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Chemical characteristics of stream waters in the Jabiluka region: Second Interim Report

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supervising scientist

Chemical characteristics of stream waters in the Jabiluka region: second interim report

Christopher leGras, Dene Moliere and David Norton

Introduction

The physiography of the Jabiluka minesite embodies a significant paradox. This is that a world-class uranium (U) orebody is overlain by streams that contain the element at concentrations of only a few nanograms per litre, which is near the practical detection limit. Indeed, uranium concentrations ([U]) in Swift Creek and its tributaries are in the bottom percentile of freshwater [U] worldwide, as depicted in the following diagram, which contains data adapted from Palmer and Edmond (1993).

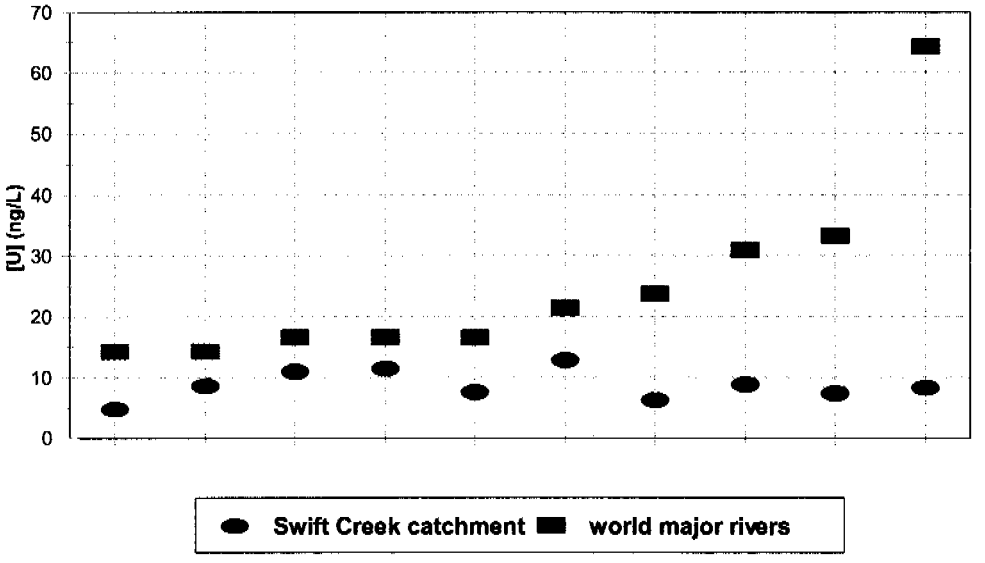

Figure 1. A comparison of mean [U] of various streams of the Swift Creek catchment and the ten major world rivers with the lowest [U] (world data from Palmer and Edmond 1993)

The Jabiluka orebody also contains copper and lead values much greater than average crustal abundance (though below ore grade), but these metals also report in stream water at concentrations that are frequently too low to measure.

The explanation for this situation lies in the local geology, where the orebody is hosted mostly by graphitic schists of lower Proterozoic age, which are overlain unconformably by sandstone and orthoquartzite deposited in the middle Proterozoic era (ERA 1996). The surface stratum is heavily leached, and even unweathered rock contains very low heavy metal contents (ERA 1996).

Therefore, the baseline and near-baseline data contained here provide a data set which will allow very small deviations from unaffected concentrations to be easily detected. This is an ideal position from a regulatory and monitoring viewpoint.

The objective of this report is to detail critical indicator values in streams of the Swift Creek catchment, and thereby to demonstrate the sensitivity of the sampling strategy that has been implemented. Two small streams in the immediate vicinity of the mine portal have been subjected to minor perturbations with presumably trivial environmental consequences. Nevertheless, these perturbations are observed clearly and consistently, which increases confidence in the efficacy of the program. The main stream near the mine, Swift Creek, shows no measurable effects from mining at present. This is despite the data being sufficiently sensitive and precise to demonstrate a high degree of intra-year and inter-year consistency for the indicators measured. This data set should therefore provide an adequate basis from which to observe small mine-related excursions from baseline, should they occur. For many indicators, notably U and sulfate (SO_4^{2-}), small spatial and temporal variations have been measured at concentrations that were below commercially accessible quantitation limits as recently as 15 years ago.

A description of the sampling program and data set

The sampling approach

The sampling program commenced during the 1997-98 Wet Season, and is scheduled to conclude at the end of the 2000-01 Season, yielding four years of data. Only data from the first three years are included in this report, except for qualitative reference to 2000-01 data where these are particularly relevant. A total of 31 sites have been sampled in Swift Creek, its tributaries, and in a number of small creeks that flow westward from the escarpment outlier west from the minesite to the Oenpelli Road. These west-flowing stream sites constitute control samples. In addition, a further six sites were sampled in three adjacent catchments, also for comparison purposes.

A total of 21 physical and chemical indicators were measured at these sites, including general water parameters (pH, electrical conductivity-EC, alkalinity, organic carbon and turbidity), nutrients (total phosphorus and orthophosphate), major ions (chloride-Cl^-, SO_4^{2-}, magnesium-Mg and calcium-Ca) and heavy metals (aluminium-Al, cadmium-Cd, chromium-Cr, copper-Cu, iron-Fe, manganese-Mn, nickel-Ni, lead-Pb, U and zinc-Zn).

Most of these indicators are present in very low concentrations, at or near practical detection limits in some cases. These indicators are unable to provide meaningful spatial or temporal information, though the data are still useful as a basis for assessing mine-related deviations. Notable in this group is Pb, with a detection limit of 0.02 µg/L and with few measurements unequivocally above this. For this reason, Pb has been not been discussed in this report. Many other indicators did not vary in a readily interpretable way, or else are not expected to be mine-related contaminants, and so have also been omitted from this report.

In the same way, the number of sites discussed has been restricted to those that would be most affected by mining activities, together with the corresponding control sites.

Mean values for important indicators

Mean values for selected indicators (averaged over the three years 1997-98 to 1999-2000) at important sites are recorded in Table 1.

Site	GPS location	pH	EC uS/cm	Turb. NTU	[Mg] mg/L	[SO_4^{2-}] mg/L	[Cu] µg/L	[Mn] µg/L	[U] µg/L
Swift Creek upstream 1	132.931444 12.504000	4.74± 0.36	11.0± 2.1	1.1± 0.4	0.25± 0.07	0.32± 0.10	0.16± 0.09	3.2± 1.6	0.008± 0.003
Swift Creek upstream 2	132.933940 12.503911	4.91± 0.22	11.4± 2.5	1.4± 2.1	0.24± 0.06	0.31± 0.20	0.18± 0.12	3.5± 1.6	0.008± 0.003
Swift Creek downstream 1	132.921528 12.494194	5.37± 0.69	9.2± 4.3	6.2± 12.9	0.36± 0.09	0.23± 0.07	0.18± 0.06	3.5± 1.6	0.010± 0.002
Swift Creek gauging station	132.922438 12.491447	5.33± 0.27	10.5± 3.0	2.1± 1.6	0.34± 0.12	0.24± 0.21	0.18± 0.11	3.4± 2.0	0.010± 0.004
Swift Creek downstream 2	132.916667 12.484111	5.02± 0.58	13.0± 12.5	2.1± 0.8	0.39± 0.12	0.25± 0.13	0.18± 0.07	3.9± 2.3	0.011± 0.004
Swift Creek (Oenpelli Road)	132.913628 12.467907	5.40± 0.26	11.2± 2.7	2.6± 2.2	0.36± 0.10	0.22± 0.14	0.20± 0.16	3.5± 1.3	0.011± 0.005
Swift Creek west branch	132.927417 12.505722	5.83± 0.28	11.3± 7.8	5.9± 7.4	0.69± 0.49	0.16± 0.12	0.16± 0.07	3.2± 2.2	0.020± 0.011
East Tributary	132.932810 12.495093	4.97± 0.26	9.9± 3.1	1.3± 1.2	0.20± 0.06	0.22± 0.20	0.18± 0.15	2.6± 1.5	0.007± 0.002
Central Tributary causeway	132.915750 12.499653	6.05± 0.31	15.6± 4.0	2.0± 4.2	0.99± 0.27	0.08± 0.03	0.17± 0.17	3.5± 2.7	0.008± 0.004
Central Tributary downstream	132.911444 12.499361	6.10± 0.26	21.1± 6.3	3.0± 5.0	1.35± 0.50	0.11± 0.06	0.09± 0.09	6.2± 3.8	0.009± 0.007
North Tributary upstream	132.913712 12.498266	5.90± 0.28	8.5± 2.0	1.0± 0.6	0.47± 0.10	0.10± 0.05	0.16± 0.12	0.79± 0.40	0.007± 0.003
North Tributary downstream	132.915972 12.498556	6.12± 0.19	19.0± 15.6	4.3± 1.7	0.94± 0.78	0.27± 0.10	0.11± 0.12	2.8± 2.9	0.016± 0.011

Table 1. Mean indicator values at selected sites for the years 1997-98 to 1999-2000

The broad overview of indicator values presented in this table show that variation is relatively small throughout the whole suite. The main excursions are between the upstream and downstream sites of North and Central Tributaries. These small creeks define the northern and southern (respectively) boundaries of significant disturbance due to the mine. However, even though mine-related impacts can be inferred from these numbers, there exist substantial inter-year differences in the magnitude and temporal patterns of these indicator variations. These will be discussed in detail below. The complete data set for the three years is detailed in Appendix 2.

Variation in indicator concentrations in Swift Creek, North Tributary and Central Tributary

The physical and chemical character of Swift Creek

Only small differences are evident between the six Swift Creek sites sampled for the critical indicators Mg, Mn, U and SO_4^{2-}. The differences between the two sites upstream from the mine, and the four downstream sites are due mainly to the significantly different water chemistry of the West Branch of Swift Creek. This is the largest tributary of the main channel

and its confluence is between the two groups of sites.. West Branch has higher [U] and [Mg], but lower [SO_4^{2-}] than Swift Creek. Mn concentrations are almost identical, hence little difference in [Mn] is observed between the groups of sites. East, Central and North Tributaries, though with measurably different water chemistry from Swift Creek, are either not sufficiently different or have too small a discharge to make an observable difference. As shown in Figure 2, intra-year differences are more important than inter-year variations for Mn, SO_4^{2-} and U, with a pronounced 'washoff' effect consistently observed through the years. Except for the ordinate value, the figures are almost superposable. There is no evidence for any mine-related influence on water chemistry at any site in Swift Creek.

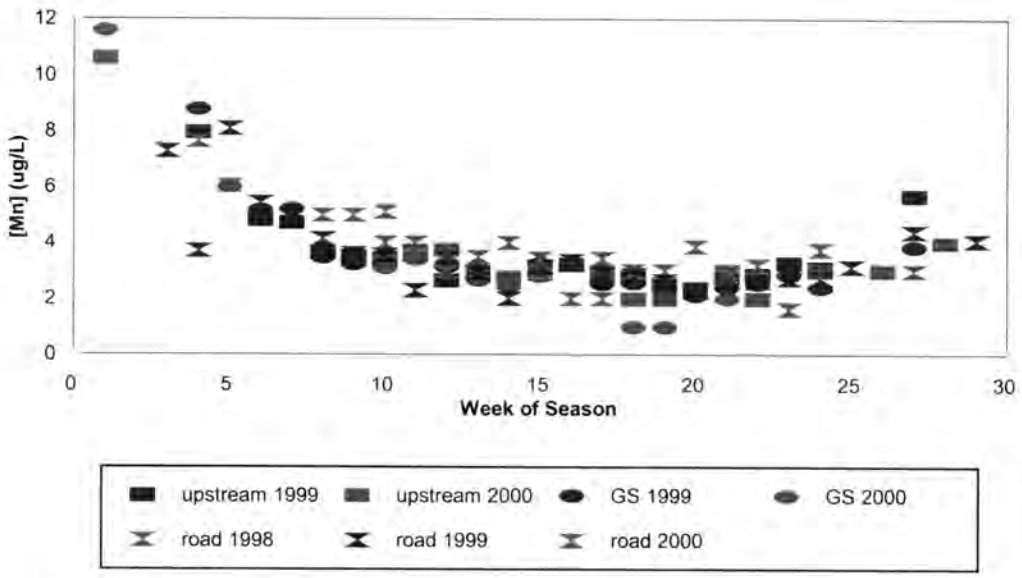

Figure 2a. Spatial and temporal variation in [Mn] at three sites in Swift Creek from 1998-2000

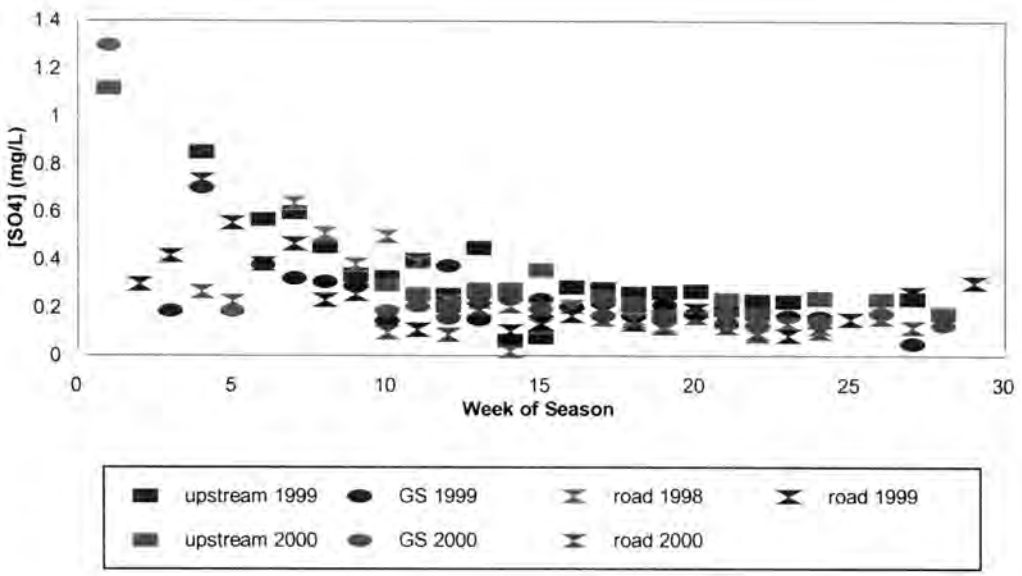

Figure 2b. Spatial and temporal variation in $[SO_4^{2-}]$ at three sites in Swift Creek from 1998-2000

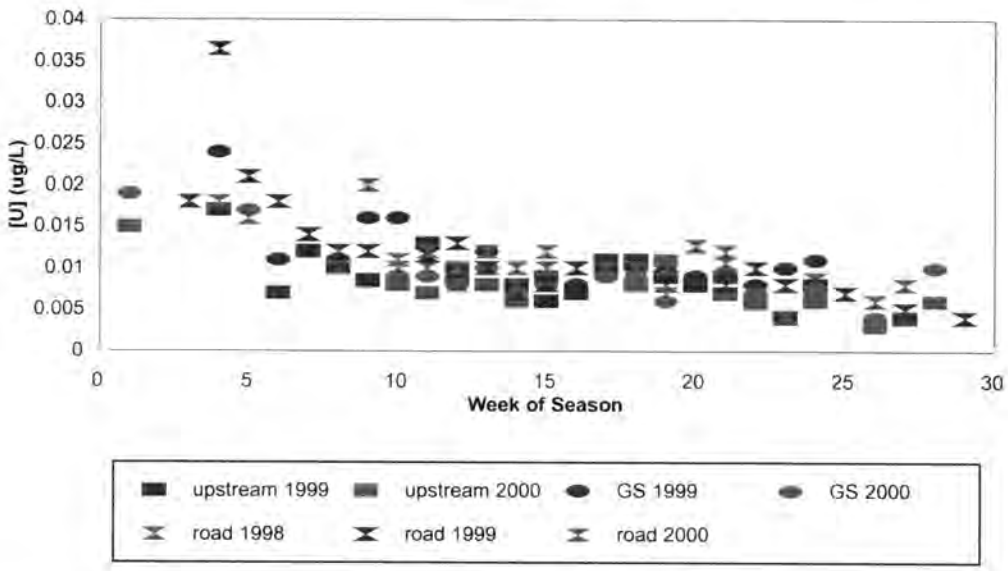

Figure 2c. Spatial and temporal variation in [U] at three sites in Swift Creek from 1998-2000

For Mn there is some evidence for an increase in concentration towards the end of the season. This may indicate that this metal is enriched in the hypolimnion, which contributes a greater proportion of surface flow as discharge decreases. Allied to this is the observation of greatly divergent behaviour of U and Mn in Swift Creek as a function of turbidity. In this case, turbidity is used as a surrogate for discharge, for which detailed data are not available.

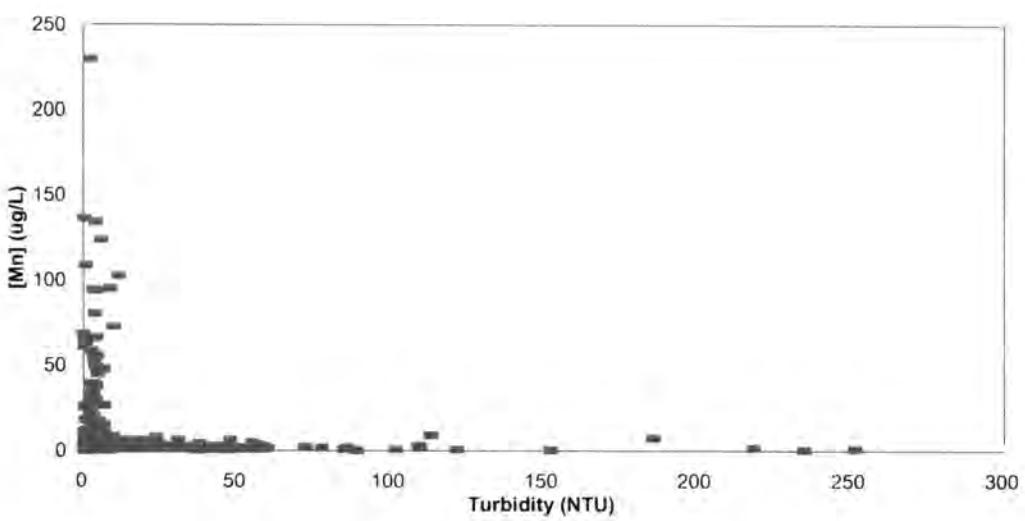

Figure 3a. The relationship between Mn and turbidity in Swift Creek samples (all sites)

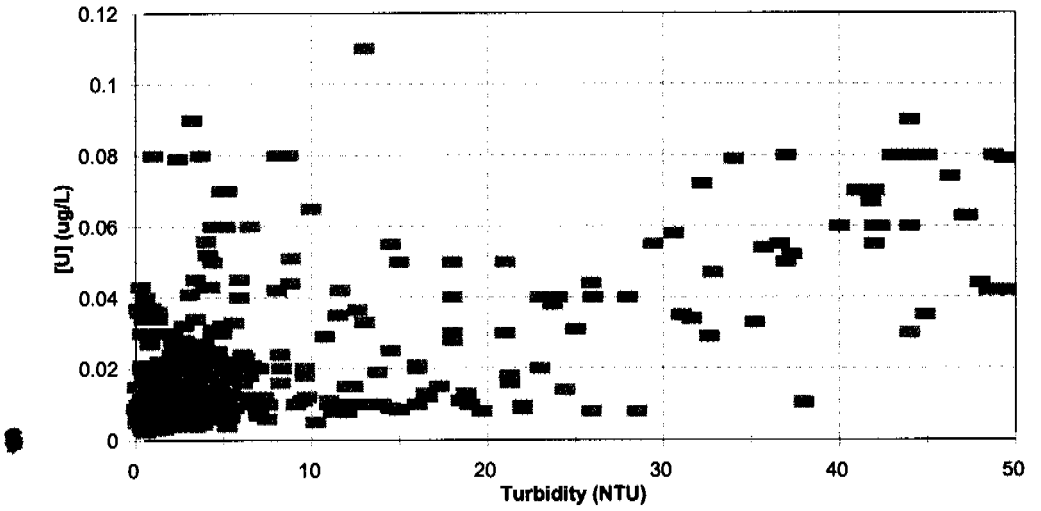

Figure 3b. The relationship between U and turbidity in Swift Creek samples (all sites)

The best explanation for this dramatically different behaviour is that Mn is derived mainly from groundwater intrusion, and hence is present in higher concentration when hyporheic water forms a greater proportion of total discharge, that is, at low flow. Uranium, conversely is much more directly related to turbidity, which suggests that it is more closely associated with runoff. This interpretation accords with the expected redox behaviour of the elements, where Mn oxides should be readily reduced to Mn^{2+} in organic-rich shallow groundwater.

The physical and chemical character of Central Tributary

Two sites were sampled on Central Tributary. One site is immediately upstream from a vehicular causeway and is believed to be minimally affected by mine-related disturbance. The second site is about 500 m farther along, downstream from likely inputs from mine construction. Although there are no obvious sources of mine-related contaminants to Central Tributary, the water chemistry of the two sites is significantly different. This was not evident for the 1998-99 Wet Season samples, the first after the commencement of mine workings. However, for the 1999-2000 samples, very evident differences were observed for Mg, Mn, Ca and pH, and to a lesser extent, SO_4^{2-}. Significantly, [U] does not change appreciably from year to year, averaging 0.008 µg/L at both sites during 1998-99, and being 0.009 and 0.010 µg/L respectively during 1999-2000. These trends have continued for the incomplete 2000-01 data set (not discussed further). The differences may suggest that an initiation period was necessary before measurable effluent loads were observable. The increase in pH suggests that the input source may be the dissolution of carbonate minerals (containing Ca, Mg and minor amounts of Mn). Increased SO_4^{2-} suggests that a small amount of sulfide mineralisation may have oxidised. The likely explanation is the partial weathering of waste rock used for construction purposes, although the mechanism of transport to Central Tributary is not immediately evident. Selected values are recorded in Table 2. The generally higher values at the causeway during 1998-99 may be an artefact of the activity associated with construction.

	[Ca] (mg/L)	[Mg] (mg/L)	[Mn] (µg/L)	[SO_4^{2-}] (mg/L)	pH
1998-1999	0.27 (causeway) 0.29 (d'stream)	1.1 (causeway) 1.1 (d'stream)	5.6 (causeway) 6.3 (d'stream)	0.08 (causeway) 0.08 (d'stream)	6.1 (causeway) 6.1 (d'stream)
1999-2000	0.04 (causeway) 0.47 (d'stream)	0.89 (causeway) 1.9 (d'stream)	1.8 (causeway) 6.0 (d'stream)	0.09 (causeway) 0.16 (d'stream)	5.7 (causeway) 6.0 (d'stream)

Table 2. Selected indicator values for the causeway (upstream) and downstream sites on Central Tributary for the 1998-1999 and 1999-2000 Wet Seasons

The physical and chemical character of North Tributary

In North Tributary, unlike Central Tributary, the reason for differences in indicator values between the upstream and downstream sites is evident. This is the large quantity of unmineralised orthoquartzite overburden that has been placed in the stream channel. The contents of target indicators in this rock are very low. This therefore allows a sensitive test of the ability of chemical testing to discern an impact on stream water quality from its presence.

A substantial difference was observed in the behaviour of common ions (Ca^{2+}, Mg^{2+} and SO_4^{2-}) and Mn as a group and U, as detailed in Table 3.

	[Ca] (mg/L)	[Mg] (mg/L)	[Mn] (µg/L)	[SO_4^{2-}] (mg/L)	[U] (µg/L
1998-1999	0.15 (upstream) 1.1 (d'stream	0.48 (upstream) 1.3 (d'stream)	0.58 (upstream) 4.2 (d'stream)	0.11 (upstream) 0.31 (d'stream)	0.006 (u'stream) 0.009 (d'stream)
1999-2000	0.04 (upstream) 0.25 (d'stream)	0.42 (upstream) 0.51 (d'stream)	0.74 (upstream) 1.0 (d'stream)	0.10 (upstream) 0.22 (d'stream)	0.006 (u'stream) 0.024 (d'stream)

Table 3. Selected indicator values for the upstream and downstream sites on North Tributary for the 1998-1999 and 1999-2000 Wet Seasons

In 1998-1999 (the first Wet Season after placement of the quartzite), electrolyte and Mn concentrations were much higher at the downstream site than in the succeeding year (1999-2000). This was particularly marked for Mn, where the concentration of this element progressively declined during the first year, as shown in Figure 4, and did not return to previous, relatively high concentrations in 1999-2000. These observations suggest an initial washoff effect for this group of indicators.

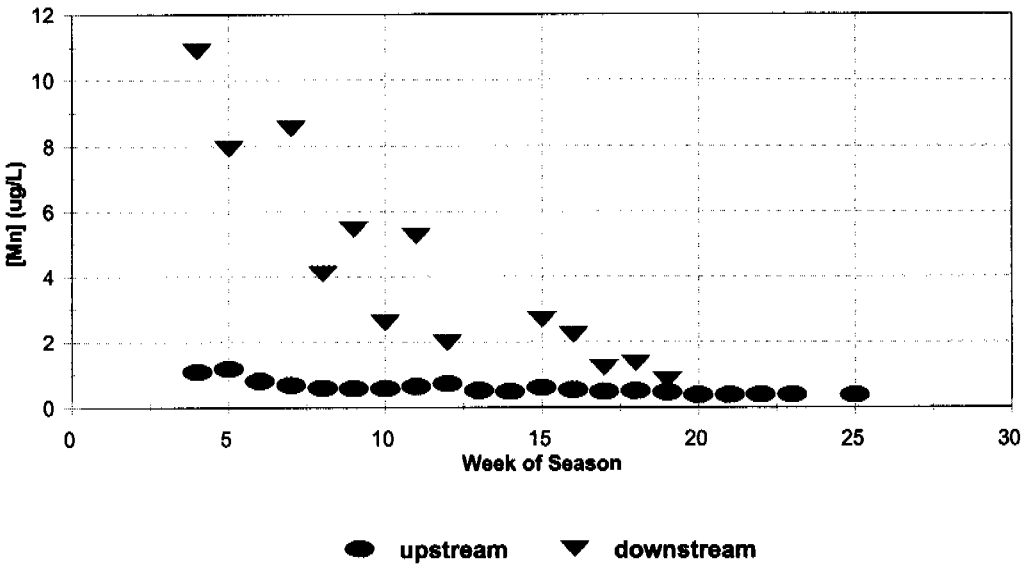

Figure 4. [Mn] in North Tributary during the 1998-1999 Wet Season

Conversely, [U] is similar at both sites during 1998-99, but significantly higher at the downstream site in 1999-2000, as depicted in Figure 5 This suggests that a period of initiation was necessary before measurable uranium values were released from the nominally unmineralised rock. The higher values are, however, only a factor of about five greater than the practical detection limit, and extremely low in world terms. These trends apparently continue in 2000-01, according to the incomplete data set for the current year.

