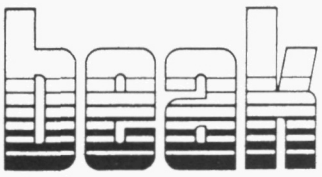

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ARCTIC ISLANDS PIPELINE PROJECT
WATER QUALITY SURVEY

C6205

VOLUME II

TECHNICAL APPENDICES

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MARCH 1978

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1. INTRODUCTION

Volume II of the Arctic Islands Pipeline Water Quality Study is a compendium of water quality data within each study area as reported by various researchers. These include Aquatic Environments Ltd. (1974), Chyurlia (1976), Environment Canada (1972-76), Guilbault and Chacko (1977), Gummer and Dunn (1976), Hatfield Consulting Limited (1977), and Way and Thorne (1977).

Two small scale maps accompany the tables to indicate the general location of sampling points or areas. Detailed maps showing precise sampling locations can be found in the appropriate references.

2. REFERENCES

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Shilts, W.W., W.E. Dean and R.A. Klassen. 1976. Physical, chemical and stratigraphic aspects of sedimentation in lake basins of the eastern Arctic shield. Geol. Surv. Can. Paper 76-1A: 245-254.

Way, J.G. and G.A. Thorne. 1976. Reconnaissance of Polar Gas Route river crossings. Interim Report, Hydrologic Regimes, FP-1-76-3, Inland Waters Directorate, Winnipeg, 143 p.

SUMMARY OF FIELD AND LABORATORY METHODS

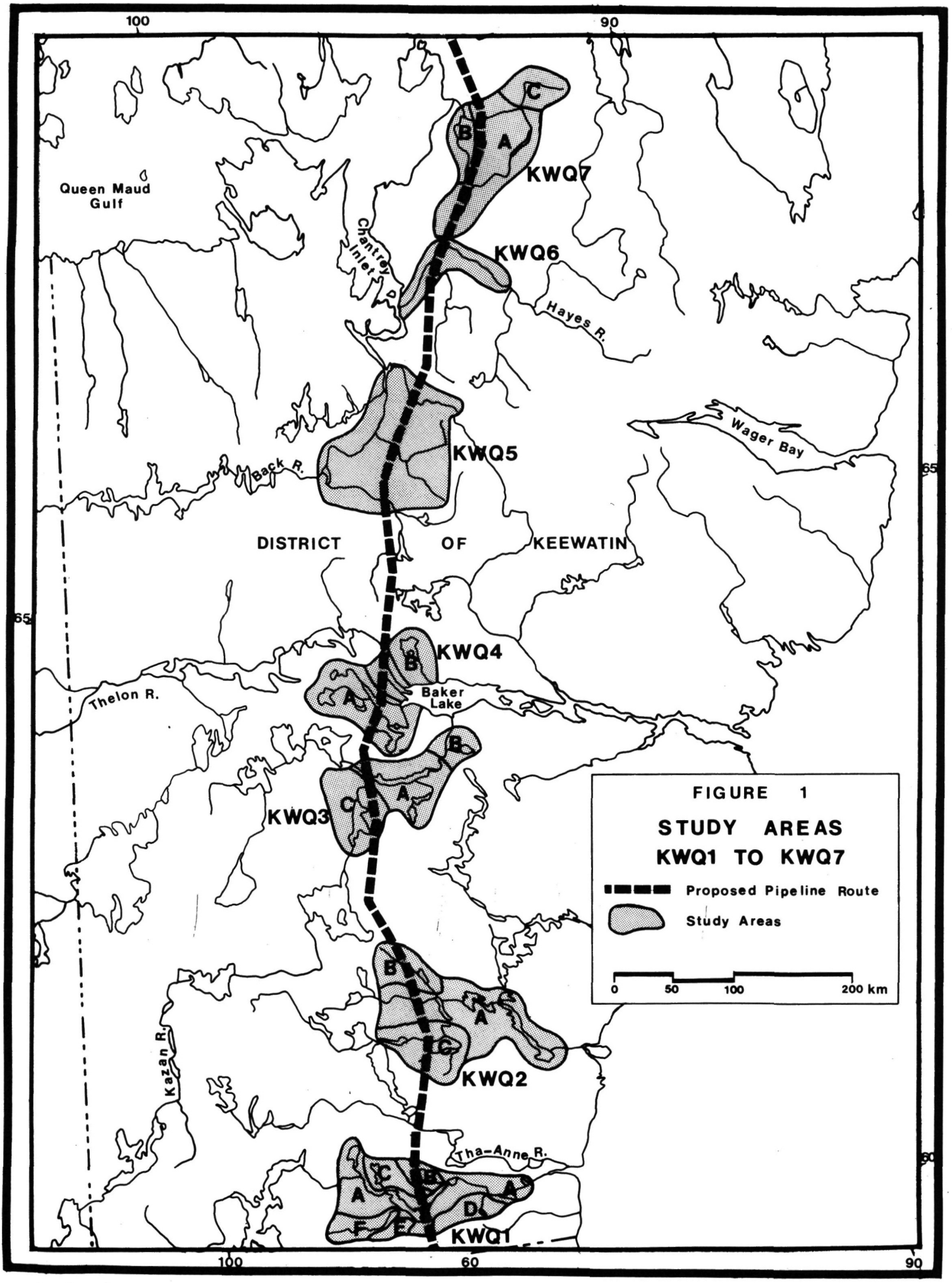
Researcher	Parameters Measured	Measurement Location	Instrumentation/Method
Aquatic Environments Ltd.	Temperature, pH, conductivity	Field	Pocket thermometer, CKA
	Physical parameters, major ions, nutrients	Calgary laboratory	Siebold pH meter, Beckman conductivity meter
Chyurlia	Physical parameters, nutrients	Field, Calgary laboratory	?
Environment Canada	Physical parameters, major ions nutrients, heavy metals	?	?
Guilbault and Chacko	Temperature, pH, conductivity	Field	?
	Physical parameters, major ions, nutrients, extractable heavy metals	Calgary laboratory	Inland Waters Directorate Analytical Methods Manual (1974)
Gummer and Dunn	Temperature	Field	Mercury bulb thermometer
	pH	Field	Metrohm E488 pH meter
	Conductivity	Field	Beckman RA-2A specific conductance meter
	Physical parameters, major ions, nutrients, heavy metals	Yellowknife laboratory	W.J. Traversey's "Methods for Chemical Analysis of Water and Wastewater"
Hatfield Consulting Ltd.	Temperature	Field	Fisher thermometer
	Conductivity, turbidity	Field	Hach spectrophotometer
	Dissolved oxygen	Field	Hach kit
Lawrence *et al.*	Temperature, conductivity	Field	Combination conductivity - temperature meter (Ysi or Hydrolab)
	Dissolved oxygen	Field	Hach kit
	Temperature	Base camp laboratory	Mercury bulb thermometer
	pH	Base camp laboratory	Hach kit and Fisher Accumet 150 pH meter

Researcher	Parameters Measured	Measurement Location	Instrumentation/Method
Lawrence *et al.* (Continued)	Conductivity	Base camp laboratory	Conductivity meter (Ysi or Hydrolab)
	Alkalinity, dissolved oxygen	Base camp laboratory	Hach kit, Bausch and Lomb Spectrokit Reagent System
	Hardness	Base camp laboratory	Hach kit
	Suspended solids including carbon, nitrogen and hydrogen content	Winnipeg laboratory	Freshwater Institute methods
Shilts *et al.*	Temperature, pH, dissolved oxygen, conductivity, redox potential	Field	Hydrosonde 6D Surveyor
Way and Thorne	Temperature	Field	Mercury bulb thermometer
	pH	Field	Metrohm E488 pH meter
	Conductivity	Field	Beckman RA-2A specific conductivity meter
	Physical parameters, major ions, nutrients, heavy metals	Calgary laboratory	Indland Waters Directorate methods

ABBREVIATIONS

The following abbreviations have been used in the data tables:

^{o}C	- degree(s) Celsius
mg/ℓ	- milligram(s) per litre
µmhos/cm	- micromhos per centimetre
J.T.U.	- Jackson turbidity unit(s)
F.T.U.	- formazin turbidity unit(s)
mv	- millivolt(s)
m	- metre(s)
n.d.	- no data
Sat	- saturation
Tr	- trace


100
90
Queen Maud Gulf
Chantrey Inlet
KWQ7
KWQ6
Hayes R.
Wager Bay
KWQ5
Back R.
DISTRICT OF KEEWATIN
65
KWQ4
Thelon R.
Baker Lake
KWQ3
FIGURE 1
STUDY AREAS
KWQ1 TO KWQ7
Proposed Pipeline Route
Study Areas
0 50 100 200 km
Kazan R.
KWQ2
Tha-Anne R.
KWQ1
100
60
90

S T U D Y A R E A KWQ1

TABLE 1.1 WATER QUALITY PARAMETERS AS REPORTED BY WAY AND THORNE, 1977

Sampling Period: June-September, 1976
Sampling Location: Thlewiaza River at proposed pipeline crossing

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Field Data			
Temperature (^{o}C)	1	4.0	-
pH (pH units)	1	6.9	-
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (^{o}C)	1	22.7	-
pH (pH units)	1	6.7	-
Conductivity (µmhos/cm)	1	18.9	-
Turbidity (J.T.U.)	1	1.1	-
Apparent colour (relative units)	1	10.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	4.7	-
Hardness as $CaCO_3$ (mg/ℓ)	1	7.9	-
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	1	4.0	-
Total inorganic carbon as C	1	3.0	-
Total Kjeldahl nitrogen as N	1	0.2	-
Total nitrogen as N	1	0.41	-
Total phosphorus as P	1	0.008	-
MAJOR IONS (mg/ℓ)			
Calcium	1	2.5	-
Magnesium	1	0.5	-
Potassium	1	0.3	-
Sodium	1	0.5	-
Chloride	1	0.4	-
Sulphate	1	2.0	-
Silica	1	1.0	-

TABLE 1.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Barium	1	0.05	-
Cadmium	1	<0.001	-
Cobalt	1	<0.002	-
Copper	1	<0.001	-
Iron	1	0.08	-
Lead	1	<0.004	-
Manganese	1	<0.01	-
Nickel	1	<0.002	-
Zinc	1	<0.001	-

TABLE 1.2 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Edehon Lake

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Area* A			
Temperature (°C)	12	15.13	11.4-22.5
pH (pH units)	12	6.8	6.0- 7.5
Conductivity (µmhos/cm)	11	13.3	10.0-19.0
Dissolved oxygen (mg/ℓ)	11	-	8.0- Sat
Total hardness (mg/ℓ))	12	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	8	0	0-0
Total alkalinity (mg/ℓ)	8	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	10	2.35	0.23-10.12
Area B			
Temperature (°C)	6	13.9	9.0-19.5
pH (pH units)	6	6.9	6.5- 7.5
Conductivity (µmhos/cm)	6	12.0	10.0-15.0
Dissolved oxygen (mg/ℓ)	5	10.2	10.0-11.0
Total hardness (mg/ℓ)	6	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	6	0	0-0
Total alkalinity (mg/ℓ)	6	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	5	1.08	0.24-2.26
Area C			
Temperature (°C)	5	14.38	10.0-22.2
pH (pH units)	5	6.7	6.0- 7.5
Conductivity (µmhos/cm)	5	14.0	10.0-20.0
Dissolved oxygen (mg/ℓ)	5	9.6	8.0-11.0
Total hardness (mg/ℓ)	5	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	3	0	0-0
Total alkalinity (mg/ℓ)	3	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	4	1.02	0.62-1.26

* For area locations, refer to Figure 1

TABLE 1.2 (Continued)

	Sample Size	Mean	Range
Area D			
Temperature (°C)	2	14.35	12.5-16.2
pH (pH units)	2	7.0	7.0- 7.0
Conductivity (µmhos/cm)	2	11.0	10.0-12.0
Dissolved oxygen (mg/ℓ)	1	10.0	-
Total hardness (mg/ℓ)	2	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	2	0	0-0
Total alkalinity (mg/ℓ)	2	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	2	0.69	0.57-0.81
Area E			
Temperature (°C)	5	19.96	15.4-24.5
pH (pH units)	5	7.1	6.5- 7.5
Conductivity (µmhos/cm)	5	15.0	10.0-19.0
Dissolved oxygen (mg/ℓ)	4	9.5	8.0-11.0
Total hardness (mg/ℓ)	5	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	5	0	0-0
Total alkalinity (mg/ℓ)	5	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	5	1.02	0.52-1.76
Area F			
Temperature (°C)	4	16.08	15.0-18.2
pH (pH units)	4	6.9	6.5- 7.0
Conductivity (µmhos/cm)	4	14.8	11.0-21.0
Dissolved oxygen (mg/ℓ)	4	9.5	9.0-10.0
Total hardness (mg/ℓ)	4	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	4	0	0-0
Total alkalinity (mg/ℓ)	4	≤20.0	≤20.0-<20.0
Total suspended solids (mg/ℓ)	4	0.74	0.40-0.99

TABLE 1.2 (Continued)

Sampling Location: Streams of Edehon Lake

	Sample Size	Mean	Range
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	10	0.409	0.14-0.83
Suspended nitrogen	10	0.039	0.015-0.075
Area B			
Suspended carbon	6	0.402	0.23-0.76
Suspended nitrogen	6	0.028	0.016-0.039
Area C			
Suspended carbon	5	0.268	0.20-0.35
Suspended nitrogen	5	0.026	0.02-0.035
Area D			
Suspended carbon	2	0.235	0.23-0.24
Suspended nitrogen	2	0.026	0.024-0.027
Area E			
Suspended carbon	5	0.314	0.22-0.49
Suspended nitrogen	5	0.033	0.021-0.05
Area F			
Suspended carbon	4	0.227	0.16-0.28
Suspended nitrogen	4	0.021	0.014-0.026

TABLE 1.2 (Continued)

