0.005	5	<.005	0.57	<.01	9	<.03	<.03	5.3	<.01	0.222	0.014	<.005	<.03	0.03
21/12/98	2	<.005	13.3	0.09	<.002	5	0.006	<.04	<.01	11	<.03	<.03	7.2	<.01	0.296	0.02	0.081	<.03	0.02
18/01/99	1	<.005	11.6	0.07	0.014	5	<.005	<.04	<.01	10	<.03	<.03	5.9	<.01	0.245	0.019	<.005	<.03	0.03
22/02/99	1	0.015	13.1	0.12	0.022	5	0.005	0.79	<.01	11	<.03	<.03	6.6	<.01	0.308	0.087	0.008	<.03	0.07
17/03/99	<1	<.005	10	0.1	0.021	5	<.005	0.42	<.01	9	<.03	<.03	5.6	<.01	0.227	0.053	<.005	<.03	0.02
20/04/99	1	<.005	10.1	0.08	0.041	4	<.005	0.24	<.01	7	<.03	<.03	4.9	<.01	0.212	0.078	<.005	<.03	0.02
17/05/99	2	<.005	1.9	0.03	<.002	1	<.005	<.04	<.01		<.03	<.03	1	<.01	0.06	<.005	0.009	<.03	0.05
3/7/1999	<1	<.005	3.1	0.03	<.002	<1	<.005	<.04	<.01	3	<.03	<.03	3.6	<.01	0.045	0.005	<.005	<.03	0.05
27/07/99	5	<.005	3.4	0.06	0.022	4	0.05	<.04	<.01	3	<.03	<.005	4.2	<.01	0.083	0.023	0.021	<.03	<.01
12/8/1999	3	<.005	5.4	0.02	0.025	4	<.005	<.04	<.01	4	<.03	<.005	6.8	<.01	0.12	0.018	0.037	<.03	0.02
10/9/1999	<1	<.005	4.1	<.01	0.006	2	<.005	<.04	<.01	3	<.03	<.005	3.8	<.01	0.095	0.037	0.02	<.03	<.01
29/10/99	<1	<.005	6.4	0.07	<.002	4	<.005	<.04	<.01	6	<.03	<.005	5.2	<.01	0.143	<.005	<.005	<.03	0.02
22/11/99	<1	<.005	7.5	0.04	0.004	4	<.005	<.04	<.01	7	<.03	<.005	4.3	<.01	0.278	0.031	<.005	<.03	<.01
14/12/99	4	0.023	7.4	0.04	<.002	2	0.023	<.04	<.01	7	0.05	<.005	3.9	<.01	0.148	0.011	0.01	<.03	0.09
27/01/00	3	0.005	8.8	0.03	<.002	5	0.009	<1	0.02		<.03	<.005	5.1	<.01	0.178	0.017	0.011	<.03	0.09
28/02/00	3	0.017	9.7	0.12	<.002	4	0.008	<1	0.05	7	<.03	<.005	6.3	<.01	0.218	0.119	0.018	<.03	0.39
23/03/00	2	0.022	9.9	0.07	<.002	<1	<.005	<1	<.01	8	<.03	<.005	5.9	<.01	0.238	<.005	<.005	<.03	0.02
27/04/00	1	<.005	9.3	0.1	<.002	4	<.005	<1	<.01		<.03	<.005	5.3	<.01	0.187	0.143	0.043	<.03	0.22
15/05/00	<1	0.026	3.6	0.04	0.015	<1	<.005	<1	<.01		<.03	<.005	3.7	<.01	0.143	0.06	0.008	<.03	0.11
26/06/00	2	<.005	3.4	0.06	<.002	<1	<.005	2	0.03		<.03	<.005	2.7	<.01	0.056	0.251	0.593	<.03	0.33
25/07/00	2	0.077	4.8	0.17	<.002	3	0.018	5	<.01		<.03	<.005	3.7	<.01	0.203	0.147	0.665	<.03	0.5
29/08/00	<1	<.005	3.7	0.01	<.002	3	0.007	4	<.01		<.03	<.005	5.7	<.01	0.088	0.066	<.005	<.03	0.13
25/09/00	<2		3.8	0.015	<0.01	<2	<0.05	<0.3	<0.05		<0.2	<0.2	4.94	<0.03	0.074	<0.01	<0.03		0.022
29/10/00	2	<.005	6.6	0.11	<.002	5	<.005	2	<.01	9	<.03	<.005	5.8	<.01	0.132	0.408	0.632	<.03	0.01
13/11/00	<1	0.012	8.7	0.1	0.004	3	0.007	0.07	<0.01	8	0.04	0.041	5.3	0.04	0.173	0.008	<0.005	<0.03	0.06
18/11/00	<2		7.2	0.053	<0.01	3	<0.05	<0.3	<0.05		<0.2	<0.2	5.66	<0.03	0.151	<0.01	<0.03		0.03
14/12/00	<2		7.6	0.052	<0.01	3	<0.05	<0.3	<0.05		<0.2	<0.2	5.33	<0.03	0.163	<0.01	<0.03		0.022
13/01/01	2	<.005	7.7	0.13	<.002	3	<.005	<1	0.02	15	<.03	<.005	5.2	<.01	0.346	0.236	0.1	<.03	0.02
10/2/2001	3	<.005	8.4	0.05	<.002	5	0.009	26	<.01	23	<.03	<.005	5.2	<.01	0.087	0.112	<.005	<.03	0.02
10/3/2001	2.04	<.005	8.92	0.07	<.002	6.7	<.005	<1	<.01	8.7	<.03	<.005	4.5	<.01	0.19	0.009	0.017	<.03	0.03
16/04/01	<1	<.005	12.5	0.07	<.002	8	<.005	<1	<.01	10	<.03	<.005	2.3	<.01	0.27	<.005	<.005	<.03	0.02
14/05/01	<1	<.005	5.5	0.04	0.011	<1	0.007	<1	0.02	4	<.03	<.005	3	<.01	0.112	0.015	0.018	<.03	0.07
17/06/01	<1	0.005	2.4	0.02	0.004	4	<.005	<1	0.01	2	0.03	<.005	2.4	<.01	0.048	0.008	<.005	<.03	0.02
14/07/01	<1	0.006	4.8	0.02	<.002	<1	<.005	<1	0.01	3	<.03	<.005	5	<.01	0.113	0.019	<.005	<.03	0.06
14/08/01	<1	<0.005	7.1	0.03	0.005	<1	<0.005	<1	<0.01	5	<0.03	<0.005	5	<0.01	0.152	0.01	<0.005	<0.03	0.03

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/09/01	<0.003	0.13	<0.005	<0.05	0.164	<0.001	<0.05	28.8	<0.001	<0.005	<0.005	0.007	0.6	<1	0.007
15/10/01	<0.003	0.07	0.006	0.43	0.213	<0.001	<0.05	35.7	<0.001	<0.005	0.007	<0.002	0.28	<1	0.013
13/11/01	<0.003	0.12	0.011	0.69	0.14	<0.001	<0.05	39.1	<0.001	<0.005	<0.005	<0.002	0.29	<1	0.012
15/12/01	<0.001	0.07	<0.005	0.33	0.086	0.001	<0.05	38.8	<0.001	0.006	0.007	<0.002	0.22	<1	0.01
STATION: X3															
1/1/1987												<0.01			
1/2/1987												<0.01			
1/3/1987												<0.01			
1/4/1987												<0.01			
1/5/1987												0.01			
1/6/1987												<0.01			
1/7/1987												<0.01			
1/8/1987												<0.01			
11/8/1987												<0.005			
1/9/1987												<0.01			
8/9/1987												<0.005			
1/10/1987												<0.01			
6/10/1987												<0.005			
1/11/1987												<0.01			
10/11/1987												<0.005			
1/12/1987												<0.01			
9/12/1987												<0.005			
27/01/88												0.003			
17/02/88												0.003			
24/03/88												0.002			
25/04/88												0.002			
25/05/88												<0.002			
7/6/1988												<0.002			
11/7/1988												<0.002			
16/08/88												<0.002			
13/09/88												0.002			
6/10/1988												0.002	0.2		
1/11/1988												0.002			
30/11/88												0.002	0.16		
26/01/89												<0.002	0.56		
13/02/89												<0.002	0.825		
14/03/89												<0.002	0.61		
12/4/1989												<0.002	0.33		
9/5/1989												<0.002	0.55		
13/06/89												0.002	0.134		
10/7/1989												0.002	0.038		
14/08/89												0.002	0.127		
11/9/1989												0.002	0.085		
16/10/89												0.002	0.083		
6/11/1989												0.002	0.477		
11/12/1989												0.002	1.32		
15/01/90												0.002			
12/2/1990												<0.002			
12/3/1990												<0.002			
17/04/90												0.002			
2/5/1990												0.005			
14/05/90												0.002			
11/6/1990												0.002			
2/1/1991												0.003			
4/2/1991												0.023			
4/3/1991												0.001			
1/4/1991												0.006			
1/5/1991												0.004			
4/6/1991												0.01			
2/7/1991												0.001			
5/8/1991												0.001			
3/9/1991												0.001			
21/01/92												0.002			
8/10/1992												0.001			
25/11/92												0.002			
6/3/1995												<0.005			
8/3/1995	<0.030	<0.06	<0.04		0.051	<0.001	<0.02	38.5	<0.002	<0.004	<0.002	<0.002	0.09		
21/06/95												<0.002			
20/07/95	<0.003	0.14	0.02		0.033	<0.001	<0.04	20.4	<0.002	<0.005	<0.005	<0.002	0.21		<0.005
23/08/95	<0.003	0.27	<0.02		0.048	<0.001	<0.04	23.3	<0.002	<0.005	<0.005	0.015	0.22		<0.005
18/09/95	<0.003	0.66	<0.02		0.047	<0.001	<0.04	23.9	<0.002	<0.005	<0.005	0.014	0.27		<0.005
16/10/95	<0.003	0.26	<0.02		0.03	<0.001	<0.04	22.1	<0.002	<0.005	<0.005	<0.002	0.24		<0.005
14/11/95	<0.003	0.1	<0.02		0.049	<0.001	<0.04	31.3	<0.002	<0.005	<0.005	<0.002	0.27		<0.005
6/12/1995	<0.003	0.09	<0.02		0.073	<0.001	<0.04	35.5	<0.002	<0.005	<0.005	<0.002	0.12		<0.005
25/01/96	<.003	0.02	<.02		0.053	<.001	<.04	31	<.002	<.005	0.011	0.007	0.27		<.005
14/02/96	<.003	0.03	<.02		0.053	0.001	<.04	29.4	<.002	<.005	<.005	0.005	0.14		<.005
12/3/1996	<.003	0.15	0.02		0.049	<.001	<.04	30.9	<.002	<.005	<.005	<.002	0.14		<.005
9/4/1996	<.003	0.07	0.02		0.053	<.001	<.04	29.8	<.002	<.005	<.005	0.013	0.1		<.005
23/04/96	<.003	0.13	<.02		0.058	<.001	<.04	29.6	<.002	<.005	<.005	<.002	0.3		<.005
13/05/96	<.003	0.17	<.02		0.05	<.001	<.04	17	<.002	<.005	<.005	0.011	0.55		<.005
11/6/1996	<.003	<.05	<.02		0.03	<.001	<.04	13.6	<.002	<.005	<.005	<.002	0.38		<.005
17/07/96	<.003	<.05	<.02		0.017	<.001	<.04	14.3	<.002	<.005	<.005	<.002	0.17		<.005
15/08/96	<.003	0.05	<.02		0.028	<.001	<.04	16.9	<.002	<.005	<.005	<.002	0.13		<.005
11/9/1996	<.003	0.05	<.02		0.096	0.002	<.04	22.8	<.002	<.005	<.005	0.003	0.5		<.005
21/10/96	<.003	0.05	<.02		0.07	<.001	<.04	27	<.002	<.005	<.005	0.027	0.44		<.005
21/11/96	<.003	<.05	<.02		0.053	<.001	<.04	26.9	<.002	<.005	<.005	<.002	0.14		<.005
19/12/96	<.003	0.05	<.02		0.081	0.001	<.04	34.2	0.002	<.005	<.005	<.002	0.18		<.005
14/01/97	<.003	0.05	<.02	<.05	0.079	<.001	<.04	25	<.002	<.005	<.005	0.004	0.09		<.005
17/02/97	<.003	0.05	<.02	0.24	0.07	0.003	<.04	35.3	<.002	0.013	<.005	0.005	0.11		<.005
11/3/1997	<.003	0.18	<.02	<.05	0.042	<.001	<.04	27.4	<.002	<.005	<.005	<.002	0.08		<.005
15/04/97	<.003	0.05	<.02	0.16	0.098	0.001	<.04	42.7	<.002	<.005	<.005	<.002	0.22	<1	<.005
12/5/1997	<.003	0.14	<.02	0.07	0.02	<.001	<.04	10.7	<.002	<.005	<.005	<.002	0.64	<1	<.005
23/06/97	<.003	<.05	<.02	<.05	0.024	<.001	<.04	12.4	<.002	<.005	0.007	<.002	0.28	<1	<.005
15/07/97	<.003	0.13	<.02	0.26	0.039	<.001	<.04	21.1	<.002	<.005	0.021	0.017	0.32	<1	<.005
12/8/1997	<.003	0.08	<.02	0.2	0.037	<.001	<.04	18.6	<.002	<.005	<.005	0.014	0.04	2	<.005

Date	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/09/01	6.3	0.05	<0.002	<1	0.005	<1	<0.01	5	<0.03	<0.005	4.6	0.04	0.145	<0.005	<0.005	<0.03	0.03
15/10/01	7.8	0.18	0.004	2	<0.005	<1	<0.01	8	<0.03	<0.005	5.4	<0.01	0.172	0.007	<0.005	<0.03	<0.01
13/11/01	8.7	0.1	0.004	3	0.007	0.07	<0.01	8	0.04	0.041	5.3	0.04	0.173	0.008	<0.005	<0.03	0.06
15/12/01	9.2	0.07	0.004	2	0.007	0.04	<0.01	7	<0.03	<0.005	4.6	<0.01	0.16	<0.005	<0.005	<0.03	0.02
STATION: X3																	
1/1/1987		0.04		2			<0.01										0.01
1/2/1987		0.54		2.1			<0.01										0.71
1/3/1987		0.12		2			<0.01										0.32
1/4/1987		0.1		2.4			<0.01										0.28
1/5/1987		0.03		2			0.01										0.16
1/6/1987		0.01		0.1			<0.01										0.01
1/7/1987		0.01		1.2			0.02										<0.01
1/8/1987		0.02		1.1			0.01										<0.01
11/8/1987		0.02		1.1			0.01										<0.005
1/9/1987		0.01		1.9			<0.01										<0.01
8/9/1987		0.01		1.9			<0.005										<0.005
1/10/1987		0.02		2			<0.01										0.01
6/10/1987		0.02		2			<0.005										0.01
1/11/1987		0.03		2.3			<0.01										0.02
10/11/1987		0.03		2.3			<0.005										0.02
1/12/1987		0.03		2.4			0.01										0.02
9/12/1987		0.03		2.4			0.01										0.02
27/01/88		0.4		2.8			<0.005										1.22
17/02/88		0.317		2.8			<0.005										1.14
24/03/88		0.068		2.8			0.013										0.35
25/04/88		0.048		2.7			0.005										0.285
25/05/88		0.015		1.5			<0.005										0.006
7/6/1988		0.024		1.2			<0.005										0.002
11/7/1988		0.013		1.2			0.005										0.003
16/08/88		0.021		1.9			<0.005										0.002
13/09/88		0.015		1.5			<0.005										0.005
6/10/1988		0.021		1.6			0.005										0.011
1/11/1988		0.024		2			<0.005										0.009
30/11/88		0.018		2.3			0.036										0.039
26/01/89		0.385		2.6			<0.005										1.26
13/02/89		0.46		3			<0.005										1.85
14/03/89		0.295		3.1			<0.005										1.5
12/4/1989		0.135		2.9			<0.005										0.86
9/5/1989		0.037		1.1			<0.005										0.008
13/06/89		0.018		1			0.005										0.005
10/7/1989		0.016		2.2			0.005										0.043
14/08/89		0.025		1.9			0.005										0.027
11/9/1989		0.015		2.2			0.005										0.011
16/10/89		0.025		2.1			0.005										0.013
6/11/1989		0.357		2.1			0.005										1.04
11/12/1989		0.36		2.1			0.005										1.4
15/01/90							<0.005										0.95
12/2/1990							<0.005										0.555
12/3/1990																	0.464
17/04/90																	0.463
2/5/1990																	0.068
14/05/90																	0.095
11/6/1990																	0.005
2/1/1991																	0.009
4/2/1991																	0.01
4/3/1991																	0.004
1/4/1991																	0.02
1/5/1991																	0.042
4/6/1991																	0.009
2/7/1991																	0.001
5/8/1991																	0.013
3/9/1991																	0.009
21/01/92																	0.018
8/10/1992							<0.001										0.015
25/11/92							<0.003										0.009
6/3/1995							<0.03										0
8/3/1995	7.09	0.024	<0.004	2.9	<0.010	<0.04	<0.03	6.4	<0.02		4.7		0.185	<0.003	<0.003		0.01
21/06/95							<0.02										<0.01
20/07/95	4.8	0.02	<0.002	2	<0.005	<0.04	<0.02	8.8	<0.02		1.13		0.116	<0.005	<0.005	<0.02	<0.010
23/08/95	4.6	0.02	<0.002	1	<0.005	<0.04	<0.02	3.8	<0.02		1.67		0.107	<0.005	<0.005	<0.02	0.01
18/09/95	4.4	0.02	0.007	6	<0.005	<0.04	<0.02	6	<0.02		7.03		0.112	0.012	<0.005	<0.02	0.04
16/10/95	4.4	0.03	<0.002	<1.0	<0.005	<0.04	<0.02	13	<0.02		0.81		0.112	<0.005	<0.005	<0.02	0.01
14/11/95	6.4	0.04	<0.002	1	<0.005	<0.04	<0.02	1	0.03		2.11		0.13	<0.005	<0.005	<0.02	<0.010
6/12/1995	5.1	<0.010	<0.002	<1.0	<0.005	<0.04	0.03	5	<0.02		2.1		0.128	<0.005	<0.005	<0.02	0.01
25/01/96	6.1	0.02	<.002	1	<.005	<.04	<.02	7	<.02		2.05		0.166	<.005	<.005	<.02	0.01
14/02/96	5.7	0.02	<.002	<1	<.005	<.04	<.02	8	<.02		2.21		0.156	<.005	<.005	<.02	0.01
12/3/1996	6.1	0.02	<.002	2	<.005	<.04	<.02	9	0.04		1.4		0.172	<.005	<.005	<.02	<.01
9/4/1996	5.5	0.05	0.004	1	<.005	<.04	<.02	3	<.03		2.23		0.166	<.005	<.005	<.03	<.01
23/04/96	6.2	0.06	0.007	1	<.005	0.05	<.02	12	<.03		2.21		0.16	<.005	<.005	<.03	0.04
13/05/96	3.5	0.05	<.002	<1	<.005	0.05	<.02	2	<.03		1.47		0.09	<.005	<.01	<.03	0.03
11/6/1996	2.7	0.02	0.003	<1	<.005	<.04	<.02	3	<.03		1.63		0.072	0.006	0.008	<.03	<.01
17/07/96	2.6	0.01	0.006	<1	<.005	0.06	<.02	6	<.03		3.8		0.071	<.005	<.005	<.03	<.01
15/08/96	3.5	0.01	<.002	<1	<.005	<.04	0.02	4	<.03		2		0.088	<.005	<.005	<.03	<.01
11/9/1996	4.7	0.02	<.002	2	<.005	0.1	<.02	8	<.03		4.9		0.11	<.005	<.005	0.03	0.01
21/10/96	5.3	0.03	<.002	4	<.005	<.04	<.02	5	<.03		4.9		0.141	<.005	<.005	<.03	0.02
21/11/96	5.4	0.03	<.002	1	<.005	<.04	<.02	6	<.03		3		0.141	<.005	<.005	<.03	0.04
19/12/96	7.2	0.04	<.002	4	<.005	<.04	<.02	6	<.03		3.6		0.177	<.005	<.005	<.03	0.05
14/01/97	4.8	0.02	0.002	1	<.005	<.04	<.02	9	<.03		3.02		0.136	<.005	<.005	<.03	0.01
17/02/97	7.1	0.03	0.007	3	0.014	0.07	<.02	33	<.03		4.24		0.194	<.005	<.005	<.03	0.01
11/3/1997	5.1	0.07	<.002	2	<.005	0.19	<.02	6	<.03	<.005	2.9	<.01	0.136	<.005	<.005	<.03	0.01
15/04/97	8	0.03	0.004	3	<.005	<.04	<.02	7	<.03	<.03	5	<.01	0.201	<.005	<.005	<.03	0.03
12/5/1997	2.1	0.05	<.002	<1	<.005	<.04	<.02	1	<.03	<.03	1.2	<.01	0.053	<.005	<.005	<.03	0.03
23/06/97	2.4	0.01	<.002	<1	<.005	0.09	<.02	2	<.03	<.03	1.5	<.01	0.06	0.007	<.005	<.03	0.01
15/07/97	4.2	<.01	<.002	3	<.005	0.21	<.02	3	<.03	<.03	3.4	<.01	0.102	0.011	<.005	<.03	0.08
12/8/1997	4.1	<.01	<.002	3	<.005	<.04	<.02	3	<.03	<.03	5.6	<.01	0.097	<.005	0.013	<.03	0.08

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
22/09/97	<.003	<.05	<.02	0.12	0.05	<.001	<.04	26.3	<.002	0.013	0.028	0.041	0.25	<1	<.005	5.4	<.01	<.002	3	<.005	<.04	<.02	5	<.03	<.03	4.1	<.01	0.138	0.006	<.005	<.03	0.07
20/10/97	<.003	<.05	<.02	<.05	0.102	<.001	<.04	27.3	<.002	<.005	<.005	0.012	0.11	<1	<.005	5.7	0.03	<.002	1	0.005	<.04	<.02	5	<.03	<.03	2.7	<.01	0.123	<.005	0.006	<.03	0.01
18/11/97	<.003	0.08	<.02	0.09	0.12	0.005	0.04	30.6	<.002	0.01	0.006	0.274	0.46	<1	0.01	6.3	<.01	<.002	3	0.025	<.04	<.02	6	<.03	<.03	2.9	<.01	0.142	0.006	0.02	<.03	0.03
8/12/1997	<.003	<.05	<.02	<.05	0.093	<.001	<.04	37.2	<.002	0.027	<.005	0.005	0.12	<1	0.007	7.6	0.03	0.009	3	<.005	<.04	0.03	6	<.03	<.03	3.8	0.01	0.178	<.005	0.007	0.03	0.02
12/1/1998	<.003	<.05	<.02	<.05	0.152	<.001	<.04	30.7	<.002	<.005	<.005	0.008	0.04	<1	<.005	6.2	0.03	0.004	2	<.005	<.04	<.02	5	<.03	<.03	2.9	<.01	0.153	<.005	<.005	<.03	0.06
24/02/98	<.003	0.16	<.02	0.26	0.05	<.001	<.04	33.5	<.002	<.005	<.005	0.005	0.14	<1	0.006	6.9	0.03	0.011	3	<.005	0.97	<.02	6	<.03	<.03	4.7	<.01	0.173	0.012	0.012	<.03	<.01
17/03/98	<.003	<.05	<.02	<.05	0.122	<.001	<.04	33.3	<.002	<.005	<.005	0.009	0.07	<1	<.005	6.6	0.03	<.002	3	<.005	<.04	<.02	5	<.03	<.03	4	<.01	0.172	0.006	0.009	<.03	0.02
13/04/98	<.003	<.05	<.02	<.05	0.156	<.001	<.04	33.6	<.002	<.005	0.01	0.036	0.06	<1	<.005	6.5	0.03	<.002	4	<.005	<.04	<.02	5	<.03	<.03	4.3	<.01	0.191	0.009	<.005	<.03	0.32
18/05/98	<.003	0.3	<.02	0.24	0.04	<.001	<.04	14	<.002	<.005	0.013	0.028	0.42	2	<.005	3	0.02	<.002	2	0.006	<.04	<.02	2	<.03	<.03	2.2	<.01	0.064	<.005	<.005	<.03	0.04
15/06/98	<.003	<.05	<.02	0.06	0.107	<.001	<.04	18.2	<.002	<.005	<.005	0.044	0.44	<1	<.005	3.8	0.02	<.002	<1	<.005	1.32	<.02	6	<.03	<.03	2.5	<.01	0.086	0.019	<.005	<.03	0.05
21/07/98	<.003	<.05	<.02	<.05	0.12	<.001	<.04	26.3	<.002	<.005	0.008	0.033	0.13	<1	<.005	5.6	0.02	0.003	3	<.005	0.23	<.02	3	<.03	<.03	2.6	<.01	0.126	<.005	<.005	<.03	0.03
10/8/1998	<.003	0.09	<.02	0.32	0.026	<.001	<.04	28.2	<.002	<.005	<.005	0.053	0.14	<1	<.005	5.7	<.01	<.002	2	<.005	0.2	<.02	6	<.03	<.03	3.3	<.01	0.138	<.005	<.005	<.03	0.03
25/09/98	<.003	<.05	<.02	<.05	0.194	<.001	<.04	26.8	<.002	<.005	0.015	0.019	0.14	1	<.005	5.3	<.01	<.002	4	<.005	0.48	<.02	4.1	<.03	<.03	3.5	<.01	0.141	0.03	0.008	<.03	0.01
19/10/98	<.003	0.07	<.02	0.23	0.056	<.001	<.04	28.3	<.002	<.005	<.005	0.01	0.33	<1	<.005	6	0.04	0.007	3	0.025	<.04	<.02	5.7	<.03	<.03	3.1	<.01	0.143	0.034	0.006	<.03	0.02
17/11/98	<.003	<.05	<.005	<.05	0.174	<.001	<.04	48.4	<.001	<.005	<.005	0.021	0.1	3	0.024	10.1	0.04	<.002	5	<.005	0.61	<.01	8	<.03	<.03	4.1	<.01	0.201	0.008	<.005	<.03	0.03
21/12/98	<.003	0.05	0.01	0.24	0.074	<.001	<.04	43.1	0.003	<.005	<.005	0.019	<.01	1	<.005	9.1	0.05	<.002	3	<.005	<.04	<.01	7	<.03	<.03	4.8	<.01	0.215	0.014	0.057	<.03	<.01
18/01/99	<.003	0.08	<.005	0.24	0.078	<.001	<.04	45.4	<.001	<.005	0.071	0.03	0.09	1	<.005	9.8	0.03	0.007	4	<.005	<.04	<.01	8	<.03	<.03	5	<.01	0.217	0.012	<.005	<.03	0.02
22/02/99	0.021	0.31	<.005	0.53	0.091	<.001	<.04	53.1	<.001	<.005	<.005	0.019	0.21	2	0.015	11.8	0.06	0.009	4	0.005	0.53	<.01	9	<.03	<.03	5.6	<.01	0.271	0.039	<.005	<.03	0.06
17/03/99	<.003	0.28	<.005	0.26	0.069	<.001	<.04	43.1	<.001	<.005	0.433	0.027	0.5	<1	<.005	8.7	0.06	<.002	4	<.005	0.33	<.01	8	<.03	<.03	4.7	<.01	0.196	0.026	<.005	<.03	0.04
20/04/99	<.003	0.13	<.005	0.22	0.066	<.001	<.04	34.2	<.001	0.007	<.005	0.018	0.62	<1	<.005	7.5	0.04	0.013	3	<.005	0.08	<.01	6	<.03	<.03	3.7	<.01	0.178	0.035	<.005	<.03	0.02
17/05/99	<.003	<.05	<.005	<.05	0.114	0.002	<.04	11.8	<.001	<.005	0.006	0.014	0.46	2	<.005	2.3	0.03	0.019	2	0.008	<.04	<.01		<.03	<.03	1.3	<.01	0.071	<.005	0.006	<.03	0.06
3/7/1999	<.003	0.35	<.005	0.47	0.046	<.001	<.04	16.7	<.001	<.005	<.005	0.017	1.11	<1	<.005	3.5	0.02	<.002	<1	<.005	<.04	<.01	3	0.04	<.03	4.1	<.01	0.069	<.005	<.005	<.03	0.04
27/07/99	<.003	<.05	<.005	<.05	0.077	<.001	<.04	15.1	<.001	0.081	<.005	0.004	0.35	3	<.005	3.4	0.01	0.007	5	<.005	0.14	<.01	3	<.03	<.005	2.7	<.01	0.101	<.005	<.005	<.03	<.01
12/8/1999	<.003	<.05	<.005	0.22	<.002	0.001	<.04	21.5	0.002	0.032	<.005	0.004	0.24	<1	<.005	4.3	0.01	<.002	3	<.005	<.04	<.01	4	<.03	<.005	5.6	<.01	0.103	0.007	0.01	<.03	0.01
31/10/99	<.003	0.16	<.005	0.06	0.133	0.001	<.04	25.5	0.001	0.012	0.012	0.011	0.18	3	<.005	5.4	0.04	<.002	4	0.011	<.04	<.01	8	<.03	<.005	4.4	<.01	0.131	<.005	<.005	<.03	0.01
22/11/99	<.003	<.05	<.005	<.05	0.152	<.001	<.04	27.6	<.001	<.005	<.005	0.023	0.42	<1	<.005	6.5	0.02	<.002	3	0.023	<.04	<.01	7	<.03	<.005	3.9	<.01	0.268	0.013	<.005	<.03	0.01
14/12/99	<.003	0.08	<.005	<.05	0.133	<.001	<.04	35.8	0.002	<.005	<.005	0.018	0.11	6	<.005	6.8	0.03	<.002	2	0.018	<.04	<.01	6	<.03	<.005	3	<.01	0.151	<.005	0.016	<.03	0.05
27/01/00	<.003	0.13	<.005	<.05	0.145	<.001	<.05	41.6	0.001	<.005	<.005	0.019	0.1	2	0.04	9	0.03	0.003	4	0.01	<1	0.01		<.03	<.005	4	<.01	0.176	0.018	<.005	<.03	<.01
28/02/00	<.003	0.18	<.005	<.05	0.119	<.001	<.05	39.6	<.001	0.008	0.059	0.038	0.15	3	0.046	8.8	0.04	<.002	4	0.011	<1	0.02	7	0.04	<.005	5.2	<.01	0.196	0.074	0.015	<.03	0.11
23/03/00	<.003	0.11	<.005	<.05	0.198	<.001	<.05	43.7	0.004	0.029	<.005	0.006	0.12	4	<.005	8.9	0.04	<.002	<1	<.005	<1	<.01	7	<.03	<.005	5.5	<.01	0.23	<.005	<.005	<.03	0.01
27/04/00	<.003	0.14	<.005	<.05	0.16	<.001	<.05	30.5	<.001	<.005	<.005	0.015	0.33	<1	<.005	6.7	0.05	<.002	3	<.005	<1	<.01		<.03	<.005	4	<.01	0.127	0.061	0.029	<.03	0.06
15/05/00	<.003	0.2	<.005	0.05	0.122	<.001	<.05	19.3	<.001	<.005	0.134	0.006	0.61	<1	<.005	4	0.03	0.004	<1	<.005	2	<.01		<.03	<.005	3.7	<.01	0.158	0.035	0.007	<.03	0.05
26/06/00	<.003	<.05	<.005	<.05	0.099	<.001	<.05	14.3	<.001	0.008	<.005	0.007	0.51	2	<.005	3	0.02	<.002	<1	<.005	4	<.01		<.03	<.005	2.4	<.01	0.042	0.1	0.071	<.03	0.08
25/07/00	<.003	<.05	<.005	<.05	0.14	0.001	<.05	18.6	0.001	0.017	<.005	0.01	1.32	2	0.089	4.2	0.02	<.002	3	0.017	2	<.01		<.03	<.005	2.9	<.01	0.206	0.052	0.1	<.03	0.11
29/08/00	<.003	0.31	<.005	0.05	0.106	<.001	<.05	23.7	<.001	0.011	<.005	0.011	0.63	1	<.005	4.8	0.03	<.002	3	0.017	<1	<.01		<.03	<.005	4.7	<.01	0.101	0.031	<.005	<.03	0.13
25/09/00	<0.01	0.11	<0.2	<0.1	0.04	<0.005	<0.1	23.6	<0.001	<0.01	<0.01	<0.01	0.15	<2		4.9	0.013	<0.01	<2	<0.05	<0.3	<0.05		<0.2	<0.2	4.25	<0.03	0.112	<0.01	<0.03		0.014
29/10/00	<.003	0.36	<.005	<.05	0.229	0.001	<.05	31.8	<.001	<.005	<.005	0.024	1.19	2	<.005	7.1	0.06	<.002	5	<.005	1	<.01	11	<.03	<.005	5.4	<.01	0.147	0.192	0.096	<.03	0.01
13/11/00	<0.003	0.1	<0.005	0.51	0.151	<0.001	<0.05	38.4	<0.001	<0.005	<0.005	<0.002	0.17	1	0.011	8.5	0.06	0.006	4	<0.005	0.09	<0.01	7	0.05	0.008	5	0.06	0.183	<0.005	<0.005	<0.03	<0.01
18/11/00	<0.01	0.1	<0.2	<0.1	0.06	<0.005	<0.1	39.2	<0.001	<0.01	<0.01	0.01	0.22	<2		7.8	0.044	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	5.03	<0.03	0.166	<0.01	<0.03		0.028
14/12/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	38.4	<0.001	<0.01	<0.01	<0.01	0.14	<2		8	0.049	<0.01	3	<0.05	<0.3	<0.05		<0.2	<0.2	5.26	<0.03	0.174	<0.01	<0.03		0.024
13/01/01	<.003	<.05	<.005	<.05	0.173	0.001	<.05	34.6	<.001	<.005	<.005	0.02	0.79	2	<.005	7.3	0.1	<.002	3	<.005	2	<.01	14	<.03	<.005	4.7	<.01	0.341	0.079	<.005	<.03	0.01
10/2/2001	<.003	<.05	0.116	<.05	0.227	0.002	<.05	39.3	<.001	<.005	<.005	0.011	0.16	3	<.005	8.6	0.05	<.002	6	0.008	<1	<.01	23	<.03	<.005	5	<.01	0.077	<.005	<.005	<.03	<.01
10/3/2001	<.003	0.29	<.005	0.12	0.22	<.001	<.05	40	<.001	<.005	0.009	0.03	0.14	1.57	0.011	8.65	0.07	<.002	6.39	<.005	<1	<.01	8.7	<.03	<.005	4.31	<.01	0.19	0.006	0.021	<.03	0.02
16/04/01	<.003	0.13	<.005	<.05	0.109	<.001	<.05	44.2	<.001	0.009	<.005	0.012	0.15	<1	<.005	9.3	0.05	<.002	1	0.014	<1	<.01	8	<.03	<.005	4.5	<.01	0.21	0.006	<.005	<.03	0.02
14/05/01	<.003	0.19	<.005	<.05	0.18	<.001	<.05	26.5	0.001	0.008	0.009	0.008	0.52	5	<.005	5.5	0.03	<.002	<1	0.015	<1	<.01	4	<.03	<.005	3	<.01	0.117	0.008	0.017	<.03	0.05
17/06/01	<.003	0.42	<.005	0.12	0.168	<.001	<.05	14.5	<.001	<.005	<.005	0.011	0.54	<1	0.012	2.9	0.07	0.003	3	<.005	<1	<.01	2	<.03	<.005	2	<.01	0.077	0.01	<.005	<.03	0.2
14/07/01	<.003	0.18	<.005	0.46	0.241	<.001	<.05	22.8	<.001	<.005	<.005	<.002	0.2	<1	0.006	4.6	0.02	<.002	<1	0.01	<1	<.01	4	<.03	0.007	4.3	<.01	0.125	0.005	<.005	<.03	0.18
14/08/01	<0.003	0.16	<0.005	<0.05	0.283	<0.001	<0.05	32.1	<0.001	<0.005	0.007	0.009	0.27	<1	<0.005	6.9	0.03	0.002	<1	0.009	<1	<0.01	5	<0.03	<0.005	5	<0.01	0.164	0.009	<0.005	<0.03	0.04
17/09/01	<0.003	0.06	<0.005	0.1	0.178	<0.001	<0.05	28.5	<0.001	<0.005	<0.005	<0.002	0.13	<1	0.005	6	0.02	<0.002	<1	<0.005	<1	<0.01	5	<0.03	<0.005	4.2	<0.01	0.156	<0.005	<0.005	<0.03	0.02
15/10/01	<0.003	0.07	0.011	0.34	0.203	<0.001	<0.05	28.9	<0.001	<0.005	<0.005	0.005	0.09	<1	0.009	5.9	0.05	<0.002	<1	<0.005	<1	<0.01	5	<0.03	0.032	4.3	<0.01	0.151	<0.005	<0.005	<0.03	0.05
13/11/01	<0.003	0.1	<0.005	0.51	0.151	<0.001	<0.05	38.4	<0.001	<0.005	<0.005	<0.002	0.17	1	0.011	8.5	0.08	0.006	4	<0.005	0.09	<0.01	7	0.05	0.008	5	0.06	0.183	<0.005	<0.005	<0.03	<0.01
15/12/01	<0.001	0.05	<0.005	0.18	0.061	<0.001	<0.05	35.5	0.001	<0.005	0.014	<0.002	0.13	<1	0.003	8.5	0.04	0.012	<1	<0.005	0.04	<0.01	7	<0.03	<0.005	4.4	<0.01	0.166	<0.005	<0.005	<0.03	0.01

STATION: X10

Date	CU-T	FE-T	MN-T	NA-T	PB-T	ZN-T
1/1/1987	<0.01		<0.01	1.9	0.02	0.02
1/2/1987	<0.01		<0.01	1.8	<0.01	0.02
1/3/1987	<0.01		<0.01	1.9	<0.01	<0.01
1/4/1987	<0.01		<0.01	1.8	<0.01	0.02
1/5/1987	<0.01		0.04	0.75	0.03	0.04
1/6/1987	<0.01		0.02	0.1	0.01	0.02
1/7/1987	<0.01		0.02	1.5	0.02	0.02
1/8/1987	<0.01		0.02	1.5	0.01	0.03
11/8/1987	<0.005		0.02	1.5	0.01	0.03
1/9/1987	<0.01		0.02	2.1	<0.01	0.03
8/9/1987	<0.005		0.02	2.1	<0.005	0.03
1/10/1987	<0.01		0.02	2.1	<0.01	0.02
6/10/1987	<0.005		0.02	2.1	<0.005	0.02
1/11/1987	<0.01		0.02	2.3	<0.01	0.03
10/11/1987	<0.005		0.02	2.3	<0.005	0.03
1/12/1987	<0.01		0.01	2.4	<0.01	0.02
9/12/1987	<0.005		0.01	2.4	<0.005	0.02
27/01/88	0.002		<0.002	2.2	<0.005	0.031
2/2/1988	0.004		3.8	78	0.005	0.005
10/2/1988	0.006		3.87	74	0.005	0.01
17/02/88	<0.002		0.002	2	<0.005	0.013
24/02/88	0.005		3.86	78	0.005	0.009
2/3/1988	0.005		3.99	78	0.005	0.011
9/3/1988	0.003		3.85	76	0.005	0.003
16/03/88	0.004		3.73	78	0.005	0.005
23/03/88	<0.002		0.003	2	<0.005	0.006
24/03/88	<0.002		0.003	2	<0.005	0.006
29/03/88	0.006		3.88	78	0.005	0.009
25/04/88	0.002		0.048	2.5	0.005	0.23
25/05/88	0.002		0.011	1.4	<0.005	0.012
16/06/88	<0.002		0.01	1.2	<0.005	0.01
11/7/1988	0.002		0.011	1.4	0.006	0.01
16/08/88	<0.002		0.023	1.8	0.006	0.017
13/09/88	0.003		0.019	1.8	0.033	0.017
6/10/1988	0.002	0.355	0.022	1.4	0.008	0.017
1/11/1988	0.002		0.036	2	<0.005	0.027
30/11/88	<0.002	0.06	0.011	2.4	0.005	0.02
27/01/89	0.002	0.205	0.023	1.9	0.008	0.014
13/02/89	0.003	0.31	0.028	1.9	0.032	0.045
14/03/89	<0.002	0.05	0.002	1.8	<0.005	0.034
12/4/1989	<0.002	0.135	0.012	1.9	0.005	0.025
9/5/1989	0.007	2.25	0.07	<1	0.031	0.033

Table C11. Surface Water Quality of Anvil and Rose Creeks, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/06/89												0.002
10/7/1989												0.002
14/08/89												0.002
11/9/1989												0.002
10/10/1989												0.002
15/11/89												0.002
11/12/1989												0.002
15/01/90												<0.002
12/2/1990												<0.002
17/04/90												0.002
11/6/1990												0.002
2/1/1991												0.007
4/3/1991												0.001
1/5/1991												0.003
2/7/1991												0.001
3/9/1991												0.001
6/11/1991												0.001
20/02/92												0.001
12/3/1992												0.004
24/11/92												<0.001
25/11/94												<0.002
21/06/95												<0.002
20/07/95	<0.003	0.17	<0.02		0.003	0.001	<0.04	24.6	<0.002	<0.005	<0.005	<0.002
18/09/95	<0.003	0.04	<0.02		0.036	<0.001	<0.04	20.5	<0.002	<0.005	<0.005	<0.002
16/10/95	<0.003	0.2	<0.02		0.043	<0.001	0.04	27.6	<0.002	<0.005	<0.005	<0.002
14/11/95	<0.003	0.19	<0.02		0.064	0.001	<0.04	40.5	<0.002	<0.005	<0.005	0.007
25/01/96	<.003	0.03	<.02		0.073	<.001	<.04	32.1	0.002	<.005	0.008	0.008
12/3/1996	<.003	0.18	<.02		0.076	<.001	<.04	34.6	<.002	<.005	<.005	<.002
13/05/96	<.003	0.22	<.02		0.047	<.001	<.04	19	<.002	<.005	<.005	0.015
28/05/96	<.003	0.24	<.02		0.03	<.001	<.04	9.6	<.002	<.005	<.005	<.002
11/6/1996	<.003	<.05	<.02		0.036	<.001	<.04	15.8	<.002	<.005	<.005	<.002
17/07/96	<.003	<.05	<.02		0.112	<.001	<.04	16	<.002	<.005	<.005	<.002
3/9/1996	<.003	0.16	<.02		0.225	0.002	<.04	23.9	<.002	0.007	<.005	<.002
11/9/1996	<.003	0.05	<.02		0.139	0.003	<.04	22.4	<.002	<.005	<.005	0.002
21/10/96	<.003	0.05	<.02		0.046	<.001	<.04	29.8	<.002	<.005	<.005	0.024
19/12/96	<.003	0.07	<.02		0.12	0.003	<.04	48.2	<.002	<.005	<.005	0.007
4/3/1997	<.003	0.21	<.02	0.1	0.054	<.001	<.04	33.4	<.002	<.005	<.005	<.002
15/04/97	<.003	0.06	0.02	0.16	0.065	0.003	<.04	40.4	<.002	<.005	0.008	0.006
12/5/1997	<.003	0.14	<.02	<.05	0.02	<.001	<.04	10.2	<.002	<.005	<.005	<.002
23/06/97	<.003	<.05	<.02	0.08	0.024	0.001	<.04	13.9	<.002	0.01	<.005	0.003
22/09/97	<.003	<.05	<.02	0.08	0.051	<.001	<.04	27.1	<.002	0.014	0.02	0.038
18/11/97	<.003	<.05	0.02	<.05	0.113	0.002	<.04	35.5	<.002	0.007	<.005	0.01
8/12/1997	<.003	<.05	<.02	<.05	0.09	<.001	<.04	34.2	<.002	0.033	<.005	0.005
18/05/98	<.003	0.29	<.02	0.21	0.041	<.001	<.04	14.4	<.002	<.005	0.013	0.028
15/06/98	<.003	0.05	<.02	<.05	0.118	<.001	<.04	20.2	<.002	<.005	<.005	0.034
10/10/98	<.003	0.08	<.02	0.15	0.054	<.001	<.04	29.6	<.002	0.011	<.005	0.013
21/12/98	<.003	0.09	0.008	0.25	0.072	<.001	<.04	43	0.003	<.005	0.008	0.021
17/05/99	<.003	0.1	<.005	<.05	0.116	0.001	<.04	11.9	<.001	0.01	0.008	0.022
27/07/99	<.003	0.39	<.005	0.1	0.112	0.002	<.04	18.4	0.005	0.103	0.006	0.007
14/12/99	<.003	<.05	<.005	<.05	0.112	<.001	<.04	37.6	<.001	<.005	<.005	0.014
23/03/00	<.003	0.1	<.005	<.05	0.191	<.001	<.05	44	0.003	0.038	<.005	0.005
27/04/00	<.003	0.14	<.005	<.05	0.19	<.001	<.05	35	0.002	<.005	<.005	0.01
15/05/00	<.003	0.21	0.01	<.05	0.108	<.001	<.05	20	<.001	0.009	0.172	0.008
28/06/00	<.003	<.05	<.005	<.05	0.109	0.001	<.05	18	<.001	<.005	0.063	0.007
25/07/00	<.003	<.05	<.005	<.05	0.14	0.001	<.05	21.4	<.001	0.008	<.005	0.009
29/08/00	<.003	0.25	<.005	<.05	0.097	<.001	<.05	20.3	<.001	<.005	<.005	<.002
25/09/00	<0.01	0.15	<0.2	<0.1	0.04	<0.005	<0.1	24.6	<0.001	<0.01	<0.01	<0.01
29/10/00	<.003	0.26	0.025	0.05	0.238	0.001	<.05	34.5	<.001	<.005	0.008	0.025
13/11/00	<0.003	0.08	0.028	0.17	0.147	<0.001	<0.05	41.4	<0.001	<0.005	<0.005	0.005
18/11/00	<0.01	0.06	<0.2	<0.1	0.06	<0.005	<0.1	42	<0.001	<0.01	<0.01	<0.01
14/12/00	<0.01	<0.05	<0.2	<0.1	0.08	<0.005	<0.1	47.9	<0.001	<0.01	<0.01	<0.01
13/01/01	<.003	<.05	<.005	<.05	0.201	0.001	<.05	36.6	<.001	0.011	<.005	0.009
10/2/2001	<.003	<.05	<.005	0.06	0.206	0.002	<.05	40.9	<.001	<.005	<.005	0.018
10/3/2001	<.003	0.28	<.005	0.11	0.26	<.001	<.05	42	<.001	<.005	<.005	0.02
16/04/01	<.003	0.08	<.005	<.05	0.121	<.001	0.08	46.9	<.001	<.005	<.005	0.006
14/05/01	<.003	0.14	<.005	<.05	0.208	<.001	<.05	30.8	<.001	<.005	<.005	0.006
17/06/01	<.003	0.39	<.005	0.12	0.195	<.001	<.05	14.8	<.001	<.005	<.005	0.008
14/07/01	<.003	0.14	<.005	0.27	0.216	<.001	<.05	25	<.001	<.005	<.005	0.005
14/08/01	<0.003	0.1	<0.005	<0.05	0.21	<0.001	<0.05	32.5	<0.001	<0.005	<0.005	0.004
17/09/01	<0.003	0.07	<0.005	0.09	0.178	<0.001	<0.05	29.5	<0.001	<0.005	<0.005	<0.002
15/10/01	<0.003	0.06	<0.005	0.2	0.226	<0.001	<0.05	34	<0.001	<0.005	<0.005	0.003
13/11/01	<0.003	0.08	0.028	0.17	0.147	<0.001	<0.05	41.4	<0.001	<0.005	<0.005	0.005
15/12/01	<0.001	0.06	<0.005	0.07	0.077	0.001	<0.05	40.1	<0.001	0.006	0.006	<0.002

Date	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/06/89	0.182				0.01		1.2			0.005
10/7/1989	0.005				0.007		1.6			0.005
14/08/89	0.072				0.007		2			0.005
11/9/1989	0.053				0.007		1.9			0.005
10/10/1989	0.053				0.007		1.9			0.005
15/11/89	0.158				0.075		2.1			0.005
11/12/1989	0.011				0.002		1.6			0.005
15/01/90										<0.005
12/2/1990										<0.005
17/04/90										
11/6/1990										0.005
2/1/1991										
4/3/1991										
1/5/1991										
2/7/1991										
3/9/1991										
6/11/1991										
20/02/92										
12/3/1992										0.004
24/11/92										<0.003
25/11/94										
21/06/95										<0.02
20/07/95	0.28		<0.005	6.1	0.04	<0.002	1	0.016	0.1	<0.02
18/09/95	0.22		<0.005	5.3	<0.010	<0.002	1	<0.005	<0.04	<0.02
16/10/95	1.38		<0.005	6.5	0.01	<0.002	<1.0	<0.005	<0.04	<0.02
14/11/95	0.3		<0.005	9.1	0.12	0.002	1	<0.005	<0.04	<0.02
25/01/96	0.24		<.005	7	0.02	<.002	1	<.005	<.04	<.02
12/3/1996	0.12		<.005	7.6	<.01	<.002	<1	<.005	<.04	<.02
13/05/96	0.51		<.005	4.6	<.01	<.002	<1	<.005	0.09	<.02
28/05/96	0.6		<.005	2.2	0.05	<.002	<1	<.005	<.04	<.02
11/6/1996	0.32		<.005	3.5	<.01	<.002	<1	<.005	<.04	<.02
17/07/96	0.19		<.005	3.5	0.02	0.005	<1	<.005	0.05	<.02
3/9/1996	0.32		0.007	5.5	0.92	<.002	1	0.009	<.04	<.02
11/9/1996	0.93		<.005	5.2	0.02	<.002	1	0.005	0.05	<.02
21/10/96	0.08		<.005	6.9	0.03	<.002	4	<.005	<.04	<.02
19/12/96	0.16		<.005	12.3	0.01	0.006	4	0.017	0.17	<.02
4/3/1997	0.04		<.005	7.5	<.01	<.002	2	<.005	0.22	<.02
15/04/97	0.27	<1	<.005	8.2	0.08	0.003	2	0.017	<.04	<.02
12/5/1997	0.8	<1	<.005	2.2	0.04	<.002	<1	<.005	<.04	<.02
23/06/97	0.36	<1	<.005	3	0.01	<.002	<1	<.005	0.07	<.02
22/09/97	0.3	<1	<.005	5.9	<.01	<.002	2	<.005	0.2	<.02
18/11/97	0.59	<1	<.005	7.9	0.03	<.002	3	0.015	<.04	<.02
8/12/1997	0.22	2	<.005	7.5	0.05	0.003	3	<.005	<.04	<.02
18/05/98	0.46	1	<.005	3.6	0.02	<.002	2	0.007	0.81	<.02
15/06/98	0.33	<1	0.014	4.3	0.02	0.01	<1	<.005	1.27	<.02
10/10/98	0.26	<1	<.005	8.7	0.04	0.002	3	0.008	1.56	<.02
21/12/98	<.01	1	<.005	9	0.09	<.002	3	0.014	<.04	0.03
17/05/99	0.64	2	<.005	2.5	0.05	<.002	1	0.009	2.92	0.01
27/07/99	1.19	<1	<.005	6	0.05	0.014	<1	0.012	<.04	<.01
14/12/99	0.17	4	0.008	7.5	0.04	<.002	<1	0.007	<.04	<.01
23/03/00	0.17	2	<.005	9.4	0.02	<.002	<1	<.005	<1	<.01
27/04/00	0.3	<1	<.005	8.1	0.04	<.002	3	<.005	<1	<.01
15/05/00	0.62	<1	0.015	4.5	0.04	<.002	<1	0.006	<1	<.01
28/06/00	0.27	3	<.005	3.8	0.02	<.002	<1	<.005	2	<.01
25/07/00	0.65	2	0.128	5.4	0.01	0.02	3	0.016	6	<.01
29/08/00	0.29	<1	<.005	4.8	<.01	<.002	2	0.014	3	<.01
25/09/00	0.22	<2		5.7	0.019	<0.01	<2	<0.05	<0.3	<0.05
29/10/00	0.75	3	<.005	8.4	0.07	<.002	5	<.005	5	<.01
13/11/00	0.19	1	0.016	9.7	0.09	<0.002	2	<0.005	<0.01	0.01
18/11/00	0.29	<2		8.8	0.054	<0.01	2	<0.05	<0.3	<0.05
14/12/00	0.16	<2		10.9	0.062	<0.01	3	<0.05	<0.3	<0.05
13/01/01	0.39	3	<.005	8.4	0.1	<.002	3	0.006	<1	<.01
10/2/2001	0.35	3	<.005	9.4	0.05	<.002	5	<.005	<1	<.01
10/3/2001	0.18	2.36	<.005	9.53	0.05	<.002	6.19	<.005	<1	<.01
16/04/01	0.17	<1	<.005	10.2	0.04	<.002	2	<.005	<1	<.01
14/05/01	0.72	3	<.005	6.5	0.05	<.002	<1	<.005	<1	<.01
17/06/01	0.58	<1	<.005	3.6	0.06	0.002	4	<.005	<1	<.01
14/07/01	0.23	<1	0.005	5.7	0.03	<.002	3	<.005	<1	<.01
14/08/01	0.36	<1	<0.005	7.6	0.03	<0.002	<1	0.012	<1	<0.01
17/09/01	0.26	<1	0.006	6.9	0.03	<0.002	<1	<0.005	<1	<0.01
15/10/01	0.23	1	0.016	7.7	0.08	<0.002	<1	<0.005	<1	<0.01
13/11/01	0.19	1	0.016	9.7	0.09	<0.002	2	<0.005	<0.01	0.01
15/12/01	0.13	<1	0.013	9.4	0.06	<0.002	<1	<0.005	<0.01	<0.01

Date	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/06/89										0.015
10/7/1989										0.02
14/08/89										0.011
11/9/1989										0.016
10/10/1989										0.021
15/11/89										0.339
11/12/1989										0.009
15/01/90										0.014
12/2/1990										0.009
17/04/90										0.014
11/6/1990										0.021
2/1/1991										0.017
4/3/1991										0.002
1/5/1991										0.07
2/7/1991										0.004
3/9/1991										0.036
6/11/1991										0.028
20/02/92										0.031
12/3/1992										0.024
24/11/92										0.225
25/11/94										0.09
21/06/95										<0.01
20/07/95	14.2	<0.02		1.06		0.128	<0.005	<0.005	<0.02	<0.010
18/09/95	5	<0.02		2.21		0.101	<0.005	<0.005	<0.02	0.01
16/10/95	11	<0.02		0.94		0.125	<0.005	<0.005	<0.02	0.01
14/11/95	15	<0.02		2.19		0.165	<0.005	<0.005	<0.02	0.13
25/01/96	7	<.02		1.92		0.117	<.005	<.005	<.02	0.03
12/3/1996	17	<.03		0.68		0.123	<.005	<.005	<.02	0.01
13/05/96	8	<.03	<.02	1.49		0.096	<.005	<.01	<.03	0.03
28/05/96	1	<.03	<.02	0.37		0.046	<.005	0.006	<.03	0.03
11/6/1996	12	<.03		1.62		0.079	<.005	0.008	<.03	<.01
17/07/96	4	<.03		3.6		0.075	<.005	<.005	<.03	0.03
3/9/1996	68	<.03		5		0.107	0.009	<.005	<.03	0.05
11/9/1996	4	<.03		4.2		0.109	<.005	<.005	<.03	0.03
21/10/96	5	<.03		4.5		0.143	<.005	<.005	<.03	0.08
19/12/96	10	<.03		3.3		0.207	<.005	0.005	<.03	0.09
4/3/1997	136	<.03	<.005	3.2	<.01	0.154	<.005	<.005	<.03	0.03
15/04/97	8	<.03	<.03	4.5	<.01	0.187	<.005	<.005	<.03	0.23
12/5/1997	1	<.03	<.03	0.9	<.01	0.046	<.005	<.005	<.03	0.02
23/06/97	3	<.03	<.03	1.6	<.01	0.064	<.005	<.005	<.03	0.02
22/09/97	5	<.03	<.03	3.9	<.01	0.138	<.005	<.005	<.03	0.09
18/11/97	7	<.03	<.03	3.2	<.01	0.159	<.005	0.015	<.03	0.09
8/12/1997	7	<.03	<.03	3	0.05	0.157	<.005	<.005	<.03	0.09
18/05/98	1	<.03	<.03	1.9	<.01	0.063	<.005	<.005	<.03	0.04
15/06/98	7	<.03	<.03	2.5	<.01	0.088	0.012	<.005	1.05	0.1
10/10/98	6.7	<.03	<.03	2.8	<.01	0.137	0.018	<.005	<.03	0.05
21/12/98	9	<.03	<.03	4.1	<.01	0.203	0.011	0.044	<.03	0.1
17/05/99		<.03	<.03	1.3	<.01	0.07	<.005	0.022	<.03	0.06
27/07/99	4	<.03	<.005	3.6	<.01	0.1	0.03	0.041	<.03	0.04
14/12/99	7	<.03	<.005	2.9	<.01	0.156	<.005	<.005	<.03	0.08
23/03/00	8	<.03	<.005	5.4	<.01	0.222	<.005	<.005	<.03	0.05
27/04/00		<.03	<.005	4.2	<.01	0.147	0.046	0.018	<.03	0.07
15/05/00		<.03	<.005	3.5	<.01	0.168	0.02	<.005	<.03	0.07
28/06/00		<.03	<.005	2.6	<.01	0.065	0.042	0.017	<.03	0.06
25/07/00		<.03	<.005	3.1	<.01	0.208	0.024	0.03	<.03	0.08
29/08/00		<.03	<.005	4.4	<.01	0.096	0.009	<.005	<.03	0.18
25/09/00		<0.2	<0.2	4.45	<0.03	0.108	<0.01	<0.03		0.011
29/10/00	18	<.03	<.005	5.3	<.01	0.172	0.094	<.005	<.03	0.09
13/11/00	8	<0.03	<0.005	4.9	0.15	0.19	<0.005	<0.005	<0.03	0.08
18/11/00		<0.2	<0.2	5.02	<0.03	0.176	<0.01	<0.03		0.039
14/12/00		<0.2	<0.2	5.94	<0.03	0.216	<0.01	<0.03		0.062
13/01/01	17	<.03	<.005	4.5	<.01	0.345	0.027	<.005	<.03	0.08
10/2/2001	25	<.03	<.005	5	<.01	0.075	0.011	<.005	<.03	0.05
10/3/2001	9.5	<.03	<.005	4.32	<.01	0.2	<.005	0.019	<.03	0.04
16/04/01	9	<.03	<.005	4.5	<.01	0.22	<.005	<.005	<.03	0.07
14/05/01	6	<.03	<.005	3.2	<.01	0.134	<.005	<.005	<.03	0.07
17/06/01	2	<.03	<.005	1.4	<.01	0.069	0.008	<.005	<.03	0.04
14/07/01	4	<.03	0.007	4.5	<.01	0.133	<.005	<.005	<.03	0.07
14/08/01	5	<0.03	<0.005	4.5	<0.01	0.163	0.008	<0.005	<0.03	0.01
17/09/01	5	<0.03	<0.005	4.1	<0.01	0.154	<0.005	<0.005	<0.03	0.02
15/10/01	6	<0.03	<0.005	4.5	<0.01	0.168	<0.005	<0.005	<0.03	0.07
13/11/01	8	<0.03	<0.005	4.9	0.15	0.19	<0.005	<0.005	<0.03	0.06
15/12/01	7	<0.03	<0.005	4.3	<0.01	0.176	<0.005	<0.005	<0.03	0.05

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: X3																																
10/10/1986												0.1					2.33		78.5			0.13										0.37
14/10/86																																0.52
23/10/86												0.07										0.1										0.28
31/10/86												0.06										0.09										0.22
6/11/1986												0.06										0.08										0.21
13/11/86												0.05										0.07										0.16
21/11/86												0.08										0.1										0.24
28/11/86												0.07										0.06										0.13
4/12/1986												0.04					1.22		74.5			0.06										0.13
10/12/1986												0.11					1.12		73			0.05										0.11
16/12/86												0.01					0.79		74.5			0.06										0.07
23/12/86												0.01					0.92		67			0.07										0.07
31/12/86												0.02					0.72		71			0.06										0.07
7/1/1987												0.03					0.92		68			0.06										0.11
15/01/87												0.04					1.1		68			0.06										0.1
20/01/87												0.04					1.07		67			0.07										0.12
28/01/87												0.02					1.12		67			0.04										0.1
3/2/1987												0.02					1.22		69			0.05										0.09
10/2/1987												0.04					1.01		71			0.04										0.09
17/02/87												0.03					1.05		69			0.04										0.09
24/02/87												0.03					1.11		75			0.04										0.09
3/3/1987												0.03					1.11		70.5			0.07										0.1
10/3/1987												0.02					1.17		74			0.05										0.11
17/03/87												0.04					1.1		80			0.05										0.1
24/03/87												0.06					1.05		80			0.05										0.09
1/4/1987												0.07					0.99		89			0.05										0.09
7/4/1987												0.06					0.87		89			0.05										0.08
14/04/87												0.06					0.87		90			0.05										0.08
20/04/87												0.04					0.83		92			0.06										0.07
28/04/87												0.03					0.79		92			0.05										0.07
5/5/1987												0.02					0.72		95			0.04										0.06
12/5/1987												0.01					0.81		94			0.03										0.06
19/05/87												0.01					0.85		91			0.04										0.07
26/05/87												0.01					0.92		88			0.05										0.19
4/6/1987												<0.01					1.07		81			0.06										0.16
11/6/1987												0.01					1		83			0.06										0.16
16/06/87												0.01					1		82			0.06										0.15
26/06/87												<0.01					1.12		88			0.09										0.14
30/06/87												0.01					1.1		86			0.11										0.13
6/7/1987												0.01					1.18		85			0.1										0.12
13/07/87												0.01					1.15		84			0.14										0.13
20/07/87												0.01					1.14		85			0.18										0.15
28/07/87												0.01					1.38		87			0.2										0.16
4/8/1987												0.02					1.38		93			0.25										0.18
11/8/1987												0.02					1.39		95			0.23										0.21
18/08/87												0.04					1.38		100			0.22										0.19
25/08/87												0.07					1.35		100			0.22										0.21
1/9/1987												0.07					1.29		98			0.2										0.21
8/9/1987												0.09					1.26		100			0.18										0.19
15/09/87												0.09					1.27		116			0.18										0.19
21/09/87												0.09					1.23		118			0.18										0.19
2/10/1987												0.1					1.22		121			0.19										0.29
6/10/1987												0.11					1.23		118			0.18										0.3
13/10/87												0.11					1.28		117			0.17										0.29
20/10/87												0.1					1.32		110			0.16										0.27
27/10/87												0.08					1.36		104			0.15										0.27
3/11/1987												0.06					1.35		101			0.15										0.27
10/11/1987												0.05					1.36		100			0.15										0.26
17/11/87												0.04					1.4		95			0.14										0.23
24/11/87												0.04					1.44		96			0.15										0.21
1/12/1987												0.1					1.47		95			0.17										0.22
9/12/1987												0.14					1.5		93			0.14										0.19
15/12/87												0.23					1.63		103			0.17										0.27
23/12/87												0.14					1.42		99			0.2										0.2
30/12/87												0.13					1.43		98			0.15										0.18
5/1/1988												0.11					1.53		96			0.116										0.195
12/1/1988												0.101					1.44		102			0.105										0.18
19/01/88												0.09					1.44		102			0.098										0.16
27/01/88												0.084					1.32		105			0.111										0.134
2/2/1988												0.075					1.18		106			0.093										0.114
10/2/1988												0.043					1.105		109			0.093										0.086
17/02/88												0.064					1.045		109			0.092										0.074
24/02/88												0.047					1.01		108			0.098										0.06
2/3/1988												0.043					0.915		105			0.096										0.064
9/3/1988												0.029					0.77		107			0.092										0.061
16/03/88												0.019					0.71		107			0.097										0.07
23/03/88												0.018					0.63		110			0.102										0.051
29/03/88												0.019					0.64		109			0.105										0.055
5/4/1988												0.019					0.565		113			0.096										0.055
12/4/1988												0.01					0.6		116			0.096										0.044
20/04/88												0.01					0.515		117			0.11										0.058
25/04/88												0.019					0.51		117			0.109										0.14
29/04/88												0.01					0.515		117			0.11										0.055
4/5/1988												0.009					0.505		112			0.1										0.071
11/5/1988												0.013					0.465		110			0.119										0.077
19/05/88												0.011					0.5		114			0.128										0.063
25/05/88												0.008					0.405		104			0.103										0.06
1/6/1988												0.009					0.51		115			0.108										0.059
7/6/1988												0.01					0.54		111			0.125										0.063
10/06/88												0.019					0.6		109			0.2										0.179
23/06/88												0.01					0.895		104			0.18										0.097
28/06/88												0.011					1		103			0.173										0.115
6/7/1988												0.01					1.06		105			0.169										0.116
11/7/1988												0.011					1.43		102			0.205										0.2

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
20/07/88												0.009					1.28		102			0.18										0.18
27/07/88												0.01					1.37		109			0.197										0.285
4/8/1988												0.021					1.2		121			0.171										0.245
10/8/1988												0.011					1.15		132			0.21										0.225
16/08/88												0.008					1.1		137			0.2										0.2
23/08/88												0.011					0.94		137			0.225										0.177
24/08/88												0.02					1		135			0.285										0.255
31/08/88												0.021					0.92		134			0.27										0.215
9/9/1988												0.018					1.12		129			0.3										0.43
13/09/88												0.021					1.29		135			0.205										0.48
22/09/88												0.026					1.6		130			0.17										0.72
29/09/88												0.019					1.64		138			0.18										0.755
6/10/1988												0.017	0.53				1.65		123			0.165										0.66
14/10/88												0.014	0.205				2.2		135			0.14										0.675
14/11/88												0.01					1.8		133			0.105										0.51
21/11/88												0.02					1.42		119			0.15										0.39
30/11/88												0.017	0.75				2		121			0.205										0.405
7/12/1988												0.008	0.18				1.9		123			0.094										0.34
12/12/1988												0.011					1.98		122			0.088										0.316
21/12/88												0.025					2.1		110			0.08										0.23
28/12/88												0.045	0.12				1.96		113			0.091										0.21
6/1/1989												0.05					2.1		118			0.099										0.225
10/1/1989												0.036					1.9		114			0.075										0.16
17/01/89												0.035	0.165				1.79		108			0.069										0.155
25/01/89												0.028	0.14				2.15		112			0.066										0.16
3/2/1989												0.022					1.75		116			0.062										0.148
7/2/1989												0.016					1.95		114			0.059										0.12
13/02/89												0.019	0.185				1.95		114			0.049										0.14
20/02/89												0.015					2.05		116			0.048										0.172
27/02/89												0.012					1.85		112			0.035										0.071
6/3/1989												0.011					1.73		117			0.033										0.081
14/03/89												0.006	0.17				1.45		117			0.036										0.068
20/03/89												0.007	0.17				1.27		119			0.033										0.058
27/03/89												0.008					1.1		122			0.031										0.038
3/4/1989												0.01					0.98		120			0.033										0.033
10/4/1989												0.008	0.15				0.86		109			0.032										0.029
17/04/89												0.008					0.8		112			0.037										0.038
26/04/89												0.005					0.5		117			0.035										0.059
2/5/1989												0.004					0.54		101			0.026										0.049
8/5/1989												0.002	0.34				0.61		97			0.027										0.056
16/05/89												0.004					0.85		99			0.05										0.303
23/05/89												0.004					0.72		94			0.055										0.374
29/05/89												0.008					0.724		91			0.074										0.348
5/6/1989												0.009					0.905		85			0.089										0.334
12/6/1989												0.012	0.148				0.956		86			0.097										0.302
20/06/89												0.014	0.172				1.07		89			0.123										0.362
26/06/89												0.011	0.099				1.05		91			0.131										0.351
3/7/1989												0.011	0.143				1.07		99			0.145										0.304
10/7/1989												0.009	0.126				1.17		121			0.158										0.259
17/07/89												0.007	0.105				0.963		133			0.14										0.174
25/07/89												0.012	0.229				1.06		136			0.18										0.183
31/07/89												0.007	0.172				1.26		146			0.145										0.17
7/8/1989												0.007	0.143				1.23		144			0.132										0.12
14/08/89												0.009	0.146				1.04		150			0.134										0.11
21/08/89												0.006	0.195				1.02		150			0.147										0.097
28/08/89												0.006	0.204				1.03		158			0.132										0.081
5/9/1989												0.008	0.219				1.2		160			0.138										0.082
11/9/1989												0.008	0.214				1.09		169			0.111										0.078
18/09/89												0.009	0.324				1.47		152			0.119										0.133
25/09/89												0.009	0.257				1.51		174			0.096										0.126
2/10/1989												0.011	0.275				1.8		147			0.099										0.118
10/10/1989												0.012	0.99				1.47		116			0.077										0.113
16/10/89												0.01	0.35				2.1		132			0.089										0.115
23/10/89												0.012	0.297				2.01		136			0.081										0.1
30/10/89												0.013	0.317				1.82		136			0.084										0.121
6/11/1989												0.024	0.257				1.78		111			0.055										0.09
15/11/89												0.025	0.315				1.86		112			0.072										0.118
20/11/89												0.027	0.251				1.78		111			0.052										0.079
27/11/89												0.038	0.34				1.85		107			0.052										0.082
4/12/1989												0.039	0.241				1.84		103			0.051										0.081
11/12/1989												0.059	0.287				1.77		104			0.045										0.101
18/12/89												0.062	0.245				1.66		112.6			0.05										0.09
28/12/89												0.072	0.286				1.71		106			0.057										0.087
3/1/1990												0.055										0.061										0.087
8/1/1990												0.058										0.067										0.102
15/01/90												0.049										0.073										0.108
22/01/90												0.039										0.061										0.101
1/2/1990												0.027										0.079										0.09
6/2/1990												0.024										0.089										0.117
12/2/1990												0.018										0.058										0.076
19/02/90												0.012										0.048										0.082
26/02/90												0.03										0.05										0.18
5/3/1990												0.011										0.044										0.047
12/3/1990												0.006										0.041										0.06
19/03/90												0.003										0.026										0.02
26/03/90												0.007										0.037										0.058
2/4/1990												0.006										0.033										0.041
9/4/1990												0.007										0.056										0.057
17/04/90												0.003										0.037										0.038
26/04/90												0.004										0.03										0.041
2/5/1990												0.006										0.057										0.087
9/5/1990												0.006										0.055										0.253
14/05/90												0.005										0.059										0.41
21/05/90												0.007										0.09										0.4
28/05/90												0.006										0.092										0.355
4/6/1990												0.005										0.101										0.219
11/6/1990												0.004										0.086										0.197

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
18/06/90												0.008										0.097										0.144
24/06/90												0.004										0.104										0.128
4/7/1990												0.004										0.096										0.1
11/7/1990												0.003										0.099										0.093
16/07/90												0.003										0.107										0.083
22/07/90												0.002										0.108										0.077
29/07/90												0.005										0.1										0.084
6/8/1990												0.004										0.104										0.076
13/08/90												0.003										0.112										0.084
20/08/90												0.005										0.099										0.087
26/08/90												0.003										0.096										0.066
5/9/1990												0.004										0.096										0.054
10/9/1990												0.005										0.085										0.153
19/09/90												0.002										0.112										0.169
25/09/90												0.004										0.129										0.26
2/10/1990												0.005										0.144										0.281
11/10/1990												0.013										0.152										0.5
18/10/90												0.011										0.283										0.535
24/10/90												0.031										0.365										0.68
31/10/90												0.013										0.198										0.7
8/11/1990												0.011										0.246										0.41
14/11/90												0.007										0.194										0.34
21/11/90												0.008										0.17										0.49
29/11/90												0.015										0.185										0.725
4/12/1990												0.011										0.17										0.765
10/12/1990												0.011										0.123										0.635
17/12/90												0.01										0.18										0.252
24/12/90												0.016										0.171										0.658
1/1/1991												0.01										0.15										0.488
7/1/1991												0.009										0.153										0.478
14/01/91												0.014										0.111										0.401
21/01/91												0.008										0.109										0.292
29/01/91												0.075										0.126										0.248
4/2/1991												0.054										0.146										0.207
11/2/1991												0.001										0.004										0.009
18/02/91												0.003										0.004										0.001
27/02/91												0.007										0.069										0.866
4/3/1991												0.006										0.067										0.991
11/3/1991												0.024										0.07										0.622
18/03/91												0.049										0.061										0.446
25/03/91												0.001										0.037										0.27
1/4/1991												0.11										0.065										0.191
8/4/1991												0.038										0.031										0.071
15/04/91												0.005										0.035										0.129
23/04/91												0.005										0.03										0.118
1/5/1991												0.07										0.05										0.128
6/5/1991												0.042										9.999										0.116
13/05/91												0.13										0.051										0.089
21/05/91												0.149										0.04										0.104
27/05/91												0.171										0.039										0.231
3/6/1991												0.132										0.03										0.307
10/6/1991												0.054										0.052										0.315
17/06/91												0.044										0.071										0.295
24/06/91												0.037										0.091										0.342
1/7/1991												0.01										0.099										0.5
2/7/1991												0.013										0.087										0.315
8/7/1991												0.011										0.114										0.439
15/07/91												0.018										0.113										1.04
24/07/91												0.009										0.101										0.306
29/07/91												0.001										0.079										0.399
5/8/1991												0.001										0.102										0.315
13/08/91												0.001										0.107										0.504
20/08/91												0.001										0.109										0.396
26/08/91												0.005										0.119										0.249
3/9/1991												0.001										0.102										0.222
9/9/1991												0.003										0.125										0.224
12/9/1991												0.003										0.073										0.28
16/09/91												0.005										0.106										0.176
23/09/91												0.024										0.155										0.194
30/09/91												0.001										0.133										0.145
7/10/1991												0.02										0.113										0.144
8/10/1991												0.001										0.07										0.121
16/10/91												0.001										0.05										0.115
21/10/91												0.016										0.059										0.128
28/10/91												0.018										0.028										0.049
1/11/1991												0.097										0.046										0.236
6/11/1991												0.06										0.018										0.17
20/11/91												0.08										<0.1										0.29
2/12/1991												0.11										0.042										0.618
4/12/1991												0.09										<0.1										0.48
8/12/1991												0.1										0.031										0.623
15/12/91												0.174										0.036										0.644
22/12/91												0.208										0.054										0.616
30/12/91												0.202										0.036										0.554
7/1/1992												0.274										0.029										0.521
14/01/92												0.274										0.028										0.411
21/01/92												0.284										0.021										0.434
27/01/92												0.277										0.035										0.408
4/2/1992												0.223										0.03										0.34
13/02/92												0.268										0.034										0.401
18/02/92												0.232										0.045										0.331
2/3/1992												0.25										0.034										0.292
9/3/1992												0.191										0.026										0.231
18/03/92												0.158										0.033										0.215
24/03/92												0.13										0.035										0.169
30/03/92												0.1										0.042										0.137
6/4/1992												0.048										0.04										0.091

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/04/92												0.004										0.051										0.059
20/04/92												0.005										0.023										0.033
29/04/92												0.021										0.03										0.05
4/5/1992												0.005										0.021										0.05
11/5/1992												0.014										0.019										0.035
19/05/92												0.056										0.015										0.084
25/05/92												0.065										0.029										0.043
1/6/1992												0.134										0.043										0.042
9/6/1992												0.183										0.031										0.035
15/06/92												0.222										0.035										0.046
23/06/92												0.291										0.046										0.073
26/06/92												0.28										0.047										0.062
29/06/92												0.243										0.043										0.068
7/7/1992												0.169										0.07										0.067
14/07/92												0.116										0.06										0.064
20/07/92												0.099										0.08										0.093
27/07/92												0.058										0.07										0.088
3/8/1992												0.032										0.1										0.097
10/8/1992												0.026										0.08										0.096
18/08/92												0.022										0.08										0.129
25/08/92												0.019										0.11										0.277
1/9/1992												0.017										0.09										0.395
8/9/1992												0.015										0.09										0.682
17/09/92												0.012										0.08										0.76
21/09/92												0.013										0.08										0.951
28/09/92												0.01										<0.001										0.947
6/10/1992												0.012										0.09										1.07
13/10/92												0.015										0.06										1.19
26/04/93												0.008										0.008										0.42
26/05/93												<0.002										0.002										0.32
31/08/93												<0.002										<0.003										0.34
1/9/1993												<0.002										0.009										0.21
1/11/1993												0.003										<0.03										0.47
13/12/93												<0.002										<0.03										1.23
1/1/1994												<0.002										<0.03										0.51
26/04/94												<0.002										<0.03										0.06
31/05/94												<0.002										<0.03										0.04
27/06/94												0.002										<0.03										0.14
10/8/1994												<0.002										<0.03										0.3
25/09/94												<0.002										<0.03										<0.01
18/11/94												<0.002										<0.03										0.18
25/11/94												<0.002										<0.03										0.15
1/12/1994												<0.002										<0.03										0.16
8/12/1994												0.004										<0.03										0.21
15/12/94												<0.002										<0.03										0.17
31/01/95												<0.002					5.67		49.7			<0.03										0.12
1/2/1995												<0.002										<0.03										0.12
17/04/95	<0.030	0.12	<0.04		0.046	<0.001	<0.02	150	<0.002	0.011	0.002	0.015	0.37			22.3	3.07	<0.004	31.7	0.03	<0.04	<0.03	129	<0.02		4.1		0.375	0.005	<0.003		0.75
8/5/1995	<0.030	<0.06	<0.04		0.01	<0.001	<0.02	79.5	<0.002	<0.004	<0.002	<0.002	<0.05			10.5	0.118	<0.004	16.7	<0.010	<0.04	<0.03	81.2	<0.02		2.1		0.259	0.007	<0.003		0.03
7/6/1995	<0.003	0.8	<0.02		0.04	<0.001	<0.04	129.7	<0.002	<0.005	<0.005	0.006	0.05		<0.005	25.7	2.45	<0.002	27	<0.005	0.42	<0.02		<0.02		2.48		0.388	<0.005	0.061	<0.02	0.12
9/6/1995												0.006										<0.02										0.12
21/06/95												<0.002										<0.02										<0.01
20/07/95	<0.003	0.88	<0.02		0.007	0.002	<0.04	119.6	<0.002	<0.005	<0.005	<0.002	0.13		<0.005	24.4	1.88	0.003	33	0.011	0.23	<0.02	125.4	<0.02		1.15		0.436	<0.005	<0.005	<0.02	<0.010
8/8/1995	<0.003	1.06	0.02		0.036	0.002	<0.04	119.6	<0.002	<0.005	<0.005	<0.002	0.11		<0.005	21.9	2.2	0.002	29	<0.005	<0.04	<0.02	147.5	<0.02		2.18		0.394	<0.005	<0.005	<0.02	0.12
9/8/1995												<0.002										<0.02										0.12
16/08/95	<0.003	0.94	<0.02		0.038	0.001	<0.04	110.1	<0.002	<0.005	<0.005	0.009	0.11		<0.005	20.8	2.17	<0.002	27	<0.005	<0.04	<0.02	140.9	<0.02		1.62		0.367	<0.005	<0.005	<0.02	0.13
23/08/95	<0.003	1.12	0.02		0.045	0.002	<0.04	127.8	<0.002	<0.005	<0.005	0.008	0.1		<0.005	22.4	2.37	0.005	29	<0.005	<0.04	<0.02	157.8	<0.02		1.63		0.403	<0.005	<0.005	<0.02	0.16
7/9/1995	<0.003	0.93	<0.02		0.032	0.002	<0.04	135.4	<0.002	<0.005	<0.005	<0.002	0.05		<0.005	22.5	3	0.002	28	<0.005	0.05	<0.02	143	<0.02		1.87		0.414	<0.005	<0.005	<0.02	0.15
12/9/1995	<0.003	1.43	0.09		0.133	0.003	<0.04	171.2	0.004	<0.005	<0.005	0.029	2.92		<0.005	32.3	8.88	<0.002	38	0.018	0.17	0.12	203	0.02		2.87		0.519	<0.005	<0.005	<0.02	0.5
13/09/95												0.029										0.12										0.5
18/09/95	<0.003	1.55	0.1		0.04	0.002	<0.04	126.5	0.004	<0.005	<0.005	0.005	0.27		<0.005	23	3.31	0.011	32	0.008	<0.04	<0.02	172	<0.02		8.54		0.425	0.019	<0.005	<0.02	0.32
3/10/1995	<0.003	1.3	<0.02		0.048	0.001	<0.04	185.5	0.002	0.007	<0.005	0.003	0.11		<0.005	31.2	4.31	0.009	33	0.017	0.17	<0.02	142	0.05		1.16		0.433	<0.005	<0.005	0.03	0.28
6/10/1995												0.003										<0.02										0.28
10/10/1995	<0.003	0.89	<0.02		0.023	0.001	<0.04	103.7	<0.002	<0.005	<0.005	0.007	0.15		<0.005	20.1	2.89	<0.002	23	<0.005	<0.04	<0.02	103	<0.02		1.63		0.299	<0.005	<0.005	<0.02	0.28
11/10/1995												0.007										<0.02										0.28
16/10/95	<0.003	1.12	0.04		0.033	0.002	<0.04	147.6	<0.002	<0.005	<0.005	0.005	0.25		<0.005	27.4	3.33	0.007	37	<0.005	0.12	<0.02	126	<0.02		1.12		0.43	<0.005	<0.005	0.03	0.3
25/10/95	<0.003	0.65	<0.02		0.049	0.002	<0.05	141.4	<0.002	0.01	<0.005	0.007	0.27		<0.005	22.4	3.29	0.019	28	0.02	<0.04	<0.02	129	0.05		2.17		0.4	0.008	<0.005	<0.02	0.3
26/10/95												0.007										<0.02										0.3
2/11/1995	<0.003	0.77	<0.02		0.033	0.002	<0.04	148.4	<0.002	<0.005	<0.005	0.009	1.05		<0.005	26.8	4.05	0.004	33	0.011	0.09	<0.02	154	<0.02		2.2		0.419	0.015	<0.005	<0.02	0.4
9/11/1995	<0.003	0.67	<0.02		0.05	0.002	<0.04	158.8	<0.002	<0.005	<0.005	0.01	0.27		<0.005	28.1	4.43	<0.002	34	0.006	<0.04	<0.02	127	<0.02		2.15		0.429	<0.005	<0.005	<0.02	0.36
14/11/95	<0.003	0.78	0.02		0.048	0.003	<0.04	164.5	<0.002	<0.005	<0.005	0.011	0.42		<0.005	29.5	4.83	0.003	36	<0.005	0.11	<0.02	144	0.02		2.34		0.446	<0.005	<0.005	<0.02	0.34
21/11/95	<0.003	0.58	0.02		0.055	0.001	<0.04	149.4	0.002	<0.005	<0.005	0.006	0.53		<0.005	27.8	4.82	<0.002	31	<0.005	<0.04	<0.02	158	<0.02		2.4		0.41	<0.005	<0.005	<0.02	0.31
30/11/95	<0.003	0.55	<0.02		0.04	0.001	<0.04	155.9	<0.002	<0.005	<0.005	0.003	0.36		<0.005	27.6	5	<0.002	33	<0.005	0.08	<0.02	183	0.02		2.82		0.395	<0.005	<0.005	<0.02	0.33
6/12/1995	<0.003	0.68	<0.02		0.046	0.002	<0.04	170.3	<0.002	<0.005	<0.005	0.008	0.56		<0.005	28.4	5.55	<0.002	32	0.011	<0.04	0.03	167	<0.02		2.73		0.411	0.018	<0.005	<0.02	0.34
11/12/1995	<0.003	0.6	0.02		0.041	0.002	0.09	170.3	<0.002	0.019	<0.005	0.002	0.46		<0.005	28.3	6.05	<0.002	36	0.009	0.07	<0.02	156	<0.02		2.43		0.418	<0.005	<0.005	<0.02	0.31
20/12/95	<0.003	0.69	0.02		0.045	0.002	<0.04	173.8	0.003	<0.005	<0.005	0.005	0.57		<0.005	31.6	6.17	<0.002	33	<0.005	0.18	<0.02	171	<0.02		2.58		0.426	<0.005	<0.005	<0.02	0.31
29/12/95	<0.003	0.67	<0.02		0.048	0.003	0.09	182.9	<0.002	<0.005	<0.005	0.009	0.77		<0.005	30	6.65	<0.002	34	<0.005	<0.04	<0.02	163	<0.02		2.63		0.446	<0.005	<0.005	<0.02	0.3
4/1/1996	<0.003	0.6	<0.02		0.038	0.002	<0.04	164.9	<0.002	<0.005	<0.005	0.012	1.21		<0.005	28.5	6.43	<0.002	34	0.008	<0.04	<0.02	158	<0.02		1.45		0.404	0.011	<0.005	<0.02	0.27
9/1/1996	<.003	0.58	<.02		0.045	0.002	<.04	173.8	<.002	<.005	<.005	0.007	1.22		<.005	29	6.86	<.002	34	<.005	<.04	<.02	168	<.02		2.7		0.431	0.009	<.005	<.02	0.27
20/01/96	<.003	0.71	0.03		0.041	0.003	<.04	152.6	0.002	<.005	<.005	0.003	0.81		<.005	26.7	6.61	<.002	31	0.006	<.04	<.02	148	<.02		1.64		0.456	<.005	<.005	<.02	0.26
25/01/96	<.003	0.62	0.03		0.034	0.002	<.04	157.5	<.002	0.009	<.005	0.013	0.42		<.005	29.5	7.15	<.002	37	<.005	<.04	<.02	147	<.02		2.57		0.493	<.005	<.005	<.02	0.23
5/2/1996	<.003	0.56	<.02		0.045	0.002	<.04	171.7	0.002	<.005	0.011	0.007	0.8		<.005	29.9	6.23	<.002	34	0.005	<.04	<.02	169	<.02		2.68		0.382	<.005	<.005	<.02	0.2
14/02/96	<.003	0.67	<.02		0.039	0.002	<.04	141.5	<.002	<.005	<.005	<.002	0.83		<.005	26.9	7.6	<.002	32	<.005	<.04	<.02	160	<.02		2.69		0.445	<.005	<.005	<.02	0.21
23/02/96	<.003	0.54	<.02		0.053	0.002	<.04	186.8	<.002	<.005	<.005	0.008	0.48		<.005	34.4	7.19	<.002	41	<.005	<.04	<.02	150	<.02		1.71		0.47	<.005	<.005	<.02	0.22
28/02/96	<.003	0.55	<.02		0.046	0.002	<.04	122.7	<.002	0.008	<.005	0.012	0.65		<.005	22.6	6.27	<.002	27	0.008	<.04	<.02	157	<.02		1.29		0.373	<.005	<.005	<.02	0.27
12/3/1996	0.003	0.64	0.03		0.068	0.002	<.04	158.5	0.002	<.005	<.005	0.003	0.55		<.005	29.2	8.35	<.002	34	0.011	<.04	0.04	159	<.03		1.65		0.482	<.005	<.005	<.02	0.22
21/03/96	<.003	0.76	<.02		0.052	0.001	<.04	155.1	<.002	<.005	0.008	0.008	1.7		<.005	30.3	8.33	0.003	34	0.007	0.19	0.03	141	<.03		1.85		0.47	0.023	0.005	<.03	0.21
30/03/96	<.003	0.54	<.02		0.052	0.002	<.04	129.3	<.002	<.005	<.005	0.006	0.41		<.005	24.8	7.17	0.002	29	0.009	0.08	<.02	185	<.03		2.5		0.402	<.005	<.005	<.03	0.19
9/4/1996	<.003	0.38	<.02		0.057	0.002	<.04	159.7	<.002	<.005	<.005	0.017	0.57		<.005	29.6	9.01	<.002	35	<.005	0.18	<.02	179	<.03		2.79		0.48	<.005	<.005	<.03	0.12
16/04/96	<.003	0.57	<.02		0.048	0.002	<.04	144.5	<.002	<.005	<.005	0.014	0.59		<.005	28	8.46	<.002	32	0.012	0.19	<.02	151	<.03		1.68		0.454	<.005	0.009	<.03	0.14
23/04/96	<.003	0.57	0.02		0.059	0.002	<.04	151.9	<.002	<.005	<.005	0.002	0.48		<.005	28.1	8.08	<.002	31	0.009	<.04	0.03	147	<.03	<.02	2.72		0.467	<.005	0.008	<.03	0.12
29/04/96	<.003	0.48	<.02		0.065	0.002	<.04	149.5	0.002	<.005	<.005	0.003	0.39		<.005	28.2	8.32	<.002	31	0.01	0.37	<.02	143	<.03	<.02	2.41		0.477	<.005	<.005	<.03	0.28
6/5/1996	<.003	0.65	<.02		0.061	0.002	<.04	170.8	<.002	<.005	<.005	0.008	0.44		<.005	31.6	8.54	<.002	35	0.006	0.13	<.02	142	<.03	<.02	2.73		0.503	<.005	<.005	<.03	0.35
13/05/96	<.003	0.49	<.02		0.061	0.002	<.04	152.3	<.002	0.009	<.005	0.024	0.19		<.005	28.8	7.82	0.004	32	0.007	0.05	<.02	154	<.03	<.02	2.09		0.468	<.005	<.01	<.03	0.39
21/05/96	<.003	0.67	<.02		0.044	0.001	<.04	149.4	<.002	0.009	<.005	0.004	0.28		<.005	27.5	7.59	<.002	29	<.005	<.04	<.02	169	<.03	<.02	1.5		0.457	<.005	<.005	<.03	0.34
27/05/96	<.003	0.91	<.02		0.051	0.002	<.04	150.9	<.002	<.005	<.005	0.006	1.19		<.005	28.1	6.85	<.002	30	<.005	0.26	<.02	135	<.03	<.02	1.64		0.466	0.023	<.005	<.03	0.39
28/05/96	<.003	1.01	<.02		0.057	0.009	<.04	167.7	<.002	<0.005	<.005	0.008	0.18		<.005	32.1	9.13	<.002	35	0.013	0.08	<.02	188	<.03		1.65		0.513	<.005	<.005	<.03	0.65

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
27/08/96	<.003	0.05	<.02		0.081	0.005	<.04	161.3	<.002	<.005	<.005	<.002	0.32		<.005	31.8	7.73	<.002	30	<.005	0.17	<.02	159	<.03		5.6		0.482	<.005	<.005	<.03	0.18
3/9/1996	<.003	0.35	<.02		0.094	0.007	<.04	171.2	<.002	<.005	<.005	0.005	0.52		<.005	34	9.17	<.002	36	<.005	<.04	<.02	107	<.03		5.7		0.495	<.005	<.005	<.03	0.22
11/9/1996	<.003	0.05	<.02		0.077	0.007	<.04	144.8	<.002	<.005	<.005	0.011	0.18		<.005	26.9	8.02	0.003	35	<.005	0.13	<.02	167	<.03		5.1		0.441	<.005	<.005	<.03	0.13
17/09/96	<.003	0.05	<.02		0.094	0.005	<.04	128.5	<.002	<.005	<.005	0.006	0.41		<.005	22.3	4.22	0.003	35	<.005	0.06	<.02	155	<.03		4.1		0.409	<.005	<.005	<.03	0.11
24/09/96	<.003	0.05	<.02		0.11	0.003	<.04	139.2	<.002	<.005	0.008	0.024	0.3		<.005	23	4.15	<.002	33	0.022	<.04	<.02	143	<.03		4		0.43	<.005	<.005	<.03	0.17
30/09/96	<.003	0.05	<.02		0.054	0.005	<.04	147.9	<.002	<.005	<.005	0.006	0.33		<.005	22.4	4.56	<.002	31	<.005	<.04	<.02	163	<.03		4.1		0.379	<.005	<.005	<.03	0.15
7/10/1996	<.003	0.05	<.02		0.069	0.003	<.04	141.5	<.002	<.005	<.005	0.009	0.23		<.005	22.3	4.33	<.002	33	<.005	<.04	<.02	139	<.03		4.2		0.393	<.005	<.005	<.03	0.18
15/10/96	<.003	0.05	<.02		0.037	0.008	<.04	143.2	<.002	0.014	<.005	0.026	0.18		<.005	25.2	4.58	<.002	34	<.005	0.11	<.02	135	<.03		4.4		0.451	<.005	<.005	<.03	0.2
21/10/96	<.003	0.05	<.02		0.065	0.005	<.04	152.8	<.002	0.027	<.005	0.038	0.43		<.005	28	5.08	<.002	38	0.013	0.23	<.02	146	<.03		4.8		0.495	<.005	<.005	<.03	0.3
29/10/96	<.003	0.05	0.02		0.046	0.004	<.04	135.2	0.002	0.017	<.005	0.025	0.65		<.005	24.2	4.98	<.002	33	<.005	0.22	<.02	128	<.03		4.8		0.429	<.005	<.005	<.03	0.22
5/11/1996	<.003	0.05	<.02		0.035	0.005	<.04	144	<.002	<.005	<.005	0.006	0.4		<.005	25.3	5.52	<.002	37	<.005	<.04	<.02	154	<.03		4.5		0.446	<.005	<.005	<.03	0.17
12/11/1996	<.003	0.05	<.02		0.036	0.006	<.04	149.3	<.002	0.011	<.005	0.009	0.46		<.005	27.3	5.89	<.002	42	<.005	<.04	<.02	155	<.03		4.7		0.483	<.005	<.005	<.03	0.18
21/11/96	<.003	<.05	<.02		0.081	0.005	<.04	149.3	<.002	0.009	0.005	0.007	0.55		<.005	26.9	5.96	<.002	37	0.024	<.04	<.02	165	<.03		3.8		0.473	<.005	<.005	<.03	0.18
25/11/96	<.003	0.05	<.02		0.062	0.008	<.04	140.5	<.002	<.005	<.005	0.005	0.47		<.005	25.2	5.47	<.002	39	<.005	<.04	<.02	160	<.03		3.4		0.447	<.005	<.005	<.03	0.17
2/12/1996	<.003	0.05	<.02		0.047	0.006	<.04	142.5	0.004	<.005	<.005	0.005	0.3		<.005	25.8	5.5	<.002	37	0.011	0.06	<.02	153	<.03		3.5		0.46	<.005	<.005	<.03	0.16
11/12/1996	<.003	1.39	<.02		0.124	0.006	<.04	147	<.002	<.005	<.005	0.009	0.33		<.005	27.3	7.11	<.002	34	0.014	0.06	<.02	152	<.03		3.4		1.461	<.005	0.012	<.03	0.2
19/12/96	<.003	0.21	0.1		0.075	0.007	<.04	162.2	<.002	0.007	<.005	0.01	0.66		<.005	29.5	8.76	0.004	33	0.028	0.17	<.02	161	<.03		3.8		0.515	<.005	<.005	<.03	0.21
23/12/96	<.003	0.1	<.02		0.054	0.005	<.04	177.2	<.002	<.005	<.005	0.009	0.89		<.005	31.4	5.37	0.007	38	0.008	0.07	<.02	144	<.03		5.7		0.547	<.005	<.005	<.03	0.15
30/12/96	<.003	0.08	<.02		0.034	<.001	<.04	181.5	<.002	<.005	<.005	0.003	1.01		<.005	31.9	6.23	<.002	34	0.006	<.04	<.02	144	<.03		5.7		0.551	<.005	<.005	<.03	0.15
6/1/1997	<.003	0.54	<.02	0.83	0.058	<.001	<.04	179.8	<.002	<.005	0.049	0.006	0.31		<.005	33.5	8.33	<.002	9	<.005	<.04	<.02	193	<.03		4.71		0.554	<.005	<.005	0.34	0.06
14/01/97	<.003	0.57	<.02	0.82	0.05	<.001	<.04	163.6	<.002	<.005	<.005	0.011	0.49		<.005	29.6	8.41	<.002	38	<.005	<.04	<.02	114	<.03		4.46		0.499	0.009	<.005	<.03	0.18
20/01/97	<.003	0.4	<.02	0.71	0.051	<.001	<.04	161	<.002	<.005	<.005	<.002	0.85		<.005	29.4	8.41	0.003	35	<.005	0.12	<.02	111	<.03		4.04		0.498	0.013	<.005	<.03	0.16
27/01/97	<.003	0.4	<.02	0.69	0.042	<.001	<.04	160	<.002	<.005	<.005	0.004	0.33		<.005	29	8.41	<.002	38	<.005	<.04	<.02	79	<.03		5.51		0.478	0.006	<.005	<.03	0.16
3/2/1997	<.003	0.24	<.02	0.64	0.068	0.002	<.04	177.2	<.002	<.005	0.006	0.006	0.62		<.005	30.8	7.59	0.004	37	<.005	0.13	<.02	75	<.03		4.61		0.429	0.006	<.005	<.03	0.14
11/2/1997	<.003	0.14	<.02	1	0.067	0.004	0.08	158.6	<.002	0.02	<.005	0.013	0.44		<.005	28.4	8.45	0.007	37	0.018	0.06	<.02	108	<.03		5.7		0.459	0.007	0.009	<.03	0.14
17/02/97	<.003	0.09	<.02	0.99	0.082	0.002	<.04	185	<.002	0.03	<.005	0.025	1.44		<.005	33.6	10	<.002	37	0.035	0.16	0.03	133	<.03		4.68		0.552	0.016	<.005	<.03	0.14
24/02/97	<.003	0.1	<.02	0.96	0.058	<.001	<.04	184.1	<.002	0.005	<.005	0.007	1.52		<.005	32.6	7.01	0.012	36	<.005	0.18	<.02	129	<.02		6.84		0.538	0.033	<.03	<.02	0.11
4/3/1997	<.003	1.08	0.04	0.11	0.033	0.007	<.04	165.2	<.002	0.028	<.005	0.004	0.41		0.048	29.8	8.22	0.016	31	0.012	0.68	<.02	133	<.03	<.005	3.9	<.01	0.438	<.005	0.006	<.03	0.12
11/3/1997	<.003	1.06	<.02	<.05	0.034	0.006	<.04	163.2	<.002	0.026	<.005	0.007	0.48		0.048	29.6	8.21	0.021	31	0.013	0.98	<.02	132	<.03	<.005	3.6	<.01	0.433	<.005	0.007	<.03	0.11
18/03/97	<.003	1.17	<.02	0.18	0.034	0.005	<.04	171.3	<.002	0.014	0.008	0.01	0.91		0.023	30.8	8.68	0.014	29	<.005	0.69	<.02	139	<.03	<.005	3.8	<.01	0.458	0.008	0.013	0.05	0.12
24/03/97	<.003	0.05	<.02	0.14	0.038	0.001	0.07	165	0.002	0.018	0.015	0.015	0.57		0.01	29.7	9.2	0.005	31	0.016	0.05	<.02	143	0.05	<.005	4.1	<.01	0.477	<.005	<.005	<.03	0.76
31/03/97	<.003	0.05	<.02	0.1	0.033	<.001	<.04	153.2	<.002	0.022	0.006	0.007	0.68		0.032	27.8	8.73	<.002	29	<.005	0.08	<.02	135	<.03	<.005	3.8	<.01	0.452	<.005	<.005	<.03	0.11
9/4/1997	<.003	<.05	<.02	0.24	0.037	0.003	<.04	152.5	<.002	<.005	0.018	0.013	0.71	3.9	0.082	28.1	8.49	<.002	30	<.005	0.1	<.02	139	<.03	<.03	4.2	<.01	0.451	0.005	0.019	<.03	0.12
15/04/97	<.003	<.05	<.02	0.2	0.036	0.006	<.04	163.2	<.002	0.006	0.009	0.005	0.63	4.2	0.027	30.7	9.29	0.004	32	0.022	0.07	<.02	154	<.03	<.03	5.4	<.01	0.495	<.005	<.005	<.03	0.13
15/07/97	<.003	0.19	<.02	0.29	0.029	<.001	<.04	131.5	<.002	<.005	<.005	0.028	0.24	4	<.005	21.7	2.83	<.002	22	<.005	0.82	<.02	122	<.03	<.03	3.4	<.01	0.404	0.016	<.005	<.03	0.16
22/07/97	<.003	0.18	<.02	<.05	0.032	0.001	<.04	129.9	<.002	0.011	<.005	0.027	0.24	3	<.005	20.5	2.82	<.002	25	0.006	0.11	0.02	167	<.03	<.03	3.6	<.01	0.447	0.009	<.005	<.03	0.26
28/07/97	<.003	0.1	<.02	0.18	0.029	0.001	<.04	131.8	0.003	0.006	0.012	0.027	0.34	5	0.024	22.3	3.3	0.006	23	0.007	1.69	<.02	100	<.03	<.03	3.4	<.01	0.442	<.005	0.007	<.03	0.3
4/8/1997	<.003	<.05	<.02	0.4	0.027	<.001	0.07	146.9	0.002	0.007	<.005	0.04	0.17	4	<.005	23.1	2.86	0.01	22	0.01	0.82	<.02	352	<.03	<.03	2.9	<.01	0.47	0.018	<.005	<.03	0.32
12/8/1997	<.003	0.18	<.02	0.21	0.024	0.001	<.04	133.9	<.002	0.007	<.005	0.027	<.01	5	<.005	20.8	2.09	<.002	20	0.006	0.66	<.02	144	<.03	<.03	4	<.01	0.429	<.005	<.005	<.03	0.08
19/08/97	<.003	0.12	<.02	<.05	0.021	<.001	<.04	140.1	<.002	0.009	<.005	0.043	0.22	3	0.007	20.1	1.96	0.009	18	0.01	<.04	<.02	117	<.03	<.03	2.5	<.01	0.408	0.015	0.009	<.03	0.13
25/08/97	<.003	0.05	<.02	<.05	0.021	<.001	<.04	154.6	<.002	<.005	<.005	0.008	0.23	4	<.005	18.3	1.56	<.002	18	<.005	<.04	<.02	53	<.03	<.03	2.3	<.01	0.446	0.01	<.005	<.03	0.06
2/9/1997	<.003	0.14	<.02	<.05	0.021	<.001	<.04	152.7	<.002	0.005	0.011	0.018	0.23	3	<.005	21	1.64	0.004	19	<.005	<.04	<.02	106	<.03	<.03	2.3	<.01	0.441	0.01	<.005	<.03	0.11
9/9/1997	<.003	0.12	<.02	<.05	0.036	0.001	<.04	164.3	<.002	<.005	<.005	0.019	0.13	4	<.005	22.8	1.27	0.003	20	<.005	0.37	<.02	106	<.03	<.03	2.1	<.01	0.478	0.006	0.006	<.03	0.08
16/09/97	<.003	<.05	<.02	0.2	0.027	<.001	<.04	148.4	<.002	0.019	<.005	0.009	0.03	4	0.006	21.7	1.7	0.003	18	<.005	<.04	<.02	141	<.03	<.03	1.4	<.01	0.47	<.005	<.005	<.03	0.18
22/09/97	<.003	0.08	<.02	0.09	0.024	<.001	<.04	143.3	<.002	0.011	<.005	0.054	0.18	4	0.011	22.3	2.14	<.002	18	0.015	<.04	<.02	160	<.03	<.03	2.7	<.01	0.453	0.013	0.006	<.03	0.55
30/09/97	<.003	0.09	<.02	<.05	0.062	<.001	<.04	153.3	<.002	0.009	<.005	0.031	0.11	4	0.009	24.6	2.31	0.003	21	0.013	0.48	<.02	170	<.03	<.03	2.1	<.01	0.372	0.011	<.005	<.03	0.59
7/10/1997	<.003	<.05	0.03	<.05	0.087	<.001	<.04	135.9	<.002	<.005	<.005	0.01	0.06	3	<.005	21.4	1.9	0.005	17	<.005	0.05	<.02	116	<.03	<.03	1.4	<.01	0.361	0.006	<.005	<.03	0.41
10/10/1997	<.003	0.16	<.02	0.13	0.037	<.001	<.04	145.4	<.002	<.005	<.005	0.014	0.13	5	<.005	23	2.13	0.003	17	0.015	<.04	<.02	127	<.03	<.03	1.9	<.01	0.407	0.008	<.005	<.03	0.39
14/10/97	<.003	0.16	0.03	0.13	0.028	<.001	<.04	144.2	<.002	0.013	<.005	0.013	0.05	4	<.005	22.6	1.73	<.002	17	0.023	<.04	<.02	128	<.03	<.03	1.9	<.01	0.401	0.007	<.005	<.03	0.29
20/10/97	<.003	<.05	<.02	<.05	0.083	<.001	<.04	138.8	<.002	<.005	0.007	0.008	0.03	5	<.005	22	1.68	0.005	17	0.006	<.04	0.02	132	<.03	<.03	1.4	<.01	0.383	<.005	<.005	<.03	0.18
27/10/97	<.003	<.05	<.02	<.05	0.074	<.001	<.04	148.2	<.002	0.024	<.005	0.009	0.03	5	<.005	23.3	1.72	0.002	17	<.005	0.1	<.02	147	<.03	<.03	1.7	<.01	0.407	<.005	<.005	<.03	0.14
4/11/1997	<.003	<.05	<.02	<.05	0.064	0.002	<.04	151.6	<.002	0.023	<.005	0.008	0.1	6	<.005	23.1	1.51	0.007	20	0.018	<.04	<.02	142	<.03	<.03	2.1	<.01	0.413	0.007	<.005	<.03	0.07
13/11/97	<.003	<.05	<.02	<.05	0.092	<.001	<.04	139.6	<.002	0.008	0.008	0.01	0.07	2	<.005	22.2	1.18	<.002	19	<.005	<.04	<.02	141	<.03	<.03	1.7	0.03	0.398	<.005	0.014	<.03	0.04
19/11/97	<.003	<.05	<.02	0.06	0.081	0.004	<.04	144.1	<.002	0.023	0.006	0.013	0.38	7	<.005	23.7	1.2	<.002	20	0.021	<.04	<.02	140	<.03	<.03	2.1	<.01	0.423	0.011	<.005	<.03	0.05
25/11/97	<.003	<.05	<.02	<.05	0.074	<.001	<.04	128.6	<.002	<.005	0.014	0.017	0.23	3	<.005	21.8	0.85	0.007	17	<.005	<.04	<.02	130	<.03	<.03	1.8	0.02	0.405	<.005	<.005	<.03	0.04
2/12/1997	<.003	<.05	<.02	<.05	0.077	<.001	<.04	129.5	<.002	0.018	<.005	0.012	0.04	1	<.005	21.9	0.78	<.002	16	<.005	<.04	<.02	127	<.03	<.03	1.8	<.01	0.417	<.005	<.005	<.03	0.04
8/12/1997	<.003	<.05	<.02	<.05	0.044	<.001	<.04	129.7	<.002	0.014	<.005	0.009	0.03	7	0.005	22	0.73	0.004	19	0.006	<.04	<.02	129	<.03	<.03	2	<.01	0.395	<.005	<.005	<.03	0.03
19/12/97	<.003	<.05	<.02	0.14	0.023	<.001	<.04	121.3	<.002	<.005	<.005	0.014	0.35	3	<.005	18.2	0.6	<.002	13	<.005	<.04	0.02	107	<.03	<.03	1.9	0.01	0.384	0.009	<.005	<.03	0.27
23/12/97	<.003	<.05	<.02	0.17	0.016	<.001	<.04	127.8	<.002	<.005	<.005	0.011	0.89	<1	<.005	18.4	0.45	<.002	14	<.005	<.04	<.02	118	<.03	<.03	1.9	<.01	0.411	<.005	<.005	<.03	0.18
30/12/97	<.003	<.05	<.02	0.3	0.025	<.001	<.04	122.2	<.002	<.005	0.012	0.026	0.33	1	0.016	19.5	0.64	0.004	16	<.005	<.04	<.02	126	<.03	<.03	1.4	<.01	0.376	0.01	<.005	<.03	0.18
5/1/1998	<.003	<.05	<.02	0.19	0.024	<.001	<.04	124.5	<.002	<.005	<.005	0.012	0.03	<1	<.005	20.7	0.35	0.009	16	<.005	<.04	<.02	146	<.03	<.03	1.6	<.01	0.41	<.005	<.005	<.03	0.07
12/1/1998	<.003	<.05	0.02	<.05	0.093	<.001	<.04	120.1	<.002	<.005	<.005	0.005	0.02	2	<.005	18.9	0.35	<.002	16	0.007	<.04	<.02	126	<.03	<.03	1.1	<.01	0.362	<.005	<.005	<.03	0.06
13/04/98	<.003	0.08	<.02	<.05	0.093	<.001	<.04	128.9	<.002	0.006	0.028	0.137	0.03	6	0.005	23.3	1.3	0.011	21	0.013	1.09	<.02	117	<.03	<.03	3.1	<.01	0.402	0.012	<.005	<.03	0.37
18/05/98	<.003	0.22	<.02	0.22	0.03	<.001	<.04	113	<.002	<.005	0.008	0.043	0.02	6	<.005	18.4	0.88	<.002	17	0.016	<.04	<.02	138	0.03	<.03	2.1	<.01	0.31	0.005	<.005	<.03	0.44
2/6/1998	<.003	0.1	<.02	<.05	0.101	0.002	<.04	120.9	<.002	0.017	0.028	0.024	0.23	6	0.017	19.5	0.9	0.003	18	<.005	0.37	<.02	133	<.03	<.03	2.4	<.01	0.307	0.014	0.011	<.03	0.48
15/06/98	<.003	0.09	<.02	0.06	0.104	0.001	<.04	140.2	<.002	<.005	<.005	0.053	0.24	8	0.009	22.7	1.16	<.002	21	<.005	1.04	<.02	55	<.03	<.03	1	<.01	0.362	0.022	<.005	<.03	0.32
20/06/98	<.003	0.08	<.02	<.05	0.112	<.001	<.04	128.8	<.002	<.005	0.016	0.046	0.09	8	<.005	21.3	0.97	0.009	21	0.008	1.54	<.02		<.03	<.03	0.7	<.01	0.309	0.012	0.013	<.03	0.33
21/06/98	<.003	0.07	<.02	<.05	0.107	<.001	<.04	122.2	<.002	<.005	0.073	0.035	0.25	7	0.013	20.3	0.99	0.015	21	0.012	0.42	<.02		<.03	<.03	0.8	<.01	0.294	0.007	<.005	<.03	0.29
30/06/98	<.003	0.11	<.02	<.05	0.114	0.001	<.04	135.9	<.002	0.009	<.005	0.02	0.03	7	<.005	23.2	1.08	0.006	20	0.012	<.04	<.02	133	<.03	<.03	1.9	<.01	0.369	0.025	<.005	<.03	0.23
21/07/98	<.003	0.09	0.03	<.05	0.088	<.001	<.04	165.7	<.002	0.009	0.043	0.049	0.12	9	<.005	30.5	1.85	0.014	25	0.01	<.04	<.02	156	0.06	<.03	1.2	<.01	0.426	0.012	<.005	<.03	0.31
10/8/1998	<.003	0.21	<.02	0.25	0.003	0.001	<.04	183.2	<.002	<.005	0.006	0.063	0.18	10	0.045	34.7	2.87	<.002	30	<.005	<.04	0.04	54	<.03	<.03	1.8	<.01	0.484	0.011	0.01	<.03	0.39
25/09/98	<.003	0.14	<.02	<.05	0.18	0.001	<.04	198.2	<.002	<.005	0.036	0.035	0.27	9	<.005	41.6	5.38	0.017	37	0.013	2.3	<.02	195.4	<.03	<.03	3.2	<.01	0.596	0.03	0.007	<.03	0.55
19/10/98	<.003	0.28	<.02	0.2	0.032	0.001	<.04	182.8	<.002	0.013	<.005	0.029	0.32	9	<.005	38.5	5.07	<.002	34	0.024	<.04	<.02	205	<.03	<.03	3.4	<.01	0.511	0.041	<.005	<.03	0.56
17/11/98	<.003	0.15	<.005	<.05	0.112	<.001	<.04	230.7	<.001	0.011	0.083	0.036	0.32	10	<.005	46.1	5.73	0.022	38	0.015	2.21	0.02	190	<.03	<.03	3.1	<.01	0.533	0.017	<.005	<.03	0.6
18/01/99	<.003	0.17	<.005	0.21	0.038	<.001	<.04	195	0.003	0.008	0.061	0.044	0.39	7	<.005	39.8	5.87	0.008	36	0.019	<.04	<.01	204	<.03	<.03	5.1	<.01	0.537	0.023	<.005	<.03	0.33
21/02/99	0.015	0.38	<.005	0.39	0.039	<.001	<.04	226.3	<.001	0.016	0.097	0.035	0.38	8	0.007	44.8	6.47	0.028	39	0.019	2.21	<.01	210	<.03	<.03	5.1	<.01	0.634	0.034	<.005	<.03	0.53
21/03/99	<.003	0.22	<.005	<.05	0.042	<.001	<.04	201.6	0.004	0.006	0.898	0.041	0.76	7	<.005	37.4	7.81	<.002	33	0.014	1.78	<.01	197.3	<.03	<.03	6.1	<.01	0.53	0.012	0.095	<.03	0.31
20/04/99	<.003	0.52	<.005	0.17	0.043	0.001	<.04	143.5	<.001	<.005	<.005	0.028	0.76	8	<.005	31.2	4.23	0.028	26	0.006	0.75	<.01	139	<.03	<.03	4	<.01	0.42	0.046	<.005	<.03	0.3
6/5/1999	<.003	0.17	<.005	0.18	0.013	0.001	<.04	125.1	0.004	0.012	<.005	0.011	0.3	7	<.005	19.6	0.89	<.002	18	<.005	0.74	<.01		<.03	<.03	1.5	<.01	0.423	0.012	<.005	<.03	0.41
17/05/99	<0.003	0.33	<0.005	<0.05	0.152	<.001	<.04	63.8	<.001	0.02	0.301	0.042	3.61	3	<.005	11.1	0.52	<.002	10	<.005	<.04	<.01		<.03	<.03	0.3	<.01	0.213	0.138	<.005	<.03	0.39
27/05/99	<.003	0.2	<.005	0.06	0.127	0.001	<.04	87.6	0.012	<.005	<.005	0.043	3.12	4	<.005	14.1	0.66	0.044	13	<.005	<.04	0.03		<.03	<.03	0.8	<.01	0.268	0.127	<.005	<.03	0.25
3/7/1999	<.003	0.47	<.005	0.53	0.035	<.001	<.04	137.7	0.002	0.006	<.005	0.03	0.89	6	<.005	25.6	1.7	<.002	19	<.005	<.04	<.01	157	<.03	<.03	5	<.01	0.424	<.005	<.005	<.03	0.37
27/07/99	<.003	0.65	<.005	0.07	0.154	<.001	<.04	150.6	<.001	0.017	<.005	0.032	0.72	7	<.005	32	2.87	0.039	23	<.005	<.04	0.01	180	<.03	<.03	3.5	<.01	0.504	0.102	<.005	<.03	0.38
29/07/99	<.0003	0.11	<.002	0.02	0.076	<.001	<.004	160.5	<.0002	<.001	<.001	0.029	0.43	7.9	<.001	30.8	2.56	0.006	24	0.004	0.06	0.017	117.1	<.003	<.003	3.61	<.001	0.467	0.013	<.001	<.003	0.342
12/8/1999	<.003	<.05	<.005	0.08	<.002	0.002	<.04	177.7	0.002	0.03	<.005	0.008	0.1	<1	<.005	33	2.28	0.014	25	<.005	<.04	<.01	185	<.03	<.005	3.9	<.01	0.494	0.011	0.015	<.03	0.3
10/9/1999	<.003	0.27	<.005	<.05	0.112	<.001	<.04	174.7	0.001	0.012	<.005	0.028	0.24	8	0.02	35.4	3.65	0.013	23	0.015	<.04	<.01	209	<.03	<.005	2.7	<.01	0.459	0.032	<.005	<.03	0.31
29/10/99	<.003	0.46	<.005	0.16	2.007	0.002	<.04	179.5	<.001	<.005	<.005	0.033	0.36	4	<.005	36.3	7.87	<.002	33	0.022	<.04	<.01	198	<.03	<.005	4.8	<.01	0.521	0.01	<.005	<.03	0.6
26/01/00																																0.35
25/03/00	<.003	0.59	<.005	0.08	0.154	<.001	<.05	206.8	<.001	0.027	<.005	0.007	0.19	12	<.005	42.1	6.3	<.002	27	<.005	<1	<.01	199	<.03	<.005	5.7	<.01	0.635	0.024	<.005	<.03	0.32
27/04/00	<.003	0.32	<.005	<.05	0.139	0.002	<.05	168.9	<.001	<.005	<.005	0.033	0.28	6	<.005	34.9	6.4	0.015	25	0.013	<1	<.01		<.03	<.005	6.6	<.01	0.483	0.084	<.005	<.03	0.29
15/05/00	<.003	0.15	0.012	0.06	0.088	<.001	<.05	49.5	<.001	0.007	0.094	0.01	0.17	1	0.033	7.2	0.47	<.002	1	<.005	<1	<.01		<.03	<.005	1.6	<.01	0.23	0.021	0.007	<.03	0.08
4/6/2000	<.003	0.9	<.005	<.05	0.203	<.001	<.05	119.3	<.001	0.005	0.033	0.029	2.44	8	<.005	22.5	1.29	0.02	15	0.02	<1	0.11		0.05	<.005	2.4	<.01	0.377	0.141	0.545	<.03	0.35
26/06/00	<.003	0.2	<.005	<.05	0.096	0.002	<.05	157.4	<.001	0.006	<.005	0.024	0.19	8	<.005	27.8	1.55	<.002	22	0.005	4	<.01		0.07	<.005	2.4	<.01	0.424	0.065	0.023	<.03	0.4
25/07/00	<.003	0.11	<.005	<.05	0.112	0.002	<.05	164.2	0.004	0.022	<.005	0.026	0.68	8	0.121	30.7	2.37	0.011	25	0.021	4	<.01		<.03	<.005	1.9	<.01	0.568	0.048	0.055	<.03	0.46
23/08/00	<.003	0.33	<.005	0.06	0.082	<.001	<.05	187.2	<.001	<.005	<.005	0.027	0.19	9	<.005	37.8	2.77	<.002	26	0.031	3	<.01		<.03	<.005	3.3	<.01	0.475	0.031	<.005	<.03	0.41
25/09/00	<0.01	0.05	<0.2	<0.1	0.02	<0.005	<0.1	191	<0.001	<0.01	<0.01	<0.01	0.11	7		39.8	4.4	<0.01	28	<0.05	<0.3	<0.05		<0.2	<0.2	3.2	<0.03	0.526	<0.01	<0.03		0.741
21/10/00	<.003	0.44	<.005	<.05	0.197	0.003	<.05	190.8	0.004	0.009	<.005	0.039	0.69	9	<.005	38.3	4.72	0.008	33	0.005	7	<.01	173	<.03	<.005	4.2	<.01	0.545	0.128	0.023	<.03	0.71

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/11/00	<0.003	0.08	<0.005	0.26	0.076	<0.001	<0.05	195.2	<0.001	<0.005	<0.005	<0.002	0.11	9	0.028	45.5	3.74	<0.002	30	0.007	0.04	<0.01	212	<0.03	<0.005	4.9	0.01	0.538	0.009	0.007	<0.03	0.14
18/11/00	<0.01	<0.05	<0.2	<0.1	0.03	<0.005	<0.1	220	<0.001	<0.01	<0.01	<0.01	0.08	7		38.8	5.18	<0.01	31	<0.05	<0.3	<0.05		<0.2	<0.2	4.09	<0.03	0.574	<0.01	<0.03		0.528
28/11/00																																0.42
14/12/00	<0.01	<0.05	<0.2	<0.1	0.03	<0.005	<0.1	223	<0.001	<0.01	<0.01	<0.01	0.14	8		45.6	5.51	0.01	30	<0.05	<0.3	<0.05		<0.2	<0.2	4.29	<0.03	0.595	<0.01	<0.03		0.613
13/01/01	<.003	0.15	<.005	0.06	0.127	0.002	<.05	162.2	<.001	<.005	<.005	0.035	0.48	8	<.005	31.3	3.57	0.024	27	0.013	<1	<.01	74	<.03	<.005	4	<.01	0.682	0.063	<.005	<.03	0.46
10/2/2001	<.003	0.29	<.005	<.05	0.161	0.003	<.05	171.7	<.001	<.005	<.005	0.028	0.33	10	<.005	34.1	3.68	<.002	28	0.033	<1	<.01	92	<.03	<.005	4.3	<.01	0.347	0.027	<.005	<.03	0.36
10/3/2001	<.003	0.72	<.005	0.12	0.2	<.001	<.05	179	<.001	<.005	<.005	0.02	0.07	4.38	<.005	36.84	4.86	0.003	28.46	<.005	<1	<.01	172.2	<.03	<.005	3.84	<.01	0.55	0.01	<.005	<.03	0.61
16/04/01	<.003	0.1	<.005	<.05	0.046	<.001	<.05	174.8	<.001	<.005	<.005	0.007	0.05	<1	<.005	36.7	4.64	<.002	28	<.005	<1	<.01	153	<.03	<.005	3.6	<.01	0.56	0.01	<.005	<.03	0.48
14/05/01	<.003	0.39	0.012	<.05	0.185	<.001	<.05	185.5	<.001	0.025	<.005	0.014	0.04	9	<.005	35.5	3.41	0.002	25	0.009	<1	0.05	163	<.03	0.006	2.8	<.01	0.544	0.006	0.013	<.03	0.37
17/06/01	<.003	0.09	<.005	0.11	0.142	<.001	<.05	185.1	<.001	<.005	0.012	0.01	0.13	6	0.022	35.4	1.59	<.002	22	<.005	<1	<.01	181	<.03	<.005	2.9	0.03	0.584	<.005	<.005	<.03	0.12
14/07/01	<.003	0.09	<.005	0.28	0.188	<.001	<.05	189.3	<.001	0.007	0.013	<.002	0.09	6	0.008	38.7	3.42	<.002	20	0.016	<1	<.01	191	<.03	<.005	4.6	<.01	0.598	0.008	<.005	<.03	0.4
14/08/01	<0.003	0.08	<0.005	<0.05	0.169	<0.001	<0.05	214	<0.001	<0.005	<0.005	0.006	0.05	7	0.005	48.1	2.63	0.003	26	0.013	<1	<0.01	225	<0.03	<0.005	5	<0.01	0.676	0.01	<0.005	<0.03	0.42
17/09/01	<0.003	0.05	<0.005	0.13	0.13	<0.001	<0.05	180.6	<0.001	<0.005	<0.005	0.003	0.03	7	0.018	42.9	2.16	<0.002	75	0.009	<1	<0.01	206	<0.03	<0.005	4.3	<0.01	0.557	<0.005	0.005	<0.03	0.21
15/10/01	<0.003	<0.05	<0.005	0.25	0.15	<0.001	<0.05	189	<0.001	0.007	<0.005	0.006	<0.01	9	0.036	44.2	3.17	0.003	26	0.012	<1	<0.01	213	<0.03	<0.005	4.2	<0.01	0.554	<0.005	<0.005	<0.03	0.25
13/11/01	<0.003	0.08	<0.005	0.26	0.076	<0.001	<0.05	195.2	<0.001	<0.005	<0.005	<0.002	0.11	9	0.028	45.5	3.74	<0.002	30	0.007	0.04	<0.01	212	<0.03	<0.005	4.9	0.01	0.538	0.009	0.007	<0.03	0.14
15/12/01	<0.001	0.08	<0.005	0.09	0.021	0.001	<0.05	189.8	<0.001	0.007	0.011	<0.002	0.05	6	0.031	43.4	3.08	0.01	24	0.008	0.03	<0.01	175	<0.03	<0.005	4.1	0.12	0.473	<0.005	0.005	<0.03	0.15
STATION: X13																																
10/10/1986												<0.01					1.93		52			0.02										0.03
23/10/86												0.01										0.01										0.03
31/10/86												<0.01										0.01										0.02
6/11/1986												<0.01										<0.01										0.04
13/11/86												<0.01										<0.01										0.01
21/11/86												<0.01										<0.01										0.02
28/11/86												<0.01										<0.01										0.02
4/12/1986												<0.01					2.3		56			<0.01										0.01
10/12/1986												0.01					2.23		56			<0.01										<0.01
16/12/86												<0.01					0.84		54.5			<0.01										<0.01
23/12/86												<0.01					2.47		59			<1										0.03
31/12/86												<0.01					2.11		59			<0.01										<0.01
7/1/1987												<0.01					2.42		55			<0.01										0.02
15/01/87												<0.01					2.66		68			<0.01										0.02
20/01/87												<0.01					2.76		59			<0.01										0.02
28/01/87												<0.01					2.9		60			<0.01										0.01
3/2/1987												<0.01					2.96		57.5			<0.01										0.01
10/2/1987												<0.01					2.81		59.5			<0.01										<0.01
17/02/87												<0.01					3.12		58			<0.01										0.01
24/02/87												<0.01					3.32		61			<0.01										0.01
3/3/1987												<0.01					3.3		60.5			0.03										0.02
10/3/1987												<0.01					3.53		61			<0.01										<0.01
17/03/87												<0.01					3.58		63			<0.01										0.01
24/03/87												<0.01					3.63		64			<0.01										<0.01
1/4/1987												<0.01					3.72		65			<0.01										<0.01
7/4/1987												<0.01					4.69		67			<0.01										<0.01
14/04/87												0.01					4		67			<0.01										0.02
20/04/87												<0.01					4.1		67			<0.01										<0.01
28/04/87												<0.01					4.2		67			<0.01										0.02
4/5/1987												<0.01					4.2		70			<0.01										<0.01
5/5/1987												<0.01					4.5		67			<0.01										0.01
12/5/1987												<0.01					4.26		67			<0.01										<0.01
19/05/87												0.01					4.06		68.5			<0.01										0.01
26/05/87												<0.01					4.25		68			<0.01										<0.01
11/6/1987												<0.01					3.85		69			<0.01										<0.01
16/06/87												<0.01					3.6		67			<0.01										<0.01
26/06/87												<0.01					3.82		69			<0.01										<0.01
30/06/87												<0.01					3.98		69			<0.01										0.02
6/7/1987												<0.01					3.72		67			<0.01										0.01
13/07/87												<0.01					3.93		68			0.02										0.03
20/07/87												<0.01					3.05		60			0.03										0.01
28/07/87												<0.01					3.72		67.5			0.02										0.01
4/8/1987												<0.005					3.63		66			0.05										0.02
11/8/1987												<0.005					3.33		63			0.02										<0.005
18/08/87												<0.005					3.73		70			0.01										<0.005
25/08/87												<0.005					3.8		70			0.02										0.02
1/9/1987												<0.005					3.69		70			<0.005										<0.005
8/9/1987												<0.005					3.66		70			<0.005										0.02
15/09/87												<0.005					3.67		71			<0.005										0.01
21/09/87												<0.005					3.73		72			<0.005										<0.005
2/10/1987												<0.005					3.68		72			<0.005										<0.005
6/10/1987												<0.005					3.71		72			<0.005										<0.005
13/10/87												<0.005					3.68		72			<0.005										0.01
20/10/87												<0.005					3.73		74			<0.005										<0.005
27/10/87												<0.005					3.73		74			<0.005										<0.005
3/11/1987												<0.005					3.42		70			<0.005										<0.005
10/11/1987												<0.005					3.65		75			<0.005										0.01
17/11/87												<0.005					3.63		72			<0.005										<0.005
24/11/87												<0.005					3.69		75			<0.005										<0.005
1/12/1987												<0.005					3.67		74			<0.005										0.01
9/12/1987												<0.005					3.79		76			<0.005										0.01
15/12/87												0.09					3.84		53.1			0.01										0.02
23/12/87												<0.005					3.22		82			0.05										0.07
30/12/87												<0.005					3.14		80.2			0.05										0.04
5/1/1988												0.004					3.6		75			<0.005										0.005
12/1/1988												0.003					3.89		77			<0.005										0.008
19/01/88												0.004					3.69		76			0.006										0.011
27/01/88												0.004					3.81		75			<0.005										0.005
2/2/1988												0.003					3.81		77			<0.005										0.007
10/2/1988												0.003					4.12		74			<0.005										0.008
17/02/88												0.003					3.5		72			<0.005										0.009
24/02/88												0.005					3.68		76			<0.005										0.009
2/3/1988												0.003					3.67		77			<0.005										0.008
9/3/1988												0.004					4.14		77			<0.005										0.009
16/03/88												0.004					3.6		73			<0.005										0.007
23/03/88												0.005					3.71		78			<0.005										0.008
29/03/88												0.006					3.8		78			<0.005										0.004
5/4/1988												0.005					3.89		77			<0.005										0.007

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/4/1988												0.007					3.64		76			<0.005										0.004
20/04/88												0.003					3.65		76			<0.005										0.009
25/04/88												0.002					3.59		79			<0.005										0.008
4/5/1988												0.002					3.60		78			<0.005										0.002
11/5/1988												0.002					3.43		78			<0.005										0.004
19/05/88												0.002					3.27		79			<0.005										0.006
25/05/88												0.002					2.9		79			<0.005										0.005
1/6/1988												0.002					3.03		79			<0.005										0.01
7/6/1988												0.002					3.45		81			<0.005										0.013
16/06/88												0.002					2.5		77			<0.005										0.007
23/06/88												<0.002					3.1		78			<0.005										0.004
28/06/88												0.002					2.9		79			<0.005										0.006
6/7/1988												0.003					2.85		78			0.006										0.026
11/7/1988												0.003					3		80			<0.005										0.013
20/07/88												0.002					2.6		76			<0.005										0.011
27/07/88												0.003					2.6		76			<0.005										0.016
4/8/1988												0.008					3.1		79			<0.005										0.018
10/8/1988												0.003					2.55		82			<0.005										0.009
16/08/88												0.003					3		82			0.005										0.008
24/08/88												0.003					3.24		85			0.006										0.008
31/08/88												0.01					0.77		45			<0.005										0.006
9/9/1988												<0.002					3.17		81			<0.005										0.005
13/09/88												0.003					3.45		86			<0.005										0.022
22/09/88												0.002					3.2		79			<0.005										0.004
29/09/88												0.003					3.5		80			<0.005										0.007
6/10/1988												0.002	1.16				3.35		79			<0.005										0.009
14/10/88												0.003	1.2				4.5		92			<0.005										0.009
19/10/88												0.003					4.4		78.5			<0.005										0.006
26/10/88												0.005	1.25				3.65		91			<0.005										0.017
1/11/1988												0.003					3.7		91			<0.005										0.011
8/11/1988												0.005					3.5		89			0.036										0.05
14/11/88												0.002					3.9		91			<0.005										0.005
21/11/88												0.002					3.75		90			<0.005										0.006
30/11/88												0.002	0.98				4.35		88			0.009										0.01
7/12/1988												0.002	1.15				4.65		92			<0.005										0.013
12/12/1988												0.003					3.96		85			0.007										0.009
21/12/88												0.002					3.99		88			<0.005										0.006
28/12/88												<0.002	1.2				3.85		91			<0.005										0.006
6/1/1989												0.002					3.75		90			<0.005										0.005
11/1/1989												0.002					3.8		88			<0.005										0.003
17/01/89												0.002	1.13				4.5		87			<0.005										0.006
24/01/89												0.002	1.15				4.6		86			<0.005										0.004
3/2/1989												<0.002					3.95		90			<0.005										0.011
7/2/1989												0.002					3.9		86			<0.005										0.008
13/02/89												0.002	1.25				4.05		85			<0.005										0.004
20/02/89												0.002					3.8		81			<0.005										0.007
27/02/89												<0.002					3.75		89			<0.005										0.01
8/3/1989												0.002					4.25		81			0.005										0.022
14/03/89												<0.002	1.27				4.25		87			<0.005										0.017
20/03/89												0.003	1.2				3.9		81			<0.005										0.023
27/03/89												<0.002					3.95		85			<0.005										0.009
3/4/1989												0.002					4.1		82			<0.005										0.006
10/4/1989												0.002	1.15				3.8		73			<0.005										0.009
17/04/89												0.002					4.45		74			<0.005										0.01
26/04/89												0.003					3.95		77			0.005										0.016
2/5/1989												0.002					4		73			<0.005										0.008
16/05/89												0.003					4.07		75			<0.005										0.014
23/05/89												0.003					4.02		74			<0.005										0.01
29/05/89												0.002					3.68		75			<0.005										0.009
5/6/1989												0.002					3.78		73			0.005										0.009
12/6/1989												0.002	1.36				3.6		69			0.005										0.009
20/06/89												0.003	0.967				3.42		75			0.005										0.014
26/06/89												0.002	1.07				3.52		75			0.005										0.01
3/7/1989												0.002	0.795				3.37		72.6			0.005										0.008
10/7/1989												0.002	0.96				3.32		76			0.005										0.016
17/07/89												0.002	0.845				3.48		85			0.005										0.005
25/07/89												0.003	1.21				3.59		80			0.005										0.011
31/07/89												0.003	1.44				3.93		79			0.005										0.031
7/8/1989												0.002	1.12				2.78		81			0.005										0.009
14/08/89												0.002	1.374				3.58		89			0.005										0.007
21/08/89												0.002	1.28				3.89		76			0.005										0.006
28/08/89												0.002	0.891				2.81		68			0.006										0.008
5/9/1989												0.004	1.19				3.91		87			0.005										0.007
11/9/1989												0.002	0.97				4.28		83			0.005										0.007
18/09/89												0.002	1.43				4.02		83			0.005										0.018
25/09/89												0.002	1.03				3.58		84			0.005										0.025
2/10/1989												0.002	1.22				3.98		86			0.005										0.006
10/10/1989												0.002	1.45				3.86		85			0.005										0.05
16/10/89												0.002	1.24				4.13		84			0.005										0.012
23/10/89												0.034	1.29				3.87		81			0.007										0.036
30/10/89												0.002	1.7				3.85		88			0.005										0.008
6/11/1989												0.002	1.19				4.36		78			0.005										0.008
15/11/89												0.002	1.34				4.09		88			0.005										0.008
20/11/89												0.002	1.46				3.74		81			0.005										0.007
27/11/89												0.002	1.4				4.25		87			0.005										0.008
4/12/1989												0.002	2.09				4.21		85			0.005										0.011
11/12/1989												0.004	1.58				4.34		85			0.005										0.012
18/12/89												0.002	1.83				3.94		87.1			0.005										0.007
26/12/89												0.005	1.46				4.24		84			0.005										0.015
3/1/1990												0.002										0.005										0.009
8/1/1990												0.002										<0.005										0.012
15/01/90												0.005										<0.005										0.022
22/01/90												0.003										<0.005										0.02
1/2/1990												0.002										<0.005										0.01
5/2/1990												0.003										<0.005										0.007
12/2/1990												<0.002										0.038										0.008
19/02/90												<0.002										<0.005										0.01

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
26/02/90												0.01										<0.01										0.21
5/3/1990												0.002										<0.005										0.011
12/3/1990												0.002										<0.005										0.012
19/03/90												<0.002										<0.005										0.055
26/03/90												<0.002										<0.005										0.006
2/4/1990												0.003										0.005										0.008
9/4/1990												0.002										0.005										0.006
17/04/90												0.002										0.005										0.009
26/04/90												0.003										0.005										0.011
2/5/1990												0.003										0.011										0.022
9/5/1990												0.003										0.005										0.017
14/05/90												0.002										0.005										0.01
21/05/90												0.002										0.015										0.008
28/05/90												0.002										0.005										0.008
4/6/1990												0.002										0.005										0.011
11/6/1990												0.003										0.005										0.008
18/06/90												0.002										0.005										0.003
24/06/90												0.003										0.005										0.008
4/7/1990												0.002										0.005										0.005
11/7/1990												0.002										0.005										0.014
16/07/90												0.002										0.005										0.003
22/07/90												0.002										0.005										0.005
29/07/90												0.002										0.005										0.004
6/8/1990												0.002										0.005										0.004
13/08/90												0.002										0.005										0.007
20/08/90												0.002										0.005										0.005
26/08/90												0.002										0.005										0.005
5/9/1990												0.002										0.005										0.011
10/9/1990												0.002										0.005										0.013
19/09/90												0.002										0.005										0.019
25/09/90												0.002										0.011										0.008
2/10/1990												0.002										0.005										0.01
11/10/1990												0.002										0.005										0.023
18/10/90												0.002										0.005										0.005
24/10/90												0.002										0.005										0.006
31/10/90												0.003										0.005										0.008
8/11/1990												0.002										0.005										0.008
14/11/90												0.002										0.008										0.025
21/11/90												0.002										0.005										0.007
29/11/90												0.002										0.005										0.01
4/12/1990												0.003										0.012										0.042
10/12/1990												0.019										0.006										0.002
17/12/90												0.008										0.022										0.13
24/12/90												0.004										0.01										0.272
1/1/1991												0.006										0.004										0.029
7/1/1991												0.004										0.033										0.012
14/01/91												0.001										0.004										0.001
21/01/91												0.001										0.006										0.01
29/01/91												0.042										0.008										0.001
4/2/1991												0.05										0.008										0.011
11/2/1991												0.001										0.004										0.067
18/02/91												0.008										0.087										0.439
27/02/91												0.001										0.004										0.002
4/3/1991												0.001										0.004										0.001
11/3/1991												0.021										0.013										0.012
18/03/91												0.03										0.004										0.005
25/03/91												0.006										0.008										0.001
1/4/1991												0.002										0.01										0.005
8/4/1991												0.02										0.009										0.006
15/04/91												0.013										0.004										0.018
23/04/91												0.001										0.005										0.011
1/5/1991												0.001										0.004										0.001
6/5/1991												1.11										0.004										0.008
13/05/91												0.003										0.004										0.001
17/05/91												0.005										0.004										0.001
21/05/91												0.001										0.004										0.001
3/6/1991												0.001										0.004										0.001
10/6/1991												0.005										0.004										0.001
17/06/91												0.001										0.004										0.001
25/06/91												0.001										0.017										0.001
1/7/1991												0.001										0.004										0.144
2/7/1991												0.001										0.004										0.002
8/7/1991												0.002										0.004										0.155
15/07/91												0.001										0.004										0.366
24/07/91												0.001										0.004										0.028
29/07/91												0.001										0.004										0.17
5/8/1991												0.001										0.004										0.003
13/08/91												0.001										0.004										0.402
20/08/91												0.001										0.004										0.065
26/08/91												0.001										0.004										0.116
3/9/1991												0.001										0.004										0.007
9/9/1991												0.001										0.004										0.027
16/09/91												0.001										0.004										0.057
23/09/91												0.02										0.02										0.064
30/09/91												0.001										0.004										0.012
7/10/1991												0.001										0.006										0.019
16/10/91												0.001										0.004										0.012
17/10/91												0.001										0.004										0.001
21/10/91												0.001										0.004										0.001
28/10/91												0.001										0.004										0.033
1/11/1991												0.022										0.007										0.01
2/12/1991												0.001										0.006										0.011
8/12/1991												0.001																				0.007
15/12/91												0.001										0.004										0.022
22/12/91												0.001										0.01										0.006
30/12/91												0.001										0.004										0.022
7/1/1992												0.001										0.007										0.023

