Mount Polley Progress Report

Mount Polley Mining Corporation (MPMC)

SNC-LAVALIN INC.

September 2014

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1 INTRODUCTION

1.1 Background

The Mount Polley Mining Corporation (MPMC) owns and operates the Mount Polley copper-gold mine located 56 kilometres (km) northeast of Williams Lake, British Columbia (BC). Early on August 4, 2014 a breach of the Tailings Storage Facility (TSF) dyke occurred that resulted in the release of approximately 25 million cubic metres (Mm^3) consisting of the following proportions (values provided by MPMC):

- 10.6 Mm^3 of supernatant water,
- 6.5 Mm^3 of interstitial water (pore water saturating the tailings solids),
- 7.3 Mm^3 of tailings solids and
- 0.6 Mm^3 of dam construction materials.

This release resulted in the following physical impacts to the downstream environment:

- Erosion and scour of the embankment separating the TSF from Polley Lake, as well as the riparian zone along lower Hazeltine Creek.
- Deposition of trees and debris in Polley Lake, along the sides of the erosion scar associated with Hazeltine Creek, and in the confluence of Hazeltine Creek into Quesnel Lake.
- Deposition of tailings and scoured earth within Polley Lake, Hazeltine Creek, and the confluence of Hazeltine Creek into Quesnel Lake.

The Province of British Columbia Ministry of Environment (MOE) issued Pollution Abatement Order No. 107461, dated August 5, 2014, to MPMC (the 'Order'). The Order has resulted in a number of submissions from MPMC, including:

- A Comprehensive Environmental Impact Assessment and Action Plan, Mount Polley Mine, Tailings Storage Facility Breach, submitted to the MOE dated August 15, 2014 in response to Item 7 of the Order;
- The CEIA and Monitoring Workplans dated August 29, 2014;
- A Conceptual Interim Erosion and Sediment Control Plan, submitted to the MOE on August 21st, 2014 to describe measures to be implemented, at a conceptual level, to reduce sediment loading in Hazeltine Creek, including in-stream works and best management practices.
- Weekly reporting on the implementation of Action Plan measures on a weekly basis to regulatory agencies and stakeholders as required by the Order

This document summarizes information collected and assessed by SNC-Lavalin Inc., Minnow Environmental Inc, Tetra-Tech Inc., representatives of Mount Polley Mining Corporation and monitoring specialists engaged in weekly MPMC monitoring activities as well as providing data relevant to the comprehensive Environmental Impact Assessment (EIA) in response to the tailings breach.

1.2 Objective and Scope

The purpose of this report is to respond to the reporting requirements of Section 8 of the Order specifically, which requires MPMC to submit a formal written update by September 15, 2014 on work at the Mount Polley site. This update provides the following information as required by the Order:

a) A list of all other qualified professionals who contributed to the report, and a summary of their qualifications;

b) A summary of the preliminary EIA and results;

c) A summary of the comprehensive EIA and results to date;

d) A description of clean-up activities, mitigation measures, site restoration and management actions that were implemented as a result of the preliminary and comprehensive EIA;

e) Recommendations for additional mitigation and restoration measures, if appropriate; and,

f) A proposed ongoing monitoring program.

Impact assessment data and results were generated as a result of the preliminary EIA, comprehensive EIA and monitoring program, and have been presented by subject matter in accordance with the following:

- Heritage
- Hydrology
- Water Quality
- Soil Quality
- Sediment Quality
- Terrestrial Ecosystems
- Aquatic Ecosystems
- Human Health and Ecological Risk Assessment

Results have been consolidated according to: b) A summary of the preliminary EIA and results and c) A summary of the comprehensive EIA and results that have been received to date, as these components of work remain in progress.

2 QUALIFIED PROFESSIONALS

To date the environmental action plan has proposed eight technical areas led by qualified professionals as described in the major sections in the Comprehensive Environmental Impact Assessment (CEIA). Those professionals are listed below. Their resumes can be found in Appendix C.

2.1 Cultural and Heritage Impact Assessment

James Light, MA

Mr. James Light, MA, is an Archaeologist with 40 years of experience. Since participating in his first archaeological survey of the Churchill River in Saskatchewan in 1973, Mr. Light has expanded his experience to include all of western Canada, the Northwest Territories, Nunavut, and the American southwest. He founded Historical Resources Management Ltd. in 1986 and directed it until 2011. He has conducted archaeological impact assessment programs in British Columbia, Alberta and Saskatchewan as well as traditional ecological knowledge (TEK) studies in Alberta. Mr. Light has experience in project management, personnel management, and financial management as well as an in-depth knowledge of Aboriginal Relations, and of the regulatory environments in a number of jurisdictions.

- Master of Arts, University of Manitoba, Winnipeg, Manitoba, Canada, 1983
- Bachelor of Arts, University of Regina, Regina, Saskatchewan, Canada, 1976

2.2 Hydrology Impact Assessment

Dr. Leif Burge, Ph.D.

Dr. Leif Burge, PhD, is a nationally recognized Fluvial Geomorphologist and Senior Scientist with over 16 years of experience solving applied river problems and conducting river research. Dr. Burge's experience includes river hazard assessment, hydraulic modelling, channel assessment, sediment management, sediment transport, river stability, fluvial habitat, and river restoration. He has worked on river systems throughout Canada, from New Brunswick to British Columbia. Feature projects include inundation and scour potential mapping using Hydrologic Engineering Centre's River Analysis System (HEC-RAS) modelling, detailed mapping and channel change detection for an environmental impact assessments, support of river restoration projects through hydraulic modelling and analysis of the sediment dynamics, investigation of the effects of urbanization on stream channel erosion, investigation of the frequency of bedforms in headwater step-pool systems using wavelet analysis, determination of the causes and characteristics of anabranching rivers, and determination of the sedimentology of confined sand bedded meandering rivers. Dr. Burge is an Adjunct Professor at the University of British Columbia Okanagan campus, Associate Faculty at Royal Roads University, and a Science Director of the Canadian Rivers Institute.

- Doctor of Philosophy (PhD), Physical Geography, Fluvial Geomorphology, McGill University, Montreal, Quebec, Canada, 2003
- Master of Science (MSc), Physical Geography, Fluvial Geomorphology, University of Calgary, Calgary, Alberta, Canada, 1997
- Bachelor of Science (BSc), Physical Geography, University of Victoria, Victoria, British Columbia, Canada, 1995

2.3 Water Quality Impact Assessment

Dr. Cliff Robinson, Ph.D.

Dr. Cliff Robinson is a Registered Professional Biologist and has 23 years of experience in the assessment, analysis and modeling of aquatic habitats in western Canada. He has recent experience providing environmental assessment and permitting, and environmental risk assessment advice to a wide variety of clients including Pacific Northwest LNG, National Energy Board of Canada, Port Metro Vancouver, Seaspan Ferries Corp, BC Stewardship Council, Port Alberni Port Authority, Canadian Wildlife Service, and the Prince Rupert Port Authority, among others. Dr. Robinson worked for Canadian National Parks Service for 13 years as a senior scientist responsible for establishing and managing coastal aquatic science programs to meet Pacific, Arctic and Atlantic Canada National Park client-based objectives of ecological integrity and biodiversity conservation. Cliff also has a Masters of Science degree in Fish Ecology and Limnology, and has worked on the impact of oxygen depletion in central Alberta Lakes, eutrophication in lakes of central Manitoba, and presently manages a water quality program for the Prince Rupert Port Authority.

- Ph.D. (Biological and Fisheries Oceanography), University of British Columbia, Vancouver, British Columbia, Canada, 1994
- M.Sc. (Zoology), University of Alberta, Edmonton, Alberta, Canada, 1988
- B.Sc. (Marine Biology), University of Victoria, Victoria, British Columbia, Canada, 1985

2.4 Soil Quality Impact Assessment

Mr. Trevor McConkey, M.Sc.

Mr. Trevor McConkey has over 14 years of experience in environmental consulting and has managed projects from a wide range of industries including upstream and downstream oil and gas, mining, forestry, and transportation. He has a successful track record of applying the principles of phytoremediation and bioremediation in the remediation of contaminated soils and drilling wastes on remote and northern sites. Since 2006, Mr. McConkey has served as a senior technical resource for a variety of upstream oil and gas client groups in meeting the objectives of the British Columbia Oil and Gas Commission Certificate of Restoration process for the assessment, remediation, and reclamation of oil and gas sites. He is currently a key account manager for a major oil and gas producer in northeast BC. Mr. McConkey also has extensive experience in the assessment and remediation of both operational and abandoned mine sites in northern

British Columbia. Since 2009, Mr. McConkey has successfully facilitated and managed various mine site assessment and reclamation projects involving multi-disciplinary technical teams and extensive First Nation consultation. In 2008, Mr. McConkey completed a M.Sc. (Forestry) degree related to his research on soil reclamation and reforestation at abandoned oil and gas well sites.

- M.Sc., Natural Resources and Environmental Studies, University of Northern British Columbia (UNBC), Prince George, British Columbia, Canada, 2008
- B.Sc., Environmental Science, University of Northern British Columbia (UNBC), Prince George, British Columbia, Canada, 2000

2.5 Sediment Quality Impact Assessment

Mr. Pierre Stecko, M.Sc., EP, RPBio

Mr. Stecko is an aquatic ecotoxicologist who works with clients to understand, mitigate and manage potential aquatic environmental effects. His areas of scientific expertise are: aquatic ecotoxicology, aquatic environmental assessment, aquatic biology, aquatic ecology, aquatic chemistry, sediment geochemistry, environmental behaviour and fate of contaminants. Within these areas of expertise, Mr. Stecko has focused predominantly on metals and metalloids.

Mr. Stecko has been applying his expertise in projects implemented for the mining industry across Canada for more than 15 years. Mr. Stecko's involvement has often been strategic and he is very familiar with all aspects of mining operations and the manner in which they interact with the environment. Specific applications that he has been engaged in over the last 15 years include environmental permitting, aquatic environmental assessment, environmental monitoring program design and implementation, environmental effects monitoring, development of site-specific objectives, and studies of metal and metalloid ecotoxicity in aquatic environments.

- M.Sc., Ecotoxicology/Sediment Geochemistry, Simon Fraser University, 1997
- B.Sc., Biology/Ecology, University of British Columbia, 1992

2.6 Terrestrial Impact Assessment

Mr. Shawn Hilton, RPBio

Mr. Shawn Hilton joined SNC-Lavalin Inc. in 2014 and is the Practice Lead for terrestrial biology in BC. Mr. Hilton is very familiar with the requirements to complete impact assessments and address wildlife and vegetation resource management concerns, both provincially and federally. He has completed numerous projects of varying scope for government, crown corporations, and independent development and resource extraction companies - involved in the provincial (BCEAA) and federal (CEAA) processes. Mr. Hilton has been the lead biologist when meeting with regulators, First Nations and the public. Mr. Hilton has worked extensively with a number of high profile Species at Risk, completing lengthy field programs, habitat management recommendations, survey standard recommendations, and technical support with recovery planning.

- B.Sc., University of British Columbia, British Columbia, Canada, 1993

2.7 Aquatic Impact Assessment

Cory Bettles, M.Sc., RPBio, CEP

Mr. Cory Bettles is a professional biologist and internationally certified fisheries professional with over 15 years experience in sensible management of fisheries & aquatic resources using sound science and ecological principles. Mr. Bettles is an authority in fisheries biodiversity and impact assessment with expertise as a fish population biologist specializing in population structure and understanding the link between and importance of inter-locality dispersal (migration & connectivity) among identified populations in the maintenance of population persistence and stability. Mr. Bettles has worked on 15 run-of-river and four (4) large hydroelectric projects in varying technical and management roles. He has worked as the Owner overseeing a hydroelectric company's environmental programs (EA, construction, commissioning, operations) for nine run-of-river hydropower facilities. He has acted in the role of EA Project Manager and Fisheries Technical Expert, leading a multidisciplinary team of engineers, scientists, and fisheries team through the harmonized environmental assessment, which successfully received project EA Certificate and authorization from DFO (Letter of Advice). He has also been retained as a fish population expert to assess the structure and interrelationship(s) of bull trout collections in the Upper Lillooet River basin as part of a proposed cluster of hydroelectric facilities undergoing a provincial environmental assessment. He has also worked on behalf of BC Hydro assessing for potential fisheries impacts based on alternative operating schemes (derating, abandonment with/without dam removal) for three existing large hydropower facilities on Vancouver Island. Finally, Mr. Bettles was retained by BC Hydro's Energy Planning Division to deliver the provincial-wide fisheries attribute program as part of the 2010 Resource Options Portfolios for Long-Term Acquisition Planning. Having worked for government, as a consultant, and industry, Mr. Bettles has developed a diverse, well-rounded technical, business-minded, and managerial skill set to compliment his strong communication abilities, which has proven to be a valuable and successful combination on numerous projects. He understands the balance between client business objectives, stakeholder needs, and scientific/regulatory requirements.

- M.Sc., Fisheries Biology, Great Lakes Institute for Environmental Research, Windsor, Ontario, Canada, 2004
- B.Sc., Biology (Fish and Wildlife) / Minor Biochemistry, University of Northern British Columbia, Prince George, British Columbia, Canada, 2000

2.8 Environmental Risk Assessment

Dr. Janice Paslawski, Ph.D., P.Eng.

Dr. Janice Paslawski, Ph.D., P.Eng., has over 25 years of experience in conducting and managing environmental specialists in the delivery of protective risk management strategies for complex impacted sites. She has been working in the environmental field since 1990, including three years of research. Dr Paslawski's experience includes development of quantitative risk assessment approaches for the evaluation of contaminants of concern in sediment, soil and groundwater with respect to human and ecological health risk, as well as development of risk management plans and assessment tools for multiple-site portfolios. She has managed teams for the development of regulatory guidelines in Canada. She currently directs the Centre of Excellence for Risk Assessment for her business unit. She is experienced in the management of diverse project teams and technical experts. Dr Paslawski has conducted national projects on the development of risk-based criteria for environmental protection and application of remediation guidelines in Canada.

- PhD Environmental Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, 2008
- Master of Science, Civil Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, 1993
- Bachelor of Science, Civil Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, 1986

Ms. Siemens Kennedy MET, CSAP RA, P.Chem

Ms. Siemens Kennedy is a Senior Environmental Toxicologist with over 15 years of experience in contaminated sites, and more than 13 years of experience conducting human health and ecological risk assessments. She joined SNC-Lavalin in September 2011 and is a member of the Roster of Contaminated Sites Approved Professionals (CSAP) in the Province of British Columbia and is a rostered Risk Assessment Approved Professional. Ms. Siemens Kennedy has designed and conducted more than 100 human health and ecological risk assessments. The BC Ministry of Environment (BC MoE) has issued a number of Certificates of Compliance and Approvals in Principle for risk assessments conducted by Ms. Siemens Kennedy. Her experience also includes fate and transport modelling, project management, liaising with provincial and federal regulators, and investigation and remediation of numerous contaminated sites.

- Master of Environmental Toxicology, Simon Fraser University, Burnaby, British Columbia, Canada, 2003
- B.Sc., Chemistry, University of British Columbia, Vancouver, British Columbia, Canada, 1996

3 SUMMARY OF ACTIVITIES AND RESULTS

3.1 Heritage Impact Assessment

Between September 2nd and 4th, 2014 a crew of archaeologists representing SNC-Lavalin Inc., Archer CRM, and Sugarcane Archaeology (Williams Lake Indian Band) conducted a Preliminary Field Reconnaissance (PFR) on the impact area of the Mount Polley Tailings pond breach. The PFR had two purposes: first, to identify any archaeological sites or areas with high potential to contain archaeological artifacts that might be immediately at risk due to the effects of the tailings release, and second, to identify areas of moderate and high archaeological potential that might be in conflict with proposed infrastructure developments planned as part of the remediation plan.

The PFR identified significant areas of moderate and high potential to contain archaeological sites along the lower reaches of Hazeltine Creek but did not identify any archaeological sites. The tailings release caused significant erosion along lower reaches of Hazeltine creek particularly below the Ditch Road bridge location. It is possible that unidentified archaeological sites may have been affected by the erosion but there is no evidence of archaeological deposits in the exposed cut banks so it does not appear that heritage remains are at risk of being eroded.

Above the Ditch Road bridge the erosion is more confined to the narrow gorge of the creek. Some areas of high archaeological potential were identified along the east edge of the tailings flow into Polley Lake but heritage deposits do not appear to be at risk of erosion.

The second goal of the PFR was to identify conflicts between areas with archaeological potential and the construction works associated with the sediment and erosion control plan and future rehabilitation. Preliminary plans for erosion and sediment control works within the lower reaches of Hazeltine Creek were examined with construction personnel. Developments that are proposed immediately are construction of temporary access roads, construction of two sedimentation basins, creek rehabilitation and riparian habitat reclamation. Two smaller sedimentation ponds are also planned on the upper reaches, just below the Mount Polley Tailings Pond.

The reconnaissance of the lower reaches of the creek identified marked variation in the amount of disturbance to the shallow sediments that may contain archaeological deposits. In some areas erosion removed surface sediments, and alluvium to a depth of many metres. In other areas the tailings flow scoured only a few centimetres. In many areas tailings and soils scoured from the creek bed were deposited on top of the original soil surface. Last, there are areas where a combination of these effects can be observed in the cut banks. Subsurface testing is required to determine the state of the original surface deposits at any distance from the cut bank edges.

In addition to the field observations and identification of areas of high potential, the PFR identified two heritage sites, a culturally modified tree, and a lithic artifact on the beach just north of the tailings deposits at the mouth of Hazeltine Creek. In addition, during a recent Traditional Land Use study done in the area by the

Williams Lake Band, a house pit village site was recorded at the mouth of Hazeltine Creek. No evidence of this site was observed and the site may be located in the area affected by the TSF breach. This site may be located within the bounds of the proposed sedimentation basins near the mouth of Hazeltine Creek.

To deal with the various heritage inventory and assessment issues on this project an archaeological program with two main phases was developed. In order to simplify reporting requirements one Heritage Investigation Permit has been obtained. The first phase of the archaeological work will be to survey and assess all development areas as they are identified in the Lower Hazeltine Creek Erosion and Sediment Control Plan. This will include access roads, both permanent and temporary, settling ponds, borrow pits, and any other developments located in areas of moderate or high archaeological potential. This work will be completed in conjunction with the repair work with interim reports submitted to provide clearance as needed. The second phase of the investigation will be to survey and inventory the impact area for any heritage resources that may be within the impact zone.

A permit to conduct the Heritage Investigation has been granted with the support of the affected First Nations.

3.2 Traditional Land Use

SNC-Lavalin Inc. is in the process of determining the required scope for a Traditional Land Use (TLU) study and stakeholder engagement for the Mount Polley Mining Corporation (MPMC), Hazeltine Creek Remediation to identify potential impacts from the tailings release. To date, MPMC has identified and consulted with two Aboriginal communities (William's Lake Indian Band and Xat'sull First Nation), as the First Nations that appear that have the greatest interest in the area. Additional First Nation and Métis communities requiring consultation may be identified by the crown.

3.3 Hydrology Impact Assessment

The following section describes the activities and preliminary results of the Hydrological Impact Assessment of the Hazeltine Creek Channel between Polley Lake and Quesnel Lake. There are two main sections in the hydrology impact assessment: the assessment of the channel and the assessment of the hydrology.

3.3.1 Channel Assessment

There are four main tasks in the assessment of the channel including a review of existing data and gap analysis, time series analysis/LiDAR, channel and floodplain tailings assessment, and a channel and floodplain evolution model development. The progress on each task is described in the following sections.

The first stage of the assessment involved a high level overview of the study area conducted through air reconnaissance and visual inspections on the ground. Two reconnaissance flights and ground observations were carried out on August 29 and September 5 by Dr. Leif Burge, Vanessa Cuervo and Dr. Richard Guthrie with the purpose of identifying:

- Active geomorphologic processes in the Hazeltine Creek channel (areas of active erosion and deposition);
- Current channel condition and stability of the banks;
- Critical areas for ground inspection; and,
- Accessibility and safety conditions for ground inspection.

Several photos including UTM coordinates were taken during the flights. To facilitate the analysis the channel was divided into four different sections: Upper Hazeltine Creek; Middle Hazeltine Creek; Canyon Hazeltine Creek; and Lower Hazeltine Creek. The analysis of the photographs, sections and long profile is in progress.

3.3.1.1 Review of Existing Data and Gap Analysis

SNC-Lavalin has begun the review of available reports and data pertaining to the hydrology and geomorphology of Hazeltine Creek. The review is underway on the following reports:

- Chapman 1991. Re: Mt. Polley Project – Hazeltine Creek Hydrology. Memorandum to CH Coulson, October 1 1991 file S2206-64
- Knight Piésold Ltd (KP), 2009a. Assessment of Hazeltine Creek flows. Letter Report to MPMC dated April 14, 2009 (Ref. No. VA09-00317).
- Knight Piésold Ltd (KP), 2009b. Recommended Maximum Discharges from the Mount Polley TSF to Hazeltine Creek. Letter Report to MPMC dated April 23, 2009 (Ref. No. VA08-01858).
- Knight Piésold Ltd (KP), 2009c. Hazeltine Creek Geomorphology. Letter Report to MPMC dated April 30, 2009 (Ref. No. VA09-00584).
- Knight Piésold Ltd (KP), 2014. Hazelton Creek Hydrologic Analysis. Letter Report to MPMC dated May 14, 2014 (Ref. No. VA101-1/32-1).
- Minnow Environmental Inc. (Minnow), 2014. Aquatic Environmental Description Report Mount Polley Mine Discharge of Treated Water to Polley Lake. Report prepared to support permit to release treated water from the tailings impoundment.

3.3.1.2 Time Series Analysis/LiDAR

The condition and dynamics Hazeltine Creek are being determined from mapping of sequential historical aerial photographs and the analysis of the LiDAR data. Data collected during the field program will inform the analysis. Historical areas of erosion and deposition will be identified and mapped and rates of change over the period of record will be determined after the aerial photographs are acquired. The present condition of the channel is being assessed using cross-sections and a long profile of the channel thalweg extracted from the LiDAR data.

To date, aerial photographs for 2009, 1996, and 1974 have been ordered. The aerial photographs will be imported into the three-dimensional, heads-up mapping software DAT/EM® Summit Evolution™ and rectified to a base projection. The aerial photography is anticipated to be prepared for digital mapping by September 30, 2014.

Cross-sections of the post-event channel geometry were created using post-event LiDAR data in GIS. A total of 165 cross sections were extracted every 50 m over the Hazeltine Creek. Cross-sections illustrate both the channel and overbank area. Detailed channel geometry (10-15 metres spacing) will be generated in the following stage for input into FLO-2D and HEC-RAS.

A long profile of the Hazeltine Creek channel bed was generated using post-event LiDAR data in ArcGis. The long profile was calculated from cross-section invert (lowest) elevations. This provides a series of x and z pairs, where x is the distance in metres down the channel and z is the elevation (masl).

Analysis of the aerial photographs and LiDAR is in progress.

3.3.1.3 Channel and Floodplain Tailings Assessment

The breach of the tailings dam produced a complex response downstream. The area closest to the breach experienced deposition of the material that was located within the tailings pond and the material that formed the tailings dam embankment. This deposited material forms the plug of sediment that is affecting the outlet of Polley Lake. The channel and floodplain were scoured by floodwaters and debris downstream of the plug. Much of the scoured material was transported downstream to be deposited into Quesnel Lake.

The volumes of tailings deposited on the floodplain by the breach and the volume of material scoured from the channel and floodplain of Hazeltine Creek are being determined through an analysis of Digital Elevation Models (DEMs) from LiDAR and other sources. The LiDAR collected after the event will be compared to a DEM that represents the pre-event topographical surface. Methods for determining the pre-event surface are being assessed. Options include the development of a pre-event DEM based on photogrammetric methods and aerial photographs or satellite imagery acquired prior to the breach. The 2003 aerial photographs are a good candidate to develop a DEM because of the relatively high resolution of the photographs. Other options for imagery include GeoEye and IKONOS.

3.3.1.4 Channel and Floodplain Evolution Model

This task will create a channel and floodplain evolution model that highlights: areas of potential erosion and deposition, features that may affect sediment transport (such as sediment and bed characteristics, large woody debris, structures, etc.), controls on rates and mechanisms of sediment movement, and a prediction of the trajectory of future channel adjustment. The purpose of a channel evolution model is to support the design development.

The channel and floodplain evolution model will be produced by combining field observations with the results from a two-dimensional hydrodynamic model. Completed activities in this stage include: the determination of modelling requirements and the review and evaluation of available two-dimensional hydrodynamic software.

The release of the stored tailings and the embankment fill material of the mount Polley tailings dam formed a channelized muddy debris flow that likely traveled as surges downstream along the Hazeltine Creek channel and floodplain. Main characteristics of this type of flow for modeling include:

- Non-newtonian flow (mix of water and sediments);
- Transient flow (periodic surges of heavily debris slurry);
- Rheological properties (behaviour and properties of the material); and
- Absolute viscosity that changes with the range of deformation.

These characteristics will be considered in simulating the flows that resulted from the release of the tailings at Mt. Polley Mine and the development of a channel evolution model.

Software for hydrodynamic modeling was reviewed to establish their capabilities to simulate muddy debris flows and clear water flows. The software reviewed included MIKE, FLO-2D, DAN-3D, DAMBRK, and HEC-RAS. We determined that FLO-2D offered the best suite of advantages for simulating flow in Hazeltine Creek. The FLO-2D software was ordered and input data requirements from the field program will be included in our field protocols (e.g. n-manning, sediments characteristics, etc.).

3.3.2 Analysis of Hydrology

The hydrology of Hazeltine Creek is being examined by updating the regional analysis for Hazeltine Creek and installing hydrometric gauges to measure the discharge of water on tributary creeks and water and sediment on Hazeltine Creek.

3.3.2.1 Regional Analysis

A regional hydrological analysis is being conducted to estimate discharges of specific return intervals at the Hazeltine Creek site. Gauges for analysis are being chosen from the WSC network from the surrounding region based on length of record and data quality.

The regional analysis began with the collection of the WSC data for the analysis. Gauges are being chosen following an analysis of the timing of discharges within each gauge and the structure of the data. The regional analysis will then be completed to estimate the specific discharges required following applicable guidelines described in Hatfield et al. (2007) and Lewis et al. (2004) APEGBC (2012) and LWBC (2004).

3.3.2.2 Hydrometric Gauges and Sediment Discharge

Instrumentation for hydrometric stations is in the process of being sourced. A minimum of three hydrometric stations will be installed in the Hazeltine Creek drainage. Once each station has been installed, several site visits will be necessary to measure stage and discharge to establish a rating curve (the relationship between stage and discharge) at each gauge. The rating curve is used to determine discharge from the measured stage. Gauges will be installed using the standards outlined in Resources Information Standards Committee standards (Ministry of Environment, 2009). Signage will be installed at these station locations stating what they are and requesting that people not tamper with them.

A hydrometric station will be installed on Hazeltine Creek at the location of the previous gauge if the site is suitable for such a station. The site may be unsuitable as a hydrometric station if ongoing channel bed scour is occurring. A suitable alternate site with a stable bed will be utilized if the original gauge location is unsuitable. The station on Hazeltine Creek will measure stage, turbidity and suspended sediment. An automated sampler will be installed to take water samples for analysis. An optical backscatter sensor (OBS) may be installed if this type of sensor is appropriate for measurement of the type of sediment currently suspended in Hazeltine Creek. An investigation into the suitability of an OBS on Hazeltine Creek is in progress.

A hydrometric station will be installed near the outlet of Edney Creek to measure stage. The station will be established at a site with a stable bed. One or two hydrometric stations will be installed on creeks that discharge into Polley Lake. One station will be installed in the channel that links Frypan Lake to Polley Lake. An additional station may be installed in a creek that flows into Polley Lake near the outlet following reconnaissance of the site and discussions with the fisheries lead. It has been suggested that the channel the flows into Polley Lake near the southern outlet provides rainbow trout spawning habitat.

3.4 Water Quality Impact Assessment

This section provides a progress update on the ongoing water quality (WQ) data collection and assessment activities being completed to inform the comprehensive EIA. The main part of this section presents a summary of results from the MPMC emergency response water quality sampling program from August 6 to 27, 2014.

3.4.1 Emergency Response Sampling Program

Within 48 hours of the tailings breach on August 4, 2014, an emergency response water quality (ERWQ) sampling program was established by environmental staff of MPMC, Minnow Environmental and the MoE. SNC-Lavalin Inc. was retained on August 12, 2014 to help establish a WQ data management system and support field sampling. An SNC-Lavalin water quality coordinator was identified on August 28, 2014 to coordinate water sampling efforts in the different locales, and to ensure that information required as part of the impact assessment and potential toxicity assessment was collected. In addition, EBA-Tetra Tech was retained on August 27,2014 to initiate field studies to map the spatial extent of deep turbid water related to the tailings sediment that directly entered the West Basin of Quesnel Lake adjacent to the mouth of Hazeltine Creek. See Section 3.4.10 for a summary of key results from the turbidity plume assessment.

Initially, the main approach used in the ERWQ sampling program was to collect water samples from a variety of locations within Quesnel Lake, at the mouth and along Hazeltine Creek, within Polley Lake and near the UNBC research station on the upper Quesnel River. The sampling stations were selected based on expectations of the location of the deep water plume (before mapping was initiated) and in response to requests from Lake residents concerned about water quality. The number and location of stations of the ERWQ program have become refined as a result of new information derived from the underwater plume mapping study, and the absence of positive results for some properties (e.g., bacteriological) that would not be considered to be directly influenced by the mine tailings. The ERWQ program continues to evolve as new information is obtained. Its results will be used to inform the WQ impact assessment, toxicity assessment and longer-term monitoring.

The water sampling methods and the subsequent laboratory analyses of water samples used in the ERWQ program have adhered to standard operating procedures. The following water sample parameters have been measured at the ALS facility in Burnaby:

- Physical properties (hardness, pH, turbidity, conductivity, TDS, TSS, and DOC);
- Microbiological tests: Total Coliform and *Escherichia* coli;
- Dissolved Inorganics: sulphate, chloride, fluoride, Total alkalinity, Bromide;
- Nutrients: total ammonia, nitrate, nitrite, total nitrogen, orthophosphate, total phosphorous, dissolved phosphorous;
- Dissolved metals (Aluminum, Calcium, Iron, Manganese, Potassium, Sodium, Antimony, Arsenic, Barium, Beryllium, Boron Cadmium, Chromium, Cobalt, Copper, Lead, Lithium, Mercury, Molybdenum, Nickel, Selenium, Silver, Thalium, Titanium, Uranium, Vanadium, ZInc); and,
- Total metals (Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chronium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Thalium, Tin, Titanium, Uranium, Vanadium, Zinc).

Weekly reports of water sampling results have been submitted to the BC Ministry of Environment by MPMC, since mid August. The following section provides a brief overview of the spatial and temporal coverage of WQ sampling in each of the locations, and how the WQ information will be used in an impact assessment.

3.4.2 Water Quality Impact Assessment

An understanding of the impact of the tailings on water quality in the receiving environments first requires an understanding of the potential fate and transport of tailings materials (sediment and water) and the potential impact of the tailings on the water quality within the three main receiving environments: Polley Lake, the West Basin of Quesnel Lake, and the Upper Quesnel River.

