MINISTRY OF ENVIRONMENT
PROVINCE OF BRITISH COLUMBIA

THE ATTAINMENT OF WATER QUALITY OBJECTIVES IN 1987

Water Management Branch

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ACKNOWLEDGEMENTS

The regional staff of the Waste Management Branch carried out most of the monitoring, either directly or through contractors. The Environmental Laboratory analyzed the samples collected. Information was also obtained from industries via the Waste Management Branch, from the Canada-B.C. Water Quality Monitoring Agreement, from the Ministry of Health, from the federal Department of Fisheries and Oceans, and from the Greater Vancouver Regional District.

The report incorporates review comments from regional Environmental Section Heads of the Waste Management Branch, from the Environmental Impact Unit of the Waste Management Branch, and from staff of the Resource Quality Section of the Water Management Branch.

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1. SUMMARY AND RECOMMENDATIONS

By the end of 1987, the Ministry had set water quality objectives in 20 different bodies of water throughout the Province. This report presents the results of monitoring done in 1987 to check attainment of the objectives. The report and monitoring results are for the use of managers of the water resource. Some familiarity with the background reports on water quality objectives for each basin is assumed.

The objectives to protect various water uses were set in these water basins because of actual or potential water quality problems. The results indicate how well the quality of water in these areas is being safeguarded and thereby, indirectly, how well problems are being dealt with. The report does not describe the state of water quality in the Province as a whole where there are many bodies of water unaffected by man.

Results of monitoring to check water quality objectives are summarized in a series of tables. There were far more instances of objectives being met than of objectives being exceeded. Variables for which objectives were exceeded included turbidity, nutrients, chlorophyll-a, fecal coliforms, dissolved oxygen, temperature, cyanide, copper, lead, zinc, and chlorophenols. Objectives for these variables were, of course, not exceeded in all the water basins tested. Since 1987 was the first year in which objectives were extensively checked, it is too early to comment on trends.

Cases of objectives being exceeded should be assessed to determine the cause and the possible need for corrective action. Monitoring in future years will indicate whether the problem is persisting or the situation is improving.

The monitoring in 1987, although extensive, was still incomplete. Sampling in future years should be carried out for all variables concerned in areas where objectives apply and at the minimum frequency required to calculate averages and percentiles. The program should be repeated over a three year cycle to establish trends and demonstrate the result of follow-up action.

2. INTRODUCTION

The setting of water quality objectives in British Columbia is based on a recommendation of the Auditor General in 1981 that the Ministry measure its performance in safeguarding water quality. Work began in 1982 and the first five reports on water quality objectives were finalized in February, 1985. By the end of 1987, 20 such reports on specific bodies of water had been finalized.

This report for 1987 is the second in a series of annual reports which document the attainment of water quality objectives. In the first report, covering 1986, the data base for checking objectives was incomplete and only a rough evaluation could be made. In 1987, funds were allocated for the first time to carry out the required monitoring. As a result, a much more accurate account of the attainment of objectives is presented in this report.

The water basins in which water quality objectives are set are usually chosen because of perceived water quality problems. Thus results reported here do not reflect the state of water quality in the Province as a whole, but indicate conditions in likely problem areas. There are many bodies of water in the Province where water quality is unaffected by man and is likely to remain so for the foreseeable future.

3. METHOD OF PRESENTING AND INTERPRETING THE MONITORING DATA

3.1 REPORTS ON OBJECTIVES

By the end of 1987, the Ministry of Environment had completed 20 reports on water quality objectives for specific bodies of water. These bodies of water were distributed among the Environment Regions as follows:

Northern	11
Southern Interior	5
Kootenay	2
Lower Mainland	2

No reports have been finalized yet for Vancouver Island Region although two are nearing completion. They are part of 14 reports on different water basins which are now at various stages of completion.

3.2 TABLES OF RESULTS

Data collected in 1987 to check objectives are summarized in Tables 1 to 20, with a separate table for each water basin.

Each table lists all the objectives that have been set, as they appear in the final reports on objectives. A few of the objectives have been updated to reflect new water quality criteria and procedures. For example, we are using chlorophyll-a instead of periphyton biomass and total ammonia-N instead of un-ionized ammonia-N. We have also stopped using the 90th percentile of 400 MPN/100 mL for bathing waters. The tables summarize the measurements made to check the objectives. These include sites, sampling dates, number of samples taken, and the values obtained. Finally, a concluding statement about the results is given.

The conclusion states whether the objective was met or not met. If there are insufficient data to check the objective or the data are suspect or the minimum detectable concentration is too high, the result is reported

as indefinite. The term "data suspect" is used for some fecal coliform results in the tables because these particular measurements were carried out improperly. If no data were collected, the objective is reported as not checked. We consider these tables to be the most important part of this report since they demonstrate, in a factual way, how well objectives were met in 1987.

3.3 TEXT

The text in this report gives a brief overview of the tabulated results for each body of water, mentioning the highlights and drawing some general conclusions. Qualifying statements such as: "The objectives were nearly met, slightly exceeded or probably met" are avoided as being too judgmental. There is also no attempt to make a detailed assessment of results since this would entail consideration of flows, discharges, whether objectives are long term or short term and many other factors. Such assessments are presently carried out by Regional Waste Management on an ongoing basis.

The report is written to guide those involved in managing water quality by allowing them to focus on areas of concern where further assessment or inspection may be needed. Since monitoring to check water quality objectives covers only a short time span, usually at most 30 days, we believe that any instance when objectives were not met could be significant and is worth a more detailed look. Further study could show that certain objectives were exceeded due to natural phenomena. On the other hand it could reveal the need for corrective action if the cause of the problem were man made.

3.4 FIGURES

The 20 water basins where objectives have been set are shown on a location map in Figure 1. The water basins are also detailed in separate maps, Figures 2 to 20, on which sampling locations referred to in the tables are shown. The relevant figure number is given at the end of each table for ease of reference.

4. NORTHERN REGION

4.1 CHARLIE LAKE

Data are presented in Table 1 and site locations in Figure 2. This lake is used as a drinking water supply and for recreation.

The fecal coliform objective was met in the lake at the Fort St. John water intake. At the beaches, the geometric mean fecal coliform objective to protect recreation was met. However, there were some values fluctuating to high levels which caused occasional beach closures.

Measurements for total phosphorus were made in late May, after spring overturn. The average value did not meet the phosphorus objective set for times other than spring overturn.

Studies to investigate the source of fecal coliforms and phosphorus are being carried out by Regional Waste Management.

4.2 BULLMOOSE CREEK

Data are presented in Table 2 and site locations in Figure 3. The creek and its branches (west and south) are adjacent to an open pit coal mine and contain important recreational fish habitat.

Objectives for most variables were met. These included suspended solids, ammonia-N, nitrite-N, and pH. The chlorophyll-a objective was met in Bullmoose Creek but not in South Bullmoose Creek.

Downstream from sedimentation ponds, the objective for turbidity was occasionally not met in West Bullmoose Creek and Bullmoose Creek. Most of the turbidity increases occurred in the non-freshet period but the source is not known.

The objectives for fecal coliforms, substrate sedimentation, and dissolved oxygen were not checked.

4.3 NECHAKO RIVER

Data are presented in Table 3 and site locations in Figure 4. The Nechako River, a major tributary to the Fraser River, has its flow controlled for power generation. The river is an important route for migrating salmon.

The fecal coliform objective was met in the Nechako River, and the ammonia-N, nitrite-N, and pH objectives were met in both the Nechako and Stuart Rivers. The dissolved oxygen objectives were not checked in the Nechako River but were met in the Stuart River. The objective for chlorine residual was not checked in either river.

The objectives for the Chilako River were not checked nor was the total gas pressure objective for the Nechako River.

Temperature was the only objective that was exceeded in the Nechako River. This occurred downstream from Cheslatta Falls from June 27 to September 12. The result underlines the need for a cold water release structure which is planned for the Kenney Dam.

4.4 PINE RIVER

Data are presented in Table 4 and site locations in Figure 5. The Pine River, a tributary to the Peace River, supplies water to Chetwynd and supports significant sportfish populations.

Objectives for chlorophyll-a, ammonia-N, nitrite-N, and dissolved oxygen were met. All fecal coliform results were suspect due to improper analysis of samples. The turbidity objective was not checked and the chlorine residual objective did not need checking because the Chetwynd discharge was not chlorinated.

The suspended solids objective was exceeded on a number of occasions downstream from Chetwynd. These results appeared due to either natural turbidity from Centurion Creek, a tributary, or to freshet conditions.

4.5 POUCE COUPE RIVER

Data are presented in Table 5 and site locations in Figure 6. The Pouce Coupe River and its tributary, Dawson Creek, run into the Peace River. The waters are affected mainly by municipal discharges.

These discharges appeared to have affected water quality since certain objectives were exceeded at points downstream. These included the chlorophyll-a objective not met in the Pouce Coupe River and the nitrite-N objective not met in Dawson Creek. The ammonia-N objective was occasionally not met in Dawson Creek and the suspended solids objective was occasionally exceeded in both the Pouce Coupe River and Dawson Creek. Fecal coliform objectives could not be checked due either to improper analysis of samples or to insufficient sampling.

Suggestions for better management and upgrading of the discharges from the Village of Pouce Coupe and the City of Dawson Creek were discussed in the 1985 report on water quality objectives.

4.6 UPPER FINLAY RIVER

Data are presented in Table 6 and site locations in Figure 7. The Upper Finaly River, north of Williston Lake, is near the site of a gold and silver mine and mill now closed. The objectives actually apply to Jock and Galen creeks which eventually flow into the Upper Finlay River. These creeks contain a valuable recreational fishery.

Since this area is remote and mining operations which could cause problems are closed, only minimal monitoring was carried out. Most of the objectives were met in the initial dilution zone, except the objective for

total copper. When the objectives are checked next, monitoring should be carried out further downstream, outside the initial dilution zone which is exceptionally long in this case (see 1986 report on water quality objectives).

4.7 PEACE RIVER MAINSTEM

The report on water quality objectives for the Peace River was completed late in the year, in November 1987. Monitoring to check objectives in this basin will therefore be carried out in 1988.

4.8 BULKLEY RIVER

Data are presented in Table 7 and site locations in Figure 8. The Bulkley River is a major tributary of the Skeena River. It is an important river for fisheries and has some drinking water use.

Most objectives were met, with the exception of the fecal coliform objective at Houston and Smithers and the chlorophyll-a objective at Houston.

4.9 KATHLYN, SEYMOUR, ROUND, AND TYHEE LAKES

Data are presented in Table 8 and site locations in Figure 9. These four small lakes, in the Smithers area, are used for recreation, domestic purposes, and irrigation.

The number of samples taken for analysis of fecal coliform objectives were too few to check the objectives, both at beaches and at water intakes. For other variables, the phosphorus objective was exceeded in Kathlyn Lake and not properly checked in Tyhee Lake. Turbidity and colour objectives were occasionally exceeded in Kathlyn Lake and met in Tyhee Lake. No objectives were checked in Round and Seymour Lakes. Management techniques to improve the water quality of the lakes have been proposed in the 1985 report on water quality objectives.

4.10 LOWER KITIMAT RIVER AND KITIMAT ARM

Data are presented in Table 9 and site locations in Figure 10. Water is used for recreation, as a migration route for salmonids, and for industrial and municipal supplies.

All objectives checked were met. These included objectives for suspended solids, turbidity, ammonia-N, nitrite-N, and pH. Several objectives which were set to protect water uses against the effects of municipal and industrial discharges were not checked. These included fecal coliforms, cyanide, fluoride, hydrogen sulphide, chlorophyll-a, dissolved oxygen, metals (Al, Cd, Cu, Fe, & Pb), and pulp mill toxicity.

No objectives were checked in Kitimat Arm.

All objectives in the Kitimat River and Arm should be checked for the next few years to give a reasonable assessment of the situation.

4.11 LAKELSE LAKE

Data are presented in Table 10 and site locations in Figure 11. The lake, which drains into the Skeena River, is of prime importance for salmon spawning and rearing and for recreation.

The objectives for fecal coliforms at beaches and water intakes could not be checked because most of the samples taken were not analyzed properly. All other objectives checked were met. These included turbidity, total phosphorus and chlorophyll-a. The dissolved oxygen objective was not checked.

5. SOUTHERN INTERIOR REGION

5.1 BONAPARTE RIVER

Data are presented in Table 11 and site locations in Figure 12. The Bonaparte River is a tributary of the Thompson River. It is an important trout habitat and is affected by cattle farming and municipal discharges.

Some objectives were checked in 1987 around the Cache Creek sewage discharge and at the mouth of the Bonaparte River. However, most measurements were made at low flow, in January to March 1988, and these results will be presented in the report for 1988.

At the mouth of the river and downstream from Cache Creek, the objectives for ammonia-N, nitrite-N, suspended solids, and turbidity were met. The objective for chlorophyll-a was not met, indicating a problem with the input of nutrients to the river. A survey of agricultural practices along the river was made in January, 1988, and the results and recommendations were passed on to the Region.

5.2 WILLIAMS LAKE

Data are presented in Table 12 and site locations in Figure 13. Williams Lake is important for drinking water, recreation, and aquatic life. The water quality is affected by nutrients from traditional farming practices in the San Jose River drainage, the main inlet to the lake.

Since the report on water quality objectives was finalized late in 1987, only a partial report of results is presented in Table 12. These results show that the objectives for total phosphorus, dissolved oxygen, and chlorophyll-a were not met, reflecting the eutrophic state of the lake. Measures to improve water quality are discussed in the 1987 report on water quality objectives.

5.3 OKANAGAN VALLEY LAKES

Data are presented in Table 13 and site locations in Figure 14. Objectives have only been set so far for phosphorus, which is the main factor controlling the trophic state of the lakes. The lakes are highly valued for recreation, fisheries, and as a source of drinking and irrigation water.

The total phosphorus objective was met in Kalamalka Lake and in all parts of Okanagan Lake except Armstrong Arm at the northern end. The objective was not met in Wood Lake, Skaha Lake, and Osoyoos Lake.

The situation is worst in Wood Lake which is the subject of a study to reduce phosphorus by treating lake sediments. Elsewhere, a substantial effort is underway to reduce phosphorus inputs into the lakes through improved management of wastes.

5.4 SIMILKAMEEN RIVER

Data are presented in Table 14 and site locations in Figure 15. The Similkameen River is important for fisheries, drinking water, and for irrigation. Water quality can be affected by mining and municipal discharges.

The fecal coliform objective, set to protect drinking water use, was met at most points in the Similkameen River except near the International Boundary. Other objectives met in the river included dissolved solids, ammonia-N, dissolved copper, dissolved zinc, and pH. The objectives for dissolved oxygen were not checked.

The objectives for a number of metals were met in Wolfe Creek, which is adjacent to a major copper mine and is a tributary to the Similkameen River. Metals meeting objectives included copper, manganese, molybdenum, and zinc.

5.5 CAHILL CREEK

Data are presented in Table 15 and site locations in Figure 16. Cahill Creek, its tributaries (Nickel Plate Mine Creek and Sunset Creek), and a parallel stream (Red Top Gulch Creek) enter the Silmilkameen River near Hedley. This watershed is the site of a gold mine and mill which started operation in August, 1987.

Objectives were set for a wide range of variables which could affect not only the creeks but also, potentially, the Similkameen River. The objectives for most of these variables were met. They included suspended solids, turbidity, arsenic, ammonia-N, nitrite-N, nitrate-N and a number of metals such as aluminum, cadmium, copper, lead, silver, and zinc. Sometimes the detection limits for certain metals were higher than the objective levels leading to an indefinite result.

Exceptions in Cahill Creek were cyanide which exceeded the average objective and pH which exceeded the objective in one instance. Selenium may also have exceeded the objective on one occasion but the analytical result is tentative. In Red Top Gulch Creek the exceptions were molybdenum exceeding the average objective and mercury which exceeded the objective on one occasion.

6. KOOTENAY REGION

6.1 WINDERMERE AND COLUMBIA LAKES

Data are presented in Table 16 and site locations in Figure 17. These lakes are important for fisheries, recreation, and drinking water.

Achievement of the fecal coliform objectives could not be checked, either due to lack of sampling or to improper analysis of samples collected. The turbidity objective was met at five out of six sites in Windermere Lake but not checked in Columbia Lake. The total phosphorus objectives were not met in either lake, although the lakes as a whole are still considered to be in an oligotrophic state.

6.2 TOBY CREEK

Data are presented in Table 17 and site locations in Figure 18. Toby Creek enters the Columbia River just downstream from Windermere Lake. It is important for recreation and aquatic life and could be affected by domestic sewage discharges and effluent from an abandoned mine.

The fecal coliform objective could not be checked due to improper analysis of samples collected. All other objectives were met. These were suspended solids, chlorophyll-a, ammonia-N, nitrite-N, and a number of metals including barium, copper, lead, and zinc.

6.3 UPPER COLUMBIA RIVER

Data are presented in Table 18 and site locations in Figure 18 for the Columbia River from Toby Creek to Edgewater. The river has high recreational, wildlife, and aquatic life values. It can be affected by domestic sewage discharges.

Objectives were only set for fecal coliforms to protect drinking water and recreational uses. Most of the data obtained gave indefinite results due to improper analysis of the samples. However, since the incorrect procedures used led to lower results than expected, any result above the objective could mean the objective was exceeded. Using this assumption, the objective for protection of drinking water was exceeded upstream from Radium Hot Springs. Further sampling is recommended.

7. LOWER MAINLAND REGION

7.1 FRASER RIVER FROM HOPE TO KANAKA CREEK

Data are presented in Table 19 and site locations in Figure 19. In addition to the Fraser River, the data cover tributaries entering from the south plus all major water courses between the Fraser River and the International Boundary.

The Fraser River is a major salmon migration route and the tributaries are important spawning areas. The tributaries are also widely used for irrigation.

The fecal coliform objectives for the Fraser River, its tributaries, and for other streams could not be checked, usually because samples were not collected at the right frequency. The objectives for ammonia-N and pH were met in the Fraser River and in tributaries that were checked.

The dissolved oxygen objective was not checked in the Fraser River. It was checked in certain tributaries and was met in the Chilliwack River and the Sumas River, but it was not met in Hope Slough at several locations. It was also not met in Saar Creek which is a tributary to the Sumas River.

Objectives need to be checked in all areas where they apply with more consistency, especially objectives for fecal coliforms and dissolved oxygen.

7.2 FRASER RIVER FROM KANAKA CREEK TO THE MOUTH

Data are presented in Table 20 and site locations in Figure 20. The river and outer estuary are important for salmon migration and rearing. The

water is used for irrigation and certain beaches are important for recreation. Water quality is sometimes affected by major discharges of municipal and industrial effluents.

Fecal coliform objectives were met in the Main Stem and at recreational beaches. The objectives were not met in the Main and Middle Arms and were frequently not met in the North Arm.

Objectives for pH and ammonia-N were met at all points checked. The objectives for suspended solids was occasionally not met in the North Arm and the dissolved oxygen objective was occasionally not met in the Main Stem, Main Arm, and North Arm.

Among the metals, the total copper objective was exceeded in the Main Arm and frequently exceeded in the North Arm. The total lead objective was met in the North Arm but not in the Main Arm, and the total zinc objective was met in the North Arm but occasionally exceeded in the Main Arm.

The objective for chlorophenols in water was exceeded in the North Arm, but the objective for chlorophenols in sediments was probably met in all areas. The detection limits for sediments were too high for a definite result. The objective for PCBs in sediments was met in all areas.

Many of the results showing objectives being exceeded are believed due to both municipal and industrial discharges. Continued and more complete monitoring is recommended, together with corrective action where possible. For example, regarding chlorophenols provincial and federal agencies are engaged in a program to eliminate chlorophenol losses from sawmills.

