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ASSESSMENT REPORT

1994

Baseline Environmental Studies

on the

Kitsault Claim Group

Kit 1-6, Ult 1-15, Bria 16-19

SKEENA MINING DIVISION

LOCATED

35 KM NORTH OF THE TOWN OF KITSAULT
SITUATED ON AND AROUND KITSAULT LAKE
BRITISH COLUMBIA

CENTRED ON

LATITUDE: 55° 46' NORTH
LONGITUDE: 129° 30' WEST

NTS 103P/13E AND 103P/14W

GEOLOGICAL BRANCH
ASSESSMENT REPORT
23,819

OWNER

1091064 ONTARIO LTD./
BARRICK GOLD CORP./
(LAC MINERALS LTD.)

OPERATOR

LAC MINERALS LTD.

MINISTRY OF ENERGY, MINES
and PETROLEUM RESOURCES
Rec'd MAR - 9 1995
VICTORIA, B.C.

REPORT BY

MIKE SIEB

DATE: 02/25/95

SUMMARY

ENVIRONMENTAL BASELINE PROGRAM 1994 ON THE KITSAULT CLAIM GROUP

An environmental baseline study was conducted by Rescan Environmental Services Ltd. throughout 1994 on the Lac Minerals Ltd. Kitsault Claim Group. The purpose of this study and ongoing studies, is to test the subaqueous environment of Kitsault Lake for potential disposal of mine tailings generated from Lac Mineral's Red Mountain property near Stewart, BC.

The study consisted of fisheries, vegetation, wildlife assessments, bathymetry, water quality, weather station, stream gauging surveys, CTD profiling, and sediment geochemistry.

The Kitsault claim group (NTS 103P/13E & 103P/14W) is located within the Skeena Mining District south-east of the Cambria Icefield, on the eastern flank of the Coast Range mountains of British Columbia approximately 37 km south-east of Stewart, British Columbia. The Kitsault Group is comprised of 25 claims; Kit 1-6, Ult 1-15, and Bria 16-19; totaling 88 units. The group covers approximately 1650 hectares. The group is predominantly underlain by Lower Jurassic Hazelton Group sediments and volcanics. This sequence is unconformably overlain by Lower Cretaceous Bowser Lake Group sediments.

The 1994 program is outlined and conclusions are drawn in the attached report by Rescan Environmental Services Ltd.

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1.0 INTRODUCTION

The Kitsault claim group (NTS 103P/13E & 103P/14W) is located within the Skeena Mining District south-east of the Cambria Icefield, on the eastern flank of the Coast Range mountains of British Columbia approximately 37 km south-east of Stewart, British Columbia (Fig. 94-01). Current access to the property is possible by a 15 minute helicopter flight from Stewart. Road access to Alice Arm, 30 kilometers to the south (Fig. 94-02), was established in the 1980's, and from there an old gravel mining road approaches to within 5 km. to the south-west of the property.

The claim group is centred on latitude 55° 46' North and longitude 129° 30' West, and covers the area surrounding, and to the north-west, of Kitsault Lake. Elevations range from 2,500 to 5,000 metres above sea level. The slopes immediately surrounding the lake are predominantly gentle, but become steep on the west side, towards the Kitsault Glacier.

The vegetation surrounding the lake consists mainly of a semi-open forest dominated by mountain hemlock with minor amounts of subalpine fir. This gives way to alpine meadows and bare rock at higher elevations.

The area has a coastal climate. Snowfall is heavy due to high elevations, northern latitude and proximity to the ocean. In the Stewart area, mean annual snowfall ranges from 520 centimetres at sea level, 1,500 centimetres at 460 metres elevation (Bear Pass), and up to 2,250 centimetres at an elevation of 915 metres (Tide Lake Flats).

Wildlife consists primarily of moose, and black bears. No grizzly bear signs were observed.

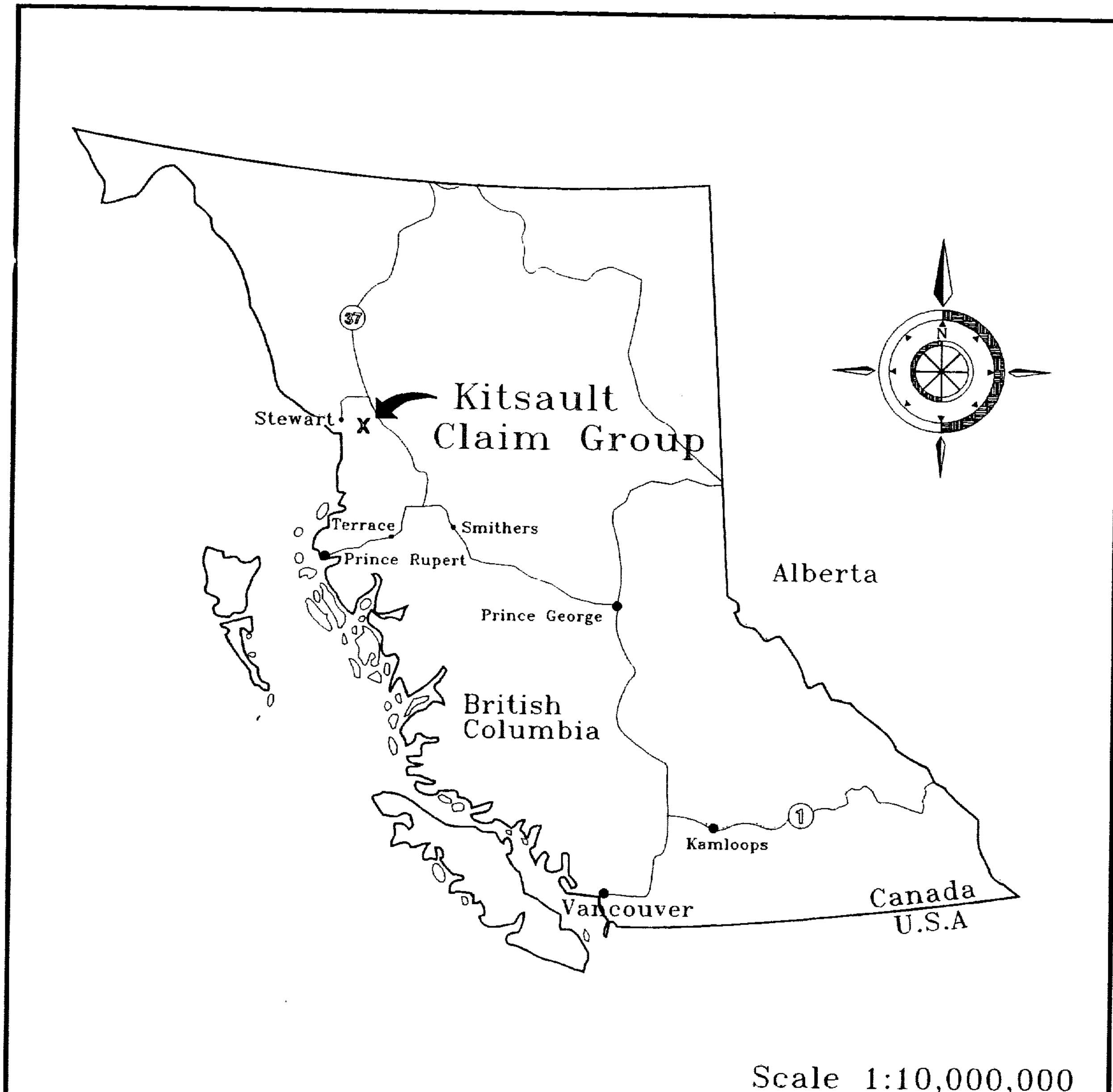
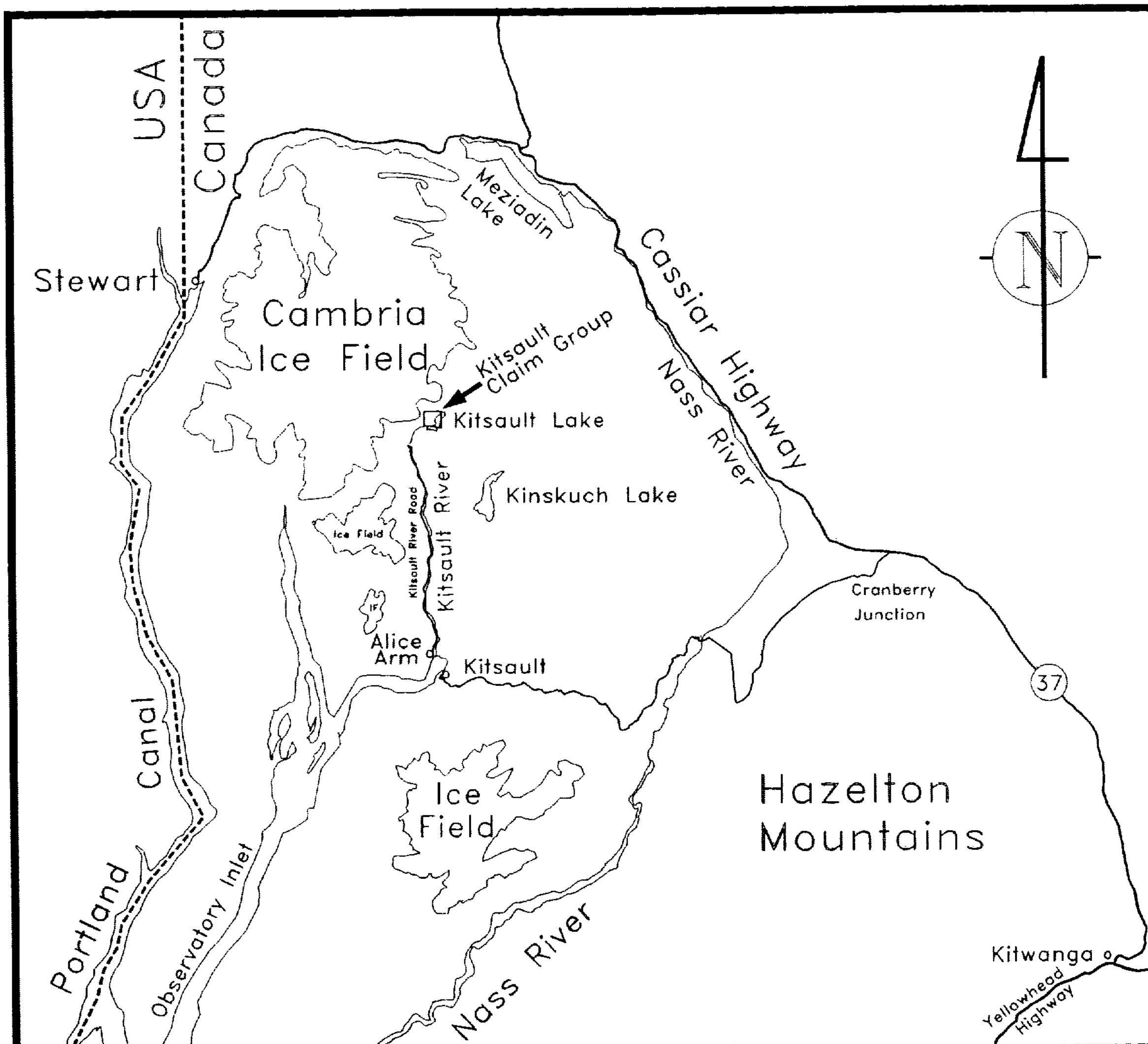


Fig 94-01 KITSAULT CLAIM GROUP LOCATION MAP



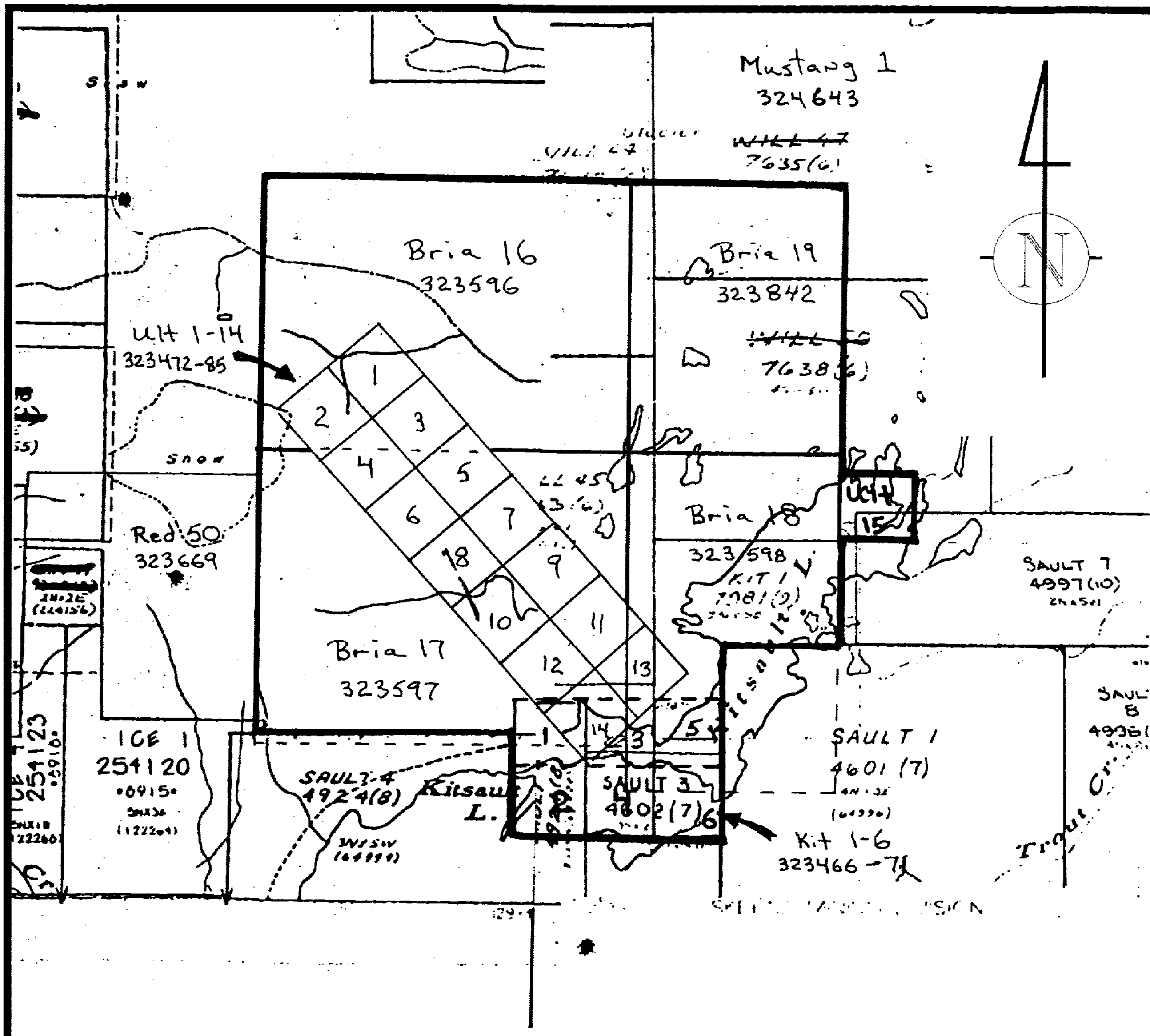
Kitsault Claim Group
Location Map 94-02
Scale 1:1,000,000

1.1 PROPERTY STATUS

The Kitsault claim group is now 100%-owned 1091064 Ontario Ltd. a wholly owned Susidiary of Barrick Gold Corporation who acquired LAC Minerals Ltd. in 1994. The Kitsault Group is comprised of 25 claims; Kit 1-6, Ult 1-15, and Bria 16-19; totaling 88 units (see Table 1). The group covers approximately 1650 hectares. Figures 94-02 and 94-03 show the location and disposition of the claims, respectively.

TABLE 1: PROPERTY STATUS SUMMARY

CLAIM NAME	TENURE NO.	UNITS	EXPIRY DATE
Kit 1	323466	1	Jan 24, 98
Kit 2	323467	1	Jan 24, 98
Kit 3	323468	1	Jan 24, 98
Kit 4	323469	1	Jan 24, 98
Kit 5	323470	1	Jan 24, 98
Kit 6	323471	1	Jan 24, 98
Ult 1	323472	1	Jan 31, 98
Ult 2	323473	1	Jan 31, 98
Ult 3	323474	1	Jan 31, 98
Ult 4	323475	1	Jan 31, 98
Ult 5	323476	1	Jan 31, 98
Ult 6	323477	1	Jan 31, 98
Ult 7	323478	1	Jan 31, 98
Ult 8	323479	1	Jan 31, 98
Ult 9	323480	1	Jan 31, 98
Ult 10	323481	1	Jan 31, 98
Ult 11	323482	1	Jan 31, 98
Ult 12	323483	1	Jan 31, 98
Ult 13	323484	1	Jan 31, 98
Ult 14	323485	1	Jan 31, 98
Ult 15	323495	1	Feb 4, 98
Bria 16	323596	20	Feb 4, 98
Bria 17	323597	20	Feb 14, 98
Bria 18	323598	15	Feb 4, 98
Bria 19	323842	12	Feb 24, 98
	TOTAL:	88	



Kitsault Claim Group

Claim Map 94-03

NTS 103P/13E, 103P/14W

Scale 1:50,000

1.2 EXPLORATION HISTORY

There is very little record of previous work on this claim group area, but significant exploration has been performed to the south along the Kitsault River. The following is a summary of the history of the surrounding area based on reports by Black (1951), Carter (1970), Dawson and Alldrick (1986).

Prospectors were attracted to the area, in 1911, by prominent gossans on bluffs and in deeply incised canyons along the Kitsault River valley. Many Cu/Ag showings were developed, up to the early 1930's, by trenching, tunneling and limited diamond drilling. The more notable properties include: Dolly Varden Mine, Combination, Surprise, Copper Cliff, Starlight, and Wildcat.

More local to the Kitsault group, 3 km to the southwest, was the discovery of the Homestake deposit, in 1914, on Homestake Ridge. Between 1914 and 1939, showings on the Cambria claims, adjacent to the west and surrounding the Homestake claims, were discovered. In 1939, 8.0 tonnes of ore (grading 140g/T Au, 202g/T Ag, 7.5% Cu, 3.8% Zn, and 0.8% Pb) was shipped from the Homestake Claim Group. There has been little new work performed in this area since this date, except for reworkings of known showings.

Adjacent to the Kitsault claim group area, work has been recorded on the south-east side of Kitsault Lake (Woodcock 1966 & 1985, Blackwell 1987, Tupper & McCartney 1990):

- In 1966 Coranex performed geological mapping for Ag and 4 trenches were dug on the south side of Kitsault Lake.
- In 1979 Newmont Exploration of Canada Ltd. performed a geochemical survey on the south-east side of Kitsault Lake with 150 silt, soil and rock chip samples analyzed for Cu, Mo, Pb, and Zn.
- In 1984 J.R. Woodcock executed a minor exploration program consisting of geological mapping, silt, soil, and rock sampling.
- In 1986-87 Cominco Ltd. launched an exploration program comprising of geological, geochemical, and geophysical surveys.
- In 1989 Keewatin Engineering Inc. drilled 5 holes totalling 998.2 m, on the Kits group of claims, with additional prospecting and geochemical sampling.

2.0 GEOLOGY

2.1 REGIONAL GEOLOGY

The Kitsault claim group is situated at the eastern margin of a broad, northwest trending volcano-plutonic belt composed of Upper Triassic Stuhini Group and Upper Triassic to Lower - Middle Jurassic Hazelton Group.

This belt has been termed the "Stewart Complex" by Grove (1986) and forms part of the Stikinia Terrane. The Stikinia Terrane together with the Cache Creek and Quesnel Terranes constitute the Intermontane Superterrane which is believed to have accreted to North America in Middle Jurassic time (Monger et al, 1982).

To the west, the Stewart Complex is bordered by the Coast Plutonic Complex. Sedimentary rocks of the Middle to Upper Jurassic Bowser Lake Group overlay the complex to the east.

The Jurassic stratigraphy was established by Grove (1986) during regional mapping between 1964 and 1968. Formational subdivisions have been and are in the process of being modified and refined as a result of recent work being undertaken in the Stewart, Sulphurets, and Iskut areas by the Geological Survey Branch of the BCMEMPR (Alldrick, 1984, 1985, 1989), the Geological Survey of Canada (Anderson, 1989; Anderson and Thorkelson, 1990), the Mineral Deposits Research Unit at the University of British Columbia, and with the most recent and detailed work by C. Greig of the Geological Survey of Canada (GSC) (Greig, et al., 1994a,b; Greig et al., in press). A sedimentological, stratigraphic, and structural synthesis is slowly emerging for this area.

The Hazelton Group represents an evolving (alkalic/calc-alkalic) island arc complex capped by a thick succession of turbidites (Bowser Lake Group). Grove (1986) subdivided the Hazelton Group into four litho-stratigraphic units (time intervals defined by Alldrick 1987): the Upper Triassic to Lower Jurassic (Norian to Pliensbachian) Unuk River Formation, the Middle Jurassic Betty Creek (Pliensbachian to

Toarcian) and Salmon River (Toarcian to Bajocian) Formations, and the Middle to Upper Jurassic (Bathonian to Oxfordian- Kimmeridigian) Nass Formation.

Alldrick assigned formational status (Mt. Dilworth Formation) to a Toarcian rhyolite unit (Monitor Rhyolite) overlying the Betty Creek Formation. Rocks of the Salmon River Formation are transitional between the mostly volcanic Hazelton Group and the wholly sedimentary Bowser Lake Group and are presently treated either as the uppermost formation of the former or the basal formation of the latter (Anderson and Thorkelson, 1990). The Nass Formation has now been assigned to the Bowser Lake Group.

The Unuk River Formation, a thick sequence of andesitic flows and tuffs with minor interbedded sedimentary rocks, hosts several major gold deposits in the Stewart area. The unit is unconformably overlain by heterogeneous maroon to green, epiclastic volcanic conglomerates, breccias, greywackes and finer grained clastic rocks of the Betty Creek Formation.

Felsic tuffs and tuff breccias characterise the Mt. Dilworth Formation. The Mt. Dilworth Formation represents the climactic and penultimate volcanic event of the Hazelton Group volcanism and forms an important regional marker horizon.

The overlying Salmon River Formation has been subdivided in the Iskut area into an Upper Lower Jurassic and a Lower Middle Jurassic member (Anderson and Thorkelson 1990). The Upper member has been further subdivided into three north-trending facies belts: the eastern Troy Ridge facies (starved basin), the medial Eskay Creek facies (back-arc basin), and the western Snippaker Mountain facies (volcanic arc).

Sediments of the Bowser Lake Group rest conformably on the Hazelton Group rocks. They include shales, argillites, silt- and mudstones, greywackes and conglomerates. The contact between the Bowser Lake Group and the Hazelton Group passes between Strohn Creek in the north and White River in the south. The contact appears to be a thrust zone with Bowser Lake Group sediment "slices" occurring within, and overlying, the Hazelton Group pyroclastic rocks to the west.

Two main intrusive episodes occur in the Stewart area: a Lower Jurassic suite of dioritic to granodioritic porphyries (Texas Creek Suite) that is comagmatic with extrusive rocks of the Hazelton Group and an Upper Cretaceous to Early Tertiary intrusive complex (Coast Plutonic Complex and satellite intrusions). The Early Jurassic suite is characterised by the occurrence of coarse hornblende, orthoclase and plagioclase phenocrysts and, locally, potassium feldspar megacrysts.

The Eocene Hyder quartz-monzonite, comprising a main batholith, several smaller plugs, and a widespread dyke phase, represents the Coast Plutonic Complex.

Middle Cretaceous regional metamorphism (Alldrick et. al., 1987) is predominantly of the lower greenschist facies. This metamorphic event may be related to west-vergent compression and concomitant crustal thickening at the Intermontane - Insular superterrane boundary (Rubin et. al., 1990). Biotite hornfels zones are associated with a majority of the quartz monzonite and granodiorite stocks.

Recent structural studies by Evenchick (1991b) indicate that Bowser Basin strata are part of a regional Skeena fold and thrust belt. This tectonism developed between latest Jurassic and early Tertiary time and involved strata at least as young as Lower and Middle Jurassic Hazelton Group. This implies that the thrust faults of this belt have affected rocks of Stikinia, and may root in the Coast Plutonic Complex.

No significant deformation has been described for the interval between the deposition of the Hazelton and Bowser Lake Groups. Evenchick (1991b) concludes that folds in the Hazelton Group are likely to be the result of shortening during the formation of the Skeena fold belt.

2.1 PROPERTY GEOLOGY AND MINERALIZATION

The Kitsault claim group is predominantly underlain by Lower Jurassic Hazelton Group sediments and volcanics. This package specifically consists of a northeast-striking north-dipping sequence of andesite to dacite pyroclastic tuff breccias, bedded pyritic tuff, barite-celestite beds, black limestone, rhyolite tuff, and basalt. This sequence is unconformably overlain by Lower Cretaceous Bowser Lake Group sediments.

A brief summary of mineralization is as follows:

- Silver mineralization has been observed (Newmont 1979) in barite within a limestone formation on the south-east side of Kitsault Lake.

- Sphalerite-bearing sulphate-sulphide rock was located (Cominco 1986-87) at 5 points along a 6.5 km trend and soil geochemistry identified anomalous multi-element (Pb, Zn, and AS) values, but the geophysical surveys failed to locate conductors in the vicinity of known showings.

- The Kits Zn-Pb-Ag prospect (Keewatin 1989) is hosted within a well laminated carbonate package that includes Zn-Pb rich sulphide horizons in assocation with Ba-Sr sulphate laminae. The best diamond drill hole intersection was 4.95 m of 1.3% Zn, 0.12% Pb, and 26.5 g/T Ag.

3.0 BASELINE ENVIRONMENTAL STUDIES

4.0 CONCLUSIONS AND RECOMMENDATIONS

The information pertaining to these sections are included within the attached report by Rescan Environmental Services.

5.0 COST STATEMENT

Work Assessment for the Kitsault Group

Work recorded for the period June 24 to Nov 19, 1994

(Baseline Environmental Studies) †

Water Quality Survey:

Location	Station	No. Samples	$Cost/Sample	Cost($)
Kitsault Lake	K1-K5	27	337.00	9,099.00
Kitsault Lake Tributaries	T1-T7	13	337.00	4,381.00
Kitsault River	W20	17	337.00	5,729.00
Kitsault River	W21	15	337.00	5,055.00
Kitsault River	W22	17	337.00	5,729.00
Kitsault River	W23	13	337.00	4,381.00
	Total:	102	**Total:**	**34,374.00**

Portion of Water Quality Survey fee assigned to work assessment on the Kitsault group of claims: **$14,000.00**

Camp and Labour Costs

CJL Enterprises Ltd. June 24 - July 10 (17 days):

One person @ $250/day	$ 4,250.00	
One person @ $160/day	$ 2,720.00	
Camp rental @ $100/day	$ 1,700.00	
Camp subtotal:		**$ 8,670.00**

Helicopter Costs

Vancouver Island **H**elicopters

(Portion of transportation costs assigned to Kitsault claim group work assessment)

6 hours x $675/hr (206B) $ **4,050.00**

TOTAL: $26,720.00

† See Attached Report

6.0 CERTIFICATE OF QUALIFICATIONS

I, Mike Sieb, of Box 337, Stewart B.C., do hereby certify that:

1. I have studied Geology at Concordia University, Montreal, PQ and received a Bachelor of Sciences degree with Specialization in Geology in the spring of 1987.

2. I have continuously practised my profession in Quebec, Ontario, and British Columbia since graduation, except for time allotted for further studies.

3 I have studied Business Administration at The University of British Columbia (UBC), Vancouver, BC and received a Masters of Business Administration (MBA) in the summer of 1994.

4. I am currently employed by Barrick Gold Corp., Royal Bank Plaza, South Tower, 200 Bay Street, Suite 2700, P.O. Box 119, Toronto, Ontario

5. The statements in this report are based on office compilation on the Kitsault Claim Group. The environmental baseline studies were conducted, throughout 1994, by Rescan Environmental Services Ltd. I have personally supervised or reviewed the work described in this and the attached report.

Dated at Stewart this 25th day of February, 1995.

Mike Sieb, BSc. MBA

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1994 Environmental Studies at Kitsault Lake

Prepared for:

Lac Minerals Ltd.
Vancouver, British Columbia

Prepared by:

Rescan Environmental Services Ltd.
Vancouver, British Columbia

February 1995

1994 ENVIRONMENTAL STUDIES AT KITSAULT LAKE

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1994 ENVIRONMENTAL STUDIES AT KITSAULT LAKE

Chapter 1.0 includes a brief background of the Kitsault Lake tailings disposal option and the objectives of the 1994 environmental field program. Details of the field work follow in Chapter 2.0 and the results of the environmental studies are summarized in Chapter 3.0. Complete data sets for the various components of the study are provided in Appendices A - G. Appendix H contains a Statement of Qualifications which includes a Rescan company profile and the contributions of those involved in the Kitsault Lake field work, sample analyses and report write-up.

1.0 Project Background

Among the alternatives for disposal of mine tailings generated from Lac Mineral's Red Mountain property near Stewart, British Columbia is the subaqueous environment of Kitsault Lake. The small lake is located across the Cambria Icefield, about 20 km southeast of Red Mountain (Figure 1). It is approximately 3 km long by 0.75 km across at its broadest point, and has a maximum depth of 70 m. How subaqueous deposition of mine tailings to the deep basin might affect water quality and fisheries of both the lake and the Kitsault River system is central to consideration of the viability of Kitsault Lake as a disposal option.

The issues relevant to Kitsault Lake for subaqueous storage of mine tailings do not involve the stability of sulphide-rich mine tailings. The absence of chemical reactivity of such material in the subaqueous environment is well documented (Rescan 1990; Pedersen *et al.* 1993). Rather, preliminary water-balance estimates performed by Rescan for Kitsault Lake suggest that the tailings supernatant poses the most significant potential impact to water quality. Thus, the processes affecting water quality in Kitsault Lake and downstream within the Kitsault River are germane to the viability of this option for mine tailings disposal. Moreover, the lower reaches of the Kitsault River, below an impassable barrier ~12 km downstream from Kitsault Lake, are known to host spawning salmon.

Preliminary assessments of the addition of mine tailings and supernatant to Kitsault Lake indicated that the tailings and, in particular, supernatant will accumulate below a "chemocline" within the deep basin rather than mixing

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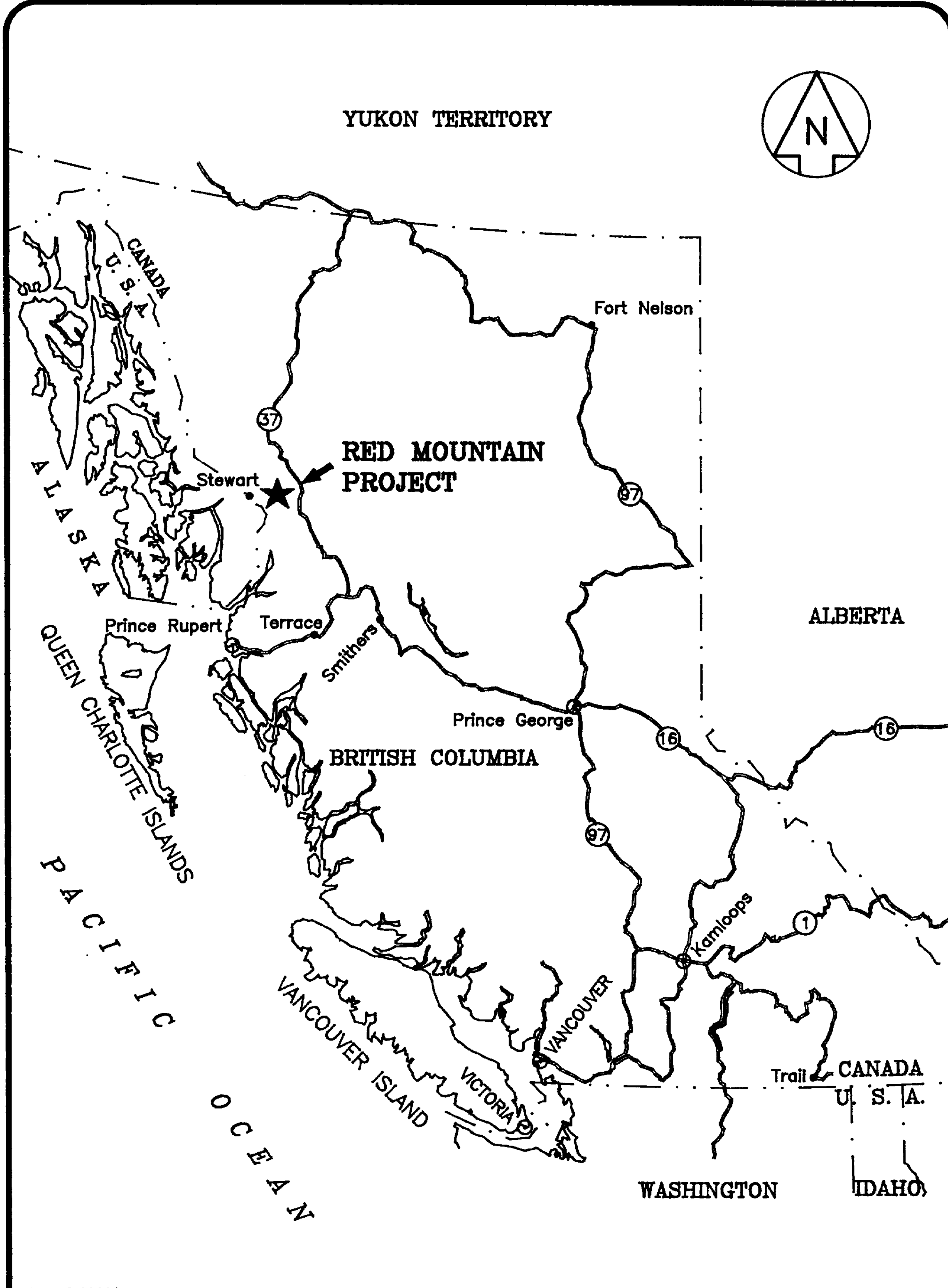

General Location Map

Figure 1

LAC

Rescan

uniformly within the lake. Such an accumulation has both positive and negative implications. For example, storage of the supernatant below a chemocline in the deep basin will attenuate impacts on water quality downstream in the Kitsault River. Under normal conditions, mixing across a chemocline would be minimal, increasing the effective dilution of this material within the lake. However, sporadic mixing events such as fall turn-over, vigorous wind mixing or plunging of cold surface inflow may result in the release of water from below the chemocline to the surface waters of the lake and ultimately to the Kitsault River. If such events occur, the resulting pulses of higher contaminant concentrations could exceed provincial (B.C. Ministry of Environment, Lands and Parks) and federal (Canadian Council of Ministers of the Environment) criteria for freshwater aquatic life in Kitsault River. The likelihood of such an event relates to the specific physical limnology of Kitsault Lake and the characteristics of the discharge. The magnitude of this potential threat is related to the quality and quantity of supernatant water stored in the deep basin. Thus, in order to assess the potential effects of supernatant water on water quality and ultimately the fisheries resource, additional information was required. Acquisition of this information involved comprehensive surveys of fisheries, lake biology, bathymetry, physical limnology, water quality and sediment geochemistry as well as the installation and monitoring of a weather station.

In addition, preliminary wildlife and vegetation studies were conducted in the vicinity of Kitsault Lake to establish background conditions in the event of pipeline construction for the subaqueous tailings disposal system.

Objectives for the Kitsault Lake surveys were:

- an assessment of the fisheries both in Kitsault Lake and the upper Kitsault River;
- a reconnaissance level vegetation and wildlife study in the immediate vicinity of Kitsault Lake;
- the determination of the degree of mixing within Kitsault Lake through the collection of meteorologic, hydrologic and hydrographic data;
- the collection of detailed bathymetric data for Kitsault Lake; and

- the determination of baseline water quality for Kitsault Lake and the Kitsault River.

Details of the Kitsault Lake field program are outlined in the following chapter.

2.0 Environmental Fieldwork

In considering Kitsault Lake as an option to receive mine tailings generated from the Red Mountain property, several environmental factors required close examination. A fisheries assessment along with detailed studies of lake hydrography, geochemistry and water quality were performed to ascertain the viability of this option for the disposal of mine tailings.

A preliminary study was conducted in January 1994, followed by three surveys in July, September, and November to fully assess the range of ice-free mixing conditions to which the Kitsault Lake water column would be subjected. A summary of the fieldwork, some requiring seasonal sampling, is provided in Table 1 followed by a more detailed description of each component.

Table 1

Fieldwork Performed During 1994 Kitsault Lake Surveys

Fieldwork Components	Survey 1 January	Survey 2 July	Survey 3 September	Survey 4 November
Fisheries	X	X	X	–
Vegetation and Wildlife	–	–	X	–
Bathymetry	–	X	–	–
Weather Station Download	–	X	X	X
Water Quality	X	X	X	–
Stream Gauging*	–	X	X	–
CTD Profiling	–	X	X	X
Sediment Geochemistry	X	X	–	X

X - component undertaken.
* in addition to automated hydrology station at the outlet of Kitsault Lake.

2.1 Fisheries Evaluation

Paramount to consideration of the Kitsault Lake disposal option is an intensive evaluation of the local fisheries resource and its associated biota. In order to assess fish populations in Kitsault Lake, its associated feeder streams and ponds, and the Kitsault River above the natural barrier to fish migration, an intensive sampling program was conducted. During the January survey, fish sampling was carried out at stations K1-K5 (Figure 2). During the July survey gillnets were set at 14 locations around the lake, as determined by the presence of fish targets indicated on the echo-sounder. Fish populations were evaluated with regard to the presence or absence of species, relative abundance, size distribution, and age structure. Fish capture methods involved floating and sinking 12.5 cm monofilament gill nets and gangs ranging in mesh size from 1.9 to 8.9 cm. Both floating and bottom sets were made perpendicular and parallel to the shoreline at various depths at the proposed seven stations. The duration of the sets were standardized at approximately eight hours and were carried out during the daytime and nighttime. Minnow traps baited with salmon roe were also set at various locations around the lake and in the feeder streams and ponds in order to catch smaller sized fish.

During the September site visit, daytime and nighttime hydro-acoustic surveys of Kitsault Lake were performed by BioSonics Inc. of Sumas, Washington to determine fish distribution and abundance in the lake, and to establish a population estimate. Data from the 30 survey transects were stored as echograms and digital tapes.

Each fish caught by gillnetting or in live traps was identified, measured, weighed and sexed. Up to ten specimens of each species were retained for stomach and tissue metals analysis and determination of age distribution. Age was determined by observations of otoliths or scales, depending on the species. Fisheries data are tabulated in Appendix A.

Essential to a comprehensive fisheries evaluation is an examination of the aquatic food chain to provide information on habitat characteristics and quality. To this end, the fisheries component included: zooplankton tows; bottle casts for phytoplankton identification and quantification as well as for nutrient analyses; periphyton collection; and Ekman grab samples for benthic invertebrate collection.

