AN ECOZONE CLASSIFICATION FOR LAKES AND STREAMS OF BRITISH COLUMBIA: VERSION 1.0

Submitted to

Ministry of Environment, Lands and Parks
Water Quality Branch
Victoria, B.C.

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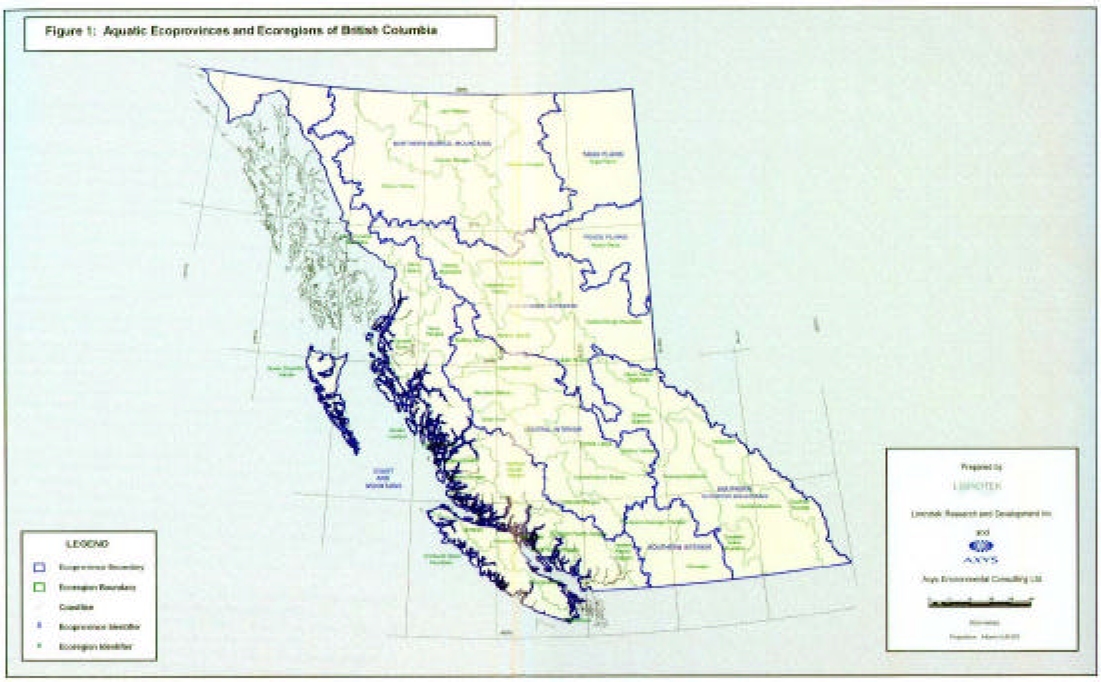

Figure 1. Aquatic Ecoprovinces and Ecoregions of British Columbia, version 1.0.

SUMMARY

An aquatic ecozone classification and supporting data base of water quality in British Columbia has been developed. It is a tool that can provide:

1. improved exchange of limnological information between scientists, resource managers, resource development companies, and resource interest groups;
2. a framework for setting water quality objectives to ecozones which may be more relevant than establishing Province-wide objectives;
3. information for establishing zonal reference sites for long term monitoring of key water quality variables;
4. information to identify regional differences in the abundance of data pertaining to any variable of interest and thereby assist in planning data collection activities in the Province;
5. descriptions of limnological and water quality characteristics that are typical on a regional basis;
6. a data management system that will standardize data collection and improve data access for water quality assessments;
7. regional descriptions of lake and stream limnology that can form a technical basis for preparation of reference documents on the quality of fresh water resources in British Columbia;
8. regional descriptions of lake and stream limnology that can form a technical basis for preparation of an internet web site from which data can be examined and downloaded for optimizing time used for water quality assessments;

Using readily available data from several sources, a data base was constructed that holds water quality information for the entire Province. It is called the Aquatic Ecozone Classification Data Base (AECD) and it consists of more than 300,000 records of water quality data for lakes and streams. Statistical clustering techniques were used to quantitatively group the data into regions of chemical homogeneity. Initial output indicated that water quality data are severely clumped, with a bias to southern areas. There is an extremely poor distribution of data in northern areas. This uneven distribution of data made the clustering technique inconclusive.

A workshop involving limnologists, water quality specialists, and GIS specialists resulted in a more meaningful delineation of aquatic ecozones. Boundaries for ecologically distinct zones were assigned on the basis of experience, previous work on assigning limnological regions in B.C. (e.g. Northcote and Larkin 1964), and review of summary statistics for relevant parameters in the data base. Workshop participants concluded that the basic building block for the classification should be a Watershed Group, which is a basic polygon of the Provincial Watershed Atlas. Participants also agreed that stratification of data by season should not be used because of lack of relevant data for all seasons. Seasonal stratification was initially considered to allow inclusion of seasonally sensitive parameters that can be important in distinguishing biological productivity among lakes (e.g. chlorophyll a, dissolved oxygen, SRP concentration, and others). The short list of parameters that was selected by participants included total dissolved solids (TDS), pH, alkalinity, total phosphorus (TP), true colour,

total suspended solids (TSS), and turbidity. The data base contained many more parameters but only those in the short list were used in characterizing ecozones.

Ecozones that were selected in the workshop have been mapped in three hierarchical levels. The basic and smallest unit is a Watershed Group. Several Watershed Groups are called Ecoregions and groups of Ecoregions are called Ecoprovinces. Definitions are as follows:

Ecoprovince: an area where there are consistent climatic processes, geology, lithology and relief that determine characteristics of aquatic ecosystems at the sub-continental level.

Ecoregion: an area within an Ecoprovince where there is minor macroclimatic variation, and a characteristic lithology and geomorphology that can influence morphometry and surface chemistry of aquatic ecosystems. Large lakes, reservoirs and rivers characterize an Ecoregion and biogeochemical processes within those systems are recognized to influence water quality.

Watershed Group: a precinct enclosing aquatic features at the sub-basin scale that is practical for detailed mapping of water quality characteristics.

A map has been produced that includes 245 Watershed Groups within 45 aquatic Ecoregions within 8 Ecoprovinces.

Water quality attributes for each parameter on the short list were determined for each of the 245 Watershed Groups by overlay analysis. Attributes were stratified by site type (lake and stream) and included: name of Watershed Group, Ecoregion, Ecoprovince, number of observations, minimum value, maximum value, mean, median and standard deviation.

Summary tables of statistical attributes are used in combination with other reference material to provide a general description of water quality among and within Ecoprovinces. Physiographic and climatic features are described and these are accompanied with a brief description of relevant geological and lithological characteristics that may influence water chemistry in the ecozone. Water quality in major rivers, lakes, and reservoirs are described where it is relevant. Chemical attributes are described and where possible they are interpreted with respect to climate, physiographic, geological, biogeochemical and limnological processes as well as land use activities that are potential factors determining zonal variation. All descriptions are brief. More detail can be retrieved from statistical summary tables that are included with the descriptions and by access to the data base through a customized ArcView 3.0 interface that accompanies this report.

The graphical user interface was written for ArcView 3.0 using Avenue®. The interface was customized to allow searches of data in large or small zones of interest and to summarize data in any region to provide information on background chemical characteristics for an area of interest. The interface is intended for wide distribution to potential users of the aquatic ecozone classification and its data base.

It is recommended that an internet web site be established to provide a medium for the input of comments, suggestions, and new data to further develop the aquatic ecozone classification. It is also recommended that water management personnel throughout the Province become familiar with the user interface by routinely using it. Only with active use will the AECD become a useful tool and have a chance to evolve with wide applications. Providing awareness of its existence is an important first step in this process and the development of a web site is one technique to reach this goal.

This aquatic ecozone classification is a first version that is meant to evolve and change with use over time. It is recommended that an organizational framework and associated funding be established to facilitate the development of future versions that are based on input from end users and technical specialists.

ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

It has long been recognized that aquatic ecosystems have a range of recognizable characteristics that are apparent to the general public and professional limnologists alike. For the general public, an undisturbed lake on the west coast of British Columbia may be regarded as “pristine” by having water that is deep, clear and relatively cool. In contrast, water quality may be regarded as poor in shallow lakes of the central interior where algal blooms may persist and there are periodic fish kills under ice because of lack of oxygen. Many people are also aware that “soft” water is typical at the coast and “hard” water is more common in the interior. For the scientist, these observations indicate differences in nutrient loading, buffering mechanisms, flushing rates, oxygen demand, morphometry, seasonal mixing, and many other variables that drive regional differences in trophic status. Which ever of these ways that the quality of water in lakes and streams is perceived, the common theme is that regional differences between aquatic ecosystems do exist and those differences can be described.

Classifications of geographic regions which include aquatic ecosystems have been mapped in the United States (Bailey 1976, Omernik, 1987) and Canada (Energy, Mines and Resources Canada 1986, Environment Canada 1996). All maps were derived with consideration of several variables describing physiography and land use. In Canada, the nation-wide Ecoregions are used for large scale environmental planning, and they are linked with state of environment data for distribution to wide sectors of the general public as a central reference for environmental policy and action (Environment Canada 1996). The Ecoregion maps provide a structured framework to facilitate understanding of spatial environmental variation. In the United States, maps produced by Omernik (1987) are used to select a small number of minimally impacted reference sites for water quality monitoring to provide protective goals for entire regions. These sites are also used by the Environmental Monitoring and Assessment Program (EMAP) as part of a nation-wide cumulative impact assessment program. In recent years, revisions and updated classifications for the United States, both at the continental scale (e.g. Hughes and Larsen 1988) and regional scales (Omernik and Griffith 1991, Omernik et al. 1991, Gorham et al. 1983, Clarke et al. 1991) have been used for planning aquatic ecosystem protection.

In British Columbia, the first regional stratification of lakes was proposed by Northcote and Larkin (1964). They recognized 12 limnological zones described mainly in terms of lake morphometrics, regional physiography, tendency for oxygen depletion to occur, biomass of plankton and fish, and total dissolved solids (TDS) concentrations. From earlier work, Northcote and Larkin (1956) found that TDS was a reasonable indicator of biological productivity in B.C lakes. To date, there is no other ecozone system that has adequately replaced this first approach to aquatic ecosystem classification in B.C. It is frequently applied along with the biogeoclimatic zone classification (Krajina 1965, British Columbia Ministry of Forests 1988) which is based on terrestrial plant associations as the main tool for interpreting naturally occurring regional variation in aquatic ecosystems.

The development of a systematic ecozone classification to visualize and interpret regional relationships is considerably further ahead for terrestrial ecosystems than for aquatic ecosystems in B.C. Demarchi (1987) proposed a classification for terrestrial ecosystems based on macroclimatic processes and physiography. This system presently divides the Province into 119 units in 3 hierarchical levels (Demarchi 1995) and it has rapidly become the standard for ecological zonation in B.C. (Demarchi et al. 1990). The Northcote and Larkin (1964) classification stands alone as the only similar classification system for aquatic systems. It has not been updated with data collected since the original analysis (Northcote and Larkin 1956).

In a pilot study to update aquatic ecosystem classification in B.C., Norecol (1996) had limited success distinguishing lake and stream Ecoprovinces. Norecol (1996) found that lakes could be distinguished between two Ecoprovinces defined by Demarchi (1995). Lakes in the region called “Coast and Mountains” were statistically unique from those in the “Southern Interior”. Streams were distinguished between “Coast and Mountains”, “Northern Boreal Mountains”, and “Southern Interior Mountains” Ecoprovinces. Differences between Ecoregions which are areas delineated within Ecoprovinces by Demarchi (1995) were weaker. However, the mean values of some chemical variables, particularly those related to biological production, were significantly different between Ecoregions. This finding was consistent with the original conclusion by Northcote and Larkin (1956) that total dissolved solids (TDS) is an important variable which integrates major ions and nutrients and can be used to distinguish types of lakes among regions.

In this project, we have completed an updated version of a lake and stream ecozone classification for British Columbia. It is based on electrochemical and nutrient parameters that are important in determining trophic status. In this regard, it is an updated version of the regional lake productivity map completed by Northcote and Larkin (1964). Unlike the original Northcote and Larkin (1964) work, the present classification is supported with a large data base containing more than 300,000 records of wide ranging chemical characteristics in streams and lakes. Data summaries can be interactively explored and manipulated using a graphical user interface in ArcView, the standard GIS used by the British Columbia Ministry of Environment. The classification system and data base is suitable for periodic updates using GIS procedures.

2.0 GENERAL APPROACH AND DEFINITIONS

It intuitively makes sense to consider ecozone boundaries already established in existing and recent ecological classification systems for B.C. (e.g. terrestrial classification by Demarchi (1995) or hydrological zonation by MOELP (1995)). The terrestrial ecozone boundaries are based on climate and physiographic characteristics that can also determine how aquatic systems function.

Lake and stream ecosystems are not simply contained within wetted margins, but they function in relation to processes occurring in upstream drainage basins (Wetzel 1983, Likens et al. 1977, Borman and Likens 1979). Both lakes and streams are a continuum of biogeochemical processes (Vannote et al. 1980). Weathering of bedrock and atmospheric inputs introduces the primary nutrients and minerals that contribute to biological structure. Geomorphological characteristics including slope, drainage area, and water retention features in a catchment can control the rate of retention and export of dissolved substances produced within and moving through the forest floor and soils (D'Arcy and Carignan 1997). In streams, dissolved nutrients spiral downstream as they are recycled through various particle sizes (Newbold et al. 1983). In lakes, downstream transport of chemical constituents is slowed from days to years. Only in meromictic lakes is some water in the monimolimnion not part of the downstream continuum. Nutrients and other chemicals become structured into biological communities as internal processes within a lake modify the size and mass of downstream transport of nutrients and other chemicals introduced from upstream. The concept of nutrient loading, particularly phosphorus (Schindler 1977), in determining lake productivity is well known (Wetzel 1983, Edmondson 1991). The same applies to production in streams in which manipulation of loading and concentrations of a limiting nutrient can substantially alter biological productivity (Johnston et al. 1990, Peterson et al. 1993). Because of the fundamental importance of upstream drainage basins determining stream and lake function, factors including climate and physiography that form the basis of terrestrial Ecoregions, must also be important in determining zones of aquatic ecosystems.

Special comment is required here with respect to consideration of the hydrological zonation that was developed for British Columbia (MOELP 1995). Hydrological zonation was produced to allow extrapolation of data from gauged stations to drainages that are not gauged within hydrologically similar regions. While this zonation can contribute to a perspective of regional variation in flow and drainage basin delineation for aquatic ecosystems, it does not consider chemical and biological variation along elevational gradients. Classes of water quality within hydrological units include combinations affected by different land areas which chemically modify surface water and produce different water quality characteristics within zones (Omernik and Griffith 1991). For this reason, the B.C. hydrological zonation was used as a reference for our ecozone classification but the hydrological boundaries were considered less important than those of the Ecoregion classification (Demarchi 1995) which is based on ecological criteria.

All aquatic ecosystems for which water quality data were available in accessible data bases were examined in this project. Data were mainly from lakes, streams, and water storage reservoirs. Wetlands were included where sampling sites for a stream or lake were located in wetland habitat.

We adopted the definition of an aquatic ecozone that was proposed during a 1994 workshop used for initial planning of an ecozone classification system (P. Newroth, Water Quality Branch, Victoria, B.C., pers. comm.). By that definition an aquatic ecozone is:

"an area with relatively homogeneous physical, geological and climatic processes that determine the physical, chemical and biological characteristics of water."

Conceptually we can assign a range of spatial scales to this definition as has been applied to the development of terrestrial ecozones by Demarchi (1995). Within the Province, Demarchi (1995) recognized "ecosections" within "Ecoregions" within

"Ecoprovinces". We have used the same terminology to assign two geographic strata of aquatic ecozones, as follows:

Ecoprovince: an area where there are consistent climatic processes, geology, lithology and relief that determine characteristics of aquatic ecosystems at the sub-continental level;

Ecoregion: an area within an Ecoprovince where there is minor macroclimatic variation, and a characteristic lithology and geomorphology that can influence morphometry and surface chemistry of aquatic ecosystems. Large lakes, reservoirs and rivers characterize an Ecoregion and biogeochemical processes within those systems are recognized to influence water quality.

Limnological regions proposed by Northcote and Larkin (1964) were similar in scale to the Ecoprovince defined here. Ecoregions are recognized to distinguish major aquatic features within an Ecoprovince. For example, an Ecoregion may be dominated by water quality characteristics of a large reservoir or a high density of pothole lakes or a particular reach of a large river. Hence, the purpose of assigning Ecoregions is in most part to isolate major morphological features of lakes and streams within an Ecoprovince that may be important in describing water quality.

Within the Ecoregion, we also recognize a third strata called the "Watershed Group". The Watershed Group is a polygon that follows watershed boundaries according to *land and water use areas that have been previously defined by the Water Management Branch (Stu Hawthorn, MOELP, Victoria, Pers Comm.). Those areas are called "precincts" (Stu Hawthorn, MOELP, Victoria, Pers Comm.) and their size (e.g. number of enclosed drainages) and number of them is set according to a level at which GIS software can complete analyses in "reasonable time" yet sustain some ecological meaning. With this criteria, a Watershed Group* may be defined as "a precinct enclosing aquatic features at the sub-basin scale that is practical for detailed mapping of water quality characteristics".

The Watershed Group was a useful strata in this project for three reasons:

1. *Watershed Groups can easily be mapped using existing data contained in the Provincial Watershed Atlas;*
2. *Watershed Groups provide relatively small "building blocks" of water quality characteristics that can easily be linked to form the larger Ecoregion and Ecoprovince polygons.*
3. *Watershed Groups do not split major aquatic features and catchments, which means they sustain ecological realism.*

Potential success in statistically distinguishing among Ecoprovinces or Ecoregions or Watershed Groups on the basis of water quality characteristics was dependent on the availability of data. In readily accessible data bases holding water quality data for British Columbia, there are more data for southern areas than northern areas. Hence, the potential for quantitatively assigning Ecoregions on the basis of statistical comparisons of values of water quality parameters was greater in the south than in the north. Also, with narrowing of scope between an Ecoprovince and a Watershed Group, there is great loss of data because the number of sampling sites drops as polygon size declines. The relative absence of data at the Watershed Group level means that the potential for quantitative analysis at that level can be extremely limited or non-existent, particularly in northern regions.

Despite this problem, all three strata were retained for mapping purposes. For Watershed Groups in which data do exist, the ability to summarize that information at the level of a Watershed Group is more useful than summarizing it at very large spatial areas, despite the inability to statistically compare water quality between adjacent Watershed Groups.

In this project, ecozone delineation pertained not only to pristine areas not affected by anthropogenic activities but they also included aquatic systems that have been or are influenced by allochthonous materials and land manipulation. The intent here was to establish an Ecoregion framework for all water quality conditions in the Province. While ecozones were mostly described in relation to undisturbed characteristics, the data base used to determine chemical attributes included sites known to be affected by pollution. With these data, variation in parameter values were greater than they would have been if contaminated sites were not included. For this reason, our descriptions of each ecozone relied on medians rather than means along with maximum and minimum values for comparison purposes. Medians are less influenced by outliers than are mean values. Where contamination was known to be a factor in these summary data, sites were described separately. For many Ecoregions, contaminated sites were not described or known and data from those sites were integrated within zone descriptions.

We recognize this approach has drawbacks by confounding regional descriptions. In future versions of the classification, separation of disturbed and undisturbed sites will be necessary. At this point, however, the inclusion of all sites provides a perspective of actual water quality across B.C.

The classification scheme is adaptable to change. Data collection and compilation that occurs after this project is complete can be entered into a central data base from which routine analyses can be run to update ecozone boundaries and descriptions. In this respect the project can evolve. Results are expected to change over time as new data is applied.

3.0 METHODS

Tasks leading up to the production of an aquatic ecozone map and ecozone descriptions included the following steps:

- data access and compilation;
- Application of statistical clustering techniques to be used for a preliminary selection of aquatic ecozones;
- Application of GIS techniques to select a second series of aquatic ecozones;
- Modification of preliminary ecozones with input from technical and water management specialists during a workshop;
- final selection of hierarchical ecozone boundaries for lakes and streams based on qualitative comparisons of results from mapping preliminary ecozones and findings from the workshop;

- completion of overlay analyses to provide water quality attributes and summary statistics of those attributes for all ecozones;
- Preparation of a map showing lake and stream ecozones;
- Preparation of this report describing methods of data compilation and analysis and descriptions of water quality in ecozones of British Columbia;
- preparation of a graphical user interface (GUI) linked to ArcView GIS to allow users to examine spatial distributions of data summaries, plot, complete data searches and sort routines, and perform querying and screen captures.

3.1 Data Access and Compilation

A large list of water quality parameters were included in the initial compilation of data. This approach was intentional to allow for wide ranging analyses. The initial list of parameters included:

- indices of biological productivity (e.g. total phosphorus (TP), total dissolved phosphorus (TDP), soluble reactive phosphorus (SRP), species of inorganic N, organic N, chlorophyll a, total organic carbon (TOC));
- electrochemical variables (e.g., water temperature, pH, alkalinity, conductivity, total dissolved solids (TDS), dissolved oxygen);
- indices of fluvial erosion and leaching from soils and bedrock (e.g. colour, total suspended solids (TSS), turbidity, selected metals) and;
- indices of hydrological, geophysical, and morphological characteristics (e.g., elevation, location identifiers, stream flow, lake depth, lake surface area).

The complete list of variables including data sources and the data dictionary is shown in Tables 1 and 2. An independent data base which hereafter is called the Aquatic Ecozone Classification Data base (AECD) was built for the project. It incorporated several digital and non-digital data sources. The provincial EMS database (formerly the SEAM database and now called the Environmental Monitoring System) provided the largest data source. However, EMS contained little information for the northeastern part of the province, the central and northern coast, and in mountain ranges in the southeastern portion of the province near the Alberta border. Additional information, selected from federal databases, published and unpublished research papers, regional office paper files and contractor's reports, improved both the quality and geographic coverage of the AECD. Table 1 provides a summary of data sources and a data dictionary.

The data were originally recorded as Excel spreadsheets and then converted to dBase format database files. During conversion, measurement values below detection limits, indicated in several datasets by the use of "<", were replaced with a zero value. Measurement units were standardized to match those used in the EMS.

Table 1. Dictionary for the aquatic ecozone classification data base (AECD) for streams including the list of variables, data sources, and dBase structure.

Variable	Field	dBase	Units	Data

or Measurement	Name	Structure		Source*
Site name	SITE_NAME	char, 60		a, b, f
Watershed code	WS_CODE	num, 45		
EMS code	EMS_ID	char, 15		a
Site code	SITE_ID	char, 15		b, f
NTS sheet number	NTS_SHEET	char, 15		b, f
Region name	REGION	char, 60		a, b, f
Latitude	LATITUDE	num, 15.3	dec. deg.	a, b, f
Longitude	LONGITUDE	num, 15.3	dec. deg.	a, b, f
Data source	DATA_SOURC	char, 60		a, b, f
Sample date	SURV_DATE	date, 8	dd/mm/yy	a, b, f
Season	SEASON	char, 10		a, b, f
Stream order	ORDER	num, 3		b
Surficial and bedrock geology	BED_MAT	char, 60		
Soil type	SOIL_TYPE	char, 60		
Riparian vegetation	RIPARIAN	char, 60		
Elevation	ELEVATION	num, 8.3	m	
Gradient	GRADIENT	num, 8.3	%	
Mean flow	FLOW_MEAN	num, 8.3	m/s	a
Max flow	FLOW_MAX	num, 8.3	m/s	
Min flow	FLOW_MIN	num, 8.3	m/s	
Sample depth	DEPTH_SAMP	num, 8.3	m	
Mean temperature	TEMP	num, 8.3	C	a, b, f
Dissolved oxygen	D_O	num, 8.3	mg/L	f
True colour	COLOUR	num, 8.3	colour units	b, f
TAC_colour	TAC_COLOUR	num, 8.3	TAC	f
Turbidity	TURBIDITY	num, 8.3	NTU	a, b, f
Total suspended solids	SUS_SOLID	num, 8.3	mg/L	b, f
Total dissolved solids	TDS	num, 8.3	mg/L	b, f
Specific conductance	SPF_COND	num, 10.3	umhos/cm	a, b, f
Total aluminum	ALUM_T	num, 8.3	mg/L	a, b, f
Dissolved aluminum	ALUM_D	num, 8.3	mg/L	a
Dissolved ammonia	AMMONIA	num, 8.3	mg/L	a, b, f
Calcium	CALCIUM	num, 8.3	mg/L	a, b, f
Total organic carbon	C_ORG_T	num, 8.3	mg/L	a, f
Dissolved organic carbon	C_ORG_D	num, 8.3	mg/L	
Total inorganic carbon	C_INORGT	num, 8.3	mg/L	f
Dissolved inorganic carbon	C_INORGD	num, 8.3	mg/L	
Total chloride	CHLOR_T	num, 8.3	mg/L	
Dissolved chloride	CHLOR_D	num, 8.3	mg/L	a, f
Total iron	IRON_T	num, 8.3	mg/L	a, b, f
Total magnesium	MG_T	num, 8.3	mg/L	f
Total manganese	MN_T	num, 8.3	mg/L	b, f
Total phosphorus	PHOS_T	num, 8.3	mg/L	a, b, f
Total dissolved phosphorus	PHOS_D	num, 8.3	mg/L	b
SRP	SRP_SURF	num, 8.3	mg/L	a, f
Potassium	POTASSIUM	num, 8.3	mg/L	f
Total Kjeldar nitrogen	TKN	num, 8.3	mg/L	a, b, f
Total Kjeldar nitrogen	DKN	num, 8.3	mg/L	
Nitrate	NITRATE	num, 8.3	mg/L	a, b, f
Nitrite	NITRITE	num, 8.3	mg/L	b
Total organic N	N_ORG_T	num, 8.3	mg/L	f
NO2 + NO3	NO2_NO3	num, 8.3	mg/L	f
Silica	SILICA	num, 8.3	mg/L	f
Silicon	SILICON	num, 8.3	mg/L	f
Sodium	SODIUM	num, 8.3	mg/L	f

Variable or Measurement	Field Name	dBase Structure	Units	Data Source*
Sulphate	SULPHATE	num, 8.3	mg/L	b, f
Total zinc	ZINC_T	num, 8.3	mg/L	f
Total alkalinity (4.5)	ALKALINITY	num, 8.3	mg/L	b, f
pH	PH	num, 8.3	pH units	a, b, f
Large blue/green algae	ALGAE_LRGE	char, 60		
Chlorophyll a	CHLORO_A	num, 8.3	ug/L	b, f
Phosphorus in sediment	SED_PHOS	num, 8.3	ug/L	
Nitrogen in sediment	SED_NITRO	num, 8.3		
Organic C in sediment	SED_C_ORG	num, 8.3		
EDTA - Hardness	HARDNESS	num, 8.3	mg CaCO3/L	b
*Data sources include	a: SEAM or EMS (MOELP) b: data base compiled by Norecol (1996) f: data extracted from regional MOELP offices in a review of paper files. blanks indicate no data were available and values for those variables are empty in the data base.			

Table 2. Dictionary for the aquatic ecozone classification data base (AECD) for lakes including the list of variables, data sources, and dBase structure.

Variable or Measurement	Field Name	dBase Structure	Units	Data Source*
Site name	SITE_NAME	char, 60		a, b, c, d, e, f
Watershed code	WS_CODE	num, 45		e
EMS code	EMS_ID	char, 15		a, b, c, e
Site code	SITE_ID	char, 15		d, f
NTS sheet number	NTS_SHEET	char, 15		b, c, d, f
Region name	REGION	char, 60		a, b, c, d, e, f
Latitude	LATITUDE	num, 15.3	dec. deg.	a, b, c, d, f
Longitude	LONGITUDE	num, 15.3	dec. deg.	a, b, c, d, f
Data source	DATA_SOURC	char, 60		a, b, c, d, e, f
Sample date	SURV_DATE	date, 8	dd/mm/yy	a, b, c, d, e, f
Season	SEASON	char, 10		a, b, c, d, e, f
Surficial and bedrock geology	BED_MAT	char, 60		
Soil type	SOIL_TYPE	char, 60		
Riparian vegetation	RIPARIAN	char, 60		
Presence of inflow	INFLOW	logical	y/n	b
Presence of outflow	OUTFLOW	logical	y/n	
Drainage basin area	AREA_DRAIN	num, 15.3	sq. km	b
Lake surface area	AREA_SURF	num, 15.3	sq. km	b
Ratio drainage basin: lake area	D_S_RATIO	num, 15.3	ratio	b
Lake volume	VOLUME	num, 15.3	cub. m	b
Water detention time	DET_TIME	num, 8.3		
Elevation	ELEVATION	num, 8.3	m	b
Max depth	DEPTH_MAX	num, 8.3	m	b
Mean depth	DEPTH_MEAN	num, 8.3	m	b, d

Variable or Measurement	Field Name	dBase Structure	Units	Data Source*
Sample depth	DEPTH_SAMP	num, 8.3	m	a, d, f
Temperature	TEMP	num, 8.3	C	a, d, e, f
Surface temperature	TEMP_SURF	num, 8.3	C	b
Bottom temperature	TEMP_BOTM	num, 8.3	C	b
Thermal stratification	THERM_STRT	logical	y/n	b
Dissolved oxygen	DO	num, 8.3	mg/L	a, b, d, f
Surface dissolved oxygen	DO_SURF	num, 8.3	mg/L	
Bottom dissolved oxygen	DO_BOTM	num, 8.3	mg/L	e
Anoxic hypolimnion	ANOX_HYPO	logical	y/n	b
Hydrogen sulphide	H2S	logical	y/n	e
Extinction depth	DEPTH_EXT	num, 8.3	m	a, c, d, f
Secchi disk	SECCHI	num, 8.3	m	b
True colour	COLOUR	num, 8.3	colour units	a, c, d, f
TAC_colour	TAC_COLOUR	num, 8.3	TAC	a, c, d, f
Turbidity	TURBIDITY	num, 8.3	NTU	a, d, f
Total suspended solids	SUS_SOLID	num, 8.3	mg/L	a, b, d, f
Total dissolved solids	TDS	num, 8.3	mg/L	a, b, c, d, f
Specific conductance	SPF_COND	num, 10.3	umhos/cm	a, b, c, d, e, f
Total aluminum	ALUMINUM_T	num, 8.3	mg/L	a, b, c, d
Dissolved aluminum	ALUMINUM_D	num, 8.3	mg/L	
Dissolved ammonia	AMMONIA	num, 8.3	mg/L	a, f
Calcium	CALCIUM	num, 8.3	mg/L	a, b, c, d, f
Total organic carbon	C_ORG_T	num, 8.3	mg/L	a, c, d, f
Dissolved organic carbon	C_ORG_D	num, 8.3	mg/L	
Total inorganic carbon	C_INORG_T	num, 8.3	mg/L	c, d, f
Dissolved inorganic carbon	C_INORG_D	num, 8.3	mg/L	a
Total chloride	CHLORIDE_T	num, 8.3	mg/L	c
Dissolved chloride	CHLORIDE_D	num, 8.3	mg/L	a, d
Total iron	FE_T	num, 8.3	mg/L	a, b, c, d, f
Total magnesium	MG_T	num, 8.3	mg/L	a, c, d, f
Total manganese	MN_T	num, 8.3	mg/L	a, c, d, f
Total phosphorus	PHOS_T	num, 8.3	mg/L	a, c, d, f
Total phosphorus - surface	PHOS_SURF	num, 8.3	mg/L	b
Total phosphorus - bottom	PHOS_BOTM	num, 8.3	mg/L	b
Total dissolved phosphorus	PHOS_D	num, 8.3	mg/L	b
SRP	SRP_SURF	num, 8.3	mg/L	b, d, f
Potassium	POTASSIUM	num, 8.3	mg/L	a, c, d, f
Total Kjeldar nitrogen	TKN	num, 8.3	mg/L	a, b, c, d, f
Total Kjeldar nitrogen	DKN	num, 8.3	mg/L	
Nitrate	NITRATE	num, 8.3	mg/L	a, b, c, d, f
Nitrite	NITRITE	num, 8.3	mg/L	
Total organic N	N_ORG_T	num, 8.3	mg/L	a, c, d, f
NO2 + NO3	NO2_NO3	num, 8.3	mg/L	a, c, d, f
Silica	SILICA	num, 8.3	mg/L	a, d, f
Silicon	SILICON	num, 8.3	mg/L	a, c, d, f
Sodium	SODIUM	num, 8.3	mg/L	a, c, d, f
Sulphate	SULPHATE	num, 8.3	mg/L	a, b, c, d, f
Total zinc	ZN_T	num, 8.3	mg/L	a, c, d, f
Total alkalinity (4.5)	ALKALINITY	num, 8.3	mg/L	a, b, c, d, f
pH	PH	num, 8.3	pH units	a, b, c, d, e, f
Large blue/green algae	ALGAE_LRGE	char, 60		b
Chlorophyll a	CHLORO_A	num, 8.3	ug/L	a, c, d, f

Variable or Measurement	Field Name	dBase Structure	Units	Data Source*
Phosphorus in sediment	SED_PHOS	num, 8.3	ug/L	b
Nitrogen in sediment	SED_NITRO	num, 8.3		
Organic C in sediment	SED_C_ORG	num, 8.3		b
EDTA - Hardness	HARDNESS	num, 8.3	mg/CaCO3/L	
*Data sources include	a: SEAM or EMS (MOELP) b: data base compiled by Norecol (1996) c: data compiled by Chapman (1996) d: Acid rain study (MOELP) e: Lakes data base (MOELP) f: data extracted from regional MOELP offices in a review of paper files. blanks indicate no data were available and values for those variables are empty in the data base.			

