

WATER QUALITY BRANCH  
ENVIRONMENTAL PROTECTION DEPARTMENT  
MINISTRY OF ENVIRONMENT, LANDS AND PARKS

**Water Quality in British Columbia**

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## SUMMARY

The setting of water quality objectives in priority basins in British Columbia began in 1982. By the end of 1994, the Ministry had set water quality objectives in 42 bodies of water, both fresh and marine, throughout the Province. Annual monitoring to check the attainment of objectives started in 1987. This report presents the results of monitoring done in 1994 to check the attainment of objectives in 21 basins.

The results are summarized in a series of tables. Over all Ministry Regions, the objectives were met 87 percent of the time, the same as last year but slightly less than in previous years when attainment ranged from 94 percent in 1987 to 89 percent in 1992. The reason there is not 100 percent compliance is because objectives are set in areas where water quality problems may occur. Monitoring results therefore reflect the state of water quality in areas affected by human development rather than in the Province as a whole.

Variables for which objectives were sometimes not met in three or more basins in 1994 included fecal coliforms, *E. coli*, suspended solids, turbidity, chlorophyll-*a* (a measure of algal growth in lakes and streams), dissolved oxygen, temperature, and certain heavy metals (copper, iron, lead, and zinc). Among organics, the objectives for PAHs in sediments were not met in three basins, and those for dioxins and furans in water and sediments were not met in two basins.

The Ministry recently developed a water quality index to help interpret objectives attainment data. The index reduces the water quality information, as tabulated in this report, to a simple category or rank describing the state of water quality in a body of water. A report on the status of water quality is being prepared by applying the index to water bodies with several years of data from checking objectives.

## ACKNOWLEDGEMENTS

The regional staff of Environmental Protection carried out most of the monitoring, either directly or by using co-op students and contractors. Zenon Environmental Laboratories analyzed the samples for most variables except for microbiological indicators measured by J.R. Laboratories, mercury measured by Analytical Service Laboratories Ltd., organotins measured by Axys Analytical Services Ltd., chlorine-produced oxidants measured by CB Research International Corp., and biological communities measured by Fraser Environmental Services.

Information was also obtained from regional offices of B.C Environment, from the Canada-B.C. Water Quality Monitoring Agreement, from regional offices of the Ministry of Health, from the federal departments of Environment and of Fisheries and Oceans, from B.C. Hydro, from Celgar Pulp Company, and from the Greater Vancouver Regional District.

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## INTRODUCTION

In 1981, the Auditor General recommended that the Ministry develop a method of measuring its performance in safeguarding water quality. To fulfill this recommendation, the Ministry undertook to set water quality objectives for fresh and marine surface waters of British Columbia.

Water quality objectives are safe conditions or threshold levels of a substance which will protect the most sensitive water use of a specific body of water. They establish a reference against which the state of water quality at a specific site is checked, as recommended by the Auditor General. They are also used to prepare Waste Management Permits or Plans and to measure their effectiveness. They are thus a basic tool for use in maintaining a healthy aquatic environment.

We began work on water quality objectives in 1982. The Ministry has now published objectives on bodies of water in 42 areas and updated them in one. In addition, objective-setting in six other basins is at an advanced stage. In each basin considered, we expected some type of water quality problem due to human activity. We set objectives for lakes, rivers, creeks, and marine areas covering all seven Environment Regions of the Ministry.

This report for 1994 is the ninth in a series of annual reports which began in 1986. Since 1987, the Ministry has been monitoring ambient water specifically to check the attainment of objectives. As a result, we have obtained an annual picture of how well objectives are being met since 1987. Each report is a condensation of monitoring data for use by managers of the water resource. It indicates where conditions are acceptable and provides a warning of where further evaluation may be needed to solve water quality problems. To keep this report to a reasonable length, we assume some reader familiarity with the detailed background reports on water quality objectives for each basin. Copies of these background reports may be obtained from the Water Quality Branch of the Ministry in Victoria.

We usually chose the basins for setting water quality objectives on the basis of perceived water quality problems. Thus, results presented here indicate conditions in likely problem areas, but do not reflect the state of water quality in the Province as a whole. There are many bodies of water where water quality is relatively unaffected by humans and likely to remain so for the foreseeable future. Thus, reports in this series are a measure of the state of water quality in areas of British Columbia influenced by human developments.

To help the public and resource managers interpret the large amount of attainment data presented in this type of report, we recently developed a water quality index. This is a system of ranking which assigns a number and grade to a body of water to indicate its quality. The B.C. index is based on factors which measure the success of meeting water quality objectives. It thus compresses large quantities of data into a statement on the quality of water and its uses. A brochure describing this index is available from the Ministry as is a more detailed report explaining how to calculate the index from the monitoring data on objectives attainment. The index is being applied to bodies of water in the Province to produce a status report on water quality in B.C.

## METHODS OF PRESENTING AND INTERPRETING THE DATA

### Reports on Objectives

At the present time, the Ministry of Environment has completed 42 reports on water quality objectives. The complexity and size of the reports varies considerably, depending upon the body of water considered. These reports are distributed among the Environmental Regions of the Ministry as follows:

Vancouver Island	5
Skeena	5
Omineca-Peace	8
Cariboo	2
Southern Interior	11
Kootenay	3
Lower Mainland	8
<hr/> Total	42

Work is in progress on another 6 reports for different water basins. These reports are now at a fairly advanced stage of completion.

### Tables of Results

We have summarized the data collected in 1994 to check objectives in Tables 2 to 22, with a separate table for each of the 21 water basins monitored. Because of funding limitations, we did not monitor all the basins in 1994 for which objectives exist. We consulted with the Regions early in the year to decide which basins to monitor and to establish the details of monitoring and funding. Monitoring schedules describe the work to be done, usually by contractors or students under regional supervision.

In each table we list all the objectives that have been set, as they appear in the summary table of each report on objectives. We have updated a few of the objectives to reflect new water quality criteria and procedures. For example, we are now using chlorophyll-*a* instead of periphyton biomass and total ammonia-N instead of un-ionized ammonia-N. The 90th percentile of 400

MPN/100 mL for fecal coliform values is used when high fecal coliform values are recorded at bathing beaches. In a few cases, such as the Peace River and Kitimat Arm, we have added some generalized water quality criteria to allow for the fact that threats to water quality have changed or are better understood since publication of the objectives reports.

Five different concluding statements are used: objective met, objective not met, indefinite result, objective not checked, and omitted 1994. We consider the objective met if the monitoring result equalled or was within the objective limit. We report the result as indefinite if there were insufficient data to check the objective, the data were suspect, or the minimum detectable concentration was too high. We report the objective as not checked if, for some reason, planned data collection did not take place. We report the objective as omitted if the plan was to not monitor because of low priority, taking into account past results. These tables are the most important part of this report since they summarize where, when, and by how much objectives were met in 1994.

## Text

In the next section, the text presents the results of our 1994 quality assurance program to test the accuracy and precision of laboratory data. We then give a provincial overview of the monitoring results. Finally, we describe briefly the tabulated data for each body of water, by Region, mentioning the highlights and sometimes drawing some general conclusions. At this stage, we avoid qualifying statements such as: "...the objectives were nearly met, slightly exceeded or probably met...". We consider them to be too speculative without the support of further evidence to explain them. Thus objectives not met by a wide margin are categorized equally with apparent borderline cases. Although a more detailed interpretation is desirable, this is not done here because the presentation of data that would then be required to support the interpretation is beyond the scope of a province-wide summary report.

We also do not attempt to explain what may have caused the results or to comment on the effect of objectives not being met. Such assessments would entail consideration of river flows, effluent discharges, whether objectives are long-term or short-term, the degree to which objectives are exceeded, quality assurance, and other factors. We are summarizing information collected over several years by ranking water quality with the newly developed water quality index. The results will be available in the water quality status report.

The 1994 Attainment Report guides those involved in managing water quality by focusing 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 whether objectives were not met because of natural phenomena or because there is a human cause to the problem.

## Figures

A location map in Figure 1 shows the 42 basins where objectives have been set. Separate maps, Figures 2 to 22, illustrate the 21 water basins monitored in 1994 and show the sampling sites referred to in the tables. Each figure number corresponds to the table of the same number.

## Guide to Ranking Future Monitoring

Due to limited funds, we cannot monitor all basins where objectives have been set each year. We have therefore ranked monitoring as follows:

- **1st priority:** any basin with less than three years of complete monitoring and any basin the Ministry considers provincially or internationally significant. Examples of significant basins are the Fraser River due to fisheries, the Okanagan Valley lakes due to recreation, the lower Columbia River due to transboundary effects, and Burrard Inlet due to a federal-provincial plan.
- **2nd priority:** any basin in which, after at least three years monitoring, a number of objectives are not regularly attained and there is either a local expression of concern or a plan for short-term action.
- **3rd priority:** any basin as for the 2nd priority above, but where there is no known concern or plan of action.
- **4th priority:** any basin in which, after at least three years monitoring, most objectives are either being met or the situation is fairly well documented with no change in status expected in the short term.

## QUALITY ASSURANCE PROGRAM

### Introduction

This is the fourth year of our quality assurance program which describes the accuracy and precision of test results. Details on procedures and results are in a separate report available from the Water Quality Branch (Quality Assurance / Quality Control for the 1994 Water Quality Objectives Program - December, 1994).

We chose 16 variables for testing in the program. These were 12 metals (aluminum, barium, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, and zinc) plus cyanide, ammonia nitrogen, nitrite nitrogen and suspended solids. Only water samples were tested, not sediments and tissues. We chose the variables based on important objectives most frequently exceeded as well as on availability of reference materials. We could not include fecal coliforms due to the lack of standard references.

In an ideal situation one would aim to measure the accuracy and precision of the total monitoring process. This would include sample collection, handling in the field, shipping, storage, and laboratory analysis. In 1994, we measured the accuracy and precision of the laboratory analyses with some work on combined field plus laboratory precision. The results apply to the June to September operating period of the laboratory when most ambient sampling occurs.

### Procedure

For metals, we obtained standard reference solutions from an established laboratory which had certified the metal levels. For nitrogen, cyanide, and suspended solids, we had commercial laboratories prepare standard solutions using clean-room techniques as required. Where possible, we chose concentrations for these references that were usually close to the maximum criterion level to protect aquatic life for each substance. Results thus indicate the confidence one may have in laboratory data at levels where sensitive objectives are set. However, these levels were often near and sometimes below laboratory detection limits and therefore tended to produce poor accuracy and precision.

We submitted all reference samples blind to the analyzing laboratory as if they were environmental samples. All variables were analyzed in their unfiltered or total state.

## Metals

For metals, the National Water Research Institute provided two reference solutions. The institute used Lake Ontario water spiked with a mixture of 14 metals. One reference solution contained about double the metal levels of the other. Actual certified concentrations of the 12 metals of interest to objectives attainment were as follows:

Aluminum:	39 and 61 µg/L	Iron:	6.4 and 28.4 µg/L
Barium:	23 and 52 µg/L	Lead:	5.5 and 10.1 µg/L
Cadmium:	4.9 and 10.4 µg/L	Manganese:	6.2 and 11.5 µg/L
Chromium:	7.1 and 13.0 µg/L	Molybdenum:	7.0 and 11.4 µg/L
Cobalt:	5.5 and 11.1 µg/L	Nickel:	6.6 and 12.5 µg/L
Copper:	7.6 and 13.2 µg/L	Zinc:	7.5 and 15.2 µg/L

Zenon Environmental Laboratories of Vancouver was the laboratory generally used for objectives work. We submitted 5 samples at each concentration to Zenon twice in July and August and once in September for a total of 50 samples.

Zenon analyzed for cadmium, copper, lead, nickel, and zinc using a low-level atomic absorption method. For the other metals, Zenon used a metals package with ICP emission spectroscopy which gives higher minimum detection levels than the low-level method.

## Ammonia and nitrite

Analytical Service Laboratories Ltd. (ASL) prepared reference solutions of ammonia and nitrite at the following concentrations:

Ammonia nitrogen:	10.037 mg/L
Nitrite nitrogen:	0.061 mg/L

We submitted 5 samples of each of these reference solutions to Zenon Environmental, once in June and twice in July and August, for a total of 25 samples for each variable.

## Cyanide

CB Research International Corp. (CBR) prepared reference solutions of cyanide immediately

before we submitted them to Zenon for analysis. We were thus assured that samples were analyzed within 72 hours of their formation, as required by the Ministry protocol. CBR certified the actual cyanide levels, expressed as strong-acid dissociable cyanide, as follows:

Cyanide range of concentrations: 0.186 to 0.199 mg/L SAD-CN

We submitted 5 samples in June, July, August, and September for a total of 20 samples.

### **Suspended solids**

The Ministry of Environment Laboratory Services had a contractor (B.C. Research) prepare two reference solutions. ASL verified the concentrations at the following levels:

Suspended solids concentrations: 21 and 102 mg/L

We submitted 5 samples at each concentration to Zenon for analysis, once in June and August and twice in July, for a total of 40 samples. Zenon used full-bottle analysis meaning all of the one litre sample was filtered rather than just an aliquot.

### **Field replicates**

To get an idea of field plus laboratory precision, regional staff carried out some replicate sampling at sites on the Nchako River, the Thompson River, Bessette Creek, Nickel Plate Mine Creek, Williams Lake, and Sproat Lake.

Duplicate samples were collected in quick succession and analyzed by Zenon for metals, nutrients, and suspended solids. This was usually done once except in the Nchako (5 times) and the Thompson (2 times). In Sproat Lake, 4 replicates were collected instead of duplicates.

## **Results**

We calculated the accuracy and the precision of the laboratory measurements. The accuracy is a measure of how the analytical result differs from the true value. It is expressed as a percent by dividing the analytical result by the true concentration of the reference solution or material. The precision is a measure of the repeatability of the analysis. It is also expressed as a percent by dividing the standard deviation of the analytical results by their mean.

We present the results as average accuracy and precision for all samples submitted at a given concentration with bracketed ranges obtained from each set of five identical samples.

### **Aluminum**

Analysis of reference solutions by Zenon at the 39 µg/L level showed all measurements as being less than Zenon's minimum detection limit of 60 µg/L, as one would expect. We could not therefore calculate accuracy and precision for this data set.

At the 61 µg/L level, only 7 of the 25 samples analyzed showed a value at or above Zenon's minimum detection limit of 60 µg/L. The accuracy for the data set of 7 was 112% and the precision 10%.

### **Barium**

The Zenon analysis of the reference solution at the 23 µg/L level gave an accuracy of 91% (87 - 93%) and a precision of 6% (0 - 13%). At the 52 µg/L level, the accuracy was 95% (89 - 102%) and the precision was 5% (1 - 3%). These results are generally within acceptable limits.

### **Cadmium**

The Zenon analysis of reference solutions produced an accuracy of 100% (91 - 105%) and a precision of 8% (6 - 12%) at the 4.9 µg/L cadmium level. At the 10.4 µg/L level the accuracy was 98% (92 - 104) and the precision 6% (0 - 8%). As in 1993, these are good results although the concentrations tested are quite high for ambient waters.

### **Chromium**

Analysis of reference samples by Zenon gave an average accuracy of 104% (90 - 110%) and an average precision of 32% (8 - 13%) at a chromium level of 7.1 µg/L. At 13.0 µg/L the results were an accuracy of 100% (92 - 111%) and a precision of 22% (4 - 6%).

These results are similar to those of 1993 which were a great improvement over those of 1992. They become even more acceptable if we remove the outlier that occurred at each concentration. The overall precision for all samples is worse than the precision for any set of 5 samples,

indicating poorer reproducibility between time periods.

### Cobalt

The Zenon analysis of reference solution at 5.5 µg/L gave an accuracy of 107% (91 - 109%) and a precision of 22% (14 - 47%). At the 11.1 µg/L level, the accuracy was 94% (86 - 112%) and the precision 12% (4 - 12%). These results are good, especially at the concentrations tested which are below levels of environmental concern.

### Copper

For the prepared reference solutions, Zenon gave an average accuracy of 99% (89 - 111%) and a precision of 16% (7 - 20%) at the 7.6 µg/L level. At 13.2 µg/L copper, the results were an accuracy of 109% (102 - 117%) and a precision of 8% (4 - 8%).

We therefore expect copper results, on average, to be no more than 9% higher than the true value and to be reproducible to within 16% by the laboratory. There were no outliers in this data set. While these results are within acceptable limits, the concentrations tested are somewhat high for ambient water.

### Iron

The levels of iron in the reference solutions, at 6.4 and 28.4 µg/L, were both below Zenon's minimum detection limit of 50 µg/L. We could therefore not calculate accuracy or precision although five of the results exceeded the detection limit, a few by a wide margin. Such results, called false positives, indicate possible laboratory contamination.

### Lead

The Zenon accuracy for reference solutions averaged 116% (98 - 132%) and the precision 19% (7 - 34%) at the 5.5 µg/L level. An obvious outlier (320 µg/L) was omitted from these calculations. At the 10.1 µg/L level, Zenon obtained average results of 117% (97 - 139%) for accuracy and 19% (8 - 22%) for precision.

In general one can therefore expect lead results to be 17% above the true value and to be reproducible within 19%. Considering the low levels involved, these results are within acceptable

limits.

### **Manganese**

The Zenon analysis of the reference solution at 6.2 µg/L gave an accuracy of 97% (90 - 103%) and a precision of 12% (0 - 18%). At 11.5 µg/L, the accuracy was 106% (101 - 110%) and the precision 7% (4 - 9%). These results are good especially for these concentrations which are well below environmentally significant levels.

### **Molybdenum**

Zenon's accuracy with the reference samples was 90% (77 - 103%) and the precision 17% (7 - 17%) at 7 µg/L. At 14.4 µg/L the accuracy was 105% (93 - 116%) and the precision 12% (4 - 13%). There were no outliers. The results are within acceptable limits and similar to those obtained in 1993.

### **Nickel**

Zenon's analysis of the reference solution at 6.6 µg/L gave an accuracy of 102% (79 - 163%) and a precision of 36% (9 - 18%). This nickel level is very close to Zenon's minimum detection limit of 6.7 µg/L which accounts for the lack of precision and the spread in accuracy results. At 12.5 µg/L, the accuracy was 106% (88 - 114%) and the precision 30% (4 - 19%). These values improved to 100% and 14% when a single outlier was omitted.

These results are good, especially since the concentrations tested are within environmentally significant levels.

### **Zinc**

At 7.5 µg/L, the level of zinc in the reference solution was below Zenon's minimum detection limit of 10 µg/L. We could therefore not calculate accuracy and precision. Nonetheless, nearly 90% of the analyses exceeded the detection limit by a small margin which is not an acceptable result. At the 15.2 µg/L level, the accuracy was 134% (132 - 145%) and the precision 18% (0 - 36%) once two outliers were omitted.

These results show that we have some problem with the analysis of zinc at concentrations which

are generally below environmentally significant levels. Even so, there is an appreciable improvement over results from 1992 and 1993.

### **Ammonia nitrogen**

The testing of ASL's reference solution by Zenon gave an average accuracy of 94% (91 - 96%) and precision of 5% (3 - 8%) at the 10 mg/L level. These results are within acceptable limits and better than in past years.

### **Nitrite nitrogen**

Out of the 25 samples of ASL's reference solution, which contained 0.061 mg/L nitrite-N, Zenon reported one less than detection (0.005 mg/L) and one outlier (0.006 mg/L) near the detection limit.

With the remaining 23 samples, Zenon obtained an accuracy of 98% (91 - 109%) and a precision of 9% (1 - 11%). These results are within acceptable limits and are an improvement over previous years.

### **Cyanide (strong-acid dissociable)**

This was the second year in our quality assurance program that we submitted samples within 72 hours of their formation, as required by the protocol. For solutions containing 0.186 mg/L to 0.199 mg/L SAD-CN, Zenon obtained an accuracy ranging from 50 to 103% and a precision from 1 to 17%.

These results are not as good as those from 1993. However, with the exception of the July batch when the accuracy was 50%, the results were within acceptable limits.

### **Suspended solids**

The testing of the Ministry-prepared solutions by Zenon gave an accuracy of 97% (95 - 98%) and a precision of 2% (0 - 3%) at the 21 mg/L level. At the higher concentration of 101.2 mg/L, Zenon results gave an accuracy of 99% (99.1 - 99.8%) and a precision of 1% (0 - 2%) once an outlier (90 mg/L) was disregarded. These results were well within acceptable limits and similar or better to those of the past two years.

## Field replicates

We can get a measure of field plus laboratory precision from duplicate sampling of receiving water. Accuracy cannot be calculated without knowing the true concentrations in the ambient sample. However, because concentrations in the environment are usually low, often below or near detection limits, results of repeated sampling are not always conclusive. We have summarized the results as follows:

- Suspended solids:

The few measurements made were at or below the detection limit of 4 mg/L. There were no outliers which indicates that the overall precision was good.

- Nutrients:

Ammonia and nitrite nitrogen levels were close to 0.005 mg/L, the maximum recorded being 0.014 mg/L. The reproducibility was generally good at all sites where measurements were made.

- Metals:

Most values were close to or below detection limits. A few cases with higher results gave a precision for iron of 0% to 28% (no lab precision for comparison) and for manganese 0% to 20% (lab precision 0 to 18%). There was an occasional outlier, such as for cobalt (0.049 mg/L) and chromium (0.007 mg/L). Taken as a whole the metal results show a precision which is similar to laboratory precision, indicating that sampling did not affect reproducibility.

change the final result. The inclusion or omission of water basins with either serious or minor water quality problems will obviously also affect the outcome.

The overall result for objectives met in 1994 was the same as in 1993 but slightly lower than results for previous years. The objectives were met 94% of the time in 1987, 93% in 1988, 92% in 1989, 93% in 1990, 90% in 1991, 89% in 1992, and 87% in 1993. The data suggest a minor downward trend. As the monitoring program is repeated in future years the general picture could change even further. New basins will be added and, with a shrinking monitoring budget, there will be a tendency to cease monitoring in areas where objectives are being met consistently by a wide margin, as described in the Methods section (Guide to Ranking Future Monitoring).

If we wish to use objectives attainment data to describe the general state of water quality in developed areas, we will need to maintain monitoring in all areas where objectives have been set. If, as is likely, monitoring resources are scarce, we will need to concentrate on areas where the worst human-made water quality problems occur. This will produce a more negative general result, although we would expect the situation to improve in subsequent years as corrective action is taken. The goal, of course, is for water quality objectives to be met 100% of the time in all areas. Monitoring in future years, followed by corrective action where required, will show how close we can get to this ideal situation.

## VANCOUVER ISLAND REGION

### Cowichan-Koksilah Rivers

The Cowichan River is the most important river on Vancouver Island for recreational and commercial fisheries. The Koksilah River is a major tributary of the Cowichan River near its mouth. Possible sources of contamination include treated municipal sewage, agriculture, urban development, and effluents from a fish hatchery and abandoned metal mines.

Monitoring to check objectives was carried out from 1988 to 1993 and discontinued in 1994 as consistent results were being obtained. Objectives not met included those for microbiological contaminants in both rivers and for algal growth in the lower part of the Cowichan River. Monitoring to check objectives attainment should be resumed after these problems have been addressed.

### Middle Quinsam Lake

Middle Quinsam Lake drains via the Quinsam River into the Campbell River near its estuary. The Middle Quinsam Lake sub-basin is a valuable habitat for trout and salmon but could be impacted by an open-pit coal mine operating in the area.

Measurements between 1989 and 1993 showed that objectives were generally met at all times. There was no monitoring to check objectives in 1994. Further monitoring is not a priority in the immediate future unless there are changes at the mine or new developments in the watershed.

### Oyster River

The Oyster River flows from the Forbidden Plateau area into the Strait of Georgia, south of Campbell River. The river and its tributaries are important habitat for several species of trout and salmon. The main threats to water quality are logging, agriculture, and mine exploration. We expect the latter to lead to active mining in the future, especially for coal.

Between 1990 and 1993, the objectives were usually always met. Since the situation is stable, we did not monitor in 1994 and no further work to check objectives is planned at this time unless

development occurs in the watershed.

## Elk and Beaver Lakes

Table 2 lists results and Figure 2 shows site locations.

Located near Victoria, these are the most important recreational fisheries lakes on southern Vancouver Island. Water-contact recreation is also very important in the lakes. Residential and agricultural development and the release of phosphorus from lake sediments are responsible for the present eutrophic state of the lakes.

This is the second year we monitored to check the attainment of objectives. As in 1993, objectives for dissolved oxygen, chlorophyll- $\alpha$  and the phytoplankton community were not met, reflecting the eutrophic nature of the lakes. We recommend monitoring for at least one more year to document the water quality situation with reasonable confidence.

## Tsolum River

Table 3 lists results and Figure 3 shows the site location.

The Tsolum River flows from Mount Washington to the Puntledge River at Comox on Georgia Strait. Acid-mine drainage from a closed copper mine in the headwaters creates high copper levels which are deleterious to fish. The river has the potential to support significant populations of salmonids.

Objectives for the Tsolum River were issued recently and their attainment was checked for the first time in 1994 in the river just downstream from the mine site. The objective for dissolved copper was often not met, indicating a continued threat to fish. The objective for percent steelhead survival was not checked.

Reclamation work in the mine area to improve water quality has been taking place and we recommend continued objectives monitoring to track progress.

## SKEENA REGION

### **Bulkley River**

The Bulkley River is a major tributary to the Skeena River. It is an important river for fisheries and has some drinking water use. The main influences on water quality are treated municipal effluent from Houston and Smithers, agriculture, urban runoff, and possible contamination in the headwaters from mining.

We have monitored the attainment of objectives since 1988 and obtained consistent data in that time. Given these results, we consider objectives checking to be a relatively low priority at this time and have not monitored since 1992.

### **Kathlyn, Seymour, Round, and Tyhee Lakes**

These four small lakes, in the Smithers area, are used for recreation, domestic water supply, and irrigation. The main influences on water quality are agriculture and residential development around the lakes.

Monitoring between 1987 and 1993 showed objectives for turbidity, colour, and phosphorus not being met due to the eutrophic nature of the lakes. Routine monitoring to check objectives ended after 1993 while plans to rehabilitate lake water quality were being prepared. Once corrective action starts, monitoring for objectives attainment should resume to check progress.

### **Lower Kitimat River and Arm**

Table 4 lists results and Figure 4 shows site locations.

The river and arm are an important migration route for salmonids, and the water is also used for recreation and for industrial and municipal supplies. A kraft pulp mill and a municipal treatment plant discharge to the river and an aluminum smelter and ammonia plant discharge at the head of the arm. The existing water quality objectives are being updated.

Some objectives and criteria were not met in 1994 at certain locations in the Harbour. They included the objectives for cyanide, fluoride, and iron and the criteria for PAHs in sediments and

for dioxins and furans in sediments to protect aquatic life.

Objectives met in 1994 included those for fecal coliform, copper, and lead in Kitimat Arm, and for turbidity, nitrite, dissolved oxygen, colour, and pH in the river. We recommend continued monitoring as the Ministry works with dischargers to upgrade effluent treatment facilities.

## **Lakelse Lake**

Lakelse Lake drains into the Skeena River and is important for salmon spawning and rearing and for recreation. It is also used as a domestic water supply. The only threats to water quality are septic tanks around the shoreline, agriculture, and logging in watersheds that drain into the lake.

The objectives were last checked in 1992 and all were met. We have not monitored since then as we presently consider such monitoring to be a low priority.

## **Yakoun River**

The Yakoun River is on Graham Island in the Queen Charlotte Islands. It flows north from the Queen Charlotte Ranges into Masset Inlet. An open pit gold mine within the drainage has been proposed and water quality objectives have been set accordingly. The river has valuable fish resources, contributing all five species of salmon. It is also important for wildlife and recreation.

The development of the gold mine is on hold. We recommend monitoring to check the attainment of water quality objectives when the project proceeds.

## OMINECA-PEACE REGION

### **Charlie Lake**

Charlie Lake is used as a drinking water supply and for recreation. Agriculture, residential development around the lake, and nutrients from lake sediments are factors affecting water quality.

Monitoring from 1987 to 1993 showed the main problem to be high phosphorus levels causing eutrophic conditions. Studies are underway to determine how to reduce nutrient input. Routine monitoring to check objectives should resume when corrective measures are undertaken.

### **Bullmoose Creek**

Bullmoose Creek and its tributaries (West and South Bullmoose creeks) are important recreational fish habitat. The creeks are adjacent to an open pit coal mine.

The attainment of water quality objectives was documented by monitoring between 1987 and 1993 and there were no serious impacts. Further monitoring is a low priority at this time.

### **Nechako River**

Table 5 lists results and Figure 5 shows site locations.

The Nechako River, a major tributary to the Fraser River at Prince George, has its flow controlled by dams for power generation. The river is an important route for migrating salmon. Water quality can be affected by treated municipal sewage and diffuse sources such as forestry and agriculture. Water temperature is influenced by the flow of water released from the dams and by the manner in which it is released.

In 1994, the fecal coliform objective was met in the Nechako River except immediately downstream from Vanderhoof, as has been the case in the past. The temperature objectives immediately downstream from Cheslatta Falls and at Vanderhoof were often not met in the summer. We have obtained similar results since 1987. Temperature objectives will presumably be met when a cold-water release structure, planned for the Kenney Dam upstream from Cheslatta Falls, is installed.

Other objectives which were met included those for ammonia, nitrite, dissolved oxygen, and pH. Given the importance of the river, we recommend continued monitoring to check objectives.

## Pine River

The Pine River, a tributary to the Peace River, supplies water to Chetwynd and supports significant sport fish populations. The water quality is considered to be mostly in a natural state with the major influence coming from treated sewage from the Village of Chetwynd and forestry.

We presently consider monitoring to be a low priority for this basin and none was carried out after 1992. Past results show all objectives being met fairly consistently.

## Pouce Coupe River and Dawson Creek

The Pouce Coupe River runs into the Peace River inside the Alberta Border. Dawson Creek is its major tributary. The waters are affected mainly by municipal discharges and agriculture.

The exact causes for objectives not being met need to be found. Since objectives were consistently not met up to 1992, we will not resume monitoring to check their attainment until measures are taken to correct the problem.

## Peace River

Table 6 lists results and Figure 6 shows site locations.

We have set objectives for the Peace River between the Bennett Dam and the B.C.-Alberta Border. The water is important for aquatic life and irrigation and can be affected by municipal discharges, forestry, agriculture, a gas plant, and a pulp mill built in 1988 after the objectives were set. We first checked the objectives in 1988.

Objectives not met at times in 1994 included those for turbidity, suspended solids, temperature, and chromium. Among objectives met were those for fecal coliform, ammonia, nitrite, dissolved oxygen, pH, copper, lead, nickel, and zinc. These are similar results to those obtained in previous years.

Considering Alberta's interest in the quality of the water crossing the provincial border, we recommend continued monitoring of the Peace River.

## **Upper Finlay River**

The Finlay River, located in the north east part of the Province, drains into the north end of Williston Lake. The area of the upper Finlay was the site of a gold and silver mine and mill, now closed. Objectives apply to Jock and Galen creeks which eventually flow into the upper Finlay River.

The objectives were checked in 1987. Since the area is remote and the operation is closed, no further monitoring has been carried out. Future monitoring or new objectives may be needed if development re-occurs in the area.

## **Fraser River from the Source to Hope**

This is the most important river in the Province for fisheries. Most of the contamination to the river between Moose Lake (the source of the river) and Hope is from pulp and paper mills and municipal treatment plants at Prince George and places downstream. We are setting water quality objectives to protect aquatic life, wildlife, irrigation, livestock watering, and drinking water supplies.

Objectives will be checked once they are finalized later in 1996.

## CARIBOO REGION

### Williams Lake

Table 7 lists results and Figure 7 shows site locations.

Williams Lake drains to the Fraser River and is important for drinking water, recreation, and aquatic life. The water quality is affected by phosphorus which comes from lake sediments and traditional farming practices in the San Jose River drainage, the main inlet to the lake, and to a lesser extent from residential septic systems around the lake.

Objectives not met in 1994 included those for turbidity, total phosphorus at spring overturn, chlorophyll-a, and water clarity. These results reflect the current eutrophic state of the lake. We recommend continued monitoring of objectives to track the progress of corrective measures being undertaken in the San Jose watershed.

### San Jose River

Table 8 lists results and Figure 8 shows site locations.

The San Jose River originates at Lac La Hache and is the main inlet to Williams Lake. It is used mainly for irrigation, livestock watering, and water storage. Ranching is the activity with the most influence on water quality.

The Ministry set only one objective for the San Jose River, namely the total annual loading of dissolved phosphorus entering Williams Lake. The Region has measured this loading since the seventies. Under the present province-wide objectives program we found it to be not met in 1994.

The annual load was derived as follows: we added daily stream flows in Borland Creek and the San Jose River just upstream; multiplied this total daily flow by the dissolved phosphorus daily concentrations measured in the San Jose downstream from Borland to give daily loads; plotted daily loads against time and measured the area under the curve to give annual load. We based our calculation on a calendar year but we noted that most of the loading occurred between February and August.

## SOUTHERN INTERIOR REGION

### Bonaparte River

Table 9 lists results and Figure 9 shows site locations.

The Bonaparte River is a tributary to the Thompson River. It is an important trout habitat and is affected by agricultural operations and municipal discharges. Its main tributaries are Clinton Creek and Loon Creek.

Water quality objectives not met at times in 1994 included those for fecal coliforms, suspended solids, turbidity, chlorophyll-*a*, and the objective for dissolved oxygen in Loon Lake. Among objectives met were those for dissolved solids, ammonia, nitrite, dissolved oxygen in the river and its tributaries, and pH. These results are similar to those obtained in the past.

There are plans to improve water quality and correct problems. Routine monitoring to check attainment of objectives should resume after improvements are made.

### Okanagan Valley Lakes

Table 10 lists results and Figure 10 shows site locations.

To date, objectives have only been set in the five main lakes 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 major inputs of phosphorus are from treated municipal sewage and from diffuse sources that include septic tanks, agriculture, and forestry. Phosphorus release from sediments also occurs in Wood Lake and Osoyoos Lake.

The short-term phosphorus objective was met in Wood Lake, as it has been since 1990. This is an improving trend compared to results obtained in 1987, 1988, and 1989 when the objective was not met. The phosphorus objective for Kalamalka Lake was met at the south end but not at the north end, a change since 1992 when it was usually met throughout. The objective for Okanagan Lake was met except in Armstrong Arm as has been the case in the past. The objective was met in Skaha Lake, as it was for the first time in 1991 and also in 1992, indicating another improving trend. It was still not met in Osoyoos Lake.

Given the environmental importance of these lakes, we recommend continued monitoring of phosphorus at spring overturn.

## **Similkameen River**

The Similkameen River flows from Manning Park, east through the south Okanagan, then south across the U.S. border. It is important for fisheries, drinking water, and irrigation. Water quality can be affected by mining and municipal discharges. We updated the water quality objectives in 1990 because of an increase in mining activity in the Hedley Creek area.

Monitoring between 1987 and 1993 has given consistent results and was suspended in 1994 as a low priority. The main problem has been with fecal coliforms, possibly from agricultural operations, which did not always meet the drinking water objective requiring disinfection only.

## **Cahill Creek**

Table 11 lists results and Figure 11 shows site locations.

Cahill Creek, its tributaries (Nickel Plate Mine Creek and Sunset Creek), and a parallel stream (Red Top Gulch Creek) enter the Similkameen River near Hedley. Fish from the Similkameen River use the creek near its mouth and the water is also used for irrigation. This watershed is the site of a gold mine and mill which began operating in 1987. Monitoring to check objectives began the same year.

Objectives not met at times in 1994 included those for dissolved solids, sulphate, and nitrate.

Among objectives met were those for suspended solids, turbidity, cyanide (in weak-acid dissociable and cyanate forms), arsenic, nitrite, pH, selenium, and a number of heavy metals (cadmium, copper, lead, molybdenum, silver, and zinc).

We recommend continuing routine monitoring to check objectives while work proceeds to improve mine operations

## Bessette Creek

Table 12 lists results and Figure 12 shows site locations.

Bessette Creek, which flows into the Shuswap River, is formed by the joining of Harris and Duteau creeks near the town of Lumby. Lawson Creek, and its tributary Spider Creek, flow into Duteau Creek. These creeks provide spawning habitat for trout and four species of salmon. Activities that can affect water quality include a telephone pole treatment plant near Harris Creek, a woodwaste landfill along Duteau Creek, and agricultural operations generally.

Objectives not met at times in 1994 included those for microbiological indicators (fecal coliforms, *E. coli*,) generally, dissolved oxygen in Lawson and Spider creeks, and colour and resin acids in Lawson Creek.

Objectives met included those for dissolved solids, suspended solids, turbidity, ammonia, nitrite, nitrate, chlorophyll-*a*, pH, and chlorophenols.

Water quality has improved since 1990 and continued monitoring to check objectives is a lower priority for the immediate future.

## Tributaries to Okanagan Lake near Westbank

We set objectives for Peachland, Trepanier, and Westbank creeks which flow into Okanagan Lake in the Peachland-Westbank area. Peachland and Trepanier creeks support spawning populations of kokanee or trout, and all three creeks are used for irrigation and domestic water supplies.

Peachland and Trepanier creeks can be affected by seepage from a molybdenum mine which closed recently. Westbank Creek is now influenced by urban runoff and agriculture.

The objectives have been checked for three years with results showing generally good water quality. Further monitoring was considered a low priority and was discontinued in 1994.

## Tributaries to Okanagan Lake near Kelowna

Table 13 lists results and Figure 13 shows site locations.

Mission, Kelowna, and Brandt's creeks are tributaries to Okanagan Lake on its east shore near

Kelowna. Mission and Kelowna creeks support salmonids and the water is also used for irrigation and domestic supply. Brandt's Creek is used mainly for just irrigation. The creeks can be affected by urban stormwater runoff in their lower reaches and by logging or agriculture further upstream. Treated wastewater is discharged to Brandt's Creek.

This was the fourth year of relatively complete monitoring to check objectives. The objectives for bacteriological indicators (fecal coliforms, *E. coli*, and enterococci) were generally not met as was the case in the past. The only other objective not met was that for zinc once at the mouth of Kelowna Creek.

All other objectives checked were met. These included those for specific conductivity, ammonia, nitrite, chlorophyll-*a*, pH, dissolved oxygen, aluminum, copper, and lead. Continued monitoring will depend on action taken in the future to control stormwater and other diffuse sources of contamination.

## **Tributaries to Okanagan Lake near Vernon**

Table 14 lists results and Figure 14 shows site locations.

Lower Vernon Creek and Deep Creek are tributaries to Okanagan Lake at its north end. The water is used for domestic and irrigation purposes and has some fisheries values, especially in lower Vernon Creek. Potential sources of contamination are a municipal sewage discharge, agricultural operations, and groundwater affected by spray irrigation of treated sewage.

In 1994, our second year of monitoring to check objectives, those not met at times were objectives for fecal coliform, *E. coli*, suspended solids, turbidity, and dissolved oxygen. Among the objectives met were those for ammonia, nitrite, nitrate, chlorophyll-*a*, and pH. We recommend at least one more year of monitoring of these creeks to ensure a reliable data base.

## **Hydraulic Creek**

Hydraulic Creek flows into Okanagan Lake via Mission Creek about 10 km upstream from the lake. Hydraulic Creek is an important source of drinking water relying on disinfection only. The creek also supports recreational fish and is used for irrigation. Commercial logging in the watershed can affect these water uses.

Monitoring between 1991 and 1993 to check objectives showed that fecal coliform contamination was the main problem. Monitoring was discontinued in 1994 as results were fairly predictable.

## Thompson River

Table 15 lists results and Figure 15 shows site locations.

We set objectives in 1992 for the South Thompson which drains Little Shuswap Lake, the North Thompson which joins the South Thompson at Kamloops, Kamloops Lake, and the lower Thompson which is a major tributary to the Fraser River. This river system is very important for fish, especially salmon and trout. It is used extensively for recreation and is also a source of water for drinking, irrigation, and industrial use.

Between the North Thompson River and Kamloops Lake, the river receives treated effluents from a bleached kraft pulp mill and the from the City of Kamloops. There are also diffuse discharges from agriculture and forestry. All these discharges can affect Kamloops Lake and the Thompson River downstream.

Objectives not met in 1994 included those for chlorophyll-*a* and, in one instance, for dioxins and furans in water. The dioxin and furan levels in water were calculated from pulp mill effluent levels assuming complete mixing of effluent with the lower Thompson River.

We recommend continued monitoring to check Thompson River objectives.

## Christina Lake

Table 16 lists results and Figure 16 shows site locations.

Christina Lake, located in south central B.C., drains into the Kettle River which joins the Columbia River in Washington State. The lake is important for recreation, domestic water supply and sport fish. The potential sources of contamination are residential development, agriculture, and logging.

Objectives were checked for the first time in 1994. Among those not met were objectives for phytoplankton distribution in the lake, periphyton distribution near the shore, dissolved oxygen occasionally, and periphyton chlorophyll-*a*.

Objectives met included those for zooplankton distribution, turbidity, water clarity, total phosphorus and total nitrogen at spring overturn, and chlorophyll-*a* in the lake. The results for fecal coliforms were indefinite because too few samples were collected in a 30-day period.

We recommend continuing sampling until objectives have been checked for at least two more years to obtain a reasonable data base.

## KOOTENAY REGION

### **Columbia and Windermere Lakes**

The two lakes are important for fisheries, recreation, and as a source of drinking water. Residential development around the lakes is the main potential influence on water quality.

We monitored to check objectives between 1987 and 1992. Since the objectives have been met fairly consistently, we discontinued monitoring in 1993.

### **Toby Creek and Upper Columbia River**

Toby Creek enters the Upper Columbia River just downstream from Windermere Lake. Both streams are important for aquatic life and recreation. Toby Creek can be affected by indirect discharges of domestic sewage and by drainage from an abandoned mine. The Upper Columbia River receives an indirect discharge of treated sewage from Radium Hot Springs.

All objectives have generally been met except, on occasion, those for fecal coliforms. We did not monitor after 1989 in Toby Creek and 1992 in the Upper Columbia River. We consider future monitoring a low priority at this time.

### **Columbia River from Keenleyside to Birchbank**

Table 17 lists results and Figure 17 shows site locations.

The Columbia River is one of the major rivers in British Columbia and in Washington State further downstream. In B.C., this section of the river is important for aquatic life, sport fishing, recreation and, to a lesser extent, as a drinking water supply. In the U.S., it supports a food fishery, major salmon runs, and irrigation and drinking water supplies. Between the Hugh Keenleyside Dam and Birchbank, the main influence is a kraft pulp mill which recently expanded production and upgraded its effluent treatment to secondary. There are also small discharges of secondary-treated municipal effluent and urban runoff.

Objectives not met at times in 1994 were those for dissolved oxygen, pH, organic carbon in sediments, dissolved gases, and dioxins and furans in fish, water, and sediments. The dioxin and

furan levels in water were measured in river samples taken in January.

We set the objective for dioxins and furans in the muscle of mountain whitefish to prevent long-term chronic effects in the fish. This objective is far more stringent than the level recommended to protect humans who eat fish. A public notice advising against consumption of mountain whitefish from the river was lifted recently.

Objectives met in 1994 included those for colour, suspended solids, turbidity, fecal coliforms, *E. coli*, pulp mill toxicity in the river, chlorophenols, resin acids, chlorinated resin acids, and periphyton chlorophyll-*a*.

Considering the international significance of the river and its importance to aquatic life, continued monitoring to check the attainment of objectives is recommended.

## **Elk River**

The Elk River and its main tributaries, the Fording River, Line Creek and Michel Creek, are located in the south-eastern part of the province. The Elk River is a tributary of the Kootenay River before it enters Lake Koocanusa. We have set provisional objectives for suspended solids and substrate sedimentation to protect aquatic life against the potential effects of coal mining operations in the basin.

The objectives for suspended solids apply to base flow, or the non-freshet period, in the Elk River basin. They were generally met at all sites in 1993. Further monitoring to check objectives was considered a low priority.

## LOWER MAINLAND REGION

### **Fraser River from Hope to Kanaka Creek**

We have set objectives for the Fraser River between Hope and Kanaka Creek, for tributaries entering from the south, and for all major water courses between the Fraser River and the International Border. The Fraser River is a major salmon migration route and the tributaries are important spawning areas. The major discharges to the Fraser River in this section are of treated municipal sewage.

Monitoring to check objectives was carried out in 1987, 1988, 1990, 1992, and 1993. The objectives are being updated and we recommend checking the revised objectives when they are finalized.

### **Fraser River from Kanaka Creek to the Mouth**

Table 18 lists results and Figure 18 shows site locations.

The river downstream from Kanaka Creek and the outer estuary are very important for salmon migration and rearing. The water is used for irrigation and certain beaches are heavily used for recreation. Water quality can be affected by industry, treated sewage, and agriculture.

We have monitored to check objectives annually since 1987. Due to the provincial importance of this river and the threats to water quality that exist in this section, we recommend that such monitoring be continued annually. We plan to publish updated objectives in 1996.

Among objectives not met at times in 1994 were those for fecal coliforms in the Main Arm and the North Arm, suspended solids in the North Arm, dissolved oxygen in the sloughs and on the banks, copper in the Middle Arm, lead in the Main, North, and Middle arms, zinc in the North Arm, and chlorophenols in sediments in the Main, North, and Middle arms.