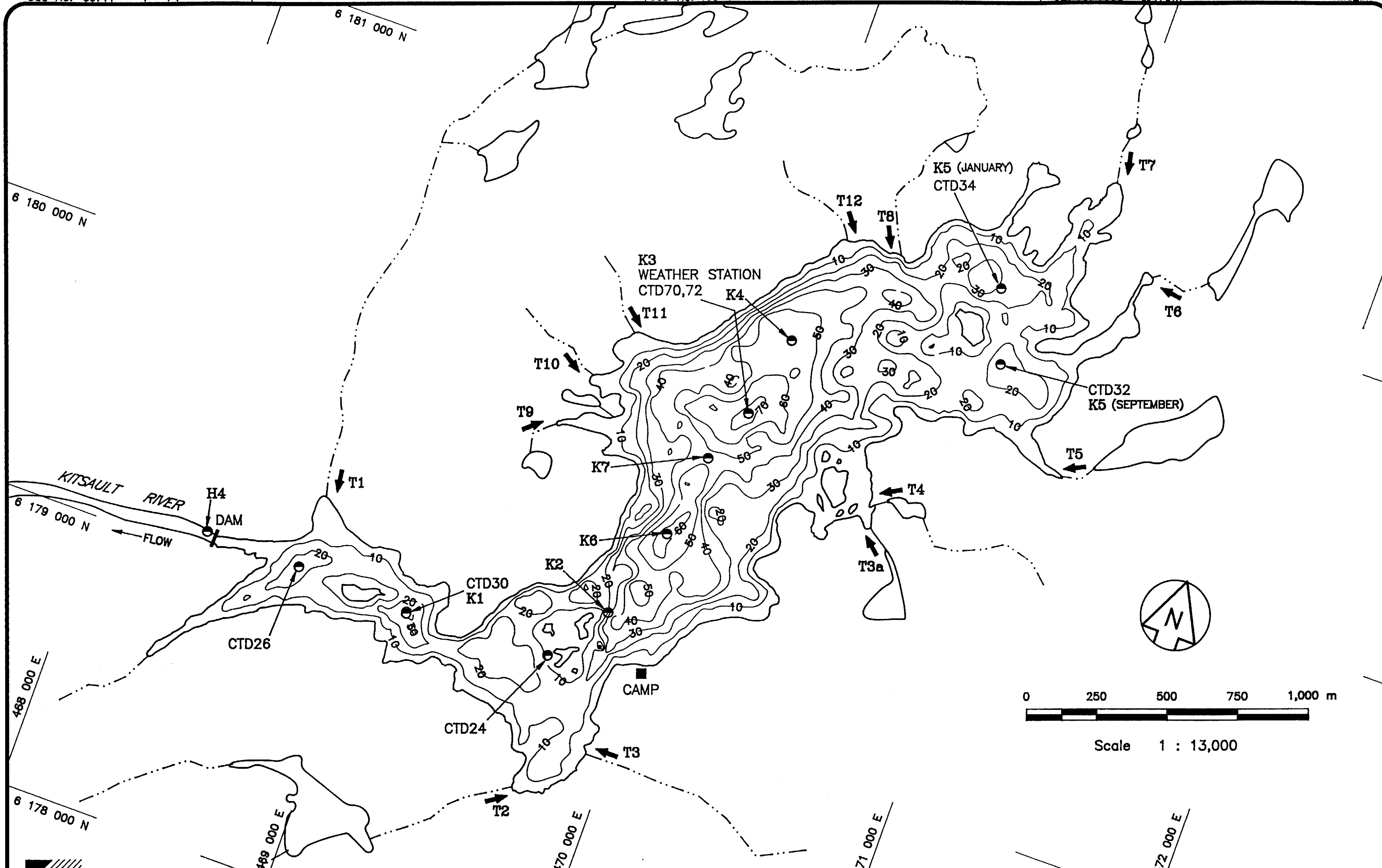

Figure 2

Kitsault Lake Station Location Map

LAC

Rescan

Samples were collected during a winter survey through the ice in January and a fall survey in September; these data are included in Appendix A.

One composite sample of periphyton (benthic algae) was collected from Kitsault Lake tributaries T1, T5, and T12a using a syringe/brush sampler (Figure 2). In addition, three samples of phytoplankton (free-floating algae) were collected from the lake itself at K1, K3 and K5. All algal samples were preserved with Lugol's iodine solution to aid in identification to the genus level, where possible, and in quantification.

During the winter, five replicate vertical zooplankton hauls were performed at stations K1 - K5 using a 0.26 m diameter net with a 164 µm mesh. Zooplankton were collected in the fall using a 0.6 m diameter, 363 µm mesh net and were preserved with buffered formalin (10% final dilution). Two horizontal surface tows were conducted at the north end of the lake; three replicate vertical hauls were conducted in the deepest part of the lake at K3.

During the winter survey, an Ekman grab was used to collect five replicate benthic invertebrate samples at Sites K1 - K5. In the fall, five replicate (where possible) grabs were done at K1, K3 and in the bay by tributary T4 (Figure 2). The grab samples were washed through a 250 µm mesh screen and the benthic invertebrates which were retained were transferred to jars and preserved with a 10% buffered formalin. In addition, three replicate samples were collected using a Hesse sampler from each of tributary T1, T5 and T12a. The benthic invertebrates retained were transferred to jars and preserved with 10% buffered formalin.

2.2 Wildlife and Vegetation Assessment

A reconnaissance level wildlife and vegetation assessment in the environs of Kitsault Lake was conducted from September 21 - 23, 1994. Foot surveys were completed around the lakeshore in order to directly observe mammals, birds, and amphibians, and to look for indirect evidence of their presence (tracks, scat, dens, *etc.*). Boat surveys were used to observe waterfowl and to access small islands to look for evidence of nesting areas.

Interpretation of the importance of various habitat types for key wildlife species or species groups involved identification of habitat types based largely upon vegetation. However, the importance of habitat for wildlife is also determined by other factors such as topography and climate, particularly snow depth and duration of snow cover. Interpretation of the importance of habitats for wildlife species is based on direct sightings where available; on known requirements for food, cover, and breeding sites as reported in published and unpublished literature; and on field experience in similar environments in the region. Appendix B tabulates the findings of the wildlife, aquatic bird and vegetation surveys.

2.3 Bathymetry

A detailed bathymetric survey was performed in Kitsault Lake in order to more accurately determine lake volume and tailings storage capacity. High quality bathymetric data are particularly critical to the hydrographic modelling proposed for Kitsault Lake (Section 2.4). Predictions of lake mixing, particularly in the deeper basin where the tailings would be discharged, rely heavily on such data. To this end, preliminary data collected in the winter of 1993/94 by lead-line and Ground Penetrating Radar (GPR) methods were supplemented with additional data from a survey utilizing a depth sounder and a differential GPS system.

A Marinetek-Seamax depth sounder and a Trimble Basic Plus GPS recorded positional and depth data every six and three seconds respectively during transects. In conjunction with the Basic Plus GPS, a Trimble 4000SE GPS was used as a base recorder to correct positional error associated with the mobile GPS unit. Total x and y positional error was less than 3 m and vertical error less than 1 m. Data was time-indexed and downloaded directly to a computer for integration and processing at a later date.

2.4 Physical Limnology

Because tailings and supernatant are suspected to accumulate in the deep basin under a "chemocline", incorporation of contaminants into Kitsault Lake surface waters and eventually into the Kitsault River could conceivably be a slow, highly attenuated process. This might occur if vertical mixing of the lake is impeded by the density effect of a thermocline or the chemocline; transport of dissolved contaminants across this barrier would occur through diffusional and small-scale turbulent processes. However, vigorous deep mixing could be induced under several scenarios, compromising the ability of the chemocline to attenuate dilution.

To model the behaviour of the lake as well as the location and stability of the chemocline, its physical characteristics were studied. This involved measurement of several meteorological parameters including wind speed and direction, precipitation, relative humidity, solar radiation and ambient temperatures. Additionally, the evolution of vertical thermal structure within the lake as well as the magnitude and temperature of any significant surface inflows were monitored.

To this end, a weather station and thermistor array were deployed from a raft over the central basin of Kitsault Lake. This information was supplemented by CTD data as well as stream gaugings of any significant surface inflows measured during the July and September surveys.

2.4.1 Weather Station

Measurement sensors and a datalogger were mounted onto a 10 foot tripod. The tripod was fastened to an 8' x 8' x 1' plywood and styrofoam raft which was anchored at four points to the lake bottom. The location of the weather station is shown in Figure 2.

An anemometer and pyranometer were mounted to the top mast of the tripod to collect data on wind speed and direction and incident short-wave solar radiation. A temperature and relative humidity probe was mounted halfway up the tripod and shielded to reduce effects of radiation. Precipitation was measured by installing a rain gauge to the side of the raft. In addition, a net radiometer was installed over the surface of the water to measure net short- and long-wave radiation.

Data from all sensors was collected with a Campbell Scientific CR-10 datalogger and stored in a storage module that was downloaded periodically. Wind speed was monitored and an average obtained on a 2 minute, 10 minute and 60 minute interval. Hourly average temperature, relative humidity and total hourly precipitation data was collected. In addition, maximum and minimum temperatures were logged on a daily basis. The station was powered using a 12V deep cycle marine battery and supplemented with a 10W solar panel. Meteorological data can be found in Appendix C.

2.4.2 Thermistors

To effectively measure temporal thermal variation in the lake with depth, a string of nine thermistors were deployed from the side of the raft. Yellow Springs Instruments (YSI) water temperature sensors with an error of 0.05°C were chosen for this application. These probes were strung at depths of 1, 2, 3, 5, 8, 13, 21, 34, and 55 metres below the surface. Data were collected by the CR-10 and hourly average temperatures were stored in the storage module.

2.4.3 Stream Gauging

A hydrology station, labelled H4, was installed on the upper Kitsault River at the outlet of the dam at Kitsault Lake (Figure 2). This hydrometric station was installed in January 1994 to support limnological studies of the lake and a hydrological assessment of the Kitsault watershed.

To assess the potential for cold surface inflow waters to plunge to significant depths within Kitsault Lake and hence induce mixing across the chemocline, streams were gauged on each survey. Stream gauging involved measurement of cross-sectional area and stream velocity at several points across the stream. Discharge was estimated from those data (Appendix D).

2.4.4 Modelling

Collectively, this limnological information was used in a predictive model to determine the behaviour of the chemocline within Kitsault Lake during and after the life of the mine.

An initial scoping assessment of the in-lake mixing problem indicated that the physical stability of tailings supernatant pooled at the lake bottom could be affected by three processes: (1) plunging of cold (perhaps turbid) glacial inflow waters; (2) lake turn-over induced by climatic variations above the lake, and (3) wind induced mixing at the surface of the lake. The first process was eliminated as a consideration when a review of topographic information and a site visit showed that the lake's catchment is unglaciated.

A modelling exercise was carried out by Dr. Greg Lawrence of the Department of Civil Engineering, University of British Columbia, a specialist in the field of environmental fluid mechanics (EFM).

2.5 Water Quality

A regular monthly sampling program was initiated in January 1994 at four stream stations (W20 - W23) located downstream from Kitsault Lake (Figure 3). The primary goal of the program was to provide a detailed characterization of water quality in the Kitsault Lake watershed which may be affected by project development. Intensive sampling, five times a month when weather conditions allowed, was conducted to assess the temporal variability in a shorter time frame. The months for intensive sampling were selected such that extreme flow events (*i.e.*, high and low flows) could be assessed in terms of their influence on water chemistry.

In addition, a baseline water quality assessment was carried out during the January, July and September surveys at three stations in Kitsault Lake: station K1 in the southwest basin, station K3 in the deep central basin and station K5 in the northeast region of the lake (Figure 2). The water quality was characterized by sampling six depths at each station. Samples were analyzed for a host of parameters including physical parameters, anions, nutrients and an extensive suite of total and dissolved trace metals (Table 2, Appendix E). In addition to the parameters listed in Table 2, dissolved oxygen readings were made by YSI Model 58 dissolved oxygen profiling probe (Appendix E).

During sampling, care was taken to collect uncontaminated trace metal sub-samples by the implementation of general trace metal protocol (*i.e.* Nriagu *et al.* 1993). A two-litre acid-washed Go-Flo bottle was rigorously cleaned and acid-washed prior to water sample collection.

In-field Quality Assurance/Quality Control (QA/QC) was carried out by collecting replicate samples on 20% of the total sample number, and was submitted to the analytical laboratory under false station labels to ensure blind analytical runs.

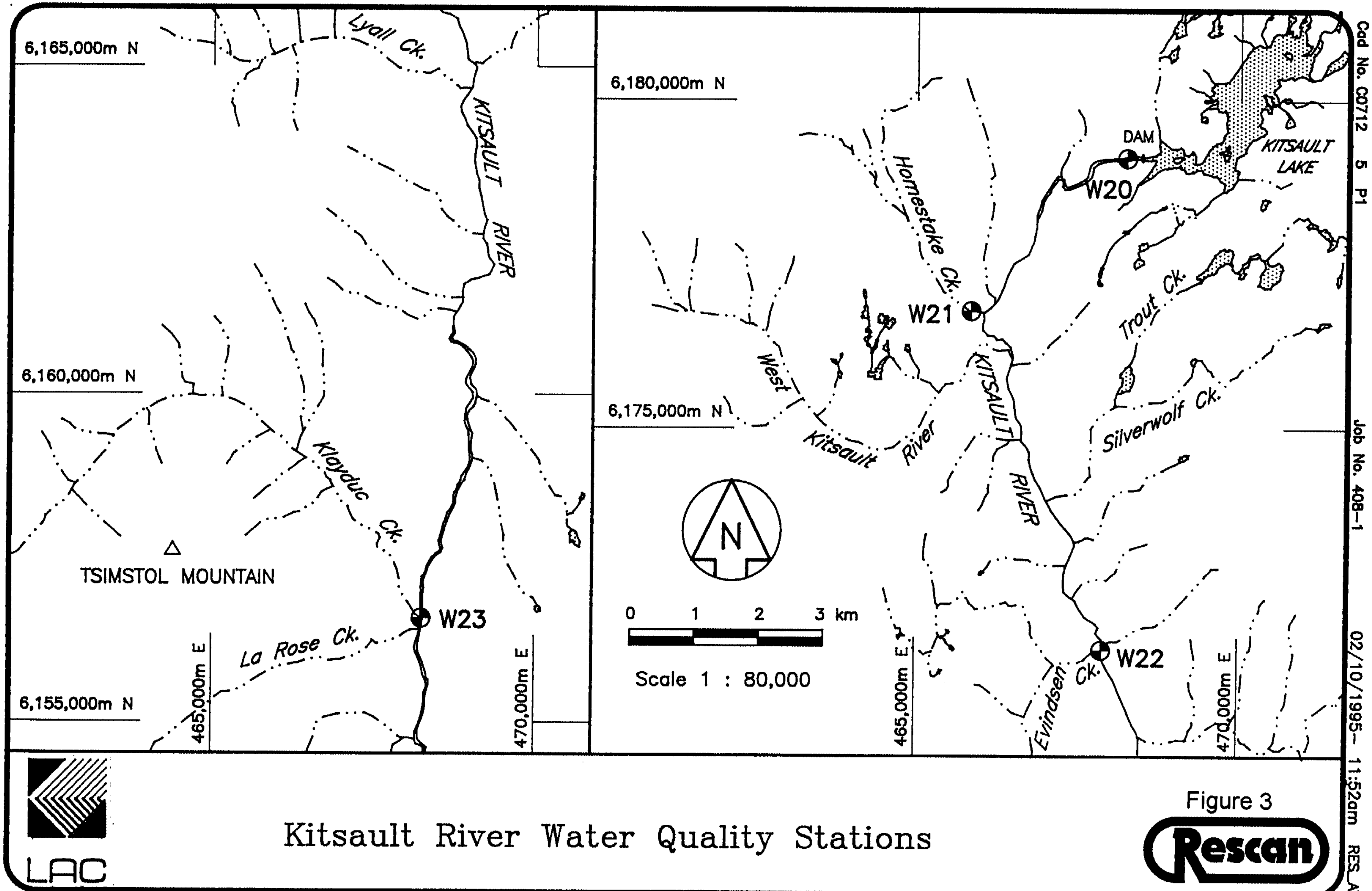

Figure 3

Kitsault River Water Quality Stations

Table 2

Kitsault Lake Water Quality Parameters and Detection Limits

Parameter	Detection Limit (mg/L)
Physical Parameters	
pH	0.1 pH units
Conductivity	2 µmhos/cm
TDS	1.0
TSS	1.0
Turbidity	0.1 NTU
Alkalinity	1.0
Hardness	1.0
Acidity	1.0
Anions	
Cl	0.5
F	0.05
SO_4	0.5
ΣH_2S	0.5
Nutrients	
NH_3	0.005
NO_3	0.01
NO_2	0.005
Total P	0.005
Dissolved P	0.005
Ortho-P	0.005
Cyanides	
CN_{wad}	0.005
CN_{total}	0.005
SCN	0.1
CNO	0.05
Organics	
DOC	0.5
TOC	0.5

Parameter	Detection Limit (µg/L)
Metals (dissolved, total)	
Al	2.0
Sb	0.1
As	1.0
Ba	1.0
Be	0.5
B	1.0
Cd	0.1
Ca	10
Cr	1.0
Co	0.5
Cu	0.5
Fe	10
Pb	1.0
Mg	10
Mn	1.0
Hg	0.05
Mo	0.5
Ni	2.0
K	50
Se	0.025
Ag	0.01
Na	10
Sr	0.1
Te	0.1
U	0.01
V	1.0
Zn	2.0

Additionally, field blanks (distilled, deionized water) were run through the sampler and exposed to the same conditions and treatments as environmental samples in order to monitor any potential sampling contamination.

Station depths were determined in the field after the water column was hydrographically characterized by CTD profiling. Depths were selected to optimize the distribution within the epilimnion across the thermocline and into the hypolimnion. Hydrographic data were collected through high resolution profiling of the water column utilizing an Applied Microsystems CTD Profiler. CTD profiling was performed at six sites in September and only at K3 in November due to ice cover. This information supplemented the data collected by the thermistor string (Section 2.4.2) and was collected on three surveys (Appendix F).

2.6 Sediment Geochemistry

Long-term chemical stability of sulphidic mine tailings residing on or within lake sediments depends largely on the *in situ* geochemical environment. Characterization of the natural sediments of Kitsault Lake was necessary to determine the geochemical environment within which the tailings will accumulate. However, because tailings reactivity is not at issue and because sediment data exist from a survey performed in January, a limited suite of sediment samples were collected in July.

Three surface grab samples were collected on a transect through the deep basin (stations K3, K4 and K6; Figure 2) and analyzed for major and minor elemental composition as well as organic carbon and total nitrogen (Appendix G).

Collectively, these data, along with data from the sediment samples collected in January (stations K1 through K5), provided sufficient information to assess the spatial geochemical nature of the lake sediments. In particular, emphasis was placed on addressing the chemical nature of the deep basin where tailings will be discharged.

2.7 Laboratory Analyses of Water Quality and Sediment Samples

Analysis by Elemental Research Inc. of Vancouver, B.C. followed APHA Standard Methods, 18th Edition (1992). Inductively Coupled Argon Plasma Mass

Spectrophotometry (ICP-MS) was used to determine total and dissolved metal concentrations. Anions such as chloride and fluoride are measured with specific ion electrodes, while sulphate is determined by a nephelometric method utilizing barium sulphate precipitation. Nutrients such as nitrogen and phosphorus are measured colourimetrically using a UV/visible spectrophotometer after methods outlined in Parsons *et al.* (1984) and APHA (1992).

Total and dissolved organic carbon were determined colourimetrically after persulphate-UV digestion, using phenolphthalein reagent (APHA Method 5310).

Sediment solids were prepared by extraction to liberate the volatile components, Hg and Se, for hydride generation. The remaining material underwent quantitative acid digestion in a sealed bomb; elemental analysis was by ICP-MS.

Internal quality control samples were prepared in the laboratory and analyzed along with the environmental samples. The information generated allowed the determination of laboratory precision, accuracy and contamination control for all measurements. For trace analyses, the following internal quality samples are employed: method blanks, sample replicates, instrument check standards, detection limit standards, surrogate compounds, sample spikes, Standard Reference Material (SRM) and Certified Reference Material (CRM).

3.0 Results

A summary of the results from the 1994 Kitsault Lake field program are provided below. Complete data sets can be found in following appendices: A) Fisheries, B) Wildlife, Aquatic Birds and Habitat, C) Meteorology, D) Stream Discharge E) Water Quality, F) CTD, and G) Sediment Geochemistry.

3.1 Fisheries Evaluation

3.1.1 Periphyton

Periphyton consisted of three phyla: Chlorophyta, Chrysophyta and Cyanophyta, representing a total of 25 genera. The most diverse and abundant group was Chrysophyta. Most of the genera present were colonial in nature (filaments or mats).

3.1.2 Phytoplankton

Phytoplankton consisted of five phyla, Chlorophyta, Chrysophyta, Cyanophyta, Cryptophyta, and Pyrrophyta, representing a total of 18 genera. Chrysophyta was the most diverse and abundant group. Genera were present as individual cells and as colonies.

3.1.3 Zooplankton

Zooplankton were comprised of two phyla, Rotifera and Crustacea, representing a total of 15 species. Rotifera were more abundant in the January samples while Crustacea (Cladocera and Copepoda) dominated the September samples.

3.1.4 Benthic Invertebrates

Stream and lake invertebrates consisted of seven phyla with the insects, particularly the larval chironomids (two-winged flies), dominating both soft and hard substrates in terms of diversity and abundance.

3.1.5 Fish

Few fish were observed on the Kitsault Lake echograms recorded by BioSonics Inc., indicating low fish density and a small population in the lake. These findings concurred with preliminary conclusions based on initial gillnet, setline and trap results, drawn by Dr. Tom Northcote (senior fisheries ecologist and limnologist), and Ron Saimoto (B.C. Environment).

Dolly Varden (*Salvelinus malma*) and rainbow trout (*Oncorhynchus mykiss*) were found in Kitsault Lake and its tributaries. The Dolly Varden population estimate was less than 1000 fish based on the BioSonics hydroacoustic survey and total catch. Dolly Varden age classes ranged from 0 to 10+ years. The rainbow trout that were aged were found to be 2+ years (n=3). Fish diet consisted largely of chironomids in the streams and cladocerans in the lake.

3.2 Wildlife and Vegetation Assessment

3.2.1 Wildlife

Moose are the only ungulates known to use the Kitsault Lake area, and only occur here in summer and early fall. One moose and a small amount of moose sign were noted at the lake. No grizzly bear sign was noted at the lake. Based on sightings and sign, black bears are common in the Kitsault Lake area. The diversity and abundance of berries is undoubtedly a contributing factor.

Common Loon, Pacific Loon and Horned Grebe were noted. Canada geese are present from at least early July to late September, based on sightings, grazing sign, and scats. Mew gulls are thought to nest on islands in the lake.

3.2.2 Vegetation

Forest stands around Kitsault Lake are mostly semi-open (parkland type) and dominated by mountain hemlock with minor amounts of subalpine fir. Several species of blueberry (*Vaccinium* spp.) dominate the forest understory. Openings among the tree stands support various heather, seepage slope, wetland, and rock outcrop communities. Plant species diversity is relatively high, as is herbage productivity (in wet sites) and berry production. Although shrubs are abundant, preferred browse species such as willows and red-osier dogwood are of limited occurrence.

Adjacent uplands are within the leeward (inland) variant of the moist maritime subzone of the Coastal Mountain Hemlock Biogeoclimatic Zone (MHmm), and show characteristics of both the continuously forested subzone (MHmm1) and higher elevation parkland (MHmmp) (Ministry of Forests and Lands 1988). Zonal and subzonal vegetation are described by Banner *et al.* (1993) and Pojar *et al.* (1991). The MH Zone is characterized by deep and lengthy snow cover, which places severe limitations on wildlife use.

3.3 Bathymetry

The survey, performed over two days in July 1994, consisted of various transects across the length and width of the lake. A detailed bathymetric chart, shown in Figure 4, was produced from the positional and depth data collected.

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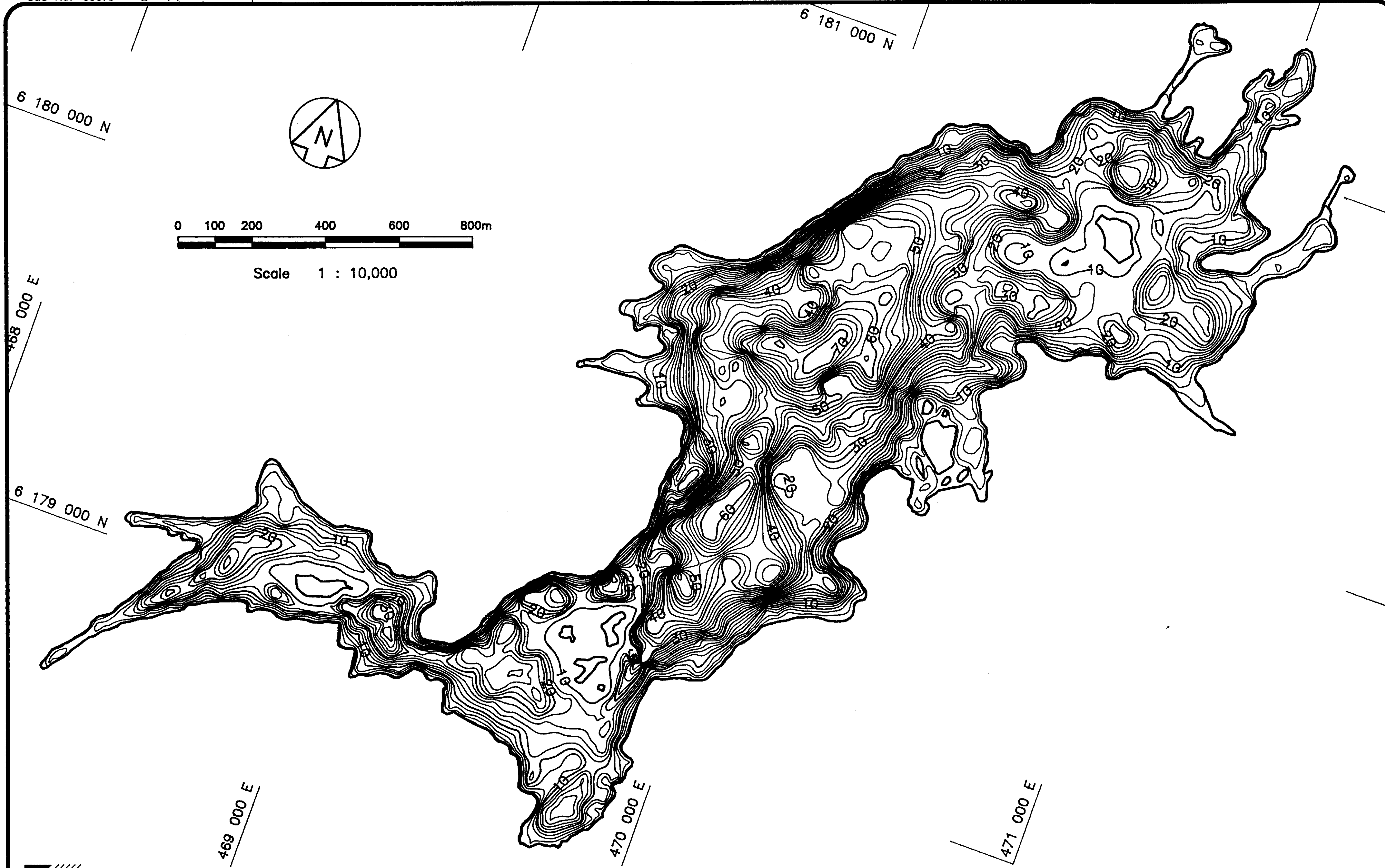

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Figure 4

Kitsault Lake Bathymetry

Rescan

3.4 Physical Limnology

3.4.1 Weather Station

Wind speed, hourly average temperature, relative humidity and total hourly precipitation data were collected. In addition, maximum and minimum temperature were logged on a daily basis.

3.4.1.1 Air Temperature

The maximum recorded temperature at Kitsault Lake during the period of data collection was 25.1°C in July and -10.2°C in November.

The average temperatures at Kitsault Lake are similar to those of the lower tram terminal during the late summer and early fall (see Table 3).

Table 3

Comparison of Kitsault Lake, Lower Tram Terminal and Upper Tram Terminal Temperature Data

Station	July	August	September	October	November
Monthly Average (°C)					
Kitsault Lake	12.6(1)	13.7	7.4	2.3	-3.1(2)
Lower Tram	12.9	14.5	7.9	n/a	n/a
Upper Tram	8.5	10.8	3.6	n/a	n/a
Maximum (°C)					
Kitsault Lake	25.1(1)	24.1	13.8	9.3	1.0(2)
Lower Tram	23.3	24.0	17.1	n/a	n/a
Upper Tram	21.2	21.4	10.8	n/a	n/a
Minimum (°C)					
Kitsault Lake	4.2(1)	5.2	0.2	-6.2	-10.2(2)
Lower Tram	6.3	6.5	0.2	n/a	n/a
Upper Tram	0.7	14.9	7.2	n/a	n/a

(1) Three weeks of data available.
(2) Two weeks of data available.

3.4.1.2 Wind Speed and Direction

Winds during the open water period are channelled by the local topography and frequently exhibit a strong diurnal cycle. Under clear sky conditions, winds generally blow up-valley by day and down-valley by night. The maximum hourly average wind speed was 10.2 m/s on September 21, 1994, while the maximum recorded instantaneous (*i.e.* five-second) wind speed was 15.6 m/s (also recorded on September 21).

3.4.1.3 Rainfall

Daily precipitation readings were compared with readings collected at the Stewart airport. The total amount of rainfall at the Stewart airport is generally higher than that measured at Kitsault Lake. September appears to have been the wettest month of the four and a half months of data collected at Kitsault Lake with a total of 229.3 mm of rainfall. October has historically been the wettest month of the year at the Stewart airport with about 301.9 mm of precipitation.

3.4.2 Thermistors

Two methods of data collection were employed to determine water temperature profiles at various points in the lake. The first method consisted of a string of nine thermistors anchored at discrete depths in the deep basin of the lake. These thermistors were connected to a datalogger where data were processed and stored. Surface water temperatures ranged from a low of 1.81°C (November 15) to a high of 19.58°C (August 13); whereas temperatures at depth, as recorded by the 55 m thermistor, ranged from 3.47°C (November 14) to 4.90°C (October 29). A graph representing all thermistor data collected during the July to November sampling period is shown in Figure 5.

The second method utilized a CTD to collect temperature data at one metre intervals at various locations (Appendix F). A comparison between the temperatures recorded by the CTD and the thermistors showed that the two methods of data collection are in good agreement (Figure 6).

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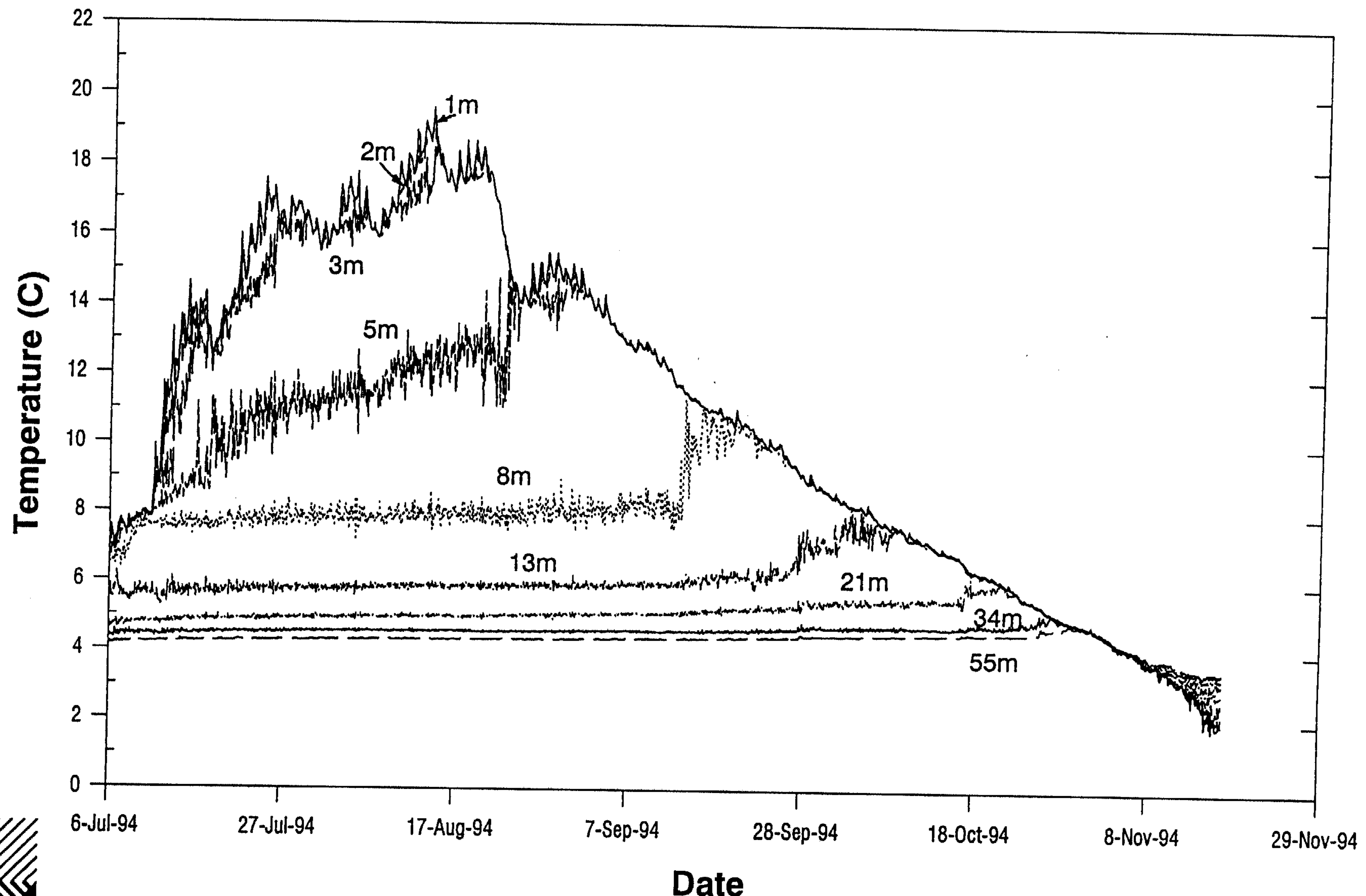

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Figure 5

Kitsault Lake Thermistor Data

Rescan

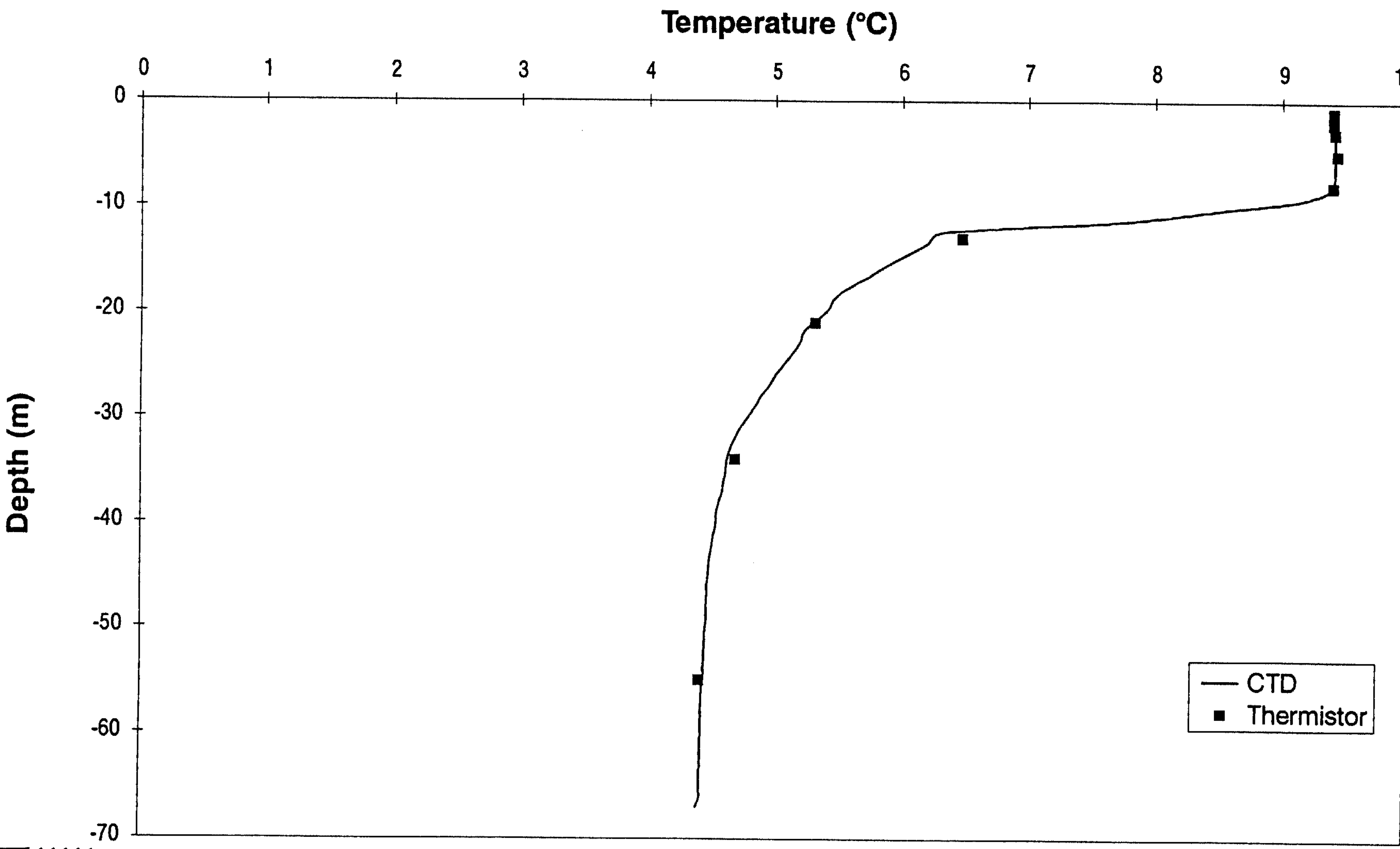

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Figure 6

Water Temperature Profile at CTD 70
Kitsault Lake - September 26, 1994

Rescan

3.4.3 Stream Gauging

A hydrology station, labelled H4, was installed on the upper Kitsault River at the outlet of the dam at Kitsault Lake (Figure 2). This hydrometric station was installed in January 1994 to support limnological studies of the lake and a hydrological assessment of the Kitsault watershed.

Although detailed analyses have not yet been completed, a preliminary assessment of the data showed that the maximum daily average streamflow was 4.32 m^3/s in mid-June 1994. The lowest recorded flow was 0.43 m^3/s in March.

Highest flows were expected in the summer months of June and July resulting largely from snowmelt runoff. Low flows were expected to occur in the winter months of February and March when temperatures are low (little snow melt).

The average monthly flows range from 0.49 m^3/s or 30.4 $L/s/km^2$ in March, to 3.23 m^3/s or 201.7 $L/s/km^2$ in June. (Stream discharge data for station H4 and Tributaries 1, 3, 4, and 5 are tabulated in Appendix D).