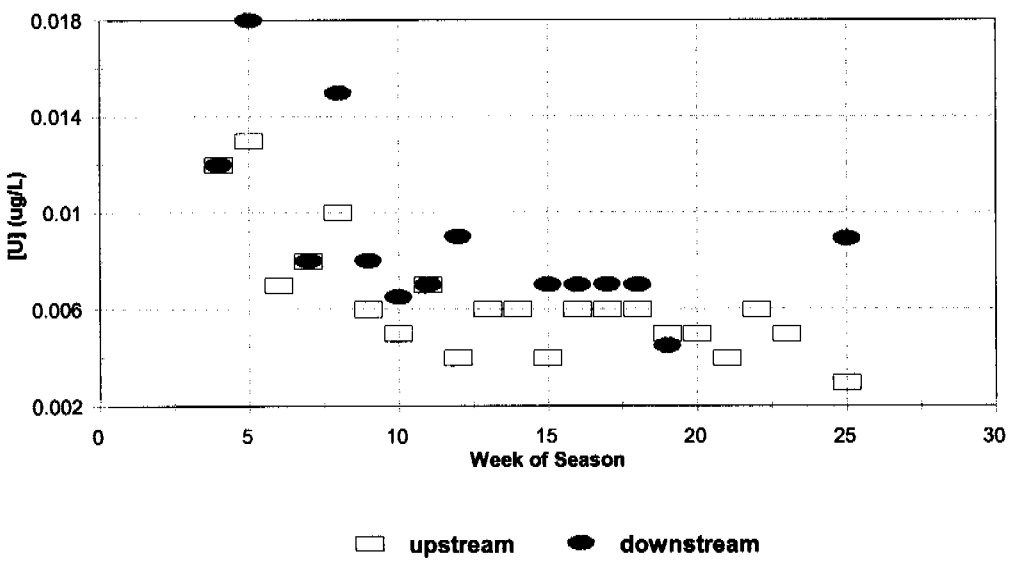

Figure 5a. Comparison of [U] at the upstream and downstream sites of North Tributary in 1998-99

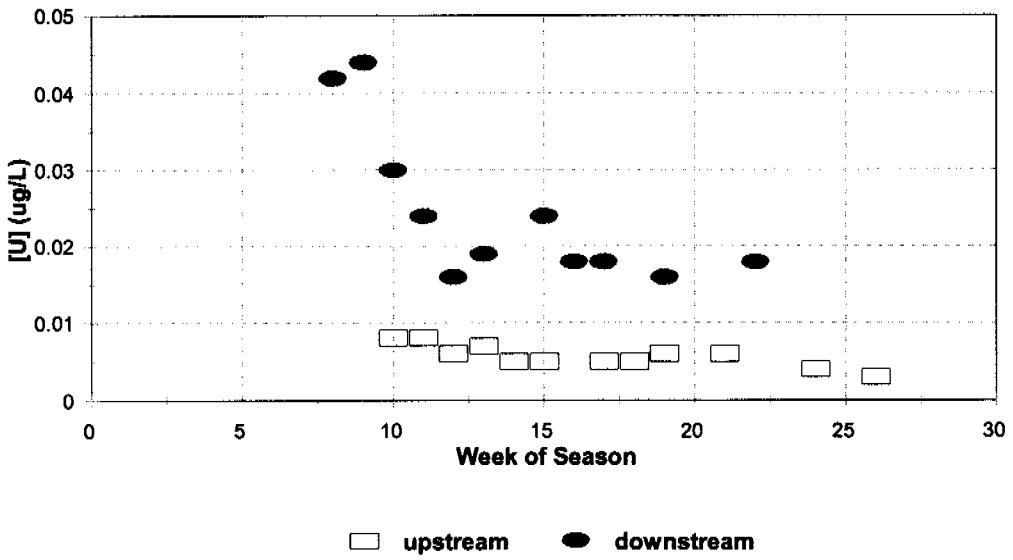

Figure 5b. Comparison of [U] at the upstream and downstream sites of North Tributary in 1999-2000

Variation in indicator concentrations at other sites

Groundwater seepage

Water was sampled from a channel constructed to receive groundwater that is surface expressed by the mass of the Interim Water Management Pond (and contained water). Sampling occurred in the 1998-99 and 1999-00 seasons (and continues in 2000-01). A site immediately downstream from the confluence of this channel and North Tributary has also sampled concurrently. This latter site is downstream from the North Tributary downstream site previously discussed.

It is evident from Figure 6 that, while Mn is enriched in the expressed groundwater, [U] is similar for the sites, which both have slightly enhanced concentrations. In general, $[SO_4^{2-}]$ is similar between the sites, though there was a unexplained transient excursion in groundwater concentrations in March 2000. The expression of this apparently unaffected groundwater does not increase lotic water concentrations of relevant indicators in a way that is likely to cause environmental degradation.

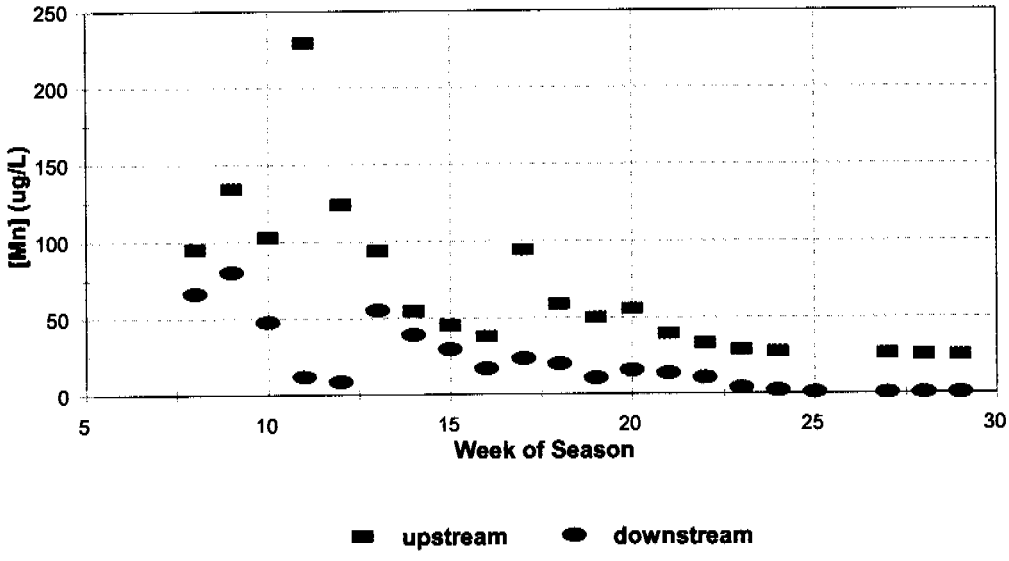

Figure 6a. [Mn] in surface-expressed groundwater and groundwater diluted by North Tributary

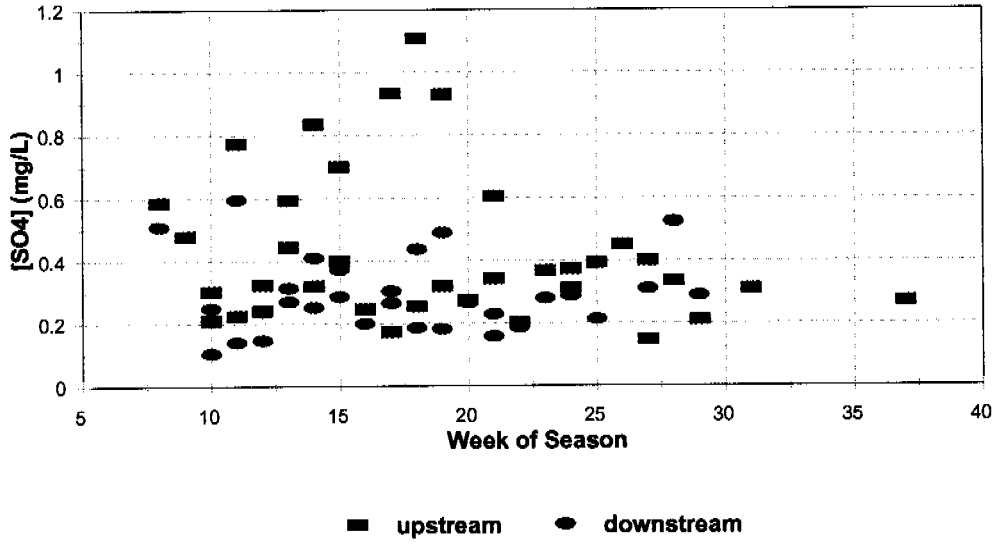

Figure 6b. $[SO_4^{2-}]$ in surface-expressed groundwater and groundwater diluted by North Tributary

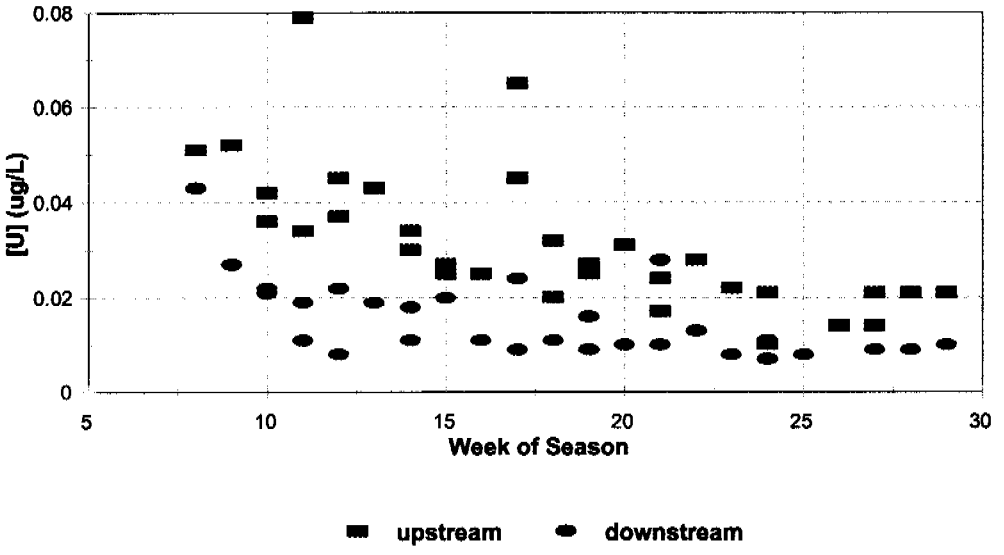

Figure 6c. [U] in surface-expressed groundwater and groundwater diluted by North Tributary

Westward-flowing creeks

A number of west-flowing creeks that cross the Oenpelli Road were sampled in 1997-98 and 1998-99. Only one creek (Jabiluka Hill Creek) was sampled every year (including 2000-01). The chemistry of these creeks, though frequently displaying distinctive variations, contained very low concentrations of all indicators. Profiles for Jabiluka Hill Creek are presented in Figure 7. These are reasonably representative of the complete suite.

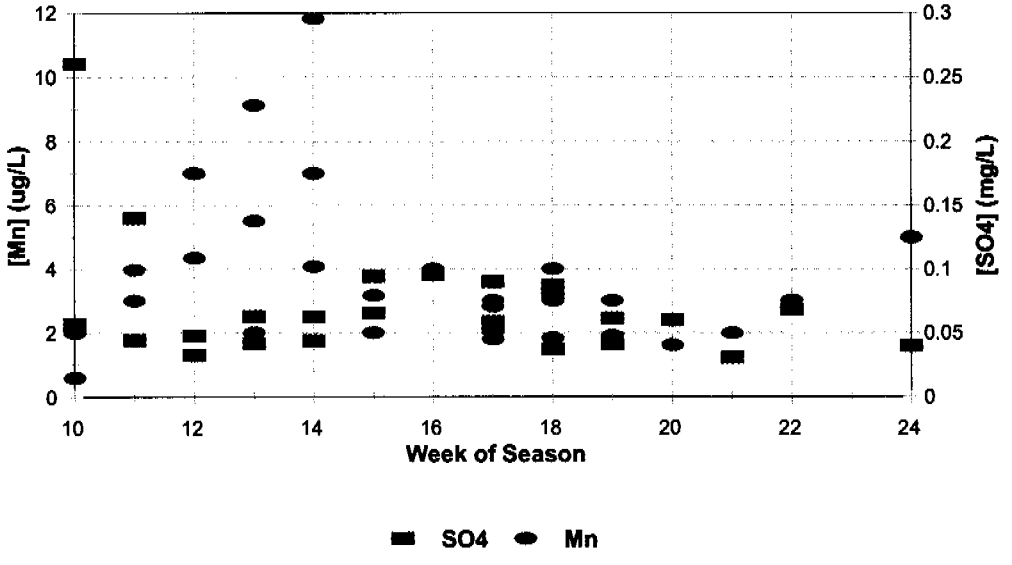

Figure 7a. [Mn] and $[SO_4^{2-}]$ in Jabiluka Hill Creek

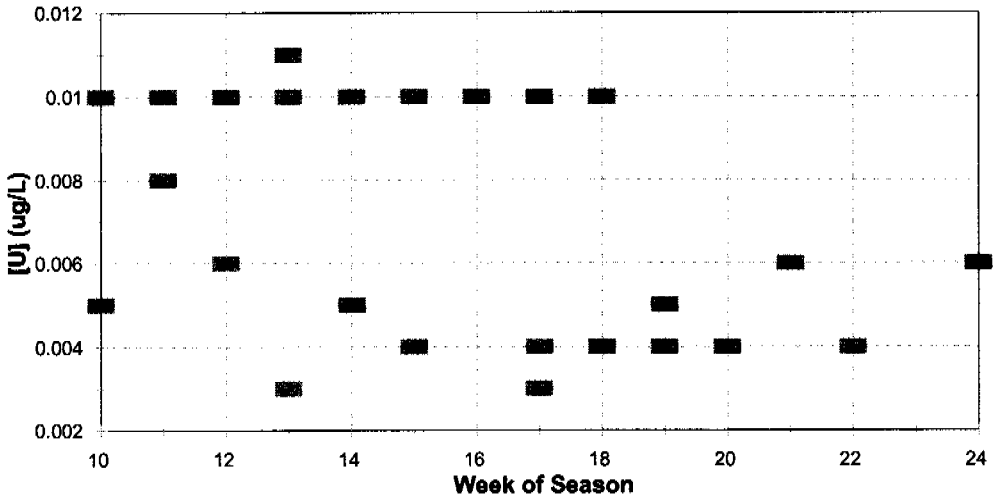

Figure 7b. [U] in Jabiluka Hill Creek

Conclusions

This objective of the continuing project described here is to monitor a number of physical and chemical indicators in the streams draining the immediate vicinity of the Jabiluka mine. The main conclusion to date is that the concentrations of all measured indicators are very low, in some cases near or at the practical limits of detection. So far, the evidence from chemical monitoring suggests that the disturbance associated with mine construction has impacted minimally on proximate streams. Nevertheless, low-level impacts can be measured in creeks immediately downstream from sites of overt disturbance. These observations lend confidence to the expectation that physical and chemical monitoring will be able to detect significant changes in water quality that may be occasioned by further mine development.

References

Energy Resources of Australia Limited (1996). Jabiluka draft environmental impact statement. *Kinhill Engineers Pty Ltd, Milton Qld*, Chapter 6.

Palmer MR & Edmond JM (1993). Uranium in river water. *Geochim. et Cosmochim. Acta*, 57, 4947-4955.

Appendix 1: Location of all sites sampled for Jabiluka baseline studies

Site	GPS coordinates
Swift Creek upstream east	132.931444; 12.504000
Swift Creek upstream (erosion & hydrology site)	132.933940; 12.503911
Swift Creek downstream site 1	132.921528; 12.494194
Swift Creek gauging station	132.922438; 12.491447
Swift Creek downstream site 2	132.916667; 12.484111
Swift Creek (Oenpelli Road)	132.913628; 12.467907
Swift Creek upstream west	132.927417; 12.505722
East Tributary	132.932810; 12.495093
North Tributary upstream (Jabiluka E)	132.913712; 12.498266
North Tributary downstream	132.915972; 12.498556
North Tributary downstream subsurface seepage drain (RPcp2)	132.915944; 12.498389
Central Tributary upstream (Jabiluka A)	132.906460; 12.502810
Central Tributary causeway (Jabiluka G)	132.915750; 12.499653
Central Tributary downstream	132.911444; 12.499361
Subsurface seepage drain (RPcp1)	132.915972; 12.498556
Creek 1 (Bulijumbu)	132.899164; 12.518294
Creek 2 (Kulrjambe)	132.899208; 12.516716
Creek 3 (Imagurri)	132.899756; 12.529556
Creek 4 (Valley)	132.899072; 12.512887
Creek 5 (Boybet Kulbri)	132.890813; 12.500569
Creek 6 (Ibarngor)	132.901923; 12.533127
Creek 7 (Weedin)	132.902959; 12.540905
Creek 8 (Mulukinyamya)	132.893264; 12.486918
Creek 11 (Mugjaberber)	132.888278; 12.496611
Creek 12 (Jalagutabul)	132.903308; 12.541950
Creek 13 (Majawavenya)	132.904404; 12.545997
Creek 15 (Jabiluka Hill)	132.893083; 12.505427
Jabiluka B	132.906966; 12.502529
Jabiluka C	132.908918; 12.501894
Jabiluka D	132.912873; 12.500141
Jabiluka F	132.913581; 12.499810
7J Creek upstream	132.943861; 12.584167
7J Creek downstream	132.929667; 12.580778
Catfish Creek upstream	132.949444; 12.460278
Catfish Creek downstream	132.949556; 12.454222
North Magela Creek upstream	132.934528; 12.646278
North Magela Creek downstream	132.929917; 12.640083