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TABLE 1

PROVINCIAL OVERVIEW OF WATER QUALITY OBJECTIVES - 1987

REGION	NUMBER OF OCCURRENCES					
	OBJECTIVES MET	OBJECTIVES NOT MET	OBJECTIVES NOT CHECKED	OBJECTIVES OMITTED	INDEFINITE RESULT	TOTALS
Vancouver Island	0 0%	0 0%	0 0%	0 0%	9 0%	0 0%
Skeena	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Northern Interior	720 85%	36 5%	70 8%	0 0%	19 2%	845 100%
Southern Interior	832 90%	23 2%	24 3%	0 0%	42 5%	921 100%
Kootenay	65 67%	10 10%	2 2%	0 0%	80 21%	97 100%
Lower Mainland	784 75%	87 8%	36 4%	8 1%	126 12%	1041 100%
All Regions	2401 83%	156 5%	132 5%	8 0%	207 7%	2904 100%
All Regions less occurrences with no result	2401 94%	156 6%				2557 100%

TABLE 1

CHARLIE LAKE WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90 th perc. near water intakes	Fort St John intake	July 15,21 27, Aug 4,18	5	<2-2/100 mL <2/100 mL 90th perc	Objective met
	Scurry Rainbow intake	Aug 10	1	<3/100 mL	Indefinite result
Fecal Coliforms♦ <200/100 mL geometric mean at beaches	Charlie L. Provincial Park beach	Jul 28,Aug4, 10,18,26	5	<3-15/100 mL 5.7/100 mL geom mean	Objective met
	Beatton Park beach south	Jul 7,14,21, 27,29	5	<3-460/100 mL 16.5/100 mL geom mean	
		Jul 29,Aug4, 10,18,26	5	<3-23/100 mL 9.3/100 mL geom mean	
	Beatton Park beach centre	Jun24,Jul 7, 14,21,27	5	<3-460/100 mL 40.5/100 mL geom mean	
		Jul 29,Aug4, 10,18 26	5	<3-93/100 mL 16.2/100 mL geom mean	
	Beatton Park beach north	Jul 29,Aug4, 10,18,26	5	<3-93/100 mL 17.3/100 mL geom mean	
Total-P <0.050 mg/L av at spring overturn <0.075 mg/L av at all other times	0400390 Charlie L. south arm	May 26	1 1 1 1 1 1 av = 0.094mg/L	0.5m:0.023mg/L 5.0m:0.028mg/L 9.0m:0.106mg/L 0.5m:0.021mg/L 5.0m:0.028mg/L 9.0m:0.357mg/L	Objective not met

♦Some high coliform levels resulted in occasional beach closures

See Figure 2 for site locations

TABLE 2

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc.	W Bullmoose Creek S Bullmoose Creek Bullmoose Creek	1987	0	no data collected	Objective not checked
Turbidity max increase: 5 NTU or 10%	W Bullmoose Creek: E206225 u/s sed. ponds	Apr 28-Nov 3	13	<1-8.3 NTU	Control site
	E206226 d/s sed. pond 3	Jan 6-Dec 2	18	max increase: <5 NTU	Obj. met
		Aug 6	1	max increase: 11.8 NTU	Obj. not met
	E206227 d/s sed. ponds 1 & 2	Jan 6-Dec 2	18	max increase: 5 NTU	Obj. met
		Aug 6	1	incr.= 9.8 NTU	Obj. not met
	S Bullmoose Creek: E206228 u/s plant	Jan 6-Dec 2	19	<1-5.6 NTU	Control site
	E206229 d/s plant	Jan 6-Dec 2	23	max increase: <5 NTU	Obj met
	Bullmoose Creek: 0410094 1 km d/s confl.	Jan 6-Dec 2	16	max increase: <5 NTU	Obj. met
		Apr 6	1	incr.= 19 NTU	Obj. not met
		May 27,Aug 6	2	incr.= 5.7 NTU	Obj. not met
	E206232 20 km d/s confl.	Jan 6-Dec 2	17	max increase: <5 NTU	Obj. met
		Aug 6	1	incr.=18.5 NTU	Obj. not met
		Aug 12	1	incr.= 7.1 NTU	Obj. not met

TABLE 2 continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	W Bullmoose Creek: E206225 u/s sed. ponds	Sept 1	1	2 mg/L	Control site
	E206226 d/s sed. pond 3	Sept 1	1	2 mg/L	Obj. met
	E206227 d/s sed. ponds 1 & 2	Sept 1 Oct 6	1 1	2 mg/L 4 mg/L	Obj. met Obj. met
	S Bullmoose Creek: E206228 u/s plant	Sept 1 Oct 6	1 1	4 mg/L 2 mg/L	Control site
	E206229 d/s plant	Sept 1	1	2 mg/L	Obj. met
	Bullmoose Creek: 0410094 1 km d/s confl.	Sept 1 Oct 6	1 1	2 mg/L 2 mg/L	Obj. met Obj. met
	E206232 20 km d/s confl.	Sept 1 Oct 6	1 1	4 mg/L 4 mg/L	Obj. met Obj. met
Substrate sedimentation no increase in particulate <3 mm dia	W Bullmoose Creek S Bullmoose Creek Bullmoose Creek	1987	0	no data collected	Objective not checked
Chlorophyll-a 50 mg/m2 max	S Bullmoose Creek E206228 u/s plant	Oct 6	1	2.2 mg/m2	Control site
	E206229 d/s plant	Oct 6	3	20.5-75.3mg/m2 av = 51.1mg/m2	Objective not met

TABLE 2 continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophyll-a 50 mg/m2 max	Bullmoose Creek: 0410094 1 km d/s confl.	Oct 6	3	13.2-35.0mg/m2 av = 21.6mg/m2	Objective met
	E206232 20 km d/s confl.	Oct 6	3	0.6 - 0.7mg/m2 av = 0.6 mg/m2	Objective met
Ammonia-N <0.72 mg/L av 3.74 mg/L max at pH = 8.2 temp = 10°C	W Bullmoose Creek: E206226 d/s sed. pond 3	Jan 6-Dec 29	15	<0.005-0.046 mg/L	Max obj. met
	E206227 d/s sed ponds 1 & 2	Jan 6-Dec 29	15	<0.005-0.032 mg/L	Max obj. met
	S Bullmoose Creek: E206229 d/s plant	Jan 6-Dec 2	12	<0.005-0.021 mg/L	Max obj. met
	Bullmoose Creek: 0410094 1 km d/s confl.	Jan 6-Dec 2	12	<0.005-0.029 mg/L	Max obj. met
	E206232 20 km d/s confl.	Jan 6-Dec 2	12	<0.005-0.150	Max obj met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	W Bullmoose Creek: E206226 d/s sed. pond 3	Jan 6-Dec 29	15	<0.001-0.006 mg/L	Max obj. met
	E206227 d/s sed. ponds 1 & 2	Jan 6-Dec 29	15	<0.001-0.022 mg/L	Max obj. met
	S Bullmoose Creek: E206229 d/s plant	Jan 6-Dec 29	12	<0.001-0.005 mg/L	Max obj. met
	Bullmoose Creek: 0410094 1 km d/s confl.	Jan 6-Dec 2	12	<0.001-0.007 mg/L	Max obj. met
	E206232 20 km d/s confl.	Jan 6-Dec 2	12	<0.001-0.007 mg/L	Max obj. met

TABLE 2 continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Oxygen 7.75 mg/L min	W Bullmoose Creek S Bullmoose Creek Bullmoose Creek	1987	0	no data collected	Objective not checked
pH 6.5 min	W Bullmoose Creek: E206226 d/s sed. pond 3	Jan 6-Dec 29	21	7.5 - 8.2	Obj. met
	E206227 d/s sed. ponds 1 & 2	Jan 6-Dec 29	21	7.8 - 8.3	Obj. met
	S Bullmoose Creek: E206229 d/s plant	Jan 6-Dec 2	22	7.9 - 8.3	Obj. met
	Bullmoose Creek: 0410094 1 km d/s confl.	Jan 6-Dec 2	18	8.0 - 8.4	Obj. met
	E206232 20 km d/s confl.	Jan 6-Dec 2	18	7.5 - 8.4	Obj. met

See Figure 3 for site locations

TABLE 3

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100/100 mL 90th perc.	Nechako River: 0400629 200m u/s Ft Fraser	Sep 21,28, Oct 5,13,19	5	5-79/100 mL 55/100 mL 90th perc	Objective met
	0400631 200m d/s Ft Fraser	Sep 21,28, Oct 5,13.19	5	<2-49/100 mL 43/100 mL 90th perc	
	0400449 u/s Vanderhoof	Sep 21,28, oct 5,13,19	5	14-94/100 mL 85/100 mL 90th perc	
	0400450 100m d/s Vanderhf.	Sep 21,28, Oct 5,13,19	5	8-79/100 mL 65/100 mL 90th perc	
	Chilako River	1987	0	no data collected	Objective not checked
Fecal Coliforms <10/100 mL 90th perc.	Stuart River 0400488 E bank at Hwy 27 (area exempt from objectives)	June-Dec	6	data suspect	Indefinite result
Fecal Coliforms <200/100 mL 90th perc.	Necoslie River 0400801 d/s Ft St James 20m u/s Hwy 27	June-Dec	5	data suspect	Indefinite result
Tot. Cl2 Res. 0.002mg/L max	Nechako & Stuart rivers	1987	0	no data collected	Objective not checked
Ammonia-N <1.85 mg/L av 12.7 mg/L max at pH = 7.5 temp = 10°C	Nechako River: 0400629 200m u/s Ft Fraser	Sep 21,28, Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	Objective met
	0400631 200m d/s Ft Fraser	Sep 21,28 Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	

TABLE 3 continued

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <1.85 mg/L av 12.7 mg/L max at pH = 7.5 temp = 10°C	Nechako River: 0400449 u/s Vanderhoof	Sep 21,28, Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	Objective met
	0400450 100m d/s Vanderhf.	Sep 21,28, Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	
	Stuart River: 0400488 E bank at Hwy 27	May14-Dec16	4	<0.005-0.057	Max obj. met
	Chilako River	1987	0	no data collected	Objective not checked
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Nechako River: 0400629 200m u/s Ft Fraser	Sep 21,28, Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	Objective met
	0400631 200m d/s Ft Fraser	Sep 21,28, Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	
	0400449 u/s Vanderhoof	Sep 21,28 Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	
	0400450 100m d/s Vanderhf.	Sep 21,28, Oct 5,13,19	5	av <0.005mg/L max <0.005mg/L	
	Stuart River: 0400488 E bank at Hwy 27	May14-Dec16	4	all <0.005mg/L	Max obj. met
	Chilako River	1987	0	no data collected	Objective not checked
Diss. Oxygen 7.75-11.2mg/L min depending on fish egg stage	Stuart River: 0920101 d/s Ft. St. James	Jul 30 Dec 16	1 1	8.6 mg/L 13.2 mg/L	Obj. met Obj. met
	0400488 E bank at Hwy 27	Jul 30 Dec 16	1 1	8.5 mg/L 13.0 mg/L	Obj. met Obj. met

TABLE 3 continued

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Nechako River: 0400629 200m u/s Ft Fraser	Sep21-Oct19	6	7.5 - 7.8	Objective met
	0400631 200m d/s Ft Fraser	Sep21-Oct19	6	7.5 - 7.7	
	0400449 u/s Vanderhoof	Sep21-Oct19	6	7.4 - 7.8	
	0400450 100m d/s Vanderhf.	Sep21-Oct19	6	7.0 - 7.8	
	Stuart River 0400488 E bank at Hwy 27	Apr14-Dec16	4	7.9 - 8.0	
	Chilako River	1987	0	no data collected	Objective not checked
Temperature <15.0°C av	Nechako River 8 km d/s Cheslatta Falls	Jan 1-Jun 26 Jun27-Aug19 Aug20-Sep12 Sep13-Dec31	136 54 21 98	0.8-14.7°C av 15.3-18.6°Cav 15.0-16.1°Cav 0-14.7°C av	Obj. met Obj. not met Obj. not met Obj. met
Total Gas Pressure 109% max	Nechako River	1987	0	no data collected	Objective not checked

See Figure 4 for site locations

TABLE 4

PINE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc.	E206235 100 m u/s Chetwynd	Aug 6,10,18, 31	4	data suspect	Indefinite result
		Apr 28,June9 Sept21,Oct 5 Nov 5	5	data suspect	
Fecal Coliforms <200/100 mL geometric mean	0410028 100 m d/s Chetwynd	Aug 6,13,31	3	data suspect	Indefinite result
		Apr 28,June9 Sept22,Oct 5 Nov 5	5	data suspect	
	0410029 800 m d/s Chetwynd	Apr 28,June9 Aug 18,31, Sept22,Oct 5 Nov 5	7	data suspect	
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Aug 6,10 18, 31	4	data suspect	
		Apr 28,June9 Sept22,Oct 8	4	data suspect	
Turbidity max increase: 5 NTU or 10%	u/s & d/s Chetwynd	1987	0	no data collected	Objective not checked
Susp. Solids♦ max increase: 10 mg/L or 10%	E206235 100 m u/s Chetwynd	Apr 28	1	41 mg/L	Control site
		June 9	1	148 mg/L	
		Aug 18	1	15 mg/L	
		Aug 31	1	51 mg/L	
		Sept 21	1	4 mg/L	
		Oct 5	1	3 mg/L	
	0410028 100 m d/s Cheywynd	Apr 28	1	44 mg/L	Obj. met
		June 9	1	148 mg/L	Obj. met
		Aug 18	1	42 mg/L	Obj. not met
		Aug 31	1	23 mg/L	Obj. met
		Sept 22	1	5 mg/L	Obj. met
		Oct 5	1	4 mg/L	Obj. met

♦In August, turbidity was observed entering the Pine R. from Centurion Cr. In April & June, freshet conditions with high suspended solids prevailed

TABLE 4 continued

PINE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	0410029 800 m d/s Chetwynd	Apr 28 June 9 Aug 18 Aug 31 Sept 22 Oct 5	1 1 1 1 1 1	70 mg/L 169 mg/L 37 mg/L 25 mg/L 7 mg/L 4 mg/L	Obj. not met Obj. not met Obj. not met Obj. met Obj. met Obj. met
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Apr 28 June 9 Aug 18 Aug 31 Sept 22	1 1 1 1 1	68 mg/L 160 mg/L 40 mg/L 17 mg/L 5 mg/L	Obj. not met Obj. met Obj. not met Obj met Obj. met
Tot. Cl2 Res. 0.002 mg/L max	d/s Chetwynd	1987	0	chlorination not occurring	no need to check obj.
Chlorophyll-a <50 mg/m2 av	E206235 100 m u/s Chetwynd	Sep 21 Oct 5	3 3	av = 5.1 mg/m2 av = 4.3 mg/m2	Control site
	0410029 800 m d/s Chetwynd	Sep 21 Oct 5	3 3	av = 22.1mg/m2 av = 49.5mg/m2	Obj. met Obj. met
	0400561 5 km d/s Chetwynd	Sep 21 Oct 5	3 3	av = 6.4 mg/m2 av = 6.3 mg/m2	Obj. met Obj. met
Ammonia-N <0.72 mg/L av 3.74 mg/L max at pH = 7.2 temp = 10°C	0410028 100 m d/s Chetwynd	Apr 28 to Nov 5	7	<0.005-0.023 mg/L	Max objective met
	0410029 800 m d/s Chetwynd	Apr 28 to Nov 5	7	<0.005-0.020 mg/L	
	0400561 5 km d/s Chetwynd	Apr 28 to Sept 22	6	<0.005-0.016 mg/L	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	0410028 100 m d/s Chetwynd	Apr 28 to Oct 5	6	all values <0.005 mg/L	Max objective met
	0410029 800 m d/s Chetwynd	as above	6	as above	
	0400561 5 km d/s Chetwynd	Apr 28 to Sept 22	6	as above	

TABLE 4 continued

PINE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 7.75 mg/L min	E206235 100 m u/s Chetwynd	Apr28-Nov4	7	10.0-12.7 mg/L	Obj. met
	0410028 100 m d/s Chetwynd	Apr28-Nov4	7	9.8-12.7 mg/L	Obj. met
	0410029 800 m d/s Chetwynd	Apr28-Nov4	7	10.0-12.8 mg/L	Obj. met
	0400561 5 km d/s Chetwynd	Apr28-Oct5	6	10.4-13.5 mg/L	Obj. met

See Figure 5 for site locations

TABLE 5

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geometric mean	Pouce Coupe River: E206705 u/s Pouce Coupe	Apr 9	1	13/100 mL	Indefinite result
		Jun10-Sep22	4	data suspect	
	E206959 1.7km d/s Pouce C.	Jul 13,20,27	3	23->2400/100mL	
		Jul 7-Nov 3	6	data suspect	
	0410042 12km d/s Dawson Cr	Apr 29,Jun 9	2	5-13/100 mL	
Turbidity max increase: 5 NTU or 10%	Pouce Coupe River Dawson Creek	1987	0	no data collected	Objective not checked
Susp. Solids max increase: 10 mg/L or 10%	Pouce Coupe River: E206705 u/s Pouce Coupe	Apr 29	1	54 mg/L	Control site
		Sep 10	1	6 mg/L	
		Sep 22	1	16 mg/L	
	E206706 600m d/s Pouce C.	Apr 29	1	68 mg/L	Obj. not met
	E206959 1.7km d/s Pouce C.	Apr 29	1	62 mg/L	Obj. met
		Sep 10	1	8 mg/L	Obj. met
		Sep 22	1	10 mg/L	Obj. met
	0410042 12km d/s Dawson Cr	Sep 10	1	16 mg/L	Obj. met
	Dawson Creek: 0410050 u/s Dawson Creek	Apr 28	1	62 mg/L	Control site
		Sep 10	1	98 mg/L	
		Sep 22	1	24 mg/L	
	0410038 30m d/s Dawson Cr (initial dil zone)	Apr 28	1	140 mg/L	Obj. not met
		Sep 10	1	34 mg/L	Obj. met
		Sep 22	1	2 mg/L	Obj. met

TABLE 5 continued

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	Dawson Creek: 0410039 2.5km d/s Dawson Creek	Apr 28 Sep 10 Sep 22	1 1 1	96 mg/L 38 mg/L 32 mg/L	Obj. not met Obj. met Obj. met
Cl2 Residual <0.01mg/L max	Pouce Coupe River Dawson Creek	1987	0	chlorination not occurring	no need to check obj.
Chlorophyll-a <50 mg/m2 av	Pouce Coupe River E206705 u/s Pouce Coupe	Sep 23	4	9.3-97.6 mg/m2 av = 38.3mg/m2	Control site
	E206706 600m d/s Pouce C.	Nov 3	4	8.6-160 mg/m2 av = 69.0mg/m2	Obj. not met
	E206959 1.7km d/s Pouce C.	Sep 23 Nov 3	3 3	av = 291 mg/m2 av = 357 mg/m2	Obj. not met Obj. not met
Ammonia-N <0.90 mg/L av 4.67 mg/L max at pH = 8.1 temp = 10°C	Pouce Coupe River: E206705 u/s Pouce Coupe	Apr29-Sep22	5	<0.005-0.017 mg/L	Max obj. met
	E206706 600m d/s Pouce C.	Apr 29	1	0.269 mg/L	Max obj. met
	E206959 1.7km d/s Pouce C.	Jul 7,13,20, 27,Aug 5	5	av = 0.022mg/L max= 0.022mg/L	Max & av obj. met
		Apr 29	1	0.645 mg/L	Max obj. met
		Jun 9-Nov 3	5	0.005-0.066 mg/L	Max obj. met
	0410042 12 km d/s Dawson Creek	Apr 29	1	0.575 mg/L	Max obj. met
		Jun 9-Sep10	2	0.011-0.012 mg/L	Max obj. met
	Dawson Creek: 0410050 u/s Dawson Cr	Apr28-Sep22	3	0.008-.0462 mg/L	Max obj. met

TABLE 5 continued

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.90 mg/L av 4.67 mg/L max at pH = 8.1 temp = 10°C	Dawson Creek: 0410038 30m d/s Dawson Cr (initial dil zone)	Apr 28 Jun 9 Jun7-Sep22	1 1 3	4.68 mg/L 6.76 mg/L 0.034-0.055	Max obj. not met Max obj. met
	0410039 2.5km d/s Dawson Creek	Apr 29	1	4.76 mg/L	Max obj. not met
	as above	Jul 7,13,20, 27,Aug 5	5	av=0.886 mg/L max=3.700 mg/L	Max & av obj. met
Nitrite-N 0.06 mg/L max	Pouce Coupe River: E206705 u/s Pouce Coupe	Apr29-Sep22	5	all <0.005mg/L	Obj. met
	E206706 600m d/s Pouce C.	Apr 29	1	<0.005 mg/L	Obj. met
	E206959 1.7km d/s Pouce C.	Apr29-Nov3	11	<0.005-0.037 mg/L	Obj. met
	0410042 12km d/s Dawson Cr	Apr29-Sep10	3	<0.005-0.020 mg/L	Obj. met
	Dawson Creek: 0410050 u/s Dawson Creek	Apr28-Sep22	3	<0.005-0.045 mg/L	Obj. met
	0410038 30m d/s Dawson Cr (initial dil zone)	Apr 28 Jun 9 Jul 7-Sep22	1 1 3	0.111 mg/L 0.132 mg/L <0.005-0.058 mg/L	Obj. not met Obj. not met Obj. met
	0410039 2.5km d/s Dawson Creek	Apr 29 Jul 7 Jul 13 Jul 27 Aug 17 Jun9-Sep22	1 1 1 1 1 6	0.093 mg/L 0.411 mg/L 0.110 mg/L 0.144 mg/L 0.065 mg/L 0.010-0.058 mg/L	Obj. not met Obj. not met Obj. not met Obj. not met Obj. not met Obj. met

TABLE 5 continued

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 5.5 mg/L min	Dawson Creek: 0410050 u/s Dawson Creek	Apr28-Nov3	5	7.3 - 12.6mg/L	Obj. met
	0410038 30m d/s Dawson Cr	Apr28-Nov3	5	6.4 - 12.1mg/L	Obj. met
	0410039 2.5km d/s Dawson Creek	Apr28-Nov3	6	7.4 - 12.5mg/L	Obj. met
	Pouce Coupe River: E206705 u/s Pouce Coupe	Apr28-Nov3	4	7.2 - 13.5mg/L	Obj. met
	E206706 600m d/s Pouce C.	Apr 28	1	10.5 mg/L	Obj. met
	E206959 1.7km d/s Pouce C.	Apr28-Nov3	6	8.0 - 12.5mg/L	Obj. met
	0410042 12km d/s Dawson Cr	Apr28-Nov3	5	7.9 - 13.2mg/L	Obj. met

See Figure 6 for site locations

TABLE 6

UPPER FINLAY RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geometric mean	Galen Creek 0400402 d/s tailings pond (initial dil zone)	Jul 19	1	<2/100 mL	Indefinite result
Tot. Cl2 Res. 0.002mg/L max	Galen Creek	1987	0	chlorination not occurring	no need to check obj.
WAD Cyanide <0.005mg/L av 0.03mg/L max	Galen Creek 0400402 d/s tailings pond (initial dil zone)	Jul 19	1	<0.005 mg/L SAD-CN	Max obj. met
Ammonia-N <1.85 mg/L av 14.4 mg/L max at pH = 7.4 temp = 10°C	Galen Creek 0400402 d/s tailings pond (initial dil zone)	Jul 19	1	<0.005 mg/L	Max obj. met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Galen Creek	1987	0	no data collected	Objective not checked
Total Cu 0.002mg/L max or 20% increase	Adit Creek 0400347 u/s mine	Jul 19	1	0.04 mg/L	Control site (10% of Galen C.)
	Galen Creek: 0400403 u/s mine	Jul 19	1	<0.01 mg/L	Control site
	0400402 d/s tailings pond (initial dil zone)	Jul 19	1	0.03 mg/L	Obj. not met
Total Fe 1.0 mg/L max	Adit Creek 0400347 u/s mine	Jul 19	1	0.13 mg/L	Control site

TABLE 6 continued

UPPER FINLAY RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Fe 1.0 mg/L max	Galen Creek: 0400403 u/s mine	Jul 19	1	0.16 mg/L	Control site
	0400402 d/s tailings pond (initial dil zone)	Jul 19	1	0.09 mg/L	Obj. met
Total Hg 0.0001 mg/L max	Galen Creek	1987	0	no data collected	Objective not checked
Total Zn 0.05 mg/L max	Adit Creek 0400347 u/s mine	Jul 19	1	0.03 mg/L	Control site
	Galen Creek: 0400403 u/s mine	Jul 19	1	0.02 mg/L	Control site
	0400402 d/s tailings pond (initial dil zone)	Jul 19	1	0.02 mg/L	Obj. met

See Figure 7 for site locations

TABLE 7

BULKLEY RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc.	0400297 u/s Houston	Aug16,23,31, & Sep14 Sep8	4 1	all 11/100 mL result suspect	Objective not met
	0400434 u/s Smithers	Aug16 & 23 Aug31 Sep14 Sep8	2 1 1 1	<2.2/100 mL 49/100 mL 8/100 mL result suspect	Objective not met
Fecal Coliforms <200/100 mL geometric mean	0400295 100m d/s Houston	Aug16,23,31 Sep8 Sep14	3 1 1	11-17/100 mL result suspect 8/100 mL	Indefinite result
Turbidity max increase: 5 NTU or 10%	0400297 u/s Houston	Aug 16,31, & Sep 8,14	4	all 1.0 NTU	Control site
	0400295 100m d/s Houston	Aug 16,31, & Sep 8,14	4	0.9-1.0 NTU	Objective met
	0400434 u/s Smithers	Aug 16,13, & Sep 8,14	4	2.1-4.5 NTU	Control site
	0400435 d/s Smithers in initial dil zone	Aug 16,13, & Sep 8,14	4	1.1-4.3 NTU	Objective met
Susp Solids max increase: 10 mg/L or 10%	0400297 u/s Houston	Aug16,23,31, & Sep8,14	5	1-2 mg/L	Control site
	0400295 100m d/s Houston	Aug16,23,31, & Sep8,14	5	1-2 mg/L	Objective met
	0400434 u/s Smithers	Aug16,23,31 & Sep8,14	5	3-9 mg/L	Control site
	0400435 d/s Smithers in initial dil zone	Aug16,23,31, & Sep8,14	5	3-8 mg/L	Objective met