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/01/92												0.001										0.004										0.015
21/01/92												0.001										0.004										0.016
27/01/92												0.001										0.014										0.013
4/2/1992												0.001										0.013										0.009
11/2/1992												0.008										0.019										0.017
18/02/92												0.001										0.007										0.028
24/02/92												0.001										0.011										0.019
2/3/1992												0.001										0.004										0.021
9/3/1992												0.001										0.004										0.03
16/03/92												0.001										0.004										0.02
24/03/92												0.001										0.004										0.022
30/03/92												0.003										0.005										0.022
6/4/1992												0.001										0.01										0.017
13/04/92												0.001										0.023										0.004
20/04/92												0.003										0.015										0.026
29/04/92												0.091										0.016										0.026
4/5/1992												0.004										0.016										0.036
11/5/1992												0.007										0.005										0.016
19/05/92												0.001										0.004										0.017
25/05/92												0.001										0.004										0.009
1/6/1992												0.002										0.011										0.014
9/6/1992												0.001										0.009										0.006
16/06/92												0.001										0.008										0.011
23/06/92												0.001										0.004										0.016
26/06/92												0.003										0.004										0.019
29/06/92												0.001										0.004										0.016
7/7/1992												0.003										0.002										0.012
14/07/92												0.007										0.001										0.011
20/07/92												0.001										0.001										0.018
27/07/92												0.001										0.001										0.013
3/8/1992												<0.001										<0.001										0.014
10/8/1992												0.002										0.002										0.018
18/08/92												0.003										0.002										0.016
25/08/92												0.003										0.002										0.015
1/9/1992												0.005										0.002										0.1
9/9/1992												<0.001										<0.001										0.038
17/09/92												0.001										0.002										0.083
21/09/92												<0.001										<0.001										0.046
28/09/92												<0.001										0.001										0.059
6/10/1992												<0.001										0.005										0.018
13/10/92												0.001										0.11										0.017
19/10/92												<0.001										0.002										0.045
26/10/92												0.002										<0.001										0.074
2/11/1992												<0.001										0.002										0.049
9/11/1992												0.001										<0.001										0.03
17/11/92												<0.001										<0.001										0.002
25/11/92												<0.001										<0.003										0.007
5/1/1993												<0.001										<0.003										0.014
11/1/1993												0.001										<0.003										0.01
20/01/93												<0.001										<0.003										0.004
27/01/93												<0.001										0.005										0.01
16/03/93												<0.002										0.003										0.06
26/04/93												0.002										0.005										0.03
26/05/93												<0.002										<0.003										0.01
24/06/93												<0.002										<0.003										0.03
31/08/93												<0.002										<0.003										0.01
1/9/1993												0.002										0.003										0.02
1/10/1993												<0.002										<0.003										0.04
25/10/93								168		<0.004		<0.002	1.67			26.6				<0.01		<0.003										0.04
1/11/1993												<0.002										<0.03										0.02
1/12/1993								218		0.004		<0.002	2.77			33.6				<0.01		<0.03										0.02
13/12/93								205		0.004		<0.002	2.67			32.5				<0.01		<0.03										0.11
26/04/94								198		<0.004		<0.002	2.28			31.6				0.01		<0.03										0.01
31/05/94								205		0.005		<0.002	2.92			32.8				0.01		<0.03										<0.01
27/06/94												<0.002										<0.03										<0.01
10/8/1994								199		0.005		<0.002	2.41			30.8				0.01		<0.03										0.02
25/09/94								239		0.008		<0.002	3.09			39.6				0.02		<0.03										0.02
18/11/94												<0.002										<0.03										<0.01
25/11/94												<0.002										<0.03										<0.01
1/12/1994												<0.002										<0.03										0.01
8/12/1994												<0.002										<0.03										<0.01
15/12/94												<0.002										<0.03										<0.01
31/01/95												<0.002					9.16		54.1			<0.03										0.03
1/2/1995												<0.002										<0.03										0.03
22/02/95												<0.002										<0.03										0.1
24/02/95	<0.030	<0.06	<0.04		0.096	<0.001	<0.02	207	<0.002	<0.004	<0.002	<0.002	6.81			33.4	7.66	<0.004	53.1	0.01	0.05	<0.03	166	<0.02		6.4		0.508	0.006	<0.003		0.09
6/3/1995												<0.002										<0.03										0
8/3/1995	<0.030	<0.06	<0.04		0.103	<0.001	<0.02	214	<0.002	0.008	<0.002	<0.002	4.07			37.6	8.54	<0.004	54.2	0.01	<0.04	<0.03	180	<0.02		7.1		0.564	<0.003	<0.003		0.02
17/04/95	<0.030	<0.06	<0.04		0.101	<0.001	<0.02	231	<0.002	0.008	0.004	<0.002	2.6			5.6	8.46	<0.004	52.4	0.02	<0.04	<0.03	186	<0.02		7.3		0.561	0.006	<0.003		0.05
8/5/1995	<0.030	0.07	<0.04		0.098	<0.001	<0.02	223	<0.002	0.008	<0.002	<0.002	2.55			37.6	8.09	<0.004	51.2	0.02	<0.04	<0.03	180	<0.02		6.9		0.551	<0.003	<0.003		0.05
7/6/1995	<0.003	0.91	<0.02		0.104	<0.001	<0.04	185.1	<0.002	<0.005	<0.005	<0.002	2.03		<0.005	34	6.42	<0.002	38	<0.005	<0.04	<0.02		<0.02		3.21		0.5	<0.005	<0.005	<0.02	0.01
9/6/1995												<0.002										<0.02										0.01
21/06/95												<0.002										<0.02										<0.01
20/07/95	<0.003	1.16	0.04		0.093	0.003	<0.04	174	0.01	0.006	<0.005	<0.002	2.1		<0.005	34.8	5.9	<0.002	44	0.011	<0.04	<0.02	158.1	<0.02		2.3		0.542	<0.005	<0.005	<0.02	<0.010
8/8/1995	<0.003	1.43	0.04		0.118	0.003	<0.04	164	<0.002	0.009	<0.005	0.004	2.18		<0.005	30.2	8.69	<0.002	39	<0.005	0.31	<0.02	171	<0.02		3.04		0.478	0.006	<0.005	<0.02	0.01
9/8/1995												0.004										<0.02										0.01
16/08/95	<0.003	1.45	0.02		0.115	0.002	<0.04	168.8	<0.002	<0.005	<0.005	0.007	1.92		<0.005	31.3	6.75	<0.002	40	<0.005	<0.04	<0.02	192.4	<0.02		2.05		0.496	0.006	<0.005	<0.02	0.02
23/08/95	<0.003	1.49	0.14		0.097	0.003	<0.04	178.9	<0.002	<0.005	<0.005	0.012	2.25		<0.005	30.9	6.72	0.004	35	0.005	<0.04	<0.02	192.4	<0.02		2.01		0.499	<0.005	<0.005	<0.02	0.01
7/9/1995	<0.003	1.23	0.03		0.11	0.003	<0.04	193.4	<0.002	<0.005	<0.005	<0.002	2.33		<0.005	33.2	7.84	<0.002	40	0.013	<0.04	<0.02	190.3	<0.02		2.37		0.535	<0.005	<0.005	<0.02	<0.010
12/9/1995	<0.003	1.27	0.03		0.118	0.003	<0.04	167.1	<0.002	<0.005	<0.005	0.003	2.33		<0.005	30.6	6.94	<0.002	36	<0.005	0.12	0.03	165	<0.02		3.13		0.509	<0.005	<0.005	<0.02	0.01
13/09/95												0.003										0.03										0.01
18/09/95	<0.003	1.16	<0.02		0.107	0.001	<0.04	165.5	0.003	<0.005	<0.005	0.008	2.53		<0.005	30.5	7.06	0.006	38	0.016	0.21	<0.02	139	<0.02		2.97		0.508	<0.005	<0.005	<0.02	<0.010
28/09/95	<0.003	1.63	0.03		0.099	0.002	<0.04	167.7	<0.002	<0.005	<0.005	0.002	2.14		<0.005	33.9	7.29	0.003	44	0.019	<0.04	0.05	184	<0.02		2.9		0.492	<0.005	<0.005	<0.02	0.01
3/10/1995	<0.003	1.85	0.02		0.12	0.002	<0.04	248.4	<0.002	0.006	<0.005	0.006	2.62		<0.005	42.8	9.31	<0.002	47	0.031	0.3	<0.02	199	0.07		2.01		0.557	0.005	<0.005	0.06	0.01
6/10/1995												0.006										<0.02										0.01
10/10/1995	<0.003	1.51	0.04		0.112	0.002	<0.04	193.3	<0.002	0.009	<0.005	0.007	2.54		<0.005	38.1	8.69	<0.002	41	0.024	0.26	<0.02	168	<0.02		3.04		0.526	<0.005	<0.005	<0.02	0.01
11/10/1995												0.007										<0.02										0.01

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
16/10/95	<0.003	1.4	0.13		0.099	0.002	<0.04	187.6	<0.002	<0.005	<0.005	0.003	2.61		<0.005	36.7	6.7	<0.002	47	0.007	0.09	<0.02	164	0.02		1.65		0.551	<0.005	<0.005	0.04	0.01
25/10/95	<0.003	0.83	0.05		0.103	0.003	<0.05	183.1	<0.002	<0.005	<0.005	0.008	1.98		<0.005	30	6.3	0.011	38	0.018	0.07	<0.02	158	0.03		2.89		0.495	0.008	<0.005	<0.02	0.01
26/10/95												0.008										<0.02										0.01
2/11/1995	<0.003	1.07	0.05		0.108	0.003	<0.04	199.4	<0.002	0.007	<0.005	0.007	2.59		<0.005	37.5	7.97	0.002	45	0.026	0.16	<0.02	206	<0.02		3.2		0.543	0.007	<0.005	<0.02	0.01
9/11/1995	<0.003	0.91	0.07		0.112	0.003	<0.04	198.3	<0.002	<0.005	<0.005	0.005	2.45		<0.005	36.2	7.4	<0.002	44	<0.005	<0.04	0.02	164	<0.02		2.96		0.509	<0.005	<0.005	<0.02	0.01
14/11/95	<0.003	1.01	0.04		0.103	0.003	<0.04	214.7	<0.002	<0.005	<0.005	0.011	3		<0.005	39.3	8.41	<0.002	48	<0.005	0.24	<0.02	186	<0.02		3.22		0.552	<0.005	<0.005	<0.02	0.01
21/11/95	<0.003	0.81	0.04		0.116	0.002	<0.04	193.9	<0.002	<0.005	<0.005	0.006	2.3		<0.005	35.9	8.32	0.002	45	0.007	<0.04	<0.02	209	<0.02		3.16		0.5	<0.005	<0.005	<0.02	<0.010
30/11/95	<0.003	0.67	0.04		0.107	0.002	<0.04	188.8	0.004	<0.005	<0.005	0.002	2.45		<0.005	33.6	7.25	<0.002	40	0.007	0.09	<0.02	211	<0.02		3.47		0.47	<0.005	<0.005	<0.02	0.01
6/12/1995	<0.003	0.75	<0.02		0.114	0.003	<0.04	202.7	0.005	<0.005	<0.005	0.005	2.43		<0.005	34.3	7.78	<0.002	39	<0.005	<0.04	<0.02	187	<0.02		3.63		0.472	0.006	<0.005	0.02	0.01
11/12/1995	<0.003	0.7	0.03		0.096	0.002	0.09	181.8	<0.002	0.019	<0.005	<0.002	2.13		<0.005	30.7	7.2	<0.002	39	0.011	<0.04	<0.02	198	<0.02		2.8		0.435	<0.005	<0.005	<0.02	<0.010
20/12/95	<0.003	0.72	0.04		0.109	0.002	<0.04	181.6	<0.002	0.005	<0.005	0.004	2.11		<0.005	33.8	6.77	0.002	37	<0.005	<0.04	<0.02	158	0.02		3.05		0.444	<0.005	<0.005	<0.02	0.01
29/12/95	<0.003	0.74	0.03		0.105	0.003	0.04	195.2	<0.002	<0.005	<0.005	0.006	2.34		<0.005	32.6	7.53	<0.002	37	<0.005	0.23	<0.02	174	<0.02		3.06		0.461	<0.005	<0.005	<0.02	0.01
4/1/1996	<0.003	0.74	0.04		0.109	0.003	<0.04	183.6	<0.002	<0.005	<0.005	0.008	2.24		<0.005	32.4	7.42	<0.002	38	<0.005	<0.04	<0.02	158	0.03		1.89		0.446	0.01	<0.005	<0.02	0.02
9/1/1996	<.003	0.6	<.02		0.1	0.003	<.04	184.8	<.002	<.005	<.005	0.007	1.96		<.005	31.3	7.39	<.002	38	<.005	<.04	<.02	160	<.02		2.96		0.443	0.005	<.005	<.02	0.01
20/01/96	<.003	0.96	<.02		0.123	0.002	<.04	167.3	<.002	<.005	<.005	0.009	3.28		<.005	29.4	7.23	<.002	35	0.005	<.04	<.02	129	<.02		2.1		0.484	0.008	<.005	<.02	0.01
25/01/96	<.003	0.65	<.02		0.113	0.002	<.04	161.6	<.002	<.005	<.005	0.01	2.34		<.005	30.5	7.25	<.002	38	<.005	<.04	<.02	143	<.02		2.81		0.501	<.005	<.005	<.02	<.01
5/2/1996	<.003	0.63	<.02		0.112	0.002	<.04	188.2	<.002	<.005	<.005	0.004	2.18		<.005	33	6.47	<.002	38	0.012	<.04	<.02	176	<.02		3.1		0.411	<.005	<.005	<.02	<.01
14/02/96	<.003	0.94	<.02		0.104	0.003	<.04	186.6	<.002	<.005	<.005	0.006	2.58		<.005	34.8	9.92	<.002	42	<.005	<.04	<.02	162	<.02		3.4		0.574	<.005	<.005	<.02	0.02
23/02/96	<.003	0.62	<.02		0.113	0.002	<.04	196.1	<.002	<.005	<.005	0.008	2.28		<.005	36.5	7.3	<.002	43	0.012	<.04	<.02	150	<.02		1.97		0.491	<.005	<.005	<.02	<.01
28/02/96	<.003	0.55	<.02		0.092	0.002	<.04	140.5	<.002	0.007	<.005	0.003	1.98		<.005	25.8	7.21	<.002	31	<.005	<.04	<.02	156	<.02		1.71		0.423	<.005	<.005	<.02	0.01
5/3/1996	<.003	0.75	<.02		0.11	0.002		147.6	<.002	<.005	<.005	0.003	1.99		<.005	27.4	7.54	<.002	35.2	<.005	<.04	<.02	173	<.03		1.59		0.469	<.005	<.005	<.03	<.01
12/3/1996	<.003	0.61	0.04		0.122	0.002	<.04	160.4	<.002	<.005	<.005	0.004	2.67		<.005	29.4	7.77	<.002	36	0.005	<.04	<.02	152	<.03		2.16		0.482	<.005	<.005	<.02	0.01
21/03/96	<.003	0.61	0.07		0.113	0.002	<.04	166.7	0.005	<.005	<.005	0.002	2.54		<.005	31.3	8.47	<.002	37	0.009	0.08	<.02	149	0.03		2.04		0.458	<.005	<.005	<.03	<.01
30/03/96	<.003	0.57	0.03		0.108	0.002	0.05	142.6	<.002	<.005	<.005	0.009	2.11		<.005	27	7.3	<.002	32	<.005	0.17	<.02	187	<.03		2.76		0.437	<.005	<.005	<.03	<.01
9/4/1996	<.003	0.4	<.02		0.137	0.002	<.04	162.4	<.002	<.005	<.005	0.018	4.12		<.005	30	7.88	<.002	37	<.005	<.04	<.02	186	<.03		3.05		0.491	0.005	<.005	<.03	<.01
16/04/96	<.003	0.55	<.02		0.107	0.002	<.04	148.6	<.002	<.005	<.005	0.011	2.32		<.005	28.3	7.52	0.004	34	<.005	0.16	<.02	149	<.03		2.03		0.465	<.005	<.005	<.03	<.01
23/04/96	<.003	0.71	<.02		0.117	0.002	<.04	154.4	<.002	<.005	<.005	<.002	2.27		<.005	30	8.41	<.002	32	0.018	<.04	<.02	158	<.03	<.02	2.89		0.496	<.005	<.005	<.03	0.01
29/04/96	<.003	0.57	0.03		0.12	0.002	<.04	170.7	<.002	<.005	<.005	0.004	2.28		<.005	31.4	8.4	<.002	35	0.026	0.26	<.02	159	<.03	<.02	2.7		0.503	<.005	<.005	<.03	0.01
6/5/1996	<.003	0.7	0.03		0.127	0.002	<.04	193.5	<.002	<.005	<.005	0.008	2.67		<.005	35	9.47	0.003	40	0.013	0.11	<.02	146	<.03	<.02	3.06		0.555	<.005	<.005	<.03	0.01
13/05/96	<.003	0.56	<.02		0.113	0.002	0.04	178.5	0.006	<.005	<.005	0.018	2.5		<.005	32.7	9.13	0.002	37	0.012	0.06	<.02	175	0.04	<.02	2.41		0.53	<.005	0.013	<.03	0.01
21/05/96	<.003	0.8	0.03		0.107	0.002	<.04	170.6	<.002	<.005	<.005	0.023	2.48		<.005	31.4	8.53	<.002	35	0.016	0.12	0.02	195	<.03	<.02	1.84		0.515	<.005	<.005	<.03	0.01
27/05/96	<.003	0.82	<.02		0.109	0.002	<.04	174.9	<.002	<.005	<.005	0.008	3.39		<.005	32.5	8.15	<.002	36	<.005	0.19	<.02	148	<.03	<.02	2.06		0.532	<.005	<.005	<.03	0.02
29/05/96	<.003	1.08	<.02		0.124	0.008	<.04	180.8	<.002	<.005	<.005	0.006	3.08		<.005	34	9.27	<.002	39	0.01	0.11	<.02	180	<.03	<.02	1.99		0.55	<.005	<.005	<.03	0.01
4/6/1996	<.003	0.33	<.02		0.119	0.008	<.04	179	<.002	<.005	<.005	0.005	2.71		<.005	33.6	9.36	<.002	38	<.005	<.04	<.02	183	<.03	<.02	2.1		0.552	<.005	<.005	<.03	<.01
11/6/1996	<.003	<.05	<.02		0.111	0.009	<.04	174	<.002	<.005	<.005	0.003	2.55		<.005	31.9	8.84	<.002	36	<.005	<.04	<.02	141	<.03		2.89		0.524	0.009	<.005	<.03	0.01
21/06/96	<.003	0.09	<.02		0.067	0.009	<.04	181.7	<.002	<.005	<.005	<.002	2.87		<.005	33.9	8.24	<.002	36	<.005	<.04	<.02	201	<.03		3.04		0.554	<.005	<.005	<.03	0.02
2/7/1996	<.003	0.24	<.02		0.15	0.009	<.04	212.4	<.002	<.005	<.005	<.002	3.29		<.005	39.9	11.23	<.002	44	0.007	<.04	<.02	212	<.03	<.02	8.6		0.647	0.006	<.005	<.03	0.03
8/7/1996	<.003	0.08	<.02		0.069	0.007	<.04	184.6	<.002	<.005	<.005	<.002	2.73		<.005	33.7	9.32	<.002	36	<.005	0.17	<.02	182	<.03		6.9		0.549	<.005	<.005	<.03	<.01
15/07/96	<.003	<.05	<.02		0.115	0.006	<.04	150.9	<.002	<.005	<.005	<.002	2.28		<.005	28.1	7.87	0.003	29	<.005	0.36	<.02	186	<.03		6.3		0.46	<.005	<.005	<.03	<.01
23/07/96	<.003	<.05	<.02		0.098	0.008	<.04	165	<.002	<.005	<.005	0.003	2.48		<.005	29.9	8.1	<.002	34	<.005	<.04	<.02	167	<.03		6.4		0.473	<.005	<.005	<.03	0.01
29/07/96	<.003	0.07	<.02		0.101	0.01	<.04	177.8	<.002	0.006	<.005	0.007	2.7		<.005	33.2	9.4	0.002	37	0.005	<.04	<.02	180	<.03		6.3		0.542	<.005	<.005	<.03	0.03
5/8/1996	<.003	0.05	0.04		0.136	0.007	<.04	167.7	<.002	<.005	<.005	0.01	2.5		<.005	31.2	8.74	<.002	34	0.008	0.25	<.02	179	<.03		6.7		0.505	0.006	<.005	<.03	0.02
14/08/96	<.003	0.05	0.02		0.1	0.007	<.04	166.2	<.002	<.005	<.005	0.008	2.44		<.005	30.8	6.91	0.003	34	0.008	0.3	<.02	188	<.03		6.7		0.502	<.005	<.005	<.03	<.01
20/08/96	<.003	0.05	0.02		0.099	0.007	<.04	160.2	<.002	<.005	<.005	0.005	2.43		<.005	29.9	8.18	<.002	33	0.014	<.04	<.02	172	<.03		6.8		0.483	<.005	<.005	<.03	0.02
27/08/96	<.003	0.05	<.02		0.127	0.007	<.04	162.3	<.002	0.006	<.005	<.002	2.27		<.005	31.3	6.58	0.003	37	<.005	0.07	0.03	145	<.03		7.2		0.491	<.005	<.005	<.03	0.01
3/9/1996	<.003	0.35	<.02		0.106	0.008	<.04	185.6	<.002	<.005	<.005	0.003	0.02		<.005	37	8.8	<.002	38	<.005	<.04	<.02	159	<.03		8.41		0.554	<.005	<.005	<.03	0.01
11/9/1996	<.003	0.05	<.02		0.125	0.007	<.04	160.5	<.002	<.005	<.005	0.007	1.85		<.005	30.6	8.26	<.002	42	<.005	<.04	<.02	177	<.03		7.1		0.499	<.005	<.005	<.03	<.01
17/09/96	<.003	0.05	<.02		0.168	0.006	<.04	156	<.002	<.005	<.005	0.009	2.33		<.005	29.3	8.73	<.002	33	0.018	<.04	<.02	175	<.03		7		0.475	<.005	<.005	<.03	0.02
24/09/96	<.003	0.1	<.02		0.136	0.006	<.04	189.7	0.005	<.005	0.006	0.025	2.52		<.005	34.3	8.35	<.002	51	0.014	<.04	<.02	189	<.03		7.2		0.566	<.005	<.005	<.03	0.04
30/09/96	<.003	0.05	<.02		0.087	0.007	<.04	196.4	<.002	<.005	<.005	0.012	2.6		<.005	32.3	8.53	<.002	54	<.005	<.04	<.02	213	<.03		7.6		0.49	<.005	<.005	<.03	0.02
7/10/1996	<.003	0.05	<.02		0.19	0.008	<.04	175.7	<.002	<.005	<.005	<.002	0.9		<.005	31.1	7.17	<.002	75	<.005	<.04	<.02	168	<.03		7.7		0.495	<.005	<.005	<.03	0.01
15/10/96	<.003	0.05	<.02		0.13	0.007	<.04	185.7	<.002	0.028	<.005	0.028	2.52		<.005	34.1	7.86	<.002	47	0.007	0.24	<.02	153	<.03		6.8		0.557	<.005	<.005	<.03	0.02
21/10/96	<.003	0.05	<.02		0.099	0.005	<.04	154.2	<.002	0.025	<.005	0.034	2.06		<.005	29.3	6.43	<.002	44	0.009	0.1	<.02	131	<.03		6.7		0.47	<.005	<.005	<.03	0.03
29/10/96	<.003	0.05	<.02		0.13	0.006	<.04	161	<.002	0.014	<.005	0.027	3.55		<.005	30.7	6.83	<.002	47	<.005	0.28	<.02	130	<.03		7.2		0.499	<.005	<.005	<.03	0.02
5/11/1996	<.003	0.05	<.02		0.102	0.006	<.04	166	<.002	0.005	<.005	0.007	2.12		<.005	30.9	7.94	<.002	50	<.005	<.04	<.02	159	<.03		6.8		0.497	<.005	<.005	<.03	<.01
12/11/1996	<.003	0.05	<.02		0.119	0.007	<.04	155.9	<.002	0.015	<.005	0.008	2.12		<.005	29.9	6.58	<.002	52	<.005	<.04	<.02	154	<.03		6.7		0.494	<.005	<.005	<.03	0.01
21/11/96	<.003	<.05	<.02		0.143	0.005	<.04	159.6	<.002	<.005	<.005	<.002	2.23		<.005	30.2	6.95	<.002	45	<.005	<.04	<.02	162	<.03		5		0.501	<.005	<.005	<.03	0.02
25/11/96	<.003	0.05	<.02		0.113	0.007	<.04	161.2	<.002	<.005	<.005	0.004	2.53		<.005	30.7	6.67	<.002	51	<.005	<.04	<.02	171	<.03		5.8		0.521	<.005	<.005	<.03	0.01
2/12/1996	<.003	0.05	<.02		0.083	0.006	<.04	169.3	<.002	<.005	<.005	0.005	2.06		<.005	31.8	6.99	<.002	47	<.005	0.08	<.02	168	<.03		5.5		0.529	<.005	<.005	<.03	0.01
11/12/1996	<.003	1.43	<.02		0.176	0.005	<.04	151.8	<.002	<.005	<.005	0.007	1.54		<.005	29.5	7.44	<.002	43	0.012	0.1	<.02	151	<.03		4.9		1.467	0.005	0.007	<.03	0.01
19/12/96	<.003	0.28	0.02		0.14	0.008	<.04	193.3	<.002	<.005	<.005	0.007	2.87		<.005	36	8.51	<.002	45	<.005	0.07	<.02	166	<.03		6.2		0.595	<.005	<.005	<.03	0.05
23/12/96	<.003	0.05	<.02		0.11	0.005	<.04	207.5	<.002	<.005	<.005	0.015	2.59		<.005	38.8	6.62	0.004	47	0.019	0.15	<.02	158	<.03		8.1		0.628	<.005	<.005	<.03	0.01
30/12/96	<.003	0.05	<.02		0.105	<.001	<.04	194.8	<.002	<.005	<.005	0.008	2		<.005	36	6.94	<.002	35	<.005	<.04	<.02	142	<.03		7.8		0.586	<.005	<.005	<.03	0.01
6/1/1997	<.003	0.62	<.02	0.74	0.113	0.001	<.04	199.2	<.002	<.005	<.005	0.005	0.05		<.005	39	9.32	<.002	11	<.005	<.04	<.02	195	<.03		6.65		0.61	<.005	<.005	<.03	0.01
14/01/97	<.003	0.62	<.02	0.64	0.116	<.001	<.04	165.9	<.002	<.005	<.005	0.008	2.32		<.005	34.5	9.77	<.002	35	<.005	<.04	<.02	89	<.03		5.76		0.559	0.008	<.005	<.03	0.01
20/01/97	<.003	0.46	0.08	0.77	0.133	0.001	<.04	174	<.002	<.005	<.005	0.008	1.82		<.005	32.8	9.15	0.006	43	<.005	0.16	<.02	122	<.03		5.86		0.531	0.009	<.005	<.03	0.02
27/01/97	<.003	0.47	<.02	0.88	0.106	<.001	<.04	188.4	<.002	<.005	<.005	0.008	1.87		<.005	34.8	10.21	<.002	44	<.005	<.04	<.02	104	<.03		7.37		0.555	0.01	<.005	<.03	<.01
3/2/1997	<.003	0.33	<.02	0.64	0.109	0.002	<.04	196.9	<.002	<.005	0.008	0.007	1.73		<.005	35.3	8.23	<.002	45	0.01	<.04	<.02	75	<.03		6.23		0.478	0.007	<.005	<.03	<.01
11/2/1997	<.003	0.19	<.02	0.99	0.133	0.004	<.04	169.8	<.002	0.006	<.005	0.012	2.11		<.005	31.4	8.84	0.012	44	<.005	0.13	<.02	110	<.03		6.71		0.493	0.009	0.008	<.03	0.02
17/02/97	<.003	0.22	0.05	1.1	0.157	0.005	<.04	187.3	<.002	0.019	0.011	0.012	2.18		<.005	35.1	9.27	<.002	40	0.054	<.04	0.06	149	<.03		6.26		0.565	0.008	<.005	<.03	<.01
24/02/97	<.003	0.14	<.02	0.99	0.105	<.001	<.04	204.1	<.002	<.005	0.007	0.003	3.06		<.005	37.1	7.59	0.014	45	<.005	0.22	<.02	134	<.02		8.66		0.6	0.011	<.03	<.02	0.01
4/3/1997	<.003	1.16	0.04	0.13	0.089	0.007	0.04	181.6	0.002	0.04	<.005	0.005	1.82		0.059	33.1	8.51	0.015	36	0.012	1.08	0.03	137	<.03	<.005	4.9	<.01	0.473	<.005	0.007	<.03	0.01
11/3/1997	<.003	1.12	<.02	<.05	0.088	0.006	<.04	173.5	<.002	0.034	<.005	0.006	1.56		0.055	32.2	8.07	0.019	36	0.013	1.03	<.02	132	<.03	<.005	4.5	0.03	0.46	<.005	<.005	<.03	0.01
18/03/97	<.003	1.26	<.02	0.17	0.091	0.004	<.04	185.4	<.002	0.014	0.006	0.016	0.67		0.048	33.9	8.77	0.016	34	<.005	0.65	0.02	141	<.03	<.005	4.5	<.01	0.495	<.005	<.005	<.03	0.02
24/03/97	<.003	0.05	<.02	0.12	0.084	<.001	<.04	176	<.002	<.005	<.005	0.007	1.04		<.005	32	9.17	0.002	35	<.005	<.04	<.02	145	<.03	<.005	4.8	<.01	0.514	<.005	<.005	<.03	0.04
31/03/97	<.003	0.05	<.02	0.22	0.099	<.001	<.04	155.5	<.002	0.008	0.008	0.003	1.47		<.005	28.8	7.8	0.002	32	<.005	0.06	<.02	127	<.03	<.005	4.6	<.01	0.461	<.005	<.005	<.03	0.02
9/4/1997	<.003	<.05	<.02	0.1	0.1	0.002	<.04	160.6	<.002	0.022	<.005	0.01	1.68	5.4	0.021	29.7	7.96	<.002	33	<.005	<.04	<.02	136	<.03	<.03	5	<.01	0.476	0.006	0.021	<.03	0.03
15/04/97	<.003	<.05	<.02	0.16	0.094	0.005	<.04	200.2	<.002	0.011	<.005	0.006	2.06	5.5	<.005	34.1	9.22	<.002	38	0.008	0.15	<.02	159	<.03	<.03	6.3	<.01	0.539	<.005	<.005	<.03	0.02
22/04/97	<.003	<.05	<.02	0.32	0.097	0.021	<.04	165.8	<.002	<.005	<.005	0.003	1.27	3	<.005	31.1	8.06	<.002	35	<.005	<.04	<.02	142	<.03	<.03	5.8	<.01	0.498	<.005	<.005	<.03	0.01
28/04/97	<.003	<.05	<.02	<.05	0.148	0.002	<.04	143.9	<.002	0.007	<.005	0.014	0.75	2.2	<.005	27.3	6.16	<.002	31	<.005	0.1	<.02	120	<.03	<.03	4.28	0.04	0.44	<.005	<.005	<.03	0.01
10/5/1997	<.003	<.05	<.02	0.11	0.105	<.001	<.04	205	<.002	0.022	<.005	<.002	1.53	<1	<.005	38	9.74	<.002	31	<.005	<.04	<.02	160	<.03	<.03	5.8	<.01	0.556	<.005	<.005	<.03	0.01
13/05/97	<.003	<.05	<.02	<.05	0.111	<.001	0.05	196.5	<.002	<.005	<.005	<.002	1.91	<1	<.005	38.2	9.42	<.002	40	0.011	<.04	<.02	151	<.03	<.03	5	<.01	0.534	0.007	<.005	<.03	<.01
20/05/97	<.003	<.05	<.02	0.11	0.108	0.003	<.04	198.8	<.002	<.005	<.005	0.005	2.44	3	0.048	36.5	10.8	<.002	38	0.017	<.04	<.02	175	<.03	<.03	5.6	<.01	0.588	<.005	<.005	<.03	0.01
27/05/97	<.003	<.05	<.02	0.05	0.099	<.001	<.04	192.2	0.003	<.005	<.005	0.007	2.02	<1	<.005	35.5	8.12	<.002	34	<.005	<.04	<.02	152	<.03	<.03	4.6	<.01	0.52	<.005	<.005	<.03	0.02
3/6/1997	<.003	0.14	<.02	0.09	0.095	0.004	<.04	227	<.002	<.005	<.005	0.002	2.31	<1	<.005	40.6	9.87	<.002	36	<.005	<.04	<.02	175	<.03	<.03	5.4	<.01	0.584	0.005	<.005	<.03	<.01
10/6/1997	<.003	0.16	<.02	<.05	0.107	<.001	<.04	201.8	<.002	<.005	<.005	0.003	1.8	4.4	<.005	36.7	8.05	<.002	35	0.009	<.04	0.03	159	<.03	<.03	5.2	<.01	0.539	0.01	<.005	<.03	0.67
17/06/97	<.003	0.11	<.02	<.05	0.085	<.001	<.04	174.2	<.002	<.005	<.005	<.002	1.75	<1	<.005	32.5	7.07	<.002	31	<.005	<.04	<.02	135	<.03	<.03	4.7	<.01	0.474	<.005	<.005	<.03	<.01
24/06/97	<.003	<.05	<.02	0.11	0.088	0.002	<.04	198.5	<.002	<.005	<.005	0.003	2.34	2	<.005	35.6	8.56	<.002	34	0.01	0.28	<.02	153	<.03	<.03	5.1	<.01	0.54	<.005	<.005	<.03	0.02
1/7/1997	<.003	0.24	<.02	<.05	0.09	0.002	<.04	247.8	<.002	0.01	<.005	0.027	3.1	6	0.026	45.7	12.53	<.002	46	0.009	0.76	<.02	153	<.03	<.03	8.3	<.01	0.674	0.017	0.014	<.03	0.23
8/7/1997	<.003	0.33	<.02	0.32	0.101	0.001	<.04	208.6	<.002	0.017	<.005	0.027	3.29	7	0.018	42.4	11.41	<.002	52	0.023	0.28	<.02	159	<.03	<.03	8.6	<.01	0.754	0.022	<.005	<.03	0.09
15/07/97	<.003	0.24	<.02	0.28	0.093	<.001	<.04	203.6	<.002	<.005	<.005	0.03	1.9	5	0.008	38	9.42	<.002	41	0.014	<.04	0.04	153	<.03	<.03	7	<.01	0.575	0.017	<.005	0.12	0.13
22/07/97	<.003	0.19	<.02	<.05	0.103	0.002	<.04	193	<.002	0.008	<.005	0.029	2.31	5	<.005	35.3	8.59	0.018	46	0.01	0.64	<.02	161	<.03	<.03	7.9	<.01	0.623	0.014	<.005	<.03	0.06
28/07/97	<.003	0.16	<.02	0.16	0.08	0.001	<.04	191.6	0.003	0.015	<.005	0.03	1.15	7	0.02	35.4	10.18	<.002	41	0.008	1.91	<.02	167	<.03	<.03	6.9	<.01	0.581	<.005	<.005	<.03	0.08
4/8/1997	<.003	<.05	<.02	0.29	0.09	0.001	0.04	188.1	0.002	0.01	<.005	0.041	1.65	5	<.005	34.3	9.33	0.01	38	0.021	1.23	<.02	410	<.03	<.03	6.6	<.01	0.551	0.017	0.02	<.03	0.08
12/8/1997	0.004	0.1	<.02	0.14	0.079	0.001	<.04	193.6	<.002	0.008	<.005	0.03	2.05	7	0.012	37	10.12	<.002	38	0.015	<.04	<.02	186	<.03	<.03	7.4	<.01	0.566	<.005	<.005	<.03	0.1
19/08/97	<.003	0.13	0.04	<.05	0.075	<.001	<.04	194.1	0.002	0.017	<.005	0.038	1.73	4	0.007	35.3	9.1	0.005	35	0.017	0.11	<.02	148	<.03	<.03	6.2	<.01	0.526	0.014	<.005	<.03	0.05
25/08/97	<.003	0.12	<.02	<.05	0.08	<.001	<.04	198	<.002	0.005	<.005	0.008	1.11	5	<.005	32.7	7.65	<.002	36	<.005	<.04	<.02	156	<.03	<.03	6.4	<.01	0.538	0.009	0.01	<.03	0.04

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/9/1997	<.003	0.19	<.02	<.05	0.077	0.001	0.07	187.4	<.002	0.013	<.005	0.016	1.66	4	<.005	34.1
9/9/1997	<.003	0.12	<.02	<.05	0.077	0.001	<.04	189.6	<.002	<.005	<.005	0.021	1.25	5	<.005	36.2
16/09/97	<.003	<.05	<.02	0.21	0.09	0.003	<.04	194.6	<.002	0.027	<.005	0.011	1.77	5	<.005	35.9
22/09/97	<.003	0.07	<.02	<.05	0.076	0.001	<.04	175	<.002	0.011	<.005	0.048	1.28	5	0.011	31.2
30/09/97	<.003	0.1	<.02	<.05	0.105	<.001	<.04	181.9	<.002	0.011	<.005	0.031	0.81	6	0.021	32.6
7/10/1997	<.003	0.08	<.02	<.05	0.131	<.001	<.04	180.3	<.002	<.005	<.005	0.013	1.49	4	<.005	31.4
14/10/97	<.003	0.32	<.02	0.24	0.092	<.001	<.04	184.7	<.002	0.023	<.005	0.016	1.07	6	<.005	33.5
20/10/97	<.003	<.05	<.02	<.05	0.135	0.002	<.04	182.6	<.002	<.005	<.005	0.009	1.52	6	<.005	33
28/10/97	<.003	<.05	0.03	0.09	0.123	0.001	<.04	201.2	<.002	0.07	<.005	0.012	1.71	10	<.005	35.7
4/11/1997	<.003	<.05	<.02	0.07	0.114	0.004	<.04	220.8	<.002	0.019	<.005	0.011	1.9	9	<.005	37.1
13/11/97	<.003	<.05	<.02	<.05	0.148	0.004	<.04	201.8	<.002	0.012	<.005	0.011	1.09	7	<.005	34.6
19/11/97	<.003	<.05	<.02	0.08	0.146	0.008	<.04	193.8	<.002	0.031	<.005	0.02	2.3	8	0.008	34.5
25/11/97	<.003	<.05	<.02	0.06	0.173	0.008	<.04	179.6	<.002	<.005	<.005	0.032	1.69	6	<.005	32.1
2/12/1997	<.003	0.06	<.02	<.05	0.133	<.001	<.04	186.2	<.002	0.014	<.005	0.025	1.95	<1	<.005	33.8
8/12/1997	<.003	<.05	<.02	0.06	0.14	0.003	<.04	183.2	<.002	0.011	<.005	0.013	1.73	8	<.005	33
16/12/97	<.003	<.05	<.02	0.07	0.156	0.004	0.09	165.3	<.002	<.005	<.005	0.011	1.58	2	<.005	30.8
23/12/97	<.003	<.05	<.02	0.18	0.088	0.003	<.04	196.4	<.002	0.007	<.005	0.013	1.82	7	<.005	34.7
30/12/97	<.003	<.05	<.02	0.19	0.087	0.001	<.04	199	<.002	<.005	0.007	0.037	2.03	6	0.006	34.9
5/1/1998	<.003	<.05	<.02	0.19	0.09	0.003	<.04	205.9	<.002	<.005	<.005	0.015	1.12	3	<.005	37.8
12/1/1998	<.003	<.05	<.02	<.05	0.146	<.001	<.04	189.3	<.002	0.016	<.005	0.004	2.03	3	<.005	33.4
24/02/98	0.004	0.33	0.02	0.24	0.07	0.001	<.04	193.7	<.002	0.008	0.007	0.049	1.54	4	0.021	37.4
17/03/98	<.003	0.12	0.02	<.05	0.159	<.001	<.04	201.2	<.002	0.011	0.024	0.024	2.14	4	0.014	39.2
13/04/98	<.003	0.14	<.02	<.05	0.173	0.001	<.04	196.8	<.002	0.016	0.015	0.05	1.83	4	0.014	37.3
18/05/98	<.003	0.23	0.03	0.2	0.08	<.001	<.04	222.7	<.002	<.005	<.005	0.041	2.05	5	<.005	40.8
15/06/98	<.003	0.17	<.02	0.06	0.145	0.002	<.04	216.9	<.002	0.01	0.014	0.054	2.41	6	<.005	39.1
30/06/98	<.003	0.14	<.02	<.05	0.202	0.001	<.04	218.9	<.002	0.012	0.093	0.019	1.95	6	<.005	42.8
21/07/98	<.003	0.08	<.02	<.05	0.143	<.001	0.04	200.4	<.002	<.005	0.03	0.046	1.52	5	0.011	37.9
10/8/1998	0.003	0.28	<.02	0.21	0.052	0.001	<.04	205.2	<.002	<.005	<.005	0.058	1.21	5	0.021	36.8
25/09/98	0.004	0.16	<.02	<.05	0.181	0.002	<.04	218.5	<.002	0.013	0.048	0.03	1.11	5	0.019	39.4
19/10/98	0.005	0.17	<.02	0.07	0.089	0.001	<.04	198.2	<.002	0.012	<.005	0.027	1.38	5	<.005	36.7
17/11/98	<.003	0.33	0.037	<.05	0.188	<.001	<.04	280.1	<.001	0.012	0.036	0.038	2.6	7	<.005	51.5
21/12/98	<.003	0.22	0.011	0.27	0.114	<.001	<.04	180.6	0.003	<.005	<.005	0.03	1.68	4	<.005	33.6
18/01/99	<.003	0.18	0.009	0.21	0.053	0.001	<.04	246.9	0.003	<.005	0.106	0.041	2.77	6	<.005	46.2
22/02/99	0.023	0.4	<.005	0.35	0.11	<.001	<.04	258.3	<.001	0.016	0.127	0.039	3.86	6	<.005	48.2
17/03/99	<.003	0.38	<.005	0.19	0.101	<.001	<.04	191.7	<.001	<.005	0.229	0.039	1.54	4	<.005	33.8
20/04/99	<.003	0.16	0.011	0.18	0.08	0.002	0.04	225.3	<.001	0.01	<.005	0.034	2.69	6	<.005	44.7
17/05/99	<.003	0.05	<.005	<.05	0.149	0.003	<.04	214.9	<.001	<.005	<.005	0.033	2.7	6	<.005	39.5
3/7/1999	<.003	0.53	<.005	0.51	0.079	<.001	<.04	213.4	<.001	0.01	<.005	0.035	3.07	6	<.005	41.1
27/07/99	<.003	<.05	<.005	0.18	0.189	0.005	<.04	207.4	0.004	0.102	<.005	0.011	2.48	4	<.005	42.6
12/8/1999	<.003	<.05	<.005	0.16	0.183	<.001	<.04	235.2	<.001	0.03	<.005	0.012	2.16	8	<.005	42.9
10/9/1999	<.003	0.25	<.005	0.06	0.157	<.001	<.04	214.3	<.001	<.005	<.005	0.026	1.51	6	0.018	40.1
29/10/99	<.003	0.17	<.005	0.07	0.189	<.001	<.04	194.6	<.001	<.005	<.005	0.003	2.31	4	<.005	36.2
22/11/99	<.003	0.27	<.005	0.08	0.163	0.001	0.05	188.8	<.001	0.014	<.005	0.049	2.3	6	<.005	40.6
14/12/99	<.003	0.57	<.005	<.05	0.145	<.001	<.04	212.8	<.001	<.005	<.005	0.029	1.74	5	<.005	35.8
27/01/00	<.003	0.31	<.005	<.05	0.167	0.002	<.05	214.1	0.004	0.018	<.005	0.041	1.97	7	0.019	39.6
28/02/00	<.003	0.37	<.005	<.05	0.151	<.001	<.05	221.4	0.001	<.005	0.118	0.666	2.39	8	0.073	43.6
23/03/00	<.003	0.55	<.005	0.13	0.231	<.001	<.05	224.7	<.001	0.047	<.005	0.007	1.71	11	<.005	42.3
27/04/00	<.003	0.37	<.005	<.05	0.206	0.002	<.05	212.9	<.001	0.014	<.005	0.034	2.01	6	<.005	42.2
15/05/00	<.003	0.32	0.025	<.05	0.175	<.001	<.05	245	<.001	0.029	0.185	0.022	1.85	6	0.052	48.4
20/06/00	<.003	0.35	<.005	<.05	0.202	0.003	<.05	193.4	<.001	0.009	<.005	0.029	1.51	7	<.005	41.1
26/06/00	<.003	0.24	<.005	0.06	0.108	0.003	<.05	227	0.002	<.005	0.063	0.031	1.36	8	<.005	41.9
25/07/00	<.003	0.18	<.005	<.05	0.152	0.003	<.05	239.3	0.009	0.034	<.005	0.033	2.37	8	0.091	45.4
29/08/00	<.003	0.35	<.005	<.05	0.128	0.001	<.05	263.1	<.001	<.005	<.005	0.029	1.52	8	<.005	47.2
25/09/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	237	<0.001	0.01	<0.01	<0.01	2.45	5		44.9
19/10/00	<.003	0.44	<.005	<.05	0.23	0.003	<.05	200.7	<.001	0.009	<.005	0.048	4.5	5	<.005	38.6
13/11/00	<0.003	<0.05	0.025	0.07	0.151	0.001	<0.05	235.7	0.001	0.009	<0.005	<0.002	1.96	7	0.037	46.5
15/11/00	<0.01	0.06	<0.2	<0.1	0.07	<0.005	<0.1	259	<0.001	0.01	<0.01	<0.01	2.51	6		45.3
14/12/00	<0.01	<0.05	<0.2	<0.1	0.08	<0.005	<0.1	257	<0.001	0.01	<0.01	<0.01	2.42	6		45.3
13/01/01	<.003	0.23	<.005	0.07	0.167	0.003	<.05	215.4	<.001	0.031	<.005	0.044	2.55	8	0.031	41.1
10/2/2001	<.003	0.16	<.005	0.06	0.193	0.003	<.05	211.7	<.001	<.005	<.005	0.048	2.95	10	<.005	40
10/3/2001	<.003	0.81	<.005	0.1	0.24	<.001	<.05	222	<.001	<.005	<.005	0.02	2.28	27	<.005	42.24
16/04/01	<.003	0.16	<.005	<.05	0.158	<.001	<.05	230.3	<.001	<.005	<.005	0.012	2.49	<1	<.005	43.6
14/05/01	<.003	0.47	<.005	<.05	0.214	<.001	<.05	228.3	<.001	<.005	<.005	0.009	1.8	5	<.005	42.4
17/06/01	<.003	0.14	<.005	0.1	0.196	<.001	<.05	224.6	<.001	0.011	0.005	0.038	2.43	6	0.04	43.3
14/07/01	<.003	0.09	<.005	0.17	0.226	<.001	<.05	203.8	<.001	0.01	0.012	0.002	1.23	5	0.015	39.9
14/08/01	<0.003	0.07	<0.005	<0.05	0.272	<0.001	<0.05	238.9	<0.001	0.011	<0.005	0.008	2.29	6	0.009	51.2
17/09/01	<0.003	<0.05	<0.005	<0.05	0.164	<0.001	<0.05	214.1	<0.001	0.012	<0.005	<0.002	2.52	6	0.022	45.7
15/10/01	<0.003	<0.05	<0.005	0.18	0.156	<0.001	<0.05	230	<0.001	0.014	<0.005	<0.002	1.53	7	0.035	47.8
13/11/01	<0.003	<0.05	0.025	0.07	0.151	<0.001	<0.05	235.7	0.001	0.009	<0.005	<0.002	1.96	7	0.037	46.5
15/12/01	<0.001	<0.05	0.022	0.07	0.074	0.001	<0.05	243	<0.001	0.018	0.013	<0.002	2.86	5	0.06	47.8

Date	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/9/1997	8.36	0.005	34	0.01	0.11	<.02	137	<.03	<.03	6	<.01	0.513	0.01	<.005	<.03	0.04
9/9/1997	8.97	<.002	34	<.005	0.27	<.02	134	<.03	<.03	5.8	<.01	0.526	0.006	0.007	<.03	0.05
16/09/97	8.7	<.002	34	<.005	<.04	<.02	160	<.03	<.03	5.3	<.01	0.592	<.005	<.005	<.03	0.03
22/09/97	7.38	<.002	30	0.012	<.04	<.02	172	<.03	<.03	6.2	<.01	0.533	0.01	<.005	<.03	0.07
30/09/97	6.46	<.002	34	0.013	<.04	<.02	162	<.03	<.03	4.7	<.01	0.433	0.012	<.005	<.03	0.03
7/10/1997	6.54	0.006	30	<.005	<.04	<.02	137	<.03	<.03	4.3	<.01	0.468	0.007	<.005	<.03	0.01
14/10/97	7.13	0.004	30	0.021	0.07	<.02	141	<.03	<.03	5.1	<.01	0.501	0.009	<.005	<.03	0.42
20/10/97	7.05	<.002	30	<.005	<.04	0.05	153	<.03	<.03	4.4	<.01	0.491	<.005	<.005	<.03	0.01
28/10/97	7.92	<.002	31	0.007	<.04	<.02	176	<.03	<.03	4.9	<.01	0.532	0.008	<.005	<.03	0.02
4/11/1997	8.7	0.01	35	0.016	0.14	<.02	183	<.03	<.03	5.5	<.01	0.571	0.01	<.005	<.03	0.02
13/11/97	8.3	0.003	32	<.005	<.04	<.02	182	<.03	<.03	4.9	0.02	0.54	0.005	0.011	<.03	0.01
19/11/97	8.38	<.002	33	0.027	<.04	<.02	159	<.03	<.03	5	<.01	0.529	0.008	0.009	<.03	0.03
25/11/97	7.47	0.01	30	0.011	<.04	<.02	151	<.03	<.03	4.9	<.01	0.524	0.008	<.005	<.03	0.03
2/12/1997	7.71	<.002	29	<.005	<.04	<.02	150	<.03	<.03	6	<.01	0.548	<.005	<.005	<.03	0.01
8/12/1997	7.57	<.002	31	0.014	<.04	<.02	147	<.03	<.03	4.7	0.03	0.508	0.005	<.005	<.03	0.02
16/12/97	7.22	<.002	29	0.012	<.04	<.02	147	<.03	<.03	4.8	<.01	0.466	0.008	0.022	<.03	0.02
23/12/97	8.01	<.002	31	0.006	<.04	<.02	145	<.03	<.03	5.6	<.01	0.563	0.005	<.005	<.03	0.02
30/12/97	9.35	<.002	33	<.005	<.04	<.02	171	<.03	<.03	5.2	<.01	0.555	0.009	<.005	<.03	<.01
5/1/1998	9.12	0.003	34	<.005	<.04	<.02	189	<.03	<.03	5.5	<.01	0.609	<.005	<.005	<.03	0.02
12/1/1998	8.39	<.002	31	0.013	<.04	<.02	162	<.03	<.03	4.7	<.01	0.532	<.005	<.005	<.03	0.02
24/02/98	8.15	0.012	34	0.022	1.74	0.03	155	0.03	<.03	5.3	<.01	0.539	0.018	<.005	0.04	<.01
17/03/98	8.27	0.007	38	0.021	<.04	<.02	132	<.03	<.03	6	<.01	0.576	0.013	0.011	<.03	0.01
13/04/98	8.52	<.002	37	0.02	<.04	<.02	148	<.03	<.03	6.3	<.01	0.608	0.018	<.005	<.03	0.3
18/05/98	9.15	<.002	39	0.02	<.04	0.02	135	0.04	<.03	6.5	<.01	0.815	0.009	<.005	<.03	0.07
15/06/98	8.69	<.002	38	0.011	5.4	<.02	163	<.03	<.03	5.7	<.01	0.582	0.022	<.005	<.03	0.05
30/06/98	7.66	0.01	41	0.018	<.04	<.02	394	<.03	<.03	7.9	<.01	0.675	0.025	0.01	<.03	0.03
21/07/98	7.29	<.002	36	0.017	0.44	<.02	140	<.03	<.03	5.4	<.01	0.566	0.011	<.005	<.03	0.03
10/8/1998	7.56	<.002	34	0.008	<.04	0.05	162	<.03	<.03	5.7	<.01	0.586	0.014	0.006	<.03	0.04
25/09/98	8.4	0.008	35	0.015	2.36	<.02	193.9	0.05	<.03	5.7	<.01	0.639	0.026	<.005	<.03	0.03
19/10/98	7.26	0.012	35	0.044	<.04	<.02	189	<.03	<.03	4.9	<.01	0.545	0.026	<.005	<.03	<.01
17/11/98	9.79	0.007	47	<.005	2.36	0.02	200	0.05	<.03	7	<.01	0.694	0.026	<.005	<.03	0.02
21/12/98	7.04	<.002	34	0.012	0.43	<.01	147	<.03	<.03	6.3	<.01	0.523	0.024	0.052	<.03	0.02
18/01/99	10.08	<.002	42	0.018	<.04	<.01	239	0.03	<.03	7.2	<.01	0.702	0.021	<.005	<.03	0.02
22/02/99	10.29	0.013	45	0.021	2.33	<.01	214	<.03	<.03	8.1	<.01	0.764	0.035	<.005	<.03	0.05
17/03/99	7.32	<.002	33	0.005	1.52	<.01	164	<.03	<.03	6.2	<.01	0.512	0.028	<.005	<.03	0.04
20/04/99	10.1	<.002	38	0.008	1.19	<.01	201	<.03	<.03	6.3	<.01	0.653	0.035	<.005	<.03	<.01
17/05/99	9.34	<.002	38	<.005	1.09	<.01		<.03	<.03	6.4	<.01	0.641	<.005	<.005	<.03	0.04
3/7/1999	9.48	<.002	34	<.005	<.04	<.01	200	<.03	<.03	9	<.01	0.665	<.005	0.008	<.03	0.04
27/07/99	9.49	0.019	36	0.051	<.04	<.01	216	<.03	<.005	6.2	<.01	0.745	0.017	0.037	<.03	0.02
12/8/1999	8.2	<.002	38	0.016	<.04	<.01	212	<.03	<.005	9.2	<.01	0.694	0.009	<.005	<.03	0.02
10/9/1999	9.27	<.002	32	0.017	<.04	<.01	193	<.03	<.005	6	<.01	0.605	0.023	0.011	<.03	<.01
29/10/99	9.27	<.002	34	<.005	<.04	<.01	188	<.03	<.005	5.4	<.01	0.577	<.005	<.005	<.03	<.01
22/11/99	9.59	<.002	33	0.034	0.28	<.01	199	<.03	<.005	6.7	<.01	0.637	0.028	<.005	<.03	<.01
14/12/99	8.58	<.002	31	0.015	<.04	<.01	171	<.03	<.005	4.6	<.01	0.538	0.009	<.005	<.03	0.02
27/01/00	8.39	<.002	34	0.011	<1	0.02		<.03	<.005	5.9	<.01	0.569	0.032	0.022	<.03	<.01
28/02/00	8.56	<.002	40	0.021	<1	0.05	192	<.03	<.005	7.7	<.01	0.628	0.052	0.011	<.03	0.16
23/03/00	10.67	<.002	27	<.005	<1	<.01	191	<.03	<.005	7.3	<.01	0.678	0.006	<.005	<.03	<.01
27/04/00	10.88	<.002	31	0.015	<1	0.06		<.03	<.005	6.7	<.01	0.637	0.063	<.005	<.03	<.01
15/05/00	10.32	<.002	38	0.014	<1	<.01		<.03	<.005	8.2	<.01	0.792	0.033	<.005	<.03	0.04
20/06/00	8.32	<.002	33	0.019	6	<.01	<1	0.05	<.005	6.2	<.01	0.586	0.034	<.005	0.03	0.05
26/06/00	10.14	<.002	37	0.021	<1	0.01		0.07	<.005	6.2	<.01	0.59	0.06	0.025	<.03	0.05
25/07/00	11.18	<.002	43	0.029	<1	<.01		<.03	<.005	6.7	<.01	0.77	0.041	0.037	<.03	0.03
29/08/00	10.58	<.002	39	0.026	2	<.01		<.03	<.005	7.2	<.01	0.642	0.032	<.005	<.03	0.07
25/09/00	10.1	<0.01	39	<0.05	<0.3	<0.05		<0.2	<0.2	6.68	<0.03	0.653	<0.01	<0.03		0.021
19/10/00	8.59	<.002	40	0.01	<1	<.01	174	<.03	<.005	6.9	<.01	0.617	0.096	<.005	<.03	0.04
13/11/00	14.17	<0.002	43	0.013	0.02	<0.01	214	0.03	<0.005	8.5	0.07	0.660	0.012	0.007	<0.03	0.02
15/11/00	11.4	<0.01	43	<0.05	<0.3	<0.05		<0.2	<0.2	7.42	<0.03	0.709	<0.01	<0.03		0.019
14/12/00	10.1	<0.01	37	<0.05	<0.3	<0.05		<0.2	<0.2	7	<0.03	0.653	<0.01	<0.03		0.014
13/01/01	9.94	0.004	39	0.031	<1	0.2	99	0.09	<.005	6.7	<.01	0.723	0.056	<.005	<.03	0.01
10/2/2001	9.97	<.002	36	0.032	18	<.01	108	<.03	<.005	6.5	<.01	0.387	0.018	<.005	<.03	<.01
10/3/2001	12.08	<.002	39.22	<.005	<1	<.01	200.6	<.03	<.005	5.97	<.01	0.64	0.005	<.005	<.03	0.02
16/04/01	12.78	<.002	38	0.005	<1	<.01	182	<.03	<.005	6	<.01	0.66	0.01	<.005	<.03	0.03
14/05/01	10.56	<.002	34	0.007	<1	<.01	176	<.03	<.005	5.2	<.01	0.587	<.005	<.005	<.03	0.02
17/06/01	6.34	0.011	40	0.059	<1	<.01	191	<.03	<.005	7.4	0.02	0.638	0.016	<.005	<.03	0.09
14/07/01	9.7	<.002	32	0.021	<1	<.01	169	<.03	<.005	8.7	0.02	0.608	<.005	<.005	<.03	0.05
14/08/01	11.77	0.004	42	0.022	<1	<0.01	224	<0.03	<0.005	10.3	0.01	0.744	<0.005	<0.005	<0.03	<0.01
17/09/01	13.63	<0.002	40	0.018	<1	<0.01	202	<0.03	<0.005	8.9	<0.01	0.673	<0.005	<0.005	<0.03	0.02
15/10/01	14.32	<0.002	40	0.019	<1	<0.01	220	<0.03	<0.005	9.1	<0.01	0.712	<0.005	<0.005	<0.03	<0.01
13/11/01	14.17	<0.002	43	0.013	0.02	<0.01	214	0.03	<0.005	8.5	0.07	0.669	0.012	0.007	<0.03	0.02
15/12/01	11.96	0.007	33	0.011	<0.01	<0.01	188	<0.03	<0.005	8	0.04	0.626	<0.005	<0.005	<0.03	0.04

STATION: X4

Date	CU-T	MN-T	NA-T	PB-T	ZN-T
10/10/1986	0.04	0.07	2	0.13	0.14
14/10/86					0.37
23/10/86	0.04			0.14	0.18
31/10/86	0.04			0.07	0.06
6/11/1986	0.03			0.04	0.02
13/11/86	0.04			0.06	0.04
21/11/86	0.13			0.08	0.06
28/11/86	0.07			0.05	0.04
4/12/1986	0.04	0.53	79.5	0.06	0.16
10/12/1986	0.07	0.45	71.5	0.04	0.05
16/12/86	0.02	0.35	67.9	0.1	0.05
23/12/86	0.02	0.7	82	0.13	0.09
31/12/86	0.02	0.62	68	0.09	0.08
7/1/1987	0.01	0.78	70	0.22	0.16
15/01/87	0.02	0.97	70	<0.01	0.16
20/01/87	<0.01	1.08	71	0.09	0.22
28/01/87	0.01	1.13	70	0.18	0.18
3/2/1987	0.05	0.81	74	0.09	0.08
10/2/1987	0.03	0.65	80	0.03	0.08
17/02/87	<0.01	0.8	79	0.06	0.08
24/02/87	<0.01	1.01	82	0.06	0.12
3/3/1987	0.01	1.06	77.5	0.1	0.16
10/3/1987	0.06	1.08	89	0.11	0.19
17/03/87	0.14	0.67	87	0.02	0.04

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/03/87												0.12					0.34		99			0.06										0.04
1/4/1987												0.07					0.46		103			0.04										0.05
7/4/1987												0.01					0.5		99			0.1										0.05
14/04/87												0.02					0.58		98			0.1										0.08
20/04/87												<0.01					0.64		98			0.07										0.07
28/04/87												<0.01					0.58		100			0.06										0.06
5/5/1987												<0.01					0.57		99			0.02										0.04
12/5/1987												0.01					0.81		93			0.07										0.08
19/05/87												0.01					0.11		84			0.15										0.65
26/05/87												0.01					1.05		85			0.17										0.28
4/6/1987												<0.01					1.04		82			0.1										0.07
11/6/1987												<0.01					1		85			0.12										0.1
16/06/87												0.01					0.9		89			0.15										0.11
26/06/87												0.01					1.01		92			0.26										0.15
30/06/87												<0.01					1.8		92			0.23										0.19
6/7/1987												<0.01					0.117		89			0.29										0.18
13/07/87												0.01					1.44		88			0.33										0.3
20/07/87												0.01					1.25		100			0.3										0.23
28/07/87												0.03					1.31		106			0.32										0.16
4/8/1987												0.06					1.33		106			0.35										0.23
11/8/1987												0.09					1.32		109			0.28										0.22
18/08/87												0.19					1.19		124			0.28										0.31
25/08/87												0.13					1.13		122			0.25										0.31
1/9/1987												0.09					1.02		120			0.2										0.22
8/9/1987												0.13					0.86		153			0.17										0.14
15/09/87												0.08					1.01		143			0.23										0.27
21/09/87												0.1					0.98		135			0.17										0.17
1/10/1987												0.12					1.37		102.6			0.21										0.38
2/10/1987												0.23					1.25		120			0.34										0.7
6/10/1987												0.15					1.24		110			0.18										0.31
13/10/87												0.13					1.45		100			0.16										0.3
20/10/87												0.07					1.47		95			0.21										0.27
27/10/87												0.02					1.43		85			0.16										0.31
3/11/1987												0.02					1.13		84			0.19										0.17
10/11/1987												0.01					1.41		89			0.11										0.18
17/11/87												0.04					1.48		90			0.23										0.24
24/11/87												0.3					1.65		94			0.24										0.23
1/12/1987												0.34					1.66		86			0.27										0.25
9/12/1987												0.27					1.88		77			0.15										0.27
15/12/87												0.3					2.03		51.8			0.25										0.79
23/12/87												0.08					1.42		78			0.15										0.17
30/12/87												0.08					1.29		113			0.25										0.18
5/1/1988												0.045					1.14		109			0.099										0.102
12/1/1988												0.112					1.33		112			0.136										0.15
19/01/88												0.066					1.205		110			0.122										0.113
27/01/88												0.072					0.805		116			0.187										0.345
2/2/1988												0.028					0.575		112			0.08										0.176
10/2/1988												0.022					0.77		104			0.164										0.099
17/02/88												0.064					0.975		109			0.218										0.116
24/02/88												0.018					0.635		110			0.12										0.1
2/3/1988												0.017					0.51		107			0.148										0.15
9/3/1988												0.013					0.38		107			0.149										0.187
16/03/88												0.011					0.46		109			0.134										0.122
23/03/88												0.007					0.36		115			0.26										0.095
29/03/88												0.018					0.33		126			0.175										0.129
5/4/1988												0.022					0.27		132			0.295										0.325
12/4/1988												0.011					0.44		126			0.122										0.093
20/04/88												0.025					0.515		120			0.235										0.29
25/04/88												0.016					0.54		109			0.144										0.265
4/5/1988												0.046					0.45		122			0.35										0.36
11/5/1988												0.051					0.59		105			0.36										0.39
19/05/88												0.078					0.635		128			0.46										0.725
25/05/88												0.029					0.56		137			0.265										0.325
1/6/1988												0.041					0.74		120			0.34										0.43
7/6/1988												0.064					0.57		123			0.5										0.5
15/06/88												0.014					1.57		68			0.36										0.325
23/06/88												0.015					1.9		100			0.29										0.325
28/06/88												0.013					1.15		114			0.24										0.193
6/7/1988												0.017					1.95		90			0.36										0.555
11/7/1988												0.009					1.76		118			0.315										0.275
20/07/88												0.017					1.8		124			0.335										0.625
27/07/88												0.027					1.16		143			0.3										0.31
4/8/1988												0.031					0.98		165			0.355										0.315
10/8/1988												0.041					0.68		148			0.4										0.41
16/08/88												0.037					0.405		163			0.31										0.36
24/08/88												0.18					1.08		118			1.27										1.4
31/08/88												0.012					0.41		131			0.165										0.072
9/9/1988												0.032					0.92		104			0.31										0.52
13/09/88												0.039					3.2		143			0.36										1.85
22/09/88												0.031					2.65		118			0.29										0.77
26/10/88												0.007	0.28				0.185		12.6			0.005										0.038
1/11/1988												0.002					0.385		19.5			<0.005										0.008
8/11/1988												0.019					1.17		115			0.17										0.265
14/11/88												0.017					1.37		122			0.165										0.275
21/11/88												0.007					1.45		126			0.123										0.197
30/11/88												0.01	0.435				1.38		127			0.19										0.185
6/12/1988												0.006	0.18				1.31		125			0.16										0.24
12/12/1988												0.086					1.5		121			0.153										0.21
21/12/88												0.126					1.8		103			0.17										0.26
28/12/88												0.051	0.77				1.53		118			0.195										0.27
5/1/1989												0.012					1.35		128			0.105										0.2
10/1/1989												0.031					1.1		125			0.155										0.2
17/01/89												0.015	0.39				0.8		118			0.11										0.089
23/01/89												0.004	0.09				0.765		120			0.066										0.034
1/2/1989												0.017					0.61		122			0.12										0.152
7/2/1989												0.007					0.5		121			0.057										0.087
13/02/89												0.017	0.67				0.42		125			0.08										0.16

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
20/02/89												0.01					0.42		122			0.046										0.064
27/02/89												0.012					0.37		127			0.075										0.099
8/3/1989												0.007					0.39		124			0.063										0.125
14/03/89												0.02	1.4				0.34		129			0.12										0.195
20/03/89												0.013	0.265				0.265		125			0.065										0.05
27/03/89												0.018					0.21		124			0.058										0.065
3/4/1989												0.009					0.17		122			0.051										0.036
10/4/1989												0.005	0.65				0.043		135			0.073										0.074
17/04/89												0.027					0.22		121			0.168										0.235
26/04/89												0.006					0.51		108			0.073										0.19
2/5/1989												0.009					0.66		97			0.087										0.134
8/5/1989												0.002	0.29				0.65		100			0.065										0.117
16/05/89												0.016					0.73		98			0.206										1.29
23/05/89												0.015					0.715		93			0.144										0.543
29/05/89												0.015					0.65		86			1.72										0.268
5/6/1989												0.028					0.865		83			0.19										0.27
12/6/1989												0.01	0.305				0.868		87			0.214										0.43
20/06/89												0.011	0.637				0.824		92			0.265										0.529
26/06/89												0.011	0.484				0.829		113			0.307										0.337
3/7/1989												0.013	1.25				0.529		150			0.324										0.181
10/7/1989												0.006	0.419				0.444		176			0.227										0.084
17/07/89												0.006	0.322				0.508		174			0.26										0.74
25/07/89												0.014	1.01				0.334		144			0.294										0.248
31/07/89												0.025	0.58				0.65		164			0.227										0.335
7/8/1989												0.013	1.09				0.625		164			0.244										0.127
14/08/89												0.009	1.336				0.61		188			0.196										0.113
21/08/89												0.024	1.41				0.731		184			0.279										0.281
18/09/89												0.088	2.52				0.75		110			0.317										0.526
25/09/89												0.051	0.675				0.64		94			0.081										0.197
10/10/1989												0.02	0.389				0.76		90			0.038										0.182
16/10/89												0.029	0.615				0.87		106			0.074										0.153
23/10/89												0.014	0.139				0.372		69			0.043										0.037
30/10/89												0.011	0.34				0.98		68			0.031										0.137
15/11/89												0.021	0.179				0.89		89			0.059										0.107
20/11/89												0.165	0.316				0.924		92			0.069										0.123
27/11/89												0.123	1.38				0.535		97			0.049										0.091
4/12/1989												0.071	0.425				0.41		107			0.086										0.09
11/12/1989												0.276	0.254				0.383		116			0.071										0.134
18/12/89												0.125	0.39				0.195		112.5			0.066										0.205
28/12/89												0.056	0.237				0.159		112			0.058										0.076
3/1/1990												0.045										0.113										0.179
8/1/1990												0.041										0.049										0.17
15/01/90												0.041										0.063										0.151
22/01/90												0.031										0.058										0.096
1/2/1990												0.021										0.056										0.124
5/2/1990												0.025										0.083										0.152
12/2/1990												0.01										0.008										0.022
19/02/90												0.017										0.071										0.16
26/02/90												0.03										0.04										0.11
5/3/1990												0.005																				0.022
12/3/1990												0.002																				0.008
19/03/90												0.002																				0.007
26/03/90												0.002																				0.007
2/4/1990												0.003																				0.012
9/4/1990												0.004																				0.006
17/04/90												0.006																				0.061
26/04/90												0.01																				0.182
2/5/1990												0.005																				0.099
9/5/1990												0.008																				0.46
14/05/90												0.009																				0.59
21/05/90												0.01																				0.393
28/05/90												0.015																				0.309
4/6/1990												0.01																				0.136
11/6/1990												0.004																				0.098
18/06/90												0.022																				0.296
24/06/90												0.01																				0.136
1/1/1991												0.01																				0.14
7/1/1991												0.005																				0.031
14/01/91												0.009																				0.03
21/01/91												0.006																				0.012
29/01/91												0.039																				0.012
4/2/1991												0.043																				0.007
11/2/1991												0.002																				0.028
18/02/91												0.012																				0.184
27/02/91												0.001																				0.885
4/3/1991												0.004																				0.835
11/3/1991												0.062																				0.64
18/03/91												0.062																				0.785
25/03/91												0.009																				0.309
1/4/1991												0.025																				0.019
8/4/1991												0.018																				0.044
15/04/91												0.011																				0.042
23/04/91												0.006																				0.076
1/5/1991												0.025																				0.152
6/5/1991												0.322																				0.136
13/05/91												0.668																				0.058
21/05/91												0.378																				2.4
27/05/91												0.327																				0.999
3/6/1991												0.08																				0.248
10/6/1991												0.065																				0.241
17/06/91												0.041																				0.298
24/06/91												0.018																				0.464
2/7/1991												0.003																				0.39
8/7/1991												0.004																				0.442
15/07/91												0.017																				0.578
24/07/91												0.018																				0.336
29/07/91												0.001																				0.526

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5/8/1991												0.001																				0.42
13/08/91												0.001																				0.258
20/08/91												0.001																				0.182
26/08/91												0.006																				0.471
3/9/1991												0.007																				0.265
9/9/1991												0.006																				0.095
16/09/91												0.009																				0.248
23/09/91												0.2																				2.38
30/09/91												0.364																				0.054
7/10/1991												0.053																				0.057
16/10/91												0.001																				0.117
21/10/91												0.018																				0.03
28/10/91												0.001																				0.002
6/11/1991												1.39																				0.119
12/11/1991												1.3																				0.314
18/11/91												1.19																				0.191
25/11/91												1.42																				0.158
2/12/1991												0.211																				0.09
8/12/1991												0.414																				0.097
15/12/91												1.33																				0.1
22/12/91												0.8																				0.068
30/12/91												0.844																				0.047
7/1/1992												0.744																				0.092
15/01/92												1.18																				0.065
21/01/92												0.333																				0.47
29/01/92												0.369																				0.034
4/2/1992												0.221																				0.035
13/02/92												0.224																				0.043
18/02/92												0.256																				0.06
24/02/92												0.117																				0.055
2/3/1992												0.1																				0.049
9/3/1992												0.031																				0.077
16/03/92												0.014																				0.032
24/03/92												0.004																				0.066
30/03/92												0.005																				0.031
5/10/1992												0.005										0.11										2.01
13/10/92												0.233										1.33										4.14
20/10/92												0.024										0.3										2.82
26/10/92												0.022										0.23										2.19
2/11/1992												<0.001										0.015										0.029
9/11/1992												0.093										1.42										4.98
17/11/92												0.003										0.19										2.79
24/11/92												<0.001										<0.003										2.67
6/1/1993												0.003										0.1										2.66
11/1/1993												0.009										0.07										2.93
15/03/93												0.008										0.003										1.78
26/04/93												0.013										0.031										0.9
26/05/93												<0.002										0.024										0.83
24/06/93												<0.002										0.019										1.52
31/08/93												0.004										0.013										1.6
1/9/1993												<0.002										0.011										2.03
1/10/1993												<0.002										0.009										1.92
1/11/1993												<0.002										<0.03										1.82
13/12/93												<0.002										<0.03										2.55
1/1/1994												<0.002										<0.03										2.59
26/04/94												<0.002										<0.03										2.68
31/05/94												<0.002										<0.03										3
27/06/94												<0.002										0.04										2.85
10/8/1994												<0.002										<0.03										2.72
25/09/94												<0.002										<0.03										2.9
7/6/1995	<0.003	0.88	<0.02		0.122	<0.001	<0.04	134.8	<0.002	<0.005	<0.005	0.009	0.41		<0.005	29.9	3.83	<0.002	11	<0.005	0.3	<0.02		<0.02		2.02		0.427	<0.005	0.05	<0.02	2.99
21/06/95												0.018										0.04										3.79
22/06/95	<0.003	1	<0.02		0.079	<0.001	<0.05	142.9	0.009	0.007	<0.005	0.004	0.1		<0.005	29.5	4.91	0.002	13	0.016	0.05	<0.02		<0.02		2.1		0.519	<0.005	0.009	<0.02	2.58
20/07/95	<0.003	0.9	0.03		0.024	0.003	<0.04	129.9	0.007	0.011	<0.005	0.016	0.14		<0.005	29.3	3.73	<0.002	14	0.02	0.31	0.04	144	<0.02		0.52		0.49	<0.005	<0.005	<0.02	3.79
8/8/1995	<0.003	1.09	<0.02		0.047	0.002	<0.04	124.3	0.006	0.02	<0.005	0.016	0.13		<0.005	25	4.04	<0.002	12	0.008	<0.04	<0.02	149.6	<0.02		1.61		0.426	<0.005	<0.005	<0.02	4.13
9/8/1995												0.016										<0.02										4.13
16/08/95	<0.003	1.12	<0.02		0.038	0.002	<0.04	125.6	0.005	<0.005	<0.005	0.021	0.09		<0.005	25.7	4.05	<0.002	13	0.006	<0.04	0.03	177.6	<0.02		1.37		0.441	<0.005	<0.005	<0.02	3.42
23/08/95	<0.003	1.24	0.04		0.038	0.002	<0.04	143.5	0.003	<0.005	<0.005	0.019	0.08		<0.005	27.2	4.19	<0.002	13	<0.005	0.07	<0.02	188.7	<0.02		1.37		0.472	<0.005	<0.005	<0.02	3.92
7/9/1995	<0.003	1.03	<0.02		0.031	0.003	<0.04	142.3	0.005	0.011	<0.005	0.005	0.2		<0.005	26.7	4.73	<0.002	13	0.014	0.35	0.05	174.9	<0.02		1.61		0.461	<0.005	<0.005	<0.02	4.87
12/9/1995	<0.003	1.07	0.02		0.087	0.002	<0.04	131	0.004	<0.005	<0.005	0.029	2.09		<0.005	26.4	4.66	<0.002	12	0.022	<0.04	0.03	167	<0.02		1.74		0.468	<0.005	<0.005	<0.02	4.87
13/09/95												0.029										0.03										4.87
18/09/95	<0.003	1.27	<0.02		0.056	0.001	<0.04	126.6	0.006	0.009	<0.005	0.011	0.52		<0.005	25.8	4.52	0.003	17	0.018	0.09	<0.02	183	<0.02		7.39		0.458	0.021	<0.005	<0.02	4.32
28/09/95	<0.003	1.25	<0.02		0.023	0.001	<0.04	122.7	0.002	<0.005	<0.005	<0.002	0.09		<0.005	27.5	4.33	<0.002	14	0.017	<0.04	0.02	172	<0.02		1.4		0.412	<0.005	<0.005	<0.02	3.93
3/10/1995	<0.003	1.33	<0.02		0.044	0.001	<0.04	194.8	0.006	0.016	<0.005	0.005	0.14		<0.005	36.6	6	0.002	16	0.032	0.13	<0.02	182	0.05		0.49		0.469	<0.005	<0.005	0.05	5.15
6/10/1995												0.005										<0.02										5.15
10/10/1995	<0.003	1.3	<0.02		0.036	0.001	<0.04	150.5	0.007	0.02	<0.005	0.006	0.28		<0.005	32.2	5.78	<0.002	14	0.043	0.3	<0.02	172	0.05		1.56		0.47	<0.005	<0.005	<0.02	4.88
11/10/1995												0.006										<0.02										4.88
16/10/95	<0.003	1.08	0.02		0.038	0.001	<0.04	143.4	0.003	0.015	<0.005	0.004	0.35		<0.005	30.7	4.16	<0.002	15	0.014	0.08	<0.02	161	<0.02		0.44		0.48	<0.005	<0.005	<0.02	3.64
25/10/95	<0.003	0.6	<0.02		0.05	0.002	<0.05	135.2	0.006	0.012	<0.005	0.011	1.31		<0.005	23.8	3.6	0.01	12	0.028	<0.04	<0.02	156	0.03		1.54		0.422	0.018	<0.005	<0.02	3.24
26/10/95												0.011										<0.02										3.24
23/04/96	<.003	0.5	<.02		0.067	0.001	<.04	97.3	0.008	0.013	<.005	0.002	5.48		<.005	18.1	3.91	0.002	7	0.017	<.04	0.08	118	0.04		1.47		0.335	<.005	<.005	<.03	8.77
29/04/96	<.003	0.3	<.02		0.059	<.001	<.04	64.7	0.005	0.009	<.005	0.007	4.61		<.005	11.6	2.97	0.005	4	0.011	0.3	0.02	93	<.03		1.11		0.218	0.011	<.005	<.03	4.74
6/5/1996	<.003	0.34	<.02		0.064	<.001	<.04	62.2	<.002	0.005	<.005	0.007	2.35		0.008	11.8	3.1	<.002	4	0.006	0.09	<.02	56	<.03		1.09		0.201	<.005	<.005	<.03	4.33
13/05/96	<.003	<.05	<.02		0.064	<.001	<.04	12.1	<.002	<.005	<.005	0.014	0.22		<.005	1.6	0.56	<.002	<1	<.005	0.07	<.02	13	<.03		0.65		0.042	<.005	<.01	<.03	0.46
21/05/96	<.003	0.4	<.02		0.034	<.001	<.04	85.6	0.006	0.007	<.005	0.031	2.94		<.005	18.6	3.86	<.002	5	<.005	0.2	<.02	131	0.03	<.02	0.27		0.286	<.005	<.005	<.03	6.18
27/05/96	<.003	0.46	<.02		0.029	0.002	<.04	111.6	0.005	0.01	<.005	0.007	2.19		<.005	23.2	4.4	<.002	9	0.006	0.19	<.02	131	<.03		0.41		0.387	0.006	<.005	<.03	5.46
4/6/1996	<.003	0.17	<.02		0.041	0.002	<.04	117.2	0.008	0.008	<.005	0.009	2.12		<.005	24.8	5.16	<.002	10	0.021	<.04	<.02	160	<.03	<.02	0.38		0.398	0.012	<.005	<.03	5.02
11/6/1996	<.003	<.05	<.02		0.077	0.007	<.04	123.7	<.002	<.005	<.005	0.004	0.63		<.005	26.1	5.35	<.002	11	0.028	<.04	<.02	129	<.03		1.48		0.426	0.01	<.005	<.03	5.72
21/06/96	<.003	<.05	<.02		0.043	0.003	<.04	123.5	0.005	0.009	<.005	0.003	1.35		<.005	25.9	4.5	0.003	10	0.009	0.17	0.03	179	<.03		1.49		0.421	<.005	<.005	<.03	4.06
2/7/1996	<.003	0.16	<.02		0.101	0.012	<.04	144.6	<.002	0.015	<.005	0.01	1.06		<.005	30.5	6.13	0.002	12	0.013	0.16	<.02	168	<.03		3.2		0.499	0.028	<.005	<.03	6.15
8/7/1996	<.003	<.05	<.02		0.066	0.005	<.04	134.1	0.007	0.012	<.005	<.002	0.2		<.005	27.7	5.63	<.002	10	<.005	0.15	<.02	168	<.03		2.4		0.453	<.005	<.005	<.03	5.93
15/07/96	<.003	<.05	<.02		0.024	0.005	<.04	114.7	0.002	0.014	<.005	<.002	0.12		<.005	24.5	5	0.008	9	0.018	0.32	<.02	184	<.03		2.4		0.399	<.005	<.005	0.03	5.64
23/07/96	<.003	<.05	<.02		0.057	0.007	<.04	129.1	0.004	<.005	<.005	0.004	0.49		<.005	26.3	5.47	<.002	11	<.005	0.07	0.02	176	<.03		2.4		0.423	<.005	<.005	<.03	6.14
29/07/96	<.003	0.06	<.02		0.065	0.008	<.04	129.6	0.011	0.008	<.005	0.013	0.55		<.005	27.4	5.42	0.004	11	0.009	<.04	0.03	172	<.03		2.7		0.437	<.005	<.005	<.03	6.14
5/8/1996	<.003	0.05	0.03		0.1	0.006	<.04	127.7	0.011	<.005	<.005	0.01	1.23		<.005	26.9	5.42	<.002	11	0.014	0.36	<.02	172	<.03		2.3		0.442	<.005	<.005	<.03	5.77
14/08/96	<.003	0.05	0.03		0.096	0.005	<.04	127	0.007	0.009	<.005	0.024	0.17		<.005	26.8	4.31	<.002	11	0.029	0.3	0.03	184	<.03		2.3		0.441	<.005	<.005	<.03	5.32
20/08/96	<.003	0.05	0.03		0.038	0.007	<.04	129.2	0.009	0.012	<.005	0.008	0.2		<.005	26.6	5.4	<.002	11	0.032	<.04	<.02	175	<.03		2.5		0.434	<.005	<.005	<.03	5.71

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
27/08/96	<.003	0.05	<.02		0.071	0.006	<.04	127.6	0.007	0.007	<.005	0.003	0.17		<.005	27.5	4.3	<.002	7	0.007	0.21	0.02	144	<.03		2.8		0.441	<.005	<.005	<.03	4.99
3/9/1996	<.003				0.007				0.01			0.006						<.002		<.005		<.02		<.03								4.78
11/9/1996	<.003	0.05	<.02		0.091	0.01	<.04	140.2	0.004	<.005	<.005	0.006	0.31		<.005	27	5.39	0.004	4	0.038	<.04	<.02	179	<.03		2.7		0.444	<.005	<.005	<.03	5.81
17/09/96	<.003	0.05	<.02		0.117	0.004	<.04	124.4	<.002	0.01	<.005	0.01	0.7		<.005	25.8	4.44	0.002	10	0.011	0.07	<.02	178	<.03		2.4		0.42	<.005	<.005	<.03	5.27
24/09/96	<.003	0.05	<.02		0.078	0.003	<.04	145.2	0.009	0.012	0.005	0.027	0.09		<.005	29.5	5.28	<.002	17	0.034	<.04	<.02	180	<.03		2.7		0.473	<.005	<.005	<.03	6.45
30/09/96	<.003	0.05	<.02		0.089	0.009	<.04	144.2	0.003	0.006	<.005	0.011	0.06		<.005	26.5	3.84	<.002	16	0.015	<.04	<.02	188	<.03		2.7		0.393	<.005	<.005	<.03	5.4
7/10/1996	<.003	0.05	<.02		0.07	0.009	<.04	142.6	<.002	0.009	<.005	0.009	0.15		<.005	27.3	5.02	<.002	19	0.009	<.04	<.02	169	<.03		2.5		0.417	<.005	<.005	<.03	5.5
15/10/96	<.003	0.05	<.02		0.051	0.007	<.04	136.6	0.002	0.026	<.005	0.032	0.11		<.005	28.9	4.77	<.002	16	0.018	0.23	<.02	154	<.03		2.5		0.466	<.005	<.005	<.03	5.3
21/10/96	<.003	0.05	<.02		0.051	0.004	<.04	143.8	0.006	0.04	<.005	0.032	0.45		<.005	30.5	5.45	<.002	20	0.037	0.19	0.02	167	<.03		2.7		0.493	<.005	<.005	<.03	5.86
29/10/96	<.003	0.05	<.02		0.074	0.005	<.04	134.3	0.008	0.023	<.005	0.028	1.25		<.005	29	5.1	<.002	17	0.016	0.27	<.02	154	<.03		2.9		0.468	<.005	<.005	<.03	4.93
5/11/1996	<.003	0.05	<.02		0.076	0.005	<.04	138.8	0.004	0.01	<.005	0.009	0.22		<.005	29	5.23	<.002	19	0.018	<.04	<.02	183	<.03		2.6		0.469	<.005	<.005	<.03	5.35
12/11/1990	<.003	0.05	<.02		0.033	0.01	<.04	135.9	0.006	0.021	<.005	0.01	0.27		<.005	29.6	5.15	<.002	19	<.005	<.04	<.02	175	<.03		2.6		0.482	<.005	<.005	<.03	5.53
21/11/96	<.003	<.05	<.02		0.059	0.005	<.04	136.2	0.009	0.014	<.005	0.005	1.46		<.005	29.8	5.12	<.002	17	0.024	0.09	<.02	177	<.03		1.4		0.473	<.005	<.005	<.03	5.5
10/5/1997	<.003	<.05	<.02	0.17	0.048	<.001	<.04	92.5	0.004	0.02	<.005	<.002	2.49	<1	<.005	20.9	3.73	<.002	6	0.012	<.04	<.02	99	<.03	<.03	0.7	<.01	0.29	<.005	<.005	0.04	7.16
13/05/97	<.003	<.05	<.02	<.05	0.036	<.001	<.04	78.2	0.003	<.005	<.005	<.002	1.74	<1	<.005	17.6	3.08	<.002	5	0.016	<.04	<.02	84	<.03	<.03	0.4	<.01	0.246	<.005	<.005	<.03	6.26
20/05/97	<.003	<.05	0.03	0.25	0.041	<.001	<.04	98.7	0.007	0.01	<.005	0.006	0.81	<1	<.005	22	4.27	<.002	9	<.005	<.04	0.02	116	<.03	<.03	1	<.01	0.34	<.005	<.005	<.03	7.28
27/05/97	<.003	<.05	<.02	0.1	0.056	<.001	<.04	115	0.009	<.005	<.005	0.011	0.63	<1	<.005	25.3	3.98	<.002	9	0.006	0.15	<.02	121	<.03	<.03	0.7	<.01	0.36	<.005	<.005	<.03	6.7
3/6/1997	<.003	<.05	<.02	<.05	0.039	0.004	<.04	131.8	<.002	<.005	<.005	0.009	0.16	<1	<.005	29.5	4.51	<.002	9	0.007	<.04	<.02	132	<.03	<.03	0.9	<.01	0.395	<.005	<.005	<.03	7.12
10/6/1997	<.003	0.12	<.02	<.05	0.044	<.001	<.04	132.9	0.009	0.016	<.005	0.007	0.93	1.7	<.005	28.7	4.1	<.002	11	0.025	<.04	0.03	139	<.03	<.03	0.9	<.01	0.41	0.03	<.005	<.03	6.77
17/06/97	<.003	0.07	<.02	0.09	0.022	<.001	<.04	125.6	0.006	<.005	<.005	<.002	1.02	<1	<.005	27.7	4.31	0.004	10	0.019	<.04	<.02	133	<.03	<.03	1	<.01	0.392	0.006	<.005	<.03	6.48
23/06/97	<.003	<.05	<.02	<.05	0.025	<.001	<.04	131.8	0.003	<.005	0.007	0.007	0.2	2	<.005	26.7	4.4	<.002	11	0.021	0.11	<.02	136	<.03	<.03	1.1	<.01	0.422	<.005	<.005	<.03	6.42
1/7/1997	<.003	0.21	<.02	0.06	0.09	<.001	<.04	164.8	0.012	0.017	<.005	0.03	<.01	4	0.008	36.4	6.32	0.012	15	0.028	1.14	0.05	126	<.03	<.03	2.3	<.01	0.613	0.029	<.005	<.03	8.22
8/7/1997	<.003	0.34	<.02	0.34	0.023	0.002	<.04	167.6	0.016	0.037	<.005	0.028	0.21	5	0.027	37.4	6.31	<.002	17	0.036	1.94	0.06	110	0.04	<.03	2.4	<.01	0.556	0.019	<.005	<.03	8.04
15/07/97	<.003	0.2	<.02	0.27	0.017	<.001	<.04	147	0.01	0.018	<.005	0.026	0.18	4	<.005	31.5	5.38	0.006	13	0.025	0.82	0.05	136	0.05	<.03	2.3	<.01	0.467	0.018	<.005	0.12	8.54
22/07/97	<.003	0.17	<.02	<.05	0.02	0.001	<.04	137.9	0.005	0.015	<.005	0.025	0.21	3	0.006	30.1	5.24	0.015	16	0.02	2.9	<.02	88	<.03	<.03	2.1	<.01	0.531	0.008	<.005	<.03	6.98
28/07/97	<.003	0.14	<.02	0.25	0.022	0.001	<.04	129.1	0.013	0.035	0.009	0.023	0.8	5	0.017	28.5	5.03	0.018	14	0.022	0.71	0.04	109	0.03	<.03	1.8	<.01	0.465	0.016	0.01	0.1	7.3
4/8/1997	<.003	<.05	<.02	0.47	0.021	<.001	<.04	136.3	0.011	0.022	<.005	0.043	0.58	4	0.012	30.4	4.58	0.018	16	0.025	1.39	0.06	403	0.03	<.03	1.8	<.01	0.481	0.026	0.014	0.04	6.94
12/8/1997	<.003	0.13	<.02	0.17	0.021	0.001	<.04	131.2	0.011	0.018	<.005	0.029	<.01	5	0.008	29.2	4.39	<.002	14	0.022	1.16	0.04	124	<.03	<.03	3.2	<.01	0.436	<.005	<.005	<.03	5.28
19/08/97	<.003	0.17	<.02	0.11	0.032	<.001	<.04	127.4	0.007	0.024	<.005	0.046	0.95	3	<.005	27.2	3.61	0.018	13	0.025	<.04	0.09	136	<.03	<.03	2	<.01	0.388	0.026	0.011	<.03	4.45
25/08/97	<.003	0.07	<.02	0.07	0.02	<.001	<.04	145.3	0.008	0.005	<.005	0.012	0.02	5	<.005	28.2	3.35	<.002	15	0.008	<.04	0.03	133	<.03	<.03	2	<.01	0.436	0.025	0.005	<.03	4.09
2/9/1997	<.003	0.15	<.02	<.05	0.022	<.001	0.04	137.6	0.008	0.014	<.005	0.018	0.53	3	0.005	29.2	3.3	<.002	14	0.022	<.04	0.04	132	<.03	<.03	1.7	<.01	0.403	0.016	<.005	<.03	3.27
9/9/1997	<.003	0.12	0.05	0.14	0.021	<.001	<.04	135.4	0.01	0.012	0.01	0.047	0.21	4	<.005	29.4	2.38	0.012	15	0.008	<.04	0.03	121	<.03	<.03	1.4	<.01	0.393	0.006	<.005	<.03	2.33
16/09/97	<.003	<.05	<.02	0.2	0.028	0.001	<.04	130	<.002	0.049	<.005	0.012	0.28	4	<.005	28.5	2.87	0.003	14	0.005	<.04	<.02	132	<.03	<.03	1	<.01	0.406	<.005	<.005	<.03	2.42
22/09/97	<.003	0.11	<.02	<.05	0.064	<.001	<.04	129.7	0.005	0.012	<.005	0.055	0.64	5	<.005	29.1	2.84	0.003	15	0.02	<.04	0.07	158	<.03	<.03	2.4	<.01	0.421	0.015	<.005	<.03	2.84
30/09/97	<.003	0.09	<.02	<.05	0.055	<.001	<.04	124.8	<.002	0.015	<.005	0.03	0.12	5	0.016	27.8	2.3	0.013	16	0.027	0.78	<.02	159	0.06	<.03	1.5	<.01	0.302	0.01	<.005	<.03	2.16
7/10/1997	<.003	<.05	<.02	<.05	0.094	<.001	<.04	114.2	<.002	<.005	<.005	0.011	0.24	4	<.005	25.5	2.19	0.004	13	0.011	<.04	<.02	112	<.03	<.03	1.1	<.01	0.306	0.011	<.005	<.03	2.13
14/10/97	<.003	0.15	<.02	0.2	0.034	<.001	<.04	123.7	0.004	0.022	0.006	0.011	0.11	3	<.005	22.5	0.99	0.007	12	0.021	<.04	<.02	118	<.03	<.03	1.5	0.02	0.359	0.009	<.005	<.03	0.83
20/10/97	<.003	<.05	<.02	<.05	0.12	<.001	<.04	75.6	<.002	<.005	<.005	0.007	1.17	3	<.005	15.9	1.26	<.002	7	0.016	<.04	0.05	68	<.03	<.03	1.7	<.01	0.251	<.005	0.005	<.03	1.09
28/10/97	<.003	<.05	<.02	0.06	0.061	<.001	<.04	63.4	<.002	0.032	0.009	0.008	1.49	3	<.005	14.4	1.42	<.002	6	<.005	0.24	<.02	57	<.03	<.03	2.2	<.01	0.228	<.005	0.006	<.03	2.66
4/11/1997	<.003	<.05	<.02	<.05	0.065	0.002	<.04	76.3	<.002	0.043	0.005	0.029	0.69	3	<.005	15.6	1.76	0.006	8	0.013	<.04	<.02	63	<.03	<.03	2.8	<.01	0.257	0.008	0.007	<.03	1.98
13/11/97	<.003	<.05	<.02	0.06	0.122	0.002	<.04	115.9	0.003	0.025	<.005	0.013	2.67	2	<.005	19.3	3.66	0.006	13	<.005	<.04	<.02	110	<.03	<.03	1.7	<.01	0.342	0.007	0.024	<.03	0.93
18/11/97	<.003	<.05	<.02	0.06	0.083	0.004	<.04	115.5	<.002	<.005	<.005	0.033	1.05	4	<.005	24.5	2.85	<.002	13	0.029	<.04	<.02	117	<.03	<.03	1.3	<.01	0.334	0.012	0.005	<.03	1.94
25/11/97	<.003	<.05	<.02	<.05	0.073	<.001	<.04	119.6	<.002	<.005	<.005	0.016	0.49	3	<.005	26.3	2.67	0.005	12	0.006	<.04	<.02	127	<.03	<.03	1.4	<.01	0.368	<.005	<.005	<.03	2.29
2/12/1997	<.003	<.05	<.02	<.05	0.068	<.001	<.04	119.3	<.002	<.005	<.005	0.008	0.1	<1	<.005	26.2	2.61	<.002	11	0.014	<.04	<.02	122	<.03	<.03	1.3	<.01	0.368	<.005	<.005	<.03	2.23
8/12/1997	<.003	<.05	<.02	<.05	0.043	<.001	<.04	123.4	<.002	<.005	<.005	0.01	0.07	6	<.005	27.1	2.66	0.003	14	<.005	<.04	<.02	124	<.03	<.03	1.3	<.01	0.361	<.005	<.005	<.03	2.3
16/12/97	<.003	0.05	<.02	<.05	0.074	0.002	<.04	110.2	0.003	<.005	0.015	0.012	0.23	2	<.005	25.1	2.61	<.002	13	<.005	<.04	<.02	125	<.03	<.03	1.4	<.01	0.328	<.005	0.038	<.03	2.26
23/12/97	<.003	<.05	<.02	0.15	0.023	<.001	<.04	132.8	<.002	0.013	<.005	0.015	0.39	4	<.005	27	2.81	<.002	12	0.013	0.06	<.02	121	<.03	<.03	2.1	0.02	0.398	<.005	<.005	<.03	2.29
30/12/97	<.003	<.05	<.02	0.22	0.029	<.001	<.04	136.4	0.003	<.005	<.005	0.022	0.36	4	<.005	25.3	2.69	<.002	16	0.015	<.04	<.02	141	<.03	<.03	1.2	<.01	0.383	0.007	<.005	<.03	1.65
5/1/1998	<.003	<.05	<.02	0.16	0.028	<.001	<.04	142.2	<.002	<.005	<.005	0.021	0.45	<1	<.005	24.7	2.09	0.013	16	0.011	<.04	<.02	154	<.03	<.03	1.2	<.01	0.404	<.005	<.005	<.03	0.94
12/1/1998	<.003	<.05	<.02	<.05	0.081	<.001	<.04	150.7	<.002	0.015	<.005	0.009	0.13	4	<.005	20.1	0.65	0.007	20	0.015	0.05	<.02	157	<.03	<.03	0.6	<.01	0.372	<.005	<.005	0.05	0.14
24/02/98	<.003	0.29	<.02	0.23	0.017	<.001	<.04	124.5	<.002	0.014	<.005	0.127	3.8	5	<.005	22.5	4.24	0.01	16	0.019	1.02	<.02	161	<.03	<.03	3.2	<.01	0.358	0.015	<.005	0.03	1.38
13/04/98	<.003	<.05	<.02	<.05	0.104	<.001	<.04	92	<.002	<.005	<.005	0.044	<0.01	3	0.006	2	<.01	0.013	7	0.008	<.04	<.02	149	<.03	<.03	0.2	<.01	0.266	0.011	<.005	<.03	0.3
18/05/98	<.003	0.14	<.02	0.21	0.039	<.001	<.04	61.3	<.002	<.005	0.023	0.03	<.01	3	<.005	10.3	0.56	<.002	8	0.017	<.04	<.02	114	0.04	<.03	<1	<.01	0.156	<.005	0.006	<.03	0.53
2/6/1998	<.003	0.12	<.02	<.05	0.069	0.002	<.04	150.9	<.002	0.013	0.016	0.028	0.23	10	0.015	25	0.24	<.002	25	0.007	<.04	<.02	127	0.05	<.03	1.5	<.01	0.355	0.018	0.005	<.03	0.1
15/06/98	<.003	0.12	<.02	0.08	0.089	0.001	<.04	171.5	<.002	0.006	<.005	0.059	0.2	12	<.005	29.5	0.5	0.014	28	<.005	0.36	<.02	62	0.04	<.03	0.2	<.01	0.408	0.024	<.005	<.03	0.12
20/06/98	<.003	0.11	<.02	<.05	0.129	<.001	<.04	164.1	<.002	<.005	0.037	0.058	0.26	11	<.005	28.9	0.51	0.015	28	0.011	<.04	<.02		0.03	<.03	0.3	<.01	0.375	0.023	0.01	<.03	0.2
21/06/98	<.003	0.08	<.02	<.05	0.099	<.001	<.04	142.5	<.002	0.006	0.012	0.039	0.03	10	0.016	24.8	0.46	0.023	24	0.01	0.94	<.02		<.03	<.03	0.1	<.01	0.318	0.009	<.005	0.39	0.12
30/06/98	<.003	0.12	<.02	<.05	0.135	0.001	<.04	197.5	<.002	0.014	<.005	0.021	0.19	12	<.005	37.7	0.79	0.011	34	0.011	0.36	<.02	397	<.03	<.03	1.6	<.01	0.54	0.03	<.005	<.03	0.25
21/07/98	<.003	0.11	<.02	<.05	0.092	<.001	<.04	190.3	<.002	<.005	0.009	0.049	0.05	12	0.018	38.9	1.1	0.009	30	0.024	0.11	<.02	119	0.04	<.03	0.5	<.01	0.465	0.016	<.005	<.03	0.27
10/8/1998	<.003	0.26	0.05	0.27	<.002	0.001	<.04	189.3	0.002	<.005	<.005	0.06	0.12	13	0.059	43.2	1.74	<.002	31	0.016	<.04	0.04	61	0.06	<.03	0.9	<.01	0.485	0.011	0.005	<.03	0.97
25/09/98	<.003	0.13	<.02	<.05	0.146	0.001	<.04	197.4	<.002	0.008	<.005	0.033	0.12	12	<.005	46.3	2.65	0.023	31	0.011	2.11	<.02	197.1	0.04	<.03	0.8	<.01	0.549	0.034	<.005	<.03	1.27
19/10/98	<.003	0.3	<.02	0.25	0.032	0.001	<.04	177.3	<.002	0.011	<.005	0.025	0.38	11	<.005	41.7	2.58	0.018	28	0.025	5.8	0.02	227.4	0.05	<.03	1.3	<.01	0.467	0.043	<.005	<.03	1.38
17/11/98	<.003	0.14	0.018	<.05	0.111	<.001	<.04	229.6	<.001	0.02	0.036	0.034	0.19	14	0.027	52.7	2.99	0.012	34	0.044	2.16	<.01	229	0.06	<.03	0.9	<.01	0.525	0.022	<.005	<.03	1.52
18/01/99	<.003	0.16	<.005	0.18	0.025	<.001	<.04	190.5	0.007	<.005	0.062	0.041	3.43	8	<.005	41	4.65	0.016	24	0.015	<.04	0.02	224	<.03	<.03	3.3	<.01	0.542	0.023	<.005	<.03	1.88
21/02/99	0.018	0.46	<.005	0.41	0.026	<.001	<.04	235.1	<.001	0.023	0.072	0.776	0.75	12	0.034	53.5	4.06	0.037	34	0.038	2.17	0.03	259	0.05	<.03	2.2	<.01	0.664	0.042	<.005	<.03	2.02
6/5/1999	<.003	0.21	<.005	0.26	0.013	0.002	<.04	155.5	0.023	0.018	<.005	0.009	0.89	8	<.005	29.1	2.2	<.002	19	0.018	0.95	<.01		<.03	<.03	1.4	<.01	0.466	0.014	<.005	<.03	4.5
17/05/99	<.003	<.05	<.005	<.05	0.114	0.001	<.04	16.1	0.001	<.005	<.005	0.011	0.16	<1	<.005	2.8	0.35	0.009	2	<.005	2.56	<.01		<.03	<.03	<1	<.01	0.059	<.005	<.005	<.03	0.5
3/7/1999	<.003	0.49	<.005	0.51	0.042	<.001	<.04	155.8	<.001	0.026	<.005	0.048	1.02	7	<.005	34.4	4	0.013	18	<.005	<.04	<.01	178	<.03	<.03	3.3	<.01	0.459	<.005	0.007	<.03	3.51
27/07/99	<.003	<.05	<.005	0.14	0.147	0.002	<.04	149.2	0.004	0.095	<.005	0.015	0.15	9	<.005	38	3.22	0.017	22	0.04	<.04	<.01	207	<.03	<.005	1	<.01	0.538	0.01	0.041	<.03	1.8
12/8/1999	<.003	<.05	<.005	0.16	<.002	0.001	<.04	184.1	<.001	<.005	<.005	0.011	0.51	3	<.005	41.9	2.99	<.002	24	<.005	<.04	<.01	205	<.03	<.005	3.1	<.01	0.51	0.017	<.005	<.03	1.71
10/9/1999	<.003	0.23	<.005	<.05	0.093	<.001	<.04	159.6	<.001	0.012	<.005	0.025	0.17	9	0.033	38.8	2.78	0.011	19	0.015	<.04	<.01	227	<.03	<.005	1.4	<.01	0.429	0.034	<.005	<.03	0.87
29/10/99	<.003	0.24	<.005	0.09	0.721	0.001	<.04	143.8	<.001	<.005	<.005	0.018	0.35	7	<.005	35.8	3.45	<.002	21	0.024	<.04	0.03	194	<.03	<.005	2.4	<.01	0.439	<.005	<.005	<.03	1.74
26/01/00																																2.52
25/03/00	<.003	0.53	<.005	<.05	0.137	<.001	<.05	178.6	<.001	0.03	<.005	<.002	3.14	15	<.005	38.1	5.79	<.002	26	<.005	<1	<.01	195	<.03	<.005	3.4	<.01	0.582	0.007	<.005	<.03	2.31
15/05/00	<.003	0.23	0.011	<.05	0.168	<.001	<.05	29.7	0.002	0.013	0.098	0.007	0.84	<1	0.027	5.4	1.15	<.002	<1	0.006	<1	0.03		<.03	<.005	0.8	<.01	0.17	0.038	0.006	<.03	1.49
26/06/00	<.003	0.16	<.005	<.05	0.099	0.002	<.05	159.3	0.004	0.018	<.005	0.025	0.3	9	<.005	34.3	3.86	<.002	17	0.029	4	<.01		<.03	<.005	0.9	<.01	0.429	0.084	0.025	<.03	3.44
25/07/00	<.003	0.1	<.005	<.05	0.106	0.002	<.05	158	0.008	0.034	<.005	0.029	0.95	10	0.155	38	3.07	0.01	23	0.034	5	<.01		<.03	<.005	1	<.01	0.554	0.062	0.047	<.03	2.05
23/08/00	<.003	0.37	<.005	<.05	0.084	<.001	<.05	180.2	<.001	0.018	<.005	0.032	0.56	10	<.005	47.2	3.12	<.002	24	0.032	5	<.01		<.03	<.005	2.6	<.01	0.48	0.044	<.005	<.03	2.34
25/09/00	<0.01	0.1	<0.2	<0.1	0.02	<0.005	<0.1	168	0.003	0.02	<0.01	<0.01	0.46	8		47.6	4.37	<0.01	21	<0.05	<0.3	<0.05		<0.2	<0.2	1.84	<0.03	0.503	<0.01	<0.03		4.06
29/10/00	<.003	0.43	0.008	0.06	0.18	0.002	<.05	158.6	0.01	0.019	<.005	0.049	1.48	9	<.005	45.4	5.77	0.009	25	0.024	2	0.02	210	<.03	<.005	2.8	<.01	0.547	0.147	0.029	<.03	5.75
13/11/00	<0.003	<0.05	0.018	0.43	0.076	<0.001	<0.05	212.6	0.006	0.05	<0.005	<0.002	0.51	8	0.035	72.9	11.76	0.006	26	0.054	0.06	0.01	297	<0.03	0.007	4.3	0.06	0.76	0.015	0.009	<0.03	18.7
18/11/00	<0.01	0.05	<0.2	<0.1	0.02	<0.005	<0.1	190	0.004	0.02	<0.01	<0.01	0.12	8		47.6	5.89	0.01	23	<0.05	<0.3	<0.05		<0.2	<0.2	2.33	<0.03	0.559	<0.01	<0.03		5.87
14/12/00	<0.01	<0.05	<0.2	<0.1	0.02	<0.005	<0.1	205	0.001	0.02	<0.01	<0.01	0.29	9		56.1	6.74	0.01	23	<0.05	<0.3	<0.05		<0.2	<0.2	2.51	<0.03	0.602	<0.01	<0.03		6.01
13/01/01	<.003	0.23	<.005	0.06	0.112	0.003	<.05	157.9	0.015	<.005	<.005	0.044	0.82	8	0.042	44.7	5.82	0.007	21	0.037	<1	0.01	108	<.03	<.005	2.6	<.01	0.765	0.075	0.011	<.03	7.1
10/2/2001	<.003	0.22	0.181	0.07	0.148	0.003	<.05	179.1	0.003	0.013	<.005	0.057	1.01	12	<.005	50.9	6.67	<.002	24	0.031	<1	<.01	138	<.03	<.005	2.8	<.01	0.407	0.015	0.046	<.03	9.22
10/3/2001	<.003	0.7	<.005	0.05	0.19	<.001	<.05	173	0.003	<.005	<.005	0.03	1.83	4.39	<.005	49.45	8.28	<.002	22.35	0.015	<1	<.01	221.5	<.03	<.005	2.39	<.01	0.58	0.01	<.005	<.03	9.78
16/04/01	<.003	0.25	<.005	<.05	0.086	<.001	<.05	198.2	0.001	<.005	<.005	0.018	5.07	<1	<.005	46.9	9.29	<.002	22	0.012	<1	<.01	198	<.03	<.005	3.7	<.01	0.65	0.013	<.005	<.03	5.89
14/05/01	<.003	0.2	<.005	<.05	0.203	<.001	<.05	34.3	<.001	<.005	0.006	0.007	0.43	2	<.005	4.6	1.03	<.002	<1	<.005	<1	<.01	26	<.03	<.005	0.8	<.01	0.093	0.007	0.009	<.03	0.62
17/06/01	<.003	0.19	<.005	0.12	0.194	<.001	<.05	134.6	0.008	0.036	0.026	0.014	4.58	4	0.021	44	4.16	0.007	15	0.104	<1	0.02	180	<.03	<.005	1.8	<.01	0.49	0.015	<.005	<.03	16.8
14/07/01	<.003	0.08	<.005	0.39	0.176	<.001	<.05	179.1	0.006	0.046	<.005	0.002	0.26	7	0.017	61.9	9.39	<.002	16	0.057	<1	<.01	248	<.03	<.005	4.3	0.04	0.672	0.011	<.005	<.03	18.79
14/08/01	<0.003	0.17	<0.005	<0.05	0.182	<0.001	<0.05	203.9	0.006	0.039	<0.005	0.008	0.52	8	<0.005	72.4	7.54	0.005	21	0.053	<1	<0.01	267	<0.03	<0.005	4.6	0.06	0.703	0.02	<0.005	<0.03	13.77
17/09/01	<0.003	<0.05	<0.005	0.13	0.125	<0.001	<0.05	180.9	0.005	0.038	<0.005	0.003	0.56	7	0.02	64.4	8.94	0.005	23	0.047	<1	<0.01	254	<0.03	<0.005	3.9	<0.01	0.671	<0.005	<0.005	<0.03	15.77
15/10/01	<0.003	<0.05	0.023	0.32	0.132	<0.001	<0.05	193.2	0.006	0.047	<0.005	0.004	0.61	8	0.029	70	10.97	<0.002	20	0.061	<1	<0.01	277	<0.03	<0.005	4	<0.01	0.742	<0.005	<0.005	<0.03	19.62
13/11/01	<0.003	<0.05	0.018	0.43	0.076	<0.001	<0.05	212.6	0.006	0.05	<0.005	<0.002	0.51	8	0.035	72.9	11.76	0.006	26	0.054	0.06	0.01	297	<0.03	0.007	4.3	0.06	0.76	0.015	0.009	<0.03	18.7
15/12/01	<0.001	<0.05	0.075	0.12	0.011	0.001	<0.05	211.4	0.005	0.047	0.03	<0.002	3.86	6	0.013	67.3	10.31	0.012	19	0.043	0.02	<0.01	238	<0.03	<0.005	4.3	0.07	0.664	0.012	<0.005	<0.03	16.85

STATION: WEIR3

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/05/96	<.003	0.48	<.02		0.103	0.001	<.04	133.7	<.002	<.005	<.005	0.01	0.8		<.005
11/9/1996	<.003	0.07	<.02		0.172	0.009	<.04	183.6	<.002	<.005	<.005	0.007	3.4		<.005
19/12/96	<.003	0.24	0.06		0.159	0.009	<.04	149.9	<.002	<.005	<.005	0.006	1.9		<.005
12/5/1997	<.003	<.05	<.02	<.05	0.099	<.001	<.04	164.1	<.002	<.005	<.005	<.002	1.08	<1	<.005
22/09/97	<.003	<.05	<.02	<.05	0.086	<.001	<.04	157.2	<.002	<.005	<.005	0.053	0.75	4	0.007
18/05/98	<.003	0.2	<.02	0.19	0.088	<.001	<.04	174.7	<.002	<.005	<.005	0.035	0.68	4	<.005
30/06/98	<.003	0.12	<.02	<.05	0.177	<.001	<.04	140.3	<.002	<.005	0.012	0.017	0.04	5	<.005
17/11/98	<.003	0.11	<.005	<.05	0.177	<.001	<.04	204.2	<.001	0.009	0.082	0.029	0.67	6	<.005
17/11/98	<.003	0.11	<.005	<.05	0.146	<.001	<.04	159.6	<.001	<.005	0.072	0.031	0.09	6	<.005
17/05/99	<.003	0.05	<.005	<.05	0.163	0.003	<.04	152.9	<.001	<.005	<.005	0.027	1.7	4	<.005
19/10/00	0.003	0.39	<.005	0.06	0.248	0.003	<.05	172.8	<.001	<.005	<.005	0.045	0.82	7	<.005
11/6/2001	<.003	<.05	<.005	0.55	0.181	<.001	<.05	200.1	<.001	<.005	0.031	0.003	1.38	5	0.026

Date	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/05/96	24.6	6.97	<.002	30	0.004	0.19	<.02	127	<.03		2.22		0.396	<.005	<.01	<.03	0.02
11/9/1996	34.9	11.06	0.003	31	0.015	0.06	<.02	211	<.03		7.7		0.573	<.005	<.005	0.06	0.01
19/12/96	27.8	5.69	<.002	42	<.005	0.09	<.02	136	<.03		5.6		0.463	0.006	<.005	<.03	0.07
12/5/1997	31.5	7.91	<.002	36	0.007	<.04	<.02	119	<.03	<.03	4.9	<.01	0.443	0.009	<.005	<.03	0.09
22/09/97	28.9	6.13	0.008	33	0.019	1.17	<.02	164	<.03	<.03	6.3	<.01	0.477	0.011	<.005	<.03	0.06
18/05/98	32.6	6.12	<.002	36	0.019	<.04	<.02	119	0.1	<.03	6.2	<.01	0.481	0.008	<.005	<.03	0.02
30/06/98	32.5	0.27	0.013	33	0.008	<.04	<.02	65	<.03	<.03	6.8	<.01	0.5	0.021	<.005	<.03	0.02
17/11/98	37.9	6.41	<.002	40	0.014	1.99	<.01	124	<.03	<.03	5.9	<.01	0.501	0.015	<.005	<.03	0.01
17/11/98	34.8	0.29	<.002	32	0.085	1.63	<.01	95	<.03	<.03	5.5	<.01	0.447	0.024	<.005	<.03	0.01
17/05/99	28.3	5.04	<.002	31	<.005	0.84	<.01		<.03	<.03	5.8	<.01	0.465	<.005	<.005	<.03	0.03
19/10/00	32.7	6.51	0.01	39	<.005	<1	<.01	144	<.03	<.005	6.8	<.01	0.491	0.062	<.005	<.03	0.04
11/6/2001	39.7	5.53	0.007	39	0.017	<1	<.01	159	<.03	<.005	7	<.01	0.602	0.012	<.005	<.03	0.04

STATION: X11

Date	CU-T	MN-T	NA-T	PB-T	ZN-T
10/10/1986	<0.01	1.6	60.5	0.03	0.02
23/10/86	0.01			0.02	0.02
6/11/1986	<0.01			0.01	0.01
13/11/86	<0.01			0.02	0.01
21/11/86	<0.01			<1	0.01
28/11/86	<0.01			<0.01	0.01
4/12/1986	<0.01	2.17	62	<0.01	2
10/12/1986	<0.01	2.17	64	<0.01	0.01
16/12/86	<0.01	1.66	60.5	0.02	<0.01
23/12/86	<0.01	2.18	76	<0.01	<0.01
31/12/86	<0.01	1.95	63	<0.01	<0.01
7/1/1987	<0.01	2.46	63	<0.01	<0.01
15/01/87	<0.01	2.77	62	<0.01	0.01
20/01/87	<0.01	2.98	63	<0.01	0.01
28/01/87	<0.01	3.19	63	<0.01	0.01
3/2/1987	<0.01	3.22	60	<0.01	<0.01
10/2/1987	<0.01	3.14	62.5	<0.01	<0.01
17/02/87	<0.01	3.53	61	<0.01	<0.01
24/02/87	<0.01	3.82	65	<0.01	0.01
3/3/1987	<0.01	4.1	62	0.02	0.02
10/3/1987	<0.01	4.32	65	<0.01	<0.01
17/03/87	<0.01	4.3	64.5	<0.01	0.02
24/03/87	<0.01	4.22	67	<0.01	0.01
1/4/1987	<0.01	4.22	68	<0.01	<0.01
7/4/1987	<0.01	4.8	67	<0.01	<0.01
14/04/87	<0.01	4.84	69	<0.01	0.02
20/04/87	<0.01	4.98	68	<0.01	<0.01
28/04/87	<0.01	5.1	69	<0.01	<0.01
5/5/1987	<0.01	5.15	70	<0.01	<0.01
12/5/1987	<0.01	5.15	72	<0.01	<0.01
19/05/87	<0.01	4.92	69	<0.01	0.02
26/05/87	<0.01	5.1	70	<0.01	<0.01
4/6/1987	<0.01	5.1	70	<0.01	<0.01
11/6/1987	<0.01	4.4	73	<0.01	0.02
16/06/87	<0.01	4.5	71	<0.01	<0.01
26/06/87	0.01	4.68	79	<0.01	<0.01
30/06/87	<0.01	4.56	74	<0.01	<0.01
6/7/1987	<0.01	4.15	78	<0.01	<0.01
13/07/87	<0.01	4.09	80	0.03	0.05
20/07/87	<0.01	3.78	78	0.03	0.01
28/07/87	<0.01	4.17	78	0.02	<0.01
4/8/1987	<0.005	4.3	78	0.04	0.02
11/8/1987	<0.005	3.96	80	0.01	<0.005
18/08/87	<0.005	4.1	79	0.03	0.02
25/08/87	<0.005	4.17	79	0.02	0.04
1/9/1987	<0.005	3.93	80	<0.005	<0.005
8/9/1987	<0.005	3.99	82	<0.005	0.01
15/09/87	<0.005	4.13	84	<0.005	<0.005
21/09/87	<0.005	4.03	82	<0.005	<0.005
2/10/1987	<0.005	4.13	85	<0.005	<0.005
6/10/1987	<0.005	4.11	85	<0.005	<0.005
13/10/87	<0.005	4.1	85	<0.005	<0.005
20/10/87	<0.005	4.17	84	<0.005	<0.005
27/10/87	<0.005	4.19	83	<0.005	<0.005
3/11/1987	<0.005	4.08	84	<0.005	0.02
10/11/1987	<0.005	4	81	<0.005	0.01
17/11/87	<0.005	4.12	82	<0.005	<0.005
24/11/87	<0.005	4.1	79	<0.005	<0.005
1/12/1987	0.01	4.02	79	<0.005	<0.005
9/12/1987	<0.005	3.9	79	<0.005	0.01
15/12/87	0.07	4.23	65.5	0.02	0.85
23/12/87	<0.005	3.49	83	0.1	0.04
30/12/87	0.01	3.54	81.1	0.05	0.04
5/1/1988	0.005	3.78	75	<0.005	0.002
12/1/1988	0.003	3.77	78	<0.005	0.003
19/01/88	0.003	3.90	76	<0.005	0.003
27/01/88	0.003	3.83	76	<0.005	0.006
2/2/1988	0.004	3.8	78	<0.005	0.005
10/2/1988	0.004	3.89	75	<0.005	0.008
16/02/88	0.004	3.73	78	<0.005	0.005
17/02/88	0.008	3.87	74	<0.005	0.01
24/02/88	0.005	3.86	76	<0.005	0.009
2/3/1988	0.005	3.99	78	<0.005	0.011
9/3/1988	0.003	3.88	76	<0.005	0.003
16/03/88	0.003	3.88	76	<0.005	0.003
23/03/88	0.008	3.88	77	<0.005	0.008
29/03/88	0.006	3.88	76	<0.005	0.009
5/4/1988	0.005	3.72	77	<0.005	0.006
12/4/1988	0.006	3.88	78	<0.005	0.004
20/04/88	0.002	3.73	76	<0.005	0.003
25/04/88	0.002	3.68	79	<0.005	0.005

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/5/1988												0.003					3.71		76			<0.005										<0.002
11/5/1988												0.003					3.62		80			0.007										0.002
19/05/88												0.002					3.6		85			<0.005										0.005
25/05/88												0.002					3.1		80			<0.005										0.031
1/6/1988												0.002					3.04		81			<0.005										0.002
7/6/1988												0.002					3.35		84			<0.005										0.004
16/06/88												0.002					3.1		79			<0.005										0.009
23/06/88												0.02					3.55		87			<0.005										0.056
28/06/88												0.002					3.25		84			<0.005										0.004
6/7/1988												0.002					3.25		87			<0.005										0.002
11/7/1988												0.002					3.8		93			0.005										0.002
20/07/88												0.002					3.25		88			<0.005										0.007
27/07/88												0.002					3.05		92			<0.005										0.004
4/8/1988												0.003					2.9		92			0.005										0.003
10/8/1988												0.002					3.2		96			<0.005										0.003
16/08/88												0.003					3.4		96			<0.005										0.003
24/08/88												0.004					3.78		91			<0.005										0.008
31/08/88												0.007					3.7		100			0.008										0.009
9/9/1988												0.002					3.78		96			<0.005										0.005
13/09/88												0.003					3.8		101			0.007										0.016
22/09/88												0.006					3.75		90			<0.005										0.003
29/09/88												0.004					3.9		89			<0.005										0.002
6/10/1988												0.002	1.54				3.75		89			<0.005										0.005
14/10/88												0.003	2.5				5		94			<0.005										0.008
19/10/88												0.008					5.1		84			<0.005										0.006
26/10/88												0.004	2.5				4.15		94			<0.005										0.006
1/11/1988												0.004					4.35		96			<0.005										0.017
8/11/1988												0.006					4.05		94			0.065										0.102
14/11/88												0.002					4.2		94			0.025										0.023
21/11/88												0.002					4.25		93			<0.005										0.006
30/11/88												0.002	1.7				4.4		91			0.006										0.01
7/12/1988												0.003	1.8				4.15		91			<0.005										0.006
21/12/88												<0.002					4.22		96			<0.005										0.007
28/12/88												0.003	1.95				4.2		92			<0.005										0.005
6/1/1989												0.002					4.05		89			<0.005										0.005
11/1/1989												0.002					4.1		88			<0.005										0.004
17/01/89												0.003	1.5				4.5		83			<0.005										0.006
24/01/89												0.002	1.9				4.5		83			<0.005										0.004
3/2/1989												<0.002					4.1		83			<0.005										0.009
7/2/1989												0.002					3.95		81			<0.005										0.01
13/02/89												0.002	2.5				4.3		85			<0.005										0.005
20/02/89												0.002					4		83			<0.005										0.008
27/02/89												0.002					3.9		81			<0.005										0.01
8/3/1989												0.002					4.35		80			<0.005										0.018
14/03/89												0.002	2.85				4.25		80			0.009										0.023
20/03/89												0.002	2.75				4.05		80			<0.005										0.018
27/03/89												0.003					3.85		81			<0.005										0.007
3/4/1989												0.002					3.85		79			<0.005										0.006
10/4/1989												0.002	2.3				3.8		69			<0.005										0.005
17/04/89												0.002					4.35		72			<0.005										0.005
2/5/1989												0.002					4.25		72			0.005										0.004
8/5/1989												0.002	1.7				3.8		80			0.005										0.004
18/05/89												0.002					3.99		77			0.005										0.007
23/05/89												0.003					3.85		72			0.005										0.007
29/05/89												0.004					3.28		73			0.005										0.009
5/6/1989												0.008					3.56		72			0.018										0.006
12/6/1989												0.002	1.69				3.63		70			0.005										0.005
20/06/89												0.003	1.72				3.57		78			0.005										0.004
26/06/89												0.002	1.3				3.42		75			0.005										0.014
3/7/1989												0.002	2.03				3.62		83			0.005										0.006
10/7/1989												0.002	2.33				4.03		89			0.005										0.01
17/07/89												0.002	2.52				3.76		92			0.005										0.005
25/07/89												0.003	2.25				3.87		90			0.006										0.008
31/07/89												0.003	1.68				3.98		90			0.005										0.02
7/8/1989												0.002	2.01				3.81		89			0.005										0.01
14/08/89												0.002	2.01				3.99		90			0.005										0.006
21/08/89												0.003	1.66				3.9		86			0.005										0.011
28/08/89												0.002	2.09				3.87		86			0.005										0.008
5/9/1989												0.002	2.25				3.92		100			0.005										0.007
11/9/1989												0.002	1.83				4.07		96			0.005										0.006
18/09/89												0.002	2.38				4.41		100			0.005										0.02
25/09/89												0.002	2.2				3.6		110			0.005										0.023
2/10/1989												0.005	2.73				4.16		105			0.013										0.015
10/10/1989												0.002	2.47				4.24		97			0.005										0.031
16/10/89												0.002	2.13				3.83		96			0.005										0.018
23/10/89												0.004	2.6				3.89		97			0.005										0.014
30/10/89												0.002	3.05				3.91		96			0.005										0.011
6/11/1989												0.002	2.08				3.9		86			0.005										0.007
15/11/89												0.003	2.6				4.23		99			0.005										0.009
20/11/89												0.003	2.31				4.05		94			0.005										0.013
27/11/89												0.002	2.52				4.11		94			0.005										0.006
4/12/1989												0.002	0.19				4.21		90			0.011										0.018
11/12/1989												0.008	2.6				4		90			0.005										0.01
18/12/89												0.003	2.45				3.66		90.3			0.005										0.007
28/12/89												0.002	2.48				3.78		92			0.005										0.008
3/1/1990												0.003										<0.005										0.047
8/1/1990												<0.002										<0.005										0.009
15/01/90												0.002										0.021										0.017
22/01/90												<0.002										<0.005										0.008
1/2/1990												0.003										<0.005										0.019
5/2/1990												0.002										<0.005										0.005
12/2/1990												<0.002										<0.005										0.007
19/02/90												<0.002										<0.005										0.01
26/02/90												0.02										<0.01										0.13
2/5/1990												0.002																				0.009
3/6/1991												0.001																				0.001
6/11/1991												0.001																				0.001

Table C12. Surface Water Quality of the Area by the Tallings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CO-T	CO-T	CR-T	CU-T	FE-T	K-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/12/1991												0.001		
24/11/92												<0.001		
20/01/93												<0.001		
16/03/93												<0.002		
26/04/93												<0.002		
26/05/93												<0.002		
24/06/93												<0.002		
31/08/93												<0.002		
1/9/1993												<0.002		
30/09/93								229		0.008		<0.002	2.82	
1/10/1993												<0.002		
22/10/93								263		0.007		<0.002	3.21	
1/11/1993												<0.002		
1/12/1993								275		0.01		<0.002	3.43	
13/12/93								256		0.006		<0.002	3.31	
1/1/1994												<0.002		
17/01/94								258		0.013		<0.002	3.83	
31/01/94								256		0.011		<0.002	3.59	
3/3/1994								267		0.012		0.004	3.84	
26/04/94								264		0.008		<0.002	3.33	
31/05/94								269		0.009		<0.002	3.43	
27/06/94												0.003		
10/8/1994								273		0.01		<0.002	3.39	
25/09/94								272		0.013		<0.002	3.39	
15/10/94								278		0.011		<0.002	3.38	
31/01/95												<0.002		
1/2/1995												<0.002		
22/02/95												<0.002		
24/02/95	<0.030	<0.06	0.05		0.088	<0.001	<0.02	288	<0.002	0.013	0.006	<0.002	4.15	
6/3/1995												<0.002		
8/3/1995	<0.030	<0.06	<0.04		0.092	<0.001	<0.02	286	<0.002	0.015	0.003	<0.002	4.22	
17/04/95	<0.030	0.06	<0.04		0.094	<0.001	<0.02	305	<0.002	0.011	0.022	<0.002	4.2	
8/5/1995	<0.030	0.07	<0.04		0.077	<0.001	<0.02	264	<0.002	0.014	<0.002	0.012	2.11	
7/6/1995	<0.003	1.03	<0.02		0.085	<0.001	<0.04	204.9	<0.002	<0.005	<0.005	0.005	2.5	
8/6/1995												0.005		
21/06/95												0.003		
20/07/95	<0.003	1.44	0.02		0.088	0.005	<0.04	207.8	<0.002	0.011	<0.005	0.003	2.86	
13/05/96	<.003	1.07	<.02		0.111	0.003	<.04	195.3	0.003	0.023	0.006	0.039	4.02	
11/9/1996	<.003	0.05	<.02		0.15	0.006	<.04	139.9	<.002	<.005	0.008	0.005	1.3	
19/12/96	<.003	0.26	0.15		0.142	0.012	<.04	244.1	<.002	0.009	<.005	0.02	3.65	
12/6/1997	<.003	<.05	0.03	0.1	0.11	0.002	<.04	257.2	<.002	<.005	<.005	0.003	2.68	<1
22/09/97	<.003	0.1	<.02	<.05	0.068	0.001	<.04	200.9	<.002	0.013	<.005	0.048	1.51	6
18/05/98	<.003	0.27	<.02	0.24	0.083	<.001	<.04	277	0.005	<.005	<.005	0.051	2.36	8
30/06/98	0.006	0.17	<.02	<.05	0.147	0.001	<.04	205.8	<.002	0.014	0.016	0.025	0.95	5
17/11/98	<.003	0.23	<.005	<.05	0.174	<.001	<.04	326	<.001	0.025	<.005	0.034	2.74	8
17/05/99	<.003	<.05	<.005	<.05	0.139	0.003	<.04	230.9	<.001	<.005	<.005	0.037	2.97	6
12/8/1999	<.003	<.05	<.005	0.1	<.002	0.003	<.04	262.7	0.002	0.013	<.005	0.017	1.84	3
10/9/1999	<.003	0.24	<.005	<.05	0.129	<.001	<.04	229	<.001	<.005	<.005	0.031	2.21	6
29/10/99	<.003	0.78	<.005	0.16	0.182	0.004	<.04	249.4	<.001	0.012	0.008	0.026	3.01	8
22/11/99	<.003	0.27	<.005	0.06	0.156	0.002	0.07	226.7	<.001	0.008	<.005	0.055	2.77	7
14/12/99	<.003	0.76	<.005	0.09	0.157	0.001	<.04	258	<.001	<.005	<.005	0.032	2.3	6
27/01/00	<.003	0.29	<.005	<.05	0.141	0.002	<.05	247.6	0.011	0.012	<.005	0.038	2.85	8
28/02/00	<.003	0.48	<.005	0.07	0.145	<.001	<.05	288.6	0.004	0.006	0.067	0.202	3.67	9
23/03/00	<.003	0.68	<.005	0.07	0.188	0.002	<.05	269.4	0.001	0.046	<.005	0.012	2.77	10
27/04/00	<.003	0.39	<.005	<.05	0.184	0.002	<.05	203.7	<.001	0.015	<.005	0.058	2.38	6
15/05/00	<.003	0.33	<.005	<.05	0.139	<.001	<.05	256	<.001	0.025	0.145	0.023	2.66	6
26/06/00	<.003	0.36	<.005	<.05	0.118	0.003	<.05	232.9	<.001	0.006	0.088	0.035	0.73	9
25/07/00	<.003	0.19	<.005	<.05	0.142	0.003	<.05	238.5	0.003	0.026	0.045	0.033	2.63	8
29/08/00	<.003	0.38	<.005	0.05	0.12	<.001	<.05	270.7	0.002	<.005	<.005	0.029	1.55	8
25/09/00	<0.01	<0.05	<0.2	<0.1	0.06	<0.005	<0.1	264	<0.001	0.01	<0.01	<0.01	2.75	6
19/10/00	<.003	0.46	<.005	<.05	0.237	0.003	<.05	254.5	0.005	<.005	<.005	0.046	3.07	9
13/11/00	<0.003	<0.05	<0.005	0.14	0.112	<0.001	<0.05	262.5	<0.001	0.018	0.013	<0.002	2.4	8
18/11/00	<0.01	0.08	<0.2	0.1	0.07	<0.005	<0.1	286	<0.001	0.02	0.14	0.03	3.31	6
14/12/00	<0.01	<0.05	<0.2	<0.1	0.08	<0.005	<0.1	322	<0.001	0.02	•<0.01	<0.01	3.22	7
13/01/01	<.003	0.28	<.005	0.06	0.172	0.003	<.05	224.2	<.001	0.009	<.005	0.043	2.84	7
10/2/2001	<.003	0.19	<.005	<.05	0.182	0.003	<.05	216.7	<.001	<.005	<.005	0.04	2.79	9
10/3/2001	<.003	0.89	<.005	0.09	0.25	<.001	<.05	242	<.001	<.005	<.005	0.02	2.53	2.81
16/04/01	<.003	0.21	<.005	0.05	0.139	<.001	<.05	251.8	<.001	<.005	<.005	0.014	2.82	<1
14/05/01	<.003	0.59	<.005	<.05	0.221	<.001	<.05	261.6	<.001	<.005	<.005	0.012	2.13	7
17/06/01	<.003	0.07	<.005	0.11	0.176	<.001	<.05	261.7	<.001	0.015	0.008	0.044	2.66	7
14/07/01	<.003	0.07	<.005	0.23	0.222	<.001	<.05	269.2	<.001	0.015	<.005	0.002	2.58	7
14/08/01	<0.003	<0.05	<0.005	<0.05	0.198	<0.001	<0.05	259.1	<0.001	0.013	<0.005	0.008	1.53	7
17/09/01	<0.003	<0.05	<0.005	<0.05	0.141	<0.001	<0.05	222.7	<0.001	0.015	<0.005	<0.002	2.59	6
15/10/01	<0.003	<0.05	0.032	0.19	0.209	<0.001	<0.05	251	<0.001	0.015	<0.005	<0.002	2.21	8
13/11/01	<0.003	<0.05	<0.005	0.14	0.112	<0.001	<0.05	262.5	<0.001	0.018	0.013	<0.002	2.4	8
15/12/01	<0.001	<0.05	0.027	0.07	0.084	0.002	<0.05	260.1	<0.001	0.023	0.01	<0.002	3.98	6