Objectives met included those for fecal coliforms at all recognized bathing beaches, suspended solids, ammonia, dissolved oxygen in the main reaches of the river, pH, chlorophenols in water and fish, and PCBs in sediments and fish.

## Boundary Bay

Boundary Bay sustains a crab and herring fishery and is important for recreation. The Little Campbell River, the Serpentine River, and the Nicomekl River are tributaries to Boundary Bay on the east side. They provide important habitat for trout and salmon and are used for irrigation. The main influences on water quality are from sewage pumping stations, stormwater, and septic tanks in Boundary Bay and from agriculture in the tributaries.

Objectives were checked from 1988 to 1993 giving consistent results. Since the situation is stable and fairly well documented, further monitoring was considered a low priority except where required at bathing beaches for human health reasons.

## Burrard Inlet

Table 19 lists results and Figure 19 shows site locations.

Burrard Inlet includes Port Moody Arm, Indian Arm, Vancouver Harbour, False Creek, and English Bay. The water is designated for aquatic life and wildlife in all areas and for primary-contact recreation in most areas, except in False Creek. There are several municipal and industrial discharges to Burrard Inlet which can affect water quality. These include primary-treated sewage, combined sewer overflows, stormwater, bulk-loading terminals, a sugar refinery, a sodium chlorate plant, a chlor-alkali plant, and oil depots.

This is the fourth year that objectives for Burrard Inlet have been checked fairly completely. We have divided the results into general characteristics, metals and organics.

Among general characteristics, objectives not met at times included those for chlorine-produced oxidants generally, dissolved oxygen in False Creek and Port Moody Arm, and suspended solids between 1st Narrows and Roche Point. Objectives for fecal coliforms at bathing beaches were usually met except at Deep Cove in Indian Arm and at Brockton Point. General objectives always met were those for turbidity, ammonia, cyanide, and pH.

For metals, objectives were most often not met in sediments. This list includes objectives for cadmium, copper, lead, nickel, and zinc in sediments. In the water column, objectives were not met at times for copper, iron, and lead. Objectives that were met included those for arsenic and chromium in water and sediments, and for barium, cadmium, nickel, and zinc in water. Also, the

objectives for lead and mercury in fish were both met.

For organics, objectives not met included those for phenols in water and for PCBs and PAHs in sediments. Among objectives met were those for tributyl tin, ethylene dichloride, and styrene in water; chlorophenols in water, sediments, and fish; and PCBs in fish.

Considering the importance of Burrard Inlet and the number of instances that objectives are not met, we recommend continued monitoring to check objectives.

## Burrard Inlet Tributaries

Table 20 lists results and Figure 20 shows site locations.

We have set objectives for the following three tributaries to Burrard Inlet: School House Brook which discharges to Port Moody Arm and could be influenced by a chemical polymer plant; Lynn Creek which discharges to Vancouver Harbour and could be affected by a municipal landfill; and the Capilano River which discharges to outer Burrard Inlet and may also be affected by a municipal landfill. The main uses of these tributaries are recreation, aquatic life, and wildlife.

In 1994, objectives were not met at times for the following: phenols, temperature, chromium, iron, zinc, and chlorophenols in water.

Among objectives met were those for fecal coliforms, *E. coli*, enterococci, chlorophyll-*a*, ammonia, nitrite, dissolved oxygen, pH, cadmium, cobalt, copper, lead, and chlorophenols and PCBs in sediment and fish.

Although this is the fourth year of monitoring, we recommend continuing for a few more years because the past record is rather incomplete.

## North Shore Lower Fraser Tributaries

Objectives have been set for the following four tributaries to the north shore of the lower Fraser River in the Lower Mainland: Kanaka Creek, the Pitt River, the Coquitlam River, and the Brunette River. All these streams, and their tributary streams and lakes, support salmon and trout fisheries to varying degrees. Most are important for recreation and some are sources of drinking water requiring treatment. Discharges which can affect water quality include stormwater, agricultural

runoff, treated sewage, landfill leachates, wastewaters from gravel operations, and a wood preservation plant.

Objectives were checked from 1990 to 1993 with fairly consistent results. We consider future monitoring to be a relatively low priority until some of the water quality problems caused mainly by non-point sources are addressed.

## Pender Harbour

Table 21 lists results and Figure 21 shows site locations.

Pender Harbour, a small coastal inlet on the Sechelt Peninsula, is important for recreational boating and fishing. It also supports commercial fishing and some commercial shellfish harvesting. The main influences on water quality are from diffuse sources such as septic tanks, some agriculture, and sewage discharges from boats.

In 1994, the third year of monitoring, objectives were often not met for copper, lead, and zinc in both water and sediments and for iron in water. Objectives for tributyl tin in water and PAHs in sediments were also not met. Among objectives met were those for fecal coliforms, enterococci, ammonia, and for dissolved oxygen except marginally in one instance.

These results were similar to those of past years. Since the situation is stable and reasonably well defined, monitoring is a lower priority in the immediate future.

## Sechelt Inlet

Table 22 lists results and Figure 22 shows site locations.

Sechelt Inlet is located on the mainland coast about 80 km northwest of Vancouver. It is important for fisheries, especially fish farming, and recreation and has potential for shellfish harvesting. Potential sources of contamination include residential development, marinas, logging and minor discharges from gravel washing, a fish hatchery, and mariculture.

We checked objectives for the second time in 1994. Objectives that were not met at times were those for suspended solids, copper, lead, and zinc, mostly near a dock in Porpoise Bay at the south end of the inlet. Among objectives met were those for fecal coliforms, enterococci,

ammonia, and dissolved oxygen.

We recommend continuing the program for at least one more year to obtain a reasonable data base.

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Water Quality Branch

TABLE 1

## PROVINCIAL OVERVIEW OF WATER QUALITY OBJECTIVES - 1994

REGION	NUMBER OF OCCURRENCES					
	OBJECTIVES MET	OBJECTIVES NOT MET	OBJECTIVES NOT CHECKED	OMITTED 1993	INDEFINITE RESULT	TOTALS
Vancouver Island	14	29	0	1	4	48
	29%	61%	0%	2%	4%	100%
Skeena	176	63	3	2	27	271
	65%	23%	1%	1%	10%	100%
Omineca	1697	216	5	15	7	1940
Peace	87%	11%	0.50%	1%	0.50%	100%
Cariboo	12	9	1	0	0	22
	54%	41%	5%	0%	0%	100%
Southern	1518	186	12	40	71	1827
Interior	83%	10%	1%	2%	4%	100%
Kootenay	830	350	0	0	10	1190
	70%	29%	0%	0%	1%	100%
Lower Mainland	3273	272	4	18	164	3731
	88%	7%	0.10%	0.90%	4%	100%
All Regions	7520	1125	25	76	283	9029
All Regions less occurrences with no result	7520	1125				8645
	87%	13%				100%

TABLE 2  
ELK AND BEAVER LAKES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Temperature  15°C max in hypolimnion	Elk Lake 1100844 at centre	Jun. 1 - Sep. 1	4	8.5 - 9.7 °C at 10 m (start of hypolimnion)	Objective met
	Beaver Lake E207470 at centre	Jun. 1 - Sep. 1	4	14 - 17.5 °C at 6 m (no hypolimnion formed)	Indefinite result
Dissolved Oxygen  5 mg/L min 1 m above sediment  May - August	Elk Lake 1100844 at centre	Jun. 1 - Sep. 1	4	0.59 - 3.2 mg/L at 10 m	Objective not met
	Beaver Lake E207470 at centre	Jun. 1 - Sep. 1	4	0.39 - 1.6 mg/L at 6 m	Objective not met
Chlorophyll-a  1.5 - 2.5 ug/L  av of duplicates at 0,2,4,6 m  May - August	Elk Lake 1100844 at centre	Jun. 1 - Sep. 1	16	1.4 - 6.2 ug/L duplicates at 0,2,4,6 m av = 2.9 ug/L	Objective not met
	Beaver Lake E207470 at centre	Jun. 1 - Sep. 1	12	<0.5 - 19.3 ug/L duplicates at 0,2,4 m av = 7.5 ug/L	Objective not met
Water Clarity  1.9 m min Secchi disc reading	Elk Lake 1100844 at centre	Jun. 1 - Sep. 1	4	3.5 - 8.5 m	Objective met
	Beaver Lake E207470 at centre	Jun. 1 - Sep. 1	4	2.0 - 5.8 m	Objective met
Phytoplankton Community  < 50 % Cyanophytes (cells/mL at surface)  May - August	Elk Lake 1100844 at centre	Jun. 1 - Sep. 1	4	75.8 - 87.5 % Cyanophytes	Objective not met
	Beaver Lake E207470 at centre	Jun. 1 - Sep. 1	4	76.5 - 97.2 % Cyanophytes	Objective not met

TABLE 3

## TSOLUM RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Copper ≤ 0.007 mg/L av 0.011 mg/L max	Tsolum River: E207826 500m d/s Murex Creek	May 11 - Jun 13	6	0.026 - 0.064 mg/L av = 0.053 mg/L	Objectives not met
		Jun 23 - Jun 29	2	0.015 - 0.017 mg/L	Max not met
		Sep 21 - Sep 28	2	0.003 - 0.005 mg/L	Max obj. met
		Oct 4 - Nov 1	5	0.003 - 0.037 mg/L av = 0.012 mg/L	Av not met
		Oct. 25	1	0.037 mg/L	Max not met
		Oct 4 - Nov 1	4	0.003 - 0.009 mg/L	Max obj. met
% steelhead egg survival  no difference between test & control (at 95% confidence)	Tsolum River	1994	0	no in situ bioassay data collected	Omitted 1994

TABLE 4  
LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geometric mean (gm)	Kitimat River: 0430025 at Highway Bridge	Jul 6 - Aug 2	5	1 - 11/100 mL gm = 3/100 mL	Objective met
	E207569 u/s STP & Eurocan	Jul 6 - Aug 2	5	1 - 60/100 mL gm = 8/100 mL	Objective met
	E207570 100 m d/s Eurocan	Jul 6 - Jul 27	4	1 - 6/100 mL	Indefinite result
Fecal Coliforms <14/100 mL median (med) <43/100 mL 90th percentile (np)	Kitimat Arm: E207574 Henderson's Beach	Jul 6 - Aug 2	5	1 - 6/100 mL med = 4/100 mL np = 5/100 mL	Objectives met
	E207572 Hospital Beach	Jul 3 - Jul 27	5	1 - 22/100 mL med = 4/100 mL np = 16/100 mL	Objectives met
	E207573 Mission Beach	Jul 6 - Aug 2	5	3 - 24/100 mL med = 3/100 mL np = 15/100 mL	Objectives met
Suspended Solids max. increase 10 mg/L or 10%	Kitimat River: 0430025 at Highway Bridge	Jul. 6 - Aug. 2	5	< 4 - 5 mg/L	Control site
	E207569 u/s Eurocan	Jul. 6 - Aug. 2	4	4 - 11 mg/L max. inc. ≈ 6 mg/L	Objective met
	E207570 d/s Eurocan	Jul 6 - Jul 27	4	7 - 11 mg/L max. inc. = 6 mg/L	Objective met
		Aug. 2	1	17 mg/L inc. = 12 mg/L	Objective not met
	Kitimat Arm	1994	0	no data collected	Omitted 1994
Turbidity max. increase: 5 NTU or 10%	Kitimat River: E207569 u/s Eurocan	Jul. 27, Aug. 2	2	3.3 - 4.5 NTU	Objective met
		Jul. 6 - 19	3	5.2 - 7.5 NTU	Indef. result (no control)
	E207570 d/s Eurocan	Jul. 6 - Aug. 2	4	4.0 - 5.0 NTU	Objective met
		Jul. 19	1	7.0 NTU	Indef. result (no control)
	Kitimat Arm:	1994	0	no data collected	Omitted 1994
WAD Cyanide 0.001 mg/L max.	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19	3	all < 0.001 mg/L	Objective met
	E218985 scow grid	Jul 6 - Jul 12	2	0.003 - 0.017 mg/L	Objective not met

TABLE 4 continued

## LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
WAD Cyanide 0.001 mg/L max.	Kitimat Harbour & Arm E218982 Yacht Basin South	Jul 6 - Jul 12	2	all < 0.001 mg/L	Objective met
Fluoride 1.5 mg/L max	Kitimat Harbour & Arm E218987 Lagoon intertidal area	Jul 6 - Jul 12	2	0.23 - 0.37 mg/L	Objective met
	E218985 scow grid	Jul. 19	1	1.79 mg/L	Obj. not met
		Jul 6 - Jul 19	3	3.86 - 5.72 mg/L	Objective not met
	E218982 Yacht Basin South	Jul 6 - Jul 12	2	0.48 - 0.54 mg/L	Objective met
	Jul. 19	1	2.15 mg/L	Obj. not met	
H2S 0.002 mg/L max.	Kitimat River	1994	0	no data collected	Omitted 1994
Chlorophyll - a 50 mg/m <sup>2</sup> av	Kitimat River:	1994	0	no data collected	Omitted 1994
Ammonia-N < 1.8 mg/L av 14.0 mg/L max (pH = 7.4 temp = 13 °C)	Kitimat River	1994	0	no data collected	Omitted 1994
Ammonia-N <2.4 mg/L av 11.0 mg/L max (pH = 7.8 temp = 15 °C sal. = 30g/kg)	Kitimat Arm	1994	0	no data collected	Omitted 1994
Nitrite-N ≤ 0.020 mg/L av 0.060 mg/L max	Kitimat River: E207569 u/s Eurocan	Jul. 6 - Aug. 2	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	E207570 d/s Eurocan	Jul. 6 - Aug. 2	5	all < 0.005 mg/L	Objectives met
Dissolved Oxygen 7.8 mg/L min.	Kitimat River: E207569 u/s Eurocan	Jul. 6 - Aug. 2	5	8.5 - 10.2 mg/L	Objective met
	E207570 d/s Eurocan	Jul. 6 - Aug. 2	5	9.5 - 10.2 mg/L	Objective met
pH 6.5 - 9.0	Kitimat River: E207569 u/s Eurocan	Jul. 6 - Aug. 2	5	6.8 - 7.3	Objective met
	E207570 d/s Eurocan	Jul. 6 - Aug. 2	5	7.1 - 7.4	Objective met

TABLE 4 continued

## LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Al  20% max increase	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19	3	0.26 - 0.49 mg/L	Indefinite result (no control)
	E218985 scow grid	Jul 6 - Jul 19	3	0.46 - 3.12 mg/L	Indefinite result (no control)
	E218982 Yacht Basin South	Jul 6 - Jul 19	3	0.17 - 0.40 mg/L	Indefinite result (no control)
Total Cd  <0.012 mg/L av 0.038 mg/L max	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19	3	all < 0.0005 mg/L	Max obj. met Av not checked.
	E218985 scow grid	Jul 6 - Jul 19	3	all < 0.0005 mg/L	Max obj. met
	E218982 Yacht Basin South	Jul 6 - Jul 19	3	all < 0.0005 mg/L	Max obj. met
Total Cu  <0.002 mg/L av 0.003 mg/L max or 20% increase	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19	2	0.004 - 0.005 mg/L	Indef. result (no control)
		Jul. 12	1	0.003 mg/L	Max obj. met
	E218985 scow grid	Jul 6 - Jul 19	3	0.006 - 0.007 mg/L	Indef. result (no control) Av not checked
	E218982 Yacht Basin South	Jul 12 - Jul 19	2	0.004 - 0.006 mg/L	Indef. result (no control)
		Jul. 6	1	0.002 mg/L	Max obj. met
Total Fe  0.3 mg/L max	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19	2	0.310 - 0.340 mg/L	Obj. not met
		Jul. 12	1	0.032 mg/L	Obj. met
	E218985 scow grid	Jul 6 - Jul 19	3	0.510 - 3.40 mg/L	Objective not met
	E218982 Yacht Basin South	Jul 6 - Jul 19	3	0.230 - 0.300 mg/L	Objective met
Total Pb  <0.009 mg/L av 0.22 mg/L max or 20% increase	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19	3	0.023 - 0.038 mg/L	Max obj. met Av not checked
	E218985 scow grid	Jul 6 - Jul 19	3	0.013 - 0.079 mg/L	Max obj. met
	E218982 Yacht Basin South	Jul 6 - Jul 19	3	0.018 - 0.035 mg/L	Max obj. met
Colour (criterion)  15 TCU max	Kitimat River: E207569 u/s Eurocan	Jul. 6 - Aug. 2	5	all < 5 TCU	Objective met
	E207570 d/s Eurocan	Jul. 6 - Aug. 2	5	<5 - 5 TCU	Objective met

TABLE 4 continued

## LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Toxicity % mill effluent in river < 0.05 of the 96-h LC50	Kitimat River	1994	0	no data collected	Omitted 1994
PAHs in water (max criteria)  naphtha 1 ug/L acenaphe 6 ug/L fluorene 12 ug/L chrysene 0.1 ug/L bz-a-py 0.01 ug/L	Kitimat Harbour & Arm: E218987 Lagoon intertidal area	Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 12 Jul. 19 Jul. 6 Jul 12 - Jul 19	3 3 3 2 1 1 2	naphtha all = 0 ug/L acenaphe 0.01-0.08 ug/L fluorene 0.01-0.04 ug/L chrysene 0.03-0.05 ug/L chrysene 0.12 ug/L bz-a-py 0.02 ug/L bz-a-py all=0.01 ug/L	Crit. met Crit. met Crit. met Crit. met Crit. not met Crit. not met Crit. met
	E218985 scow grid	Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 19	3 3 3 3 3	naphtha all = 0 ug/L acenaphe 0.32-0.52 ug/L fluorene 0.08-0.15 ug/L chrysene 0.33-0.42 ug/L bz-a-py 0.03-0.11 ug/L	Crit. met Crit. met Crit. met Crit. not met Crit. not met
	E218982 Yacht Basin South	Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 19 Jul 6 - Jul 12 Jul. 19 Jul 6 - Jul 19	3 3 3 2 1 3	naphtha all = 0 ug/L acenaphe 0.06-0.15 ug/L fluorene 0.04-0.07 ug/L chrysene 0.05-0.06 ug/L chrysene 0.16 ug/L bz-a-py all<0.01 ug/L	Crit. met Crit. met Crit. met Crit. met Crit. not met Crit. met
L-PAH in sediments (max criteria)  naphtha 0.2 ug/g acenphyl 0.06 ug/g acenaphe 0.05 ug/g fluorene 0.05 ug/g phenant 0.15 ug/g anthrac 0.10 ug/g total 0.5 ug/g	Kitimat River: E207569 u/s Eurocan	Aug. 2	1 1 1 1 1 1 1	naphtha <0.001 ug/g acenphyl <0.001 ug/g acenaphe <0.001 ug/g fluorene <0.001 ug/g phenant 0.002 ug/g anthrac <0.001 ug/g total 0.002 ug/g	Crit. met Crit. met Crit. met Crit. met Crit. met Crit. met Crit. met
	E207570 d/s Eurocan	Aug. 2	1 1 1 1 1 1 1	naphtha <0.001 ug/g acenphyl <0.001 ug/g acenaphe <0.001 ug/g fluorene <0.001 ug/g phenant <0.001 ug/g anthrac <0.001 ug/g total <0.001 ug/g	Crit. met Crit. met Crit. met Crit. met Crit. met Crit. met Crit. met
	Kitimat Harbour & Arm E207572 Hospital Beach	Jul. 6	1 1 1 1 1 1 1	naphtha 0.012 ug/g acenphyl 0.002 ug/g acenaphe 0.049 ug/g fluorene 0.050 ug/g phenant 0.34 ug/g anthrac 0.093 ug/g total 0.55 ug/g	Crit. met Crit. met Crit. met Crit. met Crit. not met Crit. met Crit. not met
	E218983 Yacht Basin North	Jul. 28 (average of 3 reps)	3 3 3 3 3 3 3	naphtha 0.75 ug/g acenphyl 0.005 ug/g acenaphe 2.05 ug/g fluorene 1.18 ug/g phenant 15.07 ug/g anthrac 3.65 ug/g total 22.6 ug/g	Crit. not met Crit. met Crit. not met Crit. not met Crit. not met Crit. not met Crit. not met

TABLE 4 continued

TABLE 4 continued  
LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
H-PAH in sediments (max criteria) fluorant 0.17 ug/g pyrene 0.26 ug/g bz-a-an 0.13 ug/g chrysene 0.14 ug/g bz-bk-fl 0.32 ug/g bz-a-py 0.16 ug/g ind-pyr 0.06 ug/g dibz-an 0.06 ug/g bz-pery 0.07 ug/g total 1.2 ug/g	Kitimat Harbour & Arm E218986 opposite Alcan Wharf	Jul. 28 (average of 3 reps)	3 3 3 3 3 3 3 3 3 3 3	fluorant 22.7 ug/g pyrene 19.7 ug/g bz-a-an 8.87 ug/g chrysene 11.7 ug/g bz-bk-fl 27.7 ug/g bz-a-py 15.7 ug/g ind-pyr 15.3 ug/g dibz-an 2.63 ug/g bz-pery 14.0 ug/g total 140 ug/g	Crit. not met Crit. not met
Dioxins and Furans (criterion) <0.25pg/g TCDD-TEQ av in sediment	Kitimat Harbour & Arm E218983 Yacht Basin North	Jul. 28	3	0.18-0.49 pg/g TCDD-TEQ av = 0.34 pg/g TCDD-TEQ	Criterion not met
	E218986 opposite Alcan Wharf	Jul. 28	3	0.60-5.50 pg/g TCDD-TEQ av = 2.72 pg/g TCDD-TEQ	Criterion not met

TABLE 5

## NECHAKO RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <100/100ml 90th perc. (np)	Nechako River 0400629 200 m u/s Fort Fraser	Jan 12 - Feb 8	4	0 - 10/100 mL	Indefinite result
		Sep 21 - Oct 18	3	1 - 15/100 mL	Indefinite result
	0400631 200 m d/s Fort Fraser	Jan 12 - Feb 8	3	0 - 10/100 mL	Indefinite result
		Sep 21 - Oct 18	5	0 - 14/100 mL np = 13/100 mL	Objective met
	0400449 u/s Vanderhoof	Jan 11 - Feb 8	5	4 - 9/100 mL np = 8/100 mL	Objective met
		Sep 21 - Oct 18	5	26 - 42/100 mL np = 39/100 mL	Objective met
	0400450 100 d/s Vanderhoof	Jan 11 - Feb 8	4	3000 - 12000/100 mL np = or > 10000/100 mL	Objective not met
		Sep 21 - Oct 18	5	24 - 2910/100 mL np = 1650/100 mL	Objective not met
	E207450 0.5 km d/s Vanderhoof	Jan 11 - Feb 8	4	200 - 800/100 mL np = or > 650/100 mL	Objective not met
		Sep 21 - Oct 18	5	36 - 49/100 mL np = 48/100 mL	Objective met
	Chilako River 0400039 ~30 km from mouth	Oct 6 - Nov 2	4	6 - 47/100 mL	Indefinite result
Fecal Coliforms  <10/100ml 90th perc (np)	Stuart River 0400488 E bank at Highway 27	Jan 13 - Feb 7	5	0 - 20/100 mL np = 15/100 mL	Objective not met
		Sep 20 - Oct 17	5	6 - 20/100 mL np = 18/100 mL	Objective not met
	0920101 W bank at Highway 27	Jan 13 - Feb 7	5	all = 0/100 mL np = 0/100 mL	Objective met
		Sep 10 - Oct 17	5	0 - 17/100 mL np = 10/100 mL	Objective met
Fecal Coliforms  ≤200/100ml geometric mean (gm) ≤400/100ml 90 perc. (np)	Necosie River 0400801 d/s Fort St James 20 m u/s Highway 27	Jan 13 - Feb 1	4	2 - 7/100 mL	Indefinite result
		Sep 20 - Oct 17	5	2 - 6/100 mL gm = 4/100 mL np = 5/100 mL	Objectives met
Total Cl <sub>2</sub> Res. 0.002 mg/L max	Nechako & Stuart Rivers	1994	0	no data collected	Omitted 1994
Ammonia-N <1.87 mg/L av 12.90 mg/L max at pH = 7.5 temp = 9 °C	Nechako River 0400629 200 m u/s Fort Fraser	Jan. 12 - Feb. 8	5	0.006 - 0.013 mg/L av = 0.009 mg/L	Objectives met
		Sep. 21 - Oct. 18	5	all values <0.005 mg/L av < 0.005 mg/L	Objectives met

TABLE 5 continued

## NECHAKO RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N  <1.87 mg/L av 12.90 mg/L max at pH = 7.5 temp = 9 °C	Nechako River: 0400631 200 m d/s Fort Fraser	Jan. 12 - Feb. 8	4	<0.005 - 0.01 mg/L av = 0.005 mg/L	Max. obj. met
		Sep. 21 - Oct. 18	5	<0.005 - 0.007 mg/L av = 0.005 mg/L	Objectives met
	0400449 u/s Vanderhoof	Jan. 11 - Feb. 8	5	0.006 - 0.016 mg/L av = 0.011 mg/L	Objectives met
		Sep. 21 - Oct. 18	5	<0.005 - 0.015 mg/L av = 0.007	Objectives met
	0400450 100 m d/s Vanderhoof	Jan. 11 - Feb. 8	5	0.121 - 2.16 mg/L av = 0.763 mg/L	Objectives met
		Sep. 21 - Oct. 12	4	0.02 - 0.382 mg/L	Max. obj. met
	E207450 0.5 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	0.019 - 0.04 mg/L av = 0.027 mg/L	Objectives met
		Sep. - Oct. 18	5	0.005 - 0.011 mg/L av = 0.007 mg/L	Objectives met
	E207451 2 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	0.009 - 0.025 mg/L av = 0.016 mg/L	Objectives met
		Sep. 21 - Oct. 12	5	all values <0.005 mg/L av = <0.005 mg/L	Objectives met
Ammonia-N  <1.13 mg/L av 5.86 mg/L max at pH = 8.0 temp = 10 °C	Stuart River 0400488 E bank at Highway 27	Jan. 13 - Feb. 7	4	0.114 - 0.164 mg/L	Max. obj. met
		Sep. 20 - Oct. 17	5	<0.005 - 0.065 mg/L av = 0.022 mg/L	Objectives met
	0920101 W bank at Highway 27	Jan. 20 - Feb. 7	4	<0.005 - 0.012 mg/L	Max. obj. met
		Sep. 20 - Oct. 17	5	all values <0.005 mg/L av < 0.005 mg/L	Objectives met
	Chilko River 0400039 ~30 km from mouth	Oct. 6 - Nov. 2	5	<0.005 - 0.009 mg/L av = 0.006 mg/L	Objectives met
	Nechako River 0400629 200 m u/s Fort Fraser	Jan. 12 - Feb. 8	5	<0.001 - 0.006 mg/L av = 0.003 mg/L	Objectives met
		Sep. 21 - Oct. 18	5	<0.001 - 0.002 mg/L av = 0.001 mg/L	Objectives met
Nitrite-N  ≤ 0.02 mg/L av 0.06 mg/L max	0400631 200 m d/s Fort Fraser	Jan. 12 - Feb. 8	4	<0.001 - 0.002 mg/L	Max. obj. met
		Sep. 21-Oct. 18	5	<0.001 - 0.002 mg/L av = 0.002 mg/L	Objectives met
	0400449 u/s Vanderhoof	Jan. 11 - Feb. 8	5	<0.001 - 0.003 mg/L av = 0.002 mg/L	Objectives met
		Sep. 21 - Oct. 18	5	<0.001 - 0.003 mg/L av = 0.002 mg/L	Objectives met
	0400450 100 m d/s Vanderhoof	Jan. 11 - Feb. 8	5	<0.001 - 0.008 mg/L av = 0.004 mg/L	Objectives met
		Sep. 21 - Oct. 12	4	<0.005 - 0.013 mg/L	Max. obj. met
	E207450 0.5 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	<0.001 - 0.004 mg/L av = 0.002 mg/L	Objectives met
		Sep. 21 - Oct. 18	5	<0.001 - 0.003 mg/L av = 0.002 mg/L	Objectives met

TABLE 5 continued

## NECHAKO RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N  ≤0.02 mg/L av 0.06 mg/L max	Nechako River: E207451 2 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	<0.001 - 0.004 mg/L av = 0.003 mg/L	Objectives met
		Sep. 21 - Oct. 12	3	<0.001 - 0.003 mg/L	Max. obj. met
	Stuart River 0400488 E bank at Highway 27	Jan. 13 - Feb. 7	5	0.002 - 0.012 mg/L av = 0.005 mg/L	Objectives met
		Sep. 20 - Oct. 17	5	<0.001 - 0.006 mg/L av = 0.004 mg/L	Objectives met
	0920101 W bank at Highway 27	Jan. 13 - Feb. 7	5	<0.001 - 0.002 mg/L av = 0.001 mg/L	Objectives met
		Sep. 20 - Oct. 17	5	<0.001 - 0.004 mg/L av = 0.002 mg/L	Objectives met
	Chilako River 0400039 ~30 km from mouth	Oct. 6 - Nov. 11	5	<0.001 - 0.005 mg/L av = 0.002 mg/L	Objectives met
	Nechako River	1994	0	no data collected	Objective not checked
	Stuart River	1994	0	no data collected	Omitted 1994
	Chilako River	1994	0	no data collected	Objective not checked
Dissolved Oxygen  7.75 - 11.2 mg/L min depending on fish egg stage	Nechako River: 0400629 200 m u/s Fort Fraser	Jan. 19 - Feb. 8	4	10.8 - 11.8 mg/L	Objective met
		Sep. 21 - Oct. 18	5	9.0 - 10.2 mg/L	Objective met
	0400631 200 m d/s Fort Fraser	Jan. 12 - Feb. 8	5	10.3 - 11.5 mg/L	Objective met
		Sep. 21 - Oct. 18	5	8.9 - 10.4 mg/L	Objective met
	0400449 u/s Vanderhoof	Jan. 11 - Feb. 8	5	11.4 - 11.6 mg/L	Objective met
		Sep. 27 - Oct. 12	5	8.6 - 10.1 mg/L	Objective met
	0400450 100 m d/s Vanderhoof	Jan. 11 - Feb. 8	5	10.0 - 10.5 mg/L	Objective met
		Sep. 21 - Oct. 18	5	9.0 - 11.0 mg/L	Objective met
	E207450 0.5 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	10.5 - 11.5 mg/L	Objective met
		Sep. 21 - Oct. 18	5	8.8 - 10.0 mg/L	Objective met
	E207451 2 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	11.0 - 11.6 mg/L	Objective met
		Sep. 21 - Oct. 19	5	8.8 - 10.4 mg/L	Objective met
	Chilako River	1994	0	no data collected	Objective not checked
	Stuart River: 0400488 E bank at Highway 27	Jan. 13 - Feb. 7	5	10.8 - 12.4 mg/L	Objective met
		Sep. 20 - Oct. 17	5	8.7 - 10.0 mg/L	Objective met

TABLE 5 continued

## NECHAKO RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 7.75 - 11.2 mg/L min depending on fish egg stage	Stuart River: 0920101 W bank at Highway 27	Jan. 13 - Feb. 7	5	10.2 - 12.0 mg/L	Objective met
		Sep. 20 - Oct. 17	5	8.9 - 10.4 mg/L	Objective met
pH 6.5 - 8.5	Nechako River 0400629 200 m u/s Fort Fraser	Jan. 12 - Feb. 8	5	7.5 - 7.7	Objective met
		Sep. 21 - Oct. 18	5	7.3 - 7.8	Objective met
	0400631 200 m d/s Fort Fraser	Jan. 12 - Feb. 8	4	7.1 - 7.5	Objective met
		Sep. 21 - Oct. 18	5	7.3 - 7.8	Objective met
	0400449 u/s Vanderhoof	Jan. 11 - Feb. 8	5	7.1 - 7.8	Objective met
		Sep. 21 - Oct. 18	5	7.5 - 7.8	Objective met
	0400450 100 m d/s Vanderhoof	Jan. 11 - Feb. 8	5	7.2 - 7.5	Objective met
		Sep. 21 - Oct. 12	4	7.2 - 7.9	Objective met
	E207450 0.5 km d/s Vanderhoof	Jan. 11 - Feb. 8	5	7.2 - 7.6	Objective met
		Sep. 21 - Oct. 18	5	7.4 - 7.9	Objective met
Temperature $\leq 15^{\circ}\text{C}$ av $\sim 100$ m d/s Cheslatta Falls	Stuart River 0400488 E bank at Highway 27	Jan. 20 - Feb. 7	4	7.4 - 8.1	Objective met
		Sep. 20 - Oct. 17	5	7.7 - 7.9	Objective met
	0920101 W bank at Highway 27	Jan. 20 - Feb. 7	4	7.4 - 7.9	Objective met
		Sep. 20 - Oct. 17	5	7.4 - 7.9	Objective met
	Chilako River 0400039 ~30 km from mouth	Oct. 6 - Nov. 2	5	8.1 - 8.3	Objective met
	Nechako River: immediately d/s Cheslatta Falls (DFO's Cheslatta Falls site)	Jan 1 - Jun 21	172	0.6 - 14.5 ° C	Obj. met
		Jun 22 - Jul 2	11	15.2 - 16.6 ° C	Obj. not met
		Jul 3 - Jul 9	7	14.2 - 15 ° C	Obj. met
		Jul 10 - Sep 18	71	15.1 - 18.5 ° C	Obj. not met
		Sep 19 - Dec 31	104	1.5 - 14.9 ° C	Obj. met
	10 km d/s Cheslatta Falls (DFO's B. Irvine site)	Jan 1 - Jun 20	171	0.1 - 14.8 ° C	Obj. met
		Jun 21 - Jul 1	11	15.1 - 16.8 ° C	Obj. not met
		Jul 2 - Jul 3	2	14.6 - 14.7 ° C	Obj. met
		Jul 4 - Jul 7	4	15.2 - 15.4 ° C	Obj. not met
		Jul 8 - Jul 9	2	15.0 ° C	Obj. met
		Jul 10 - Sep 17	68	15.1 - 18.5 ° C	Obj. not met
		Sep 12 & Sep 14	2	14.9 ° C	Obj. met
		Sep 18 - Dec 31	105	0.4 - 14.9 ° C	Obj. met

TABLE 5 continued

## NECHAKO RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Temperature  $\leq 20^{\circ}\text{C}$ Jul. -Aug. $\leq 18^{\circ}\text{C}$ Sep.-Jun. ~ 100 m u/s Stuart River	Nechako River: at Vanderhoof ~40 km u/s Stuart R. confl. (DFO's Vanderhoof site)	Jan 1 - Jun 20	171	0.0 - 17.6 ° C	Obj. met
		Jun 21 - Jun 27	7	18.1 - 20.4 ° C	Obj. not met
		Jun 28 - Jun 30	3	16.5 - 17.2 ° C	Obj. met
		Jul 1 - Aug 31	62	14.3 - 19.9 ° C	Obj. met
		Sep 1 - Dec 10	101	0.0 - 18.0 ° C	Obj. met
	7.5 km u/s Stuart R. confl. (DFO's Finmore site)	Jul 10 - Aug 11	22	17.2 - 20.0 ° C	Obj. met
		Jul. 15	1	20.8 ° C	Obj. not met
		Jul 21 - Jul 25	5	20.2 - 20.7 ° C	Obj. not met
		Jul 28 - Jul 30	3	20.2 - 20.6 ° C	Obj. not met
		Aug 3 - Aug 4	2	20.3 ° C	Obj. not met
Total Gas Pressure  109 % max	Nechako River: 0400631 200 m d/s Fort Fraser	Jan. 27 - Feb. 2	2	96.0 - 99.0 %	Objective met
		Sep. 21 - Oct. 18	5	98.0 - 100.0 %	Objective met
	E207451 2 km d/s Vanderhoof	Jan. 27 - Feb. 2	2	95.0 - 97.0 %	Objective met
		Sep. 21 - Oct. 19	5	98.0 - 100.0 %	Objective met

TABLE 6

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <100/100 mL 90th percentile (np)	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	3 - 13/100 mL np = 11/100 mL	Objective met
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	4	2 - 40/100 mL	Indefinite result
	0400138 u/s Petro-Canada(N. Side)	Aug. 3 - Sep. 8	5	1 - 20/100 mL np = 15/100 mL	Objective met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	1 - 80/100 mL np = 50/100 mL	Objective met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	4	2 - 70/100 mL av = 0.009 mg/L	Indefinite result
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	0 - 50/100 mL np = 30/100 mL	Objective met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	5	2 - 80/100 mL np = 50/100 mL	Objective met
Fecal Coliforms  200/100 mL geometric mean (gm) April - October	Beattion River: E207448 u/s Ft. St. John STP	May 17 - Jun 15	5	16 - 700 gm = 40/100 mL	Objective met
	E207449 d/s Ft. St. John STP	May 17 - Jun 15	5	2 - 1060/100 mL gm = 16/100 mL	Objective met
Turbidity  max. increase: 5 NTU or 10%	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	1.8 - 14 NTU	Control site
	0400492 100 m d/s Ft. St. John	Aug. 11 - Sep. 8	4	1.3 - 13 NTU max. inc = 0.2 NTU	Objective met
		Aug. 3	1	12 NTU increase = 6 NTU	Objective not met
	0400138 u/s Petro-Canada (N. Side)	Aug. 11 - Sep. 8	4	2.1 - 15 NTU max. inc. = 2.2 NTU	Objective met
		Aug. 3	1	12 NTU increase = 6 NTU	Objective not met
	0410054 100 m d/s Petro-Canada	Aug. 11 - Sep. 8	4	2.1 - 12 NTU max. inc. = 2.6 NTU	Objective met
		Aug. 3	1	17 NTU increase = 9 NTU	Objective not met
	E207631 200 m d/s Fibreco	Aug. 11 - Sep. 8	4	2.5 - 12 NTU max. inc. = 4.8 NTU	Objective met
		Aug. 3	1	16 NTU increase = 10 NTU	Objective not met
	E207965 1 km d/s Fibreco	Aug. 11 - Sep. 8	4	2.7 - 9 NTU max. inc. = 4.8 NTU	Objective met
		Aug. 3	1	16 NTU increase = 10 NTU	Objective not met

TABLE 6 continued

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity  max. increase: 5 NTU or 10%	Peace River: O400142 5 km d/s Petro-Canada (N. Side)	Aug. 11 - Sep. 8	4	2.2 - 4.5 NTU max. inc. = 2.6 NTU	Objective met
		Aug. 3	1	22 NTU increase = 16 NTU	Objective not met
	Beaton River E207448 u/s Ft. St. John STP	May 17 - Jun. 15	5	48 - 75 NTU	Control site
		May 17 - Jun. 15	4	35 - 75 NTU max. inc. = 3 NTU	Objective met
		Jun. 6	1	55 NTU increase = 7 NTU	Objective not met
Suspended Solids  max. increase: 10 mg/L or 10%	Peace River O400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	< 4 - 24 mg/L	Control site
		Aug. 11 - Sep. 8	4	< 4 - 24 mg/L max. inc. = 1 mg/L	Objective met
	O400492 100 m d/s Ft. St. John	Aug. 3	1	80mg/L increase = 59 mg/L	Objective not met
		Aug. 11 - Sep. 8	4	< 4 - 23 mg/L max. inc. = 4 mg/L	Objective met
	O400138 u/s Petro-Canada (N. Side)	Aug. 3	1	64 mg/L increase = 43 mg/L	Objective not met
		Aug. 11 - Sep. 8	4	4 - 25 mg/L max. inc. = 9 mg/L	Objective met
	O410054 100 m d/s Petro-Canada	Aug. 3	1	138 mg/L increase = 117 mg/L	Objective not met
		Aug. 11 - Sep. 6	3	6 - 29 mg/L max. inc. = 5 mg/L	Objective met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	2	18 - 141 mg/L inc. = 14 - 120 mg/L	Objective not met
		Aug. 11 - Sep. 6	3	6 - 28 mg/L max. inc. = 4 mg/L	Objective met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	2	20 - 182 mg/L inc. = 16 - 161 mg/L	Objective not met
		Aug. 11 - Sep. 8	4	4 - 12 mg/L max. inc. = 8 mg/L	Objective met
	O400142 5 km d/s Petro-Canada (N. Side)	Aug. 3	1	127 mg/L increase = 108 mg/L	Objective not met
		May 17 - Jun. 15	5	55 - 1340 mg/L	Control site
	Beaton River E207449 d/s Ft. St. John STP	May 17 - June 15	4	50 - 1460 mg/L max. inc.=120 mg/L(<10%)	Objective met
		Jun. 6	1	82 mg/L increase = 14 mg/L	Objective not met
Total Cl <sub>2</sub> Res. 0.002 mg/L max	Peace River	1994	0	no data collected	Omitted 1994
Dissolved Fluoride 1.0 mg/L max	Peace River	1994	0	no data collected	Omitted 1994

TABLE 6 continued

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
WAD-CN $\leq 0.005 \text{ mg/L}$ av $0.01 \text{ mg/L}$ max	Peace River	1994	0	no data collected	Omitted 1994
Chlorophyll-a $50 \text{ mg/m}^2$ max	Peace River Beaton River	1994	0	no data collected	Objective not checked
Ammonia-N $<0.709 \text{ mg/L}$ $3.69 \text{ mg/L}$ max at pH = 8.2 temp = 12°C	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	all < 0.005 mg/L	Objectives met
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	all < 0.005 mg/L	Objectives met
	0400138 u/s Petro-Canada(N. Side)	Aug. 3 - Sep. 8	5	all < 0.005 mg/L	Objectives met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	<0.005 - 0.028 mg/L av = 0.009 mg/L	Objectives met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	5	<0.005 - 0.024 mg/L av = 0.009 mg/L	Objectives met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	<0.005 - 0.019 mg/L av = 0.008 mg/L	Objectives met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	5	<0.005 - 0.016 mg/L av = 0.007 mg/L	Objectives met
	Beaton River	1994	0	no data collected	Omitted 1994
	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	<0.005 - 0.005 mg/L av = <0.005 mg/L	Objectives met
Nitrite-N $<0.02 \text{ mg/L}$ av $0.06 \text{ mg/L}$ max	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	<0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
	0400138 u/s Petro-Canada	Aug. 3 - Sep. 8	5	<0.005 - 0.005 mg/L av = <0.005 mg/L	Objectives met
	0410054 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	<0.005 - 0.009 mg/L av = 0.006 mg/L	Objectives met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	5	<0.005 - 0.009 mg/L av = 0.006 mg/L	Objectives met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	<0.005 - 0.005 mg/L av < 0.005 mg/L	Objectives met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	5	<0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met

TABLE 6 continued

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite - N $\leq 0.02 \text{ mg/L av}$ 0.06 mg/L max	Beaton River	1994	0	no data collected	Omitted 1994
Dissolved Oxygen 7.25 mg/L min	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	9.37 - 10.43 mg/L	Objective met
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	9.6 - 10.5 mg/L	Objective met
	0400138 u/s Petro-Canada	Aug. 3 - Sep. 8	5	9.37 - 10.43 mg/L	Objective met
	0410054 100 m d/s Petro-Canada	Aug. 22 - Sep. 8	11	9.36 - 10.6 mg/L	Objective met
	E207631 200 m d/s Fibreco	Aug. 11 - Sep. 8	4	9.5 - 10.16 mg/L	Objective met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	9.24 - 10.7 mg/L	Objective met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	5	9.6 - 10.5	Objective met
	Beaton River	1994	0	no data collected	Omitted 1994
Total Dissolved Gas 110% max	Peace River	1994	0	no data collected	Objective not checked
pH 6.5 - 9.0	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	8.0 - 8.3	Objective met
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	8.1 - 8.3	Objective met
	0400138 u/s Petro-Canada	Aug. 3 - Sep. 8	5	8.0 - 8.3	Objective met
	0410054 100 m d/s Petro Canada	Aug. 3 - Sep. 8	5	8.1 - 8.3	Objective met
	E207631 200 d/s Fibreco	Aug. 3 - Sep. 8	5	8.0 - 8.3	Objective met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	8.0 - 8.3	Objective met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 9	5	8.0 - 8.3	Objective met

TABLE 6 continued

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 9.0	Beaton River	1994	0	no data collected	Omitted 1994
Temperature max increase: 1°C	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	12.3 - 13.2 °C	Control site
Temperature max increase: 1°C	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	11.7 - 12.9 °C max. increase = 0.6°C	Objective met
	0400138 u/s Petro-Canada (N. Side)	Aug. 3 - Sep. 8	5	11.9 - 12.8°C	Control site
	0410054 100 m d/s Petro-Canada	Aug. 22 Sep. 6 Sep. 8	1 6 4	13.7 °C, inc. = 0.9 °C 14.1 °C av, inc. = 2.0 °C 13.1 °C av, inc. = 1.2 °C	Objective met Obj. not met Obj. not met
	E207631 200 m d/s Fibreco	Aug. 11 - Sep. 8	4	12.0 - 13.7°C max. increase = 0.9°C	Objective met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	12.2 - 13.7°C max. increase = 0.9°C	Objective met
	0400142 5 km d/s Petro-Canada (N. Side)	Aug. 3 - Sep. 8	5	12.3 - 13.2 °C max. increase = 0.6°C	Objective met
	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	all < 2.0 ug/L av < 2.0 ug/L	Control site
Total Cu $\leq 4.48 \text{ ug/L av}$ $12.5 \text{ ug/L max}$ at hardness 112 mg/L or 20% increase	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	<2.0 - 2.0 ug/L av < 2.0 ug/L	Objectives met
	0400138 u/s Petro-Canada	Aug. 3 - Sep. 8	5	< 2.0 - 2.0 ug/L av < 2.0 ug/L	Objectives met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	< 2.0 - 2.0 ug/L av < 2.0 ug/L	Objectives met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	5	< 2.0 - 4.0 ug/L av = 2.0 ug/L	Objectives met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	< 2.0 - 4.0 ug/L av = 2.0 ug/L	Objectives met
	0400142 5 km d/s Petro-Canada (N. Side)	Aug. 3 - Sep. 8	5	< 2.0 - 3.0 ug/L av = 2.0 ug/L	Objectives met
	Peace River	1994	0	no data collected	Omitted 1994
Chlorophenols (tri + tetra + penta) 0.0002 mg/L max	Peace River	1994	0	no data collected	Omitted 1994
	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	all < 0.002 mg/L	Control site
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	all < 0.002 mg/L	Objective met

