

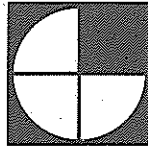


Gartner
Lee

**2000 Vangorda Plateau
Annual Environmental Report
Water Licence IN89-002**

Prepared for:
Yukon Territory Water Board

Consultants In The Environment



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Prepared for:
Yukon Territory Water Board

Prepared by:
Gartner Lee Limited

on behalf of

**Deloitte & Touche LLP
(in their Capacity as Interim Receiver of Anvil Range Mining Corp.)**

March 1, 2001

GLL P20927

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3. June 2000 Technical Advisory Committee Meeting: Agenda, Attendees, Summary
4. Indian and Northern Affairs Canada, Letter: *Re: Maintenance of Vangorda Creek Diversion Flume: Anvil Range Mine, Faro, Yukon*, November 03, 2000

Summary

Water quality and physical monitoring programs were performed during 2000 in accordance with Water Licence IN89-002 (the "Licence"). This report presents the data that was gathered and an overview interpretation of the information.

Anvil Range Mining Corporation ("ARMC") entered into receivership in April 1998 and, since that time, management of the mine site has been under the direction of Deloitte & Touche LLP, acting as court appointed Interim Receiver.

Surface and ground water monitoring was conducted in 2000 by ARMC generally according to or in excess of the schedule for "temporary cessation of operations", as appropriate, and the results are presented in this report. The macroinvertebrate and stream sediment monitoring program that is scheduled for performance every second year was not performed in 2000 because it had been performed in 1999. The annual geotechnical/physical inspection was completed in 2000 by Steffen Robertson and Kirsten (Canada) Inc. and their full report is appended. A performance review of the water treatment plant for 2000 is not necessary because the plant was not operated during 2000.

Mining activities in the Grum and Vangorda Open Pits were suspended in February 1998 and the shut down continued through 2000. Known economic ore reserves in the Vangorda open pit had been depleted at the time of the shut down. There was no dewatering of open pits carried out in 2000. Several smaller ponds were managed by pumping into the open pits.

Water quality entering Vangorda Creek was generally in compliance with the Licence, in 2000, including seepage from the Grum rock dump with the exception of several isolated events of short duration that are described in this report. Seepage from the Vangorda rock dump continued to be collected in Little Creek Dam, in 2000, from where it was pumped into the mined out Vangorda open pit for storage. The water level in the Vangorda pit was monitored and was observed to rise at an increased rate in 2000, as compared to 1998 and 1999, due to the increased precipitation experienced in 2000. The concentration of total suspended solids in the fish rearing habitat in lower Vangorda Creek were briefly elevated in September 2000 as a result of the influences of the unusually high precipitation that was experienced through the summer.

Several physical maintenance tasks were completed in 2000. Erosion protection was upgraded at various culverts and at the Little Creek Dam emergency outflow channel. Contractor removal of overhanging rock faces at the Vangorda Creek diversion flume was arranged in 2000 for performance prior to spring 2001. Preliminary planning was developed, in 2000, for re-starting the Grum/Vangorda water treatment plant for possible future treatment of water from the Vangorda pit.

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One technical advisory committee meeting was held in 2000 at the minesite that included tours of the minesites. The primary topics discussed at the meeting included current environmental issues and on-going environmental management through the shut down period.

1. Introduction

1.1 General Introduction

This annual environmental report has been prepared as described in Part A Section 9 of Water Licence IN89-002 (the "Licence"). This report provides estimated water quantities used during 2000 and an interpretation of trends and variations in water quality data. Anvil Range Mining Corporation ("ARMC") entered into receivership in April 1998 and, since that time, the mine site has been under the management of Deloitte & Touche LLP as court appointed Interim Receiver of Anvil Range Mining Corp. ("Deloitte & Touche"). This report, including all data presentations and interpretations, was prepared by Gartner Lee Limited ("Gartner Lee") based on information provided by ARMC and Steffen Robertson and Kirsten (Canada) Inc. ("SRK").

This report presents the results of surface and ground water quality monitoring per the Licence. All of the field information, unless stated otherwise, was gathered by ARMC. The macroinvertebrate and stream sediment monitoring program that is scheduled for performance every second year was not conducted in 2000 because it had been performed in 1999. The physical monitoring program described in the Licence was performed in 2000 by SRK and their full report is appended.

Open pit mining activities were suspended in February 1998 and remained suspended through 2000. At the time when mining activities were suspended, the known economic ore reserves in the Vangorda open pit had been depleted. During previous mine operations, ore from the Vangorda and Grum open pits was trucked approximately 13 km to the Faro concentrator plant where tailings were deposited in the mined out Faro pit. There has been no tailings deposition at the Vangorda Plateau minesite. Activities at the Faro mine site are reported separately under Water Licence QZ95-003.

No water was pumped from either the Grum or Vangorda open pits during 2000. The water elevation in the Vangorda open pit was monitored and updated projections of the rate of filling of the pit were made. The water treatment plant was not operated during 2000. Some mine site surface run off water entered Vangorda Creek via the Grum interceptor ditch and Grum Creek.

Water quality monitoring locations are illustrated on Figures 1 and 2 and are listed on Table 1. Analytical results for 2000 for all parameters analysed are listed in Appendix 1 with statistical summaries.

1.2 Overview Of Mine Water Management Systems

The mine water management system is illustrated on Figure 2.

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Natural run off water from the slopes above the Grum Pit is diverted around the Grum pit via the Grum interceptor ditch. The interceptor ditch also collects water pumped from the deep wells (during mine operations pre-1998) along the eastern perimeter of the pit. In addition, water discharged from the water treatment plant clarification pond (during mine operations pre-1998) enters the interceptor ditch.

Water from the Grum interceptor ditch passes into two settlement ponds referred to as the Sheep Pad Ponds. A smaller "pre-settlement" pond allows for initial settlement of coarser heavier particles and for dissipation of flow energy. The main pond (Sheep Pad Pond) provides retention time for settlement of finer particles. The Sheep Pond outflow passes into Vangorda Creek at the plunge pool above the haul road.

During mine operations (pre-1998), 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 ground water 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, some of the underground workings were intercepted by pit development and it is uncertain whether future dewatering of the underground workings will be necessary or possible. 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 catchment due to re-routing of surface water into the Sheep Pad Pond and interception of ground water in the Grum open 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 gravelly 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.

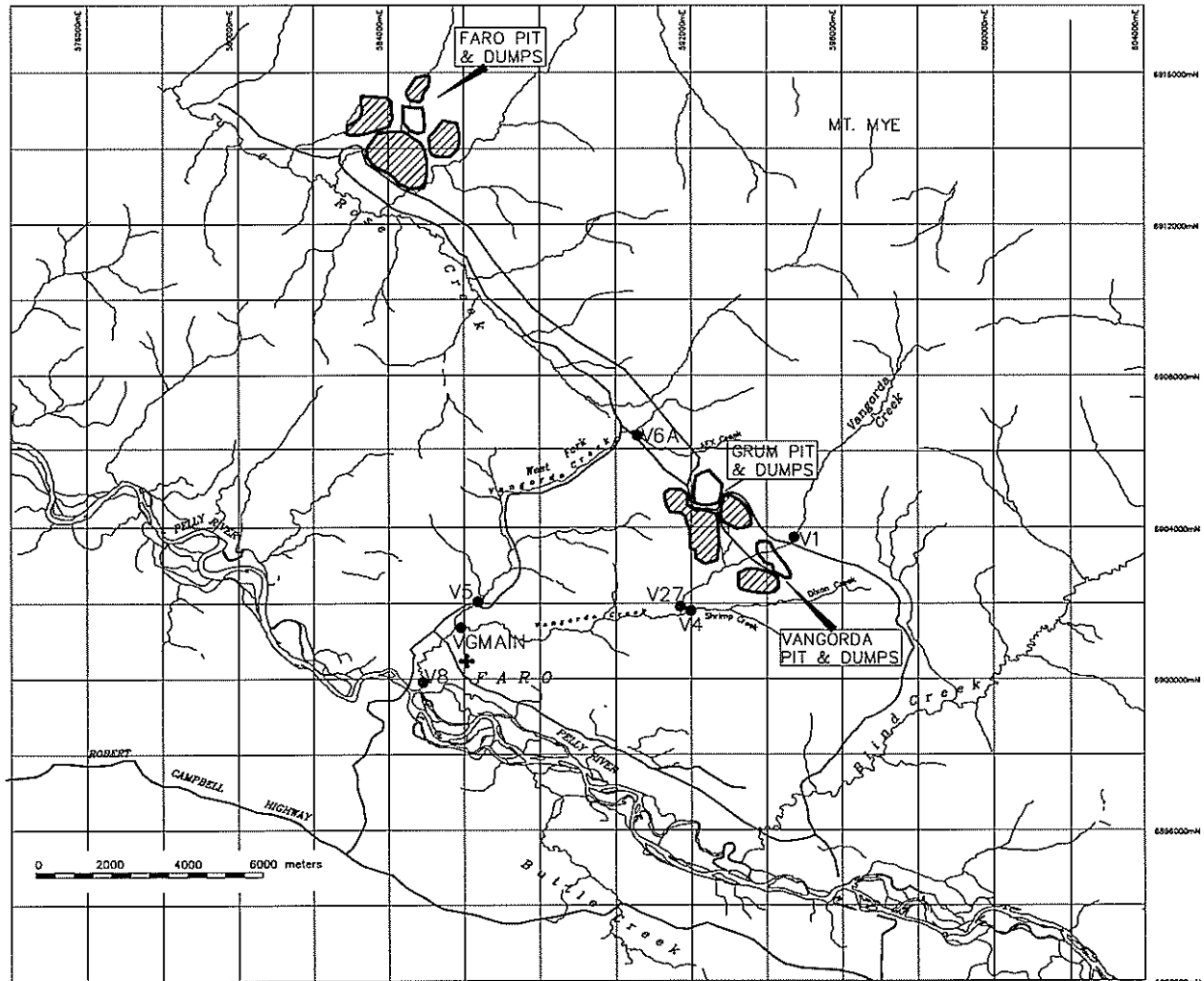
Water is diverted around the Vangorda Pit via the Vangorda north east and north west interceptor ditches as well as through a diversion of Vangorda Creek. The Vangorda north east interceptor ditch passes water from the slopes to the north east of the pit into Shrimp Creek which, in turn, reports to the Main Fork of Vangorda Creek. The north west interceptor ditch diverts water from the north west slopes into a settlement/ground water 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

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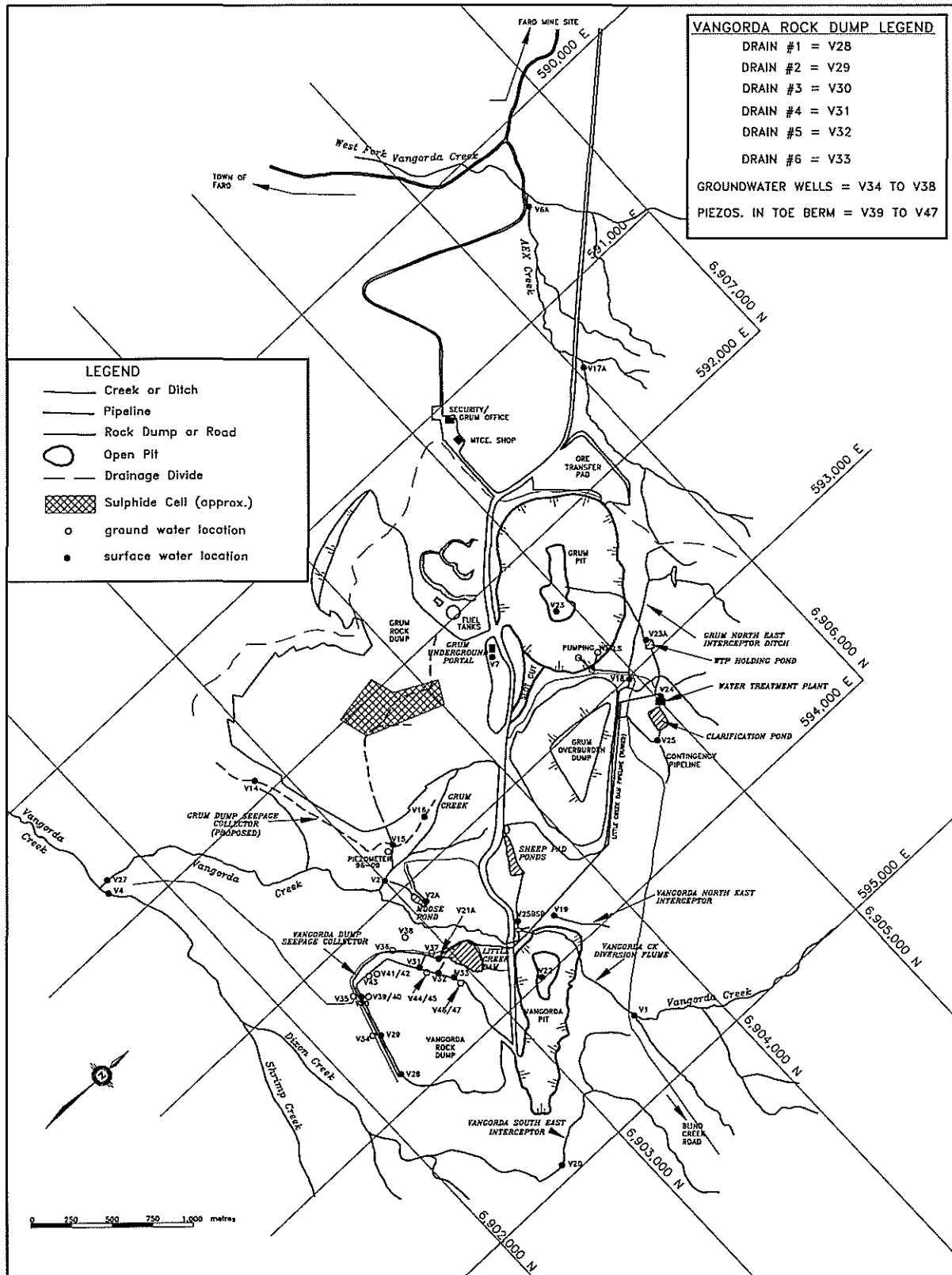
Little Creek Dam has been pumped into the mined out Vangorda open pit in order to maintain an appropriate water level in Little Creek Dam. The run off water which accumulates in Little Creek Dam is typically non-compliant for zinc and other parameters due to the collection of surface run off and seepage from the Vangorda rock dump.

Figure 1: Vangorda Plateau Drainage and Monitoring Locations



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Figure 2: Water Quality Monitoring Locations



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Table 1: Water Quality Monitoring Locations

V1	Vangorda Creek, upstream from the mine and Blind Creek road.
V2	Grum Creek, upstream from its confluence with Vangorda Creek.
V2A	Grum Creek diversion to Moose Pond.
V4	Shrimp Creek, upstream from its confluence with Vangorda Creek.
V5	West Fork of Vangorda Creek upstream of mine access road.
V6A	A small tributary (AEX Creek) to the west fork of Vangorda Creek.
V7	Overflow from the Grum portal.
V8	Vangorda Creek near the bridge to Faro town water supply.
V14	Southwest sump Grum main waste dump.
V15	Sulphide cell sump Grum main waste dump.
V16	Southeast sump Grum main waste dump.
V17	Grum Interceptor Ditch when interceptor wells are pumping.
V17A	Surface drainage from the northern side of the Ore Transfer Pad at the upstream side of the Vangorda haul road.
V18	Grum southeast interceptor ditch, when interceptor wells are pumping.
V19	Vangorda pit northwest interceptor ditch.
V20	Vangorda pit southeast interceptor ditch.
V21	Vangorda Waste Dump collector sump (middle).
V21A	Vangorda waste dump collector ditch at the discharge into Little Creek Dam.
V22	Vangorda pit water and Vangorda Lake at closure.
V23	Grum pit water and Grum Lake at closure.
V23A	Grum Pit water in the Grum external sump
V24	Influent to treatment plant.
V25	Effluent from treatment plant at clarification pond outflow.
V25BSP	Outflow from the Sheep Pad Pond just above the Vangorda Creek plunge pool.
V26	"Little Creek" between Vangorda pit and waste dumps.
V27	Main stem of Vangorda Creek upstream of the confluence with Shrimp Creek.
V28 to V33	Vangorda Rock Dump Drains #1 through #6.
V34 to V38	Groundwater wells GW94-01 through GW94-05 below Vangorda rock dump.
V39, V40	Piezometers P94-01a and P94-01b on Vangorda dump toe berm.
V41, V42, V43	Piezometers P94-02a, P94-02b and P94-02c on Vangorda dump toe berm.
V44, V45	Piezometers P94-03a and P94-03b on Vangorda dump toe berm.
V46, V47	Piezometers P94-04a and P94-04b on Vangorda dump toe berm.

2. Water Use

Water Licence IN89-002 permits the use of up to 3.5 million Igpd (Imperial gallons per day) or 5.8 million m³ per year of water for storage, diversion and return. The total water usage includes water passed through the water treatment plant (nil in 2000), water diverted in the Vangorda Creek diversion flume, water diverted in the Grum interceptor ditch, and water accumulated ("stored") in the Grum and Vangorda open pits.

In total, the water estimated for these purposes during 2000 was greater than the allowable quantity as summarized on Table 2. This apparent over use of water was largely due to the volume of water flowing through Vangorda Creek, which is out of the control of mine management. Since the flow through the Vangorda Creek diversion flume and the Grum Interceptor Ditch were not directly measured frequently enough to allow an accurate estimation of annual flow, the estimated "normal" flow calculated from hydrology data was used (the annual precipitation for 2000 was 139% of "normal").

The quantity of water that accumulated in the Vangorda open pit in 2000 was accurately estimated at 900,000 m³, based on observed increases in the in-pit water elevation. This quantity includes water pumped from Little Creek Dam and water syphoned from the Sheep Pad Pond.

During 2000, run off water which accumulated in Little Creek Dam was pumped into the Vangorda pit. There was one period of pumping in 2000 during August when an estimated total of 53,000 m³ of water was pumped into the Vangorda pit at an estimated pumping rate of 34 litres per second (540 USgpm). A portable submersible pump was utilized operating from a portable diesel generator.

During 2000, water was syphoned from the Sheep Pad pond into the Vangorda open pit during May/June and again in September in order to prevent water that contained total suspended solids at a concentration greater than the Licence maximum allowable discharge limit from entering Vangorda Creek. An estimated 30,000 m³ of water was syphoned in 2000.

The quantity of water that accumulated in the Grum open pit in 2000 is roughly estimated at 300,000 m³, based on annual average hydrologic data. The water elevation in the Grum pit has not been surveyed and, therefore, an accurate estimate can not be made at this time. The water elevation in the Grum pit remained very low, in 2000, with respect to the overflow elevation and, therefore, this rough estimate of accumulated quantities is considered appropriate, at this time.

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Table 2: 2000 Estimated Water Use

Use for Storage, Diversion and Return in 2000	Estimated Quantity (‘000 m³)
Vangorda Creek diversion ¹	8,258
Location V25BSP below Sheep Pad pond ¹	925
Stored in Vangorda Open Pit	900
<u>Stored in Grum Open Pit¹</u>	<u>300</u>
Total Water Use	10,383
Other Water Quantities in 2000	Estimated Quantity (‘000 m³)
Pumped from Little Creek Dam into Vangorda Pit ²	53
Syphoned from Sheep Pad pond into Vangorda Pit ²	30
WTP Feed from Grum Holding Pond and Little Creek Dam	0

NOTE: 1. These quantities estimated as “average annual flows” from hydrologic data;
flow measurement was too infrequent to allow a calculated quantity
2. These quantities included in the quantity “Stored in Vangorda Open Pit”.

3. Open Pits and Rock Dumps Water Quality

3.1 Grum Open Pit (V7, V17, V23, V23A)

Location V7 is outflow from the underground exploration workings. There was no flow at this location during 2000 and no samples were collected. The deep dewatering wells at the perimeter of the Grum open pit were not installed and, therefore, no samples were collected at location V17 during 2000.

Water quality in the Grum open pit has been monitored at both location V23 (pit pond) and location V23A (Grum pit water holding pond). Location V23A was monitored 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 has been routinely monitored since mine shut down (February 1998) because it represents the accumulation of water in the pit in the absence of dewatering activities.

Four samples were collected at location V23 (pit pond) in 2000, in March, June (twice) and September. The samples were collected as grab samples from the surface of the pit pond. The concentrations of total and dissolved zinc ranged from 0.02 mg/L to 11.9 mg/L and from 0.02 mg/L to 0.7 mg/L, respectively, in 2000. The concentration of sulphate ranged from 192 mg/L to 488 mg/L and pH remained neutral at 7.7 in 2000. The concentrations of total zinc and sulphate were greater in 2000 than in 1999 and an increasing trend appeared to be developing in 2000. This trend is reasonable and is attributed to the flushing of residual contaminants from broken mineralized material in the pit bottom.

One sample was collected at location V23A in 2000 to determine the quality of run off water that accumulated in the Grum pit holding pond. Water quality was demonstrated to be compliant with concentrations of total and dissolved zinc of 0.18 mg/L and 0.15 mg/L, respectively. A small quantity of this water that had accumulated in the holding pond was pumped into the Grum pit in August 2000 in order to prevent an overflow and possible erosion of the holding pond dyke.

3.2 Grum Rock Dump (V14, V15, V16, P96-A/B)

3.2.1 Seepage

Locations V14, V15 and V16 are surface seepages at the toe of the ultimate (per design) Grum rock dump area. Locations V14 and V16 are not currently specifically located in the field but would become defined as part of possible future construction of a toe seepage collector ditch. No samples were collected at locations V14 or V16 during 2000.

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. A small sump was constructed at this location in the past to collect flow. Flow from this location enters Grum Creek upstream of monitoring location V2.

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Three samples were collected at location V15 in 2000, in March, June and September. Water pH was neutral at 7.8. The concentrations of total and dissolved zinc were low in 2000 and ranged from 0.01 mg/L to 0.03 mg/L and all <0.01 mg/L, respectively. The concentration of total suspended solids was elevated in March 2000 at 63 mg/L, which is attributed to the influence of winter sampling of very low flows. The flow in March 2000 was estimated at only 0.25 Lps. The concentration of sulphate ranged from 305 mg/L to 560 mg/L in 2000. An increasing trend in the concentration of sulphate is evident from 1995 to 2000, which could be related to the influences of run off from the rock dump or to natural ground water that may discharge to surface in the general area. There has been no corresponding increase in the concentrations of total or dissolved zinc or by a corresponding decrease in pH. Further information collection is required to adequately evaluate this issue.

3.2.2 Ground Water

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. 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.

Piezometer P96-A (shallow) was sampled twice during 2000, in May and October, and piezometer P96-9B (deep) was sampled once in 2000, in May. 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). The concentrations of dissolved zinc in the two piezometers during 1999 were all 0.01 mg/L or <0.01 mg/L and the concentrations of sulphate ranged from 178 mg/L in the deep installation to 545/668 mg/L in the shallow installation. Although the concentration of sulphate in the shallow installation was greater in 2000 than in 1999, no clear increasing trend was evident. Ground water pH remained neutral in 2000 in a range from 6.5 to 8.3.

3.3 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, water pumped periodically from Little Creek Dam and water syphoned periodically from the Sheep Pad pond.

Three samples were collected at location V22 in 2000, in March, June and September. These samples were collected as grab samples from the surface of the pit pond. The concentrations of total and dissolved zinc ranged from 4.6 mg/L to 43.8 mg/L and from 1.0 mg/L to 18.4 mg/L, respectively, in 2000. The concentrations of sulphate ranged from 107 mg/L to 589 mg/L, in 2000. The concentrations of

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total and dissolved zinc and sulphate were within the ranges observed since 1998. Water pH remained neutral at 7.1, in 2000.

A geochemical study was performed in June 2000 by SRK that showed that the Vangorda pit pond was vertically stratified with higher contaminant concentrations at depth. At that time, the concentrations of dissolved zinc near surface (2 metres) and near bottom (12 metres) in the pit pond were 6.27 mg/L and 70.1 mg/L, respectively. This clearly indicates that the surface grab samples described above can not be interpreted as representative of the pit pond as a whole but only of the surface layer. Further information collection is necessary to adequately assess the chemical stability and possible seasonal variations of the stratification.

The water level in the Vangorda open pit was monitored in 2000 using a series of stakes and pins that were installed at 1.0 metre vertical intervals along the pit ramp and by surveying. The in-pit water level was observed to increase by 14.8 metres in 2000. This was a greater increase than was anticipated because of the higher than normal precipitation that was experienced in 2000. The water elevation at year-end 2000 was estimated to be 1088.0 metres above sea level.

Planning for future management of the pit water was advanced in 2000. A preliminary engineering assessment of the water treatment plant was undertaken by Canadian Metallurgical and Environmental Inc. of Vancouver B.C. to provide an indication of the work required to re-start the plant. This study concluded that the plant appeared to be in reasonable physical condition and that no extraordinary work would be anticipated regarding starting the plant. Additionally, a geochemical study was undertaken by SRK of Vancouver B.C. to assess the feasibility of reclaiming the Vangorda open pit as a clean water system such that active management was not required. This study concluded that the feasibility of achieving acceptable water quality in the pit pond was extremely poor.

3.4 Vangorda Rock Dump (V28 to V47, LCD, VC21, V21A, V26)

3.4.1 Seepage

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 represent monitoring locations V28 through V33. The quantity of water flowing from the drains in 2000 continued to be extremely low in 2000 with a peak measured flow of only 0.1 Lps. Water quality in the drains that were sampled continued to show high metal concentrations and sulphate, in 2000, at continued neutral pH with the exception of drain #5 where pH was in the acidic range.

The observed seepage flow has been, since installation of the drains in 1994, at least one order of magnitude less than the quantities of water that would be anticipated based on water balance projections. The fate of water (precipitation and run off) that infiltrates into the rock dump has not been identified. The possibility of an accumulation of seepage water behind and within the till containment berm that

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rings the dump is discouraged by monitoring of piezometers installed within the berm. The possibility of undetected ground flow is discouraged by monitoring of ground water wells around the toe of the dump, although the wells do not reach bedrock. The possibility of greater than anticipated evaporation to the atmosphere has not been investigated.

Seepage flow was observed at three of the six drains in 2000. No flow was present at drain #1 (V28) in 2000 and this drain is considered inoperable. No flow was observed at drain #2 (V29) and drain #4 (V31) in 2000. These two drains are typically dry although samples have been obtained during freshet in some previous years. The flows observed at drain #3 (V30) and drain #5 (V32) are typically consistent through the spring/summer/fall season but winter flows are erratic. The flow at drain #6 (V33) has been erratic in the past. However, maintenance/cleaning of sloughed soil in the vicinity of the drain in 1999 and 2000 is hoped to improve the flow characteristics.

Drain #3 (V30) was sampled twice in 2000, in May. Water quality for drain #3 may be most representative of general conditions within the dump because drain #3 most consistently has flow and because the collection area is thought to be the greatest. The concentrations of dissolved zinc and sulphate at drain #3 on the two sampling occasions in May 2000 were 198/621 mg/L and 3,502/4,575 mg/L, respectively, and pH was neutral at 6.0/6.4. Seepage quality in 2000 was within the ranges observed since 1995 for these parameters.

Drain #5 (V32) was sampled twice in 2000, in May and September. Water quality at drain #5 continued, in 2000, to be the poorest observed at all of the drains. This is attributed to the presence of the sulphide cell and, specifically, the "baritic fines" material within the assumed collection area of drain #5. The concentrations of dissolved zinc and sulphate at drain #5 on the two sampling occasions in 2000 were 3,411/1,100 mg/L and 15,389/17,040 mg/L, respectively, and pH was acidic at 3.6/3.8. The concentrations of sulphate and dissolved zinc at drain #5 continued an increasing trend in 2000. The trend is most pronounced for sulphate.

Drain #6 (V33) was sampled twice in 2000, in May and September. Flow at drain #6 was erratic in 2000. No flow was observed in May and the May 2000 sample was collected as a grab sample from the standing pool upstream of the V-Notch weir plate. Maintenance work in the vicinity of drain #6 that involved cleaning of sloughed soil from the flow path may improve the flow characteristics at this location in the future. Water quality at drain #6 continued, in 2000, to be similar to that at drain #3, even though the drain #6 collection area is assumed to lie entirely within the sulphide cell area. The concentrations of dissolved zinc and sulphate at drain #6 on the two sampling occasions in 2000 were 122/428 mg/L and 1,455/5,228 mg/L, respectively, and pH was neutral at 6.0. Seepage quality in 2000 was within the ranges observed since 1995 for these parameters.

The concentrations of dissolved zinc and sulphate for drain #3 (V30), drain #5 (V32) and drain #6 (V33) since sampling commenced in 1995 are illustrated on Figures 3 and 4, respectively.

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Figure 3: Vangorda Rock Dump Drains (V30, V32, V33) Dissolved Zinc

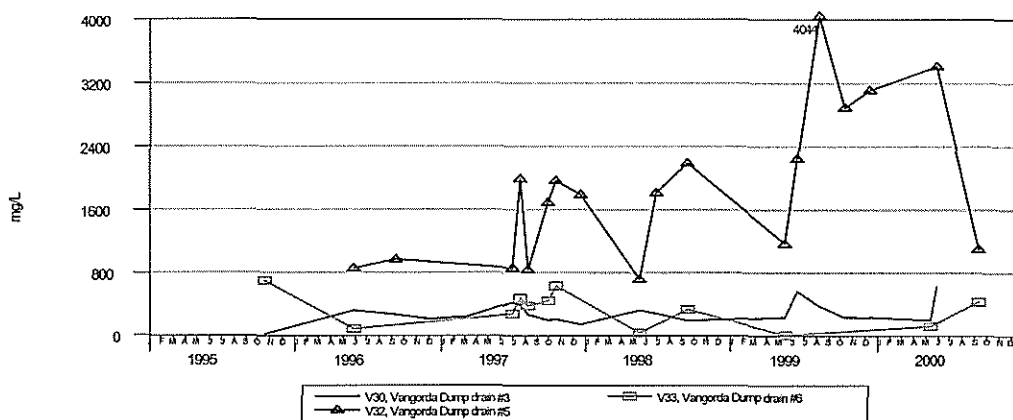
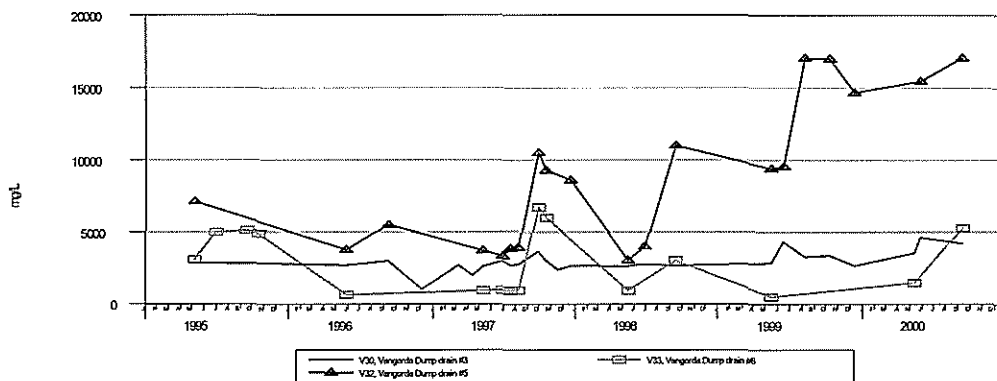


Figure 4: Vangorda Rock Dump Drains (V30, V32, V33) Sulphate



Little Creek Dam is the collection point for local area run off and precipitation, surface run off from the Vangorda rock dump and toe seepage from the Vangorda rock dump. Prior to the shut down of mining activities in February 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, and in 2000, 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. The water that has accumulated in Little Creek Dam has been non-compliant for total zinc and, therefore, has not been discharged into Vangorda Creek. The pumping procedure has maintained an appropriate water elevation in Little Creek Dam such that the risk of release of non-compliant water was minimized.



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One water sample was collected from Little Creek Dam (sample "LCD") in 2000, in May. The concentrations of total and dissolved zinc were 10.8 mg/L and 9.3 mg/L, respectively. The concentration of sulphate was 314 mg/L and the pH was 7.5. These parameters were within or close to the ranges observed since 1997.

Location V21A is the discharge end of the Vangorda Dump seepage collector ditch where the ditch empties into Little Creek Dam. Flow at this location is typically nil except during freshet in some previous years. The issue regarding the much lower than anticipated flows in the seepage collection ditch are directly related to the description provided above of the extremely low seepage flows that are observed to exit the dump toe via the six transverse drains (V28 to V33). Sampling location V21A has been used in previous years as a substitute for location V21 which is located near the middle of the seepage collector ditch because the likelihood of obtaining sufficient water to sample is greater at the discharge end of the ditch. No samples were collected at either V21 or V21A in 2000.

Location V26 is a "Little Creek" between the Vangorda pit and rock dump. This location does not exist and the application for Licence amendment currently under review includes the deletion of this location.

A series of piezometers (P94-01 through P94-04, V39 to V47) are installed in the till berm which surrounds the base of the rock dump and through which the transverse drains pass seepage water. Static water levels in these piezometers were monitored for physical stability assessments as described in Section 6 of this report. No seepage water quality monitoring was performed in 2000.

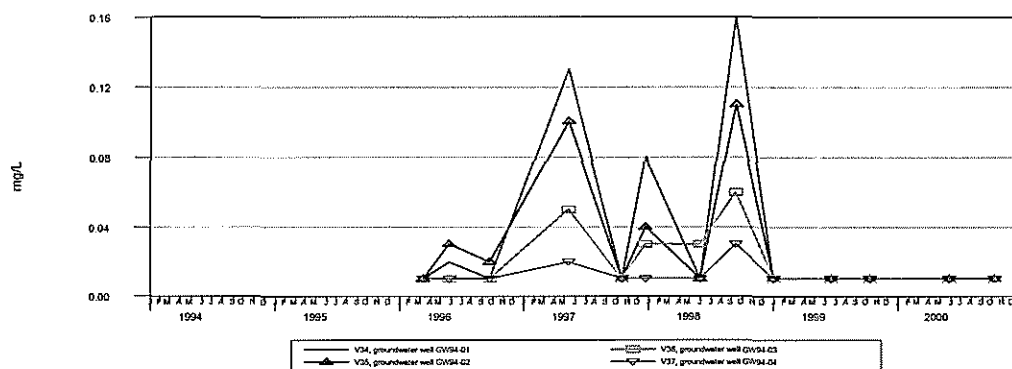
3.4.2 Ground Water

Standpipe piezometers labeled GW94-01 through GW94-04 (V34 through V37) are located around the toe of the Vangorda rock dump and allow monitoring of ground water seeping below the collector ditch. Each of these piezometers was sampled twice during 2000, in May and October. Piezometer GW94-05 (V38) is not equipped with a sampler and was not sampled in 2000.

Ground water quality in piezometers GW94-01 through GW94-04 continued, in 2000, to show low metal concentrations. Erratic spikes in the concentration of dissolved zinc (up to approximately 0.16 mg/L) that were observed in 1997 and 1998 were not repeated in 1999 or 2000. The concentrations of dissolved zinc were all <0.01 mg/L, in 2000, as illustrated on Figure 5.

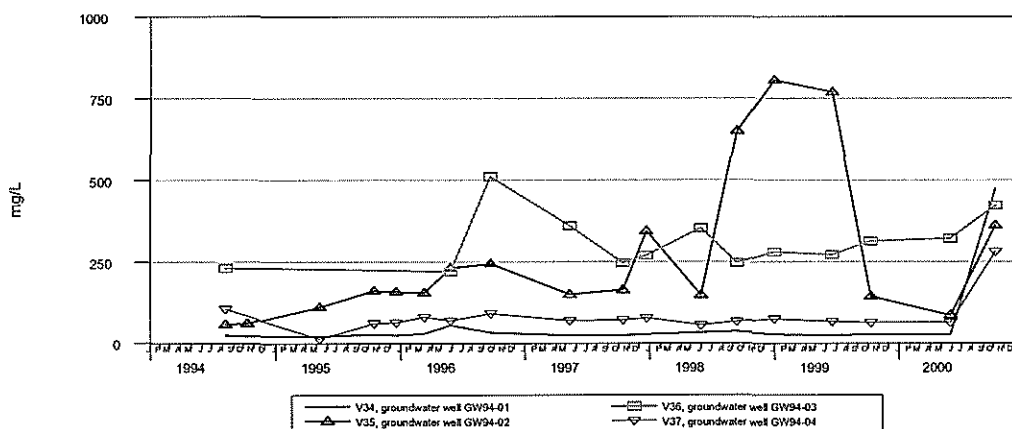
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Figure 5: Vangorda Rock Dump Toe Piezometers (V34 to V37) Dissolved Zinc



The concentrations of sulphate in piezometers GW94-01 to GW94-04 all remained within the ranges observed since 1994 with the exception of fall 2000 where the concentrations were higher in two piezometers (GW94-01 and GW94-04). The concentrations of sulphate in piezometers GW94-01 and GW94-04 have been similar since 1994 and has remained less than 100 mg/L with the exception of the fall 2000 samples. The concentrations of sulphate in piezometers GW94-02 and GW94-03 continued, in 2000, to be greater than and more erratic than in the other two piezometers. The concentrations of sulphate in piezometers GW94-02 and GW94-03 for the two sampling occasions in 2000 were 86/360 mg/L and 320/420 mg/L, respectively. Sulphate concentrations for the four piezometers are illustrated on Figure 6.