Sampling Location: Lakes of Edehon Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (^{o}C)	24	13.28	8.8-20.3
pH (pH units)	22	7.45	7.0-7.5
Conductivity (µmhos/cm)	16	19.0	11.0-23.0
Dissolved oxygen (mg/ℓ)	3	10.0	9.0-11.0
Total hardness (mg/ℓ)	22	<17.0	<17.0-<17.0
Phenolphthalein alkalinity (mg/ℓ)	22	0	0-0
Total alkalinity (mg/ℓ)	22	<20.0	<20.0- 20.0
Total suspended solids (mg/ℓ)	22	1.38	0.60-2.81
Area B			
Temperature (^{o}C)	1	14.2	-
pH (pH units)	1	7.0	-
Conductivity (µmhos/cm)	1	12.0	-
Dissolved oxygen (mg/ℓ)	1	11.0	-
Total hardness (mg/ℓ)	1	<17.0	-
Phenolphthalein alkalinity (mg/ℓ)	1	0	-
Total alkalinity (mg/ℓ)	1	<20.0	-
Total suspended solids (mg/ℓ)	1	0.76	
Area C			
Temperature (^{o}C)	1	15.0	-
pH (pH units)	3	7.2	7.0-7.5
Conductivity (µmhos/cm)	1	8.0	-
Dissolved oxygen (mg/ℓ)	3	10.3	9.0-12.0
Total hardness (mg/ℓ)	3	<17.0	<17.0-<17.0
Phenolphthalein alkalinity (mg/ℓ)	3	0	0-0
Total alkalinity (mg/ℓ)	3	<20.0	<20.0-<20.0
Total suspended solids (mg/ℓ)	3	1.13	0.53-1.64

TABLE 1.2 (Continued)

Sampling Location: Lakes of Edehon Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area D			
Temperature (°C)		n.d.	
pH (pH units)	1	7.5	-
Conductivity (µmhos/cm)	1	n.d	
Dissolved oxygen (mg/ℓ)		n.d.	
Total hardness (mg/ℓ)	1	≤17.0	-
Phenolphthalein alkalinity (mg/ℓ)	1	0	-
Total alkalinity (mg/ℓ)	1	≤20.0	-
Total suspended solids (mg/ℓ)	1	1.28	-
Area E			
Temperature (°C)	3	16.27	15.8-16.5
pH (pH units)	3	7.5	7.5-7.5
Conductivity (µmhos/cm)	3	13.0	12.0-15.0
Dissolved oxygen (mg/ℓ)	3	10.7	10.0-12.0
Total hardness (mg/ℓ)	3	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	3	0	0-0
Total alkalinity (mg/ℓ)	3	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	3	1.52	0.93-2.32
Area F			
Temperature (°C)	2	14.6	13.2-16.0
pH (pH units)	3	6.8	6.5-7.0
Conductivity (µmhos/cm)	2	12.0	12.0-12.0
Dissolved oxygen (mg/ℓ)	2	11.0	10.0-12.0
Total hardness (mg/ℓ)	3	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	3	0	0-0
Total alkalinity (mg/ℓ)	3	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	3	1.71	1.61-1.90

TABLE 1.2 (Continued)

Sampling Location: Streams of Edehon Lake

NUTRIENTS (mg/ℓ)	Sample Size	Mean	Range
Area A			
Suspended carbon	21	0.335	0.16-0.69
Suspended nitrogen	21	0.038	0.025-0.063
Area B			
Suspended carbon	1	0.28	-
Suspended nitrogen	1	0.031	-
Area C			
Suspended carbon	3	0.377	0.035-0.40
Suspended nitrogen	3	0.041	0.031-0.053
Area D			
Suspended carbon	1	0.30	-
Suspended nitrogen	1	0.031	-
Area E			
Suspended carbon	3	0.467	0.28-0.76
Suspended nitrogen	3	0.050	0.034-0.076
Area F			
Suspended carbon	3	0.377	0.28-0.48
Suspended nitrogen	3	0.039	0.026-0.047

S T U D Y A R E A KWQ2

TABLE 2.1 WATER QUALITY PARAMETERS AS REPORTED BY WAY AND THORNE, 1977

Sampling Period: June-September, 1976
Sampling Location: Maguse River at proposed pipeline crossing (Area* A)

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Field Data			
Temperature (°C)	2	6.5	5.0- 8.0
pH (pH units)	2	7.55	7.3- 7.8
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (°C)	2	20.95	19.2-22.7
pH (pH units)	2	6.6	6.3- 6.9
Conductivity (µmhos/cm)	2	22.05	21.1-23.0
Turbidity (J.T.U.)	2	1.5	1.2- 1.8
Apparent colour (relative units)	2	5	5-5
Alkalinity total as $CaCO_3$ (mg/ℓ)	2	7.5	6.7- 8.3
Hardness as $CaCO_3$ (mg/ℓ)	2	11.5	8.5-14.5
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	2	5.5	5.0- 6.0
Total inorganic carbon as C	2	2.5	2.0- 3.0
Total Kjeldahl nitrogen as N	2	0.4	0.3- 0.5
Total nitrogen as N	2	0.46	0.31-0.6
Total phosphorus as P	2	0.008	0.005-0.01
MAJOR IONS (mg/ℓ)			
Calcium	2	3.25	2.5- 4.0
Magnesium	2	0.95	0.8- 1.1
Potassium	2	0.6	0.4- 0.8
Sodium	2	0.65	0.5- 0.8
Chloride	2	0.55	0.5- 0.6
Sulphate	2	1.55	1.3- 1.8
Silica	2	0.3	0.2- 0.4

* For area locations, refer to Figure 1

TABLE 2.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Barium	2	-	<0.05-0.06
Cadmium	2	<0.001	-
Cobalt	2	<0.002	-
Copper	2	-	<0.001-0.001
Iron	2	0.17	0.05-0.28
Lead	2	<0.004	-
Manganese	2	<0.01	-
Nickel	2	<0.002	-
Zinc	2	-	<0.001-0.004

TABLE 2.1 (Continued)

Sampling Location: Kogtok River at proposed pipeline crossing (Area A)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	1	8.5	-
pH (pH units)	1	7.5	-
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (^{o}C)	1	18.7	-
pH (pH units)	1	6.3	-
Conductivity (µmhos/cm)	1	18.0	-
Turbidity (J.T.U.)	1	3.5	-
Apparent colour (relative units)	1	10.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	5.5	-
Hardness as $CaCO_3$ (mg/ℓ)	1	6.0	-
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	1	6.0	-
Total inorganic carbon as C	1	2.0	-
Total Kjeldahl nitrogen as N	1	0.4	-
Total nitrogen as N	1	0.41	-
Total phosphorus as P	1	0.01	-
MAJOR IONS (mg/ℓ)			
Calcium	1	1.9	-
Magnesium	1	0.3	-
Potassium	1	0.5	-
Sodium	1	0.8	-
Chloride	1	0.7	-
Sulphate	1	1.3	-
Silica	1	0.8	-

TABLE 2.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Barium	1	<0.05	-
Cadmium	1	<0.001	-
Cobalt	1	<0.002	-
Copper	1	0.001	-
Iron	1	<0.04	-
Lead	1	<0.004	-
Manganese	1	<0.01	-
Nickel	1	<0.002	-
Zinc	1	0.003	-

S T U D Y A R E A KWQ2

TABLE 2.2 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Maguse River

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (°C)	15	8.57	1.5-17.5
pH (pH units)	15	7.23	6.75-7.7
Conductivity (μmhos/cm)	14	13.2	7.0-26.0
Dissolved oxygen (mg/ℓ)	13	-	9.0-Sat
Total hardness (mg/ℓ)	15	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)		n.d.	
Total alkalinity (mg/ℓ)		n.d.	
Total suspended solids (mg/ℓ)	9	1.52	0.83-2.54
Area B			
Temperature (°C)	5	6.52	3.2-10.1
pH (pH units)	5	7.4	7.0-7.5
Conductivity (μmhos/cm)	5	14.0	9.0-20.0
Dissolved oxygen (mg/ℓ)	5	-	11.0-Sat
Total hardness (mg/ℓ)	5	-	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)		n.d.	
Total alkalinity (mg/ℓ)		n.d.	
Total suspended solids (mg/ℓ)	4	1.73	1.13-2.05
Area C			
Temperature (°C)	10	9.24	5.1-15.2
pH (pH units)	10	7.15	7.0-7.5
Conductivity (μmhos/cm)	3	18.3	14.0-21.0
Dissolved oxygen (mg/ℓ)	10	-	10.0-Sat
Total hardness (mg/ℓ)	10	-	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)		n.d.	
Total alkalinity (mg/ℓ)		n.d.	
Total suspended solids (mg/ℓ)	10	1.59	0.51-5.3

* For area locations, refer to Figure 1

TABLE 2.2 (Continued)

	Sample Size	Mean	Range
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	9	0.339	0.25-0.61
Suspended nitrogen	9	0.038	0.024-0.063
Area B			
Suspended carbon	4	0.433	0.35-0.55
Suspended nitrogen	4	0.047	0.039-0.053
Area C			
Suspended carbon	10	0.405	0.18-1.07
Suspended nitrogen	10	0.039	0.019-0.090

TABLE 2.2 (Continued)

Sampling Location: Lakes of Maguse River

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area A			
Temperature (°C)	24	8.35	4.5-17.5
pH (pH units)	24	7.23	6.5-8.0
Conductivity (µmhos/cm)	20	18.6	12.0-32.0
Dissolved oxygen (mg/ℓ)	13	-	11.0-Sat
Total hardness (mg/ℓ)	22	-	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)	8	0	0-0
Total alkalinity (mg/ℓ)	8	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	18	1.78	0.61-6.14
Area B			
Temperature (°C)	5	5.3	2.5-8.7
pH (pH units)	6	7.3	7.0-7.5
Conductivity (µmhos/cm)	5	13.4	9.0-21.0
Dissolved oxygen (mg/ℓ)	5	-	11.0-Sat
Total hardness (mg/ℓ)	6	-	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)		n.d.	
Total alkalinity (mg/ℓ)		n.d.	
Total suspended solids (mg/ℓ)	6	1.74	1.28-2.31
Area C			
Temperature (°C)	11	7.54	4.5-16.0
pH (pH units)	11	7.2	7.0-8.0
Conductivity (µmhos/cm)	5	17.6	15.0-21.0
Dissolved oxygen (mg/ℓ)	7	-	8.0-Sat
Total hardness (mg/ℓ)	11	-	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)		n.d.	
Total alkalinity (mg/ℓ)		n.d.	
Total suspended solids (mg/ℓ)	10	1.98	0.83-5.74

TABLE 2.2 (Continued)

	Sample Size	Mean	Range
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	21	0.379	0.14-0.94
Suspended nitrogen	21	0.039	0.017-0.106
Area B			
Suspended carbon	6	0.459	0.30-0.61
Suspended nitrogen	6	0.048	0.033-0.060
Area C			
Suspended carbon	11	0.596	0.28-2.14
Suspended nitrogen	11	0.060	0.030-0.198

S T U D Y A R E A KWQ3

TABLE 3.1 WATER QUALITY PARAMETERS AS REPORTED BY SHILTS *et al.*, 1976

Sampling Period: August, 1975
Sampling Location: Thirty Mile Lake vicinity

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* B			
Depth (m)	5	2.6	1.0-8.2
Temperature (^{o}C)	5	12.8	12.5-13.0
pH (pH units)	5	7.1	6.8-7.3
Conductivity (µmhos/cm)	5	33.0	20.0-40.0
Dissolved oxygen (mg/ℓ)	5	12.3	11.8-12.8
Redox potential (mv)	5	206.0	195-220
Area C			
Depth (m)	7	3.0	1.0-7.2
Temperature (^{o}C)	7	12.9	12.5-13.0
pH (pH units)	7	6.9	6.8-7.1
Conductivity (µmhos/cm)	7	29.3	20.0-40.0
Dissolved oxygen (mg/ℓ)	7	12.4	12.2-12.8
Redox potential (mv)	7	221.0	210-230

* For area locations, refer to Figure 1

S T U D Y A R E A KWQ3

TABLE 3.2 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Thirty Mile Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (^{o}C)	15	12.1	8.5-15.0
pH (pH units)	13	7.04	6.5-7.5
Conductivity (µmhos/cm)	9	19.4	13.0-28.0
Dissolved oxygen (mg/ℓ)	13	-	9.0-Sat
Total hardness (mg/ℓ)	14	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	14	0	0-0
Total alkalinity (mg/ℓ)	14	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	14	1.88	0.66-7.81
Area B			
Temperature (^{o}C)	11	12.7	10.2-14.9
pH (pH units)	11	7.36	7.0-7.5
Conductivity (µmhos/cm)	11	24.7	18.0-31.0
Dissolved oxygen (mg/ℓ)	10	10.2	8.0-11.0
Total hardness (mg/P)	11	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	11	0	0-0
Total alkalinity (mg/ℓ)	11	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	9	0.98	0.13-3.09
Area C			
Temperature (^{o}C)	5	16.2	13.0-18.0
pH (pH units)	6	7.42	7.0-7.5
Conductivity (µmhos/cm)		n.d.	
Dissolved oxygen (mg/P)	5	9.8	9.0-11.0
Total hardness (mg/ℓ)	6	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	6	0	0-0
Total alkalinity (mg/ℓ)	6	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	6	1.41	0.48-3.01

* For area locations, refer to Figure 1

TABLE 3.2 (Continued)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	14	0.451	0.21-1.71
Suspended nitrogen	14	0.043	0.019-0.157
Area B			
Suspended carbon	10	0.250	0.10-0.37
Suspended nitrogen	10	0.028	0.014-0.041
Area C			
Suspended carbon	6	0.432	0.16-0.79
Suspended nitrogen	6	0.039	0.015-0.062

TABLE 3.2 (Continued)

Sampling Location: Lakes of Thirty Mile Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (°C)	11	8.96	7.0-11.2
pH (pH units)	12	6.96	6.5-7.5
Conductivity (µmhos/cm)	7	16.3	12.0-28.0
Dissolved oxygen (mg/ℓ)	4	-	7.0-Sat
Total hardness (mg/ℓ)	13	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	13	0	0-0
Total alkalinity (mg/ℓ)	13	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	13	2.82	0.73-24.03
Area B			
Temperature (°C)	13	11.37	7.5-12.9
pH (pH units)	13	7.23	7.0-7.5
Conductivity (µmhos/cm)	13	18.8	13.0-25.0
Dissolved oxygen (mg/ℓ)	8	-	9.0-Sat
Total hardness (mg/ℓ)	13	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	13	0	0-0
Total alkalinity (mg/ℓ)	13	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	12	1.29	0.37-3.59
Area C			
Temperature (°C)	4	12.0	10.0-13.0
pH (pH units)	4	7.5	7.5-7.5
Conductivity (µmhos/cm)		n.d.	
Dissolved oxygen (mg/ℓ)	4	10.8	10.0-11.0
Total hardness (mg/ℓ)	4	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	4	0	0-0
Total alkalinity (mg/ℓ)	4	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	4	0.66	0.58-0.75

TABLE 3.2 (Continued)

	Sample Size	Mean	Range
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	13	0.912	0.16-7.9
Suspended nitrogen	13	0.070	0.018-0.506
Area B			
Suspended carbon	12	0.295	0.16-0.43
Suspended nitrogen	12	0.033	0.02-0.045
Area C			
Suspended carbon	4	0.218	0.19-0.25
Suspended nitrogen	4	0.022	0.018-0.026