As shown in Tables 1 and 2, there were many variables for which data were not found in source data bases (source data field is blank). These variables were obviously not further considered in data analysis. There were many more variables that were discarded because data were available from only a few locations and they were of no use in examining regional distributions. Still more variables were eliminated because they were considered irrelevant with respect to an ecozone classification. This data reduction process left the following variables for analysis:

- total suspended solids (TSS);
- turbidity (TURB);
- total dissolved solids (TDS);
- true colour (COL);
- pH;
- alkalinity (ALK);
- total phosphorus (TP);
- conductivity (COND);
- chlorophyll a;
- dissolved oxygen (DO).

The final AECD contains 122,069 measurements for lake-based and 188,178 records for stream-based stations including all chemical parameters.

3.2 Cluster Analysis

Cluster analysis was run only on lake data with the primary objective of determining the feasibility of spatial clustering for the entire Province using existing data. The AECD contained data for 1,055 lakes. For these lakes, relevant data were sorted by season to control confounding by seasonality that could strongly affect productivity-related variables. Mean and median values for each variable were then determined by location within season where winter was January - March; spring was April - June; summer was July - September; and fall was October - December. TSS was omitted from the variable list as it is largely irrelevant for lakes. Conductivity was also omitted because of co-linearity with TDS. Only lakes having at least one measurement for all variables were included in the data set used for clustering. The final data set contained 30 lakes for fall, 22 lakes for winter, 54 lakes for spring, and 49 lakes for summer. There was some overlap between lake and season (i.e. some lakes which were sampled in winter were also sampled in spring) but only 6 lakes in the entire Province were sampled in all seasons at any time.

Cluster analysis is a multivariate procedure for detecting natural groupings in data. The method assumes that neither the number nor members of the subgroups are known *a priori*. The approach known as Kmeans clustering (Wilkinson 1996) was used wherein between-cluster variation is maximized relative to within-cluster variation by sequential splitting of clusters of cases (locations in our application) until within groups sums of squares can no longer be reduced. All data were standardized using procedures described by Wilkinson (1996) to keep the influence of all variables comparable.

3.3 GIS Analysis

Initially, each chemical datum point was linked by its geographic coordinates or watershed code to the specific lake or stream from which the measurement was taken. When ranges or medians were plotted on a base map for any parameter, clumped distributions were found, or data was found to be lacking for large areas of the Province. For this reason, raw delineation of ecozone boundaries based on distributions of parameter values summarized either as means, medians, or ranges was abandoned.

The approach was revised to summarize chemical data from lakes and streams within predefined Ecoprovinces, Ecoregions, and Watershed Groups without concern about eveness of data distributions. The intent was simply to describe chemical characteristics as they are, regardless of sample size.

Ecoprovince and Ecoregion polygons were originally the same as those mapped for terrestrial ecozones by Demarchi (1995). However, many did not overlay Watershed Group polygons (the third and most detailed strata) which made the three strata incompatible from the point of view of digital mapping. To correct this problem, the Watershed Group was assigned as the basic spatial unit for “building” the aquatic Ecoregions and Ecoprovinces. Boundaries of Watershed Groups were dissolved to form larger polygons that approximated the distribution and areal extent of Ecoregions that enclosed major aquatic morphological features within Ecoprovinces. The same approach was used to delineate the aquatic Ecoprovinces (e.g. aquatic Ecoregion polygons were dissolved to form the larger Ecoprovinces). The resulting location and spatial extent of the aquatic Ecoprovinces was similar to lake productivity zones originally defined by Northcote and Larkin (1964).

For each Watershed Group, the mean, median, maximum, minimum and standard deviation for each chemical parameter for both lakes and streams was determined using the following process:

1. A geographic query (a point in polygon search) was conducted using a GIS (Genamap) to determine within which Watershed Group a measurement station (lake station or stream site) was located.
2. A program was written in dBase to determine the statistics for each parameter by polygon. The data summary was conducted using data combined for all seasons. This approach was based on recommendations from the workshop that seasonally sensitive parameters should not be used to distinguish ecozones. Null values which included values that were originally less than detection limits were ignored by the program. If there were an even number of measurements, the higher value of the middle two records was selected as the median.
3. The data summary generated attribute tables for lake and stream data that allowed each of the ecozone polygons to be colour themed according to the summarized data values.
4. The thematic maps and accompanying attribute tables were used as the base to review boundaries for the Ecoprovinces and Ecoregions during the workshop. The data summary program was re-run after modifications were made to ecozone boundaries during the workshop, thus providing an updated attribute table for the new polygons.

3.4 Workshop

A workshop was held to integrate the first-hand regional knowledge of scientific and technical experts and to critically review preliminary ecozone delineations.

Participants included:

- Dr. Tom Northcote (Professor Emeritus, UBC)
- Dr. Ken Hall (UBC)
- Ken Ashley (MOELP/UBC)
- Dr. John Stockner (DFO (retired)
- Steve Cook (MEMPR/Geol Survey)
- Remi Odense (MOELP/Smithers)
- Maurice Lirette (MOELP/Williams Lake)
- Bruce Carmichael (MOELP/Prince George)
- Brian Chan (MOELP/Kamloops)

in addition to project team members including:

- Chris Perrin (project manager and workshop leader)
- Ann Blyth (GIS manager)
- Dr. Rick Nordin (contract manager)
- Kim Chapman (project co-op student)
- Ashton Horne (GIS technician)

Maps that were colour themed by parameter ranges were prepared for critical review. In addition to maps of Ecoregions and Ecoprovinces, colour themed maps of

Hydrological Zones were also prepared for review. The inclusion of Hydrological Zones was at this point arbitrary and was not intended to favour that classification over the Ecoregion classification of Demarchi (1995) or the Limnological Regions of Northcote and Larkin (1964) as a starting point for boundary delineation. The Hydrological Zone map simply provided another option for workshop participants to review.

Participants were divided into two groups (northern BC and southern BC) based upon their experience. Each study group was encouraged to alter ecozone boundaries where it was found to be necessary by sketching directly onto the colour themed maps and provide reference material that could be used to substantiate the changes. As the group completed revisions of one variable, the regions were transferred to a large format map on which ecozone boundaries were delineated. Where neighbouring zones were assigned identical attributes for all variables, these regions were combined into one ecozone.

The revised ecozone boundaries and value ranges were used to generate an updated version of the Ecoregion boundaries in digital format with an accompanying attributes table containing data ranges and medians for each of the Ecoregions as described in Section 3.3. Watershed group polygons were retained as the basic structure for map production. Alphabetic labels were assigned to each Ecoprovince, Ecoregion and Watershed Group polygon.

3.5 Description of Water Quality in Ecoprovinces and Ecoregions

Several sources of information were used to describe water quality in the Ecoprovinces and Ecoregions. The attribute table of summary chemical data for each Watershed Group was the primary source. Discussion of climate and physiography that can influence chemical characteristics of drainages affecting lakes and streams within Ecoprovinces and Ecoregions was from descriptions by Demarchi et al. (1990). Observations by the senior author and data from the technical literature pertaining to water quality in British Columbia was also used. There was no detailed literature review, however, as that was beyond the scope of the present version 1 project. Cited literature and data was from the personal library of the senior author.

Using data summarized in the attribute tables and the other reference material, the water quality characteristics of each Ecoprovince and embedded Ecoregions and Watershed Groups were described. The chemical parameters were limited to those listed in section 3.1 and modified as a result of the workshop proceedings. Differences in characteristics of water quality among ecozones were interpreted with respect to climate, physiographic, geological, lithological, biogeochemical and limnological processes as well as land use activities that are potential factors determining zonal variation. All descriptions were generalized and were not intended to deal with detailed causal relationships. The intent was simply to describe spatial characteristics of water quality in support of the proposed zonation produced on the accompanying map (Figure 1).

4.0 RESULTS AND DISCUSSION

4.1 Cluster Analysis

Lake clusters were found for all seasons but there were few lakes grouped within any one cluster and they poorly represented all areas of the Province (Table 3). For summer, a total of 6 groups were found including lakes from southern and central regions. Fewest groups were found in winter (total of 4) and with the exception of one lake that represented one group, these were restricted to southern regions. In all groups, there were very few lakes, in many cases only one lake was assigned to a statistically unique group. Given that several thousand lakes are known to exist in most of the regions assigned in Table 3, these sample sizes were severely inadequate with which to have confidence in the cluster allocations.

This outcome is due to a general lack of data for all parameters used in the cluster analysis among lakes in AECD. In classical clustering technique, results are severely weakened when data for any one parameter are missing. For this reason, only lakes having at least one measurement of each parameter were included in the analysis. Because most lakes in the AECD do not have data for the complete short list of variables listed in section 3.1, this selection criteria meant that the lake sample size was severely limited. It was also biased to locations in southern regions. Lakes from the north and north-western part of the Province were completely lacking. For this reason, clustering was not considered an appropriate technique for grouping lakes with the existing data base and clustering results were not further considered in preparation of the aquatic ecozone map.

Table 3. Seasonal clustering of lakes with associated political regions as determined by cluster analysis.

Season	Cluster Number	Number of Lakes	Region
Winter	1	7	Vancouver Island; Kootenays; Okanagan
	2	1	Vancouver Island
	3	1	Omineca-Peace
	4	8	Vancouver Island; Okanagan
Spring	1	19	Vancouver Island; Kootenays; Okanagan; Thompson-Nicola; Lower Mainland; Omineca-Peace
	2	1	Caribou
	3	2	East Kootenays
	4	1	Omineca-Peace
	5	7	Thompson-Nicola; Okanagan; Caribou
Summer	1	8	Omineca-Peace; Okanagan; Caribou
	2	1	Omineca-Peace
	3	1	Omineca-Peace
	4	12	Vancouver Island; Okanagan; Lower Mainland; Thompson-Nicola
	5	3	Kootenays
	6	1	Vancouver Island
Fall	1	10	Vancouver Island; Okanagan; Omineca-Peace
	2	1	Caribou
	3	1	Vancouver Island
	4	3	Vancouver Island; Omineca-Peace
	5	3	Kootenays; Okanagan

The Kmeans clustering provided F-ratios by variable which can be directly compared because data are standardized to a consistent scale. Results of this comparison indicated a ranking of variables that contribute to formation of clusters (Table 4). Electrochemical variables were the strongest discriminators in all seasons except summer when productivity-related variables were best. Colour was a very strong discriminator in all seasons except fall. Because organic leachates contribute to colour, this finding suggests that there were important differences between cluster locations associated with leachates from upstream drainages or surrounding wetland environments. There was no one variable that was included in the list of best discriminators for all seasons. Given the small sample size and general weakness of the analysis that was described above, this finding is not considered an indication that there was no consistency of best discriminators across seasons. The analysis needs to be repeated once sample size and distribution of lakes is expanded in the AECD.

Table 4. Listing of the four top predictors of lake clusters by season shown in Table 3.

Season	Variable	F-Ratio
Winter	colour	44.6
	pH	33.3
	alkalinity	32.3
	TP	22.9
Spring	colour	409
	alkalinity	106
	TDS	71.7
	DO	47.3
Summer	chlorophyll a	97.1
	colour	48.3
	TP	35.5
	TDS	31.7
Fall	alkalinity	109.2
	TDS	89.7
	DO	49.0
	TP	45.7

4.2 Workshop Results

The workshop was successful in producing a roughed out map showing the basic framework for the classification of water quality in lakes and streams of British Columbia. Within one day, workshop participants were successful in outlining approximate boundaries of Ecoprovinces. In some of these zones, Ecoregions were identified in terms of special morphometric characteristics that were known to influence concentrations of chemical attributes.

Two important findings came from the workshop process. First was agreement that ecozones should be built on combinations of Watershed Groups. Other zonation systems were discussed including the terrestrial ecozone classification (Demarchi 1995) and the B.C. Hydrological zones (MOELP 1995) which are not based on watershed areas. It was decided that the hydrological zones were not appropriate because many boundaries for those zones dissect major water bodies making it awkward to use for aquatic ecosystem classification. It was also decided that climatic and physiographic factors that determine terrestrial ecozones were important in determining the distribution of aquatic ecozones. For this reason, Demarchi’s (1995) ecozone descriptions were retained as reference in describing the aquatic ecozone classification. Watershed groups were retained as the basic building block for all zones because they can be subdivided or combined and still maintain logical watercourses and water bodies for interpretation of water quality. Combinations of Watershed Groups were combined by dissolving polygon boundaries to form Ecoregions and combinations of Ecoregion boundaries were dissolved to form the Ecoprovinces.

The second finding was that stratification of data by season should be dropped in this first version of the classification because of the lack of adequate data to support the seasonal strata. It was also recommended that seasonally sensitive variables be omitted. These were the biological variables for which values tended to fluctuate widely by season (e.g. chlorophyll a) and those which are greatly modified by biological activity (e.g. SRP and NH_4^+). Hence, variables used in the final attribute table were:

- TDS
- conductivity
- pH
- alkalinity
- TP
- Colour

for both lakes and streams. For streams, TSS was also added because of its importance in discriminating between streams having glacial turbidity and those which do not. TSS was also useful in discriminating streams by various land use practices.

4.3 Ecozone Structure and Descriptions

Delineations of Watershed Groups were taken directly from digital data available in the Watershed Atlas for B.C. A total of 245 Watershed Groups were used in our mapping. Boundaries for these groups were dissolved to form 45 aquatic Ecoregions and boundaries for these areas were dissolved to form 8 aquatic Ecoprovinces. Because quantitative analysis was not successful in differentiating these areas, their delineation was based on input from participants at the workshop, consideration of the original outline proposed by Northcote and Larkin (1964), consideration of ecozone boundaries by Demarchi (1995), presence or absence of major limnological features, and obvious discriminating characteristics of water quality that were apparent in the table of chemical attributes.

The ecozones are plotted on the map that accompanies this report and on the smaller version included here as Figure 1. A listing of Watershed Groups within aquatic Ecoregions that in turn are within the aquatic Ecoprovinces is provided in Appendix A. Chemical attributes by aquatic Ecoprovince, aquatic Ecoregion, and Watershed Group are available electronically by request. The listing was too large to include as hard copy in this report. This listing includes all parameters found in the data search. Definitions of codes and labels are given in Appendix B. Descriptions and units of measure for all parameters are listed in Appendix C. Statistics pertaining to each aquatic Ecoprovince for the short list of parameters indicated in section 4.2 are included as tables in descriptions of each Ecoprovince in sections 4.3.1 through 4.3.8 below. Definitions of codes and labels in these tables are given in Appendix B.

Descriptions of the Ecoprovinces follows a general sequence. Physiographic and climatic features are described and these are accompanied with brief description of relevant geological and lithological characteristics that may influence water chemistry in the ecozone. Water quality in major rivers, lakes, and reservoirs are described where relevant. Water quality based on the chemical attributes is described and where possible it is interpreted with respect to climate, physiographic, geological, biogeochemical and limnological processes as well as land use activities that are potential factors determining zonal variation.

4.3.1 Taiga Plains

The oldest land mass in B.C. is in the northeastern corner comprising the Taiga Plains Aquatic Ecoprovince. The area is not assigned Ecoregions due to the homogeneous nature of lakes and streams; however, 18 Watershed Groups are recognized (Table 5).

The Taiga area consists of a relatively flat plateau at an elevation of about 450 m that is the remnant of a large inland sea. Bedrock throughout is shale which is largely unmodified since glaciation. Soils and the shale parent materials are highly erodable resulting in deep channels formed by the Fort Nelson River and the Petiot River. The geologic history as produced an undulating surface dominated by extensive wetland, poorly drained soils, and slow flowing, meandering streams. There are no large lakes in this Ecoprovince but small lakes are abundant. The wetlands include black spruce bogs characterized by an understory of sphagnum moss, Labrador tea, sweet gale and scrub birch.

The Taiga Plains are exposed to arctic air masses for the duration of winter months. In summer, the interaction of arctic air and Pacific air masses produce long periods of cloud cover. In cold years, soils can remain frozen year round. In combination with little precipitation, these conditions yield low stream flows and extensive ponding.

The highly erodable shale parent materials have a high carbonate content and would be expected to produce moderate to high TDS concentrations and high alkalinity. Data were only available for lakes in the Watershed Groups called the Lower Prophet River, Upper Fort Nelson River, and Upper Sikanni Chief River. In any one Watershed Group, there are no more than two observations of TDS, pH, and TP. There are no data for alkalinity, colour, and TSS. There are also no data for any stream or river. While these data are limited, Table 5 does show high dissolved solids concentrations (values between 146 to 424 mg•L^{-1}) and alkaline pH, which is consistent with what is expected in leachates from shale parent materials. TP concentrations are between 0.03 mg•L^{-1} and 0.24 mg•L^{-1} which are relatively high compared to other areas of the Province and can indicate the influence of lacustrine sediments which can have a high phosphorus content. There are no colour data for the Taiga Plains but it may be expected to be high in relation to concentration of leachates from the extensive bog communities.

Table 5. Water quality attributes for lakes and streams in Watershed Groups of the Taiga Plains Aquatic Ecoprovince. Column headings are defined in Appendix B.

WSG_CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
LPRO	LOWER PROPHET RIVER	Taiga Plains	Taiga Plains	LPRO	L	TDS	2	148.00	148.00	148.00	148.00	0.00
UFRT	UPPER FORT NELSON RIVER	Taiga Plains	Taiga Plains	UFRT	L	TDS	2	304.00	424.00	364.00	424.00	84.85
USIK	UPPER SIKANNI CHIEF RIVER	Taiga Plains	Taiga Plains	USIK	L	TDS	2	144.00	146.00	145.00	146.00	1.41
LPRO	LOWER PROPHET RIVER	Taiga Plains	Taiga Plains	LPRO	L	PH	2	7.50	8.10	7.80	8.10	0.42
USIK	UPPER SIKANNI CHIEF RIVER	Taiga Plains	Taiga Plains	USIK	L	PH	2	8.70	8.80	8.75	8.80	0.07
LPRO	LOWER PROPHET RIVER	Taiga Plains	Taiga Plains	LPRO	L	P_T	2	0.03	0.24	0.14	0.24	0.15
UFRT	UPPER FORT NELSON RIVER	Taiga Plains	Taiga Plains	UFRT	L	P_T	2	0.04	0.04	0.04	0.04	0.00
USIK	UPPER SIKANNI CHIEF RIVER	Taiga Plains	Taiga Plains	USIK	L	P_T	2	0.03	0.03	0.03	0.03	0.00

4.3.2 Peace Plains

South of the Taiga Plains, elevations rise to 1,500 m at the Sikanni-Beatton Plateau and then decline to lowlands of the Peace River watershed. This area is called the Peace Plains Aquatic Ecoprovince. It is part of the Alberta Plateau which is an area of plateaus, plains, prairies, and lowland. There are no aquatic Ecoregions assigned in the Peace Plains but there are 8 Watershed Groups (Appendix A, Table 6).

In the Peace Plains, retreating ice left a large lake covering what is now the Peace River valley. With rebound and draining of the lake, a layer of rich sediment to a depth of 30 cm was left. That sediment formed the present soils that are nutrient-rich. These soils now support agricultural land use in the Peace River valley. Soft shales are the typical bedrock. The shales are highly erodable resulting in deep channels formed by the Peace River, Kiskatinaw River, and Beatton River.

The geologic history has produced a surface of low relief dominated by lowland forests of white or black spruce and patchy distributions of aspen. Soils are poorly drained, resulting in large areas of muskeg and wetland. Streams are slow and meandering. There are no large lakes in the Peace Plains.

Water quality data are concentrated in the Watershed Groups called Lower Beatton River and Lower Peace River (Table 6), both of which are close to Fort St John. Both lake and stream data are available.

Having highly erodable shale parent materials which have a high carbonate content, there are high TDS concentrations (medians of 110 to 234 mg•L^{-1}). Median alkalinity is only from lake samples and is also in moderate to high concentrations (median of 63.1 to 103 mg•L^{-1}). Median TP concentrations are mainly between 0.020 and 0.080 mg•L^{-1} among Watershed Groups, but very high concentrations up to a median of 0.168 mg•L^{-1} is found in the Lower Beatton River. In contrast, a relatively low median value of 0.011 mg•L^{-1} is found in the Upper Peace River. Most of the TP concentrations are high compared to what is found in many other areas of British Columbia. This phosphorus supports what is thought to be relatively productive lakes and streams in the Peace River valley. In lakes of the Lower Beatton River, median colour is 30 TCU which is moderate. It likely indicates leachates from bog communities and from organic matter in soils of the river valleys. At higher elevations, relatively low colour would be expected since this is where bogs give way to scrub forest of black spruce and tamarack. The pH is moderately alkaline (7.7 to 8.3) in all Watershed Groups, which is an effect of alkaline leachates from the shales.

Table 6. Water quality attributes for lakes and streams in Watershed Groups of the Peace Plains Aquatic Ecoprovince. Column headings are defined in Appendix B.

WSG_CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	ALK	270	2.000	156.000	67.133	63.100	12.761
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	L	ALK	11	91.900	141.000	105.436	103.000	16.805
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	L	ALK	4	82.800	90.800	86.500	88.200	3.668
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	COL	70	15.000	60.000	27.643	30.000	9.430
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	L	P_T	4	0.028	0.064	0.038	0.030	0.017
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	S	P_T	7	0.032	0.666	0.245	0.079	0.280
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	P_T	829	0.003	32.000	0.127	0.070	1.111
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	S	P_T	165	0.003	3.490	0.274	0.168	0.333
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	L	P_T	30	0.037	0.100	0.069	0.071	0.020
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	S	P_T	304	0.003	8.550	0.311	0.076	0.829
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	L	P_T	32	0.003	0.031	0.011	0.011	0.007
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	S	P_T	34	0.003	0.303	0.055	0.022	0.070
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	L	PH	2	8.300	8.300	8.300	8.300	0.000
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	S	PH	10	7.600	8.600	8.210	8.300	0.292
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	PH	603	5.300	9.300	7.991	7.900	0.462
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	S	PH	53	7.000	9.200	7.659	7.700	0.368
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	L	PH	18	7.300	8.300	7.972	8.000	0.293
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	S	PH	535	7.300	8.700	8.093	8.100	0.211
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	L	PH	24	7.800	8.300	7.996	8.000	0.120
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	S	PH	126	7.900	8.300	8.169	8.200	0.107
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	L	TDS	4	121.000	132.000	126.750	128.000	4.574
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	S	TDS	7	154.000	280.000	222.857	234.000	48.756
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	TDS	135	1.000	160.000	115.622	112.000	19.574
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	S	TDS	12	110.000	276.000	174.333	160.000	50.732
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	L	TDS	11	150.000	206.000	166.182	160.000	18.077
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	S	TDS	104	64.000	870.000	261.865	126.000	212.434
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	L	TDS	8	90.000	122.000	108.500	110.000	11.747
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	S	TDS	26	100.000	158.000	118.000	114.000	14.097
KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	S	TSS	9	14.000	756.000	232.444	70.000	296.697
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	TSS	265	1.000	97.000	7.193	5.000	10.328
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	S	TSS	78	3.000	6530.000	477.608	84.000	1116.990
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	L	TSS	2	4.000	4.000	4.000	4.000	0.000
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	S	TSS	526	1.000	4660.000	120.520	23.000	384.201
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	S	TSS	89	1.000	770.000	52.835	11.800	120.240

KISK	KISKATINAW RIVER	Peace Plains	Peace Plains	KISK	S	TURB	7	19.000	432.000	161.571	62.000	186.602
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	L	TURB	184	0.500	26.000	4.501	3.800	3.759
LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains	LBTN	S	TURB	71	1.100	2800.000	203.107	75.000	458.312
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	L	TURB	9	3.900	8.200	6.556	7.400	1.571
LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains	LPCE	S	TURB	365	0.600	850.000	36.503	9.100	84.559
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	L	TURB	4	0.700	4.400	1.775	1.000	1.756
UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains	UPCE	S	TURB	116	0.800	430.000	20.259	4.000	48.724

4.3.3 Northern Boreal Mountains

Aquatic ecosystems in the Northern Boreal Mountains are situated between the Coast Mountains and Taiga Plains. They extend south to uplands separating drainage between headwaters of the Nass and Skeena River watersheds that flow south and headwaters of the Stikine River which flows west. The Ecoprovince is characterized by mountain ranges separated by wide valleys. Major physiographic features from west to east are the Alsek Ranges, Cassiar Mountains, Liard Ranges, the Northern Rocky Mountain Trench, the Muskwa Ranges, and the Liard Gorge through which the Liard River flows between the Rocky and MacKenzie Mountains.

Extent of glaciation was variable in this Ecoprovince with ice masses flowing onto the wide valleys separating the mountain ranges. Glacial erosion is extensive at high elevations but less pronounced or locally absent in some lowlands and plateaus. The Stikine, Taku, and Alsek Rivers drain many rounded landforms that appear to have had limited or no glaciation.

Four aquatic Ecoregions are recognized in the Northern Boreal Mountains. They distinguish major physiographic features and include the Cassiar Ranges, the Liard Plateau, Muskwa Ranges and the Stikine Plateau. Among these Ecoregions, there are 45 Watershed Groups. This large number of groups reflects the wide morphological diversity of aquatic ecosystems in the Ecoprovince. Rivers drain large basins (e.g. the Liard River) but there are also abundant headwater streams originating in the alpine. Large elevational gradients are a major feature of aquatic ecosystems in the Northern Boreal Mountains.

Among major watersheds, the largest is the Liard. Upper elevations of the Liard River drain northern sections of the Cassiar Ranges and through relatively flat plains of muskeg and boreal white and black spruce of the Liard plateau. Major tributaries of the Liard include the Turnagain, Kechika, Dease and Blue Rivers which drain only a few small and medium sized lakes including Dease Lake. South of the Liard River is the Finlay River which drains towards the northern extent of the Rocky Mountain Trench to the north inflow of the Williston Reservoir. Headwaters of the Finlay River and the Kechika River drain a divide that separates the Muskwa and Cassiar Ranges. The second largest watershed in the Ecoprovince is the Stikine which originates from the Spatsizi Plateau and the Tuya River. Flowing through a steep canyon near Telegraph Creek, it cuts through steep glaciated valleys of the Coast Mountains to empty into Frederick Sound in the Alaskan panhandle. To the north, the Taku River has a similar westward path. In the northwest corner of the Ecoprovince (Stikine Plateau Ecoregion), there are several moderate sized lakes including Gladys Lake and Surprise Lake. All of these lakes are in glacially formed depressions in the rainshadow of the Tahltan Highlands.

In many broad valleys of the Ecoprovince, particularly in the Stikine Plateau, there are two treelines. One separates extensive alpine tundra from subalpine fir and white spruce and a second occurs in lower elevation valleys where cold air drainage tends to keep river valleys cool enough to limit forest communities and favour wetlands with willows and moss cover. Small lakes and slow meandering streams are typical in these valleys.

Water quality of lakes and streams has been recorded in 26 of the 45 Watershed Groups in the Northern Boreal Mountains (Table 7). The data are from all four aquatic Ecoregions although samples from the Liard Plateau and the Muskwa Ranges has been sparse compared to data from the other two Ecoregions. Despite the relative diversity of sites that have been sampled, recorded sample sizes are small (Table 7). More than half of the statistical summaries for any chemical parameter in a given Watershed Group in Table 7 are based on sample sizes <10. One exception is in the Sheslay River where 294 pH measurements are recorded.

Median dissolved solids concentrations range from a low value of 18 mg•L^{-1} in the Middle Dease River (Cassiar Ranges) to a very high value of 306 mg•L^{-1} in the Lower Kechika River (Liard Plateau). Some of the higher TDS values are associated with watersheds where there has been a long history of fire (e.g. Muskwa Ranges and Liard Plateau). Median TDS concentrations in the Stikine Plateau are particularly variable, ranging from a low of 26 mg•L^{-1} in the Pitman River watershed to a high of 279 mg•L^{-1} in the Upper Iskut River watershed. This wide variation is found in both lakes and streams. The Upper Iskut watershed in the Stikine Plateau has highly alkaline conditions (pH near 8.0, alkalinity of 171 mg•L^{-1}). Other high values are found in the Nahlin River and Klappan River watersheds of the Stikine Plateau. TDS concentrations in the Cassiar Ranges are mainly between 36 mg•L^{-1} and 68 mg•L^{-1} which are generally the lowest values for lakes and streams of the whole Ecoprovince.

Median pH and alkalinity values indicate moderate acid neutralizing capacity in the Ecoprovince. Median pH is 7.2 to 8.4 while alkalinity is mainly between 24 and 92 mg•L^{-1} . Relatively low alkalinity is found in one lake sample from the Dease Lake watershed, while extremely high alkalinity in 12 samples from the Upper Iskut Watershed Group stands out as an anomaly (Table 7).

TP concentrations are commonly <0.01 mg•L^{-1} in the Boreal Mountains which is in a range where P supply can severely limit biological production. Lowest values are generally found in the Cassiar Ranges while relatively high concentrations are found in both lakes and streams of the Stikine Plateau. The Stikine is an area where volcanic parent materials are common and weathering of these can locally add substantial phosphorus loads to surface water. Median TP concentrations of 0.038 mg•L^{-1} and 0.023 mg•L^{-1} are found in lakes of the Mess Creek and Middle Stikine River watersheds respectively. In the Sheslay River watershed, a very high median TP concentration of 0.180 mg•L^{-1} is found from 13 samples.

Colour data are missing from the Boreal Mountains watersheds, with the exception of 6 lake samples from the Liard River Watershed Group. The median from these data is 30 TCU. This is a high value that may be due to leachates from sphagnum dominated black spruce bogs. Colour may be expected to be much lower (e.g. <5 TCU) at higher elevations that are away from the influence of bog communities.

Table 7. Water quality attributes for lakes and streams in Watershed Groups of the Northern Boreal Mountains Aquatic Ecoprovince. Column headings are defined in Appendix B.

4.3.4 Coast and Mountains

The Coast and Mountains Ecoprovince extends the full length of the British Columbia coastline and is the largest and most diverse of all Ecoprovinces. The area includes the windward side of the coast mountains, the Queen Charlotte Islands and Vancouver Island. In the extreme southern portion, it includes southeastern Vancouver Island, the Gulf Islands, the urban sprawl of the City of Vancouver, city suburbs and the lower Fraser Valley. There are 16 aquatic Ecoregions along the coast and 67 Watershed Groups (Figure 1 and Table 8). While the spatial scale and morphometric characteristics of aquatic ecosystems are diverse in this Ecoprovince, the coastal influence on water chemistry was considered sufficiently important to keep the area as one unit. The influence of agriculture, urban and suburban development on water quality characteristics in populated areas of the lower Fraser Valley, Greater Vancouver, southern Vancouver Island and the Gulf Islands are described separately as anomalies from the general coastal water quality. Despite these anomalous data, these areas were retained in the Coast and Mountains to keep coastal water quality characteristics in one Ecoprovince.