TABLE 6 continued

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Chromium  0.002 mg/L max or 20% increase	Peace River: 0400138 u/s Petro-Canada (N. Side)	Aug 11 - Sep 8	4	all < 0.002 mg/L	Objective met
		Aug. 3	1	0.030 mg/L inc. > 0.028 mg/L	Objective not met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	all <0.002 mg/L	Objective met
	E207631 200 m d/d Fibreco	Aug. 3 - Sep. 8	5	all <0.002 mg/L	Objective met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	all <0.002 mg/L	Objective met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	4	all <0.002 mg/L	Objective met
		Aug. 8	1	0.004 mg/L inc. > 0.002 mg/L	Objective not met
Total Lead  ≤ 4.3 ug/L av 67 ug/L max at hardness 112 mg/L or 20% increase	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	all < 3.0 ug/L av < 3.0 ug/L	Control site
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	all < 3.0 ug/L av < 3.0 ug/L	Objectives met
	0400138 u/s Petro-Canada	Aug. 3 - Sep. 8	5	all < 3.0 ug/L av < 3.0 ug/L	Objectives met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	< 3.0 ug/L - 7.0 ug/L av = 4.0 ug/L	Objectives met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	5	<3.0 - 4.0 ug/L av = 3.0 ug/L	Objectives met
	E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	<3.0 - 4.0 ug/L av = 3.0 ug/L	Objectives met
	0400142 5 km d/s Petro-Canada (N. Side)	Aug. 3 - Sep. 8	5	<3.0 - 3.0 ug/L av < 3.0 ug/L	Objectives met
Total Nickel  0.065 mg/L max at hardness 112mg/L	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	all < 0.01 mg/L	Objective met
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	all < 0.01 mg/L	Objective met
	0400138 u/s Petro-Canada (N. Side)	Aug. 3 - Sep. 8	5	all < 0.01 mg/L	Objective met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	all <0.01 mg/L	Objective met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	5	all < 0.01 mg/L	Objective met

TABLE 6 continued

## PEACE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Nickel  0.065 mg/L max at hardness 112mg/L	Peace River: E207965 1 km d/s Fibreco	Aug. 3 - Sep. 8	5	all < 0.01 mg/L	Objective met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	5	all < 0.01 mg/L	Objective met
Total Zinc  0.03 mg/L max or 20% increase	Peace River 0400134 3.2 km u/s Ft. St. John (N. Side)	Aug. 3 - Sep. 8	5	<0.01 - 0.04 mg/L	Control site
	0400492 100 m d/s Ft. St. John	Aug. 3 - Sep. 8	5	<0.01 - 0.03 mg/L	Objective met
	0400138 u/s Petro-Canada (N. Side)	Aug. 3 - Sep. 8	5	<0.01 - 0.04 mg/L	Objective met
	0410054 100 m d/s Petro-Canada	Aug. 3 - Sep. 8	5	<0.01 - 0.04 mg/L	Objective met
	E207631 200 m d/s Fibreco	Aug. 3 - Sep. 8	5	<0.01 - 0.03 mg/L	Objective met
	E207965 2 km d/s Fibreco	Aug. 3 - Sep. 8	5	<0.01 - 0.03 mg/L	Objective met
	0400142 5 km d/s Petro-Canada	Aug. 3 - Sep. 8	5	<0.01 - 0.03 mg/L	Objective met
Phenol 0.002 mg/L av or 20% increase	Peace River	1994	0	no data collected	Omitted 1994
H2S 0.002 mg/L max or 20% increase	Peace River	1994	0	no data collected	Omitted 1994
2,4-D (ester) 0.004 mg/L max	Peace River	1994	0	no data collected	Omitted 1994
Resin Acids (criteria) 13 ug/L max DHA 52 ug/L max total	Peace River	1994	0	no data collected	Omitted 1994

TABLE 7

## WILLIAMS LAKE WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform <200/100 mL geometric mean (gm)	Williams Lake: E221221 Scout Island Beach	Aug 2 - Aug 29	5	1 - 16/100 mL gm = 4/100 mL np = 11/100 mL	Objectives met
<400/100 mL 90th percentile (np) at beaches	Williams Lake: E221222 Russet Bluff Beach	Aug 2 - Aug 29	5	0 - 12/100 mL gm < 3/100 mL np = 9/100 mL	Objectives met
Fecal Coliform <10/100 mL 90th percentile at water intakes	Williams Lake water intake sites	1994	0	no data collected	Objective not checked
Turbidity $\leq 1$ NTU av 5 NTU max.	Williams Lake: 0603019 at lake centre	Jul. 27 - Aug. 29 Jul. 27, Aug. 2, 14 Aug. 9, 22, 29	6 3 3	av = 13.7 NTU 20.0 - 30.0 NTU 2.0 - 3.3 NTU	Av. not met Max. not met Max. obj. met
Total P $\leq 0.020$ mg/L av at spring overturn	Williams Lake: 0603019 at lake centre	Apr. 14	1 1 1 1	0.5 m : 0.040 mg/L 5 m : 0.040 mg/L 10 m : 0.082 mg/L 18 m : 0.094 mg/L av = 0.064 mg/L	Objective not met
Chlorophyll-a $\leq 0.005$ mg/L av	Williams Lake: 0603019 at lake centre	May 8 - Sep. 26	6	0.0071 - 0.0219 mg/L av = 0.0161 mg/L	Objective not met
Dissolved Oxygen 4.0 mg/L min 5 m above sed.	Williams Lake: 0603019 at lake centre	May 9 & Jun. 8	2	8.2 & 4.3 mg/L at 14.5 m depth	Objective met
Water Clarity 1.2 m min Secchi reading May- August	Williams Lake: 0603019 at lake centre	May 2, 9, Jun. 8 Jul. 4, 21	3 2	1.51 - 1.9 m 0.9 - 1.0 m	Objective met Objective not met

TABLE 8

## SAN JOSE RIVER WATER QUALITY OBJECTIVE - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved P  2500 kg/year  max. loading at the inlet to Williams Lk	San Jose River: 08MC040 (near 0600317) u/s Borland Creek	Jan 15 - Dec 18	32	0.178 - 7.85 m3/s river flow	Objective not met
	Borland Creek: 08MC039 (near 0600105) at the mouth	Jan 15 - Dec 18	32	0.003 - 4.16 m3/s creek flow	
	San Jose River: 0600316 d/s Borland Creek	Jan 15 - Dec 18	32	0.017 - 0.460 mg/L dissolved P  5400 kg/year dissolved P	

TABLE 9

## BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <100/100 mL 90th percentile (np)	Bonaparte River: 0600017 u/s Clinton Creek	May 17 - Jun. 15	5	14 - 260/100 mL np = 140/100 mL	Objective not met
	E207927 d/s Loon Creek	May 17 - Jun. 15	5	7 - 31/100 mL np = 30/100 mL	Objective met
	E207291 d/s Hat Creek	May 17 - Jun 15	5	5 - 55/100 mL np = 40/100 mL	Objective met
	0600506 u/s Cache Creek STP	May. 17 - Jun. 15	5	34 - 220/100 mL np = 170/100 mL	Objective not met
	0600508 d/s Cache Creek STP	May 24 - Jun. 15	4	140 - 180/100 mL np = or > 250/100 mL	Objective not met
	0600329 near mouth	May 17 - Jun. 15	8	110 - 280/100 mL np = 240/100 mL	Objective not met
	Clinton Creek: 0600503 u/s Clinton STP	May 17 - Jun. 15	5	1 - 45/100 mL np = 30/100 mL	Objective met
	0500258 d/s lagoon	May 17 - Jun. 8	5	1 - 250/100 mL np = 160/100 mL	Objective not met
	Loon Creek: 0600297 u/s hatchery	May 17 - Jun. 15	5	9 - 24/100 mL np = 22/100 mL	Objective met
	E206110 d/s hatchery	May 17 - Jun. 15	5	7 - 50/100 mL np = 30/100 mL	Objective met
Fecal Coliforms  <10/100 mL 90th perc. (np) at water intakes	0600336 near mouth	May 17 - Jun. 15	5	7 - 40/100 mL np = 36/100 mL	Objective met
	Loon Lake E218769 at water intake	Jul 26 - Aug 8	2	6 - 12/100 mL	Indefinite result
	Fecal Coliforms  <200/100 mL geometric mean (gm) at beaches	Loon Lake E207959 Prov. Park Beach	Jul 26 - Aug 8	6 - 10/100 mL	Indefinite result
	Suspended Solids  10 mg/L or 10% max. increase	Bonaparte River: 600017 u/s Clinton Creek	May 17 - Jun. 15	6 - 17 mg/L	Control site
		E207927 d/s Loon Creek	May 17 - Jun. 15	8 - 20 mg/L max. inc. = 7 mg/L	Objective met

TABLE 9 continued

## BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids  10 mg/L or 10% max. increase	Bonaparte River: E207291 d/s Hat Creek	May 17 - Jun 8	4	33 - 40 mg/L max. inc. = 16 - 28 mg/L	Objective not met
		Jun. 8	1	15 mg/L inc. = 9 mg/L	Objective met
	600506 u/s Cache Creek STP	May. 17 - Jun. 15	5	19 - 57 mg/L max. inc. = 13 - 45 mg/L	Objective met
	600508 d/s Cache Creek STP	May 17 - Jun. 15	5	22 - 82 mg/L max. inc. = 16 - 70 mg/L	Objective not met
	600329 near mouth	May 17 - Jun. 15	5	20 - 63 mg/L max. inc. = 14 - 51 mg/L	Objective not met
	Clinton Creek: 600503 u/s Clinton STP	May 27 - Jun. 15	5	6 - 28 mg/L	Control site
		May 17 - Jun. 8	4	6 - 28 mg/L max. inc. = 9 mg/L	Objective met
		Jun. 15	1	42 mg/L inc. = 14 mg/L	Objective not met
	Loon Creek: 600297 u/s hatchery	May 17 - Jun. 15	5	11 - 26 mg/L	Control site
	E206110 d/s hatchery	May 17 - Jun. 15	5	9 - 24 mg/L max. inc. = 0 mg/L	Objective met
	600336 near mouth	May 17 - Jun. 15	5	10 - 24 mg/L max. inc. = 0 mg/L	Objective met
Turbidity  5 NTU or 10 % max. increase	Bonaparte River: 0600017 d/s Hat Creek	May. 17 - Jun. 15	5	0.7 - 3.5 NTU	Control site
		May. 17 - Jun. 15	5	1.0 - 3.5 NTU max. inc. = 2NTU	Objective met
	E207291 d/s Loon Creek	May 17 - Jun. 15	5	2.3 - 6 NTU max. inc. = 2.6 NTU	Objective met
	0600506 u/s Cache Creek STP	May 17 - Jun. 15	5	3.5 - 7.0 NTU max. inc. = 5 NTU	Objective met
		May 17 - Jun. 15	5	1.5 - 8 NTU max. inc. = 4.5 NTU	Objective met
	0600329 near mouth	May 17	1	15 NTU inc. = 11.5 NTU	Objective not met
		May 24 - Jun. 15	4	3.5 - 7.5 NTU max. inc. = 5 NTU	Objective met

TABLE 9 continued

## BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity  5 NTU or 10 % max. increase	Clinton Creek: 0600503 u/s Clinton STP	May. 17 - Jun. 15	5	1 - 3.6 NTU	Control site
	0600258 d/s Lagoon	May 17 - Jun. 15	5	1 - 4.3 NTU max. inc. = 0.7 NTU	Objective met
	Loon Creek: 0600297 u/s hatchery	May 17 - Jun. 15	5	1.8 - 4 NTU	Control site
	E206110 d/s hatchery	May 17 - Jun. 15	5	2.0 - 3.8 NTU max. inc. = 0.8 NTU	Objective met
	0600336 near mouth	May 17 - Jun. 15	5	1.8 - 3.5 NTU max. inc. = 0.8 NTU	Objective met
Dissolved Solids  500 mg/L max.	Clinton Creek: 0600503 u/s Clinton STP	May. 17 - Jun. 15	5	270 - 408 mg/L	Objective met
	0600258 d/s lagoon	May. 17 - Jun. 15	5	248 - 486 mg/L	Objective met
Total Cl <sub>2</sub> Res. 0.002 mg/L max	Bonaparte River Clinton Creek	1994	0	no data collected	Omitted 1994
Ammonia-N  ≤ 0.455 mg/L av 2.36 mg/L max  at  pH = 8.4 Temp = 13°C	Bonaparte River: 0600017 u/s Clinton	May 17 - Jun. 15	5	< 0.005 - 0.018 mg/L av = 0.008 mg/L	Objectives met
	E207297 d/s Loon Creek	May 17 - Jun 15	5	< 0.005 - 0.007 mg/L av = 0.006 mg/L	Objectives met
	E207291 d/s Hat Creek	May 17 - Jun. 15	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	0600506 u/s Cache Creek STP	May 17 - Jun. 15	5	< 0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
	0600508 d/s Cache Creek STP	May 17 - Jun. 15	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	0600329 near mouth	May 17 - Jun. 15	5	< 0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
	Clinton Creek: 0600503 u/s Clinton STP	May 17 - Jun. 15	5	< 0.005 - 0.015 mg/L av = 0.007 mg/L	Objectives met
	0600258 d/s lagoon	May 17 - Jun. 15	5	< 0.005 - 0.025 mg/L av = 0.012 mg/L	Objectives met

TABLE 9 continued

## BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N  $\leq 0.455 \text{ mg/L av}$ $2.36 \text{ mg/L max}$ $\text{at pH} = 8.4$ $\text{Temp} = 13^\circ\text{C}$	Loon Creek: 0600297 u/s hatchery	May 17 - Jun. 15	5	< 0.005 - 0.009 mg/L av = 0.006 mg/L	Objectives met
	E206110 d/s hatchery	May 17 - Jun. 15	5	< 0.005 - 0.007 mg/L av = 0.005 mg/L	Objectives met
	0600336 near mouth	May 17 - Jun. 15	5	< 0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
Nitrite-N  $\leq 0.02 \text{ mg/L av}$ $0.06 \text{ mg/L max}$	Bonaparte River: 0600017 u/s Clinton	May 17 - Jun. 15	5	all < 0.005 mg/L	Objectives met
	E207297 d/s Loon Creek	May 17 - Jun. 15	5	all < 0.005 mg/L	Objectives met
	E207291 d/s Hat Creek	May 17 - Jun. 15	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	0600506 u/s Cache Creek STP	May 17 - Jun. 15	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	0600508 d/s Cache Creek STP	May 17 - Jun. 15	5	< 0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
	0600329 near mouth	May 17 - Jun. 15	5	< 0.005 - 0.009 mg/L av = 0.006 mg/L	Objectives met
	Clinton Creek: 0600503 u/s Clinton Creek	May 17 - Jun. 15	5	all < 0.005 mg/L	Objectives met
	0600258 d/s Lagoon	May 17 - Jun. 15	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
Chlorophyll-a $< 50 \text{ mg/m}^2 \text{ av}$	Bonaparte River: 0600329 near mouth	Aug. 22	6	20.6 - 105.0 mg/m <sup>2</sup> av = 61.4 mg/m <sup>2</sup>	Objective not met
		Sep. 14	6	60.1 - 197.0 mg/2 av = 133.8 mg/m <sup>2</sup>	Objective not met
Chlorophyll-a $< 100 \text{ mg/m}^2 \text{ av}$ or 20% increase	Clinton Creek	1994	0	no data collected	Omitted 1994
Dissolved Oxygen  $7.75 - 11.2 \text{ mg/L}$ min depending on fish egg stage	Bonaparte River: 0600017 u/s Clinton Creek	May - 17 - Jun. 15	5	8.9 - 10.2 mg/L	Objective met
	E207297 d/s Loon Creek	May 17 - Jun. 15	5	9.5 - 10.4 mg/L	Objective met
	E207291 d/s Hat Creek	May 17 - Jun. 15	5	9.3 - 9.8 mg/L	Objective met

TABLE 9 continued

## BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen  7.75 - 11.2 mg/L min depending on fish egg stage	Bonaparte River: 0600506 u/s Cache Creek STP	May 17 - Jun. 17	5	9.3 - 10.2 mg/L	Objective met
	0600508 d/s Cache Creek STP	May 17 - Jun. 15	5	9.2 - 9.8 mg/L	Objective met
	0600329 near mouth	May 17 - Jun. 15	5	9.2 - 10.1 mg/L	Objective met
	Clinton Creek: 0600503 u/s Clinton STP	May 17 - Jun. 15	5	9.8 - 11.2 mg/L	Objective met
	0600258 d/s lagoon	May 17 - Jun. 15	5	9.8 - 11.4 mg/L	Objective met
	Loon Creek: 0600297 u/s fish hatchery	May 17 - Jun. 15	5	9.6 - 10.9 mg/L	Objective met
	E206110 d/s fish hatchery	May 17 - Jun. 15	5	9.7 - 10.8 mg/L	Objective met
	0600336 near mouth	May 17 - Jun. 15	5	9.8 - 10.8 mg/L	Objective met
Dissolved Oxygen  5 mg/L min above bottom	Loon Lake 0603050 above deepest point	Jun. 28	1	10m: 2.4 mg/L	Obj. not met
		Aug. 24	1	16.8-49m: 0 - 0.2 mg/L	Obj. not met
pH  6.5 - 8.5 (u/s Cache Creek & in Clinton Creek)	Bonaparte River: 0600017 u/s Clinton Creek	May 17 - Jun. 15	5	8.0 - 8.1	Objective met
	E207297 d/s Loon Creek	May 17 - Jun. 15	5	8.2 - 8.4	Objective met
	E207291 d/s Hat Creek	May 17 - Jun. 15	5	8.2 - 8.3	Objective met
	Clinton Creek: 0600503 u/s Clinton STP	May 17 - Jun. 15	5	8.4 - 8.5	Objective met
	0600258 d/s Clinton STP	May 17 - Jun. 15	5	8.3 - 8.4	Objective met

TABLE 9 continued

## BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH  6.5 - 9.0 (d/s Cache Creek & in Loon Creek)	Bonaparte River: 0600506 u/s Cache Creek STP	May 17 - Jun 15	5	8.2 - 8.3	Objective met
	0600508 d/s Cache Creek STP	May 17 - Jun. 15	5	8.2 - 8.3	Objective met
	0600329 near mouth	May 17 - Jun. 15	5	8.3 - 8.5	Objective met
	Loon Creek: 0600297 u/s hatchery	May 17 - Jun 15	5	8.4 - 8.5	Objective met
	E206110 d/s hatchery	May 17 - Jun. 15	5	8.4 - 8.5	Objective met
	0600336 near mouth	May 17 - Jun. 15	5	8.4 - 8.5	Objective met

TABLE 10

## OKANAGAN VALLEY LAKES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total-P  <0.040 mg/L av at spring overtur (short-term)	Wood Lake: 0500848 lake centre	Mar. 22	1 1 1	1-10m: 0.038 mg/L 15 m: 0.034 mg/L 20-30m: 0.031 mg/L av = 0.034 mg/L	Objective met
Total-P  $\leq 0.008$ mg/L av at spring overtur	Kalamalka Lake: 0500246 south end	Mar. 22	1 1	15 m: 0.006 mg/L 45 m: 0.007 mg/L av = 0.007 mg/L	Objective met
	0500461 north end	Mar. 22	1 1	15 m: 0.009 mg/L 29 m: 0.008 mg/L av = 0.009 mg/L	Objective not met
Total-P  $\leq 0.010$ mg/L av at spring overtur	Okanagan Lake: 0500239 Armstrong Arm	Mar. 23	1 1 1	0-10 m: 0.012 mg/L 15 m: 0.016 mg/L 45 m: 0.015 mg/L av = 0.014 mg/L	Objective not met
	0500238 Vernon Arm	Mar. 23	1 1 1	1-10m: 0.006 mg/L 15m: 0.006 mg/L 20m: 0.007 mg/L av = 0.006 mg/L	Objective met
	0500730 north basin	Mar. 23	1 1 1	1-10m: 0.006 mg/L 15m: 0.006 mg/L 20-45m: 0.007 mg/L av = 0.006 mg/L	Objective met
	0500236 central basin	Mar. 20	1 1 1	1-10m: 0.004 mg/L 15m: 0.007 mg/L 20-45m: <0.003 mg/L av = 0.005 mg/L	Objective met
	0500729 south basin	Mar. 15	1 1 1	1-10m: <0.003 mg/L 15m: <0.003 mg/L 20-45m: 0.005 mg/L av = 0.004 mg/L	Objective met
Total-P  $<0.015$ mg/L av at spring overtur	Skaha Lake: 0500615 at centre	Mar. 3	1 1	15 m: 0.014 mg/L 45 m: 0.012 mg/L av = 0.013 mg/L	Objective met
	Osoyoos Lake: 0500249 north end	Mar. 17	1 1 1	0 - 10 m: 0.012 mg/L 15 m: 0.010 mg/L 32 m: 0.013 mg/L av = 0.012 mg/L	Objective met

TABLE 11

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids  10 mg/L or 10% max. increase	Cahill Creek: E206636 d/s tailings	Jul. 7 - Aug. 4	4	all < 4 mg/L	Control site
	E206637 at highway	Jul. 8 - Aug. 4	5	< 4 - 7 mg/L	Objective met
	Red Top Gulch: E206638 at Highway	Jul. 14 - Aug. 4	3	all < 4 mg/L	Objective met
Susp. Solids  20 mg/L or 10% max. increase	Cahill Creek: E206636 d/s tailings	Jul. 7 - Aug. 4	4	all < 4 mg/L	Objective met
	Nickel Plate Mine Creek Sunset Creek	1994	0	no data collected	Omitted 1994
Turbidity  5 NTU or 10% max. increase	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	0.3 - 0.8 NTU	Control site
	E206636 d/s tailings	Jul. 7 - Aug. 4	4	0.3 - 0.7 NTU	Objective met
	E206637 at highway	Jul. 8 - Aug. 4	5	0.5 - 2.5 NTU	Objective met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	0.2 - 0.3 NTU	Objective met
Turbidity  10 NTU or 20% max. increase	Sunset Creek: E215954 u/s Carty Pit	Jul. 14 - Aug. 4	4	0.2 - 0.3 NTU	Control site
	E215955 d/s Carty Pit	Jul. 14 - Aug. 4	4	0.3 - 0.6 NTU	Objective met
	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	0.1 - 0.2 NTU	Objective met
Dissolved Solids  500 mg/L max	Cahill Creek: E206636 d/s tailings	Jul. 7, 14 Jul. 28, Aug. 4	2 2	346 - 384 mg/L 506 - 512 mg/L	Objective met Obj. not met
	E206637 at highway	Jul. 8 - Aug. 4	5	368 - 500 mg/L	Objective met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	410 - 452 mg/L	Objective met
	Nickel Plate Mine Creek	1994	0	no data collected	Omitted 1994

TABLE 11 continued

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Sulphate  ≤ 50 mg/L av 150 mg/L max.	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	6 - 9.4 mg/L av = 7.7 mg/L	Objectives met
	E206637 at highway	Jul. 8 - Aug. 4	5	< 1 - 117 mg/L av = 64 mg/L	Max. obj. met Av. not met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	138 - 137 mg/L	Max. obj. met Av. not checked
	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 8	5	271 - 340 mg/L av = 313 mg/L	Objectives not met
WAD-CN  ≤ 0.005 mg/L av 0.010 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	4	all < 0.001 mg/L	Max. obj. met
	E206637 at highway	Jul. 8 - Aug. 4	5	< 0.001 - 0.003 mg/L av ≈ 0.001 mg/L	Objectives met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	<0.001 - 0.003 mg/L	Max. obj. met Av. not checked
SAD-CN + Thiocyanate as CN  0.20 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	Thiocyanate: all < 0.025 mg/L (SAD-CN not checked)	Indefinite result
	E206637 at highway	Jul. 8 - Aug. 4	5	Thiocyanate: all < 0.025 mg/L (SAD-CN not checked)	Indefinite result
	Red Top Gulch: E206638 at Highway	Jul. 14 - Aug. 4	3	Thiocyanate: all < 0.025 mg/L (SAD-CN not checked)	Indefinite result
Cyanates as CN  0.45 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	all < 0.05 mg/L	Objective met
	E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.05 mg/L	Objective met
	Red Top Gulch: E206638	Jul. 14 - Aug. 4	3	all < 0.05 mg/L	Objective met

TABLE 11 continued

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total As 0.05 mg/L max.	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	all < 0.04 mg/L	Objective met
	E206636 d/s tailings	Jul. 7	1	< 0.04 mg/L	Objective met
	E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.0005 mg/L	Objective met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.0005 mg/L	Objective met
Total As 0.5 mg/L max	Nickel Plate Mine Creek: E206633	Jul. 7 - Aug. 4	5	all < 0.04 mg	Objective met
Ammonia-N <0.491 mg/L av 3.61 mg/L max (pH=8.2,temp=20 C)	Cahill Creek Red Top Gulch Nickel Plate Mine Creek	1994	0	no data collected	Omitted 1994
Nitrite-N ≤ 0.02 mg/L av 0.06 mg/L max	Cahill Creek: E206637 at highway	Jul. 8 - Aug. 4	5	< 0.005 - 0.018 mg/L av = 0.010 mg/L	Objectives met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	< 0.005 - 0.006 mg/L	Max. obj. met Av. not checked
Nitrite-N 1 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7-Aug. 4	5	all < 0.005 mg/L	Objective met
Nitrite-N 10 mg/L max	Nickel Plate Mine Creek E206633 d/s pit	Jul. 7 - Aug. 4	5	< 0.005 - 0.014 mg/L	Objective met
Nitrate-N 10 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	all < 0.02 mg/L	Objective met
	E206637 at highway	Jul. 8 - Aug. 4	5	12.5 - 22.4 mg/L	Objective not met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	5.92 - 6.11 mg/L	Objective met
Nitrate-N 100 mg/L max	Nickel Plate Mine Creek E206633 d/s pit	Jul. 7 - Aug. 4	5	71.4 - 81.7 mg/L	Objective met

TABLE 11 continued

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH  6.5 - 8.5	Cahill Creek: E206637 at highway	Jul. 8 - Aug. 4	5	8.1 - 8.2	Objective met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	8.2 - 8.3	Objective met
	Nickel Plate Mine Creek	1994	0	no data collected	Omitted 1994
Total Al 0.30 mg/L max or 20% increase at pH >7	Cahill Creek: E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.06 mg/L	Objective met
Total Al 0.30 mg/L max at pH > 7	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.06 mg/L	Objective met
Total Cd  0.0002 mg/L max	Cahill Creek: E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.002 mg/L	Indefinite result
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.002 mg/L	Indefinite result
Total Cd 0.005 mg/L	Cahill Creek: E206635 u/s Confluence	Jul. 7 - Aug. 4	5	all < 0.002 mg/L	Objective met
Total Cd 0.02 mg/L max	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	all < 0.002 mg/L	Objective met
Total Cu  ≤ 0.005 mg/L av 0.007 mg/L max or 20% max. increase	Cahill Creek: E206637 at highway	Jul. 8 - Aug. 4	5	<0.002 - 0.003 mg/L av = 0.002 mg/L	Objectives met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.002 mg/L	Max. obj. met Av. not checked
Total Cu  0.2 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	< 0.002 - 0.003 mg/L	Objective met
	E206636 d/s tailings	Jul. 7	1	< 0.002 mg/L	Objective met

TABLE 11 continued

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu 0.3 mg/L max	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7-Aug. 4	5	all < 0.002 mg/L	Objective met
Dissolved Fe 0.3 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	< 0.05 - 0.11 mg/L	Objective met
	E206636 d/s tailings	Jul. 7	1	0.08 mg/L	Objective met
	E206637 at highway	Jul. 8 - Aug. 4	5	< 0.05 - 0.15 mg/L	Objective met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.05 mg/L	Objective met
	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	all < 0.05 mg/L	Objective met
Total Pb $\leq 0.005 \text{ mg/L av}$ $0.015 \text{ mg/L max}$ or 20% increase	Cahill Creek: E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.03 mg/L	Indefinite results
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.03	Indefinite results
Total Pb 0.05 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	all < 0.03 mg/L	Objective met
	E206636	Jul. 7	1	< 0.03 mg/L	Objective met
Total Pb 0.1 mg/L max	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	all < 0.03 mg/L	Objective met
Total Hg 0.1 ug/L max	Cahill Creek at hwy Red Top Gulch at hwy	1994	0	no data collected	Omitted 1994
Total Hg 10 ug/L max	Cahill Creek u/s hwy Red Top Gulch Ck u/s hwy	1994	0	no data collected	Omitted 1994
Total Hg 30 ug/L	Nickel Plate Mine Creek	1994	0	no data collected	Omitted 1994
Total Hg in fish muscle 0.5 ug/g max wet wt	Cahill Creek at hwy Red Top Gulch at hwy	1994	0	no data collected	Omitted 1994
Total Mo 0.01 mg/L av 0.05 mg/L max	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	< 0.004 - 0.006 mg/L	Max obj. met av not chkd.

TABLE 11 continued

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Mo  < 0.01 mg/L av 0.05 mg/L max  or 20% max. increase	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	all < 0.004 mg/L	Objectives met
	E206636 d/s tailings	Jul. 7	1	< 0.004 mg/L	Max obj. met
	E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.004 mg/L	Objectives met
Total Mo  0.05 mg/L max	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	all < 0.004 mg/L	Objective met
Total Se  0.001 mg/L max  or 20% max. increase	Cahill Creek: E206635 u/s Confluence	Jul. 7 - Aug. 4	5	all < 0.03 mg/L	Control site
	E206637 at highway	Jul. 8 - Aug. 4	5	all < 0.03 mg/L	Indefinite result
Total Se  0.001 mg/L max	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	all < 0.03 mg/L	Indefinite result
Total Se  0.01 mg/L max	Cahill Creek: E206636 d/s tailings	Jul. 7	1	< 0.03 mg/L	Indefinite result
Total Se  0.05 mg/L max	Nickel Plate Mine Creek: E206633	Jul. 7 - Aug. 4	5	< 0.03 - 0.04 mg/L	Objective met
Total Ag  0.0001 mg/L max  or 20% max. increase	Cahill Creek: E206637 u/s confluence at highway	Jul. 8 - Aug. 4	5	all < 0.03 mg/L	Indefinite result
	Red Top Gulch: E206635 at highway	Jul. 8 - Aug. 4	5	all < 0.03 mg/L	Indefinite result
Total Ag  0.05 mg/L max  or 20% max. increase	Cahill Creek: E206635 u/s Confluence	Jul. 7 - Aug. 4	5	all < 0.03 mg/L	Objective met
	E206636 d/s tailings	Jul. 7	1	< 0.03 mg/L	Objective met
	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	all < 0.03 mg/L	Objective met

TABLE 11 continued

## CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn 0.05 mg/L max	Cahill Creek: E206635 u/s confluence	Jul. 7 - Aug. 4	5	< 0.01 - 0.04 mg/L	Objective met
	E206636 d/s tailings	Jul. 7	1	0.01 mg/L	Objective met
	E206637 at highway	Jul. 8 - Aug. 4	5	< 0.01 - 0.04 mg/L	Objective met
	Red Top Gulch: E206638 at highway	Jul. 14 - Aug. 4	3	< 0.01 - 0.01 mg/L	Objective met
	Nickel Plate Mine Creek: E206633 d/s pit	Jul. 7 - Aug. 4	5	< 0.01 - 0.02 mg/L	Objective met

TABLE 12

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <100/100 mL 90th perc. (np)  200/100 mL max	Bessette Creek: 0500293 u/s Lumby	Jun 27 - Jul 25	4	77 - 830/100 mL	np not checked
		Jul. 4	1	77/100 mL	Max obj. met
		Jun 27 - Jul 25	3	400 - 830/100 mL	Max not met
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	np = 380/100 mL	np not met
		Jun 27 - Jul 19	4	68 - 200/100 mL	Max obj. met
		Jul. 25	1	570/100 mL	Max not met
	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	np = 180/100 mL	np not met
		Jun 27 - Jul 19	4	42 - 120/100 mL	Max obj. met
		Jul. 25	1	260/100 mL	Max not met
	Spider Creek: 0500643 u/s Riverside Mill	Jun 27 - Jul 26	5	np = 5100/100 mL	np not met
		Jun 27 - Jul 26	5	350 - 8600/100 mL	Max not met
E. coli	Bessette Creek: 0500293 u/s Lumby	Jun 27 - Jul 25	4	66 - 560/100 mL	np not checked
		Jul. 4	1	66/100 mL	Max obj. met
		Jun 27 - Jul 25	3	280 - 560/100 mL	Max not met
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	np = 300/100 mL	np not met
		Jun 27 - Jul 19	4	62 - 200/100 mL	Max obj. met
		Jul. 25	1	410/100 mL	Max not met
	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	4	30 - 270/100 mL	np not checked
		Jun 27 - Jul 11	3	30 - 70/100 mL	Max obj. met
		Jul. 25	1	270/100 mL	Max not met
	Spider Creek: 0500643 u/s Riverside Mill	Jun 27 - Jul 25	5	np = 3900/100 mL	np not met
		Jun 27 - Jul 25	5	230 - 6200/100 mL	Max not met
Enterococci  <25/100 mL 90th percentile 50/100 mL max	Bessette Creek Lawson Creek Spider Creek	Jun 27 - Jul 25	5	np = 2100/100 mL	np not met
		Jun 27 - Jul 25	5	220 - 2600/100 mL	Max not met
		1994	0	no data collected	Omitted 1994
Dissolved Solids  500 mg/L max or 20% increase	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	398 - 496 mg/L	Control site
		Jun. 27 - Jul. 25	5	434 - 530 mg/L max. inc. = 17%	Objective met

TABLE 12 continued

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Solids 500 mg/L max or 20% increase	Spider Creek: 0500643 u/s Riverside Mill	Jun. 27 - Jul. 25	5	380 - 498 mg/L	Control site
	0500644 near mouth	Jun. 27 - Jul. 25	5	412 - 576 mg/L max. inc. = 17%	Objective met
Suspended Solids 10 mg/L or 10% maximum increase	Bessette Creek: 0500293 u/s Lumby	Jun. 27 - Jul. 25	5	< 4 - 4 mg/L	Control site
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	< 4 - 5 mg/L	Objective met
	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	all < 4 mg/L	Control site
	0500646 d/s Riverside mill	Jun. 27 - Jul. 25	5	< 4 - 12 mg/L max. inc. = 8 mg/L	Objective met
	Spider Creek: 0500643 u/s Riverside Mill	Jun. 27 - Jul. 25	5	< 4 - 11 mg/L	Control site
	0500644 near mouth	Jun. 27 - Jul. 25	5	4 - 7 mg/L max. inc. = 3 mg/L	Objective met
	Harris Creek: E209072 u/s Bell Pole	Jun. 27 - Jul. 25	5	all < 4 mg/L	Control site
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	< 4 - 4 mg/L	Objective met
Substrate Sedimentation no increase in weight of particles <3 mm diameter	Bessette Creek Lawson Creek Spider Creek Harris Creek	1994	0	no data collected	Omitted 1994
Turbidity 5 NTU or 10% max. increase	Bessette Creek: 0500293 u/s Lumby	Jun. 27 - Jul. 25	5	0.6 - 1.0 NTU	Control site
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	0.4 - 1.5 NTU max. inc. = 0.5 NTU	Objective met
	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	0.6 - 1.5 NTU	Control site
	0500646 d/s Riverside mill	Jun. 27 - Jul. 25	5	0.8 - 2.5 NTU max. inc. = 1.6 NTU	Objective met

TABLE 12 continued

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

OBJECTIVE	SITE	DATE	n	VALUE	
Turbidity 5 NTU or 10% max. increase	Spider Creek: 0500643 u/s Riverside Mill	Jun. 27 - Jul. 25	5	0.3 - 5.0 NTU	Control site
	0500644 near mouth	Jun. 27 - Jul. 25	5	0.8 - 2.5 NTU max. inc. = 2.1 NTU	Objective met
	Harris Creek: E207072 u/s Bell Pole	Jun. 27 - Jul. 25	5	0.4 - 0.9 NTU	Control site
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	0.6 - 0.9 NTU max. inc. = 0.3 NTU	Objective met
Ammonia-N < 1.42mg/L av 7.93 mg/L max at pH = 7.8 temp = 16 °C	Bessette Creek Lawson Creek Spider Creek	1994	0	no data collected	Omitted 1994
	Harris Creek E209072 u/s Bell Pole	Jun. 27 - Jul. 25	5	< 0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	< 0.005 - 0.013 mg/L av = 0.007 mg/L	Objectives met
Nitrite-N ≤0.04 mg/L av 0.12 mg/L max Cl = 2 - 4 mg/L	Bessette Creek: 0500293 u/s Lumby	Jun. 27 - Jul. 25	5	<0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	all < 0.005 mg/L	Objectives met
	Spider Creek: u/s Riverside Mill at highway	Jun. 27 - Jul. 25	5	all < 0.005 mg/L	Objectives met
	0500644 near mouth	Jun. 27 - Jul. 25	5	all < 0.005 mg/L	Objectives met
Nitrite-N ≤0.20 mg/L av 0.60 mg/L max Cl > 10 mg/L	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	0.013 - 0.022 mg/L av = 0.016 mg/L	Objectives met
	0500646 d/s Riverside mill	Jun. 27 - Jul. 25	5	0.009 - 0.011 mg/L av = 0.010 mg/L	Objectives met
Nitrite-N ≤0.02 mg/L av 0.06 mg/L max Cl < 2 mg/L	Harris Creek: E209072 u/s Bell Pole	Jun. 27 - Jul. 25	5	all < 0.005 mg/L	Objectives met
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	all < 0.005 mg/L	Objectives met

TABLE 12 continued

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrate-N  10 mg/L max	Bessette Creek: 0500293 u/s Lumby	Jun. 27 - Jul. 25	5	<0.02 - 0.06 mg/L	Objective met
	0500697 d/s Lumby	Jun. 26 - Jul. 25	5	0.02 - 0.06 mg/L	Objective met
	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	0.50 - 0.62 mg/L	Objective met
	0500646 d/s Riverside mill	Jun. 27 - Jul. 25	5	0.11 - 0.27 mg/L	Objective met
	Spider Creek: 0500643 u/s Riverside Mill	Jun. 27 - Jul. 25	5	all < 0.02 mg/L	Objective met
	0500644 near mouth	Jun. 27 - Jul. 25	5	< 0.02 - 0.02 mg/L	Objective met
	Harris Creek: E207072 u/s Bell Pole	Jun. 27 - Jul. 25	5	all < 0.02 mg/L	Objective met
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	all < 0.02 mg/L	Objective met
Chlorophyll-a  100 mg/m <sup>2</sup> max	Bessette Creek: 0500697 d/s Lumby	Aug. 19	6	13.3 - 119.0 mg/m <sup>2</sup> av = 81.0 mg/m <sup>2</sup>	Objective met
	Harris Creek: E207072 u/s Bell Pole	Aug. 19	6	5.9 - 33.2 mg/m <sup>2</sup> av = 15.0 mg/m <sup>2</sup>	Objective met
	E210219 at Bell Pole	Aug. 18	6	8.7 - 23.6 mg/m <sup>2</sup> av = 17.7 mg/m <sup>2</sup>	Objective met
	Lawson Creek Spider Creek	1994	0	no data collected	Objective not checked
Colour  15 TCU max. or 20% increase	Lawson Creek: 0500645 u/s Riverside mill	Jun. 26, Jul. 4 Jul. 11, 19, 25	2 3	all = 20 TCU 5 - 10 TCU	Control site
	0500646 d/s Riverside mill	Jul. 11 Jun. 27 - Jul. 25	1 4	20 TCU 10 - 15 TCU	Obj. not met Objective met
	Spider Creek: 0500643 at highway	Jun. 27 - Jul. 25	5	< 5 - 5 TCU	Control site

TABLE 12 continued

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Colour 15 TCU max. or 20% increase	0500644 near mouth	Jun. 27 - Jul. 25	5	< 5 - 5 TCU	Objective met
Temperature 1°C max. increase	Duteau Creek	1994	0	no data collected	Objective not checked
pH 6.5 - 8.5 or 0.2 max. increase at pH > 8.5	Bessette Creek: 0500293 u/s Lumby	Jun. 27 - Jul. 25	5	7.8 - 8.3	Objective met
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	7.9 - 8.4	Objective met
pH 6.5 - 8.5	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 25	5	7.7 - 8.1	Objective met
	0500646 d/s Riverside mill	Jun. 26 - Jul. 25	5	7.9 - 8.1	Objective met
	Spider Creek: 0500643 u/s Riverside Mill	Jun. 27 - Jul. 25	5	8.1 - 8.4	Objective met
	0500644 near mouth	Jun. 27 - Jul. 25	5	7.8 - 8.2	Objective met
	Harris Creek: E209072 u/s Bell Pole	Jun. 27 - Jul. 25	5	7.6 - 8.0	Objective met
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	7.7 - 8.0	Objective met
Dissolved Oxygen 8 - 11 mg/L min	Bessette Creek: 0500293 u/s Lumby	Jun. 27 - Jul. 25	5	9.2 - 10.6 mg/L	Objective met
	0500697 d/s Lumby	Jun. 27 - Jul. 25	5	9.6 - 11.2 mg/L	Objective met
	Lawson Creek: 0500645 u/s Riverside mill	Jul. 4 Jul. 11 - Jul. 25	1 3	9.2 mg/L 5.5 - 6.1 mg/L	Objective met Obj. not met
	0500646 d/s Riverside mill	Jul. 4 Jul. 11 - Jul. 25	1 3	9.7 mg/L 6.5 - 7.7 mg/L	Objective met Obj. not met
	Spider Creek: u/s Riverside Mill at highway	Jun. 27 - Jul. 25	5	8.8 - 11.0 mg/L	Objective met
	0500644 near mouth	Jul. 4 - Jul. 19 Jul. 25	3 1	8.7 - 11.3 mg/L 7.9 mg/L	Objective met Obj. not met

TABLE 12 continued

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen  8 - 11 mg/L min	Harris Creek: E209072 u/s Bell Pole	Jun. 27 - Jul. 25	5	8.4 - 10.4 mg/L	Objective met
	E210219 at Bell Pole	Jun. 27 - Jul. 25	5	9.1 - 10.4 mg/L	Objective met
Resin Acids  DHA: 0.013 mg/L max. Total: 0.052 mg/L max at pH = 8.0	Lawson Creek: 0500645 u/s Riverside mill	Jun. 27 - Jul. 4 Jul. 11 - Jul. 25 Jun. 27 - Jul. 25	2 3 5	DHA: 0.015 - 0.026 mg/L DHA: < 0.001 - 0.005 mg/L Total: <0.007-0.032 mg/L	Obj. not met Objective met Objective met
	0500646 d/s Riverside mill	Jul. 4 Jun. 27 - Jul. 25 Jun. 27 - Jul. 25	1 4 5	DHA: 0.019 mg/L DHA: all < 0.001 mg/L Total: < 0.007 - 0.025 mg/L	Obj. not met Objective met Objective met
	Spider Creek: 0500644 near mouth	Jun. 27 - Jul. 25	5 5	DHA: < 0.001 - 0.010 mg/L Total: < 0.007 - 0.022 mg/L	Objectives met
	Harris Creek: E209072 u/s Bell Pole	Jun. 27 - Jul. 25	5 5	DHA: all < 0.001 mg/L Total: all < 0.007 mg/L	Objectives met
	E210219 d/s Bell Pole	Jun. 27 - Jul. 25	5 5	DHA: all < 0.001 mg/L total: all < 0.007 mg/L	Objectives met
	Harris Creek E209072 u/s Bell Pole	Aug. 19 (3 reps)	3	av < 0.005 ug/g for each of tri,tetra & penta	Objective met
Total Chlorophenols in sediments  0.005 ug/g max dry weight (av of 3 reps)	E210219 at Bell Pole	Aug. 19 (3 reps)	3	av < 0.005 ug/g for each of tri,tetra & penta	Objective met
	Harris Creek: E210219 at Bell Pole	Aug. 29	1	tri-CP: < 0.01 ug/g tetra-CP: < 0.01 ug/g penta-CP: < 0.01 ug/g total: < 0.03 ug/g	Objective met
Mono-CP  0.5 ug/L max	Harris Creek E209072 u/s Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
	E210219 at Bell Pole	Jun27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
Di-CP  0.1 ug/L max	Harris Creek E209072 u/s Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
	E210219 at Bell Pole	Jun27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met