S T U D Y A R E A KWQ3

TABLE 3.3 WATER QUALITY PARAMETERS AS REPORTED BY ENVIRONMENT CANADA, 1972-1976

Sampling Period: March-September, 1972-1976
Sampling Location: Kazan River above Kazan Falls (W.S.C. Stn. #06LC001)

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Temperature in field (^{o}C)	7	4.3	0.6-10.0
Temperature in laboratory (^{o}C)	12	22.9	19.7-26.0
pH (pH units)	12	7.0	6.6-7.4
Conductivity (μmhos/cm)	12	25.6	18.0-48.0
Turbidity (J.T.U.)	12	1.2	0.2-2.4
Apparent colour (relative units)	12	-	<5.0-20.0
Phenolphthalein alkalinity as $CaCO_3$ (mg/ℓ)	6	0.0	0-0
Alkalinity total as $CaCO_3$ (mg/ℓ)	12	9.3	5.4-15.0
Hardness as $CaCO_3$ (mg/ℓ)	12	11.8	8.1-20.1
Total dissolved solids (mg/ℓ)	12	13.3	9.0-24.0
Reactive silica (mg/ℓ)	12	-	<0.1-<1.0
NUTRIENTS (mg/ℓ)			
Total organic carbon	3	3.7	2.0-5.0
Total inorganic carbon	4	3.5	1.0-5.0
Total Kjeldahl nitrogen	6	-	<0.1-<0.5
Nitrogen as $NO_2 + NO_3$	11	-	<0.001-0.435
Total nitrogen	6	0.19	0.0-0.44
Ortho-phosphate	4	<0.002	<0.002-<0.002
Total phosphorus	5	-	<0.005-0.01
MAJOR IONS (mg/ℓ)			
Calcium	12	3.2	2.4-4.6
Magnesium	12	0.9	0.3-2.6
Potassium	12	0.57	0.3-1.4
Sodium	12	0.7	<0.1-2.5
Chloride	12	1.0	0.4-3.1
Fluoride	6	0.09	0.07-0.1
Sulphate	12	-	<1.0-1.8
Bicarbonate	6	12.0	8.0-18.0

TABLE 3.3 (Continued)

		Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)				
Aluminum	- dissolved	1	<0.06	-
	- extractable	7	-	<0.06-<0.1
Barium	- extractable	7	-	<0.0-<0.1
Cadmium	- dissolved	1	0.003	-
	- extractable	7	-	<0.001-0.007
Chromium	- extractable	5	-	<0.01-<0.015
Cobalt	- extractable	8	-	<0.001-0.002
Copper	- dissolved	5	-	<0.001-0.006
	- extractable	7	-	<0.001-0.014
Iron	- dissolved	5	-	0.01-<0.05
	- extractable	7	-	<0.05-0.18
Lead	- extractable	7	-	<0.005-0.026
Manganese	- dissolved	5	<0.01	<0.01-<0.01
	- extractable	7	-	<0.01-<0.1
Molybdenum	- dissolved	1	<0.05	-
	- extractable	5	-	<0.05-<0.1
Nickel	- dissolved	1	0.003	-
	- extractable	7	-	<0.005-0.005
Strontium	- extractable	1	<0.01	-
Zinc	- dissolved	5	0.007	0.002-0.021
	- extractable	7	-	<0.001-0.026

S T U D Y A R E A KWQ4

TABLE 4.1 WATER QUALITY PARAMETERS AS REPORTED BY CHYURLIA, 1976

Sampling Period: June, 1976
Sampling Location: Airplane Lake Basin (Area* B)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Temperature (^{o}C)	17	3.2	0-7.0
pH (pH units)	16	6.74	6.1-7.0
Conductivity (μmhos/cm)	17	34.1	25.0-44.0
Alkalinity total as HCO_3 (mg/ℓ)	17	2.03	1.34-2.81
Calcium hardness as $CaCO_3$ mg/ℓ)	15	1.07	1.0-1.50
Total hardness as $CaCO_3$ (mg/ℓ)	16	1.19	1.0-1.50
Dissolved oxygen (mg/ℓ)	19	8.63	7.5-12.0
NUTRIENTS (mg/ℓ)			
Nitrogen as NO_3	13	0.272	0.10-0.57

* For area location, refer to Figure 1

TABLE 4.2 WATER QUALITY PARAMETERS AS REPORTED BY SHILTS *et al.*, 1976

Sampling Period: August, 1975
Sampling Location: Pitz and Baker lakes area

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A (Pitz Lake area)			
Depth (m)	15	2.7	1.0-6.4
Temperature (^{o}C)	15	12.8	12.5-13.5
pH (pH units)	15	6.9	6.6-7.3
Conductivity (µmhos/cm)	15	20.0	15-40
Dissolved oxygen (mg/ℓ)	15	12.7	12.2-13.4
Redox potential (mv)	15	191.0	130-230
Area B (Baker Lake)			
Depth (m)	12	6.8	1.0-15.8
Temperature (^{o}C)	12	6.5	4.0-10.0
pH (pH units)	12	6.9	6.8-7.0
Conductivity (µmhos/cm)	12	792.0	14-1350
Dissolved oxygen (mg/ℓ)	12	14.5	14.0-15.0
Redox potential (mv)	12	228.0	160-250

* For area locations, refer to Figure 1

S T U D Y A R E A KWQ4

TABLE 4.3 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Pitz Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (°C)	21	16.5	8.9-21.2
pH (pH units)	22	7.5	7.5-8.0
Conductivity (μmhos/cm)	21	21.4	10.0-49.0
Dissolved oxygen (mg/ℓ)	22	9.6	8.0-11.0
Total hardness (mg/ℓ)	22	≤17.0	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)	22	0	0-0
Total alkalinity (mg/ℓ)	22	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	17	1.47	0.36-4.29
Area B			
Temperature (°C)	6	18.5	17.8-19.0
pH (pH units)	6	7.3	6.5-8.0
Conductivity (μmhos/cm)	6	23.8	18.0-29.0
Dissolved oxygen (mg/ℓ)	6	9.3	9.0-10.0
Total hardness (mg/ℓ)	6	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	6	0	0-0
Total alkalinity (mg/ℓ)	6	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	6	0.65	0.23-1.11
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	17	0.402	0.14-1.27
Suspended nitrogen	17	0.038	0.014-0.114
Area B			
Suspended carbon	6	0.243	0.10-0.47
Suspended nitrogen	6	0.019	0.012-0.029

* For area locations, refer to Figure 1

TABLE 4.3 (Continued)

Sampling Location: Lakes of Pitz Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area A			
Temperature (^{o}C)	39	13.4	7.0-20.7
pH (pH units)	35	7.5	6.5-8.0
Conductivity (μmhos/cm)	35	17.2	9.0-29.0
Dissolved oxygen (mg/ℓ)	27	10.5	9.0-13.0
Total hardness (mg/ℓ)	35	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	35	0	0-0
Total alkalinity (mg/ℓ)	35	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	29	0.93	0.39-2.16
Area B			
Temperature (^{o}C)	11	12.4	6.5-16.1
pH (pH units)	11	7.56	7.0-8.0
Conductivity (μmhos/cm)	11	18.6	10.0-24.0
Dissolved oxygen (mg/ℓ)	11	10.9	9.0-12.0
Total hardness (mg/ℓ)	11	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	11	0	0-0
Total alkalinity (mg/ℓ)	11	≤20.0	≤20.0-≤20.0
Total suspended solids (mg/ℓ)	11	0.46	0.18-0.74
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	29	0.33	0.21-0.67
Suspended nitrogen	29	0.034	0.022-0.061
Area B			
Suspended carbon	11	0.179	0.12-0.27
Suspended nitrogen	11	0.023	0.013-0.043

S T U D Y A R E A KWQ4

TABLE 4.4 WATER QUALITY PARAMETERS AS REPORTED BY ENVIRONMENT CANADA, 1972-1976

Sampling Period: June-July, 1972-1975
Sampling Location: Baker Lake, one mile from Baker Lake settlement (W.S.C. Stn. #06MA001)

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Temperature in field (^{o}C)	2	4.1	1.1-7.0
Temperature in laboratory (^{o}C)	2	23.9	22.3-25.5
pH (pH units)	2	7.1	7.1-7.1
Conductivity (µmhos/cm)	2	15.5	2.0-29.0
Turbidity (J.T.U.)	2	0.8	0.6-1.0
Apparent colour (relative units)	2	10.0	10-10
Phenolphthalein alkalinity as $CaCO_3$ (mg/ℓ)	1	0.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	2	8.6	7.4-9.8
Hardness as $CaCO_3$ (mg/ℓ)	2	47.0	10.6-83.4
Total dissolved solids (mg/ℓ)	2	416.0	11.0-821.0
Reactive silica (mg/ℓ)	2	0.2	0.1-0.3
NUTRIENTS (mg/ℓ)			
Total organic carbon	1	9.0	-
Total inorganic carbon	1	2.0	-
Total Kjeldahl nitrogen	1	<0.5	-
Nitrogen as $NO_2 + NO_3$	2	0.05	0.04-0.06
Total nitrogen	1	0.06	-
Ortho-phosphate	1	0.007	-
Total phosphorus		n.d.	
MAJOR IONS (mg/ℓ)			
Calcium	2	13.4	2.7-24.0
Magnesium	2	3.3	0.9-5.7
Potassium	2	5.6	0.4-10.7
Sodium	2	78.4	0.7-156.0
Chloride	2	275.9	1.8-550.0
Fluoride	1	<0.005	-
Sulphate	2	-	<1.0-68.0
Bicarbonate	1	9.0	-

TABLE 4.4 (Continued)

		Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)				
Aluminum	- dissolved		n.d.	
	- extractable	1	<0.1	-
Barium	- extractable	1	<0.1	-
Cadmium	- dissolved		n.d.	
	- extractable	1	<0.001	-
Chromium	- extractable	1	<0.01	-
Cobalt	- extractable	1	<0.001	-
Copper	- dissolved	1	0.002	-
	- extractable	1	<0.001	-
Iron	- dissolved	1	0.01	-
	- extractable	1	<0.05	-
Lead	- extractable	1	<0.005	-
Manganese	- dissolved	1	<0.01	-
	- extractable	1	<0.01	-
Molybdenum	- dissolved		n.d.	
	- extractable	1	<0.05	-
Nickel	- dissolved		n.d.	
	- extractable	1	<0.005	-
Strontium	- extractable		n.d.	
Zinc	- dissolved	1	0.006	-
	- extractable	1	<0.001	-

TABLE 4.4 (Continued)

Sampling Period: March-September, 1972-1976
Sampling Location: Thelon River above Thelon Bluffs* (W.S.C. Stn. #06JC001)

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Temperature in field (^{o}C)	9	7.7	1.0-17.8
Temperature in laboratory (^{o}C)	13	23.2	19.7-26.8
pH (pH units)	13	6.9	6.6-7.1
Conductivity (µmhos/cm)	13	40.7	26.0-70.0
Turbidity (J.T.U.)	13	2.0	0.3-6.4
Apparent colour (relative units)	13	-	<5-20
Phenolphthalein alkalinity as $CaCO_3$ mg/ℓ)	7	0.0	0-0
Alkalinity total as $CaCO_3$ (mg/ℓ)	13	10.9	6.8-16.5
Hardness as $CaCO_3$ (mg/ℓ)	13	17.0	11.1-26.0
Total dissolved solids (mg/ℓ)	12	19.6	13.0-38.0
Reactive silica (mg/ℓ)	12	0.5	0.1-0.7
NUTRIENTS (mg/ℓ)			
Total organic carbon	7	5.0	3.0-8.0
Total inorganic carbon	7	2.6	1.0-4.0
Total Kjeldahl nitrogen	7	-	<0.1-1.16
Nitrogen as NO_2 + NO_3	12	-	<0.001-0.2
Total nitrogen	7	0.35	0.02-1.17
Ortho-phosphate	6	-	<0.002-0.003
Total phosphorus	5	0.009	0.006-0.012
MAJOR IONS (mg/ℓ)			
Calcium	13	4.4	2.9-6.6
Magnesium	13	1.5	0.3-2.4
Potassium	13	0.47	0.2-0.9
Sodium	13	1.0	0.3-2.3
Chloride	13	4.7	1.7-12.0
Fluoride	7	-	<0.05-0.05
Sulphate	13	1.5	<1.0-3.0
Bicarbonate	7	13.3	9.0-20.0

* Although this is not within the area per se, the waters of the Thelon River drain into Baker Lake, thereby influencing water quality characteristics within the study area.