The main feature of the Ecoprovince is a north-south continuum of large rugged mountain ranges, high amounts of precipitation, and large elevational variation in aquatic ecosystems. Glacial scouring has modified massive granitic intrusions that formed from heating with the docking of superterranes. Ice sheets up to depths of 2,500 m were typical along the present coastline. As glaciation receded, massive moraines were left in valleys and outwash areas at the ocean interface. Subsequent drainage formed high densities of small streams, and small to large sized lakes which can have steep littoral zones in fjord-like basins (e.g. Atlin Lake, Bowser Lake, Meziadin Lake, Kitsumkalum Lake, Owikeno Lake, Woss Lake).

The northern triangle is characterized by the St. Elias Range with the highest peaks in Canada rising to 5,000 m. Glaciation remains typical in these high peaks with drainage contributing to the Tatshenshini, Kusawa, Tutshi, and Atlin watersheds. Further to the south, the Stikine River cuts through coast mountains to the west. Small glacial pothole lakes are found at moderate elevations, none of these potholes are at highest elevations, and at the lowest elevations, small to moderate sized lakes are abundant as remnants of glacially-formed depressions.

South of the Stikine River, mountains become more dome shaped with peaks occurring at relatively low elevations. Large Rivers including the Nass and Skeena pass through low valleys to empty into deep fjords that cut several hundred km into the exposed coastline. Inland, the Nass Basin is recognized as a separate Ecoregion because of its flat terrain, scraped in an undulating topography by glaciers to form abundant depressions characterized by small lakes and wetlands surrounded by interior cedar-hemlock forests.

Within the Exposed Fjords and south to the Owikeno Ranges, Northern Pacific Ranges and Bute Inlets are rugged steep-sloped mountains having extensive glaciation at higher elevations. They are drained by several moderate and high gradient, medium sized rivers (e.g. Bella Coola River, Klinakini River, and Homathco River).

Insular mountains of the Queen Charlotte Islands and the west coast of Vancouver Island are also rugged, particularly on Vancouver Island where peaks in Strathcona Park rise to elevations of more than 2000 m. Most of the island terrain rises steeply from the ocean but glacially formed u-shaped valleys are abundant and all are drained by small to medium sized rivers. Many of these rivers have small lakes as headwaters.

The mild coastal climate which dominates the Coast and Mountains Ecoprovince favours warm monomictic lakes. These lakes are typical of low elevations. They circulate freely in fall through early summer and thermally stratify in summer (if they are large enough to stratify). Ice cover generally does not occur or it is transient. This feature makes coastal lakes quite unlike interior lakes which are generally dimictic, mixing before ice forms and after ice melts. Only at high elevations in the alpine and in the North Coast Mountains are many lakes dimictic because of a stronger influence from arctic air.

Water quality data are available from 54 of the 67 Watershed Groups in the Coast and Mountains. Although sample sizes are generally small, they do include lakes and streams along the entire Ecoprovince (Table 8). There are several Watershed Groups where data appear to have been collected routinely, providing several hundred observations. However, this sampling effort is not consistent among all parameters. Where there may be abundant data for one parameter, there can be very few observations for another.

At highest elevations typical of the alpine and subalpine in the North Coastal Mountains, weathering of bedrock is the primary mechanism for introduction of particles into water. In this northern Ecoregion, alkalinity is moderate (<90 mg•L^{-1}) and pH is mainly close to 7.7. An exception is in alkaline streams of the Atlin Lake watershed where alkalinity is up to 134 mg•L^{-1} and pH is >8.0. These northern streams have moderate TDS concentrations (50-60 mg•L^{-1}) but outflows of the larger rivers can produce higher TDS in their lower reaches near the coast (e.g. 132 mg•L^{-1} in Lower Iskut River). Suspended solids concentrations are highly variable, ranging from 1 mg•L^{-1} (e.g. the streams in the Unuk River watershed) to >190 mg•L^{-1} (e.g. streams of the Tatshenshini River and Lower Stikine River watersheds). Higher concentrations are likely due to large effects of glacial outwash while the lowest concentrations may be from locations less influenced by glacial erosion. True colour is <5 TCU in the North Coastal Mountains which is an indication of little effects from organic leachates. TP concentrations are <0.015 mg•L^{-1} in most small streams and lakes but in the larger rivers that cut through the North Coast Mountains, TP concentrations can be several times higher. In particular, the Stikine River which drains volcanic bedrock has TP concentrations >0.100 mg•L^{-1}.

Further south in the Nass Basin and the Nass Ranges, a well developed cover and riparian community of cedar-hemlock forests is prevalent. Median pH is mainly 7.0 to 7.5 which is lower than that found in the higher mountains to the north. Alkalinity remains moderate in many lakes and streams but relatively low acid neutralising capacity is indicated by alkalinity values $\leq$20 mg•L^{-1} in the lower elevation Watershed Groups. TDS concentrations as low as 34 mg•L^{-1} are also apparent which is lower than levels found in the North Coastal Mountains. TP concentrations are $\leq$0.015 mg•L^{-1} in the Nass Basin and Ranges, which is similar to lakes and streams of the northern mountains. Exceptions are streams of the Lower Bell-Irving watershed in which the median TP concentration is 0.140 mg•L^{-1} . This value may not be representative, however, given that only two samples were collected from that Watershed Group.

Moving further downslope to lakes and streams of the Exposed Fjords and Hecate Lowland, pH drops below neutrality and alkalinity drops to <10 mg•L^{-1} in many watersheds. In some coastal lakes, alkalinity approaches 1 mg•L^{-1} which indicates extremely low acid neutralising capacity and high sensitivity to disturbance. These values are accompanied by colour values up to 40 TCU which is a major increase from values consistently <10 TCU further to the north. This shift may be attributed to greater concentrations of leachates from coastal bogs which introduce colour and organic acids to solution. TDS concentrations are wide ranging but most are <35 mg•L^{-1} which is also lower than those found in the North Coast Mountains and in the Nass watershed. Retention of nutrients and cations in the forest floor of the coastal rainforests is an important process contributing to this change. Granitic parent materials, that are characteristic of the Exposed Fjords, weather very slowly and also produce low dissolved solids concentrations. Dilution by high annual rainfall also contributes to this effect. Suspended solids concentrations are mainly low in the Exposed Fjords, indicating little surface transport of particulates. Exceptions are in the Necleetsconnay River and Work Channel watersheds were median TSS up to 67 mg•L^{-1} is found. These values may be associated with soils disturbance. TP concentrations are among the lowest anywhere in British Columbia. Most median concentrations are ≤0.010 mg•L^{-1} and many are at or below the detection limit of 0.003 mg•L^{-1} . These low levels are due to a relative absence of phosphorus in the ambient lithology and efficient retention in the forest floors. It is also due to lack of phosphorus return from sediments in the water column of well oxygenated lakes that are typical in this Ecoprovince.

In the insular Ecoregions of the Queen Charlotte Islands, the Windward Island Mountains, Nimpkish, and in the Bute Inlets, riparian vegetation includes lush rainforests of western hemlock, western red cedar, and sitka spruce. Many of these forests are in stages of second growth because of an extensive history of logging.
Although water quality data are sparse for these ecozones, the few records show dissolved solids concentrations are low. This is expected because of dilution from heavy rainfall combined with low weathering rates of hard granitic bedrock. Low nutrient loading rates to aquatic systems are enhanced by nutrient retention in second growth forests which contributes to oligotrophication in coastal lakes and streams. By the end of summer in coastal lakes, concentrations of soluble nutrients are mostly undetectable because the nutrient load is efficiently tied up in plankton or fish biomass. TP concentrations in lakes are mostly ≤0.010 mg•L^{-1} , which like those in the other coastal Watershed Groups, are among the lowest measured in the Province.

Although most lakes and streams of the Coast and Mountains Ecoregion are clear water systems having high light transparency, those of the Windward Island Mountains and particularly those of Nimpkish have high colour. In some watersheds, true colour can reach 50-100 TCU. While these systems are chronically nutrient deficient, the colour comes from leachates containing tanins and lignins that are constantly washed from the forest floor of the cedar-hemlock forests.

In the Northern Pacific Ranges, Southern Pacific Ranges, and Eastern Pacific Ranges, electrochemical values are higher than in lakes and streams found at low elevations of the coastal rainforests. Alkalinity data are mainly from the Southern Pacific Ranges but it is wide ranging with values in many watersheds exceeding 15 mg•L^{-1} . In the Northern and Southern Pacific Ranges, pH is >7. TDS concentrations are >20 mg•L^{-1} with median concentrations in most watersheds between 30 and 60 mg•L^{-1} . TP concentrations in the Pacific Ranges is similar to those in the other coastal Ecoregions. Median concentrations are generally <0.010 mg•L^{-1} .

The Fraser River is the major feature of the Eastern Pacific Ranges. This lower reach has a steep gradient and is highly turbulent as it passes canyon walls of the coast range. At this point the Fraser has accumulated suspended solids concentrations up to 137 mg•L^{-1} during the spring freshet but this drops to <50 mg•L^{-1} at other times of the year (Hall et al. 1991). TDS concentrations are close to 85 mg•L^{-1} in spring, increasing to 114 mg•L^{-1} due to a concentration effect at low flow. TP concentrations are up to 157 µg•L^{-1} at high flow in spring, declining to 36 µg•L^{-1} at low flows in winter. These values are relatively high and are the culmination of particle transport and weathering of surficial materials from four Ecoprovinces including the Southern Interior Mountains, the Sub-Boreal Interior, the Central Interior as well as input from the Thompson River in the Southern Interior.

The lower Fraser River and its estuary is also the largest limnological feature of the Southern Pacific Ranges. This lower reach is flat and meandering. Variation in water quality is large and related to flow. Minimum and maximum TSS concentrations are 1 and 439 mg•L^{-1} respectively in a sample size of 1,230 observations. In a summary of water quality data for the Fraser mainstem, Hall et al. (1991) showed that average suspended sediment concentrations are 30 mg•L^{-1} at low flow and 137 mg•L^{-1} at high flow downstream of Hope. In the same study, the average TDS was found to reach 85 mg•L^{-1} at high flow and 114 mg•L^{-1} at low flow.

Transport of sediment to the Fraser estuary has resulted in highly productive wetlands that support a high diversity and abundance of birds (Campbell et al. 1990), wildlife and fish populations. The sediment has also contributed to a fertile flood plain that historically has been used for agriculture. Despite rich soils, use of fertilizer in the valley has been widespread to maximize crop production. Dorcey (1991) estimated that 0.54 T/ha/yr of fertilizer is applied to the lower Fraser sub-basin, much of which can enter streams and eventually the mainstem Fraser River. With increasing demand for housing because of expanding populations in Richmond, Maple Ridge, Langley, Abbotsford, and Chilliwack, much of the agricultural land is giving way to suburban development. This gradual change in land use may limit total loading of agricultural fertilizer but it can introduce nutrients and contaminants in stormwater runoff that discharge to the Fraser. While the median TP concentration in the Fraser Canyon is 0.006 mg•L^{-1} , this agriculture and land development has increased median TP concentrations to 0.055 mg•L^{-1} in the lower Fraser Valley. Hall et al. (1991) reports average TP concentrations of 0.030 mg•L^{-1} at low flow and up to 0.200 mg•L^{-1} at high flows.

Nutrient enrichment is also typical of small lakes found in the lower mainland. These lakes (e.g. Deer Lake, Burnaby Lake) are surrounded by trails and parkland but receive nutrient loading in groundwater and stormwater runoff from urban areas. This nutrient loading produces eutrophic conditions. Lake TP concentrations can be up to

0.134 mg•L^{-1} . During stormwater runoff events, TDS concentrations may reach more than 4,000 mg•L^{-1} in streams which is higher than anywhere else in the Province.

The extreme southern Ecoregions of the Coast and Mountains include Georgia Basin (mainly the east side of Vancouver Island) and Puget Basin (southern Vancouver Island). These areas lie in the rainshadow of insular mountains of Vancouver Island. The area was heavily glaciated as a result of two ice sheets meeting; one from the west originating in high mountain peaks of central Vancouver Island and the other from the east flowing out of the coast mountains. The ice sheet turned southwest in the centre of the Georgia Basin and out through what is now Juan de Fuca Strait. Drainage on the east side of Vancouver Island is via several medium sized rivers including the Cowichan, Nanaimo, Puntledge, Qualicum River, and Campbell Rivers. Numerous small streams scattered along the east side of the island include the Englishman River, Rosewall Creek, Tsable River, Trent River, French Creek among many others. All these small streams drain from the foothills of the central Vancouver Island Mountains and pass through areas that have been logged, areas of second growth, through rural settlements, and some agricultural land.

In these areas, median alkalinity is low (7 - 40 mg•L^{-1}) and pH is circumneutral. Median TDS concentrations are 22-60 mg•L^{-1} . Highest electrochemical concentrations are from the Parksville watershed. Colour values in lakes are very low (5 TCU) except again in the Parksville watershed where a median value from 14 observations was 40 TCU. TP concentrations are low (most values $\leq$0.01 mg•L^{-1}), again reflecting the relative lack of phosphorus eroded from bedrock and conservative retention of phosphorus in forest and aquatic ecosystems.

Within the Strait of Georgia, there are numerous small islands. Most consist of exposed bedrock capped with a thin soil veneer. With these thin soils and relatively thin forest floors, combined with being in the rainshadow of Vancouver Island, the islands are dry. These conditions are particularly prevalent in the Gulf Islands which are located in the southern end of the Puget Basin. Lakes in the islands are shallow, having formed in depressions scoured out of the surface bedrock by glaciation. They have limited outflows and summer heating produces warm surface water. Although small, they can have relatively long water detention times. With nutrient loading from watershed disturbance and septic tanks used in rural development around the lakes, summer anoxia may develop in the hypolimnia every year.

Some lakes near Victoria are also influenced by shoreline residential development and can receive high nutrient loadings from septic tank discharge, producing TP concentrations up to 0.080 mg•L^{-1} and mesotrophic or eutrophic conditions (e.g. Langford Lakes near Victoria (Perrin 1996)). With high primary productivity, photosynthesis can shift pH to 8.0 while alkalinity is 50-60 mg•L^{-1} . Shawnigan Lake on Vancouver Island is also influenced by recreational land use along its north and eastern shoreline which produces nutrient enrichment. In Langford Lake and Glen Lake near Victoria, aeration has been used to compensate for the eutrophication and maintain recreational water use by local residents.

In contrast, Sooke Lake which provides the Victoria Regional District with its water supply is not influenced by residential development and receives drainage mostly from second growth Douglas fir, hemlock and cedar forests. In that system, nutrient loading is relatively low, producing TP concentrations of not more than 0.015 mg•L^{-1} , circumneutral pH, alkalinity near 30 mg•L^{-1} and TDS concentrations <30 mg•L^{-1} (AXYS 1994).

Table 8. Water quality attributes for lakes and streams in the Coast and Mountains Ecoprovince. Column headings are defined in Appendix B.

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
TOBA	TOBA INLET	Bute Inlets	Coast and Mountains	TOBA	L	ALK	1	13.100	13.100	13.100	13.100	0.000
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	ALK	5	36.145	40.348	37.522	37.269	1.664
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	ALK	20	13.145	62.600	27.236	19.159	16.143
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	ALK	12	38.552	55.317	46.990	47.857	5.506
KITL	KITLOPE RIVER	Exposed Fjords	Coast and Mountains	KITL	L	ALK	1	1.300	1.300	1.300	1.300	0.000
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	ALK	7	0.400	1.500	0.997	1.050	0.340
LNAR	LOWER NASS RIVER	Exposed Fjords	Coast and Mountains	LNAR	L	ALK	6	29.800	32.400	30.983	31.400	1.005
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	ALK	2	2.700	4.000	3.350	4.000	0.919
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	S	ALK	2	10.500	19.200	14.850	19.200	6.152
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	L	ALK	1	3.600	3.600	3.600	3.600	0.000
COMX	COMOX	Georgia Basin	Coast and Mountains	COMX	L	ALK	5	9.700	21.000	15.940	19.200	5.732
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	ALK	12	21.900	55.700	39.958	38.800	10.573
SALM	SALMON RIVER	Georgia Basin	Coast and Mountains	SALM	L	ALK	16	5.300	17.060	7.982	7.100	2.957
MBNK	MIDDLE BANKS ISLAND	Hecate Lowland	Coast and Mountains	MBNK	L	ALK	7	0.920	1.500	1.113	1.070	0.199
KINR	KINSKUCH RIVER	Nass Basin	Coast and Mountains	KINR	L	ALK	4	11.700	24.000	17.475	19.300	5.351
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	L	ALK	1	32.100	32.100	32.100	32.100	0.000
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	S	ALK	2	39.000	67.000	53.000	67.000	19.799
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	ALK	2	15.100	15.800	15.450	15.800	0.495
KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains	KLUM	S	ALK	1	29.670	29.670	29.670	29.670	0.000
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	L	ALK	3	24.200	28.300	26.667	27.500	2.173
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	S	ALK	2	87.300	88.700	88.000	88.700	0.990
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	ALK	21	16.500	25.600	21.210	20.900	2.128
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	L	ALK	2	36.670	1517.000	776.835	1517.000	1046.751
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	S	ALK	3	12.170	22.670	16.837	15.670	5.346
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	L	ALK	18	4.600	69.700	18.852	11.000	20.056
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	ALK	15	2.800	10.300	5.802	5.400	2.743
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	ALK	4	9.500	65.000	43.950	65.000	26.655
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	S	ALK	9	19.200	202.900	129.267	133.900	67.599
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	L	ALK	66	3.000	119.000	89.392	94.300	23.414
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	S	ALK	22	18.000	110.000	49.500	50.000	26.211
LSTR	LOWER STIKINE RIVER	North Coastal Mountains	Coast and Mountains	LSTR	S	ALK	3	40.000	76.000	54.667	48.000	18.903
TATR	TATSHENSHINI RIVER	North Coastal Mountains	Coast and Mountains	TATR	S	ALK	94	19.000	378.000	88.575	67.000	64.255
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	ALK	7	34.500	36.500	35.329	35.300	0.605
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	L	ALK	1	41.200	41.200	41.200	41.200	0.000
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	S	ALK	32	7.000	100.000	38.581	21.700	30.540
BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains	BELA	S	ALK	2	15.100	23.900	19.500	23.900	6.223
HOMA	HOMATHCO RIVER	Northern Pacific Ranges	Coast and Mountains	HOMA	L	ALK	3	124.000	128.000	126.000	126.000	2.000
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	S	ALK	5	29.400	49.800	37.266	34.300	7.884
SEYM	SEYMOUR INLET	Owikeno Ranges	Coast and Mountains	SEYM	L	ALK	3	2.800	3.700	3.200	3.100	0.458
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	ALK	67	3.400	33.800	13.030	11.300	5.825
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	ALK	604	5.300	169.000	31.134	29.700	15.626
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	L	ALK	5	5.700	15.800	11.640	12.200	3.751
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	ALK	500	3.900	37.800	22.020	22.800	3.244
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	ALK	72	7.750	66.000	60.814	62.800	6.871
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	ALK	9	6.720	61.400	45.266	58.300	21.887

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	ALK	14	12.820	16.397	14.888	15.060	0.913
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	ALK	47	5.446	17.000	10.819	9.800	3.765
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	ALK	10	13.784	29.100	20.061	20.268	4.854
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	ALK	23	7.000	41.000	20.840	20.077	7.990
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	ALK	26	2.400	26.589	11.382	5.100	9.298
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	ALK	108	6.000	90.416	37.785	38.949	15.028
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	ALK	5	0.250	14.700	11.090	13.600	6.083
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	ALK	58	2.946	107.000	16.155	9.725	20.436
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	L	ALK	28	3.600	31.900	14.226	14.900	6.410
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	ALK	25	4.000	54.100	22.973	25.433	9.534
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	ALK	40	0.500	23.030	6.297	2.600	6.831
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	L	ALK	7	3.200	15.400	7.693	6.050	4.313
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	S	ALK	13	6.000	40.000	17.385	15.000	11.147
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	ALK	67	2.100	28.900	10.979	8.900	6.351
TAHS	TAHSIS	Windward Island Mountains	Coast and Mountains	TAHS	L	ALK	1	16.400	16.400	16.400	16.400	0.000
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	COL	4	5.000	10.000	6.250	5.000	2.500
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	COL	5	5.000	10.000	7.056	6.111	2.370
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	COL	5	5.000	10.000	6.189	5.000	2.169
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	COL	1	15.000	15.000	15.000	15.000	0.000
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	COL	1	5.000	5.000	5.000	5.000	0.000
NASC	NASCALL RIVER	Exposed Fjords	Coast and Mountains	NASC	L	COL	3	5.000	20.000	11.667	10.000	7.638
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	L	COL	2	40.000	40.000	40.000	40.000	0.000
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	COL	14	20.000	130.000	46.923	40.000	34.615
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	COL	1	10.000	10.000	10.000	10.000	0.000
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	COL	27	5.000	30.000	12.037	10.000	7.106
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	L	COL	3	5.000	5.000	5.000	5.000	0.000
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	COL	15	30.000	100.000	65.933	74.000	25.485
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	COL	1	15.000	15.000	15.000	15.000	0.000
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	L	COL	1	5.000	5.000	5.000	5.000	0.000
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	COL	7	5.000	5.000	5.000	5.000	0.000
OWIK	OWIKENO LAKE	Owikeno Ranges	Coast and Mountains	OWIK	L	COL	1	15.000	15.000	15.000	15.000	0.000
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	COL	94	5.000	80.000	13.142	5.000	17.933
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	COL	643	5.000	200.000	10.827	5.000	14.332
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	COL	367	0.000	20.000	4.986	5.000	1.535
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	COL	60	5.000	5.000	5.000	5.000	0.000
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	COL	9	5.000	7.857	5.604	5.000	0.961
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	COL	5	5.000	5.000	5.000	5.000	0.000
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	COL	7	5.000	30.000	11.643	5.000	10.998
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	COL	4	5.000	8.660	6.375	6.095	1.590
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	COL	6	5.000	10.000	6.677	5.625	2.004
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	COL	5	5.000	10.000	6.817	5.000	2.509
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	COL	54	5.000	68.173	19.479	20.000	13.825
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	COL	2	7.143	10.000	8.572	10.000	2.020
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	COL	18	5.000	12.247	6.222	5.000	1.930
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	L	COL	6	5.000	15.000	8.000	8.000	4.000
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	COL	14	5.000	30.000	18.095	20.000	9.448
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	COL	19	5.000	20.000	12.389	12.389	4.866
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	COL	37	5.000	20.000	6.944	5.000	3.391

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
TOBA	TOBA INLET	Bute Inlets	Coast and Mountains	TOBA	L	P_T	17	0.003	0.090	0.009	0.003	0.021
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	P_T	5	0.004	0.017	0.010	0.009	0.005
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	P_T	23	0.003	0.023	0.008	0.006	0.005
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	P_T	11	0.003	0.007	0.005	0.005	0.001
KITR	KITIMAT RIVER	Exposed Fjords	Coast and Mountains	KITR	S	P_T	105	0.000	2.500	0.207	0.010	0.563
KSHR	KSHWAN RIVER	Exposed Fjords	Coast and Mountains	KSHR	S	P_T	2	0.003	0.004	0.004	0.004	0.001
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	P_T	1	0.006	0.006	0.006	0.006	0.000
LNAR	LOWER NASS RIVER	Exposed Fjords	Coast and Mountains	LNAR	L	P_T	8	0.003	0.019	0.007	0.005	0.006
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	P_T	9	0.004	0.010	0.006	0.005	0.002
NASC	NASCALL RIVER	Exposed Fjords	Coast and Mountains	NASC	L	P_T	5	0.003	0.004	0.003	0.003	0.000
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	L	P_T	2	0.003	0.003	0.003	0.003	0.000
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	S	P_T	2	0.003	0.017	0.010	0.017	0.010
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	L	P_T	6	0.003	0.009	0.005	0.004	0.002
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	S	P_T	60	0.003	0.955	0.086	0.053	0.129
COMX	COMOX	Georgia Basin	Coast and Mountains	COMX	L	P_T	38	0.003	0.012	0.007	0.007	0.002
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	P_T	47	0.003	0.162	0.021	0.010	0.035
SALM	SALMON RIVER	Georgia Basin	Coast and Mountains	SALM	L	P_T	13	0.003	0.012	0.005	0.004	0.003
KINR	KINSKUCH RIVER	Nass Basin	Coast and Mountains	KINR	L	P_T	7	0.003	0.014	0.006	0.005	0.004
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	L	P_T	3	0.006	0.013	0.008	0.006	0.004
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	S	P_T	2	0.037	0.140	0.089	0.140	0.073
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	P_T	9	0.004	0.101	0.019	0.009	0.031
KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains	KLUM	S	P_T	40	0.003	0.301	0.033	0.013	0.061
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	L	P_T	3	0.003	0.007	0.005	0.005	0.002
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	S	P_T	66	0.004	0.134	0.022	0.014	0.026
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	P_T	144	0.000	0.550	0.029	0.008	0.060
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	S	P_T	61	0.006	0.144	0.023	0.015	0.023
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	L	P_T	11	0.003	0.013	0.006	0.004	0.004
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	P_T	20	0.003	0.017	0.007	0.005	0.004
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	P_T	5	0.003	0.008	0.006	0.008	0.003
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	L	P_T	2	0.003	0.005	0.004	0.005	0.001
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	L	P_T	31	0.003	0.070	0.015	0.012	0.013
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	S	P_T	137	0.003	0.517	0.091	0.018	0.134
LSTR	LOWER STIKINE RIVER	North Coastal Mountains	Coast and Mountains	LSTR	S	P_T	19	0.023	0.980	0.275	0.260	0.199
TATR	TATSHENSHINI RIVER	North Coastal Mountains	Coast and Mountains	TATR	S	P_T	94	0.003	5.030	0.532	0.030	1.071
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	P_T	2	0.003	0.004	0.004	0.004	0.001
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	L	P_T	4	0.004	0.010	0.007	0.008	0.003
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	S	P_T	37	0.003	0.400	0.097	0.090	0.107
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	S	P_T	1	0.019	0.019	0.019	0.019	0.000
BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains	BELA	S	P_T	22	0.003	0.067	0.015	0.011	0.014
HOMA	HOMATHCO RIVER	Northern Pacific Ranges	Coast and Mountains	HOMA	L	P_T	5	0.009	0.024	0.015	0.014	0.006
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	S	P_T	6	0.005	0.031	0.014	0.010	0.010
OWIK	OWIKENO LAKE	Owikeno Ranges	Coast and Mountains	OWIK	L	P_T	1	0.004	0.004	0.004	0.004	0.000
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	P_T	304	0.003	2.970	0.086	0.008	0.336
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	P_T	2000	0.003	6.240	0.098	0.017	0.397
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	L	P_T	6	0.004	0.033	0.011	0.007	0.011
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	S	P_T	27	0.007	0.064	0.018	0.016	0.011
MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains	MORI	L	P_T	5	0.007	0.012	0.010	0.011	0.002
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	P_T	991	0.000	2.500	0.009	0.004	0.080

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	P_T	120	0.003	0.025	0.006	0.005	0.004
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	P_T	9	0.003	0.009	0.006	0.006	0.002
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	P_T	13	0.003	0.006	0.004	0.004	0.001
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	P_T	43	0.003	0.054	0.007	0.004	0.008
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	P_T	16	0.003	0.021	0.009	0.008	0.006
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	P_T	19	0.003	0.154	0.030	0.007	0.044
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	P_T	108	0.003	0.134	0.016	0.006	0.025
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	P_T	112	0.011	0.337	0.065	0.055	0.050
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	P_T	8	0.005	0.010	0.008	0.008	0.002
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	P_T	56	0.003	0.110	0.013	0.007	0.017
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	L	P_T	15	0.003	0.012	0.006	0.004	0.004
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	P_T	22	0.003	0.041	0.008	0.006	0.009
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	P_T	44	0.003	0.011	0.004	0.003	0.002
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	L	P_T	25	0.003	0.404	0.023	0.003	0.081
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	S	P_T	14	0.003	0.034	0.013	0.009	0.012
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	P_T	285	0.003	0.300	0.010	0.005	0.028
TAHS	TAHSIS	Windward Island Mountains	Coast and Mountains	TAHS	L	P_T	4	0.003	0.009	0.006	0.005	0.003
TOBA	TOBA INLET	Bute Inlets	Coast and Mountains	TOBA	L	PH	3	7.000	7.300	7.167	7.200	0.153
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	PH	5	7.498	7.862	7.651	7.578	0.161
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	PH	194	7.100	8.200	7.753	7.800	0.254
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	PH	12	7.593	8.100	7.824	7.848	0.158
KITR	KITIMAT RIVER	Exposed Fjords	Coast and Mountains	KITR	S	PH	319	5.900	7.900	6.955	7.000	0.330
KITL	KITLOPE RIVER	Exposed Fjords	Coast and Mountains	KITL	L	PH	1	6.000	6.000	6.000	6.000	0.000
KSHR	KSHWAN RIVER	Exposed Fjords	Coast and Mountains	KSHR	S	PH	247	6.780	8.190	7.537	7.620	0.292
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	PH	7	5.700	6.600	6.043	6.000	0.276
LNAR	LOWER NASS RIVER	Exposed Fjords	Coast and Mountains	LNAR	L	PH	6	7.600	7.800	7.767	7.800	0.082
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	PH	4	6.300	6.800	6.550	6.700	0.238
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	S	PH	1	6.700	6.700	6.700	6.700	0.000
NASC	NASCALL RIVER	Exposed Fjords	Coast and Mountains	NASC	L	PH	5	6.200	7.000	6.580	6.400	0.390
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	L	PH	2	6.300	6.400	6.350	6.400	0.071
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	S	PH	2	6.900	7.300	7.100	7.300	0.283
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	L	PH	3	6.000	6.700	6.400	6.500	0.361
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	S	PH	71	6.100	7.500	6.792	6.800	0.327
COMX	COMOX	Georgia Basin	Coast and Mountains	COMX	L	PH	20	6.300	7.600	6.850	6.800	0.301
COMX	COMOX	Georgia Basin	Coast and Mountains	COMX	S	PH	1376	1.500	8.200	6.646	7.000	1.084
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	PH	105	6.400	8.280	7.370	7.340	0.380
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	S	PH	21	6.600	7.700	7.200	7.200	0.313
SALM	SALMON RIVER	Georgia Basin	Coast and Mountains	SALM	L	PH	28	5.127	7.500	6.800	6.800	0.472
SALM	SALMON RIVER	Georgia Basin	Coast and Mountains	SALM	S	PH	12	6.800	7.000	6.883	6.900	0.084
MBNK	MIDDLE BANKS ISLAND	Hecate Lowland	Coast and Mountains	MBNK	L	PH	6	5.400	6.200	5.833	5.900	0.266
KINR	KINSKUCH RIVER	Nass Basin	Coast and Mountains	KINR	L	PH	5	6.900	7.600	7.160	7.000	0.321
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	L	PH	5	7.600	8.000	7.780	7.800	0.148
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	S	PH	3	7.600	7.800	7.733	7.800	0.116
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	PH	5	6.700	7.000	6.900	6.900	0.123
KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains	KLUM	S	PH	169	6.870	8.100	7.657	7.700	0.214
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	L	PH	3	7.000	7.500	7.233	7.200	0.252
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	S	PH	70	6.800	8.400	7.504	7.500	0.286
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	PH	41	6.700	7.900	7.273	7.300	0.268