Figure 6: Vangorda Rock Dump Toe Piezometers (V34 to V37) Sulphate



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The static water levels in piezometers GW94-01 to GW94-02 remained generally stable in 2000 although the ground water level was slightly higher in fall 2000, which is attributed to the unusually high precipitation that was experienced during the summer 2000 season. Ground water pH in all of the piezometers remained neutral, in 2000, and ranged from 6.8 to 8.0.

4. Water Quality Entering Vangorda Creek

4.1 Grum Pit Dewatering (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. The dewatering wells were not installed in 2000 and no samples were collected at location V18.

4.2 Water Treatment Plant (V24, V25)

The water treatment plant located near the Grum pit is a conventional lime plant. The treatment process consists of pH modification using lime followed by enhanced settlement of treatment sediments with the aid of flocculant. This process does not reduce ammonia concentrations except, possibly, via retention time in the clarification pond. During periods of past mining operations, the plant has been operated on an as-required basis to maintain acceptable water levels in in-pit sumps, Little Creek Dam and the Grum holding pond and the plant performed acceptable well when it was operated.

The water treatment system has not been operated since the mine shut down in February 1998. During 2000, run off water that accumulated in Little Creek Dam was pumped into the mined out Vangorda open pit, run off water was allowed to accumulate in the Vangorda and Grum open pits and run off water that accumulated in the Grum pit holding pond was pumped into the Grum open pit.

Location V24 is the inflow to the treatment plant, which included, in the past, water from the Grum pit via the holding pond and water pumped directly from Little Creek Dam. Location V25 is the outlet of the Clarification Pond. No samples were collected at either of these locations in 2000.

4.3 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 and 1996 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 open pit, reduced the flow in Grum Creek substantially from its original levels.

The changes to the water management system implemented during 1995 and 1996 also allowed the diversion of a portion of the remaining Grum Creek water into the Moose pond where the water is observed to seep into the ground and enter the ground water regime. This diversion was put into place as part of the mitigation plan for reducing suspended sediment loadings entering Vangorda Creek via Grum Creek and remained in place through 2000.

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The diverted Grum Creek water has, in previous years, been sampled in addition to location V2 at location V2A prior to entry into the Moose pond. No samples were collected at location V2A in 2000.

Location V2 was sampled on three occasions in 2000, in March, June and September. The concentration of total suspended solids at location V2 continued, in 2000, to be improved over previous years prior to about 1996. The concentrations of total suspended solids ranged from 1 mg/L to 10 mg/L in 2000.

The concentrations of total zinc and sulphate at location V2 continued, in 2000, to be improved over previous years except for the fall 2000 samples, which were elevated for both parameters. The concentrations of total zinc and sulphate ranged from 0.01 mg/L to 1.0 mg/L and from 183 mg/L to 638 mg/L, respectively, in 2000. The fall 2000 concentrations of total zinc and sulphate were the greatest concentrations reported since 1993 and 1988, respectively. The high fall 2000 concentrations are attributed to the unusually high precipitation that was experienced through summer 2000 that may have flushed particulates into the creek or re-suspended metal-bearing creek sediments that were deposited in previous years. The concentration of dissolved zinc in September 2000 (that corresponded to the elevated concentration of total zinc) was only slightly elevated at 0.08 mg/L.

4.4 Vangorda Creek Plunge Pool (V19, V25BSP)

Location V19 is the Vangorda north west interceptor ditch which drains into Vangorda Creek at the plunge pool. A sump was built in 1996 near the discharge end of the V19 ditch that allows the low flows of ditch water to seep into the ground, thereby eliminating a flow of potentially high suspended sediment into Vangorda Creek. No outflow from the sump was observed in 2000 and no samples were collected at location V19.

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 (nil in 2000) and natural run off that is collected in the Grum Interceptor ditch. Location V25BSP is not currently included in the Licence but is necessary to monitor water quality entering Vangorda Creek from the Sheep Pad pond. The application for Licence amendment currently under review includes the addition of location V25BSP to Schedule A of the Licence.

The Sheep pad Pond was constructed in 1995 as part of the mitigative actions intended to minimize sediment loading into Vangorda Creek. During mine operations (pre-1998), ferric sulphate and Percol-E10 flocculants were added at the inflow into the Sheep Pad pond during freshet to promote settlement of fine clayey suspended particles that would not settle naturally. Syphoning this water into the Vangorda open pit was considered a more appropriate management approach in 2000 given the lower flows passing through the Sheep Pad ponds in the absence of operation of the water treatment plant.

There was no flow at location V25BSP early in 2000 (winter season) to about mid-May, as is typical for this location in the absence of operation of the water treatment plant. There is typically no flow (from

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natural run off) at location V25BSP from about September through December. However, the unusually high precipitation experienced through summer 2000 resulted in flow persisting into the winter season in 2000 and samples were collected at location V25BSP through to December. Additionally, there was no flow for parts of May, June and September 2000 due to syphoning water from the Sheep Pad pond into the Vangorda pit. The syphoning was done to prevent elevated concentrations of total suspended solids from entering Vangorda Creek via the Sheep Pad pond.

Location V25BSP was sampled on seven occasions in 2000 as flow allowed. The concentration of total suspended solids at location V25BSP elevated above the Licence maximum allowable discharge limit of 15 mg/L on one occasion in 2000 (August 29) when the concentrations of total suspended solids was 27 mg/L. The concentrations of total and dissolved zinc at location V25BSP ranged from 0.09 mg/L to 0.31 mg/L and from 0.03 mg/L to 0.28 mg/L, respectively, in 2000. The peak concentration of dissolved zinc (0.28 mg/L in January) is anomalous in that it was greater than the corresponding concentration of total zinc (0.11 mg/L).

4.5 AEX Creek (V17A, V6A)

Location V17A is not currently included in the Water Licence but is proposed as a replacement for location V17 in the Licence amendment application currently under review. 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.

One sample was collected at location V17A in 2000, in June. The concentrations of total zinc, dissolved zinc and sulphate were 0.04 mg/L, <0.01 mg/L and 10 mg/L, respectively, in June 2000.

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. Location V6A was sampled on three occasions in 2000, in March, June and September. The concentrations of total and dissolved zinc ranged from 0.02 mg/L to 0.04 mg/L and all <0.01 mg/L, respectively, in 2000. The concentration of sulphate ranged from 7 mg/L to 34 mg/L in 2000. These concentrations were similar to those observed in 1999.

5. Receiving And Background Water Quality

5.1 Shrimp Creek (V4, V20)

Location V4 is Shrimp Creek upstream of the confluence with the Main Fork of Vangorda Creek. This location provides reference information regarding background water quality.

There were three samples collected at location V4 during 2000, in March, June and September. Water quality at location V4 continued, in 2000, to be harder (range from 200 mg/L to 375 mg/L CaCO_3) than the other background water quality reference location in Vangorda Creek (V1) as has been observed in previous years. The greater hardness at location V4 is attributed to the presence of certain rock types (esp. calcareous phyllites) in the drainage area of Shrimp Creek, which are not largely present in the drainage area of Vangorda Creek above location V1. The concentrations of total and dissolved zinc at location V4 were at or near the detection limit (0.01 mg/L) in 2000 with one exception for total zinc, which was reported at 0.03 mg/L in September. The concentration of sulphate ranged from 37 mg/L to 105 mg/L in 2000. The concentrations of total and dissolved zinc and sulphate in 2000 were within the ranges observed at this location since 1990.

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. This diverted water enters Shrimp Creek upstream of monitoring location V4. Flow at location V20 has, historically, been intermittent and two samples were collected in 2000, in June and September. The concentrations of total and dissolved zinc at location V20 were at or near the detection limit (0.01 mg/L) in 2000 with one exception for total zinc, which was reported at 0.04 mg/L in September. The concentrations of sulphate on the two 2000 sampling occasions were 16 mg/L and 9 mg/L, respectively.

5.2 Upper Vangorda Creek (V1, V27)

"Upper" Vangorda Creek is the primary receiving water for mine site discharges and is sampled upstream of mine activities at V1, and locally downstream of mine activities at V27 above the confluence with Shrimp Creek. There is no known fish habitat in "upper" Vangorda Creek due to downstream impasses near the town of Faro.

Location V1 is the Main Fork of Vangorda Creek immediately upstream of mine activities. This location provides information regarding background water quality upstream of the mine site.

There were two samples collected at location V1 during 2000, in June and September. The concentration of sulphate and hardness on the two 2000 sampling occasions were 4/10 mg/L and 12/21 mg/L CaCO_3 , respectively. Water at location V1 is typically softer than at the other upstream reference location in

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Shrimp Creek (location V4) due to the characteristics of certain rock types (esp. calcareous phyllite) in the drainage area. The concentration of total zinc at location V1 was measurable on both of the 2000 sampling occasions at 0.06 mg/L and 0.02 mg/L, respectively. The concentrations of dissolved zinc were both <0.01 mg/L in 2000. The concentration of sulphate ranged from 37 mg/L to 105 mg/L in 2000. The concentrations of total and dissolved zinc and sulphate in 2000 were within the ranges observed at this location since 1990.

Location V27 is the Main Fork of Vangorda Creek upstream of the confluence with Shrimp Creek and provides information regarding the impact on Vangorda Creek from mining activities on the Vangorda Plateau. 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 via Grum Creek or the Vangorda Creek plunge pool.

There were three samples collected at location V27 during 2000, in March, June and September. The concentrations of total zinc were all reported at 0.04 mg/L in 2000. One concentration of dissolved zinc was reported at greater than the method detection limit of 0.01 mg/L, which was 0.08 mg/L in September. The concentration of sulphate ranged from 9 mg/L to 50 mg/L in 2000. The concentration of sulphate ranged from 37 mg/L to 105 mg/L in 2000. The concentrations of total and dissolved zinc and for sulphate in 2000 were within or close to the ranges observed at this location since 1990.

5.3 Lower Vangorda Creek (V5, VGMAIN, V8)

“Lower” Vangorda Creek is defined here as 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. Water quality in lower Vangorda Creek is monitored at location V8.

The West Fork of Vangorda Creek represents natural run off and some minesite drainage originating from location V6A in AEX Creek, the Vangorda ore haul road and a calcareous phyllite portion of the Grum rock dump. Water quality in the West Fork of Vangorda Creek is monitored at location V5.

The Main Fork of Vangorda Creek represents natural run off including Shrimp Creek via location V4 plus drainage from the mine site via location V27. Water quality in the Main Fork of Vangorda Creek is monitored at location VGMAIN.

Water quality information that was collected in 2000 for each of locations V5, VGMAIN and V8 is described in the following sections 5.3.1 to 5.3.3, respectively, and recent data for total suspended solids, total zinc and sulphate is illustrated on Figures 7 to 9, respectively. Additional information regarding water quality in Lower Vangorda Creek in a longer-term context is described in Section 5.4.

5.3.1 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 calcareous phyllite rock dump 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.

There were eleven samples collected at location V5 during 2000. The concentration of total suspended solids ("TSS") ranged from 5 mg/L to 251 mg/L in 2000, which was within the range observed in previous years. Elevated concentrations of TSS through freshet or due to specific events have been observed at location V5 in previous years including a peak concentration in 1999 of 731 mg/L. TSS was elevated in 2000 in May, August and September with the peak concentration (251 mg/L) occurring in September. The elevated TSS in 2000 is attributed to natural events (as opposed to direct influences of mine activities) related to the unusually high precipitation that was experienced through the summer/fall season. For example, a landslide/soil slump of significant proportion occurred on the north side of the West Fork valley upstream of location V5 that would have resulted in the generation of loose soil that was readily available for mobilization into the creek as TSS.

The concentrations of total and dissolved zinc at location V5 were not elevated in 2000 in concert with the elevated TSS. The concentrations of total and dissolved zinc ranged from 0.005 mg/L to 0.04 mg/L and from 0.005 mg/L to 0.49 mg/L in 2000, which were within the ranges observed in previous years. The peak concentration of dissolved zinc (0.49 mg/L) is considered anomalous at this time because it was much greater than the corresponding concentration of total zinc (<0.01 mg/L) and because there were no corresponding elevated concentrations of other metals.

The concentrations of sulphate and hardness at location V5 continued to exhibit a general seasonal trend during 2000 in which these concentrations were greater during the winter season when surface run off was at a minimum. This trend is attributed to the presence in the West Fork catchment area of certain rock types (esp. Red River, Earn Group and Vangorda Formation) that influence surface run off and ground water discharge to surface. The concentrations of sulphate and hardness at location V5 ranged from 34 mg/L to 340 mg/L and from 130 mg/L to 367 mg/L, respectively, in 2000.

5.3.2 Main Fork (VGMAIN)

Location VGMAIN is an informal sampling location (not included in the Licence) that is located in the Main Fork of Vangorda Creek immediately upstream of the confluence with the West Fork. This location provides important information regarding the relative impacts of the Main and West Forks on the fish rearing habitat in lower Vangorda Creek. Although Licence location V27 is also in the Main

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Fork, location V27 is over 6 kilometres upstream of the fish rearing habitat and it is difficult to apply water chemistry data from location V27 in an analysis of lower Vangorda Creek because of the potential for numerous and unquantified impacts on the Main Fork downstream of location V27.

A total of nine samples were collected at location VGMAIN in 2000. The concentration of total suspended solids ("TSS") at location VGMAIN remained low (<11 mg/L) through 2000 with the exception of one sample in September for which TSS was reported at 67 mg/L. This elevated concentration in September corresponds to the peak concentration reported in 2000 for location V5 and is attributed to the unusually high precipitation that was experienced through summer/fall 2000 and not to the influences of mine activities. This conclusion is supported by the low (1 mg/L) concentration of TSS that was reported for upstream location V27 in September 2000. The peak concentration of TSS in 2000 (67 mg/L) at location VGMAIN was less than the peak concentration reported in 1999 (125 mg/L).

The concentrations of total and dissolved zinc at location VGMAIN ranged from <0.01 mg/L to 0.11 mg/L and from <0.01 mg/L to 0.27 mg/L, respectively, in 2000, which were within the ranges observed in previous years. The peak concentrations of total and dissolved zinc occurred in August and July, respectively, in 2000 and did not correspond with the peak concentration of TSS. The peak concentration of dissolved zinc (0.27 mg/L) is considered anomalous at this time because it was much greater than the corresponding concentration of total zinc (0.06 mg/L) and because there were no corresponding elevated concentrations of other metals.

The concentrations of sulphate and hardness at location VGMAIN continued the seasonal trend that has been established at this location and at location V5 with higher concentrations observed in the winter season. The concentrations of sulphate and hardness ranged from 17 mg/L to 254 mg/L and from 62 mg/L to 306 mg/L CaCO₃, respectively, in 2000.

5.3.3 Lower Vangorda Creek (V8)

Location V8 is in the fish rearing habitat in lower Vangorda Creek downstream of the confluence of the West (location V5) and Main (location VGMAIN) Forks. There were twelve samples collected at location V8 during 2000.

The concentration of total suspended solids ("TSS") at location V8 was elevated above 15 mg/L on two occasions in 2000, in August and September. The peak concentration of TSS (129 mg/L) in 2000 occurred in September and was lower than the peak concentration that was reported for 1999 (184 mg/L). The peak concentration in 2000 corresponded to the peak concentrations reported for upstream locations V5 (251 mg/L) and VGMAIN (67 mg/L). The elevated September 2000 concentrations of TSS are attributed to natural events related to the unusually high precipitation that was experienced through summer/fall 2000. For example, precipitation in August and September 2000 was reported to be (Environment Canada weather service for Faro airport) 255% and 276% of "normal", respectively, in 2000. As described above in the description of water quality at location V5, a landslide/soil slump of

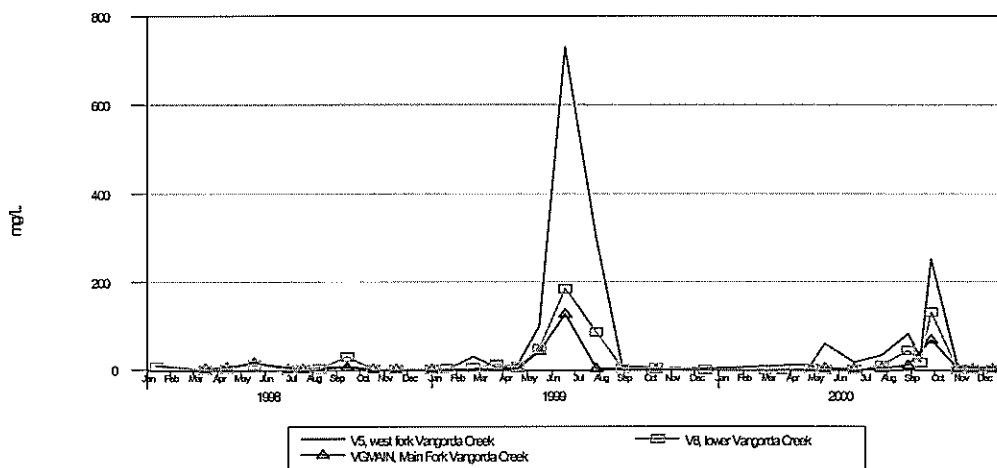
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significant proportion occurred in 2000 in the West Fork valley upstream of location V5 that would have resulted in the generation of loose soil that was readily available for mobilization into the creek as TSS.

The concentrations of total and dissolved zinc at location V8 ranged from 0.01 mg/L to 0.16 mg/L and from <0.01 mg/L to 0.31 mg/L, respectively, in 2000. These were within the ranges observed in previous years except for the two peak concentrations of dissolved zinc. The peak concentrations of total and dissolved zinc occurred in August and July, respectively, in 2000 and did not correspond with the peak concentration of TSS. The peak concentration of dissolved zinc (0.31 mg/L) is considered anomalous at this time because it was much greater than the corresponding concentration of total zinc (0.09 mg/L) and because there were no corresponding elevated concentrations of other metals.

The concentrations of sulphate and hardness at location V8 continued, in 2000, to mirror the trend observed at upstream locations V5 and VGMAIN with greater concentrations observed in the winter season when surface flows were at a minimum. The concentrations of sulphate and hardness at location V8 ranged from 22 mg/L to 328 mg/L and from 80 mg/L to 355 mg/L CaCO₃, respectively, in 2000, which were within the ranges observed in previous years with the exception of one peak concentration of sulphate (328 mg/L in October).

Figure 7: Lower Vangorda Creek (V5, VGMAIN, V8) Total Suspended Solids



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Figure 8: Lower Vangorda Creek (V5, VGMAIN, V8) Total Zinc

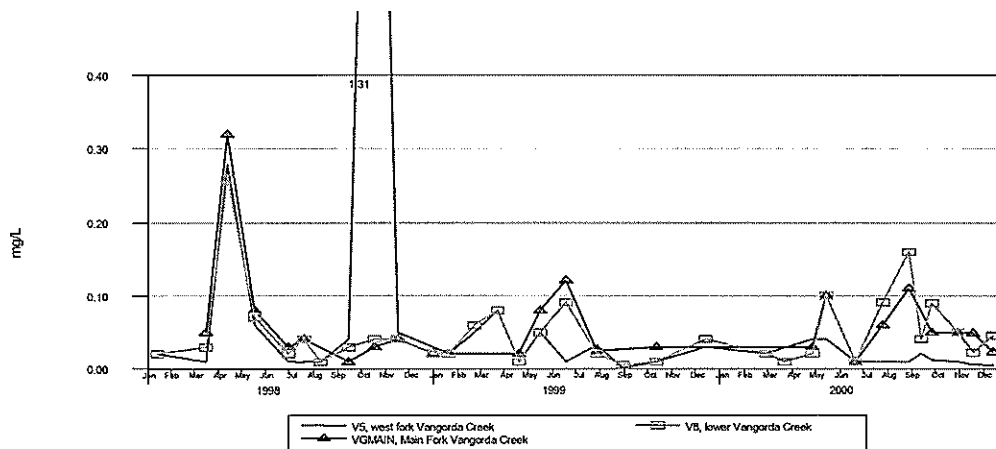
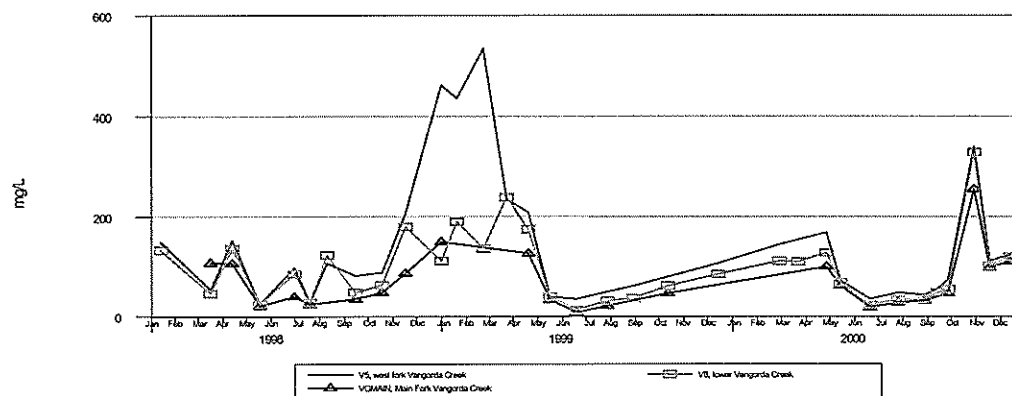


Figure 9: Lower Vangorda Creek (V5, VGMAIN, V8) Sulphate



5.4 Long Term Trends In Lower Vangorda Creek

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 zinc, total lead and ammonia in 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 sulphate. 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.



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Concentrations of total suspended solids ("TSS"), total zinc, sulphate, hardness, pH, ammonia, total lead and total arsenic for locations V5 and V8 (for which the monitoring records extend back to 1988) are illustrated on Figures 10 through 17, respectively, for the period from 1988 to 2000.

During the period from 1988 to 1990 (3 years), there was a relatively small amount of work done in overburden stripping for the Grum Open 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 zinc, ammonia, 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 total suspended solids, total zinc, total lead and ammonia 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 zinc 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 total suspended solids, total zinc, total lead, ammonia and arsenic 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 zinc were 0.04 mg/L and 0.12 mg/L, respectively.

During 1998, 1999 and 2000, 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

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2000 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 2000, the average concentration of total suspended solids was 19 mg/L with a peak value of 184 mg/L. The average and peak concentrations of total zinc were 0.05 mg/L and 0.26 mg/L, respectively.

Measured flow volumes in the West Fork (V5) and lower Vangorda Creek (V8), as illustrated on Figure 18, indicate that, on average, the West Fork contributes 33% of flow to lower Vangorda Creek with a range from 21% to 49%. The 21 corresponding flow measurements at locations V5 and V8 spanning 1991 to 1999 are listed in Table 3.

Table 3: Listing of Corresponding Flow Measurements at Locations V5 and V8

STATION: V5		STATION: V8		% V5/V8
Date	Flow (Lps)	Date	Flow (Lps)	
07/05/91	1358	07/05/91	2778	49%
22/08/91	249	15/08/91	1116	22%
11/10/91	334	04/10/91	1182	28%
26/11/91	131	25/11/91	372	35%
28/02/92	51	28/02/92	153	33%
28/04/92	280	28/04/92	634	44%
26/04/93	243	26/04/93	533	46%
02/08/93	207	02/08/93	620	33%
09/05/95	230	09/05/95	1096	21%
12/09/95	224	12/09/95	960	23%
11/06/96	195.3	11/06/96	801	24%
11/09/96	191.6	11/09/96	687	28%
19/12/96	35	05/12/96	110	32%
10/03/97	7	10/03/97	15	47%
05/05/97	892	05/05/97	1873	48%
30/06/97	185	30/06/97	566	33%
24/07/97	379	24/07/97	1007	38%
28/08/97	162	28/08/97	541	30%
10/06/98	152	10/06/98	594	26%
29/07/99	364	29/07/99	1101	33%
31/08/99	144	30/08/99	484	30%
				AVG 33%
				MAX 49%
				MIN 21%
				COUNT 21
				MEDIAN 33%

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Figure 10: Long Term Lower Vangorda Creek (V5, V8) Total Suspended Solids

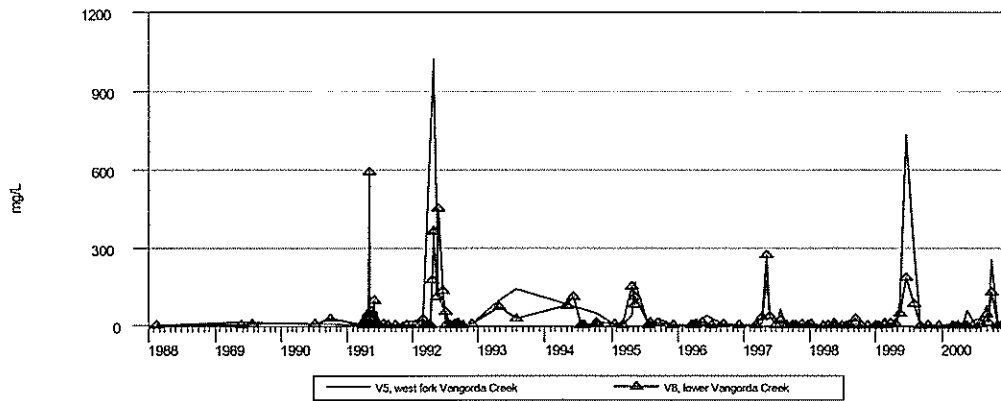


Figure 11: Long Term Lower Vangorda Creek (V5, V8) Total Zinc

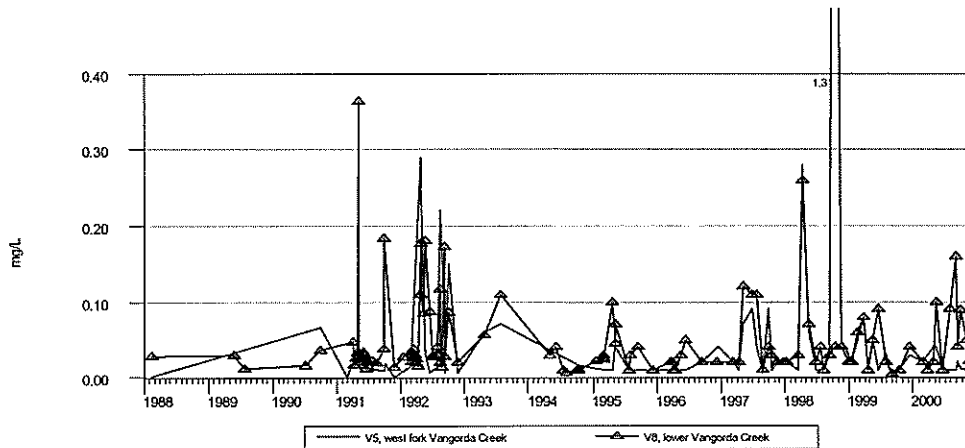
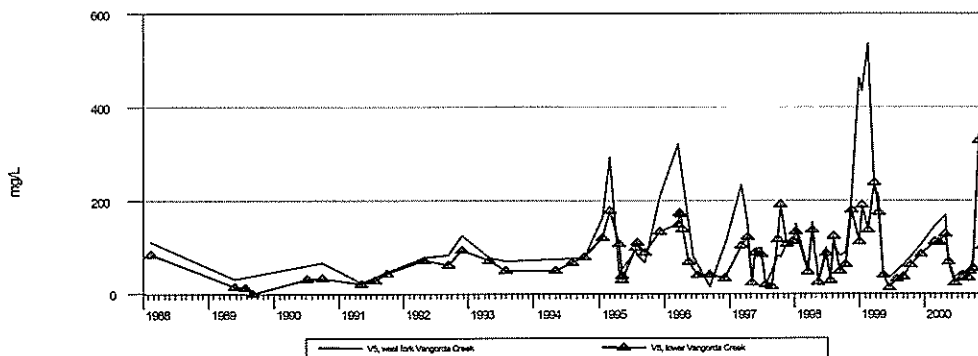


Figure 12: Long Term Lower Vangorda Creek (V5, V8) Sulphate



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Figure 13: Long Term Lower Vangorda Creek (V5, V8) Hardness

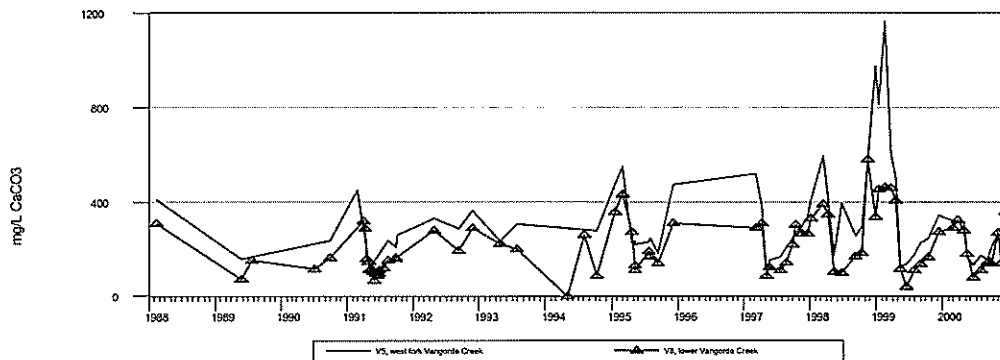


Figure 14: Long Term Lower Vangorda Creek (V5, V8) pH

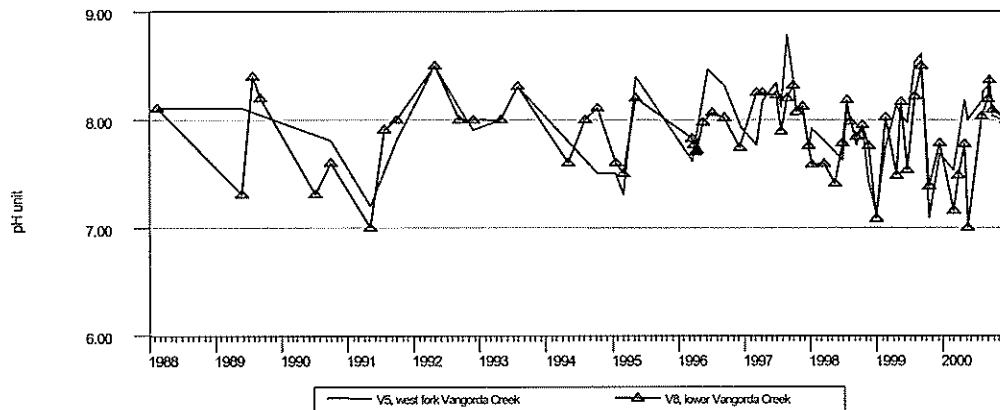
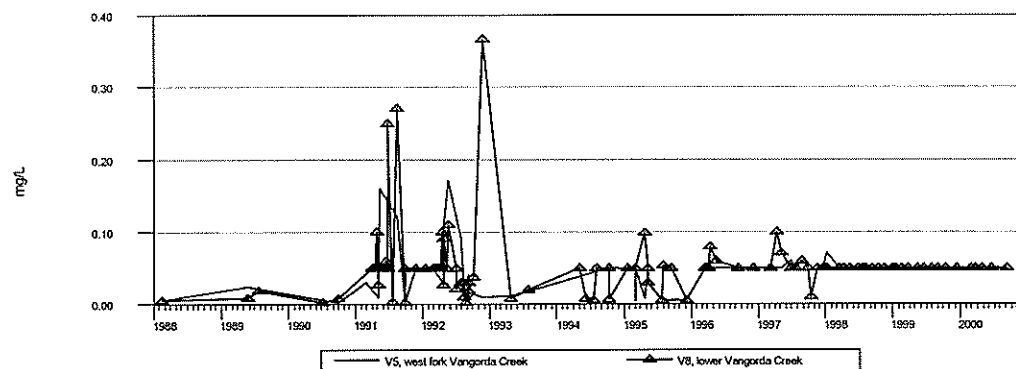


Figure 15: Long Term Lower Vangorda Creek (V5, V8) Ammonia (NH₃-N)



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Figure 16: Long Term Lower Vangorda Creek (V5, V8) Total Lead

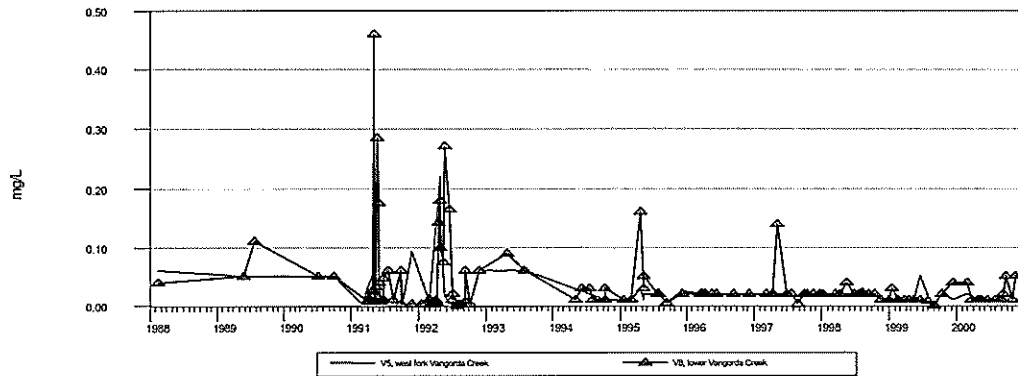


Figure 17: Long Term Lower Vangorda Creek (V5, V8) Total Arsenic

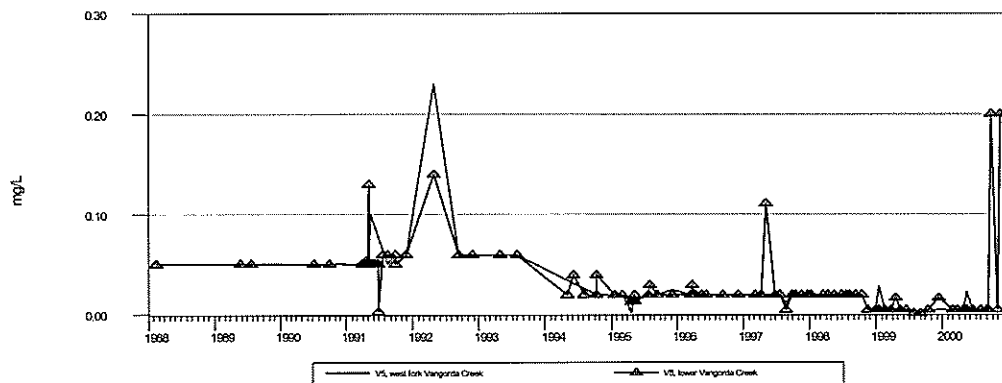
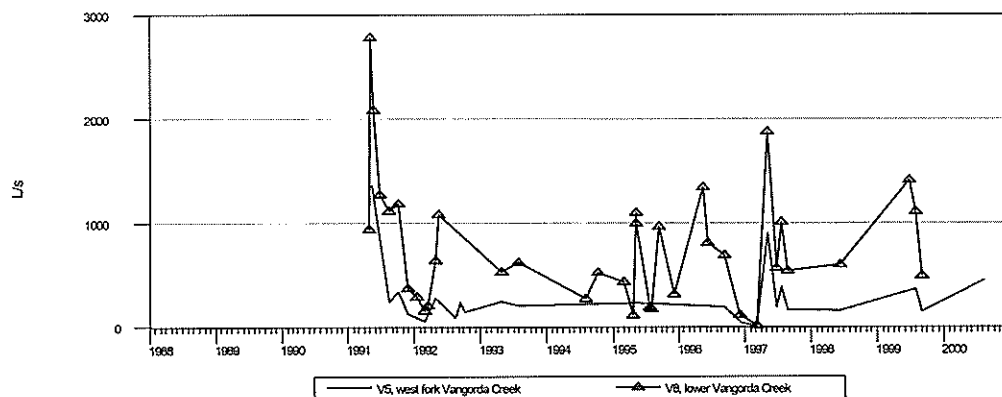


Figure 18: Long Term Lower Vangorda Creek (V5, V8) Flow



6. Macroinvertebrate and Stream Sediment Monitoring

The macroinvertebrate and stream sediment monitoring programs are scheduled, in the Licence, to be performed in Vangorda Creek every second year. These programs were performed in 1999 and, therefore, they were not performed in 2000.

7. Geotechnical Monitoring

The annual geotechnical/physical monitoring program described in Part D Section 6 of the Licence was performed by Steffen, Robertson and Kirsten (Canada) Inc. ("SRK") in 2000. The SRK report is appended as Appendix 2 and the following summary is provided.

Mr. Peter Healey, P. Eng., of SRK conducted a site inspection in June. The inspection looked at the geotechnical performance and stability of the following structures: Vangorda rock dump and seepage collection system, Little Creek Dam, Vangorda Creek diversion, Clarification Pond and Sheep Pad Ponds.

SRK also reviewed all available data collected from monitoring of piezometers and thermistors related to the Vangorda rock dump and Little Creek Dam. No significant trends were identified and no concerns were noted.