Date	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/12/1991																		0.01
24/11/92								<0.003										0.005
20/01/93								<0.003										<0.002
16/03/93								<0.003										<0.01
26/04/93								<0.003										0.02
26/05/93								<0.003										<0.01
24/06/93								<0.003										0.02
31/08/93								<0.003										<0.01
1/9/1993								<0.003										<0.01
30/09/93		33.8				0.01		<0.03										<0.01
1/10/1993								0.003										0.03
22/10/93		39.9				<0.01												0.03
1/11/1993								<0.03										0.01
1/12/1993		41.4				0.02		<0.03										0.01
13/12/93		39.9				0.02		<0.03										0.02
1/1/1994								<0.03										0.01
17/01/94		40.8				0.02		<0.03										0.01
31/01/94		40.6				0.01		<0.03										0.02
3/3/1994		42.2				0.02		<0.03										0.04
26/04/94		40				0.02		<0.03										<0.01
31/05/94		41.4				0.01		<0.03										<0.01
27/06/94								<0.03										<0.001
10/8/1994		42				0.02		<0.03										<0.01
25/09/94		45.1				0.02		<0.03										0.02
15/10/94		11.1				0.02		<0.03										<0.01
31/01/95			11.5		55.9			<0.03										0.04
1/2/1995								<0.03										0.04
22/02/95								<0.03										0.1
24/02/95		45.3	12.3	<0.004	59.7	0.02	<0.04	<0.03	238	<0.02		7.2		0.679	<0.003	<0.003		0.09
6/3/1995								<0.03										0
8/3/1995		49	13	<0.004	60.8	0.02	<0.04	<0.03	249	<0.02		7.8		0.726	<0.003	<0.003		0.04
17/04/95		50.3	12.9	<0.004	60.9	0.02	<0.04	<0.03	258	<0.02		8.3		0.735	0.007	<0.003		0.01
8/5/1995		44.5	10.9	<0.004	54.8	0.02	<0.04	<0.03	223	<0.02		7.2		0.644	0.004	<0.003		0.02
7/6/1995	<0.005	38.1	8.32	<0.002	38	<0.005	<0.04	<0.02		<0.02		3.13		0.543	<0.005	<0.005	<0.02	0.01
8/6/1995								<0.02										0.01
21/06/95								<0.02										<0.01
20/07/95	<0.005	41.2	8.2	<0.002	48	0.028	0.05	<0.02	196.4	<0.02		2.36		0.645	<0.005	<0.005	<0.02	<0.010
13/05/96	0.018	36.2	11.18	<.002	37	0.031	0.43	0.02	200	0.03		2.34		0.595	0.028	0.01	<.03	0.04
11/9/1996	<.005	26.2	6.13	<.002	37	0.017	0.04	<.02	139	<.03		6.9		0.428	<.005	<.005	<.03	0.02
19/12/96	<.005	45.6	12.38	0.003	49	0.041	0.28	<.02	220	0.04		6.9		0.749	0.009	<.005	<.03	0.1
12/6/1997	<.005	49.2	14.71	<.002	44	<.005	<.04	<.02	208	<.03	<.03	5.4	<.01	0.684	0.012	<.005	<.03	0.01
22/09/97	0.024	35.3	9.09	<.002	32	0.017	<.04	0.03	213	<.03	<.03	6.7	<.01	0.617	0.015	<.005	<.03	0.06
18/05/98	<.005	51.4	12.21	<.002	46	0.025	<.04	<.02	208	<.03	<.03	7.9	<.01	0.774	0.011	0.005	<.03	0.54
30/06/98	0.019	37.7	7.48	<.002	31	0.023	5.58	<.02	416	<.03	<.03	6.4	<.01	0.582	0.032	<.005	<.03	0.03
17/11/98	<.005	59.5	12.32	0.007	50	0.016	2.62	<.01	229	<.03	<.03	6.9	<.01	0.815	0.023	<.005	<.03	<.01
17/05/99	<.005	43.1	10.74	<.002	40	<.005	0.99	<.01		<.03	<.03	6.3	<.01	0.699	<.005	<.005	<.03	0.05
12/8/1999	<.005	47.3	9.47	0.003	36	<.005	<.04	<.01	238	<.03	<.005	8.3	<.01	0.737	0.018	0.014	<.03	0.02
10/9/1999	0.027	42.8	10.37	<.002	30	0.018	<.04	0.03	235	<.03	<.005	5.6	<.01	0.626	0.027	0.009	<.03	<.01
29/10/99	0.008	47.2	13.4	0.014	42	0.041	<.04	<.01	260	<.03	<.005	7.8	<.01	0.754	0.012	<.005	<.03	<.01
22/11/99	<.005	49	12.8	<.002	38	0.028	<.04	<.01	246	<.03	<.005	6.5	<.01	0.761	0.038	<.005	<.03	<.01
14/12/99	<.005	43.1	11.89	<.002	35	0.008	<.04	<.01	222	<.03	<.005	4.7	<.01	0.646	0.011	<.005	<.03	0.03
27/01/00	0.014	45.5	11.12	<.002	36	0.011	<1	0.03		<.03	<.005	5.9	<.01	0.652	0.037	0.008	<.03	<.01
28/02/00	0.019	56.8	12.4	<.002	48	0.025	<1	0.05	267	<.03	<.005	8.7	<.01	0.809	0.082	<.005	<.03	0.14
23/03/00	<.005	50.5	14.15	<.002	28	0.008	<1	<.01	237	<.03	<.005	7.9	<.01	0.806	0.01	<.005	<.03	<.01
27/04/00	<.005	40.4	11.17	<.002	29	0.021	<1	<.01		<.03	<.005	6.3	<.01	0.611	0.069	<.005	<.03	0.03
15/05/00	0.033	50.8	11.67	<.002	38	0.011	1	<.01		<.03	<.005	8.1	<.01	0.801	0.036	<.005	<.03	0.07
26/06/00	<.005	43.4	10.84	<.002	37	0.023	4	0.01		<.03	<.005	6	<.01	0.596	0.063	<.005	<.03	0.16
25/07/00	0.107	45.5	11.6	<.002	42	0.038	7	<.01		<.03	<.005	6.2	<.01	0.835	0.047	0.039	<.03	0.04
29/08/00	<.005	48.8	11.25	<.002	40	0.047	5	<.01		<.03	<.005	7.1	<.01	0.654	0.033	0.021	<.03	0.09
25/09/00		49.2	11.6	<0.01	41	<0.05	<0.3	<0.05		<0.2	<0.2	7.03	<0.03	0.72	<0.01	<0.03		0.022
19/10/00	<.005	49.2	12	0.009	47	0.015	2	<.01	229	<.03	<.005	7.5	<.01	0.768	0.112	<.005	<.03	0.05
13/11/00	0.014	53.5	16.63	<0.002	44	0.013	0.05	0.01	250	0.03	<0.005	9.2	0.09	0.772	<0.005	0.006	<0.03	<0.01
18/11/00		48.1	12.3	<0.01	44	0.11	<0.3	<0.05		<0.2	<0.2	8.58	<0.03	0.744	<0.01	<0.03		0.038
14/12/00		58.3	14.2	<0.01	44	<0.05	<0.3	<0.05		<0.2	<0.2	7.96	<0.03	0.843	<0.01	<0.03		0.016
13/01/01	<.005	42.8	11.07	0.018	38	0.01	2	0.05	103	<.03	<.005	6.4	<.01	0.75	0.053	<.005	<.03	0.04
10/2/2001	<.005	41.3	10.65	<.002	35	0.03	28	<.01	112	<.03	<.005	6.1	<.01	0.372	0.015	<.005	<.03	<.01
10/3/2001	<.005	46.08	14.26	<.002	39.92	<.005	<1	<.01	223.9	<.03	<.005	6.07	<.01	0.69	0.007	<.005	<.03	0.02
16/04/01	<.005	48.1	15.03	<.002	40	0.006	<1	<.01	207	<.03	<.005	6	<.01	0.72	0.01	<.005	<.03	0.03
14/05/01	<.005	49.1	13.08	<.002	38	<.005	<1	<.01	210	<.03	<.005	5.4	<.01	0.67	0.005	<.005	<.03	0.03
17/06/01	0.028	61	7.72	0.004	42	0.109	<1	<.01	238	<.03	<.005	7.7	<.01	0.735	0.019	<.005	<.03	0.16
14/07/01	0.01	52	15.72	<.002	42	0.023	<1	<.01	250	<.03	<.005	9.9	<.01	0.773	<.005	<.005	<.03	0.05
14/08/01	<0.005	54.9	13.84	<0.002	48	0.026	<1	<0.01	255	<0.03	<0.005	9.7	<0.01	0.797	<0.005	<0.005	<0.03	0.02
17/09/01	0.021	47.1	14.77	<0.002	39	0.019	<1	<0.01	221	<0.03	<0.005	8.6	<0.01	0.708	<0.005	<0.005	<0.03	0.03
15/10/01	0.035	52.6	16.35	<0.002	42	0.024	<1	<0.01	246	0.04	<0.005	9.1	<0.01	0.77	<0.005	<0.005	<0.03	<0.01
13/11/01	0.014	53.5	16.63	<0.002	44	0.013	0.05	0.01	250	0.03	<0.005	9.2	0.09	0.772	<0.005	0.006	<0.03	<0.01
15/12/01	0.034	53.5	13.62	<0.002	35	0.012	0.01	<0.01	203	<0.03	0.043	8.3	0.17	0.683	<0.005	<0.005	<0.03	0.02

STATION: X12

Date	CU-T	MN-T	NA-T	PB-T	ZN-T
10/10/1986	0.01	0.35	28	0.06	0.01
23/10/86	0.01			0.02	0.03
31/10/86	<0.01			0.01	0.01
6/11/1986	<0.01			<0.01	0.02
13/11/86	<0.01			0.01	0.01
21/11/86	<0.01			<0.01	0.01
28/11/86	<0.01			<0.01	0.01
4/12/1986	<0.01	0.49	32	<0.01	0.01
10/12/1986	<0.01	0.55	32.6	<0.01	<0.01
16/12/86	<0.01	0.42	32	0.01	<0.01
23/12/86	<0.01	0.44	24.7	<0.01	<0.01
31/12/86	<0.01	0.5	33.5	<0.01	<0.01
7/1/1987	<0.01	0.51	33.5	<0.01	<0.01
15/01/87	<0.01	0.6	34.5	<0.01	<0.01
20/01/87	<0.01	0.65	35.5	<0.01	0.01
28/01/87	<0.01	0.62	36	<0.01	<0.01
3/2/1987	<0.01	0.62	37.5	<0.01	<0.01
10/2/1987	<0.01	0.63	39.5	<0.01	<0.01

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/02/87												<0.01					0.67		40			<0.01										<0.01
24/02/87												<0.01					0.72		40.5			<0.01										<0.01
3/3/1987												<0.01					0.76		41.5			0.03										0.02
10/3/1987												<0.01					0.8		42			<0.01										<0.01
17/03/87												<0.01					0.83		43			<0.01										0.01
24/03/87												<0.01					0.84		45.5			<0.01										<0.01
1/4/1987												<0.01					0.82		47			<0.01										<0.01
7/4/1987												<0.01					0.87		48.5			<0.01										<0.01
8/4/1987												<0.01					0.88		33.5			0.04										0.01
14/04/87												0.02					0.91		48			<0.01										<0.01
20/04/87												<0.01					0.99		49.5			<0.01										<0.01
28/04/87												0.01					1.06		51			<0.01										<0.01
5/5/1987												<0.01					1.05		47.5			<0.01										0.01
12/5/1987												<0.01					0.97		49			<0.01										<0.01
19/05/87												<0.01					1.04		47.5			<0.01										<0.01
26/05/87												<0.01					1.06		52			<0.01										<0.01
4/6/1987												<0.01					0.97		53			<0.01										<0.01
11/6/1987												<0.01					1.04		51			<0.01										<0.01
16/06/87												<0.01					0.95		48			<0.01										<0.01
26/06/87												<0.01					1.06		47			<0.01										<0.01
30/06/87												<0.01					1.05		45			<0.01										<0.01
6/7/1987												<0.01					1.02		39.5			<0.01										<0.01
20/07/87												<0.01					0.91		34			0.06										<0.01
28/07/87												<0.01					0.85		34.5			0.02										<0.01
4/8/1987												<0.005					0.88		33.5			0.04										0.01
11/8/1987												<0.005					0.9		32.5			0.02										<0.005
18/08/87												<0.005					1.02		36			0.01										0.06
25/08/87												<0.005					1.14		37.5			0.01										<0.005
1/9/1987												<0.005					1.2		41			<0.005										<0.005
8/9/1987												<0.005					1.25		38			<0.005										<0.005
15/09/87												<0.005					1.22		37			<0.005										<0.005
21/09/87												<0.005					1.31		38			<0.005										<0.005
2/10/1987												<0.005					1.29		39			<0.005										<0.005
6/10/1987												<0.005					1.3		39			<0.005										<0.005
13/10/87												<0.005					1.32		40			<0.005										<0.005
20/10/87												<0.005					1.32		41			<0.005										<0.005
27/10/87												<0.005					1.21		41			<0.005										<0.005
3/11/1987												<0.005					1.13		41			<0.005										<0.005
10/11/1987												<0.005					1.01		39			<0.005										<0.005
17/11/87												<0.005					1.1		41			<0.005										<0.005
24/11/87												<0.005					1		40.5			<0.005										<0.005
1/12/1987												<0.005					1.08		40			<0.005										<0.005
9/12/1987												<0.005					0.96		42			<0.005										0.01
15/12/87												0.06					0.93		40.7			0.02										<0.005
23/12/87												<0.005					0.92		39.1			0.05										0.04
30/12/87												0.01					0.86		32.8			0.05										0.04
5/1/1988												0.004					1.03		43			<0.005										<0.002
12/1/1988												0.003					1.01		44			<0.005										0.002
18/01/88												0.002					1.24		48.5			<0.005										0.002
27/01/88												0.003					1.19		51			<0.005										0.005
2/2/1988												0.004					0.875		46			<0.005										0.005
10/2/1988												0.003					0.56		40.5			<0.005										0.005
17/02/88												0.003					1.2		52			<0.005										0.006
24/02/88												0.004					1.18		52			0.005										0.004
2/3/1988												0.004					1.175		55			<0.005										0.005
9/3/1988												0.004					1.18		54			<0.005										0.004
16/03/88												0.004					1.2		56			<0.005										0.009
23/03/88												0.005					1.205		58			<0.005										0.005
29/03/88												0.006					1.24		58			0.005										0.01
5/4/1988												0.005					1.25		62			<0.005										0.003
12/4/1988												0.005					1.36		60			<0.005										0.002
20/04/88												0.003					1.31		60			0.006										0.007
25/04/88												0.004					1.17		51			<0.005										0.008
4/5/1988												0.002					1.205		58			<0.005										0.002
11/5/1988												0.004					1.2		60			0.01										0.005
19/05/88												0.005					1.29		60			0.008										0.014
25/05/88												0.002					1		60			0.005										0.007
1/6/1988												0.002					1.16		58			<0.005										0.007
16/06/88												0.002					0.85		56			<0.005										0.005
23/06/88												0.002					0.84		47.5			<0.005										0.039
28/06/88												0.002					0.745		45.5			<0.005										0.003
6/7/1988												0.002					0.645		42			<0.005										0.012
11/7/1988												0.002					0.705		42.5			<0.005										0.008
20/07/88												<0.002					0.645		38			<0.005										0.013
27/07/88												0.002					0.575		37			<0.005										0.005
4/8/1988												<0.002					0.59		39			<0.005										<0.002
10/8/1988												0.002					0.64		39			<0.005										0.002
16/08/88												0.002					0.6		40			<0.005										0.006
24/08/88												0.003					0.71		41			0.008										0.003
31/08/88												0.005					3.2		87			<0.005										0.009
9/9/1988												<0.002					0.71		44			<0.005										0.002
13/09/88												0.003					0.72		43.5			<0.005										0.01
22/09/88												0.002					0.88		40.5			<0.005										0.004
29/09/88												0.002					0.925		44			<0.005										0.004
6/10/1988												0.002	0.09				0.93		45.5			<0.005										0.005
14/10/88												0.004	0.025				1.04		50			<0.005										0.002
19/10/88												0.002					1.01		40.5			<0.005										0.003
26/10/88												0.003	0.02				0.87		48			<0.005										0.005
1/11/1988												0.002					0.89		51			<0.005										0.005
8/11/1988												0.002					0.975		51			0.012										0.018
14/11/88												<0.002					0.99		52			0.009										0.014
21/11/88												<0.002					1.02		52			<0.005										0.002
30/11/88												<0.002	0.06				1.02		53			0.011										0.006
7/12/1988												<0.002	0.02				1		52.5			<0.005										0.002
21/12/88												0.002					1.07		54			<0.005										0.004
28/12/88												<0.002	0.02				0.99		55			<0.005										0.004
6/1/1989												<0.002					1.02		53.5			<0.005										0.003

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/1/1989												<0.002					1		54			0.005										0.005
17/01/89												0.002	0.02				1.02		52			<0.005										0.005
24/01/89												0.002	0.015				0.98		55			<0.005										0.003
3/2/1989												0.003					1.06		58			<0.005										0.011
7/2/1989												0.002					1.1		62			<0.005										0.009
13/02/89												0.002	0.075				1.05		63			<0.005										0.003
20/02/89												<0.002					1.05		64			<0.005										0.006
27/02/89												<0.002					1.01		67			0.011										0.01
6/3/1989												0.003					1.15		68			0.022										0.037
14/03/89												<0.002	0.065				1.13		68			<0.005										0.015
20/03/89												0.002	0.07				1.06		67			<0.005										0.022
27/03/89												0.002					1.18		71			<0.005										0.007
3/4/1989												0.002					1.2		71			<0.005										0.007
10/4/1989												0.002	0.11				1.15		62			0.005										0.009
17/04/89												0.002					1.21		64			<0.005										0.007
2/5/1989												0.002					1.26		59			<0.005										0.004
8/5/1989												<0.002	0.005				1.25		66			<0.005										0.002
16/05/89												0.004					1.95		63			0.005										0.074
23/05/89												0.003					1.32		64			0.005										0.005
29/05/89												0.002					1.22		61			0.007										0.006
5/6/1989												0.002					1.317		59			0.005										0.007
12/6/1989												0.002	0.049				1.26		53			0.005										0.005
20/06/89												0.003	0.026				1.17		50			0.005										0.041
26/06/89												0.002	0.024				1.05		50			0.005										0.005
3/7/1989												0.002	0.005				0.997		48			0.005										0.005
10/7/1989												0.002	0.014				1.07		50			0.005										0.19
17/07/89												0.002	0.005				0.94		52			0.005										0.002
25/07/89												0.002	0.024				0.945		48.5			0.005										0.007
31/07/89												0.002	0.074				1.38		47			0.005										0.005
7/8/1989												0.002	0.031				1.18		52			0.005										0.006
14/08/89												0.003	0.017				1.19		48			0.005										0.006
21/08/89												0.002	0.013				1.18		46			0.005										0.002
28/08/89												0.002	0.016				1.25		47			0.005										0.003
5/9/1989												0.002	0.017				1.06		47			0.005										0.004
11/9/1989												0.002	0.015				1.03		52			0.005										0.004
18/09/89												0.002	0.022				1.38		52			0.005										0.02
25/09/89												0.002	0.016				1.21		48			0.005										0.029
2/10/1989												0.003	0.013				1.35		52			0.005										0.008
10/10/1989												0.002	0.127				1.39		50			0.005										0.068
18/10/89												0.002	0.041				1.34		52			0.005										0.01
23/10/89												0.004	0.025				1.31		48			0.005										0.055
30/10/89												0.002	0.033				1.55		51			0.005										0.007
6/11/1989												0.002	0.027				1.22		50			0.005										0.003
15/11/89												0.002	0.02				1.32		51			0.005										0.005
20/11/89												0.002	0.015				1.86		51			0.005										0.005
27/11/89												0.002	0.044				1.93		52			0.005										0.006
4/12/1989												0.007	2.69				2.16		52			0.005										0.019
11/12/1989												0.002	0.027				1.29		54			0.005										0.006
18/12/89												0.002	0.029				1.71		54.4			0.005										0.003
28/12/89												0.002	0.025				1.8		56			0.005										0.006
3/1/1990												0.003										0.005										0.007
8/1/1990												0.009										<0.005										0.321
15/01/90												<0.002										<0.005										0.013
22/01/90												0.002										<0.005										0.014
1/2/1990												0.004										0.011										0.035
5/2/1990												0.003										0.007										0.012
12/2/1990												<0.002										<0.005										0.006
19/02/90												<0.002										<0.005										0.018
26/02/90												0.02										0.03										0.2
2/5/1990												0.008																				0.028
3/6/1991												0.001																				0.019
6/11/1991												0.001																				0.001
2/12/1991												0.001																				0.012
24/11/92												<0.001										<0.003										0.011
20/01/93												<0.001										0.003										<0.002
16/03/93												<0.002										<0.003										<0.01
26/04/93												0.002										0.004										0.02
26/05/93												<0.002										<0.003										0.02
24/08/93												<0.002										<0.003										0.05
31/08/93												<0.002										0.003										<0.01
1/9/1993												0.003										<0.003										0.03
30/09/93								110		<0.004		0.003	<0.05			21				<0.01		<0.03										0.03
1/10/1993												<0.002										<0.003										<0.01
25/10/93								108		<0.004		<0.002	<0.05			21				<0.01												<0.01
1/11/1993												<0.002										<0.03										0.01
1/12/1993								182		<0.004		<0.002	1.98			27.2				0.01		<0.03										0.01
13/12/93								168		<0.004		<0.002	1.74			25.8				0.01		<0.03										0.05
1/1/1994												0.004										<0.03										0.22
17/01/94								178		0.005		0.004	11			27.9				0.02		<0.03										0.22
31/01/94								176		0.005		<0.002	2.27			27.5				0.01		<0.03										0.01
3/3/1994								182		<0.004		<0.002	3.02			29.2				0.01		<0.03										0.05
26/04/94								189		<0.004		<0.002	2.34			28.2				0.02		<0.03										<0.01
31/05/94								189		<0.004		<0.002	2.13			28.9				0.01		<0.03										0.04
27/06/94												<0.002										<0.03										0.01
10/8/1994								174		<0.004		<0.002	1.63			26.5				0.01		<0.03										<0.01
25/09/94								179		<0.004		<0.002	1.77			29.6				0.02		<0.03										0.01
15/10/94								182		<0.004		<0.002	1.81			28				0.01		<0.03										<0.01
31/01/95												<0.002					6.63		48.4			<0.03										0.04
1/2/1995												<0.002										<0.03										0.04
22/02/95												<0.002										<0.03										0
24/02/95	<0.030	<0.06	0.05		0.086	<0.001	<0.02	178	<0.002	<0.004	<0.002	<0.002	1.15			28.1	6.37	<0.004	51.8	0.01	<0.04	<0.03	134	<0.02		6.3		0.43	<0.003	<0.003		0.04
6/3/1995												<0.002										<0.03										<0.0
8/3/1995	<0.030	<0.06	<0.04		0.04	<0.001	<0.02	117	<0.002	<0.004	0.004	<0.002	0.08			24.3	0.853	<0.004	44.1	<0.010	0.04	<0.03	93.3	<0.02		5.2		0.343	<0.003	<0.003		<0.010
17/04/95	<0.030	<0.06	<0.04		0.092	<0.001	<0.02	182	<0.002	0.005	0.03	0.003	1.04			29.6	6.83	<0.004	46.9	0.03	<0.04	<0.03	138	<0.02		6.9		0.446	0.004	<0.003		<0.010
8/5/1995	<0.030	0.09	<0.04		0.044	<0.001	<0.02	118	<0.002	<0.004	<0.002	0.003	0.11			24.2	0.487	<0.004	41.7	<0.010	<0.04	<0.03	89.9	<0.02		4.8		0.344	0.007	<0.003		0.09
7/6/1995	<0.003	0.78	<0.02		0.103	<0.001	<0.04	163.3	<0.002	<0.005	<0.005	0.002	1.25		<0.005	29.9	5.67	<0.002	36	<0.005	<0.04	<0.02		<0.02		3.18		0.437	<0.005	<0.005	<0.02	<0.010
9/6/1995												0.002										<0.02										<0.01

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21/06/95												0.002				
20/07/95	<0.003	1.01	0.03		0.052	0.003	<0.04	146.1	<0.002	<0.005	<0.005	0.002	1.17		<0.005	28.4
30/06/98	<.003	0.12	<.02	<.05	0.177	<.001	<.04	140.3	<.002	<.005	0.012	0.017	0.04	5	<.005	32.5
17/11/98	<.003	0.11	<.005	<.05	0.146	<.001	<.04	159.6	<.001	<.005	0.072	0.031	0.09	6	<.005	34.8
17/05/99	<.003	0.33	<.005	<.05	0.14	0.002	<.04	115.1	<.001	<.005	<.005	0.029	0.72	5	<.005	25.3
12/8/1999	<.003	<.05	<.005	0.09	0.16	<.001	<.04	136.1	0.005	<.005	<.005	0.006	0.07	6	<.005	28.5
10/9/1999	<.003	0.17	<.005	<.05	0.104	<.001	<.04	111	<.001	<.005	<.005	0.02	0.1	4	0.015	23.7
29/10/99	<.003	0.13	<.005	<.05	0.157	<.001	<.04	117.4	<.001	<.005	<.005	0.011	0.1	4	0.028	25.4
22/11/99	<.003	0.2	<.005	<.05	0.138	<.001	<.04	106.8	<.001	<.005	<.005	0.035	0.27	4	<.005	27.1
14/12/99	<.003	0.25	<.005	<.05	0.12	<.001	<.04	128.1	<.001	<.005	<.005	0.016	0.02	3	<.005	25.8
27/01/00	<.003	0.23	<.005	<.05	0.115	0.001	<.05	119.5	0.007	<.005	<.005	0.029	0.16	6	0.034	26.4
28/02/00	<.003	1.62	<.005	<.05	0.155	<.001	<.05	134.3	<.001	<.005	0.13	0.605	3.02	7	<.005	32.2
23/03/00	<.003	0.49	<.005	0.06	0.17	<.001	<.05	130.9	0.001	0.017	<.005	0.003	0.29	5	<.005	30.8
27/04/00	<.003	0.33	<.005	<.05	0.171	0.001	0.08	123.4	<.001	<.005	<.005	0.026	0.32	5	<.005	26.5
15/05/00	<.003	0.25	0.014	0.07	0.112	<.001	<.05	129.5	<.001	0.018	0.157	0.015	0.21	5	0.006	30.1
26/06/00	<.003	0.15	<.005	<.05	0.103	0.002	<.05	134.5	<.001	0.009	<.005	0.023	0.13	7	<.005	29.3
25/07/00	<.003	0.09	<.005	<.05	0.129	0.002	<.05	123.2	0.004	0.015	<.005	0.023	0.52	6	0.102	27.2
29/08/00	<.003	0.24	<.005	<.05	0.112	<.001	<.05	130.5	0.004	<.005	<.005	0.012	0.07	5	<.005	27
26/09/00	<0.01	<0.05	<0.2	<0.1	0.04	<0.005	<0.1	126	<0.001	<0.01	<0.01	<0.01	<0.01	4		27.2
19/10/00	<.003	0.41	<.005	<.05	0.224	0.002	<.05	117.2	0.002	<.005	<.005	0.035	0.59	7	<.005	26.2
13/11/00	<0.003	0.11	0.02	0.08	0.113	<0.001	<0.05	139.7	<0.001	<0.005	0.018	0.005	0.16	6	0.019	31.6
18/11/00	<0.01	0.06	<0.2	<0.1	0.05	<0.005	<0.1	138	<0.001	<0.01	<0.01	<0.01	0.02	4		27
14/12/00	<0.01	<0.05	<0.2	<0.1	0.04	<0.005	<0.1	128	<0.001	<0.01	<0.01	<0.01	0.04	5		27.2
13/01/01	<.003	0.15	<.005	0.07	0.165	0.002	<.05	122.1	<.001	0.037	<.005	0.028	0.3	5	<.005	27.3
10/2/2001	<.003	0.06	<.005	<.05	0.157	0.002	<.05	116.6	0.006	<.005	<.005	0.028	0.21	7	<.005	25.8
10/3/2001	<.003	0.59	<.005	0.1	0.25	<.001	<.05	126	<.001	<.005	<.005	0.02	0.15	2.16	<.005	28.53
16/04/01	<.003	0.17	<.005	0.08	0.108	<.001	<.05	144.3	<.001	<.005	<.005	0.014	0.02	<1	<.005	32.4
14/05/01	<.003	0.15	<.005	<.05	0.178	<.001	<.05	105.6	<.001	<.005	<.005	0.009	0.01	3	<.005	22.6
17/06/01	<.003	0.26	<.005	0.11	0.182	<.001	<.05	146.1	<.001	<.005	<.005	0.009	0.14	5	0.024	32.1
14/07/01	<.003	0.66	<.005	0.19	0.247	<.001	<.05	143.4	<.001	<.005	0.018	0.006	1.35	5	0.007	31.2
14/08/01	<0.003	0.11	<0.005	<0.05	0.193	<0.001	<0.05	146.3	<0.001	<0.005	0.008	0.005	0.04	5	<0.005	33.9
17/09/01	<0.003	0.05	<0.005	<0.05	0.133	<0.001	<0.05	122.1	<0.001	<0.005	<0.005	0.004	0.03	4	0.014	28.1
15/10/01	<0.003	0.15	0.005	0.18	0.188	<0.001	<0.05	142.3	<0.001	<0.005	<0.005	<0.002	0.05	5	0.024	33.2
13/11/01	<0.003	0.11	0.02	0.08	0.113	<0.001	<0.05	139.7	<0.001	<0.005	0.018	0.005	0.16	6	0.019	31.6
15/12/01	<0.001	0.05	<0.005	0.07	0.042	<0.001	<0.05	138.9	<0.001	<0.005	<0.005	<0.002	0.05	4	0.039	32.4

Date	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21/06/95						0.03										<0.01
20/07/95	5.16	<0.002	39	<0.005	<0.04	0.03	113.4	<0.02		2.11		0.451	<0.005	<0.005	<0.02	<0.010
30/06/98	0.27	0.013	33	0.006	<.04	<.02	65	<.03	<.03	6.8	<.01	0.5	0.021	<.005	<.03	0.02
17/11/98	0.29	<.002	32	0.085	1.63	<.01	95	<.03	<.03	5.5	<.01	0.447	0.024	<.005	<.03	0.01
17/05/99	0.17	0.009	23	<.005	0.24	<.01		<.03	<.03	4.8	<.01	0.414	0.008	<.005	<.03	0.04
12/8/1999	0.13	0.003	24	0.017	<.04	<.01	111	<.03	<.005	6.3	<.01	0.46	0.006	<.005	<.03	0.01
10/9/1999	0.61	<.002	19	<.005	<.04	<.01	103	<.03	<.005	4.1	<.01	0.34	0.019	<.005	<.03	<.01
29/10/99	0.9	<.002	24	<.005	<.04	<.01	105	<.03	<.005	4	<.01	0.386	<.005	<.005	<.03	<.01
22/11/99	0.76	<.002	23	0.017	<.04	<.01	101	<.03	<.005	4.4	<.01	0.458	0.019	<.005	<.03	<.01
14/12/99	0.64	<.002	21	0.007	<.04	<.01	94	<.03	<.005	3.3	<.01	0.37	<.005	<.005	<.03	0.03
27/01/00	0.64	<.002	21	<.005	<1	<.01		<.03	<.005	3.9	<.01	0.357	0.025	0.006	<.03	<.01
28/02/00	2.44	<.002	27	0.024	<1	0.04	110	<.03	<.005	8	<.01	0.461	0.118	0.008	<.03	0.2
23/03/00	0.55	<.002	12	<.005	<1	<.01	106	<.03	<.005	5.8	<.01	0.497	0.009	<.005	<.03	<.01
27/04/00	1.5	0.005	21	<.005	<1	0.05		<.03	<.005	5.1	<.01	0.413	0.06	<.005	<.03	0.02
15/05/00	0.44	<.002	20	<.005	<1	<.01		<.03	<.005	5.6	<.01	0.501	0.027	<.005	<.03	0.03
26/06/00	0.64	<.002	24	0.009	4	<.01		0.08	<.005	4.7	<.01	0.404	0.052	0.013	<.03	0.06
25/07/00	0.58	0.013	25	0.017	3	<.01		<.03	<.005	4.8	<.01	0.532	0.031	0.027	<.03	0.03
29/08/00	0.71	<.002	21	0.023	4	<.01		<.03	<.005	5.5	<.01	0.377	0.023	0.018	<.03	0.08
26/09/00	0.236	<0.01	21	<0.05	<0.3	<0.05		<0.2	<0.2	4.93	<0.03	0.388	<0.01	<0.03		<0.005
19/10/00	0.44	<.002	26	<.005	3	<.01	110	<.03	<.005	6.4	<.01	0.405	0.094	<.005	<.03	0.04
13/11/00	1.06	<0.002	27	<0.005	0.06	<0.01	110	0.05	0.008	6.1	0.19	0.437	<0.005	0.005	0.04	0.02
18/11/00	0.314	<0.01	23	<0.05	<0.3	<0.05		<0.2	<0.2	5.35	<0.03	0.408	<0.01	<0.03		0.008
14/12/00	0.371	<0.01	20	<0.05	<0.3	<0.05		<0.2	<0.2	4.68	<0.03	0.388	<0.01	<0.03		0.006
13/01/01	0.55	0.008	23	<.005	2	<.01	64	<.03	<.005	5.2	<.01	0.533	0.045	<.005	<.03	0.03
10/2/2001	0.46	<.002	22	0.039	<1	<.01	70	<.03	<.005	4.5	<.01	0.204	0.014	<.005	<.03	<.01
10/3/2001	0.89	<.002	24.34	<.005	<1	<.01	101.3	<.03	<.005	4.46	<.01	0.43	0.007	<.005	<.03	0.02
16/04/01	0.7	<.002	20	<.005	<1	<.01	103	<.03	<.005	4.8	<.01	0.49	0.01	<.005	<.03	0.03
14/05/01	0.29	<.002	14	<.005	<1	<.01	70	<.03	<.005	3.2	<.01	0.316	<.005	<.005	<.03	<.01
17/06/01	0.56	<.002	25	0.028	<1	<.01	106	<.03	<.005	4.8	<.01	0.482	<.005	<.005	<.03	0.02
14/07/01	0.8	<.002	20	0.02	<1	0.02	104	<.03	<.005	7.5	<.01	0.482	0.025	<.005	<.03	0.46
14/08/01	0.39	0.007	22	<0.005	<1	<0.01	110	<0.03	<0.005	7.3	<0.01	0.501	0.006	<0.005	<0.03	<0.01
17/09/01	0.45	<0.002	22	<0.005	<1	<0.01	95	<0.03	<0.005	5.7	<0.01	0.436	<0.005	<0.005	<0.03	<0.01
15/10/01	1	<0.002	72	0.005	<1	<0.01	110	<0.03	<0.005	6.9	<0.01	0.47	0.007	<0.005	<0.03	<0.01
13/11/01	1.06	<0.002	27	<0.005	0.06	<0.01	110	0.05	0.008	6.1	0.19	0.437	<0.005	0.005	0.04	0.02
15/12/01	0.82	0.012	19	<0.005	0.07	<0.01	96	<0.03	0.033	5.9	0.06	0.393	0.026	<0.005	<0.03	<0.01

STATION: X14

Date	CU-T	FE-T	MN-T	NA-T	PB-T	ZN-T
30/01/84	0.02		0.8	33	0.02	0.06
27/02/84	0.02		0.98	35	0.03	0.1
19/03/84	0.01		1.75	53	0.09	0.08
30/04/84	0.02		0.59	24	0.03	0.07
22/05/84	0.01		0.79	24	0.09	0.07
18/06/84	0.01		0.81	29	0.07	0.06
16/07/84	0.02		0.38	12	0.04	0.06
27/08/84	0.01		0.32	11	0.02	0.11
17/09/84	0.02		0.44	38	0.05	0.05
22/10/84	0.01		0.83	29	0.03	0.11
12/8/1985			0.18	6		0.03
16/09/85			0.2	5		0.04
13/10/85			0.42	14		0.05
28/10/85			0.58	12		0.04
11/11/1985			0.66	13		0.05
8/12/1985			0.5			0.04
1/1/1987	0.04		1.23	63	0.05	0.09
1/2/1987	0.02		19.1	57	0.02	0.07
1/3/1987	0.02		2.08	63	0.03	0.08
1/4/1987	0.04		1.81	82	0.03	0.06
1/5/1987	<0.01		0.36	14.5	0.03	0.05
1/6/1987	<0.01		0.33	9.7	0.02	0.03
1/7/1987	<0.01		0.62	25	0.06	0.06
1/8/1987	0.01		0.7	33	0.06	0.07
11/8/1987	0.01		0.7	33	0.06	0.07
1/9/1987	0.01		0.49	28	0.03	0.06
8/9/1987	0.01		0.49	28	0.03	0.06
1/10/1987	0.04		0.82	43	0.05	0.11
6/10/1987	0.04		0.82	43	0.05	0.11
1/11/1987	0.02		1.06	49	0.05	0.12
10/11/1987	0.02		1.06	49	0.05	0.12
1/12/1987	0.07		1.68	66	0.07	0.11
9/12/1987	0.07		1.68	66	0.07	0.11
27/01/88	0.059		1.85	90	0.068	0.093
17/02/88	0.038		1.9	90	0.057	0.045
24/03/88	0.02		1.5	96	0.084	0.067
25/04/88	0.004		0.29	21	0.022	0.042
25/04/88	0.014		1.12	92	0.073	0.21
25/05/88	0.004		0.29	21	0.022	0.042
7/6/1988	0.003		0.172	13.4	0.019	0.021
20/07/88	0.002		0.216	12.1	0.02	0.046
24/08/88	0.009		0.96	74	0.12	0.12
13/09/88	0.007		0.56	39.5	0.056	0.135
6/10/1988	0.004	0.285	0.74	37.5	0.036	0.185
1/11/1988	<0.002		0.44	12.7	<0.005	0.02
30/11/88	0.006	0.265	1.52	74	0.051	0.175
27/01/89	0.019	0.37	2.5	100	0.042	0.115
13/02/89	0.017	0.91	2.35	102	0.05	0.115
14/03/89	0.007	0.45	2	99	0.025	0.058
12/4/1989	0.009	0.745	1.55	93	0.035	0.046
12/6/1989	0.003	0.186	0.4	18.5	0.013	0.052
10/7/1989	0.004	0.367	0.67	34.5	0.039	0.08
14/08/89	0.005	0.301	1.18	52	0.042	0.049
11/9/1989	0.004	0.349	1.33	94	0.056	0.046
16/10/89	0.002	0.505	2.19	37	0.005	0.024
15/11/89	0.016	0.58	1.96	81	0.037	0.131
11/12/1989	0.045	0.556	2.28	91	0.032	0.094
15/01/90	0.034				0.056	0.083
12/2/1990	0.013				<0.005	0.064

Table C12. Surface Water Quality of the Area by the Tailings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/3/1990												0.006										0.025										0.027
17/04/90												0.006										0.027										0.047
2/5/1990												0.011										0.055										0.124
14/05/90												0.005										0.02										0.083
11/6/1990												0.003										0.014										0.06
11/7/1990												0.002										0.02										0.028
13/08/90												0.002										0.041										0.039
19/09/90												0.002										0.012										0.143
16/10/90												0.005										0.073										0.157
14/11/90												0.005										0.075										0.149
10/12/1990												0.021										0.062										0.316
2/1/1991												0.008										0.079										0.249
4/2/1991												0.005										0.086										0.124
4/3/1991												0.002										0.042										0.615
1/4/1991												0.016										0.062										0.139
1/5/1991												0.006										0.031										0.069
3/6/1991												0.009										0.004										0.048
1/7/1991												0.001										0.004										0.026
2/7/1991												0.001										0.004										0.026
5/8/1991												0.001																				0.065
3/9/1991												0.001										0.025										0.062
7/10/1991												0.001										0.016										0.05
1/11/1991												0.044																				0.022
6/11/1991												0.044																				0.022
3/12/1991												0.009										0.007										0.086
21/01/92												0.085										0.014										0.304
20/02/92												0.159										0.028										0.211
12/3/1992												0.13										0.014										0.156
29/04/92												0.032										0.029										0.052
12/5/1992												0.012										0.005										0.058
9/6/1992												0.014										0.009										0.01
26/06/92												0.03										0.01										0.028
14/07/92												0.011										0.01										0.019
10/8/1992												0.005										0.019										0.043
10/9/1992												0.004										0.018										0.163
6/10/1992												0.004										0.018										0.26
25/11/92												<0.001										<0.003										0.129
25/11/94												<0.002										<0.03										0.07
25/01/95	<0.001	0.02	<0.02		0.0949	<0.0002		114	<0.0005	<0.001	<0.001	0.007	1.11	3.3		22.4	2.66	<0.005	23.5	0.007	<0.08	<0.01	73.9	<0.02	<0.02	5.02	<0.01	0.37	0.003	0.018		0.006
6/3/1995	<0.001	0.02	<0.02		0.076	<0.0002	<0.02	76.2	<0.0005	<0.001	<0.001	0.024	0.44	1.9		13.7	1.42	<0.005	12.4	0.002	<0.05	<0.01	34.9	<0.02	<0.02	5.63	<0.01	0.28	0.006	0.008		<0.005
6/3/1995												<0.002										<0.03										0
8/3/1995	<0.030	<0.06	<0.04		0.064	<0.001	<0.02	70.2	<0.002	<0.004	<0.002	<0.002	0.47			13.4	1.25	<0.004	11.9	<0.010	<0.04	<0.03	36.9	<0.02		4.8		0.251	<0.003	<0.003		0.03
8/5/1995	<0.001	0.59	<0.02		0.048	<0.0002	<0.02	26	<0.0005	<0.001	0.004	0.014	1.47	1.2		5.26	0.353	<0.005	3.8	0.005	<0.06	0.01	12.1	<0.02	<0.02	4.1	<0.01	0.1	0.017	0.004		0.045
8/5/1995	<0.030	0.53	<0.04		0.044	<0.001	<0.02	27.4	<0.002	<0.004	0.003	0.005	1.41			5.66	0.345	<0.004	3.9	<0.010	0.04	<0.03	12.8	<0.02		3.5		0.097	0.014	<0.003		0.06
21/06/95												<0.002										<0.02										<0.01
20/07/95	<0.003	0.27	0.06		0.022	<0.001	<0.04	39.5	<0.002	<0.005	<0.005	<0.002	0.37		<0.005	9.2	0.5	<0.002	5	<0.005	<0.04	<0.02	32.7	<0.02		1.17		0.171	<0.005	<0.005	<0.02	<0.010
23/08/95	<0.003	0.44	<0.02		0.052	0.001	<0.04	46.4	<0.002	<0.005	<0.005	<0.002	0.38		<0.005	9.4	0.68	<0.002	5	<0.005	<0.04	<0.02	28.2	<0.02		1.62		0.166	<0.005	<0.005	<0.02	0.05
16/10/95	<0.003	0.49	<0.02		0.051	<0.001	<0.04	62.4	<0.002	<0.005	<0.005	<0.002	0.47		<0.005	12.9	0.9	<0.002	10	<0.005	<0.04	<0.02	45	<0.02		1.06		0.221	<0.005	<0.005	0.02	0.08
14/11/95	<0.003	0.49	<0.02		0.071	0.002	<0.04	97.6	0.005	<0.005	<0.005	0.01	0.54		<0.005	18.7	2	<0.002	16	0.005	0.17	<0.02	79	0.04		2.43		0.294	<0.005	<0.005	<0.02	0.17
6/12/1995	<0.003	0.59	<0.02		0.077	0.002	<0.04	154.8	<0.002	<0.005	<0.005	<0.002	0.83		<0.005	26.9	4.41	<0.002	29	<0.005	<0.04	<0.02	142	<0.02		3.13		0.373	0.012	<0.005	<0.02	0.14
12/12/1995	<0.001	0.05	<0.02		0.0673	<0.0002		138	<0.0005	0.003	<0.001	0.006	0.537	3		24.6	3.22	<0.005	26.1	0.007	<0.06	<0.005	99	<0.02	<0.02	6.23	<0.005	0.338	<0.001	0.006		0.111
25/01/96	<.003	0.6	0.04		0.068	0.002	<.04	143.6	<.002	<.005	<.005	0.017	0.87		<.005	27	5.24	<.002	31	0.008	<.04	<.02	124	<.02		2.52		0.457	0.005	<.005	<.02	0.1
14/02/96	<.003	0.65	<.02		0.091	0.002	<.04	136.3	<.002	<.005	<.005	0.005	0.78		<.005	26.5	5.82	<.002	30	<.005	<.04	<.02	154	<.02		2.7		0.443	<.005	<.005	<.02	0.09
12/3/1996	<.003	0.53	0.03		0.09	0.001	<.04	144.4	<.002	<.005	<.005	<.002	0.74		<.005	27.3	6.04	<.002	30	<.005	<.04	<.02	138	<.03		1.72		0.455	<.005	<.005	<.02	0.08
9/4/1996	<.003	0.35	<.02		0.096	0.002	<.04	147.7	<.002	<.005	<.005	0.019	0.68		<.005	28	6.21	<.002	31	0.008	0.23	0.06	170	<.03		2.62		0.463	<.005	<.005	<.03	0.02
15/05/96	<.003	0.41	<.02		0.051	<.001	<.04	29.2	<.002	<.005	<.005	0.015	1.17		<.005	5.9	0.74	<.002	3	<.005	0.08	<.02	19	<.03	<.02	1.77		0.102	0.007	<.005	<.03	0.05
29/05/96	<.003	0.27	<.02		0.032	<.001	<.04	14.9	<.002	<.005	<.005	<.002	0.59		<.005	3.2	0.28	0.004	<1	<.005	<.04	<.02	10	<.03		0.45		0.063	<.005	<.005	<.03	0.04
11/6/1996	<.003	<.05	<.02		0.042	<.001	<.04	22.2	<.002	<.005	0.008	0.009	0.38		<.005	4.8	0.29	<.002	2	<.005	<.04	<.02	10	<.03	<.02	1.71		0.098	0.005	0.007	<.03	0.02
17/07/96	<.003	<.05	<.02		0.023	<.001	<.04	21.7	<.002	<.005	<.005	<.002	0.27		<.005	4.5	0.22	0.002	<1	<.005	<.04	<.02	13	<.03		3.9		0.09	<.005	<.005	<.03	0.02
15/08/96	<.003	0.05	<.02		0.045	0.001	<.04	33.4	<.002	<.005	<.005	<.002	0.3		<.005	7	0.52	<.002	3	<.005	0.13	<.02	16	<.03		2.5		0.14	<.005	<.005	<.03	0.03
3/9/1996	<.003	0.16	<.02		0.125	0.002	0.06	39	<.002	<.005	<.005	0.006	0.3		0.007	8.6	0.93	<.002	29	<.005	<.04	<.02	66	0.04		5.5		0.157	0.006	<.005	<.03	0.04
11/9/1996	<.003	0.05	<.02		0.058	0.001	<.04	35.5	<.002	<.005	<.005	<.002	0.34		<.005	7.5	0.85	<.002	31	<.005	0.06	<.02	25	<.03		4.2		0.146	<.005	<.005	<.03	0.04
21/10/96	<.003	0.05	<.02		0.107	0.003	<.04	63.6	<.002	<.005	<.005	0.03	0.84		<.005	12.8	1.44	<.002	13	<.005	0.15	<.02	34	<.03		4.7		0.236	<.005	<.005	<.03	0.09
21/11/96	<.003	<.05	<.02		0.074	0.001	<.04	99	<.002	<.005	<.005	<.002	1.35		<.005	19.2	2.69	<.002	24	<.005	<.04	<.02	68	<.03		3.8		0.336	<.005	<.005	<.03	0.1
19/12/96	<.003	0.2	<.02		0.097	0.006	<.04	153.4	<.002	<.005	0.007	0.005	0.99		<.005	29	5.41	<.002	32	<.005	0.11	<.02	120	<.03		4.4		0.499	<.005	<.005	<.03	0.12
14/01/97	<.003	0.14	<.02	0.33	0.075	<.001	<.04	69.8	<.002	<.005	<.005	0.011	0.31		<.005	13.2	2.13	0.008	30	<.005	<.04	<.02	47	<.03		3.69		0.257	<.005	0.006	<.03	0.05
17/02/97	<.003	0.05	<.02	0.73	0.113	0.001	<.04	151.1	<.002	0.015	<.005	0.005	0.57		<.005	29	6.34	<.002	29	0.042	<.04	<.02	98	<.03		4.71		0.488	<.005	<.005	<.03	0.06
11/3/1997	<.003	0.85	<.02	<.05	0.06	0.004	<.04	126.6	<.002	0.023	<.005	0.005	0.47		0.033	24.2	4.78	0.021	23	0.005	0.8	<.02	93	<.03	<.005	3.4	<.01	0.363	<.005	0.006	<.03	0.05
15/04/97	<.003	<.05	<.02	0.19	0.071	0.003	<.04	117.7	<.002	<.005	<.005	0.004	0.58	2.2	<.005	21.1	4.02	0.011	18	<.005	0.1	<.02	80	<.03	<.03	5.3	<.01	0.368	<.005	<.005	<.03	0.06
28/04/97	<.003	0.34	<.02	0.08	0.112	<.001	0.08	27.6	0.004	0.073	<.005	0.008	0.67	<1	<.005	6.2	0.33	<.002	4	0.012	0.08	0.11	12	<.03	<.03	2.57	0.06	0.127	0.018	0.007	<.03	0.04
12/5/1997	<.003	0.25	<.02	<.05	0.034	<.001	<.04	16	<.002	<.005	<.005	<.002	0.97	<1	<.005	3.6	0.21	<.002	1	<.005	<.04	<.02	5	<.03	<.03	1.2	<.01	0.065	0.009	<.005	<.03	0.04
23/06/97	<.003	<.05	<.02	<.05	0.029	<.001	<.04	21.6	<.002	<.005	0.006	<.002	0.2	<1	<.005	4.5	0.23	<.002	2	<.005	0.1	<.02	8	<.03	<.03	1.8	<.01	0.087	<.005	<.005	<.03	0.04
15/07/97	<.003	0.13	0.02	0.23	0.046	<.001	<.04	43.7	<.002	<.005	0.007	0.017	0.37	1	<.005	8.6	0.68	<.002	6	<.005	1.09	<.02	8	<.03	<.03	3.5	<.01	0.165	0.007	<.005	<.03	0.07
12/8/1997	<.003	<.05	<.02	0.15	0.044	<.001	0.04	34.4	<.002	<.005	0.08	0.022	0.29	3	<.005	7.4	0.48	<.002	5	<.005	<.04	<.02	7	<.03	<.03	3.8	<.01	0.143	<.005	<.005	<.03	0.11
22/09/97	<.003	<.05	<.02	<.05	0.05	<.001	<.04	57.9	<.002	<.005	0.013	0.041	0.33	<1	0.008	10.6	0.85	<.002	7	<.005	<.04	<.02	39	<.03	<.03	3.8	<.01	0.222	0.005	<.005	<.03	0.15
30/09/97	<.003	<.05	<.02	<.05	0.08	<.001	<.04	62.7	<.002	0.007	<.005	0.022	0.2	2	0.01	11.6	0.86	0.003	9	<.005	0.57	<.02	47	<.03	<.03	2.9	<.01	0.184	0.005	<.005	<.03	0.12
7/10/1997	<.003	<.05	<.02	<.05	0.131	<.001	<.04	68.3	<.002	0.017	<.005	0.011	0.4	2	<.005	12.8	1	<.002	9	<.005	<.04	0.05	39	<.03	0.041	2.6	<.01	0.214	0.006	<.005	<.03	0.11
20/10/97	<.003	<.05	<.02	<.05	0.123	<.001	<.04	70.3	<.002	<.005	0.011	0.006	0.61	3	<.005	13.3	1.07	0.003	8	<.005	<.04	0.03	47	<.03	<.03	2.9	<.01	0.229	<.005	0.008	<.03	0.08
19/11/97	0.003	<.05	<.02	<.05	0.12	0.002	<.04	80.3	<.002	<.005	<.005	0.008	0.71	5	<.005	14.9	1.32	<.002	9	0.006	<.04	0.04	54	<.03	<.03	3	<.01	0.267	<.005	<.005	<.03	0.06
8/12/1997	<.003	<.05	<.02	<.05	0.105	<.001	0.09	81.6	<.002	0.015	<.005	0.008	0.35	<1	<.005	15.6	1.25	0.003	11	0.02	<.04	<.02	57	<.03	<.03	3.2	<.01	0.275	<.005	0.011	<.03	0.06
12/1/1998	<.003	<.05	<.02	<.05	0.118	<.001	<.04	108.4	<.002	<.005	<.005	0.005	0.35	2	<.005	18.5	1.37	0.004	14	0.015	<.04	<.02	98	<.03	<.03	2.3	0.01	0.339	<.005	<.005	<.03	0.06
24/02/98	<.003	0.24	<.02	0.26	0.061	<.001	<.04	72.5	<.002	<.005	0.008	0.011	0.4	1	<.005	14.8	1.47	0.005	10	0.007	2.78	<.02	97	<.03	<.03	5.3	<.01	0.261	0.008	0.005	<.03	0.03
17/03/98	<.003	<.05	<.02	<.05	0.138	<.001	<.04	77.2	<.002	<.005	0.013	0.018	0.33	<1	<.005	15.6	1.6	0.006	12	<.005	<.04	<.02	170	<.03	<.03	4.3	<.01	0.276	<.005	0.014	<.03	0.02
13/04/98	<.003	0.05	<.02	<.05	0.135	<.001	<.04	66	<.002	<.005	0.01	0.033	0.2	1	<.005	13.5	1.48	0.003	0	0.005	<.04	<.02	91	<.03	<.03	4.3	<.01	0.277	<.005	<.005	<.03	0.32
18/05/98	<.003	0.25	<.02	0.16	0.039	<.001	<.04	24.8	<.002	<.005	<.005	0.027	0.52	2	<.005	5.4	0.31	<.002	3	0.007	1.35	<.02	8	0.05	<.03	1.9	<.01	0.087	<.005	<.005	<.03	0.3
15/06/98	<.003	<.05	<.02	<.05	0.11	<.001	<.04	38.1	<.002	<.005	<.005	0.03	0.3	1	0.01	7.3	0.38	<.002	4	<.005	1.06	<.02	18	<.03	<.03	2.4	<.01	0.131	0.008	<.005	<.03	0.06
20/06/98	<.003	<.05	<.02	<.05	0.109	<.001	<.04	27.6	<.002	<.005	0.043	0.029	0.16	<1	0.006	5.9	0.29	<.002	4	0.008	0.68	<.02		<.03	<.03	2.1	<.01	0.099	<.005	0.012	0.03	0.09
21/06/98	<.003	<.05	<.02	<.05	0.12	<.001	<.04	29.3	<.002	<.005	0.043	0.031	0.19	1	0.007	6.4	0.32	0.003	5	<.005	0.13	<.02		<.03	<.03	2.3	<.01	0.105	<.005	<.005	<.03	0.18
21/06/98	<.003	<.05	<.02	<.05	0.12	<.001	<.04	29.3	<.002	<.005	0.043	0.031	0.19	1	0.007	6.4	0.32	0.003	5	<.005	0.13	<.02		<.03	<.03	2.3	<.01	0.105	<.005	<.005	<.03	0.18
21/07/98	<.003	<.05	<.02	<.05	0.124	<.001	<.04	52.1	<.002	<.005	0.033	0.035	0.41	2	0.008	11	0.72	0.006	7	<.005	<.04	<.02	8	<.03	<.03	3	<.01	0.197	<.005	<.005	<.03	0.05
10/8/1998	<.003	0.37	<.02	0.29	0.03	<.001	<.04	76.3	<.002	<.005	<.005	0.09	0.57	4	<.005	15.2	1.02	0.014	10	<.005	<.04	0.02	15	0.04	<.03	3.4	<.01	0.25	0.01	<.005	<.03	0.13
25/09/98	<.003	0.08	<.02	<.05	0.148	<.001	<.04	47.7	<.002	<.005	0.02	0.018	0.11	2	<.005	9.8	0.7	0.019	7	0.009	0.87	<.02	29.9	<.03	<.03	2.7	<.01	0.183	0.016	<.005	<.03	0.07
19/10/98	<.003	0.11	<.02	0.21	0.059	<.001	<.04	55.6	<.002	<.005	<.005	0.016	0.38	2	<.005	11.8	0.9	0.003	8	0.015	1.2	<.02	35.2	<.03	<.03	3.1	<.01	0.207	0.023	<.005	<.03	0.08
17/11/98	<.003	0.11	<.005	<.05	0.178	<.001	<.04	99.9	<.001	<.005	0.045	0.024	0.5	4	<.005	20	1.65	0.009	13	0.019	1.29	<.01	50	<.03	<.03	5.1	<.01	0.309	0.022	<.005	<.03	0.09
21/12/98	<.003	0.15	0.01	0.31	0.09	<.001	<.04	105.7	0.007	<.005	0.013	0.028	0.39	3	<.005	20.6	2.57	<.002	15	0.01	<.04	<.01	69	<.03	<.03	5.2	<.01	0.366	0.015	0.044	<.03	0.06
18/01/99	<.003	0.12	<.005	0.18	0.09	<.001	<.04	118.5	0.002	<.005	0.048	0.035	0.46	3	<.005	23.2	2.61	0.003	17	<.005	<.04	<.01	88	<.03	<.03	5.2	<.01	0.384	0.013	<.005	<.03	0.06
22/02/99	0.018	0.27	<.005	0.32	0.084	<.001	<.04	125.3	<.001	<.005	<.005	0.022	0.53	3	<.005	24.4	3.04	0.003	18	0.009	1.58	<.01	109	0.04	<.03	4.6	<.01	0.415	0.021	<.005	<.03	0.03

Table C12. Surface Water Quality of the Area by the Tallings Impoundment, Faro Mine Site - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/03/99	<.003	0.28	<.005	0.18	0.085	<.001	<.04	122.5	<.001	<.005	0.301	0.033	0.51	3	<.005
20/04/99	<.003	0.14	<.005	0.25	0.08	<.001	<.04	89.2	<.001	<.005	<.005	0.02	0.48	2	<.005
17/05/99	<.003	0.33	<.005	<.05	0.131	0.002	<.04	18.3	0.003	<.005	<.005	0.022	1.06	2	<.005
3/7/1999	<.003	0.45	<.005	0.33	0.054	<.001	0.04	30.8	0.003	<.005	<.005	0.023	1.19	1	<.005
27/07/99	<.003	0.46	<.005	0.08	0.069	0.001	<.04	23.2	0.005	0.042	<.005	0.005	1.05	<1	<.005
12/8/1999	<.003	<.05	<.005	0.09	0.087	<.001	<.04	61.6	<.001	0.021	<.005	0.005	0.23	1	<.005
10/9/1999	<.003	0.15	<.005	<.05	0.13	<.001	<.04	52.9	0.003	<.005	<.005	0.015	0.24	2	0.006
29/10/99	<.003	0.08	<.005	<.05	0.146	<.001	<.04	43.2	<.001	<.005	<.005	<.002	0.32	2	<.005
22/11/99	<.003	0.13	<.005	0.1	0.165	<.001	0.05	51.9	<.001	<.005	<.005	0.027	0.46	1	<.005
14/12/99	<.003	0.33	<.005	<.05	0.167	<.001	<.04	71.4	<.001	0.015	<.005	0.03	0.76	6	<.005
27/01/00	<.003	0.2	<.005	<.05	0.166	0.001	<.05	97.7	0.007	<.005	<.005	0.027	0.48	4	0.036
28/02/00	<.003	0.24	<.005	<.05	0.143	<.001	<.05	91.5	<.001	0.007	0.018	0.032	0.55	4	0.011
23/03/00	<.003	0.27	<.005	0.14	0.201	<.001	<.05	99.5	0.003	0.043	0.006	0.009	0.26	7	0.009
27/04/00	<.003	0.25	<.005	<.05	0.193	0.001	<.05	113.3	<.001	0.005	<.005	0.028	0.42	4	<.005
15/05/00	<.003	0.25	0.022	<.05	0.109	<.001	<.05	37.3	<.001	0.014	0.148	0.008	0.73	2	<.005
26/06/00	<.003	0.11	<.005	<.05	0.102	0.001	<.05	41.7	<.001	0.007	<.005	0.008	0.21	4	<.005
25/07/00	<.003	<.05	<.005	<.05	0.125	0.001	<.05	59.2	0.004	0.009	<.005	0.016	0.58	4	0.09
29/08/00	<.003	0.27	<.005	<.05	0.116	<.001	<.05	39	<.001	<.005	<.005	0.004	0.35	2	<.005
25/09/00	<0.01	0.06	<0.2	<0.1	0.04	<0.005	<0.1	28.6	<0.001	<0.01	<0.01	<0.01	0.22	<2	
20/10/00	<.003	0.24	<.005	<.05	0.231	0.002	<.05	44.7	<.001	<.005	<.005	0.024	0.75	3	<.005
13/11/00	<0.003	0.11	0.012	<0.05	0.139	<0.001	<0.05	59.9	<0.001	<0.005	<0.005	<0.002	0.29	2	0.013
18/11/00	<0.01	0.1	<0.2	<0.1	0.06	<0.005	<0.1	66.8	0.002	<0.01	<0.01	<0.01	0.32	<2	
14/12/00	<0.01	<0.05	<0.2	<0.1	0.07	<0.005	<0.1	73.1	<0.001	<0.01	<0.01	<0.01	0.27	2	
13/01/01	<.003	0.11	<.005	<.05	0.165	0.001	<.05	63.7	<.001	<.005	<.005	0.021	0.68	4	<.005
10/2/2001	<.003	0.3	<.005	0.05	0.197	0.002	<.05	96.7	<.001	<.005	<.005	0.03	0.43	7	<.005
10/3/2001	<.003	0.35	<.005	0.12	0.26	<.001	<.05	78	<.001	<.005	<.005	0.02	0.28	2.33	<.005
16/04/01	<.003	<.05	<.005	<.05	0.104	<.001	<.05	91.4	<.001	<.005	<.005	0.004	0.31	<1	<.005
14/05/01	<.003	0.24	0.006	<.05	0.194	<.001	<.05	70.3	0.002	<.005	0.008	0.015	0.73	10	0.005
17/06/01	<.003	0.39	<.005	0.07	0.163	<.001	<.05	18.6	<.001	<.005	<.005	0.006	0.62	<1	<.005
14/07/01	<.003	0.16	0.024	0.16	0.221	<.001	<.05	41.8	<.001	<.005	<.005	0.014	0.75	1	<.005
14/08/01	<0.003	0.25	<0.005	<0.05	0.237	<0.001	<0.05	74.4	<0.001	<0.005	<0.005	0.006	0.55	2	<0.005
17/09/01	<0.003	0.07	<0.005	<0.05	0.156	<0.001	<0.05	45.9	<0.001	<0.005	<0.005	0.002	0.23	1	0.01
15/10/01	<0.003	0.14	<0.005	0.16	0.194	<0.001	<0.05	113.5	<0.001	<0.005	0.014	<0.002	0.25	4	0.028
13/11/01	<0.003	0.11	0.012	<0.05	0.139	<0.001	<0.05	59.9	<0.001	<0.005	<0.005	<0.002	0.29	2	0.013
15/12/01	<0.001	0.12	<0.005	0.07	0.065	0.002	<0.05	109.6	<0.001	0.006	0.007	<0.002	0.3	3	0.022

Date	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/03/99	22.3	3.11	<.002	17	<.005	1.07	<.01	89	<.03	<.03	5.2	<.01	0.378	0.017	<.005	<.03	0.04
20/04/99	19.1	1.94	<.002	13	<.005	0.45	<.01	60	<.03	<.03	4.2	<.01	0.321	0.023	<.005	<.03	0.03
17/05/99	3.8	0.24	0.013	2	<.005	<.04	<.01		<.03	<.03	2	<.01	0.09	<.005	<.005	<.03	0.07
3/7/1999	7.6	0.26	<.002	2	<.005	<.04	<.01	14	0.05	<.03	6.2	<.01	0.122	<.005	0.007	<.03	0.05
27/07/99	6.1	0.23	0.011	1	0.008	<.04	<.01	12	<.03	<.005	3.4	<.01	0.104	0.021	0.017	<.03	0.04
12/8/1999	12.2	0.68	0.006	8	<.005	<.04	<.01	46	<.03	<.005	5.4	<.01	0.219	<.005	<.005	<.03	0.08
10/9/1999	11.1	0.83	<.002	7	<.005	<.04	<.01	42	<.03	<.005	3.5	<.01	0.185	0.013	0.006	<.03	0.05
29/10/99	9.1	0.66	<.002	6	<.005	<.04	<.01	23	<.03	<.005	3.8	<.01	0.176	<.005	<.005	<.03	0.02
22/11/99	12.3	0.97	<.002	8	0.103	<.04	<.01	31	0.05	<.005	6.6	<.01	0.277	0.016	<.005	<.03	0.05
14/12/99	13.3	1.2	0.009	7	0.025	<.04	<.01	34	<.03	<.005	3.4	<.01	0.231	0.013	0.015	<.03	0.08
27/01/00	19.7	2.02	<.002	14	0.011	1	0.02		<.03	<.005	4.4	<.01	0.307	0.022	<.005	<.03	0.02
28/02/00	21.4	1.81	<.002	13	0.007	<1	0.02	62	<.03	<.005	5.3	<.01	0.346	0.027	<.005	<.03	0.54
23/03/00	20	2.38	<.002	9	0.009	<1	<.01	63	<.03	<.005	5.9	<.01	0.378	<.005	<.005	<.03	0.03
27/04/00	23.8	3.52	<.002	16	<.005	<1	0.03		<.03	<.005	5.1	<.01	0.387	0.047	<.005	<.03	0.09
15/05/00	7.8	0.51	<.002	<1	<.005	<1	<.01		<.03	<.005	4	<.01	0.24	0.021	<.005	<.03	0.07
26/06/00	8.3	0.46	<.002	4	<.005	7	<.01		<.03	<.005	2.6	<.01	0.137	0.029	<.005	<.03	0.1
25/07/00	12.2	0.69	<.002	9	0.014	<1	<.01		<.03	<.005	3.1	<.01	0.305	0.024	0.022	<.03	0.14
29/08/00	8.5	0.37	<.002	6	0.019	<1	<.01		<.03	<.005	4.9	<.01	0.139	0.019	<.005	<.03	0.1
25/09/00	6.6	0.114	<0.01	2	<0.05	<0.3	<0.05		<0.2	<0.2	4.49	<0.03	0.12	<0.01	<0.03		0.01
20/10/00	10.4	0.43	<.002	7	<.005	3	<.01	28	<.03	<.005	5.2	<.01	0.195	0.062	0.014	<.03	0.07
13/11/00	13.5	1.03	0.01	7	<0.005	<0.01	0.02	28	0.08	0.071	5	0.03	0.233	<0.005	0.006	0.05	0.07
18/11/00	13.5	0.686	<0.01	7	<0.05	<0.3	<0.05		<0.2	<0.2	5.23	<0.03	0.244	<0.01	<0.03		0.088
14/12/00	15.5	1.14	<0.01	7	<0.05	<0.3	<0.05		<0.2	<0.2	5.47	<0.03	0.263	<0.01	<0.03		0.051
13/01/01	13.4	1.28	<.002	8	0.012	<1	<.01	30	0.03	<.005	4.8	<.01	0.365	0.022	<.005	<.03	0.07
10/2/2001	20	1.96	<.002	15	<.005	<1	<.01	54	<.03	<.005	5.2	<.01	0.144	0.035	0.052	<.03	0.11
10/3/2001	16.41	1.81	<.002	13.7	<.005	<1	<.01	45.2	<.03	<.005	4.7	<.01	0.3	<.005	0.008	<.03	0.04
16/04/01	18.9	2.21	<.002	11	<.005	<1	<.01	54	<.03	<.005	4.4	<.01	0.33	<.005	<.005	<.03	0.08
14/05/01	13.7	1.08	0.013	8	0.018	<1	0.12	42	0.07	<.005	3.1	<.01	0.233	0.007	0.021	<.03	0.12
17/06/01	4.3	0.12	<.002	4	<.005	<1	<.01	6	0.1	<.005	1.4	0.02	0.06	0.014	<.005	<.03	0.03
14/07/01	8.6	0.43	<.002	6	<.005	<1	<.01	19	<.03	0.009	4.8	<.01	0.171	<.005	<.005	<.03	0.04
14/08/01	16.5	0.8	<0.002	4	0.008	<1	<0.01	48	<0.03	<0.005	5.4	<0.01	0.286	0.014	<0.005	<0.03	0.04
17/09/01	10.3	0.63	<0.002	5	<0.005	<1	<0.01	25	<0.03	<0.005	3.7	<0.01	0.195	<0.005	<0.005	<0.03	0.03
15/10/01	26	1.76	<0.002	12	0.005	<1	<0.01	100	<0.03	0.011	5.1	<0.01	0.362	<0.005	<0.005	<0.03	0.11
13/11/01	13.5	1.03	0.01	7	<0.005	<0.01	0.02	25	0.08	0.071	5	0.03	0.233	<0.005	0.006	0.05	0.07
15/12/01	25.6	1.89	0.006	11	0.017	<0.01	<0.01	81	<0.03	<0.005	4.5	<0.01	0.325	0.006	0.006	<0.03	0.08

Appendix D

Faro Mine Site Ground Water Quality Graphs

List of color Figures – Appendix D
Ground Water Quality of the Faro Mine Site

Figure	Description
D1	North East Waste Dump – shallow wells: BH13B, BH12A, BH14A
D2	North East Waste Dump – deep wells: BH12B, BH14B
D3	Faro Zone II Pit – wells: BH1, BH2, BH4
D4	Main/Intermediate Waste Dump – shallow wells: S1B, S2A, S3, P96-8a
D5	Main/Intermediate Waste Dump – deep wells: S1A, S2B
D6	Main/Intermediate Waste Dump – deep wells: P96-6, P96-7, P97-8
D7	Intermediate Impoundment – shallow wells: X21A, X21B
D8	Intermediate Impoundment – deep wells: X21C
D9	Intermediate Dam – shallow wells: X24A, X24B, X25A
D10	Intermediate Dam – deep wells: X24C, X24D, X25B
D11	Downgradient of Polishing Pond – shallow wells: X16A, X17A, X18A
D12	Downgradient of Polishing Pond – shallow wells: X16B, X17B, X18B

Figure D1. Groundwater Quality of the Northeast Waste Dump
Shallow Wells

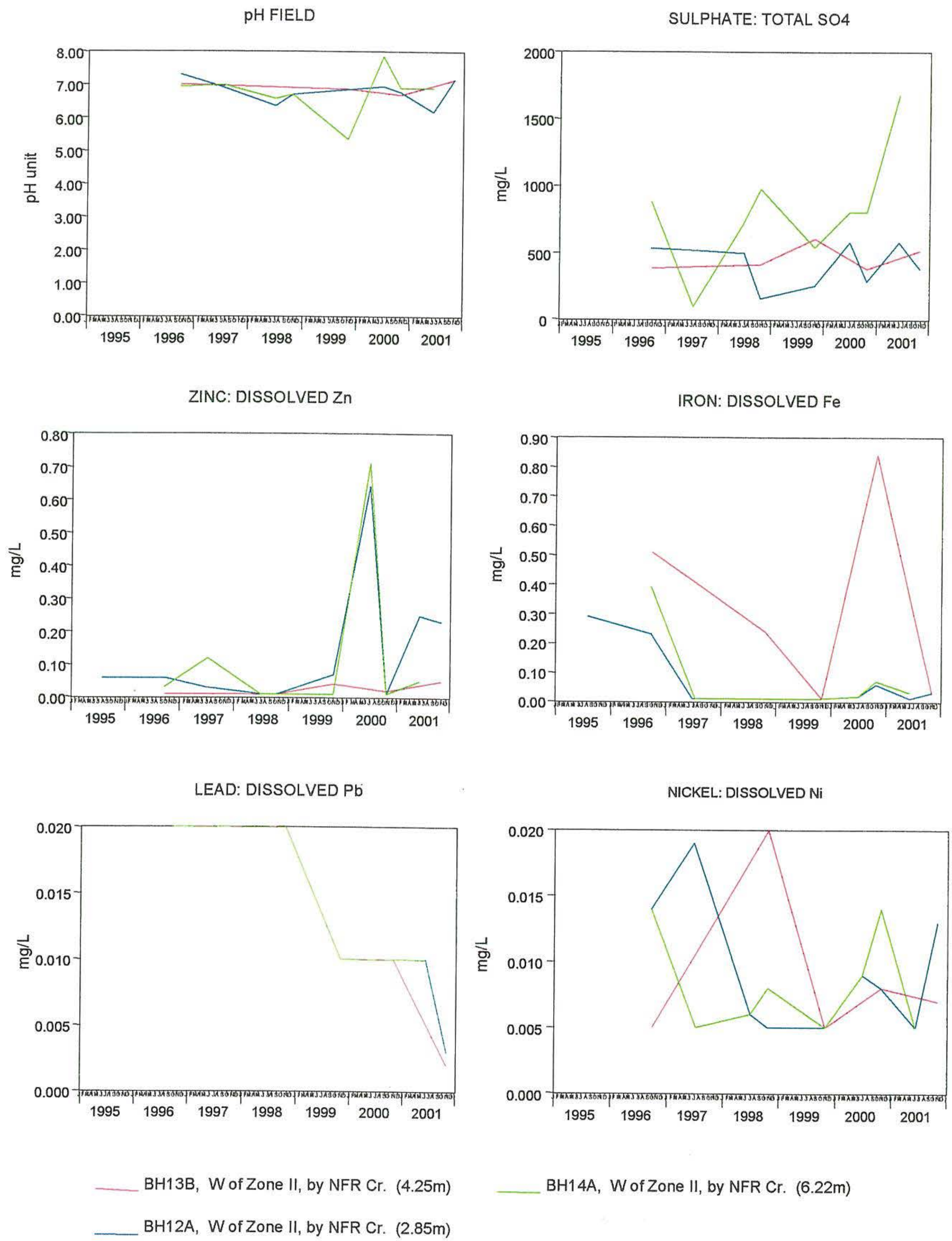
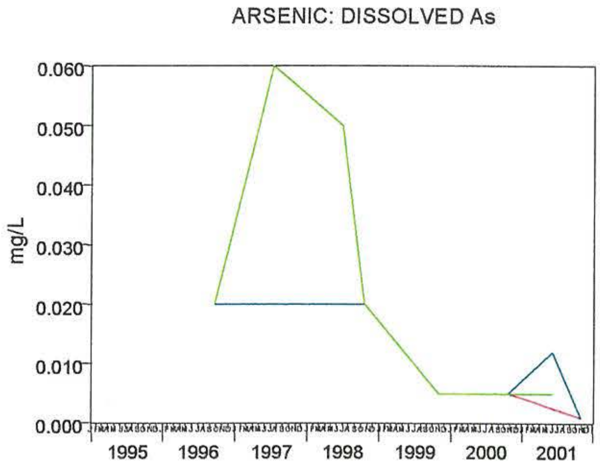
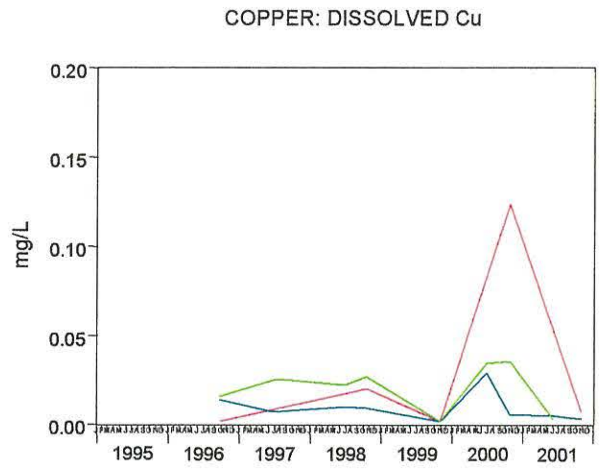


Figure D1. Groundwater Quality of the Northeast Waste Dump
Shallow Wells



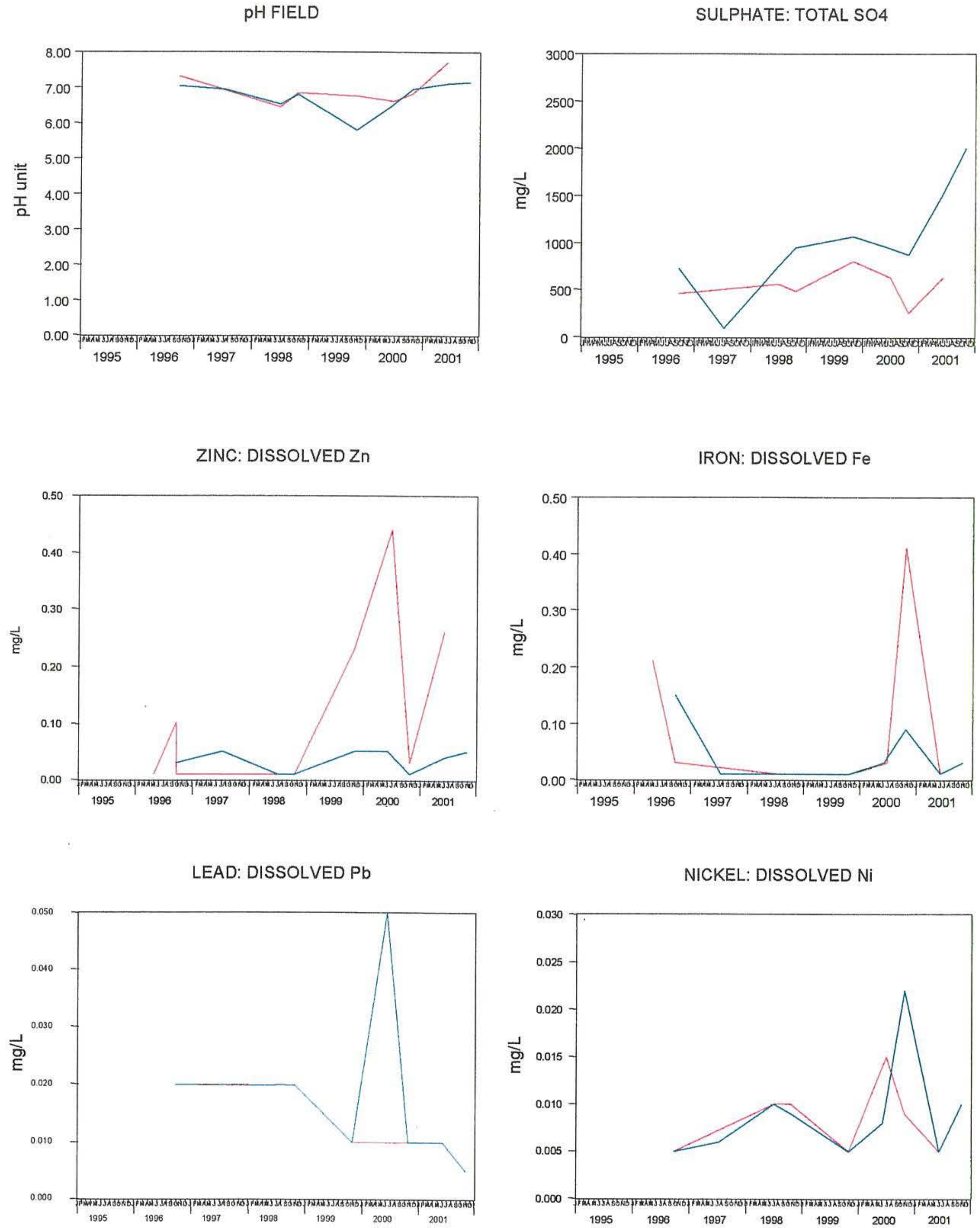


BH13B, W of Zone II, by NFR Cr. (4.25m)

BH14A, W of Zone II, by NFR Cr. (6.22m)

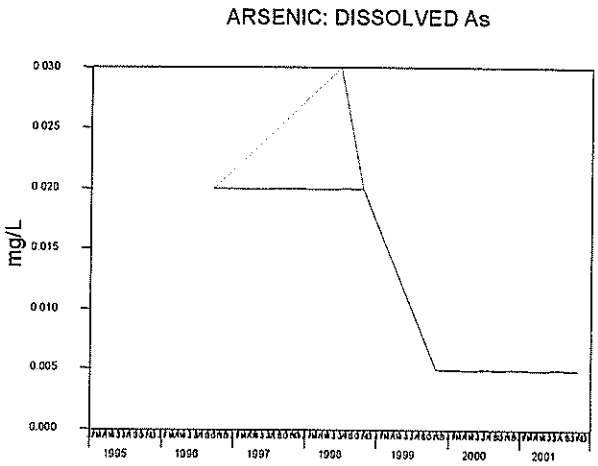
BH12A, W of Zone II, by NFR Cr. (2.85m)

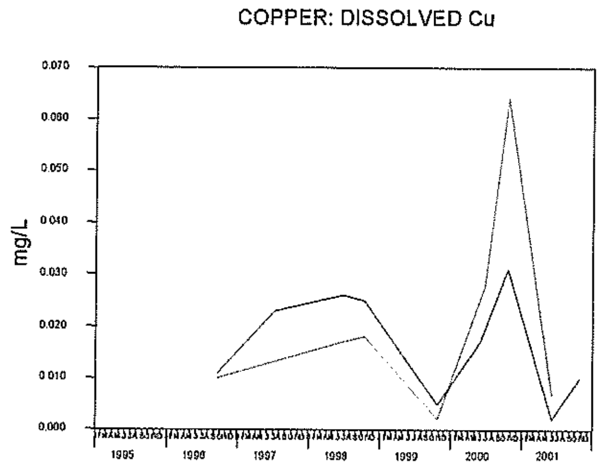
Figure D2. Groundwater Quality of the Northeast Waste Dump
Deep Wells



BH12B, W of Zone II, by NFR Cr. (8.05m)
BH14B, W of Zone II, by NFR Cr. (10.00m)

Figure D2. Groundwater Quality of the Northeast Waste Dump
Deep Wells





— BH12B, W of Zone II, by NFR Cr. (8.05m) — BH14B, W of Zone II, by NFR Cr. (10.00m)

Figure D3. Groundwater Quality of Zone II Pit (BH1,BH2,BH4)

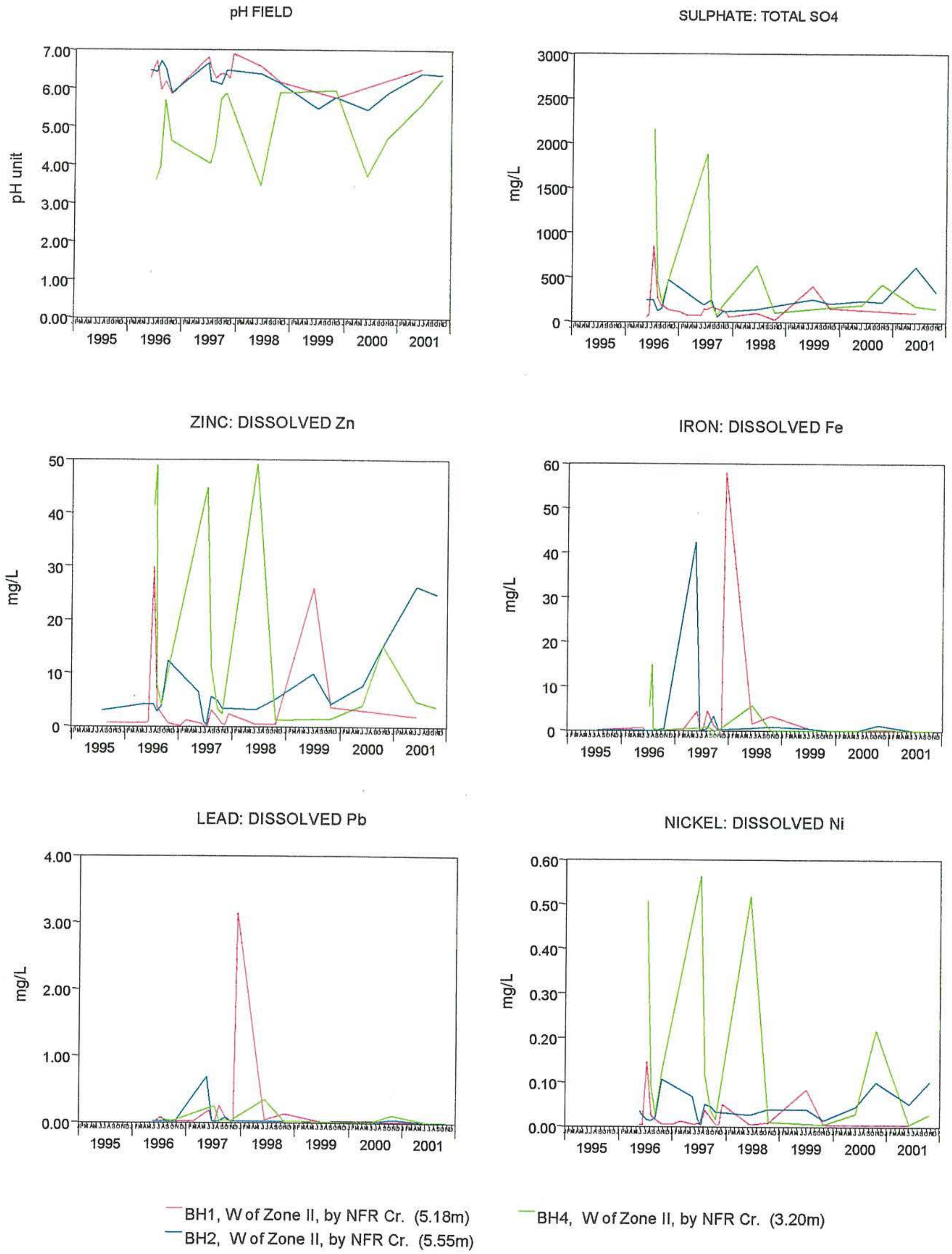
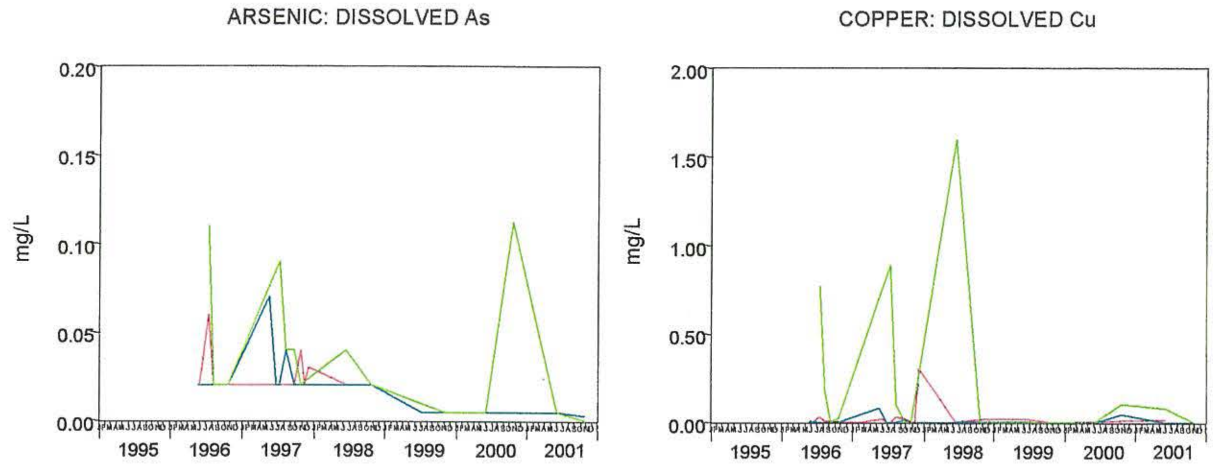


Figure D3. Groundwater Quality of Zone II Pit (BH1,BH2,BH4)



BH1, W of Zone II, by NFR Cr. (5.18m)
BH2, W of Zone II, by NFR Cr. (5.55m)
BH4, W of Zone II, by NFR Cr. (3.20m)

Figure D4. Groundwater Quality of Main/Intermediate Waste Dump Shallow Wells

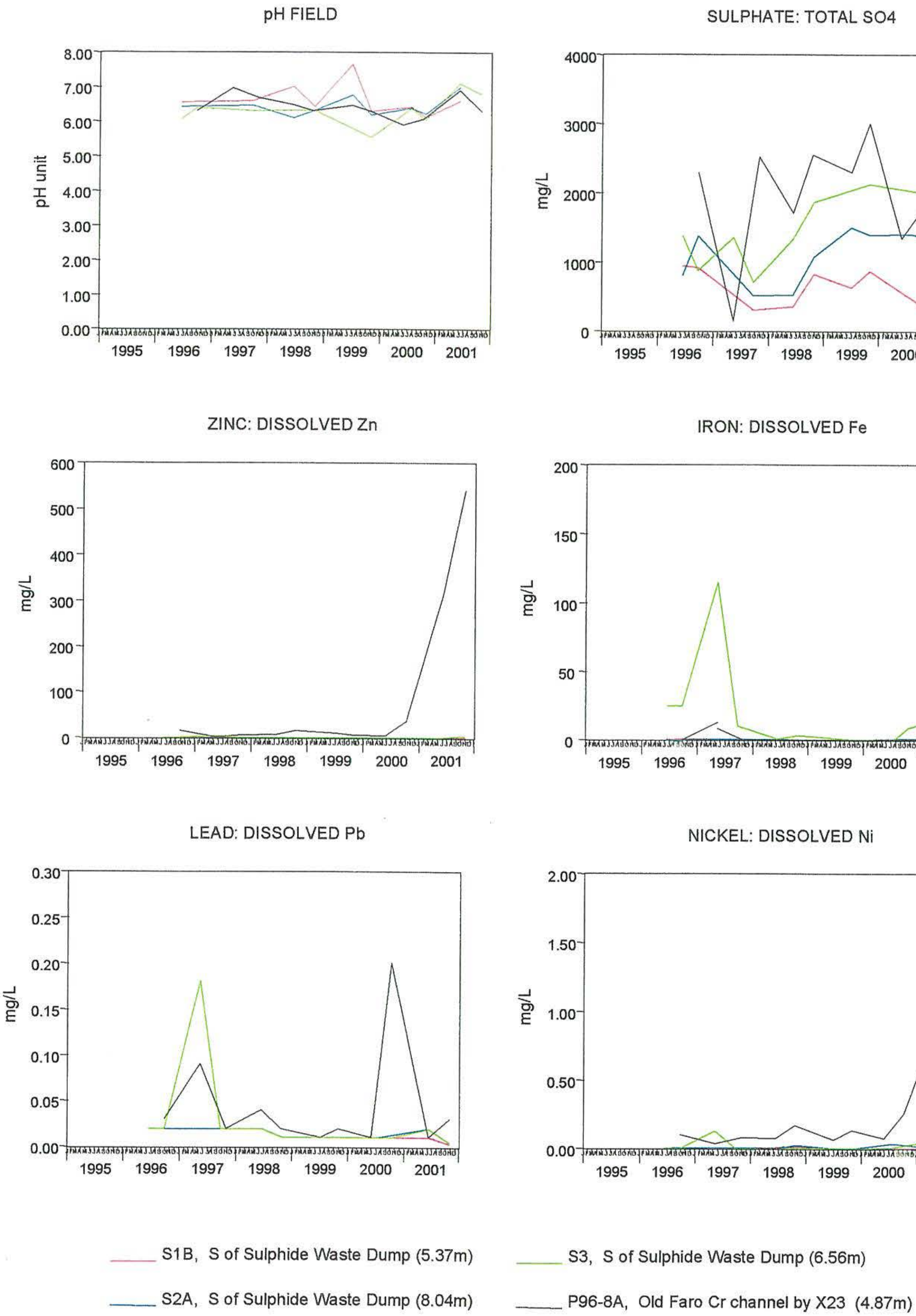
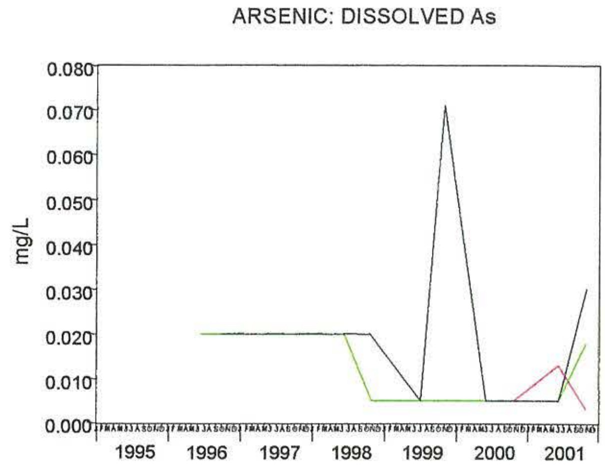
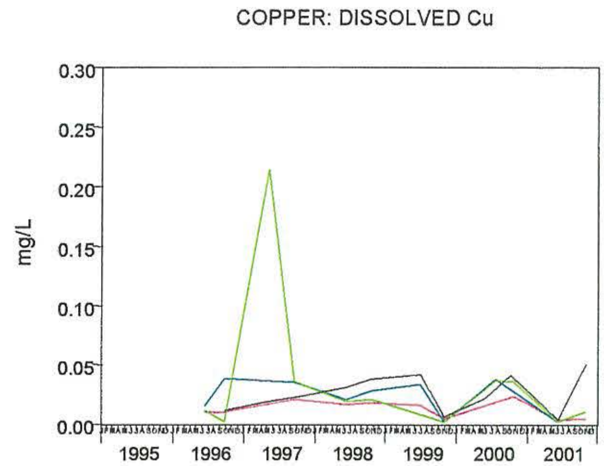


Figure D4. Groundwater Quality of Main/Intermediate Waste Dump
Shallow Wells





S1B, S of Sulphide Waste Dump (5.37m)

S3, S of Sulphide Waste Dump (6.56m)

S2A, S of Sulphide Waste Dump (8.04m)

P96-8A, Old Faro Cr channel by X23 (4.87m)

Figure D5. Groundwater Quality of Main/Intermediate Waste Dump Deep Wells

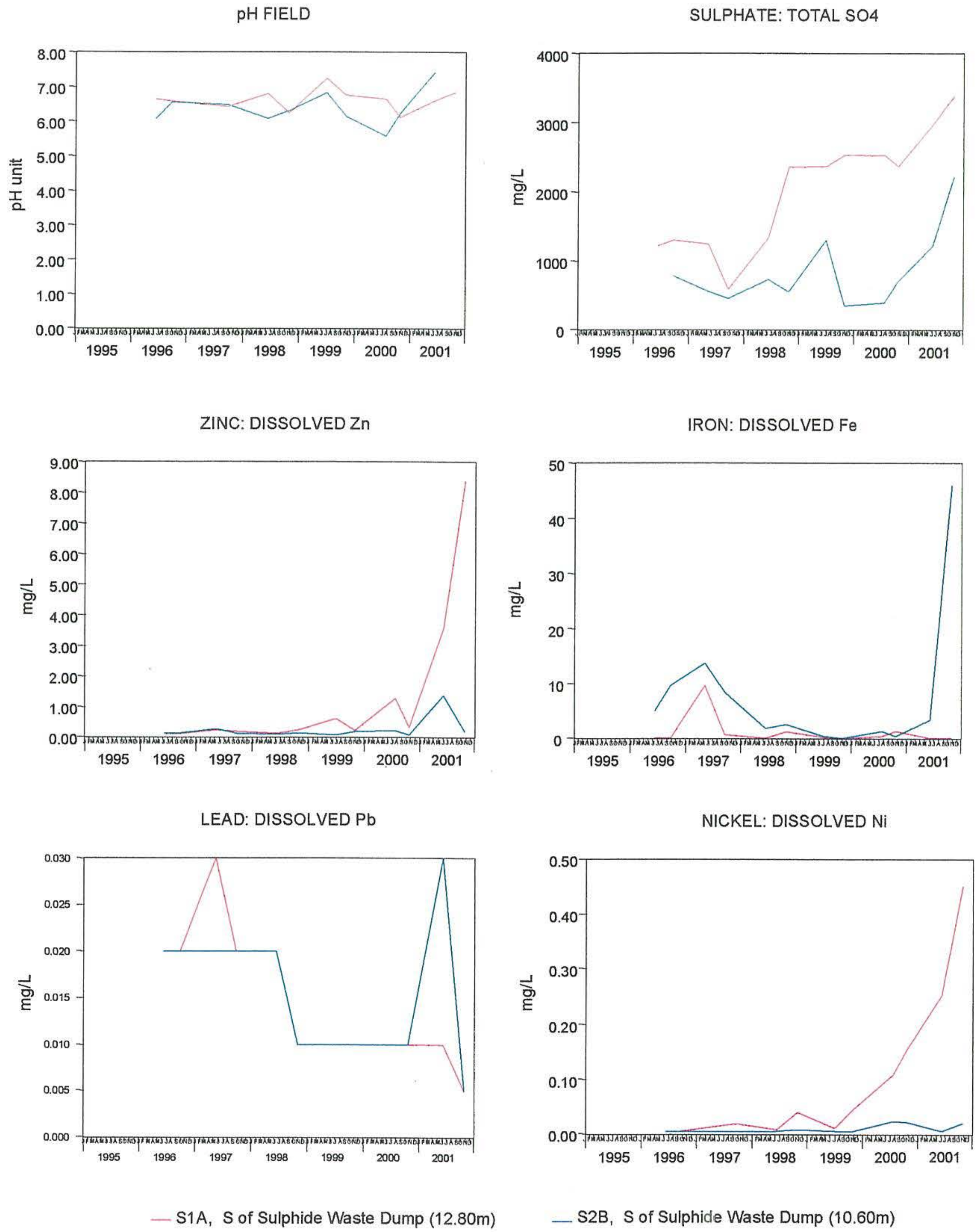
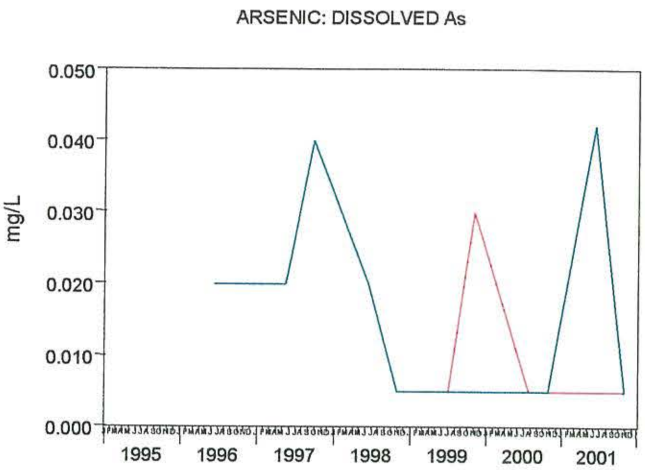
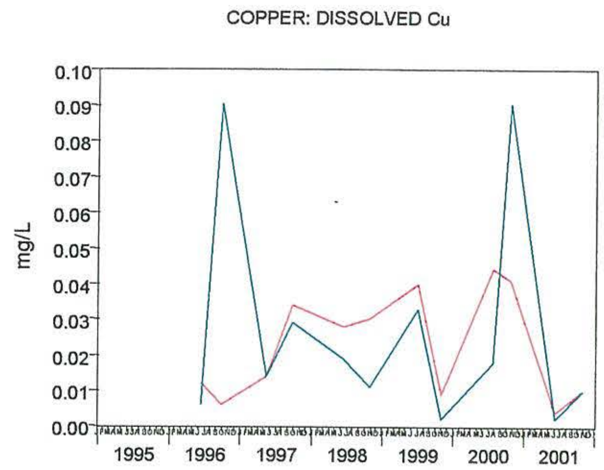


Figure D5. Groundwater Quality of Main/Intermediate Waste Dump Deep Wells





S1A, S of Sulphide Waste Dump (12.80m) S2B, S of Sulphide Waste Dump (10.60m)

Figure D6. Groundwater Quality of Main/Intermediate Waste Dump Deep Wells

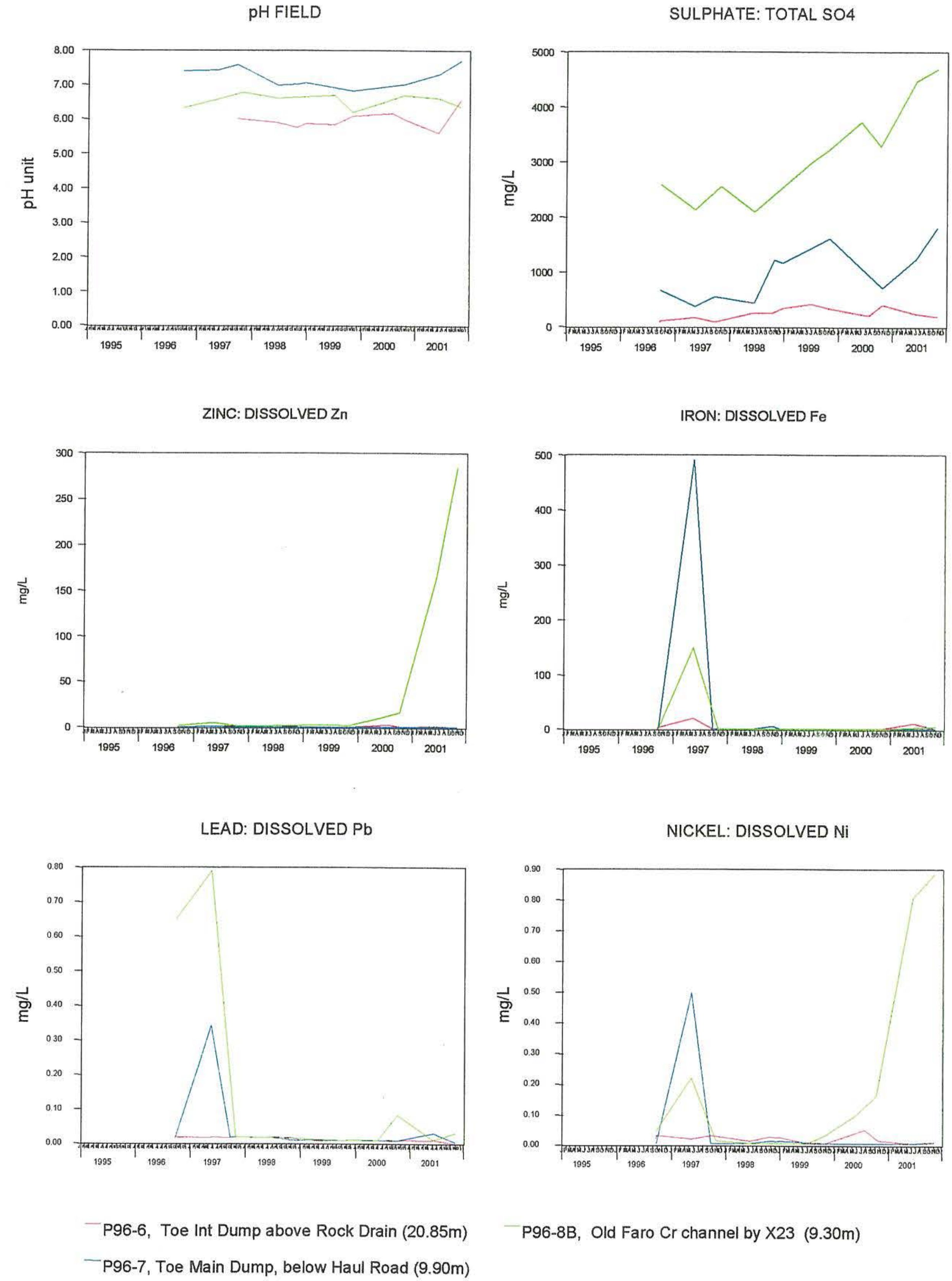
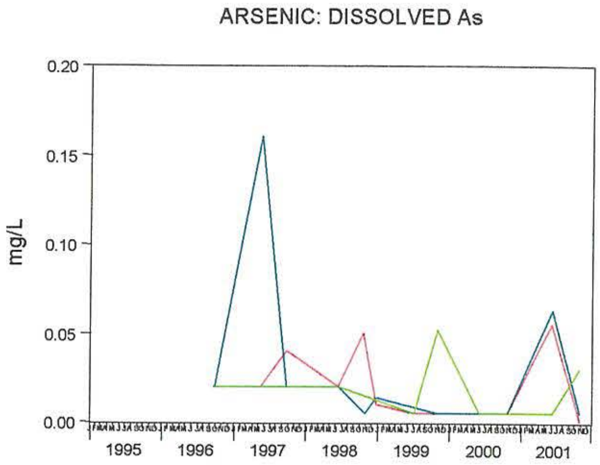
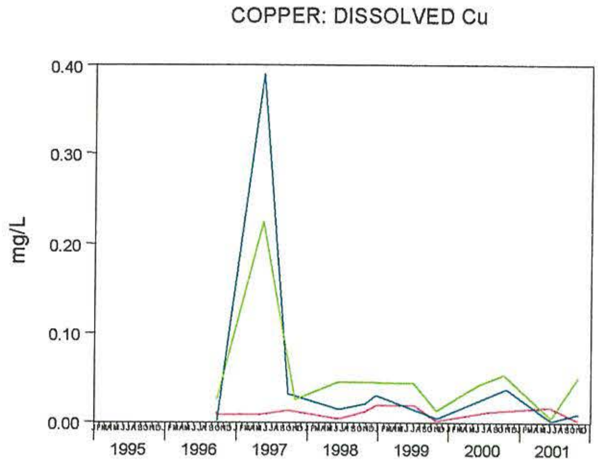


Figure D6. Groundwater Quality of Main/Intermediate Waste Dump Deep Wells





P96-6, Toe Int Dump above Rock Drain (20.85m)

P96-7, Toe Main Dump, below Haul Road (9.90m)

P96-8B, Old Faro Cr channel by X23 (9.30m)

Figure D7. Groundwater Quality of the Intermediate Impoundment Shallow Wells

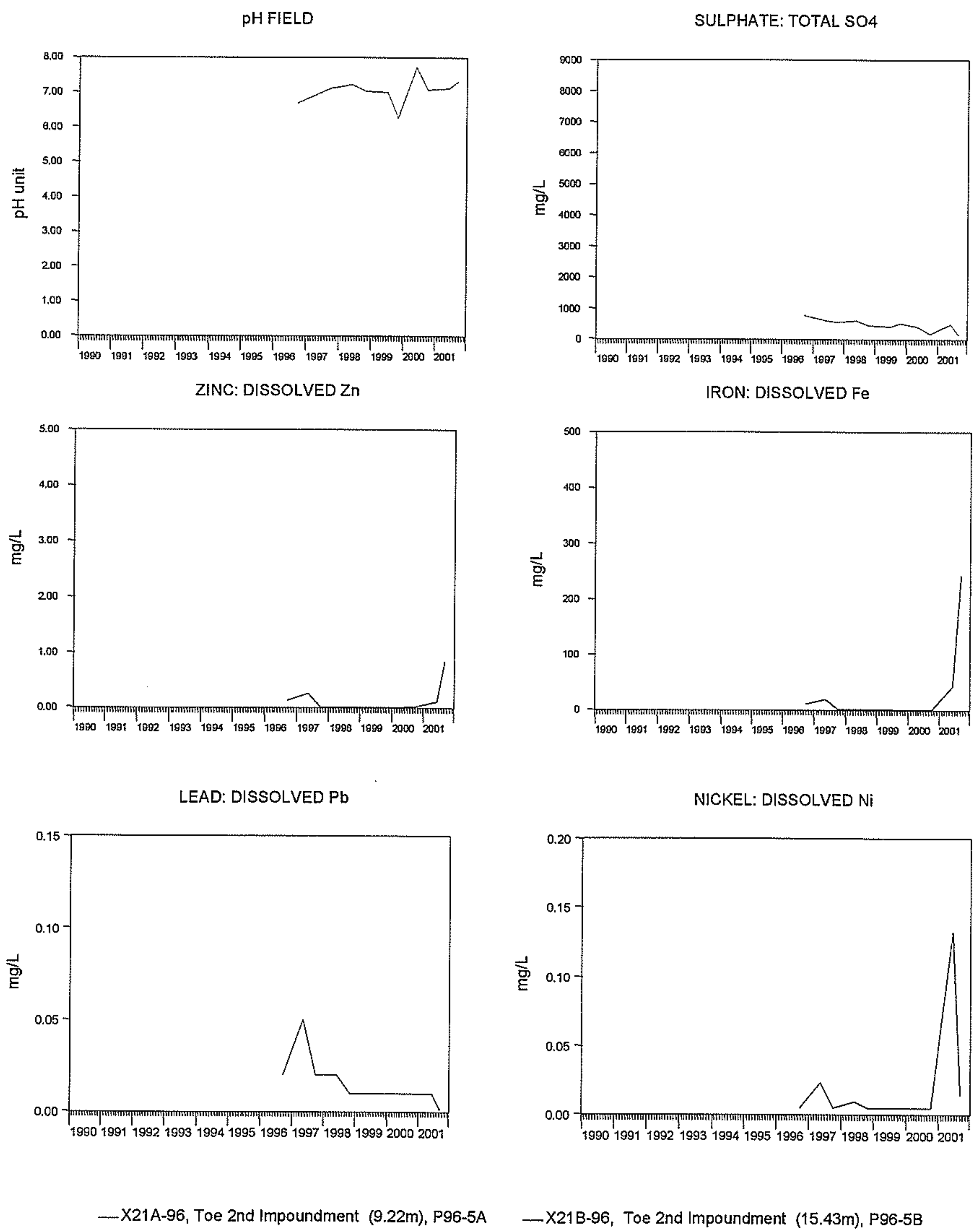
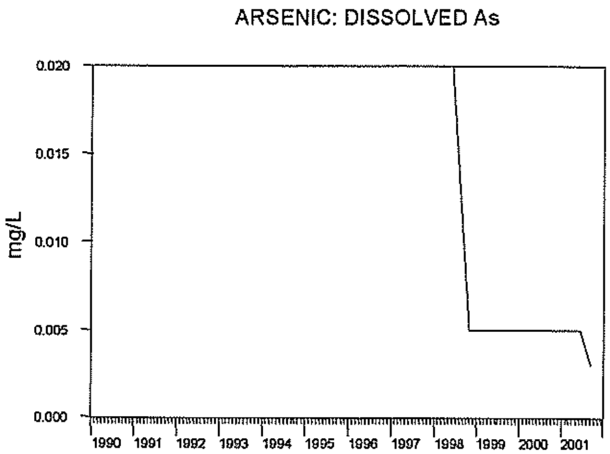
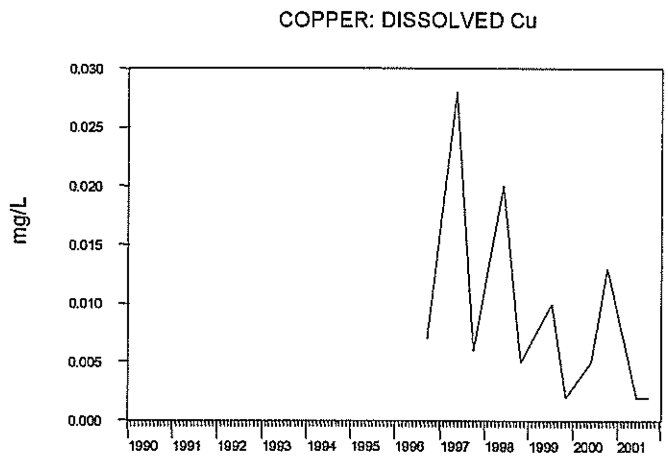


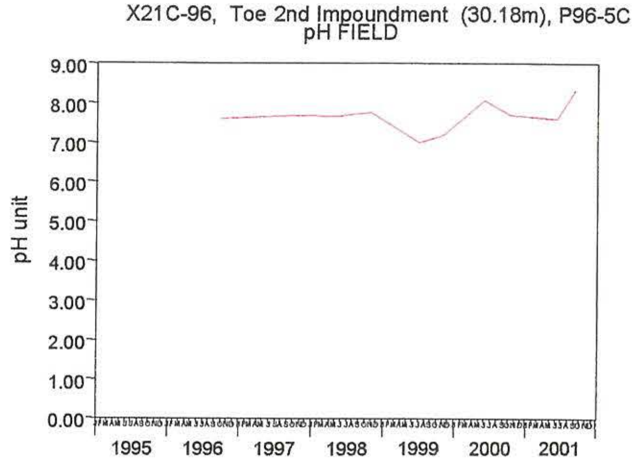
Figure D7. Groundwater Quality of the Intermediate Impoundment Shallow Wells

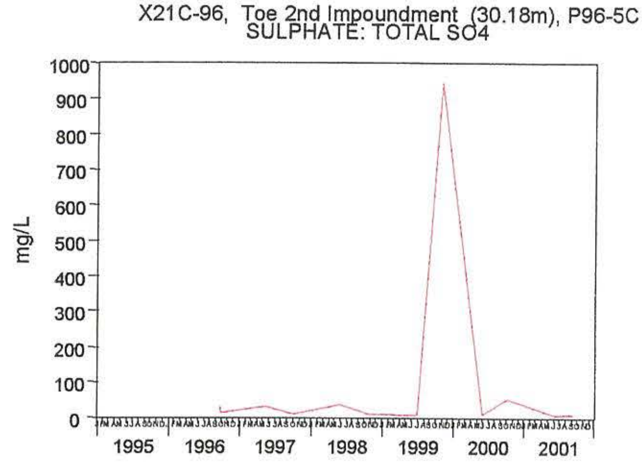


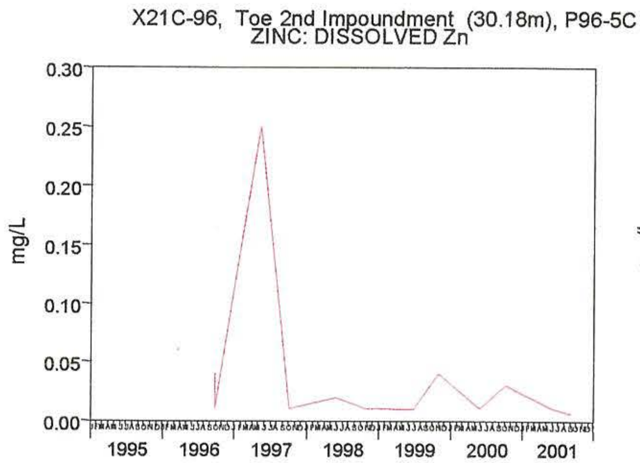


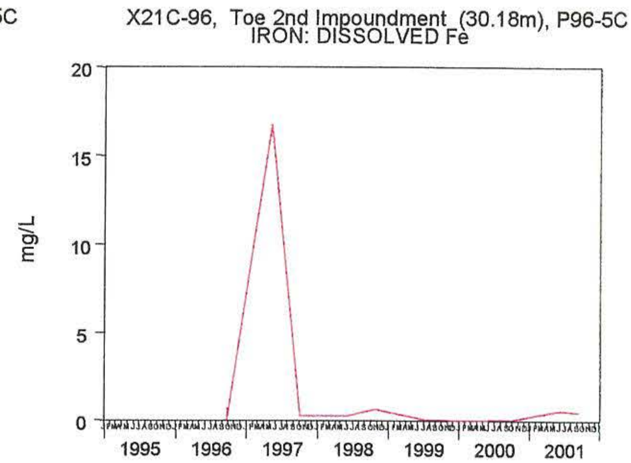
—X21A-96, Toe 2nd Impoundment (9.22m), P96-5A —X21B-96, Toe 2nd Impoundment (15.43m), P96-5B

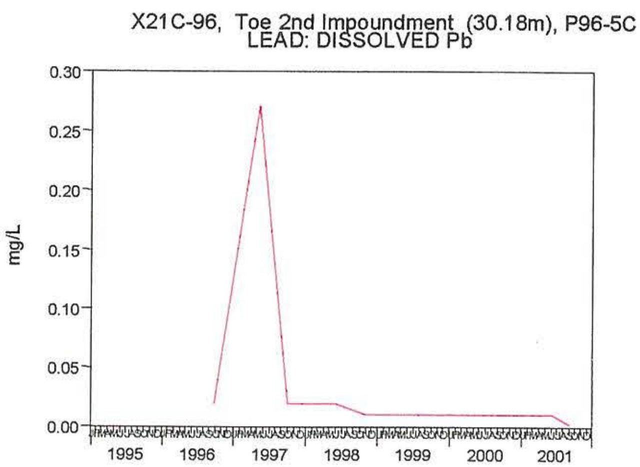
Figure D8. Groundwater Quality of the Second Impoundment
Deep Wells











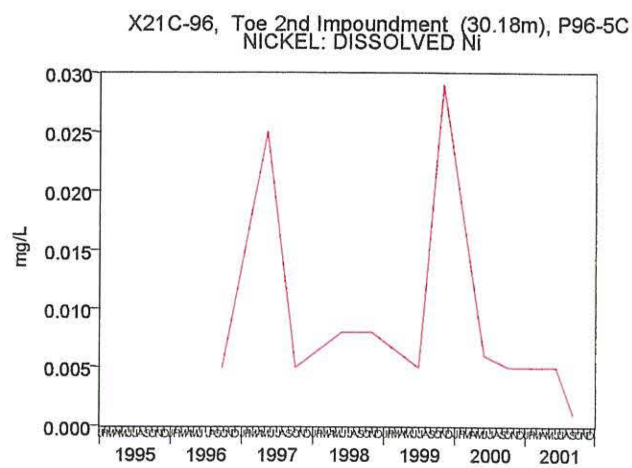
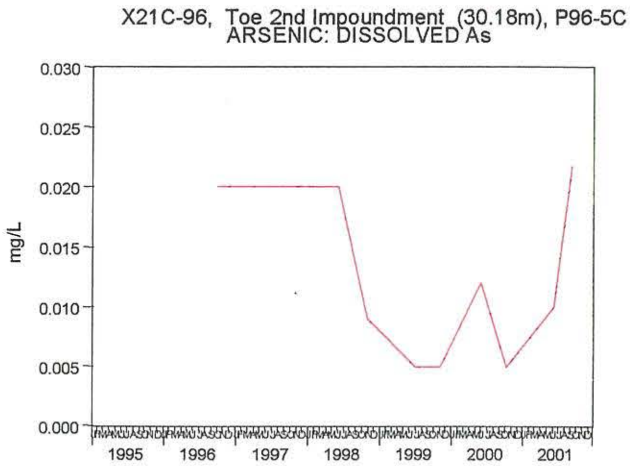


Figure D8. Groundwater Quality of the Second Impoundment
Deep Wells



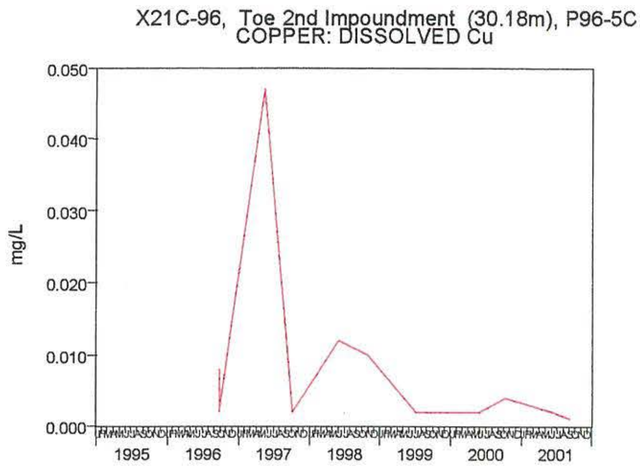
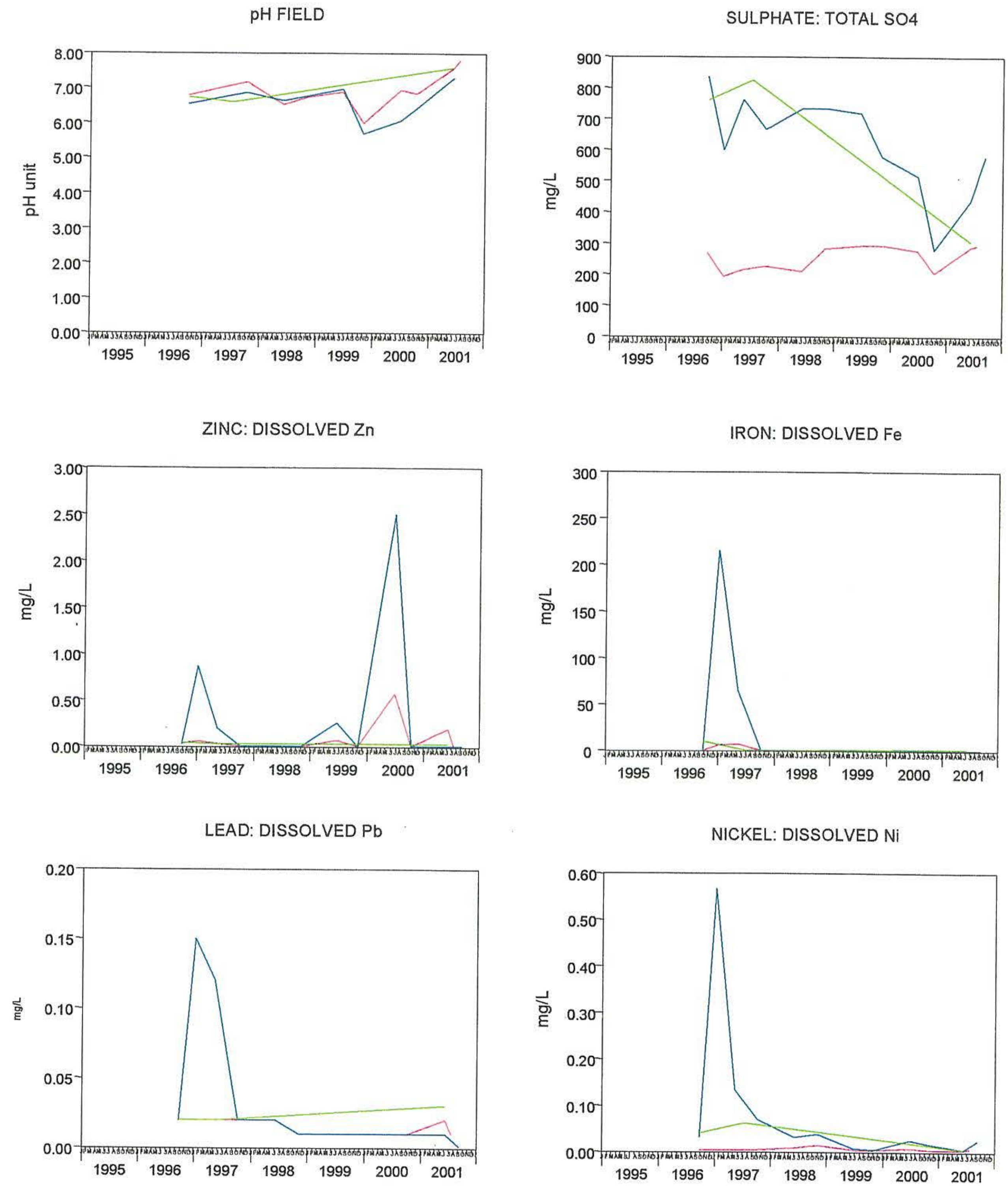


Figure D9. Groundwater Quality of the Intermediate Valley Dam Shallow Wells

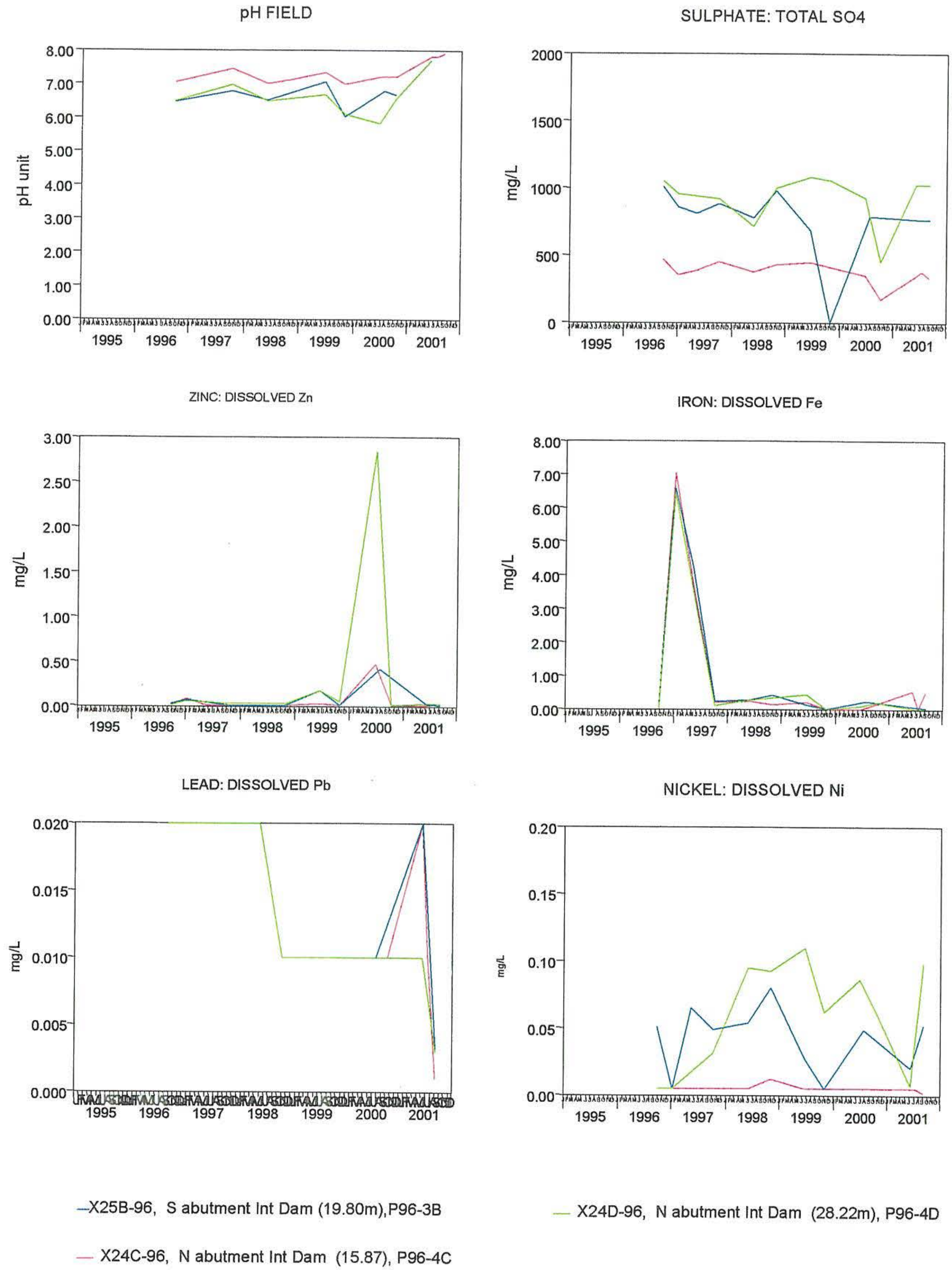


X25A-96, S abutment Int Dam (9.65m),P96-3A

X24A-96, N abutment Int Dam (5.88m), P96-4A

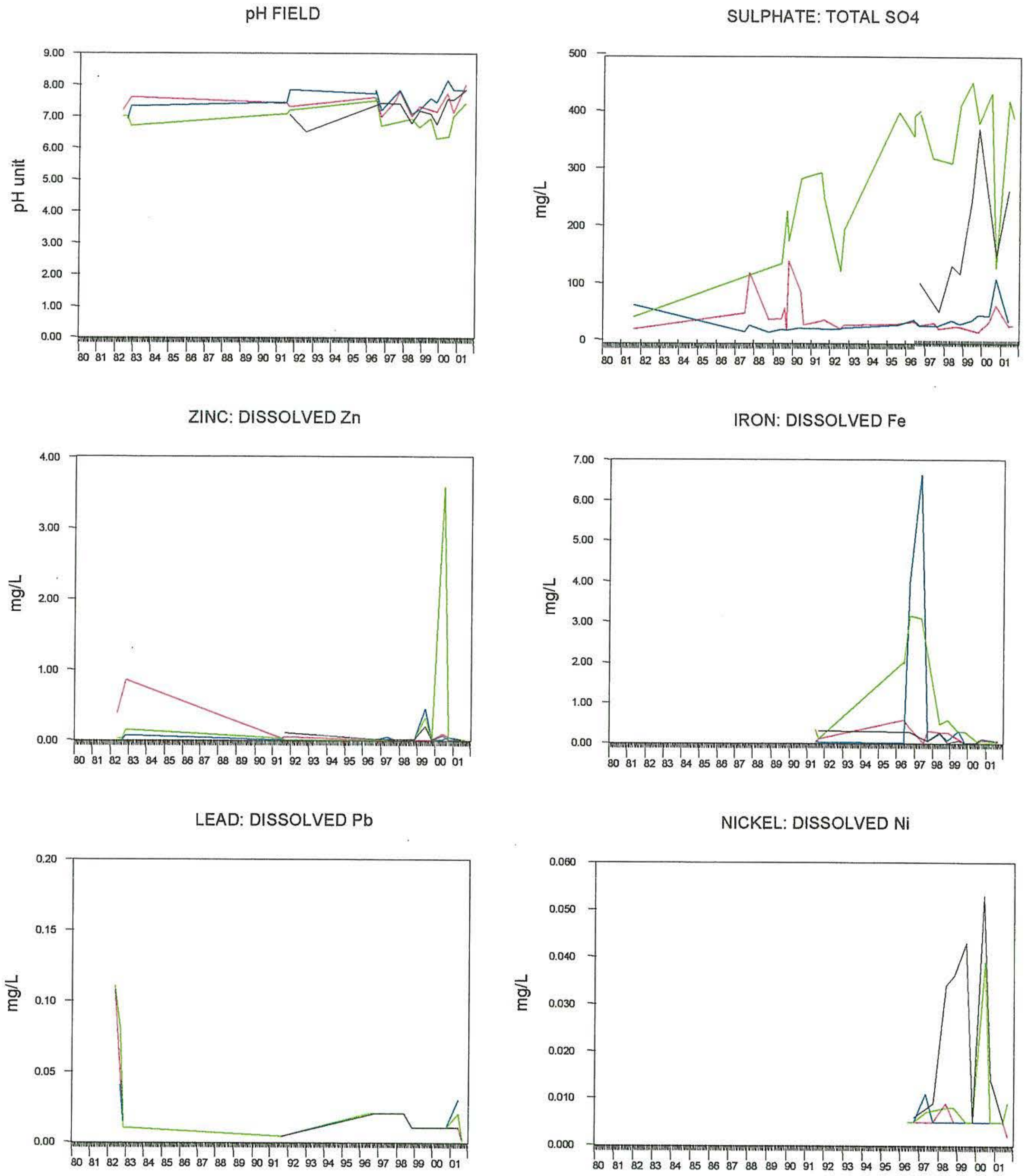
X24B-96, N abutment Int Dam (10.80m), P96-4B

Figure D10. Groundwater Quality of the Intermediate Valley Dam Deep Wells



22943-App D10

Figure D11. Groundwater Quality Downgradient of Polishing Pond
Shallow Wells



X16A, By Rose Cr d/s CVDam (5m)

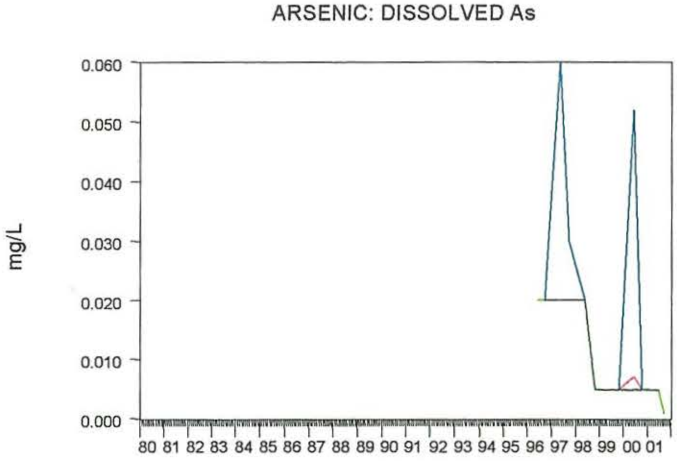
X17A, d/s CVdam & u/s of X14 across diversion (5m)

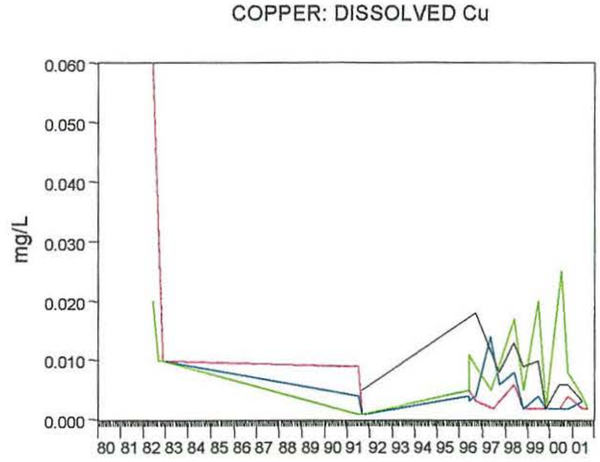
X18A,N of CVDam, & right of access rd to X14 (10m)

X19A, d/s CVDam by X13 (12m)

22943-App D11

Figure D11. Groundwater Quality Downgradient of Polishing Pond
Shallow Wells





X16A, By Rose Cr d/s CVDam (5m)

X18A,N of CVDam, & right of access rd to X14 (10m)

X17A, d/s CVdam & u/s of X14 across diversion (5m)

X19A, d/s CVDam by X13 (12m)

Figure D12. Groundwater Quality Downgradient of Polishing Pond
Deep Wells

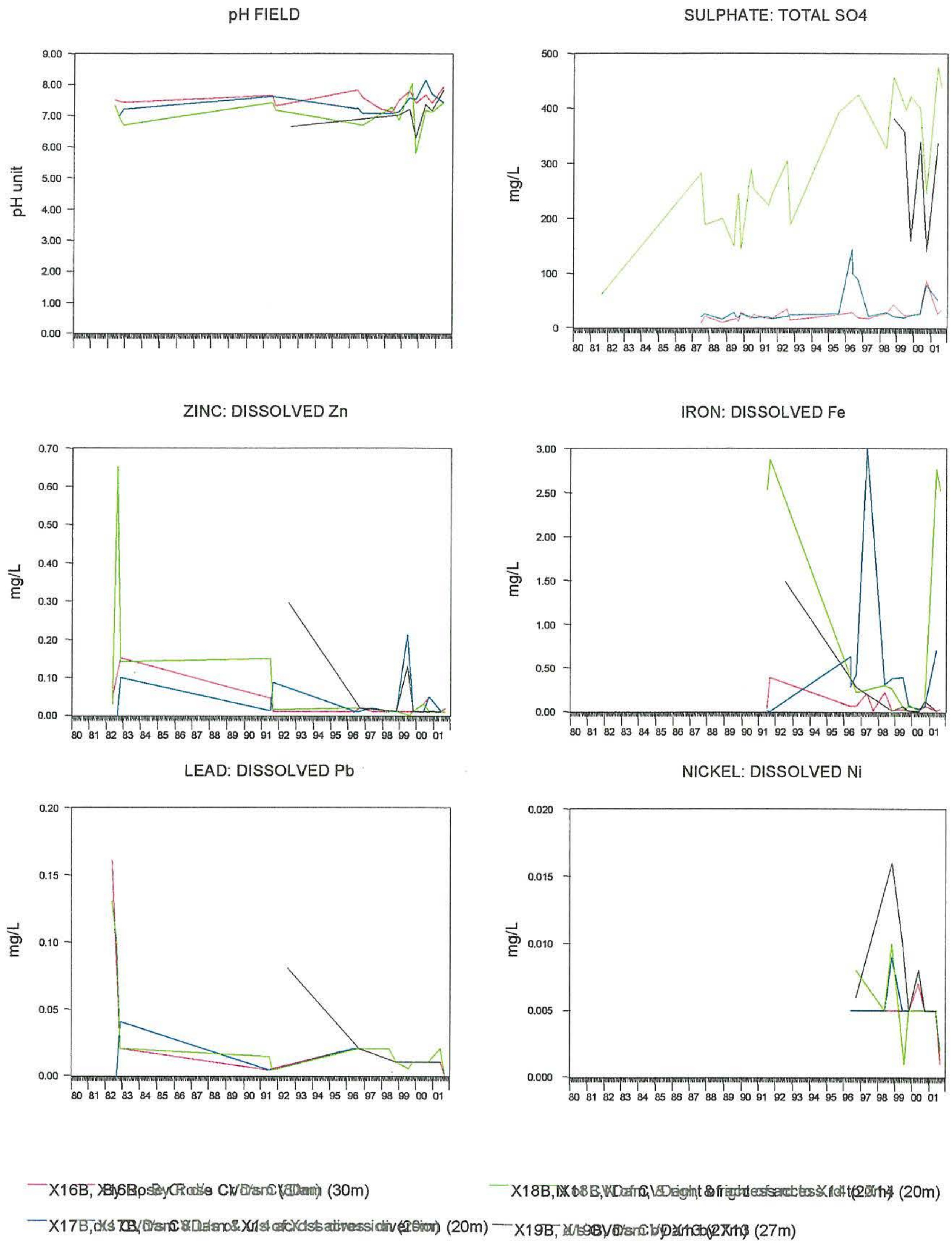
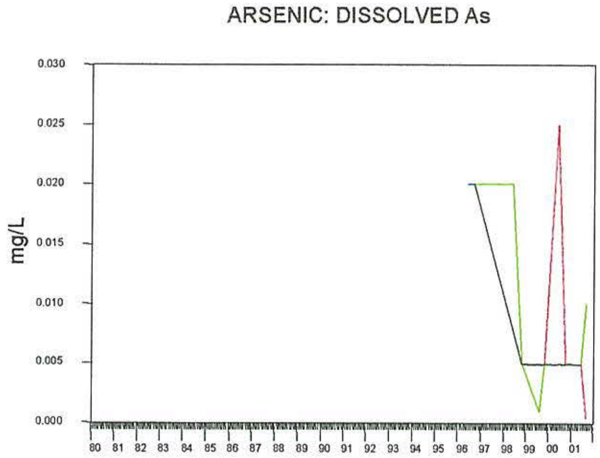
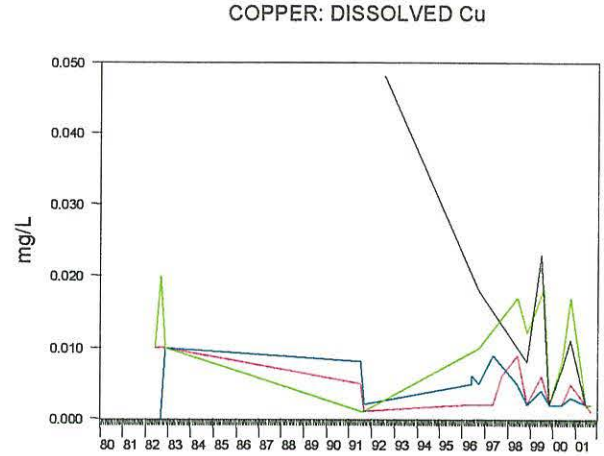