The total runoff over nine months was calculated to be 1,842 mm. By estimating the runoff for the remaining three months of the year, a total of about 2,300 mm was estimated for 1994. This data can be compared to the longterm historical runoffs at the Water Surveillance of Canada (WSC) gauge on the Kitsault River at Klayduc Creek (WSC Station O8DB011). The average annual runoff at the WSC station is 2,955 mm. The difference between the two figures may partially result from the probable underestimation of high flows at H4, mentioned above. However, it is likely that a real difference does exist: the Kitsault River catchment is partially glaciated, but the portion of it contributing to flow at H4 is not. This issue could be easily resolved through the determination of a more accurate stage-discharge relationship at H4, and by comparing data collected at H4 to data collected at the WSC gauge simultaneously (data from the WSC gauge for 1994 were not available when this report was prepared.

3.4.4 Modelling

The modelling exercise assessed chemocline stability through seasonal changes, including spring and fall turn-over, and during periods of high winds. Although the modelling exercise is not complete, several general conclusions can be made:

- Water discharged to the lake with the tailings will at all times of the year be denser than lake water and will therefore tend to pool at the deepest part of the lake's central basin. The boundary dividing the dense tailings supernatant from the less dense lake water is termed a "chemocline." The pool of supernatant may be termed the "monomolimnion."
- The monomolimnion will increase in depth as more tailings are discharged into the central basin.
- The stability of the chemocline depends greatly on its depth. If the chemocline remains below, say, 30 m, wind-induced mixing and internal waves are extremely unlikely to cause erosion of the chemocline or upwelling of water from beneath it. On the other hand, if the chemocline rises to a depth of 15 m, then the probability of upwelling occurring as the result of wind-induced internal waves would be significant. Therefore, any tailings management plan must seek to minimize the quantity and water discharged to the lake with the tailings.
- The "safe" limit for the depth of the chemocline has not been determined. This limit depends on the maximum wind speed which can be sustained over a few hours, which cannot be precisely determined on the basis of wind data collected during a single open-water season.
- A preliminary assessment of the likely wind regime at the lake indicated that the lake is in a relatively sheltered location and that accordingly, a conservative analysis could be based on data from nearby stations, such as Stewart, with longer periods of record. Any detailed assessment would need to consider both summertime thermally-driven winds and Arctic outflow winds, which may occur near the end of the open-water season.

3.5 Water Quality

3.5.1 Kitsault Lake

The water column of Kitsault Lake is chemically invariant; not only is the water devoid of most dissolved constituents, its chemical composition changes imperceptibly with time. The principal variations in water quality relate to its physical characteristics rather than its chemical composition.

The water column of Kitsault Lake is best characterized by its low ionic strength (<30 µmhos/cm), low hardness (<15 mg/L) and average pH (~6.5). Kitsault Lake is oligotrophic, containing undetectable concentrations of nitrogen- or phosphorus-containing nutrients; this in part accounts for the lack of biogeochemical constituents. Most importantly, Kitsault Lake contains undetectable concentrations of dissolved metals (and in most cases, total metals) such as As, Cd, Cu, Pb, Se, Hg and Ag. Its watershed presumably does not host exposed, soluble rock facies capable of contributing measurable metals to the lake.

Despite the presence of a reasonably strong thermocline, the oligotrophic nature of Kitsault Lake precludes an oxygen demand of consequence. As a result, dissolved oxygen even in deep waters was always at or near fully saturated conditions (>10 mg/L). Further, the lack of biologic activity precludes the presence of the vertical zonation of dissolved constituents seen in many other systems; components such as nutrients, Cd, Cu and other biologically active constituents did not vary with depth.

3.5.2 Kitsault River

The composition of the Kitsault River changes along its course toward the ocean. Initially, at station W20, Kitsault River water is no more than Kitsault Lake surface water characterized by low conductivity, low dissolved and total metals, low nutrients and low major ion concentration. Further, its composition is relatively invariant with the changing seasons. However, the influence of the various tributaries to the Kitsault River (Homestake Creek and others) alter its composition. While it is not possible to define the precise influence of each tributary, it is possible to grossly characterize the evolution of Kitsault River waters from the outflow of Kitsault Lake to their confluence with Klayduc Creek, some 30 km downstream.

The first and possibly the greatest influence on the Kitsault River is that of Homestake Creek (W21). Unlike Kitsault River water, Homestake Creek is characterized by higher ionic strength, arising primarily from greater concentrations of the major ions Mg, Ca and sulphate; Homestake Creek water is harder than the Kitsault River water. Additionally, during the spring and summer, the freshet contributes greater quantities of suspended solids probably derived from its glacial-fed headwaters. Despite the increased sediment load in the spring, total metals of consequence (Cu, Cd, Se, Zn, Pb, etc.) do not increase substantially in concentration. Further, dissolved metals remain invariant.

The remainder of the Kitsault River changes very little with the addition of waters from Evindsen Creek (W22) and Klayduc Creek (W23), suggesting that they are similar in composition to that of Homestake Creek. The seasonal signature in suspended solids is partially obscured presumably through dilution with waters less laden with glacial material. Additionally, the seasonal signature observed in Homestake Creek is more obscure in the lower Kitsault River. Whether this is due to natural attenuation of suspended solids or through dilution by solid-free tributaries is not possible to determine.

The final measured composition of Kitsault River water at its confluence with Klayduc Creek (W23) is characterized by low metals with the exception of Mg and Ca and sulphate, giving the water a degree of hardness. A marginal increase in alkalinity relative to Kitsault Lake waters results in slightly higher pH downstream. Generally, the chemical composition of the lower reaches of the Kitsault River vary little seasonally.

3.6 Sediment Geochemistry

The surface sediments of Kitsault Lake are typical of other alpine sediments and reflect the chemistry of the water column as well as the local sources of native rock.

The sediments are fine-grained in the deep basins and marginally coarse in the shallows reflecting the preferential accumulation of fines in the calmer, deep waters. The hydrodynamic equivalence of organic matter to fine-grained sediments results in its enhanced accumulation in the deep sites where it was observed at concentrations as high as 5.8 wt. %. Because Kitsault Lake is oligotrophic, the origin of organic carbon in the sediments is primarily terrestrial. This is reflected strongly in the C/N weight ratios which range from 10 to 60. As a result, the organic matter of Kitsault Lake sediments are more refractive than in other lakes; the intensity of diagenesis is anticipated to be correspondingly low.

Elevated oxygen in bottom waters combined with refractory organic matter result in the presence of oxic surface sediments. Oxic conditions in the sediments are indirectly reflected in the bulk chemistry which displays Fe and Mn values enriched above detrital background values. The suggestion of diagenetic oxide enrichments is supported by commensurate surface enrichments in Zn, Mo and As which are known to associate with such phases.

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Appendix A - Fisheries

Kitsault Lake Zooplankton Analyses: Vertical Hauls

0.26 m diameter net
164 μm mesh

Lake Site		K2						
Date		25-Jan-94						
Depth		39 m						
Replicate		1	2	3	4	5	Mean	%
		(#/m^3)						
Genus/Group	Stage							
ROTIFERA							19466.9	67.55
Kellicottia longispina		725.7	1257.9	919.2	1112.7	1790.0	1161.1	4.03
Polyarthra vulgaris		0.0	0.0	0.0	0.0	72.6	14.5	0.08
Keratella cochlearis		18384.1	15723.3	24189.6	17416.5	15094.3	18161.6	63.02
Keratella quadrata		145.1	241.9	96.8	67.7	96.8	129.7	0.45
Conochilus unicornis	indiv.	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Unidentified	(soft)	0.0	0.0	0.0	0.0	0.0	0.0	0.00
CLADOCERA							20.6	0.07
Daphnia middendorffiana		0.0	0.0	0.0	0.0	0.0	0.0	0.00
Bosmina longirostris		32.4	22.3	16.9	16.0	15.5	20.6	0.07
COPEPODA							7773.9	26.98
Calanoida								
Diaptomus pribilofensis	M	120.9	72.6	120.9	91.9	58.1	92.9	0.32
	F	101.6	101.6	43.5	82.2	48.4	75.5	0.26
Heterocope septentrionalis	M	0.5	1.0	1.0	0.5	0.0	0.6	0.002
	F	1.9	4.8	3.9	4.4	2.9	3.6	0.01
Calanoid	nauplius	4.8	0.0	0.0	0.0	0.0	1.0	0.003
Cyclopoida								
Cyclops b. thomasi	F	498.3	1112.7	488.6	628.9	387.0	623.1	2.16
	cop.	1596.5	1548.1	1117.6	2128.7	1306.2	1539.4	5.34
Cyclops capillatus	F	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Cyclops scutifer	F	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	cop.	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Cyclopoid	nauplius	6386.1	5757.1	5612.0	4837.9	4596.0	5437.8	18.87
TOTAL		27998.1	25843.3	32610.1	26387.5	23467.8	28817.1	100.00

Kitsault Lake Zooplankton Analyses: Vertical Hauls

0.26 m diameter net
164 μm mesh

Lake Site		K3						
Date		26-Jan-94						
Depth		67 m						
Replicate		1	2	3	4	5	Mean	%
		($\#/m^3$)						
Genus/Group	Stage							
ROTIFERA							17137.1	67.64
Kellicottia longispina		450.6	675.9	957.5	563.2	309.8	591.4	2.33
Polyarthra vulgaris		0.0	0.0	0.0	0.0	0.0	0.0	0.00
Keratella cochlearis		14925.4	19994.4	24556.5	7603.5	15192.9	16454.5	64.95
Keratella quadrata		56.3	19.7	98.6	56.3	56.3	57.4	0.23
Conochilus unicornis	indiv.	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Unidentified		56.3	0.0	56.3	56.3	0.0	33.8	0.13
CLADOCERA							18.1	0.07
Daphnia middendorffiana		0.3	0.0	0.0	0.0	0.6	0.2	0.00
Bosmina longirostris		17.7	22.5	4.2	23.9	21.1	17.9	0.07
COPEPODA							4483.6	17.70
Calanoida								
Diaptomus pribilofensis	M	62.0	81.7	53.5	53.5	28.2	55.8	0.22
	F	115.5	115.5	138.0	123.9	126.7	123.9	0.49
Heterocope septentrionalis	M	10.1	8.2	6.2	5.4	3.7	6.7	0.03
	F	15.8	16.9	9.6	17.2	13.0	14.5	0.06
Calanoid	nauplius	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Cyclopoida								
Cyclops b. thomasi	F	675.9	929.3	1210.9	647.7	444.9	781.8	3.09
	cop.	1182.8	844.8	788.5	1267.2	1019.4	1020.6	4.03
Cyclops capillatus		0.3	0.0	0.0	0.0	0.0	0.1	0.00
Cyclops scutifer	F	0.0	129.5	0.0	5.6	0.0	27.0	0.11
	cop.	0.0	87.3	0.0	0.0	0.0	17.5	0.07
Cyclopoid	nauplius	1943.1	2224.7	3463.8	1717.8	2830.2	2435.9	9.61
TOTAL		19512.0	25150.4	31343.6	12141.7	20046.7	25335.3	100.00

Kitsault Lake Zooplankton Analyses: Vertical Hauls

0.26 m diameter net
164 μm mesh

Lake Site		K4						
Date		26-Jan-94						
Depth		28 m						
Replicate		1	2	3	4	5	Mean	%
		(#/m^3)						
Genus/Group	Stage							
ROTIFERA							30416.4	81.30
Kellicottia longispina		876.0	673.9	673.9	1886.8	1212.9	1064.7	2.85
Polyarthra vulgaris		0.0	0.0	0.0	6.7	0.0	1.3	0.00
Keratella cochlearis		32345.0	20889.5	37062.0	30997.3	21563.3	28571.4	76.36
Keratella quadrata		134.8	94.3	215.6	2156.3	404.3	601.1	1.61
Conochilus unicornis	indiv.	0.0	0.0	0.0	6.7	404.3	82.2	0.22
Unidentified		0.0	0.0	67.4	6.7	404.3	95.7	0.26
CLADOCERA							8.0	0.02
Daphnia middendorffiana		0.0	0.0	0.0	0.0	0.0	0.0	0.00
Bosmina longirostris		7.4	12.8	3.4	14.2	2.0	8.0	0.02
COPEPODA							7119.9	19.03
Calanoida								
Diaptomus pribilofensis	M	60.6	87.6	53.9	87.6	87.6	75.5	0.20
	F	161.7	168.5	188.7	155.0	134.8	161.7	0.43
Heterocope septentrionalis	M	4.7	7.4	6.7	2.0	4.7	5.1	0.01
	F	10.8	19.5	19.5	8.1	20.2	15.6	0.04
Calanoid	nauplius	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Cyclopoida								
Cyclops b. thomasi	F	808.6	1819.4	1212.9	1347.7	1145.6	1266.8	3.39
	cop.	2830.2	741.2	1212.9	1145.6	1078.2	1401.6	3.75
Cyclops capillatus		0.7	0.7	0.7	0.0	0.0	0.4	0.00
Cyclops scutifer	F	0.0	0.0	0.0	2.0	0.0	0.4	0.00
	cop.	0.0	0.0	0.0	6.7	0.0	1.3	0.00
Cyclopoid	nauplius	3369.3	3234.5	3167.1	5593.0	5593.0	4191.4	11.20
TOTAL		40609.8	27749.3	43884.8	43422.5	32055.3	37414.6	100.00

Kitsault Lake Zooplankton Analyses: Vertical Hauls

0.26 m diameter net
164 μm mesh

Lake Site		K5						
Date		27-Jan-94						
Depth		14 m						
Replicate		1	2	3	4	5	Mean	%
		(No/m^3)						
Genus/Group	Stage							
ROTIFERA							19780.3	82.75
Kellicottia longispina		2291.1	2021.6	1367.9	1482.5	269.5	1486.5	6.22
Polyarthra vulgaris		80.9	27.0	80.9	27.0	13.5	45.8	0.19
Keratella cochlearis		11590.3	18733.2	19393.5	18598.4	21967.7	18056.6	75.54
Keratella quadrata		202.2	431.3	80.9	80.9	121.3	183.3	0.77
Conochilus unicornis	indiv.	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Unidentified		40.4	0.0	0.0	0.0	0.0	8.1	0.03
CLADOCERA							25.1	0.10
Daphnia middendorffiana		0.0	0.0	0.0	0.0	0.0	0.0	0.00
Bosmina longirostris		25.6	17.5	25.6	24.3	32.3	25.1	0.10
COPEPODA							4465.0	18.68
Calanoida								
Diaptomus pribilofensis	M	161.7	161.7	175.2	94.3	133.4	145.3	0.61
	F	202.2	175.2	188.7	215.6	190.0	194.3	0.81
Heterocope septentrionalis	M	1.3	2.7	1.3	4.0	2.7	2.4	0.01
	F	4.0	6.7	5.4	2.7	6.7	5.1	0.02
Calanoid	nauplius	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Cyclopoida								
Cyclops b. thomasi	F	889.5	498.7	586.3	444.7	431.3	570.1	2.38
	cop.	889.5	1212.9	1226.4	1374.7	1752.0	1291.1	5.40
Cyclops capillatus		2.7	0.0	0.0	0.0	0.0	0.5	0.00
Cyclops scutifer	F	0.0	0.0	0.0	94.3	0.0	18.9	0.08
	cop.	0.0	134.8	0.0	0.0	0.0	27.0	0.11
Cyclopoid	nauplius	2115.9	4043.1	2614.6	2021.6	256.1	2210.2	9.25
TOTAL		18497.3	27466.3	25746.6	24465.0	25176.5	23903.4	100.00

Kitsault Lake Zooplankton Analyses: Recovery Standards

0.26 m diameter net
164 μm mesh

Group	Subsamples 1	2	3	4	5	Total Count Estimated	Range	Actual*	C.V.
Zooplankton Sample K2-4 (1/1000)									
Kellicottia	2	3	3	4	2	3000	2000-4000	2300	0.27
Keratella cochlearis	37	29	37	39	38	35500	29000-39000		0.12
Keratella quadrata	1	1	0	0	0	500	0-1000	140	1.15
Bosmina longirostris	0	1	0	0	0	25	0-100	33	2.00
Cyclops b. thomasi cop	4	2	4	3	3	3250	2000-4000	4400	0.26
Cyclopoid nauplii	10	12	12	12	9	11000	9000-12000	10000	0.13
Zooplankton Sample K3-3 (1/1000)									
Kellicottia	2	3	6	5	2	3600	2000-6000	3200	0.50
Keratella cochlearis	75	96	93	76	96	87200	75000-96000		0.12
Cyclops b. thomasi	7	6	7	2	4	5200	2000-7000	3400	0.42
Cyclops b. thomasi cop	5	2	3	2	1	2600	1000-5000	3000	0.58
Cyclopoid nauplii	16	14	12	11	14	13400	11000-16000	11200	0.15
Zooplankton Sample K3-5 (1/1000 & 1/100)									
Kellicottia (1/1000)	1	2	3	2	3	2000	1000-3000	1175	0.41
Kellicottia (1/100)	13	11	10	13	8	1175	800-1300		0.13
Keratella cochlearis (1/100	66	73	65	60	59	64600	75000-96000	43300	0.09
Diaptomus male (1/100)	1	1	1	1	3	140	100-300	100	0.64
Diaptomus female (1/100)	4	9	3	3	7	520	300-900	450	0.52
C. b. thomasi F (1/1000)	3	1	1	2	2	1800	1000-3000	1580	0.46
C. b. thomasi F (1/100)	18	15	16	14	16	1580	1400-1800		0.09
C. b. thomasi cop (1/100)	3	3	1	3	2	2400	1000-3000	3620	0.37
C. b. thomasi cop (1/1000)	36	33	35	37	40	3620	3300-4000		0.07
Cyclopoid nauplii (1/1000)	7	12	6	13	11	9800	6000-13000	10300	0.32
Zooplankton Sample K5-3 (1/1000 and 1/100)									
Kellicottia (1/100)	8	11	10	12	10	1025	800-1200	1010	0.17
Keratella cochlearis (1/100	16	16	12	14	13	14500	1200-1600	14750	0.13
Keratella cochlearis (1/100	137	160	144	149	139	14750	13700-16000		0.07
Keratella quadrata (1/100)	5	2	2	3	3	300	200-500	220	0.47
Diaptomus male (1/100)	1	1	1	1	1	100	100	130	0.00
C. b. thomasi F (1/100)	5	1	2	3	5	320	100-500	550	0.56
C. b. thomasi cop (1/100)	1	2	2	1	0	1200	0-2000	840	0.70
C. b. thomasi cop (1/1000)	14	7	14	7	7	980	700-1400	840	0.39
Cyclopoid nauplii (1/1000)	3	1	0	1	2	1400	0-3000	1940	0.81
Cyclopoid nauplii (1/1000)	19	21	18	21	18	1940	1800-2100	1940	0.08

Kitsault Lake Benthic Invertebrate Analyses: Lake

Lake Site		K1 (27 m)						
Date		20-Jan-94						
Replicate		1	2	3	4	5	Mean	%
Genus/Group	Stage							
NEMATODA		310.8	88.8	177.6	0.0	0.0	115.4	2.200
OLIGOCHAETA							17.8	0.338
Enchytraeidae		88.8	0.0	0.0	0.0	0.0	17.8	0.338
Naididae								
Pristina		0.0	0.0	0.0	0.0	0.0	0.0	0.000
OSTRACODA							3525.4	67.174
Cypria	A	2220.0	1243.2	2308.8	1820.4	399.6	1598.4	30.457
Cypria	small	2664.0	888.0	2664.0	3019.2	0.0	1847.0	35.194
Candona	A	0.0	0.0	0.0	44.4	0.0	8.9	0.169
Limnocythere ornata?	A	44.4	88.8	44.4	88.8	88.8	71.0	1.354
COPEPODA							26.6	0.508
Cyclops	C	44.4	0.0	0.0	0.0	0.0	8.9	0.169
Diaptomus	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Bryocamptus	A	44.4	0.0	44.4	0.0	0.0	17.8	0.338
MISCELLANEOUS							26.6	0.508
Psocoptera*	A	88.8	0.0	0.0	0.0	0.0	17.8	0.338
Hydracarina	L	44.4	0.0	0.0	0.0	0.0	8.9	0.169
CHIRONOMIDAE							1234.3	23.519
Tanypodinae								
Procladius	L	44.4	44.4	0.0	88.8	44.4	44.4	0.846
Diamesinae								
Protanypus	L	133.2	0.0	44.4	88.8	44.4	62.2	1.184
Chironomini								
Chironomus	L	133.2	0.0	266.4	266.4	0.0	133.2	2.538
Tanytarsini								
Tanytarsus	L	0.0	44.4	177.6	177.6	0.0	79.9	1.523
Micropsectra	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Orthocladiinae								
Eukiefferiella #1	L	355.2	88.8	177.6	44.4	0.0	133.2	2.538
Eukiefferiella #2	L	532.8	310.8	577.2	355.2	0.0	355.2	6.768
Parametriocnemus		177.6	44.4	310.8	0.0	0.0	106.6	2.030
Unidentified	L	799.2	44.4	666.0	88.8	0.0	319.7	6.091
MOLLUSCA-Pelecypoda								
Sphaerium nitidum?		177.6	310.8	488.4	399.6	133.2	301.9	5.753
TOTAL		7903.2	3196.8	7947.6	6482.4	710.4	5248.1	100.000

Kitsault Lake Benthic Invertebrate Analyses: Lake

Lake Site		K2 (39 m)						
Date		25-Jan-94						
Replicate		1	2	3	4	5	Mean	%
Genus/Group	Stage							
NEMATODA		88.8	444.0	222.0	0.0	133.2	177.6	5.525
OLIGOCHAETA							8.9	0.276
Enchytraeidae		0.0	44.4	0.0	0.0	0.0	8.9	0.276
Naididae		0.0						
Pristina		0.0	0.0	0.0	0.0	0.0	0.0	0.000
OSTRACODA							1660.6	51.657
Cypria	A	621.6	1420.8	2575.2	799.2	266.4	1136.6	35.359
Cypria	small	0.0	0.0	2220.0	0.0	0.0	444.0	13.812
Candona	A	0.0	0.0	88.8	44.4	0.0	26.6	0.829
Limnocythere ornata	A	88.8	44.4	88.8	44.4	0.0	53.3	1.657
COPEPODA							0.0	0.000
Cyclops	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Diaptomus	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Bryocamptus	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
MISCELLANEOUS							0.0	0.000
Psocoptera	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Lepidoptera	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
CHIRONOMIDAE							1332.0	41.436
Tanypodinae								
Procladius	L	44.4	0.0	44.4	0.0	0.0	17.8	0.552
Diamesinae								
Protanypus	L	44.4	44.4	0.0	0.0	88.8	35.5	1.105
Chironomini								
Chironomus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Tanytarsini								
Tanytarsus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Micropsectra	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Orthocladiinae								
Eukiefferiella #1	L	1198.8	1554.0	1332.0	621.6	843.6	1110.0	34.530
Eukiefferiella #2	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Parametriocnemus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Unidentified	L	133.2	266.4	355.2	44.4	44.4	168.7	5.249
MOLLUSCA-Pelecypoda								
Sphaerium nitidum?		133.2	44.4	0.0	0.0	0.0	35.5	1.105
TOTAL		2353.2	3862.8	6926.4	1554.0	1376.4	3214.6	99.999

Kitsault Lake Benthic Invertebrate Analyses: Lake

Lake Site		K3 (68 m)						
Date		26-Jan-94						
Replicate		1	2	3	4	5	Mean	%
Genus/Group	Stage							
NEMATODA		1909.2	799.2	1998.0	1687.2	1642.8	1607.3	86.604
OLIGOCHAETA							26.6	1.435
Enchytraeidae		0.0	0.0	0.0	0.0	0.0	0.0	0.000
Naididae		0.0						
Pristina		0.0	44.4	0.0	0.0	88.8	26.6	1.435
OSTRACODA							168.7	9.091
Cypria	A	0.0	88.8	310.8	133.2	310.8	168.7	9.091
Cypria	small	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Candona	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Limnocythere ornata	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
COPEPODA							0.0	0.000
Cyclops	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Diaptomus	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Bryocamptus	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
MISCELLANEOUS							0.0	0.000
Psocoptera	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Lepidoptera	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
CHIRONOMIDAE							44.4	2.392
Tanypodinae								
Procladius	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Diamesinae								
Protanypus	L	0.0	0.0	88.8	0.0	0.0	17.8	0.957
Chironomini								
Chironomus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Tanytarsini								
Tanytarsus	L	0.0	0.0	44.4	0.0	0.0	8.9	0.478
Micropsectra	L	0.0	0.0	0.0	44.4	44.4	17.8	0.957
Orthocladiinae								
Eukiefferiella #1	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Eukiefferiella #2	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Parametriocnemus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Unidentified	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
MOLLUSCA-Pelecypoda								
Sphaerium nitidum?		0.0	44.4	0.0	0.0	0.0	8.9	0.478
TOTAL		1909.2	976.8	2442.0	1864.8	2086.8	1855.9	100.001

Kitsault Lake Benthic Invertebrate
Analyses: Lake

Lake Site		K4 (39 m)						
Date		26-Jan-94						
Replicate		1	2	3	4	5	Mean	%
Genus/Group	Stage							
NEMATODA		44.4	44.4	177.6	0.0	88.8	71.0	2.241
OLIGOCHAETA							8.9	0.280
Enchytraeidae		0.0	0.0	0.0	0.0	0.0	0.0	0.000
Naididae								
Pristina		0.0	0.0	0.0	44.4	0.0	8.9	0.280
OSTRACODA							1554.0	49.019
Cypria	A	1198.8	1420.8	2042.4	932.4	932.4	1305.4	41.176
Cypria	small	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Candona	A	0.0	0.0	44.4	0.0	0.0	8.9	0.280
Limnocythere ornata?	A	133.2	222.0	310.8	133.2	399.6	239.8	7.563
COPEPODA							0.0	0.000
Cyclops	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Diaptomus	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Bryocamptus	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
MISC. INSECTA							17.8	0.560
Psocoptera	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Lepidoptera	L	0.0	0.0	0.0	0.0	44.4	8.9	0.280
Hydracarina		0.0	0.0	44.4	0.0	0.0	8.9	0.280
CHIRONOMIDAE							1465.2	46.218
Tanypodinae								
Procladius	L	88.8	44.4	0.0	0.0	88.8	44.4	1.401
Diamesinae								
Protanypus	L	44.4	0.0	0.0	0.0	88.8	26.6	0.840
Chironomini								
Chironomus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Tanytarsini								
Tanytarsus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Micropsectra	L	44.4	44.4	0.0	0.0	0.0	17.8	0.560
Orthocladiinae								
Eukiefferiella #1	L	1420.8	1287.6	1420.8	932.4	843.6	1181.0	37.254
Eukiefferiella #2	L	310.8	222.0	0.0	88.8	133.2	151.0	4.762
Parametriocnemus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Unidentified	L	44.4	133.2	0.0	0.0	44.4	44.4	1.401
MOLLUSCA-Pelecypoda								
Sphaerium nitidum?		88.8	44.4	44.4	0.0	88.8	53.3	1.681
TOTAL		3418.8	3463.2	4084.8	2131.2	2752.8	3170.2	99.999

Kitsault Lake Benthic Invertebrate Analyses: Lake

Lake Site		K5 (15 m)						
Date		27-Jan-94						
Replicate		1	2	3	4	5	Mean	%
		(no./m²)						
Genus/Group	Stage							
NEMATODA		532.8	0.0	88.8	222.0	0.0	168.7	1.639
OLIGOCHAETA							0.0	0.000
Enchytraeidae		0.0	0.0	0.0	0.0	0.0	0.0	0.000
Naididae		0.0						
Pristina		0.0	0.0	0.0	0.0	0.0	0.0	0.000
OSTRACODA							7796.6	75.755
Cypria	A	2175.6	2264.4	1909.2	3862.8	3374.4	2717.3	26.402
Cypria	small	3552.0	1776.0	2220.0	0.0	9768.0	3463.2	33.650
Candona	A	0.0	0.0	44.4	0.0	88.8	26.6	0.259
Limnocythere ornata?	A	1243.2	1110.0	1465.2	1998.0	2131.2	1589.5	15.444
COPEPODA							88.8	0.863
Cyclops	C	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Diaptomus	C	0.0	355.2	0.0	0.0	0.0	71.0	0.690
Bryocamptus	A	44.4	0.0	0.0	44.4	0.0	17.8	0.173
MISC. INSECTA							26.6	0.259
Psocoptera	A	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Parasitic mite?	L	0.0	0.0	0.0	0.0	88.8	17.8	0.173
Hydracarina		0.0	0.0	44.4	0.0	0.0	8.9	0.086
CHIRONOMIDAE							1909.2	18.551
Tanypodinae								
Procladius	L	0.0	0.0	88.8	177.6	88.8	71.0	0.690
Diamesinae								
Protanypus	L	0.0	88.8	0.0	88.8	0.0	35.5	0.345
Chironomini								
Chironomus	L	0.0	0.0	44.4	0.0	44.4	17.8	0.173
Tanytarsini								
Tanytarsus	L	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Micropsectra	L	0.0	44.4	0.0	532.8	44.4	124.3	1.208
Orthocladiinae								
Eukiefferiella #1	L	1154.4	1021.2	1376.4	1864.8	1376.4	1358.6	13.201
Eukiefferiella #2	L	177.6	177.6	44.4	532.8	44.4	195.4	1.898
Parametriocnemus	L	0.0	0.0	0.0	44.4	0.0	8.9	0.086
Unidentified	L	44.4	44.4	133.2	133.2	133.2	97.7	0.949
MOLLUSCA-Pelecypoda								
Sphaerium nitidum?		177.6	177.6	266.4	399.6	488.4	301.9	2.934
TOTAL		9102.0	7059.6	7725.6	9901.2	17671.2	10291.9	100.000

Number of organisms in Dolly Varden stomachs, Kitsault River, January and July 1994.

Location		Kitsault River			
Sample No.		Site 4	Site 3–1	Site 9–1	Site 9–2
Date		1-Jul	30-Jan	30-Jan	30-Jan
Fish Length (mm)		48			
Contents Wt. (mg)		654	256	142	483
% Full		50	25	90	100
% Digested		90	75	95	50
Food Taxon	Stage				
ARANEA	A	1			
EPHEMEROPTERA					
Baetidae	N	10			2
Siphlonuridae	N	1		1	
Heptageniidae	N	9	2		
Epeorus	N	1			1
Ephemerellidae					
Ephemerella doddsi	N	2			
PLECOPTERA	N	5			35
Perlodidae				3	1
Skwala	N	1			
Nemouridae	N				17
Chloroperlidae	N		8	5	32
Triznaka	N		6		6
TRICHOPTERA					
Polycentropididae	L	4			
Limnephilidae	L				1
Rhyacophilidae	L				2
Rhyacophila	L	3			
Case materials					|
LEPIDOPTERA	L	1			
COLEOPTERA	L	1			
DIPTERA	A	1			
Empididae					
Chelifera	L	1			
Simulidae					
Prosimulium	L	3			
Tipulidae	L			1	
Chironomidae	P	12			
Tanypodinae	L	2			
Tanytarsini					
Micropsectra	P	1			
Orthocladiinae	L	5			3
Diamesinae	P	1			
Fish	5 mm				1
Plant		|			
Pebble				|	
Mucus		|	|		|
TOTAL		65	16	10	101

Weight (mg) of organisms in Dolly Varden stomachs, Kitsault River, January and July 1994.

Location		Kitsault River			
Sample No.		Site 4	Site 3-1	Site 9-1	Site 9-2
Date		1-Jul	30-Jan	30-Jan	30-Jan
Fish Length (mm)		48			
Contents Wt. (mg)		654	256	142	483
% Full		50	25	90	100
% Digested		90	75	95	50
Food Taxon	**Stage**				
ARANEA	A	20			
EPHEMEROPTERA					
Baetidae	N	30			2
Siphlonuridae	N	3		2	
Heptageniidae	N	45	100		
Epeorus	N	5			50
Ephemerellidae					
Ephemerella doddsi	N	120			
PLECOPTERA	N	80			35
Perlodidae				105	80
Skwala	N	5			
Nemouridae	N				10
Chloroperlidae	N		8	5	32
Triznaka	N		6		6
TRICHOPTERA					
Polycentropididae	L	20			
Limnephilidae	L				20
Rhyacophilidae	L				100
Rhyacophila	L	15			
Case materials					93
LEPIDOPTERA	L	3			
COLEOPTERA	L	1			
DIPTERA	A	2			
Empididae					
Chelifera	L	1			
Simulidae					
Prosimulium	L	12			
Tipulidae	L			20	
Chironomidae	P	12			
Tanypodinae	L	2			
Tanytarsini					
Micropsectra	P	1			
Orthocladiinae	L	2			3
Diamesinae	P	3			
Fish	5 mm				2
Plant		1			
Pebble				10	
Mucus		271	142		50
TOTAL		654	256	142	483

Number of organisms in Dolly Varden stomachs, Kitsault Lake, January, June and July 1994.

Location		Kitsault Lk						
Sample No.		GN1A-1	GN1A-2	GN1B	GN1C-1	GN1C-2	GN1D-S	K2-1
Date		29-Jun	29-Jun	30-Jun	1-Jul	1-Jul	2-Jul	30-Jan
Fish Length (mm)		190	175	205	187	187	189	
Contents Wt. (mg)		2631	277	364	1679	996	1212	413*
% Full		50	25	25	75	75	50	?
% Digested		50	75	25	50	50	50	95
Food Taxon	**Stage**							
Copepoda								
Heterocope septentrionalis	A							275
Amphipoda								
Gammarus lacustris		14	3	7	13	11	7	
Pontoporeia affinis		1						
ACARINA (parasitic)			1					
PLECOPTERA	N	2					1	
TRICHOPTERA								
Lepidosomatidae	P						1	
DIPTERA	P				1			
Chironomidae	P				3			
Orthocladiinae	L			1				
Brillia	L	10						
Gymnometriocnemus	L	2	1					
Diamesinae	L							
Protanypus	L	1						
Tanypodinae	L	1		1		1		
Procladius	L	2						
HYMENOPTERA								
Chalcoidea	A	1						
MOLLUSCA								
Pisidium					1			
Plant			I					
Pebble					I			
TOTAL		34	5	9	18	12	9	275

Weight (mg) of organisms in Dolly Varden stomachs, Kitsault Lake, January, June and July 1994.