Understanding the fate and transport in the receiving environment consists of several main tasks: 1) characterizing the properties of the tailing materials in the lake sediments and water column, 2) understanding and modeling transport processes occurring within the lake and influences with Quesnel River; and 3) Providing an evaluation of the environmental and human health implications of the water quality following the event. This interpretation may involve characterizing and comparing water quality before and after the event in receiving environments, comparison to applicable water quality guidelines or more detailed toxicological evaluations where necessary. Mine affected materials in the lake and creek sediments also has the potential to affect WQ over time.

The remainder of this section discusses transport processes within the West Basin of Quesnel Lake and the Quesnel River, and characterizes the water quality as generated from the emergency response sampling program.

3.4.3 Transport Processes in Quesnel Lake and Quesnel River

The following description of mixing and flushing processes within Quesnel Lake has been summarized from Laval et al. 2008, and highlights some of the key mixing and water movements within the receiving environment of the West Basin of Quesnel Lake. Quesnel Lake is a fjord-type lake with two basins and three arms, and it has a mean depth of approximately 157 m and a maximum depth of 511 m. The West Basin is the portion of the lake west of Cariboo Island to the outflow of the Quesnel River. The West Basin is separated from the main body of Quesnel Lake by a 35 m sill. The West Basin has a maximum depth of 113 m and represents about 9% of the surface area and about 2.3% of the volume of Quesnel Lake. It is estimated that the average residence time of Quesnel Lake's 41.8 km^3 of water is about 10 years, while the average residence time of the West Basin is about 3 months.

During summer, Quesnel Lake's thermal structure is characterized by a ~10m thick surface mixed layer, overlying a thermally stratified metalimnion (10-20m), which generally prevents mixing of surface waters with the deep, cold waters of the hypolimnion. There are however, two major movements of water within the Western Basin. Epilimnetic waters undergo hydraulic through flow into Quesnel River such that the Quesnel River undergoes temperature variation greater than 5C d^{-1}; similar to temperature variations observed within the West Basin. Laval et al. (2008) indicate that the water entering the Quesnel River from Quesnel Lake is a mixture of water drawn from the surface down to about 8m. The authors also noted that in 2003 three cooling events in the Quesnel River were matched with large vertical isotherm displacement throughout the West Basin lasting 3-6 days. Ultimately, the hydraulic through flow of surface waters is mainly confined to epiliminetic waters, and the rapid temperature changes in Quesnel River are a direct result of wind-forced upwelling in Quesnel Lake.

Laval et al. (2008) also described subsurface flow, namely hypolimnetic flushing of deeper West Basin waters. Upwelling in the West Basin drives considerable volume flux over the sill separating the West Basin from the Main Basin. Generally, the temperature oscillations observed in the West Basin are influenced by a direct injection of hypolimnetic water from the Main Basin into the West Basin, where the waters intermingle and the mixture is returned to the Main Basin when the upwelling relaxes. It was estimated that three upwelling events with a 6-week period could irreversibly replace about 75-90% of the deep West Basin water, suggesting a residence time for deep waters of about 6-8 weeks.

In summary, strong westerly winds (even in summer) are channeled along the steep valleys and result in upwelling of deep water in the West Basin and ultimately outflow of surface waters into the Quesnel River, and in deep water exchange with the Main Basin. Present day confirmation of general epilimnetic and hypolimnetic water movements in the West Basin are being undertaken by field studies and modeling by EBA Tetra Tech. This information will be used to model the transport and fate of turbidity and dissolved substances associated with tailings on the lake bed in the West Basin of Quesnel Lake.

3.4.4 Preliminary Impact Assessment

For screening purposes, two main approaches are taken to understand the magnitude and duration of impact of the event on water quality.

1) Comparisons of water quality sample parameters to BC and CCME water quality guidelines for drinking water and for aquatic life.
2) Comparisons of natural background levels of measured physical parameter values after the event andr between near-field and far-field locations within the same water body, or within depth layers over time.

At present, pre-breach data, both background and operational background (in the presence of mining operations) data have not yet been compiled and evaluated to provide a basis for comparison of water quality before and after the tailings breach because efforts have been focused on control of turbid waters from the breach, data collection and data analysis. Further, operational background conditions and/or ambient conditions for Polley Lake, Hazeltine Creek, West Basin and Quesnel River will ultimately be compared to the surface water results when they become available and as applicable to the CEIA. In the interim, a summary of key results from the emergency response water quality sampling program will be presented by comparing results to appropriate provincial or federal guideline. With the exception of dissolved iron and calcium, guidelines based on total concentrations for inorganic parameters have been applied to total metals data reported from unfiltered samples. In certain situations (e.g. manganese based on the guideline overview provided by MoE), dissolved metals concentrations may be compared to total metals guidelines in the event a guideline exceedance is due to the presence of particulate matter and adverse effects due to the metal are not obvious. For the purpose of identification of guideline exceedances in surface water, total metals guidelines are compared to unfiltered water sample results and dissolved metals guidelines are used as a point of comparison to dissolved metals data.

The drinking water guideline for total phosphorous (TP) is applicable to lakes, and the values are set to limit aesthetic concerns related to water quality. Further, the aquatic life value for TP is applicable to lakes with salmonids present, and in particular during spring overturn or an average of summer season samples; the guideline is not applicable to the time of present sampling.

The preliminary assessment described below is structured to consider water moving from Polley Lake through Hazeltine Creek, into the West Basin of Quesnel Lake and finally discharging into Quesnel River

3.4.5 Polley Lake

Polley Lake is a long (6.17 km) narrow (0.65 km) lake with a surface area of about 4.53 km^2, mean depth of 18 m and maximum depths of 35 m in the southeast basin and 33 m in the northwest basin. Lake volume was estimated at 83.3 M m^3, and based on current watershed area and mean annual unit runoff (MAUR; 7.1 L/s/km^2; KPL 2014) the hydraulic residence time was calculated as approximately 16.2 years.

Polley Lake is a di-mictic lake, with well-developed thermal stratification in summer, with thermocline depths between 5-15 m. In winter months, water temperature has been observed to increase gradually with depth. In all seasons, dissolved oxygen concentrations have been observed to decrease with depth. Dissolved oxygen concentrations below the BC WQG (5 mg/L for the protection of life stages other than buried embryo/alevins; BCMOE 2006a) have been observed at depths greater than approximately 20 metres during spring, summer, fall and winter. Low dissolved oxygen events (at depth) were observed both before and after mine development. However, there is recent evidence that the trophic status of Polley Lake has increased from the oligotrophic/mesotrophic boundary at baseline to the mesotrophic/eutrophic boundary in 2012, and phytoplankton blooms have been observed in recent years.

The tailings breach resulted in the movement of an unknown quantity of tailings sediment and water into the southern end of Polley Lake. Safety concerns have not allowed for field sampling and a detailed understanding of the extent of the distribution of tailing material in Polley Lake and the impact on water quality is not yet known. The impact of the tailings material on Polley Lake water quality will be determined using various methods including a before-after comparison with historical information collected at two mid water stations on Polley Lake at the surface and depth as well as interpretation of present impacted water quality in the context of applicable guidelines and toxicological interpretation. The historical water quality of Polley Lake was recently summarized in Minnow (2014), and some of the basic information about Polley Lake from Minnow (2014) and references therein is discussed below.

As noted above, safety concerns have not allowed for sampling of the historical mid lake stations on Polley Lake until recently. The sampling has been re-initiated the week of 8 September 2014 and will be required to occur over several weeks to generate data comparable with historical data and to complete an assessment of the impact of the tailing on Polley Lake.

In the interim, the emergency response sampling program resulted in the collection of surface water samples from 3 stations on the shore of Polley Lake. The general results of these samples are described below. Thirty of forty-eight waters samples exceeded BCWQG for drinking water pH guidelines (pH > 8.5) and four water samples collected early in August (7/8th) exceeded guideline *E. coli* and total coliform, but samples collected from August 9-27 did not have any microbiological exceedances. Note the guidelines for total coliform are for municipal systems and not necessarily applicable. A discussion of these E-Coli sample results is provided in section 3.1.8 below. Four water samples had exceedances for aquatic life (pH > 9.0) for total metals analysis. We note that for many aquatic life parameters, toxicity to aquatic life is better represented by dissolved metals concentrations; however total metals analysis can serve as a screening criteria. Copper (total concentration) exceeded the BCWQG for aquatic life; aluminum (total concentration) exceeded drinking water guidelines for esthetics.

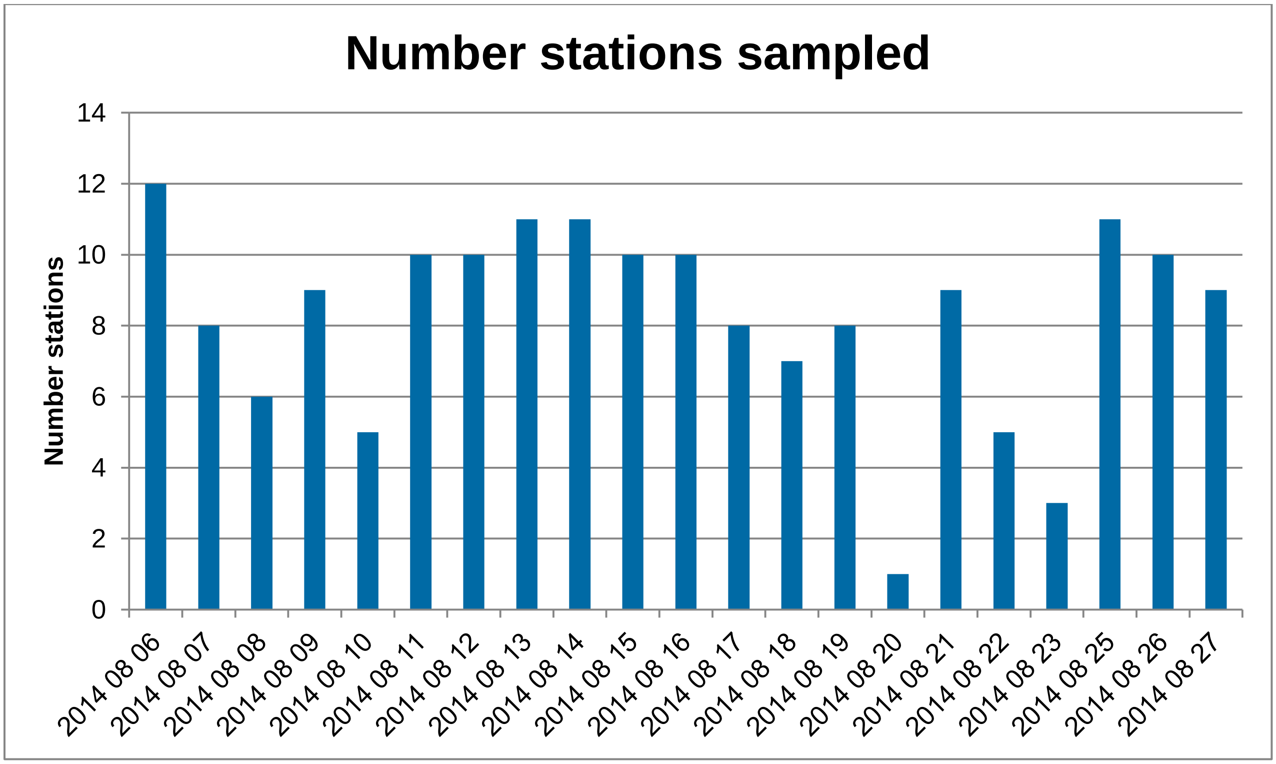
3.4.6 Hazeltine Creek

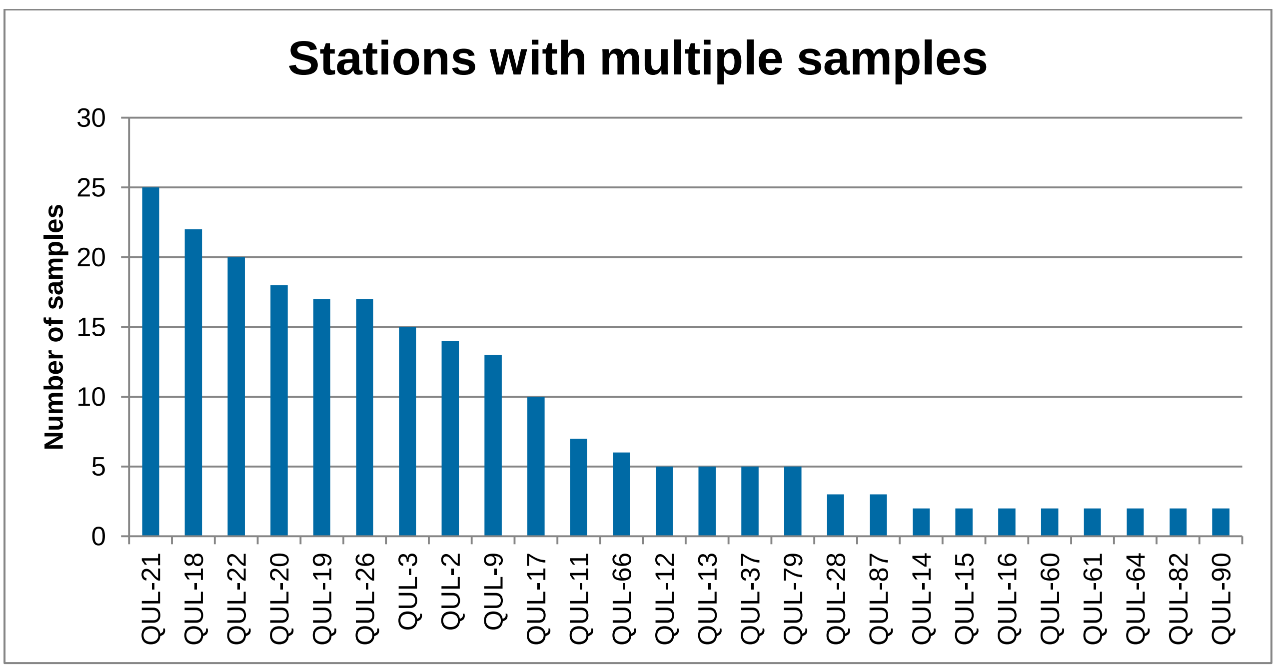
Water quality sampling from the Polley Lake discharge (via pipe) into Hazeltine Creek (station HAD-1) began on August 10, and has continued daily until August 27. Total aluminum exceeded drinking water quality criteria for samples collected early in the time series and additional short-term exceedances were also detected around August 16 and August 21.

A water quality station situated near the mouth of Hazeltine Creek (HAC), where it empties into Quesnel Lake, was sampled daily from August 24 to 27. Water sampled at HAC since August 24, 2014 has had turbidity values > 4,000 NTU and TSS values ranging 3,000 to 35,000. A number of metals in the turbid samples were found to exceed guidelines due to the turbid nature of the water Specifically, the following total metals were found to exceed the guidelines: aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, nickel, selenium, thalium, titanium, vanadium, and zinc. The following total metals also exceeded guidelines but on August 27 only: uranium, silver, mercury, barium and beryllium. The dissolved form of the metals is generally thought to be more representative of the bio-accessibility to aquatic life.

3.4.7 West Basin Quesnel Lake

A total of 57 stations in the West Basin, and around Cariboo Island in Quesnel Lake, were sampled for water quality from August 6 through 27, 2014. The graphs below shows the numbers of stations sampled on any given day during that period, and the stations with multiple samples.


Number stations sampled
Number stations
0
2
4
6
8
10
12
14
2014 08 06
2014 08 07
2014 08 08
2014 08 09
2014 08 10
2014 08 11
2014 08 12
2014 08 13
2014 08 14
2014 08 15
2014 08 16
2014 08 17
2014 08 18
2014 08 19
2014 08 20
2014 08 21
2014 08 22
2014 08 23
2014 08 25
2014 08 26
2014 08 27


Stations with multiple samples
Number of samples
0
5
10
15
20
25
30
QUL-21
QUL-18
QUL-22
QUL-20
QUL-19
QUL-26
QUL-3
QUL-2
QUL-9
QUL-17
QUL-11
QUL-66
QUL-12
QUL-13
QUL-37
QUL-79
QUL-28
QUL-87
QUL-14
QUL-15
QUL-16
QUL-60
QUL-61
QUL-64
QUL-82
QUL-90

The number of water quality samples by depth strata for near-field stations to Hazeltine Creek (9, 11, 12, 13, 14 15, 16, 23, 24, 26, 43, 66) were compared to far-field stations (remaining stations) for all dates combined and are shown in the tables below.

Layer	Depth	Near-field stations	Far-field stations
Surface	0m	30	119
Epilimnion	1-10m	11	26
Thermocline	10-20m	9	6
Hypolimnion	>20m	7	28

The tables below summarize the exceedance in WQ properties compared to BCWQG DW - BC Water Quality Guidelines for Drinking Water and to the BCWQG AW - BC Water Quality Guidelines for Aquatic Life for each of depth layers and stations identified above.

In general, the percent of samples exceeding guidelines was greater for deeper layers of the lake, and greater for near-field stations than far-field stations. More individual total metal exceedances were noted for the deeper hypolimnetic waters. At the present time insufficient data exist to conduct detailed statistical analyses with the additional consideration of time of sampling.

Table 3.4.1: Near-field Station Surface Layer Exceedances (0 m) (30 samples taken)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Microbiological Tests				
E. Coli	2	7%	0	0%
Total Inorganics				
Phosphorus	0	0%	8	27%
Total Metals				
Aluminum	7	23%	0	0%
Copper	0	0%	11	37%
Iron	2	7%	0	0%

Table 3.4.2: Far-field Station Surface Layer Exceedances (0 m) (119 samples taken)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Physical Parameter				
pH	1	1%	0	0%
Microbiological Tests				
E. Coli	7	6%	0	0%
Total Inorganics				
Phosphorus	1	1%	22	18%
Total Metals				
Aluminum	1	1%	0	0%
Cadmium	0	0%	2	2%
Copper	0	0%	6	5%
Iron	1	1%	0	0%

Table 3.4.3: Near-field Station Epilimnion Layer Exceedances (1 - 10 m) (11 samples taken)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Total Inorganics				
Phosphorus	0	0%	1	9%
Total Metals				
Aluminum	2	18%	0	0%
Copper	0	0%	2	18%

Table 3.4.4: Far-field Station Epilimnion Layer Exceedances (1 - 10 m) (26 samples taken)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Total Inorganics				
Phosphorus	3	12%	10	38%
Total Metals				
Copper	0	0%	3	12%

Table 3.4.5: Near-field Station Thermocline Layer Exceedances (10-20 m) (9 samples taken)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Total Metals				
Aluminum	3	33%	0	0%
Copper	0	0%	3	33%
Iron	2	22%	0	0%

Table 3.4.6: Far-field Station Thermocline Layer Exceedances (10-20 m) (6 samples taken)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Total Inorganics				
Phosphorus	1	17%	3	50%
Total Metals				
Aluminum	1	17%	0	0%
Copper	0	0%	2	33%

Table 3.4.7: Near-field Station Hypolimnion Layer Exceedances (>20 m) (7 total samples)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Total Metals				
Aluminum	5	71%	0	0%
Cadmium	0	0%	2	29%
Chromium	0	0%	3	43%
Copper	0	0%	5	71%
Iron	3	43%	3	43%
Manganese	3	43%	0	0%
Vanadium	0	0%	3	43%
Zinc	0	0%	2	29%

Table 3.4.8: Far-field Station Hypolimnion Layer Exceedances (>20 m) (28 total samples)

Parameter	BCWQG DW, Canada Drinking Water Quality Guidelines		BCWQG AW	
	# of Samples Exceeded	Exceedances per Total Sampled	# of Samples Exceeded	Exceedances per Total Sampled
Total Inorganics				
Phosphorus	9	32%	12	43%
Total Metals				
Aluminum	19	68%	0	0%
Cadmium	0	0%	2	7%
Chromium	0	0%	12	43%
Copper	0	0%	20	71%
Iron	14	50%	12	43%
Manganese	12	43%	0	0%
Vanadium	0	0%	6	21%
Zinc	0	0%	4	14%

3.4.8 Residential Water Quality Monitoring Program

A residential water intake sampling program was developed as part of the emergency response water quality sampling program on Quesnel Lake. A total of 27 water samples have been collected by MPMC staff from August 18 through 27, 2014. Overall, as noted above, there have been three exceedances for *E. Coli* on August 18 for samples taken near Likely; no additional microbiological exceedances have been identified. The only other result of note is 3 exceedances for total copper detected, two from tap water samples collected in the Winkley Creek area on August 15 and August 25, and 1 from a station QUL-77 near Likely on August 22.

Prior to the Tailings Storage Facility (TSF) breach on August 4, 2014, MPMC was handling their sewage in accordance with Ministry of Environment permit 11678, last amended in June 2013. This permit authorized the discharge of sewage into a septic tank and then the TSF. The sewage volume was small in comparison to the tailings volume.

Exposure to UV light from the sun, natural die-off of sewage-related bacteria after an extended period of time outside of the digestive system and the low concentration of sewage in the TSF would make it unlikely that bacteria such as *Escherichia coli* (*E. coli*) would survive. To verify this expectation, MPMC's environmental group took some samples of the TSF supernatant in 2010, 2011, 2012, and twice in 2013. These samples showed concentrations of *E. coli* as follows:

11/4/2010	<1 MPN/100 mL
4/6/2011	<1 MPN/100 mL
2/8/2012	<1 MPN/100 mL

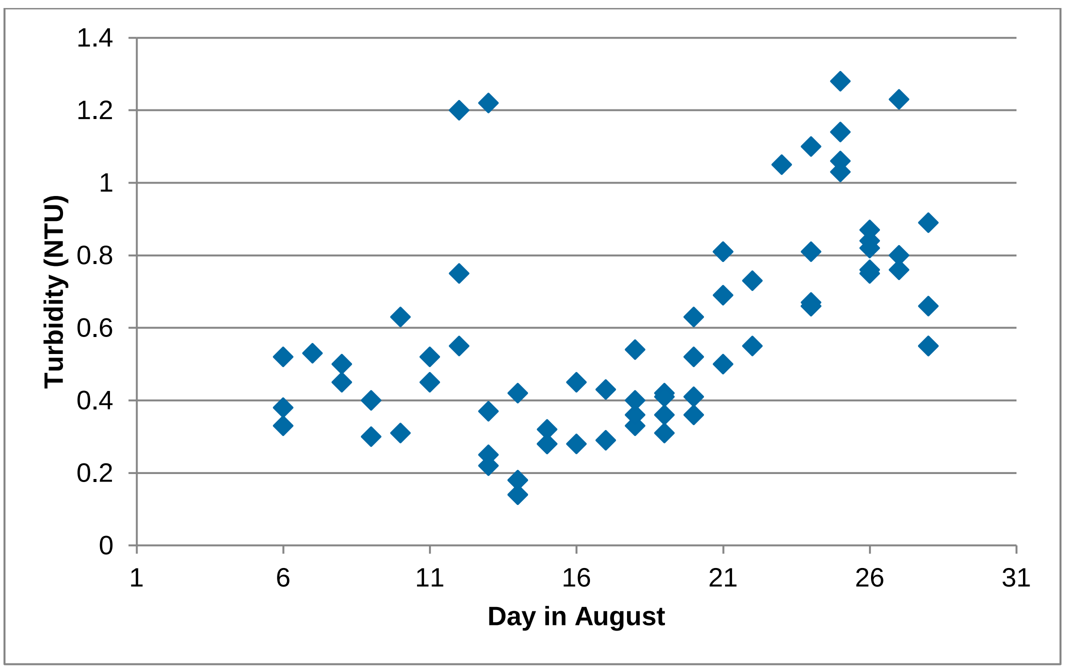
8/8/2013	1 MPN/100 mL
11/5/2013	1 MPN/100 mL

Samples of *E. coli* collected in Quesnel Lake have generally been in the range of 1 to 2 MPN/100 mL. Such results are common in surface waters and, based on our testing of TSF supernatant, the discharge of tailings water during the breach would not result in the observed E. coli readings in Quesnel Lake.

MPMC continues to monitor water quality in Quesnel Lake for substances related to the TSF breach, such as turbidity and metals. However, because *E. coli* readings are not related to the TSF breach, monitoring for *E. coli* has been removed from the program.

3.4.9 Upper Quesnel River

Historical data describing water quality in the upper Quesnel River have not yet been identified. In the interim, this section describes results from the emergency response sampling program. Water sampling was conducted by an ISCO sampler located at the UNBC research station on the banks of the upper Quesnel River, downstream of Likely. At least one and typically 2 to 4 water samples, were collected daily from the sampler and sent to the ALS laboratory for analysis. Turbidity levels measured at the river station remained at or below about 1.3 NTU during August, and there is no clear temporal pattern in turbidity pattern in August. Recently, turbid waters have been noted near likely at the Quesnel River. Results compiled here will not reflect those recent turbidity readings.



No comparative guidelines have been exceeded for micobiological tests, dissolved inorganics, or nutrients. Total zinc was found to exceed guidelines 7 times out of 71 samples (~10%) but with no apparent temporal pattern.

Total copper concentrations in river water samples collected from August 6 to 20 were below BCWQGs (< 0.9 ug/L). Starting August 20; however, there was an increase in concentrations with 6 of the next 30 samples exceeding BCWQGs, and all four samples on August 25 exceeding the BCWQG for aquatic life (2.0 ug/L).

It is unclear at this time what caused the variation in total copper concentrations detected in the upper Quesnel River.

3.4.10 Summary of sub turbidity plume mapping results, West Basin

The Tetra Tech EBA observational campaign on Quesnel Lake is complete as of September 9, including two additional days providing support to Minnow to collect bottom sediment samples using a van Veen sampler. Two boats were involved. The smaller boat, Storm, did ADCP transects and CTD casts at various points along each of the ADCP transects. In total, there were 212 CTD casts, 80 Transverse ADCP sections and 43 longitudinal ADCP sections.

As of September 10, this data has passed through the first stages of data processing. Preliminary findings are applicable to the period of study, are as follows:

- The main part of the turbidity plume appears to be confined to the west basin;
- The main part of the turbidity plume is confined to depths greater than 35 m;
- The plume is characterized by elevated turbidity, elevated conductivity and elevated temperature;
- The increase of turbidity with depth is indicative of a sinking and particle size-sorting process;
- Preliminary indications are that the maximum turbidity is decreasing with time, but the conductivity and temperature anomalies have been relatively constant over the period of observations;
- Profiles were taken on September 3 at a localized upwelling site, but analysis of the upwelling signature is not yet complete;

The larger boat, the Ugly Duckling, was doing the multi-beam bathymetry, sidescan sonar and sub-bottom profiling, in order to characterize the deposited tailings in Quesnel Lake. A high resolution map of bathymetry of the western basin has been developed. Preliminary observations based only on field processing of data are summarized as follows.

- There is a mound of what is inferred to be deposited material approximately 1 to 3 m thick directly off Hazeltine Creek that spans the width of the lake and extending about 600 m in the longitudinal direction; and,
- Sub-bottom profiles indicate layering in the bottom sediment that may assist estimation of tailings deposition over the lakebed.

This data set (multi-beam, sub-bottom profiling and sidescan sonar) will be undergoing more detailed interpretation over the next few weeks. The following numerical models are being developed.

- A 1-d model of a vertical column of water, to establish vertical mixing coefficients and test plausible sinking velocities (started).
- A 2-d model of the tailings as the enter the lake to replicate the depositional patterns observed (not yet started).
- A 3-d model of the lake, to simulate the long-term evolution of the lake as it recovers, and also to simulate the water column aspects associated with the TSF breach, in terms of distribution of tailings water, tailings solids and deposited sediment (started).

Figure 3.4.1 is a longitudinal section of ADCP backscatter through the lake, with Cedar Point at the left and Cariboo Island at km 17. The top 10 m is strongly affected by the thermocline, and not relevant to the sub-surface plume. The stronger backscatter east of Cariboo Island, at depths of 80 m and greater, is most likely not related to elevated turbidity because the turbidity/depth profile does not reflect a linkage between turbidity and ADCP returns.

The sub-surface plume shows up in two ways: as the band of strong (light green to red) values at a depth of about 35 m from about km 2 to km 12, and the intense red colours in the deep basin off Hazeltine Point. The band likely corresponds to the top of the turbid sub-surface plume, as shown in the profiles in the next figure.

Figure 3.4.2 is a plot containing a sequence of profiles off Hazeltine Creek. The sub-surface plume is readily seen in the turbidity profile, with a fairly distinct start at about 25-30 m depth. The blue family of colours are from later August, the yellow ones from early September. The sudden decrease of turbidity at the very bottom is likely related to burying the turbidity sensor in the lake bed as it reached the bottom, and this anomaly will be rectified in subsequent versions.

It is noted that at depth (approximately 100 m), turbidity decreased from 1000 NTU to about 400 NTU over a 6-day period, which is inferred to be the result of settling of particulate material. At depths of 30-35 m, the depth of the top of the turbidity plume has risen by 5 m or so, indicating some vertical mixing is occurring. The conductivity profiles show similar behaviour.

The temperature data is somewhat more challenging to interpret at this early stage. The sub-surface plume is interpreted to be warmer than the lake would normally be at those depths, likely a consequence of the introduction of warm tailings water. We also see that the thermocline is rising, primarily due to the advance of fall and associated cooling.

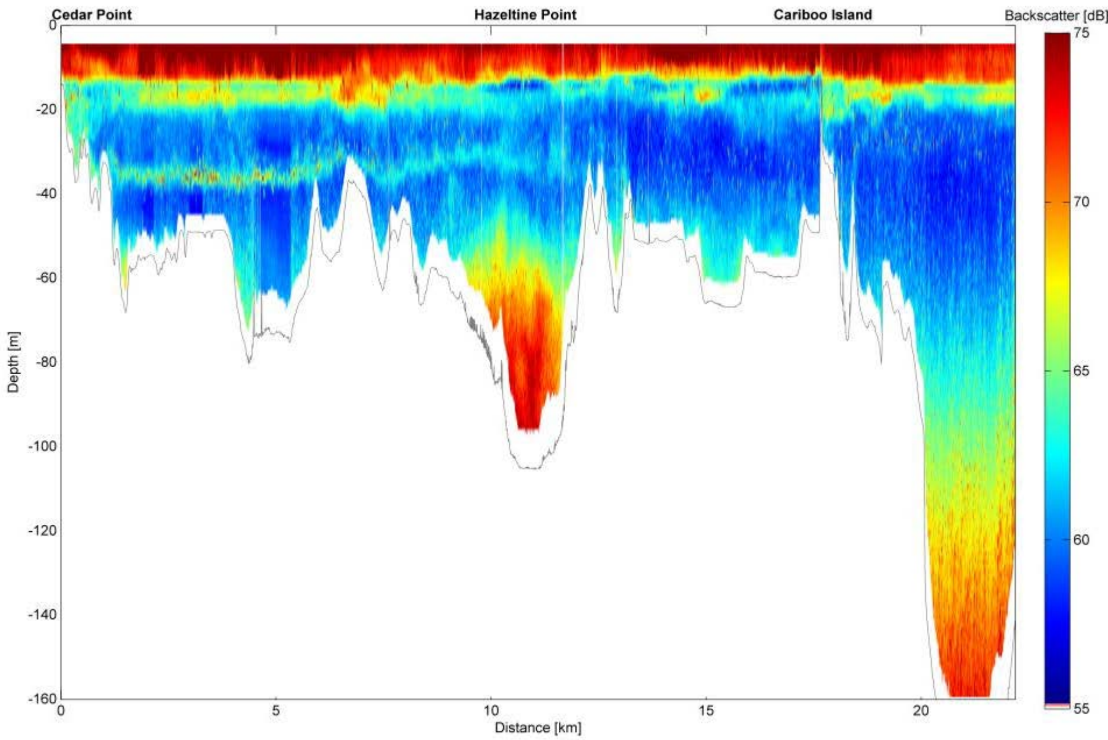


Figure 3.4.1: Longitudinal section of ADCP backscatter.