TABLE 12 continued

## BESSETTE CREEK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Tri-CP  0.05 ug/L max	Harris Creek E209072 u/s Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
	E210219 at Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
Tetra-CP  0.1 ug/L max	Harris Creek E209072 u/s Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
	E210219 at Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L for each isomer	Objective met
Penta-CP  0.05 ug/L max	Harris Creek E209072 u/s Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L	Objective met
	E210219 at Bell Pole	Jun 27 - Jul 25	5	all < 0.05 ug/L	Objective met

TABLE 13

## TRIBUTARIES TO OKANAGAN LAKE NEAR KELOWNA WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <100/100 mL 90th perc. (np)	Mission Creek: E209637 at E Kelowna Bridge	Jun 9 - Jul 6	5	11 - 39/100 mL np = 38/100 mL	Objective met
	0500046 at the mouth	Jun 9 - Jul 6	5	37 - 62/100 mL np = 51/100 mL	Objective met
	Kelowna Creek: E209638 at Hereron Road	Jun 8 - Jul 6	5	80 - 330/100 mL np = 230/100 mL	Objective not met
	E215986 d/s feedlot	Jun 9 - Jul 6	5	440 - 800/100 mL np = 700/100 mL	Objective not met
	0500039 at the mouth	Jun 9 - Jul 6	5	300 - 820/100 mL np = 640/100 mL	Objective not met
E. coli  <100/100 mL 90th perc. (np)	Mission Creek: E209637 at E Kelowna Bridge	Jun 9 - Jul 6	5	5 - 79/100 mL np = 50/100 mL	Objective met
	0500046 at the mouth	Jun 9 - Jul 6	5	23 - 46/100 mL np = 43/100 mL	Objective met
	Kelowna Creek: E209638 at Hereron Road	Jun 8 - Jul 6	5	10 - 250/100 mL np = 240/100 mL	Objective not met
	E215986 d/s feedlot	Jun 9 - Jul 6	5	50 - 710/100 mL np = 620/100 mL	Objective not met
	0500039 at the mouth	Jun 9 - Jul 6	5	300 - 470/100 mL np = 440/100 mL	Objective not met
Enterococci  <25/100 mL 90th perc. (np)	Mission Creek: E209637 at E Kelowna Bridge	Jun 9 - Jul 6	4	20 - 120/100 mL	Indefinite result
	0500046 at the mouth	Jun 9 - Jul 6	5	45 - 120/100 mL np = 100/100 mL	Objective not met
	Kelowna Creek: E209638 at Hereron Road	Jun 8 - Jul 6	5	230 - 600/100 mL np = 450/100 mL	Objective not met
	E215986 d/s feedlot	Jun 9 - Jul 6	4	570 - 900/100 mL	Indefinite result
	0500039 at the mouth	Jun 9 - Jul 6	4	600 - 900/100 mL	Indefinite result

TABLE 13 continued

## TRIBUTARIES TO OKANAGAN LAKE NEAR KELOWNA WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Specific Conductivity  1200 uS/cm max. (May - Sep)	Brandt's Creek: E208958 at Highland Drive	Jun. 14 - Jul. 13	5	2250 - 2650 uS/cm	Objective not met
	0500009 at the mouth	Jun. 9 - Jul. 6	5	990 - 1100 uS/cm	Objective met
Ammonia-N  ≤ 1.31 mg/L av 6.79 mg/L max at pH = 7.9 temp = 14 °C	Mission Creek: E209637 at E Kelowna Bridge	Jun. 9 - Jul. 6	5	< 0.005 - 0.007 mg/L av = 0.006 mg/L	Objectives met
	0500046 at the mouth	Jun. 9 - Jul. 6	5	< 0.005 - 0.011 mg/L av = 0.007 mg/L	Objectives met
	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 7	5	< 0.005 - 0.021 mg/L av = 0.013 mg/L	Objectives met
	E215986 d/s feedlot	Jun. 9 - Jul. 6	5	< 0.005 - 0.023 mg/L av = 0.019 mg/L	Objectives met
	0500039 at the mouth	Jun. 9 - Jul. 6	5	< 0.005 - 0.062 mg/L av = 0.024 mg/L	Objectives met
	Mission Creek: E207637 at E Kelowna Bridge	Jun. 9 - Jul. 6	5	< 0.005 - 0.005 mg/L av < 0.005 mg/L	Objectives met
Cl < 2 mg/L	0500046 at the mouth	Jun. 9 - Jul. 6	5	all < 0.005 mg/L	Objectives met
Nitrite-N  ≤ 0.02 mg/L av 0.06 mg/L max  Cl > 10	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	< 0.005 - 0.009 mg/L av = 0.006 mg/L	Objectives met
	E215986 d/s feedlot	Jun. 9 - Jul. 6	5	0.013 - 0.051 mg/L av = 0.028 mg/L	Objectives met
	0500039 at the mouth	Jun. 9 - Jul. 6	5	< 0.005 - 0.02 mg/L av = 0.011 mg/L	Objectives met
Chlorophyll - a  ≤ 100 mg/m <sup>2</sup> av	Mission Creek: E209637 at E Kelowna Bridge	Aug. 18	6	32.1 - 72.5 mg/m <sup>2</sup> av = 58.7 mg/m <sup>2</sup>	Objective met
	0500046 at the mouth	Aug. 18	6	6.1 - 78.5 mg/m <sup>2</sup> av = 55.4 mg/m <sup>2</sup>	Objective met
	Kelowna Creek:	1994	0	no data collected	Omitted 1994

TABLE 13 continued

## TRIBUTARIES TO OKANAGAN LAKE NEAR KELOWNA WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen  8-11 mg/L min	Mission Creek: E209637 at E Kelowna Bridge	Jun. 9 - Jul. 6	5	9.8 - 11.6 mg/L	Objective met
	0500046 at the mouth	Jun. 9 - Jul. 6	5	10.3 - 11.5 mg/L	Objective met
	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	9.5 - 10.8 mg/L	Objective met
	E215986 d/s feedlot	Jun. 9 - Jul. 6	5	9.4 - 11.3 mg/L	Objective met
	0500039 at the mouth	Jun. 9 - Jul. 6	5	8.6 - 9.9 mg/L	Objective met
pH  6.5 - 9.0	Mission Creek: E209637 at E Kelowna Bridge	Jun. 9 - Jul. 6	5	7.5 - 7.8	Objective met
	0500046 at the mouth	Jun. 9 - Jul. 6	5	7.4 - 7.9	Objective met
pH  6.5 - 8.5	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	7.9 - 8.2	Objective met
	E215986 d/s feedlot	Jun. 9 - Jul. 6	5	8.2 - 8.4	Objective met
	0500039 at the mouth	Jun. 9 - Jul. 6	5	8.0 - 8.2	Objective met
Dissolved Al  0.1 mg/L max. or 20 % increase	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	0.02 - 0.08 mg/L	Control site
	0500039 at the mouth	Jun. 9 - Jul. 6	5	0.02 - 0.03 mg/L	Objective met
Total Cu  < 0.005 mg/L av 0.013 mg/L max or 20% increase at hardness = 118 mg/L	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	< 0.002 - 0.004 mg/L av = 0.002 mg/L	Objectives met
	0500039 at the mouth	Jun. 9 - Jul. 6	5	<0.002 - 0.004 mg/L av = 0.003 mg/L	Objectives met

TABLE 13 continued

## TRIBUTARIES TO OKANAGAN LAKE NEAR KELOWNA WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb  <0.007 mg/L av 0.118 mg/L max or 20% increase at hardness = 118mg/L	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	all < 0.003 mg/L	Control site
	0500039 at the mouth	Jun. 9 - Jul. 6	5	all < 0.003 mg/L	Objectives met
Total Pb  0.8 ug/g max. wet weight in fish tissue	Kelowna Creek	1994	0	no data collected	Objective not checked
Total Zn  0.03 mg/L max. or 20% increase	Kelowna Creek: E209638 at Hereron Road	Jun. 9 - Jul. 6	5	<0.01 - 0.02 mg/L	Control site
	0500039 at the mouth	Jun. 9 - Jul. 6	4	<0.01 - 0.02 mg/L	Objective met
		Jun. 29	1	0.04 mg/L increase = 400%	Objective not met

TABLE 14

## TRIBUTARIES TO OKANAGAN LAKE NEAR VERNON WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <100/100 mL 90th percentile (np)	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul 7 - Aug 2	5	8 - 110/100 mL np = 60/100 mL	Objective met
	0500091 Okanagan Lake inlet	Jul 7 - Aug 2	6	260 - 7000/100 mL np = 3800/100 mL	Objective not met
	Deep Creek: 0500258 u/s Armstrong	Jul 7 - Aug 2	5	400 - 58000/100 mL np = 29000/100 mL	Objective not met
	0500768 d/s Otter L. (Larkin Rd.)	Jul 7 - Aug 2	5	60 - 520/100 mL np = 380/100 mL	Objective not met
	0500020 Okanagan Lake inlet	Jul 7 - Aug 2	5	80 - 2400/100 mL np = 1500/100 mL	Objective not met
E. coli  <100/100 mL 90th percentile (np)	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul 7 - Aug 2	5	5 - 80/100 mL np = 40/100 mL	Objective met
	0500091 Okanagan Lake inlet	Jul 7 - Aug 2	6	40 - 600/100 mL np = 450/100 mL	Objective not met
	Deep Creek: 0500258 u/s Armstrong	Jul 7 - Aug 2	5	400 - 39000/100 mL np = 10600/100 mL	Objective not met
	0500768 d/s Otter L. (Larkin Rd.)	Jul 7 - Aug 2	5	20 - 430/100 mL np = 320/100 mL	Objective not met
	0500020 Okanagan Lake inlet	Jul 7 - Aug 2	5	70 - 2400/100 mL np = 1500/100 mL	Objective not met
Enterococci  $\leq 25/100 mL$ 90th perc. (np)	Lower Vernon Creek Deep Creek	1994	0	no data collected	Omitted 1994
Suspended Solids  10 mg/L or 10% maximum increase	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul. 7 - Aug. 2	5	all < 4 mg/L	Control site
	0500091 Okanagan Lake inlet	Jul. 14 - Aug. 2	4	6 - 7 mg/L max. inc = 3 mg/L	Objective met
		Jul. 7	1	14 mg/L max. inc > 10 mg/L	Objective not met

TABLE 14 continued

## TRIBUTARIES TO OKANAGAN LAKE NEAR VERNON WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids  10 mg/L or 10% maximum increase	Deep Creek: 0500258 u/s Armstrong	Jul. 7 - Aug. 2	5	< 4 - 4 mg/L	Control site
	0500768 d/s Otter L. (Larkin Rd.)	Jul. 14 - Aug. 2	4	7 - 11 mg/L max. inc. = 9 mg/L	Objective met
		Jul. 7	1	34 mg/L max. inc. = 30 mg/L	Objective not met
	0500020 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	< 4 - 8 mg/L max. inc. = 4 mg/L	Objective met
Turbidity  5 NTU or 10% maximum increase	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul. 7 - Aug. 2	5	0.5 - 1.5 NTU	Control site
	0500091 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	1.5 - 4.3 NTU max. inc. = 3.7 NTU	Objective met
	Deep Creek: 0500258 u/s Armstrong	Jul. 7 - Aug. 2	5	0.6 - 1.8 NTU	Control site
	0500768 d/s Otter L. (Larkin Rd.)	Jul. 14 - Aug. 2	4	3.5 - 4.5 NTU max. inc. = 3.6 NTU	Objective met
		Jul. 7	1	10 NTU max. inc. = 8.9 NTU	Objective not met
	0500020 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	0.5 - 2 NTU max. inc. = 0.9 NTU	Objective met
Ammonia-N  $\leq 0.491 \text{ mg/L av}$ $3.61 \text{ mg/L max}$ $\text{at pH} = 8.2$ $\text{temp} = 20^\circ\text{C}$	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul. 7 - Aug. 2	5	all < 0.005 mg/L	Objectives met
	0500091 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	all < 0.005 mg/L	Objectives met
	Deep Creek: 0500528 u/s Armstrong	Jul. 7 - Aug. 2	5	0.005 - 0.061 mg/L av = 0.020 mg/L	Objectives met
	0500768 d/s Otter L. (Larkin Rd.)	Jul. 7 - Aug. 2	5	< 0.005 - 0.007 mg/L av = 0.005 mg/L	Objectives met
	0500020 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	< 0.005 - 0.082 mg/L av = 0.021 mg/L	Objectives met
Nitrite-N  $< 0.10 \text{ mg/L av}$ $0.30 \text{ mg/L max}$ $\text{at CI} = 8 - 10 \text{ mg/L}$	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul. 7 - Aug. 7	5	all < 0.005 mg/L	Objectives met
	0500091 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	< 0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met

TABLE 14 continued

## TRIBUTARIES TO OKANAGAN LAKE NEAR VERNON WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N  <0.10 mg/L av 0.30 mg/L max at Cl = 8 - 10 mg/L	Deep Creek: 0500528 u/s Armstrong	Jul. 7 - Aug. 2	5	0.016 - 0.054 mg/L av = 0.031 mg/L	Objectives met
	0500768 d/s Otter L. (Larkin Rd.)	Jul. 7 - Aug. 2	5	all < 0.005 mg/L	Objectives met
	0500020 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	< 0.005 - 0.018 mg/L av = 0.011	Objectives met
Nitrate + Nitrite-N  10 mg/L max	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	July 7 - Aug. 2	5	all < 0.02 mg/L	Objective met
	0500091 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	0.24 - 0.51 mg/L	Objective met
	Deep Creek: 0500258 u/s Armstrong	Jul. 7 - Aug. 2	5	0.26 - 0.77 mg/L	Objective met
	0500768 d/s Otter L. (Larkin Rd.)	Jul. 7 - Aug. 2	5	< 0.02 - 0.03 mg/L	Objective met
	0500020 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	< 0.02 - 0.09 mg/L	Objective met
Chlorophyll-a  < 100 mg/m <sup>2</sup> av (average based on six reps)	Lower Vernon Creek: 0500091 Okanagan Lake inlet	Aug. 9	1	27.1 mg/m <sup>2</sup> (avg. of 6 reps)	Objective met
	Deep Creek: 0500020 Okanagan Lake inlet	Aug. 9	1	97.5 mg/m <sup>2</sup> (avg. of 6 reps)	Objective met
	Deep Creek	1994	0	no data collected	Omitted 1994
Dissolved Oxygen  8.0 mg/L min. May - Oct  11.0 mg/L min. Nov. - Apr.	Lower Vernon Creek: 0500089 Kalamalka Lake outlet	Jul. 7 - Aug. 2	5	8.3 - 10.0 mg/L	Objective met
	0500091 Okanagan Lake inlet	Jul. 7 - Aug. 2	5	8.9 - 11.2 mg/L	Objective met
	Deep Creek: 0500258 u/s Armstrong	Jul. 7, 14 Jul. 20 - Aug. 2	2 3	8.6 - 8.8 mg/L 5.8 - 7.6 mg/L	Objective met Obj. not met
	0500768 d/s Otter L. (Larkin Rd.)	Jul. 7, 14 Jul. 20 - Aug. 2	2 3	8.1 - 9.2 mg/L 5.6 - 5.7 mg/L	Objective met Obj. not met
	0500020 Okanagan Lake inlet	Jul. 7, Aug. 2 Jul. 14 - Jul. 28	2 3	8.2 - 8.5 mg/L 6.4 - 6.8 mg/L	Objective met Obj. not met

TABLE 15  
THOMPSON RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms $\leq 10/100$ mL 90th perc. (np)	South Thompson: 0600135 Kamloops d/s Peterson C.	Jan 15 - Nov 23	14	0 - 10/100 mL	Indefinite result
	North Thompson: 0600164 Kamloops u/s Paul Creek	Jan 19 - Dec 13	15	0 - 20/100 mL	Indefinite result
	Kamloops Lake E218768 near outlet	Jul 26 - Aug 8	2	4 - 74/100 mL	Indefinite result
	Lower Thompson: 0600004 at Savona	Jul 26 - Aug 22	5	0 - 2/100 mL np = 1/100 mL	Objective met
	0600163 d/s Walhachin	Jan 19 - Jul 26	5	0 - 1/100 mL	Indefinite result
	E206586 Spences Br. d/s Nicola R.	Jul 26 - Aug 8	2	2 - 12/100 mL	Indefinite result
<i>E. coli</i> $\leq 200/100$ mL geometric mean (gm)	South Thompson: 0600135 Kamloops d/s Peterson C.	Jan 19 - Dec 13	9	1 - 9/100 mL	Indefinite result
	North Thompson: 0600164 Kamloops u/s Paul Creek	Jan 19 - Dec 13	12	1 - 18/100 mL	Indefinite result
	Kamloops Lake E218768 near outlet	Jul 26 - Aug 8	2	4 - 54/100 mL	Indefinite result
	Lower Thompson: 0600004 at Savona	Jul 26 - Aug 22	2	0 - 3/100 mL	Indefinite result
	0600163 d/s Walhachin	Jul 26 - Aug 8	2	1 - 6/100 mL	Indefinite result
	E206586 Spences Br. d/s Nicola R.	Jul 26 - Aug 8	2	1 - 3/100 mL	Indefinite result
Colour 15 TCU max or 5 TCU increase over average of N + S Thompson rivers	Kamloops Lake: E219877 at inlet	Jan. 16 - Mar. 15	3	all = 5 TCU	Objective met
	Lower Thompson: 0600004 at Savona	Jan. 16 - Mar. 15 Dec. 13	3 1	5 - 10 TCU 10 TCU	Objective met Objective met
	0600163 d/s Walhachin	Jan. 19 - Mar. 15 Dec. 13	3 1	all = 5 TCU 5 TCU	Objective met Objective met

TABLE 21 continued

## THOMPSON RIVER WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophyll-a  ≤ 50 mg/m <sup>2</sup>	Lower Thompson: 0600004 at Savona	Feb. 22	5	71.7 - 225 mg/m <sup>2</sup> av = 156 mg/m <sup>2</sup>	Obj. not met
		Mar. 15	5	166 - 499 mg/m <sup>2</sup> av = 316 mg/m <sup>2</sup>	Obj. not met
		Nov. 17	5	136 - 393 mg/m <sup>2</sup> av = 242 mg/m <sup>2</sup>	Obj. not met
		Dec. 12	5	166 - 405 mg/m <sup>2</sup> av = 256 mg/m <sup>2</sup>	Obj. not met
	0600163 d/s Walhachin	Feb. 22	5	103 - 378 mg/m <sup>2</sup> av = 156 mg/m <sup>2</sup>	Obj. not met
		Mar. 15	5	118 - 243 mg/m <sup>2</sup> av = 194 mg/m <sup>2</sup>	Obj. not met
		Nov. 17	5	189 - 224 mg/m <sup>2</sup> av = 203 mg/m <sup>2</sup>	Obj. not met
		Dec. 12	5	200 - 280 mg/m <sup>2</sup> av = 244 mg/m <sup>2</sup>	Obj. not met
Dioxins and Furans  0.2 pg/L max TEQ-TCDD	Lower Thompson d/s Weyerhaeuser mill	Feb 8 - Dec 20	10	effluent levels: 1.65 - 8.10 pg/L TEQ-TCDD  calculated river levels: 0.076 - 0.003 pg/L TEQ-TCDD	Objective met
		Mar. 2	1	effluent level: 20.01 pg/L TEQ-TCDD  calculated river level: 0.202 pg/L TEQ-TCDD	Objective not met
		Sep. 28	5	detectable congeners: 0.2 - 0.4 pg/g TEQ-TCDD in rainbow trout muscle	Objective met
Dioxins and Furans  1.0 pg/g max TEQ-TCDD wet weight in fish muscle	Lower Thompson: 0600163 d/s Walhachin			non-detectable congeners: <2.2 - <3.6 pg/g TEQ-TCDD in rainbow trout muscle	Indefinite result
Dioxins and Furans  0.7 pg/g max TEQ-TCDD  dry wt. in sediments	Lower Thompson Kamloops Lake	1994	0	no data collected	Objective not checked
Resin Acids  12 ug/L DHA max 45 ug/L total max  at pH = 7.5	Kamloops Lake: E219877 at inlet	Jan 19 - Mar 15	3	all < 1 ug/L DHA < 7 - < 24 ug/L total	Objectives met
	Lower Thompson: 0600004 at Savona	Jan 19 - Dec 13	4	all < 1 ug/L DHA all < 7 ug/L total	Objectives met
	0600163 d/s Walhachin	Jan 19 - Dec 13	4	all < 1 ug/L DHA all < 7 ug/L total	Objectives met

TABLE 16

## CHRISTINA LAKE WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Phytoplankton (pelagic)  <10 % blue-greens (b-g objective)  >10 % for any of dominant genera (d-g objective)  <i>Melosira</i> <i>Asterionella</i> <i>Fragilaria</i> <i>Synedra</i> <i>Peridinium</i> <i>Dinobryon</i> <i>Mallomonas</i>	Christina Lake (deep sites): 0200078 750 m S Lavalley Point	Jun. 7	1	<i>Lyngbya limnetica</i> = 19% of cells	b-g objective not met
				<i>Dinobryon</i> = 28% of cells	d-g objective met
		Aug. 8	1	<i>Anacystis, Anabaena, Lyngbya</i> each < 1% (max b-g)	b-g objective met
				<i>Peridinium</i> = 3.2% of cells (max d-g)	d-g objective not met
		Sep. 12	1	<i>Lyngbya limnetica</i> = 23% of cells	b-g objective not met
				<i>Peridinium, Dinobryon</i> each 3.5% (max d-g)	d-g objective not met
	0200250 off English Point	Oct. 3	1	<i>Anacystis, Lyngbya</i> each = 4.3% (max b-g)	b-g objective met
				<i>Peridinium</i> = 7% of cells (max d-g)	d-g objective not met
		Jun. 7	1	<i>Lyngbya limnetica</i> = 48% of cells	b-g objective not met
				<i>Dinobryon</i> = 16% of cells	d-g objective met
		Aug. 16	1	<i>Gomphosphaeria, oscillatoria</i> each < 1% (max b-g)	b-g objective met
				<i>Dinobryon</i> = 6.6% of cells (max d-g)	d-g objective not met
	E215758 north basin at centre	Sep. 12	1	<i>Anacystis, Lyngbya,</i> each < 1% (max b-g)	b-g objective met
				<i>Peridinium</i> = 2.3% of cells (max d-g)	d-g objective not met
		Oct. 3	1	<i>Anacystis, Oscillatoria</i> each < 1% (max b-g)	b-g objective met
				<i>Melosira</i> = 7.5% of cells (max d-g)	d-g objective not met
		Jun. 7	1	<i>Lyngbya limnetica</i> = 16% of cells	b-g objective not met
				<i>Dinobryon</i> = 8% of cells (max d-g)	d-g objective not met
	Aug. 16			<i>Lyngbya</i> < 1% of cells	b-g objective met
				<i>Dinobryon</i> = 3.3% of cells (max d-g)	d-g objective not met
		Sep. 12	1	<i>Agmenellum, Anabaena,</i> <i>Lyngbya</i> each < 1% (max b-g)	b-g objective met
				<i>Peridinium</i> = 4.5% of cells (max d-g)	d-g objective not met
	Oct. 3			<i>Anabaena, Lyngbya</i> each < 1% (max b-g)	b-g objective met
				<i>Dinobryon</i> 7.7% of cells (max d-g)	d-g objective not met

TABLE 16 continued

## CHRISTINA LAKE WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Periphyton > 50 % (cells/mL) of pennate diatoms	Christina Lk (shallow sites) E220623 at Axel Johnson Rec. Site	Jun. 7 - Oct. 4	5	15.06 - 34.64%	Objective not met
	E220624 at Rolli Phillips Res.	Jun. 7 - Oct. 4	5	12.42 - 46.72%	Objective not met
	E220625 at Troy Rec. Site	Aug. 16 Jun. 7 - Oct. 4	1 4	59.21% 1.62 - 20.60%	Objective met Obj. not met
	E220626 south Lavalley Point	Jun. 7 - Sep. 13	4	18.63 - 30.02%	Objective not met
	E220628 north Lavalley Point	Aug. 16 Jun. 7 - Oct. 4	1 4	93.91% 17.26 - 47.79%	Objective met Obj. not met
	E220629 at SW corner	Jun. 7 - Oct. 4	5	15.37 - 31.58%	Objective not met
Zooplankton > 10% for any of the rotifers (ro objective) <i>Kellicottia</i> <i>Conochilus</i>  > 10% for any of the crustaceans (cr objective) <i>Bosmina</i> <i>Epishura</i> <i>Diacyclops</i>	Christina Lake (deep sites): 0200078 750 m S Lavalley Point	Jun. 6	1	<i>Kellicottia</i> = 39% of rotifers	ro objective met
				<i>Diacyclops</i> = 29% of crustaceans	cr objective met
		Jul. 13	1	<i>Conochilus, Kellicottia</i> = 32 - 54% of rotifers	ro objective met
				<i>Diacyclops</i> = 50% of crustaceans	cr objective met
		Aug. 15	1	<i>Conochilus, Kellicottia</i> = 42 - 52% of rotifers	ro objective met
				<i>Diacyclops</i> = 52% of crustaceans	cr objective met
	0200250 off English Point	Sep. 12	1	<i>Conochilus, Kellicottia</i> = 28 - 57% of rotifers	ro objective met
				<i>Diacyclops</i> = 41% of crustaceans	cr objective met
		Oct. 3	1	<i>Kellicottia</i> = 100% of rotifers	ro objective met
				<i>Diacyclops</i> = 63% of crustaceans	cr objective met
		Jun. 6	1	<i>Kellicottia</i> = 64% of rotifers	ro objective met
				<i>Diacyclops</i> = 64% of crustaceans	cr objective met
	0200250 off English Point	Jul. 13	1	<i>Kellicottia</i> = 62% of rotifers	ro objective met
				<i>Diacyclops</i> = 74% of crustaceans	cr objective met
		Aug. 15	1	<i>Kellicottia, Conochilus</i> = 29 - 56% of rotifers	ro objective met
				<i>Diacyclops</i> = 65% of crustaceans	cr objective met

TABLE 16 continued

## CHRISTINA LAKE WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Zooplankton  > 10% for any of the rotifers (ro objective) <i>Kellicottia</i> <i>Conochilus</i>	Christina Lake (deep sites): 02000250 off English Point  E215578 north basin at centre	Sep. 12	1	<i>Conochilus, Kellicottia</i> = 22 - 53% of rotifers <i>Diacyclops</i> = 66% of crustaceans	ro objective met cr objective met
		Oct. 3	1	<i>Kellicottia, Conochilus</i> = 37 - 52% of rotifers <i>Diacyclops</i> = 64% of crustaceans	ro objective met cr objective met
> 10% for any of the crustaceans (cr objective) <i>Bosmina</i> <i>Epishura</i> <i>Diacyclops</i>		Jun. 6	1	<i>Conochilus, Kellicottia</i> = 18 - 39% of rotifers <i>Diacyclops</i> = 60% of crustaceans	ro objective met cr objective met
		Jul. 13	1	<i>Kellicottia</i> = 43% of rotifers <i>Diacyclops</i> = 77% of crustaceans	ro objective met cr objective met
		Aug. 15	1	<i>Conochilus, Kellicottia</i> = 34 - 45% of rotifers <i>Diacyclops</i> = 70% of crustaceans	ro objective met cr objective met
		Sep. 12	1	<i>Kellicottia</i> = 57% of rotifers <i>Diacyclops</i> = 80% of crustaceans	ro objective met cr objective met
		Oct. 3	1	<i>Conochilus, Kellicottia</i> = 29 - 49% of rotifers <i>Diacyclops</i> = 60% of crustaceans	ro objective met cr objective met
Dissolved Oxygen  8 mg/L at any depth	Christina Lake (deep sites): 0200078 750 m S Lavallee Point	Jun. 6 - Oct. 3	58	8.6 - 12.6 mg/L (0 - 24m)	Objective met
	0200520 off English Point	Jun. 6 - Oct. 3	40	8.41 - 11.95 mg/L (0 - 34m)	Objective met
	E215758 north basin at centre	Jun. 6 - Oct. 3	75	8.1 - 13.41 mg/L (0 - 48m)	Objective met
			5	4.46 - 7.8 mg/L (40 - 50 m)	Objective not met
Turbidity  $\leq$ 1 NTU seasonal av  5 NTU max	Christina Lake (deep sites): 0200078 750 m S Lavallee Point	Jun. 7 - Oct. 3	5	0.2 - 0.4 NTU av = 0.26 NTU	Objectives met
	0200520 off English Point	Jun. 7 - Oct. 3	5	0.1 - 0.3 NTU av = 0.2 NTU	Objectives met
	E215758 north basin at centre	Jun. 7 - Oct. 3	6	0.2 - 0.3 NTU av = 0.23 NTU	Objectives met

TABLE 16 continued

## CHRISTINA LAKE WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Secchi Depth  3 m min seasonal av > 10 m	Christina Lake (deep sites): 0200078 750 m S Lavallee Point	Mar. 29 - Oct. 3	6	9.0 - 12.6 m av = 11.2 m	Objectives met
	0200520 off English Point	Mar. 29 - Oct. 3	6	9.0 - 13.6 m av = 11.8 m	Objectives met
	E215758 north basin at centre	Mar. 29 - Oct. 3	6	10.2 - 13.8 m av = 12.2 m	Objectives met
Total Phosphorus  < 7 ug/L av at spring overturn	Christina Lake (deep sites): 0200520 off English Point	Mar. 29	1 1	1 - 10 m: 4 ug/L 20 - 32 m: 6 ug/L  av = 5 ug/L	Objective met
Total Nitrogen  $\leq$ 200 ug/L av at spring overturn	Christina Lake (deep sites): 0200520 off English Point	Mar. 29	1 1	1 - 10 m: <110 ug/L 20 - 32 m: <150 ug/L  av = 130 ug/L	Objective met
Chlorophyll - a  $\leq$ 2.5 ug/L seasonal av	0200078 750 m S Lavallee Point	Jun. 6 - Oct. 3	5	< 0.5 - 1.6 ug/L av = 0.94 ug/L	Objective met
	0200520 off English Point	Mar. 29 - Oct. 3	6	< 0.5 - 1.7 ug/L av = 0.8 ug/L	Objective met
	E215758 north basin at centre	Jun. 7 - Oct. 3	5	< 0.5 - 2.3 ug/L av = 1.14 ug/L	Objective met
Periphyton Chlorophyll - a  $\leq$ 10 mg/m <sup>2</sup> seasonal av	Christina Lk (shallow sites) E220623 at Axel Johnson Rec. Site	Jun 8 - Oct 4	5	2.3 - 159.2 mg/m <sup>2</sup> av = 132.1 mg/m <sup>2</sup>	Objective not met
	E220624 at Roll Phillips Res.	Jun 8 - Oct 4	5	3.5 - 133.1 mg/m <sup>2</sup> av = 71.2 mg/m <sup>2</sup>	Objective not met
	E220625 at Troy Rec. Site	Jun. 8 - Oct 4	5	1.2 - 23.6 mg/m <sup>2</sup> av = 15.4 mg/m <sup>2</sup>	Objective not met
	E220626 south of Lavallee Point	Jun 8 - Oct 4	5	8.4 - 212.5 mg/m <sup>2</sup> av = 85.8 mg/m <sup>2</sup>	Objective not met
	E220628 North of Lavallee Point	Jun 8 - Oct 4	5	4.8 - 74.8 mg/m <sup>2</sup> av = 29.7 mg/m <sup>2</sup>	Objective not met
	E220629 at SW corner	Jun. 8 - Oct. 4	5	13.5 - 104.1 mg/m <sup>2</sup> av = 58.2 mg/m <sup>2</sup>	Objective not met

TABLE 16 continued

## CHRISTINA LAKE WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  ≤ 10/100 mL 90th perc. (np) over 30 days	Christina Lake (deep sites): 0200078 750 m S Lavally Point	Mar. 29 - Oct. 4	6	all values = 0/100 mL	Indefinite result
	0200520 off English Point	Mar. 29 - Oct. 4	6	all values = 0/100 mL	Indefinite result
	E215758 north basin at centre	Mar. 29 - Oct. 4	6	all values = 0/100 mL	Indefinite result
	Christina Lk (shallow sites) E220623 at Axel Johnson Rec. Site	Jul. 13 - Oct. 4	4	all values = 0/100 mL	Indefinite result
	E220624 at Roll Phillips Res.	Jul. 13 - Oct. 4	4	0 - 1/100 mL	Indefinite result
	E220625 at Troy Rec. Site	Jul. 13 - Oct. 4	4	0 - 1/100 mL	Indefinite result
	E220626 south Lavally Point	Jul. 13 - Oct. 4	4	1 - 3/100 mL	Indefinite result
	E220628 north Lavally Point	Jul. 13 - Oct. 4	4	0 - 3/100 mL	Indefinite result
	E220629 at SW corner	Jul. 13 - Oct. 4	4	0 - 9/100 mL	Indefinite result
	Christina Creek: 0200077 u/s Sander Bros. Landfill	Jun. 6 - Oct. 3	5	4 - 23/100 mL	Indefinite result
	Sutherland Creek: 0200079 at mouth	Jun. 6 - Oct. 3	5	4 - 36/100 mL	Indefinite result
	McRae Creek: 0200517 near mouth	Jun. 6 - Oct. 3	5	0 - 12/100 mL	Indefinite result
	Sandner Creek: 0200518 near mouth	Jun. 6 - Oct. 3	5	2 - 11/100 mL	Indefinite result
	Stewart Creek: 0200538 near mouth	Jun. 6 - Oct. 3	5	0 - 53/100 mL	Indefinite result
	Moody Creek	1994	0	no data collected	Objective not checked

TABLE 17

COLUMBIA RIVER FROM KEENLEYSIDE TO BIRCHBANK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Dissolved Oxygen  10 mg/L min	Columbia River: 0200183 3 km u/s Celgar	Jan 13 - Jun 15	6	12.0 - 13.2 mg/L	Objective met	
		Jun 22 - Jul 7	4	6.0 - 9.0 mg/L	Objective not met	
	E216155 400 m d/s Celgar mid-stream	Jan 13 - Feb 9	4	12.4 - 13.2 mg/L	Objective met	
		Jun 29 - Jul 7	3	2.0 - 8.5 mg/L	Objective not met	
	0200200 400 m u/s Kootenay	Jan 13 - Feb 9	5	11.8 - 14.4 mg/L	Objective met	
		Jun 15 - Jul 7	5	4.0 - 9.0 mg/L	Objective not met	
	0200003 at Birchbank	Jan 13 - Feb 9	5	13.0 - 13.8 mg/L	Objective met	
		Jun 29 - Jul 4	4	4.5 - 8.0 mg/L	Objective not met	
pH  6.5 - 8.5	Columbia River: 0200183 3 km u/s Celgar	Jun. 15 - Jul. 7	5	7.7 - 8.0	Objective met	
		Jan 13 - Jul 7	10	7.3 - 7.9	Objective met	
	E216155 400 m d/s Celgar mid-stream	Jun 6, Sep 26, Dec 19	3	5.5 - 5.9	Objective not met	
		Jun. 22 - Jul. 7	4	7.9 - 8.0	Objective met	
	0200200 400 m u/s Kootenay	Jun. 15 - Jul. 7	5	7.9 - 8.1	Objective met	
	0200003 at Birchbank	Jun. 15 - Jul. 7	5	7.9 - 8.1	Objective met	
	Colour  15 TCU max	Columbia River: 0200183 3 km u/s Celgar	Jun. 15 - Jul. 7	5	all < 5 SWU	Objective met
		E216155 400 m d/s Celgar mid-stream	Jan 13 - Jul 7	10	<5 - 13 SWU	Objective met
		0200200 400 m u/s Kootenay	Jun. 22 - Jul. 7	4	all < 5 SWU	Objective met
		0200003 at Birchbank	Jun. 7 - Jul. 7	15	all < 5 SWU	Objective met
Suspended Solids  10 mg/L max. increase	Columbia River: 0200183 3 km u/s Celgar	Jun. 15 - Jul. 7	5	all < 4 mg/L	Control site	
	E216155 400 m d/s Celgar mid-stream	Jan 13 - Jul 7	10	all < 4 mg/L	Objective met	

TABLE 17 continued

COLUMBIA RIVER FROM KEENLEYSIDE TO BIRCHBANK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids 10 mg/L max increase	Columbia River: 0200200 400 m u/s Kootenay	Jun. 22 - Jul. 7	4	all < 4 mg/L	Objective met
	0200003 at Birchbank	Jun. 15 - Jul. 7	5	all < 4 mg/L	Objective met
Turbidity 5 NTU max increase	Columbia River: 0200183 3 km u/s Celgar	Jun. 15 - Jul. 7	5	0.3 - 0.4 NTU	Control site
	E216155 400 m d/s Celgar mid-stream	Jan 13 - Jul 4	9	0.2 - 0.6 NTU	Objective met
	0200200 400 m u/s Kootenay	Jun. 22 - Jul. 7	4	0.3 - 0.5 NTU max. inc. = 0.1 NTU	Objective met
	0200003 at Birchbank	Jun. 15 - Jul. 4	4	0.4 - 0.6 NTU max. inc. = 0.3 NTU	Objective met
Sediment TOC no increase u/s to d/s at 95% confidence	Columbia River: 0200183 3 km u/s Celgar	Jun. 4	5	3.45 - 9.75 mg/g av = 6.53 mg/g	Control site
	E216155 400 m d/s Celgar mid-stream	Jun. 4	6	11.8 - 19.5 mg/g av = 15.7 mg/g % increase = 140	Objective not met
	0200200 400 m u/s Kootenay	Jun. 4	6	5.19 - 11.70 mg/g av = 8.16 mg/g % increase = 25%	Objective not met
Dissolved Gas 110% max	Columbia River: at Hugh Keenleyside u/s Dam (B.C. Hydro site)	Jan 1 - Dec 31	342	96.3 - 110 %	Objective met
		May 11 - Jul 30	8	110.1 - 110.8 %	Objective not met
	at Robson ~ 3.5 km d/s Celgar (B.C. Hydro site)	Jan 24 - Dec 31	161	97.7 - 110 %	Objective met
		Jan 1 - Nov 1	165	110.1 - 135.6 %	Objective not met
	at Birchbank (B.C. Hydro site)	Jan 24 - Dec 31	168	98.2 - 110 %	Objective met
		Jan 1 - Nov 1	133	110.2 - 118.9 %	Objective not met
Fecal Coliforms < 100/100 mL 90th perc (np)	Columbia River 0200183 3 km u/s Celgar	Jan 13 - Feb 9	5	all = 0/100 mL	Objective met
		Jun 7 - Jul 7	6	0 - 2/100 mL np = 2/100 mL	Objective met
	E216155 400 m d/s Celgar mid-stream	Jan 13 - Feb 9	5	0 - 17/100 mL np = 9/100 mL	Objective met
		Jun 8 - Jul 7	6	0 - 2/100 mL np = 2/100 mL	Objective met

TABLE 17 continued

## COLUMBIA RIVER FROM KEENLEYSIDE TO BIRCHBANK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  < 100/100 mL 90th perc. (np)	Columbia River: 0200200 400 m u/s Kootenay	Jan 14 - Feb 9	5	0 18/100 mL np = 9/100 mL	Objective met
		Jun 8 - Jul 7	6	0 - 3/100 mL np = 2/100 mL	Objective met
	0200003 at Birchbank	Jan 13 - Feb 9	7	0 - 10/100 mL np = 8/100 mL	Objective met
		Jun 7 - Jul 7	10	0 26/100 mL np = 20/100 mL	Objective met
E. coli  < 100/100 mL 90th perc. (np)	Columbia River: 0200183 3 km u/s Celgar	Jan 13 - Feb 9	5	all = 0/100 mL	Objective met
		Jun 7 - Jul 7	5	0 - 2/100 mL np = 1/100 mL	Objective met
	E216155 400 m d/s Celgar mid-stream	Jan 13 - Feb 9	5	0 - 2/100 mL np = 1/100 mL	Objective met
		Jun 8 - Jul 7	6	0 - 2/100 mL np = 2/100 mL	Objective met
	0200200 400 m u/s Kootenay	Jan 14 - Feb 9	4	all = 0/100 mL	Indefinite result
		Jun 8 - Jul 7	5	0 - 3/100 mL np = 2/100 mL	Objective met
	0200003 at Birchbank	Jan 13 - Apr 20	5	0 - 2/100 mL	Indefinite result
		Jun 8 - Jul 7	6	0 - 2/100 mL np = 1/100 mL	Objective met
Toxicity  % mill effluent in river: < 0.05 of the 96-h LC50	Columbia River at Celgar	monthly tests on rainbow trout	12	96-hLC50 = 100% (no fish mortalities)	Objective met
Chlorophenols  < 0.05 ug/L tri < 0.10 ug/L tetra < 0.05 mg/L penta	Columbia River: 0200183 3 km u/s Celgar	Jun. 29	1	tri: < 0.1 ug/L	Indef. result
			1	tetra: < 0.1 ug/L	Objective met
			1	penta: < 0.1 ug/L	Indef. result
	E216155 400 m d/s Celgar mid-stream	Jun. 29	1	tri: < 0.1 ug/L	Indef. result
			1	tetra: < 0.1 ug/L	Objective met
			1	penta: < 0.1 ug/L	Indef. result
	0200200 400 m u/s Kootenay	Jun. 29	1	tri: < 0.1 ug/L	Indef. result
			1	tetra: < 0.1 ug/L	Objective met
			1	penta: < 0.1 ug/L	Indef. result
	0200003 at Birchbank	Jun. 29	1	tri: < 0.1 ug/L	Indef. result
			1	tetra < 0.1 ug/L	Objective met
			1	penta: < 0.1 ug/L	Indef. result

TABLE 17 continued

COLUMBIA RIVER FROM KEENLEYSIDE TO BIRCHBANK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dioxins/Furans  1 pg/g TCDD TEQ max in fish muscle (wet weight)	Columbia River at Genelle	Jul. 16	8	1.45 - 31.5 pg/g TCDD TEQ (in fish muscle)	Objective not met
		Jul. 15	2	0.61- 0.79 pg/g TCDD TEQ (in fish muscle)	Objective met
Dioxins/Furans  0.2 pg/L TCDD TEQ max. in water	Columbia River: 0200183 3 km u/s Celgar  0200200 400 m u/s Kootenay  0200003 at Birchbank	Jan. 14	1	2.86 pg/L TCDD TEQ	Objective not met
		Jan. 14	1	1.18 pg L TCDD TEQ	Objective not met
		Jan. 14	1	1.19 pg/L TCDD TEQ	Objective not met
Dioxins/Furans  0.7 pg/g TCDD TEQ av max in sediment	Columbia River: 0200183 3 km u/s Celgar  0200200 400 m u/s Kootenay  0200003 at Birchbank	Jun. 4	5	0.008 - 0.342 pg/g TCDD TEQ av = 0.098 pg/g TCDD TEQ	Objective met
		Jun. 4	6	0.017 - 3.051 pg/g TCDD TEQ av = 1.163 pg/g TCDD TEQ	Objective not met
		Jun. 4	7	0.670 - 1.653 pg/g TCDD TEQ av = 1.144 pg/g TCDD TEQ	Objective not met
Resin Acids  13 ug/L max DHA 52 ug/L max total at pH = 8.0	Columbia River: 0200183 3 km u/s Celgar  E216155 400 m d/s Celgar mid-stream  0200200 400 m u/s Kootenay  0200003 at Birchbank	Jun. 29	1	DHA: < 0.5 ug/L Total: < 3.5 ug/L	Objectives met
		Jan 13 - Jun 29	2	DHA: all < 0.5 ug/L Total: < 3.5 ug/L	Objectives met
		Jun. 29	1	DHA: < 0.5 ug/L Total: < 3.5 ug/L	Objectives met
		Jun. 29	1	DHA: < 0.5 ug/L Total: < 3.5 ug/L	Objectives met
Chlorinated Resin Acids  6 ug/L max of mono Cl-DHA & di Cl-DHA	Columbia River: 0200183 3 km u/s Celgar  E216155 400 m d/s Celgar mid-stream  0200200 400 m u/s Kootenay  0200003 at Birchbank	Jun. 29	1	Cl-DHA < 0.5 ug/L Cl2-DHA < 0.5 ug/L	Objectives met
		Jan 13 - Jun 29	2	Cl-DHA: < 0.5 ug/L Cl2-DHA: < 0.5 ug/L	Objectives met
		Jun. 29	1	Cl-DHA < 0.5 ug/L Cl2-DHA < 0.5 ug/L	Objectives met
		Jun. 29	1	Cl-DHA < 0.5 ug/L Cl2-DHA < 0.5 ug/L	Objectives met

TABLE 17 continued

## COLUMBIA RIVER FROM KEENLEYSIDE TO BIRCHBANK WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophyll-a  < 50 mg/m <sup>2</sup> av	Columbia River: 0200183 3 km u/s Celgar	Jun. 2	6	1.2 - 15.7 mg/m <sup>2</sup> av = 5.4 mg/m <sup>2</sup>	Objective met
	0200200 400 m u/s Kootenay	Jun. 2	6	2.9 - 14.7 mg/m <sup>2</sup> av = 8.8 mg/m <sup>2</sup>	Objective met
	0200003 at Birchbank	Jun. 2	6	2.9 - 18.5 mg/m <sup>2</sup> av = 9.1 mg/m <sup>2</sup>	Objective met