Appendix 2: Indicator concentrations for all sites from 1997-98 to 1999-2000

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek upstream east	12-Jan-99	2.7	0.29	0.48	0.64	55	0.01	0.2	0.05	101	3.73	0.09	0.01	0.010	0.4	4.92	12.5	1.3	0		4	3
Swift Creek upstream east	02-Feb-99	2.1	0.21	0.48	0.13	63	0.01	0.1	0.30	74	3.50	0.06	0.01	0.010	0.3					2.9		3
Swift Creek upstream east	23-Feb-99	2.2	0.21	0.35	0.57	43	0.01	0.1	0.20	67	2.58	0.07	0.01	0.007	0.0					2.8		3
Swift Creek upstream east	15-Mar-99	1.2	0.26	0.23	0.54	21	0.01	0.1	0.10	48	1.81	0.06	0.01	0.013	0.4	4.89	9.2	1.8	0	2.1		
Swift Creek upstream east	19-Apr-99	2.6	0.26	0.36	0.19	24	0.01	0.2	0.20	43	2.85	0.13	0.02	0.004	0.4	5.11	11.5	0.6	2	3.1	6	0
Swift Creek upstream east	16-Dec-99	3.5	0.41	0.28	0.12	50	0.01	0.2	0.12	100	7.45	0.39	0.02	0.010	0.6	4.50	14.0	0.9			9	0
Swift Creek upstream east	28-Jan-00	2.4	0.22	0.32	0.08	58	0.01	0.3	0.18	100	3.67	0.38	0.13	0.009	1.0	3.98		1.2			3	0
Swift Creek upstream east	22-Feb-00	2.4	0.24	0.26	0.19	46	0.01	0.3	0.25	51	2.84	0.30	0.03	0.006	1.6	4.65	10.5	1.0	0.0		2	0
Swift Creek upstream east	28-Mar-00	1.9	0.18	0.23	0.06	30	0.01	0.2	0.16	70	2.00	0.03	0.03	0.007	0.6	4.91	8.2	1.0	0.0		0	0
Swift Creek upstream east	18-Apr-00	2.0	0.20	0.19	0.06	40	0.01	0.3	0.03	70	2.00	0.11	0.03	0.005	1.4	4.92			0.6		2	0
Swift Creek upstream	16-Dec-98	3.2	0.36	0.85	0.23	98	0.01	0.2	0.11	107	7.96	0.03	0.01	0.017	0.0	4.57	17.5	0.6	0	3.8	3	1
Swift Creek upstream	31-Dec-98	2.8	0.32	0.57	0.16	76	0.01	0.1	0.07	101	4.85	0.13	0.01	0.007	0.0	4.66	15.8	0.8	0	3.2	5	3
Swift Creek upstream	05-Jan-99	2.4	0.29	0.60	0.12	91	0.01	0.2	0.07	93	4.74	0.09	0.01	0.012	0.4	4.66	16.3	0.9	0	3.3	3	2
Swift Creek upstream	07-Jan-99	2.5	0.26	0.46	0.13	57	0.01	0.2	0.03	79	3.65	0.10	0.01	0.010	0.4	5.35	13.2	1.0	0	2.4		3
Swift Creek upstream	19-Jan-99	2.8	0.23	0.34	0.11	53	0.01	0.3	0.06	86	3.51	0.09	0.02	0.009	0.7	4.79	14.5	0.7	0	2.8		3
Swift Creek upstream	26-Jan-99	2.1	0.21	0.33	0.12	68	0.01	0.3	0.07	79	3.44	0.06	0.01	0.008	0.3	4.65	12.4	3.0	0	3.8		2
Swift Creek upstream	02-Feb-99	2.4	0.25	0.40	0.16	64	0.03	0.2	0.31	69	3.58	0.15	0.18	0.013	1.1	4.76	12.0	2.0	0	2.8		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek upstream	09-Feb-99	1.7	0.16	0.26	0.13	78	0.01	0.1	0.05	79	2.65	0.05	0.05	0.009	0.2	4.7	11.2	1.4	0	3.0		
Swift Creek upstream	16-Feb-99	2.5	0.30	0.45	0.08	45	0.01	0.2	0.16	87	2.95	0.08	0.03	0.008	0.4	4.88	12.5	0.8	0	2.2		
Swift Creek upstream	23-Feb-99	2.3	0.32	0.06	0.09	44	0.01	0.1	0.14	74	2.77	0.07	0.02	0.008	0.2	4.92	12.9	0.7	0	2.2		
Swift Creek upstream	02-Mar-99	2.5	0.34	0.08	0.08	45	0.01	0.2	0.13	67	3.13	0.10	0.02	0.006	0.5	4.81	13.0	0.6	0	2.1		
Swift Creek upstream	09-Mar-99	2.0	0.19	0.29	0.07	57	0.01	0.2	0.16	74	3.22	0.08	0.02	0.007	0.3	4.82	12.5	1.0	0	2.3		
Swift Creek upstream	17-Mar-99	1.2	0.15	0.28	0.06	106	0.01	0.2	0.05	81	2.91	0.16	0.02	0.011	0.1	4.82	9.3	2.2	0	4.3		
Swift Creek upstream	23-Mar-99	1.7	0.16	0.26	7.00	64	0.01	0.2	0.25	62	2.79	0.05	0.04	0.011	0.1	4.98	10.5	1.2	0	2.7		
Swift Creek upstream	30-Mar-99	1.8	0.18	0.27	0.00	47	0.01	0.2	0.14	55	2.54	0.05	0.01	0.009	0.1	5.06	10.4	1.0	0	2.4		
Swift Creek upstream	06-Apr-99	1.9	0.19	0.27	0.43	41	0.01	0.2	0.21	59	2.37	0.01	0.02	0.008	0.3	5.04	9.8	0.6	0	2.5		
Swift Creek upstream	12-Apr-99	2.2	0.25	0.19	0.09	33	0.01	0.2	0.24	63	2.80	0.10	0.02	0.007	0.2	4.97	11.5	0.5	0	2.1	6	0
Swift Creek upstream	20-Apr-99	2.6	0.27	0.23	0.10	23	0.01	0.2	0.19	92	2.87	0.10	0.02	0.006	0.2	5.03	12.0	0.4	0	1.9	3	0
Swift Creek upstream	27-Apr-99	2.6	0.31	0.23	0.10	25	0.01	0.1	0.12	85	3.29	0.10	0.01	0.004	0.1	4.97	12.4	0.4	0	1.9	1	0
Swift Creek upstream	04-May-99	2.7	0.31	0.24	0.07	19	0.02	0.1	0.11	66	3.11	0.09	0.01	0.008	0.3	5	11.7	0.4	0	1.6	5	0
Swift Creek upstream	26-May-99	3.1	0.32	0.24	0.14	12	0.01	0.1	0.22	39	5.70	0.16	0.01	0.004	0.6	5.08	13.2	0.8	4	1.3	11	0
Swift Creek upstream	24-Nov-99	3.0	0.39	1.12	0.24	107	0.06	0.4	0.24	87	10.6	0.24	0.18	0.015	1.0	4.32		0.1	0.0		5	1
Swift Creek upstream	25-Jan-00	1.7	0.22	0.30	0.07	69	0.01	0.3	0.19	80	3.34	0.27	0.16	0.008	1.0	5.04	9.0	0.8			6	0
Swift Creek upstream	01-Feb-00	2.5	0.25	0.26	0.09	46	0.01	0.3	0.23	54	3.72	0.33	0.06	0.007	0.4	5.08	10.0	7.0	2.4		4	0
Swift Creek upstream	08-Feb-00	2.5	0.22	0.21	0.37	65	0.06	0.5	0.57	67	3.76	0.33	0.31	0.010	1.5	4.50	12.0	0.5	0.0		4	0
Swift Creek upstream	15-Feb-00	1.8	0.17	0.28	0.11	72	0.01	0.3	0.30	70	3.00	0.22	0.02	0.008	0.3	4.96	9.3	0.8	0.0		4	0
Swift Creek upstream	22-Feb-00	2.3	0.23	0.28	0.11	44	0.01	0.2	0.22	46	2.77	0.30	0.03	0.006	1.3	5.26	10.5	0.9	0.0		3	0
Swift Creek upstream	29-Feb-00	1.9	0.16	0.36	0.07	72	0.01	0.3	0.27	69	2.90	0.30	0.03	0.009	1.5	5.26	10.5	0.9	0.0		2	0
Swift Creek upstream	14-Mar-00	1.6	0.14	0.25	0.04	67	0.03	0.4	0.45	80	2.82	0.30	0.14	0.010	1.9	5.00	8.5	12.0	0.0		1	0
Swift Creek upstream	21-Mar-00	1.6	0.21	0.22	0.10	40	0.01	0.2	0.17	30	2.00	0.07	0.03	0.008	0.3	4.85	8.7	1.8	0.0		1	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek upstream	28-Mar-00	1.7	0.19	0.17	0.05	30	0.04	0.4	0.27	60	2.00	0.20	0.28	0.011	1.0	4.90	8.2	1.9	0.0		0	0
Swift Creek upstream	11-Apr-00	1.6	0.18	0.24	0.07	60	0.01	0.3	0.03	70	3.00	0.32	0.03	0.009	1.1	4.71	7.5	1.3	0.0		0	0
Swift Creek upstream	20-Apr-00	2.1	0.19	0.18	0.07	30	0.01	0.2	0.03	70	2.00	0.11	0.03	0.006	1.2	4.91	8.7	0.6	0.8		1	0
Swift Creek upstream	02-May-00	2.4	0.23	0.24	0.10	20	0.01	0.2	0.10	60	3.00	0.37	0.05	0.006	0.3	4.93	9.8	1.2	0.0		0	0
Swift Creek upstream	16-May-00	2.4	0.25	0.24	0.11	10	0.01	0.2	0.13	80	3.00	0.12	0.03	0.003	0.5	5.31	5.4	0.7	0.0		3	0
Swift Creek upstream	30-May-00	2.9	0.27	0.18	0.09	10	0.01	0.2	0.26	180	4.00	0.16	0.05	0.006	2.10	5.10	13.5	0.6	1.5		3	0
Swift Creek upstream	19-Jun-00	2.0	0.28	0.19	0.22											5.11	13.0	1.5	2.6		8	0
Swift Creek d'stream site 1	21-Dec-98	1.7	0.22	0.27	0.56	65	0.02	0.1	0.10	82	4.57	0.04	0.04	0.011	0.5	4.85	11.5	38	0	4.7	57	1
Swift Creek d'stream site 1	12-Jan-99	2.6	0.37	0.36	0.66	48	0.01	0.1	0.15	65	3.78	0.08	0.01	0.014	2.5	5.25	11.3	1.7	6	2.7	8	4
Swift Creek d'stream site 1	02-Feb-99	1.9	0.38	0.30	0.17	46	0.01	0.1	0.35	61	3.48	0.12	0.21	0.013	3.9					2.8		3
Swift Creek d'stream site 1	22-Feb-99	2.3	0.29	0.13	0.59	32	0.01	0.1	0.20	57	2.64	0.10	0.07	0.008	0.5					2.2		
Swift Creek d'stream site 1	15-Mar-99	1.4	0.33	0.28	0.56	57	0.01	0.1	0.10	77	3.04	0.08	0.02	0.011	0.2	5.4	8.5	3.3	10	2.3		
Swift Creek d'stream site 1	19-Apr-99	2.4	0.42	0.18	0.19	17	0.01	0.1	0.20	43	2.63	0.28	0.01	0.008	0.3	5.63	11.2	1.2	12		8	0
Swift Creek d'stream site 1	10-May-99	3.0	0.53	0.20	0.10	34	0.01	0.1	0.17	352	3.28	0.10	0.01	0.007	0.3							
Swift Creek d'stream site 1	16-Dec-99	3.5	0.52	0.27	0.16	58	0.01	0.2	0.15	106	7.96	0.17	0.01	0.013	0.5	6.70	14.0	1.3			8	0
Swift Creek d'stream site 1	28-Jan-00	2.4	0.30	0.28	0.09	49	0.01	0.3	0.17	57	3.46	0.38	0.14	0.010	1.1	4.07	0.0	1.5			4	1
Swift Creek d'stream site 1	22-Feb-00	2.2	0.36	0.20	0.10	34	0.01	0.1	0.21	84	2.69	0.30	0.03	0.008	1.0	5.43	10.0	1.5	9.8		2	0
Swift Creek d'stream site 1	28-Mar-00	1.7	0.29	0.16	0.07	20	0.01	0.2	0.18	60	2.00	0.06	0.03	0.008	0.9	5.40	7.1	1.3	1.4		0	0
Swift Creek d'stream site 1	18-Apr-00	1.8	0.33	0.14	0.07	20	0.01	0.2	0.17	30	2.00	0.57	0.05	0.008	2.7	5.57			3.2		2	0
Swift Creek gauging station	09-Dec-98	1.7	0.25	0.19	0.14											5.17	15.3	2.0	2.8	4.6	5	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek gauging station	17-Dec-98	3.6	0.61	0.71	0.28	108	0.01	0.7	0.14	145	8.79	0.22	0.05	0.024	1.0	5.1	16.9	2.1	0	4.3	3	2
Swift Creek gauging station	31-Dec-98	2.6	0.35	0.38	0.16	71	0.01	0.1	0.02	94	5.17	0.08	0.01	0.011	0.0	5	13.5	1.7	0	3.5	3	3
Swift Creek gauging station	06-Jan-99	2.6	0.34	0.32	0.15	65	0.01	0.2	0.06	85	5.21	0.09	0.05	0.012	0.3	5.17	13.5	1.6	0	3.3	3	3
Swift Creek gauging station	13-Jan-99	2.2	0.29	0.31	0.12	62	0.01	0.3	0.05	84	3.48	0.09	0.04	0.011	0.3	5.44	12.6	1.8	2.4	2.9	5	2
Swift Creek gauging station	19-Jan-99	2.6	0.34	0.29	0.14	51	0.01	0.3	0.05	65	3.24	0.06	0.01	0.016	0.3	5.5	13.0	1.6	14	2.4	3	3
Swift Creek gauging station	26-Jan-99	1.8	0.24	0.15	0.14	51	0.01	0.3	0.05	65	3.24	0.06	0.01	0.016	0.3	5.4	10.5	6.1	30.8	3.8		2
Swift Creek gauging station	09-Feb-99	1.5	0.25	0.38	0.12	63	0.01	0.1	0.04	58	3.15	0.01	0.01	0.010	0.2	5.21	10.0	5.2	0	2.8		
Swift Creek gauging station	17-Feb-99	2.3	0.36	0.15	0.14	35	0.03	0.2	0.18	58	2.76	0.12	0.24	0.012	0.4	5.35	11.9	7.3	6.4	2.0		
Swift Creek gauging station	02-Mar-99	2.5	0.24	0.24	0.06	26	0.03	0.2	0.06	43	3.25	0.33	0.03	0.009	0.5	5.43	11.5	1.1	12	2.3		
Swift Creek gauging station	09-Mar-99	2.0	0.24	0.21	0.08	46	0.01	0.2	0.18	60	3.24	0.10	0.03	0.008	0.3	5.12	11.0	2.1	4	2.5		
Swift Creek gauging station	18-Mar-99	1.6	0.23	0.23	0.02	44	0.01	0.2	0.13	51	2.55	0.32	0.03	0.010	0.1	5.35	10.3	1.8	5	2.5		
Swift Creek gauging station	23-Mar-99	1.5	0.22	0.17	0.08	44	0.01	0.1	0.22	50	2.58	0.18	0.02	0.010	0.2	5.25	10.0	1.9	12.4	2.9		
Swift Creek gauging station	30-Mar-99	1.9	0.24	0.22	0.02	36	0.01	0.2	0.25	48	2.39	0.08	0.05	0.010	0.5	5.30	9.9	1.3	5.6	2.4		
Swift Creek gauging station	06-Apr-99	1.9	0.30	0.18	0.38	28	0.01	0.2	0.19	46	2.12	0.10	0.01	0.009	0.2	5.36	9.3	1.1	8	2.5		
Swift Creek gauging station	12-Apr-99	2.2	0.38	0.14	0.01	20	0.01	0.1	0.21	43	2.41	0.09	0.02	0.009	0.3	5.58	10.6	1.1	16	2.0	3	0
Swift Creek gauging station	20-Apr-99	2.5	0.41	0.18	0.07	16	0.01	0.1	0.20	55	2.54	0.10	0.01	0.008	0.2	5.71	11.6	1.0	13.2	1.9	4	0
Swift Creek gauging station	27-Apr-99	2.8	0.53	0.17	0.87	16	0.02	0.1	0.28	55	2.87	0.16	0.08	0.010	0.3	5.73	13.0	1.8	28	2.4	7	0
Swift Creek gauging station	04-May-99	2.6	0.49	0.16	0.13	13	0.01	0.1	0.14	52	2.39	0.11	0.01	0.011	0.1	5.73	11.5	0.75	18	1.8	5	0
Swift Creek gauging station	26-May-99	2.4	0.68	0.05	0.25	5	0.01	0.1	0.12	47	3.85	0.12	0.01	0.004	0.5	5.72	12.9	2.2	44	1.6	11	1
Swift Creek gauging station	24-Nov-99	3.1	0.47	1.30	0.19	114	0.01	0.4	0.21	107	11.6	0.32	0.06	0.019	0.7	4.71		1.0	0.0		7	1
Swift Creek gauging station	21-Dec-99	1.7	0.39	0.19	0.18	87	0.01	0.2	0.21	108	6.02	0.16	0.05	0.017	0.2	4.90	11.0	5.6	0.0		12	0
Swift Creek gauging station	25-Jan-00	2.1	0.28	0.19	0.07	54	0.01	0.3	0.16	59	3.11	0.12	0.18	0.009	0.9	4.79	8.4	1.5	0.0		3	0
Swift Creek gauging station	01-Feb-00	2.5	0.35	0.21	0.11	37	0.01	0.2	0.21	47	3.42	0.35	0.05	0.009	0.3	5.03	8.7	1.2	4.4		3	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek gauging station	08-Feb-00	2.2	0.32	0.16	0.55	47	0.01	0.3	0.37	55	3.28	0.30	0.04	0.008	0.5	5.51	9.0	1.0	18.8		5	0
Swift Creek gauging station	15-Feb-00	1.8	0.28	0.25	0.12	53	0.01	0.2	0.25	61	2.68	0.11	0.04	0.010	0.2	5.34	9.0	1.9	2.2		3	0
Swift Creek gauging station	22-Feb-00	2.2	0.34	0.24	0.23	37	0.01	0.2	0.33	76	2.44	0.30	0.03	0.007	1.7	5.38	9.5	1.8	8.2		3	0
Swift Creek gauging station	29-Feb-00	1.9	0.24	0.20	0.29	53	0.01	0.2	0.27	58	2.82	0.30	0.03	0.008	1.4	5.38	9.5	1.8	8.2		3	0
Swift Creek gauging station	14-Mar-00	1.4	0.18	0.17	0.12	63	0.01	0.3	0.39	82	3.06	0.30	0.03	0.009	2.0	5.32	7.0	2.5	3.0		2	0
Swift Creek gauging station	21-Mar-00	2.0	0.31	0.21	0.10	30	0.01	0.1	0.19	30	1.00	0.09	0.03	0.009	0.3	5.20	8.0	1.5	10.0		0	0
Swift Creek gauging station	28-Mar-00	1.8	0.30	0.15	0.08	10	0.01	0.1	0.16	30	1.00	0.03	0.03	0.006	0.5	5.38	7.4	1.4	3.4		0	0
Swift Creek gauging station	11-Apr-00	1.4	0.14	0.18	0.05	50	0.01	0.2	0.03	80	2.00	0.08	0.03	0.007	1.0	5.06	6.6	1.4	0.6		1	0
Swift Creek gauging station	20-Apr-00	2.0	0.30	0.13	0.07	20	0.01	0.2	0.03	60	2.00	0.22	0.03	0.007	0.6	5.25	6.8	0.5	2.2		1	0
Swift Creek gauging station	02-May-00	2.0	0.35	0.15	0.07	10	0.01	0.2	0.24	30	3.00	0.31	0.06	0.007	0.8	5.39	9.2	1.3	2.6		3	0
Swift Creek gauging station	16-May-00	2.6	0.38	0.18	0.13	10	0.01	0.1	0.14	30	3.00	0.14	0.03	0.004	2.5	5.97	0.7	5.2	3.8		3	0
Swift Creek gauging station	30-May-00	2.7	0.45	0.13	0.19	20	0.01	0.1	0.45	220	4.00	0.21	0.03	0.010	4.0	5.57	13.5	0.6	6.0			
Swift Creek gauging station	19-Jun-00	3.0	0.58	0.05	0.14		0.01									5.48	14.5	1.6	5.2		3	0
Swift Creek d'stream site 2	21-Dec-98	3.2	0.59	0.59	0.64	80	0.01	0.1	0.20	164	9.28	0.10	0.03	0.019	0.9	4.52	42	2.4	0	5.4	25	1
Swift Creek d'stream site 2	12-Jan-99	2.6	0.36	0.43	0.81	48	0.01	0.1	0.20	70	4.05	0.07	0.01	0.012	0.4	5.21	11	2.1	6	2.8	9	4
Swift Creek d'stream site 2	02-Feb-99	2.0	0.34	0.27	0.14	51	0.01	0.1	0.30	63	3.60	0.10	0.14	0.012	0.0					2.9		4
Swift Creek d'stream site 2	22-Feb-99	2.1	0.30	0.22	0.52	30	0.01	0.1	0.20	53	2.65	0.08	0.01	0.008	0.3					2.3		
Swift Creek d'stream site 2	15-Mar-99	1.3	0.24	0.20	0.55	61	0.01	0.1	0.10	69	3.15	0.26	0.01	0.011	0.2	5.24	8	3.7	12	3.6		
Swift Creek d'stream site 2	19-Apr-99	2.4	0.44	0.21	0.23	17	0.01	0.2	0.20	46	2.59	0.10	0.01	0.007	0.1	5.62	11.3	1.5	18		7	0
Swift Creek d'stream site 2	10-May-99	2.9	0.53	0.17	0.10	53	0.01	0.2	0.20	540	3.41	0.22	0.02	0.013	1.2							
Swift Creek d'stream site 2	16-Dec-99	3.6	0.59	0.21	0.19	53	0.01	0.3	0.14	100	8.07	0.19	0.01	0.015	0.4	5.45	15.0	1.5			10	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek d'stream site 2	28-Jan-00	2.5	0.30	0.23	0.05	50	0.01	0.3	0.22	66	3.74	0.40	0.13	0.011	1.3	3.90	0.0	1.2			6	0
Swift Creek d'stream site 2	22-Feb-00	2.1	0.37	0.18	0.10	30	0.01	0.2	0.26	47	2.70	0.30	0.05	0.007	1.6	4.46	9.7	2.2			3	0
Swift Creek d'stream site 2	28-Mar-00	1.9	0.32	0.14	0.09	15	0.01	0.2	0.16	30	2.00	0.07	0.03	0.007	0.5	5.42	7.3	2.0	1.8		1	0
Swift Creek d'stream site 2	18-Apr-00	2.0	0.34	0.14	0.09	20	0.01	0.2	0.03	30	2.00	0.39	0.04	0.009	1.4	5.33			3.2		1	0
Swift Creek (Oenpelli Road)	05-Jan-98	2.91	0.42	0.64	0.25											5.11	18.1	1.8	2.00	4.3	11	6
Swift Creek (Oenpelli Road)	12-Jan-98	2.58	0.36	0.51	0.19	78	0.30	0.2	0.30	95	5.00	0.10	0.10	0.010	1	5.01	16.8	1.9	0.00	3.6	8	9
Swift Creek (Oenpelli Road)	22-Jan-98	2.22	0.34	0.38	0.16	110	0.30	0.3	0.30	140	5.00	0.10	0.10	0.020	610	5.13	14.0	3.8	0.00		9	3
Swift Creek (Oenpelli Road)	27-Jan-98	1.52	0.34	0.50	0.14	78	0.30	0.2	0.30	72	4.00	0.20	0.10	0.010	5	5.40	12.0	6.6	6.80	3.5	27	6
Swift Creek (Oenpelli Road)	02-Feb-98	2.24	0.39	0.39	0.14	36	0.30	0.2	0.30	42	4.00	0.10	0.10	0.010	1	5.45	13.4	2.7	8.80	2.7	14	6
Swift Creek (Oenpelli Road)	09-Feb-98	2.38	0.36	0.23	0.14	33	0.30	0.2	0.30	38	3.00	0.10	0.10	0.010	1	5.47	13.0	3	7.60	2.8		
Swift Creek (Oenpelli Road)	16-Feb-98	1.89	0.27	0.23	0.15	41	0.30	0.2	0.30	71	3.00	0.10	0.10	0.010	1	5.29	11.6	2.4	4.40	3.1	11	9
Swift Creek (Oenpelli Road)	23-Feb-98	1.61	0.25	0.02	0.12	40	0.30	0.1	0.30	56	4.00	0.10	0.10	0.010	34	5.41	10.2	1.8	5.60	3.5	8	3
Swift Creek (Oenpelli Road)	02-Mar-98	1.85	0.28	0.13	0.09	87	0.30	0.2	0.30	63	3.00	0.10	0.10	0.010	82	5.25	9.5	6.8	0.00	3.2	15	6
Swift Creek (Oenpelli Road)	09-Mar-98	2.26	0.38	0.21	0.08	22	0.30	0.1	0.30	37	2.00	0.10	0.10	0.010	1	5.62	12.1	2	9.60	1.9		
Swift Creek (Oenpelli Road)	16-Mar-98	1.83	0.33	0.15	0.08	31	0.30	0.1	0.30	49	2.00	0.10	0.10	0.010	1	5.45	10.7	1.9	7.60	2.1		
Swift Creek (Oenpelli Road)	23-Mar-98	2.08	0.34	0.16	0.10	35	0.30	0.2	0.30	58	3.00	0.10	0.40	0.010	14	5.73	13.9	1.8	15.6	2.2	9	1
Swift Creek (Oenpelli Road)	30-Mar-98	2.76	0.44	0.13	0.08	21	0.30	0.1	0.30	84	3.00	0.10	0.10	0.010	1	5.79	13.4	1.4	16.4	1.7	10	6
Swift Creek (Oenpelli Road)	06-Apr-98	2.06	0.32	0.16	0.09	58	0.03	0.1	0.35	75	3.86	0.01	0.04	0.013	0	5.11	12.5	2.6	0.00	3.9	21	1
Swift Creek (Oenpelli Road)	14-Apr-98	2.80	0.48	0.15	0.11	19	0.01	0.1	0.01	115	2.90	0.01	0.01	0.011	0	5.63	13.9	1.3	13.6	1.7	3	1
Swift Creek (Oenpelli Road)	20-Apr-98	2.03	0.28	0.09	0.09	29	0.01	0.1	0.01	117	3.18	0.01	0.02	0.006	3	5.45	11.3	1.6	6.00	3.3	3	2
Swift Creek (Oenpelli Road)	27-Apr-98	2.57	0.32	0.14	0.10	41	0.01	0.1	0.01	70	1.62	0.07	0.01	0.004	9	5.28	12.0	1	4.00	1.9	9	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek (Oenpelli Road)	05-May-98	3.04	0.49	0.12	0.14	20	0.01	0.1	0.11	125	3.76	0.07	0.26	0.009	0	5.49	13.9	1.2	7.60	1.5	3	5
Swift Creek (Oenpelli Road)	09-Dec-98	3.6	0.41	0.30	0.22																	
Swift Creek (Oenpelli Road)	10-Dec-98	2.5	0.49	0.42	0.26	124	0.01	0.3	0.10	133	7.29	0.08	0.04	0.018	2.1	5.25	14.1	1.8	7.2	7.1	8	3
Swift Creek (Oenpelli Road)	15-Dec-98	2.7	0.44	0.74	0.26	16	0.01	0.1	0.05	28	3.72	0.10	0.01	0.037	0.0	5	14.9	12.6	0	5.0	3	2
Swift Creek (Oenpelli Road)	22-Dec-98	2.7	0.45	0.56	0.25	126	0.01	0.4	0.18	124	8.10	0.14	0.02	0.021	53.5	5.06	14.5	2.6	0	5.9	3	1
Swift Creek (Oenpelli Road)	30-Dec-98	2.2	0.35	0.39	0.17	94	0.01	0.2	0.06	85	5.44	0.09	0.01	0.018	0.0	5.26	12.4	3.5	7.6	4.7	7	2
Swift Creek (Oenpelli Road)	05-Jan-99	2.5	0.37	0.47	0.18	75	0.01	0.2	0.06	81	5.00	0.08	0.04	0.014	0.2	4.92	13.3	2.0	0	3.7	3	2
Swift Creek (Oenpelli Road)	07-Jan-99	2.4	0.36	0.24	0.18	47	0.01	0.2	0.04	65	4.16	0.09	0.01	0.012	0.1	5.36	12.7	2.6	15.6	2.7	3	3
Swift Creek (Oenpelli Road)	19-Jan-99	2.6	0.37	0.26	0.15	39	0.01	0.3	0.02	55	3.61	0.08	0.13	0.012	0.1	5.33	12.7	2.2	5.8	2.5		3
Swift Creek (Oenpelli Road)	27-Jan-99	2.4	0.38	0.18	0.15	30	0.01	0.1	0.01	53	3.57	0.06	0.01	0.011	0.0	5.61	12.7	3.0	11.6	2.7		3
Swift Creek (Oenpelli Road)	02-Feb-99	1.5	0.26	0.11	0.07	13	0.01	0.1	0.15	45	2.31	0.10	0.10	0.012	0.0	5.75	7.2	1.9	18	2.0		
Swift Creek (Oenpelli Road)	09-Feb-99	1.4	0.27	0.20	0.12	66	0.01	0.1	0.06	75	3.47	0.04	0.01	0.013	0.1	5.46	8.6	5.4	7.6	4.1		
Swift Creek (Oenpelli Road)	16-Feb-99	2.3	0.36	0.19	0.12	28	0.01	0.1	0.14	51	2.95	0.07	0.03	0.010	0.4	5.38	12.1	1.6	4.4	2.3		
Swift Creek (Oenpelli Road)	23-Feb-99	1.6	0.31	0.11	0.06	9	0.01	0.1	0.11	36	2.02	0.08	0.02	0.007	0.3	5.79	9.0	1.0	28	1.5		
Swift Creek (Oenpelli Road)	02-Mar-99	2.2	0.31	0.14	0.09	26	0.01	0.2	0.06	59	3.18	0.08	0.01	0.008	0.4	5.52	11.2	1.5	10.8	2.5		
Swift Creek (Oenpelli Road)	11-Mar-99	1.7	0.20	0.17	0.08	50	0.01	0.2	0.18	57	3.36	0.08	0.03	0.010	0.3	5.11	9.9	2.3	0	3.0		
Swift Creek (Oenpelli Road)	18-Mar-99	1.5	0.21	0.20	0.05	45	0.01	0.1	0.11	52	2.94	0.06	0.02	0.011	0.5	5.4	9.6	1.8	10.4	3.3		
Swift Creek (Oenpelli Road)	23-Mar-99	1.6	0.23	0.14	0.02	31	0.01	0.1	0.22	43	2.87	0.22	0.02	0.009	0.2	5.55	10.6	1.6	10.8	2.5		
Swift Creek (Oenpelli Road)	30-Mar-99	1.5	0.19	0.12	0.05	32	0.01	0.2	0.15	41	2.66	0.06	0.02	0.008	0.2	5.43	9.9	1.5	15.6	2.6		
Swift Creek (Oenpelli Road)	06-Apr-99	1.8	0.29	0.19	0.28	22	0.01	0.1	0.15	39	2.29	0.01	0.01	0.008	0.3	5.57	9.3	1.3	15.2	2.6		
Swift Creek (Oenpelli Road)	15-Apr-99	2.4	0.43	0.20	0.21	16	0.01	0.1	0.19	52	2.66	0.11	0.01	0.008	0.2	5.7	11.0	1.4	16	2.0	4	0
Swift Creek (Oenpelli Road)	22-Apr-99	2.4	0.45	0.16	0.08	14	0.01	0.1	0.08	52	2.61	0.09	0.01	0.010	0.2	5.78	11.5	1.3	17.6	1.9	6	0
Swift Creek (Oenpelli Road)	27-Apr-99	2.7	0.52	0.09	0.79	17	0.01	0.1	0.14	78	2.73	0.09	0.01	0.008	0.2	5.8	12.3	1.4	20	2.2	5	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek (Oenpelli Road)	07-May-99	2.7	0.54	0.15	0.09	11	0.08	0.2	0.18	52	2.74	0.11	0.03	0.007	0.3	5.69	12	1.23	22.8	2.0	7	0
Swift Creek (Oenpelli Road)	14-May-99	2.7	0.52	0.15	0.50	8	0.01	0.2	0.11	53	3.16	0.10	0.01	0.007	0.5	5.65	12.5	1.98	25.8	1.9	8	0
Swift Creek (Oenpelli Road)	26-May-99	3.0	0.60	0.26	0.28	2	0.01	0.1	0.07	34	4.41	0.13	0.01	0.005	0.5	5.77	13.5	10.3	24.6	1.5	13	0
Swift Creek (Oenpelli Road)	04-Jun-99	3.6	0.64	0.31	0.54	3	0.01	0.1	0.03	47	4.08	0.08	0.01	0.004	0.4	5.67	15.3	3.46	23.6	2.2	10	0
Swift Creek (Oenpelli Road)	14-Dec-99	3.5	0.61	0.27	0.17	49	0.01	0.2	0.15	104	7.66	0.15	0.01	0.018	0.2	5.32		0.8	15.6		7	0
Swift Creek (Oenpelli Road)	21-Dec-99	1.9	0.37	0.23	0.10	85	0.01	0.2	0.20	100	6.05	0.21	0.17	0.016	0.3	5.33	9.0	8.2	5.0		15	0
Swift Creek (Oenpelli Road)	25-Jan-00	2.1	0.31	0.10	0.07	67	0.01	0.3	0.30	100	5.12	0.54	0.18	0.011	1.9	4.77	7.2	2.3			6	0
Swift Creek (Oenpelli Road)	01-Feb-00	2.5	0.39	0.23	0.15	34	0.56	0.2	0.20	62	3.70	0.21	0.10	0.012	0.8	5.02	7.2	2.0	5.0		6	0
Swift Creek (Oenpelli Road)	08-Feb-00	2.3	0.31	0.09	0.50	37	0.29	0.2	0.42	50	3.57	0.60	0.05	0.008	3.3	5.55	9.5	1.2	24.2		5	0
Swift Creek (Oenpelli Road)	15-Feb-00	1.9	0.27	0.20	0.21	65	0.01	0.3	0.38	80	3.50	0.13	0.06	0.012	0.5	4.92	8.7	2.4	2.0		0	0
Swift Creek (Oenpelli Road)	22-Feb-00	2.4	0.34	0.21	0.15	30	0.01	0.2	0.30	44	2.63	0.70	0.03	0.008	2.4	5.50	10.0	2.4	14.0		3	0
Swift Creek (Oenpelli Road)	29-Feb-00	1.4	0.24	0.20	0.21	83	0.01	0.3	0.34	141	3.45	0.30	0.03	0.012	2.0	5.50	10.0	2.4	14.0		3	0
Swift Creek (Oenpelli Road)	14-Mar-00	1.3	0.22	0.20	0.16	64	0.01	0.3	0.29	82	3.44	0.30	0.03	0.010	2.3	5.11	6.7	2.5	6.8		2	0
Swift Creek (Oenpelli Road)	21-Mar-00	2.0	0.30	0.15	0.10	20	0.12	0.1	0.40	30	2.00	0.15	0.06	0.009	1.9	5.53	7.8	2.4	2.2		0	0
Swift Creek (Oenpelli Road)	28-Mar-00	1.8	0.29	0.12	0.07	10	0.01	0.2	0.84	30	2.00	0.11	0.03	0.007	1.7	5.62	7.7	2.1	2.8		0	0
Swift Creek (Oenpelli Road)	11-Apr-00	1.3	0.21	0.12	0.08	50	0.01	0.2	0.06	120	3.00	0.20	0.03	0.012	1.2	5.04	6.1	2.2	1.6		3	0
Swift Creek (Oenpelli Road)	19-Apr-00	1.9	0.27	0.10	0.07	30	0.01	0.2	0.03	130	2.00	0.27	0.03	0.007	1.4	4.89	7.1	1.3	0.8		2	0
Swift Creek (Oenpelli Road)	02-May-00	2.3	0.29	0.10	0.10	20	0.01	0.2	0.36	130	3.00	0.60	0.06	0.007	4.2	5.43	9.1	1.5	6.2		4	0
Swift Creek (Oenpelli Road)	16-May-00	2.4	0.34	0.16	0.07	10	0.01	0.1	0.18	30	3.00	0.09	0.03	0.006	1.4	5.49	4.1	1.3	4.2		4	0
Swift Creek (Oenpelli Road)	22-May-00	2.6	0.42	0.12	0.10	10	0.01	0.2	0.69	30	3.00	0.22	0.03	0.008	1.9	5.40	13.0	1.4	3.5		5	0
Swift Creek (Oenpelli Road)	19-Jun-00	2.4	0.41	0.11	0.14											5.55	12.0	4.2	6.6		13	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Swift Creek upstream west	21-Dec-98	3.1	1.11	0.39	0.79	65	0.01	0.1	0.20	137	8.05	0.13	0.02	0.038	0.2	6.02	20	23.7	70	7.3	14	1
Swift Creek upstream west	12-Jan-99	2.0	0.63	0.11	0.94	94	0.01	0.1	0.10	220	4.42	0.11	0.01	0.035	0.3	5.97	11	11.5	30	3.8	23	9
Swift Creek upstream west	02-Feb-99	1.7	0.39	0.26	0.17	16	0.01	0.1	0.30	46	2.01	0.10	0.04	0.018	16.7					2.2		5
Swift Creek upstream west	22-Feb-99	1.8	0.49	0.08	0.49	11	0.01	0.1	0.20	57	1.78	0.08	0.01	0.012	0.2					2		
Swift Creek upstream west	15-Mar-99	1.5	0.14	0.34	0.19	76	0.01	0.1	0.10	82	2.71	0.06	0.01	0.009	0.3	5.81	7.5	5.2	10	2.6		
Swift Creek upstream west	19-Apr-99	2.0	0.88	0.14	0.74	8	0.01	0.1	0.20	41	2.59	0.10	0.01	0.013	0.0	6.1	13.4	2.6	62		10	0
Swift Creek upstream west	10-May-99	2.6	1.37	0.26	1.18	35	0.01	0.1	0.20	451	3.48	0.16	0.01	0.023	0.2							
Swift Creek upstream west	16-Dec-99	4.7	1.77	0.02	0.34	17	0.01	0.3	0.15	100	6.83	0.48	0.07	0.037	0.7	6.00		0.9			10	0
Swift Creek upstream west	28-Jan-00	2.0	0.45	0.05	0.08	16	0.01	0.2	0.17	35	2.23	0.18	0.11	0.017	0.7	5.18	24.0	1.4			5	0
Swift Creek upstream west	22-Feb-00	2.0	0.37	0.12	0.18	15	0.01	0.1	0.13	42	1.87	0.30	0.03	0.012	1.5	5.95	0.0	2.3	24.6		3	0
Swift Creek upstream west	28-Mar-00	1.5	0.32	0.06	0.11	10	0.01	0.1	0.13	70	1.00	0.09	0.03	0.013	0.3	5.67	8.4	2.9	3.6		1	0
Swift Creek upstream west	18-Apr-00	1.7	0.38	0.05	0.08	10	0.01	0.2	0.03	30	1.00	0.23	0.03	0.012	1.9	5.76	5.9	2.4	5.8		2	0
East Tributary	17-Dec-98	3.5	0.26	0.50	0.19	95	0.01	0.5	0.04	95	6.20	0.10	0.01	0.009	1.5	4.49	18.2	0.5	0	3.7	3	1
East Tributary	31-Dec-98	2.4	0.24	0.48	0.12	91	0.01	0.1	0.01	105	4.54	0.05	0.01	0.007	0.0	4.62	15.0	0.9	0	3.6	3	2
East Tributary	05-Jan-99	2.4	0.24	0.38	0.11	76	0.01	0.2	0.03	88	3.81	0.06	0.04	0.009	0.3	4.67	14.7	1.0	0	3.2	3	4
East Tributary	07-Jan-99	1.1	0.16	0.28	0.11	84	0.01	0.2	0.03	72	3.39	0.05	0.02	0.012	0.3	4.78	10.4	6.5	0	4.1	3	1
East Tributary	19-Jan-99	2.4	0.21	0.28	0.10	59	0.01	0.3	0.05	85	3.16	0.08	0.10	0.012	6.6	4.93	12.5	1.0	0	2.4		2
East Tributary	26-Jan-99	1.8	0.18	0.23	0.10	68	0.01	0.2	0.04	80	3.10	0.07	0.03	0.011	0.2	4.84	10.0	3.4	0	3.6		3
East Tributary	02-Feb-99	2.1	0.13	0.19	0.10	54	0.01	0.1	0.23	78	3.07	0.08	0.47	0.012	9.2	5.7	10.5	2.4	14.8	2.7		
East Tributary.	09-Feb-99	1.6	0.16	0.18	0.07	65	0.01	0.1	0.01	81	2.60	0.01	0.01	0.006	0.2	4.83	10.2	2.5	0	2.7		
East Tributary	16-Feb-99	2.1	0.21	0.14	0.06	39	0.01	0.2	0.17	80	2.40	0.06	0.04	0.007	0.2	4.97	11.3	1.0	0	2.0		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
East Tributary	23-Feb-99	1.9	0.17	0.14	0.06	34	0.01	0.1	0.13	57	2.18	0.08	0.02	0.006	0.5	5	11.0	1.1	0	2.0		
East Tributary	02-Mar-99	2.0	0.23	0.09	0.05	48	0.01	0.2	0.03	110	2.50	0.08	0.03	0.007	0.0	4.95	11.0	1.0	0	2.1		
East Tributary	09-Mar-99	1.9	0.19	0.20	0.06	64	0.01	0.2	0.11	69	3.11	0.06	0.02	0.005	0.4	4.82	11.5	0.9	0	2.7		
East Tributary	17-Mar-99	1.0	0.11	0.24	0.04	91	0.01	0.2	0.14	81	2.53	0.09	0.03	0.008	0.2	4.86	8.6	2.4	0	4.0		
East Tributary	23-Mar-99	1.4	0.16	0.13	0.03	67	0.01	0.2	0.22	68	2.53	0.07	0.03	0.008	0.2	4.87	10.0	1.3	0	3.2		
East Tributary	30-Mar-99	1.5	0.16	0.14	0.00	45	0.01	0.2	0.16	53	2.00	0.09	0.02	0.006	0.0	5.07	9.6	0.7	2	2.4		
East Tributary	06-Apr-99	1.7	0.18	0.16	0.01	37	0.01	0.2	0.19	48	1.77	0.01	0.02	0.006	0.4	5.04	8.9	0.5	0	2.5		
East Tributary	12-Apr-99	1.9	0.20	0.13	0.02	32	0.01	0.1	0.27	42	2.04	0.07	0.03	0.006	0.3	4.94	10.0	0.7	0	2.4	3	0
East Tributary	20-Apr-99	2.2	0.22	0.20	0.39	19	0.01	0.1	0.22	51	2.05	0.06	0.01	0.005	0.2	4.98	11.0	0.5	0	1.8	2	0
East Tributary	27-Apr-99	2.4	0.31	0.11	0.78	22	0.01	0.4	0.12	56	2.39	0.06	1.53	0.007	0.2	4.94	11.4	0.6	0	1.9	1	0
East Tributary	04-May-99	2.5	0.28	0.18	0.35	18	0.01	0.1	0.22	76	2.04	0.08	0.04	0.006	0.7	5.03	11.4	0.4	0	1.5	5	0
East Tributary	26-May-99	2.9	0.41	0.11	0.29	22	0.03	0.1	0.51	56	3.43	0.12	0.02	0.006	0.8	5.11	13.3	0.5	0	2.1	10	0
East Tributary	24-Nov-99	2.8	0.31	1.26	0.23	127	0.01	0.3	0.30	105	9.03	0.14	0.04	0.012	0.7						4	0
East Tributary	25-Jan-00	1.8	0.18	0.13	0.02	76	0.01	0.3	0.14	77	2.54	0.09	0.07	0.008	0.6	4.56	7.2	1.5	0.0		3	0
East Tributary	01-Feb-00	2.4	0.19	0.13	0.13	41	0.01	0.3	0.20	48	2.62	0.26	0.06	0.006	0.3	5.00	8.4	0.8	0.0		4	0
East Tributary	08-Feb-00	1.6	0.15	0.12	0.14	72	0.01	0.3	0.80	80	2.41	0.11	0.06	0.007	0.8	4.57	9.0	1.0	0.0		4	0
East Tributary	15-Feb-00	1.6	0.15	0.19	0.08	73	0.01	0.3	0.27	78	2.58	0.08	0.04	0.007	0.3	4.48	7.6	1.2	0.0		3	0
East Tributary	22-Feb-00	2.0	0.20	0.20	0.05	41	0.01	0.2	0.21	66	1.93	0.30	0.03	0.005	1.3	5.01	8.5	0.8	0.0		2	1
East Tributary	29-Feb-00	1.6	0.14	0.24	0.05	69	0.01	0.3	0.31	91	2.30	0.30	0.15	0.007	2.0	5.01	8.5	0.8	0.0		1	0
East Tributary	14-Mar-00	1.4	0.13	0.23	0.11	67	0.01	0.3	0.21	78	2.48	0.30	0.06	0.006	1.5	5.18	7.0	2.4	13.8		2	0
East Tributary	21-Mar-00	1.4	0.19	0.17	0.19	30	0.01	0.2	0.22	70	1.00	0.09	0.05	0.006	0.3	4.89	6.5	1.6	0.0		0	0
East Tributary	28-Mar-00	1.4	0.15	0.16	0.03	40	0.01	0.2	0.18	80	1.00	0.03	0.03	0.006	3.7	5.21	6.5	0.8	1.6		0	0
East Tributary	11-Apr-00	1.5	0.23	0.15	0.11	40	0.01	0.2	0.10	50	2.00	0.09	0.03	0.010	1.3	5.21	6.5	2.0	1.6		2	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
East Tributary	20-Apr-00	1.5	0.17	0.12	0.05	30	0.01	0.2	0.03	60	1.00	0.13	0.03	0.005	0.8	5.27	8.3	1.0	2.4		1	0
East Tributary	02-May-00	1.6	0.19	0.14	0.06	50	0.01	0.2	0.21	0	1.00	0.38	0.14	0.004	1.1	5.16	7.1	0.5	2.8		2	0
East Tributary	16-May-00	2.4	0.22	0.13	0.29	10	0.01	0.1	0.08	0	1.00	0.06	0.03	0.004	0.7	5.42	0.4	3.2	4.4		3	0
East Tributary	30-May-00	2.3	0.24	0.14	0.06	10	0.01	0.2	0.33	0	1.00	0.07	0.03	0.003	1.5	5.25	12.5	0.5	2.6		3	0
East Tributary	19-Jun-00	1.9	0.32	0.14	0.12											5.23	13.0	0.8	4.0		7	0
Central Tributary upstream	05-Jan-98	1.98	0.81	0.16	0.06											6.17	14.5	0.54	59.2	0.8	9	3
Central Tributary upstream	12-Jan-98	1.94	0.92	0.13	0.04	5	0.30		0.30	9	1.00	0.10	0.10	0.010	2	6.09	15.8	0.55	66.4	0.7	3	3
Central Tributary upstream	22-Jan-98	1.67	0.67	0.14	0.02	8	0.30	0.1	0.30	14	1.00	0.30	0.10	0.010	3	6.02	12.2	0.5	50.4	1.6	12	1
Central Tributary upstream	02-Feb-98	1.68	0.86	0.20	0.05	4	0.30		0.30	8	1.00	0.30	0.10	0.010	4	6.17	14.1	0.45	63.2	0.5	7	8
Central Tributary upstream	09-Feb-98	1.86	1.03	0.12	0.02		0.30		0.30	13	2.00	0.50	0.10	0.010	1	6.25	15.1	0.4	74.8	0.6	10	3
Central Tributary upstream	16-Feb-98	1.61	0.64	0.14	0.02		0.30		0.30	18	2.00	0.30	0.10	0.010	1	6.10	11.6	0.54	50.4	0.5	20	4
Central Tributary upstream	23-Feb-98	1.88	0.91	0.09	0.02		0.30		0.30	17	2.00	0.60	0.10	0.010	1	6.33	14.2	0.42	72.4	0.4	7	3
Central Tributary upstream	02-Mar-98	1.84	0.79	0.09	0.40	9	0.30		0.30	16	1.00	0.40	0.10	0.010	10	5.89	12.1	0.4	59.2	0.3	19	3
Central Tributary upstream	09-Mar-98	1.83	1.04	0.12	0.02	1	0.30		0.30	16	1.00	0.30	0.10	0.010	1	6.33	14.4	0.41	79.2	0.3	13	1
Central Tributary upstream	16-Mar-98	1.82	0.95	0.11	0.02	3	0.30		0.30	22	1.00	0.30	0.10	0.010	1	6.18	13.5	0.41	67.6	0.3		
Central Tributary upstream	23-Mar-98	1.86	1.07	0.07	0.02	12	0.30		0.30	25	1.00	0.30	0.10	0.010	1	6.36	16.6	0.32	85.2	0.3	21	1
Central Tributary upstream	30-Mar-98	1.95	1.14	0.07	0.02	1	0.30		0.30	27	2.00	1.10	0.10	0.010	1	6.37	16.5	0.2	91.6	0.2	18	9
Central Tributary upstream	06-Apr-98	1.89	0.88	0.12	0.03	4	0.17	0.1	0.24	23	1.64	0.29	0.03	0.012	0	5.93	13.7	0.64	67.4	0.5	3	3
Central Tributary upstream	14-Apr-98	2.17	1.25	0.09	0.02	4	0.01	0.1	0.01	36	0.77	0.55	0.01	0.005	0	6.19	16.8	0.16	94.0	0.3	3	3
Central Tributary upstream	20-Apr-98	1.92	1.05	0.09	0.02	38	0.01	0.1	0.01	36	2.09	0.51	0.01	0.006	27	6.28	15.8	0.46	82.8	0.6	3	1
Central Tributary upstream	27-Apr-98	2.02	1.08	0.07	0.08	55	0.01	0.1	0.30	48	3.55	0.31	0.16	0.009	0	6.12	16.1	0.16	88.8	0.3	5	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Central Tributary upstream	05-May-98	2.27	1.40	0.06	0.06	16	0.01	0.1	0.14	47	2.03	0.69	0.08	0.005	0	6.35	18.1	0.13	110	0.4	8	4
Central Tributary upstream	15-Dec-98	2.4	0.90	0.18	0.12	14	0.01	0.1	0.03	27	3.46	0.09	0.02	0.034	0.0	5.97	15.4	1.3	68	1.2	3	4
Central Tributary upstream	22-Dec-98	1.8	0.93	0.12	0.04	29	0.01	0.1	0.29	49	2.50	0.49	0.03	0.043	0.7	6.05	13.0	4.1	57.6	2.0	11	1
Central Tributary upstream	30-Dec-98	2.0	0.77	0.12	0.02	8	0.01	0.1	0.01	33	2.34	0.28	0.01	0.014	3.3	6.08	13.2	0.5	67.6	0.7	3	2
Central Tributary upstream	05-Jan-99	2.2	1.05	0.25	0.04	6	0.01	0.1	0.01	33	1.77	0.33	0.02	0.015	0.5	6.17	16.0	0.3	88.4	0.5	3	2
Central Tributary upstream	07-Jan-99	1.9	0.98	0.10	0.03	5	0.01	0.1	0.01	35	1.99	0.33	0.01	0.013	0.4	6.19	15.2	0.4	73.2	0.5	3	2
Central Tributary upstream	19-Jan-99	2.0	0.84	0.07	0.02	6	0.01	0.2	0.01	29	1.95	0.38	0.09	0.019	0.2	5.97	13.7	0.6	62.8	0.5		2
Central Tributary upstream	27-Jan-99	1.7	0.72	0.11	0.02	4	0.01	0.1	0.01	33	1.73	0.32	0.01	0.014	0.0	6.05	12.4	0.5	51.4	0.6		3
Central Tributary upstream	02-Feb-99	1.7	0.63	0.10	0.04	4	0.01	0.1	0.21	42	1.87	0.28	0.06	0.017	2.3	5.62	9.5	0.6	28	0.8		
Central Tributary upstream	09-Feb-99	1.5	0.50	0.10	0.05	11	0.01	0.1	0.01	49	2.76	0.17	0.01	0.015	0.4	5.96	9.7	1.1	42.4	0.9		
Central Tributary upstream	16-Feb-99	1.9	0.99	0.13	0.02	5	0.01	0.1	0.10	39	2.03	0.41	0.02	0.010	0.6	5.72	14.5	0.4	70	0.4		
Central Tributary upstream	23-Feb-99	2.1	1.16	0.07	0.03	3	0.01	0.1	0.08	41	2.30	0.45	0.02	0.009	0.7	5.88	15.5	0.3	85.2	0.5		
Central Tributary upstream	02-Mar-99	1.9	1.13	0.09		5	0.01	0.1	0.01	26	2.45	0.52	0.01	0.006	0.4	5.99	15.5	0.2	89.2	0.4		
Central Tributary upstream	11-Mar-99	2.0	1.15	0.07		2	0.01	0.1	0.10	39	2.32	0.59	0.02	0.008	0.6	6.1	16.2	0.2	97.2	0.5		
Central Tributary upstream	18-Mar-99	1.5	0.65	0.11		6	0.01	0.1	0.01	26	1.82	0.29	0.01	0.012	0.2	5.94	12.5	0.4	50.4	0.7		
Central Tributary upstream	23-Mar-99	1.8	0.69	0.10	0.00	5	0.01	0.1	0.16	34	1.92	0.40	0.02	0.010	0.4	5.97	14.1	0.3	63.2	0.5		
Central Tributary upstream	30-Mar-99	1.7	0.72	0.10	0.00	6	0.01	0.1	0.09	40	1.78	0.37	0.01	0.011	0.3	6.03	13.5	0.4	59.2	0.5		
Central Tributary upstream	06-Apr-99	1.9	0.85	0.10	0.00	5	0.01	0.1	0.11	41	1.74	0.30	0.01	0.009	0.4	5.74	12.8	0.4	62.8	0.7		
Central Tributary upstream	15-Apr-99	2.0	1.13	0.14	0.42	3	0.01	0.1	0.15	38	2.33	0.55	0.03	0.007	0.8	6.03	14.9	0.4	82.8	0.4	2	1
Central Tributary upstream	22-Apr-99	2.1	1.28	0.10	0.39	2	0.01	0.1	0.04	45	2.62	0.70	0.01	0.007	0.6	6.06	16.3	0.2	95.6	0.4	3	1
Central Tributary upstream	27-Apr-99	2.1	1.15	0.12	0.81	5	0.12	0.1	2.71	48	2.71	0.64	0.11	0.006	1.1	5.93	15.4	0.4	88.8	0.3	3	0
Central Tributary upstream	07-May-99	2.2	1.44	0.10	0.39	2	0.01	0.1	0.19	76	2.51	0.68	0.03	0.006	1.3	6.2	17.2	0.16	110	0.4	2	0
Central Tributary upstream	14-May-99	2.4	1.61	0.12	0.39	2	0.01	0.1	0.08	91	2.43	0.73	0.02	0.006	1.0	6.12	19.4	0.13	124	0.5	3	0