Location		Kitsault Lk						
Sample No.		GNIA-1	GNIA-2	GN1B	GN1C-1	GN1C-2	GN1D-S	K2-1
Date		29-Jun	29-Jun	30-Jun	1-Jul	1-Jul	2-Jul	30-Jan
Fish Length (mm)		190	175	205	187	187	189	
Contents Wt. (mg)		2631	277	364	1679	996	1212	413*
% Full		50	25	25	75	75	50	?
% Digested		50	75	25	50	50	50	95
Food Taxon	**Stage**							
Copepoda								
Heterocope septentrionalis	A							413
Amphipoda								
Gammarus lacustris		2588	274	362	1448	994	1148	
Pontoporeia affinis		24						
ACARINA (parasitic)			<1					
PLECOPTERA	N	2					10	
TRICHOPTERA								
Lepidosomatidae	P						54	
DIPTERA	P				3			
Chironomidae	P				6			
Orthocladiinae	L			1				
Brillia	L	10						
Gymnometriocnemus	L	1	1					
Diamesinae	L							
Protanypus	L	2						
Tanypodinae	L	1		1		2		
Procladius	L	2						
HYMENOPTERA								
Chalcoidea	A	1						
MOLLUSCA								
Pisidium					6			
Plant			2					
Pebble					216			
TOTAL		2631	277	364	1679	996	1212	413

Kitsault Lake Fish Data

Date	Location	Species (ID #)	Sex	Fork Length (cm	Weight (g)	Age (yr)	Egg Count	Diameter (mm)	Comments
26/09/94	Kitsault Dam	RB 1	n/a	13.0	29.5	2+			found dead on shore
29/09/94	Trib 5	DV 1	IM	8.8	7.4	2+			
		DV 2	IM	9.8	9.8	2+			
		DV 3	male	12.7	24.0	4+			ripe (spawner)
		RB 2	male	9.3	9.5	2+			super ripe - releasing (1/3 of innards)
26/09/94	Camp Island	DV 4	male	14.4	32.6	4+			ripe (not releasing)
29/09/94	Trib 1	DV 5	male	15.8	44.3	7+			ripe (releasing milt)
		DV 6	female	15.6	46.5	8+	288	3	ripe (releasing)
		DV 7	female	11.6	15.0	4+			developing (eggs<1mm)
		DV 8	IM	10.0	11.4	2+			sex indeterminate
26/09/94	Camp Hole 20m	DV 9	female	20.5	85.2	6+	70	2	not ready to spawn
26/09/94	Camp Hole 32m	DV 10	female	23.0	116.0	6+	70	2.5	not releasing (lots atricious eggs);parasite laden
25/09/94	Weather Stn Hole	DV 11	female ?	19.8	19.0	4+			immature; parasite laden
	33m	DV 12	male	17.6	19.3	6+			immature (developing); parasite laden
27/09/94	Kitsault Lake	DV 13	female ?	11.2	15.0	4+			immature
	(Trib 5 mouth)	DV 14	male	22.0	112.0	7+			ripe (not releasing; parasite laden
	(Trib 6 mouth)	DV 15	male	28.4	267.0	8+			ripe (not releasing); very few parasites
27/09/94	Bear Pt	DV 16	female	26.3	180.6	6+	128	4	releasing; no parasites
27/09/94	Camp Island	DV 17	male ?	11.9	17.4	2+			immature
29/09/94	Trib 12A	DV 18	male	15.8	46.3	3+			ripe (not releasing); no parasites
		DV 19	male	15.1	38.8	5+			immature
		DV 20	female	21.7	101.2	-	32	3	releasing (mostly atricious); parasite laden
		DV 21	male	14.5	34.7	-			releasing; no parasites
		DV 22	female	20.4	97.0	5+	112	4	ripe (not releasing)
29/09/94	Trib 1	DV 23	male	21.9	105.0	-			ripe (releasing); parasite leaden
	(lower end)	DV 24	male	18.7	70.7	-			ripe (releasing); parasites
24/09/94	Camp Bay - 2"	DV 25	female ?	29.0	214.7	10+			immature; parasites
	SGN (48 hr)	DV 26	female	26.4	171.2	9+	84	4	ripe (not releasing); parasites
29/09/94	Trib 5 Lake	DV 27	male	21.7	99.0	6+			ripe (not releasing); only couple cysts
		DV 28	male	12.8	20.0	4+			immature; no cysts
		DV 29	male	16.0	39.0	6+			ripe (releasing); no cysts
		DV 30	male	15.7	35.8	6+			ripe (not releasing); no cysts
		DV 31	male	20.0	76.2	5+			ripe (releasing); parasite laden
28/09/94	Kitsault Lake	RB 3	IM	4.5	1.0	-			small fish in stomach
	(Trib 2)	RB 4	male	9.1	8.3	2+			ripe (not releasing)
		RB 5	male	9.5	11.0	2+			ripe (releasing)
		DV 32	male	10.3	11.7	3+			ripe (releasing)

Kitsault Lake Fish Data

Date	Location	Species (ID #)	Sex	Fork Length (cm	Weight (g)	Age (yr)	Egg Count	Diameter (mm)	Comments
1/10/94	Trout Cr con w/ Kitsault R	DV 33	female	15.8	40.0	6+	36	3	ripe (not releasing)
27/09/94	Dam 20-30m	DV 34	female	19.2	82.0	5+	56	3	partially spent right ovary
		DV 35	male	18.9	64.6	5+			partially spent; parasite laden
		DV 36	female	19.2	71.0	6+	48	3?	spent right ovary
		DV 37	male	18.2	73.7	5+			ripe (not releasing)
		DV 38	male	15.8	45.7	4+			ripe (spent?); a few parasites
		DV 39	male	21.3	115.2	6+			ripe (not releasing)
		DV 40	female	15.9	48.5	6+	20	2.5	spent left ovary; parasite laden
		DV 41	female	21.8	117.1	8+	48	3	spent left ovary; parasite laden
		DV 42	female	19.7	94.1	6+			developing (eggs <1mm); parasite laden
		DV 43	female	24.0	146.5	8+	108	2.5	ripe (releasing; lots atricious); parasite laden)
28/09/94	Lake Trib 4 (Kitsault Lake)	DV 44	male	14.8	35.3	5+			ripe (releasing)
		DV 45	male	14.6	36.3	8+			ripe (releasing)
		DV 46	female	14.5	18.9	5+	35	3	ripe (not releasing)
		DV 47	female	17.8	57.0	7+	48	3.5	ripe (releasing)
		DV 48	female	15.5	46.0	6+	72	3	ripe (releasing)
		DV 49	female	15.7	44.7	8+	72	3.5	ripe (releasing)
		DV 50	male	15.0	38.8	8+			ripe (releasing)
		DV 51	female	16.7	55.5	6+	56	3.5	ripe (releasing)
		DV 52	female	16.7	55.0	5+	70	2.5	ripe (not releasing)
		DV 53	male	18.8	58.8	6+			ripe (releasing)
		DV 54	male	27.5	213.5	9+			ripe (releasing)
28/09/94	Lake Trib T3A Lake	DV 55	female	16.2	54.8	5+	72	3	ripe (releasing)
		DV 56	male	17.8	74.3	4+			ripe (releasing)
		DV 57	male	24.1	167.7	6+			spent?
		DV 58	female	28.0	228.5	6+	180	3.5	ripe (releasing)
		DV 59	male	26.5	211.0	5+			spent?
		DV 60	female	29.2	287.2	7+	392	3.5	ripe (releasing)

KITSAULT LAKE: FISH STOMACH CONTENTS

NUMBER OF ORGANISMS PER STOMACH

CLASS * ORDER	FAMILY	GENERA	SITE / Fish # / Species / STAGE	TRIBUTARIES 6 DV	5 DV	23 DV	3 RS	4 RS	5 RS	22 DV	3 DV	LAKE 10 DV	25 DV	4 DV	16 DV	9 DV	No. per Fish
EPHEMEROPTERA	HEPTAGENIIDAE	*EPEORUS?*	L	1	2	16											19
	EPHEMERELLIDAE	*DRUNELLA doddsi*	L	4	2					1							7
	BAETIDAE	*BAETIS*	L							3	8						11
	LEPTOPHLEBIIDAE	*PARALEPTOPHLEBIA*	L	1			3		1	7							12
	CHLOROPERLIDAE	*SWELTSA group*	L		1		3	1		1	1						7
	NEMOURIDAE	*ZAPADA*	L	9	2	4				4							19
			AD		1		1			1							3
TRICHOPTERA			cases		17			3	3								23
	HYDROPSYCHIDAE	*PARAPSYCHE*	L	1	1	1											3
	BRACHYCENTRIDAE	*MICRASEMA*	L					2	2	3							7
	LIMNEPHILIDAE	*PSYCHOGLYPHA*	L	1	10												11
		FARULA	L	3	5												8
		NEOPHYLAX	L	3	1							1					5
		unrecognized	L													2	2
			PU			7											7
			AD												1		1
DIPTERA												1					1
	SIMULIIDAE	*SIMULIUM*	L	1						1							2
			P					1									1
			AD		1					1							2
	MUSCIDAE	*LIMNOPHORA*	L		1												1
			AD	2	1												3
	CHIRONOMIDAE											20	452	2			474
		unrecognized	L	4	5	2	2	5		1						2	21
			PU	9						1					1		11
			AD	3						1					1		5
	CARABIDAE		AD	2													2
	DYTISCIDAE	*HYDROPORUS*	L			1							3				4
		LACCCOPHILUS	AD											2			2
	AMPHIZOIDAE	*AMPHIZOA*	L							1							1
	HALIPLIDAE	*HALIPLUS*	AD			1											1
HYMENOPTERA	BRACONIDAE		AD	1	2												3
HEMIPTERA	APHIDIDAE				1					2							3
LEPIDOPTERA			L				1			2							3
			AD		1												1
ARACHNOIDEA*																	
HYDRACARINA		*UNRECOGNIZED*			3												3
ARACHNIDA		*TETRAGNATHA etc..*			5		4			3							12
CLADOCERA	CHYDORIDAE	*EURYCERCUS lamellatus*											43	381		21	445
EUCOPEPODA	TEMORIDAE	*HETEROCOPE septentrio.*					4	4		1							9
AMPHIPODA	GAMMARIDAE	*GAMMARUS*				3				1		27	74			18	123
PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*					1	1				1				2	5
		TOTAL		45	62	35	19	17	6	35	9	50	572	385	3	45	1283

STOMACHS CONTENT

IN % COMPOSITION

TRIBUTARIES 6 DV	5 DV	23 DV	3 RS	4 RS	5 RS	32 DV	3 DV	LAKE 10 DV	25 DV	4 DV	16 DV	9 DV
2.2%	3.2%	45.7%										
8.9%	3.2%					2.9%						
						8.6%	88.9%					
2.2%			15.8%		16.7%	20.0%						
	1.6%		15.8%	5.9%		2.9%	11.1%					
20.0%	3.2%	11.4%				11.4%						
	1.6%		5.3%			2.9%						
	27.4%			17.6%	50.0%							
2.2%	1.6%	2.9%										
				11.8%	33.3%	8.6%						
2.2%	16.1%											
6.7%	8.1%											
6.7%	1.6%							2.0%				
												4.4%
		20.0%										
											33.3%	
								2.0%				
2.2%						2.9%						
				5.9%								
	1.6%					2.9%						
	1.6%											
4.4%	1.6%											
								40.0%	79.0%	0.5%		
8.9%	8.1%	5.7%	10.5%	29.4%		2.9%						4.4%
20.0%						2.9%					33.3%	
6.7%						2.9%					33.3%	
4.4%												
		2.9%							0.5%			
										0.5%		
						2.9%						
		2.9%										
2.2%	3.2%											
	1.6%					5.7%						
			5.3%			5.7%						
	1.6%											
	4.8%											
	8.1%		21.1%			8.6%						
									7.5%	99.0%		46.7%
			21.1%	23.5%		2.9%						
		8.6%				2.9%		54.0%	12.9%			40.0%
			5.3%	5.9%				2.0%				4.4%
100	100	100	100	100	100	100	100	100	100	100	100	100

Kitsault Lake Fish Tissue Analysis: Metals Concentrations

Species (ID #)	Sex	Fork Length (cm)	Weight (g)	Mg (ppm)	Mn (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)	Se (ppm)	Ag (ppm)	Cd (ppm)	Te (ppm)	Hg (ppm)	Pb (ppm)
DV 1	IM	8.8	7.4	255	4.450	0.0618	1.020	30.90	0.0645	0.777	0.0045	0.0328	<0.0026	0.0405	0.0295
DV 2	IM	9.8	9.8	270	14.000	0.3510	0.390	27.40	0.2500	0.805	0.1040	0.0883	<0.0026	0.0765	0.0578
DV 3	male	12.7	24.0	249	2.230	<0.01	0.521	19.80	<0.005	0.666	0.0027	0.0059	<0.0027	0.0543	0.0173
DV 4	male	14.4	32.6	256	0.997	<0.01	0.370	13.80	<0.005	0.272	0.0034	0.0193	<0.0034	0.0254	0.0172
DV 5	male	15.8	44.3	283	3.300	0.0645	0.698	36.20	0.0664	0.875	0.0053	0.0522	<0.0022	0.0480	0.0646
DV 6	female	15.6	46.5	302	2.830	<0.01	0.704	39.80	<0.005	0.903	0.0054	0.0581	<0.0024	0.0764	0.0137
DV 7	female	11.6	15.0	322	2.020	0.0225	0.502	35.40	0.0948	1.190	0.0045	0.0711	<0.0025	0.0257	0.0519
DV 8	IM	10.0	11.4	275	2.080	0.0466	0.815	33.00	0.0351	0.721	0.0074	0.0650	<0.0028	0.0207	0.0119
DV 9	female	20.5	85.2	217	0.718	<0.01	0.515	8.21	<0.005	0.438	0.0037	0.0710	<0.0028	0.0774	<0.0039
DV 10	female	23.0	116.0	213	3.080	0.0100	0.527	12.60	<0.005	0.514	0.0041	0.0819	<0.0024	0.1060	0.0176
DV 11	female ?	19.8	19.0	252	9.690	0.1290	1.300	23.10	0.0283	0.397	0.0160	0.0512	<0.0023	0.0484	0.0905
DV 12	male	17.6	19.3	293	7.830	0.0730	1.690	29.40	0.1340	0.546	0.0200	0.0646	<0.003	0.0262	0.0993
DV 13	female ?	11.2	15.0	295	9.000	0.0487	2.030	24.80	0.2950	0.882	0.0091	0.0413	<0.003	0.0319	0.0413
DV 14	male	22.0	112.0	256	2.540	<0.01	0.683	13.10	<0.005	0.654	0.0034	0.0387	<0.0026	0.0719	0.0055
DV 15	male	28.4	267.0	319	0.600	<0.01	0.487	4.90	<0.005	0.770	<0.0011	0.0027	<0.003	0.0482	<0.0042
DV 16	female	26.3	180.6	276	0.510	<0.01	0.853	7.66	<0.005	0.603	0.0194	0.0732	<0.003	0.0463	0.3140
DV 17	male ?	11.9	17.4	334	3.310	<0.01	0.563	17.60	0.0257	0.608	0.0033	0.0229	<0.0026	0.0376	0.0247
DV 18	male	15.8	46.3	274	3.190	<0.01	0.565	17.20	<0.005	0.265	0.0040	0.0132	<0.0026	0.0269	0.0092
DV 19	male	15.1	38.8	288	5.470	<0.01	0.549	16.80	<0.005	0.448	0.0031	0.0084	<0.0027	0.0268	<0.0039
DV 20	female	21.7	101.2	278	1.060	<0.01	0.597	16.20	0.4610	1.390	0.0042	0.0492	<0.0027	0.0751	<0.0038
DV 21	male	14.5	34.7	335	10.700	0.0964	0.800	30.70	0.0690	0.570	0.0148	0.0378	<0.0024	0.0215	0.0176
DV 22	female	20.4	97.0	287	2.200	<0.01	0.783	19.40	0.0620	1.050	0.0026	0.0128	<0.0028	0.0364	<0.004
DV 23	male	21.9	105.0	261	0.755	0.2900	0.513	5.42	0.0476	0.433	<0.001	0.0213	<0.0026	0.0375	0.0038
DV 24	male	18.7	70.7	264	1.360	<0.01	0.670	12.40	0.0462	0.529	0.0027	0.0075	<0.003	0.0276	<0.0042
DV 25	female ?	29.0	214.7	251	1.060	<0.011	0.422	9.33	0.0685	0.498	0.0013	0.0220	<0.0031	0.0692	0.0116
DV 26	female	26.4	171.2	257	0.681	<0.01	0.436	9.27	0.1650	0.389	<0.001	0.0705	<0.0034	0.0780	0.0186
DV 27	male	21.7	99.0	248	1.010	<0.01	0.784	15.00	0.0562	0.507	0.0012	0.0185	<0.0026	0.0637	0.0437
DV 28	male	12.8	20.0	267	4.220	<0.01	0.573	33.70	0.1640	0.636	0.0021	0.0233	<0.0028	0.0725	<0.004
DV 29	male	16.0	39.0	218	1.400	<0.01	0.558	22.10	0.0719	0.882	<0.001	0.0239	<0.0027	0.1400	0.0264
DV 30	male	15.7	35.8	239	1.470	<0.011	0.543	26.40	0.1180	0.770	<0.0012	0.0270	<0.0031	0.1290	<0.0043
DV 31	male	20.0	76.2	226	1.620	<0.01	0.602	11.30	0.0076	0.393	0.0012	0.0286	<0.003	0.0518	<0.0043
DV 32	male	10.3	11.7	227	1.920	<0.01	1.150	27.70	0.1840	0.749	0.0061	0.2920	<0.0027	0.0648	0.0765
DV 33	female	15.8	40.0	256	1.860	0.0311	0.664	42.50	0.0704	0.591	0.0022	0.0857	<0.0029	0.0777	0.0172
DV 34	female	19.2	82.0	290	0.839	0.0213	0.597	11.20	0.0804	0.419	0.0069	0.0184	0.0041	0.0331	0.0044
DV 35	male	18.9	64.6	282	1.430	0.0107	0.649	15.20	0.0440	0.436	0.0076	0.0311	<0.0026	0.0374	0.0073
DV 36	female	19.2	71.0	295	1.240	0.0265	0.737	13.70	0.1220	0.700	0.0043	0.0340	<0.0021	0.0395	0.0064

Kitsault Lake Fish Tissue Analysis: Metals Concentrations

Species (ID #)	Sex	Fork Length (cm)	Weight (g)	Mg (ppm)	Mn (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)	Se (ppm)	Ag (ppm)	Cd (ppm)	Te (ppm)	Hg (ppm)	Pb (ppm)
DV 37	male	18.2	73.7	241	1.460	<0.01	0.748	12.10	0.0256	0.347	0.0029	0.0186	<0.0021	0.0369	0.0047
DV 38	male	15.8	45.7	298	1.430	0.0320	0.662	14.50	0.0875	0.673	0.0049	0.0210	<0.0023	0.0329	0.0118
DV 39	male	21.3	115.2	221	0.712	0.0360	0.682	10.20	0.1040	0.522	0.0043	0.0206	<0.0026	0.0365	0.0047
DV 40	female	15.9	48.5	289	2.800	0.0810	0.713	24.40	0.0921	0.677	0.0127	0.0758	0.0038	0.0709	0.0075
DV 41	female	21.8	117.1	240	1.110	0.0117	1.350	14.90	0.0463	0.447	0.0062	0.0542	<0.0023	0.0638	0.0501
DV 42	female	19.7	94.1	251	0.615	0.0332	0.558	9.87	0.0890	0.559	0.0047	0.0377	<0.0023	0.0496	0.0204
DV 43	female	24.0	146.5	266	2.580	0.0355	0.682	14.20	0.0915	0.624	0.0037	0.0143	0.0039	0.0290	0.0213
DV 44	male	14.8	35.3	255	2.140	0.0369	0.604	19.60	0.1850	0.531	0.0011	0.0123	0.0071	0.0702	0.0357
DV 45	male	14.6	36.3	264	1.040	0.0227	0.621	17.80	0.1460	0.603	0.0030	0.0242	0.0030	0.0870	0.0176
DV 46	female	14.5	18.9	298	2.430	0.0232	0.540	21.10	0.1960	0.494	0.0026	0.0151	<0.0021	0.0667	0.0064
DV 47	female	17.8	57.0	284	1.740	0.0113	0.587	20.40	0.0445	0.442	0.0037	0.0261	<0.0023	0.0921	0.0060
DV 48	female	15.5	46.0	312	1.510	<0.01	0.610	20.20	0.5460	0.714	0.0019	0.0211	<0.0025	0.0920	0.0041
DV 49	female	15.7	44.7	346	2.810	0.0245	0.583	22.50	0.1580	0.444	<0.001	0.0336	<0.0022	0.1090	0.0044
DV 50	male	15.0	38.8	323	2.610	0.0224	0.812	22.90	0.1740	0.659	<0.001	0.0391	0.0061	0.1040	0.0042
DV 51	female	16.7	55.5	360	2.730	0.0244	0.427	16.60	0.2710	0.553	0.0024	0.0212	0.0033	0.0972	0.0054
DV 52	female	16.7	55.0	308	0.918	<0.01	0.634	14.90	0.1140	0.441	0.0013	0.0166	<0.0026	0.0993	0.0062
DV 53	male	18.8	58.8	380	3.380	0.0209	0.708	17.00	0.2360	0.692	0.0041	0.0389	0.0029	0.0429	0.0195
DV 54	male	27.5	213.5	263	1.030	<0.01	0.504	7.65	0.0402	0.770	0.0010	0.0529	<0.0025	0.0335	0.0044
DV 55	female	16.2	54.8	267	1.200	<0.01	0.524	11.70	0.0806	0.784	0.0034	0.0139	<0.0025	0.0568	0.0070
DV 56	male	17.8	74.3	320	3.550	0.0142	0.629	13.60	<0.005	0.540	0.0023	0.0080	<0.0024	0.0363	0.0064
DV 57	male	24.1	167.7	286	1.620	0.1890	0.578	9.77	0.0361	0.421	0.0039	0.0329	0.0032	0.0237	<0.0022
DV 58	female	28.0	228.5	410	3.480	0.0347	0.702	12.90	0.0692	0.847	0.0009	0.0416	0.0104	0.0274	<0.0024
DV 59	male	26.5	211.0	287	0.727	<0.01	0.493	8.69	0.0566	1.040	0.0036	0.0198	<0.0024	0.0351	<0.0024
DV 60	female	29.2	287.2	297	3.060	<0.01	0.605	9.11	0.0543	0.826	0.0035	0.0234	<0.0022	0.0455	0.0212
RB 2	male	9.3	9.5	338	5.020	0.0106	0.683	29.80	0.0734	1.100	0.0089	0.0200	<0.0023	0.0465	0.0166
RB 4	male	9.1	8.3	350	6.360	0.0409	0.723	38.00	0.6990	1.080	0.0030	0.3940	0.0047	0.0700	0.1620
RB 5	male	9.5	11.0	353	10.800	0.0394	0.603	42.20	1.0800	1.050	0.0043	0.3420	<0.0025	0.0497	0.4160

KITSAULT LAKE ZOOPLANKTON ANALYSIS: HORIZONTAL TOWS

KITSAULT LAKE
9/28/94
0.6m diameter net
330 micrometer mesh

Phylum * Subclass ** Order	Suborder	Species	# / Part counted / stage	500m NORTH END horizontal tow 1					900m SOUTH END horizontal tow 2					ZOOPLANKTON DENSITIES NR/m3	
			Part counted	0.02				1	0.02				1		
			stage	NR/subsample				NR /SAMPL	NR/subsample				NR /SAMPL	tow1 500m	tow2 900m
CLADOCERA		EUBOSMINA longispina	fem & eggs	4				256	3	1		1	192	1.81	0.75
			fem no eggs						1		2	1	64		0.25
			small												
			male												
			Total					256					256	1.81	1.01
		HOLOPEDIUM gibberum	fem & eggs							1	1				
			small								1				
			Total												
		DAPHNIA pulex	fem & eggs												
			fem no eggs	1			1	2	1			1	64	0.01	0.25
			small												
			male												
			Total					2					64	0.01	0.25
COPEPODA**	CYCLOPOID	CYCLOPS scutifer	fem & eggs	2				128	2				128	0.91	0.50
			fem no eggs	25				1,600	11				704	11.32	2.77
			male												
			cop						2				128		0.50
			Total					1,728					960	12.22	3.77
	CALANOIDA	HETEROCOPE septentrionalis	female	77				4,928	1	3		1	64	34.86	0.25
			male	73				4,672	3	1	4	5	192	33.05	0.75
			Total					9,600					256	67.91	1.01
		DIAPTOMUS pribilofensis	fem & eggs	332				21,248	206				13,184	150.30	51.81
			fem no eggs	728				46,592	351				22,464	329.57	88.28
			male	369				23,616	262				16,768	167.05	65.89
			cop						14				896		3.52
			Total					91,456					53,312	646.92	209.50
ROTIFERA * FLOSCULARIACEAE		CONOCHILUS unicornis (colonies)		32				2,048	14				896	14.49	3.52

KITSAULT LAKE ZOOPLANKTON ANALYSIS: VERTICAL HAULS

		KITSAULT LAKE 9/28/94	REPLICATE #	65m vert. haul 1					65m vert. haul 2					65m vert. haul 3					DENSITY OF ZOOPLANKTON TAXA NR/m3			
		0.6m diameter net 330 micrometer mesh	Part counted	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	1	0.25				1				MEAN
Phylum * Subclass ** Order	Suborder	Species	stage	NR/subsample				NR /SAMPLE	NR/subsample				NR /SAMPLE	NR/subsample				NR /SAMPLE	REPLICATES# 1	2	3	NR /m3
CLADOCERA		EUBOSMINA longispina	fem & eggs	1		1		2.00	1	1		1	3.00	1		1		2.00	0	0	0	0.13
			fem no eggs								1		1.00	1				1.00		0	0	0.04
			small																			
			male																			
			Total					2.00					4.00					3.00	0	0	0	0.16
		HOLOPEDIUM gibberum	fem & eggs							1			1.00							0		0.02
			small	1				1.00			1		1.00						0	0		0.04
			Total	1				1.00					2.00						0	0		0.05
		DAPHNIA pulex	fem & eggs																			
			fem no eggs		1	1		2.00			1	1	2.00						0	0		0.07
			small																			
			male																			
			Total					2.00					2.00						0	0		0.07
COPEPODA**	CYCLOPOIDA	CYCLOPS scutifer	fem & eggs	14				56.00	8				32.00	8				32.00	3	2	2	2.18
			fem no eggs	82				328.00	72				288.00	92				368.00	18	16	20	17.85
			male																			
			cop	15				60.00	22				88.00	24				96.00	3	5	5	4.43
			Total					444.00					408.00					496.00	24	22	27	24.45
	CALANOIDA	HETEROCOPE septentrionalis	female	13	9	17	9	48.00	8	6	14	14	42.00	8	15	11	14	48.00	3	2	3	2.50
			male	12	16	11	11	50.00	11	14	9	19	53.00	8	6	4	14	32.00	3	3	2	2.45
			Total					98.00					95.00					80.00	5	5	4	4.95
		DIAPTOMUS pribilofensis	fem & eggs	654				2,616.00	514				2,056.00	728				2,912.00	142	112	158	137.56
			fem no eggs	563				2,252.00	612				2,448.00	576				2,304.00	123	133	125	127.04
			male	871				3,484.00	904				3,616.00	704				2,816.00	190	197	153	179.85
			cop	25				100.00	36				144.00	32				128.00	5	8	7	6.75
			Total					8,452.00					8,264.00					8,160.00	460	450	444	451.19
ROTIFERA * FLOSCULARIACEAE		CONOCHILUS unicornis (colonies)		29	44	40	35	148.00	29	29	34	38	130.00	37	30	28	32	127.00	8	7	7	7.35

KITSAULT LAKE PHYTOPLANKTON ANALYSIS

SAMPLING DATE: September 28, 1994

RAW DATA

SITE	K1	settling chamber d=26mm		
DEPTH	Surface			
A(ml)	Tot Vol. (ml)	500		
B(ml)	Vol. Settled (ml)	50	50	50
C(nr)	Tot. Nr of Fields	2,056	8,225	32,901
D(nr)	Fields Counted	160	1	40
	Total magnif.	200	400	800
Factor		0.3	164.5	16.5

Density of algal cells in No/L

FINAL RESULTS

K1

ORDER	GENERA	form	# OF CELLS COUNTED			# OF CELLS /ML = (Count*F) 200*	400*	800*	#cells/litre
CHRYSOPHYTA									
Chrysomonadales	Chromulina/Kephyrion				160			2,632	2.63E+06
	Ochromonas				33			543	5.43E+05
	Dinobryon	col	2			1			5.14E+02
	Mallomonas		21			5			5.40E+03
Centrales	Cyclotella		3			1			7.71E+02
Pennales									
	Synedra		60			15			1.54E+04
	Tabellaria	col							
CRYPTOPHYTA									
Cryptomonadales	Chroomonas		59			15			1.52E+04
CHLOROPHYTA									
Chlorococcales	Ankistrodesmus		4			1			1.03E+03
	Tetraedron				5			82	8.23E+04
Tetrasporales	Elakatothrix	cells	64			16			1.65E+04
Zygnematales	Cosmarium		2			1			5.14E+02
PYRROPHYTA									
	Gymnodinium				1			16	1.65E+04
CYANOPHYTA									
Chroococcales	Anacystis	col	88			23			2.26E+04
	Aphanocapsa	col	25			6			6.43E+03
	Chroococcus	col	24			6			6.17E+03
	Merismopedia	col							
Nostocales	Anabaena	fil	2			1			5.14E+02
EXTRA									
(Ciliates)			3			1			7.71E+02

KITSAULT LAKE PHYTOPLANKTON ANALYSIS

SAMPLING DATE: September 28, 1994

RAW DATA

SITE	K3			
DEPTH	Surface	settling chamber d=26mm		
A(ml)	Tot Vol. (ml)	500		
B(ml)	Vol. Settled (ml)	50	50	50
C(nr)	Tot. Nr of Fields	2,056	8,225	32,901
D(nr)	Fields Counted	160	1	40
	Total magnif.	200	400	800
Factor		0.3	164.5	16.5

Density of algal cells in No/L

FINAL RESULTS

K3

ORDER	GENERA	form	# OF CELLS COUNTED			# OF CELLS/ML=(Count*F) 200*	400*	800*	#cells/litre
CHRYSOPHYTA									
Chrysomonadales	Chromulina/Kephyrion				157			2,583	2.58E+06
	Ochromonas				17			280	2.80E+05
	Dinobryon	col	3			1			7.71E+02
	Mallomonas		18			5			4.63E+03
Centrales	Cyclotella		6			2			1.54E+03
Pennales									
	Synedra		41			11			1.05E+04
	Tabellaria	col	2			1			5.14E+02
CRYPTOPHYTA									
Cryptomonadales	Chroomonas		62			16			1.59E+04
CHLOROPHYTA									
Chlorococcales	Ankistrodesmus		6			2			1.54E+03
	Tetraedron				7			115	1.15E+05
Tetrasporales	Elakatothrix	cells	45			12			1.16E+04
Zygnematales	Cosmarium		2			1			5.14E+02
PYRROPHYTA									
	Gymnodinium				2			33	3.29E+04
CYANOPHYTA									
Chroococcales	Anacystis	col	89			23			2.29E+04
	Aphanocapsa	col	21			5			5.40E+03
	Chroococcus	col	20			5			5.14E+03
	Merismopedia	col	2			1			5.14E+02
Nostocales	Anabaena	fil	3			1			7.71E+02
EXTRA									
(Ciliates)			7			2			1.80E+03

KITSAULT LAKE PHYTOPLANKTON ANALYSIS

SAMPLING DATE: September 28, 1994

RAW DATA

SITE	K5	settling chamber d=26mm		
DEPTH	Surface			
A(ml)	Tot Vol. (ml)	500		
B(ml)	Vol. Settled (ml)	50	50	50
C(nr)	Tot. Nr of Fields	2,056	8,225	32,901
D(nr)	Fields Counted	160	1	40
	Total magnif.	200	400	800
Factor		0.3	164.5	16.5

Density of algal cells in No/L

FINAL RESULTS

ORDER	GENERA	form	# OF CELLS COUNTED			# OF CELLS/ML = (Count*F) 200*	400*	800*	K5 Surface #cells/litre
CHRYSOPHYTA									
Chrysomonadales	Chromulina/Kephyrion				145			2,385	2.39E+06
	Ochromonas				22			362	3.62E+05
	Dinobryon	col	1			0			2.57E+02
	Mallomonas		16			4			4.11E+03
Centrales	Cyclotella		9			2			2.31E+03
Pennales									
	Synedra		50			13			1.29E+04
	Tabellaria	col							
CRYPTOPHYTA									
Cryptomonadales	Chroomonas		47			12			1.21E+04
CHLOROPHYTA									
Chlorococcales	Ankistrodesmus		4			1			1.03E+03
	Tetraedron				9			148	1.48E+05
Tetrasporales	Elakatothrix	cells	41			11			1.05E+04
Zygnematales	Cosmarium		4			1			1.03E+03
PYRROPHYTA									
	Gymnodinium				2			33	3.29E+04
CYANOPHYTA									
Chroococcales	Anacystis	col	118			30			3.03E+04
	Aphanocapsa	col	28			7			7.20E+03
	Chroococcus	col	23			6			5.91E+03
	Merismopedia	col							
Nostocales	Anabaena	fil							
EXTRA									
(Ciliates)			5			1			1.29E+03

KITSAULT LAKE TRIBUTARIES: PERIPHYTON ANALYSIS

SAMPLING DATE: September 28, 1994

 # OF CELLS per square cm.

PHYLUM ORDER	GENERA	form	TRIBUTARY # 1	5	12A
CHLOROPHYTA					
Chlorococcales	Pediastrum	cells			7.95E+01
	Scenedesmus				3.97E+02
Zygematales	Spirogyra	fil			1.19E+03
	Cosmarium			7.95E+01	5.56E+02
CHRYSOPHYTA					
Pennales	Amphora		3.97E+02		5.09E+03
	Achnanthes		6.29E+04		1.43E+05
	Amphipleura				1.35E+03
	Anomoeoneis		2.54E+03		1.91E+03
	Ceratoneis		4.29E+03	9.54E+02	2.38E+02
	Cymbella		1.03E+03	3.18E+02	1.02E+04
	Epithemia				3.18E+02
	Fragilaria		2.38E+02	2.86E+03	5.56E+02
	Gomphonema		1.59E+03	1.19E+03	8.90E+03
	Hantzschia				1.59E+02
	Navicula			5.56E+02	1.03E+03
	Synedra			6.36E+02	3.18E+02
	Tabellaria		3.97E+02	3.18E+02	
	Tetracyclus		1.59E+03		6.36E+02
CYANOPHYTA					
Chroococcales	Anacystis	col		6.36E+02	8.27E+03
	Aphanocapsa	col	3.81E+03	1.91E+03	
	Gloeacapsa	col	1.21E+04	1.65E+04	1.59E+02
	Merismopedia	col			
	Microcystis	col			2.54E+03
Nostocales	Anabaena	fil		1.59E+02	3.18E+03
	Nostoc	col	4.77E+02	4.93E+03	7.15E+02
Oscillatoriales	Schizothrix	fil		6.36E+02	3.18E+02

KITSAULT LAKE BENTHIC INVERTEBRATE ANALYSES: LAKE

SAMPLING DATE: 28-Sep-94
LOCATION: MOUTH of TRIB #4
TYPE OF SAMPLE: EKMAN GRAB

NUMBER OF ORGANISMS PER SAMPLE

AREA SAMPLED: 225cm2

CLASS * ORDER	FAMILY	GENERA	REP # DEPTH STAGE	1 4m	2 4m	3 4m	4 4m	5 4m	MEAN Nr/sample	% of species	Composition all Taxa	MEAN DENSITY Nr/m*m
INSECTA* DIPTERA	CERATOPOGONIDAE	*BEZZIA/PROBEZZIA*	L	1	2		1		0.80	0.23%		35.56
	EMPIDIDAE	*CHELIFERA*	L				2		0.40	0.11%		17.78
	CHIRONOMIDAE											
	(ORTHOCLADIINAE)	*HETEROTRISSOCLADI*	L	2	9	5	8	2	5.20	1.47%		231.11
		PARAKIEFFERIELLA	L	8	8	4	3	4	5.40	1.53%		240.00
		PSECTROCLADIUS	L	3	8	3		1	3.00	0.85%		133.33
	(CHIRONOMINAE)											
	{CHIRONOMINI}	*CHIRONOMUS*	L	12	7	7	3	2	6.20	1.76%		275.56
		MICROTENDIPES	L	34	57	10	67	41	41.80	11.85%		1,857.78
		PHAENOPSECTRA	L	33	38	46	64	24	41.00	11.62%		1,822.22
	{TANYTARSINI}	*MICROPSECTRA*	L	18	51	22	9	8	21.60	6.12%		960.00
		TANYTARSUS	L	25	153	51	43	30	60.40	17.12%		2,684.44
	(PRODIAMESINE)	*MONODIAMESA*	L					1	0.20	0.06%		8.89
	(TANYPODINAE)	*CONCHAPELOPIA*	L	10	11	13	20	21	15.00	4.25%		666.67
		PROCLADIUS	L	21	32	29	16	6	20.80	5.90%		924.44
		PSECTROTANYPUS	L									
											62.87%	
OSTRACODA* PODOCOPA	CANDONIDAE		1									
	unrecognized		2			4			0.80	0.23%	0.23%	35.56
NEMATODA**		*MONONCHUS*		64	147	60	56	33	72.00	20.41%	20.41%	3,200.00
OLIGOCHAETA* HAPLOTAXIDA	ENCHYTRAEIDAE			4	17	3	21	4	9.80	2.78%		435.56
	NAIDIDAE	*NAIS/PRISTINA*		4	32	16	64	44	32.00	9.07%		1,422.22
		HAPLOTAXIS?		13	14	4	8	2	8.20	2.32%		364.44
											14.17%	
HIRUDINEA*	GLOSSIPHONIIDAE	*BATRACHOBDELLA*		2		2	1		1.00	0.28%	0.28%	44.44
MOLLUSCA** PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*		1	4	9	16	6	7.20	2.04%	2.04%	320.00
		TOTAL		255	590	288	402	229	352.80		100.00%	15,680.00

NOTES:

PHYLUM** (SUBFAMILY)
CLASS * { TRIBE }

L = LARVAL stage
PU = PUPAE stage
AD = ADULT stage

KITSAULT LAKE BENTHIC INVERTEBRATE ANALYSES: LAKE

SAMPLING DATE: 28-Sep-94
LOCATION: K1
TYPE OF SAMPLE: EKMAN GRAB

NUMBER OF ORGANISMS PER SAMPLE

AREA SAMPLED
225cm2

CLASS * ORDER	FAMILY	GENERA	REP # / DEPTH STAGE	1 30m	2 30m	3 30m	4 30m	5 30m	MEAN Nr/sample	% of species	Composition all Taxa	MEAN DENSITY Nr/m*m
INSECTA*	CHIRONOMIDAE											
DIPTERA	(ORTHOCLADIINAE)	*HETEROTRISSOCLADI*	L	3	6	1		5	3.00	6.98%		133.33
		PARAKIEFFERIELLA	L									
		PSECTROCLADIUS	L									
	(CHIRONOMINAE)											
	{CHIRONOMINI}	*CHIRONOMUS*	L	1	2			4	1.40	3.26%		62.22
		MICROTENDIPES	L									
		PHAENOPSECTRA	L									
	{TANYTARSINI}	*MICROPSECTRA*	L	1				6	1.40	3.26%		62.22
		TANYTARSUS	L	1					0.20	0.47%		8.89
		RHEOTANYTARPUS			1	1	3		1.00	2.33%		44.44
	(PRODIAMESINE)	*MONODIAMESA*	L		1				0.20	0.47%		8.89
	(TANYPODINAE)	*CONCHAPELOPIA*	L									
		PROCLADIUS	L		2		1		0.60	1.40%		26.67
		PSECTROTANYPUS	L	1			2		0.60	1.40%		26.67
											19.53%	
OSTRACODA*	CANDONIDAE		1	15	2		12	1	6.00	13.95%		266.67
PODOCOPA	unrecognized		2	35	11	14	16	29	21.00	48.84%		933.33
											62.79%	
NEMATODA**		*MONONCHUS*		10				6	3.20	7.44%	7.44%	142.22
OLIGOCHAETA* HAPLOTAXIDA	ENCHYTRAEIDAE											
	NAIDIDAE	*NAIS/PRISTINA*		3				2	1.00	2.33%		44.44
		HAPLOTAXIS?										
											2.33%	
ARACHNOIDEA* "HYDRACARINA"		*LEBERTIA*				1		1	0.40	0.93%	0.93%	17.78
MOLLUSCA** PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*			5	1	5	4	3.00	6.98%	6.98%	133.33
		TOTAL		70	30	18	39	58	43.00	100.00%	100.00%	1,911.11

NOTES:
PHYLUM** (SUBFAMILY)
CLASS * { TRIBE }

L = LARVAL stage
PU = PUPAE stage
AD = ADULT stage

KITSAULT LAKE BENTHIC INVERTEBRATE ANALYSES: LAKE

SAMPLING DATE: 28-Sep-94
LOCATION: K3
TYPE OF SAMPLE: EKMAN GRAB

NUMBER OF ORGANISMS PER SAMPLE

AREA SAMPLED: 225cm2

CLASS * ORDER	FAMILY	GENERA	REP # / DEPTH STAGE	1 68m	2 68m	3 68m	4 68m	MEAN Nr/sample	% of species	Composition all Taxa	MEAN DENSITY Nr/m*m
INSECTA*	CHIRONOMIDAE										
DIPTERA	(ORTHOCLADIINAE)	*HETEROTRISSOCLADI*	L								
		PARAKIEFFERIELLA	L								
		PSECTROCLADIUS	L								
	(CHIRONOMINAE)										
	{CHIRONOMINI}	*CHIRONOMUS*	L								
		MICROTENDIPES	L								
		PHAENOPSECTRA	L								
	{TANYTARSINI}	*MICROPSECTRA*	L								
		TANYTARSUS	L								
		RHEOTANYTARPUS									
	(PRODIAMESINE)	*MONODIAMESA*	L								
	(TANYPODINAE)	*CONCHAPELOPIA*	L								
		PROCLADIUS	L								
		PSECTROTANYPUS	L								
OSTRACODA*	CANDONIDAE		1	45				11.25	26.16%		500.00
PODOCOPA	unrecognized		2	24		1		6.25	14.53%		277.78
										40.70%	
NEMATODA**		*MONONCHUS*			19	7	9	8.75	20.35%	20.35%	388.89
OLIGOCHAETA*											
HAPLOTAXIDA	ENCHYTRAEIDAE										
	NAIDIDAE	*NAIS/PRISTINA*			1			0.25	0.58%		11.11
		HAPLOTAXIS?									
										0.58%	
ARACHNOIDEA* "HYDRACARINA"		*LEBERTIA*		1				0.25	0.58%	0.58%	11.11
MOLLUSCA** PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*		1				0.25	0.58%	0.58%	11.11
		TOTAL		71	20	8	9	27.00	100.00%	100.00%	1,200.00

NOTES:

PHYLUM** (SUBFAMILY)
CLASS * { TRIBE }

L = LARVAL stage
PU = PUPAE stage
AD = ADULT stage

KITSAULT LAKE BENTHIC INVERTEBRATE ANALYSES: TRIBUTARY SAMPLES

SAMPLING DATE: 30-Sep-94
LOCATION : TRIB # 1

TYPE OF SAMPLE : HESS SAMPLES

NUMBER OF ORGANISMS PER SAMPLE

AREA SAMPLED: 693.5cm2

CLASS * ORDER	FAMILY	GENERA	STATION REPL. # / STAGE	1	2	3	MEAN Nr/sample	% of species	Composition all Taxa	MEAN DENSITY Nr/m*m
EPHEMEROPTERA	HEPTAGENIIDAE									
		CINYGMULA	L							
		RHITHROGENA	L	3		2	1.67	17.86%		24.38
	EPHEMERELLIDAE	*DRUNELLA doddsi*	L	1			0.33	3.57%		4.88
	BAETIDAE	*BAETIS*	L							
	LEPTOPHLEBIIDAE	*PARALEPTOPHLEBIA*	L							
	SIPHLONURIDAE	*AMELETUS*	L		1		0.33	3.57%		4.88
			AD						25.00%	
PLECOPTERA	CHLOROPERLIDAE									
		SWELTSA group	L							
	NEMOURIDAE	*ZAPADA*	L							
	CAPNIIDAE	*CAPNIA*	L	1	3	8	4.00	42.86%		58.52
	TAENIOPTERYGIDAE	*TAENIONEMA*	L	2		3	1.67	17.86%		24.38
			AD						60.71%	
TRICHOPTERA										
	LIMNEPHILIDAE	*PSYCHOGLYPHA*	L		1		0.33	3.57%		4.88
			PU							
			AD						3.57%	
DIPTERA										
	CERATOPOGONIDAE	*BEZZIA/PROBEZZIA*	L							
			AD							
	TIPULIDAE	*DICRANOTA*	L							
	CHIRONOMIDAE (ORTHOCLADIINAE)									
		CORYNONEURA	L							
		CRICOTOPUS	L							
		EUKIEFFERIELLA	L							
		HETEROTRISSOCLADI	L		1		0.33	3.57%		4.88
		PARAKIEFFERIELLA	L							
	(CHIRONOMINAE) (TANYTARSINI)									
		MICROPSECTRA	L		1	1	0.67	7.14%		9.76
	(TANYPODINAE)	*CONCHAPELOPIA*	L							
		PROCLADIUS	L							
	TOT. CHIRONOMIDAE		PU							
			AD						10.71%	
COLEOPTERA	DYTISCIDAE	*HYDROPORUS*	L							
ARACHNOIDEA* "HYDRACARINA"		*PANISUS*								
		HYGROBATES								
"ORIBATEI"		*HYDROZETES*								
"SPIDERS"										
PODOCOPA	CANDONIDAE		1							
	unrecognized		2							
NEMATODA** MONONCHIDA		*MONONCHUS*								
TURBELLARIA*	PLANARIIDAE	*POLYCELIS coronata*								
OLIGOCHAETA* HAPLOTAXIDA										
	ENCHYTRAEIDAE									
	NAIDIDAE	*NAIS/PRISTINA*								
MOLLUSCA** PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*								
		TOTAL		7	7	14	9.33		100.00%	136.56

NOTES:

PHYLUM** (SUBFAMILY)
CLASS * (TRIBE)

L = LARVAL stage
PU = PUPAE stage
AD = ADULT stage

KITSAULT LAKE BENTHIC INVERTEBRATE ANALYSES: TRIBUTARY SAMPLES

SAMPLING DATE: 30-Sep-94
LOCATION : TRIB # 5
TYPE OF SAMPLE : HESS SAMPLES

NUMBER OF ORGANISMS PER SAMPLE

AREA SAMPLED 683.5cm2

CLASS * ORDER	FAMILY	GENERA	STATION REPL. # / STAGE	1	2	3	MEAN Nr/sample	% of species	Composition all Taxa	MEAN DENSITY Nr/m*m
EPHEMEROPTERA	HEPTAGENIIDAE									
		CINYGMULA	L		3		1.00	1.32%		14.63
		RHITHROGENA	L	1	1	2	1.33	1.76%		19.51
	EPHEMERELLIDAE	*DRUNELLA doddsi*	L							
	BAETIDAE	*BAETIS*	L	7	6	13	8.33	11.01%		121.92
	LEPTOPHLEBIIDAE	*PARALEPTOPHLEBIA*	L		2	6	2.67	3.52%		39.01
	SIPHLONURIDAE	*AMELETUS*	L		3	4	2.33	3.08%		34.14
			AD						20.70%	
PLECOPTERA	CHLOROPERLIDAE									
		SWELTSA group	L		2		0.67	0.88%		9.75
	NEMOURIDAE	*ZAPADA*	L	2	1	4	2.33	3.08%		34.14
	CAPNIIDAE	*CAPNIA*	L			1	0.33	0.44%		4.88
	TAENIOPTERYGIDAE	*TAENIONEMA*	L	1			0.33	0.44%		4.88
			AD						4.85%	
TRICHOPTERA										
	LIMNEPHILIDAE	*PSYCHOGLYPHA*	L							
			PU							
			AD							
DIPTERA										
	CERATOPOGONIDAE	*BEZZIA/PROBEZZIA*	L							
			AD							
	TIPULIDAE	*DICRANOTA*	L							
	CHIRONOMIDAE									
	(ORTHOCLADIINAE)	*CORYNONEURA*	L	1			0.33	0.44%		4.88
		CRICOTOPUS	L			1	0.33	0.44%		4.88
		EUKIEFFERIELLA	L	9	8	17	11.33	14.98%		165.81
		HETEROTRISSOCLADI	L	8		2	3.33	4.41%		48.77
		PARAKIEFFERIELLA	L							
	(CHIRONOMINAE)									
	{TANYTARSINI}	*MICROPSECTRA*	L	36	27	31	31.33	41.41%		458.42
	(TANYPODINAE)	*CONCHAPELOPIA*	L	4	1	8	4.33	5.73%		63.40
		PROCLADIUS	L							
	TOT. CHIRONOMIDAE		PU			1	0.33	0.44%		4.88
			AD						67.84%	
COLEOPTERA	DYTISCIDAE	*HYDROPORUS*	L							
			AD			1	0.33	0.44%	0.44%	4.88
ARACHNOIDEA*		*PANISUS*								
"HYDRACARINA"		*HYGROBATES*								
"ORIBATEI"		*HYDROZETES*				1	0.33	0.44%		4.88
"SPIDERS"									0.44%	
PODOCOPA	CANDONIDAE		1	3	4	2	3.00	3.96%		43.89
	unrecognized		2							
									3.96%	
NEMATODA** MONONCHIDA		*MONONCHUS*		1			0.33	0.44%	0.44%	4.88
TURBELLARIA*	PLANARIIDAE	*POLYCELIS coronata*								
OLIGOCHAETA*										
HAPLOTAXIDA	ENCHYTRAEIDAE					1	0.33	0.44%		4.88
	NAIDIDAE	*NAIS/PRISTINA*		2			0.67	0.88%		9.75
									1.32%	
MOLLUSCA** PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*								
		TOTAL		76	57	96	75.67		100.00%	1,107.06

NOTES:

PHYLUM** (SUBFAMILY)
CLASS * { TRIBE }

L = LARVAL stage
PU = PUPAE stage
AD = ADULT stage

KITSAULT LAKE BENTHIC INVERTEBRATE ANALYSES: TRIBUTARY SAMPLES

SAMPLING DATE: 30-Sep-94
LOCATION : TRIB # 12A
TYPE OF SAMPLE : HESS SAMPLES

NUMBER OF ORGANISMS PER SAMPLE

AREA SAMPLED 683.5cm2

CLASS * ORDER	FAMILY	GENERA	STATION REPL. # STAGE	1	2	3	MEAN Nr/sample	% of species	Composition all Taxa	MEAN DENSITY Nr/m*m
EPHEMEROPTERA	HEPTAGENIIDAE									
		CINYGMULA	L		2	2	1.33	2.01%		19.51
		RHITHROGENA	L							
	EPHEMERELLIDAE	*DRUNELLA doddsi*	L							
	BAETIDAE	*BAETIS*	L							
	LEPTOPHLEBIIDAE	*PARALEPTOPHLEBIA*	L		4		1.33	2.01%		19.51
	SIPHLONURIDAE	*AMELETUS*	L	3	4	6	4.33	6.53%		63.40
			AD						10.55%	
PLECOPTERA	CHLOROPERLIDAE									
		SWELTSA group	L	1			0.33	0.50%		4.88
	NEMOURIDAE	*ZAPADA*	L	1		5	2.00	3.02%		29.26
	CAPNIIDAE	*CAPNIA*	L	1			0.33	0.50%		4.88
	TAENIOPTERYGIDAE	*TAENIONEMA*	L							
			AD						4.02%	
TRICHOPTERA										
	LIMNEPHILIDAE	*PSYCHOGLYPHA*	L		1		0.33	0.50%		4.88
			PU							
			AD						0.50%	
DIPTERA										
	CERATOPOGONIDAE	*BEZZIA/PROBEZZIA*	L	1	1		0.67	1.01%		9.75
			AD							
	TIPULIDAE	*DICRANOTA*	L	2			0.67	1.01%		9.75
	CHIRONOMIDAE									
	(ORTHOCLADIINAE)	*CORYNONEURA*	L							
		CRICOTOPUS	L	9	8	4	7.00	10.55%		102.41
		EUKIEFFERIELLA	L	2	3	2	2.33	3.52%		34.14
		HETEROTRISSOCLADI	L	5	3	5	4.33	6.53%		63.40
		PARAKIEFFERIELLA	L	8	2	7	5.67	8.54%		82.91
	(CHIRONOMINAE)									
	(TANYTARSINI)	*MICROPSECTRA*	L	13	5	6	8.00	12.06%		117.04
	(TANYPODINAE)	*CONCHAPELOPIA*	L	13	12	3	9.33	14.07%		136.55
		PROCLADIUS	L		5		1.67	2.51%		24.38
	TOT. CHIRONOMIDAE		PU							
			AD						59.80%	
COLEOPTERA	DYTISCIDAE	*HYDROPORUS*	L	1			0.33	0.50%	0.50%	4.88
ARACHNOIDEA*		*PANISUS*				1	0.33	0.50%		4.88
"HYDRACARINA"		*HYGROBATES*		1			0.33	0.50%		4.88
"ORIBATEI"		*HYDROZETES*			1	1	0.67	1.01%		9.75
"SPIDERS"									2.01%	
PODOCOPA	CANDONIDAE		1		3	2	1.67	2.51%		24.38
	unrecognized		2		1	1	0.67	1.01%	3.52%	9.75
NEMATODA** MONONCHIDA		*MONONCHUS*				2	0.67	1.01%	1.01%	9.75
TURBELLARIA*	PLANARIIDAE	*POLYCELIS coronata*								
OLIGOCHAETA*										
HAPLOTAXIDA	ENCHYTRAEIDAE									
	NAIDIDAE	*NAIS/PRISTINA*		19	10	4	11.00	16.58%		160.94
									16.58%	
MOLLUSCA** PELECYPODA*	SPHAERIIDAE	*SPHAERIUM*		3			1.00	1.51%	1.51%	14.63
		TOTAL		83	65	51	66.33		100.00%	970.50

NOTES:

PHYLUM** (SUBFAMILY)
CLASS * { TRIBE }

L = LARVAL stage
PU = PUPAE stage
AD = ADULT stage

Appendix B - Wildlife, Aquatic Birds and Habitat

Rescan

Observations of Terrestrial Wildlife or Sign Around Kitsault Lake, September 22/23, 1994

Species	Observation	Remarks
MAMMALS		
Moose	Sighting	- Large bull swam across the lake near camp.
	Scats Tracks	- Old summer scat on islands near camp.
		- One fresh and one old track on islands near camp; one track on shoreline; several old tracks in wetlands north of camp.
Black bear	Sighting	- One adult observed on two occasions in open forest - blueberry habitat south of the narrows.
	Scats	- Summer scat (berries) near camp; two spring scats (grasses) north of camp.
Marten	Scat	- One scat on a mossy rock; contained some berries.
BIRDS		
Sharp-shinned Hawk	Sighting	- One seen in air near the lake.
Hawk Owl	Sightings	- One seen perched near the dam and being harassed by gray jays; another (possibly the same) perched on a snag at the camp.
Gray Jay	Sightings	- Three jays harassing an owl; four seen in woods north of the camp.
American Robin	Sighting	- Two robins in woods north of the camp.
Dark-eyed Junco	Sighting	- Seen on three occasions in groups up to six.
AMPHIBIANS		
Spotted frog	Sighting	- One in standing water in a small wetland near the camp.

Observations of Aquatic Birds at Kitsault Lake, 1994

Species	Number	Date	Comments
Common Loon	14	Sep. 22	- Observed feeding (diving) in a flock on the lake. Not present the next day. - One or more heard calling at night.
Pacific Loon	1	Sep. 22	- Flew in and landed, south end of lake.
Unident. Loon	1	Sep. 22	- Flew past the camp.
	2	Sep. 23	- Seen by Fisheries staff near dam.
Horned Grebe	6	Sep. 22 (am)	- In a flock, diving for food, in bay just south of camp.
	6	Sep. 22 (pm)	- Seen in groups of 1 or 2 scattered around the lake (probably same birds seen in a.m.).
Red-necked Grebe	4	Sep. 12	- Observed diving, south end of the lake.
Canada Goose	10	July/94	- Seen by J. Slater.
	6	Sep. 22	- Feeding at head of cove south of the dam.
	4	Sep. 23	- Flew by the camp.
	-	Sep. 23	- Grazing sign and droppings noted around lakeshore in several locations.
White-winged Scoter	9	Sep. 23	- Flock seen on the lake on at least two occasions.
Black Scoter	1	Sep. 23	- On south end of the lake.
Unident. Scoter	12	Sep. 23/24	- A group of 11 plus a single sighting; not White-winged (either Surf or Black Scoters).
Harlequin Duck	1	Sep. 23	- Near the camp.
Bufflehead	1	Sep. 23	- North part of the lake.
Unident. Ducks	27	Sep. 22	- Flew over the lake.
Glaucous-winged Gulls	2	Sep. 22	- One adult and one juvenile, on rocks in the lake.
	10	Sep. 23	- Flew over the lake.
Mew Gull	Sev.	July/94	- Territorial gulls at most islands in the lake and assumed to be nesting. No nests found (Jim Slater).
	2	Sep. 22	- Flying over the lake.
	-	Sep. 22/23	- Two probable old nests found on rocky islands near the camp; no shell in them and unlikely to have been active in 1994.

Shoreline and Upland Habitat Types Bordering Kitsault Lake

Habitat Type	Distribution/Site Characteristics	Dominant Plants
Willow-sedge fen	Very restricted, level, riparian sites	Willows, sedges, grasses.
Seepage slopes	Moderately common, sloping wetlands between forest stands.	Cottongrass; Sitka burnet; leatherleaf saxifrage; deer cabbage; sweet coltsfoot, tri-angle-leaved butterwort; horsetail
Wetlands; pondweeds	Small in size and scattered in occurrence. Some open water, emergent vegetation and pondweeds	Sedges
Rock outcrops	Common on islands in the lake, also at higher elevations	Crowberry; lichen; clubmoss

Appendix C - Meteorology

Rescan

Kitsault Lake Meteorological Data

Date 1994	Max Wind Speed (m/s)	Time of Max Wind Speed	Direction of Max Wind Speed	Maximum Temp (°C)	Minimum Temp (°C)	Rainfall (mm)	**Total** Solar Radiation (kW/m2)	**Total** Net Radiation (W/m2)
5-Jul	10.33	10:46	231.0	9.71	7.43	n/a	1681	n/a
6-Jul	8.68	4:03	213.1	9.36	5.08	9.84	2933	n/a
7-Jul	10.90	6:41	211.0	9.63	6.58	0.05	3518	n/a
8-Jul	9.60	5:54	214.2	9.69	6.91	0.01	2461	n/a
9-Jul	7.19	5:42	246.7	12.13	4.25	0.06	2416	n/a
10-Jul	6.82	9:56	247.1	19.53	7.12	0.00	5810	n/a
11-Jul	7.82	7:44	277.9	22.01	9.13	0.00	5903	n/a
12-Jul	8.25	9:11	214.4	20.98	9.20	0.07	5260	n/a
13-Jul	7.88	6:37	213.3	19.51	9.17	0.00	5467	n/a
14-Jul	8.78	9:30	217.1	19.34	8.98	0.10	5321	n/a
15-Jul	7.96	6:00	201.3	12.47	8.81	1.94	2874	n/a
16-Jul	9.74	22:13	208.4	12.08	9.68	4.15	1956	n/a
17-Jul	9.09	7:03	218.3	11.19	9.31	0.36	1827	n/a
18-Jul	6.43	9:31	197.5	17.10	10.68	0.00	3616	n/a
19-Jul	8.86	5:45	224.5	17.50	7.74	0.07	5411	n/a
20-Jul	6.76	9:13	303.4	20.67	7.86	0.00	6008	n/a
21-Jul	6.39	9:20	321.2	23.95	9.18	0.00	6025	n/a
22-Jul	6.76	10:56	297.0	25.08	10.50	0.09	5517	n/a
23-Jul	7.74	6:57	233.1	25.70	12.45	0.00	5554	n/a
24-Jul	7.96	5:04	33.9	19.58	11.30	0.42	2635	n/a
25-Jul	7.94	11:18	230.8	16.48	10.42	0.57	2369	n/a
26-Jul	5.78	5:49	59.5	20.19	12.46	0.73	3873	n/a
27-Jul	5.86	7:23	275.3	17.66	10.58	4.88	2142	n/a
28-Jul	9.27	10:18	197.2	13.12	7.83	3.82	2555	n/a

Date 1994	Max Wind Speed (m/s)	Time of Max Wind Speed	Direction of Max Wind Speed	Maximum Temp (°C)	Minimum Temp (°C)	Rainfall (mm)	**Average** Solar Radiation (kW/m2)	**Average** Net Radiation (W/m2)
29-Jul	7.78	15:34	222.0	13.90	9.17	42.62	0.214	97.80
30-Jul	5.47	17:03	185.2	15.71	8.17	2.29	0.215	101.70
31-Jul	9.51	12:37	57.0	18.97	7.85	0.00	0.205	110.20

Kitsault Lake Meteorological Data

Date 1994	Max Wind Speed (m/s)	Time of Max Wind Speed	Direction of Max Wind Speed	Maximum Temp (°C)	Minimum Temp (°C)	Rainfall (mm)	Average Solar Radiation (kW/m2)	Average Net Radiation (W/m2)
1-Aug	5.10	16:53	209.7	23.09	12.53	0.79	0.273	159.90
2-Aug	11.02	19:20	66.5	23.30	12.28	0.89	0.178	91.30
3-Aug	13.21	19:57	200.9	20.25	11.30	16.62	0.141	82.70
4-Aug	7.00	23:57	224.8	16.21	10.49	4.89	0.160	87.40
5-Aug	7.17	1:14	221.0	12.33	9.77	6.20	0.082	39.73
6-Aug	9.84	9:21	16.7	18.87	9.98	2.08	0.182	97.90
7-Aug	8.94	18:21	72.5	22.37	12.03	0.00	0.234	130.10
8-Aug	6.53	11:39	43.9	23.16	11.41	0.00	0.272	149.90
9-Aug	5.88	17:23	325.3	22.54	12.68	0.02	0.284	149.20
10-Aug	5.04	16:14	263.0	23.44	12.22	0.00	0.238	118.20
11-Aug	5.25	13:13	24.5	24.07	12.98	0.00	0.238	119.80
12-Aug	9.96	16:09	208.5	22.90	13.38	0.06	0.263	141.60
13-Aug	8.23	13:49	209.1	14.78	11.55	0.78	0.128	62.82
14-Aug	7.88	14:06	221.7	14.36	10.30	0.00	0.179	84.70
15-Aug	6.82	16:26	322.6	18.77	9.21	0.00	0.262	127.90
16-Aug	7.00	15:49	307.3	22.40	10.31	0.00	0.263	123.80
17-Aug	4.41	16:23	263.1	23.12	11.32	0.03	0.199	89.20
18-Aug	13.86	23:22	221.2	20.07	12.23	5.60	0.226	115.40
19-Aug	9.00	0:09	186.4	14.54	10.57	1.55	0.136	62.81
20-Aug	10.17	14:13	213.3	12.07	8.68	12.51	0.065	20.06
21-Aug	11.98	15:14	229.7	10.11	6.76	12.87	0.079	24.45
22-Aug	10.66	12:45	202.1	9.35	6.57	3.25	0.156	83.00
23-Aug	8.47	0:04	226.7	12.19	7.02	0.20	0.163	77.20
24-Aug	7.49	14:49	231.0	15.70	5.21	0.19	0.243	114.80
25-Aug	5.37	13:40	8.1	19.54	6.37	0.00	0.247	116.60
26-Aug	7.74	16:17	220.9	20.06	7.76	0.00	0.241	112.30
27-Aug	10.53	14:11	259.0	20.17	8.18	0.12	0.244	110.70
28-Aug	6.72	14:41	238.6	14.53	9.08	0.01	0.111	37.44
29-Aug	10.29	19:53	213.7	16.44	7.67	2.26	0.150	70.60
30-Aug	10.29	1:22	214.9	14.11	6.24	1.93	0.219	93.00
31-Aug	7.60	14:21	55.5	12.42	4.51	4.60	0.129	41.64

Kitsault Lake Meteorological Data

Date 1994	Max Wind Speed (m/s)	Time of Max Wind Speed	Direction of Max Wind Speed	Maximum Temp (°C)	Minimum Temp (°C)	Rainfall (mm)	Average Solar Radiation (kW/m2)	Average Net Radiation (W/m2)
1-Sep	6.12	2:47	203.0	10.69	4.42	3.53	0.139	50.68
2-Sep	8.17	16:50	219.5	13.03	3.18	0.00	0.231	113.60
3-Sep	6.82	3:30	243.7	8.76	6.45	16.30	0.044	1.32
4-Sep	7.08	17:01	196.1	10.15	6.94	8.99	0.064	22.31
5-Sep	5.23	17:14	221.5	9.24	5.97	11.89	0.071	25.40
6-Sep	5.88	9:40	31.2	12.21	5.86	0.00	0.149	72.70
7-Sep	6.29	21:21	229.6	11.39	7.54	2.83	0.092	38.09
8-Sep	8.21	15:42	224.4	10.42	7.02	0.27	0.106	34.37
9-Sep	7.94	15:48	206.5	11.55	6.21	0.00	0.131	50.17
10-Sep	9.17	23:47	225.9	8.56	6.76	2.24	0.070	25.69
11-Sep	10.86	5:08	212.6	11.10	7.01	23.49	0.048	22.96
12-Sep	10.25	5:15	204.4	10.49	7.16	37.98	0.059	27.95
13-Sep	8.39	17:12	213.0	9.42	7.36	16.99	0.043	15.44
14-Sep	11.86	5:00	203.5	10.74	7.43	17.41	0.050	18.00
15-Sep	5.00	12:11	8.1	9.82	6.67	28.25	0.037	12.76
16-Sep	10.84	16:00	213.4	11.06	7.71	9.68	0.068	28.90
17-Sep	6.55	23:17	211.4	9.18	7.07	13.19	0.036	9.84
18-Sep	7.90	1:41	227.5	10.16	3.15	0.22	0.158	54.35
19-Sep	5.57	10:39	22.1	9.11	2.71	2.27	0.077	29.64
20-Sep	15.62	22:44	244.0	13.78	6.44	14.91	0.027	17.48
21-Sep	13.64	0:51	223.5	11.94	5.43	18.87	0.039	6.48
22-Sep	6.19	12:38	20.9	8.44	2.95	0.01	0.149	45.00
23-Sep	11.56	22:56	215.7	11.96	4.13	16.33	0.051	26.38
24-Sep	11.31	12:05	236.9	9.24	5.62	2.80	0.067	25.69
25-Sep	9.02	2:57	237.7	5.97	1.91	19.93	0.031	0.13
26-Sep	14.05	5:46	256.7	6.92	1.23	9.06	0.100	38.79
26-Sep	3.12	0:00	64.1	6.83	6.83	48.00	0.397	217.50
27-Sep	4.68	16:55	5.1	7.16	0.64	0.37	0.065	-25.71
28-Sep	5.72	10:54	24.7	6.06	0.22	0.04	0.092	21.36
29-Sep	6.72	19:06	223.5	4.94	3.08	4.81	0.025	-4.67
29-Sep	3.84	0:00	205.3	5.26	5.26	3.34	0.245	155.90
30-Sep	4.68	13:44	201.3	7.69	1.01	0.10	0.098	24.95

Kitsault Lake Meteorological Data

Date 1994	Max Wind Speed (m/s)	Time of Max Wind Speed	Direction of Max Wind Speed	Maximum Temp (°C)	Minimum Temp (°C)	Rainfall (mm)	Average Solar Radiation (kW/m2)	Average Net Radiation (W/m2)
1-Oct	7.39	13:44	54.3	7.49	0.27	0.00	0.117	34.69
2-Oct	6.41	10:25	24.4	7.46	3.42	0.01	0.062	21.89
3-Oct	13.45	16:29	236.2	9.33	3.74	6.84	0.029	-3.82
4-Oct	8.25	16:51	226.6	7.04	3.59	0.03	0.126	40.03
5-Oct	13.60	10:21	202.5	6.65	3.66	4.09	0.032	-2.41
6-Oct	6.70	0:11	234.4	5.31	2.30	2.56	0.060	15.96
7-Oct	7.76	9:12	271.8	5.84	0.84	11.76	0.078	21.20
8-Oct	8.70	22:34	240.9	4.25	1.68	2.72	0.076	19.45
9-Oct	8.88	3:32	266.3	5.10	-0.16	1.53	0.089	28.64
10-Oct	5.86	11:05	28.9	3.61	-0.50	3.71	0.068	14.76
11-Oct	4.21	15:12	236.0	5.69	0.92	6.27	0.039	8.50
12-Oct	6.29	2:14	23.3	3.46	0.73	8.60	0.022	-4.67
13-Oct	3.74	1:22	48.5	4.74	0.85	0.00	0.054	13.12
14-Oct	5.35	20:23	344.8	4.55	2.17	18.51	0.047	10.49
15-Oct	12.35	21:06	215.5	7.46	1.92	63.94	0.011	-4.45
16-Oct	11.51	7:55	234.9	3.19	1.31	10.41	0.029	4.97
17-Oct	5.66	6:03	271.8	3.91	0.80	5.85	0.032	6.59
18-Oct	4.88	23:59	217.0	2.77	0.75	11.27	0.029	3.27
19-Oct	7.66	2:09	232.8	3.26	0.89	5.90	0.041	10.03
20-Oct	8.11	23:45	224.1	2.83	0.69	3.79	0.042	9.10
21-Oct	8.78	0:30	227.1	2.19	-0.83	3.48	0.033	-3.84
22-Oct	8.27	17:17	43.1	0.30	-1.79	0.11	0.015	-15.03
23-Oct	4.41	0:47	43.0	2.12	-0.60	10.01	0.027	4.74
24-Oct	10.72	23:13	220.4	4.41	0.85	26.64	0.011	-5.88
25-Oct	10.90	2:26	213.2	3.15	0.50	12.23	0.027	2.87
26-Oct	9.56	14:53	226.6	1.18	-0.05	6.68	0.029	2.20
27-Oct	8.31	13:30	262.7	0.98	-0.30	1.51	0.046	6.57
28-Oct	9.00	22:27	271.7	0.79	-0.39	0.25	0.030	-2.39
29-Oct	6.10	0:45	249.4	0.03	-2.55	0.17	0.014	-10.03
30-Oct	6.61	1:38	23.7	0.12	-6.16	0.54	0.053	-14.36
31-Oct	2.92	9:59	118.4	1.03	-7.60	0.93	0.068	-12.40

Kitsault Lake Meteorological Data

Date 1994	Max Wind Speed (m/s)	Time of Max Wind Speed	Direction of Max Wind Speed	Maximum Temp (°C)	Minimum Temp (°C)	Rainfall (mm)	Average Solar Radiation (kW/m2)	Average Net Radiation (W/m2)
1-Nov	5.94	14:19	271.5	-2.51	-8.37	0.00	0.041	-12.03
2-Nov	9.76	23:45	238.0	-0.47	-4.81	0.02	0.009	-15.78
3-Nov	11.76	2:26	231.2	-0.38	-3.17	0.10	0.003	-17.25
4-Nov	10.23	0:11	226.1	-1.30	-4.31	0.00	0.009	-13.67
5-Nov	5.49	4:26	349.7	-1.67	-4.04	0.00	0.005	-1.22
6-Nov	12.68	12:16	218.1	-0.43	-2.43	0.00	0.003	-6.17
7-Nov	8.70	0:51	233.7	-0.35	-1.68	0.00	0.009	-5.04
8-Nov	6.80	20:04	240.4	0.39	-1.81	0.82	0.043	-22.28
9-Nov	9.60	14:32	231.6	0.19	-1.92	0.00	0.013	-9.18
10-Nov	9.82	3:15	244.8	-0.12	-1.75	0.00	0.029	-7.63
11-Nov	11.11	18:07	229.1	-0.79	-2.18	0.06	0.021	-7.63
12-Nov	8.86	0:00	217.1	-1.40	-3.32	0.02	0.004	-16.38
13-Nov	7.55	0:33	224.4	-2.64	-4.45	0.00	0.004	-14.39
14-Nov	6.76	11:29	263.6	-4.46	-7.99	0.00	0.005	-14.08
15-Nov	5.68	12:38	87.5	-5.00	-10.16	0.00	0.006	-29.14

Appendix D - Stream Discharge

Kitsault Lake Hydrological Data

Tributary 1 **94-07-06**

Discharge = 2.10 m^3/s (33340 USgpm)

Notes	1 Station (m)	2 Depth (cm)	3 Avg Vel (cm/s)	4 Width (cm)	5 Col 2x3 (cm^2/s)	6 Sec avg (cm^2/s)	7 Flow (m^3/s)
Left bank	6.50	7	112	0	0	0	0.000
	6.00	25	124	50	3100	1550	0.078
	5.50	25	121	50	3025	3063	0.153
	5.00	25	71	50	1775	2400	0.120
	4.75	25	108	25	2700	2238	0.056
	4.50	30	128	25	3840	3270	0.082
	4.25	35	131	25	4585	4213	0.105
	4.00	40	112	25	4480	4533	0.113
	3.75	40	138	25	5520	5000	0.125
	3.50	45	162	25	7290	6405	0.160
	3.25	35	162	25	5670	6480	0.162
	3.00	35	170	25	5950	5810	0.145
	2.75	45	197	25	8865	7408	0.185
	2.50	42	105	25	4410	6638	0.166
	2.25	45	135	25	6075	5243	0.131
	2.00	40	121	25	4840	5458	0.136
	1.75	40	122	25	4880	4860	0.122
	1.50	30	0	25	0	2440	0.061
Right bank	1.00	0	0	50	0	0	0.000

Kitsault Lake Hydrological Data

Tributary 3 94-07-06

Discharge = 0.05 m^3/s (842 USgpm)

Notes	1 Station (m)	2 Depth (cm)	3 Avg Vel (cm/s)	4 Width (cm)	5 Col 2x3 (cm^2/s)	6 Sec avg (cm^2/s)	7 Flow (m^3/s)
Right Bank	3.60	15	4	0	0	0	0.000
	3.40	23	23	20	529	265	0.005
	3.20	25	10	20	250	390	0.008
	3.00	25	4	20	100	175	0.004
	2.80	33	8	20	264	182	0.004
	2.60	28	5	20	140	202	0.004
	2.40	35	25	20	875	508	0.010
	2.20	30	9	20	270	573	0.011
	2.00	25	12	20	300	285	0.006
Left Bank	1.90	0	0	10	0	150	0.002

Kitsault Lake Hydrological Data

Tributary 4 94-07-06

Discharge = 0.18 m^3/s (2914 USgpm)

Notes	1 Station (m)	2 Depth (cm)	3 Avg Vel (cm/s)	4 Width (cm)	5 Col 2x3 (cm^2/s)	6 Sec avg (cm^2/s)	7 Flow (m^3/s)
Right Bank	2.00	41	17	0	0	0	0.000
	2.10	45	6	10	270	135	0.001
	2.20	45	8	10	360	315	0.003
	2.30	50	2	10	100	230	0.002
	2.40	55	3	10	165	133	0.001
	2.50	53	12	10	636	401	0.004
	2.60	53	32	10	1696	1166	0.012
	2.70	50	33	10	1650	1673	0.017
	2.80	43	34	10	1462	1556	0.016
	2.90	40	31	10	1240	1351	0.014
	3.00	40	25	10	1000	1120	0.011
	3.25	35	13	25	455	728	0.070
	3.50	33	12	25	396	426	0.011
	3.75	28	10	25	280	338	0.008
	4.00	25	10	25	250	265	0.007
	4.25	25	7	25	175	213	0.005
	4.50	28	0	25	0	88	0.002
	4.75	26	0	25	0	0	0.000
	5.00	27	0	25	0	0	0.000
	5.25	21	0	25	0	0	0.000
	5.50	20	0	25	0	0	0.000
Left Bank	5.75	17	0	25	0	0	0.000

Kitsault Lake Hydrological Data

Tributary 5 94-07-06

Discharge = 0.88 m^3/s (13927 USgpm)

Notes	1 Station (m)	2 Depth (cm)	3 Avg Vel (cm/s)	4 Width (cm)	5 Col 2x3 (cm^2/s)	6 Sec avg (cm^2/s)	7 Flow (m^3/s)
Left Bank	1.50	0	0	0	0	0	0.000
	1.75	17	35	25	595	298	0.007
	2.00	25	45	25	1125	860	0.022
	2.25	40	46	25	1840	1483	0.037
	2.50	43	25	25	1075	1458	0.036
	2.75	43	11	25	473	774	0.019
	3.00	45	18	25	810	642	0.016
	3.25	45	5	25	225	518	0.013
	3.50	28	90	25	2520	1373	0.034
	3.75	30	102	25	3060	2790	0.070
	4.00	25	85	25	2125	2593	0.065
	4.25	25	81	25	2025	2075	0.255
	4.50	20	81	25	1620	1823	0.046
	4.75	20	91	25	1820	1720	0.043
	5.00	18	105	25	1890	1855	0.046
	5.25	18	92	25	1656	1773	0.044
	5.50	14	113	25	1582	1619	0.040
	5.75	10	80	25	800	1191	0.030
	6.00	10	56	25	560	680	0.017
	6.25	12	60	25	720	640	0.016
	6.50	12	38	25	456	588	0.015
Left Bank	6.75	0	0	25	0	228	0.006

Kitsault River Daily Average Flows

1994	Jan (m^3/s)	Feb (m^3/s)	Mar (m^3/s)	Apr (m^3/s)	May (m^3/s)	Jun (m^3/s)	Jul (m^3/s)	Aug (m^3/s)	Sep (m^3/s)	Oct (m^3/s)	Nov (m^3/s)	Dec (m^3/s)
1	-	0.74	0.52	0.44	0.86	1.89	2.67	1.33	1.01	-	-	-
2	-	0.72	0.52	0.44	0.89	1.93	2.63	1.32	0.99	-	-	-
3	-	0.71	0.52	0.45	0.91	1.98	2.63	1.30	0.98	-	-	-
4	-	0.70	0.52	0.46	0.92	2.12	2.61	1.30	0.96	-	-	-
5	-	0.69	0.52	0.47	0.93	2.46	2.54	1.29	0.95	-	-	-
6	-	0.68	0.52	0.48	0.95	2.67	2.34	1.30	0.95	-	-	-
7	-	0.66	0.51	0.48	1.00	2.87	2.36	1.31	0.97	-	-	-
8	-	0.66	0.50	0.48	1.05	3.03	2.61	1.29	0.97	-	-	-
9	-	0.65	0.50	0.48	1.07	3.33	2.67	1.28	0.96	-	-	-
10	-	0.64	0.49	0.48	1.09	3.58	2.45	1.26	0.96	-	-	-
11	-	0.64	0.48	0.49	1.12	3.48	2.29	1.25	0.94	-	-	-
12	-	0.64	0.47	0.51	1.16	3.60	2.08	1.23	0.93	-	-	-
13	-	0.64	0.49	0.53	1.21	3.65	1.93	1.22	0.94	-	-	-
14	-	0.64	0.51	0.54	1.24	3.97	1.83	1.20	1.03	-	-	-
15	-	0.63	0.51	0.56	1.25	4.32	1.75	1.20	1.10	-	-	-
16	-	0.63	0.51	0.57	1.26	3.98	1.69	1.19	1.16	-	-	-
17	-	0.62	0.50	0.59	1.26	3.72	1.63	1.17	1.22	-	-	-
18	-	0.61	0.50	0.58	1.29	3.59	1.57	1.15	1.28	-	-	-
19	-	0.60	0.50	0.57	1.34	3.54	1.54	1.14	1.29	-	-	-
20	-	0.59	0.49	0.57	1.39	3.43	1.51	1.12	1.30	-	-	-
21	-	0.59	0.49	0.57	1.44	3.36	1.48	1.11	1.29	-	-	-
22	-	0.57	0.49	0.58	1.53	3.24	1.44	1.11	1.29	-	-	-
23	-	0.57	0.48	0.61	1.60	3.36	1.39	1.11	1.33	-	-	-
24	-	0.56	0.47	0.64	1.64	3.61	1.37	1.12	1.35	-	-	-
25	-	0.54	0.46	0.67	1.70	3.78	1.36	1.11	1.35	-	-	-
26	-	0.53	0.45	0.71	1.82	3.80	1.35	1.09	1.36	-	-	-
27	0.86	0.53	0.44	0.72	1.88	3.63	1.35	1.07	1.36	-	-	-
28	0.82	0.52	0.43	0.74	1.89	3.24	1.35	1.06	-	-	-	-
29	0.80		0.43	0.76	1.87	2.90	1.34	1.04	-	-	-	-
30	0.78		0.43	0.79	1.85	2.75	1.34	1.03	-	-	-	-
31	0.75		0.44		1.88		1.34	1.01	-	-		-

Kitsault River Monthly Average Flows

Area of Kitsault River Basin = 16 km^2

Month (1994)	Flow (m^3/s)	Flow/Area ($L/s/km^2$)	Runoff (mm)
Jan	0.80	50.05	134
Feb	0.63	39.08	95
Mar	0.49	30.41	81
Apr	0.56	35.28	91
May	1.33	83.20	223
Jun	3.23	201.73	523
Jul	1.88	117.78	315
Aug	1.18	74.05	198
Sep	1.12	69.97	181
Oct	-	-	-
Nov	-	-	-
Dec	-	-	-

Appendix E - Water Quality

Kitsault Lake Water

Dissolved (µg/L)		94-01-20 K1 - 0 m	94-01-20 K1 - 6 m	94-01-20 K1 - 13 m	94-01-20 K1 - 19 m	94-01-20 K1 - 25 m	94-01-25 K2 - 0 m	94-01-25 K2 - 9.8 m	94-01-25 K2 - 19.5 m	94-01-25 K2 - 29.3 m	94-01-25 K2 - 39 m	94-01-25 K3 - 0 m
Aluminum	Al	13	12	14	14	12	5.8	6.3	5.3	5.8	5.2	6.8
Antimony	Sb	<0.05	<0.05	0.11	<0.05	0.11	0.07	<0.05	0.06	<0.05	<0.05	<0.05
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	5.4	5.4	5.4	5.5	6	3.4	4.3	3.7	3.7	3.6	3.3
Beryllium	Be	<0.07	<0.07	<0.07	<0.07	0.08	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Boron	B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Calcium	Ca	4500	4500	4700	4700	5100	2800	3200	3000	3000	2800	2700
Chromium	Cr	<0.20	<0.20	<0.20	0.20	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt	Co	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Copper	Cu	0.70	0.50	<0.30	<0.30	0.42	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	0.22	0.12	0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	Mg	480	480	510	500	560	320	330	310	330	310	320
Manganese	Mn	0.9	1.6	1.5	0.53	1.1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Mercury	Hg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Molybdenum	Mo	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Nickel	Ni	0.39	0.25	0.37	0.36	0.34	0.22	<0.20	<0.20	0.28	<0.20	0.24
Potassium	K	50	100	100	50	50	<50	<50	<50	<50	<50	<50
Selenium	Se	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	320	330	330	340	420	180	190	180	190	180	170
Strontium	Sr	130	130	130	140	170	95	120	110	110	98	85
Tellurium	Te	0.15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	Zn	<1.0	2.0	1.0	3.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Kitsault Lake Water