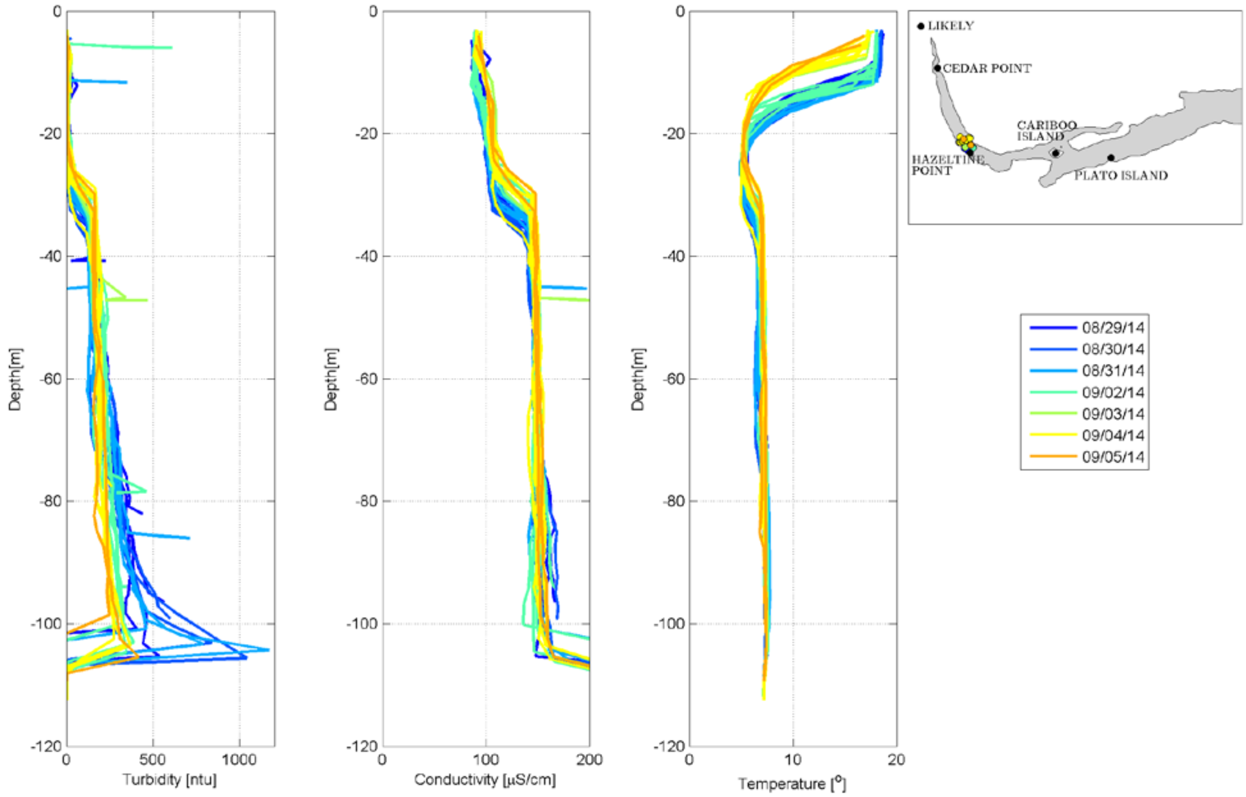


Figure 3.4.2: Sequence of profiles.

3.5 Soil Quality Impact Assessment

The Soil Quality Impact Assessment has focused on implementation of a soil characterization program to achieve the following objectives:

1) Determine background soil quality and fertility in the area of the release extending from the TSF to Quesnel Lake;
2) Determine the spatial extent of impacts (affected area) to soil resources in the area of the release; and,
3) Determine the extent and distribution of tailings related contamination in the affected area.

The results of this will inform the impact assessment, as well as remediation and reclamation objectives related to the project. The following tasks have been completed to achieve these objectives.

3.5.1 Gap Analysis and Background Review

Available records from online sources (surficial geological mapping and soil survey information) are in the process of being reviewed for potentially relevant information that will be used in the impact assessment. The characterization program described below is being conducted to verify soil conditions (chemical and nutrient) in relation to dominant and expected soil or geological units.

The background review will include a review of records and data available through MPMC. The sources of information include soil quality data from baseline and reclamation related work. Historical geochemical data sets also exist for tailings within the TSF. A review of process reagents used in the mining operations has also been completed. This information is being used to inform the selection of analytical parameters to be characterized during the SQIA.

3.5.2 Soil Characterization Program

The soil characterization program is designed to capture variability along the depositional environments along the affected area below the TSF, and aims to delineate impacts, and establish background conditions prior to and during mine operations.

The program includes a review of high resolution post-release aerial imagery and a field reconnaissance along the affected area with SRK and SNC-Lavalin personnel. A total of 18 transects have been proposed that include between three to five within-deposit sampling locations chosen using aerial imagery and intended to capture variability across each transect with respect to the varied depositional environments and visually distinctive materials (based on colour and grain size). These environments are being field mapped. Samples are being collected from these deposits at randomized locations using depth intervals determined in the field following shallow pit profiles (up to 30 cm). At a single location within-transect, stratified vertical sampling is being carried out to characterize visually distinct stratigraphic units, and underlying soil quality. Additional samples will be added to transects on an as-needed basis to characterize anomalous deposits that are encountered.

Approximately 70 soil samples are expected to be collected for selective laboratory analysis. Analytes include various nutrient parameters, total metals and sulphur, pH, salinity parameters, major anions/ cations, cation exchange capacity, flotation or other process reagents (including hydrocarbons), bulk density, and grain size. All soil samples are being screened using contact testing for pH and electrical conductivity to aid in sample selection.

Background conditions are being assessed at one step-out location per transect approximately 10 m outside of the inferred affected area. Soils are being profiled and samples collected from distinct A and/or B horizons. Creek channel sidewalls near the surface water course are being characterized opportunistically from native and undisturbed soils to inform the understanding of background conditions.

At the time of writing 3 transects have been completed and the work is expected to be ongoing until September 18, 2014. Laboratory analytical results were not available at the time of writing.

3.6 *Sediment Quality Impact Assessment*

3.6.1 Activities

Sediment quality monitoring was initiated on August 7, 2014, starting with some exploratory sediment collections right at the mouth of Hazeltine Creek and then some collections of sediment from recreational areas. Starting on August 13, 2014, a sediment quality monitoring program was initiated by Minnow Environmental Inc. (Minnow) that was designed to evaluate the spatial extent and magnitude of sediment quality impact in littoral and profundal areas of Quesnel Lake, as well as in Polley Lake and in Hazeltine Creek. The basic design of this program is a combination of multiple control-impact (MCI) design and spatial gradient (SG) design. Additional sub-bottom mapping was initiated by TetraTech on August, and verification of the mapping was conducted by Minnow and TetraTech from September 5 to 9. A summary of sediment sampling activities to date is provided below.

3.6.2 Results

The spatial extent of the mine-impacted sediment within Quesnel Lake has been mapped using a combination of sub-bottom mapping with confirmatory sampling; these results are currently being assessed. It appears that mine-impacted sediment can be operationally distinguished from native Quesnel Lake sediment by colour (grey versus dark brown, respectively) and texture/density (clay-sized and dense versus silt sized and less dense, respectively; Photographs 1 and 2). However, visual observations alone are not reliable as sediment colour can change due to a variety of factors. When data from chemical analyses are available, it is anticipated that a more robust means of differentiating sediment sources will be available.

Photograph 1: Tailings beach sediment in Quesnel Lake

Photograph 2: Native sediment from Horsefly Bay

Sediment quality data have been reported by the analytical laboratory (ALS Environmental) for a total of ten areas, eight of which are near the mouth of Hazeltine Creek. The remaining two areas are recreational areas (Abbot Creek Recreational Area and Cedar Point Recreational Area) and were sampled during initial response due to public request. Concentrations of copper and iron were present at concentrations greater than the Probable Effect Level (PEL) of the British Columbia Working Sediment Quality Guidelines (BCSQG) in sediment samples collected near the mouth of Hazeltine Creek. Concentrations of arsenic and manganese were present at concentrations below the PEL but above the Threshold Effect Level (TEL) of the BCSQG in sediment samples collected near the mouth of Hazeltine Creek. All of these analytes have been previously observed as elevated in Hazeltine Creek (Minnow 2014). Concentrations of arsenic and manganese reported at the mouth of Hazeltine Creek are similar to those previously observed in Hazeltine Creek, whereas concentrations of copper and iron are both higher and are therefore the primary indicators of the tailings dam breach. At the recreational areas, arsenic was the only analyte present at concentrations greater than a PEL (at the Cedar Point Recreational Area only Table 3.6.3). Concentrations of chromium, copper, iron, manganese and nickel, were present at concentrations below the PEL but above the TEL of the BCSQG in sediment samples collected near the recreational areas. Concentrations of chromium and nickel were greater at the recreational areas than in sediments at the mouth of Hazeltine Creek indicating that they are not of mine origin.

There are numerous factors that affect the bioavailability of metals in sediments. While metals levels that are below the sediment quality guidelines provide a reliable indicator of an absence of effect, sediment quality results that exceed those benchmarks do not provide a reliable indication that effects are present. Additional techniques to evaluate bioavailability are necessary and are part of the studies underway.

Table 3.6.1: Sediment and benthic invertebrate sampling inventory for Quesnel Lake as of September 10, 2014

Program	Area	Area #	Station	"Replication"	Date	Easting (Zone 10U)	Northing (Zone 10U)	1 Sediment	T2 Sediment	Benthos
Initial Response	Near-Field Hazeltine Creek at Mouth	-	4	3	07-Aug-14	601593	5817934	ü		
			5	3	07-Aug-14	601666	5817825	ü		
			6	3	07-Aug-14	601782	5817734	ü		
			3	1	10-Aug-14	601418	5818134	ü		
			4	1	10-Aug-14	601529	5817974	ü		
			5	1	10-Aug-14	601591	5817917	ü		
			7	1	13-Aug-14	601519	5817992	ü		
			3	1	13-Aug-14	601457	5818033	ü		
	Beach Abbott Creek Rec Area	-	0	3	12-Aug-14	621467	5821260	ü		
	Beach at Cedar Point Rec Area	-	4	3	12-Aug-14	598935	5826379	ü		
Study Design - Littoral	Near-Field Shallow - right off mouth	QUL – 45	5-01		13-Aug-14	601524	5817990	ü	ü	ü
			5-02		13-Aug-14	601457	5818033	ü	ü	ü
			5-03		15-Aug-14	601451	5818067	ü	ü	ü
			5-04		16-Aug-14	601555	5817927	ü	ü	ü
			5-05		16-Aug-14	601479	5818047	ü	ü	ü
	Near-Field 2 Shallow 2 - through trees	QUL – 49	9-01		18-Aug-14	602436	5817331	ü	ü	ü
			9-02		20-Aug-14	602443	5817311	ü	ü	ü
			9-03		20-Aug-14	602447	5817278	ü	ü	ü
			9-04		23-Aug-14	602461	5817240	ü	ü	ü
			9-05		23-Aug-14	602478	5817209	ü	ü	ü
	Downstream Far-Field	QUL – 47	7-01		27-Aug-14	601680	5820049	ü	ü	ü
			7-02		27-Aug-14	600441	5822695	ü		ü
			7-03		04-Sep-14	600932	5818778	ü		ü
			7-04		04-Sep-14	600861	5818809	ü		ü
			7-05		04-Sep-14	601035	5821268	ü		ü
	Downstream Far-Far-Field	QUL – 48	8-01		06-Sep-14	598891	5826331	ü	ü	ü
			8-02		07-Sep-14	598381	5828386	ü		ü
			8-03		07-Sep-14	598265	5828863	ü		ü
			8-04		07-Sep-14	598419	5829333	ü		ü
			8-05		07-Sep-14	598855	5827778	ü		ü
	Horsefly Bay Reference	QUL – 51	1-01		26-Aug-14	610136	5813949	ü	ü	ü
			1-02		24-Aug-14	610003	5813958	ü	ü	ü
			1-03		25-Aug-14	610097	5813939	ü	ü	ü
			1-04		25-Aug-14	610164	5813960	ü	ü	ü
			1-05		26-Aug-14	610031	5813948	ü	ü	ü
Study Design - Profundal	Near-Field	QULP – 1	1-01		09-Sep-14	601795	5818151	ü	ü	ü
			QULP-1-02		10-Sep-14	601672	5818297	ü	ü	ü

Table 3.6.2: Summary of sediment quality data for Quesnel Lake near the Hazeltine Creek mouth, Mount Polley Mining Corporation, data reported by the analytical laboratory as of September 3, 2014

									Total Metals																													
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Gravel	Sand	Silt	Clay	TOC	pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Tin	Thallium	Titanium	Uranium	Vanadium	Zinc
			(%)	(%)	(%)	(%)	(%)	(pH)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
BC TEL											5.9			0.6		37.3		35.7	21,200	35			460	0.170		16			2	0.5								123
BC PEL											17			3.5		90		197	43,776	91			1,100	0.486		75			-	-								315
Background																																						
CSR Fresh Water Sediment (FW Sediment)								n/a	n/a	n/a	11	n/a	n/a	2.2	n/a	56	n/a	120	21,200[a]	57	n/a	n/a	460[a]	0.3	n/a	16[a]	n/a	n/a	2[a]	0.5[a]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	200
QUL-14	QUL-14-S	2014 08 07	3.19	50.2	39.3	7.27																																
(near Hazeltine	QUL-14-S-1	2014 08 07					0.18	8.82	19,000	0.48	***14.4***	205	0.74	0.165	32,200	16.2	21.6	***721***	***71,200***	5.99	20	11,700	***755***	0.0793	4.31	12.5	1,840	1,670	1.16	0.375	1,050	192	2.05	< 0.05	2,040	1.35	268	70.3
Creek mouth)	QUL-14-S-1<2MM	2014 08 07							15,800	0.39	***11.9***	160	0.6	0.136	25,500	11.7	16.4	***863***	***49,700***	4.74	15.4	9,450	***640***	0.082	4.41	9.25	1,270	1,340	0.98	0.37	980	158	< 2	< 0.05	1,370	1.02	192	59.2
	QUL-14-S-163UM	2014 08 07					0.12																															
	QUL-14-S-2	2014 08 07					0.12	8.5	18,400	0.45	***14***	199	0.71	0.149	31,200	15.2	20.6	***711***	***69,600***	5.69	18.8	11,400	***740***	0.0761	3.95	11.8	1,770	1,620	1.11	0.333	1,030	182	1.88	< 0.05	1,930	1.26	260	67.8
	QUL-14-S-2<2MM	2014 08 07							14,900	0.35	***12.1***	153	0.57	0.144	24,000	12	18.1	***820***	***49,100***	5.05	15	8,980	***691***	0.109	4.07	9.36	1,250	1,240	0.95	0.35	880	142	< 2	< 0.05	1,190	0.949	181	55.3
	QUL-14-S-263UM	2014 08 07					0.16																															
	QUL-14-S-3	2014 08 07					0.1	8.78	18,900	0.44	***14.5***	205	0.74	0.178	31,600	15.6	21.5	***736***	***71,100***	5.6	19.9	11,900	***760***	0.0764	4.07	12.4	1,840	1,660	1.17	0.329	1,040	184	1.88	< 0.05	1,850	1.24	266	70.5
	QUL-14-S-3<2MM	2014 08 07							14,800	0.38	***11.3***	154	0.58	0.156	24,400	11.5	16.2	***828***	***47,700***	4.78	14.9	9,340	***669***	0.0878	4.39	11.1	1,210	1,250	1	0.37	890	147	< 2	< 0.05	1,200	0.898	178	58
	QUL-14-S-363UM	2014 08 07					0.12																															
QUL-15	QUL-15-S	2014 08 07	1.43	68.7	28.4	1.52																																
(near Hazeltine	QUL-15-S-1	2014 08 07					< 0.1	8.82	11,800	0.35	***12.2***	125	0.51	0.129	23,800	21.7	18.1	***526***	***89,600***	5.06	12.6	7,200	***528***	0.0633	2.9	12.8	1,840	1,020	0.9	0.266	620	118	1.03	< 0.05	1,040	0.892	330	54.3
Creek mouth)	QUL-15-S-1<2MM	2014 08 07							10,800	0.31	9.17	120	0.44	0.121	18,800	13.6	13.2	***620***	***48,700***	3.94	11.2	6,500	***467***	0.0771	3.27	9.66	1,190	980	0.76	0.25	700	112	< 2	< 0.05	866	0.673	183	44.1
	QUL-15-S-163UM	2014 08 07					0.1																															
	QUL-15-S-2	2014 08 07					0.11	8.75	11,800	0.36	***12.9***	118	0.49	0.136	24,600	21.3	18.8	***533***	***94,600***	4.87	11.5	6,690	***551***	0.0636	3.11	12.2	1,950	930	0.96	0.26	600	117	1.27	< 0.05	1,290	0.979	353	54.4
	QUL-15-S-2<2MM	2014 08 07							11,500	0.35	10.1	121	0.49	0.126	20,500	13.6	13.4	***641***	***53,300***	4.07	11	6,470	***485***	0.0719	3.25	8.97	1,240	960	0.83	0.28	740	119	< 2	< 0.05	1,000	0.769	202	44.9
	QUL-15-S-263UM	2014 08 07					< 0.1																															
	QUL-15-S-3	2014 08 07					0.12	8.74	11,600	0.4	***13.5***	116	0.48	0.366	22,600	29.8	21.7	***539***	***119,000***	5.86	12.1	6,510	***567***	0.0653	2.99	15.7	1,770	930	1.07	0.284	540	106	1.26	< 0.05	1,300	1.01	440	62.1
	QUL-15-S-3<2MM	2014 08 07							10,200	0.32	9.4	76.3	0.39	0.108	15,000	17.2	11.2	***528***	***37,700***	5.9	10.3	6,260	***483***	0.0791	2.06	11.4	909	730	0.57	0.27	550	83.7	< 2	< 0.05	870	0.597	134	44.2
	QUL-15-S-363UM	2014 08 07					0.15																															
QUL-16	QUL-16-S	2014 08 07	< 0.1	68.7	30.1	1.23																																
(near Hazeltine	QUL-16-S-1	2014 08 07					0.11	8.8	12,200	0.38	***11.6***	124	0.5	0.146	25,000	20.8	18	***504***	***95,200***	4.7	11.8	6,530	***545***	0.0562	2.78	12.1	1,740	990	0.86	0.266	640	127	1.42	< 0.05	1,450	0.994	355	55.6
Creek mouth)	QUL-16-S-1<2MM	2014 08 07							12,000	0.31	9.28	129	0.47	0.193	20,700	13	12.6	***626***	***49,200***	3.94	11.1	6,370	***472***	0.0626	3.88	8.67	1,000	980	0.8	0.28	810	132	< 2	< 0.05	1,120	0.733	184	44
	QUL-16-S-163UM	2014 08 07					< 0.1																															
	QUL-16-S-2	2014 08 07					0.11	8.79	11,600	0.4	***11.5***	118	0.49	0.155	24,200	22	17.9	***496***	***92,100***	4.73	11.1	6,260	***537***	0.0551	3.56	11.8	1,700	910	0.94	0.266	630	121	1.27	< 0.05	1,390	0.958	343	55.9
	QUL-16-S-2<2MM	2014 08 07							11,500	0.33	9.11	116	0.47	0.122	20,500	14	12.5	***604***	***50,500***	4.1	10.7	6,120	***475***	0.0819	3.22	8.78	1,050	940	0.79	0.3	730	127	< 2	< 0.05	1,110	0.769	188	44
	QUL-16-S-263UM	2014 08 07					0.12																															
	QUL-16-S-3	2014 08 07					0.1	8.64	11,700	0.38	***11.6***	121	0.46	0.249	23,800	24.3	19.1	***532***	***102,000***	11.7	11.6	6,470	***547***	0.0619	3.22	13.4	1,760	920	0.96	0.263	630	118	1.77	< 0.05	1,340	0.974	378	63.3
	QUL-16-S-3<2MM	2014 08 07							11,800	0.32	8.53	125	0.44	0.112	19,400	11.7	11.4	***678***	***39,800***	3.77	10.8	6,220	***452***	0.0766	3.47	8.19	905	950	0.78	0.31	830	134	< 2	< 0.05	1,090	0.681	151	41.7
	QUL-16-S-363UM	2014 08 07					0.13																															
QUL-23	QUL23<2MM	2014 08 10							12,600	0.36	9.63	138	0.52	0.145	20,400	15.4	13.6	***577***	***53,200***	4.46	12.2	6,950	***513***	0.0766	3.48	10.3	1,080	1,120	0.76	0.28	810	137	< 2	< 0.05	1,130	0.781	197	46.7
(near Hazeltine	QUL23	2014 08 10	< 0.1	52.7	44.5	2.85	0.27	8.24	13,100	0.39	***11.6***	139	0.51	0.142	23,200	23.5	19	***518***	***93,400***	5.41	13.2	7,600	***578***	0.0822	3.02	13.5	1,770	1,160	0.87	0.273	720	125	1.29	< 0.05	1,260	0.948	348	55.5
Creek mouth)	QUL2363UM	2014 08 10					0.22																															

Table3.6.2.2: Summary of sediment quality data for Quesnel Lake near the Hazeltine Creek mouth, Mount Polley Mining Corporation, data reported by the analytical laboratory as of September 3, 2014

									Total Metals																													
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Gravel	Sand	Silt	Clay	TOC	pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Tin	Thallium	Titanium	Uranium	Vanadium	Zinc
QUL-24	QUL24<2MM	2014 08 10							15,600	0.37	***11.6***	144	0.59	0.126	24,600	12.5	16	***733***	***43,800***	4.57	15.3	9,620	***601***	0.0842	3.49	9.6	1,150	1,340	0.95	0.35	960	160	< 2	< 0.05	1,260	0.898	168	54.4
(near Hazeltine	QUL24	2014 08 10	0.61	52	37.8	9.64	0.25	8.67	19,600	0.47	***13.8***	195	0.74	0.129	29,300	15.2	21	***628***	***59,900***	5.44	18.6	12,400	***706***	0.0908	3.4	11.6	1,780	1,930	1.04	0.309	1,210	208	1.87	< 0.05	1,690	1.28	229	62.6
Creek mouth)	QUL2463UM	2014 08 10					0.28																															
QUL-25	QUL25<2MM	2014 08 10							13,400	0.32	10.6	146	0.54	0.128	21,800	12	14.8	***732***	***44,900***	4.31	14.2	8,620	***532***	0.0849	3.58	9.97	1,110	1,170	0.94	0.33	890	143	< 2	< 0.05	966	0.765	167	51.6
(near Hazeltine	QUL25	2014 08 10	2.09	52.7	38.2	7.05	0.22	8.76	17,400	0.43	***13.3***	181	0.68	0.137	27,600	16.1	19.9	***627***	***68,900***	5	16.7	10,600	***662***	0.0801	3.72	11.6	1,750	1,580	0.99	0.298	1,030	177	1.8	< 0.05	1,570	1.13	262	60.6
Creek mouth)	QUL2563UM	2014 08 10					0.18																															
QUL-27	QUL27-140813	2014 08 13	< 0.1	66.5	31.6	1.89		8.46	12,400	0.44	***12.4***	142	0.58	0.149	21,700	20.2	20.2	***604***	***92,300***	5.01	13	7,680	***572***	0.0704	3.56	12.4	1,820	1,150	0.95	0.414	780	118	1.03	0.136	1,080	0.976	349	58.5
(near Hazeltine	QUL27 <2MM	2014 08 13							12,100	0.36	10.2	124	0.5	0.134	20,000	12.6	13.3	***725***	***47,000***	4.15	11.8	6,970	***484***	-	5.25	8.93	1,010	1,040	0.87	0.32	840	127	< 2	< 0.05	1,060	0.725	179	46.2
Creek mouth)	QUL27	2014 08 13	< 0.1	66.5	31.6	1.89	0.17	8.46	12,400	0.44	***12.4***	142	0.58	0.149	21,700	20.2	20.2	***604***	***92,300***	5.01	13	7,680	***572***	0.0704	3.56	12.4	1,820	1,150	0.95	0.414	780	118	1.03	0.136	1,080	0.976	349	58.5
	QUL27	2014 08 13					0.17																															
	QUL27<2MM	2014 08 13							12,100	0.36	10.2	124	0.5	0.134	20,000	12.6	13.3	***725***	***47,000***	4.15	11.8	6,970	***484***	0.117	5.25	8.93	1,010	1,040	0.87	0.32	840	127	< 2	< 0.05	1,060	0.725	179	46.2
	QUL2763UMTOC	2014 08 13					0.15																															
	QUL27 63UM TOC	2014 08 13					0.15																															
QUL-43	QUL43-140813	2014 08 13	5.54	45.9	39.3	9.31		8.64	20,000	0.44	***13.7***	206	0.73	0.136	29,100	14.8	21.5	***662***	***60,000***	5.84	19.5	12,300	***735***	0.0754	3.83	12.6	1,660	2,230	1.02	0.331	1,340	214	1.62	< 0.05	1,820	1.27	224	64.6
(near Hazeltine	QUL43 <2MM	2014 08 13							15,900	0.39	***11.9***	149	0.6	0.154	23,800	13.3	16.5	***760***	***43,900***	5.62	15.3	9,950	***613***	-	3.58	11	1,220	1,370	0.99	0.33	950	159	< 2	< 0.05	1,370	0.911	165	56.9
Creek mouth)	QUL43	2014 08 13	5.54	45.9	39.3	9.31	0.24	8.64	20,000	0.44	***13.7***	206	0.73	0.136	29,100	14.8	21.5	***662***	***60,000***	5.84	19.5	12,300	***735***	0.0754	3.83	12.6	1,660	2,230	1.02	0.331	1,340	214	1.62	< 0.05	1,820	1.27	224	64.6
	QUL43	2014 08 13					0.24																															
	QUL43<2MM	2014 08 13							15,900	0.39	***11.9***	149	0.6	0.154	23,800	13.3	16.5	***760***	***43,900***	5.62	15.3	9,950	***613***	0.0948	3.58	11	1,220	1,370	0.99	0.33	950	159	< 2	< 0.05	1,370	0.911	165	56.9
	QUL4363UMTOC	2014 08 13					0.12																															
	QUL43 63UM TOC	2014 08 13					0.12																															
QUL-45	QUL-45-01	2014 08 13	< 0.1	50.2	41.7	8.07	0.25	8.72	17,600	0.4	***13.3***	186	0.65	0.135	27,100	16.7	20.9	***630***	***66,600***	6.09	16.8	10,900	***676***	0.0747	4	12.7	1,740	1,720	0.99	0.312	1,150	190	1.55	< 0.05	1,610	1.13	253	60.2
(near Hazeltine	QUL-45-01<2MM	2014 08 13							15,100	0.38	10.9	144	0.64	0.128	23,300	15.7	15.3	***677***	***44,500***	4.71	15.3	9,190	***574***	0.0844	4.01	10.7	1,180	1,340	0.84	0.32	920	157	< 2	< 0.05	1,270	0.924	169	52.8
Creek mouth)	QUL-45-0163UMTOC	2014 08 13					0.23																															
	QUL-45-02	2014 08 13	5.34	45.7	38.2	10.8	0.3	8.65	18,600	0.41	***12.4***	199	0.68	0.119	26,800	13	20.3	***707***	***51,000***	5.68	18.5	11,900	***691***	0.0745	3.6	11.7	1,430	1,860	1	0.321	1,220	206	1.52	< 0.05	1,640	1.14	193	60.3
	QUL-45-02<2MM	2014 08 13							15,800	0.41	***12***	147	0.64	0.145	23,400	20.6	16.4	***719***	***43,000***	4.98	16	9,790	***633***	0.0851	3.53	10.3	1,240	1,370	1.03	0.34	920	160	< 2	< 0.05	1,280	0.934	160	56.4
	QUL-45-0263UMTOC	2014 08 13					0.26																															
		n	12	12	12	12	36	18	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
		# > TEL									**36**			**0**		**0**		**36**	**36**	**0**			**35**	**0**		**0**			**0**	**0**								**0**
		% > TEL									**100%**			**0%**		**0%**		**100%**	**100%**	**0%**			**97%**	**0%**		**0%**			**0%**	**0%**								**0%**
		# > PEL									**0**			**0**		**0**		**36**	**33**	**0**			**0**	**0**		**0**			**0**	**0**								**0**
		% > PEL									**0%**			**0%**		**0%**		**100%**	**92%**	**0%**			**0%**	**0%**		**0%**			**0%**	**0%**								**0%**

BOLD Concentration greater than CSR Fresh Water Sediment (FW Sediment) standard.

[a] No CSR Sediment Criteria, BCWQG guideline show n.