The recommendations resulting from the inspection are summarized as follows:

- fill small depression at south abutment of Little Creek Dam ("LCD")
- SRK to provide recommendation for remediation/upgrading of 1999 ditch on Vangorda rock dump till berm
- maintenance work in the Vangorda rock dump seepage collection channel,
- maintenance work at Little Creek Dam,
- continue monitoring of piezometers and thermistors,
- monitor for tension cracking and seeps related to dams and dykes and perform maintenance work as necessary,
- install water control structures at approach ramp to Little Creek Dam,
- repair various rip rap structures at culvert inlets, Vangorda Creek diversion and Grum interceptor ditch,
- review need for the Grum Pit Holding/Settling Pond,

Some physical maintenance tasks were completed in 2000 in response to recommendations in the 1999 and 2000 geotechnical inspection reports. These included:

- maintenance and clean up at Vangorda rock dump drain #6 and seepage collection ditch,
- fill-in depression near south abutment of Little Creek Dam,
- placement of additional rip rap rock at the Little Creek Dam emergency outflow channel,
- placement of rip rap rock at the headworks to the Vangorda Creek diversion channel and at the Vangorda Creek Plunge Pool.

8. Water Treatment Plant Performance

The Water Treatment Plant was not operated during 2000. Therefore, no performance report on the operation of the plant is required for 2000.

The water treatment plant was shut down in an orderly manner at the cessation of mining activities in January 1998 such that all lines and tanks were drained of water. Electrical power to the plant was cut off at the time of shut down and remained disconnected through 2000.

A preliminary engineering review of the state of the plant and of the scope of work required to start the plant was conducted in 2000 by Canadian Metallurgical and Environmental Inc. of Vancouver, B.C. This review was of interest to the development of alternative management options for the Vangorda open pit. The alternate of using the existing water treatment plant to treat water from the Vangorda pit is similar to the seasonal (summer) treatment program that has been established for the Faro Main pit and this alternative was considered to represent the most appropriate management plan.

At year-end, a request for proposals for the engineering design work required for start-up of the water treatment plant was released.

9. Technical Advisory Committee

One Technical Advisory Committee meeting was held in 2000, in June. The meeting was held in Faro and involved tours of the Faro and Vangorda Plateau minesites. The meeting was attended by representatives of:

- Anvil Range Mining Corp. (Interim Receivership)
- Deloitte & Touche LLP as Interim Receiver for Anvil Range Mining Corporation
- Department of Fisheries and Oceans
- DIAND - Mineral Resources
- DIAND - Water Resources
- Gartner Lee Limited
- Yukon Conservation Society
- Yukon Salmon Committee
- Yukon Fish and Wildlife Board
- YTG - Economic Development
- YTG - Renewable Resources

The topics discussed at the meeting were primarily concerned with current environmental issues and on-going environmental management of the minesites during the interim receivership.

A list of the attendees, agenda and summary notes for the meeting are included in Appendix 3.

10. Physical Maintenance Work

10.1 Little Creek Dam Emergency Overflow

An emergency overflow system for Little Creek Dam was designed and constructed during 1998 and was described in the 1998 Vangorda Plateau Annual Environmental Report. At the recommendation of SRK in their 2000 Inspection Report (described in Section 7 of this report), additional rip rap rock was placed in the outflow channel. This work was completed in September 2000.

The crest of Little Creek Dam was graded and a small quantity of granular material was hauled to the area in preparation for re-surfacing of the crest in 2000. However, extremely wet weather conditions necessitated the postponement of this work into 2001.

10.2 Vangorda Creek Diversion Flume

A very minor amount of fine loose rock sloughed into the flume in 2000 and this was removed. There were no large-scale rock falls experienced in 2000.

At the recommendation of SRK in their 2000 Inspection Report (described in Section 7 of this report), additional rip rap rock was placed at the upstream side of the Vangorda Creek diversion channel headworks dam. This work was completed in August 2000.

At the recommendation of SRK in their 2000 Inspection Report (described in Section 7 of this report), additional rip rap rock was placed in certain areas around the perimeter of the Plunge Pool at the downstream end of the Vangorda Creek diversion channel. This work was completed in September 2000.

A request for proposals for contractor removal of certain overhanging blocks of rock from the wall overlooking the diversion flume in the vicinity of the 1999 rock fall was released late in 2000 for performance early in 2001. This work will reduce the risks of a repetition of the 1999 rock fall and responds to directions received from DIAND, Water Resources as described in Section 11 of this report.

10.3 Vangorda Rock Dump

Sloughed soil in the vicinity of Vangorda rock dump drain #6 was cleaned up in September 2000. The intent of this work was to ensure that seepage flow from the drain was unimpeded.

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At the recommendation of SRK in their 2000 Inspection Report (described in Section 7 of this report), soil that had sloughed into the upstream reaches of the Vangorda rock dump collector ditch was cleaned out in September 2000.

11. Regulatory Issues

11.1 Licence Amendment

An application for amendment to Water Licence IN89-002 was outstanding at year-end. The application was filed by Anvil Range Mining Corporation prior to the current Interim Receivership period. The proposed amendments are primarily "housekeeping" issues.

11.2 DIAND Directive Regarding Vangorda Diversion Flume

An instruction was received from DIAND Water Resources in 2000 that required the performance of maintenance work at the Vangorda Creek diversion flume prior to spring 2001. The instruction is included in Appendix 4.

Contractor bids for performance of the required work were requested at year-end and the work was scheduled for completion prior to spring 2001. The work is specified to include the removal of rock from the adjacent rock wall in order to reduce the risks of a recurrence a fall of rock similar to that experienced in 1999.

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Appendices

Appendix 1

2000 Water Quality Listing

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V1, Vangorda Creek, upstrm of mine & Blind Cr. Rd

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
20/06/00			<0.05	4	1			12		
9/8/00	7.13	5.9							663.5	
12/9/00	8.05	7.6		10	2	73		21		
JAN 2000 - DEC 2000										
Mean	7.59	6.8	0.05	7	2	73		16	663.5	
Std. Deviation	0.65	1.2	0	4	1	0		6	0	
Minimum Value	7.13	5.9	0.05	4	1	73		12	663.5	
Maximum Value	8.05	7.6	0.05	10	2	73		21	663.5	
Num. Values	2	2	1	2	2	1		2	1	

STATION: V2, Grum Creek, upstr. of Vangorda Ck

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
22/03/00			<0.05	183	10	820			0.5	
20/06/00			<0.05	571	1	460				
12/9/00	8.23	7.8	<0.05	638	7	1435				
JAN 2000 - DEC 2000										
Mean	8.23	7.8	0.05	464	6	905			0.5	
Std. Deviation	0	0	0	246	5	493			0	
Minimum Value	8.23	7.8	0.05	183	1	460			0.5	
Maximum Value	8.23	7.8	0.05	638	10	1435			0.5	
Num. Values	1	1	3	3	3	3			1	

STATION: V4, Shrimp Creek, upstr. of Vangorda Creek

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
25/03/00			<.05	105	1	720	341	375		d/s culvert
20/06/00				39	2			239		
12/9/00	8.04	3.9		37	17	448		200		
JAN 2000 - DEC 2000										
Mean	8.04	3.9	0.05	60	7	584	341	271		
Std. Deviation	0	0	0	39	9	192	0	92		
Minimum Value	8.04	3.9	0.05	37	1	448	341	200		
Maximum Value	8.04	3.9	0.05	105	17	720	341	375		
Num. Values	1	1	1	3	3	2	1	3		pH probe broken

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V5, west fork Vangorda Creek

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	(CaCO3) mg/L	L/s	meters
28/02/00	7.53	0	<0.05	144	7			319		
27/04/00	8.18	3	<0.05	168	12			316		
15/05/00	8	5		71	58			164		
20/06/00			<0.05	34	17			130		
25/07/00	8.17	8.9		48	33			172		
9/8/00	8.26	6.9							449.45	
29/08/00	8.3	5		42	80			153		
12/9/00	8.4	4.7		55	27	400		173		
26/09/00	8.04	6.2		73	251			207		
28/10/00		4								
29/10/00				340	11			271		
18/11/00				110	4.6			207		
14/12/00	7.98			122	4.6			367		
JAN 2000 - DEC 2000										
Mean	8.1	4.9	0.05	110	45.9	400		225	449.45	
Std. Deviation	0.25	2.5	0	88	72.1	0		80	0	
Minimum Value	7.53	0	0.05	34	4.6	400		130	449.45	
Maximum Value	8.4	8.9	0.05	340	251	400		367	449.45	
Num. Values	9	9	3	11	11	1		11	1	

STATION: V6A, AEX Creek

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
23/03/00	7.21	1	<0.05	24	2	285				
20/06/00			<0.05	7	1	79				
12/9/00	7.68	5.3	<0.05	34	2	179				
JAN 2000 - DEC 2000										
Mean	7.44	3.2	0.05	22	2	181				pH probe broken
Std. Deviation	0.33	3	0	14	1	103				
Minimum Value	7.21	1	0.05	7	1	79				
Maximum Value	7.68	5.3	0.05	34	2	285				
Num. Values	2	2	3	3	3	3				

STATION: VGMAIN, Main Fork Vangorda Creek

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	(CaCO3) mg/L	L/s	meters
27/04/00	7.74	3	<0.05	99	1			207		
15/05/00	7.35	6		61	3			178		
20/06/00			<0.05	17	2			62		
25/07/00	8.16	11.2		27	3			87		
29/08/00	8.12	7.5		31	11			124		walking bridge
26/09/00	8.11	6.1		46	67			137		ped. bridge
28/10/00		2.5								
29/10/00				254	3			230		ped. bridge
18/11/00				98	<0.2			137		
14/12/00	8.01			109	1			306		
JAN 2000 - DEC 2000										
Mean	7.91	6	0.05	82	10.1			163		pH probe broken
Std. Deviation	0.32	3.2	0	73	21.6			76		
Minimum Value	7.35	2.5	0.05	17	0.2			62		
Maximum Value	8.16	11.2	0.05	254	67			306		
Num. Values	6	6	2	9	9			9		

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V8, lower Vangorda Creek

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
28/02/00	7.15	0	<0.05	111	<1			289		
23/03/00	7.48	1	<0.05	109	1	600	216	323		
27/04/00	7.77	2	<0.05	128	3			278		
15/05/00	7	8		67	1			179		
20/06/00			<0.05	22	1	173	59	80		
25/07/00	8.03	10.3		33	9			109		
29/08/00	8.19	6.7		34	44			141		
12/9/00	8.36	6.4	<0.05	47	16	345	138	148		
26/09/00	8.09	6.1		55	129			137		
28/10/00		2.1								
29/10/00				328	2			269		
18/11/00				100	1.4			137		
14/12/00	8			119	1.2			355		
JAN 2000 - DEC 2000										
Mean	7.79	4.7	0.05	96	17.5	373	138	204		
Std. Deviation	0.48	3.6	0	82	37.3	215	79	93		
Minimum Value	7	0	0.05	22	1	173	59	80		
Maximum Value	8.36	10.3	0.05	328	129	600	216	355		
Num. Values	9	9	5	12	12	3	3	12		

STATION: V15, Sulphide cell sump, Grum Dump

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL	5m depth
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters	
22/03/00			<0.05	340	63	310	465		0.25		
20/06/00			<0.05	305	2	1200	374				
12/9/00	7.83	7.4	<0.05	560	5	1520	472				
JAN 2000 - DEC 2000											
Mean	7.83	7.4	0.05	402	23	1010	437		0.25		
Std. Deviation	0	0	0	138	34	627	55		0		
Minimum Value	7.83	7.4	0.05	305	2	310	374		0.25		
Maximum Value	7.83	7.4	0.05	560	63	1520	472		0.25		
Num. Values	1	1	3	3	3	3	3		1		

STATION: V17A, Runoff from ore transfer pad

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL	5m depth
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters	
20/06/00				10							
JAN 2000 - DEC 2000											
Mean				10							
Std. Deviation				0							
Minimum Value				10							
Maximum Value				10							
Num. Values				1							

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V20, Vangorda pit, NE interceptor ditch

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
22/03/00				16	1			113		
20/06/00	7.47	3.9		9	3	162				
12/9/00										
JAN 2000 - DEC 2000										
Mean	7.47	3.9		12	2	162		113		
Std. Deviation	0	0		5	1	0		0		
Minimum Value	7.47	3.9		9	1	162		113		
Maximum Value	7.47	3.9		16	3	162		113		
Num. Values	1	1		2	2	1		1		

STATION: V22, Vangorda pit water

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
22/03/00			0.54	589	4	1180	118			
20/06/00			<0.05	107	6	345	62			
12/9/00	7.1	6.6		357	7	720	184			
JAN 2000 - DEC 2000										
Mean	7.1	6.6	0.3	351	6	748	121			
Std. Deviation	0	0	0.35	241	2	418	61			
Minimum Value	7.1	6.6	0.05	107	4	345	62			
Maximum Value	7.1	6.6	0.54	589	7	1180	184			
Num. Values	1	1	2	3	3	3	3			

STATION: V23, Grum Pit Water

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
22/03/00			0.56	292	3	895	216			
20/06/00			<0.05	192	8	530	59			
26/06/00	7.71	14	0.42	335	11	925	161			
12/9/00	7.63	7.5		488	9	1065	249			
JAN 2000 - DEC 2000										
Mean	7.67	10.8	0.34	327	8	854	171			
Std. Deviation	0.06	4.6	0.26	123	3	228	83			
Minimum Value	7.63	7.5	0.05	192	3	530	59			
Maximum Value	7.71	14	0.56	488	11	1065	249			
Num. Values	2	2	3	4	4	4	4			

STATION: V23A, Grum Pit Water Holding Pond

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
25/09/00	7.26	5	0.03	38	4.4			72		
JAN 2000 - DEC 2000										
Mean	7.26	5	0.03	38	4.4			72		
Std. Deviation	0	0	0	0	0			0		
Minimum Value	7.26	5	0.03	38	4.4			72		
Maximum Value	7.26	5	0.03	38	4.4			72		
Num. Values	1	1	1	1	1			1		

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V25BSP, Below Sheep Pond at the weir

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
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		77	2.2			187		
28/10/00		1.8								
29/10/00				59	4					
18/11/00			0.02	84	0.4			187		
14/12/00	7.4			107	0.4					
JAN 2000 - DEC 2000										
Mean	7.55	6.8	0.02	79	5.6			187		
Std. Deviation	0.21	4.6	0	32	9.6			0		
Minimum Value	7.34	1.8	0.02	40	0.4			187		
Maximum Value	7.78	12.8	0.02	132	27			187		
Num. Values	4	4	1	7	7			2		

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

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
25/03/00			<.05	50	1	295	111	148		
20/06/00				9	2	67	66	26		
12/9/00	7.63	3.2		37	1	183	66	74		
JAN 2000 - DEC 2000										
Mean	7.63	3.2	0.05	32	1	182	81	83		
Std. Deviation	0	0	0	21	1	114	26	61		
Minimum Value	7.63	3.2	0.05	9	1	67	66	26		
Maximum Value	7.63	3.2	0.05	50	2	295	111	148		
Num. Values	1	1	1	3	3	3	3	3		

STATION: V30, Vangorda Dump drain #3

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
15/05/00	6	4		3502						
31/05/00	6.36	6		4575					0.05	
12/09/00				4214						defective meter
JAN 2000 - DEC 2000										
Mean	6.18	5		4097					0.05	
Std. Deviation	0.25	1		546					0	
Minimum Value	6	4		3502					0.05	
Maximum Value	6.36	6		4575					0.05	
Num. Values	2	2		3					1	

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V32, Vangorda Dump drain #5

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	3.55	11		15389					0.1	
12/09/00	3.81	5.7		17040						
JAN 2000 - DEC 2000										
Mean	3.68	8.3		16214					0.1	
Std. Deviation	0.18	3.7		1167					0	
Minimum Value	3.55	5.7		15389					0.1	
Maximum Value	3.81	11		17040					0.1	
Num. Values	2	2		2					1	

STATION: V33, Vangorda Dump drain #6

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
15/05/00	6	3		1455					0	no flow; pool
12/09/00	6.04	4.2		5228						
JAN 2000 - DEC 2000										
Mean	6.02	3.6		3342					0	
Std. Deviation	0.03	0.8		2668					0	
Minimum Value	6	3		1455					0	
Maximum Value	6.04	4.2		5228					0	
Num. Values	2	2		2					1	

STATION: V34, groundwater well GW94-01

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	7.71	4		26						5.75
09/10/00	7.51	3.8		470						4.98
JAN 2000 - DEC 2000										
Mean	7.61	3.9		248						5.37
Std. Deviation	0.14	0.1		314						0.54
Minimum Value	7.51	3.8		26						4.98
Maximum Value	7.71	4		470						5.75
Num. Values	2	2		2						2

STATION: V35, groundwater well GW94-02

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	6.78	6		86						8.68
09/10/00	7.38	4.6		360						3.96
JAN 2000 - DEC 2000										
Mean	7.08	5.3		223						6.32
Std. Deviation	0.42	1		194						3.34
Minimum Value	6.78	4.6		86						3.96
Maximum Value	7.38	6		360						8.68
Num. Values	2	2		2						2

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V36, groundwater well GW94-03

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	7.78	3		320						8.26
09/10/00	7.08	2.4		420						6.9
JAN 2000 - DEC 2000										
Mean	7.43	2.7		370						7.58
Std. Deviation	0.49	0.4		71						0.96
Minimum Value	7.08	2.4		320						6.9
Maximum Value	7.78	3		420						8.26
Num. Values	2	2		2						2

STATION: V37, groundwater well GW94-04

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00				62						9.33
09/10/00	8.02	5.3		279						8.35
JAN 2000 - DEC 2000										
Mean	8.02	5.3		170						8.84
Std. Deviation	0	0		153						0.69
Minimum Value	8.02	5.3		62						8.35
Maximum Value	8.02	5.3		279						9.33
Num. Values	1	1		2						2

STATION: V38, groundwater well GW94-05

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00										1.84 no sample
JAN 2000 - DEC 2000										
Mean										1.84
Std. Deviation										0
Minimum Value										1.84
Maximum Value										1.84
Num. Values										1

STATION: 96-9A, Groundwater at the toe of Grum dump

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	7.43	5		668						5.24
09/10/00	6.51	5.6		545						5.46
JAN 2000 - DEC 2000										
Mean	6.97	5.3		606						5.35
Std. Deviation	0.65	0.4		87						0.16
Minimum Value	6.51	5		545						5.24
Maximum Value	7.43	5.6		668						5.46
Num. Values	2	2		2						2

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: 96-9B, Groundwater at toe of Grum dump

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	8.31	5		178						0 flowing
JAN 2000 - DEC 2000										
Mean	8.31	5		178						0
Std. Deviation	0	0		0						0
Minimum Value	8.31	5		178						0
Maximum Value	8.31	5		178						0
Num. Values	1	1		1						1

STATION: LCD, Little Creek Dam Pond Water

	PH-F	TEMP-C	NH3-N	SO4-T	TSS	COND	ALK-T	HARD-T (CaCO3)	FLOW	SWL
Date	pH unit		mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	L/s	meters
31/05/00	7.51	12		314	9					
JAN 2000 - DEC 2000										
Mean	7.51	12		314	9					
Std. Deviation	0	0		0	0					
Minimum Value	7.51	12		314	9					
Maximum Value	7.51	12		314	9					
Num. Values	1	1		1	1					

YANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V1, Vazeyela Creek, upstream of mine & Blind Cr. Rd

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BL-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NH-T	P-T	PH-T	ST	SH-T	SE-T	SI-T	SN-T	SR-T	TI-T	TL-T	V-T	ZN-T
2006/00	<0.03	0.19	<0.05	<0.05	0.211	0.001	<0.05	4.5	<0.01	<0.05	<0.05	0.017	0.81	1	0.6	0.08	<0.02	1	<0.05	<1	0.04	<1	<0.3	<0.05	2.2	<0.1	0.044	0.065	0.009	0.06		
12/2000	<0.03	0.33	<0.05	0.1	0.15	<0.001	<0.01	12.8	0.01	<0.05	<0.05	0.103	4.44	<1	2.4	0.01	0.029	5	0.023	4	0.02	<0.3	<0.3	<0.05	5.3	<0.1	0.004	0.085	<0.05	0.02		
JAN 2009 - DEC 2009	0.003	0.26	0.005	0.08	0.011	0.001	0.05	8.7	0.005	0.005	0.005	0.06	2.63	1	1.5	0.04	0.015	2	0.014	2	0.03	1	0.03	0.005	3.4	0.01	0.024	0.075	0.007	0.04		
Std. Deviation	0	0.1	0	0.04	0.043	0	0	5.9	0.006	0	0	0.061	2.57	0	1.3	0.05	0.019	1	0.013	2	0.01	0	0	0	2.2	0	0.028	0.014	0.003	0.03		
Minimum Value	0.003	0.19	0.005	0.05	0.001	0.05	4.5	0.001	0.005	0.005	0.005	0.017	0.81	1	0.5	0.01	0.002	1	0.005	1	0.02	1	0.03	0.005	2.2	0.01	0.004	0.065	0.005	0.02		
Maximum Value	0.003	0.33	0.005	0.1	0.211	0.001	0.05	12.8	0.01	0.005	0.005	0.103	4.44	2	2.4	0.08	0.029	5	0.023	4	0.04	1	0.03	0.005	5.3	0.01	0.044	0.085	0.009	0.06		
Num. Values	2	2	2	2	2	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
JAN 2009 - DEC 2009																																
Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NH-D	P-D	PH-D	S-D	SH-D	SE-D	SI-D	SN-D	SR-D	TI-D	TL-D	V-D	ZN-D
2006/00	<0.03	<0.05	<0.05	<0.05	0.006	<0.01	<0.05	2	<0.01	<0.05	<0.05	<0.02	0.13	1	1.4	<0.01	<0.02	2	<0.05	<1	<0.1	1	<0.3	<0.05	2.1	<0.1	<0.02	<0.05	0.006	<0.1		
12/2000	<0.03	<0.05	<0.05	<0.05	0.011	<0.001	<0.05	8.5	<0.01	<0.05	<0.05	<0.02	<0.01	<1	1	1	<0.01	<0.02	4	0.005	4	<0.1	3	<0.3	<0.05	3	<0.1	0.004	<0.05	<0.1		
JAN 2009 - DEC 2009																																

Date	AG-D	AL-D	AS-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NH-D	P-D	PH-D	S-D	SH-D	SE-D	SI-D	SN-D	SR-D	TI-D	TL-D	V-D	ZN-D
2006/00	<0.03	<0.05	<0.05	<0.05	<0.01	<0.05	2	<0.01	<0.05	<0.05	<0.02	0.13	1		1.4	<0.1	<0.02	2	<0.05	<1	<0.1	1	<0.3	<0.05	2.1	<0.1	<0.02	<0.05	0.006	<0.1	
12/2000	<0.03	<0.05	<0.05	0.011	<0.01	<0.01	8.5	<0.01	<0.05	<0.05	<0.02	<0.1	<1		1	<0.1	<0.02	4	0.005	4	<0.1	3	<0.3	<0.05	3	<0.1	0.004	<0.05	<0.05	<0.1	
Mean	0.003	0.05	0.005	0.05	0.001	0.05	5.2	0.001	0.005	0.005	0.002	0.07	1		1.2	0.01	0.002	3	0.005	2	0.01	2	0.03	0.005	2.3	0.01	0.003	0.005	0.005	0.01	
Std. Deviation	0.004	0	0	0.004	0	0	4.6	0	0	0	0.08	0	0		0.3	0	0	1	0	0	0	0	0	0	0.6	0	0.001	0	0.001	0	
Minimum Value	0.003	0.05	0.005	0.006	0.001	0.001	0.05	0.001	0.005	0.005	0.002	0.13	1		1	0.01	0.002	2	0.005	1	0.01	1	0.03	0.005	2.1	0.01	0.002	0.005	0.005	0.01	
Maximum Value	0.003	0.05	0.005	0.05	0.011	0.001	8.5	0.001	0.005	0.005	0.002	0.13	2		1.4	0.01	0.002	4	0.005	4	0.01	3	0.03	0.005	3	0.01	0.004	0.005	0.005	0.01	
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

STATION: V1, Gram Creek, south of Vazeyela Cr.

Date	AG-T	AL-T	AS-T	BT	BE-T	BL-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NH-T	P-T	PH-T	S-T	SH-T	SE-T	SI-T	SN-T	SR-T	TI-T	TL-T	V-T	ZN-T
22/03/00	<0.03	0.41	<0.05	0.05	0.391	<0.01	123.6	0.003	0.009	<0.05	0.012	0.25	3	32.4	<0.1	<0.02	<1	<0.05	<1	<0.1	61	<0.3	<0.05	<0.05	5.4	<0.1	0.651	0.012	<0.05	<0.1	
12/2000	0.005	0.47	<0.05	<0.05	0.194	0.001	224.8	<0.01	<0.05	<0.05	0.061	0.86	4	87.8	0.02	0.002	10	0.073	2	<0.1	<1	<0.3	<0.05	<0.05	4	<0.1	0.806	0.057	0.015	1.02	
Mean	0.004	0.44	0.005	0.05	0.274	0.002	193.2	0.002	0.006	0.005	0.036	0.47	4	71.4	0.02	0.006	7	0.035	3	0.01	31	0.03	0.005	0.005	4.6	0.01	0.775	0.044	0.004	0.43	
Std. Deviation	0.001	0.03	0	0	0.102	0.001	55.4	0.001	0.002	0	0.025	0.34	2	36	0.01	0.005	5	0.005	2	0	42	0.01	0	0.7	0	0.111	0.028	0.006	0.53		
Minimum Value	0.003	0.41	0.005	0.05	0.194	0.001	123.6	0.001	0.005	0.005	0.012	0.25	3	32.4	0.01	0.002	1	0.005	1	0.01	1	0.03	0.005	0.005	4	0.01	0.651	0.012	0.005	0.01	
Maximum Value	0.005	0.47	<0.05	<0.05	0.391	0.003	224.8	0.003	0.009	0.005	0.061	0.86	6	99.9	0.03	0.012	10	0.073	5	0.01	61	0.04	0.005	0.005	5.4	0.01	0.867	0.064	0.015	1.02	
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

JAN 2006 - DEC 2006

Date	AG-D	AL-D	AS-D	BD	BA-D	BE-D	BL-D	CA-D	CD-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NH-D	P-D	PH-D	S-D	SH-D	SE-D	SI-D	SN-D	SR-D	TI-D	TL-D	V-D	ZN-D
22/03/00	<0.03	0.23	<0.05	<0.05	0.34	<0.01	117.2	0.001	0.014	<0.05	<0.05	<0.1	3	32.7	<0.1	<0.02	<1	<0.05	<1	<0.1	61	<0.3	<0.05	<0.05	5.9	<0.1	0.648	<0.05	<0.05	<0.1	
12/2000	<0.03	0.32	<0.05	<0.05	0.034	<0.01	193.4	0.001	<0.05	<0.05	0.026	0.21	7	99.4	0.01	0.007	8	0.02	4	0.01	190	<0.3	<0.05	4.2	<0.1	0.722	0.026	<0.05	<0.05	<0.1	
12/20/00	<0.03	0.17	<0.05	<0.05	0.048	<0.01	189.7	<0.01	<0.05	<0.05	0.026	0.02	5	75.9	0.02	<0.02	9	0.037	7	<0.1	213	<0.3	<0.05	2.6	<0.1	0.635	<0.05	<0.05	<0.05	0.03	

Date	AG-D	AL-D	AS-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NH-D	P-D	PH-D	S-D	SH-D	SE-D	SI-D	SN-D	SR-D	TI-D	TL-D	V-D	ZN-D
2006/00	<0.03	0.23	<0.05	<0.05	<0.01	<0.05	117.2	<0.01	0.014	<0.05	<0.02	<0.1	3		32.2	<0.1	<0.02	<1	<0.05	<1	<0.1	61	<0.3	<0.05	5.9	<0.1	0.648	<0.05	<0.05	<0.1	
12/2000	<0.03	0.32	<0.05	<0.05	0.034	0.003	193.4	0.001	<0.05	<0.05	0.026	0.21	7		99.4	0.01	0.007	8	0.02	4	0.01	190	<0.3	<0.05	4.2	<0.1	0.722	0.026	<0.05	<0.1	
Mean	0.003	0.24	0.005	0.05	0.141	0.002	166.8	0.001	0.008	0.005	0.018	0.48	5		65.3	0.01	0.004	6	0.021	4	0.01	155	0.03	0.005	1.2	0.01	0.668	0.012	0.005	0.03	
Std. Deviation	0.003	0.17	0.005	0.05	0.034	0.001	117.2	0.001	0.005	0.005	0.002	0.01	2		32.2	0.01	0.002	4	0.005	3	0.01	45	0.01	0	1.1	0.01	0.605	0.015	0.005	0.03	
Minimum Value	0.003	0.17	0.005	0.05	0.034	0.001	117.2	0.001	0.005	0.005	0.002	0.01	3		32.2	0.01	0.002	1	0.005	1	0.01	61	0.03	0.005	2.6	0.01	0.635	0.005	0.005	0.01	
Maximum Value	0.003	0.32	0.005	0.05	0.34	0.003	193.4	0.001	0.014	0.005	0.026	0.21	7		99.4	0.02	0.007	9	0.021	7	0.01	213	0.03	0.005	5.9	0.01	0.722	0.026	0.005	0.08	
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

YANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: VA, Shrimp Creek, north of Yangorda Creek

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BU-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NI-T	P-T	PH-T	S-T	SE-T	SI-T	SN-T	SR-T	TL-T	VL-T	ZN-T
24/02/00	<0.03	0.27	<0.05	<0.05	0.244	<0.01	<0.05	97.8	<0.01	0.057	<0.05	0.004	0.18	4	37.8	0.03	0.002	10	<0.05	<1	<0.01	34	<0.03	<0.05	4.6	<0.01	0.48	<0.05	<0.05	0.01
20/06/00	<0.03	0.22	<0.05	<0.05	0.196	<0.02	<0.05	34.7	<0.01	<0.05	<0.05	0.001	0.18	2	22.4	0.03	0.002	3	<0.05	3.5	<0.01	<1	<0.03	<0.05	3.5	<0.01	0.267	<0.05	<0.05	0.01
12/09/00	<0.03	0.57	<0.05	0.09	0.15	<0.01	<0.05	68.2	0.001	<0.05	<0.05	0.003	0.91	<1	32.4	0.03	0.015	4	0.014	2	<0.01	<1	<0.03	<0.05	5.7	<0.01	0.246	<0.05	<0.05	0.03
Mean	0.003	0.35	0.005	0.06	0.197	0.001	0.05	74.2	0.001	0.022	0.005	0.026	0.47	2	27.9	0.02	0.006	6	0.009	2	0.01	18	0.03	0.005	4.6	0.01	0.331	0.018	0.005	0.02
Std. Deviation	0	0.19	0	0.02	0.047	0.001	0	23.1	0	0.03	0	0.032	0.39	0	8.6	0.01	0.008	4	0.005	0	0.01	23	0	0	0	0	0.129	0.012	0	0.01
Minimum Value	0.003	0.22	0.005	0.05	0.15	0.001	0.05	54.7	0.001	0.005	0.005	0.004	0.18	1	22.4	0.03	0.002	3	<0.05	1	0.01	1	0.03	0.005	3.5	0.01	0.246	0.005	0.005	0.01
Maximum Value	0.003	0.57	0.005	0.09	0.244	0.002	0.05	99.8	0.001	0.057	0.005	0.003	0.91	3	37.8	0.03	0.015	10	0.014	2	0.01	34	0.03	0.005	5.7	0.01	0.48	0.006	0.005	0.03
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

JAN 2000 - DEC 2000

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BU-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NI-D	P-D	PH-D	S-D	SE-D	SI-D	SN-D	SR-D	TL-D	VL-D	ZN-D
24/02/00	<0.03	0.09	<0.05	<0.05	0.182	<0.01	<0.05	38.5	<0.01	<0.05	<0.05	<0.02	0.18	6	37.5	0.03	<0.02	10	<0.05	<1	<0.01	35	<0.03	<0.05	5	<0.01	0.453	<0.05	<0.05	<0.01
20/06/00	<0.03	0.11	<0.05	<0.05	0.177	<0.01	<0.05	53.9	<0.01	<0.05	<0.05	0.002	0.01	1	20.3	0.03	0.002	4	<0.05	4.2	<0.01	<0.03	<0.05	4.2	<0.01	0.215	0.006	<0.05	<0.05	<0.01
12/09/00	<0.03	0.09	<0.05	<0.05	0.021	<0.01	<0.05	57.1	<0.01	<0.05	<0.05	0.005	0.04	<1	20.3	<0.01	<0.02	4	0.009	4	<0.01	12	<0.03	<0.05	3.6	<0.01	0.184	<0.05	<0.05	0.01
Mean	0.003	0.11	0.005	0.05	0.071	0.001	0.05	66.5	0.001	0.005	0.005	0.004	0.08	3	27.1	0.02	0.002	6	0.006	2	0.01	20	0.03	0.005	4.3	0.01	0.244	0.005	0.005	0.01
Std. Deviation	0	0.03	0	0	0.094	0	0	19.1	0	0	0	0.002	0.1	0	9.1	0.01	0	0	0.002	2	0	0	0	0	0	0	0.147	0.001	0	0
Minimum Value	0.003	0.09	0.005	0.05	0.177	0.001	0.05	53.9	0.001	0.005	0.005	0.002	0.01	1	20.3	0.03	0.002	4	0.005	1	0.01	12	0.03	0.005	3.6	0.01	0.184	0.005	0.005	0.01
Maximum Value	0.003	0.11	0.005	0.05	0.182	0.002	0.05	88.5	0.001	0.005	0.005	0.005	0.2	6	37.5	0.03	0.002	10	0.009	4	0.01	35	0.03	0.005	5	0.01	0.453	0.006	0.005	0.01
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

JAN 2000 - DEC 2000

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BU-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NI-T	P-T	PH-T	S-T	SE-T	SI-T	SN-T	SR-T	TL-T	VL-T	ZN-T	
24/02/00	<0.03	0.33	<0.05	<0.05	0.146	<0.01	0.06	83.6	<0.01	<0.05	<0.05	0.028	0.35	3	40	<0.01	0.03	<0.02	6	0.005	<1	0.02	44	<0.03	<0.05	5	<0.01	0.372	0.028	0.009	0.02
20/06/00	<0.03	0.27	<0.05	<0.05	0.186	<0.01	<0.05	74.8	<0.01	<0.05	<0.05	0.021	0.35	2	33.1	0.03	<0.02	5	<0.05	<1	<0.01	<0.01	<0.03	<0.05	4.2	<0.01	0.301	0.042	0.009	0.02	
12/09/00	<0.03	0.11	<0.05	<0.05	0.143	<0.01	<0.05	48	<0.01	0.024	0.017	0.015	0.91	2	20.1	0.03	0.004	<1	0.008	<1	0.01	<0.01	<0.03	<0.05	5.4	<0.01	0.278	0.041	0.014	0.04	
Mean	0.003	0.282	<0.05	<0.05	0.143	<0.01	<0.05	66.5	<0.01	<0.05	<0.05	0.019	0.36	1	17.2	0.04	<0.02	3	0.002	2	<0.01	<0.01	<0.03	<0.05	5.3	<0.01	0.317	0.043	0.005	<0.01	
Std. Deviation	0.003	0.182	<0.05	<0.05	0.169	<0.01	<0.05	44.1	<0.01	<0.05	<0.05	0.006	0.12	<1	21.6	0.02	0.006	<0.01	0.013	3	<0.01	<0.01	<0.03	<0.05	8.3	<0.01	0.152	0.054	0.021	<0.01	
Minimum Value	<0.01	0.11	<0.05	<0.05	0.143	<0.01	<0.05	38.5	<0.01	<0.05	<0.05	0.006	0.04	<1	21.6	0.02	0.006	<0.01	0.013	3	<0.01	<0.01	<0.03	<0.05	6.7	<0.01	0.183	0.026	<0.05	<0.01	
Maximum Value	<0.01	0.33	<0.05	<0.05	0.186	<0.01	<0.05	88.5	<0.01	<0.05	<0.05	0.04	0.91	2	37.9	0.03	<0.02	7	<0.05	9	<0.01	<0.01	<0.03	<0.05	5.1	<0.01	0.311	0.049	<0.05	0.02	
Num. Values	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	

JAN 2000 - DEC 2000

Date	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BU-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NI-D	P-D	PH-D	S-D	SE-D	SI-D	SN-D	SR-D	TL-D	VL-D	ZN-D
24/02/00	<0.03	0.14	<0.05	<0.05	0.038	<0.01	<0.05	72.1	<0.01	<0.05	<0.05	0.016	<0.01	2	33.9	0.01	<0.02	6	<0.05	<1	0.02	48	<0.03	<0.05	4.6	<0.01	0.305	<0.05	<0.05	<0.01
20/06/00	<0.03	0.17	<0.05	<0.05	0.039	<0.01	<0.05	69	<0.01	<0.05	<0.05	0.005	0.04	<1	33.3	0.01	<0.02	5	<0.05	<1	<0.01	56	<0.03	<0.05	3.7	<0.01	0.241	0.011	<0.05	<0.01
12/09/00	<0.03	0.09	0.014	<0.05	0.021	<0.01	<0.05	37.4	<0.01	<0.05	<0.05	0.005	0.14	<1	17.1	<0.01	<0.02	<1	<0.05	<1	<0.01	11	<0.03	<0.05	4	<0.01	0.18	<0.05	<0.05	<0.01
Mean	0.003	0.15	<0.05	<0.05	0.038	<0.01	<0.05	74.8	<0.01	<0.05	<0.05	0.008	0.18	2	33.3	0.01	<0.02	6	0.002	<1	<0.01	56	<0.03	<0.05	4.2	<0.01	0.23	0.007	0.002	0.01
Std. Deviation	0.003	0.22	<0.05	<0.05	0.037	<0.01	<0.05	30.6	<0.01	<0.05	<0.05	<0.002	<0.01	<1	12.1	<0.01	<0.02	4	<0.05	<1	<0.01	14	<0.03	<0.05	4.8	<0.01	0.197	<0.05	<0.05	<0.01
Minimum Value	<0.03	<0.05	<0.05	<0.05	0.025	<0.01	<0.05	49.2	<0.01	<0.05	<0.05	0.011	0.04	<1	17.5	<0.01	<0.02	5	0.008	4	<0.01	18	<0.03	<0.05	3.3	<0.01	0.167	<0.05	<0.05	<0.01
Maximum Value	<0.03	0.07	<0.05	<0.05	0.066	<0.01	<0.05	88.5	<0.01	<0.05	<0.05	0.007	0.09	<2	34.8	<0.01	<0.02	7	<0.05	<1	<0.01	113	<0.03	<0.05	5	<0.01	0.246	<0.05	<0.05	<0.01
Num. Values	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