TABLE 4.4 (Continued)

		Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)				
Aluminum	- dissolved		n.d.	
	- extractable	7	-	<0.06-<0.1
Barium	- extractable	6	<0.1	<0.1-<0.1
Cadmium	- dissolved		n.d.	
	- extractable	7	-	<0.001-0.004
Chromium	- extractable	6	-	<0.01-<0.015
Cobalt	- extractable	7	-	<0.001-0.004
Copper	- dissolved	5	-	<0.001-0.002
	- extractable	7	-	<0.001-0.003
Iron	- dissolved	5	-	0.01-0.05
	- extractable	7	-	<0.05-0.1
Lead	- extractable	7	-	<0.001-0.29
Manganese	- dissolved	5	<0.01	<0.01-<0.01
	- extractable	7	-	<0.01-0.6
Molybdenum	- dissolved		n.d.	
	- extractable	6	-	<0.05-<0.1
Nickel	- dissolved		n.d.	
	- extractable	7	-	<0.005-0.007
Strontium	- extractable	1	<0.01	-
Zinc	- dissolved	5	-	<0.001-<0.01
	- extractable	8	-	<0.001-0.01

S T U D Y A R E A KWQ5

TABLE 5.1 WATER QUALITY PARAMETERS AS REPORTED BY WAY AND THORNE, 1977

Sampling Period: June-September, 1976
Sampling Location: Meadowbank River below Amer Lake at proposed pipeline crossing

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	1	1.0	-
pH (pH units)	1	7.8	-
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (^{o}C)	1	24.1	-
pH (pH units)	1	6.5	-
Conductivity (µmhos/cm)	1	17.3	-
Turbidity (J.T.U.)	1	0.7	-
Apparent colour (relative units)	1	5.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	4.1	-
Hardness as $CaCO_3$ (mg/ℓ)	1	4.8	-
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	1	4.0	-
Total inorganic carbon as C	1	3.0	-
Total Kjeldahl nitrogen as N	1	<0.1	-
Total nitrogen as N	1	<0.12	-
Total phosphorus as P	1	0.005	-
MAJOR IONS (mg/ℓ)			
Calcium	1	1.6	-
Magnesium	1	0.2	-
Potassium	1	0.4	-
Sodium	1	0.5	-
Chloride	1	1.0	-
Sulphate	1	1.5	-
Silica	1	0.7	-

TABLE 5.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Barium	1	<0.05	-
Cadmium	1	<0.002	-
Cobalt	1	<0.002	-
Copper	1	<0.001	-
Iron	1	0.04	-
Lead	1	0.005	-
Manganese	1	<0.01	-
Nickel		n.d.	
Zinc	1	<0.001	-

TABLE 5.1 (Continued)

Sampling Location: Hermann River above Back River at proposed pipeline crossing

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	1.0	1.0-1.0
pH (pH units)		n.d.	
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (^{o}C)	2	21.7	19.5-23.9
pH (pH units)	2	5.5	4.9-6.1
Conductivity (µmhos/cm)	2	16.4	8.8-24.0
Turbidity (J.T.U.)	2	5.35	0.8-9.9
Apparent colour (relative units)	2	5.0	5.0-5.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	0.7	-
Hardness as $CaCO_3$ (mg/ℓ)	2	3.7	1.0-6.4
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	2	2.5	1.0-4.0
Total inorganic carbon as C	2	-	<1.0-2.0
Total Kjeldahl nitrogen as N	2	-	<0.1-0.2
Total nitrogen as N	2	-	<0.11-0.21
Total phosphorus as P	2	0.005	0.003-0.006
MAJOR IONS (mg/ℓ)			
Calcium	2	1.15	0.4-1.9
Magnesium	2	-	<0.1-0.4
Potassium	2	0.35	0.3-0.4
Sodium	2	0.5	0.4-0.6
Chloride	2	0.65	0.4-0.9
Sulphate	2	3.35	1.5-5.2
Silica	2	1.7	1.0-2.4

TABLE 5.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Barium	2	<0.05	-
Cadmium	2	<0.001	-
Cobalt	2	<0.002	-
Copper	2	<0.001	-
Iron	2	-	<0.04-0.04
Lead	2	<0.004	-
Manganese	2	-	<0.01-0.016
Nickel	2	-	<0.002-0.003
Zinc	2	0.002	0.001-0.002

S T U D Y A R E A KWQ5

TABLE 5.2 WATER QUALITY PARAMETERS AS REPORTED BY ENVIRONMENT CANADA, 1972-1976

Sampling Period: March-September, 1972-1976
Sampling Location: Back River between Meadowbank and Hermann rivers (W.S.C. Stn. #10RC001)

	Sample Size	Mean	Range
PHYSICAL PARAMETERS			
Temperature in field (^{o}C)	5	3.4	0.6-6.7
Temperature in laboratory (^{o}C)	12	22.8	19.3-26.8
pH (pH units)	11	6.7	6.3-7.3
Conductivity (μmhos/cm)	12	20.0	12.0-43.0
Turbidity (J.T.U.)	12	2.4	0.6-9.4
Apparent colour (relative units)	12	-	<5.0-20.0
Phenolphthalein alkalinity as $CaCO_3$ (mg/ℓ)	5	0.0	0-0
Alkalinity total as $CaCO_3$ (mg/ℓ)	12	5.5	3.3-9.9
Hardness as $CaCO_3$ (mg/ℓ)	12	8.6	5.6-16.2
Total dissolved solids (mg/ℓ)	11	10.9	7.0-22.0
Reactive silica (mg/ℓ)	12	-	<0.1-1.1
NUTRIENTS (mg/ℓ)			
Total organic carbon	5	4.2	3.0-6.0
Total inorganic carbon	5	2.4	1.0-5.0
Total Kjeldahl nitrogen	8	-	<0.1-1.0
Nitrogen as $NO_2 + NO_3$	11	-	<0.01-0.18
Total nitrogen	8	0.25	0.0-1.18
Ortho-phosphate	3	<0.002	<0.002-<0.002
Total phosphorus	5	0.007	0.005-0.01
MAJOR IONS (mg/ℓ)			
Calcium	11	-	<0.5-3.5
Magnesium	11	1.0	0.1-2.2
Potassium	12	0.5	0.2-1.2
Sodium	12	0.8	0.4-2.2
Chloride	12	1.1	0.5-3.3
Fluoride	5	<0.5	<0.5-<0.5
Sulphate	12	-	1.0-2.6
Bicarbonate	5	7.6	4.0-12.0

TABLE 5.2 (Continued)

		Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)				
Aluminum	- dissolved	1	0.15	-
	- extractable	6	-	<0.1-0.15
Barium	- extractable	6	<0.1	<0.1-<0.1
Cadmium	- dissolved	1	0.011	-
	- extractable	6	-	<0.001-0.006
Chromium	- extractable	4	<0.01	<0.01-<0.01
Cobalt	- extractable	7	-	<0.001-0.002
Copper	- dissolved	4	-	<0.001-0.012
	- extractable	6	0.01	0.002-0.043
Iron	- dissolved	4	-	0.01-0.31
	- extractable	6	0.08	0.03-0.24
Lead	- extractable	6	-	<0.004-0.03
Manganese	- dissolved	4	<0.01	<0.01-<0.01
	- extractable	6	-	<0.01-0.066
Molybdenum	- dissolved	1	<0.05	-
	- extractable	4	<0.05	<0.05-<0.05
Nickel	- dissolved	1	0.002	-
	- extractable	6	-	<0.002-<0.005
Strontium	- extractable		n.d.	
Zinc	- dissolved	4	0.009	0.004-0.021
	- extractable	6	0.041	0.005-0.065

S T U D Y A R E A KWQ6

TABLE 6.1 WATER QUALITY PARAMETERS AS REPORTED BY WAY AND THORNE, 1977

Sampling Period: June, 1976
Sampling Location: Hayes River, 55 miles above Chantrey Inlet at proposed pipeline crossing

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	1	3.0	-
pH (pH units)	1	7.4	-
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (^{o}C)	1	24.2	-
pH (pH units)	1	6.2	-
Conductivity (µmhos/cm)	1	15.6	-
Turbidity (J.T.U.)	1	56.0	-
Apparent colour (relative units)	1	25.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	1.3	-
Hardness as $CaCO_3$ (mg/ℓ)	1	2.4	-
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	1	5	-
Total inorganic carbon as C	1	2	-
Total Kjeldahl nitrogen as N	1	<0.1	-
Total nitrogen as N	1	<0.12	-
Total phosphorus as P	1	0.079	-
MAJOR IONS (mg/ℓ)			
Calcium	1	0.8	-
Magnesium	1	0.1	-
Potassium	1	0.6	-
Sodium	1	1.7	-
Chloride	1	3.4	-
Sulphate	1	1.7	-
Silica	1	1.4	-

S T U D Y A R E A KWQ7

TABLE 7.1 WATER QUALITY PARAMETERS AS REPORTED BY WAY AND THORNE, 1977

Sampling Period: June-September, 1976
Sampling Location: Murchison River below Murchison Lake at proposed pipeline crossing

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	1.25	0.5-2.0
pH (pH units)	2	7.35	7.3-7.4
Conductivity (µmhos/cm)	1	<50.0	-
Laboratory Data			
Temperature (^{o}C)	2	21.8	19.5-24.0
pH (pH units)	2	6.25	6.1-6.4
Conductivity (µmhos/cm)	2	28.4	26.0-30.8
Turbidity (J.T.U.)	2	47.5	22.0-73.0
Apparent colour (relative units)	2	67.5	35.0-100.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	2	3.35	2.2-4.5
Hardness as $CaCO_3$ (mg/ℓ)	2	6.3	4.1-8.5
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	2	3.5	3.0-4.0
Total inorganic carbon as C	2	2.0	2.0-2.0
Total Kjeldahl nitrogen as N	2	-	<0.1-0.2
Total nitrogen as N	2	-	<0.18-0.22
Total phosphorus as P	2	0.036	0.02-0.052
MAJOR IONS (mg/ℓ)			
Calcium	2	1.35	0.8-1.9
Magnesium	2	0.7	0.5-0.9
Potassium	2	0.75	0.7-0.8
Sodium	2	3.2	2.4-4.0
Chloride	2	5.5	3.4-7.6
Sulphate	2	1.75	1.7-1.8
Silica	2	1.0	1.0-1.0

TABLE 7.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Barium	2	<0.05	-
Cadmium	2	-	<0.001-0.001
Cobalt	2	<0.002	-
Copper	2	0.003	0.001-0.004
Iron	2	2.86	0.42-5.3
Lead	2	-	<0.004-0.006
Manganese	2	-	<0.01-0.072
Nickel	2	-	<0.002-0.007
Zinc	2	0.007	0.003-0.011

S T U D Y A R E A KWQ7

TABLE 7.2 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Murchison Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (^{o}C)	3	0.67	0.0-1.0
pH (pH units)	4	7.4	7.0-7.5
Conductivity (µmhos/cm)		n.d.	
Dissolved oxygen (mg/ℓ)	4	Sat	Sat -Sat
Total hardness (mg/ℓ)	4	17.0	17.0-17.0
Phenolphthalein alkalinity (mg/ℓ)	4	0	0-0
Total alkalinity (mg/ℓ)	4	15.5	7.0-41.0
Total suspended solids (mg/ℓ)	4	8.23	0.75-19.84
Area B			
Temperature (^{o}C)	3	4.0	4.0-4.0
pH (pH units)	3	7.25	6.5-8.0
Conductivity (µmhos/cm)	3	145.3	71.0-193.0
Dissolved oxygen (mg/ℓ)	3	Sat	Sat -Sat
Total hardness (mg/ℓ)	3	34.0	34.0-34.0
Phenolphthalein alkalinity (mg/ℓ)	3	0	0-0
Total alkalinity (mg/ℓ)	3	23.3	14.0-36.0
Total suspended solids (mg/ℓ)	3	42.85	10.76-103.8
Area C			
Temperature (^{o}C)	2	5.5	5.0-6.0
pH (pH units)	2	6.88	6.5-7.0
Conductivity (µmhos/cm)	2	21.5	20.0-23.0
Dissolved oxygen (mg/ℓ)	2	Sat	Sat -Sat
Total hardness (mg/ℓ)	2	$\leq$17.0	$\leq$17.0-$\leq$17.0
Phenolphthalein alkalinity (mg/ℓ)	2	0	0-0
Total alkalinity (mg/ℓ)	2	10.5	7.0-14.0
Total suspended solids (mg/ℓ)	2	8.58	1.64-15.52

* For area locations, refer to Figure 1

TABLE 7.2 (Continued)

NUTRIENTS (mg/ℓ)	Sample Size	Mean	Range
Area A			
Suspended carbon	4	0.245	0.13-0.49
Suspended nitrogen	4	0.024	0.015-0.040
Area B			
Suspended carbon	3	0.540	0.24-1.08
Suspended nitrogen	3	0.034	0.026-0.042
Area C			
Suspended carbon	2	0.322	0.143-0.50
Suspended nitrogen	2	0.034	0.017-0.051

TABLE 7.2 (Continued)

Sampling Location: Lakes of Murchison Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area A			
Temperature (^{o}C)	29	2.4	0.0-4.0
pH (pH units)	32	6.79	6.0-7.5
Conductivity (µmhos/cm)	2	20.5	18.0-23.0
Dissolved oxygen (mg/ℓ)	32	Sat	15.0-Sat
Total hardness (mg/ℓ)	32	≤17.0	≤17.0-34.0
Phenolphthalein alkalinity (mg/ℓ)	32	0.0	0-0
Total alkalinity (mg/ℓ)	32	11.0	7.0-27.0
Total suspended solids (mg/ℓ)	33	24.3	0.44-332.1
Area B			
Temperature (^{o}C)	17	2.9	1.5-5.0
pH (pH units)	17	6.99	6.5-7.5
Conductivity (µmhos/cm)	17	20.9	8.0-65.0
Dissolved oxygen (mg/ℓ)	17	Sat	Sat -Sat
Total hardness (mg/ℓ)	17	≤17.0	≤17.0-≤17.0
Phenolphthalein alkalinity (mg/ℓ)	17	0	0-0
Total alkalinity (mg/ℓ)	17	8.6	7.0-27.0
Total suspended solids (mg/ℓ)	17	2.44	0.35-15.52
Area C			
Temperature (^{o}C)	9	3.22	2.0-4.0
pH (pH units)	9	7.44	7.0-8.0
Conductivity (µmhos/cm)	9	271.9	7.0-1359.0
Dissolved oxygen (mg/ℓ)	9	Sat	Sat -Sat
Total hardness (mg/ℓ)	9	-	≤17.0-136.0
Phenolphthalein alkalinity (mg/ℓ)	9	0	0-0
Total alkalinity (mg/ℓ)	9	22.1	14.0-48.0
Total suspended solids (mg/ℓ)	9	31.16	1.25-127.55

TABLE 7.2 (Continued)

NUTRIENTS (mg/ℓ)	Sample Size	Mean	Range
Area A			
Suspended carbon	33	0.669	0.16-6.39
Suspended nitrogen	33	0.071	0.018-0.057
Area B			
Suspended carbon	17	0.237	0.10-0.38
Suspended nitrogen	17	0.025	0.010-0.039
Area C			
Suspended carbon	9	0.631	0.17-1.98
Suspended nitrogen	9	0.067	0.018-0.206