Table 3.6.3: Summary of sediment quality data for Quesnel Lake near recreational areas, Mount Polley Mining Corporation, data reported by the analytical Laboratory as of September 3, 2014

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Gravel	Sand	Silt	Clay	TOC	pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
			(%)	(%)	(%)	(%)	(%)	(pH)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
BC TEL											5.9			0.6		37.3		35.7	21,200	35	
BC PEL											17			3.5		90		197	43,776	91	
Background																					
CSR Fresh Water Sediment (FW Sediment)								n/a	n/a	n/a	11	n/a	n/a	2.2	n/a	56	n/a	120	21,200[a]	57	n/a
QUL-30	QUL30-01	2014 08 12	7.12	57.9	33.8	1.13	0.51	8.28	7,490	0.1	3.74	19	0.19	0.054	59,300	14.5	7.61	10.7	19,200	6.88	17.9
(near Abbott Creek	QUL30-01<2MM	2014 08 12							8,990	0.12	3.82	25.3	< 0.2	< 0.05	41,800	19.1	10.7	12.2	***22,800***	6.85	22.1
Recreational Area)	QUL30-0163UMTOC	2014 08 12					0.61														
	QUL30-02	2014 08 12	0.64	81.5	17.2	0.66	0.37	8.44	7,680	0.11	3.86	21.1	0.22	0.077	45,400	16.2	8.27	11.5	20,300	7.42	17.5
	QUL30-02<2MM	2014 08 12							6,920	< 0.1	3.04	18.4	< 0.2	< 0.05	28,500	14.4	7.66	9.12	17,600	5.24	15.8
	QUL30-0263UMTOC	2014 08 12					0.58														
	QUL30-03	2014 08 12	2.86	89.3	7.32	0.49	0.25	8.47	8,050	0.21	4.4	24.7	0.22	0.129	38,400	19	9.05	13	***21,700***	7.84	17.5
	QUL30-03<2MM	2014 08 12							5,300	< 0.1	1.93	14.5	< 0.2	0.056	17,100	10.3	5.13	6.63	12,800	3.89	11.8
	QUL30-0363UMTOC	2014 08 12					0.63														
QUL-44	QUL44-01	2014 08 12	< 0.1	26	70	3.92	3.59	6.1	16,500	0.8	10.6	49.8	0.34	0.353	8,500	53.9	15.5	66.9	***28,600***	8.93	15.3
(near Cedar Point	QUL44-01<2MM	2014 08 12							17,100	0.95	***13.1***	50.9	0.41	0.398	8,140	***56.8***	17.4	74.6	***31,600***	9.94	17.5
Recreational Area)	QUL44-0163UMTOC	2014 08 12					2.69														
	QUL44-02	2014 08 12	8.81	74.9	15.1	1.25	0.69	7.41	18,000	1.66	***22.6***	64.8	0.38	0.508	9,310	***65.1***	20.7	80.8	***34,300***	8.61	16.7
	QUL44-02<2MM	2014 08 12							18,000	1.36	***35.5***	41.1	0.35	0.339	7,620	55.5	18.3	59.2	***39,200***	6.89	18
	QUL44-0263UMTOC	2014 08 12					1.39														
	QUL44-03	2014 08 12	8.23	56.9	32.3	2.56	1.79	7.58	17,700	1.44	***27.1***	60.2	0.36	0.379	9,560	***57.9***	15.2	74.2	***30,000***	7.48	14.7
	QUL44-03<2MM	2014 08 12							16,800	1.04	***23.1***	189	0.31	0.198	7,280	50.3	14.1	48.9	***33,100***	5.49	16
	QUL44-0363UMTOC	2014 08 12					1.97														
		n	6	6	6	6	12	6	12	12	12	12	12	12	12	12	12	12	12	12	12
		# > TEL									**6**			**0**		**6**		**6**	**8**	**0**	
		% > TEL									**50%**			**0%**		**50%**		**50%**	**67%**	**0%**	
		# > PEL									**4**			**0**		**0**		**0**	**0**	**0**	
		% > PEL									**33%**			**0%**		**0%**		**0%**	**0%**	**0%**	

BOLD Concentration greater than CSR Fresh Water Sediment (FW Sediment) standard.

[a] No CSR Sediment Criteria, BCWQG guideline shown.

3.7 Terrestrial Impact Assessment

3.7.1 Introduction

The Mt. Polley mine lies within the Quesnel Highland Ecosection, which is part of the Columbia Highlands Ecoregion. The Quesnel Highland Ecosection is a highland area, situated between plateaus on the west and higher mountain ranges to the east. Easterly flowing moist air from the Pacific Ocean allows for considerable moisture as either rain or snow. In addition, cold Arctic air in the winter months can result in sub-zero temperatures for extended periods. Wet Interior Cedar – Hemlock (ICH) forests are prevalent in the valleys and lower slopes; cold tolerant Engelmann Spruce – Subalpine Fir forests dominate the upper slopes and lower mountain summits (Demarchi 2011).

Geological, climate, and anthropogenic processes (e.g., historic and current mining activities, forestry, settlements) have all shaped the current ecological habitats and associated seral stages found in the general area. To manage multiple interests within the general area the Horsefly Sustainable Resource Management Plan (HSRMP) was developed as part of the implementation of the Cariboo Chilcotin Land Use Plan. The plan provides detailed area-based resource targets and strategies for a number of uses. As examples, these include timber harvesting, mining, fishing, biodiversity conservation, and tourism (HSRMP 2005).

The TSF breach resulted in the removal of some portions of the terrestrial ecosystems and habitats along the Hazeltine Creek corridor, the displacement of wildlife that might have used those areas and the probable mortality of wildlife. The main measureable effect of the TSF breach on vegetation, ecological communities and wildlife is the direct alteration of habitat.

The methods and results below are generated based on preliminary reviews of available information associated with the immediate effect to terrestrial habitats due to the TSF breach. Fieldwork and additional research is planned in the near future to further refine the assumptions made with the quantitative information provided and to outline potential long-term effects associated with tailings deposition (e.g., bioaccumulation).

3.7.2 Vegetation

3.7.2.1 Methods

Terrestrial Ecosystems

The TSF breach occurs within the ICH biogeoclimatic zone, and includes two biogeoclimatic subzones: the Horsefly moist cool ICH variant (ICHmk3) and the Quesnel wet cool ICH variant (ICHwk2). Brief descriptions are provided below.

Interior Cedar Hemlock Moist Cool Horsefly Variant (ICHmk3)

“The ICHmk3 occurs on gently rolling terrain along the eastern flank of the Fraser Plateau and adjacent portions of the Quesnel Highland from Quesnel Lake in the north to McNeil Lake in the south, at elevations between 780 m and 1250 m (Steen and Coupe, 1997). The ICHmk3 is characterized by drier climates and absence of western hemlock (*Tsuga heterophylla*). Dominant tree species include western redcedar (*Thuja plicata*), hybrid white spruce (*Picea glauca x engelmannii*) and Douglas fir (*Pseudotsuga menziesii*). The understory typically includes falsebox (*Paxistima myrsinites*), and moss species such as red-stemmed feather moss (*Pleurozium schreberi*) and Knight's plume (*Ptilium crista-castrensis*)."

Interior Cedar Hemlock Wet Cool Horsefly Variant (ICHwk2)

"The ICHwk2 occurs primarily in most valleys of the Quesnel Highland and Cariboo Mountains south of Mitchell Lake. It is centred on the Quesnel Lake area. The ICHwk2 occurs east and north of the ICHmk3 in wetter climates at similar elevations (725 m to 1250 m). Dominant tree species in this variant include western hemlock and western redcedar, as well as hybrid white spruce. Understory species include oval-leaved blueberry (*Vaccinium ovalifolium*) and bunchberry (*Cornus canadensis*), with step moss (*Hylocomium splendens*) and pipecleaner moss (*Rhytidiopsis robusta*) common in the moss layer."

Terrestrial Ecosystem Mapping (TEM) will be used to provide quantitative information about the physical and vegetation characteristics of the area of interest and the immediate impacts associated with the TSF breach. Mapping (TEM), conducted in 2001 at a 1:50,000 scale, exists for the East Cariboo Highlands area east of Likely, and includes the eastern portion of the Mt. Polley tailings facility, the southeast portion of Polley Lake, Hazeltine Creek and Quesnel Lake (GEOWEST, 2001). This includes the entire terrestrial area potentially affected by the breach. This mapping needs will be updated to account for newer openings (e.g., cut-blocks, the tailings facility), and site verification of neighbouring polygons. Preliminary results are provided within this report that quantify the amount of each terrestrial ecosystem affected by the release of material from the tailings facility.

A draft spatial boundary has been delineated around the extent of the tailings deposition on the terrestrial environment and totals approximately 133 ha. This draft boundary is used to quantify the preliminary draft results. Ecosystems that overlap the draft boundary are provided in Table 3.7.1.

Table 3.7.1: Mapped ecosystem units occurring within the draft boundary.

BEC Variant	Map Code	Site Series	Ecosystem Name
ICHmk3	RF	01	CwSxw-Falsebox-Knight's Plume
	SO	04	CwSxw-Oak fern-Cat's tail moss
	SF	05	SxwCw-Oak fern
	RD	06	CwHw-Devil's club-Lady fern
	RH	07	CwSxw-Devil's club-Horsetail
	BS	00	Scrub birch-Sedge-Sphagnum
ICHwk2	HO	01	CwHw-Oak fern
	ST	06	Sxw-Twinberry-Oak fern
	WD	00	Willow-Red-osier dogwood floodplain
	LA	00	Lake

Structural stages describe the existing dominant stand appearance or physiognomy for the ecosystem unit (Resources Inventory Committee 1998). The TEM structural stage definitions for ecosystems that overlapped the draft boundary were provided in the existing TEM (GEOWEST, 2001). A brief summary of the definitions of the structural stages used to describe serial stages of mapped ecosystems is provided below (Table 3.7.2).

Table 3.7.2: Structural stage definitions.

Structural Stage	Definition
3	**Shrub**: shrubs less than 10 metres tall, less than 40 years old
4	**Pole /Sapling**: trees greater than 10 metres tall, usually less than 40 years old
5	**Young Forest**: trees typically 40 to 80 years old
6	**Mature Forest**: trees 80 to 250 years old
7	**Old Forest**: greater than 250 years old

At-Risk and Sensitive Ecological Communities

An ecological community can be defined as a natural plant community and its associated environmental site characteristics including soil, landform, nutrient, and moisture regimes. At-risk ecological communities are defined and ranked by the BC Conservation Data Centre (CDC) and placed on the provincial Red- or Blue-list according to the degree of threat, trend in area of occupancy, number of protected and managed occurrences, intrinsic vulnerability, specificity of habitat requirements, and other considerations (BC Conservation Data Centre 2004). Forest or wetland plant communities listed by the CDC are usually associated with one or more forest or wetland site series. The association indicates that the site series has the potential to support the community in question but the community will not necessarily be present at each occurrence of the site series.

One Red-listed and two Blue-listed communities are defined for the ecosystems within the ICHmk3 subzone variant that overlap the draft boundary of the TSF breach (BC Conservation Data Centre 2014a). None of the identified ecosystems within the ICHwk2 that overlap the draft boundary are provincially listed. Brief descriptions of each of the at-risk ecological communities are provided below.

Scrub birch / sedges / peat-mosses

This fen community is provincially Red-listed. A site description of this community comes from the CDC (2014b):

“This is a wetland community with very low productivity. The soils are organic and seepage is commonly present above 20cm. It occurs in areas of cold-air ponding or cold air drainage (Delong 2003).

Pinus contorta (lodgepole pine) cover does not usually exceed five percent. Shrub cover is low to moderate, consisting of *Betula nana* (scrub birch), *Lonicera involucrata* (black twinberry), *Ledum groenlandicum* (Labrador tea) and various willows. The herb cover may be as high as seventy percent, dominated primarily by *Carex* spp. (sedges). Other herbs present may include *Equisetum arvense* (common horsetail), *Senecio* *triangularis* (arrow-leaved groundsel), and *Gaultheria hispidula* (creeping snowberry). The moss layer is well developed with up to 65 percent cover, dominated by *Sphagnum* spp. (sphagnum species), *Pleurozium schreberi* (red-stemmed feathermoss), and *Aulacomnium palustre* (glow-moss)."

Western redcedar / oak fern / electrified cat's-tail moss

This forested community is provincially Blue-listed. A site description of the associated site series comes from Steen and Coupe (1997).

"...occurs on sites that are slightly more moist (mesic-subhygric) than zonal sites. They occur primarily on mid and lower slope positions where they receive low volumes of intermittent seepage. Soils are frequently mottled and forest floors are relatively thick (7 - 12 cm). The forest canopy is moderately closed and dominated by redcedar, with subalpine fir and hybrid white spruce in the lower canopy. Regeneration is dominated by redcedar and is often moderately dense. In addition to species common on zonal sites, characteristic species on these sites include devil's club, oak fern, rosy twistedstalk, and sweet-scented bedstraw. The moss layer is typically well developed and dominated by electrified cat's-tail moss, woodsy ragged moss, and leafy mosses."

Western redcedar / falsebox

This forested community is provincially Blue-listed. A site description of the associated site series comes from Steen and Coupe (1997).

"...dominates the ICHmk3 landscape. It occurs on gentle to moderately sloping terrain with deep, medium-textured soils. Late seral and climax stands have closed canopies dominated by western redcedar and subalpine fir. Hybrid white spruce is frequently scattered throughout the stand. Western hemlock rarely occurs in the overstory and only occasionally occurs in the understory. A very dense cover of red cedar and subalpine fir regeneration is a characteristic. Seral stands are frequently dominated by Douglas-fir and lodgepole pine. Paper birch is frequently present in seral stands and occasionally forms nearly pure stands. The undergrowth, except for the dense regeneration layer, contains a moderate to sparse cover of falsebox and black huckleberry as well as several forbs including wild sarsaparilla, foamflower, queen's cup, bunchberry, twinflower, and five-leaved bramble. Ferns are generally lacking. The moss layer usually forms a nearly continuous carpet dominated by red-stemmed feathermoss, step moss, and knight's plume".

Sensitive ecological communities are those that may not be Red- or Blue-listed but are ecologically particularly fragile (Resource Information Standards Committee 2006). Sensitive communities preliminarily defined for the purposes of this interim report include old-growth forest and Old-Growth Management Areas (OGMAs), and wetlands.

Old-growth Forest and Old-growth Management Areas

Old forests provide valuable habitat for plant and animal species that prefer large-diameter trees, multi-layered stands, high densities of snags and other characteristics that require many years to develop. For the purposes of this preliminary report old-growth forest is defined as forest in Structural Stage 7.

The area affected by the TSF breach (draft spatial boundary) overlaps the Polley Landscape Unit. Old-growth Management Areas (OGMAs) have been designated, and occur along Hazeltine Creek.

Wetlands

Wetlands cover about 6% of the province and perform essential hydrological and ecological functions (BC Ministry of Forests 2000). Based on the current TEM the Red-listed 00/BS (Scrub birch/ Sedges/ Peat-mosses) fen unit occurs within the affected area. Fens have moderate amounts of nutrients and are usually dominated by sedges and mosses; water levels are typically at the rooting zone (MacKenzie and Moran, 2004).

Future field work as outlined in the comprehensive EIA workplan (SNCL, 2014) will help understand wetland communities immediately adjacent to the TSF breach and provide greater clarity regarding vegetation assemblages and ecosystem function.

Rare plants

A preliminary list of rare plants potentially occurring within the general vicinity of Mt. Polley Mine is included in Table 3.7.3. The list was generated by querying the CDC data for Red- and Blue-listed vascular plant taxa associated with the ICHmk or ICHwk subzones. For the mosses, the query was for taxa associated with the entire ICH zone. The list of potential rare plants includes 46 vascular plants and 25 mosses.

Table 3.7.3: Rare vascular plants and mosses potentially occurring within the general area.

Scientific Name	Common Name	BC List	Comments
Agastache urticifolia	Nettle-leaved Giant-hyssop	Blue	Vascular plant
Agoseris lackschewitzii	Pink Agoseris	Blue	Vascular plant
Antennaria corymbosa	Flat-top Pussytoes	Red	Vascular plant
Botrychium crenulatum	Dainty Moonwort	Blue	Vascular plant
Botrychium montanum	Mountain Moonwort	Red	Vascular plant
Botrychium simplex var. compositum	Least Moonwort	Blue	Vascular plant
Carex crawei	Crawe's Sedge	Blue	Vascular plant
Carex geyeri	Elk Sedge	Blue	Vascular plant
Carex membranacea	Fragile Sedge	Blue	Vascular plant
Carex tenera	Tender Sedge	Blue	Vascular plant
Castilleja gracillima	Slender Paintbrush	Blue	Vascular plant
Chenopodium atrovirens	Dark Lamb's-quarters	Red	Vascular plant
Cryptantha ambigua	Obscure Cryptantha	Blue	Vascular plant
Delphinium sutherlandii	Sutherland's Larkspur	Blue	Vascular plant
Dicentra uniflora	Steer's Head	Blue	Vascular plant
Dryopteris cristata	Crested Wood Fern	Blue	Vascular plant
Eleocharis elliptica	Elliptic Spike-rush	Blue	Vascular plant
Elodea nuttallii	Nuttall's Waterweed	Blue	Vascular plant
Epilobium halleanum	Hall's Willowherb	Blue	Vascular plant
Epilobium x treleasianum	Trelease's Hybrid Willowherb	Blue	Vascular plant
Floerkea proserpinacoides	False-mermaid	Blue	Vascular plant
Galium labradoricum	Northern Bog Bedstraw	Blue	Vascular plant
Gayophytum humile	Dwarf Groundsmoke	Blue	Vascular plant
Gentianopsis macounii	Macoun's Fringed Gentian	Blue	Vascular plant
Hypericum scouleri ssp. nortoniae	Western St. John's-wort	Blue	Vascular plant
Juncus confusus	Colorado Rush	Red	Vascular plant

Scientific Name	Common Name	BC List	Comments
Lappula occidentalis var. cupulata	Western Stickseed	Red	Vascular plant
Leptosiphon septentrionalis	Northern Linanthus	Blue	Vascular plant
Lomatium sandbergii	Sandberg's Desert-parsley	Blue	Vascular plant
Melica spectabilis	Purple Oniongrass	Blue	Vascular plant
Mimulus breviflorus	Short-flowered Monkey-flower	Blue	Vascular plant
Mimulus breweri	Brewer's Monkey-flower	Blue	Vascular plant
Mimulus patulus	Stalk-leaved Monkey-flower	Red	Vascular plant
Navarretia intertexta	Needle-leaved Navarretia	Red	Vascular plant
Orobanche corymbosa ssp. mutabilis	Flat-topped Broomrape	Blue	Vascular plant
Pedicularis parviflora ssp. parviflora	Small-flowered Lousewort	Blue	Vascular plant
Pinus albicaulis	Whitebark Pine	Blue	Vascular plant; SARA Schedule 1- E
Polygonum polygaloides ssp. confertiflorum	Close-flowered Knotweed	Red	Vascular plant
Polygonum polygaloides ssp. kelloggii	Kellogg's Knotweed	Blue	Vascular plant
Ranunculus pedatifidus ssp. affinis	Birdfoot Buttercup	Blue	Vascular plant
Salix boothii	Booth's Willow	Blue	Vascular plant
Senecio hydrophiloides	Sweet-marsh Butterweed	Red	Vascular plant
Solidago nemoralis ssp. decemflora	Field Goldenrod	Blue	Vascular plant
Sphenopholis intermedia	Slender Wedgegrass	Blue	Vascular plant
Stellaria obtusa	Blunt-sepaled Starwort	Blue	Vascular plant
Thermopsis rhombifolia	Prairie Golden Bean	Red	Vascular plant
Torreyochloa pallida	Fernald's False Manna	Red	Vascular plant
Barbula convoluta var. eustegia		Red	Moss
Bartramia halleriana	Haller's Apple Moss	Red	Moss; SARA Schedule 1 - T
Brachythecium holzingeri		Blue	Moss
Campylium calcareum		Red	Moss

Scientific Name	Common Name	BC List	Comments
Campylium radicale		Blue	Moss
Encalypta mutica		Blue	Moss
Entosthodon fascicularis	Banded Cord-moss	Blue	Moss; SARA Schedule 1 - SC
Grimmia mollis		Blue	Moss
Hygrohypnum alpinum		Blue	Moss
Hygrohypnum norvegicum		Red	Moss
Oreas martiana		Red	Moss
Orthotrichum pallens		Blue	Moss
Philonotis marchica		Blue	Moss
Philonotis yezoana		Blue	Moss
Platyhypnidium riparioides		Blue	Moss
Pohlia elongata		Blue	Moss
Pylaisia intricata		Red	Moss
Rhodobryum roseum		Blue	Moss
Scouleria marginata	Margined Streamside Moss	Red	Moss; SARA Schedule 1 - E
Seligeria tristichoides		Blue	Moss
Sphagnum jensenii		Red	Moss
Sphagnum wulfianum		Blue	Moss
Tortula obtusifolia		Blue	Moss
Ulota curvifolia		Blue	Moss
Warnstorfia tundrae		Red	Moss

3.6.2.2 Results

Terrestrial Ecosystems

The areas (in hectares) of terrestrial ecosystems (in each structural stage) that overlap with the disturbance caused by the TSF breach are provided in Table 3.7.4. The terrestrial ecosystems most affected are mature and old forest stands in close proximity to Hazeltine Creek.

Table 3.7.4: Preliminary estimate of ecosystem units and structural stages affected by the TSF breach.

Ecosystem Unit	Structural Stage						Total (ha)
	3	4	5	6	7	Other	
00/BS (Scrub birch-Sedge-Sphagnum)	3.8						3.8
01/HO (CwHw-Oak fern)	4.0			3.0			7.0
00/LA (Lake)						1.6	1.6
06/RD (CwHw-Devil's club-Lady fern)	5.2				6.7		11.9
01/RF (CwSxw-Falsebox-Knight's Plume)		0.8	0.4	16.2			17.4
07/RH (CwSxw-Devil's club-Horsetail)				15.0			15.0
05/SF (SxwCw-Oak fern)				13.5	13.3		26.8
04/ SO (CwSxw-Oak fern-Cat's tail moss)	2.3	3.4		21.6			27.3
06/ST (Sxw-Twinberry-Oak fern)	8.5			6.5			15.0
00/WD (Willow-Red-osier dogwood floodplain)	7.6						7.6
Total	**31.4**	**4.2**	**0.4**	**75.8**	**20.0**	**1.6**	**133.4**

At-Risk and Sensitive Ecological Communities

A summary of the areas affected of mapped ecosystem units associated with one or more ecological communities at risk is presented in Table 3.7.4. This includes 3.8 ha of the 00/BS (Scrub birch/ Sedges/ Peat-mosses) fen unit, 27.3 ha of the 04/ SO (CwSxw-Oak fern-Cat's tail moss) unit, and 17.4 ha of the 01/RF (CwSxw-Falsebox-Knight's Plume) unit.

Old-growth Forest and Old-growth Management Areas

A summary of area (in hectares) of structural stage 7 affected by the TSF breach is presented in Table 3.7.4. In total, preliminary results indicate that 20ha of structural stage 7 forest was removed. This is associated with two forested ecosystems within the ICHmk3: 06/RD (CwHw-Devil's club-Lady fern) and 05/SF (SxwCw-Oak fern). In addition, 92.4ha of OGMA in the ICHmk3 and approximately 30ha of OGMA in the ICHwk2 was removed.

Wetlands

A summary of area (in hectares) of 00/BS (Scrub birch/ Sedges/ Peat-mosses) affected by the TSF breach is presented in Table 3.7.4. In total, preliminary results indicate that 3.8ha of the fen community was removed.

Rare Plants

The actual occurrence and subsequent effect to rare plants is difficult to determine. The draft list of 46 vascular plants and 25 mosses is a preliminary account of potential occurrence and does not necessarily reflect presence. According to CDC Element Occurrence data, only two of these species have known occurrences within 25 km of the mine: *Carex tenera* and *Carex membranacea*. Neither of these known occurrences was affected by the tailings breach.

3.7.3 Wildlife

3.7.3.1 Methods

<u>Suitable Habitats</u>

The ecosystem mapping will be used to develop habitat maps for particular wildlife species, to further quantify the extent and implications of suitable habitat lost as a result of the TSF breach. Wildlife species accounts and ratings tables for selected species will be created for use in the preparation of wildlife habitat mapping to support the final version of the Comprehensive Environmental Impact Assessment.

As an interim measure available spatial files delineating managed landscapes for a number of species (e.g., Wildlife Habitat Aras, Ungulate Winter Ranges) were reviewed to determine occurrence within the immediate area of Mt. Polley Mine. Habitat suitability models associated with the HSRMP were also reviewed – where readily available.

<u>Species at Risk</u>

A preliminary list of species at risk with greater potential of occurring within the general vicinity of Mt. Polley Mine is included in Table 3.7.5. The list was generated by querying the CDC data for Red- and Blue-listed wildlife taxa associated with the ICH zone within the Cariboo-Chilcotin Natural Resource District. The list has been further refined based on known population ranges and general forest stand characteristics available. The list of potential rare species includes 3 invertebrates, 1 amphibian, 1 reptile, 6 birds, and 6 mammals.

Table 3.7.5: Rare wildlife potentially occurring within the general area

Scientific Name	Common Name	BC List	Comments
Enallagma hageni	Hagen's Bluet	Blue	Dragonfly
Magnipelta mycophaga	Magnum Mantleslug	Blue	
Oeneis jutta chermocki	Jutta Arctic, *chermocki* subspecies	Blue	Butterfly
Anaxyrus boreas	Western Toad	Blue	SARA Schedule 1 -SC
Charina bottae	Northern Rubber Boa	Yellow	SARA Schedule 1 -SC
Ardea herodias herodias	Great Blue Heron, *herodias* subspecies	Blue	
Botaurus lentiginosus	American Bittern	Blue	
Chordeiles minor	Common Nighthawk	Yellow	SARA Schedule 1 - T
Contopus cooperi	Olive-sided Flycatcher	Blue	SARA Schedule 1 - T
Falco peregrinus anatum	Peregrine Falcon, *anatum* subspecies	Red	SARA Schedule 1 -SC
Hirundo rustica	Barn Swallow	Blue	
Gulo gulo luscus	Wolverine, *luscus* subspecies	Blue	
Myotis lucifugus	Little Brown Myotis	Yellow	
Myotis septentrionalis	Northern Myotis	Blue	
Pekania pennanti	Fisher	Blue	
Taxidea taxus	American Badger	Red	SARA Schedule 1 - E (Ssp. *jeffersonii* only)
Ursus arctos	Grizzly Bear	Blue	

3.7.3.2 Results

Suitable Habitats

Based on a review of managed areas, it was identified that there were no designated Wildlife Habitat Areas or Ungulate Winter Ranges within the immediate area of the TSF breach. Within the general area there were a few managed areas identified, including:

- Ungulate Winter Range (UWR u-5-002 - along east shore of Quesnel Lake; south near Horsefly Bay; west near Joan Lake; north of Likely Road);

- Wildlife Habitat Area (e.g., WHA 5-106) for mountain caribou located on higher elevations north and east of Spanish Lake; and
- High value capable grizzly bear habitat along the east shore of Quesnel Lake.

None of these areas are affected by the TSF breach.

There are high value wetlands important for moose in the immediate area of the TSF breach (Intrepid Biological Contracting 2003). Through preliminary spatial analysis it was determined that almost 19 ha of a 25.7 ha area of class 3 suitable moose winter habitat and class 2 suitable moose summer habitat was lost due to the breach.

Species at Risk

The actual occurrence and subsequent effect to species at risk is difficult to determine. The draft list of species is a preliminary account of potential occurrence and does not necessarily reflect presence. Species use in the immediate area is dependent on factors affecting the populations in a given area at any given time, including natural and anthropogenic mortality, social interactions, seasonal and inter-annual variation, population cycling, migration rates and timing, and weather. Habitat mapping of select species can be employed for further analysis to understand potential displacement. Furthermore, habitat can be directly measured, and proposed mitigation that increases, enhances, or replaces habitat lost can be readily monitored to verify success.

3.8 *Aquatic Impact Assessment*

3.8.1 Summary of Fisheries Data Generating Activities

Sampling of fish tissue specimens at select locations was initiated on August 20th and has been ongoing. The summary herein includes information up until September 7th, 2014.

Fish sampling to date was conducted as per methods set out in Part C, Section 4.1.6.4 of the BC Field Sampling Manual *"Processing Fish Tissues" protocols*[1]. Fish sampling has been completed at several locations at private docks in the area of the tailings pond breach. Different sampling gear (e.g., gee-type minnow traps, angling, gill nets) have been used to target specific species/sizes of fish. Each fish collected was assigned an independent identification code and observations were recorded for each fish collected, including: date, location, collection method, species, sex, length (cm), weight (grams), aging (ventral/pectoral), liver and muscle tissue weights & specimens, scales, anesthetic used (if any), and other pertinent qualitative observations.

[1] BC Field Sampling Manual for continuous Monitoring and Collect in of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples. Prepared and Published by Water, Air, and Climate Change Branch, Ministry of Water, Land and Air Protection, Province of British Columbia. January 2003. http://www.env.gov.bc.ca/epd/wamr/labsys/field_man_pdfs/fld_man_03.pdf

A summary of data from fish sampling events conducted between August 20th and September 5th, 2014 is provided below. Raw field data collected during sampling events will be included in the CEIA following a formal quality assurance protocol.

Fish samples (i.e., muscle tissue, liver tissue, composites) were sent to a certified laboratory (ALS) for metals analysis on September 7th, 2014.

Seventeen fish sampling events were completed between August 20^{th} and September 5^{th}, 2014 at several locations. Several species were sampled, including: sockeye salmon (*Oncorhynchus nerka;* SK/HSK); northern pikeminnow (*Ptychocheilus oregonensis;* NSC); burbot (*Lota lota; BB*) (BB); Longnose Dace (*Rhinichthys cataractae;* LNC); rainbow trout (*O. mykiss;* RB); and Peamouth Chub (*Mylocheilus caurinus;* PCC). Table 3.8.1 lists the various fisheries sampling events, locations, target species, and sample methods used.

Table 3.8.1: Summary of fisheries sampling events and limited date since commencement August 20, 2014.

Date	Location	Site ID	Target Species	Sampling Method
August 20, 2014	Soda Creek	Soda Creek	SK	Dip Net
August 21, 2014	Quesnel Lake	QGTH-1, QGTT-1, QGTD-1, QGTSK-1	NSC, BB	Gee Traps
August 22, 2014	Quesnel Lake	QGTCP-1	NSC	Angling
August 27, 2014	Quesnel Lake	QGTPQ-1	RB	Angling
August 28, 2014	Quesnel Lake	CPGT-1	LNC, NSC, BB	Gee Traps
August 29, 2014	Quesnel Lake	CPGT-1	LNC, NSC, BB	Gee Traps
August 31, 2014	Quesnel Lake	HGT-1, HGT-2	NSC	Gee Traps
September 1, 2014	Quesnel Lake	HGT-3	NSC	Gee Traps
September 1, 2104	Quesnel Lake	HFGT-1	NSC, PCC, LNC, BB	Gee Traps
September 2, 2014	Horsefly River	Horsefly River	HSK	Gill Net
September 3, 2014	Quesnel Lake	HGT-3	NSC, LNC, BB	Gee Traps
September 4, 2014	Horsefly River	Horsefly River	HSK	Gill Net
September 4, 2014	Quesnel Lake	HFSL-1	No fish caught	Set Lines
September 4, 2014	Quesnel Lake	HFGT-2	NSC	Gee Traps
September 5, 2014	Quesnel Lake	HGT-3	NSC, LNC, BB	Gee Traps
September 5, 2014	Quesnel Lake	HFSL-2	No fish caught	Set Lines
September 5, 2014	Quesnel Lake	HFGT-2	NSC	Gee Traps

QGTH-1: Wayne Henke's dock**; QGTT-1:** Tim & Maureen Browns' dock; **QGTD-1:** Dave Carpenter's dock; **QGTSK-1:** Skeeds' dock NL Lodge; **QGTCP-1:** Cedar Point dock; **QGTPQ-1:** Poquette Creek mouth (narrows); **CPGT-1:** Cedar Point bay; **HGT-1:** South of Hazeltine mouth (boom); **HGT-2:** N. of Hazeltine mouth (boom); **HGT-3:** NW of Hazeltine Creek mouth (inside boom); **HFGT-1:** NW of Horsefly River mouth; **HGT-3:** NW of Hazeltine Creek mouth (inside boom); **HFGT-2:** SW of Horsefly River mouth (30m from shore)

A total of 60 fish specimens (comprised of whole fish, liver tissues, and/or muscle tissue) were sent to ALS Laboratories on September 7, 2014. Species of fish that comprised the collection included sockeye salmon (N=30), northern pikeminnow (N=24), rainbow trout (N=1), Burbot (N=1), unidentified sucker (N=1), Longnose Dace (LNC) (N=3), and Peamouth Chub (PCC). As of September 15, 2014, laboratory analytical results for all fish tissue samples submitted are pending. Lab results will be reported as part of the CEIA.