STATION: VA, wet fork Yamoussou Creek

STATION: VA, west fork Yangorda Creek

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BU-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NI-T	P-T	PH-T	S-T	SE-T	SI-T	SN-T	SR-T	TL-T	VT	ZN-T	
24/02/00	<0.03	0.33	<0.05	0.06	0.146	<0.01	0.06	83.6	<0.01	<0.05	<0.05	0.028	0.35	3	40	<0.01	0.03	<0.02	6	0.005	<1	0.02	44	<0.03	<0.05	5	<0.01	0.372	0.028	0.009	0.02
20/06/00	<0.03	0.27	<0.05	<0.05	0.186	<0.01	<0.05	74.8	<0.01	<0.05	<0.05	0.021	0.35	2	33.1	0.03	<0.02	5	<0.05	<1	<0.01	<0.01	<0.03	<0.05	4.2	<0.01	0.301	0.042	0.009	0.02	
12/09/00	<0.03	0.11	<0.05	<0.05	0.143	<0.01	<0.05	48	<0.01	0.024	0.017	0.015	0.91	2	20.1	0.03	0.004	<1	0.008	<1	0.01	<0.01	<0.03	<0.05	5.4	<0.01	0.278	0.041	0.014	0.04	
Mean	0.003	0.282	<0.05	<0.05	0.143	<0.01	<0.05	66.5	<0.01	0.014	0.008	0.018	0.26	1	17.2	0.04	<0.02	3	0.002	2	<0.01	<0.01	<0.03	<0.05	5.3	<0.01	0.317	0.043	0.005	<0.01	
Std. Deviation	0.003	0.182	<0.05	<0.05	0.169	<0.01	<0.05	44.1	<0.01	<0.05	<0.05	0.019	0.36	1	14.3	0.01	<0.02	3	0.006	3	<0.01	<0.01	<0.03	<0.05	8.3	<0.01	0.152	0.054	0.021	<0.01	
Minimum Value	<0.01	0.11	<0.05	<0.05	0.143	<0.01	<0.05	38.5	<0.01	<0.05	<0.05	0.006	0.12	<1	2	0.01	<0.02	3	0.002	3	<0.01	<0.01	<0.03	<0.05	6.2	<0.01	0.103	0.036	0.006	0.02	
Maximum Value	0.003	0.44	<0.05	0.06	0.276	<0.01	0.06	97.9	<0.01	<0.05	<0.05	0.04	0.91	3	40.0	0.03	0.019	<0.01	0.008	9	<0.01	<0.01	<0.03	<0.05	11.1	<0.01	0.427	0.062	0.022	0.04	
Num. Values	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
AG-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	
AL-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	
AS-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	
B-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	
BA-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
BE-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
BU-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
CA-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
CD-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
CO-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
CR-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
CU-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
FE-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
K-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
LI-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
MG-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
MS-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
MO-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
NA-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
NI-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
P-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
PH-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
S-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
SE-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
SI-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
SN-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
SR-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
TL-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
VT	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
ZN-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
JAN 2000 - DEC 2009	0.005	0.71	0.06	0.06	0.166	0.002	0.06	61.1	0.001	0.009	0.03	0.021	1.37	3	0.01	26.5	0.043	0.006	4	0.03	3.1	0.02	55	0.08	0.058	5.45	0.02	0.372	0.033	0.017	0.017
Std. Deviation	0.003	0.57	0.09	0.03	0.053	0.002	0.02	19.2	0	0.006	0.045	0.012	1.17	1	0	0.3	0.043	0.004	2	0.03	2.5	0.02	60	0.08	0.091	1.21	0.01	0.076	0.015	0	0.015
Minimum Value	0.003	0.09	0.005	0.05	0.076	0.005	0.01	31.9	0.001	0.005	0.005	0.01	0.16	1	0.01	10.7	0.007	0.002	1	0.005	0.3	0.01	1	0.03	0.005	4.2	0.01	0.152	0.01	0.2	0.005
Maximum Value	0.01	1.22	0.2	0.15	0.276	0.065	0.1	84.6	0.001	0.024	0.157	0.046	3.91	3	0.01	40	0.13	0.01	7	0.05	9	0.05	119	0.2	0.2	8.3	0.03	0.372	0.054	0.2	0.052
Num. Values	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
AG-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
AL-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
AS-T	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L												

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V6A, AEN Creek

	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	LI-T	MG-T	MO-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	TL-T	V-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
23/03/00	<0.03	0.13	<0.05	<0.5	0.156	<0.01	<0.5	45.5	0.003	<0.05	<0.05	0.004	0.15	1		8.2	<0.1	<0.02	<1	<0.05	<1	<0.1	8	<0.3	<0.05	5.1	<0.1	0.24	<0.05		<0.05	0.02
20/06/00	<0.03	0.17	<0.05	<0.5	0.165	0.001	<0.5	11.3	<0.01	<0.05	<0.05	0.004	0.25	1		2.2	<0.1	<0.02	2	<0.05	1	<0.1	<1	<0.3	<0.05	3.8	<0.1	0.088	0.014		<0.05	0.02
12/9/00	<0.03	0.05	<0.05	<0.5	0.102	<0.01	<0.5	26.4	<0.01	<0.05	<0.05	0.014	0.16	<1		4	<0.1	0.006	3	<0.05	4	<0.1	<0.3	<0.05	3.1	<0.1	0.061	<0.05		<0.05	0.04	
JAN 2000 - DEC 2000																																
Mean	0.003	0.12	0.005	0.05	0.141	0.001	0.05	27.7	0.002	0.005	0.005	0.007	0.19	1		4.8	0.01	0.003	2	0.005	2	0.01	4	0.03	0.005	4	0.01	0.13	0.008		0.005	0.03
Std. Deviation	0	0.06	0	0	0.034	0	0	17.1	0.001	0	0	0.006	0.06	0		3.1	0	0.002	1	0	2	0	5	0	0	1	0	0.097	0.005	0	0.01	
Minimum Value	0.003	0.05	0.005	0.05	0.102	0.001	0.05	11.3	0.001	0.005	0.005	0.004	0.15	1		2.2	0.01	0.002	1	0.005	1	0.01	1	0.03	0.005	3.1	0.01	0.061	0.005		0.005	0.02
Maximum Value	0.003	0.17	0.005	0.05	0.165	0.001	0.05	45.5	0.003	0.005	0.005	0.014	0.25	1		8.2	0.01	0.006	3	0.005	4	0.01	8	0.03	0.005	5.1	0.01	0.24	0.014		0.005	0.04
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	
	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	LI-D	MG-D	MO-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	TL-D	V-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
23/03/00	<0.03	0.06	<0.05	<0.5	0.145	<0.01	<0.5	45	<0.01	0.007	<0.05	<0.02	<0.1	3		8.3	<0.1	<0.02	<1	<0.05	<1	<0.1	8	<0.3	<0.05	5.6	<0.1	0.241	<0.05		<0.05	<0.1
20/06/00	<0.03	<0.05	<0.05	<0.5	0.013	<0.01	<0.5	10.2	<0.01	<0.05	<0.05	<0.02	0.16	1		2.4	<0.1	<0.02	3	<0.05	<1	<0.1	2	<0.3	<0.05	3.6	<0.1	0.049	<0.05		<0.05	<0.1
12/9/00	<0.03	<0.05	<0.05	<0.5	0.017	<0.01	<0.5	26.3	<0.01	<0.05	0.036	<0.02	<0.1	<1		5.3	<0.1	<0.02	3	<0.05	2	<0.1	11	<0.3	<0.05	3.2	<0.1	0.062	<0.05		<0.05	<0.1
JAN 2000 - DEC 2000																																
Mean	0.003	0.05	0.005	0.05	0.058	0.001	0.05	27.2	0.001	0.006	0.015	0.002	0.06	2		5.3	0.01	0.002	2	0.005	1	0.01	7	0.03	0.005	4.1	0.01	0.117	0.005		0.005	0.01
Std. Deviation	0	0.01	0	0	0.075	0	0	17.4	0	0.001	0.018	0	0.09	1		3	0	0	1	0	1	0	5	0	0	1.3	0	0.107	0	0	0	0
Minimum Value	0.003	0.05	0.005	0.05	0.013	0.001	0.05	10.2	0.001	0.005	0.005	0.002	0.01	1		2.4	0.01	0.002	1	0.005	1	0.01	2	0.03	0.005	3.2	0.01	0.049	0.005		0.005	0.01
Maximum Value	0.003	0.06	0.005	0.05	0.145	0.001	0.05	45	0.001	0.007	0.036	0.002	0.16	3		8.3	0.01	0.002	3	0.005	2	0.01	11	0.03	0.005	5.6	0.01	0.241	0.005		0.005	0.01
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

STATION: VGMAIN, Main Fork Vangorda Creek

	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	LI-T	MG-T	MO-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	TL-T	V-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
27/04/00	<0.03	0.21	<0.05	<0.5	0.203	<0.01	0.05	52.8	<0.01	<0.05	<0.05	0.018	0.17	1		22	0.11	<0.02	4	0.011	<1	<0.1		<0.3	<0.05	3.7	<0.1	0.257	0.035		0.008	0.03
15/05/00	<0.03	0.27	<0.05	<0.5	0.125	<0.01	<0.5	44.4	<0.01	0.005	0.171	0.01	0.28	1		16.4	<0.1	<0.02	<1	<0.05	<1	<0.1		<0.3	<0.05	4.3	<0.1	0.303	0.016		<0.05	0.1
20/06/00	<0.03	0.19	<0.05	<0.5	0.168	0.001	<0.5	16.8	<0.01	<0.05	<0.05	0.009	0.2	<1		5.6	<0.1	<0.02	2	<0.05	<1	<0.1	<1	<0.3	<0.05	2.7	<0.1	0.121	0.015		<0.05	<0.1
25/07/00	<0.03	<0.05	<0.05	<0.5	0.123	0.001	<0.5	24.4	0.003	0.024	<0.05	0.012	0.02	3		7.5	0.02	<0.02	3	0.038	2	<0.1	<0.3	<0.05	3.4	<0.1	0.229	0.021		0.038	0.06	
29/08/00	<0.03	0.32	<0.05	<0.5	0.108	<0.01	<0.5	33.4	<0.01	<0.05	<0.05	<0.02	0.64	1		10.2	0.02	<0.02	3	0.01	<1	<0.1	<0.3	<0.05	4.7	<0.1	0.14	0.011		0.007	0.11	
26/09/00	<0.01	0.37	<0.2	<0.1	0.06	<0.005	<0.1	37	<0.001	<0.01	<0.01	<0.01	0.58	<2	<0.01	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	<0.2	<0.03	0.05	
29/10/00	<0.03	0.38	<0.05	<0.5	0.225	0.002	<0.5	57.2	0.001	<0.05	0.029	0.042	1.01	4		20.6	0.03	<0.02	6	<0.05	5	<0.1	81	<0.3	<0.05	5.1	<0.1	0.246	0.048		<0.05	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	<0.01	25.9	0.005	<0.01	4	<0.05	<0.3	<0.05	<0.2	<0.2	<0.03	<0.2	4.82	0.294	<0.01	<0.2	<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	0.06	<2	<0.01	28	0.005	<0.01	3	<0.05	<0.3	<0.05	<0.2	<0.2	4.54	<0.03	0.321	<0.01	<0.2	<0.03	0.023	
JAN 2000 - DEC 2000																																
Mean	0.005	0.21	0.07	0.07	0.132	0.002	0.07	46.3	0.001	0.009	0.028	0.014	0.41	2	0.01	16.4	0.026	0.005	3	0.024	1.3	0.02	41	0.09	0.051	3.69	0.55	0.228	0.02	0	0.018	0.053
Std. Deviation	0.003	0.13	0.098	0.03	0.055	0.002	0.03	20.8	0.001	0.006	0.054	0.011	0.32	1	0	8.2	0.033	0.004	1	0.021	1.5	0.02	57	0.09	0.045	1.5	1.6	0.076	0.013	0	0.014	0.033
Minimum Value	0.003	0.05	0.005	0.05	0.06	0.001	0.05	16.8	0.001	0.005	0.005	0.002	0.06	1	0.01	5.6	0.005	0.002	1	0.005	0.3	0.01	1	0.03	0.005	0.2	0.01	0.121	0.01	0.2	0.005	0.01
Maximum Value	0.01	0.38	0.2	0.1	0.225	0.005	0.1	76.5	0.003	0.024	0.171	0.042	1.01	4	0.01	28	0.11	0.01	6	0.05	5	0.05	81	0.2	0.2	5.1	4.82	0.321	0.048	0.2	0.038	0.11
Num. Values	9	9	9	9	9	9	9	9	9	9	9	9	9	9	3	9	9	9	9	9	9	9	2	9	9	9	9	9	9	3	9	9
	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	LI-D	MG-D	MO-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	TL-D	V-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
27/04/00	<0.03	<0.5	<0.05	<0.5	0.03	<0.01	<0.5	47.5	<0.01	<0.05	<0.05	0.006	<0.1	<1		20.5	0.03	<0.02	4	<0.05	<1	<0.1	33	<0.3	<0.05	3.3	<0.1	0.167	0.007		<0.05	<0.1
15/05/00	<0.03	0.05	<0.05	<0.5	0.026	<0.01	<0.5	43.1	<0.01	<0.05	<0.05	0.007	0.08	<1		17.1	<0.1	<0.02	<1	<0.05	<1	<0.1		<0.3	<0.05	4.5	<0.1	0.228	<0.05		<0.05	0.1
20/06/00	<0.03	0.5	<0.05	<0.5	0.074	<0.01	<0.5	15.5	<0.01	<0.05	<0.05	<0.02	0.11	<1		4.6	<0.1	<0.02	<1	<0.05	<1	<0.1	<1	<0.3	<0.05	2.5	<0.1	0.08	<0.05		<0.05	<0.1
25/07/00	<0.03	<0.05	<0.05	<0.5	0.017	<0.01	<0.5	22.5	<0.01	0.026	<0.05	0.002	0.18	3		7.5	0.11	<0.02	3	0.019	2	<0.1	3	<0.3	<0.05	3.2	<0.1	0.135	<0.05		0.025	0.27
29/08/00	<0.03	0.09	<0.05	<0.5	0.011	<0.01	<0.5	36.8	<0.01	<0.05	<0.05	<0.02	<0.1	1		10	0.02	<0.02	3	0.012	<1	<0.1	11	<0.3	<0.05	4.3	<0.1	0.11	<0.05		<0.05	0.02
26/09/00	<0.01	0.08	<0.2	<0.1	0.05	<0.005	<0.1	30.4	<0.001	<0.01	<0.01	0.05	<2	<0.01	10	0.006	<0.01	<2	<0.05	<0.3	<0.05	<0.2	<0.2	4.07	<0.03	0.14	<0.01	<0.2	<0.03	0.025		
29/10/00	<0.03	0.16	<0.05	<0.5	0.033	0.001	<0.5	55.6	<0.01	<0.05	<0.05	0.015	0.2	2		21.3	0.07	<0.02	6	<0.05	<1	<0.1	85	<0.3	<0.05	5.2	<0.1	0.227	<0.05		<0.05	0.02
18/11/00	<0.01	<0.05	<0.2	<0.1	0.09	<0.005	<0.1	72.2	<0.001	<0.01	<0.01	<0.01	0.1	<2	<0.01	26	0.005	<0.01	<2	<0.05	<0.3	<0.05	<0.2	<0.2	<0.03	<0.2	4.8	0.201	<0.2	<0.2	<0.03	0.015
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	0.01	<2	<0.01	29	<0.005	<0.01	3	<0.05	<0.3	<0.05	<0.2	<0.2	4.49	<0.03	0.322	<0.01	<0.2	<0.03	0.022	
JAN 2000 - DEC 2000																																
Mean	0.004	0.07	0.07	0.07	0.04	0.002	0.07	44.5	0.001	0.009	0.007	0.007	0.07	2	0.01	16.3	0.007	0.005	3	0.022	0.9	0.02	29	0.09	0.051	3.53	0.55	0.189	0.009	0	0.017	0.055
Std. Deviation	0.003	0.09	0.09	0.03	0.029	0.002	0.03	20.5	0.001	0.006	0.054	0.004	0.3	1	0	8.5	0.027	0.004	2	0.02	1.3	0.02	32	0.09	0.04	1.49	1.6	0.083	0.009	0	0	0.04
Minimum Value	0.003	0.05	0.005	0.05	0.011	0.001	0.05	15.5	0.001	0.005	0.005	0.002	0.01	1	0.01	4.6	0.005	0.002	1	0.005	0.3	0.01	6	0.03	0.005	0.2	0.01	0.08	0.005	0.2	0.005	0.01
Maximum Value	0.01	0.16	0.2	0.1	0.09	0.005	0.1	76.5	0.001	0.026	0.1	0.015	0.2	2	0.01	29	0.18	0.01	6	0.05	2	0.05	85	0.2	0.2	5.2	4.8	0.322	0.01	0.2	0.035	0.27
Num. Values	7	9	9	9	9	9	9	9	9	9	9	9	9	9	3	9	9	9	9	9	9	9	5	9	9	9	9	9	9	3	9	9

YANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V4, Lower Yangorda Creek

Date	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BU-T	CA-T	CD-T	CO-T	CR-T	CUT	FE-T	K-T	LL-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PH-T	S-T	SE-T	SI-T	SN-T	SR-T	TH-T	TL-T	VT	ZN-T
2000-01-01	<0.03	0.23	<0.05	<0.05	<0.05	<0.01	<0.05	71.9	0.002	<0.05	0.004	0.027	0.23	3	<0.01	32.1	0.07	0.018	6	0.007	<1	0.04	24	<0.03	<0.05	4.7	<0.01	0.337	0.025	0.016	0.02
2000-01-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	78.3	0.002	0.027	<0.05	0.006	0.09	4	<0.01	33.6	0.09	0.002	1	<0.05	<1	<0.01	38	<0.03	<0.05	5	<0.01	0.383	<0.05	0.016	0.02
2000-02-01	<0.03	0.23	<0.05	<0.05	<0.05	<0.01	<0.05	81.6	0.002	0.027	<0.05	0.008	0.18	2	<0.01	34.2	0.09	0.002	3	<0.05	<1	<0.01	41	<0.03	<0.05	4.1	<0.01	0.426	0.019	0.017	0.02
2000-02-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	85.0	0.002	0.027	<0.05	0.012	0.25	2	<0.01	34.8	0.09	0.002	2	<0.05	<1	<0.01	44	<0.03	<0.05	3.8	<0.01	0.469	0.019	0.017	0.02
2000-03-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	88.4	0.002	0.027	<0.05	0.016	0.35	1	<0.01	35.4	0.09	0.002	1	<0.05	<1	<0.01	47	<0.03	<0.05	3.5	<0.01	0.512	0.019	0.017	0.02
2000-03-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	91.8	0.002	0.027	<0.05	0.020	0.45	1	<0.01	36.0	0.09	0.002	1	<0.05	<1	<0.01	50	<0.03	<0.05	3.2	<0.01	0.555	0.019	0.017	0.02
2000-04-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	95.2	0.002	0.027	<0.05	0.024	0.55	1	<0.01	36.6	0.09	0.002	1	<0.05	<1	<0.01	53	<0.03	<0.05	2.9	<0.01	0.598	0.019	0.017	0.02
2000-04-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	98.6	0.002	0.027	<0.05	0.028	0.65	1	<0.01	37.2	0.09	0.002	1	<0.05	<1	<0.01	56	<0.03	<0.05	2.6	<0.01	0.641	0.019	0.017	0.02
2000-05-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	102.0	0.002	0.027	<0.05	0.032	0.75	1	<0.01	37.8	0.09	0.002	1	<0.05	<1	<0.01	59	<0.03	<0.05	2.3	<0.01	0.684	0.019	0.017	0.02
2000-05-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	105.4	0.002	0.027	<0.05	0.036	0.85	1	<0.01	38.4	0.09	0.002	1	<0.05	<1	<0.01	62	<0.03	<0.05	2.0	<0.01	0.727	0.019	0.017	0.02
2000-06-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	108.8	0.002	0.027	<0.05	0.040	0.95	1	<0.01	39.0	0.09	0.002	1	<0.05	<1	<0.01	65	<0.03	<0.05	1.7	<0.01	0.770	0.019	0.017	0.02
2000-06-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	112.2	0.002	0.027	<0.05	0.044	1.05	1	<0.01	39.6	0.09	0.002	1	<0.05	<1	<0.01	68	<0.03	<0.05	1.4	<0.01	0.813	0.019	0.017	0.02
2000-07-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	115.6	0.002	0.027	<0.05	0.048	1.15	1	<0.01	40.2	0.09	0.002	1	<0.05	<1	<0.01	71	<0.03	<0.05	1.1	<0.01	0.856	0.019	0.017	0.02
2000-07-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	119.0	0.002	0.027	<0.05	0.052	1.25	1	<0.01	40.8	0.09	0.002	1	<0.05	<1	<0.01	74	<0.03	<0.05	0.8	<0.01	0.899	0.019	0.017	0.02
2000-08-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	122.4	0.002	0.027	<0.05	0.056	1.35	1	<0.01	41.4	0.09	0.002	1	<0.05	<1	<0.01	77	<0.03	<0.05	0.5	<0.01	0.942	0.019	0.017	0.02
2000-08-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	125.8	0.002	0.027	<0.05	0.060	1.45	1	<0.01	42.0	0.09	0.002	1	<0.05	<1	<0.01	80	<0.03	<0.05	0.2	<0.01	0.985	0.019	0.017	0.02
2000-09-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	129.2	0.002	0.027	<0.05	0.064	1.55	1	<0.01	42.6	0.09	0.002	1	<0.05	<1	<0.01	83	<0.03	<0.05	<0.01	<0.01	1.028	0.019	0.017	0.02
2000-09-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	132.6	0.002	0.027	<0.05	0.068	1.65	1	<0.01	43.2	0.09	0.002	1	<0.05	<1	<0.01	86	<0.03	<0.05	<0.01	<0.01	1.071	0.019	0.017	0.02
2000-10-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	136.0	0.002	0.027	<0.05	0.072	1.75	1	<0.01	43.8	0.09	0.002	1	<0.05	<1	<0.01	89	<0.03	<0.05	<0.01	<0.01	1.114	0.019	0.017	0.02
2000-10-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	139.4	0.002	0.027	<0.05	0.076	1.85	1	<0.01	44.4	0.09	0.002	1	<0.05	<1	<0.01	92	<0.03	<0.05	<0.01	<0.01	1.157	0.019	0.017	0.02
2000-11-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	142.8	0.002	0.027	<0.05	0.080	1.95	1	<0.01	45.0	0.09	0.002	1	<0.05	<1	<0.01	95	<0.03	<0.05	<0.01	<0.01	1.200	0.019	0.017	0.02
2000-11-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	146.2	0.002	0.027	<0.05	0.084	2.05	1	<0.01	45.6	0.09	0.002	1	<0.05	<1	<0.01	98	<0.03	<0.05	<0.01	<0.01	1.243	0.019	0.017	0.02
2000-12-01	<0.03	0.27	<0.05	<0.05	<0.05	<0.01	<0.05	149.6	0.002	0.027	<0.05	0.088	2.15	1	<0.01	46.2	0.09	0.002	1	<0.05	<1	<0.01	101	<0.03	<0.05	<0.01	<0.01	1.286	0.019	0.017	0.02
2000-12-15	<0.03	0.16	<0.05	<0.05	<0.05	<0.01	<0.05	153.0	0.002	0.027	<0.05	0.092	2.25	1	<0.01	46.8	0.09	0.002	1	<0.05	<1	<0.01	104	<0.03	<0.05	<0.01	<0.01	1.329	0.019	0.017	0.02

JAN-2000 - DEC-2000																																	
	Mean	Std. Deviation	Minimum Value	Maximum Value	Nom. Value																												
01-14	0.054	0.06	0.005	0.06	53.8	0.001	0.012	0.008	0.007	0.19	2	3.01	21.7	0.042	0.004	4	0.017	1.2	0.02	34	0.07	0.04	3.54	0.41	0.233	0.007	0.2	0.013	0.009	0.006	0.005	0.005	0.005
01-19	0.088	0.02	0.042	0.001	21.2	0	0.012	0.004	0.004	0.39	1	0	10.2	0.046	0.004	2	0.02	1.3	0.02	33	0.08	0.075	1.42	1.38	0.091	0.004	0	0.011	0.006	0.006	0.006	0.006	0.006
02-05	0.005	0.035	0.022	0.001	0.05	21	0.001	0.005	0.002	0.01	1	0.01	7.4	0.01	0.002	1	0.005	0.3	0.01	7	0.09	0.005	0.01	0.009	0.005	0.02	0.005	0.005	0.005	0.005	0.005	0.005	0.005
02-11	0.2	0.1	0.161	0.005	0.1	87.6	0.001	0.016	0.012	1.41	3	0.01	36	0.17	0.01	7	0.038	5	0.05	109	0.2	0.2	5.4	4.81	0.375	0.02	0.2	0.03	0.12	0.12	0.12	0.12	0.12
03-04	0.12	0.12	0.12	0.12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	8	12	12	12	12	12	12	3	12	12	12	12	12	12

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V17A, Runoff from ore transfer pad

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BL-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-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	TL-T	V-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
20/06/00	<0.03	0.71	<0.03	<0.5	0.182	0.002	<0.5	38.7	<0.01	<0.05	<0.05	0.012	0.94	1		4.8	<0.1	<0.02	2	0.006	<1	<0.1	<1	<0.3	<0.05	3.7	<0.1	0.204	0.023		<0.05	0.04
JAN 2000 - DEC 2000																																
Mean	0.003	0.71	0.005	0.05	0.182	0.002	0.05	38.7	0.001	0.005	0.005	0.012	0.94	1		4.8	0.01	0.002	2	0.006	1	0.01	1	0.03	0.005	3.7	0.01	0.204	0.023		0.005	0.04
Std. Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Value	0.003	0.71	0.005	0.05	0.182	0.002	0.05	38.7	0.001	0.005	0.005	0.012	0.94	1		4.8	0.01	0.002	2	0.006	1	0.01	1	0.03	0.005	3.7	0.01	0.204	0.023		0.005	0.04
Maximum Value	0.003	0.71	0.005	0.05	0.182	0.002	0.05	38.7	0.001	0.005	0.005	0.012	0.94	1		4.8	0.01	0.002	2	0.006	1	0.01	1	0.03	0.005	3.7	0.01	0.204	0.023		0.005	0.04
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-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	TL-D	V-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
20/06/00	<0.03	0.09	<0.05	<0.5	0.02	0.001	<0.5	34.7	<0.01	<0.05	<0.05	0.006	0.14	2		5.6	<0.1	0.003	2	<0.05	<1	<0.1	3	<0.3	<0.05	3.5	<0.1	0.157	<0.05		<0.05	<0.1
JAN 2000 - DEC 2000																																
Mean	0.003	0.09	0.005	0.05	0.02	0.001	0.05	34.7	0.001	0.005	0.005	0.006	0.14	2		5.6	0.01	0.003	2	0.005	1	0.01	3	0.03	0.005	3.5	0.01	0.157	0.005		0.005	0.01
Std. Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Value	0.003	0.09	0.005	0.05	0.02	0.001	0.05	34.7	0.001	0.005	0.005	0.006	0.14	2		5.6	0.01	0.003	2	0.005	1	0.01	3	0.03	0.005	3.5	0.01	0.157	0.005		0.005	0.01
Maximum Value	0.003	0.09	0.005	0.05	0.02	0.001	0.05	34.7	0.001	0.005	0.005	0.006	0.14	2		5.6	0.01	0.003	2	0.005	1	0.01	3	0.03	0.005	3.5	0.01	0.157	0.005		0.005	0.01
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

STATION: V20, Vangorda pit, NE Interceptor ditch

	AG-T	AL-T	AS-T	B-T	BA-T	BE-T	BL-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-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	TL-T	V-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
20/06/00	<0.03	0.14	<0.05	<0.5	0.18	0.001	<0.5	32.8	<0.01	0.006	<0.05	0.01	0.1	2		6.5	<0.1	<0.02	2	0.012	<1	<0.1	<1	<0.3	<0.05	3.9	<0.1	0.173	0.009		<0.05	<0.1
12/9/00	<0.03	0.1	<0.05	0.07	0.132	<0.01	<0.5	25.4	<0.01	<0.05	<0.05	0.016	0.14	<1		5.8	<0.1	<0.02	3	<0.05	<1	<0.1	<1	<0.3	<0.05	5.2	<0.1	0.052	<0.05		0.014	0.04
JAN 2000 - DEC 2000																																
Mean	0.003	0.12	0.005	0.06	0.156	0.001	0.05	29.1	0.001	0.005	0.005	0.013	0.12	2		6.2	0.01	0.002	2	0.008	1	0.01	1	0.03	0.005	4.5	0.01	0.112	0.007		0.01	0.02
Std. Deviation	0	0.03	0	0.01	0.024	0	0	5.2	0	0.001	0	0.004	0.03	1		0.5	0	0	1	0.005	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Value	0.003	0.1	0.005	0.05	0.132	0.001	0.05	25.4	0.001	0.005	0.005	0.01	0.1	1		5.8	0.01	0.002	2	0.005	1	0.01	1	0.03	0.005	3.9	0.01	0.052	0.005		0.005	0.01
Maximum Value	0.003	0.14	0.005	0.07	0.18	0.001	0.05	32.8	0.001	0.006	0.005	0.016	0.14	2		6.5	0.01	0.002	3	0.012	1	0.01	1	0.03	0.005	5.2	0.01	0.173	0.009		0.014	0.04
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

	AG-D	AL-D	AS-D	B-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-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	TL-D	V-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
20/06/00	<0.03	0.07	<0.05	<0.5	0.028	0.001	<0.5	34	<0.01	<0.05	<0.05	0.007	0.11	2		6.5	<0.1	<0.02	3	<0.05	<1	<0.1	5	<0.3	<0.05	5	<0.1	0.162	<0.05		<0.05	<0.1
12/9/00	<0.03	<0.5	<0.05	<0.5	0.017	<0.01	<0.5	24.6	<0.01	<0.05	<0.05	0.012	<0.1	1		6.6	<0.1	<0.02	5	<0.05	7	<0.1	3	<0.3	<0.05	4.9	<0.1	0.086	<0.05		<0.05	<0.1
JAN 2000 - DEC 2000																																
Mean	0.003	0.06	0.005	0.05	0.023	0.001	0.05	29.3	0.001	0.005	0.005	0.01	0.06	2		6.5	0.01	0.002	4	0.005	4	0.01	4	0.03	0.005	5	0.01	0.124	0.005		0.005	0.01
Std. Deviation		0.01		0	0	0.008		6.6	0	0	0	0.004	0.07	1		0.1	0	0	1	0	4	0	1	0	0	0	0	0	0	0	0	0
Minimum Value	0.003	0.05	0.005	0.05	0.017	0.001	0.05	24.6	0.001	0.005	0.005	0.007	0.01	1		6.5	0.01	0.002	3	0.005	1	0.01	3	0.03	0.005	4.9	0.01	0.086	0.005		0.005	0.01
Maximum Value	0.003	0.07	0.005	0.05	0.028	0.001	0.05	34	0.001	0.005	0.005	0.012	0.11	2		6.6	0.01	0.002	5	0.005	7	0.01	5	0.03	0.005	5	0.01	0.162	0.005		0.005	0.01
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

VANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V22, Vangorda pit water

	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	LI-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	TL-T	V-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	
22/03/00	<.003	0.53	<.005	0.1	0.155	<.001	<.05	103.4	0.044	0.273	<.005	0.017	0.09	4		59.1	14.53	0.015	9	0.234	<1	0.05	199	<.03	<.005	3.4	<.01	1.905	0.023		<.005	43.76
20/06/00	<.003	0.82	<.005	<.05	0.208	0.002	<.05	40.8	0.016	0.011	<.005	0.069	1.26	2		13.6	1.02	<.002	3	0.056	6	0.03	<1	<.03	<.005	3.7	<.01	0.428	0.03		<.005	4.62
12/9/00	<.003	0.26	0.024	0.05	0.122	<.001	<.05	92.5	0.047	0.143	<.005	0.03	0.42	<1		30.5	6.21	0.042	5	0.175	13	0.11	0.07	<.005	2.7	<.01	0.613	0.006		<.005	21.84	
JAN 2000 - DEC 2000																																
Mean	0.003	0.54	0.011	0.07	0.162	0.001	0.05	98.9	0.036	0.142	0.005	0.039	0.59	2		34.4	7.25	0.02	6	0.155	7	0.06	100	0.04	0.005	3.3	0.01	0.982	0.02		0.005	23.41
Std. Deviation	0	0.28	0.011	0.03	0.043	0.001	0	61.6	0.017	0.131	0	0.027	0.6	2		23	6.82	0.02	3	0.091	6	0.04	140	0.02	0	0.5	0	0.805	0.012	0	0	19.62
Minimum Value	0.003	0.26	0.005	0.05	0.122	0.001	0.05	40.8	0.016	0.011	0.005	0.017	0.09	1		13.6	1.02	0.002	3	0.056	1	0.03	1	0.03	0.005	2.7	0.01	0.428	0.006		0.005	4.62
Maximum Value	0.003	0.82	0.024	0.1	0.208	0.002	0.05	103.4	0.047	0.273	0.005	0.069	1.26	4		59.1	14.53	0.042	9	0.234	13	0.11	199	0.07	0.005	3.7	0.01	1.905	0.03		0.005	43.76
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	2	3	3	3	3	3	3	3		3	3

	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	LI-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	TL-D	V-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
22/03/00	<.003	0.41	<.005	0.05	0.068	<.001	<.05	151.1	0.027	0.227	<.005	<.002	0.03	7		57.5	12.41	<.002	6	0.174	<1	<.01	196	<.03	<.005	2.7	<.01	1.608	<.005		<.005	18.41
20/06/00	<.003	0.47	<.005	<.05	0.056	0.001	<.05	40.3	<.001	<.005	0.027	0.53	2			12.1	0.36	<.002	3	0.014	<1	<.01	36	<.03	<.005	3.1	<.01	0.317	0.013		<.005	1.91
12/9/00	<.003	0.07	<.005	<.05	0.067	<.001	<.05	96.1	0.008	0.057	<.005	0.015	<.01	2		30.6	3.42	<.002	6	0.098	6	<.01	119	<.03	<.005	0.6	<.01	0.614	<.005		<.005	3.05
JAN 2000 - DEC 2000																																
Mean	0.003	0.32	0.005	0.05	0.064	0.001	0.05	95.8	0.012	0.096	0.005	0.015	0.19	4		33.4	5.4	0.002	5	0.095	3	0.01	117	0.03	0.005	2.1	0.01	0.846	0.008		0.005	7.49
Std. Deviation	0	0.22	0	0	0.007	0	0	55.4	0.013	0.116	0	0.013	0.29	3		22.8	6.26	0	2	0.08	3	0	80	0	0	13	0	0.676	0.005	0	0	9.51
Minimum Value	0.003	0.07	0.005	0.05	0.056	0.001	0.05	40.3	0.001	0.005	0.005	0.002	0.01	2		12.1	0.36	0.002	3	0.014	1	0.01	36	0.03	0.005	0.6	0.01	0.317	0.005		0.005	1.91
Maximum Value	0.003	0.47	0.005	0.05	0.068	0.001	0.05	151.1	0.027	0.227	0.005	0.027	0.53	7		57.5	12.41	0.002	6	0.174	6	0.01	196	0.03	0.005	3.1	0.01	1.608	0.013		0.005	18.41
Num. Values	3	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	