Figure D12. Groundwater Quality Downgradient of Polishing Pond
Deep Wells





X16B, By Rose Cr d/s CVDam (30m)

X17B,d/s CVDam & u/s of X14 across diversion (20m)

X18B,N of CVDam, & right of access rd to X14 (20m)

X19B, d/s CVDam by X13 (27m)

Appendix E

Faro Mine Site Ground Water Quality Data Tables

List of Tables – Appendix E
Groundwater Quality at the Faro Mine Site

E10:	Groundwater Quality of Faro Zone 2 Pit, Faro Mine Site – Physical Parameters BH2, BH1, BH4, BH5, BH6, BH7A, BH7B, BH8,
E11:	Groundwater Quality of Main\Intermediate Waste Dump, Faro Mine Site – Physical Parameters S1A, S1B, S2A, S2B, S3, P01-10A, P01-10B, P01-08B, P01-08C, X21A-96, X21B-96, X21C-96, P01-06, P01-05A, P01-05B, P96-6, P96-7, P96-8A, P96-8B
E12:	Groundwater Quality of the Second Impoundment, Faro Mine Site – Physical Parameters P01-09A P01-09B, P01-09C, P01-09D, P01-07A, P01-07B, P01-07C, P01-07D, P01-07E, BH83-4B, BH83-4C BH88-2
E13:	Groundwater Quality at the Intermediate Dam, Faro Mine Site – Physical Parameters X24A-96, X24B-96, X24C-96, X24C-96, X24D-96, X25A-96, X25B-96, P01-03, P01-04A, P01-04B
E14:	Groundwater Quality Down Gradient of Polishing Pond, Faro Mine Site – Physical Parameters X16A, X16B, X17A, X17B, X18A, X18B, X19A, X19B P01-01A, P01-01B, P01-02A, P01-02B

Table E1. Groundwater Quality of North East Waste Dump, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: BH12A																																	
19/11/94													0.034																				0.058
08-02-95													0.29																				0.06
25/09/96													0.23																				0.06
25/09/96	<.003	0.15	<.02		0.056	0.004	<.04	162.9	<.002	<.005	<.005	0.014	0.23	<.02		<.005	72.1	<.01	<.002	11	0.014	<.04	<.02	205	<.03		6.19		0.816	<.005	<.005	<.03	0.06
23/06/97	<.003	<.05	<.02	0.22	0.034	<.001	<.04	178.2	<.002	<.005	0.007	0.007	<.01		8	<.005	77.3	0.05	0.002	8	0.019	<.04	<.02	173	<.03	<.03	4.1	0.02	0.806	<.005	<.005	<.03	0.03
29/06/98	<.003	0.07	<.02	<.05	0.098	0.001	<.04	164.7	<.002	<.005	0.045	0.01	<.01		3	<.005	75.4	<.01	0.014	12	0.006	2.27	<.02	166	0.03	<.03	7.1	<.01	0.988	0.018	<.005	<.03	<.01
19/10/98	<.003	0.07	<.02	<.05	0.011	<.001	<.04	81.5	<.002	<.005	<.005	0.009	<.01		3	<.005	39.2	<.01	<.002	5	<.005	1.17	<.02	53.1	<.03	<.03	3.8	<.01	0.392	0.012	<.005	<.03	0.01
30/10/99	<.003	<.05	<.005	<.05	0.08	<.001	<.04	107.3	<.001	<.005	<.005	<.002	<.01		2	<.005	37.8	0.02	<.002	6	<.005	<.04	<.01	86	<.03	<.005	3.9	<.01	0.519	<.005	<.005	<.03	0.07
26/06/00	<.003	0.12	<.005	<.05	0.06	0.003	<.05	221	<.001	<.005	0.026	0.029	0.02		6	<.005	82	0.95	<.002	9	0.009	5	<.01	193	<.03	<.005	4.8	<.01	0.96	0.022	0.014	<.03	0.64
22/10/00	<.003	0.3	<.005	<.05	0.025	0.002	<.05	96	<.001	<.005	<.005	0.006	0.06		2	<.005	42.4	0.02	<.002	6	0.008	<1	<.01	96	0.05	<.005	5.6	<.01	0.39	0.025	<.005	<.03	0.01
06-04-01	<.003	<.05	0.012	0.88	0.126	<.001	<.05	236	<.001	<.005	0.006	0.005	<.01		4	<.005	97.9	0.66	<.002	10	<.005	<1	<.01	194	<.03	<.005	5.2	<.01	1.138	<.005	<.005	<.03	0.25
25/10/01	<0.00004	<0.01	<0.001	<0.1	0.09	<0.002		142	0.0004	<0.0006	<0.002	0.003	<0.03	<0.00005	3		59.9	0.0053	<0.002	6	0.013		0.003		<0.001	0.004		<0.001		<0.01	<0.03		0.23
STATION: BH12B																																	
19/11/94													0.045																				0.009
05-02-96													0.21																				<0.01
25/09/96													0.03																				<0.1
25/09/96	<.003	0.22	<.02		0.06	0.005	<.04	194.5	<.002	<.005	<.005	0.01	0.03	<.02		<.005	39.5	0.76	<.002	11	<.005	<.04	<.02	185	<.03		5.43		0.815	<.005	<.005	<.03	<.01
29/06/98	<.003	0.11	0.03	<.05	0.128	0.002	<.04	262.7	0.005	0.011	0.061	0.017	<.01		3	0.005	83.5	<.01	0.006	12	0.01	4.47	<.02	187	<.03	<.03	7.1	<.01	1.18	0.024	<.005	<.03	<.01
19/10/98	<.003	<.05	0.02	<.05	0.015	0.001	<.04	219.7	<.002	<.005	<.005	0.016	<.01		3	<.005	51.3	0.23	0.006	9	0.01	5	<.02	162.5	0.05	<.03	3.5	<.01	0.874	0.013	<.005	<.03	<.01
30/10/99	<.003	0.35	<.005	<.05	0.104	<.001	<.04	306.3	<.001	<.005	<.005	<.002	<.01		4	<.005	63	0.43	<.002	12	<.005	<.04	<.01	268	<.03	<.005	5.7	<.01	1.249	<.005	<.005	<.03	0.23
26/06/00	<.003	0.17	<.005	<.05	0.066	0.003	<.05	233.3	<.001	<.005	<.005	0.028	0.03		6	<.005	79.7	0.4	<.002	10	0.015	4	<.01	211	0.04	<.005	4.8	<.01	0.988	0.026	0.007	<.03	0.44
22/10/00	<.003	0.99	<.005	<.05	0.187	0.002	<.05	117.5	<.001	<.005	<.005	0.064	0.41		3	<.005	38.2	0.08	0.007	6	0.009	<1	<.01	86	<.03	<.005	5.7	<.01	0.51	0.057	<.005	<.03	0.03
06-04-01	<.003	<.05	<.005	0.68	0.098	<.001	<.05	232.9	<.001	0.009	<.005	0.007	0.01		7	<.005	91.9	0.65	0.003	14	<.005	<1	<.01	209	<.03	<.005	4.9	<.01	1.096	0.012	0.008	<.03	0.26
STATION: BH13B																																	
27/09/96	<.003	0.05	<.02		0.02	0.003	<.04	145	<.002	<.005	<.005	<.002	0.51	<.02		<.005	44.4	0.47	<.002	18	0.005	<.04	<.02	140	<.03		5.14		0.72	<.005	<.005	<.03	<.01
19/10/98	<.003	0.35	<.02	<.05	0.018	0.001	<.04	149.3	<.002	0.006	<.005	0.02	0.24		4	<.005	43.1	0.33	<.002	11	0.02	0.46	<.02	138.8	<.03	<.03	3.5	<.01	0.768	0.022	<.005	<.03	<.01
30/10/99	<.003	0.05	<.005	<.05	0.137	<.001	<.04	170.1	<.001	<.005	<.005	<.002	<.01		2	<.005	47.8	0.02	<.002	12	<.005	<.04	<.01	201	<.03	<.005	3.7	<.01	0.913	<.005	<.005	<.03	0.04
22/10/00	<.003	1.75	<.005	<.05	0.129	0.003	<.05	172.3	<.001	0.013	<.005	0.123	0.84		4	0.014	54.6	0.05	<.002	8	0.008	<1	<.01	126	<.03	<.005	5.6	<.01	0.831	0.058	<.005	<.03	0.02
25/10/01	<0.00004	<0.01	<0.001	<0.1	0.08	<0.002		176	0.0002	<0.0006	<0.002	0.007	<0.03	<0.00005	3		49.8	0.0121	0.005	9	0.007		0.002		<0.001	0.005		<0.001		<0.01	<0.03		0.05
STATION: BH14A																																	
25/09/96	<.003	0.62	<.02		0.08	0.012	<.04	358	<.002	<.005	<.005	0.016	0.39	<.02		<.005	102	0.01	<.002	31	0.014	0.11	<.02	342	<.03		8.44		1.763	0.006	<.005	<.03	0.03
07-11-97	<.003	0.2	0.06	0.29	0.021	0.001	<.04	367.4	0.004	<.005	<.005	0.025	<.01		4	0.007	138	0.05	<.002	31	<.005	0.94	<.02	32	<.03	<.03	8	<.01	1.868	0.025	<.005	0.59	0.12
29/06/98	<.003	0.19	0.05	<.05	0.142	0.002	<.04	416.7	<.002	0.017	0.174	0.022	<.01		3	<.005	139.8	0.01	0.011	29	0.006	4.82	<.02	241	0.08	<.03	9.8	<.01	2.152	0.03	<.005	<.03	0.01
19/10/98	<.003	0.21	<.02	<.05	0.018	0.002	<.04	402.3	<.002	<.005	<.005	0.027	<.01		4	<.005	122.9	0.06	<.002	30	0.008	<.04	<.02	324.8	0.06	<.03	6.5	<.01	1.918	0.021	<.005	<.03	<.01
30/10/99	<.003	0.19	<.005	<.05	0.155	<.001	<.04	211.7	<.001	<.005	<.005	<.002	<.01		4	<.005	62.2	0.03	<.002	11	<.005	<.04	<.01	181	<.03	<.005	3.5	<.01	1.036	<.005	<.005	<.03	<.01
26/06/00	<.003	0.23	<.005	<.05	0.08	0.003	<.05	351.9	<.001	<.005	<.005	0.034	0.02		6	<.005	105.6	0.26	<.002	21	0.009	<1	0.01	268	0.06	<.005	6.4	<.01	1.574	0.034	0.014	<.03	0.71
22/10/00	<.003	0.44	<.005	<.05	0.028	0.004	<.05	375	0.001	<.005	<.005	0.035	0.07		4	0.014	111.2	0.02	<.002	18	0.014	<1	<.01	268	<.03	<.005	7.5	<.01	1.667	0.043	<.005	<.03	<.01
06-04-01	<.003	0.06	<.005	1.59	0.088	<.001	<.05	606.8	<.001	<.005	<.005	0.003	0.03		4	0.01	197.8	0.48	0.004	17	<.005	<1	<.01	558	<.03	<.005	12.6	<.01	2.934	<.005	0.007	<.03	0.05
STATION: BH14B																																	
25/09/96	<.003	0.77	<.02		0.072	0.009	<.04	313.7	<.002	<.005	<.005	0.011	0.15	<.02		<.005	94.7	0.02	<.002	21	<.005	<.04	<.02	291	<.03		7.07		1.588	<.005	<.005	<.03	0.03
07-11-97	<.003	0.22	<.02	0.35	0.021	0.001	<.04	363	0.005	<.005	<.005	0.023	<.01		4	0.022	130.3	<.01	<.002	24	0.006	0.44	<.02	31	<.03	<.03	7.9	<.01	1.616	0.022	<.005	0.37	0.05
29/06/98	<.003	0.21	<.02	<.05	0.118	0.002	<.04	402.7	<.002	0.021	0.081	0.026	<.01		3	0.02	127.6	0.01	0.009	19	0.01	1.11	<.02	252	0.06	<.03	8.9	<.01	1.697	0.031	<.005	<.03	<.01
19/10/98	<.003	0.22	<.02	<.05	0.019	0.002	<.04	407.3	<.002	<.005	<.005	0.025	<.01		3	<.005	130.2	0.02	0.01	18	0.009	3.26	<.02	316	<.03	<.03	6.6	<.01	2.03	0.02	<.005	<.03	<.01
30/10/99	<.003	0.75	<.005	<.05	0.178	<.001	<.04	372.2	<.001	<.005	<.005	0.005	<.01		8	<.005	118.4	<.01	<.002	17	<.005	0.13	<.01	354	<.03	<.005	6.7	<.01	1.921	<.005	<.005	<.03	0.05
06-03-00	<.003	0.15	<.005	<.05	0.094	0.001	<.05	381.6	0.008	<.005	<.005	0.017	0.03		5	<.005	125.2	0.11	<.002	15	0.008	<1	0.05	319	<.03	<.005	6	<.01	1.64	0.014	<.005	<.03	0.05
22/10/00	<.003	0.44	<.005	<.05	0.034	0.004	<.05	390	0.005	0.006	<.005	0.031	0.09		5	<.005	120.3	0.03	<.002	18	0.022	<1	<.01	291	<.03	<.005	7.7	<.01	1.827	0.041	<.005	<.03	<.01
06-04-01	<.003	<.05	<.005	1.06	0.061	<.001	<.05	552	<.001	<.005	<.005	<.002	<.01		4	0.006	180.9	0.19	0.003	16	<.005	<1	<.01	508	<.03	<.005	11	<.01	2.689	<.005	0.008	<.03	0.04
25/10/01	<0.0002	<0.05	<0.005	<0.1	<0.02	<0.01		575	<0.0005	<0.003	<0.01	<0.01	<0.03	<0.00005	3		199	<0.003	<0.01	14	<0.01		<0.005		<0.005	<0.01		<0.005		<0.01	<0.03		<0.05

Table E2. Groundwater Quality of the Faro Zone II Pit, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: BH1																																	
12/9/1991													0.022																				2.44
24/10/91													0.005																				2.36
27/11/91													0.344																				4.25
16/12/91													0.013																				1.9
23/01/92													0.05																				1.77
21/02/92													1.2																				1.45
31/03/92													0.018																				1.44
27/04/92													0.005																				1.59
29/05/92													0.062																				1.68
9/7/1992													0.559																				1.33
31/07/92													0.018																				1.31
28/08/92													0.71																				1.01
17/09/92													0.011																				0.954
5/10/1992													0.038																				1.06
19/11/92													0.012																				0.894
11/12/1992													0.018																				1.11
25/10/94																																	1.08
12/12/1994													0.09																				0.781
2/9/1995													0.2																				0.58
28/05/96													0.58																				0.55
28/05/96	<.003	0.28	<.02		0.064	<.001	<.04	36.8	0.003	0.007	<.005	0.009	0.58	<.02		<.005	8.8	2.43	<.002	4	<.005	<.04	<.02	18	<.03		1.4		0.208	<.005	<.005	<.03	0.55
29/05/96	<.003	0.28	<.02		0.064	<.001	<.04	36.8	0.003	0.007	<.005	0.009	0.58	<.02		<.005	8.8	2.43	<.002	4	<.005	<.04	<.02	18	<.03		1.4		0.208	<.005	<.005	<.03	0.55
13/06/96	<.003	<.05	0.03		0.06	0.002	<.04	42.3	0.004	0.009	<.005	0.006	0.12	<.02		<.005	10.2	1.69	<.002	10	<.005	<.04	<.02	28	<.03		1.8		0.245	<.005	<.005	<.03	0.82
14/06/96	<.003	<.05	0.03		0.06	0.002	<.04	42.3	0.004	0.009	<.005	0.006	0.12	<.02		<.005	10.2	1.69	<.002	10	<.005	<.04	<.02	28	<.03		1.8		0.245	<.005	<.005	<.03	0.82
17/07/96	0.007	0.19	0.06		0.126	0.007	<.04	204.5	0.053	0.052	<.005	0.033	0.07	<.02		<.005	54.6	6.36	0.01	8	0.145	0.28	0.08	463	0.11		11.93		0.882	0.005	<.005	0.17	29.92
14/08/96	<.003	0.05	<.02		0.069	0.003	<.04	66.2	0.01	<.005	<.005	0.009	0.01	<.02		<.005	16.7	1.68	<.002	6	0.025	0.18	0.02	55	<.03		6.83		0.339	<.005	<.005	<.03	3.49
11/9/1996	<.003	0.05	<.02		0.007	0.004	<.04	64.5	0.006	0.012	<.005	0.009	0.06	<.02		<.005	15.9	2.25	<.002	8	0.016	<.04	<.02	60	<.03		5.06		0.306	<.005	<.005	<.03	2.3
12/9/1996													0.08																				2.3
12/9/1996	<.003	0.05	<.02		0.007	0.004	<.04	64.5	0.006	0.012	<.005	0.009	0.06	<.02		<.005	15.9	2.25	<.002	8	0.016	<.04	<.02	60	<.03		5.06		0.306	<.005	<.005	<.03	2.3
25/10/96	<.003	0.14	<.02		0.068	0.002	<.04	63	<.002	0.01	<.005	0.006	0.19	<.02		<.005	14.7	1.13	<.002	10	0.008	<.04	<.02	38	<.03		7.14		0.305	<.005	<.005	<.03	0.62
14/01/97	<.003	0.13	<.02	0.3	0.059	<.001	<.04	60.9	<.002	0.006	<.005	0.003	0.04	<.02		<.005	15	2.6	<.002	3	0.006	0.05	<.02	43	<.03		5.99		0.305	<.005	<.005	0.06	0.07
26/02/97	<.003	0.16	<.02	0.52	0.059	<.001	<.04	64	<.002	0.012	<.005	0.005	0.07	<.02		<.005	15	2.2	0.021	6	0.013	0.2	<.02	45	<.02		7.86		0.328	<.005	<.03	<.02	1.15
6/6/1997	<.003	5.39	<.02	<.05	0.263	<.001	<.04	56.5	<.002	0.013	<.005	0.022	4.33		<1	<.005	13.4	1.35	<.002	14	<.005	0.09	0.18	25	<.03	<.03	13.3	<.01	0.303	0.123	<.005	<.03	0.52
23/06/97	<.003	0.39	<.02	0.23	0.051	<.001	<.04	49.8	<.002	<.005	0.005	0.006	0.36		6	<.005	12	0.73	<.002	10	0.009	<.04	<.02	23	<.03	<.03	5.3	<.01	0.268	<.005	0.007	<.03	0.09
15/07/97	<.003	0.13	<.02	0.34	0.036	<.001	<.04	51.4	<.002	<.005	<.005	0.004	<.01		2	<.005	12.3	0.87	<.002	9	<.005	0.78	<.02	48	<.03	<.03	5.3	<.01	0.272	0.011	<.005	0.29	0.02
12/8/1997	<.003	5.11	<.02	<.05	0.252	0.002	<.04	149.5	0.006	0.013	0.01	0.034	4.54		7	0.011	36.4	2.49	0.004	17	0.037	1.07	0.26	84	<.03	<.03	14.8	<.01	0.556	0.156	0.006	<.03	2.95
22/09/97	<.003	1.51	<.02	<.05	0.08	<.001	<.04	138.6	<.002	0.01	<.005	0.022	1.28		3	0.016	31.2	3.31	0.008	14	0.02	<.04	0.07	128	<.03	<.03	9.1	<.01	0.53	0.054	0.011	0.84	1.72
27/10/97	<.003	<.05	0.04	<.05	0.11	<.001	<.04	69.4	<.002	<.005	<.005	0.007	0.11		8	<.005	15.7	1.34	<.002	9	<.005	0.04	<.02	42	<.03	<.03	5	<.01	0.312	0.007	<.005	0.14	0.39
18/11/97	<.003	<.05	<.02	<.05	0.091	<.001	<.04	64.9	<.002	<.005	<.005	0.007	<.01		3	<.005	14.7	2.34	<.002	8	<.005	0.09	<.02	38	<.03	<.03	4.8	<.01	0.295	<.005	0.006	0.21	0.15
9/12/1997	0.003	19.41	0.03	0.1	2.569	0.005	<.04	49.6	0.01	0.085	0.059	0.305	57.92		7	0.017	15.1	4.08	0.005	7	0.05	0.85	3.14	19	<.03	<.03	23.4	0.01	0.299	0.477	0.023	<.03	2.27
15/06/98	<.003	2.09	<.02	<.05	0.098	<.001	<.04	42.8	<.002	<.005	0.118	0.008	1.66		2	<.005	10.1	1.26	0.006	5	<.005	0.33	0.03	31	<.03	<.03	7.6	<.01	0.228	0.029	<.005	<.03	0.28
20/10/98	<.003	3.87	<.02	<.05	0.172	<.001	<.04	33.8	<.002	<.005	<.005	0.02	3.37		2	<.005	8.4	1.18	<.002	7	0.01	<.04	0.13	6.8	<.03	<.03	8.8	<.01	0.193	0.085	0.017	0.08	0.28
4/7/1999	<.003	0.18	<.005	0.49	0.165	<.001	<.04	129.3	0.015	0.061	<.005	0.019	0.46		4	<.005	32.3	4.95	0.012	8	0.084	<.04	<.01	133	<.03	<.03	8.2	<.01	0.609	<.005	<.005	<.03	25.87
30/10/99	<.003	<.05	<.005	<.05	0.139	<.001	<.04	61.3	0.004	<.005	<.005	<.002	<.01		<1	<.005	14	3.4	<.002	7	<.005	<.04	0.02	50	<.03	<.005	4.1	<.01	0.303	<.005	<.005	<.03	3.52
5/6/2001	<.003	0.1	<.005	<.05	0.143	<.001	<.05	65.5	0.006	0.012	<.005	0.018	0.07		2	0.013	15.1	3.67	<.002	8	<.005	<1	<.01	31	<.03	<.005	4.8	<.01	0.327	0.007	<.005	<.03	1.75
STATION: BH2																																	
16/07/91													0.034																				3.97
12/9/1991													0.057																				4.38
10/10/1991													0.031																				6.61
23/11/91													0.375																				4.2
16/12/91													0.332																				2.82
28/01/92													0.059																				2.67
21/02/92													0.106																				2.13
3/4/1992													0.016																				1.83
27/04/92													0.003																				3.01
29/05/92													0.089																				3.57
9/7/1992													0.021																				4.09
31/07/92													0.008																				3.51
28/08/92													1.18																				3.55
17/09/92													0.007																				3.65
5/10/1992													0.018																				3.6
19/11/92													0.003																				3
11/12/1992													0.004																				2.56
25/10/94																																	5.1
12/12/1994													0.03																				3.12
2/8/1995													0.2																				2.92
28/05/96													0.24																				4.19
28/05/96	<.003	0.43	<.02		0.072	0.002	<.04	64.1	0.01	<.005	<.005	0.007	0.24	<.02		<.005	20	<.01	<.002	4	0.035	<.04	<.02	73	<.03		0.93		0.345	<.005	<.005	<.03	4.19
29/05/96	<.003	0.43	<.02		0.072	0.002	<.04	64.1	0.01	<.005	<.005	0.007	0.24	<.02		<.005	20	<.01	<.002	4	0.035	<.04	<.02	73	<.03		0.93		0.345	<.005	<.005	<.03	4.19
13/06/96	<.003	0.06	<.02		0.059	0.009	<.04	69.4	0.006	<.005	<.005	0.009	0.13	<.02		<.005	22.2	0.02	<.002	5	0.026	<.04	<.02	71	<.03		1.15		0.392	<.005	<.005	<.03	4.06
14/06/96	<.003	0.06	<.02		0.059	0.009	<.04	69.4	0.006	<.005	<.005	0.009	0.13	<.02		<.005	22.2	0.02	<.002	5	0.026	<.04	<.02	71	<.03		1.15		0.392	<.005	<.005	<.03	4.06
17/07/96	<.003	0.06	<.02		0.052	0.001	<.04	57.5	0.003	<.005	<.005	0.003	0.11	<.02		<.005	17.1	0.04	0.005	3	0.016	0.15	<.02	101	<.03		5.08		0.298	<.005	<.005	<.03	4.16
14/08/96	<.003	0.05	<.02		0.08	<.001	<.04	46.3	0.005	<.005	<.005	<.002	0.02	<.02		<.005	14.7	<.01	<.002	4	0.014	0.1	<.02	38	<.03		4.66		0.261	<.005	<.005	<.03	2.77
12/9/1996													0.21																				3.78
12/9/1996	<.003	0.05	<.02		0.011	0.003	<.04	58.3	0.008	<.005	<.005	0.005	0.21	<.02		<.005	18.5	0.01	<.002	6	0.021	<.04	<.02	35	<.03		3.85		0.318	<.005	<.005	<.03	3.78
25/10/96	<.003	0.05	<.02		0.145	0.003	<.04	121.3	0.031	<.005	<.005	0.007	0.48	<.02		<.005	41	0.1	<.002	10	0.108	0.27	<.02	151	<.03		7.17		0.669	<.005	<.005	<.03	12.26
20/05/97	<.003	12.83	0.07	0.06	0.311	0.003	<.04	69.1	0.009	0.129	0.028	0.084	42.38		2	0.056	25.4	3.66	0.005	8	0.068	0.37	0.68	75	<.03	<.03	15.1	<.01	0.409	0.368	0.026	<.03	6.44
23/06/97	<.003	0.06	<.02	0.2	0.044	<.001	<.04	63.7	<.002	<.005	<.005	<.002	0.25		7	<.005	21.5	0.58	<.002	7	0.017	0.18	<.02	58	<.03	<.03	3.7	<.01	0.326	<.005	<.005	<.03	0.8
11/7/1997	<.003	0.18	0.02	0.29	0.022	<.001	<.04	46.4	<.002	<.005	<.005	0.003	0.07		2	<.005	15.7	0.18	0.011	7	<.005	0.33	<.02	75	<.03	<.03	4	<.01	0.231	0.01	<.005	0.48	0.11
12/8/1997	<.003	0.2	0.04	<.05	0.049	0.001	<.04	60.8	0.008	0.005	<.005	0.007	0.49		5	0.018	21.3	0.12	0.01	6	0.05	1.43	0.02	67	0.05	<.03	4.7	<.01	0.328	0.006	0.017	<.03	5.57
22/09/97	<.003	3.15	<.02	<.05	0.075	<.001	<.04	63.3	0.005	0.02	<.005	0.017	3.26		2	0.01	21.5	0.51	0.01	5	0.045	0.9	0.06	37	<.03	<.03	10.2	<.01	0.369	0.095	0.007	0.3	4.83
27/10/97	<.003	0.11	<.02	<.05	0.13	<.001	<.04	57.3	0.002	<.005	<.005	0.004	0.3		5	<.005	19.5	0.25	<.002	6	0.033	0.06	<.02	39	<.03	<.03	4.4	<.01	0.293	0.005	0.006	<.03	3.4
16/06/98	<.003	0.58	<.02	<.05	0.06	<.001	<.04	73.5	<.002	0.008	<.005	0.005	0.58		2	<.005	23.6	0.1	<.002	6	0.027	0.42	0.02	48	<.03	<.03	4.7	<.01	0.37	0.013	<.005	<.03	3.1
20/10/98	<.003	0.86	<.02	<.05	0.045	0.001	<.04	84.7	0.009	0.016	<.005	0.011	0.93		2	<.005	27.4	0.54	0.012	6	0.04	0.51	0.02	60.8	<.03	<.03	5.3	<.01	0.464	0.025	0.01	0.39	5.04
4/7/1999	<.003	0.1	<.005	0.4	0.092	<.001	<.04	72.4	0.005	<.005	<.005	0.007	0.48		2	<.005	28.5	0.74	0.003	8	0.04	<.04	<.01	88	<.03	<.03	4.7	<.01	0.415	<.005	<.005	<.03	9.85
30/10/99	<.003	<.05	<.005	<.05	0.135	<.001	<.04	65.4	0.006	<.005	<.005	<.002	<.01		3	<.005	23.7	0.07	<.002	7	0.015	<.04	<.01	69	<.03	<.005	3.7	<.01	0.369	<.005	<.005	<.03	4.15
4/8/2000	<.003	<.05	<.005	<.05	0.081	<.001	<.05	71.8	0.015	<.005	<.005	<.002	0.04		3	<.005	25.9	0.14	<.002	8	0.045	5	0.01	79	<.03	<.005	3.6	<.01	0.427	<.005	<.005	<.03	7.53
22/10/00	<.003	0.91	<.005	<.05	0.252	0.002	<.05	106.3	0.03	<.005	<.005	0.052	1.25		4	0.011	33.3	0.8	0.028	7	0.1	<1	0.05	73	0.09	<.005	7	<.01	0.513	0.039	<.005	<.03	15.02
5/6/2001	<.003	0.59	<.005	<.05	0.195	<.001	<.05	163.8	0.038	<.005	<.005	<.002	0.02		4	0.031	59.2	0.85	<.002	8	0.052	<1	<.01	205	<.03	<.005	5.6	0.03	0.88	<.005	<.005	<.03	26.2
25/10/01	<0.0001	0.05	<0.003	<0.1	0.24	<0.005		97.8	0.0231	<0.002	<0.005	<0.005	0.07	<0.00005	2		30.7	0.035	<0.005	8	0.101		0.007		<0.003	<0.005		<0.003		<0.01	<0.03		24.8
STATION: BH4																																	

Table E2. Groundwater Quality of the Faro Zone II Pit, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/9/1991													60.7																				118
24/10/91													89.9																				125
27/11/91													72.6																				114
16/12/91													38.4																				69.3
28/01/92													39.5																				69.3
21/02/92													34.8																				79.5
27/04/92													293																				184
29/05/92													60.3																				102
9/7/1992													12.8																				90.8
31/07/92													20.4																				85.8
28/08/92													30.4																				58.3
17/09/92													28.1																				44
5/10/1992													31.9																				50.1
19/11/92													20.7																				57.9
11/12/1992													7.54																				49.8
25/10/94																																	54.2
12/12/1994													30.7																				50.4
17/07/96	0.005	112.54	0.11		0.028	0.036	<.04	257.6	0.09	0.491	<.005	0.77	5.39	<.02		0.105	51.7	5.84	0.013	6	0.506	0.29	0.06	964	0.09		32.19		0.951	0.009	<.005	0.15	41.26
2/8/1996													14.85																				48.76
14/08/96	<.003	17.66	<.02		0.065	0.007	<.04	70.9	0.023	0.065	<.005	0.183	0.46	<.02		0.019	17.6	0.91	<.002	5	0.069	<.04	0.04	150	0.05		10.12		0.341	<.005	<.005	<.03	7.67
12/9/1996													0.04																				3.98
12/9/1996	<.003	0.05	<.02		0.003	0.002	<.04	52.6	0.01	0.023	<.005	0.008	0.04	<.02		<.005	14	0.44	<.002	5	0.027	<.04	<.02	72	<.03		5.31		0.282	<.006	<.006	<.03	3.98
25/10/96	<.003	2.09	<.02		0.058	0.008	<.04	120	0.027	0.111	<.005	0.029	0.18	<.02		<.005	27.8	1.11	<.002	9	0.122	0.22	0.03	155	<.03		9.41		0.575	<.005	<.005	<.03	10.12
11/7/1997	<.003	133.59	0.09	0.44	0.043	0.032	<.04	315.7	0.114	0.496	<.005	0.891	0.59		2	0.143	68.7	6.32	0.039	12	0.562	8.69	0.25	58	0.1	<.03	33.6	<.01	1.139	0.022	<.005	1.31	44.63
12/8/1997	<.003	12.44	0.04	<.05	0.029	0.007	<.04	77.2	0.022	0.097	<.005	0.099	0.94		4	0.037	19.1	1.15	0.03	6	0.115	1.04	<.02	35	0.05	<.03	8.5	<.01	0.363	<.005	0.014	<.03	11.05
22/09/97	<.003	<.05	0.04	0.07	0.024	<.001	<.04	59.8	0.005	0.023	<.005	0.01	0.04		<1	<.005	15.6	0.24	0.011	5	0.036	<.04	0.03	62	<.03	<.03	5.7	<.01	0.326	0.008	<.005	0.1	3.36
27/10/97	<.003	<.05	<.02	<.05	0.118	<.001	<.04	69	<.002	0.057	<.005	0.003	<.01		4	<.005	17.8	0.14	<.002	6	0.016	0.13	<.02	59	<.03	<.03	4.4	<.01	0.343	<.005	<.005	<.03	2.34
15/06/98	<.003	157.58	0.04	<.05	0.053	0.034	<.04	373.2	0.122	0.573	0.02	1.597	5.65		1	0.118	72.9	6.47	0.041	10	0.516	4.28	0.33	208	<.03	<.03	39.1	<.01	1.162	0.019	<.005	0.42	49.11
20/10/98	<.003	<.05	<.02	<.05	0.015	<.001	<.04	51.5	<.002	0.009	0.014	0.007	0.09		1	<.005	14.6	0.13	0.003	5	0.011	1.01	<.02	32.5	<.03	<.03	3.8	<.01	0.256	<.005	0.01	<.03	1.16
30/10/99	<.003	<.05	<.005	<.05	0.042	<.001	<.04	56.5	0.003	<.005	<.005	<.002	<.01		<1	<.005	14.3	0.17	<.002	5	<.005	<.04	<.01	53	<.03	<.005	3.9	<.01	0.294	<.005	<.005	<.03	1.34
4/6/2000	<.003	<.05	<.005	<.05	0.068	<.001	<.05	50.4	0.007	0.007	<.005	<.002	<.01		3	<.005	14.1	0.34	0.007	5	0.029	<1	<.01	62	<.03	<.005	4.7	<.01	0.321	<.005	<.005	<.03	4.01
22/10/00	<.003	18.25	0.112	<.05	0.07	0.01	<.05	233.7	0.027	0.173	<.005	0.107	0.39		3	<.005	60.2	2.3	0.031	10	0.217	<1	0.11	141	0.07	<.005	13.5	<.01	0.825	0.03	<.005	<.03	14.99
5/6/2001	<.003	3.39	<.005	<.05	0.138	0.001	<.05	59.9	0.006	0.04	<.005	0.081	0.09		2	0.013	15.9	0.67	<.002	5	<.005	<1	<.01	61	<.03	<.005	5.6	<.01	0.322	<.005	<.005	<.03	4.75
25/10/01	0.00004	0.11	<0.0005	<0.1	0.07	<0.001		66.4	0.00403	0.0178	<0.001	0.006	0.06	<0.00005	2		15.9	0.391	<0.001	5	0.028		0.0046		<0.0005	<0.001		<0.0005		<0.01	<0.03		3.67
STATION: BH5																																	
25/10/94													25.5																				4.19
28/05/96													19.95																				4.25
29/05/96	<.003	0.41	<.02		0.045	0.003	<.04	66.2	0.002	0.02	<.006	0.004	19.95	<.02		<.005	24.7	2.16	<.002	10	0.021	0.11	<.02	72	<.03		3.16		0.339	<.005	<.005	<.03	4.25
2/8/1996													27.16																				3.76
12/9/1996													0.04																				3.75
12/9/1996	<.003	0.05	<.02		0.018	0.002	<.04	70.2	0.007	0.015	<.005	<.002	0.04	<.02		<.005	25.1	1.74	<.002	16	<.005	0.15	<.02	66	<.03		9.51		0.391	<.005	<.005	<.03	3.75
11/7/1997	<.003	<.05	<.02	0.36	0.03	<.001	<.04	76	<.002	0.014	<.005	0.008	0.04		3	<.005	29.2	2.52	<.002	12	0.04	1.65	<.02	16	<.03	<.03	9.8	<.01	0.389	0.014	<.005	0.73	2.36
27/10/97	<.003	<.05	0.04	<.05	0.124	<.001	<.04	85.7	<.002	0.047	<.005	0.002	14.42		2	<.005	29.8	1.87	0.004	14	0.031	0.44	<.02	70	<.03	0.081	9.1	0.22	0.437	<.005	<.005	<.03	3.79
STATION: BH6																																	
25/10/94													12.7																				7.5
28/05/96													5.06																				3.89
29/05/96	<.003	0.23	<.02		0.038	0.002	<.04	34.2	0.005	0.037	<.005	0.003	5.06	<.02		<.005	12	3.07	<.002	4	0.022	<.04	<.02	38	<.03		1.93		0.21	<.005	<.005	<.03	3.89
2/8/1996													9.4																				5.65
25/09/96	<.003	0.07	<.02		0.051	0.002	<.04	47.2	0.007	0.038	<.005	0.016	8.1	<.02		<.005	16.6	3.7	<.002	10	0.039	<.04	<.02	73	<.03		7.96		0.284	<.005	<.005	<.03	5.16
20/05/97	<.003	3	0.05	0.08	0.123	0.002	<.04	31.3	<.002	0.052	0.007	0.015	14.2		<1	0.068	11.5	2.67	<.002	5	0.03	0.1	0.15	20	<.03	<.03	9.1	<.01	0.199	0.165	<.005	<.03	3.37
27/10/97	<.003	<.05	<.02	<.05	0.108	<.001	<.04	46.9	<.002	0.031	<.005	<.002	0.11		3	<.005	15.7	2.4	<.002	6	0.025	0.15	<.02	35	<.03	<.03	5.5	0.05	0.255	<.005	0.008	<.03	3.64
STATION: BH7A																																	
25/10/94													0.265																				2.78
2/8/1995													0.47																				0.71
28/05/96													0.06																				0.83
29/05/96	<.003	0.16	<.02		0.026	0.002	<.04	27.8	0.003	<.005	<.005	0.002	0.06	<.02		<.005	9.4	0.02	<.002	3	<.005	<.04	<.02	15	<.03		1.11		0.125	<.005	<.005	<.03	0.83
25/09/96	<.003	0.05	<.02		0.025	<.001	<.04	27.4	<.002	<.005	<.005	0.003	0.08	<.02		<.005	9.1	<.01	<.002	9	<.005	<.04	<.02	18	<.03		4.7		0.113	<.005	<.005	<.03	0.85
21/05/97	<.003	2	<.02	<.05	0.06	<.001	<.04	26.4	<.002	<.005	<.005	0.012	9.18		<1	<.005	9.2	0.24	<.002	3	<.005	<.04	0.25	9	<.03	<.03	4.6	<.01	0.111	0.084	<.005	<.03	1
27/10/97	<.003	<.05	<.02	<.05	0.094	<.001	<.04	31.7	<.002	<.005	<.005	<.002	0.04		3	<.005	10.5	0.04	<.002	5	0.008	0.14	<.02	10	<.03	<.03	3.3	<.01	0.125	<.005	0.008	<.03	0.85
STATION: BH7B																																	
25/10/94													0.599																				1.23
2/8/1995													0.64																				0.54
28/05/96													0.09																				0.47
29/05/96	<.003	0.25	<.02		0.02	0.005	<.04	31	0.005	<.005	<.005	0.006	0.09	<.02		<.005	7	0.02	<.002	3	<.005	<.04	0.03	9	<.03		1.01		0.167	<.005	<.005	<.03	0.47
25/09/96	<.003	0.05	<.02		0.006	<.001	<.04	33.2	<.002	<.005	<.005	0.004	0.06	<.02		<.005	7.5	<.01	<.002	7	<.005	<.04	<.02	24	<.03		5.06		0.181	<.005	<.005	<.03	0.62
21/05/97	<.003	1.18	<.02	0.07	0.011	<.001	<.04	30.8	<.002	<.005	<.005	0.009	5.11		<1	<.005	7	0.08	<.002	3	<.005	<.04	0.09	6	<.03	<.03	3.8	<.01	0.153	0.03	<.005	<.03	0.56
27/10/97	<.003	0.17	<.02	<.05	0.087	<.001	<.04	40.8	<.002	0.035	<.005	0.004	0.79		2	<.005	9.1	0.02	<.002	4	0.008	0.17	<.02	7	<.03	<.03	4	<.01	0.195	0.006	0.012	<.03	0.49
STATION: BH8																																	
22/11/94													1020																				158
28/05/96													392.7																				>50
29/05/96	<.003	2.65	<.02		0.132	0.014	<.04	228.6	0.307	0.337	<.005	0.041	392.7	<.02		0.076	114	8.6	<.002	25	0.277	0.52	0.15	792	0.21		1.68		1.148	0.006	<.005	<.03	>50
25/09/96													461																				228
25/09/96	0.015	6.23	0.29		0.152	0.021	<.04	285	0.55	0.309	<.005	0.114	461	<.02		0.154	147.3	10.18	<.002	50	0.425	0.54	0.18	1015	0.16		6.27		1.357	<.005	0.01	<.03	228
21/05/97	0.004	5.57	<.02	0.62	0.152	0.007	<.04	276.4	0.395	0.444	<.005	0.101	426.69		<1	0.043	138.1	8.29	<.002	24	0.282	1.52	0.51	715	0.15	<.03	5	<.01	1.235	0.028	<.005	0.08	151
27/10/97	<.003	4.95	0.02	0.07	0.192	0.014	<.04	315.2	0.602	0.616	<.005	0.163	519.61		17	0.153	164.3	10.4	<.002	33	0.347	0.63	0.9	951	0.19	0.214	4.7	<.01	1.296	<.005	<.005	0.52	193.07

Table E3. Groundwater Quality of the Main/Intermediate Waste Dumps, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: S1A										
13/06/96	678	1390	316			6.82	6.63		1217	4.25
27/09/96			344			7.58	6.57	2.4	1299	4
13/05/97			338						1244	
22/09/97							6.42	3.9	583	4.18
15/06/98							6.78		1325	4.09
31/10/98			292				6.24		2351	3.73
22/12/98										4.38
3/7/1999							7.24	3	2356	3.88
31/10/99							6.75	1	2533	4.01
25/07/00							6.64	7.2	2530	4.75
22/10/00							6.11	1.3	2357	3.89
6/6/2001		2851					6.6	2.1	2964	
26/10/01	4860				2350	6.36	6.84	0.9	3380	3.44
STATION: S1B										
13/06/96	727	903	184			6.7	6.54		937	4.42
27/09/96			70			7.62			921	2.57
22/09/97							6.6	7	306	4.07
15/06/98							7.02		348	4.23
31/10/98			187				6.42		820	3.99
22/12/98										4.55
3/7/1999							7.68	2	626	2.81
31/10/99							6.28	0	863	4.12
25/07/00							6.42	3.9		4.19
22/10/00							6.12	1.6	351	2.62
6/6/2001		1356					6.6	2	1528	
26/10/01	1760				955	6.37		1	1150	3.87
STATION: S2A										
13/06/98	609	517	69			6.68	6.41		808	4.89
27/09/96			121			7.52	6.44	2.4	1367	4.41
22/09/97							6.45	4.6	505	4.76
15/06/98							6.1		529	4.69
31/10/98			223				6.33		1069	4.34
22/12/98										5.05
3/7/1999							6.76	2	1491	4.01
31/10/99							6.18	0	1385	4.61
25/07/00							6.39	4.2	1408	4.98
22/10/00							6.21	1.4		4.37
6/6/2001		1325					7	4.8	1263	
STATION: S2B										
13/06/96						6.08	6.06			3.25
27/09/96			109			7.19	6.54	2.4	771	3.19
13/05/97			197						562	
22/09/97							6.47	4.2	452	3.27
15/06/98							6.07		725	3.16
31/10/98			361				6.3		550	2.62
22/12/98										3.37
3/7/1999							6.82	2	1300	2.91
31/10/99							6.15	0	345	2.99
25/07/00							5.56	4.7	388	3.6
22/10/00							6.22	1.3	696	2.94
6/6/2001		1332					7.4	3	1200	
26/10/01	3180				1256	6.25		1	2210	3.48
STATION: S3										
13/06/96	753	1335	97			6.15	6.05		1371	2.86
27/09/96			105			6.93	6.36	3.5	876	2.47
13/05/97			178						1345	
22/09/97							6.29	5.9	708	2.73
15/06/98							6.33		1323	2.32
31/10/98			239				6.32		1662	2.08
22/12/98										2.74
31/10/99							5.55	0	2119	2.45
25/07/00							6.37	5.5	2025	2.49

Table E3. Groundwater Quality of the Main/Intermediate Waste Dumps, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
22/10/00							6.03	1.4	1994	1.41
6/6/2001		2715					7.1	1.6	2792	
26/10/01	4690				2371	6.17	6.78	2.4	3210	1.69
STATION: P96-6										
25/09/96			226			8.16			85	12.76
25/09/96			228			8		2.3	108	12.76
13/05/97			258			5.6			174	
22/09/97							5.99	4.7	97	13.09
15/06/98							5.88		250	12.54
20/10/98							5.75		254	13.16
21/12/98							5.85		342	12.03
4/7/1999							5.84	3	428	12.09
30/10/99							6.05	1	341	13.12
25/07/00							6.15	5.6	207	11.99
22/10/00							5.97	1.3	397	12.52
5/6/2001		538	302			5.47	5.6	1.8	246	
25/10/01	494				437	6.14	6.54	1.4	193	12.98
STATION: P96-7										
27/09/96			160			7.66	7.39	2.5	662	5.24
13/05/97			301				7.4	4.7	362	
22/09/97							7.56	5.9	552	5.62
15/06/98							6.96		437	8.93
31/10/98			141				7.01		1219	6.86
22/12/98							7.06		1155	7.85
3/7/1999										9.21
31/10/99							6.81	1	1606	6.65
22/10/00							7.02	1.5	720	1.98
6/6/2001		1256					7.3	3.4	1226	
26/10/01	2810				1496	7.23	7.67	1.4	1800	5.44
STATION: P96-8A										
26/09/96		2044	464			7.44	6.31	4.5	2278	3.52
13/05/97			243	0.007			6.96	4.2	135	
23/06/97										3.7
28/10/97							6.67	3.5	2521	3.84
15/06/98							6.47		1702	3.59
19/10/98							6.3		2535	
21/12/98										3.6
3/7/1999							6.46	3	2290	3.13
29/10/99							6.28	2	2993	3.48
31/05/00							5.9	2	1340	3.25
10/10/2000							6.07	4.9	1752	2.42
7/6/2001			144			5.98	6.9	2.3	3391	
25/10/01	6340				3225	7.04	6.31	4.8	3900	3.25
STATION: P96-8B										
26/09/96		2395	702			7.71	6.3	3.4	2576	3.09
13/05/97			78	0.006			6.57	4	2118	
23/06/97										3.7
28/10/97							6.77	2.6	2545	3.83
15/06/98							6.58		2092	3.59
21/12/98										3.51
3/7/1999							6.67	3	2963	3.05
29/10/99							6.18	2	3218	3.37
31/05/00							6.48	4	3714	3.16
10/10/2000							6.68	2	3270	2.33
7/6/2001			341			6.1	6.6	3.7	4468	
25/10/01	6910				3422	6.12	6.35	4.7	4690	3.15

Table E4. Groundwater Quality of the Intermediate Impoundment, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: X21A-96													
1/9/1999	<0.3	<1	<1	1	<0.03	<0.03		334	0.35	1.2	<0.1	0.2	338
27/09/00	0.08	2.5	<0.05	0.8	0.002	0.005		299.8	0.135	1.349	0.37	<0.005	406
6/9/2001	<0.0001	0.06	0.015	<0.5	<0.1	<0.005		419	0.0274	0.114	<0.005	<0.005	869
STATION: X21B-96													
26/09/98	<.003	0.05	<.02		0.09	0.008	<.04	178.3	<.002	<.005	<.005	0.007	9.89
26/09/98	<0.003	0.05	<0.02		0.09	0.008	<0.04	178.3	<0.002	<0.005	<0.005		9.89
13/05/97	<.003	3.08	<.02	0.06	0.371	<.001	<.04	186.1	<.002	<.005	<.005	0.028	18.92
13/05/97	<0.003	3.08	<0.02	0.06	0.371	<0.001	<0.04	186.1	<0.002	<0.005	<0.005	0.028	18.92
7/10/1997	<.003	0.07	0.02	<.05	0.116	0.002	<.04	168.3	<.002	<.005	<.005	0.006	2.13
7/10/1997	<0.003	0.07	0.02	<0.05	0.115	0.002	<0.04	168.3	<0.002	<0.005	<0.005	0.006	2.13
2/6/1998	<.003	0.11	0.02	<.05	0.048	0.003	<.04	178.3	<.002	<.005	<.005	0.02	0.29
2/6/1998	<0.003	0.11	0.02	<0.05	0.048	0.003	<0.04	178.3	<0.002	<0.005	<0.005	0.02	0.29
31/10/98	<.003	<.05	<.005	<.05	0.033	<.001	<.04	139.9	<.001	0.006	<.005	0.005	2.61
31/10/98	<0.003	<0.05	<0.005	<0.05	0.033	<0.001	<0.04	139.9	<0.001	0.006	<0.005	0.005	2.61
3/7/1999	<.003	0.08	<.005	0.41	0.005	<.001	<.04	111.3	<.001	<.005	<.005	0.01	0.15
1/9/1999	<0.01	0.16	<0.05	0.02	0.022	0.002		134	<0.005	0.008	<0.005	0.031	16.7
31/10/99	<.003	<.05	<.005	<.05	0.095	<.001	<.04	128.5	<.001	0.008	<.005	<.002	<.01
31/05/00	<.003	<.05	<.005	<.05	0.094	<.001	<.05	111.9	0.005	<.005	0.006	0.005	<.01
31/05/00	<0.003	<0.05	<0.005	<0.05	0.094	<0.001	<0.05	111.9	0.005	<0.005	0.006	0.005	<0.01
27/09/00	<0.01	0.05	<0.05	0.04	0.016	0.002		112.8	0.005	0.011	0.005	0.005	17.32
10/10/2000	<.003	0.22	<.005	<.05	0.053	0.001	<.05	109.4	<.001	<.005	<.005	0.013	0.14
10/10/2000	<0.003	0.22	<0.005	<0.05	0.053	0.001	<0.05	109.4	<0.001	<0.005	<0.005	0.013	0.14
7/6/2001	<.003	0.17	<.005	0.4	0.133	<.001	<.05	139.7	<.001	0.01	<.005	<.002	42.82
6/9/2001	<0.00004	<0.01	0.003	<0.1	0.02	<0.002		172	<0.0001	0.0419	<0.002	<0.002	243
STATION: X21C-96													
26/09/98	<.003	0.05	<.02		0.383	<.001	<.04	48.7	<.002	<.005	<.005	0.008	0.72
26/09/98	<.003	0.05	<.02		0.112	0.002	<.04	46.7	<.002	<.005	<.005	<.002	0.05
26/09/98	<0.003	0.05	<0.02		0.112	0.002	<0.04	46.7	<0.002	<0.005	<0.005		0.05
13/05/97	<.003	5.45	<.02	0.09	0.751	<.001	<.04	53.4	<.002	<.005	0.016	0.047	16.74
13/05/97	<0.003	5.45	<0.02	0.09	0.751	<0.001	<0.04	53.4	<0.002	<0.005	0.016	0.047	16.74
7/10/1997	<.003	0.32	<.02	<.05	0.157	<.001	<.04	53.8	<.002	<.005	<.005	<.002	0.23
7/10/1997	<0.003	0.32	<0.02	<0.05	0.157	<0.001	<0.04	53.8	<0.002	<0.005	<0.005	<0.002	0.23
2/6/1998	<.003	0.11	<.02	<.05	0.079	0.003	<.04	55.1	<.002	<.005	<.005	0.012	0.26
2/6/1998	<0.003	0.11	<0.02	<0.05	0.079	0.003	<0.04	55.1	<0.002	<0.005	<0.005	0.012	0.26
31/10/98	<.003	0.85	0.009	<.05	0.069	<.001	<.04	61.7	<.001	<.005	<.005	0.01	0.64
31/10/98	<0.003	0.85	0.009	<0.05	0.069	<0.001	<0.04	61.7	<0.001	<0.005	<0.005	0.01	0.64
3/7/1999	<.003	<.05	<.005	0.17	0.037	<.001	<.04	46.5	<.001	<.005	<.005	<.002	0.09
31/10/99	<.003	0.33	<.005	0.06	0.156	0.002	<.04	290.3	<.001	0.015	<.005	0.002	<.01
31/05/00	<.003	<.05	0.012	<.05	0.087	<.001	<.05	52.4	<.001	<.005	<.005	<.002	<.01
31/05/00	<0.003	<0.05	0.012	<0.05	0.087	<0.001	<0.05	52.4	<0.001	<0.005	<0.005	<0.002	<0.01
27/09/00	<0.01	<0.05	<0.05	<0.01	0.15	0.005		53.8	0.005	0.005	0.01	0.005	0.62
10/10/2000	<.003	0.1	<.005	<.05	0.072	<.001	<.05	51.5	<.001	0.012	<.005	0.004	0.1
10/10/2000	<0.003	0.1	<0.005	<0.05	0.072	<0.001	<0.05	51.5	<0.001	0.012	<0.005	0.004	0.1
7/6/2001	<.003	0.12	0.01	0.16	0.295	<.001	<.05	59.8	<.001	<.005	0.006	<.002	0.6
6/9/2001	<0.00002	0.014	0.0217	<0.1	0.18	<0.001		54	<0.00005	<0.0003	<0.001	<0.001	0.5
STATION: P01-06													
10/9/2001	<0.01	0.04	0.013	<0.1	<0.02	<0.005		335	<0.0003	0.2	<0.005	<0.005	676
STATION: P01-05A													
10/9/2001	<0.003	<0.03	<0.003	<0.1	<0.02	<0.005		170	<0.0003	0.003	<0.005	<0.005	0.57
STATION: P01-05B													
10/9/2001	<0.001	<0.01	0.005	<0.1	<0.02	<0.002		175	<0.0001	0.0067	<0.002	<0.002	4.09

Date	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: X21A-96																				
1/9/1999		20		1390	491	<0.3	45	3.4	<3	4.8	2950	<1	2	5.9	<1	0.83		<0.3		595
27/09/00		16.8		1247	155	<0.01	51.4	10.4	9	0.65	2814	1.48	<2.5	7	<0.05	0.381		0.03		787.9
6/9/2001	<0.00005	25		1120	335	<0.005	32	0.42		0.156		0.006	<0.005		<0.003		<0.05	<0.2		367
STATION: X21B-96																				
26/09/98	<.02		<.005	42	10.56	<.002	<1	<.005	0.18	<.02	261	<.03		6.35		0.525	<.005	<.005	<.03	0.13
26/09/98	<0.02		<0.005	42	10.56	<0.002	<1	<0.005	0.18	<0.02	261	<0.03		6.35		0.525		<0.005	<0.03	
13/05/97		2	0.014	46.7	11.96	<.002	86	0.023	<.04	0.05	204	<.03	<.03	8	0.01	0.501	0.13	<.005	<.03	0.26
13/05/97			0.014	46.7	11.96	<0.002	86	0.023	<0.04	0.05	204	<0.03	<0.03	8	0.01	0.501		<0.05	<0.03	0.26
7/10/1997		5	<.005	37.7	9.81	0.005	85	<.005	0.14	<.02	179	<.03	<.03	3.9	<.01	0.43	0.008	<.005	<.03	0.01
7/10/1997		5	<0.005	37.7	9.81	0.005	85	<0.005	0.14	<0.02	179	<0.03	<0.03	3.9	<0.01	0.43		<0.005	<0.03	0.01
2/6/1998		5	0.042	41.2	6.75	0.011	84	0.009	<.04	<.02	195	<.03	<.03	5.9	<.01	0.473	0.014	<.005	<.03	0.01
2/6/1998		5	0.042	41.2	6.75	0.011	84	0.009	<0.04	<0.02	195	<0.03	<0.03	5.9	<0.01	0.473		<0.005	<0.03	0.01
31/10/98		4	<.005	32.5	10.43	<.002	76	0.005	<.04	<.01	147	<.03	<.03	5.8	<.01	0.449	<.005	<.005	<.03	<.01
31/10/98		4	<0.005	32.5	10.43	<0.002	76	0.005	<0.04	<0.01	147	<0.03	<0.03	5.8	<0.01	0.449		<0.005	<0.03	<0.01
3/7/1999		3	0.009	26	8.02	<.002	63	<.005	<.04	<.01	135	<.03	<.03	6.8	<.01	0.31	<.005	<.005	<.03	<.01
1/9/1999		3.4		26.3	9.83	<0.01	61	0.03	<0.1	<0.05	143	<0.05	0.08	7.65	<0.05	0.372		<0.01		0.12
31/10/99		<1	<.005	28.1	10.16	<.002	75	<.005	<.04	<.01	168	<.03	<.005	4.3	<.01	0.402	<.005	<.005	<.03	<.01
31/05/00		4	<.005	24.5	7.52	<.002	64	<.005	<1	<.01	129	<.03	<.005	6.9	<.01	0.363	<.005	<.005	<.03	<.01
31/05/00		4	<0.005	24.5	7.52	<0.002	64	<0.005	<1	<0.01	129	<0.03	<0.005	6.9	<0.01	0.363		<0.005	<0.03	<0.01
27/09/00		3.3		23.6	8.404	<0.01	55.2	0.09	0.1	<0.05	102.6	<0.05	<0.05	7.08	<0.05	0.332		<0.01		0.244
10/10/2000		5	<.005	23.1	5.29	<.002	68	<.005	2	<.01	53	<.03	<.005	5.9	<.01	0.366	0.013	0.013	<.03	0.02
10/10/2000		5	<0.005	23.1	5.29	<0.002	68	<0.005	2	<0.01	53	<0.03	<0.005	5.9	<0.01	0.366		0.013	<0.03	0.02
7/6/2001		4	0.025	32.9	8.54	<.002	72	0.132	<1	<.01	163	<.03	<.005	7.8	<.01	0.427	0.019	<.005	<.03	0.1
6/9/2001	<0.00005	5		123	23.6	<0.002	56	0.014		<0.001		0.001	<0.002		<0.001		<0.01	<0.03		0.828
STATION: X21C-96																				
26/09/98	<.02		<.005	8.7	0.28	<.002	10	<.005	0.09	<.02	7	<.03		4.34		0.271	<.005	<.005	<.03	0.04
26/09/98	<.02		<.005	8.4	0.22	<.002	9	<.005	0.05	<.02	3	<.03		4.01		0.261	<.005	<.005	<.03	<.01
26/09/98	<0.02		<0.005	8.4	0.22	<0.002	9	<0.005	0.05	<0.02	3	<0.03		4.01		0.261		<0.005	<0.003	
13/05/97		<1	<.005	12.9	0.49	0.005	5	0.025	0.15	0.27	10	<.03	<.03	8.7	<.01	0.263	0.168	0.012	<.03	0.25
13/05/97			<0.005	12.9	0.49	0.005	5	0.025	0.15	0.27	10	<0.03	<0.03	8.7	<0.01	0.263		0.012	<0.03	0.25
7/10/1997		2	0.006	9.6	0.29	0.006	5	<.005	<.04	<.02	3	<.03	<.03	3.3	<.01	0.258	0.017	<.005	<.03	<.01
7/10/1997		2	0.006	9.6	0.29	0.006	5	<0.005	<0.04	<0.02	3	<0.03	<0.03	3.3	<0.01	0.258		<0.005	<0.03	<0.01
2/6/1998		2	0.018	10.3	0.6	0.007	2	0.008	0.26	<.02	12	<.03	<.03	4.2	<.01	0.265	0.009	<.005	<.03	0.02
2/6/1998		2	0.018	10.3	0.6	0.007	2	0.008	0.26	<0.02	12	<0.03	<0.03	4.2	<0.01	0.265		<0.005	<0.03	0.02
31/10/98		2	<.005	11.4	1.38	0.013	7	0.008	<.04	<.01	3	0.04	<.03	5.2	<.01	0.332	0.046	<.005	<.03	<.01
31/10/98		2	<0.005	11.4	1.38	0.013	7	0.008	<0.04	<0.01	3	0.04	<0.03	5.2	<0.01	0.332		<0.005	<0.03	<0.01
3/7/1999		<1	<.005	8.2	0.57	<.002	1	<.005	<.04	<.01	3	<.03	<.03	4.1	<.01	0.202	<.005	<.005	<.03	<.01
31/10/99		5	<.005	57.1	17.32	<.002	46	0.029	0.07	<.01	314	<.03	<.005	5.9	<.01	0.95	<.005	<.005	<.03	0.04
31/05/00		2	<.005	8.7	1.42	<.002	3	0.008	<1	<.01	4	<.03	<.005	4.3	<.01	0.29	<.005	<.005	<.03	<.01
31/05/00		2	<0.005	8.7	1.42	<0.002	3	0.008	<1	<0.01	4	<0.03	<0.005	4.3	<0.01	0.29		<0.005	<0.03	<0.01
27/09/00		1.6		8.9	0.38	<0.01	2.9	<0.02	<0.1	<0.05	8.71	<0.05	<0.05	4.16	<0.05	0.3		<0.01		0.14
10/10/2000		3	<.005	9.1	1.1	<.002	6	<.005	2	<.01	18	<.03	<.005	4.3	<.01	0.265	0.007	0.008	<.03	0.03
10/10/2000		3	<0.005	9.1	1.1	<0.002	6	<0.005	2	<0.01	18	<0.03	<0.005	4.3	<0.01	0.265		0.008	<0.03	0.03
7/6/2001		2	0.01	10.4	0.36	0.003	3	<.005	<1	<.01	2	<.03	<.005	3.8	<.01	0.352	<.005	<.005	<.03	0.01
6/9/2001	<0.00005	<2		8.8	0.261	0.004	3	<0.001		0.0023		0.0029	<0.001		<0.0005		<0.01	<0.03		0.006
STATION: P01-06																				
10/9/2001	<0.00005	17		281	104	<0.005	39	0.06		0.005		0.005	<0.005		<0.003		<0.01	0.06		1.02
STATION: P01-05A																				
10/9/2001	<0.00005	14		45.2	0.494	<0.005	173	0.008		0.045		0.038	<0.005		<0.003		<0.01	<0.03		0.145
STATION: P01-05B																				
10/9/2001	<0.00005	4		35.3	19.7	<0.002	47	0.005		0.032		0.005	<0.002		<0.001		<0.01	<0.03		0.074

Table E5. Groundwater Quality of the Second Impoundment, Faro Mine Site - Dissolved Metals

Date	AG-D mg/L	AL-D mg/L	AS-D mg/L	B-D mg/L	BA-D mg/L	BE-D mg/L	BI-D mg/L	CA-D mg/L	CD-D mg/L	CO-D mg/L	CR-D mg/L	CU-D mg/L	FE-D mg/L	HG-D mg/L	K-D mg/L	LA-D mg/L
STATION: P01-09A																
11/9/2001	<0.0004	<0.1	<0.01	<2	<0.4	<0.02		391	<0.001	<0.006	<0.02	<0.02	11000	<0.00005	76	
STATION: P01-09B																
11/9/2001	<0.002	0.05	<0.001	<0.1	0.02	<0.002		165	0.0095	0.308	<0.002	<0.002	55.6	<0.00005	4	
STATION: P01-09C																
11/9/2001	<0.001	0.11	<0.001	<0.1	0.06	<0.002		162	0.0081	0.117	<0.002	0.008	43.4	<0.00005	4	
STATION: P01-09D																
11/9/2001	<0.001	0.31	<0.001	<0.1	0.04	<0.002		166	0.0135	0.383	<0.002	0.021	252	<0.00005	6	
STATION: P01-07A																
11/9/2001	<0.001	0.05	0.009	<0.1	<0.02	<0.002		4.5	<0.0001	0.0034	<0.002	0.002	0.04	<0.00005	8	
STATION: P01-07B																
11/9/2001	<0.003	0.11	0.008	<0.1	0.02	<0.005		3.5	<0.0003	0.01	<0.005	<0.005	0.18	<0.00005	7	
STATION: P01-07C																
11/9/2001	<0.001	<0.01	0.013	<0.1	0.06	<0.002		113	<0.0001	0.0051	<0.002	<0.002	12.1	<0.00005	3	
STATION: P01-07D																
10/9/2001	<0.001	<0.01	0.002	<0.1	0.07	<0.002		156	0.0033	0.0174	<0.002	<0.002	2.26	<0.00005	4	
STATION: P01-07E																
10/9/2001	<0.001	<0.01	<0.001	<0.1	0.02	<0.002		164	0.0043	0.0659	<0.002	<0.002	0.36	<0.00005	4	
STATION: BH83-4B																
1/9/1999	<0.3	<1	<1	2	<0.03	<0.03		363	<0.1	<0.1	<0.1	0.7	2050		34	
27/09/00	0.02	<2.5	<0.05	7.7	0.004	0.009		385.4	0.812	<0.25	<0.25	<0.005	3597.19		46.7	
STATION: BH83-4C																
1/9/1999	<0.5	<3	<3	1	<0.05	<0.05		290	<0.3	<0.3	<0.3	<0.3	6970		30	
27/09/00	0.03	<2.5	0.14	16.9	0.002	0.012		317	2.017	<0.005	<0.25	<0.25	492.4		23.9	
STATION: BH88-2																
8/10/1993	<0.1	1.7	<0.5	0.6	0.15	<0.01		4	<0.05	<0.05	0.15	<0.05	1.99		5	
2/8/1994	<0.01	0.38	<0.05	0.03	0.354	<0.001		1.8	<0.005	0.019	<0.005	0.016	1.35		6.9	
1/9/1999	<0.01	<0.05	<0.05	0.04	0.087	0.002		145	<0.005	<0.005	0.012	0.028	40.4		5	
STATION: BH88-2																
8/10/1993	<0.01	<0.05	<0.05	0.06	1.41	0.001		31.4	0.005	0.006	0.009	<0.005	33		8.8	
2/8/1994	<0.01	<0.05	<0.05	0.05	2.39	<0.001		78.3	0.011	0.009	<0.005	<0.005	98.5		10.1	
STATION: BH88-2																
8/10/1993	<0.1	<0.5	<0.5	7.6	0.01	0.02		376	0.89	<0.05	0.28	<0.05	4300		37	
2/8/1994	<0.1	<0.5	<0.5	1.6	<0.01	<0.01		375	0.39	<0.05	<0.05	<0.05	5370		36	
STATION: BH88-2																
7/10/1993	<0.1	<0.5	<0.5	11.6	0.01	0.02		414	1.36	<0.05	0.32	<0.05	6530		85	
3/8/1994	<1	<5	<5	7	0.2	<1		420	0.8	0.8	<0.5	<0.5	6800		90	
1/9/1999	<0.5	<3	<3	2	<0.05	<0.05		310	<0.3	<0.3	<0.3	<0.3	7620		69	
27/09/00	0.01	<2.5	0.22	24.4	0.012	0.010		331.6	3.3	0.053	<0.25	<0.25	12200		43.4	

Date	MG-D mg/L	MN-D mg/L	MO-D mg/L	NA-D mg/L	NI-D mg/L	P-D mg/L	PB-D mg/L	S-D mg/L	SB-D mg/L	SE-D mg/L	SI-D mg/L	SN-D mg/L	SR-D mg/L	TI-D mg/L	V-D mg/L	W-D mg/L	ZN-D mg/L
STATION: P01-09A																	
11/9/2001	571	35.1	<0.02	155	<0.02		0.3		<0.02	<0.02		<0.01		<0.2	<0.6		658
STATION: P01-09B																	
11/9/2001	34.7	53.5	<0.002	19	0.369		0.018		0.004	<0.002		<0.001		<0.01	0.03		12.4
STATION: P01-09C																	
11/9/2001	31.9	33.3	<0.002	17	0.18		0.002		0.001	<0.002		<0.001		<0.01	0.03		13.4
STATION: P01-09D																	
11/9/2001	49.9	50.3	<0.002	16	0.328		0.005		0.002	<0.002		<0.001		<0.01	<0.05		43.7
STATION: P01-07A																	
11/9/2001	1.1	0.0277	0.147	267	<0.002		0.011		0.054	<0.002		<0.001		<0.01	<0.03		<0.005
STATION: P01-07B																	
11/9/2001	1.2	0.006	0.142	363	<0.005		0.286		0.097	<0.005		<0.003		<0.01	<0.03		<0.005
STATION: P01-07C																	
11/9/2001	26.5	20.7	0.002	40	0.005		0.007		0.005	<0.002		<0.001		<0.01	<0.03		<0.005
STATION: P01-07D																	
10/9/2001	39.3	24.8	<0.002	30	0.029		<0.001		0.004	<0.002		<0.001		<0.01	0.03		0.011
STATION: P01-07E																	
10/9/2001	36.5	34.2	<0.002	30	0.082		<0.001		0.001	<0.002		<0.001		<0.01	<0.04		0.017
STATION: BH83-4B																	
1/9/1999	432	31	<0.02	180	<0.5	<0.3	<1	2090	<1	<1	4.7	<1	0.78		<0.3		0.5
27/09/00	549	52.12	<0.01	203.9	<1	<5	0.24	3263.4	<2.5	<2.5	4	<0.05	0.952		1.2		0.98
STATION: BH83-4C																	
1/9/1999	200	127	<0.5	170	<1	<5	<3	4470	<3	<3	13	<3	0.1		0.8		264
27/09/00	350	140.87	<0.5	50.8	1.4	<5	1.24	5328.9	<2.5	<2.5	15.5	<0.05	0.226		3.16		246.91
STATION: BH88-2																	
8/10/1993		0.04	0.3	238	<0.2	1	<0.5		<0.5	<0.5	3.8	<0.5	0.01		<0.1		0.83
2/8/1994	0.2	0.15	0.14	263	<0.02	1	0.25		0.05	<0.05	2.6	<0.05	0.018		<0.01		0.16
1/9/1999	23.8	13.2	0.01	77	0.02	<0.1	<0.05	111	<0.05	0.09	12.7	<0.05	0.449		<0.01		0.066
STATION: BH88-2																	
8/10/1993	4.2	1.01	<0.01	243	<0.02	<0.1	<0.05		<0.05	<0.05	7.42	<0.05	0.155		<0.01		0.045
2/8/1994	6.6	2.55	0.02	182	<0.02	0.3	<0.05		<0.05	<0.05	11.9	0.06	0.356		<0.01		
STATION: BH88-2																	
8/10/1993	512	117	<0.1	64	0.8	1	1.4		<0.5	<0.5	2.5	<0.5	0.18		0.9		16.9
2/8/1994	542	119	0.4	110	0.5	<1	4.9		<0.5	<0.5	3.3	<0.5	0.22		<0.1		30.2
STATION: BH88-2																	
7/10/1993	1130	150	<0.1	283	0.6	2	0.8		1.8	<0.5	2.8	<0.5	1.61		1.4		960
3/8/1994	1130	182	<1	270	<2	<10	<5		8	<5	13	<5	1.9		<1		2130
1/9/1999	490	80.7	<0.5	340	<1	<5	<3	5400	6.8	<3		<3	1.2		0.8		899
27/09/00	366	78.52	<0.5	100.4	<1	<5	1	8290	<2.5	<2.5		0.1	0.899		5.28		1690

Table E6. Groundwater Quality of the Intermediate Impoundment, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: X21A-96										
7/10/1997										4.5
2/6/1998										3.25
31/10/98										4.58
3/7/1999										4.13
1/9/1999	16900	8950	26		9900				20000	
31/10/99										4.52
31/05/00										4.64
27/06/00										4.25
27/09/00	12720	8102	18		8632				13325	
10/10/2000										3.65
6/9/2001	5.51			0.7	3204	5.51	6.1	3.9	8920	4.32
STATION: X21B-96										
26/09/96		593	202			7.15	6.68	3.5	767	4.49
26/09/96		593	202		1299				767	
13/05/97			215			7.3			605	5.4
13/05/97			215		1626				605	
7/10/1997							7.1	5.4	537	4.43
7/10/1997					1406				537	
2/6/1998							7.21		584	4.51
2/6/1998									584	
31/10/98			197				7.01		440	4.63
31/10/98			197						440	
3/7/1999							6.98	4	405	4.11
1/9/1999	900	495	176		1130				440	
31/10/99							6.25	1	504	4.56
31/05/00							7.69	5	386	4.62
31/05/00									386	
27/09/00	650	426	179		1053				390	
10/10/2000							7.05	5.9	158	3.71
10/10/2000									158	
7/6/2001			188			6.67	7.1	4.6	489	
6/9/2001	4.81			0.007	2106	4.81	7.3	2.8	149	4.35
STATION: X21C-96										
26/09/96		152	167			7.85			28	
26/09/96		146	178			7.84	7.58	3.3	12	4.54
26/09/96		146	178		363				12	
13/05/97			203			8			31	5.81
13/05/97			203		384				31	
7/10/1997							7.67	6.4	9	4.49
7/10/1997					354				9	
2/6/1998							7.66		37	4.5
2/6/1998									37	
31/10/98			187				7.75		9	4.71
31/10/98			187						9	
3/7/1999							6.98	4	10	4.17
31/10/99							7.17		942	4.66
31/05/00							8.06	4	11	4.68
31/05/00									11	
27/09/00	160	173	180		370				27	
10/10/2000							7.69	3.8	53	4.85
10/10/2000									53	
7/6/2001			197			7.91	7.6	4.1	6	
6/9/2001	8.2			<0.005	3316	8.2	8.3	2.3	9	4.42
STATION: P01-06										
10/9/2001	4220			0.072	3169	8.02	7.1	3.3	2610	4.75
STATION: P01-05A										
10/9/2001	1630			1.51	1948	7.32	8	3.5	1210	2.9
STATION: P01-05B										
10/9/2001	1240			0.234	1475	7.22	7.8	3.1	780	3.24

Table E7. Groundwater Quality of the Intermediate Dam, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: X24A-96																																	
26/09/96	<.003	0.13	<.02		0.102	0.012	<.04	256.3	<.002	<.005	<.005	0.015	0.04	<.02		<.005	50.6	14.4	<.002	50	0.032	0.09	<.02	281	<.03		8.37		0.854	<.005	<.005	<.03	0.02
26/09/96	<0.003	0.13	<0.02		0.102	0.012	<0.04	256.3	<0.002	<0.005	<0.005	0.015	0.04	<0.02		<0.005	50.6	14.4	<0.002	50	0.032	0.09	<0.02	281	<0.03		8.37		0.854		<0.005	<0.03	<0.02
6/1/1997	<.003	93.33	0.19	4.18	1.541	0.056	0.05	306.5	0.005	0.072	0.159	0.531	215.3	<.02		0.209	90.1	27.06	0.029	26	0.566	3.54	0.15	225	0.04		104.53		1.163	3.634	0.273	<.03	0.87
13/05/97	<.003	27	<.02	<.05	0.582	0.002	<.04	329.3	<.002	0.032	0.043	0.138	64.73		3	0.099	73	15.19	<.002	40	0.134	0.57	0.12	257	<.03	<.03	35.6	<.01	0.94	0.001	0.045	<.03	0.2
13/05/97	<0.003	27	<0.02	<0.05	0.582	0.002	<0.04	329.3	<0.002	0.032	0.043	0.138	64.73			0.099	73	15.19	<0.002	40	0.134	0.57	0.12	257	<0.03	<0.03	35.6	<0.01	0.94		0.045	<0.03	0.2
7/10/1997	<.003	0.39	<.02	<.05	0.141	0.004	<.04	278.7	<.002	<.005	<.005	0.013	0.2		7	<.005	53.5	17.44	<.002	42	0.069	0.09	<.02	222	<.03	<.03	6.3	<.01	0.744	0.014	<.005	<.03	0.01
7/10/1997	<0.003	0.39	<0.02	<0.05	0.141	0.004	<0.04	276.7	<0.002	<0.005	<0.005	0.013	0.2		7	<0.005	53.5	17.44	<0.002	42	0.069	0.09	<0.02	222	<0.03	<0.03	6.3	<0.01	0.744		<0.005	<0.03	0.01
1/6/1998	<.003	0.13	<.02	<.05	0.105	0.003	<.04	220.5	0.003	0.014	<.005	0.023	0.27		6	0.052	45.5	9.09	<.002	39	0.032	0.05	<.02	244	0.03	<.03	6.9	<.01	0.615	0.017	<.005	<.03	<.01
1/6/1998	<0.003	0.13	<0.02	<0.05	0.105	0.003	<0.04	220.5	0.003	0.014	<0.005	0.023	0.27		6	0.052	45.5	9.09	<0.002	39	0.032	0.05	<0.02	244	0.03	<0.03	6.9	<0.01	0.615		<0.005	<0.03	<0.01
31/10/98	<.003	0.91	<.005	<.05	0.066	0.001	<.04	273.5	<.001	0.016	<.005	0.017	0.97		6	<.005	58	17.59	<.002	47	0.038	2.6	<.01	245	<.03	<.03	9.3	<.01	0.874	0.054	<.005	<.03	<.01
31/10/98	<0.003	0.91	<0.005	<0.05	0.066	0.001	<0.04	273.5	<0.001	0.016	<0.005	0.017	0.97		6	<0.005	58	17.59	<0.002	47	0.038	2.6	<0.01	245	<0.03	<0.03	9.3	<0.01	0.874		<0.005	<0.03	<0.01
19/06/99	<.003	0.24	<.005	<.05	0.13	<.001	<.04	237.6	<.001	<.005	<.005	0.009	0.19		7	0.029	60.7	15.63	<.002	41	0.008	0.45	<.01	239	<.03	<.03	6.3	<.01	0.683	<.005	<.005	<.03	0.28
29/10/99	<.003	0.12	<.005	0.05	0.113	<.001	<.04	189.4	<.001	0.006	<.005	<.002	0.06		5	<.005	37.5	10.37	<.002	32	<.005	<.04	<.01	193	<.03	<.005	5.3	<.01	0.589	<.005	<.005	<.03	<.01
27/06/00	<.003	0.06	<.005	<.05	0.058	0.002	<.05	198.1	0.005	0.005	<.005	0.023	0.02		7	<.005	38.3	8.12	<.002	30	0.025	2	<.01	172	0.08	<.005	5.7	<.01	0.542	0.019	<.005	<.03	2.5
27/06/00	<0.003	0.06	<0.005	<0.05	0.058	0.002	<0.05	198.1	0.005	0.005	<0.005	0.023	0.02		7	<0.005	38.3	8.12	<0.002	30	0.025	2	<0.01	172	0.08	<0.005	5.7	<0.01	0.542		<0.005	<0.03	2.5
10/10/2000	<.003	0.32	<.005	<.05	0.097	0.002	<.05	207	0.006	0.009	<.005	0.026	0.18		6	<.005	39.5	9.99	<.002	35	0.018	<1	<.01	94	<.03	<.005	6.8	<.01	0.657	0.023	<.005	<.03	0.01
10/10/2000	<0.003	0.32	<0.005	<0.05	0.097	0.002	<0.05	207	0.006	0.009	<0.005	0.026	0.18		6	<0.005	39.5	9.99	<0.002	35	0.018	<1	<0.01	94	<0.03	<0.005	6.8	<0.01	0.657		<0.005	<0.03	0.01
6/6/2001	<.003	0.06	<.005	0.05	0.121	<.001	<.05	173.3	<.001	0.012	0.008	<.002	0.1		6	0.032	35.4	8.02	<.002	29	<.005	<1	0.01	149	0.05	<.005	6.2	<.01	0.519	0.017	<.005	<.03	<.01
6/9/2001	<0.00004	<0.01	<0.001	<0.1	0.03	<0.002		209	0.0005	0.0147	<0.002	<0.002	<0.03	<0.00005	5		39.3	15.5	<0.002	29	0.024		<0.001		0.003	<0.002		<0.001		<0.01	<0.03		0.005
STATION: X24B-96																																	
27/09/96	<.003	5.8	<.02		0.12	0.014	<.04	256.8	<.002	0.01	<.005	0.034	9.19	<.02		<.005	50.5	20.8	<.002	60	0.041	0.06	<.02	217	<.03		16.65		0.773	0.259	<.005	<.03	0.04
27/09/96	<0.003	5.8	<0.02		0.12	0.014	<0.04	256.8	<0.002	0.01	<0.005	0.034	9.19	<0.02		<0.005	50.5	20.9	<0.002	60	0.041	0.06	<0.02	217	<0.03		16.65		0.773		<0.005	<0.03	0.04
11/7/1997	<.003	0.18	<.02	0.3	0.047	<.001	<.04	296.8	<.002	<.005	<.005	0.023	<.01		6	<.005	64	10.29	<.002	46	0.062	<.04	<.02	275	<.03	<.03	7.8	<.01	0.852	0.019	<.005	0.17	0.02
11/7/1997	<0.003	0.18	<0.02	0.3	0.047	<0.001	<0.04	296.6	<0.002	<0.005	<0.005	0.023	<0.01		6	<0.005	64	10.29	<0.002	46	0.062	<0.04	<0.02	275	<0.03	<0.03	7.8	<0.01	0.852		<0.005	0.17	0.02
6/6/2001	<.003	0.69	<.005	<.05	0.148	<.001	<.05	150.8	<.001	0.008	0.008	0.006	1.65		5	0.026	27.1	3.66	<.002	29	<.005	<1	0.03	102	0.04	<.005	8	<.01	0.424	0.037	<.005	<.03	0.03
STATION: X24C-96																																	
26/09/96	<.003	0.26	<.02		0.066	0.012	<.04	311.9	<.002	0.011	<.005	0.013	0.06	<.02		<.005	59.6	12.98	<.002	<1	0.051	0.12	<.02	350	<.03		8.49		1.072	<.005	<.005	<.03	0.02
26/09/96	<0.003	0.26	<0.02		0.066	0.012	<0.04	311.9	<0.002	0.011	<0.005	0.013	0.06	<0.02		<0.005	59.6	12.98	<0.002	<1	0.051	0.12	<0.02	350	<0.03		8.49		1.072		<0.005	<0.03	0.02
6/1/1997	<.003	3.58	<.02	1.44	0.164	0.007	<.04	306.8	0.002	0.042	<.005	0.026	6.59	<.02		0.008	57.5	15.02	<.002	16	<.005	0.23	<.02	328	<.03		10.39		1.028	0.069	<.005	<.03	0.07
13/05/97	<.003	1.51	<.02	<.05	0.076	<.001	<.04	331.2	<.002	<.005	<.005	0.017	4.2		3	<.005	64.8	15.95	<.002	45	0.065	<.04	<.02	273	<.03	<.03	7.4	<.01	1.001	0.059	<.005	<.03	0.04
13/05/97	<0.003	1.51	<0.02	<0.05	0.076	<0.001	<0.04	331.2	<0.002	<0.005	<0.005	0.017	4.2			<0.005	64.8	15.95	<0.002	45	0.065	<0.04	<0.02	273	<0.03	<0.03	7.4	<0.01	1.001		<0.005	<0.03	0.04
7/10/1997	<.003	0.51	<.02	<.05	0.143	0.004	<.04	350.3	<.002	<.005	<.005	0.015	0.24		7	<.005	66.5	14.51	<.002	50	0.049	0.39	<.02	294	<.03	<.03	6.3	<.01	1.004	0.013	<.005	<.03	0.01
7/10/1997	<0.003	0.51	<0.02	<0.05	0.143	0.004	<0.04	350.3	<0.002	<0.005	<0.005	0.015	0.24		7	<0.005	66.5	14.51	<0.002	50	0.049	0.39	<0.02	294	<0.03	<0.03	6.3	<0.01	1.004		<0.005	<0.03	0.01
1/6/1998	<.003	0.19	<.02	<.05	0.08	0.004	<.04	337	<.002	0.027	<.005	0.026	0.28		7	0.031	68.4	10.04	<.002	53	0.054	0.36	<.02	259	0.05	<.03	7.6	<.01	1.007	0.022	<.005	<.03	<.01
1/6/1998	<0.003	0.19	<0.02	<0.05	0.08	0.004	<0.04	337	<0.002	0.027	<0.005	0.026	0.28		7	0.031	68.4	10.04	<0.002	53	0.054	0.36	<0.02	259	0.05	<0.03	7.6	<0.01	1.007		<0.005	<0.03	<0.01
31/10/98	<.003	0.25	<.005	<.05	0.08	0.002	<.04	368.8	<.001	0.031	0.019	0.017	0.43		7	<.005	75.7	19.38	<.002	54	0.08	7.17	<.01	327	<.03	<.03	8.3	<.01	1.249	0.023	<.005	<.03	<.01
31/10/98	<0.003	0.25	<0.005	<0.05	0.08	0.002	<0.04	368.8	<0.01	0.031	0.019	0.017	0.43		7	<0.005	75.7	19.38	<0.002	54	0.08	7.17	<0.01	327	<0.03	<0.03	8.3	<0.01	1.249		<0.005	<0.03	<0.01
19/06/99	<.003	0.16	<.005	<.05	0.13	0.001	<.04	257.4	<.001	0.005	<.005	0.025	0.15		8	<.005	55.2	13.26	0.003	53	0.027	<.04	<.01	228	<.03	<.03	7.6	<.01	0.809	0.005	0.007	<.03	0.17
29/10/99	<.003	<.05	<.005	<.05	<.002	<.001	<.04	0.1	<.001	<.005	<.005	<.002	<.01		<1	<.005	<.1	<.01	<.002	<1	<.005	<.04	<.01	<1	<.03	<.005	<.1	<.01	<.002	<.005	<.005	<.03	<.01
25/07/00	<.003	<.05	<.005	<.05	0.093	0.003	<.05	244.4	0.01	0.034	<.005	0.029	0.24		7	0.137	49.5	7.79	<.002	42	0.049	1	<.01	263	<.03	<.005	6.6	<.01	0.809	0.025	0.021	<.03	0.41
25/07/00	<0.003	<0.05	<0.005	<0.05	0.093	0.003	<0.05	244.4	0.01	0.034	<0.005	0.029	0.24		7	0.137	49.5	7.79	<0.002	42	0.049	1	<0.01	263	<0.03	<0.005	6.6	<0.01	0.809		0.021	<0.03	0.41
6/6/2001	<.003	<.05	<.005	<.05	0.128	<.001	<.05	277.6	<.001	0.028	0.009	0.002	0.07		6	0.035	56.7	16.14	<.002	33	0.02	<1	0.02	255	<.03	<.005	10.3	<.01	0.778	0.034	<.005	<.03	0.02
6/9/2001	<0.0001	<0.03	<0.003	<0.1	<0.02	<0.005		285	0.0005	0.029	<0.005	<0.005	0.04	<0.00005	5		54.5	24.9	<0.005	33	0.052		<0.003		0.004	<0.005		<0.003		<0.01	<0.03		0.009
STATION: X24D-96																																	
26/09/96	<.003	0.24	<.02		0.092	0.01	<.04	352.9	<.002	<.005	<.005	0.007	<.01	<.02		<.005	62.8	0.92	<.002	<1	<.005	0.22	<.02	371	<.03		7.85		1.12	<.005	<.005	<.03	0.01
26/09/96	<0.003	0.24	<0.02		0.092	0.01	<0.04	352.9	<0.002	<0.005	<0.005	0.007	<0.01	<0.02		<0.005	62.8	0.92	<0.002	<1	<0.005	0.22	<0.02	371	<0.03		7.85		1.12		<0.005	<0.03	0.01
6/1/1997	<.003	3.28	<.02	1.42	0.18	0.003	<.04	347	0.002	0.026	<.005	0.031	6.45	<.02		0.005	61.3	1.31	<.002	17	<.005	0.18	<.02	365	<.03		9.59		1.092	0.044	<.005	<.03	0.06
7/10/1997	<.003	0.57	<.02	<.05	0.143	<.001	<.04	384.1	<.002	<.005	<.005	0.014	0.11		7	<.005	69	3.27	0.005	53	0.031	0.35	<.02	308	<.03	<.03	6.3	<.01	1.044	0.014	<.005	<.03	0.02
7/10/1997	<0.003	0.57	<0.02	<0.05	0.143	<0.001	<0.04	384.1	<0.002	<0.005	<0.005	0.014	0.11		7	<0.005	69	3.27	0.005	53	0.031	0.35	<0.02	308	<0.03	<0.03	6.3	<0.01	1.044		<0.005	<0.03	0.02
1/6/1998	<.003	0.2	0.02	<.05	0.079	0.004	<.04	355.4	<.002	0.007	<.005	0.029	0.29		7	0.044	66.6	8.58	<.002	54	0.095	<.04	<.02	238	<.03	<.03	7.5	<.01	1.004	0.021	<.005	<.03	0.03
1/6/1998	<0.003	0.2	0.02	<0.05	0.079	0.004	<0.04	355.4	<0.002	0.007	<0.005	0.029	0.29		7	0.044	66.6	8.58	<0.002	54	0.095	<0.04	<0.02	238	<0.03	<0.03	7.5	<0.01	1.004		<0.005	<0.03	0.03
31/10/98	0.004	0.3	0.019	<.05	0.062	0.002	<.04	330.1	0.007	0.023	<.005	0.021	0.34		6	<.005	62.5	13.49	<.002	43	0.092	<.04	<.01	332	<.03	<.03	6.6	<.01	0.994	0.023	<.005	<.03	0.02
31/10/98	0.004	0.3	0.019	<0.05	0.062	0.002	<0.04	330.1	0.007	0.023	<0.005	0.021	0.34		6	<0.005	62.5	13.49	<0.002	43	0.092	<0.04	<0.01	332	<0.03	<0.03	6.6	<0.01	0.994		<0.005	<0.03	0.02
19/06/99	<.003	0.23	<.005	<.05	0.156	0.002	<.04	406.1	<.001	<.005	<.005	0.041	0.44		11	0.016	83.5	17.33	0.018	64	0.109	<.04	<.01	361	0.05	<.03	9.4	<.01	1.128	0.014	0.005	<.03	0.17
29/10/99	<.003	0.39	<.005	0.07	0.092	0.002	<.04	326	<.001	0.017	<.005	<.002	<.01		5	<.005	61.9	16.77	<.002	50	0.062	0.08	<.01	350	<.03	<.005	8	<.01	1.021	<.005	<.005	<.03	0.05
27/06/00	<.003	0.16	<.005	<.05	0.076	0.003	<.05	340.1	0.002	<.005	0.029	0.032	0.1		8	<.005	63.2	15.77	<.002	48	0.086	2	<.01	307	0.03	<.005	7.2	<.01	0.93	0.031	<.005	<.03	2.84
27/06/00	<0.003	0.16	<0.005	<0.05	0.076	0.003	<0.05	340.1	0.002	<0.005	0.029	0.032	0.1		8	<0.005	63.2	15.77	<0.002	48	0.086	2	<0.01	307	0.03	<0.005	7.2	<0.01	0.93		<0.005	<0.03	2.84
27/09/00	<0.01	<0.05	<0.05	<0.01	0.023	0.006		354.4	0.005	0.007	0.011	0.005	0.016		5.6		62.2	20.57	<0.01	40.7	0.29	0.3	<0.05	262.9	<0.05	<0.05	8.17	<0.05	0.944		<0.01		0.062
10/10/2000	<.003	0.39	<.005	0.05	0.109	0.003	<.05	327.7	0.009	<.005	<.005	0.029	0.22		8	<.005	61.6	16.21	<.002	53	0.063	3	0.01	149	<.03	<.005	8.2	<.01	0.986	0.034	<.005	<.03	<.01
10/10/2000	<0.003	0.39	<0.005	0.05	0.109	0.003	<0.05	327.7	0.009	<0.005	<0.005	0.029	0.22		8	<0.005	61.6	16.21	<0.002	53	0.063	3	0.01	149	<0.03	<0.005	8.2	<0.01	0.986		<0.005	<0.03	<0.01
6/6/2001	<.003	<.05	<.005	<.05	0.126	<.001	<.05	316.5	0.001	0.013	0.01	<.002	0.02		7	0.037	64.6	15.13	<.002	47	0.007	<1	0.01	342	0.05	<.005	10.7	<.01	0.89	0.031	<.005	<.03	0.03
6/9/2001	<0.0001	<0.03	<0.003	<0.1	0.02	<0.005		339	0.0023	0.014	<0.005	<0.005	<0.03	<0.00005	6		61.4	24.9	<0.005	43	0.098		<0.003		<0.003	<0.005		<0.003		<0.01	<0.03		0.028
STATION: X25A-96																																	
26/09/96	<.003	0.09	<.02		0.108	0.009	<.04	100.7	<.002	0.02	<.005	0.009	0.05	<.02		<.005	24.2	5.68	<.002	25	<.005	0.13	<.02	91	<.03		7.1		0.285	<.005	<.005	<.03	0.03
26/09/96	<0.003	0.09	<0.02		0.108	0.009	<0.04	100.7	<0.002	0.02	<0.005	0.009	0.05	<0.02		<0.005	24.2	5.68	<0.002	25	<0.005	0.13	<0.02	91	<0.03		7.1		0.285		<0.005	<0.03	0.03
6/1/1997	<.003	2.23	<.02	0.53	0.119	0.001	<.04	89.1	<.002	0.008	<.005	0.03	8.07	<.02		<.005	21.6	5.5	<.002	8	<.005	0.26	<.02	82	<.03		7.33		0.251	0.078	<.005	<.03	0.06
13/05/97	<.003	2.2	<.02	0.13	0.108	<.001	<.04	113.4	<.002	0.037	<.005	0.024	8.74		<1	<.005	27.8	6.52	<.002	23	<.005	<.04	<.02	71	<.03	<.03	7.2	<.01	0.28	0.091	<.005	<.03	0.03
13/05/97	<0.003	2.2	<0.02	0.13	0.108	<0.001	<0.04	113.4	<0.002	0.037	<0.005	0.024	8.74			<0.005	27.8	6.52	<0.002	23	<0.005	<0.04	<0.02	71	<0.03	<0.03	7.2	<0.01	0.28		<0.005	<0.03	0.003
7/10/1997	<.003	0.06	<.02	<.05	0.163	<.001	<.04	119	<.002	<.005	<.005	0.008	0.04		5	0.015	28.3	4.95	<.002	26	<.005	<.04	<.02	76	<.03	<.03	5	<.01	0.28	0.006	0.007	<.03	<.01
7/10/1997	<0.003	0.06	<0.02	<0.05	0.163	<0.001	<0.04	119	<0.002	<0.005	<0.005	0.008	0.04		5	0.015	28.3	4.95	<0.002	26	<0.005	<0.04	<0.02	76	<0.03	<0.03	5	<0.01	0.28		0.007	<0.03	<0.01
1/6/1998	<.003	0.06	<.02	<.05	0.132	0.003	<.04	116.4	<.002	<.005	<.005	0.011	0.21		4	0.039	31.9	3.18	<.002	26	0.01	<.04	<.02	70	<.03	<.03	6.3	<.01	0.36	0.01	<.005	<.03	<.01
1/6/1998	<0.003	0.06	<0.02	<0.05	0.132	<0.003	<0.04	116.4	<0.002	<0.005	<0.005	0.011	0.21		4	0.039	31.9	3.18	<0.002	26	<0.01	<0.04	<0.02	70	<0.03	<0.03	6.3	<0.01	0.36		0.005	<0.03	<0.01
31/10/98	<.003	0.19	0.012	<.05	0.066	<.001	<.04	130.3	<.001	0.006	<.005	0.003	0.14		4	<.005	35.2	6.46	0.01	28	0.015	<.04	<.01	95	0.04	<.03	6.6	<.01	0.38	0.008	<.005	<.03	0.01
31/10/98	<0.003	0.19	0.012	<0.05	0.066	<0.001	<0.04	130.3	<0.001	0.006	<0.005	0.003	0.14		4	<0.005	35.2	6.46	<0.01	28	0.015	<0.04	<0.01	95	0.04	<0.03	6.6	<0.01	0.38		<0.005	<0.03	0.01
19/06/99	<.003	0.1	<.005	<.05	0.051	<.001	<.04	129	<.001	<.005	<.005	0.019	0.06		5	0.012	35	6.02	0.005	27	<.005	<.04	<.01	87	<.03	<.03	6.3	<.01	0.337	<.005	<.005	<.03	0.07
29/10/99	<.003	<.05	<.005	<.05	0.108	<.001	<.04	117.4	<.001	<.005	<.005	<.002	<.01		2	<.005	29.2	5.86	<.002	25	<.005	<.04	<.01	98	<.03	<.005	5	<.01	0.321	<.005	<.005	<.03	<.01
27/06/00	<.003	<.05	<.005	<.05	0.035	0.002	<.05	130.2	0.006	<.005	<.005	0.02	<.01		5	<.005	32.3	5.61	<.002	25	0.008	<1	<.01	92	<.03	<.005	5.7	<.01	0.317	0.013	<.005	<.03	0.57
27/06/00	<0.003	<0.05	<0.005	<0.05	0.035	0.002	<0.05	130.2	0.006	<0.005	<0.005	0.02	<0.01		5	<0.005	32.3	5.61	<0.002	25	0.008	<1	<0.01	92	<0.03	<0.005	5.7	<0.01	0.317		<0.005	<0.03	0.57
10/10/2000	<.003	0.21	<.005	<.05	0.055	0.001	<.05	116.5	0.002	<.005	<.005	0.016	0.16		4	<.005	29.5	5.07	<.002	28	<.005	6	<.01	69	<.03	<.005	6.5	<.01	0.323	0.016	0.022	<.03	<.01
10/10/2000	<0.003	0.21	<0.005	<0.05	0.055	0.001	<0.05	116.5	0.002	<0.005	<0.005	0.016	0.16		4	<0.005	29.5	5.07	<0.002	28	<0.005	6	<0.01	69	<0.03	<0.005	6.5	<0.01	0.323		0.022	<0.03	<0.01
6/6/2001	<.003	0.1	<.005	<.05	0.255	<.001	<.05	130.2	0.002	0.006	0.014	<.002	0.02		4	0.023	33.3	4.63	<.002	27	<.005	<1	0.02	96	0.04	<.005	7.3	<.01	0.381	0.011	<.005	<.03	0.19

Table E7. Groundwater Quality of the Intermediate Dam, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/07/01	<.003	<.05	<.005	0.13	0.09	<.001	<.05	134.6	0.003	0.008	0.013	<.002	<.01		4	<.005
STATION: X25B-96																
26/09/96	<.003	0.05	<.02		0.058	0.006	<.04	151.5	<.002	<.005	<.005	0.007	<.01	<.02		<.005
26/09/96	<0.003	<0.05	<0.02		0.058	0.006	<0.04	151.5	<0.002	<0.005	<0.005	0.007	<0.01	<0.02		<0.005
6/1/1997	<.003	1.44	<.02	0.7	0.106	<.001	<.04	134.4	<.002	0.009	<.005	0.031	7.04	<.02		<.005
13/05/97	<.003	0.71	<.02	0.08	0.049	<.001	<.04	165.2	<.002	<.005	0.014	0.025	3.69		<1	<.005
13/05/97	<0.003	0.71	<0.02	0.08	0.049	<0.001	<0.04	165.2	<0.002	<0.005	0.014	0.025	3.69			<0.005
7/10/1997	<.003	0.06	<.02	<.05	0.151	<.001	<.04	192.2	<.002	<.005	<.005	0.008	0.22		4	<.005
7/10/1997	<0.003	0.39	<0.02	<0.05	0.141	0.004	<0.04	276.7	<0.002	<0.005	<0.005	0.013	0.2		7	<0.005
1/6/1998	<.003	0.09	<.02	<.05	0.111	0.003	<.04	160.5	<.002	0.006	<.005	0.016	0.24		4	0.04
1/6/1998	<0.003	0.09	<0.02	<0.05	0.111	0.003	<0.04	160.5	<0.002	0.006	<0.005	0.016	0.24		4	0.04
31/10/98	<.003	<.05	<.005	<.05	0.05	0.001	<.04	170.9	<.001	<.005	0.014	0.004	0.15		4	0.009
31/10/98	<0.003	<0.05	<0.005	<0.05		0.001	<0.04	179.9	<0.001	<0.005	0.014	0.004	0.15		4	0.009
19/06/99	<.003	0.1	<.005	<.05	0.065	0.001	<.04	177.3	0.002	<.005	<.005	0.019	0.21		6	0.03
29/10/99	<.003	<.05	<.005	<.05	0.072	<.001	<.04	141.2	<.001	<.005	<.005	<.002	<.01		2	<.005
27/06/00	<.003	<.05	<.005	<.05	0.038	0.002	<.05	155.1	<.001	<.005	0.029	0.023	<.01		6	<.005
27/06/00	<0.003	<0.05	<0.005	<0.05	0.038	0.002	<0.05	155.1	<0.001	<0.005	0.029	0.023	<0.01		6	<0.005
27/06/00	<0.01	<0.05	<0.05	<0.01	0.025	0.003		152.1	0.005	0.005	0.06	0.005	0.517		2.8	
10/10/2000	<.003	0.2	<.005	<.05	0.059	0.001	<.05	138.7	<.001	<.005	<.005	0.018	0.16		4	<.005
10/10/2000	<0.003	0.2	<0.005	<0.05	0.059	0.001	<0.05	138.7	<0.001	<0.005	<0.005	0.018	0.16		4	<0.005
6/6/2001	<.003	0.07	<.005	<.05	0.14	<.001	<.05	152.9	<.001	<.005	0.007	<.002	0.55		4	0.03
15/07/01	<.003	<.05	<.005	0.12	0.007	<.001	<.05	150.1	<.001	<.005	<.005	<.002	<.01		4	0.009
5/9/2001	<0.00004	<0.01	<0.001	<0.1	0.03	<0.002		157	<0.0001	<0.0006	<0.002	<0.002	0.5	<0.00005	3	
STATION: P01-03																
10/9/2001	<0.006	<0.03	<0.003	<0.1	0.02	<0.005		297	<0.0003	0.029	<0.005	<0.005	0.33	<0.00005	7	
STATION: P01-04A																
10/9/2001	<0.001	<0.01	0.001	<0.1	0.03	<0.002		181	<0.0001	<0.0006	<0.002	<0.002	3.35	<0.00005	4	
STATION: P01-04B																
10/9/2001	<0.001	<0.01	0.009	<0.1	0.49	<0.002		117	<0.0001	0.001	<0.002	<0.002	0.86	<0.00005	3	

Date	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/07/01	34.1	7.12	<.002	27	0.007	<1	<.01	98	<.03	<.005	7.9	<.01	0.381	<.005	<.005	<.03	0.01
STATION: X25B-96																	
26/09/96	28.4	0.11	<.002	<1	<.005	0.18	<.02	154	<.03		5.82		0.4	<.005	<.005	<.03	0.01
26/09/96	28.4	0.11	<0.002	<1	<0.005	0.18	<0.02	154	<0.03		5.82		0.4		<0.005	<0.03	0.01
6/1/1997	25.1	0.26	<.002	7	<.005	0.16	<.02	126	<.03		5.03		0.351	<.005	<.005	<.03	0.08
13/05/97	31.2	0.3	<.002	58	<.005	<.04	<.02	129	<.03	<.03	4.3	<.01	0.378	0.035	<.005	<.03	<.01
13/05/97	31.2	0.3	<0.002	58	<0.005	<0.04	<0.02	129	<0.03	<0.03	4.3	<0.01	0.378		<0.005	<0.03	<0.01
7/10/1997	34	0.44	<.002	65	<.005	0.12	<.02	149	<.03	<.03	3.6	0.02	0.42	<.005	<.005	<.03	<.01
7/10/1997	53.5	17.44	<0.002	42	0.069	0.09	<0.02	222	<0.03	<0.03	8.3	<0.01	0.744		<0.005	<0.03	0.01
1/6/1998	32.8	0.64	<.002	64	<.005	0.08	<.02	124	<.03	<.03	5.3	<.01	0.388	0.014	<.005	<.03	<.01
1/6/1998	32.8	0.64	<0.002	64	0.005	0.08	<0.02	124	<0.03	<0.03	5.3	<0.01	0.388		<0.005	<0.03	<0.01
31/10/98	35.8	1.2	<.002	68	0.012	0.87	<.01	143	<.03	<.03	4.5	<.01	0.485	0.007	<.005	<.03	0.01
31/10/98	35.8	1.2	<0.002	68	0.012	0.87	<0.01	143	<0.03	<0.03	4.5	<0.01	0.485		<0.005	<0.03	0.01
19/06/99	38	1.38	<.002	71	<.005	<.04	<.01	148	<.03	<.03	5	<.01	0.439	<.005	<.005	<.03	0.03
29/10/99	27.3	0.11	<.002	57	<.005	<.04	<.01	138	<.03	<.005	3.8	<.01	0.398	<.005	<.005	<.03	<.01
27/06/00	28.7	1.77	<.002	57	<.005	6	<.01	118	0.07	<.005	4.5	<.01	0.361	0.016	<.005	<.03	0.47
27/06/00	28.7	1.77	<0.002	57	<0.005	6	<0.01	118	0.07	<0.005	4.5	<0.01	0.381		<0.005	<0.03	0.47
27/06/00	26.9	0.169	<0.01	49	<0.02	<0.1	<0.05	98.83	<0.05	<0.05	5.25	<0.05	0.374		<0.01		0.037
10/10/2000	25.7	1.95	<.002	58	<.005	3	<.01	59	<.03	<.005	5.5	<.01	0.38	0.019	0.02	<.03	<.01
10/10/2000	25.7	1.95	<0.002	58	<0.005	3	<0.01	59	<0.03	<0.005	5.5	<0.01	0.38		0.02	<0.03	<0.01
6/6/2001	28.3	0.42	<.002	54	<.005	<1	0.02	115	<.03	<.005	6.5	<.01	0.405	0.005	<.005	<.03	<.01
15/07/01	29.5	0.13	<.002	60	<.005	<1	<.01	127	<.03	<.005	7.2	0.05	0.421	<.005	<.005	<.03	0.03
5/9/2001	26.8	0.195	<0.002	53	<0.002		<0.001		0.001	<0.002		<0.001		<0.01	<0.03		<0.005
STATION: P01-03																	
10/9/2001	61.3	22.1	<0.005	39	0.049		<0.003		<0.003	<0.005		<0.003		<0.01	0.03		0.009
STATION: P01-04A																	
10/9/2001	29.8	0.484	<0.002	44	<0.002		<0.001		0.001	<0.002		<0.001		<0.01	<0.03		<0.005
STATION: P01-04B																	
10/9/2001	45.5	0.232	0.009	69	0.006		<0.001		0.004	<0.002		<0.001		<0.01	<0.03		<0.005

Table E8. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Dissolved Metals

STATION: X16A

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
3/6/1982								94				0.06					27.2	8		48			0.11										0.39
16/11/82												0.01						1.78		12			0.01										0.65
1/7/1991												0.009	0.036					0.047		2.4			0.004										0.026
1/9/1991												<0.001	0.106					0.029		2			<0.004										0.05
19/07/94		<0.02	<0.04	<0.008	0.114	<0.001	<0.02	61.9	<0.002	<0.003	<0.002	0.003	0.03		1.4		13.1	0.019	<0.004	2.4	<0.008	<0.04	<0.02	17.7	<0.015	<0.03	3.8	<0.02	0.162				0.011
25/10/94		<0.02	<0.04	<0.008	0.09	<0.001	<0.02	49	<0.002	<0.003	<0.002	0.002	0.061		1.3		10.7	0.027	0.005	2.47	<0.008	<0.04	<0.02	11	<0.015	<0.03	3.29	<0.02	0.135				0.006
1/8/1995												<0.002	0.17										<0.02										<0.01
30/05/96	<.003	0.25	<.02		0.096		<.04	41.3	<.002	<.005	<.005	0.005	0.57	<.02		0.008	9.8	0.04	<.002	2	<.005	<.04	<.02	11	<.03		0.75		0.129	<.005	<.005	<.03	0.01
30/05/96	<0.003	0.25	<0.02		0.096	<0.001	<0.04	41.3	<0.002	<0.005	<0.005	0.005	0.57	<0.02		0.008	9.8	0.04	<0.002	2	<0.005	<0.04	<0.02	11	<0.03		0.75		0.129		<0.005	<0.03	0.01
26/09/96	<.003	0.05	<.02		0.078	<.001	<.04	40.8	<.002	<.005	<.005	0.003	0.38	<.02		<.005	9.2	0.01	<.002	6	<.005	<.04	<.02	8	<.03		3.69		0.136	<.005	<.005	<.03	0.01
25/09/96	<0.003	0.05	<0.02		0.078	<0.001	<0.04	40.8	<0.002	<0.005	<0.005	0.003	0.38	<0.02		<0.005	9.2	0.01	<0.002	6	<0.005	<0.04	<0.02	8	<0.03		3.69		0.136		<0.005	<0.03	0.01
11/7/1997	<.003	<.05	<.02	0.38	0.029	<.001	<.04	48.8	<.002	<.005	<.005	0.002	<.01		1	<.005	11.8	<.01	<.002	4	<.005	0.12	<.02	10	<.03	<.03	3.8	<.01	0.158	0.006	<.005	0.34	<.01
11/7/1997	<0.003	<0.05	<0.02	0.38	0.029	<0.001	<0.04	48.8	<0.002	<0.005	<0.005	<0.002	<0.01		1	<0.005	11.8	<0.01	<0.002	4	<0.005	0.12	<0.02	10	<0.03	<0.03	3.8	<0.01	0.158		<0.005	0.34	<0.01
7/10/1997	<.003	0.08	<.02	<.05	0.108	<.001	<.04	47.1	<.002	<.005	<.005	0.003	0.3		2	<.005	10.8	0.1	<.002	4	<.005	<.04	<.02	7	<.03	<.03	3.1	<.01	0.132	0.006	<.005	<.03	<.01
7/10/1997	<0.003	0.08	<0.02	<0.05	0.108	<0.001	<0.04	47.1	<0.002	<0.005	<0.005	0.003	0.3		2	<0.005	10.8	0.1	<0.002	4	<0.005	<0.04	<0.02	7	<0.03	<0.03	3.1	<0.1	0.132		<0.005	<0.03	<0.01
1/6/1998	<.003	<.05	<.02	<.05	0.05	0.002	<.04	40.2	<.002	<.005	0.013	0.006	0.26		<1	0.026	10.4	0.1	0.01	2	0.009	0.19	<.02	8	<.03	<.03	4.1	<.01	0.111	0.006	<.005	<.03	0.01
1/6/1998	<0.003	<0.05	<0.02	<0.05	0.05	0.002	<0.04	40.2	<0.002	<0.005	0.013	0.006	0.26		<1	0.026	10.4	0.1	0.01	2	0.009	0.19	<0.02	8	<0.03	<0.03	4.1	<0.01	0.111		<0.005	<0.03	0.01
31/10/98	<.003	0.1	<.005	<.05	0.032	<.001	<.04	47.9	<.001	<.005	<.005	<.002	0.27		<1	<.005	12.4	0.03	0.007	3	<.005	1.37	<.01	8	<.03	<.03	3.4	<.01	0.155	0.022	<.005	<.03	<.01
31/10/98	<0.003	0.1	<0.005	<0.05	0.032	<0.001	<0.04	47.9	<0.001	<0.005	<0.005	<0.002	0.27		<1	<0.005	12.4	0.03	0.007	3	<0.005	1.37	<0.01	8	<0.03	<0.03	3.4	<0.01	0.155		<0.005	<0.03	<0.01
29/10/99	<.003	<.05	<.005	<.05	0.143	<.001	<.04	31.4	<.001	<.005	<.005	<.002	<.01		<1	<.005	7.1	<.01	<.002	2	<.005	<.04	<.01	5	<.03	<.005	1.9	<.01	0.101	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	0.007	<.05	0.031	<.001	<.05	39.8	0.001	<.005	<.005	<.002	<.01		<1	<.005	9.8	0.3	<.002	3	<.005	<1	<.01	11	<.03	<.005	4	<.01	0.142	<.005	<.005	<.03	0.09
31/05/00	<0.003	<0.05	0.007	<0.05	0.031	<0.001	<0.05	39.8	0.001	<0.005	<0.005	<0.002	<0.01		<1	<0.005	9.6	0.3	<0.002	3	<0.005	<0.1	<0.01	11	<0.03	<0.005	4	<0.01	0.142		<0.005	<0.03	0.09
9/10/2000	<.003	0.08	<.005	<.05	0.042	<.001	<.05	38.1	<.001	<.005	<.005	0.004	0.06		2	<.005	10	0.33	<.002	4	<.005	3	<.01	20	<.03	<.005	3.7	<.01	0.15		0.013	<.03	0.04
10/10/2000	<0.003	0.08	<0.005	<0.05	0.042	<0.001	<0.05	38.1	<0.001	<0.005	<0.005	0.004	0.06		2	<0.005	10	0.33	<0.002	4	<0.005	3	<0.01	20	<0.03	<0.005	3.7	<0.01	0.15	0.006	0.013	<0.03	0.04
5/6/2001	<.003	0.09	<.005	<.05	0.212	<.001	<.05	42.7	<.001	<.005	<.005	<.002	0.04		1	0.009	10.3	0.15	<.002	2	<.005	<1	<.01	9	<.03	<.005	1.5	<.01	0.132	<.005	<.005	<.03	0.02
5/9/2001	<0.00004	0.02	<0.001	<0.1	0.16	<0.002		70.5	<0.0001	<0.0006	<0.002	<0.002	<0.03	<0.00005	<2		21.3	0.0007	0.002	2	<0.002		<0.001		0.007	<0.002		<0.001		<0.01	<0.03		0.006

STATION: X16B

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
1/8/1982								100				0.01					2.1	0.06		21			0.16										0.05
16/11/82												0.01						0.1		7			0.02										0.15
1/7/1991												0.005	0.034					0.026		2.7			<0.004										0.046
1/9/1991												<0.001	0.386					0.136		4.6			0.005										0.01
19/07/94		<0.02	<0.04	<0.008	0.117	<0.001	<0.02	60.7	<0.002	<0.003	<0.002	0.003	0.03		1		14.9	<0.002	<0.004	2.21	<0.008	<0.04	<0.02	8.1		<0.03	3.74	<0.02	0.17				<0.002
25/10/94		<0.02	<0.04	<0.008	0.112	<0.001	<0.02	57.8	<0.002	0.003	<0.002	0.001	0.098		1.2		14.3	0.013	<0.004	2.16	<0.008	<0.04	<0.02	7.45	<0.015	<0.03	3.79	<0.02	0.164				<0.002
1/8/1995												<0.002	0.27										<0.02										0.02
30/05/96	<.003	0.28	<.02		0.113	0.001	<.04	45.5	<.002	<.005	<.005	<.002	0.06	<.02		<.005	12.3	<.01	<.002	2	<.005	<.04	<.02	10	<.03		0.87		0.156	<.005	<.005	<.03	<.01
30/05/96	<0.003	0.28	<0.02		0.113	0.001	<0.04	45.5	<0.002	<0.005	<0.005	<0.002	0.06	<0.02		<0.005	12.3	<0.01	<0.002	2	<0.005	<0.04	<0.02	10	<0.03		0.87		156		<0.005	<0.03	<0.01
27/09/96	<.003	0.05	<.02		0.138	0.002	<.04	43.6	<.002	<.005	<.005	<.002	0.07	<.02		<.005	12	0.02	<.002	6	<.005	0.05	<.02	8	<.03		4.27		0.155	<.005	<.005	<.03	0.02
27/09/96	<0.003	0.05	<0.02		0.138	0.002	<0.04	43.6	<0.002	<0.005	<0.005	<0.002	0.07	<0.02		<0.005	12	0.02	<0.002	6	<0.005	0.05	<0.02	8	<0.03		4.27		0.155		<0.005	<0.03	<0.01
13/05/97	<.003	<.05	<.02	0.08	0.091	<.001	<.04	44.1	<.002	<.005	<.005	<.002	0.21		<1	<.005	12.3	<.01	<.002	1	<.005	<.04	<.02	8	<.03	<.03	2.4	<.01	0.137	<.005	<.005	<.03	<.01
13/05/97	<0.003	<0.05	<0.02	0.08	0.091	<0.001	<0.04	44.1	<0.002	<0.005	<0.005	<0.002	0.21			<0.005	12.3	<0.01	<0.002	1	<0.005	<0.04	<0.02	8	<0.03	<0.03	2.4	<0.01	0.137		<0.005	<0.03	<0.01
7/10/1997	<.003	<.05	<.02	<.05	0.187	<.001	<.04	54.1	<.002	0.031	<.005	0.006	<.01		4	<.005	14.3	0.02	<.002	4	<.005	<.04	<.02	7	<.03	<.03	2.7	<.01	0.161	<.005	<.005	<.03	<.01
7/10/1997	<0.003	<0.05	<0.02	<0.05	0.187	<0.001	<0.04	54.1	<0.002	0.031	<0.005	0.006	<0.01		4	<0.005	14.3	0.02	<0.002	4	<0.005	<0.04	<0.02	7	<0.03	<0.03	2.7	<0.01	0.161		<0.001	<0.03	<0.01
1/6/1998	<.003	0.05	<.02	<.05	0.057	0.003	<.04	48.6	<.002	0.007	<.005	0.009	0.23		1	0.021	13.5	0.04	0.006	1	<.005	<.04	<.02	8	<.03	<.03	3.8	<.01	0.141		0.008	<.03	<.01
1/6/1998	<0.003	0.05	<0.02	<0.05	0.057	0.003	<0.04	48.6	<0.002	0.007	<0.005	0.009	0.23		1	0.021	13.5	0.04	0.006	1	<0.005	<0.04	<0.02	8	<0.03	<0.03	3.8	<0.01	0.141	0.006	0.008	<0.03	<0.01
31/10/98	<.003	<.05	<.005	<.05	0.043	<.001	<.04	61.9	<.001	<.005	<.005	<.002	<.01		<1	<.005	17.6	<.01	0.006	3	<.005	<.04	<.01	14	<.03	<.03	3.2	<.01	0.219	<.005	<.005	<.03	<.01
31/10/98	<0.003	<0.05	<0.005	<0.05	0.043	<0.001	<0.04	61.9	<0.001	<0.005	<0.005	<0.002	<0.01		<1	<0.005	17.6	<0.01	0.006	3	<0.005	<0.04	<0.01	14	<0.03	<0.03	3.2	<0.01	0.219		<0.005	<0.03	<0.01
19/06/99	<.003	0.2	<.005	<.05	0.075	<.001	<.04	60	<.001	<.005	<.005	0.006	0.03		2	0.015	16.2	<.01	0.002	4	<.005	<.04	<.01	8	<.03	<.03	4.3	<.01	0.208	<.005	<.005	<.03	<.01
29/10/99	<.003	<.05	<.005	<.05	0.171	<.001	<.04	52.8	<.001	<.005	<.005	<.002	<.01		<1	<.005	14.2	<.01	<.002	3	<.005	<.04	<.01	8	<.03	<.005	3.2	<.01	0.179	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	0.025	<.05	0.044	<.001	<.05	48.5	0.003	<.005	0.016	<.002	<.01		<1	<.005	13.1	0.24	<.002	2	0.007	<1	<.01	9	<.03	<.005	4.4	<.01	0.172	<.005	<.005	<.03	0.03
31/05/00	<0.003	<0.05	0.025	0.05	0.044	<0.001	<0.05	48.5	0.003	<0.005	0.016	<0.02	<0.01		<1	<0.005	13.1	0.24	<0.002	2	0.007	<0.1	<0.01	9	<0.03	<0.005	4.4	<0.01	0.172		<0.005	<0.003	0.03
27/09/00	<0.01	<0.05	<0.05	<0.01	0.118	<0.001		50.8	<0.005	0.006	0.015	<0.005	0.05		0.9		13.9	0.012	<0.01	1.8	<0.02	<0.1	<0.05	6.74	<0.05	<0.05	3.94	<0.05	0.164		<0.01		0.028
9/10/2000	<.003	0.1	<.005	<.05	0.05	<.001	<.05	49.2	<.001	<.005	<.005	0.005	0.07		2	<.005	13.8	0.24	<.002	5	<.005	2	<.01	29	<.03	<.005	4.5	<.01	0.193		0.03	<.03	0.05
10/10/2000	<0.003	0.1	<0.005	<0.05	0.05	<0.001	<0.05	49.2	<0.001	<0.005	<0.005	0.005	0.07		2	<0.005	13.6	0.24	<0.002	5	<0.005	2	<0.01	29	<0.03	<0.005	4.5	<0.01	0.193	0.007	0.03	<0.03	0.05
5/6/2001	<.003	0.07	<.005	<.05	0.272	<.001	<.05	61.3	<.001	<.005	<.005	<.002	0.01		2	0.013	16.7	0.12	<.002	2	<.005	<1	<.01	9	<.03	<.005	2.4	<.01	0.206	<.005	<.005	<.03	<.01
5/9/2001	<0.00002	0.011	<0.0005	<0.1	0.11	<0.001		57.6	0.0001	<0.0003	<0.001	<0.001	<0.03	<0.00005	<2		13.2	0.0046	0.002	2	<0.001		<0.0005		0.0067	0.001		<0.0005		<0.01	<0.03		0.018

STATION: X17A

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
8/9/1982												0.01						0.01					0.04										0.01
16/11/82												0.01						0.02					0.01										0.07
1/7/1991												0.004	0.024					0.013		2.6			<0.004										0.003
1/9/1991												<0.001	0.026					0.003		2.7			<0.004										0.006
19/07/94		<0.02	<0.04	<0.008	0.172	<0.001	<0.02	159	<0.002	<0.003	<0.002	0.004	1.22		5.6		32.8	2.07	<0.004	43.3	<0.008	<0.004	<0.02	123	<0.015	<0.03	5.21	<0.02	0.662				<0.003
25/10/94		<0.02	<0.04	<0.08	<0.101	<0.001	<0.02	52.8	<0.002	0.004	<0.002	0.001	0.019		1.2		14.1	0.003	<0.004	2.47	<0.008	<0.04	<0.02	7.96	<0.015	<0.03	3.85	<0.02	0.137				<0.002
1/8/1995												0.004	0.4										<0.02										0.01
30/05/96	<.003	0.29	<.02		0.125	0.002	<.04	51.6	<.002	<.005	<.005	0.004	0.01	<.02		<.005	14.9	0.04	<.002	2	<.005	<.04	<.02	12	<.03		0.91		0.161	<.005	<.005	<.03	<.01
30/05/96	<.003	0.29	<.02		0.113	0.002	<.04	51.1	<.002	<.005	<.005	0.003	<.01	<.02		<.005	14.9	<.01	<.002	2	<.005	<.04	<.02	10	<.03		0.8		0.159	<.005	<.005	<.03	<.01
30/05/96	<0.003	0.29	<0.02		0.113	0.002	<0.04	51.1	<0.002	<0.005	<0.005	0.003	<0.01	<0.02		<0.005	14.9	<0.01	<0.002	2	<0.005	<0.04	<0.02	10	<0.03		0.9		0.159		<0.005	<0.03	<0.01
26/09/96	<.003	0.05	<.02		0.11	<.001	<.04	46.3	<.002	<.005	<.005	0.004	4	<.02		<.005	13.5	<.01	<.002	6	<.005	0.08	<.02	8	<.03		3.64		0.154	<.005	<.005	<.03	<.01
26/09/96	<0.003	0.05	<0.02		0.11	<0.001	<0.04	46.3	<0.002	<0.005	<0.005	0.004	4	<0.02		<0.005	13.5	<0.01	<0.002	6	<0.005	0.08	<0.02	8	<0.03		3.64		0.154		<0.005	<0.03	<0.01
16/05/97	<.003	3.25	0.06	0.09	0.2	0.001	<.04	50.4	0.004	0.017	0.015	0.014	6.62		3	0.084	15.8	0.39	0.002	2	0.011	0.14	<.02	9	<.03	<.03	7	<.01	0.164	0.187	<.005	<.03	0.05
16/05/97	<0.003	3.25	0.06	0.09	0.2	0.001	<0.04	50.4	0.004	0.017	0.015	0.014	6.62			0.084	15.8	0.39	0.002	2	0.011	0.14	<0.02	9	<0.03	<0.03	7	<0.01	0.164		<0.005	<0.03	0.05
7/10/1997	<.003	0.07	0.03	<.05	0.194	<.001	<.04	57.3	<.002	0.019	<.005	0.006	0.06		4	<.005	16.6	0.11	<.002	5	<.005	<.04	<.02	8	<.03	<.03	3.2	<.01	0.157	0.007	<.005	<.03	<.01
7/10/1997	<0.003	0.07	0.03	<0.05	0.194	<0.001	<0.04	57.3	<0.002	0.019	<0.005	0.006	0.06		4	<0.005	16.6	0.11	<0.002	5	<0.005	<0.04	<0.02	8	<0.03	<0.03	3.2	<0.01	0.157		<0.005	<0.03	<0.01
1/6/1998	<.003	0.08	<.02	<.05	0.097	0.003	<.04	58.7	<.002	0.01	<.005	0.008	0.25		<1	0.015	17.2	0.07	0.007	2	0.005	<.04	<.02	11	<.03	<.03	4.1	<.01	0.155	0.009	<.005	<.03	<.01
1/6/1998	<0.003	0.08	<0.02	<0.05	0.097	0.003	<0.04	56.7	<0.002	0.01	<0.005	0.008	0.25		<1	0.015	17.2	0.07	0.007	2	0.005	<0.04	<0.02	11	<0.03	<0.03	4.1	<0.01	0.155		<0.005	<0.03	<0.01
31/10/98	<.003	0.25	<.005	<.05	0.045	<.001	<.04	56.4	<.001	<.005	<.005	<.002	0.06		<1	<.005	17.6	0.11	<.002	3	<.005	<.04	<.01	10	<.03	<.03	3.7	<.01	0.179	0.019	<.005	<.03	<.01
31/10/98	<0.003	0.25	<0.005	<0.05	0.045	<0.001	<0.04	56.4	<0.001	<0.005	<0.005	<0.002	0.06		<1	<0.005	17.6	0.11	<0.002	3	<0.005	<0.04	<0.01	10	<0.03	<0.03	3.7	<0.01	0.179		<0.005	<0.03	<0.01
19/06/99	<.003	0.23	<.005	<.05	0.078	<.001	<.04	57.1	<.001	<.005	<.005	0.004	0.3		2	<.005	19	0.11	0.004	4	<.005	<.04	<.01	11	<.03	<.03	4.3	<.01	0.187	<.005	<.005	<.03	0.45
29/10/99	<.003	<.05	<.005	0.05	0.229	<.001	<.04	57.6	<.001	<.005	<.005	<.002	<.01		<1	<.005	16.7	0.35	<.002	5	<.005	<.04	<.01	15	<.03	<.005	3.5	<.01	0.184	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	0.052	<.05	0.057	<.001	<.05	59.7	0.005	0.005	0.018	<.002	<.01		1	<.005	18.1	0.18	<.002	3	<.005	<1	<.01	14	<.03	<.005	4.6	<.01	0.195	<.005	<.005	<.03	0.02
31/05/00	<0.003	<0.05	0.052	<0.05	0.057	<0.001	<0.05	59.7	0.005	0.005	0.018	<0.002	<0.01		1	<0.005	18.1	0.18	<0.002	3	<0.005	<1	<0.01	14	<0.03	<0.005	4.6	<0.01	0.195		<0.005	<0.03	0.02
10/10/2000	<.003	0.09	<.005	<.05	0.058	<.001	<.05	53.8	<.001	<.005	<.005	0.002	0.1		1	<.005	16.2	0.18	0.013	6	<.005	<1	<.01	36	<.03	<.005	4.7	<.01	0.191	0.008	0.035	<.03	0.04
10/10/2000	<0.003	0.09	<0.005	<0.05	0.058	<0.001	<0.05	53.8	<0.001	<0.005	<0.005	0.002	0.1		1	<0.005	16.2	0.16	0.013	6	<0.005	<1	<0.01	36	<0.03	<0.005	4.7	<0.01	0.191		0.035	<0.03	0.04
6/6/2001	<.003	0.07	<.005	0.07	0.271	<.001	<.05	62	<.001	<.005	<.005	0.003	0.05		2	0.013	18.7	0.32	<.002	5	<.005	<1	0.03	11	0.07	<.005	4.1	<.01	0.193	<.005	<.005	<.03	0.01

STATION: X17B

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
8/9/1982												0						0					0										0
16/11/82												0.01						0.05					0.04										0.1
1/7/1991												0.008	0.011					0.033		2.8			<0.004										0.012
1/9/1991												0.002	<0.005					<0.001		3.1			<0.004										0.008
19/07/94		<0.02	<0.04	<0.008	0.149	<0.001	<0.02	159	<0.002	<0.003	<0.002	0.003	0.383		5.5		35	1.04	<0.004	40.8	<0.008	<0.04	<0.02	125	<0.015	<0.03	5.19	<0.02	0.58				<0.002