Based on field notes, deceased fish were observed over the course of sampling events conducted. The date, approximate location observed, species observed, and number of deceased are summarized in Table 3.8.2. Deceased species observed include: an unconfirmed species of sucker (*Catostomus* sp); Redside Shiner (*Richardsonius balteatus*; RSC); Mountain Whitefish (*Prosopium williamsoni; M*F); Sockeye (*O. nerka*; SK); and Chinook Salmon (*O. tshawytscha*). Causation of death of these fish is unknown at this time.

Table 3.8.2: Observed deceased fish during fish sampling.

Date	Species	Location	Number Observed
August 21, 2014	Sucker	Polley Lake	1
Undocumented	RSC	Quesnel Lake	1
August 28, 2014	WF	Cedar Point (Quesnel Lake)	1
September 1, 2014	SK	Horsefly River @ Quesnel Lk confluence	1
September 1, 2014	Chinook	Near QUL-18, emaciated	1
September 2, 2014	SK	Horsefly River	To be confirmed
September 2, 2014	SK	Horsefly River @ Quesnel Lake confluence	To be confirmed

3.8.2 Comprehensive EIA

As per section VII-2.1 of the Mount Polley CEIA & Monitoring Work Plan (August 29, 2014), the following tasks are either in the cue or have been initiated:

Scientific Literature and Existing Data Review: a. Historical habitat data/information is being compiled for Hazeltine, lower Edney and Bootjack creeks to feed the quantification of habitat loss that resulted from the tailings breach. **b.** Historical information is currently being compiled regarding zooplankton in Quesnel Lake. Findings from the literature review will be evaluated (collaboratively by the Aquatic Impact Assessment and Water Quality Impact Assessment Leads) to determine whether a zooplankton baseline sampling program should be designed and implemented.

Fish Reproduction: Through quantification of habitat loss in Hazeltine Creek as well as consideration of loss of migratory access to spawning habitat in Edney & Bootjack creeks, impacts to reproduction will be estimated. Outcome of results will be reported through the CEIA.

Fish Migration: a. Short-term mitigation options are currently being evaluated to specifically address upstream migration of particular fish species from Quesnel Lake to Edney Creek as well as fish (rainbow trout) from Polley Lake to lower Bootjack Creek. **b.** Mitigation options are currently being considered for Polley Lake rainbow trout with respect to the loss of important spawning habitat at the outlet of Hazeltine Creek (Minnow 2014).

Aquatic Productivity: Benthic macro-invertebrate data will be generated in collaboration with the Sediment Quality Impact Assessment team. As mentioned above, the collection of zooplankton samples from Quesnel Lake is currently being evaluated. Other lower trophic measures (i.e., periphyton etc.) is being collected in collaboration with the Water Quality Impact Assessment Team.

3.9 Environmental Risk Assessment

The assessment of potential toxicity of the mine affected materials that have been released to the environment is described in the Comprehensive Environmental Impact Assessment and Action Plan, and in the Comprehensive Environmental Impact Assessment Workplan. This component of the CEIA will be informed by the outcomes of the assessment components described above. Accordingly, progress has not been made on these aspects of the impact assessment, and the scope and methodology presented in these reports remains unchanged. The scope and approach of the environmental risk assessment may be revisited once the results of the individual impact assessment components are available.

4 MITIGATIONS

4.1 General

Mitigation completed to date has largely involved managing and monitoring water to reduce the risk of ongoing release of tailings and mine affected materials to the environment, and/or the potential effects to people that use the water of Quesnel Lake. These actions reflect the response mode of this incident wherein the primary objective is to stop ongoing inputs of turbid waters and tailings solids to Quesnel Lake. The following primary mitigation steps have been implemented and are discussed in greater detail in the underlying sub-sections of this report:

- floating debris has been recovered from Quesnel Lake;
- Removal of contained or beached material is underway;
- an interim dyke has been mostly constructed to control further release of tailings solids, and to allow investigation of the root-cause of the TSF failure;
- a sump system, pump, pipeline and related appurtenances has been installed and, since September 4, 2014 operational challenges to pumping this water have been overcome and the system has been reliably collecting drainage from the TSF and pumping that drainage to Springer Pit;
- ongoing improvements to the collection sumps and pumping systems are in progress to provide backup capacity so that increased flows from precipitation events can be handled;
- water in Polley Lake is being pumped around into Hazeltine Creek to reduce the risk of uncontrolled release of water, tailings and other debris from Polley Lake into Hazeltine Creek;
- water quality in Quesnel Lake at potential locations of use is being sampled and tested to evaluate the quality of this water relative to criteria for consumption as well as aquatic life; and
- filters have been provided to area residents that utilize the water of Quesnel Lake for their domestic supplies;

4.2 Debris Recovery

Coarse woody debris from the event has been deposited below the TSF extending to Polley Lake and Quesnel Lake. Floating debris is currently being recovered in Quesnel Lake and is nearing completion. Marketable timber is being transferred to local timber company and the remaining material is being stockpiled for mulching and chipping. The chip and mulch will be used to support the reclamation of terrestrial habitat as described in Section 5.3.

The removal of floating debris will be revisited from time to time as lake levels fluctuate and additional debris floats off of the shoreline. However, visible debris such as wood from the event is being collected pre-emptively.

4.3 Mine Water and Tailings Management

A temporary berm has been mostly constructed across the location of the TSF breach, inside of the footprint of the original TSF embankment. Updates on the status of this construction have been provided to provincial ministries during daily calls. The purpose of this temporary berm is to contain residual tailings and stabilize the area for safe access for additional geotechnical investigations. The nature of the repair work is described in MPMC's submission to the MoE that is dated August 13, 2014.

The water that accumulates in the secured TSF will be managed within or adjacent to the TSF, either behind the temporary berm or within sumps constructed in the TSF. Tailings solids, with the possible exception of very fine solids that are suspended in this water will be allowed to settle out. The resulting supernatant will be transferred to the Springer Pit to prevent the escape of turbid waters into Hazeltine Creek.

The temporary berm is designed to be permeable, thus reducing the differential pressures across the berm that could undermine berm stability. The berm that is nearing completion will not allow the TSF to return to service. Water that seeps through the temporary berm collects in an interception sump. Water that collects in this sump is being transferred through a series of pumping activities to Springer Pit.

During operation, mine and process area runoff was directed to the TSF, prior to the TSF breach. This water is now collected and transferred to inactive mine pits to reduce the volumes of water that are directed to the TSF. As water levels accumulate in the inactive mine pits, it may be beneficial to treat and release this water so that "freeboard" can be maintained. If this is required, it will be managed by separate assessment and application to the MoE, possibly into a different drainage.

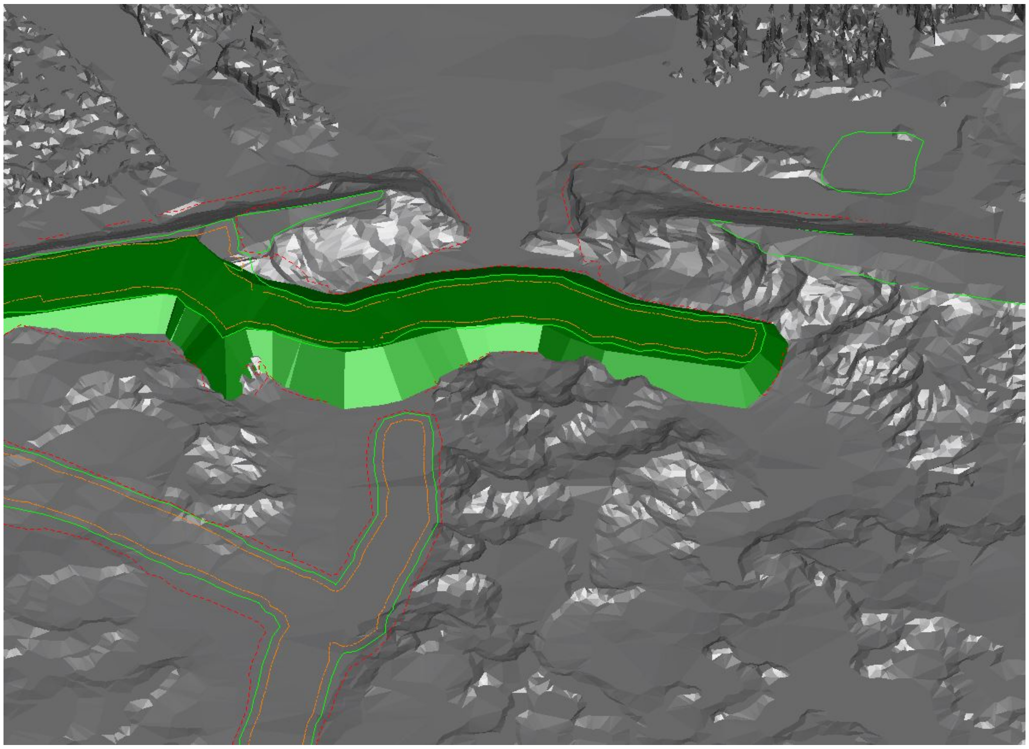


Figure 4.3.1: Construction of the temporary dyke, (provided by MPMC 2014).

4.4 Polley Lake Water Management

The TSF breach resulted in the deposition of debris, mine affected materials and TSF embankment materials across the former outlet from Polley Lake into Hazeltine Creek. Accordingly, natural flow out of the lake has stopped and the level of water in Polley Lake rose approximately 1.7 m. The composition and competence of the Polley Lake plug cannot be assured; hence, water is currently being pumped from Hazeltine Creek and is being released into the upper reaches of Hazeltine Creek until the lake water levels return to normal. The need for this dewatering is at the direction of BGC Engineering Consultants. Figure 4.4.1 illustrates the reduction of water level that has occurred in Polley Lake since this pumping was initiated. The water level had been reduced by approximately 0.6 metres at the time of issuance of this report.

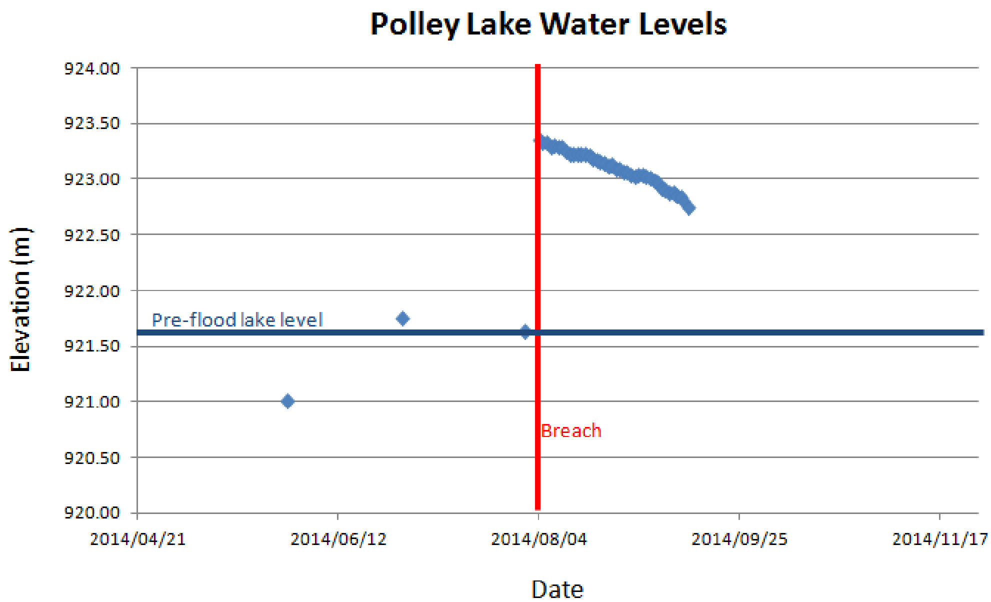


Figure 4.4.1: Water levels in Polley Lake.

Water from Polley Lake is currently being pumped at a rate of approximately 20,000 US gpm (1.3 m^3/sec). Pumping will continue until the water level in Polley Lake returns to its normal, pre-incident water level. At this point it will be possible to pump at flow rates more comparable to seasonal levels (approximately 0.1 m^3/sec), and potentially to construct a controlled discharge structure and outlet.

4.5 Quesnel Lake Monitoring

A detailed monitoring program of water quality in Quesnel Lake was implemented immediately following the TSF breach. The primary objective of this water quality monitoring program was to evaluate potential risks to domestic water supplies, and where necessary to implement measures to mitigate those risks. The results and structure of the water quality monitoring program are described in Section 6 of this report.

4.6 Domestic Water Filters

The TSF breach resulted in a zone of elevated turbidity in Quesnel Lake near the mouth of Hazeltine Creek, which has expanded in size and migrated towards Likely. Monitoring of water quality within this turbidity plume indicates the potential for elevated metals concentrations to be present, but that water quality generally complied with Canadian Drinking Water Quality Guidelines (CDWQG). Turbidity values in excess of the CDWQG criteria of 1 NTU were measured in the water approaching the domestic water supplies of Likely. Filters, including installation costs were offered to the residents of lake properties that obtain their water from Quesnel Lake. This was considered an appropriate response as testing indicated filtering effectively removes the suspended sediments associated with the turbidity plume.

Residents who draw water from Quesnel Lake or Quesnel River, and are located downstream of Cariboo Island and upstream of the UNBC Quesnel River Research Centre, were offered an installed water filter, free of charge. Residents were asked to submit a request via a form in order to coordinate the assessment and installation of the filter. The filter system consists of a DGD-2501-20 gradient filter system targeting the 50-5 micron size range to remove the sediment loading that gives the water its cloudy appearance.

Many residents have opted to proceed with MPMC's installed filter program. At the time of issuance of this report, over 50 residents had accepted the offer to install particle filters on their domestic water supplies. Commercially available water filters were supplied by MPMC following initial inspection to determine the appropriate unit for installation at each residence. An alternate source of water has also been provided.

5 RECOMMENDED ACTIONS

5.1 General

A framework for aquatic and terrestrial habitat restoration was proposed as part of the Comprehensive Environmental Impact Assessment (CEIA) and Action Plan that was submitted to the MoE in accordance with the requirements of Section 7 of the Order. This framework remains valid and will be informed by the results of the CEIA work that is described in that same Plan. MPMC has also submitted the Lower Hazeltine Creek Erosion and Sediment Control Plan, which is designed to reduce sediment loading to Quesnel Lake and advance the terrestrial and aquatic habitat restoration objectives.

Summaries of the relevant principles of each of these aspects of MPMC's response to the TSF breach are provided below. The cited Plans should be consulted for more complete descriptions of the work that is recommended to mitigate the impacts associated with the TSF breach. These plans may be amended based on feedback received.

Works in and about a stream as defined under the BC *Water Act* (i.e. includes stream and lake systems) will be managed as a high risk Emergency Works[2]. Additional mitigation activities such as temporary diversion dams, pumping and treating of water, fish salvages, and recovery of contaminants related mortalities to remove them from the food chain may be implemented (as required) to further protect aquatic life and habitat, water quality and downstream water users. Timing is an important consideration for the implementation phase of these recommended mitigative actions.

5.2 Aquatic Habitat Restoration Framework

5.2.1 Hazeltine Creek

The rehabilitation plan for Hazeltine Creek will be informed by the outcomes of the impact assessment work. The following tasks will be implemented to develop the Action Plan to restore aquatic habitat.

1) Analyze options for management of mine affected materials and the construction and/or rehabilitation of the Hazeltine Creek channel.

2) Determine the design characteristics for the Hazeltine Creek channel that are based on the following:

    - the hydrology of Hazeltine Creek;
    - the past and current configuration of the Hazeltine Creek channel; and,
    - the desired aquatic and terrestrial habitat that will be developed as an outcome of the restoration work.

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2 http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf Section 7.8 Standards and Best Practices for Emergency Works

3) Design the Hazeltine Creek channel using:

- the boundary conditions previously identified;
- a hydraulic and sediment transport analysis (HEC-RAS or similar) to aid in channel design that meets the requirements as specified in the options analysis;
- the conceptual design and hydraulic performance of the new outlet from Polley Lake; and
- modifications needed in the delta that flows into Quesnel Lake.

Aquatic habitat restoration in Hazeltine Creek will take into account the pre-existing channel morphology. However, due to extensive changes to that channel and the possibility that geochemical requirements compel further changes, restoration plans may focus on functional, rather than morphological similarities to the pre-impact condition. Where necessary, offsite habitat offsets may also be appropriate.

Habitat components quantified during the CEIA and available previous to the impact of the TSF breach will be input into channel design for rehabilitation. Channel rehabilitation will need to address sedimentation control, particularly from any mine-affected sediments. Riparian habitat restoration will be an important element in the recovery of stream habitat function.

5.2.2 Polley and Quesnel Lakes

Pending results of the comprehensive EIA, an Action Plan will be developed to determine appropriate rehabilitation requirements for Polley and Quesnel Lakes. These requirements will be based on determining the impacts caused by the tailings and the requirements for recovery. Building on the EIA and the toxicological analysis mentioned previously, this will include:

- analysis of the potential mobility of tailings material within the lakes under high-flow conditions and lake turn-over (Tetra Tech EBA studies);
- assessment of potential ecological impacts arising from tailings deposition in ecologically sensitive areas (e.g. spawning beaches and benthic invertebrate habitat);
- assessment of the geochemical stability of the tailings under the various conditions in which they are presently located and whether or not mechanisms for release of metals in harmful quantitites exist from those tailings;
- assessment of the physical and ecological impacts of changing water levels;
- assessment of potential impacts that could arise from remedial activities; and,
- an options analysis for managing and mitigating potential effects associated with the mine affected materials.

5.3 Terrestrial Habitat Restoration Framework

The methods of terrestrial habitat restoration works will contain a degree of flexibility as a balance between each progression must be met.

5.3.1 Debris Recovery

Coarse woody debris from the event has been deposited below the TSF extending to Polley Lake and Quesnel Lake. A survey of the area will be completed to determine the volume of land-based debris not yet recovered and the risks associated with the materials (re-mobilization, environmental quality, aesthetics, etc.). A collection program will be implemented depending on the results of the survey. Woody debris (as recovered or chipped and mulched) will be used for enhancing aquatic habitat, shoreline stabilization, soil amendment to improve soil physical conditions, and/or to create microsites for vegetation establishment.

5.3.2 Management of Mine Affected Materials

The requirements for management and/or mitigation of impacts associated with mine-affected materials that have been deposited above water will be established based on the results of the comprehensive EIA and the toxicological risk assessment.

A set of technically and economically feasible management options will be developed for subsequent feasibility evaluation. These options may include:

- excavation and transfer of tailings materials back to the mine site TSF;
- management in-place;
- geotechnical stabilization coupled with drainage and erosion control measures; and/or,
- establishment of self-sustaining native vegetation that may control erosion and enhance habitat value.

Feasibility of management options will be evaluated using the following criteria:

- health and ecological risk;
- technical feasibility;
- regulatory input;
- environmental impacts and uncertainties associated with implementation; and,
- Stakeholder input; and,
- cost.

5.3.3 Reclamation and Re-vegetation

A Digital Elevation Model (DEM), updated TEM and wildlife habitat mapping will enable description of the habitat types and terrain (elevation, topography, aspect etc) of the affected and immediately surrounding areas which can then be used to plan reclamation. The information will likely be used to map out Reclamation Units (RUs) for which reliable and ecologically appropriate reclamation and re-vegetation strategies will be developed.

Reclamation objectives will be developed for each RU (or RU group) based on the existing and anticipated end land use being determined as part of the impact assessment and based on anticipated post remediation conditions as described above. Reclamation objectives on sites in BC typically aim to stabilize disturbed areas, restore drainage patterns, and provide sustainable and ecologically appropriate vegetation communities that are compatible with end land uses. It is recognized that much of the impacted zone is not a mine site but at the present time, this approach appears to provide a viable path forward.

Candidate species of trees, shrubs and herbaceous plants for use in reclamation will be identified based on results of the preferred remedial option and the characteristics of the RU (i.e., drainage, solar aspect, etc.). Native seed mixes will be evaluated based on availability and their ability to meet reclamation objectives. Agronomic seed mixtures often provide short term benefits through aggressive establishment of a vegetative cover and have been applied in areas where immediate stabilization was considered to be an appropriate interim step. These can be used alone or, based on longer term objectives, can be used in combination with brush mats or other techniques to improve the establishment and success of native species (grasses, trees or shrubs). It is noted that much of the affected area of tailings deposition lends itself to developing a strategy that is complimented by encroachment of native plant species from adjacent lands.

The nutrient status and physical properties of the soils in the affected area require characterization to determine if the material is a suitable growth medium for the plants that may be considered for reclamation and re-vegetation efforts. Samples will be selectively analyzed for key nutrient parameters including total carbon, total nitrogen, available nitrogen (min-N), and available phosphorous. The data will be evaluated to confirm if nutrients are considered potentially growth limiting and to determine if and what soil amendments may be necessary (e.g., coarse woody debris, wood chips, and other locally available amendments, fertilizers, etc.). Potential phytotoxicity of soils will also be evaluated.

Soil properties will be reviewed to establish if the physical conditions of these soils may be potentially growth limiting (i.e., bulk density, water retention characteristics). The need for backfill or covers will be established and testing for nutrient status and physical properties of candidate source materials will be completed as required. The TEM will identify possible borrow source locations for characterization and investigation.

5.4 Lower Hazeltine Creek Erosion and Sediment Control Plan

The Lower Hazeltine Erosion and Sediment Control Plan was prepared to direct the 'Works' in the lower portion of Hazeltine Creek that were designed to reduce sediment loading to Quesnel Lake and restore the aquatic and terrestrial habitats of this zone of the creek. The overall plan is to implement restoration work in stages of Hazeltine Creek; lower Hazeltine was selected for first implementation because it is most accessible and because of the priority need to reduce sediment loading to Quesnel Lake.

The recommended Works associated with this Plan include the following:

- construction of temporary access to execute the Works;
- management of vegetation debris;
- in-stream works and best management practices to control erosion and sediment transport from Hazelton Creek into Quesnel Lake, including stream restoration;
- management of soil and sediment; and,
- reclamation of riparian habitat affected by the TSF breach.

This Plan provides further detail and builds on MPMC's Conceptual Interim Erosion and Sediment Control Plan (MPMC, 2014) that was issued t the MoE on September 11th, 2014. It will be completed in parallel with and where and when available will be informed by the results and analyses generated by the CEIA.

6 CURRENT MONITORING PROGRAM

6.1 General

A preliminary EIA initiated by MPMC in response to Section 2 of the Order issued by the MoE on August 5, 2014. This section describes the monitoring program that is currently ongoing, the results of which will be integrated into the comprehensive EIA, rehabilitation and mitigation planning, and ecological and human health risk assessments.

The scope of the monitoring program is evaluated, focused and updated as results from both the monitoring program and CEIA are received and evaluated. Details of the current monitoring program are summarized in Table A below, and locations are illustrated on Drawings found in Appendix A.

The results of the monitoring program are beings submitted on a weekly basis.

6.2 Surface Water Monitoring

The objective of the water quality monitoring is to monitor the quality of the potentially affected areas and includes water sampling and analysis of potential chemicals of concern (PCOC) associated with the tailings breach and to provide an early indication of the potential for chemical impacts from the TSF breach. For screening purposes, water quality results are being compared to applicable BCWQGs for the protection of drinking water and aquatic life. Those chemicals exceeding applicable guidelines can be used to focus subsequent monitoring activities and studies directed at evaluating the significance of the elevations in concentration.

As of August 26, 2014, fifty-six (56) water sampling locations have been established to assess water quality in Quesnel Lake in the area of the mouth of Hazeltine Creek, and at other potentially affected locations on Quesnel Lake. Sampling locations also include potential baseline reference locations at more remote up-gradient locations on Quesnel Lake, and a down-gradient location on Quesnel River. Three water quality sampling locations have been established on the shore of Polley Lake. The sampling program has included up to 11 residential water intake locations in Quesnel Lake.

Ongoing water quality profile (multi-depth) monitoring on a semi-regular schedule (every few days) has been established at five sampling locations (QUL-2, QUL-21, QUL-22, QUL-66, and QUL-79). Wate samples have been collected at 2 or 3 depths at each stationrelative to measured thermocline and / or electrical conductivity and turbidity readings.

An automated ISCO sampler was installed on the shoreline at the Quesnel River Research Centre (QRRC) and was functioning as of August 14, 2014. The ISCO sampler collects water samples three times a day (at 8 PM, 3 AM, 12 PM) and mine staff retrieve them daily for laboratory analysis. A multi-probe (and data-logger) at the same location is currently measuring turbidity, pH, temperature, dissolved oxygen, and electrical conductivity every fifteen minutes.

The following is a detailed list of analytical parameters currently being evaluated:

- Total and dissolved metals (including mercury);
- Anions: sulphate, chloride, fluoride;
- Nutrients: total ammonia, nitrate, nitrite, total nitrogen, total Kjeldahl nitrogen, orthophosphate, total phosphorous, dissolved phosphorous;
- Toxicity testing (of samples collected selected locations in Quesnel Lake, Hazeltine Creek and Quesnel River) consisting of a combination of the following tests:
  - 96 hour Rainbow trout acute lethality;
  - 48 hour *Daphnia magna* acute lethality;
  - 7 day *Ceriodaphnia dubia* survival and reproduction;
  - 7 day Fathead minnow survival and growth;
  - 72 hour *Pseudokirchneriella subcapitata* growth inhibition; and
  - 7 day *Lemna minor* growth inhibition.

The water quality sampling program is being adapted in response to outcomes of the EBA-Tetra Tech sub surface plume modelling study, and will be further guided by analysis of results from the preliminary and comprehensive EIAs and environmental program.

6.3 Sediment Quality Monitoring

A sediment monitoring program has been established to confirm the quality of sediment in Quesnel Lake near the mouth of Hazeltine Creek as well as some reference locations, in Hazeltine Creek, and in Polley Lake. For screening purposes, results are being compared to criteria applicable to British Columbia: BC *Contaminated Sites Regulation* (CSR), the working quality guidelines for sediments contained within the BC MoE's *A Compendium of Working Water Quality Guidelines for British Columbia* and Canadian Council of Ministers of the Environment (CCME) Sediment Quality Guidelines.

Since the initiation of sampling, one-time sediment samples have been collected from thirty (30) locations in Quesnel Lake. Ongoing littoral sampling in Quesnel Lake is being completed at two locations (QUL-45 and QUL-49), in close proximity of the mouth of Hazeltine Creek, and at a reference location in Horsefly Bay (QUL-51).

In Polley Lake, sediment samples are being collected at the south and north ends of the lake. Two reference locations at Bootjack Lake have also been included to provide background information. In Hazeltine Creek, sediment samples are being collected from three areas (upper, middle and lower).

All samples are being analyzed for particle size, total organic carbon, and total metals (<63 µm diameter). Replicate samples collected at selected locations have been analyzed for toxicity using *Hyalella* and *Chironomus* organisms, Tessier extraction (metals), Shake Flask Metals, and Acid-Base Accounting.

6.4 Fish and Aquatic Monitoring

In accordance with the Aquatic Impact Assessment Work Plan (Chapter 7), permits for twelve individuals of each of the species rainbow trout (*Oncorhynchus mykiss*), lake trout (*Salvelinus namaycush*), burbot (*Lota lota*), kokanee (*Onchorhynchus nerka*), Chinook Salmon (*O. tshawytscha*), Coho Salmon (*O. kisutch*), and sockeye salmon (*O. nerka*), were sought by MPMC, and approvals were obtained.

The sampling program is ongoing with the aim to continuously evaluate the potential accumulation of COPC in various species and sizes (i.e., life stages) of fish. . ,

Based on laboratory results from tissue residues recently submitted, the tissue sampling program will be re-evaluated and refined where appropriate. This will include (but is not limited to) the removal and/or addition of sample locations, increased focus on select/target species and life stage(s), frequency of sample collection.

The Ministry of Environment and First Nations Health Authority have also been conducting sampling of fish tissues and have found that the species of fish sampled are safe to consume (website). Further monitoring will be taking place in the impact area to verify that this remains the case over time as metals uptake is a relatively slow phenomenon. Recently, Ministry of Environment and members of the environmental team assembled by MPMC have discussed the possibility of combining fish sampling efforts to reduce the numbers of fish required.

Longer-term (chronic) fish and aquatic monitoring programs will be developed based on the results from the environmental program.

6.5 Quality Control/Quality Assurance

Sampling, monitoring and testing will be completed in accordance with Water and Air Baseline Monitoring Guidance for Mine Proponents and Operators and the BC Field Sampling Manual, as applicable. Where these guidelines are not applicable, sampling, monitoring and testing will be implemented in accordance with industry-standard protocols adopted to this project.

A data integrity and management framework (DIMF) has been developed to provide a means to track field monitoring data, field documentation, laboratory submissions, and the receipt and quality of analytical results.. All field staff will be required to have read and understood the DIMF and relevant Preferred / Standard Operating Procedures (P/SOPs). The DIMF consists of the following components:

1) Development of written work plans for all phases of project work and use of trained and qualified personnel.

2) Sample procurement and monitoring will be in accordance with P/SOPs and, as applicable, with provincial and/or federal guidance and protocols.

3) Discipline leads will be responsible for ensuring the adequacy of the work plans and that P/SOPs are in place.

4) Field blanks, equipment blanks and blind field duplicate samples are to be collected at an approximate 1 in 10 frequency (10%) for all laboratory analytical parameters. Field blanks and equipment blanks are being collected at an approximate 5% frequency (1 in 20 samples). De-ionized water blanks and filter blanks are being tested by the batch on an approximate monthly basis.

5) Maintain a daily record of events in bound field books including purpose, time, date, crew members, location, temperature, weather, and any changing ambient conditions that could affect sample integrity (i.e., rain, dust, etc.).

6) Potentially relevant observations regarding biological, geotechnical, or other environmental concerns will be documented and reported to the project coordinator on a daily basis for inclusion in the weekly report to the Project Management team and regulators.

7) Fill out sampling records in full at the field at time of sample collection.

8) Handle, store, and transport samples in accordance with P/SOPs. This includes proper sample preservation including use of ice charged coolers (as required), protecting sample vessels as necessary, shipping within hold times, and use of Chain of Custody documentation. Caution will be taken shipping over weekends or near statutory holidays and should be generally avoided if possible.

9) Chain of Custody documentation will be filled out in full and submitted to the Data Coordinator at the end of each day along with photographs, field notes, sampling records, and any other relevant field documentation.

10) On a daily basis, the Data Coordinator will update a Sample Tracking Spreadsheet (STS) with sample information shown on submitted Chain of Custody including date and time of sampling, sample ID, media type (soil, sediment, water, biological parameters or tissues, etc.). To ensure ease of data management and cross referencing, the STS will be structured to allow data to be sorted by media, sample ID, and laboratory report number.