STATION: V21, Grum Pit Water

	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	LI-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	TL-T	V-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
22/03/00	<.003	0.39	<.005	<.05	0.2	<.001	<.05	101.4	0.018	0.114	<.005	0.013	0.08	8		56.1	0.66	0.006	7	0.176	<1	<.01	102	<.03	<.005	4.3	<.01	1.146	0.006		<.005	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		22.5	0.02	<.002	9	0.013	10	<.01	<1	<.03	<.005	0.3	<.01	0.339	0.022		<.005	0.02
26/06/00	<.003	0.23	<.005	<.05	0.117	0.002	<.05	91.2	0.029	0.073	<.005	0.021	0.16	5		49.6	0.59	<.002	10	0.221	8	<.01	0.09	<.005	2.5	<.01	0.804	0.031		0.023	5.92	
12/9/00	<.003	0.29	<.005	<.05	0.119	<.001	<.05	112.2	0.049	0.076	<.005	0.051	0.18	2		60.1	0.86	0.018	14	0.275	3	<.01	0.12	<.005	2.5	<.01	0.927	0.008		<.005	11.94	
JAN 2000 - DEC 2000																																
Mean	0.003	0.34	0.005	0.05	0.154	0.002	0.05	92.1	0.024	0.067	0.005	0.024	0.21	5		47.1	0.53	0.007	10	0.171	6	0.01	52	0.07	0.005	2.4	0.01	0.804	0.017		0.009	6.27
Std. Deviation	0	0.1	0	0	0.043	0.001	0	20.8	0.02	0.045	0	0.018	0.15	2		16.9	0.26	0.008	3	0.113	4	0	71	0.04	0	1.6	0	0.341	0.012	0	0	4.91
Minimum Value	0.003	0.23	0.005	0.05	0.117	0.001	0.05	63.7	0.001	0.005	0.005	0.013	0.08	2		22.5	0.02	0.002	7	0.013	1	0.01	1	0.03	0.005	0.3	0.01	0.339	0.006		0.005	0.02
Maximum Value	0.003	0.46	0.005	0.05	0.2	0.002	0.05	112.2	0.049	0.114	0.005	0.051	0.43	8		60.1	0.86	0.018	14	0.275	10	0.01	102	0.12	0.005	4.3	0.01	1.146	0.031		0.023	11.94
Num. Values	4	4	4	4	4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	2	4	4	4	4	4	4		4	4

	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	LI-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	TL-D	V-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
22/03/00	<.003	0.25	<.005	<.05	0.087	<.001	<.05	95.4	0.003	0.062	<.005	<.002	<.01	6		54.6	0.59	0.005	7	0.11	<.01	<.01	97	<.03	<.005	3.2	<.01	1.112	<.005		<.005	0.3
20/06/00	<.003	0.15	<.005	<.05	0.07	0.001	<.05	63.5	<.001	<.005	0.01	0.15	5			22.3	0.12	<.002	9	<.005	1	<.01	64	<.03	<.005	0.4	<.01	0.366	0.006		<.005	0.02
26/06/00	<.003	<.05	<.005	<.05	0.024	0.001	<.05	87.3	0.006	0.018	<.005	0.013	<.01	5		50.2	1.28	<.002	11	0.121	7	<.01	112	0.06	<.005	2.1	<.01	0.734	0.009		<.005	0.69
12/9/00	<.003	0.14	<.005	<.05	0.063	<.001	<.05	120.5	0.014	0.042	<.005	0.016	<.01	4		65.1	1.48	<.002	16	0.109	5	<.01	163	<.03	<.005	1.9	<.01	0.959	<.005		<.005	0.48
JAN 2000 - DEC 2000																																
Mean	0.003	0.15	0.005	0.05	0.061	0.001	0.05	91.7	0.006	0.037	0.005	0.01	0.05	5		48	0.87	0.003	11	0.086	4	0.01	109	0.04	0.005	1.9	0.01	0.793	0.006		0.005	0.37
Std. Deviation	0	0.08	0	0	0.027	0	0	23.5	0.006	0.024	0	0.006	0.07	1		18.3	0.63	0.001	4	0.054	3	0	41	0.01	0	1.2	0	0.324	0.002	0	0	0.28
Minimum Value	0.003	0.05	0.005	0.05	0.024	0.001	0.05	63.5	0.001	0.005	0.005	0.002	0.01	4		22.3	0.12	0.002	7	0.005	1	0.01	64	0.03	0.005	0.4	0.01	0.366	0.005		0.005	0.02
Maximum Value	0.003	0.25	0.005	0.05	0.087	0.001	0.05	120.5	0.014	0.062	0.005	0.016	0.15	6		65.1	1.48	0.005	16	0.121	7	0.01	163	0.06	0.005	2.2	0.01	1.112	0.009		0.005	0.69
Num. Values	4	4	4	4	4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	4	4	4	4	4		4	4

YANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V33A, Gram Pm Water Holding Pond

Date	AG-T	AL-T	AS-T	BA-T	BE-T	BU-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NI-T	PI-T	SE-T	SE-T	SN-T	SR-T	TH-T	TL-T	V-T	ZN-T
23/09/99	<0.01	0.46	<0.2	<0.1	0.05	<0.005	<0.1	<0.001	<0.01	<0.01	<0.01	0.44	<2	<0.01	5	0.031	<0.01	<2	<0.05	<0.3	<0.2	3.54	<0.03	0.108	<0.01	<0.2	<0.03	0.18
JAN 2000 - DEC 2000																												
Mean	0.01	0.46	0.2	0.1	0.05	0.005	0.1	0.001	0.01	0.01	0.01	0.44	2	0.01	5	0.031	0.01	2	0.05	0.3	0.2	3.54	0.03	0.108	0.01	0.2	0.03	0.18
Std. Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Value	0.01	0.46	0.2	0.1	0.05	0.005	0.1	0.001	0.01	0.01	0.01	0.44	2	0.01	5	0.031	0.01	2	0.05	0.3	0.2	3.54	0.03	0.108	0.01	0.2	0.03	0.18
Maximum Value	0.01	0.46	0.2	0.1	0.05	0.005	0.1	0.001	0.01	0.01	0.01	0.44	2	0.01	5	0.031	0.01	2	0.05	0.3	0.2	3.54	0.03	0.108	0.01	0.2	0.03	0.18
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Date	AG-D	AL-D	AS-D	BA-D	BE-D	BU-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NI-D	PI-D	SE-D	SE-D	SN-D	SR-D	TH-D	TL-D	V-D	ZN-D
23/09/99	<0.01	0.22	<0.2	<0.1	0.04	<0.005	<0.1	<0.001	<0.01	<0.01	<0.01	0.21	<2	<0.01	5.2	0.021	<0.01	<2	<0.05	<0.2	<0.2	3.51	<0.03	0.113	<0.01	<0.2	<0.03	0.15
JAN 2000 - DEC 2000																												
Mean	0.01	0.22	0.2	0.1	0.04	0.005	0.1	0.001	0.01	0.01	0.01	0.21	2	0.01	5.2	0.021	0.01	2	0.05	0.3	0.2	3.51	0.03	0.113	0.01	0.2	0.03	0.15
Std. Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Value	0.01	0.22	0.2	0.1	0.04	0.005	0.1	0.001	0.01	0.01	0.01	0.21	2	0.01	5.2	0.021	0.01	2	0.05	0.3	0.2	3.51	0.03	0.113	0.01	0.2	0.03	0.15
Maximum Value	0.01	0.22	0.2	0.1	0.04	0.005	0.1	0.001	0.01	0.01	0.01	0.21	2	0.01	5.2	0.021	0.01	2	0.05	0.3	0.2	3.51	0.03	0.113	0.01	0.2	0.03	0.15
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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
23/09/99	<0.01	0.22	<0.2	<0.1	0.04	<0.005	<0.1	20.9	<0.001	<0.01	<0.01	0.21	<2	<0.01	5.2	0.01	<0.01	<2	<0.05	<0.2	3.51	<0.03	0.113	<0.01	<0.2	<0.03	0.15	
JAN 2000 - DEC 2000																												
Mean	0.01	0.22	0.2	0.1	0.04	0.005	0.1	20.9	0.001	0.01	0.01	0.21	2	0.01	5.2	0.01	0.01	2	0.05	0.2	3.51	0.03	0.113	0.01	0.2	0.03	0.15	
Std. Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Minimum Value	0.01	0.22	0.2	0.1	0.04	0.005	0.1	20.9	0.001	0.01	0.01	0.21	2	0.01	5.2	0.01	0.01	2	0.05	0.2	3.51	0.03	0.113	0.01	0.2	0.03	0.15	
Maximum Value	0.01	0.22	0.2	0.1	0.04	0.005	0.1	20.9	0.001	0.01	0.01	0.21	2	0.01	5.2	0.01	0.01	2	0.05	0.2	3.51	0.03	0.113	0.01	0.2	0.03	0.15	
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		

STATION: V34BIS, Below Shores Pond at the weir

Date	AG-T	AL-T	AS-T	BA-T	BE-T	BU-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MS-T	MO-T	NA-T	NI-T	PI-T	SE-T	SE-T	SN-T	SR-T	TH-T	TL-T	V-T	ZN-T		
23/06/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
23/07/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
23/08/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
23/09/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
23/10/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
23/11/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
23/12/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	47.8	<0.01	<0.05	<0.05	0.025	0.12	3	<0.01	11.2	0.07	<0.02	5	0.012	4	<0.05	<0.05	<0.01	0.251	0.016	<0.05	<0.05	0.31		
JAN 2000 - DEC 2000																														
Mean	0.006	0.21	0.039	0.07	0.003	0.03	43.4	0.001	0.011	0.005	0.02	0.79	3	0.01	8.6	0.052	0.005	4	0.029	0.8	0.03	11	0.1	0.064	0.231	0.027	0.2	0.026	0.145	
Std. Deviation	0.004	0.68	0.04	0.03	0.07	0.002	8.6	0	0.009	0.002	0.036	1.16	1	0	2	0.033	0.004	1	0.02	0.6	0.02	14	0.09	0.093	0.249	0.031	0.023	0	0.017	0.08
Minimum Value	0.003	0.05	0.005	0.05	0.001	0.05	33.1	0.001	0.005	0.005	0.01	0.1	2	0.01	6.2	0.005	0.002	3	0.003	0.3	0.01	1	0.03	0.005	0.2	0.014	0.01	0.005	0.02	
Maximum Value	0.01	2	0.2	0.1	0.005	0.05	46.5	0.001	0.01	0.01	0.04	3.22	4	0.01	11.2	0.09	0.01	7	0.03	2	0.05	21	0.2	0.2	0.288	0.065	0.3	0.053	0.31	
Num. Values	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7			

Date	AO-T	AL-D	AS-D	BA-D	BE-D	BU-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NI-D	PI-D	SE-D	SE-D	SN-D	SR-D	TH-D	TL-D	V-D	ZN-D		
23/06/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
23/07/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
23/08/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
23/09/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
23/10/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
23/11/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
23/12/99	<0.03	0.25	<0.05	0.05	0.002	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	11.6	0.08	<0.02	5	<0.03	44	<0.03	<0.05	5.9	<0.01	0.257	<0.05	<0.05	0.21	<0.05		
JAN 2000 - DEC 2000																														
Mean	0.006	0.21	0.039	0.07	0.003	0.03	46.7	0.001	0.011	0.005	0.009	0.1	2	11.6	0.08	0.052	0.005	4	0.029	0.8	0.03	11	0.1	0.064	0.231	0.027	0.2	0.026	0.145	
Std. Deviation	0.004	0.68	0.04	0.03	0.07	0.002	8.6	0	0.009	0.002	0.036	1.16	1	0	2	0.033	0.004	1	0.02	0.6	0.02	14	0.09	0.093	0.249	0.031	0.023	0	0.017	0.08
Minimum Value	0.003	0.05	0.005	0.05	0.001	0.05	33.1	0.001	0.005	0.005	0.01	0.1	2	0.01	6.2	0.005	0.002	3	0.003	0.3	0.01	1	0.03	0.005	0.2	0.014	0.01	0.005	0.02	
Maximum Value	0.01	2	0.2	0.1	0.005	0.05	46.5	0.001	0.01	0.01	0.04	3.22	4	0.01	11.2	0.09	0.01	7	0.03	2	0.05	21	0.2	0.2	0.288	0.065	0.3	0.053	0.31	
Num. Values	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7			

Date	AG-D	AL-D	AS-D	BA-D	BE-D	BU-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MS-D	MO-D	NA-D	NI-D	PI-D	SE-D	SE-D	SN-D	SR-D	TH-D	TL-D	V-D	ZN-D		
23/06/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
23/07/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.18	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	47	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
23/08/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
23/09/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
23/10/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
23/11/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
23/12/99	<0.03	0.09	<0.05	<0.05	0.001	<0.05	46.7	<0.01	<0.05	<0.05	0.009	0.1	2	<0.01	11.6	0.08	<0.02	5	<0.05	<1	<0.01	44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
JAN 2000 - DEC 2000																														
Mean	0.005	0.2	0.009	0.07	0.004	0.003	40.8	0.001	0.008	0.008	0.009	0.18	2	0.01	8.4	0.056	0.005	4	0.027	1.1	0.03	24	0.1	0.064	0.31	0.19	0.009	0.2	0.018	0.113
Std. Deviation	0.004	0.27	0.014	0.03	0.018	0.002	10.8	0	0.009	0.004	0.004	0.19	0	0	2.3	0.045	0.004	1	0.022	1	0.02	14	0.09	0.093	0.209	0.031	0.023	0	0.013	0.08
Minimum Value	0.003	0.05	0.005	0.05	0.001	0.05	33.1	0.001	0.005	0.005	0.01	0.1	2	0.01	6.2	0.005	0.002	3	0.003	0.3	0.01	1	0.03	0.005	0.2	0.01	0.014	0.01	0.005	0.02
Maximum Value	0.01	2	0.2	0.1	0.005	0.05	46.5	0.001	0.01	0.01	0.04	3.22	4	0.01	11.2	0.09	0.01	7	0.03	2	0.05	21	0.2	0.2	0.288	0.065	0.3	0.053	0.31	0.07
Num. Values	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	

STATION: V27, Yangord's Creek, just upstr. of Shrimp

STATION: V32, Vungorda Dump drain #5STATION: V33, Vangorda Dump drain #6

YANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: V14, groundwater well GW9442

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	LI-D	MG-D	MON-D	MO-D	NA-D	NI-D	P-D	PH-D	S-D	SB-D	SE-D	SH-D	SN-D	SR-D	TH-D	TL-D	V-D	Zn-D
31/05/00 09/10/00	<0.03 <0.03	<0.03 0.24	<0.05 <0.05	<0.05 0.047 0.055	<0.01 0.017 0.055	<0.01 0.001 0.001	<0.05 0.015 0.015	<0.01 0.001 0.001	<0.01 0.001 0.001	0.008 0.015 0.015	<0.05 0.005 0.005	0.01 0.01 0.01	<0.1 0.16 0.16	4 5 6	75 64.7 64.7	0.2 0.45 0.45	<0.02 0.004 0.004	6 8 9	<0.05 0.005 0.005	<1 2 2	<0.1 157 157	<0.3 0.03 0.03	<0.3 0.03 0.03	<0.05 5.7 5.8	<0.1 0.01 0.01	0.513 0.546 0.546	0.013 0.009 0.009	<0.05 0.013 0.013	<0.1 0.021 0.021	<0.1 2 2		
JAN 2000 - DEC 2000	0.003	0.14	0.005	0.05	0.008	0.001	0.005	0.001	0.001	0.012	0.005	0.01	0.08	5	60.8	0.22	0.003	0.003	8	0.005	2	0.01	83	0.03	0.005	5.8	0.01	0.546	0.009	0.013	0.01	
Stat Decision	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Value	0.003	0.003	0.005	0.005	0.003	0.001	0.005	0.001	0.001	0.008	0.005	0.005	0.01	4	64.7	0.2	0.002	0.002	6	0.005	1	0.01	9	0.03	0.005	5.7	0.01	0.513	0.005	0.005	0.01	
Maximum Value	0.003	0.24	0.005	0.05	0.039	0.001	0.005	0.001	0.001	0.015	0.005	0.01	0.16	6	75	0.45	0.004	0.004	9	0.005	2	0.01	157	0.03	0.005	5.8	0.01	0.607	0.013	0.021	0.01	
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

STATION: V14, groundwater well GW9442

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	LI-D	MG-D	MON-D	MO-D	NA-D	NI-D	P-D	PH-D	S-D	SB-D	SE-D	SH-D	SN-D	SR-D	TH-D	TL-D	V-D	Zn-D
31/05/00 09/10/00	<0.03 0.001	<0.05 0.24	<0.05 0.005	<0.05 0.05	0.044 0.001	<0.01 0.001	<0.05 0.05	83.3 87.4	<0.01 0.001	<0.005 0.005	<0.05 0.005	0.004 0.009	<0.1 0.08	3 4		49 49.5	0.38 0.23	<0.02 0.002	6 8	<0.05 0.005	<1 3	<0.1 0.01	29 74	<0.3 0.03	<0.05 0.005	4.8 4.9	<0.1 0.01	0.537 0.545	<0.05 0.005	<0.05 0.005	<0.1 0.01	
JAN 2000 - DEC 2000	0.003	0.14	0.005	0.05	0.036	0.001	0.05	87.4	0.001	0.005	0.005	0.009	0.08	4		40.5	0.23	0.002	8	0.005	3	0.01	74	0.03	0.005	4.9	0.01	0.545	0.01	0.015	0.01	
Stat Decision	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Value	0.003	0.13	0.005	0.05	0.034	0.001	0.05	83.3	0.001	0.005	0.005	0.004	0.01	3		49	0.38	0.002	6	0.005	1	0.01	29	0.03	0.005	4.8	0.01	0.537	0.005	0.005	0.01	
Maximum Value	0.003	0.24	0.005	0.05	0.039	0.001	0.05	91.4	0.001	0.005	0.005	0.014	0.15	4		50	0.38	0.002	9	0.005	3	0.01	120	0.03	0.005	5	0.01	0.553	0.015	0.006	0.01	
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

STATION: V16, groundwater well GW9443

Date	AG-D	AL-D	AS-D	BL-D	BA-D	BE-D	BI-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MON-D	MO-D	NA-D	NI-D	P-D	PH-D	S-D	SB-D	SE-D	SH-D	SN-D	SR-D	TH-D	TL-D	V-D	Zn-D
31/05/00 09/10/00	<0.03 <0.03	<0.05 0.12	<0.05 <0.05	<0.05 0.046	0.001 0.004	0.001 0.001	<0.05 0.05	122.2 94.8	<0.01 <0.01	<0.005 <0.005	<0.05 <0.05	0.01 0.012	0.16 0.08	5 4	5 4	101.7 79.8	0.35 0.27	<0.02 0.002	10 10	<0.05 0.005	<1 2	<0.1 0.01	107 124	<0.3 0.03	<0.05 0.005	7.3 5.9	<0.1 0.01	0.721 0.644	<0.05 0.007	<0.05 0.005	<0.1 0.01	
JAN 2000 - DEC 2000	0.003	0.13	0.005	0.055	0.001	0.001	0.05	108.5	0.001	0.005	0.005	0.012	0.08	4	4	79.8	0.27	0.002	10	0.005	2	0.01	124	0.03	0.005	5.9	0.01	0.644	0.011	0.007	0.01	
Stat Decision	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Value	0.003	0.12	0.005	0.046	0.001	0.001	0.05	94.8	0.001	0.005	0.005	0.015	0.16	4	4	75.9	0.15	0.002	9	0.005	1	0.01	107	0.03	0.005	4.4	0.01	0.557	0.005	0.005	0.01	
Maximum Value	0.003	0.22	0.005	0.064	0.001	0.001	0.05	122.2	0.001	0.005	0.005	0.015	0.16	5	5	101.7	0.38	0.002	10	0.005	2	0.01	140	0.03	0.005	7.3	0.01	0.721	0.016	0.009	0.01	
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

STATION: V17, groundwater well GW9444

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	LI-D	MG-D	MON-D	MO-D	NA-D	NI-D	P-D	PH-D	S-D	SB-D	SE-D	SH-D	SN-D	SR-D	TH-D	TL-D	V-D	Zn-D
31/05/00 09/10/00	<0.03 <0.03	<0.03 0.15	0.015 <0.05	<0.05 <0.5	0.082 0.06	<0.01 0.01	<0.05 <0.5	46.3 43.3	<0.01 0.001	<0.05 0.01	<0.05 0.005	0.006 0.005	0.11 0.06	7 10		64.7 59.2	0.12 0.2	0.01 0.015	23 164	<0.05 <0.05	<1 5	<0.1 0.01	21 59	<0.3 0.03	<0.05 0.005	3.3 5.2	<0.1 0.01	0.499 0.369	0.009 0.007	<0.05 0.012	<0.1 0.01	
JAN 2000 - DEC 2000	0.003	0.1	0.01	0.05	0.071	0.001	0.05	44.8	0.001	0.007	0.005	0.005	0.06	8		51.9	0.16	0.012	94	0.005	3	0.01	57	0.03	0.005	4.2	0.01	0.434	0.007	0.012	0.01	
Stat Decision	0	0	0	0	0	0	0	2.1	0.004	0	0	0.37	0	0	0	0	0.03	0.004	100	0	3	0	51	0	0	0	0	0.092	0.003	0.001	0	
Minimum Value	0.003	0.07	0.007	0.05	0.06	0.001	0.05	43.3	0.001	0.005	0.005	0.005	0.07	2		39.2	0.13	0.01	23	0.005	1	0.01	21	0.03	0.005	3.3	0.01	0.369	0.005	0.005	0.01	
Maximum Value	0.003	0.15	0.015	0.05	0.082	0.001	0.05	46.3	0.001	0.01	0.005	0.006	0.11	10		64.7	0.2	0.015	164	0.005	3	0.01	93	0.03	0.005	5.2	0.01	0.499	0.009	0.019	0.01	
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

STATION: 963A, Groundwater at the toe of Green dump

	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	LI-D	MG-D	MO-D	MON-D	NA-D	NI-D	P-D	PH-D	S-D	SB-D	SE-D	SH-D	SN-D	SR-D	TH-D	TL-D	V-D	Zn-D
Date	<0.03	<0.05	<0.05	<0.05	0.215	0.001	<0.05	182	<0.01	<0.015	<0.05	0.013	0.03	4	70.2	0.36	<0.02	15	0.017	<1	<0.1	223	<0.3	<0.05	7.2	<0.1	1.065	<0.05	<0.05	<0.1		
JAN 2000 - DEC 2000	0.003	0.2	0.007	0.05	0.161	0.002	0.05	191.5	0.002	0.01	0.005	0.021	0.1	5	72.4	0.39	0.002	16	0.011	2	0.01	202	0.03	0.005	7.3	0.01	0.968	0.015	0.009	0.01		
Stat Decision	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Minimum Value	0.003	0.21	0.004	0.05	0.166	0.001	0.05	182	0.001	0.005	0.005	0.013	0.03	4	70.2	0.34	0.002	15	0.005	1	0.01	182	0.03	0.005	7.2	0.01	0.87	0.005	0.006	0.01		
Maximum Value	0.003	0.34	0.01	0.05	0.215	0.002	0.05	201	0.002	0.015	0.005	0.029	0.17	6	74.7	0.36	0.002	16	0.017	2	0.01	223	0.03	0.005	7.5	0.01	1.065	0.024	0.013	0.01		
Num. Values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		

YANGORDA PLATEAU WATER QUALITY LISTING FOR 2000

STATION: 96-9N, Groundwater at toe of Gerni dam

Date	AG-D	AL-D	AS-D	BL-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MR-D	MO-D	NA-D	NI-D	P-D	PE-D	S-D	SE-D	SE-D	SN-D	SR-D	TH-D	TL-D	V-D	ZN-D
31/03/00	<0.03	0.06	<0.05	<0.05	<0.03	<0.01	<0.03	39.8	<0.01	<0.05	<0.05	<0.02	<0.1	2	19.3	0.73	<0.02	40	<0.05	<1	<0.1	59	<0.3	<0.05	4.7	<0.1	0.811	<0.05	<0.05	<0.1	
JAN 2000 - DEC 2000	0.003	0.06	0.005	0.05	0.050	0.001	0.03	39.8	0.001	0.005	0.005	0.002	0.01	2	19.3	0.73	0.002	40	0.005	1	0.01	59	0.03	0.005	4.7	0.01	0.811	0.005	0.005	0.01	
Mean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Std. Deviation	0.003	0.06	0.005	0.05	0.050	0.001	0.03	39.8	0.001	0.005	0.005	0.002	0.01	2	19.3	0.73	0.002	40	0.005	1	0.01	59	0.03	0.005	4.7	0.01	0.811	0.005	0.005	0.01	
Minimum Value	0.003	0.06	0.005	0.05	0.050	0.001	0.03	39.8	0.001	0.005	0.005	0.002	0.01	2	19.3	0.73	0.002	40	0.005	1	0.01	59	0.03	0.005	4.7	0.01	0.811	0.005	0.005	0.01	
Maximum Value	0.003	0.06	0.005	0.05	0.050	0.001	0.03	39.8	0.001	0.005	0.005	0.002	0.01	2	19.3	0.73	0.002	40	0.005	1	0.01	59	0.03	0.005	4.7	0.01	0.811	0.005	0.005	0.01	
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

STATION: LCH, Little Creek Dam Pond Water

Date	JAN 2000 - DEC 2000																												JAN 2000 - DEC 2000																											
	AG-T	AL-T	AS-T	BL-T	BA-T	BE-T	BL-T	CA-T	CD-T	CO-T	CR-T	CU-T	FE-T	K-T	LI-T	MG-T	MR-T	MO-T	NA-T	NI-T	P-T	PE-T	S-T	SE-T	SE-T	SN-T	SR-T	TH-T	TL-T	V-T	ZN-T																									
31/03/00	<0.03	0.53	0.016	<0.5	0.195	<0.01	<0.5	86.8	0.022	0.039	0.01	0.024	0.52	3	30.7	3.49	0.011	4	0.084	1	0.32	101	0.06	<0.05	3.5	<0.1	0.474	0.179	0.668	10.78																										
Mean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																									
Std. Deviation	0.003	0.53	0.016	0.05	0.195	0.001	0.05	86.8	0.022	0.039	0.01	0.024	0.52	3	30.7	3.49	0.011	4	0.084	1	0.32	101	0.06	0.005	3.5	0.01	0.474	0.179	0.668	10.78																										
Minimum Value	0.003	0.53	0.016	0.05	0.195	0.001	0.05	86.8	0.022	0.039	0.01	0.024	0.52	3	30.7	3.49	0.011	4	0.084	1	0.32	101	0.06	0.005	3.5	0.01	0.474	0.179	0.668	10.78																										
Maximum Value	0.003	0.53	0.016	0.05	0.195	0.001	0.05	86.8	0.022	0.039	0.01	0.024	0.52	3	30.7	3.49	0.011	4	0.084	1	0.32	101	0.06	0.005	3.5	0.01	0.474	0.179	0.668	10.78																										
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																									
Date	JAN 2000 - DEC 2000																												JAN 2000 - DEC 2000																											
AG-D	AL-D	AS-D	BL-D	BA-D	BE-D	BL-D	CA-D	CD-D	CO-D	CR-D	CU-D	FE-D	K-D	LI-D	MG-D	MR-D	MO-D	NA-D	NI-D	P-D	PE-D	S-D	SE-D	SE-D	SN-D	SR-D	TH-D	TL-D	V-D	ZN-D																										
31/03/00	<0.03	0.07	<0.05	<0.05	0.037	<0.01	<0.05	78.1	0.019	<0.05	0.004	<0.01	2	24.9	0.49	<0.02	3	0.036	<1	<0.1	105	0.03	<0.05	2.5	<0.1	0.416	<0.05	<0.05	9.29																											
Mean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																										
Std. Deviation	0.003	0.07	0.005	0.05	0.037	0.001	0.05	78.1	0.019	0.005	0.005	0.004	0.01	2	24.9	0.49	0.002	3	0.036	1	0.01	105	0.03	0.005	2.5	0.01	0.416	0.005	0.005	9.29																										
Minimum Value	0.003	0.07	0.005	0.05	0.037	0.001	0.05	78.1	0.019	0.005	0.005	0.004	0.01	2	24.9	0.49	0.002	3	0.036	1	0.01	105	0.03	0.005	2.5	0.01	0.416	0.005	0.005	9.29																										
Maximum Value	0.003	0.07	0.005	0.05	0.037	0.001	0.05	78.1	0.019	0.005	0.005	0.004	0.01	2	24.9	0.49	0.002	3	0.036	1	0.01	105	0.03	0.005	2.5	0.01	0.416	0.005	0.005	9.29																										
Num. Values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																									

Appendix 2

*Steffen Robertson and Kirsten (Canada) Inc.,
2000 Annual Inspection, Waste and Waste Water
Management Facilities Vangorda Mine, Yukon
Territory, February 2001*



Deloitte & Touche

2000 Annual Inspection Waste and Water Management Facilities Vangorda Mine Yukon Territory

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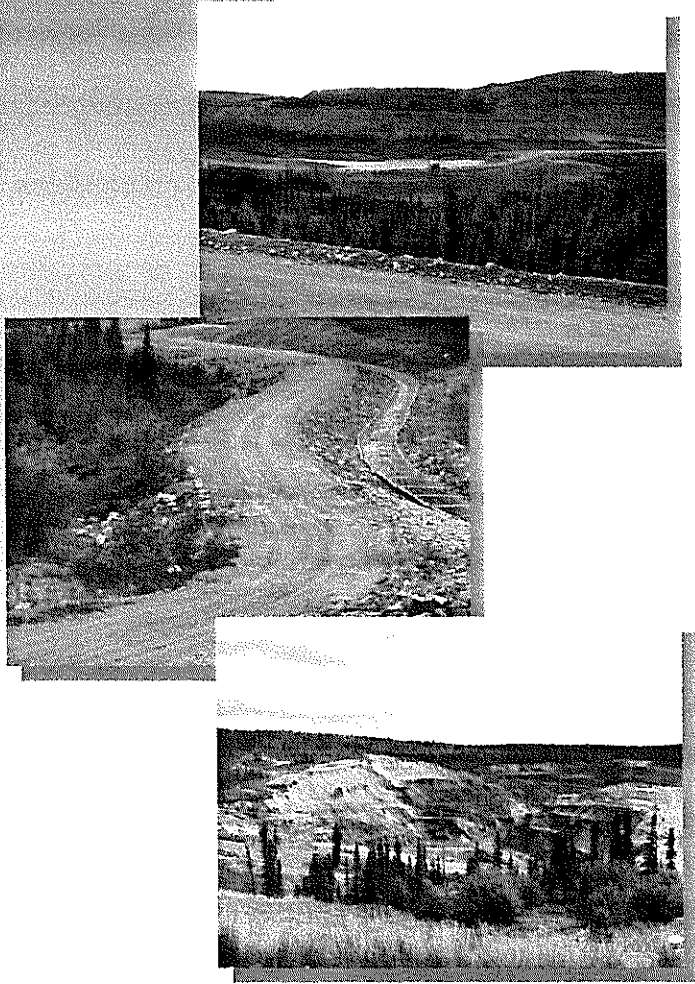
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February, 2001



1CD003.03

**2000 ANNUAL INSPECTION
WASTE AND WATER MANAGEMENT FACILITIES
VANGORDA MINE
YUKON TERRITORIES**

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FEBRUARY, 2001

ICD003.03

2000 ANNUAL INSPECTION WASTE AND WATER MANAGEMENT FACILITIES VANGORDA MINE YUKON TERRITORIES

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**2000 ANNUAL INSPECTION
WASTE AND WATER MANAGEMENT FACILITIES
VANGORDA MINE
YUKON TERRITORIES**

1. Introduction

At the request of Deloitte and Touche (DT) Mr. Peter Healey of Steffen Robertson and Kirsten (Canada) Inc. (SRK) completed an inspection of the waste and water management facilities at Vangorda Plateau Mine on June 28 and 29, 2000. The Vangorda mine is located 16 km south of the Faro Mine, Yukon Territory as shown on Figure 1. The purpose of this inspection was to evaluate the geotechnical performance and stability of the following structures:

- Vangorda Waste Rock Containment Facility (Photo 1) including the seepage collection system ;
- Little Creek Dam;
- Vangorda Creek Diversion;
- Sludge Pond Embankments at the Water Treatment Plant,
- Grum Waste Rock Piles;
- The Grum Interceptor Ditch; and
- The Sheep Pad Sediment Ponds below the Overburden Stockpile.

A plan of the Vangorda Plateau area and the above components are shown in Figure 2.

This report presents our observations and comments on the performance and stability of the structures and provides recommendations, where appropriate.

2. Vangorda Waste Rock Pile

2.1 Observations

2.1.1 Seepage Collection System

2.2.1.1 Channel Berm

At the outlet of the seepage channel and at the south abutment of the Little Creek Dam, a small depression still exists which provides the opportunity for ponding of water. The remaining sections of the dyke show no signs of settlement, cracking or sloughing.

2.2.1.2 Transverse Drains and Weirs

During construction of the original till berm, six transverse drains were installed beneath the berm to allow seepage to drain from the waste dump. These drains were connected to the seepage collection channel during the 1994 upgrading.

During the inspection, minor seepage was observed at Drains 2, 3 (Photo 2), 5 (Photo 3) and 6 (Photo 4) only. The silt that was observed in behind the weir at drain 6 had been removed but during construction of a diversion ditch along the crest of the till Starter dyke, material had been pushed over the bank causing unstable conditions as shown in Photo 4.

The weir at Drain 5 is functioning adequately, however there is a large boulder located in behind the weir, which should be removed.

2.2.1.3 Starter Dyke Diversion Ditch

In an attempt of control runoff and instability of the area above the weir at Drain 6, a ditch was excavated within the crest of the till starter dyke along the north side of the Vangorda Waste dump in September 1999. The depth of the excavation varied from about 1 to 4 m. The sideslopes of the ditch were vertical in most places and had sloughed in at several locations causing water to pool in the ditch. The excavated material had been placed on the downstream slope of the starter dyke resulting in an oversteepening of the upper section of the slope (See photos 5 to 9). Figure 3 shows a

plan view of the excavated ditch developed from a survey completed last year by Yukon Engineering Services.

2.2.1.4 Seepage Channel

No instability of the sideslopes of the seepage channel was observed. Seepage from the transverse drains at Weir 3 and Weir 2 is entering the channel but there was no noticeable flow in the channel.

2.2.2 Starter Dyke and Till Cover

The sideslopes of the till starter dyke remain susceptible to erosion. There is one area that lies just below the 1994 resloping and till cover placement that is particularly eroded. Runoff concentrates in-between the till cover and the resloped rock causing erosion gullies and silt spill into the seepage channel at the toe of the dyke.

Adjacent to Weir 3, till was removed from the toe of the starter dyke in 1992 by the mine to construct an adjacent sump. This remains a potential risk to the stability of the dyke with the possible loss of the piezometers above (P94-01A and 01B). Erosion gullies that have formed below P94-3A and 3B pose a threat to these piezometers also.

2.2.4 Instrumentation

DT has been taking water level readings from the nine piezometers and four of the five groundwater wells around and within the facility. A summary of the water level readings taken to date in both the piezometers and the groundwater wells is presented in Table 1. Water levels, as recorded on May 31, 2000 in Piezometers P94-01A, 01B, 02A and 02B, are shown in Figures 4 and 5. A plot of the historical readings for these piezometers is shown on Figure 6. The water levels in the piezometers continue to remain generally static with minor fluctuations. Figure 7 presents a plot of the levels in the groundwater wells around the dump.

2.2.5 Rock Pile

Tension cracks are still evident in places along the crest at the northeast end of the dump. The cracks have not widened since SRK last inspected the rock pile in 1999.

TABLE 1 Water Levels in Piezometers and Groundwater Wells - Vangorda Rock Pile

Measured Static Water Level (metres)

underlined readings (begin in 1998) indicate that no water was identified (hole was dry or frozen).
 readings post Sep98 given as metres below top of plastic piezometer pipe.
 readings prior to Nov98 could be metres below top of piezo. pipe or steel casing.

Date	V34 GW-94-01	V35 GW-94-02	V36 GW-94-03	V37 GW-94-04	V38 GW-94-05*	V39 P-94-01A	V40 P-94-01B	V41 P-94-02A	V42 P-94-02B	V43 P-94-02C	V44 P-94-03A	V45 P-94-03B	V46 P-94-04A	V47 P-94-04B
3-May-94	8.28	14.33	11.28	14.33	11.56	12.37	6.05	10.57	6.12	13.08	14.10	9.80	12.17	8.99
21-Jun-94	7.45	8.65	9.15	9.65										
30-Jun-95						7.79	5.62	8.02	6.11	9.02	13.91	9.80	11.35	8.99
13-Jul-95						7.80	5.59							
30-Jul-95						7.86	5.48	7.99	6.12	8.81	13.68	9.80	11.83	8.99
26-Aug-95	6.89	8.47		9.05										
31-Aug-95	7.36					7.93	4.85	7.97	6.06	8.66	13.62		12.60	
17-Oct-95	7.14	8.26		9.37		7.90	4.23	8.70	5.76	8.54	13.41		11.88	
20-Nov-95	7.10	8.18		9.19										
13-Mar-96	7.44	9.23		9.39										
28-May-96	7.50	9.34	10.00	10.25		8.34	5.38	9.94	6.12	9.37	14.12		12.77	
24-Sep-96	7.50	7.43	7.95	9.17		10.40	5.30	8.30	6.12	8.66	13.68	9.88	12.80	8.99
13-May-97	6.84	9.42	9.96	9.53		9.17	5.67	7.74	6.40	9.51	12.78	9.96	12.78	9.62
11-Jul-97						9.80	5.90	7.92	6.12	8.97	14.10	9.80	9.97	9.00
11-Aug-97	6.75	8.38	8.41	8.81	1.99	9.59	5.25	8.10	6.25	8.77	12.84	9.96	12.62	9.21
14-Oct-97	6.76	8.58	9.15	8.99		9.51	4.96	7.99	6.23	8.94	12.96	9.96	12.73	9.21
23-Dec-97	6.70	9.05	9.53	9.13		9.25	4.76	7.68	6.07	8.95	12.70	9.81	12.66	9.02
31-May-98	6.72	8.60	9.73	9.59	1.86	9.52	5.25	8.05	6.24	9.20	12.87	9.95	12.77	9.20
25-Jul-98						10.20	5.22	8.04	6.20	9.11	12.58	9.92	12.79	9.18
15-Sep-98	6.67	8.85	9.52	9.10	2.40	10.02	5.22	7.98	6.20	9.22	12.54	9.92	12.83	9.19
16-Nov-98						10.32	5.11	7.93	6.11	9.06	12.45	9.78	12.70	8.99
31-Dec-98	6.70	9.06	9.91	9.23										
18-Jun-99	6.88	9.24	10.24	10.18		9.96	5.09	8.35	6.11	9.48	12.48	9.77	12.70	8.99
12-Oct-99	6.61	7.58	8.81	8.79		10.01	5.10	8.16	5.73	8.82	12.49	9.78	12.71	8.97
31-May-00	5.75	8.68	8.26	9.33	1.84	10.20	5.10	7.85	5.93	8.97	12.48	9.78	12.66	8.88
5-Sep-00	6.66													
9-Oct-00	4.98	3.96	6.90	8.35	0.93									

*: depth to bottom of hole GW-94-05 (V38) checked as 14.7m on Sep 15/98.