Site	Date	Cl mg/L	Mg mg/L	SO4 mg/L	Ca mg/L	Al ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Fe ug/L	Mn ug/L	Ni ug/L	Pb ug/L	U ug/L	Zn ug/L	pH	EC µS	NTU	Alk uM	TOC mg/L	TP ug/L	PO4 ug/L
Central Tributary upstream	26-May-99	2.7	1.82	0.17	0.41	2	0.01	0.1	0.07	163	2.54	0.67	0.01	0.006	0.6	5.82	22	0.17	157	0.4	3	2
Central Tributary causeway	05-Jan-98	5.14	1.40	0.05	0.16											5.91	25.0	1.50	56.4	1.0	3	6
Central Tributary causeway	12-Jan-98	4.07	1.19	0.06	0.13	1	0.30		0.30	150	6.00	0.30	0.10	0.010	1	6.16	23.0	1.9	60.4	1.1	9	4
Central Tributary causeway	22-Jan-98	1.81	0.50	0.15	0.04	9	0.30	0.1	0.30	60	2.00	0.10	0.10	0.010	1	6.10	11.5	0.58	34.8	0.7	8	1
Central Tributary causeway	02-Feb-98	1.79	0.83	0.12	0.06	4	0.30		0.30	87	2.00	0.10	0.10	0.010	1	6.28	13.9	0.51	64.8	0.7	3	1
Central Tributary causeway	16-Feb-98	1.76	0.76	0.08	0.09	5	0.30		0.30	59	2.00	0.20	0.10	0.010	1	6.40	12.7	1.00	63.6	0.6	3	1
Central Tributary causeway	23-Feb-98	2.03	0.82	0.03	0.05	3	0.30		0.30	83	2.00	0.20	0.10	0.010	1	6.42	13.5	0.38	68.0	0.6	1	3
Central Tributary causeway	02-Mar-98	1.82	0.81	0.06	0.02	2	0.30		0.30	51	2.00	0.10	0.10	0.010	1	6.40	12.6	0.42	68.0	0.5	3	1
Central Tributary causeway	09-Mar-98	1.86	0.94	0.05	0.03	1	0.30		0.30	84	1.00	0.10	0.10	0.010	1	6.42	13.7	0.31	67.6	0.4	3	1
Central Tributary causeway	16-Mar-98	1.89	1.00	0.05	0.09	5	0.30		0.30	81	1.00	0.10	0.10	0.010	9	6.52		0.35	78.0	0.4	3	1
Central Tributary causeway	23-Mar-98					9	0.30		0.30	98	1.00	0.10	0.10	0.010	25		14.5	0.3		0.5	3	4
Central Tributary causeway	30-Mar-98	1.89	0.84	0.05	0.02	2	0.30		0.30	160	1.00	0.10	0.10	0.010	1	6.64	14.1	0.37	66.4	0.4	9	5
Central Tributary causeway	06-Apr-98	1.86	0.80	0.08	0.05	2	3.31	0.1	0.28	74	2.13	0.09	0.12	0.006	0	6.25	13.5	0.65	62.8	0.5	3	6
Central Tributary causeway	14-Apr-98	2.05	0.83	0.05	0.05	1	0.01	0.1	0.01	106	0.00	0.04	0.01	0.003	0	6.00	13.7	0.44	58.0	0.4	5	1
Central Tributary causeway	20-Apr-98	2.03	0.77	0.06	0.04	50	0.01	0.1	0.01	99	1.49	0.07	0.01	0.007	16	6.15	13.6	0.5	61.2	0.7	3	1
Central Tributary causeway	27-Apr-98	2.08	0.74	0.05	0.04	6	0.01	0.1	0.15	23	0.51	0.26	0.11	0.005	0	5.86	13.1	0.40	52.4	0.4	8	1
Central Tributary causeway	05-May-98	2.14	0.81	0.03	0.04	3	0.01	0.1	0.33	111	2.03	0.28	0.22	0.004	0	6.08	14.1	0.47	58.4	0.4	3	5
Central Tributary causeway	30-Dec-98	1.9	0.52	0.15	0.17	12	0.01	0.1	0.01	89	5.10	0.14	0.01	0.018	0.0	5.97	12.5	4.4	47.6	1.4	5	3
Central Tributary causeway	05-Jan-99	3.3	1.20	0.04	0.46	6	0.01	0.1	0.03	42	17.2	0.29	0.02	0.009	1.3	6.16	21.4	4.9	99.2	0.8	5	3
Central Tributary causeway	07-Jan-99	2.2	0.85	0.09	0.15	3	0.01	0.1	0.01	90	5.78	0.15	0.15	0.019	1.0	5.98	15.6	1.8	69.2	0.7	3	2
Central Tributary causeway	19-Jan-99	2.3	1.00	0.09	0.16	8	0.01	0.2	0.01	50	4.46	0.17	0.10	0.011	0.7	6.24	15.8	18.5	70.8	0.7		3