TABLE 18

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  ≤ 1000/100 mL geometric mean (gm)  4000/100 mL max  April - October	Main Stem: 0300005 at Pattullo Bridge	Aug 29 - Sep 27	5	10 - 560/100 mL gm = 88/100 mL	Objectives met
	Main Arm: GVRD 1 u/s Annacis	Apr. 26 - Aug. 18 Oct. 25	3 1	70 - 130/100 mL 11000/100 mL	Max. obj. met Max. not met
	0301308 u/s Annacis	Aug 29 - Sep 27	5	30 - 160/100 mL gm = 56/100 mL	Objectives met
	0301311 d/s Annacis	Aug 29 - Sep 27	5	39 - 80/100 mL gm = 49/100 mL	Objectives met
	GVRD 2 d/s Annacis	Jun. 7, Aug. 18 Apr. 26, Oct. 25	2 2	40 - 170/100 mL 17000 - 30000/100 mL	Max. obj. met Max. not met
	FREMP site off Tilbury Island	Jan. 25, Mar. 7, 22 Jan. 10, Feb. 8, 21	3 3	230 - 3000/100 mL 5000 - 13000/100 mL	Max. obj. met Max. not met
	E105892 u/s Lulu	Aug 29 - Sep 27 Sep. 7 Aug 29 - Sep 27	4 1 5	70 - 780/100 mL 15000/100 mL gm = 517/100 mL	Max obj. met Max not met gm met
	E207407 d/s Lulu	Aug 29 - Sep 27 Sep. 7 Aug 29 - Sep 7	4 1 5	76 - 520/100 mL 18000/100 mL gm = 545/100 mL	Max obj. met Max not met gm met
	GVRD 4 d/s Lulu	Jun. 7, Aug. 18 Apr. 26 - Oct. 25	2 2	80 - 170/100 mL both 5000/100 mL	Max. obj. met Max. not met
	GVRD 5 d/s Steveston	Jun. 7, Aug. 18 Apr. 26, Oct. 25	2 2	130 - 300/100 mL 8000 - 13000/100 mL	Max. obj. met Max. not met
	North Arm: E207398 u/s Scott Paper	Oct. 1 - Oct. 30 Oct. 5, 18 Oct. 1 - Oct. 30	28 2 30	90 - 1600/100 mL 4200 - 4600/100mL gm = 462/100 mL	Max. obj. met Max. not met gm met
	E207396 u/s Belkin	Oct. 1 - Oct. 30 Oct. 6, 18, 19 Oct. 1 - Oct. 30	26 3 29	140 - 3200/100 mL 11000 - 30100/100 mL gm = 775/100 mL	Max. obj. met Max. not met gm met
	E207397 d/s Belkin	Oct. 1 - Oct. 30 Oct. 4 Oct. 1 - Oct. 30	29 1 30	100 - 3900/100mL 4400/100 mL gm = 604/100 mL	Max. obj. met Max. not met gm met
	0300002 Oak Street Bridge	Oct. 1 - Oct. 30 Oct. 13,14,26,27 Oct. 1 - Oct. 30	25 4 29	100 - 4000/100 mL 4300 - 9000/100 mL gm = 1303/100 mL	Max. obj. met Max. not met gm not met
	FREMP site Oak Street Bridge	Jan. 11, 24, Mar. 21 Feb. 7, 22, Mar. 8	3 3	1700 - 2300/100 mL 8000 - 24000/100 mL	Max. obj. met Max. not met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	Middle Arm: E207601 100 m d/s North Arm	Aug 29 - Sep 27	5	100 - 400/100 mL gm = 192/100 mL	Objectives met
	E207600 at Dinsmore Bridge	Aug 29 - Sep 27	5	90 - 2000/100 mL gm = 254/100 mL	Objectives met
Fecal Coliforms ≤ 200/100 mL geometric mean (gm) June - August at beaches	Iona Beach every 1.5 km along jetty east to west GVRD 4	Jun 2 - Jul 6 Jul 28 - Aug 31	5 5	gm < 34/100 mL gm < 39/100 mL	Objective met Objective met
	GVRD 6	Jun 2 - Jun 29 Jul 28 - Aug 31	5 5	gm < 20/100 mL gm < 23/100 mL	Objective met Objective met
	GVRD 8	Jun 10 - Jul 8 Jul 28 - Aug 31	6 6	gm < 30/100 mL gm < 20/100 mL	Objective met Objective met
	GVRD 10	Jun 2 - Jul 6 Jul 28 - Aug 31	6 6	gm < 20/100 mL gm < 20/100 mL	Objective met Objective met
	GVRD 12	Jun 2 - Jul 6 Jul 28 - Aug 31	6 6	gm < 28/100 mL gm < 20/100 mL	Objective met Objective met
	GVRD 14	Jun 2 - Jul 6 Jul 28 - Aug 31	6 6	gm < 22/100 mL gm < 20/100 mL	Objective met Objective met
	Tsawwassen Beach: GVRD 1 Causeway-north, 0 km	Jun 3 - Jul 8	5	gm < 23/100 mL	Objective met
	GVRD 2 Causeway-north, 2 km	Jun 3 - Jul 8	5	gm < 40/100 mL	Objective met
	GVRD 3 Causeway-north, 3 km	Jun 3 - Jul 8	5	gm < 23/100 mL	Objective met
	Sturgeon Bank E216048 d/s MacDonald Slough	Aug 29 - Sep 27	5	16 - 600/100 mL gm = 138/100 mL	Objective met
Suspended Solids  max increase: 10 mg/L or 10 %	Roberts Bank E216049 Causeway centre-S	Aug 29 - Sep 5	2	all = 0/100 mL	Indefinite result
	North Arm E207398 u/s Scott Paper	Mar. 9 - Apr. 11	5	29 - 97 mg/L	Control site
	0300002 Oak Street Bridge	Mar. 21 - Apr. 11	4	22 - 78 mg/L max. inc. = 0 mg/L	Objective met
		Mar. 9	1	46 mg/L max. inc. = 13 mg/L	Objective not met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids  max increase: 10 mg/L or 10 %	Middle Arm E207601 100 m d/s North Arm	Mar. 9 - Apr. 11	5	30 - 80 mg/L	Control site
	E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11	5	20 - 48 mg/L max increase = 0	Objective met
Total Cl <sub>2</sub> Res. 0.002 mg/L max.	Main Arm: GVRD 1,2,3,4,&5	Feb. 15 - Nov. 29	30	all < 0.05 mg/L	Indefinite result
Ammonia-N  1.82 mg/L av 12.5 mg/L max at pH = 7.5 temp = 12°C	Main Arm: GVRD 1 u/s Annacis	Feb 15 - Nov 29	6	<0.01 - 0.11 mg/L	Max. obj. met
	0301308 u/s Annacis	Mar. 9 - Apr. 11	5	0.008 - 0.034 mg/L av = 0.016 mg/L	Objectives met
	0301311 d/s Annacis	Mar. 9 - Apr. 11	5	0.007 - 0.14 mg/L av = 0.038 mg/L	Objectives met
	GVRD 2 d/s Annacis	Feb 15 - Nov 29	6	<0.01 - 0.14 mg/L	Max obj. met
	FREMP site off Tilbury Island	Jan. 10 - Mar 22	6	0.024 - 0.069 mg/L	Max obj. met
	GVRD 3 12 km d/s Annacis	Feb 15 - Nov 29	6	0.02 - 0.10 mg/L	Max obj. met
	E105892 u/s Lulu STP	Mar. 9 - Apr. 11	5	0.04 - 0.069 mg/L av = 0.056 mg/L	Objectives met
	E207407 d/s Lulu STP	Mar. 9 - Apr. 11	5	0.036 - 0.062 mg/L av = 0.052 mg/L	Objectives met
	GVRD 4 d/s Lulu	Feb. 15 - Nov. 29	5	0.04 - 0.1 mg/L	Max obj. met
	GVRD 5 d/s Steveston	Feb. 15 - Nov. 29	5	0.05 - 0.1 mg/L	Max obj. met
North Arm: E207398 u/s Scott Paper	Mar. 9 - Apr. 11	5	0.008 - 0.024 mg/L av = 0.013 mg/L	Objectives met	
	Oct 1 - Oct 30	28	<0.005 - 0.034 mg/L av = 0.007 mg/L	Objectives met	
	E207396 u/s Belkin Paperboard	Mar 9 - Apr 4	5	< 0.005 - 0.041 mg/L av = 0.016 mg/L	Objectives met
	Oct 1 - Oct 30	29	<0.005 - 0.037 mg/L av = 0.008 mg/L	Objectives met	
	E207397 d/s Belkin Paperboard	Mar 9 - Apr 11	5	0.007 - 0.042 mg/L av = 0.022 mg/L	Objectives met
	Oct 1 - Oct 30	29	<0.005 - 0.044 mg/L av = 0.008 mg/L	Objectives met	

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N  1.82 mg/L av 12.5 mg/L max at pH = 7.5 temp = 12°C	North Arm: 0300002	Mar 9 - Apr 11	5	0.012 - 0.035 mg/L av = 0.024 mg/L	Objectives met
	Oak Street Bridge	Oct 1 - Oct 30	29	<0.005 - 0.030 mg/L av = 0.011 mg/L	Objectives met
	FREMP site Oak Street Bridge	Jan 11 - Mar. 21	6	0.035 - 0.057 mg/L	Max. obj. met
	Middle Arm: E207601 100m d/s North Arm	Mar 9 - Apr 11	5	0.019 - 0.044 mg/L av = 0.031	Objectives met
	E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11	5	0.011 - 0.035 mg/L av = 0.023 mg/L	Objectives met
	Sturgeon Bank: E216048 d/s MacDonald Slough	Aug 29 - Sep 27	5	<0.005 - 0.071 mg/L av = 0.042 mg/L	Objectives met
Dissolved Oxygen  7.75 mg/L min	Roberts Bank: E216049 Causeway centre-S	Aug 29 - Sep 5	2	0.01 - 0.333 mg/L	Max. obj. met Av not chekd.
	Main Stem: E206965 Barnston Island	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.3 - 12.4 mg/L 9.7 - 10.8 mg/L	Objective met Objective met
	0300005 Pattullo Bridge	Mar 9 - Apr 11 Aug 29 - Sep 27	4 5	11.4 - 12.3 mg/L 9.4 - 10.4 mg/L	Objective met Objective met
	Main Arm: Gunderson Slough E216045	Mar. 30 Sep. 22	7 16	0-5.6 m: 10 - 11.9 mg/L 0-4.6 m: 8 - 9.9 mg/L	Objective met Objective met
	GVRD 1 u/s Annacis	Feb. 15 - Nov. 29	6	9.0 - 12.9 mg/L	Objective met
	0301308 u/s Annacis	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.3 - 12.3 mg/L 10.1 - 11.2 mg/L	Objective met Objective met
	0301311 d/s Annacis	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.4 - 12.3 mg/L 9.4 - 11.1 mg/L	Objective met Objective met
	GVRD 2 d/s Annacis	Feb. 15 - Nov. 29	6	9.2 - 12.9 mg/L	Objective met
	FREMP site off Tilbury Island	Jan. 10 - Mar. 3	6	11.4 - 12.3 mg/L	Objective met
	Deas Slough	Mar. 30 Sep. 22	7 12 2	0-5.6 m: 9.4 - 12.1 mg/L 0-3.4 m: 7.8 - 9.8 mg/L 3.7-4 m: 7.2 - 7.6 mg/L	Objective met Objective met Obj. not met
	GVRD 3 12 km d/s Annacis	Feb. 15 - Nov. 29	6	9 - 12.6 mg/L	Objective met
	Ladner Slough	Mar. 30 Sep. 22	6 11 4	0-5 m: 10.5 - 11.7 mg/L 0-3.7 m: 7.9 - 9.9 mg/L 2.7-4.3 m: 7.6 - 7.7 mg/L	Objective met Objective met Obj. not met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen  7.75 mg/L min	Main Arm: E105892 100 m u/s Lulu	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.5 - 12.3 mg/L 9.7 - 10.2 mg/L	Objective met Objective met
	E207407 100 m d/s Lulu	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.4 - 12.1 mg/L 9.4 - 10.3 mg/L	Objective met Objective met
	GVRD 4 d/s Lulu	Feb. 15 - Nov. 29	6	9.2 - 12.1 mg/L	Objective met
	GVRD 5 d/s Steveston	Feb. 15 - Nov. 29	5	9.8 - 12.0 mg/L	Objective met
	North Arm: E207398 u/s Scott Paper	Mar 9 - Apr 11 Oct 1 - Oct 30	5 30	11.2 - 12.3 mg/L 8.8 - 10.5 mg/L	Objective met Objective met
	E207396 u/s Belkin	Mar 9 - Apr 11 Oct 1 - Oct 30	5 30	11.2 - 12.3 mg/L 9.0 - 10.8 mg/L	Objective met Objective met
	E207397 d/s Belkin	Mar 9 - Apr 11 Oct 1 - Oct 30	5 30	11.2 - 12.2 mg/L 9.0 - 10.8 mg/L	Objective met Objective met
	Tree Island Slough E216038	Mar. 30	7	0-5.6 m: 12 - 12.2 mg/L	Objective met
		Sep. 21	9 2	0-2.4 m: 9 - 9.8 mg/L 2.7-3 m: 6 - 6.5 mg/L	Objective met Obj. not met
	0300002 Oak Street Bridge	Mar 9 - Apr 11 Oct 1 - Oct 30	5 30	11.3 - 12.2 mg/L 8.8 - 10.3 mg/L	Objective met Objective met
	FREMP site Oak Street Bridge	Jan. 11 - Mar. 21	6	11.4 - 12.4 mg/L	Objective met
	Eburne Slough E216039	Mar. 29	5	0-4.5 m: 10.2 - 12.1 mg/L	Objective met
		Sep. 21	11 2	0-3 m: 8.6 - 10 mg/L 3.4-3.7 m: 7.1 - 7.6 mg/L	Objective met Obj. not met
	MacDonald Slough E216037	Mar. 29	6	0-5 m: 9.2 - 12.2 mg/L	Objective met
		Sep. 21	15 1	0-4.3 m: 7.8 - 8.6 mg/L 4.6 m: 7.3 mg/L	Objective met Obj. not met
	Middle Arm: E207601 100 m d/s North Arm	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.2 - 12.2 mg/L 8.8 - 10.3 mg/L	Objective met Objective met
	E207600 at Dinsmore Bridge	Mar 9 - Apr 11 Aug 29 - Sep 27	5 5	11.0 - 12.5 mg/L 8.8 - 10.2 mg/L	Objective met Objective met
Dissolved Oxygen  9.0 mg/L min	Sturgeon Bank E216048 d/s MacDonald Slough	Sep 13,27 Aug 29 - Sep 21	2 3	9.3 - 10.1 mg/L 6.9 - 7.6 mg/L	Objective met Obj. not met
	Roberts Bank E216049 Causeway centre-S	Sep. 27 Aug 29 - Sep 21	1 4	9.5 mg/L 7.5 - 8.5 mg/L	Objective met Obj. not met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Main Stem: E206965 Barnston Island	Mar 9 - Apr 11 Aug 29 - Sep 27	4 5	7.6 - 7.8 7.6 - 7.7	Objective met Objective met
	0300005 d/s Pattullo Bridge	Mar 9 - Apr 11 Aug 29 - Sep 27	3 5	7.5 - 7.6 7.5 - 7.6	Objective met Objective met
	Main Arm: GVRD 1 u/s Annacis	Feb. 15 - Nov. 29	6	6.7 - 7.4	Objective met
	0301308 u/s Annacis	Mar. 9 - Apr. 11 Aug 29 - Sep 27	4 5	7.6 - 7.8 7.6 - 7.9	Objective met Objective met
	0301311 d/s Annacis	Mar. 9 - Apr. 11 Aug 29 - Sep 27	4 5	7.5 - 7.8 7.6 - 7.7	Objective met Objective met
	GVRD 2 d/s Annacis	Feb. 15 - Nov. 29	6	6.7 - 7.4	Objective met
	FREMP site off Tilbury Island	Jan. 10 - Mar. 22	6	7.3 - 7.7	Objective met
	GVRD 3 12 km d/s Annacis	Feb. 15 - Nov. 29	6	6.7 - 7.5	Objective met
	E105892 100m u/s Lulu	Mar. 9 - Apr. 11 Aug 29 - Sep 27	4 5	7.4 - 7.6 7.0 - 7.6	Objective met Objective met
	E207407 100m d/s Lulu	Mar. 9 - Apr. 11 Aug 29 - Sep 27	4 5	7.5 - 7.6 7.5 - 7.7	Objective met Objective met
	GVRD 4 d/s Lulu	Feb. 15 - Nov. 29	6	6.8 - 7.6	Objective met
	GVRD 5 d/s Steveston	Feb. 15 - Nov. 29	6	7.3 - 7.6	Objective met
	North Arm: E207398 u/s Scott Paper	Mar. 9 - Apr. 11 Oct 1 - Oct 30	4 30	7.5 - 7.7 7.5 - 7.8	Objective met Objective met
	E207396 u/s Belkin Paperboard	Mar. 9 - Apr. 11 Oct 1 - Oct 30	4 30	7.5 - 7.6 7.5 - 7.8	Objective met Objective met
	E207397 d/s Belkin Paperboard	Mar. 9 - Apr. 11 Oct 1 - Oct 30	4 30	7.5 - 7.6 7.4 - 7.8	Objective met Objective met
	0300002 Oak Street Bridge	Mar. 9 - Apr. 11 Oct 1 - Oct 30	4 30	7.4 - 7.6 7.2 - 7.6	Objective met Objective met
	FREMP site Oak Street Bridge	Jan. 11 - Mar. 21	6	7.1 - 7.4	Objective met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Middle Arm: E207601 100 m d/s North Arm	Mar. 9 - Apr. 11 Aug 29 - Sep 27	5 5	7.3 - 7.6 7.4 - 7.7	Objective met Objective met
	E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11 Aug 29 - Sep 27	5 5	7.3 - 7.7 7.4 - 7.5	Objective met Objective met
Total Cu <0.004 mg/L av 0.006 mg/L max at hardness > 35 or 20% increase	Main Arm: GVRD 1 u/s Annacis	Feb. 15 - Nov. 29	6	<0.001 - 0.002 mg/L (Dissolved Cu)	Control Site
	0301308 u/s Annacis	Mar. 9 - Apr. 11	5	0.004 - 0.007 mg/L av = 0.006 mg/L (Total Cu)	Control Site
	0301311 d/s Annacis	Mar. 9 - Apr. 11	5	0.003 - 0.007 mg/L av = 0.005 mg/L max. inc. = 0 mg/L (Total Cu)	Objectives met
	GVRD 2 d/s Annacis	Feb. 15 - Nov. 29	5	<0.001 - 0.002 mg/L (Dissolved Cu)	Indefinite result
	FREMP site off Tilbury Island	Jan. 10 - Mar. 22	6	0.002 - 0.005 mg/L (Total Cu)	Max. objective met
	GVRD 3 12 km d/s Annacis	Feb. 15 - Nov. 29	6	<0.001 - 0.002 mg/L (Dissolved Cu)	Max obj. met
	E105892 100 m u/s Lulu	Mar 9 - Apr 11	5	0.003 - 0.006 mg/L av = 0.005 mg/L (Total Cu)	Objectives met
	E207407 100 m d/s Lulu	Mar 9 - Apr 11	5	<0.002 - 0.005 mg/L av = 0.003 mg/L (Total Cu)	Objectives met
	GVRD 4 d/s Lulu	Feb. 15 - Nov. 29	6	<0.001 - 0.002 mg/L (Dissolved Cu)	Max obj. met
	GVRD 5 d/s Steveston	Feb. 15 - Nov. 29	6	<0.001 - 0.002 mg/L (Dissolved Cu)	Max obj. met
North Arm: E207398 u/s Scott Paper	Mar. 9 - Apr. 11	5	0.004 - 0.006 mg/L av = 0.005 mg/L (Total Cu)	Objectives met	
	Oct 1 - Oct 30	29	av = 0.003 mg/L <0.002 - 0.003	Av obj. met	
	Oct 1 - Oct 30 Oct. 10, 30	27 2	0.009 - 0.021 mg/L (Total Cu)	Max obj. met Indef. result	

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu  <0.004 mg/L av 0.006 mg/L max at hardness > 35 or 20% increase	North Arm: E207396 u/s Belkin Paperboard	Mar. 9 - Apr. 11	5	0.003 - 0.005 mg/L av = 0.004 mg/L (Total Cu)	Objectives met
		Oct 1 - Oct 30	30	av = 0.002 mg/L	Av obj. met
		Oct 1 - Oct 30	29	<0.002 - 0.003 mg/L	Max obj. met
		Oct. 27	1	0.011 mg/L (Total Cu)	Indef. result
	E207397 d/s Belkin Paperboard	Mar. 9 - Apr. 11	5	0.003 - 0.006 mg/L av = 0.004 mg/L (Total Cu)	Objectives met
		Oct 1 - Oct 30	30	av = 0.002 mg/L	Av obj. met
		Oct 1 - Oct 30	29	<0.002 - 0.003 mg/L	Max obj. met
		Oct. 3	1	0.008 mg/L (Total Cu)	Indef. result
	0300002 Oak Street Bridge	Mar. 9 - Apr. 11	5	0.003 - 0.007 mg/L av = 0.005 mg/L (Total Cu)	Objectives met
		Oct 1 - Oct 30	30	<0.002 - 0.004 mg/L av = 0.002 mg/L (Total Cu)	Objectives met
	FREMP site Oak Street Bridge	Jan. 11 - Mar. 21	6	0.002 - 0.004 mg/L (Total Cu)	Max. objective met
Middle Arm: E207601 100 m d/s North Arm	Mar 9 - Apr 11 Mar 9 - Apr 11 Mar. 28	5	av = 0.006 mg/L	Av obj. met	
		4	0.005 - 0.008 mg/L	Max obj. met	
		1	max inc = 14% 0.008 mg/L, inc = 100%	Max not met	
	E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11	5	0.003 - 0.007 mg/L max inc = 17% av = 0.004 mg/L (Total Cu)	Objectives met
	Main Arm: GVRD 1 u/s Annacis	Feb. 15 - Nov. 29	5	all < 0.001 mg/L (Dissolved Pb)	Indefinite result
Total Pb  < 0.003 mg/L av 0.010 mg/L max	0301308 u/s Annacis	Mar. 9 - Apr. 11	4	< 0.003 - 0.004 mg/L	Max. obj. met
		Mar. 28	1	0.04 mg/L	Max. not met
		Mar. 9 - Apr. 11	5	av = 0.011 mg/L (Total Pb)	Av. not met
	0301311 d/s Annacis	Mar. 9 - Apr. 11	4	<0.003 - 0.005 mg/L	Max. obj met
		Apr. 4	1	0.011 mg/L	Max. not met
		Mar. 9 - Apr. 11	5	av = 0.005 mg/L (Total Pb)	Av. not met
	GVRD 2 d/s Annacis	Feb. 15 - Nov. 29	6	<0.001 - 0.001 mg/L (Dissolved Pb)	Indefinite result
	FREMP site off Tilbury Island	Jan. 10 - Mar. 22	6	all < 0.005 mg/L (Total Pb)	Max. objective met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb  < 0.003 mg/L av 0.010 mg/L max	Main Arm: GVRD 3 12 km d/s Annacis	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Pb)	Indefinite result
	E105892 100 m u/s Lulu	Mar 9 - Apr 11	5	<0.003 - 0.003 mg/L av = 0.003 mg/L (Total Pb)	Objectives met
	E207407 100 m d/s Lulu	Mar 9 - Apr 11	5	<0.003 - 0.005 mg/L av = 0.003 mg/L (Total Pb)	Objectives met
	GVRD 4 d/s Lulu	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Pb)	Indefinite result
	GVRD 5 d/s Steveston	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Pb)	Indefinite result
	North Arm: E207398 u/s Scott Paper	Mar. 9 - Apr. 11	5	<0.003 - 0.004 mg/L av = 0.004 mg/L (Total Pb)	Max. obj met Av. not met
		Oct 1 - Oct 30	29	av = 0.004 mg/L	Av not met
		Oct 2 - Oct 30	28	<0.003 - 0.009 mg/L	Max obj. met
		Oct. 1	1	0.013 mg/L (Total Pb)	Max not met
	E207396 U/s Belkin Paperboard	Mar 9 - Apr 11	5	av = 0.011	Av not met
		Mar. 9	1	0.044 mg/L	Max. not met
		Mar. 21 - Apr. 11	4	<0.003 - 0.004 mg/L (Total Pb)	Max obj. met
		Oct 1 - Oct 30	30	av = 0.004 mg/L	Av not met
		Oct 1 - Oct 30	29	<0.003 - 0.007 mg/L	Max obj. met
		Oct. 4	1	0.025 mg/L (Total Pb)	Max not met
	E207397 d/s Belkin Paperboard	Mar. 9 - Apr. 11	5	<0.003 - 0.004 mg/L av = 0.003 mg/L (Total Pb)	Objectives met
		Oct 1 - Oct 30	30	av = 0.004 mg/L	Av not met
		Oct 1 - Oct 30	28	<0.003 - 0.009 mg/L	Max obj. met
		Oct. 4, 25	2	0.014 - 0.015 mg/L (Total Pb)	Max not met
	0300002 Oak Street Bridge	Mar. 9 - Apr. 11	5	<0.003 - 0.003 av < 0.003 mg/L (Total Pb)	Objectives met
		Oct 1 - Oct 30	30	<0.003 - 0.009 mg/L av = 0.003 mg/L (Total Pb)	Objectives met
	FREMP site Oak Street Bridge	Jan. 11 - Mar. 21	6	< 0.001 - 0.001 mg/L (Total Pb)	Max. objective met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb  < 0.003 mg/L av. 0.010 mg/L max	Middle Arm: E207601 100m d/s North Arm	Mar. 9 Mar. 21 - Apr. 11 Mar. 9 - Apr. 11	1 4 5	0.024 mg/L < 0.003 - 0.004 mg/L av = 0.007 mg/L (Total Pb)	Max. not met Max. obj. met Av. not met
	E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11	5	<0.003 - 0.004 mg/L av = 0.003 (Total Pb)	Objectives met
Total Zn  ≤ 0.050 mg/L av. 0.100 mg/L max.	Main Arm : GVRD 1 u/s Annacis	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Zn)	Indefinite result
	0301308 u/s Annacis	Mar. 9 - Apr. 11	5	0.02 - 0.1 mg/L av = 0.04 mg/L (Total Zn)	Objectives met
	0301311 d/s Annacis	Mar. 9 - Apr. 11	5	0.02 - 0.07 mg/L av = 0.04 mg/L (Total Zn)	Objectives met
	GVRD 2 d/s Annacis	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Zn)	Indefinite result
	FREMP site off Tilbury Island	Jan. 10 - Mar. 22	6	0.003 - 0.02 mg/L (Total Zn)	Max. objective met
	GVRD 3 12 km d/s Annacis	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Zn)	Indefinite result
	E105892 100 m u/s Lulu	Mar 9 - Apr 11	5	0.01 - 0.08 mg/L av = 0.03 mg/L (Total Zn)	Objectives met
	E207407 100 m d/s Lulu	Mar 9 - Apr 11	5	<0.01 - 0.04 mg/L av = 0.03 mg/L (Total Zn)	Objectives met
	GVRD 4 d/s Lulu	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Zn)	Indefinite result
	GVRD 5 d/s Steveston	Feb. 15 - Nov. 29	6	all < 0.001 mg/L (Dissolved Zn)	Indefinite result
	North Arm: E207398 u/s Scott Paper	Mar. 9 - Apr. 11	4	0.02 - 0.04 mg/L	Max. obj. met
		Mar. 28	1	0.18 mg/L	Max. not met
		Mar. 9 - Mar. 11	5	av = 0.06 mg/L (Total Zn)	Av. not met
		Oct 1 - Oct 30	29	<0.01 - 0.08 mg/L av = 0.02 mg/L (Total Zn)	Objectives met
	E207396 u/s Belkin	Mar. 9 - Apr. 11	5	0.01 - 0.06 mg/L av = 0.03 mg/L (Total Zn)	Objectives met
		Oct 1 - Oct 30	30	<0.01 - 0.07 mg/L av = 0.02 mg/L (Total Zn)	Objectives met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn  ≤ 0.050 mg/L av. 0.100 mg/L max.	North Arm: E207397 d/s Belkin Paper	Mar. 9 - Apr. 11	5	0.01 - 0.05 mg/L av = 0.03 mg/L (Total Zn)	Objectives met
		Oct 1 - Oct 30	30	<0.01 - 0.06 mg/L av = 0.02 mg/L (Total Zn)	Objectives met
	0300002 Oak Street Bridge	Mar. 9 - Apr. 9	5	0.01 - 0.07 mg/L av = 0.03 mg/L (Total Zn)	Objectives met
		Oct 1 - Oct 30	30	<0.01 - 0.04 mg/L av = 0.01 mg/L (Total Zn)	Objectives met
	FREMP site Oak Street Bridge	Jan. 11 - Mar. 21	6	0.002 - 0.084 mg/L (Total Zn)	Max obj. met
	Middle Arm: E207601 100m d/s North Arm	Mar. 9 - Apr. 11	5	0.01 - 0.09 mg/L av = 0.03 (Total Zn)	Objectives met
	E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11	5	<0.01 - 0.08 mg/L av = 0.03 mg/L (Total Zn)	Objectives met
	Chlorophenols (tri + tetra + penta) in water  0.0002 mg/L max	Main Stem: E206965 Barnston Island	Mar. 9 - Apr. 11	5 all tri, tetra & penta - CP <0.0001 mg/L	Objective met
	Main Arm: FREMP site off Tilbury Island	Jan. 11 - Mar. 21	18	<1 - 6 ng/L - penta-CP <1 - 2 ng/L tetra-CP <1 - 3 ng/L tri-CP	Objective met
	E207624 Deas Slough	Mar. 9 - Apr. 11	5	all tri, tetra & penta - CP <0.0001 mg/L	Objective met
	North Arm: E207397 d/s Belkin	Mar. 9 - Apr. 11	5	all tri, tetra & penta - CP <0.0001 mg/L	Objective met
	E207401 d/s Mitchell Island	Mar. 9 - Apr. 11	5	all tri & tetra - CP < 0.0001 mg/L penta - CP <0.0001 - 0.0002 mg/L	Objective met
	FREMP site Oak Street Bridge	Jan. 11 - Mar. 21	18	<1 - 10 ng/L penta-CP <1 - 2 ng/L tetra-CP <1 - 3 ng/L tri-CP	Objective met
	Middle Arm: E207600 at Dinsmore Bridge	Mar. 9 - Apr. 11	5	all tri, tetra, & penta-CP <0.0001 mg/L	Objective met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophenols (tri + tetra + penta) in sediments  0.01 ug/g max av of replicates (dry weight)	Main Stem: E206965 Barnston Island	Mar. 31	2	all < 0.005 ug/g for tri, tetra & penta - CP	Objective met
	Main Arm: E207624 Deas Slough	Mar. 30	3	0.009 - 0.018 ug/g tri av = 0.012 ug/g  <0.005-0.006 ug/g tetra av = 0.005 ug/g  0.009-0.023 ug/g penta av = 0.016 ug/g	Objective not met
	North Arm: E207397 d/s Belkin Paperboard	Mar. 30	3	0.009 - 0.01 ug/g tri av = 0.015 ug/g  all < 0.005 ug/g tetra  0.011 - 0.013 ug/g penta av = 0.012 ug/g	Objective not met
	Middle Arm: E207600 at Dinsmore Bridge	Mar. 29	3	0.007-0.009 ug/g tri av = 0.008 ug/g  all < 0.005 ug/g tetra  0.008-0.013 ug/g penta av = 0.011 ug/g	Objective not met
	Sturgeon Bank E216048 d/s MacDonald Slough	Mar. 30	3	all < 0.005 ug/g for tri & tetra-CP  < 0.005 - 0.007 ug/g penta av = 0.006 mg/L	Objective met
	Roberts Bank E216049 Causeway centre-S	Mar. 30	3	all < 0.005 ug/g for tri, tetra & penta-CP	Objective met
Chlorophenols (Tri + Tetra + Penta) in fish  0.10 ug/g max. (wet weight)	Main Stem E206965 Barnston Island	Mar. 28	3	(3 samples of 1 composite of starry flounders) all < 0.005 ug/g for each homologue	Objective met
		Apr. 6	2	(2 samples of composites of starry flounders) 0.03 - 0.05 ug/g tri all < 0.02 tetra all < 0.02 penta	Objective met
	3 FREMP sites around Barnston Island	Jul 26 - Aug 23	5	(5 samples of composites of peamouth chub) all < 0.002 ug/g total CPs	Objective met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophenols (Tri + Tetra + Penta) in fish  0.10 ug/g max. (wet weight)	Main Arm E206970 Ewen Slough	Mar. 27	5	(5 samples of 1 composite of starry flounders) all < 0.005 ug/g for each homologue	Objective met
		Apr. 5	5	(5 samples of composites of starry flounders) <0.02 - 0.07 ug/g tri all <0.02 ug/g tetra <0.02 - 0.04 ug/g penta	Objective met
	4 FREMP sites in the Main Arm	Jul 26 - Aug 23	5	(5 samples of composites of peamouth chub) all <0.002 ug/g total CPs	Objective met
			5	(5 samples of composites of starry flounders) all <0.002 ug/g total CPs	Objective met
	North Arm E216037 in MacDonald Slough	Mar. 29	5	(5 samples of 1 composite of starry flounders) all < 0.005 ug/g for each homologue	Objective met
	E206968 at MacDonald Slough	Apr. 7	5	(5 samples of composites of starry flounders) <0.02 - 0.06 ug/g tri all <0.02 ug/g tetra all <0.02 ug/g penta	Objective met
	3 FREMP sites in the North Arm	Jul 26 - Aug 23	5	(5 samples of composites of peamouth chub) all <0.002 ug/g total CPs	Objective met
			5	(5 samples of composites of starry flounders) all <0.002 ug/g total CPs	Objective met
	Middle Arm E207600 Dinsmore Bridge	Mar. 29	5	(5 samples of 1 composite of starry flounders) all < 0.005 ug/g for each homologue	Objective met
		Apr. 8	5	(5 samples of composites of starry flounders) 0.04 - 0.06 ug/g tri all <0.02 ug/g tetra all <0.02 ug/g penta	Objective met
PCBs in sediments  0.03 ug/g max av of replicates (dry weight)	Main Stem	1994	0	no data collected	Objective not checked
	Main Arm: E207624 Deas Slough	Mar. 30	1	< 0.02 ug/g	Objective met
	North Arm: E207397	Mar. 30	1	< 0.02 ug/g	Objective met
	Middle Arm: E207600 at Dinsmore Bridge	Mar. 29	1	< 0.02 ug/g	Objective met

TABLE 18 continued

## FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PCBs in fish 0.50 ug/g max (wet weight)	Main Stem E206965 Barnston Island	Mar. 28 Apr. 6	3 2	(2-3 samples of composites of starry flounders) < 0.1 ug/g total PCBs < 0.1 ug/g total PCBs	Objective met Objective met
	3 FREMP sites around Barnston Island	Jul 26 - Aug 23	5	(5 samples of composites of peamouth chub) all <0.03 ug/g total PCBs	Objective met
	Main Arm E206970 Ewen Slough	Mar. 27 Apr. 5	5 5	(5 samples of composites of starry flounders) 0.1 ug/g total PCBs < 0.1 ug/g total PCBs	Objective met Objective met
	4 FREMP sites in the Main Arm	Jul 26 - Aug 23	5	(5 samples of composites of peamouth chub) all <0.03 ug/g total PCBs	Objective met
			5	(5 samples of composites of starry flounders) all <0.01 ug/g total PCBs	Objective met
	North Arm E216037 in MacDonald Slough	Mar. 29	5	(5 samples of 1 composite of starry flounders) 0.1 ug/g total PCBs	Objective met
	E206968 at MacDonald Slough	Apr. 7	5	(5 samples of composites of starry flounders) all <0.01 ug/g total PCBs	Objective met
	3 FREMP sites in the North Arm	Jul 26 - Aug 23	5	(5 samples of composites of peamouth chub) all <0.03 ug/g total PCBs	Objective met
			5	(5 samples of composites of starry flounders) all <0.01 ug/g total PCBs	Objective met
	Middle Arm E207600 Dinsmore Bridge	Mar. 29 Apr. 8	5 5	(5 samples of composites of starry flounders) 0.1 ug/g total PCBs < 0.1 ug/g total PCBs	Objective met Objective met

TABLE 19

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  < 200/100 mL geometric mean (gm)  May - Oct	Port Moody Arm: GVRD 1 Barnett Pk. E of pier	May 6 - Jun 10	5	<20 - 40/100 mL gm < 23/100 mL	Objective met
		Jun 10 - Jul 22	5	<20 - 800/100 mL gm < 95/100 mL	Objective met
	GVRD 2 Barnett Pk. Sandy Beach	May 6 - Jun 10	5	<20 - 170/100 mL gm < 85/100 mL	Objective met
		Jun 10 - Jul 22	5	20 - 230/100 mL gm = 90/100 mL	Objective met
	Indian Arm: GVRD 35 Deep Cove Beach N	May 9 - Jun 9	11	<20 - 5000/100 mL gm < 87/100 mL	Objective met
		Jul 7 - Aug 8	10	20 - 3000/100 mL gm = 349/100 mL	Objective not met
	GVRD 39 Deep Cove Beach S	May 9 - Jun 9	11	<20 - 16000/100 mL gm = 262/100 mL	Objective not met
		Jul 7 - Aug 8	10	20 - 5000/100 mL gm = 545/100 mL	Objective not met
	2nd Narrows-Roche Pt.: GVRD 36 Cates Park Beach	May 31 - Jun 30	7	<20 - 110/100 mL gm = 31/100 mL	Objective met
		Jul 6 - Aug 8	7	<20 - 500/100 mL gm = 94/100 mL	Objective met
	GVRD 29 Ctes Park boat ramp	May 19 - Jun 20	7	20 - 80/100 mL gm = 44/100 mL	Objective met
		Jul 6 - Aug 8	7	20 - 800/100 mL gm = 88/100 mL	Objective met
	1st-2nd Narrows: GVRD 5 1 km W Brockton Pt.	May 18 - Jun 20	11	<20 - 1700/100 mL gm = 132/100 mL	Objective met
		Jul 20 - Aug 17	6	40 - 500/100 mL gm = 91/100 mL	Objective met
	GVRD 1 1.5 km W Brockton Pt.	May 20 - Jun 20	10	20 - 5000/100 mL gm = 221/100 mL	Objective not met
		Jul 25 - Aug 26	7	80 - <16000/100 mL gm > 779/100 mL	Objective not met
	Outer Burrard: GVRD 14 Ambleside Beach	May 24 - Jun 21	9	20 - 230/100 mL gm = 80/100 mL	Objective met
		Jul 20 - Aug 22	8	<20 - 300/100 mL gm < 31/100 mL	Objective met
	GVRD 101 3rd Beach	May 16 - Jun 16	9	<20 - 500/100 mL gm < 29/100 mL	Objective met
		Jul 20 - Aug 22	10	<20 - 500/100 mL gm < 43/100 mL	Objective met
	GVRD 200 2nd Beach	May 24 - Jun 22	8	<20 - 170/100 mL gm < 49/100 mL	Objective met
		Jul 25 - Aug 24	10	<20 - 300/100 mL gm = 38/100 mL	Objective met
	GVRD 304 English Bay Beach	Jun 6 - Jul 6	9	<20 - 500/100 mL gm = 64/100 mL	Objective met
		Jul 11 - Aug 10	10	<20 - 220/100 mL gm < 58/100 mL	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  < 200/100 mL geometric mean (gm)  May - Oct	Outer Burrard: GVRD 703 Locarno Beach	May 12 - Jun 14	10	<20 - 2400/100 mL gm < 74/100 mL	Objective met
		Jul 12 - Aug 12	10	<20 - 300/100 mL gm < 48/100 mL	Objective met
	False Creek: GVRD 16 at the mouth	Jun 1 - Jun 30	7	20 - 500/100 mL gm = 114/100 mL	Objective met
		Jul 4 - Aug 5	6	20 - 1300/100 mL gm = 97/100 mL	Objective met
Enterococci <200/100 mL geometric mean (gm) May - Oct	Burrard Inlet	1994	0	no data collected	Omitted 1994
Suspended Solids  10 mg/L max. increase	Port Moody Arm E216033 centre	Aug. 31 - Sep. 28	5	16 - 18m: 7 - 29 mg/L	Control Site
	2nd Narrows-Roche Pt.: E207822 50m off Shellburn disch.	Aug. 31 - Sep. 28	5	15 - 21m: 6 - 22 mg/L max. inc. = 5 mg/L	Objective met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 20	4	7 - 9 m: 4 - 18 mg/L max. inc. = 0 mg/L	Objective met
		Sep. 28	1	8 m: 20 mg/L max. inc. = 13 mg/L	Objective not met
	E207820 100 m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	13 - 15m: 6 - 19 mg/L max. inc. = 5 mg/L	Objective met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	18 - 21m: 7 - 19 mg/L max. inc. = 7 mg/L	Objective met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 20	4	10 - 14m: 9 - 22 mg/L max. inc. = 10 mg/L	Objective met
		Sep. 28	1	10m: 26 mg/L inc. = 16 mg/L	Objective not met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13m: 6 - 20 mg/L max. inc. = 0 mg/L	Objective met
	E207813 100 m off Coal Harbour CSO	Aug. 31 - Sep. 20	4	6 - 9m: 11 - 26 mg/L max. inc. = 3 mg/L	Objective met
		Sep. 28	1	8.3m: 21 mg/L inc. = 14 mg/L	Objective not met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	8 - 11m: 5 - 21 mg/L max. inc. = 2 mg/L	Objective met
	0300076 English River	Aug. 31 - Sep. 28	5	17 - 19m: 8 - 18 mg/L max. inc. = 3 mg/L	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids  10 mg/L max. increase	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	5	5 - 8m: 9 - 24 mg/L max. inc. = 10 mg/L	Objective met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9m: 7 - 18 mg/L max. inc. = 2 mg/L	Objective met
Turbidity  5 NTU max. increase	Port Moody Arm E216033 centre	Aug. 31 - Sep. 28	5	16 - 18m: 0.3 - 2.1 NTU	Control site
	2nd Narrows-Roche Pt.: E207822 50m off Shellburn disch.	Aug. 31 - Sep. 28	5	15 - 21m: 0.7 - 3.1 NTU max. inc. = 2.8 NTU	Objective met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	7 - 9m: 0.5 - 1.4 NTU max. inc. = 0.4 NTU	Objective met
	E207820 100 m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	13 - 15m: 0.3 - 2.0 NTU max. inc. = 1.7 NTU	Objective met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	18 - 21m: 0.6 - 1.3 NTU max. inc. = 0.6 NTU	Objective met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14m: 0.9 - 3.8 NTU max. inc. = 3.5 NTU	Objective met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13m: 0.5 - 1.8 NTU max. inc. = 1.0 NTU	Objective met
	E207813 100m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9m: 0.5 - 2.5 NTU max. inc. = 1.7 NTU	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	6 - 11m: 0.3 - 2.9 NTU max. inc. = 2.2 NTU	Objective met
	0300076 English Bay	Aug. 31 - Sep. 28	5	16 - 19m: 0.4 - 1.6 NTU max. inc. = 0.5 NTU	Objective met
Cl2-Produced Oxidants  3 ug/L av	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	5	5 - 8m: 0.7 - 1.8 NTU max. inc. = 1.5 NTU	Objective met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9m: 0.9 - 2.3 NTU max. inc. = 1.2 NTU	Objective met
	Port Moody Arm: E207698 50 m E Pacific Coast	Sep 1 - Sep 30	5	58.4 - 157.6 ug/L av = 107.2 ug/L	Objective not met
	E207823 100 m off loco disch.	Sep 1 - Sep 30	5	40.4 - 163.1 ug/L av = 112.2 ug/L	Objective not met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Cl <sub>2</sub> -Produced Oxidants  3 ug/L av	2nd Narrows-Roche Pt.: E207822 50m off Shellburn disch.	Sep 1 - Sep 30	5	59.5 - 156.4 ug/L av = 107.6 ug/L	Objective not met
	E207821 50m off Chevron disch.	Sep 1 - Sep 30	5	76.0 - 157.2 ug/L av = 121.1 ug/L	Objective not met
	E207820 100 m S Can-Occ. disch.	Sep 1 - Sep 30	5	72.0 - 156.4 ug/L av = 119.6 ug/L	Objective not met
Ammonia-N  <1.0 mg/L av 2.5 mg/L max.	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 28	5	11 - 17m 0.039 - 0.1 mg/L av = 0.069 mg/L	Objectives met
	E207823 100 m off loco disch.	Aug. 31 - Sep. 28	5	10 - 14 m 0.072 - 0.117 mg/L av = 0.092 mg/L	Objectives met
	2nd Narrows-Roche Pt.: E207822 50m off Shellburn disch.	Aug. 31 - Sep. 28	5	15 - 21 m <0.005 - 0.029 mg/L av = 0.012 mg/L	Objectives met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	7 - 9 m <0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
	E207820 100 m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	13 - 15 m <0.005 - 0.006 mg/L av = 0.005 mg/L	Objectives met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	18 - 21 m <0.005 - 0.014 mg/L av = 0.007 mg/L	Objectives met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14 m <0.005 - 0.056 mg/L av = 0.022 mg/L	Objectives met
	E207816 100-500 m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13 m <0.005 - 0.023 mg/L av = 0.01 mg/L	Objectives met
	E207813 100 m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m <0.005 - 0.045 mg/L av = 0.032 mg/L	Objectives met
	False Creek: E207814 100 m E Science World	Aug. 31 - Sep. 28	5	5 - 8 m 0.049 - 0.114 mg/L av = 0.079 mg/L	Objectives met
Dissolved Oxygen  6.5 mg/L min.	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9 m 0.009 - 0.057 mg/L av = 0.027 mg/L	Objectives met
	Indian Arm: 0300008 3 km E of Deep Cove	Aug. 31 - Sep. 28	5	26 - 36 m: 7.2 - 7.6 mg/L	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	9.3 - 11.1 m: 7.8 - 8.8 mg/L	Objective met
	0300076 English Bay	Aug. 31 - Sep. 28	5	17.9 - 19.6 m 7.0 - 7.8 mg/L	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen  6.5 mg/L min.	False Creek: E207814 100m E Science World	Aug. 31, Sep. 8	2	7.3m: 6.5 - 7.0 mg/L	Objective met
		Sep. 14 - Sep. 28	3	6.7 - 9m: 6.0 - 6.4 mg/L	Obj. not met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	7.2 - 9.2 m: 7.0 - 7.8 mg/L	Objective met
	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 28	4	12.9 - 17.5 m: 7.0 - 8.2 mg/L	Objective met
		Sep. 20	1	16.1 m : 6.4 mg/L	Obj. not met
	E216033 centre	Aug. 31 - Sep. 28	5	17.2 - 18.5 m: 6.6 - 7.6 mg/L	Objective met
	E207823 100 m off loco discharge	Aug. 31 - Sep. 28	4	11.2 - 13.9m: 6.8 - 8.1 mg/L	Objective met
		Sep. 20	1	14.4m: 6.2 mg/L	Obj. not met
	2nd Narrows-Roche Pt.: E207822 50m off Shellburn disch.	Aug. 31 - Sep. 28	5	16.9 - 21.3 m: 7.2 - 8.4 mg/L	Objective met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	8.1 - 9.4 m: 7.3 - 8.6 mg/L	Objective met
	E207820 100 m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	14.2 - 15.6 m: 6.8 - 8.2 mg/L	Objective met
	1st-2nd Narrows: E216036 50m of Dow Chem Terminal	Aug. 31 - Sep. 28	5	6.6 - 7.4 m: 7.0 - 8.2 mg/L	Objective met
	E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	19.3 - 21.6 m: 6.9 - 8.2 mg/L	Objective met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	11.0 - 14.3 m: 7.2 - 8.0 mg/L	Objective met
	E207816 100-500 m E Vn Wharves	Aug. 31 - Sep. 28	5	11.1 - 13.6 m: 7.6 - 8.3 mg/L	Objective met
	E216035 Coal Harbour Marina	Aug. 31 - Sep. 28	5	6.6 - 8.6 m: 7.2 - 8.2 mg/L	Objective met
	E207813 100 m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	7.2 - 9.6 m: 7.0 - 8.2 mg/L	Objective met
WAD - CN  0.001 mg/L max	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 28	5	11 - 17 m all < 0.001 mg/L	Objective met
	E207823 100 m off loco disch.	Aug. 31 - Sep. 28	5	10 - 14 m all <0.001 mg/L	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
H2S 0.002 mg/L max	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Indefinite result
	E207823 100 m off loco disch.	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Indefinite result
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Indefinite result
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Indefinite result
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Indefinite result
	E207813 100m off Coal Harbaour CSO	Aug. 31- Sep. 28	5	all < 0.5 mg/L	Indefinite result
pH 6.5 - 8.5	2nd Narrows-Roche Pt.: E207822 50 m off Shellburn disch.	Sep. 20, 28	2	16 - 18 m: 7.8 - 7.9	Objective met
	E207821 50 m off Chevron disch	Sep. 20, 28	2	7 - 8 m: 7.8 - 8.0	Objective met
	E207820 100 m S Can-Occ. disch	Sep. 20, 28	2	13 - 14 m: 7.8 - 8.0	Objective met
Total As 0.010 mg/L max	2nd Narrows-Roche Pt.: E207822 50 m off Shellburn disch.	Aug. 31, Sep. 8	2	17-21m: all <0.2 mg/L	Indefinite result
		Sep. 14,20,28	3	15-18m: all <0.0005 mg/L	Objective met
	E207821 50 m off Chevron disch.	Aug. 31, Sep. 8	2	7-9m: all <0.2 mg/L	Indefinite result
		Sep. 14,20,28	3	7-9m: all <0.0005 mg/L	Objective met
	E207820 100 m S Can-Occ. disch.	Aug. 31, Sep. 8	2	13-14m: all< 0.2 mg/L	Indefinite result
		Sep. 14,20,28	3	13-15m: all <0.0005 mg/L	Objective met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31, Sep. 8	2	18-20m: all < 0.2 mg/L	Indefinite result
		Sep. 14,20,28	3	18-21m: all< 0.0005mg/L	Objective met
	E207818 off Clark Drive CSO	Aug. 31, Sep. 8	2	10-11m: all < 0.2 mg/L	Indefinite result
		Sep. 14,20,28	3	10-14m: all< 0.0005 mg/L	Objective met
	E207816 100-500m E Vn Wharves	Aug. 31, Sep. 8	2	10-13m: all < 0.2 mg/L	Indefinite result