Top of Pipe Elevations (masl)

V34 GW-94-01	V35 GW-94-02	V36 GW-94-03	V37 GW-94-04	V38 GW-94-05	V39 P-94-01A	V40 P-94-01B	V41 P-94-02A	V42 P-94-02B	V43 P-94-02C	V44 P-94-03A	V45 P-94-03B	V46 P-94-04A	V47 P-94-04B
1117.445	1117.465	1118.431	1116.165	1101.673	1136.555	1136.493	1138.41	1138.332	1129.84	1134.373	1134.459	1134.609	1134.327

Piezometric Elevation (masl)

Date	V34 GW-94-01	V35 GW-94-02	V36 GW-94-03	V37 GW-94-04	V38 GW-94-05	V39 P-94-01A	V40 P-94-01B	V41 P-94-02A	V42 P-94-02B	V43 P-94-02C	V44 P-94-03A	V45 P-94-03B	V46 P-94-04A	V47 P-94-04B
3-May-94	1109.165	1103.075	1107.151	1101.835	1090.113	1124.183	1130.443	1127.84	1132.212	1116.76	1120.273	1124.659	1122.439	1125.337
21-Jun-94	1109.995	1108.755	1109.281	1106.515										
30-Jun-95						1128.765	1130.873	1130.39	1132.222	1120.82	1120.463	1124.659	1123.259	1125.337
13-Jul-95						1128.755	1130.903							
30-Jul-95						1128.695	1131.013	1130.42	1132.212	1121.03	1120.693	1124.659	1122.779	1125.337
26-Aug-95	1110.555	1108.935		1107.115										
31-Aug-95	1110.085					1128.625	1131.643	1130.44	1132.272	1121.18	1120.753		1122.009	
17-Oct-95	1110.305	1109.145		1106.795		1128.655	1132.263	1129.71	1132.572	1121.3	1120.963		1122.729	
20-Nov-95	1110.345	1109.235		1106.975										
13-Mar-96	1110.005	1108.175		1106.775										
28-May-96	1109.945	1108.065	1108.431	1105.915		1128.215	1131.113	1128.47	1132.212	1120.47	1120.253		1121.839	
24-Sep-96	1109.945	1109.975	1110.481	1106.995		1126.155	1131.193	1130.11	1132.212	1121.18	1120.693	1124.579	1121.809	1125.337
13-May-97	1110.605	1107.99	1108.476	1106.635		1127.385	1130.823	1130.67	1131.932	1120.33	1121.593	1124.499	1121.829	1124.707
11-Jul-97						1126.755	1130.593	1130.49	1132.212	1120.87	1120.273	1124.659	1124.639	1125.327
11-Aug-97	1110.695	1109.025	1110.021	1107.355	1099.683	1126.965	1131.243	1130.31	1132.082	1121.07	1121.533	1124.499	1121.989	1125.117
14-Oct-97	1110.685	1108.825	1109.281	1107.175		1127.045	1131.533	1130.42	1132.102	1120.9	1121.413	1124.499	1121.879	1125.117
23-Dec-97	1110.745	1108.355	1108.901	1107.035		1127.305	1131.733	1130.73	1132.262	1120.89	1121.673	1124.649	1121.949	1125.307
31-May-98	1110.725	1108.805	1108.701	1106.575	1099.813	1127.035		1130.36		1120.64		1124.509	1121.839	1125.127
25-Jul-98						1126.355		1130.37		1120.73			1121.819	
15-Sep-98	1110.775	1108.555	1108.911	1107.065	1099.273	1126.535		1130.43		1120.62			1121.779	
16-Nov-98						1126.235		1130.48		1120.78				
31-Dec-98	1110.745	1108.345	1108.521	1106.975										
18-Jun-99	1110.565	1108.165	1108.191	1105.985		1126.595		1130.06		1120.36				
12-Oct-99	1110.835	1109.825	1109.621	1107.375		1126.545		1130.25		1121.02				
31-May-00	1111.695	1108.725	1110.171	1106.835	1099.833	1126.355		1130.56	1132.402	1120.87			1121.949	1125.447
5-Sep-00	1110.785													
9-Oct-00	1112.465	1113.445	1111.531	1107.815	1100.743									

2.3 Recommendations

2.3.1 Seepage Collection Channel

SRK recommends that DT backfill the depression at the south abutment of Little Creek Dam with locally available till and compact with several passes of a dozer. Monthly monitoring of the area should be conducted for any signs of further settlement.

2.3.2 Transverse Drains and Weirs, Starter Dyke Diversion Ditch

The excavated ditch along the crest of the starter dyke that was completed in 1999 has done little to minimise the instability of the bank above the Weir 6 and the siltation potential. Furthermore the bank above the weir is now steeper than before the ditch was excavated and is less stable.

SRK was asked to inspect the ditch during the site visit. SRK prepared an action plan for the ditch, which was presented to DT in a memo dated July 4, 2000. The recommendations included the following:

1. Runoff should not be allowed to pond in the ditch behind the sloughed material and any accumulation should be monitored;
2. Survey a profile along the bottom of the ditch including a number of cross sections;
3. Prepare a longitudinal profile and cross sections from the survey data;
4. Determine an optimum grade for the centreline of the ditch and develop a final profile and sections
5. Backfill the existing ditch to the revised grade, providing a ditch with sideslopes of at least 1.75 to 1 (H:V). Backfill should be taken from the over-steepened section of the starter dyke and compacted in lifts no less than 300mm.
6. Compaction should consist of 3 to 4 passes of a vibratory smooth drum roller.

An alternative to partially backfilling the ditch involved completely backfilling the ditch and resloping the entire starter dyke and waste rock material. It was suggested to DT that during the survey program above, the crew pick enough survey points so that

cross sections could be developed that extend into the waste rock above. The survey was completed in November, 2000. SRK is currently reviewing this data and preparing preliminary drawings for the different options.

2.3.3 Till Covers and Berms

In the upper reaches of the seepage collection channel below the till cover, DT should remove any silt that has accumulated in the channel. When the next phase of till cover is placed, this area would be recontoured and the sediment problem would be reduced. In the meantime, DT should continue to monitor the silt build-up and periodically remove the material.

DT should also place backfill up against the toe of the starter dyke adjacent to Weir 3, where material has been removed.

2.3.3 Instrumentation

Water level readings should continue to be taken from both the groundwater wells and the standpipe piezometers in the till berm around the rock pile. These readings should be taken at least semi-annually with close attention given to the water levels in P94-01A and B, and P94-02A, 02B and 02C.

Water quality samples should continue to be taken from the groundwater wells around the Vangorda Waste dump.

2.3.4 Rock pile

DT should continue to regularly monitor the cracks observed on the surface of the rock fill. Any widening of these cracks should be reported.

3. Little Creek Dam

3.1 Observations

A view of the Little Creek dam and the new emergency spillway are shown on Photo 1. Photo 10 shows a view of Little Creek Pond. Runoff from the eastern approach road continues to cause erosion and subsidence of the road embankment sideslopes as shown in Photo 11. DT constructed a drainage ditch along the inside edge of the approach road (Photo 12), which has directed much of the runoff over to the opposite bank. However, this flow passes over a loosely end dumped pile of till material before it eventually finds its way into Vangorda Creek. Consequently, the stockpile is badly eroded.

There is a significant erosion gully (Photo 13) on the upstream face of the dam, which has developed as a result of the runoff. The gully is located about 30m east of the pumphouse.

Water level in the pond during our inspection was recorded at about 1109.5m. DT periodically pumps water from the pond to Vangorda Pit. However, at the time of our inspection no water was being pumped from the pond. No cracks or major settlement of the dam were observed and there was no noticeable seepage along the toe.

The downstream face of the dam (Photo 14) shows little evidence of surficial movement, bulging or instability. The loose, uncompacted material at the toe of the dam, which was deposited during its construction in 1991, has not moved but does show signs of erosion.

The new spillway culvert in Little Creek dam (photos 15 and 16 and Figure 8) was also inspected during the site visit. The additional riprap that was added in September of 1999 provided the needed erosion control at the entrance to the pipe.

The riprap in the plunge pool and the upper reaches of the exit chute meets design criteria. However, more riprap is required in the lower reaches of the exit chute to provide adequate erosion protection for the 200-year flood event (Photo 17).

In 1994, six pneumatic piezometers and three thermistors were installed along the crest of the Little Creek dam. The six piezometers are located at three separate locations; two piezometers, one deep and one shallow, at each location. The location of the piezometers and thermistors are shown on Figure 9 and the most recent 2000 piezometric levels are shown in section on Figures 10 to 12. Actual readings are presented in Appendix B.

During the inspection, no seepage was observed at along the toe of the downstream dam.

3.2 Recommendations

DT should continue to regularly monitor the crest of the dam for any cracks, settlement or surficial movement of the slope.

The piezometric levels are consistent with the water levels recorded in the impoundment and are in accordance with the design safety factors associated with the stability of the dam. The thermistor readings are also consistent.

SRK recommends that the pneumatic piezometers and thermistors are monitored on a semi-annual basis and the results compiled and forwarded to SRK.

It is recommended that DT construct either a riprapped or CMP lined channel down the face of the end dumped material to minimize the erosion and the potential for sediment entering Vangorda Creek. Furthermore, the road surface should be regraded to encourage drainage off the crest and a 150mm layer of 20mm minus sand and gravel should be placed and compacted on the crest.

4. Vangorda Creek Diversion

4.1 Observations

The half-round culvert in the upper reaches (Photo 18) has performed well but the flume does not weather well along the lower reaches. The potential still remains for slide debris to enter the flume at certain locations along the channel. The crossbars are badly bent and the flume is buckled in places (Photo 19). In several areas along the flume, riprap has settled to below the lip of the culvert.

Riprap around the entrance to the culvert at the headwork's of the Vangorda diversion has dropped away exposing the underlying geotextile (Photo 20). This situation is not new and has been noted on previous inspections. Furthermore, riprap has begun to collect in the channel and around the trash rack at the inlet to the CMP narrowing the entrance. The pipe itself appears to be sound.

There are no signs of instability or settlement of the headwork's dam.

The plunge pool (Photo 21 and 22) at the outlet of the flume has lost some of the original riprap that had been placed on the sideslopes of the basin. Furthermore, where an area of the pool was excavated to allow water trucks to be filled, the water is slowly undermining the bank. SRK is currently reviewing the hydrology of the plunge pool system to determine whether there is adequate capacity to accommodate peak flows with the addition of flow from Sheep Pad Settling pond.

4.2 Recommendations

DT should place additional riprap over exposed geotextile at the headworks and continue to monitor the sideslopes above the flume for sloughing.

The riprap along flume where the material has settled below the rim of the culvert sections should be topped up and additional riprap should be placed in the excavated pool at the southeast corner of the plunge pool. Additional riprap should also be placed on the sideslopes around the perimeter of the pool. Where fresh soil is exposed non-woven geotextile filter fabric should be placed prior to laying down the rock.

5. Sludge Pond Embankment-Vangorda Water Treatment Plant

5.1 Observations

At the time of our inspection, the water level in the sludge pond was about 1m below the intake pipe at the south end of the pond (Photo 23). The tension cracks along the inside face of the pond and along the crest of the dyke have not changed since the last inspection (Photos 24). Although there is still evidence of previous settlement and minor sloughing of the downstream slope in the southwest corner of the pond, there are no signs of recent movement. Vegetation on the downstream slope is providing some stability to the face (Photo 25).

During the inspection no water treatment was in progress.

5.2 Recommendations

The following actions should be taken at the Water Treatment Plant:

- Ensure that the pond level does not exceed 2m. below crest;
- Continue to monitor on a monthly basis, the crest and sideslopes for cracking or any signs of sloughing. With the pond level at an all time low, the risk of any instability is quite small.
- Fill in or blade over tension cracks both in the crest and along the upstream face to prevent entry from runoff and precipitation.
- Weekly inspection of the upstream face and the crest for further development of the cracks is recommended.

6. Grum Settling Pond

6.1 Observations

At the time of our inspection the water level in the pond was about 3m below the crest of the dyke (Photo 26) and the downstream sideslopes showed no signs of any recent movement. No significant cracks were observed in the crest.

There was no seepage noted along the toe of the dyke.

6.2 Recommendations

The crest of the embankment should be monitored monthly for cracks and the pond level should not exceed 1.0 m below crest. Seepage into and out of the pond should also be monitored.

Monthly inspections along the toe of the embankment for seepage is recommended.

The need for the pond should be reviewed.

7. Grum Interceptor Ditch and Sheep Pad Settling Pond

7.1 Observations

In the upper reaches of the GID, the slopes have performed well and the vegetation is providing effective erosion control of the sideslopes (Photo 27). Inlets and outlets of some of the culverts are silted up and require cleaning. Below the treatment plant, however, there are sections of the ditch where the grade steepens and the sideslopes have subsided narrowing the channel (photo 28). This subsidence results in an increase in the sediment load reporting to the Sheep Pad ponds (Photo 29). It was noted that water collecting in the ponds was being siphoned into the Vangorda Pit because of the high level of suspended solids.

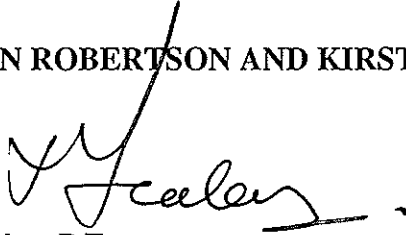
7.2 Recommendations

The following actions are recommended:

- Place additional riprap (shotrock) around inlets and outlets of all culverts where applicable to prevent erosion and sediment build-up. Geotextile should be placed against the exposed soil prior to placing the riprap;
- Monitor monthly tension cracks in the settling pond dykes, on the crest and on the upstream and downstream slopes;
- Monitor monthly the toe of the dykes for any seeps;
- Continue to provide riprap protection on the lower reaches of the GID to minimize erosion and sedimentations.

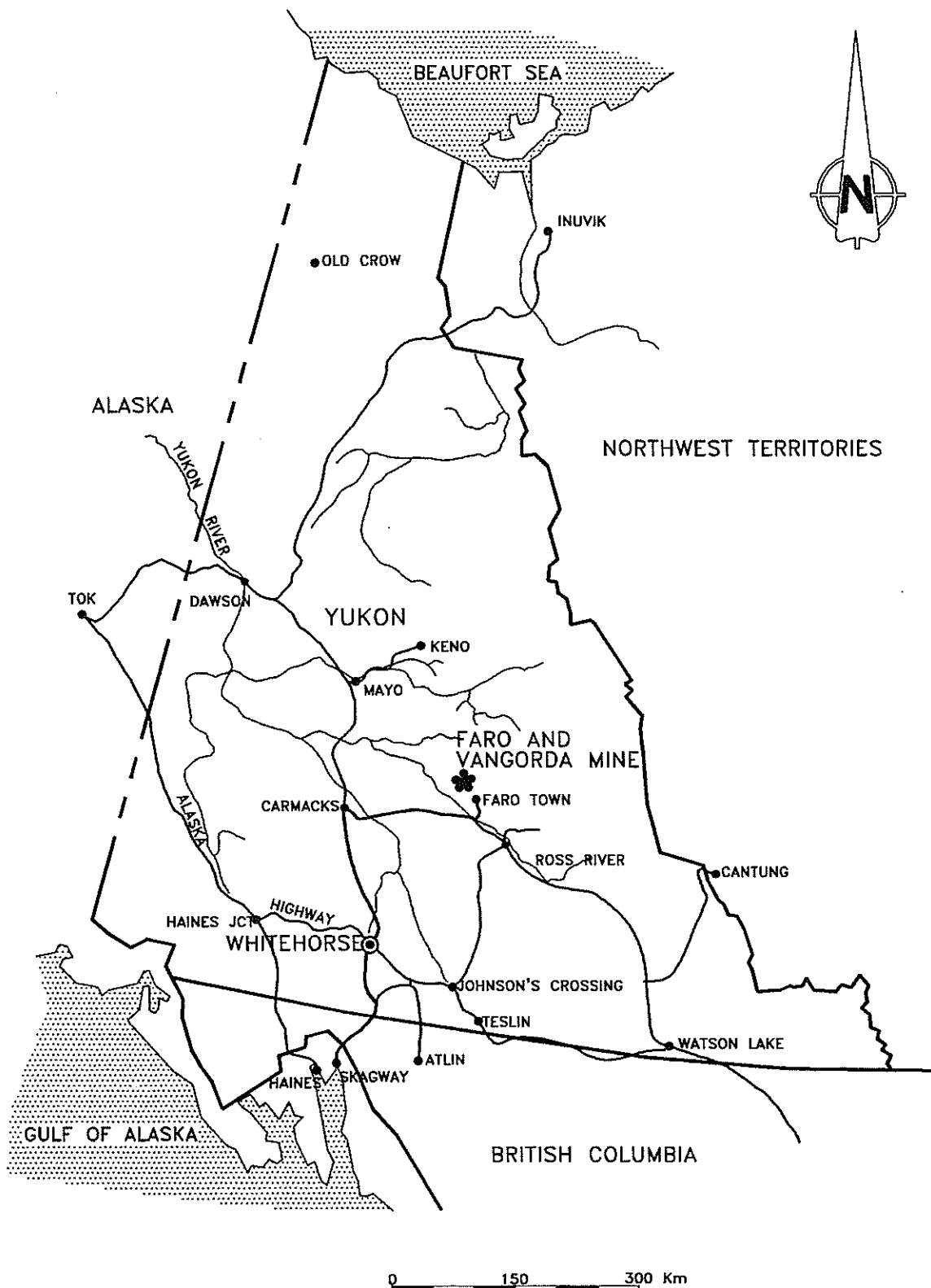
This Report, 1CD003.03 - 2000 Annual Inspection Waste and Water Management Facilities Vangorda Mine, Yukon Territories has been prepared by:

STEFFEN ROBERTSON AND KIRSTEN (CANADA) INC.

A handwritten signature in black ink, appearing to read 'P. Healey', is written over the company name.

Peter Healey, P.Eng.
Associate Principal

Figures



VANGORDA PLATEAU MINE

LOCATION MAP

DELOITTE & TOUCHE

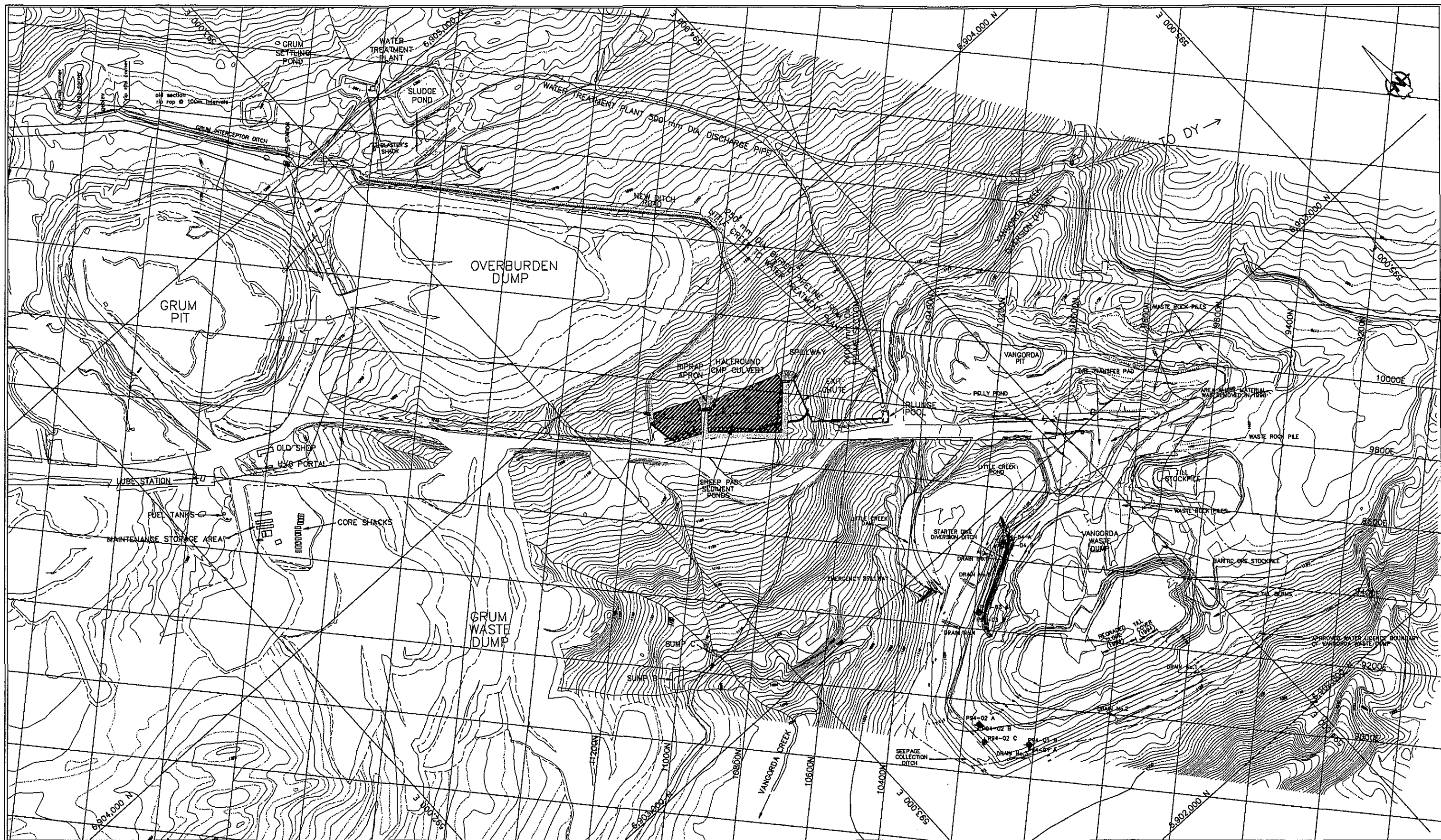
PROJECT NO.
1CD003.03

DATE
JAN. 2001

APPROVED

FIGURE

1



NOTES:
1. TOPOGRAPHIC MAP PROVIDED BY ANML
RANGE MINING CORPORATION



1100 ————— ORIGINAL GROUND CONTOURS

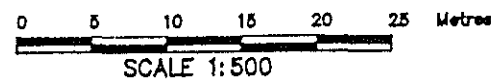
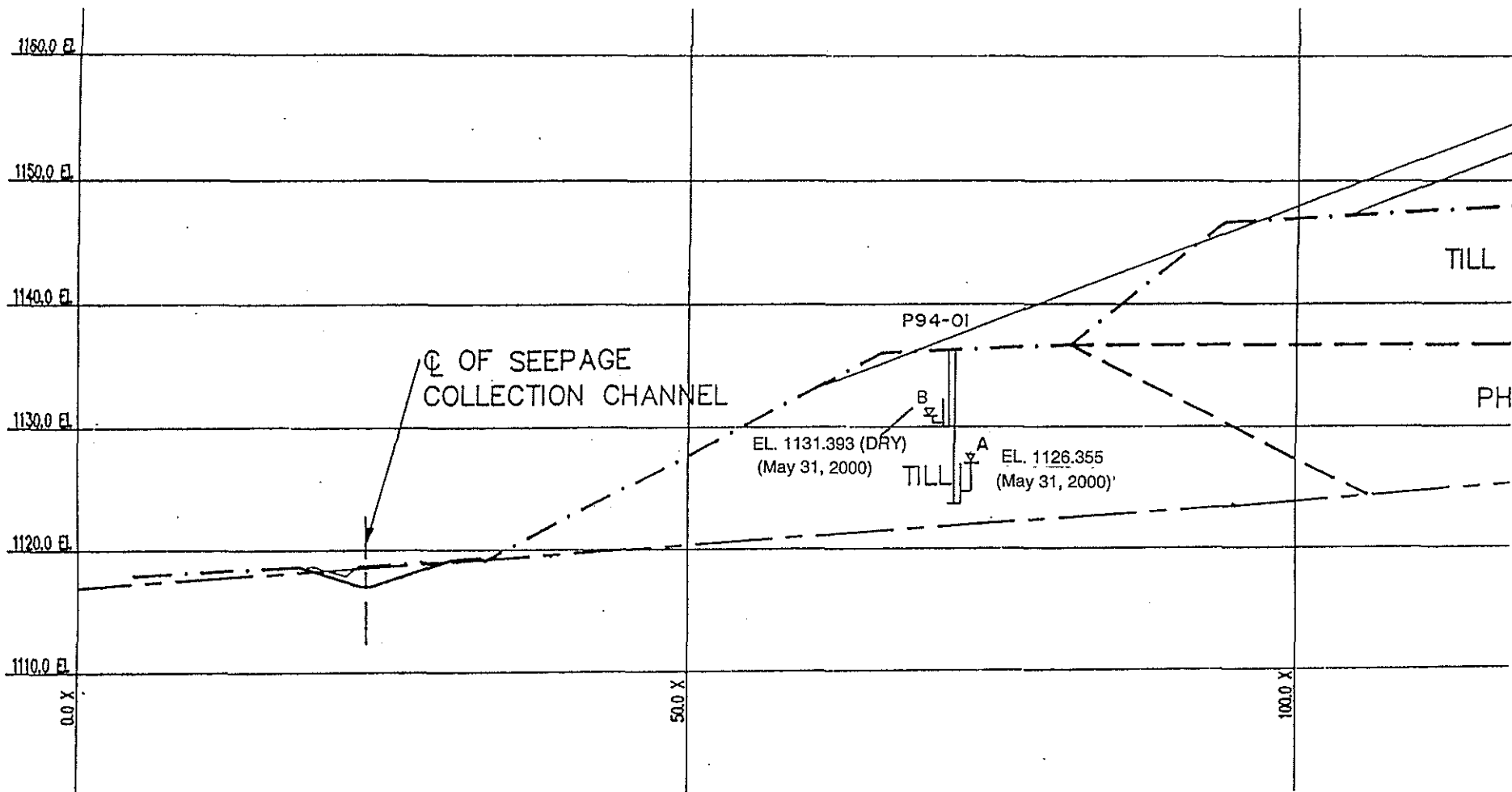


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VANGORDA PLATEAU MINE

SITE PLAN

FILE REFERENCE	PROJECT NO.	DRAWING NO.	REV.
GENERAL-ARRANGEMENT.DWG	1CD003.03	2	



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VANGORDA PLATEAU MINE

SECTION D-3
CHANNEL STA. 4+80

PROJECT NO. 1CD003.03	DATE JAN. 2001	APPROVED	FIGURE 4
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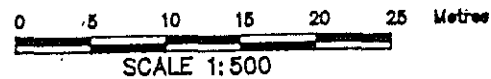


FIGURE 6: PIEZOMETER LEVELS - VANGORDA WASTE DUMP

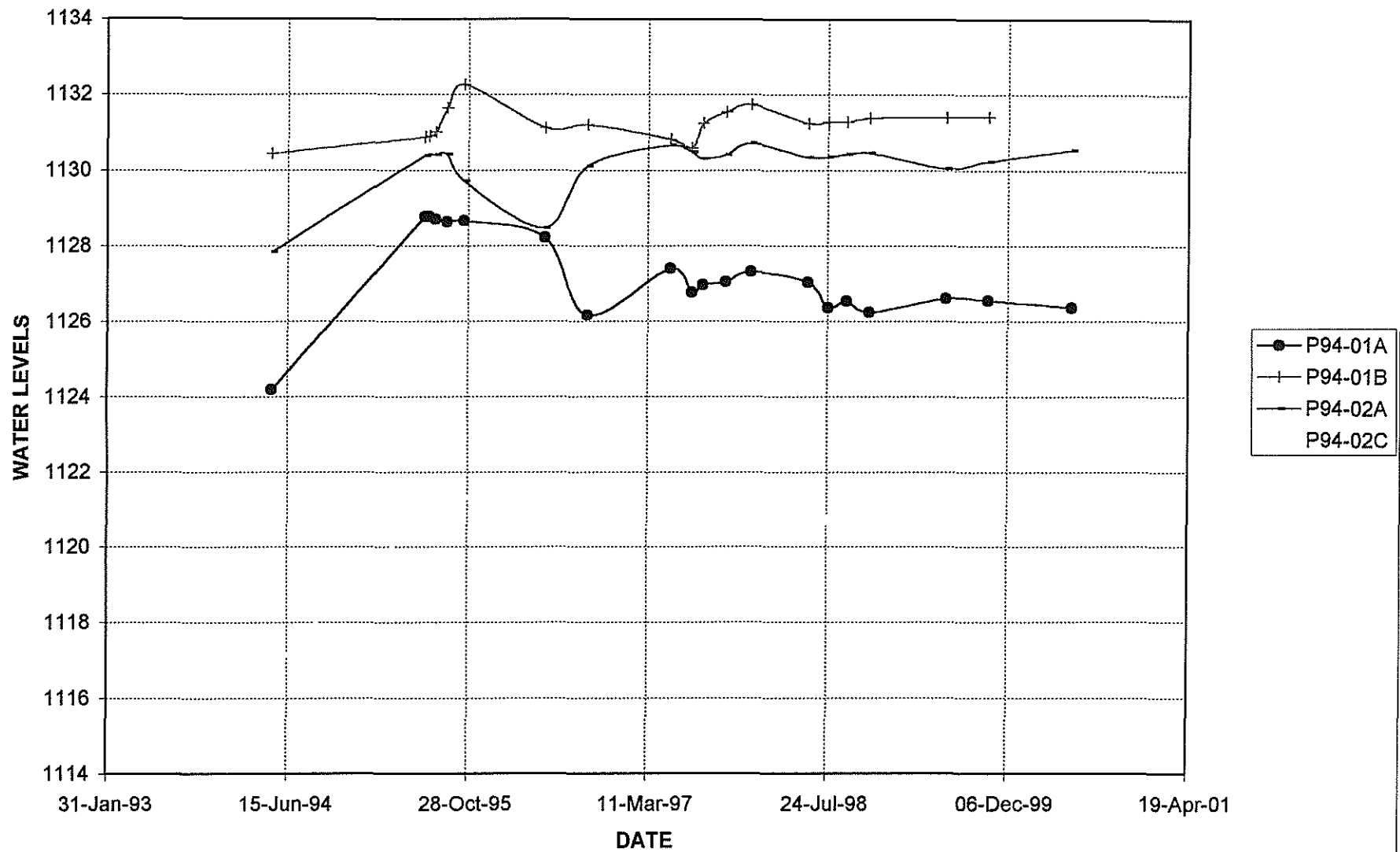
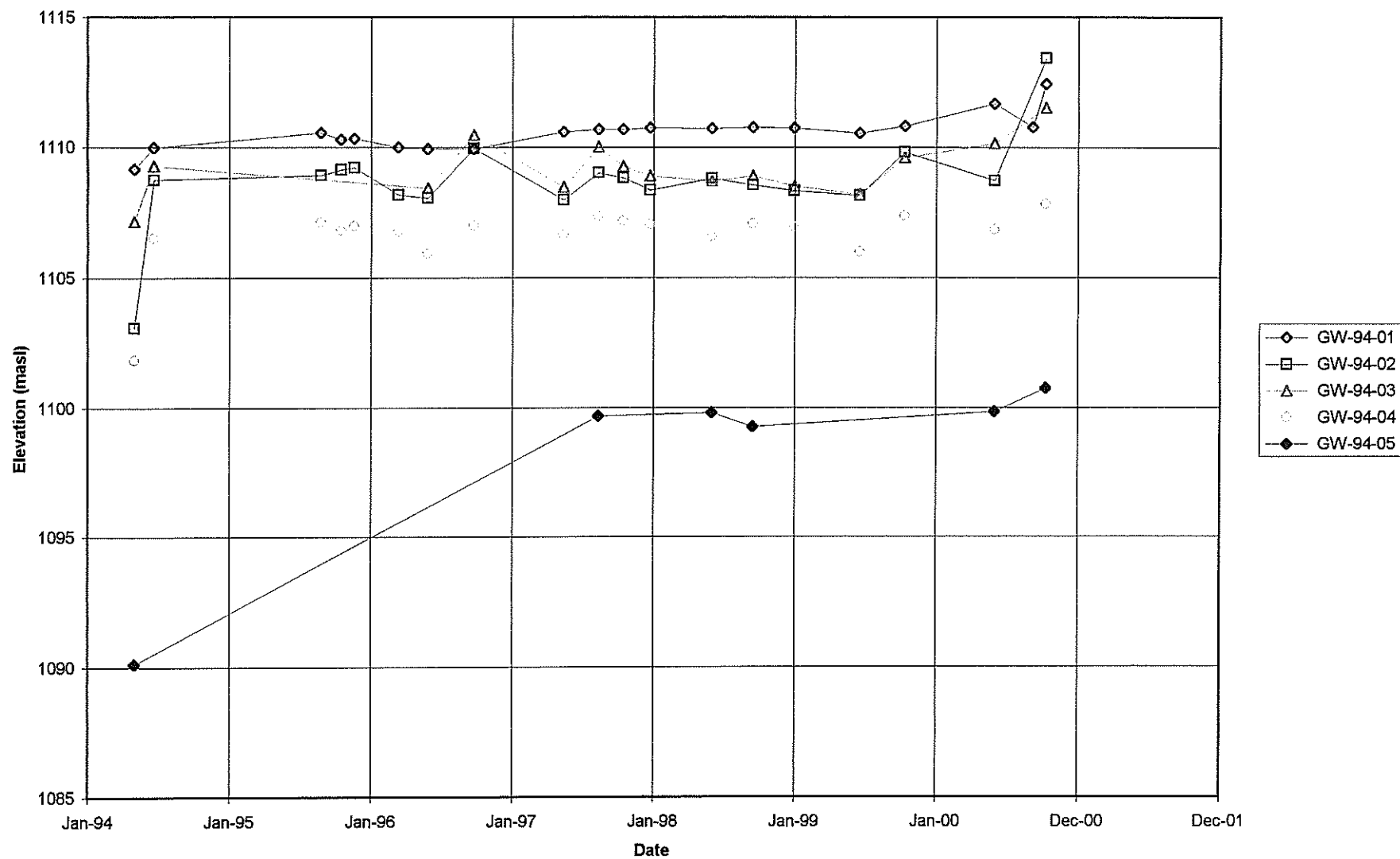
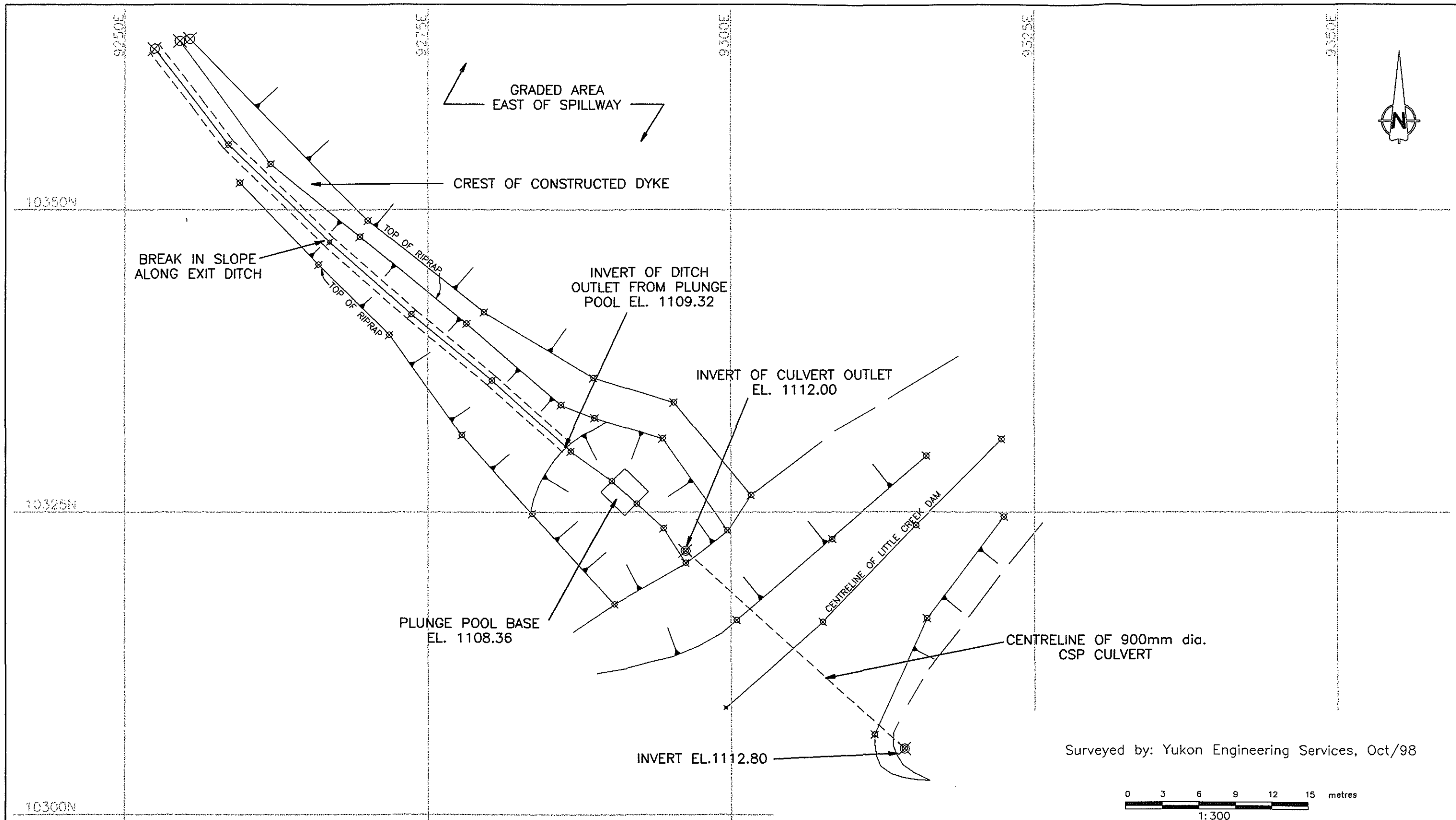