TABLE 7 continued

BULKLEY RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Tot. Cl2 Res. 0.002mg/L max	d/s Houston & Smithers	1987	0	no data collected	Objective not checked
Chlorophyll-a <50 mg/m2 av	0400297 u/s Houston	Sep 14	5	av = 58.4mg/m2	Objective not met
	0400295 100m d/s Houston	Sep 14	3	av = 21.5mg/m2	Objective met
	0400434 u/s Smithers	Sep 11	3	av = 7.6 mg/m2	Objective met
	0400435 d/s Smithers in initial dil zone	Sep 11	3	av = 12.6mg/m2	Objective met
Ammonia-N <0.90 mg/L av 4.67 mg/L max at pH = 8.1 temp = 10°C	0400297 u/s Houston	Aug16-Sep14	5	0.007-0.011 mg/L	Objective met
	0400295 100m d/s Houston	Aug16-Sep14	5	0.009-0.066 mg/L	Objective met
Ammonia-N <1.59 mg/L av 8.25 mg/L max at pH = 7.8 temp = 10°C	0400434 u/s Smithers	Aug16-Sep14	5	<0.005-0.031 mg/L	Objective met
	0400435 d/s Smithers in initial dil zone	Aug16-Sep14	5	<0.005-0.008 mg/L	Objective met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	0400295 100m d/s Houston	Aug16-Sep14	5	all <0.005mg/L	Objective met
	0400435 d/s Smithers in initial dil zone	Aug16-Sep14	5	all <0.005mg/L	Objective met
Dissolved Oxygen 7.8 mg/L min	d/s Houston & Smithers	1987	0	no data collected	Objective not checked

See Figure 8 for site locations

TABLE 8

KATHLYN,SEYMOUR,ROUND & TYHEE LAKES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. at water intakes <200/100 mL geometric mean at beaches	Kathlyn Lake: beach	Jul 27 Aug 4	1 1	49/100 mL 110/100 mL	Indefinite result
	Frenzel water intake	Jul 27 Aug 4	1 1	<2.2/100 mL <2.2/100 mL	
	Lortscher water intake	Jul 27 Aug 4	1 1	<2.2/100 mL <2.2/100 mL	
	Tyhee Lake: beach	Jul 27 Aug 4	1 1	<2.2/100 mL 5/100 mL	Indefinite result
	Lowe water intake	Jul 27 Aug 4	1 1	<2.2/100 mL <2.2/100 mL	
	Henderson water intake	Jul 27 Aug 4	1 1	1600/100 mL <2.2/100 mL	
	Round & Seymour Lakes	1987	0	no data collected	Objective not checked
Turbidity <1 NTU av 5 NTU max	Kathlyn Lake: 1131007	Apr29-Sep2: 1 & 9m	5	0.9-3.9 NTU	Max obj. met
	N basin	Sep2: 9m	1	16.0 NTU	Obj. not met
	Frenzel water intake	Jul 15-Aug4	4	0.8-1.0 NTU	Max obj. met
	Lortscher water intake	Jul 15-Aug4	4	1.0-1.3 NTU	Max obj. met
	Tyhee Lake: 1131009 deep site	Jul 17-Sep2	6	0.5-1.4 NTU	Max obj. met
	Lowe water intake	Jul 15-Aug4	4	0.8-1.4 NTU	Max obj. met
	Henderson water intake	Jul 15-Aug4	4	0.8-1.4 NTU	Max obj. met
	Round & Seymour L	1987	0	no data	Obj not chkd

TABLE 8 continued

KATHLYN,SEYMOUR,ROUND & TYHEE LAKES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total P <0.015mg/L av at spring overturn	Kathlyn Lake 1131007 N basin	Apr 29: 1m 8m	1 1	0.029 mg/L 0.020 mg/L av = 0.024mg/L	Obj. not met
	Tyhee Lake 1131009 deep site	Jun 17 0m 15m	1 1	0.021 mg/L 0.039 mg/L	Lake stratified Indefinite result
	Round Lake	1987	0	no data collected	Objective not checked
Colour 15 TCU max	Kathlyn Lake: 1131007 N basin	Apr29: 1&8m Jul 17-Sep2: 1&9m	2 4	20 TCU <5-10 TCU	Obj. not met Obj. met
	Frenzel water intake	Jul 15-Aug4	4	5-10 TCU	Obj. met
	Lortscher water intake	Jul 15-Aug4	4	<5-10 TCU	Obj. met
	Tyhee Lake 1131009 deep site	Jun 17-Sep2	6	<5-10 TCU	Obj. met
	Lowe water intake	Jul 15-Aug4	4	5-15 TCU	Obj. met
	Henderson water intake	Jul 15-Aug4	4	5-15 TCU	Obj. met
	Round Lake	1987	0	no data collected	Objective not checked

See Figure 9 for site locations

TABLE 9

KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <14/100mL & <43/100mL med & 90 perc (shellfish) <200/100mL (recreation)	Kitimat Arm	1987	0	no data collected	Objective not checked
Susp. Solids max increase: 10 mg/L or 10%	Kitimat River: 0430025 u/s at bridge	Jan21-Nov17	9	1-9 mg/L	Control site
	u/s near bridge	Aug 24	1	5 mg/L	Control site
	300m d/s Kitimat	Aug 24	1	6 mg/L	Obj. met
	300m d/s Eurocan	Aug 24	1	10 mg/L	Obj. met
	Kitimat Arm	1987	0	no data collected	Objective not checked
Turbidity max increase: 5 NTU or 10%	Kitimat River: 0430025 u/s at bridge	Jan21-Nov17	9	1.2-5.1 NTU	Control site
	u/s near bridge	Aug 24	1	2.5 NTU	Control site
	300m d/s Kitimat	Aug 24	1	2.5 NTU	Obj. met
	300m d/s Eurocan	Aug 24	1	5.6 NTU	Obj. met
	Kitimat Arm	1987	0	no data collected	Objective not checked
WAD Cyanide 0.001mg/L max	Kitimat Arm	1987	0	no data collected	Objective not checked
Diss Fluoride 1.5 mg/L max	as above	1987	0	as above	as above
H2S 0.002mg/L max	as above	1987	0	as above	as above

TABLE 9 continued

KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophyll-a <50 mg/m2 av	Kitimat Arm	1987	0	no data collected	Objective not checked
Ammonia-N <1.86 mg/L av 8.25 mg/L max at pH = 7.7 temp = 10°C	Kitimat River: 300m d/s Kitimat	Aug 24	1	0.033 mg/L	Max obj. met
	300m d/s Eurocan	Aug 24	1	0.015 mg/L	Max obj. met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Kitimat River: 300m d/s Kitimat	Aug 24	1	<0.005 mg/L	Max obj. met
	300m d/s Eurocan	Aug 24	1	<0.005 mg/L	Max obj. met
Dissolved Oxygen 7.8 mg/L min	Kitimat River	1987	0	no data collected	Objective not checked
pH 6.5 - 9.0	Kitimat River: 300m d/s Kitimat	Aug 24	1	7.2	Obj. met
	300m d/s Eurocan	Aug 24	1	7.7	Obj. met
Total Al 20% increase	Kitimat Arm	1987	0	no data collected	Objective not checked
Total Cd <0.012mg/L av 0.038mg/L max	as above	1987	0	as above	as above
Total Cu <0.002mg/L av 0.003mg/L max 20% increase	as above	1987	0	as above	as above
Total Fe 0.3mg/L max	as above	1987	0	as above	as above
Total Pb <0.009mg/L av 0.220mg/L max 20% increase	as above	1987	0	as above	as above

TABLE 9 continued

KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Toxicity % mill effl. in river: <0.05 of the 96-hLC50	Kitimat River	1987	0	no data collected	Objective not checked

See Figure 10 for site locations

TABLE 10

LAKELSE LAKE WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. at water intakes <200/100 mL geometric mean at beaches	North end beach	Aug 24	1	<2/100 mL	Indefinite result
		Aug26-Sep16	4	data suspect	
	Husoy water intake	Aug 24	1	22/100 mL	Indefinite result
		Aug26-Sep16	4	data suspect	
	Waterlily Bay water intake	Aug 24	1	6/100 mL	Indefinite result
		Aug26-Sep16	4	data suspect	
Turbidity 1 NTU av 5 NTU max	E206616 N end,deepest pt.	Apr28-Oct21	9	0.5-2.7 NTU	Max obj. met
Total P <0.010mg/L av over May to August	E206616 N end,deepest pt.	Apr 28: 1m	1	0.006 mg/L	Objective met
		25m	1	0.007 mg/L	
		Jul 16: 1m	1	0.003 mg/L	
		6m	1	0.005 mg/L	
		25m	1	0.004 mg/L	
		Aug 19: 1m	1	0.007 mg/L	
		25m	1	0.007 mg/L	
		Apr28-Aug19	7	av = 0.006 mg/L	
Chlorophyll-a <0.003 mg/L over May to August	E206616 N end,deepest pt	Apr28: 0,2, 4,& 6m comp.	1	0.0028 mg/L	Objective met
		Aug19: 0,2, 4,& 6m comp.	1	0.0012 mg/L	
		Apr28-Aug19	2	av = 0.0020 mg/L	

TABLE 10 continued

LAKELSE LAKE WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen >6 mg/L 5m above sed.	at deepest point	1987	0	no data collected	Objective not checked

See Figure 11 for site locations

TABLE 11

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100/100 mL 90th perc.	Bonaparte River: 0600506 u/s Cache Cr STP	March 31	1	6/100 mL	Indefinite results
	0600508 d/s Cache Cr STP	March 31	1	82/100 mL	
	0600329 at the mouth	Jan19-Oct13	5	23-920/100 mL	
	Loon Cr u/s Hatch. 0600297	April 7	1	28/100 mL	Indef result
	Clinton Creek	1987	0	no data	Obj not chkd
Fecal Coliforms <10/100 mL 90th perc. at water intakes <200/100 mL geom. mean at beaches	Loon Lake	1987	0	no data collected	Objective not checked
Susp. Solids max increase: 10 mg/L or 10%	Bonaparte River: 0600506 u/s Cache Cr STP	March 31	1	5 mg/L	Control site
	0600508 d/s Cache Cr STP	March 31	1	6 mg/L	Obj. met
	0600329 at the mouth	Jan19-Apr27	4	1 - 10 mg/L	Obj. met
		May 14	1	42 mg/L	Indef result
		Jun 11	1	24 mg/L	Indef result
		Jul 20-Dec19	6	3 - 8 mg/L	Obj. met
	Loon Cr u/s Hatch. 0600297	April 7	1	11 mg/L	Indefinite result
	Clinton Creek	1987	0	no data	Obj not chkd
Turbidity max increase: 5 NTU or 10%	Bonaparte River: 0600506 u/s Cache Cr STP	March 31	1	1.1 NTU	Obj. met

TABLE 11 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Bonaparte River: 0600508 d/s Cache Cr STP	March 31	1	1.2 NTU	Obj. met
	0600329 at the mouth	Jan19-Apr27	4	0.9 - 2.0 NTU	Obj. met
		May 14	1	6.5 NTU	Indef result
		Jun11-Dec9	7	1.2 - 4.9 NTU	Obj. met
	Loon Cr u/s Hatch. 0600297	April 7	1	3.2 NTU	Obj. met
	Clinton Creek	1987	0	no data	Obj not chkd
Diss. Solids 500 mg/L max	Clinton Creek	1987	0	no data collected	Objective not checked
Ammonia-N <0.37 mg/L av 1.93 mg/L max at pH = 8.5 temp = 10°C	Bonaparte River: 0600506 u/s Cache Cr STP	March 31	1	0.005 mg/L	Max obj. met
	0600508 d/s Cache Cr STP	March 31	1	0.010 mg/L	Max obj. met
	0600329 at the mouth	Jan19-Dec9	12	max=0.005 mg/L	Max obj. met
	Loon Cr u/s Hatch. 0600297	April 7	1	<0.005 mg/L	Max obj. met
	Clinton Creek	1987	0	no data	Obj not chkd
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Bonaparte River: 0600506 u/s Cache Cr STP	March 31	1	<0.005 mg/L	Max obj. met
	0600508 d/s Cache Cr STP	March 31	1	<0.005 mg/L	Max obj. met
	0600329 at the mouth	Jan19-Oct13	10	max=0.005 mg/L	Max obj. met
	Clinton Creek	1987	0	no data	Obj not chkd

TABLE 11 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
chlorophyll-a $\bar{}$ <50 mg/m2 av	Bonaparte River: 0600506 u/s Cache Cr STP	Mar 31	5	av = 39.1mg/m2	Obj. met
	0600508 d/s Cache Cr STP	Mar 31	5	av = 94.4mg/m2	Obj. not met
	0600329 at the mouth	Feb 17	5	av = 127 mg/m2	Obj. not met
		Mar 16	5	av = 73.8mg/m2	
		Apr 27	4	av = 236 mg/m2	
		Jul 20	5	av = 75.9mg/m2	
		Aug 17	5	av = 159 mg/m2	
		Sep 21	5	av = 254 mg/m2	
		Oct 13	5	av = 263 mg/m2	
		Nov 16	5	av = 173 mg/m2	
		Dec 9	5	av = 177 mg/m2	
Chlorophyll-a <100 mg/m2 av $\bar{}$ or 20% increase	Clinton Creek	1987	0	no data collected	Objective not checked
Diss. Oxygen 7.75 - 11.2 mg/L min	Bonaparte River Clinton & Loon Cks	1987	0	no data collected	Objective not checked
Diss. Oxygen 5 mg/L min,5m above bottom	Loon Lake at deepest point 0603050	Jun 2	1	6.4 mg/L	Obj. met
		Jul16-Sep16	3	2.0-4.1 mg/L	Obj. not met
pH 6.5 - 8.5	Bonaparte R. above Cache Creek	1987	0	no data collected	Objective not checked
	Clinton Creek	1987	0	as above	as above
pH 6.5 - 9.0	Bonaparte River: 0600506 u/s Cache Cr STP	Mar 31	1	8.3	Obj. met
	0600508 d/s Cache Cr STP	Mar 31	1	8.3	Obj. met
	0600329 at the mouth	Jan19-Dec9	12	8.3 - 8.7	Obj. met

TABLE 11 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 9.0	Loon Creek	Apr 7	1	8.4	Obj. met

Note: objectives to be checked more completely at low flow, January-March,1988

See Figure 12 for site locations

TABLE 12

WILLIAMS LAKE WATER QUALITY OBJECTIVES - 1987

(Partial report only as objectives finalized in late 1987)

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity <1 NTU av 5 NTU max	lake centre 0603019	Apr 15	1	1.5 NTU	Max obj. met
	deepest point 0603022	Apr 15 1,5 10 & 20m	4	1.7 - 2.2 NTU	Max obj. met
Total P <0.020mg/L av at spring overturn	lake centre 0603019	Apr 15	1	0.075 mg/L	Objective not met
	deepest point 0603022	Apr 15 1,5,10 & 20m	4	0.074 - 0.080 mg/L av=0.076 mg/L	Objective not met
Chlorophyll-a <0.005 mg/L av	lake centre 0603019	Jun2-Nov30	4	0.003 - 0.013 mg/L av=0.009 mg/L	Objective not met
Diss. Oxygen 4.0 mg/L min 5m above sediment	lake centre 0603019 5m above sediment	Aug 19	1	0.45 mg/L	Objective not met

See Figure 13 for site locations

TABLE 13

OKANAGAN VALLEY LAKES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total P 0.015 mg/L av at spring overturn	Wood Lake 0500848 lake centre	Mar 4	2	av = 0.040mg/L	Objective not met
		Apr 1	6	av = 0.037mg/L	
Total P 0.008 mg/L av at spring overturn	Kalamalka Lake 0500246 south end	Mar 4	2	av = 0.008mg/L	Objective met
		Apr 1	2	av = 0.007mg/L	
Total P 0.010 mg/L av at spring overturn	Okanagan Lake: 0500239 Armstrong Arm	Mar 24	4	av = 0.012mg/L	Objective not met
	0500238 Vernon Arm	Mar 5	2	av = 0.005mg/L	Objective met
	0500730 north basin	Mar 5	4	av = 0.006mg/L	Objective met
	0500236 central basin	Mar 11	2	av = 0.007mg/L	Objective met
	0500729 south basin	Mar 9	4	av = 0.005mg/L	Objective met
Total P 0.015 mg/L av at spring overturn	Skaha Lake 0500615 lake centre	Feb 25	3	av = 0.024mg/L	Objective not met
	Osoyoos Lake 0500249 north end	Mar 10	4	av = 0.021mg/L	Objective not met

See Figure 14 for site locations

TABLE 14

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc.	Similkameen River: Falls u/s Newmont 0500075	Sep 8,15,21, 28,Oct 5	5	1-4/100 mL	Obj. met
	u/s Princeton 0500724	Jan14-Jun 17	2	0/100 mL	Indefinite result
	d/s Princeton 0500725	Sep 8,15,21, 28,Oct 5	5	0-20/100 mL 90th = 9/100mL	Obj. met
	u/s Keremeos 0500692	Jan14-May13	3	0-20/100 mL	Indefinite result
	d/s Keremeos 0500693	Sep 5,15,21, 28,Oct 5	5	0-2/100 mL	Obj. met
	near U.S. border 0500073	Sep 1,15,28, Oct 10,13	5	9-33/100 mL 90th=28/100mL	Obj. not met
	Allison Lake,N end 1131013	May 6	1	<2.0/100 mL	Indefinite result
Diss. Solids <500 mg/L av	Wolfe Creek: u/s Newmont 0500397	Sep 8,15,21, 28,Oct 5	5	av = 398 mg/L	Obj. met
	d/s Newmont 0500101	Sep 9,15,21, 28,Oct 5	5	av = 431 mg/L	Obj. met
Tot. Cl2 Res. 0.002mg/L max	Similkameen River: Princeton - border	1987	0	no data collected	Objective not checked
Ammonia-N <0.9 mg/L av 4.7 mg/L max at pH = 8.1 temp = 10°C	Similkameen River: d/s Princeton 0500725	Sep 8,15,21, 28,Oct 5	5	av<0.005 mg/L max=0.005 mg/L	Obj. met
	u/s Keremeos 0500692	Jan14-Nov17	7	<0.005-0.007 mg/L	Max obj. met
	d/s Keremeos 0500693	Sep 8,15,21, 22,Oct 5	5	av<0.005 mg/L max=0.007 mg/L	Obj. met
	near U.S. border 0500073	Mar16-Dec22	20	<0.005-0.006 mg/L	Max obj. met

TABLE 14 continued

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total P <0.02 mg/L av at spring overturn	Allison Lake,N end 1131013	May6,0-6 m 20-32m	1 1	0.020 mg/L 0.013 mg/L	Obj. met
	Missezula Lake 0500928	May 6, 0-10m 20-45m	1 1	0.020 mg/L 0.033 mg/L	Indefinite result
	Osprey Lake E206818	Apr23, 0-3 m 2-9 m	1 1	0.018 mg/L 0.018 mg/L	Obj. met
Diss. Oxygen 5.25 mg/L min	Allison Creek	1987	0	no data collected	Objective not checked
pH 6.5 - 8.5	Similkameen River: d/s Princeton 0500725	Jan14-Nov17	22	7.3 - 8.3	Obj. met
	u/s Keremeos 0500692	Jan14-Nov17	7	7.4 - 8.2	Obj. met
	d/s Keremeos 0500693	Jan14-Nov17	19	7.3 - 8.3	Obj. met
	near U.S. border 0500073	Mar16-Dec22	20	7.7 - 8.2	Obj. met
	Wolfe Creek: u/s Newmont 0500397	Feb17-Oct5	16	7.7 - 8.4	Obj. met
	d/s Newmont 0500101	Feb17-Oct5	16	7.4 - 8.2	Obj. met
Dissolved Cu <0.002mg/L av 0.004mg/L max or 20% increase	Similkameen River: Falls,u/s Newmont 0500075	Jun25-Oct5	10	<0.001-0.001 mg/L	Control site
	d/s Newmont 0500629	Jun25-Jul23	5	av = 0.001mg/L max= 0.002mg/L	Obj. met
Dissolved Cu <0.006mg/L av 0.008mg/L max or 20% increase	Wolfe Creek u/s Newmont 0500397	Feb17-Oct5	11	0.001-0.005 mg/L	Control site

TABLE 14 continued

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Cu <0.006mg/L av 0.008mg/L max or 20% increase	Wolfe Creek d/s Newmont 0500101	Jun25,Jul 2, 9,16,23 Sep 8,15,21, 28,Oct 5 Feb17-Oct5	5 5 11	av = 0.001mg/L av = 0.001mg/L max= 0.002mg/L	Objective met
Dissolved Fe 0.3 mg/L max or 20% increase	Wolfe Creek: u/s Newmont 0500397 d/s Newmont 0500101	 Feb17-Oct5 Feb17-Oct5	 11 11	 <0.005-0.026 mg/L 0.020-0.030 mg/L	 Control site Obj. met
Dissolved Mn 0.20 mg/L max or 20% increase	Wolfe Creek: u/s Newmont 0500397 d/s Newmont 0500101	 Feb17-Oct5 Feb17-Oct5	 11 11	 <0.001-0.002 mg/L 0.02-0.13 mg/L	 Control site Obj. met
Dissolved Mo <0.02 mg/L av 0.05 mg/L max or 20% increase May to Sep	Wolfe Creek: u/s Newmont 0500397 d/s Newmont 0500101	 Jun25-Oct5 Jun25-Jul23 Sep8- Oct5 Jun25-Oct5	 10 5 5 10	 all <0.01 mg/L av = 0.01mg/L av < 0.01mg/L max = 0.03mg/L	 Control site Obj. met
Dissolved Zn <0.05 mg/L av 0.18 mg/L max depending on hardness, or 20% increase	Similkameen River: Falls,u/s Newmont 0500075 d/s Newmont 0500629	 Jun25-Oct5 Jun25-Jul 23 Sep 8-Oct 5	 10 5 5	 all <0.005mg/L all <0.005mg/L av = 0.024mg/L max= 0.120mg/L	 Control site Objective met
Dissolved Zn <0.05 mg/L av 0.18 mg/L max or 20% increase	Wolfe Creek: u/s Newmont 0500397 d/s Newmont 0500101	 Feb17-Oct5 Jun25-Jul23 Sep8-Oct5 Feb17-Oct5	 11 5 5 11	 all <0.005mg/L av <0.005mg/L av <0.005mg/L max <0.005mg/L	 Control site Obj. met