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total As 0.010 mg/L max	1st-2nd Narrows: 100-500m E Vn Wharves	Sep. 14,20,28	3	10-12m: all < 0.0005 mg/L	Objective met
	E207813 100m off Coal Harbour CSO	Aug. 31, Sep. 8	2	6-7m: all < 0.2 mg/L	Indefinite result
		Sep. 14,20,28	3	6-9m: all < 0.0005 mg/L	Objective met
Total As <20 ug/g av in sediment (long term)	Port Moody Arm E207823 100m off Ioco disch.	Nov. 5	1	23 ug/g	Objective not met
	1st-2nd Narrows: E207816 100-500m E Vn Wharves	Nov. 5	1	<25 ug/g	Indefinite result
	E207813 100 m off Coal Harbour CSO	Nov. 5	1	<25 ug/g	Indefinite result
	E207821 50m off Chevron disch.	Nov. 5	1	<10 ug/g	Objective met
	False Creek: E207814 100m E Science World	Nov. 5	1	18 ug/g	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	12 ug/g	Objective met
Total Ba 0.5 mg/L max.	2nd Narrows-Roche Pt.: E207822 50m E of Shellburn disch	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Objective met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Objective met
	E207820 100m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	all < 0.5 mg/L	Objective met
Total Cd <0.009 mg/L av 0.043 mg/L max.	Indian Arm: 0300080 3 km E of Deep Cove	Aug. 31 - Sep. 28	5	25 - 30 m <0.0005 - 0.001 mg/L av = 0.0007 mg/L	Objectives met
	Port Moody Arm: E207698 50m E Pacific Coast	Aug. 31 - Sep. 28	5	11 - 17 m all < 0.0005 mg/L	Objectives met
	E207823 100m off Ioco disch.	Aug. 31 - Sep. 28	5	10 - 14 m all < 0.0005 mg/L	Objectives met
	2nd Narrows-Roche Pt.: E207822 50m off Shellburn disch.	Aug. 31 - Sep. 28	5	15 - 21 m all < 0.0005 mg/L	Objectives met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	7 - 9 m all < 0.0005 mg/L	Objectives met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cd  <0.009 mg/L av. 0.043 mg/L max.	2nd Narrows-Roche Pt.: E207820 100m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	13 - 15 m all < 0.0005 - 0.0081 mg/L av = 0.0024 mg/L	Objectives met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	18 - 21 m all < 0.0005 mg/L	Objectives met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14 m all < 0.0005 mg/L	Objectives met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13 m all < 0.0005 mg/L	Objectives met
	E207813 100m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m all < 0.0005 mg/L	Objectives met
	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	5	6 - 8 m all < 0.0005 mg/L	Objectives met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9 m all < 0.0005 mg/L	Objectives met
Total Cd  <1.0 ug/g av. in sediment (long term)	Port Moody Arm: E207823 100m off loco disch.	Nov. 5	1	2 ug/g	Objective not met
	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	< 1.0 ug/g	Objective met
	E207816 100-500m E Vn Wharves	Nov. 5	1	5.0 ug/g	Objective not met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	2.0 ug/g	Objective not met
	False Creek: E207814 100m E Science World	Nov. 5	1	2 ug/g	Objective not met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	<1 ug/g	Objective met
Total Cr  0.050 mg/L max	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 20	4	11 - 17 m all < 0.005 mg/L	Objective met
	E207823 100 m off loco discharge	Aug. 31 - Sep. 20	4	10 - 14 m all < 0.005 mg/L	Objective met
	2nd Narrows-Roche Pt.: E207822 50m off Shelburn disch	Aug. 31 - Sep. 20	4	15 - 21 m: all < 0.005 mg/L	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cr  0.050 mg/L max	2nd Narrows-Roche Pt.: E207821 50m off Chevron disch.	Aug. 31 - Sep. 20	4	7 - 9 m: all < 0.005 mg/L	Objective met
	E207820 100m S Can-Occ. disch.	Aug. 31 - Sep. 20	4	13 - 15 m: all < 0.005 mg/L	Objective met
	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 20	4	5 - 8 m: all < 0.005 mg/L	Objective met
	E207815 at mid-point	Aug. 31 - Sep. 20	4	6 - 9 m: all < 0.005 mg/L	Objective met
Total Cr  <60 ug/g av in sediment (long term)	Port Moody Arm: E207823 100m off loco disch.	Nov. 5	1	35 ug/g	Objective met
	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	15 ug/g	Objective met
	E207816 100-500m E Vn Wharves	Nov. 5	1	16 ug/g	Objective met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	16 ug/g	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	32 ug/g	Objective met
	False Creek: E207814 100m E Science World	Nov. 5	1	39 ug/g	Objective met
Total Cu  <2 ug/L av. 3 ug/L max. (long term)	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 28	5	11-17m: <1 - 3 ug/L av = 2 ug/L	Objectives met
	E207823 100m off loco disch	Aug. 31 - Sep. 28 Aug 31 - Sep 8 Sep 14 - Sep 28	5 2 3	10-13m: av = 2 ug/L 11-13m: 4 ug/L 10-13m: <1 - 1 ug/L	Av obj. met Max not met Max obj. met
	Indian Arm: 0300080 3 km E of Deep Cove	Aug. 31 - Sep. 28 Sep. 8 Aug 31 - Sep 28	5 1 4	25 - 35 m: av = 2ug/L 30m: 5 ug/L 25-35m: <1 - 3 ug/L	Av obj. met Max not met Max obj. met
	2nd Narrows-Roche Pt.: E207822 50m off Shelburn disch.	Aug. 31 - Sep. 28 Aug. 31 Sep 8 - Sep 28	5 1 4	16-20m: av = 3 ug/L 20m: 7 ug/L 16-17m: <1 - 3 ug/L	Av not met Max not met Max obj. met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28 Aug 31 - Sep 8 Sep 14 - Sep 28	5 2 3	7-8m: av = 2 ug/L 7-8m: 4 ug/L 7-8m: all <1 ug/L	Av obj. met Max not met Max obj. met
	E207820 100m S Can-Occ. disch	Aug. 31 - Sep. 28 Aug 31 - Sep 8 Sep 14 - Sep 28	5 2 3	13-15 m: av = 3 ug/L 13m: 5 - 6 ug/L 13-15m: all <1 ug/L	Av not met Max not met Max obj. met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu  <2 ug/L av 3 ug/L max. (long term)	1st-2nd Narrows: E207819 mid-harbour (L-K bank)	Aug. 31 - Sep. 28	5	18 - 21 m: <1 - 2 ug/L av = 1 ug/L	Objectives met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28 Sep. 14 Aug 31 - Sep 28	5 1 4	10 - 13 m: av = 3 ug/L 13m: 6 ug/L 10-13m: <1 - 3 ug/L	Av not met Max not met Max obj. met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28 Sep. 8 Aug 31 - Sep 28	5 1 4	10 - 13 m: av = 3 ug/L 13m: 11 ug/L 10-12m: <1 - 2 ug/L	Av not met Max not met Max obj. met
	E207813 100 m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m: <1 - 3 ug/L av = 2 ug/L	Objectives met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	8 - 11m: < 1 - 3 ug/L av = 2 ug/L	Objectives met
	0300076 English Bay	Aug. 31 - Sep. 28	5	16 - 19 m: <1 - 2 ug/L av = 1 ug/L	Objectives met
	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28 Aug 31 - Sep 8 Sep 14 - Sep 28	5 2 3	6-8m: av = 3 ug/L 6m: 6 ug/L 6-8m: all <1 ug/L	Av not met Max not met Max obj. met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9 m: <1 - 3 ug/L av = 2 ug/L	Objectives met
Total Cu  <100 ug/g av in sediment	Port Moody Arm: E207823 100m off loco disch.	Nov. 5	1	116 ug/g	Objective not met
Total Cu  <100 ug/g av in sediment (long term)	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	125 ug/g	Objective not met
	E207816 100-500m E Vn Wharves	Nov. 5	1	1950 ug/g	Objective not met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	238 ug/g	Objective not met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	36 ug/g	Objective met
	False Creek: E207814 100m E Science World	Nov. 5	1	141 ug/g	Objective not met
Total Fe  0.3 mg/L max (long term)	Port Moody Arm: E207698 50m E Pacific Coast	Aug. 31 - Sep. 20	4	11 - 16 m: 0.043 - 0.294 mg/L	Objective met
	E207823 100m off loco disch.	Aug. 31 - Sep. 28	5	10 - 14 m: 0.035 - 0.294 mg/L	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Fe 0.3 mg/L max (long term)	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	3	6 - 8 m: 0.036 - 0.147 mg/L	Objective met
		Sep 8 - Sep 14	2	6-8m: 0.320-0.340 mg/L	Obj. not met
	E207815 at mid-point	Aug. 31 - Sep. 28	4	6 - 8 m: 0.038 - 0.196 mg/L	Objective met
		Sep. 8	1	6m: 0.391 mg/L	Obj. not met
Total Fe 0.3 mg/L max	Indian Arm: 0300080 3 km E Deep Cove	Aug. 31 - Sep. 28	5	25 - 35 m: 0.016 - 0.196 mg/L	Objective met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	18 - 21 m: 0.029 - 0.196 mg/L	Objective met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14 m: 0.062 - 0.245 mg/L	Objective met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13 m: 0.018 - 0.196 mg/L	Objective met
	E207813 100m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m: 0.025 - 0.294 mg/L	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	8 - 11 m: 0.026 - 0.196 mg/L	Objective met
	0300076 English Bay	Aug. 31 - Sep. 28	4	17 - 19 m: 0.025 - 0.147 mg/L	Objective met
		Sep. 8	1	17m: 0.342 mg/L	Obj. not met
Total Pb < 2 ug/L av (long term) 140 ug/L max	Port Moody Arm: E207698 50 m E Pacific Coast	Aug. 31 - Sep. 28	5	11 - 17 m: < 1 - 9 ug/L av = 3 ug/L	Max. obj. met Av not met
	E207823 100m off loco disch.	Aug. 31 - Sep. 28	5	10 - 14 m: all < 1 ug/L	Objectives met
	Indian Arm: 0300080 3 km E Deep Cove	Aug. 31 - Sep. 28	5	25 - 35 m: <1 - 3 ug/L av = 1 ug/L	Objectives met
	2nd Narrows-Roche Pt.: E207822 50m off Shelburn disch.	Aug. 31 - Sep. 28	5	15 - 21 m: < 1 - 3 ug/L av = 2 ug/L	Objectives met
	E207821 50m off Chevron disch	Aug. 31 - Sep. 28	5	7 - 9 m: <1 - 93 ug/L av = 21 ug/L	Max. obj. met Av not met
	E207820 100m S Can-Occ. disch	Aug. 31 - Sep. 28	5	13 - 15 m: < 1 - 12 ug/L av = 6 ug/L	Max. obj. met Av not met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb  < 2 ug/L av (long term)  140 ug/L max	1st-2nd Narrows: E207819 mid-harbour (L-K bank)	Aug. 31 - Sep. 28	5	18 - 21 m: <1 - 1 ug/L av < 1 ug/L	Objectives met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14 m: < 1 - 18 ug/L av = 5 ug/L	Max. obj. met Av. not met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13 m: <1 - 9 ug/L av = 4 ug/L	Max. obj. met Av. not met
	E207813 100m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m: <1 - 9 ug/L av = 3 ug/L	Max. obj. met Av. not met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	8 - 11 m: <1 - 7 ug/L av = 2 ug/L	Objectives met
	0300076 English Bay	Aug. 31 - Sep. 28	5	16 - 19 m: <1 - 14 ug/L av = 4 ug/L	Max. obj. met Av not met
	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	5	5 - 8 m: <1 - 9 ug/L av = 3 ug/L	Max. obj. met Av. not met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9 m: <1 - 50 ug/L av = 12 ug/L	Max. obj. met Av. not met
	Total Pb  <30 ug/g av in sediment (long term)	Port Moody Arm: E207823 100m off loco disch.	Nov. 5	77 ug/g	Objective not met
<30 ug/g av in sediment (long term)	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	66 ug/g	Objective not met
	E207816 100-500m E Vn Wharves	Nov. 5	1	165 ug/g	Objective not met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	82 ug/g	Objective not met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	12 ug/g	Objective met
	False Creek: E207814 100m E Science World	Nov. 5	1	129 ug/g	Objective not met
	Total Pb  0.8 ug/g max wet weight in fish tissue	Port Moody Arm: E207823 100m off loco disch.	Nov. 9	5 all < 0.3 ug/g (English sole)	Objective met
	Indian Arm: 0300080 3 km E Deep Cove	Nov. 9	5	all < 0.3 ug/g (English sole)	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb  0.8 ug/g max wet weight in fish tissue	2nd Narrows-Roche Pt: E207821 50m off Chevron disch	Nov. 10	5	all < 0.3 ug/g (English sole)	Objective met
	1st-2nd Narrows: E207819 mid-harbour (L-K bank)	Nov. 10	5	all < 0.3 ug/g (English sole)	Objective met
	False Creek: E207814 100m E Science World	Nov 11 - Nov 12	4	all < 0.3 ug/g (English sole)	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 11	5	all < 0.3 ug/g (English sole)	Objective met
Total Hg  <0.02 ug/L av 2.0 ug/L max	2nd Narrows-Roche Pt: 1st-2nd Narrows: False Creek:	1994	0	no data collected	Omitted 1994
Total Hg  <0.15 ug/g av Sediment	Port Moody Arm: 2nd Narrows-Roche Pt:	1994	0	no data collected	Omitted 1994
Total Hg  <0.15 ug/g av Sed. (long-term)	1st-2nd Narrows: Outer Burrard: False Creek:	1994	0	no data collected	Omitted 1994
Total Hg  0.5 ug/g max wet weight in fish tissue	2nd Narrows-Roche Pt: E207821 50m off Chevron disch	Nov. 10	5	0.043 - 0.079 ug/g	Objective met
	1st-2nd Narrows: E207819 mid-harbour (L-K bank)	Nov. 10	5	0.032 - 0.050 ug/g	Objective met
	False Creek: E207814 100m E Science World	Nov. 9 - Nov. 12	5	0.045 - 0.149 ug/g	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 11	5	0.024 - 0.039 ug/g	Objective met
Total Ni  < 8 ug/L av. 75 ug/L max.	2nd Narrows-Roche Pt.: E207822 50m off Shelburn disch.	Aug. 31 - Sep. 28	5	15 - 21 m: all < 10 ug/L	Objectives met
	E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	7 - 9 m: all < 10 ug/L	Objectives met
	E207820 100m S Can-Occ. disch	Aug. 31 - Sep. 28	5	13 - 15 m: all < 10 ug/L	Objectives met
	1st-2nd Narrows: E207819 mid-harbour(L-K bank)	Aug. 31 - Sep.28	5	18 - 21 m: all < 10 ug/L	Objectives met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Ni  < 8 ug/L av. 75 ug/L max.	1st-2nd Narrows: E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14 m: <10 - 10 ug/L av < 10 ug/L	Objectives met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13 m: all < 10 ug/L	Objectives met
	E207813 100m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m: all < 10 ug/L	Objectives met
	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	5	5 - 8 m: all < 10 ug/L	Objectives met
	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9 m: all < 10 ug/L	Objectives met
Total Ni  < 45 ug/g av in sediment	Port Moody Arm: E207823 100m off loco disch.	Nov. 5	1	34 ug/g	Objective met
	2nd Narrows-Roche Pt: E207821 50m off Chevron disch.	Nov. 5	1	13 ug/g	Objective met
	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	19 ug/g	Objective met
	E207816 100-500m E Vn Wharves	Nov. 5	1	46 ug/g	Objective not met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	35 ug/g	Objective met
	Outer Burrard: E207812 off Locarno Pk CSO	Nov. 5	1	37 ug/g	Objective met
	False Creek: E207814 100m E Science World	Nov. 5	1	33 ug/g	Objective met
Total Zn  < 86 ug/L av 95 ug/L max	Port Moody Arm: E207698 50m E Pacific Coast	Aug. 31 - Sep. 28	5	11 - 17 m: 6 - 30 ug/L av = 14 ug/L	Objectives met
	E207823 100m off loco disch	Aug. 31 - Sep. 28	5	10 - 14 m: < 5 -13 ug/L av = 10 ug/L	Objectives met
	Indian Arm: 0300080 3 km E of Deep Cove	Aug. 31 - Sep. 28	5	25 - 35 m: < 5 - 16 ug/L av = 9 ug/L	Objectives met
	2nd Narrows-Roche Pt.: E207822 50m off Shelburn disch.	Aug. 31 - Sep. 28	5	15 - 21 m: < 5 - 23 ug/L av = 10 ug/L	Objectives met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn  < 86 ug/L av 95 ug/L max	2nd Narrows-Roche Pt.: E207821 50m off Chevron disch.	Aug. 31 - Sep. 28	5	7 - 9 m: 8 - 13 ug/L av = 11 ug/L	Objectives met
	E207820 100m S Can-Occ. disch.	Aug. 31 - Sep. 28	5	13 - 15 m: < 5 - 32 ug/L av = 14 ug/L	Objectives met
	1st-2nd Narrows: E216036 50m off Dow Chem Terminal	Aug 31 - Sep 28	5	6 - 7 m: 6 - 12 ug/L av = 9 ug/L	Objectives met
	E207819 mid-harbour(L-K bank)	Aug. 31 - Sep. 28	5	18 - 21 m: < 5 - 12 ug/L av = 7 ug/L	Objectives met
	E207818 off Clark Drive CSO	Aug. 31 - Sep. 28	5	10 - 14 m: 7 - 15 ug/L av = 11 ug/L	Objectives met
	E207816 100-500m E Vn Wharves	Aug. 31 - Sep. 28	5	10 - 13 m: < 5 - 17 ug/L av = 9 ug/L	Objectives met
	E207813 100m off Coal Harbour CSO	Aug. 31 - Sep. 28	5	6 - 9 m: < 5 - 18 ug/L av = 5 ug/L	Objectives met
	Outer Burrard: E207812 off Locarno Park CSO	Aug. 31 - Sep. 28	5	8 - 11 m: 6 - 12 ug/L av = 8 ug/L	Objectives met
	0300076 English Bay	Aug. 31 - Sep. 28	5	16 - 19 m: 6 - 32 ug/L av = 13 ug/L	Objectives met
	False Creek: E207814 100m E Science World	Aug. 31 - Sep. 28	5	5 - 8 m: 7 - 15 ug/L av = 11 ug/L	Objectives met
Total Zn  < 150 ug/g av in sediment (long term)	E207815 at mid-point	Aug. 31 - Sep. 28	5	6 - 9 m : < 5 - 14 ug/L av = 8 ug/L	Objectives met
	Port Moody Arm E207823 100m off loco disch.	Nov. 5	1	189 ug/g	Objective not met
	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	147 ug/g	Objective met
	E207816 100-500m E Vn Wharves	Nov. 5	1	1120 ug/L	Objective not met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	181 ug/g	Objective not met
	Outer Burrard E207812 off Locarno Pk CSO	Nov. 5	1	81 ug/g	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn < 150 ug/g av in sed. (long term)	False Creek E207814 100m E Science World	Nov. 5	1	333 ug/g	Objective not met
Chlorophenols (tri + tetra + penta) <0.2 ug/L max	1st-2nd Narrows: E216036 50m off Dow Chem Terminal	Aug 31 - Sep 28	5	6 - 7 m: <0.1 ug/L for each homologue	Objective met
Chlorophenols (tri + tetra + penta) <0.1 ug/g max in sediment	1st-2nd Narrows: E216036 50m off Dow Chem Terminal	Nov. 5	1	< 0.005 ug/g for each homologue	Objective met
Chlorophenols (tri + tetra + penta) 0.1 ug/g max wet weight in fish	1st-2nd Narrows: E216036 50m off Dow Chem Terminal	Nov. 10	5	<0.01 ug/g each homologue (English sole)	Objective met
PCBs <0.03 ug/g av in sediment	Port Moody Arm E207823 100m off loco disch.	Nov. 5	1	<0.02 ug/g	Objective met
	2nd Narrows-Roche Pt.: E207821 50m off Chevron disch.	Nov. 5	1	<0.02 ug/g	Objective met
	1st-2nd Narrows: E207818 off Clark Drive CSO	Nov. 5	1	< 0.02 ug/g	Objective met
	E207816 100-500m E Vn Wharves	Nov. 5	1	< 0.02 ug/g	Objective met
	E207813 100m off Coal Harbour CSO	Nov. 5	1	0.11 ug/g	Objective not met
	Outer Burrard E207812 off Locarno Pk CSO	Nov. 5	1	<0.02 ug/g	Objective met
	False Creek E207814 100m E Science World	Nov. 5	1	0.09 ug/g	Objective not met
PCBs 0.5 ug/g max wet weight in fish tissue	Port Moody Arm: E207823 100 m off loco disch.	Nov. 9	5	< 0.1 - 0.4 ug/g (English sole)	Objective met
	2nd Narrows - Roche Pt : E207821 50 m off Chevron disch.	Nov. 10	5	< 0.1 - 0.1 ug/g (English sole)	Objective met
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 11	5	all <0.1 ug/g (English sole)	Objective met
	False Creek: E207814 100m E Science World	Nov. 9 - Nov. 12	5	< 0.1 - 0.1 ug/g (English sole)	Objective met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
TBT  10 ng/L	1st-2nd Narrows: E216035 Coal Harbour Marina	Sep 8 - Sep 28	4	< 3.2 ng/L	Objective met
	False Creek: E216034 False Creek Marina	Sep 8 - Sep 28	4	< 3.7 ng/L	Objective met
Ethylene Dichloride < 0.2 mg/L av 2.0 mg/L max	1st-2nd Narrows: E216036 50m off Dow Chem Terminal	Aug 31 - Sep 28	5	6 - 7 m: all < 0.0004 mg/L	Objectives met
Phenols  1 ug/L max	Port Moody Arm: E207698 50m E Pacific Coast	Aug. 31 - Sep. 8 Sep. 14 - Sep. 28	2 3	11 - 17 m: < 2 ug/L 2 - 4 ug/L	Indef. result Obj. not met
	E207823 100m off loco disch	Aug 31, Sep 20, 28 Sep. 8, 14	3 2	10 - 14 m: < 2 ug/L 3 - 5 ug/L	Indef. result Obj. not met
	2nd Narrows-Roche Pt.: E207822 50m off Shelburn disch.	Sep. 8, 20, 28 Aug 31, Sep 14	3 2	15 - 21 m: < 2 ug/L 3 - 4 ug/L	Indef. result Obj. not met
	E207821 50m off Chevron disch	Aug. 31 - Sep. 28	5	7 - 9 m: all < 2 ug/L	Indefinite result
	E207820 100 m S Can-Occ. disch	Sep 8 - Sep 14 Aug 31, Sep 20, 28	2 3	13 - 15 m: < 2 ug/L 2 - 6 ug/L	Indef. result Obj. not met
Styrene  50 ug/L max	Port Moody Arm: E207698 50 m E Pacific Coast	Aug 31 - Sep 28	5	11.9 - 16.5 m: all < 0.4 ug/L	Objective met
	E207823 100 m off loco disch.	Aug 31 - Sep 28	5	10.2 - 13.4 m: all < 0.4 ug/L	Objective met
L-PAH in sediment (max)  naphthy 0.20 ug/g acenphyl 0.06 ug/g acenaphe 0.05 ug/g fluor 0.05 ug/g phenant 0.15 ug/g anthrac 0.10 ug/g total 0.5 ug/g	Port Moody Arm: E207823 100 m off loco disch.	Nov. 5	1 1 1 1 1 1 1	naphthy 0.047 ug/g acenphyl 0.036 ug/g acenaphe 0.033 ug/g fluor 0.067 ug/g phenant 0.64 ug/g anthrac 0.24 ug/g total 1.1 ug/g	Obj. met Obj. met Obj. met Obj. not met Obj. not met Obj. not met Obj. not met
	2nd Narrows-Roche Pt.: E207821 50m off Chevron disch	Nov. 5	1 1 1 1 1 1 1	naphthy 0.007 ug/g acenphyl 0.011 ug/g acenaphe 0.012 ug/g fluor 0.021 ug/g phenant 0.16 ug/g anthrac 0.043 ug/g total 0.25 ug/g	Obj. met Obj. met Obj. met Obj. met Obj. not met Obj. met Obj. met

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION		
	SITE	DATE	n	VALUE			
L-PAH in sediment (max)  naphthy 0.20 ug/g acenphyl 0.06 ug/g acenaphe 0.05 ug/g fluor 0.05 ug/g phenant 0.15 ug/g anthrac 0.10 ug/g total 0.5 ug/g	False Creek: E207814 100m E Science World	Nov. 5	1	naphthy 0.079 ug/g	Obj. met		
			1	acenphyl 0.075 ug/g	Obj. not met		
			1	acenaphe 0.021 ug/g	Obj. met		
			1	fluor 0.039 ug/g	Obj. met		
			1	phenant 0.22 ug/g	Obj. not met		
	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	anthrac 0.13 ug/g	Obj. not met		
			1	total 0.56 ug/g	Obj. not met		
			1	naphthy 0.025 ug/g	Obj. met		
			1	acenphyl 0.011 ug/g	Obj. met		
			1	acenaphe 0.064 ug/g	Obj. not met		
H-PAH in sediment (max)  fluorant 0.17 ug/g pyrene 0.26 ug/g bz-a-an 0.13 ug/g chrysene 0.14 ug/g bz-a-fl 0.32 ug/g bz-a-py 0.16 ug/g ind-pyr 0.06 ug/g dibz-an 0.06 ug/g bz-pery 0.07 ug/g total 1.2 ug/g	Port Moody Arm: E207823 100 m off loco disch.  2nd Narrows-Roche Pt.: E207821 50m off Chevron disch	Nov. 5	1	fluorant 3.6 ug/g	Obj. not met		
			1	pyrene 2.7 ug/g	Obj. not met		
			1	bz-a-an 1.0 ug/g	Obj. not met		
			1	chrysene 1.2 ug/g	Obj. not met		
			1	bz-a-fl 0.70 ug/g	Obj. not met		
			1	bz-a-py 0.55 ug/g	Obj. not met		
			1	ind-pyr 0.22 ug/g	Obj. not met		
			1	dibz-an 0.047 ug/g	Obj. met		
			1	bz-pery 0.17 ug/g	Obj. not met		
			1	total 10 ug/g	Obj. not met		
False Creek: E207814 100m E Science World			1	fluorant 0.24 ug/g	Obj. not met		
			1	pyrene 0.25 ug/g	Obj. met		
			1	bz-a-an 0.11 ug/g	Obj. met		
			1	chrysene 0.081 ug/g	Obj. met		
			1	bz-a-fl 0.13 ug/g	Obj. met		
			1	bz-a-py 0.17 ug/g	Obj. not met		
			1	ind-pyr 0.076 ug/g	Obj. not met		
			1	dibz-an 0.015 ug/g	Obj. met		
			1	bz-pery 0.057 ug/g	Obj. met		
			1	total 1.1 ug/g	Obj. met		

TABLE 19 continued

## BURRARD INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
H-PAH in sediment (max)	Outer Burrard: E207812 off Locarno Park CSO	Nov. 5	1	fluorant 0.057 ug/g	Obj. met
fluorant 0.17 ug/g			1	pyrene 0.072 ug/g	Obj. met
pyrene 0.26 ug/g			1	bz-a-an 0.037 ug/g	Obj. met
bz-a-an 0.13 ug/g			1	chrysene 0.042 ug/g	Obj. met
chrysene 0.14 ug/g			1	bz-a-fl 0.047 ug/g	Obj. met
bz-a-fl 0.32 ug/g			1	bz-a-py 0.047 ug/g	Obj. met
bz-a-py 0.16 ug/g			1	ind-pyr 0.023 ug/g	Obj. met
ind-pyr 0.06 ug/g			1	dibz-an 0.004 ug/g	Obj. met
dibz-an 0.06 ug/g			1	bz-pery 0.022 ug/g	Obj. met
bz-pery 0.07 ug/g			1	total 0.35 ug/g	Obj. met
total 1.2 ug/g					

TABLE 20

## BURRARD INLET TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  <200/100 mL geometric mean (gm)	Lynn Creek 0300085 2 km from mouth	Aug 3 - Aug 31	6	43 - 220/100 mL gm = 111/100 mL	Objective met
	Capilano River 0300083 near mouth	Aug 3 - Aug 31	4	15 - 47/100 mL	Indefinite result
E. Coli  <77/100 mL geometric mean (gm)	Lynn Creek 0300085 2 km from mouth	Aug 7 - Aug 31	6	27 - 140/100 mL gm = 75/100 mL	Objective met
	Capilano River 0300083 near mouth	Aug 3 - Aug 31	4	13 - 48/100 mL	Indefinite result
Enterococci  <20/100 mL geometric mean (gm)	Lynn Creek 0300085 2 km from mouth	Aug 3 - Aug 31	6	0 - 180/100 mL gm < 20/100 mL	Objective met
	Capilano River 0300083 near mouth	Aug 3 - Aug 31	4	41 - 120/100 mL	Indefinite result
Ammonia-N  <1.82 mg/L av 14.1 mg/L max at pH = 7.4 temp = 12°C	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	0.031 - 0.053 mg/L av = 0.043 mg/L	Objectives met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	< 0.005 - 0.008 mg/L av = 0.006 mg/L	Objectives met
Nitrite-N  < 0.02 mg/L av. 0.06 mg/L max.	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	all < 0.005 mg/L	Objectives met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	<0.005 - 0.005 mg/L av < 0.005 mg/L	Objectives met
Chlorophyll - a  50 mg/m <sup>2</sup> max	Lynn Creek: 0300085 2 km from mouth	Sep. 8	6	9.8 - 32.2 mg/m <sup>2</sup> av = 17.2 mg/m <sup>2</sup>	Objective met
	Capilano River: 0300083 near mouth	Sep. 8	6	0.3 - 99.3 mg/m <sup>2</sup> av = 27.5 mg/m <sup>2</sup>	Objective met
Diss. Oxygen  8 - 11 mg/L min	Lynn Creek: 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	8.2 - 9.2 mg/L	Objective met
	Capilano River: 0300083 near mouth	Aug. 3 - Aug. 31	5	8.3 - 10.4 mg/L	Objective met

TABLE 20 continued

## BURRARD INLET TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Phenols 1 ug/L max.	School House Brook 0301578 d/s Reichold	Aug. 3 - Aug. 30	5	11 - 19 ug/L	Objective not met
	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	10 - 15 ug/L	Objective not met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	5 - 24 ug/L	Objective not met
Temperature max. increase: 1°C	School House Brook: 0301566 u/s Reichold	Aug. 3 - Aug. 30	4	12.0 - 14.0 °C	Control Site
	0301578 d/s Reichold	Aug. 3, 24, 30	3	12.6 - 14.8 °C max. inc. = 0.8 °C	Objective met
		Aug. 10	1	14.6 °C max. inc. = 1.2 °C	Objective not met
pH 6.5 - 9.0	School House Brook 0301578 d/s Reichold	Aug. 3 - Aug. 30	5	7.3 - 7.6	Objective met
Total Cd 0.2 ug/L max.	School House Brook 0301578 d/s Reichold	Aug. 3 - Aug. 30	5	all < 2.0 ug/L	Indefinite result
	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	all < 0.1 ug/L	Objective met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	all < 0.1 ug/L	Objective met
Total Cr 2 ug/L max.	School House Brook 0301578 d/s Reichold	Aug. 3 - Aug. 30	5	all < 2.0 ug/L	Objective met
	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 24 Aug. 31	4 1	all < 2 ug/L 6 ug/L	Objective met Obj. not met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	all < 2.0 ug/L	Objective met
Total Co 50 ug/L max	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	all < 4.0 ug/L	Objective met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	all < 4.0 ug/L	Objective met

TABLE 20 continued

## BURRARD INLET TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu  < 2 ug/L av 3.7 ug/L max (at hard. = 18 mg/L)	School House Brook: 0301578 d/s Reichold	Aug. 3 - Aug. 30	5	all < 2 ug/L	Objectives met
	Lynn Creek: 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	< 2 - 2 ug/L av = < 2 ug/L	Objectives met
	Capilano River: 0300083 near mouth	Aug. 3 - Aug. 31	5	< 2 - 3 ug/L av = 2 ug/L	Objectives met
Total Fe  0.3 mg/L max.	School House Brook 0301578 d/s Reichold	Aug. 3, 24 Aug 10, 17, 30	2 3	0.16 - 0.28 mg/L 0.32 - 0.43 mg/L	Objective met Obj. not met
	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	< 0.05 - 0.11 mg/L	Objective met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	< 0.05 - 0.08 mg/L	Objective met
Total Pb  < 4.8 ug/L av 38 ug/L max (at hard. = 55 mg/L)	School House Brook 0301578 d/s Reichold	Aug. 3 - Aug. 30	5	all < 3 ug/L	Objectives met
	Lynn Creek Capilano River	1994	0	no data collected	Omitted 1994
	Lynn Creek Capilano River	1994	0	no data collected	Omitted 1994
Total Zn  0.015 mg/L max	School House Creek 0301578 d/s Reichold	Aug. 3, 10 Aug 17,24,30	2 3	0.02 mg/L < 0.01 - 0.01 mg/L	Obj. not met Objective met
	Lynn Creek 0300085 2 km from mouth	Aug. 10 Aug 3,17,24, 31	1 4	0.02 mg/L all < 0.01 mg/L	Obj. not met Objective met
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	< 0.01 - 0.11 mg/L	Objective met
Chlorophenols  0.2 ug/L max	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	< 0.1 ug/L for each of tri, tetra, & penta	Objective met
	Capilano River 0300083 near mouth	Aug 3,17,24,31	4	< 0.1 ug/L of tri,tetra & penta	Objective met
		Aug. 10	1	0.5 ug/L of penta	Obj. not met

TABLE 20 continued

## BURRARD INLET TRIBUTARIES WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophenols  0.01 ug/g max. in sediment	Lynn Creek 0300085 2 km from mouth	Sep. 25	3	< 0.005 ug/g for each of tri, tetra, & penta	Objective met
	Capilano River 0300083 near mouth	Sep. 25	3	< 0.005 ug/g for each of tri, tetra, & penta	Objective met
Chlorophenols  0.1 ug/g max. wet wt in fish	Lynn Creek 0300085 2 km from mouth	Oct. 18	5	< 0.1 ug/g for each of tri, tetra, & penta	Objective met
	Capilano River 0300083 near mouth	Sep. 25	5	< 0.1 ug/g for each of tri, tetra, & penta	Objective met
PCBs  1 ng/L max.	Lynn Creek 0300085 2 km from mouth	Aug. 3 - Aug. 31	5	all < 400 ng/L	Indefinite result
	Capilano River 0300083 near mouth	Aug. 3 - Aug. 31	5	all < 400 ng/L	Indefinite result
PCBs  0.03 ug/g max. in sediment	Lynn Creek 0300085 2 km from mouth	Sep. 25	3	all < 0.02 ug/g	Objective met
	Capilano River 0300083 near mouth	Sep. 25	3	all < 0.02 ug/g	Objective met
PCBs  0.1 ug/g max wet wt in fish	Lynn Creek 0300085 2 km from mouth	Oct. 18	5	all < 0.1 ug/g	Objective met
	Capilano River 0300083 near mouth	Sep. 25	5	all < 0.1 ug/g	Objective met

TABLE 21

## PENDER HARBOUR WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Enterococci  <35/100 mL geometric mean (gm)	Pender Harbour: E217043 Hospital Bay Beach	Jul 28 - Aug 23	5	0 - 2/100 mL gm < 1/100 mL	Objective met
	E217042 Garden Bay Beach	Jul 28 - Aug 22	5	0- 1/100 mL gm < 1/100 mL	Objective met
	E217044 Beach S Gunboat Point	Jul 28 - Aug 23	5	0 - 2/100 mL gm < 1/100 mL	Objective met
	E217045 Madeira Park Beach	Jul 28 - Aug 23	5	0 - 6/100 mL gm < 1/100 mL	Objective met
	E217041 Beach E Bargain Narrows	Jul 28 - Aug 22	5	0 - 1/100 mL gm < 1/100 mL	Objective met
Fecal Coliforms  <14/100 mL median (med) <43/100 mL 90th percentile (np)	Bargain Bay: E217035 at centre	Jul 28 - Aug 23	5	0 - 4/100 mL med = 0/100 mL np = 2/100 mL	Objectives met
Ammonia-N  <1.65 mg/L av 10.8 mg/L max  at temp = 17°C pH = 7.9 salinity = 25 ppt	Pender Harbour: E217031 E from Skardon Island	Jul. 28 - Aug. 22	15	<0.005 - 0.053 mg/L av = 0.013 mg/L (0 - 30 m)	Objectives met
	Bargain Bay: E217035 at centre	Jul. 28 - Aug. 23	15	<0.005 - 0.017 mg/L av = 0.007 mg/L	Objectives met
Total Cu  <0.002 mg/L av 0.003 mg/L max	Pender Harbour: E217040 Hospital Bay Dock	Jul. 28 - Aug. 23 Jul. 28 - Aug. 23 Aug. 2	10 9 1	1 - 13m: av = 0.009 mg/L 1-13m:<0.001-0.003mg/L 10m: 0.074 mg/L	Av. not met Max. obj. met Max. not met
	E217036 Madeira Park Wharf	Jul. 28 - Aug. 23 Jul. 28, Aug 2,9 Jul 28,Aug.9,17,23,28	9 3 6	1-13m: av = 0.003 mg/L 1-13m: 0.004 -0.006mg/L 1-11m:<0.001-0.002mg/L	Av. not met Max. not met Max. obj. met
	Pender Harbour: E217040 Hospital Bay Dock	1994	0	no data collected	Objective not checked
Total Cu  100 ug/g max in sediment (av of replicates)	E217036 Madeira Park Wharf	Aug. 23	3	69 - 193 ug/g av = 142 ug/g	Objective not met
	Bargain Bay: E217035 at centre	Aug. 23	3	6 - 11 ug/g av = 8 ug/g	Objective met

TABLE 21 continued

## PENDER HARBOUR WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Zn  0.015 mg/L max  (or as total Zn if low susp. solids)	Pender Harbour: E217040 Hospital Bay Dock	Jul. 28 - Aug. 23 Jul. 28, Aug. 2	8 2	1-13m: all < 0.005 mg/L 9-10m: 0.025-0.081mg/L	Objective met Obj. not met
	E217036 Madeira Park Wharf	Jul.28 - Aug. 23 Aug. 2	8 1	1-11m:<0.005-0.011 mg/L 13m: 0.023mg/L	Objective met Obj. not met
	Bargain Bay: Jul. 28 - Aug. 23 at centre	Jul. 28 - Aug. 23 Aug.2	8 1	1-13m:<0.005-0.009 mg/L 1m: 0.02 mg/L	Objective met Obj. not met
Total Zn  150 ug/g max in sediment (av of replicates)	Pender Harbour: E217040 Hospital Bay Dock	1994	0	no data collected	Objective not checked
	E217036 Madeira Park Wharf	Aug. 23	3	98 - 776 ug/g av = 336 ug/g	Objective not met
	Bargain Bay: E217035 at centre	Aug. 23	3	20 - 27 ug/g av = 30 ug/g	Objective met
Total Pb  <0.002 mg/L av 0.140mg/L max  <0.003 mg/L 20th percentile(tp)	Pender Harbour: E217040 Hospital Bay Dock	Jul. 28 - Aug. 23	10	< 0.001 - 0.053 mg/L av = 0.022 mg/L tp = 0.003 mg/L (1-13m)	Max. obj. met Av. not met tp obj. met
	E217036 Madeira Park Wharf	Jul. 28 - Aug. 23	9	< 0.001 - 0.041 mg/L av = 0.015 mg/L tp = 0.002 mg/L (1-13m)	Max. obj. met Av. not met tp obj. met
	Bargain Bay: E217035 at centre	Jul. 28 - Aug. 23	9	<0.001 - 0.057 mg/L av = 0.019 mg/L tp = 0.001 mg/L (1-13m)	Max. obj. met Av. not met tp obj. met
Total Pb  30 ug/g max in sediment (av of replicates)	Pender Harbour: E207040 Hospital Bay Dock	1994	0	no data collected	Objective not checked
	E217036 Madeira Park Wharf	Aug. 23	3	27 - 59 ug/g av = 39 ug/g	Objective not met
	Bargain Bay: E217035	Aug. 23	3	all < 10 ug/g	Objective met
Total Pb  0.8 ug/g max in tissue (wet weight)	Pender Harbour: E217038 Oyster Bay	Aug. 22	3	all < 10 ug/g (in oysters)	Indefinite result
	Bargain Bay: E217039	Aug. 22	3	all < 10 ug/g (in oysters)	Indefinite result