11) Using the STS, the data coordinator will track sample receipt confirmations and will follow up with the receiving laboratory if sample receipt confirmations are not received. Any deficiencies will be reported to the Project Data Manager (i.e., sample ID discrepancies, missed hold times, elevated temperatures) and corrective action taken to avoid further deficiencies.

12) Analytical report turn-around-time (TAT) will be tracked by the data coordinator and date of report receipt tracked.

13) All analytical reports will be reviewed upon receipt for completeness, potentially anomalous data, and data quality waivers. This initial QA/QC screen will be tracked on the STS. Appropriate investigations will be initiated as issues are identified (i.e., laboratory re-checks, sample review, etc.).

14) A companion Data QA/QC spreadsheet will be maintained documenting any recorded field or laboratory based QA/QC concerns.

15) Relative percent differences (RPDs) will be calculated for each pair of duplicate samples collected and appropriate actions taken to investigate elevated RPDs.

16) Laboratory and tabulated data will be reviewed for QA/QC purposes and to identify any possible issues related to both field sampling and laboratory analytical procedures. All data quality waivers will be reviewed and summarized.

17) A field and desktop audit will be performed periodically to confirm adherence to P/SOPs and the effectiveness of the DIMS. Based on audit results, improvements will be made on a continuous basis.

Table 6.5.1: Summary of Monitoring Program for Mount Polley tailings release preliminary environmental impact assessment

Monitoring Program	Sampling Location IDs	Total Number of Sampling Locations	Comments
Surface Water Quality[1]	**Quesnel Lake**: QUL-1 through QUL-23, QUL-26, QUL-28, QUL-30 to QUL-39, QUL41, QUL-60 to QUL-64, QUL-66 to QUL-69, QUL-74, QUL-75, QUL-77, QUL-79, QUL-81 to QUL-85, QUL-88, QUL-and Raft Cr Rec Site **Polley Lak**e: POL-1, POL-2, POL-3, POL-4 **Polley Discharge to Hazeltine Creek**: HAD-1 **Quesnel River**: QUR-1 (includes QURU-1x & QUR-3)	56 Quesnel Lake 4 Polley Lake 1 Discharge from Polley Lake 1 Quesnel River	Field monitoring at each sampling location generally consists of measuring the following parameters: pH, turbidity, specific conductivity, temperature, dissolved oxygen, and Secchi disk depth recorded. Data collection has been on a daily basis at twelve locations in Quesnel and Polley Lakes: QUL-3, QUL 9, QUL-17 to QUL-22, QUL-26, QUL-28, POL-2, POL-3, POL-4, HAD-1. An automated ISCO sampler has been installed (QUR-1) at the Quesnel River Research Station (QRRC) which collected samples up to three times daily for laboratory analysis. A fourth sample is collected manually at this location once per day.

Monitoring Program	Sampling Location IDs	Total Number of Sampling Locations	Comments
Water Quality Profile	**One Time Measurement**: QUL-3, QUL-19, QUL-26, QUL-65 **Repeated Measurements** (once every 3 days): QUL-2, QUL-21, QUL-22, QUL-66, and QUL-79	4	Samples at Water Quality Profile Locations collected from discrete depth intervals in relation to measured thermocline and / or electrical conductivity and turbidity readings. With exception of QUL-65 and QUL-66 profiles completed up to a depth of 30 m. QUL-65 and QUL-66 extended to bottom (45 m to 50 m)
Surface Water Toxicity[2]	QUR-1, HAD-1, QUL-66	3	
Residential Water Intake locations	**Quesnel Lake:** QUL-34, QUL-35, QUL-36, QUL-37, QUL-38, QUL-39, QUL-60, QUL-61, QUL-62, QUL-63, QUL-64 **Polley Lake**: POL-1, POL-2	11 Quesnel Lake 2 Polley Lake	
Coliform and e. coli	**Quesnel Lake Locations**: QUL-30 (Abbott Creek), QUL-31 (Plato Island Resort) **Residential Intakes:** QUL-34, QUL-35, QUL-36, QUL-37, QUL-38, QUL-39, QUL-60, QUL-61, QUL-62, QUL-63, QUL-64 POL-1, POL-2	15	

Monitoring Program	Sampling Location IDs	Total Number of Sampling Locations	Comments
Sediment Quality[4,5]	QUL-23, QUL-24, QUL-25, QUL27, QUL30-01, QUL30-02, QUL30-03, QUL43, QUL44-01, QUL40-02, QUL40-03, QUL50-01, QUL51-02, QUL51-03, QUL51-04, QUL51-05, Tailings outside dam breach-site 1, tailings outside dam breach-site 2, Tailings outside dam breach-site 3, tailings inside dam breach QUL-45, QUL-49, QUL-51 HAC50, HAC01	Quesnel Lake 20 Single Sample Sites 3 Repeated Sampling Sites Polley Lake 2	Five replicates are collected at each sampling location. Polley Lake locations include discharge to Hazeltine Creek.
Fish and Aquatic Monitoring	Gee minnow traps at 4 residential dock locations on Quesnel Lake (Northern Pike minnow). Angling in Quesnel Lake (Northern Pike minnows and rainbow trout) Gee traps and gill nets in Quesnel Lake (red sided shiners)	Quesnel Lake	Fish and aquatic monitoring program is in progress. Program will be modified as CEIA continues.

Notes:

1. Surface Water Quality samples are submitted for laboratory analysis of total and dissolved metals (BCWQG AW and DW detection limits), pH, anions, nutrients, dissolved organic carbon, total suspended sediment, total dissolved solids, and turbidity.
2. Surface Water Toxicity testing includes rainbow trout (96 hr), Daphnia magna (48 hr LC50), fathead minnow (7 day test)
3. Drinking Water Quality includes coliform/e. coli
4. Sediment Quality Tier 1 sampling includes particle size, total organic carbon, and total metals analysis (<63 µm).
5. Sediment Quality Tier 2 includes toxicity testing using Hyalella and Chironomus organisms, Tessier extraction (metals), Shake Flask Metals, and Acid-base accounting (ABA).

7 CLOSURE

Yours truly,

SNC-LAVALIN INC.

Gordon J. Johnson, M.Sc., P.Eng.
Managing Director, Environment & Water

8 BIBLIOGRAPHY

APEGBC. (2012). Professional Practice Guidelines - Legislated Flood Assessments in a Changing Climate in BC.

APEGBC, Ministry of Forest, Land and Natural Resource Operations, Natural Resources Canada. BCMOE (British Columbia Ministry of Environment). 2006b. A Compendium of Working Water Quality Guidelines for British Columbia. Updated August 2006.

Baker, J.R., Peck, D.V., and Sutton, D.W. (editors). 1997. Environmental Monitoring and Assessment Program Surface Waters: Field Operations Manual for Lakes. EPA/620/R-97/001. U.S. Environmental Protection Agency, Washington D.C. June 1997. http://www.epa.gov/emap/html/pubs/docs/groupdocs/surfwatr/field/lake_fis.pdf

BC Conservation Data Centre. 2004. Ecological Communities in British Columbia: Conservation Status Assessment Factors. Available at: http://www.env.gov.bc.ca/cdc/documents/ConsStatusAssessFactors.pdf. Accessed Sep 10, 2014.

B.C. Conservation Data Centre. 2014a. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: http://a100.gov.bc.ca/pub/eswp/. Accessed Sep 10, 2014.

B.C. Conservation Data Centre. 2014. Ecological Community Summary:Betula nana / Carex spp. / Sphagnum spp.. B.C. Minist. of Environment. Available: http://a100.gov.bc.ca/pub/eswp/. Accessed Sep 11, 2014.

BC Field Sampling Manual for continuous Monitoring and Collect in of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples. Prepared and Published by Water, Air, and Climate Change Branch, Ministry of Water, Land and Air Protection, Province of British Columbia. January 2003. http://www.env.gov.bc.ca/epd/wamr/labsys/field_man_pdfs/fld_man_03.pdf

BCMOE (British Columbia Ministry of Environment). 2006b. A Compendium of Working Water Quality Guidelines for British Columbia. Updated August 2006.

Demarchi, D.A. 2011. The British Columbia Ecoregion Classification 3rd Edition. Ecosystem Information Section, BC Ministry of Environment, Victoria, BC. Available at: http://www.env.gov.bc.ca/ecology/ecoregions/index.html. Accessed September 10, 2014.

Geowest Environmental Consultants Ltd (GEOWEST). 2001. Terrestrial Ecosystem Mapping with Wildlife Interpretations for the Eastern Cariboo Area, East of Williams Lake, British Columbia. Volume 1: Terrestrial Ecosystem & Bioterrain Mapping with Expanded Legends for Terrestrial Ecosystem Units. Prepared for Province of British Columbia Ministry of Environment, Lands and Parks, Williams Lake, BC.

Hatfield, T., A.F. Lewis, and S. Babakaiff. 2007. Guidelines for the collection and analysis of fish and fish habitat data for the purpose of assessing impacts from small hydropower projects in British Columbia. Prepared by Solander Ecological Research Ltd. and Ecofish Research Ltd. for the BC Ministry of Environment, Surrey BC.

HSRMP. 2005. Horsefly Sustainable Resource Management Plan. Province of British Columbia. Available at: http://www.for.gov.bc.ca/tasb/slrp/srmp/north/horsefly/Horsefly_SRMP_Final.pdf. Accessed September 10, 2014.

Intrepid Biological Contracting. 2003. Preliminary list of "High Value" wetlands for moose within the Cariboo Forest Region. Ministry of Water, Land and Air Protection, Williams Lake.

Lewis, A., T. Hatfield, B. Chilibeck and C. Roberts. 2004. Assessment methods for aquatic habitat and instream flow characteristics in support of applications to dam, divert, or extract water from streams in British Columbia. Report prepared for the Ministry of Water, Land and Air Protection and the Ministry of Sustainable Resource Management.

LWBC (Land and Water British Columbia Inc). 2005. Hydrological guidelines for power projects. Land and water management division, Surrey.

MacKenzie, W. and J.R. Moran. 2004. Wetlands of British Columbia: A Guide to Identification. Land Management Handbook 52. Research Branch, BC Ministry of Forests, Victoria, BC. Available at: http://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh52.htm. Accessed September 10, 2014.

Minnow (Minnow Environmental Inc.) 2014. Aquatic Environmental Description Report Mount Polley Mine Discharge of Treated Water to Polley Lake. Report Prepared for Mount Polley Mining Corporation. July 2014.

Resource Information Standards Committee. 2006. Standards for Mapping Ecosystems at Risk in British Columbia. An Approach to Mapping Ecosystems at Risk and Other Sensitive Ecosystems. Version 1.0. BC Ministry of Environment, Ecosystems Branch.

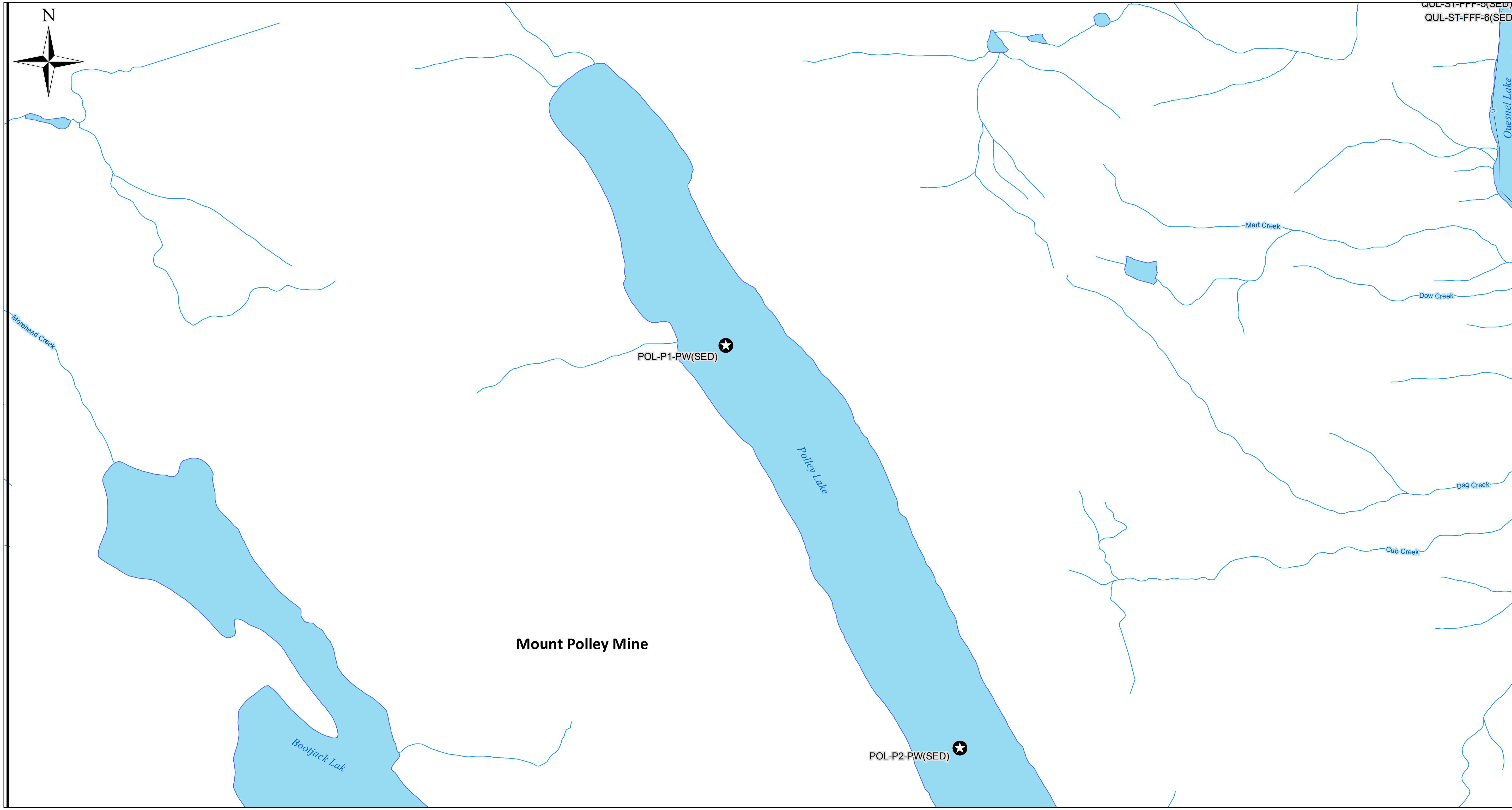
Resources Inventory Committee. 1998. Standard for Terrestrial Ecosystem Mapping in British Columbia. Province of BC, Victoria, BC.

SNC-Lavalin. 2014. Mount Polley Comprehensive Environmental Impact Assessment Workplan. Prepared for Mount Polley Mining Corporation. August 22 2014.

Steen, O.A. and A. Coupe. 1997. A Field Guide to Forest Site Identification and Interpretation for the Cariboo Forest Region. Ministry of Forests Research Program, Ministry of Forests, BC.

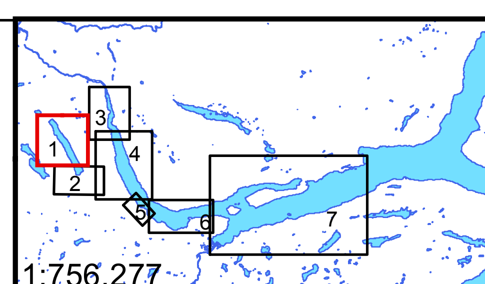
APPENDIX A

Maps and Figures



LEGEND

- Sediment Sampling Locations (8)
- Bathymetric 10m Contours
- FWA Lakes
- FWA Rivers
- FWA Streams
- Tailings Impoundment Area
- Area of Disturbance



NOTES

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Privileged and Confidential: Subject to Solicitor-Client Privilege and Prepared in Contemplation of Litigation

REFERENCES

0 125 250 500 750 1,000 Meters

1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

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CLIENT NAME: MPMC

PROJECT LOCATION: Mount Polley Mine, British Columbia

Sediment Sampling Locations
Page 1 of 7

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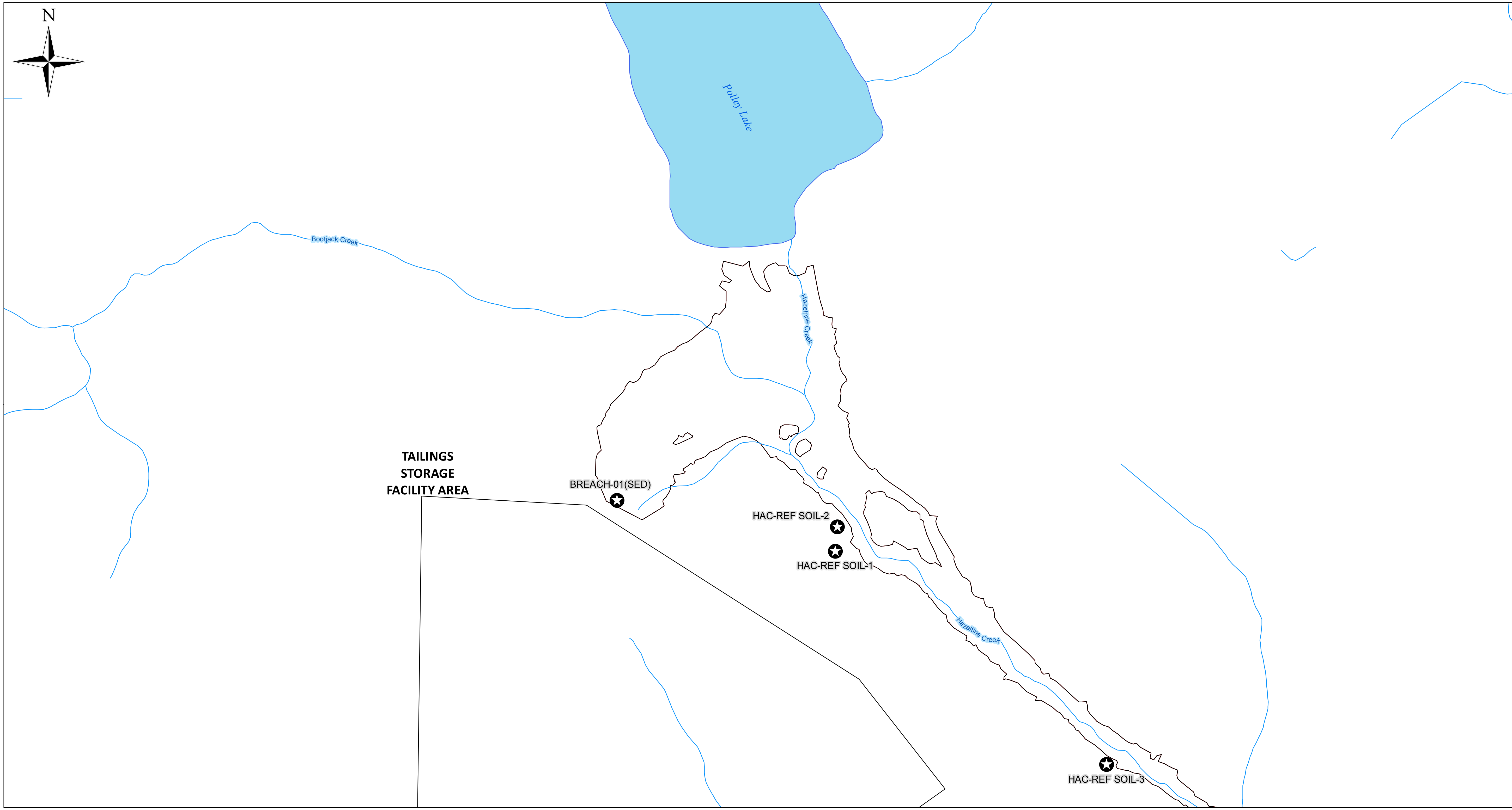

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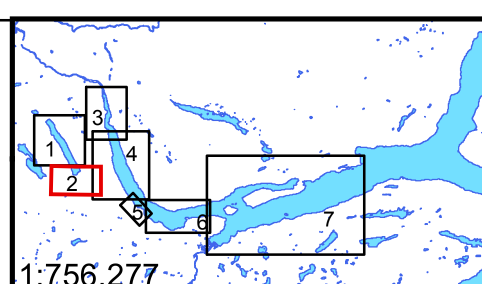
- Area of Disturbance



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REFERENCES

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2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

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CLIENT NAME: MPMC	PROJECT LOCATION: Mount Polley Mine, British Columbia

Sediment Sampling Locations
Page 2 of 7

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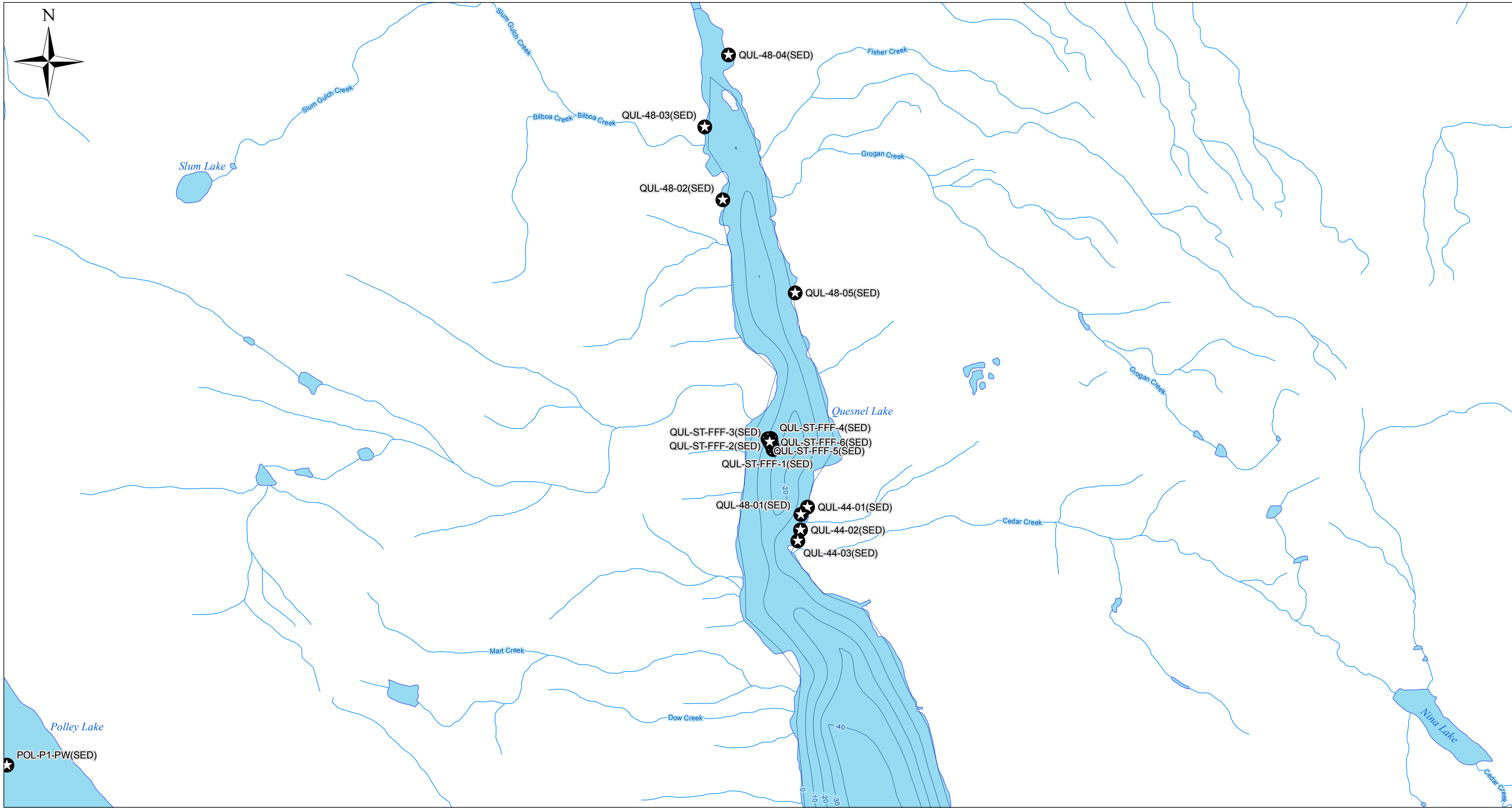
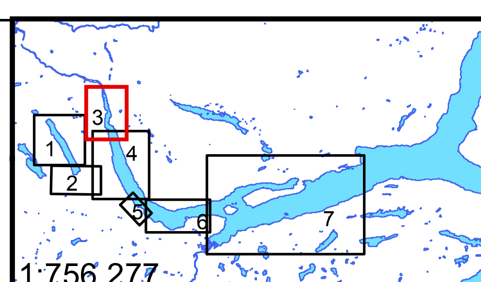


LEGEND

- Sediment Sampling Locations (15)
- Bathymetric 10m Contours
- FWA Lakes
- FWA Rivers
- FWA Streams
- Tailings Impoundment Area
- Area of Disturbance



NOTES

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REFERENCES

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1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

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Sediment Sampling Locations Page 3 of 7			
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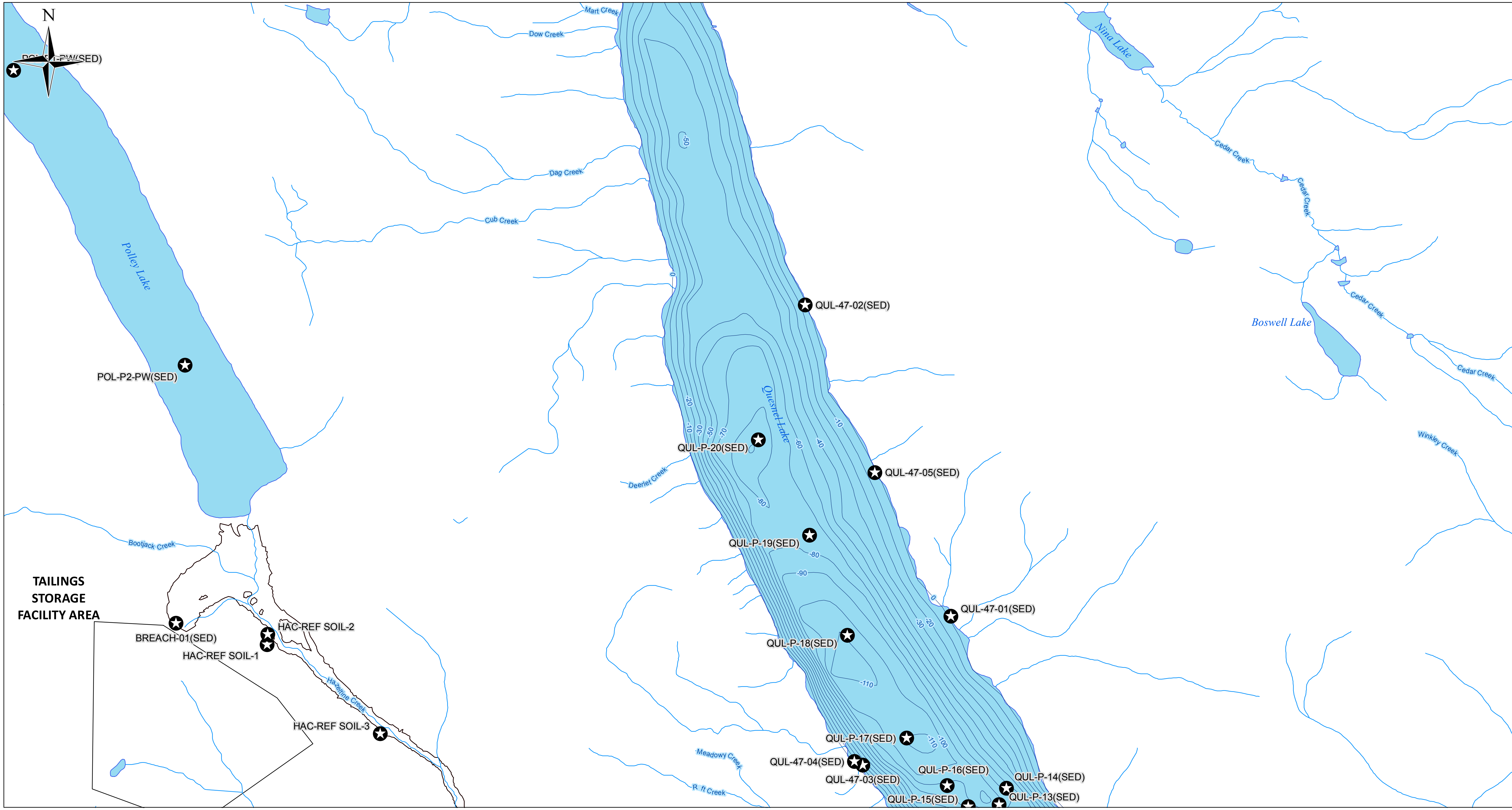
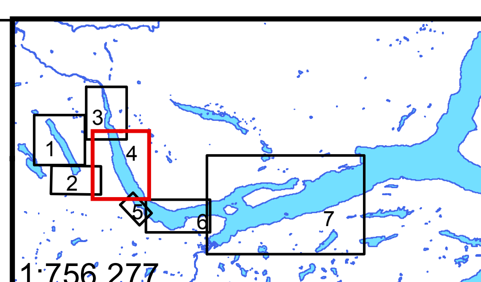


LEGEND

- Sediment Sampling Locations (19)
- Bathymetric 10m Contours
- FWA Lakes
- FWA Rivers
- FWA Streams
- Tailings Impoundment Area
- Area of Disturbance



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1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Privileged and Confidential: Subject to Solicitor-Client Privilege and Prepared in Contemplation of Litigation

REFERENCES

0 170 340 680 1,020 1,360 Meters

1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

SNC·LAVALIN

CLIENT NAME: MPMC	PROJECT LOCATION: Mount Polley Mine, British Columbia

Sediment Sampling Locations
Page 4 of 7

BY: CJW	SCALE: 1:33,530	DATE: 2014/09/12	REF No: 621717-006-P4	REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N			