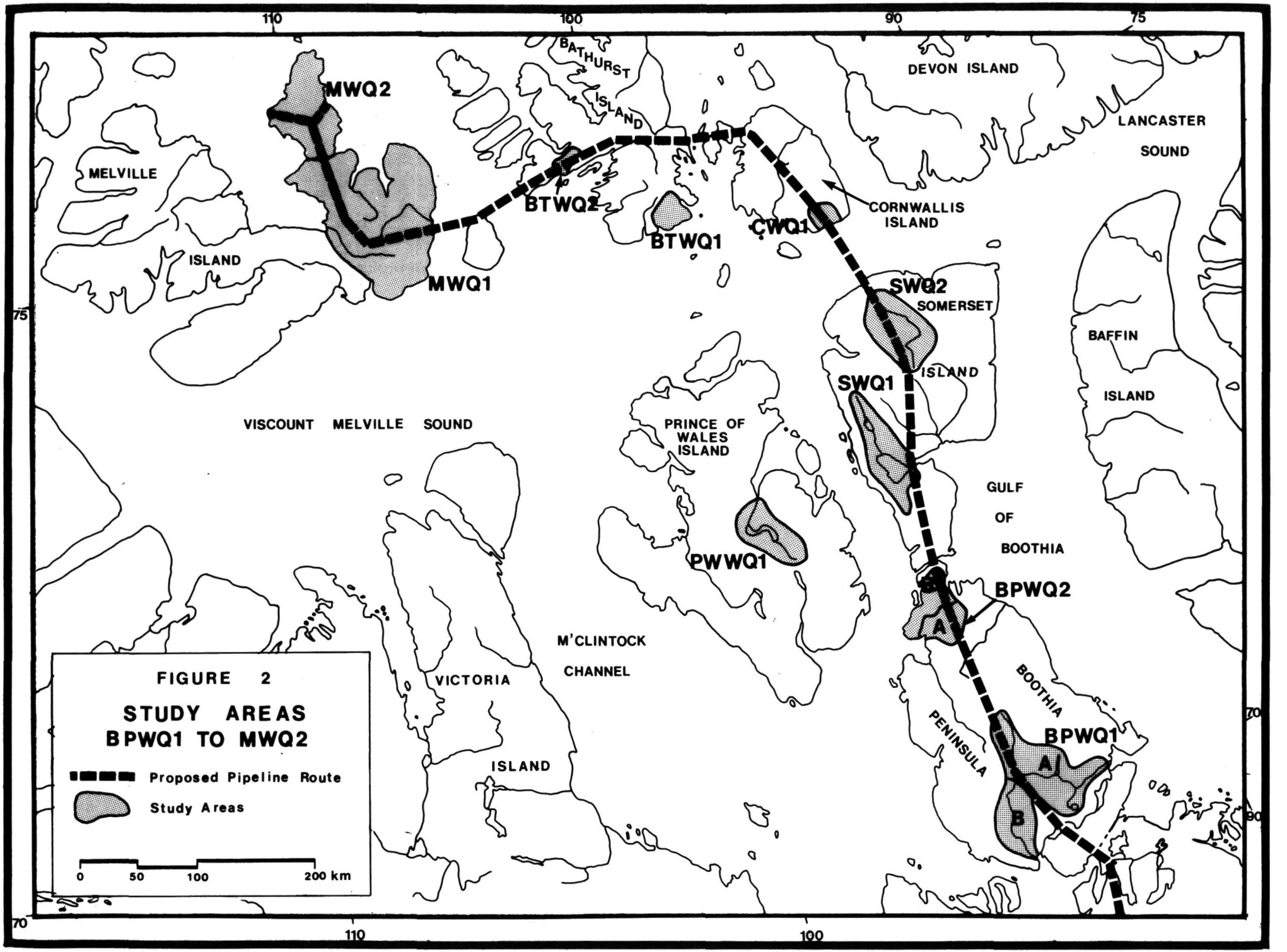
TABLE 8.1 PHYSICAL WATER QUALITY PARAMETERS AS REPORTED BY HATFIELD CONSULTING LIMITED, 1977

Sampling Period: April-September, 1976
Sampling Location: Along proposed pipeline route in each study area

	Temperature (°C)	Turbidity (F.T.U.)	Dissolved Oxygen (mg/ℓ)	Conductivity (μmhos/cm)
Study Area KWQ1				
Sample Size	4	4	2	1
Mean	7.5	<5.0	11.5	41.0
Range	1.0-16.0	<5.0-5	10.0-13.0	-
Study Area KWQ2				
Sample Size	5	3		
Mean	7.9	-	n.d.	n.d.
Range	0.5-14.5	<5.0-10.0		
Study Area KWQ3				
Sample Size	4	2	1	
Mean	5.5	<5.0	13.0	n.d.
Range	0.5-13.5	<5.0-<5.0	-	
Study Area KWQ4				
Sample Size	9	5	1	7
Mean	5.8	-	6	28.9
Range	0.5-16.0	<5.0-12.0	-	15.0-60.0
Study Area KWQ5				
Sample Size	13	11	2	6
Mean	6.4	<5.0	11.0	20.7
Range	0-17.0	<5.0-10.0	9.0-13.0	14.0-28.0

TABLE 8.1 (Continued)

	Temperature (°C)	Turbidity (F.T.U.)	Dissolved Oxygen (mg/ℓ)	Conductivity (μmhos/cm)
Study Area KWQ6				
Sample Size	4	4		2
Mean	6.0	-	n.d.	16.5
Range	5.0-7.0	<5.0-20.0		15.0-18.0
Study Area KWQ7				
Sample Size	8	8		2
Mean	6.3	-	n.d.	38.0
Range	4.0-8.0	<5.0-195		27.0-49.0


110
100
90
75
BATHURST ISLAND
DEVON ISLAND
LANCASTER SOUND
MWQ2
MELVILLE
ISLAND
MWQ1
BTWQ2
BTWQ1
CWQ1
CORNWALLIS ISLAND
SWQ2
SOMERSET
ISLAND
BAFFIN
ISLAND
SWQ1
VISCOUNT MELVILLE SOUND
PRINCE OF WALES ISLAND
GULF OF BOOTHIA
PWWQ1
BPWQ2
A
M'CLINTOCK CHANNEL
VICTORIA
ISLAND
BOOTHIA
PENINSULA
BPWQ1
A
B
75
70
110
100
90
70
FIGURE 2
STUDY AREAS
BPWQ1 TO MWQ2
Proposed Pipeline Route
Study Areas
0
50
100
200 km

S T U D Y A R E A BPWQ1

TABLE 9.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Sanagak Lake (Area* A)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	3	24.0	0-49.0
Temperature (^{o}C)	3	1.0	0.5-1.5
pH (pH units)	3	7.7	7.6-7.8
Conductivity (µmhos/cm)	3	94.3	87.0-106.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	3	13.5	12.1-15.4
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen		n.d.	
Ortho-phosphate	3	-	Tr-0.004
Total dissolved phosphorus		n.d.	
MAJOR IONS (mg/ℓ)			
Calcium	3	27.3	25.0-29.0
Magnesium	3	6.0	4.4-7.8
Potassium	3	0.83	0.7-1.0
Sodium	3	1.14	1.05-1.20
Chloride	3	0.47	0.4-0.6
Sulphate	3	-	Tr-0.5
Silica (as SiO_2)	3	0.385	0.346-0.430
Carbonate (as $CaCO_3$)	3	Tr	-
Bicarbonate (as $CaCO_3$)	2	102.5	95.0-110.0
HEAVY METALS (mg/ℓ)			
Iron	3	Tr	-

* For area location, refer to Figure 2

TABLE 9.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	2	<0.10	<0.10-<0.10
Arsenic	1	<0.0005	-
Barium	2	<0.1	<0.1-<0.1
Cadmium	2	<0.001	<0.001-<0.001
Chromium	2	<0.01	<0.01-<0.01
Cobalt	2	<0.001	<0.001-<0.001
Copper	2	<0.001	<0.001-<0.001
Iron	2	-	<0.05-0.05
Lead	2	<0.005	<0.005-<0.005
Manganese	2	<0.01	<0.01-<0.01
Molybdenum	2	<0.05	<0.05-<0.05
Nickel	2	<0.005	<0.005-<0.005
Selenium	1	<0.0005	-
Zinc	2	0.033	0.010-0.055

S T U D Y A R E A BPWQ1

TABLE 9.3 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Sanagak Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (^{o}C)	8	5.14	0.2-8.9
pH (pH units)	8	7.75-8.1	7.5-8.5
Conductivity (µmhos/cm)	8	123.4	54.0-196.0
Dissolved oxygen (mg/ℓ)	5	-	13.0-Sat
Total hardness (mg/ℓ)	8	62.3-88.0	34.0-137.0
Phenolphthalein alkalinity (mg/ℓ)	8	0	0-0
Total alkalinity (mg/ℓ)	8	57.9-67.6	≤20.0-131.0
Total suspended solids (mg/ℓ)	8	0.88	0.38-3.01
Area B			
Temperature (^{o}C)	8	9.14	7.5-10.2
pH (pH units)	8	8.1-8.25	8.0-8.5
Conductivity (µmhos/cm)	8	171.3	75.0-315.0
Dissolved oxygen (mg/ℓ)	8	-	12.0-Sat
Total hardness (mg/ℓ)	8	107.3-124.3	86.0-154.0
Phenolphthalein alkalinity (mg/ℓ)	8	0	0-0
Total alkalinity (mg/ℓ)	8	72.5-92.5	40.0-120.0
Total suspended solids (mg/ℓ)	8	0.66	0.38-1.22
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	8	0.158	0.070-0.220
Suspended nitrogen	8	0.015	0.007-0.022
Area B			
Suspended carbon	8	0.166	0.10-0.29
Suspended nitrogen	8	0.016	0.009-0.031

* For area location, refer to Figure 2

TABLE 9.3 (Continued)

Sampling Location: Lakes of Sanagak Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area A			
Temperature (^{o}C)	10	4.4	1.0-6.6
pH (pH units)	9	7.7-8.1	7.0-8.5
Conductivity (µmhos/cm)	7	165.4	85.0-265.0
Dissolved oxygen (mg/ℓ)	9	Sat	14.0-Sat
Total hardness (mg/ℓ)	9	74.2-91.7	51.0-154.0
Phenolphthalein alkalinity (mg/ℓ)	9	0	0-0
Total alkalinity (mg/ℓ)	9	60.2-73.5	20.0-122.0
Total suspended solids (mg/ℓ)	9	4.79	0.35-36.58
Area B			
Temperature (^{o}C)	7	7.1	6.2-8.1
pH (pH units)	7	8.1-8.3	8.0-8.5
Conductivity (µmhos/cm)	7	156.9	93.0-257.0
Dissolved oxygen (mg/ℓ)	7	13.6	13.0-14.0
Total hardness (mg/ℓ)	7	68.1-85.9	51.0-103.0
Phenolphthalein alkalinity (mg/ℓ)	7	0	0-0
Total alkalinity (mg/ℓ)	7	65.7-82.9	40.0-140.0
Total suspended solids (mg/ℓ)	7	1.62	0.54-3.86
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	10	0.39	0.15-1.88
Suspended nitrogen	10	0.044	0.019-0.19
Area B			
Suspended carbon	7	0.44	0.19-1.61
Suspended nitrogen	7	0.038	0.021-0.121

S T U D Y A R E A BPWQ2

TABLE 10.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Amituryouak Lake, Area* A

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	3	43.5	0-87.0
Temperature (^{o}C)	3	1.17	0.5-2.0
pH (pH units)	3	7.8	7.7-7.9
Conductivity (µmhos/cm)	3	216.7	208.0-222.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	3	13.17	12.1-14.5
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	2	0.153	0.152-0.153
Ortho-phosphate	3	-	Tr-0.016
Total dissolved phosphorus	2	0.006	0.004-0.008
MAJOR IONS (mg/ℓ)			
Calcium		n.d.	
Magnesium		n.d.	
Potassium		n.d.	
Sodium		n.d.	
Chloride		n.d.	
Sulphate		n.d.	
Silica (as SiO_2)	3	0.264	0.227-0.334
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)		n.d.	
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

* For area location, refer to Figure 2

S T U D Y A R E A BPWQ2

TABLE 10.2 WATER QUALITY PARAMETERS AS REPORTED BY LAWRENCE *et al.*, 1977

Sampling Period: June-September, 1976
Sampling Location: Streams of Amituryouak Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area* A			
Temperature (^{o}C)	4	2.63	1.5-3.5
pH (pH units)	4	7.88-8.25	7.5-8.5
Conductivity (μmhos/cm)	3	235.0	193.0-256.0
Dissolved oxygen (mg/ℓ)	4	Sat	Sat -Sat
Total hardness (mg/ℓ)	4	86.0-104.0	69.0-137.0
Phenolphthalein alkalinity (mg/ℓ)	4	0	0-0
Total alkalinity (mg/ℓ)	4	66.5	48.0-75.0
Total suspended solids (mg/ℓ)	4	1.21	0.98-1.46
Area B			
Temperature (^{o}C)	2	1.0	1.0-1.0
pH (pH units)	2	7.5-8.0	7.5-8.0
Conductivity (μmhos/cm)	2	169.0	169.0-169.0
Dissolved oxygen (mg/ℓ)	2	-	16.0-Sat
Total hardness (mg/ℓ)	2	94.5	86.0-103.0
Phenolphthalein alkalinity (mg/ℓ)	2	0	0-0
Total alkalinity (mg/ℓ)	2	94.0	75.0-113.0
Total suspended solids (mg/ℓ)	2	1.06	0.79-1.33
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	4	0.18	0.13-0.21
Suspended nitrogen	4	0.016	0.008-0.020
Area B			
Suspended carbon	2	0.235	0.20-0.27
Suspended nitrogen	2	0.014	0.013-0.015

* For area location, refer to Figure 2

TABLE 10.2 (Continued)

Sampling Location: Lakes of Amituryouak Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Area A			
Temperature (°C)	6	2.22	1.0-4.0
pH (pH units)	6	7.75-8.0	7.5-8.5
Conductivity (µmhos/cm)	4	164.5	98.0-250.0
Dissolved oxygen (mg/ℓ)	5	Sat	14.0-Sat
Total hardness (mg/ℓ)	5	58.2-75.6	34.0-103.0
Phenolphthalein alkalinity (mg/ℓ)	6	0	0-0
Total alkalinity (mg/ℓ)	6	62.2	54.0-102.0
Total suspended solids (mg/ℓ)	6	2.65	0.87-9.80
Area B			
Temperature (°C)		n.d.	
pH (pH units)	2	-	7.5-8.0
Conductivity (µmhos/cm)	1	282.0	-
Dissolved oxygen (mg/ℓ)	2	Sat	Sat -Sat
Total hardness (mg/ℓ)	1	51.0-69.0	-
Phenolphthalein alkalinity (mg/ℓ)	2	0	0-0
Total alkalinity (mg/ℓ)	2	74.5	54.0-95.0
Total suspended solids (mg/ℓ)	2	10.54	2.86-18.21
NUTRIENTS (mg/ℓ)			
Area A			
Suspended carbon	6	0.263	0.150-0.360
Suspended nitrogen	6	0.034	0.028-0.040
Area B			
Suspended carbon	2	0.535	0.30-0.77
Suspended nitrogen	2	0.053	0.035-0.071

S T U D Y A R E A SWQ1

TABLE 11.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Stanwell-Fletcher Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	12	51.7	10.4-103.7
Temperature (^{o}C)	?	-	0-1.6
pH (pH units)		n.d.	
Conductivity (µmhos/cm)	12	86.04	83.4-93.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)		n.d.	
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen		n.d.	
Ortho-phosphate		n.d.	
Total dissolved phosphorus		n.d.	
MAJOR IONS (mg/ℓ)			
Calcium	3 (composites)	7.33	7.1-7.5
Magnesium	3 (composites)	3.0	2.9-3.2
Potassium		n.d.	
Sodium	12	4.75	4.6-5.1
Chloride	3 (composites)	7.5	7.4-7.6
Sulphate		n.d.	
Silica (as SiO_2)		n.d.	
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)		n.d.	
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