Table E8. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Dissolved Metals

	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/10/94		0.03	<0.04	<0.008	0.162	<0.001	<0.02	58.8	<0.002	<0.003	<0.002	0.002	0.599		1.9		15.4	0.16	<0.004	5.3	<0.008	<0.04	<0.02	8.61	<0.015	<0.03	4.64	<0.02	0.258				0.007
1/8/1995												<0.002	0.76										<0.02										0.02
30/05/96	<.003	0.58	<.02		0.352	0.003	<.04	101.2	<.002	<.005	<.005	0.005	0.83	<.02		<.005	28.8	0.38	<.002	12	<.005	<.04	<.02	48	<.03		1.48		0.514	<.005	<.005	<.03	<.01
30/05/96	<.003	0.58	<.02		0.355	0.009	<.04	96.4	<.002	<.005	<.005	0.006	0.29	<.02		<.005	27.2	0.38	<.002	13	<.005	<.04	<.02	27	<.03		1.38		0.518	<.005	<.005	<.03	<.01
30/05/96	<0.003	0.58	<0.02		0.355	0.009	<0.04	96.4	<0.002	<0.005	<0.005	0.006	0.29	<0.02		<0.005	27.2	0.36	<0.002	13	<0.005	<0.04	<0.02	27	<0.03		1.38		0.518		<0.005	<0.03	<0.01
26/09/96	<.003	0.05	<.02		0.155	0.003	<.04	47.2	<.002	<.005	<.005	0.005	0.43	<.02		<.005	13.5	0.15	<.002	10	0.005	0.08	<.02	21	<.03		4.5		0.244	<.005	<.005	<.03	<.01
26/09/96	<0.003	0.05	<0.02		0.155	0.003	<0.04	47.2	<0.002	<0.005	<0.005	0.005	0.43	<0.02		<0.005	13.5	0.15	<0.002	10	0.005	0.08	<0.02	21	<0.03		4.5		0.244		<0.005	<0.003	<0.01
16/05/97	<.003	0.89	<.02	0.06	0.148	<.001	<.04	40.9	<.002	<.005	<.005	0.009	2.99		<1	<.005	12	0.17	<.002	3	<.005	<.04	<.02	7	<.03	<.03	4.1	<.01	0.198	0.032	<.005	<.03	0.02
16/05/97	<0.03	0.89	<0.02	0.06	0.148	<0.001	<0.04	40.9	<0.002	<0.005	<0.005	0.009	2.99			<0.005	12	0.17	<0.002	3	<0.005	<0.04	<0.02	7	<0.03	<0.03	4.1	<0.01	0.198		<0.005	<0.03	0.02
1/6/1998	<.003	<.05	<.02	<.05	0.102	0.002	<.04	36.8	<.002	0.011	<.005	0.005	0.31		1	0.045	11.1	0.06	0.002	2	<.005	0.19	<.02	9	<.03	<.03	3.3	<.01	0.115	0.005	<.005	<.03	<.01
1/6/1998	<0.003	<0.05	<0.02	<0.05	0.102	0.002	<0.04	36.8	<0.002	0.011	<0.005	0.005	0.31		1	0.045	11.1	0.06	0.002	2	<0.005	0.19	<0.02	9	<0.03	<0.03	3.3	<0.01	0.115		<0.005	<0.03	<0.01
31/10/98	<.003	<.05	<.005	<.05	0.044	<.001	<.04	40.5	<.001	<.005	0.007	<.002	0.38		<1	<.005	12.5	0.07	<.002	3	0.009	1.67	<.01	7	<.03	<.03	2.2	<.01	0.153	<.005	<.005	<.03	<.01
31/10/98	<0.003	<0.05	<0.005	<0.05	0.044	<0.001	<0.04	40.5	<0.001	<0.005	0.007	<0.002	0.38		<1	<0.005	12.5	0.07	<0.002	3	0.009	1.67	<0.01	7	<0.03	<0.03	2.2	<0.01	0.153		<0.005	<0.03	<0.01
19/06/99	<.003	<.05	<.005	<.05	0.059	<.001	<.04	42.3	<.001	<.005	<.005	0.004	0.4		2	0.017	13.8	0.08	0.003	5	<.005	<.04	<.01	6	<.03	<.03	3.2	<.01	0.164	<.005	<.005	<.03	0.21
29/10/99	<.003	<.05	<.005	<.05	0.168	<.001	<.04	43.7	<.001	<.005	<.005	<.002	0.07		<1	<.005	12.4	0.11	<.002	4	<.005	<.04	<.01	8	<.03	<.005	2.9	<.01	0.173	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.056	<.001	<.05	39.6	0.001	<.005	<.005	<.002	0.04		1	<.005	11.3	0.13	<.002	4	<.005	<1	<.01	8	<.03	<.005	4	<.01	0.183	<.005	<.005	<.03	<.01
31/05/00	<0.003	<0.05	<0.005	<0.05	0.056	<0.001	<0.05	39.6	0.001	<0.005	<0.005	<0.002	0.04		1	<0.005	11.3	0.13	<0.002	4	<0.005	<1	<0.01	8	<0.03	<0.005	4	<0.01	0.183		<0.005	<0.03	<0.01
10/10/2000	0.003	0.12	<.005	<.05	0.046	<.001	<.05	42.7	<.001	<.005	<.005	0.003	0.07		2	<.005	12.5	0.11	<.002	6	<.005	2	<.01	26	<.03	<.005	4.5	<.01	0.158	0.006	<.005	<.03	0.05
10/10/2000	0.003	0.12	<0.005	<0.05	0.046	<0.001	<0.05	42.7	<0.001	<0.005	<0.005	0.003	0.07		2	<0.005	12.5	0.11	<0.002	6	<0.005	2	<0.01	26	<0.03	<0.005	4.5	<0.01	0.158		<0.005	<0.03	0.05
6/6/2001	<.003	0.08	<.005	0.06	0.359	<.001	<.05	84.1	<.001	<.005	<.005	<.002	0.7		3	0.015	23.7	0.44	<.002	14	<.005	<1	0.01	17	<.03	<.005	5.7	<.01	0.416	0.006	<.005	<.03	<.01
STATION: X18A																																	
1/6/1982								164				0.02					65.1	0.02		36			0.11										0.03
8/9/1982												0.01						0.14		12			0.08										0.03
16/11/82												0.01						1.38		18			0.01										0.15
1/7/1991												<0.001	0.327					0.113		76.8			<0.004										0.023
1/9/1991												<0.001	0.105					0.161		54			<0.004										0.008
20/07/94		<0.02	<0.04	<0.008	0.161	<0.001	<0.02	58.1	<0.002	<0.003	<0.002	<0.001	0.505		2		15.3	0.151	<0.004	7.03	<0.008	<0.04	<0.02	8.35	<0.015	<0.03	4.3	<0.02	0.272				<0.002
25/10/94		<0.02	<0.04	<0.008	0.208	<0.001	<0.02	167	<0.002	<0.003	0.002	0.002	2.95		5.1		36	0.339	<0.004	39.5	<0.008	<0.04	<0.02	126	<0.015	<0.03	5.29	<0.02	0.641				0.004
3/8/1995												0.002	2.88										<0.02										<0.01
30/05/96	<.003	0.69	<.02		0.192	0.003	<.04	117.7	<.002	<.005	<.005	0.005	2.02	<.02		<.005	31	0.2	<.002	32	<.005	<.04	<.02	124	<.03		1.48		0.687	<.005	<.005	<.03	<.01
30/05/96	<.003	0.73	<.02		0.193	0.005	<.04	118.9	<.002	<.005	<.005	0.011	1.97	<.02		<.005	30.9	0.22	<.002	32	0.005	0.04	<.02	132	<.03		1.44		0.679	<.005	<.005	<.03	<.01
30/05/96	<0.003	0.73	<0.02		0.193	0.005	<0.04	118.9	<0.002	<0.005	<0.005	0.011	1.97	<0.02		<0.005	30.9	0.22	<0.002	32	0.005	0.04	<0.02	132			1.44		0.679		<0.005	<0.03	<0.01
26/09/96	<.003	0.06	<.02		0.211	0.005	<.04	136	<.002	<.005	<.005	0.009	3.15	<.02		<.005	32.6	0.15	<.002	32	<.005	0.21	<.02	143	<.03		5.58		0.636	<.005	<.005	<.03	0.01
26/09/96	<0.003	0.06	<0.02		0.211	0.005	<0.04	136	<0.002	<0.005	<0.005	0.009	3.15	<0.02		<0.005	32.6	0.15	<0.002	32	<0.005	0.21	<0.02	143	<0.03		5.58		0.628		<0.005	<0.005	<0.03
20/05/97	<.003	0.21	<.02	<.05	0.219	<.001	<.04	128.2	<.002	<.005	<.005	0.005	3.08		4	0.02	30.4	0.16	<.002	26	0.007	<.04	<.02	108	<.03	<.03	4.3	<.01	0.576	0.009	<.005	<.03	0.01
20/05/97	<0.003	0.21	<0.02	<0.05	0.219	<0.001	<0.04	128.2	<0.002	<0.005	<0.005	0.005	3.08			0.02	30.4	0.16	<0.002	26	0.007	<0.04	<0.02	108	<0.03	<0.03	4.3	<0.01	0.576		<0.005	<0.03	
1/6/1998	<0.003	0.13	<0.02	<0.05	0.2	0.003	<0.04	130.2	<0.002	<0.005	<0.005	0.017	0.45		5	0.052	30.9	0.53	<0.002	21	0.008	<0.04	<0.02	104	<0.03	<0.03	5.1	<0.01	0.485		0.007	<0.03	
2/6/1998	<.003	0.13	<.02	<.05	0.2	0.003	<.04	130.2	<.002	<.005	<.005	0.017	0.45		5	0.052	30.9	0.53	<.002	21	0.008	<.04	<.02	104	<.03	<.03	5.1	<.01	0.485	0.013	0.007	<.03	0.02
31/10/98	<.003	<.05	<.005	<.05	0.117	0.001	<.04	139.9	<.001	<.005	0.02	0.005	0.57		5	<.005	35	0.22	<.002	19	0.008	0.5	<.01	138	<.03	<.03	3.6	<.01	0.588	0.008	<.005	<.03	0.02
31/10/98	<0.003	<0.05	<0.005	<0.05	0.117	0.001	<0.04	139.9	<0.001	<0.005	0.02	0.005	0.57		5	<0.005	35	0.22	<0.002	19	0.008	0.5	<0.01	138	<0.03	<0.03	3.6	<0.01	0.588		<0.005	<0.03	0.02
19/06/99	<.003	0.06	<.005	<.05	0.229	0.001	<.04	182	0.005	<.005	0.18	0.02	0.28		9	<.005	49.2	0.28	0.01	32	<.005	<.04	<.01	152	<.03	<.03	5.6	<.01	0.768	<.005	<.005	<.03	0.32
29/10/99	<.003	<.05	<.005	<.05	0.227	<.001	<.04	139.7	<.001	<.005	<.005	<.002	0.28		3	<.005	33.2	0.3	<.002	22	<.005	<.04	<.01	127	<.03	<.005	3.8	<.01	0.594	<.005	<.005	<.03	0.02
27/06/00	<.003	<.05	<.005	<.05	0.078	0.002	<.05	175.8	<.001	0.014	<.005	0.025	0.04		8	<.005	41	1.7	<.002	25	0.039	6	<.01	145	0.07	<.005	5	<.01	0.639	0.016	<.005	<.03	3.57
27/06/00	<0.003	<0.05	<0.005	<0.05	0.078	0.002	<0.05	175.8	<0.001	0.014	<0.005	0.025	0.04		8	<0.005	41	1.7	<0.002	25	0.039	6	<0.01	145	0.07	<0.005	5	<0.01	0.639		<0.005	<0.03	3.57
9/10/2000	<.003	<.05	<.005	<.05	0.02	<.001	<.05	78.4	<.001	<.005	<.005	0.008	<.01		5	<.005	19.4	0.74	<.002	20	<.005	<1	<.01	44	<.03	<.005	6	<.01	0.311	<.005	0.023	<.03	<.01
10/10/2000	<0.003	<0.05	<0.005	<0.05	0.02	<0.001	<0.05	78.4	<0.001	<0.005	<0.005	0.008	<0.01		5	<0.005	19.4	0.74	<0.002	20	<0.005	<1	<0.01	44	<0.03	<0.005	6	<0.01	0.311		0.023	<0.03	<0.01
6/6/2001	<.003	0.08	<.005	0.1	0.237	<.001	<.05	163	<.001	<.005	0.015	0.004	0.03		6	0.029	39.7	2.12	<.002	23	<.005	<1	0.02	141	<.03	<.005	6.8	<.01	0.636	0.008	<.005	<.03	0.01
5/9/2001	<0.00004	0.01	<0.001	<0.1	0.15	<0.002		202	0.0002	<0.0006	<0.002	<0.002	0.06	<0.00005	6		40.5	2.3	<0.002	19	0.009		<0.001		0.007	<0.002		<0.001		<0.01	<0.03		0.016
STATION: X18B																																	
1/6/1982								159				0.01					45.6	1		45			0.13										0.03
8/9/1982												0.02						1.6		30			0.1										0.65
16/11/82												0.01						0.32		11			0.02										0.14
1/7/1991												<0.001	2.52					0.241		44.7			0.014										0.149
1/9/1991												<0.001	2.87					0.213		66.6			<0.004										0.014
20/07/94		0.09	<0.04	<0.008	0.106	<0.001	<0.02	51.4	<0.002	<0.003	<0.002	0.004	0.178		1.1		13.7	0.025	<0.004	2.48	<0.008	<0.04	<0.02	7.49	<0.015	<0.03	3.91	<0.02	0.134				<0.002
25/10/94		<0.02	<0.04	<0.008	0.143	<0.001	<0.02	163	<0.002	<0.003	<0.002	<0.001	0.427		5.7		35.8	1.22	<0.004	39.4	<0.008	<0.04	<0.02	128	<0.015	<0.03	5.51	<0.02	0.569				<0.002
3/8/1995												0.002	0.55										<0.02										<0.01
30/05/96																																	<0.01
26/09/96	<.003	0.13	<.02		0.161	0.008	<.04	137.4	<.002	0.008	<.005	0.01	0.22	<.02		<.005	33.2	0.64	<.002	29	0.008	0.25	<.02	141	<.03		5.84		0.598	<.005	<.005	<.03	0.02
26/09/96	<0.003	0.13	<0.02		0.161	0.008	<0.04	137.4	<0.002	0.008	<0.005	<0.005	0.22	<0.02		<0.005	33.2	0.64	<0.02	29	0.008	0.25	<0.02	141	<0.03		5.84		0.598		<0.005	<0.03	0.02
1/6/1998	<0.003	0.11	<0.02	<0.05	0.215	0.003	<0.04	148.4	<0.002	0.013	<0.005	0.017	0.3		5	0.038	38	0.39	0.011	24	<0.005	0.11	<0.02	109	<0.03	<0.03	5	<0.01	0.591		<0.005	<0.03	0.01
2/6/1998	<.003	0.11	<.02	<.05	0.215	0.003	<.04	148.4	<.002	0.013	<.005	0.017	0.3		5	0.038	38	0.39	0.011	24	<.005	0.11	<.02	109	<.03	<.03	5	<.01	0.591	0.013	<.005	<.03	0.01
31/10/98	<.003	0.32	<.005	<.05	0.122	0.001	<.04	143.9	<.001	<.005	0.05	0.012	0.26		5	<.005	35.9	0.95	<.002	22	0.01	1.48	<.01	152	<.03	<.03	4.4	<.01	0.602	0.016	<.005	<.03	0.01
31/10/98	<0.003	0.32	<0.005	<0.05	0.122	0.001	<0.04	143.9	<0.001	<0.005	0.05	0.012	0.26		5	<0.005	35.9	0.95	<0.002	22	0.01	1.48	<0.01	152	<0.03	<0.03	4.4	<0.01	0.602		<0.005	<0.03	0.01
29/07/99	<.0001	0.17	<.001	0.04	0.1026	0.0004	<.001	161.2	<.0001	<.0002	<.0002	0.0183	0.014		4.1	0.007	39.53	0.006	<.0001	15.5	0.001	0.007	0.005	132.2	<.001	<.001	5.05	<.0004	0.3172	0.0053	<.0002	<.001	<.0004
29/10/99	<.003	<.05	<.005	<.05	0.231	<.001	<.04	151.4	<.001	<.005	<.005	<.002	0.08		5	<.005	33.9	1.6	<.002	23	<.005	<.04	<.01	141	<.03	<.005	4.3	<.01	0.611	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.149	0.001	<.05	141	<.001	<.005	<.005	0.008	0.02		5	<.005	38.7	0.33	<.002	21	<.005	<1	<.01	133	<.03	<.005	5.8	<.01	0.599	<.005	<.005	<.03	0.03
31/05/00	<0.003	<0.05	<0.005	<0.05	0.149	0.001	<0.05	141	<0.001	<0.005	<0.005	0.008	0.02		6	<0.005	38.7	0.33	<0.002	21	<0.005	<1	<0.01	133	<0.03	<0.005	5.6	<0.01	0.599		<0.005	<0.03	0.03
9/10/2000	<.003	0.21	<.005	<.05	0.118	0.001	<.05	144.9	<.001	<.005	<.005	0.017	0.11		8	<.005	34.7	0.38	0.005	26	<.005	2	<.01	82	<.03	<.005	5.3	<.01	0.61	0.017	0.015	<.03	0.01
10/10/2000	<0.003	0.21	<0.005	<0.05	0.118	0.001	<0.05	144.9	<0.001	<0.005	<0.005	0.017	0.11		8	<0.005	34.7	0.38	0.005	26	<0.005	2	<0.01	82	<0.03	<0.005	5.3	<0.01	0.61		0.015	<0.03	0.01
6/6/2001	<.003	0.07	<.005	0.08	0.314	<.001	<.05	174.7	<.001	<.005	0.013	<.002	2.76		6	0.027	43.5	0.79	<.002	27	<.005	<1	0.02	158	<.03	<.005	6.8	<.01	0.847	0.007	<.005	<.03	<.01
5/9/2001	<0.00004	0.02	0.01	<0.1	0.2	<0.002		188	<0.0001	<0.0006	<0.002	<0.002	2.51	<0.00005	8		48.6	0.453	<0.002	27	<0.002		<0.001		0.005	<0.002		<0.001		<0.01	<0.03		0.008
STATION: X19A																																	
1/9/1991												0.005	0.292					0.456		2.4			<0.004										0.103
27/09/96	<.003	0.05	<.02		0.188	0.004	<.04	70.9	<.002	<.005	<.005	0.018	0.28	<.02		<.005	20.4	0.81	<.002	18	0.008	<.04	<.02	39	<.03		4.49		0.236	0.008	<.005	<.03	0.02
27/09/96	<0.003	0.05	<0.02		0.188	0.004	<0.04	70.9	<0.002	<0.005	<0.005	0.018	0.28	<0.02		<0.005	20.4	0.81	<0.002	18	0.008	<0.04	<0.02	39	<0.03		4.49		0.238		<0.005	<0.03	0.02
7/10/1997	<.003	0.07	<.02	<.05	0.253	<.001	0.06	65	<.002	0.016	<.005	0.008	0.05		4	0.006	17.7	0.69	<.002	13	0.009	0.2	<.02	18	<.03	<.03	2.3	<.01	0.229	<.005	0.016	<.03	0.02
7/10/1997	<0.003	0.07	<0.02	<0.05	0.253	<0.001	0.06	65	<0.002	0.016	<0.005	0.008	0.05		4	0.006	17.7	0.69	<0.002	13	0.009	0.2	<0.02	18	<0.03	<0.03	2.3	<0.01	0.229		0.016	<0.03	0.02
1/6/1998	<.003	0.09	<.02	<.05	0.163	0.003	<.04	74.6	<.002	0.005	<.005	0.013	0.26		2	0.046	21.6	0.36	0.017	11	0.034	0.3	<.02	45	<.03	<.03	4	<.01	0.257	0.009	0.01	<.03	0.02
1/6/1998	<0.003	0.09	<0.02	<0.05	0.163	0.003	<0.04	74.6	<0.002	0.005	<0.005	0.013	0.26		2	0.046	21.6	0.36	0.017	11	0.034	0.3	<0.02	45	<0.03	<0.03	4	<0.01	0.257		0.01	<0.03	0.02
31/10/98	<.003	0.21	<.005	<.05	0.108	<.001	<.04	73.8	<.001	<.005	0.014	0.009	<.01		3	<.005	21.2	0.57	0.009	16	0.036	4.52	<.01	40	<.03	<.03	3	<.01	0.311	<.005	<.005	<.03	0.02
31/10/98	<0.003	0.21	<0.005	<0.05	0.108	<0.001	<0.04	73.8	<0.001	<0.005	0.014	0.009	<0.01		3	<0.005	21.2	0.57	0.009	16	0.036	4.52	<0.01	40	<0.03	<0.03	3	<0.01	0.311		<0.005	<0.03	0.02
19/06/99	<.003	0.08	<.005	<.05	0.202	<.001	<.04	124	0.004	<.005	<.005	0.01	0.08		4	0.007	35.9	0.65	0.008	27	0.043	<.04	<.01	83	<.03	<.03	4.4	<.01	0.442	<.005	<.005	<.03	0.19
29/10/99	<.003	<.05	<.005	<.05	0.107	<.001	<.04	148	<.001	<.005	<.005	<.002	<.01		2	<.005	27.5	5.61	<.002	31	<.005	<.04	<.01	124	<.03	<.005	4.9	<.01	0.439	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.154	<.001	<.05	99.4	0.012	<.005	<.005	0.006	<.01		2	<.005	27.2	0.59	<.002	17	0.053	<1	<.01	79	<.03	<.005	5	<.01	0.371	<.005	<.005	<.03	0.06
31/05/00	<0.003	<0.05	<0.005	<0.05	0.154	<0.001	<0.05	99.4	0.012	<0.005	<0.005	0.006	<0.01		2	<0.005	27.2	0.59	<0.002	17	0.053	<1	<0.1	79	<0.03	<0.005	5	<0.01	0.371		<0.005	<0.03	0.06
9/10/2000	<.003	0.15	<.005	<.05	0.088	<.001	<.05	80.7	<.001	<.005	<.005	0.006	0.1		3	<.005	22.3	0.35	<.002	16	0.014	3	<.01	51	<.03	<.005	5	<.01	0.304	0.011	0.019	<.03	<.01
10/10/2000	<0.003	0.15	<0.005	<0.05	0.088	<0.001	<0.05	80.7	<0.001	<0.005	<0.005	0.006	0.1		3	<0.005	22.3	0.35	<0.002	16	0.014	3	<0.01	51	<0.03	<0.005	5	<0.01	0.304		0.019	<0.03	<0.01
6/6/2001	<.003	0.08	<.005	0.15	0.444	<.001	<.05	130	<.001	<.005	<.005	0.003	0.06		3	0.026	33.6	1.28	<.002	23	<.005	<1	0.01	89	<.03	<.005	6.6	<.01	0.422	<.005	<.005	<.03	0.01
STATION: X19B																																	

Table E8. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/07/92												0.048	1.49	
27/03/96	<.003	0.05	<.02		0.188	0.004	<.04	70.9	<.002	<.005	<.005	0.016	0.26	<.02
31/10/98	<.003	<.05	<.005	<.05	0.101	<.001	<.04	164.8	<.001	<.005	0.011	0.008	<.01	
31/10/98	<0.003	<0.05	<0.005	<0.05	0.101	<0.001	<0.04	164.8	<0.001	<0.005	0.011	0.008	<0.01	
19/06/99	<.003	0.08	<.005	<.05	0.128	0.001	<.04	187.5	<.001	<.005	0.186	0.023	0.06	
29/10/99	<.003	<.05	<.005	<.05	0.249	<.001	<.04	90.3	<.001	<.005	<.005	<.002	<.01	
31/05/00	<.003	<.05	<.005	<.05	0.11	0.001	<.05	130.8	0.007	<.005	<.005	0.007	<.01	
31/05/00	<0.003	<0.05	<0.005	<0.05	0.11	0.001	<0.05	130.8	0.007	<0.005	<0.005	0.007	<0.01	
9/10/2000	<.003	0.17	<.005	<.05	0.053	0.001	<.05	104.8	<.001	0.008	<.005	0.011	0.12	
10/10/2000	<0.003	0.17	<0.005	<0.05	0.053	0.001	<0.05	104.8	<0.001	0.008	<0.005	0.011	0.12	
6/6/2001	<.003	<.05	<.005	0.12	0.133	<.001	<.05	145.1	<.001	<.005	<.005	<.002	<.01	
STATION: P01-01A														
10/9/2001	<0.003	<0.01	<0.001	<0.1	0.12	<0.002		211	0.0001	<0.0008	<0.002	<0.002	<0.03	<0.00005
STATION: P01-01B														
10/9/2001	<0.001	<0.01	0.028	<0.1	0.16	<0.002		158	0.0001	0.0053	<0.002	<0.002	0.12	<0.00005
STATION: P01-02A														
10/9/2001	<0.0005	<0.005	0.0008	<0.1	0.06	<0.001		86.3	0.00007	0.0014	<0.001	<0.001	<0.03	<0.00005
STATION: P01-02B														
10/9/2001	<0.0005	0.012	0.0027	<0.1	0.05	<0.001		64.8	<0.00005	0.0017	<0.001	<0.001	<0.03	<0.00005

Date	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/07/92				1.08		3.71			0.08										0.296
27/03/96		<.005	20.4	0.81	<.002	18	0.008	<.04	<.02	39	<.03		4.49		0.236	0.008	<.005	<.03	0.02
31/10/98	4	<.005	33.9	5.39	<.002	37	0.016	<.04	<.01	127	<.03	<.03	6.4	<.01	0.53	0.005	<.005	<.03	<.01
31/10/98	4	<0.005	33.9	5.39	<0.002	37	0.016	<0.04	<0.01	127	<0.03	<0.03	6.4	<0.01	0.53		<0.005	<0.03	<0.01
19/06/99	7	0.014	39.5	5.25	0.003	46	0.01	<.04	<.01	119	<.03	<.03	6.2	<.01	0.556	<.005	<.005	<.03	0.13
29/10/99	<1	<.005	23.7	0.68	<.002	14	<.005	<.04	<.01	53	<.03	<.005	3.6	<.01	0.334	<.005	<.005	<.03	<.01
31/05/00	3	<.005	26.7	3.82	<.002	27	0.008	<1	<.01	113	<.03	<.005	6.6	<.01	0.404	<.005	<.005	<.03	0.01
31/05/00	3	<0.005	26.7	3.82	<0.002	27	0.008	<1	<0.01	113	<0.03	<0.005	6.6	<0.01	0.404		<0.05	<0.03	0.01
9/10/2000	4	<.005	20.8	2.2	<.002	27	<.005	<1	<.01	47	<.03	<.005	4.9	<.01	0.325	0.012	0.008	<.03	<.01
10/10/2000	4	<0.005	20.8	2.2	<0.002	27	<0.005	<1	<0.01	47	<0.03	<0.005	4.9	<0.01	0.325		0.008	<0.03	<0.01
6/6/2001	4	0.029	29	4.51	0.003	30	<.005	<1	<.01	112	<.03	<.005	7.4	<.01	0.43	0.009	<.005	<.03	0.01
STATION: P01-01A																			
10/9/2001	7		51.7	0.0731	0.003	32	<0.002		<0.001		0.001	<0.002		<0.001		<0.01	<0.03		<0.005
STATION: P01-01B																			
10/9/2001	5		32.8	0.0744	0.125	28	0.037		<0.001		0.035	0.011		<0.001		<0.01	<0.03		0.006
STATION: P01-02A																			
10/9/2001	4		23.4	0.692	0.002	23	0.013		<0.0005		0.0043	0.001		<0.0005		<0.01	<0.03		<0.005
STATION: P01-02B																			
10/9/2001	4		27.5	0.215	0.002	22	0.023		<0.0005		0.0081	<0.001		<0.0005		<0.01	<0.03		<0.005

Table E11. Groundwater Quality of the Original Impoundment, Faro Mine Site - Dissolved Metals

	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	HG-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: P01-10A																																	
10/9/2001	<0.003	0.1	<0.003	<0.1	0.11	<0.005		12.6	0.0012	<0.002	<0.005	0.018	0.23	<0.00005	9		5.1	0.094	0.069	305	<0.005		0.047		0.053	<0.005		<0.003		<0.01	<0.03		0.284
STATION: P01-10B																																	
11/9/2001	<0.0005	0.015	0.01	<0.1	0.25	<0.001		80.4	0.00006	0.0016	<0.002	0.001	4.18	<0.00005	3		11.6	9.67	0.013	54	0.001		0.0018		0.0093	<0.001		<0.0005		<0.01	<0.03		0.009
STATION: P01-08A																																	
11/9/2001	<0.0005	0.014	0.0029	<0.1	<0.02	<0.001		49.2	<0.00005	0.0005	<0.002	0.002	0.22	<0.00005	8		6.6	0.397	0.051	90	0.002		0.01		0.07	0.003		<0.0005		<0.01	<0.03		0.024
STATION: P01-08B																																	
11/9/2001	<0.001	0.03	0.002	<0.1	0.02	<0.002		121	<0.0001	0.0173	<0.002	<0.002	25.5	<0.00005	5		23.2	7.24	0.003	32	0.018		0.008		0.008	<0.002		<0.001		<0.01	<0.03		0.742
STATION: P01-08C																																	
11/9/2001	<0.0005	0.07	0.0013	<0.1	0.04	<0.001		124	0.045	0.136	<0.001	0.005	35	<0.00005	3		28.4	28.6	<0.001	15	0.106		<0.0005		0.0012	<0.001		<0.0005		<0.01	<0.03		0.73

Table E9. Groundwater Quality of the North East Waste Dump, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: BH12A										
2/8/1995			167			6.99				
25/09/96			197			7.86			538	
25/09/96			197			7.86	7.29	3.1	538	2.39
23/06/97							6.93	11.5	520	2.01
29/06/98							6.34		498	
19/10/98							6.7		159	2.1
30/10/99									259	2.06
3/6/2000										1.92
26/06/00							6.94	6	578	2.67
22/10/00							6.76	1.2	288	2.14
4/6/2001		988	246			6.72	6.2	1.9	583	
25/10/01	816				634	6.77	7.16	0.9	382	2.14
STATION: BH12B										
19/11/94			203			7.4			408	
2/5/1996			200			7.44				
25/09/96			227			7.8			466	
25/09/96			227			7.8	7.31	2.7	466	2.45
11/7/1997										2.53
29/06/98							6.43		562	
19/10/98							6.83		488	2.14
30/10/99							6.75	0	805	1.56
3/6/2000										1.46
26/06/00							6.62	5	633	1.56
22/10/00							6.81	1.5	257	1.63
4/6/2001		954	226			6.65	7.7	1.6	628	
STATION: BH13A										
20/10/98										3.63
30/10/99										4.37
3/6/2000										4.23
26/06/00										4.24
22/10/00										4.15

Table E9. Groundwater Quality of the North East Waste Dump, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: BH13B										
27/09/96			95			7.62	7.01	2.5	384	2.76
19/10/98							6.9		416	3.92
30/10/99							6.85	0	603	4.02
3/6/2000										4.4
26/06/00										2.68
22/10/00							6.68	2	379	3.44
25/10/01	874				611	6.93	7.15	0.6	513	3.91
STATION: BH14A										
25/09/96			318			7.53	6.92	3.3	883	3.02
11/7/1997			55				7	7.3	96	2.8
29/06/98							6.56		723	
19/10/98							6.7		974	3.72
30/10/99							5.35	2	544	3.77
3/6/2000										3.98
26/06/00							7.85	4	805	3.76
22/10/00							6.9	2.9	804	3.92
4/6/2001		2307	420			6.78	6.9	2	1674	
STATION: BH14B										
25/09/96			344			7.47	7.03	3.1	732	3.64
11/7/1997			60				6.92	4.9	93	3.48
29/06/98							6.53		755	
19/10/98							6.78		948	4.38
30/10/99							5.79	1	1063	4.44
3/6/2000							6.46	3	958	4.63
22/10/00							6.94	2.6	872	4.68
4/6/2001		2103	420			6.91	7.1	1.4	1523	
25/10/01	3520				2056	7.42	7.14	2.4	2000	4.4

Table E10. Groundwater Quality of the Faro Zone II Pit, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: BH1										
12/9/1991			85			6.42			321	
24/10/91			143			5.92			421	
27/11/91			94			6.24			302	
16/12/91			133			6.44			136	
23/01/92			163			7.09			81	
21/02/92			90			6.8			84	
31/03/92			135			8.13			68	
27/04/92			161			6.54			46	
29/05/92			143			6.36			69	
9/7/1992			151			6.53			38	
31/07/92			132			6.05			86	
28/08/92			152			6.79			47	
17/09/92			152			6.09			37	
5/10/1992			160			6.13			44	
19/11/92			142			6.04			35	
11/12/1992			137			5.94			34	
25/10/94			140			6.8			40.7	
12/12/1994			135			6.48			41.9	
2/9/1995			151			8.23				
28/05/96			142			6.52			53	
29/05/96	180	128	142			6.52	6.27		53	3.34
13/06/96	222	148	131				6.45		83	3.9
17/07/96			72	0.001			6.7		847	
14/08/96			137	0.006			5.96	7	266	3.8
11/9/1996			117	<.001			6.18	7	164	4.19
12/9/1996			117						184	
25/10/96			145				5.86		131	
14/01/97	276		128	<0.001		8.3			108	
26/02/97			134						72	
6/6/1997			28						74	3.35
23/06/97			32				6.81	12	148	
11/7/1997			28				6.54	8	132	3.86
12/8/1997			24	0.34			6.27	8.5	158	3.89
22/09/97			20	0.06			6.38	4.8	144	
27/10/97			19	0.14			6.34	2.7	125	3.88
18/11/97			19	<.01			6.26	1.8	115	
9/12/1997			144	0.2			6.9	1.4	58	
15/06/98							6.56		92	
20/10/98							6.16		21	3.44
4/7/1999								3	399	3.57
30/10/99							5.75	1	150	3.84
26/06/00										3.26

Table E10. Groundwater Quality of the Faro Zone II Pit, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
22/10/00										5.02
5/6/2001		222	157			6.07	6.5	4.5	92	
STATION: BH2										
16/07/91						6.52			245	
12/9/1991			183			6.78			203	
10/10/1991			105			6.03			269	
23/11/91			100			6.3			151	
16/12/91			105			6.46			110	
28/01/92			105			6.5			77	
21/02/92			105			6.68			69	
3/4/1992			130			7.21			53	
27/04/92			118			6.58			110	
29/05/92			106			6.48			232	
9/7/1992			105			6.6			162	
31/07/92			119			6.27			128	
28/08/92			124			6.52			115	
17/09/92			116			6.23			121	
5/10/1992									120	
19/11/92			117			6.23			98	
11/12/1992			113			6.19			67	
25/10/94			120			7.8			227	
12/12/1994			126			6.52			96.4	
2/8/1995			116			8.49				
28/05/96			83			6.66			246	
29/05/96	293	243	83			6.66	6.46	2	246	4.7
13/06/96	308	265	78				6.48		251	4.87
17/07/96			103	0.001			6.43	4	242	
14/08/96			117	0.005			6.7	7	128	4.94
12/9/1996			105						152	
12/9/1996			105	<.05			6.52	4.5	152	4.94
25/10/96			122	0.036			5.88		472	
20/05/97			103						226	4.75
23/06/97			18				6.66	8.6	187	
11/7/1997			24				6.19	6.5	213	4.94
12/8/1997			21	<.01			6.15	5.8	243	4.81
22/09/97			19	<.01			6.1	5.1	58	
27/10/97			17	<0.001			6.48	3.5	116	4.95
16/06/98							6.37		139	4.85
20/10/98							6.14		182	4.93
4/7/1999							5.48	4	259	4.67
30/10/99							5.77	2	206	4.86
4/6/2000							5.44	4	236	4.81
22/10/00							5.88	2.6	220	4.61
5/6/2001		648	66			5.97	6.4	2	615	
25/10/01	572				457	6.33	6.35	2.7	334	4.73

Table E10. Groundwater Quality of the Faro Zone II Pit, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: BH4										
30/07/91						3.3				
12/9/1991						5.33			3100	
24/10/91						3.27			3350	
27/11/91						3.37			3470	
16/12/91						3.51			2710	
28/01/92						3.69			2260	
27/04/92						2.63			9050	
29/05/92						3.08			3400	
9/7/1992						3.84			2840	
31/07/92						3.15			2290	
28/08/92						3.33			1690	
17/09/92						3.34			1450	
19/11/92						3.33			1880	
11/12/1992									3060	
25/10/94			0.5			3.1			1700	
12/12/1994			<0.5			3.37			158	
17/07/96			<5	0.001			3.6	6	2159	
2/8/1996			<1			3.15				
14/08/96			<1	0.006			3.96	6	454	2.56
11/9/1996			19	<.001			5.68	6	214	2.55
12/9/1996			19			5			214	
25/10/96			<1	0.042			4.62		458	
11/7/1997			<5				4.03	6	1875	2.57
12/8/1997			<5	0.04			4.49	6.2	189	2.48
22/09/97			12	<.01			5.71	4.9	68	
27/10/97			12	0.05			5.87	1.3	177	2.58
15/06/98							3.45		625	2.39
20/10/98							5.88		98	2.6
30/10/99							5.95	1	158	2.33
4/6/2000							3.7	2	187	2.3
22/10/00							4.7	2.3	422	2.26
5/6/2001		212	33			5.28	5.6	1.9	182	
25/10/01	320				265	7.02	6.25	2.1	152	2.31
STATION: BH5										
25/10/94			185			5.9			222	
28/05/96			145			5.84			239	
29/05/96	309	267	145			5.84	5.3	3	239	2.42
2/8/1996			149			6.92				
12/9/1996			160						184	
12/9/1996			160	<.001			5.53	3.5	184	2.78
11/7/1997			12				5.56	5.8	48	2.85
27/10/97							5.6	1	211	2.87

Table E10. Groundwater Quality of the Faro Zone II Pit, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
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STATION: BH6										
25/10/94			57			6.1			232	
28/05/96			90			6.2			110	
29/05/96	177	135	90			6.2	5.83	2.5	110	3.5
2/8/1996			69			6.11				
25/09/96			85			6.35			125	
25/09/96			82			6.35	6.09	4.5	125	3.43
20/05/97									59	3.29
27/10/97							6.01	1.3	105	3.54
STATION: BH7A										
25/10/94			178			6.6			30.4	
2/8/1995			122			6.44				
28/05/96			108			6.62			43	
29/05/96	106	108	108			6.62	6.16	3.5	43	5.23
25/09/96			99			7.16			34	
25/09/96			99			7.16	6.03	3.5	34	5.33
21/05/97									27	5.32
27/10/97							6.36	1.5	31	5.9
STATION: BH7B										
25/10/94			159			6.7			30.4	
2/8/1995			120			6.53				
28/05/96			118			6.69			25	
29/05/96	104	107	118			6.69	6.51	5	25	5.54
25/09/96			118			7.22			15	
25/09/96			118			7.22		4	15	5.63
21/05/97									17	5.6
27/10/97							6.6	1.2	22	5.78
STATION: BH8										
22/11/94			1.9			4.7			3190	
29/05/96							5.73	6		18.9
25/09/96			<5			2.7			2656	
25/09/96			<5			2.7	4.74	4.5	2656	16.61
21/05/97									2146	18.88
27/10/97							5.15	3.3	2854	17.68

E11. Groundwater Quality of the Original Impoundment, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: P01-10A										
10/9/2001	661			0.026	1097	8.52	8	4	298	9.71
STATION: P01-10B										
11/9/2001	432			0.015	643	8.06	7.6	3.8	94	10.48
STATION: P01-08A										
11/9/2001	427			2.39	660	7.66	7.3	5.4	206	11.77
STATION: P01-08B										
11/9/2001	638			0.65	935	7.21	6.9	2.2	342	13.05
STATION: P01-08C										
11/9/2001	770			<0.005	972	6.34	6.7	2.6	482	13.48

Table E12. Groundwater Quality of the Second Impoundment, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: P01-09A										
11/9/2001	33500			0.96	4710	3.68	7.1	3.7	20000	5.95
STATION: P01-09B										
11/9/2001	1080			0.007	1220	3.74	6.4	3.5	711	6.55
STATION: P01-09C										
11/9/2001	922			<0.005	1097	6.15	6.9	3.5	623	6.62
STATION: P01-09D										
11/9/2001	1760			0.084	1640	4.47	6	3.5	1180	6.95
STATION: P01-07A										
11/9/2001	760			0.99	1154	9.13	9.5	3.6	349	11.57
STATION: P01-07B										
11/9/2001	968			3.16	1508	9.78	9.7	4	360	11.35
STATION: P01-07C										
11/9/2001	780			0.102	992	7.45	7.6	3.2	370	11.27
STATION: P01-07D										
10/9/2001	778			<0.005	1013	7.21	6.9	4.1	433	11.64
STATION: P01-07E										
10/9/2001	960			<0.005	1188	7.09	6.9	3.5	580	11.5
STATION: BH83-4B										
1/9/1999	12800	6410			8000				8200	
27/09/00	14940	9768			9941				15455	
STATION: BH83-4C										
1/9/1999	29800	15100			13400				18300	
27/09/00	26530	3749			13480				23374	
STATION: BH88-2										
8/10/1993		16	470		1023				159	
2/8/1994		10	578		1113				4	
1/9/1999	880	557	349		1180				340	
STATION: BH88-2										
8/10/1993		158	20		1179				19	
2/8/1994		414	637		1368				65	
STATION: BH88-2										
8/10/1993		11000	<1		10565				10100	
2/8/1994		13100								
3/8/1994		21500	<1		19135				24355	

Table E13. Groundwater Quality at the Intermediate Dam, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: X24A-96										
26/09/96		818	315			7.7	6.53	3.4	835	3.27
26/09/96		818	315		1364				835	
6/1/1997		919	527			7.4			600	
13/05/97			283			7			760	5.21
13/05/97			283		2240				760	
7/10/1997							6.86	3.9	665	1.45
7/10/1997					1734				665	
1/6/1998							6.63		733	1.84
31/10/98			216			8.25			734	3.18
31/10/98			216						734	
19/06/99							6.97	4	717	1.43
29/10/99							5.68	1	579	3.68
27/06/00							6.06	6	515	3.14
27/06/00									515	
10/10/2000							6.41	2.3	281	2.92
10/10/2000									281	
6/6/2001		568					7.3	3.5	438	
6/9/2001	8.15			<0.005	1324	8.15		3.4	579	2.77
STATION: X24B-96										
27/09/96			332			7.56	6.75		758	3.25
27/09/96			332		1350				758	
11/7/1997			60				6.59	7.7	825	3.51
11/7/1997			60		1898				825	
7/10/1997										1.87
1/6/1998										1.84
31/10/98										3.15
19/06/99										1.38
29/10/99										3.62
27/06/00										3.08
10/10/2000										2.85
6/6/2001		479					7.6	4.8	306	
STATION: X24C-96										
26/09/96		988	363			7.55	6.47	2.9	1005	3.12
26/09/96		988	363		1492				1005	
6/1/1997		967	622			7.4			857	
13/05/97			338			7.1			808	4.85
13/05/97			338		2370				808	
7/10/1997							6.77	3.9	881	1.82
7/10/1997					2270				881	
1/6/1998							6.52		778	1.83
1/6/1998									778	
31/10/98			331			8.19			980	3.09
31/10/98			331						980	
19/06/99							7.05	6	684	1.36
29/10/99							6.01	1	<1	3.6
27/06/00										3.07
25/07/00							6.77	4	789	2.84
25/07/00									789	
10/10/2000							6.67	2.5		2.83
6/6/2001		910							765	
6/9/2001	8.1			0.032	1595	8.1		3	764	2.71
STATION: X24D-96										
26/09/96		1102	394			7.33	6.49	3.3	1048	3.05
26/09/96		1102	394		1605				1048	
6/1/1997		1081	708			7.5			951	
7/10/1997							6.97	4.1	917	
7/10/1997					2457				917	
1/6/1998							6.49		713	1.62
1/6/1998									713	
31/10/98			341			6.97			997	3.01
31/10/98			341						997	
19/06/99							6.67	5	1084	1.25
29/10/99							6.09	2	1050	3.46
27/06/00							5.8	6	922	2.93
27/06/00									922	
27/09/00	1810	1180	344		2093				996	

Table E13. Groundwater Quality at the Intermediate Dam, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
10/10/2000							6.54	2.3	447	2.71
10/10/2000									447	
6/6/2001		1037					7.7	3.6	1026	
6/9/2001	8.12			<0.005	1929	8.12		3	1020	2.57
STATION: X25A-96										
10/6/1990									316	
21/08/90									404	
26/09/96		336	236			8.06	6.78	3	269	2.53
26/09/96		336	236		769				269	
6/1/1997		296	166			8.1			194	
13/05/97			252			7.5			213	4.5
13/05/97			252		914				213	
7/10/1997							7.18	3.7	227	1.06
7/10/1997					888				227	
1/6/1998							6.51		209	1.07
1/6/1998									209	
31/10/98			216			8.54	6.73		285	2.44
31/10/98			216						285	
19/06/99							6.88	4	292	0.7
29/10/99							5.98	2	294	2.94
27/06/00							6.93	6	276	2.41
27/06/00									276	
10/10/2000							6.82	2.8	206	2.2
10/10/2000									206	
6/6/2001		456					7.6	3.8	287	
15/07/01							7.8	3.3	294	2
STATION: X25B-96										
10/6/1990									96	
21/08/90									155	
26/09/96		478	277			7.69	7.04	2.7	468	2.4
26/09/96		478	277		1056				468	
6/1/1997		423	260			7.8			352	
13/05/97			240			8			383	4.32
13/05/97			240		1297				383	
7/10/1997							7.44	3.5	448	0.95
1/6/1998							7		372	0.99
1/6/1998									372	
31/10/98			184			8.6	7.11		429	2.34
31/10/98			184						429	
19/06/99							7.34	4	445	0.58
29/10/99							6.98	2	408	2.82
27/06/00							7.19	5	348	2.26
27/06/00									348	
27/09/00	800	492	283		1146				373	
10/10/2000							7.21	2.7	177	2.05
10/10/2000									177	
6/6/2001		488					7.8	4.7	344	
15/07/01							7.8	3.6	361	1.86
5/9/2001	8.22			0.019	1050	8.22	7.9	3.2	334	1.86
STATION: P01-03										
10/9/2001	1380			0.009	1573	6.98	7.5	3.5	769	1.58
STATION: P01-04A										
10/9/2001	763			<0.005	1055	7.77	7.8	3.8	331	0.78
STATION: P01-04B										
10/9/2001	602			<0.005	1045	8.11	7.5	4	30	0.43

Table E14. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
STATION: X16A										
1/9/1981									19	
3/6/1982							7.2			
16/11/82							7.6			
9/7/1987									46	
1/10/1987									118	
12/10/1988									35	
31/05/89									37	
8/8/1989									55	
21/09/89									17	
30/10/89									137	
8/6/1990									83.5	
10/6/1990			150						84	
16/08/90									26.6	
18/08/90			124						27	
1/7/1991			151				7.4	11.4	33	
1/9/1991			121				7.29	7	35	
24/07/92									20	
24/07/92		150	142						20	
30/09/92									26	
30/09/92			150						26	
10/10/1993		166	128						38	
19/07/94		223	150						57	
25/10/94			130		271				32	
1/8/1995					304				28	
3/8/1995									28.2	
30/05/96	190	144	147			7.86	7.6	5	33.1	3.38
30/05/96		144	147		396				33	
26/09/96		134	147	0.01		8.16	6.97	5	26	3.57
26/09/96		134	147		327				28	
11/7/1997			29				7.47	7.5	30	3.46
11/7/1997			29		340				30	
7/10/1997				<0.01			7.79	8.2	20	3.8
7/10/1997					342				20	
1/6/1998							6.99		23	3.42
1/6/1998									23	
31/10/98			141				7.31		22.8	3.73
31/10/98			141						23	
19/06/99										3.42
29/10/99							7.13	4	15	3.73
31/05/00							7.73	4	33	3.45
31/05/00									33	
9/10/2000							7.12	5.3	60	3.4
10/10/2000									60	
5/6/2001		147	119			7.36	8	3.5	26	
5/9/2001	250			<0.005		8.25			26	
STATION: X16B										
1/6/1982							7.5			
16/11/82							7.4			
9/7/1987									9	
1/10/1987									21	
12/10/1988									10	
31/05/89									16	
8/8/1989									17	
21/09/89									12	
30/10/89									28	
8/6/1990									17.5	
10/6/1990			144						18	

Table E14. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
16/08/90									24.1	
18/08/90			90						24	
1/7/1991			139				7.64	9.5	17	
1/9/1991			122				7.29	7.5	17	
24/07/92									34	
24/07/92			156						34	
30/09/92									15	
30/09/92			134						15	
10/10/1993		75	68						14	
19/07/94		265	191						24	
25/10/94			173		323				25	
1/8/1995					343				25	
3/8/1995									24.8	
30/05/96									28.8	
30/05/96	204	164	173			8.12	7.8	6	29	3.86
30/05/96			173		425				29	
26/09/96									19	
27/09/96			172	<.001		8.22	7.57	3.3	19	3.92
27/09/96			172		361				19	
13/05/97			246			7.9			18	3.92
13/05/97			246		362				18	
7/10/1997				<0.01			7.21	6.2	21	4.16
7/10/1997					390				21	
1/6/1998							7.09		25	3.77
1/6/1998									25	
31/10/98			167				7.49		42	4.09
31/10/98			167						42	
19/06/99							7.79	5	23	3.71
29/10/99							7.38	3	24	4.08
31/05/00							7.66	5	26	3.84
31/05/00									26	
27/09/00	190	184	192		384				25	
9/10/2000							7.38	1.1	87	3.66
10/10/2000									87	
5/6/2001		219	213			7.61	7.9	3.9	26	
5/9/2001	222			<0.005		8			33	
STATION: X17A										
1/9/1981									60	
8/9/1982							6.9			
16/11/82							7.3			
9/7/1987									14	
1/10/1987									26	
12/10/1988									13	
31/05/89									19	
8/8/1989									18	
21/09/89									18	
30/10/89									17	
8/6/1990									21.3	
10/6/1990			158						21	
16/08/90									19.7	
18/08/90			148						20	
1/7/1991			150				7.45	11.3	20	
1/9/1991			160				7.85	6	19	
24/07/92									20	
24/07/92		151	134						20	
30/09/92									21	
30/09/92			148						21	
10/10/1993		176	155						24	
20/07/94		208	186						27	
25/10/94			159		302				25	

Table E14. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
1/8/1995					322				26	
3/8/1995									26.4	
30/05/96	226	191	200			8.09	7.72	3	36	2.35
30/05/96	231	189	202			8.04	7.82	3	36	2.35
30/05/96		189	202		481				36	
26/09/96									25	
26/09/96		163	184	<.001		7.96	7.2	3.2	25	2.15
26/09/96		163	184		384				25	
16/05/97									26	2.38
16/05/97					449				26	
7/10/1997				<0.01			7.81	6.5	25	2.22
7/10/1997					428				25	
1/6/1998							7.05		34	2.16
1/6/1998									34	
31/10/98			174				7.21		29	2.3
31/10/98			174						29	
19/06/99							7.56	5	34	2.09
29/10/99							7.45	3	44	2.28
31/05/00							8.13	5	43	2.27
31/05/00									43	
10/10/2000							7.83	4.4	107	1.94
10/10/2000									107	
6/6/2001		229					7.8	3.7	32	
STATION: X17B										
8/9/1982							7			
16/11/82							7.2			
9/7/1987									20	
1/10/1987									25	
12/10/1988									16	
31/05/89									28	
8/8/1989									20	
21/09/89									19	
30/10/89									25	
8/6/1990									19.9	
10/6/1990			150						20	
16/08/90									19.1	
18/08/90			136						19	
1/7/1991			152				7.62	9.8	20	
1/9/1991			142				7.58	6	18	
24/07/92									21	
24/07/92			149						21	
30/09/92									24	
30/09/92			151						24	
10/10/1993		173	157						21	
20/07/94		306	172						25	
25/10/94			183		342				26	
1/8/1995					316				26	
3/8/1995									25.9	
30/05/96	463	372	421			7.7	7.22	4	143	2.9
30/05/96	394	353	363			7.71	7.25	4	99	2.9
30/05/96		353	363		815				99	
26/09/96		165	409	<.001		7.7	7.07	3.3	88	3.08
26/09/96		165	409		660				88	
16/05/97									22	2.93
16/05/97					378				22	
7/10/1997										2.78
1/6/1998							7.07		28	2.7
1/6/1998									28	
31/10/98			138				7.12		22	2.85
31/10/98			138						22	

Table E14. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
19/06/99							7.55	5	19	2.66
29/10/99							7.52	3	23	2.83
31/05/00							8.14	7	25	2.81
31/05/00									25	
10/10/2000							7.68	4.2	79	2.49
10/10/2000									79	
6/6/2001		303					7.4	4.7	50	
STATION: X18A										
1/9/1981									40	
1/6/1982							7			
8/9/1982							7			
16/11/82							6.7			
31/05/89									133	
8/8/1989									186	
21/09/89									225	
30/10/89									172	
8/6/1990									280	
10/6/1990			210						280	
16/08/90									282	
18/08/90			194						282	
1/7/1991			214				7.07	9.6	291	
1/9/1991			225				7.18	6.5	247	
24/07/92									120	
24/07/92			192						120	
30/09/92									193	
30/09/92			238						193	
10/10/1993		415	201						256	
19/07/94		670	248						398	
25/10/94			223						322	
3/8/1995									397	
3/8/1995					976				397	
30/05/96	479	422	231			7.72	7.5	2	355	4.47
30/05/96	478	425	228			7.82	7.6	2	390	4.47
30/05/96		425	228		990				390	
26/09/96		454	240	<.001		8	6.68	2.2	400	4.11
26/09/96		454	240		912				400	
20/05/97									323	4.51
20/05/97					1100				323	
1/6/1998									313	
2/6/1998							6.92		313	3.56
31/10/98			157				6.64		413	4.41
31/10/98			157						413	
19/06/99							6.93	5	455	4.36
29/10/99							6.28	2	382	4.35
31/05/00										3.78
31/05/00									399	
27/06/00							6.35	8	435	3.41
27/06/00									435	
9/10/2000							7	4.5	131	2.93
10/10/2000									131	
6/6/2001		562					7.4	4.3	423	
5/9/2001	797			0.006		7.67			392	
STATION: X18B										
1/9/1981									60	
1/6/1982							7.3			
8/9/1982							6.9			
16/11/82							6.7			
9/7/1987									281	

Table E14. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
1/10/1987									188	
12/10/1988									200	
31/05/89									149	
8/8/1989									211	
21/09/89									245	
30/10/89									143	
8/6/1990									290	
10/6/1990			222						290	
16/08/90									252	
18/08/90			228						252	
1/7/1991			253				7.42	9.6	223	
1/9/1991			223				7.15	6.5	244	
24/07/92									304	
24/07/92			234						304	
30/09/92									188	
30/09/92			238						188	
10/10/1993		408	299						364	
19/07/94		541	214						390	
25/10/94			211						341	
3/8/1995									392	
3/8/1995					921				392	
26/09/96									424	
26/09/96		460	224	0.012		8.13	6.68	2.8	424	3.78
26/09/96		460	224		909				424	
1/6/1998									327	
2/6/1998							7.26		327	3.1
31/10/98			190				6.85		456	4.02
31/10/98			190						456	
29/07/99							8.03	5	397	
29/10/99							5.75	2	422	4.37
31/05/00							7.16	6	399	4.15
9/10/2000							7.09	3.3	245	3.88
10/10/2000									245	
6/6/2001		606					7.4	4.3	475	
5/9/2001	870			0.006		7.83			438	

STATION: X19A

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
1/9/1991			150				7.03	6		
24/07/92							6.49	6.1		
24/07/92			206							
27/09/96			227	0.033		8.05	7.41	3.3	105	6.85
27/09/96			227		571				105	
15/05/97										7
7/10/1997				<0.01			7.38	5.3	55	7.65
7/10/1997					650				55	
1/6/1998							6.77		135	6.81
1/6/1998									135	
31/10/98			203				7.16		121	6.85
31/10/98			203						121	
19/06/99							7.05	5	248	6.77
29/10/99							6.75	2	373	6.87
31/05/00							7.53	5	238	6.88
31/05/00									238	
9/10/2000							7.51	5.9	152	6.74
10/10/2000									152	
6/6/2001		456					7.8	3.6	266	

STATION: X19B

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
24/07/92			206				6.63	11.4		
15/05/97										5.89

Table E14. Groundwater Quality Downgradient of Polishing Pond, Faro Mine Site - Physical Parameters

Date	DISSOLVED SOLIDS mg/L	TOTAL HARDNESS mg/L	ALK-T mg/L	CN-T mg/L	SPECIFIC COND S/cm	PH-L pH unit	PH-F pH unit	TEMP-C deg C	SO4-T mg/L	SWL meters
7/10/1997										5.47
1/6/1998										5.44
31/10/98			216				7.01		380	5.6
31/10/98			216						380	
19/06/99							7.18	5	356	5.38
29/10/99							6.29	2	159	5.62
31/05/00							7.33	5	338	5.55
31/05/00									338	
9/10/2000							7.13	3	140	5.34
10/10/2000									140	
6/6/2001		473					7.8	3.9	335	
STATION: P01-01A										
10/9/2001	872			<0.005	1140	7.83	8	2.5	480	3.73
STATION: P01-01B										
10/9/2001	708			<0.005	981	7.81	7.8	2.7	289	3.98
STATION: P01-02A										
10/9/2001	402			<0.005	591	7.84	7.9	4	156	1.54
STATION: P01-02B										
10/9/2001	346			<0.005	554	7.99	8	4.2	119	0

Appendix F

Vangorda Plateau Mine Site Surface Water Quality Graphs

List of color Figures – Appendix F
Surface Water Quality of the Faro Mine Site

Figure	Description
F1	Shrimp Creek: V20, V4
F2	Upper Vangorda Creek: V1, V27
F3	Grum Open Pit: V7, V17, V23, V23A
F4	Grum Rock Dump: V14, V15, V16
F5	Vangorda Open Pit: V22
F6	Vangorda Rock Dump: V28, V29, V30
F7	Vangorda Rock Dump: V31, V32, V33
F8	Vangorda Rock Dump: V34, V35,V36, V37, V38
F9	Vangorda Rock Dump: V21, V21A, V26
F10	Grum Pit Dewatering: V18
F11	Vangorda Creek Plunge Pool: V19, V25BSP
F12	Grum Creek: V2, V2A
F13	Water Treatment Plant: V24, V25
F14	AEX Creek: V17A, V6A
F15	V5, VGMain, V8

Figure F1. Receiving and Background Water Quality
Shrimp Creek (V4, V20)

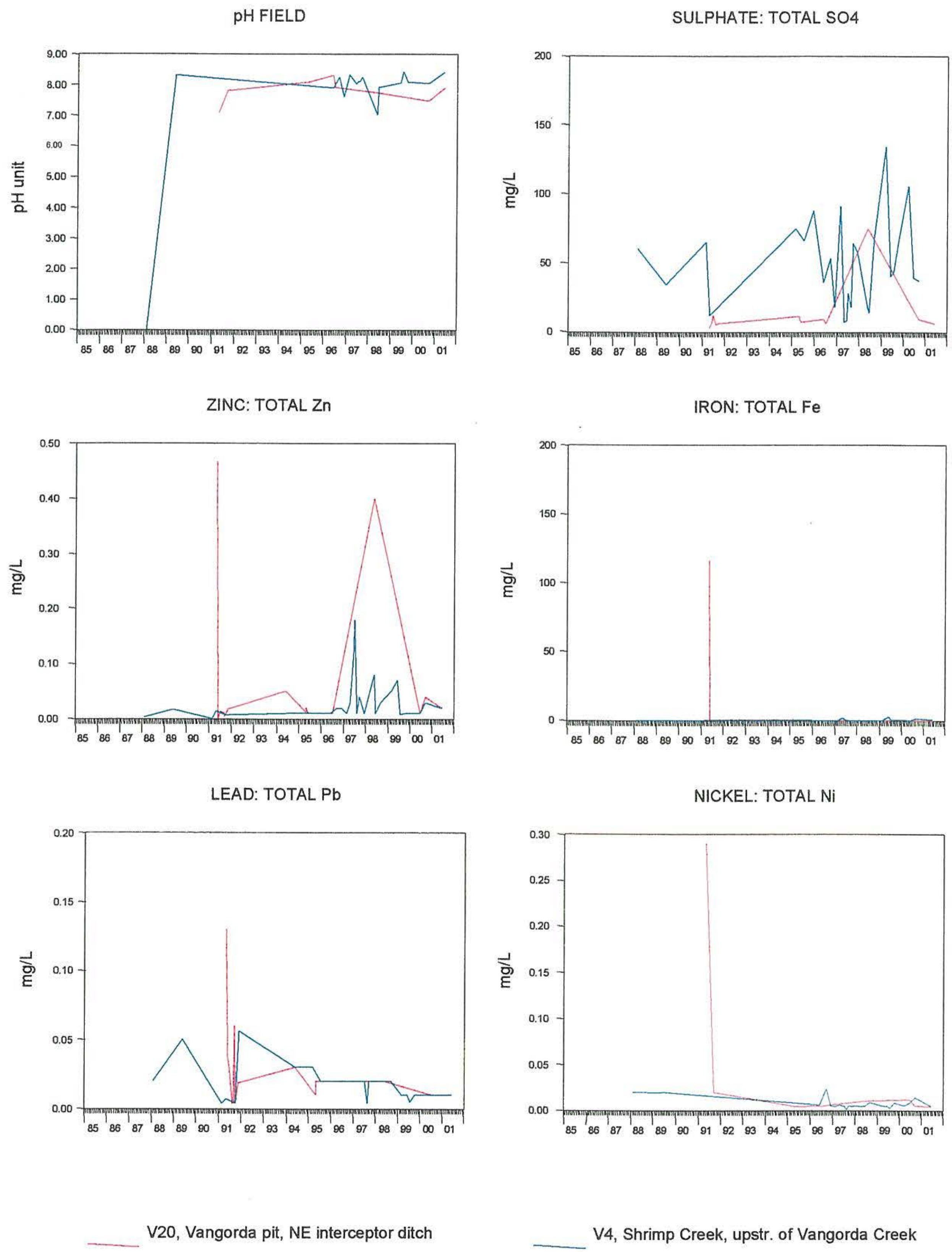
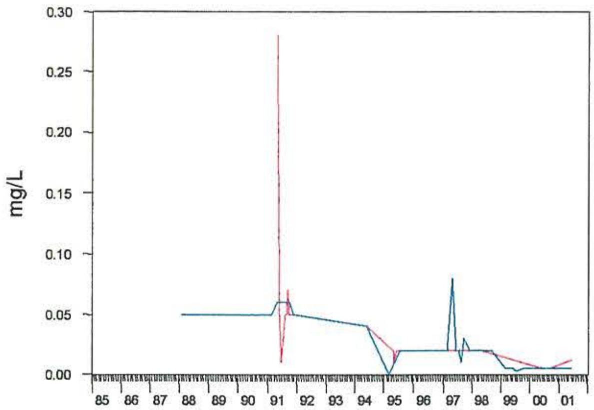
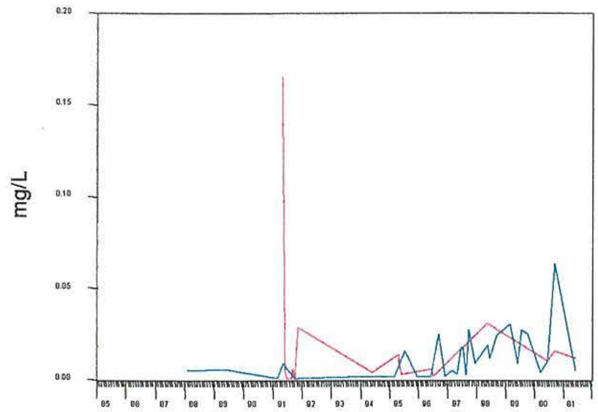


Figure F1. Receiving and Background Water Quality
Shrimp Creek (V4, V20)

ARSENIC: TOTAL As



COPPER: TOTAL Cu



V20, Vangorda pit, NE interceptor ditch

V4, Shrimp Creek, upstr. of Vangorda Creek

Figure F2. Receiving and Background Water Quality
Upper Vangorda Creek Creek (V1, V27)

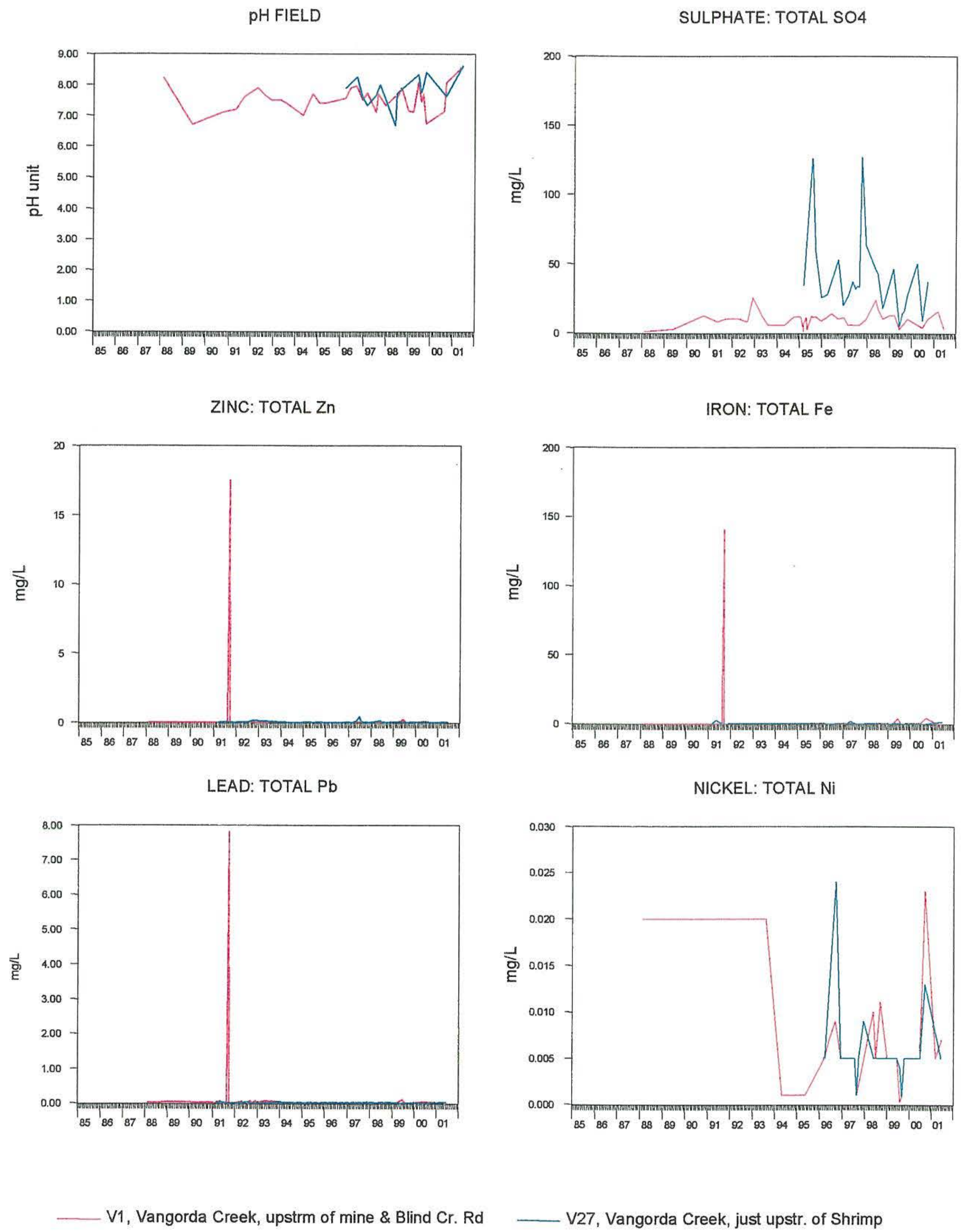
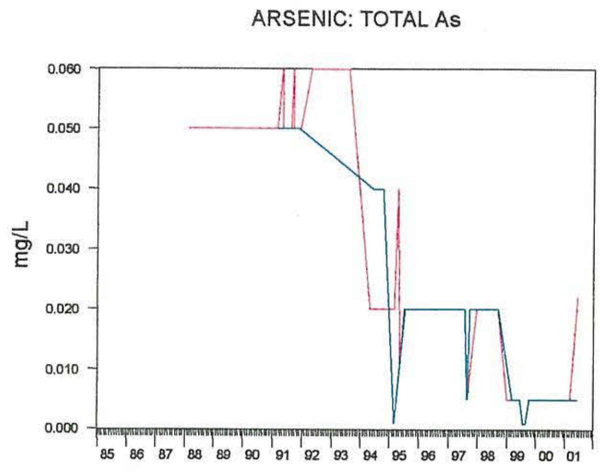
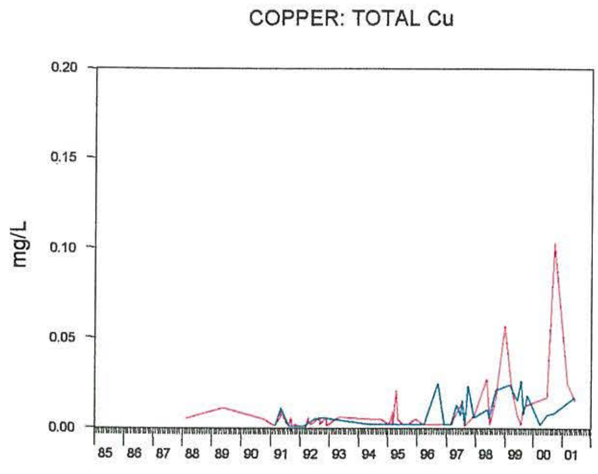


Figure F2. Receiving and Background Water Quality
Upper Vangorda Creek Creek (V1, V27)





V1, Vangorda Creek, upstrm of mine & Blind Cr. Rd
V27, Vangorda Creek, just upstr. of Shrimp

Figure F3. Water Quality of Open Pits and Rock Dumps
Grum Open Pit - (V7, V17, V23, V23A)

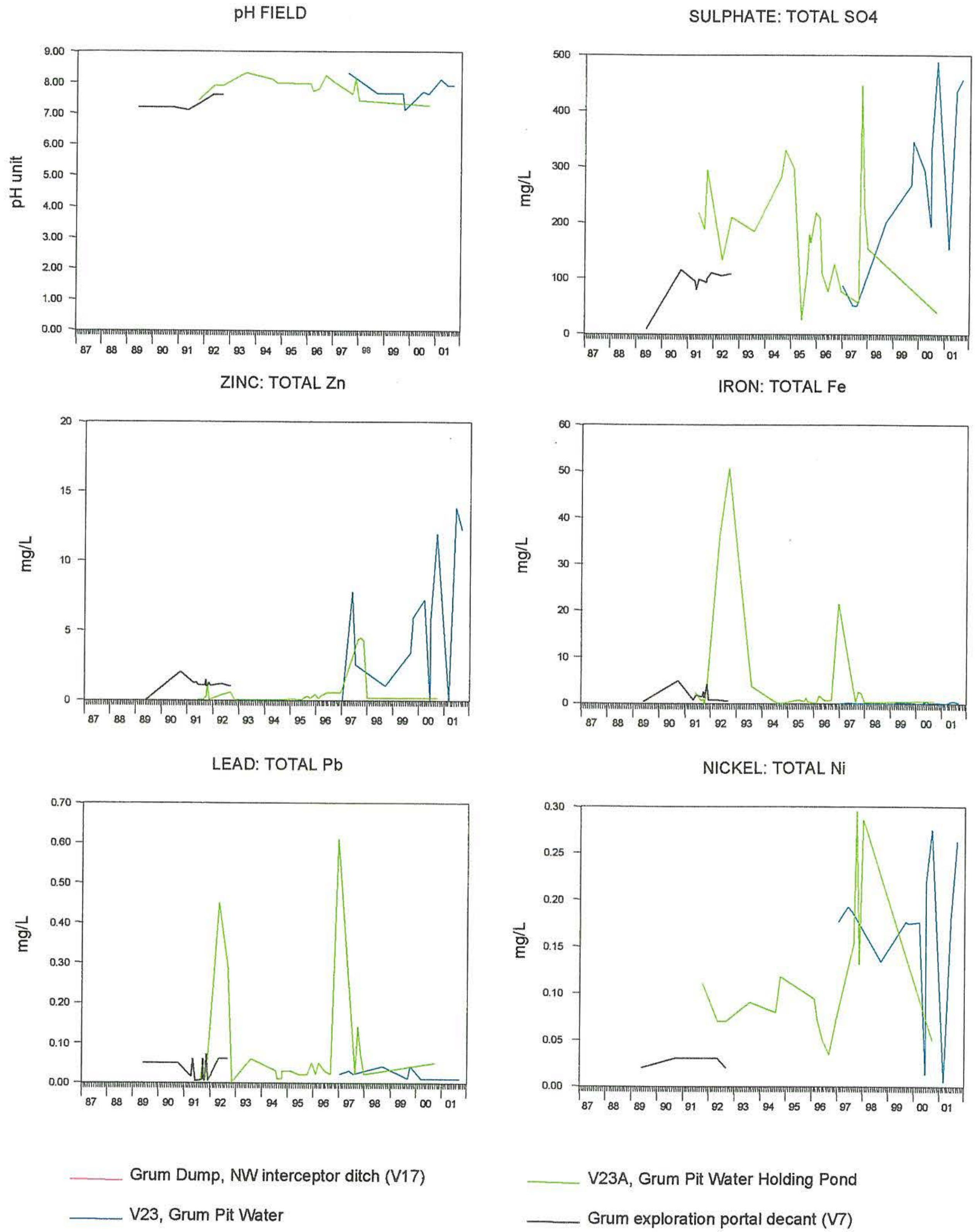
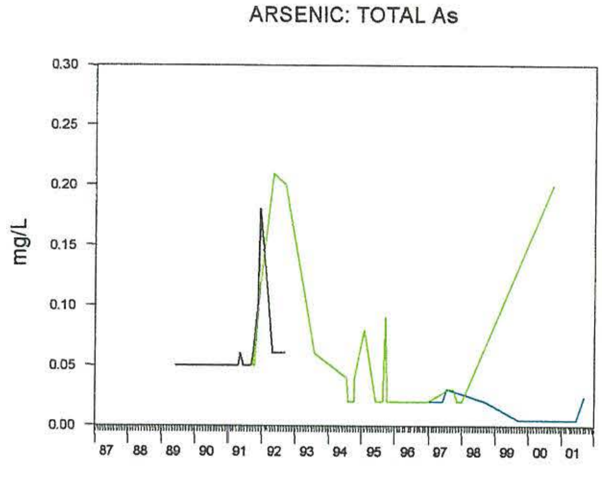


Figure F3. Water Quality of Open Pits and Rock Dumps
Grum Open Pit - (V7, V17, V23, V23A)



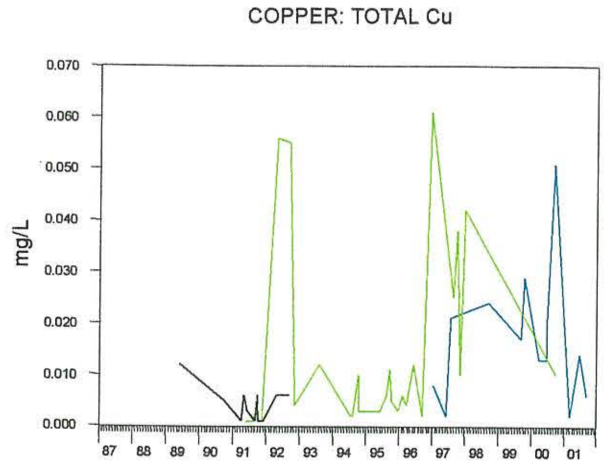
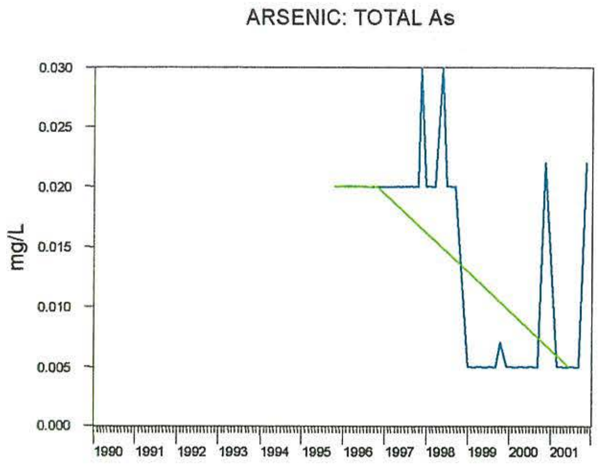
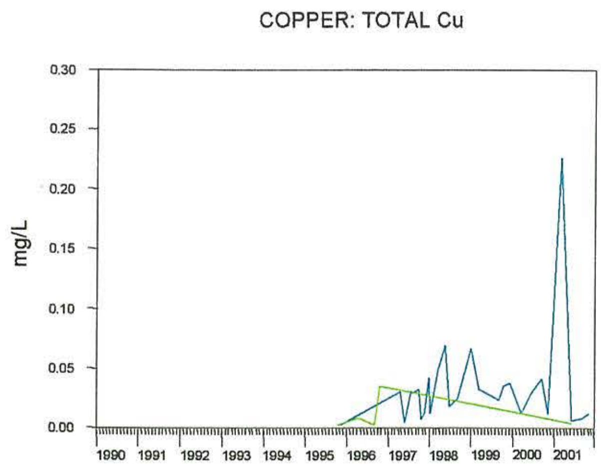


Figure F4. Surface Water Quality
Grum Rock Dump- (V14, V15, V16)





V14, Grum Dump southwest sump

V16, Grum Dump, southeast sump

V15, Sulphide cell sump, Grum Dump

Figure F4. Surface Water Quality
Grum Rock Dump- (V14, V15, V16)

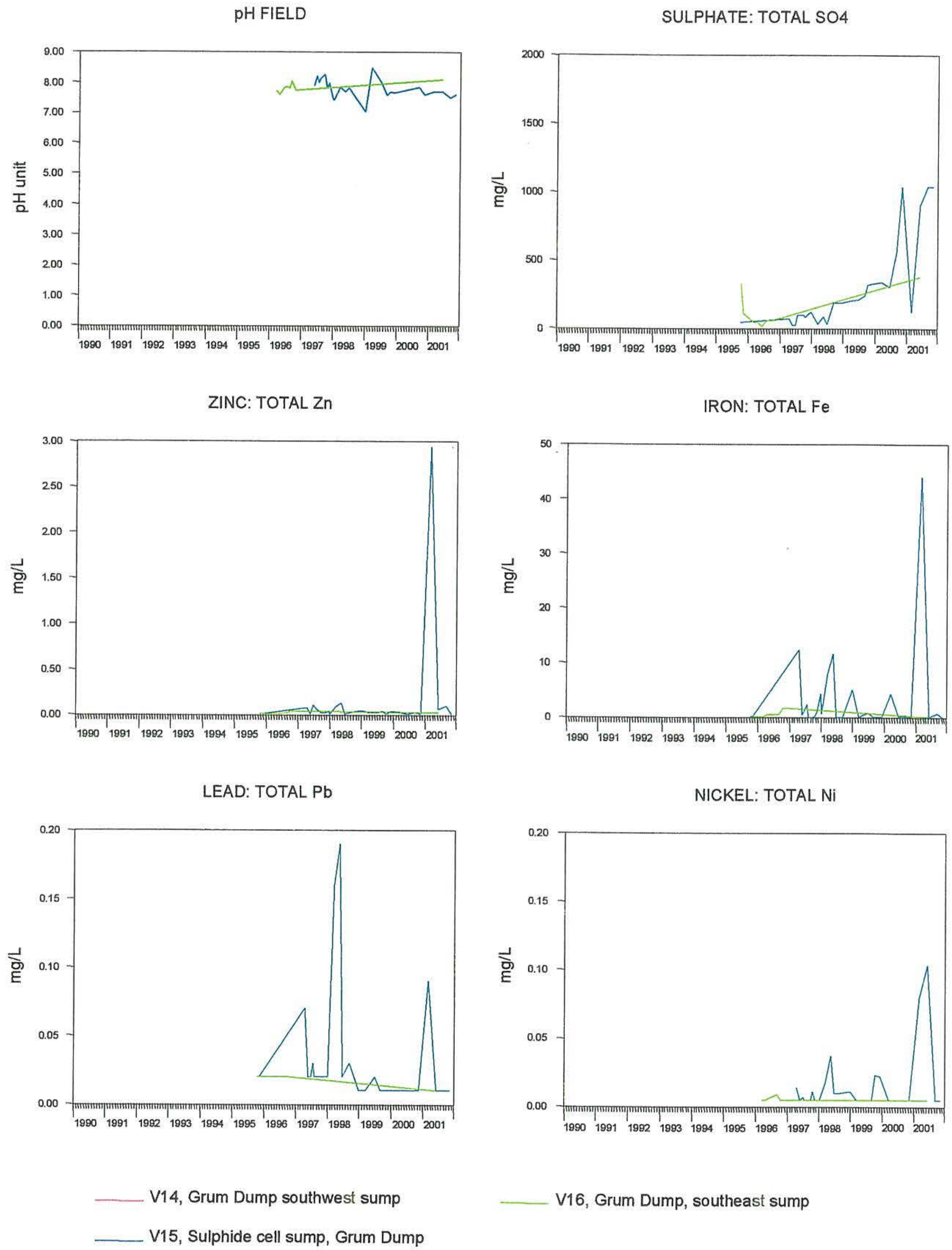


Figure F5. Water Quality of Open Pits and Rock Dumps
Vangorda Open Pit - (V22)

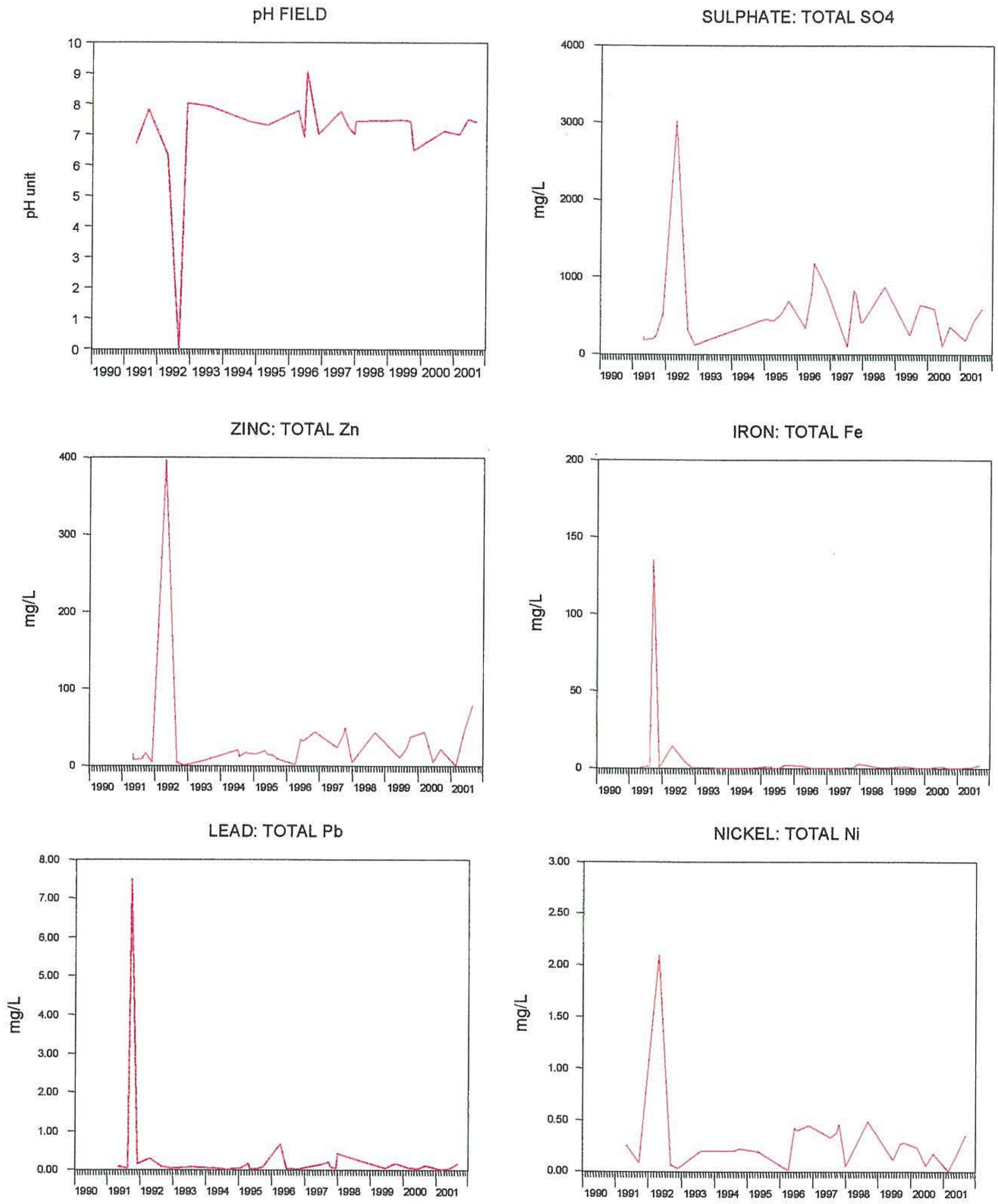
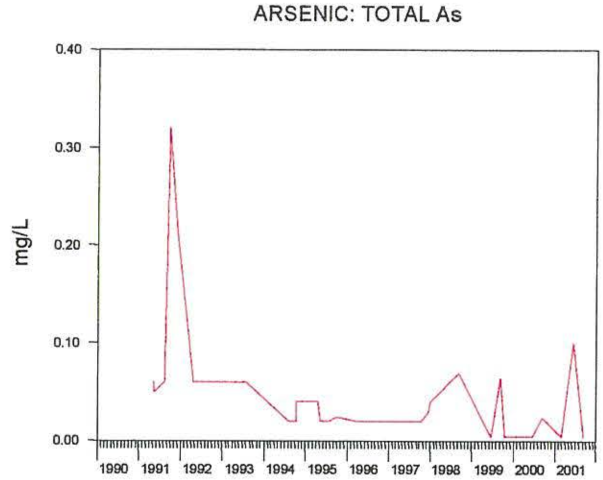


Figure F5. Water Quality of Open Pits and Rock Dumps
Vangorda Open Pit - (V22)



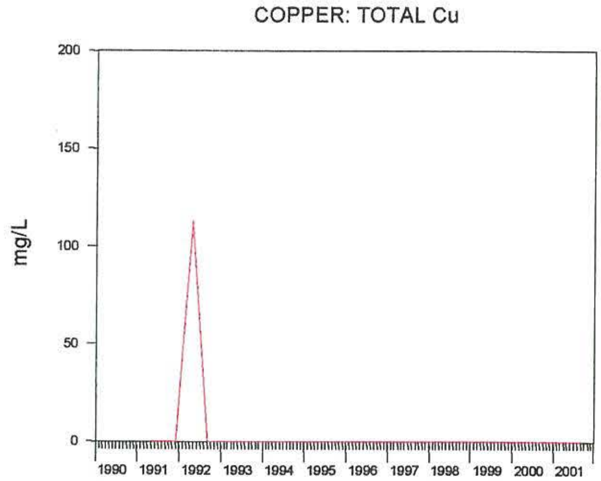


Figure F6. Water Quality of Open Pits and Rock Dumps
Vangorda Rock Dump (V28, V29, V30)

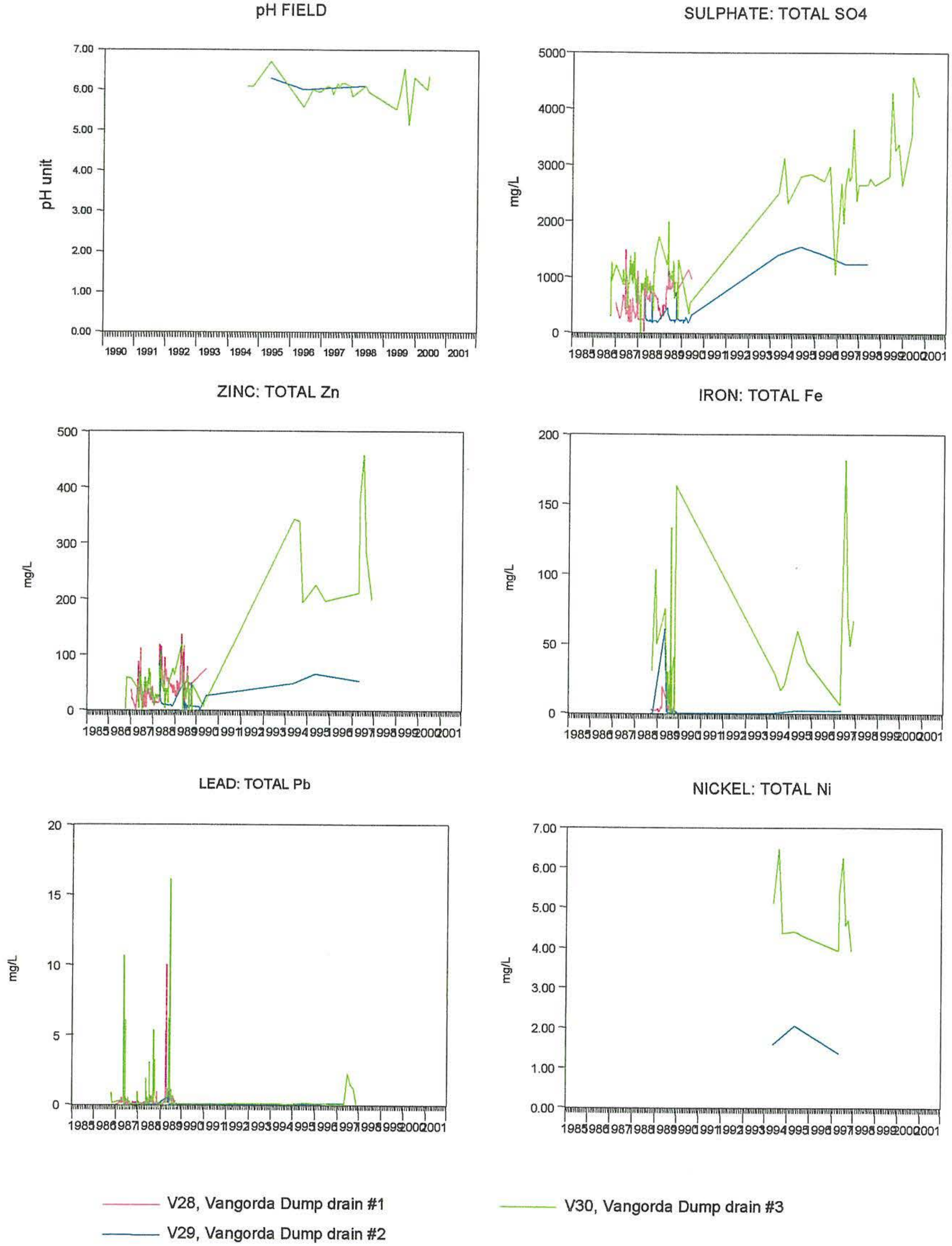
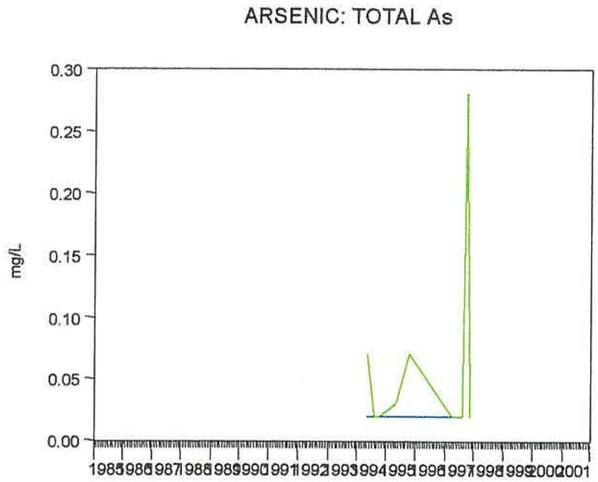
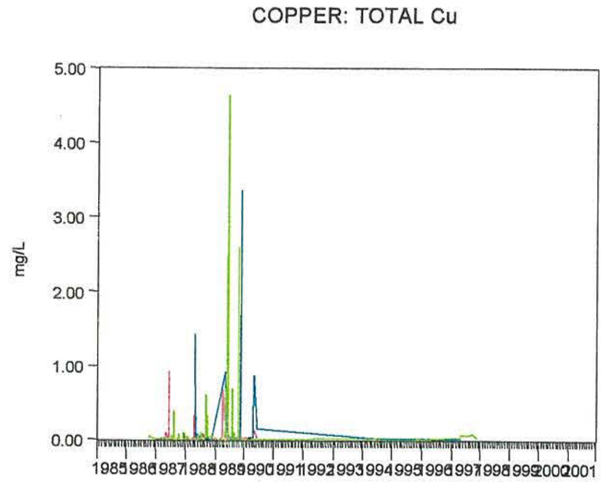


Figure F6. Water Quality of Open Pits and Rock Dumps
Vangorda Rock Dump (V28, V29, V30)





V28, Vangorda Dump drain #1
V29, Vangorda Dump drain #2
V30, Vangorda Dump drain #3

Figure F7. Water Quality of Open Pits and Rock Dump
Vangorda Rock Dump (V31, V32, V33)

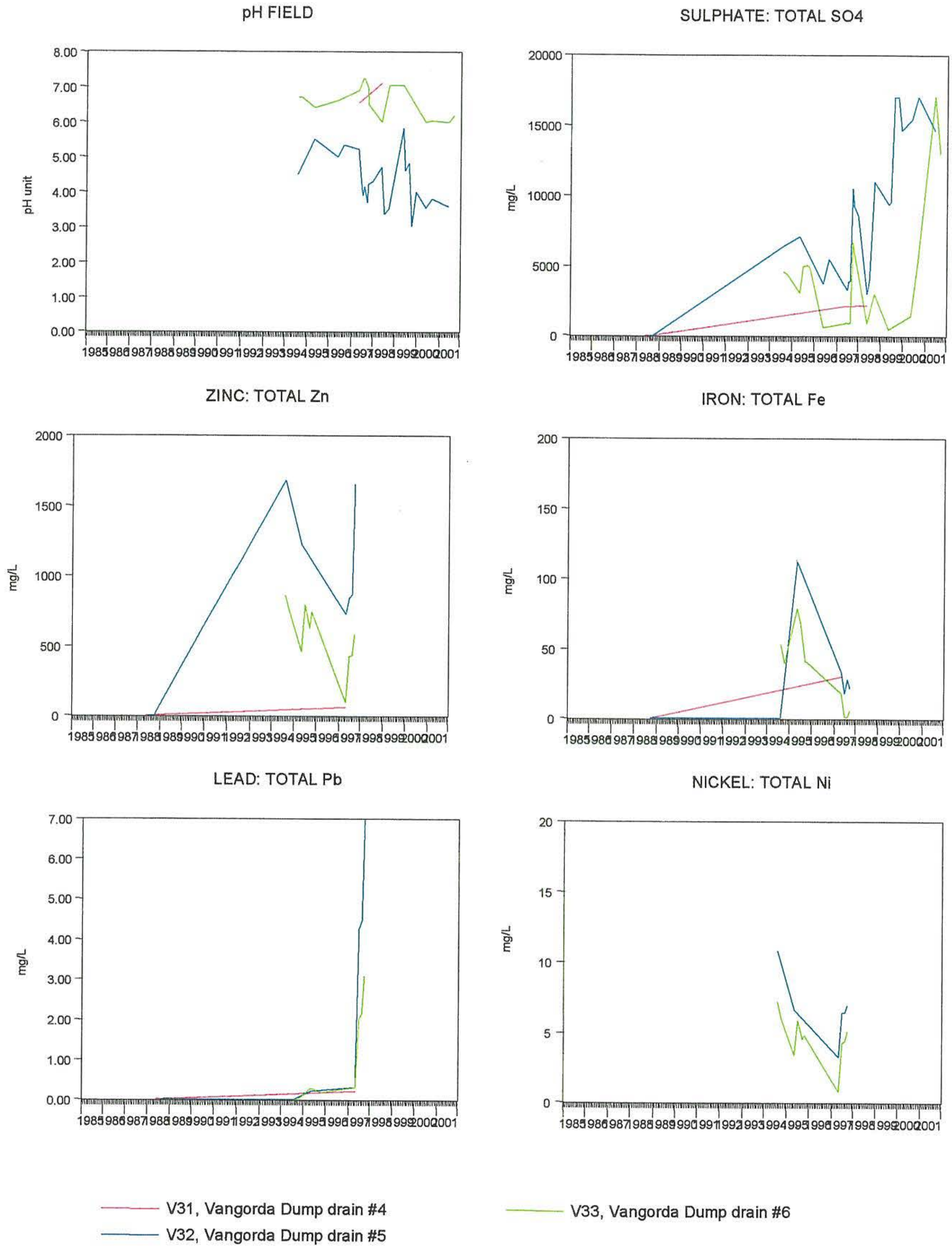


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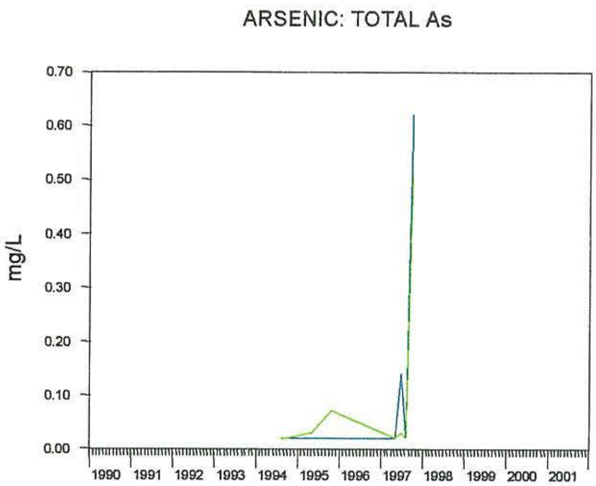
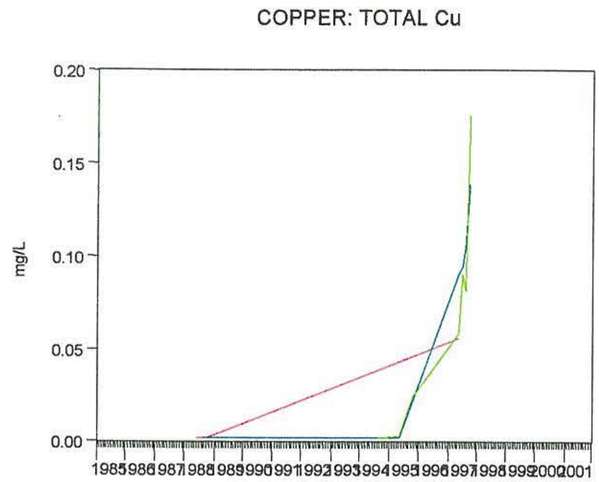
Figure F7. Water Quality of Open Pits and Rock Dump
Vangorda Rock Dump (V31, V32, V33)





V31, Vangorda Dump drain #4
V32, Vangorda Dump drain #5
V33, Vangorda Dump drain #6

Figure F8. Water Quality of Open Pits and Rock Dumps
Vangorda Rock Dump- (V34, V35, V36, V37, V38)

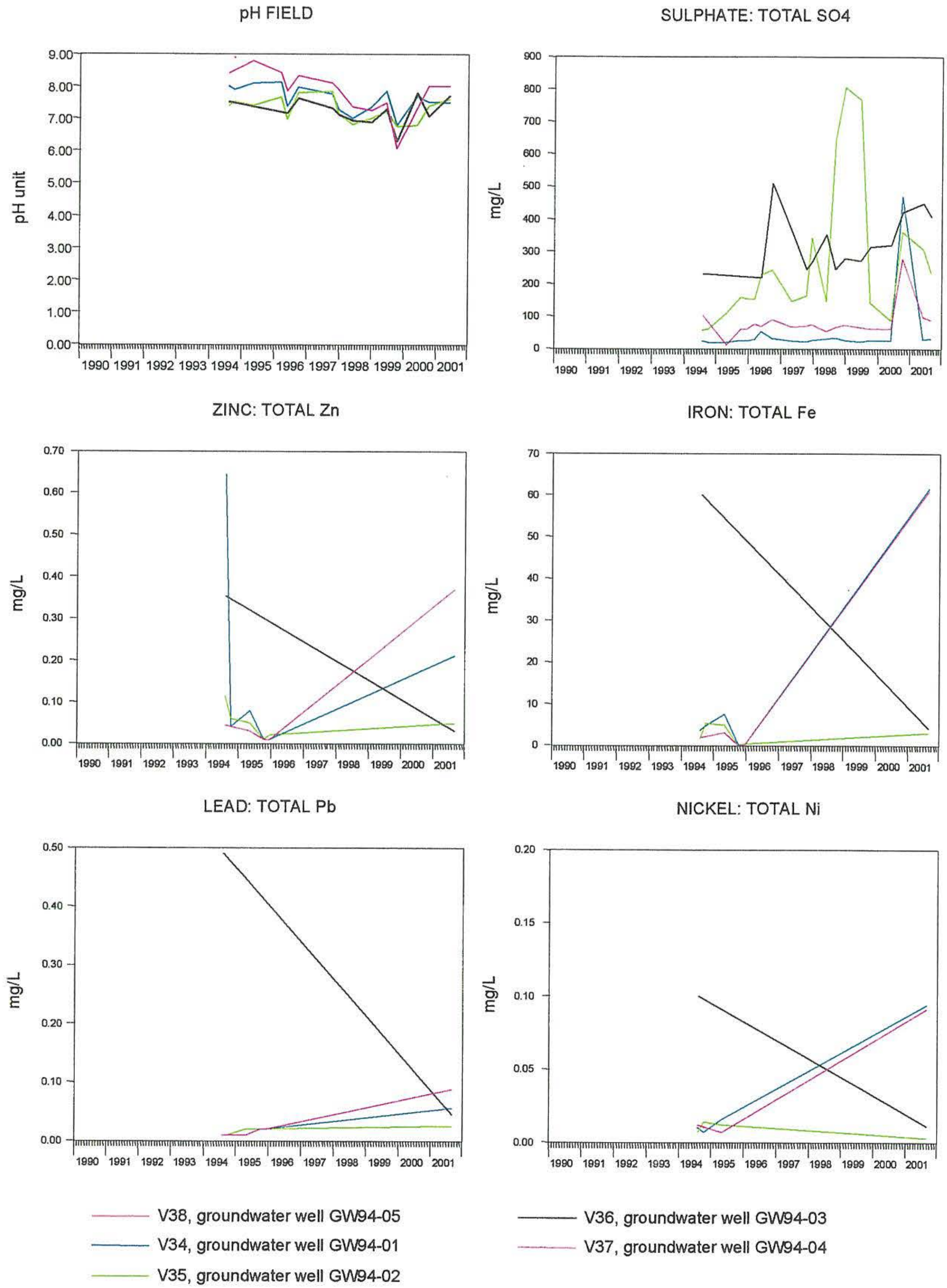
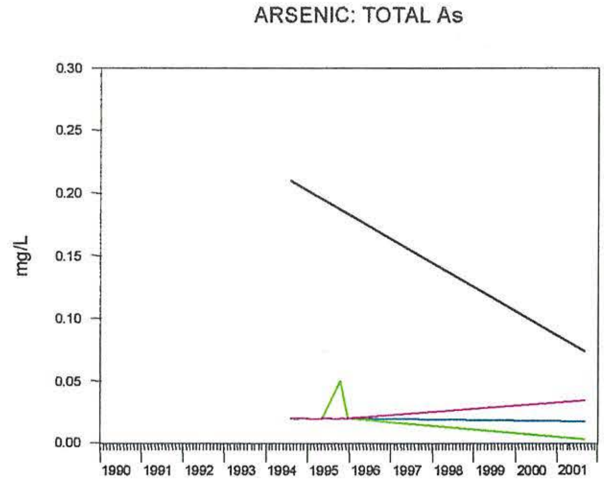
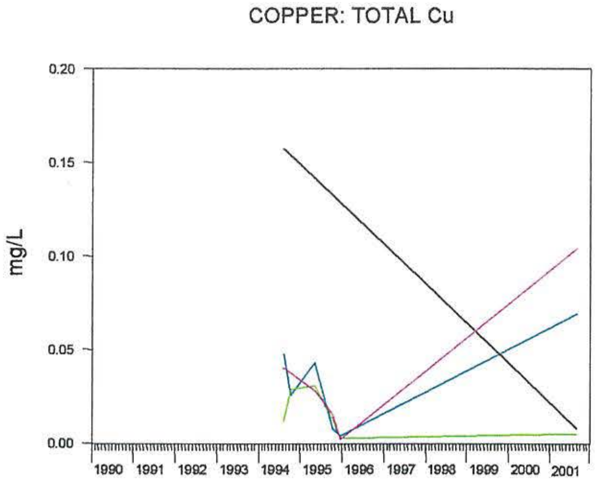


Figure F8. Water Quality of Open Pits and Rock Dumps
Vangorda Rock Dump- (V34, V35, V36, V37, V38)





V38, groundwater well GW94-05
V34, groundwater well GW94-01
V35, groundwater well GW94-02
V36, groundwater well GW94-03
V37, groundwater well GW94-04

Figure F9. Water Quality of Open Pits and Rock Dumps
Vangorda Rock Dump (V21, V21A, V26)

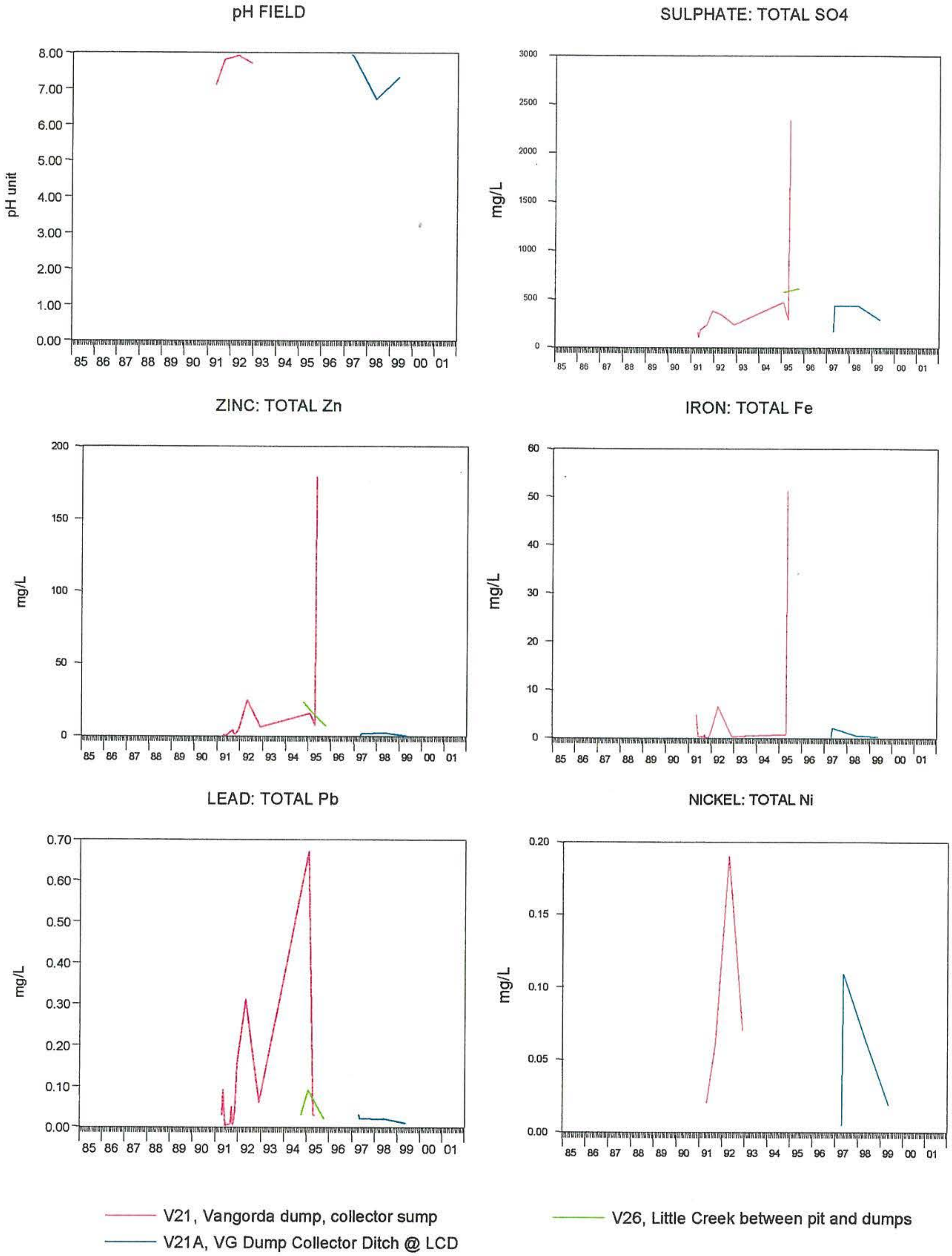
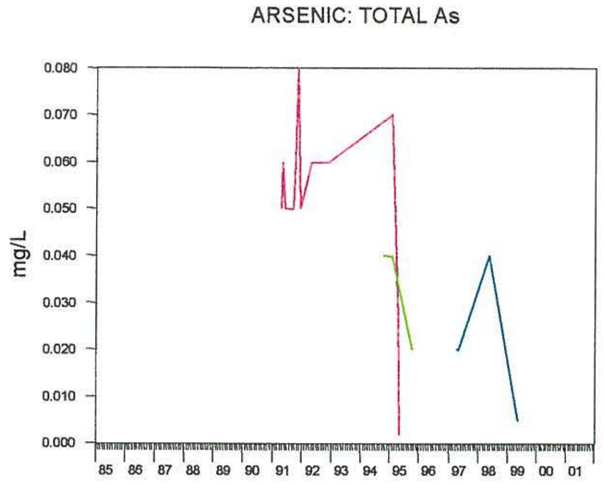
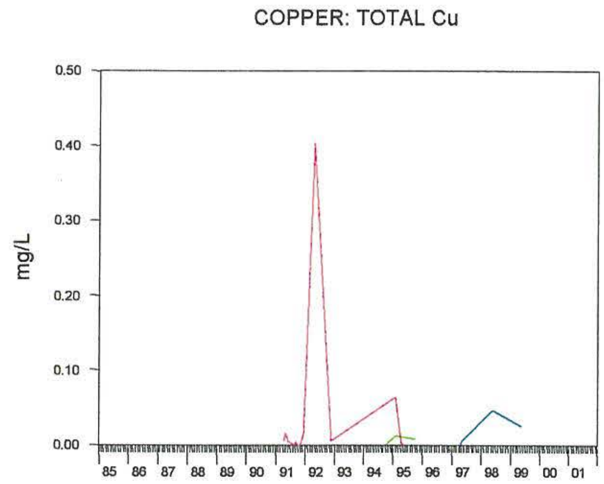


Figure F9. Water Quality of Open Pits and Rock Dumps
Vangorda Rock Dump (V21, V21A, V26)





V21, Vangorda dump, collector sump
V21A, VG Dump Collector Ditch @ LCD
V26, Little Creek between pit and dumps

Figure F10. Water Quality Entering Vangorda Creek
Grum Pit Dewatering (V18)

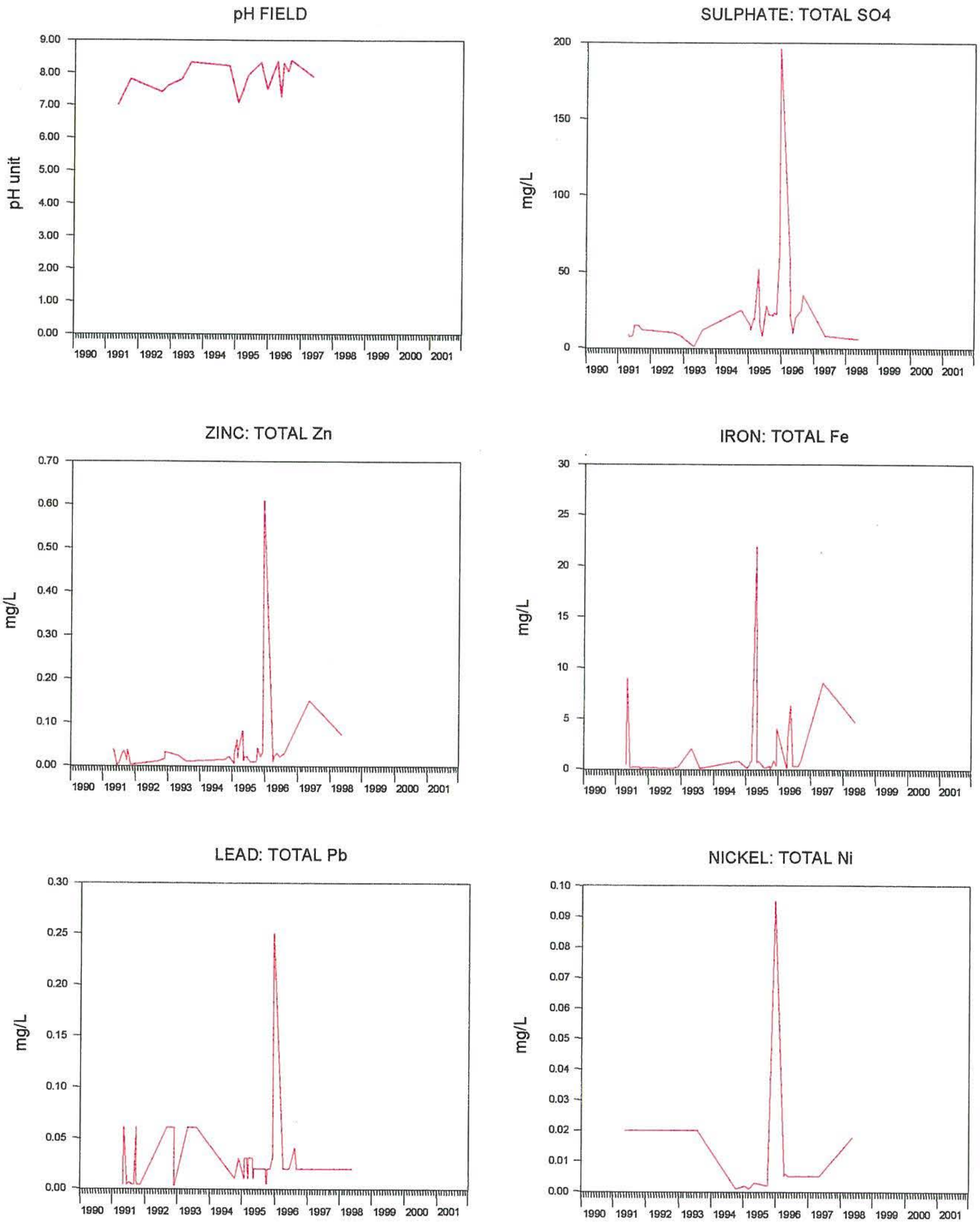
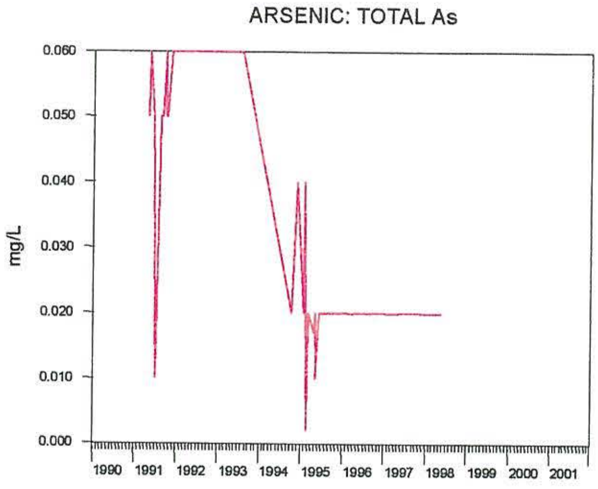


Figure F10. Water Quality Entering Vangorda Creek
Grum Pit Dewatering (V18)



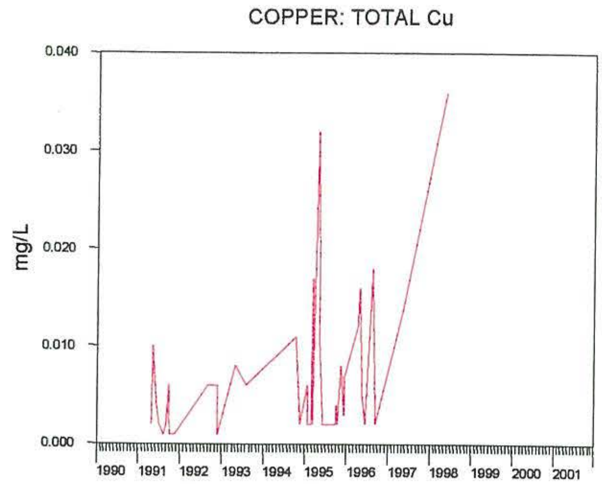


Figure F11. Water Quality Entering Vangorda Creek
Vangorda Creek Plunge Pool (V19, V25BSP)

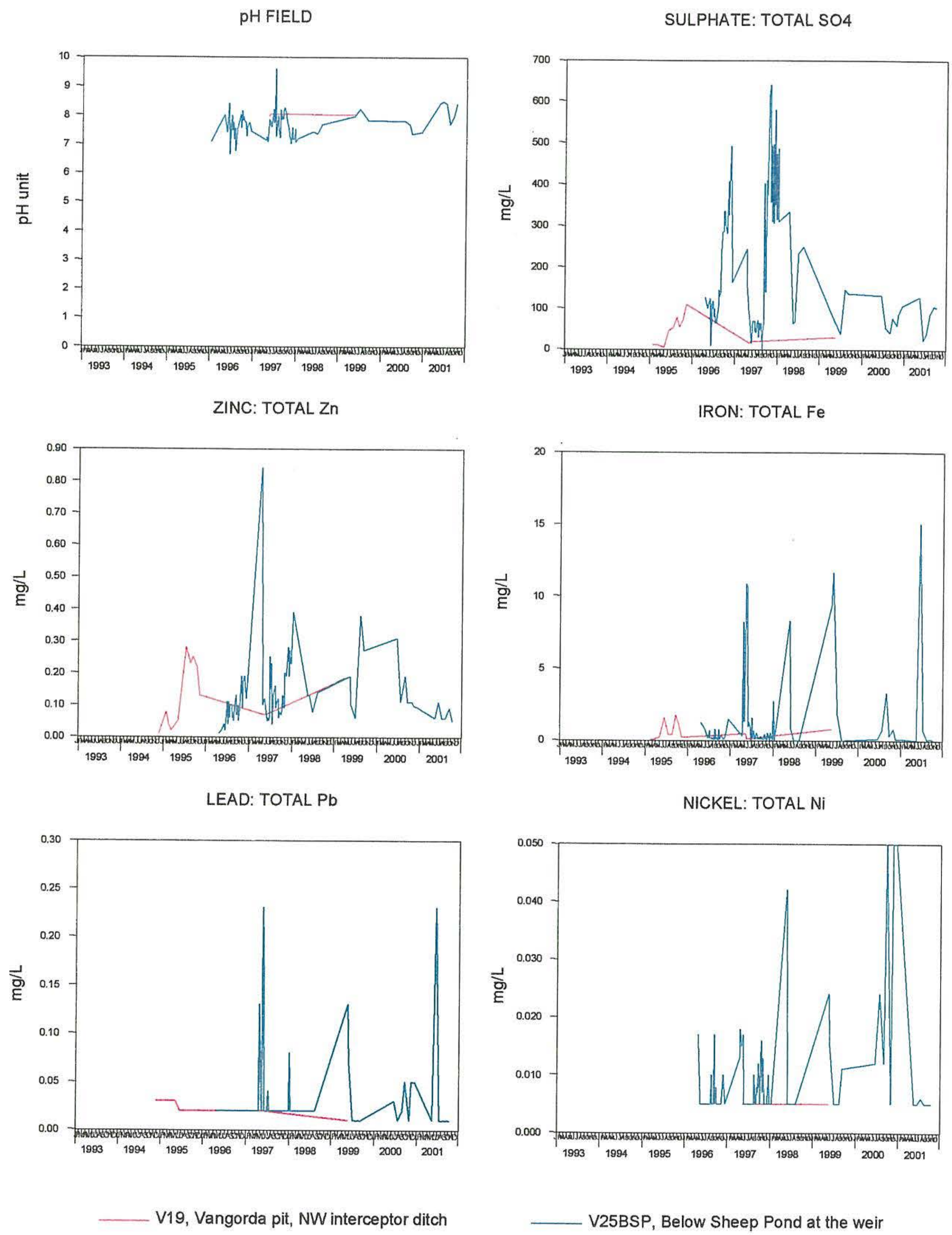


Figure F12. Water Quality Entering Vangorda Creek
Grum Creek (V2, V2A)

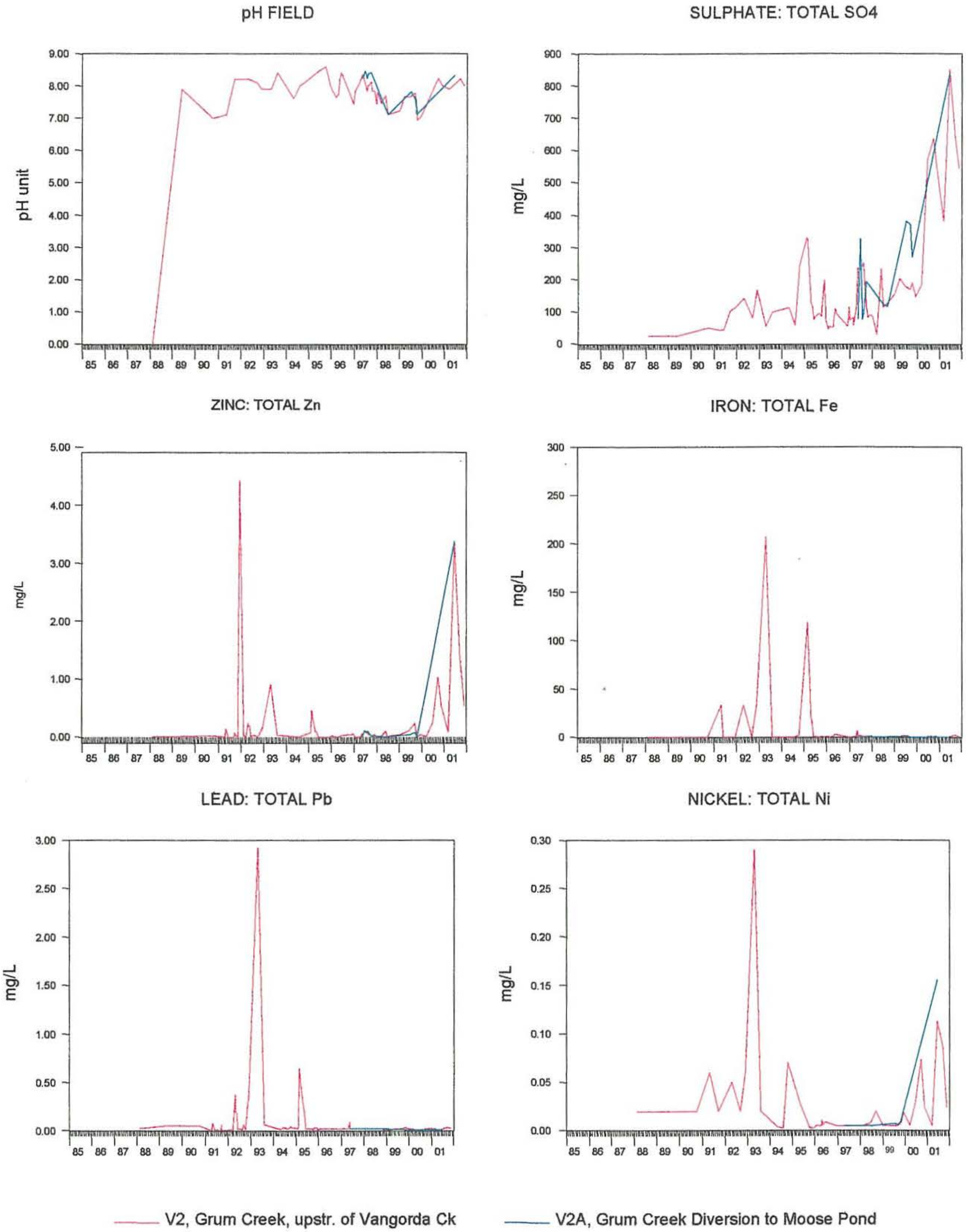
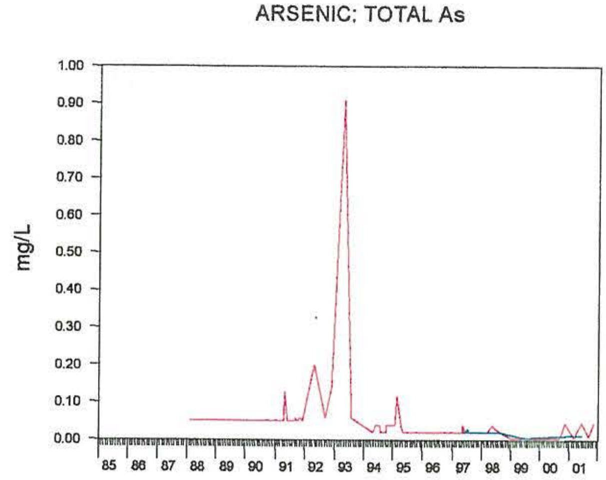
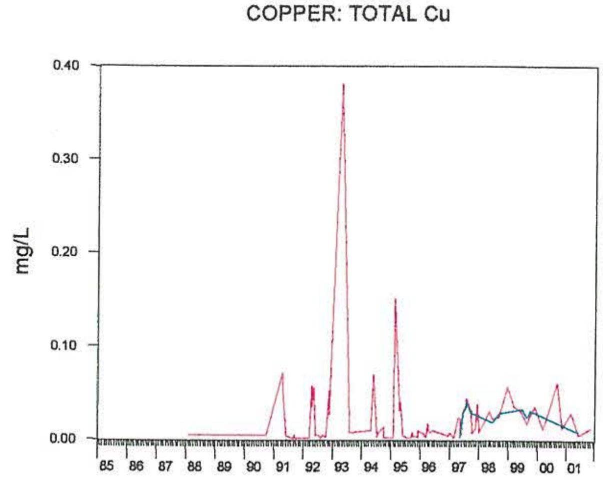


Figure F12. Water Quality Entering Vangorda Creek
Grum Creek (V2, V2A)





V2, Grum Creek, upstr. of Vangorda Ck — V2A, Grum Creek Diversion to Moose Pond

Figure F13. Water Quality Entering Vangorda Creek
Water Treatment Plant (V24, V25)

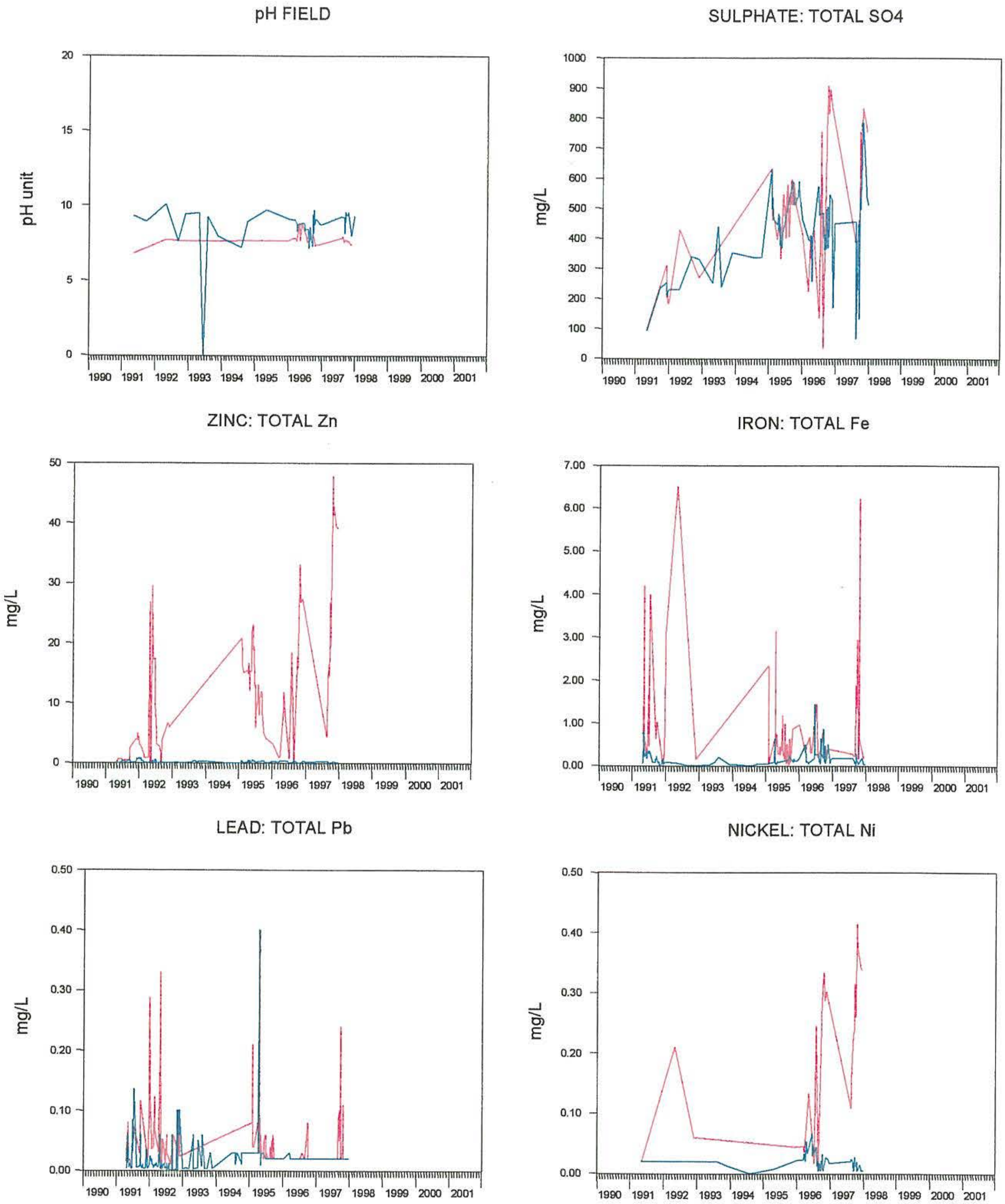
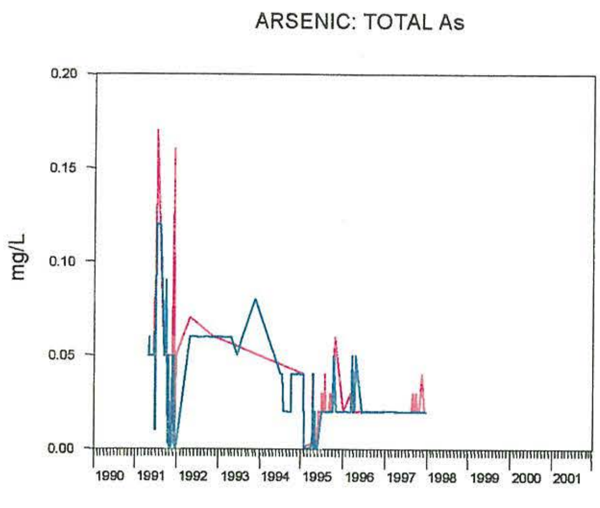
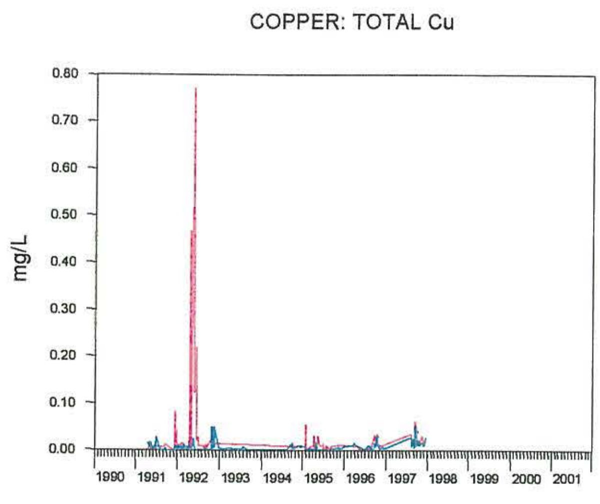


Figure F13. Water Quality Entering Vangorda Creek
Water Treatment Plant (V24, V25)





V24, Influent to water treatment plant

V25, Effluent from treatment plant

Figure F14. Water Quality Entering Vangorda Creek
AEX Creek (V17A, V6A)

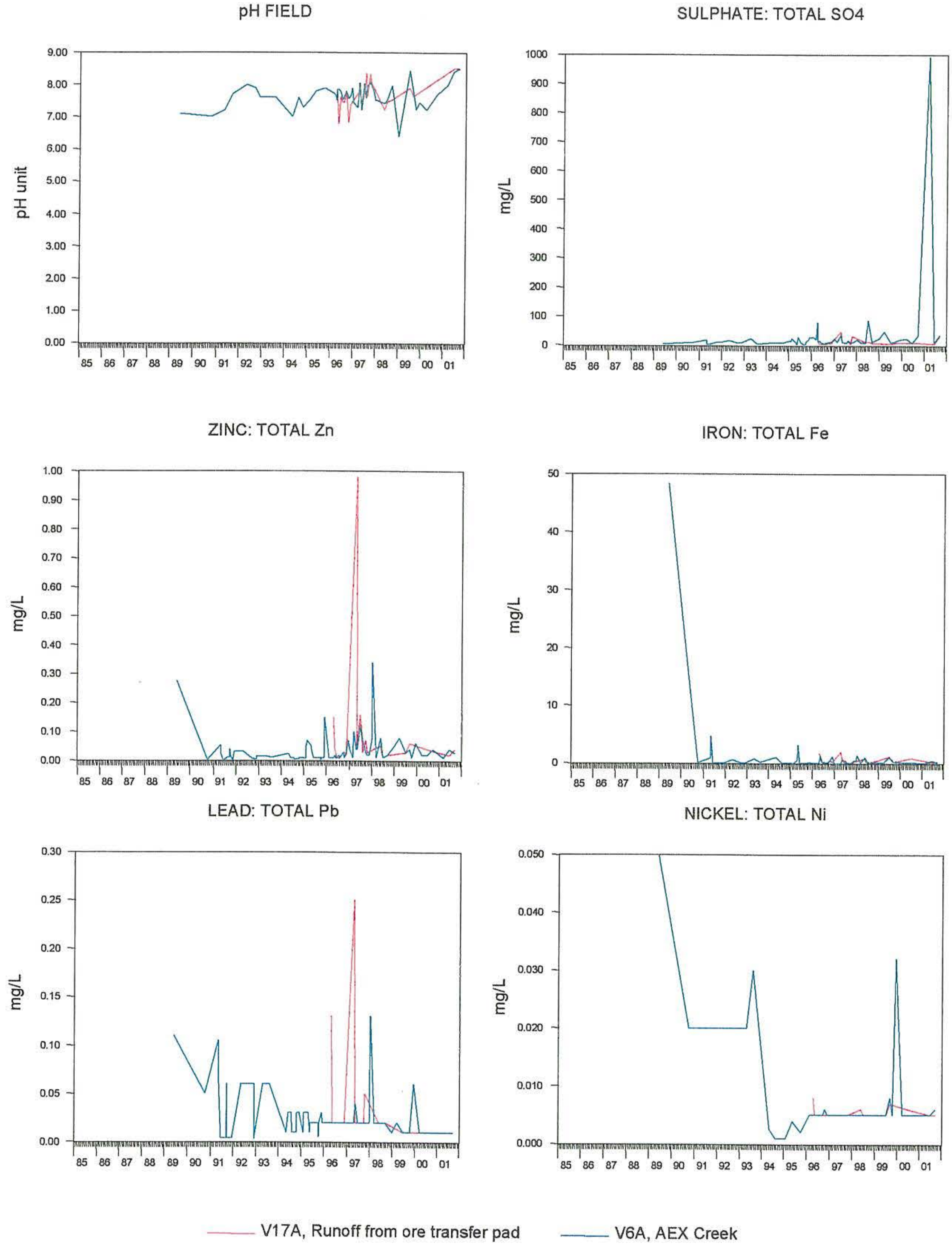


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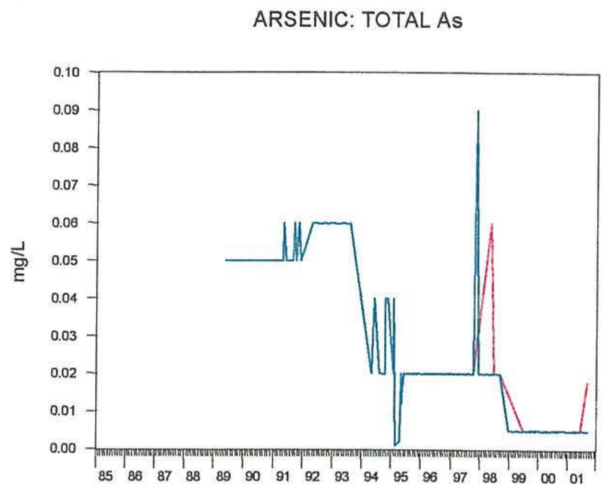
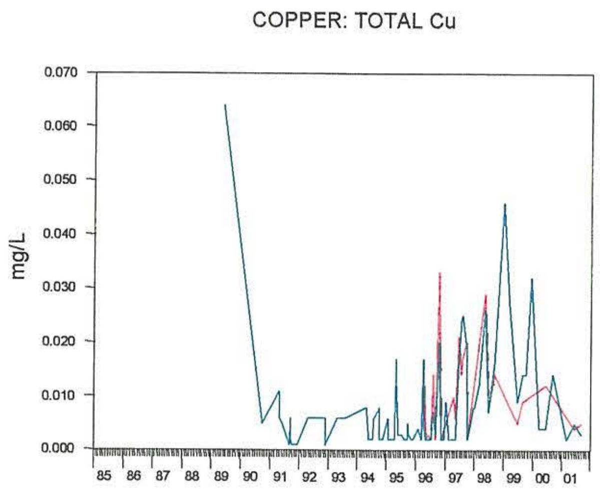
Figure F14. Water Quality Entering Vangorda Creek
AEX Creek (V17A, V6A)





V17A, Runoff from ore transfer pad   V6A, AEX Creek

Figure F15. Receiving and Background Water Quality - Lower Vangorda Creek (V5, VGMain, V8)

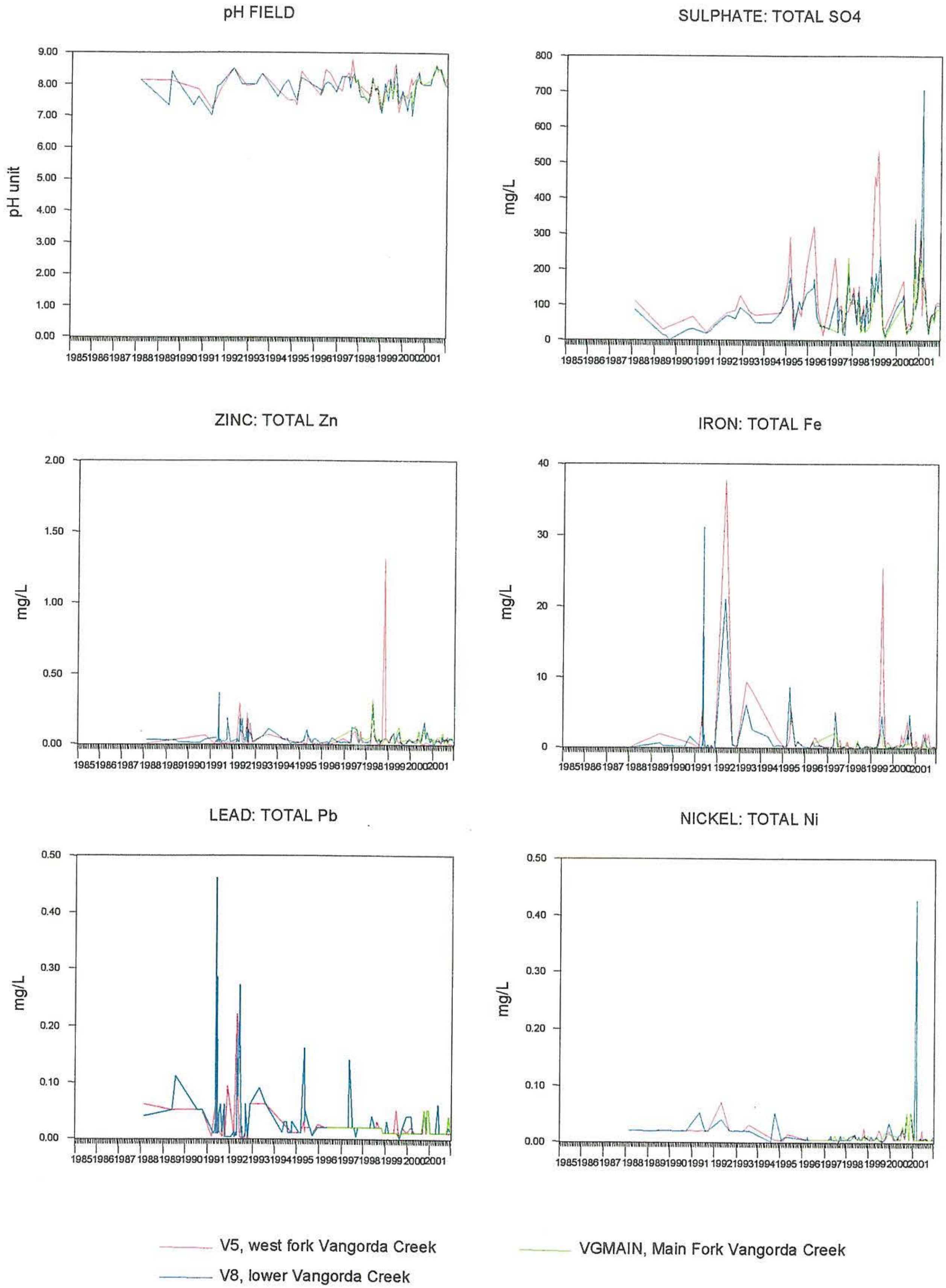
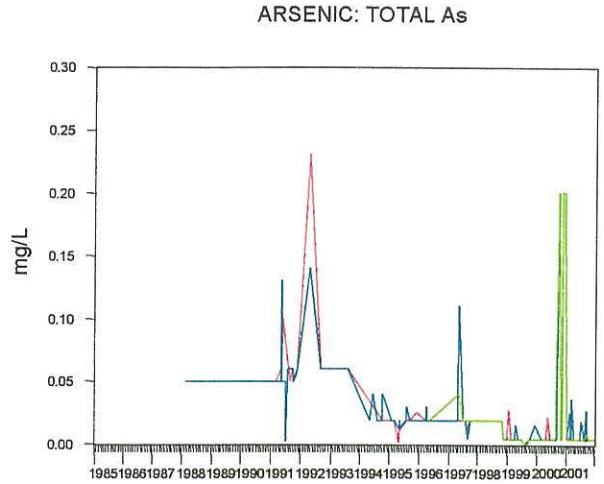
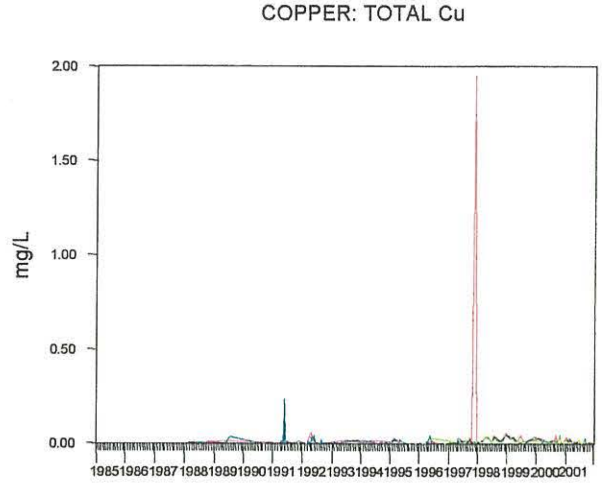


Figure F15. Receiving and Background Water Quality - Lower Vangorda Creek (V5, VGMain, V8)





V5, west fork Vangorda Creek

V8, lower Vangorda Creek

VGMAIN, Main Fork Vangorda Creek

Appendix G

Vangorda Plateau Mine Site Surface Water Quality Data Tables

List of Tables – Appendix G
Surface Water Quality at Vangorda Mine Site

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
STATION: V4										
18/02/88		0.029			295	0	0	359	60	<5
29/05/89		0.025			214	8.3	7	269	34	<5
5/3/1991		0.11			295		1	361	65	5
16/05/91	350	0.34			98		5.5	34	12	71
8/10/1991	89	0.01			226		1.5	281		5
27/11/91	50	0.05			268		0			5
8/6/1994		0.03								5
11/3/1995		0.01			357		0.3	477	75	21
24/07/95		<0.005			364		9.1	287	66	4
20/12/95		0.73			437			417	88	7
12/6/1996	107	<0.05		516	204	7.89	4		36	<5
24/09/96	42	>.05		485	247	8.24	4		53	<5
5/12/1996	40	<0.05		512	106	7.63	0		18	<5
10/3/1997		<0.05		920		8.33			91	<5
6/5/1997	527	<0.05		132				59	7	98
30/06/97		0.08		500		8.02	9		8	8
24/07/97	83	<0.05		499		8.1	7.1	240	28	<5
28/08/97	48	<.05		565		8.13	4.8	265	18	<5
30/09/97		<0.05		607		8.25	2.4		64	<5
15/12/97		<0.05							57	5
29/05/98		<0.05				7.02			17	2
29/06/98		<0.05				7.91		355	14	1
14/09/98		<0.05						370	68	3
16/03/99		<0.05						458	134	5
18/06/99		<0.05				8.06	<9	259	40	46
29/07/99	64	<0.05				8.42	4.9	255	43	10
12/10/1999						8.09	1	322	66	3
25/03/00		<.05			341			375	105	1
20/06/00								239	39	2
12/9/2000						8.04	3.9	200	37	17
7/6/2001				310		8.4	4.8			
STATION: V20										
7/5/1991		0.019			57	7.1	7.8	237	3	2290
11/6/1991		0.07			83		9.5		6	5
3/7/1991		0.05			109		18		12	1
15/08/91		0.01			117		10		5	5
3/9/1991		0.59			122		7			5
25/09/91		<0.002			103	7.8	3.5	108	6	<5
11/10/1991		0.01			101		1			5
22/11/91		0.07			102		0.5			19
8/6/1994		0.005								38