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	S	PH	64	6.700	7.900	7.127	7.100	0.218
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	L	PH	2	6.500	7.000	6.750	7.000	0.354
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	S	PH	4	6.500	7.800	6.950	6.900	0.592
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	L	PH	54	6.200	7.900	6.956	6.900	0.372
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	S	PH	11	6.300	7.200	6.800	6.800	0.253
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	PH	16	5.800	7.000	6.349	6.300	0.374
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	S	PH	5	6.200	6.800	6.520	6.500	0.217
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	PH	5	7.000	7.700	7.360	7.500	0.297
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	S	PH	10	6.200	7.700	6.870	6.900	0.450
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	L	PH	2	7.800	8.800	8.300	8.800	0.707
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	S	PH	11	7.000	8.600	7.887	8.100	0.518
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	L	PH	68	6.100	8.300	7.738	7.800	0.407
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	S	PH	308	1.600	8.400	7.580	7.700	0.680
LSTR	LOWER STIKINE RIVER	North Coastal Mountains	Coast and Mountains	LSTR	S	PH	45	7.500	8.200	7.867	7.800	0.146
TATR	TATSHENSHINI RIVER	North Coastal Mountains	Coast and Mountains	TATR	S	PH	99	7.100	8.700	7.882	7.900	0.335
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	PH	7	7.600	77.000	17.557	7.700	26.212
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	L	PH	3	6.400	7.900	6.900	6.400	0.866
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	S	PH	513	6.360	8.340	7.651	7.760	0.352
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	L	PH	12	7.010	8.990	7.868	7.830	0.478
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	S	PH	2	7.800	7.900	7.850	7.900	0.071
BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains	BELA	S	PH	27	6.000	7.600	7.033	7.100	0.351
HOMA	HOMATHCO RIVER	Northern Pacific Ranges	Coast and Mountains	HOMA	L	PH	12	8.200	9.700	8.779	8.900	0.591
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	L	PH	4	7.900	8.750	8.328	8.500	0.374
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	S	PH	10	7.057	8.000	7.650	7.700	0.246
OWIK	OWIKENO LAKE	Owikeno Ranges	Coast and Mountains	OWIK	L	PH	1	7.000	7.000	7.000	7.000	0.000
SEYM	SEYMOUR INLET	Owikeno Ranges	Coast and Mountains	SEYM	L	PH	3	6.600	6.800	6.700	6.700	0.100
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	PH	211	5.700	9.800	7.076	7.100	0.500
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	S	PH	998	6.100	8.900	7.417	7.400	0.350
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	PH	1515	5.500	9.500	7.315	7.300	0.485
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	S	PH	276	5.800	8.000	7.040	7.100	0.426
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	L	PH	8	4.900	8.000	6.363	6.600	1.018
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	S	PH	18	6.100	7.000	6.561	6.500	0.268
MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains	MORI	L	PH	6	6.100	7.300	6.850	7.100	0.497
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	PH	4119	3.000	12.000	7.230	7.290	0.455
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	S	PH	769	5.600	13.000	7.349	7.400	0.497
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	PH	105	6.300	8.300	7.877	8.000	0.362
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	PH	122	6.600	8.300	7.481	7.500	0.345
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	PH	14	7.100	7.840	7.483	7.583	0.256
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	PH	230	6.200	8.900	7.541	7.600	0.434
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	PH	15	6.500	8.000	7.303	7.300	0.375
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	PH	69	6.100	7.700	7.165	7.235	0.388
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	PH	156	0.599	8.500	6.973	7.100	0.740
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	PH	1924	3.800	9.900	7.291	7.300	0.642
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	PH	6	7.053	7.400	7.292	7.300	0.127
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	PH	527	6.000	8.700	7.260	7.300	0.346
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	L	PH	44	5.900	8.400	7.148	7.000	0.491
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	S	PH	244	4.100	8.700	7.225	7.200	0.632
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	PH	29	6.300	7.870	7.254	7.360	0.351

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	S	PH	7	7.000	7.900	7.343	7.200	0.360
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	PH	73	5.040	9.200	6.130	6.100	0.960
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	S	PH	3	6.800	7.200	6.933	6.800	0.231
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	L	PH	7	6.400	7.100	6.779	6.900	0.274
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	S	PH	113	3.900	8.000	7.357	7.400	0.452
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	PH	295	5.380	8.000	6.955	7.000	0.408
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	S	PH	11	6.700	7.500	7.064	7.000	0.284
TAHS	TAHSIS	Windward Island Mountains	Coast and Mountains	TAHS	L	PH	1	6.800	6.800	6.800	6.800	0.000
TOBA	TOBA INLET	Bute Inlets	Coast and Mountains	TOBA	L	TDS	17	7.000	5330.000	340.647	20.000	1286.030
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	TDS	5	56.000	65.863	60.111	59.000	3.717
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	TDS	121	23.844	124.000	72.860	76.000	25.361
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	L	TDS	4	54.000	78.000	66.500	68.000	9.849
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	TDS	11	59.911	88.393	73.261	73.260	9.192
KITR	KITIMAT RIVER	Exposed Fjords	Coast and Mountains	KITR	S	TDS	22	17.000	50.000	31.227	34.000	9.865
KITL	KITLOPE RIVER	Exposed Fjords	Coast and Mountains	KITL	L	TDS	1	6.000	6.000	6.000	6.000	0.000
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	TDS	12	6.000	21.000	13.750	14.000	3.596
LNAR	LOWER NASS RIVER	Exposed Fjords	Coast and Mountains	LNAR	L	TDS	8	48.000	90.000	61.000	56.000	14.580
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	TDS	11	10.000	24.000	14.182	12.000	4.143
NASC	NASCALL RIVER	Exposed Fjords	Coast and Mountains	NASC	L	TDS	3	14.000	18.000	16.667	18.000	2.309
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	S	TDS	2	12.000	32.000	22.000	32.000	14.142
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	L	TDS	9	10.000	14.000	10.889	10.000	1.453
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	S	TDS	2	36.000	96.000	66.000	96.000	42.426
COMX	COMOX	Georgia Basin	Coast and Mountains	COMX	L	TDS	38	8.000	116.000	27.947	22.000	19.963
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	TDS	25	38.000	102.000	61.860	60.000	21.434
SALM	SALMON RIVER	Georgia Basin	Coast and Mountains	SALM	L	TDS	23	18.000	36.000	24.488	22.000	5.344
MBNK	MIDDLE BANKS ISLAND	Hecate Lowland	Coast and Mountains	MBNK	L	TDS	5	12.500	29.700	20.540	21.200	6.245
KINR	KINSKUCH RIVER	Nass Basin	Coast and Mountains	KINR	L	TDS	8	18.000	40.000	25.500	22.000	9.607
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	L	TDS	7	56.000	78.000	66.000	64.000	7.506
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	S	TDS	1	58.000	58.000	58.000	58.000	0.000
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	TDS	10	30.000	38.000	33.000	34.000	3.432
KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains	KLUM	S	TDS	24	1.000	86.000	56.667	64.000	25.646
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	L	TDS	3	44.000	44.000	44.000	44.000	0.000
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	S	TDS	24	34.000	158.000	69.458	57.000	35.719
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	TDS	2	36.000	40.000	38.000	40.000	2.828
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	S	TDS	26	26.000	54.000	40.654	42.000	6.493
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	L	TDS	20	12.000	30.000	20.670	20.000	4.730
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	TDS	12	16.000	38.000	23.125	21.000	7.123
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	TDS	3	36.500	80.000	65.500	80.000	25.115
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	L	TDS	1	62.000	62.000	62.000	62.000	0.000
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	S	TDS	4	72.000	132.000	110.000	132.000	28.566
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	TDS	9	42.000	53.000	50.222	52.000	3.528
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	L	TDS	4	15.000	53.000	33.000	49.000	20.849
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	L	TDS	23	12.000	124.000	35.622	23.800	28.805
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	S	TDS	1	146.000	146.000	146.000	146.000	0.000
BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains	BELA	S	TDS	3	28.000	38.000	32.667	32.000	5.033
HOMA	HOMATHCO RIVER	Northern Pacific Ranges	Coast and Mountains	HOMA	L	TDS	10	0.000	535.000	153.650	111.000	163.528
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	L	TDS	7	17.500	304.000	101.500	82.000	93.724
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	S	TDS	5	46.000	78.000	56.874	52.000	13.031

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
OWIK	OWIKENO LAKE	Owikeno Ranges	Coast and Mountains	OWIK	L	TDS	7	6.500	35.200	14.286	11.300	9.828
SEYM	SEYMOUR INLET	Owikeno Ranges	Coast and Mountains	SEYM	L	TDS	3	29.000	38.000	34.333	36.000	4.726
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	TDS	171	12.000	114.000	31.932	28.000	17.293
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	TDS	554	3.000	144.500	59.014	44.000	27.978
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	L	TDS	31	23.300	82.000	37.407	35.100	13.539
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	S	TDS	16	36.000	110.000	57.688	60.000	19.113
MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains	MORI	L	TDS	6	24.000	44.000	34.000	32.000	8.295
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	TDS	411	6.000	95.000	37.723	38.000	8.777
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	TDS	39	1.500	120.000	100.807	106.000	20.007
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	TDS	9	24.000	98.000	78.611	93.500	30.791
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	TDS	14	26.000	56.000	32.671	31.937	7.442
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	TDS	33	16.971	34.620	25.939	26.533	5.255
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	TDS	13	26.000	68.000	44.886	40.988	14.893
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	TDS	17	26.000	80.697	47.596	46.000	14.979
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	TDS	91	8.000	57.671	21.749	20.000	11.326
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	TDS	278	8.000	4430.000	108.023	40.733	325.931
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	TDS	10	16.000	52.000	34.400	32.000	11.918
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	TDS	102	12.000	1760.500	85.973	35.826	234.971
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	L	TDS	42	18.100	122.000	41.941	34.000	27.482
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	S	TDS	2	38.600	48.500	43.550	48.500	7.000
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	TDS	14	17.000	54.000	33.357	36.000	10.367
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	TDS	48	4.000	1250.000	48.783	20.000	177.392
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	L	TDS	19	10.000	38.000	21.711	19.000	9.806
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	TDS	225	6.000	54.000	25.318	24.000	6.426
TOBA	TOBA INLET	Bute Inlets	Coast and Mountains	TOBA	L	TSS	1	1.000	1.000	1.000	1.000	0.000
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	TSS	3	1.442	2.600	1.917	1.710	0.606
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	TSS	133	1.000	397.000	35.325	10.000	64.749
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	TSS	10	1.000	65.152	8.274	2.000	20.000
KITR	KITIMAT RIVER	Exposed Fjords	Coast and Mountains	KITR	S	TSS	233	0.100	597.200	18.728	6.000	50.762
KSHR	KSHWAN RIVER	Exposed Fjords	Coast and Mountains	KSHR	S	TSS	251	1.000	680.000	7.664	2.000	44.240
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	TSS	1	1.000	1.000	1.000	1.000	0.000
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	TSS	1	1.000	1.000	1.000	1.000	0.000
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	S	TSS	1	3.000	3.000	3.000	3.000	0.000
NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains	NECL	S	TSS	2	1.000	67.000	34.000	67.000	46.669
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	S	TSS	54	1.000	99.000	26.204	23.000	24.148
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	TSS	22	1.000	10.000	2.227	1.000	2.389
SALM	SALMON RIVER	Georgia Basin	Coast and Mountains	SALM	L	TSS	3	2.000	3.000	2.333	2.000	0.577
KINR	KINSKUCH RIVER	Nass Basin	Coast and Mountains	KINR	L	TSS	3	1.000	7.000	4.333	5.000	3.055
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	L	TSS	4	2.000	97.000	47.500	71.000	44.080
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	S	TSS	3	47.000	93.000	62.667	48.000	26.274
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	TSS	3	1.000	14.000	5.333	1.000	7.506
KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains	KLUM	S	TSS	152	1.000	1840.000	40.243	10.000	155.794
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	S	TSS	61	1.000	119.000	12.800	4.000	22.653
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	TSS	29	1.000	9.000	2.069	1.000	2.137
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	S	TSS	49	1.000	79.000	8.639	4.000	15.852
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	L	TSS	2	5.000	5.000	5.000	5.000	0.000
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	S	TSS	6	1.000	5.000	3.000	5.000	2.191
NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains	NIMP	L	TSS	4	2.000	4.000	2.750	3.000	0.957

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	TSS	18	1.000	18.000	3.444	2.000	4.630
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	TSS	2	1.000	1.000	1.000	1.000	0.000
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	S	TSS	11	0.400	98.000	27.582	6.400	34.574
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	L	TSS	71	1.000	101.000	5.211	1.000	13.602
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	S	TSS	313	1.000	673.000	52.690	12.000	89.263
LSTR	LOWER STIKINE RIVER	North Coastal Mountains	Coast and Mountains	LSTR	S	TSS	45	4.000	465.000	222.956	195.000	126.430
TATR	TATSHENSHINI RIVER	North Coastal Mountains	Coast and Mountains	TATR	S	TSS	2	505.000	1260.000	882.500	1260.000	533.866
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	TSS	7	5.000	5.000	5.000	5.000	0.000
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	L	TSS	1	8.000	8.000	8.000	8.000	0.000
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	S	TSS	483	1.000	574.000	12.882	1.000	41.934
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	S	TSS	1	1.000	1.000	1.000	1.000	0.000
BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains	BELA	S	TSS	14	1.000	14.000	4.714	2.000	5.014
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	S	TSS	5	2.000	26.000	8.258	3.000	10.214
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	TSS	49	1.000	21.000	2.939	2.000	3.105
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	TSS	632	1.000	64.000	3.152	2.000	3.488
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	S	TSS	114	1.000	411.000	10.693	1.000	46.637
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	TSS	1110	0.300	450.000	2.629	1.000	14.870
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	TSS	69	1.000	21.000	2.079	1.000	3.065
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	TSS	9	2.000	5.167	2.869	2.500	1.073
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	TSS	11	1.000	3.000	1.334	1.000	0.633
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	TSS	99	1.000	161.000	15.778	4.000	28.671
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	TSS	8	1.287	10.100	4.552	4.346	3.398
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	TSS	15	1.000	93.851	23.097	6.245	31.700
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	TSS	61	1.000	64.000	9.678	4.000	13.712
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	TSS	1230	1.000	439.000	22.894	11.000	40.144
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	TSS	6	2.000	3.000	2.782	3.000	0.402
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	TSS	130	0.700	270.000	12.596	2.857	37.964
ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains	ALBN	L	TSS	7	1.000	5.000	1.857	1.000	1.464
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	TSS	15	1.000	26.000	4.333	2.000	7.188
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	TSS	19	1.000	3.000	1.105	1.000	0.459
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	L	TSS	1	2.000	2.000	2.000	2.000	0.000
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	S	TSS	14	1.000	4.000	1.429	1.000	1.089
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	TSS	26	1.000	6.000	1.923	2.000	1.197
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	L	TURB	2	0.374	0.749	0.562	0.749	0.265
FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains	FRCN	S	TURB	31	0.433	140.000	11.459	2.200	26.092
SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains	SKGT	S	TURB	6	0.400	1.400	0.844	1.039	0.389
KITR	KITIMAT RIVER	Exposed Fjords	Coast and Mountains	KITR	S	TURB	218	0.000	220.000	13.961	5.000	28.159
KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains	KUMR	L	TURB	1	0.200	0.200	0.200	0.200	0.000
LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains	LSKE	L	TURB	5	0.500	1.500	1.000	0.900	0.374
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	L	TURB	3	0.500	1.000	0.667	0.500	0.289
WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains	WORC	S	TURB	38	0.200	116.000	14.516	11.000	18.865
PARK	PARKSVILLE	Georgia Basin	Coast and Mountains	PARK	L	TURB	12	0.300	2.100	0.950	0.900	0.590
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	L	TURB	4	15.000	100.000	57.250	83.000	40.681
LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains	LBIR	S	TURB	3	0.500	42.000	15.600	4.300	22.942
NASR	NASS RIVER	Nass Basin	Coast and Mountains	NASR	L	TURB	1	0.300	0.300	0.300	0.300	0.000
KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains	KLUM	S	TURB	86	0.300	124.000	14.933	7.500	20.879
KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains	KISP	S	TURB	61	0.500	64.000	7.657	3.000	12.582
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	L	TURB	116	0.100	11.000	1.001	0.600	1.458

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
LKEL	LAKELSE	Nass Ranges	Coast and Mountains	LKEL	S	TURB	54	1.000	43.000	3.796	2.000	6.684
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	L	TURB	2	0.800	1.300	1.050	1.300	0.354
ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains	ZYMO	S	TURB	3	0.100	1.600	0.933	1.100	0.764
NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains	NEVI	L	TURB	9	0.400	1.600	0.644	0.600	0.381
TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains	TSIT	L	TURB	1	0.300	0.300	0.300	0.300	0.000
ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains	ATLL	S	TURB	9	0.200	58.000	12.551	1.400	20.466
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	L	TURB	11	0.500	1.600	0.946	0.800	0.423
LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains	LISR	S	TURB	159	0.800	260.000	44.101	30.000	49.355
LSTR	LOWER STIKINE RIVER	North Coastal Mountains	Coast and Mountains	LSTR	S	TURB	45	8.000	220.000	110.044	95.000	51.463
TATR	TATSHENSHINI RIVER	North Coastal Mountains	Coast and Mountains	TATR	S	TURB	94	0.200	450.000	77.501	9.200	117.538
TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains	TUTR	L	TURB	7	1.000	1.200	1.043	1.000	0.079
UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains	UNUR	S	TURB	121	0.100	460.000	29.150	16.000	50.554
ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains	ATNA	S	TURB	2	2.600	4.500	3.550	4.500	1.344
BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains	BELA	S	TURB	1	0.600	0.600	0.600	0.600	0.000
KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains	KLIN	S	TURB	5	0.632	9.100	3.206	1.500	3.481
COWN	COWICHAN	Puget Basin	Coast and Mountains	COWN	L	TURB	92	0.200	26.000	1.417	0.500	3.181
VICT	VICTORIA	Puget Basin	Coast and Mountains	VICT	L	TURB	610	0.200	23.000	1.761	1.100	2.011
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	L	TURB	5	0.400	0.800	0.640	0.700	0.182
GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains	GRAI	S	TURB	18	0.700	17.000	2.333	1.200	3.736
CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains	CAMB	L	TURB	782	0.100	92.000	1.745	0.800	5.423
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	L	TURB	87	0.200	16.000	0.989	0.500	2.252
CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains	CHWK	S	TURB	8	0.600	2.029	1.058	0.883	0.538
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	L	TURB	4	0.300	17.000	5.625	2.700	7.661
HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains	HARR	S	TURB	31	0.300	80.000	5.029	1.400	14.579
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	L	TURB	6	0.464	12.149	4.651	3.800	4.549
LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains	LILL	S	TURB	63	0.200	112.000	7.833	4.500	15.311
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	L	TURB	51	0.100	270.000	8.777	1.700	37.607
LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains	LFRA	S	TURB	1369	0.100	192.000	11.352	6.600	15.861
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	L	TURB	6	0.800	6.200	3.739	4.800	2.248
SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains	SQAM	S	TURB	341	0.200	54.000	3.475	1.700	5.998
BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains	BRKS	L	TURB	10	0.200	8.400	1.800	1.200	2.340
CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains	CLAY	L	TURB	4	0.300	4.000	1.325	0.600	1.788
GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains	GOLD	S	TURB	14	0.400	14.000	3.321	2.400	3.320
SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains	SANJ	L	TURB	46	0.200	3.900	0.513	0.400	0.536

4.3.5 Sub-Boreal Interior

The Sub-Boreal Ecoprovince is located in the north-central part of B.C., east of the coast mountains, west of the Alberta plains, south of northern boreal plateaus, and north of the central interior plateau. The Ecoprovince is characterized by the presence of large lakes, reservoirs, and rivers that are important for power production, industrial water supplies, fish production, and transportation corridors. The Fraser River at Prince George is also where treated wastewater is discharged from pulp mills.

Six aquatic Ecoregions and 38 Watershed Groups are allocated in the Sub-Boreal Interior. The Ecoregions distinguish major drainage and lake systems as follows:

1. **Central Rocky Mountains** includes the south (Parsnip) and east (Peace) arms of Williston Reservoir and its inflow drainages plus southern headwaters of the Peace River,
2. **Upper Fraser** includes the northern extent of the Fraser River mainstem and its tributaries,
3. **Babine Upland** includes large lakes; Babine Lake, Stuart Lake, and Trembleur Lake. Babine Lake is the largest lake completely contained within provincial boundaries (Atlin is larger but it extends into Yukon). All of these lakes are deep and long, oriented northwest-southeast in association with glacial erosion.
4. **Takla/Manson Plateau** includes Takla Lake and the Nation River system.
5. **Omineca Mountains** includes the north (Finlay) arm of the Williston Reservoir and its inflow tributaries including the Mesilinka, Omineka, and Manson Rivers.
6. **Skeena Mountains** includes headwaters to the Skeena and Nass Rivers.

Mountains and flat plateau are found in this Ecoprovince. In the north-west are the Omineca and Skeena Mountains, which originated as massive granitic intrusions. Drainage is to the east in the Omineka Mountains but it is to the south and west in the Skeena Mountains. Further to the south in the Takla/Manson Plateau, Babine Uplands and Upper Fraser Ecoregions, the bedrock is sedimentary with some volcanic intrusions making the parent materials highly erodable. These areas are flat or gently rolling with abundant small lakes and wetlands that have formed in surface depressions where drainage is generally poor. Deep incisions are formed by the lower reaches of the Nechako River near Prince George due to fluvial erosion which has created long ridges of low relief that follow the river channel. Many slopes from these ridges consist of loose gravel and sand that is constantly being eroded by precipitation and freezing and thawing, thus contributing to a sand and small gravel substratum in many reaches of the Nechako River. The Central Rocky Mountains are found on the east side of the Rocky Mountain Trench. Locally, this area of the Rockies is called the Hart Ranges which have higher relief in the south but grade into foothills towards the Peace Plains in the north. The Peace River dissects the Hart Range to the east through a deep gorge that has eroded through the sedimentary rocks. The Hart Ranges generally have low relief compared to the Skeena Ranges because of less erosion from thinner ice sheets during glaciation.

Lakes and streams of the Sub-Boreal Interior Ecoprovince contain a gradient of chemical characteristics (Table 9). In the high elevation lakes of the Omineka and

Skeena Mountains, median TDS is 38-58 mg•L^{-1} but it does reach 166 mg•L^{-1} in the Iskut River and 199 mg•L^{-1} in the Upper Skeena River. Median TDS is also relatively high in Finlay Arm of the Williston Reservoir (90 mg•L^{-1}). Alkalinity is 14 mg•L^{-1} in a lake of the Middle Skeena watershed but it is 118 mg•L^{-1} at a stream site in the Upper Skeena Watershed Group. The pH values are slightly alkaline. Median TP concentrations are 0.004 to 0.010 mg•L^{-1} except in Finlay Arm of the Williston Reservoir where the median TP concentration is 0.026 mg•L^{-1} . In combination these data suggest the Finlay Arm has a higher nutrient content and is potentially more productive than smaller lakes in the Omineka and Skeena Mountains.

In the highly erodable sedimentary rocks of the Central Rocky Mountains, median TDS concentrations are relatively high (82 to 242 mg•L^{-1} in streams and 100 to 156 mg•L^{-1} in lakes). Median alkalinity is also moderate to high (82 - 95 mg•L^{-1}) with an accompanying high median pH of 7.7 to 8.3. TP concentrations are highly variable ranging from an extremely high value of 0.273 mg•L^{-1} in a lake of the Pine River watershed to 0.004 in a lake of the Parsnip River Watershed Group. TP concentrations in streams are 0.003 to 0.044 mg•L^{-1} . In the Takla/Manson Plateau, TDS is 48 to 110 mg•L^{-1} in both lakes and streams. Although there are only four observations, TP concentrations drop to 0.018 mg•L^{-1} in the Nation River area of the plateau. The pH is 7.5 in lakes and 7.7 in streams.

In the Babine Uplands, lake median TDS is 56-68 mg•L^{-1} , alkalinity is 21-44 mg•L^{-1} and TP concentrations are 0.005 to 0.007 mg•L^{-1} . Many of these lakes data may come from the large lakes including Babine Lake and Stuart Lake where sedimentation of particles and nutrients may produce lower concentrations. In smaller lakes of the region, higher concentrations may be found.

Moving south from the Stuart system to the Upper Fraser Ecoregion, the TDS concentrations are 40 to 104 mg•L^{-1} in lakes but higher in streams (88-112 mg•L^{-1}). Alkalinity is 36 mg•L^{-1} in the Lower Salmon River watershed but it does reach a median concentration of 161 mg•L^{-1} in the Cottonwood River watershed. The pH values in all Watershed Groups of the Upper Fraser are 7.4 to 8.0 indicating substantial acid neutralising capacity.

Suspended sediment concentrations in the Ecoprovince are wide ranging. In the north west, glacial outwash in the Sustut River produces a median TSS concentration of 170 mg•L^{-1} but at relatively low elevations of the Tabor River watershed (Upper Fraser Ecoregion) the median TSS in streams is as low as 1 mg•L^{-1} .

Table 9. Water quality attributes for lakes and streams in the Sub-Boreal Interior Ecoprovince. Column headings are defined in Appendix B.

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	ALK	9	8.300	30.000	20.260	20.800	5.561
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	S	ALK	20	24.000	110.000	51.200	46.000	24.550
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	L	ALK	3	41.433	44.600	43.444	44.300	1.748
UTRE	UPPER TREMBLEUR LAKE	Babine Upland	Sub-Boreal Interior	UTRE	L	ALK	1	33.650	33.650	33.650	33.650	0.000
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	ALK	24	48.400	145.000	99.238	95.000	24.777
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	S	ALK	2	69.089	81.564	75.327	81.564	8.821
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	L	ALK	1	82.700	82.700	82.700	82.700	0.000
USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior	USKE	S	ALK	4	94.800	122.000	112.450	118.000	12.111
BABR	BABINE RIVER	Skeena Mountains	Sub-Boreal Interior	BABR	L	ALK	7	13.300	61.000	35.471	41.300	20.698
MSKE	MIDDLE SKEENA RIVER	Skeena Mountains	Sub-Boreal Interior	MSKE	L	ALK	3	12.700	15.900	14.167	13.900	1.617
TAKL	TAKLA LAKE	Takla/Manson Plateau	Sub-Boreal Interior	TAKL	L	ALK	1	28.700	28.700	28.700	28.700	0.000
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	L	ALK	6	40.500	159.000	111.883	148.000	50.014
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	ALK	1	161.990	161.990	161.990	161.990	0.000
CRKD	CROOKED RIVER	Upper Fraser	Sub-Boreal Interior	CRKD	L	ALK	2	26.400	34.300	30.350	34.300	5.586
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	ALK	35	50.500	96.600	61.763	56.200	10.733
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	ALK	11	35.000	39.600	36.346	36.000	1.548
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	ALK	39	26.600	83.000	74.026	76.300	11.147
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	ALK	124	56.000	93.100	71.001	73.000	7.385
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	COL	14	5.000	50.000	11.464	5.000	13.345
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	COL	25	5.000	50.000	20.200	15.000	15.240
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	S	COL	2	16.013	20.345	18.179	20.345	3.063
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	COL	1	12.247	12.247	12.247	12.247	0.000
CRKD	CROOKED RIVER	Upper Fraser	Sub-Boreal Interior	CRKD	L	COL	3	30.000	40.000	36.667	40.000	5.774
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	COL	32	5.000	60.000	34.375	35.000	12.297
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	COL	16	5.000	30.000	10.000	5.000	8.367
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	COL	35	5.000	40.000	8.000	5.000	9.941
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	COL	70	5.000	30.000	12.300	10.000	5.663
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	P_T	184	0.000	0.047	0.007	0.005	0.007
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	S	P_T	20	0.003	0.052	0.011	0.007	0.013
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	L	P_T	5	0.004	0.010	0.007	0.007	0.002
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	S	P_T	1	0.018	0.018	0.018	0.018	0.000
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	P_T	14	0.004	0.365	0.064	0.018	0.100
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	S	P_T	182	0.003	0.770	0.042	0.011	0.087
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	L	P_T	44	0.018	0.099	0.051	0.049	0.018
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	S	P_T	15	0.003	0.090	0.026	0.003	0.028
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	L	P_T	6	0.004	0.005	0.004	0.004	0.001
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	S	P_T	2	0.009	0.044	0.027	0.044	0.025
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	L	P_T	2	0.015	0.273	0.144	0.273	0.182
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	S	P_T	221	0.003	2.240	0.069	0.022	0.188
SMOK	SMOKY RIVER	Central Rocky Mountains	Sub-Boreal Interior	SMOK	S	P_T	34	0.005	0.091	0.025	0.020	0.021
FINA	FINLAY ARM	Omineca Mountains	Sub-Boreal Interior	FINA	L	P_T	2	0.012	0.026	0.019	0.026	0.010
LOMI	LOWER OMINECA RIVER	Omineca Mountains	Sub-Boreal Interior	LOMI	L	P_T	6	0.003	0.015	0.008	0.008	0.005
MESI	MESILINKA RIVER	Omineca Mountains	Sub-Boreal Interior	MESI	L	P_T	2	0.007	0.007	0.007	0.007	0.000
SUST	SUSTUT RIVER	Omineca Mountains	Sub-Boreal Interior	SUST	L	P_T	6	0.003	0.007	0.005	0.005	0.002

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior	USKE	S	P_T	4	0.003	0.008	0.006	0.007	0.002
BABR	BABINE RIVER	Skeena Mountains	Sub-Boreal Interior	BABR	L	P_T	3	0.004	0.010	0.006	0.005	0.003
ISKR	ISKUT RIVER	Skeena Mountains	Sub-Boreal Interior	ISKR	L	P_T	2	0.009	0.010	0.010	0.010	0.001
MSKE	MIDDLE SKEENA RIVER	Skeena Mountains	Sub-Boreal Interior	MSKE	L	P_T	3	0.004	0.009	0.006	0.004	0.003
NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior	NATR	L	P_T	4	0.012	0.074	0.029	0.018	0.030
CARP	CARP LAKE	Upper Fraser	Sub-Boreal Interior	CARP	L	P_T	2	0.014	0.021	0.018	0.021	0.005
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	L	P_T	22	0.009	0.546	0.086	0.036	0.145
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	P_T	80	0.003	0.555	0.062	0.048	0.072
CRKD	CROOKED RIVER	Upper Fraser	Sub-Boreal Interior	CRKD	L	P_T	20	0.008	0.140	0.023	0.016	0.029
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	P_T	244	0.003	0.670	0.047	0.023	0.086
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	S	P_T	96	0.003	0.420	0.036	0.012	0.062
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	P_T	46	0.011	0.098	0.024	0.020	0.014
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	S	P_T	15	0.010	0.174	0.042	0.016	0.050
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	P_T	178	0.003	0.256	0.017	0.009	0.032
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	S	P_T	86	0.003	4.050	0.193	0.059	0.514
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	P_T	411	0.003	0.442	0.035	0.021	0.045
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	S	P_T	220	0.003	0.295	0.059	0.042	0.054
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	PH	237	6.140	8.200	7.214	7.200	0.383
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	S	PH	21	6.500	8.600	7.467	7.500	0.436
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	L	PH	6	7.300	8.000	7.733	7.900	0.308
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	S	PH	1	8.300	8.300	8.300	8.300	0.000
UTRE	UPPER TREMBLEUR LAKE	Babine Upland	Sub-Boreal Interior	UTRE	L	PH	1	7.150	7.150	7.150	7.150	0.000
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	PH	36	7.750	8.650	8.113	8.100	0.208
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	S	PH	467	7.500	8.700	8.149	8.200	0.183
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	L	PH	8	6.300	8.000	7.550	7.700	0.524
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	S	PH	18	5.800	8.500	8.135	8.400	0.654
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	L	PH	3	7.800	8.000	7.867	7.800	0.116
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	S	PH	13	7.000	8.600	7.808	7.800	0.421
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	S	PH	295	7.600	8.850	8.227	8.200	0.177
SMOK	SMOKY RIVER	Central Rocky Mountains	Sub-Boreal Interior	SMOK	S	PH	33	8.000	8.500	8.294	8.300	0.114
LOMI	LOWER OMINECA RIVER	Omineca Mountains	Sub-Boreal Interior	LOMI	L	PH	2	7.500	7.600	7.550	7.600	0.071
SUST	SUSTUT RIVER	Omineca Mountains	Sub-Boreal Interior	SUST	S	PH	2	3.100	3.300	3.200	3.300	0.141
USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior	USKE	S	PH	4	7.920	8.100	8.008	8.050	0.082
BABR	BABINE RIVER	Skeena Mountains	Sub-Boreal Interior	BABR	L	PH	7	6.900	10.900	8.071	7.700	1.394
MSKE	MIDDLE SKEENA RIVER	Skeena Mountains	Sub-Boreal Interior	MSKE	L	PH	3	6.600	7.200	6.867	6.800	0.306
NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior	NATR	L	PH	2	7.000	7.500	7.250	7.500	0.354
NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior	NATR	S	PH	5	7.600	7.900	7.680	7.600	0.130
TAKL	TAKLA LAKE	Takla/Manson Plateau	Sub-Boreal Interior	TAKL	L	PH	1	7.400	7.400	7.400	7.400	0.000
CARP	CARP LAKE	Upper Fraser	Sub-Boreal Interior	CARP	L	PH	2	7.400	8.000	7.700	8.000	0.424
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	L	PH	46	6.340	8.800	7.363	7.400	0.621
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	PH	110	5.600	8.400	7.376	7.500	0.577
CRKD	CROOKED RIVER	Upper Fraser	Sub-Boreal Interior	CRKD	L	PH	13	6.800	7.700	7.315	7.400	0.279
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	PH	154	7.000	8.800	7.733	7.700	0.298
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	S	PH	313	6.900	8.300	7.737	7.800	0.267
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	PH	35	6.900	8.300	7.431	7.400	0.272