See Figure 15 for site locations

TABLE 15

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	Cahill at Hwy E206637	May 6-Nov 2	7	<1-3 mg/L	Obj. met
		Sep 3	1	13 mg/L	Indefinite result
	Red Top Gulch,Hwy E206638	May 6-Aug 4	6	<1-3 mg/L	Obj. met
Susp. Solids max increase: 20 mg/L or 20%	Cahill d/s tailing E206636	May 6-Aug 4	6	1-2 mg/L	Obj. met
	Sunset at mouth E206634	May 6-Aug 4	5	<1-3 mg/L	Obj. met
	Ni Plate Mine,u/s E206632	May 6-Aug 4	5	all <1 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	May 6-Aug4	6	<1-5 mg/L	Obj. met
Turbidity max increase: 5 NTU or 10%	Cahill at Hwy E206637	May 6-Nov 2	8	0.3-2.0 NTU	Obj. met
	Red Top Gulch,Hwy E206638	May 6Aug 4	6	0.2-0.9 NTU	Obj. met
Turbidity max increase: 10 NTU or 20%	Cahill d/s tailing E206636	May 6-Aug 4	6	0.3-1.3 NTU	Obj. met
	Sunset at mouth E206634	May 6-Aug 4	5	0.3-1.9 NTU	Obj. met
	Ni PLate Mine,u/s E206632	May 6-Aug 4	5	all 0.2 NTU	Obj. met
	Ni Plate mine,d/s E206633	May 6-Aug 4	6	0.2-0.6 NTU	Obj. met
Diss. Solids 500 mg/L max	Cahill at Hwy E206637	May 6-Nov 2	7	108-160 mg/L	Obj. met
	Cahill d/s tailing E206636	May 6-Aug 4	5	104-130 mg/L	Obj. met

TABLE 15 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Solids 500 mg/L max	Red Top Gulch,Hwy E206638	May 6-Aug 4	5	190-248 mg/L	Obj. met
	Ni Plate Mine,u/s E206632	May 6-Aug 4	4	88-102 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	May 6-Aug 4	5	236-286 mg/L	Obj. met
Sulphate <50 mg/L av 150 mg/L max	Cahill at Hwy E206637	Jul 6-Aug 4 May 5-Nov 2	5 8	av = 10.9mg/L max = 17.4mg/L	Obj. met
	Cahill d/s tailing E206636	Jul 6-Aug 4 May 5-Aug 4	5 6	av = 10.8mg/L max = 12.0mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4 May 6-Aug 4	5 6	av = 20.3mg/L max = 25.7mg/L	Obj. met
	Ni Plate Mine,u/s E206632	May 6-Aug 4	5	max = 4.1 mg/L	Max obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4 May 6-Aug 4	5 6	av = 33.3mg/L max = 43.4mg/L	Obj. met
WAD-CN <0.005mg/L av 0.01mg/L max	Cahill at Hwy E206637	Jul 6-Aug 4 May 6-Nov 2	5 8	av=0.006 mg/L max=0.009 mg/L	Obj. not met Max obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4 May 6-Aug 4	5 6	av<0.005 mg/L max=0.006 mg/L	Obj. met
SAD-CN + Thiocyanate 0.2 mg/L max	Cahill at Hwy E206637	May 6-Nov 2	8	0.03-0.06 mg/L	Obj. met
	Cahill d/s tailing E206636	May 6-Aug 4	5	0.03-0.04 mg/L	Obj. met
Cyanate 0.45 mg/L max	Cahill at Hwy E206637	Jul 6-Aug 4	5	all <0.1 mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	all <0.1 mg/L	Obj. met
Total As 0.05 mg/L max	Cahill at Hwy E206637	May 6-Nov 2	7	0.007-0.009 mg/L	Obj. met

TABLE 15 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total As 0.05 mg/L max	Cahill d/s tailing E206636	Jul 6-Aug 4	5	0.006-0.009 mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 7-Aug 4	5	0.009-0.014 mg/L	Obj. met
Total As 0.5 mg/L max	Ni Plate Mine,u/s E206632	Jul 13-Aug 4	4	<0.001-0.002 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	0.014-0.018 mg/L	Obj. met
Ammonia-N <0.718mg/L av 3.74mg/L max at pH = 8.2 temp = 10°C	Cahill at Hwy E206637	Jul 6-Aug 4 May 6-Nov 2	5 8	av=0.005 mg/L max=0.006 mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4 May 6-Aug 4	5 6	av<0.005 mg/L max=0.007 mg/L	Obj. met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Cahill at Hwy E206637	Jul 6-Aug 4 May 6-Nov 2	5 8	av<0.005 mg/L max<0.005 mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4 May 6-Aug 4	5 8	av<0.005 mg/L max<0.005 mg/L	Obj. met
Nitrite-N 1 mg/L max	Cahill d/s tailing E206636	May 6-Aug 4	6	max<0.005 mg/L	Obj. met
Nitrite-N 10 mg/L max	Ni Plate Mine,u/s E206632	May 6-Aug 4	5	max<0.005 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	May 6-Aug 4	6	max<0.005 mg/L	Obj. met
Nitrate-N 10 mg/L max	Cahill at Hwy E206637	May 6-Nov 2	8	all <0.02 mg/L	Obj. met
	Cahill d/s tailing E206636	May 6-Aug 4	6	<0.02-0.06mg/L	Obj. met
	Red Top Gulch,Hwy E206638	May 6-Aug 4	6	0.03-0.05 mg/L	Obj. met

TABLE 15 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrate-N 100 mg/L max	Ni Plate Mine,u/s E206632	May 6-Aug 4	5	<0.02-0.03mg/L	Obj. met
	Ni Plate Mine,d/s E206633	May 6-Aug 4	6	0.51-0.72 mg/L	Obj. met
pH 6.5 - 8.5	Cahill at Hwy E206637	May 6-Nov 2 Jul 6	11 1	7.7 - 8.4 8.6	Obj. met Obj. not met
	Cahill d/s tailing E206636	May 6-Aug 4	10	7.7 - 8.4	Obj. met
	Red Top Gulch,Hwy E206638	May 6-Aug 4	10	7.8 - 8.4	Obj. met
	Ni Plate Mine,u/s E206632	May 6-Aug 4	9	7.4 - 7.9	Obj. met
	Ni Plate Mine,d/s E206633	Apr 20-Aug 4	10	7.6 - 8.3	Obj. met
Total Al 0.3 mg/L max or 20% increase at pH>7.0	Cahill at Hwy E206637	Jul 20-Aug 4	3	0.15-0.27 mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 27 Aug 4 Jul 20	1 1 1	0.23 mg/L 0.30 mg/L 0.32 mg/L	Obj. met Obj. met Indef result
Total Cd 0.0002 mg/L max	Cahill at Hwy E206637	Jul 6-Nov 2	7	all <0.0005 mg/L	Indefinite result
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	all <0.0005 mg/L	Indefinite result
Total Cd 0.005mg/L max	Cahill d/s tailing E206636	Jul 6-Aug 4	5	all <0.0005 mg/L	Obj. met
Total Cd 0.02 mg/L max	Ni Plate Mine,u/s E206632	Jul 13-Aug 4	4	<0.0005-0.005 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	all <0.0005 mg/L	Obj. met

TABLE 15 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu	Cahill at Hwy E206637	Jul 6-Aug 4	5	av=0.002 mg/L	Obj. met
		Jul 6-Sep 3	6	max=0.003 mg/L	
<0.005mg/L av 0.007mg/L max or 20% increase		Nov 2	1	0.010 mg/L	Indef result
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	av=0.0016mg/L max=0.002 mg/L	Obj. met
Total Cu 0.2 mg/L max	Cahill d/s tailing E206636	Jul 6-Aug 4	5	av=0.002 mg/ max=0.002 mg/L	Obj. met
Dissolved Fe	Cahill at Hwy E206637	May 6-Nov 2	8	<0.01-0.06mg/L	Obj. met
0.3 mg/L max	Cahill d/s tailing E206636	May 6-Aug 4	6	<0.01-0.04mg/L	Obj. met
	Red Top Gulch,Hwy E206638	May 6-Aug 4	6	all <0.01 mg/L	Obj. met
	Ni Plate Mine,u/s E206632	May 6-Aug 4	5	all <0.01 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	May 6-Aug 4	6	all <0.01 mg/L	Obj. met
Total Pb	Cahill at Hwy E206637	Jul 6-Aug 4	5	av=0.002 mg/L	Obj. met
		Jul 6-Nov 2	7	max=0.005 mg/L	
<0.005mg/L av 0.015mg/L max or 20% increase	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	av=0.002 mg/L max=0.004 mg/L	Obj. met
Total Pb 0.05 mg/L max	Cahill d/s tailing E206636	Jul 6-Aug 4	5	<0.001-0.004 mg/L	Obj. met
Total Pb 0.1 mg/L max	Ni Plate Mine,u/s E206632	Jul 13-Aug 4	4	0.002-0.003 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	<0.001-0.003 mg/L	Obj. met
Total Hg	Cahill at Hwy E206637	May 6-Jul 27	5	max = 0.00005 mg/L	Obj. met
0.0001 mg/L max	Red Top Gulch,Hwy E206638	Aug 4	1	0.00025 mg/L	Obj. not met

TABLE 15 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Hg 0.001mg/L max	Cahill d/s tailing E206636	May 6-Aug 4	6	max = 0.00026 mg/L	Obj. met
Total Hg 0.003mg/L max	Ni Plate Mine,u/s E206632	May 6-Aug 4	5	max = 0.00027 mg/L	Obj. met
Total Hg 0.003mg/L max	Ni Plate Mine,d/s E206633	May 6-Aug 4	6	max = 0.00028 mg/L	Obj. met
Total Mo <0.01 mg/L av 0.05 mg/L max or 20% increase	Cahill at Hwy E206637	Jul 6-Aug 4 Jul 6-Nov 2	5 7	av=0.01 mg/L max=0.01 mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	av=0.014 mg/L max=0.02 mg/L	Obj. not met Max obj. met
	Cahill d/s tailing E206636	Jul 6-Aug 4	5	av=0.01 mg/L max=0.01 mg/L	Obj. met
Total Mo 0.05 mg/L max	Ni Plate Mine,u/s E206632	May 6-Aug 4	4	all <0.01 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	<0.01-0.02mg/L	Obj. met
Total Se 0.001mg/L max 20% increase	Cahill at Hwy E206637	Jul 6-Jul 27 Aug 4	4 1	all <0.01 mg/L 0.03 mg/L	Indef result Obj. not met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	all <0.01 mg/L	Indef result
Total Se 0.01 mg/L max	Cahill d/s tailing E206636	Jul 6-Aug 4	5	all <0.01 mg/L	Obj. met (cntrl site)
Total Se 0.05 mg/L max	Ni Plate Mine E206633	Jul 6-Aug 4	5	all <0.01 mg/L	Obj. met
Total Ag 0.0001 mg/L max or 20% increase	Cahill at Hwy E206637	Jul 6-Aug 4	5	all <0.0005 mg/L	Indefinite result
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	all <0.0005 mg/L	Indefinite result

TABLE 15 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Ag 0.05 mg/L max or 20% increase	Cahill d/s tailing E206636	Jul 6-Aug 4	5	all <0.0005 mg/L	Obj. met
	Ni Plate Mine,u/s E206632	Jul 6-Aug 4	4	all <0.0005 mg/L	Obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	all <0.0005 mg/L	Obj. met
Total Zn 0.05 mg/L max	Cahill at Hwy E206637	Jul 6-Nov 2	8	max = 0.02mg/L	Obj. met
	Cahill d/s tailing E206636	Jul 6-Aug 4	5	max < 0.01mg/L	Obj. met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	max = 0.01mg/L	Obj. met
	Ni Plate Mine,u/s E206632	Jul 6-Aug 4	4	max = 0.01mg/L	Obj. met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	max = 0.01mg/L	Obj. met

See Figure 16 for site locations

TABLE 16

WINDERMERE AND COLUMBIA LAKES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. near water intakes <200/100 mL geometric mean at beaches	Windermere Lake: 6 water intake sites 6 beach sites	June,July & August/87		All data suspect due to improper analysis	Indefinite result
	Columbia Lake	1987	0	no data collected	Objective not checked
Turbidity 1 NTU av 5 NTU max during non-freshet	Windermere Lake water intake sites				
	E207044 Windermere	June 29 & July 7,14, 22,27 /87	5	av = 0.8 NTU max = 1.0 NTU	Objective met
	E207045 Akiskanook	as above	5	av = 0.7 NTU max = 0.8 NTU	Objective met
	E207046 Terravista	as above	5	av = 0.7 NTU max = 0.8 NTU	Objective met
	E207047 Windermere Holdings	as above	5	av = 0.7 NTU max = 1.0 NTU	Objective met
	E207048 Parr Utilities	as above	5	av = 2.0 NTU max = 6.0 NTU	Objective not met
	E207049 Timber Ridge	as above	5	av = 0.9 NTU max = 1.4 NTU	Objective met
	Columbia Lake	1987	0	no data collected	Objective not checked

TABLE 16 continued

WINDERMERE AND COLUMBIA LAKES WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total-P	Windermere Lake:				
<0.010 mg/L av at spring overturn	0200051 centre	April 14/87	1 1	0.5m:0.010mg/L 3.0m:0.013mg/L av = 0.011mg/L	Objective not met
	0200052 north	April 14/87	1 1	0.5m:0.009mg/L 4.5m:0.013mg/L av = 0.011mg/L	
Total-P	Columbia Lake:				
<0.008 mg/L av at spring overturn	0200433 south	April 15/87	1 1	0.5m:0.012mg/L 3.0m:0.012mg/L av = 0.012mg/L	Objective not met

See Figure 17 for site locations

TABLE 17

TOBY CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc.	0200224 d/s Invermere	July 6,15, 21,27 /87	4	data suspect	Indefinite result
	0200333 u/s Panorama	June 24/87 July 23/87	1 1	data suspect	
	0200334 d/s Panorama	June 24/87 July 23/87	1 1	data suspect	
Turbidity max increase: 5 NTU or 10%	0200224 d/s Invermere	Aug 4/87	1	5.0 NTU	Objective met
	0200333 u/s Panorama	June 24/87 July 23/87	1 1	4.0 NTU 4.3 NTU	
	0200334 d/s Panorama	June 24/87 July 23/87	1 1	4.2 NTU 3.9 NTU	
Susp. Solids max increase: 10 mg/L or 10%	0200224 d/s Invermere	Aug 4/87	1	11 mg/L	Indefinite result
	0200333 u/s Panorama	June 24/87 July 23/87	1 1	20 mg/L 10 mg/L	Objective met
	0200334 d/s Panorama	June 24/87 July 23/87	1 1	19 mg/L 10 mg/L	
Chlorophyll-a <50 mg/m2 av	0200224 d/s Invermere	Aug 23/87	5	4.34 mg/m2 av	Objective met
Ammonia-N <1.23 mg/L av 4.7 mg/L max at pH = 8.1 temp = 10°C	0200224 d/s Invermere	June 29, & July 6,15, 21,27 /87	5	<0.005 mg/L av 0.005 mg/L max	Objective met
	0200333 u/s Panorama	June 24/87 July 23/87	1 1	0.008 mg/L 0.007 mg/L	Maximum objective met
	0200334 d/s Panorama	June 24/87 July 23/87	1 1	0.013 mg/L 0.007 mg/L	

TABLE 17 continued

TOBY CREEK WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0 02 mg/L av 0.06 mg/L max	0200224 d/s Invermere	June 29, & July 6,15 21,27 /87	5	<0.005 mg/L av & max	Objective met
	0200333 u/s Panorama	June 24/87 July 23/87	1 1	<0.005 mg/L <0.005 mg/L	Maximum objective met
	0200334 d/s Panorama	June 24/87 July 23/87	1 1	<0.005 mg/L <0.005 mg/L	
Total Ba 1.0 mg/L max	0200333 u/s Panorama	July 23/87	1	<0.5 mg/L	Objective met
Total Cd 0.0002 mg/L max	0200333 u/s Panorama	July 23/87	1	<0.0005 mg/L	Indefinite result
Dissolved Cu 0.002 mg/L max	0200333 u/s Panorama	July 23/87	1	0.002 mg/L	Objective met
Total Pb 0.005 mg/L max	0200333 u/s Panorama	July 23/87	1	0.002 mg/L	Objective met
Total Zn 0.05 mg/L max	0200333 u/s Panorama	July 23/87	1	<0.005 mg/L	Objective met

See Figure 18 for site locations

TABLE 18

UPPER COLUMBIA RIVER WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc.	0200232 u/s Radium	July 8,16, 20,28 & Aug 6 /87	5	<2-130/100 mL 70/100 mL 90th perc.	Objective not met
		Aug 6,12,17, 20,23 /87	5	all values <2/100 mL	Indefinite result
Fecal Coliforms <200/100 mL geometric mean	0200233 d/s Radium	July 8,16, 20,28 & Aug 6 /87	5	<2-800/100 mL 42/100 mL geometric mean	Indefinite result
		Aug 6,12,17, 20,23 /87	5	<2-150/100 mL 9.7/100 mL geometric mean	

Note:
Some results are low due to improper storage of samples and incorrect incubation temperature. This leads to either the objective not being met or to an indefinite result.

See Figure 18 for site locations

TABLE 19

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean	Fraser River E206581 at Hope, u/s STP	Aug7-Oct26	6	2-240/100 mL	Indefinite result
	Hope Slough E207009 ~15 km u/s mouth	Aug 12	1	<2/100 mL	Indefinite result
	Atchelitz Creek Luckakuck Creek Chilliwack Creek Elk Creek Salmon River	1987	0	no data collected	Objective not checked
	Bertrand Creek E207092 d/s Aldergrove	Jul 2-Aug 5	6	data suspect	Indefinite result
	Sumas River: E206997 near U.S. border	Aug 11	1	<2/100 mL	Indefinite result
	E207000	Aug 11	1	4/100 mL	
	E207002	Aug 11	1	<2/100 mL	
	Saar Creek: E206989 near U.S. border	Aug 11	1	6/100 mL	Indefinite result
	E206992 nr. Sumas R confl.	Aug 11	1	23/100 mL	
Fecal Coliforms <100/100 mL 90th perc.	Chilliwack River E207041 nr. Sumas R confl.	Aug 7,31, Sep 14,28, Oct 13,26	6	2-240/100 mL	Indefinite result

TABLE 19 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geom. mean at beaches	Cultus Lake: E207095 N end	Jul 2,9,16, 23,30,Aug 5	6	data suspect	Indefinite result
	E207096 E side	as above	6	as above	as above
	E207098 S end	as above	6	as above	as above
<10/100 mL 90th perc. water intakes	Cultus Lake	1987	0	no data	Objective not checked
Ammonia-N <1.37 mg/L av 13.6 mg/L max at pH = 7.4 temp = 18°C	Fraser River: E206581 at Hope, u/s STP	Jan5-Dec21	25	<0.005-0.012 mg/L	Max obj. met
	50m u/s Aldergrove STP	Jan 20	1	0.109 mg/L	Max obj. met
	100m d/s Adgve STP	Jan 20	1	0.115 mg/L	Max obj. met
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20°C	Fraser River: 50m u/s Kent STP	Jan29,Mar23	2	0.006-0.007 mg/L	Max obj. met
	100m d/s Kent STP	Jan29,Mar23	2	0.005-0.009 mg/L	Max obj. met
	50m u/s Hope STP	Jan29,Mar23	2	0.005-0.008 mg/L	Max obj. met
	100m d/s Hope STP	Jan29,Mar23	2	<0.005-0.006 mg/L	Max obj. met
	Hope Slough: E207013 at mouth	Aug 12	1	0.057 mg/L	Max obj. met
	E207009 ~ 15 km u/s mouth	Aug 12	1	0.071 mg/L	Max obj. met
	Atchelitz Creek Luckakuck Creek Chilliwack Creek Elk Creek	1987	0	no data collected	Objective not checked

TABLE 19 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20°C	Bertrand Creek E207092 d/s Aldergrove	Jul 2,9,16, 23,30,Aug 5	6	av = 0.663mg/L max = 3.6 mg/L	Objective met
	Salmon River	1987	0	no data collected	Objective not checked
Total P <0.01 mg/L av at spring overturn	Cultus Lake at lake centre	Apr 20 at 0 & 20m	2	0.006-0.007 mg/L	Objective met
Diss. Oxygen 7.75 mg/L min	Fraser River	1987	0	no data collected	Objective not checked
Diss. Oxygen 8.0-11.2 mg/L min depending on fish egg stage 6.0 mg/L min other times	Hope Slough: E207013 at mouth	Aug 12	1	4.1 mg/L	Obj. not met
	E207012	Aug 12	1	7.0 mg/L	Obj. met
	E207011	Aug 12	1	7.0 mg/L	Obj. met
	E207010	Aug 12	1	6.5 mg/L	Obj. met
	E207009 ~15 km u/s mouth	Aug 12	1	3.5 mg/L	Obj. not met
	E207008	Aug 12	1	9.0 mg/L	Obj. met
	E207007 near source	Aug 12	1	5.9 mg/L	Obj. not met
	Atchelitz Creek Luckakuck Creek Chilliwack Creek Bertrand Creek Salmon River	1987	0	no data collected	Objective not checked
	Sumas River: E207005	Aug 11	1	8.0 mg/L	Obj. met
	E207004	Aug 11	2	7.1-8.9 mg/L	Obj. met

TABLE 19 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Oxygen 8.0-11.2 mg/L min depending on fish egg stage 6.0 mg/L min other times	Sumas River: E207002	Aug 11	1	8.9 mg/L	Obj. met
	E207001	Aug 11	1	11.0 mg/L	Obj. met
	E207000	Aug 11	1	7.1 mg/L	Obj. met
	E206998	Aug 11	1	7.1 mg/L	Obj. met
	E206997 near U.S. border	Aug 11	1	6.5 mg/L	Obj. met
	Saar Creek: E206992 nr. Sumas R confl.	Aug 11	1	5.5 mg/L	Obj. not met
	E206990	Aug 11	1	1.1 mg/L	Obj. not met
	E206991	Aug 11	1	5.1 mg/L	Obj. not met
	E206989 near U.S. border	Aug 11	1	1.1 mg/L	Obj. not met
Diss. Oxygen as above but 7.75 mg/L min other times	Chilliwack River E207041 nr. Sumas R confl.	Aug 11	1	8.9 mg/L	Obj. met
Diss. Oxygen 5.0 mg/L min hypolimnion	Cultus Lake	1987	0	no data collected	Objective not checked
pH 6.5 - 8.5	Fraser River: E206581 at Hope, u/s STP	Jan 5-Dec 21	25	6.8 - 8.0	Obj. met
	50m u/s Hope STP	Jan29-Mar23	2	7.7 - 7.8	Obj. met
	200m d/s Hope STP	Jan29-Mar23	2	7.9	Obj. met
	50m u/s Kent STP	Jan29-Mar23	2	7.9	Obj. met
	100m d/s Kent STP	Jan29-Mar23	2	7.9 - 8.0	Obj. met