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
9/5/1995		<0.05			59	8.1	12.6	68	11	<5
9/5/1995	2	0.034			61		12.6	65	9	5
14/06/95	2	0.032			87		8		7	5
12/6/1996		<0.05		137	68	8.3	10		9	<5
15/07/96		<.05		137	73	7.91	9.5	53	6	<5
18/05/98		<0.05				7.74			75	3
20/06/00								113	16	1
12/9/2000						7.47	3.9		9	3
13/06/01				152		7.9	9.1		6	5

STATION: V1

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
18/02/88		0.022			46	8.2	0	50	<1	<5
29/05/89		<0.005			12	6.7	6	11	3	<5
1/10/1990		0.077			26	7.1	0.7	37	13	10
26/02/91		0.05			46		0	52		5
7/5/1991		0.012			29	7.2	1.7	32	8	<10
7/5/1991		0.08			28		3.5	26		5
22/08/91		0.28			30		7	31		5
25/09/91		0.003			19	7.6	2.2	27	10	<5
25/09/91		0.14			21		2.2	25.3		5
8/10/1991		0.01			22.9		1.5	26.9		5
14/11/91		0.05			39		0	47.7		5
5/12/1991		0.05			77		1		10.4	5
18/03/92		0.05								5
28/04/92		0.006			50	7.9	1.1	59	10	<10
28/04/92		0.09								5
21/05/92		0.05								5
9/9/1992		0.005			22	7.6	3.1	29	8	<10
9/9/1992		0.02								1
24/11/92		<0.002			39	7.5	0.6	45	26	<10
24/11/92		0.02								<4
26/04/93		0.005			46	7.5	2	52	13	<10
2/8/1993		0.002			20	7.4	12	19	6	<10
2/5/1994		<0.05			39	7	2.6	0	6	<5
11/10/1994		0.05			31	7.7	0.9	37	12	<5
25/01/95		<0.05			47	7.4	0.1	55	12	<5
7/3/1995		<0.05			43	7.4	0.1	52	1	<5
7/3/1995		<0.005			72		0.1	34	7	<4
19/04/95		0.008			46		3.3	53	11	<4
9/5/1995		<0.05			98	7.4	4.7	13	3	<5
9/5/1995		0.045			57		4.7	13	3	5
20/07/95	100	<0.005			29		10	24	13	1
1/8/1995		0.081			19			23	11	<1
12/9/1995	446	<0.005			23			20	12	<1
8/12/1995	189	0.29			55			48	9	<5

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
13/03/96		<.05		124	63	7.56	2.2		11	<5
12/6/1996		<0.05		39	15	7.89	3.5		14	<5
11/9/1996		<.05		61	20	7.96			10	<5
19/12/96		<0.05		104	25	7.51	0		11	<5
10/3/1997		<0.05		124		7.75		43	6	<5
24/07/97	471	<0.05		45	<5	7.1	5.9	17	6	17
28/08/97	441	0.12		66	<5	7.71	6.2	21	6	<5
22/12/97		<0.05				7.33			10	<5
18/05/98		<0.05				7.6		23	24	1
30/05/98	1426									
9/6/1998	580									
30/06/98		<0.05				7.6		325	17	<1
14/09/98		<0.05				7.88	3	29	10	2
31/12/98		<0.05				7.16		58	13	1
17/03/99		<0.05				7.12		56	13	3
18/06/99		<0.05				8.08	7	10	3	2
29/07/99	534	<0.05			2	7.44	3	9	6	1
31/08/99	293	<0.05			26	7.7	3.9	22	7	1
12/10/1999		<0.05				6.75	1	17	10	1
20/06/00		<0.05						12	4	1
9/8/2000	663.5					7.13	5.9			
12/9/2000						8.05	7.6	21	10	2
5/3/2001						8.4	1	65	16	<1
13/06/01				24		8.6	3	12	3	5

STATION: V27

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
5/3/1991		0.04			156		0.5			5
16/05/91		0.17			45		4	85		405
21/08/91		0.01			69		9	76		5
8/10/1991		0.01			63		1	79.2		6
27/11/91		0.05			98.9					5
27/02/92		0.05								5
10/7/1992		0.07								18
25/09/92		56								6
8/6/1994		0.005								7
15/10/94		0.149								6
11/3/1995		0.005			97		0.2	139	35	19
24/07/95		<0.005			48		10.7	110	126	8
1/8/1995		0.18			34			134	122	5
12/9/1995	551	0.05			41			65	59	4
20/12/95		0.31			102			96	26	<5
22/03/96		<.05		238	106	7.89	1.6	86	28	<5
24/09/96		<.05		485	247	8.24	4	217	53	<5
5/12/1996		<0.05		342	46	7.63	0	112	20	<5
10/3/1997		<0.05		320	26	7.33		120	27	<5

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
6/5/1997	329	<0.05		220				78	37	60
30/06/97		0.06		102		7.61	11.3		32	<5
24/07/97	636	<0.05		88	<5	7.68	8.6	32	34	17
28/08/97	296	0.08		183	<5	7.86	6.2	61	33	<5
30/09/97		0.32		371		7.99	3.7	158	127	<5
15/12/97		<0.05							63	<5
29/05/98		<0.05				6.66			45	7
29/06/98		<0.05				7.72		88	43	1
14/09/98		<.05						56	18	2
16/03/99		<0.05			118			149	46	5
18/06/99		<0.05				8.33	<8	18	5	4
29/07/99	785	<0.05			5	7.74	4.4	36	14	5
31/08/99	348	<0.05			46	7.97	5.2	49	16	3
12/10/1999					59	8.41	3	69	27	<1
25/03/00		<.05			111			148	50	1
20/06/00					66			26	9	2
12/9/2000					66	7.63	3.2	74	37	1
7/6/2001				72		8.6	3.1			

STATION: V5

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
18/02/88		<0.005			277	8.1	0	407	110	<5
29/05/89		0.024			135	8.1	5	157	31	15
1/10/1990		<0.002			171	7.8	2.5	234	66	<10
26/02/91		0.03			275		1	448		5
7/5/1991	1358	0.01			74	7.2	4.6	118	22	80
16/05/91	1358	0.16			108		5			11
22/08/91	249	0.12			296		6	234		5
25/09/91		0.003			155	7.8	5.3	209	46	5
11/10/1991	334	0.01			169		1.5	257		5
26/11/91	131	0.05			233.5		0			17
28/02/92	51	0.05								19
28/04/92	280	0.027			162	8.5	1.4	329	77	1020
28/04/92	278	0.11								974
27/05/92		0.17								112
28/07/92		0.09								6
12/8/1992	85	0.02								8
9/9/1992	240	0.04								15
10/9/1992	240	0.008			196	8.1	3.9	285	83	10
7/10/1992	148	0.014								<4
24/11/92		0.009			248	7.9	0.8	361	125	<10
26/04/93	243	0.012			137	8	3.1	231	78	100
2/8/1993	207	0.017			205	8.3	13.9	304	69	140
11/10/1994		<0.05			180	7.5	0.8	276	76	48
25/01/95		<0.05			320	7.5	0.1	472	163	<5
6/3/1995		<0.05			324	7.3	0.3	550	290	<5

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
6/3/1995		<0.005			324		0.3	549	290	<5
7/3/1995		<0.05								<5
26/04/95		0.007			152		2	222	37	39
9/5/1995	230	<0.05			127	8.4	5.6	232	53	158
9/5/1995	230	0.028			132		5.6	218	52	165
24/07/95		<0.005			232		7.9	229	93	2
1/8/1995		<0.005			177			244	82	6
12/9/1995	224	<0.005			199			177	65	28
8/12/1995		<0.005			380			472	208	<5
22/03/96		<.05		1343	487	7.61	1.4		319	<5
11/6/1996	195.3	<.05		452	137	8.46	4		79	37
11/9/1996	191.6	<.05		421	170	8.31	4		15	<5
19/12/96	35	<0.05		685	147	7.92	0		114	<5
10/3/1997	7	<0.05		1225		7.76		517	232	<5
15/04/97		<0.05		865		8.17	2.6	378	152	7
5/5/1997	892	0.05		225				86	22	171
27/05/97				370				152	95	37
30/06/97	185	0.06		396		8.34	8.5		97	<5
24/07/97	379	<0.05		390	<5	8.11	5.1	166	18	63
28/08/97	162	0.06		462	<5	8.78	6.2	204	48	<5
30/09/97		<0.05		772		8.37	5.3	244	81	<5
20/10/97		<0.01				8.07	3.9	266	79	<5
19/11/97		<0.05				8.1	1.8	296	105	10
22/12/97		<0.05				7.71		341	101	<5
13/01/98		0.07				7.91		408.1139	149	9
17/03/98		<0.05				7.8		591	53	<1
14/04/98		<0.05						416	153	4
19/05/98		<0.05				7.7		176	24	16
10/6/1998	152									
30/06/98		<0.05				7.62		391	98	5
21/07/98		<0.05				8.12			27	<1
11/8/1998		<0.05				8.01			105	5
15/09/98		<0.05				7.76	4	256	81	8
19/10/98		<0.05				7.92		293	88	1
17/11/98		<0.05				7.42		574	206	2
31/12/98		<0.05				7.12		971	461	<1
19/01/99		<0.05						810	435	2
23/02/99		<0.05				7.75	0	1161	532	29
23/03/99		<0.05						602	235	5
20/04/99						8.14	2	498	208	13
18/05/99		<0.05				8.04	2	126	39	100
20/06/99		<0.05				7.97	6	134	34	731
29/07/99	364	<0.05			22	8.53	5.8	174	49	300
31/08/99	144	<0.05			187	8.6	5.9	226	60	7
12/10/1999		<0.05				7.09	2	245	79	5
14/12/99						7.68	0	340	105	3

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
28/02/00		<0.05				7.53	0	319	144	7
27/04/00		<0.05				8.18	3	316	168	12
15/05/00						8	5	164	71	58
20/06/00		<0.05						130	34	17
25/07/00						8.17	8.9	172	48	33
9/8/2000	449.45					8.26	6.9			
29/08/00						8.3	5	153	42	80
12/9/2000						8.4	4.7	173	55	27
26/09/00						8.04	6.2	207	73	251
28/10/00							4			
29/10/00								271	340	11
13/11/00						8	-0.4	346	107	10
18/11/00								207	110	4.6
14/12/00						7.98		367	122	4.6
13/01/01								340	257	6
10/2/2001								371	323	10
5/3/2001		<0.05				8	-0.1		72	24
10/3/2001						8	-0.2	489	180	2
16/04/01						8.2	0.2	411	158	16
14/05/01						8.4	2.4	218	61	51
13/06/01				186		8.5	5.9	119	25	19
17/06/01						8.6	5.7	121	28	35
14/07/01						8.5	6.8	248	65	34
14/08/01						8.5	6.3	478	72	48
8/9/2001						8.5	2.9	276	76	3
17/09/01						8.4	5.1	276	75	13
15/10/01						8.3	-0.4	339	101	14
13/11/01						8	-0.4	346	107	10

STATION: VGMAIN

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
16/05/96		0.18		341	92			123	51	14
5/5/1997		0.07		185				77	23	101
27/05/97				244				87	31	<5
30/06/97		<0.05		224		8.23	10.6		35	6
24/07/97		<0.05		1702				79	28	18
30/09/97		0.06		419		8.21	4.9		134	<5
20/10/97		0.14				8.01	3.9	310	233	<5
19/11/97		<0.05				8.17	1.8	230	99	<5
23/12/97		<0.05				7.9		339	106	<5
17/03/98		<0.05				7.6		318	107	4
14/04/98		<0.05						285	105	5
19/05/98		<0.05				7.5		87	21	17
30/06/98		<0.05				7.82		152	40	<1
21/07/98		<0.05				8.13			24	1
15/09/98		<0.05				7.81	6	109	34	5

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
19/10/98		<0.05				7.91		155	48	1
17/11/98		<0.05				7.75		275	86	2
31/12/98		<0.05				7.21		371	149	<1
20/04/99								298	126	3
18/05/99		0.06				8.01	1	100	33	42
20/06/99		0.07				7.58	7	34	7	125
29/07/99		<0.05				7.99	10	74	20	4
12/10/1999		<0.05				7.48	2	134	46	<1
27/04/00		<0.05				7.74	3	207	99	1
15/05/00						7.35	6	178	61	3
20/06/00		<0.05						62	17	2
25/07/00						8.16	11.2	87	27	3
29/08/00						8.12	7.5	124	31	11
26/09/00						8.11	6.1	137	46	67
28/10/00							2.5			
29/10/00								230	254	3
13/11/00						8	-0.4	288	98	6
18/11/00								137	98	<0.2
14/12/00						8.01		306	109	1
13/01/01								280	191	<1
10/2/2001								288	227	2
10/3/2001						8.1	-0.2	341	132	3
16/04/01						8.2	0.2	358	123	5
14/05/01						8.5	2.2	241	82	5
17/06/01						8.6	6.5	63	20	23
14/07/01						8.4	8.6	144	47	4
14/08/01						8.5	8.5	395	72	<1
17/09/01						8.3	6.3	156	52	<1
15/10/01						8.3	-0.4	220	76	2
13/11/01						8	-0.4	244	87	2
STATION: V8										
18/02/88		<0.005			214	8.1	0	309	85	<5
29/05/89		0.008			54	7.3	5	73	14	<5
25/07/89		0.018			124	8.4	16	151	12	8
6/9/1989						8.2	5.5		0	
11/7/1990		<0.002			94	7.3	7	114	31	<10
2/10/1990		0.007			124	7.6	3.3	161	32	30
3/4/1991		0.05			225		2	317		5
10/4/1991		0.05			201		2	284		5
16/04/91		0.05			201		2	284		19
23/04/91		0.05			122		2.5	157		23
1/5/1991	936	0.1			113		4	146		47
7/5/1991	2778	0.026			68	7	4.6	145	20	590
10/5/1991		0.05			89		6	112		44

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
17/05/91		0.05			83		4.5	117		59
24/05/91	2080	0.05			89		7	103		41
30/05/91		0.05			47		4	66		100
5/6/1991		0.05			75		11	101		13
13/06/91		0.05			70		8.5	94		10
18/06/91		0.06			66		7	85		9
26/06/91		0.05			74		9.5	95		5
1/7/1991	1270	0.25			81		10	107		8
24/07/91		0.003			95	7.9	12.8	118	27	7
15/08/91	1116	0.27			132		10.5	153		5
25/09/91		<0.002			117	8	5.7	158	42	<5
25/09/91		0.05			117		5.7	163		5
4/10/1991	1182						0			
25/11/91	372	0.05					0			5
17/01/92	284	0.05								5
28/02/92	153	0.05								30
9/3/1992		0.05								5
16/03/92	202	0.05								5
24/03/92		0.05								5
3/4/1992		0.05								5
6/4/1992		0.05								6
15/04/92		0.05								5
22/04/92		0.1								176
28/04/92	634	0.026			155	8.5	1.6	277	70	360
28/04/92		0.09								365
11/5/1992	1077	0.05								111
27/05/92		0.11								453
14/06/92										134
3/7/1992		0.05								5
8/7/1992		0.02								56
28/07/92		0.03								6
3/8/1992		0.03								6
12/8/1992		0.01								4
19/08/92		0.03								5
24/08/92		0.002								10
9/9/1992		0.03								12
10/9/1992		0.018			135	8	4.5	193	61	10
7/10/1992		0.037								<4
24/11/92		0.366			184	8	0.8	288	93	<10
26/04/93	533	0.007			136	8	3.2	222	71	70
2/8/1993	620	0.019			132	8.3	14.7	199	50	30
2/5/1994		<0.05			120	7.6	1.5	0	50	77
8/6/1994		0.007								112
19/07/94		0.005								<4
9/8/1994	274	<0.05			179	8	12	258	65	<5
11/10/1994	520	<0.05			153	8.1	3.1	84	78	10

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
15/10/94		0.006								16
25/01/95		<0.05			240	7.6	0.1	356	120	8
6/3/1995		<0.05			210	7.5	0.2	430	177	<5
6/3/1995	427	<0.050			210		0.2	427	177	<5
7/3/1995		<0.05								<5
26/04/95	110	0.098			137		4.1	273	105	151
9/5/1995	1096	<0.05			76	8.2	7.6	129	37	82
9/5/1995	1000	0.03			64		7.8	107	29	111
24/07/95	187	<0.005			139		10.3	187	98	4
1/8/1995	167	0.053			91			167	109	16
12/9/1995	960	0.05			129			138	87	13
8/12/1995	310	<0.005			265			310	132	<5
22/03/96		<.05		758	286	7.82	1.5		148	<5
1/4/1996		<.05		704	261	7.76			172	<5
9/4/1996		<.05		781	274	7.7	1		169	<5
16/04/96		0.08		740	259	7.71	2		137	9
16/05/96	1340	0.06		411	120	7.97	3		68	14
11/6/1996	801									
8/7/1996						8.06	10		40	<5
11/9/1996	687	<.05		247	108	8.01	5		41	7
5/12/1996	110	<0.05		556	72	7.74	0		33	<5
10/3/1997	15	<0.05		675		8.25		288	102	<5
15/04/97		0.1		699		8.25	2.4	308	121	35
5/5/1997	1873	0.07		207				85	23	271
27/05/97				282				122	87	37
30/06/97	566	<0.05		295		8.22	9		85	<5
24/07/97	1007	<0.05		270	<5	7.89	7.7	110	19	23
28/08/97	541	0.06		353	<5	8.2	8.5	143	14	<5
30/09/97		<0.05		475		8.31	5.3	219	116	<5
20/10/97		<0.01				8.07	3	303	191	<5
19/11/97		<0.05				8.12	2	265	105	8
23/12/97		<0.05				7.75		265	112	<5
13/01/98		<0.05				7.58		328.1499	132	8
17/03/98		<0.05				7.59		389	46	<1
14/04/98		<0.05						345	136	4
19/05/98		<0.05				7.4		102	24	13
10/6/1998	594									
30/06/98		<0.05				7.78		97	86	1
21/07/98		<0.05				8.18			27	<1
11/8/1998		<0.05				7.98			123	4
15/09/98		<0.05				7.84	6	169	48	29
19/10/98		<0.05				7.95		183	62	<1
17/11/98		<0.05				7.75		577	179	2
31/12/98		<0.05				7.08		335	111	2
19/01/99		<0.05						451	190	3
23/02/99		<0.05				8.02	0	462	136	5

Table G1. Water Quality for Background and Receiving Water, Vangorda Plateau - Physical Parameters

	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
Date	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
23/03/99		<0.05						458	238	12
20/04/99						7.48	3	404	174	7
18/05/99		<0.05				8.16	1	116	39	47
20/06/99		<0.05				7.53	7	37	12	184
25/06/99	1403									
29/07/99	1101	<0.05			13	8.21	7.7	107	31	85
30/08/99	484	<0.05			112	8.5	7.3	135	36	3
12/10/1999		<0.05			144	7.38	2	164	61	5
14/12/99		<0.05			190	7.78	0	271	85	1
28/02/00		<0.05				7.15	0	289	111	<1
23/03/00		<0.05			216	7.48	1	323	109	1
27/04/00		<0.05				7.77	2	278	128	3
15/05/00						7	8	179	67	1
20/06/00		<0.05			59			80	22	1
25/07/00						8.03	10.3	109	33	9
29/08/00						8.19	6.7	141	34	44
12/9/2000		<0.05			138	8.36	6.4	148	47	16
26/09/00						8.09	6.1	137	55	129
28/10/00							2.1			
29/10/00								269	328	2
13/11/00						8	-0.4	244	87	2
18/11/00								137	100	1.4
14/12/00						8		355	119	1.2
13/01/01								304	219	2
10/2/2001								324	274	2
5/3/2001					144.3	8	1		703	8
10/3/2001						8	-0.2	411	153	2
16/04/01						8.2	0.2	283	138	4
14/05/01						8.4	2.7	241	76	9
13/06/01		<0.05		130	47	8.5	5.9	75	20	31
17/06/01						8.6	6.3	83	23	30
14/07/01						8.5	8.4	181	54	8
14/08/01						8.5	8.1	439	75	9
8/9/2001		<0.05			138	8.5	3.8	201	64	2
17/09/01						8.3	6.2	196	61	3
15/10/01						8.2	-0.4	284	94	8
13/11/01						8	-0.4	288	98	6

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
STATION: V18										
25/04/91		0.2			56		2.5		9	14
7/5/1991		0.018			40	7	2.5	58	7	130
11/6/1991		0.01			80		6		8	5
3/7/1991					88		12		15	4
15/08/91		0.06			45		14		15	5
3/9/1991		0.22			53		5.5			5
25/09/91		0.002			37	7.8	2.7	50	12	<5
25/09/91		0.01			37		2.7			5
11/10/1991		0.01			80		1			5
15/11/91		0.05			98		0.5			5
9/9/1992		0.008			80	7.4	3.6	83	10	<10
24/11/92		0.025			101	7.6	2.8	103	8	<10
24/11/92		0.03								6
26/04/93		0.01			119	7.8	9.1	129	<1	20
2/8/1993		0.006			118	8.3	9.6	123	12	<10
11/10/1994		<0.05			52	8.2	0.7	239	25	11
26/11/94		0.005								<4
25/01/95		<0.05			120	7.1	1.2	122	15	<5
31/01/95	27	0.006			115		5.1		12	<4
22/02/95		<0.005								19
24/02/95	9.5	<0.005			133		2.9	144	19	19
7/3/1995		<0.05			137	7.4	2.4	153	20	15
7/3/1995		0.012			135		2.4	148	19	26
26/04/95	18	0.012			96		3.6	144	52	287
9/5/1995		<0.05			104	7.9	8.3	105	15	9
9/5/1995	5	0.033			101		8.3	103	15	11
7/6/1995	15	0.035			88		8		8	12
20/07/95	10	0.47			167		10.4	115	28	6
23/08/95	11	<0.005			157		7.3	111	22	<1
27/09/95	10	<0.005			156		5.2	102	22	<1
4/10/1995		<0.05			124	8.3	3.6	130	21	<5
16/10/95	7				170		2		23	<1
14/11/95		0.11			174		2.5	137	22	<5
6/12/1995	5.1	1.02			175			162	59	<5
12/12/1995		5			323	7.5	0.1	602	196	147
9/4/1996		<.05		429	187	8.35	3.1		60	<5
22/04/96		0.24		196	97	7.95	3.5	143	20	42
15/05/96		0.06		98	39	7.27	3	143	10	219
12/6/1996		<0.05		220	88	8.28	9.5	143	20	<5
1/8/1996		<.05				8.05				r
14/08/96		<.05		228	111	8.12	9		25	<5
11/9/1996		<.05		305	132	8.38	9.5	117	35	5
12/5/1997		<0.05		54		7.87	4.5		8	628
18/05/98		<0.05							6	150
STATION: V24										

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
26/04/91		0.31			140		2			8
1/5/1991		0.33			100		2.5			9
7/5/1991		0.38			109	6.8	4.3	228	100	50
9/5/1991		0.46			101		1.5			49
13/05/91		0.82			100		3.5			24
3/6/1991		1.87			120		9.5			10
11/6/1991		1.75			123		9			5
17/06/91		1.49			128		9			9
1/7/1991		0.92			140		16.4			9
3/7/1991					138		15			3
8/7/1991		0.83			142		17			94
16/09/91		6.77			176		10			26
23/09/91		5.91			159		10.5			147
28/11/91		6.4			198		1.5			5
5/12/1991		7.4			195.4		2		314	5
8/12/1991		1.3			194		2		204	5
15/12/91		13			185		2		218	5
22/12/91		13			193		2		185	16
30/12/91		8.5			187		3		186	74
7/1/1992		8								86
27/01/92		17								5
11/2/1992		22								5
24/02/92		19								10
2/3/1992		23								9
9/3/1992		16								5
3/4/1992		11.5								5
6/4/1992		12.5								5
13/04/92		13								5
20/04/92		5								25
28/04/92		6.16			104	7.7	1.5	494	430	100
28/04/92		4.3								98
5/5/1992		8.6								13
11/5/1992		8.6								9
19/05/92		7.6								14
25/05/92		7.2								7
1/6/1992		8.3								7
18/06/92		6.6								5
23/06/92		8.2								5
10/7/1992		11.8								47
15/07/92		15.1								18
14/08/92		20.1								64
18/08/92		13.8								32
24/08/92		13								29
1/9/1992		10.4								2
14/09/92		21.3								9
21/09/92		18.7								14
16/11/92		15.1								<4
24/11/92		18.8			208	7.6	1.3	486	271	<10
24/11/92		13								<4
31/01/95	22	1.83			160		3.6		633	<4

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
8/2/1995	22.7	1.62			134			604	537	36
13/02/95	22.7	1.74			142			603	462	<4
22/02/95	22.7	1.71			145			572	475	<4
10/4/1995	24	1.69						552	398	9
17/04/95	24	1.56			122			583	457	17
19/04/95	24	1.66			116		7.4	511	419	8
24/04/95	54.2	1.58			111			606	460	55
3/5/1995	41	1.17			105			443	409	13
8/5/1995	41	1.14					7.6	462	400	13
15/05/95	43	0.847			80			458	334	5
23/05/95	43	1.04			84			486	413	<4
31/05/95		1.32			90			519	533	5
7/6/1995	40	1.4			83		10		548	7
14/06/95	50	1.21			98		13.2	630	507	2
28/06/95	57	1.2			93		13.2		511	7
11/7/1995		1.8			172			452	403	<5
17/07/95		1.41			207		12.8		540	<5
24/07/95		1.2			140		13.8	518	581	<1
1/8/1995	58	1.49			110		13.3		502	3
8/8/1995		1.07			172				406	<1
16/08/95	82	1.54			207		13.1	410	453	<1
23/08/95	82	1.77			176		11.3	515	549	<1
29/08/95		2.5			173			487	516	15
7/9/1995	65	2.45			193		9.9		590	2
12/9/1995	65	2.65			180		11.2		597	6
18/09/95	65	5.25			226		7.9	490	513	13
3/10/1995		3.08			185			476	584	1
25/10/95	56.8	6.17			194		3.4		505	52
9/1/1996	78.5	9.75		1216	261	7.65	1.1	554	413	31
14/03/96		14.19		1162	402	7.84	2.9	330	224	9
1/4/1996		11.75		1144	250	7.61		392	409	9
29/04/96		8.73		1060	131	8.85	4	431	403	22
6/5/1996		8.64		1036		7.65		205	430	9
28/05/96		4.64		831	137	8.85	4	329	327	16
8/7/1996		3.02		683	220	8.01	12	275	135	22
29/07/96		4.7		1234	121	7.52	14	633	755	<5
27/08/96		1.95		584	204			232	36	10
24/09/96		0.86		1235	143	8.06	6	654	778	13
7/10/1996		7.28		632		7.82	5.2		907	<5
21/10/96		5.61		1120	106	7.31	6	788	815	21
5/11/1996		7.52		1260	127	7.4		714	897	
21/11/96		4.48		1069	172	7.34	2.5	675	834	8
19/08/97	82	1.82				7.85	11.9		387	4
25/08/97	38	1.84				7.93	13		72	<5
2/9/1997	66	1.61				7.53	11.7		308	<5
9/9/1997	107	2.07				7.62	12.1		362	<5
16/09/97	107	2.22				7.6	8.6		460	<5
23/09/97	113	3.04				7.76	9.9		157	6
30/09/97	107	2.67				7.71	7.2		755	142
7/10/1997		2.28				7.62	5.8		599	46

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
14/10/97		3.33				7.61	4.3		717	22
20/10/97		3.55				7.67	7		794	<5
28/10/97		4.26				7.59	4.9		831	12
25/11/97	63	4.46				7.36	3.6		792	5
9/12/1997		5.49							753	<5

STATION: V25

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T	SO4-T	TSS
26/04/91		0.29			114		1			5
1/5/1991		0.5			85		3.5			6
7/5/1991		0.312			66	9.3	2.1	180	95	11
9/5/1991		0.41			72		2			5
13/05/91		0.62			60		4			5
22/05/91					70		5			7
3/6/1991		0.82			47		7			7
11/6/1991		0.99			44		6			5
17/06/91		1.16			76		8.5			5
1/7/1991		0.98			129		15.5			9
3/7/1991		1.2			127		17			8
8/7/1991		0.75			130		14			9
15/08/91		0.05			98		12			5
12/9/1991		3.8			54		7.5			5
16/09/91		5.82			118		7			5
23/09/91		5.78			107		5			5
25/09/91		7.18			100	8.9	4.8	354	236	<5
25/09/91		5.75			88		4.8			5
1/10/1991		5.73					5			5
8/10/1991		5.46			96		3			9
18/10/91		5.59			90					5
22/10/91		5.86			97					
28/10/91		5.93			139		0.5			16
4/11/1991		3			79		3			5
15/11/91		3.3			86		3			5
18/11/91		3.3			99		2			5
29/11/91		3.3			87.7		2			5
5/12/1991		6.6			134		2		253	5
8/12/1991		6.4			136		2		226	5
15/12/91		5.4			123		2		209	5
22/12/91		8.2			115		2		223	5
30/12/91		6.4			120		2		231	5
7/1/1992		7.5								5
15/01/92		10								5
20/01/92		11								5
27/01/92		12								5
4/2/1992		15								23
11/2/1992		17								5
18/02/92		14.5								5
24/02/92		23								5
2/3/1992		23								5
9/3/1992		23								5

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
16/03/92		16								7
24/03/92		14								5
3/4/1992		16								5
6/4/1992		14.5								5
13/04/92		13.5								5
20/04/92		12								5
28/04/92		11.9			55	10.1	1.2	293	230	<10
28/04/92		8.6								5
5/5/1992		13.4								5
11/5/1992		8								5
19/05/92		7.6								5
25/05/92		7								5
1/6/1992		7.1								5
15/06/92		5								5
23/06/92		4.4								5
25/06/92		6.1								5
2/7/1992		6.4								5
7/7/1992		4.87								7
15/07/92		8.74								7
20/07/92		6.86								5
27/07/92		5.35								3
3/8/1992		6.6								4
10/8/1992		2.01								8
18/08/92		8.05								
24/08/92		12.8								12
1/9/1992		10.4								2
9/9/1992		11.3			56	7.6	7.7	474	340	<10
9/9/1992		8.92								3
14/09/92		16.8								8
21/09/92		18								10
28/09/92		11.3								2
6/10/1992		11.3								<4
13/10/92		13.1								<4
19/10/92		13.2								<4
26/10/92		14.1								<4
2/11/1992		14.3								
9/11/1992		14.9								<4
16/11/92		14.3								
24/11/92		17.8			43	9.4	1.6	381	330	<10
24/11/92		16.7								
5/1/1993		19.3								<4
13/01/93		21.2								
20/01/93		20.3								<4
27/01/93		20.8								<4
8/3/1993		21.8								<4
17/03/93		16								<4
26/04/93		15.5			72	9.5	3.3	281	250	<10
28/04/93		10.1								<4
1/5/1993		4.14								<4
22/06/93		0.02								10

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
24/06/93		13.9			38	0	0	260	440	<10
31/07/93		3.05								<4
2/8/1993		4.59			38	9.2	15.2	311	240	<10
1/9/1993		1.87								
1/10/1993		2.78								
1/11/1993		4.64								
29/11/93		3.6	<0.005		78	7.9	0.1	373	353	<5
8/6/1994		2.52								8
8/8/1994		0.369								35
9/8/1994		0.44			12	7.2	14	371	336	<5
11/10/1994		1.6			29	8.9	4.8	372	338	<5
15/10/94		1.87								<4
18/11/94		1.85								16
26/11/94		1.73								9
1/12/1994		1.5								10
8/12/1994		1.4								15
15/12/94		1.4								13
31/01/95	0.2	1.18			392		4.1		628	<4
8/2/1995	22.7	1.58			41			629	497	5
13/02/95	22.7	1.67			37			545	538	5
22/02/95	22.7	1.71			19			532	466	19
10/4/1995	24	2.05						504	445	8
17/04/95	24	1.53			28			561	483	4
19/04/95	24	1.38			18		3	508	424	12
24/04/95	54.2	1.31			20			7	477	8
3/5/1995	41	1.29			25			452	452	9
8/5/1995	41	1.12					4.1	440	378	8
9/5/1995		1			18	9.7	8.1	408	439	<5
9/5/1995	6	1			18		8.1	408	439	5
15/05/95	43	0.883			19			441	386	6
23/05/95	43	0.813			26			405	368	<4
31/05/95		0.94			39			489	420	7
6/7/1995	60.9									
7/9/1995	65	1.86			9				565	10
18/09/95	65	2.75			92		8.5	466	588	56
10/10/1995		3.92			1				517	2
16/10/95		4.03			115		2.8		513	1
9/11/1995	1	0.33			19		5.5		537	<5
14/11/95	1	0.64			24		5.3		539	<5
21/11/95	1						3.9	538		
30/11/95	1.5	6.07			130		2.3		592	<5
6/12/1995	0.5	0.1			237		2.4		536	<5
9/1/1996	78.5	9.41		1142	117	9.07	2.5	513	464	<5
14/03/96		8.73		1102	77	9.03	2.6	392	399	<5
1/4/1996		11.45		1060	213	8.82		335	392	8
9/4/1996		8.45		1064	161	8.25	1.2	413	411	<5
22/04/96		12.5		1044	196	8.75	3	363	259	<5
29/04/96		10.13		947	158			335	407	13
21/06/96		5.4		1025	96	8.89		314	569	
26/06/96		5.29		1016	88	8.76	10	447	574	<5

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
2/7/1996		4.89		960	81	8.31	9	551	520	<5
8/7/1996		5.14		989	105	8.44	13.5	440	479	8
1/8/1996		3.6								r
5/8/1996		3.38		914	82	8.44	10	461		<5
14/08/96		1.81		923	93	7.14	10.5		487	<5
20/08/96		2.75		932	78	7.59	8	423	487	<5
27/08/96		5.82		981	94	8.51	10	488	440	<5
3/9/1996		7.73		935	60			472	364	<5
11/9/1996		0.89		756	102	7.82	7	425	416	<5
19/09/96		0.78		880	99	7.3	5	349	365	<5
24/09/96		4.08		915	56	9.38	4	441	498	<5
30/09/96		3.01		909	74	8.15	2.1	442	495	<5
7/10/1996		4.84		936	49	9.71	4.3	451	507	<5
15/10/96		3.72	0.013	817	58	8.72	0.5	331	367	<5
21/10/96		3.48		820	57	8.89	0	444	404	12
29/10/96		1.01		876	56	9.08	0	449	428	<5
5/11/1996		4.78		940	84	9.08	0	484	545	
21/11/96		3.8		876	105	8.98	0	452	529	6
11/12/1996		4.35		1052		8.8	0	414	171	<5
30/12/96		9.36		1083	204	8.69	0	498	450	<5
19/08/97		4.27				9.25	12.2		456	8
25/08/97		2.01				9.23	13		69	<5
2/9/1997	66	1.63				9.17	12.1		397	<5
9/9/1997	107	1.75				9.18	12.2		451	<5
16/09/97	107	1.95				8.14	8.6		426	<5
23/09/97	113	2.44				9.58	8.8		134	5
30/09/97	107	2.6				9.45	6.7		530	<5
7/10/1997	95	2.35				9.37	4.4		496	8
14/10/97	95	2.89				9.41	3.7		629	<5
20/10/97	95	2.99				9.54	4.6		712	<5
28/10/97	95	3.45				9.28	2.8		786	8
25/11/97	63	3.29				7.97	1.9		642	<5
9/12/1997		7.99							538	<5
30/12/97		8.1				9.29		344	513	14
STATION: V2										
18/02/88		0.008			115	0	0	142	24	<5
29/05/89		0.026			81	7.9	6	113	26	<5
1/10/1990		<0.002			101	7	1	165	50	<10
16/04/91		0.24			97		2		41	10
7/5/1991		0			68	7.1	5.7	167	46	640
11/6/1991		0.07			81		7		41	5
3/9/1991		0.79			128		5.5			5
25/09/91		0.052			96	8.2	7.3	216	103	<5
25/09/91		0.01			94		7.3			5
8/10/1991		0.01			97		7.3			5
14/11/91		0.13			122		0			5
18/12/91		0.5			98		0		115	5
19/02/92		0.05								5

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
18/03/92		0.05								5
28/04/92		0.571			145	8.2	0	360	142	460
28/04/92		0.45								432
21/05/92		0.06								572
10/6/1992		0.05								5
15/07/92		0.99								32
12/8/1992		0.1								8
9/9/1992		0.68			103	8.1	4.6	196	81	<10
14/10/92		0.065								21
24/11/92		6.7			66	7.9	0.9	382	166	1130
24/11/92		3.05								1070
26/04/93		0.021			93	7.9	5.9	395	54	5330
2/8/1993		0.488			180	8.4	13.6	274	99	<10
2/5/1994		<0.05			131	7.6	3.5		112	24
8/6/1994		0.01								16
19/07/94		0.008								<4
9/8/1994		<0.05			173	8	12.8	248	58	<5
11/10/1994		1			189	8.1	1	458	241	48
15/10/94		1.02								7
31/01/95	25	0.009			207		1.9		328	26
22/02/95		1.05								2810
24/02/95	25.2	1.05			56		0.9	561	326	2810
25/04/95	50	0.02			178		3.6	337	128	558
9/5/1995		<0.05			210	8.4	3.4	408	117	372
9/5/1995		0.041			208		3.4	373	112	395
7/6/1995		0.024			230		4.3		76	23
20/07/95	88	<0.005			279		5.1	230	87	7
23/08/95	6	<0.005			341		6.7	298	94	<1
18/09/95	7	0.05			308		3.1	259	91	<1
4/10/1995		<0.05			213	8.6	3	278	84	6
16/10/95	14				291		1		116	18
14/11/95	10	<0.005			285		0.5	317	199	27
11/12/1995		<0.005			262		0.6	244	78	7
12/12/1995		<0.05			216	8	0.2	308	74	6
25/01/96	8	<.05		525	256	7.82	0.8		45	<5
14/02/96		<.05		540	239	7.78	1.2	186	55	<5
13/03/96		<.05		536	271	7.63	2	212	52	<5
9/4/1996		<.05		542	258	7.72	1.3	213	52	<5
22/04/96		<.05		536	222	7.71	3		73	<5
15/05/96		<.05		664	252	8.2		213	108	95
29/05/96		<.05		596	229	8.4	1.9	200	93	125
27/11/96		0.09		521	255	7.55		228	53	<5
19/12/96		<0.05		683	179	7.41	0	319	115	<5
14/01/97		<0.05		605		7.84			74	<5
26/02/97	<1	<0.05		548	166			254	82	8
10/3/1997	<1	<0.05		602		7.99		247	57	<5
14/04/97	<1	<0.05		647	185			290	119	7
8/5/1997	14									
12/5/1997	7	<0.05		988	314	8.33	4.5	470	235	369
21/05/97	7	0.12		1000	202			426	233	42

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
26/05/97				955						27
30/06/97	1.5	0.09		598	26	8.08	6.5		238	<5
22/07/97	2	0.08		570		7.84	6.1		242	<5
6/8/1997	5									
11/8/1997	2	<0.05				8	9.2		252	<5
30/09/97	2	<0.05				8.12	4.3		110	<5
20/10/97	1.5	<0.01				7.83	2		82	10
19/11/97	1.5	<0.05				7.83	2		89	17
29/12/97		0.1				7.42			87	51
12/1/1998	1.5	0.12				7.8			82	9
17/03/98	1.5	<0.05				7.45			28	9
18/05/98	4	<0.05				7.7			234	1
29/06/98	2	<0.05				7.1			115	1
14/09/98	2	<0.05							125	2
31/12/98		0.05				7.22			154	12
17/03/99		<0.05				7.67			202	11
18/06/99	1	<0.05				7.64	6		180	8
10/9/1999	1	<0.05				7.76	5		169	5
12/10/1999	1.5	<0.05				6.95	2		191	4
13/12/99	0.5	<0.05				7.06	0		146	6
22/03/00	0.5	<0.05							183	10
20/06/00		<0.05							571	1
12/9/2000		<0.05				8.23	7.8		638	7
12/11/2000		<0.05				8	-0.6		543	7
5/3/2001		<0.05				7.9	1		380	3
13/06/01		<0.05		1645					849	5
8/9/2001		<0.05				8.2	3.1	951	643	58
12/11/2001		<0.05				8	-0.6		543	7

STATION: V2A

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
12/5/1997	4	<0.05		477	172	8.25	4.5	234	77	10
30/06/97	1	0.09		797	42	8.47	12.7		326	<5
22/07/97	1.5	0.07		874		8.22	7		76	<5
6/8/1997	2.5									
11/8/1997	1.5	<0.05				8.36	14.4		88	<5
30/09/97	1	<0.05				8.4	5		195	<5
29/06/98	1	<0.05				7.09			124	<1
14/09/98	1	<0.05							116	4
3/7/1999	2	<0.05				7.81	6		379	7
10/9/1999	0.5					7.58	4		370	
12/10/1999	0.5					7.13	1		269	
13/12/99	0									
13/06/01				1500		8.3	7.1		836	5

STATION: V19

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
26/11/94		0.007								<4
31/01/95	3.3	<0.005			45		1.9		11	6
1/2/1995		<0.005								116

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
22/02/95	100	<0.005			49		0.8	55	13	<4
11/3/1995	150	<0.005			48		0.5	51	11	<4
25/04/95							2.9			
9/5/1995		<0.005			12		4.8	11	5	4
14/06/95	25	0.022			35		7.7		47	41
20/07/95	16	<0.005			72		10.7	77	53	9
23/08/95	12	<0.005			81		9.3	110	78	<1
18/09/95	13	<0.005			85		7.5	80	56	40
16/10/95	12				88		3.6		70	10
14/11/95	12	<0.005			85		1.1	196	110	<5
12/5/1997	1.1	<0.05		170		7.95	4.5		16	<5
21/05/97	0.2	0.09		247		8.03	9		20	15
18/05/99	1	0.07				8.02	2		29	25
STATION: V25BSP										
9/1/1996		1.54				7.08	1.4			40
9/4/1996		8.04				7.83	1.1			
22/04/96		2.59		496		8.01	3		125	19
15/05/96		1.86		398	59	7.38	4	70	99	24
4/6/1996		0.72		293	49	8.4	11	111	124	13
12/6/1996		0.05		60	16	6.65	9.5		10	<5
21/06/96		<0.05		285	52	7.72		79	112	<5
26/06/96		<.05		278	58	8	14	116	111	<5
2/7/1996		<0.05		208	54	7.47	8.5	37	117	<5
8/7/1996		<.05		265	63	7.76	16.5	108	80	14
15/07/96		<.05		358	56	7.16	9	108	100	<5
23/07/96		<.05		250	63	7.54	14	123	65	6
29/07/96		<.05		398	63	6.75	12	117	68	10
5/8/1996		<.05		293	55	7.13	7	120		<5
14/08/96		<.05		406	68	7.53	10	108	103	<5
20/08/96		0.07		449	68	7.57	10	160	143	<5
27/08/96		0.66		557	75	7.67	10	220	129	15
3/9/1996		<.05		564	66			258	136	<5
11/9/1996		<.05		542	62	8.01	6.5	254	243	<5
19/09/96		0.3		724	68	7.53	5	273	285	5
24/09/96		0.85		633	72	8.15	4.5	267	286	5
30/09/96		2.36		694	64	7.8	1.7	297	333	<5
7/10/1996		1.57		572	67	7.96	3.2	317	337	<5
15/10/96		2.93	<.001	717	69	7.79	0.5	458	301	<5
29/10/96		1.25		657	61	7.73	0	326	281	<5
5/11/1996		2.1		769	63	7.28	0	362	408	
12/11/1996		0.46		710	53	7.57	0	321	325	8
25/11/96		1.76		773	67	7.73	0	461	492	<5
11/12/1996		<0.05		1005	102	7.43	0	401	163	<5
14/04/97	1	2.12		603		7.12			244	6
22/04/97	0.5	1.87		451		7.26	4.3		151	218
28/04/97		0.32		403		7.09	3.7		97	203
8/5/1997	28.5									
12/5/1997	15	<0.05		298		7.87		124	73	203

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
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20/05/97		<.05		176		7.78	6.6		42	293
26/05/97	4	0.17		193		7.65	7.1	82	16	90
3/6/1997		0.12		247		7.59	10.1		63	<5
10/6/1997		0.29		2495		7.78	15.9		69	<5
17/06/97	2.5	0.19		260		8.19	13.3		70	<5
23/06/97	2.5	<0.05		265		7.73	15.7		70	<5
30/06/97	3	<0.05		261		7.76	17.2		45	<5
8/7/1997	20.4	<.05		248		9.6	17.9		41	10
14/07/97	3.9	<0.05		291		7.28			63	6
22/07/97	7	0.07		300		7.65	13.2		72	<5
28/07/97	6.7	0.06		300		7.98	18.8		31	5
4/8/1997	3.9	0.06		330		7.56	18		65	<5
6/8/1997	1.8									
11/8/1997	1.3	<0.05				7.22	16.8		50	10
19/08/97	133.4	0.68				8.17	12.5		65	14
25/08/97	16.6	0.81				7.84	15.3		<1	<5
2/9/1997	66	0.96				7.95	13.8		36	<5
9/9/1997	107	1.32				7.86	12.5		60	<5
16/09/97	107	1.43				8.14	8.6		403	<5
23/09/97	113	1.74				8.25	8.5		139	<5
30/09/97	107	1.66				8.06	5.9		411	<5
7/10/1997	95	1.66				7.89	5.1		374	<5
14/10/97	95	2.13				7.72	3		535	<5
20/10/97	95	2.2				7.66	2.8		617	6
28/10/97	95	2.09				7.45	2.4		641	8
4/11/1997	1.3	<0.05				7.27	3		358	<5
13/11/97	2.1	0.15				7.16	2.1		494	<5
19/11/97	0.3	<0.05				7.02	1.8		310	<5
25/11/97	2	0.57				7.57	2		498	<5
2/12/1997	0.3	<0.05				7.18	3		306	<5
9/12/1997	35.1	3.06							581	12
16/12/97	0.125	<0.05				7.2			351	<5
22/12/97		2.55				7.52			475	8
30/12/97	0.1	0.11				7.06			315	15
6/1/1998	0.1	2.65				7.13			486	34
12/1/1998	0.01	0.14				7.2			310	5
17/03/98	0									
14/04/98	0.1	<0.05							333	11
19/04/98	0.5									
7/5/1998	3									
18/05/98	10	<0.05				7.4			63	137
31/05/98	5	<0.05				7.4			68	8
9/6/1998	13.2									
30/06/98	5	<0.05				7.34			233	3
25/07/98	0.13									
11/8/1998	0.125	<0.05				7.66			249	2
18/05/99	3	0.07				7.95	2		68	129
27/05/99									63	148
18/06/99	0.5									
3/7/1999	5	<0.05				8.21	14	73	38	15

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
12/8/1999		<0.05					18		145	3
10/9/1999	1					7.83	10		136	
20/06/00									132	1
25/07/00						7.78	12.8		52	4
29/08/00						7.67	7.7		40	27
25/09/00						7.34	5.1	187	77	2.2
28/10/00							1.8			
29/10/00									59	
18/11/00		0.02						187	84	0.4
14/12/00						7.4			107	0.4
14/05/01						8.4	0.2		127	3
17/06/01						8.5	12.3	68	23	159
14/07/01						8.4	11.7	100	38	7
14/08/01						7.7	11.4		84	4
17/09/01						8	6.2		106	4
15/10/01						8.4	0.2		101	2

STATION: V17A

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
22/04/96		0.1		115	51	7.73	1.5	44	13	45
15/05/96		<.05		93	40	6.77	1.5	44	5	9
12/6/1996		<0.05		50	24	7.62	4		3	<5
15/07/96		<.05		64	32	7.44	6	24	7	<5
14/08/96		<.05		80	43	7.44	6.5		4	<5
11/9/1996		<.05		84	42	7.79	5	35	7	<5
21/10/96		<.05		115	32	6.83	0	51	7	16
21/11/96		0.01		112	4	7.37	0	29	8	<5
14/04/97	5	<0.05		245		7.82	2.7		48	56
12/5/1997		<0.05		101		7.39	4.5		12	21
30/06/97		<0.05		64		7.65	9.9		10	<5
22/07/97		0.05		68		8.35	7.8		8	<5
11/8/1997		0.12				7.64	11.4		16	<5
30/09/97		0.05				8.31	4.6		6	<5
20/10/97		0.1				8.07	3.3		32	10
18/05/98		<0.05				7.2			9	9
30/06/98		<0.05				7.46			14	2
14/09/98		<0.05				7.53			7	<1
3/7/1999	5	<0.05				7.89	9		6	8
10/9/1999	3					7.64	7		7	
20/06/00									10	
13/06/01		<0.05		54	16	8.5	4.9	24	6	7
8/9/2001		<0.05			54	8.5	3.2	90	34	<1

STATION: V6A

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
29/05/89		0.03			21	7.1	6	79	6	152
1/10/1990		<0.002			60	7	0.7	73	9	<10
25/04/91		0.26			75		2	73	19	71
7/5/1991		0.006			41	7.2	2.8	53	6	90

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
11/6/1991		0.06			34		4		3	5
3/9/1991		0.97			129		6	71.2		5
25/09/91		<0.002			55	7.7	2	67	9	<5
25/09/91		0.01			75		2	60.9		5
8/10/1991		0.01			61		2	59.9		5
14/11/91		0.05			87		0	70.8		5
5/12/1991		0.05			87		0		9.4	5
28/04/92		0.011			102	8	0.4	122	16	<10
9/9/1992		0.004			66	7.9	3.4	74	7	<10
24/11/92		0.002			87	7.6	0.3	96	9	<10
1/12/1992		0.02								<4
26/04/93		0.004			85	7.6	1.4	107	23	10
2/8/1993		0.014			62	7.6	11.2	69	6	<10
2/5/1994		<0.05			54	7	2.8	0	9	23
8/6/1994		0.005								4
19/07/94		0.007								<4
9/8/1994		<0.05			80	7.6	11.8	95	8	<5
11/10/1994		<0.05			61	7.3	1.3	73	10	<5
15/10/94		0.007								<4
26/11/94		0.005								<4
25/01/95		<0.05			124	7.5	0.2	132	16	<5
31/01/95		0.006			118		2.9		15	36
22/02/95		<0.005								<4
24/02/95		<0.005			135			160	24	<4
25/04/95	30	0.011			62		4	71	11	10
9/5/1995		<0.05			33	7.8	1.7	64	4	63
9/5/1995		0.031			36		2	55	5	69
7/6/1995	20	0.011			33		5.5	28	30	2
20/07/95		<0.005			65		8.6	48	9	5
23/08/95		<0.005			89		6.3	47	6	<1
26/09/95	350	<0.005			63		3.1	39	3	<1
4/10/1995		<0.05			59	7.9	1.7	57	7	<5
16/10/95	11				100		1.5		14	<1
14/11/95		0.05			116		1.2	96	20	<5
6/12/1995		0.87			141			117	29	<5
14/02/96		<.05		344	160	7.74	1.3		29	<5
12/3/1996		<.05		366	168	7.68	1.3		20	<5
9/4/1996		<.05		363	164	7.53	1.4		79	<5
22/04/96		<.05		140	73	7.84	2		15	<5
15/05/96		<.05		122	54	7.85	1.5		16	17
29/05/96		<.05		70	31	7.8	3.9		10	22
12/6/1996		<.05		79	37	7.77	2			<5
15/07/96		<.05		53	42	7.52	3		5	<5
14/08/96		<.05		130	67	7.65	6		8	<5
11/9/1996		<.05		128	63	7.78	3.5		10	<5
21/10/96		<.05		164	64	7.57	0.5		11	<5
21/11/96		0.02		159	34	7.66	0		14	<5
19/12/96		0.06		267	66	7.89	0		20	8
14/01/97		<0.05		338	32	7.43		129	24	<5
24/02/97	<1			346	99		0	153	12	

Table G2. Water Quality Entering Vangorda Creek, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
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11/3/1997	5	<0.05		365		7.29		147	21	<5
15/04/97		0.06		278	69	8.05	3.3	113	35	6
13/05/97		<0.05		103	37	7.21	5.8	46	11	9
30/06/97		<0.05		112		8.03	10.4		13	<5
24/07/97		0.06		114		7.58	7		7	<5
11/8/1997		<0.05				7.94	10.7		16	<5
30/09/97		<0.05				8.07	4.3		13	<5
20/10/97		<0.01				7.99	2.8		10	<5
19/11/97		<0.05				7.8	2.5		14	8
22/12/97		<0.05				7.5			18	17
13/01/98		<0.05				7.53			20	66
17/03/98		<0.05							7	<1
19/05/98		<0.05				7.4			9	10
30/06/98		<0.05				7.52			86	3
15/09/98		<0.05				7.98	4		12	4
31/12/98		<0.05				6.39			26	5
22/03/99		<0.05							46	13
3/7/1999		<0.05				8.45	8		10	7
10/9/1999		<0.05				7.69	7		14	1
12/10/1999		<0.05				7.23	1		16	1
14/12/99		<0.05				7.45	0		21	1
23/03/00		<0.05				7.21	1		24	2
20/06/00		<0.05							7	1
12/9/2000		<0.05				7.68	5.3		34	2
5/3/2001		<0.05			514.9	8	3		990	13
13/06/01		<0.05		67		8.4	5.5		10	9
8/9/2001		<0.05				8.5	3		35	<1

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
Date	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
STATION: V7										
29/05/89		0.02			38	7.2	6	51	9	<5
1/10/1990		0.172			254	7.2	3.4	358	116	<10
16/04/91		0.34			260		5		95	8
7/5/1991		0.154			265	7.1	5.2	362	80	<10
11/6/1991		0.22			259		7		98	5
3/9/1991		0.85			257		5		94	5
25/09/91		0.153			261	7.3	4.2	346	92	<5
25/09/91		0.14			252		4.2		98	5
11/10/1991		0.01			250		4			5
14/11/91		0.2			250		1			5
5/12/1991		0.16					4	260.2	110	5
28/04/92		0.173			255	7.6	4.5	352	105	<10
9/9/1992		0.141			253	7.6	4.8	334	108	<10
STATION: V17										
14/11/95		0.11			98		1.2	80	17	5
STATION: V23										
14/01/97		0.09		788	158			321	87	<5
26/05/97		3		568					51	
22/07/97		2.16		672	24	8.3	16.3		49	<5
14/09/98		2.6				7.65			201	6
10/9/1999					190	7.64	9		266	4
12/10/1999		0.54			190	7.12	4		344	5
22/03/00		0.56			216				292	3
20/06/00		<0.05			59				192	8
26/06/00		0.42			161	7.71	14		335	11
12/9/2000					249	7.63	7.5		488	9
5/3/2001						8.1	1	397	154	3
13/06/01				955	141	7.9	11.2		435	14
8/9/2001					148	7.9	7.7		456	11
STATION: V23A										
27/05/91		1.42			103		9.5		218	54
22/08/91		0.19			149		12		188	5
25/09/91		0.917			111	7.4	1.7	484	295	7
25/09/91		0.9			108		1.7			5
11/10/1991		0.01			12		2.5			29
14/11/91		1.3			146		0			56
28/04/92		1.35			108	7.9	1.5	315	133	620
9/9/1992		0.631			207	7.9	5.5	500	210	1160
2/11/1992		0.01								<4
2/8/1993		5.6			214	8.3	20.4	410	184	60
19/07/94		1.11								<4
9/8/1994		1			138	8.1	19.2	470	282	<5
11/10/1994		1.5			166	8	1.4	562	330	<5
15/10/94		1.67								<4

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
31/01/95		35.3			485		2.4		298	68
7/6/1995		0.205						148	25	19
23/08/95		0.8			215		11.1	207	115	3
18/09/95		10.6			309		6.6	332	178	29
10/10/1995		8.75			1				164	4
20/12/95		8.3			407			286	218	
14/02/96		7.33		1116	422	7.96	2.3	422	209	<5
22/03/96		13.01		1008	334	7.72	5		109	87
12/6/1996		7.54		781	220	7.79	9		77	12
11/9/1996		2.41		550	203	8.22	7	269	125	
19/12/96		10.65		496	96	8.06	0	224	76	6
19/08/97		2.02				7.68	12		56	9
30/09/97		3.25				7.62	7.4		445	<5
4/11/1997		1.75				8.13	6.6		224	59
30/12/97		16.4				7.4			153	31
25/09/00		0.03				7.26	5	72	38	4.4
STATION: V14										
29/05/89		0.011			27	7.3	5	31	4	8
12/6/2001						7.6	13.5		1740	12
STATION: V15										
16/10/95	1						2.5		44	
14/11/95							1.6		49	
14/04/97	<0.5	0.12		652					75	584
26/05/97	0.4	0.07		766		7.89	7		30	8
30/06/97	0.5	<0.05		720	48	8.21	12.9		29	51
22/07/97	0.33	0.05		721		7.99	10.7		94	41
11/8/1997	0.5	<0.05				8.15	15.6		101	9
30/09/97	0.3	<0.05				8.24	6.1		100	<5
20/10/97	0.3	<0.01				7.79	3.3	379	85	6
19/11/97	0.25	<0.05				7.97	1.5		102	9
29/12/97		<0.05				7.45			123	203
12/1/1998	0.5	<0.05				7.4			112	61
17/03/98	0.5	<0.05				7.84			39	271
18/05/98	0.5	<0.05				7.7			90	366
29/06/98	0.5	<0.05				7.82			35	<1
14/09/98	0.5	<0.05							189	5
31/12/98	0.1	<0.05				7.03			192	1213
17/03/99		<0.05			348	8.48			200	6
3/7/1999	1	<0.05				8.02	10		215	8
10/9/1999	1	<0.05			380	7.58	6		240	5
12/10/1999	0.5	<0.05			462	7.69	2		320	3
13/12/99	0.5	<0.05			459	7.67			330	5
22/03/00	0.25	<0.05			465				340	63
20/06/00		<0.05			374				305	2
12/9/2000		<0.05			472	7.83	7.4		560	5
12/11/2000		<0.05				7.6	0.4		1040	7
5/3/2001					203.3	7.7	1		124	607
13/06/01		<0.05		2000	466	7.7	6.6		905	13
8/9/2001		<0.05			459	7.5	3.6		1044	31

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
12/11/2001		<0.05				7.6	0.4		1040	7
STATION: V16										
16/10/95									330	
14/11/95							0.9		117	
14/03/96		0.09		510	256	7.73	2.3		46	<5
22/04/96		<.05		489	212	7.61	2.5	171	55	17
12/6/1996		<0.05		587	218	7.83	7.5		19	6
15/07/96		<.05		459	227	7.86	3	226	49	66
14/08/96		<.05		551	240	7.8	10.5		63	6
11/9/1996		<.05		509	248	8.04	7	241	62	19
21/10/96		<.05		557	235	7.74	0	290	65	8
12/6/2001						8.1	12.8		381	4
STATION: V22										
7/5/1991		3.96			130	6.7	11.6	355	230	<10
16/05/91		2.63			125		8		189	11
22/08/91		14.8			184		1.5		207	11
25/09/91		5.79			193	7.8	3.9	825	250	3140
5/12/1991		20			207		0.5		524	8
28/04/92		1.46			29	6.3	3.2	1710	3020	60
9/9/1992		26.3			158	0	6.6	512	320	20
24/11/92		50.4			235	8	2.8	372	115	<10
24/11/92		32.1								13
2/8/1993		4.07			107	7.9	18.4	379	230	<10
19/07/94		2.13								5.5
9/8/1994		1.3			97	7.5	19	489	387	<5
11/10/1994		2.3			105	7.4	4	532	425	11
15/10/94		2.25								<4
31/01/95		1.82			139		3.2		455	5
19/04/95	63.1	1.75			115			598	426	26
9/5/1995		1.5			92	7.3	8.9	523	454	<5
9/5/1995		1.5			92		8.9	523	454	<5
14/06/95	44	1.84			115		9		480	1
24/07/95		2.08			153		12.8	484	553	7
29/09/95		5.05			233		6.6	618	693	14
9/4/1996		17.43		1135	210	7.78	7		340	12
12/6/1996		8.71		1480	126	6.93	5.5		793	<5
8/7/1996		6.58		1667	130	9.05	9.5	874	1178	<5
21/11/96		3.84		1023	168	7	2	655	878	<5
22/07/97		2.16		1269	11	7.75	15.4		98	<5
30/09/97		2.66				7.38	6.9		828	7
20/10/97		3.74				7.22	4.7	753	779	<5
23/12/97		3.85				7			408	80
13/01/98		75.7				7.42			417	65
14/09/98		2.36							872	9
18/06/99		0.1				7.48	18		247	19
10/9/1999					66	7.43	11		513	7
12/10/1999		0.55			85	6.48	3		635	9
22/03/00		0.54			118				589	4
20/06/00		<0.05			62				107	6

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
12/9/2000					184	7.1	6.6		357	7
5/3/2001						7	2	466	177	5
13/06/01				790	45	7.5	14.1		430	14
8/9/2001					17	7.4	8.6		591	14

STATION: V28

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
7/1/1987	128.8	0.18	0.01						532	4
15/01/87	128.8	0.29	<0.01						487	5
3/2/1987	45.5	1.65	<0.01						391	16
10/2/1987	45.5	1.33	<0.01						399	22
17/02/87	91	4.97	<0.01						352	25
10/3/1987	45.5	6.26	0.01						259	13
24/03/87	45.5	11.6	0.05						279	324
1/4/1987	45.5	6.38							351	216
20/04/87	45.5	0.77							398	8
5/5/1987	45.5	16.3	0.01						642	57
12/5/1987	45.5	3.54	<0.01						677	48
19/05/87	45.5	7.21	0.01						656	1670
26/05/87	45.5	4.44	<0.01						609	38
4/6/1987	91	1.87	<0.01						426	82
11/6/1987	91	2.67	0.01						449	101
16/06/87	36.3333	2.6	0.02						1485	113
26/06/87	127.3333	1.19	<0.01						325	57
30/06/87	127.3333	9.39	<0.01						351	24
6/7/1987	91	4.45	0.02						344	17
13/07/87	91	3.33	<0.01						391	42
20/07/87	81.8333	2.61	<0.01						380	15
28/07/87	22.8333	0.19	<0.01						201	1
4/8/1987	81.8	2.78	0.01						491	8
11/8/1987	91	9.81	0.07						450	2
18/08/87	110.7	4.64	<0.005						430	9
25/08/87	81.8	0.18	<0.005						187	11
1/9/1987	97	3.4	<0.005						588	7
8/9/1987	51.7	0.18	0.08						182	2
15/09/87	51.7	<0.005	<0.005						202	7
21/09/87	51.7	0.25	<0.005						204	1
2/10/1987	97	4.98	0.01						539	7
6/10/1987		6.75	0.01						616	10
13/10/87	119.8	5.92	<0.005						505	26
20/10/87		2.54	0.01						479	15
27/10/87	81.8	2.27	<0.005						426	16
3/11/1987	81.8	1.81	<0.005						353	17
10/11/1987	81.8	6.45	0.03						359	48
17/11/87	81.8	4.44	0.03						345	28
24/11/87	81.8	0.64	0.01						253	11
1/12/1987		8.99	0.04						314	26
9/12/1987		11.9	0.03						298	25
15/12/87		1.52	<0.005						385	19
23/12/87		5.16	<0.005						1110	22
30/12/87		9.71	<0.005						1020	89
5/1/1988		1.7	0.007						236	18
12/1/1988		4.63	0.009						252	32

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
19/01/88		3.39	0.008						239	20
27/01/88		1.21	<0.005						223	23
2/2/1988		0.97	0.005						229	20
10/2/1988		0.82	<0.005						229	17
11/2/1988		0.82	<0.005						229	17
17/02/88		0.57	0.006						232	10
24/02/88		0.54	<0.005						235	27
2/3/1988		0.5	<0.005						243	20
9/3/1988		1.25							259	32
16/03/88		0.51	<0.005						238	11
23/03/88		0.64	<0.005						227	12
29/03/88		6.53	0.028						232	18
5/4/1988		2.4	<0.005						237	7
12/4/1988		1.58	<0.005						21	21
19/04/88		1.61							875	64
20/04/88		1.21	0.009						669	74
25/04/88		0.79			50				767	213
4/5/1988		1.16			114				757	92
11/5/1988		1.44			90				680	113
19/05/88		1.61			150				875	64
25/05/88		0.44			156				720	53
1/6/1988		0.43			151				645	35
7/6/1988		0.36			150				589	52
15/06/88		1.02			144				603	30
23/06/88		0.72			181				595	130
28/06/88		1.3			180.1				598	335
6/7/1988		0.14			169.58				668	485
11/7/1988		1.19			187.42				545	54
20/07/88		1.22			152.2				920	63
27/07/88		1.32			185.3				810	106
4/8/1988		3			189				846	20
10/8/1988		2.41			181.1				765	360
16/08/88		2.17			202.6				695	990
24/08/88		1.63			192.2				735	54
31/08/88		2.14							690	67
9/9/1988		2.18							700	62
13/09/88		2.2			207.5				750	176
22/09/88		2.19			205				715	85
29/09/88		2.35			208				720	12
6/10/1988	9.5	2.51			219.5				695	7
14/10/88		2.13							640	10
19/10/88		2.27			204				665	14
26/10/88		2.5			216				670	7
1/11/1988		2.5			205				630	10
8/11/1988		2.2			205.5				600	11
14/11/88		2.41			212				586	10
21/11/88		2.15			212				620	14
30/11/88		0.97			120				407	23
7/12/1988		0.97			123				400	9
21/12/88		0.88			113				447	6
28/12/88		1.27			116				419	7
6/1/1989		0.24			81				319	159
17/01/89		0.39			80.8				245	8

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
23/01/89					84.5				318	10
7/2/1989		0.18			77				307	10
13/02/89		0.84			115.5				499	4
20/02/89		0.68			114.5				375	11
27/02/89		0.16			89				293	5
8/3/1989		2.33			170				500	6
14/03/89		2.81			163.5				493	18
20/03/89		0.89			275.2				499	8
3/4/1989		1.26			127.4				455	25
10/4/1989		0.1			100				430	355
17/04/89		4.31			165				697	1170
2/5/1989		1.24			13				835	191
16/05/89		1.86			132				770	163
23/05/89		6.71			231				1140	72
29/05/89		5.8			270				1060	54
5/6/1989		1.91			194				996	34
12/6/1989		3.15			235				1000	
20/06/89		0.15			218				774	71
26/06/89		4.97			254				825	45
17/07/89		6.89			306				780	34
25/07/89		1.94			180				885	27
31/07/89		1.72			194				925	193
7/8/1989		2.77			220				865	87
14/08/89		1.02			196				750	132
5/9/1989		0.85			190				640	23
11/9/1989		1			188				710	16
18/09/89		1.03			204				715	42
17/04/90		4.17			178				1130	31
14/05/90	82.8	4.68			136					22
11/6/1990	15	5.97			164				965	8

STATION: V29

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
25/04/88		0.32							679	9530
4/5/1988		0.05			297				320	2620
11/5/1988		0.19			20				263	1620
19/05/88		0.22			40				247	285
25/05/88		0.13			46				231	395
1/6/1988		0.45			49				210	355
7/6/1988		0.42			45				232	177
15/06/88		0.29			50				215	35
23/06/88		0.01			54				210	49
28/06/88		0.13			54.6				211	5
6/7/1988		0.45			50.4				204	250
11/7/1988		0.23			51.45				215	43
20/07/88		0.14			48.3				224	26
27/07/88		0.05			46.7				230	8
4/8/1988		0.13			48.3				214	4
10/8/1988		0.17			50.9				205	4
16/08/88		0.16			54.6				197	3
24/08/88		0.2			55.6				203	6
31/08/88		0.17							685	15
9/9/1988		0.19							179	2

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
13/09/88		0.3			56				211	10
22/09/88		0.33			60				215	2
29/09/88		0.41			59				219	11
6/10/1988		0.01			56.19				217	4
14/10/88		0.9							219	1
19/10/88		0.15			56				222	16
26/10/88		0.08			57				213	4
1/11/1988		0.06			58				211	4
8/11/1988		0.21			57.5				202	8
14/11/88		0.16			62				202	12
21/11/88		0.1			63				191	12
8/5/1989		0.37							450	1110
23/05/89		0.65			11				340	177
29/05/89		0.12			41				305	4200
5/6/1989		0.06			44				274	
12/6/1989		0.35			44				245	
20/06/89		0.1			52				228	126
26/06/89		0.01			52				226	8
4/7/1989		0.05			78				232	7
11/7/1989					68				212	5
17/07/89		0.01			60				209	3
25/07/89		0.15			48				232	29
31/07/89		0.06			64				227	8
7/8/1989		0.01			64				231	4
14/08/89		0.01			60				222	5
21/08/89		0.04			66				229	1
28/08/89		0.24			60				226	6
5/9/1989		0.01			60				189	12
11/9/1989		0.01			60				226	3
18/09/89		0.01			62				226	51
25/09/89		0.01			61				224	128
2/10/1989		0.01			58				231	2
10/10/1989		1.7			184				710	31
16/10/89		0.07			66				246	18
23/10/89		0.01			72				247	19
30/10/89		0.01			66				238	12
6/11/1989		0.01			68				225	22
15/11/89		0.09			66				228	12
20/11/89		0.08			66				218	8
27/11/89		0.01			66				228	26
4/12/1989		0.3			66				216	5
11/12/1989		0.01			66				223	9
18/12/89		0.11			68				221	5
28/12/89		0.01			70				215	6
3/1/1990		<0.01			68				228	4
8/1/1990		<0.01			72				230	9
15/01/90		0.32			68				225	6
22/01/90		0.16			68				225	5
1/2/1990		<0.01			70				175	7
5/2/1990		0.06			68				221	<5
12/2/1990		0.15			72				226	15
19/02/90		<0.01			68				220	<5
26/02/90		<0.1			70				285	12

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
12/3/1990		0.08			70					<5
17/04/90	8.2	0.1			64				169	5
14/05/90	21.1	0.11								534
11/6/1990	12.8	0.15			42				333	62
4/5/1994		2.8			256			0	1390	7
9/5/1995		2.6			242	6.3	9.5	1790	1540	8
27/05/96		3.74		1656	323	6	5	1459	1390	
12/5/1997	0.02	1.56		2810	283				1231	
18/05/98	0.025	0.32			249	6.1			1236	
18/05/99	0									

STATION: V30

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
10/10/1986									297	
23/10/86									990	3400
31/10/86									1260	100
6/11/1986									925	570
7/1/1987		0.32	<0.01						1205	57
5/5/1987		9.53	0.01						859	1610
12/5/1987		3.92	0.06						1120	1410
19/05/87		6.35	0.03						963	2370
26/05/87		3.26	0.05						904	668
4/6/1987		1.4	0.1						853	119
11/6/1987		1.75	0.15						1020	117
16/06/87		2.1	0.11						1093	90
6/7/1987		3.03	0.06						947	52
13/07/87		1.63	0.07						443	187
20/07/87		1.78	0.05						866	86
28/07/87		4.96	0.1						810	29
4/8/1987		1.87	0.07						887	43
11/8/1987		3.81	0.19						874	64
18/08/87		1.99	0.15						1165	38
25/08/87		1.33	0.15						1305	41
1/9/1987	39.7	0.91	0.04						1370	95
8/9/1987	50	1.48	0.03						1035	33
15/09/87	55	0.99	0.06						1225	72
21/09/87	70.5	1.5	0.09						930	67
2/10/1987	18.7	2.86	0.07						948	790
6/10/1987	77.5	3.04	0.07						863	1520
13/10/87	48.5	5.84	1.82						1260	4480
20/10/87	55.8	1.96	0.15						1275	3350
27/10/87	42.2	1.51	0.07						977	8420
3/11/1987	77.5	2.04	0.18						1440	60
10/11/1987	55.8	4.16	0.11						936	2970
17/11/87		2.97	0.08						990	70
24/11/87	8.5	1.15	0.31						766	4990
1/12/1987		5.04	0.04						536	2270
15/12/87		2.6	0.01						962	89
23/12/87		3.05	0.09						891	6150
30/12/87		3.13	0.02						910	371
5/1/1988	340	1.16	0.096						785	2610
12/1/1988		4.08	0.057						757	533
19/01/88		3.3	0.014						669	7250

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
Date	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
27/01/88		0.82	0.258						506	40400
17/02/88		0.42	0.316						8	9460
24/02/88		1.25	0.121						879	8060
2/3/1988		0.93	0.305						868	16000
9/3/1988		0.68	0.135						706	12100
16/03/88		0.77	0.351						771	22200
23/03/88		1.07	0.087						867	4170
29/03/88		2.52	0.087						816	2460
5/4/1988		1.64	0.071						754	2730
12/4/1988		1.18	0.048						791	1760
20/04/88		1.34	0.011						825	2580
25/04/88		0.9	0.036		45				978	2810
4/5/1988		0.9	0.088		38				846	2770
11/5/1988		1.08	0.082		2				1130	499
19/05/88		1.24	0.01		42				850	
25/05/88		1.15	0.059		58				820	
1/6/1988		0.55	0.547		37				780	
7/6/1988		0.71	0.41		31				706	
15/06/88		0.64	0.6		5				1010	
23/06/88		0.77	0.026		54				760	
28/06/88		0.73	0.038		37.8				813	
6/7/1988		0.48	0.088		14.18				869	
11/7/1988		0.84	0.032		48.82				732	
20/07/88		0.28	0.108		60.9				721	
27/07/88		1.07	0.13		91.9				747	
4/8/1988		0.51	0.112		59.8				841	
10/8/1988		1.37	0.097		59.3				790	
16/08/88		1.4	0.207		59.8				820	
24/08/88		1.28	0.044		45.2				835	
31/08/88		1.03	0.183						775	
9/9/1988		1.1	0.065						840	
13/09/88		0.37	0.006		73				384	
22/09/88		1.27	0.025		122.5				1095	
29/09/88		1.25	0.123		100.9				1070	
6/10/1988		1.61	0.023		141				1335	
30/11/88		1.64	0.126						1710	
28/12/88		0.75	0.12		68					
2/5/1989		0.88	0.059		6				1210	
8/5/1989		1.74	0.065		54				1390	
16/05/89		0.91	0.193		58				1995	230
23/05/89		2.76	0.161		59				1235	337
29/05/89		3.59	0.161		79				1030	
5/6/1989		2.14	0.148		2				985	
26/06/89		3.35	0.068		70				985	
3/7/1989		1.13	0.064		10				1030	4360
10/7/1989		1.2	0.179		14				960	12
17/07/89		2.85	0.038		12				1100	33
25/07/89		1.41	0.005		40				940	249
31/07/89		1.35	0.017		36				955	2470
7/8/1989		0.97	0.351		52				1280	28700
14/08/89		0.38	0.005		8				1190	2090
21/08/89		0.47	0.006		22				815	9800
28/08/89			0.02		86				615	324

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
5/9/1989		0.81	0.021		34				890	
10/10/1989		1.51	0.043		90				915	
16/10/89			0.208		34				257	
23/10/89		1.45	0.178		56				276	
30/10/89		1.03	0.279		70				1250	
6/11/1989		0.28	0.005		92				1300	
26/04/90		0.3	0.059		2				334	
9/5/1990		0.76	0.005		22				530	
4/5/1994		6.2			77			0	2500	46
9/8/1994		6.4			163	6.1	14.1	2720	3120	27
11/10/1994		5.6			186	6.1	2.6	2510	2310	45
9/5/1995		8.3			126	6.7	6.7	<1	2790	44
18/10/95		7.8			155			0	2820	93
27/05/96	0.002	13.52		2456	207	5.56	5	2288	2701	
11/9/1996	0.0015	6.12		5880		6.01	8.5		2969	<5
5/12/1996		11.35		3852	650	5.94	1.9	1912	1045	<5
10/3/1997		12.65		4256		6.09			2680	
14/04/97	0	14.51		3600		6.05	2.7		1954	86
8/5/1997	0.13									
12/5/1997	0.15	10.8		4350	129	5.89	4.5		2592	
30/06/97	0.08	11.1		5495	26	6.16	13.9		2955	62
22/07/97	0.04	8.52		4920		6.05	10		2717	73
6/8/1997	0.03									
11/8/1997	0.03	10.2				6.15	12.5		2772	62
30/09/97	0.02	9.96		4540		6.17	3.5		3636	52
20/10/97	0.008	9.94		4498		6.12	2.8		3053	
19/11/97	0	10.03		4250		6.13	1.8		2350	114
22/12/97	0	8.95				5.85			2648	
18/05/98	0.083	<0.05			177	6.1			2634	
29/06/98	0.01	6.72				5.95			2757	
14/09/98	0.007	7.2							2637	
31/12/98	0									
18/05/99	0.14	5.46				5.52	2		2788	
18/06/99	0.025	6.55				5.85	11		4281	
12/8/1999	0.014					6.54	20		3259	
12/10/1999	0.006	7.24			243	5.14	0		3367	
13/12/99						6.31			2637	
15/05/00						6	4		3502	
31/05/00	0.05					6.36	6		4575	
12/9/2000									4214	

STATION: V31

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
1/6/1988		0.01							2	
15/06/88		0.29			<1				2	
7/7/1988					12.08					
11/7/1988		0.2			12.6				3	
20/07/88					12.6					
27/07/88					11.55					
24/08/88		0.34			14.7				4	<1
13/09/88		0.35			14				<1	2
6/10/1988		0.09			16				1	1
12/5/1997	0.02	3.64		4200	289	6.54	4.5		2138	

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
18/05/98	0.017	2.73			26320	7.1			2172	
18/05/99	0									
STATION: V32										
15/06/88					<1					
7/7/1988					13.12					
11/7/1988					13.12					
20/07/88					12.6					
27/07/88					12.6					
24/08/88		0.73			15.8				<1	<1
13/09/88		0.46			14.5				<1	<1
6/10/1988		0.1			16				<1	<1
9/8/1994		6			0	4.5	21.6	4240	6390	116
9/5/1995		5			<5	5.5	13.6	4	7110	38
27/05/96	0.019	13.52		3008	<5	5	9	2389	3775	
11/9/1996		4.73		9220		5.34	9		5459	67
12/5/1997	0.02	4.93		5150	0	5.22	4.5		3689	
30/06/97	0.05	3.16		9120	<5	4.08	19.6		3319	17
22/07/97	0.02	6.7		9550		3.91	12.1		3868	45
6/8/1997	0.02									
11/8/1997	0.02	8.79				4.14	15.8		3944	51
30/09/97	0.02	6.69		9950		3.7	5.2		10493	29
20/10/97	0.008	7.14		10250		4.21	2.1		9267	
22/12/97	0.004	6.35				4.31			8558	
18/05/98	0.008	<0.05			<5	4.7			3003	
29/06/98	0.03	<0.05				3.37			3961	
14/09/98	0.02	<0.05				3.51	2		10947	
18/05/99	0.01	1.36				5.82			9365	
18/06/99	0.018	0.29				4.61	12		9550	
12/8/1999	0.019					4.81	19		17010	
12/10/1999	0.03	<0.05			<5	3.04	1		16970	
13/12/99						3.98			14645	
31/05/00	0.1					3.55	11		15389	
12/9/2000						3.81	5.7		17040	
13/06/01						3.6	8.7		14666	99
STATION: V33										
9/8/1994		7			177	6.7	12.8	3930	4610	116
11/10/1994		7.8			236	6.7	1.8	3690	4400	134
9/5/1995		4.3			97	6.4	4.4	86	3110	456
30/06/95		7		5600	145			3740	4990	124
19/09/95		6.8			209				5100	129
18/10/95		5			230			0	4880	154
27/05/96	0.0001	2.18		1042	108	6.61	4	502	630	
12/5/1997	0.06	2.35		1920	135	6.89	4.5		897	
30/06/97	0.02	9.6		5950	41	7.17	23.6		970	16
22/07/97	0.008	7.13		6250		7.23	14.2		937	72
6/8/1997	0.0007									
11/8/1997	0.003					7.22	18.5		961	52
30/09/97	0.003	8.15		6910		6.99	4.5		6687	78
20/10/97	0.008	8.62		7470		6.47	2.1		5981	

Table G3. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
18/05/98	0.077	0.38			66	6			909	
15/09/98	0.004	0.28				7.03	1		3045	
18/05/99	0.025	0.12				7.04	2		470	
15/05/00	0					6	3		1455	
12/9/2000						6.04	4.2		5228	
13/06/01						6	9.1		17098	412
8/9/2001						6.2	4.5		12985	
STATION: LCD										
30/06/97		2.86				7.78	16.8		1102	<5
18/05/98		1.15				7			144	7
18/06/99		0.53				7.47	17		299	
31/05/00						7.51	12		314	9
STATION: V21										
16/04/91		0.79			164		2.5		157	16
7/5/1991		0.225			109	7.1	3.3	229	106	60
11/6/1991		1.53			122		2		183	15
3/9/1991		6.42			157		8			5
25/09/91		5.41			160	7.8	6.1	429	237	9
25/09/91		5.89			157		0.1			8
11/10/1991		4.2			156		2			5
14/11/91		6.1			244		1			41
18/12/91		10			277		0		371	24
28/04/92		6.09			103	7.9	1.3	505	340	90
24/11/92		17.6			208	7.7	0.8	502	237	<10
31/01/95		1.83			133		1.4		472	134
1/2/1995		1.83								932
25/04/95	18	0.59			62		8.2	250	289	9
9/5/1995	83	8.36			182		8.5	2150	2330	97
STATION: V21A										
14/04/97		0.31		498		7.94	2.2		166	10
12/5/1997		<0.05		1086	80	7.9	4.5		431	54
18/05/98	0.001	<0.05				6.7			435	9
18/05/99	0.5	<0.05				7.31	2		292	9
STATION: V26										
15/10/94		0.399								38
31/01/95		1.77			149		4.4		568	<4
10/10/1995		3.36			1				607	129

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: V18																																
25/04/91			0.05									0.002	0.448									0.004										0.037
7/5/1991	<0.01	8.78	<0.06	0.01	0.124	<0.001		13.4	<0.006	0.067	0.014	0.01	8.89	3		5.5	0.132	<0.01	2.6	<0.02	<0.1	<0.06		<0.06	<0.06	19.8	<0.06	0.1	0.261	<0.01		0.034
11/6/1991			0.05									0.004	0.137									0.004										0.001
3/7/1991			0.01									0.002	0.18									0.006										0.005
15/08/91			0.05									0.001	0.225									0.004										0.029
3/9/1991			0.05									0.002	0.152									0.004										0.034
25/09/91	<0.01	0.25	<0.06	<0.01	0.047	<0.001		16.4	<0.006	<0.006	<0.006	<0.006	0.254	<2		2.5	0.015	<0.01	1.6	<0.02	<0.1	<0.06		<0.06	<0.06		<0.06	0.075	0.007	<0.01		0.015
25/09/91			0.05									0.003	0.131									0.007										0.013
11/10/1991			0.05									<0.001	0.044									0.004										0.035
15/11/91			0.05									<0.001	0.139									0.004										0.003
9/9/1992	<0.01	0.1	<0.06	<0.01	0.075	<0.001		23.9	0.007	<0.006	<0.006	<0.006	0.071	<2		6.4	0.017	<0.01	4.1	<0.02	<0.1	<0.06		<0.06	<0.06	7.94	<0.06	0.181	0.003	<0.01		0.01
24/11/92	<0.01	0.25	<0.06	<0.01	0.159	<0.001		30.7	<0.006	<0.006	<0.006	<0.006	0.237	<2		8.6	0.144	<0.01	4.1	<0.02	<0.1	<0.06		<0.06	<0.06	7.81	<0.06	0.194	0.007	<0.01		0.016
24/11/92												0.001										<0.003										0.032
26/04/93	<0.01	1.88	<0.06	<0.01	0.12	<0.001		34.1	<0.006	<0.006	<0.006	0.008	2.05	<2		10	0.08	<0.01	5.5	<0.02	<0.1	<0.06		<0.06	<0.06	7.87	<0.06	0.253	0.047	<0.01		0.024
2/8/1993	<0.01	0.13	<0.06	<0.01	0.11	0.002		36.6	<0.006	<0.006	0.01	<0.006	0.1	0.7		8.8	0.026	<0.01	4.7	<0.02	<0.1	<0.06		<0.06	<0.06	6.79	<0.06	0.254	0.003	<0.01		0.01
11/10/1994	<0.001	0.52	<0.02		0.0714	0.0003		25.6	<0.0005	<0.001	<0.001	0.011	0.797	0.7		3.83	0.016	<0.005	2.21	<0.001	<0.06	<0.01	7	<0.02	<0.02	7.33	<0.01	0.13	0.013	0.003		0.014
26/11/94			<0.04									<0.002										<0.03										0.02
25/01/95	<0.001	0.05	<0.02		0.0944	<0.0002		32.8	<0.0005	<0.001	<0.001	0.006	0.09	0.9		9.58	0.024	<0.005	5.76	0.002	<0.06	<0.01	4.9	<0.02	<0.02	6.02	<0.01	0.27	0.003	0.006		<0.005
31/01/95			<0.040									<0.002										<0.03										0.03
22/02/95												<0.002										<0.03										0.06
24/02/95			0.002									<0.002	0.77									<0.030										0.06
7/3/1995	<0.001	0.51	<0.02		0.122	<0.0002		42.5	<0.0005	<0.001	0.002	0.017	0.831	0.7		10.8	0.066	<0.005	7.02	<0.001	<0.06	<0.01	0.4	<0.02	<0.02	9.04	<0.01	0.35	0.018	0.005		0.017
7/3/1995			<0.020									<0.002	0.87									<0.03										0.03
26/04/95			0.017									0.032	21.9									<0.030										0.08
9/5/1995	<0.001	0.59	<0.02		0.0871	<0.0002		28.4	<0.0005	<0.001	0.002	0.016	0.711	1		7.11	0.024	<0.005	5.06	0.003	<0.06	<0.01	4.6	<0.02	<0.02	7.58	<0.01	0.2	0.014	<0.002		0.013
9/5/1995			0.01									0.01	0.79									0.02										0.02
7/6/1995			<0.020									0.002	0.76									<0.020										0.02
20/07/95			<0.020									<0.002	0.16									<0.020										<0.01
23/08/95			<0.020									<0.002	0.18									<0.020										0.01
27/09/95			<0.020									<0.002	0.29									<0.020										0.01
4/10/1995	<0.001	0.08	<0.02		0.102	<0.0002		35.7	<0.0005	<0.001	<0.001	0.004	0.062	0.9		9.78	0.0169	<0.005	6.51	<0.002	<0.05	<0.005	6.7	<0.02	<0.02	7.05	<0.005	0.287	<0.001	0.003		0.013
18/10/95			<0.020									0.002	0.19									<0.020										0.04
14/11/95			<0.020									0.008	0.87									<0.020										0.02
6/12/1995			<0.020									0.003	0.27									0.03										0.03
12/12/1995	<0.001	1.9	<0.02		0.133	<0.0002		127	0.0006	0.006	0.004	0.007	3.97	6		64.8	0.132	0.006	16.9	0.095	<0.06	0.25	67	<0.02	<0.02	6.55	<0.005	0.615	0.041	0.01		0.81
9/4/1996	<.003	0.12	<.02		0.086	<.001	<.04	39.8	<.002	<.005	<.005	0.012	0.08		<.005	10.5	0.1	0.006	7	0.005	<.04	0.02	23	<.03		2.49		0.42	<.005	0.005	<.03	<.01
22/04/96	<.003	1.9	<.02		0.088	<.001	<.04	22.1	<.002	<.005	<.005	0.016	3.2		<.005	5.3	0.11	<.002	3	0.006	0.15	<.02	4	<.03		2.53		0.202	0.045	0.008	<.03	0.02
15/05/96	<.003		<.02		0.85							0.005	6.25					<.002		<.005		<.02		<.03								0.03
12/6/1996	<.003	0.14	<.02		0.054	0.008	<.04	22.4	<.002	<.005	<.005	0.002	0.32		<.005	5.2	0.06	<.002	3	<.005	<.04	<.02	5		<.03	2.01		0.217	<.005	<.005	<.03	0.02
14/08/96	<.003	0.15	<.02		0.065	0.001	<.04	28.7	<.002	<.005	0.015	0.018	0.31		<.005	6.8	0.04	0.002	4	<.005	<.04	0.04	10	0.05		4.1		0.272	<.005	<.005	<.03	0.03
11/9/1996	<.003	0.05	<.02		0.113	0.004	<.04	33.3	0.002	<.005	<.005	<.002	0.83		<.005	8.1	0.08	0.003	32	<.005	0.07	<.02	11	<.03		5.2		0.319	<.005	<.005	<.03	0.04
12/5/1997	<.003	4.38	<.02	0.11	0.099	<.001	<.04	9	<.002	<.005	<.005	0.014	8.52	<1	<.005	3.1	0.14	<.002	<1	<.005	0.05	<.02	2	<.03	<.03	6.2	<.01	0.048	0.123	<.005	<.03	0.15
18/05/98	<.003	2.67	<.02	0.24	0.065	<.001	<.04	9.1	<.002	<.005	0.039	0.036	4.59	2	<.005	3	0.07	<.002	2	0.018	<.04	<.02	2	0.06	<.03	5.6	<.01	0.046	0.067	0.009	<.03	0.07
STATION: V24																																
26/04/91			0.05									0.002	0.545									0.017										0.184
1/5/1991			0.05									0.008	1.39									0.047										0.161
7/5/1991	<0.01	4.28	<0.06	0.01	0.165	<0.001		60.5	<0.006	0.041	0.014	0.012	4.2	3		16	0.82	<0.01	3.9	<0.02	<0.1	0.08		<0.06	<0.06	13.3	<0.06	0.243	0.132	<0.01		0.289
9/5/1991			0.05									0.018	0.532									0.046										0.327
13/05/91			0.05									0.011	0.681									0.019										0.666
3/6/1991			0.05									0.002	0.326									0.017										0.589
11/6/1991			0.05									0.006	0.229									0.004										0.551
17/06/91			0.05									0.005	0.501									0.004										0.744
1/7/1991			0.09									0.006	2.225									0.053										0.334
3/7/1991			0.01									0.004	0.45									0.033										0.281
8/7/1991			0.17									0.008	4									0.072										0.386
16/09/91			0.05									0.007	0.632									0.029										0.448
23/09/91			0.05									0.013	1.03									0.115										2.57
28/11/91			0.05									<0.001	0.08									0.038										3.83
5/12/1991			0.15									0.001	0.011									0.018										3.94
8/12/1991			0.16									0.001	0.156									0.017										3.94
15/12/91			0.05									0.083	0.249									0.035										4.91
22/12/91			0.005									0.025	0.65									0.068										3.72
30/12/91			0.05									0.045	3.14									0.288										4.37
7/1/1992												0.015										0.112										3.07
27/01/92												0.009										0.036										2.62
11/2/1992												0.014										0.038										1.99
24/02/92												0.017										0.122										1.48
2/3/1992												0.003										0.067										0.836
9/3/1992												0.008										0.054										0.892
3/4/1992												0.009										0.037										0.819
6/4/1992												0.005										0.03										0.76
13/04/92												0.003										0.1										0.78
20/04/92												0.02										0.163										10.5
28/04/92	<0.01	5.23	0.07	0.03	0.561	<0.001		127	0.145	0.438	0.014	0.467	8.5	9		38.2	6.82	<0.01	7.5	0.21	0.1	0.33		<0.06	<0.06		<0.06	0.579	0.215	<0.01		25.2
28/04/92												0.398										0.293										26.8
5/5/1992												0.001										0.004										0.001
11/5/1992												0.001										0.004										0.001
19/05/92												0.772										0.05										29.6
25/05/92												0.495										0.053										24.9
1/6/1992												0.123										0.046										17.2
18/06/92												0.22										0.018										17.4
23/06/92												0.021										0.012										10.6
10/7/1992												0.029										0.06										4.45
15/07/92												0.01										0.029										3.04
14/08/92												0.009										0.014										2.61
18/08/92												0.009										0.01										2.23
24/08/92												0.009										0.024										1.86
1/9/1992												0.002										0.023										0.09
14/09/92												0.013										0.021										3.87
21/09/92												0.004										0.06										4.09
16/11/92												0.03										0.03										6.69

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/11/92	<0.01	<0.06	<0.06	<0.01	0.077	<0.001		141	0.01	0.14	<0.006	0.02	0.162	9		32.1	1.62	<0.01	15.2	0.06	<0.1	<0.06		0.1	<0.06	5.09	<0.06	1.91	0.004	<0.01		6.39
24/11/92												0.015										0.023										5.94
31/01/95			0.04									0.007										0.08										20.6
8/2/1995			0.001									0.057	2.33									0.21										19.5
13/02/95			0.001									0.005	0.07									0.04										16.2
22/02/95			0.002									0.004	0.18									0.04										15
10/4/1995			0.003									0.011	0.57									0.08										15.5
17/04/95			0.003									0.007	0.6									0.09										14.8
19/04/95			<0.040									0.032	3.15									0.4										16.6
24/04/95			0.005									0.006	0.6									0.09										15.2
3/5/1995			0.002									0.003	0.45									<0.030										12
8/5/1995			0.004									0.006	0.73									0.06										15.3
15/05/95			0.001									0.018	0.31									<0.030										15.2
23/05/95			0.001									0.03	0.27									<0.030										22
31/05/95			0.003									0.014	0.31									<0.030										23.1
7/6/1995			<0.020									0.012	0.45									<0.020										18.89
14/06/95			<0.020									0.009	0.25									0.05										19.42
28/06/95			<0.020									0.01	0.56									0.08										12.81
6/7/1995			<0.020									0.012	1.17									0.08										13.12
11/7/1995			0.03									0.014	0.34									<0.020										5.87
17/07/95			<0.020									0.004	0.26									0.03										8.88
24/07/95			0.02									<0.002	0.18									0.02										10.32
1/8/1995			0.04									0.011	0.98									<0.020										13.07
8/8/1995			<0.020									0.002	0.15									<0.020										11.05
16/08/95			<0.020									0.009	0.38									<0.020										7.96
23/08/95			<0.020									0.008	0.05									0.04										11.04
29/08/95			<0.020									0.008	0.51									<0.020										11.03
7/9/1995			<0.020									0.002	0.07									0.05										11.99
12/9/1995			<0.020									<0.002	0.02									<0.020										11.82
18/09/95			0.03									0.009	0.63									0.06										7.98
3/10/1995			<0.020									0.009	0.08									<0.020										4.93
25/10/95			0.06									0.011	0.88									<0.020										4.12
9/1/1996	<.003	0.87	<.02		0.091	0.002	<.04	145.7	<.002	0.019	<.005	0.012	0.98		<.005	46.1	2.72	<.002	10	0.044	<.04	<.02	139	0.04		2.44		1.248	0.014	<.005	<.02	3.29
14/03/96	<.003	0.56	0.03		0.083	0.001	<.04	88.6	0.003	0.01	<.005	0.01	0.31		<.005	41.6	0.98	<.002	12	0.046	<.04	0.03	71	<.03		1.41		1.074	0.005	<.005	<.03	0.97
30/03/96	<.003	0.66	<.02		0.119	<.001	0.05	90.6	0.003	0.018	<.005	0.01	0.48		<.005	30.9	1.21	0.008	10	0.035	0.05	<.02	120	0.11		1.98		1.234	0.01	<.005	<.03	1.05
29/04/96	<.003	0.89	0.02		0.12	0.001	<.04	111.5	0.016	0.087	<.005	0.007	0.68		<.005	37.1	5.89	<.002	7	0.107	0.39	<.02	175	0.04		1.72		1.294	0.02	<.005	<.03	8.32
6/5/1996	<.003	0.74	<.02		0.119	0.002	<.04	125.9	0.017	0.119	<.005	0.01	0.31		<.005	41.3	7.13	0.004	9	0.133	0.12	<.02	154	0.05		1.64		1.376	0.007	<.005	<.03	11.9
24/05/96	<.003	0.59	<.02		0.073	0.004	<.04	78.6	0.007	0.074	<.005	0.005	0.29		<.005	32.4	4.14	<.002	7	0.114	0.05	<.02	106	<.03		0.71		0.921	<.005	<.005	<.03	7.71
8/7/1996	<.003	0.43	<.02		0.099	0.002	<.04	60.9	0.003	<.005	<.005	<.002	1.43		<.005	29.9	0.16	0.003	10	0.017	0.16	<.02	44	<.03		5		0.694	0.02	<.005	<.03	0.69
29/07/96	<.003	<.05	<.02		0.034	0.009	<.04	172.7	0.005	0.198	<.005	0.005	0.2		<.005	58.8	10.55	0.002	10	0.248	<.04	0.03	255	0.03		3.4		1.812	<.005	<.005	<.03	18.4
27/08/96	<.003	0.1	<.02		0.071	<.001	<.04	49.4	<.002	<.005	<.005	<.002	0.38		<.005	28.4	0.12	<.002	6	<.005	<.04	0.02	13	0.05		4.8		0.562	<.005	<.005	<.03	0.38
24/09/96	<.003	0.29	<.02		0.106	0.012	<.04	178.3	0.018	0.19	<.005	0.034	0.85		<.005	59.5	8.56	<.002	16	0.271	<.04	0.08	252	<.03		4.6		1.595	0.009	<.005	<.03	17.75
7/10/1996	<.003	0.09	<.02		0.094	0.01	<.04	211.1	0.009	0.328	<.005	0.01	0.1		<.005	71.4	13.9	<.002	16	0.315	<.04	<.02	309	<.03		4.8		1.722	<.005	<.005	<.03	15.83
21/10/96	<.003	0.05	<.02		0.072	0.007	<.04	200.6	0.029	0.442	<.005	0.038	0.43		<.005	69.5	14.33	<.002	13	0.334	0.33	<.02	286	0.03		4.3		1.684	<.005	<.005	<.03	33.09
5/11/1996	<.003	0.05	<.02		0.078	0.011	<.04	192.5	0.016	0.341	<.005	0.013	0.17		<.005	68.6	12.68	0.004	15	0.287	0.08	<.02	300	<.03		4.1		1.692	<.005	<.005	<.03	26.69
21/11/96	<.003	<.05	<.02		0.067	0.009	<.04	179.1	0.015	0.326	<.005	0.009	0.38		<.005	64.9	11.37	<.002	16	0.301	0.04	0.02	271	<.03		3.5		1.704	<.005	<.005	<.03	27.42
19/08/97	<.003	0.13	<.02	<.05	0.049	<.001	<.04	71.1	0.014	0.031	0.011	0.035	0.26	2	<.005	31.7	1.05	0.01	9	0.109	0.16	<.02	128	0.04	<.03	2.6	<.01	0.592	0.008	0.009	<.03	4.73
25/08/97	0.003	0.08	<.02	<.05	0.053	<.001	<.04	74.2	0.018	0.03	0.01	0.008	0.24	4	<.005	38	0.24	<.002	14	0.164	<.04	<.02	26	0.08	<.03	3.2	<.01	0.745	<.005	0.007	<.03	4.38
2/9/1997	<.003	0.2	0.03	<.05	0.046	0.001	<.04	119.9	0.033	0.154	0.019	0.018	0.22	2	<.005	48.3	5.8	0.01	11	0.222	0.24	0.09	107	0.04	<.03	2.9	<.01	1.087	0.006	<.005	<.03	14.7
9/9/1997	0.004	0.27	<.02	<.05	0.045	<.001	<.04	135	0.037	0.181	0.014	0.02	0.93	4	0.012	51.6	6.85	0.027	9	0.232	0.73	0.1	106	0.09	<.03	2.4	<.01	1.179	0.009	0.009	<.03	16.46
16/09/97	<.003	0.32	<.02	0.21	0.062	0.003	<.04	120.7	0.028	0.194	<.005	0.01	1.87	5	<.005	51.9	6.44	0.006	11	0.236	0.2	0.05	138	0.08	0.057	2.4	0.01	1.16	0.01	<.005	<.03	14.42
23/09/97	<.003	0.2	<.02	0.19	0.048	0.001	<.04	115.7	0.034	0.159	0.013	0.062	1.34	6	0.015	50.9	5.42	0.044	12	0.315	2.21	0.1	157	0.14	<.03	3.2	<.01	1.145	0.048	<.005	0.52	16.84
30/09/97	<.003	0.94	0.03	<.05	0.112	0.001	<.04	165.1	0.049	0.26	<.005	0.045	2.94	5	0.028	60.8	10.38	0.047	11	0.282	2.21	0.24	252	0.19	<.03	3.1	<.01	1.203	0.04	<.005	0.61	26.85
7/10/1997	<.003	0.61	<.02	<.05	0.131	0.002	<.04	181.8	0.02	0.211	<.005	0.01	2.33	4	<.005	58.3	12.19	0.004	8	0.28	0.08	<.02	200	<.03	<.03	1.8	<.01	1.458	0.026	<.005	0.18	19.45
14/10/97	<.003	0.42	<.02	0.14	0.047	0.005	0.04	200.8	0.068	0.383	<.005	0.02	0.16	5	<.005	67.4	16.85	0.004	8	0.415	0.08	0.03	239	0.09	<.03	2.3	<.01	1.535	0.009	<.005	<.03	47.8
20/10/97	<.003	1.51	<.02	<.05	0.228	0.006	<.04	210	0.08	0.343	<.005	0.021	6.22	7	<.005	70.5	16.5	<.002	10	0.384	0.05	0.11	265	0.05	0.037	3.8	<.01	1.593	0.043	0.009	<.03	41.28
28/10/97	<.003	0.05	<.02	0.11	0.082	0.004	<.04	215.5	0.053	0.39	<.005	0.014	0.61	9	<.005	70	15.82	<.002	9	0.372	0.43	<.02	277	<.03	<.03	2.3	<.01	1.574	0.009	<.005	<.03	42.77
25/11/97	0.024	0.12	0.04	0.18	0.103	0.012	<.04	213.8	0.042	0.297	0.008	0.031	0.33	11	<.005	68.9	15.07	0.013	10	0.343	0.33	<.02	264	0.05	0.42	2.7	0.04	1.671	0.008	<.005	0.4	39.57
9/12/1997	<.003	<.05	<.02	<.05	0.083	0.004	<.04	222.4	0.031	0.325	<.005	0.014	0.18	9	<.005	71.1	15.01	0.003	11	0.338	0.09	<.02	251	0.06	<.03	2.5	0.07	1.725	<.005	<.005	0.2	39.06

STATION: V25

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
28/04/91			0.05									0.017	0.073									0.004										0.12
1/5/1991			0.05									0.009	0.34									0.016										0.058
7/5/1991	<0.01	0.6	<0.06	0.02	0.089	<0.001		43.5	<0.006	0.007	0.015	0.018	0.777	<2		14.8	0.215	<0.01	4.3	<0.02	<0.1	<0.06		<0.06	<0.06	6.69	<0.06	0.205	0.006	<0.01		0.096
9/5/1991			0.05									0.01	0.297									0.038										0.042
13/05/91			0.05									0.007	0.258									0.011										0.089
22/05/91			0.05									0.003	0.206									0.006										0.028
3/6/1991			0.05									0.002	0.303									0.011										0.082
11/6/1991			0.05									0.008	0.182									0.004										0.048
17/06/91			0.05									0.002	0.326									0.006										0.139
1/7/1991			0.065									0.018	0.301									0.084										0.273
3/7/1991			0.01									0.003	0.26									0.032										0.237
8/7/1991			0.12									0.029	0.341									0.136										0.308
15/08/91			0.12									<0.001	0.09									0.005										0.041
12/9/1991			0.05									<0.001	0.077									0.007										0.625
18/09/91			0.05									<0.001	0.155									0.008										0.557
23/09/91			0.05									0.003	0.178									0.02										0.417
25/09/91	<0.01	0.18	<0.06	<0.01	0.13	<0.001		95.1	<0.006	0.044	<0.006	<0.006	0.214	6		30.1	0.466	<0.01	7.6	<0.02	<0.1	<0.06		<0.06	<0.06		<0.06	0.464	0.005	<0.01		0.223
25/09/91			0.05									0.002	0.168									0.019										0.193
1/10/1991			0.09									<0.001	0.136									0.009										0.196
8/10/1991			0.08									<0.001	0.079									0.004										0.092
18/10/91			0.004									<0.001	0.063									0.01										0.171
22/10/91			0.003									<0.001	0.1									0.005										0.001
28/10/91			0.05									<0.001	0.005									0.004										0.041
4/11/1991			0.001									<0.001	0.02									0.004										0.151
15/11/91			0.001									<0.001	0.03									0.004										0.035
18/11/91			0.001									<0.001	0.058									0.004										0.07
29/11/91			0.05									<0.001	0.13									0.034										0.183
5/12/1991			0.003									0.001	0.166									0.009										0.649
8/12/1991			0.003									0.001	0.128									0.004										0.658
15/12/91			0.05									0.007	0.039									0.004										0.569
22/12/91			0.001									0.005	0.074									0.007										0.636
30/12/91			0.001									0.012	0.078									0.008										0.694
7/1/1992												0.007										0.024										0.807
15/01/92												0.004										0.022										0.627

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
20/01/92												0.003										0.015										0.569
27/01/92												0.009										0.019										0.798
4/2/1992												0.004										0.01										0.267
11/2/1992												0.012										0.008										0.43
18/02/92												0.003										0.005										0.22
24/02/92												0.006										0.008										0.158
2/3/1992												0.003										0.01										0.092
9/3/1992												0.013										0.007										0.095
16/03/92												0.011										0.012										0.154
24/03/92												0.006										0.009										0.071
3/4/1992												0.005										0.006										0.034
6/4/1992												0.007										0.007										0.027
13/04/92												0.002										0.028										0.014
20/04/92												0.008										0.018										0.046
28/04/92	<0.01	0.21	<0.06	0.02	0.06	<0.001		61.1	0.008	0.007	<0.006	0.013	0.075	7		25.7	0.18	<0.01	9	<0.02	<0.1	<0.06		0.07	<0.06		<0.06	0.46	0.009	<0.01		0.15
28/04/92												0.01										0.005										0.155
5/5/1992												0.001										0.004										0.065
11/5/1992												0.005										0.014										0.072
19/05/92												0.012										0.004										0.32
25/05/92												0.025										0.004										0.049
1/6/1992												0.01										0.01										0.398
15/06/92												0.001										0.011										0.039
23/06/92												0.001										0.004										0.024
25/06/92												0.001										0.006										0.827
25/06/92												<0.006										<0.06										0.875
2/7/1992												0.001										0.004										0.333
7/7/1992												0.003										0.012										0.084
15/07/92												0.003										0.002										0.083
20/07/92												0.003										0.002										0.041
27/07/92												0.001										0.004										0.035
3/8/1992												0.003										0.011										0.027
10/8/1992												0.001										0.001										0.082
18/08/92												0.003										<0.001										0.072
24/08/92												<0.001										0.002										0.266
1/9/1992												0.002										0.002										0.093
9/9/1992	<0.01	0.06	<0.06	0.03	0.29	<0.001		121	<0.006	<0.006	<0.006	<0.006	0.01	8		41.5	0.269	<0.01	11	<0.02	0.1	<0.06		<0.06	<0.06	2.89	<0.06	0.779	<0.002	<0.01		0.069
9/9/1992												0.002										0.001										0.07
14/09/92												0.002										<0.02										0.079
21/09/92												0.001										0.002										0.18
28/09/92												<0.001										0.002										0.075
6/10/1992												0.002										<0.001										0.025
13/10/92												0.002										<0.001										0.025
19/10/92												0.002										0.003										0.025
26/10/92												0.001										<0.001										0.029
2/11/1992												<0.05										<0.1										<0.04
9/11/1992												0.002										<0.001										0.025
16/11/92												<0.05										<0.1										0.04
24/11/92	<0.01	<0.06	<0.06	<0.01	0.162	<0.001		111	<0.006	0.016	<0.006	<0.006	<0.006	9		37.1	0.141	<0.01	13	<0.02	<0.1	<0.06		0.06	<0.06	3.05	<0.06	0.96	<0.002	<0.01		0.066
24/11/92												<0.05										<0.1										0.06
5/1/1993												0.006										<0.003										0.032
20/01/93												0.004										<0.003										0.024
27/01/93												0.005										0.005										0.018
3/2/1993												0.005										0.009										0.022
16/02/93												0.004										0.009										0.04
8/3/1993												0.002										<0.003										0.11
17/03/93												0.004										<0.003										0.07
26/04/93	<0.01	<0.06	<0.06	<0.01	0.072	<0.001		56.8	<0.006	<0.006	<0.006	<0.006	0.016	7		31.6	0.048	0.02	17.6	<0.02	<0.1	<0.06		0.16	<0.06	3.62	<0.06	1.43	<0.002	<0.01		0.01
28/04/93												0.003										<0.003										0.02
1/5/1993												<0.002										<0.003										0.04
22/06/93												0.005										0.005										0.04
24/06/93	<0.01	0.1	<0.05	0.01	0.115	<0.001		57.9	<0.005	<0.005	<0.005	<0.005	0.087	7		26.2	0.105	<0.01	14	<0.02	<0.1	<0.05		0.09	<0.05	1.63	<0.05	0.892	0.004	<0.01		0.073
31/07/93												0.004										0.007										0.16
2/8/1993	<0.01	0.22	<0.06	<0.01	0.068	0.003		131	<0.006	<0.006	<0.006	0.007	0.199	4.1		23.2	0.219	<0.01	6.2	<0.02	<0.1	<0.06		<0.06	<0.06	2.25	<0.06	1.07	0.003	<0.01		0.11
1/9/1993												<0.002										<0.003										0.36
1/10/1993												<0.002										0.004										0.18
1/11/1993												<0.002										<0.03										0.29
29/11/93	<0.001	0.204	0.08		0.1	<0.0002		95.8	<0.0003	0.015	<0.001	<0.001	0.031	4.5		32	0.456	0.006	7.5	0.014	<0.02	<0.004		<0.02	<0.02	2.28		1	<0.001	<0.001		0.235
4/7/1994												0.002										<0.03										0.02
11/7/1994			<0.04									<0.002										<0.03										0.21
19/07/94			<0.04									<0.002										<0.03										0.06
29/07/94			<0.04									<0.002										<0.03										0.03
7/8/1994												0.002										<0.03										0.04
8/8/1994												0.003										<0.03										0.01
9/8/1994	<0.001	0.05	<0.02		0.11	<0.0002		109	<0.0005	<0.001	<0.001	<0.002	<0.003	5.9		31.5	0.142	<0.005	8.71	<0.001	<0.06	<0.01	117	<0.02	<0.02	2.28	<0.01	1	0.002	0.006		<0.005
22/08/94												<0.002										<0.03										0.03
11/10/1994	<0.001	0.31	<0.02		0.0816	0.0004		107	<0.0005	0.002	<0.001	0.016	0.055	3.4		24.6	0.177	<0.006	6.65	0.002	0.07	<0.01	113	<0.02	<0.02	1.64	<0.01	0.96	0.003	0.006		0.014
15/10/94			<0.04									0.005										<0.03										<0.01
15/11/94																																0.01
18/11/94			<0.04									0.008										<0.03										0.06
21/11/94																																0.03
26/11/94			<0.04									0.007										<0.03										<0.01
28/11/94																																<0.01
29/11/94																																<0.01
30/11/94																																0.02
1/12/1994			<0.04									0.011										<0.03										0.04
8/12/1994			<0.04									0.01										<0.03										<0.01
15/12/94			<0.04									0.011										<0.03										<0.01
31/01/95			0.04									0.007										<0.03										0.07
8/2/1995			<0.0005									<0.002	<0.05									<0.030										0.37
13/02/95			<0.0005									<0.002	<0.05									<0.030										0.35
22/02/95			<0.0005									<0.002	0.07									<0.03										0.003
10/4/1995			0.001									0.004	0.08									<0.030										0.11
17/04/95			0.008									0.005	0.63									0.4										0.52
19/04/95			<0.040									<0.002	0.17									<0.030										0.2
24/04/95			<0.040									<0.002	<0.05									<0.030										<0.01
3/5/1995			<0.0005									<0.002	<0.05									<0.030										0.32

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
8/5/1995			0.001									<0.002	<0.05									<0.030										0.45
9/5/1995	<0.001	0.06	<0.02		0.0256	<0.0002		133	0.0005	0.004	<0.001	0.019	0.059	3.1		17.9	0.304	<0.005	6.51	0.008	<0.06	<0.01	121	<0.02	<0.02	1.23	<0.01	0.8	0.003	<0.002		0.175
9/5/1995			<0.020									0.019	0.06									<0.010										0.18
15/05/95			<0.0005									<0.002	0.11									<0.030										0.17
23/05/95			0.001									<0.002	0.08									<0.030										0.18
31/05/95			0.001									<0.002	0.08									<0.030										0.58
6/7/1995			<0.020									0.003	0.12									0.02										0.12
7/9/1995			<0.020									<0.002	0.13									<0.020										0.25
18/09/95			<0.020									0.004	0.24									<0.020										0.43
10/10/1995			<0.020									0.006	0.18									<0.020										0.29
16/10/95			0.05									0.003	0.15									0.02										0.16
9/11/1995			<0.020									0.006	0.08									<0.020										0.04
14/11/95			<0.020									0.005	0.17									<0.020										0.02
21/11/95			<0.020									0.008	0.11									<0.020										0.02
30/11/95			0.02									0.002	0.12									<0.020										0.13
6/12/1995			<0.020									0.004	0.12									<0.020										0.1
9/1/1996	<.003	0.38	<.02		0.055	0.001	<.04	127.6	<.002	<.005	<.005	0.007	0.18		<.005	47.1	1.14	<.002	10	0.022	<.04	<.02	157	<.02		1.95		1.035	<.005	<.005	<.02	0.23
14/03/96	<.003	0.89	<.02		0.057	0.001	<.04	84.5	<.002	<.005	0.008	0.011	0.5		<.005	41.9	0.43	<.002	12	0.022	0.06	0.03	138	<.03		1.02		1.025	0.01	0.008	<.03	0.11
30/03/96	<.003	0.43	0.05		0.091	<.001	0.05	78.6	<.002	0.01	<.005	0.012	0.08		<.005	33.8	0.83	0.009	11	0.033	0.17	<.02	130	0.13		2.01		1.02	<.005	<.005	<.03	0.41
9/4/1996	<.003	0.33	<.02		0.104	0.001	<.04	100.4	<.002	<.005	<.005	0.017	0.12		<.005	39.5	0.65	0.004	12	0.02	0.13	<.02	158	<.03		1.89		1.022	0.005	<.005	<.03	0.24
22/04/96	<.003	0.38	<.02		0.088	<.001	<.04	84.4	<.002	<.005	<.005	0.012	0.08		<.005	37.1	1.09	0.005	11	0.054	0.07	<.02	84	0.05		1.89		1.153	<.005	<.005	<.03	0.42
29/04/96	<.003	0.43	0.05		0.091	<.001	0.05	78.6	<.002	0.036	<.005	0.012	0.08		<.005	33.8	0.83	0.009	11	0.033	0.17	<.02	130	0.13		2.01		1.02	<.005	<.005	<.03	0.41
21/06/96	<.003	0.12	<.02		0.042	0.005	<.04	125.5	<.002	0.048	<.005	0.004	0.18		<.005	42.3	3.85	<.002	8	0.066	0.05	<.02	179	<.03	<.02	1.44		1.292	<.005	<.005	<.03	0.36
26/06/96	<.003		<.02		0.08				<.002			0.004	1.43					<.002		0.03				<.03	<.02							0.21
2/7/1996	<.003	0.15	<.02		0.103	0.004	<.04	129	<.002	0.008	<.005	<.002	0.27		<.005	55.7	1.78	0.003	10	0.046	<.04	<.02	172	<.03	<.02	3.3		1.397	<.005	<.005	<.03	0.17
8/7/1996	<.003	0.1	<.02		0.089	0.003	<.04	110	0.003	0.019	<.005	<.002	0.25		<.005	40.2	1.99	<.002	8	0.034	0.14	<.02	141	<.03		2.8		1.117	<.005	<.005	<.03	0.2
5/8/1996	<.003	0.08	<.02		0.094	0.004	<.04	116.5	<.002	0.01	0.007	0.009	0.27		<.005	41.2	1.28	0.005	9	0.044	0.29	<.02	182	<.03		2.6		1.126	<.005	<.005	<.03	0.21
14/08/96	<.003	0.14	<.02		0.118	0.004	<.04	114.5	<.002	<.005	<.005	0.011	0.08		<.005	39.5	0.38	0.004	8	0.012	0.17	<.02	159	0.06		2.4		1.045	<.005	<.005	<.03	0.2
20/08/96	<.003	0.05	0.02		0.092	0.003	<.04	96.7	<.002	<.005	0.02	0.003	0.14		<.005	43.9	0.43	<.002	8	0.021	<.04	<.02	168	<.03		2.7		0.945	<.005	<.005	<.03	0.28
27/08/96	<.003	0.05	<.02		0.072	0.002	<.04	121.7	<.002	0.01	<.005	<.002	0.05		<.005	44.5	1.01	<.002	12	0.009	0.25	<.02	143	<.03		2.9		1.205	<.005	<.005	<.03	0.48
3/9/1996	<.003	0.22	<.02		0.169	0.003	<.04	104.7	<.002	<.005	<.005	0.007	0.64		<.005	51.1	0.43	<.002	10	<.005	<.04	<.02	97	<.03		2.2		1.083	<.005	<.005	<.03	0.1
11/9/1996	<.003	0.05	<.02		0.107	0.001	<.04	107.1	<.002	<.005	<.005	<.002	0.26		<.005	38	0.6	<.002	12	0.018	<.04	<.02	145	<.03		3.5		0.91	<.005	<.005	<.03	0.39
19/09/96	<.003	0.06	<.02		0.113	0.001	<.04	91.9	0.004	<.005	<.005	0.004	0.19		<.005	34.7	0.36	<.002	12	0.005	<.04	0.02	121	<.03		3.2		0.777	<.005	<.005	<.03	0.15
24/09/96	<.003	0.05	<.02		0.057	0.002	<.04	117.7	<.002	<.005	<.005	0.017	0.86		<.005	41.9	0.43	<.002	15	0.021	<.04	<.02	159	<.03		5.6		1.041	<.005	<.005	<.03	0.08
30/09/96	<.003	0.05	<.02		0.094	0.008	<.04	123.5	<.002	<.005	<.005	0.01	0.22		<.005	38.1	0.47	<.002	13	0.016	<.04	<.02	166	<.03		2.5		0.851	<.005	<.005	<.03	0.13
7/10/1996	<.003	0.05	<.02		0.146	0.004	<.04	108.1	<.002	<.005	<.005	0.007	0.1		<.005	43.9	0.24	<.002	16	0.032	<.04	<.02	162	<.03		4.1		0.943	<.005	<.005	<.03	0.06
15/10/96	<.003	0.05	<.02		0.042	0.004	<.04	94.2	0.004	<.005	<.005	0.029	0.48		<.005	39.8	0.72	<.002	13	0.008	0.06	<.02	116	<.03		2.8		0.856	<.005	<.005	<.03	0.06
21/10/96	<.003	0.05	<.02		0.061	0.002	<.04	102.6	<.002	<.005	<.005	0.031	0.07		<.005	45.4	0.62	<.002	15	<.005	0.15	<.02	129	<.03		2.9		0.932	<.005	<.005	<.03	<.01
29/10/96	<.003	0.05	<.02		0.073	0.002	<.04	101	<.002	<.005	<.005	0.029	0.12		<.005	47.7	0.79	<.002	14	0.009	<.04	<.02	129	<.03		2		1.021	<.005	<.005	<.03	0.07
5/11/1996	<.003	0.05	<.02		0.052	0.004	<.04	126.6	<.002	<.005	<.005	0.012	0.18		<.005	47.7	2.16	<.002	17	0.015	<.04	<.02	177	<.03		2.5		1.043	<.005	<.005	<.03	0.1
21/11/96	<.003	<.05	<.02		0.062	0.003	<.04	112.3	<.002	0.011	0.008	0.003	0.49		<.005	48.2	1.89	<.002	17	0.027	<.04	<.02	169	<.03		1.7		1.048	<.005	<.005	<.03	0.11
11/12/1996	<.003	1.15	0.02		0.111	0.003	<.04	104.7	<.002	0.011	<.005	0.007	0.07		<.005	44.5	2.44	0.007	14	0.023	0.15	<.02	163	<.03		0.8		2.068	0.006	0.008	<.03	0.37
30/12/96	<.003	0.33	<.02		0.082	<.001	<.04	113.2	<.002	<.005	<.005	0.004	0.17		<.005	57.4	0.32	<.002	36	0.017	0.08	<.02	151	<.03		1.4		1.224	<.005	<.005	<.03	0.16
19/08/97	<.003	0.14	<.02	<.05	0.033	<.001	<.04	73.6	<.002	0.008	<.005	0.028	0.19	3	<.005	31.1	0.28	0.011	9	0.02	<.04	<.02	150	<.03	<.03	1.6	<.01	0.596	0.008	0.012	<.03	0.26
25/08/97	<.003	0.06	<.02	<.05	0.029	<.001	<.04	68.6	<.002	<.005	0.013	0.007	0.16	4	0.006	33.8	0.12	<.002	12	0.023	<.04	<.02	24	<.03	<.03	2.2	<.01	0.547	<.005	0.008	<.03	0.22
2/9/1997	<.003	0.16	<.02	<.05	0.028	<.001	<.04	89.4	<.002	0.013	0.02	0.017	0.09	3	0.037	39.5	0.69	0.008	11	0.021	0.08	<.02	133	0.04	<.03	1.4	<.01	0.703	<.005	0.006	<.03	0.1
5/9/1997	<.003	0.09	<.02	<.05	0.027	<.001	<.04	98	<.002	<.005	0.007	0.022	0.07	4	<.005	43.1	0.53	0.008	11	0.02	0.58	<.02	124	0.03	<.03	0.9	<.01	0.762	<.005	0.011	<.03	0.26
9/9/1997	<.003	0.12	<.02	<.05	0.025	<.001	<.04	100.2	<.002	0.006	0.005	0.026	0.1	4	<.005	42.2	0.35	0.007	11	0.01	0.33	<.02	133	<.03	<.03	0.8	<.01	0.769	<.005	<.005	<.03	0.1
16/09/97	<.003	<.05	<.02	0.16	0.032	<.001	<.04	108.7	0.003	<.005	<.005	0.006	0.01	3	<.005	37.8	0.4	0.003	10	<.005	0.06	<.02	128	0.05	<.03	0.2	0.02	0.932	<.005	<.005	<.03	0.15
23/09/97	<.003	0.06	<.02	0.1	0.028	<.001	<.04	90.2	<.002	<.005	0.018	0.052	0.27	4	<.005	39.5	0.23	0.003	11	0.017	<.04	<.02	134	0.05	<.03	1	<.01	0.837	0.02	<.005	<.03	0.16
30/09/97	<.003	0.09	<.02	<.05	0.061	<.001	<.04	116.3	<.002	0.009	0.012	0.036	0.12	4	0.017	45.4	0.68	0.025	12	0.027	<.04	<.02	177	0.04	<.03	0.6	<.01	0.787	0.011	0.007	<.03	0.2
7/10/1997	<.003	0.13	<.02	<.05	0.094	<.001	0.07	159.2	<.002	<.005	<.005	0.011	0.12	5	<.005	45.3	0.84	<.002	9	0.012	0.11	<.02	165	<.03	<.03	<.1	<.01	1.068	0.009	0.012	<.03	0.18
14/10/97	<.003	0.38	<.02	0.16	0.034	<.001	<.04	195.2	<.002	<.005	<.005	0.014	0.03	8	<.005	52.9	0.59	0.004	9	0.014	0.04	<.02	210	<.03	<.03	<.1	0.02	1.336	0.009	<.005	<.03	0.13
20/10/97	<.003	0.05	<.02	<.05	0.081	<.001	<.04	211	<.002	<.005	<.005	0.024	0.05	6	<.005	51.8	0.28	<.002	10	0.019	<.04	<.02	237	<.03	<.03	<.1	<.01	1.381	<.005	<.005	<.03	0.06
28/10/97	<.003	<.05	<.02	0.08	0.057	<.001	<.04	223.7	0.006	0.039	<.005	0.011	0.09	11	0.006	57.3	0.89	<.002	10	<.005	0.06	<.02	262	<.03	<.03	<.1	<.01	1.467	0.007	<.005	<.03	0.25
25/11/97	<.003	<.05	<.02	<.05	0.09	0.002	<.04	183.9	<.002	<.005	<.005	0.018	0.19	5	<.005	50.1	0.13	<.002	9	0.015	0.12	<.02	214	<.03	<.03	<.1	<.01	1.365	0.006	<.005	<.03	0.12
9/12/1997	<.003	<.05	<.02	0.06	0.069	0.001	0.1	151.5	<.002	0.023	<.005	0.01	0.04	10	<.005	50.6	0.22	<.002	13	0.005	<.04	<.02	179	<.03	<.03	0.7	0.04	1.161	<.005	0.016	<.03	0.06
30/12/97	<.003	<.05	<.02	0.14	0.032	<.001	<.04	132.3	<.002	0.011	<.005	0.028	0.03	2	<.005	45.1	0.39	0.003	12	<.005	<.04	<.02	171	<.03	<.03	0.6	<.01	1.069	<.005	<.005	<.03	0.14
STATION: V2																																
18/02/88		0.06	<0.05	<0.001	0.106	<0.001		39.8	<0.002	0.01	<0.005	<0.005	0.049			9.8	0.003	0.015	3.7	<0.02	<0.05	<0.02		<0.05	<0.05	4.2	<0.01	0.188	<0.002	<0.005		0.004
29/05/89	<0.01	0.17	<0.05	<0.01	0.088	<0.001		31	<0.005	<0.005	<0.005	0.008	0.172			7	0.004	<0.01	2.8	<0.02	<0.1	<0.05		<0.05	<0.05	4.48	<0.05	0.139	0.004	<0.01		0.015
1/10/1990	<0.01	<0.05	<0.05	<0.01	0.097	<0.001		45.3	<0.005	<0.005	<0.005	<0.005	0.091	<2		10.1	0.004	<0.01	3.7	<0.02	<0.1	<0.05		<0.05	<0.05	5.89	<0.05	0.185	<0.002	<0.01		0.024
18/04/91			0.05									0.072										0.004										0.007
7/5/1991	<0.01	26.2	0.13	<0.01	0.431	<0.001		45.8	<0.006	0.264	0.058	0.05	32.6	6		18.2	0.509	<0.01	3.6	0.06	0.4	0.08		<0.06	<0.06	43.3	<0.06	0.186	0.564	0.05		0.142
11/6/1991			0.05									0.004	0.157									0.007										0.001
3/9/1991			0.05									<0.001	0.064									0.004										0.009
25/09/91	<0.01	0.09	<0.06	0.01	0.14	<0.001		68.8	0.008	<0.006	<0.006	<0.006	0.099	<2		14.7	0.022	<0.01	3.7	<0.02	<0.1	<0.06		<0.06	<0.06		<0.06	0.262	0.003	<0.01		0.025
25/09/91			0.05									0.002	0.055									0.007										0.085
8/10/1991			0.05									<0.001	0.077									0.004										0.023
14/11/91			0.06									<0.001	0.283									0.004										0.012
18/12/91			0.05									0.001	0.063									0.004										4.43
19/02/92												0.001										0.012										0.025
18/03/92												0.001										0.004										0.008
28/04/92	<0.01	21.4	0.2	0.01	0.551	0.001		104	0.017	<0.006	0.058	0.058	32.8	9		36.5	0.496	0.02	5.5	0.05	0.4	0.37		<0.06	<0.05		<0.06	0.355	0.41	0.05		0.257
28/04/92												0.035										0.201										0.208
21/05/92												0.056										0.186										0.192
10/6/1992												0.005										0.007										0.004
15/07/92												0.006										0.025										0.034
12/8/1992												0.001										0.001										0.03
9/9/1992	<0.01	0.36	<0.06	<0.01	0.148	<0.001		54.8	<0.006	<0.006	<0.006	<0.006	0.365	<2		13.9	0.041	<0.01	4.8	<0.02	<0.1	<0.08		<0.06	<0.06	6.84	<0.06	0.276	0.011	<0.01		0.018
14/10/92												0.002										0.011										0.023
24/11/92	<0.01	27.8	0.14	<0.01	0.734	<0.001		77.8	<0.006	<0.006	0.045	0.053	32.5	10		31.6	0.738	<0.01	9.2	0.08	0.8	0.36		<0.06	<0.06	21.2	<0.06	0.584	0.543	0.04		0.17
24/11/92												0.027										0.31										0.107
26/04/93	<0.01	162	0.91	0.02	4.43	0.005		72	0.031	<0.006	0.291	0.381	207	23		74.9	3.64	0.02	6	0.29	4.8	2.92		<0.06	<0.06	149	<0.06	0.472	3.32	0.23		0.91
2/8/1993	<0.01	0.19	<0.06	<0.01	0.192	0.002		84	<0.006	<0.006	<0.006	0.007	0.222	2.1		23.4	0.017	<0.01	5.7	<0.02	<0.1	<0.06		<0.06	<0.06	5.3	<0.06	0.376	0.004	<0.01		0.036
2/5/1994	<0.001	0.231	<0.02		0.122	0.0002		65.8	<0.0005	<0.001	0.0021	0.01	0.428	2.1		15.6	0.0304	<0.005	3.33	0.0044	<0.05	<0.01	33.1	<0.02	<0.02	3.72	<0.01	0.236	0.007	<0.002		0.014
8/6/1994			<0.04									0.07										<0.03										0.005
19/07/94			<0.04									<0.002										<0.03										0.02
9/8/1994	<0.001	0.03	<0.02		0.17	<0.0002		71.7	<0.0005	<0.001	<0.001	0.007	0.041	1.7		16.7	0.003	<0.005	5.17	0.002	<0.06	<0.01	20.9	<0.02	<0.02	5.32	<0.01	0.32	<0.001	0.004		<0.005
11/10/1994	<0.001	1.2	<0.02		0.171	0.0003		100	<0.0005	0.007	0.003	0.014	1.62	3.3		48	0.057	0.007	7.15	0.07	<0.06	0.04	85.2	<0.02	<0.02	4.92	<0.01	0.51	0.033	0.008		0.041
15/10/94			<0.04									<0.002										<0.03										0.04
31/01/95			<0.040									<0.002										<0.03										0.08
22/02/95												0.152										0.64										0.46
24/02/95			0.117									0.152	118									0.64										0.48