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Central Tributary causeway	27-Jan-99	2.2	0.90	0.09	0.20	1	0.01	0.1	0.01	55	6.35	0.17	0.01	0.013	0.0	6.43	15.8	2.2	60.4	0.8		
Central Tributary causeway	02-Feb-99	2.0	0.93	0.07	0.19	9	0.01	0.1	0.19	60	5.61	0.24	0.09	0.013	2.2	6.25	13.5	18.8	66.4	1.0		
Central Tributary causeway	09-Feb-99	1.7	0.95	0.07	0.21	12	0.01	0.1	0.01	53	6.21	0.13	0.01	0.015	1.4	6.37	15.8	17.3	69.6	1.1		
Central Tributary causeway	16-Feb-99	2.0	1.15	0.04	0.15	4	0.01	0.1	0.11	122	5.27	0.27	0.03	0.007	0.5	6.24	18.0	4.5	78.4	0.6		
Central Tributary causeway	23-Feb-99	2.0	1.13	0.03	0.11	3	0.01	0.1	0.12	159	4.50	0.23	0.02	0.007	0.4	6.25	18.0	0.8	74	0.6		
Central Tributary causeway	02-Mar-99	2.0	1.09	0.16	0.09	3	0.01	0.1	0.08	55	4.51	0.24	0.01	0.004	0.5	6.13	17.0	1.0	66.4	0.6		
Central Tributary causeway	11-Mar-99	2.0	0.97	0.06	0.09	2	0.01	0.1	0.08	171	4.87	0.23	0.02	0.005	0.4	6.06	17.9	1.0	67.2	0.6		
Central Tributary causeway	18-Mar-99	1.7	1.01	0.06	0.08	5	0.01	0.1	0.11	96	4.04	0.25	0.02	0.007	0.4	6.3	18.1	1.0	71.6	0.6		
Central Tributary causeway	23-Mar-99	1.9	1.22	0.09	0.03	5	0.01	0.1	0.14	122	4.77	0.29	0.02	0.006	0.2	6.21	21.2	1.1	80	0.6		
Central Tributary causeway	30-Mar-99	1.8	1.11	0.06	0.02	5	0.01	0.1	0.09	153	4.69	0.27	0.02	0.006	0.3	6.12	20.3	0.9	76	0.6		
Central Tributary causeway	06-Apr-99	2.0	1.25	0.12	0.44	3	0.01	0.1	0.01	79	4.39	0.17	0.03	0.004	0.0	6.32	18.3	1.0	74.8	0.8		
Central Tributary causeway	15-Apr-99	2.1	1.38	0.07	0.58	0	0.01	0.1	0.01	0	4.57	0.28	0.01	0.003	0.1	6.29	19.9	0.7	82	0.5	2	0
Central Tributary causeway	22-Apr-99	2.2	1.40	0.06	0.49	1	0.01	0.1	0.14	34	5.23	0.26	0.01	0.004	0.2	6.17	21.2	0.6	68	0.6	2	0
Central Tributary causeway	27-Apr-99	2.3	1.29	0.09	0.65	1	0.01	0.1	0.01	24	6.15	0.50	0.01	0.005	0.3	6.05	19.4	0.9	68.4	0.4	3	0
Central Tributary causeway	07-May-99	2.2	1.35	0.06	0.30	1	0.01	0.1	0.05	24	4.91	0.20	0.02	0.003	0.3	5.79	20	0.77	56	0.5	2	0
Central Tributary causeway	14-May-99	2.4	1.34	0.06	0.31	1	0.01	0.1	0.01	0	4.74	0.21	0.01	0.003	0.5	5.79	20.7	0.73	52	0.5	3	0
Central Tributary causeway	26-May-99	2.3	1.43	0.06	0.47	1	0.01	0.1	0.01	23	5.24	0.26	0.01	0.003	0.8	5.82	20.5	0.9	56.8	0.7	4	1
Central Tributary causeway	04-Jun-99	2.6	1.36	0.12	0.43	1	0.01	0.1	0.09	56	4.94	0.21	0.01	0.004	0.5	5.66	20	1.25	69.2	1.2	6	0
Central Tributary causeway	11-Jun-99	2.6	1.31	0.08	0.44	1	0.01	0.1	0.08	45	4.69	0.21	0.01	0.004	0.4						6	0
Central Tributary causeway	25-Jan-00	1.9	0.86	0.08	0.01	5	0.01	0.1	0.09	37	1.95	0.41	0.19	0.009	1.5	5.88	11.0	0.0	77.2		1	0
Central Tributary causeway	01-Feb-00	1.8	1.00	0.07	0.03	4	0.27	0.2	0.15	49	1.94	0.67	0.09	0.011	1.2	5.98	12.5	1.3	83.0		3	0
Central Tributary causeway	08-Feb-00	2.0	0.91	0.15	0.04	5	0.01	0.2	0.24	38	1.99	0.87	0.05	0.010	0.9	5.79	12.0	0.3	75.2		2	0
Central Tributary causeway	15-Feb-00	1.6	0.55	0.13	0.08	12	0.01	0.4	0.30	40	1.90	0.40	0.03	0.015	0.8	5.26	9.6	0.5	32.4		1	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Central Tributary causeway	22-Feb-00	1.9	0.84	0.09	0.03	5	0.01	0.1	0.30	30	1.64	0.30	0.03	0.006	2.1	5.63	12.0	0.5	58.0		2	0
Central Tributary causeway	29-Feb-00	1.4	0.56	0.08	0.08	15	0.01	0.1	0.22	33	1.67	0.30	0.03	0.010	2.3	5.63	12.0	0.5	58.0		1	0
Central Tributary causeway	14-Mar-00	1.8	0.63	0.12	0.04	14	0.01	0.1	0.15	37	1.66	0.30	0.03	0.011	3.2	5.36	9.7	0.8	52.4		0	0
Central Tributary causeway	21-Mar-00	1.9	0.79	0.08	0.04	10	0.01	0.1	0.12	30	1.00	0.39	0.03	0.008	0.5	5.53	11.5	1.0	7.0		0	0
Central Tributary causeway	28-Mar-00	2.1	0.95	0.08	0.03	10	0.01	0.1	0.12	30	1.00	0.40	0.03	0.007	2.0	5.62	12.0	0.5	8.6		0	0
Central Tributary causeway	11-Apr-00	1.3	0.49	0.13	0.05	10	0.01	0.1	0.29	30	1.00	0.45	0.03	0.012	1.1	5.55	7.3	0.6	5.6		0	0
Central Tributary causeway	02-May-00	1.8	1.08	0.06	0.03	10	0.01	0.1	0.09	60	2.00	0.95	0.05	0.007	2.4	5.94	14.5	0.8	11.0		0	0
Central Tributary causeway	16-May-00	2.3	1.34	0.08	0.04	10	0.01	0.1	0.19	80	3.00	0.72	0.03	0.004	2.4	6.08	12.5	0.4	15.2		0	0
Central Tributary causeway	22-May-00	2.6	1.51	0.07	0.07	10	0.04	0.2	1.03	0	3.00	0.87	0.03	0.005	13.6	6.20	22.0	0.6	14.8		2	0
Central Tributary d'stream	30-Dec-98	2.1	0.59	0.16	0.26	13	0.01	0.1	0.01	72	8.43	0.12	0.01	0.020	0.6	6.08	13.4	9.6	53.6	1.5	11	3
Central Tributary d'stream	05-Jan-99	3.2	1.09	0.11	0.82	6	0.01	0.1	0.05	111	26.5	0.35	0.02	0.011	1.0	6.21	22.5	6.7	115	1.0	8	4
Central Tributary d'stream	07-Jan-99	2.3	0.81	0.05	0.26	9	0.01	0.1	0.03	113	8.97	0.21	0.03	0.025	18.0	6.07	15.9	3.2	71.2	0.9	11	2
Central Tributary d'stream	19-Jan-99	2.3	0.96	0.04	0.20	7	0.01	0.2	0.06	61	6.39	0.27	0.32	0.012	0.7	6.49	15.9	16.6	73.2	0.8		2
Central Tributary d'stream	27-Jan-99	2.1	0.88	0.05	0.20	0	0.01	0.1	0.01	54	6.69	0.17	0.01	0.010	0.0	6.49	15.3	2.5	63.2	0.8		2
Central Tributary d'stream	02-Feb-99	2.0	0.92	0.06	0.20	5	0.03	0.1	0.21	62	6.03	0.33	0.13	0.013	2.9	5.32	13.5	16.5	79.6	1.1		4
Central Tributary d'stream	09-Feb-99	1.7	0.92	0.05	0.22	11	0.01	0.1	0.02	48	6.07	0.10	0.35	0.016	0.3	6.34	15.7	21.3	84.4	1.0		
Central Tributary d'stream	16-Feb-99	1.9	1.14	0.05	0.16	3	0.01	0.1	0.12	113	5.45	0.28	0.03	0.007	0.6	6.28	17.5	3.3	76.8	0.6		
Central Tributary d'stream	23-Feb-99	2.1	1.10	0.04	0.13	4	0.01	0.1	0.09	128	4.87	0.22	0.04	0.007	0.5	6.08	17.6	1.5	68	0.6		
Central Tributary d'stream	02-Mar-99	1.8	0.95	0.16	0.10	9	0.01	0.1	0.09	122	4.35	0.30	0.02	0.010	0.2	6.11	16.7	1.1	64.8	0.6		
Central Tributary d'stream	11-Mar-99	1.8	0.93	0.05	0.05	2	0.01	0.1	0.10	150	5.21	0.21	0.02	0.005	0.3	6.04	17.1	1.2	62	0.7		
Central Tributary d'stream	18-Mar-99	1.7	1.05	0.04	0.04	3	0.01	0.1	0.01	75	4.30	0.23	0.01	0.007	0.2	6.32	17.9	1.3	71.6	0.6		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Central Tributary d'stream	23-Mar-99	1.8	1.15	0.04	0.03	2	0.01	0.1	0.01	116	4.97	0.29	0.01	0.005	0.2	6.4	20.6	1.2	73.6	0.6		
Central Tributary d'stream	30-Mar-99	2.0	1.20	0.05	0.02	3	0.01	0.1	0.01	114	4.69	0.35	0.01	0.005	0.2	6.25	20.0	0.8	74	0.6		
Central Tributary d'stream	06-Apr-99	1.9	1.19	0.13	0.39	4	0.01	0.1	0.01	107	4.34	0.18	0.01	0.006	0.0	6.39	18.0	1.1	72.4	0.8		
Central Tributary d'stream	15-Apr-99	2.1	1.30	0.09	0.55	1	0.01	0.1	0.10	34	4.96	0.27	0.01	0.003	0.2	6.15	19.5	0.8	75.2	0.5	2	1
Central Tributary d'stream	22-Apr-99	2.2	1.23	0.07	0.51	1	0.01	0.1	0.11	34	5.15	0.32	0.02	0.005	0.2	6.11	19.5	0.8	60	0.6	3	0
Central Tributary d'stream	27-Apr-99	2.2	1.23	0.08	0.48	0	0.01	0.1	0.01	0	6.05	0.26	0.01	0.007	0.1	6.12	18.8	1.1	66	0.5	3	0
Central Tributary d'stream	07-May-99	2.2	1.21	0.10	0.52	1	0.01	0.1	0.05	0	4.90	0.20	0.02	0.003	0.3	5.92	18.7	1.01	53.2	0.7	3	0
Central Tributary d'stream	14-May-99	2.2	1.26	0.05	0.50	1	0.01	0.1	0.01	0	4.79	0.20	0.01	0.003	0.3	5.9	18.9	1.08	48	0.7	2	0
Central Tributary d'stream	26-May-99	2.3	1.07	0.05	0.16	1	0.01	0.1	0.10	43	4.76	0.26	0.01	0.004	0.4	5.97	17.2	1.63	63.2	0.7	3	0
Central Tributary d'stream	04-Jun-99	2.4	1.04	0.12	0.20	1	0.01	0.1	0.10	54	4.16	0.17	0.01	0.004	0.5	5.97	16.3	2.12	68	1.5	7	0
Central Tributary d'stream	11-Jun-99	2.3	0.90	0.11	0.63	1	0.01	0.1	0.01	50	3.66	0.14	0.01	0.005	0.3						6	0
Central Tributary d'stream	25-Jan-00	2.4	2.07	0.05	0.68	5	0.01	0.1	0.09	36	7.63	0.43	0.20	0.010	1.4	5.75	33.0	1.0	51.4		2	0
Central Tributary d'stream	01-Feb-00	2.5	2.81	0.17	0.94	3	0.31	0.1	0.16	31	9.28	0.67	0.08	0.010	1.1	5.48	39.0	0.6	47.6		3	0
Central Tributary d'stream	08-Feb-00	2.1	2.03	0.11	0.65	7	0.01	0.1	0.21	58	7.91	0.29	0.03	0.007	1.6	6.30	32.0	0.5	95.2		2	0
Central Tributary d'stream	15-Feb-00	1.7	1.36	0.27	0.53	14	0.01	0.1	0.24	59	6.05	0.23	0.02	0.036	0.9	5.59	22.5	1.2	68.8		2	0
Central Tributary d'stream	22-Feb-00	2.1	1.52	0.16	0.32	5	0.01	0.1	0.07	51	5.28	0.30	0.03	0.008	1.6	6.07	22.5	0.6	84.6		2	0
Central Tributary d'stream	29-Feb-00	1.6	1.48	0.11	0.43	6	0.01	0.1	0.09	68	6.55	0.30	0.03	0.006	1.1	6.07	22.5	0.6	84.6		1	2
Central Tributary d'stream	14-Mar-00	1.8	1.46	0.15	0.31	5	0.01	0.1	0.25	51	5.55	0.30	0.03	0.012	1.4	6.14	21.0	1.2	73.4		0	0
Central Tributary d'stream	21-Mar-00	1.8	1.59	0.09	0.35	10	0.01	0.1	0.08	50	4.00	0.28	0.03	0.006	0.8	6.23	22.0	0.8	10.2		0	0
Central Tributary d'stream	28-Mar-00	1.9	1.62	0.15	0.36	10	0.01	0.1	0.03	70	4.00	0.31	0.03	0.005	0.3	6.25	22.0	0.6	10.0		0	0
Central Tributary d'stream	11-Apr-00	1.6	1.33	0.16	0.28	10	0.01	0.1	0.08	60	4.00	0.57	0.03	0.009	0.7	5.97	16.5	1.1	8.6		0	0
Central Tributary d'stream	02-May-00	2.0	1.88	0.18	0.41	10	0.03	0.3	0.13	60	5.00	0.96	0.23	0.008	2.1	6.09	26.0	0.5	8.2		0	0
Central Tributary d'stream	16-May-00	2.1	2.08	0.25	0.47	10	0.01	0.1	0.25	30	6.00	0.26	0.03	0.008	2.0	6.26	25.5	0.3	8.2		0	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Central Tributary d'stream	22-May-00	2.6	2.22	0.26	0.51	10	0.01	0.1	0.40	30	7.00	0.31	0.03	0.005	5.3	6.21	35.0	0.7	10.6		3	0
Central Tributary d'stream	19-Jun-00	2.3	2.48	0.09	0.41											6.11	34.0	2.5	4.0		4	0
Subsurface seepage channel	07-Jan-99	4.1	8.07	0.59	3.07	32	0.03	0.1	0.30	105	95.2	1.97	0.30	0.051	1.6	6.15	144	8.8	118	0.7	0	2
Subsurface seepage channel	19-Jan-99	4.0	8.17	0.48	3.46	102	0.05	0.2	0.64	155	134	2.92	1.16	0.052	3.1	5.68	180	4.1	97.2	0.7		2
Subsurface seepage channel	27-Jan-99	4.0	7.39	0.30	3.17	68	0.03	0.1	0.39	135	103	1.99	0.46	0.042	1.4	5.9	141	11.6	93.6	0.6		2
Subsurface seepage channel	02-Feb-99	5.5	14.2	0.77	6.21	178	0.17	0.1	1.23	177	230	5.01	1.74	0.079	5.9	6.05	215	2.4	32.4	1.0		
Subsurface seepage channel	09-Feb-99	4.1	9.04	0.32	3.25	94	0.05	0.1	0.59	169	124	2.24	0.75	0.045	2.8	5.65	153	5.9	89.2	0.9		
Subsurface seepage channel	16-Feb-99	3.8	5.70	0.44	2.81	65	0.04	0.1	0.57	128	94.1	1.77	0.59	0.043	1.9	5.56	120	4.0	96.4	0.6		
Subsurface seepage channel	23-Feb-99	3.6	3.88	0.32	1.79	40	0.02	0.1	0.37	123	54.5	0.98	0.38	0.034	1.3	5.43	81.0	3.4	92	0.5		
Subsurface seepage channel	02-Mar-99	3.4	2.92	0.40	1.19	46	0.02	0.1	0.20	112	45.0	0.90	0.13	0.025	1.2	5.49	61.5	4.7	98.4	0.4		
Subsurface seepage channel	11-Mar-99	3.4	2.71	0.25	0.90	22	0.02	0.1	0.26	105	37.9	0.77	0.20	0.025	0.9	5.44	55.0	4.3	100	0.5		
Subsurface seepage channel	18-Mar-99	3.8	6.99	0.17	3.02	67	0.03	0.1	0.58	135	94.6	1.64	0.73	0.045	3.4	5.3	135	3.4	71.6	0.5		
Subsurface seepage channel	23-Mar-99	3.2	4.40	0.25	2.17	43	0.01	0.1	0.43	112	58.7	0.99	0.44	0.032	1.0	5.51	90.2	2.8	90	0.5		
Subsurface seepage channel	30-Mar-99	3.1	3.69	0.32	1.80	33	0.01	0.1	0.30	96	49.8	0.82	0.33	0.027	1.0	5.5	73.8	3.9	87.6	0.5		
Subsurface seepage channel	06-Apr-99	3.0	4.12	0.27	1.86	39	0.01	0.1	0.40	81	55.6	0.87	0.45	0.031	1.1	5.17	77.0	4.4	65.2	0.8		
Subsurface seepage channel	15-Apr-99	2.7	2.98	0.34	1.81	28	0.01	0.1	0.32	80	39.2	0.70	0.24	0.024	0.9	5.4	57.0	2.7	82.8	0.5	4	1
Subsurface seepage channel	22-Apr-99	2.9	2.53	0.20	1.44	24	0.01	0.1	0.28	88	33.2	0.59	0.20	0.028	0.7	5.68	47.2	2.1	92.8	0.4	3	0
Subsurface seepage channel	27-Apr-99	2.7	2.11	0.37	1.42	18	0.01	0.1	0.23	85	28.9	0.66	0.14	0.022	0.9	5.47	40.0	2.3	96.4	0.3	4	0
Subsurface seepage channel	07-May-99	2.7	2.18	0.37	1.30	18	0.01	0.1	0.20	30	27.4	0.58	0.16	0.021	0.9	5.43	38.2	1.8	95.2	0.4	3	0
Subsurface seepage channel	14-May-99	2.7	2.24	0.39	1.10											5.5	38.5	1.54	103	0.5	3	0
Subsurface seepage channel	26-May-99	2.8	2.23	0.15	0.87	18	0.01	0.1	0.19	23	26.	0.58	0.15	0.021	0.9	5.66	37.3	0.74	112	0.4	3	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Subsurface seepage channel	04-Jun-99	2.8	2.25	0.34	0.99	17	0.01	0.1	0.19	20	25.3	0.57	0.15	0.021	0.9	5.72	36.3	0.44	130	0.4	5	1
Subsurface seepage channel	11-Jun-99	2.7	2.22	0.21	1.13	19	0.01	0.1	0.17	20	25.0	0.55	0.17	0.021	0.8						5	0
Subsurface seepage channel	25-Jan-00	3.2	5.81	0.21	2.44	48	0.01	0.4	0.17	21	61.0	0.92	0.55	0.036	1.1	5.42	91.0	0.3	75.2		2	0
Subsurface seepage channel	01-Feb-00	2.6	5.76	0.22	2.50	59	0.01	0.4	0.24	10	64.1	1.00	0.40	0.034	0.1	5.08	89.0	0.5	50.4		3	0
Subsurface seepage channel	08-Feb-00	2.7	5.97	0.24	2.68	65	0.02	0.4	0.34	24	68.4	1.04	0.45	0.037	0.3	5.30	96.0	0.2	64.8		3	0
Subsurface seepage channel	15-Feb-00	2.9	8.46	0.59	4.08	105	0.03	0.5	0.50	27	137	1.56	0.52	0.043	0.6	5.25	138	0.3			3	2
Subsurface seepage channel	22-Feb-00	3.0	7.18	0.84	3.32	84	0.02	0.1	0.78	21	109	1.43	0.46	0.030	2.2	5.17	120	0.8	72.2		3	2
Subsurface seepage channel	29-Feb-00	2.7	4.53	0.70	2.27	44	0.01	0.1	0.37	21	64	0.95	0.27	0.027	1.7	5.17	120	0.8	72.2		2	2
Subsurface seepage channel	14-Mar-00	2.5	4.10	0.93	2.01	651	0.02	0.2	0.52	259	72.7	1.05	0.53	0.065	3.3	5.12	63.0	10.0	49.6		5	1
Subsurface seepage channel	21-Mar-00	2.4	3.57	1.11	1.73	20	0.01	0.1	0.29	30	4.90	0.71	0.22	0.020	0.9	5.14	60.0	8.3	5.8		7	0
Subsurface seepage channel	28-Mar-00	2.4	3.37	0.93	1.72	0	0.01	0.1	0.19	30	4.90	1.11	0.37	0.025	2.6	5.31	48.0	2.2	6.6		0	0
Subsurface seepage channel	11-Apr-00	2.2	2.25	0.61	1.11	10	0.01	0.1	0.16	30	3.00	0.59	0.09	0.017	1.7	5.26	35.0	1.3	9.0		0	1
Subsurface seepage channel	02-May-00	1.8	1.62	0.31	0.64	10	0.02	0.5	0.32	30	3.00	0.69	0.06	0.010	1.2	5.31	36.0	7.5	9.6		23	0
Subsurface seepage channel	16-May-00	2.0	1.84	0.45	0.82	10	0.01	0.3	0.22	30	3.20	0.52	0.06	0.014	1.7	5.55	28.0	2.6	11.4		15	0
Subsurface seepage channel	22-May-00	2.1	1.90	0.40	0.80	10	0.01	0.3	0.32	30	3.10	0.53	0.08	0.014	14.1	5.39	36.0	0.9	11.4		4	0
Subsurface seepage channel	19-Jun-00	2.3	1.99	0.31	0.69											5.94	31.0	1.3	18.4		28	0
Subsurface seepage channel	31-Jul-00	1.8	1.60	0.27	0.51																2	0
North Tributary upstream	09-Feb-98	1.45	0.54	0.11	0.02	7	0.30		0.30	33	1.00	0.10	0.10	0.010	1	5.89	10.0	1.1	43.6	0.5	8	4
North Tributary upstream	16-Feb-98	1.20	0.40	0.10	0.04	5	0.30		0.60	20	2.00	0.10	0.10	0.010	1	6.04	9.0	2.1	32.0	0.5	7	1
North Tributary upstream	23-Feb-98	1.45	0.48	0.07	0.02	4	0.30		0.30	30	1.00	0.10	0.10	0.010	1	6.06	9.0	1.2	32.2	0.5	3	1
North Tributary upstream	02-Mar-98	1.34	0.43	0.10	0.02	6	0.30		0.30	28	1.00	0.10	0.10	0.010	1	5.93	8.7	1.1	30.0	0.5	10	4

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
North Tributary upstream	09-Mar-98	1.23	0.52	0.11	0.03	13	0.30		0.30	37	1.00	0.10	0.10	0.010	1	6.17	9.1	0.87	35.2	0.4		
North Tributary upstream	16-Mar-98	1.34	0.49	0.10	0.02	8	0.30		0.30	39	1.00	0.10	0.10	0.010	3	6.12	9.1	0.85	33.6	0.5	3	1
North Tributary upstream	23-Mar-98	1.34	0.52	0.08	0.02	21	0.30		0.30	36	1.00	0.10	0.10	0.010	14	6.32	10.4	0.7	40.0	0.4		
North Tributary upstream	30-Mar-98	1.40	0.56	0.09	0.02	5	0.30		0.30	47	1.00	0.10	0.10	0.010	1	6.26	9.6	0.65	38.4	0.7		
North Tributary upstream	06-Apr-98	1.39	0.46	0.11	0.02	4	0.06	0.1	0.24	20	1.00	0.03	0.04	0.005	0	6.01	9.0	1.1	30.0	0.4		
North Tributary upstream	14-Apr-98	1.41	0.56	0.08	0.02	2	0.01	0.1	0.10	26	1.00	0.01	0.01	0.003	0	6.15	9.4	0.51	35.2	0.7		
North Tributary upstream	20-Apr-98	1.45	0.51	0.08	0.04	6	0.01	0.1	0.10	25	1.00	0.02	0.24	0.004	25	6.11	9.5	0.48	33.6	0.5	3	5
North Tributary upstream	27-Apr-98	1.44	0.52	0.06	0.02	8	0.01	0.1	0.10	33	2.44	0.58	0.07	0.005	1	6.13	9.5	0.47	36.4	0.5	8	4
North Tributary upstream	05-May-98	1.35	0.61	0.05	0.03	4	0.01	0.1	0.32	26	1.00	0.15	0.19	0.002	0	6.21	10.2	0.59	35.6			
North Tributary upstream	15-Dec-98	2.3	0.62	0.32	0.06	17	0.01	0.1	0.03	29	1.09	0.01	0.02	0.012	0.0	6.05	11.8	2.9	38	1.4	3	4
North Tributary upstream	22-Dec-98	1.7	0.59	0.15	0.04	23	0.01	0.7	0.03	43	1.18	0.10	0.01	0.013	0.2	5.89	10.2	2.3	38	1.9	11	1
North Tributary upstream	30-Dec-98	1.4	0.39	0.13	0.04	9	0.01	0.1	0.01	36	0.80	0.05	0.01	0.007	0.0	5.9	8.9	1.4	33.2	1.1	3	2
North Tributary upstream	05-Jan-99	1.3	0.60	0.08	0.02	7	0.01	0.1	0.01	38	0.68	0.06	0.01	0.008	0.1	6.15	10.4	1.4	40.4	0.8	3	2
North Tributary upstream	07-Jan-99	1.3	0.44	0.11		7	0.01	0.1	0.01	35	0.59	0.08	0.01	0.010	0.5	5.84	9.0	1.2	33.2	0.8	3	2
North Tributary upstream	19-Jan-99	1.4	0.40	0.14	0.02	8	0.01	0.2	0.01	39	0.57	0.07	0.05	0.006	0.0	6.07	8.9	1.2	25.6	0.7		2
North Tributary upstream	27-Jan-99	1.4	0.41	0.12	0.03	5	0.01	0.1	0.01	39	0.57	0.07	0.01	0.005	0.0	5.97	8.9	1.4	28	0.7		3
North Tributary upstream	02-Feb-99	1.4	0.37	0.11	0.02	4	0.01	0.1	0.14	51	0.63	0.08	0.05	0.007	3.3	6.02	7.5	1.6	30.4	0.8		
North Tributary upstream	09-Feb-99	1.3	0.32	0.15	0.03	7	0.01	0.1	0.01	35	0.72	0.03	0.01	0.004	0.0	5.84	7.7	2.2	23.2	0.7		
North Tributary upstream	16-Feb-99	1.3	0.42	0.07	0.03	5	0.01	0.1	0.12	59	0.51	0.10	0.03	0.006	0.1	5.77	8.7	0.9	34.8	0.7		
North Tributary upstream	23-Feb-99	1.4	0.52	0.06	0.04	4	0.01	0.1	0.08	58	0.47	0.08	0.02	0.006	0.2	6	9.0	0.7	40	0.7		
North Tributary upstream	02-Mar-99	1.3	0.53	0.10	0.02	7	0.01	0.1	0.01	49	0.60	0.08	0.01	0.004	0.0	6.08	8.9	0.6	42.8	0.6		
North Tributary upstream	11-Mar-99	1.3	0.55	0.03	0.02	3	0.01	0.1	0.07	47	0.53	0.21	0.03	0.006	0.3	6.17	9.3	0.6	48.8	0.7		
North Tributary upstream	18-Mar-99	1.2	0.35	0.10		5	0.01	0.1	0.15	44	0.47	0.07	0.02	0.006	0.2	5.73	8.8	0.9	27.2	0.6		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
North Tributary upstream	23-Mar-99	1.1	0.33	0.11	0.00	4	0.01	0.1	0.19	51	0.49	0.10	0.02	0.006	0.3	5.67	8.9	0.7	30.8	0.6		
North Tributary upstream	30-Mar-99	1.2	0.38	0.05	0.00	4	0.01	0.1	0.15	60	0.45	0.09	0.04	0.005	0.3	5.77	9.0	0.6	32.8	0.6		
North Tributary upstream	06-Apr-99	1.3	0.40	0.16	0.25	4	0.01	0.1	0.12	56	0.37	0.01	0.01	0.005	0.2	5.88	8.3	0.6	33.2	0.9		
North Tributary upstream	15-Apr-99	1.4	0.53	0.05	0.69	2	0.01	0.1	0.10	30	0.37	0.10	0.01	0.004	0.1	5.81	8.5	0.6	38	0.6	2	0
North Tributary upstream	22-Apr-99	1.5	0.59	0.08	0.33	2	0.01	0.1	0.13	37	0.38	0.09	0.01	0.006	0.1	6.16	8.7	0.5	37.6	0.7	2	0
North Tributary upstream	27-Apr-99	1.5	0.69	0.07	0.72	2	0.01	0.1	0.04	32	0.38	0.11	0.01	0.005	0.1	6.01	8.9	0.5	40.8	0.7	3	1
North Tributary upstream	07-May-99	1.4	0.69	0.08	0.41	2	0.01	0.1	0.17	34	0.37	0.08	0.03	0.003	0.4	6.19	9	0.5	49.6	0.7	2	0
North Tributary upstream	25-Jan-00	1.3	0.42	0.08	0.03	10	0.01	0.1	0.13	42	0.55	0.25	0.15	0.008	1.0	5.51	5.2	1.1	29.6		1	0
North Tributary upstream	01-Feb-00	1.5	0.52	0.08	0.03	7	0.29	0.4	0.14	53	0.51	0.35	0.07	0.008	1.2	6.01	5.5	1.8	40.6		3	0
North Tributary upstream	08-Feb-00	1.5	0.45	0.10	0.04	6	0.01	0.2	0.22	50	0.55	0.33	0.02	0.006	0.3	5.90	7.0	0.8	45.8		2	0
North Tributary upstream	15-Feb-00	1.3	0.36	0.15	0.02	7	0.01	0.1	0.25	52	0.68	0.40	0.02	0.007	0.5	5.27	6.6	1.0	42.2		2	0
North Tributary upstream	22-Feb-00	1.3	0.42	0.07	0.07	7	0.01	0.1	0.25	50	0.52	0.30	0.28	0.005	1.8	5.20	6.7	1.0	52.0		2	0
North Tributary upstream	29-Feb-00	1.1	0.36	0.14	0.09	7	0.01	0.1	0.26	42	0.58	0.30	0.06	0.005	2.0	5.20	6.7	1.0	52.0		1	2
North Tributary upstream	14-Mar-00	1.4	0.35	0.17	0.03	7	0.01	0.1	0.18	47	0.52	0.30	0.03	0.005	1.7	5.31	5.9	1.6	23.2		0	0
North Tributary upstream	21-Mar-00	1.4	0.44	0.12	0.03	10	0.01	0.1	0.14	30	1.00	0.10	0.03	0.005	0.3	5.65	6.4	1.3	5.4		0	0
North Tributary upstream	28-Mar-00	1.3	0.43	0.08	0.03	10	0.01	0.1	0.10	30	1.00	0.44	0.23	0.006	1.2	5.64	6.4	1.0	4.8		0	0
North Tributary upstream	11-Apr-00	1.0	0.32	0.12	0.03	10	0.01	0.1	0.03	30	1.00	0.35	0.03	0.006	1.1	5.51	14.0	1.1	5.4		0	0
North Tributary upstream	02-May-00	1.3	0.46	0.08	0.03	10	0.01	0.2	0.03	30	1.00	0.62	0.03	0.004	1.1	5.92	7.2	0.4	8.2		0	0
North Tributary upstream	16-May-00	1.2	0.51	0.06	0.03	10	0.01	0.1	0.28	30	1.00	0.13	0.03	0.003	1.4	6.13	0.6	0.6	9.4		1	0
North Tributary d'stream	30-Dec-98	2.2	3.27	0.37	3.26	18	0.01	0.3	0.03	25	10.9	0.12	0.05	0.012	1.4	6.23	67.8	6.8	34.4	1.2	3	1
North Tributary d'stream	07-Jan-99	2.1	2.58	0.25	2.12	16	0.01	0.1	0.03	26	7.93	0.22	0.04	0.018	1.9	6.15	48.7	4.4	24.8	0.8	3	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
North Tributary d'stream	19-Jan-99	2.0	2.54	0.27	2.27	12	0.01	0.2	0.01	20	8.54	0.15	0.09	0.008	0.3	6.13	50.0	4.5	21.6	0.7		2
North Tributary d'stream	27-Jan-99	1.7	1.34	0.30	1.09	8	0.01	0.1	0.01	26	4.08	0.13	0.01	0.015	0.2	6.05	28.4	4.8	22	0.7		1
North Tributary d'stream	02-Feb-99	1.8	1.38	0.58	1.43	9	0.01	0.1	0.10	26	5.45	0.06	0.04	0.008	0.1	6.2	26.5	3.5	72	1.0		
North Tributary d'stream	09-Feb-99	1.4	0.63	0.38	0.51	9	0.01	0.1	0.02	28	2.58	0.01	0.01	0.007	0.3	6.16	14.2	5.4	32	0.8		
North Tributary d'stream	16-Feb-99	1.8	1.26	0.28	0.89	7	0.01	0.1	0.11	31	5.24	0.10	0.03	0.007	0.6	5.94	24.6	3.3	32.4	0.7		
North Tributary d'stream	23-Feb-99	1.9	1.09	0.31	0.83	7	0.01	0.1	0.12	29	1.97	0.05	0.03	0.009	0.5	6.22	21.0	5.6	38	0.8		
North Tributary d'stream	18-Mar-99	1.3	0.61	0.33	0.25	5	0.01	0.1	0.01	24	2.67	0.06	0.02	0.007	0.2	6.21	14.5	2.9	33.2	0.7		
North Tributary d'stream	23-Mar-99	1.3	0.60	0.22	0.20	5	0.01	0.1	0.04	25	2.21	0.10	0.01	0.007	0.8	6.24	13.6	2.9	32.8	0.8		
North Tributary d'stream	30-Mar-99	1.1	0.50	0.29	0.27	6	0.01	0.1	0.01	26	1.20	0.48	0.03	0.007	0.1	6.31	11.8	2.8	32.8	0.8		
North Tributary d'stream	06-Apr-99	1.5	0.58	0.22	0.39	6	0.01	0.1	0.01	28	1.32	0.01	0.01	0.007	0.2	6.28	11.4	2.4	29.6	1.0		
North Tributary d'stream	15-Apr-99	1.5	0.66	0.22	0.69	2	0.01	0.1	0.01	0	0.82	0.46	0.01	0.005	0.1	6.29	12.4	3.8	36.4	0.7	3	0
North Tributary d'stream	25-Jan-00	1.3	0.40	0.15	0.12	11	0.01	0.1	0.12	10	0.24	0.43	0.17	0.042	1.0	5.65	5.6	8.0	33.6		3	0
North Tributary d'stream	01-Feb-00	1.3	0.48	0.13	0.34	9	0.18	0.1	0.18	10	0.18	0.74	0.06	0.044	0.5	6.31	6.6	8.8	72.2		6	0
North Tributary d'stream	08-Feb-00	1.4	0.42	0.20	0.17	11	0.01	0.1	0.56	25	0.24	0.10	0.03	0.030	0.4	6.15	7.0	4.9	44.2		4	0
North Tributary d'stream	15-Feb-00	1.3	0.62	0.42	0.44	9	0.01	0.1	0.22	26	1.53	0.10	0.02	0.024	0.4	6.35	12.0	3.5	95.8		2	1
North Tributary d'stream	22-Feb-00	1.5	0.83	0.32	0.44	5	0.01	0.1	0.16	23	1.35	0.30	0.03	0.016	1.2	6.03	15.0	2.6	45.8		2	2
North Tributary d'stream	29-Feb-00	1.2	0.45	0.21	0.18	34	0.01	0.2	0.19	24	1.38	0.30	0.03	0.019	1.5	6.03	15.0	2.6	45.8		2	2
North Tributary d'stream	14-Mar-00	1.3	0.51	0.27	0.32	5	0.01	0.1	0.22	30	2.17	0.30	0.07	0.024	2.4	5.61	8.7	6.1	44.4		0	1
North Tributary d'stream	21-Mar-00	1.4	0.57	0.24	0.22	10	0.01	0.1	0.21	30	1.00	1.93	0.03	0.018	1.4	6.25	9.1	3.2	7.4		0	0
North Tributary d'stream	28-Mar-00	1.2	0.54	0.20	0.24	10	0.02	0.1	0.17	30	1.00	0.66	0.24	0.018	3.7	6.12	8.9	3.3	7.6		0	0
North Tributary d'stream	11-Apr-00	0.6	0.33	0.13	0.09	10	0.01	0.1	0.03	30	1.00	0.34	0.03	0.016	0.9	5.87	14.5	3.3	6.2		0	0
North Tributary d'stream	02-May-00	1.2	0.46	0.17	0.21	10	0.01	0.1	0.03	30	1.00	1.17	0.03	0.018	1.8	6.20	8.2	3.7	10.8		1	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Downstream seepage drain	07-Jan-99	3.3	6.64	0.51	2.59	14	0.02	0.1	0.19	42	66.4	1.39	0.09	0.043	1.0	6.2	109	4.2	102	0.8	40	1
Downstream seepage drain	19-Jan-99					16	0.03	0.2	0.23	43	80.5	1.55	0.20	0.027	1.2	6.3	111	3.7	79.2	0.8		2
Downstream seepage drain	27-Jan-99	2.7	4.02	0.25	1.91	8	0.01	0.1	0.09	29	47.9	0.99	0.02	0.021	0.3	5.81	80.0	6.6	67.2	0.8		2
Downstream seepage drain	02-Feb-99	2.0	1.85	0.60	1.68	8	0.01	0.1	0.20	30	12.0	0.28	0.12	0.011	2.3	4.86	33.0	4.3	0	1.1		
Downstream seepage drain	09-Feb-99	1.5	0.97	0.24	0.45	10	0.01	0.1	0.01	27	8.62	0.11	0.01	0.008	0.2	6.14	20.9	7.0	30	0.9		
Downstream seepage drain	16-Feb-99	2.9	4.00	0.27	1.93	12	0.02	0.1	0.23	37	55.5	1.03	0.05	0.019	1.2	6.21	76.4	3.9	76.8	0.8		
Downstream seepage drain	23-Feb-99	3.0	3.29	0.25	1.51	6	0.01	0.1	0.25	22	39.3	0.72	0.03	0.018	1.1	6.11	61.5	3.7	80.4	0.7		
Downstream seepage drain	02-Mar-99	3.1	2.49	0.37	1.12	154	0.02	0.1	0.24	110	29.7	0.71	0.11	0.026	1.2	6.18	48.2	3.9	102	0.9		
Downstream seepage drain	11-Mar-99	3.0	2.27	0.20	0.87	3	0.01	0.1	0.20	0	17.2	0.79	0.02	0.011	1.8	6.17	43.4	4.1	92.4	1.2		
Downstream seepage drain	18-Mar-99	1.9	2.26	0.27	1.09	5	0.01	0.1	0.15	22	23.3	0.45	0.02	0.009	0.5	6.17	47.2	2.5	46.4	0.7		
Downstream seepage drain	23-Mar-99	2.4	2.57	0.19	1.10	4	0.01	0.1	0.20	0	20.3	0.46	0.02	0.011	0.6	6.24	51.0	3.1	64	0.8		
Downstream seepage drain	30-Mar-99	2.0	1.60	0.18	0.57	4	0.01	0.1	0.14	20	10.8	0.27	0.02	0.009	0.4	6.18	33.2	2.8	47.6	0.9		
Downstream seepage drain	06-Apr-99	2.2	2.15	0.27	0.87	6	0.01	0.1	0.22	20	15.6	0.32	0.03	0.010	0.8	6.12	39.8	2.6	42.4	1.1		
Downstream seepage drain	15-Apr-99	2.4	2.27	0.23	1.05	4	0.01	0.1	0.19	0	13.8	0.47	0.01	0.010	0.5	6.03	40.3	2.5	78.4	0.7	4	1
Downstream seepage drain	22-Apr-99	2.5	2.54	0.19	1.39	3	0.01	0.1	0.04	0	10.6	0.40	0.01	0.013	0.4	6.21	39.8	2.2	84.4	0.6	2	0
Downstream seepage drain	27-Apr-99	2.6	2.00	0.28	1.45	2	0.01	0.1	0.15	0	3.95	0.32	0.01	0.008	0.5	6.26	34.0	2.5	86.8	0.6	3	0
Downstream seepage drain	07-May-99	2.6	2.12	0.29	1.07	2	0.01	0.1	0.08	0	2.02	0.32	0.02	0.007	0.5	6.15	34	1.75	96	0.7	3	0
Downstream seepage drain	14-May-99	2.7	2.21	0.21	1.12	2	0.01	0.1	0.15	0	0.86	0.27	0.02	0.008	0.6	6.26	35	1.98	104	0.8	3	0
Downstream seepage drain	26-May-99	2.9	2.33	0.31	1.13	3	0.01	0.1	0.17	0	0.43	0.23	0.01	0.009	0.5	6.48	35.3	1.68	113	1.1	5	0
Downstream seepage drain	04-Jun-99	2.8	2.30	0.52	1.04	4	0.01	0.1	0.20	0	0.41	0.19	0.02	0.009	0.7	6.48	35.5	1	143	1.2	6	0
Downstream seepage drain	11-Jun-99	2.8	2.32	0.29	1.11	6	0.01	0.1	0.18	22	0.34	0.16	0.03	0.010	0.5						6	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Downstream seepage drain	25-Jan-00	2.4	2.78	0.10	0.98	7	0.01	0.2	0.15	43	1.90	0.61	0.25	0.022	0.2	6.20	42.8	2.5	87.2		4	0
Downstream seepage drain	01-Feb-00	2.5	4.33	0.14	1.93	13	0.01	0.2	0.25	26	0.57	0.41	0.07	0.019	0.4	6.68	68.0	5.0	101		28	0
Downstream seepage drain	08-Feb-00	2.2	2.83	0.15	1.27	12	0.01	0.1	0.28	30	0.19	0.45	0.03	0.022	0.4	5.82	43.0	5.0	97.2		31	7
Downstream seepage drain	15-Feb-00	1.9	2.08	0.31	0.83	6	0.01	0.2	0.33	36	2.91	0.22	0.02	0.019	1.4	4.52	34.0	1.8	0.0		3	1
Downstream seepage drain	22-Feb-00	2.4	3.65	0.41	1.76	4	0.01	0.1	0.22	27	2.75	0.30	0.03	0.011	1.9	5.73	59.0	1.1	75.6		3	2
Downstream seepage drain	29-Feb-00	1.7	1.24	0.29	0.45	5	0.01	0.2	0.26	32	1.95	0.30	0.03	0.020	2.1	5.73	59.0	1.1	75.6		0	2
Downstream seepage drain	14-Mar-00	1.4	1.04	0.30	0.35	7	0.01	0.2	0.35	36	2.25	0.30	0.05	0.024	1.1	6.28	12.0	8.2	72.8		2	0
Downstream seepage drain	21-Mar-00	1.9	1.68	0.44	0.74	10	0.01	0.1	0.27	30	1.00	0.20	0.11	0.011	1.0	6.36	8.5	2.4	10.8		1	0
Downstream seepage drain	28-Mar-00	1.8	1.99	0.49	0.85	10	0.01	0.1	0.26	100	2.00	0.27	0.03	0.016	1.2	6.08	28.5	2.6	12.6		0	0
Downstream seepage drain	11-Apr-00	1.7	0.66	0.16	0.27	10	0.01	0.1	0.23	70	1.00	0.53	0.03	0.028	1.3	6.17	9.9	2.8	9.6		0	0
Downstream seepage drain	02-May-00	1.8	1.58	0.30	0.63	10	0.01	0.1	0.29	30	2.00	0.79	0.06	0.011	1.0	6.14	25.0	0.8	16.6		2	0
Majawavenya Creek	05-Jan-98	1.94	0.69	0.26	0.10											6.50	18	119	72.8	2.4	3	1
Majawavenya Creek	22-Jan-98	1.21	0.76	0.12	0.25	44	0.30	0.8	0.30	50	3.00	2.50	0.10	0.080	1	6.34	16.7	43	89.2		3	1
Majawavenya Creek	27-Jan-98	0.86	0.72	0.34	0.19	46	0.30	0.6	0.30	64	2.00	0.40	0.10	0.070	1	6.30	14.8	42	68.4	3.2	3	1
Majawavenya Creek	02-Feb-98	1.05	0.85	0.29	0.16	8	0.30	0.4	0.30	76	2.00	0.10	0.10	0.060	1	6.42	15.8	42	98.8	2.1	7	1
Majawavenya Creek	09-Feb-98	1.05	0.76	0.22	0.09	14	0.30	0.5	0.30	33	2.00	0.30	0.10	0.070	1	6.42	15.6	41	100	3.0	8	1
Majawavenya Creek	16-Feb-98	0.95	0.73	0.20	0.11	12	0.30	0.4	0.30	20	2.50	0.25	0.10	0.060	1	6.45	14.3	44	94.4	1.8	3	1
Majawavenya Creek	23-Feb-98	0.93	0.70	0.12	0.16	18	0.30	0.5	0.30	37	3.00	0.20	0.10	0.070	1	6.35	14.8	59	89.2	3.0	3	3
Majawavenya Creek	02-Mar-98	0.85	0.70	0.11	0.15	37	0.30	0.5	0.30	40	2.00	0.35	0.10	0.055	1	6.25	13.1	42	87.2	2.7	8	1
Majawavenya Creek	09-Mar-98	0.97	0.70	0.27	0.06	3	0.30	0.1	0.30	13	1.00	0.10	0.10	0.060	13	6.45	13.5	40	83.2	1.3	7	1
Majawavenya Creek	16-Mar-98	1.07	0.82	0.23	0.07	920	0.30	0.4	0.30	230	2.00	0.10	0.10	0.080	1	6.45	14.3	44	93.2	0.9	3	1