TABLE 19 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Fraser River: 50m u/s Alder-grove STP	Jan 20	1	7.7	Obj. met
	200m d/s Alder-grove STP	Jan 20	1	7.7	Obj. met
	Hope Slough: E207013 at mouth	Aug 12	1	7.4	Obj. met
	E207009 ~15 km u/s mouth	Aug 12	1	7.4	Obj. met
	Atchelitz Creek Luckakuck Creek Chilliwack Creek Elk Creek Bertrand Creek Salmon River	1987	0	no data collected	Objective not checked

See Figure 19 for site locations

TABLE 20

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	Main Stem: GVRD 15 d/s Brunette confl	May13-Oct20	11	80-1300/100 mL	Max obj. met
	GVRD 14 Pattullo Bridge	Aug11-Sep11 May13-Oct20	5 13	gm = 223/100mL max=1300/100mL	Obj. met
	GVRD 13 u/s N Arm confl	Aug11-Sep11 May13-Oct20	5 13	gm = 216/100mL max=2300/100mL	Obj. met
	GVRD 12 u/s N Arm confl	Aug11-Sep11 May13-Oct20	5 13	gm = 140/100mL max= 300/100mL	Obj. met
	Main Arm: GVRD 1 u/s Annacis	Apr 29-Oct 5	4	<20-300/100 mL	Max obj. met
	GVRD 2 d/s Annacis	Apr 29-Oct 5	4	130-5000/100mL	Max. not met
	GVRD 3 u/s Lulu	Apr 29-Oct 5	4	110-17000/ 100 mL	Max. not met
	GVRD 4 d/s Lulu	Apr 29-Oct 5	4	110-50000/ 100 mL	Max. not met
	GVRD 5 d/s Steveston	Apr 29-Oct 5	4	<20-30000/ 100 mL	Max. not met
	North Arm: GVRD 11 Queensborough Br.	Aug11-Sep11 May13-Oct20	5 13	gm = 117/100mL max= 500/100mL	Obj. met
	GVRD 10 ~5km d/s Belkin	Aug11-Sep11 May13-Oct 20	5 13	gm = 294/100mL max=1300/100ml	Obj. met
	GVRD 9 Mitchell Island	Aug11-Sep11 May13-Oct20	5 13	gm = 323/100mL max=9000/100mL	Obj. not met
	GVRD 7 Oak Street Bridge	Aug11-Sep11 May13-Oct20	5 13	gm = 260/100mL max=9000/100mL	Obj. not met
	GVRD 6 Sea Island-east	May13-Oct20	12	40-3000/100ml	Max obj. met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	North Arm GVRD 5 Sea Island-west	Aug11-Sep11 May13-Oct20	5 13	gm = 300/100mL max > 16000/ 100 mL	Obj. not met
	Middle Arm GVRD 8 at entrance	Aug11-Sep11 May13-Oct20	5 13	gm = 536/100mL max > 16000/ 100 mL	Obj. not met
Fecal Coliforms <200/100 mL geometric mean (gm) at beaches Jun - Aug	Iona Beach: every 200ft along jetty,east to west GVRD 4	Jun24-Jul24 Jul29-Aug28	5 5	gm = 50/100mL gm = 140/100mL	Obj. met
	GVRD 6	Jun24-Jul24 Jul29-Aug28	5 5	gm = 43/100mL gm = 120/100mL	Obj. met
	GVRD 8	Jun24-Jul24 Jul29-Aug28	5 5	gm = 34/100mL gm = 72/100mL	Obj. met
	GVRD 10	Jun24-Jul24 Jul29-Aug28	5 5	gm = 72/100mL gm = 74/100mL	Obj. met
	GVRD 12	Jun19-Jul24 Jul29-Aug28	5 5	gm = 41/100mL gm = 68/100mL	Obj. met
	GVRD 14	Jun19-Jul24 Jul29-Aug28	5 5	gm = 43/100mL gm = 56/100mL	Obj. met
	Tsawwassen Beach: GVRD 4 Yacht Club	Jul 7-Aug 11	5	gm = 23/100mL	Obj. met
	GVRD 5 Causeway-east	Jul 7-Aug 11	5	gm = 79/100mL	Obj. met
	GVRD 6 Causeway-west	Jul 7-Aug 11	5	gm = 63/100mL	Obj. met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	North Arm: New Westminster	Jan 7 (dry) Jan21 (dry) Mar 3 (wet) Mar 4 (wet)	1 1 1 1	8 mg/L 7 mg/L 19 mg/L 18 mg/L	Control site
	Byrne Road d/s Scott & Belkin	Jan 7 (dry) Jan21 (dry) Mar 3 (wet) Mar 4 (wet)	1 1 1 1	16 mg/L 10 mg/L 13 mg/L 32 mg/L	Obj. met Obj. met Obj. met Obj. not met
	Oak Street Bridge	Jan 7 (dry) Jan21 (dry) Mar 3 (wet) Mar 4 (wet)	1 1 1 1	17 mg/L 17 mg/L 9 mg/L 18 mg/L	Obj. met Obj. met Obj. met Obj. met
	Middle Arm	1987	0	no data	Obj not chkd
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20°C	Main Arm: 0301308 u/s Annacis	Aug 20,27, Sep 3,8,16 (2 depths)	10	<0.005-0.017 mg/L	Obj. met
	0301311 d/s Annacis	as above	10	<0.005-0.080 mg/L	Obj. met
	E105892 u/s Lulu	as above	10	0.011-0.077 mg/L	Obj. met
	E105893 d/s Lulu	as above	10	0.006-0.086 mg/L	Obj. met
	North Arm: u/s Scott Paper	as above	10	<0.005-0.008 mg/L	Obj. met
	d/s Scott Paper	as above	10	<0.005-0.008 mg/L	Obj. met
	New Westminster	Jan 7-Mar 4	4	0.023-0.031 mg/L	Max obj. met
	Byrne Road	as above	4	<0.005-0.018 mg/L	Max obj. met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20°C	North Arm Oak Street	Jan 7-Mar 4	4	<0.005-0.029 mg/L	Max obj. met
	Middle Arm Sturgeon Bank Roberts Bank	1987	0	no data collected	Objective not checked
Tot. Cl2 Res.	Main Arm	Feb24-Nov26	25	all <0.05 mg/L	Indef result
0.002mg/L max	Sturgeon,Roberts B	1987	0	no data	Obj not chkd
Dissolved Oxygen	Main Stem: u/s W-Langley	Aug20-Sep16	10	7.8-9.4 mg/L	Obj. met
7.75 mg/L min	d/s W-Langley	Aug20-Sep16	8	7.7-9.0 mg/L	Obj. met
		Aug 27	1	7.5 mg/L	Obj. not met
		Sep 3	1	7.4 mg/L	Obj. not met
	GVRD 15 d/s Brunette confl	May13-Oct20	6	8.9-10.9 mg/L	Obj. met
	GVRD 14 Pattullo Bridge	May28-Oct20	6	9.5-10.9 mg/L	Obj. met
	GVRD 13 & 12 u/s N Arm confl	May13-Sep23	11	8.7-10.6 mg/L	Obj. met
	Main Arm: GVRD 1 u/s Annacis	Feb24-Nov26	6	9.5-12.3 mg/L	Obj. met
	GVRD 2 d/s Annacis	as above	6	9.1-12.3 mg/L	Obj. met
	GVRD 3 u/s Lulu	as above	6	9.3-11.7 mg/L	Obj. met
	GVRD 4 d/s Lulu	as above	6	8.7-11.0 mg/L	Obj. met
	GVRD 5 d/s Steveston	as above	6	8.6-11.4 mg/L	Obj. met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 7.75 mg/L min	Main Arm:				
	0301308 u/s Annacis	Aug 27	1	7.6 mg/L	Obj. not met
		Sep 8	1	7.6 mg/L	Obj. not met
		Feb 4-Sep10	10	8.3-13.6 mg/L	Obj. met
	0301311 d/s Annacis	Aug20-Sep10	10	7.8-9.2 mg/L	Obj. met
		Feb 4	2	12.8-13.4 mg/L	Obj. met
	E105892 u/s Lulu	Aug20-Sep10	10	7.8-9.2 mg/L	Obj. met
		Feb 4	2	11.8-13.0 mg/L	Obj. met
	E105893 d/s Lulu	Aug20-Sep10	10	7.7-9.2 mg/L	Obj. met
		Feb 4	2	11.2-13.1 mg/L	Obj. met
	North Arm:				
	GVRD 11 Queensborough Br.	May13-Oct20	6	9.1-10.9 mg/L	Obj. met
	GVRD 10 ~ 5km d/s Belkin	May28-Sep23	5	9.1-10.4 mg/L	Obj. met
	GVRD 9 Mitchell Island	May13-Oct20	6	9.0-10.3 mg/L	Obj. met
	GVRD 7 Oak Street Bridge	May28-Sep2	6	8.6-9.9 mg/L	Obj. met
	GVRD 1,2,3,4 N Arm Jetty	May13-Oct20	20	8.0-10.1 mg/L	Obj. met
		Oct 20	2	6.6-7.5 mg/L	Obj. not met
	GVRD 5 & 6 Sea Island	May13-Oct20	11	8.5-10.2 mg/L	Obj. met
	u/s Scott Paper	Aug20-Sep16	8	8.1-9.0 mg/L	Obj. met
		Sep 3	1	7.6 mg/L	Obj. not met
		Sep 16	1	7.1 mg/L	Obj. not met
	d/s Scott Paper	Aug20-Sep16	10	7.7-8.2 mg/L	Obj. met
	New Westminster	Jan21,Mar3,4	3	11.4-13.0 mg/L	Obj. met
	Byrne Road	as above	3	10.9-12.7 mg/L	Obj. met
	Oak Street	as above	3	11.1-12.6 mg/L	Obj. met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Oxygen 7.75 mg/L min	Middle Arm GVRD 8	May13-Sep23	4	8.5-10.2 mg/L	Obj. met
Diss. Oxygen 9.0 mg/L min	Sturgeon Bank & Roberts Bank	1987	0	no data collected	Objective not checked
pH 6.5 - 8.5	Main Stem: u/s W Langley	Aug20-Sep16	10	7.7 - 8.0	Obj. met
	d/s W Langley	Aug20-Sep16	10	7.8 - 8.0	Obj. met
	Main Arm: GVRD 1,2,3,4,5	Feb24-Nov 26	30	7.2 - 7.7	Obj. met
	0301308,0301311, E105892,E105983	Aug20-Sep16	36	7.7 - 7.9	Obj. met
	North Arm: u/s & d/s Scott Paper	Aug20-Sep16	20	7.6 - 7.9	Obj. met
	New Westminster, Byrne Road,Oak St.	Jan 7-Mar 4	12	7.3 - 7.6	Obj. met
	Middle Arm	1987	0	no data	Obj not chkd
Total Cu <0.004mg/L av 0.006mg/L max or 20% increase	Main Arm: 0301308 u/s Annacis	Aug 20,27, Sep 3,8,16 at 0 & 6.1m	10	av=0.004 mg/L max=0.020 mg/L	Av obj. met Max not met
	0301311 d/s Annacis	as above	10	av=0.004 mg/L max=0.009 mg/L	Av obj. met Max not met
	E105892 u/s Lulu	as above	10	av=0.011 mg/L max=0.040 mg/L	Obj. not met
	E105893 d/s Lulu	as above	10	av=0.013 mg/L max=0.040 mg/L	Obj. not met
	North Arm u/s Scott Paper	Aug 20,27, Sep 3,8,16 at 0 & 4m	10	av=0.006 mg/L max=0.030 mg/L	Obj. not met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu <0.004mg/L av 0.006mg/L max or 20% increase	North Arm: d/s Scott Paper	Aug 20,27, Sep 3,8,16 at 0 & 4m	10	av=0.004 mg/L max=o.020 mg/L	Av obj. met Max not met
	New Westminster	Jan 7-Mar 4	4	<0.001-0.004 mg/L	Max Obj. met
	Byrne Road	as above	4	0.001-0.020 mg/L	Max. not met
	Oak Street	as above	4	0.001-0.004 mg/L	Max obj. met
	Middle Arm	1987	0	no data	Obj not chkd
Total Pb <0.003mg/L av 0.01mg/L max	Main Arm: 0301308 u/s Annacis	Aug 20,27, Sep 3,8,16 at 0 & 6.1m	10	all <0.1 mg/L	Indefinite result
	0301311 d/s Annacis	as above	10	all <0.1 mg/L	Indefinite result
	E105892 u/s Lulu	as above	10	<0.1-0.4 mg/L	Objective not met
	E105893 d/s Lulu	as above	10	<0.1-0.3 mg/L	Objective not met
	North Arm: u/s Scott Paper	Aug 20,27, Sep 3,8,16 at 0 & 4m	10	all <0.1 mg/L	Indefinite result
	d/s Scott Paper	as above	10	all <0.1 mg/L	Indef result
	New Westminster	Jan 7-Mar 4	4	0.001-0.006 mg/L	Max Obj. met
	Byrne Road	as above	4	<0.001-0.004 mg/L	Max obj. met
	Oak Street	as above	4	<0.001-0.003 mg/L	Max obj met
	Middle Arm	1987	0	no data	Obj not chkd

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn <0.05 mg/L av 0.10 mg/L max	Main Arm: 0301308 u/s Annacis	Aug 20,27, Sep 3,8,16 at 0 & 6.1m	10	av=0.016 mg/L max=0.100 mg/L	Obj. met
	0301311 d/s Annacis	as above	10	av=0.011 mg/L max=0.030 mg/L	Obj. met
	E105892 u/s Lulu	as above	10	av=0.084 mg/L max=0.570 mg/L	Obj. not met
	E105893 d/s Lulu	as above	10	av=0.038 mg/L max=0.100 mg/L	Obj. met
	North Arm: u/s Scott Paper	Aug 20,27, Sep 3,8,16 at 0 & 4m	10	av=0.009 mg/L max=0.030 mg/L	Obj. met
	d/s Scott Paper	as above	10	av=0.007 mg/L max=0.020 mg/L	Obj. met
	New Westminster	Jan 7-Mar4	4	<0.01-0.01mg/L	Max obj. met
	Byrne Road	as above	4	<0.01-0.02mg/L	Max obj. met
	Oak Street	as above	4	<0.01-0.02mg/L	Max obj. met
	Middle Arm	1987	0	no data	Obj not chkd
Chlorophenols (tri, tetra, penta) in water 0.2 ug/L max	Main Arm: 0301308, 0301311 u/s & d/s Annacis	Feb 4	4	all <0.2 ug/L tetra + penta	Indefinite result
	E105892, E105983 u/s & d/s Lulu	Feb 4	4	all <0.2 ug/L tetra + penta	Indefinite result
	North Arm: New Westminster	Jan 7,21	2	<0.2 ug/L tetra + penta	Indef result
		Mar 3,4	2	0.3-1.0 ug/L	Obj. not met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophenols (tri, tetra, penta) in water 0.2 ug/L max	North Arm: Byrne Road d/s Belkin & Scott	Jan7,21,Mar4	3	all <0.2 ug/L tetra + penta	Indef result
		Mar 3	1	0.6 ug/L	Obj. not met
	Oak Street	Jan 21	1	0.2 ug/L tetra + penta	Indef result
		Jan 7	1	0.3 ug/L	Obj. not met
		Mar 3	1	1.3 ug/L	Obj. not met
	Main Stem/Mid. Arm	1987	0	no data	Obj not chkd
Chlorophenols (tri, tetra, penta) in sediments 0.01 ug/g max	Main Stem: E206965 d/s Barnston Isl.	Jan 13	10	all <0.015ug/g	Indefinite results
	E206966 Sapperton Chnl.	Jan 13	10	all <0.015ug/g	
	Main Arm: E206969 at Annacis Island	Jan 15	10	all <0.015ug/g	
	E206970 at Ewen Slough	Jan 12	10	all <0.015ug/g	
	North Arm: E206967 opposite Belkin	Jan 14	10	all <0.015ug/g	
	E206968 at McDonald Slough	Jan 12	10	all <0.015ug/g	
	Middle Arm	1987	0	no data	Obj not chkd
PCBs in sediments 0.03 ug/g max	Main Stem: E206965 d/s Barnston Isl.	Jan 13	10	all <0.02 ug/g	Obj. met
	E206966 Sapperton Chnl.	Jan 13	10	all <0.02 ug/g	Obj. met

TABLE 20 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1987

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
PCBs in sediments 0.03 ug/g max	Main Arm: E206969 at Annacis Island	Jan 15	10	all <0.02 ug/g	Obj. met
	E206970 at Ewen Slough	Jan 12	10	all <0.02 ug/g	Obj. met
	North Arm: E206967 opposite Belkin	Jan 14	10	all <0.02 ug/g	Obj. met
	E206968 at McDonald Slough	Jan 12	10	all <0.02 ug/g	Obj. met
	Middle Arm	1987	0	no data	Obj not chkd
Chlorophenols in fish 0.1 ug/g max wet weight	Main Stem, Main Arm, North Arm, Middle Arm	1987	0	no data collected	Objectives to be checked in 1988
PCBs in fish 0.5 ug/g max wet weight					

See Figure 20 for site locations

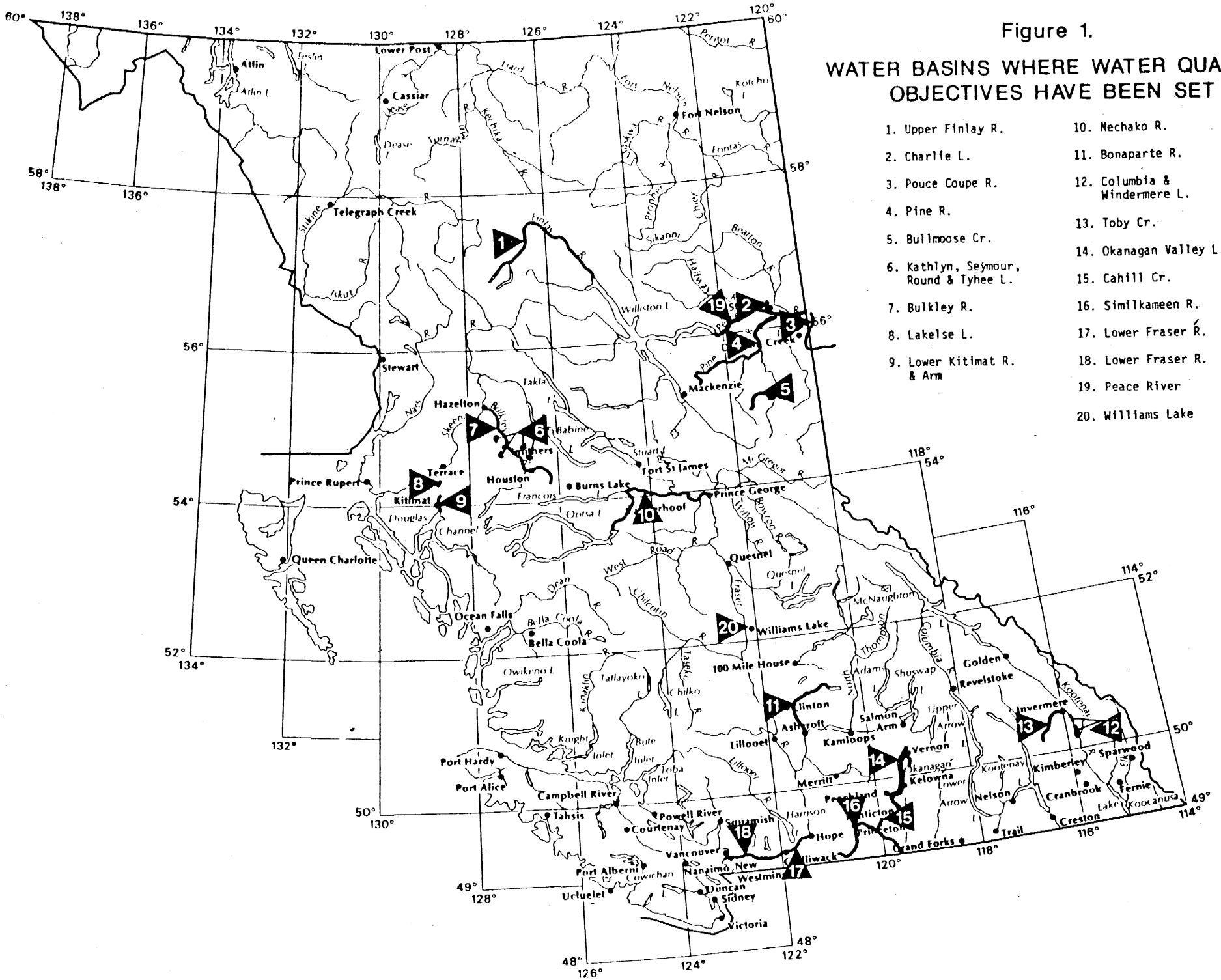


Figure 1.