TABLE 11.1 (Continued)

Sampling Location: Union River at proposed pipeline crossing

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	1	3.0	-
pH (pH units)	1	8.0	-
Conductivity (µmhos/cm)		n.d.	
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)		n.d.	
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	1	0.051	-
Ortho-phosphate		n.d.	
Total dissolved phosphorus	1	Tr	-
MAJOR IONS (mg/ℓ)			
Calcium	1	6.0	-
Magnesium	1	2.8	-
Potassium	1	0.4	-
Sodium	1	2.0	-
Chloride	1	6.2	-
Sulphate	1	9.0	-
Silica (as SiO_2)	1	0.01	-
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	1	23	-
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

TABLE 11.1 (Continued)

Sampling Location: Lake ST 100 L

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	3	6.3	0-12.5
Temperature (^{o}C)	3	0.58	0.25-1.0
pH (pH units)	3	7.5	7.2-7.7
Conductivity (μmhos/cm)	3	63.7	45.0-95.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	3	10.8	3.4-15.0
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	3	0.152	0.097-0.244
Ortho-phosphate	3	Tr	-
Total dissolved phosphorus	3	0.021	0.010-0.048
MAJOR IONS (mg/ℓ)			
Calcium	3	23	18-31
Magnesium	3	3.4	1.2-4.9
Potassium	3	0.53	0.3-1.0
Sodium	3	0.43	0.21-0.85
Chloride	3	1.73	0.4-4.0
Sulphate	3	0.53	0.3-0.8
Silica (as SiO_2)	3	0.74	0.473-1.279
Carbonate (as $CaCO_3$)	3	Tr	-
Bicarbonate (as $CaCO_3$)	3	31.3	22.5-46.0
HEAVY METALS (mg/ℓ)			
Iron	3	Tr	-

S T U D Y A R E A SWQ1

TABLE 11.2 WATER QUALITY PARAMETERS AS REPORTED BY GUMMER AND DUNN, 1976

Sampling Period: June-August, 1975
Sampling Location: Union River at outlet of Stanwell - Fletcher Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	3	5.17	1.0-12.5
pH (pH units)	2	8.2	7.4-9.0
Conductivity (µmhos/cm)		n.d.	
Laboratory Data			
Temperature (^{o}C)	3	25.83	25.0-26.5
pH (pH units)	3	7.47	7.4-7.6
Conductivity (µmhos/cm)	3	74.7	72.0-76.7
Turbidity (J.T.U.)	3	2.4	1.5-3.0
Colour (relative units)	3	6.67	5.0-10.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	3	22.5	22.3-22.8
Hardness as $CaCO_3$ (mg/ℓ)	3	24.8	21.1-28.0
Reactive silica (mg/ℓ)	3	0.53	0.50-0.55
Chemical oxygen demand (mg/ℓ)	3	<10.0	<10.0-<10.0
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	3	<0.5	<0.5-<0.5
Dissolved nitrogen (NO_2 + NO_3) as N	3	0.05	0.037-0.064
Total phosphorus as P	3	<0.005	<0.005-<0.005
MAJOR IONS (mg/ℓ)			
Calcium	3	7.57	6.9-8.1
Potassium	3	0.397	0.38-0.41
Sodium	3	4.017	3.75-4.20
Chloride	3	7.2	7.10-7.35
Fluoride	2	<0.05	<0.05-<0.05
Sulphate	3	-	<1.0-2.0

TABLE 11.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	3	<0.1	<0.1-<0.1
Arsenic	3	<0.0005	<0.0005-<0.0005
Barium	3	<0.1	<0.1-<0.1
Cadmium	3	<0.001	<0.001-<0.001
Chromium	3	<0.01	<0.01-<0.01
Cobalt	3	<0.001	<0.001-<0.001
Copper	3	<0.001	<0.001-<0.001
Iron	3	<0.05	<0.05-<0.05
Lead	3	<0.005	<0.005-<0.005
Manganese	3	<0.01	<0.01-<0.01
Molybdenum	3	<0.05	<0.05-<0.05
Nickel	3	<0.005	<0.005-<0.005
Selenium	3	<0.0005	<0.0005-<0.0005
Zinc	3	<0.001	<0.001-<0.001

TABLE 11.2 (Continued)

Sampling Location: Gorge inflow to Stanwell - Fletcher Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	1	7.4	-
pH (pH units)	1	7.5	-
Conductivity (µmhos/cm)	1	50.0	-
Laboratory Data			
Temperature (^{o}C)	1	19.8	-
pH (pH units)	1	7.6	-
Conductivity (µmhos/cm)	1	50.0	-
Turbidity (J.T.U.)	1	1.1	-
Colour (relative units)	1	5.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	20.8	-
Hardness as $CaCO_3$ (mg/ℓ)	1	24.8	-
Reactive silica (mg/ℓ)	1	0.50	-
Chemical oxygen demand (mg/ℓ)	1	<10.0	-
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N		n.d.	
Dissolved nitrogen (NO_2 + NO_3) as N	1	0.011	-
Total phosphorus as P	1	<0.055	-
MAJOR IONS (mg/ℓ)			
Calcium	1	7.7	-
Potassium	1	0.2	-
Sodium	1	1.0	-
Chloride	1	1.92	-
Fluoride	1	<0.05	-
Sulphate	1	1.2	-

TABLE 11.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	1	<0.1	-
Arsenic	1	<0.0005	-
Barium	1	<0.1	-
Cadmium	1	<0.001	-
Chromium	1	<0.01	-
Cobalt	1	<0.001	-
Copper	1	<0.001	-
Iron	1	<0.05	-
Lead	1	<0.005	-
Manganese	1	<0.01	-
Molybdenum	1	<0.05	-
Nickel	1	<0.005	-
Selenium	1	<0.0005	-
Zinc	1	0.008	-

TABLE 11.2 (Continued)

Sampling Location: Stanwell - Fletcher River

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	1	7.2	-
pH (pH units)	1	7.0	-
Conductivity (µmhos/cm)	1	60.0	-
Laboratory Data			
Temperature (^{o}C)	1	24.5	-
pH (pH units)	1	7.0	-
Conductivity (µmhos/cm)	1	1.7	-
Turbidity (J.T.U.)	1	1.5	-
Colour (relative units)	1	10.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	3.7	-
Hardness as $CaCO_3$ (mg/ℓ)	1	7.9	-
Reactive silica (mg/ℓ)	1	0.75	-
Chemical oxygen demand (mg/ℓ)	1	<10.0	-
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N		n.d.	
Dissolved nitrogen (NO_2 + NO_3) as N	1	0.025	-
Total phosphorus as P	1	<0.005	-
MAJOR IONS (mg/ℓ)			
Calcium	1	2.8	-
Potassium	1	0.13	-
Sodium	1	0.7	-
Chloride	1	1.25	-
Fluoride	1	0.05	-
Sulphate	1	2.1	-

TABLE 11.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	1	<0.1	-
Arsenic	1	<0.0005	-
Barium	1	<0.1	-
Cadmium	1	<0.001	-
Chromium	1	<0.01	-
Cobalt	1	<0.001	-
Copper	1	<0.001	-
Iron	1	<0.05	-
Lead	1	<0.005	-
Manganese	1	<0.01	-
Molybdenum	1	<0.05	-
Nickel	1	<0.005	-
Selenium	1	<0.0005	-
Zinc	1	0.01	-

S T U D Y A R E A SWQ2

TABLE 12.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Cunningham River at proposed pipeline crossing

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	1	10.0	-
pH (pH units)	1	7.9	-
Conductivity (μmhos/cm)		n.d.	
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	1	10.0	-
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	1	0.096	-
Ortho-phosphate		n.d.	
Total dissolved phosphorus	1	0	-
MAJOR IONS (mg/ℓ)			
Calcium	1	26.3	-
Magnesium	1	2.4	-
Potassium	1	0.2	-
Sodium	1	1.0	-
Chloride	1	2.5	-
Sulphate	1	4.0	-
Silica (as SiO_2)	1	0.14	-
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	1	74	-
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

S T U D Y A R E A SWQ2

TABLE 12.2 WATER QUALITY PARAMETERS AS REPORTED BY GUMMER AND DUNN, 1976

Sampling Period: June-August, 1975
Sampling Location: Cunningham River

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	3	3.57	1.5-5.3
pH (pH units)	3	7.8	7.5-8.3
Conductivity (µmhos/cm)	3	146.7	120.0-160.0
Laboratory Data			
Temperature (^{o}C)	3	21.7	19.8-25.0
pH (pH units)	3	8.07	8.0-8.1
Conductivity (µmhos/cm)	3	150.7	110.0-172.0
Turbidity (J.T.U.)	3	1.77	0.5-3.8
Colour (relative units)	3	-	<5.0-5.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	3	73.3	56.8-81.6
Hardness as $CaCO_3$ (mg/ℓ)	3	78.2	56.3-89.5
Reactive silica (mg/ℓ)	3	0.43	0.35-0.50
Chemical oxygen demand (mg/ℓ)	3	<10.0	<10.0-<10.0
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	1	<0.5	-
Dissolved nitrogen (NO_2 + NO_3) as N	2	0.228	0.020-0.435
Total phosphorus as P	2	<0.005	<0.005-<0.005
MAJOR IONS (mg/ℓ)			
Calcium	3	22.43	18.6-28.8
Potassium	3	0.21	0.13-0.35
Sodium	3	0.73	0.5-1.0
Chloride	3	1.47	0.8-1.98
Fluoride	3	<0.05	<0.05-<0.05
Sulphate	3	1.47	1.0-1.9

TABLE 12.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	3	<0.1	<0.1-<0.1
Arsenic	3	<0.0005	<0.0005-<0.0005
Barium	3	<0.1	<0.1-<0.1
Cadmium	3	<0.001	<0.001-<0.001
Chromium	3	<0.01	<0.01-<0.01
Cobalt	3	<0.001	<0.001-<0.001
Copper	3	<0.001	<0.001-<0.001
Iron	3	-	<0.050-0.110
Lead	3	<0.005	<0.005-<0.005
Manganese	3	<0.01	<0.01-<0.01
Molybdenum	3	<0.05	<0.05-<0.05
Nickel	3	<0.005	<0.005-<0.005
Selenium	3	<0.0005	<0.0005-<0.0005
Zinc	3	-	<0.001-0.950

S T U D Y A R E A PWWQ1

TABLE 13.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Crooked Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	10	1.56	0-4.8
Temperature (^{o}C)	10	3.0	0-5.5
pH (pH units)	10	7.94	7.7-8.1
Conductivity (μmhos/cm)	5	180.6	143.0-244.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	10	12.9	7.8-15.6
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	10	0.323	0.149-0.60
Ortho-phosphate	5	Tr	-
Total dissolved phosphorus	10	0.017	0.001-0.025
MAJOR IONS (mg/ℓ)			
Calcium	10	35.3	24.7-49.0
Magnesium	10	3.6	2.9-4.3
Potassium	10	1.0	0.4-1.6
Sodium	10	1.5	0.95-2.3
Chloride	10	6.95	5.5-8.6
Sulphate	10	1.5	0.2-4.9
Silica (as SiO_2)	10	0.302	0.220-0.693
Carbonate (as $CaCO_3$)	5	Tr	-
Bicarbonate (as $CaCO_3$)	10	97.7	67.0-130.0
HEAVY METALS (mg/ℓ)			
Iron	5	Tr	-

TABLE 13.1 (Continued)

Sampling Location: Streams of Crooked Lake (PW100S - PW108S)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	11	11.4	7.5-14.5
pH (pH units)	8	7.9	7.4-8.3
Conductivity (μmhos/cm)	2	215.5	213.0-218.0
Turbidity (F.T.U.)	11	1.88	0.7-8.5
Dissolved oxygen (mg/ℓ)	11	10.95	9.0-13.0
Suspended sediments (mg/ℓ)	8	5.13	1.0-13.0
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	2	0.175	0.146-0.204
Ortho-phosphate		n.d.	
Total dissolved phosphorus	11	-	0-.014
MAJOR IONS (mg/ℓ)			
Calcium	11	24.7	14.5-45.0
Magnesium	11	4.34	3.0-6.1
Potassium	11	0.68	0.4-1.0
Sodium	11	2.31	1.2-3.6
Chloride	10	5.55	0-10.5
Sulphate	11	4.56	0.30-9.0
Silica (as SiO_2)	11	0.405	0.10-0.645
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	7	83.6	56.0-139.0
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

S T U D Y A R E A PWWQ1

TABLE 13.2 WATER QUALITY PARAMETERS AS REPORTED BY GUMMER AND DUNN, 1976

Sampling Period: June-August, 1975
Sampling Location: Dolphin River below Crooked Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	1	11.2	-
pH (pH units)	1	9.0	-
Conductivity (µmhos/cm)	1	136.0	-
Laboratory Data			
Temperature (^{o}C)	1	21.1	-
pH (pH units)	1	8.2	-
Conductivity (µmhos/cm)	1	157.0	-
Turbidity (J.T.U.)	1	0.4	-
Colour (relative units)	1	5.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	73.0	-
Hardness as $CaCO_3$ (mg/ℓ)	1	77.2	-
Reactive silica (mg/ℓ)	1	0.25	-
Chemical oxygen demand (mg/ℓ)	1	<10.0	-
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N		n.d.	
Dissolved nitrogen (NO_2 + NO_3) as N	1	0.033	-
Total phosphorus as P	1	<0.005	-
MAJOR IONS (mg/ℓ)			
Calcium	1	25.7	-
Potassium	1	0.45	-
Sodium	1	3.15	-
Chloride	1	4.73	-
Fluoride	1	<0.05	-
Sulphate	1	2.8	-

TABLE 13.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	1	<0.1	-
Arsenic	1	<0.0005	-
Barium	1	<0.1	-
Cadmium	1	<0.001	-
Chromium	1	<0.01	-
Cobalt	1	<0.001	-
Copper	1	<0.001	-
Iron	1	<0.05	-
Lead	1	<0.005	-
Manganese	1	<0.01	-
Molybdenum	1	<0.05	-
Nickel	1	<0.005	-
Selenium	1	<0.0005	-
Zinc	1	0.22	-