Dissolved (µg/L)		94-01-25 K3 - 17 m	94-01-25 K3 - 34 m	94-01-25 K3 - 51 m	94-01-25 K3 - 68 m	94-01-26 K4 - 0 m	94-01-26 K4 - 7.2 m	94-01-26 K4 - 14.5 m	94-01-26 K4 - 21.7 m	94-01-26 K4 - 29 m	94-01-27 K5 - 0 m	94-01-27 K5 - 3.7 m
Aluminum	Al	5.0	5.3	4.7	4.0	14	13	12	12	12	13	14
Antimony	Sb	<0.05	0.07	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	0.06
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	3	3.3	3.2	3.5	5.3	5.6	5.2	5	5.8	5.6	5.2
Beryllium	Be	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.07	0.07	<0.07	<0.07	<0.07
Boron	B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Calcium	Ca	2500	2800	2700	2900	4400	4500	4600	4500	4700	4700	4700
Chromium	Cr	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	<0.20	<0.20	<0.20
Cobalt	Co	<0.10	<0.10	<0.10	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Copper	Cu	<0.30	<0.30	<0.30	<0.30	0.46	<0.30	<0.30	<0.30	<0.30	0.42	<0.30
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.10	<0.10	<0.10	<0.10	0.89	<0.10	<0.10	<0.10	<0.10	0.37	<0.10
Magnesium	Mg	280	320	310	350	500	490	490	500	510	560	560
Manganese	Mn	<0.3	<0.3	<0.3	<0.3	<0.3	0.4	<0.3	<0.3	<0.3	0.8	0.48
Mercury	Hg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Molybdenum	Mo	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Nickel	Ni	0.25	<0.20	0.20	0.25	<0.20	0.20	0.45	0.28	0.25	0.33	<0.20
Potassium	K	<50	<50	<50	<50	100	50	100	100	150	100	100
Selenium	Se	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	150	180	170	290	320	320	330	320	350	340	350
Strontium	Sr	84	92	88	96	130	140	130	130	140	130	130
Tellurium	Te	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	Zn	1.5	<1.0	<1.0	<1.0	<1.0	1.0	1.0	<1.0	<1.0	<1.0	<1.0

Kitsault Lake Water

Dissolved (µg/L)		94-01-27	94-01-27	94-01-27	94-07-07	94-07-07	94-07-07	94-07-07	94-07-07	94-07-07	94-07-07	94-07-07
		K5 - 7.5 m	K5 - 11.2 m	K5 - 15 m	K1 - 1 m	K1 - 5 m	K1 - 10 m	K1 - 15 m	K1 - 20 m	K1 - 25 m	K3 - 1 m	K3 - 5 m
Aluminum	Al	13	13	13	6.06	6.96	5.36	5.72	7.76	5.40	6.43	7.64
Antimony	Sb	<0.05	0.07	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	5.3	5.5	5.3	4.86	4.66	4.45	5.33	5.10	4.73	4.86	4.69
Beryllium	Be	0.08	<0.07	<0.07	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Boron	B	<0.5	<0.5	<0.5	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Calcium	Ca	4700	4800	4600	3500	3240	3430	3650	3780	3460	3500	3300
Chromium	Cr	<0.20	<0.20	<0.20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	Co	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Copper	Cu	<0.30	<0.30	0.31	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.10	<0.10	0.10	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Magnesium	Mg	520	510	510	243	218	238	253	250	226	236	246
Manganese	Mn	0.67	0.47	0.36	0.910	0.630	0.440	0.530	0.490	0.420	0.760	1.27
Mercury	Hg	<0.04	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.07	<0.07	<0.07	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	Ni	0.34	0.21	0.21	<0.5	<0.5	<0.5	<0.5	0.840	<0.5	<0.5	<0.5
Potassium	K	100	100	100	<50	<50	<50	<50	<50	<50	<50	<50
Selenium	Se	<1.0	<1.0	<1.0	0.0200	<0.01	0.0200	0.0200	0.0100	0.0200	0.0300	0.0200
Silver	Ag	<0.01	<0.01	<0.01	0.0100	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	340	340	330	146	134	144	145	185	146	141	279
Strontium	Sr	130	140	140	111	102	106	116	119	110	110	103
Tellurium	Te	<0.10	<0.10	<0.10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<0.2	<0.2	<0.2	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<1.0	<1.0	<1.0	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73

Kitsault Lake Water

Dissolved (µg/L)		94-07-07 K3 - 10 m	94-07-07 K3 - 25 m	94-07-07 K3 - 50 m	94-07-07 K3 - 65 m	94-07-07 K5 - 1 m	94-07-07 K5 - 5 m	94-07-07 K5 - 10 m	94-07-07 K5 - 15 m	94-07-07 K5 - 20 m	94-07-07 K5 - 25 m	94-09-27 Travel Blank
Aluminum	Al	9.13	7.10	7.80	6.88	7.04	6.67	7.36	6.71	9.94	8.30	<1
Antimony	Sb	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	5.46	5.13	5.36	4.94	4.83	4.46	4.47	4.33	4.62	4.90	<0.06
Beryllium	Be	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.21
Boron	B	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<1
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.1
Calcium	Ca	3580	3600	3610	3520	3550	3380	3370	3280	3480	3680	<10
Chromium	Cr	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	Co	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.06
Copper	Cu	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.5
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.07
Magnesium	Mg	236	241	246	235	265	238	263	285	263	255	<0.6
Manganese	Mn	0.830	0.500	0.710	0.610	0.780	0.830	0.860	0.790	1.74	0.660	<0.15
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.12
Nickel	Ni	<0.5	<0.5	<0.5	0.730	0.630	<0.5	<0.5	<0.5	<0.5	0.540	<0.5
Potassium	K	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Selenium	Se	<0.01	<0.01	0.0100	<0.01	<0.01	0.0200	<0.01	<0.01	<0.01	<0.01	<1
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	193	149	161	183	150	159	152	150	152	165	<10
Strontium	Sr	116	113	114	109	114	109	106	101	113	119	<0.08
Tellurium	Te	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	<1

Kitsault Lake Water

Dissolved (µg/L)		94-09-27 Field Blank	94-09-27 K1 - 0m	94-09-27 K1 - 5m	94-09-27 K1 - 10m	94-09-27 K1 - 10m Rep	94-09-27 K1 - 15m	94-09-27 K1 - 20m	94-11-17 K3 - 0m
Aluminum	Al	<1	25.2	11.0	10.5	8.15	4.22	3.83	<1
Antimony	Sb	<0.1	0.110	<0.1	<0.1	<0.1	<0.1	<0.1	0.180
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	<0.06	5.61	5.32	5.14	5.09	3.73	3.72	6.41
Beryllium	Be	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.3
Boron	B	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	Cd	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	Ca	<10	4260	4330	4020	3920	2970	2940	3760
Chromium	Cr	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	Co	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05
Copper	Cu	<0.5	0.820	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.24
Magnesium	Mg	<0.6	467	446	461	419	294	292	338
Manganese	Mn	<0.15	0.170	<0.15	<0.15	<0.15	<0.15	<0.15	0.100
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.150
Nickel	Ni	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
Potassium	K	<50	<50	<50	<50	<50	<50	<50	<50
Selenium	Se	<1	<1	<1	<1	<1	<1	<1	<1
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	<10	265	252	235	220	103	98.5	246
Strontium	Sr	<0.08	124	124	116	115	88.3	86.0	130
Tellurium	Te	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<1	<1	<1	<1	<1	<1	<1	2.02

Kitsault Lake Water

Total (µg/L)		94-01-20 K1 - 0m	94-01-20 K1 - 6m	94-01-20 K1 - 13m	94-01-20 K1 - 19m	94-01-20 K1 - 25m	94-01-25 K2 - 0m	94-01-25 K2 - 9.8m	94-01-25 K2 - 19.5m	94-01-25 K2 - 29.3m	94-01-25 K2 - 39m	94-01-25 K3 - 0m
Aluminum	Al	27	26	27	26	24	18	14	11	10	13	15
Antimony	Sb	0.15	<0.05	0.12	0.16	0.13	0.11	<0.05	0.06	<0.05	<0.05	<0.05
Arsenic	As	3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.0	<1.0	<1.0	<1.0
Barium	Ba	5.5	5.6	5.6	5.5	6	4	5.2	4.4	4	3.9	3.4
Beryllium	Be	<0.07	0.07	0.15	0.08	0.17	<0.07	<0.07	<0.07	<0.07	<0.07	0.07
Boron	B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	<0.08	<0.08	<0.08
Calcium	Ca	6300	6400	6400	6100	7200	4000	4800	4200	3700	3700	3500
Chromium	Cr	<0.2	0.2	0.3	0.7	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	Co	<0.05	<0.05	0.17	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	Cu	0.7	0.5	<0.3	<0.3	0.45	1.5	<0.3	0.33	<0.3	<0.3	<0.3
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	0.37	0.17	0.13	0.14	0.12	0.19	<0.1	<0.1	<0.1	<0.1	0.14
Magnesium	Mg	720	770	760	720	830	480	540	460	430	460	430
Manganese	Mn	3.1	4.7	4.5	3.5	4.2	<0.3	0.4	<0.3	<0.3	0.99	<0.3
Mercury	Hg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Molybdenum	Mo	<0.07	<0.07	0.15	0.11	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Nickel	Ni	0.8	0.28	0.51	0.89	0.64	1.2	0.48	0.7	0.28	<0.2	0.34
Potassium	K	300	250	200	250	250	50	100	50	<50	50	<50
Selenium	Se	<1.0	<1.0	2.0	<1.0	3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	Ag	<0.01	0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01	0.15	0.02
Sodium	Na	490	480	470	470	630	270	300	240	210	220	200
Strontium	Sr	140	150	150	160	190	110	150	130	120	110	95
Tellurium	Te	0.30	0.30	<0.10	<0.10	<0.10	0.29	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	Zn	<1.0	3.0	2.0	3.0	3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Kitsault Lake Water

Total (µg/L)		94-01-25 K3 - 17m	94-01-25 K3 - 34m	94-01-25 K3 - 51m	94-01-25 K3 - 68m	94-01-26 K4 - 0m	94-01-26 K4 - 7.2m	94-01-26 K4 - 14.5m	94-01-26 K4 - 21.7m	94-01-26 K4 - 29m	94-01-27 K5 - 0m	94-01-27 K5 - 3.7m
Aluminum	Al	11	11	13	14	25	24	27	23	21	20	26
Antimony	Sb	0.08	0.07	<0.05	0.13	0.15	0.11	<0.05	0.08	<0.05	<0.05	0.07
Arsenic	As	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Barium	Ba	3.4	3.7	3.8	5.1	5.9	5.8	5.3	5.1	6.2	5.6	5.7
Beryllium	Be	<0.07	<0.07	<0.07	<0.07	<0.07	0.20	0.10	0.10	0.07	<0.07	0.08
Boron	B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Calcium	Ca	3500	3900	3700	4800	6000	6200	6000	6100	5700	5600	5700
Chromium	Cr	<0.2	<0.2	<0.2	<0.2	0.8	0.3	1.2	1.1	<0.2	<0.2	<0.2
Cobalt	Co	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<0.05
Copper	Cu	<0.3	<0.3	<0.3	<0.3	5.6	<0.3	0.3	0.5	<0.3	0.54	0.7
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.1	<0.1	<0.1	<0.1	1.7	0.15	0.17	0.19	0.15	0.47	0.21
Magnesium	Mg	420	470	450	630	750	720	670	680	660	680	730
Manganese	Mn	<0.3	<0.3	<0.3	2.5	1.1	2.7	2.4	2.4	2.7	2.0	2.4
Mercury	Hg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Molybdenum	Mo	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.15	<0.07	<0.07	<0.07	<0.07
Nickel	Ni	0.49	0.2	0.23	0.5	<0.2	0.2	0.71	1.1	0.64	0.4	0.85
Potassium	K	<50	<50	<50	100	250	200	200	250	150	150	150
Selenium	Se	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.0	2.0	1.0	<1.0	1.0
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.05	<0.01	<0.01
Sodium	Na	210	230	230	480	470	450	440	430	420	380	410
Strontium	Sr	100	110	110	140	140	150	140	150	150	140	140
Tellurium	Te	0.21	0.17	<0.1	<0.10	0.40	<0.10	0.12	0.25	<0.10	<0.10	<0.10
Uranium	U	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	Zn	2.6	<1.0	<1.0	<1.0	2.0	1.0	2.0	<1.0	<1.0	<1.0	<1.0

Kitsault Lake Water

Total (µg/L)		94-01-27 K5 - 7.5m	94-01-27 K5 - 11.2m	94-01-27 K5 - 15m	94-07-07 K1 - 1m	94-07-07 K1 - 5m	94-07-07 K1 - 10m	94-07-07 K1 - 15m	94-07-07 K1 - 20m	94-07-07 K1 - 25m	94-07-07 K3 - 1m	94-07-07 K3 - 5m
Aluminum	Al	23	20	22	18.9	13.9	12.6	13.7	25.1	255	47.6	224
Antimony	Sb	0.11	0.09	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	As	<1.0	1.0	<1.0	<1	<1	<1	<1	1.00	<1	<1	3.00
Barium	Ba	5.5	5.5	5.3	6.47	6.75	6.72	6.67	6.69	9.91	6.52	6.72
Beryllium	Be	0.08	<0.07	<0.07	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Boron	B	<0.5	<0.5	<0.5	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Calcium	Ca	5800	5600	5500	3970	3760	3780	3760	4800	4410	4410	4430
Chromium	Cr	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	0.840	0.500	0.780	0.570
Cobalt	Co	<0.05	0.07	<0.05	<0.05	<0.05	0.0800	<0.05	<0.05	0.330	0.0600	<0.05
Copper	Cu	<0.3	<0.3	8.8	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	223	<10	<10
Lead	Pb	0.13	0.13	0.35	<0.12	0.250	<0.12	0.230	0.360	0.860	0.770	0.720
Magnesium	Mg	670	660	650	267	260	252	264	359	330	310	357
Manganese	Mn	2.8	2.1	2.6	6.49	3.66	2.95	2.51	3.04	119	3.15	2.82
Mercury	Hg	<0.04	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.09	<0.07	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	Ni	0.41	0.47	0.53	<0.5	1.23	<0.5	0.770	3.34	1.88	2.92	0.930
Potassium	K	150	150	100	<50	<50	<50	<50	100	50.0	50.0	50.0
Selenium	Se	2.0	<1.0	<1.0	0.0200	<0.01	0.0300	0.0200	0.0100	0.0200	0.0400	0.0200
Silver	Ag	<0.01	<0.01	0.02	0.0300	0.0200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	400	390	390	161	158	152	161	263	224	245	607
Strontium	Sr	150	140	150	122	125	121	121	135	131	124	130
Tellurium	Te	<0.10	<0.10	<0.10	<0.2	<0.3	0.220	<0.2	<0.2	<0.2	<0.2	<0.2
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.0200	<0.02	<0.02
Vanadium	V	<0.2	0.35	<0.2	<1	<1	<1	<1	1.00	<1	<1	<1
Zinc	Zn	<1.0	<1.0	<1.0	<0.73	<0.73	<0.73	6.83	12.7	5.63	26.9	12.9

Kitsault Lake Water

Total (µg/L)		94-07-07 K3 - 10m	94-07-07 K3 - 25m	94-07-07 K3 - 50m	94-07-07 K3 - 65m	94-07-07 K5 - 1m	94-07-07 K5 - 5m	94-07-07 K5 - 10m	94-07-07 K5 - 15m	94-07-07 K5 - 20m	94-07-07 K5 - 25m	94-09-27 Travel Blank
Aluminum	Al	42.5	24.7	33.2	15.6	14.6	18.0	21.1	12.9	18.2	14.5	<1
Antimony	Sb	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	As	<1	2.00	3.00	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	6.48	6.21	6.46	6.66	6.37	6.46	6.43	5.90	6.05	6.49	<0.06
Beryllium	Be	0.460	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.21
Boron	B	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<1
Cadmium	Cd	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.1
Calcium	Ca	4750	4360	4300	4060	3910	4020	3970	3590	4100	4190	<10
Chromium	Cr	0.740	<0.5	0.530	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.520	<0.5
Cobalt	Co	0.0700	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.06
Copper	Cu	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.5
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	1.35	0.510	0.600	<0.12	<0.12	0.130	0.310	<0.12	<0.12	0.590	<0.07
Magnesium	Mg	358	330	316	299	279	316	333	338	305	314	<0.6
Manganese	Mn	3.08	2.87	2.69	2.61	2.91	2.68	3.01	3.20	2.88	2.45	<0.15
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.12
Nickel	Ni	3.44	1.89	1.82	0.740	0.700	0.650	0.960	<0.5	<0.5	5.54	<0.5
Potassium	K	100	50.0	50.0	<50	<50	<50	<50	<50	<50	<50	<50
Selenium	Se	0.0200	<0.01	0.0200	0.0100	0.0100	0.0200	0.0100	0.0100	<0.01	<0.01	<1
Silver	Ag	<0.01	<0.01	<0.01	0.0100	<0.01	0.0100	0.0100	<0.01	<0.01	0.0100	<0.01
Sodium	Na	353	241	248	185	170	190	203	165	173	181	<10
Strontium	Sr	127	131	128	127	122	122	119	109	125	131	0.140
Tellurium	Te	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.270	<0.2	0.240	<0.1
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	41.4	21.7	17.8	<0.73	<0.73	3.49	8.75	<0.73	<0.73	11.2	<1

Kitsault Lake Water

Total (µg/L)		94-09-27 Field Blank	94-09-27 K1 - 0m	94-09-27 K1 - 5m	94-09-27 K1 - 10m	94-09-27 K1 - 15m	94-09-27 K1 - 20m	94-09-27 K1 - 20m Rep	94-11-17 K3 - 0m
Aluminum	Al	<1	25.7	23.7	25.6	17.8	14.7	17.1	<1
Antimony	Sb	<0.1	0.110	0.100	<0.1	<0.1	<0.1	<0.1	0.260
Arsenic	As	<1	3.00	1.00	<1	<1	<1	<1	1.57
Barium	Ba	<0.06	6.15	5.61	6.10	5.84	5.80	5.56	6.47
Beryllium	Be	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.3
Boron	B	<1	<1	<1	<1	<1	<1	<1	5.11
Cadmium	Cd	<0.1	<0.1	<0.1	0.110	<0.1	<0.1	<0.1	<0.1
Calcium	Ca	10.0	4730	4590	4370	4140	4950	5290	3910
Chromium	Cr	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.520
Cobalt	Co	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.160
Copper	Cu	0.520	1.13	<0.5	0.540	0.970	0.780	0.580	0.890
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	1.33
Magnesium	Mg	2.45	576	495	555	447	532	521	368
Manganese	Mn	0.200	2.53	2.22	1.86	1.58	1.64	2.20	0.930
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.150
Nickel	Ni	<0.5	7.79	<0.5	0.880	<0.5	<0.5	<0.5	1.81
Potassium	K	<50	<50	<50	<50	<50	50.0	<50	<50
Selenium	Se	<1	<1	<1	<1	<1	<1	<1	<1
Silver	Ag	0.0100	0.0600	<0.01	<0.01	<0.01	<0.01	<0.01	0.0200
Sodium	Na	<10	315	268	280	258	334	333	438
Strontium	Sr	<0.08	126	128	118	111	127	136	146
Tellurium	Te	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<1	<1	<1	<1	<1	3.54	2.15	5.80

Kitsault Lake Water

Parameters	94-01-20 K1 - 0m	94-01-20 K1 - 6m	94-01-20 K1 - 13m	94-01-20 K1 - 19m	94-01-20 K1 - 25m	94-01-25 K2 - 0m	94-01-25 K2 - 9.8m	94-01-25 K2 - 19.5m
pH (units)	6.20	6.30	6.30	6.30	6.30	6.50	6.40	6.40
Conductivity (µmhos/cm)	23	27	26	24	28	26	28	27
Total Dissolved Solids (mg/L)	11	14	13	17	22	31	29	36
Total Suspended Solids (mg/L)	3	1	<1	1	<1	<1	<1	<1
Turbidity (NTU)	0.21	0.21	0.21	0.26	0.24	0.34	0.28	0.22
Hardness (mg/L)	13	13	14	14	15	8.3	9.4	8.8
Acidity to pH 8.3 (mg $CaCO_3$/L)	2.4	2.6	3.4	3.4	4.2	3.6	3.4	3.2
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	24	12	12	12	16	14	16	14
Chloride (mg/L)	0.5	0.5	<0.5	0.5	0.5	1.0	1.0	1.0
Fluoride (mg/L)	0.10	0.10	0.10	0.10	0.05	0.10	0.10	0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05	0.15	<0.05	<0.05	0.05	0.05	0.05	<0.05
Nitrite (mg NO_2-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total P (mg P/L)	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.03	0.03
Dissolved P (mg P/L)	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.02	0.02
Ortho P (mg P/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01

Kitsault Lake Water

Parameters	94-01-25 K2 - 29.3m	94-01-25 K2 - 39m	94-01-25 K3 - 0m	94-01-25 K3 - 17m	94-01-25 K3 - 34m	94-01-25 K3 - 51m	94-01-25 K3 - 68m	94-01-26 K4 - 0m
pH (units)	6.40	6.40	6.30	6.40	6.30	6.40	6.30	6.30
Conductivity (μmhos/cm)	24	26	25	26	24	26	27	25
Total Dissolved Solids (mg/L)	20	23	28	32	25	25	33	15
Total Suspended Solids (mg/L)	<1	<1	<1	<1	<1	<1	<1	<1
Turbidity (NTU)	0.26	0.26	0.31	0.26	0.30	0.26	0.46	0.20
Hardness (mg/L)	8.9	8.3	8.0	7.4	8.3	8.0	8.6	13
Acidity to pH 8.3 (mg $CaCO_3$/L)	2.8	3.0	3.0	2.8	2.4	2.8	4.8	2.6
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	14	12	14	14	14	12	14	12
Chloride (mg/L)	2.0	1.5	1.5	1.0	1.5	1.0	1.0	0.5
Fluoride (mg/L)	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Sulphate (mg/L)	0.5	0.5	0.5	0.5	<0.5	0.5	0.5	<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	0.05	0.10	<0.05	<0.05	<0.05	<0.05	0.05	0.05
Nitrite (mg NO_2-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total P (mg P/L)	0.04	0.04	0.04	0.04	0.05	0.05	0.06	<0.01
Dissolved P (mg P/L)	0.03	0.03	0.03	0.03	0.03	0.02	0.03	<0.01
Ortho P (mg P/L)	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01

Kitsault Lake Water

Parameters	94-01-26 K4 - 7.2m	94-01-26 K4 - 14.5m	94-01-26 K4 - 21.7m	94-01-26 K4 - 29m	94-01-27 K5 - 0m	94-01-27 K5 - 3.7m	94-01-27 K5 - 7.5m
pH (units)	6.40	6.50	6.40	6.40	6.40	6.50	6.40
Conductivity (µmhos/cm)	24	26	25	26	26	24	24
Total Dissolved Solids (mg/L)	38	17	20	22	15	13	13
Total Suspended Solids (mg/L)	<1	1	1	1	3	2	3
Turbidity (NTU)	0.23	0.20	0.20	0.26	0.18	0.19	0.21
Hardness (mg/L)	13	14	13	14	14	14	14
Acidity to pH 8.3 (mg $CaCO_3$/L)	2.5	2.5	2.7	3.6	1.9	2.5	2.6
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	12	12	14	14	14	13	13
Chloride (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (mg/L)	0.05	0.05	0:05	0.05	0.05	0.05	0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05	0.05	0.05	0.10	0.10	<0.05	<0.05
Nitrite (mg NO_2-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total P (mg P/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved P (mg P/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ortho P (mg P/L)	0.01	0.01	0.01	0.01	0.02	<0.01	0.02

Kitsault Lake Water

Parameters	94-01-27 K5 - 11.2m	94-01-27 K5 - 15m	94-07-07 K1 - 1m	94-07-07 K1 - 5m	94-07-07 K1 - 10m	94-07-07 K1 - 15m	94-07-07 K1 - 20m
pH (units)	6.40	6.40	5.6	6.0	6.1	6.2	6.2
Conductivity (µmhos/cm)	25	25	27	26	26	25	24
Total Dissolved Solids (mg/L)	16	10	27	24	22	19	21
Total Suspended Solids (mg/L)	2	1	<1	<1	2	<1	<1
Turbidity (NTU)	0.19	0.21	0.35	0.36	0.28	0.31	0.24
Hardness (mg/L)	14	14	9.7	9.0	9.5	10	10
Acidity to pH 8.3 (mg $CaCO_3$/L)	2.6	2.6	4.4	3.2	3.2	3.6	3.4
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	12	14	12	12	14	12	14
Chloride (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (mg/L)	0.05	0.05	0.05	0.05	0.05	<0.05	<0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.170
Nitrate (mg NO_3-N/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (mg NO_2-N/L)	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)	<0.01	<0.01	0.004	<0.002	<0.002	<0.002	<0.002
Dissolved P (mg P/L)	<0.01	<0.01	0.004	<0.002	<0.002	<0.002	<0.002
Ortho P (mg P/L)	0.02	0.02	<0.002	<0.002	<0.002	<0.002	0.003

Kitsault Lake Water

Parameters	94-07-07 K1 - 25m	94-07-07 K3 - 1m	94-07-07 K3 - 5m	94-07-07 K3 - 10m	94-07-07 K3 - 25m	94-07-07 K3 - 50m	94-07-07 K3 - 65m	94-07-07 K5 - 1m
pH (units)	6.3	6.4	6.4	6.4	6.4	6.4	6.5	6.5
Conductivity (µmhos/cm)	25	38	30	26	26	26	25	26
Total Dissolved Solids (mg/L)	24	18	26	21	16	16	14	17
Total Suspended Solids (mg/L)	31	<1	<1	<1	<1	<1	<1	<1
Turbidity (NTU)	3.3	0.26	0.28	0.28	0.24	0.25	0.23	0.24
Hardness (mg/L)	9.6	9.7	9.3	9.9	10	10	9.8	10
Acidity to pH 8.3 (mg $CaCO_3$/L)	3.4	2.6	3.0	2.8	4.4	3.4	3.6	3.0
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	12	12	12	14	12	10	12	14
Chloride (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Free Ammonia (mg NH_3-N/L)	0.050	<0.005	<0.005	0.070	<0.005	<0.005	<0.005	0.030
Nitrate (mg NO_3-N/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (mg NO_2-N/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)	0.100	0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002
Dissolved P (mg P/L)	0.007	0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002
Ortho P (mg P/L)	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002

Kitsault Lake Water

Parameters	94-07-07 K5 - 5m	94-07-07 K5 - 10m	94-07-07 K5 - 15m	94-07-07 K5 - 20m	94-07-07 K5 - 25m	94-09-27 Travel Blank	94-09-27 Field Blank
pH (units)	6.4	6.6	6.4	6.5	6.5	5.7	5.5
Conductivity (µmhos/cm)	27	25	23	26	26	1.9	1.9
Total Dissolved Solids (mg/L)	11	11	15	20	22	3	1
Total Suspended Solids (mg/L)	<1	2	1	<1	<1	<1	<1
Turbidity (NTU)	0.24	0.24	0.25	0.20	0.22	<0.1	<0.1
Hardness (mg/L)	9.4	9.5	9.4	9.8	10	<1	<1
Acidity to pH 8.3 (mg $CaCO_3$/L)	3.0	2.6	3.0	2.8	3.2	1.9	1.5
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	12	12	12	12	14	1	1
Chloride (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	0.027	<0.005	<0.005	0.025	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.05
Nitrite (mg NO_2-N/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)	<0.002	0.025	<0.002	0.005	<0.002	<0.002	<0.002
Dissolved P (mg P/L)	<0.002	0.008	<0.002	0.005	<0.002	<0.002	<0.002
Ortho P (mg P/L)	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002

Kitsault Lake Water

Parameters	94-09-27 K1 - 0m	94-09-27 K1 - 5m	94-09-27 K1 - 10m	94-09-27 K1 - 15m	94-09-27 K1 - 20m	94-11-17 K3 - 0m
pH (units)	5.7	6.0	6.1	6.2	6.2	57
Conductivity (µmhos/cm)	26	27	26	27	27	30
Total Dissolved Solids (mg/L)	22	16	20	20	20	23
Total Suspended Solids (mg/L)	1	2	<1	<1	2	<1
Turbidity (NTU)	1.0	0.9	0.7	0.7	0.5	0.44
Hardness (mg/L)	13	13	12	8.6	8.5	11
Acidity to pH 8.3 (mg $CaCO_3$/L)	2.8	2.5	2.4	2.9	2.8	5.6
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	12	14	13	13	13	14
Chloride (mg/L)	<0.5	0.5	0.5	0.5	<0.5	1.0
Fluoride (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05	<0.05	<0.05	0.05	0.05	<0.05
Nitrite (mg NO_2-N/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)	<0.002	<0.002	0.005	<0.002	0.002	0.002
Dissolved P (mg P/L)	<0.002	<0.002	0.002	<0.002	<0.002	0.002
Ortho P (mg P/L)	<0.002	<0.002	<0.002	<0.002	<0.002	0.002

Kitsault Lake Tributaries

Dissolved (µg/L)		94-07-07 Dam	94-07-07 T1	94-07-07 T5	94-09-28 T1	94-09-28 T2	94-09-28 T3	94-09-28 T3A	94-09-28 T4	94-09-28 T5	94-09-28 T6	94-09-28 T7
Aluminum	Al	6.55	3.65	2.29	9.71	22.5	13.4	23.8	20.0	2.92	13.6	9.14
Antimony	Sb	<0.1	<0.1	0.12	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	4.46	2.59	6.78	4.56	11.8	13.0	5.37	5.89	6.23	5.90	13.9
Beryllium	Be	<0.3	<0.3	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Boron	B	<1.1	<1.1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	Cd	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium	Ca	4020	2180	7400	2380	5050	7290	4080	5680	5130	4580	8180
Chromium	Cr	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	Co	<0.04	<0.04	<0.04	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Copper	Cu	<0.68	<0.68	<0.68	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.11	<0.11	<0.11	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Magnesium	Mg	503	836	359	945	178	247	349	315	306	364	280
Manganese	Mn	<0.2	<0.2	<0.2	<0.15	<0.15	1.70	1.76	1.42	<0.15	<0.15	0.420
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.1	<0.1	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	Ni	<0.24	<0.24	<0.24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Potassium	K	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Selenium	Se	0.03	0.03	0.01	<1	<1	<1	<1	<1	<1	<1	<1
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	202	192	160	225	122	177	154	205	75.6	162	128
Strontium	Sr	131	47.7	165	48.8	314	726	156	96.9	108	91.1	759
Tellurium	Te	<0.12	<0.12	<0.12	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<0.61	<0.61	<0.61	<0.5	2.02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Kitsault Lake Tributaries

Total (µg/L)		94-09-28 T1	94-09-28 T2	94-09-28 T3	94-09-28 T3A	94-09-28 T4	94-09-28 T5	94-09-28 T6	94-09-28 T7
Aluminum	Al	16.8	49.2	23.2	39.3	23.8	9.69	31.1	18.1
Antimony	Sb	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Arsenic	As	<1	<1	<1	1.00	<1	1.00	<1	<1
Barium	Ba	4.66	14.0	14.4	5.58	5.92	6.28	5.94	15.2
Beryllium	Be	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.310
Boron	B	<1	5.79	<1	<1	<1	<1	5.88	<1
Cadmium	Cd	<0.05	<0.05	<0.05	0.0600	<0.05	<0.05	<0.05	<0.05
Calcium	Ca	2610	6920	10200	4900	5770	6210	4670	10200
Chromium	Cr	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	Co	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Copper	Cu	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
Iron	Fe	<10	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	0.390	0.240	0.220	0.130	<0.06	<0.06	<0.06	0.0800
Magnesium	Mg	1110	284	388	432	319	390	373	370
Manganese	Mn	<0.15	3.18	2.03	2.89	1.77	1.12	1.87	1.77
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	<0.1	0.110	0.130	<0.1	<0.1	0.100	<0.1	<0.1
Nickel	Ni	<0.2	<0.2	<0.2	0.500	<0.2	<0.2	<0.2	<0.2
Potassium	K	<50	50.0	<50	<50	<50	<50	<50	50.0
Selenium	Se	<1	<1	<1	<1	<1	<1	<1	<1
Silver	Ag	<0.01	<0.01	0.0100	<0.01	0.0200	0.0100	<0.01	<0.01
Sodium	Na	260	271	223	224	215	132	167	225
Strontium	Sr	49.8	366	827	158	98.2	109	96.4	870
Tellurium	Te	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Uranium	U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	0.550	4.79	<0.5	<0.5	16.8	<0.5	<0.5	<0.5

Kitsault Lake Tributaries

Parameters	94-07-07 Dam	94-07-07 Dam Rep	94-07-07 T1	94-07-07 T3	94-07-07 T5	94-09-28 T1	94-09-28 T2	94-09-28 T3
pH (units)	6.0	6.0	6.2	6.4	6.5	6.5	6.1	6.3
Conductivity (μmhos/cm)	22	23	15	45	36	27	45	66
Total Dissolved Solids (mg/L)	14	16	10	28	20	23	25	41
Total Suspended Solids (mg/L)	<1	<1	<1	<1	<1	2	1	1
Turbidity (NTU)	0.26	0.26	0.22	0.26	0.18	1.4	0.56	0.45
Hardness (mg/L)	12	12	8.9	24	20	9.8	13	19
Acidity to pH 8.3 (mg $CaCO_3$/L)	3.2	3.4	2.2	2.4	2.2	2.4	2.3	2.5
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	10	12	6	18	22	13	22	32
Chloride (mg/L)						<0.5	<0.5	<0.5
Fluoride (mg/L)						<0.05	<0.05	<0.05
Sulphate (mg/L)						<0.5	<0.5	<0.5
Free Ammonia (mg NH_3-N/L)						<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)						<0.05	<0.05	<0.05
Nitrite (mg NO_2-N/L)						<0.001	<0.001	<0.001
Total P (mg P/L)						<0.002	0.014	<0.002
Dissolved P (mg P/L)						<0.002	<0.002	<0.002
Ortho P (mg P/L)						<0.002	<0.002	<0.002

Kitsault Lake Tributaries

Parameters	94-09-28 T3A	94-09-28 T4	94-09-28 T5	94-09-28 T6	94-09-28 T7
pH (units)	6.4	6.4	6.5	6.6	6.7
Conductivity (µmhos/cm)	36	43	49	43	67
Total Dissolved Solids (mg/L)	28	28	34	34	46
Total Suspended Solids (mg/L)	<1	1	<1	4	<1
Turbidity (NTU)	1.6	0.54	0.64	0.55	0.60
Hardness (mg/L)	12	16	14	13	22
Acidity to pH 8.3 (mg $CaCO_3$/L)	3.2	2.7	2.6	2.2	2.2
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	17	20	24	21	32
Chloride (mg/L)	<0.5	0.5	<0.5	<0.5	<0.5
Fluoride (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (mg NO_2-N/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)	0.004	<0.002	<0.002	<0.002	<0.002
Dissolved P (mg P/L)	0.004	<0.002	<0.002	<0.002	<0.002
Ortho P (mg P/L)	<0.002	<0.002	<0.002	<0.002	<0.002

LAC W20 - Kitsault River Below Kitsault Lake Dam

Dissolved (µg/L)		94-01-29	94-03-06	94-03-29	94-03-29 (replicate)	94-04-26	94-05-30	94-06-07	94-06-12	94-06-20	94-06-24	94-06-29
Aluminum	Al	13	3.4	<1.0	<1.0	10.1	26.9	13.7	15.8	11.4	14.5	12.4
Antimony	Sb	0.12	<0.07	0.17	0.07	0.14	<0.04	<0.05	0.12	0.22	0.18	<0.20
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	5.4	5.2	4.9	5.4	6.3	6.2	5.04	6.36	5.11	4.5	4.02
Beryllium	Be	<0.06	<0.10	<0.10	<0.10	<0.30	<0.10	<0.15	<0.05	<0.07	<0.06	<0.11
Boron	B	<0.4	<0.4	<0.44	<0.44	<0.79	1.27	0.82	<0.32	<0.44	<0.45	<0.68
Cadmium	Cd	<0.10	<0.08	<0.13	<0.13	<0.11	<0.04	<0.05	<0.04	<0.1	<0.1	<0.10
Calcium	Ca	4200	3600	3910	4150	3930	2360	2360	3010	4000	4000	4810
Chromium	Cr	<0.10	<0.30	<0.50	<0.50	<0.50	<0.40	<0.5	<0.4	<0.4	<0.5	<0.50
Cobalt	Co	<0.10	<0.04	<0.14	<0.14	<0.10	<0.03	<0.03	<0.04	<0.05	<0.06	<0.030
Copper	Cu	<0.20	1.30	0.23	0.65	<0.50	<0.20	<0.4	<0.5	2.7	<0.5	<0.40
Iron	Fe	<10	<10	<10	<10	14	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.10	<0.06	<0.05	<0.05	<0.12	<0.10	<0.06	0.17	0.28	<0.09	<0.050
Magnesium	Mg	500	420	468	493	778	188	270	343	400	571	722
Manganese	Mn	<0.3	2.7	3.79	3.42	3.17	1.73	1.43	1.76	1.9	2.72	2.77
Mercury	Hg	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050
Molybdenum	Mo	<0.08	<0.10	<0.10	<0.10	<0.10	<0.03	<0.08	<0.07	<0.06	<0.1	0.190
Nickel	Ni	<0.20	<0.10	<0.40	<0.40	<0.44	<0.40	<0.4	<0.4	<1	3.64	0.820
Potassium	K	<50	<50	<50	<50	100	<50	<50	<50	50	50	<50
Selenium	Se	<1.0	<1.0	1.0	<1.0	<1.0	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Sodium	Na	270	220	229	250	500	133	122	164	263	287	329
Strontium	Sr	150	120	134	146	116	120	101	122	130	120	179
Tellurium	Te	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.1	<0.13	<0.1	<0.11	<0.12
Uranium	U	<0.02	<0.02	<0.04	<0.04	<0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020
Vanadium	V	<0.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<0.4	1.7	<1.0	1.9	1.1	2.2	3.03	2.04	2.14	1	<1