WATER BASINS WHERE WATER QUALITY OBJECTIVES HAVE BEEN SET

1. Upper Finlay R.
2. Charlie L.
3. Pouce Coupe R.
4. Pine R.
5. Bullmoose Cr.
6. Kathlyn, Seymour, Round & Tyhee L.
7. Bulkley R.
8. Lakelse L.
9. Lower Kitimat R. & Arm
10. Nechako R.
11. Bonaparte R.
12. Columbia & Windermere L.
13. Toby Cr.
14. Okanagan Valley L.
15. Cahill Cr.
16. Similkameen R.
17. Lower Fraser R.
18. Lower Fraser R.
19. Peace River
20. Williams Lake

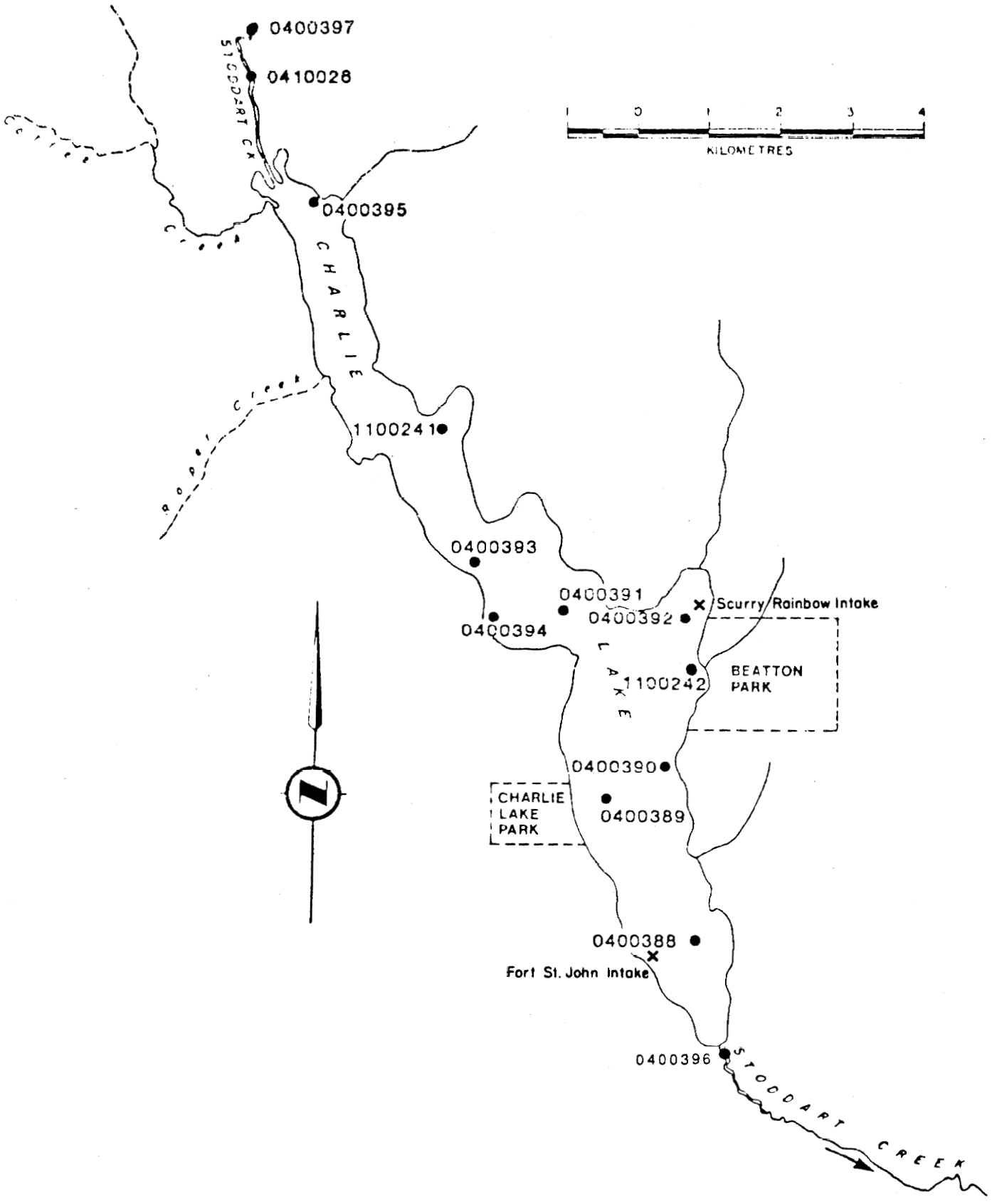


Figure 2 Charlie Lake

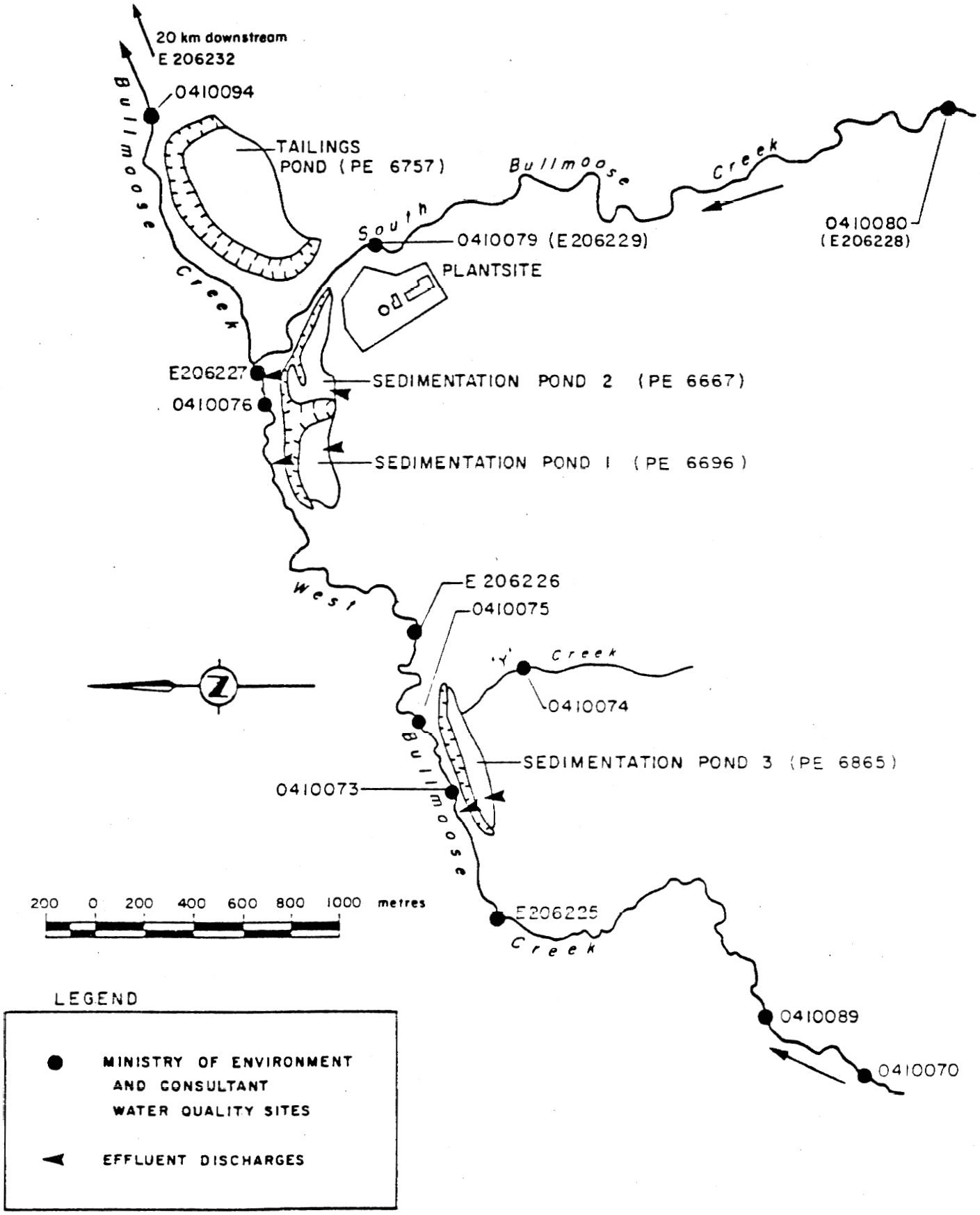


Figure 3 Bullmoose Creek

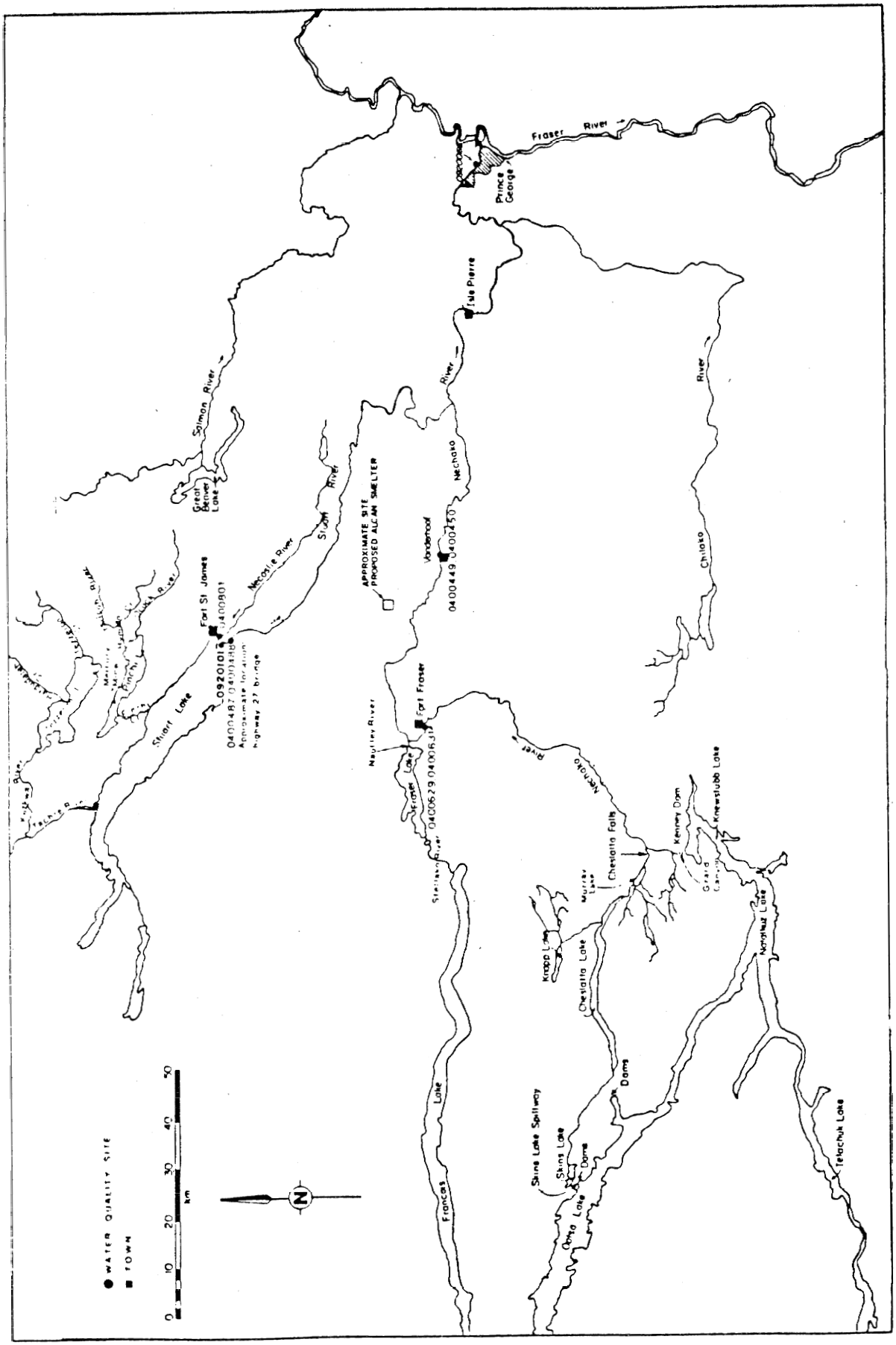


Figure 4 Nechako River

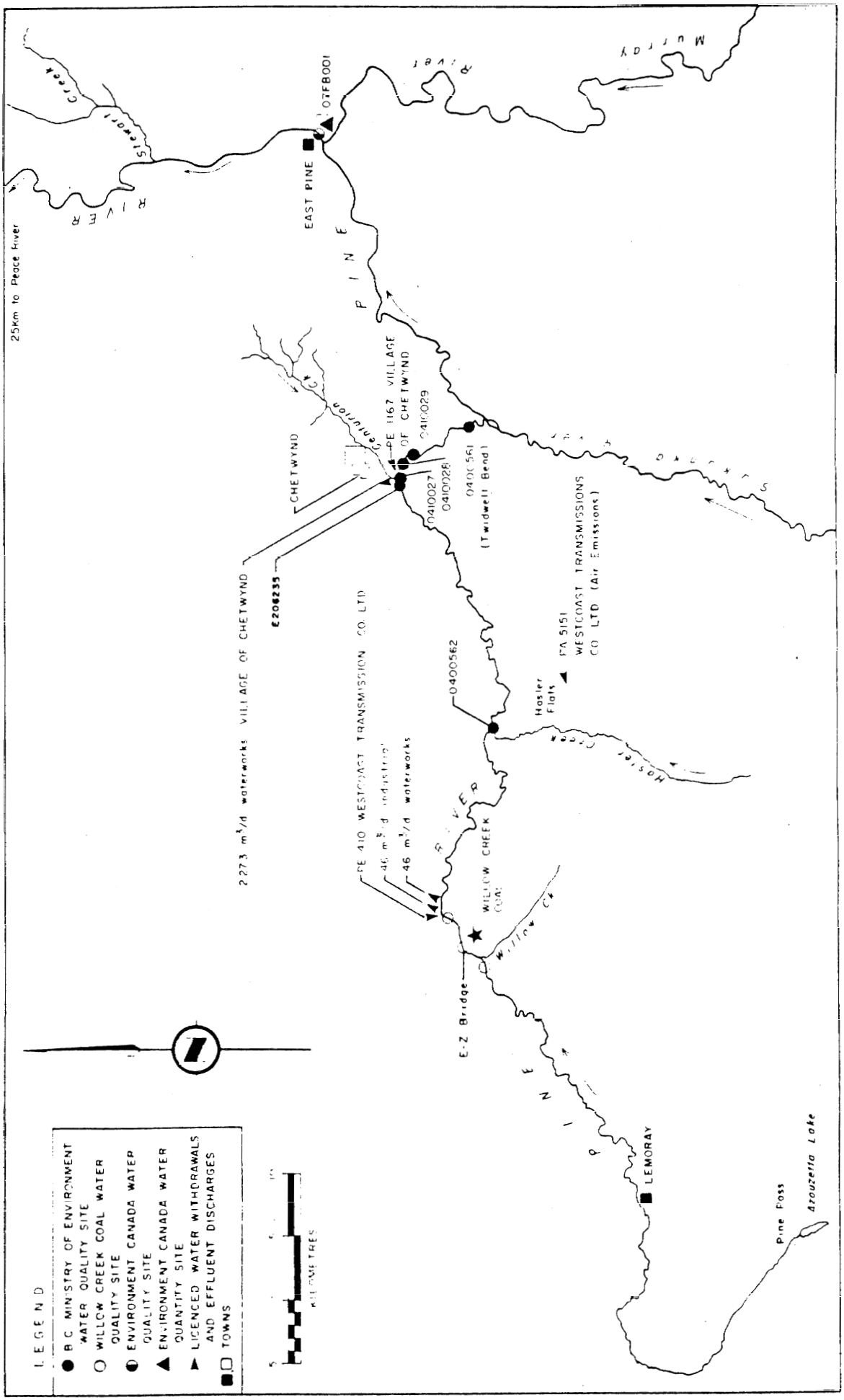


Figure 5 Pine River

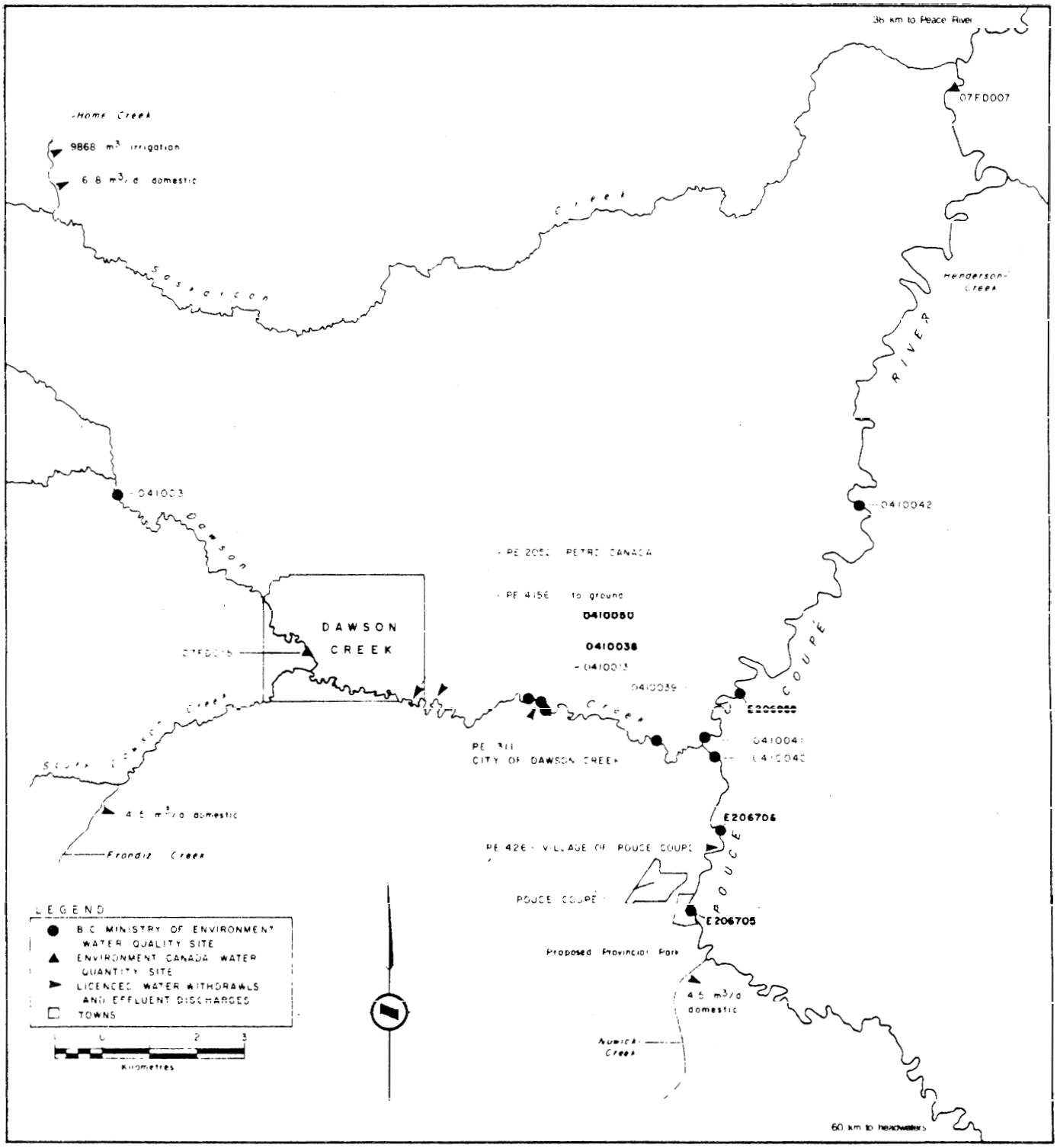


Figure 6 Pouce Coupe River

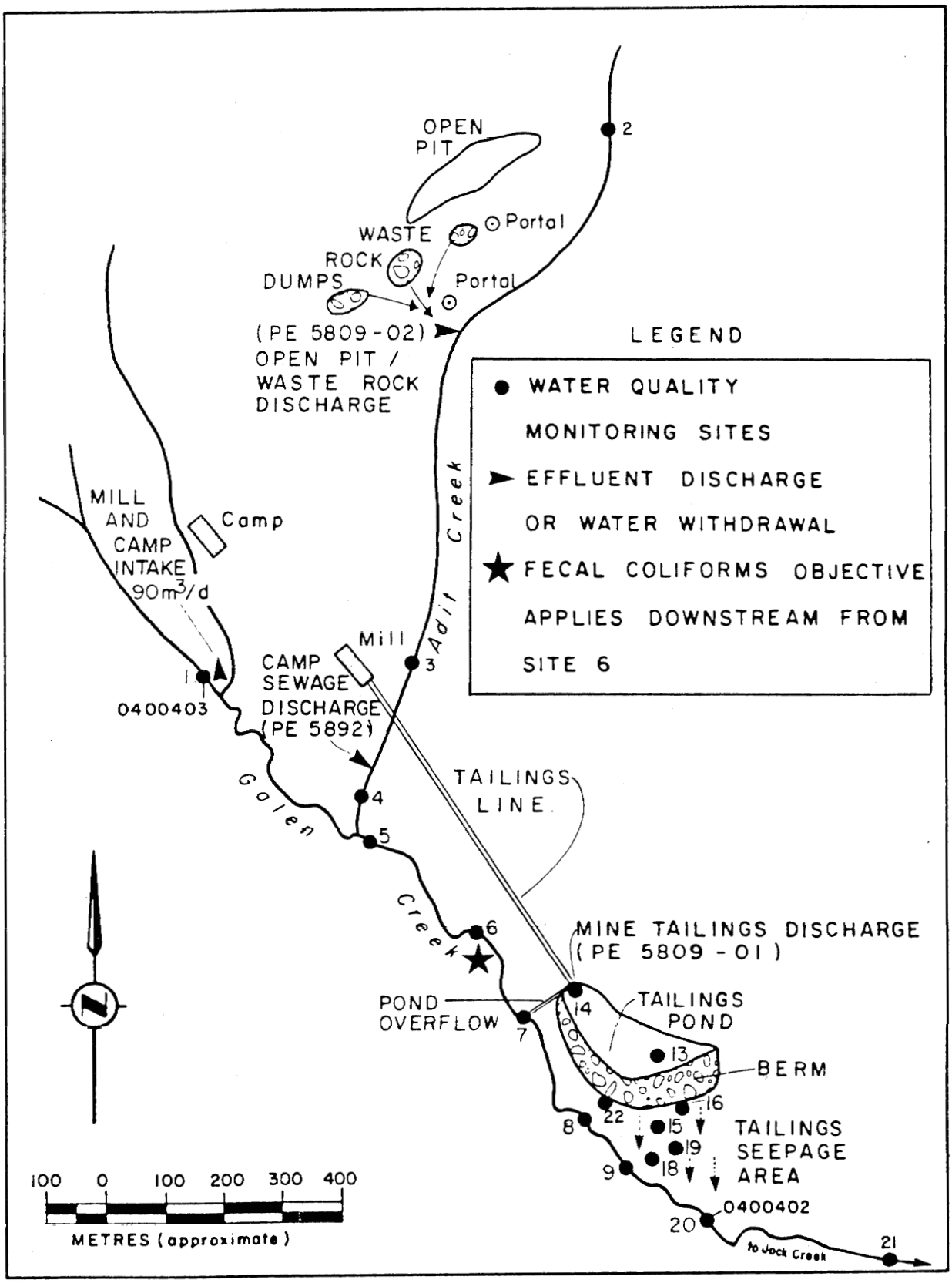


Figure 7 Upper Finlay Creek (tributaries)