S T U D Y A R E A CWQ1

TABLE 14.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Nelson Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	14	3.0	0-9.5
Temperature (^{o}C)	14	3.1	0-6.0
pH (pH units)	14	7.9	7.6-8.1
Conductivity (μmhos/cm)	7	207.4	28.0-292.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	14	14.1	12.5-16.7
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	14	0.200	0.062-0.392
Ortho-phosphate	4	0.020	Tr-0.036
Total dissolved phosphorus	14	0.007	0-0.021
MAJOR IONS (mg/ℓ)			
Calcium	10	24.2	15.9-41.8
Magnesium	10	4.8	2.4-9.7
Potassium	10	0.92	0.50-1.70
Sodium	10	2.7	0.90-8.40
Chloride	10	4.2	3.0-6.1
Sulphate	10	9.1	1.1-30.3
Silica (as SiO_2)	14	0.261	0.110-0.510
Carbonate (as $CaCO_3$)	3	0	0-0
Bicarbonate (as $CaCO_3$)	10	70.4	45.5-122.5
HEAVY METALS (mg/ℓ)			
Iron	3	Tr	-

TABLE 14.1 (Continued)

Sampling Location: Victory Lake

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	16	3.4	0-8.5
Temperature (^{o}C)	16	2.4	0-4.0
pH (pH units)	3	8.0	8.0-8.0
Conductivity (μmhos/cm)		n.d.	
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	16	13.6	2.8-17.2
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	15	0.189	0.025-0.402
Ortho-phosphate	8	0.004	Tr-0.016
Total dissolved phosphorus	15	0.008	0-0.036
MAJOR IONS (mg/ℓ)			
Calcium	10	21.3	12.9-42.4
Magnesium	10	4.1	2.8-8.9
Potassium	10	0.8	0-1.7
Sodium	10	2.1	0.4-7.1
Chloride	10	3.6	2.5-6.0
Sulphate	10	7.5	1.4-22.9
Silica (as SiO_2)	16	0.278	0.112-1.068
Carbonate (as $CaCO_3$)	3	0	0-0
Bicarbonate (as $CaCO_3$)	10	64.5	39.5-120.5
HEAVY METALS (mg/ℓ)			
Iron	3	Tr	-

TABLE 14.1 (Continued)

Sampling Location: Stream CS 100 S (flowing into Nelson Lake from north)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	2	2.0	0-4.0
pH (pH units)	2	8.0	7.9-8.1
Conductivity (µmhos/cm)		n.d.	
Turbidity (F.T.U.)	2	2.4	1.6-3.2
Dissolved oxygen (mg/ℓ)	2	13.8	13.0-14.5
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	1	0.187	-
Ortho-phosphate		n.d.	
Total dissolved phosphorus	2	Tr	-
MAJOR IONS (mg/ℓ)			
Calcium	2	15.2	7.0-23.4
Magnesium	2	2.9	1.0-4.7
Potassium	2	0.3	0.1-0.5
Sodium	2	1.1	0.9-1.3
Chloride	2	3.3	1.5-5.0
Sulphate	2	3.3	0.6-6.0
Silica (as SiO_2)	2	0.120	0.070-0.170
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	2	41	18-64
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

TABLE 14.1 (Continued)

Sampling Location: Stream CS 101 S (flowing into Nelson Lake from east)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	2	1.8	0.5-3.0
pH (pH units)	2	8.2	8.0-8.4
Conductivity (μmhos/cm)		n.d.	
Turbidity (F.T.U.)	2	3.0	0.7-5.2
Dissolved oxygen (mg/ℓ)	2	13.5	13.0-14.0
Suspended sediments (mg/ℓ)	1	53.0	-
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	1	0.090	-
Ortho-phosphate		n.d.	
Total dissolved phosphorus	2	-	0-Tr
MAJOR IONS (mg/ℓ)			
Calcium	2	19.5	14.4-24.6
Magnesium	2	3.0	1.8-4.1
Potassium	2	0.20	0-0.40
Sodium	2	1.6	1.2-1.9
Chloride	2	3.8	2.0-5.6
Sulphate	2	6.5	6.0-7.0
Silica (as SiO_2)	2	0.210	0.150-0.270
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	2	54.5	39.0-70.0
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

TABLE 14.1 (Continued)

Sampling Location: Stream CS 103 S (flowing south from Victory Lake)

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	2	1.3	0-2.5
pH (pH units)	2	7.95	7.9-8.0
Conductivity (μmhos/cm)		n.d.	
Turbidity (F.T.U.)	2	1.1	0.7-1.4
Dissolved oxygen (mg/ℓ)	2	12.5	12.0-13.0
Suspended sediments (mg/ℓ)	1	3.0	-
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	1	0.060	-
Ortho-phosphate		n.d.	
Total dissolved phosphorus	2	-	Tr-0.033
MAJOR IONS (mg/ℓ)			
Calcium	2	18.4	18.2-18.6
Magnesium	2	3.1	3.0-3.1
Potassium	2	0.2	0.2-0.2
Sodium	2	1.3	0.7-1.9
Chloride	2	3.7	2.8-4.5
Sulphate	2	5.5	4.0-7.0
Silica (as SiO_2)	2	0.183	0.145-0.220
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	2	52.0	49.0-55.0
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

S T U D Y A R E A CWQ1

TABLE 14.2 WATER QUALITY PARAMETERS AS REPORTED BY GUMMER AND DUNN, 1976

Sampling Period: June-August, 1975
Sampling Location: Marshall River

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	3.0	1.5-4.5
pH (pH units)	2	8.05	7.8-8.3
Conductivity (µmhos/cm)	2	154.0	120-188
Laboratory Data			
Temperature (^{o}C)	1	27.2	-
pH (pH units)	1	8.1	-
Conductivity (µmhos/cm)	1	105.0	-
Turbidity (J.T.U.)	1	4.5	-
Colour (relative units)	1	5.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	54.8	-
Hardness as $CaCO_3$ (mg/ℓ)	1	56.0	-
Reactive silica (mg/ℓ)	1	0.4	-
Chemical oxygen demand (mg/ℓ)	1	<10.0	-
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	1	<0.5	-
Dissolved nitrogen (NO_2 + NO_3) as N	1	0.03	-
Total phosphorus as P	1	<0.005	-
MAJOR IONS (mg/ℓ)			
Calcium	1	18.5	-
Potassium	1	0.13	-
Sodium	1	1.0	-
Chloride	1	2.0	-
Fluoride	1	0.06	-
Sulphate	1	<1.0	-

TABLE 14.2 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	1	<0.1	-
Arsenic	1	<0.0005	-
Barium	1	<0.1	-
Cadmium	1	<0.001	-
Chromium	1	<0.01	-
Cobalt	1	<0.001	-
Copper	1	<0.001	-
Iron	1	0.06	-
Lead	1	<0.005	-
Manganese	1	<0.01	-
Molybdenum	1	<0.05	-
Nickel	1	<0.005	-
Selenium	1	<0.0005	-
Zinc	1	0.14	-

S T U D Y A R E A BTWQ1

TABLE 15.1 WATER QUALITY PARAMETERS AS REPORTED BY AQUATIC ENVIRONMENTS LTD., 1974

Sampling Period: May-August, 1974
Sampling Location: Lake BT 100 L

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	3	10.3	0-21.0
Temperature (^{o}C)	3	1.7	1.0-2.0
pH (pH units)	3	8.0	7.9-8.1
Conductivity (μmhos/cm)	3	144.7	134.0-155.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	3	13.8	13.2-14.6
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	3	0.126	0.078-0.196
Ortho-phosphate	3	-	<0.002-0.002
Total dissolved phosphorus	3	0.003	0.002-0.005
MAJOR IONS (mg/ℓ)			
Calcium	3	10.0	10.0-10.0
Magnesium	3	6.3	6.2-6.4
Potassium	3	1.4	1.3-1.5
Sodium	3	1.9	1.8-2.1
Chloride	3	-	Tr-0.40
Sulphate	3	0.8	0.6-0.9
Silica (as SiO_2)	3	0.088	0.058-0.108
Carbonate (as $CaCO_3$)	3	Tr	-
Bicarbonate (as $CaCO_3$)	3	61.7	60.0-64.0
HEAVY METALS (mg/ℓ)			
Iron	3	Tr	-

TABLE 15.1 (Continued)

Sampling Location: Lake BT 101 L

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)	3	10.8	0-20.5
Temperature (^{o}C)	3	1.0	0.5-1.5
pH (pH units)	3	7.9	7.85-8.0
Conductivity (μmhos/cm)	3	152.7	150.0-158.0
Turbidity (F.T.U.)		n.d.	
Dissolved oxygen (mg/ℓ)	3	13.9	13.6-14.5
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen	3	0.078	0.075-0.083
Ortho-phosphate	3	0	0-0
Total dissolved phosphorus	3	0.003	0.003-0.004
MAJOR IONS (mg/ℓ)			
Calcium	3	12.3	12.0-13.0
Magnesium	3	6.1	6.0-6.4
Potassium	3	1.5	1.4-1.6
Sodium	3	1.8	1.2-2.2
Chloride	3	0.5	0.4-0.6
Sulphate	3	0.5	0.1-1.1
Silica (as SiO_2)	3	0.214	0.209-0.221
Carbonate (as $CaCO_3$)	3	Tr	-
Bicarbonate (as $CaCO_3$)	3	70.7	69.5-72.5
HEAVY METALS (mg/ℓ)			
Iron	3	Tr	-

TABLE 15.1 (Continued)

Sampling Location: Stream BT 100 S

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	1	5.0	-
pH (pH units)	1	7.8	-
Conductivity (μmhos/cm)		n.d.	
Turbidity (F.T.U.)	1	0.7	-
Dissolved oxygen (mg/ℓ)	1	12.0	-
Suspended sediments (mg/ℓ)	1	2.0	-
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen		n.d.	
Ortho-phosphate		n.d.	
Total dissolved phosphorus	1	0	
MAJOR IONS (mg/ℓ)			
Calcium	1	12.5	-
Magnesium	1	4.9	-
Potassium	1	0.2	-
Sodium	1	2.4	-
Chloride	1	2.6	-
Sulphate	1	6.0	-
Silica (as SiO_2)	1	0.175	-
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	1	56.0	-
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

TABLE 15.1 (Continued)

Sampling Location: Stream BT 103 S

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Depth (m)		n.d.	
Temperature (^{o}C)	1	8.0	-
pH (pH units)	1	7.8	-
Conductivity (μmhos/cm)		n.d.	
Turbidity (F.T.U.)	1	0.5	-
Dissolved oxygen (mg/ℓ)	1	10.0	-
Suspended sediments (mg/ℓ)	1	5.0	-
NUTRIENTS (mg/ℓ)			
Total dissolved nitrogen		n.d.	
Ortho-phosphate		n.d.	
Total dissolved phosphorus	1	0.013	-
MAJOR IONS (mg/ℓ)			
Calcium	1	15.3	-
Magnesium	1	6.0	-
Potassium	1	0.7	-
Sodium	1	2.0	-
Chloride	1	1.0	-
Sulphate	1	8.0	-
Silica (as SiO_2)	1	0.090	-
Carbonate (as $CaCO_3$)		n.d.	
Bicarbonate (as $CaCO_3$)	1	62.0	-
HEAVY METALS (mg/ℓ)			
Iron		n.d.	

S T U D Y A R E A BTWQ2

TABLE 16.1 WATER QUALITY PARAMETERS AS REPORTED BY GUILBAULT AND CHACKO, 1977

Sampling Period: June-August, 1976
Sampling Location: Snowbird Creek below White Bear Creek

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	20	3.3	0.0-8.9
pH (pH units)	20	7.5	6.6-8.4
Conductivity (µmhos/cm)	11	19.8	10.0-28.0
Laboratory Data			
Temperature (^{o}C)	20	19.6	11.4-23.3
pH (pH units)	20	6.5	5.7-7.3
Conductivity (µmhos/cm)	20	22.2	12.3-36.7
Turbidity (J.T.U.)	20	26.8	11.0-81.0
Colour (relative units)	20	19.3	5-60
Alkalinity total as $CaCO_3$ (mg/ℓ)	20	2.1	<0.5-4.2
Hardness as $CaCO_3$ (mg/ℓ)	20	5.2	2.3-7.7
Nonfilterable residue (mg/ℓ)	5	43.6	3.0-139.0
Total dissolved solids (mg/ℓ)	20	11.3	6.3-18.1
Reactive silica (mg/ℓ)	20	0.6	0.3-1.0
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	20	2.8	2.0-4.0
Total inorganic carbon as C	20	-	<1.0-2.0
Total inorganic carbon as $CaCO_3$	20	-	<8.0-17.0
Total Kjeldahl nitrogen as N	20	-	<0.1-0.4
Total nitrogen as N	20	-	<0.1-0.5
Total phosphorus as P	20	0.023	0.003-0.121

TABLE 16.1 (Continued)

	Sample Size	Mean	Range
MAJOR IONS (mg/ℓ)			
Calcium	20	1.0	0.6-1.6
Magnesium	20	0.7	0.2-1.2
Potassium	20	0.3	0.2-0.6
Sodium	20	1.8	0.7-3.4
Chloride	20	3.4	1.2-6.3
Sulphate	20	1.4	<1.0-2.5
Nitrate plus nitrite as N	20	0.03	0.01-0.07
Bicarbonate	20	2.6	<0.6-5.1
HEAVY METALS (mg/ℓ)			
Aluminum	7	0.491	0.150-1.60
Cadmium	11	-	<0.001-0.003
Cobalt	11	-	<0.002-0.008
Copper	11	-	<0.001-0.002
Iron	11	0.405	0.150-1.20
Lead	11	-	<0.004-0.005
Manganese	11	-	<0.010-0.052
Nickel	9	0.004	0.002-0.007
Zinc	11	-	<0.001-0.004

TABLE 16.1 (Continued)

Sampling Location: White Bear Creek

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	19	2.4	0-6.7
pH (pH units)	19	7.2	6.4-8.2
Conductivity (µmhos/cm)	11	18.7	8.0-27.0
Laboratory Data			
Temperature (^{o}C)	19	20.1	17.5-23.4
pH (pH units)	19	6.5	5.5-6.8
Conductivity (µmhos/cm)	11	17.1	8.9-28.3
Turbidity (J.T.U.)	18	32.8	11.0-68.0
Colour (relative units)	19	35.3	10.0-80.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	19	1.9	<0.5-3.9
Hardness as $CaCO_3$ (mg/ℓ)	19	4.1	2.2-7.6
Nonfilterable residue (mg/ℓ)	6	86.3	6.0-174.0
Total dissolved solids (mg/ℓ)	19	8.9	4.7-12.2
Reactive silica (mg/ℓ)	19	0.7	0.2-1.2
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	19	3.0	1.0-4.0
Total inorganic carbon as C	19	-	<1.0-3.0
Total inorganic carbon as $CaCO_3$	19	-	<8.0-25.0
Total Kjeldahl nitrogen as N	19	-	<0.1-0.3
Total nitrogen as N	19	-	<0.1-0.3
Total phosphorus as P	19	0.029	0.005-0.099