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	S	PH	18	7.200	8.200	7.728	7.700	0.293
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	PH	91	6.800	8.400	7.795	7.800	0.379
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	S	PH	280	7.000	8.800	7.823	7.800	0.257
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	PH	182	7.100	8.700	7.907	7.900	0.285
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	S	PH	230	7.100	8.300	7.864	7.900	0.202
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	TDS	5	44.000	68.000	56.200	56.000	11.278
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	S	TDS	1	57.000	57.000	57.000	57.000	0.000
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	L	TDS	3	66.000	77.300	70.433	68.000	6.030
UTRE	UPPER TREMBLEUR LAKE	Babine Upland	Sub-Boreal Interior	UTRE	L	TDS	1	58.000	58.000	58.000	58.000	0.000
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	TDS	25	76.000	164.000	124.960	116.000	24.598
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	S	TDS	196	46.000	506.000	153.679	144.000	54.805
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	L	TDS	2	102.000	106.000	104.000	106.000	2.828
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	S	TDS	19	1.000	344.000	239.045	242.000	88.465
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	L	TDS	1	100.000	100.000	100.000	100.000	0.000
PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior	PARS	S	TDS	13	54.000	114.000	80.308	82.000	17.318
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	L	TDS	2	126.000	156.000	141.000	156.000	21.213
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	S	TDS	163	86.000	344.000	154.822	138.000	55.017
SMOK	SMOKY RIVER	Central Rocky Mountains	Sub-Boreal Interior	SMOK	S	TDS	37	114.000	274.000	163.135	156.000	33.697
FINA	FINLAY ARM	Omineca Mountains	Sub-Boreal Interior	FINA	L	TDS	2	88.000	90.000	89.000	90.000	1.414
LOMI	LOWER OMINECA RIVER	Omineca Mountains	Sub-Boreal Interior	LOMI	L	TDS	6	22.000	68.000	49.667	58.000	20.530
MESI	MESILINKA RIVER	Omineca Mountains	Sub-Boreal Interior	MESI	L	TDS	2	44.000	48.000	46.000	48.000	2.828
SUST	SUSTUT RIVER	Omineca Mountains	Sub-Boreal Interior	SUST	L	TDS	6	28.000	44.000	39.333	40.000	5.888
USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior	USKE	S	TDS	4	154.000	203.000	188.750	199.000	23.243
BABR	BABINE RIVER	Skeena Mountains	Sub-Boreal Interior	BABR	L	TDS	3	32.000	44.000	37.333	36.000	6.110
ISKR	ISKUT RIVER	Skeena Mountains	Sub-Boreal Interior	ISKR	L	TDS	2	154.000	166.000	160.000	166.000	8.485
MSKE	MIDDLE SKEENA RIVER	Skeena Mountains	Sub-Boreal Interior	MSKE	L	TDS	3	36.000	42.000	38.667	38.000	3.055
NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior	NATR	L	TDS	4	66.000	138.000	97.500	110.000	32.919
NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior	NATR	S	TDS	5	68.000	82.000	74.000	72.000	5.292
TAKL	TAKLA LAKE	Takla/Manson Plateau	Sub-Boreal Interior	TAKL	L	TDS	1	48.275	48.275	48.275	48.275	0.000
CARP	CARP LAKE	Upper Fraser	Sub-Boreal Interior	CARP	L	TDS	2	94.000	98.000	96.000	98.000	2.828
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	L	TDS	44	10.000	242.000	71.591	40.000	67.843
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	TDS	44	48.000	224.890	92.520	88.000	27.755
CRKD	CROOKED RIVER	Upper Fraser	Sub-Boreal Interior	CRKD	L	TDS	1	53.000	53.000	53.000	53.000	0.000
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	TDS	8	86.000	116.000	102.375	104.000	8.518
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	S	TDS	237	4.000	200.000	77.511	76.000	22.601
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	TDS	4	61.000	78.000	66.250	64.000	7.932
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	S	TDS	9	86.000	128.000	106.667	112.000	15.166
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	TDS	9	57.000	101.000	82.222	86.000	15.699
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	S	TDS	18	1.000	314.000	110.722	102.000	68.161
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	TDS	36	92.000	206.000	113.333	104.000	28.082
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	S	TDS	61	64.000	137.000	96.295	90.000	22.214
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	TSS	196	1.000	12.000	1.480	1.000	1.409
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	S	TSS	21	1.000	415.000	53.191	5.000	93.871
STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior	STUL	S	TSS	1	3.000	3.000	3.000	3.000	0.000
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	TSS	1	33.000	33.000	33.000	33.000	0.000

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	S	TSS	225	1.000	378.000	16.689	3.000	43.586
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	S	TSS	126	1.000	3721.000	79.900	11.000	348.832
SUST	SUSTUT RIVER	Omineca Mountains	Sub-Boreal Interior	SUST	S	TSS	2	32.000	170.000	101.000	170.000	97.581
USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior	USKE	S	TSS	4	1.000	2.000	1.500	2.000	0.577
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	L	TSS	2	1.000	13.000	7.000	13.000	8.485
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	TSS	20	3.000	437.000	73.390	12.000	120.216
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	TSS	6	2.000	14.000	5.167	3.000	4.535
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	S	TSS	256	1.000	339.000	11.766	4.000	26.413
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	TSS	8	1.000	9.000	4.125	4.000	2.642
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	S	TSS	14	2.000	163.000	27.107	5.000	46.138
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	TSS	28	1.000	99.000	6.821	2.000	18.357
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	S	TSS	26	1.000	344.000	97.539	40.000	115.441
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	TSS	108	1.000	19.000	2.498	1.000	2.595
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	S	TSS	82	1.000	396.000	80.282	60.000	88.812
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	L	TURB	15	0.200	3.000	0.687	0.500	0.704
BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior	BABL	S	TURB	20	0.100	175.000	11.715	1.100	39.142
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	L	TURB	25	0.700	62.000	15.280	4.300	18.073
MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior	MURR	S	TURB	371	0.200	180.000	8.343	2.200	19.124
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	L	TURB	6	0.800	2.500	1.783	2.000	0.624
PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior	PARA	S	TURB	19	0.200	46.000	15.343	8.900	16.021
PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior	PINE	S	TURB	218	0.400	460.000	27.978	8.500	51.552
SMOK	SMOKY RIVER	Central Rocky Mountains	Sub-Boreal Interior	SMOK	S	TURB	37	0.100	44.000	9.124	5.000	11.168
USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior	USKE	S	TURB	4	0.310	2.680	1.020	0.690	1.119
NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior	NATR	S	TURB	4	0.800	1.000	0.950	1.000	0.100
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	L	TURB	2	1.000	3.400	2.200	3.400	1.697
COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior	COTR	S	TURB	41	1.342	210.000	30.416	12.000	44.053
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	L	TURB	7	0.600	9.500	3.686	2.600	3.366
LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior	LCHL	S	TURB	196	0.200	124.000	5.879	2.600	12.834
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	L	TURB	8	0.700	7.700	2.638	1.700	2.508
LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior	LSAL	S	TURB	13	1.100	42.000	11.177	4.500	13.491
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	L	TURB	28	0.400	33.000	2.857	0.800	6.207
STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior	STUR	S	TURB	96	0.100	170.000	10.130	1.400	29.143
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	L	TURB	33	1.000	4.000	1.706	1.400	0.775
TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior	TABR	S	TURB	136	0.900	115.000	24.806	19.000	24.857

4.3.6 Southern Interior Mountains

The Southern Interior Mountains includes Quesnel Highlands, the Columbia Mountains, Purcell Range, Shuswap Highlands, and Southern Rocky Mountains all located in the southeastern part of B.C. This Ecoprovince contains large lakes, some of which are among the deepest in the Province (e.g. Kootenay Lake is >100m deep). The area also contains numerous large reservoirs including Duncan (controlled by the Duncan Dam), Koocanusa (which extends into Montana and is controlled by the Libby Dam), Arrow Lakes (controlled by the Keenleyside Dam) , Revelstoke (controlled by the Revelstoke Dam), and Kinbasket (controlled by the Mica Dam). All these reservoirs are river impoundments and all are in the Columbia River watershed. Major rivers flowing into (Kootenay River at Libby Dam) and out of Kootenay Lake (Corra Linn Dam) are also controlled as part of a flow control system in the upper Columbia for power production under a transboundary treaty. All Columbia River water flows south into the United States downstream of Trail. The only other watershed to the east of the Columbia system in British Columbia is the Flathead which has headwaters in the high elevations of the southern Rocky Mountains. In the north and west of the Ecoprovince, headwaters of the Fraser River are the dominant limnological feature. Larger water bodies include:

- Quesnel Lake and the Horsefly River which drain to the Quesnel River and meet the Fraser River at Quesnel (in the Sub-Boreal Ecoprovince),
- headwaters of the mainstem Fraser River originating in the Southern Rocky Mountain Trench,
- the Bowron Lakes and Bowron River which flow north to meet the Fraser River,
- headwaters of the north Thompson River which originate west of Kinbasket Reservoir in the Northern Columbia Mountains,
- Adams Lake, Shuswap Lake, and Mabel Lake which drain to the South Thompson River.

Physiographic features in this Ecoprovince are varied. The Columbia Mountains and Rocky Mountains are an area of complexly folded sedimentary, some volcanic, and metamorphic rocks that have been intruded locally with granodiorites. Glaciation covered the entire area leaving steep slopes and sharp serrated ridges. Retreating glaciers left widespread moraines and debris dams which in some cases created temporary lakes as the glacial melt progressed. Lateral moraines left along valley sides are visible now as abundant gravel, sand and silt. In the existing reservoirs, these materials have been reworked with annual draw down and they now appear as multiple beach terraces.

The Quesnel and Shuswap Highlands are a transition area between interior plateaus and the eastern mountains. The area has rounded hills of folded sedimentary rock in eastern areas grading to volcanics and sedimentary rocks in the northwest. The rounded topography resulted from deep ice cover over all areas during glaciation.

A most conspicuous feature of the Ecoprovince is the Rocky Mountain Trench which is a long and wide faulted valley between the Columbia and Rocky Mountains. A trench that is smaller in size but has the same physiography is the Purcell Trench which is between the Selkirk and Purcell Mountains and hosts the basin forming Kootenay Lake. The Rocky Mountain Trench leads north to the Nechako lowlands and to the south in penetrates well into Montana. Although originally deep, the trench filled in with moraine and other erosional debris during and after glaciation, forming a wide valley that now is the flood plain for upper reaches of the Columbia and Fraser watersheds. The trench also provides a natural corridor for drainage of cold air from the north and is the main feature contributing to episodic cold conditions in the east Kootenays in winter.

The west slope of the Rocky Mountains are steep with lateral small valleys molded by glacial erosion from complexly folded sedimentary rocks. There are few lakes in this area and those present are small. Streams and rivers flowing along small valleys to the Rocky Mountain Trench are the main feature of this slope. The larger of these rivers (e.g. Kootenay River) follow a southward path of up to 200 km before dropping into the trench.

Eight aquatic Ecoregions and 27 Watershed Groups are recognized in the Southern Interior Mountains (Table 10). The Ecoregions distinguish major physiographic features in which large reservoirs, lakes and rivers are formed.

Values of the chemical parameters are low to moderate throughout this Ecoprovince. In the Southern Rockies, alkalinity is 65-79 mg•L^{-1} and pH is alkaline (median >8.0 in lakes and streams) indicating effects of weathering of parent materials having high carbonate content. The TDS is high (>100 mg•L^{-1}) in lakes but it is >120 mg•L^{-1} in streams. Sedimentary bedrock of the Rockies has little phosphorus content which is reflected in low TP concentrations in lakes (mostly <0.010 mg•L^{-1}) but it is higher in the south, reaching 0.029 mg•L^{-1} at lake sites in the Elk River watershed.

The Quesnel and Shuswap Highlands have pH values below 8.0 but many values >7.5 which is lower than in the southern Rockies but still indicating alkaline conditions. Acid neutralising capacity is highly variable ranging from an alkalinity of 36 mg•L^{-1} in Shuswap Lake to more than 200 mg•L^{-1} in the Lower North Thompson River. Median TDS is 36 mg•L^{-1} (Murtle Lake watershed) to 96 mg•L^{-1} (Columbia Reach of Kinbasket Reservoir) in the Quesnel Highlands lakes and 60-142 mg•L^{-1} in lakes of the Shuswap area. Stream TDS is higher in the Upper Shuswap watershed, reaching a median of 328 mg•L^{-1}. TP concentrations in both areas are mostly <0.010 mg•L^{-1} in either lakes or streams but they are higher in the Quesnel and Willow River watersheds. Lowest TP concentrations in the large lakes and in rivers draining those lakes (e.g. Thompson River) are found in late summer after soluble P is depleted by plankton growth in the lakes during the growing season.

Erosion rates are high in the Quesnel highlands which produces a high sediment load and high TDS concentrations in the Quesnel River (TDS of 182 mg•L^{-1} , TSS concentrations up to 692 mg•L^{-1} respectively). It also carries high TP concentrations (up to 0.505 mg•L^{-1}).

In the Columbia Mountains, pH is more alkaline than in the Shuswap Highlands and TDS is higher. Lowest median TDS of 55.3 mg•L^{-1} is found in the Revelstoke Reservoir but it reaches 159 mg•L^{-1} in lakes of the Columbia River Watershed Group. TDS in streams reaches 201 mg•L^{-1} in the Bull River watershed. An extremely high TDS value of 610 mg•L^{-1} is found in lakes of the St. Mary Watershed Group. Alkalinity is 13 to 102 mg•L^{-1} in the Columbia Mountains lakes, except again in the St Mary's watershed where it is up to 600 mg•L^{-1} . This high value may be due to a disturbed site or effluent discharge. Again the lowest alkalinity in the range of values in the Columbia Mountains is in the Revelstoke Reservoir. TP concentrations in Columbia Mountain lakes and reservoirs mainly range between 0.005 and 0.020 mg•L^{-1}. In Duncan Reservoir, a median concentration up to 0.284 mg•L^{-1} but this value is based only on 2 observations.

From biweekly sampling over a whole year at a pelagic station in the Duncan Reservoir, Perrin and Korman (1997) reported an average TP concentration not exceeding 0.007 mg•L^{-1} . At sites close to the inflow of the Duncan River, however, average TP concentrations up to 0.076 mg•L^{-1} were found during the spring freshet. Variation was high at that time of year because of the strong influence of melting ice and snow on particulate phosphorus transport. As river flows increased from snowmelt, particulate phosphorus concentrations in the rivers and in the reservoir increased. TP concentrations >0.100 mg•L^{-1} were common at high flows. In contrast, the annual average TP concentration near the river inflow was 0.059 mg•L^{-1} .

TP concentrations in streams of the Columbia Mountains Ecoregion were <0.013 mg•L^{-1} . While the stream data are based on more than 100 observations in some Watershed Groups, they may not be representative of conditions during the spring and summer freshet. At that time, TP concentrations in streams near the Duncan Reservoir, for example, can exceed 0.100 mg•L^{-1} (Perrin and Korman 1997). Most of that phosphorus is inorganic particulate P that is bound to glacial flour and stream sediment. It is not bio-available. Soluble P that is bio-available remains at very low concentrations (≤0.001 mg•L^{-1}). The data reported by Perrin and Korman (1997) suggest that in areas of B.C. where there is a strong influence of glacial scour on sedimentary and volcanic rock types, very high concentrations of TP in lakes and rivers may not indicate high potential for eutrophic conditions to develop. They can, however, indicate high concentrations of biologically unavailable particulate phosphorus produced from mobilization of inorganic particulates.

Further south in the Southern Selkirk Mountains Ecoregion, TDS is moderate, ranging from a median of 56 mg•L^{-1} in lakes of the Slocan River watershed to 112 mg•L^{-1} in streams of the same area. The pH is in a narrow range between 7.6 and 7.9. Alkalinity is moderate 39 mg•L^{-1} , although this median value was based only on 12 samples.

Table 10. Water quality attributes for lakes and streams in the Southern Interior Mountains Ecoprovince. Column headings are defined in Appendix B.

Table 10. Water quality attributes for lakes and streams of the Southern Interior Mountains.
Column headings are defined in Appendix B.

WSG_ CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_ TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	ALK	218	69.000	248.000	97.667	96.000	18.046
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	ALK	75	51.000	490.000	116.404	102.000	65.147
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	L	ALK	2	67.300	79.100	73.200	79.100	8.344
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	ALK	694	16.200	87.000	64.908	65.900	10.384
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	L	ALK	2	7.000	13.000	10.000	13.000	4.243
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	L	ALK	5	67.500	626.000	494.500	599.000	240.033
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	L	ALK	18	58.300	82.600	69.511	74.400	7.826
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	L	ALK	2	26.600	32.900	29.750	32.900	4.455
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	S	ALK	2	31.100	36.100	33.600	36.100	3.536
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	ALK	6	45.100	207.000	118.550	163.000	72.878
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	L	ALK	1	95.000	95.000	95.000	95.000	0.000
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	S	ALK	4	6.400	70.500	30.725	31.100	28.427
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	L	ALK	1	14.800	14.800	14.800	14.800	0.000
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	S	ALK	2	11.700	21.300	16.500	21.300	6.788
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	ALK	107	32.900	296.000	109.891	122.000	47.932
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	ALK	8	33.300	224.000	98.813	65.300	77.822
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	L	ALK	7	34.100	50.700	37.014	34.200	6.092
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	L	ALK	4	11.000	18.700	13.700	13.000	3.432
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	S	ALK	5	119.000	222.000	171.400	159.000	40.820
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	ALK	51	8.800	190.000	135.104	165.000	59.346
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	ALK	3	138.000	240.000	203.333	232.000	56.722
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	ALK	118	28.100	61.500	41.929	41.500	8.517
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	S	ALK	2	19.100	36.900	28.000	36.900	12.587
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	ALK	70	10.900	46.800	36.097	39.100	9.175
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	L	ALK	4	74.500	82.900	78.475	79.100	3.508
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	L	ALK	2	64.900	64.900	64.900	64.900	0.000
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	L	ALK	12	35.800	39.900	38.142	38.600	1.377
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	COL	95	5.000	50.000	6.053	5.000	4.941
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	COL	47	5.000	10.000	5.426	5.000	1.410
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	COL	90	5.000	20.000	5.500	5.000	2.127
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	COL	1	10.000	10.000	10.000	10.000	0.000
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	COL	48	5.000	30.000	8.438	5.000	5.173
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	COL	1	39.149	39.149	39.149	39.149	0.000
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	L	COL	6	50.000	60.000	53.333	50.000	5.164
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	COL	9	5.000	10.000	6.111	5.000	2.205
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	COL	1	3.000	3.000	3.000	3.000	0.000
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	COL	44	5.000	20.000	6.932	5.000	4.066
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	COL	22	5.000	10.000	5.682	5.000	1.756
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	P_T	219	0.004	0.710	0.033	0.012	0.067
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	S	P_T	133	0.003	2.600	0.179	0.013	0.402

COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	P_T	148	0.003	0.156	0.009	0.007	0.013
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	S	P_T	82	0.003	0.135	0.020	0.010	0.025
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	L	P_T	2	0.018	0.284	0.151	0.284	0.188
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	S	P_T	29	0.003	0.038	0.008	0.004	0.008
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	P_T	1028	0.003	0.121	0.011	0.005	0.013
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	S	P_T	491	0.003	0.587	0.029	0.012	0.054
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	S	P_T	74	0.003	0.259	0.027	0.011	0.042
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	L	P_T	8	0.005	0.115	0.039	0.020	0.038
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	S	P_T	1227	0.003	600.000	1.428	0.006	21.262
UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains	UARL	L	P_T	4	0.003	0.009	0.006	0.008	0.003
UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains	UARL	S	P_T	48	0.003	0.030	0.008	0.005	0.007
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	L	P_T	46	0.003	0.011	0.006	0.006	0.002
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	S	P_T	1	0.003	0.003	0.003	0.003	0.000
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	L	P_T	10	0.004	0.015	0.010	0.011	0.004
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	S	P_T	3	0.006	0.010	0.008	0.008	0.002
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	L	P_T	4	0.006	0.008	0.007	0.008	0.001
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	P_T	15	0.003	0.027	0.010	0.010	0.007
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	L	P_T	5	0.004	0.071	0.019	0.006	0.029
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	S	P_T	16	0.004	0.019	0.008	0.007	0.004
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	L	P_T	4	0.004	0.005	0.004	0.004	0.001
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	P_T	222	0.003	0.440	0.034	0.025	0.048
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	P_T	135	0.003	0.505	0.041	0.019	0.068
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	L	P_T	31	0.007	0.126	0.055	0.054	0.031
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	S	P_T	146	0.003	0.077	0.013	0.009	0.012
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	L	P_T	2	0.006	0.009	0.008	0.009	0.002
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	S	P_T	77	0.003	0.053	0.008	0.006	0.007
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	P_T	150	0.003	0.205	0.019	0.009	0.032
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	P_T	563	0.003	0.567	0.017	0.009	0.039
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	P_T	783	0.003	0.136	0.009	0.006	0.010
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	S	P_T	824	0.000	2.530	0.052	0.009	0.148
UNTH	UPPER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	UNTH	S	P_T	53	0.003	0.054	0.009	0.005	0.011
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	P_T	260	0.003	0.124	0.008	0.004	0.016
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	S	P_T	586	0.003	0.606	0.040	0.026	0.060
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	L	P_T	24	0.004	0.098	0.031	0.029	0.023
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	S	P_T	1544	0.003	1.060	0.027	0.009	0.068
KHOR	KICKING HORSE RIVER	Southern Rockies	Southern Interior Mountains	KHOR	L	P_T	4	0.005	0.007	0.007	0.007	0.001
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	L	P_T	20	0.003	0.021	0.007	0.006	0.005
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	S	P_T	3	0.006	0.023	0.012	0.007	0.010
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	L	P_T	2	0.007	0.016	0.012	0.016	0.006
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	S	P_T	988	0.001	1.200	0.023	0.010	0.054
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	L	P_T	22	0.003	0.079	0.008	0.004	0.016
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	S	P_T	68	0.003	0.155	0.009	0.004	0.020
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	L	P_T	1	0.013	0.013	0.013	0.013	0.000
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	S	P_T	78	0.003	0.239	0.043	0.029	0.048
UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains	UFRA	L	P_T	22	0.082	5.350	1.920	1.950	1.439
UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains	UFRA	S	P_T	2	0.011	0.013	0.012	0.013	0.001
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	PH	483	7.200	9.200	8.182	8.200	0.265

BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	S	PH	187	7.000	9.000	8.155	8.200	0.271
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	PH	179	7.600	8.990	8.395	8.400	0.222
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	S	PH	124	7.200	8.300	8.122	8.100	0.159
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	L	PH	2	7.600	8.000	7.800	8.000	0.283
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	S	PH	29	7.200	7.600	7.448	7.500	0.091
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	PH	1574	5.500	9.400	7.986	8.000	0.308
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	S	PH	866	5.600	8.800	8.038	8.100	0.340
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	L	PH	2	6.500	6.700	6.600	6.700	0.141
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	S	PH	328	6.500	9.000	7.634	7.700	0.369
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	L	PH	29	8.000	10.600	9.383	9.480	0.675
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	S	PH	2579	2.000	9.100	7.311	7.600	1.107
UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains	UARL	L	PH	3	6.500	8.200	7.327	7.280	0.851
UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains	UARL	S	PH	44	6.700	8.100	7.423	7.400	0.368
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	L	PH	45	7.000	8.200	7.896	7.900	0.276
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	S	PH	1	8.200	8.200	8.200	8.200	0.000
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	L	PH	8	6.900	7.600	7.344	7.500	0.277
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	S	PH	4	7.500	7.800	7.700	7.800	0.141
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	L	PH	8	7.420	7.800	7.604	7.600	0.112
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	PH	15	7.700	8.600	8.133	8.100	0.258
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	L	PH	3	6.900	8.600	7.967	8.400	0.929
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	S	PH	27	6.600	8.800	7.504	7.500	0.417
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	L	PH	2	6.900	7.400	7.150	7.400	0.354
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	S	PH	2	6.600	7.300	6.950	7.300	0.495
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	PH	238	5.850	8.900	8.135	8.300	0.470
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	PH	281	5.500	8.700	7.722	7.800	0.488
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	L	PH	22	7.000	8.300	7.536	7.500	0.252
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	S	PH	292	2.600	8.800	7.368	7.600	0.820
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	L	PH	4	7.000	7.567	7.292	7.400	0.246
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	S	PH	104	6.600	8.800	7.679	7.600	0.433
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	PH	137	6.500	8.700	8.039	8.200	0.470
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	PH	829	4.400	8.800	7.742	7.700	0.383
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	PH	939	6.460	9.000	7.730	7.800	0.411
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	S	PH	948	6.500	9.300	7.739	7.600	0.514
UNTH	UPPER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	UNTH	S	PH	61	5.900	9.500	7.410	7.400	0.483
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	PH	509	6.140	11.600	7.484	7.500	0.488
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	S	PH	887	5.300	11.400	7.907	7.900	0.462
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	L	PH	16	8.100	8.500	8.231	8.200	0.130
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	S	PH	8003	1.000	10.300	8.209	8.210	0.259
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	L	PH	10	7.700	8.400	8.000	8.100	0.271
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	S	PH	4	8.100	8.300	8.225	8.300	0.096
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	L	PH	1	7.900	7.900	7.900	7.900	0.000
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	S	PH	2171	5.400	9.900	7.830	7.900	0.338
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	L	PH	12	7.400	7.900	7.608	7.600	0.156
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	S	PH	276	6.600	8.700	7.790	7.800	0.345
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	L	PH	1	7.000	7.000	7.000	7.000	0.000
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	S	PH	161	7.400	8.600	7.906	7.900	0.183
UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains	UFRA	L	PH	22	6.800	8.600	7.450	7.500	0.476

UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains	UFRA	S	PH	6	7.500	8.000	7.800	7.900	0.210
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	TDS	119	88.000	394.000	143.092	132.000	42.699
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	S	TDS	209	103.000	274.000	199.876	201.000	42.250
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	TDS	85	82.500	1400.000	202.629	159.000	192.700
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	S	TDS	29	78.000	244.000	150.000	140.000	45.863
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	L	TDS	2	91.000	107.000	99.000	107.000	11.314
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	TDS	536	64.000	144.000	98.644	100.000	12.209
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	S	TDS	521	1.000	234.000	106.269	100.000	30.862
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	L	TDS	2	9.900	55.300	32.600	55.300	32.103
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	S	TDS	72	48.000	245.000	80.931	78.000	23.173
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	L	TDS	9	75.500	726.000	479.722	610.000	273.525
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	S	TDS	646	18.000	9074.000	209.407	156.000	541.716
UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains	UARL	L	TDS	6	9.100	162.000	87.850	104.000	51.994
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	L	TDS	23	82.000	162.000	111.304	96.000	29.552
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	L	TDS	6	42.000	54.000	47.442	48.650	4.349
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	S	TDS	2	38.000	52.000	45.000	52.000	9.900
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	L	TDS	11	10.000	66.000	39.818	55.000	25.818
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	TDS	5	64.000	242.000	161.600	206.000	83.035
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	L	TDS	3	12.000	126.000	54.000	24.000	62.642
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	S	TDS	19	40.000	106.000	53.158	50.000	14.116
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	L	TDS	6	4.000	190.000	53.000	36.000	68.173
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	S	TDS	2	24.000	34.000	29.000	34.000	7.071
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	TDS	148	0.000	518.000	112.248	92.000	80.834
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	TDS	67	53.000	1027.000	232.572	182.000	229.960
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	L	TDS	4	82.000	123.000	96.750	94.000	18.173
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	S	TDS	47	48.000	478.000	110.872	100.000	63.254
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	L	TDS	4	24.000	31.900	28.675	30.800	3.523
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	S	TDS	25	32.000	406.000	88.600	44.000	102.324
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	TDS	53	30.000	428.000	137.170	142.000	89.690
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	TDS	164	1.000	436.000	79.451	64.000	56.429
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	TDS	421	34.000	168.000	66.118	64.000	15.361
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	S	TDS	211	14.000	464.000	141.640	95.000	111.578
UNTH	UPPER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	UNTH	S	TDS	17	20.000	44.000	29.882	28.000	7.631
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	TDS	71	30.000	80.000	57.507	60.000	10.706
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	S	TDS	195	36.000	750.000	281.544	328.000	169.244
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	L	TDS	24	56.000	320.000	215.583	282.000	101.881
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	S	TDS	1018	60.000	346.000	185.493	186.000	39.426
KHOR	KICKING HORSE RIVER	Southern Rockies	Southern Interior Mountains	KHOR	L	TDS	4	40.000	300.000	159.500	256.000	138.009
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	L	TDS	26	34.000	176.000	101.962	104.000	29.918
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	S	TDS	1	126.000	126.000	126.000	126.000	0.000
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	L	TDS	3	60.000	65.000	62.333	62.000	2.517
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	S	TDS	753	1.000	372.000	79.635	79.000	28.525
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	L	TDS	22	12.000	104.000	50.136	56.000	24.261
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	S	TDS	63	48.000	182.000	112.762	112.000	37.658
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	L	TDS	1	338.000	338.000	338.000	338.000	0.000
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	S	TDS	252	40.000	342.000	102.401	100.000	32.613
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	TSS	100	1.000	40.000	5.470	2.000	7.824

BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	S	TSS	127	0.000	450.000	8.835	3.000	41.024
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	TSS	34	1.000	12.500	1.632	1.000	1.990
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	S	TSS	68	1.000	226.000	35.812	20.000	42.419
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	L	TSS	2	1.000	3.000	2.000	3.000	1.414
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	S	TSS	29	1.000	35.000	12.414	10.000	8.609
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	TSS	265	1.000	4.000	1.125	1.000	0.374
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	S	TSS	432	1.000	436.000	7.227	2.000	24.195
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	S	TSS	370	0.500	450.000	17.118	2.200	43.795
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	L	TSS	1	4.000	4.000	4.000	4.000	0.000
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	S	TSS	1096	1.000	596.000	15.453	2.000	50.376
UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains	UARL	S	TSS	36	1.000	30.000	4.056	2.000	6.642
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	L	TSS	1	7.900	7.900	7.900	7.900	0.000
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	S	TSS	1	2.000	2.000	2.000	2.000	0.000
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	TSS	9	1.000	62.000	10.889	4.000	19.560
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	S	TSS	7	1.000	14.000	6.686	4.000	4.922
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	TSS	50	1.000	151.000	7.000	2.000	25.328
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	TSS	190	1.000	692.000	14.553	2.000	57.927
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	S	TSS	97	1.000	319.000	16.804	4.000	42.331
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	S	TSS	60	1.000	85.000	7.897	1.000	17.226
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	TSS	10	1.000	36.000	8.200	4.000	11.074
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	TSS	340	1.000	719.000	18.821	4.300	53.827
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	TSS	24	0.800	17.800	2.821	1.400	4.320
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	S	TSS	722	0.100	1105.000	21.567	3.000	72.536
UNTH	UPPER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	UNTH	S	TSS	42	1.000	46.000	8.857	3.000	12.691
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	TSS	9	1.000	2.000	1.444	1.000	0.527
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	S	TSS	332	1.000	510.000	15.126	6.000	40.045
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	S	TSS	11480	0.000	8211.000	23.273	3.040	157.414
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	S	TSS	2060	0.500	378.000	3.029	1.000	10.767
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	L	TSS	12	1.000	1.000	1.000	1.000	0.000
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	S	TSS	127	0.200	80.000	6.043	1.700	12.484
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	L	TSS	1	14.000	14.000	14.000	14.000	0.000
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	S	TSS	289	1.000	893.000	53.694	28.000	83.177
UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains	UFRA	L	TSS	1	13.000	13.000	13.000	13.000	0.000
UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains	UFRA	S	TSS	4	1.000	2.000	1.250	1.000	0.500
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	L	TURB	212	0.300	160.000	6.528	1.900	16.374
BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains	BULL	S	TURB	106	0.340	92.000	9.078	3.000	16.603
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	L	TURB	184	0.300	7.300	0.871	0.600	0.945
COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains	COLR	S	TURB	76	0.500	50.000	10.995	5.600	11.423
DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains	DUNC	L	TURB	2	0.900	1.100	1.000	1.100	0.141
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	L	TURB	921	0.100	22.000	0.527	0.400	0.876
KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains	KOTL	S	TURB	497	0.200	182.000	5.395	1.300	16.143
REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains	REVL	S	TURB	32	0.500	54.000	10.509	5.900	13.171
SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains	SMAR	S	TURB	1186	0.025	694.000	6.771	1.550	26.359
CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains	CLRH	L	TURB	30	0.400	2.400	0.893	0.800	0.427
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	L	TURB	4	0.300	0.500	0.425	0.500	0.096
BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains	BOWR	S	TURB	2	0.700	1.800	1.250	1.800	0.778
CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains	CARR	S	TURB	6	0.900	2.900	1.767	1.900	0.720

CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	L	TURB	2	0.300	0.400	0.350	0.400	0.071
CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains	CLWR	S	TURB	16	0.400	3.800	1.475	1.100	0.960
MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains	MURT	L	TURB	4	0.300	0.500	0.425	0.500	0.096
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	L	TURB	63	0.400	4.000	1.071	0.900	0.696
QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains	QUES	S	TURB	153	0.100	83.000	5.551	0.900	13.642
WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains	WILL	S	TURB	66	0.700	190.000	10.852	4.500	26.772
ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains	ADMS	S	TURB	35	0.100	36.000	3.654	0.700	9.220
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	L	TURB	9	0.200	14.000	2.711	0.300	4.626
LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	LNTH	S	TURB	446	0.100	60.000	3.548	1.500	6.259
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	L	TURB	245	0.200	9.400	1.172	0.600	1.399
SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains	SHUL	S	TURB	250	0.100	290.000	8.017	1.300	28.710
UNTH	UPPER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains	UNTH	S	TURB	40	0.300	15.000	2.830	0.900	3.907
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	L	TURB	80	0.100	2.700	0.645	0.500	0.438
USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains	USHU	S	TURB	757	0.200	104.000	3.977	1.600	8.780
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	L	TURB	2	1.700	2.500	2.100	2.500	0.566
ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains	ELKR	S	TURB	11547	0.000	6815.000	16.480	2.220	96.050
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	L	TURB	3	0.400	0.800	0.667	0.800	0.231
KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains	KOTR	S	TURB	3	4.200	17.000	8.600	4.600	7.277
LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains	LARL	S	TURB	851	0.100	21.000	1.104	0.700	1.705
SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains	SLOC	S	TURB	43	0.150	57.000	3.675	1.000	9.282
MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains	MORK	S	TURB	47	0.700	76.000	23.134	16.000	22.859

4.3.7 Central Interior

The main feature of the Central Interior Ecoprovince is a wide plateau spread between the Coast Mountains and ranges of the Southern Interior Mountains Ecoprovince. Somewhat of an atypical feature for the Ecoprovince is the rugged landscape and large glacial lakes on the east slope of the coast mountains included in the Chilcotin Ranges Ecoregion. Despite the high relief, this area was included in the Central Interior because it is relatively dry.