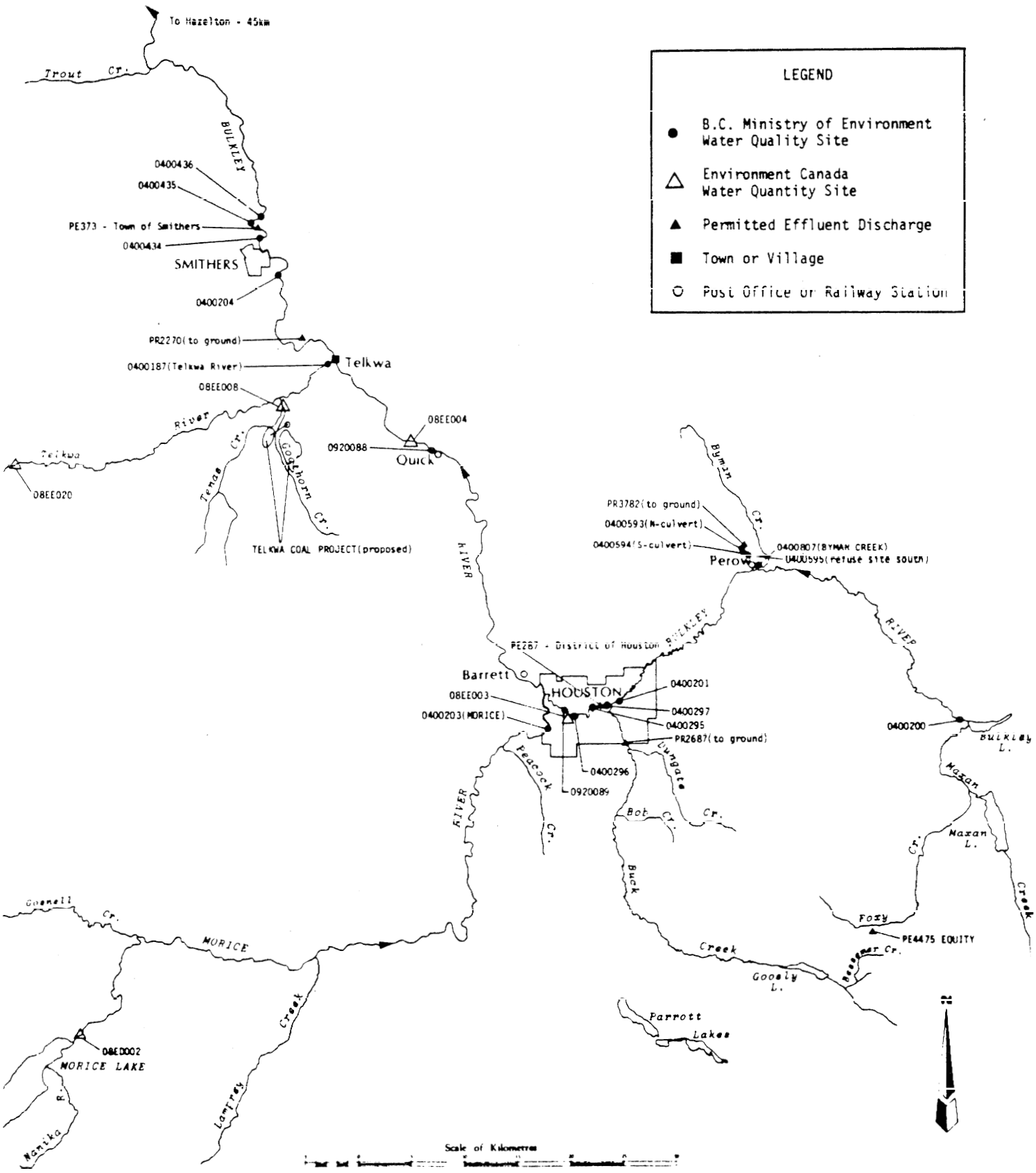
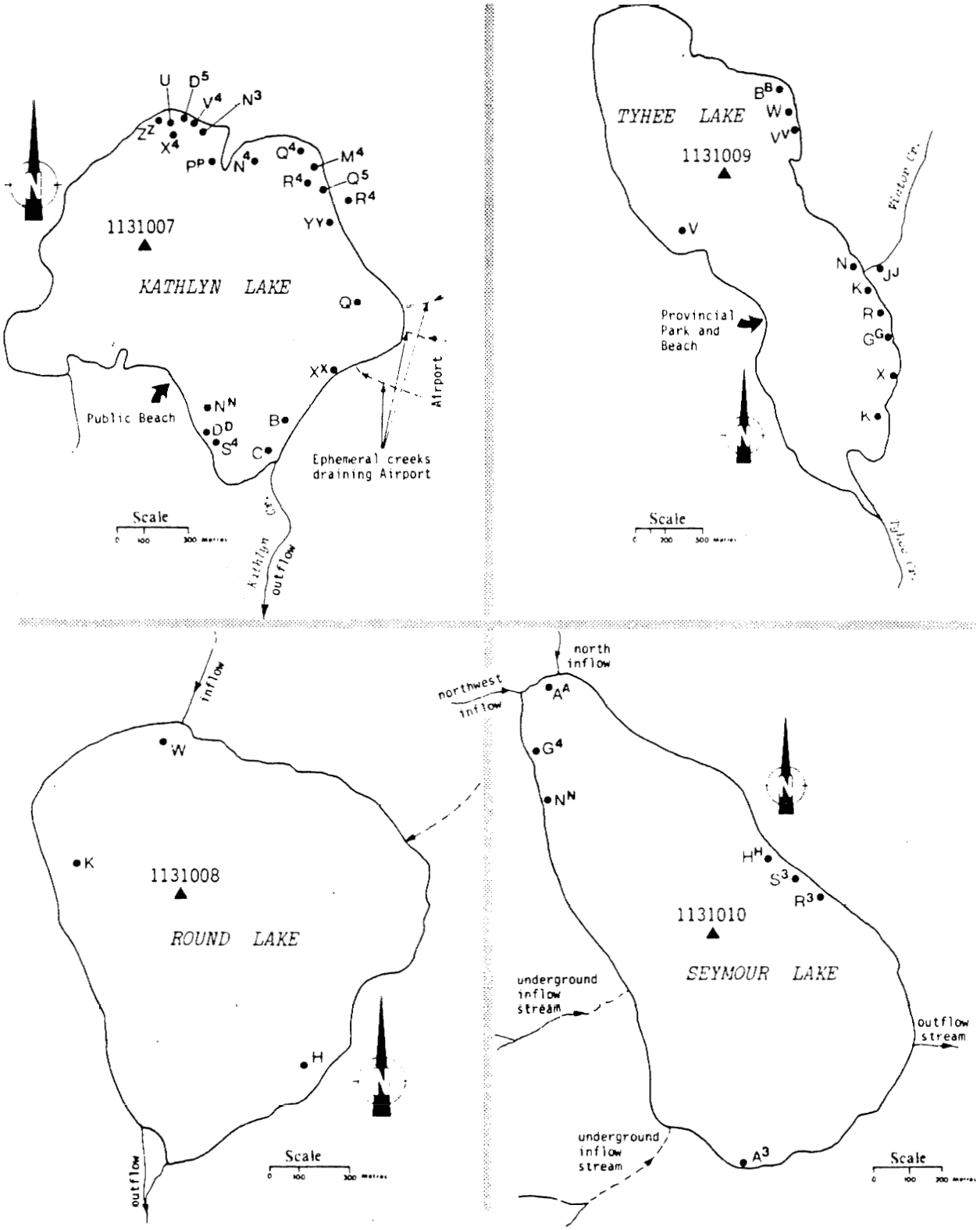


Figure 8 Bulkley River



• Water licence point of withdrawal(See Technical Appendix for water licence numbers and description of individual water licences).

▲ Water quality monitoring site.