TABLE 21 continued

## PENDER HARBOUR WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Fe  0.05 mg/L max.	Pender Harbour: E217040 Hospital Bay Dock	Jul. 28 - Aug. 17	8	0.08 - 0.636 mg/L (1-11m)	Objective not met
	E217036 Madeira Park Wharf	Jul. 28 - Aug. 23	9	0.10 - 0.43 mg/L (0.5 - 13 m)	Objective not met
	Bargain Bay: E217035 at centre	Jul. 28 - Aug. 23	8	0.147 - 0.17 mg/L (1-13m)	Objective not met
		Aug. 23	1	0.049 mg/L (1 m)	Objective met
Tributyl Tin  1 ng/L	Pender Harbour: E217040 Hospital Bay Dock	Aug. 23	1	2.3 ng/L (top)	Objective not met
			1	1.4 ng/L (bottom)	Objective not met
	E217036 Madeira Park Wharf	Aug. 23	1	3.8 ng/L (top)	Objective not met
			1	1.6 ng/L (bottom)	Objective met
L-PAH  in sediment (max) naphtha 0.20 ug/g acenphyl 0.06 ug/g acenaphe 0.05 ug/g fluor 0.05 ug/g phenant 0.15 ug/g anthrac 0.10 ug/g total 0.5 ug/g	Bargain Bay: E217035 at centre	Aug. 23	1	0.78 ng/L (top)	Objective met
	Pender Harbour: E217040 Hospital Bay Dock	Aug. 23	3	naphtha: 0.010 ug/g	Obj. met
			3	acenphyl: 0.006 ug/g	Obj. met
		(3 reps)	3	acenaphe: 0.020 ug/g	Obj. met
			3	fluor: 0.021 ug/g	Obj. met
			3	phenant: 0.132 ug/g	Obj. met
			3	anthrac: 0.053 ug/g	Obj. met
			3	total: 0.42 ug/g	Obj. met
H-PAH  in sediment (max) fluorant 0.17ug/g pyrene 0.26 ug/g bz-a-an 0.13 ug/g chrysene 0.14 ug/g bz-bk-fl 0.32 ug/g bz-a-py 0.16 ug/g ind-pyr 0.06 ug/g dibz-an 0.06 ug/g bz-pery 0.07 ug/g total 1.2 ug/g	Pender Harbour: E217040 Hospital Bay Dock	Aug. 23	3	av of 3 replicates	Obj. not met
			3	fluorant: 0.263 ug/g	Obj. met
	(3 reps)		3	pyrene: 0.203 ug/g	Obj. met
			3	bz-a-an: 0.009 ug/g	Obj. not met
			3	chrysene: 0.207 ug/g	Obj. met
			3	bz-bk-fl: 0.257 ug/g	Obj. met
			3	bz-a-py: 0.116 ug/g	Obj. met
			3	ind-pyr: 0.056 ug/g	Obj. met
			3	dibz-an: 0.009 ug/g	Obj. met
			3	bz-pery: 0.049 ug/g	Obj. met
			3	total: 1.7 ug/g	Obj. not met
Dissolved Oxygen  6.75 mg/L min	Pender Harbour: E217031 E from Skardon Island	Jul 28 - Aug 22	65	7.0 - 12.9 mg/L (0.2 - 129 m)	Objective met
		Jul 28 - Aug 22	10	4.0 - 6.5 mg/L (15 - 29 m)	Objective not met
	Bargain Bay: E217035 at centre	Jul 28 - Aug 22	58	6.9 - 12.2 mg/L (0.2 - 15 m)	Objective met
		Aug. 2	1	5.9 mg/L (10 m)	Objective not met

TABLE 22

## SECHELT INLET WATER QUALITY OBJECTIVES - 1994

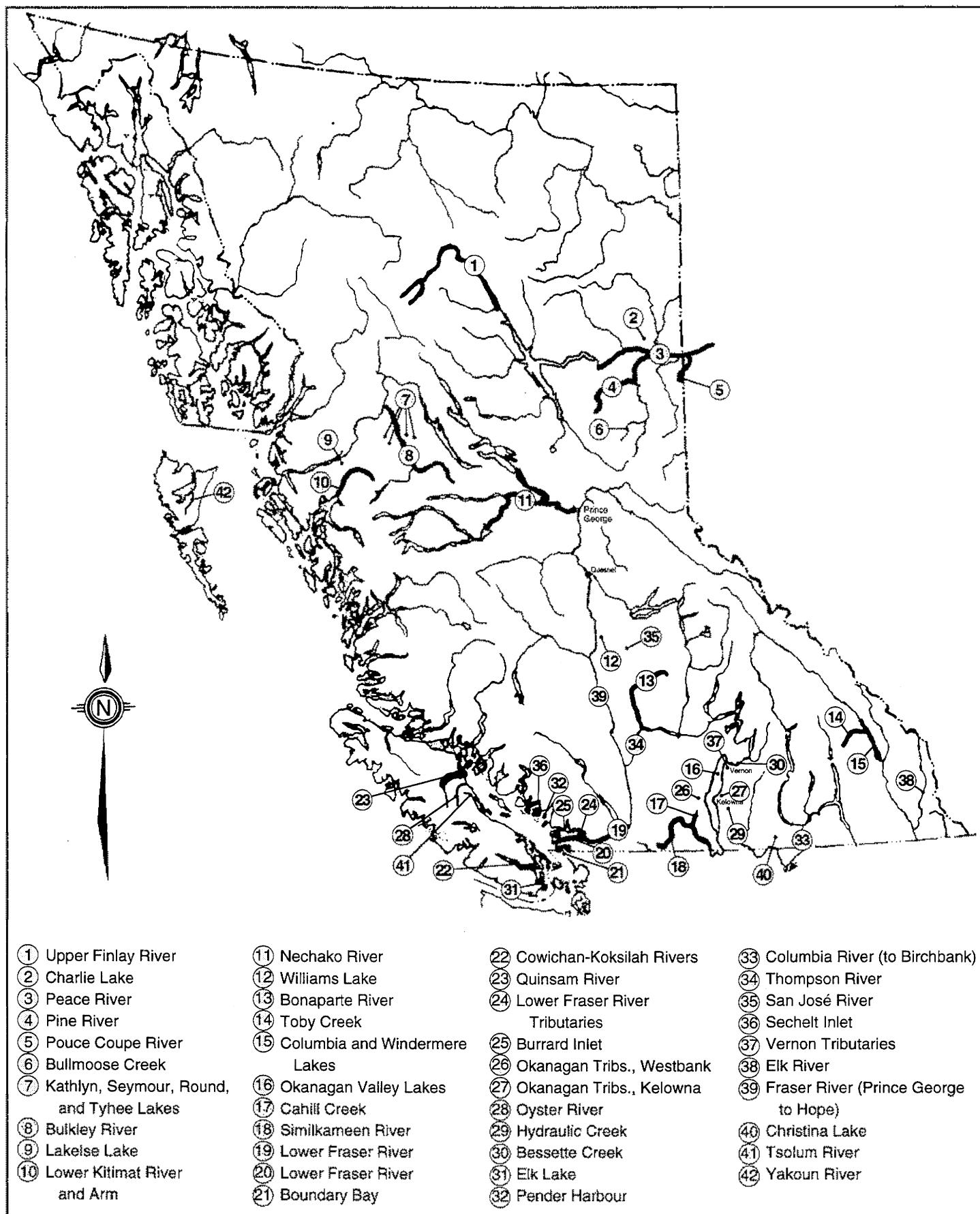
VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms  $\leq 14/100 \text{ mL}$ median (med.) $\leq 43/100 \text{ mL}$ 90th perc.(np)	Sechelt Inlet E218926 mid channel - S Sechelt	Jul 28, Aug 2,9,17,22	15	0 - 2/100 mL med = 0/100 mL np = 0.8/100 mL  (all at 0 m)	Objectives met
Fecal Coliforms  $<200/100 \text{ mL}$ geometric mean (gm)	Porpoise Bay E207599 south-east of Poise Island	Jul 28, Aug 2,9,17,22	14	0 - 2/100 mL gm < 1/100 mL  (all at 0 m)	Objective met
	E218927 50m north west Gov't dock	Jul 28, Aug 2,9,17,22	10	0 - 28/100 mL gm < 4/100 mL  (all at 0 m)	Objective met
	Sechelt Inlet E218926 mid channel - S Sechelt	Jul 28, Aug 2,9,17,22	15	0 - 14/100 mL med = 0/100 mL np = 6.8/100 mL  (all at 0 m)	Objectives met
Enterococci  $\leq 4/100 \text{ mL}$ median (med.) $\leq 11/100 \text{ mL}$ 90th perc. (np)	Porpoise Bay E207599 south-east of Poise Island	Jul 28, Aug 2,9,17,22	15	0 - 2/100 mL gm < 1/100 mL  (all at 0 m)	Objective met
	E218927 50m north west Gov't dock	Jul 28, Aug 2,9,17,22	10	0 - 4/100 mL gm < 1/100 mL  (all at 0 m)	Objective met
	Porpoise Bay	1994	0	no data collected	Omitted 1994
Pseudomonas aeruginosa $<2/100 \text{ mL}$ 75 perc	Porpoise Bay	Jul. 28 - Aug. 22	15	< 0.005 - 0.016 mg/L av = 0.007 mg/L (1 - 30 m)	Objectives met
	E218927 50m north west Gov't dock	Jul. 28 - Aug. 22	10	<0.005 - 0.045 mg/L av = 0.013 mg/L (1-5m)	Objectives met
	Sechelt Inlet E218926 mid channel - S Sechelt	July 28 - Aug. 22	5	< 0.005 - 0.015 mg/L av = 0.007 mg/L (1-30m)	Objectives met
Suspended Solids  $10 \text{ mg/L}$ max. Increase	Sechelt Inlet E218926 mid channel - S Sechelt (control for Porpoise Bay)	Jul. 28 - Aug. 22	15	14 - 56 mg/L (1-30 m)	Indefinite Result (no control)

TABLE 22 continued

## SECHELT INLET WATER QUALITY OBJECTIVES - 1994

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids  10 mg/L max. Increase	Porpoise Bay E207599 south-east of Poise Island	Jul. 28 - Aug. 22	9	13 - 56 mg/L (1 - 30 m) max. inc. = 10 mg/L	Objective met
		Aug. 2, 22	2	18 - 34 mg/L (1 m) inc. = 12 - 17 mg/L	Objective not met
		Jul. 28, Aug. 17	2	38 - 65 mg/L (15 m) inc. = 19 - 39 mg/L	Objective not met
		Aug. 9, 17	2	50 - 200 mg/L (30 m) inc. = 31 - 183 mg/L	Objective not met
	E218927 50m north west Gov't dock	Jul. - Aug. 22	8	12 - 40 mg/L max. inc. = 8 mg/L (1 - 5 m)	Objective met
		Aug. 2	2	all 40 mg/L inc. = 17 - 22 mg/L (1 - 5 m)	Objective not met
	Sechelt Inlet: E218926 mid channel - S Sechelt	Jul 28 - Aug 22	5	7.9 - 11.0 mg/L	Objective met
		Jul 28 - Aug 22	5	8.1 - 11.3 mg/L	Objective met
		Jul 28 - Aug 22	5	7.5 - 10.2 mg/L	Objective met
Dissolved Oxygen  6.75 mg/L min at the surface	Porpoise Bay: E207559 south-east of Poise Island	Jul 28 - Aug 22	5	7.9 - 11.0 mg/L	Objective met
		Jul 28 - Aug 22	5	8.1 - 11.3 mg/L	Objective met
		Jul 28 - Aug 22	5	7.5 - 10.2 mg/L	Objective met
	E218927 50m north west Gov't dock	Jul. 28 - Aug. 22	10	<1 - 3 ug/L av = 1 ug/L (1-5m)	Objectives met
		Jul. 28 - Aug. 22	14	< 1 - 3 ug/L (1 - 30 m)	Max. obj. met
Total Cu  ≤2 ug/L av 3 ug/L max	Sechelt Inlet E218926 mid channel - S Sechelt	Jul. 28	1	7 ug/L ( 15 m)	Max. not met
		Jul. 28 - Aug. 22	15	<1 - 7 ug/L av = 2 ug/L (1 - 30 m)	Av obj. met
		Jul. 28 - Aug. 22	10	5 - 47 ug/L av = 21 ug/L 80th perc. = 41 ug/L (1 - 5 m)	Max. obj. met
		Jul. 28 - Aug. 22	10	5 - 47 ug/L av = 21 ug/L 80th perc. = 41 ug/L (1 - 5 m)	Av. not met
	Porpoise Bay E218927 50m north west Gov't dock	Aug. 22	5	all < 10 ug/g wet weight	Indefinite result
Total Pb  <2 ug/L av 140 ug/L max < 3 ug/L 80th perc.	Porpoise Bay E218927 50m north west Gov't dock	Jul. 28 - Aug. 22	10	5 - 47 ug/L av = 21 ug/L 80th perc. = 41 ug/L (1 - 5 m)	Max. obj. met
		Aug. 17	1	31 ug/L ( 5 m )	Av. not met
Total Zn  15 ug/L max	Porpoise Bay E218927 50m north west Gov't dock	Jul. 28 - Aug. 22	10	< 5 - 11 ug/L (1 - 5 m)	Objective met
		Aug. 17	1	31 ug/L ( 5 m )	Objective not met

FIGURE 1: WATER BASINS WHERE WATER QUALITY OBJECTIVES HAVE BEEN SET



## FIGURE 2: ELK AND BEAVER LAKES

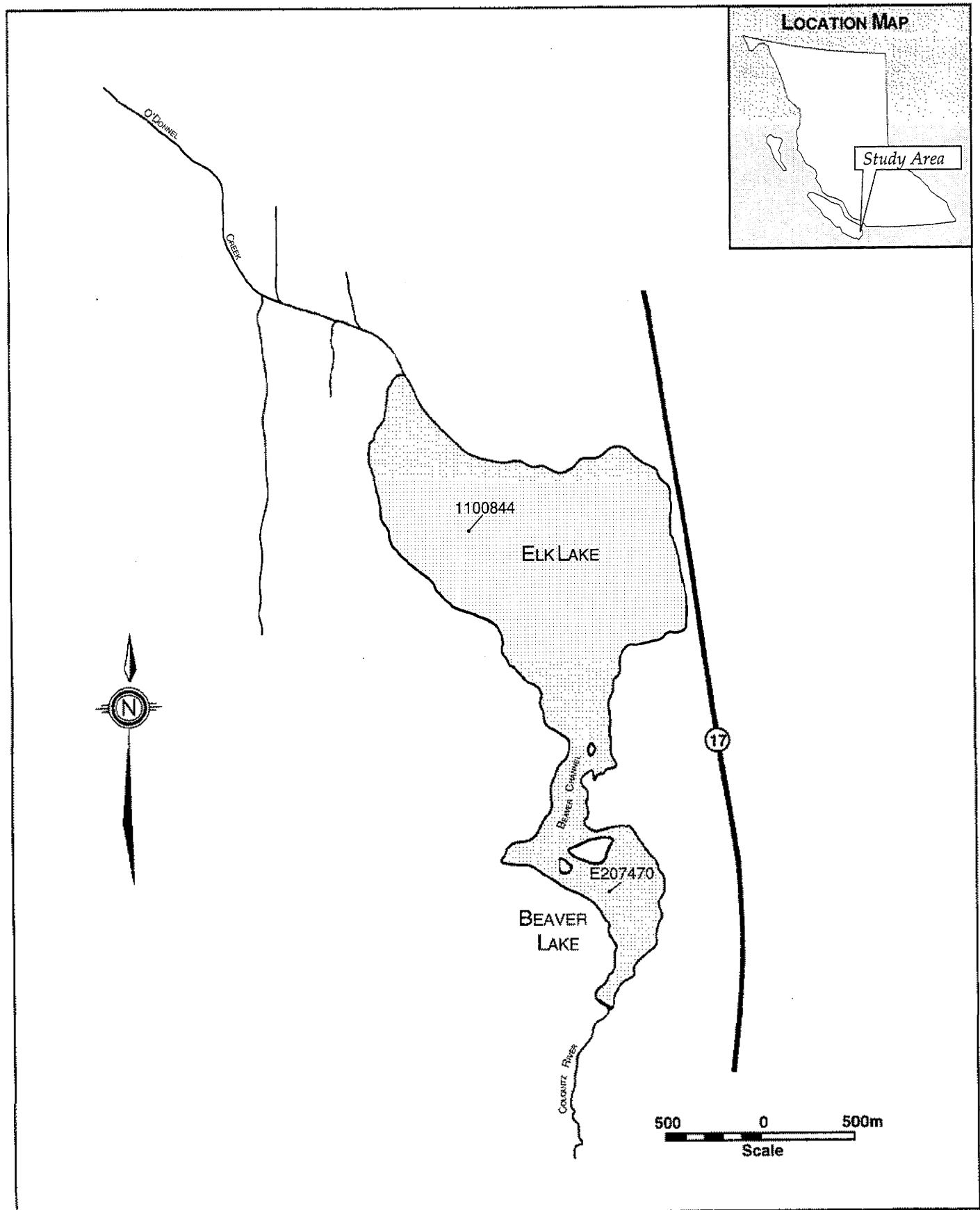


FIGURE 3: TSOLUM RIVER

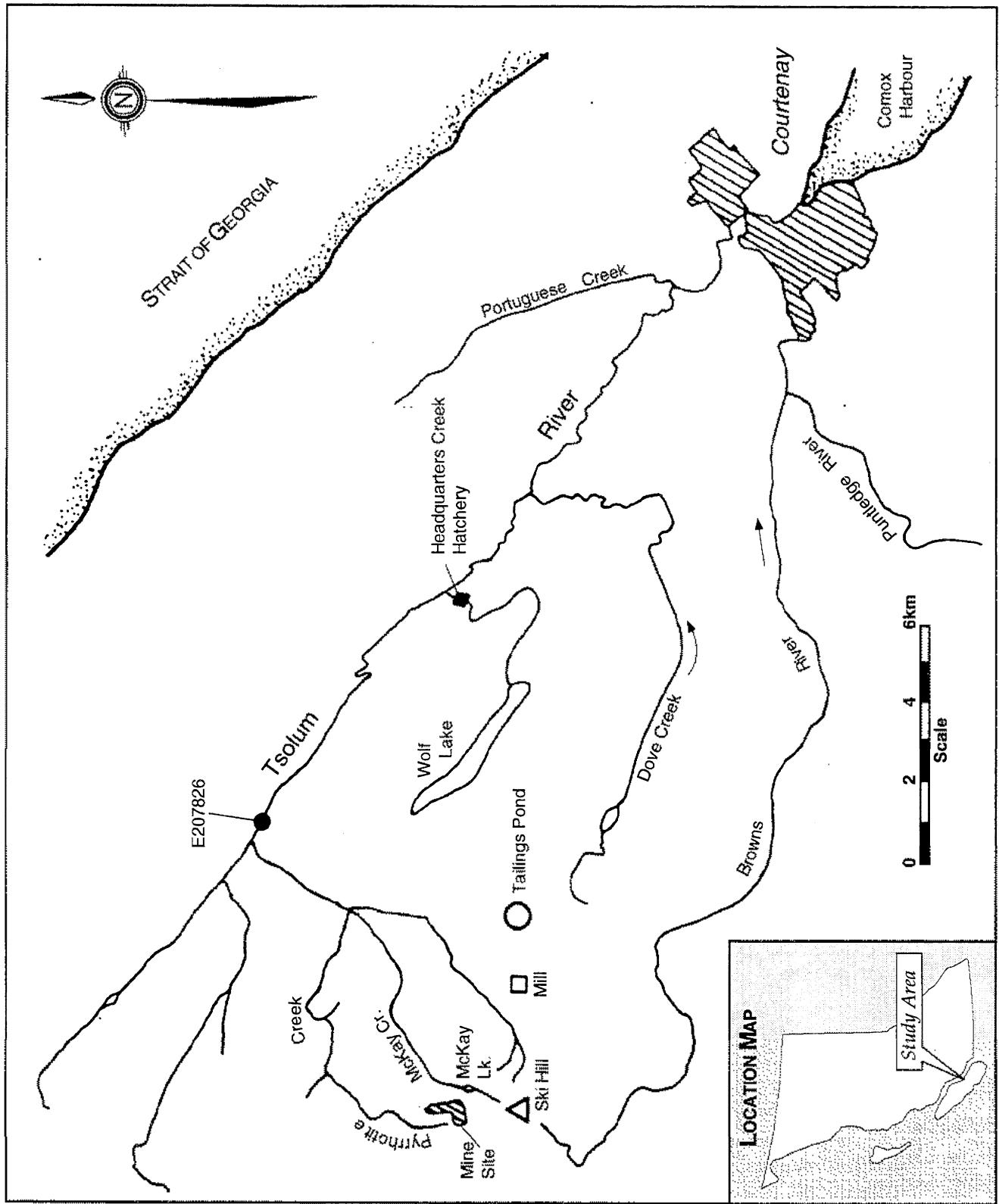


FIGURE 4: LOWER KITIMAT RIVER AND KITIMAT ARM

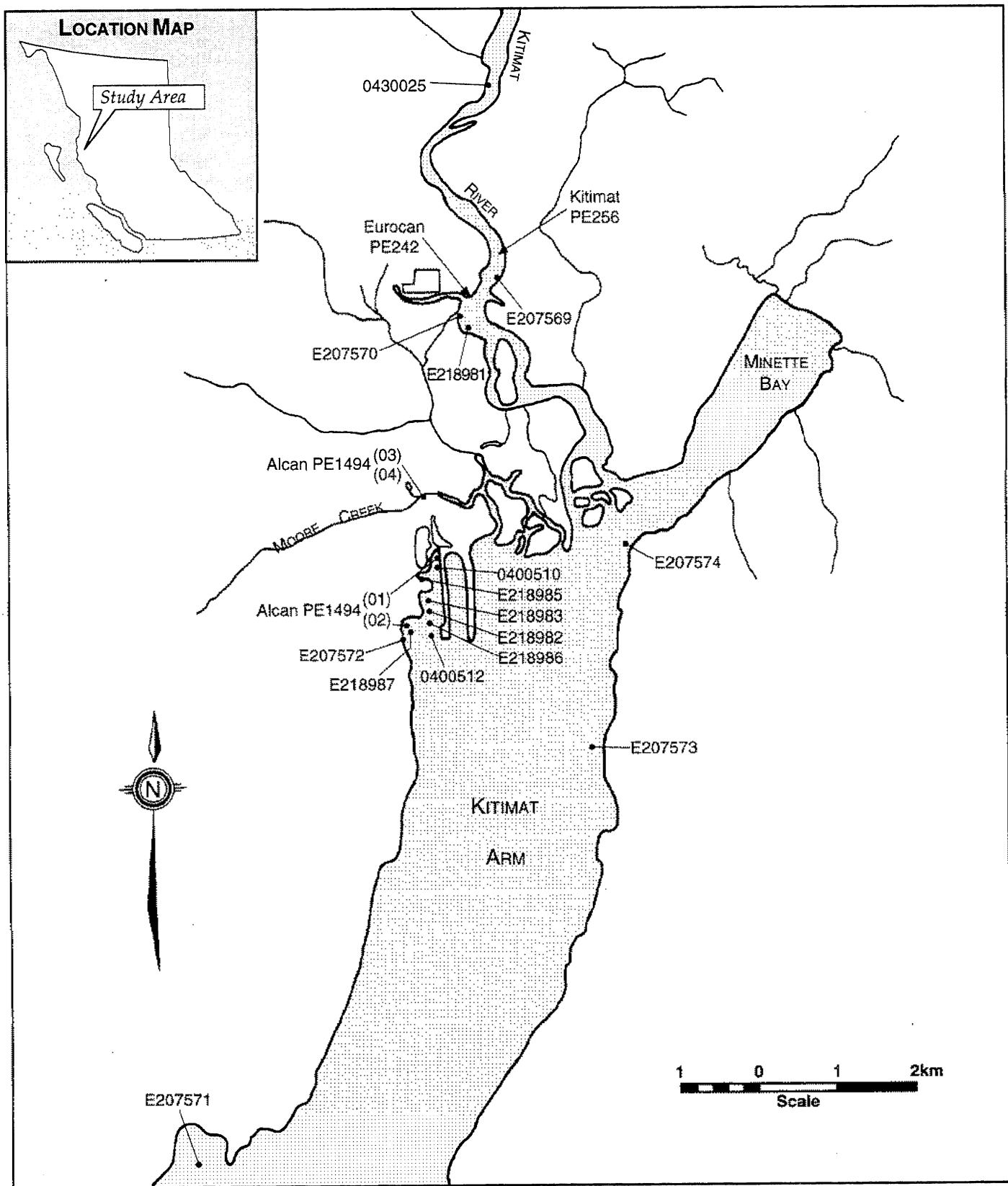
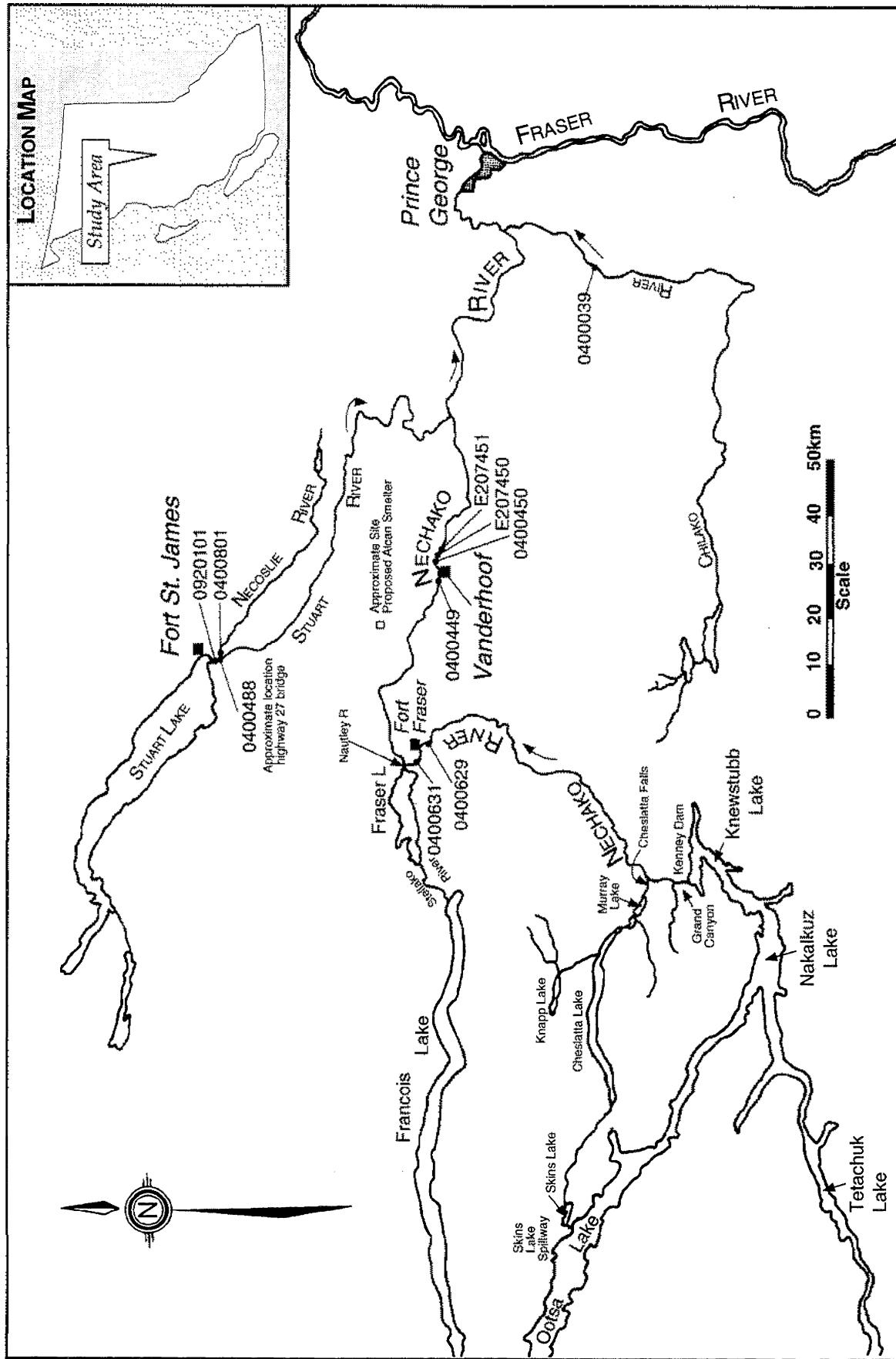


FIGURE 5: NECHAKO RIVER



# FIGURE 6: PEACE RIVER MAINSTEM

**LOCATION MAP**

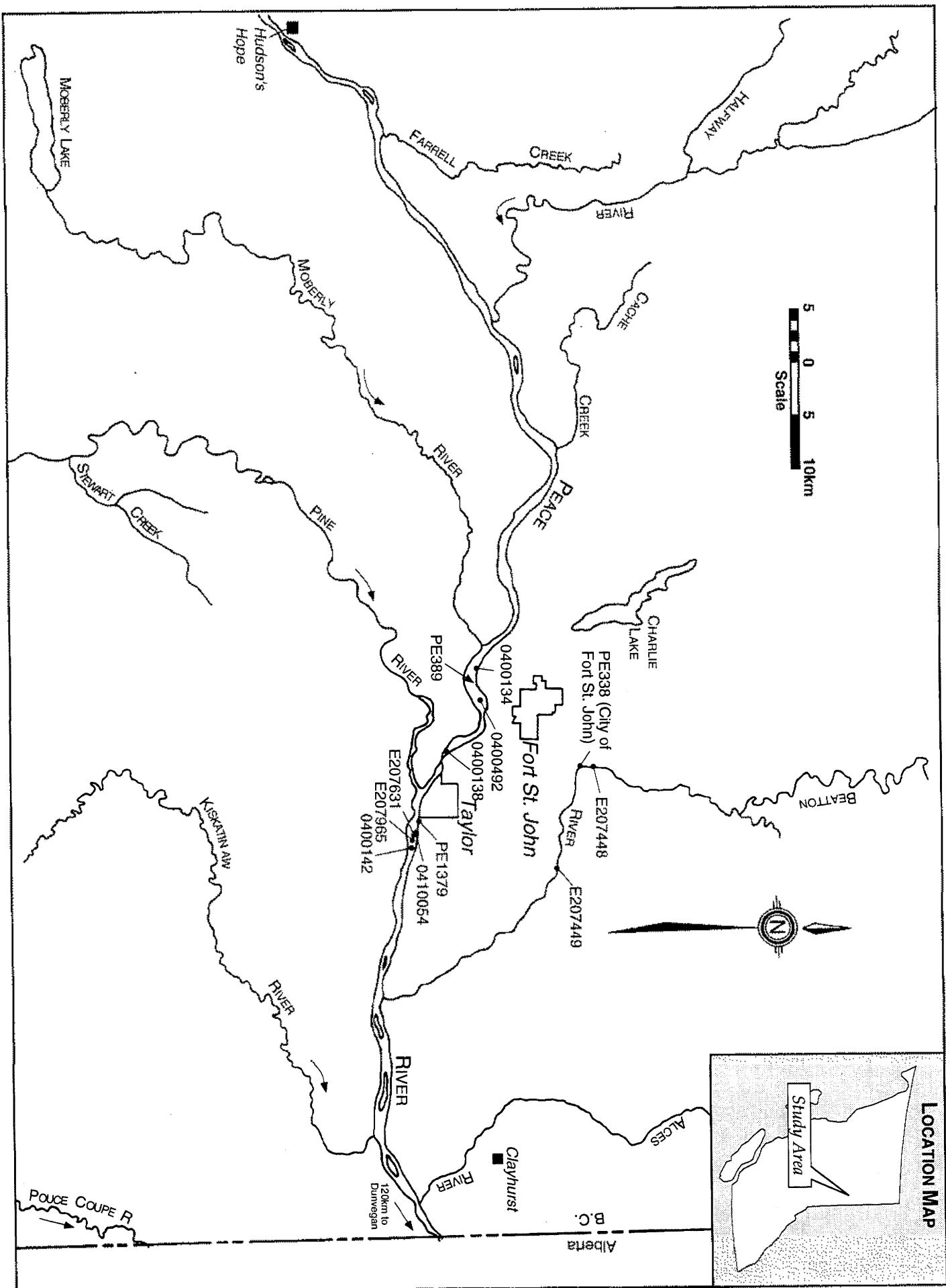


FIGURE 7: WILLIAMS LAKE

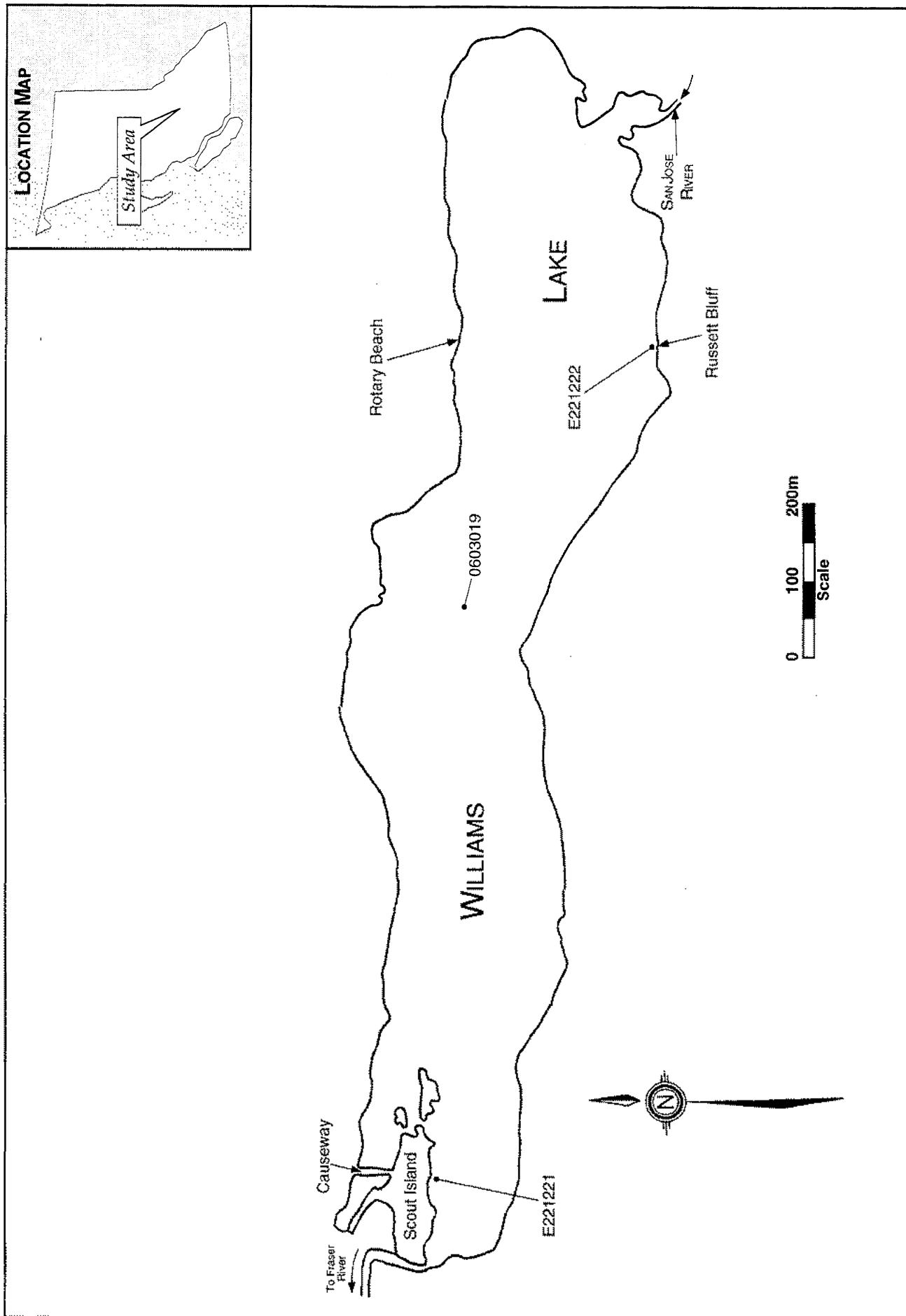


FIGURE 8: SAN JOSE RIVER

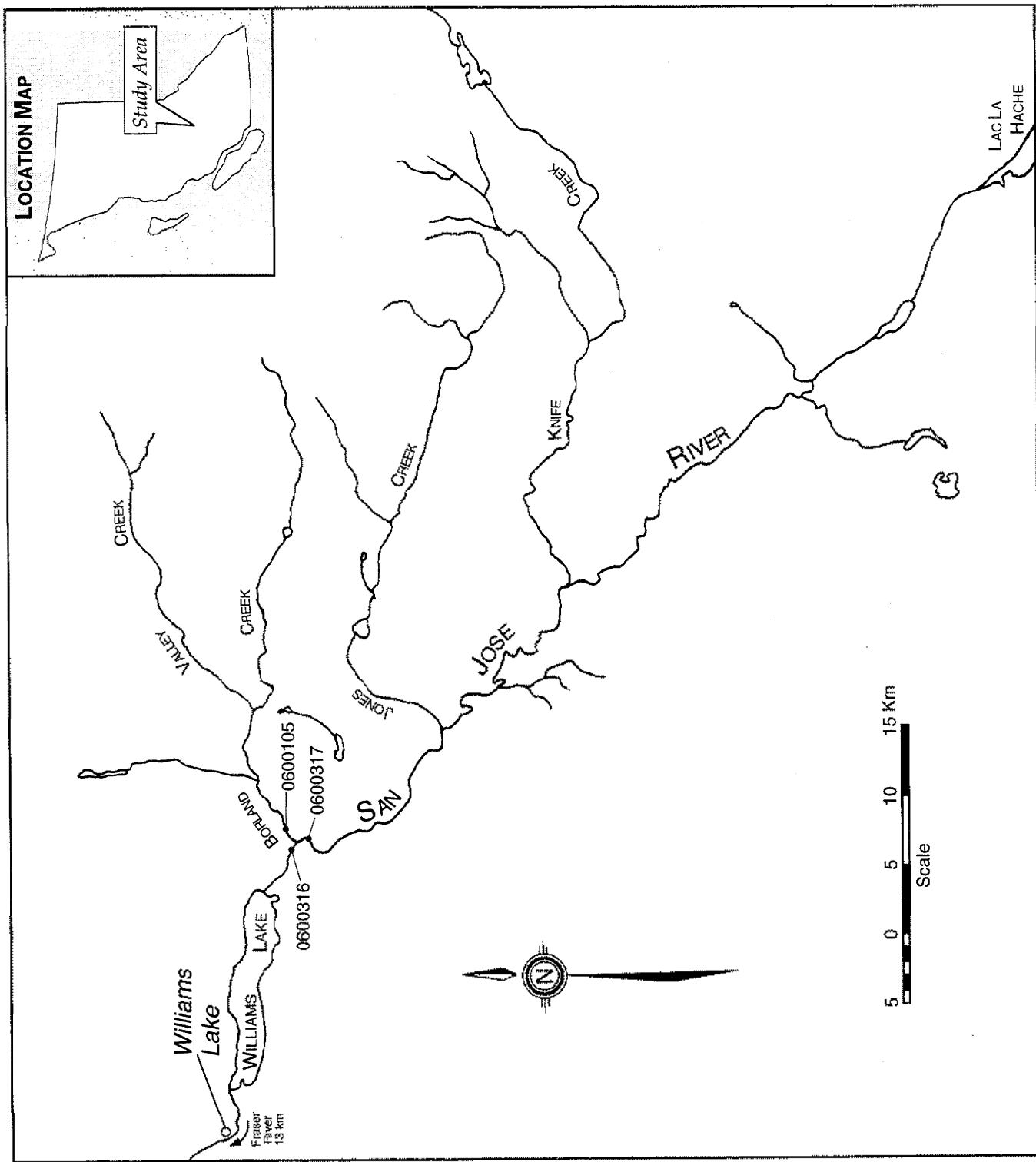
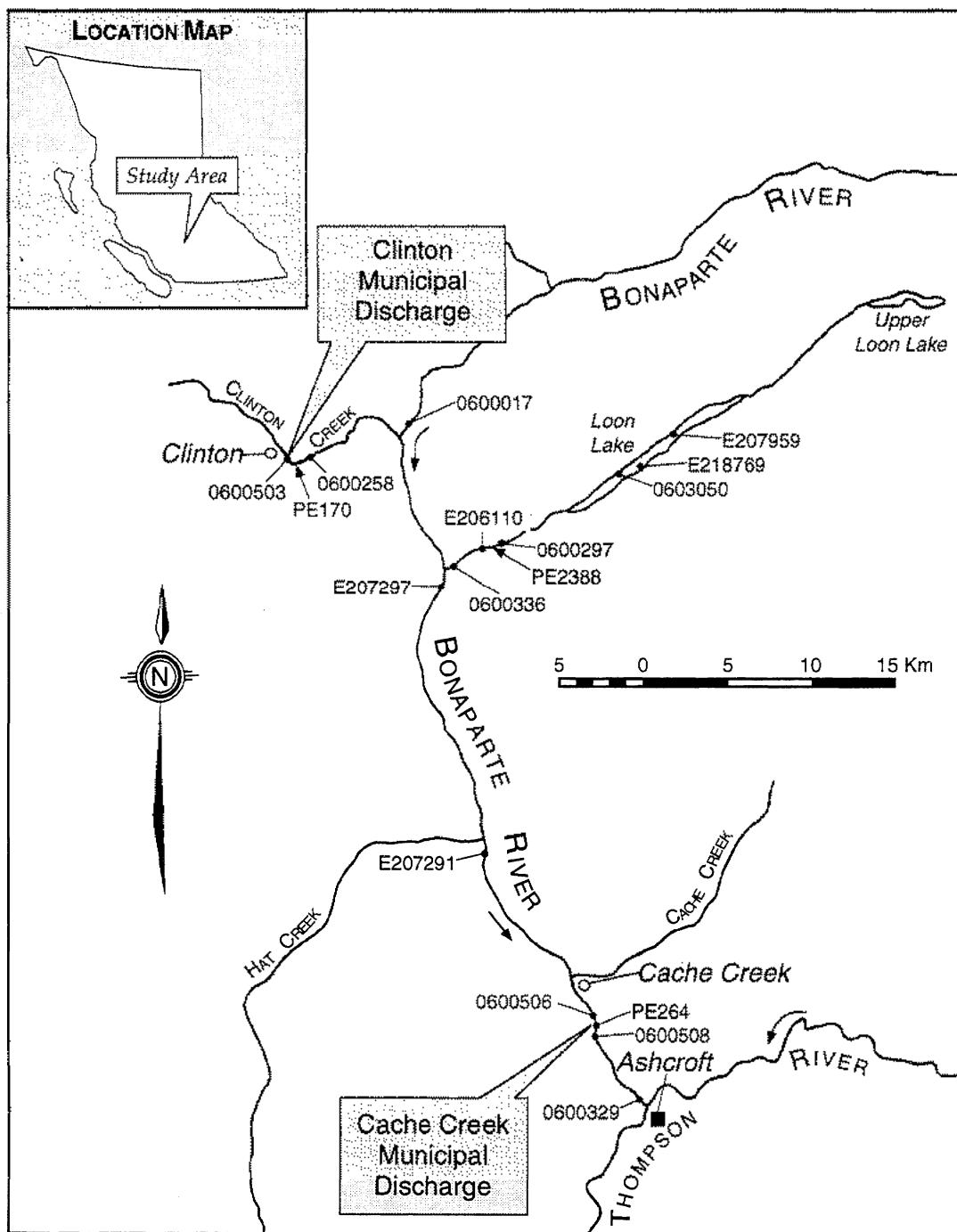