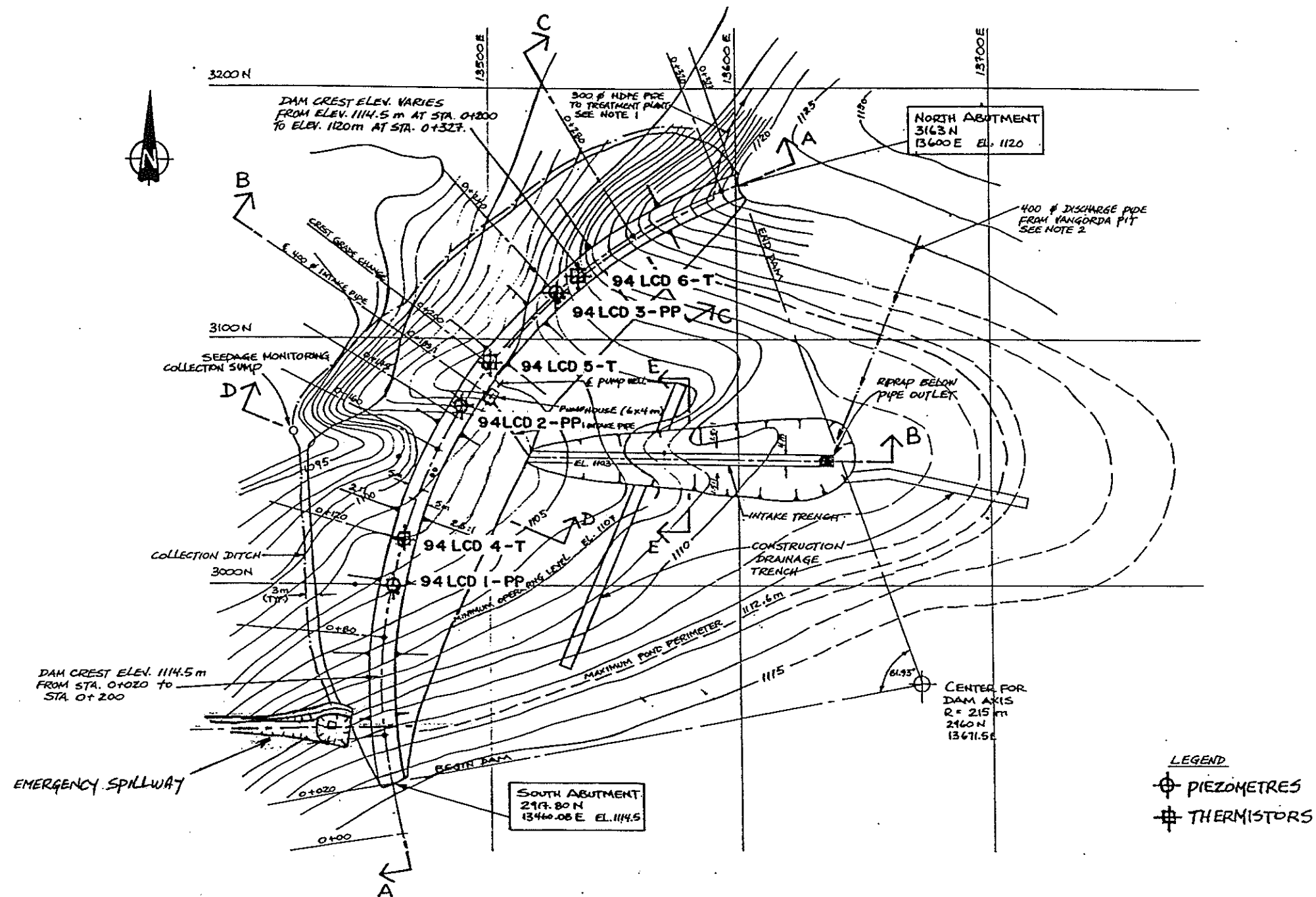
Figure 7: Vangorda Dump Toe Groundwater Elevations





FILE REF: lcd-r12.dwg

 SRK Consulting <i>Engineers and Scientists</i>	VANGORDA PLATEAU MINE			
	LITTLE CREEK DAM EMERGENCY SPILLWAY			
DELOITTE & TOUCHE	PROJECT NO. 1CD003.03	DATE JAN. 2001	APPROVED	FIGURE 8



GENERAL ARRANGEMENT PLAN

SCALE - 1:2000

CONTOUR INTERVAL = 1 metre
 GRID SHOWN IS MINE GRID

0 10 20 30 40 50 metres

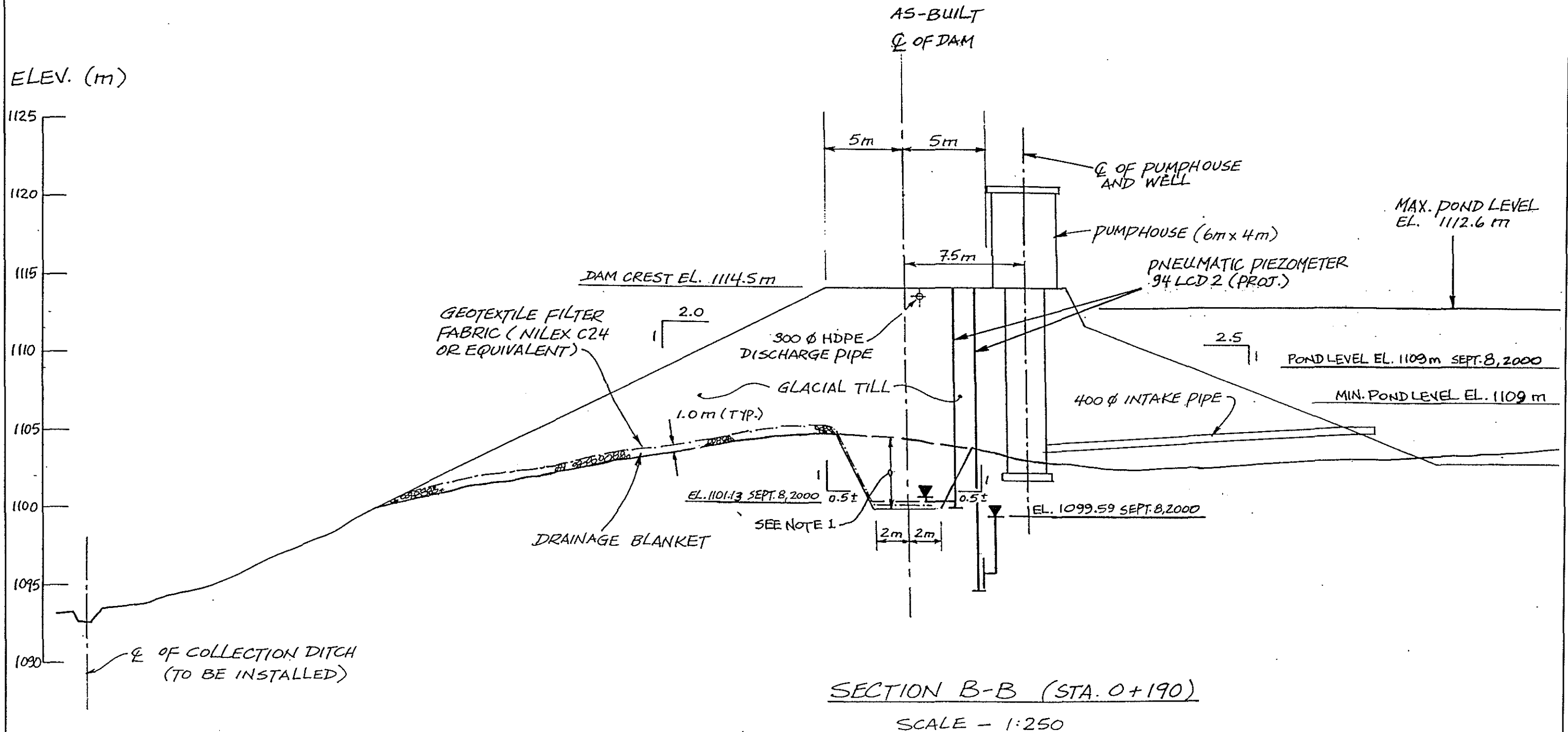


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VANGORDA PLATEAU MINE

**LITTLE CREEK DAM
 GENERAL ARRANGEMENT PLAN**

PROJECT NO. 1CD003.03	DATE JAN. 2001	APPROVED	FIGURE 9
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SRK Consulting
Engineers and Scientists

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VANGORDA PLATEAU MINE

LITTLE CREEK DAM
SECTION B-B

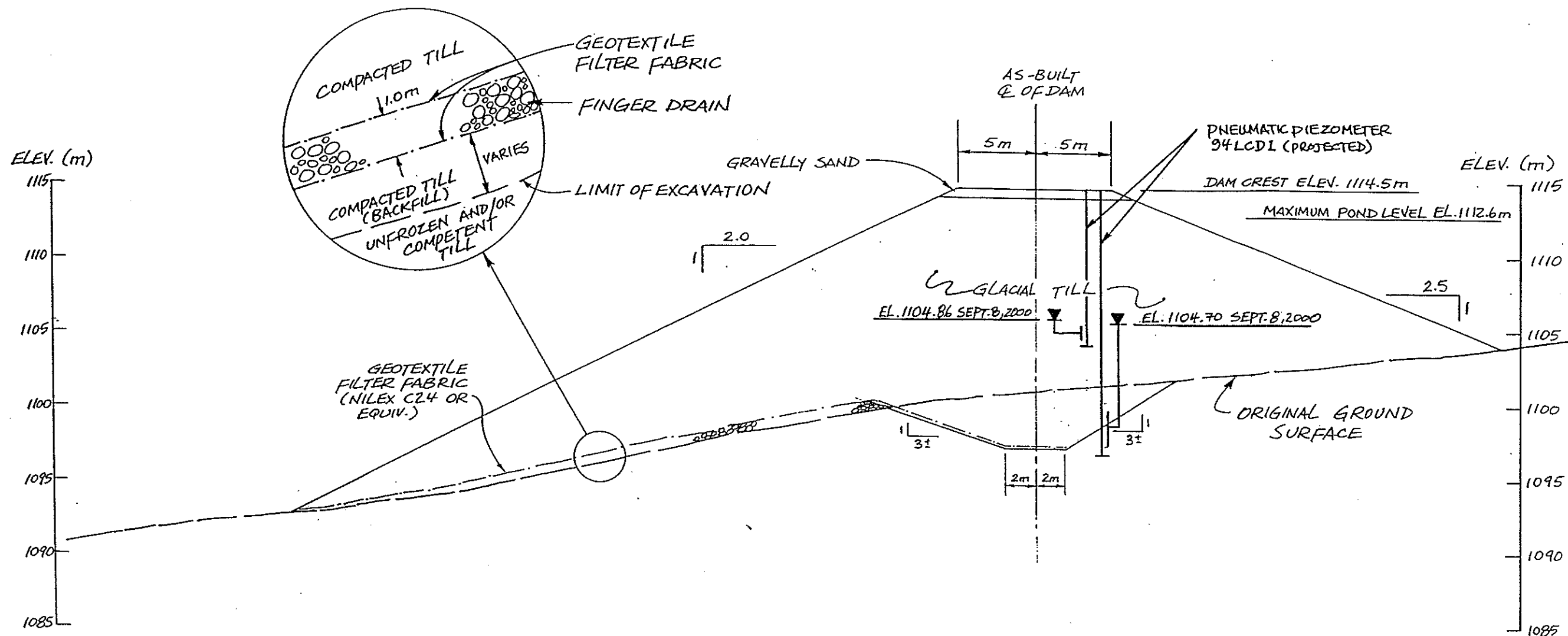
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DATE
JAN. 2001

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FIGURE

10



SECTION D-D (STA. 0+144)

SCALE - 1:300

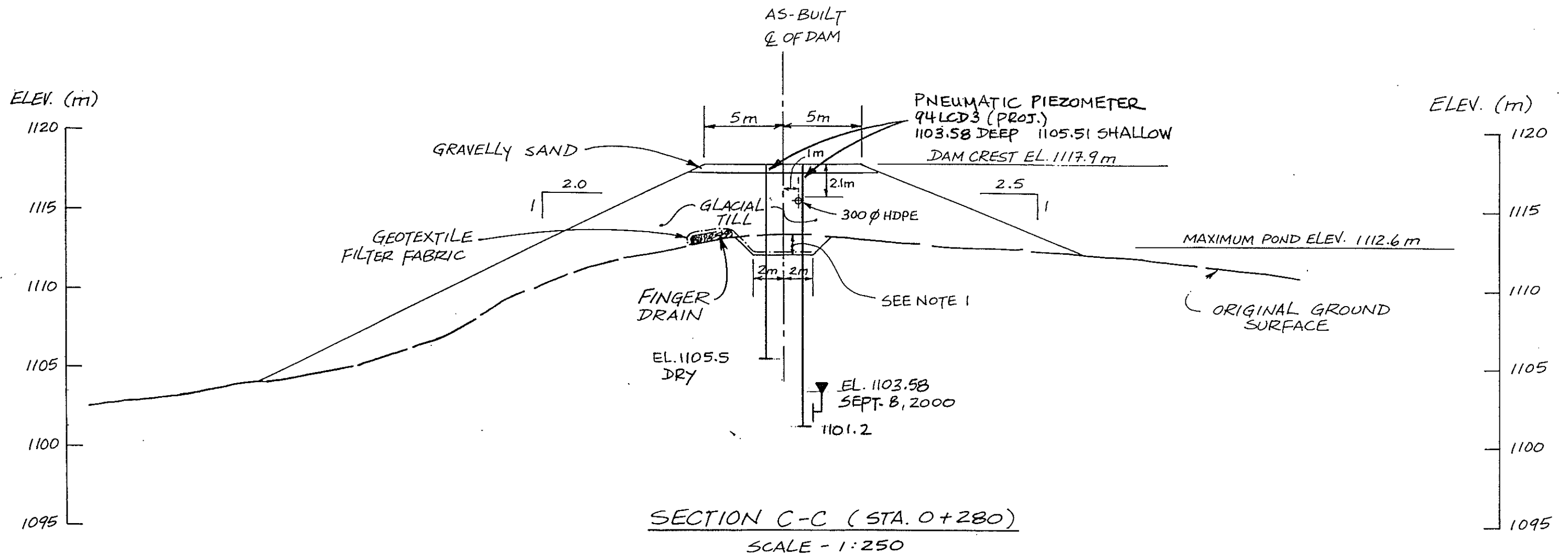


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VANGORDA PLATEAU MINE

LITTLE CREEK DAM
SECTION D-D

PROJECT NO. 1CD003.03	DATE JAN. 2001	APPROVED	FIGURE 11
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APPENDIX A

Photos



Photo 1 A view overlooking the Vangorda Waste Dump with Little Creek Pond in the foreground



Photo 2 Weir at Drain 3

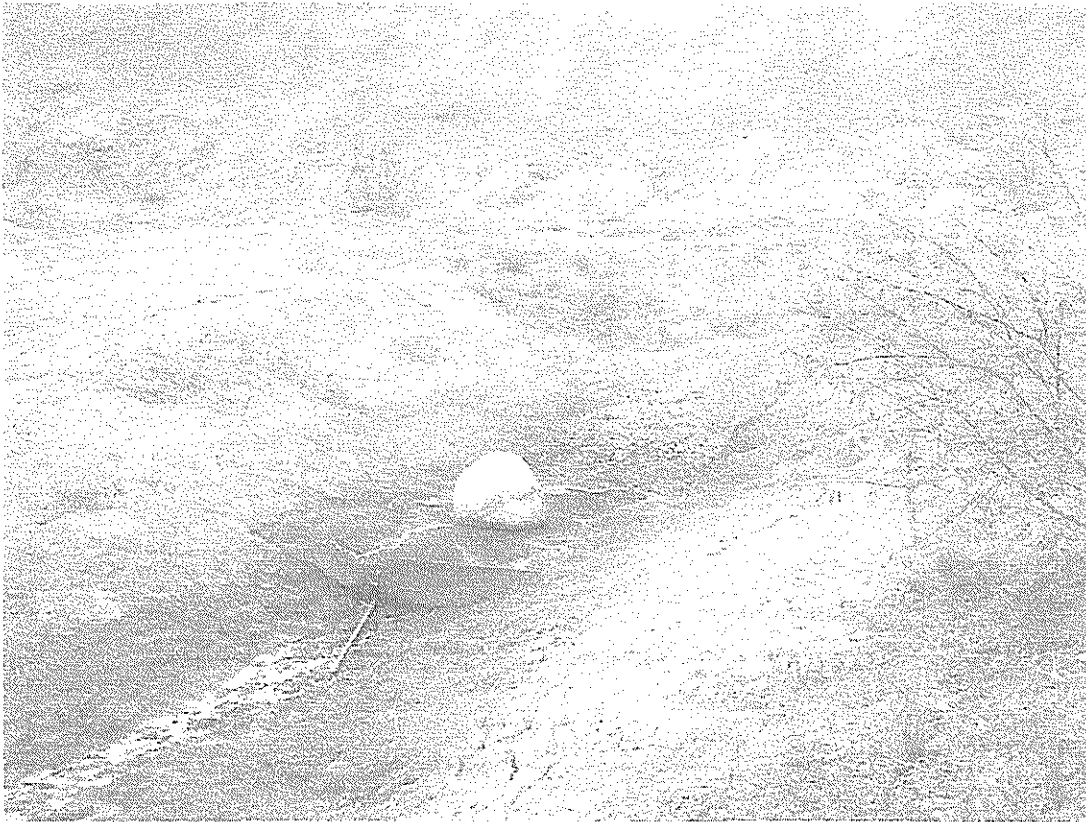


Photo 3 Weir at Drain 5

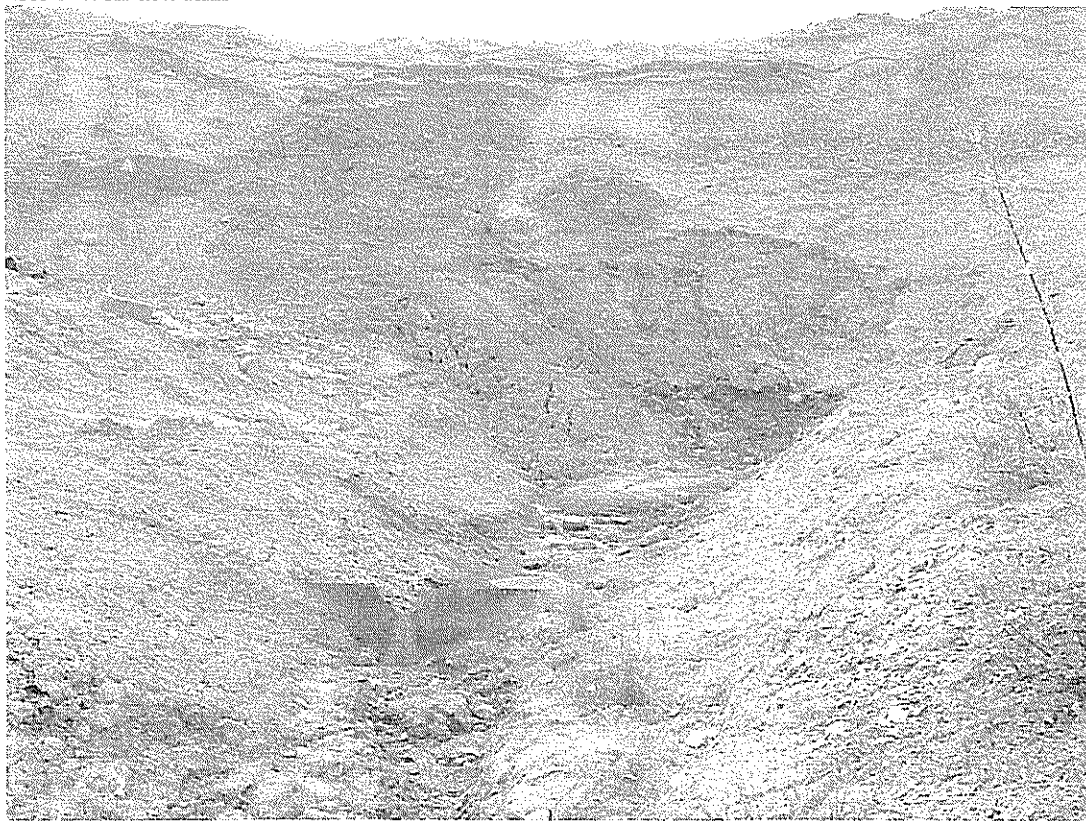


Photo 4 Weir at Drain 6

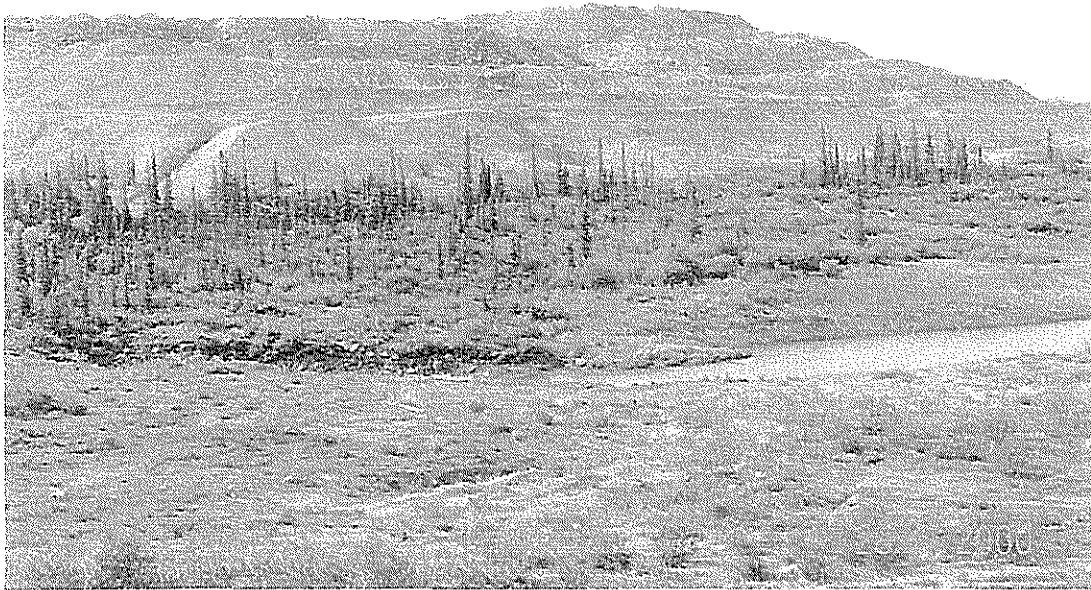


Photo 5 View of the Starter Dyke Diversion Ditch



Photo 6 View looking downgradient of the upper reaches of the ditch



Photo 7 Exit reach of the diversion ditch



Photo 8 Subsidence in the Diversion ditch



Photo 9 Poned Water in the diversion ditch



Photo 10 Little Creek Pond



Photo11 Bank Erosion on east approach road

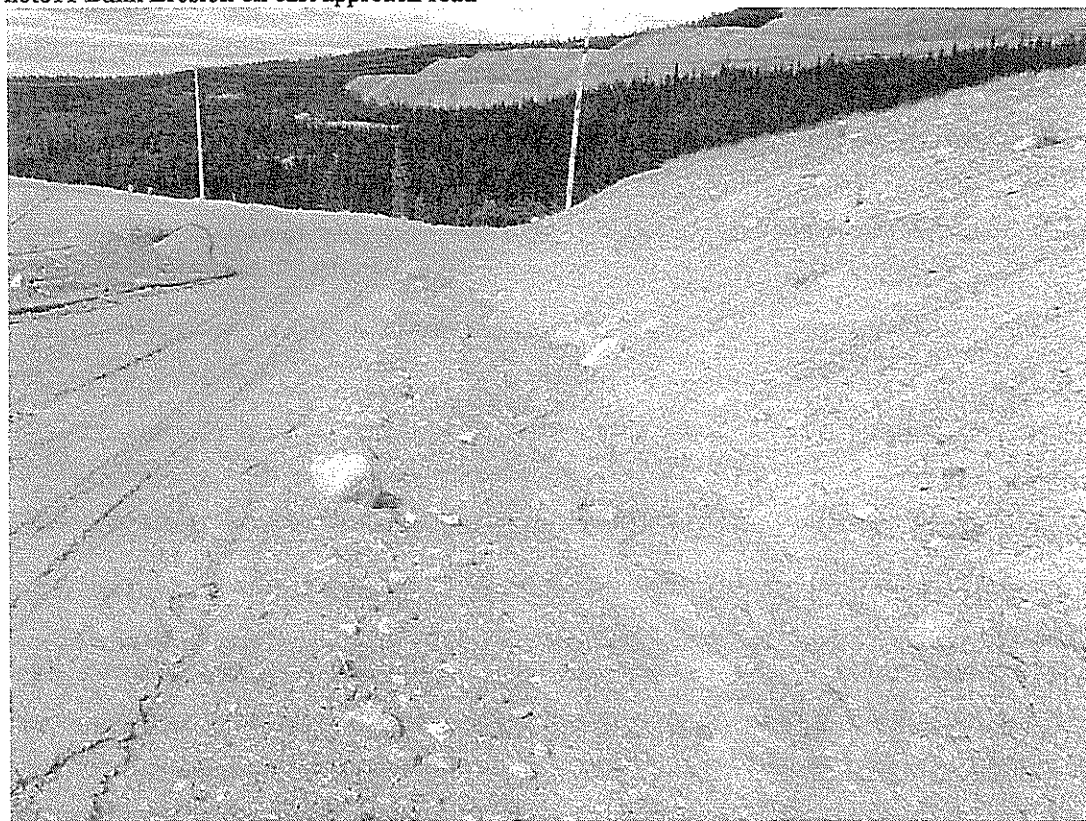


Photo 12 Drainage ditch on the Approach road to Little Creek Dam



Photo13 Erosion Gully on the upstream face of Little Creek Dam



Photo 14 Downstream face of Little Creek Dam



Photo 15 Emergency Spillway Culvert and chute at Little Creek Dam



Photo 16 Emergency Spillway at Little Creek dam



Photo 17 Exit Channel below Plunge pool at Little Creek Dam Spillway



Photo 18 Upper Reaches of Vangorda Creek Diversion



Photo 19 Lower Reaches of Vangorda Creek Diversion



Photo 20 Headworks of the Vangorda Creek Diversion



Photo 21 Plunge pool at base of Vangorda Creek Diversion



Photo 22 Plunge pool at base of Vangorda Creek Diversion



Photo 23 Sludge Pond at the Treatment Plant



Photo 24 Tension Crack in crest of the Sludge Pond Dyke



Photo 25 Vegetation on downstream face of Sludge Pond Dyke.



Photo 26 Grouco Pond



Photo 27 Grum Interceptor Ditch



Photo 28 Subsidence in the lower reaches of the GID

APPENDIX B

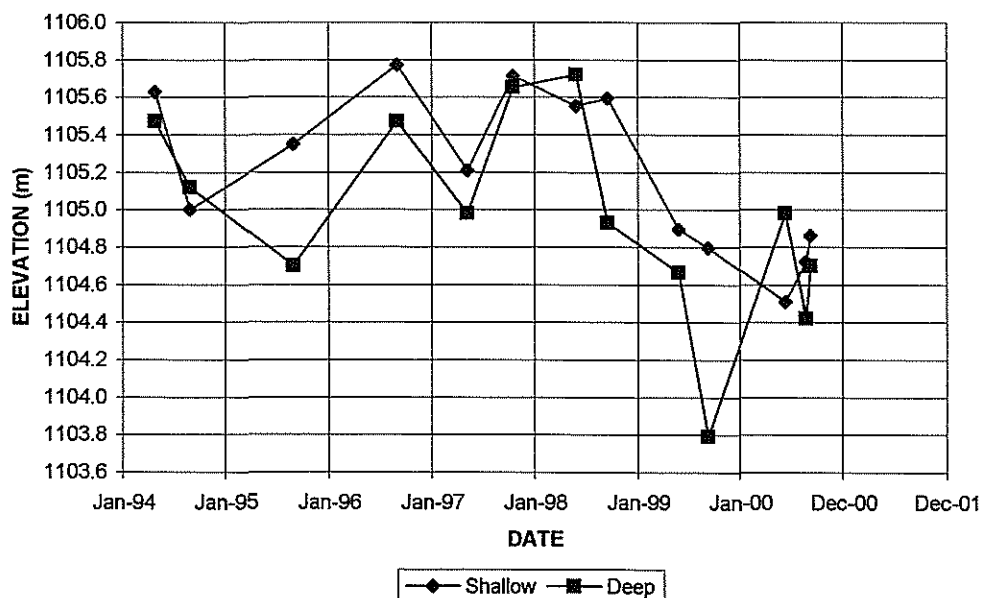
Pneumatic Piezometer and Thermistor Readings - Little Creek Dam

Little Creek Dam Pneumatic Piezometers

BH94 LCD1		Location: Little Creek Dam Crest	Ground Elevation: 1114.5m	Coordinates: 3000N, 13460E
Date Installed: June '94		Shallow Tip Elevation: 1103.6	Surface Deep Tip Elevation : 1097.0	Surface Protector: yes

Date	Reading (psi)		Piezometric Elevation (m)		Pond Level
	Shallow	Deep	Shallow	Deep	
May-94	2.9	12.1	1105.63	1105.47	
Sep-94	2.0	11.6	1105.00	1105.12	
Sep-95	2.5	11.0	1105.35	1104.70	
Sep-96	3.1	12.1	1105.77	1105.47	
May-97	2.3	11.4	1105.21	1104.98	
Oct-97	3.02	12.36	1105.71	1105.65	
May-98	2.79	12.46	1105.55	1105.72	
Sep-98	2.85	11.33	1105.60	1104.93	~1109.5
May-99	1.85	10.95	1104.90	1104.67	
Sep-99	1.71	9.70	1104.80	1103.79	~1105
Jun-00	1.30	11.40	1104.51	1104.98	
Aug-00	1.60	10.60	1104.72	1104.42	
Sep-00	1.80	11.00	1104.86	1104.70	

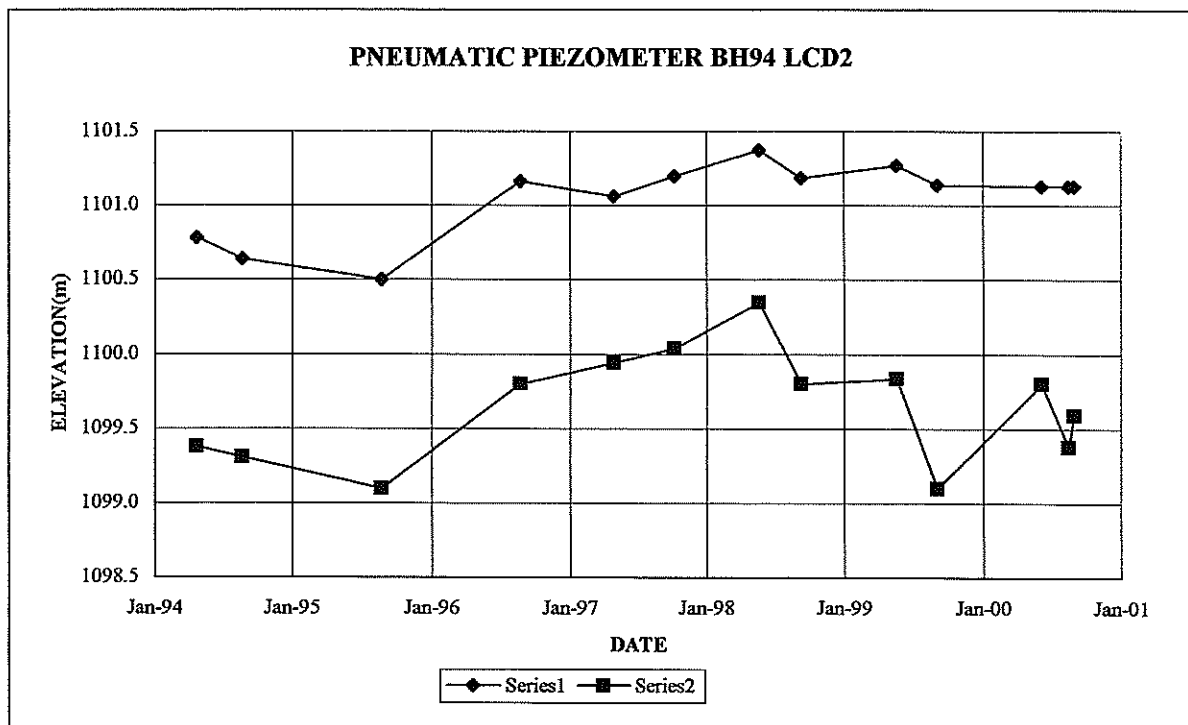
PNEUMATIC PIEZOMETER BH94 LCD1



Little Creek Dam Pneumatic Piezometers

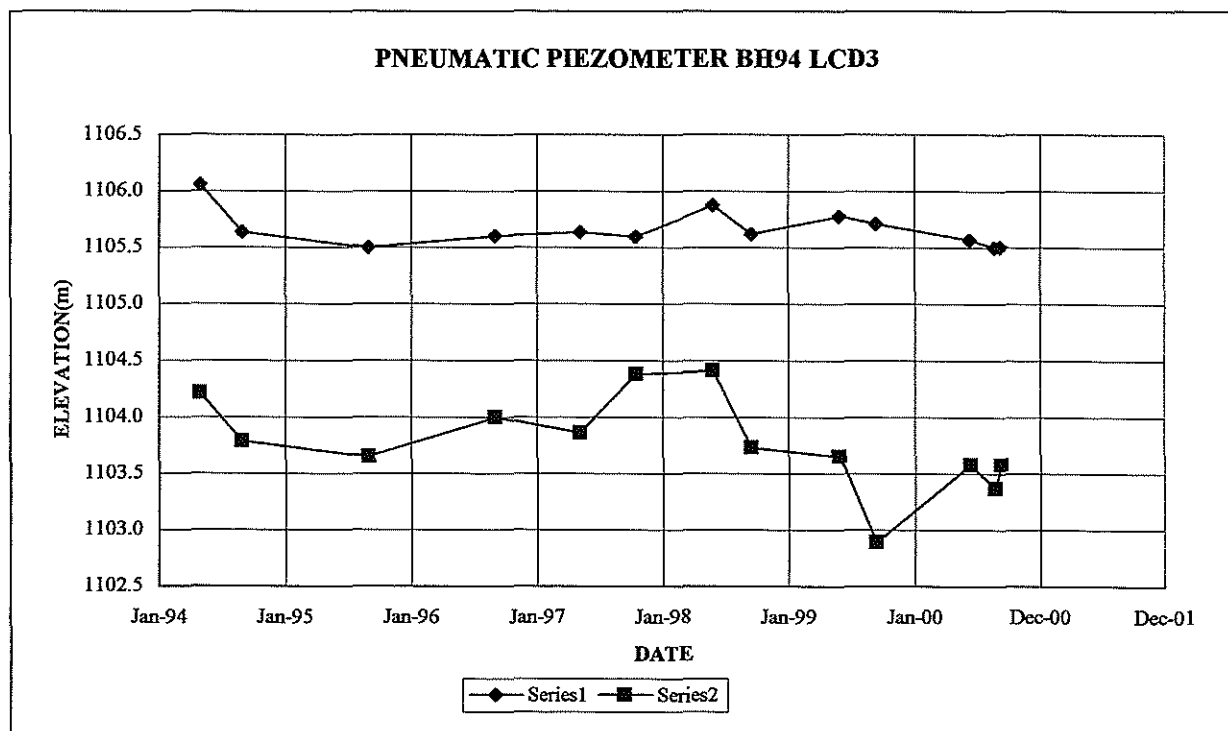
BH94 LCD2		Location: Little Creek Dam Crest	Ground Elevation: 1114.5m	Coordinates: 3065N,13485E	
Date Installed: June '94		Shallow Tip Elevation: 1100.5	Surface Deep Tip Elevation : 1094.9	Surface Protector: yes	