LAC W20 - Kitsault River Below Kitsault Lake Dam

Dissolved (µg/L)		94-06-29 (split)	94-07-30	94-08-28	94-10-05	94-11-06	94-11-29	94-12-29
Aluminum	Al	12.8	8	14.8	4.21	12.9	5.39	7.30
Antimony	Sb	<0.2	0.37	<0.21	<0.1	<0.1	<0.1	<0.11
Arsenic	As	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	3.68	5.55	4.43	5.02	5.47	6.63	6.18
Beryllium	Be	<0.11	<0.2	<0.2	<0.2	<0.2	<0.5	<0.3
Boron	B	<0.68	<1	<0.74	<1	<1	<1	<1
Cadmium	Cd	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Calcium	Ca	4530	5200	4750	3580	3540	3430	5020
Chromium	Cr	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.51
Cobalt	Co	0.07	<0.1	<0.09	<0.06	<0.05	<0.03	<0.05
Copper	Cu	<0.4	<0.4	<1	<0.4	<0.4	<0.4	<0.4
Iron	Fe	<10	<10	<10	<10	<10	<10	<10
Lead	Pb	<0.05	0.33	<0.09	<0.07	<0.08	<0.1	<0.1
Magnesium	Mg	669	470	576	383	420	384	701
Manganese	Mn	2.57	<0.17	0.33	<0.17	0.1	<0.29	0.130
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.21	<0.2	<0.2	<0.1	<0.1	<0.1	<0.11
Nickel	Ni	<0.5	<0.5	<0.5	<0.4	<0.5	<0.4	<0.41
Potassium	K	<50	50	<50	<50	<50	100	<50
Selenium	Se	<1	<1	0.01	0.03	<0.01	<0.01	0.0300
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	Na	306	274	268	211	217	173	244
Strontium	Sr	164	193	134	110	115	121	134
Tellurium	Te	<0.12	<0.2	<0.2	<0.1	<0.1	<0.11	<0.2
Uranium	U	<0.02	<0.03	<0.02	<0.02	<0.02	<0.02	<0.021
Vanadium	V	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<1	2.6	<1	<1	<1	<1	<1.1

LAC W20 - Kitsault River Below Kitsault Lake Dam

Total (µg/L)		94-01-29	94-03-06	94-03-29	94-03-29 (replicate)	94-04-26	94-05-30	94-06-07	94-06-12	94-06-20	94-06-24	94-06-29
Aluminum	Al	26	20	65.1	15	12.8	50.9	20	24.5	20.3	22.9	42.6
Antimony	Sb	0.15	0.12	0.17	0.07	0.15	<0.04	0.15	0.19	0.57	0.78	<0.20
Arsenic	As	<1.0	<1.0	<1.0	<1.0	<1	<1	<1	<1	1	<1	<1.0
Barium	Ba	5.4	5.8	6.44	5.7	7.5	6.91	6.18	7.37	8.42	7.91	5.89
Beryllium	Be	<0.06	<0.10	0.26	0.16	<0.3	<0.1	<0.15	<0.05	<0.07	<0.06	<0.11
Boron	B	<0.4	1.4	<0.44	<0.44	<0.79	1.72	0.82	<0.32	0.57	7.01	<0.68
Cadmium	Cd	<0.10	<0.08	<0.13	<0.13	0.16	<0.04	<0.05	0.08	<0.1	<0.1	<0.10
Calcium	Ca	5900	4700	5920	5680	5250	3150	2700	3750	4230	4190	5270
Chromium	Cr	<0.1	<0.3	<0.5	<0.5	<0.5	0.41	<0.5	<0.4	<0.4	<0.5	0.640
Cobalt	Co	<0.1	0.52	<0.14	<0.14	0.16	<0.03	0.08	<0.04	<0.05	<0.06	0.0300
Copper	Cu	<0.2	2.3	2.29	4.03	5.52	0.31	0.4	<0.5	3.2	<0.5	<0.40
Iron	Fe	<10	<10	60	<10	19	20	<10	<10	<10	<10	<10
Lead	Pb	<0.1	0.59	0.29	1.08	<0.12	0.16	0.09	0.18	0.98	<0.09	0.140
Magnesium	Mg	740	570	716	685	1150	283	340	437	440	600	840
Manganese	Mn	3.0	5.7	33.8	7.92	6.01	2.49	2.14	3.17	3.93	3.9	4.45
Mercury	Hg	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050
Molybdenum	Mo	<0.08	<0.1	<0.1	<0.1	<0.1	<0.03	<0.08	<0.07	0.06	<0.1	0.220
Nickel	Ni	<0.2	1.0	<0.4	0.52	3.93	<0.4	<0.4	<0.4	26.6	14.5	0.830
Potassium	K	450	<50	100	50	1130	<50	<50	<50	50	50	<50
Selenium	Se	<1.0	<1.0	2.0	<1.0	2	<0.010	0.01	<0.010	<0.010	<0.01	<0.010
Silver	Ag	<0.01	0.01	0.02	0.04	<0.01	<0.01	0.01	<0.01	0.05	0.01	0.0200
Sodium	Na	380	350	400	350	1470	183	142	201	263	290	330
Strontium	Sr	180	140	181	172	136	145	109	139	140	130	184
Tellurium	Te	<0.20	<0.20	<0.20	<0.20	<0.2	<0.1	<0.1	<0.13	<0.1	<0.11	<0.12
Uranium	U	<0.02	<0.02	<0.04	<0.04	<0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020
Vanadium	V	<0.2	<1.0	<1.0	<1.0	1.07	<1	<1	<1	<1	<1	<1.0
Zinc	Zn	<0.4	5.8	24.1	10.1	12	2.73	3.33	2.58	14.6	8.96	4.56

LAC W20 - Kitsault River Below Kitsault Lake Dam

Total (µg/L)		94-06-29 (split)	94-07-30	94-08-28	94-10-05	94-11-06	94-11-29	94-12-29
Aluminum	Al	18.6	32.6	20.8	22.8	30.6	13.8	10
Antimony	Sb	<0.2	1.6	<0.2	0.13	0.29	<0.1	<0.1
Arsenic	As	<1	<1	<1	<1	<1	<1	16
Barium	Ba	5.22	6.5	4.95	7.02	14.7	6.72	6.94
Beryllium	Be	<0.11	<0.2	<0.2	<0.2	<0.2	<0.5	<0.3
Boron	B	<0.68	<1	<0.74	<1	<1	<1	<1
Cadmium	Cd	<0.1	<0.1	<0.2	<0.1	0.1	<0.1	<0.1
Calcium	Ca	4610	5300	4780	4950	4500	4580	5740
Chromium	Cr	0.57	<0.5	0.82	<0.5	0.7	<0.5	<0.5
Cobalt	Co	0.08	<0.1	0.33	<0.06	0.24	<0.03	<0.05
Copper	Cu	<0.4	0.72	8.7	0.45	16.9	<0.4	<0.4
Iron	Fe	<10	10	30	24.4	22.7	<10	<10
Lead	Pb	0.13	0.34	0.37	0.23	14.5	<0.1	<0.1
Magnesium	Mg	715	490	625	617	565	528	822
Manganese	Mn	2.67	2.62	5.88	4.99	1.59	<0.29	1.87
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.21	<0.2	0.29	<0.1	0.15	<0.1	<0.1
Nickel	Ni	<0.5	<0.5	<0.5	<0.4	8.32	<0.4	1.51
Potassium	K	<50	50	<50	200	150	100	<50
Selenium	Se	<1	0.03	1	<0.01	<0.01	0.02	0.03
Silver	Ag	0.04	0.03	0.01	0.02	0.05	<0.01	0.04
Sodium	Na	307	322	308	334	433	193	290
Strontium	Sr	167	201	137	137	118	155	138
Tellurium	Te	<0.12	<0.2	<0.2	<0.1	<0.1	<0.11	<0.2
Uranium	U	<0.02	<0.03	<0.02	<0.02	<0.02	0.02	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	6.6	6	<1	3.5	63.4	<1	3.5

LAC W20 - Kitsault River Below Kitsault Lake Dam

Parameters	94-01-29	94-03-06	94-03-06 (field)	94-03-29	94-03-29 (field)	94-03-29 (replicate)	94-03-29 (field)	94-04-26
Temperature (°C)			0.7		2.2		2.2	
pH (units)	6.00	6.90	6.80	7.40	6.70	6.30	7.20	7.20
Conductivity (µmhos/cm)	27	30	28	29	25	31	32	32
Total Dissolved Solids (mg/L)	36	29		21		25		20
Total Suspended Solids (mg/L)	<1	2		<1		<1		<1
Turbidity (NTU)	0.21	0.22		0.40		0.40		0.26
Hardness (mg/L)	13	11		12		12		13
Acidity to pH 8.3 (mg $CaCO_3$/L)	5.6	4.4		2.8		3.2		3.2
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	12	10		14		14		15
Chloride (mg/L)	1.0	0.5		<0.5		<0.5		<0.5
Fluoride (mg/L)	0.15	0.15		<0.05		0.05		0.05
Sulphate (mg/L)	<0.5	<0.5		<0.5		<0.5		<0.5
Free Ammonia (mg NH_3-N/L)	<0.005	0.007		<0.005		<0.005		<0.005
Nitrate (mg NO_3-N/L)	<0.05	0.81		<0.05		<0.05		0.08
Nitrite (mg NO_2-N/L)	<0.005	<0.005		<0.001		<0.001		0.001
Total P (mg P/L)	0.04	0.02		<0.002		0.003		<0.002
Dissolved P (mg P/L)	0.03	<0.01		<0.002		<0.002		<0.002
Ortho P (mg P/L)	<0.01	<0.01		<0.002		<0.002		<0.002

LAC W20 - Kitsault River Below Kitsault Lake Dam

Parameters	94-04-26 (field)	94-05-30	94-05-30 (field)	94-06-07	94-06-07 (field)	94-06-12	94-06-12 (field)	94-06-20
Temperature (°C)			0.4		1.4		1.7	
pH (units)	6.40	6.60	6.00	6.6	6.8	6.2	6.9	6.1
Conductivity (µmhos/cm)	27	20	21	56	22	25	25	24
Total Dissolved Solids (mg/L)		<1		19		17		25
Total Suspended Solids (mg/L)		2		<1		<1		5
Turbidity (NTU)		0.26		21		0.41		0.32
Hardness (mg/L)		6.7		7.0		8.9		12
Acidity to pH 8.3 (mg $CaCO_3$/L)		4.9		3.8		5.2		6
Alkalinity to pH 4.5 (mg $CaCO_3$/L)		11		28		12		12
Chloride (mg/L)		<0.5		<0.5		<0.5		<0.5
Fluoride (mg/L)		<0.05		0.10		<0.05		<0.05
Sulphate (mg/L)		<0.5		<0.5		<0.5		<0.5
Free Ammonia (mg NH_3-N/L)		<0.005		<0.005		<0.005		0.005
Nitrate (mg NO_3-N/L)		<0.05		<0.05		<0.05		<0.05
Nitrite (mg NO_2-N/L)		<0.001		<0.001		<0.001		<0.001
Total P (mg P/L)		0.002		<0.002		0.005		0.002
Dissolved P (mg P/L)		<0.002		<0.002		<0.002		0.002
Ortho P (mg P/L)		<0.002		<0.002		<0.002		0.002

LAC W20 - Kitsault River Below Kitsault Lake Dam

Parameters	94-06-20 (field)	94-06-24	94-06-24 (field)	94-06-29	94-06-29 (split)	94-06-29 (field)	94-06-29 (split)	94-07-30
Temperature (°C)	3.4		4.5			5	5	
pH (units)	6.8	6.8	7	4.4	5.3	6.2	6.1	7.0
Conductivity (µmhos/cm)	25	24	22	36	27	23	22	27
Total Dissolved Solids (mg/L)		23		13	23			27
Total Suspended Solids (mg/L)		<1		2	<1			3
Turbidity (NTU)		0.30		0.24	0.25			0.48
Hardness (mg/L)		5		47	14			14
		12						
Acidity to pH 8.3 (mg $CaCO_3$/L)				<1	1.5			1.8
Alkalinity to pH 4.5 (mg $CaCO_3$/L)		10		14	14			15
Chloride (mg/L)		<0.5		1.0	0.5			<0.5
Fluoride (mg/L)		<0.05		<0.05	<0.05			<0.05
Sulphate (mg/L)		<0.5		5.5	<0.5			<0.5
Free Ammonia (mg NH_3-N/L)		<0.005		0.012	<0.005			0.009
Nitrate (mg NO_3-N/L)		<0.05		<0.05	<0.05			<0.05
Nitrite (mg NO_2-N/L)		0.001		<0.001	<0.001			<0.001
Total P (mg P/L)		<0.002		0.219	0.051			<0.002
Dissolved P (mg P/L)		<0.002		<0.002	<0.002			<0.002
Ortho P (mg P/L)		<0.002		<0.002	<0.002			<0.002

LAC W20 - Kitsault River Below Kitsault Lake Dam

Parameters	94-07-30 (field)	94-08-28	94-08-28 (field)	94-10-05	94-11-06	94-11-29	94-12-29
Temperature (°C)	15.9		15.5				
pH (units)	7.4	7.3	7.4	7.4	6.9	5.9	6.6
Conductivity (µmhos/cm)	26	27	25	28	27	26	29
Total Dissolved Solids (mg/L)		9		32	17	<1	19
Total Suspended Solids (mg/L)		2		2	<1	4	<1
Turbidity (NTU)		0.70		1.1	0.32	0.24	0.32
Hardness (mg/L)		16		15	13	14	12
Acidity to pH 8.3 (mg $CaCO_3$/L)		<1		2.3	3	6	7
Alkalinity to pH 4.5 (mg $CaCO_3$/L)		14		25	26	10	15
Chloride (mg/L)		0.5		<0.5	<0.5	<0.5	0.5
Fluoride (mg/L)		0.05		<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)		0.5		<0.5	<0.5	<0.5	0.5
Free Ammonia (mg NH_3-N/L)		<0.005		<0.005	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)		<0.05		<0.05	<0.05	<0.05	<0.05
Nitrite (mg NO_2-N/L)		<0.001		<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)		0.012		<0.002	<0.002	<0.002	0.002
Dissolved P (mg P/L)		0.002		<0.002	<0.002	<0.002	0.002
Ortho P (mg P/L)		<0.002		<0.002	<0.002	<0.002	0.002

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Dissolved (µg/L)		94-02-04	94-03-06	94-03-29	94-04-26	94-04-26 (replicate)	94-05-30	94-05-30 (split)	94-06-29	94-07-30	94-07-30 (replicate)	94-08-28
Aluminum	Al	1.3	2.7	<1.0	112	120	149	130	674	294	274	11.9
Antimony	Sb	0.80	0.44	0.51	0.56	0.58	0.55	0.48	0.760	1.2	1.53	<0.2
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Barium	Ba	45	34	34	24	25	22	20	28.4	18.8	19.3	7.15
Beryllium	Be	<0.07	<0.10	<0.10	0.37	<0.30	<0.10	<0.10	<0.11	<0.2	<0.2	<0.2
Boron	B	<0.40	<0.40	<0.44	<0.79	<0.79	<0.50	<0.50	<0.68	<1	<1	<0.74
Cadmium	Cd	<0.09	0.18	<0.13	<0.11	<0.11	<0.04	<0.04	<0.10	<0.1	<0.1	<0.2
Calcium	Ca	28000	22000	27200	15500	16000	10500	9670	10800	7530	9570	5530
Chromium	Cr	0.73	1.20	<0.50	1.48	1.56	0.86	0.54	1.47	0.56	0.74	<0.5
Cobalt	Co	<0.04	<0.04	<0.14	<0.10	<0.10	0.10	0.05	0.310	0.19	0.3	0.13
Copper	Cu	0.64	1.00	0.78	<0.5	1.36	0.47	0.31	<0.40	<0.4	<0.4	<1
Iron	Fe	<10	<10	<10	74	71	80	70	374	174	170	<10
Lead	Pb	<0.05	<0.06	<0.05	0.29	0.19	1.23	0.51	0.370	0.17	0.32	<0.09
Magnesium	Mg	3000	2300	3090	2040	2130	1060	1010	1250	679	787	728
Manganese	Mn	0.53	0.80	0.51	6.60	7.37	16	16	32.5	6.14	3.63	0.43
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.05
Molybdenum	Mo	1.20	0.70	0.64	0.69	0.60	0.77	0.57	0.850	0.55	0.71	<0.2
Nickel	Ni	1.50	1.20	<0.40	<0.44	<0.44	0.92	0.50	1.51	<0.5	<0.5	<0.5
Potassium	K	420	300	350	300	300	250	200	500	400	450	<50
Selenium	Se	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	0.21	<1	<1	0.24
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0100	0.01	<0.01	<0.01
Sodium	Na	940	860	910	650	650	297	268	309	144	195	453
Strontium	Sr	210	170	216	117	119	81	75	93.9	58.1	70.4	126
Tellurium	Te	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.12	<0.2	<0.2	0.21
Uranium	U	0.08	0.05	<0.04	0.05	0.05	0.03	0.04	0.04	0.05	0.05	<0.02
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1.0	1	<1	<1
Zinc	Zn	8.3	8.9	8.0	1.7	9.7	10	7.6	<1.0	2.35	3.01	<1

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Dissolved (µg/L)		94-10-05	94-11-06	94-11-29	94-12-29
Aluminum	Al	90	14.8	<1	1.38
Antimony	Sb	1.22	0.95	0.81	0.740
Arsenic	As	<1	<1	<1	<1
Barium	Ba	30.9	42	45.1	38.9
Beryllium	Be	<0.2	<0.2	<0.5	<0.3
Boron	B	<1	<1	<1	<1
Cadmium	Cd	0.23	<0.1	<0.1	<0.1
Calcium	Ca	16800	25200	18300	32600
Chromium	Cr	<0.5	0.73	<0.5	<0.51
Cobalt	Co	<0.06	0.05	<0.03	<0.05
Copper	Cu	<0.4	<0.4	<0.4	<0.4
Iron	Fe	70.2	<10	<10	<10
Lead	Pb	0.14	<0.08	<0.1	<0.1
Magnesium	Mg	1490	2420	2390	3920
Manganese	Mn	3.82	2.23	<0.29	0.300
Mercury	Hg	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	1.45	1.88	1.56	1.76
Nickel	Ni	<0.4	<0.5	<0.4	0.870
Potassium	K	600	350	500	300
Selenium	Se	<0.01	0.04	<0.01	0.0600
Silver	Ag	0.01	<0.01	<0.01	<0.01
Sodium	Na	386	671	574	926
Strontium	Sr	112	191	159	253
Tellurium	Te	<0.1	<0.1	<0.11	<0.2
Uranium	U	0.06	0.08	0.1	0.0800
Vanadium	V	<1	<1	<1	<1
Zinc	Zn	3.07	2.43	4.53	5.00

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Total (µg/L)		94-02-04	94-03-06	94-03-29	94-04-26	94-04-26 (replicate)	94-05-30	94-05-30 (split)	94-06-29	94-07-30	94-07-30 (replicate)	94-08-28
Aluminum	Al	14	30	14.5	1170	1270	1280	1550	1240	4170	4200	11.9
Antimony	Sb	1.00	0.45	0.57	0.62	0.69	0.68	0.75	0.770	2.51	2.43	<0.2
Arsenic	As	<1.0	2.0	<1.0	<1	<1	<1	1	2.00	4	7	<1
Barium	Ba	48	36	37.2	48.7	54.2	46.1	54.5	37.6	108	114	7.25
Beryllium	Be	0.15	0.20	0.21	0.44	<0.3	0.24	<0.1	<0.11	<0.2	0.32	<0.2
Boron	B	2.3	1.3	0.87	2.17	2.16	<0.5	2.36	<0.68	3.23	1.32	<0.74
Cadmium	Cd	0.89	0.18	<0.13	0.16	0.16	0.12	0.1	<0.10	0.64	0.53	<0.2
Calcium	Ca	41000	27000	37600	25600	28000	13500	14200	13000	9390	9830	5740
Chromium	Cr	0.75	1.3	<0.5	2.24	2.7	2.29	2.62	2.41	10.5	10.1	1.43
Cobalt	Co	0.09	0.16	<0.14	0.55	0.87	0.43	0.54	0.860	3.36	3.77	0.33
Copper	Cu	1.0	1.3	1.6	7.2	7.1	2.09	2.66	2.03	9.2	10.1	4
Iron	Fe	20	10	<10	959	1290	800	1110	1780	7270	6910	10
Lead	Pb	0.1	0.23	0.07	0.3	0.2	1.23	1.77	1.61	5.9	6.14	0.62
Magnesium	Mg	5000	2600	4350	4080	4360	1780	1980	2290	3090	3070	839
Manganese	Mn	1.0	2.0	1.67	47.6	68.9	37.6	49.5	71.5	286	289	3.29
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.05
Molybdenum	Mo	1.4	0.7	0.64	0.88	1.23	0.82	0.85	0.870	1.08	1.32	<0.2
Nickel	Ni	2.6	1.4	1.42	5.24	6.51	2.32	3.38	3.35	13.2	15.7	<0.5
Potassium	K	700	300	550	1960	2020	800	900	500	1360	1480	<50
Selenium	Se	1.0	2.0	4.0	<1	3	<1	<1	0.360	0.66	<1	0.03
Silver	Ag	0.03	0.01	0.01	0.01	0.03	0.03	0.03	0.0300	0.33	0.18	0.1
Sodium	Na	1600	1100	1310	2100	2240	471	509	336	503	531	464
Strontium	Sr	250	170	264	169	191	91.6	98.4	95.1	75.1	75	129
Tellurium	Te	<0.20	<0.20	<0.20	0.58	<0.2	<0.1	<0.1	<0.12	<0.2	<0.2	0.31
Uranium	U	0.08	0.05	<0.04	0.11	0.13	0.07	0.07	0.0600	0.14	0.14	<0.02
Vanadium	V	<1.0	<1.0	<1.0	3.62	3.65	2.52	3.5	1.0	13.1	14	<1
Zinc	Zn	8.5	9.3	15.3	20	26.9	11.3	11.6	13.6	58.6	62.5	<1

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Total (µg/L)		94-10-05	94-11-06	94-11-29	94-12-29
Aluminum	Al	1730	81.5	8.7	5.6
Antimony	Sb	2.44	1.01	0.91	0.82
Arsenic	As	5.89	<1	<1	<1
Barium	Ba	142	45.2	53.6	39.9
Beryllium	Be	<0.2	<0.2	<0.5	<0.3
Boron	B	<1	34.6	<1	<1
Cadmium	Cd	0.24	<0.1	0.17	<0.1
Calcium	Ca	20000	30200	26600	39300
Chromium	Cr	7.16	0.88	<0.5	1.44
Cobalt	Co	2.72	0.14	0.04	<0.05
Copper	Cu	6.15	12.7	0.4	2.47
Iron	Fe	3000	108	<10	<10
Lead	Pb	7.93	14.3	<0.1	<0.1
Magnesium	Mg	3960	3170	3750	4640
Manganese	Mn	240	3.8	<0.29	0.7
Mercury	Hg	0.13	<0.05	<0.05	<0.05
Molybdenum	Mo	1.71	1.95	2.01	2.62
Nickel	Ni	8.64	9.2	<0.4	1.11
Potassium	K	2800	550	600	550
Selenium	Se	0.04	<0.01	0.16	0.25
Silver	Ag	0.29	0.04	<0.01	<0.01
Sodium	Na	814	952	710	1100
Strontium	Sr	125	191	237	278
Tellurium	Te	0.15	<0.1	<0.11	<0.2
Uranium	U	0.25	0.08	0.13	0.08
Vanadium	V	7.14	<1	<1	<1
Zinc	Zn	8.2	69	4.6	7.9

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Parameters	94-02-04	94-03-06	94-03-06	94-03-29	94-03-29 (field)	94-04-26	94-04-26 (replicate)	94-04-26 (field)
Temperature (°C)			0.3		3.7			
pH (units)	7.70	6.90	7.50	7.50	7.70	7.20	6.80	7.30
Conductivity (µmhos/cm)	210	170	180	190	197	120	120	118
Total Dissolved Solids (mg/L)	130	110		120		81	86	
Total Suspended Solids (mg/L)	1	2		4		24	25	
Turbidity (NTU)	1.1	0.63		1.5		32	31	
Hardness (mg/L)	82	64		81		47	49	
Acidity to pH 8.3 (mg $CaCO_3$/L)	3.0	3.8		2.5		3.2	2.9	
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	66	56		62		43	42	
Chloride (mg/L)	0.5	0.5		<0.5		<0.5	<0.5	
Fluoride (mg/L)	0.10	0.10		<0.05		0.05	0.10	
Sulphate (mg/L)	41	30		32		7.1	11	
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005		<0.005		<0.005	<0.005	
Nitrate (mg NO_3-N/L)	0.05	0.10		0.08		0.10	0.08	
Nitrite (mg NO_2-N/L)	<0.005	<0.005		<0.001		0.001	<0.001	
Total P (mg P/L)	0.01	0.02		<0.002		0.025	0.063	
Dissolved P (mg P/L)	0.01	<0.01		<0.002		<0.002	<0.002	
Ortho P (mg P/L)	<0.01	<0.01		<0.002		<0.002	<0.002	

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Parameters	94-04-26 (replicate)	94-05-30	94-05-30 (replicate)	94-05-30 (field)	94-05-30 (replicate)	94-06-29	94-06-29 (field)	94-07-30
Temperature (°C)				2.2	2.2		4.0	
pH (units)	7.20	7.00	7.10	7.50	7.50	5.7	7.3	7.2
Conductivity (µmhos/cm)	111	81	79	90	92	72	60	51
Total Dissolved Solids (mg/L)		53	39			43		41
Total Suspended Solids (mg/L)		17	39			95		360
Turbidity (NTU)		42	51			100		180
Hardness (mg/L)		31	28			32		21
Acidity to pH 8.3 (mg $CaCO_3$/L)		3.0	3.1			1.3		1.0
Alkalinity to pH 4.5 (mg $CaCO_3$/L)		31	32			22		22
Chloride (mg/L)		<0.5	<0.5			1.0		<0.5
Fluoride (mg/L)		<0.05	0.05			<0.05		<0.05
Sulphate (mg/L)		13	13			8.2		3.7
Free Ammonia (mg NH_3-N/L)		<0.005	<0.005			0.020		<0.005
Nitrate (mg NO_3-N/L)		<0.05	<0.05			<0.05		0.05
Nitrite (mg NO_2-N/L)		0.001	<0.001			<0.001		0.001
Total P (mg P/L)		0.051	0.088			0.064		0.120
Dissolved P (mg P/L)		<0.002	0.004			0.004		0.074
Ortho P (mg P/L)		<0.002	0.004			<0.002		0.004

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Parameters	94-07-30 (replicate)	94-07-30 (field)	94-07-30 (replicate)	94-08-28	94-08-28 (field)	94-10-05	94-11-06	94-11-29
Temperature (°C)		5	5		13.9			
pH (units)	6.7	8.2	8.3	7.1	7.6	7.3	6.9	6.9
Conductivity (µmhos/cm)	49	50	53	31	29	110	170	190
Total Dissolved Solids (mg/L)	44			1		77	110	100
Total Suspended Solids (mg/L)	270			<1		150	7	<1
Turbidity (NTU)	170			0.40		190	2.3	0.75
Hardness (mg/L)	22			14		38	54	60
Acidity to pH 8.3 (mg $CaCO_3$/L)	1.8			<1		2.4	3	12
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	27			17		48	73	56
Chloride (mg/L)	<0.5			0.5		<0.5	<0.5	<0.5
Fluoride (mg/L)	<0.05			<0.05		<0.05	<0.05	<0.05
Sulphate (mg/L)	3.7			<0.5		9.9	29	35
Free Ammonia (mg NH_3-N/L)	<0.005			<0.005		0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05			<0.05		<0.05	0.07	0.10
Nitrite (mg NO_2-N/L)	<0.001			<0.001		<0.001	<0.001	<0.001
Total P (mg P/L)	0.120			0.008		0.098	<0.002	0.002
Dissolved P (mg P/L)	0.006			<0.002		<0.002	<0.002	<0.002
Ortho P (mg P/L)	0.004			<0.002		<0.002	<0.002	<0.002

LAC W21 - Homestake Creek Above Confluence with Kitsault River

Parameters	94-12-29
Temperature (°C)	
pH (units)	7.2
Conductivity (µmhos/cm)	220
Total Dissolved Solids (mg/L)	140
Total Suspended Solids (mg/L)	<1
Turbidity (NTU)	0.42
Hardness (mg/L)	64
Acidity to pH 8.3 (mg $CaCO_3$/L)	8
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	98
Chloride (mg/L)	0.5
Fluoride (mg/L)	<0.05
Sulphate (mg/L)	38
Free Ammonia (mg NH_3-N/L)	<0.005
Nitrate (mg NO_3-N/L)	0.05
Nitrite (mg NO_2-N/L)	<0.001
Total P (mg P/L)	0.002
Dissolved P (mg P/L)	0.002
Ortho P (mg P/L)	<0.002

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Dissolved (µg/L)		94-01-29 (KR2)*	94-03-06	94-03-29	94-04-26	94-04-26 (split)	94-05-30	94-05-30 (replicate)	94-06-07	94-06-12	94-06-20	94-06-24
Aluminum	Al	11	<1.0	2.0	16	18	34	37	46.3	86.3	143	320
Antimony	Sb	0.33	0.16	0.20	0.12	0.31	0.21	0.2	0.18	0.22	0.33	0.25
Arsenic	As	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
Barium	Ba	23	26	26	24	24	18	18	17.8	19.6	20.1	32.5
Beryllium	Be	<0.06	<0.10	<0.10	<0.30	<0.30	<0.10	<0.10	<0.15	<0.05	<0.07	<0.06
Boron	B	<0.4	<0.4	<0.4	<0.8	<0.8	2.2	<0.5	0.82	<0.32	<0.44	<0.45
Cadmium	Cd	<0.10	<0.08	<0.13	<0.11	<0.11	<0.04	<0.04	<0.05	0.11	<0.1	<0.1
Calcium	Ca	14000	15000	17000	13100	13600	8420	8540	6910	7690	9000	9120
Chromium	Cr	0.21	0.84	<0.50	<0.50	1.23	0.52	0.55	<0.5	0.4	0.72	1.09
Cobalt	Co	<0.10	<0.04	<0.14	<0.10	<0.10	<0.03	0.07	0.12	<0.04	<0.05	0.1
Copper	Cu	<0.20	1.10	0.63	<0.50	0.64	<0.20	0.29	<0.4	0.77	0.61	<0.5
Iron	Fe	<10	<10	<10	16	16	<10	10	20	24.5	90	163
Lead	Pb	<0.10	0.07	<0.05	<0.12	<0.12	0.63	0.3	<0.06	0.18	0.14	<0.09
Magnesium	Mg	1300	1200	1500	1230	1270	691	690	549	673	864	839
Manganese	Mn	<0.3	0.6	0.4	1.5	1.7	3.7	3.8	7.61	10.3	15.4	10.4
Mercury	Hg	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.54	0.38	0.25	0.37	0.43	0.50	0.49	0.5	0.52	0.56	0.78
Nickel	Ni	0.20	0.37	<0.40	<0.44	<0.44	<0.40	<0.40	0.5	0.71	<1	1.26
Potassium	K	550	390	400	300	300	150	150	100	250	400	650
Selenium	Se	<1.0	<1.0	<1.0	<1.0	<1.0	0.15	<1.0	0.15	0.12	0.11	0.17
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.04	0.03
Sodium	Na	670	690	772	700	700	280	282	172	258	325	317
Strontium	Sr	160	130	146	100	101	69	69	63	70.1	77	73.3
Tellurium	Te	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.1	<0.13	<0.1	<0.11
Uranium	U	0.06	0.04	<0.04	0.04	0.05	0.02	0.02	0.02	0.03	0.04	0.07
Vanadium	V	<0.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	<0.4	4.1	2.4	<1.0	3.7	5.0	2.4	<1	7.2	1.53	1

* KR2 - Sample taken below confluence of Homestake Creek and Kitsault River

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Dissolved (µg/L)		94-06-29	94-07-30	94-08-28	94-10-05	94-11-06	94-11-29	94-12-29
Aluminum	Al	182	251	242	109	14.4	5.92	<1.1
Antimony	Sb	0.300	0.38	<0.2	0.62	0.35	0.18	<0.11
Arsenic	As	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	18.3	23.1	23.4	35.9	27.8	28.1	14.4
Beryllium	Be	<0.11	<0.2	<0.2	<0.2	<0.2	<0.5	<0.3
Boron	B	<0.68	<1	<0.74	<1	<1	<1	<1
Cadmium	Cd	<0.10	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Calcium	Ca	11000	8250	12000	15100	16000	11600	25300
Chromium	Cr	0.600	<0.5	0.51	<0.5	1.53	<0.5	<0.51
Cobalt	Co	0.120	<0.1	<0.09	<0.06	0.07	<0.03	<0.05
Copper	Cu	<0.40	<0.4	<1	<0.4	0.84	<0.4	<0.4
Iron	Fe	90.0	160	118	96.2	<10	<10	<10
Lead	Pb	<0.05	<0.08	<0.09	0.17	<0.08	<0.1	<0.1
Magnesium	Mg	956	583	947	1090	1220	1060	1660
Manganese	Mn	15.6	21.7	18.5	8.8	2.2	<0.29	<0.11
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.740	0.27	1.04	1.71	1.13	0.95	<0.11
Nickel	Ni	0.670	<0.5	<0.5	<0.4	<0.5	<0.4	<0.41
Potassium	K	400	450	654	850	400	350	50.0
Selenium	Se	0.14	<1	0.27	0.2	<0.01	<0.01	0.290
Silver	Ag	<0.01	<0.01	0.02	<0.01	0.01	<0.01	<0.01
Sodium	Na	362	221	555	501	611	504	662
Strontium	Sr	100	68.8	75.2	99.8	127	115	111
Tellurium	Te	<0.12	<0.2	<0.2	<0.1	<0.1	<0.11	<0.2
Uranium	U	0.0400	0.05	0.03	0.09	0.04	0.05	<0.021
Vanadium	V	<1	<1	<1	1.15	<1	<1	<1
Zinc	Zn	<1	2.1	<1	2.4	<1	<1	2.30

* KR2 - Sample taken below confluence of Homestake Creek and Kitsault River

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Total (µg/L)		94-01-29 (KR2)*	94-03-06	94-03-29	94-04-26	94-04-26 (split)	94-05-30	94-05-30 (replicate)	94-06-07	94-06-12	94-06-20	94-06-24
Aluminum	Al	31	20	16.6	152	157	135	163	101	463	592	2190
Antimony	Sb	0.33	0.27	0.21	0.17	0.32	0.23	0.24	0.27	0.37	0.33	0.77
Arsenic	As	<1.0	<1.0	<1.0	<1	1	<1	<1	1	<1	1	2
Barium	Ba	24	30	31.4	33.4	36.9	24.1	24	22.4	30.1	35.3	85.4
Beryllium	Be	<0.06	0.16	<0.10	<0.3	<0.3	<0.1	<0.1	<0.15	<0.05	<0.07	<0.06
Boron	B	1.1	1.7	1.71	0.94	1.14	2.4	<0.5	2.79	0.8	<0.44	2.88
Cadmium	Cd	<0.10	0.17	<0.13	0.2	<0.11	<0.04	<0.04	0.12	0.55	0.13	<0.1
Calcium	Ca	20000	21000	25200	20300	21800	13000	12500	7970	8770	9170	9550
Chromium	Cr	0.21	2.4	<0.5	<0.5	1.3	0.55	0.63	<0.5	0.6	0.89	2.32
Cobalt	Co	<0.1	<0.04	<0.14	0.13	0.43	0.3	0.18	0.21	0.33	0.4	1.27
Copper	Cu	<0.2	2.2	1.33	7	4.31	1.44	0.95	7.31	1.97	2.4	3.46
Iron	Fe	<10	20	<10	174	181	160	210	170	501	918	2400
Lead	Pb	<0.1	0.43	0.08	1.58	<0.12	0.66	0.36	0.2	1.79	2.52	1.81
Magnesium	Mg	2000	1800	2300	2090	2240	1140	1130	702	919	999	1600
Manganese	Mn	0.79	1.9	1.45	8.22	8.23	9.58	10.6	12.6	25.1	34	73.1
Mercury	Hg	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.81	0.47	0.62	0.82	0.77	0.75	0.74	0.54	0.69	0.65	0.79
Nickel	Ni	1.2	0.8	0.66	6.39	2.17	1.28	0.46	0.56	2.87	30.4	14.4
Potassium	K	800	550	600	1680	1650	350	350	200	500	500	1200
Selenium	Se	<1.0	3.0	1.0	1	<1	0.17	<1	0.21	0.15	0.12	0.2
Silver	Ag	<0.01	0.03	0.03	0.01	<0.01	0.01	0.02	0.02	0.02	0.04	0.03
Sodium	Na	980	1000	1180	2020	2090	462	447	229	377	413	563
Strontium	Sr	190	150	194	136	149	95.4	90.9	70.6	75.1	79	79.5
Tellurium	Te	<0.20	<0.20	<0.20	<0.2	0.87	<0.1	<0.1	<0.1	<0.13	<0.1	<0.11
Uranium	U	0.06	0.08	<0.04	0.09	0.07	0.03	0.03	0.02	0.12	0.04	0.17
Vanadium	V	<0.2	<1.0	<1.0	1.12	<1	<1	<1	<1	<1	2.53	6.32
Zinc	Zn	5.2	7.5	4.21	16.6	3.81	5.22	2.58	1.08	31.9	28.9	23.8

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Total (µg/L)		94-06-29	94-07-30	94-08-28	94-10-05	94-11-06	94-11-29	94-12-29
Aluminum	Al	369	1370	1870	450	43.1	9.7	<1
Antimony	Sb	1.13	1.07	0.2	0.86	0.38	0.3	<0.1
Arsenic	As	1.00	<1	<1	1.55	<1	<1	3
Barium	Ba	25.9	55.5	50.8	61.3	28.6	35.2	15
Beryllium	Be	<0.11	<0.2	0.2	<0.2	<0.2	<0.5	<0.3
Boron	B	<0.68	2.44	<0.74	<1	<1	<1	<1
Cadmium	Cd	<0.10	<0.1	0.23	<0.1	0.12	<0.1	<0.1
Calcium	Ca	12600	9220	12900	16500	17400	16800	26500
Chromium	Cr	0.920	2.9	3.14	1.69	1.72	1.19	<0.5
Cobalt	Co	0.390	1.15	0.74	0.78	0.09	0.04	<0.05
Copper	Cu	0.720	2.54	<1	2.09	1.78	0.96	2.53
Iron	Fe	468	1800	1440	901	44.5	14.40	<10
Lead	Pb	0.530	1.48	0.88	2.06	2.02	<0.1	<0.1
Magnesium	Mg	1350	1240	1840	2000	1430	1610	1700
Manganese	Mn	22.6	70.10	60.7	73.8	2.27	<0.29	<0.1
Mercury	Hg	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.750	0.83	1.16	1.78	1.19	1.16	<0.1
Nickel	Ni	1.50	3.83	1.93	2.58	<0.5	2.39	<0.4
Potassium	K	400	900	1030	1110	400	400	100
Selenium	Se	0.150	0.32	<0.01	<0.01	<0.01	0.1	0.34
Silver	Ag	<0.010	0.04	0.05	0.05	0.04	<0.01	0.01
Sodium	Na	372	355	557	646	716	543	676
Strontium	Sr	104	70.4	77.20	105	131	173	113
Tellurium	Te	<0.12	<0.2	<0.2	<0.1	<0.1	<0.11	<0.2
Uranium	U	0.0500	0.11	0.1	0.16	0.04	0.06	<0.02
Vanadium	V	1.00	6.70	2.59	2.22	<1	<1	<1
Zinc	Zn	13.4	10.40	1.6	14.40	6.4	<1	2.5