There are eight Ecoregions in the Central Interior. Seven are headwater systems to the Fraser River and one is a headwater drainage of the Skeena River. Middle reaches of the Fraser mainstem are also included. In this area, the Fraser penetrates highly erodable glacial materials to form badland type terrain as it flows southward through the Central Interior Plateau and the Chilcotin ranges before dissecting through the Coast Mountains in the Coast and Mountains Ecoprovince. Major drainages and assigned Ecoregions in the Central Interior are as follows:

- The Bulkly River flows north to empty into the Skeena River at Hazelton, located at the extreme north end of the Ecoprovince.
- The Nechako Plateau contains the Nechako Reservoir, Eutsuk Lake and the associated local inflows. While most of the Ecoregion is characterized by rolling hills and moderate relief, extreme southern western areas include higher relief of the east slope of the Coast Mountains. Water from the Nechako Reservoir can flow west through a tunnel under Mt. Dubose in the Coast Mountains to Kemano on the west coast. This water diversion is used to produce power for an aluminum smelter in Kitimat. In 1996 approximately 57% of total outflow (1.0 $m^3 \times 10^7$) from the reservoir was diverted to the power house at Kemano (Alcan Ltd., Kitimat, B.C. unpublished data). The remaining outflow is directed east through the Murrey/Cheslatta system to the Nechako River.
- The Lower Nechako Ecoregion includes Francois Lake, Burns Lake, and Fraser Lake which drain to the Nechako River. It also includes upper and middle reaches of the Nechako River flowing eastward to the Fraser River at Prince George.
- The Dean River watershed.
- Low gradient rivers of the Central Interior Plateau including the Chilcotin, Nazko, Blackwater, Euchiniko and Chilako Rivers. These rivers drain eastward from the central plateau to the Fraser River.
- Rugged Chilcotin Ranges from which glacial meltwater is the inflow to Chilko Lake and large water storage reservoirs (Carpenter and Downton reservoirs). Chilko Lake is a large headwater lake of the Chilcotin River and an important rearing and spawning area for Fraser River sockeye salmon.
- A central plateau of small but abundant Pothole Lakes that drain to the Fraser River.

There are two large water storage reservoir systems in the Central Interior. The Nechako Reservoir is 160 km long and includes 95,000 ha of lakes, rivers and submerged forest that was not logged prior to flooding in 1954. The other is the Carpenter/Downton-Seton system located in the southern end of the Chilcotin Ranges. Flows in Carpenter-Seton are controlled by BC Hydro for power production at Shalalth located on the north shore of Seton Lake. Water surface elevation and flows out of the Nechako Reservoir are controlled by Alcan.

The Central Interior Plateau, Caribou Plateau, and Pothole Lakes, are gently rolling uplands at elevations of 800 - 1500 m. Glacial drift covers most areas creating an undulating surface having abundant small pothole lakes (<500 ha) connected by small streams. Under the glacial drift, bedrock is typically flat lava which have been eroded along river channels to form steep escarpments with flat caps and talus bases. The headwaters of the Dean River in the vicinity of Anahim Lake are unique from adjacent areas because of the presence of three high shield volcanoes. At the western end of the Nechako Plateau, close to Whitesail Lake (one of the lakes of the Nechako Reservoir), granite intrusives form large mountains. These parent materials are highly resistant to erosion, yielding extremely low concentrations of TP in surface water and lakes. In Whitesail Lake for example, TP concentrations are <0.003 $mg\bullet L^{-1}$ but at the eastern end of the reservoir in Knewstubb Lake which is less influenced granitic parent materials, TP concentrations are close to 0.007 $mg\bullet L^{-1}$ (Perrin et al. 1997).

Table 11 shows that the Central Interior Ecoprovince contains gradients of chemical characteristics.

In the Bulkley Basin, pH is slightly above neutrality, TDS is moderate (34 to 64 $mg\bullet L^{-1}$), alkalinity is low (<38 $mg\bullet L^{-1}$) and TP concentrations are 0.090 $mg\bullet L^{-1}$ to 0.025 $mg\bullet L^{-1}$ in streams and lakes. Locally where there is influence or has been influence from mine drainage (e.g. Equity Mine), TDS can increase to >300 $mg\bullet L^{-1}$. Addition of dissolved solids is mainly due to high concentrations of sulfate (>100 $mg\bullet L^{-1}$) and components of lime where neutralisation of acid drainage is active (e.g. Ca up to 50 $mg\bullet L^{-1}$ from a background of 5 $mg\bullet L^{-1}$ and Mg up to 11 $mg\bullet L^{-1}$ from a background of 0.01 $mg\bullet L^{-1}$) (Perrin et al. 1992).

The prominent feature of the Nechako Plateau is the Nechako Reservoir which has a gradient of increasing dissolved solids and nutrient concentrations from west to east (Perrin et al. 1997). TDS increases from 19 $mg\bullet L^{-1}$ at the western end of Whitesail Lake and in nearby Eutsuk Lake (not part of the reservoir) to 30 $mg\bullet L^{-1}$ at the eastern end of Knewstubb Lake near the Kenney Dam. Alkalinity increases from 14 to 24 $mg\bullet L^{-1}$ over the same reach. TP concentrations increase from 0.002 $mg\bullet L^{-1}$ at the western end to reach more than 0.007 $mg\bullet L^{-1}$ at the eastern end. Throughout the gradient, pH remains slightly above neutrality (7.0 to 7.4).

In the Lower Nechako Ecoregion which includes Francois Lake and the Nechako River, nutrient and dissolved solids concentrations are higher than in the Nechako Reservoir. TP concentrations reach a median of 0.011 to 0.024 $mg\bullet L^{-1}$ in lakes and streams. Median TDS is up to 64 $mg\bullet L^{-1}$ in streams and 118 $mg\bullet L^{-1}$ in lakes.

The Dean Uplands are considered a separate Ecoregion because of the presence of shield volcanoes and abundant cattle grazing each of which produce high concentrations of TP in the Dean River. The volcanic parent materials have contributed to high concentrations of total phosphorus (0.060 $mg\bullet L^{-1}$ (Perrin 1997)) in the Dean River. Table 11 also shows TP concentrations up to 0.076 $mg\bullet L^{-1}$ in the Upper Dean River. These TP concentrations can be much higher (up to 0.150 $mg\bullet L^{-1}$) in the vicinity of cattle grazing areas and feed lot operations. These land uses contribute to mesotrophic or eutrophic conditions in numerous lakes of the area (e.g. Anahim Lake).

Moving southward to the Central Interior Plateau and the Pothole Lakes area, there is increasing nutrient enrichment in streams and lakes (Table 11). Much of this enrichment is derived from the weathering of the flat lava bedrock. Lava has high concentrations of phosphorus which can be eroded from the bedrock in a highly soluble and bio-available form. This weathering also contributes high concentrations of cations to solution. The phosphorus contributes to high productivity in all aquatic ecosystems of the area and eutrophic conditions in many of the small lakes and streams. Where there is little surface drainage and long water residence times, many of the pothole lakes can be hypereutrophic. Large amounts of organic matter in lake sediments that results from the high productivity, induces oxygen demand under ice in many of the lakes leading to periodic fish kills in winter (Lirette and Chapman 1993). Anoxia can also cause the release of large amounts of bio-available phosphorus back into the water column each year. This annual return of phosphorus maintains long term eutrophication of these lakes.

In lakes and streams of both the Central Interior Plateau and the Pothole Lakes, TDS concentration is commonly >100 mg•L^{-1} (Table 11). In 6 out of the 17 Watershed Groups in the Central Interior Plateau, TDS is >200 mg•L^{-1}. The same is true in 5 out of the 11 Watershed Groups of the Pothole Lakes. Highest concentrations can reach more than 600 mg•L^{-1} (e.g. lakes of the Deadman River Watershed Group). In a survey of many lakes of the Ecoprovince, Lirette and Chapman (1993) found that TDS values reaching 600 mg•L^{-1} are common (Lirette and Chapman 1993). In many pothole lakes and similar sized lakes of the Central Plateau where there is little or no surface drainage, TDS can reach several thousand mg•L^{-1}. Accompanying the high TDS concentrations is high alkalinity (most values >100 mg•L^{-1} and many are 200 to 600 mg•L^{-1}). Median pH is >7.6 throughout the Central Interior Plateau and the Pothole Lakes.

There are also some relatively low TDS and alkalinity concentrations found in these Ecoregions. For example, the Euchiniko Watershed Groups have median TDS concentrations between 60 and 96 mg•L^{-1} and a single alkalinity measurement from a stream site in the Upper Chilcotin River is only 4.5 mg•L^{-1}.

TP concentrations are generally high throughout the Central Interior Plateau and the Pothole Lakes (mostly 0.020 to 0.080 mg•L^{-1}). In lakes of the Deadman River watershed, TP concentrations reach more than 0.100 mg•L^{-1}. In contrast, median TP concentration is only 0.007 mg•L^{-1} in Green Lake.

Anther important feature of the Central Interior Plateau and the Pothole Lakes is the Fraser River mainstem. Downstream of the Quesnel River, the Fraser River has TDS concentrations of 80-150 mg•L^{-1}, slightly alkaline pH and TP concentrations of 0.031-0.050 mg•L^{-1} (Hall et al. 1991). Some of this TP may originate from pulp mills that are located in Prince George. The Quesnel River also introduces a high sediment load which produces a median turbidity of 21 NTU downstream in the Fraser River.

In the Chilcotin Ranges there are more variable concentrations of most chemical parameters. In Chilko Lake, TDS concentrations are 40-60 mg•L^{-1}, alkalinity is close to 10 mg•L^{-1} and TP concentrations are <10 µg•L^{-1} (J.G. Stockner, Ecologic, Pers Comm.).

These values are low compared to data from small lakes which have median TDS concentrations of 100 to 148 mg•L^{-1}, alkalinity up to 32 mg•L^{-1}, and TP concentrations up to 0.017 mg•L^{-1}. Streams have median TDS concentrations of 38 to 68 mg•L^{-1} which is lower than TDS in the small lakes. If much of the data from lakes were collected at times of mixing, the higher lake values may be related to internal nutrient return from sediments. High sediment loads have generally not been typical in streams of the Chilcotin Ranges. Median TSS concentrations are 5 or 6 mg•L^{-1}.

In the southern part of Chilcotin Ranges, there is a strong influence of localised volcanic parent materials and extensive glacial flour in streams. In the Downton-Carpenter Reservoir system, for example, TP concentrations can reach 0.300 mg•L^{-1} in some streams during the spring freshet but the levels drop to 0.010-0.020 mg•L^{-1} at lower flows (Perrin and Macdonald 1997). TDS can be up to 300 mg•L^{-1} in small streams at low flows but in larger rivers it is typically 20-60 mg•L^{-1}, except during the spring freshet when high concentrations of TDS and TSS are found in the large rivers (e.g. the Bridge River). Glacial turbidity can be up to 70 NTU in spring, declining to <20 NTU at lower flows in winter. The pH is typically close to 8 throughout the year.

Table 11. Water quality attributes for lakes and streams in the Central Interior Ecoprovince. Column headings are defined in Appendix B.

WSG_CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	ALK	79	12.500	213.900	41.733	37.000	30.517
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	S	ALK	10	4.900	92.000	37.300	36.000	31.289
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	L	ALK	8	17.800	64.300	29.988	19.400	20.319
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	L	ALK	5	8.800	85.300	69.760	84.800	34.079
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	S	ALK	14	18.472	92.000	52.755	46.000	24.884
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	ALK	19	45.300	665.500	143.457	74.500	186.814
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	S	ALK	2	65.500	76.100	70.800	76.100	7.495
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	S	ALK	1	66.900	66.900	66.900	66.900	0.000
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	S	ALK	1	131.740	131.740	131.740	131.740	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	ALK	32	136.000	323.000	291.500	295.000	30.099
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	L	ALK	2	212.000	588.000	400.000	588.000	265.872
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	S	ALK	7	143.000	186.000	162.000	162.000	13.844
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	S	ALK	4	102.000	172.000	121.000	108.000	34.117
GRNL	GREEN LAKE	Central Interior Plateau	Central Interior	GRNL	L	ALK	5	216.000	973.000	514.600	241.000	395.261
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	ALK	11	128.000	310.000	214.455	191.000	74.949
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	S	ALK	4	33.100	204.000	123.825	170.000	77.589
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	S	ALK	1	4.500	4.500	4.500	4.500	0.000
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	L	ALK	1	18.880	18.880	18.880	18.880	0.000
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	S	ALK	1	22.600	22.600	22.600	22.600	0.000
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	ALK	5	28.000	55.000	39.228	31.750	12.910
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	ALK	9	39.385	116.000	81.799	88.148	26.398
LDEN	LOWER DEAN RIVER	Dean River	Central Interior	LDEN	S	ALK	1	13.000	13.000	13.000	13.000	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	ALK	6	33.900	102.000	88.733	99.100	26.892
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	S	ALK	2	87.800	95.700	91.750	95.700	5.586
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	ALK	19	14.300	42.300	37.414	40.900	8.469
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	ALK	2	81.200	112.000	96.600	112.000	21.779
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	L	ALK	2	43.300	45.500	44.400	45.500	1.556
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	S	ALK	1	43.391	43.391	43.391	43.391	0.000
UNRS	UPPER NECHAKO RESERVOIR	Nechako Plateau	Central Interior	UNRS	L	ALK	5	10.800	17.000	14.280	15.000	2.540
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	ALK	7	245.000	254.000	251.286	252.000	2.928
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	S	ALK	3	4.100	527.000	332.033	465.000	285.686
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	L	ALK	27	139.000	254.000	179.259	175.000	27.201
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	S	ALK	1	217.000	217.000	217.000	217.000	0.000
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	ALK	65	127.000	764.000	305.277	264.000	127.169
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	S	ALK	2	430.000	595.000	512.500	595.000	116.673
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	L	ALK	5	143.000	160.000	152.200	151.000	6.907
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	COL	276	5.000	120.000	22.489	15.000	20.020
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	COL	9	10.000	20.000	14.444	15.000	3.005
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	S	COL	1	23.522	23.522	23.522	23.522	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	COL	3	5.000	5.000	5.000	5.000	0.000
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	COL	1	5.000	5.000	5.000	5.000	0.000
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	COL	3	5.000	9.134	6.693	5.946	2.166
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	COL	1	5.000	5.000	5.000	5.000	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	COL	1	30.000	30.000	30.000	30.000	0.000

FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	COL	13	5.000	20.000	11.154	10.000	6.817
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	COL	23	5.000	60.000	10.652	5.000	15.689
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	S	COL	1	29.129	29.129	29.129	29.129	0.000
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	COL	43	5.000	10.000	5.116	5.000	0.763
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	COL	62	5.000	40.000	16.903	18.000	9.843
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	L	COL	4	10.000	10.000	10.000	10.000	0.000
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	P_T	296	0.003	0.764	0.042	0.025	0.068
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	S	P_T	312	0.003	0.585	0.035	0.019	0.052
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	L	P_T	10	0.003	0.065	0.017	0.010	0.019
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	S	P_T	67	0.003	0.142	0.018	0.009	0.025
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	L	P_T	19	0.006	0.139	0.031	0.010	0.041
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	S	P_T	66	0.004	0.170	0.013	0.008	0.021
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	P_T	49	0.005	0.224	0.020	0.014	0.034
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	S	P_T	46	0.003	0.076	0.015	0.012	0.014
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	S	P_T	5	0.013	0.020	0.017	0.018	0.004
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	S	P_T	1	0.072	0.072	0.072	0.072	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	P_T	110	0.003	0.141	0.057	0.056	0.043
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	S	P_T	1017	0.003	1.150	0.074	0.049	0.102
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	L	P_T	4	0.061	2.360	0.655	0.108	1.137
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	L	P_T	2	0.013	0.028	0.021	0.028	0.011
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	S	P_T	57	0.003	0.780	0.133	0.062	0.183
GRNL	GREEN LAKE	Central Interior Plateau	Central Interior	GRNL	L	P_T	159	0.003	0.038	0.008	0.007	0.006
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	P_T	17	0.003	0.613	0.055	0.016	0.146
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	S	P_T	32	0.006	0.152	0.036	0.027	0.031
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	L	P_T	9	0.028	0.380	0.127	0.144	0.116
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	S	P_T	1	0.171	0.171	0.171	0.171	0.000
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	L	P_T	3	0.014	0.020	0.016	0.015	0.003
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	S	P_T	4	0.004	0.028	0.012	0.010	0.011
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	P_T	16	0.003	0.129	0.021	0.007	0.034
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	P_T	57	0.003	0.260	0.028	0.005	0.057
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	L	P_T	3	0.017	0.019	0.018	0.017	0.001
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	S	P_T	14	0.003	0.024	0.010	0.010	0.007
LDEN	LOWER DEAN RIVER	Dean River	Central Interior	LDEN	S	P_T	1	0.003	0.003	0.003	0.003	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	P_T	12	0.009	0.061	0.031	0.032	0.017
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	S	P_T	12	0.034	0.135	0.084	0.076	0.035
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	P_T	281	0.003	0.162	0.024	0.021	0.018
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	S	P_T	49	0.003	0.093	0.028	0.024	0.019
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	P_T	107	0.003	0.110	0.028	0.023	0.017
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	S	P_T	139	0.003	1.320	0.032	0.011	0.124
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	L	P_T	6	0.013	0.061	0.024	0.016	0.019
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	S	P_T	1	0.025	0.025	0.025	0.025	0.000
UNRS	UPPER NECHAKO RESERVOIR	Nechako Plateau	Central Interior	UNRS	L	P_T	2	0.007	0.009	0.008	0.009	0.001
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	P_T	99	0.003	0.765	0.029	0.015	0.081
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	S	P_T	431	0.003	2.640	0.047	0.025	0.138
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	L	P_T	52	0.008	0.054	0.016	0.014	0.008
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	S	P_T	30	0.014	0.149	0.047	0.037	0.036
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	L	P_T	16	0.013	0.214	0.041	0.020	0.051

NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	S	P_T	101	0.003	0.230	0.044	0.020	0.055
NAZR	NAZKO RIVER	Pothole Lakes	Central Interior	NAZR	L	P_T	3	0.012	0.088	0.044	0.032	0.039
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	P_T	367	0.004	0.330	0.037	0.022	0.037
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	S	P_T	1961	0.003	2.070	0.103	0.062	0.153
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	L	P_T	16	0.004	1.850	0.206	0.014	0.504
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	S	P_T	28	0.009	0.301	0.080	0.073	0.065
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	PH	117	6.500	8.800	7.309	7.300	0.449
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	S	PH	2112	1.000	9.460	7.323	7.400	0.605
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	L	PH	9	6.800	7.900	7.189	7.200	0.344
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	S	PH	67	6.700	7.700	7.296	7.300	0.193
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	L	PH	21	6.800	8.300	7.757	7.900	0.453
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	S	PH	69	7.100	8.400	7.922	8.000	0.244
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	PH	69	6.900	8.900	7.878	7.900	0.380
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	S	PH	740	6.000	9.500	7.223	7.200	0.352
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	L	PH	1	8.100	8.100	8.100	8.100	0.000
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	S	PH	18	7.300	8.100	7.732	7.750	0.226
BIGC	BIG CREEK	Central Interior Plateau	Central Interior	BIGC	L	PH	11	7.100	9.000	8.156	8.090	0.506
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	L	PH	11	6.670	8.310	7.646	8.000	0.654
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	S	PH	1	7.656	7.656	7.656	7.656	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	PH	85	7.500	9.400	8.400	8.400	0.439
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	S	PH	1213	6.300	9.000	8.336	8.300	0.199
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	L	PH	4	7.900	8.400	8.250	8.400	0.238
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	S	PH	12	8.200	8.500	8.350	8.300	0.109
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	L	PH	15	8.090	9.300	8.502	8.400	0.396
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	S	PH	260	6.480	8.700	7.600	7.600	0.319
EUCL	EUCHINIKO LAKE	Central Interior Plateau	Central Interior	EUCL	L	PH	1	8.200	8.200	8.200	8.200	0.000
EUCH	EUCHINIKO RIVER	Central Interior Plateau	Central Interior	EUCH	L	PH	21	7.370	8.200	7.855	7.960	0.266
GRNL	GREEN LAKE	Central Interior Plateau	Central Interior	GRNL	L	PH	29	8.200	9.320	8.894	8.850	0.286
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	PH	36	7.400	9.500	8.331	8.400	0.416
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	S	PH	55	6.000	8.600	7.586	7.700	0.573
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	L	PH	13	7.900	9.500	8.623	8.600	0.384
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	S	PH	1	8.600	8.600	8.600	8.600	0.000
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	L	PH	25	7.617	9.010	8.474	8.560	0.342
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	S	PH	4	6.870	7.600	7.375	7.540	0.340
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	PH	10	7.517	8.900	7.994	8.000	0.455
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	PH	77	6.300	8.600	7.584	7.500	0.389
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	L	PH	33	5.100	8.840	7.643	7.700	0.819
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	S	PH	32	6.400	7.700	7.178	7.200	0.386
LDEN	LOWER DEAN RIVER	Dean River	Central Interior	LDEN	S	PH	1	8.500	8.500	8.500	8.500	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	PH	19	7.000	9.300	8.054	8.080	0.459
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	S	PH	14	7.500	8.200	7.921	8.000	0.272
CHES	CHESLATTA RIVER	Lower Nechako	Central Interior	CHES	S	PH	1	7.300	7.300	7.300	7.300	0.000
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	PH	109	7.000	9.800	7.729	7.800	0.331
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	S	PH	147	6.480	8.670	7.735	7.830	0.453
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	PH	44	7.500	9.600	8.034	8.000	0.362
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	S	PH	603	6.700	8.400	7.567	7.600	0.237
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	L	PH	2	7.300	7.800	7.550	7.800	0.354

UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	S	PH	1	7.443	7.443	7.443	7.443	0.000
UNRS	UPPER NECHAKO RESERVOIR	Nechako Plateau	Central Interior	UNRS	L	PH	5	6.800	7.400	7.080	7.100	0.278
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	PH	30	7.400	9.350	8.356	8.330	0.410
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	S	PH	366	6.500	9.200	8.147	8.200	0.375
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	L	PH	65	7.930	9.340	8.859	8.900	0.239
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	S	PH	42	6.500	9.100	8.033	8.000	0.590
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	L	PH	58	2.900	9.200	7.520	7.700	1.138
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	S	PH	1248	4.600	9.400	7.690	7.800	0.478
NAZR	NAZKO RIVER	Pothole Lakes	Central Interior	NAZR	L	PH	22	7.210	9.100	7.967	8.000	0.544
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	PH	317	7.400	9.400	8.511	8.500	0.270
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	S	PH	839	6.600	9.700	8.370	8.400	0.348
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	L	PH	34	7.000	9.360	8.387	8.360	0.584
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	S	PH	179	5.800	8.300	7.805	7.900	0.410
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	TDS	9	40.000	118.000	74.667	62.000	30.430
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	S	TDS	78	8.000	130.000	66.321	64.000	28.878
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	L	TDS	8	46.000	96.000	59.000	50.000	21.699
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	S	TDS	22	25.000	55.000	37.182	34.000	8.450
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	L	TDS	63	0.000	202.000	82.341	73.300	61.647
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	S	TDS	4	28.000	80.000	53.000	60.000	22.241
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	TDS	167	0.000	1634.000	98.249	78.000	160.159
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	S	TDS	49	34.000	100.000	63.102	64.000	13.905
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	L	TDS	3	110.000	297.000	172.333	110.000	107.965
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	S	TDS	3	98.000	104.000	102.000	104.000	3.464
BIGC	BIG CREEK	Central Interior Plateau	Central Interior	BIGC	L	TDS	15	0.000	345.000	162.420	129.000	114.990
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	L	TDS	25	20.000	205.000	116.280	110.000	62.630
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	S	TDS	1	175.790	175.790	175.790	175.790	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	TDS	38	56.000	351.000	315.763	328.000	62.478
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	S	TDS	289	90.000	500.000	286.810	280.000	93.127
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	L	TDS	2	254.000	648.000	451.000	648.000	278.600
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	S	TDS	7	178.000	214.000	196.571	198.000	12.421
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	L	TDS	37	54.000	2000.000	438.027	302.000	436.614
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	S	TDS	29	66.000	144.000	98.035	96.000	21.949
EUCL	EUCHINIKO LAKE	Central Interior Plateau	Central Interior	EUCL	L	TDS	5	41.000	262.000	96.600	60.000	93.096
EUCH	EUCHINIKO RIVER	Central Interior Plateau	Central Interior	EUCH	L	TDS	38	10.000	204.000	97.321	84.200	55.618
GRNL	GREEN LAKE	Central Interior Plateau	Central Interior	GRNL	L	TDS	36	0.000	1100.000	540.528	446.000	371.843
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	TDS	42	12.700	1900.000	250.231	176.000	312.599
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	S	TDS	21	44.000	270.000	106.667	84.000	69.321
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	L	TDS	7	150.000	448.000	311.429	340.000	98.453
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	L	TDS	30	38.683	807.000	192.793	122.000	188.120
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	S	TDS	1	48.000	48.000	48.000	48.000	0.000
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	TDS	15	36.878	160.000	106.559	100.000	39.213
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	TDS	19	22.000	166.000	80.556	68.000	45.224
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	L	TDS	45	29.100	1120.000	186.013	148.000	179.877
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	S	TDS	7	32.000	44.000	37.429	38.000	4.429
LDEN	LOWER DEAN RIVER	Dean River	Central Interior	LDEN	S	TDS	1	22.000	22.000	22.000	22.000	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	TDS	10	0.000	283.000	132.080	166.000	87.708
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	S	TDS	7	78.000	156.000	129.429	146.000	35.341

FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	TDS	38	32.000	92.000	66.778	68.000	10.955
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	S	TDS	9	62.000	90.000	67.222	64.000	8.997
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	TDS	13	80.000	156.000	118.231	118.000	23.044
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	S	TDS	53	36.000	78.000	50.981	50.000	10.978
LNRS	LOWER NECHAKO RESERVOIR	Nechako Plateau	Central Interior	LNRS	L	TDS	5	30.000	100.000	74.000	80.000	26.077
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	L	TDS	6	60.000	96.000	76.667	78.000	15.833
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	S	TDS	1	78.325	78.325	78.325	78.325	0.000
UNRS	UPPER NECHAKO RESERVOIR	Nechako Plateau	Central Interior	UNRS	L	TDS	2	32.000	32.000	32.000	32.000	0.000
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	TDS	85	0.000	611.000	166.051	142.000	138.988
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	S	TDS	87	150.000	408.000	225.793	194.000	69.171
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	L	TDS	45	40.000	1800.000	501.822	379.000	396.307
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	S	TDS	14	66.000	584.000	183.857	88.000	203.372
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	L	TDS	50	1.000	1596.000	359.510	202.000	435.996
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	S	TDS	180	1.000	660.000	162.688	160.000	140.053
NAZR	NAZKO RIVER	Pothole Lakes	Central Interior	NAZR	L	TDS	47	30.000	696.000	148.583	110.000	109.108
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	TDS	148	0.000	1580.000	337.037	298.000	228.895
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	S	TDS	149	120.000	715.000	368.530	362.000	81.019
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	L	TDS	67	0.000	2000.000	360.336	245.000	357.653
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	S	TDS	228	8.000	212.000	106.408	103.000	26.444
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	TSS	76	1.000	20.000	3.447	3.000	3.431
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	S	TSS	1804	0.500	745.000	11.516	3.300	36.426
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	S	TSS	55	1.000	149.000	16.167	3.000	30.865
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	L	TSS	3	2.000	6.000	3.333	2.000	2.309
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	S	TSS	19	1.000	6.000	2.193	2.000	1.429
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	TSS	13	1.000	5.000	1.692	1.000	1.378
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	S	TSS	529	0.000	227.000	7.357	2.000	17.341
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	S	TSS	18	1.000	5.300	2.422	2.000	1.579
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	TSS	6	1.000	1.000	1.000	1.000	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	S	TSS	694	1.000	452.000	19.439	10.000	33.756
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	L	TSS	2	6.000	36.000	21.000	36.000	21.213
DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior	DEAD	S	TSS	3	1.000	2.000	1.333	1.000	0.577
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	L	TSS	2	2.000	7.000	4.500	7.000	3.536
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	S	TSS	240	1.000	2450.000	22.106	2.700	172.787
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	TSS	1	3.000	3.000	3.000	3.000	0.000
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	S	TSS	9	2.000	17.000	7.222	3.000	6.379
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	L	TSS	2	1.000	1.000	1.000	1.000	0.000
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	S	TSS	1	2.000	2.000	2.000	2.000	0.000
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	S	TSS	3	5.000	17.000	9.000	5.000	6.928
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	TSS	3	1.000	11.802	4.739	1.414	6.121
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	TSS	58	1.000	212.000	23.719	5.000	49.911
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	S	TSS	11	1.000	26.000	9.273	6.000	8.580
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	TSS	1	5.000	5.000	5.000	5.000	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	S	TSS	5	1.000	8.000	5.200	6.000	2.775
CHES	CHESLATTA RIVER	Lower Nechako	Central Interior	CHES	S	TSS	1	1.000	1.000	1.000	1.000	0.000
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	TSS	53	1.000	12.000	2.585	2.000	2.188
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	S	TSS	118	1.000	63.000	6.542	5.000	7.646
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	TSS	1	1.000	1.000	1.000	1.000	0.000

NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	S	TSS	77	1.000	1470.000	24.649	2.000	167.211
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	TSS	10	1.000	1.000	1.000	1.000	0.000
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	S	TSS	96	1.000	366.000	9.813	1.000	41.649
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	L	TSS	7	1.000	5.000	2.143	1.000	1.952
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	S	TSS	1	63.000	63.000	63.000	63.000	0.000
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	L	TSS	31	1.000	98.000	17.871	9.000	22.366
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	S	TSS	777	0.050	16000.000	53.695	3.000	612.439
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	TSS	68	1.000	127.000	5.271	3.000	15.142
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	S	TSS	75	1.000	133.000	16.955	8.000	21.572
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	L	TSS	6	1.000	5.000	2.667	4.000	1.862
TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	S	TSS	238	1.000	549.000	67.840	38.000	94.600
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	L	TURB	330	0.200	23.000	1.915	1.200	2.394
BULK	BULKLEY RIVER	Bulkley Basin	Central Interior	BULK	S	TURB	400	0.100	180.000	7.751	2.300	17.067
MORR	MORICE RIVER	Bulkley Basin	Central Interior	MORR	S	TURB	60	0.500	44.000	5.723	1.900	9.351
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	L	TURB	5	0.400	3.700	1.580	1.000	1.324
HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior	HORS	S	TURB	14	0.600	1.600	1.073	1.000	0.314
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	L	TURB	10	0.200	1.500	0.600	0.400	0.488
MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior	MAHD	S	TURB	51	0.500	22.000	3.408	1.800	4.053
BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior	BBAR	S	TURB	10	0.100	5.000	1.331	1.100	1.415
BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior	BLAR	S	TURB	1	2.864	2.864	2.864	2.864	0.000
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	L	TURB	22	0.300	2.100	0.909	1.000	0.419
BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior	BONP	S	TURB	686	0.200	54.000	3.512	1.800	5.643
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	L	TURB	2	0.600	3.200	1.900	3.200	1.839
DOGC	DOG CREEK	Central Interior Plateau	Central Interior	DOGC	S	TURB	221	0.120	1400.000	12.931	2.000	95.295
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	L	TURB	1	0.700	0.700	0.700	0.700	0.000
LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	LCHR	S	TURB	23	1.100	42.000	9.026	4.600	10.401
UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior	UCHR	S	TURB	1	1.500	1.500	1.500	1.500	0.000
CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior	CHIR	S	TURB	4	0.310	11.000	4.530	6.300	5.130
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	L	TURB	3	0.300	11.407	4.117	0.645	6.315
SETN	SETON LAKE	Chilcotin Ranges	Central Interior	SETN	S	TURB	57	0.400	93.000	11.092	2.400	22.321
TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior	TASR	S	TURB	6	6.500	21.000	13.583	13.000	4.944
LDEN	LOWER DEAN RIVER	Dean River	Central Interior	LDEN	S	TURB	1	2.400	2.400	2.400	2.400	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	L	TURB	1	3.600	3.600	3.600	3.600	0.000
UDEN	UPPER DEAN RIVER	Dean River	Central Interior	UDEN	S	TURB	9	0.500	2.600	1.400	1.300	0.634
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	L	TURB	25	0.400	3.300	1.060	0.700	0.822
FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior	FRAN	S	TURB	5	0.600	1.400	0.840	0.700	0.321
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	L	TURB	1	0.600	0.600	0.600	0.600	0.000
NECR	NECHAKO RIVER	Lower Nechako	Central Interior	NECR	S	TURB	80	0.300	256.000	5.556	1.200	28.632
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	L	TURB	6	0.700	1.100	0.917	1.000	0.147
UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior	UEUT	S	TURB	1	3.683	3.683	3.683	3.683	0.000
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	L	TURB	43	0.200	0.600	0.337	0.300	0.107
BRID	BRIDGE CREEK	Pothole Lakes	Central Interior	BRID	S	TURB	359	0.100	22.000	1.728	1.100	2.067
MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior	MFRA	S	TURB	14	2.500	43.000	21.329	21.000	12.740
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	L	TURB	1	10.000	10.000	10.000	10.000	0.000
NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior	NARC	S	TURB	69	0.300	320.000	14.310	3.100	42.689
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	L	TURB	118	0.200	30.000	2.608	1.600	4.206
SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior	SAJR	S	TURB	154	0.400	300.000	13.325	2.400	46.433

TWAC	TWAN CREEK	Pothole Lakes	Central Interior	TWAC	S	TURB	36	1.200	92.000	23.950	24.000	18.377

4.3.8 Southern Interior

The Southern Interior Ecoprovince lies between the Coast Mountains to the west and the Columbia Mountains to the east. It is the most southern portion of the interior plateau in British Columbia (Figure 1). It includes the Thompson-Okanagan Plateau, the southeastern slopes the Cascades and the Okanagan Highlands. Major water bodies in the west and north of the Ecoprovince include the Thompson River and its lakes and tributaries which join the Fraser River at Lytton. To the east and south is Okanagan Lake and the Similkameen River which flow south into Washington State.

Climate of the Southern Interior is the driest of the whole Province as it is in the rainshadow of the Coast Mountains. Southern portions are influenced by hot dry air from the Great Basin of the United States which produces desert conditions. Very warm temperatures in summer results in evaporation exceeding filling rates in many small lakes which concentrates dissolved solids and yields alkaline or saline lakes. In winter, cold air flows from the north down the central plateau and drains into low lying valleys. At some times this drainage produces colder air at lower elevations compared to that at higher elevations where cold air is less likely to be trapped.

The entire Ecoprovince was glaciated during the Pleistocene and during the glacial retreat, extensive surficial moraines were left. In depressions, many glacial lakes were formed, the largest being Kamloops Lake and Okanagan Lake. Streams and rivers have cut through the surficial moraines creating steeply incised gullies, contacting bedrock in transition areas between headwaters in the uplands to lower lying valleys. With the exception of the Cascades, bedrock is composed mainly of lava flows that extend southward from those in the Central Interior. The Cascades are composed of folded and metamorphosed sedimentary rocks with some volcanics intruded by granitic batholiths.

Within the Southern Interior there are two Ecoregions and eight Watershed Groups (Figure 1). It is the smallest of all Ecoprovinces but there is an abundance of water quality data for most of the Watershed Groups (Table 12) compared to other Ecoprovinces.

Lakes and streams of the Thompson-Okanagan Plateau are nutrient-rich. The Thompson River near the confluence with the Fraser at Lytton has TDS concentrations close to 85 $mg{\bullet}L^{-1}$ in spring, increasing to 114 $mg{\bullet}L^{-1}$ at low flow. Median TDS concentration in the data base for the Thompson River is 66 $mg{\bullet}L^{-1}$. Alkalinity at the Thompson River lake and stream sites is >200 $mg{\bullet}L^{-1}$ and it is equally high in streams of the Lower Nicola River and Guichon Creek Watershed Groups. In lakes of the same areas, alkalinity is <100 $mg{\bullet}L^{-1}$. TP concentrations in the Guichon Creek, Nicola River and lower Nicola River watersheds are 0.020 to 0.050 $mg{\bullet}L^{-1}$ but downstream of Kamloops Lake, the median TP concentration is lower (<0.015 $mg{\bullet}L^{-1}$) potentially due to uptake and sedimentation in Kamloops Lake. All pH values in the Thompson-Okanagan are 7.6-8.2 which in combination with the alkalinity data indicate moderately alkaline conditions with a high acid neutralising capacity.

In the Similkameen River watershed, alkalinity is relatively low (median of 69 mg•L^{-1}) but the median pH of 8.0 is similar to that of the Thompson River headwaters. Median TP concentration is 0.009 mg•L^{-1} in streams but much higher in lakes (0.021 mg•L^{-1}). TDS concentrations are high (up to 204 mg•L^{-1}) and suspended sediment concentration is usually low (median of 2 mg•L^{-1}). There are, however, some extremely high TSS concentrations reaching more than 6,000 mg•L^{-1} in the Similkameen River watershed that are likely due to effects of channelization and disturbance of riparian zones in some areas. Above valley bottoms of the lower Similkameen River (e.g. high elevation streams near Hedley), TDS concentrations can be as low as 30 mg•L^{-1} but they increase with decreasing elevation in some cases reaching 150-300 mg•L^{-1} in valley bottoms before discharging to the Similkameen mainstem (Perrin and Lekstrum 1996). Alkalinity at those higher elevations is 10-20 mg•L^{-1}, pH is circumneutral, and TP concentrations are 6-20 µg•L^{-1} which is very low compared to other areas of the Ecoprovince.

The Kettle River Watershed Group (east and west Kettle) has the lowest nutrient and dissolved solids concentrations of anywhere in the Southern Interior. Alkalinity is <35 mg•L^{-1}, median pH is <8.0 and TDS concentrations are <100 mg•L^{-1} in lakes and streams. Median TP concentration is 0.004 mg•L^{-1} in lakes and 0.012 mg•L^{-1} in streams.

In the Okanagan River watershed, water quality sample sizes are the largest of any Watershed Group in the province, which suggests that the summary statistics are relatively precise. Median alkalinity is 138 mg•L^{-1} and pH is 8.1. TDS concentrations are 174 mg•L^{-1} in lakes and 148 mg•L^{-1} in streams. TP concentrations are moderate (median of 0.010 mg•L^{-1} in lakes and 0.030 mg•L^{-1} in streams).

At high treeline elevations on the west side of Okanagan Lake, water quality is unique from that at the lower elevations. While water quality data for these high elevation ecosystems is not explicitly listed in the AECD or in Table 12, these systems were identified as being unique by Dr. Tom Northcote during the workshop. These lakes and streams have pH ranges near neutrality or below 7, only moderate TDS of 50-100 mg•L^{-1} and median TP concentrations of 9-20 µg•L^{-1}. These values are low compared to those found in lakes, streams and in the mainstem Okanagan River at valley bottoms. The high elevation lakes also have high colour (40-50 TCU). Soils at the high elevations are shallow but acidic and darkly coloured with abundant organic matter that is readily leached. Humate leaching from these soils would be expected to contribute to colouration of the small alpine streams and lakes.

There is an extremely dry area of the Okanagan Ecoregion that is located along the Canada/U.S. border between Osoyoos and Grand Forks. This area is mainly desert as it is the northern extent of the Great Basin that dominates much of the western United States. Bedrock is volcanic. A Watershed Group is not allocated to this area in the AECD or on the map (Figure 1) but during the workshop it did receive special consideration. A separate summary of data from this area showed that alkalinity is 90-190 mg•L^{-1} and median TDS concentrations in lakes and streams are 100-170 mg•L^{-1}. Median TP concentrations are near 0.020 mg•L^{-1} but it can range up to 1.0 mg•L^{-1} in streams and 5.0 mg•L^{-1} in small lakes. At these concentrations, aquatic ecosystems can become highly eutrophic.

Table 12. Water quality attributes for lakes and streams in the Southern Interior Ecoprovince. Column headings are defined in Appendix B.

WSG_CODE	WSG_NAME	ECOREGION	ECOPROV	LOCATION	SITE_TYPE	PCODE	NUMBER	MIN	MAX	MEAN	MEDIAN	S_DEV
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	ALK	96	27.500	35.600	32.407	32.800	1.439
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	S	ALK	5	0.500	25.300	15.640	18.700	9.847
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	ALK	892	5.200	194.000	125.068	138.000	31.460
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	ALK	125	6.400	214.000	78.814	69.000	37.459
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	S	ALK	1	245.000	245.000	245.000	245.000	0.000
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	ALK	7	50.712	668.000	274.685	95.100	264.632
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	ALK	3	159.000	237.000	209.667	233.000	43.924
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	L	ALK	3	20.700	22.400	21.533	21.500	0.851
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	L	ALK	11	29.900	388.000	120.973	141.000	109.300
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	ALK	2	176.000	213.000	194.500	213.000	26.163
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	ALK	15	27.600	453.000	289.258	360.000	181.312
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	S	ALK	5	34.600	267.000	184.720	223.000	99.736
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	COL	39	5.000	10.000	5.256	5.000	1.117
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	COL	99	5.000	70.000	7.303	5.000	8.955
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	COL	6	5.000	10.000	5.833	5.000	2.041
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	COL	1	10.000	10.000	10.000	10.000	0.000
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	COL	2	5.000	40.000	22.500	40.000	24.749
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	L	COL	2	5.000	5.000	5.000	5.000	0.000
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	COL	1	40.000	40.000	40.000	40.000	0.000
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	COL	4	5.000	5.000	5.000	5.000	0.000
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	P_T	280	0.003	0.136	0.006	0.004	0.013
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	S	P_T	479	0.003	0.642	0.032	0.012	0.074
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	P_T	3870	0.000	5.550	0.022	0.010	0.094
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	S	P_T	4614	0.000	31.000	0.146	0.030	0.662
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	P_T	228	0.004	0.282	0.043	0.021	0.055
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	S	P_T	537	0.003	0.790	0.029	0.009	0.059
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	L	P_T	19	0.005	0.200	0.052	0.022	0.058
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	S	P_T	133	0.003	0.540	0.051	0.033	0.076
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	P_T	179	0.003	0.545	0.061	0.030	0.101
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	P_T	117	0.003	0.680	0.032	0.020	0.066
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	L	P_T	7	0.015	0.166	0.066	0.028	0.064
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	S	P_T	30	0.014	0.337	0.074	0.050	0.078
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	L	P_T	35	0.003	1.070	0.080	0.016	0.193
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	P_T	1455	0.000	999.000	0.795	0.050	26.222
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	P_T	68	0.003	0.563	0.042	0.014	0.087
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	S	P_T	452	0.003	0.174	0.016	0.009	0.021
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	PH	861	6.000	8.900	7.265	7.300	0.477
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	S	PH	591	6.190	9.100	7.830	7.900	0.386
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	PH	6509	0.083	10.000	7.979	8.140	0.915
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	S	PH	6129	5.600	9.700	8.001	8.100	0.457
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	PH	282	6.500	9.900	7.930	8.000	0.469
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	S	PH	2310	3.600	12.100	7.931	8.000	0.426
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	L	PH	13	7.350	9.000	8.335	8.300	0.444
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	S	PH	167	7.000	9.200	8.171	8.200	0.328

LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	PH	48	7.500	9.100	8.329	8.200	0.443
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	PH	185	7.100	8.700	7.930	7.900	0.325
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	L	PH	7	7.400	8.600	7.714	7.600	0.445
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	S	PH	38	7.300	9.100	7.861	7.800	0.437
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	L	PH	35	7.100	8.900	8.073	7.900	0.452
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	PH	1670	4.400	9.200	7.824	7.800	0.481
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	PH	58	6.900	9.000	8.250	8.300	0.456
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	S	PH	929	6.100	8.800	7.746	7.700	0.329
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	TDS	45	48.000	124.000	56.556	54.000	10.866
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	S	TDS	103	32.000	228.000	100.243	98.000	44.067
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	TDS	967	15.000	646.000	184.937	174.000	64.613
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	S	TDS	2166	4.000	4609.000	198.020	148.000	170.603
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	TDS	14	14.000	8150.000	1280.429	204.000	2901.536
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	S	TDS	473	15.000	1570.000	190.497	148.000	161.015
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	L	TDS	5	194.000	1080.000	541.600	200.000	473.450
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	S	TDS	39	38.000	348.000	239.180	270.000	72.398
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	TDS	12	71.554	1240.000	785.165	1210.000	546.578
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	TDS	25	36.000	426.000	143.280	78.000	120.011
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	L	TDS	4	22.000	54.000	42.000	50.000	14.236
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	L	TDS	17	46.000	693.000	183.385	202.000	151.946
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	TDS	430	35.000	792.000	178.630	194.000	111.890
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	TDS	38	50.000	780.000	291.857	228.000	229.237
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	S	TDS	447	1.000	2204.000	76.045	66.000	108.697
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	TSS	19	1.000	2.000	1.211	1.000	0.419
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	S	TSS	285	0.700	166.000	8.348	4.000	18.949
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	TSS	511	0.000	72.000	3.870	2.000	7.110
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	S	TSS	3285	0.000	4505.000	23.029	3.700	127.114
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	TSS	5	1.000	117.700	24.340	1.000	52.190
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	S	TSS	1091	0.000	6110.000	18.117	2.000	193.030
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	L	TSS	3	1.500	5.000	3.833	5.000	2.021
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	S	TSS	98	0.500	1447.000	28.079	2.000	154.726
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	TSS	4	1.000	3.000	1.933	2.000	0.827
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	TSS	162	1.000	77.000	7.994	4.000	12.667
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	L	TSS	2	1.000	1.000	1.000	1.000	0.000
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	S	TSS	13	1.000	182.000	32.846	12.000	56.969
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	TSS	1407	1.000	661.000	25.951	6.000	57.489
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	TSS	11	1.000	3.000	1.727	2.000	0.786
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	S	TSS	488	0.700	349.000	8.178	2.000	25.199
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	L	TURB	130	0.100	2.100	0.350	0.300	0.250
KETL	KETTLE RIVER	Okanagan	Southern Interior	KETL	S	TURB	552	0.100	70.000	1.716	0.800	3.730
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	L	TURB	1172	0.100	31.000	1.211	0.900	1.701
OKAN	OKANAGAN RIVER	Okanagan	Southern Interior	OKAN	S	TURB	4468	0.000	480.000	5.763	1.300	17.081
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	L	TURB	89	0.400	10.000	1.974	1.200	1.940
SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior	SIML	S	TURB	956	0.100	280.000	3.764	0.700	15.230
GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior	GUIC	S	TURB	40	0.200	75.000	4.468	1.100	12.158
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	L	TURB	3	0.900	3.000	1.800	1.500	1.082
LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	LNIC	S	TURB	16	0.160	6.100	1.804	1.500	1.776

NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	L	TURB	2	2.200	3.000	2.600	3.000	0.566
NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior	NICL	S	TURB	26	0.200	35.000	6.850	2.000	9.912
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	L	TURB	3	0.600	1.000	0.800	0.800	0.200
STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	STHM	S	TURB	848	0.100	180.000	5.429	1.500	13.408
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	L	TURB	18	0.200	2.200	0.966	0.700	0.583
THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior	THOM	S	TURB	290	0.100	47.000	1.853	1.100	3.233

5.0 CONCLUDING COMMENT ON ECOZONE DESCRIPTIONS

In Section 4.0 of this report, descriptions of water quality in the Ecoprovinces is brief because it is only intended to provide a general overview to support the aquatic ecozone classification. Discussion of causal and functional relationships of observed data summaries is not the objective of this exercise, although some obvious processes are briefly mentioned in Section 4.0. There are many published studies and unpublished works retained by regional MOELP offices, contractors reports that are stored in MOELP regional offices, and reports completed by BC Hydro, Regional Water Districts and others, including agency contractors, that deal specifically with processes explaining water quality characteristics. Many deal with effects of pollutant discharge to aquatic ecosystems and many others deal with natural biogeochemical processes. There are also documents which describe water quality characteristics for specific regions in much greater detail than was possible in this report. The reader is referred to the regional MOELP or Regional District office that is closest to an area of interest as well as the published literature to obtain this detailed information. Actual data from which the descriptions were prepared can also be accessed through the user interface that is described in Section 6.0.

In future versions of this ecozone classification, a detailed bibliography may be prepared as a reference source for detailed works describing processes that help explain observed water quality in AECD. A conceptual approach to the use of this bibliography is given in section 8.0.

6.0 THE GRAPHICAL USER INTERFACE FOR ACCESSING SUMMARY DATA

The user interface was written for ArcView 3.0 using Avenue® and customized to allow searches of data in large or small zones of interest and to summarize data in any region to provide information on background chemical characteristics for an area of interest. It is available on the CD which accompanies this report.

All available spatial and attribute data for the Aquatic Ecozone Classification have been imported into ArcView as tables and linked together to produce various display views. A series of user-defined scripts have also been developed to perform a number of data analysis scenarios. These scripts have been incorporated into a customized menu that provides a step by step approach to running queries, locating records, summarizing and displaying specific data and creating histograms. The menu is labeled “Aquatic Ecosystems “ and is located on the ArcView menu bar when the display view is active. The menu functions are described in more detail below. Each of the components are saved together in an ArcView project (AEZ.apr) that can be repeatedly accessed and manipulated. This environment allows users to view and analyze the Aquatic Ecosystem data in a simple and consistent manner.

There are three types of data accessible in the user interface: spatial, attribute and summary data. Spatial data, or map data, are stored as ArcInfo coverages and include Watershed Group polygons, Ecoprovince polygons, Ecoregion polygons and sampling station points. The attributes for the spatial data (e.g., the sampling location name, type of water body) are stored as a feature of these coverages. Summary data summarizes the samples taken at a specific station, or within a given Watershed Group, and are stored as separate tables within the ArcView project. These summary tables contain values for parameters that were sampled at a given station and are related back to the original data by a unique identifier for the feature.

6.1 Aquatic Ecosystem Menu

The "Aquatic Ecosystems" menu provides access to the following functions:

Station Query

The Station Query option guides the user through a simple query of the station summary table and highlights the stations that satisfy the query. The station query steps are as follows:
Select parameter type (e.g., alkalinity, temperature);
Select field to query (mean, median, minimum, maximum);
Select query type (exact, less than, greater than, range) and;
Enter a value to query.

The query function may be run for only one parameter at a time. More complex queries may also be performed using the ArcView Query Builder.

Watershed Group Query

The Watershed Group Query guides the user through a simple query of the Watershed Group polygons and highlights the polygons that satisfy the query. This query performs the same function as the Station Query, but utilizes data summaries for the Watershed Group polygons.

Summarize for Stations

The station summary function allows values found in the station summary table to be temporarily joined to the station table. This would be necessary, for example, before one could create a thematic map colouring stations according to their pH values.

Summarize for Watershed Groups

A Watershed Group summary functions similarly to the Summarize for Stations function, however, it utilizes watershed summary data.

Find Stations Contained

The Find Stations Contained function locates all sampling stations found within a given polygon feature. For example, a user could use this query option to select all stations within a selected Watershed Group. Prior to invoking the query function the user must selected one or more polygon features to perform the query on.

<u>Find Stations Associated</u>

The Find Stations Associated function allows users to more easily see the connection between the station table and the station summary table. Users can query the station summary table, to find all summary records with a mean pH greater than 7.0, for example. This function then allows users to easily select the station features that correspond to the selected summary records.

<u>Find Watershed Groups Associated</u>

The Find Watershed Groups Associated query performs the same function as the Find Stations Associated function, but utilizes Watershed Groups summary information.

<u>Create Station Histogram</u>

Users can develop a station histogram that examines numeric values in a selected field of the station table and creates a histogram chart indicating the distribution of the values. Users may indicate the number of intervals used to create the histogram.

<u>Create Watershed Group Histogram</u>

The Watershed Group histogram option performs the same function as the Create Station Histogram function, but in reference to Watershed Groups summary data.

7.0 APPLICATIONS OF THE AQUATIC ECOZONE CLASSIFICATION

In times of decreasing opportunities to implement what can be lengthy and expensive studies, resource managers have recognized the need for a framework to optimize the use of existing water quality data. The aquatic ecozone classification system outlined in this report can provide a technical rationale and a visualization tool to meet this objective. This report with the accompanying map and the graphical user interface will allow users to explore chemical data within and between any Watershed Group and larger ecozone in B.C. This tool will be a major advancement in the management of water resources in B.C. by organizing and putting a large data source at the fingertips of end users and resource managers alike. Specifically, the ecozone classification is a tool that can provide:

1. improved exchange of limnological information between scientists, resource managers, resource development companies, and resource interest groups;
2. a framework for setting water quality objectives to ecozones which may be more relevant than establishing Province-wide objectives;
3. information for establishing zonal reference sites for long term monitoring of key water quality variables;
4. information to identify regional differences in the abundance of data pertaining to any variable of interest and thereby assist in planning data collection activities in the Province;
5. descriptions of limnological and water quality characteristics that are typical on a regional basis;
6. a data management system that will standardize data collection and improve data access for water quality assessments;
7. regional descriptions of lake and stream limnology that can form a technical basis for preparation of reference documents on the quality of fresh water resources in British Columbia;
8. regional descriptions of lake and stream limnology that can form a technical basis for preparation of an internet web site from which data can be examined and downloaded for optimizing time used for water quality assessments;

8.0 RECOMMENDATIONS

The aquatic ecozone classification described in this report, the accompanying map (large format map and Figure 1), and ecozone descriptions are preliminary. They are intended to be reviewed during active use and changed as new data and limnological insight becomes available to improve ecozone descriptions and analysis of regional variation in water quality. Even as this first version is completed, we are aware that it is only a cursory first step. We know that existing data in sources that we were not able to access for this work could greatly improve the classification. We also recognize that water management specialists working in the various regions of British Columbia have a much greater awareness of water quality characteristics than were possible to include in this first report. Even as we finish this first version, we are only just beginning. Its potential use as a tool for water quality management in B.C. will only be realized with continual improvements and adjustments.

We recommend that an internet web site be established to provide an interface for the input of comments, suggestions, and new data to help improve the aquatic ecozone classification. It is also recommended that water management personnel throughout the Province become familiar with the GUI by routinely using it. Only with active use will the AECD become a useful tool and have a chance to evolve with wide applications. Providing awareness of its existence is an important first step in this process and the development of a web site is one technique to reach this goal.

With development of a water quality web site, there must also be qualified people and financial resources made available to manage information that is supplied by users of the site. It is recommended that an organizational framework be established that includes a water quality team to filter and add new information to the data base and provide updated listings and interpretation of summary statistics of water quality characteristics in all ecozones. These updated analyses will be important for users of the web site to have confidence that information on the site is current and thus valid for use in support of decisions related to water quality issues.

In section 5.0, potential development of a technical bibliography was proposed to support the aquatic ecozone classification. The bibliography may include readily available documents in which processes that determine characteristics of water quality for specific lakes and streams are explained. It is recommended that future versions of the ecozone classification, include this bibliography in an electronic format. Ideally, it would be accessed through the web site. Using a series of menu selections, the user may quickly find a reference and source of a report or published paper to assist with interpreting chemical characteristics for the area of interest.

9.0 LIST OF REFERENCES

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APPENDIX A: Names of Watershed Groups, aquatic Ecoregions and aquatic Ecoprovinces.

LWSG_BC	LWSG_BC_ID	WSG_CODE	WSG_NAME	ECOREGION	ECOPROVINCE
1028	1027	BULK	BULKLEY RIVER	Bulkley Basin	Central Interior
1071	1070	MORR	MORICE RIVER	Bulkley Basin	Central Interior
1244	1243	HORS	HORSEFLY RIVER	Caribou Plateau	Central Interior
1265	1264	MAHD	MAHOOD LAKE	Caribou Plateau	Central Interior
1155	1154	EUCH	EUCHINIKO RIVER	Central Interior Plateau	Central Interior
1156	1155	BLAR	BLACKWATER RIVER	Central Interior Plateau	Central Interior
1171	1170	EUCL	EUCHINIKO LAKE	Central Interior Plateau	Central Interior
1225	1224	UCHR	UPPER CHILCOTIN RIVER	Central Interior Plateau	Central Interior
1256	1255	LCHR	LOWER CHILCOTIN RIVER	Central Interior Plateau	Central Interior
1289	1288	BIGC	BIG CREEK	Central Interior Plateau	Central Interior
1293	1292	DOGC	DOG CREEK	Central Interior Plateau	Central Interior
1299	1298	GRNL	GREEN LAKE	Central Interior Plateau	Central Interior
1301	1300	BBAR	BIG BAR CREEK	Central Interior Plateau	Central Interior
1303	1302	BONP	BONAPARTE RIVER	Central Interior Plateau	Central Interior
1324	1323	DEAD	DEADMAN RIVER	Central Interior Plateau	Central Interior
1277	1276	CHIR	CHILKO RIVER	Chilcotin Ranges	Central Interior
1279	1278	TASR	TASEKO RIVER	Chilcotin Ranges	Central Interior
1329	1328	SETN	SETON LAKE	Chilcotin Ranges	Central Interior
1174	1173	LDEN	LOWER DEAN RIVER	Dean River	Central Interior
1205	1204	UDEN	UPPER DEAN RIVER	Dean River	Central Interior
1074	1073	FRAN	FRANCOIS LAKE	Lower Nechako	Central Interior
1097	1096	NECR	NECHAKO RIVER	Lower Nechako	Central Interior
1137	1136	CHES	CHESLATTA RIVER	Lower Nechako	Central Interior
1144	1143	CHIL	CHILAKO RIVER	Lower Nechako	Central Interior
1136	1135	UNRS	UPPER NECHAKO RESERVOIR	Nechako Plateau	Central Interior
1145	1144	LEUT	LOWER EUTSUK LAKE	Nechako Plateau	Central Interior
1147	1146	LNRS	LOWER NECHAKO RESERVOIR	Nechako Plateau	Central Interior
1158	1157	UEUT	UPPER EUTSUK LAKE	Nechako Plateau	Central Interior
1181	1180	NAZR	NAZKO RIVER	Pothole Lakes	Central Interior
1184	1183	NARC	NARCOSLI CREEK	Pothole Lakes	Central Interior
1234	1233	TWAC	TWAN CREEK	Pothole Lakes	Central Interior
1261	1260	MFRA	MIDDLE FRASER	Pothole Lakes	Central Interior
1267	1266	SAJR	SAN JOSE RIVER	Pothole Lakes	Central Interior
1287	1286	BRID	BRIDGE CREEK	Pothole Lakes	Central Interior
1319	1318	KNIG	KNIGHT INLET	Bute Inlets	Coast and Mountains
1335	1334	KNIG	KNIGHT INLET	Bute Inlets	Coast and Mountains
1339	1338	TOBA	TOBA INLET	Bute Inlets	Coast and Mountains
1346	1345	SEYM	SEYMOUR INLET	Bute Inlets	Coast and Mountains
1347	1346	TOBA	TOBA INLET	Bute Inlets	Coast and Mountains
1350	1349	SEYM	SEYMOUR INLET	Bute Inlets	Coast and Mountains
1352	1351	KNIG	KNIGHT INLET	Bute Inlets	Coast and Mountains
1369	1368	KNIG	KNIGHT INLET	Bute Inlets	Coast and Mountains
1375	1374	KNIG	KNIGHT INLET	Bute Inlets	Coast and Mountains
1377	1376	KNIG	KNIGHT INLET	Bute Inlets	Coast and Mountains
1398	1397	FRCN	FRASER CANYON	Eastern Pacific Ranges	Coast and Mountains
1456	1455	SKGT	SKAGIT RIVER	Eastern Pacific Ranges	Coast and Mountains
986	985	KSHR	KSHWAN RIVER	Exposed Fjords	Coast and Mountains
1015	1014	LNAR	LOWER NASS RIVER	Exposed Fjords	Coast and Mountains
1035	1034	WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains
1036	1035	WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains
1041	1040	WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains