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
25/04/95			0.033									0.031	21.9									0.3										0.1
9/5/1995	<0.001	1	<0.02		0.462	0.0005		64.8	<0.0005	0.007	0.022	0.041	15.4	3.6		27.3	0.334	<0.005	6.25	0.027	0.34	0.2	35.2	<0.02	<0.02	19.2	<0.01	0.34	0.224	0.021		0.098
9/5/1995			0.021									0.033	15.65									0.21										0.09
7/6/1995			<0.020									0.006	0.75									<0.020										<0.002
20/07/95			0.02									<0.002	0.19									<0.020										<0.01
23/08/95			<0.020									<0.002	0.05									<0.020										0.01
18/09/95			<0.020									<0.002	0.35									<0.020										<0.01
4/10/1995	<0.001	0.13	<0.02		0.168	<0.0002		74.1	<0.0005	<0.001	<0.001	0.006	0.154	1.8		22.2	0.0068	<0.005	5.42	0.003	<0.05	<0.005	24.8	<0.02	<0.02	6.04	<0.005	0.364	<0.001	0.007		0.005
16/10/95			<0.020									0.004	1.07									<0.020										0.01
14/11/95			<0.020									0.004	0.31									0.03										<0.01
11/12/1995			<0.020									<0.002	0.33									<0.020										<0.01
12/12/1995	<0.001	0.19	<0.02		0.175	<0.0002		85.6	<0.0005	<0.001	<0.001	0.01	0.233	1		22.5	0.0085	<0.005	6.35	<0.002	<0.06	<0.005	26.4	<0.02	<0.02	6.03	<0.005	0.341	0.004	0.005		0.004
25/01/96	<.003	0.24	<.02		0.168	<.001	<.04	58.9	<.002	<.005	<.005	0.007	1.06		<.005	15.7	<.01	0.003	4	<.005	<.04	<.02	22	<.02		2.23		0.312	0.018	<.005	<.02	0.03
14/02/96	<.003	0.22	<.02		0.13	0.001	<.04	51.7	<.002	<.005	<.005	0.008	0.24		<.005	13.7	0.01	<.002	2	<.005	<.04	<.02	22	<.02		2.31		0.267	<.005	<.005	<.02	0.02
13/03/96	<.003	0.36	<.02		0.138	<.001	<.04	59.2	<.002	<.005	<.005	<.002	0.13		<.005	15.6	<.01	<.002	3	<.005	<.04	<.02	18	<.03		1.32		0.305	<.005	<.005	<.02	<.01
9/4/1996	<.003	0.17	<.02		0.153	0.001	<.04	59.8	<.002	<.005	<.005	0.018	0.85		<.005	15.5	<.01	0.004	3	<.005	0.17	<.02	21	<.03		2.24		0.306	0.019	<.005	0.05	<.01
22/04/96	<.003	0.23	<.02		0.128	<.001	<.04	52	<.002	<.005	<.005	0.012	0.9		<.005	14.9	<.01	<.002	2	0.011	0.09	<.02	22	<.03		2.02		0.257	0.008	<.005	<.03	<.01
15/05/96	<.003		<.02		<.02				<.002			0.007	2.67					<.002		<.005		<.02		<.03	<.02							0.02
29/05/96	<.003		<.02		0.21				<.002			0.01						<.002		0.009		<.02		<.03	<.02							0.03
27/11/96	<.003	0.78	<.02		0.161	0.005	<.04	64.1	<.002	<.005	<.005	0.006	0.31		<.005	18.4	0.01	0.003	6	<.005	0.23	<.02	14	<.03		4.3		0.306	<.005	<.005	<.03	0.05
19/12/96	<.003	0.18	<.02		0.156	0.005	<.04	91.8	<.002	<.005	<.005	0.004	0.15		<.005	25.8	<.01	<.002	8	<.005	0.08	<.02	36	<.03		4.4		0.436	<.005	<.005	<.03	0.06
14/01/97	<.003	0.22	<.02	0.08	0.162	<.001	<.04	74.5	<.002	<.005	<.005	0.008	0.04		<.005	19.5	<.01	0.006	3	<.005	<.04	<.02	14	<.03		4.35		0.351	<.005	0.005	<.03	0.01
26/02/97	<.003	0.05	<.02	0.14	0.274	0.002	<.04	78.8	<.002	<.005	0.01	<.002	0.08		<.005	15.7	<.01	0.019	5	<.005	0.11	<.02	25	<.02		6.31		0.398	<.005	<.03	<.02	0.01
10/3/1997	<.003	0.55	<.02	0.07	0.157	0.003	<.04	75.9	<.002	<.005	<.005	0.002	0.02		<.005	18.5	<.01	0.011	4	<.005	0.51	<.02	20	<.03	<.005	3.1	<.01	0.313	<.005	<.005	<.03	<.01
14/04/97	<.003	0.37	<.02	0.25	0.207	0.018	<.04	83	<.002	<.005	<.005	0.024	0.77	2.5	<.005	23.5	<.01	0.005	6	<.005	0.12	<.02	40	<.03	<.03	7.2	<.01	0.391	0.011	<.005	<.03	<.01
12/5/1997	<.003	2.3	<.02	<.05	0.323	<.001	<.04	123.5	<.002	<.005	<.005	0.023	5.88	<1	<.005	48.1	0.15	<.002	5	<.005	<.04	0.09	79	<.03	<.03	5.3	<.01	0.525	0.062	<.005	<.03	0.08
21/05/97	<.003	0.11	0.04	0.25	0.166	<.001	<.04	108.7	<.002	<.005	<.005	0.006	0.88	<1	<.005	37.7	0.03	0.003	5	<.005	0.06	<.02	78	<.03	<.03	3.2	<.01	0.503	0.014	<.005	0.03	0.02
30/06/97	<.003	0.19	<.02	0.36	0.228	<.001	<.04	102.3	<.002	<.005	<.005	0.029	1.72	2	0.018	25.9	<.01	<.002	7	<.005	0.39	<.02	79	<.03	<.03	6.1	<.01	0.487	0.052	0.015	<.03	0.11
22/07/97	<.003	0.2	0.02	0.24	0.243	<.001	<.04	82.2	<.002	<.005	0.008	0.036	0.91	<1	<.005	20.7	<.01	0.014	8	<.005	0.48	<.02	84	0.04	<.03	5.5	<.01	0.488	0.032	<.005	<.03	0.08
11/8/1997	<.003	0.08	<.02	0.47	0.207	<.001	0.05	74.1	<.002	<.005	0.008	0.045	0.54	2	<.005	19.1	<.01	0.021	8	<.005	<.04	0.02	84	<.03	<.03	5.2	<.01	0.398	0.02	0.009	0.06	0.07
30/09/97	<.003	0.11	<.02	0.15	0.223	<.001	<.04	82.6	<.002	<.005	<.005	0.032	0.86	<1	0.011	20.9	<.01	<.002	7	<.005	<.04	<.02	37	<.03	<.03	3.8	<.01	0.351	0.043	0.005	<.03	0.03
20/10/97	<.003	0.27	<.02	<.05	0.289	<.001	<.04	84	<.002	<.005	0.008	0.007	0.91	2	<.005	21.2	0.02	<.002	5	<.005	<.04	<.02	27	<.03	<.03	3.9	<.01	0.396	0.013	<.005	<.03	0.02
19/11/97	<.003	0.06	<.02	<.05	0.294	0.001	<.04	91.1	<.002	<.005	<.005	0.012	0.54	2	<.005	21.2	0.01	<.002	6	<.005	<.04	<.02	30	<.03	<.03	3.9	<.01	0.433	0.005	0.017	<.03	0.05
29/12/97	<.003	0.37	<.02	0.23	0.24	<.001	<.04	81	<.002	<.005	0.02	0.039	1.09	2	<.005	20.7	0.04	<.002	6	<.005	<.04	<.02	29	<.03	<.03	4.4	<.01	0.403	0.024	0.012	<.03	<.01
12/1/1998	<.003	<.05	<.02	<.05	0.295	<.001	<.04	78.7	<.002	0.007	<.005	0.008	0.21	<1	<.005	19.8	<.01	<.002	4	<.005	<.04	<.02	27	<.03	<.03	3.4	<.01	0.392	<.005	<.005	<.03	0.02
17/03/98	<.003	0.14	<.02	<.05	0.351	<.001	<.04	103.1	<.002	<.005	0.028	0.018	0.18	1	0.006	29.2	<.01	0.01	8	<.005	<.04	<.02	28	<.03	<.03	4.8	<.01	0.523	0.008	0.018	<.03	<.01
18/05/98	<.003	0.31	0.04	0.22	0.201	<.001	<.04	86.9	<.002	<.005	0.008	0.032	0.19	1	<.005	22.5	0.02	<.002	6	0.007	0.1	<.02	78	0.08	<.03	4.5	<.01	0.415	<.005	<.005	<.03	0.1
29/06/98	<.003	0.11	0.03	<.05	0.333	0.001	<.04	94.6	<.002	0.009	0.066	0.022	0.1	2	<.005	23.6	<.01	0.012	6	0.008	<.04	<.02	38	<.03	<.03	5.2	<.01	0.466	0.041	<.005	<.03	0.01
14/09/98	<.003	0.1	<.02	0.06	0.32	<.001	<.04	106	<.002	0.009	<.005	0.026	0.23	2	<.005	28.7	0.04	0.008	8	0.02	1.18	<.02	41.6	<.03	<.03	5.1	<.01	0.556	0.028	<.005	<.03	0.03
31/12/98	<.003	0.22	<.005	0.28	0.294	<.001	<.04	133.8	<.001	0.012	<.005	0.057	0.38	3	<.005	41.4	<.01	0.008	11	<.005	13.49	<.01	51	<.03	<.03	6.4	<.01	0.705	0.021	<.005	<.03	0.04
17/03/99	<.003	0.57	<.005	0.21	0.352	<.001	<.04	141.3	<.001	<.005	0.335	0.036	0.5	3	<.005	49.4	0.02	<.002	10	<.005	1.27	<.01	67	<.03	<.03	5.7	<.01	0.721	0.017	<.005	<.03	0.07
18/06/99	<.003	0.3	<.005	0.11	0.342	0.001	<.04	137.5	<.001	<.005	<.005	0.032	1.61	4	0.076	44.3	<.01	0.031	11	<.005	0.12	0.02	52	0.04	<.03	6.2	<.01	0.667	0.058	0.015	<.03	0.11
10/9/1999	<.003	0.11	<.005	<.05	0.234	<.001	<.04	88.4	<.001	<.005	<.005	0.017	0.03	2	0.015	22.4	0.1	0.004	5	<.005	0.18	<.01	58	<.03	<.005	3.2	<.01	0.425	0.013	0.013	<.03	0.24
12/10/1999	<.003	0.16	<.005	0.06	0.308	<.001	<.04	110.8	0.005	<.005	<.005	0.027	0.18	3	<.005	29.1	<.01	<.002	8	0.007	<.04	0.03	59	<.03	<.005	5.1	<.01	0.528	0.035	<.005	<.03	<.01
13/12/99	<.003	0.49	<.005	0.09	0.328	<.001	<.04	132.3	0.003	<.005	<.005	0.036	0.06	4	0.006	32.9	0.01	<.002	6	0.018	<.04	0.02	64	<.03	<.005	3.7	<.01	0.592	0.01	0.013	<.03	0.05
22/03/00	<.003	0.41	<.005	0.05	0.391	<.001	<.05	123.6	0.003	0.009	<.005	0.012	0.25	3	<.005	32.4	<.01	<.002	<1	<.005	<1	<.01	81	<.03	<.005	5.4	<.01	0.651	0.012	<.005	<.03	<.01
20/06/00	<.003	0.44	<.005	<.05	0.249	0.003	<.05	213.4	<.001	<.005	<.005	0.035	0.29	6	<.005	99.9	0.03	0.012	9	0.028	5	<.01	<1	0.04	<.005	4.5	<.01	0.867	0.064	<.005	<.03	0.25
12/9/2000	0.005	0.47	<.005	<.05	0.194	0.001	<.05	224.8	<.001	<.005	<.005	0.061	0.66	4	<.005	87.6	0.02	0.005	10	0.073	2	<.01		<.03	<.005	4	<.01	0.806	0.057	0.015	<.03	1.02
12/11/2000	<0.003	0.14	0.045	<0.05	0.214	<0.001	<0.05	206.8	<0.001	<0.005	<0.005	0.013	0.16	4	0.015	82.9	0.06	<0.002	10	0.024	0.03	0.02	174	<0.03	0.042	6.3	0.05	0.778	<0.005	<0.005	<0.03	0.54
5/3/2001	<.003	0.762	<.005	0.089	0.394	<.001	<.05	186	<.001	<.005	<.005	0.029	<.01	6.94	<.005	50	0.02	<.002	13	<.005	<1	<.01	127	<.03	<.005	4.6	<.01	0.78	0.02	0.005	<.03	0.09
13/06/01	<.003	0.07	0.046	0.48	0.188	<.001	<.05	241.9	<.001	<.005	0.105	0.006	0.09	5	0.031	119.2	0.61	0.004	8	0.113	<1	<.01	257	<.03	<.005	6.1	<.01	0.892	0.008	0.005	<.03	3.35
8/9/2001	<0.003	1.46	0.01	<0.05	0.189	<0.001	<0.05	220.9	<0.001	<0.005	0.006	0.009	2.15	6	0.019	104.2	0.03	<0.002	8	0.087	<1	0.03	214	<0.03	0.005	7.4	<0.01	0.809	0.033	<0.005	0.04	1.41
12/11/2001	<0.003	0.14	0.045	<0.05	0.214	<0.001	<0.05	206.8	<0.001	<0.005	<0.005	0.013	0.16	4	0.015	82.9	0.06	<0.002	10	0.024	0.03	0.02	174	<0.03	0.042	6.3	0.05	0.778	<0.005	<0.005	<0.03	0.54
STATION: V2A																																
12/5/1997	<.003	0.07	<.02	0.06	0.158	<.001	<.04	70.6	<.002	<.005	<.005	<.002	0.41	<1	<.005	18.2	0.02	<.002	4	<.005	<.04	<.02	26	<.03	<.03	3.6	<.01	0.309	<.005	<.005	<.03	<.01
30/06/97	<.003	0.19	<.02	0.19	0.135	<.001	<.04	121.1	<.002	<.005	<.005	0.029	<.01	2	0.011	35.2	<.01	<.002	7	<.005	0.93	<.02	108	<.03	<.03	4.4	<.01	0.5	0.019	<.005	<.03	0.11
22/07/97	<.003	0.21	0.03	0.16	0.164	<.001	<.04	117.2	<.002	0.005	<.005	0.034	0.28	1	0.011	35.1	<.01	0.003	6	<.005	<.04	<.02	26	<.03	<.03	5.2	<.01	0.591	0.019	<.005	<.03	0.09
11/8/1997	<.003	0.2	<.02	0.12	0.151	<.001	<.04	112.4	<.002	<.005	0.005	0.041	0.11	3	<.005	35.3	<.01	<.002	7	<.005	<.04	<.02	29	<.03	<.03	6.4	<.01	0.521	0.013	<.005	<.03	0.1
30/09/97	<.003	0.07	<.02	0.1	0.164	<.001	<.04	104.9	<.002	<.005	<.005	0.029	0.15	2	0.007	28.8	<.01	<.002	7	<.005	<.04	<.02	65	0.03	<.03	3.5	<.01	0.384	0.022	0.008	0.03	0.03
29/06/98	<.003	<.05	<.02	<.05	0.268	<.001	<.04	105.8	<.002	<.005	0.052	0.019	<.01	2	<.005	28.2	<.01	0.004	8	<.005	<.04	<.02	41	<.03	<.03	5.7	<.01	0.497	0.019	0.011	<.03	0.01
14/09/98	<.003	0.1	<.02	<.05	0.186	<.001	<.04	93.5	<.002	<.005	0.031	0.028	0.17	2	<.005	23.9	<.01	0.004	6	<.005	0.98	<.02	38.6	<.03	<.03	4.3	<.01	0.43	0.022	<.005	<.03	0.02
3/7/1999	<.003	0.52	<.005	0.44	0.158	<.001	<.04	181.7	<.001	0.008	<.005	0.033	0.61	4	0.024	69.5	0.02	0.014	7	0.007	<.04	<.01	136	<.03	<.03	6.1	<.01	0.836	<.005	0.007	<.03	0.05
10/9/1999	<.003	0.2	<.005	<.05	0.187	<.001	<.04	154.9	0.001	<.005	0.008	0.024	0.05	3	0.016	52.2	0.01	<.002	6	0.006	<.04	0.02	123	<.03	<.005	3.7	<.01	0.611	0.016	<.005	<.03	0.08
12/10/1999	<.003	0.15	0.007	0.05	0.212	<.001	<.04	120.8	0.002	<.005	0.009	0.031	0.15	3	<.005	38.3	<.01	<.002	8	0.009	<.04	<.01	80	<.03	<.005	4.5	<.01	0.502	0.032	<.005	<.03	0.02
13/06/01	<.003	0.08	0.014	0.29	0.198	<.001	<.05	247.3	<.001	<.005	0.05	0.008	0.07	5	0.03	122	0.58	<.002	9	0.158	<1	<.01	265	<.03	0.015	6.1	0.19	0.913	<.005	0.006	<.03	3.37
STATION: V19																																
26/11/94			<0.04									<0.002										<0.03										0.01
31/01/95			<0.040									<0.002										<0.030										0.08
1/2/1995												<0.002										<0.03										0.08
22/02/95			<0.0005									<0.002	0.06									<0.03										0.04
11/3/1995			<0.0005									<0.002	0.05									<0.03										0.02
9/5/1995			<0.0005									<0.002	0.25									<0.030										0.05
14/06/95			<0.020									0.016	1.59									<0.020										0.18
20/07/95			<0.020									0.009	0.42									<0.020										0.28
23/08/95			<0.020									0.014	0.36									<0.020										0.23
18/09/95			<0.020									0.017	1.76									<0.020										0.25
16/10/95			<0.020									0.01	1.14									<0.020										0.22
14/11/95			<0.020									0.006	0.19									<0.020										0.13
12/5/1997	<.003	0.21	<.02	0.07	0.097	<.001	<.04	24.8	<.002	<.005	<.005	<.002	0.49	<1	<.005	3.9	0.01	<.002	2	<.005	<.04	<.02	5	<.03	<.03	4.8	<.01	0.112	<.005	<.005	<.03	0.07
21/05/97	<.003	<.05	0.04	0.22	0.078	<.001	<.04	26.6	<.002	<.005	<.005	0.003	0.1	<1	<.005	4.3	0.02	<.002	2	<.005	<.04	<.02	7	<.03	<.03	3.9	<.01	0.128	<.005	<.005	<.03	0.07
18/05/99	<.003	0.51	<.005	<.05	0.148	0.002	<.04	19.9	<.001	<.005	0.007	0.015	0.82	1	<.005	3.3	0.02	<.002	2	<.005	2.13	<.01		<.03	<.03	5	<.01	0.099	<.005	0.009	<.03	0.19
STATION: V24B																																
22/04/96	<.003	0.79	<.02		0.101	<.001	<.04	37.3	<.002	<.005	<.005	0.011	1.24		<.005	12.5	0.19	0.006	4	0.017	0.06	<.02	40	<.03		1.61		0.309	0.017	<.005	<.03	0.01
15/05/96	<.003		<.02		0.078				<.002			<.002	1.01					<.002		<.005		<.02		<.03								0.02
4/6/1996	<.003	0.22	<.02		0.083	<.001	<.04	31.5	<.002	<.005	<.005	0.009	0.67		<.005	7.8	0.11	<.002	3	<.005	<.04	<.02	40	<.03		0.9		0.205	0.007	<.005	<.03	0.04
12/6/1996	<.003	<.05	<.02		0.02	<.001	<.04	6.1	<.002	<.005	<.005	<.002	0.42		<.005	1.3	0.04	0.002	<1	<.005	<.04	<.02	2	<.02	<.03	1.52		0.043	<.005	<.005	<.03	0.02
12/6/1996	<.003	0.07	<.02		0.073	0.002	<.04	31.7	<.002	<.005	<.005	0.01	0.36		<.005	7.3	0.05	<.002	3	<.005	<.04	<.02	13		<.03	1.9		0.191	<.005	<.005	<.03	0.05
21/06/96	<.003	<.05	<.02		0.045	0.001	<.04	31.7	<.002	<.005	<.005	0.005	0.21		<.005	6.8	0.01	<.002	2	<.005	<.04	<.02	40	<.03		2.01		0.183	<.005	<.005	<.03	0.06
2/7/1996	<.003	<.05	<.02		0.115	<.001	<.04	44.9	<.002	<.005	<.005	0.002	0.15		<.005	9	0.01	<.002	2	<.005	0.13	<.02	32	<.03		5.5		0.239	<.005	<.005	<.03	0.11
6/7/1996	<.003	0.19	<.02		0.055	<.001	<.04	32.3	<.002	<.005	<.005	<.002	0.7		<.005	6.7	0.06	<.002	2	<.005	0.05	<.02	24	<.03		4.1		0.182	0.008	<.005	<.03	0.04

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/07/96	<.003	<.05	<.02		0.054	<.001	<.04	33.4	<.002	<.005	<.005	0.005	0.16	
23/07/96	<.003	0.08	<.02		0.004	0.001	<.04	29.2	<.002	0.006	<.005	0.005	0.19	
29/07/96	<.003	<.05	<.02		0.012	<.001	<.04	37	<.002	<.005	<.005	0.008	0.11	
5/8/1996	<.003	0.05	<.02		0.095	0.001	<.04	35.9	<.002	<.005	<.005	0.009	0.11	
14/08/96	<.003	0.08	<.02		0.142	0.002	<.04	40.7	<.002	<.005	<.005	0.017	0.26	
20/08/96	<.003	0.05	<.02		0.096	0.001	<.04	48.5	<.002	<.005	<.005	0.005	0.08	
27/08/96	<.003	0.05	<.02		0.153	<.001	<.04	60.1	<.002	<.005	<.005	0.008	0.79	
3/9/1996	<.003	0.08	<.02		0.189	0.002	<.04	70.1	<.002	<.005	<.005	0.012	0.12	
11/9/1996	<.003	0.05	<.02		0.188	<.001	<.04	70.8	<.002	<.005	<.005	0.012	0.2	
19/09/96	<.003	0.05	<.02		0.09	0.001	<.04	77	<.002	<.005	<.005	0.004	0.02	
24/09/96	<.003	0.05	<.02		0.047	0.004	<.04	74.5	<.002	<.005	0.005	0.008	0.75	
30/09/96	<.003	0.05	<.02		0.139	0.003	<.04	85.6	<.002	<.005	<.005	0.012	0.1	
7/10/1996	<.003	0.05	<.02		0.084	0.001	<.04	84.6	<.002	<.005	<.005	0.007	0.1	
15/10/96	<.003	0.05	<.02		0.102	0.001	<.04	83.4	<.002	<.005	<.005	0.03	0.32	
29/10/96	<.003	0.05	<.02		0.116	0.003	<.04	84.9	<.002	<.005	<.005	0.021	0.23	
5/11/1996	<.003	0.05	<.02		0.046	0.003	<.04	96.1	<.002	<.005	<.005	0.01	0.13	
12/11/1996	<.003	0.05	<.02		0.085	0.002	<.04	82.7	<.002	<.005	<.005	0.012	0.1	
25/11/96	<.003	0.05	<.02		0.087	0.007	<.04	147.1	0.003	<.005	<.005	0.005	0.51	
11/12/1996	<.003	2.02	0.03		0.203	0.003	<.04	103.2	<.002	<.005	<.005	0.022	1.46	
14/04/97	<.003	0.14	<.02	0.19	0.07	0.002	<.04	72.1	<.002	0.035	<.005	0.042	0.33	1.5
22/04/97	<.003	4.23	<.02	0.27	0.183	0.02	<.04	44.8	<.002	0.039	<.005	0.112	8.22	<1
28/04/97	<.003	1.65	0.07	0.06	0.158	<.001	0.09	39.2	0.003	0.092	0.008	0.049	1.34	1.5
12/5/1997	<.003	6.18	<.02	0.08	0.153	<.001	<.04	34.4	<.002	<.005	0.008	0.052	10.67	<1
20/05/97	<.003	5.45	0.05	0.27	0.147	0.001	<.04	17.7	0.003	<.005	0.007	0.041	10.73	1
26/05/97	<.003	3.39	<.02	<.05	0.102	<.001	<.04	22.5	0.003	<.005	0.008	0.02	6.6	<1
3/6/1997	<.003	0.26	<.02	<.05	0.053	<.001	<.04	28.2	<.002	<.005	<.005	0.003	0.98	<1
10/6/1997	<.003	0.26	<.02	<.05	0.057	<.001	<.04	26.7	<.002	<.005	<.005	0.005	1.31	<1
17/06/97	<.003	0.22	<.02	0.06	0.05	<.001	<.04	28.8	<.002	<.005	<.005	0.005	0.98	<1
23/06/97	<.003	0.07	<.02	0.09	0.055	<.001	<.04	29.9	0.003	0.015	0.009	0.011	0.41	<1
30/06/97	<.003	0.23	0.03	0.06	0.074	<.001	<.04	40.2	<.002	<.005	<.005	0.023	<.01	1
8/7/1997	<.003	0.7	<.02	0.28	0.079	<.001	<.04	34.1	<.002	0.008	0.028	0.028	1.58	2
14/07/97	<.003	0.19	0.03	0.33	0.087	<.001	<.04	35.5	<.002	<.005	0.018	0.032	0.21	<1
22/07/97	<.003	0.28	<.02	<.05	0.073	<.001	<.04	34.2	0.007	0.009	<.005	0.033	0.7	<1
28/07/97	<.003	0.11	<.02	0.11	0.07	<.001	<.04	35	<.002	0.017	0.038	0.024	0.29	3
4/8/1997	<.003	<.05	<.02	0.3	0.073	<.001	<.04	39	<.002	0.007	<.005	0.034	0.11	2
11/8/1997	<.003	0.22	<.02	0.29	0.072	<.001	0.05	42.2	<.002	<.005	0.019	0.038	0.56	2
19/08/97	<.003	0.32	<.02	<.05	0.07	<.001	<.04	41.7	<.002	<.005	<.005	0.025	0.46	<1
25/08/97	<.003	0.08	<.02	<.05	0.093	<.001	<.04	65.4	<.002	<.005	0.009	0.012	0.14	3
2/9/1997	<.003	0.16	<.02	<.05	0.074	<.001	0.05	69.1	<.002	0.008	0.025	0.016	0.11	2
9/9/1997	<.003	0.18	<.02	<.05	0.07	<.001	0.05	90.9	<.002	<.005	0.012	0.028	0.23	3
16/09/97	<.003	0.05	<.02	0.1	0.07	<.001	<.04	102.7	<.002	0.011	<.005	0.007	0.13	2
23/09/97	<.003	0.08	<.02	0.11	0.068	<.001	<.04	99.4	<.002	0.007	0.01	0.053	0.21	4
30/09/97	<.003	0.12	<.02	<.05	0.091	<.001	<.04	91.1	<.002	<.005	<.005	0.028	0.12	4
7/10/1997	<.003	0.1	<.02	<.05	0.135	<.001	0.11	116.5	<.002	<.005	<.005	0.011	0.11	4
14/10/97	<.003	0.28	<.02	0.08	0.065	<.001	<.04	169.8	<.002	<.005	<.005	0.012	0.09	5
20/10/97	<.003	0.23	<.02	<.05	0.134	<.001	<.04	179.4	<.002	<.005	<.005	0.011	0.4	6
28/10/97	<.003	<.05	<.02	0.07	0.122	<.001	<.04	184	<.002	0.044	<.005	0.012	0.25	8
4/11/1997	<.003	<.05	<.02	<.05	0.087	<.001	<.04	120.5	0.003	0.006	0.006	0.016	0.09	5
13/11/97	<.003	<.05	<.02	0.08	0.127	<.001	<.04	147.9	<.002	<.005	0.006	0.014	0.07	6
19/11/97	<.003	<.05	<.02	<.05	0.123	<.001	<.04	99.9	<.002	<.005	<.005	0.021	0.54	<1
25/11/97	<.003	<.05	<.02	<.05	0.139	<.001	<.04	153.1	<.002	<.005	0.009	0.028	0.2	6
2/12/1997	<.003	<.05	<.02	<.05	0.103	<.001	<.04	101.4	<.002	0.029	<.005	0.01	<.01	<1
9/12/1997	<.003	0.28	<.02	<.05	0.148	<.001	<.04	169.8	<.002	<.005	<.005	0.024	0.55	7
16/12/97	<.003	<.05	<.02	<.05	0.109	<.001	0.05	101.3	<.002	<.005	<.005	0.012	0.15	<1
22/12/97	<.003	0.1	<.02	<.05	0.081	<.001	<.04	151	0.003	<.005	<.005	0.022	0.24	4
30/12/97	<.003	<.05	<.02	0.09	0.048	<.001	<.04	98.3	<.002	0.005	<.005	0.025	0.08	<1
6/1/1998	<.003	1.31	<.02	0.23	0.116	<.001	<.04	131.8	<.002	<.005	<.005	0.062	2.71	<1
12/1/1998	<.003	<.05	0.03	<.05	0.107	<.001	<.04	95.2	<.002	0.032	<.005	0.017	0.04	<1
18/05/98	<.003	4.59	0.04	0.14	0.131	<.001	<.04	26.5	<.002	<.005	0.024	0.055	8.3	2
31/05/98	<.003	0.44	<.02	<.05	0.132	0.002	<.04	47.3	<.002	0.007	0.028	0.027	0.79	1
30/06/98	<.003	<.05	<.02	<.05	0.199	<.001	<.04	87.8	<.002	<.005	0.04	0.018	<.01	2
11/8/1998	<.003	0.16	<.02	0.27	0.041	<.001	<.04	74.7	<.002	<.005	<.005	0.049	0.03	<1
18/05/99	<.003	5.26	<.005	<.05	0.225	0.002	<.04	29.1	<.001	<.005	<.005	0.074	9.34	3
27/05/99	<.003	6.93	0.011	<.05	0.215	<.001	<.04	32.3	0.009	<.005	<.005	0.052	11.65	3
3/7/1999	<.003	1.01	<.005	0.42	0.058	<.001	<.04	23.5	0.008	<.005	<.005	0.023	1.79	2
12/8/1999	<.003	<.05	<.005	0.06	0.148	<.001	<.04	55.6	<.001	0.049	<.005	0.026	0.04	<1
10/9/1999	<.003	0.2	<.005	<.05	0.119	<.001	<.04	41.7	0.002	0.043	0.017	0.044	0.03	2
20/06/00	<.003	0.25	<.005	0.05	0.184	0.002	<.05	47.8	<.001	<.005	<.005	0.025	0.12	3
25/07/00	<.003	0.25	<.005	<.05	0.155	0.001	<.05	33.1	<.001	0.03	0.542	0.023	0.72	3
28/08/00	<.003	2	<.005	<.05	0.17	<.001	<.05	36.8	<.001	<.005	<.005	0.011	3.32	2
25/09/00	<0.01	0.29	<0.2	<0.1	0.08	<0.005	<0.1	38.3	<0.001	<0.01	<0.01	<0.01	0.34	<2
29/10/00	<.003	0.62	<.005	<.05	0.248	0.001	<.05	42.9	<.001	<.005	0.012	0.054	0.8	4
18/11/00	<0.01	0.17	<0.2	<0.1	0.07	<0.005	<0.1	50.6	<0.001	<0.01	<0.01	0.01	0.1	<2
14/12/00	<0.01	<0.05	<0.2	<0.1	0.08	<0.005	<0.1	56.5	<0.001	<0.01	<0.01	<0.01	0.1	<2
14/05/01	<.003	0.1	<.005	<.05	0.208	<.001	<.05	67.4	<.001	<.005	<.005	0.01	0.03	3
17/06/01	<.003	9.63	<.005	0.09	0.384	<.001	<.05	23.7	<.001	<.005	0.019	0.041	15.05	3
14/07/01	<.003	0.61	0.022	0.09	0.238	<.001	<.05	33	<.001	<.005	<.005	0.012	0.69	1
14/08/01	<0.003	0.16	<0.005	<0.05	0.304	<0.001	<0.05	52.1	<0.001	<0.005	<0.005	0.017	0.07	1
17/09/01	<0.003	0.14	<0.005	<0.05	0.215	<0.001	<0.05	52.8	<0.001	<0.005	<0.005	0.008	0.1	1
15/10/01	<0.003	0.1	<0.005	0.11	0.261	<0.001	<0.05	50.8	<0.001	<0.005	<0.005	0.004	<0.01	1
STATION: V17A														
22/04/96	<.003	0.78	0.02		0.161	<.001	<.04	14	<.002	<.005	<.005	0.012	1.79	
15/05/96	<.003		<.02		0.58				<.002			<.002	1.33	
12/6/1996	<.003	0.08	<.02		0.021	0.001	<.04	5.8	<.002	<.005	<.005	0.003	0.41	
15/07/96	<.003	<.05	<.02		0.102	<.001	<.04	8.1	<.002	<.005	<.005	<.002	0.17	
14/08/96	<.003	0.05	<.02		0.031	<.001	<.04	11.5	<.002	<.005	<.005	0.014	0.18	
11/9/1996	<.003	0.05	<.02		0.086	<.001	<.04	11.3	<.002	<.005	<.005	<.002	0.03	
21/10/96	<.003	0.05	<.02		0.065	0.001	<.04	16.8	<.002	<.005	<.005	0.033	0.58	
21/11/96	<.003	<.05	<.02		0.074	0.002	<.04	9.3	<.002	<.005	<.005	<.002	0.25	
14/04/97	<.003	0.99	<.02	0.21	0.237	0.018	<.04	24.3	<.002	<.005	<.005	0.01	2.03	<1
12/5/1997	<.003	0.27	<.02	0.08	0.07	<.001	<.04	14.6	0.002	<.005	<.005	0.006	0.72	<1
30/06/97	<.003	0.1	<.02	0.08	0.028	<.001	<.04	11.9	<.002	<.005	0.013	0.021	0.44	<1
22/07/97	<.003	0.09	<.02	0.1	0.024	<.001	<.04	9.3	<.002	<.005	<.005	0.014	0.25	<1
11/8/1997	<.003	0.09	<.02	0.24	0.021	<.001	<.04	9.8	<.002	<.005	0.007	0.017	0.01	<1

Date	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/07/96	<.005	6.9	0.05	0.005	2	<.005	0.08	<.02	32	<.03		4.4		0.192	<.005	<.005	<.03	0.11
23/07/96	<.005	5.8	0.03	<.002	2	<.005	<.04	<.02	19	0.03		4.4		0.143	<.005	<.005	<.03	0.06
29/07/96	<.005	7.5	0.03	<.002	4	<.005	<.04	<.02	26	<.03		3.6		0.192	<.005	<.005	<.03	0.1
5/8/1996	<.005	7.4	0.04	<.002	3	<.005	0.17	<.02	31	<.03		5		0.192	<.005	<.005	<.03	0.1
14/08/96	<.005	9.4	0.04	<.002	3	0.01	<.04	<.02	36	<.03		4.4		0.251	<.005	<.005	<.03	0.06
20/08/96	<.005	10.7	0.05	<.002	3	<.005	<.04	<.02	47	<.03		4.9		0.283	<.005	<.005	<.03	0.07
27/08/96	<.005	17	0.16	<.002	7	<.005	0.08	<.02	43	<.03		4.4		0.467	0.008	<.005	<.03	0.05
3/9/1996	<.005	20.2	0.08	<.002	2	<.005	0.15	<.02	58	<.03		4.9		0.455	<.005	<.005	<.03	0.1
11/9/1996	<.005	18.9	0.07	<.002	3	0.017	<.04	<.02	85	<.03		4.8		0.497	<.005	<.005	<.03	0.13
19/09/96	<.005	23.5	0.1	<.002	2	<.005	<.04	<.02	95	<.03		3.2		0.593	<.005	<.005	<.03	0.07
24/09/96	<.005	23.1	0.15	<.002	10	0.008	<.04	<.02	92	<.03		4.7		0.584	<.005	<.005	<.03	0.07
30/09/96	<.005	23.6	0.17	<.002	11	<.005	<.04	<.02	108	<.03		3.9		0.553	<.005	<.005	<.03	0.1
7/10/1996	<.005	25.7	0.13	<.002	12	<.005	<.04	<.02	103	<.03		3.8		0.632	<.005	<.005	<.03	0.05
15/10/96	<.005	29.8	0.25	<.002	12	<.005	<.04	<.02	87	<.03		3.5		0.675	<.005	<.005	<.03	0.08
29/10/96	<.005	27.7	0.21	<.002	12	<.005	0.15	<.02	92	<.03		5.3		0.625	<.005	<.005	<.03	0.19
5/11/1996	<.005	34.9	0.48	0.002	14	<.005	<.04	<.02	133	<.03		3.9		0.759	<.005	<.005	<.03	0.09
12/11/1996	<.005	27.8	0.27	<.002	12	<.005	<.04	<.02	105	<.03		4.5		0.638	<.005	<.005	<.03	0.17
25/11/96	<.005	26.5	5.74	<.002	40	0.01	<.04	<.02	169	<.03		3.6		0.469	<.005	<.005	<.03	0.19
11/12/1996	<.005	41.2	1.37	<.002	12	<.005	0.18	<.02	132	<.03		2.8		1.912	0.025	<.005	<.03	0.12
14/04/97	<.005	18.2	0.79	<.002	7	0.013	0.07	<.02	81	<.03	<.03	4.9	<.01	0.377	<.005	<.005	<.03	0.64
22/04/97	<.005	13	0.61	<.002	4	0.016	0.11	0.13	50	<.03	<.03	7.5	0.02	0.246	0.108	0.014	<.03	0.67
28/04/97	0.046	10.3	0.27	<.002	4	0.016	0.12	0.08	32	0.04	<.03	2.65	0.07	0.222	0.041	0.013	<.03	0.1
12/5/1997	<.005	10.8	0.31	<.002	3	0.017	0.15	0.02	24	<.03	<.03	8.6	<.01	0.187	0.147	<.005	<.03	0.12
20/05/97	<.005	6	0.26	0.005	2	<.005	0.08	0.23	14	<.03	<.03	7.8	<.01	0.109	0.13	0.007	<.03	0.1
26/05/97	<.005	6.3	0.18	<.002	2	<.005	<.04	0.15	16	<.03	<.03	5.2	0.02	0.125	0.096	<.005	<.03	0.07
3/6/1997	<.005	6	0.12	<.002	2	<.005	<.04	<.02	21	<.03	<.03	2	<.01	0.138	0.007	<.005	<.03	0.05
10/6/1997	<.005	5.9	0.11	<.002	2	<.005	<.04	<.02	23	<.03	<.03	2.7	<.01	0.141	0.008	<.005	<.03	0.06
17/06/97	<.005	6.5	0.08	<.002	3	<.005	<.04	<.02	23	<.03	<.03	2.6	<.01	0.151	<.005	<.005	<.03	0.05
23/06/97	<.005	6.6	0.08	<.002	3	<.005	0.17	<.02	21	<.03	<.03	2.7	0.02	0.181	<.005	<.005	<.03	0.06
30/06/97	0.007	8.8	0.07	<.002	4	<.005	0.53	<.02	17	<.03	<.03	5.1	<.01	0.21	0.006	<.005	<.03	0.25
8/7/1997	<.005	7.5	0.06	<.002	4	<.005	0.47	0.04	15	<.03	<.03	4.8	<.01	0.191	0.02	<.005	<.03	0.15
14/07/97	<.005	7.4	0.04	<.002	5	<.005	<.04	<.02	21	<.03	<.03	4.4	<.01	0.193	0.013	<.005	0.12	0.23
22/07/97	<.005	7.5	0.1	0.01	5	<.005	<.04	<.02	25	<.03	<.03	4.4	<.01	0.21	0.009	0.019	<.03	0.04
28/07/97	0.016	7.9	0.04	0.012	5	<.005	<.04	<.02	10	<.03	<.03	3.8	<.01	0.205	<.005	<.005	0.09	0.13
4/8/1997	<.005	8.6	0.03	0.005	5	<.005	1.38	<.02	65	<.03	<.03	4	<.01	0.219	0.007	0.018	<.03	0.14
11/8/1997	<.005	9.7	0.05	<.002	6	<.005	0.24	<.02	17	<.03	<.03	5.7	<.01	0.234	<.005	<.005	<.03	0.18
19/08/97	<.005	11.3	0.03	0.005	5	0.01	<.04	<.02	21	<.03	<.03	3.1	<.01	0.24	0.013	0.013	<.03	0.09
25/08/97	<.005	19.5	0.03	<.002	8	<.005	<.04	<.02	23	<.03	<.03	3.2	<.01	0.426	<.005	0.006	<.03	0.11
2/9/1997	0.01	29	0.11	0.005	9	<.005	<.04	<.02	16	<.03	<.03	2.3	<.01	0.494	<.005	<.005	<.03	0.11
9/9/1997	0.005	39.9	0.25	0.011	11	0.008	<.04	<.02	21	<.03	<.03	1.6	<.01	0.683	<.005	0.013	<.03	0.12
16/09/97	<.005	38.4	0.14	0.009	10	0.007	<.04	<.02	121	<.03	<.03	0.7	<.01	0.835	<.005	<.005	<.03	0.06
23/09/97	<.005	36.5	0.08	0.008	11	0.012	0.34	<.02	139	<.03	<.03	1.4	<.01	0.862	0.016	<.005	<.03	0.08
30/09/97	0.012	37.1	0.13	0.009	12	0.008	<.04	<.02	137	<.03	<.03	1	<.01	0.606	0.009	<.005	<.03	0.07
7/10/1997	<.005	39.5	0.38	0.007	10	<.005	<.04	<.02	125	<.03	<.03	0.3	<.01	0.609	0.008	0.015	<.03	0.08
14/10/97	0.008	48.2	0.64	0.003	9	0.014	<.04	<.02	178	<.03	<.03	0.2	<.01	1.151	<.005	<.005	<.03	0.13
20/10/97	<.005	48.6	0.4	<.002	10	0.018	0.18	0.02	206	<.03	<.03	<.1	<.01	1.173	0.007	<.005	<.03	0.1
28/10/97	<.005	48.2	0.84	0.004	10	0.007	0.24	<.02	214	<.03	<.03	<.1	<.01	1.176	0.007	<.005	<.03	0.09
4/11/1997	<.005	28.2	0.09	<.002	8	0.013	<.04	<.02	119	<.03	<.03	2.6	<.01	0.654	0.007	<.005	<.03	0.2
13/11/97	<.005	35.5	0.09	0.008	8	<.005	0.04	<.02	165	<.03	<.03	2	0.05	0.665	0.006	0.007	<.03	0.2
19/11/97	0.007	23.7	<.01	<.002	7	<.005	<.04	<.02	103	<.03	<.03	2.9	<.01	0.541	<.005	<.005	<.03	0.19
25/11/97	<.005	37.7	0.18	0.009	8	<.005	<.04	<.02	166	<.03	<.03	2	<.01	0.953	<.005	0.008	<.03	0.26
2/12/1997	<.005	24.2	0.05	<.002	5	<.005	<.04	<.02	102	<.03	<.03	3.4	0.03	0.562	<.005	<.005	<.03	0.28
9/12/1997	<.005	49.3	0.28	<.002	11	0.008	<.04	<.02	194	<.03	<.03	1.8	0.04	1.193	0.011	<.005	<.03	0.19
16/12/97	<.005	28.1	0.05	<.002	6	0.01	<.04	<.02	117	<.03	<.03	2.9	<.01	0.674	<.005	0.015	<.03	0.27
22/12/97	<.005	39.7	0.18	<.002	7	<.005	0.33	<.02	158	<.03	<.03	2.8	<.01	0.975	<.005	0.008	<.03	0.23
30/12/97	0.009	23.5	0.02	<.002	7	<.005	<.04	<.02	105	<.03	<.03	3.1	<.01	0.527	<.005	<.005	<.03	0.23
6/1/1998	<.005	38.9	0.27	0.006	9	<.005	<.04	0.08	162	0.03	<.03	3.8	<.01	0.91	0.025	<.005	<.03	0.32
12/1/1998	<.005	23.9	0.14	<.002	6	<.005	<.04	<.02	103	<.03	<.03	3.4	<.01	0.524	<.005	<.005	<.03	0.39
18/05/98	<.005	8	0.13	<.002	3	0.042	<.04	0.02	21	0.08	<.03	7.9	<.01	0.149	0.128	0.014	<.03	0.13
31/05/98	0.018	11	0.04	<.002	3	<.005	<.04	0.02	23	<.03	<.03	3.4	<.01	0.238	0.022	0.009	<.03	0.13
30/06/98	<.005	18.5	<.01	0.005	7	<.005	1.84	<.02	78	<.03	<.03	4.2	<.01	0.367	0.014	<.005	<.03	0.08
11/8/1998	0.007	17.3	<.01	<.002	6	<.005	3.05	<.02	83	0.03	<.03	3.5	<.01	0.374	<.005	0.009	<.03	0.14
18/05/99	<.005	7.4	0.27	0.013	3	0.024	1.68	0.13		<.03	<.03	8.4	<.01	0.15	0.124	0.019	<.03	0.19
27/05/99	<.005	9	0.15	0.005	4	0.015	<.04	0.07		<.03	<.03	10.6	<.01	0.181	0.23	0.008	<.03	0.1
3/7/1999	0.028	4.6	0.02	0.006	1	<.005	<.04	<.01	13	<.03	<.03	6.1	<.01	0.142	<.005	<.005	<.03	0.06
12/8/1999	<.005	11.7	0.28	<.002	3	<.005	<.04	<.01	50	<.03	<.005	7.9	<.01	0.275	<.005	<.005	<.03	0.38
10/9/1999	0.032	8.7	0.33	0.007	4	0.011	0.52	<.01	45	<.03	<.005	4.3	<.01	0.195	0.009	<.005	<.03	0.27
20/06/00	<.005	11.2	0.07	<.002	5	0.012	<1	0.03	<1	<.03	<.005	6.1	<.01	0.251	0.018	<.005	<.03	0.31
25/07/00	0.12	6.5	0.04	<.002	4	0.024	2	<.01		<.03	<.005	4.8	<.01	0.288	0.023	0.053	<.03	0.11
28/08/00	<.005	7	0.08	<.002	4	0.012	<1	0.02		<.03	<.005	8.4	<.01	0.156	0.065	0.031	<.03	0.19
25/09/00		6.2	0.064	<0.01	3	<0.05	<0.3	<0.05		<0.2	<0.2	5.58	<0.03	0.146	0.01	<0.03		0.108
29/10/00	<.005	9	0.09	<.002	7	<.005	1	<.01	21	<.03	<.005	6.1	<.01	0.199	0.053	<.005	<.03	0.11
18/11/00		10	0.015	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.03	<0.2	5.72	0.201	<0.01	<0.03		0.098
14/12/00		10.1	<0.005	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.2	5.65	<0.03	0.234	<0.01	<0.03		0.092
14/05/01	<.005	12.9	0.02	<.002	2	<.005	<1	<.01	39	<.03	<.005	3.8	<.01	0.244	<.005	<.005	<.03	0.06
17/06/01	0.011	7.1	0.17	<.002	4	<.005	<1	0.23	7	0.04	<.005	13.7	0.06	0.113	0.263	0.016	0.06	0.11
14/07/01	<.005	5.6	<.01	<.002	3	0.008	<1	0.01	13	<.03	<.005	5.8	0.12	0.169	0.015	<.005	<.03	0.08
14/08/01	<0.005	9.9	0.01	0.002	7	<0.005	<1	<0.01	30	<0.03	<0.005	6.2	<0.01	0.252	<0.005	<0.005	<0.03	0.06
17/09/01	0.009	10.4	<0.01	<0.002	3	<0.005	<1	<0.01	35	<0.03	<0.005	5.6	<0.01	0.249	<0.005	<0.005	<0.03	0.09
15/10/01	0.018	10	<0.01	<0.002	3	<0.005	<1	<0.01	31	0.04	<0.005	4.8	<0.01	0.232	0.005	<0.005	<0.03	0.05
STATION: V17A																		
22/04/96	<.005	2.3	0.1	<.002	<1	0.008	0.17	0.13	2	<.03		1.71		0.069	0.021	0.007	<.03	0.15
15/05/96				<.002		<.005		<.02		<.03								0.04
12/6/1996	<.005	0.9	0.01	<.002	<1	<.005	<.04	<.02	1		<.03	1.97		0.033	<.005	<.005	<.03	0.01
15/07/96	<.005	1	<.01	<.002	<1	<.005	0.07	<.02	1	<.03		4.5		0.044	<.005	<.005	<.03	<.01
14/08/96	<.005	1.4	0.01	0.002	<1	<.005	<.04	0.02	2	<.03		5		0.06	<.005	<.005	<.03	<.01
11/9/1996	<.005	1.6	0.01	<.002	2	<.005	<.04	<.02	2	<.03		5.2		0.056	<.005	<.005	<.03	0.03
21/10/96	<.005	2.2	0.07	<.002	3	<.005	<.04	<.02	5	<.03		5.9		0.083	<.005	<.005	<.03	0.03
21/11/96	<.005	1.7	<.01	<.002	1	<.005	<.04	<.02	1	<.03		3.5		0.056	<.005	<.005	<.03	0.02
14/04/97	<.005	5.7	0.72	<.002	2	<.005	0.1	0.25	16	<.03	<.03	4.2	<.01	0.108	0.019	<.005	<.03	0.98
12/5/1997	<.005	2.3	0.09	<.002	<1	<.005	<.04	<.02	3	<.03	<.03	1.5	<.01	0.064	<.005	<.005	<.03	0.05
30/06/97	<.005	1.4	0.01	0.019	2	<.005	0.22	<.02	5	<.03	<.03	5.7	<.01	0.06	0.008	0.006	<.03	0.16
22/07/97	0.006	1.2	<.01	0.002	2	<.005	<.04	<.02	3	<.03	<.03	5.3	<.01	0.058	<.005	0.007	<.03	0.1
11/8/1997	<.005	1.4	<.01	<.002	2	<.005	0.13	<.02	5	<.03	<.03	5.1	<.01	0.054	<.005	0.009	<.03	0.03

Table G4. Water Quality Entering Vangorda Creek, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
30/09/97	<.003	<.05	<.02	<.05	0.063	<.001	<.04	15.1	<.002	<.005	0.024	0.02	0.15	<1	<.005	1.9	0.01	<.002	3	<.005	0.15	<.02	2	<.03	<.03	3.9	<.01	0.061	<.005	<.005	<.03	0.07
20/10/97	<.003	<.05	<.02	<.05	0.102	0.001	0.14	15.9	<.002	0.03	<.005	0.002	0.31	2	<.005	2.4	0.19	0.004	2	<.005	<.04	0.05	11	<.03	<.03	3.8	0.04	0.073	<.005	0.028	<.03	0.03
18/05/98	<.003	0.51	0.06	0.18	0.041	<.001	<.04	13.4	<.002	<.005	0.033	0.029	0.83	1	<.005	2.7	0.07	0.004	2	0.006	0.28	<.02	3	<.03	<.03	2.4	<.01	0.059	<.005	<.005	<.03	0.05
30/06/98	<.003	<.05	<.02	<.05	0.137	<.001	<.04	10.7	<.002	<.005	0.032	0.008	0.12	<1	<.005	1.6	<.01	<.002	2	<.005	2.69	<.02	5	<.03	<.03	5.6	<.01	0.058	0.009	<.005	<.03	<.01
14/09/98	<.003	<.05	<.02	<.05	0.098	<.001	<.04	17.1	<.002	<.005	<.005	0.014	0.25	<1	<.005	2.5	0.02	<.002	2	<.005	<.04	0.02	2.4	<.03	<.03	5.2	<.01	0.084	0.006	<.005	<.03	0.02
3/7/1999	<.003	0.33	<.005	0.34	0.03	<.001	<.04	10.2	<.001	<.005	<.005	0.005	1.1	<1	<.005	1.4	0.02	<.002	<1	<.005	<.04	<.01	2	<.03	<.03	5.8	<.01	0.066	<.005	0.012	<.03	0.03
10/9/1999	<.003	0.1	<.005	<.05	0.135	<.001	<.04	18.3	<.001	0.007	<.005	0.009	0.28	<1	<.005	2.3	0.05	<.002	3	0.007	<.04	<.01	3	<.03	<.005	4.9	<.01	0.036	0.01	0.018	<.03	0.06
20/06/00	<.003	0.71	<.005	<.05	0.162	0.002	<.05	38.7	<.001	<.005	<.005	0.012	0.94	1	<.005	4.8	<.01	<.002	2	0.006	<1	<.01	<1	<.03	<.005	3.7	<.01	0.204	0.023	<.005	<.03	0.04
13/06/01	<.003	0.29	<.005	0.05	0.169	<.001	<.05	7.2	<.001	<.005	<.005	0.004	0.27	<1	<.005	1.6	0.05	0.005	3	<.005	<1	<.01	2	0.05	<.005	3.3	<.01	0.039	<.005	<.005	<.03	0.02
8/9/2001	<0.003	0.08	0.018	1.36	0.112	<0.001	<0.05	28.7	<0.001	<0.005	<0.005	0.005	0.27	<1	0.009	5.8	0.06	<0.002	6	<0.005	<1	0.01	11	<0.03	<0.005	4.3	<0.01	0.142	<0.005	<0.005	<0.03	0.04
STATION: V8A																																
29/05/89	0.01	40.3	<0.05	0.01	0.415	0.002		12.4	<0.005	<0.005	0.059	0.064	48.3			17.2	0.616	<0.01	2.3	0.05	0.8	0.11		<0.05	<0.05	46.4	<0.05	0.083	0.899	0.08		0.277
1/10/1990	<0.01	0.09	<0.05	<0.01	0.025	<0.001		20.9	<0.005	<0.005	<0.005	<0.005	0.121	<2		3.5	0.012	<0.01	1.5	<0.02	<0.1	<0.05		<0.05	<0.05	5.53	<0.05	0.091	<0.002	<0.01		0.004
25/04/91			0.05									0.011	0.975									0.105										0.053
7/5/1991	<0.01	4.7	<0.06	<0.01	0.068	<0.001		14.6	<0.006	0.039	<0.006	<0.006	4.73	<2		3.6	0.116	<0.01	1	<0.02	<0.1	<0.06		<0.06	<0.06	10.3	<0.06	0.07	0.11	<0.01		0.022
11/6/1991			0.05									0.005	0.123									0.004										0.001
3/9/1991			0.05									<0.001	0.153									0.004										0.012
25/09/91	<0.01	0.06	<0.06	<0.01	0.025	<0.001		22	<0.006	<0.006	<0.006	<0.006	0.11	<2		3.2	0.006	<0.01	1.4	<0.02	<0.1	<0.06		<0.05	<0.06		<0.06	0.086	<0.002	<0.01		0.01
25/09/91			0.06									0.002	0.065									0.004										0.04
8/10/1991			0.05									<0.001	0.041									0.004										0.013
14/11/91			0.06									<0.001	0.209									0.004										0.001
5/12/1991			0.05									0.001	0.098									0.004										0.031
28/04/92	<0.01	0.36	<0.06	<0.01	0.05	<0.001		43.8	0.01	<0.006	<0.006	<0.006	0.676	<2		6.3	0.064	<0.01	1.7	<0.02	<0.1	<0.06		<0.06	<0.05		<0.06	0.161	0.007	<0.01		0.031
9/9/1992	<0.01	0.1	<0.06	<0.01	0.028	<0.001		23.3	<0.006	<0.006	<0.006	<0.006	0.125	<2		3.7	0.007	<0.01	1.6	<0.02	<0.1	<0.06		<0.06	<0.06	5.67	<0.06	0.099	0.003	<0.01		0.007
24/11/92	<0.01	<0.06	<0.06	<0.01	0.034	<0.001		30	<0.006	<0.006	<0.006	<0.006	0.078	<2		5.1	0.018	<0.01	1.6	<0.02	<0.1	<0.06		<0.06	<0.06	5.65	<0.06	0.13	<0.002	<0.01		0.005
1/12/1992												0.001										<0.003										0.014
28/04/93	<0.01	0.62	<0.06	<0.01	0.054	<0.001		32.4	<0.006	<0.006	<0.006	<0.006	0.849	<2		5.8	0.05	<0.01	1.4	<0.02	<0.1	<0.06		<0.06	<0.06	4.18	<0.06	0.14	0.014	<0.01		0.016
2/8/1993	<0.01	0.15	<0.06	<0.01	0.029	<0.001		23	<0.006	<0.006	0.014	<0.006	0.288	0.3		3.6	0.01	<0.01	1.5	0.03	<0.1	<0.06		<0.06	<0.06	5.24	<0.06	0.11	<0.002	<0.01		0.009
2/5/1994	<0.001	0.364	<0.02		0.0349	<0.0002		17.6	<0.0005	<0.001	0.0013	0.006	1.03	1.3		2.7	0.111	<0.005	0.95	0.0026	<0.05	<0.01	2.4	<0.02	<0.02	3.43	<0.01	0.079	0.0071	<0.002		0.024
8/6/1994			<0.04									<0.002										<0.03										<0.01
19/07/94												<0.002										<0.03										<0.01
9/8/1994	<0.001	0.03	<0.02		0.036	<0.0002		29.9	<0.0005	<0.001	<0.001	0.006	0.078	0.4		4.8	0.009	<0.005	1.87	<0.001	<0.06	<0.01	2.8	<0.02	<0.02	5.36	<0.01	0.14	<0.001	<0.002		<0.005
11/10/1994	<0.001	0.06	<0.02		0.0261	<0.0002		23	<0.0005	<0.001	<0.001	0.008	0.12	0.2		3.63	0.014	<0.005	1.72	<0.001	<0.06	<0.01	3.4	<0.02	<0.02	6.18	<0.01	0.1	0.002	<0.002		0.008
15/10/94			<0.04									<0.002										<0.03										0.01
26/11/94			<0.04									<0.002										<0.03										0.01
25/01/95	<0.001	0.01	<0.02		0.0397	<0.0002		40	<0.0005	<0.001	<0.001	0.006	0.05	0.4		7.81	0.009	<0.005	1.83	<0.001	<0.06	<0.01	5.3	<0.02	<0.02	4.17	<0.01	0.19	0.002	0.007		0.008
31/01/95			<0.040									0.002										<0.03										0.05
22/02/95												<0.002										<0.03										0.07
24/02/95			0.001									<0.002	0.07									<0.030										0.07
25/04/95			0.002									<0.002	0.51									<0.030										0.05
9/5/1995	<0.001	2	<0.02		0.0496	<0.0002		14.3	<0.0005	<0.001	0.004	0.017	2.81	0.9		2.67	0.075	<0.005	1.47	0.004	<0.06	<0.01	1.7	<0.02	<0.02	7.36	<0.01	0.07	0.037	0.004		0.029
9.5/1995			0.012									0.012	3.22									0.02										0.03
7/6/1995			0.02									0.003	0.15									0.02										0.01
20/07/95			0.02									0.003	0.15									0.02										0.01
23/08/95			<0.020									<0.002	0.18									<0.020										0.01
26/09/95			<0.020									<0.002	0.18									<0.020										<0.01
4/10/1995	<0.001	0.05	<0.02		0.023	<0.0002		17.9	<0.0005	<0.001	<0.001	0.005	0.071	0.3		2.87	0.01	<0.005	1.66	<0.002	<0.05	<0.005	2.1	<0.02	<0.02	5.79	<0.005	0.089	<0.001	0.003		0.004
16/10/95			<0.020									0.003	0.21									<0.020										0.01
14/11/95			<0.020									<0.002	0.24									0.03										0.01
6/12/1995			<0.020									<0.002	0.12									<0.020										0.15
14/02/96	<.003	0.13	<.02		0.05	0.001	<.04	37.5	<.002	<.005	<.005	0.004	0.16		<.005	7.8	0.01	<.002	<1	<.005	<.04	<.02	10	<.02		2.28		0.201	<.005	<.005	<.02	0.01
12/3/1996	<.003	0.12	<.02		0.048	<.001	<.04	41.8	<.002	<.005	<.005	<.002	0.05		<.005	9.2	<.01	<.002	<1	<.005	<.04	<.02	11	<.03		1.37		0.233	<.005	<.005	<.02	<.01
9/4/1996	<.003	0.14	<.02		0.054	<.001	<.04	38.5	<.002	<.005	<.005	0.017	0.09		<.005	6	<.01	0.003	<1	<.005	0.07	<.02	28	<.03		2.05		0.204	0.01	<.005	0.03	<.01
22/04/96	<.003	0.18	<.02		0.039	<.001	<.04	18.4	<.002	<.005	<.005	0.004	0.31		<.005	2.8	0.02	0.003	<1	<.005	0.05	<.02	3	<.03		1.53		0.083	<.005	<.005	<.03	<.01
15/05/96	<.003		<.02		0.045				<.002			<.002	1.21					<.002		<.005		<.02		<.03								0.02
24/05/96	<.003	0.32	<.02		0.033	<.001	<.04	10	<.002	<.005	<.005	<.002	0.61		<.005	1.5	0.02	<.002	<1	<.005	<.04	<.02	5	<.03	<.02	0.73		0.051	<.005	<.005	<.03	0.01
29/05/96													0.61																			
12/6/1996	<.003	<.05	<.02		0.02	<.001	<.04	9.5	<.002	<.005	<.005	<.002	0.25		<.005	1.6	<.01	<.002	<1	<.005	<.04	<.02	2		<.03	1.94		0.053	<.005	<.005	<.03	<.01
15/07/96	<.003	0.07	<.02		0.056	0.005	<.04	10.4	<.002	<.005	<.005	<.002	0.25		<.005	1.6	0.01	<.002	<1	<.005	<.04	<.02	2	<.03		4.4		0.056	<.005	<.005	<.03	0.02
14/08/96	<.003	0.05	<.02		0.052	0.001	<.04	17.4	<.002	<.005	<.005	0.007	0.12		<.005	3.1	<.01	<.002	<1	<.005	<.04	<.02	2	<.03		4.5		0.093	<.005	<.005	<.03	<.01
11/9/1996	<.003	0.05	<.02		0.074	0.003	<.04	18	<.002	<.005	<.005	0.003	0.3		<.005	3	0.01	<.002	2	<.005	0.07	<.02	4	<.03		4.7		0.095	<.005	<.005	0.03	0.03
21/10/96	<.003	0.05	<.02		0.027	0.001	<.04	28.7	<.002	<.005	<.005	0.02	0.56		<.005	4.7	0.01	<.002	3	0.006	<.04	<.02	5	<.03		5.4		0.131	<.005	<.005	<.03	<.01
21/11/96	<.003	<.05	<.02		0.103	0.001	<.04	24.3	<.002	<.005	0.007	<.002	1.26		<.005	4.5	0.01	<.002	1	<.005	0.09	<.02	6	<.03		3.4		0.128	<.005	<.005	<.03	0.03
19/12/96	<.003	0.13	<.02		0.065	0.005	<.04	35.8	0.004	0.007	<.005	<.002	0.31		<.005	7	0.02	<.002	6	<.005	0.07	<.02	5	<.03		4.3		0.166	0.006	<.005	<.03	0.07
14/01/97	<.003	0.09	<.02	<.05	0.11	<.001	<.04	40.7	<.002	<.005	<.005	0.009	0.07		<.005	8.4	<.01	<.002	1	<.005	0.09	<.02	7	0.04		2.83		0.217	<.005	<.005	<.03	0.04
24/02/97	<.003	0.05	<.02	<.05	0.036	<.001	<.04	47.5	<.002	<.005	0.024	<.002	<.01		<.005	9.8	<.01	<.002	2	<.005	<.04	<.02	5	<.02		5.43		0.251	<.005	<.03	<.02	<.01
11/3/1997	<.003	0.31	<.02	<.05	0.044	0.001	<.04	45.4	<.002	0.008	<.005	<.002	<.01		<.005	9.8	0.02	<.002	2	<.005	0.32	<.02	8	<.03	<.005	2.7	<.01	0.218	<.005	0.008	<.03	0.1
14/04/97	<.003	<.05	<.02	0.18	0.041	<.001	<.04	35.1	0.002	<.005	<.005	<.002	0.09	<1	<.005	7.1	0.02	<.002	<1	<.005	<.04	<.02	12	<.03	<.03	3.3	<.01	0.162	<.005	<.005	<.03	0.04
13/05/97	<.003	0.22	<.02	0.07	0.051	<.001	<.04	14.8	<.002	<.005	<.005	<.002	0.73	<1	<.005	2.6	0.13	<.002	<1	<.005	<.04	<.02	3	<.03	<.03	1.6	<.01	0.068	<.005	<.005	<.03	0.04
30/06/97	<.003	0.15	<.02	0.14	0.032	<.001	<.04	18	<.002	<.005	0.008	0.016	<.01	<1	0.008	3	<.01	0.017	2	<.005	0.12	0.04	8	<.03	<.03	4.7	<.01	0.089	0.005	<.005	<.03	0.12
24/07/97	<.003	0.12	<.02	0.07	0.036	<.001	<.04	16.3	<.002	<.005	<.005	0.024	0.32	<1	<.005	2.7	0.01	<.002	2	<.005	1.17	<.02	2	<.03	<.03	5.4	<.01	0.096	0.006	<.005	<.03	0.09
11/8/1997	<.003	0.2	<.02	0.52	0.03	<.001	<.04	16.5	<.002	<.005	<.005	0.025	<.01	<1	<.005	2.9	<.01	<.002	3	<.005	0.35	<.02	5	<.03	<.03	7	<.01	0.091	<.005	<.005	<.03	0.07
30/09/97	<.003	<.05	<.02	0.06	0.07	<.001	<.04	22.4	<.002	<.005	0.013	0.019	0.13	<1	<.005	3.8	<.01	<.002	3	<.005	1.31	<.02	4	<.03	<.03	3.5	<.01	0.093	0.007	0.014	<.03	0.03
20/10/97	<.003	<.05	<.02	<.05	0.095	<.001	<.04	23.7	<.002	<.005	0.008	<.002	0.08	<1	<.005	4.3	<.01	0.008	2	<.005	<.04	<.02	3	<.03	<.03	3.2	0.02	0.112	<.005	<.005	<.03	0.02
19/11/97	<.003	<.05	0.09	<.05	0.103	0.001	<.04	29.7	<.002	<.005	<.005	0.008	0.6	<1	<.005	5.3	<.01	0.004	2	<.005	0.14	<.02	6	<.03	<.03	3.8	<.01	0.141	<.005	0.016	<.03	0.02
22/12/97	<.003	0.31	<.02	<.05	0.071	<.001	<.04	35	0.003	0.016	0.008	0.008	0.65	<1	0.008	6.6	0.03	0.004	<1	<.005	0.39	<.02	6	<.03	<.03	4	<.01	0.175	0.008	0.025	<.03	0.07
13/01/98	<.003	0.31	<.02	<.05	0.252	<.001	<.04	39.3	<.002	0.023	<.005	0.008	1.5	<1	<.005	7.8	0.04	0.002	2	<.005	<.04	0.13	7	<.03	<.03	3.5	<.01	0.194	0.006	<.005	<.03	0.34
17/03/98	<.003	<.05	<.02	<.05	0.12	<.001	<.04	46.8	<.002	<.005	0.011	0.012	<.01	<1	<.005	9.8	<.01	<.002	3	<.005	<.04	<.02	7	<.03	<.03	3.9	<.01	0.232	<.005	0.014	<.03	<.01
19/05/98	<.003	0.57	<.02	0.21	0.045	<.001	<.04	15.3	<.002	<.005	0.028	0.026	0.99	<1	0.021	3.3	0.08	<.002	2	<.005	1.5	<.02	3	0.07	<.03	2.8	<.01	0.07	<.005	<.005	<.03	0.08
30/06/98	<.003	0.06	<.02	<.05	0.147	<.001	<.04	22.7	<.002	<.005	0.068	0.007	0.13	<1	<.005	4.3	<.01	<.002	2	<.005	<.04	<.02	29	<.03	<.03	5.4	<.01	0.117	0.011	<.005	<.03	0.01
15/09/98	<.003	<.05	<.02	<.05	0.109	<.001	<.04	24.8	<.002	<.005	<.005	0.016	0.17	<1	<.005	4.5	0.01	<.002	2	<.005	0.33	<.02	4.1	<.03	<.03	4.3	<.01	0.128	0.017	<.005	<.03	0.02
31/12/98	<.003	0.11	<.005	0.2	0.097	<.001	<.04	49.8	<.001	<.005	<.005	0.046	0.28	2	0.027	10.4	0.01	<.002	3	<.005	<.04	<.01	9	<.03	<.03	5.1	<.01	0.259	0.011	<.005	<.03	0.05
22/03/99	<.003	0.38	<.005	0.21	0.107	<.001	<.04	69.4	<.001	<.005	0.395	0.027	0.11	3	<.005	18.7	0.03	<.002	4	<.005	0.72	0.02	18.8	<.03	<.03	7	<.01	0.317	0.006	0.008	<.03	0.08
3/7/1999	<.003	0.46	<.005	0.49	0.041	<.001	<.04	15.4	<.001	<.005	<.005	0.009	1	<1	<.005	2.6	0.01	<.002	1	<.005	<.04	<.01	4	<.03	<.03	6.1	<.01	0.088	<.005	0.01	<.03	0.03
10/9/1999	<.003	0.12	<.005	<.05	0.12	<.001	<.04	24.4	<.001	0.007	<.005	0.014	0.3	<1	<.005	3.9	0.02	0.037	2	0.006	<.04	<.01	8	0.05	<.005	3.6	<.01	0.118	0.011	<.005	<.03	0.04
12/10/1999	<.003	0.08	<.005	<.05	0.139	<.001	<.04	25.1	0.001	<.005	<.005	0.014	0.3	<1	<.005	4.5	<.01	<.002	3	<.005	<.04	<.01	5	<.03	<.005	5.7	<.01	0.125	0.015	<.005	<.03	0.01
14/12/99	<.003	0.22	<.005	0.07	0.125	<.001	<.04	35.8	0.005	<.005	<.005	0.032	0.29	8	0.014	5.9	0.04	0.005	2	0.032	0.07	0.06	7	0.03	<.005	3.2	<.01	0.15	0.009	0.022	<.03	0.06
23/03/00	<.003	0.13	<.005	<.05	0.156	<.001	<.05	45.5	0.003	<.005	<.005	0.004	0.15	1	<.005	8.2	<.01	<.002	<1	<.005	<1	<.01	8	<.03	<.005	5.1	<.01	0.24	<.005	<.005	<.03	0.02
20/06/00	<.003	0.17	<.005	<.05	0.165	0.001	<.05	11.3	<.001	<.005	<.005	0.004	0.25	1	<.005	2.2	<.01	<.002	2	<.005	1	<.01	<1	<.03	<.005	3.6	<.01	0.036	0.014	<.005	<.03	0.04
12/9/2000	<.003	0.05	<.005	<.05	0.102	<.001	<.05	28.4	<.001	<.005	<.005	0.014	0.16	<1	<.005	4	<.01	0.006	3	<.005	4	<.01		<.03	<.005	3.1	<.01	0.061	<.005	<.005	<.03	0.04
5/3/2001	<.003	1.295	<.005	0.104	0.252	<.001	<.05	348	<.001	<.005	<.005	<.002	0.168	1.02	<.005	144	0.01	<.002	14	<.005	<1	<.01	344	<.03	<.005	6.7	<.01	1.33	0.01	<.005	<.03	0.01
13/06/01	<.003	0.33	<.005	0.16	0.151	<.001	<.05	10.3	<.001	<.005	0.017	0.005	0.46	<1	<.005	2.3	0.06	<.002	3	<.005	<1	<.01	3	0.07	<.005	3.5	0.01	0.053	0.006	<.005	<.03	0.04
8/9/2001	<0.003	0.06	<0.005	3.38	0.114	<0.001	<0.05	35.8	<0.001	<0.005	<0.005	0.003	0.15	<1	0.01	7.2	0.01	<0.002	2	0.006	<1	<0.01	12	<0.03	<0.005	4.3	<0.01	0.167	<0.005	<0.005	<0.03	0.03

Table G5. Water Quality of Receiving and Background Waters, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: V4																																
18/02/88		0.35	<0.05	<0.001	0.086	<0.001		94	<0.002	0.01	<0.005	<0.005	0.203			37	0.029	<0.005	4.1	<0.02	0.07	<0.02		<0.05	0.09	4.6	<0.01	0.394	<0.002	<0.005		<0.002
29/05/89	<0.01	0.13	<0.05	<0.01	0.066	<0.001		64.2	<0.005	<0.005	<0.005	0.006	0.209			24	0.014	<0.01	2.4	<0.02	<0.1	<0.05		<0.05	<0.05	3.68	<0.05	0.269	0.003	<0.01		0.017
5/3/1991			0.05									0.001	0.154									0.004										0.001
16/05/91			0.08									0.009	0.777									0.007										0.014
8/10/1991			0.06									<0.001	0.03									0.004										0.006
27/11/91			0.05									<0.001	0.138									0.056										0.007
8/6/1994			<0.04									<0.002										<0.03										<0.01
11/3/1995			<0.0005									<0.002	0.03									<0.03										0.01
24/07/95			0.02									0.016	0.85									<0.020										<0.01
20/12/95			<0.020									0.002	0.36									<0.020										0.01
12/6/1996	<.003	<.05	<.02		0.061	0.002	<.04	48.2	<.002	<.005	<.005	<.002	0.3		<.005	18.8	0.02	<.002	1	0.008	<.04	<.02	12		<.03	1.66		0.225	<.005	<.005	<.03	<.01
24/09/96	<.003	0.05	<.02		0.111	0.001	<.04	57.4	0.008	<.005	0.005	0.025	0.026		<.005	21.1	0.01	<.002	7	0.024	0.11	<.02	22	<.03		4.58		0.25	<.005	<.005	<.03	0.02
5/12/1996	<.003	0.72	<.02		0.148	0.003	<.04	66.6	<.002	<.005	0.021	<.002	0.32		<.005	26.5	0.04	<.002	3	<.005	0.07	<.02	6	0.03		5.2		0.325	<.005	<.005	<.03	0.02
10/3/1997	<.003	0.71	<.02	0.08	0.098	0.004	<.04	97.8	<.002	0.007	<.005	0.005	0.07		<.005	39.2	0.02	0.013	5	<.005	0.66	<.02	31	<.03	<.005	3.9	<.01	0.419	<.005	<.005	<.03	<.01
6/5/1997	<.003	0.73	0.08	<.05	0.051	<.001	<.04	17.8	0.002	0.025	<.005	0.003	1.69	4	0.005	5.9	0.06	0.003	<1	0.008	0.05	<.02	2	<.03	<.005	2.2	<.01	0.082	0.02	<.005	<.03	0.03
30/06/97	<.003	0.9	<.02	0.11	0.08	<.001	<.04	81.2	<.002	<.005	<.005	0.017	0.56	<1	<.005	23.9	0.04	<.002	3	<.005	0.82	<.02	5	<.03	<.03	4.6	<.01	0.27	0.03	0.006	<.03	0.12
24/07/97	<.003	0.22	<.02	<.05	0.08	<.001	<.04	59.8	<.002	<.005	<.005	0.018	0.37	<1	0.01	22.6	0.03	<.002	3	<.005	0.87	<.02	10	<.03	<.03	4.9	<.01	0.308	<.005	<.005	<.03	0.18
28/08/97	<.0008	0.07	0.01	<.01	0.0618	0.0002	<.008	51.6	<.0004	0.001	<.001	0.0025	0.025	<.2	0.004	21.2	<.002	0.0027	2.4	<.001	<.008	<.004	6	<.008	<.001	3.688	<.002	0.254	<.001	<.001	<.006	0.01
30/09/97	<.003	0.07	0.03	0.09	0.108	<.001	<.04	75.5	<.002	<.005	0.005	0.027	0.19	<1	<.005	29.6	0.02	0.004	5	<.005	0.94	<.02	21	<.03	<.03	3.4	<.01	0.28	0.016	<.005	<.03	0.04
15/12/97	<.003	<.05	<.02	<.05	0.142	0.002	0.08	70.8	<.002	<.005	<.005	0.009	0.37	<1	<.005	28.9	0.05	<.002	2	<.005	0.09	0.02	19	<.03	<.03	3.3	<.01	0.317	0.005	0.02	<.03	0.01
29/05/98	<.003	0.12	<.02	<.05	0.132	0.002	<.04	61.6	<.002	<.005	0.036	0.019	0.39	<1	0.032	23.5	0.02	<.002	2	<.005	<.04	<.02	6	<.03	<.03	3.9	<.01	0.245	0.013	0.008	<.03	0.08
29/06/98	<.003	<.05	<.02	<.05	0.183	<.001	<.04	73.8	<.002	<.005	0.021	0.012	0.04	<1	0.012	30.1	<.01	0.011	4	<.005	1.39	<.02	5	<.03	<.03	4.8	<.01	0.353	0.02	<.005	<.03	<.01
14/09/98	<.003	0.06	<.02	<.05	0.134	<.001	<.04	87.5	<.002	0.008	<.005	0.024	0.16	1	<.005	36.1	0.02	0.003	5	0.009	0.95	<.02	22.6	<.03	<.03	4.2	<.01	0.403	0.021	<.005	<.03	0.03
16/03/99	<.003	0.3	<.005	0.17	0.129	<.001	<.04	112.1	0.001	<.005	0.694	0.03	0.12	1	<.005	43.4	0.03	<.002	7	<.005	0.97	<.01	45	<.03	<.03	5.4	<.01	0.479	0.006	<.005	<.03	0.05
16/06/99	<.003	1.23	<.005	0.1	0.144	<.001	<.04	62.4	<.001	<.005	<.005	0.009	2.56	2	0.006	26.7	0.03	0.015	3	<.005	0.15	<.01	12	<.03	<.03	4.8	<.01	0.286	0.041	<.005	<.03	0.07
29/07/99	<.0001	0.24	0.003	0.02	0.0606	0.0003	<.001	64.04	<.0001	<.0002	0.004	0.0273	0.342	0.9	0.003	25.93	0.033	<.0001	2.1	0.002	<.002	0.005	10.7	<.001	<.001	4.35	<.0004	0.207	0.0097	<.0002	<.001	0.008
12/10/1999	<.003	0.16	<.005	<.05	0.168	<.001	<.04	79	0.002	0.008	<.005	0.025	0.46	2	0.007	31.7	0.06	<.002	5	0.008	<.04	<.01	21	<.03	<.005	4.9	<.01	0.342	0.026	<.005	<.03	<.01
25/03/00	<.003	0.27	<.005	<.05	0.244	<.001	<.05	99.8	<.001	0.057	<.005	0.004	0.18	4	<.005	37.8	0.03	<.002	10	<.005	<1	<.01	34	<.03	<.005	4.6	<.01	0.48	<.005	<.005	<.03	0.01
20/06/00	<.003	0.22	<.005	<.05	0.196	0.002	<.05	54.7	<.001	<.005	<.005	0.01	0.31	2	<.005	22.4	0.01	<.002	3	0.008	2	<.01	<1	<.03	<.005	3.5	<.01	0.267	0.026	<.005	<.03	0.01
12/9/2000	<.003	0.57	<.005	0.09	0.15	<.001	<.05	68.2	0.001	<.005	<.005	0.063	0.91	<1	<.005	23.4	0.03	0.015	4	0.014	2	<.01		<.03	<.005	5.7	<.01	0.246	0.024	<.005	<.03	0.03
7/8/2001	<.003	0.38	<.005	0.07	0.199	<.001	<.05	46.3	<.001	<.005	0.141	0.005	0.57	<1	0.009	16.2	0.28	<.002	2	<.005	<1	<.01	7	<.03	<.005	3.7	<.01	0.198	0.01	<.005	<.03	0.02
STATION: V20																																
7/5/1991	<0.01	76.7	0.28	0.03	0.87	0.003		54.7	0.017	0.901	0.367	0.165	118	10		49.3	1.77	<0.01	2.4	0.29	1.5	0.13		<0.06	<0.06	153	<0.06	0.209	1.42	0.16		0.467
11/6/1991			0.05									0.005	0.107									0.037										0.001
3/7/1991			0.01									0.001	0.12									0.03										0.013
15/08/91			0.05									0.001	0.039									0.004										0.01
3/9/1991			0.05									<0.001	0.021									0.004										0.011
25/09/91	<0.01	0.07	0.07	<0.01	0.046	<0.001		31.6	<0.006	<0.006	<0.006	<0.006	0.076	<2		8.7	<0.001	<0.01	2.3	<0.02	<0.1	<0.06		<0.06	<0.06		<0.06	0.139	<0.002	<0.01		0.004
11/10/1991			0.05									<0.001	0.009									0.004										0.01
22/11/91			0.05									0.029	0.538									0.019										0.018
8/6/1994			<0.04									0.004										<0.03										0.05
9/5/1995	<0.001	0.22	<0.02		0.0349	<0.0002		17.6	<0.0005	<0.001	<0.001	0.014	0.375	1		5.29	0.011	<0.005	1.58	0.004	<0.06	<0.01	1.8	<0.02	<0.02	4.87	<0.01	0.08	0.005	<0.002		0.012
9/5/1995			0.01									0.009	0.32									0.02										0.02
14/06/95			<0.020									0.003	0.4									<0.020										<0.01
12/6/1996	<.003	<.05	<.02		0.036	<.001	<.04	16.4	<.002	<.005	<.005	0.006	0.19		<.005	4.7	<.01	<.002	<1	<.005	<.04	<.02	3		<.03	2.12		0.091	<.005	<.005	<.03	0.01
15/07/96	<.003	<.05	<.02		0.02	<.001	<.04	15.1	<.002	<.005	<.005	<.002	0.12		<.005	4.3	<.01	0.003	<1	<.005	0.05	<.02	2	<.03		4.9		0.084	<.005	<.005	<.03	<.01
18/05/98	<.003	0.3	<.02	0.18	0.04	0.02	<.04	13.1	<.002	<.005	0.047	0.031	0.38	1	0.013	4.2	0.1	<.002	2	0.01	<.04	<.02	25	<.03	<.03	3.2	<.01	0.059	<.005	<.005	<.03	0.4
20/06/00	<.003	0.14	<.005	<.05	0.18	0.001	<.05	32.8	<.001	0.008	<.005	0.01	0.1	2	<.005	6.5	<.01	<.002	2	0.012	<1	<.01	<1	<.03	<.005	3.9	<.01	0.173	0.009	<.005	<.03	<.01
12/9/2000	<.003	0.1	<.005	0.07	0.132	<.001	<.05	25.4	<.001	<.005	<.005	0.016	0.14	<1	<.005	5.8	<.01	<.002	3	<.005	<1	<.01		<.03	<.005	5.2	<.01	0.052	<.005	0.014	<.03	0.04
13/06/01	<.003	0.08	0.012	0.07	0.174	<.001	<.05	22.3	<.001	<.005	<.005	0.012	0.09	<1	<.005	6.3	0.1	0.007	3	<.005	<1	<.01	2	0.04	<.005	5.1	0.01	0.118	0.005	<.005	<.03	0.02
STATION: V1																																
18/02/88		<0.05	<0.05	<0.001	0.042	<0.001		15.5	<0.002	<0.005	<0.005	<0.005	0.039			2.6	<0.001	0.009	2	<0.02	<0.05	<0.02		<0.05	<0.05	4.2	<0.01	0.078	<0.002	<0.005		0.007
29/05/89	<0.01	0.26	<0.05	<0.01	0.017	<0.001		3.1	<0.005	<0.005	<0.005	0.011	0.301			0.7	0.007	<0.01	1	<0.02	<0.1	<0.05		<0.05	<0.05	2.32	<0.05	0.016	0.02	<0.01		0.032
1/10/1990	<0.01	0.12	<0.05	<0.01	0.03	<0.001		11.3	<0.005	<0.005	<0.005	<0.005	0.122	<2		1.6	0.003	<0.01	1.8	<0.02	<0.1	<0.05		<0.05	<0.05	4.99	<0.05	0.057	0.003	<0.01		0.003
26/02/91			0.05									<0.001	0.031									0.004										0.002
7/5/1991	<0.01	0.1	<0.06	<0.01	0.023	<0.001		9.8	<0.006	<0.006	<0.006	<0.006	0.143	<2		1.4	0.002	<0.01	1	<0.02	<0.1	<0.06		<0.06	<0.06	4.09	<0.06	0.045	0.002	<0.01		0.006
7/5/1991			0.05									0.009	0.091									0.017										0.02
22/08/91			0.05									<0.001	0.044									0.004										0.029
25/09/91	<0.01	15	<0.06	1.2	1.58	<0.001		137	<0.006	1	<0.006	<0.006	141	<2		50	6.17	<0.01	1.4	<0.02	<0.1	7.8		<0.06	<0.06		<0.06	0.65	0.31	<0.01		17.5
25/09/91			0.05									<0.001	0.032									0.004										0.003
8/10/1991			0.05									<0.001	0.02									0.004										0.01
14/11/91			0.05									0.002	0.032									0.004										0.001
5/12/1991			0.05									0.001	0.098									0.004										0.008
18/03/92												0.001										0.02										0.043
28/04/92	<0.01	0.07	<0.06	<0.01	0.04	<0.001		18.9	<0.006	<0.006	<0.006	<0.006	0.032	<2		2.8	<0.001	<0.01	2.3	<0.02	<0.1	<0.06		<0.06	<0.05		<0.06	0.079	<0.002	<0.01		<0.002
28/04/92												0.003										0.009										0.008
21/05/92												0.002										0.004										0.004
9/9/1992	<0.01	<0.06	<0.06	<0.01	0.027	<0.001		9.1	<0.006	<0.006	<0.006	<0.006	0.034	<2		1.3	0.001	<0.01	1.6	<0.02	<0.1	<0.06		<0.06	<0.06	4.77	<0.06	0.046	<0.002	<0.01		0.004
9/9/1992												0.002										0.002										0.061
24/11/92	<0.01	<0.06	<0.06	<0.01	0.039	<0.001		14.6	<0.006	<0.006	<0.006	<0.006	<0.006	<2		2.2	<0.001	<0.01	1.8	<0.02	<0.1	<0.06		<0.06	<0.06	5.49	<0.06	0.068	<0.002	<0.01		<0.002
24/11/92												<0.001										<0.003										0.011
28/04/93	<0.01	<0.06	<0.06	<0.01	0.04	<0.001		16.3	<0.006	<0.006	<0.006	<0.006	0.031	<2		2.5	<0.001	<0.01	1.9	<0.02	<0.1	<0.06		<0.06	<0.06	5.28	<0.06	0.072	<0.002	<0.01		<0.002
2/8/1993	<0.01	<0.06	<0.06	<0.01	0.066	0.003		99.9	<0.006	<0.006	<0.006	<0.006	<0.008	4.3		24	0.174	<0.01	8.9	<0.02	<0.1	<0.06		0.06	<0.06	2.9	<0.06	1.01	<0.002	<0.01		0.045
2/5/1994	<0.001	0.03	<0.02		0.0325	<0.0002		12.5	<0.0005	<0.001	<0.001	0.005	0.114	0.9		1.75	0.0023	<0.005	1.55	<0.001	<0.05	<0.01	1.86	<0.02	<0.02	3.84	<0.01	0.057	<0.001	<0.002		0.011
11/10/1994	<0.001	0.02	<0.02		0.0322	<0.0002		12.1	<0.0005	<0.001	<0.001	0.005	0.046	0.3		1.61	0.008	<0.005	1.94	<0.001	<0.06	<0.01	3.7	<0.02	<0.02	5.47	<0.01	0.07	<0.001	<0.002		0.017
25/01/95	<0.001	0.01	<0.02		0.0415	<0.0002		16.3	<0.0005	<0.001	<0.001	<0.002	0.007	0.5		2.54	0.002	<0.005	2.18	<0.001	<0.06	<0.01	3.7	<0.02	<0.02	4.08	<0.01	0.09	<0.001	<0.002		<0.005
7/3/1995	<0.001	<0.01	<0.02		0.0425	<0.0002		16.8	<0.0005	<0.001	<0.001	0.009	0.044	0.6		2.59	0.002	<0.005	2.25	<0.001	<0.06	<0.01	3.5	<0.02	<0.02	5.56	<0.01	0.08	<0.001	<0.002		<0.005
7/3/1995			<0.020									<0.002	0.04									<0.03										0.01
19/04/95			<0.040									0.021	<0.05									<0.030										0.03
9/5/1995	<0.001	0.13	<0.02		0.0155	<0.0002		3.8	<0.0005	<0.001	<0.001	0.008	0.244	1		0.57	0.012	<0.005	0.78	<0.001	<0.06	<0.01	1	<0.02	<0.02	2.28	<0.01	0.02	0.003	<0.002		<0.005
9/5/1995			0.01									0.005	0.25									0.02										0.01

Table G5. Water Quality of Receiving and Background Waters, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
20/07/95			<0.020									<0.002	0.11									<0.020										<0.01
1/8/1995			<0.020									<0.002	0.14									<0.020										<0.01
12/9/1995			<0.020									<0.002	0.74									<0.005										0.01
8/12/1995			<0.020									0.005	0.51									<0.020										0.02
13/03/96	<.003	0.11	<.02		0.04	<.001	<.04	13.9	<.002	<.005	<.005	<.002	0.35		<.005	2.4	0.01	<.002	<1	<.005	<.04	<.02	4	<.03		1.41		0.081	<.005	<.005	<.02	<.01
12/6/1996	<.003	<.05	<.02		0.018	<.001	<.04	4.1	<.002	<.005	<.005	<.002	0.3		<.005	0.5	<.01	<.002	<1	0.007	0.05	<.02	9		<.03	1.51		0.024	<.005	<.005	<.03	<.01
11/9/1996	<.003	0.05	<.02		0.073	0.002	<.04	7.9	<.002	<.005	<.005	0.002	0.39		<.005	1	<.01	<.002	1	0.009	<.04	<.02	7	<.03		4.1		0.049	<.005	<.005	<.03	0.02
19/12/96	<.003	0.05	<.02		0.07	0.003	<.04	15.1	<.002	<.005	<.005	<.002	0.84		<.005	2.6	<.01	<.002	4	<.005	0.16	<.02	4	<.03		4.1		0.083	0.009	<.005	<.03	0.05
10/3/1997	<.003	0.08	<.02	0.1	0.035	<.001	<.04	14.1	<.002	<.005	<.005	<.002	0.48		<.005	2.3	0.03	<.002	2	<.005	0.19	<.02	3	<.03	<.005	2.9	<.01	0.07	<.005	<.005	<.03	<.01
24/07/97	<.003	0.08	<.02	<.05	0.021	<.001	<.04	5.2	<.002	<.005	<.005	0.014	0.15	<1	<.005	1	<.01	<.002	1	<.005	<.04	<.02	2	<.03	<.03	3.4	<.01	0.038	<.005	0.018	<.03	0.05
28/08/97	<.0006	0.03	0.005	<.01	0.0225	<.0002	<.008	6.37	<.0004	<.001	<.001	0.0012	0.012	0.3	<.001	0.92	<.002	0.0064	1.5	<.001	<.008	<.004	2	<.006	<.001	3.391	<.002	0.0428	<.001	<.001	<.006	0.008
22/12/97	<.003	0.07	<.02	0.17	0.034	<.001	<.04	14	<.002	0.01	<.005	0.007	0.03	<1	<.005	2.2	<.01	<.002	<1	<.005	<.04	<.02	3	<.03	<.03	3.8	0.06	0.074	<.005	0.007	<.03	0.01
18/05/98	<.003	0.15	0.02	0.23	0.028	<.001	<.04	7.1	<.002	<.005	0.02	0.027	0.09	1	<.005	1.3	<.01	<.002	2	0.01	0.27	<.02	8	<.03	<.03	1.6	<.01	0.033	<.005	<.005	<.03	0.02
30/06/98	<.003	<.05	<.02	<.05	0.152	<.001	<.04	7.5	<.002	<.005	0.008	<.002	<.01	<1	<.005	1.4	<.01	0.005	2	<.005	2.37	<.02	6	<.03	<.03	4	<.01	0.048	0.008	0.008	<.03	<.01
14/09/98	<.003	<.05	<.02	<.05	0.078	<.001	<.04	9.1	<.002	0.01	<.005	0.016	0.61	<1	<.005	1.5	<.01	0.007	2	0.011	<.04	<.02	3.2	<.03	<.03	3.4	<.01	0.058	0.038	<.005	<.03	0.02
31/12/98	<.003	0.06	<.005	0.21	0.058	<.001	<.04	18.5	<.001	0.009	<.005	0.057	0.29	<1	<.005	2.8	<.01	0.033	3	<.005	1.95	<.01	4	<.03	<.03	4.4	<.01	0.102	0.013	<.005	<.03	0.05
17/03/99	<.003	0.24	<.005	0.22	0.043	<.001	<.04	17.7	<.001	<.005	<.005	0.025	0.09	<1	<.005	2.9	<.01	<.002	4	<.005	<.04	<.01	4	<.03	<.03	4.2	<.01	0.083	<.005	<.005	<.03	0.04
18/06/99	<.003	0.15	<.005	0.08	0.095	<.001	<.04	4.1	0.002	0.007	<.005	0.007	4.18	1	<.005	0.8	<.01	0.021	2	<.005	0.77	0.11	2	<.03	<.03	1.9	<.01	0.049	0.104	<.005	<.03	0.24
29/07/99	<.0001	0.03	<.001	0.01	0.0167	<.0001	<.001	2.9	<.0001	<.0002	<.0002	0.002	0.07	0.4	<.0002	0.61	0.001	<.0001	0.8	<.0002	<.002	<.001	1.4	<.001	<.001	2.46	<.0004	0.0237	0.0035	<.0002	<.001	0.002
31/08/99	<.0001	0.038	<.001	0.017	0.0245	<.0001	<.001	8.073	0.0051	<.0002	<.0002	0.0113	0.421	0.42	<.0002	0.698	0.0017	0.0009	2.43	0.0008	<.002	<.001	2.59	<.001	<.001	2.702	<.0004	0.0385	0.0221	0.0011	<.001	0.0015
12/10/1999	<.003	0.05	<.005	<.05	0.131	<.001	<.04	9.8	0.001	<.005	<.005	0.013	0.2	<1	<.005	1.6	<.01	<.002	3	<.005	<.04	<.01	3	<.03	<.005	4.3	<.01	0.051	0.028	<.005	<.03	0.01
20/06/00	<.003	0.19	<.005	<.05	0.211	0.001	<.05	4.5	<.001	<.005	<.005	0.017	0.61	1	<.005	0.6	0.08	<.002	1	<.005	<1	0.04	<1	<.03	<.005	2.2	<.01	0.044	0.065	0.009	<.03	0.06
12/9/2000	<.003	0.33	<.005	0.1	0.15	<.001	<.05	12.8	0.01	<.005	<.005	0.103	4.44	<1	<.005	2.4	0.01	0.029	3	0.023	4	0.02		<.03	<.005	5.3	<.01	0.004	0.085	<.005	<.03	0.02
5/3/2001	<.003	0.36	<.005	0.08	0.226	<.001	<.05	18	<.001	<.005	0.011	0.025	0.045	5.51	0.033	3	<.01	<.002	7	<.005	<1	<.01	5	<.03	<.005	4.6	<.01	0.1	0.01	0.023	<.03	0.02
13/06/01	<.003	0.21	0.022	0.87	0.136	<.001	<.05	3.9	<.001	<.005	0.121	0.015	0.41	<1	<.005	0.8	0.07	<.002	2	0.007	<1	<.01	1	<.03	0.023	2.2	0.04	0.025	0.009	<.005	<.03	0.03
STATION: V27																																
5/3/1991			0.05									<0.001	0.122									0.005										0.016
16/05/91			0.05									0.011	2.84									0.035										0.057
21/08/91			0.05									<0.001	0.092									0.009										0.08
8/10/1991			0.05									<0.001	0.088									0.004										0.05
27/11/91			0.05									<0.001	0.005									0.012										0.026
27/02/92												0.001										0.009										0.071
10/7/1992												0.005										0.037										0.08
25/09/92												0.006										0.005										0.159
8/6/1994			<0.04									0.002										<0.03										0.04
15/10/94			<0.04									<0.002										<0.03										0.04
11/3/1995			0.001									<0.002	0.79									<0.03										0.05
24/07/95			<0.020									<0.002	0.21									<0.020										0.02
1/8/1995			<0.020									<0.002	0.25									<0.020										0.05
12/9/1995			<0.020									<0.002	0.26									<0.005										0.06
20/12/95			<0.020									<0.002	0.2									<0.020										0.04
22/03/96	<.003	0.07	<.02		0.051	<.001	<.04	24.1	<.002	<.005	<.005	<.002	0.04		<.005	6.3	<.01	<.002	<1	<.005	0.05	<.02	5	<.03		1.05		0.125	<.005	<.005	<.03	0.02
24/09/96	<.003	0.05	<.02		0.111	0.001	<.04	57.4	0.008	<.005	0.005	0.025	0.26		<.005	21.1	0.01	<.002	7	0.024	0.11	<.02	22	<.03		4.6		0.25	<.005	<.005	<.03	0.02
5/12/1996	<.003	0.28	<.02		0.123	<.001	<.04	32.7	<.002	<.005	0.009	<.002	0.03		<.005	9.1	<.01	<.002	3	<.005	<.04	<.02	8	<.03		4.6		0.192	<.005	<.005	<.03	0.08
10/3/1997	<.003	0.26	<.02	<.05	0.086	<.001	<.04	35.1	<.002	<.005	<.005	<.002	0.02		<.005	9.2	<.01	0.004	3	<.005	0.28	<.02	10	<.03	<.005	2.8	<.01	0.167	<.005	<.005	<.03	0.04
6/5/1997	<.003	1.04	<.02	<.05	0.08	<.001	<.04	24.6	<.002	<.005	<.005	0.013	1.97	2	<.005	6.8	0.08	<.002	2	<.005	0.09	<.02	13	<.03	<.005	3.2	<.01	0.13	0.025	<.005	<.03	0.12
30/06/97	<.003	0.14	<.02	<.05	0.04	<.001	<.04	15.4	<.002	<.005	0.01	0.007	<.01	<1	<.005	3.5	0.1	0.013	2	<.005	<.04	<.02	15	<.03	<.03	3.8	<.01	0.08	<.005	<.005	<.03	0.44
24/07/97	<.003	0.11	<.02	<.05	0.029	<.001	<.04	9.6	<.002	0.01	<.005	0.015	0.27	<1	0.008	2.2	<.01	<.002	1	<.005	2.05	<.02	12	<.03	<.03	3	<.01	0.059	<.005	<.005	<.03	0.11
28/08/97	<.0006	0.09	0.005	<.01	0.0485	<.0002	<.008	19.69	<.0004	<.001	<.001	0.0025	0.012	<2	0.001	4.97	<.002	0.0018	2.4	<.001	<.008	<.004	11	<.006	<.001	4.023	<.002	0.1219	<.001	<.001	<.006	0.012
30/09/97	<.003	0.05	0.02	<.05	0.093	<.001	<.04	41	<.002	<.005	0.013	0.023	0.11	1	<.005	13	0.02	0.004	5	<.005	0.99	<.02	42	0.04	<.03	2.6	<.01	0.225	0.008	<.005	<.03	0.08
15/12/97	<.003	<.05	<.02	<.05	0.12	<.001	<.04	36.9	<.002	0.013	<.005	0.008	0.07	<1	0.008	9.7	<.01	<.002	2	0.009	0.06	<.02	21	<.03	<.03	2.8	<.01	0.196	0.005	0.01	<.03	0.04
29/05/98	<.003	0.2	<.02	<.05	0.104	0.002	<.04	6.3	<.002	0.008	0.033	0.01	0.53	<1	0.006	2	0.02	<.002	<1	<.005	0.3	<.02	15	<.03	<.03	2.6	<.01	0.032	0.012	0.008	<.03	0.09
29/06/98	<.003	<.05	<.02	<.05	0.139	<.001	<.04	12.8	<.002	<.005	<.005	0.008	0.01	<1	<.005	2.9	<.01	<.002	2	<.005	1.66	<.02	14	<.03	<.03	4	<.01	0.076	0.007	<.005	<.03	0.05
14/09/98	<.003	0.13	<.02	<.05	0.089	<.001	<.04	16.4	<.002	0.008	0.027	0.021	0.08	<1	<.005	3.8	<.01	0.005	3	<.005	<.04	<.02	6.1	<.03	<.03	4.5	<.01	0.094	0.011	<.005	<.03	0.04
16/03/99	<.003	0.25	<.005	0.22	0.081	<.001	<.04	42.9	<.001	<.005	0.069	0.024	0.07	<1	<.005	10.3	<.01	<.002	4	<.005	0.39	<.01	15	<.03	<.03	4.2	<.01	0.197	<.005	<.005	<.03	0.07
18/06/99	<.003	0.19	<.005	0.11	0.1	<.001	<.04	5.9	<.001	<.005	0.227	0.015	0.5	<1	<.005	1.5	<.01	<.002	2	<.005	0.08	<.01	1	0.06	<.03	1.8	<.01	0.053	0.007	0.012	<.03	0.06
29/07/99	<.0001	0.08	<.001	0.02	0.0289	<.0001	<.001	10.73	0.0002	<.0002	<.0002	0.0261	0.17	0.3	<.0002	2.6	0.005	<.0001	1.1	0.004	<.002	<.001	3.1	<.001	<.001	3.73	<.0004	0.0464	0.0039	<.0002	<.001	0.04
31/08/99	<.0001	0.046	<.001	0.057	0.0368	<.0001	<.001	14.778	0.0009	<.0002	<.0002	0.0076	0.134	0.42	<.0002	3.355	0.0032	<.0001	2.42	0.0009	<.002	<.001	5.68	<.001	<.001	3.442	<.0004	0.0703	0.0058	<.0002	<.001	0.0283
12/10/1999	<.003	0.08	<.005	<.05	0.13	<.001	<.04	21.5	<.001	<.005	<.005	0.018	0.2	<1	<.005	4.9	<.01	<.002	3	<.005	<.04	<.01	8	<.03	<.005	4	<.01	0.111	0.012	<.005	<.03	0.07
25/03/00	<.003	0.06	<.005	0.08	0.213	<.001	<.05	41.2	<.001	0.034	<.005	<.002	0.02	3	<.005	10.4	<.01	<.002	8	<.005	<1	<.01	17	<.03	<.005	4.1	<.01	0.218	<.005	<.005	<.03	0.04
20/06/00	<.003	0.19	<.005	<.05	0.138	0.001	<.05	8.2	<.001	<.005	<.005	0.007	0.2	1	<.005	1.9	<.01	<.002	2	<.005	2	<.01	<1	<.03	<.005	2.2	<.01	0.092	0.009	<.005	<.03	0.04
12/9/2000	<.003	0.12	<.005	<.05	0.128	<.001	<.05	28.7	0.003	<.005	<.005	0.008	0.23	<1	<.005	5.3	<.01	<.002	3	0.013	<1	0.01		<.03	<.005	3.3	<.01	0.068	<.005	<.005	<.03	0.04
7/6/2001	<.003	0.8	<.005	0.09	0.156	<.001	<.05	9.8	<.001	<.005	0.182	0.017	1.37	<1	<.005	3.1	0.08	<.002	<1	<.005	<1	0.02	5	<.03	<.005	2.4	<.01	0.044	0.018	<.005	<.03	0.05
STATION: V8																																
18/02/88		0.09	<0.05	<0.001	0.095	<0.001		102	<0.002	0.011	<0.005	<0.005	0.141			47.1	0.016	0.011	4.5	<0.02	0.06	0.06		<0.05	0.07	4.7	<0.01	0.394	<0.002	<0.005		<0.002
29/05/89	<0.01	1.86	<0.05	<0.01	0.069	<0.001		35.7	<0.005	<0.005	<0.005	0.014	1.99			14.2	0.034	<0.01	2.2	<0.02	<0.1	<0.05		<0.05	<0.05	5.85	<0.05	0.151	0.04	<0.01		0.033
1/10/1990	<0.01	0.27	<0.05	<0.01	0.063	<0.001		57.9	0.011	<0.005	<0.005	0.007	0.622	<2		21.7	0.025	<0.01	2.9	<0.02	0.1	<0.05		<0.05	<0.05	5.26	<0.05	0.221	0.006	<0.01		0.066
26/02/91			0.05									<0.001	0.044									0.004										0.001
7/5/1991	<0.01	4.64	<0.06	<0.01	0.116	<0.001		30.9	<0.006	0.051	0.01	0.009	5.35	2		11	0.135	<0.01	1.4	<0.02	0.1	<0.06		<0.06	<0.06	11.8	<0.06	0.114	0.143	0.01		0.044
16/05/91			0.1									0.006	0.332									0.02										0.008
22/08/91			0.05									<0.001	0.088									0.004										0.011
25/09/91	<0.01	0.28	<0.06	<0.01	0.065	<0.001		55.7	<0.006	<0.006	<0.006	<0.006	0.348	<2		19.5	0.016	<0.01	2.4	<0.02	<0.1	<0.06		<0.06	<0.06		<0.06	0.199	0.009	<0.01		0.01
11/10/1991			0.05									<0.001	0.109									0.004										0.018
26/11/91			0.06									<0.001	0.005									0.093										0.001
28/02/92												0.001										0.006										0.015
28/04/92	<0.01	29.5	0.23	0.02	0.678	<0.001		83.9	0.015	<0.006	0.071	0.063	37.6	9		37.1	0.647	<0.01	3.9	0.07	1	0.22		<0.06	<0.05		<0.06	0.259	0.667	0.08		0.29
28/04/92												0.057										0.142										0.252
27/05/92												0.013										0.017										0.029
16/06/92												0.002										0.004										0.007
28/07/92												0.001										0.001										0.014
12/8/1992												0.005										0.002										0.221
9/9/1992												0.003										0.003										0.052
10/9/1992	<0.01	0.47	<0.06	<0.01	0.09	<0.001		69.2	<0.006	<0.006	<0.006	<0.006	0.554	<2		27.5	0.03	<0.01	3.2	<0.02	<0.1	<0.06		<0.06	<0.06	6.35	<0.06	0.255	0.014	<0.01		0.007
7/10/1992												0.001										<0.001										0.15

Table G5. Water Quality of Receiving and Background Waters, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/11/92	<0.01	<0.06	0.06	<0.01	0.088	<0.001		84.7	<0.006	<0.006	<0.006	<0.006	0.072	<2		36.8	0.01	<0.01	3.7	<0.02	<0.1	<0.06		<0.06	<0.06	5.67	<0.06	0.32	0.003	<0.01		0.006
26/04/93	<0.01	7.8	<0.06	<0.01	0.196	<0.001		81.3	<0.006	<0.006	0.018	0.015	9.32	4		24.1	0.187	<0.01	3	<0.02	0.1	<0.06		<0.06	<0.06	14.2	<0.06	0.18	0.167	0.02		0.06
2/8/1993	<0.01	10.6	<0.06	0.02	0.312	<0.001		78.4	<0.006	<0.006	0.037	0.02	7.96	3.9		31.2	0.117	<0.01	3.8	0.03	0.2	<0.06		<0.06	<0.06	28.8	<0.06	0.304	0.407	0.04		0.071
11/10/1994	<0.001	0.6	<0.02		0.0923	0.0003		64.2	<0.0005	<0.001	0.003	0.014	1.36	1		28.5	0.066	<0.006	3.52	0.005	<0.06	<0.01	24.7	<0.02	<0.02	7.06	<0.01	0.25	0.024	0.007		0.016
25/01/95	<0.001	0.02	<0.02		0.103	<0.0002		105	<0.0005	<0.001	<0.001	0.01	0.087	1.3		50.8	0.022	<0.005	5.38	0.004	<0.06	<0.01	54.6	<0.02	<0.02	4.49	<0.01	0.45	0.003	0.017		0.012
6/3/1995	<0.001	0.02	<0.02		0.126	<0.0002		127	<0.0005	<0.001	0.001	0.029	0.188	2.4		57.4	0.018	<0.005	7.23	0.003	<0.06	<0.01	80	<0.02	<0.02	6.68	<0.01	0.55	0.005	0.015		0.011
6/3/1995			<0.020									0.029	0.19									<0.010										0.01
7/3/1995												0.026										<0.01										0.01
26/04/95			0.002									<0.002	1.31									<0.030										0.01
9/5/1995	<0.001	3.6	<0.02		0.14	<0.0002		47.3	<0.0005	0.002	0.012	0.024	5.4	1.9		20.3	0.142	<0.005	3.04	0.015	0.17	<0.01	16.2	<0.02	<0.02	10.7	<0.01	0.18	0.09	0.013		0.046
9/5/1995			0.012									0.018	5.26									0.02										0.04
24/07/95			<0.020									0.002	0.16									0.02										0.01
1/8/1995			<0.020									0.004	0.3									0.02										<0.01
12/9/1995			<0.020									0.002	0.93									0.005										0.01
8/12/1995			0.025									0.003	0.17									0.025										0.01
22/03/96	<.003	0.45	<.02		0.14	0.001	<.04	133.1	0.003	<.005	<.005	0.003	0.03		<.005	68.7	<.01	<.002	5	<.005	0.18	<.02	96	<.03		1.53		0.61	<.005	<.005	<.03	<.01
11/6/1996	<.003	0.52	<.02		0.069	0.002	<.04	40.8	<.002	<.005	<.005	0.012	1.48		<.005	16.7	<.01	<.002	2	<.005	0.08	<.02	15	<.03		2.3		0.17	0.021	0.009	<.03	<.01
11/9/1996	<.003	0.05	<.02		0.079	0.002	<.04	32.5	<.002	<.005	<.005	0.002	0.23		<.005	11.7	0.01	<.002	5	<.005	0.07	<.02	4	<.03		4.7		0.155	<.005	<.005	<.03	0.02
19/12/96	<.003	0.15	<.02		0.095	0.004	<.04	76.1	<.002	<.005	<.005	0.004	0.15		<.005	32.4	0.01	<.002	6	<.005	0.08	<.02	38	<.03		3.6		0.335	<.005	<.005	<.03	0.04
10/3/1997	<.003	0.94	<.02	0.06	0.107	0.004	<.04	123.6	<.002	0.018	0.006	0.007	0.16		0.01	59.3	0.01	0.02	7	<.005	0.79	<.02	78	<.03	<.005	3.5	<.01	0.549	<.005	0.014	<.03	0.02
15/04/97	<.003	<.05	<.02	0.13	0.077	<.001	<.04	90.9	<.002	<.005	<.005	0.004	0.15	<1	<.005	43.2	<.01	<.002	12	0.008	<.04	<.02	51	<.03	<.03	4.7	<.01	0.363	<.005	<.005	<.03	0.01
5/5/1997	<.003	2.37	<.02	0.06	0.098	<.001	<.04	24.8	<.002	<.005	0.009	0.013	5.11	<1	<.005	9.5	0.16	0.004	2	<.005	0.2	<.02	8	<.03	<.005	4.2	<.01	0.111	0.062	<.005	<.03	0.07
30/06/97	<.003	0.41	<.02	0.12	0.06	<.001	<.04	48.1	<.002	<.005	<.005	0.014	0.17	<1	0.014	19.5	<.01	<.002	4	<.005	0.45	<.02	34	<.03	<.03	4.6	<.01	0.196	0.014	0.012	<.03	0.09
24/07/97	<.003	0.59	<.02	<.05	0.077	<.001	<.04	41.2	<.002	<.005	<.005	0.019	1.27	<1	0.007	15.9	0.04	0.004	3	<.005	1.67	<.02	6	<.03	<.03	5.3	<.01	0.2	0.028	0.024	<.03	0.04
28/08/97	<.0006	0.1	0.011	<.01	0.057	<.0002	<.008	40.04	<.0004	<.001	<.001	0.0025	0.025	<2	0.001	16.82	<.002	0.0039	3	<.001	<.008	<.004	15	<.006	<.001	3.855	<.002	0.1984	<.001	<.001	<.006	0.006
30/09/97	<.003	0.1	<.02	0.07	0.132	<.001	<.04	57.8	<.002	<.005	<.005	0.03	0.27	<1	0.006	23.2	0.01	<.002	5	<.005	<.04	<.02	27	<.03	<.03	3.2	<.01	0.205	0.013	0.006	<.03	0.09
20/10/97	<.003	<.05	<.02	<.05	0.124	<.001	<.04	66.9	<.002	<.005	<.005	0.003	0.05	<1	<.005	28.2	<.01	0.006	4	<.005	<.04	<.02	26	<.03	<.03	3.1	<.01	0.266	<.005	<.005	<.03	<.01
19/11/97	<.003	0.33	<.02	<.05	0.128	<.001	<.04	75.2	0.003	<.005	<.005	1.945	0.95	<1	<.005	31	<.01	<.002	5	<.005	0.07	<.02	35	<.03	<.03	3.3	<.01	0.294	<.005	<.005	<.03	0.02
22/12/97	<.003	<.05	<.02	<.05	0.081	<.001	<.04	79.9	0.002	<.005	<.005	0.018	0.11	<1	<.005	33.7	<.01	0.002	1	<.005	<.04	<.02	34	<.03	<.03	3.5	<.01	0.324	<.005	0.015	<.03	0.02
13/01/98	<.003	<.05	<.02	<.05	0.171	<.001	<.04	93.7	<.002	0.018	<.005	0.008	0.18	2	<.005	42.2	0.01	0.002	4	<.005	<.04	<.02	50	<.03	<.03	3.4	<.01	0.383	<.005	<.005	<.03	0.02
17/03/98	<.003	0.1	<.02	<.05	0.158	<.001	<.04	125.3	<.002	<.005	0.034	0.022	<.01	2	0.016	64.6	<.01	0.007	6	0.01	0.32	0.02	53	<.03	<.03	4.9	<.01	0.507	0.007	0.014	<.03	<.01
14/04/98	<.003	0.13	<.02	<.05	0.157	<.001	<.04	92.2	<.002	<.005	0.031	0.038	0.02	<1	0.012	44.1	0.01	0.01	8	0.012	0.04	<.02	48	<.03	<.03	4.4	<.01	0.402	0.009	<.005	<.03	0.28
19/05/98	<.003	0.5	<.02	0.23	0.064	<.001	<.04	41	<.002	<.005	0.014	0.031	0.76	2	<.005	17	0.03	<.002	3	0.012	2.6	<.02	8	0.07	<.03	3.7	<.01	0.172	0.008	<.005	<.03	0.06
30/06/98	<.003	0.26	<.02	<.05	0.189	<.001	<.04	53.6	<.002	<.005	0.032	0.011	0.13	<1	0.037	22.6	<.01	0.01	5	<.005	<.04	<.02	33	<.03	<.03	5.2	<.01	0.247	0.014	0.015	<.03	0.01
21/07/98	<.003	<.05	<.02	<.05	0.139	<.001	<.04	65.8	<.002	<.005	0.022	0.041	0.02	<1	0.032	26.9	<.01	<.002	6	0.01	<.04	<.02	9	0.03	<.03	3.7	<.01	0.276	<.005	<.005	<.03	0.01
11/8/1998	<.003	0.17	<.02	0.21	0.042	<.001	<.04	65.5	<.002	<.005	<.005	0.035	0.11	<1	<.005	25	<.01	<.002	4	<.005	<.04	0.03	35	0.06	<.03	4	<.01	0.281	<.005	0.007	<.03	0.01
15/09/98	<.003	0.05	<.02	<.05	0.113	<.001	<.04	60	<.002	<.005	<.005	0.024	0.09	1	<.005	25.1	0.01	0.007	4	0.007	<.04	<.02	27.1	<.03	<.03	3.9	<.01	0.284	0.016	<.005	<.03	0.04
19/10/98	<.003	0.21	<.02	0.1	0.083	<.001	<.04	62.8	<.002	<.005	<.005	0.018	0.35	1	<.005	25.7	0.06	0.012	5	0.026	8.88	<.02	29.2	<.03	<.03	3.4	<.01	0.274	0.102	0.008	<.03	1.31
17/11/98	<.003	0.15	<.005	<.05	0.201	<.001	<.04	131.2	<.001	<.005	0.112	0.025	0.12	2	<.005	60	0.01	0.014	8	0.01	1.65	<.01	69	<.03	<.03	4.4	<.01	0.481	0.012	<.005	<.03	0.05
31/12/98	<.003	0.25	<.005	0.21	0.228	<.001	<.04	220	<.001	<.005	<.005	0.058	0.23	3	<.005	102.6	0.01	0.005	13	0.008	13.93	<.01	154	0.05	<.03	7.9	<.01	0.95	0.029	<.005	<.03	0.03
19/01/99	<.003	0.27	0.028	0.25	0.16	0.001	<.04	182.5	0.008	<.005	0.086	0.039	0.18	3	<.005	86.2	<.01	0.005	11	<.005	<.04	<.01	145	<.03	<.03	6.3	<.01	0.844	0.022	<.005	<.03	0.02
23/02/99	0.007	0.47	<.005	0.25	0.098	<.001	<.04	244.2	<.001	<.005	0.299	0.036	0.1	4	0.031	134.2	<.01	0.009	16	<.005	3.1	<.01	177	<.03	<.03	9.3	<.01	1.081	0.027	<.005	<.03	0.05
23/03/99	<.003	0.37	<.005	0.25	0.128	<.001	<.04	140.3	0.001	<.005	0.6	0.031	0.08	3	0.019	79.6	0.27	<.002	9	<.005	1.55	<.01	88.3	<.03	<.03	4.9	<.01	0.716	0.009	0.007	<.03	0.08
20/04/99	<.003	0.31	<.005	0.14	0.095	0.001	<.04	95.5	<.001	<.005	<.005	0.024	0.44	2	<.005	53.6	0.03	0.009	8	<.005	0.1	<.01	65	<.03	<.03	4.5	<.01	0.404	0.029	<.005	<.03	0.01
18/05/99	<.003	1.24	<.005	<.05	0.166	0.002	<.04	31.8	<.001	<.005	<.005	0.016	2.15	2	<.005	12	0.06	0.003	3	0.009	3.18	<.01		<.03	<.03	4.2	<.01	0.143	0.019	0.009	<.03	0.05
20/06/99	0.003	13.82	<.005	0.08	0.389	<.001	<.04	39.1	<.001	<.005	0.124	0.044	25.27	4	0.027	20.9	0.23	<.002	4	0.021	<.04	0.05	11	<.03	<.03	27	<.01	0.197	0.399	0.034	<.03	<.01
29/07/99	<.0001	4.67	<.001	0.01	0.157	0.0003	<.001	42.7	<.0001	<.0002	0.018	0.0204	7.337	1.4	0.005	18.2	0.111	<.0001	2.4	0.018	0.196	0.018	11.2	<.001	<.001	8.65	<.0004	0.1592	0.133	0.011	<.001	0.032
31/08/99	<.0001	0.082	<.001	0.045	0.0495	0.0002	<.001	58.09	0.0023	0.0004	<.0002	0.0092	0.242	0.81	<.0002	22.277	0.0088	0.0009	5.29	<.0002	<.002	<.001	20.83	<.001	<.001	2.795	<.0004	0.1679	0.0127	<.0002	<.001	<.0004
12/10/1999	<.003	0.2	<.005	<.05	0.152	<.001	<.04	61.5	<.001	0.007	<.005	0.024	0.8	2	0.008	24.9	0.02	<.002	5	<.005	<.04	0.02	25	<.03	<.005	4.7	<.01	0.253	0.023	<.005	<.03	<.01
14/12/99	<.003	0.26	<.005	<.05	0.14	<.001	<.04	78.1	0.002	<.005	<.005	0.025	0.06	5	<.005	28.9	0.01	<.002	4	0.02	<.04	<.01	32	<.03	<.005	3	<.01	0.282	0.008	0.008	<.03	0.03
28/02/00	<.003	0.33	<.005	<.05	0.148	<.001	0.06	88.6	<.001	<.005	<.005	0.028	0.35	3	0.025	40	<.01	<.002	6	0.005	<1	0.02	44	<.03	<.005	5	<.01	0.372	0.028	0.009	<.03	0.02
27/04/00	<.003	0.35	<.005	<.05	0.186	0.001	<.05	74.8	<.001	<.005	<.005	0.021	0.35	2	<.005	33.1	0.13	<.002	5	0.007	<1	<.01		<.03	<.005	4.2	<.01	0.301	0.042	<.005	<.03	0.04
15/05/00	<.003	1.1	0.022	<.05	0.143	<.001	<.05	46	<.001	0.024	0.157	0.015	1.91	2	0.027	20.1	0.03	0.004	<1	0.008	<1	0.01		<.03	<.005	5.4	<.01	0.278	0.041	0.014	<.03	0.04
20/06/00	<.003	0.41	<.005	<.05	0.173	0.001	<.05	33.9	<.001	<.005	<.005	0.012	0.72	2	<.005	13.7	0.03	<.002	3	<.005	2	<.01	<1	<.03	<.005	4.3	<.01	0.181	0.027	<.005	<.03	<.01
25/07/00	<.003	0.98	<.005	<.05	0.17	0.002	<.05	44.8	<.001	0.014	<.005	0.018	2.26	3	0.122	17.3	0.04	<.002	5	0.022	2	<.01		<.03	<.005	5.5	<.01	0.317	0.043	0.052	<.03	<.01
29/08/00	<.003	2.02	<.005	<.05	0.169	<.001	<.05	38.1	<.001	<.005	<.005	0.019	3.91	1	<.005	14.3	0.12	<.002	3	0.006	3	<.01		<.03	<.005	8.3	<.01	0.152	0.054	0.021	<.03	<.01
12/9/2000	<.003	0.89	<.005	0.15	0.189	<.001	<.05	58.3	<.001	<.005	<.005	0.046	1.24	<1	<.005	21.8	0.02	0.006	3	0.013	3	<.01		<.03	<.005	6.7	<.01	0.183	0.026	<.005	<.03	0.02
26/09/00	<0.01	1.1	<0.2	<0.1	0.09	<0.005	<0.1	51.8	<0.001	<0.01	<0.01	<0.01	1.57	<2		19.1	0.055	<0.01	3	<0.05	<0.3	<0.05		<0.2	<0.2	8.12	<0.03	0.203	0.03	<0.03		0.012
29/10/00	<.003	0.4	<.005	0.08	0.278	0.002	<.05	69.7	<.001	<.005	<.005	0.04	2.3	3	<.005	27.9	<.01	<.002	7	<.005	9	<.01	119	<.03	<.005	5.1	<.01	0.311	0.049	<.005	<.03	0.01
13/11/00	<0.003	0.21	<0.005	<0.05	0.16	<0.001	<0.05	80	0.001	<0.005	0.01	0.008	0.29	1	0.024	35.7	0.05	<0.002	5	<0.005	0.03	<0.01	35	<0.03	<0.005	5.3	0.09	0.337	<0.005	0.009	<0.03	0.01
18/11/00	<0.01	0.15	<0.2	<0.1	0.1	<0.005	<0.1	83.1	<0.001	<0.01	<0.01	<0.01	0.25	<2		33.3	0.019	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.2	4.8	<0.03	0.35	<0.01	<0.03		0.005
14/12/00	<0.01	0.09	<0.2	<0.1	0.09	<0.005	<0.1	81	<0.001	<0.01	<0.01	<0.01	0.16	<2		39.9	0.007	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.2	4.52	<0.03	0.341	<0.01	<0.03		<0.005
13/01/01	<.003	0.08	<.005	<.05	0.165	0.002	<.05	86.5	0.013	<.005	<.005	0.034	1.07	3	<.005	37.9	<.01	0.009	6	<.005	<1	<.01	91	<.03	<.005	4.8	<.01	0.369	0.028	<.005	<.03	<.01
10/2/2001	<.003	0.12	<.005	0.06	0.225	0.003	<.05	93.7	<.001	<.005	<.005	0.014	0.1	3	<.005	41.8	<.01	<.002	7	<.005	<1	<.01	112	<.03	<.005	5	<.01	0.224	0.012	<.005	<.03	<.01
5/3/2001	<.003	0.484	0.01	0.089	0.267	0.001	<.05	61	<.001	<.005	0.017	0.022	0.177	4.31	<.005	14	0.02	<.002	8	<.005	<1	<.01	24	<.03	<.005	5	<.01	0.3	0.01	0.028	<.03	0.03
10/3/2001	<.003	0.505	<.005	0.105	0.271	<.001	<.05	101	<.001	<.005	<.005	0.02	0.211	1.94	<.005	47	0.03	<.002	9	<.005	<1	<.01	56	<.03	<.005	4.5	<.01	0.43	0.01	<.005	<.03	0.04
16/04/01	<.003	0.2	<.005	<.05	0.177	<.001	0.06	105.1	0.002	<.005	<.005	0.014	0.2	<1	<.005	49	0.02	0.011	7	<.005	<1	<.01	52	<.03	<.005	4.3	<.01	0.448	0.009	0.006	<.03	0.04
14/05/01	<.003	1.19	<.005	<.05	0.22	<.001	<.05	50.2	<.001	<.005	0.006	0.012	2.1	3	0.005	20.9	0.07	<.002	<1	<.005	<1	<.01	19	<.03	<.005	3.9	<.01	0.18	0.032	0.02	<.03	0.01
13/06/01	<.003	0.61	<.005	0.19	0.177	<.001	<.05	25.4	<.001	<.005	0.031	0.009	1.01	<1	0.006	9.9	0.25	<.002	3	0.021	<1	<.01	8	0.04	0.059	4.2	0.01	0.123	0.018	<.005	<.03	0.03
17/06/01	<.003	1.24	<.005	0.07	0.193	<.001	<.05	31.8	<.001	<.005	0.01	0.006	2.14	1	0.007	11.3	0.16	0.003	4	<.005	<1	<.01	9	<.03	<.005	3.1	0.02	0.143	0.025	<.005	<.03	0.03
14/07/01	<.003	0.72	0.019	0.08	0.32	<.001	<.05	61.3	<.001	<.005	0.016	0.005	1.2	1	0.008	24.9	0.04	<.002	6	0.008	<1	<.01	21	<.03	<.005	5.7	<.01	0.284	0.017	<.005	<.03	0.04
14/08/01	<0.003	1.38	<0.005	<0.05	0.309	<0.001	<0.05	79.4	<0.001	<0.005	0.013	0.01	2.03	1	<0.005	33.8	<0.01	0.003	5	0.006	<1	<0.01	25	<0.03	<0.005	7.4	0.06	0.388	0.032	<0.005	<0.03	0.03
8/9/2001	<0.003	0.19	<0.005	3.8	0.148	<0.001	<0.05	68.8	<0.001	<0.003	0.007	0.004	0.28	1	0.019	27.4	0.02	<0.002	<1	0.006	<1	<0.01	28	<0.03	0.028	5.1	<0.01	0.301	0.009	<0.005	<0.03	0.06
17/09/01	<0.003	0.2	<0.005	<0.05	0.195	<0.001	<0.05	67.8	<0.001	<0.005	<0.005	0.003	0.23	1	0.015	26	<0.01	<0.002	<1	<0.005	<1	<0.01	25	<0.03	<0.005	5.3	<0.01	0.311	0.006	<0.005	<0.03	<0.01
15/10/01	<0.003	0.28	<0.005	0.14	0.276	<0.001	<0.05	80.1	<0.001	<0.005	<0.005	0.003	0.21	2	0.02	35.2	<0.01	<0.002	2	<0.005	<1	<0.01	33	<0.03	<0.005	5.8	<0.01	0.357	0.011	<0.005	<0.03	<0.01
13/11/01	<0.003	0.21	<0.005	<0.05	0.16	<0.001	<0.05	80	0.001	<0.005	0.01	0.008	0.29	1	0.024	35.7	0.05	<0.002	5	<0.005	0.03	<0.01	35	<0.03	<0.005	5.3	0.09	0.337	<0.005	0.009	<0.03	0.01
14/12/01	<0.001	0.13	<0.005	<0.05	0.098	<0.001	<0.05	91.5	<0.001	<0.005	0.008	0.002	0.15	1	0.017	40.4	0.03	0.017	2	0.006	0.01	<0.01	35	<0.03	<0.005	5	0.02	0.349	<0.005	<0.005	<0.03	<0.01

STATION: VGMAIN

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
16/05/96	<.003	0.35	<.02		0.049	<.001	<.04	33.1	<.002	<.005	<.005	0.029	0.57		<.005	11.1	0.02	<.002	1	<.005	<.04	<.02	16	<.03		1.06		0.184	<.005	<.005	<.03	0.02
5/5/1997	<.003	0.97	0.04	<.05	0.074	<.001	<.04	22.8	<.002	0.041	0.005	0.01	2.12	4	<.005	8	0.12	<.002	1	<.005	<.04	<.02	8	<.03	<.005	2.7	<.01	0.109	0.022	<.005	<.03	0.1
30/06/97	<.003	0.12	<.02	0.08	0.048	<.001	<.04	29.8	<.002	<.005	0.008	0.014	<.01	<1	0.02	10	<.01	0.005	3	0.012	<.04	<.02	14	<.03	<.03	3.8	<.01	0.14	0.008	0.009	<.03	0.13
24/07/97	<.003	0.18	<.02	<.05	0.045	<.001	<.04	21.1	<.002	0.007	<.005	0.012	0.34	<1	<.005	6.7	<.01	<.002	2	<.005	<.04	<.02	10	<.03	<.03	4	<.01	0.118	<.005	0.013	<.03	0.09
30/09/97	<.003	<.05	<.02	<.05	0.1	<.001	<.04	51.1	<.002	<.005	0.012	0.023	0.11	<1	0.008	17.8	<.01	0.01	6	0.008	0.13	<.02	45	<.03	<.03	2.7	<.01	0.236	0.007	0.014	<.03	0.05
20/10/97	<.003	<.05	<.02	<.05	0.16	<.001	<.04	85.9	<.002	<.005	<.005	0.004	0.08	1	<.005	27	0.02	<.002	5	0.007	0.04	<.02	78	<.03	<.03	2	<.01	0.487	<.005	<.005	<.03	0.05
19/11/97	<.003	<.05	<.02	0.05	0.138	0.003	<.04	60.7	0.003	<.005	<.005	0.009	0.49	<1	<.005	21.6	<.01	0.004	4	0.009	0.1	0.02	33	<.03	<.03	3.2	<.01	0.289	0.007	0.008	<.03	0.04
23/12/97	<.003	<.05	<.02	<.05	0.08	<.001	0.04	60.5	<.002	<.005	0.013	0.01	0.05	<1	<.005	21.7	<.01	<.002	<1	<.005	0.45	<.02	35	<.03	<.03	3	<.01	0.298	<.005	0.025	<.03	0.03

Table G5. Water Quality of Receiving and Background Waters, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/03/98	<.003	0.08	<.02	<.05	0.162	<.001	<.04	73.2	<.002	<.005	0.018	0.013	0.11	<1	<.005	31.4	0.01	<.002	6	0.01	<.04	<.02	107	<.03	<.03	3.9	<.01	0.342	<.005	0.015	<.03	0.05
14/04/98	<.003	0.11	<.02	<.05	0.18	<.001	<.04	67.1	<.002	<.005	0.027	0.038	0.1	<1	<.005	28	0.02	0.004	6	0.009	<.04	<.02	32	<.03	<.03	3.9	<.01	0.342	0.007	<.005	<.03	0.32
19/05/98	<.003	0.67	<.02	0.2	0.059	<.001	<.04	21.6	<.002	<.005	0.028	0.035	1.11	1	<.005	7.6	0.04	<.002	2	0.011	0.79	<.02	7	0.04	<.03	3	<.01	0.097	0.009	<.005	<.03	0.08
30/06/98	<.003	<.05	<.02	<.05	0.144	<.001	<.04	27.9	<.002	<.005	0.027	0.008	<.01	<1	<.005	9.8	<.01	0.003	3	<.005	2.49	<.02	13	<.03	<.03	4	<.01	0.14	0.011	<.005	<.03	0.03
21/07/98	<.003	<.05	<.02	<.05	0.121	<.001	<.04	37.6	<.002	<.005	0.037	0.03	<.01	<1	0.015	13.3	<.01	<.002	4	0.008	<.04	<.02	8	<.03	<.03	2.8	<.01	0.181	<.005	<.005	<.03	0.04
15/09/98	<.003	<.05	<.02	<.05	0.098	<.001	<.04	27.4	<.002	<.005	<.005	0.015	0.04	1	<.005	9.6	<.01	0.007	3	<.005	<.04	<.02	11.4	<.03	<.03	2.9	<.01	0.14	0.018	<.005	<.03	0.01
19/10/98	<.003	0.09	<.02	0.11	0.055	<.001	<.04	39.1	<.002	<.005	<.005	0.013	0.08	<1	<.005	14	<.01	<.002	4	0.01	2.22	<.02	16	<.03	<.03	3	<.01	0.163	0.022	0.006	<.03	0.03
17/11/98	<.003	<.05	<.005	<.05	0.168	<.001	<.04	65.5	<.001	<.005	0.023	0.019	0.05	2	<.005	27.2	<.01	0.007	6	<.005	1.08	<.01	29	<.03	<.03	3.4	<.01	0.278	0.009	<.005	<.03	0.04
31/12/98	<.003	0.13	<.005	0.24	0.095	<.001	<.04	78.4	<.001	<.005	<.005	0.047	0.17	2	<.005	42.6	<.01	0.007	7	0.012	<.04	<.01	50	<.03	<.03	3.9	<.01	0.446	0.012	<.005	<.03	0.02
20/04/99	<.003	0.08	<.005	0.14	0.074	<.001	<.04	55.5	0.002	<.005	<.005	0.014	0.03	1	<.005	26.2	0.02	0.011	5	<.005	0.8	<.01	36	<.03	<.03	3	<.01	0.274	0.014	<.005	<.03	0.02
18/05/99	<.003	0.74	<.005	<.05	0.137	0.002	<.04	25.8	<.001	<.005	<.005	0.021	1.45	1	0.007	8.6	0.05	0.04	2	0.007	0.74	<.01		<.03	<.03	3.3	<.01	0.129	<.005	<.005	<.03	0.08
20/06/99	<.003	0.65	<.005	0.08	0.105	<.001	<.04	10.5	0.002	<.005	0.049	0.009	1.78	1	0.007	3.8	0.02	<.002	2	<.005	1.92	<.01	3	<.03	<.03	2.8	<.01	0.084	0.02	<.005	<.03	0.12
29/07/99	<.0001	0.11	<.001	0.02	0.0327	<.0001	<.001	20.08	<.0001	<.0002	0.009	0.0166	0.206	0.4	<.0002	6.65	0.005	<.0001	1.3	0.002	0.061	0.005	5.1	<.001	<.001	3.09	<.0004	0.0708	0.0047	<.0002	<.001	0.024
12/10/1999	<.003	0.1	0.005	<.05	0.149	<.001	<.04	38.8	0.002	0.005	<.005	0.022	0.15	2	0.008	12.5	<.01	<.002	4	0.018	<.04	<.01	14	<.03	<.005	3.9	<.01	0.17	0.018	<.005	<.03	0.03
27/04/00	<.003	0.21	<.005	<.05	0.203	<.001	0.05	52.8	<.001	<.005	<.005	0.018	0.17	1	<.005	22	0.11	<.002	4	0.011	<1	<.01		<.03	<.005	3.7	<.01	0.257	0.035	0.008	<.03	0.03
15/05/00	<.003	0.27	<.005	<.05	0.125	<.001	<.05	44.4	<.001	0.005	0.171	0.01	0.28	1	0.027	18.4	<.01	<.002	<1	<.005	<1	<.01		<.03	<.005	4.3	<.01	0.303	0.016	<.005	<.03	0.1
20/06/00	<.003	0.19	<.005	<.05	0.168	0.001	<.05	16.8	<.001	<.005	<.005	0.009	0.2	<1	<.005	5.6	<.01	<.002	2	<.005	<1	<.01	<1	<.03	<.005	2.7	<.01	0.121	0.015	<.005	<.03	<.01
25/07/00	<.003	<.05	<.005	<.05	0.123	0.001	<.05	24.4	0.003	0.024	<.005	0.012	0.62	3	0.127	7.6	0.02	<.002	3	0.028	2	<.01		<.03	<.005	3.4	<.01	0.229	0.021	0.038	<.03	0.06
29/08/00	<.003	0.32	<.005	<.05	0.108	<.001	<.05	33.4	<.001	<.005	<.005	<.002	0.64	1	<.005	10.2	0.02	<.002	3	0.01	<1	<.01		<.03	<.005	4.7	<.01	0.14	0.011	0.007	<.03	0.11
26/09/00	<0.01	0.37	<0.2	<0.1	0.08	<0.005	<0.1	37	<0.001	<0.01	<0.01	<0.01	0.58	<2		10.9	0.021	<0.01	<2	<0.05	<0.3	<0.05		<0.2	<0.2	4.54	<0.03	0.14	0.01	<0.03		0.05
29/10/00	<.003	0.38	<.005	<.05	0.225	0.002	<.05	57.2	0.001	<.005	0.029	0.042	1.01	4	<.005	20.6	0.03	<.002	6	<.005	5	<.01	81	<.03	<.005	5.1	<.01	0.248	0.048	<.005	<.03	0.05
13/11/00	<0.003	0.08	<0.005	<0.05	0.152	<0.001	<0.05	70.2	<0.001	<0.005	0.01	0.012	0.12	1	0.028	29.3	0.07	<0.002	4	<0.005	0.06	0.02	32	0.06	<0.005	5	0.14	0.308	<0.005	<0.005	<0.03	0.05
18/11/00	<0.01	0.08	<0.2	<0.1	0.09	<0.005	<0.1	74.2	<0.001	<0.01	<0.01	<0.01	0.1	<2		25.9	0.005	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.03	<0.2	4.82	0.294	<0.01	<0.03		0.048
14/12/00	<0.01	<0.05	<0.2	<0.1	0.09	<0.005	<0.1	76.5	<0.001	<0.01	<0.01	<0.01	0.08	<2		28	0.005	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.2	4.54	<0.03	0.321	<0.01	<0.03		0.023
13/01/01	<.003	0.1	<.005	<.05	0.187	0.002	<.05	67.6	<.001	<.005	0.139	0.025	0.4	3	<.005	25.4	0.09	<.002	4	0.021	<1	<.01	59	<.03	<.005	4.4	<.01	0.356	0.022	0.024	<.03	0.04
10/2/2001	<.003	<.05	<.005	<.05	0.202	0.002	<.05	69	<.001	0.024	<.005	0.009	0.08	3	0.073	26.2	0.04	<.002	6	<.005	<1	<.01	71	<.03	<.005	4.2	<.01	0.183	<.005	<.005	<.03	0.01
10/3/2001	<.003	0.307	<.005	0.09	0.272	<.001	<.05	78	<.001	<.005	<.005	0.015	0.017	<1	<.005	29	<.01	<.002	7	<.005	<1	<.01	41	<.03	<.005	4.1	<.01	0.34	<.005	0.013	<.03	0.05
16/04/01	<.003	0.09	<.005	<.05	0.142	<.001	<.05	82	<.001	<.005	<.005	0.01	0.06	<1	0.005	31.8	<.01	<.002	6	<.005	<1	<.01	40	<.03	<.005	4.1	<.01	0.368	0.005	<.005	<.03	0.08
14/05/01	<.003	0.2	<.005	<.05	0.22	<.001	<.05	59.4	<.001	0.007	0.006	0.01	0.24	2	<.005	21.2	<.01	0.005	<1	<.005	<1	<.01	26	<.03	<.005	3.1	<.01	0.231	<.005	0.013	<.03	0.05
17/06/01	<.003	1.03	<.005	0.07	0.178	<.001	<.05	18.3	<.001	<.005	<.005	0.023	0.98	<1	0.065	5.9	0.08	0.033	3	<.005	<1	<.01	7	<.03	<.005	1.6	<.01	0.081	0.016	<.005	<.03	0.08
14/07/01	<.003	0.17	<.005	0.07	0.226	<.001	<.05	39.2	<.001	<.005	<.005	<.002	0.1	<1	<.005	12.8	<.01	<.002	3	<.005	<1	<.01	16	<.03	<.005	4.9	0.03	0.182	<.005	<.005	<.03	<.01
14/08/01	<0.003	0.09	<0.005	<0.05	0.223	<0.001	<0.05	58.3	<0.001	<0.005	<0.005	0.011	0.08	1	<0.005	21.4	<0.01	0.003	5	<0.005	<1	<0.01	25	<0.03	<0.005	5.3	0.02	0.26	<0.005	<0.005	<0.03	<0.01
17/09/01	<0.003	0.06	0.009	<0.05	0.179	<0.001	<0.05	40.2	<0.001	<0.005	<0.005	0.005	0.03	<1	0.005	14.8	<0.01	<0.002	2	<0.005	<1	<0.01	18	<0.03	<0.005	4.3	<0.01	0.194	<0.005	<0.005	<0.03	0.02
15/10/01	<0.003	0.06	<0.005	0.13	0.235	<0.001	<0.05	54.8	<0.001	<0.005	<0.005	0.003	<0.01	1	0.016	21.9	<0.01	<0.002	2	<0.005	<1	<0.01	26	<0.03	<0.005	5.2	<0.01	0.258	<0.005	<0.005	<0.03	0.04
13/11/01	<0.003	0.1	<0.005	<0.05	0.144	<0.001	<0.05	60.4	0.001	<0.005	0.018	0.015	0.09	1	0.024	23.9	0.07	<0.002	3	<0.005	0.02	0.04	29	0.04	<0.005	5	0.07	0.267	<0.005	<0.005	<0.03	0.04
14/12/01	<0.001	0.11	<0.005	<0.05	0.083	<0.001	<0.05	65.7	<0.001	<0.005	<0.005	<0.002	0.07	<1	0.017	25.7	0.03	<0.002	2	<0.005	0.03	<0.01	28	<0.03	<0.005	4.6	<0.01	0.261	<0.005	<0.005	<0.03	0.04