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Parameters	94-01-29	94-03-06	94-03-06	94-03-29	94-03-29 (field)	94-04-26	94-04-26 (split)	94-04-26 (field)
Temperature (°C)			0.2		5.4			
pH (units)	6.50	7.10	7.60	7.50	7.70	7.30	7.10	6.90
Conductivity (μmhos/cm)	89	110	117	120	118	100	99	86
Total Dissolved Solids (mg/L)	70	68		79		67	66	
Total Suspended Solids (mg/L)	<1	1		1		<1	<1	
Turbidity (NTU)	0.41	0.35		0.43		2.8	3.6	
Hardness (mg/L)	40	42		49		38	39	
Acidity to pH 8.3 (mg $CaCO_3$/L)	4.6	3.4		3.1		2.4	2.8	
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	35	46		46		40	40	
Chloride (mg/L)	0.5	0.5		<0.5		<0.5	<0.5	
Fluoride (mg/L)	0.10	0.10		<0.05		0.05	0.05	
Sulphate (mg/L)	14	14		17		14	14	
Free Ammonia (mg NH_3-N/L)	<0.005	<0.005		<0.005		<0.005	<0.005	
Nitrate (mg NO_3-N/L)	0.05	0.15		0.13		0.24	0.22	
Nitrite (mg NO_2-N/L)	<0.005	<0.005		0.001		0.001	0.001	
Total P (mg P/L)	0.03	0.01		<0.002		<0.002	0.004	
Dissolved P (mg P/L)	0.03	<0.01		<0.002		<0.002	<0.002	
Ortho P (mg P/L)	0.01	<0.01		<0.002		<0.002	<0.002	

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Parameters	94-04-26 (split)	94-05-30	94-05-30 (replicate)	94-05-30 (field)	94-05-30 (replicate)	94-06-07	94-06-07 (field)	94-06-12
Temperature (°C)							5	
pH (units)	7.10	7.10	6.70	7.40	7.50	6.4	7.5	6.3
Conductivity (µmhos/cm)	96	65	70	78	74	21	62	61
Total Dissolved Solids (mg/L)		49	39			39		40
Total Suspended Solids (mg/L)		5	10			29		33
Turbidity (NTU)		9.6	9.7			0.36		33
Hardness (mg/L)		24	24			20		22
Acidity to pH 8.3 (mg $CaCO_3$/L)		2.8	3.5			3.4		3.4
Alkalinity to pH 4.5 (mg $CaCO_3$/L)		32	30			10		26
Chloride (mg/L)		<0.5	<0.5			<0.5		<0.5
Fluoride (mg/L)		<0.05	0.05			0.05		<0.05
Sulphate (mg/L)		7.7	5.4			6.8		7.2
Free Ammonia (mg NH_3-N/L)		<0.005	<0.005			0.006		<0.005
Nitrate (mg NO_3-N/L)		<0.05	<0.05			<0.05		<0.05
Nitrite (mg NO_2-N/L)		<0.001	<0.001			<0.001		<0.001
Total P (mg P/L)		0.019	0.026			0.043		0.034
Dissolved P (mg P/L)		<0.002	0.003			<0.002		<0.002
Ortho P (mg P/L)		<0.002	0.003			<0.002		0.003

Appendix F - CTD

Kitsault Lake CTD Data

CTD24 94-09-26			CTD26 94-09-26			CTD30 94-09-26			CTD32 94-09-26		
Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light
1.0	9.298	83.79	1.0	9.075	83.11	1.2	9.216	82.84	1.0	9.543	83.22
2.1	9.280	83.84	2.1	9.058	83.17	2.2	9.213	83.50	2.0	9.541	83.31
3.1	9.229	83.89	3.1	8.989	83.25	3.3	9.211	83.53	3.0	9.536	83.29
4.2	9.214	83.88	4.1	8.963	83.33	4.3	9.212	83.55	4.1	9.536	83.08
5.2	9.219	83.87	5.1	8.883	83.65	5.3	9.204	83.58	5.1	9.534	83.23
6.2	9.194	84.05	6.2	8.839	83.83	6.4	9.052	83.63	6.1	9.527	83.29
7.3	9.136	84.12	7.2	8.727	83.80	7.4	8.844	84.32	7.1	9.526	83.41
8.3	9.065	84.19	8.2	8.434	84.03	8.4	8.568	84.53	8.2	9.524	83.31
9.4	8.681	84.57	9.3	7.773	84.49	9.5	8.413	84.55	9.2	9.500	83.43
10.4	8.580	84.60	10.4	7.134	84.85	10.5	7.995	84.96	10.2	9.477	83.20
11.5	8.054	84.92	11.4	6.733	85.13	11.5	7.488	85.08	11.3	9.138	83.54
12.5	7.278	85.14	12.5	6.482	85.24	12.5	6.939	85.38	12.4	6.624	85.06
13.5	6.626	85.57	13.5	6.318	85.31	13.5	6.494	85.59	13.4	6.056	85.66
14.6	6.322	85.79	14.6	6.263	85.50	14.6	6.253	85.79	14.4	5.850	85.81
15.6	5.990	85.93	15.6	6.164	85.48	15.6	5.958	86.02	15.5	5.828	85.84
16.6	5.886	86.22	16.6	6.087	85.29	16.7	5.912	86.16	16.5	5.772	85.86
17.6	5.825	86.17	17.6	6.060	85.28	17.7	5.866	86.09	17.6	5.729	85.89
18.6	5.719	86.32	18.7	6.037	85.32	18.8	5.828	86.12	18.6	5.709	85.93
19.7	5.637	86.21	19.7	5.930	85.01	19.9	5.791	86.22	19.7	5.693	85.92
20.7	5.546	86.34				20.9	5.784	86.28	20.7	5.637	85.91
						21.9	5.753	86.20	21.7	5.615	85.96
						22.9	5.747	86.17	22.7	5.557	86.01
						24.0	5.738	86.22	23.8	5.503	86.07
						25.0	5.729	86.03	24.8	5.502	85.95
						26.1	5.726	86.03	25.8	5.490	85.97
						27.1	5.723	86.06	26.9	5.479	85.93
									28.0	5.469	85.96
									29.0	5.466	86.00
									30.0	5.462	85.94

Kitsault Lake CTD Data

CTD34 94-09-26			CTD70 94-09-26			CTD72 94-09-26			CTD70 94-11-17		
Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light
1.0	9.529	83.32	1.1	9.413	83.86	1.0	9.420	83.31	3.7	2.328	81.90
2.1	9.532	83.41	2.1	9.414	83.92	2.1	9.421	83.36	4.8	2.429	83.02
3.1	9.534	83.33	3.1	9.411	83.94	3.1	9.423	83.37	5.8	2.614	83.19
4.2	9.533	83.34	4.2	9.406	83.89	4.1	9.424	83.40	6.8	2.792	83.31
5.2	9.532	83.34	5.2	9.392	83.96	5.1	9.424	83.39	7.9	2.854	83.32
6.2	9.532	83.39	6.3	9.383	84.01	6.2	9.423	83.47	8.9	2.913	83.51
7.3	9.533	83.40	7.3	9.367	84.13	7.2	9.421	83.53	10.0	3.057	83.33
8.3	9.529	83.41	8.3	9.353	84.09	8.2	9.393	83.63	11.0	3.159	83.65
9.3	9.527	83.36	9.4	9.331	84.16	9.3	9.120	83.99	12.1	3.217	83.75
10.3	9.505	83.30	10.4	8.759	84.47	10.3	8.443	84.25	13.1	3.241	83.86
11.3	9.458	82.92	11.4	7.357	84.94	11.3	7.712	84.59	14.1	3.253	84.11
12.4	6.439	84.81	12.4	6.666	85.32	12.4	6.303	85.10	15.2	3.276	83.47
13.5	5.850	85.71	13.5	6.268	85.56	13.4	6.204	85.27	16.3	3.301	84.08
14.5	5.775	85.82	14.5	6.063	85.67	14.5	6.045	85.27	17.3	3.311	84.03
15.6	5.702	85.96	15.5	5.913	85.78	15.5	5.888	85.29	18.4	3.329	84.09
16.6	5.557	86.10	16.5	5.796	85.90	16.6	5.746	85.38	19.4	3.340	84.04
17.6	5.541	86.03	17.6	5.677	85.93	17.6	5.593	85.59	20.4	3.341	84.08
18.7	5.501	86.11	18.6	5.495	86.01	18.7	5.474	85.78	21.5	3.344	84.11
19.8	5.412	86.20	19.6	5.413	86.40	19.7	5.429	85.69	22.5	3.345	84.08
20.8	5.369	86.16	20.7	5.302	86.52	20.7	5.341	85.86	23.6	3.357	84.04
21.8	5.364	86.13	21.7	5.253	86.61	21.7	5.239	86.20	24.7	3.361	83.96
22.8	5.339	86.13	22.8	5.131	86.71	22.7	5.212	86.22	25.8	3.367	83.96
23.9	5.338	86.23	23.8	5.047	86.88	23.7	5.160	86.32	26.8	3.371	83.85
24.9	5.334	86.20	24.8	5.006	86.83	24.8	5.084	86.41	27.9	3.402	83.94
25.9	5.328	86.16	25.8	4.960	86.86	25.8	5.024	86.45	28.9	3.415	83.87
27.0	5.309	86.23	26.8	4.932	86.99	26.8	4.971	86.49	29.9	3.434	83.83
28.0	5.277	86.09	27.9	4.881	87.05	27.8	4.907	86.53	30.9	3.433	83.42
			28.9	4.856	87.07	28.8	4.859	86.69	32.2	3.440	83.31
			29.9	4.820	87.07	29.9	4.794	86.62	33.5	3.443	83.42
			31.0	4.757	87.22	30.9	4.741	86.75	34.6	3.445	83.36
			32.0	4.719	87.20	31.9	4.693	86.79	35.7	3.445	83.36
			33.1	4.694	87.19	32.9	4.658	86.88	36.9	3.448	83.37
			34.1	4.671	87.21	34.0	4.630	86.91	38.0	3.464	83.36

LAC W22 - Kitsault River Below Confluence with Evindsen Creek

Parameters	94-07-30 (field)	94-08-28	94-08-28 (field)	94-10-05	94-11-06	94-11-29	94-12-29
Temperature (°C)	8.2		6.8				
pH (units)	7.9	7.2	7.8	7.4	7.0	6.9	7.2
Conductivity (μmhos/cm)	54	63	60	88	100	100	140
Total Dissolved Solids (mg/L)		35		64	61	41	83
Total Suspended Solids (mg/L)		34		54	5	3	<1
Turbidity (NTU)		38		77	0.68	0.48	0.26
Hardness (mg/L)		26		36	40	38	64
Acidity to pH 8.3 (mg $CaCO_3$/L)		<1		2.3	3	12	7
Alkalinity to pH 4.5 (mg $CaCO_3$/L)		34		42	45	33	70
Chloride (mg/L)		0.5		<0.5	<0.5	<0.5	0.5
Fluoride (mg/L)		0.05		<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)		7.0		9.6	13	14	11
Free Ammonia (mg NH_3-N/L)		0.006		0.034	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)		<0.05		0.05	0.11	0.10	0.05
Nitrite (mg NO_2-N/L)		0.001		<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)		0.100		0.080	<0.002	0.002	<0.002
Dissolved P (mg P/L)		0.002		0.004	<0.002	<0.002	<0.002
Ortho P (mg P/L)		0.002		<0.002	<0.002	<0.002	<0.002

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Dissolved (µg/L)		94-03-06	94-03-29	94-03-29 (split)	94-04-26	94-05-30	94-06-29	94-06-29 (replicate)	94-07-30	94-08-28	94-10-05	94-11-06
Aluminum	Al	<1.0	<1.0	<1.0	<1.0	30.4	131	117	123	200	34.2	7.38
Antimony	Sb	0.27	<0.06	0.07	0.24	0.17	<0.20	0.27	0.65	<0.2	0.45	0.2
Arsenic	As	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	Ba	32	17	17	19	20	21	20.2	27.3	26	33.1	29.5
Beryllium	Be	<0.10	0.11	<0.10	<0.30	<0.10	<0.11	<0.11	<0.2	0.3	<0.2	<0.2
Boron	B	<0.40	<0.44	<0.44	<0.79	<0.50	<0.68	<0.68	<1	<0.74	<1	<1
Cadmium	Cd	<0.08	<0.13	<0.13	<0.11	<0.04	<0.10	<0.1	<0.1	<0.2	<0.1	<0.1
Calcium	Ca	18000	9850	10300	8540	9370	12500	12800	11300	14000	17000	14700
Chromium	Cr	0.87	<0.50	<0.50	<0.50	0.67	0.580	0.61	<0.5	0.61	<0.5	<0.5
Cobalt	Co	<0.04	<0.14	<0.14	<0.10	<0.03	0.0500	<0.03	0.25	0.13	<0.06	0.05
Copper	Cu	0.58	0.32	0.94	<0.50	0.29	<0.40	<0.4	<0.4	<1	<0.4	<0.4
Iron	Fe	<10	<10	<10	<10	<10	60.0	60	70	100	33.7	<10
Lead	Pb	<0.06	<0.05	<0.05	<0.12	0.95	<0.050	<0.05	<0.08	0.39	<0.07	<0.08
Magnesium	Mg	1300	550	577	468	826	1100	1130	820	1120	1130	1030
Manganese	Mn	1.1	<0.1	<0.1	<0.2	4.3	11.0	10.1	8.1	16.5	5.14	1.27
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.5	<0.1	0.67	0.57	0.47	0.690	0.84	1.16	0.83	1.17	0.57
Nickel	Ni	0.48	<0.40	<0.40	<0.44	<0.40	0.780	0.5	<0.5	<0.5	<0.4	<0.5
Potassium	K	520	700	750	750	200	400	400	500	775	600	350
Selenium	Se	<1.0	<1.0	<1.0	<1.0	<1.0	0.22	<1	<1	0.22	0.27	<0.01
Silver	Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	0.03	0.01	<0.01
Sodium	Na	720	532	572	750	328	412	415	314	601	498	467
Strontium	Sr	110	49	53	42	62	98.1	97.9	81.2	76	94	87.9
Tellurium	Te	<0.20	<0.20	<0.20	<0.20	<0.10	<0.12	<0.12	<0.2	<0.2	<0.1	<0.1
Uranium	U	0.03	<0.04	<0.04	0.09	<0.02	<0.020	0.04	0.05	0.04	0.05	0.04
Vanadium	V	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	Zn	2.2	1.5	2.4	<1.0	6.3	<1	<1	2.03	1.05	1.13	<1

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Dissolved (µg/L)		94-11-29	94-12-29
Aluminum	Al	1.21	2.85
Antimony	Sb	0.25	<0.11
Arsenic	As	<1	<1
Barium	Ba	38.9	11.2
Beryllium	Be	<0.5	<0.3
Boron	B	<1	<1
Cadmium	Cd	<0.1	<0.1
Calcium	Ca	14500	15500
Chromium	Cr	<0.5	<0.51
Cobalt	Co	<0.03	<0.05
Copper	Cu	<0.4	<0.4
Iron	Fe	<10	<10
Lead	Pb	<0.1	<0.1
Magnesium	Mg	1350	925
Manganese	Mn	<0.29	<0.11
Mercury	Hg	<0.05	<0.05
Molybdenum	Mo	0.81	0.990
Nickel	Ni	<0.4	<0.41
Potassium	K	500	550
Selenium	Se	0.01	0.170
Silver	Ag	<0.01	<0.01
Sodium	Na	484	536
Strontium	Sr	107	67.6
Tellurium	Te	<0.11	<0.2
Uranium	U	0.05	0.05
Vanadium	V	<1	<1
Zinc	Zn	<1	1.35

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Total (µg/L)		94-03-06	94-03-29	94-03-29 (split)	94-04-26	94-05-30	94-06-29	94-06-29 (replicate)	94-07-30	94-08-28	94-10-05	94-11-06	94-11-29
Aluminum	Al	22	87.4	56.4	63.4	288	252	257	6100	1270	138	168	6.9
Antimony	Sb	0.30	<0.06	0.07	0.27	0.28	<0.20	1.1	0.69	<0.2	0.52	0.45	0.25
Arsenic	As	<1.0	<1.0	1.0	<1	1	<1.0	2	<1	<1	<1	<1	<1
Barium	Ba	36	18.7	20.4	18.5	42.6	27.9	28.7	41.4	43.5	44	45.2	39.6
Beryllium	Be	<0.10	0.22	0.11	0.34	0.17	<0.11	<0.11	<0.2	0.3	<0.2	<0.2	<0.5
Boron	B	4.5	0.6	1.39	<0.79	1.13	<0.68	<0.68	<1	<0.74	1.54	48.8	<1
Cadmium	Cd	0.13	<0.13	<0.13	<0.11	<0.04	<0.10	<0.1	<0.1	<0.2	<0.1	0.14	<0.1
Calcium	Ca	22000	13800	14500	12500	15100	14200	14800	11600	14800	19500	21800	16500
Chromium	Cr	1.9	<0.5	<0.5	<0.5	0.83	0.650	0.94	1.14	3.11	<0.5	1.3	<0.5
Cobalt	Co	<0.04	<0.14	<0.14	0.13	0.39	0.210	0.26	0.38	0.65	0.16	0.12	<0.03
Copper	Cu	2.0	5.61	1.75	5.62	1.8	<0.40	<0.4	1.77	<1	0.61	12.6	1.75
Iron	Fe	20	100	50	103	430	318	317	730	921	246	236	12.20
Lead	Pb	0.29	0.77	0.1	<0.12	1.15	0.320	0.37	0.45	0.57	0.49	11.20	<0.1
Magnesium	Mg	1800	849	853	839	1490	1400	1480	1020	1740	1700	1750	1580
Manganese	Mn	2.3	5.55	4.26	3.25	26.1	15.7	15	31	41.5	19.5	6.26	<0.29
Mercury	Hg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	Mo	0.81	0.76	0.98	0.57	0.7	0.700	0.86	1.19	1.33	1.41	0.86	0.88
Nickel	Ni	0.5	2.65	0.77	0.67	0.58	0.860	0.74	0.85	1.23	<0.4	4.63	<0.4
Potassium	K	650	1160	1230	1600	450	400	400	650	860	800	650	500
Selenium	Se	1.0	2.0	2.0	1	2	0.230	<1	0.24	0.35	<0.01	0.01	0.12
Silver	Ag	0.02	0.02	0.03	0.01	0.02	<0.010	0.01	0.02	0.03	0.03	0.53	0.03
Sodium	Na	960	800	850	1620	567	432	420	350	612	710	934	563
Strontium	Sr	120	59.7	63.8	51.7	92.4	101	98	82.60	76.3	103	108	129
Tellurium	Te	<0.20	0.25	<0.20	0.32	<0.1	<0.12	<0.12	<0.2	0.3	<0.1	<0.1	<0.11
Uranium	U	0.07	<0.04	<0.04	0.09	0.04	0.0300	0.05	0.06	0.05	0.08	0.04	0.05
Vanadium	V	<1.0	<1.0	<1.0	1.26	<1	<1.0	<1	2	<1	1.15	<1	<1
Zinc	Zn	3.7	18.5	4.95	<1	6.95	5.10	10	5.20	2.2	5.4	50.60	4.94

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Total (µg/L)		94-12-29
Aluminum	Al	19.4
Antimony	Sb	<0.1
Arsenic	As	2
Barium	Ba	11.7
Beryllium	Be	<0.3
Boron	B	<1
Cadmium	Cd	<0.1
Calcium	Ca	16200
Chromium	Cr	<0.5
Cobalt	Co	0.05
Copper	Cu	0.78
Iron	Fe	20
Lead	Pb	<0.1
Magnesium	Mg	936
Manganese	Mn	0.5
Mercury	Hg	<0.05
Molybdenum	Mo	1.02
Nickel	Ni	<0.4
Potassium	K	550
Selenium	Se	0.18
Silver	Ag	0.02
Sodium	Na	541
Strontium	Sr	69.3
Tellurium	Te	<0.2
Uranium	U	0.05
Vanadium	V	<1
Zinc	Zn	2.07

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Parameters	94-03-06	94-03-06 (field)	94-03-29	94-03-29 (field)	94-03-29 (replicate)	94-03-29 (field)	94-04-26	94-04-26 (field)
Temperature (°C)		0.3		2.6		2.6		
pH (units)	7.20	7.50	7.40	7.30	6.60	7.20	7.20	6.90
Conductivity (µmhos/cm)	130	127	71	66	68	68	66	61
Total Dissolved Solids (mg/L)	80		36		41		43	
Total Suspended Solids (mg/L)	5		2		<1		<1	
Turbidity (NTU)	0.66		0.29		0.29		0.54	
Hardness (mg/L)	50		27		28		41	
Acidity to pH 8.3 (mg $CaCO_3$/L)	3.4		2.8		2.8		2.6	
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	52		31		30		30	
Chloride (mg/L)	0.5		<0.5		<0.5		<0.5	
Fluoride (mg/L)	0.10		<0.05		0.05		<0.05	
Sulphate (mg/L)	11		2.8		2.8		<0.5	
Free Ammonia (mg NH_3-N/L)	<0.005		<0.005		<0.005		<0.005	
Nitrate (mg NO_3-N/L)	0.15		0.47		0.53		0.53	
Nitrite (mg NO_2-N/L)	<0.005		<0.001		0.001		0.001	
Total P (mg P/L)	0.02		<0.002		0.003		0.003	
Dissolved P (mg P/L)	<0.01		<0.002		<0.002		<0.002	
Ortho P (mg P/L)	<0.01		<0.002		<0.002		<0.002	

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Parameters	94-05-30	94-05-30 (field)	94-06-29	94-06-29 (replicate)	94-06-29 (field)	94-06-29 (replicate)	94-07-30	94-07-30 (field)
Temperature (°C)		5.2			6.4	6.4		10.8
pH (units)	7.30	7.60	6.1	5.7	7.4	7.7	7.1	7.9
Conductivity (µmhos/cm)	82	90	76	78	65	67	63	65
Total Dissolved Solids (mg/L)	31		45	38			52	
Total Suspended Solids (mg/L)	9		19	22			37	
Turbidity (NTU)	9.80		23	17			24	
Hardness (mg/L)	27		36	37			28	
Acidity to pH 8.3 (mg $CaCO_3$/L)	2.7		1.1	15			1.4	
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	38		34	30			32	
Chloride (mg/L)	<0.5		1.0	1			<0.5	
Fluoride (mg/L)	<0.05		<0.05	0.05			<0.05	
Sulphate (mg/L)	8.1		5.5	5.3			6.6	
Free Ammonia (mg NH_3-N/L)	<0.005		0.007	0.007			0.013	
Nitrate (mg NO_3-N/L)	0.05		<0.05	<0.05			0.05	
Nitrite (mg NO_2-N/L)	0.001		<0.001	<0.001			<0.001	
Total P (mg P/L)	0.021		0.044	0.018			0.061	
Dissolved P (mg P/L)	<0.002		<0.002	0.005			0.023	
Ortho P (mg P/L)	<0.002		<0.002	<0.002			<0.002	

LAC W23 - Kitsault River near Confluence with Klayduc Creek

Parameters	94-08-28	94-08-28 (field)	94-10-05	94-11-06	94-11-29	94-12-29
Temperature (°C)		7.7				
pH (units)	7.2	7.8	7.4	7.1	7.2	6.9
Conductivity (μmhos/cm)	76	70	100	120	120	87
Total Dissolved Solids (mg/L)	35		64	75	46	50
Total Suspended Solids (mg/L)	33		14	2	4	<1
Turbidity (NTU)	33		26	1.3	0.45	0.7
Hardness (mg/L)	32		45	52	50	32
Acidity to pH 8.3 (mg $CaCO_3$/L)	<1		3.4	3	13	6
Alkalinity to pH 4.5 (mg $CaCO_3$/L)	40		47	41	42	43
Chloride (mg/L)	<0.5		<0.5	<0.5	0.5	0.5
Fluoride (mg/L)	<0.05		<0.05	<0.05	<0.05	<0.05
Sulphate (mg/L)	7.4		9.6	12	14	4
Free Ammonia (mg NH_3-N/L)	0.007		0.016	<0.005	<0.005	<0.005
Nitrate (mg NO_3-N/L)	<0.05		0.05	0.15	0.10	0.14
Nitrite (mg NO_2-N/L)	<0.001		<0.001	<0.001	<0.001	<0.001
Total P (mg P/L)	0.076		0.034	0.002	0.006	0.004
Dissolved P (mg P/L)	0.006		<0.002	<0.002	<0.002	<0.002
Ortho P (mg P/L)	0.002		<0.002	<0.002	<0.002	<0.002

Kitsault Lake Dissolved Oxygen Readings, July 1994

Station K1

Depth (m)	Temp (°C)	D.O. (mg/L)
surface	6.0	11.2
1	6.0	11.1
2	6.0	11.2
3	5.5	11.2
5	5.2	11.1
10	5.0	11.2
15	5.0	11.1
20	5.0	10.9
23	4.9	10.8

Station K3

Depth (m)	Temp (°C)	D.O. (mg/L)
surface	7.8	11.2
1	7.8	11.2
2	7.8	11.3
5	7.2	11.2
10	6.7	11.2
15	5.8	11.1
20	4.9	10.9
25	4.9	10.8
30	4.9	10.8
35	4.8	10.8
40	4.8	10.8
45	4.6	10.7

Station K5

Depth (m)	Temp (°C)	D.O. (mg/L)
surface	8.3	11.2
1	8.4	11.0
2	8.2	11.0
3	8.2	11.0
5	8.1	11.0
10	8.0	10.9
12	6.8	10.8
13	6.6	10.9
14	5.8	10.8
15	5.4	10.8
20	5.0	10.6
25	5.0	10.6

Tributary 1

Depth (m)	Temp (°C)	D.O. (mg/L)
surface	6.0	11.2
1.0	6.0	11.4
2.0	6.1	11.2
2.5	4.2	11.3

Tributary 5

Depth (m)	Temp (°C)	D.O. (mg/L)
surface	7.8	11.1
0.5	7.1	11.1
1.0	6.1	11.1
1.5	6.0	11.1

Kitsault Lake CTD Data

CTD70 94-09-26			CTD72 94-09-26		
Depth (m)	Temp (°C)	% Light	Depth (m)	Temp (°C)	% Light
35.2	4.626	87.34	35.0	4.623	86.84
36.2	4.617	87.32	36.1	4.606	86.89
37.2	4.608	87.32	37.1	4.595	86.87
38.3	4.585	87.32	38.1	4.570	86.89
39.3	4.565	87.34	39.2	4.550	86.91
40.3	4.557	87.39	40.3	4.543	86.95
41.3	4.554	87.41	41.3	4.525	87.04
42.4	4.543	87.24	42.4	4.514	87.03
43.4	4.535	87.31	43.4	4.499	86.97
44.4	4.509	87.36	44.4	4.492	86.95
45.5	4.495	87.33	45.4	4.484	86.95
46.5	4.483	87.33	46.5	4.483	86.94
47.5	4.475	87.30	47.5	4.478	86.93
48.5	4.472	87.30	48.6	4.476	86.92
49.6	4.469	87.27	49.6	4.475	86.97
50.6	4.464	87.25	50.6	4.469	86.86
51.6	4.462	87.26	51.7	4.464	86.94
52.7	4.457	87.27	52.7	4.461	86.90
53.7	4.455	87.25	53.7	4.456	86.95
54.7	4.455	87.18	54.8	4.452	86.88
55.8	4.454	87.27	55.8	4.447	86.95
56.8	4.451	87.21	56.8	4.444	86.93
57.8	4.450	87.25	57.8	4.441	86.90
58.9	4.443	87.27	58.9	4.439	86.90
			60.0	4.438	86.88
			61.0	4.436	86.84
			62.0	4.436	86.84
			63.0	4.435	86.88
			64.1	4.434	86.78
			65.1	4.434	86.60
			66.1	4.431	86.60

Appendix G - Sediment Geochemistry

Kitsault Lake Sediments

Parameter (%)	94-01-20 K1	94-01-25 K2	94-01-26 K3	94-01-26 K4	94-01-27 K5	94-07-07 K1	94-07-07 K3	94-07-07 K5
Moisture	85	89	93	89	88	90	92	82
TOC	1.3	0.84	1.8	0.95	2.1	3.8	5.8	2.3
TKN	0.085	0.08	0.075	0.15	0.007	0.08	0.09	0.09

Element (µg/g)		94-01-20 K1	94-01-25 K2	94-01-26 K3	94-01-26 K4	94-01-27 K5	94-07-07 K1	94-07-07 K3	94-07-07 K5
Aluminum	Al	65000	76000	67000	70000	60000	54300	68300	62900
Antimony	Sb	10	12	13	22	9.4	51.4	50.2	31.2
Arsenic	As	200	200	190	200	160	497	250	360
Barium	Ba	1200	1100	710	860	730	1770	615	1410
Beryllium	Be	1.7	1.8	1.8	1.9	1.5	1.55	1.84	1.68
Boron	B	330	270	450	350	290	17.2	8.98	22.8
Cadmium	Cd	2.5	5	3.9	3.6	2.4	4.16	3.41	1.81
Calcium	Ca	5000	4400	4900	5200	4300	7610	5780	5210
Chromium	Cr	100	78	63	72	63	51.1	72.2	108
Cobalt	Co	48	41	41	40	32	86.6	43.2	66.9
Copper	Cu	53	56	56	63	46	59.5	63.1	52.4
Iron	Fe	92000	55000	63000	53000	44000	90800	65600	82000
Lead	Pb	31	62	41	43	28	33.1	37.7	23.1
Magnesium	Mg	8300	8000	5700	7500	7000	6160	6590	9130
Manganese	Mn	13000	35000	3400	15000	15000	63400	1250	39000
Mercury	Hg	0.3	0.75	0.58	0.7	0.4	0.120	0.230	0.0550
Molybdenum	Mo	13	11	17	10	7.2	29.0	14.6	14.8
Nickel	Ni	97	79	69	68	69	81.3	64.5	107
Potassium	K	11000	11000	9800	11000	11000	9640	10100	11500
Selenium	Se	4.3	<1	7.1	3.4	<1	2.74	5.94	2.39
Silver	Ag	1.3	1.7	1.9	1.5	0.77	0.980	1.81	0.920
Sodium	Na	9000	6800	4000	5900	6600	4900	4030	8480
Strontium	Sr	290	210	190	210	170	325	202	291
Tellurium	Te	0.41	<0.2	<0.2	<0.2	<0.2	2.24	2.67	2.37
Uranium	U	1.7	2.2	2	2.4	2	2.14	1.39	1.19
Vanadium	V	110	110	85	110	92	92.2	93.0	104
Zinc	Zn	480	850	670	640	540	620	602	375

Note: TOC, TKN and element analyses are reported upon a dry weight basis.

Appendix H - Statement of Qualifications

APPENDIX H - STATEMENT OF QUALIFICATIONS

Rescan Company Profile

Rescan Environmental Services Ltd. is a multidisciplinary consulting firm specializing in the environmental management of resource development projects. Rescan offers the unique ability to effectively resolve complex issues requiring specialized technical, managerial and negotiating skills. In addition to a complete range of environmental services encompassing environmental engineering, metallurgy, chemistry, biology, socioeconomics and planning, Rescan offers expertise in government liaison and project management.

Rescan's client list includes many of the world's leading companies and project assignments have spanned five continents. Rescan has completed numerous environmental impact assessments, feasibility studies, pilot plant evaluations, engineering design, computer simulation modelling and design and management of complex waste treatment systems. Rescan has come to be recognized as a specialist in process plant waste treatment technology, surface runoff treatment and effluent disposal using submarine and riverine techniques. Our expertise includes modelling of effluent behaviour within the aqueous environment.

In resolving the complex and sometimes contentious issues surrounding environmental regulation, specialized technical, managerial and negotiation skills are required. Our technical expertise in freshwater and marine water chemistry; biological sciences; chemical, metallurgical, air quality and environmental engineering is utilized in the complete range of environmental services offered. To complement our technical expertise, Rescan owns and operates a full range of water quality, hydrology, fisheries and air quality monitoring equipment. Project permitting and licensing form another significant aspect of environmental management. Rescan's negotiating skills and experience working with governments and international regulatory and financing institutions is invaluable to ensuring regulatory approval.

Field Program

Donald A. Blood, R.P. Bio. **M. S. Hons. (Wildlife Biology)**
B.Sc. Hons. (Zoology and Biology)

Mr. Blood is a subcontractor who specializes in vegetation and wildlife studies. He has extensive experience mapping wildlife habitat and conducting flora and fauna surveys throughout the Northwest Territories and northern B.C., as well as other areas. He has been involved with this component of the project since its inception.

Janet E. Freeth, G.I.T. **B.Sc. Hons. (Geology and Oceanography)**

Ms. Freeth is an environmental geologist who has supervised and participated in fieldwork on a variety of projects in Canada and internationally. She has directed and been involved in the writing of proposals, prospectus', baseline studies, and environmental impact assessments. Ms. Freeth coordinated the write-up of the environmental studies completed at Kitsault Lake by Rescan in 1994.

Greg Lawrence, P.Eng. **Ph.D. (Civil Engineering)**

Dr. Lawrence is associate professor of Civil Engineering at the University of British Columbia. He specializes in Environmental Fluid Mechanics (EFM). He received the Lorenz G. Straub award for best doctoral thesis worldwide in hydraulics or a related field for his study of the hydraulics and mixing of two-layer flow over an obstacle. He has authored and co-authored many technical papers and is leading research projects across North America. Mr. Lawrence carried out the modelling exercise to assess chemocline stability in Kitsault Lake.

John J. McNee **Ph. D. Candidate (Geochemistry)**
B.Sc. Hons. (Chemistry and Oceanography)

Mr. McNee is an environmental geochemist with extensive experience in the analytical techniques pertaining to sediment geochemistry. His work has involved studying natural cycles of trace-elements in both marine and lacustrine environments. Mr. McNee was instrumental in the design of the limnological sampling components and participated in the July and November surveys. He was involved in the interpretation of the water quality and sediment geochemistry data and was responsible for these sections of the report.

Thomas G. Northcote **Ph.D., M.A. and B.A. (Zoology)**

Dr. Northcote is a Professor Emeritus at the University of British Columbia who specializes in limnology and fisheries ecology. Dr. Northcote acted as chief advisor on the fisheries and aquatic resources component of this project based on his extensive experience throughout northern British Columbia while employed with the provincial government and at U.B.C.

Shawna E. Reed **Ph. D. (Marine Sciences)**

Dr. Reed's background is in genetics and invertebrate ecology. Ms. Reed has been involved in the assessment of ecosystems, impact on aquatic and terrestrial resources in Canada, U.S. and Peru. She has also been in charge of directing and managing related field work.

For this project, Dr. Reed led the fall field program and conducted the aquatic flora and fauna sampling, in addition to assisting Mr. Whelen with the fisheries program. She supervised the various analysts who provided the identifications of the organisms sampled; she was also responsible for the fish dissections for vital statistics, aging structures, stomachs, and tissues, as well as the coordination of the laboratories who carried out the actual analyses. As the results were returned from the laboratories, she tabulated the data and is now analyzing and interpreting those results. Duties also included editing and coordinating input for fisheries and wildlife/vegetation writeups for Kitsault Lake.

Derek J. Riehm, P. Eng. **M.A.Sc. (Metals and Materials Engineering)**
B.Sc. (Metallurgical Engineering)

Mr. Riehm specializes in impact assessment, water quality studies, and water and waste management planning for the mining industry. In addition to installing the hydrometric station at the outlet of Kitsault Lake, Mr. Riehm acted as project coordinator for the mixing assessment of Kitsault Lake.

R. James Slater, R.P. Bio. **B.Sc. (Marine Biology)**
B.A. (English)

Mr. Slater was the project/field biologist for June/July field trip to Kitsault Lake. Fish sampling activities included gillnetting, minnow trapping, echolocation of fish to approximate their distribution and abundance, a survey of the lake to locate major inlet streams, angling, longlining, stream surveys, and a survey of Kitsault River to identify the first impasse to anadromous fish.

During the late September survey, Mr. Slater managed many of the logistics for the field crews (Rescan, BioSonics & MELP on behalf of Lac Minerals Ltd.), including retaining BioSonics to conduct the hydroacoustic survey of the lake, arranging for construction and delivery of custom-made giant minnow traps, ordering appropriate gillnets, arranging for Dr. Tom Northcote and MELP staff to conduct a site visit, developing a sampling survey under the instruction of Dr. Northcote, and arranging for the delivery of equipment to Rescan crew at Kitsault Lake. Duties also included editing and coordinating input for the aquatic resources component of Kitsault Lake.

Michael A. Whelen, R.P. Bio. **B.Sc. (Marine Biology)**

Mr. Whelen is a subcontractor who specializes in fisheries studies for both private and governmental agencies. He has over twenty years of experience conducting fish habitat assessment and utilization surveys, as well as habitat restoration recommendations throughout the province of B.C.. He was contracted by Rescan to conduct the summer and fall fisheries programs at Kitsault Lake.

Janet Wong, E.I.T. **B.Eng. (Civil/Environmental Engineering)**

Ms. Wong has experience in several areas of environmental assessment and management of resources including surface and groundwater analyses and impact assessments. Ms. Wong installed, maintained and downloaded the meteorological station at Kitsault Lake. She also conducted water quality sampling, CTD profiling, and assisted in the bathymetric survey. Ms. Wong was responsible for downloading the hydrology stations on the Kitsault River and for gauging the river and tributaries of Kitsault Lake.

Sample Analyses

BioSonics Inc.
P.O. Box 485
Sumas, Washington
98295

BioSonics conducted the hydroacoustic survey of Kitsault Lake.

Danusia Dolecki **M. Sc. (Zoology)**
1097A Sitka Square
Vancouver, B.C.
V6H 3P8

Ms. Dolecki has over twenty years of experience in the identification of algae, plankton, benthic invertebrates, and fish stomach contents from a wide variety of ecosystems. On this project, she completed taxonomic identification of freshwater invertebrates, fish stomach contents and periphyton.

Elemental Research Inc.
309-267 West Esplanade,
North Vancouver, B.C.
V7M 1A5

ERI was responsible for all water quality, sediment geochemistry and fish tissue metals analyses for samples collected from Kitsault Lake.

Margaret MacDonald **M.Sc. (Biology)**
Box 243
Midway, B.C.
V0H 1M0

Ms. MacDonald has over twenty years of experience aging freshwater and marine fishes using a variety of structures and techniques. Now semi-retired from the Pacific Biological Station at Nanaimo, B.C., she continues aging fish for government and private industry. For the Kitsault Lake project, she determined fish aging by analyzing otoliths and scales.

Nell Stallard **M.Sc. (Zoology)**
Applied Technical Services
P.O. Box 514
Saanichton, B.C.
V8M 2C5

Ms. Stallard completed taxonomic identification of freshwater invertebrates, fish stomach contents and planktonic organisms.