TABLE 16.1 (Continued)

	Sample Size	Mean	Range
MAJOR IONS (mg/ℓ)			
Calcium	19	0.70	0.4-1.0
Magnesium	19	0.60	0.3-1.7
Potassium	19	0.30	0.2-0.4
Sodium	19	1.40	0.6-2.1
Chloride	19	2.40	0.9-4.5
Sulphate	19	1.30	<1.0-2.4
Nitrate plus nitrite as N	19	0.03	0.01-0.06
Bicarbonate	19	2.30	<0.6-4.8
HEAVY METALS (mg/ℓ)			
Aluminum	6	0.798	0.210-1.60
Cadmium	9	-	<0.001-0.003
Cobalt	9	-	<0.002-0.010
Copper	9	-	<0.001-0.002
Iron	9	0.529	0.180-1.20
Lead	9	-	<0.004-0.007
Manganese	9	-	<0.010-0.044
Nickel	8	-	<0.002-0.008
Zinc	9	0.002	<0.001-0.004

TABLE 16.1 (Continued)

Sampling Location: South Arm Creek

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	21	2.1	0-4.7
pH (pH units)	20	7.1	5.9-8.2
Conductivity (µmhos/cm)	10	13.1	10.0-17.0
Laboratory Data			
Temperature (^{o}C)	21	20.1	17.1-22.4
pH (pH units)	21	6.3	5.3-6.9
Conductivity (µmhos/cm)	21	19.8	7.9-49.2
Turbidity (J.T.U.)	21	13.1	3.5-64.0
Colour (relative units)	21	-	<5.0-35.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	21	-	<0.5-2.2
Hardness as $CaCO_3$ (mg/ℓ)	21	4.7	2.2-9.6
Nonfilterable residue (mg/ℓ)	2	118.0	37.0-198.0
Total dissolved solids (mg/ℓ)	21	9.1	3.6-22.3
Reactive silica (mg/ℓ)	21	0.4	0.2-2.8
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	21	2.40	0-4.0
Total inorganic carbon as C	21	-	<1.0-2.0
Total inorganic carbon as $CaCO_3$	21	-	<8.0-17.0
Total Kjeldahl nitrogen as N	20	-	<0.1-0.3
Total nitrogen as N	20	0.20	<0.1-0.4
Total phosphorus as P	21	0.013	<0.003-0.079

TABLE 16.1 (Continued)

	Sample Size	Mean	Range
MAJOR IONS (mg/ℓ)			
Calcium	21	0.90	0.4-2.0
Magnesium	21	0.60	0.2-1.3
Potassium	21	-	<0.1-0.4
Sodium	21	1.70	0.5-5.5
Chloride	21	3.80	1.0-12.0
Sulphate	21	-	<1.0-2.1
Nitrate plus nitrite as N	21	0.07	0.01-0.15
Bicarbonate	21	-	<0.60-2.1
HEAVY METALS (mg/ℓ)			
Aluminum	9	0.193	0.026-1.20
Cadmium	11	-	<0.001-0.003
Cobalt	11	-	<0.002-0.009
Copper	11	<0.001	<0.001-0.001
Iron	11	-	<0.040-0.840
Lead	11	-	<0.004-0.006
Manganese	11	-	<0.010-0.038
Nickel	11	-	<0.002-0.008
Zinc	11	-	<0.001-0.003

TABLE 16.1 (Continued)

Sampling Location: Snowbird Creek below South Arm Creek

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	17	2.9	0-5.0
pH (pH units)	16	7.0	6.3-7.9
Conductivity (µmhos/cm)	12	14.1	9.0-19.4
Laboratory Data			
Temperature (^{o}C)	17	19.4	13.9-23.2
pH (pH units)	17	6.5	6.1-6.9
Conductivity (µmhos/cm)	17	15.2	9.8-30.9
Turbidity (J.T.U.)	17	28.8	10.0-150.0
Colour (relative units)	17	22.0	<5.0-100.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	17	1.1	<0.5-2.0
Hardness as $CaCO_3$ (mg/ℓ)	17	4.2	2.3-7.4
Nonfilterable residue (mg/ℓ)	7	87.4	3.0-493.0
Total dissolved solids (mg/ℓ)	17	8.1	4.4-15.2
Reactive silica (mg/ℓ)	17	0.6	0.3-1.0
NUTRIENTS (mg/ℓ)			
Total organic carbon as C	17	2.5	1.0-4.0
Total inorganic carbon as C	17	-	<1.0-2.0
Total inorganic carbon as $CaCO_3$	17	-	<8.0-17.0
Total Kjeldahl nitrogen as N	17	-	<0.1-0.3
Total nitrogen as N	17	0.1	<0.1-0.3
Total phosphorus as P	17	.018	.005-.046

TABLE 16.1 (Continued)

	Sample Size	Mean	Range
MAJOR IONS (mg/ℓ)			
Calcium	17	0.80	0.6-1.2
Magnesium	17	0.60	0.2-1.2
Potassium	17	0.30	0.2-0.4
Sodium	17	1.20	0.6-3.2
Chloride	17	2.60	1.1-7.2
Sulphate	17	1.20	<1.0-2.5
Nitrate plus nitrite as N	17	0.03	0.01-0.06
Bicarbonate	17	1.40	<0.6-2.4
HEAVY METALS (mg/ℓ)			
Aluminum	6	0.493	0.120-0.90
Cadmium	8	-	<0.001-0.003
Cobalt	8	-	<0.002-0.004
Copper	8	-	<0.001-0.001
Iron	8	0.308	0.140-0.560
Lead	8	-	<0.004-0.004
Manganese	8	-	<0.010-0.020
Nickel	8	-	<0.002-0.010
Zinc	8	-	<0.001-0.002

S T U D Y A R E A MWQ1

TABLE 17.1 WATER QUALITY PARAMETERS AS REPORTED BY GUMMER AND DUNN, 1976

Sampling Period: June-August, 1975
Sampling Location: Unnamed River above King Point

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	3.75	1.5-6.0
pH (pH units)	2	7.3	7.2-7.4
Conductivity (µmhos/cm)	2	62.5	50.0-75.0
Laboratory Data			
Temperature (^{o}C)	2	22.6	19.6-25.5
pH (pH units)	2	7.1	6.9-7.3
Conductivity (µmhos/cm)	2	50.0	16.0-84.0
Turbidity (J.T.U.)	2	12.5	10.0-15.0
Colour (relative units)	2	25.0	20.0-30.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	2	7.45	3.6-11.3
Hardness as $CaCO_3$ (mg/ℓ)	2	15.8	9.1-22.5
Reactive silica (mg/ℓ)	2	0.48	0.35-0.68
Chemical oxygen demand (mg/ℓ)	2	<10.0	<10.0-<10.0
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	1	<0.5	-
Dissolved nitrogen (NO_2 + NO_3) as N	2	-	<0.010-0.035
Total phosphorus as P	2	0.015	0.013-0.017
MAJOR IONS (mg/ℓ)			
Calcium	2	4.2	2.6-5.8
Potassium	2	2.44	0.18-4.70
Sodium	2	4.2	0.4-8.0
Chloride	2	8.14	0.78-15.5
Fluoride	2	<0.05	<0.05-<0.05
Sulphate	2	1.95	1.7-2.2

TABLE 17.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	2	-	<0.1-0.28
Arsenic	2	<0.0005	<0.0005-<0.0005
Barium	2	<0.1	<0.1-<0.1
Cadmium	2	<0.001	<0.001-<0.001
Chromium	2	<0.01	< 0.01-<0.01
Cobalt	2	<0.001	<0.001-<0.001
Copper	2	0.002	0.002-0.002
Iron	2	0.514	0.064-0.450
Lead	2	<0.005	<0.005-<0.005
Manganese	2	0.02	0.02-0.02
Molybdenum	2	<0.05	<0.05-<0.05
Nickel	2	<0.005	<0.005-<0.005
Selenium	2	<0.0005	<0.0005-<0.0005
Zinc	1	0.003	-

TABLE 17.1 (Continued)

Sampling Location: Unnamed River above West Arm of Wetherall Bay

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	4.05	1.5-6.6
pH (pH units)	2	6.95	6.6-7.3
Conductivity (µmhos/cm)	2	59.0	50.0-68.0
Laboratory Data			
Temperature (^{o}C)	1	26.5	-
pH (pH units)	1	6.6	-
Conductivity (µmhos/cm)	1	14.0	-
Turbidity (J.T.U.)	1	9.0	-
Colour (relative units)	1	20.0	-
Alkalinity total as $CaCO_3$ (mg/ℓ)	1	2.3	-
Hardness as $CaCO_3$ (mg/ℓ)	1	8.9	-
Reactive silica (mg/ℓ)	1	0.9	-
Chemical oxygen demand (mg/ℓ)	1	<10.0	-
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	1	<0.5	-
Dissolved nitrogen (NO_2 + NO_3) as N	1	0.02	-
Total phosphorus as P	1	0.012	-
MAJOR IONS (mg/ℓ)			
Calcium	1	2.6	-
Potassium	1	0.3	-
Sodium	1	0.4	-
Chloride	1	0.55	-
Fluoride	1	<0.05	-
Sulphate	1	5.4	-

TABLE 17.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	1	0.15	-
Arsenic	1	<0.0005	-
Barium	1	<0.1	-
Cadmium	1	<0 001	-
Chromium	1	<0.01	-
Cobalt	1	<0.001	-
Copper	1	<0.001	-
Iron	1	0.25	-
Lead	1	<0.005	-
Manganese	1	0.04	-
Molybdenum	1	<0.05	-
Nickel	1	<0.005	-
Selenium	1	<0.0005	-
Zinc	1	0.016	-

TABLE 17.1 (Continued)

Sampling Location: Unnamed River above Sabine Bay

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	4.0	1.5-6.5
pH (pH units)	2	8.2	7.2-9.2
Conductivity (µmhos/cm)	2	50.0	50.0-50.0
Laboratory Data			
Temperature (^{o}C)	2	22.8	20.0-25.5
pH (pH units)	2	6.8	6.7-6.9
Conductivity (µmhos/cm)	2	23.0	11.0-35.0
Turbidity (J.T.U.)	2	26.5	22.0-31.0
Colour (relative units)	2	5.0	5.0-5.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	2	2.3	1.4-3.2
Hardness as $CaCO_3$ (mg/ℓ)	2	9.3	8.6-10.0
Reactive silica (mg/ℓ)	2	0.4	0.3-0.5
Chemical oxygen demand (mg/ℓ)	2	<10.0	<10.0-<10.0
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	1	<0.5	-
Dissolved nitrogen (NO_2 + NO_3) as N	2		<0.01-0.22
Total phosphorus as P	2	0.027	0.026-0.027
MAJOR IONS (mg/ℓ)			
Calcium	2	-	<1.0-2.8
Potassium	2	0.34	0.28-0.39
Sodium	2	1.8	0.8-2.8
Chloride	2	2.45	1.0-3.9
Fluoride	2	<0.05	<0.05-<0.05
Sulphate	2	1.35	1.1-1.6

TABLE 17.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	2	0.42	0.35-0.48
Arsenic	2	<0.0005	<0.0005-<0.0005
Barium	2	<0.1	<0.1-<0.1
Cadmium	2	0.001	0.001-0.001
Chromium	2	-	<0.01-0.02
Cobalt	2	<0.001	<0.001-<0.001
Copper	2	-	<0.001-0.003
Iron	2	0.835	0.790-0.879
Lead	2	<0.005	<0.005-<0.005
Manganese	2	0.023	0.020-0.026
Molybdenum	2	<0.05	<0.05-<0.05
Nickel	2	<0.005	<0.005-<0.005
Selenium	2	<0.0005	<0.0005-<0.0005
Zinc	2	0.005	0.004-0.005

S T U D Y A R E A MWQ2

TABLE 18.1 WATER QUALITY PARAMETERS AS REPORTED BY GUMMER AND DUNN, 1976

Sampling Period: June-August, 1975
Sampling Location: Unnamed River above Warren Point

PHYSICAL PARAMETERS	Sample Size	Mean	Range
Field Data			
Temperature (^{o}C)	2	2.75	1.5-4.0
pH (pH units)	2	7.3	7.0-7.5
Conductivity (µmhos/cm)	2	182.5	130-235
Laboratory Data			
Temperature (^{o}C)	2	22.8	19.8-25.8
pH (pH units)	2	6.7	6.5-6.9
Conductivity (µmhos/cm)	2	173.5	92.0-255.0
Turbidity (J.T.U.)	2	35.5	10.0-61.0
Colour (relative units)	2	25.0	20.0-30.0
Alkalinity total as $CaCO_3$ (mg/ℓ)	2	-	<2.5-6.2
Hardness as $CaCO_3$ (mg/ℓ)	2	38.6	22.5-54.7
Reactive silica (mg/ℓ)	2	5.35	3.3-7.4
Chemical oxygen demand (mg/ℓ)	2	-	<10.0-26.0
NUTRIENTS (mg/ℓ)			
Total Kjeldahl nitrogen as N	1	<0.5	-
Dissolved nitrogen (NO_2 + NO_3) as N	2	0.045	0.044-0.045
Total phosphorus as P	2	0.02	0.12-0.28
MAJOR IONS (mg/ℓ)			
Calcium	2	8.15	4.2-12.1
Potassium	2	3.03	1.05-5.0
Sodium	2	23.38	8.75-38.0
Chloride	2	13.25	5.5-21.0
Fluoride	2	0.15	0.12-0.18
Sulphate	2	56.9	26.5-87.3

TABLE 18.1 (Continued)

	Sample Size	Mean	Range
HEAVY METALS (mg/ℓ)			
Aluminum	2	2.35	1.4-3.3
Arsenic	2	<0.0005	<0.0005-<0.0005
Barium	2	<0.1	<0.1-<0.1
Cadmium	2	0.001	0.001-0.001
Chromium	2	-	<0.01-0.028
Cobalt	2	0.006	0.003-0.008
Copper	2	0.035	0.007-0.063
Iron	2	3.05	0.29-5.80
Lead	2	-	<0.005-0.012
Manganese	2	0.298	0.230-0.365
Molybdenum	2	<0.05	<0.05-<0.05
Nickel	2	0.015	0.01-0.02
Selenium	2	<0.0005	<0.0005-<0.0005
Zinc	2	0.071	0.066-0.076

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