FIGURE 9: BONAPARTE RIVER



# FIGURE 10: OKANAGAN VALLEY LAKES

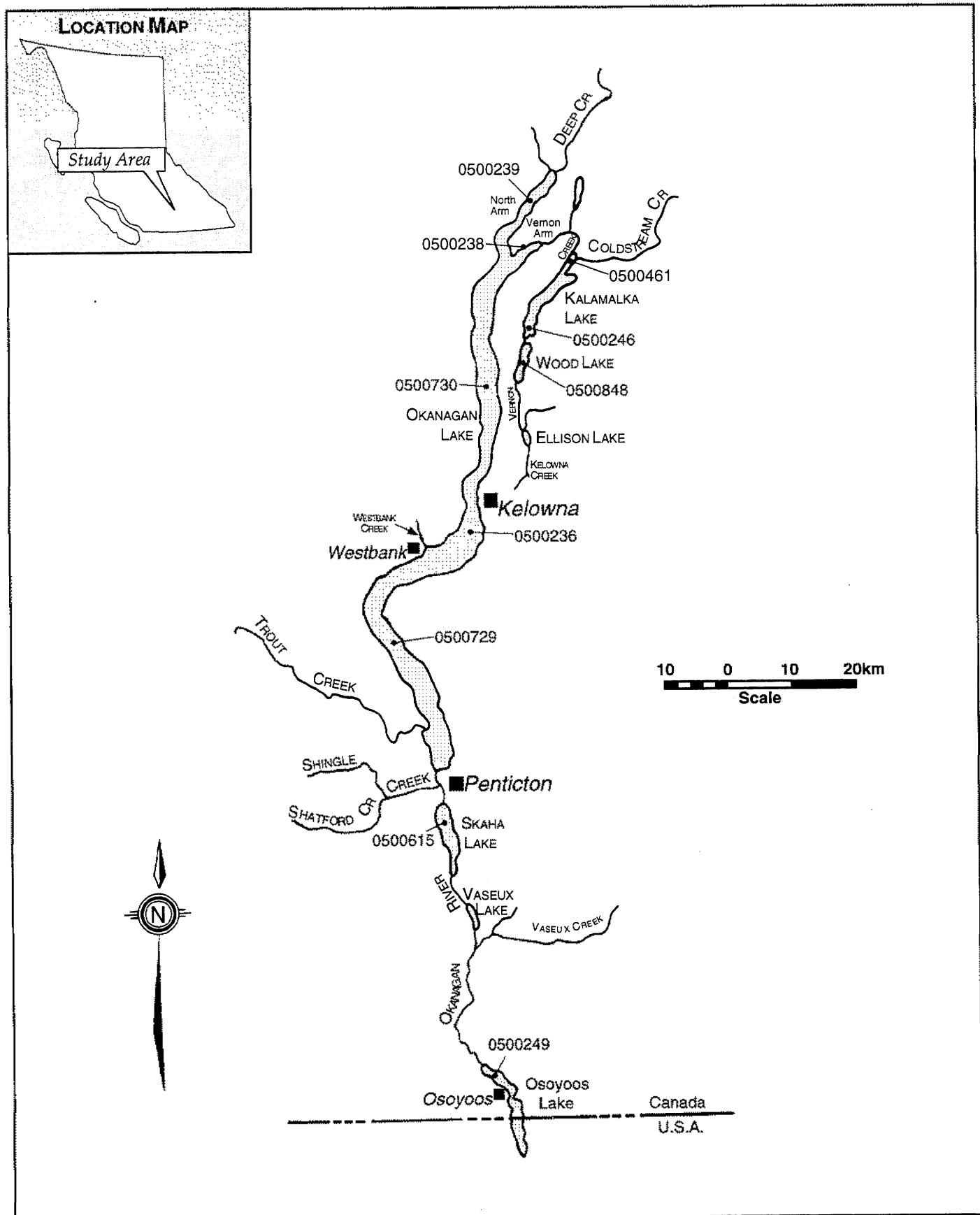
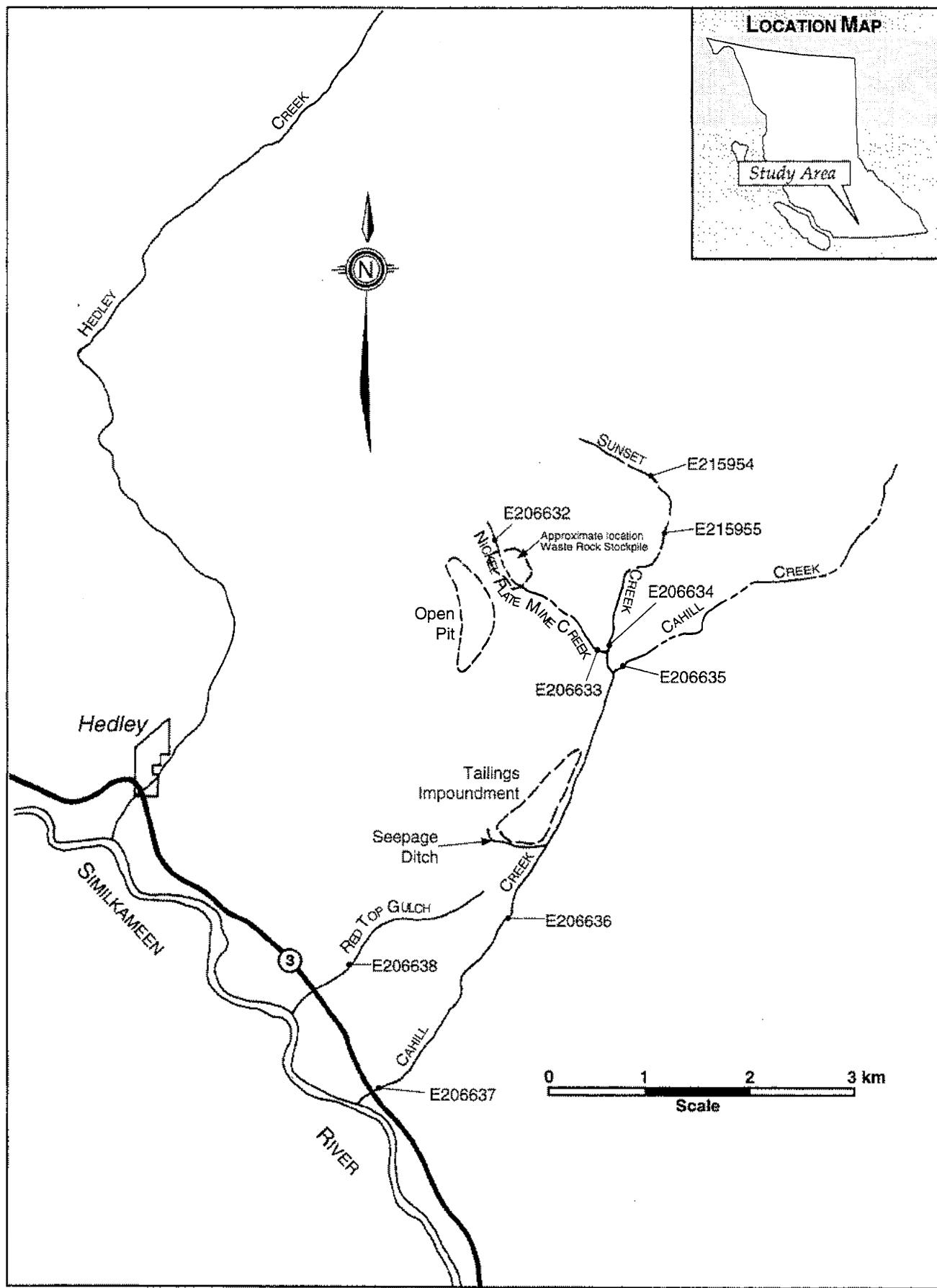


FIGURE 11: CAHILL CREEK



## FIGURE 12: BESETTE CREEK

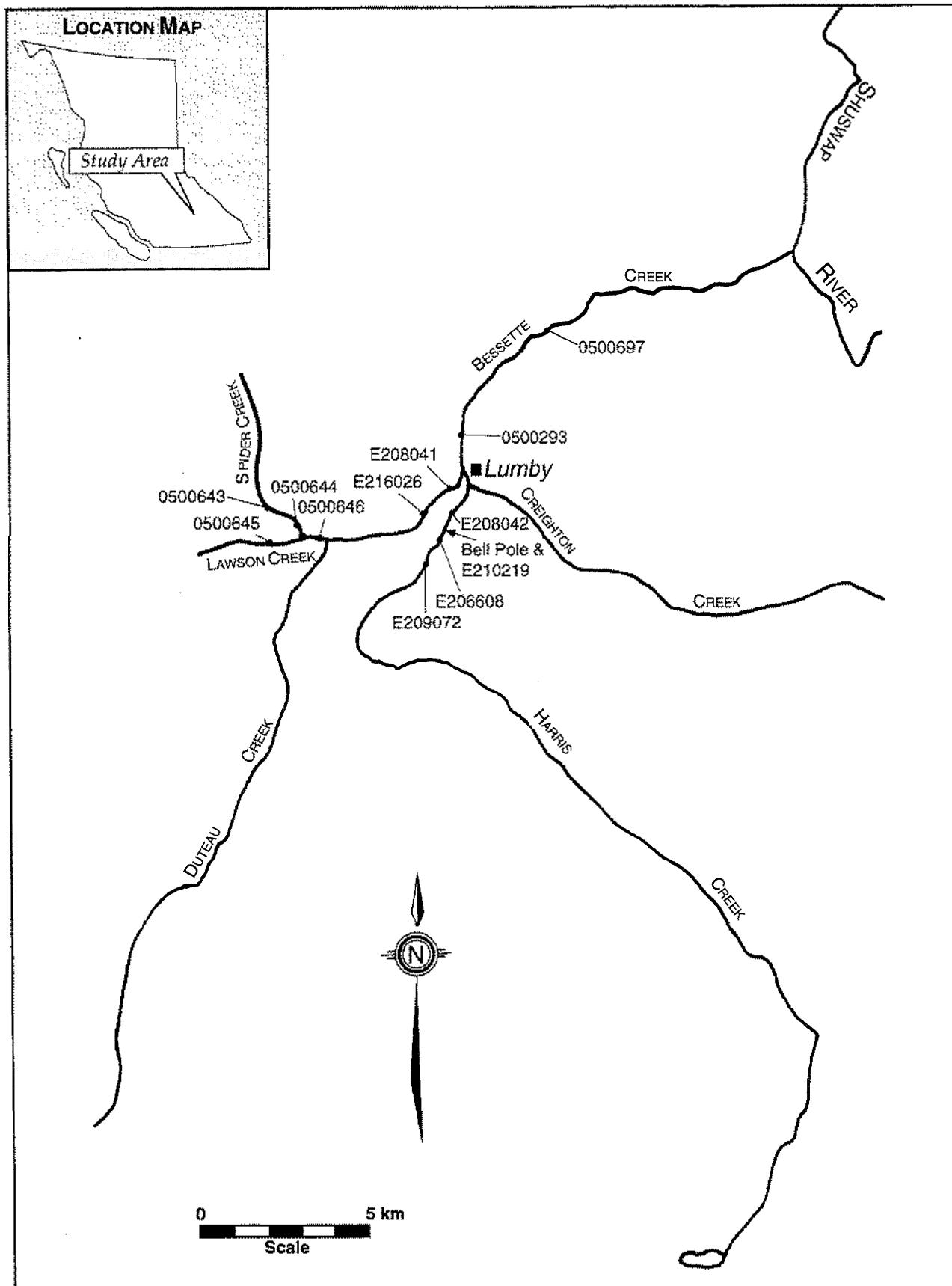


FIGURE 13: TRIBUTARIES TO OKANAGAN LAKE NEAR KELOWNA

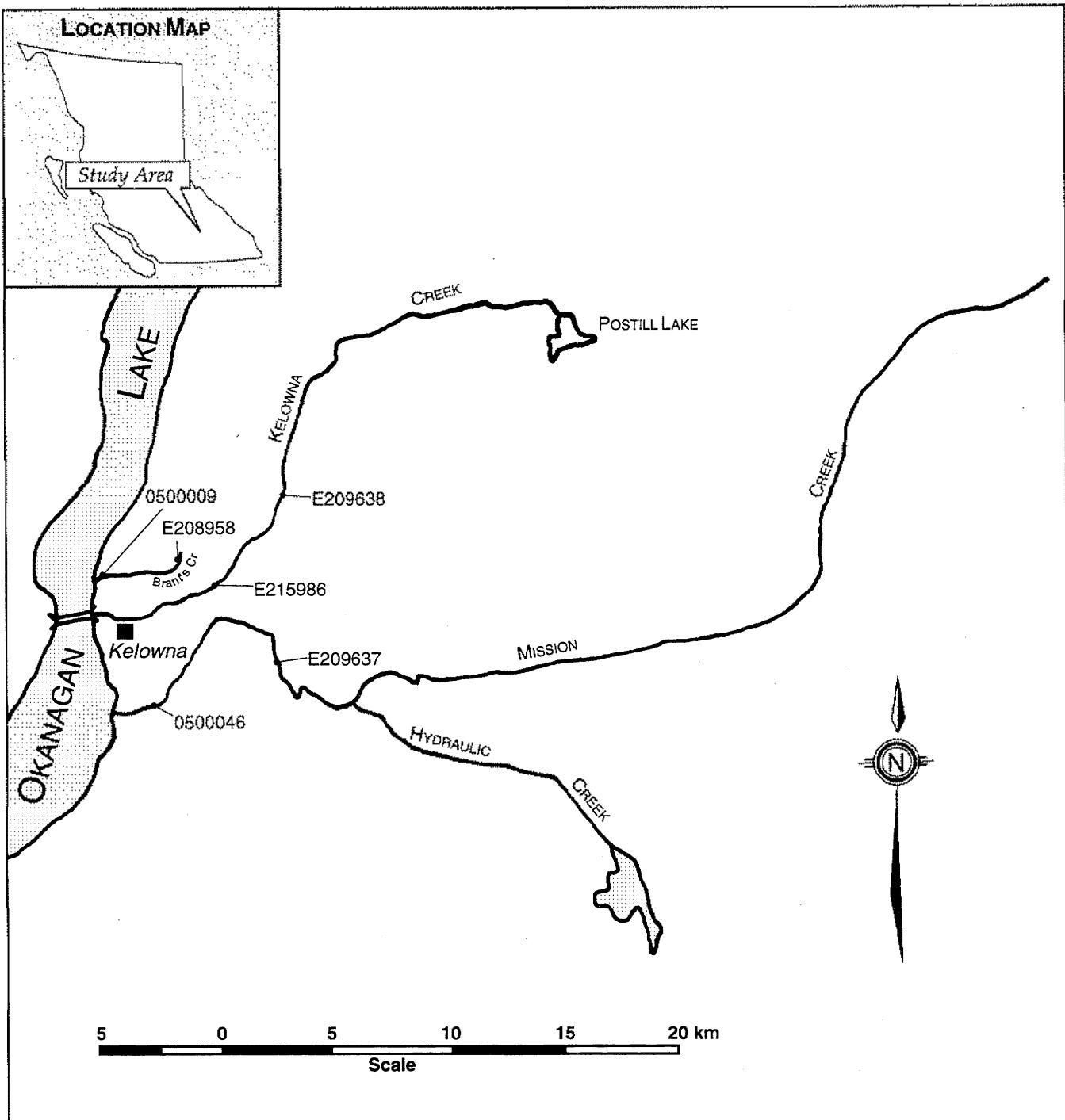


FIGURE 14: TRIBUTARIES TO OKANAGAN LAKE NEAR VERNON

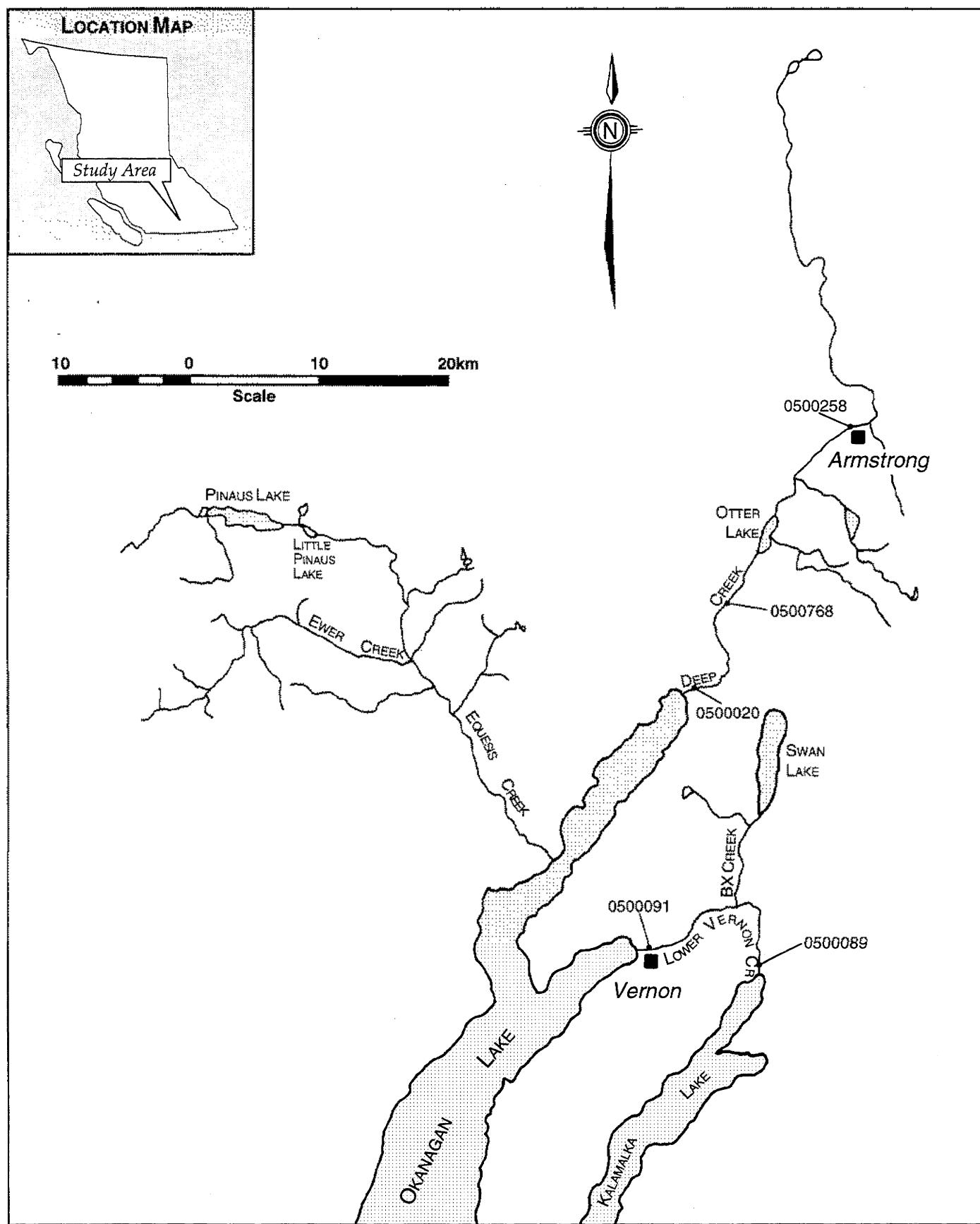


FIGURE 15: THOMPSON RIVER

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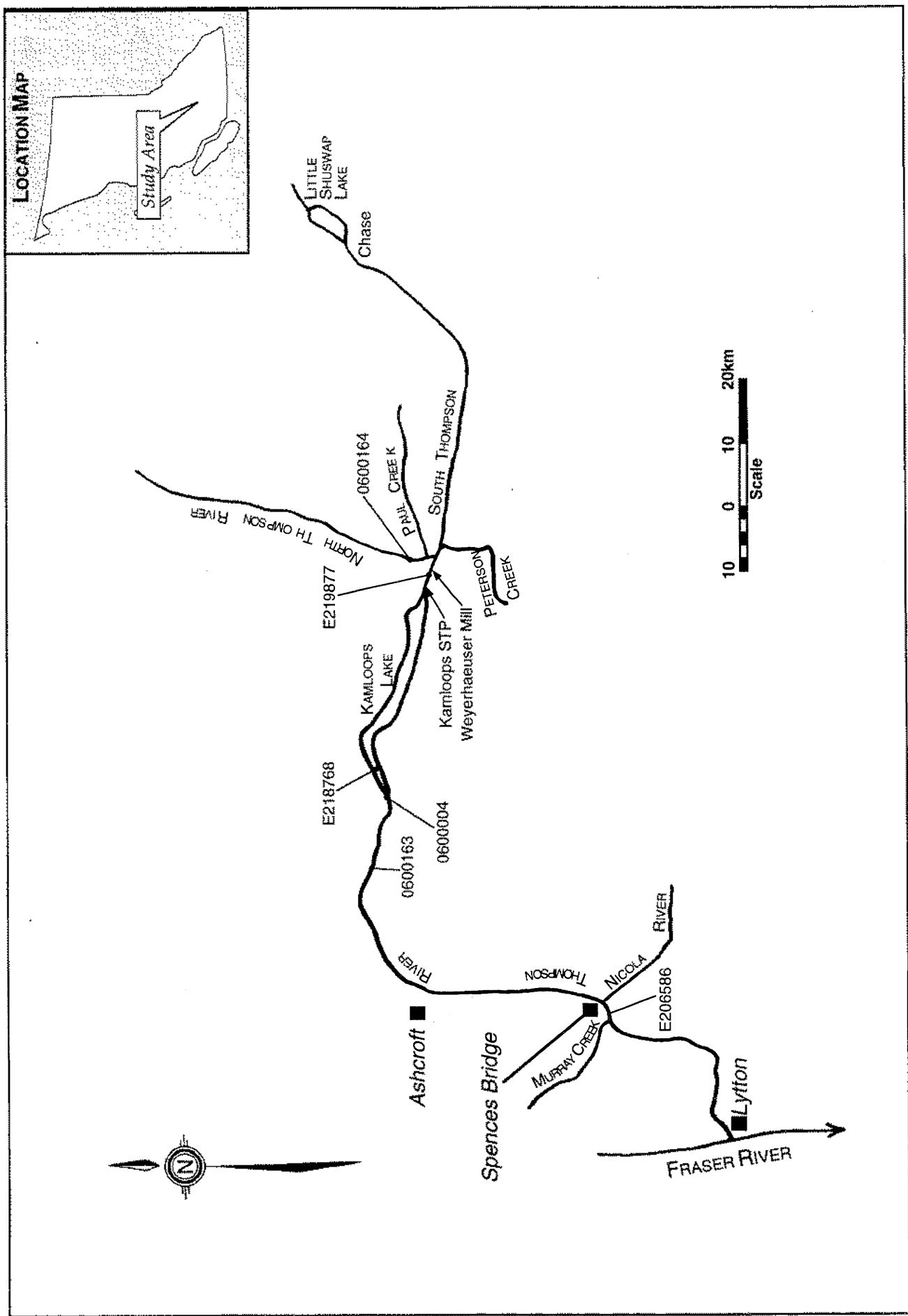


FIGURE 16: CHRISTINA LAKE

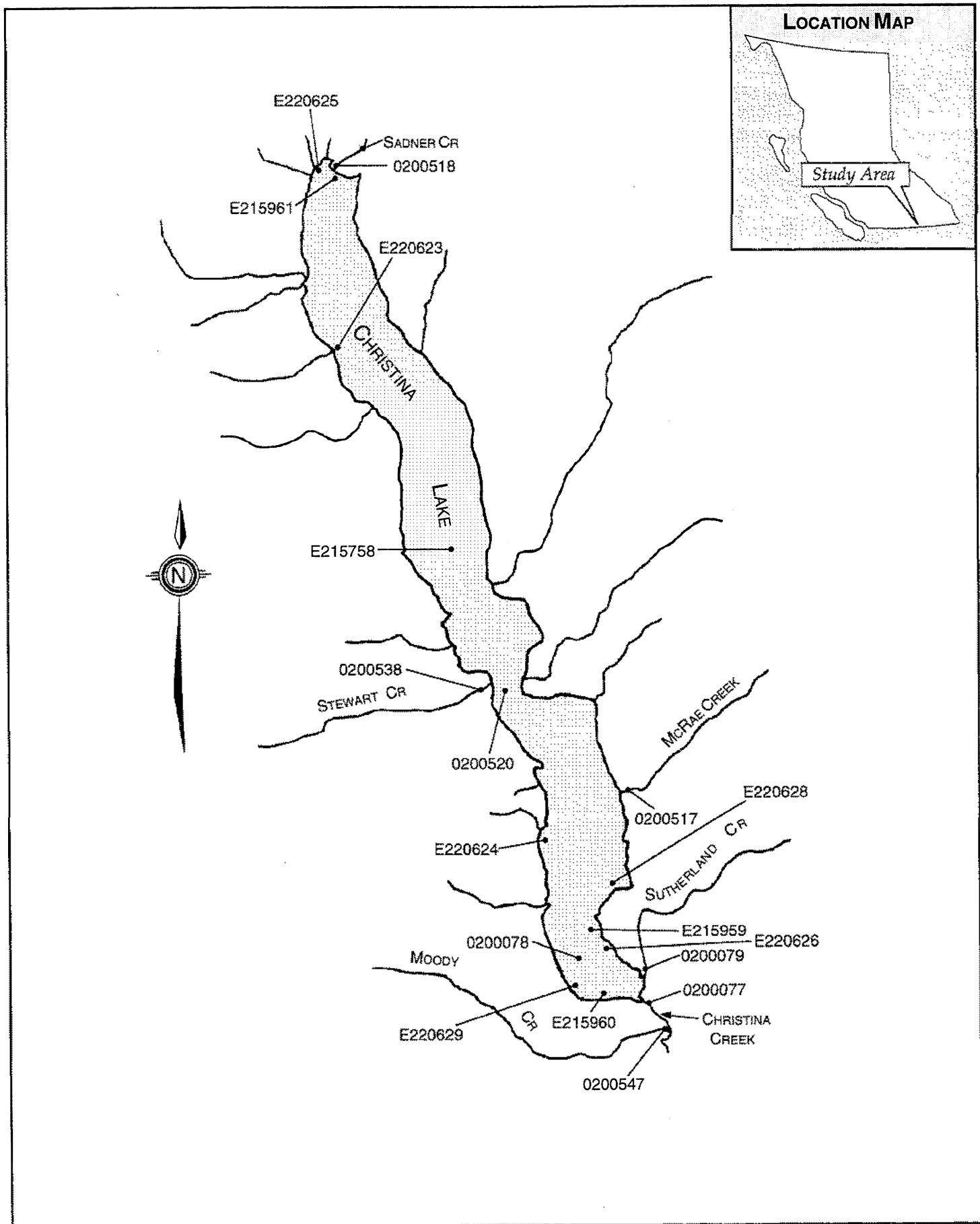


FIGURE 17: COLUMBIA RIVER FROM KEENLEYSIDE TO BIRCHBANK

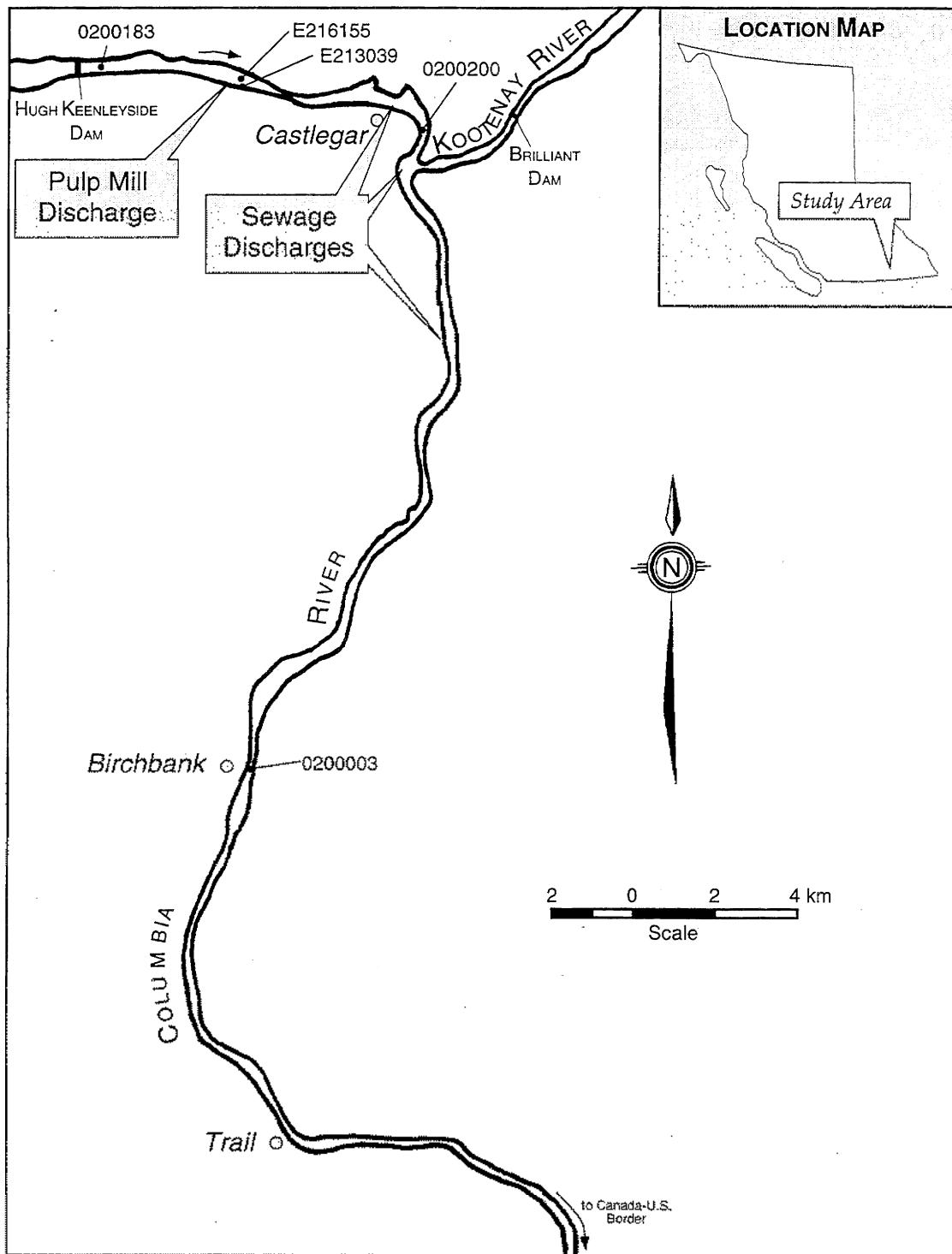


FIGURE 18: FRASER RIVER FROM KANAKA CREEK TO THE MOUTH

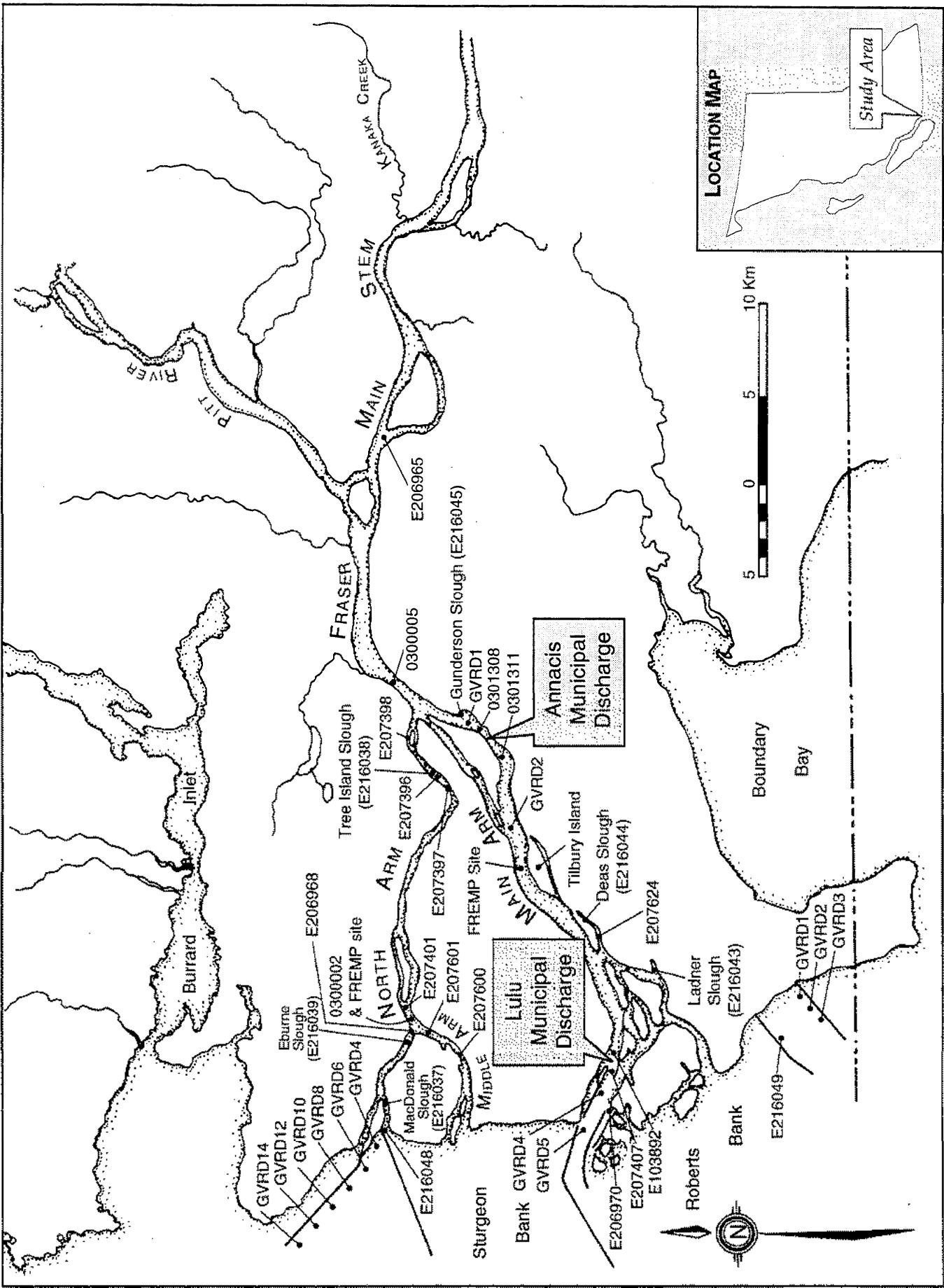


FIGURE 19: BURRARD INLET

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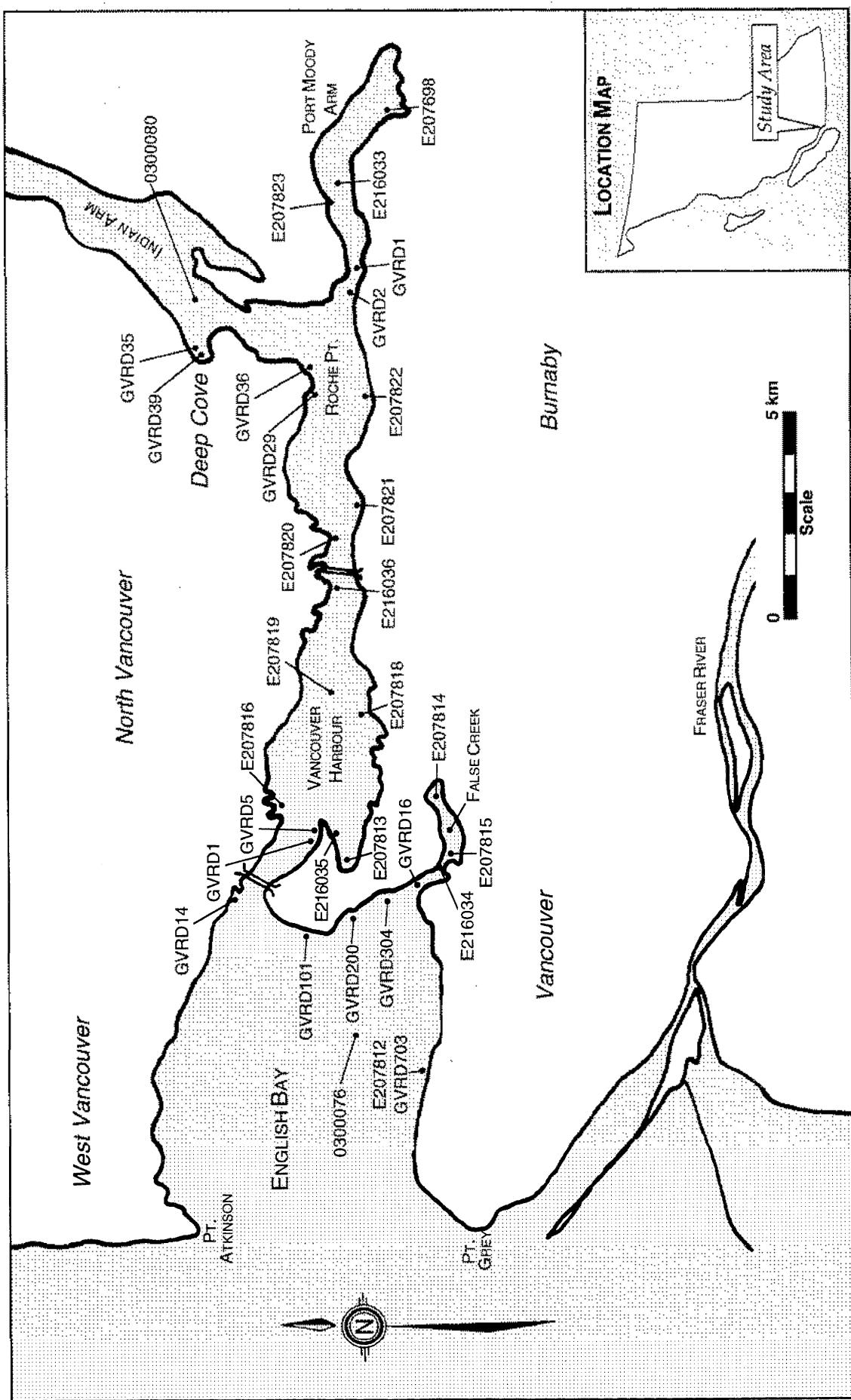


FIGURE 20: BURRARD INLET TRIBUTARIES

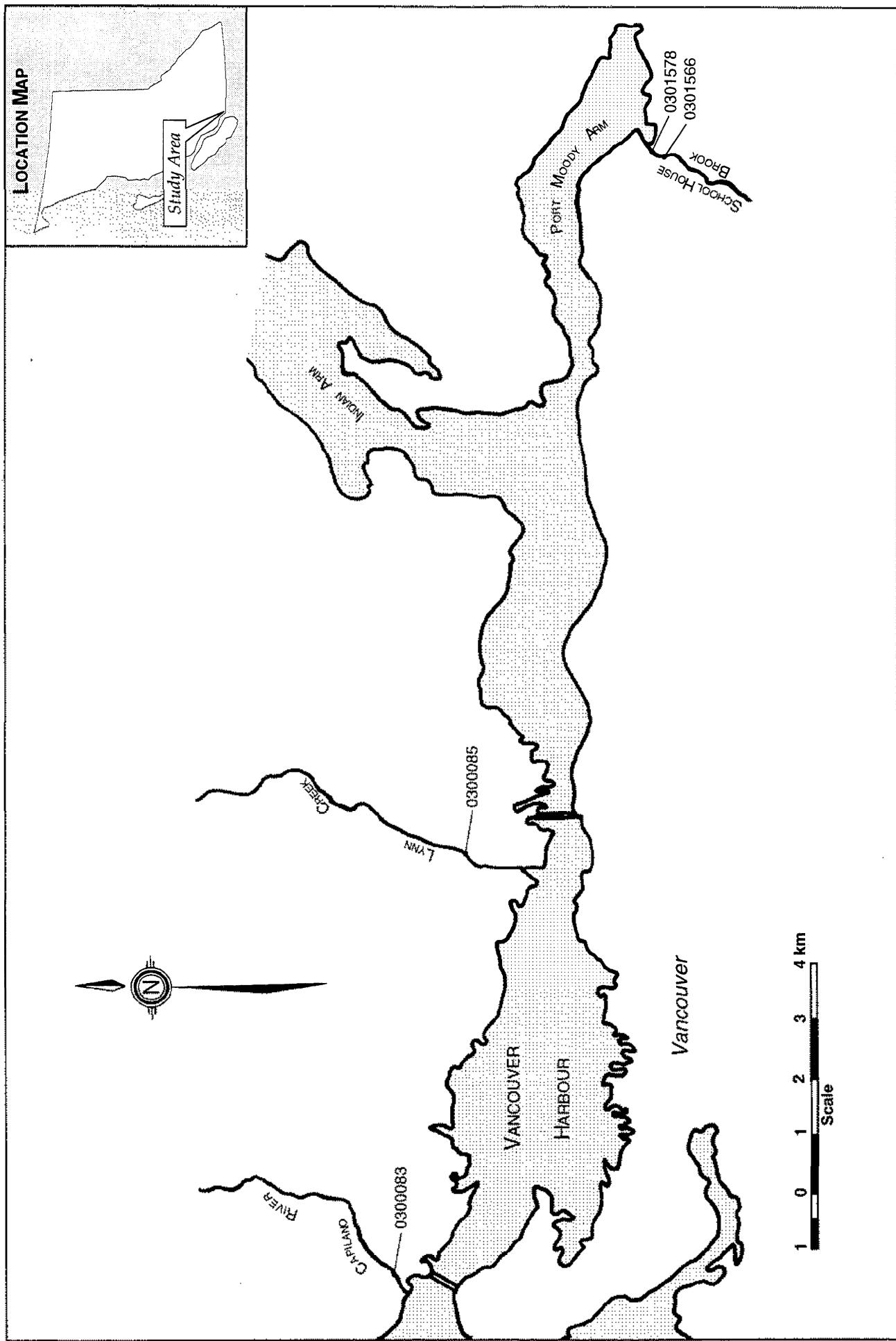


FIGURE 21: PENDER HARBOUR

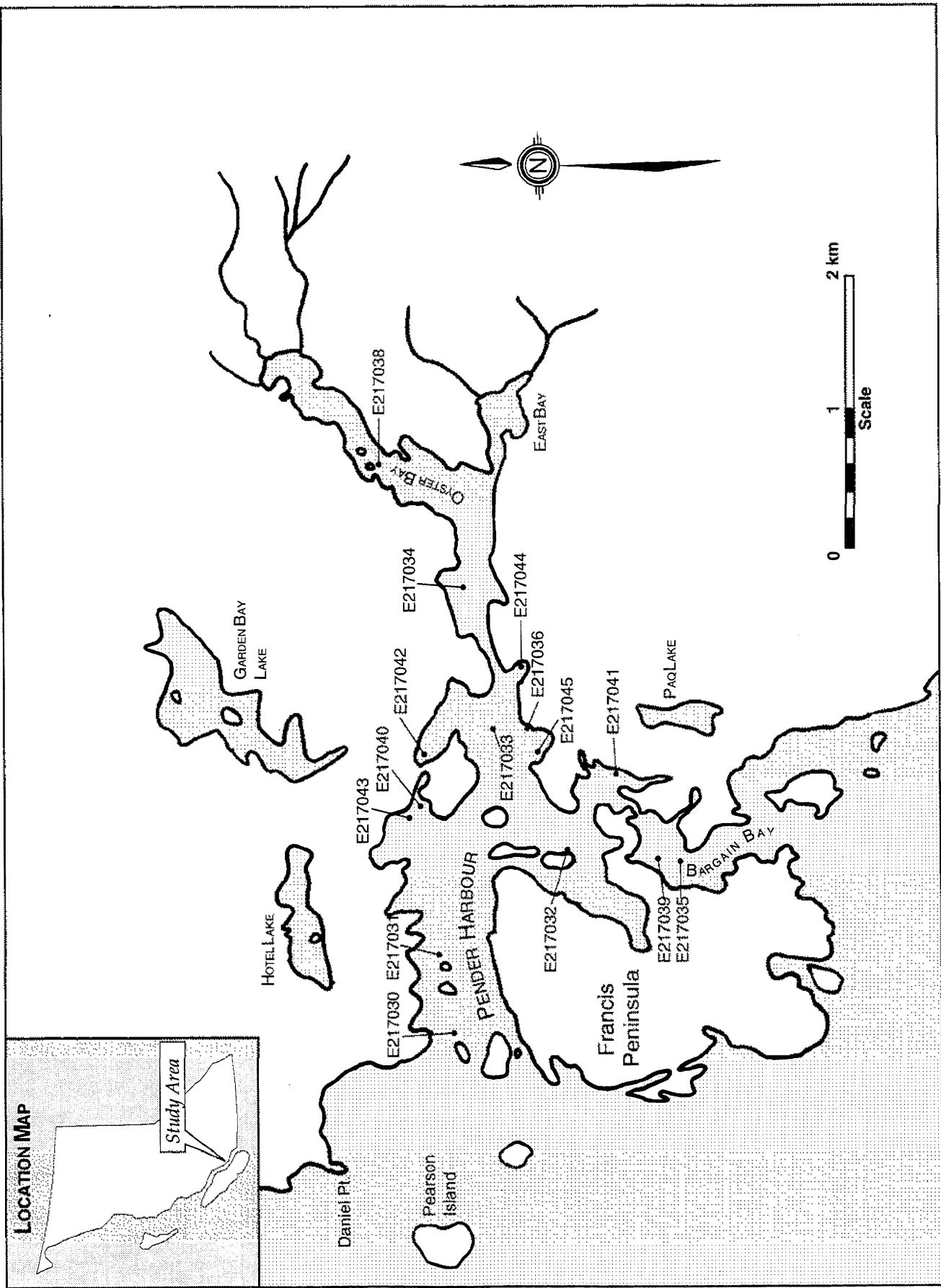


FIGURE 22: SECHELT INLET