Site	Date	Cl mg/L	Mg mg/L	SO4 mg/L	Ca mg/L	Al ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Fe ug/L	Mn ug/L	Ni ug/L	Pb ug/L	U ug/L	Zn ug/L	pH	EC µS	NTU	Alk uM	TOC mg/L	TP ug/L	PO4 ug/L
Majawavenya Creek	23-Mar-98	1.21	0.87	0.23	0.10	1	0.30	0.1	0.30	9	3.00	0.30	0.10	0.030	2	6.82	17.0	44	104	0.9	9	1
Majawavenya Creek	15-Dec-98	1.8	0.38	0.18	0.05	105	0.01	0.2	0.14	100	7.39	0.01	0.04	0.027	0.0	6.09	12.6	186	37.4	3.3	24	2
Majawavenya Creek	22-Dec-98	1.4	0.38	0.15	0.07	36	0.01	0.5	0.53	43	1.25	0.28	0.23	0.088	2.3	6.14	11.1	252	48.2	3.6	31	1
Majawavenya Creek	30-Dec-98	1.6	0.71	0.14	0.14	15	0.01	0.4	0.11	41	3.22	0.25	0.01	0.068	0.0	6.39	15.5	110	81.2	2.8	34	1
Majawavenya Creek	07-Jan-99	1.3	0.77	0.16	0.13	11	0.01	0.4	0.07	50	2.37	0.18	0.01	0.062	0.2	6.37	15.8	72.4	96.4		24	2
Majawavenya Creek	19-Jan-99	1.3	0.69	0.22	0.11	12	0.01	0.4	0.06	47	2.01	0.16	0.14	0.064	6.1	6.35	14.9	51.0	82	1.6		2
Majawavenya Creek	27-Jan-99	1.4	0.79	0.18	0.19	6	0.01	0.3	0.04	56	3.69	0.17	0.01	0.052	0.0	6.65	16.5	56.6	103	2.7		2
Majawavenya Creek	02-Feb-99	1.2	0.64	0.12	0.13	9	0.01	0.4	0.10	57	1.94	0.17	0.03	0.058	0.0	6.13	12.0	57.1	58.4	2.7		
Majawavenya Creek	09-Feb-99	1.1	0.76	0.10	0.18	28	0.01	0.4	0.08	60	2.37	0.19	0.01	0.054	0.3	6.23	14.0	35.7	86.8	3.6		
Majawavenya Creek	16-Feb-99	1.1	0.72	0.16	0.08	7	0.01	0.2	0.14	36	1.17	0.14	0.02	0.035	0.5	6.14	15.1	44.9	99.2	1.4		
Majawavenya Creek	23-Feb-99	1.1	0.67	0.21	0.07	8	0.01	0.2	0.17	36	1.31	0.16	0.04	0.042	1.2	6.13	14.2	49.4	86.8	1.6		
Majawavenya Creek	02-Mar-99	1.1	0.65	0.23	0.05	81	0.02	0.3	0.13	78	1.65	0.21	0.05	0.042	0.3	6.27	13.9	48.5	108	1.7		
Majawavenya Creek	11-Mar-99	1.1	0.53	0.09	0.12	18	0.01	0.4	0.22	43	2.11	0.18	0.02	0.059	0.2	6.26	13.0	52.5	73.2	3.4		
Majawavenya Creek	18-Mar-99	1.0	0.57	0.15	0.08	21	0.01	0.4	0.13	50	1.57	0.38	0.02	0.055	0.2	6.15	14.0	29.4	74.8	3.3		
Majawavenya Creek	23-Mar-99	1.2	0.66	0.19	0.02	17	0.01	0.4	0.27	63	2.70	0.20	0.02	0.055	0.2	6.12	16.0	36.6	94.4	3.3		
Majawavenya Creek	30-Mar-99	1.3	0.74	0.08	0.03	18	0.01	0.4	0.23	69	2.12	0.22	0.03	0.058	0.0	6.22	17.2	30.6	90.8	4.0		
Majawavenya Creek	06-Apr-99	1.3	0.72	0.13	0.09	23	0.01	0.3	0.21	56	1.72	0.12	0.01	0.044	0.0	6.19	14.5	25.9	89.6	3.3		
Majawavenya Creek	15-Apr-99	1.1	0.79	0.20	0.38	4	0.01	0.2	0.17	29	1.11	0.17	0.01	0.033	0.2	6.31	13.2	35.2	90.4	1.2	7	1
Majawavenya Creek	22-Apr-99	0.9	0.71	0.20	0.22	3	0.01	0.2	0.20	22	1.09	0.10	0.01	0.029	0.1	5.96	12.4	32.6	87.6	1.2	9	0
Majawavenya Creek	27-Apr-99	1.2	1.01	0.20	0.83	3	0.01	0.2	0.10	25	2.74	0.17	0.01	0.034	0.1	5.97	15.8	31.6	116	1.3	9	1
Jalagutabul Creek	05-Jan-98	1.51	0.66	0.21	0.25											6.31	14.5	29	66.8	2.7	9	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Jalagutabul Creek	12-Jan-98	1.63	0.69	0.22	0.23	19	0.30	0.2	0.60	31	6.50	0.90	0.20	0.035	3	6.12	15.5	31	74.8	2.3	7	1
Jalagutabul Creek	22-Jan-98	1.03	0.52	0.13	0.18	60	0.30	0.5	0.30	54	2.00	0.30	0.10	0.050	62	6.01	12.0	21	58.4		3	1
Jalagutabul Creek	27-Jan-98	0.70	0.53	0.36	0.19	43	0.30	0.5	0.30	48	2.00	1.50	0.10	0.050	1	6.09	10.9	37	50.0	2.6	3	1
Jalagutabul Creek	02-Feb-98	0.96	0.59	0.24	0.09	8	0.30	0.2	0.30	22	3.00	0.20	0.10	0.040	1	6.17	12.5	28	67.2	1.7	3	1
Jalagutabul Creek	09-Feb-98	1.00	0.54	0.17	0.10	16	0.30	0.3	0.30	29	3.00	0.40	0.10	0.040	1	6.25	11.6	23	60.0	2.4	12	1
Jalagutabul Creek	16-Feb-98	0.96	0.53	0.15	0.11	13	0.30	0.2	0.30	24	3.00	0.30	0.10	0.040	1	6.16	11.3	24	63.6	1.6	3	1
Jalagutabul Creek	23-Feb-98	1.12	0.49	0.11	0.11	10	0.30	0.3	0.30	23	2.00	0.20	0.10	0.030	1	6.18	11.2	21	56.4	1.7	8	1
Jalagutabul Creek	02-Mar-98	0.96	0.47	0.08	0.12	34	0.30	0.3	0.30	34	2.00	0.20	0.10	0.040	1	6.10	9.5	26	54.0	2.0	3	1
Jalagutabul Creek	09-Mar-98	1.10	0.58	0.16	0.07	6	0.30	0.1	0.30	38	4.00	0.10	0.10	0.040	1	6.26	12.0	18	62.8	1.6	7	1
Jalagutabul Creek	16-Mar-98	1.25	0.65	0.13	0.09	300	0.30	0.3	0.30	140	2.00	0.20	0.10	0.050	1	6.39	12.2	18	64.8	1.3	8	1
Jalagutabul Creek	23-Mar-98	1.47	0.64	0.12	0.11	3	0.30	0.1	0.30	28	1.00	0.10	0.10	0.030	7	6.38	14.1	18	70.0	1.3	8	1
Jalagutabul Creek	30-Mar-98	1.76	0.56	0.14	0.06	740	0.30	0.4	0.30	300	1.00	0.55	0.10	0.050	1	6.49	13.5	15	59.8	1.4	15	6
Jalagutabul Creek	06-Apr-98	2.03	0.69	0.15	0.04	9	0.06	0.2	0.31	36	3.29	0.08	0.04	0.031	0	6.25	15.0	25	62.4	1.8	13	1
Jalagutabul Creek	10-Dec-98	1.6	0.40	0.41	0.19	39	0.01	0.1	0.01	45	1.60	0.14	0.01	0.041	1						16	7
Weedin Creek	05-Jan-98	1.74	1.41	0.19	0.25											6.75	21.1	116	134	2.4	3	1
Weedin Creek	12-Jan-98	1.73	1.53	0.27	0.26	45	0.30	0.5	0.30	15	1.00	0.50	0.10	0.100	3	6.74	23.8	85	159	2.0	3	1
Weedin Creek	22-Jan-98	1.06	1.12	0.17	0.15	30	0.30	0.5	0.30	26	2.50	0.65	0.10	0.110	1	6.30	18.0	110	137	2.5	3	1
Weedin Creek	27-Jan-98	0.80	1.03	0.32	0.13	28	0.30	0.6	0.30	18	1.00	0.50	0.10	0.150	32	6.38	15.4	122	102	2.8	3	1
Weedin Creek	02-Feb-98	0.96	1.52	0.32	0.19	650	0.30	6.6	0.30	390	5.00	3.00	0.20	0.290	17	6.69	21.6	55	171	1.8	3	
Weedin Creek	09-Feb-98	0.93	1.30	0.19	0.24	11	0.30	0.4	0.30	19	1.00	0.50	0.10	0.090	1	6.59	19.0	55	143	1.9	3	1
Weedin Creek	16-Feb-98	0.95	1.34	0.16	0.15	23	0.30	0.5	0.30	27	2.00	0.50	0.10	0.090	21	6.53	19.4	44	159	1.5	5	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Weedin Creek	23-Feb-98	1.05	1.37	0.15	0.16	9	1.00	0.4	0.30	16	1.00	0.30	0.10	0.080	3	6.59	19.8	52	157	1.5	20	1
Weedin Creek	02-Mar-98	0.96	1.09	0.12	0.14	16	0.30	0.4	0.30	22	1.00	0.30	0.10	0.100	5	6.37	15.0	58	119	1.7	12	1
Weedin Creek	09-Mar-98	0.97	1.59	0.19	0.14	8	0.30	0.3	0.30	15	1.00	0.30	0.10	0.080	1	6.72	22.0	37	168	1.5	8	1
Weedin Creek	16-Mar-98	1.39	1.85	0.14	0.16	3	0.30	0.2	0.30	13	1.00	0.10	0.10	0.080	1	6.83	23.5	45	191	1.2	13	1
Weedin Creek	23-Mar-98	1.81	1.81	0.14	0.17	8	0.30	0.3	0.30	12	1.00	0.40	0.30	0.080	2	6.80	27.5	54	187	1.6	20	1
Weedin Creek	06-Apr-98	3.47	2.12	0.23	0.17	12	0.15	0.2	0.31	15	1.00	0.23	0.04	0.097	0	6.80	30.8	102	181	2.1	20	4
Weedin Creek	10-Dec-98	1.9	1.59	0.26	0.26	22	0.01	0.3	0.16	40	0.37	0.52	0.01	0.109	0.0	6.72	20.2	89.3	128	3.4	39	8
Weedin Creek	15-Dec-98	1.5	1.23	0.20	0.19	25	0.01	0.5	0.06	37	0.57	0.35	0.02	0.147	3.9	6.51	17.0	152	109	3.0	19	8
Weedin Creek	22-Dec-98	1.4	1.23	0.13	0.15	36	0.03	0.5	0.13	43	0.66	0.50	0.02	0.148	2.7	6.61	15.7	235	112	3.4	168	1
Weedin Creek	30-Dec-98	1.3	1.29	0.13	0.19	18	0.01	0.4	0.02	42	2.27	0.34	0.01	0.095	1.7	6.69	19.6	86.0	143	2.3	34	3
Weedin Creek	05-Jan-99	1.4	1.80	0.30	0.28	14	0.01	0.4	0.03	38	2.06	0.25	0.01	0.086	0.0	6.61	24.3	77.7	185	1.8	25	2
Weedin Creek	07-Jan-99	1.2	1.42	0.14	0.17	16	0.01	0.5	0.02	41	1.67	0.32	0.01	0.108	0.2	6.52	20.2	218	142	2.5	22	2
Weedin Creek	19-Jan-99	1.2	1.49	0.13	0.19	19	0.01	0.6	0.02	45	1.93	0.33	0.03	0.099	6.0	6.5	21.8	59.0	158	1.9		3
Weedin Creek	27-Jan-99	1.3	1.70	0.08	0.19	10	0.01	0.3	0.04	44	1.50	0.30	0.01	0.080	19.3	6.56	23.2	48.8	161	1.8		3
Weedin Creek	02-Feb-99	1.1	1.59	0.12	0.20	12	0.01	0.4	0.08	49	1.56	0.36	0.03	0.091	1.0	6.31	16.0	60.2	162	2.0		
Weedin Creek	09-Feb-99	1.0	1.35	0.10	0.12	14	0.01	0.3	0.01	42	1.58	0.29	0.01	0.079	0.2	6.03	17.3	49.4	134	2.0		
Weedin Creek	16-Feb-99	1.1	1.82	0.10	0.18	11	0.01	0.4	0.14	36	1.24	0.29	0.03	0.063	0.0	6.42	24.6	47.3	199	1.7		
Weedin Creek	23-Feb-99	1.2	1.88	0.09	0.17	9	0.01	0.3	0.11	43	1.10	0.29	0.03	0.067	0.2	6.51	22.7	41.8	180	1.7		
Weedin Creek	02-Mar-99	1.3	2.08	0.12	0.18	21	0.01	0.3	0.09	35	0.83	0.30	0.03	0.060	0.2	6.67	25.5	42.3	215	1.8		
Weedin Creek	11-Mar-99	1.5	1.68	0.08	0.08	11	0.01	0.4	0.16	31	0.99	0.92	0.04	0.082	0.6	6.51	21.5	50.5	162	2.4		
Weedin Creek	18-Mar-99	1.1	1.29	0.10	0.09	15	0.01	0.4	0.08	36	1.13	0.32	0.02	0.084	0.0	6.28	19.1	51.3	130	2.6		
Weedin Creek	23-Mar-99	1.3	1.56	0.13	0.03	7	0.01	0.4	0.20	32	1.13	0.32	0.02	0.074	0.3	6.32	23.0	46.3	164	2.2		
Weedin Creek	30-Mar-99	1.5	1.66	0.13	0.02	8	0.01	0.4	0.17	45	1.24	0.33	0.02	0.079	0.0	6.34	22.8	34.0	153	2.3		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Weedin Creek	06-Apr-99	1.6	1.65	0.13	0.45	7	0.01	0.3	0.11	46	1.22	0.48	0.01	0.072	0.1	6.39	21.8	32.2	163	2.2		
Weedin Creek	15-Apr-99	1.9	2.42	0.11	0.55	4	0.01	0.2	0.19	30	0.90	0.26	0.01	0.047	0.2	6.61	27.4	32.8	222	1.4	11	1
Weedin Creek	22-Apr-99	1.9	2.48	0.20	0.51	5	0.01	0.2	0.13	27	0.46	0.30	0.01	0.052	0.0	6.76	28.6	37.3	234	1.6	8	0
Weedin Creek	27-Apr-99	2.9	3.09	0.17	0.94	5	0.01	0.3	0.09	27	0.60	0.27	0.01	0.063	0.0	6.73	33.0	47.1	258	1.8	15	3
Ibarngor Creek	05-Jan-98	1.52	0.66	0.23	0.20											6.19	13.3	13	46.0	1.7	3	1
Ibarngor Creek	12-Jan-98	1.40	0.65	0.22	0.18	18	0.30	0.1	0.30	17	3.00	0.10	0.10	0.010	1	6.21	13.1	19	58.4	1.4	3	1
Ibarngor Creek	22-Jan-98	1.04	0.49	0.19	0.13	15	0.30	0.2	0.30	22	2.00	0.10	0.10	0.010	1	6.18	10.5	13	80.0	1.8	3	1
Ibarngor Creek	09-Feb-98	1.08	0.60	0.17	0.13	13	0.30	0.1	0.30	22	2.00	0.30	0.10	0.010	1	6.24	11.0	13	63.6	1.5	3	1
Ibarngor Creek	23-Feb-98	1.06	0.58	0.11	0.13	37	0.30	0.1	0.30	23	2.00	0.10	0.10	0.010	64	6.23	11.2	11	62.8	1.2	2	1
Ibarngor Creek	02-Mar-98	0.93	0.49	0.10	0.09	18	0.30	0.1	0.30	20	3.00	0.20	0.10	0.010	1	6.10	9.2	12	46.4	1.2	3	1
Ibarngor Creek	09-Mar-98	1.01	0.73	0.12	0.12	3	0.30		0.30	18	2.00	0.10	0.10	0.010	1	6.35	11.9	14	64.4	1.1	3	1
Ibarngor Creek	16-Mar-98	1.16	0.83	0.13	0.15	30	0.30	0.1	0.30	34	2.00	0.10	0.10	0.020	1	6.45	12.5	16	74.8	1.0	7	1
Ibarngor Creek	23-Mar-98	1.22	0.83	0.12	0.16	3	0.30		0.30	24	3.00	0.10	0.10	0.010	1	6.35	14.7	16	88.8	1.0	6	1
Ibarngor Creek	30-Mar-98	1.16	0.88	0.15	0.17	48	0.30	0.1	0.30	59	1.00	0.10	0.10	0.020	1	6.55	14.1	23	90.8	1.0	14	1
Ibarngor Creek	06-Apr-98	1.56	0.80	0.15	0.16	22	0.06	0.1	0.28	40	3.30	0.03	0.02	0.011	0	6.34	13.5	11	76.4	1.1	10	6
Ibarngor Creek	14-Apr-98	1.33	0.85	0.19	0.12	8	0.01	0.1	0.01	47	1.45	0.09	0.01	0.010	0	6.56	13.6	22	98.0	1.0	8	3
Ibarngor Creek	20-Apr-98	1.75	0.75	0.10	0.15	9	0.01	0.1	0.75	20	1.09	0.54	0.34	0.008	0	6.38	13.6	12	78.0	1.2	3	5
Ibarngor Creek	27-Apr-98	1.73	0.71	0.12	0.14	11	0.01	0.1	0.01	25	2.23	0.03	0.01	0.008	0	6.37	13.7	15	72.4	1.0	18	8
Ibarngor Creek	05-May-98	1.42	0.89	0.14	0.18	57	0.01	0.1	0.01	28	1.69	0.03	0.01	0.009	24	6.54	14.1	22	85.6	1.1	10	1
Ibarngor Creek	10-Dec-98	1.8	0.53	0.25	0.17	24	0.01	0.1	0.01	47	1.77	0.06	0.01	0.010	0.0	6	11.6	6.9	38.4	2.1	3	3
Ibarngor Creek	15-Dec-98	1.6	0.56	0.26	0.20	30	0.06	0.2	0.24	51	3.33	0.03	0.01	0.021	0.0	5.99	11.4	16.0	47.2	2.0	3	3