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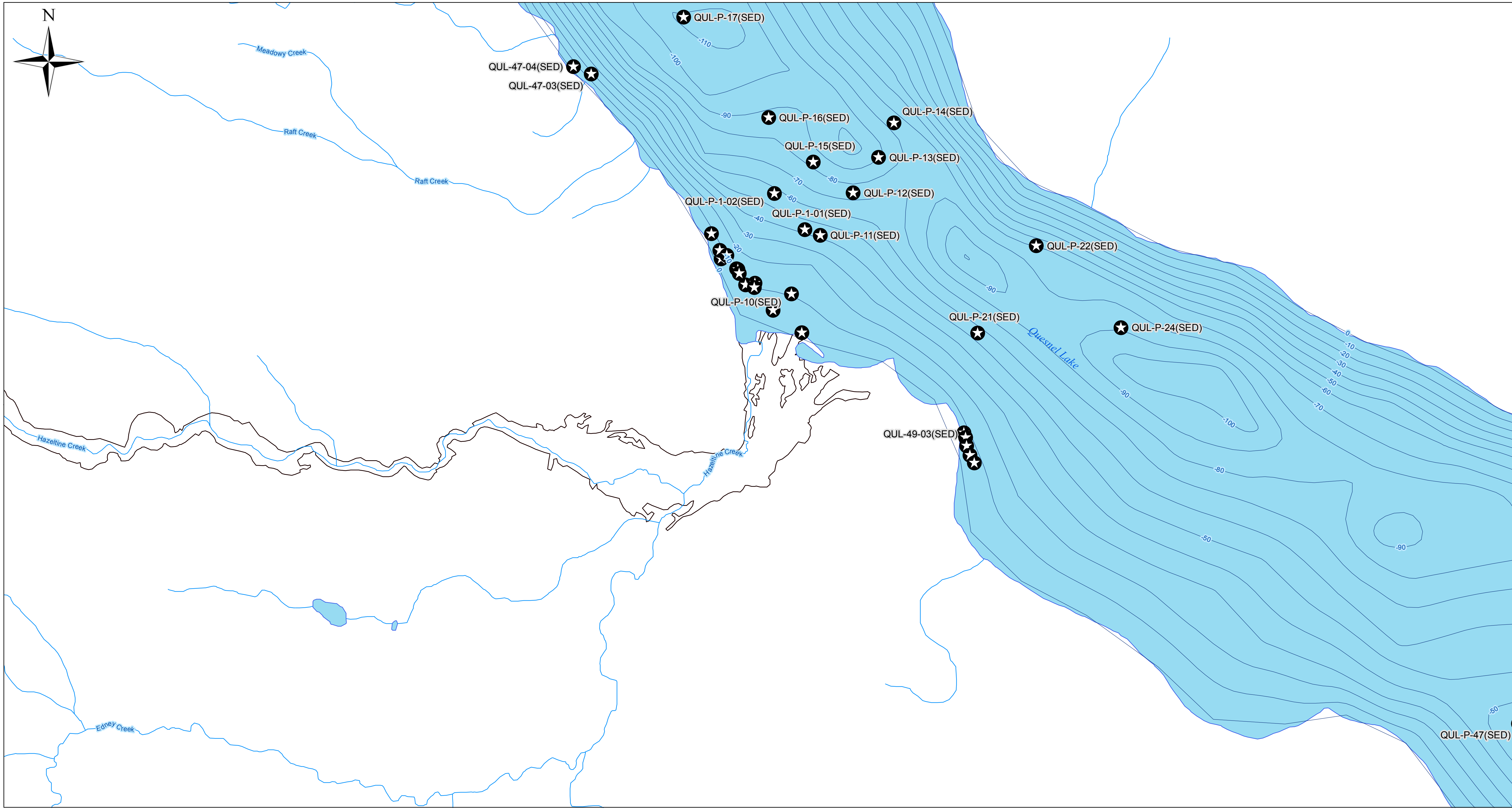
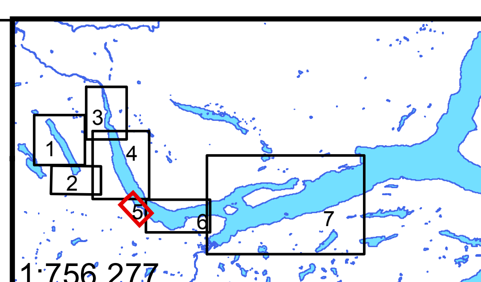
Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

- Sediment Sampling Locations (34)
- Bathymetric 10m Contours
- FWA Lakes
- FWA Rivers
- FWA Streams
- Tailings Impoundment Area
- Area of Disturbance



NOTES

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Privileged and Confidential: Subject to Solicitor-Client Privilege and Prepared in Contemplation of Litigation

REFERENCES

0 80 160 320 480 640 Meters

1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

SNC · LAVALIN

CLIENT NAME: MPMC

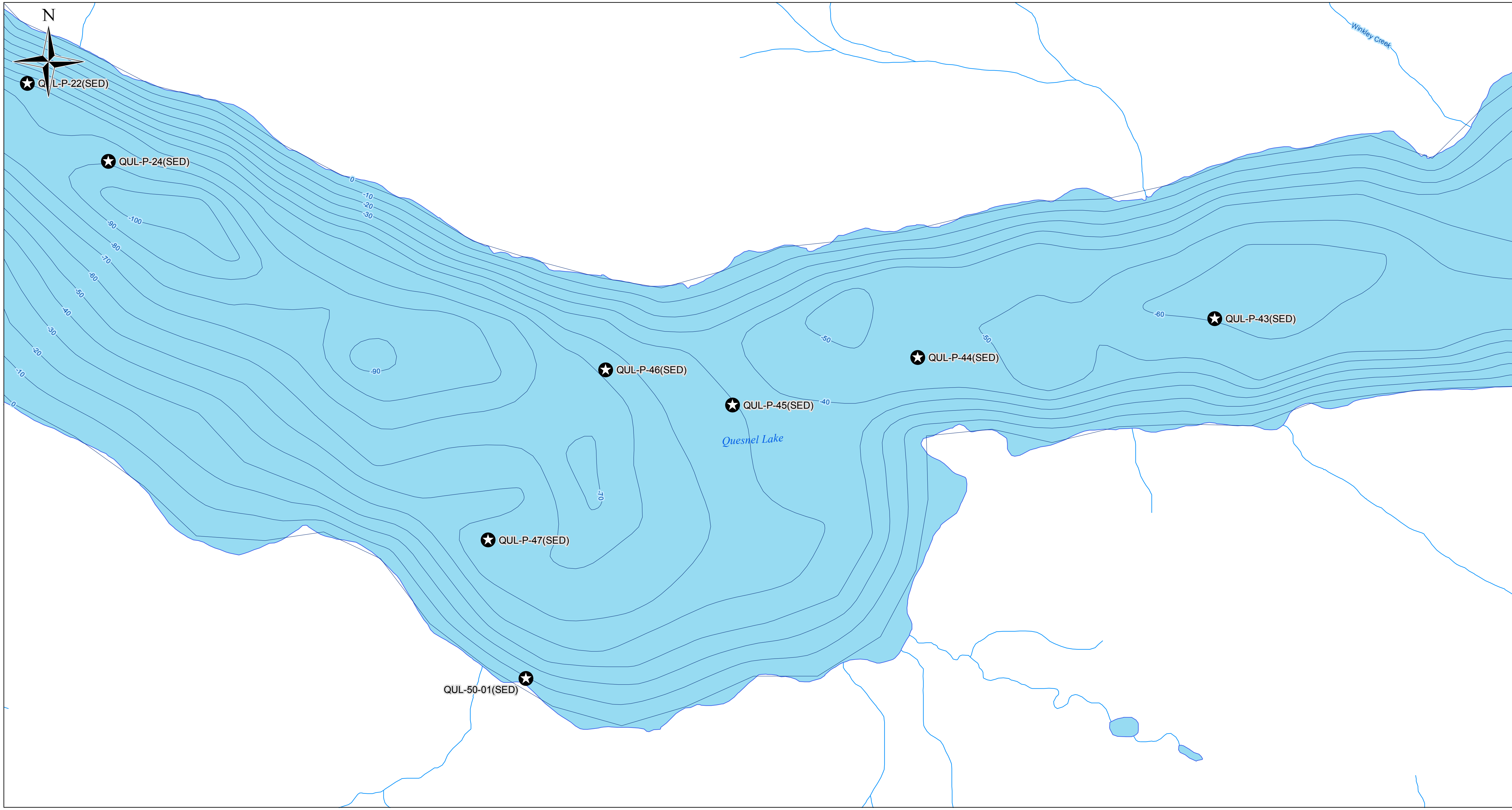
PROJECT LOCATION: Mount Polley Mine, British Columbia

Sediment Sampling Locations
Page 5 of 7

BY: CJW	SCALE: 1:15,900	DATE: 2014/09/12	REF No:	REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-006-P5	

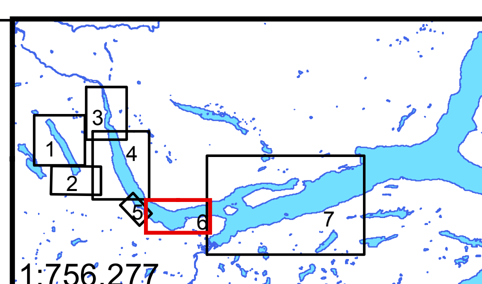
MXD Path: P:\LOB\EIAM-BC\Current Projects\Mount Polley Mining Corporation\621717_Mount Polley Mine\4.0 Execution\4.5 GIS and Drawings\GIS\621717-006_SEDLocPlan.mxd

Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

- Sediment Sampling Locations (8)
- Bathymetric 10m Contours
- FWA Lakes
- FWA Rivers
- FWA Streams
- Tailings Impoundment Area
- Area of Disturbance



NOTES

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Privileged and Confidential: Subject to Solicitor-Client Privilege and Prepared in Contemplation of Litigation

REFERENCES

0 85 170 340 510 680 Meters

1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

SNC · LAVALIN

CLIENT NAME: MPMC

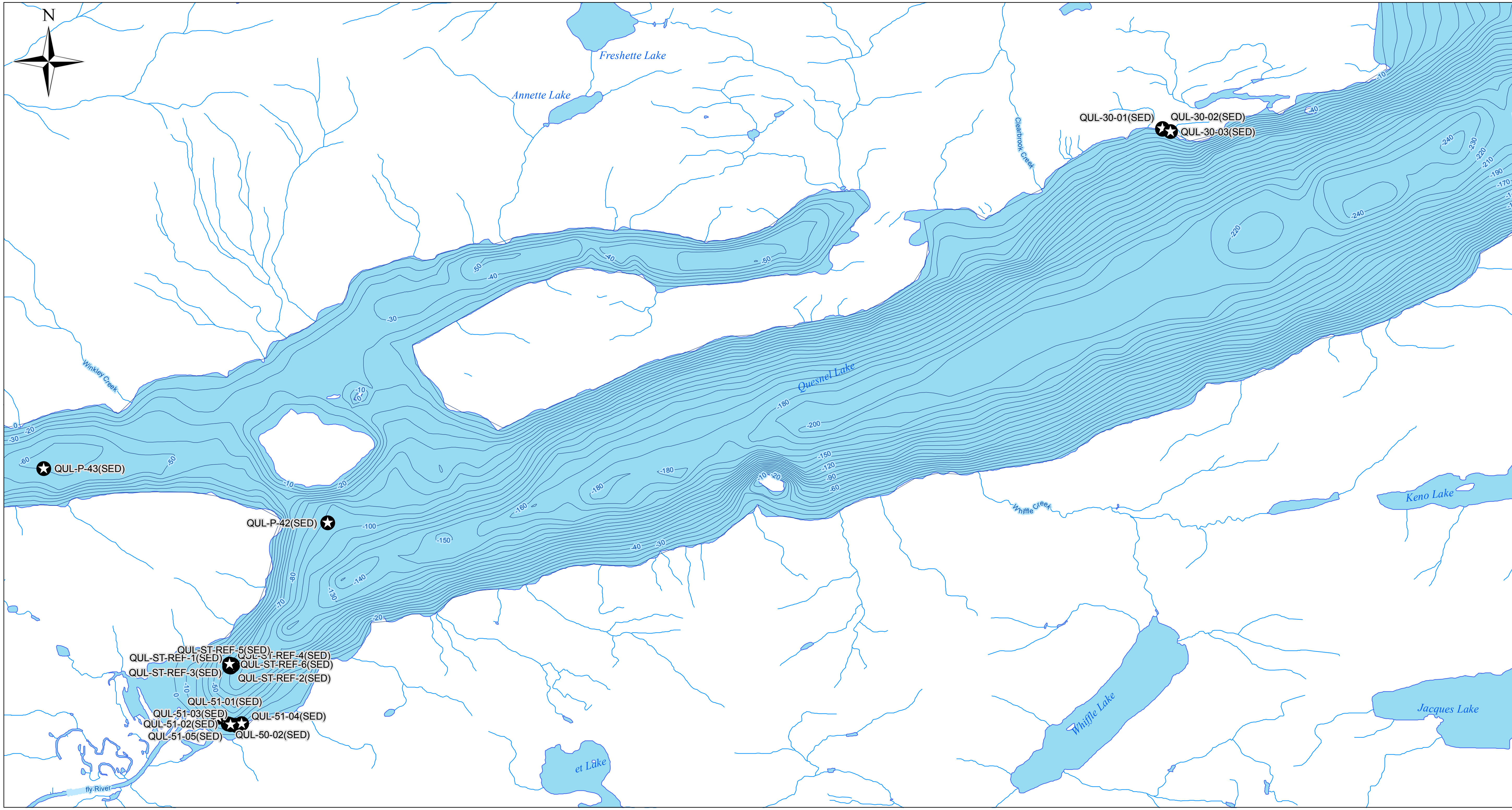
PROJECT LOCATION: Mount Polley Mine, British Columbia

Sediment Sampling Locations
Page 6 of 7

BY: CJW	SCALE: 1:16,630	DATE: 2014/09/12	REF No: REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-006-P6

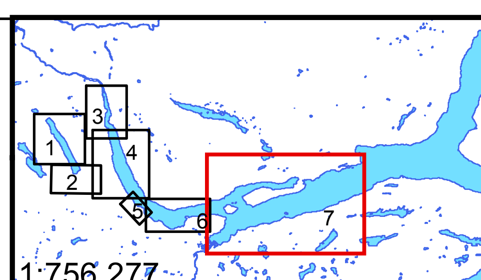
MXD Path: P:\LOB\EIAM-BC\Current Projects\Mount Polley Mining Corporation\621717_Mount Polley Mine\4.0 Execution\4.5 GIS and Drawings\GIS\621717-006_SEDLocPlan.mxd

Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

- Sediment Sampling Locations (17)
- Bathymetric 10m Contours
- FWA Lakes
- FWA Rivers
- FWA Streams
- Tailings Impoundment Area
- Area of Disturbance



NOTES

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Privileged and Confidential: Subject to Solicitor-Client Privilege and Prepared in Contemplation of Litigation

REFERENCES

0 250 500 1,000 1,500 2,000 Meters

1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

SNC • LAVALIN

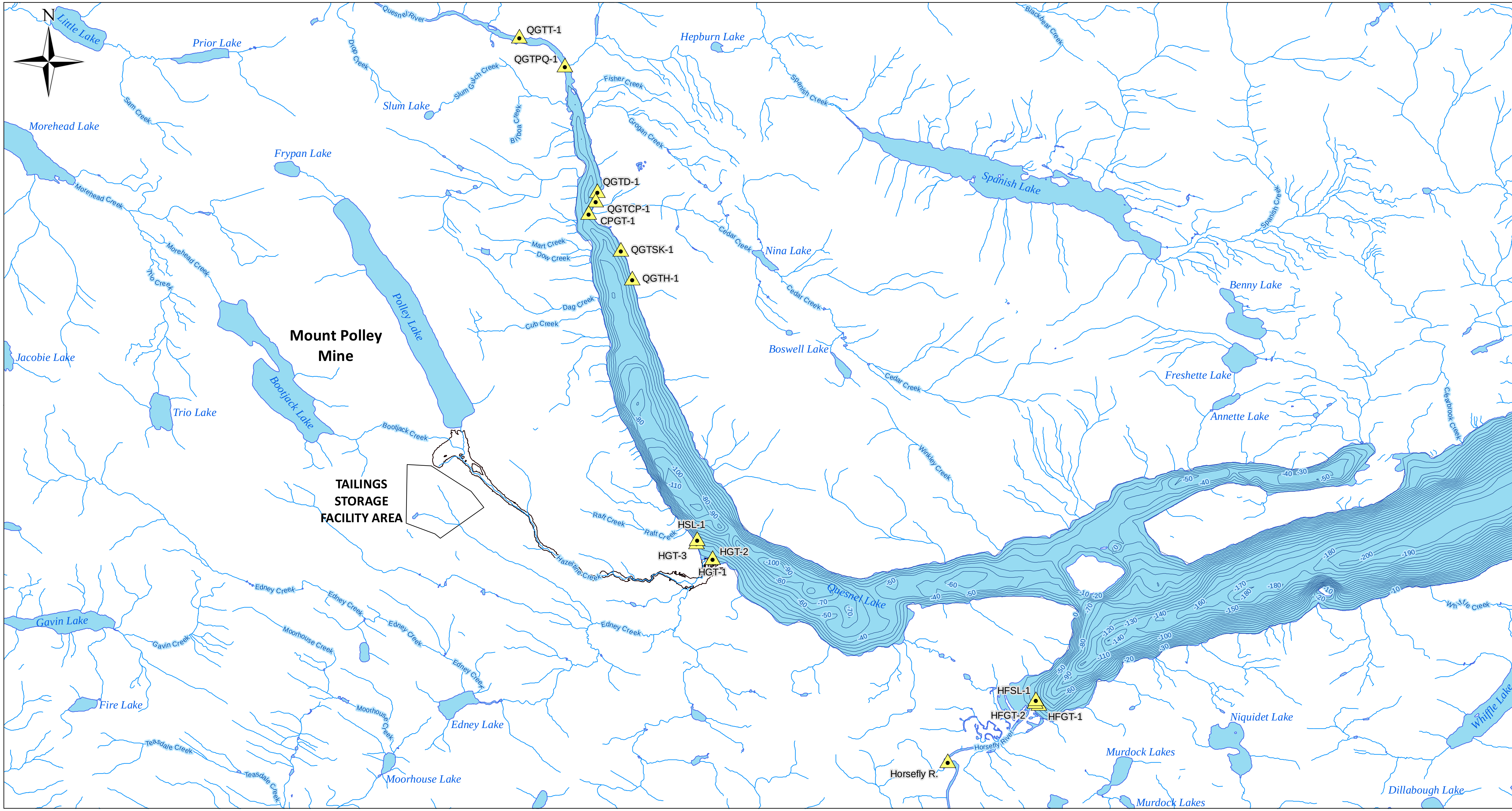
CLIENT NAME: MPMC	PROJECT LOCATION: Mount Polley Mine, British Columbia

Sediment Sampling Locations
Page 7 of 7

BY: CJW	SCALE: 1:48,360	DATE: 2014/09/12	REF No: REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-006-P7

MXD Path: P:\LOBI\EIAM-BC\Current Projects\Mount Polley Mining Corporation\621717_Mount Polley Mine\4.0 Execution\4.5 GIS and Drawings\GIS\621717-006_SEDLocPlan.mxd

Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

Fish Sampling Locations (15)

NOTES

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Privileged and Confidential: Subject to Solicitor-Client Privilege and Prepared in Contemplation of Litigation
5. SODA CREEK sampling location is not showing on this figure. The correct location is being confirmed.

REFERENCES

0 487.5 975 1,950 2,925 3,900 Meters

1. Data provided by Mount Polley Mining Corporation
2. Data downloaded from Data.Gov.BC.ca Data Distribution Service.
3. Orthophoto collected by McElhanney on August 5th, 2014

SNC · LAVALIN

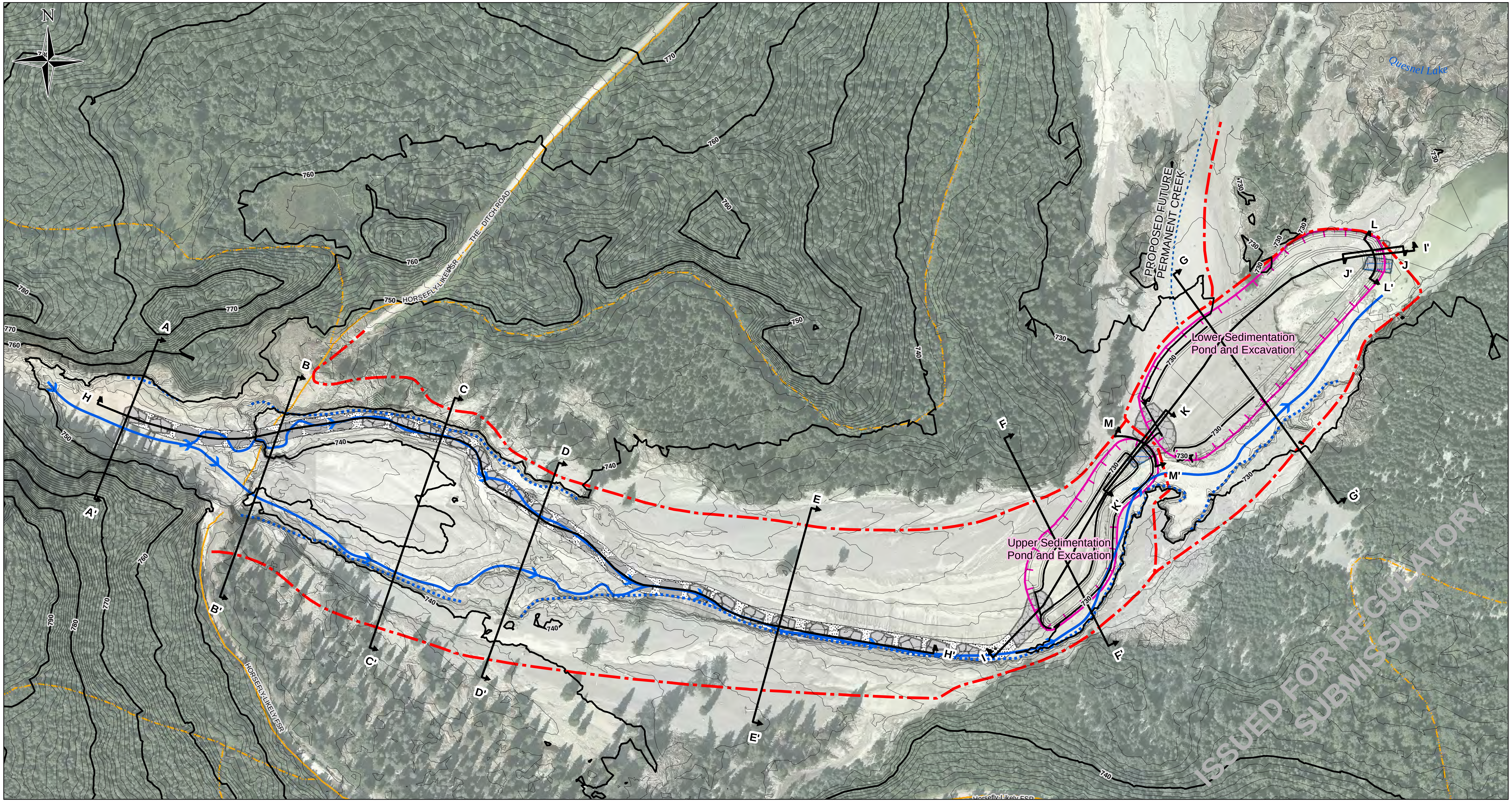
CLIENT NAME:	PROJECT LOCATION:
MPMC	Mount Polley Mine, British Columbia

Fish Sampling Locations

BY: CJW	SCALE: 1:95,620	DATE: 2014/09/12	REF No:	REV: 0
CHK'D: CB	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-013	

MXD Path: P:\LOBI\EIAM-BC\Current Projects\Mount Polley Mining Corporation\621717_Mount Polley Mine\4.0 Execution\4.5 GIS and Drawings\GIS\621717-013_FishSamplingLocations.mxd

Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

- APPROXIMATE EXISTING CHANNEL CENTER WITH FLOW DIRECTION
- SECTION
- 1 METRE CONTOUR
- 10 METRE CONTOUR
- CREEK BANK STABILIZATION
- TEMPORARY ACCESS ROAD
- TRIM GRAVEL ROADS
- ABANDONED ROADS
- SEDIMENT PONDS
- GRAVEL
- RIFFLE POOL
- RIP RAP
- SPILLWAY
- STEP POOL

NOTES

1. ORIGINAL IN COLOUR.
2. NUMERICAL SCALE REFLECTS FULL-SIZE PRINT. PRINT SCALING WILL DISTORT THIS SCALE, HOWEVER SCALE BAR WILL REMAIN ACCURATE.
3. INTENDED FOR ILLUSTRATION PURPOSES, ACCURACY HAS NOT BEEN VERIFIED FOR CONSTRUCTION OR NAVIGATION PURPOSES.

REFERENCES

0 15 30 60 90 120 Meters

WMS-TOPORAMA ON WMS.ESS-WS.NRCAN.GC.CA
CONTOURS AND ORTHOPHOTO DERIVED FROM AERIAL SURVEY CONDUCTED BY MCELHANNEY.

SNC • LAVALIN

CLIENT NAME: MOUNT POLLEY MINING CORPORATION	PROJECT LOCATION: MOUNT POLLEY MINE, BRITISH COLUMBIA

PLAN VIEW OF WORKS

BY: CJW, KVG	SCALE: 1:3,500	DATE: 2014/09/11	REF No: REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-LH-003

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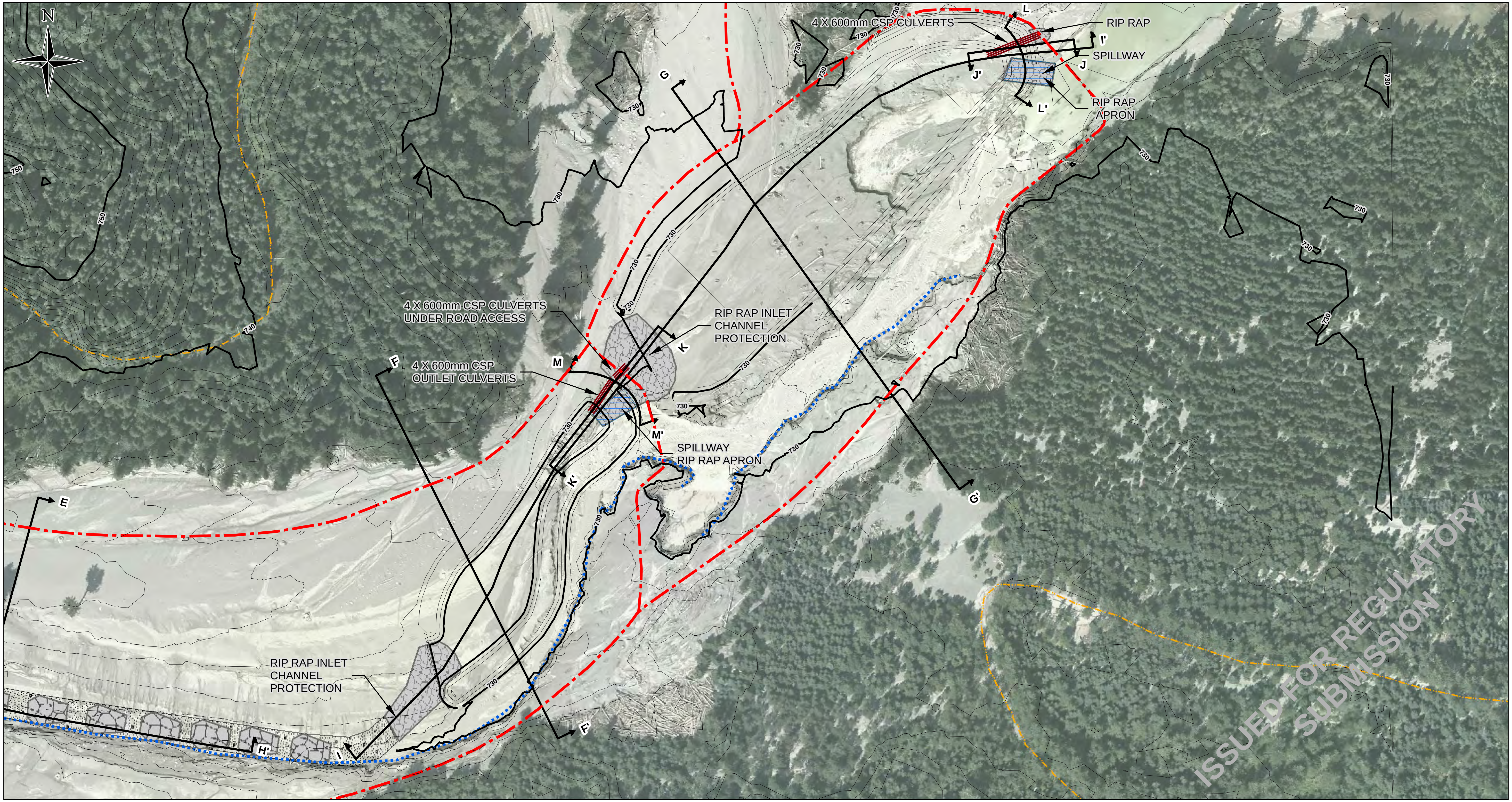
Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

- 1 METRE CONTOUR
- 10 METRE CONTOUR
- SECTIONS
- CREEK BANK STABILIZATION
- TEMPORARY ACCESS ROAD
- ABANDONED ROADS
- GRAVEL
- RIFFLE POOL
- RIP RAP
- SPILLWAY

NOTES

1. ORIGINAL IN COLOUR.
2. NUMERICAL SCALE REFLECTS FULL-SIZE PRINT. PRINT SCALING WILL DISTORT THIS SCALE, HOWEVER SCALE BAR WILL REMAIN ACCURATE.
3. INTENDED FOR ILLUSTRATION PURPOSES, ACCURACY HAS NOT BEEN VERIFIED FOR CONSTRUCTION OR NAVIGATION PURPOSES.
4. ALL ELEVATIONS ARE APPROXIMATE, BASED ON LiDAR SURVEY. SEDIMENTATION BASIN EMBANKMENT ELEVATIONS TO BE DETERMINED BASED ON FIELD SURVEY AND FINAL DESIGN.

REFERENCES

0 10 20 40 60 80 Meters

WMS-TOPORAMA ON WMS.ESS-WS.NRCAN.GC.CA
CONTOURS AND ORTHOPHOTO DERIVED FROM AERIAL SURVEY CONDUCTED BY MCELHANNEY.