STATION: V8

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
16/02/88		0.1	<0.05	<0.001	0.084	<0.001		76.1	<0.002	0.007	<0.005	0.006	0.049			38.6	0.014	0.02	4.3	<0.02	0.07	0.04		0.05	<0.05	4.5	0.02	0.328	<0.002	<0.005		0.026
29/05/89	<0.01	0.51	<0.05	<0.01	0.033	<0.001		18.9	<0.005	<0.005	<0.005	0.01	0.563			8.1	0.015	<0.01	1.3	<0.02	<0.1	<0.05		<0.05	<0.05	3	<0.05	0.073	0.013	<0.01		0.03
25/07/89	<0.01	0.23	<0.05	<0.01	0.066	<0.001		44.3	<0.005	0.007	0.008	0.037	0.317	4		15.9	0.014	<0.01	2.5	<0.02	<0.1	0.11		<0.05	<0.05	4.65	<0.05	0.192	0.005	0.01		0.012
11/7/1990	<0.01	0.19	<0.05	0.03	0.048	<0.001		28.9	<0.005	<0.005	<0.005	<0.005	0.206	<2		10	0.009	<0.01	2	<0.02	<0.1	<0.05		<0.05	<0.05	4.79	<0.05	0.135	<0.002	<0.01		0.0166
2/10/1990	<0.01	1.75	<0.05	<0.01	0.097	<0.001		41.9	<0.005	0.007	<0.005	<0.005	1.65	<2		14.9	0.034	<0.01	2.4	<0.02	<0.1	<0.05		<0.05	<0.05	7.85	<0.05	0.179	0.047	<0.01		0.036
3/4/1991			0.05									<0.001	0.081									0.006										0.047
10/4/1991			0.05									0.013	0.09									0.012										0.017
16/04/91			0.05									0.013	0.09									0.012										0.017
23/04/91			0.05									0.006	0.448									0.018										0.026
1/5/1991			0.05									0.009	1.47									0.026										0.033
7/5/1991	<0.01	21.6	0.13	<0.01	0.42	<0.001		32.5	<0.006	0.241	0.052	0.056	31.1	5		18.1	0.558	<0.01	2.8	0.05	0.6	0.46		<0.06	<0.06	35.8	<0.06	0.148	0.474	0.04		0.364
10/5/1991			0.05									0.008	0.372									0.008										0.021
17/05/91			0.05									0.235	1.16									0.033										0.024
24/05/91			0.05									0.01	1.26									0.285										0.026
30/05/91			0.05									0.017	1.82									0.175										0.034
5/6/1991			0.05									0.209	0.291									0.039										0.033
13/06/91			0.05									0.017	0.21									0.007										0.031
18/06/91			0.05									0.012	0.286									0.01										0.012
26/06/91			0.05									0.01	0.134									0.01										0.016
1/7/1991			0.003									0.013	0.12									0.046										0.021
24/07/91	<0.01	0.34	<0.06	0.02	0.056	<0.001		31	<0.006	<0.006	<0.006	<0.006	0.351	<2		11	0.014	<0.01	2.1	<0.02	<0.1	<0.06		<0.06	<0.06	5.08	<0.06	0.131	0.008	<0.01		0.023
15/08/91			0.06									<0.001	0.083									0.01										0.019
25/09/91	<0.01	0.16	<0.06	<0.01	0.065	<0.001		43.2	<0.006	<0.006	<0.006	<0.006	0.209	<2		13.6	0.01	<0.01	2.3	<0.02	<0.1	<0.06		<0.06	<0.06		<0.06	0.161	0.004	<0.01		0.038
25/09/91			0.05									<0.001	0.079									0.004										0.184
25/11/91			0.06									0.012	0.1									0.004										0.014
17/01/92												0.001										0.004										0.027
28/02/92												0.001										0.012										0.034
9/3/1992												0.002										0.004										0.022
16/03/92												0.012										0.004										0.038
24/03/92												0.001										0.007										0.031
3/4/1992												0.011										0.005										0.019
6/4/1992												0.003										0.01										0.025
15/04/92												0.001										0.005										0.015
22/04/92												0.019										0.142										0.11
28/04/92	<0.01	15.1	0.14	0.01	0.424	<0.001		69.3	0.008	<0.006	0.042	0.038	20.9	5		29.1	0.306	<0.01	4.9	0.04	0.4	0.18		<0.06	<0.06		<0.06	0.237	0.331	0.03		0.177
28/04/92												0.019										0.1										0.11
11/5/1992												0.014										0.074										0.085
27/05/92												0.039										0.272										0.181
14/06/92												0.018										0.164										0.087
28/06/92												<0.008										<0.06										0.031
3/7/1992												0.004										0.011										0.027
8/7/1992												0.007										0.021										0.029
28/07/92												0.002										0.001										0.031
3/8/1992												<0.001										0.003										0.04
12/8/1992												0.003										0.003										0.117
19/08/92												0.002										0.004										0.02
24/08/92												0.026																				0.014
9/9/1992												0.007										0.008										0.173
10/9/1992	<0.01	0.35	<0.06	<0.01	0.078	<0.001		47.8	<0.006	<0.006	<0.006	<0.006	0.427	<2		18	0.024	<0.01	2.8	<0.02	<0.1	<0.06		<0.06	<0.06	5.69	<0.06	0.191	0.014	<0.01		0.028

Table G5. Water Quality of Receiving and Background Waters, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
7/10/1992												0.002										0.003										0.066
24/11/92	<0.01	0.15	<0.06	<0.01	0.1	<0.001		69.1	<0.006	<0.006	<0.008	<0.006	0.23	<2		28.9	0.021	<0.01	4.1	<0.02	<0.1	<0.06		<0.06	<0.06	5.5	<0.06	0.292	0.005	<0.01		0.021
26/04/93	<0.01	6.22	<0.06	<0.01	0.216	<0.001		52.6	<0.008	<0.006	0.01	0.01	6.02	3		22.3	0.122	<0.01	3.4	<0.02	<0.1	0.09		<0.06	<0.06	13.8	<0.06	0.204	0.205	0.01		0.056
2/8/1993	<0.01	1.82	<0.06	<0.01	0.277	0.002		51.3	<0.006	<0.006	0.013	0.013	2.53	1.4		18.4	0.043	<0.01	3	<0.02	<0.1	<0.06		<0.06	<0.06	8.36	<0.06	0.23	0.05	0.01		0.11
2/5/1994	<0.001	0.848	<0.02		0.0804	0.0003		39	<0.0005	<0.001	0.0035	0.014	1.61	1.7		14.7	0.0758	<0.005	2.2	0.006	<0.05	<0.01	14.3	<0.02	<0.02	5.08	<0.01	0.155	0.0218	0.003		0.029
8/6/1994			<0.04									0.007										<0.03										0.04
19/07/94												<0.002										<0.03										<0.01
9/8/1994	<0.001	0.12	<0.02		0.0786	<0.0002		64	<0.0005	<0.001	<0.001	0.005	0.141	1.6		25.2	0.018	<0.005	3.77	<0.001	<0.06	<0.01	23.5	<0.02	<0.02	4.96	<0.01	0.28	0.004	0.005		0.006
11/10/1994	<0.001	0.19	<0.02		0.0734	0.0003		57	<0.0005	<0.001	<0.001	0.008	0.342	0.8		23.2	0.023	<0.005	3.5	0.05	<0.08	<0.01	25	<0.02	<0.02	5.5	<0.01	0.24	0.006	0.003		0.012
15/10/94			<0.04									0.002										<0.03										0.01
25/01/95	<0.001	0.06	<0.02		0.0944	<0.0002		80.3	<0.0005	<0.001	<0.001	0.012	0.168	1.3		38.1	0.051	<0.005	4.92	0.003	<0.06	<0.01	38.9	<0.02	<0.02	4.3	<0.01	0.35	0.004	0.012		0.022
8/3/1995	<0.001	0.03	<0.02		0.109	<0.0002		96.7	<0.0005	<0.001	<0.001	0.024	0.362	1.6		48.3	0.071	<0.005	6.25	0.007	<0.06	<0.01	52.7	<0.02	<0.02	6.22	<0.01	0.47	0.006	0.008		0.025
8/3/1995			<0.020									0.024	0.36									<0.010										0.03
7/3/1995												0.023										<0.01										0.024
26/04/95			0.013									0.017	8.65									0.18										0.1
9/5/1995	<0.001	2.5	<0.02		0.097	<0.0002		27.3	<0.0005	0.002	0.008	0.022	3.44	1.4		9.88	0.088	<0.005	1.88	0.009	0.1	0.03	11	<0.02	<0.02	7.1	<0.01	0.12	0.053	0.008		0.045
9/5/1995			0.014									0.019	4.89									0.05										0.07
24/07/95			<0.020									<0.002	0.22									<0.020										<0.01
1/8/1995			0.03									<0.002	0.42									<0.020										0.03
12/9/1995			<0.020									<0.002	0.82									<0.005										0.04
8/12/1995			<0.020									<0.002	0.18									<0.020										0.01
22/03/96	<.003	0.29	<.02		0.081	<.001	<.04	65.4	<.002	<.005	<.005	<.002	0.04		<.005	33.8	0.13	<.002	3	<.005	0.1	<.02	42	<.03		1.27		0.336	<.005	<.005	<.03	0.02
1/4/1996	<.003	0.24	0.03		0.068	<.001	0.06	53.5	<.002	<.005	<.005	0.011	0.11		<.005	26.7	0.12	0.003	3	0.009	<.04	<.02	48	0.03		2.09		0.271	<.005	<.005	<.03	0.02
9/4/1996	<.003	0.19	<.02		0.093	0.001	<.04	73.4	<.002	<.005	<.005	0.016	0.12		<.005	36.1	0.12	0.004	5	<.005	0.11	<.02	58	<.03		2.29		0.373	0.006	<.005	0.03	<.01
16/04/96	<.003	0.32	<.02		0.084	<.001	<.04	65.3	<.002	<.005	<.005	0.009	0.29		<.005	31.8	0.05	<.002	5	<.005	0.09	<.02	50	<.03		1.4		0.331	<.005	<.005	<.03	<.01
18/05/96	<.003	0.43	<.02		0.052	<.001	<.04	38.6	<.002	<.005	<.005	0.043	0.83		<.005	15.3	0.07	<.002	1	<.005	0.05	<.02	19	<.03		1.07		0.192	<.005	<.005	<.03	0.03
11/6/1996	<.003	<.05	<.02		0.053	0.002	<.04	33	<.002	<.005	<.005	0.005	0.3		<.005	12.3	0.09	<.002	2	<.005	<.04	<.02	15	<.03	<.02	1.81		0.195	<.005	0.008	<.03	0.05
11/9/1996	<.003	0.05	<.02		0.064	<.001	<.04	31.8	<.002	<.005	<.005	<.002	0.41		<.005	11.3	0.03	<.002	4	<.005	<.04	<.02	14	<.03		4.5		0.15	<.005	<.005	<.03	0.02
5/12/1996	<.003	0.51	<.02		0.14	0.001	<.04	47.5	<.002	<.005	0.006	<.002	0.1		<.005	21.6	0.01	<.002	4	<.005	<.04	<.02	12	<.03		4.4		0.257	<.005	<.005	<.03	0.02
10/3/1997	<.003	0.52	<.02	0.06	0.072	0.003	<.04	69.8	<.002	<.005	<.005	0.006	0.1		<.005	32.4	0.18	0.012	5	<.005	0.54	<.02	35	<.03	<.005	3.2	<.01	0.315	<.005	0.009	<.03	0.02
14/04/97	<.003	0.2	<.02	0.17	0.079	<.001	<.04	75.8	<.002	<.005	<.005	0.003	0.58	<1	<.005	33.8	0.04	0.005	7	0.012	<.04	<.02	40	<.03	<.03	4.7	<.01	0.328	<.005	<.005	<.03	0.02
5/5/1997	<.003	2.2	0.11	0.09	0.107	<.001	<.04	24.6	<.002	0.035	0.007	0.03	4.91	4	<.005	9.3	0.21	0.005	2	<.005	0.52	0.14	8	<.03	0.033	4	0.12	0.115	0.057	<.005	<.03	0.12
30/06/97	<.003	0.17	<.02	0.09	0.049	<.001	<.04	35.8	<.002	<.005	<.005	0.015	0.2	<1	<.005	13.2	<.01	0.01	3	<.005	<.04	<.02	30	<.03	<.03	3.7	<.01	0.161	0.007	0.013	<.03	0.11
24/07/97	<.003	0.19	<.02	<.05	0.051	<.001	<.04	28	0.003	0.01	<.005	0.017	0.37	<1	<.005	10.1	0.03	<.002	3	<.005	2.74	<.02	7	<.03	<.03	4	<.01	0.152	<.005	<.005	<.03	0.11
28/08/97	<.0006	0.08	0.005	<.01	0.0545	<.0002	<.008	34.71	<.0004	<.001	<.001	0.0012	0.012	<.2	0.002	12.98	<.002	0.0013	2.9	<.001	<.008	<.004	5	<.006	<.001	4.291	<.002	0.1782	<.001	<.001	<.006	0.011
30/09/97	<.003	0.07	<.02	0.05	0.097	<.001	<.04	52.7	<.002	<.005	0.005	0.02	0.13	1	0.011	19.6	0.02	<.002	5	0.012	<.04	<.02	39	<.03	<.03	2.8	<.01	0.224	0.009	<.005	<.03	0.04
20/10/97	<.003	<.05	<.02	<.05	0.155	<.001	<.04	81.7	0.003	<.005	0.008	0.005	0.02	3	<.005	28.3	0.03	0.003	5	<.005	<.04	<.02	64	<.03	<.03	2.2	<.01	0.415	<.005	0.01	<.03	0.03
19/11/97	<.003	<.05	<.02	<.05	0.125	0.002	<.04	68	<.002	<.005	<.005	0.013	0.46	1	<.005	26.5	0.02	0.002	4	<.005	0.07	<.02	35	<.03	<.03	3.2	<.01	0.309	<.005	0.017	<.03	0.02
23/12/97	<.003	<.05	<.02	0.19	0.08	<.001	<.04	69.4	<.002	<.005	<.005	0.008	0.06	1	<.005	27.6	0.06	0.002	1	<.005	0.34	<.02	37	<.03	<.03	3.4	<.01	0.329	<.005	0.025	<.03	0.02
13/01/98	<.003	<.05	<.02	<.05	0.173	<.001	<.04	77.7	<.002	0.013	<.005	0.006	<.01	1	<.005	32.5	0.1	0.008	4	<.005	<.04	<.02	44	<.03	<.03	2.9	<.01	0.37	<.005	<.005	<.03	0.02
17/03/98	<.003	0.08	<.02	<.05	0.166	<.001	<.04	85.6	<.002	<.005	0.019	0.015	<.01	<1	0.005	40.6	0.14	0.003	7	<.005	<.04	<.02	46	<.03	<.03	4.2	<.01	0.402	<.005	0.016	<.03	0.03
14/04/98	<.003	0.09	<.02	<.05	0.141	<.001	<.04	77.7	0.002	<.005	0.029	0.037	<.01	<1	<.005	36	0.1	0.003	6	0.007	<.04	<.02	41	<.03	<.03	4	<.01	0.387	0.006	<.005	<.03	0.26
19/05/98	<.003	0.45	<.02	0.18	0.053	<.001	<.04	24.8	<.002	<.005	0.038	0.031	0.75	1	<.005	9.3	0.04	<.002	2	0.015	0.87	0.04	8	0.04	<.03	2.4	<.01	0.109	0.006	0.019	<.03	0.07
30/06/98	<.003	<.05	<.02	<.05	0.163	<.001	<.04	35.3	<.002	<.005	0.025	0.008	<.01	<1	0.017	13.7	<.01	<.002	3	<.005	0.54	<.02	29	<.03	<.03	4.4	<.01	0.177	0.009	0.006	<.03	0.02
21/07/98	<.003	<.05	<.02	<.05	0.131	<.001	<.04	50.2	<.002	<.005	0.038	0.036	0.02	<1	0.022	19.8	0.02	<.002	5	0.01	<.04	<.02	9	<.03	<.03	3.3	<.01	0.234	<.005	<.005	<.03	0.04
11/8/1998	<.003	0.14	<.02	0.25	0.022	<.001	<.04	33	<.002	<.005	0.048	0.03	0.08	<1	<.005	11.8	0.01	<.002	2	<.005	2.33	<.02	41	<.03	<.03	3.8	<.01	0.157	<.005	<.005	<.03	0.01
15/09/98	<.003	0.12	<.02	<.05	0.124	<.001	<.04	40.6	<.002	<.005	<.005	0.017	0.23	1	<.005	16	0.04	0.008	4	<.005	1.1	<.02	15.9	<.03	<.03	3.4	<.01	0.197	0.012	<.005	<.03	0.03
19/10/98	<.003	0.11	<.02	0.13	0.053	<.001	<.04	44.4	<.002	<.005	0.02	0.014	0.18	<1	<.005	17.5	0.03	<.002	4	0.012	2.49	<.02	20.7	<.03	<.03	2.7	<.01	0.203	0.031	0.012	<.03	0.04
17/11/98	<.003	0.14	<.005	<.05	0.208	<.001	<.04	131.8	<.001	<.005	0.086	0.025	0.16	3	<.005	60.3	0.15	0.01	10	0.01	1.82	<.01	60	<.03	<.03	8.6	<.01	0.537	0.012	<.005	<.03	0.04
31/12/98	<.003	0.07	<.005	0.16	0.077	<.001	<.04	75.7	<.001	<.005	<.005	0.04	0.09	2	0.024	35.5	0.34	<.002	6	0.006	5.1	<.01	37	0.04	<.03	3.4	<.01	0.367	0.01	<.005	<.03	0.02
19/01/99	<.003	0.13	<.005	0.2	0.095	<.001	<.04	100.9	0.001	<.005	0.089	0.034	0.04	3	<.005	49.5	0.54	<.002	8	<.005	<.04	0.03	63	<.03	<.03	5	<.01	0.474	0.012	<.005	<.03	0.02
23/02/99	0.011	0.3	<.005	0.4	0.082	<.001	<.04	107.3	<.001	0.005	<.005	0.026	<.01	2	0.009	47.3	0.98	0.005	7	0.01	1.21	<.01	45	<.03	<.03	5.3	<.01	0.511	0.018	<.005	<.03	0.06
23/03/99	<.003	0.33	<.005	0.23	0.11	<.001	<.04	109.7	<.001	<.005	0.099	0.034	0.26	3	0.006	71.4	0.39	<.002	9	<.005	1.26	<.01	88	<.03	<.03	4.7	<.01	0.543	<.005	<.005	<.03	0.06
20/04/99	<.003	0.13	0.016	0.14	0.077	0.001	0.04	75.9	<.001	0.009	<.005	0.02	0.09	2	<.005	40.6	0.1	0.008	6	<.005	0.34	0.01	52	<.03	<.03	3.4	<.01	0.354	0.02	<.005	<.03	<.01
18/05/99	<.003	0.48	<.005	<.05	0.132	0.002	<.04	28.5	<.001	<.005	<.005	0.017	0.97	2	<.005	10.1	0.05	<.002	2	0.01	0.96	<.01		<.03	<.03	3.1	<.01	0.138	<.005	0.006	<.03	0.05
20/06/99	<.003	2.57	<.005	<.05	0.134	<.001	<.04	14.5	<.001	<.005	0.098	0.005	4.55	2	<.005	6.4	0.07	<.002	2	<.005	3.46	<.01	4	<.03	<.03	5.6	<.01	0.104	0.066	<.005	<.03	0.09
29/07/99	<.0001	1.09	<.001	0.01	0.0577	0.0002	<.001	27.35	<.0001	<.0002	0.012	0.0204	1.745	0.6	0	10.5	0.038	<.0001	1.6	0.004	<.002	0.007	7.3	<.001	<.001	4.23	<.0004	0.0988	0.0329	0.002	<.001	0.021
30/08/99	<.0001	0.065	<.001	0.008	0.0421	0.0001	<.001	35.716	0.0007	0.0002	<.0002	0.0081	0.157	0.76	<.0002	12.658	0.0176	0.0005	3.8	<.0002	<.002	<.001	12.42	<.001	<.001	2.91	<.0004	0.1238	0.0091	<.0002	<.001	0.0054
12/10/1999	<.003	0.12	<.005	<.05	0.151	<.001	<.04	49.1	0.002	0.009	<.005	0.02	0.18	2	<.005	19	0.05	<.002	5	0.008	<.04	0.02	20	<.03	<.005	4.5	<.01	0.23	0.016	<.005	<.03	<.01
14/12/99	<.003	0.26	0.016	0.05	0.138	<.001	<.04	59.4	0.005	<.005	<.005	0.034	0.05	7	0.034	21.5	0.06	<.002	3	0.034	0.14	0.04	25	0.06	<.005	2.6	<.01	0.234	0.011	0.01	<.03	0.04
28/02/00	<.003	0.23	<.005	<.05	0.143	<.001	<.05	71.9	0.002	<.005	0.084	0.027	0.23	3	0.024	32.1	0.07	0.018	8	0.007	<1	0.04	34	<.03	<.005	4.7	<.01	0.357	0.025	0.016	<.03	0.02
23/03/00	<.003	0.16	<.005	<.05	0.208	<.001	<.05	78.3	0.002	0.027	<.005	0.008	0.09	4	<.005	33.6	0.09	<.002	1	<.005	<1	<.01	38	<.03	<.005	5	<.01	0.383	<.005	<.005	<.03	0.01
27/04/00	<.003	0.25	<.005	<.05	0.19	0.001	<.05	63.6	<.001	<.005	<.005	0.018	0.2	2	<.005	29	0.07	<.002	5	<.005	<1	<.01		<.03	<.005	4.1	<.01	0.266	0.039	0.027	<.03	0.02
15/05/00	<.003	0.32	<.005	<.05	0.123	<.001	<.05	44.5	<.001	0.009	0.157	0.013	0.55	1	0.025	18.1	0.03	<.002	<1	0.012	<1	<.01		<.03	<.005	4.1	<.01	0.287	0.017	0.013	<.03	0.1
20/06/00	<.003	0.27	<.005	<.05	0.145	0.001	<.05	20.5	<.001	0.008	<.005	0.012	0.25	2	<.005	7.3	0.02	<.002	2	0.015	<1	<.01	<1	<.03	<.005	2.8	<.01	0.128	0.018	<.005	<.03	0.01
25/07/00	<.003	0.16	<.005	<.05	0.13	0.001	<.05	28	0.002	0.014	0.087	0.013	0.78	3	0.093	9.7	0.03	<.002	3	0.023	2	<.01		<.03	<.005	3.2	<.01	0.249	0.019	0.044	<.03	0.09
29/08/00	<.003	1.15	<.005	<.05	0.12	<.001	<.05	36.3	<.001	<.005	<.005	0.003	1.94	1	<.005	12.5	0.06	<.002	3	0.016	<1	<.01		<.03	<.005	5.9	<.01	0.152	0.031	0.008	<.03	0.16
12/9/2000	<.003	0.39	<.005	<.05	0.137	<.001	<.05	48.4	<.001	<.005	<.005	0.021	0.63	<1	<.005	15.3	0.02	<.002	4	0.01	<1	0.02		<.03	<.005	4	<.01	0.14	0.005	<.005	<.03	0.04
26/09/00	<0.01	3.6	<0.2	<0.1	0.13	<0.005	<0.1	52.3	<0.001	<0.01	<0.01	<0.01	4.75	<2		18.2	0.108	<0.01	3	<0.05	<0.3	<0.05		<0.2	<0.2	9.61	<0.03	0.18	0.1	<0.03		0.089
29/10/00	<.003	0.39	<.005	0.11	0.248	0.002	<.05	66.7	<.001	0.007	0.017	0.046	1	3	<.005	26.7	0.05	<.002	7	<.005	5	<.01	113	<.03	<.005	5.4	<.01	0.277	0.047	<.005	<.03	0.05
13/11/00	<0.003	0.1	<0.005	<0.05	0.144	<0.001	<0.05	60.4	0.001	<0.005	0.018	0.015	0.09	1	0.024	23.9	0.07	<0.002	3	<0.005	0.02	0.04	29	0.04	<0.005	5	0.07	0.267	<0.005	<0.005	<0.03	0.04
18/11/00	<0.01	<0.05	<0.2	<0.1	0.08	<0.005	<0.1	78.2	<0.001	<0.01	<0.01	<0.01	0.12	<2		29.9	0.02	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.03	<0.2	4.67	0.315	<0.01	<0.03		0.022
14/12/00	<0.01	<0.05	<0.2	<0.1	0.09	<0.005	<0.1	83.7	<0.001	<0.01	<0.01	<0.01	0.11	<2		35.5	0.024	<0.01	4	<0.05	<0.3	<0.05		<0.2	<0.2	4.56	<0.03	0.356	<0.01	<0.03		0.045
13/01/01	<.003	0.11	<.005	<.05	0.211	0.002	<.05	83.5	<.001	<.005	<.005	0.023	0.31	2	<.005	35.7	0.11	<.002	5	0.012	<1	<.01	85	<.03	<.005	5.1	<.01	0.541	0.03	0.043	<.03	<.01
10/2/2001	<.003	<.05	0.025	0.06	0.216	0.002	<.05	78.2	<.001	<.005	<.005	0.017	0.17	5	<.005	32.6	0.04	<.002	7	<.005	<1	<.01	88	<.03	<.005	4.2	<.01	0.197	<.005	0.021	<.03	<.01
5/3/2001	<.003	0.696	<.005	0.098	0.243	<.001	<.05	173	0.094	0.282	<.005	0.028	0.146	1.31	<.005	67	19.04	<.002	12	0.425	<1	<.01	244	<.03	<.005	5.2	<.01	1.23	0.01	<.005	<.03	
10/3/2001	<.003	0.322	0.037	0.081	0.235	<.001	<.05	81	<.001	<.005	<.005	0.018	0.082	<1	<.005	36	0.06	<.002	7	<.005	<1	<.01	44	<.03	<.005	3.9	<.01	0.37	<.005	0.006	<.03	0.03
16/04/01	<.003	0.05	<.005	<.05	0.107	<.001	<.05	87.3	<.001	<.005	<.005	<.002	0.09	<1	<.005	39.2	0.06	<.002	5	<.005	<1	<.01	44	<.03	<.005	3.8	<.01	0.403	<.005	<.005	<.03	0.03
14/05/01	<.003	0.48	<.005	<.05	0.217	<.001	<.05	58.4	0.001	0.005	0.006	0.008	0.79	<1	<.005	22.3	0.04	0.003	<1	0.008	<1	0.06	24	<.03	<.005	3.3	<.01	0.217	0.012	0.02	<.03	0.02
13/06/01	<.003	0.86	<.005	0.12	0.174	<.001	<.05	25.9	<.001	<.005	0.014	0.011	1.57	<1	0.007	6.7	0.77	0.004	3	<.005	<1	<.01	6	<.03	<.005	3.7	0.02	0.101	0.023	<.005	<.03	0.06
17/06/01	<.003	1.13	<.005	0.07	0.202	<.001	<.05	23.3	<.001	<.005	0.007	0.011	1.55	<1	0.009	8.1	0.12	0.004	4	<.005	<1	<.01	8	<.03	0.014	2.3	<.01	0.106	0.025	<.005	<.03	0.04
14/07/01	<.003	0.25	0.018	0.07	0.229	<.001	<.05	47.7	<.001	<.005	<.005	0.002	0.33	<1	0.009	17.4	0.02	<.002	12	0.006	<1	0.01	18	<.03	<.005	5.1	<.01	0.218	0.005	<.005	<.03	0.02
14/08/01	<0.003	0.17	<0.005	<0.05	0.28	<0.001	<0.05	65	<0.001	<0.005	<0.005	0.005	0.2	1	<0.005	26.7	0.02	<0.002	4	0.008	<1	<0.01	26	<0.03	<0.005	5.4	<0.01	0.315	0.008	<0.005	<0.03	0.05
8/9/2001	<0.003	0.13	0.028	3.16	0.164	<0.001	<0.05	52.7	<0.001	<0.005	0.008	0.028	0.11	1	0.016	19.8	0.02	<0.002	4	<0.005	<1	<0.01	21	<0.03	<0.005	4.8	<0.01	0.233	0.009	<0.005	<0.03	0.03
17/09/01	<0.003	0.06	<0.005	<0.05	0.175	<0.001	<0.05	48.8	<0.001	<0.005	0.009	0.006	0.05	<1	0.009	19.6	0.02	<0.002	<1	<0.005	<1	<0.01	21	<0.03	<0.005	4.5	<0.01	0.236	<0.005	<0.005	<0.03	0.02
15/10/01	<0.003	0.15	<0.005	0.15	0.272	<0.001	<0.05	67.7	<0.001	<0.005	<0.005	0.003	0.09	1	0.02	29.5	0.04	<0.002	<1	<0.005	<1	<0.01	32	<0.03	<0.005	5.4	<0.01	0.321	<0.005	<0.005	<0.03	0.05
13/11/01	<0.003	0.08	<0.005	<0.05	0.152	<0.001	<0.05	70.2	<0.001	<0.005	0.01	0.012	0.12	1	0.028	29.3	0.07	<0.002	4	<0.005	0.08	0.02	32	0.06	<0.005	5	0.14	0.308	<0.005	<0.005	<0.03	0.05
14/12/01	<0.001	0.07	<0.005	<0.05	0.095	<0.001	<0.05	76.3	<0.001	0.006	<0.005	<0.002	0.11	1	0.014	33.2	0.06	0.003	<1	0.01	<0.01	<0.01	32	<0.03	<0.005	5.1	<0.01	0.312	<0.005	<0.005	<0.03	0.02

22943-TOTV2

Table G6. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: V7																																
29/05/89	<0.01	0.27	<0.05	<0.01	0.026	<0.001		12.1	<0.005	<0.005	<0.005	0.012	0.316			3.9	0.01	<0.01	1.2	<0.02	<0.1	<0.05		<0.05	<0.05	2.42	<0.05	0.052	0.007	<0.01		0.03
1/10/1990	<0.01	<0.05	<0.05	<0.01	0.043	<0.001		74.1	<0.005	0.025	<0.005	<0.005	4.84	2		38.7	0.156	<0.01	14.2	0.03	<0.1	<0.05		<0.05	<0.05	5.18	<0.05	0.63	<0.002	<0.01		2.01
16/04/91			0.05									0.001										0.016										1.19
7/5/1991	<0.01	<0.06	<0.06	<0.01	0.041	<0.001		71.4	<0.006	<0.006	<0.006	<0.006	0.686	<2		37.2	0.132	<0.01	13	0.03	<0.1	<0.06		<0.06	<0.06	5.13	<0.06	0.608	<0.002	<0.01		1.28
11/6/1991			0.05									0.003	1.74									0.004										1.07
3/9/1991			0.05									0.001	1.45									0.007										1.06
25/09/91	<0.01	0.08	0.06	<0.01	0.044	<0.001		80.5	<0.006	0.017	<0.006	<0.006	2.57	<2		38.7	0.148	<0.01	12.5	0.03	<0.1	<0.06		<0.06	<0.06		<0.06	0.61	0.003	<0.01		1.45
25/09/91			0.06									0.003	1.44									0.011										0.995
11/10/1991			0.07									<0.001	1.25									0.004										0.991
14/11/91			0.1									<0.001	4.07									0.071										1.24
5/12/1991			0.18									0.001	0.852									0.004										1
28/04/92	<0.01	<0.06	<0.06	<0.01	0.041	<0.001		84.4	0.009	<0.006	<0.006	<0.006	0.748	<2		38.6	0.131	<0.01	13.1	0.03	<0.1	<0.06		<0.06	<0.05		<0.06	0.601	0.003	<0.01		1.14
9/9/1992	<0.01	<0.06	<0.06	<0.01	0.048	<0.001		73.3	<0.006	0.007	0.006	<0.006	0.461	3		38.2	0.123	<0.01	11.7	<0.02	<0.1	<0.06		<0.06	<0.06	5.31	<0.06	0.639	<0.002	0.01		0.971
STATION: V17																																
14/11/95			<0.020									0.002	1.5									<0.020										<0.01
STATION: V23																																
14/01/97	<.003	0.17	<.02	<.05	0.131	<.001	<.04	75.3	<.002	0.007	<.005	0.008	0.07		<.005	38.2	0.07	0.014	15	0.177	<.04	<.02	5	<.03		9		0.939	0.008	<.005	<.03	0.01
26/05/97	<.003	0.05	<.02	<.05	0.064	<.001	<.04	49.4	0.011	<.005	<.005	<.002	0.2	<1	<.005	23.8	0.31	0.003	8	0.192	<.04	0.03	51	<.03	<.03	1.4	<.01	0.418	<.005	<.005	<.03	7.79
22/07/97	<.003	0.15	0.03	<.05	0.082	<.001	<.04	61.1	<.002	0.042	<.005	0.021	0.11	4	<.005	31.4	0.05	0.012	13	0.189	2.02	<.02	17	0.07	<.03	2.9	<.01	0.651	0.009	<.005	<.03	2.53
14/09/98	<.003	0.16	<.02	<.05	0.112	<.001	<.04	78	<.002	0.026	<.005	0.024	0.09	4	<.005	45.8	0.1	0.013	15	0.134	<.04	0.04	67.1	0.08	<.03	3.8	<.01	1.086	0.016	<.005	<.03	1.03
10/9/1999	<.003	0.22	<.005	<.05	0.15	<.001	<.04	82.4	0.01	0.057	<.005	0.017	0.18	4	<.005	46	0.37	0.019	12	0.177	<.04	<.01	89	0.09	<.005	2.7	<.01	0.868	0.015	0.011	<.03	3.42
12/10/1999	<.003	0.18	<.005	<.05	0.12	<.001	<.04	73.8	0.019	0.044	<.005	0.029	0.14	4	<.005	41.7	0.46	0.013	11	0.174	<.04	0.04	103	0.04	<.005	2.4	<.01	0.781	0.017	<.005	<.03	5.91
22/03/00	<.003	0.39	<.005	<.05	0.2	<.001	<.05	101.4	0.018	0.114	<.005	0.013	0.08	8	<.005	56.1	0.66	0.008	7	0.176	<1	<.01	102	<.03	<.005	4.3	<.01	1.148	0.008	<.005	0.03	7.19
20/06/00	<.003	0.46	<.005	<.05	0.181	0.002	<.05	63.7	<.001	<.005	<.005	0.013	0.43	5	<.005	22.5	0.02	<.002	9	0.013	10	<.01	<1	<.03	<.005	0.3	<.01	0.339	0.022	<.005	<.03	0.02
28/06/00	<.003	0.23	<.005	<.05	0.117	0.002	<.05	91.2	0.029	0.073	<.005	0.021	0.18	5	<.005	49.8	0.59	<.002	10	0.221	8	<.01		0.09	<.005	2.5	<.01	0.804	0.031	0.023	<.03	5.92
12/9/2000	<.003	0.29	<.005	<.05	0.119	<.001	<.05	112.2	0.049	0.076	<.005	0.051	0.18	2	<.005	60.1	0.88	0.018	14	0.275	3	<.01		0.12	<.005	2.5	<.01	0.927	0.008	<.005	<.03	11.94
5/3/2001	<.003	0.327	<.005	0.127	0.26	<.001	<.05	93	<.001	<.005	<.005	<.002	0.05	<1	<.005	41	0.07	<.002	9	<.005	<1	<.01	51	<.03	<.005	4.6	<.01	0.44	<.005	<.005	<.03	<.01
13/06/01	<.003	0.24	<.005	0.08	0.195	<.001	<.05	105	0.03	0.091	0.007	0.014	0.49	3	0.019	64.3	1.73	0.007	12	0.181	<1	<.01	137	0.06	<.005	4	0.02	0.867	0.013	<.005	<.03	13.8
8/9/2001	<0.003	0.11	0.024	2.42	0.151	<0.001	<0.05	119.9	0.025	0.079	<0.005	0.006	0.14	4	0.019	66.4	1.01	0.01	12	0.263	<1	<0.01	149	<0.03	<0.005	4.1	<0.01	0.891	0.006	<0.005	<0.03	12.27
STATION: V23A																																
27/05/91			0.05									0.001	2.38									0.004										0.026
22/08/91			0.05									0.001	0.521									0.004										0.032
25/09/91	<0.01	1.1	<0.06	<0.01	0.11	<0.001		128	<0.006	0.032	<0.006	<0.006	0.989	4		38.5	0.542	<0.01	4.1	0.11	<0.1	<0.06		<0.06	<0.06		<0.06	0.52	0.017	<0.01		0.296
25/09/91			0.05									0.003	0.149									0.008										0.188
11/10/1991			0.05									<0.001	0.075									0.004										1.25
14/11/91			0.1									<0.001	4.38									0.019										0.081
28/04/92	<0.01	30	0.21	0.03	0.44	<0.001		78.3	0.007	<0.006	0.075	0.058	36.3	10		35.1	0.622	<0.01	4.5	0.07	0.5	0.45		<0.06	<0.06		<0.06	0.308	0.653	0.03		0.365
9/9/1992	<0.01	35.9	0.2	<0.01	0.682	<0.001		120	<0.008	<0.006	0.052	0.055	50.5	8		55.8	1.08	<0.01	5.6	0.07	0.7	0.29		<0.06	<0.06	25.7	<0.06	0.498	0.551	0.02		0.571
2/11/1992												0.004										0.002										0.022
2/8/1993	<0.01	4.64	<0.06	0.01	0.135	0.002		92	<0.006	<0.006	0.01	0.012	3.7	5.7		51.3	0.125	<0.01	10	0.09	<0.1	<0.06		<0.06	<0.06	13	<0.06	0.54	0.15	0.01		0.033
19/07/94			<0.04									<0.002										<0.03										0.01
9/8/1994	<0.001	0.02	<0.02		0.0355	<0.0002		94.7	<0.0005	<0.001	<0.001	<0.002	0.012	4.7		56.8	0.015	0.011	6.79	0.079	<0.06	<0.01	94	<0.02	<0.02	1.35	<0.01	0.51	<0.001	0.005		0.015
11/10/1994	<0.001	0.05	<0.02		0.0358	0.0004		119	<0.0005	0.016	<0.001	0.01	0.073	4.8		64.3	0.052	0.012	8.42	0.118	<0.06	<0.01	112	<0.02	<0.02	1.77	<0.01	0.61	0.003	0.007		0.075
15/10/94			<0.04									0.003										<0.03										0.07
31/01/95			0.08									0.003										<0.03										0.11
7/6/1995			<0.020									0.003	0.61									<0.020										0.03
23/08/95			<0.020									0.006	0.3									<0.020										0.27
18/09/95			0.09									0.011	1.24									<0.020										0.3
10/10/1995			0.02									0.005	0.35									<0.020										0.09
20/12/95			<0.020									0.003	0.19									0.05										0.45
14/02/96	<.003	0.38	<.02		0.061	0.001	<.04	76.9	<.002	<.005	<.005	0.006	0.2		<.005	62	0.06	<.002	15	0.094	<.04	<.02	67	<.02		2.73		0.901	<.005	<.005	<.02	0.09
22/03/96	<.003	0.81	<.02		0.094	<.001	<.04	64	0.003	<.005	<.005	0.004	1.62		<.005	41.4	0.09	0.004	11	0.071	0.21	0.05	32	0.11		1.63		0.686	0.011	<.005	<.03	0.31
12/6/1996	<.003	0.19	<.02		0.078	0.003	<.04	54.8	<.002	<.005	<.005	0.012	0.57		<.005	31	0.13	<.002	12	0.05	<.04	0.03	24		0.27	2.23		0.682	<.005	<.005	<.03	0.53
11/9/1996	<.003	0.12	<.02		0.14	0.003	<.04	57.5	<.002	<.005	<.005	0.002	0.7		<.005	30.4	0.15	0.013	11	0.034	0.07	<.02	46	0.18		5.5		0.612	<.005	<.005	<.03	0.58
19/12/96	0.01	9.99	<.02		0.481	0.004	<.04	50.4	0.006	0.026	0.031	0.061	21.54		0.017	28	0.54	0.007	13	0.072	0.91	0.61	23	0.14		17.4		0.682	0.488	0.031	<.03	0.53
19/08/97	<.003	0.1	0.03	<.05	0.043	<.001	<.04	82.7	0.025	0.037	<.005	0.025	0.16	3	<.005	35.4	0.2	0.014	12	0.152	0.51	<.02	18	0.07	<.03	2.9	<.01	0.633	<.005	0.011	<.03	4.34
30/09/97	<.003	1.53	0.03	<.05	0.108	<.001	<.04	109.8	0.015	0.034	0.017	0.038	2.53	5	0.028	67.2	0.41	0.023	20	0.295	<.04	0.14	148	0.16	<.03	5.4	<.01	0.872	0.079	0.006	0.1	4.49
4/11/1997	<.003	0.92	<.02	<.05	0.112	0.002	<.04	75.3	0.009	0.052	0.013	0.01	2.12	7	<.005	46.8	0.25	0.007	21	0.131	0.14	0.07	75	0.1	<.03	4.6	<.01	0.801	0.039	0.005	<.03	4.28
30/12/97	<.003	<.05	<.02	0.2	0.053	0.001	<.04	66.4	<.002	0.012	<.005	0.042	0.23	2	<.005	44.5	0.09	0.018	15	0.286	<.04	<.02	51	<.03	<.03	3	<.01	1.194	0.008	0.008	<.03	0.15
25/09/00	<0.01	0.46	<0.2	<0.1	0.05	<0.005	<0.1	20.1	<0.001	<0.01	<0.01	<0.01	0.44	<2		5	0.031	<0.01	<2	<0.05	<0.3	<0.05		<0.2	<0.2	3.54	<0.03	0.108	<0.01	<0.03		0.18
STATION: V14																																
29/05/89	<0.01	0.31	<0.05	<0.01	0.028	<0.001		8.9	<0.005	<0.005	<0.005	0.007	0.392			1.8	0.014	<0.01	1	<0.02	<0.1	<0.05		<0.05	<0.05	2.72	<0.05	0.039	0.007	<0.01		0.02
12/6/2001	<.003	<.05	0.012	0.07	0.147	<.001	<.05	386.4	<.001	0.005	0.009	0.007	0.04	10	0.03	323.4	<.01	<.002	18	0.084	<1	<.01	637	<.03	<.005	6.4	<.01	1.524	<.005	<.005	<.03	0.04
STATION: V18																																
16/10/95			<0.020									0.003	0.06									<0.020										<0.01
14/11/95			<0.020									0.002	0.23									<0.020										<0.01
14/04/97	<.003	7.66	<.02	0.22	0.453	0.02	<.04	81.7	<.002	<.005	0.03	0.03	12.3	3.2	0.03	31.9	0.14	0.005	7	0.014	0.4	0.07	25	<.03	<.03	12.9	<.01	0.494	0.208	0.012	<.03	0.08
26/05/97	<.003	0.07	<.02	<.05	0.201	<.001	<.04	82.7	0.004	<.005	<.005	0.005	0.52	<1	<.005	30.2	0.02	<.002	5	<.005	<.04	<.02	30	<.03	<.03	2.4	<.01	0.451	<.005	<.005	<.03	<.01
30/06/97	<.003	1.27	<.02	0.08	0.35	0.001	<.04	99	<.002	<.005	<.005	0.02	1.43	2	0.013	34.1	0.02	<.002	8	0.007	<.04	<.02	12	<.03	<.03	5.8	<.01	0.532	0.037	0.007	<.03	0.11
22/07/97	<.003	1.2	<.02	0.07	0.51	0.001	<.04	98	<.002	<.005	<.005	0.031	2.38	1	0.008	33.2	0.04	<.002	10	<.005	0.66	0.03	32	<.03	<.03	6.5	<.01	0.656	0.044	<.005	<.03	0.08
11/8/1997	<.003	0.18	<.02	0.4	0.271	<.001	<.04	91.1	<.002	<.005	0.009	0.029	0.03	3	<.005	30.7	<.01	<.002	8	<.005	0.68	<.02	34	<.03	<.03	7.4	<.01	0.552	<.005	0.006	<.03	0.06
30/09/97	<.003	0.07	<.02	0.06	0.267	<.001	<.04	103.1	<.002	<.005	0.011	0.032	0.1	2	<.005	34.6	<.01	0.005	8	<.005	<.04	<.02	33	<.03	<.03	3.2	<.01	0.475	0.011	<.005	<.03	0.02
20/10/97	<.003	<.05	<.02	0.05	0.341	<.001	<.04	103.6	<.002	0.01	<.005	0.007	0.19	3	<.005	34.1	0.01	<.002	7	0.011	<.04	<.02	28	<.03	<.03	3	<.01	0.55	<.005	0.007	<.03	0.02
19/11/97	<.003	0.37	0.03	0.06	0.358	0.004	<.04	117.3	<.002	0.014	<.005	0.012	1.18	5	<.005	39.2	<.01	0.009	7	<.005	0.1	<.02	34	<.03	<.03	3.8	0.02	0.62	0.019	0.015	<.03	0.02
29/12/97	<.003	1.82	<.02	0.32	0.515	<.001	<.04	121.2	<.002	<.005	0.011	0.042	4.24	3	0.009	42.1	0.1	<.002	7	<.005	<.04	<.02	41	<.03	<.03	5.7	0.02	0.667	0.075	0.008	<.03	0.04
12/1/1998	<.003	0.24	<.02	<.05	0.388	<.001	<.04	109.3	<.002	<.005	<.005	0.012	0.74	2	<.005	38.4	0.02	<.002	5	<.005	<.04	<.02	37	<.03	<.03	3.2	<.01	0.611	0.013	<.005	<.03	0.01
17/03/98	<.003	3.73	<.02	<.05	0.723	<.001	<.04	140.1	<.002	0.011	0.04	0.049	7.9	2	0.024	55.4	0.14	0.011	9	0.018	0.05	0.16	39	<.03	<.03	8.6	<.01	0.762	0.127	0.02	<.03	0.09
18/05/98	<.003	5.56	0.03	0.21	0.899	<.001	<.04	132.7	<.002	<.005	<.005	0.069	11.69	3	0.017	51.4	0.19	<.002	9	0.037	0.42	0.19	30	0.09	<.03	11.9	<.01	0.745	0.178	0.017	<.03	0.13
29/06/98	0.004	0.09	<.02	<.05	0.441	0.001	<.04	127.2	<.002	0.01	<.005	0.018	<.01	3	0.027	47	<.01	0.013	7	0.01	1.37	<.02	12	<.03	<.03	5.2	<.01	0.757	0.022	<.005	<.03	0.01
14/09/98	<.003	0.11	<.02	<.05	0.483	<.001	<.04	145.2	<.002	<.005	<.005	0.025	0.08	3	<.005	53	0.02	0.005	8	0.01	<.04	0.03	62.9	<.03	<.03	5	<.01	0.887	0.016	0.005	<.03	0.03
31/12/98	<.003	3.53	<.005	0.21	0.58	<.001	<.04	164.3	<.001	0.007	<.005	0.066	5.06	3	0.055	65.3	0.06	0.008	10	0.011	8.02	<.01	64	0.04	<.03	10.4	<.01	1.008	0.111	<.005	<.03	0.05
17/03/99	<.003	0.29	<.005	0.19	0.316	<.001	<.04	133.8	0.001	<.005	0.498	0.032	0.06	2	<.005	48.1	<.01	<.002	9	<.005	1.25	<.01	67	<.03	<.03	5.1	<.01	0.735	0.006	<.005	<.03	0.03
3/7/1999	<.003	0.51	<.005	0.51	0.404	<.001	<.04	154.3	0.001	<.005	<.005	0.027	0.91	3	0.051	53.2	0.01	0.003	8	<.005	<.04	0.02	72	0.04	<.03	7.7	<.01	0.988	<.005	0.018	<.03	0.02
10/9/1999	<.003	0.21	<.005	<.05	0.44	<.001	<.04	153.8	<.001	<.005	<.005	0.023	0.05	3	<.005	56.4	0.03	0.006	7	<.005	0.24	<.01	84	<.03	<.005	5.2	<.01	0.897	0.019	0.018	<.03	0.04

Table G6. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/10/1999	<.003	0.21	0.007	<.05	0.412	<.001	<.04	171.5	0.006	<.005	<.005
13/12/99	<.003	0.64	<.005	<.05	0.34	<.001	<.04	180.5	0.002	<.005	<.005
22/03/00	<.003	2.79	<.005	0.08	0.513	<.001	<.05	185.5	<.001	0.016	<.005
20/06/00	<.003	0.41	<.005	<.05	0.325	0.003	<.05	156.6	0.003	0.022	<.005
12/9/2000	<.003	0.34	<.005	<.05	0.267	0.001	<.05	252.9	<.001	<.005	<.005
12/11/2000	<0.003	0.06	0.022	<0.05	0.136	<0.001	<0.05	332.1	<0.001	<0.005	<0.005
5/3/2001	<.003	30	<.005	0.255	0.889	<.001	<.05	87	<.001	0.058	0.085
13/08/01	<.003	0.07	<.005	0.11	0.204	<.001	<.05	313.2	<.001	<.005	0.015
8/9/2001	<0.003	0.71	<0.005	2.78	0.154	<0.001	<0.05	316.9	<0.001	<0.005	<0.005
12/11/2001	<0.003	0.06	0.022	<0.05	0.136	<0.001	<0.05	332.1	<0.001	<0.005	<0.005
STATION: V18											
16/10/95			<0.020								
14/11/95			<0.020								
14/03/98	<.003	0.42	<.02		0.099	<.001	<.04	50.1	<.002	<.005	<.005
22/04/98	<.003	0.44	<.02		0.154	<.001	<.04	48.5	<.002	<.005	<.005
11/9/1998	<.003	0.15	<.02		0.244	0.003	<.04	64	0.002	<.005	<.005
21/10/98	<.003	0.53	<.02		0.244	0.001	<.04	78.1	<.002	<.005	<.005
12/8/2001	<.003	0.06	<.005	0.06	0.163	<.001	<.05	178.9	<.001	<.005	<.005
STATION: V22											
7/5/1991	<0.01	0.07	<0.06	0.01	0.039	<0.001		93.4	0.095	0.754	<0.006
16/05/91			0.05								
22/08/91			0.06								
25/09/91	<0.01	13.2	0.32	<0.01	1.5	<0.001		137	0.008	1.01	0.038
5/12/1991			0.21								
28/04/92	<0.01	1.25	<0.06	0.03	0.063	<0.001		250	2.54	5.99	0.008
9/9/1992	<0.01	5.55	<0.06	0.02	0.25	<0.001		140	0.007	0.094	0.013
24/11/92	<0.01	0.15	<0.06	0.03	0.913	<0.001		102	<0.006	<0.006	<0.006
24/11/92											
2/8/1993	<0.01	0.24	<0.06	<0.01	0.178	0.004		111	0.021	0.157	<0.006
19/07/94											
9/8/1994	<0.001	0.03	<0.02		0.023	<0.0002		131	0.04	0.245	<0.001
11/10/1994	<0.001	0.03	<0.02		0.0208	<0.0002		141	0.0373	0.229	<0.001
15/10/94			<0.04								
31/01/95			<0.040								
19/04/95			<0.040								
9/5/1995	<0.001	0.03	<0.02		0.0199	<0.0002		138	0.0345	0.193	0.002
9/5/1995			<0.020								
14/06/95			<0.020								
24/07/95			<0.020								
29/09/95			0.025								
9/4/1996	<.003	0.59	0.02		1.304	0.001	<.04	103.4	<.002	<.005	<.005
12/6/1996	<.003	0.29	<.02		0.051	0.013	<.04	192.3	0.017	0.358	<.005
8/7/1996	<.003	0.28	<.02		0.083	0.01	<.04	229.3	0.031	0.36	0.008
21/11/96	<.003	<.05	0.02		0.08	0.011	<.04	175.6	0.022	0.537	<.005
22/07/97	<.003	0.24	<.02	0.06	0.03	0.001	<.04	157.2	0.06	0.334	<.005
30/09/97	<.003	0.25	<.02	<.05	0.075	0.001	0.04	190.8	0.073	0.38	<.005
20/10/97	<.003	0.07	<.02	<.05	0.097	0.007	<.04	205.7	0.069	0.404	<.005
23/12/97	<.003	1.83	0.03	<.05	0.153	0.002	<.04	149.1	0.011	0.168	0.011
13/01/98	<.003	0.19	0.04	<.05	1.653	<.001	<.04	144.8	<.002	0.065	<.005
14/09/98	0.004	0.17	0.07	<.05	0.085	0.001	<.04	217.9	0.099	0.487	0.039
18/06/99	<.003	0.54	<.005	0.09	0.125	<.001	<.04	68.7	0.017	0.052	<.005
10/5/1999	<.003	0.19	0.065	<.05	0.105	<.001	<.04	119.6	0.058	0.216	<.005
12/10/1999	<.003	0.23	<.005	<.05	0.122	<.001	<.04	135.9	0.061	0.199	<.005
22/03/00	<.003	0.53	<.005	0.1	0.155	<.001	<.05	163.4	0.044	0.273	<.005
20/06/00	<.003	0.82	<.005	<.05	0.208	0.002	<.05	40.8	0.018	0.011	<.005
12/9/2000	<.003	0.26	0.024	0.05	0.122	<.001	<.05	92.5	0.047	0.143	<.005
5/3/2001	<.003	0.461	<.005	0.127	0.271	<.001	<.05	112	<.001	<.005	<.005
13/08/01	<.003	0.22	0.101	0.08	0.18	<.001	<.05	90.8	0.056	0.258	0.014
8/9/2001	<0.003	0.07	<0.005	2.61	0.275	<0.001	<0.05	116.6	0.086	0.381	<0.005

Date	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/10/1999	0.035	0.13	4	<.005	64	<.01	0.008	8	0.023	<.04
13/12/99	0.038	0.14	6	<.005	60.3	0.01	<.002	6	0.022	<.04
22/03/00	0.012	4.26	4	<.005	67.3	0.07	<.002	3	<.005	<1
20/06/00	0.029	0.25	4	<.005	58.3	0.01	<.002	9	<.005	4
12/9/2000	0.041	0.13	3	0.044	86.2	0.01	<.002	12	<.005	5
12/11/2000	0.012	0.06	5	0.052	182.5	0.08	<0.002	15	<0.005	0.05
5/3/2001	0.226	44	4.76	<.005	37	1.01	<.002	19	0.079	<1
13/08/01	0.006	0.06	4	0.045	149.4	0.79	<.002	12	0.103	<1
8/9/2001	0.008	0.84	5	0.039	167.6	0.01	<0.002	11	<0.005	<1
12/11/2001	0.012	0.06	5	0.052	182.5	0.08	<0.002	15	<0.005	0.05
STATION: V18										
16/10/95	<0.002	0.23								
14/11/95	0.003	0.07								
14/03/98	0.007	0.18		<.005	12	<.01	<.002	2	<.005	<.04
22/04/98	0.008	0.44		<.005	13.3	0.02	<.002	3	<.005	0.06
11/9/1998	0.002	0.57		<.005	19.7	0.03	0.009	3	0.009	0.05
21/10/98	0.035	1.78		<.005	24.3	0.06	<.002	8	0.005	0.11
12/8/2001	0.004	0.08	2	0.021	55.4	0.34	0.006	10	<.005	<1
STATION: V22										
7/5/1991	0.583	0.713	6		25.4	2.12	<0.01	6.6	0.28	<0.1
16/05/91	0.123	0.498								
22/08/91	0.001	1.34								
25/09/91	0.279	135	15		49.4	5.92	<0.01	11	0.08	2.6
5/12/1991	0.01	0.817								
28/04/92	113	14.5	7		80.7	42.9	<0.01	6.6	2.1	3
9/9/1992	0.008	5.03	10		40.8	1.57	<0.01	11	0.08	0.1
24/11/92	<0.006	0.532	7		31.3	0.125	<0.01	15.6	0.03	<0.1
24/11/92	0.001									
2/8/1993	0.018	0.337	4.4		28.1	3.05	<0.01	7.2	0.2	<0.1
19/07/94	0.015									
9/8/1994	<0.002	0.114	3.8		38.3	6.77	<0.005	7.12	0.197	<0.06
11/10/1994	<0.002	0.136	4.1		40.3	6.65	<0.005	7.84	0.216	<0.06
15/10/94	0.004									
31/01/95	0.004									
19/04/95	0.006	1.3								
9/5/1995	0.024	0.174	3.6		40.1	6.58	<0.005	7.5	0.192	<0.06
9/5/1995	0.024	0.17								
14/06/95	0.004	0.03								
24/07/95	<0.002	0.14								
29/09/95	0.009	2.04								
9/4/1996	0.026	1.5		<.005	31.2	0.79	0.01	11	0.013	0.16
12/6/1996	0.02	0.65		<.005	68.3	17.49	<.002	10	0.42	<.04
8/7/1996	0.009	0.35		<.005	73	16.42	<.002	10	0.391	0.23
21/11/96	0.011	0.37		<.005	82.6	16.11	0.003	12	0.448	<.04
22/07/97	0.033	0.15	4	<.005	50.7	12.67	0.037	10	0.327	4.35
30/09/97	0.08	0.47	4	0.027	82.3	13.93	0.054	10	0.377	5.15
20/10/97	0.013	0.29	10	<.005	66	17.43	<.002	9	0.453	<.04
23/12/97	0.021	2.92	9	<.005	44.6	5.44	0.002	8	0.154	0.12
13/01/98	0.02	2.78	8	<.005	43.9	2.79	0.003	14	0.048	<.04
14/09/98	0.032	0.2	4	<.005	79	19.37	0.072	10	0.467	4.33
18/06/99	0.095	1.15	3	0.02	25.8	3.13	0.013	5	0.11	<.04
10/5/1999	0.022	0.28	3	<.005	45.4	9.94	0.081	5	0.281	3.29
12/10/1999	0.034	0.39	4	<.005	52.1	10.77	0.071	6	0.278	<.04
22/03/00	0.017	0.09	4	0.011	59.1	14.53	0.015	9	0.234	<1
20/06/00	0.069	1.26	2	<.005	13.6	1.02	<.002	3	0.056	8
12/9/2000	0.03	0.42	<1	0.029	30.5	6.21	0.042	5	0.175	13
5/3/2001	0.003	0.095	<1	<.005	52	<.01	<.002	10	<.005	<1
13/08/01	0.028	0.7	2	0.018	38.5	13.65	<.002	4	0.172	<1
8/9/2001	0.018	2.02	3	0.023	49.3	21.8	<0.002	4	0.349	<1
STATION: V28										
7/1/1987	<0.01					2.66		18		
15/01/87	<0.01					2.49		15		
3/2/1987	<0.01					1.88		13.5		
10/2/1987	<0.01					1.99		15		
17/02/87	<0.01					1.63		14.1		
10/3/1987	<0.01					0.87		15.7		
24/03/87	<0.01					0.54		22.3		
1/4/1987	0.02					1.22		16		
20/04/87	0.01					1.6		9		
5/5/1987	0.05					4.25		16.5		
12/5/1987	0.11					5.45		15.4		
19/05/87	0.06					5.2		14.5		
26/05/87	0.05					4.2		11.9		
4/6/1987	0.01					2.7		14.8		
11/6/1987	0.01					2.06		19.1		
16/06/87	0.93					8.3		38.5		
26/06/87	<0.01					1.71		13.4		
30/06/87	<0.01					1.27		24		
6/7/1987	<0.01					1.5		24		
13/07/87	0.01					1.6		22.5		
20/07/87	<0.01					1.64		24.5		
28/07/87	<0.01					0.02		3.6		
4/8/1987	<0.005					2.3		37		
11/8/1987	<0.005					2.2		37.5		
18/08/87	<0.005					1.98		37.5		
25/08/87	<0.005					0.02		3.2		
1/9/1987	<0.005					3.24		44		
8/9/1987	<0.005					0.02		3.8		
15/09/87	<0.005					0.07		3.8		
21/09/87	<0.005					0.08		3.8		
2/10/1987	<0.005					2.53		43.5		

Date	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/10/1999	<.01	102	0.03	<.005	5.7	<.01	0.962	0.027	<.005	<.03	<.01
13/12/99	<.01	97	<.03	<.005	3.8	<.01	0.865	0.011	0.02	<.03	0.04
22/03/00	<.01	109	<.03	<.005	9	<.01	1.038	0.073	<.005	<.03	0.03
20/06/00	<.01	<1	<.03	<.005	5	<.01	0.815	0.031	<.005	<.03	0.01
12/9/2000	<.01		<.03	<.005	5.8	<.01	1.126	0.022	<.005	<.03	0.03
12/11/2000	0.01	365	<0.03	<0.005	10	<0.01	1.207	0.005	0.009	<0.03	<0.01
5/3/2001	0.09	44	<.03	<.005	50.6	<.01	0.65	1.14	0.054	<.03	2.94
13/08/01	<.01	298	<.03	<.005	9.8	0.09	1.164	<.005	0.006	<.03	0.08
8/9/2001	<0.01	350	<0.03	<0.005	10	<0.01	1.139	0.027	<0.005	<0.03	0.1
12/11/2001	0.01	365	<0.03	<0.005	10	<0.01	1.207	0.005	0.009	<0.03	<0.01
STATION: V18											
16/10/95	<0.020										0.01
14/11/95	<0.020										<0.01
14/03/98	<.02	11	<.03		1.31		0.244	<.005	<.005	<.03	<.01
22/04/98	<.02	17	<.03		1.99		0.27	0.008	0.006	<.03	<.01
11/9/1998	<.02	17	<.03		4.9		0.384	0.009	<.005	<.03	0.02
21/10/98	<.02	5	<.03		5.2		0.442	0.007	<.005	<.03	0.04
12/8/2001	0.01	141	<.03	<.005	4.2	<.01	0.763	<.005	<.005	<.03	0.02
STATION: V22											
7/5/1991	<0.06		<0.06	<0.06	4.1	<0.06	0.573	<0.002	<0.01		14.8
16/05/91	0.07										7.57
22/08/91	0.023										8.69
25/09/91	7.48		<0.06	<0.06		<0.06	0.608	0.211	0.04		17.1
5/12/1991	0.153										4.05
28/04/92	0.29		<0.06	<0.06		<0.06	0.869	0.01	<0.01		398
9/9/1992	<0.06		0.1	<0.06	16.8	<0.06	1.1	0.218	<0.01		3.59
24/11/92	<0.06		0.46	<0.06	4.05	<0.06	3.66	0.004	<0.01		0.115
24/11/92	0.033										0.078
2/8/1993	<0.06		0.08	<0.06	3.77	<0.06	1.36	0.004	<0.01		7.37
19/07/94	<0.03										20.1
9/8/1994	<0.01	132	<0.02	<0.02	3.26	<0.01	1.1	<0.001	0.007		11.7
11/10/1994	<0.01	147	<0.02	<0.02	3.68	<0.01	1.11	0.002	0.006		17.4
15/10/94	<0.03										16.6
31/01/95	0.04										15.2
19/04/95	0.17										18.2
9/5/1995	0.02	144	<0.02	<0.02	3.7	0.02	0.99	0.003	<0.002		19.9
9/5/1995	0.02										19.9
14/06/95	<0.020										14.43
24/07/95	<0.020										13.97
29/09/95	0.085										9.33
9/4/1996	0.68	122	<.03		1.66		2.498	0.009	<.005	<.03	0.96
12/6/1996	<.02	268		0.05	1.92		2.168	0.007	<.005	<.03	34.26
8/7/1996	0.03	382	<.03		3.2		2.111	<.005	<.005	<.03	32.5
21/11/96	0.03	300	<.03		2.8		1.737	<.005	<.005	<.03	43.8
22/07/97	0.15	34	0.09	<.03	2.8	<.01	1.85	0.017	<.005	<.03	23.71
30/09/97	0.2	276	0.2	<.03	2.4	<.01	1.513	0.017	<.005	1.01	39.83
20/10/97	0.08	260	0.08	<.03	1.9	<.01	1.541	<.005	<.005	<.03	50.17
23/12/97	0.03	136	<.03	<.03	4.9	<.01	2.019	0.049	0.014	<.03	12.73
13/01/98	0.4	139	0.13	<.03	2	<.01	1.805	<.005	<.005	<.03	4.88
14/09/98	0.24	290.7	0.22	<.03	2.4	<.01	2.021	0.022	0.005	<.03	42.75
18/06/99	0.04	75	0.1	<.03	2	<.01	0.737	0.027	0.007	<.03	11.21
10/5/1999	0.13	171	0.17	<.005	1.8	<.01	1.047	0.018	0.012	<.03	22.59
12/10/1999	0.17	169	0.13	<.005	2.8	<.01	1.226	0.024	<.005	<.03	37.36
22/03/00	0.05	189	<.03	<.005	3.4	<.01	1.905	0.023	<.005	<.03	43.76
20/06/00	0.03	<1	<.03	<.005	3.7	<.01	0.428	0.03	<.005	<.03	4.82
12/9/2000	0.11		0.07	<.005	2.7	<.01	0.613	0.006	<.005	<.03	21.84
5/3/2001	<.01	81	<.03	<.005	4.9	<.01	0.48	0.01	<.005	<.03	<.01
13/08/01	0.02	135	<.03	<.005	3.8	0.07	0.598	0.021	<.005	<.03	45.9
8/9/2001	0.16	197	<0.03	0.038	3.7	<0.01	0.694	<0.005	<0.005	<0.03	78.29
STATION: V28											
7/1/1987	0.03										37.2
15/01/87	0.02										31.6
3/2/1987	0.04										20.2
10/2/1987	0.05										17.3
17/02/87	0.08										14
10/3/1987	0.23										6.25
24/03/87	0.1										1.28
1/4/1987	0.49										10.7
20/04/87	0.1										26
5/5/1987	0.26										69
12/5/1987	0.13										87
19/05/87	0.06										3.26
26/05/87	0.15										56.2
4/6/1987	0.04										43.8
11/6/1987	0.45										32.2
16/06/87	0.1										110.5
26/06/87	0.02										28.5
30/06/87	0.13										17.5
6/7/1987	0.06										20.3
13/07/87	0.23										22.2
20/07/87	0.11										23
28/07/87	0.02										4.14
4/8/1987	0.12										25.5
11/8/1987	0.05										28.8
18/08/87	0.05										25.7
25/08/87	0.02										4.31
1/9/1987	0.07										38.3
8/9/1987	0.01										4.63
15/09/87	<0.005										5.26
21/09/87	<0.005										5.7
2/10/1987	0.1										31.7

Table G6. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/10/1987												<0.005					3.29		47.5			0.22										41.6
13/10/87												0.01					2.29		39			0.2										26.4
20/10/87												<0.005					2.2		25.5			0.06										37.4
27/10/87												0.01					2.02		22			0.09										38.88
3/11/1987												0.01					1.34		15.5			0.06										26.7
10/11/1987												0.01					1.54		18.5			0.05										31.8
17/11/87												0.01					1.18		18			0.14										22
24/11/87												<0.005					0.8		6.8			0.06										23
1/12/1987												0.01					1.08		16.5			0.18										19.9
9/12/1987												0.01					0.95		20			0.07										18
15/12/87												0.11					0.79		3.6			0.03										19.9
23/12/87												0.01					8.35		33.5			0.25										42
30/12/87												0.03					5.78		31.8			0.4										38.5
5/1/1988												0.006					0.555		11.8			0.028										12.7
12/1/1988												0.009					0.65		18.5			0.028										12.5
19/01/88												0.005					0.52		17.5			0.048										11.6
27/01/88												0.006					0.505		15			0.038										12.1
2/2/1988												0.006					0.525		15.5			0.056										11.5
10/2/1988												0.007					0.46		13.2			0.039										11.4
11/2/1988												0.007					0.48		13.2			0.039										11.4
17/02/88												0.006					0.625		14.8			0.038										13.7
24/02/88												0.007					0.605		11.3			0.031										11.3
2/3/1988												0.008					0.67		12			0.073										14.4
9/3/1988												0.013					0.82		14			0.047										16.4
16/03/88												0.009					0.635		15.1			0.082										13
23/03/88												0.008					0.54		14.3			0.058										11.7
29/03/88												0.014					0.5		15.5			0.074										12.1
5/4/1988												0.012					0.59		18.1			0.088										12.1
12/4/1988												0.01					0.94		16.4			0.097										16.4
19/04/88												0.003					8.3		39.5			0.005										115
20/04/88												0.32					5.4		17.9			0.167										97.2
25/04/88												0.14					7.35		16.2			<0.005										118
4/5/1988												0.008					6.12		25.5			0.006										113
11/5/1988												0.079					5.83		21			0.137										103
19/05/88												0.003					6.3		39.5			<0.005										115
25/05/88												0.022					4.3		32.5			0.235										77.5
1/6/1988												0.019					3.8		29.5			0.086										73
7/6/1988												0.021					3.35		29			0.122										69.5
15/06/88												0.018					3.15		32.5			0.113										62
23/06/88												0.013					2.85		38			0.062										53
28/06/88												0.039					2.55		32			0.24										46.5
6/7/1988												0.031					2.35		31			0.117										38
11/7/1988												0.011					2.45		32			0.056										43
20/07/88												0.011					8.75		37			0.121										94
27/07/88												0.031					5.15		38			0.43										70
4/8/1988												0.01					5		46			0.17										62.5
10/8/1988												0.02					4.85		39			0.113										73
16/08/88												0.062					4.55		34			0.605										71.5
24/08/88												0.016					5.33		40			0.14										55.5
31/08/88												0.019					4.23		46			0.165										50.1
9/9/1988												0.01					4		46			0.069										57
13/09/88												0.03					3.9		44.5			0.37										58
22/09/88												0.019					3.75		39.5			0.013										53.5
29/09/88												0.014					3.5		40.5			0.08										52.5
6/10/1988												0.009	2.85				3.1		31.5			0.073										52
14/10/88												0.012	2.65				3.85		42.5			0.075										47
19/10/88												0.012					3.7		32			0.098										45.5
26/10/88												0.011	2.4				2.85		39			0.07										43
1/11/1988												0.011					2.95		38.5			0.06										47
8/11/1988												0.012					2.65		39			0.92										40.5
14/11/88												0.007					2.3		37.5			0.074										38.5
21/11/88												0.007					2.55		37.5			0.087										44
30/11/88												0.011	2.05				1.58		16.2			0.079										30.8
7/12/1988												0.006	1.98				1.33		17			0.036										29.2
21/12/88												0.005					1.87		19			0.064										43.4
28/12/88												0.004	2.3				1.61		19.5			0.06										40.5
6/1/1989												0.018					1.23		9.2			0.18										30
17/01/89												0.016	3.6				0.925		10			0.058										23.7
23/01/89												0.005	1.3				1.27		9.1			0.021										33.5
7/2/1989												0.008					0.95		7.6			0.059										23
13/02/89												0.008	0.78				3.1		16.2			0.065										51.5
20/02/89												0.005					1.85		13			0.088										35
27/02/89												0.003					0.96		7.8			0.047										28
8/3/1989												0.013					3.45		23.5			0.21										49.5
14/03/89												0.02	4.45				3.45		25.5			0.17										45.5
20/03/89												0.005	3.45				2.7		39			0.145										33
3/4/1989												0.048					2.8		17.5			0.13										49
10/4/1989												0.106	19.3				2.95		13			0.525										45
17/04/89												0.68					5		28.5			10										77.5
2/5/1989												0.475					9.15		16.5			0.82										135
16/05/89												0.183					5.78		43			0.331										0.061
23/05/89												0.073					8.79		49.5			0.64										11.87
29/05/89												0.035					7.63		53			0.696										102
31/05/89	<0.01	35.7	<0.05	0.01	0.583	0.003		77.4	0.033	<0.005	0.067	0.332	43.8			46.2	2.25	<0.01	5.5	0.1	1	0.39		<0.05	<0.05	51.9	<0.05	0.323	1.39	0.09		23.4
5/6/1989												0.012					7.9		48			0.195										118
12/6/1989												0.028	9.42				6.67		6			5.62										8.31
20/06/89												0.029	6.62				5.83		60			0.533										8.6
26/06/89												0.031	3.76				4.25		67			0.566										49.7
17/07/89												0.012	5.17				3.96		75			0.21										49.5
25/07/89												0.012	2.11				5.34		50			0.215										53.2
31/07/89												0.053	8.58				8.94		50			0.645										78.2
7/8/1989												0.012	5.75				4.32		60			0.045										50.3
14/08/89												0.02	2.54				4.44		48			0.395										40.3
5/9/1989												0.01	1.6				4.29		50			0.18										49.9
11/9/1989												0.009	2				4.13		52			0.096										44.3
18/09/89												0.018	2.81				3.87		50			0.232										43.5
17/04/90												0.037																				

Table G6. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1/5/1990	<0.01	9.66	<0.05	0.01	0.151	0.003		145	0.088	0.306	0.017	0.761	22.9	12		107	7.76	<0.01	35.4	0.51	0.4	0.24		<0.05	<0.05	18.8	<0.05	0.994	0.3	<0.01		98
14/05/90												0.126																				
11/6/1990												0.015																				74.7
11/7/1990	<0.01	0.42	<0.05	0.04	0.088	<0.001		150	0.028	0.139	<0.005	0.028	0.847	14		86	4.8	<0.01	43	0.4	<0.1	0.24		<0.05	<0.05	5.25	<0.05	1.02	<0.002	<0.01		49.8
2/10/1990	<0.01	0.98	0.07	<0.01	0.329	<0.001		215	0.05	0.26	<0.005	0.019	3.27	19		124	7.51	<0.01	50.2	0.73	0.3	0.67		0.1	<0.05	5.45	<0.05	1.3	0.033	<0.01		85.2
27/02/91	<0.01	0.27	<0.06	0.03	0.029	<0.001		202	0.029	0.243	<0.006	0.019	1.85	20		111	5.86	<0.01	48.3	0.66	<0.1	0.21		<0.06	<0.06	4.13	<0.06	1.21	0.007	<0.01		66.9
8/5/1991	<0.01	0.49	<0.06	<0.01	0.038	<0.001		235	0.118	0.4	<0.006	0.04	2.4	17		157	12.7	<0.01	40.3	0.65	<0.1	0.21		<0.06	<0.06	4.31	<0.06	1.3	0.013	<0.01		196
24/07/91	<0.01	0.24	<0.06	0.04	0.025	<0.001		184	0.057	0.279	0.007	0.024	2.35	17		119	8.84	<0.01	43	0.63	<0.1	0.29		<0.06	<0.06	3.6	<0.06	1.09	0.009	<0.01		109
6/11/1991	<0.01	2.78	<0.05	0.01	0.062	<0.001		145	0.057	0.161	0.007	0.035	3.67	7		90.1	5.9	<0.01	20.8	0.27	0.1	<0.05		<0.05	<0.05	10.9	<0.05	0.69	0.119	<0.01		63.8
21/01/92	<0.01	0.41	<0.06	<0.01	0.028	<0.001		135	0.048	0.041	<0.006	0.012	5.08	3		64.7	3.01	<0.01	7.6	0.11	<0.1	<0.06		<0.06	<0.06		<0.06	0.424	0.013	<0.01		55.7
29/04/92	<0.01	4.69	<0.06	0.01	0.081	0.002		203	0.208	0.328	<0.006	0.578	12.6	14		171	17.8	<0.01	32.8	0.51	0.1	0.26		<0.06	<0.06		<0.06	1.08	0.11	<0.01		287
STATION: V28																																
25/04/88												1.42					6.67		3.7			0.107										66.5
4/5/1988												0.05					1.71		3.2			0.007										24.5
11/5/1988												0.33					2.4		3.8			0.415										21.9
19/05/88												0.008					0.755		3.6			<0.005										13.9
25/05/88												0.096					0.735		3.5			0.07										11.4
1/6/1988												0.042					0.635		3.6			0.047										9.85
7/6/1988												0.078					0.795		2.5			0.045										12
15/06/88												0.045					0.51		3.4			0.023										10.2
23/06/88												0.044					0.53		4.5			0.019										11
28/06/88												0.032					0.35		3.8			0.018										8.4
6/7/1988												0.066					0.57		3.8			0.106										9.65
11/7/1988												0.037					0.475		3.8			0.028										10.1
20/07/88												0.054					0.6		3.8			0.05										11.7
27/07/88												0.043					0.57		3.8			0.024										10.8
4/8/1988												0.037					0.485		3.8			0.02										10.4
10/8/1988												0.038					0.41		3.9			0.021										10
16/08/88												0.032					0.35		3.8			0.015										9.5
24/08/88												0.027					0.31		3.9			0.02										9.4
31/08/88												0.024					0.28		4.4			0.015										8.8
9/9/1988												0.021					0.245		3.8			0.012										8.6
13/09/88												0.04					0.3		4.2			0.015										8.9
22/09/88												0.021					0.29		3.4			0.009										8.3
29/09/88												0.019					0.28		3.4			0.017										8.35
6/10/1988												0.015	0.33				0.28		2.8			0.011										9
14/10/88												0.015	0.26				0.23		3.7			0.009										8.7
19/10/88												0.021					0.32		3.2			0.017										9.05
26/10/88												0.017	0.4				0.245		3.8			0.014										8.4
1/11/1988												0.01					0.195		3.7			0.009										8.5
8/11/1988												0.008					0.131		3.7			0.039										7.75
14/11/88												0.006					0.091		3.7			0.011										7
21/11/88												0.003					0.068		4.3			0.008										8.3
8/5/1989												0.92	60.5				3.2		1			0.53										44
23/05/89												0.415					2.23		3.5			0.1										29.8
29/05/89												0.508					2.39		4.1			0.904										22.2
31/05/89	<0.01	0.73	<0.05	0.01	0.058	<0.001		184	0.012	0.262	0.005	0.007	1.34			94.2	8.06	<0.01	40.9	0.63	<0.1	0.15		<0.05	<0.05	4.38	<0.05	0.933	0.01	<0.01		20.7
5/6/1989												0.161					1.37		3.4			0.091										1.89
12/6/1989												0.109	1.05				0.935		3.4			0.055										15.7
20/06/89												0.076	3.56				0.753		3.34			0.043										1.32
26/06/89												0.057	0.336				0.59		3.3			0.028										11.1
4/7/1989												0.048	0.316				0.523		3.8			0.023										11.8
11/7/1989												0.038	0.292				0.435		3.9			0.02										9.98
17/07/89												0.027	0.267				0.336		3.9			0.014										9.55
25/07/89												0.038	0.92				0.81		4			0.063										1.22
31/07/89												0.022	0.293				0.334		3.8			0.022										9.31
7/8/1989												0.021	0.219				0.287		2.7			0.012										9.25
14/08/89												0.018	0.15				0.241		3.6			0.011										9.44
21/08/89												0.016	0.19				0.222		3.3			0.008										9.37
26/08/89												0.013	0.155				0.203		3.4			0.011										8.6
5/9/1989												0.014	0.311				0.175		3.5			0.015										9.36
11/9/1989												0.009	0.117				0.115		3.6			0.005										8.15
18/09/89												0.013	1.28				0.127		3.6			0.054										7.66
25/09/89												0.005	0.191				0.076		3.5			0.008										7.04
2/10/1989												0.006	0.078				0.05		3.5			0.007										6.4
10/10/1989												0.008	4.58				3.66		38.5			0.097										49.7
16/10/89												0.009	1.27				0.038		3.6			0.038										7.34
23/10/89												0.006	0.653				0.036		3.3			0.014										6.84
30/10/89												0.003	0.349				0.031		3.3			0.008										6.7
6/11/1989												0.005	1.67				0.041		3			0.013										6.8
15/11/89												0.005	0.164				0.032		3.2			0.01										6.42
20/11/89												3.35	0.342				0.029		3.1			0.01										5.87
27/11/89												0.004	1.49				0.039		3			0.014										6.35
4/12/1989												0.002	0.183				0.025		2.9			0.007										6.12
11/12/1989												0.01	0.365				0.03		2.7			0.005										5.68
18/12/89												0.003	0.167				0.026		3.9			0.008										5.52
28/12/89												0.003	0.269				0.027		3.9			0.005										6.04
3/1/1990												0.003										0.008										6.49
8/1/1990												0.003										<0.005										6.23
15/01/90												0.003										0.009										5.99
22/01/90												0.002										<0.005										5.4
1/2/1990												0.003										0.008										5.61
5/2/1990												0.002										0.005										5.76
12/2/1990												0.002										0.038										5.5
19/02/90												<0.002										<0.005										5.08
26/02/90												0.02										<0.01										0.33
12/3/1990												<0.002																				
17/04/90												0.046																				
14/05/90												0.872																				
11/8/1990												0.164																				25.1
8/5/1991	<0.01	16.4	<0.06	<0.01	0.202	0.005		87	0.089	0.66	0.019	1.26	32.2	5		73.2	4.61	<0.01	5.1	0.16	0.4	0.21		<0.06	<0.06	30.2	<0.06	0.309	0.517	0.03		70.6
24/07/91	<0.01	8.07	<0.06	0.02	0.11	<0.001		79.4	0.025	0.065	0.007	0.15	5.98	<2		41.3	1.38	<0.01	4.4	0.08	0.3	0.09		<0.06	<0.06	17.8	<0.06	0.242	0.211	<0.01		28.2
4/5/1994	<0.001	0.05	<0.02		0.0394	0.0006		389	0.0632	0.531	0.003	0.023	0.429	17		164	17.5	<0.005	12.5	1.59	<0.05	0.02	371	<0.02	<0.02	5.77	<0.01	1.39	0.011	0.003		48.5
9/5/1995	<0.001	0.06	<0.02		0.0364	<0.0002		404	0.0941	0.615	0.004	0.016	1.85	11		179	20.6	<0.005	11	2.05	<0.08	0.05	525	0.04	<0.02	6.04	<0.01	1.31	0.005	<0.002		64.2
12/5/1997	<.003	0.16	<.02	0.09	0.108	0.004	<.04	340.3	0.097	0.448	<.005	0.01	2.04	<1	<.005	152.9	16.99	<.002	8	1.361	0.06	0.07	416	<.03	<.03	4.1	<.01	1.181	0.005	<.005	0.08	52.28

Table G6. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Total Metals

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: V30																																
10/10/1988												0.02					0.03		145			0.8										0.04
23/10/88												0.08										0.87										43
31/10/88												0.03										0.23										56.1
6/11/1988												0.04										0.08										58.7
7/1/1987												0.01					8.75		30			0.19										56.8
5/5/1987												0.02					7.05		19.4			0.37										38.25
12/5/1987												0.02					14		21.5			10.62										14.55
19/05/87												<0.01					9.4		0.22			0.05										3.04
26/05/87												0.03					8.05		17.8			0.65										68.3
4/6/1987												0.01					6.8		47			8.03										37
11/6/1987												0.01					9.25		33			0.11										44.2
16/06/87												<0.01					8.95		33			0.13										60.3
6/7/1987												0.02					6.85		28			0.38										38.5
13/07/87												0.06					1.06		124			0.38										1
20/07/87												0.04					6.1		34.5			0.46										30
26/07/87												0.01					6.74		28.5			0.17										29.3
4/8/1987												<0.005					6.5		26.5			0.2										32.1
11/8/1987												0.4					6.9		32			0.18										29.3
18/08/87												<0.005					8		37			0.11										43.8
25/08/87												<0.005					9.12		37			0.1										58
1/9/1987												<0.005					9.67		38			0.05										58.7
8/9/1987												<0.005					7.81		35			0.04										39.4
15/09/87												<0.005					8.8		34			0.06										51
21/09/87												<0.005					7		38			0.09										38.4
2/10/1987												0.02					7.4		38.5			<0.005										31
6/10/1987												0.01					8.6		32.5			<0.005										35.8
13/10/87												0.09					9.52		43.5			0.02										52.2
20/10/87												<0.005					9.2		35			<0.005										55.8
27/10/87												0.01					7.5		35			<0.005										45
3/11/1987												<0.005					8.93		37			0.03										74.5
10/11/1987												<0.005					8.92		27			<0.005										61
17/11/87												<0.005					7.02		25			<0.005										67.8
24/11/87												0.01					7.23		19			0.02										35.6
1/12/1987												<0.005					4.39		18.5			<0.005										24
15/12/87												0.1					7.2		14			0.18										38.4
23/12/87												0.07					5.34		10.1			0.9										28.5
30/12/87												0.01					5.13		18.4			0.1										22
5/1/1988												0.01					7.21		26.5			<0.005										29.7
12/1/1988												0.009					7		26.5			<0.005										29.4
19/01/88												0.02					5.8		25			<0.01										23.5
27/01/88												0.052					3		45			0.163										7.5
17/02/88												0.01					7.35		30			<0.005										27.3
24/02/88												0.005					7.7		25.5			0.02										28
2/3/1988												0.006					7.45		35.5			0.008										24.9
9/3/1988												0.012					5.9		29			0.011										21.9
16/03/88												0.009					6.79		40			0.035										18.7
23/03/88												0.007					7.7		25.5			<0.005										27.1
29/03/88												0.008					7.19		24.5			<0.005										27.2
5/4/1988												0.008					6.52		24.5			<0.005										23.3
12/4/1988												0.009					7		26			0.005										27.5
20/04/88												0.005					7.03		17			0.028										74
25/04/88												0.008					8.48		19.4			0.012										78
4/5/1988												0.008					7.5		22			0.009										56.3
11/5/1988												0.033					13		23.5			1.87										108
19/05/88												0.005					7.4		25.5			<0.005										60
25/05/88												0.008					6.2		26.5			0.108										48
1/6/1988												0.005					5.15		24.5			0.084										41.5
7/6/1988												0.058					5		25.5			0.49										41
15/06/88												0.04					5.85		31			0.325										48.5
23/06/88												0.023					6		24			0.285										39.5
28/06/88												0.009					6.25		20.5			0.089										32.5
6/7/1988												0.105					5.2		21			3										69
11/7/1988												0.03					5.3		27			0.33										35.5
20/07/88												0.1					1.39		149			0.625										4.1
27/07/88												0.094					1.89		141			0.38										3.95
4/8/1988												0.032					5		31			0.37										28
10/8/1988												0.013					5.6		28			0.182										38.5
16/08/88												0.015					5.2		32.5			0.24										26
24/08/88												0.04					6.95		23			0.53										35
31/08/88												0.007					6.2		22.5			<0.005										32.5
8/9/1988												0.061					5.38		29			0.78										38.7
13/09/88												0.62					2.55		4.5			5.3										12.5
22/09/88												0.026					7.45		22.5			0.255										55.5
29/09/88												0.345					7.3		22.5			3.25										55
6/10/1988												0.04	30.5				8.8		30			0.67										53.5
30/11/88												0.06	103				11.6		59			0.053										74
28/12/88												0.007	50				8.35		33			0.017										63.5
2/5/1989												0.007					11.7		22.5			0.12										119
8/5/1989												0.132	75.5				11.1		34.5			1.13										77.5
16/05/89												0.058					15.35		43.5			0.531										0.073
23/05/89												0.7					9.86		39.5			6.13										7.31
29/05/89												0.343					7.27		43			1.94										37.62
5/6/1989												4.63					8.83		28.5			18.1										51.9
26/06/89												0.037	9.94				4.96		44			0.432										24.8
3/7/1989												0.083	30				5.73		56			1.11										32.1
10/7/1989												0.006	5.43				4.75		37			0.021										18.5
17/07/89												0.005	7.02				7.75		28.5			0.015										39.5
25/07/89												0.006	10.9				5.65		38.5			0.007										31
31/07/89												0.005	30.7				6.73		35.5			0.017										45.5
7/8/1989												0.705	0.041				6.51		152			0.62										61.5
14/08/89												0.008	133				8.34		24			0.27										50.4
21/08/89												0.005	34.9				4.56		32.5			0.219										2.84
28/08/89												0.105	0.019				0.07		328			0.052										0.014
5/9/1989												0.01	30.2				8.32		26			0.039										37.2

Table G6. Water Quality of Open Pits and Rock Dumps, Vangorda Plateau - Total Metals

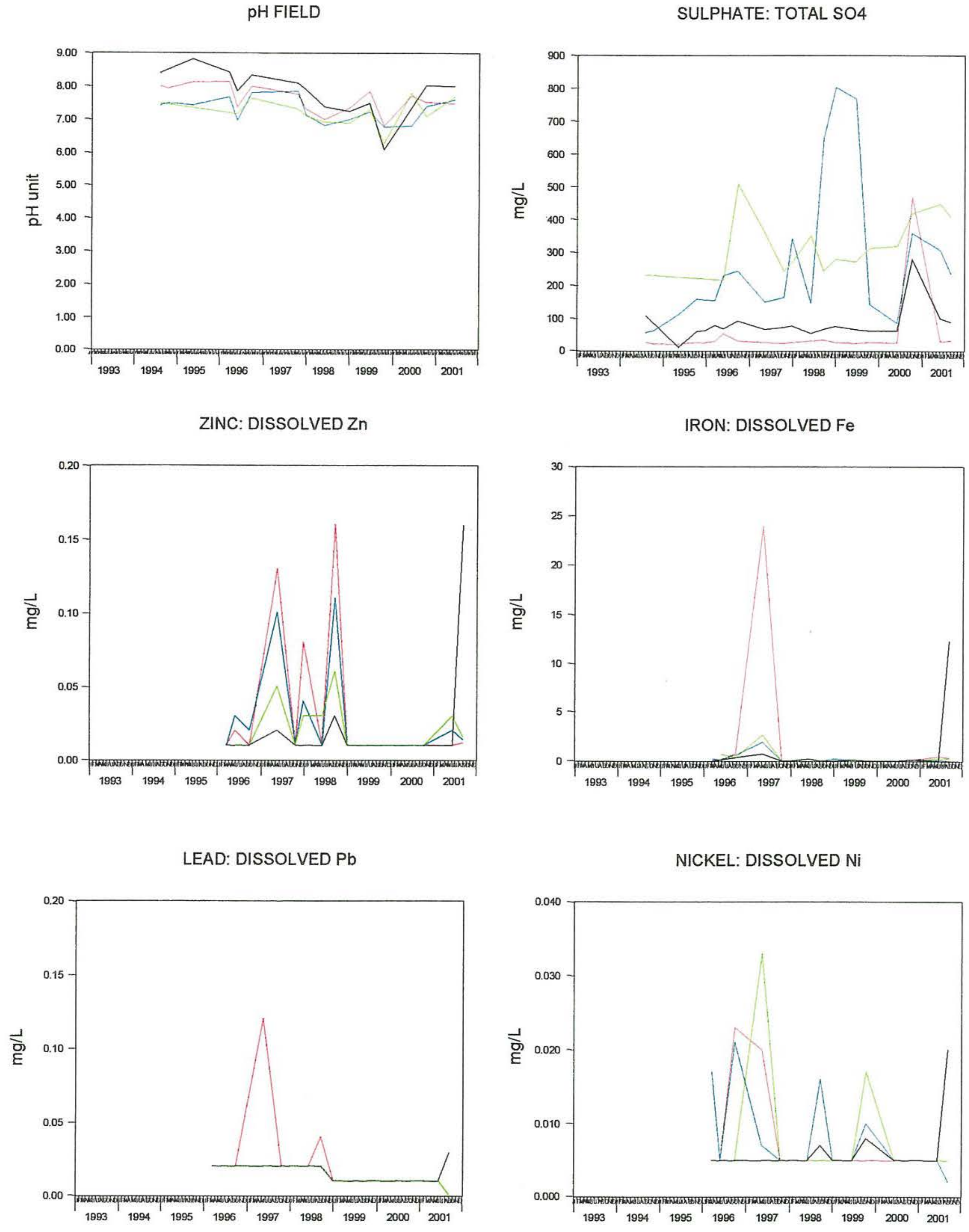
Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BI-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SE-T	SI-T	SN-T	SR-T	TI-T	V-T	W-T	ZN-T
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
10/10/1989												0.006	40.3				5.58		38			0.009										38.2
16/10/89												0.068	0.036				0.002		36			0.026										0.012
23/10/89												2.59	0.021				0.028		114			0.049										0.014
30/10/89												0.008	103				9.17		31.5			0.005										41.6
6/11/1989												0.005	163				8.95		28			0.005										44
26/04/90												0.01																				6.21
9/5/1990												0.007																				10.3
12/7/1990	<0.01	0.09	<0.05	0.01	0.046	<0.001		21.9	<0.005	<0.005	<0.005	0.028	0.15	<2		4.5	0.021	<0.01	1.7	<0.02	<0.1	<0.05		<0.05	<0.05	4.72	<0.05	0.094	<0.002	<0.01		0.008
4/5/1994	<0.001	0.05	0.07		0.0217	0.0018		359	0.175	3.27	0.004	0.022	28.3	17		173	56.2	<0.005	7.6	5.1	<0.05	0.097	568	<0.02	<0.02	5.97	<0.01	1.24	0.0096	0.004		342
9/8/1994	0.001	0.38	<0.02		0.0086	<0.0002		511	0.051	3.81	<0.001	<0.002	16.9	16		307	82.5	<0.005	15.8	6.48	<0.08	<0.01	950	<0.02	<0.02	6.1	<0.01	1.55	0.002	<0.002		338
11/10/1994	0.003	0.15	<0.02		0.0178	<0.0002		498	0.0351	2.6	0.004	<0.002	20.3	13		274	54.1	<0.005	14.5	4.37	<0.06	<0.01	750	0.03	<0.02	6.67	<0.01	1.42	0.001	0.005		193
9/5/1995	<0.001	0.08	0.03		0.0168	<0.0002		450	0.0479	2.51	0.009	<0.002	59.1	12		244	63.2	<0.005	12.2	4.41	<0.06	0.1	780	<0.02	<0.02	8.37	<0.01	1.37	0.006	<0.002		224
18/10/95	<0.001	0.27	0.07		0.0157	0.0005		421	0.0247	2.68	<0.001	<0.002	37	13		243	61.6	0.017	18.2	4.26	0.77	0.098	680	<0.02	0.07	6.97	0.008	1.59	0.005	0.024		195
14/04/97	0.011	1.96	<.02	0.17	0.134	0.023	<.04	319.4	0.086	2.235	<.005	0.032	8.24	9.2	<.005	193.9	70	0.006	8	3.918	0.5	<.02	651	0.11	<.03	9.1	<.01	1.335	0.039	0.007	<.03	211
12/5/1997	0.023	0.57	<.02	4.18	0.18	0.053	0.29	395.4	0.225	3.429	0.015	0.082	50.31	2	<.005	309.3	105.4	0.032	18	5.385	1.6	<.02	878	0.72	<.03	8.9	<.01	1.633	0.035	0.017	1.13	381.66
30/06/97	<.003	0.69	<.02	<.05	0.022	0.004	<.04	531	0.359	3.942	<.005	0.057	181.45	18	0.039	539	>50	0.795	17	6.236	54.8	2.26	957	1.76	<.03	10.1	<.01	2.271	0.029	<.005	19.03	457.98
11/8/1997	0.022	0.56	<.02	<.05	0.023	0.003	<.04	403.5	0.196	2.867	0.013	0.062	68.75	15	0.043	382.4	95.63	0.429	16	4.556	32.12	1.42	924	0.82	<.03	9.5	<.01	1.812	0.02	<.005	<.03	281.25
30/09/97	<.003	1.04	0.28	<.05	0.746	0.004	<.04	425.6	0.16	2.924	<.005	0.091	48.61	12	<.005	372.9	79.18	0.355	39	4.694	30.95	1.18	1212	1.66	<.03	10.3	<.01	1.545	0.039	<.005	8.42	245.9
19/11/97	<.003	0.71	<.02	<.05	0.151	0.032	<.04	361.8	0.067	2.219	<.005	0.024	68.37	13	<.005	285.7	74.65	<.002	12	3.92	0.49	<.02	783	0.17	<.03	6.5	0.1	1.443	0.181	<.005	1.41	197.94
STATION: V31																																
1/8/1988												<0.002					0.002		1.2			<0.005										0.007
15/06/88												<0.002					0.006		1.4			0.032										0.009
7/7/1988																																<0.002
11/7/1988												<0.002					0.002		1.6			<0.005										0.008
20/07/88																																0.007
24/08/88												<0.002					0.002		1.7			<0.005										0.003
13/09/88												<0.002					0.002		1.8			<0.005										0.005
6/10/1988												<0.002	0.095				0.002		1.5			<0.005										0.007
12/5/1997	<.003	16.08	<.02	0.06	0.391	0.014	<.04	497.5	0.012	1.17	0.036	0.056	30.43	6	<.005	272.6	50.65	<.002	13	1.544	0.76	0.23	724	<.03	<.03	24.6	0.02	1.486	0.348	0.027	0.12	62.3
STATION: V32																																
7/7/1988																																0.021
11/7/1988																																0.01
20/07/88																																0.019
24/08/88												0.002					0.006		1.8			0.005										0.008
13/09/88												0.002					0.007		1.8			0.007										0.015
6/10/1988												<0.002	0.095				0.002		1.6			<0.005										0.003
9/8/1994	0.009	4	<0.02		<0.0006	<0.0002		513	0.558	15	<0.001	<0.002	0.807	28		542	387	<0.005	14.8	10.6	<0.08	<0.01	2060	<0.02	<0.02	7.39	<0.01	0.78	<0.001	<0.002		1680
9/5/1995	0.015	0.66	<0.02		0.0127	<0.0002		453	0.146	10.1	0.036	<0.002	112	20		543	380	<0.005	13.4	6.57	<0.06	0.23	1890	<0.02	<0.02	9.94	0.02	0.64	0.01	<0.002		1220
12/5/1997	0.034	1.68	<.02	4.98	0.61	0.134	0.37	322.2	0.556	6.392	<.005	0.09	33.81	<1	0.417	426.3	305.5	<.002	19	3.261	2.08	0.32	1250	1.13	<.03	10.4	0.14	0.664	0.034	0.047	2.55	726.06
30/06/97	<.003	7.42	0.14	<.05	0.018	0.006	<.04	433.7	1.295	10.378	<.005	0.094	18.23	20	0.158	928.5	>50	1.559	15	8.399	97.54	4.24	1074	3.19	<.03	13.8	<.01	1.048	0.033	<.005	45.7	843.64
11/8/1997	0.08	5.36	<.02	<.05	0.019	0.006	<.04	368	1.4	10.503	<.005	0.106	27.79	18	0.144	685.6	536.2	1.5	14	6.411	97.02	4.46	1315	3.14	<.03	13.4	<.01	0.952	0.029	<.005	<.03	865.48
30/09/97	0.039	5.04	0.62	<.05	0.799	0.008	0.68	399.9	2.247	11.2	<.005	0.138	22.21	16	0.306	930.5	591.3	2.306	37	8.931	148.74	6.98	3498	7.6	<.03	14.8	<.01	0.811	0.059	<.005	38.58	1652
STATION: V33																																
25/06/92												<0.006										<0.06										0.01
9/8/1994	8.16	0.84	<0.02		0.0022	<0.0002		583	0.362	11	<0.001	<0.002	53	19		444	303	<0.005	14.7	7.22	<0.06	<0.01	1720	<0.02	<0.02	8.16	<0.01	1.13	<0.001	<0.002		857
11/10/1994	0.009	1	<0.02		0.0207	<0.0002		545	0.209	9.38	0.016	<0.002	40	15		426	279	<0.005	13.5	5.95	<0.06	<0.01	1460	0.04	<0.02	9.79	0.02	1	0.009	<0.002		753
9/5/1995	0.005	16	0.03		0.351	<0.0002		401	0.172	4.34	0.073	0.003	78.7	12		278	158	<0.005	9.2	3.39	0.43	0.3	930	0.03	<0.02	32.8	<0.01	0.83	0.265	0.024		458
30/06/95								548	0.291	8.99			68.1	15		444	318		12.9	5.88								1.11				790
19/09/95								439	0.2	7.55			40.7	14		458	272		17.6	4.54								1.21				625
18/10/95	<0.001	0.9	0.07		0.0384	<0.0002		451	0.203	8.29	<0.001	0.024	40.2	12		416	320	0.02	13.7	4.82	0.8	0.182	1250	<0.02	<0.02	10.1	0.025	1.14	0.016	0.032		744
12/5/1997	<.003	9.35	<.02	0.15	0.512	0.018	<.04	151.8	0.06	1.124	0.017	0.058	18.15	<1	<.005	124.3	65.63	<.002	4	0.795	0.4	0.33	303	0.07	<.03	14.1	<.01	0.444	0.2	0.018	0.26	99.08
30/06/97	<.003	1.06	0.03	<.05	0.041	0.004	<.04	585.2	0.457	8.421	<.005	0.09	1.65	18	0.069	631.9	>50	0.666	16	4.253	49.3	1.99	316	1.23	<.03	12.8	<.01	1.809	0.037	<.005	17.93	426.67
11/8/1997	0.039	0.76	<.02	<.05	0.034	0.004	<.04	484.6	0.37	8.907	<.005	0.081	1.24	18	0.075	639.2	344.67	0.635	18	4.386	49.31	2.14	320	1.24	<.03	11.4	<.01	1.765	0.024	<.005	<.03	428.3
30/09/97	0.02	2.61	0.51	<.05	0.778	0.007	0.43	501.4	0.499	8.065	<.005	0.175	5.75	12	0.28	725.7	392.69	0.95	38	5.093	65.03	3.08	2229	2.88	<.03	14.7	<.01	1.538	0.087	<.005	14.32	578.03

Appendix H

Vangorda Plateau Mine Site Ground Water Quality Graphs

List of color Figures – Appendix H
Ground Water Quality at the Vangorda Site

Figure H1. Groundwater Quality Vangorda Rock Dump (V34, V35, V36, V37, V38)



V34, groundwater well GW94-01

V35, groundwater well GW94-02

V36, groundwater well GW94-03

V37, groundwater well GW94-04

V38, groundwater well GW94-05

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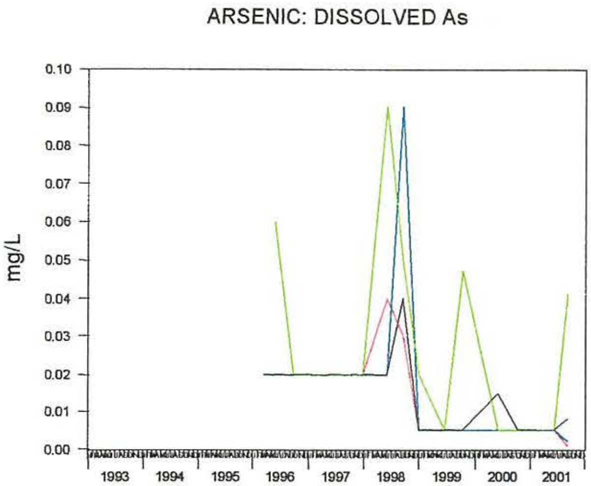
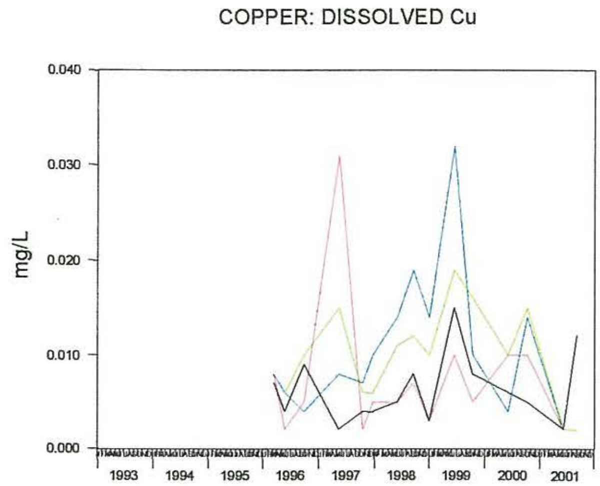
Figure H1. Groundwater Quality Vangorda Rock Dump (V34, V35, V36, V37, V38)





V34, groundwater well GW94-01

V35, groundwater well GW94-02

V36, groundwater well GW94-03

V37, groundwater well GW94-04

V38, groundwater well GW94-05

Figure H2. Groundwater Quality - Grum Rock Dump (96-9A, 96-9B)

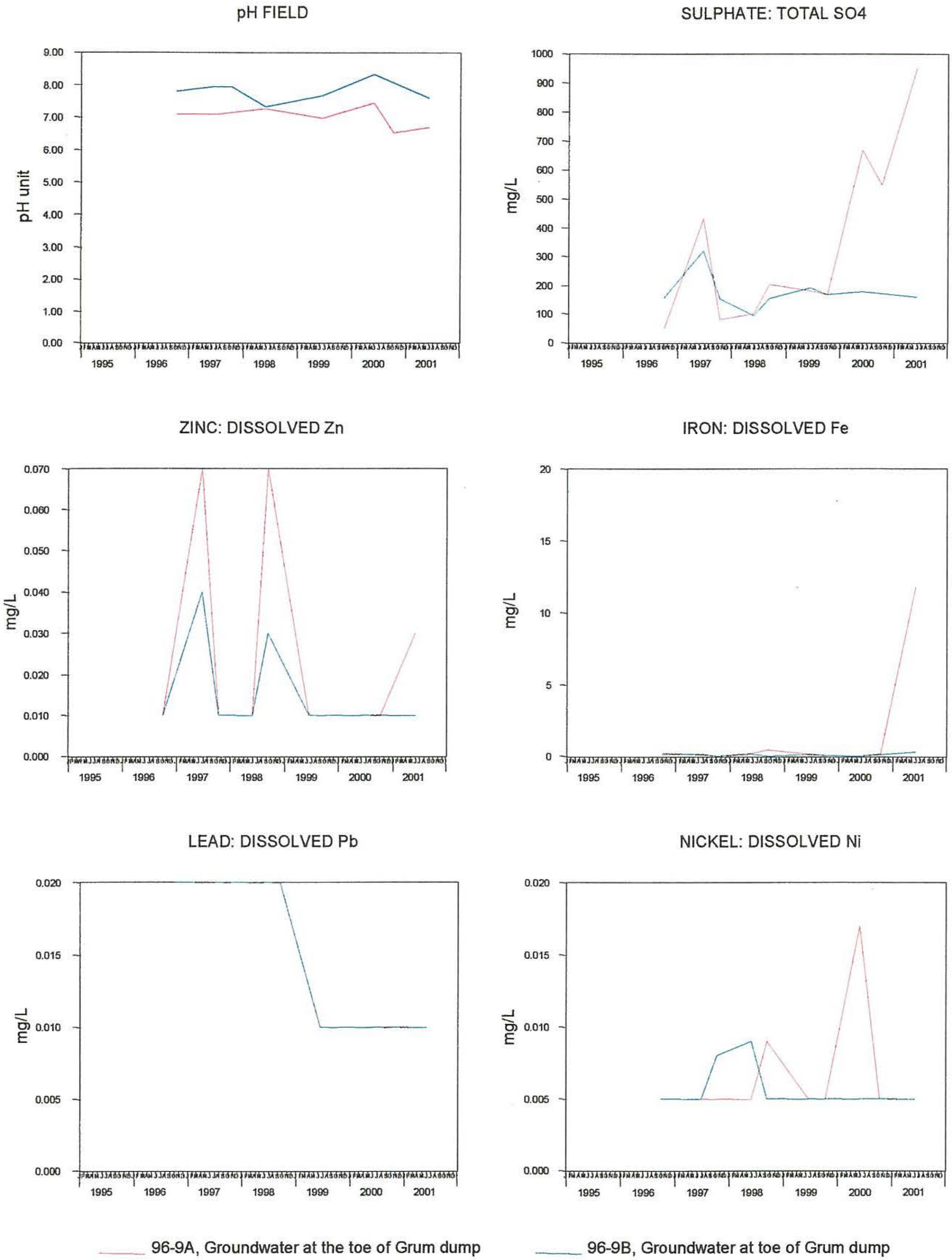


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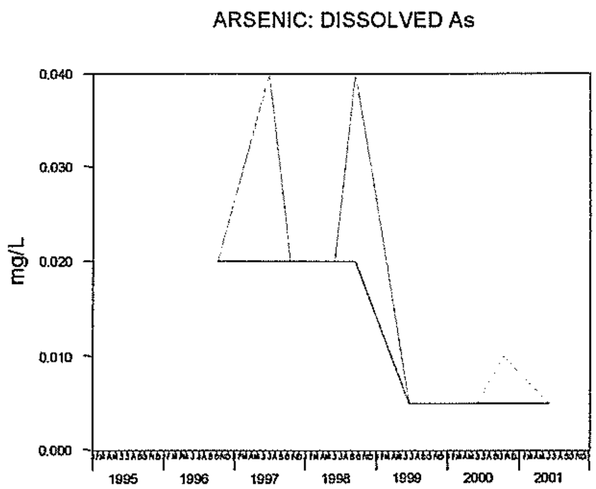
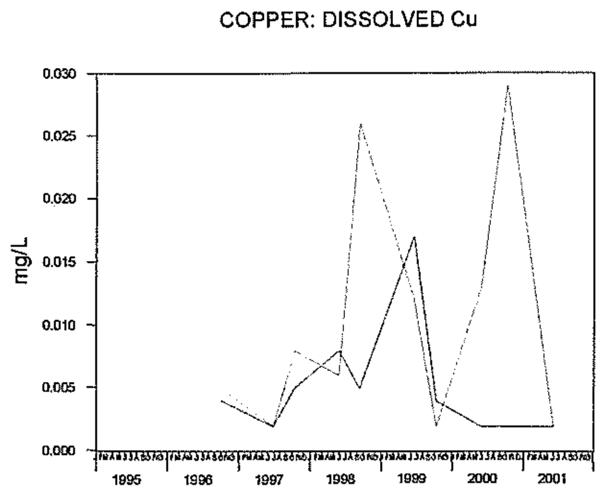
Figure H2. Groundwater Quality - Grum Rock Dump (96-9A, 96-9B)





_____ 96-9A, Groundwater at the toe of Grum dump _____ 96-9B, Groundwater at toe of Grum dump

22943-App H2

Appendix I

Vangorda Plateau Mine Site Ground Water Quality Data Tables

List of Tables – Appendix I
Groundwater Quality at the Vangorda Site

Table I-1. Groundwater Quality at the Vangorda Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: P2001 - 02B (13.9 m)																																
13/09/01	<0.001	0.01	0.01	<0.1	0.05	<0.002		89.8	0.0002	0.0015	<0.002	<0.002	<0.03	11		69.6	0.213	0.028	52	0.009		0.002		0.017	<0.002		<0.001		<0.01	<0.03		0.007
STATION: P2001-03 (61.6m)																																
13/09/01	<0.0005	0.013	0.0026	<0.1	0.04	<0.001		68.3	0.00062	0.0013	<0.001	0.001	0.34	3		53	1.26	0.007	24	0.003		<0.0005		0.0262	<0.001		<0.0005		<0.01	<0.03		0.014
STATION: 96-9A																																
9/10/96	<.003	0.05	<.02		0.114	0.002	<.04	86.9	<.002	<.005	<.005	0.005	0.23		<.005	34.4	<.01	<.002	9	<.005	<.04	<.02	16	<.03		6.1		0.554	<.005	<.005	<.03	<.01
30/06/97	<.003	0.08	0.04	0.16	0.048	<.001	<.04	54.4	<.002	<.005	<.005	<.002	0.16	<1	0.011	32.6	0.4	0.008	14	<.005	0.63	<.02	142	<.03	<.03	5.1	<.01	0.566	0.01	<.005	<.03	0.07
14/10/97	<.003	<.05	<.02	0.07	0.345	<.001	0.07	96.6	<.002	<.005	<.005	0.008	<.01	4	<.005	45.3	0.36	<.002	8	<.005	<.04	<.02	27	<.03	<.03	4.2	<.01	0.658	<.005	<.005	<.03	<.01
31/05/98	<.003	0.1	<.02	<.05	0.095	0.002	<.04	46.2	<.002	<.005	<.005	0.006	0.24	2	0.028	23.2	0.08	0.016	50	<.005	0.33	<.02	34	<.03	<.03	4.9	<.01	0.973	0.008	0.006	<.03	<.01
15/09/98	<.003	0.97	0.04	<.05	0.37	0.001	<.04	164.9	<.002	<.005	0.056	0.026	0.45	3	0.018	68.5	0.08	0.009	15	0.009	1.03	<.02	67.7	<.03	<.03	8.3	<.01	1.079	0.028	<.005	<.03	0.07
18/06/99	<.003	0.29	<.005	<.05	0.078	<.001	<.04	67.8	<.001	<.005	<.005	0.012	0.21	4	<.005	34.9	0.62	0.011	53	<.005	<.04	0.01	60	<.03	<.03	5.6	<.01	1.029	<.005	<.005	<.03	<.01
12/10/99	<.003	<.05	<.005	<.05	0.027	<.001	<.04	43.3	0.001	<.005	0.011	<.002	0.11	2	<.005	22.3	0.04	<.002	45	0.005	0.06	<.01	56	<.03	<.005	3	<.01	1.058	<.005	<.005	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.215	0.001	<.05	182	<.001	<.005	<.005	0.013	0.03	4	<.005	70.2	6.36	<.002	15	0.017	<1	<.01	223	<.03	<.005	7.2	<.01	1.065	<.005	<.005	<.03	<.01
9/10/00	<.003	0.34	0.01	<.05	0.106	0.002	<.05	201	0.002	0.015	<.005	0.029	0.17	6	<.005	74.7	1.49	<.002	16	<.005	2	0.01	182	<.03	<.005	7.5	<.01	0.87	0.024	0.013	<.03	0.01
5/6/01	<.003	0.11	<.005	<.05	0.297	<.001	<.05	267.3	<.001	0.006	<.005	<.002	11.76	5	0.032	116.5	3.64	<.002	11	<.005	<1	<.01	316	<.03	<.005	5.8	<.01	1.194	<.005	<.005	<.03	0.03
STATION: 96-9B																																
9/10/96	<.003	0.15	<.02		0.073	<.001	<.04	43.2	<.002	<.005	<.005	0.004	0.19		<.005	20.3	0.13	<.002	53	<.005	<.04	<.02	53	<.03		5.7		1.069	<.005	<.005	<.03	<.01
30/06/97	<.003	0.28	<.02	0.23	0.021	<.001	<.04	43.4	<.002	<.005	<.005	<.002	0.19	1	0.02	22.4	0.09	0.018	49	<.005	<.04	<.02	106	<.03	<.03	4.7	<.01	0.977	0.021	<.005	0.07	0.04
14/10/97	<.003	0.25	<.02	<.05	0.048	<.001	0.15	47.1	<.002	0.012	0.007	0.005	0.05	6	<.005	23.2	0.07	0.013	45	0.008	<.04	<.02	51	<.03	<.03	3.8	<.01	1.076	0.006	0.01	<.03	<.01
31/05/98	<.003	<.05	<.02	<.05	0.09	0.002	<.04	51	<.002	<.005	<.005	0.008	0.21	1	0.036	24.9	0.06	0.005	54	0.009	<.04	<.02	32	<.03	<.03	5	<.01	1.139	0.007	0.005	<.03	<.01
15/09/98	<.003	<.05	<.02	<.05	0.057	<.001	<.04	44.4	<.002	0.007	<.005	0.005	<.01	2	<.005	22.4	0.05	0.021	46	<.005	0.3	<.02	51.8	<.03	<.03	3.3	<.01	1.067	<.005	<.005	<.03	0.03
18/06/99	<.003	0.17	<.005	<.05	0.042	<.001	<.04	66	<.001	<.005	<.005	0.017	0.12	4	0.026	35.9	0.21	0.019	76	<.005	0.1	<.01	63	0.05	<.03	6.6	<.01	1.444	<.005	<.005	<.03	<.01
12/10/99	<.003	0.14	<.005	<.05	0.026	<.001	<.04	44.9	<.001	0.006	0.005	0.004	0.09	2	<.005	22.3	0.06	<.002	47	<.005	0.05	<.01	56	<.03	<.005	3.7	<.01	1.12	0.006	<.005	<.03	<.01
31/05/00	<.003	0.06	<.005	<.05	0.063	<.001	<.05	39.8	<.001	<.005	<.005	<.002	<.01	2	<.005	19.3	0.73	<.002	40	<.005	<1	<.01	59	<.03	<.005	4.7	<.01	0.811	<.005	<.005	<.03	<.01
5/6/01	<.003	0.11	<.005	<.05	0.163	<.001	<.05	45.5	<.001	<.005	<.005	<.002	0.31	3	0.01	22.2	0.27	0.012	44	<.005	<1	<.01	53	<.03	<.005	2.6	<.01	1.154	<.005	<.005	<.03	0.01
STATION:GW94-01																																
13/03/96	<.003	0.2	<.02		0.119	<.001	<.04	47.6	<.002	<.005	<.005	0.008	0.1		<.005	71.3	0.16	0.004	7	<.005	<.04	<.02	10	<.03		1.48		0.544	<.005	<.005	<.02	<.01
27/05/96	0.003	0.19	<.02		0.102	<.001	<.04	53.9	<.002	<.005	<.005	0.002	0.09		<.005	69.1	0.18	0.003	5	<.005	0.15	<.02	19	<.03		1.52		0.576	<.005	<.005	<.03	0.02
24/09/96	<.003	0.07	<.02		0.074	0.006	<.04	55.7	<.002	<.005	<.005	0.005	0.83		<.005	72.8	0.15	<.002	11	0.023	<.04	<.02	27	<.03		6		0.618	<.005	<.005	<.03	<.01
13/05/97	<.003	12.09	<.02	0.09	0.274	<.001	<.04	68.6	<.002	0.063	0.051	0.031	23.98	4	0.166	81.5	0.5	<.002	6	0.02	0.26	0.12	8	<.03	<.03	17.4	<.01	0.6	0.217	0.015	<.03	0.13
14/10/97	<.003	<.05	<.02	<.05	0.054	<.001	<.04	49.6	<.002	<.005	<.005	<.002	<.01	4	0.009	78.7	0.05	0.008	5	<.005	<.04	<.02	8	<.03	<.03	4.3	0.03	0.573	0.006	<.005	0.46	<.01
23/12/97	<.003	<.05	<.02	<.05	0.084	<.001	<.04	42.9	<.002	<.005	<.005	0.005	0.03	5	<.005	73.9	0.12	<.002	4	<.005	0.61	<.02	9	<.03	<.03	4.7	<.01	0.508	<.005	0.01	0.27	0.08
31/05/98	<.003	<.05	0.04	<.05	0.023	0.002	<.04	40.4	<.002	<.005	<.005	0.005	0.17	5	<.005	70.6	0.04	0.007	5	<.005	<.04	<.02	10	<.03	<.03	5.1	<.01	0.438	0.006	0.015	<.03	0.01
14/09/98	<.003	<.05	0.03	<.05	0.022	<.001	<.04	56.9	<.002	0.009	0.019	0.007	<.01	5	<.005	71.6	0.26	0.009	5	<.005	<.04	0.04	11.3	<.03	<.03	3.8	<.01	0.606	<.005	0.005	<.03	0.16
31/12/98	<.003	<.05	<.005	0.08	0.028	<.001	<.04	59.3	<.001	<.005	<.005	0.003	0.03	5	0.012	78.8	0.06	0.01	6	<.005	<.04	<.01	9	<.03	<.03	4.4	<.01	0.646	<.005	<.005	<.03	<.01
18/06/99	<.003	0.06	<.005	<.05	0.031	<.001	<.04	56.2	0.006	<.005	<.005	0.01	0.03	6	<.005	82.6	0.06	0.016	8	<.005	<.04	<.01	8	0.05	<.03	5.4	<.01	0.596	0.016	<.005	<.03	<.01
12/10/99	<.003	<.05	<.005	<.05	0.018	<.001	<.04	44.8	<.001	<.005	<.005	0.005	<.01	4	<.005	55.9	<.01	<.002	5	<.005	<.04	<.01	9	<.03	<.005	3	<.01	0.456	0.006	<.005	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.047	<.001	<.05	55.5	<.001	0.008	<.005	0.01	<.01	4	<.005	75	0.2	<.002	6	<.005	<1	<.01	9	<.03	<.005	5.7	<.01	0.607	<.005	<.005	<.03	<.01
9/10/00	<.003	0.24	<.005	<.05	0.059	0.001	<.05	58.4	0.001	0.015	<.005	0.01	0.16	6	<.005	64.7	0.45	0.004	9	<.005	2	<.01	157	<.03	<.005	5.8	<.01	0.513	0.013	0.021	<.03	<.01
5/6/01	<.003	0.07	<.005	0.29	0.221	<.001	<.05	62.9	<.001	<.005	<.005	<.002	0.43	4	0.011	73.5	0.54	0.003	5	<.005	<1	<.01	10	<.03	<.005	2.6	<.01	0.708	<.005	<.005	<.03	<.01
4/9/01	<0.00004	0.02	0.001	<0.1	0.12	<0.002		72.7	<0.0001	<0.0006	<0.002	<0.002	0.34	5		83.4	0.075	0.004	6	<0.002		<0.001		0.008	<0.002		<0.001		<0.01	<0.03		0.012
STATION: GW94-02																																
13/03/96	<.003	0.46	<.02		0.1	0.001	<.04	103.8	0.003	<.005	<.005	0.008	0.18		<.005	68.9	0.31	<.002	7	0.017	0.85	<.02	53	0.04		1.62		0.78	<.005	<.005	<.02	0.01
27/05/96	<.003	0.5	<.02		0.087	0.001	<.04	117.6	0.003	0.01	<.005	0.006	0.2		<.005	78.4	0.22	<.002	6	<.005	0.8	<.02	78	<.03		1.49		0.842	<.005	<.005	<.03	0.03
24/09/96	<.003	0.11	<.02		0.079	0.005	<.04	114.6	<.002	<.005	<.005	0.004	0.65		<.005	76	0.2	<.002	11	0.021	0.68	<.02	81	<.03		5.7		0.848	<.005	<.005	<.03	0.02
13/05/97	<.003	0.61	<.02	<.05	0.122	<.001	<.04	103.1	<.002	<.005	0.008	0.008	1.92	<1	<.005	68.9	0.25	<.002	6	0.007	0.67	<.02	49	<.03	<.03	4	<.01	0.715	0.013	<.005	<.03	0.1
14/10/97	<.003	<.05	<.02	<.05	0.064	<.001	<.04	102.6	<.002	<.005	<.005	0.007	<.01	4	0.014	72.7	0.12	<.002	6	<.005	0.26	<.02	54	<.03	<.03	3.7	0.03	0.672	<.005	<.005	0.04	0.01
23/12/97	<.003	<.05	<.02	<.05	0.091	<.001	<.04	96.9	<.002	0.009	0.006	0.01	0.02	6	<.005	98.7	0.09	0.006	6	<.005	0.77	<.02	114	<.03	<.03	4.4	<.01	0.704	<.005	0.009	0.03	0.04
31/05/98	<.003	0.13	<.02	<.05	0.065	0.003	<.04	158.2	<.002	0.007	<.005	0.014	0.19	4	0.023	125.1	0.15	0.005	8	<.005	0.26	<.02	49	<.03	<.03	5.3	<.01	0.838	0.014	<.005	<.03	0.01
14/09/98	0.003	0.11	0.09	<.05	0.034	0.002	<.04	215.5	<.002	0.008	<.005	0.019	<.01	4	<.005	148.9	0.34	0.019	9	0.016	0.76	<.02	216.1	<.03	<.03	4.7	<.01	1.097	0.01	<.005	<.03	0.11
31/12/98	<.003	0.07	<.005	<.05	0.021	<.001	<.04	243.2	<.001	<.005	<.005	0.014	0.21	4	<.005	175.6	0.28	<.002	10	<.005	7.52	<.01	268	<.03	<.03	5	<.01	1.215	0.013	<.005	<.03	<.01
18/06/99	<.003	0.24	<.005	<.05	0.031	0.002	<.04	228.3	<.001	<.005	<.005	0.032	0.09	6	0.026	187.1	0.22	<.002	13	<.005	<.04	<.01	256	<.03	<.03	6.4	<.01	1.085	0.012	<.005	<.03	<.01
12/10/99	<.003	<.05	<.005	<.05	0.029	<.001	<.04	86.8	0.001	0.014	<.005	0.01	0.04	3	<.005	51.2	0.24	<.002	6	0.01	<.04	<.01	47	<.03	<.005	3.1	<.01	0.515	0.006	<.005	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.054	<.001	<.05	83.3	<.001	<.005	<.005	0.004	<.01	3	<.005	49	0.08	<.002	6	<.005	<1	<.01	29	<.03	<.005	4.8	<.01	0.537	<.005	<.005	<.03	<.01
9/10/00	<.003	0.24	<.005	<.05	0.063	0.001	<.05	91.4	<.001	<.005	<.005	0.014	0.15	4	<.005	50	0.38	<.002	9	0.005	5	<.01	120	<.03	<.005	5	<.01	0.553	0.015	0.006	<.03	<.01
5/6/01	<.003	0.08	<.005	<.05	0.133	<.001	<.05	139	<.001	<.005	<.005	<.002	0.09	4	0.022	81.7	0.52	0.006	6	<.005	2	<.01	102	<.03	<.005	3.7	<.01	0.955	<.005	<.005	<.03	0.02
4/9/01	<0.00004	0.01	0.002	<0.1	0.04	<0.002		149	<0.0001	<0.0006	<0.002	<0.002	<0.03	3		72.4	0.0211	<0.002	5	<0.002		0.001		0.009	0.003		<0.001		<0.01	<0.03		0.014

Table I-1. Groundwater Quality at the Vangorda Site - Dissolved Metals

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LA-D	MG-D	MN-D	MO-D	NA-D	NI-D	P-D	PB-D	S-D	SB-D	SE-D	SI-D	SN-D	SR-D	TI-D	V-D	W-D	ZN-D
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
STATION: GW94-03																																
27/05/96	<.003	0.45	0.06		0.036	<.001	<.04	104.1	<.002	<.005	<.005	0.006	0.71		<.005	75.9	0.13	<.002	8	<.005	0.06	<.02	70	<.03		2.16		0.58	<.005	<.005	<.03	0.01
24/09/96	<.003	0.1	<.02		0.007	0.005	<.04	146.1	<.002	<.005	<.005	0.01	0.34		<.005	108.5	0.07	<.002	17	<.005	<.04	<.02	184	<.03		5.8		0.855	<.005	<.005	<.03	0.01
13/05/97	<.003	1.04	<.02	<.05	0.056	<.001	<.04	138.1	<.002	<.005	<.005	0.015	2.68	<1	<.005	107.8	0.12	<.002	10	0.033	<.04	<.02	121	<.03	<.03	5.1	<.01	0.734	0.014	<.005	<.03	0.05
14/10/97	<.003	<.05	<.02	<.05	0.034	<.001	<.04	96.2	<.002	<.005	<.005	0.006	<.01	6	0.019	93.4	0.08	<.002	9	<.005	<.04	<.02	82	<.03	<.03	5.7	0.03	0.583	<.005	<.005	<.03	<.01
23/12/97	<.003	<.05	<.02	<.05	0.055	<.001	<.04	81.9	<.002	0.009	<.005	0.006	0.02	5	0.009	89.4	0.04	<.002	9	<.005	0.06	<.02	90	<.03	<.03	6.3	<.01	0.5	<.005	<.005	<.03	0.03
31/05/98	<.003	0.07	0.09	<.05	0.043	0.002	<.04	92	<.002	0.011	<.005	0.011	0.21	6	0.06	87.9	0.08	0.007	10	<.005	0.13	<.02	117	<.03	<.03	6.6	<.01	0.523	0.01	<.005	<.03	0.03
14/09/98	<.003	<.05	0.05	<.05	0.021	<.001	<.04	106.1	<.002	<.005	0.022	0.012	0.02	5	0.006	84.5	0.09	0.012	10	<.005	<.04	<.02	81.7	<.03	<.03	5.6	<.01	0.595	<.005	<.005	<.03	0.06
31/12/98	<.003	<.05	0.02	0.14	0.009	<.001	<.04	116	<.001	<.005	<.005	0.01	0.07	5	<.005	96.4	0.08	0.006	11	<.005	<.04	<.01	93	0.04	<.03	6.2	<.01	0.656	<.005	<.005	<.03	<.01
18/06/99	<.003	0.12	<.005	<.05	0.014	0.001	<.04	115.9	<.001	<.005	<.005	0.019	0.08	8	0.014	104.1	0.09	0.012	13	<.005	1.04	<.01	90	0.07	<.03	7.9	<.01	0.629	<.005	<.005	<.03	0.01
12/10/99	<.003	0.11	0.047	<.05	0.026	<.001	<.04	119.4	0.005	0.006	<.005	0.016	0.06	6	<.005	94.3	0.17	0.007	10	0.017	<.04	<.01	104	<.03	<.005	5.9	<.01	0.654	0.012	0.008	<.03	<.01
31/05/00	<.003	<.05	<.005	<.05	0.046	0.001	<.05	122.2	0.001	<.005	<.005	0.01	<.01	5	<.005	101.7	0.15	<.002	10	<.005	<1	<.01	107	<.03	<.005	7.3	<.01	0.731	<.005	<.005	<.03	<.01
9/10/00	<.003	0.22	<.005	<.05	0.064	0.001	<.05	94.8	<.001	<.005	<.005	0.015	0.16	4	<.005	57.9	0.38	<.002	9	<.005	4	<.01	140	<.03	<.005	4.4	<.01	0.557	0.016	0.009	<.03	<.01
5/6/01	<.003	0.12	<.005	<.05	0.14	<.001	<.05	157.5	<.001	<.005	<.005	<.002	0.22	5	0.026	102.5	0.54	<.002	8	<.005	<1	<.01	149	<.03	<.005	4.6	0.02	0.896	<.005	<.005	<.03	0.03
4/9/01	<0.00004	0.04	0.041	<0.1	<0.02	<0.002		178	0.0001	0.0009	<0.002	<0.002	0.33	5		110	0.113	0.002	7	0.005		0.001		0.008	<0.002		<0.001		<0.01	<0.03		0.016
STATION: GW94-04																																
13/03/96	<.003	0.17	<.02		0.309	<.001	<.04	48.2	<.002	<.005	<.005	0.007	0.08		<.005	57.2	0.41	0.01	24	<.005	0.27	<.02	24	<.03		0.79		0.57	<.005	<.005	<.02	<.01
27/05/96	<.003	0.17	<.02		0.276	<.001	<.04	45.5	<.002	<.005	<.005	0.004	0.14		<.005	55.1	0.14	0.033	22	<.005	0.11	<.02	25	<.03		0.57		0.524	<.005	<.005	<.03	<.01
24/09/96	<.003	0.05	<.02		0.171	0.002	<.04	58.6	<.002	<.005	<.005	0.009	0.39		<.005	65	0.17	<.002	32	<.005	<.04	<.02	50	<.03		3.6		0.547	<.005	<.005	<.03	<.01
13/05/97	<.003	<.05	<.02	0.13	0.203	<.001	<.04	52.5	<.002	0.016	<.005	<.002	0.74	4	<.005	63.1	0.18	0.023	21	<.005	<.04	<.02	22	<.03	<.03	1.9	<.01	0.473	<.005	<.005	<.03	0.02
14/10/97	<.003	<.05	<.02	0.05	0.141	<.001	<.04	51.4	<.002	<.005	<.005	0.004	0.04	10	0.013	72.1	0.05	0.028	23	<.005	<.04	<.02	24	<.03	<.03	2.3	0.04	0.528	<.005	<.005	<.03	<.01
23/12/97	<.003	<.05	<.02	<.05	0.16	<.001	<.04	41.7	<.002	<.005	<.005	0.004	<.01	6	0.009	67.2	0.04	0.027	23	<.005	0.09	<.02	25	<.03	<.03	2.8	<.01	0.492	<.005	<.005	<.03	<.01
31/05/98	<.003	<.05	<.02	<.05	0.087	0.002	<.04	45.7	<.002	<.005	<.005	0.005	0.18	9	0.037	67.8	0.04	0.028	24	<.005	<.04	<.02	18	<.03	<.03	3.6	<.01	0.458	0.007	<.005	<.03	<.01
14/09/98	<.003	<.05	0.04	<.05	0.068	<.001	<.04	51.8	<.002	0.012	<.005	0.008	<.01	8	<.005	64.6	0.09	0.034	23	0.007	<.04	<.02	21.6	<.03	<.03	1.8	<.01	0.551	<.005	<.005	<.03	0.03
31/12/98	<.003	<.05	<.005	0.11	0.057	<.001	<.04	53.3	<.001	<.005	<.005	0.003	0.03	9	<.005	70.8	0.06	0.027	24	<.005	1.69	<.01	25	0.05	<.03	2	<.01	0.532	<.005	<.005	<.03	<.01
18/06/99	<.003	0.08	<.005	<.05	0.092	<.001	<.04	57.4	<.001	<.005	<.005	0.015	0.09	12	0.028	82.9	0.06	0.014	31	<.005	<.04	<.01	22	<.03	<.03	3.1	<.01	0.54	<.005	0.008	<.03	0.01
12/10/99	<.003	<.05	<.005	<.05	0.059	<.001	<.04	48.9	0.008	0.011	0.039	0.008	0.05	8	<.005	63.3	0.09	0.011	23	0.008	<.04	<.01	21	0.04	<.005	1.9	<.01	0.478	0.006	<.005	<.03	<.01
31/05/00	<.003	<.05	0.015	<.05	0.082	<.001	<.05	46.3	<.001	<.005	<.005	0.006	<.01	7	<.005	64.7	0.13	0.01	23	<.005	<1	<.01	21	<.03	<.005	3.3	<.01	0.499	<.005	<.005	<.03	<.01
9/10/00	<.003	0.15	<.005	<.05	0.06	0.001	<.05	43.3	<.001	0.01	<.005	0.005	0.11	10	<.005	39.2	0.2	0.015	164	<.005	5	<.01	93	<.03	<.005	5.2	<.01	0.369	0.009	0.019	<.03	<.01
5/6/01	<.003	0.12	<.005	<.05	0.34	<.001	<.05	51	<.001	<.005	0.018	<.002	0.03	8	0.013	62.2	0.49	0.026	45	<.005	<1	<.01	33	<.03	<.005	1.2	<.01	0.53	<.005	<.005	<.03	0.01
4/9/01	<0.00004	2.28	0.008	<0.1	0.33	<0.002		87.1	0.0008	0.008	0.011	0.012	12.2	8		86.8	0.471	0.023	34	0.02		0.029		<0.001	<0.002		<0.001		0.02	0.03		0.159

Table I-2. Groundwater Quality at the Vangorda Site - Physical Parameters

Date	FLOW L/s	NH3-N mg/L	CN-T mg/L	COND-L S/cm	ALK-T mg/L	PH-F pH unit	TEMP-C	HARD-T (CACO3) mg/L	SO4-T mg/L	TSS mg/L
STATION: P2001-02B										
13/09/01			0.022		476			511	199	
STATION: P2001-03										
13/09/01			<0.005		473			389	89	
STATION: 96-9A										
9/10/96		0.02		608	175	7.1	4		52	
30/06/97		0.17		740	50	7.08	5.8		432	
14/10/97		0.29		749		7.13	5.4		81	
31/05/98						7.26			102	
15/09/98		0.09							203	
18/06/99		<0.05				6.96	4		181	
12/10/99		<0.05			157				168	
31/05/00						7.43	5		668	
9/10/00						6.51	5.6		545	
5/6/01				1910	203	6.7	3.5	1143	948	
STATION: 96-9B										
7/10/96		<.005		563	87	7.79	2.5		156	
30/06/97		0.23		625	58	7.95	4.8		321	
14/10/97		0.33		605		7.93	5		153	
31/05/98						7.31			96	
15/09/98		0.25							155	
18/06/99		<0.05				7.67	3		190	
12/10/99		0.11			151				167	
31/05/00						8.31	5		178	
5/6/01				600	154	7.6	5.2	204	159	
STATION: GW94-01										
9/8/94		0.29			403	8	5.1	495	25	105
9/8/94		0.29			403	8	5.1	495	25	105
11/10/94		0.24			367	7.9	3.2	385	21	83
11/10/94		0.24			367	7.9	3.2	385	21	83
9/5/95		0.24			339	8.1	3.7	393	21	71
9/5/95		0.24			339	8.1	3.7	393	21	71
16/10/95								475	26	
20/12/95		0.49			478				25	
13/03/96		<.05		824	488	8.14	3.9		28	702
27/05/96		0.16		792	473	7.37	3	377	54	
24/09/96		<.05		676	484	7.98	3.5	394	32	
13/05/97		<0.05	0.003	849	888				25	
14/10/97		0		822		7.76	4.2		23	
23/12/97		0.06				7.3			26	
31/05/98		<0.05				7			31	
14/09/98		0.05							34	
31/12/98		<0.05				7.35			27	
18/06/99		<0.05				7.85	5		23	
12/10/99		<0.05			489	6.79	2		26	
31/05/00						7.71	4		26	
9/10/00						7.51	3.8		470	
5/6/01				745	400	7.5	4.5	467	29	
4/9/01			0.005		448			525	32	

Table I-2. Groundwater Quality at the Vangorda Site - Physical Parameters

Date	FLOW	NH3-N	CN-T	COND-L	ALK-T	PH-F	TEMP-C	HARD-T (CACO3)	SO4-T	TSS
	L/s	mg/L	mg/L	S/cm	mg/L	pH unit		mg/L	mg/L	mg/L
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STATION: GW94-02										
9/8/94		0.68			400	7.4	5.5	503	57	123
9/8/94		0.68			400	7.4	5.5	503	57	123
11/10/94		0.48			440	7.5	2.7	521	61	210
11/10/94		0.48			440	7.5	2.7	521	61	210
9/5/95		0.12			426	7.4	3.4	529	111	<5
9/5/95		0.12			426	7.4	3.4	529	111	219
16/10/95								612	159	
20/12/95		0.67			506				156	
13/03/96		0.47		1020	589	7.67	2.8		153	52
27/05/96		0.1		1054	473	6.97	4	569	228	
24/09/96		0.28		922	478	7.79	3.5	553	244	
13/05/97		0.07		1077	467				148	
14/10/97		0.79		981		7.83	3.4		163	
23/12/97		0.25				7.13			342	
31/05/98		0.07				6.82			147	
14/09/98		0.12							648	
31/12/98		0.1				6.99			805	
18/06/99		<0.05				7.21	3		768	
12/10/99		<0.05			374	6.77	1		142	
31/05/00						6.78	6		86	
9/10/00						7.38	4.6		360	
5/6/01				1200	426	7.6	6.1	685	307	
4/9/01			<0.005		365			669	236	
STATION: GW94-04										
9/8/94		0.8			353	8.4	4.1	420	105	125
9/8/94		0.8			353	8.4	4.1	420	105	125
9/5/95		0.36			261	8.8	3.1	276	12	5
9/5/95		0.36			261	8.8	3.1	276	12	243
16/10/95								329	60	
20/12/95		1.16			475				62	
13/03/96		1.18		830	471	8.42	2.6		78	46
27/05/96		0.73		748	406	7.85	3	307	69	
24/09/96		0.84		734	435	8.33	2.3	374	90	
13/05/97		0.34		875	523				67	
14/10/97		1.55		863		8.09	2.8		72	
23/12/97		1.17				7.89			76	
31/05/98		0.95				7.36			54	
14/09/98		0.93							65	
31/12/98		0.08				7.25			74	
18/06/99		<0.05				7.48	3		66	
12/10/99		<0.05			426	6.07	1		62	
31/05/00									62	
9/10/00						8.02	5.3		279	
5/6/01				860	426	8	2.6	390	99	
4/9/01			<0.005		458			575	88	
STATION: GW94-05										
11/10/94		<0.05			340	8.9	2	352	71	134
11/10/94		<0.05			340	8.9	2	352	71	134