1051	1050 WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains
1055	1054 WORC	WORK CHANNEL	Exposed Fjords	Coast and Mountains
1059	1058 LSKE	LOWER SKEENA RIVER	Exposed Fjords	Coast and Mountains
1082	1081 KITR	KITIMAT RIVER	Exposed Fjords	Coast and Mountains
1119	1118 KUMR	KUMOWDAH RIVER	Exposed Fjords	Coast and Mountains
1135	1134 TSAY	TSAYTIS RIVER	Exposed Fjords	Coast and Mountains
1140	1139 KHTZ	KHUTZE RIVER	Exposed Fjords	Coast and Mountains
1142	1141 KHTZ	KHUTZE RIVER	Exposed Fjords	Coast and Mountains
1152	1151 KHTZ	KHUTZE RIVER	Exposed Fjords	Coast and Mountains
1153	1152 KHTZ	KHUTZE RIVER	Exposed Fjords	Coast and Mountains
1160	1159 KITL	KITLOPE RIVER	Exposed Fjords	Coast and Mountains
1166	1165 TSAY	TSAYTIS RIVER	Exposed Fjords	Coast and Mountains
1208	1207 NASC	NASCALL RIVER	Exposed Fjords	Coast and Mountains
1224	1223 NASC	NASCALL RIVER	Exposed Fjords	Coast and Mountains
1229	1228 NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains
1254	1253 NECL	NECLEETSCONNAY RIVER	Exposed Fjords	Coast and Mountains
1392	1391 SALM	SALMON RIVER	Georgia Basin	Coast and Mountains
1393	1392 COMX	COMOX	Georgia Basin	Coast and Mountains
1404	1403 COMX	COMOX	Georgia Basin	Coast and Mountains
1405	1404 TOBA	TOBA INLET	Georgia Basin	Coast and Mountains
1407	1406 COMX	COMOX	Georgia Basin	Coast and Mountains
1408	1407 TOBA	TOBA INLET	Georgia Basin	Coast and Mountains
1410	1409 COMX	COMOX	Georgia Basin	Coast and Mountains
1413	1412 COMX	COMOX	Georgia Basin	Coast and Mountains
1427	1426 COMX	COMOX	Georgia Basin	Coast and Mountains
1448	1447 PARK	PARKSVILLE	Georgia Basin	Coast and Mountains
1450	1449 PARK	PARKSVILLE	Georgia Basin	Coast and Mountains
1451	1450 PARK	PARKSVILLE	Georgia Basin	Coast and Mountains
1453	1452 PARK	PARKSVILLE	Georgia Basin	Coast and Mountains
1462	1461 COWN	COWICHAN	Georgia Basin	Coast and Mountains
1058	1057 WORC	WORK CHANNEL	Hecate Lowland	Coast and Mountains
1077	1076 WORC	WORK CHANNEL	Hecate Lowland	Coast and Mountains
1078	1077 WORC	WORK CHANNEL	Hecate Lowland	Coast and Mountains
1093	1092 PORI	PORCHER ISLAND	Hecate Lowland	Coast and Mountains
1095	1094 WORC	WORK CHANNEL	Hecate Lowland	Coast and Mountains
1118	1117 PORI	PORCHER ISLAND	Hecate Lowland	Coast and Mountains
1121	1120 PORI	PORCHER ISLAND	Hecate Lowland	Coast and Mountains
1132	1131 KUMR	KUMOWDAH RIVER	Hecate Lowland	Coast and Mountains
1134	1133 PORI	PORCHER ISLAND	Hecate Lowland	Coast and Mountains
1138	1137 KUMR	KUMOWDAH RIVER	Hecate Lowland	Coast and Mountains
1143	1142 NBNK	NORTH BANKS ISLAND	Hecate Lowland	Coast and Mountains
1149	1148 KUMR	KUMOWDAH RIVER	Hecate Lowland	Coast and Mountains
1150	1149 MBNK	MIDDLE BANKS ISLAND	Hecate Lowland	Coast and Mountains
1162	1161 KEEC	KEECHA CREEK	Hecate Lowland	Coast and Mountains
1163	1162 KUMR	KUMOWDAH RIVER	Hecate Lowland	Coast and Mountains
1168	1167 KEEC	KEECHA CREEK	Hecate Lowland	Coast and Mountains
1169	1168 LRDO	LAREDO INLET	Hecate Lowland	Coast and Mountains
1173	1172 KEEC	KEECHA CREEK	Hecate Lowland	Coast and Mountains
1178	1177 KEEC	KEECHA CREEK	Hecate Lowland	Coast and Mountains
1188	1187 KEEC	KEECHA CREEK	Hecate Lowland	Coast and Mountains
1207	1206 KHTZ	KHUTZE RIVER	Hecate Lowland	Coast and Mountains
1216	1215 KTSU	KITASU BAY	Hecate Lowland	Coast and Mountains
1228	1227 NASC	NASCALL RIVER	Hecate Lowland	Coast and Mountains
1233	1232 KTSU	KITASU BAY	Hecate Lowland	Coast and Mountains
1245	1244 NASC	NASCALL RIVER	Hecate Lowland	Coast and Mountains
1247	1246 KTSU	KITASU BAY	Hecate Lowland	Coast and Mountains
1248	1247 NASC	NASCALL RIVER	Hecate Lowland	Coast and Mountains
1253	1252 NASC	NASCALL RIVER	Hecate Lowland	Coast and Mountains
1257	1256 NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1260	1259 NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains

1269	1268	NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1270	1269	NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1272	1271	NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1274	1273	NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1275	1274	NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1278	1277	NECL	NECLEETSCONNAY RIVER	Hecate Lowland	Coast and Mountains
1294	1293	NIEL	NIEL CREEK	Hecate Lowland	Coast and Mountains
1298	1297	NIEL	NIEL CREEK	Hecate Lowland	Coast and Mountains
967	966	LBIR	LOWER BELL-IRVING RIVER	Nass Basin	Coast and Mountains
985	984	NASR	NASS RIVER	Nass Basin	Coast and Mountains
989	988	KINR	KINSKUCH RIVER	Nass Basin	Coast and Mountains
997	996	KISP	KISPIOX RIVER	Nass Ranges	Coast and Mountains
1032	1031	KLUM	KALUM RIVER	Nass Ranges	Coast and Mountains
1050	1049	ZYMO	ZYMOETZ RIVER	Nass Ranges	Coast and Mountains
1065	1064	LKEL	LAKELSE	Nass Ranges	Coast and Mountains
1340	1339	NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains
1344	1343	NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains
1345	1344	NEVI	NORTHEAST VANCOUVER ISLAND	Nimpkish	Coast and Mountains
1362	1361	NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains
1364	1363	NIMP	NIMPKISH RIVER	Nimpkish	Coast and Mountains
1379	1378	TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains
1389	1388	TSIT	TSITIKA RIVER	Nimpkish	Coast and Mountains
2	1	TATR	TATSHENSHINI RIVER	North Coastal Mountains	Coast and Mountains
3	2	KUSR	KUSAWA RIVER	North Coastal Mountains	Coast and Mountains
18	17	TUTR	TUTSHI RIVER	North Coastal Mountains	Coast and Mountains
19	18	ATLL	ATLIN LAKE	North Coastal Mountains	Coast and Mountains
444	443	INKR	INKLIN RIVER	North Coastal Mountains	Coast and Mountains
675	674	BARR	BARRINGTON RIVER	North Coastal Mountains	Coast and Mountains
880	879	LSTR	LOWER STIKINE RIVER	North Coastal Mountains	Coast and Mountains
948	947	LISR	LOWER ISKUT RIVER	North Coastal Mountains	Coast and Mountains
971	970	UNUR	UNUK RIVER	North Coastal Mountains	Coast and Mountains
1235	1234	BELA	BELLA COOLA RIVER	Northern Pacific Ranges	Coast and Mountains
1237	1236	ATNA	ATNARKO RIVER	Northern Pacific Ranges	Coast and Mountains
1271	1270	KLIN	KLINAKLINI RIVER	Northern Pacific Ranges	Coast and Mountains
1291	1290	HOMA	HOMATHCO RIVER	Northern Pacific Ranges	Coast and Mountains
1259	1258	NIEL	NIEL CREEK	Owikeno Ranges	Coast and Mountains
1266	1265	OWIK	OWIKENO LAKE	Owikeno Ranges	Coast and Mountains
1309	1308	NIEL	NIEL CREEK	Owikeno Ranges	Coast and Mountains
1318	1317	SEYM	SEYMOUR INLET	Owikeno Ranges	Coast and Mountains
1327	1326	OWIK	OWIKENO LAKE	Owikeno Ranges	Coast and Mountains
1460	1459	COWN	COWICHAN	Puget Basin	Coast and Mountains
1464	1463	VICT	VICTORIA	Puget Basin	Coast and Mountains
1470	1469	VICT	VICTORIA	Puget Basin	Coast and Mountains
1471	1470	VICT	VICTORIA	Puget Basin	Coast and Mountains
1472	1471	VICT	VICTORIA	Puget Basin	Coast and Mountains
1473	1472	VICT	VICTORIA	Puget Basin	Coast and Mountains
1075	1074	GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains
1081	1080	GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains
1133	1132	GRAI	GRAHAM ISLAND	Queen Charlotte Islands	Coast and Mountains
1165	1164	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1170	1169	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1179	1178	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1180	1179	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1197	1196	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1217	1216	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1246	1245	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1268	1267	MORI	MORSBY ISLAND	Queen Charlotte Islands	Coast and Mountains
1394	1393	SALM	SALMON RIVER	Sayward	Coast and Mountains
1397	1396	SALM	SALMON RIVER	Sayward	Coast and Mountains
1419	1418	CAMB	CAMPBELL RIVER	Sayward	Coast and Mountains

1349	1348	LILL	LILLOOET	Southern Pacific Ranges	Coast and Mountains
1378	1377	SQAM	SQUAMISH	Southern Pacific Ranges	Coast and Mountains
1439	1438	HARR	HARRISON RIVER	Southern Pacific Ranges	Coast and Mountains
1440	1439	LFRA	LOWER FRASER	Southern Pacific Ranges	Coast and Mountains
1458	1457	CHWK	CHILLIWACK RIVER	Southern Pacific Ranges	Coast and Mountains
1353	1352	HOLB	HOLBERG	Windward Island Mountains	Coast and Mountains
1374	1373	BRKS	BROOKS PENINSULA	Windward Island Mountains	Coast and Mountains
1401	1400	TAHS	TAHSIS	Windward Island Mountains	Coast and Mountains
1417	1416	GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains
1430	1429	TAHS	TAHSIS	Windward Island Mountains	Coast and Mountains
1441	1440	GOLD	GOLD RIVER	Windward Island Mountains	Coast and Mountains
1446	1445	CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains
1452	1451	ALBN	ALBERNI INLET	Windward Island Mountains	Coast and Mountains
1457	1456	CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains
1459	1458	CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains
1461	1460	CLAY	CLAYOQUOT	Windward Island Mountains	Coast and Mountains
1463	1462	SANJ	SAN JUAN RIVER	Windward Island Mountains	Coast and Mountains
23	22	SWIR	SWIFT RIVER	Cassiar Ranges	Northern Boreal Mountains
25	24	LRAN	LITTLE RANCHERIA RIVER	Cassiar Ranges	Northern Boreal Mountains
82	81	BLUR	BLUE RIVER	Cassiar Ranges	Northern Boreal Mountains
142	141	JENR	JENNINGS RIVER	Cassiar Ranges	Northern Boreal Mountains
233	232	UJER	UPPER JENNINGS RIVER	Cassiar Ranges	Northern Boreal Mountains
343	342	DEAL	DEASE LAKE	Cassiar Ranges	Northern Boreal Mountains
374	373	MDEA	MIDDLE DEASE RIVER	Cassiar Ranges	Northern Boreal Mountains
384	383	UKEC	UPPER KECHIKA RIVER	Cassiar Ranges	Northern Boreal Mountains
394	393	CRYL	CRY LAKE	Cassiar Ranges	Northern Boreal Mountains
496	495	TURN	TURNAGAIN RIVER	Cassiar Ranges	Northern Boreal Mountains
674	673	FROG	FROG RIVER	Cassiar Ranges	Northern Boreal Mountains
824	823	TOOD	TOODOGGONE RIVER	Cassiar Ranges	Northern Boreal Mountains
831	830	CHUK	CHUKACHIDA RIVER	Cassiar Ranges	Northern Boreal Mountains
910	909	INGR	INGENIKA RIVER	Cassiar Ranges	Northern Boreal Mountains
27	26	ULRD	UPPER LIARD RIVER	Liard Plateau	Northern Boreal Mountains
32	31	COAL	COAL RIVER	Liard Plateau	Northern Boreal Mountains
33	32	LIAR	LIARD RIVER	Liard Plateau	Northern Boreal Mountains
46	45	DEAR	DEASE RIVER	Liard Plateau	Northern Boreal Mountains
228	227	LKEC	LOWER KECHIKA RIVER	Liard Plateau	Northern Boreal Mountains
30	29	DUNE	DUNEDIN RIVER	Muskwa Ranges	Northern Boreal Mountains
31	30	BEAV	BEAVER RIVER	Muskwa Ranges	Northern Boreal Mountains
382	381	TOAD	TOAD RIVER	Muskwa Ranges	Northern Boreal Mountains
663	662	MMUS	MIDDLE MUSKWA RIVER	Muskwa Ranges	Northern Boreal Mountains
669	668	GATA	GATAGA RIVER	Muskwa Ranges	Northern Boreal Mountains
738	737	UMUS	UPPER MUSKWA RIVER	Muskwa Ranges	Northern Boreal Mountains
820	819	FOXR	FOX RIVER	Muskwa Ranges	Northern Boreal Mountains
832	831	UPRO	UPPER PROPHET RIVER	Muskwa Ranges	Northern Boreal Mountains
879	878	FINL	FINLAY RIVER	Muskwa Ranges	Northern Boreal Mountains
20	19	GLAR	GLADYS RIVER	Stikine Plateau	Northern Boreal Mountains
21	20	TESR	TESLIN RIVER	Stikine Plateau	Northern Boreal Mountains
258	257	NAKR	NAKINA RIVER	Stikine Plateau	Northern Boreal Mountains
398	397	TUYR	TUYA RIVER	Stikine Plateau	Northern Boreal Mountains
426	425	NAHR	NAHLIN RIVER	Stikine Plateau	Northern Boreal Mountains
612	611	SHER	SHESLAY RIVER	Stikine Plateau	Northern Boreal Mountains
671	670	TAHR	TAHLTAN RIVER	Stikine Plateau	Northern Boreal Mountains
672	671	MSTR	MIDDLE STIKINE RIVER	Stikine Plateau	Northern Boreal Mountains
702	701	PITR	PITMAN RIVER	Stikine Plateau	Northern Boreal Mountains
793	792	STIR	STIKINE RIVER	Stikine Plateau	Northern Boreal Mountains
805	804	KAKC	KAKIDDI CREEK	Stikine Plateau	Northern Boreal Mountains
818	817	MESC	MESS CREEK	Stikine Plateau	Northern Boreal Mountains
825	824	KLAR	KLAPPAN RIVER	Stikine Plateau	Northern Boreal Mountains
829	828	USTK	UPPER STIKINE RIVER	Stikine Plateau	Northern Boreal Mountains
830	829	UISR	UPPER ISKUT RIVER	Stikine Plateau	Northern Boreal Mountains

834	833 SPAT	SPATZIZI RIVER	Stikine Plateau	Northern Boreal Mountains
908	907 FIRE	FIRESTEEL RIVER	Stikine Plateau	Northern Boreal Mountains
858	857 MILL	MILLIGAN CREEK	Peace Plains	Peace Plains
877	876 UBTN	UPPER BEATTON RIVER	Peace Plains	Peace Plains
909	908 LBTN	LOWER BEATTON RIVER	Peace Plains	Peace Plains
918	917 UHAF	UPPER HALFWAY RIVER	Peace Plains	Peace Plains
934	933 LHAF	LOWER HALFWAY RIVER	Peace Plains	Peace Plains
978	977 LPCE	LOWER PEACE RIVER	Peace Plains	Peace Plains
979	978 UPCE	UPPER PEACE RIVER	Peace Plains	Peace Plains
995	994 KISK	KISKATINAW RIVER	Peace Plains	Peace Plains
1351	1350 OKAN	OKANAGAN RIVER	Okanagan	Southern Interior
1395	1394 KETL	KETTLE RIVER	Okanagan	Southern Interior
1422	1421 SIML	SIMILKAMEEN RIVER	Okanagan	Southern Interior
1333	1332 THOM	THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior
1334	1333 STHM	SOUTH THOMPSON RIVER	Thompson-Okanagan Plateau	Southern Interior
1354	1353 GUIC	GUICHON CREEK	Thompson-Okanagan Plateau	Southern Interior
1371	1370 LNIC	LOWER NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior
1380	1379 NICL	NICOLA RIVER	Thompson-Okanagan Plateau	Southern Interior
1255	1254 REVL	REVELSTOKE LAKE	Columbia Mountains	Southern Interior Mountains
1297	1296 UARL	UPPER ARROW LAKE	Columbia Mountains	Southern Interior Mountains
1322	1321 DUNC	DUNCAN LAKE	Columbia Mountains	Southern Interior Mountains
1323	1322 COLR	COLUMBIA RIVER	Columbia Mountains	Southern Interior Mountains
1363	1362 BULL	BULL RIVER	Columbia Mountains	Southern Interior Mountains
1365	1364 SMAR	ST. MARY RIVER	Columbia Mountains	Southern Interior Mountains
1370	1369 KOTL	KOOTENAY LAKE	Columbia Mountains	Southern Interior Mountains
1186	1185 CANO	CANOE REACH	Kinbasket	Southern Interior Mountains
1230	1229 CLRH	COLUMBIA REACH	Kinbasket	Southern Interior Mountains
1106	1105 WILL	WILLOW RIVER	Quesnel Highlands	Southern Interior Mountains
1120	1119 BOWR	BOWRON	Quesnel Highlands	Southern Interior Mountains
1157	1156 CARR	CARIBOO RIVER	Quesnel Highlands	Southern Interior Mountains
1182	1181 QUES	QUESNEL RIVER	Quesnel Highlands	Southern Interior Mountains
1195	1194 CLWR	CLEARWATER RIVER	Quesnel Highlands	Southern Interior Mountains
1226	1225 MURT	MURTLE LAKE	Quesnel Highlands	Southern Interior Mountains
1215	1214 UNTH	UPPER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains
1258	1257 ADMS	ADAMS RIVER	Shuswap Highlands	Southern Interior Mountains
1286	1285 LNTH	LOWER NORTH THOMPSON RIVER	Shuswap Highlands	Southern Interior Mountains
1288	1287 SHUL	SHUSWAP LAKE	Shuswap Highlands	Southern Interior Mountains
1331	1330 USHU	UPPER SHUSWAP	Shuswap Highlands	Southern Interior Mountains
1276	1275 KHOR	KICKING HORSE RIVER	Southern Rockies	Southern Interior Mountains
1295	1294 KOTR	KOOTENAY RIVER	Southern Rockies	Southern Interior Mountains
1332	1331 ELKR	ELK RIVER	Southern Rockies	Southern Interior Mountains
1361	1360 SLOC	SLOCAN RIVER	Southern Selkirk Mountains	Southern Interior Mountains
1384	1383 LARL	LOWER ARROW LAKE	Southern Selkirk Mountains	Southern Interior Mountains
1073	1072 MORK	MORKILL RIVER	Upper Fraser Trench	Southern Interior Mountains
1146	1145 UFRA	UPPER FRASER RIVER	Upper Fraser Trench	Southern Interior Mountains
1024	1023 BABL	BABINE LAKE	Babine Upland	Sub-Boreal Interior
1031	1030 MIDR	MIDDLE RIVER	Babine Upland	Sub-Boreal Interior
1039	1038 LTRE	LOWER TREMBLEUR LAKE	Babine Upland	Sub-Boreal Interior
1046	1045 UTRE	UPPER TREMBLEUR LAKE	Babine Upland	Sub-Boreal Interior
1054	1053 STUL	STUART LAKE	Babine Upland	Sub-Boreal Interior
912	911 OSPK	OSPIKA RIVER	Central Rocky Mountains	Sub-Boreal Interior
984	983 PCEA	PEACE ARM	Central Rocky Mountains	Sub-Boreal Interior
992	991 PINE	PINE RIVER	Central Rocky Mountains	Sub-Boreal Interior
1007	1006 PARA	PARSNIP ARM	Central Rocky Mountains	Sub-Boreal Interior
1010	1009 MURR	MURRAY RIVER	Central Rocky Mountains	Sub-Boreal Interior
1020	1019 SMOK	SMOKY RIVER	Central Rocky Mountains	Sub-Boreal Interior
1029	1028 PARS	PARSNIP RIVER	Central Rocky Mountains	Sub-Boreal Interior
1061	1060 HERR	HERRICK CREEK	Central Rocky Mountains	Sub-Boreal Interior
1064	1063 MCGR	MCGREGOR RIVER	Central Rocky Mountains	Sub-Boreal Interior
911	910 USKE	UPPER SKEENA RIVER	Omineca Mountains	Sub-Boreal Interior

949	948	FINA	FINLAY ARM	Omineca Mountains	Sub-Boreal Interior
976	975	SUST	SUSTUT RIVER	Omineca Mountains	Sub-Boreal Interior
980	979	MESI	MESILINKA RIVER	Omineca Mountains	Sub-Boreal Interior
990	989	LOMI	LOWER OMINECA RIVER	Omineca Mountains	Sub-Boreal Interior
907	906	ISKR	ISKUT RIVER	Skeena Mountains	Sub-Boreal Interior
913	912	UBIR	UPPER BELL-IRVING RIVER	Skeena Mountains	Sub-Boreal Interior
914	913	UNAR	UPPER NASS RIVER	Skeena Mountains	Sub-Boreal Interior
961	960	TAYR	TAYLOR RIVER	Skeena Mountains	Sub-Boreal Interior
982	981	MSKE	MIDDLE SKEENA RIVER	Skeena Mountains	Sub-Boreal Interior
999	998	BABR	BABINE RIVER	Skeena Mountains	Sub-Boreal Interior
988	987	UOMI	UPPER OMINECA RIVER	Takla/Manson Plateau	Sub-Boreal Interior
996	995	DRIR	DRIFTWOOD RIVER	Takla/Manson Plateau	Sub-Boreal Interior
1011	1010	TAKL	TAKLA LAKE	Takla/Manson Plateau	Sub-Boreal Interior
1018	1017	NATR	NATION RIVER	Takla/Manson Plateau	Sub-Boreal Interior
1033	1032	CARP	CARP LAKE	Upper Fraser	Sub-Boreal Interior
1038	1037	SALR	SALMON RIVER	Upper Fraser	Sub-Boreal Interior
1053	1052	CRKD	CROOKED RIVER	Upper Fraser	Sub-Boreal Interior
1056	1055	MUSK	MUSKEG RIVER	Upper Fraser	Sub-Boreal Interior
1062	1061	LSAL	LOWER SALMON RIVER	Upper Fraser	Sub-Boreal Interior
1076	1075	STUR	STUART RIVER	Upper Fraser	Sub-Boreal Interior
1079	1078	TABR	TABOR RIVER	Upper Fraser	Sub-Boreal Interior
1125	1124	LCHL	LOWER CHILAKO RIVER	Upper Fraser	Sub-Boreal Interior
1148	1147	COTR	COTTONWOOD RIVER	Upper Fraser	Sub-Boreal Interior
22	21	UPET	UPPER PETITOT RIVER	Taiga Plains	Taiga Plains
24	23	TSEA	TSEA RIVER	Taiga Plains	Taiga Plains
26	25	LPET	LOWER PETITOT RIVER	Taiga Plains	Taiga Plains
28	27	SAHD	SAHDOANAH CREEK	Taiga Plains	Taiga Plains
240	239	LFRT	LOWER FORT NELSON RIVER	Taiga Plains	Taiga Plains
250	249	SHEK	SHEKILIE RIVER	Taiga Plains	Taiga Plains
362	361	SAHT	SAHTANEH RIVER	Taiga Plains	Taiga Plains
378	377	MFRT	MIDDLEW FORT NELSON RIVER	Taiga Plains	Taiga Plains
399	398	KCHL	KOTCHO LAKE	Taiga Plains	Taiga Plains
554	553	LMUS	LOWER MUSKWA RIVER	Taiga Plains	Taiga Plains
616	615	HAYR	HAY RIVER	Taiga Plains	Taiga Plains
624	623	UFRT	UPPER FORT NELSON RIVER	Taiga Plains	Taiga Plains
661	660	LPRO	LOWER PROPHET RIVER	Taiga Plains	Taiga Plains
667	666	FONT	FONTAS RIVER	Taiga Plains	Taiga Plains
703	702	KAHN	KAHNTAH RIVER	Taiga Plains	Taiga Plains
724	723	MPRO	MIDDLE PROPHET RIVER	Taiga Plains	Taiga Plains
745	744	LSIK	LOWER SIKANNI CHIEF RIVER	Taiga Plains	Taiga Plains
814	813	USIK	UPPER SIKANNI CHIEF RIVER	Taiga Plains	Taiga Plains

APPENDIX B: Definitions of codes and labels in tables of chemical attributes used in descriptions of the aquatic ecozones.

Codes and Labels	Description
WSG_CODE	Watershed Group code (from the BC Watershed atlas)
WSG_NAME	Watershed Group name
ECOREGION	Ecoregion name
ECOPROV	Ecoprovince name
LOCATION	location identifier
SITE_TYPE	site identifier ("L" is lake; "S" is stream)
PCODE	parameter code
	TDS: total dissolved solids
	ALK: total alkalinity
	PH: pH
	P_T: total phosphorus
	COL: true colour
	TSS: total suspended solids
	TURB: turbidity
NUMBER	number of observations
MIN	minimum value
MAX	maximum value
MEAN	mean
MEDIAN	median
S_DEV	standard deviation

APPENDIX C: Descriptions and units of measure of chemical parameters listed in tables of chemical attributes used in descriptions of the aquatic ecozones.

PCODE	PARAMETER	DESCRIPTION	UNITS
ALK	ALKALINITY	Alkalinity	mg/L $CaCO_3$
AL_T	ALUMINUM	Total Aluminum	mg/L
AL_T	ALUM_T	Total Aluminum	mg/L
NH3	AMMOINIA	Ammonia	mg/L
NH3	AMMONIA	Ammonia	mg/L
AL_D	Al-D	Dissolved Aluminum	mg/L
AL_T	Al-T	Total Aluminum	mg/L
ALK	Alkalinity Total 4.5	Alkalinity Total 4.5	mg/L $CaCO_3$
NH3	Amonia Dissolved	Dissolved Ammonia	mg/L
NH3	Amonia:T	Total Ammonia	mg/L
CA	CALCIUM	Total Calcium	mg/L
CHLR_T	CHLORIDE	Total Chloride	mg/L
CHL_A	CHLORO_A	Chlorophyll a	ug/L
CHLR_D	CHLOR_D	Dissolved Chloride	mg/L
TAC	COLOR_TAC	TAC Colour	TAC
COL	COLOUR	Colour True	Colour Units
TAC	COLOUR_TAC	TAC Colour	TAC
C_IN_D	C_INORG	Inorganic Carbon	mg/L
C_IN_T	C_INORGT	Total Inorganic Carbon	mg/L
C_O_D	C_ORG	Dissolved Organic Carbon	mg/L
C_O_T	C_ORG_T	Total Organic Carbon	mg/L
CA	Ca-T	Total Calcium	mg/L
C_IN_D	Carbon Diss. Inorganic	Dissolved Inorganic Carbon	mg/L
C_O_T	Carbon Total Organic	Total Organic Carbon	mg/L
CHL_A	Chlorophyll a	Chlorophyll a	ug/L
CHLR_D	Chlrid:D	Dissolved Chloride	mg/L
COL	Color True	True Colour	Colour Units
TAC	ColorTAC	TAC Colour	TAC
C_O_T	Crbn O:T	Total Organic Carbon	mg/L
D_EXT	DEPTH_EXT	Ext. Depth	m
D_SMP	DEPTH_SAMP	Sample Depth	m
D_O_B	DO_BOTM	Dissolved Oxygen (Bottom)	mg/L
D_O	DO_MEAN	Dissolved Oxygen	mg/L
D_O_S	DO_SURF	Dissolved Oxygen (Surface)	mg/L
D_O	D_O	Dissolved Oxygen	mg/L
D_O	Diss Oxy	Dissolved Oxygen	mg/L
D_EXT	ExtDepth	Ext. Depth	m
FE_T	Fe-T	Total Iron	mg/L
FLOW	Flow Avg	Mean Flow	m/sec
HARD	HARDNESS	Hardness	
FE_T	IRON	Total Iron	mg/L
FE_T	IRON_T	Total Iron	mg/L
MG_T	MAGNESIUM	Total Magnesium	mg/L
MN_T	MANGANESE	Total Manganese	mg/L
MG_T	MG_T	Total Magnesium	mg/L
MN_T	MN_T	Total Manganese	mg/L
MG_T	Mg-T	Total Magnesium	mg/L
MN_T	Mn-T	Total Manganese	mg/L
TKN	N.Kjel:T	Total Kjeldahl Nitrogen	mg/L
NO3	NIRATE	Nitrate	mg/L
NO3	NITRATE	Nitrate	mg/L
NITRO_B	NITRO_BOTM	Nitrogen (Bottom)	mg/L

PCODE	PARAMETER	DESCRIPTION	UNITS
NITRO_S	NITRO_SURF	Nitrogen (Surface)	mg/L
NO2_3	NO2+NO3	Nitrites/Nitrates	mg/L
NO2_3	NO2_NO3	Nitrites/Nitrates	mg/L
N_O_T	N_ORG	Total Organic Nitrogen	mg/L
N_O_T	N_ORG_T	Total Organic Nitrogen	mg/L
NO3	Nitrat:T	Nitrate	mg/L
TKN	Nitrogen (Kjeldahl) Total	Total Kjeldahl Nitrogen	mg/L
N_O_T	Nitrogen Organic -Total	Total Organic Nitrogen	mg/L
SRP	P.Ortho	SRP	mg/L
PH	PH	pH	pH
P	PHOSPHORUS	Total Phosphorous	mg/L
P_B	PHOS_BOTM	Phosphorous (Bottom)	mg/L
P_D	PHOS_D	Dissolved Phosphorous	mg/L
P_S	PHOS_SURF	Phosphorous (Surface)	mg/L
P_T	PHOS_T	Total Phosphorous	mg/L
K	POTASSIUM	Potassium	mg/L
P_T	Phosphorus Total	Total Phosphorous	mg/L
K	Potassium	Potassium	mg/L
TDS	RES_FILT	Filterable Residue 1.0u	mg/L
TDS	Residue Filterable 1.0u	Filterable Residue 1.0u	mg/L
TSS	Residue Non-filterable	Non-Filterable Residue	mg/L
SECCHI	SECCHI	Secchi Depth	m
SED_C_O	SED_C_ORG	Sedimentary Organic Carbon	mg/L
SED_P_T	SED_PHOS_T	Total Sedimentary Phosphorous	mg/L
SILICA	SILICA	Silica	mg/L
SI	SILICON	Silicon	mg/L
NA	SODIUM	Sodium	mg/L
SPF	SPF_COND	Specific Conductivity	umhos/cm
SRP	SRP	SRP	mg/L
SRP	SRP_SURF	SRP	mg/L
SO4	SULPHATE	Sulphate	mg/L
TSS	SUS_SOLID	Non-Filterable Residue	mg/L
SILICA	Silica:T	Silica	mg/L
SI	Silicon	Silicon	mg/L
NA	Sodium	Sodium	mg/L
SPF	Specific Conductance	Specific Conductivity	umhos/cm
SO4	Sulfate	Sulphate	mg/L
TAC	TAC_COLOUR	TAC Colour	TAC
TDS	TDS	Filterable Residue 1.0u	mg/L
TEMP	TEMP	Temperature	° C
TEMP_B	TEMP_BOTM	Temperature (Bottom)	° C
TEMP_S	TEMP_SURF	Temperature (Surface)	° C
TKN	TKN	Total Kjeldahl Nitrogen	mg/L
TURB	TURBIDITY	Turbidity	NTU
TEMP	Temp	Temperature	° C
TURB	Turbidit	Turbidity	NTU
ZN_T	ZINC	Total Zinc	mg/L
ZN_T	ZINC_T	Total Zinc	mg/L
ZN_T	Zn-T	Total Zinc	mg/L
PH	pH	pH	pH