Figure 9 Kathlyn, Seymour, Round, and Tyhee Lakes

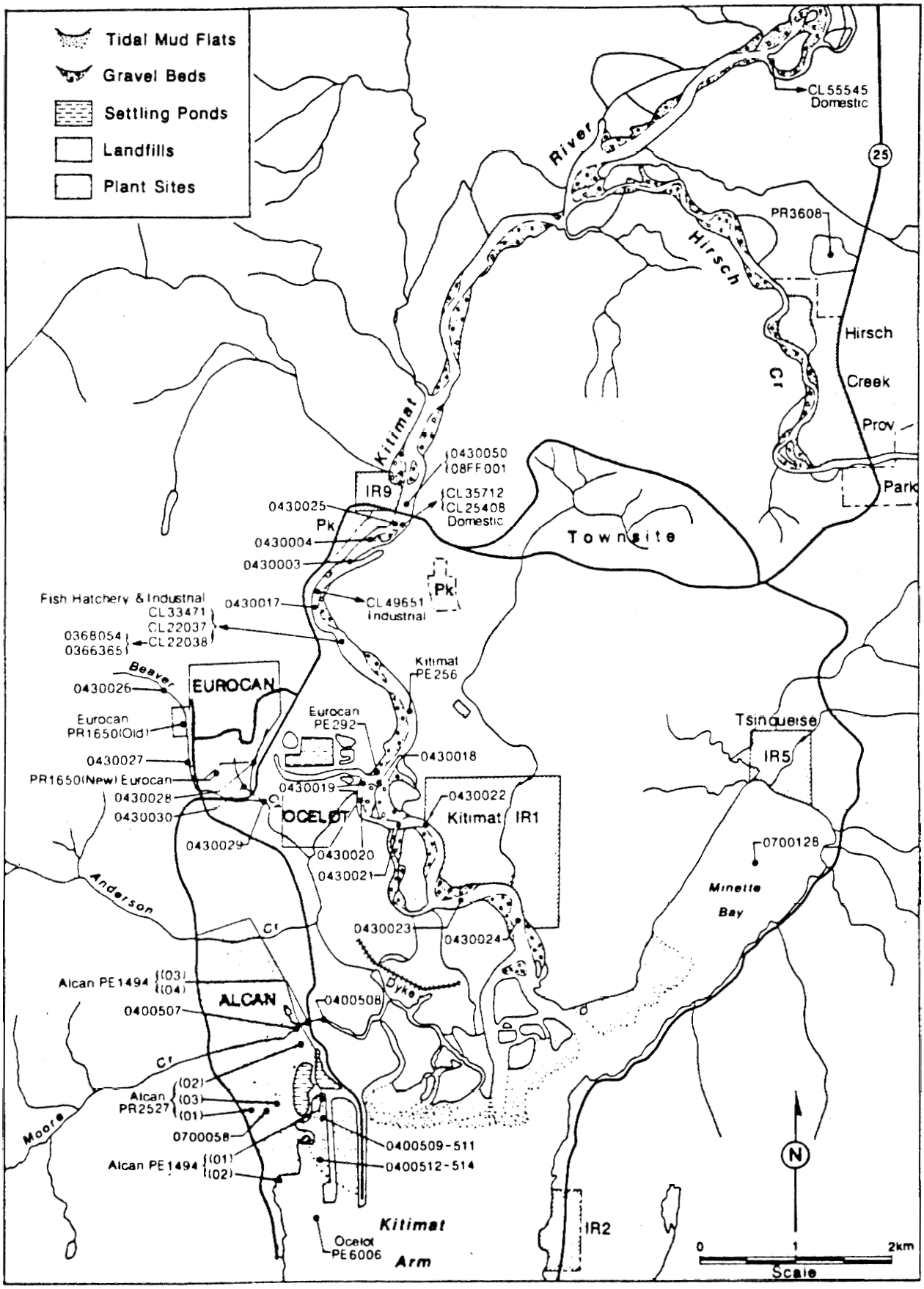


Figure 10 Lower Kitimat River and Kitimat Arm

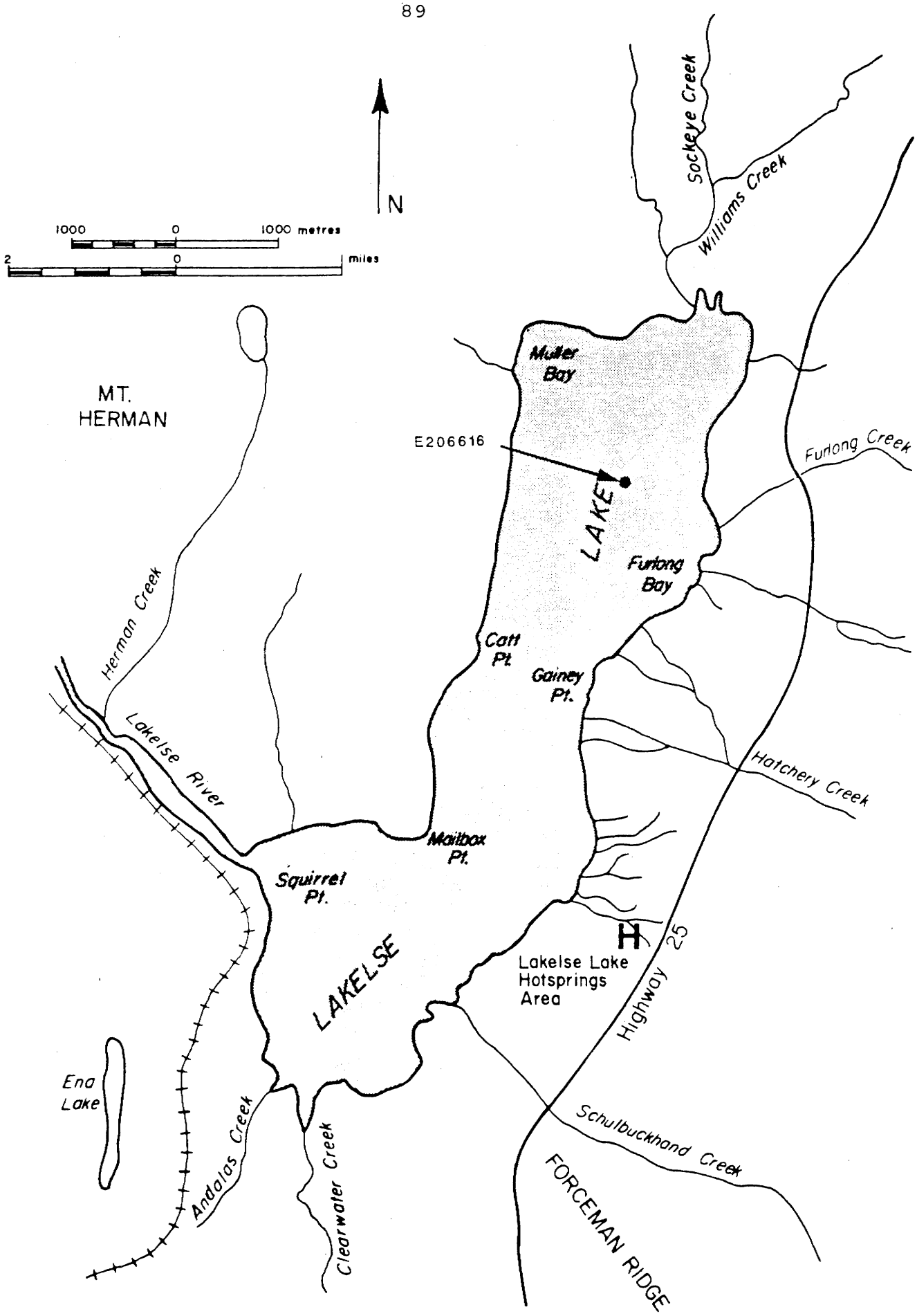


Figure 11 Lakelse Lake

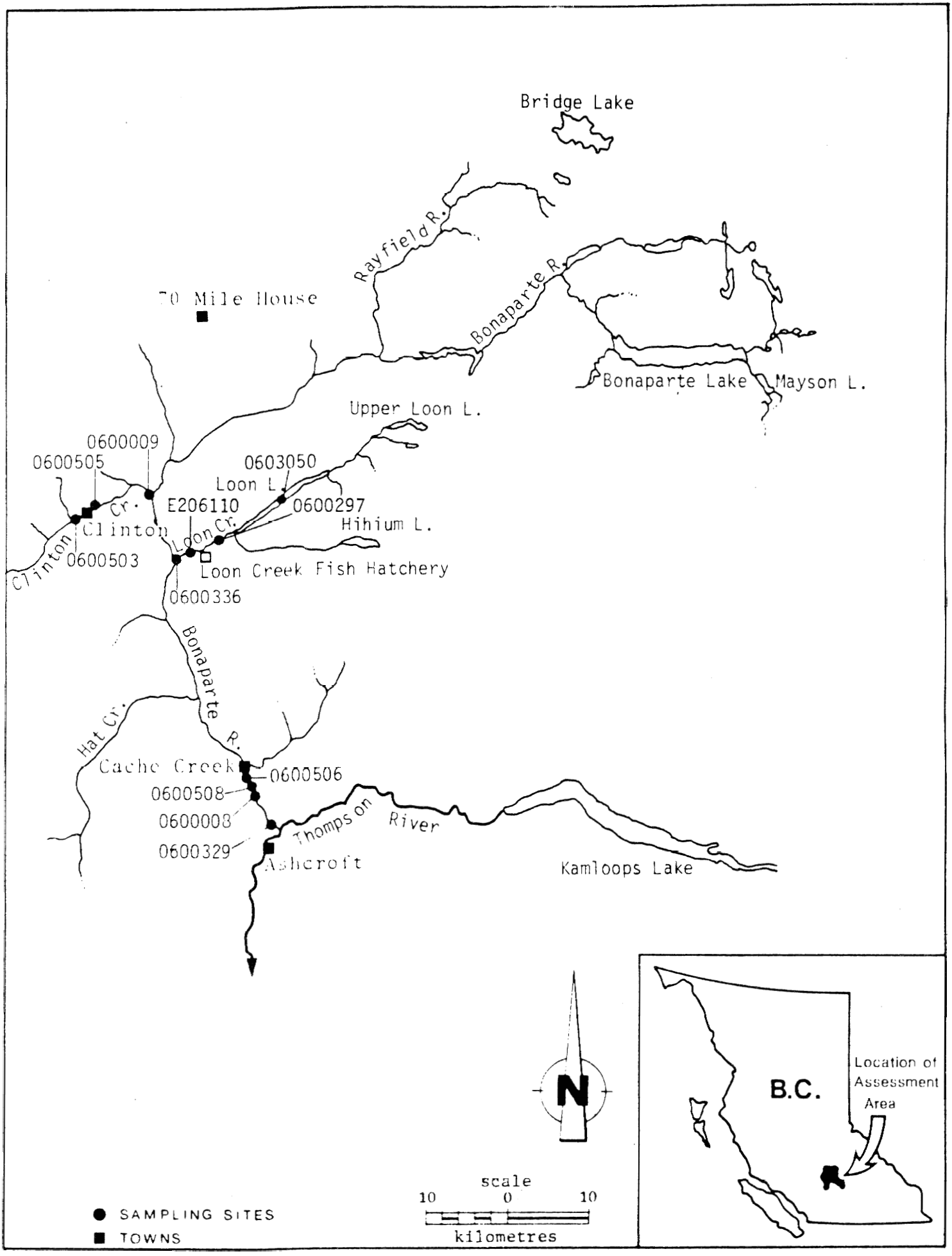


Figure 12 Bonaparte River

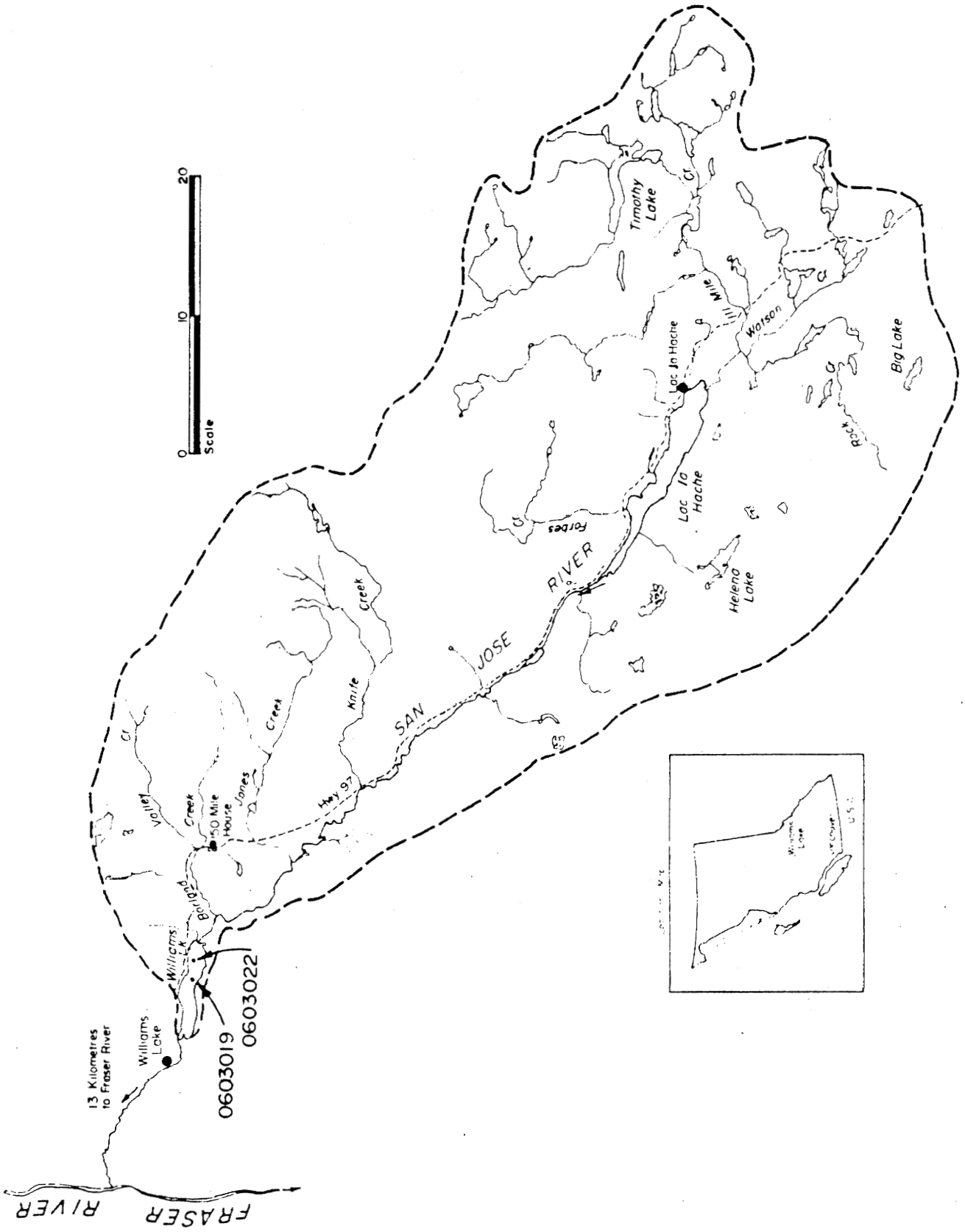


Figure 13 Williams Lake

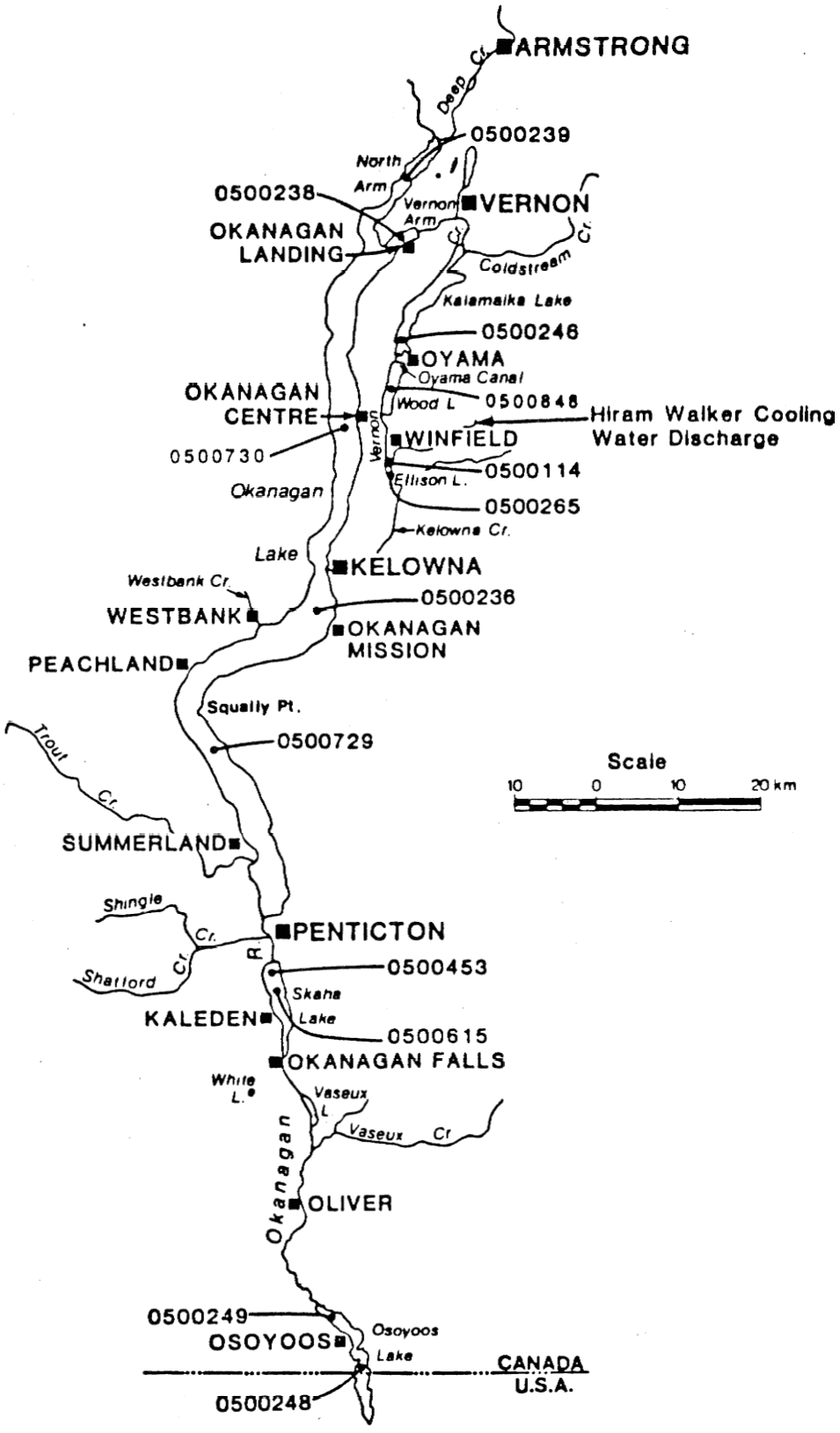


Figure 14 Okanagan Valley Lakes

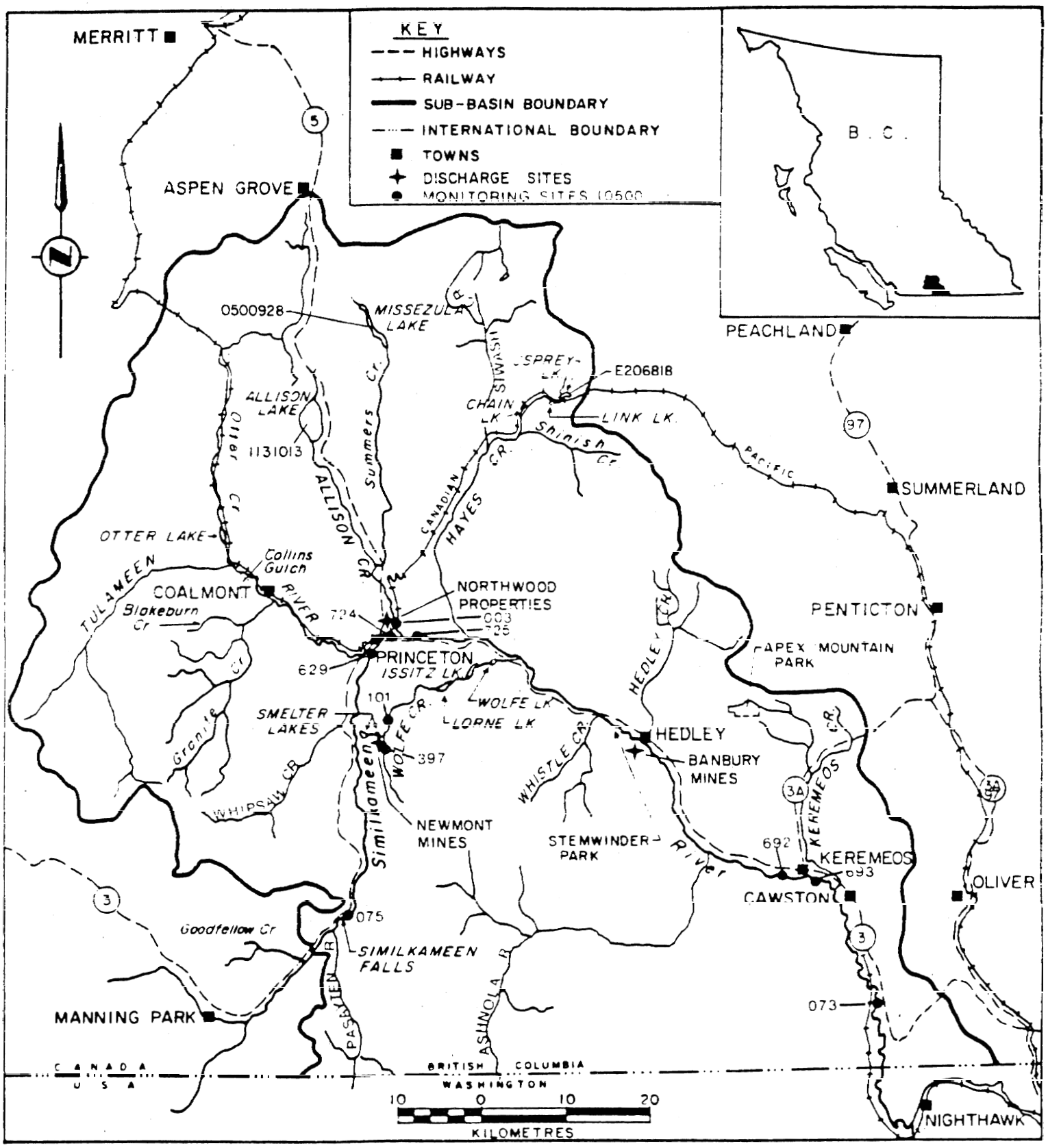


Figure 15 Similkameen River

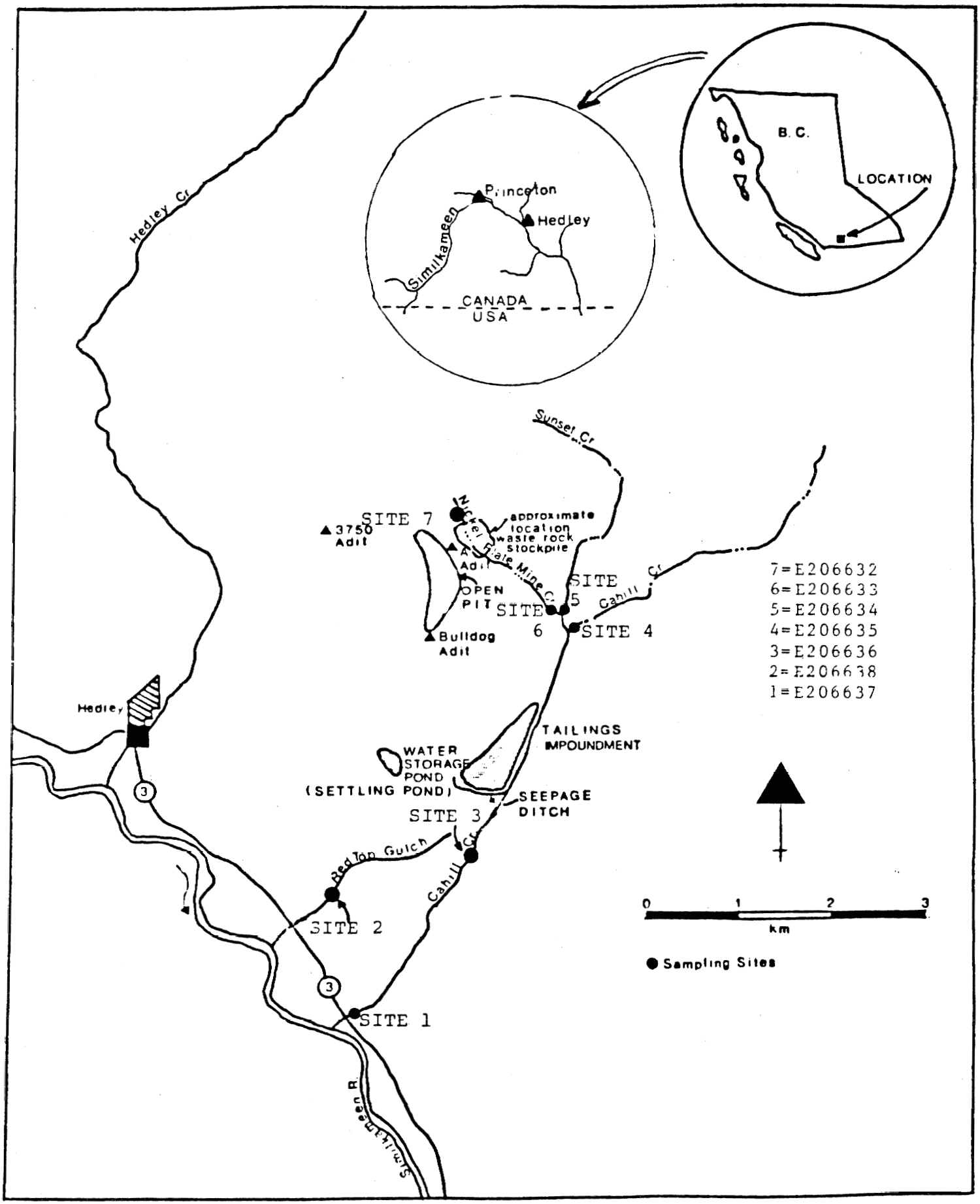


Figure 16 Cahill Creek

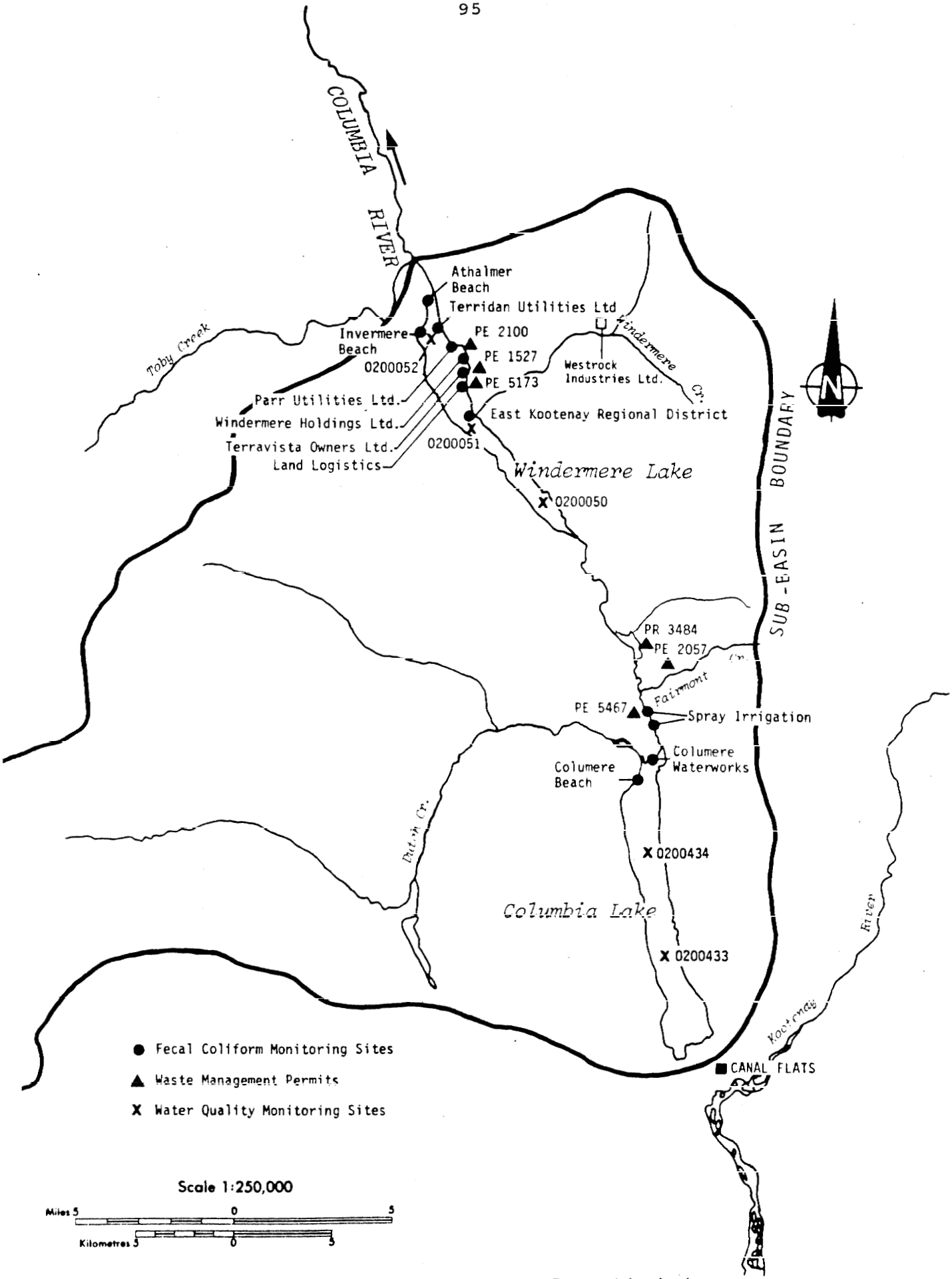


Figure 17 Windermere and Columbia Lakes

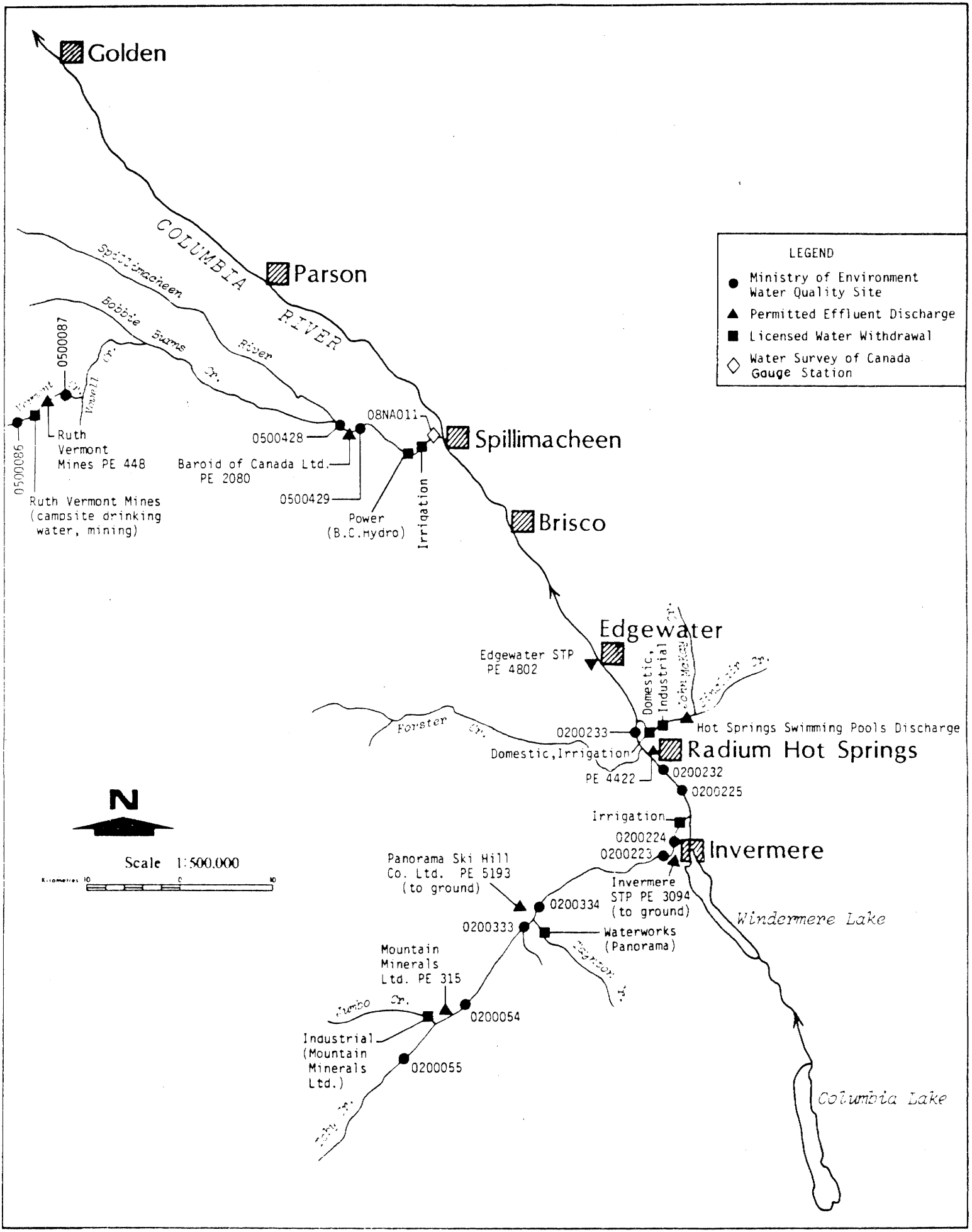


Figure 18 Toby Creek and the Upper Columbia River

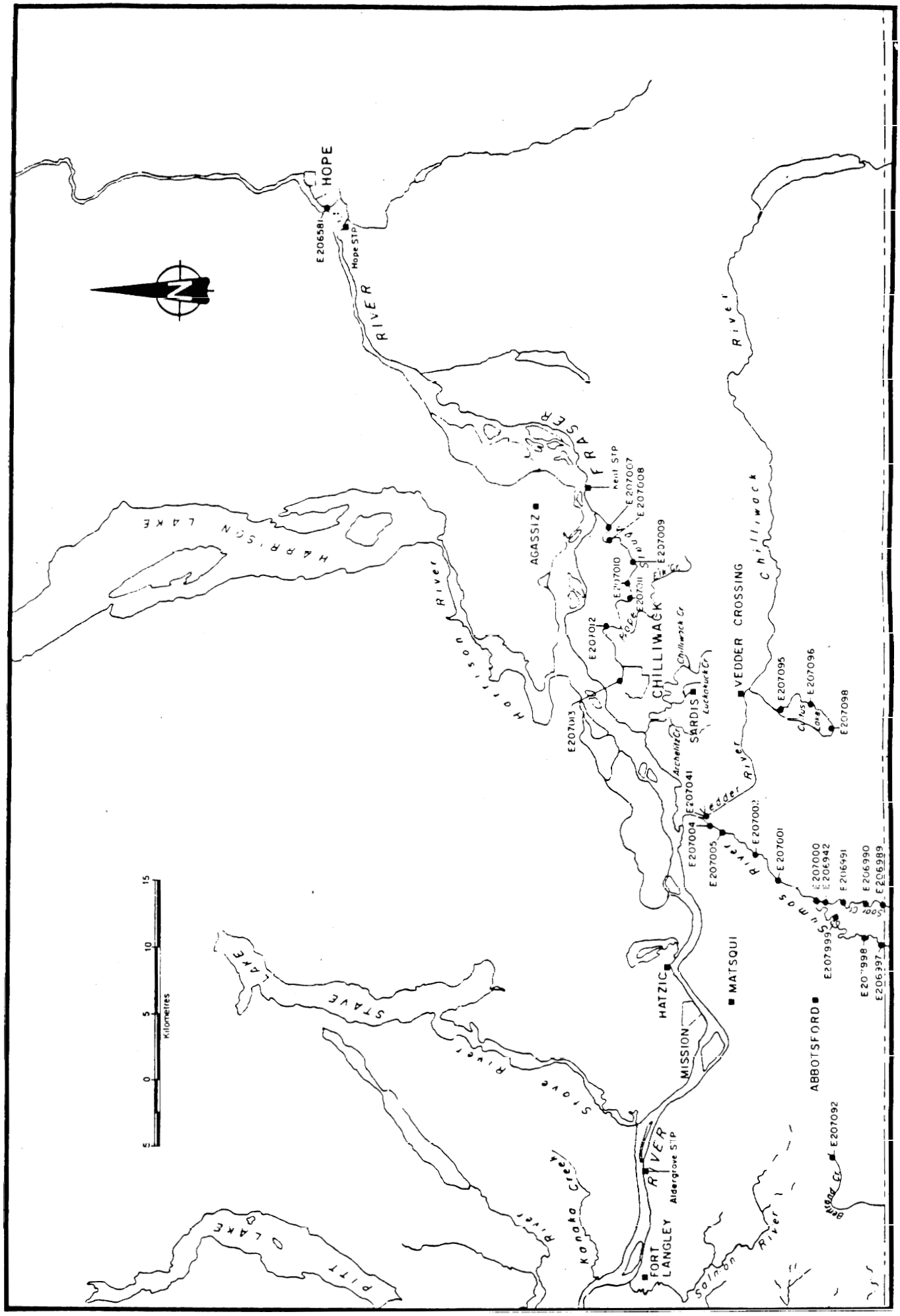


Figure 19 Fraser River from Hope to Kanaka Creek