Site	Date	Cl mg/L	Mg mg/L	SO4 mg/L	Ca mg/L	Al ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Fe ug/L	Mn ug/L	Ni ug/L	Pb ug/L	U ug/L	Zn ug/L	pH	EC µS	NTU	Alk uM	TOC mg/L	TP ug/L	PO4 ug/L
Ibarngor Creek	22-Dec-98	1.2	0.51	0.13	0.19	39	0.01	0.2	0.12	75	4.16	0.22	0.01	0.028	0.2	6.27	10.6	18.0	52.4	3.1	23	1
Ibarngor Creek	30-Dec-98	1.3	0.51	0.14	0.12	19	0.01	0.1	0.03	55	3.74	0.18	0.10	0.019	0.0	6.48	11.0	13.8	60.8	1.8	7	4
Ibarngor Creek	05-Jan-99	1.5	0.66	0.28	0.16	15	0.01	0.1	0.02	41	4.05	0.12	0.01	0.018	0.1	6.22	12.4	21.3	59.6	1.4	5	3
Ibarngor Creek	07-Jan-99	1.2	0.60	0.09	0.15	13	0.01	0.2	0.01	41	4.38	0.13	0.01	0.014	0.0	6.02	11.8	24.4	58.4	1.5	3	3
Ibarngor Creek	19-Jan-99	1.2	0.58	0.17	0.13	13	0.01	0.2	0.01	38	2.77	0.12	0.34	0.025	0.7	5.89	11.5	14.5	56	1.3		2
Ibarngor Creek	27-Jan-99	1.3	0.55	0.09	0.11	8	0.01	0.1	0.02	39	2.46	0.22	0.08	0.029	7.5	6.11	11.4	10.8	51.2	1.3		1
Ibarngor Creek	02-Feb-99	1.1	0.54	0.11	0.10	12	0.01	0.1	0.05	48	2.11	0.10	0.02	0.012	0.0	6.02	9.0	9.7	53.2	1.4		
Ibarngor Creek	23-Feb-99	1.3	0.65	0.11	0.12	10	0.01	0.1	0.09	44	2.18	0.10	0.02	0.010	0.3	6.09	11.5	11.8	65.2	1.2		
Ibarngor Creek	02-Mar-99	1.1	0.66	0.07	0.12	104	0.39	0.4	0.09	92	2.60	0.21	0.83	0.015	0.4	6.12	11.8	12.4	74.4	1.2		
Ibarngor Creek	11-Mar-99	1.2	0.59	0.17	0.08	9	0.01	0.1	0.11	37	2.41	0.13	0.02	0.011	0.5	6.09	10.9	9.5	65.2	1.3		
Ibarngor Creek	15-Apr-99	1.5	0.85	0.08	0.50	4	0.01	0.1	0.08	33	2.82	0.12	0.01	0.009	0.3	6.08	12.8	11.4	80.8	1.1	6	1
Ibarngor Creek	22-Apr-99	1.5	0.99	0.13	0.59	5	0.01	0.1	0.16	33	2.89	0.12	0.01	0.009	0.1	6.2	13.6	14.5	87.2	1.1	8	0
Ibarngor Creek	27-Apr-99	1.7	0.87	0.16	0.92	5	0.01	0.1	0.05	36	2.97	0.12	0.01	0.008	0.1	6.1	13.1	11.3	75.2	1.1	8	0
Ibarngor Creek	07-May-99	1.5	1.11	0.18	0.59	5	0.01	0.2	0.63	36	2.93	0.16	0.03	0.008	0.3	6.33	14	19.7	101	1.1	8	0
Ibarngor Creek	14-May-99	1.4	1.15	0.20	0.46	4	0.01	0.2	0.02	34	2.22	0.11	0.01	0.008	0.2	6.43	14.6	25.9	110	1.3	11	0
Ibarngor Creek	26-May-99	1.4	1.01	0.24	0.14	4	0.01	0.1	0.01	28	1.21	0.12	0.01	0.008	0.7	6.7	13.6	28.5	100	1.5	11	0
Imagurri Creek	05-Jan-98	2.73	0.36	0.38	0.13											5.47	14.5	1.3	10.4	1.8	3	1
Imagurri Creek	12-Jan-98	2.93	0.38	0.27	0.14	27	0.30	0.2	0.30	57	3.00	0.10	0.10	0.030	3	5.86	16.1	2	24.8	1.7	8	6
Imagurri Creek	22-Jan-98	1.65	0.22	0.37	0.09	42	0.30	0.2	0.30	29	2.00	0.10	0.10	0.010	1	5.51	10.5	4.2	8.80	2.0	6	1
Imagurri Creek	27-Jan-98	1.29	0.26	0.52	0.07	47	0.30	0.2	0.30	36	2.00	0.10	0.10	0.010	2	5.45	10.8	11	9.80	1.7	11	3
Imagurri Creek	02-Feb-98	1.67	0.36	0.40	0.12	34	0.30	0.2	0.30	32	2.00	0.10	0.10	0.030	82	5.88	13.1	4.4	40.4	1.4	6	2

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Imagurri Creek	09-Feb-98	1.65	0.30	0.29	0.08	18	0.30	0.1	0.30	34	3.00	0.10	0.10	0.020	1	5.78	12.3	2.4	30.8	1.2	3	1
Imagurri Creek	16-Feb-98	1.58	0.27	0.25	0.10	17	0.30	0.2	0.30	21	2.00	0.10	0.10	0.010	11	5.72	11.5	2.2	28.4	1.2	3	1
Imagurri Creek	23-Feb-98	1.48	0.26	0.18	0.06	25	0.30	0.2	0.30	43	2.00	0.10	0.10	0.020	21	5.74	10.6	2.2	28.0	1.4	5	1
Imagurri Creek	02-Mar-98	1.23	0.22	0.20	0.06	30	0.30	0.1	0.30	31	2.00	0.10	0.10	0.010	1	5.59	8.4	2.7	14.4	1.6	3	1
Imagurri Creek	09-Mar-98	1.63	0.35	0.21	0.06	13	0.30	0.2	0.30	28	2.00	0.10	0.10	0.010	10	5.95	12.4	2	43.6	1.1	7	1
Imagurri Creek	16-Mar-98	1.97	0.36	0.11	0.10	3	0.30		0.30	31	2.00	0.10	0.10	0.020	1	5.96	12.9	2	46.8	1.1	3	1
Imagurri Creek	23-Mar-98	1.81	0.36	0.11	0.10	7	0.30		0.30	21	2.00	0.10	0.10	0.010	1	5.86	13.8	2.3	46.0	1.2	6	1
Imagurri Creek	30-Mar-98	1.94	0.35	0.08	0.08	47	0.30	0.2	0.30	330	2.00	0.10	0.10	0.030	42	6.00	13.0	2.1	46.4	1.0	8	9
Imagurri Creek	06-Apr-98	1.72	0.28	0.21	0.06	18	0.06	0.1	0.34	21	1.36	0.01	0.03	0.017	0	5.68	10.1	1.9	24.8	1.4	3	3
Imagurri Creek	14-Apr-98	2.11	0.34	0.10	0.10	11	0.01	0.1	0.01	93	1.00	0.01	0.01	0.016	1	6.03	13.5	2.2	49.2	1.1	3	4
Imagurri Creek	20-Apr-98	2.25	0.34	0.12	0.06	6	0.01	0.1	0.09	27	1.00	0.10	0.83	0.011	0	5.93	12.5	1.5	32.8	1.2	3	4
Imagurri Creek	27-Apr-98	2.21	0.31	0.08	0.14	13	0.01	0.1	0.01	35	2.03	0.01	0.01	0.011	0	5.91	12.8	2.1	36.0	1.2	8	3
Imagurri Creek	05-May-98	2.25	0.36	0.05	0.09	20	0.01	0.1	0.08	22	1.29	0.02	0.01	0.012	71	5.79	13.5	2.7	39.2	1.2	8	4
Imagurri Creek	10-Dec-98	2.3	0.28	0.32	0.12	61	0.01	0.5	0.01	41	3.43	0.01	0.01	0.023	8.7						3	4
Bulijumbu Creek	05-Jan-98	2.18	0.23	0.34	0.12											4.90	14.0	0.53	0.00	1.4	6	6
Bulijumbu Creek	12-Jan-98	2.20	0.24	0.31	0.09	43	0.30	0.1	0.30	85	4.00	0.10	0.10	0.040	170	5.37	13.2	0.54	2.80	1.2	7	8
Bulijumbu Creek	22-Jan-98	1.44	0.15	0.35	0.10	45	0.30	1.0	0.30	50	2.50	0.10	0.10	0.010	4	4.99	11.2	0.75	0.00	1.8	3	1
Bulijumbu Creek	27-Jan-98	1.21	0.21	0.53	0.06	78	0.30	0.2	0.30	46	4.00	0.10	0.10	0.030	1	5.06	11.0	1.8	0.00	1.9	14	12
Bulijumbu Creek	02-Feb-98	1.98	0.27	0.46	0.08	29	0.30	0.1	0.30	72	2.00	0.10	0.10	0.020	1	5.35	12.6	0.53	9.00	1.1	3	4
Bulijumbu Creek	09-Feb-98	1.83	0.23	0.35	0.11	24	0.30		0.30	51	2.00	0.20	0.10	0.020	1	5.17	12.7	0.45	6.80	1.5	3	3
Bulijumbu Creek	16-Feb-98	1.91	0.21	0.27	0.07	29	0.30	0.1	0.30	68	2.00	0.10	0.10	0.020	4	5.17	12.2	0.4	3.20	1.0	3	3

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Bulijumbu Creek	23-Feb-98	1.71	0.19	0.23	0.06	29	0.30	0.1	0.30	45	2.00	0.10	0.10	0.010	2	5.19	11.4	0.37	6.40	1.0	6	4
Bulijumbu Creek	02-Mar-98	1.36	0.15	0.24	0.05	39	0.30	0.1	0.30	42	2.00	0.10	0.10	0.010	7	5.09	9.3	0.46	0.00	1.6	3	2
Bulijumbu Creek	09-Mar-98	2.06	0.29	0.26	0.04	14	0.30	0.1	0.30	65	1.00	0.10	0.10	0.030	4	5.21	13.5	0.38	11.6	0.7	9	1
Bulijumbu Creek	16-Mar-98	2.30	0.31	0.20	0.05	13	0.30		0.30	44	1.00	0.10	0.10	0.030	1	5.18	13.7	0.45	11.6	0.7	3	1
Bulijumbu Creek	23-Mar-98	2.12	0.28	0.18	0.06	13	0.30		0.30	30	1.00	0.10	0.10	0.020	1	5.54	14.2	0.55	24.4	0.7	6	1
Bulijumbu Creek	30-Mar-98	2.19	0.28	0.18	0.04	100	0.30	0.1	0.30	130	1.00	0.10	0.10	0.020	5	5.14	13.4	0.38	13.2	0.5	9	7
Bulijumbu Creek	06-Apr-98	1.73	0.22	0.24	0.02	31	0.08	0.1	0.40	47	1.10	0.01	0.10	0.018	0	5.02	10.9	0.48	0.00	1.1	3	1
Bulijumbu Creek	14-Apr-98	2.50	0.35	0.18	0.11	13	0.01	0.1	0.01	48	1.00	0.22	0.06	0.015	0	5.24	14.1	0.7	21.2	0.6	3	2
Bulijumbu Creek	20-Apr-98	2.00	0.23	0.25	0.07	10	0.01	0.1	0.02	47	1.07	0.01	0.03	0.008	0	5.08	11.9	0.28	0.00	0.8	3	1
Bulijumbu Creek	27-Apr-98	2.45	0.30	0.16	0.04	22	0.01	0.1	0.06	52	1.70	0.01	0.13	0.007	0	5.28	14.6	0.46	22.4	0.5	11	2
Bulijumbu Creek	05-May-98	2.52	0.39	0.12	0.07	8	0.01	0.1	0.29	38	1.00	0.39	0.12	0.004	0	5.06	14.6	0.54	10.8	0.5	11	3
Bulijumbu Creek	10-Dec-98	1.8	0.17	0.37	0.10	46	0.04	0.1	0.02	38	3.30	0.02	0.01	0.015	4.9						3	4
Kulrjambe Creek	05-Jan-98	2.08	0.18	0.37	0.10											4.66	15.1	0.6	0.00	2.6	3	4
Kulrjambe Creek	12-Jan-98	2.21	0.19	0.23	0.10	50	0.30	0.2	0.30	73	3.00	0.10	0.10	0.030	1.0	4.85	14.3	0.8	0.00	2.1	3	7
Kulrjambe Creek	22-Jan-98	1.31	0.14	0.29	0.09	72	0.30	0.3	0.30	66	2.00	0.30	0.10	0.010	5	4.80	12.0	2.3	0.00		3	1
Kulrjambe Creek	27-Jan-98	1.07	0.17	0.53	0.07	70	0.30	0.3	0.30	56	2.00	0.10	0.10	0.010	1	4.85	11.0	4.6	0.00	2.6	14	5
Kulrjambe Creek	02-Feb-98	1.56	0.22	0.41	0.08	31	0.30	0.2	0.30	55	2.00	0.10	0.10	0.010	1	5.08	11.7	1.8	0.00	1.7	10	4
Kulrjambe Creek	09-Feb-98	1.56	0.18	0.24	0.06	36	0.30	0.1	0.30	63	3.00	0.10	0.10	0.010	2	5.02	11.5	0.7	0.00	1.8	3	1
Kulrjambe Creek	16-Feb-98	1.38	0.15	0.26	0.06	43	0.30	0.2	0.30	67	2.00	0.10	0.10	0.010	12	5.00	11.0	2.2	0.00	1.5	3	1
Kulrjambe Creek	23-Feb-98	1.46	0.16	0.22	0.06	49	0.30	0.2	0.30	68	2.00	0.10	0.10	0.010	1	5.03	10.8	1	0.00	2.1	3	1
Kulrjambe Creek	02-Mar-98	1.16	0.13	0.21	0.05	43	0.30	0.1	0.30	51	2.00	0.10	0.10	0.010	1	4.93	9.0	1.4	0.00	2.2	3	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Kulrjambe Creek	09-Mar-98	1.70	0.21	0.21	0.04	19	0.30	0.2	0.30	21	3.00	0.10	0.10	0.030	4	5.01	11.5	0.67	0.00	1.2	9	1
Kulrjambe Creek	16-Mar-98	1.74	0.20	0.18	0.03	16	0.30	0.1	0.30	15	1.00	0.10	0.10	0.010	1	4.99	11.2	0.66	0.00	1.2	3	1
Kulrjambe Creek	23-Mar-98	1.70	0.20	0.14	0.09	24	0.30	0.2	0.30	21	2.00	0.10	0.10	0.010	1	4.91	12.5	0.76	0.00	1.6	10	1
Kulrjambe Creek	30-Mar-98	1.92	0.21	0.10	0.07	32	0.30	0.2	0.30	150	4.00	0.30	0.10	0.020	9	4.96	11.7	0.72	0.00	1.5	11	6
Kulrjambe Creek	06-Apr-98	1.43	0.18	0.24	0.06	52	0.06	0.5	0.38	95	1.90	0.01	0.05	0.016	0	4.82	11.1	0.73	0.00	2.1	9	3
Kulrjambe Creek	14-Apr-98	2.33	0.29	0.07	0.10	40	0.01	0.2	0.01	18	4.00	0.11	0.01	0.011	12	5.05	12.4	0.81	0.00	1.8	16	1
Kulrjambe Creek	20-Apr-98	1.55	0.16	0.28	0.05	19	0.01	0.2	0.58	15	1.90	0.39	1.01	0.010	0	4.78	11.3	0.4	0.00	1.9	3	2
Kulrjambe Creek	27-Apr-98	2.09	0.22	0.08	0.09	51	0.01	0.2	0.01	71	2.50	0.08	0.02	0.008	0	4.91	12.0	0.75	0.00	1.6	15	2
Kulrjambe Creek	10-Dec-98	2.8	0.64	0.99	0.46	145	0.01	0.7	0.01	50	18.2	0.12	0.01	0.010	11.4	4.27	32.3	0.6	0	1.9	3	5
Kulrjambe Creek	15-Dec-98	2.5	0.39	0.80	0.27	109	0.12	0.1	0.07	49	10.6	0.17	0.01	0.011	0.0	4.25	24.1	0.6	0	2.0	3	5
Kulrjambe Creek	22-Dec-98	2.0	0.18	0.66	0.14	84	0.03	0.3	0.14	38	5.56	0.15	0.05	0.009	12.0	4.54	15.8	3.1	0	2.9	23	3
Kulrjambe Creek	30-Dec-98	2.0	0.28	0.57	0.15	99	0.02	0.2	0.11	61	6.24	0.10	0.01	0.013	11.2	4.56	17.8	0.7	0	2.4	9	4
Kulrjambe Creek	05-Jan-99	2.9	0.30	0.57	0.13	46	0.01	0.2	0.04	64	4.67	0.13	0.02	0.020	0.3	4.74	14.5	0.8	0	1.8	3	4
Kulrjambe Creek	07-Jan-99	2.3	0.26	0.54	0.09	41	0.01	0.2	0.02	75	5.00	0.11	0.02	0.015	0.2	4.86	13.7	1.1	0	1.6	3	4
Kulrjambe Creek	19-Jan-99	2.2	0.25	0.40	0.10	42	0.01	0.3	0.01	74	4.63	0.15	0.26	0.019	0.5	4.83	12.6	0.9	0	1.6		3
Kulrjambe Creek	27-Jan-99	2.2	0.22	0.42	0.13	46	0.01	0.2	0.03	64	4.78	0.11	0.01	0.015	0.7	4.99	12.5	1.8	0	1.9		3
Kulrjambe Creek	02-Feb-99															5.23	1.0	0.4	0	0.2		
Kulrjambe Creek	09-Feb-99	1.6	0.19	0.46	0.11	60	0.01	0.1	0.04	89	3.95	0.02	0.01	0.008	0.0	4.76	11.8	1.8	0	2.2		
Kulrjambe Creek	16-Feb-99	2.2	0.21	0.33	0.10	26	0.01	0.2	0.13	81	3.92	0.13	0.03	0.013	0.7	4.84	12.4	0.8	0	1.4		
Kulrjambe Creek	23-Feb-99	2.1	0.25	0.38	0.11	27	0.01	0.2	0.23	74	4.35	0.21	0.03	0.012	1.1	4.86	12.0	0.7	3.6	1.7		
Kulrjambe Creek	02-Mar-99	1.8	0.19	0.29	0.09	30	0.32	0.3	0.09	100	4.00	0.17	0.45	0.011	0.5	4.87	11.4	0.7	0	1.8		
Kulrjambe Creek	11-Mar-99	1.9	0.18	0.29	0.04	29	0.01	0.2	0.15	73	3.58	0.20	0.03	0.012	0.5	4.9	11.0	0.6	0	1.7		
Kulrjambe Creek	18-Mar-99	1.6	0.14	0.37	0.07	40	0.01	0.2	0.04	76	2.84	0.08	0.02	0.012	0.2	4.98	10.6	0.5	0	1.9		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Kulrjambe Creek	23-Mar-99	1.7	0.16	0.31	0.01	31	0.01	0.1	0.14	74	2.93	0.10	0.04	0.010	0.3	4.91	11.7	0.5	0	1.6		
Kulrjambe Creek	30-Mar-99	1.5	0.13	0.29	0.00	34	0.01	0.2	0.10	76	2.53	0.10	0.02	0.011	0.0	4.88	10.8	0.5	0	1.8		
Kulrjambe Creek	06-Apr-99	1.7	0.07	0.15	0.05	30	0.01	0.1	0.07	72	2.18	0.01	0.01	0.010	0.1	4.89	10.0	0.5	0	1.8		
Kulrjambe Creek	15-Apr-99	2.0	0.23	0.29	0.05	23	0.01	0.2	0.19	44	2.57	0.17	0.01	0.011	0.3	4.8	11.3	0.6	0	1.3	7	0
Kulrjambe Creek	22-Apr-99	2.4	0.31	0.13	0.09	20	0.01	0.2	0.20	40	2.42	0.30	0.01	0.014	0.4	4.9	12.2	0.7	2	1.7	13	0
Kulrjambe Creek	27-Apr-99	2.1	0.21	0.48	0.75	33	0.01	0.2	0.09	65	3.89	0.15	0.01	0.011	0.2	4.74	11.0	0.7	0	1.6	8	0
Kulrjambe Creek	07-May-99	2.4	0.36	0.13	0.06	19	0.01	0.2	0.26	32	4.06	0.24	0.03	0.012	1.0	4.95	11.9	0.68	0	1.5	9	0
Valley Creek	05-Jan-98	2.18	0.31	0.23	0.08											5.33	11.5	0.83	5.60	1.6	14	5
Valley Creek	12-Jan-98	2.15	0.32	0.17	0.09	24	0.30	0.1	0.30	53	1.50	1.00	0.10	0.010	1	5.48	11.6	0.8	6.40	1.4	11	3
Valley Creek	22-Jan-98	1.41	0.23	0.23	0.05	27	0.30		0.30	30	1.00	0.10	0.10	0.010	1	5.35	9.0	2	4.40	1.8	3	1
Valley Creek	27-Jan-98	1.12	0.25	0.38	0.09	37	0.30	0.1	0.30	35	1.00	0.10	0.10	0.010	4	5.30	9.5	9.1	6.00	1.6	11	1
Valley Creek	02-Feb-98	1.50	0.30	0.36	0.07	18	0.30		0.30	70	1.00	0.10	0.10	0.010	20	5.48	11.0	3.9	14.4	1.2	3	1
Valley Creek	09-Feb-98	1.52	0.25	0.22	0.05	18	0.30		0.30	62	2.00	0.10	0.10	0.020	1	5.44	10.2	2.1	9.60	1.5	3	1
Valley Creek	16-Feb-98	1.36	0.23	0.21	0.04	17	0.30	0.2	0.30	50	1.00	0.10	0.20	0.010	6	5.41	9.6	2.2	15.2	1.1	3	1
Valley Creek	23-Feb-98	1.58	0.25	0.15	0.04	14	0.30	0.1	0.30	40	1.00	0.10	0.10	0.010	1	5.40	10.1	1.6	6.40	1.2	5	3
Valley Creek	02-Mar-98	1.28	0.22	0.14	0.04	22	0.30		0.30	29	1.00	0.10	0.10	0.010	1	5.38	8.1	1.8	9.40	1.2	3	1
Valley Creek	09-Mar-98	1.57	0.26	0.21	0.04	11	0.30		0.30	68	1.00	0.10	0.10	0.010	3	5.47	10.0	1.6	17.2	0.9	3	1
Valley Creek	16-Mar-98	1.49	0.28	0.15	0.04	9	0.30		0.30	58	1.00	0.10	0.10	0.010	1	5.44	9.6	1.6	12.4	1.0	3	1
Valley Creek	23-Mar-98	1.58	0.25	0.12	0.04	6	0.30		0.30	43	1.00	0.10	0.10	0.010	1	5.37	10.9	1.6	16.0	0.9	3	1
Valley Creek	30-Mar-98	1.57	0.24	0.11	0.02	18	0.30	0.1	0.30	42	1.00	0.40	0.10	0.010	17	5.47	9.9	1.5	17.6	0.8	9	3
Valley Creek	06-Apr-98	1.59	0.28	0.12	0.06	13	0.04	0.1	0.39	22	0.87	0.01	0.05	0.008	0	5.42	9.2	1.4	11.2	1.1	12	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Valley Creek	14-Apr-98	1.68	0.26	0.13	0.05	6	0.01	0.1	0.01	49	1.00	0.05	0.13	0.005	11	5.54	10.1	1.6	19.2	0.8	3	2
Valley Creek	20-Apr-98	1.69	0.26	0.11	0.05	5	0.01	0.1	0.01	43	1.00	0.02	0.06	0.004	0	5.48	9.7	1.1	13.6	1.1	9	1
Valley Creek	27-Apr-98	1.71	0.23	0.10	0.06	12	0.01	0.1	0.14	34	1.52	0.19	0.22	0.006	0	5.51	9.5	1.2	15.6	0.8	3	1
Valley Creek	05-May-98	1.93	0.26	0.07	0.03	21	0.01	0.1	0.13	59	1.39	0.17	0.04	0.022	0	5.41	9.9	1.4	14.8	0.8	7	1
Valley Creek	10-Dec-98	3.2	0.57	0.39	0.28	36	0.01	1.2	0.04	36	5.58	0.06	0.02	0.008	0.1						3	3
Jabiluka Hill Creek	27-Jan-98	1.23	0.84	0.26	0.07	14	0.30		0.30	14	2.00	0.40	0.10	0.010	1	6.25	13.0	3.5	62.4	0.7	3	1
Jabiluka Hill Creek	02-Feb-98	1.47	0.32	0.14	0.07	6	0.30		0.30	20	3.00	0.10	0.10	0.010	1	5.66	10.0	0.41	23.2	1.0	6	1
Jabiluka Hill Creek	09-Feb-98	1.43	0.24	0.05	0.09	14	0.30		0.30	110	7.00	0.10	0.10	0.010	1	5.64	10.2	0.55	19.6	0.4	13	1
Jabiluka Hill Creek	16-Feb-98	1.38	0.69	0.06	0.05	9	0.30		0.30	39	2.00	0.10	0.10	0.010	1	6.20	11.5	1	54.0	0.9	7	1
Jabiluka Hill Creek	23-Feb-98	1.38	0.22	0.04	0.12	14	0.30		0.30	160	7.00	0.10	0.10	0.010	1	5.47	10.7	0.31	17.4	0.5	3	2
Jabiluka Hill Creek	02-Mar-98	1.41	0.42	0.07	0.02	16	0.30		0.30	66	2.00	0.10	0.10	0.010	16	5.66	9.0	0.4	27.6	0.4	8	1
Jabiluka Hill Creek	09-Mar-98	1.44	0.24	0.10	0.08	9	0.30		0.30	120	4.00	0.10	0.10	0.010	2	5.44	10.8	0.18	18.4	0.4	9	1
Jabiluka Hill Creek	16-Mar-98	1.41	0.31	0.09	0.05	8	0.30		0.30	99	3.00	0.10	0.10	0.010	1	5.50	9.1	0.28	18.0	0.3	3	1
Jabiluka Hill Creek	23-Mar-98	1.34	0.20	0.04	0.10	21	0.30		0.30	82	4.00	0.10	0.10	0.010	1	5.16	13.4	0.6	10.0	0.4	3	1
Jabiluka Hill Creek	27-Jan-99	1.7	0.75	0.06	0.08	11	0.01	0.1	0.01	58	0.60	0.06	0.01	0.005	0.0	6.52	12.7	1.8	61.6	0.7		
Jabiluka Hill Creek	02-Feb-99	1.8	1.05	0.04	0.14	9	0.01	0.1	0.12	83	3.98	0.11	0.06	0.008	0.0	6.14	11.0	1.4	79.2	0.9		
Jabiluka Hill Creek	09-Feb-99	1.5	1.22	0.03	0.12	12	0.01	0.1	0.04	92	4.35	0.06	0.01	0.006	0.2	6.32	14.6	7.5	98.4	0.8		
Jabiluka Hill Creek	16-Feb-99	1.4	0.39	0.04	0.10	5	0.01	0.1	0.11	119	5.51	0.17	0.03	0.003	1.0	5.51	10.5	1.1	45.2	0.6		
Jabiluka Hill Creek	23-Feb-99	1.4	0.24	0.06	0.15	10	0.01	0.1	0.22	367	11.8	0.24	0.03	0.005	5.2	5.29	11.1	1.1	34.8	0.5		
Jabiluka Hill Creek	18-Mar-99	1.4	0.68	0.05	0.03	6	0.01	0.1	0.06	35	1.80	0.10	0.01	0.004	0.2	6.47	12.1	0.5	56	0.6		
Jabiluka Hill Creek	23-Mar-99	1.4	0.60	0.09	0.00	5	0.01	0.1	0.01	34	1.83	0.15	0.01	0.004	0.0	6.05	11.6	0.5	71.2	0.5		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Jabiluka Hill Creek	30-Mar-99	1.5	0.44	0.06	0.25	7	0.01	0.1	0.01	41	1.90	0.08	0.01	0.005	0.0	5.78	10.5	0.4	36.8	0.6		
Jabiluka Hill Creek	06-Apr-99	1.7	0.55	0.06	0.32	6	0.01	0.1	0.05	45	1.62	0.02	0.01	0.004	0.3	5.88	10.0	0.4	37.2	0.8		
Jabiluka Hill Creek	15-Feb-00	1.2	0.48	0.04	0.24	9	0.01	0.1	0.31	39	9.13	0.19	0.06	0.011	0.5	5.78	5.8	4.6	53.8		4	0
Jabiluka Hill Creek	22-Feb-00	1.5	0.27	0.06	0.12	12	0.01	0.1	0.11	62	4.08	0.30	0.07	0.005	1.7	5.07	7.7	0.8	2.4		2	0
Jabiluka Hill Creek	29-Feb-00	1.1	0.52	0.09	0.22	7	0.01	0.1	0.26	59	3.17	0.30	0.03	0.004	2.3	5.07	7.7	0.8	2.4		1	0
Jabiluka Hill Creek	14-Mar-00	1.6	0.59	0.06	0.08	12	0.01	0.2	0.26	71	2.82	0.30	0.15	0.003	3.1	5.48	8.7	0.9	39.6		0	1
Jabiluka Hill Creek	21-Mar-00	1.4	0.31	0.08	0.06	10	0.01	0.1	0.13	40	3.00	0.12	0.03	0.004	1.4	5.42	7.1	1.1	3.8		0	0
Jabiluka Hill Creek	28-Mar-00	1.3	0.19	0.04	0.03	10	0.01	0.1	0.03	100	3.00	1.93	0.03	0.004	2.7	5.03	6.8	0.5	1.2		0	0
Jabiluka Hill Creek	11-Apr-00	1.4	0.73	0.03	0.04	10	0.01	0.1	0.03	40	2.00	0.29	0.03	0.006	1.3	5.71	8.8	3.7	8.6		0	0
Jabiluka Hill Creek	19-Apr-00	1.2	0.26	0.07	0.07	10	0.01	0.1	0.03	70	3.00	0.41	0.03	0.004	5.0	5.14	5.9	0.5	2.4		0	0
Jabiluka Hill Creek	02-May-00	1.6	0.16	0.04	0.09	10	0.01	0.2	0.48	100	5.00	0.65	0.11	0.006	7.6	5.20	7.8	1.0	3.8		4	0
Boybet Kulbri Creek	05-Jan-98	2.17	0.60	0.23	0.12											6.08	13.0	3.4	33.2	2.0	10	4
Boybet Kulbri Creek	12-Jan-98	2.19	0.74	0.18	0.14	28	0.30		0.30	47	3.00	0.10	0.10	0.080	16	6.25	14.5	3.7	46.8	1.9	6	2
Boybet Kulbri Creek	22-Jan-98	1.72	0.57	0.18	0.09	19	0.30	0.2	0.30	50	1.00	0.10	0.10	0.090	4	5.96	12.0	3.2	36.0	2.8	3	1
Boybet Kulbri Creek	27-Jan-98	1.09	0.48	0.39	0.06	37	0.30	0.1	0.30	41	2.00	0.10	0.10	0.110	3	5.68	10.6	13	24.8	1.9	11	1
Boybet Kulbri Creek	02-Feb-98	1.83	0.91	0.41	0.09	19	0.30	0.1	0.30	78	3.00	0.10	0.10	0.080	18	6.09	15.2	8	58.4	1.7	5	1
Boybet Kulbri Creek	09-Feb-98	1.83	1.02	0.31	0.12	11	0.30		0.30	45	2.00	0.30	0.10	0.060	1	6.13	16.0	6.5	75.6	1.6	3	1
Boybet Kulbri Creek	16-Feb-98	1.41	0.70	0.23	0.10	13	0.30	0.1	0.30	36	2.00	0.50	0.10	0.080	1	5.95	12.7	8.7	52.0	1.5	3	1
Boybet Kulbri Creek	23-Feb-98	1.67	0.93	0.17	0.10	14	0.30		0.30	35	1.00	0.10	0.10	0.040	6	6.16	15.0	5.9	78.4	1.3	3	4
Boybet Kulbri Creek	02-Mar-98	1.49	0.75	0.15	0.09	12	0.30	0.1	0.30	46	1.00	0.20	0.10	0.070	1	6.00	12.0	5.2	63.2	1.3	3	1
Boybet Kulbri Creek	09-Mar-98	1.28	1.04	0.19	0.10	9	0.30		0.30	43	1.00	0.10	0.10	0.060	3	6.20	14.9	5.1	82.8	1.2	3	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Boybet Kulbri Creek	16-Mar-98	1.29	0.32	0.11	0.05	9	0.30		0.30	45	1.00	0.10	0.10	0.070	1	5.90	12.0	4.9	61.2	1.2	3	1
Boybet Kulbri Creek	23-Mar-98	1.39	0.96	0.10	0.12	5	0.30		0.30	44	1.00	0.20	0.10	0.050	1	6.12	15.4	4.4	74.0	1.1	3	1
Boybet Kulbri Creek	30-Mar-98	1.41	1.03	0.09	0.09	34	0.30	0.1	0.30	230	2.00	4.30	0.10	0.060	1	6.16	15.0	4.4	82.4	1.0	27	6
Boybet Kulbri Creek	06-Apr-98	1.64	0.73	0.14	0.13	64	0.04	0.1	0.43	57	1.26	0.04	0.04	0.056	0	6.00	12.4	4	56.0	1.3	7	8
Boybet Kulbri Creek	14-Apr-98	1.60	1.12	0.09	0.13	4	0.01	0.1	0.01	66	0.58	0.13	0.02	0.027	0	6.20	15.6	3.5	94.8	1.0	6	5
Boybet Kulbri Creek	20-Apr-98	1.76	0.82	0.10	0.11	8	0.01	0.1	0.64	46	1.39	0.79	0.23	0.023	0	6.10	13.9	2.5	68.0	1.4	3	1
Boybet Kulbri Creek	27-Apr-98	1.89	0.95	0.05	0.10	11	0.01	0.1	0.03	43	1.83	0.11	0.05	0.028	0	6.14	15.0	2.6	85.6	0.9	9	1
Boybet Kulbri Creek	05-May-98	1.64	1.17	0.06	0.18	30	0.02	0.1	0.08	42	1.29	0.33	0.09	0.007	0	6.26	15.9	2.2	97.0	1.0	3	1
Mugjaberber Creek	05-Jan-98	2.10	0.38	0.32	0.08											5.72	13.8	1.8	16.8	1.9	3	1
Mugjaberber Creek	12-Jan-98	2.31	0.45	0.23	0.09	20	0.30	0.1	0.30	50	2.00	0.10	0.10	0.010	1	5.50	13.5	2	5.20	2.0	3	1
Mugjaberber Creek	22-Jan-98	1.59	0.27	0.21	0.04	54	0.30		0.30	81	1.00	0.10	0.10	0.020	520	5.54	10.0	1.6	7.60	1.8	3	1
Mugjaberber Creek	02-Feb-98	1.27	0.33	0.45	0.06	15	0.30		0.30	15	1.00	0.10	0.10	0.010	1	5.63	10.2	6.8	21.2	1.6	3	1
Mugjaberber Creek	09-Feb-98	1.54	0.32	0.38	0.06	14	0.30	0.1	0.30	33	2.00	0.20	0.10	0.010	1	5.38	11.8	3.4	5.60	1.4	20	1
Mugjaberber Creek	16-Feb-98	1.31	0.27	0.28	0.04	21	0.30		0.30	57	1.00	0.10	0.10	0.010	1	5.49	10.1	6.6	14.0	1.4	3	1
Mugjaberber Creek	23-Feb-98	1.59	0.31	0.32	0.03	14	0.30	0.2	0.30	32	3.00	0.20	0.10	0.010	7	5.57	11.0	3.9	17.6	1.3	15	1
Mugjaberber Creek	02-Mar-98	1.36	0.28	0.28	0.03	16	0.30		0.30	21	1.00	0.10	0.10	0.010	1	5.49	9.1	3.8	15.6	1.2	10	1
Mugjaberber Creek	09-Mar-98	1.59	0.33	0.34	0.05	11	0.30	0.1	0.30	27	1.00	0.10	0.10	0.010	1	5.59	11.0	2.8	16.8	1.2	8	1
Mugjaberber Creek	16-Mar-98	1.41	0.28	0.21	0.03	18	0.30		0.30	25	2.00	0.10	0.10	0.010	1	5.40	9.7	2.3	6.60	1.2	3	3
Mugjaberber Creek	23-Mar-98	1.67	0.31	0.26	0.03	10	0.30		0.30	38	1.00	0.10	0.10	0.010	1	5.40	12.1	2.2	14.8	1.0	3	2
Mugjaberber Creek	30-Mar-98	1.73	0.31	0.32	0.03	9	0.30		0.30	31	1.00	0.10	0.10	0.010	1	5.44	11.6	1.8	16.4	0.9	8	3
Mugjaberber Creek	06-Apr-98	2.25	0.36	0.24	0.02	18	0.16	0.1	0.24	48	2.32	0.06	0.07	0.007	0	5.16	12.5	1.7	4.40	1.3	19	3