Date	Reading (psi)		Piezometric Elevation (m)		Pond Level
	Shallow	Deep	Shallow	Deep	
May-94	0.4	6.4	1100.78	1099.38	
Sep-94	0.2	6.3	1100.64	1099.31	
Sep-95	0.0	6.0	1100.50	1099.10	
Sep-96	0.95	7.0	1101.17	1099.80	
May-97	0.8	7.2	1101.06	1099.94	
Oct-97	1.00	7.34	1101.20	1100.04	
May-98	1.25	7.78	1101.38	1100.35	
Sep-98	0.98	7.00	1101.19	1099.80	~1109.5
May-99	1.10	7.05	1101.27	1099.84	
Sep-99	0.91	6.00	1101.14	1099.10	~1105
Jun-00	0.90	7.00	1101.13	1099.80	
Aug-00	0.90	6.40	1101.13	1099.38	
Sep-00	0.90	6.70	1101.13	1099.59	



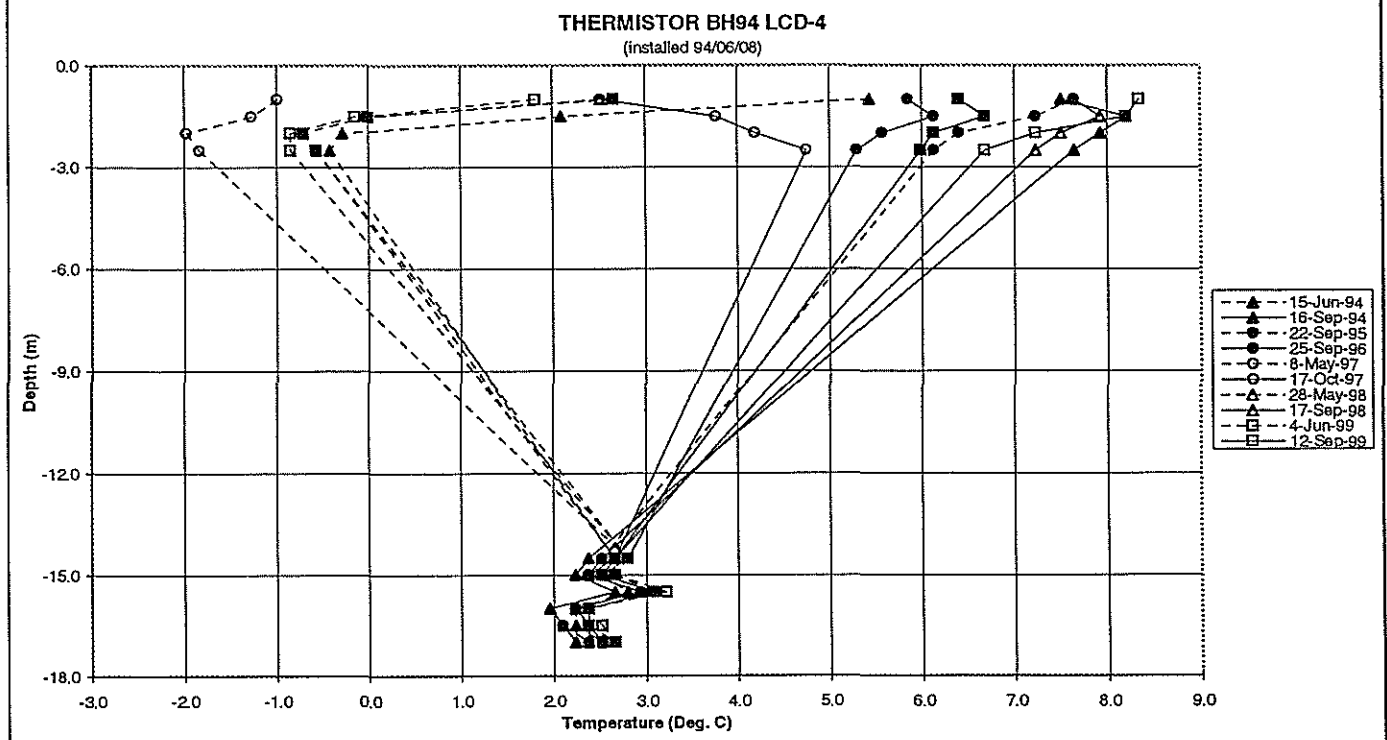
Little Creek Dam Pneumatic Piezometers

BH94 LCD3		Location: Little Creek Dam Crest	Ground Elevation: 1114.5m	Coordinates: 3115N, 13525E	
Date Installed: June '94		Shallow Tip Elevation: 1105.5	Surface Protector: yes		
		Deep Tip Elevation : 1101.2			
Date	Reading (psi)		Piezometric Elevation (m)		
	Shallow	Deep	Shallow	Deep	
May-94	0.8	4.3	1106.06	1104.21	
Sep-94	0.2	3.7	1105.64	1103.79	
Sep-95	0.0	3.5	1105.50	1103.65	
Sep-96	0.15	4.0	1105.61	1104.00	
May-97	0.2	3.8	1105.64	1103.86	
Oct-97	0.14	4.54	1105.60	1104.38	
May-98	0.54	4.58	1105.88	1104.41	
Sep-98	0.17	3.62	1105.62	1103.73	
May-99	0.40	3.50	1105.78	1103.65	
Sep-99	0.30	2.42	1105.71	1102.89	
Jun-00	0.10	3.40	1105.57	1103.58	
Aug-00	0.00	3.10	1105.50	1103.37	
Sep-00	0.01	3.40	1105.51	1103.58	



Little Creek Dam Thermistors

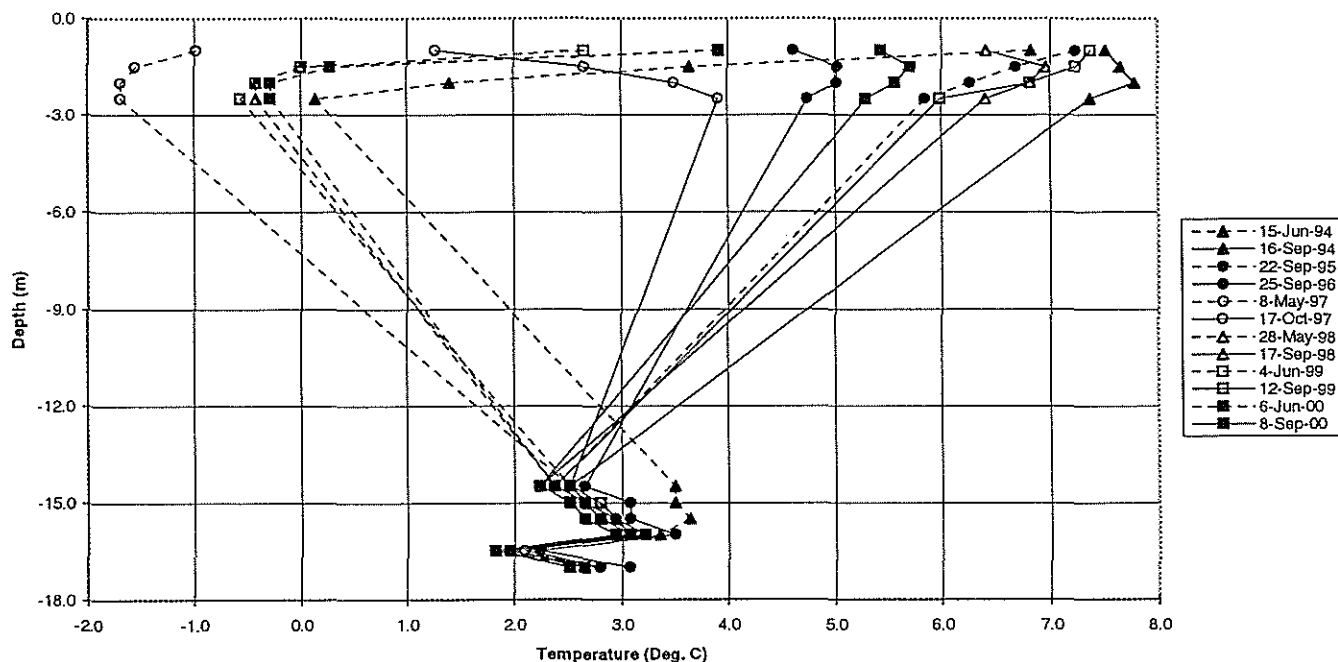
BH94 LCD-4		Location: Little Creek Dam Crest			Elevation: 1114.5m		Coordinates 3015N, 13465E									
Date Installed:		8-Jun-94			Thermistor Type:		SINCA RTD's		Ice-Bath Calibration:		not applied		Surface Protector:		yes	
Depth Correction		0		Ro (Ohms)= 1854												
Depth on String	Actual Depth	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	8-May-97	17-Oct-97	28-May-98	17-Sep-98	4-Jun-99	12-Sep-99	6-Jun-00	8-Sep-00			
1.0	-1.0	1893	1908	1909	1896	1847	1872	1872	1909	1867	1914	1873	1900			
1.5	-1.5	1869	1913	1906	1898	1845	1881	1854	1911	1853	1913	1854	1902			
2.0	-2.0	1852	1911	1900	1894	1840	1884	1849	1908	1848	1906	1849	1898			
2.5	-2.5	1851	1909	1898	1892	1841	1888	1850	1906	1848	1902	1850	1897			
14.5	-14.5	1873	1871	1872	1874	1874	1873	1873	1872	1874	1873	1874	1873			
15.0	-15.0	1872	1870	1871	1872	1872	1871	1871	1871	1873	1872	1873	1872			
15.5	-15.5	1874	1873	1875	1876	1876	1875	1875	1875	1877	1876	1876	1876			
16.0	-16.0	1870	1868	1870	1871	1871	1870	1870	1870	1871	1871	1871	1871			
16.5	-16.5	1870	1869	1869	1871	1871	1871	1870	1871	1872	1871	1871	1871			
17.0	-17.0	1870	1870	1871	1872	1872	1872	1872	1871	1873	1872	1873	1872			
Depth on String	Actual Depth	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	8-May-97	17-Oct-97	28-May-98	17-Sep-98	4-Jun-99	12-Sep-99	6-Jun-00	8-Sep-00			
1.0	-1.0	5.4	7.5	7.7	5.9	-1.0	2.5	2.5	7.7	1.8	8.3	2.7	6.4			
1.5	-1.5	2.1	8.2	7.2	6.1	-1.3	3.8	0.0	7.9	-0.1	8.2	0.0	6.7			
2.0	-2.0	-0.3	7.9	6.4	5.6	-2.0	4.2	-0.7	7.5	-0.8	7.2	-0.7	6.1			
2.5	-2.5	-0.4	7.7	6.1	5.3	-1.8	4.7	-0.6	7.2	-0.8	6.7	-0.6	6.0			
14.5	-14.5	2.7	2.4	2.5	2.8	2.8	2.7	2.7	2.5	2.8	2.7	2.8	2.7			
15.0	-15.0	2.5	2.2	2.4	2.5	2.5	2.4	2.4	2.4	2.7	2.5	2.7	2.5			
15.5	-15.5	2.8	2.7	2.9	3.1	3.1	2.9	2.9	2.9	3.2	3.1	3.1	3.1			
16.0	-16.0	2.2	2.0	2.2	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.4			
16.5	-16.5	2.2	2.1	2.1	2.4	2.4	2.4	2.2	2.4	2.5	2.4	2.4	2.4			
17.0	-17.0	2.2	2.2	2.4	2.5	2.5	2.5	2.5	2.4	2.7	2.5	2.7	2.5			



Little Creek Dam Thermistors

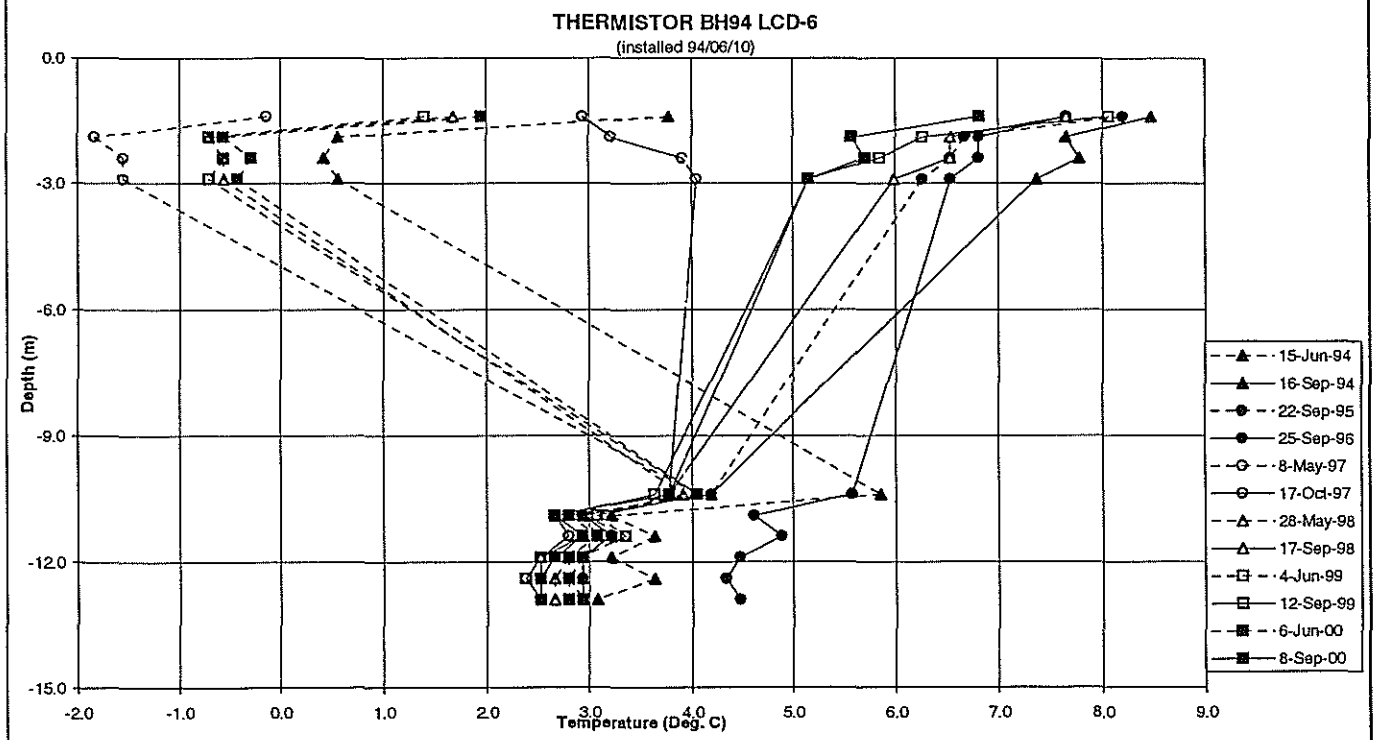
BH94 LCD-5		Location: Little Creek Dam Crest		Elevation: 1114.5m		Coordinates 3090N, 13500E							
Date				Thermistor SINCA		Ice-Bath		Surface					
Installed: 8-Jun-94				Type: RTD's		Calibration: not applied		Protector: yes					
Depth													
Correction 0				Ro (Ohms)= 1854									
Depth on String	Actual Depth	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	8-May-97	17-Oct-97	28-May-98	17-Sep-98	4-Jun-99	12-Sep-99	6-Jun-00	8-Sep-00
1.0	-1.0	1903	1908	1906	1887	1847	1863	1882	1900	1873	1907	1882	1893
1.5	-1.5	1880	1909	1902	1890	1843	1873	1854	1904	1854	1906	1856	1895
2.0	-2.0	1864	1910	1899	1890	1842	1879	1851	1903	1851	1903	1852	1894
2.5	-2.5	1855	1907	1896	1888	1842	1882	1851	1900	1850	1897	1852	1892
14.5	-14.5	1879	1872	1871	1873	1872	1872	1871	1870	1872	1871	1871	1870
15.0	-15.0	1879	1873	1873	1876	1874	1874	1873	1872	1874	1873	1873	1872
15.5	-15.5	1880	1875	1874	1876	1875	1875	1874	1873	1874	1874	1874	1873
16.0	-16.0	1878	1876	1877	1879	1877	1877	1876	1875	1877	1876	1876	1875
16.5	-16.5	1868	1868	1868	1870	1869	1869	1867	1867	1868	1868	1868	1867
17.0	-17.0	1873	1873	1874	1876	1874	1874	1873	1872	1873	1873	1873	1872
Depth on String	Actual Depth	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)
(m)	(m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	8-May-97	17-Oct-97	28-May-98	17-Sep-98	4-Jun-99	12-Sep-99	6-Jun-00	8-Sep-00
1.0	-1.0	6.8	7.5	7.2	4.6	-1.0	1.3	3.9	6.4	2.7	7.4	3.9	5.4
1.5	-1.5	3.6	7.7	6.7	5.0	-1.5	2.7	0.0	7.0	0.0	7.2	0.3	5.7
2.0	-2.0	1.4	7.8	6.3	5.0	-1.7	3.5	-0.4	6.8	-0.4	6.8	-0.3	5.6
2.5	-2.5	0.1	7.4	5.9	4.7	-1.7	3.9	-0.4	6.4	-0.6	6.0	-0.3	5.3
14.5	-14.5	3.5	2.5	2.4	2.7	2.5	2.5	2.4	2.2	2.5	2.4	2.4	2.2
15.0	-15.0	3.5	2.7	2.7	3.1	2.8	2.8	2.7	2.5	2.8	2.7	2.7	2.5
15.5	-15.5	3.6	2.9	2.8	3.1	2.9	2.9	2.8	2.7	2.8	2.8	2.8	2.7
16.0	-16.0	3.4	3.1	3.2	3.5	3.2	3.2	3.1	2.9	3.2	3.1	3.1	2.9
16.5	-16.5	2.0	2.0	2.0	2.2	2.1	2.1	1.8	1.8	2.0	2.0	2.0	1.8
17.0	-17.0	2.7	2.7	2.8	3.1	2.8	2.8	2.7	2.5	2.7	2.7	2.7	2.5

THERMISTOR BH94 LCD-5
(installed 94/06/08)



Little Creek Dam Thermistors

BH94 LCD-6		Location: Little Creek Dam Crest			Elevation: 1114.5m		Coordinates 3125N, 13535E						
Date Installed: 10-Jun-94		Thermistor Type: SINCA RTD's		Ice-Bath Calibration: not applied		Surface Protector: yes							
Depth Correction 0.4		Ro (Ohms)= 1854											
Depth on String	Actual Depth	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)	Resistivity (Ohms)
String (m)	Depth (m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	8-May-97	17-Oct-97	28-May-98	17-Sep-98	4-Jun-99	12-Sep-99	6-Jun-00	8-Sep-00
1.0	-1.4	1881	1915	1913	1909	1853	1875	1866	1909	1864	1912	1868	1903
1.5	-1.9	1858	1909	1902	1903	1841	1877	1849	1901	1849	1899	1850	1894
2.0	-2.4	1857	1910	1901	1903	1843	1882	1850	1901	1850	1896	1852	1895
2.5	-2.9	1858	1907	1899	1901	1843	1883	1850	1897	1849	1891	1851	1891
10.0	-10.4	1896	1884	1884	1894	1883	1881	1882	1881	1883	1880	1883	1881
10.5	-10.9	1877	1875	1875	1887	1875	1873	1875	1873	1876	1873	1874	1873
11.0	-11.4	1880	1877	1877	1889	1878	1874	1876	1875	1878	1875	1876	1875
11.5	-11.9	1877	1875	1875	1886	1875	1872	1874	1872	1875	1872	1874	1873
12.0	-12.4	1880	1875	1875	1885	1874	1871	1873	1872	1874	1871	1874	1872
12.5	-12.9	1876	1875	1875	1886	1875	1872	1873	1872	1875	1872	1874	1872
Depth on String	Actual Depth	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)	Temperature (C)
String (m)	Depth (m)	15-Jun-94	16-Sep-94	22-Sep-95	25-Sep-96	8-May-97	17-Oct-97	28-May-98	17-Sep-98	4-Jun-99	12-Sep-99	6-Jun-00	8-Sep-00
1.0	-1.4	3.8	8.5	8.2	7.7	-0.1	2.9	1.7	7.7	1.4	8.1	2.0	6.8
1.5	-1.9	0.6	7.7	6.7	6.8	-1.8	3.2	-0.7	6.5	-0.7	6.3	-0.6	5.6
2.0	-2.4	0.4	7.8	6.5	6.8	-1.5	3.9	-0.6	6.5	-0.6	5.9	-0.3	5.7
2.5	-2.9	0.6	7.4	6.3	6.5	-1.5	4.1	-0.6	6.0	-0.7	5.2	-0.4	5.2
10.0	-10.4	5.9	4.2	4.2	5.6	4.1	3.8	3.9	3.8	4.1	3.6	4.1	3.8
10.5	-10.9	3.2	2.9	2.9	4.6	2.9	2.7	2.9	2.7	3.1	2.7	2.8	2.7
11.0	-11.4	3.6	3.2	3.2	4.9	3.4	2.8	3.1	2.9	3.4	2.9	3.1	2.9
11.5	-11.9	3.2	2.9	2.9	4.5	2.9	2.5	2.8	2.5	2.9	2.5	2.8	2.7
12.0	-12.4	3.6	2.9	2.9	4.3	2.8	2.4	2.7	2.5	2.8	2.4	2.8	2.5
12.5	-12.9	3.1	2.9	2.9	4.5	2.9	2.5	2.7	2.5	2.9	2.5	2.8	2.5



Appendix 3

2000 Technical Advisory Committee Meeting: Agenda, Attendees, Summary





Postal Bag 1000, Faro, Yukon Y0B 1K0
Phone (867) 994-2459
Facsimile (867) 994-3483

FAX MESSAGE TO: distribution attached

2 pages total

DATE: June 12, 2000

FROM: Eric Denholm

RE: Faro Technical Advisory Committee Meeting

MESSAGE: A T.A.C. Meeting has been scheduled for July 6 in Faro.

Please let us know if you will be attending.

Accommodations in Faro are very limited. Hoang's (previously Redmond's) at 994-2430 is the only hotel. Bed & breakfasts are available (check names and numbers with Town of Faro).

Please contact Karin Svec at Gartner Lee Ltd. Whitehorse office with any questions (ph: 633-6474).

Regards,

RETURN FAX TO: Gartner Lee Ltd. (Whitehorse); Attention Karin Svec

fax: (867) 633-6321

FROM: _____

MESSAGE: I will attend: _____

I will not attend: _____

Additional comments: _____

TECHNICAL ADVISORY COMMITTEE MEETING
(PRELIMINARY CIRCULAR)

DATE: Thursday July 6, 2000; 8:00 am to 5:00 pm

LOCATION: Faro guest house, 248 Dawson (large house, lower bench)

PROPOSED AGENDA:

1. BRIEF OVERVIEW OF: SITE MANAGEMENT
1999 ENVIRONMENTAL WORK
2000 ENVIRONMENTAL WORK
2. SITE TOUR: FARO MAIN / ZONE II PITS
(bag lunch is provided) FARO WATER TREATMENT SYSTEM
DOWN VALLEY / TAILINGS
VANGORDA PLATEAU
3. WRAP UP MEETING:

DISTRIBUTION: Anvil Range Mining Corp.(Interim Receivership):

Dana Haggar	(867) 994-3349
Deloitte & Touche Inc.: Wes Treleaven	(416) 601-6390
Deloitte & Touche Inc.: Doug Sedgwick	(416) 601-6390
Deloitte & Touche Inc.: Greg Stevens	(403) 263-2390
Dept. of Fisheries and Oceans: Brian Ferguson	393-6738
DIAND, Environment: Ian Church	667-3216
DIAND, Land Use: Allan Carlick	667-3193
DIAND, Mining Development: Hugh Copeland	667-3193
DIAND, Water Resources: Dave Sherstone	667-3195
Environment Canada: Vic Enns	667-7962
Ross River Dena Council:	
Chief Norman Sterriah	(867) 969-2405
Selkirk First Nation: Don Trudeau	(867) 537-3902
Town of Faro, Jim McLaughlin	(867) 994-3154
Yukon Conservation Society: Bob Van Dijken	668-6637
YTG, Economic Development: Rod Hill	667-8601
YTG, Renewable Resources: Chuck Hubert	667-3641

**ANVIL RANGE MINING CORPORATION
(INTERIM RECEIVERSHIP)**

**VANGORDA PLATEAU TECHNICAL ADVISORY COMMITTEE
SUMMARY OF MEETING JULY 6, 2000**

Location: Faro

Attendees: Deloitte & Touche Inc.: Wes Treleaven (416) 601-6390
 Deloitte & Touche Inc.: Greg Stevens (403) 263-2390
 Dept. of Fisheries and Oceans: Sandra Orban 393-6738
 DIAND, Mineral Resources, Allan Carlick 667-3193
 DIAND, Mineral Resources: Hugh Copeland 667-3193
 DIAND, Water Resources: Dave Sherstone 667-3195
 Gartner Lee Ltd.: Eric Denholm 633-6321
 Yukon Conservation Society: Bob Van Dijken 668-6637
 Yukon Salmon Committee (Chair): Carl Sidney
 Yukon Salmon Committee and Fish & Wildlife Board:
 Clyde Blackjack
 Yukon Salmon Committee: Beverly Brown
 YTG, Economic Development: Rod Hill 667-8601
 YTG, Renewable Resources: Chuck Hubert 667-3641

The meeting was called to order at 8:15 am.

Wes Treleaven provided an overview of the status and future direction of site management and ownership issues and responded to questions on these issues as per the following summary:

- the Memorandum Of Understanding ("MOU") that would pass ownership of the minesite to a new company that might be jointly owned by DIAND, YTG and Cominco and for which Cominco would be the operator is being discussed and moved forward by the parties; however, there are numerous legalities involved that take time to work through regarding disposition of proceeds from the sale of assets, environmental issues, and so on
- the MOU and change of ownership is probably not going to take place right away and the current management structure with Deloitte & Touche Inc. ("D&T") acting as court appointed interim receiver will remain in place for now
- we are into the 3rd year of the interim receivership which is longer than was generally anticipated at the outset; the work that has been performed to date under the receivership has been management of the day to day compliance issues with the intention of protection of the environment while ownership issues were resolved

- however, the management philosophy under the receivership has changed due to the extended timeframe that is now involved; some of the longer term environmental issues must be actively pursued to ensure that the environment is being adequately protected
- we have serious concerns regarding the physical integrity of the Faro fresh water supply dam ("FWSD") and we intend to develop options that would reduce the pressures on the dam; the evaluation of options should include DFO because of implications on fisheries habitat (the FWSD and Rose Creek are used by freshwater fisheries)

Q. (BVD): will this work require a licence amendment?

A. (WT/DS): likely not; Water Resources could order D&T to do such work if necessary; there are some legalities that would be double checked

- the chances that the mine operations will restart at Faro are low; it is likely that over \$100 million start up capital would be required; therefore, we must start looking at the minesite issues from a longer term perspective
- there are other areas of significant concern including the Vangorda Creek diversion flume; there was a rock fall last year at the flume and the flume was repaired on an emergency basis; an emergency preparedness plan is in place and some maintenance work (rip rap) is planned for this year
- approx. 2,700 tons of scrap steel was removed from the site last year under a DIAND work program; the boneyards were cleaned up as the work progressed and a follow up program has been authorized for this year (the 1999 quantity was misstated as approx. 80,000 lbs of scrap steel at the T.A.C. meeting - E.D.)
- the consolidation of used oil is on-going

Q. (BVD): is the Faro pit/Zone II pit coffer dam required under the longer term perspective?

A. (WS): the Faro Creek diversion is an issue wrt the stability if the NE pit wall; perpetual care & mtce of the water level in the Faro pit is required in the long term; the coffer dam is not currently needed if the Faro pit water level is managed properly

Q. (CS): what is the timeframe required for clean up of the site?

A. (WS): the Reclamation Security Trust is vastly undersized for the amount of work required at only ~\$12.5 million; there may be in excess of 10 to 15 years work required plus engineering/research studies plus considerations of water management at the Vangorda pit

Q. (CH): is the site in compliance now?

A. (WT): yes, the pond levels are low and the water quality is good; we are starting to see a reduction in the zinc levels in the Intermediate pond due to pumping and treating water from the Faro pit

- Eric Denholm has recently accepted a position with Gartner Lee Ltd. and there is a contract in place whereby Gartner Lee and Eric provide consulting services to us
- also, Doug Sedgwick who is the Director of Environmental Services with D&T continues to be involved with this project
- the routine monitoring programs are continuing for water quality and physical stability

Q. (BVD): Does the water licence require further abandonment studies and who holds the water licence?

A. (WS): Anvil Range Mining Corp. holds the water licences; D&T did not sign the land leases; in reality, DIAND is the funder of the project; further abandonment studies would be performed based on available and approved funding from DIAND

A. (DS): this situation is similar to that at BYG; Water Resources may not hold a water licence for abandoned sites; the legalities are being checked but are not yet determined; a problem arises from being both the operator and the regulator; the licences might not be renewed here and the site may be managed and regulated under other regulations

Q. (BVD): the reclamation issues have been put off since 1992 or earlier; how do we get a forum to discuss these issues?

A. (WS): it is always very difficult to make decisions involving large numbers of people/stakeholders

Q. (CB): the last report on the tailings pond was that it was full and that it would soon overflow; when will you start to clean it out?

A. (WS/ED): tailings are both beached and underwater in the tailings ponds; there is no program for moving the tailings in the near future; we are providing treatment for overflow from the tailings ponds prior to the water entering Rose Creek

Q. (CH): are there any new developments at the FWSD re. increased cracking, etc.

A. (WS/DS): no, it is the same situation that has existed for a number of years; we have professional engineering assessments of the dam on at least an annual basis; there are some long standing issues re. cracking on the crest of the dam

Q. (CH): what is Cominco's involvement?

A. (WS): Cominco is a shareholder and a creditor of ARMC; Cominco is involved in negotiating the MOU but are not paying any of the costs right now

Q. (BVD): in the USA, Cominco may have been brought into the issue of liabilities

A. (WS): D&T is working extensively in the USA including a significant amount of mining work; in the USA public shareholders are not liable for env./reclamation issues

Q. (CS): Faro is an expensive lesson for the mining industry; can we make this site into a training/education centre for env./reclamation work?

A. (WS): Faro is not an isolated case; in the 1960's, mining industry was not required to provide for long term reclamation as they are now and, therefore, the events of the past come forward to be dealt with today; here at Faro, someone has to take ownership of the

env. issues and this could be the new company formed under the MOU when this is finalized

(RH): a tremendous amount of work has been done and is being done regarding mine reclamation issues and the federal MEND program is a good example of this

(WT): it is best when a financially viable company who are good corporate citizens are involved; for example, Elliot Lake in Ontario is a good example of reclamation; Faro is a fringe mine and has largely been operated by fringe companies

Q. (CH): but Cominco who is a major mine company is involved here

A. (WT): Cominco is a good company but can not assume the liabilities here in Faro; the way forward here is to finalize the MOU and move onwards under that structure

Q. (BVD): if D&T is likely to be managing the minesite into 2001, how will the court dates work?

A. (WT): D&T reports back to the court every 90 days; budgets are presented and reviewed by DIAND and Cominco; the budgets get approved for 2 to 3 month periods; the current budget is approved to September 2000

Q. (BVD): we no longer receive the court reports

A. (WT): they are available and you can get them from DIAND or directly from D&T; the court reports are public documents

Q. (SO): if the MOU is bogged down, what are the expectations?

A. (WT): the MOU is a very large document that is being negotiated by the lawyers; there are numerous legal and financial complications; the Miners Lien Act is unique to the Yukon and must be dealt with; there are also unresolved issues among the lien holders themselves

Q. (CH): how much longer is D&T prepared to stay on?

A. (WT): we have a good relationship here; D&T could walk away but it is not our intention to do so

Eric Denholm provided an overview of the minesite and described the route of the mine tour

a tour of the minesites was taken with stops and discussions at the following locations:

1. Faro Fresh Water Supply Dam
2. Faro Creek diversion/Faro Main pit east viewpoint
3. North Fork of Rose Creek/Vangorda haul road rock drain
4. Faro guardhouse
5. Intermediate Dam spillway lime addition system
6. Down Valley; south abutment of Intermediate dam
7. Grum pit viewpoint
8. Vangorda pit viewpoint
9. Vangorda Creek diversion flume

- 10. Vangorda rock dump 1994 reclamation work from dump toe
- 11. Grum water treatment plant

- Wes Treleven and Greg Stevens did not attend the mine tour due to previous commitments
- Carl Sidney, Clyde Blackjack and Beverly Brown left the minesite after the stop at the south abutment of the Intermediate dam due to previous commitments
- during the tour, the following issues were discussed:
 - FWSD current issues and intention to move forward with reduced water elevation
 - Faro Creek diversion leakage, physical stability, and possible relocation options
 - Faro Main pit and Zone II pit management
 - Treatment and discharge of Faro pit water
 - special project underway re. physical stability of Vangorda Creek diversion flume and short term management options
 - special project underway re. the technical feasibility for reclamation of the Vangorda open pit as a clean water flow through system
 - special project underway re. use of the existing Grum water treatment plant for possible future treatment of water from the Vangorda open pit
 - timeframe for filling of the Vangorda open pit

Following the tour, a brief wrap up meeting was held in the town of Faro

The meeting was adjourned at 5:00pm.

This meeting summary was prepared by Eric Denholm

Distribution: all attendees
all invitees not in attendance and whose organizations were not represented (including minesite tour maps)

Appendix 4

*Indian and Northern Affairs Canada,
Letter: Re: Maintenance of Vangorda Creek Diversion
Flume: Anvil Range Mine, Faro, Yukon,
November 3, 2000*



Indian and Northern
Affairs Canada

Affaires indiennes
et du Nord Canada

Water Resources Division
Northern Affairs Program
#310 - 300 Main Street
Whitehorse, Yukon, Y1A 2J35

Yukon file Yukon reference

Out file Native reference

Faro Mine -
Anvil Range

November 03, 2000

Mr. Doug Sedgwick, Director
Environmental Services
Deloitte & Touche LLP
BCE Place
181 Bay Street, Suite 1400
Toronto, Ontario, M5J 2V1

Fax #(416) 601-6151

Dear Mr. Sedgwick:

**RE: MAINTENANCE OF VANGORDA CREEK DIVERSION FLUME: ANVIL RANGE
MINE, FARO, YUKON**

The purpose of this letter is to instruct Deloitte & Touche LLP, acting in its capacity as the Receiver for the Anvil Range Mining properties at the Faro, Vangorda and Grum mining properties, to undertake the necessary steps to prevent further rock falls and blockages of the above diversion ditch system. Deloitte & Touche is further instructed to commence this work immediately with the goal of completing the necessary work prior to fall freeze up 2000, but in any case no later than the onset of spring freshet in 2001.

The Problem:

In 1999 a failure of the rock face adjacent to the Vangorda Diversion Ditch in the area of the Vangorda Open Pit, resulted in damage to several metres of the culvert flume. In effecting the repairs the flow in the ditch was directed to the Vangorda Pit for several days.

The diversion of flow to the pit accelerates the filling rate and mixes significant volumes of "clean" water with the contaminated water already in the pit. This will substantially increase the volume of pit water which must ultimately be treated before discharge to the environment. The additional treatment cost will be significant.

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Additionally, the 1999 rock wall failure occurred at a point at which the distance between the diversion ditch and the lip of the open pit is only a few metres. Should another failure of the rock wall occur and the culvert section be blocked during a time of year when access is restricted, there is the possibility that the roadway between the flume and open pit would be washed out. This would prevent access to the upper portions of the Vangorda Creek Diversion. It would also result in substantial additional volumes of creek water entering the Vangorda Open Pit.

Options for Correcting the Problem:

DIAND Water Resources has reviewed the several options prepared by Deloitte & Touche to address the problem. Given this Department's concerns with long-term stability and environmental control and clean-up issues, it is our position that the only acceptable solution is the removal of sufficient of the adjacent rock wall, and the resloping of the resulting rock face such that any additional failures will not likely result in material entering the Vangorda Diversion Ditch and/or flume.

To complete the necessary engineering work, mobilize equipment and manpower in timely manner and complete the work I understand the cost to be estimated at between \$120,000 and \$140,000. Given the colder temperatures now being experienced and the need to mobilize on short notice I recommend that Deloitte & Touche proceed on the basis that costs are most likely to be close to the \$140,000 figure.

Instruction to Deloitte & Touche:

As an Inspector designated under the *Yukon Waters Act* I am hereby instructing Deloitte & Touche to proceed with all possible speed to initiate the work necessary to remove sufficient of the rock wall and reslope the remaining outcrop in a manner which will prevent further damage to, or obstruction of, the Vangorda Diversion Ditch in the areas adjacent to the Vangorda Open Pit.

Should you require clarification or further information please contact me at your earliest convenience.

Yours sincerely,

David A. Sherstone

David A. Sherstone
Regional Manager, Water Resources
Inspector #055, *Yukon Waters Act*

cc: Robert Lauer, Mineral Resources Directorate, DIAND HQ