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Mugjaberber Creek	14-Apr-98	1.69	0.28	0.38	0.04	11	0.01	0.1	0.01	92	1.00	0.06	0.01	0.003	0	5.35	11.3	1.6	13.6	1.0	6	2
Mugjaberber Creek	20-Apr-98	2.38	0.33	0.22	0.06	24	0.01	0.1	0.01	55	1.39	0.06	0.04	0.003	0	5.22	12.6	1.3	0.00	1.3	12	1
Mugjaberber Creek	27-Apr-98	2.04	0.30	0.28	0.04	39	0.01	0.1	0.01	20	2.03	0.10	0.01	0.004	21	5.08	11.7	1.6	4.80	0.9	18	1
Mulukinyamya Creek	05-Jan-98	2.24	0.44	0.36	0.10											5.86	12.5	1.6	14.0	2.0	3	1
Mulukinyamya Creek	12-Jan-98	2.12	0.46	0.25	0.13	17	0.30		0.30	46	3.00	0.10	0.10	0.010	26	5.85	13.0	1.4	18.0	2.0	5	1
Mulukinyamya Creek	22-Jan-98	1.64	0.32	0.20	0.06	29	0.30		0.30	40	2.00	0.30	0.10	0.010	1	5.76	10.0	1.5	17.2	1.7	5	3
Mulukinyamya Creek	27-Jan-98	1.50	0.45	0.35	0.15	110	0.30	0.2	0.30	130	5.00	0.80	0.10	0.010	1	5.48	13.1	3.3	14.0	2.3	3	4
Mulukinyamya Creek	02-Feb-98	1.47	0.38	0.28	0.09	16	0.30	0.1	0.30	21	2.00	0.10	0.10	0.010	9	5.80	10.1	1.2	16.0	1.7	2	1
Mulukinyamya Creek	09-Feb-98	1.87	0.39	0.15	0.02	10	0.30		0.30	31	2.00	0.10	0.10	0.010	1	5.95	11.0	1	24.4	1.9	5	1
Mulukinyamya Creek	16-Feb-98	1.29	0.32	0.15	0.10	17	0.30	0.1	0.30	27	2.00	0.50	0.10	0.010	1	5.28	11.2	2.2	5.20	1.5	3	2
Mulukinyamya Creek	23-Feb-98	1.61	0.34	0.08	0.07	7	0.30	0.4	0.30	16	1.00	0.40	0.10	0.080	1	5.85	10.0	1	19.6	1.5	2	1
Mulukinyamya Creek	02-Mar-98	1.38	0.30	0.09	0.04	15	0.30		0.30	24	1.00	0.10	0.10	0.010	1	5.79	7.9	1	24.0	1.3	3	1
Mulukinyamya Creek	09-Mar-98	1.39	0.36	0.13	0.06	6	0.30		0.30	21	1.00	0.10	0.10	0.010	1	5.90	9.4	0.85	22.2	1.3	3	1
Mulukinyamya Creek	16-Mar-98	1.30	0.33	0.10	0.05	12	0.30		0.30	21	1.00	0.10	0.10	0.010	1	5.76	8.6	1.3	15.6	1.4	3	1
Mulukinyamya Creek	23-Mar-98	1.52	0.34	0.07	0.04	6	0.30		0.30	19	2.00	0.10	0.10	0.010	1	5.81	9.9	0.8	22.0	1.2	7	1
Mulukinyamya Creek	30-Mar-98	1.48	0.34	0.06	0.02	8	0.30		0.30	51	1.00	0.10	0.10	0.010	1	5.74	9.6	0.75	22.0	1.0	11	9
Mulukinyamya Creek	06-Apr-98	1.78	0.34	0.13	0.07	14	0.03	0.1	0.34	20	1.17	0.01	0.02	0.006	0	5.62	9.9	1.6	14.0	1.2	7	3
Mulukinyamya Creek	14-Apr-98	1.76	0.36	0.10	0.06	6	0.01	0.1	0.01	29	1.00	0.05	0.03	0.003	0	5.64	9.9	0.85	17.6	1.0	6	1
Mulukinyamya Creek	20-Apr-98	1.88	0.33	0.11	0.05	6	0.01	0.1	0.21	16	1.69	0.14	0.17	0.003	0	5.58	10.2	0.82	12.4	1.4	7	1
Mulukinyamya Creek	27-Apr-98	1.84	0.33	0.08	0.05	16	0.01	0.1	0.01	20	2.03	0.07	0.01	0.006	16	5.58	10.0	0.71	17.6	1.0	9	1
Mulukinyamya Creek	05-May-98	1.89	0.37	0.06	0.09	42	0.01	0.1	0.04	27	2.03	0.04	0.03	0.005	67	5.60	10.5	1.4	16.8	1.0	3	1

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Mulukinyamya Creek	10-Dec-98	2.1	0.35	0.47	0.14	60	0.01	0.2	0.07	50	4.69	0.07	0.10	0.017	0.4						3	7
North Magela upstream	22-Dec-98	1.2	0.39	0.14	0.99	73	0.01	0.7	0.20	136	9.20	0.17	0.05	0.045	0.1	5.89	11	113	54	6.3	46	3
North Magela upstream	13-Jan-99	2.4	0.69	0.12	1.07	26	0.01	0.3	0.30	105	5.37	0.22	0.01	0.055	0.3	6.27	16	14.5	74	5.3	12	4
North Magela upstream	03-Feb-99					62	0.01	0.1	0.30	72	4.59	0.11	0.18	0.023	0.0					3.3		3
North Magela upstream	23-Feb-99	1.8	0.25	0.12	0.58	42	0.01	0.1	0.30	66	3.04	0.10	0.01	0.011	0.5					3.3		
North Magela upstream	16-Mar-99	1.9	0.53	0.15	0.85	16	0.01	0.3	0.20	67	4.11	0.24	0.01	0.020	0.2	6.23	13.8	6.2	78	3.9		
North Magela upstream	11-May-99	2.5	0.51	0.18	1.47	14	0.01	0.1	0.10	277	3.47	0.10	0.01	0.012	0.1						8	4
North Magela upstream	15-Dec-99	3.8	1.10	0.15	0.70	16	0.01	0.3	0.33	309	15.5	0.22	0.02	0.020	0.2	7.30	25.0	6.5			5	0
North Magela upstream	27-Jan-00	2.6	0.61	0.06	0.34	62	0.01	0.4	0.57	504	6.40	0.41	0.21	0.032	0.8	4.99	0.0	5.0			3	8
North Magela upstream	23-Feb-00	2.0	0.44	0.02	0.35	49	0.02	0.2	0.61	203	5.30	0.74	0.64	0.024	4.0	5.97	10.4	4.6	88.0		3	0
North Magela upstream	29-Mar-00	2.3	0.39	0.02	0.34	10	0.01	0.2	0.21	60	4.00	0.31	0.03	0.022	0.7	5.92	13.0	5.3	6.6		3	0
North Magela upstream	18-Apr-00	2.0	0.41	0.03	0.37	10	0.01	0.2	0.42	70	2.00	0.89	0.03	0.015	6.2	6.37	12.0	3.5	10.4		2	0
North Magela upstream	19-Apr-00	2.2	0.45	0.02	0.32	10	0.01	0.2	0.12	0	3.00	0.28	0.03	0.013	2.0						11	0
North Magela d'stream	22-Dec-98	2.0	0.52	0.19	1.00	34	0.01	0.7	0.40	109	6.57	0.20	0.04	0.044	1.5	6	13	48	56	6.2	30	1
North Magela d'stream	13-Jan-99	2.5	0.68	0.11	0.93	24	0.01	0.3	0.30	101	4.50	0.15	0.01	0.033	7.4	6.22	16	13	70	4.9	11	4
North Magela d'stream	03-Feb-99					40	0.01	0.2	0.30	59	4.02	0.13	0.35	0.024	0.0					3.3		4
North Magela d'stream	23-Feb-99	1.7	0.33	0.14	0.44	28	0.01	0.2	0.20	55	2.71	0.16	0.01	0.011	0.4					3.2		
North Magela d'stream	16-Mar-99	1.9	0.54	0.13	0.96	16	0.01	0.3	0.10	67	4.31	0.14	0.01	0.020	0.3	6.09	14.3	7	76	3.8		
North Magela d'stream	11-May-99	2.7	0.56	0.10	1.32	13	0.01	0.1	0.20	274	3.83	0.10	0.01	0.012	2.0							
North Magela d'stream	15-Dec-99	4.1	1.13	0.08	0.76	5	0.01	0.3	0.25	62	12.4	0.70	0.04	0.018	0.2	7.20	27.0	6.4			9	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
North Magela d'stream	27-Jan-00	2.6	0.64	0.09	0.32	60	0.01	0.4	0.30	580	7.56	0.28	0.16	0.033	0.9	4.83	0.0	5.6			5	0
North Magela d'stream	23-Feb-00	2.1	0.52	0.04	0.38	43	0.01	0.3	0.72	261	5.57	0.30	0.13	0.021	1.7	5.74	10.8	4.0	76.0		4	7
North Magela d'stream	29-Mar-00	2.4	0.42	0.02	0.34	40	0.01	0.4	0.27	25	6.00	0.35	0.03	0.023	1.0	5.90	11.0	6.2	8.4		2	0
North Magela d'stream	19-Apr-00	1.9	0.50	0.03	0.39	10	0.01	0.3	0.13	100	4.00	0.28	0.03	0.014	1.1	6.26	12.0	3.6	12.6		2	0
7J Creek upstream	22-Dec-98	1.1	0.21	0.33	0.92	95	0.01	0.1	0.20	96	5.12	0.07	0.02	0.018	0.1	4.87	9	9.6	6	6.3	11	1
7J Creek upstream	13-Jan-99	2.2	0.28	0.35	0.14	65	0.01	0.1	0.20	122	3.83	0.06	0.01	0.013	0.7	5.19	10	2.6	4	3.3	4	2
7J Creek upstream	03-Feb-99					12	0.01	0.2	0.30	62	3.95	0.15	0.10	0.025	0.0					4		3
7J Creek upstream	23-Feb-99	2.1	0.56	0.06	0.87	10	0.01	0.3	0.30	70	4.05	0.15	0.03	0.019	0.4					2.7		
7J Creek upstream	16-Mar-99	1.4	0.23	0.28	0.23	50	0.01	0.1	0.10	72	3.16	0.09	0.01	0.011	0.3	5.35	8.6	3	12	3.3		
7J Creek upstream	20-Apr-99	2.4	0.48	0.20	0.19	21	0.01	0.2	0.20	40	2.76	0.21	0.03	0.011	0.3						8	0
7J Creek upstream	11-May-99	2.6	0.57	0.20	1.21	57	0.01	0.1	0.20	492	4.85	0.11	0.01	0.013	0.2							
7J Creek upstream	15-Dec-99	3.2	0.69	0.17	0.27	34	0.01	0.3	0.24	127	14.9	0.32	0.03	0.014	1.0	6.30	17.0	2.3			10	0
7J Creek upstream	28-Jan-00	2.5	0.31	0.20	0.13	54	0.01	0.3	0.21	74	4.53	0.21	0.11	0.013	1.0	4.61	0.0	2.6			4	0
7J Creek upstream	23-Feb-00	2.2	0.34	0.17	0.11	42	0.01	0.2	1.71	80	3.35	0.53	0.18	0.012	2.2	5.78	7.5	2.1	22.0		3	0
7J Creek upstream	29-Mar-00	1.3	0.21	0.11	0.11	60	0.01	0.2	0.05	80	4.00	0.12	0.03	0.014	1.1	5.47	5.5	4.6	1.9		1	0
7J Creek upstream	19-Apr-00	2.0	0.31	0.15	0.11	30	0.02	0.3	0.03	65	3.00	0.84	0.05	0.012	1.6	5.49	8.0	1.9	3.4		1	0
7J Creek d'stream	22-Dec-98	1.0	0.21	0.41	0.94	104	0.03	0.1	0.20	112	6.32	0.09	0.12	0.015	0.5	4.8	9	12	0	6.7	19	1
7J Creek d'stream	13-Jan-99	2.0	0.32	0.27	0.54	99	0.01	0.1	0.30	254	4.69	0.08	0.01	0.022	6.9	5.57	10.5	3.2	16	3.6	3	3
7J Creek d'stream	03-Feb-99					13	0.03	0.3	0.30	67	4.43	0.45	0.61	0.032	0.0					3.5		3
7J Creek d'stream	23-Feb-99	2.1	0.51	0.12	0.81	9	0.01	0.3	0.20	70	4.13	0.15	0.01	0.020	0.3					2.9		

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
7J Creek d'stream	16-Mar-99	1.7	0.31	0.16	0.50	38	0.01	0.1	0.10	59	3.00	0.09	0.02	0.012	0.3	5.57	9.5	3.3	26	3.2		
7J Creek d'stream	20-Apr-99	2.3	0.48	0.27	0.63	14	0.01	0.2	0.20	39	2.66	0.16	0.05	0.010	0.2						8	0
7J Creek d'stream	11-May-99	2.6	0.54	0.25	1.08	36	0.01	0.1	0.20	410	3.55	0.10	0.01	0.013	0.1							
7J Creek d'stream	15-Dec-99	3.9	1.25	0.14	0.55	87	0.01	0.5	0.30	211	34.2	1.51	0.03	0.041	1.5	6.70	0.0	3.1			33	0
7J Creek d'stream	28-Jan-00	2.4	0.38	0.14	0.14	34	0.01	0.3	0.38	54	4.50	0.22	0.11	0.016	1.0	4.66	0.0	2.7			4	0
7J Creek d'stream	23-Feb-00	2.5	0.40	0.14	0.16	29	0.01	0.2	0.86	57	3.01	0.76	1.40	0.012	2.4	5.99	8.7	2.5	50.0		3	1
7J Creek d'stream	29-Mar-00	1.4	0.25	0.08	0.11	40	0.01	0.2	0.13	70	1.00	0.30	0.03	0.014	1.0	5.80	6.3	4.3	2.8		0	0
7J Creek d'stream	19-Apr-00	1.8	0.37	0.11	0.19	10	0.01	0.2	0.03	30	1.00	0.80	0.08	0.012	2.1	6.01	8.8	1.9	7.2		0	0
Catfish Creek upstream	23-Dec-98	2.2	0.15	0.36	0.81	105	0.01	0.2	0.08	98	4.30	0.15	0.05	0.008	11.1	4.4	13.5	0.8	0	4.4	3	2
Catfish Creek upstream	14-Jan-99	1.7	0.12	0.23	0.10	71	0.01	0.1	0.01	65	2.31	0.01	0.01	0.010	1.4	4.61	12	0.6	0	3.8	9	1
Catfish Creek upstream	24-Feb-99	1.8	0.17	0.12	0.64	96	0.01	0.2	0.01	89	2.64	0.04	0.01	0.010	0.0					4.6		
Catfish Creek upstream	22-Mar-99	1.6	0.10	0.08	0.33	43	0.01	0.2	0.17	59	1.88	0.06	0.02	0.005	0.3					2.7		
Catfish Creek upstream	23-Apr-99	2.3	0.13	0.05	1.03	64	0.01	0.1	0.17	89	2.20	0.18	0.02	0.006	0.3							
Catfish Creek upstream	28-Apr-99	2.3	0.13	0.05	1.05	42	0.01	0.2	0.03	147	2.28	0.07	0.03	0.004	0.0							
Catfish Creek upstream	12-May-99	3.3	0.21	0.47	0.29	49	0.01	0.1	0.10	225	3.98	0.03	0.01	0.006	1.0							
Catfish Creek upstream	17-Dec-99	3.6	0.21	0.08	0.09	59	0.01	0.2	0.11	52	3.44	0.30	0.02	0.006	0.2	4.02	19.0	0.3			3	0
Catfish Creek upstream	25-Jan-00	1.6	0.11	0.13	0.06	103	0.01	0.3	0.19	92	2.60	0.12	0.30	0.006	1.3	4.87	8.7	0.6	0.0		3	0
Catfish Creek upstream	25-Feb-00	1.8	0.10	0.10	0.06	72	0.01	0.2	0.23	89	1.77	0.30	0.06	0.005	1.5	5.00	7.6	0.8	0.0		2	0
Catfish Creek upstream	30-Mar-00	1.5	0.09	0.06	0.04	40	0.01	0.2	0.03	30	1.00	0.05	0.03	0.006	0.6	4.91	6.8	0.4	0.0		0	0
Catfish Creek upstream	20-Apr-00	1.3	0.08	0.05	0.05	50	0.01	0.2	0.03	30	1.00	0.10	0.03	0.006	1.2	4.93	6.3	0.4	0.3		1	0

Site	Date	Cl	Mg	SO4	Ca	Al	Cd	Cr	Cu	Fe	Mn	Ni	Pb	U	Zn	pH	EC	NTU	Alk	TOC	TP	PO4
		mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS		uM	mg/L	ug/L	ug/L
Catfish Creek d'stream	23-Dec-98	2.2	0.16	0.35	0.77	105	0.01	0.2	0.08	98	4.30	0.15	0.05	0.008	1.8	4.52	14	0.4	0	4.6	3	2
Catfish Creek d'stream	14-Jan-99	1.9	0.13	0.24	0.11	71	0.01	0.1	0.01	65	2.31	0.01	0.01	0.010	1.0	4.58	11	0.8	0	3.6	5	1
Catfish Creek d'stream	24-Feb-99	1.7	0.14	0.07	0.65	96	0.01	0.2	0.01	89	2.64	0.04	0.01	0.010	0.0					4.7		
Catfish Creek d'stream	22-Mar-99	1.4	0.09	0.07	0.52	43	0.01	0.2	0.17	59	1.88	0.06	0.02	0.005	0.4					2.6		
Catfish Creek d'stream	23-Apr-99	2.2	0.13	0.25	1.03	64	0.01	0.1	0.17	89	2.20	0.18	0.02	0.006	0.5							
Catfish Creek d'stream	28-Apr-99	2.3	0.13	0.25	1.03	42	0.01	0.2	0.03	147	2.28	0.07	0.03	0.004	0.3							
Catfish Creek d'stream	12-May-99	2.9	0.19	0.06	0.09	49	0.01	0.1	0.10	225	3.98	0.03	0.01	0.006	0.3							
Catfish Creek d'stream	17-Dec-99	3.6	0.22	0.21	0.06	56	0.01	0.4	0.09	47	4.10	0.15	0.03	0.005	0.2	3.91	17.9	1.3			6	0
Catfish Creek d'stream	25-Jan-00	1.8	0.10	0.15	0.01	107	0.01	0.3	0.28	79	2.66	0.98	0.09	0.007	0.9	4.81	8.9	0.6	0.0		2	0
Catfish Creek d'stream	25-Feb-00	2.0	0.10	0.14	0.10	75	0.01	0.2	0.25	84	1.99	0.30	0.06	0.005	2.3	4.81	8.3	0.5	0.0		3	0
Catfish Creek d'stream	30-Mar-00	1.6	0.09	0.15	0.06	40	0.01	0.2	0.21	50	2.00	0.19	0.03	0.006	1.3	4.96	7.3	0.8	0.4		0	0
Catfish Creek d'stream	20-Apr-00	1.5	0.08	0.04	0.06	50	0.01	0.2	0.03	60	2.00	0.07	0.03	0.006	0.6	4.73	6.2	4.5	0.0		0	0