SNC · LAVALIN

CLIENT NAME: MOUNT POLLEY MINING CORPORATION	PROJECT LOCATION: MOUNT POLLEY MINE, BRITISH COLUMBIA

SEDIMENTATION BASINS PLAN VIEW

BY: CJW, KVG	SCALE: 1:2,000	DATE: 2014/09/11	REF No: REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-LH-005

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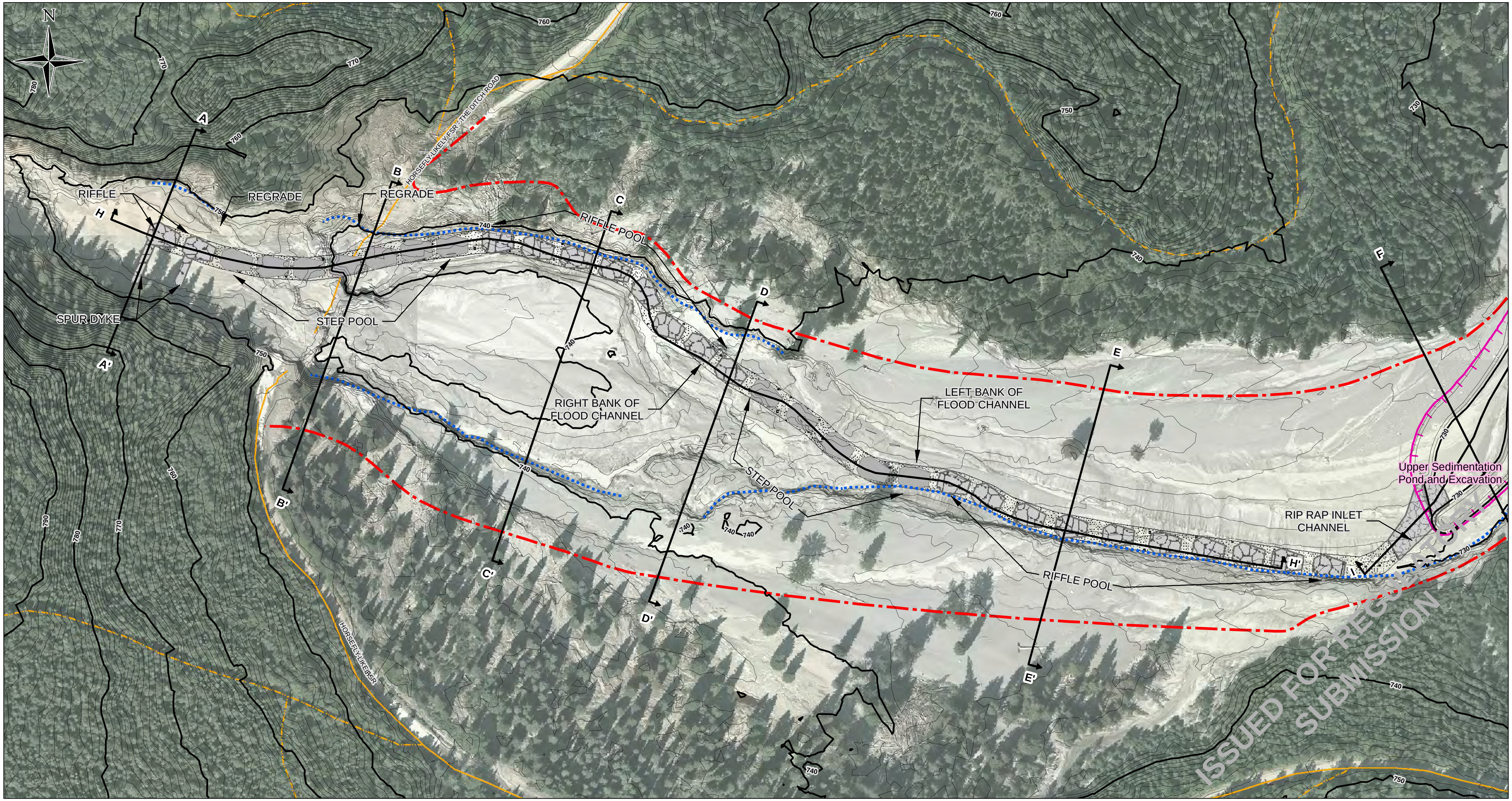
Project Path: P:\Current Projects\Mount Polley\621717\



LEGEND

1 METRE CONTOUR	ABANDONED ROADS
10 METRE CONTOUR	SEDIMENT PONDS
SECTION	GRAVEL
CREEK BANK STABILIZATION	RIFFLE POOL
TEMPORARY ACCESS ROAD	RIP RAP
TRIM GRAVEL ROADS	STEP POOL

NOTES

1. ORIGINAL IN COLOUR.
2. NUMERICAL SCALE REFLECTS FULL-SIZE PRINT. PRINT SCALING WILL DISTORT THIS SCALE, HOWEVER SCALE BAR WILL REMAIN ACCURATE.
3. INTENDED FOR ILLUSTRATION PURPOSES, ACCURACY HAS NOT BEEN VERIFIED FOR CONSTRUCTION OR NAVIGATION PURPOSES.

REFERENCES

0 12.5 25 50 75 100 Meters

WMS-TOPORAMA ON WMS.ESS-WS.NRCAN.GC.CA
CONTOURS AND ORTHOPHOTO DERIVED FROM AERIAL SURVEY CONDUCTED BY MCELHANNEY.

SNC · LAVALIN

CLIENT NAME: MOUNT POLLEY MINING CORPORATION	PROJECT LOCATION: MOUNT POLLEY MINE, BRITISH COLUMBIA

CHANNEL PLAN VIEW ABOVE SEDIMENTATION PONDS

BY: CJW, KVG	SCALE: 1:2,500	DATE: 2014/09/11	REF No: REV: 0
CHK'D: GJ	PROJ COORD SYS: NAD 1983 UTM Zone 10N		621717-LH-004

MXD Path: Z:\LOB\EIAM-BC\Current Projects\Mount Polley Mining Corporation\621717_Mount Polley Mine\4.0 Execution\4.5 GIS and Drawings\GIS\MapSeries\621717-LH-004_UpperChannel.mxd

Project Path: P:\Current Projects\Mount Polley\621717\

APPENDIX B

Results

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Physical Parameters									Microbiological Tests		Total Inorganics												
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUR-1	QUR-1(12:32)	2014 08 06	48.5	-	7.94	-	0.33	97.2	54	< 3	2.03	-	-	-	0.173	< 5	62.7	< 1	62.7	< 0.5	35	5.65	44.4	-	< 0.001	< 0.002[a]
	QUR-1X	2014 08 06	48.7	-	7.93	-	0.38	96.7	63	< 3	2.06	-	-	-	0.163	< 5	61.2	< 1	61.2	< 0.5	35	5.6	43.8	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	-	< 1	-	*	< 1	15	*	*	-	-	-	*	*	2	*	2	*	*	< 1	1	-	*	*
	QUR-1(13:30)	2014 08 06	48.7	-	7.93	-	0.52	97.1	58	< 3	2.06	-	-	-	0.132	< 5	61.9	1	62.9	< 0.5	34	5.6	44.7	-	< 0.001	< 0.002[a]
	QUR-1	2014 08 07	47.6	-	7.93	-	0.53	96.9	62	< 3	1.86	-	-	0.115	0.174	< 5	77.3	< 1	-	< 0.5	33	5.71	44.5	-	< 0.001	< 0.002[a]
	QUR-1(11:33)	2014 08 08	50	-	7.98	-	0.5	102	63	< 3	1.95	-	-	-	0.162	< 5	104	< 1	-	< 0.5	35	5.76	47.5	-	< 0.001	< 0.002[a]
	QUR-1(15:43)	2014 08 08	50.8	7.80	7.93	9.9	0.45	103	66	< 3	1.85	-	-	-	0.171	< 5	116	< 1	-	< 0.5	35	5.9	47	-	< 0.001	< 0.002[a]
	QUR-1(10:08)	2014 08 09	52.8	7.34	7.95	9.6	0.4	104	73	< 3	2.09	-	-	-	0.184	< 5	114	< 1	-	< 0.5	35	5.89	46.3	-	< 0.001	< 0.002[a]
	QUR-1(14:30)	2014 08 09	51.6	7.54	7.95	10.9	0.3	103	74	< 3	2.09	-	-	-	0.178	< 5	110	< 1	-	< 0.5	34	5.83	45.8	-	< 0.001	< 0.002[a]
	QUR-1(10:19)	2014 08 10	49.8	7.76	7.87	12.8	0.63	99.9	67	< 3	2.07	-	-	-	0.172	< 5	93.1	< 1	-	< 0.5	34	5.77	46.1	-	< 0.001	< 0.002[a]
	QUR-1(17:45)	2014 08 10	50.3	7.91	7.92	13.6	0.31	100	68	< 3	2.09	-	-	-	0.176	< 5	92.5	< 1	-	< 0.5	34	5.77	46.6	-	< 0.001	< 0.002[a]
	QUR-1(11:18)	2014 08 11	49.3	-	7.88	-	0.45	99.8	70	< 3	2.03	-	-	-	0.154	< 5	73.9	< 1	-	< 0.5	34	5.75	45.1	-	< 0.001	**0.0028**
	QUR-1(17:12)	2014 08 11	49.8	7.73	7.93	16.8	0.52	100	68	< 3	2.16	-	-	-	0.148	< 5	72.2	< 1	-	< 0.5	34	5.73	45.3	-	< 0.001	< 0.002[a]
	QUR-1(14:04)	2014 08 12	49.1	-	7.92	-	1.2	99.5	-	-	-	-	-	-	-	-	66.2	1	-	< 0.5	34	5.77	-	< 0.05	-	-
	QUR-1(16:34)	2014 08 12	49.7	8.14	7.88	17.4	0.55	99.4	68	< 3	1.92	-	-	-	0.142	< 5	64.4	< 1	-	< 0.5	36	5.74	45.2	-	0.0013	< 0.002[a]
	QUR-1(20:00)	2014 08 12	49.5	-	7.92	-	0.75	99.6	-	-	-	-	-	-	-	-	64.7	< 1	-	< 0.5	37	5.78	-	< 0.05	-	-
	QUR-1(04:00)	2014 08 13	50.1	-	7.9	-	0.37	99.1	-	-	-	-	-	-	-	-	62.1	< 1	-	< 0.5	36	5.77	-	< 0.05	-	-
	QUR-1(12:00)	2014 08 13	49.4	-	7.91	-	1.22	99.1	-	-	-	-	-	-	-	-	57.5	< 1	-	< 0.5	34	5.76	-	< 0.05	-	-
	QUR-1(13:18)	2014 08 13	48.4	8.20	7.93	18.5	0.25	99.1	68	< 3	1.92	-	-	-	0.139	< 5	56	1.2	-	< 0.5	36	5.75	45.3	-	0.0011	< 0.002[a]
	QUR-1(20:00)	2014 08 13	48.3	-	7.94	-	0.22	96.5	-	-	-	-	-	-	-	-	54.2	< 1	-	< 0.5	32	5.74	-	-	-	-
	QUR-1(04:00)	2014 08 14	49.2	-	7.94	-	0.14	96.5	-	-	-	-	-	-	-	-	53.6	< 1	-	< 0.5	32	5.73	-	-	-	-
	QUR-1(12:00)	2014 08 14	48.4	-	7.97	-	0.18	97.1	-	-	-	-	-	-	-	-	50.2	< 1	-	< 0.5	32	5.73	-	-	-	-
	QUR-1(14:45)	2014 08 14	49.1	7.96	7.97	19.8	0.18	95.9	66	< 3	2.17	-	-	-	0.124	< 5	48.4	< 1	-	< 0.5	33	5.71	45.7	-	< 0.001	< 0.002[a]
	QUR-1X(14:50)	2014 08 14	46.8	-	7.98	-	0.14	96.4	59	< 3	2.03	-	-	-	0.124	< 5	48.8	< 1	-	< 0.5	33	5.72	45	-	< 0.001	< 0.002[a]
	QA/QC RPD %		5	*	0	*	*	1	11	*	7	-	-	-	*	*	1	*	-	*	*	< 1	< 1	-	*	*
	QUR-1(20:00)	2014 08 14	49	-	7.89	-	0.42	99	-	-	-	-	-	-	-	-	50.7	< 1	-	< 0.5	34	5.75	-	-	-	-
	QUR-1(04:00)	2014 08 15	49	-	7.97	-	0.28	100	-	-	-	-	-	-	-	-	56.4	< 1	-	< 0.5	36	5.75	-	-	-	-
	QUR-1(12:00)	2014 08 15	48.7	-	8	-	0.32	101	-	-	-	-	-	-	-	-	61.2	< 1	-	< 0.5	37	5.78	-	-	-	-
	QUR-1(13:28)	2014 08 15	48.1	8.19	7.94	17.4	0.28	99.6	61	< 3	1.96	-	-	-	0.133	< 5	61.4	< 1	-	< 0.5	36	5.74	44.6	-	< 0.001	**0.0024**
	QUR-1(14:59)	2014 08 16	49.1	8.21	7.96	18.1	0.45	100	68	< 3	2.18	-	-	-	0.129	< 5	58.2	< 1	58.2	< 0.5	36	5.72	45.2	-	< 0.001	< 0.002[a]
	QUR-1(20:00)	2014 08 16	50.3	-	7.97	-	0.28	100	-	-	-	-	-	-	-	-	61.4	< 1	-	< 0.5	34	5.77	-	-	-	-
	QUR-1	2014 08 17	48.4	8.19	7.96	18.0	0.43	99.2	69	< 3	2.08	-	-	-	0.137	< 5	57	< 1	-	< 0.5	36	5.72	45.2	-	< 0.001	< 0.002[a]
	QUR-1(20:00)	2014 08 17	49.5	-	7.97	-	0.29	99.5	-	-	-	-	-	-	-	-	61.6	< 1	-	< 0.5	33	5.78	-	-	-	-
	QUR-1(04:00)	2014 08 18	49.5	-	7.96	-	0.4	99.8	-	-	-	-	-	-	-	-	63.4	< 1	-	< 0.5	33	5.79	-	-	-	-
	QUR-1(09:18)	2014 08 18	48.6	8.11	7.99	17.3	0.54	99	69	< 3	2.5	-	-	-	0.153	5.3	62.6	< 1	-	< 0.5	34	5.76	44.7	-	< 0.001	< 0.002[a]
	QUR-1(12:00)	2014 08 18	50.1	-	7.92	-	0.33	98.8	-	-	-	-	-	-	-	-	62.3	< 1	-	< 0.5	34	5.68	-	-	-	-
	QUR-1(20:00)	2014 08 18	51.4	-	7.93	-	0.36	98.9	-	-	-	-	-	-	-	-	57.7	< 1	-	< 0.5	35	5.66	-	-	-	-
	QUR-1(04:00)	2014 08 19	50.6	-	7.93	-	0.41	99	-	-	-	-	-	-	-	-	58.5	< 1	-	< 0.5	34	5.68	-	-	-	-
	QUR-1(12:00)	2014 08 19	49.5	-	7.93	-	0.42	98.9	-	-	-	-	-	-	-	-	60.8	< 1	-	< 0.5	34	5.7	-	-	-	-
	QUR-1(13:27)	2014 08 19	49.8	7.63	7.88	17.8	0.36	97.5	67	< 3	2.07	-	-	-	0.142	< 5	58.1	< 1	-	< 0.5	34	5.65	45.2	-	< 0.001	< 0.002[a]
	QUR-1(20:00)	2014 08 19	50	-	7.94	-	0.31	99.1	-	-	-	-	-	-	-	-	59.2	< 1	-	< 0.5	35	5.64	-	-	-	-
	QUR-1(04:00)	2014 08 20	49.7	-	7.89	-	0.36	99.1	-	-	-	-	-	-	-	-	62.4	< 1	-	< 0.5	33	5.62	-	-	-	-
	QUR-1(12:00)	2014 08 20	50.6	-	7.9	-	0.41	99.4	-	-	-	-	-	-	-	-	65.6	< 1	-	< 0.5	34	5.69	-	-	-	-
	QUR-1(16:40)	2014 08 20	50.5	-	7.9	-	0.63	99.8	65	< 3	1.8	-	-	-	0.132	< 5	74.2	< 1	-	< 0.5	34	5.72	44.7	-	< 0.001	< 0.002[a]
	QUR-1(20:00)	2014 08 20	50.9	-	7.85	-	0.52	101	-	-	-	-	-	-	-	-	92	< 1	-	< 0.5	34	5.88	-	-	-	-
	QUR-1(04:00)	2014 08 21	51.2	-	7.86	-	0.69	99.3	-	-	-	-	-	-	-	-	81	< 1	-	< 0.5	36	5.82	-	-	-	-
	QUR-1(12:00)	2014 08 21	50.9	-	7.87	-	0.5	99.6	-	-	-	-	-	-	-	-	82.7	< 1	-	< 0.5	36	5.83	-	-	-	-
	QUR-1(16:28)	2014 08 21	51.7	-	7.87	-	0.81	100	62	< 3	2.1	-	-	-	0.164	5.1	89.3	< 1	-	< 0.5	36	5.83	44.9	-	< 0.001	< 0.002[a]
	QUR-1(20:00)	2014 08 21	51.3	-	7.88	-	0.81	101	-	-	-	-	-	-	-	-	92.4	< 1	-	< 0.5	37	5.88	-	-	-	-
	QUR-1(04:00)	2014 08 22	51.6	-	7.86	-	0.55	101	-	-	-	-	-	-	-	-	81.2	< 1	-	< 0.5	36	5.85	-	-	-	-
	QUR-1(10:40)	2014 08 22	51.6	8.05	7.91	14.3	0.73	100	61	< 3	2	-	-	-	0.157	< 5	83.8	< 1	-	< 0.5	36	5.83	45.6	-	< 0.001	< 0.002[a]

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Dissolved Metals																											
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUR-1	QUR-1	2014 08 06	10.4	16.2	< 30	1.93	0.422	0.495	1.01	< 0.1	0.12	5.3	< 0.1	< 10	0.019	< 0.5	< 0.1	0.72	< 0.05	0.83	< 0.05	0.323	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.122	< 1	< 3
	QUR-1X	2014 08 06	10.8	16.3	< 30	1.93	0.47	0.492	0.863	< 0.1	0.12	5.15	< 0.1	< 10	0.07	< 0.5	< 0.1	0.68	< 0.05	0.73	< 0.05	0.316	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QA/QC RPD %		*	< 1	*	0	11	< 1	16	*	*	3	*	*	*	*	*	*	*	*	*	2	*	*	*	*	*	2	*	*
	QUR-1	2014 08 06	9.7	16.3	< 30	1.94	0.362	0.468	1.04	< 0.1	0.12	5.24	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.7	< 0.05	0.314	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.122	< 1	< 3
	QUR-1	2014 08 07	9.4	15.9	< 30	1.89	0.1	0.483	0.843	< 0.1	0.1	5.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.75	< 0.05	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUR-1(11:33)	2014 08 08	9.2	16.8	< 30	1.95	0.156	0.468	0.872	< 0.1	0.11	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.63	-	0.278	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUR-1(15:43)	2014 08 08	7.5	17.1	< 30	1.98	0.181	0.457	0.873	< 0.1	< 0.1	5.17	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.75	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUR-1(10:08)	2014 08 09	7.3	17.8	< 30	2.03	0.395	0.461	0.873	< 0.1	0.11	5.09	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.71	-	0.272	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.182	< 1	< 3
	QUR-1(14:30)	2014 08 09	7.5	17.4	< 30	2	0.368	0.456	0.856	< 0.1	0.1	5.13	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.54	-	0.271	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.171	< 1	< 3
	QUR-1(10:19)	2014 08 10	9.5	16.8	< 30	1.91	0.263	0.474	0.871	< 0.1	0.11	5.06	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.57	-	0.271	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	< 3
	QUR-1(17:45)	2014 08 10	9.3	17	< 30	1.91	0.33	0.471	0.865	< 0.1	0.11	5.03	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.52	-	0.263	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	< 3
	QUR-1(11:18)	2014 08 11	11.4	16.6	< 30	1.9	0.361	0.494	0.857	< 0.1	0.12	5.21	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.1	-	0.271	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUR-1(17:12)	2014 08 11	10.3	16.8	< 30	1.92	0.411	0.488	0.871	< 0.1	0.1	5.2	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.12	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUR-1(14:04)	2014 08 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(16:34)	2014 08 12	10.1	16.6	< 30	2.01	0.358	0.463	0.843	< 0.1	0.11	5.25	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.85	-	0.295	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.128	< 1	< 3
	QUR-1(20:00)	2014 08 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(12:00)	2014 08 13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(13:18)	2014 08 13	10.4	16.3	< 30	1.89	0.159	0.47	0.845	< 0.1	0.12	5.31	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.79	-	0.303	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUR-1(20:00)	2014 08 13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(12:00)	2014 08 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(14:45)	2014 08 14	9.4	16.4	< 30	1.94	0.202	0.469	0.858	< 0.1	0.12	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.62	-	0.318	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUR-1X(14:50)	2014 08 14	10.7	15.8	< 30	1.81	0.211	0.465	0.858	< 0.1	0.11	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.69	-	0.296	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QA/QC RPD %		*	4	*	7	*	1	0	*	*	0	*	*	*	*	*	*	*	*	-	7	*	*	*	*	*	0	*	*
	QUR-1(20:00)	2014 08 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(12:00)	2014 08 15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(13:28)	2014 08 15	9.6	16.1	< 30	1.9	0.355	0.469	0.846	< 0.1	0.13	5.55	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.56	-	0.294	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.123	< 1	< 3
	QUR-1(14:59)	2014 08 16	9.4	16.5	< 30	1.94	0.315	0.458	0.812	< 0.1	0.12	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.65	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUR-1(20:00)	2014 08 16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1	2014 08 17	8.6	16.3	< 30	1.91	0.185	0.465	0.832	< 0.1	0.11	4.98	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.6	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUR-1(20:00)	2014 08 17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(09:18)	2014 08 18	9	16.4	< 30	1.88	0.14	0.466	0.825	< 0.1	< 0.1	5.16	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.69	-	0.302	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUR-1(12:00)	2014 08 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(20:00)	2014 08 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(12:00)	2014 08 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(13:27)	2014 08 19	11.2	16.8	< 30	1.91	0.45	0.477	0.843	< 0.1	0.12	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.56	< 0.05	0.79	-	0.279	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUR-1(20:00)	2014 08 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(12:00)	2014 08 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(16:40)	2014 08 20	9.9	17	< 30	1.95	0.542	0.448	0.803	< 0.1	< 0.1	5.11	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.69	< 0.05	0.76	-	0.269	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
	QUR-1(20:00)	2014 08 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(12:00)	2014 08 21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(16:28)	2014 08 21	9.5	17.5	< 30	1.95	0.586	0.47	0.861	< 0.1	< 0.1	5.44	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.87	< 0.05	0.61	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
	QUR-1(20:00)	2014 08 21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(04:00)	2014 08 22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1(10:40)	2014 08 22	8.7	17.5	< 30	1.94	0.619	0.468	0.858	< 0.1	0.11	5.38	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.81	< 0.05	0.6	-	0.297	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Total Metals																														
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUR-1	QUR-1	2014 08 06	19.6	< 0.1	0.13	5.62	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.66	< 30	< 0.05	0.73	2,030	1.42	< 0.05	0.331	< 0.5	493	< 0.5	1,720	< 0.01	902	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUR-1X	2014 08 06	19.7	< 0.1	0.14	5.61	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.65	< 30	< 0.05	0.7	1,990	1.38	< 0.05	0.323	< 0.5	475	< 0.5	1,680	< 0.01	874	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QA/QC RPD %		< 1	*	*	< 1	*	*	*	*	1	*	*	*	*	*	*	2	*	*	2	*	4	*	2	*	3	*	*	*	< 1	*	*
	QUR-1	2014 08 06	22.1	< 0.1	0.14	5.35	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.65	< 30	< 0.05	0.71	1,980	1.41	< 0.05	0.316	< 0.5	476	< 0.5	1,670	< 0.01	867	< 0.01	< 0.1	< 10	0.127	< 1	< 3
	QUR-1	2014 08 07	23.8	< 0.1	0.13	5.34	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.68	< 30	< 0.05	0.77	1,970	1.35	< 0.05	0.305	< 0.5	484	< 0.5	1,650	< 0.01	859	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUR-1(11:33)	2014 08 08	24.2	< 0.1	0.13	5.42	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	0.64	48	< 0.05	0.51	2,010	1.62	< 0.05	0.283	< 0.5	474	< 0.5	1,670	< 0.01	888	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUR-1(15:43)	2014 08 08	20.4	< 0.1	0.13	5.26	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	< 0.1	0.62	< 30	< 0.05	0.55	2,030	1.27	< 0.05	0.281	< 0.5	470	< 0.5	1,670	< 0.01	885	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUR-1(10:08)	2014 08 09	27.8	< 0.1	0.12	5.34	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	0.72	33	< 0.05	0.71	2,040	1.73	< 0.05	0.295	< 0.5	472	< 0.5	1,680	< 0.01	872	< 0.01	< 0.1	< 10	0.187	< 1	< 3
	QUR-1(14:30)	2014 08 09	28.2	< 0.1	0.14	5.31	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	0.68	31	< 0.05	0.69	2,030	1.59	< 0.05	0.297	< 0.5	466	< 0.5	1,660	< 0.01	861	< 0.01	< 0.1	< 10	0.182	< 1	< 3
	QUR-1(10:19)	2014 08 10	21.7	< 0.1	0.12	5.06	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.65	< 30	< 0.05	< 0.5	1,930	1.15	< 0.05	0.283	< 0.5	480	< 0.5	1,620	< 0.01	893	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUR-1(17:45)	2014 08 10	19.5	< 0.1	0.12	5.11	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	0.61	< 30	< 0.05	0.54	1,940	1.2	< 0.05	0.277	< 0.5	491	< 0.5	1,640	< 0.01	899	< 0.01	< 0.1	< 10	0.145	< 1	< 3
	QUR-1(11:18)	2014 08 11	23.8	< 0.1	0.14	5.28	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.64	< 30	< 0.05	0.98	1,900	1.39	< 0.05	0.293	< 0.5	487	< 0.5	1,550	< 0.01	873	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUR-1(17:12)	2014 08 11	23.6	< 0.1	0.13	5.41	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.66	< 30	< 0.05	0.82	1,910	1.37	< 0.05	0.293	< 0.5	490	< 0.5	1,560	< 0.01	859	< 0.01	< 0.1	< 10	0.13	< 1	< 3
	QUR-1(14:04)	2014 08 12	16.6	< 0.1	0.14	5.25	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.68	< 30	< 0.05	0.85	1,990	1.17	-	0.304	< 0.5	473	< 0.5	1,620	< 0.01	866	< 0.01	< 0.1	< 10	0.129	< 1	**9.4**
	QUR-1(16:34)	2014 08 12	20.4	< 0.1	0.13	5.41	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.7	< 30	< 0.05	0.81	1,970	1.18	< 0.05	0.317	< 0.5	475	< 0.5	1,600	< 0.01	857	< 0.01	< 0.1	< 10	0.132	< 1	< 3
	QUR-1(20:00)	2014 08 12	15.8	< 0.1	0.14	5.26	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.63	< 30	< 0.05	0.84	1,960	1.15	-	0.311	< 0.5	469	< 0.5	1,590	< 0.01	863	< 0.01	< 0.1	< 10	0.135	< 1	**8**
	QUR-1(04:00)	2014 08 13	25.3	< 0.1	0.14	5.49	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	0.68	< 30	< 0.05	0.83	1,980	1.47	-	0.307	< 0.5	482	< 0.5	1,610	< 0.01	881	< 0.01	< 0.1	< 10	0.134	< 1	6
	QUR-1(12:00)	2014 08 13	18.6	< 0.1	0.15	5.41	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.64	< 30	< 0.05	0.82	1,950	1.38	-	0.312	< 0.5	466	< 0.5	1,600	< 0.01	858	< 0.01	< 0.1	< 10	0.131	< 1	6.6
	QUR-1(13:18)	2014 08 13	18.9	< 0.1	0.14	5.43	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.63	< 30	< 0.05	0.84	1,930	1.22	< 0.05	0.316	< 0.5	480	< 0.5	1,580	< 0.01	863	< 0.01	< 0.1	< 10	0.134	< 1	< 3
	QUR-1(20:00)	2014 08 13	15.6	< 0.1	0.16	5.3	< 0.1	< 0.5	< 10	< 0.01	16,200	0.62	< 0.1	0.62	< 30	< 0.05	0.74	1,930	1.32	-	0.331	0.58	465	< 0.5	1,560	< 0.01	846	< 0.01	< 0.1	< 10	0.131	< 1	**8**
	QUR-1(04:00)	2014 08 14	19.5	< 0.1	0.16	5.46	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.62	< 30	< 0.05	0.76	1,970	1.53	-	0.314	< 0.5	475	< 0.5	1,600	< 0.01	852	< 0.01	< 0.1	< 10	0.134	< 1	6.8
	QUR-1(12:00)	2014 08 14	18.7	0.56	0.17	5.46	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.59	< 30	< 0.05	0.7	1,890	1.63	-	0.324	< 0.5	476	< 0.5	1,560	< 0.01	869	< 0.01	< 0.1	< 10	0.136	< 1	**8**
	QUR-1(14:45)	2014 08 14	16.4	< 0.1	0.13	5.39	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.6	< 30	< 0.05	0.67	1,910	1.38	-	0.316	< 0.5	462	< 0.5	1,570	< 0.01	843	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUR-1X(14:50)	2014 08 14	18.7	< 0.1	0.15	5.44	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.64	< 30	< 0.05	0.74	1,860	1.41	-	0.326	< 0.5	470	< 0.5	1,530	< 0.01	854	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QA/QC RPD %		13	*	*	1	*	*	*	*	1	*	*	*	*	*	*	3	*	-	3	*	2	*	3	*	1	*	*	*	1	*	*
	QUR-1(20:00)	2014 08 14	19.2	< 0.1	0.17	5.08	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.61	< 30	< 0.05	< 0.5	1,950	1.67	-	0.335	< 0.5	472	< 0.5	1,630	< 0.01	861	< 0.01	< 0.1	< 10	0.127	< 1	**10.1**
	QUR-1(04:00)	2014 08 15	23.1	0.1	0.16	5.2	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.64	< 30	< 0.05	< 0.5	1,940	1.8	-	0.322	< 0.5	478	< 0.5	1,630	< 0.01	866	< 0.01	< 0.1	< 10	0.122	< 1	6.2
	QUR-1(12:00)	2014 08 15	15	< 0.1	0.14	5.04	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.64	< 30	< 0.05	< 0.5	1,920	1.24	-	0.324	< 0.5	470	< 0.5	1,590	< 0.01	880	< 0.01	< 0.1	< 10	0.128	< 1	5.7
	QUR-1(13:28)	2014 08 15	18.5	< 0.1	0.16	5.58	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.63	< 30	< 0.05	< 0.5	1,950	1.35	-	0.3	< 0.5	489	< 0.5	1,630	< 0.01	881	< 0.01	< 0.1	< 10	0.132	< 1	< 3
	QUR-1(14:59)	2014 08 16	18.9	< 0.1	0.13	5.27	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.62	< 30	< 0.05	0.71	1,910	1.54	-	0.315	< 0.5	465	< 0.5	1,580	< 0.01	837	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUR-1(20:00)	2014 08 16	13.6	< 0.1	0.13	5.36	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	0.51	< 30	< 0.05	0.71	1,980	1.13	-	0.328	< 0.5	482	< 0.5	1,630	< 0.01	882	< 0.01	< 0.1	< 10	0.142	< 1	6.2
	QUR-1	2014 08 17	20	< 0.1	0.13	5.17	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.63	< 30	< 0.05	0.62	1,920	1.35	-	0.312	< 0.5	475	< 0.5	1,600	< 0.01	875	< 0.01	< 0.1	< 10	0.132	< 1	< 3
	QUR-1(20:00)	2014 08 17	23.4	< 0.1	0.11	5.39	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.83	< 30	< 0.05	0.65	1,930	1.44	-	0.294	< 0.5	467	< 0.5	1,610	< 0.01	848	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUR-1(04:00)	2014 08 18	19.3	< 0.1	0.12	5.36	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.74	< 30	< 0.05	0.63	1,930	1.5	-	0.295	< 0.5	475	< 0.5	1,600	< 0.01	839	< 0.01	< 0.1	< 10	0.133	< 1	6.1
	QUR-1(09:18)	2014 08 18	27.7	< 0.1	0.13	5.2	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.72	< 30	< 0.05	0.66	1,920	1.76	-	0.311	< 0.5	445	< 0.5	1,610	< 0.01	840	< 0.01	< 0.1	< 10	0.137	< 1	**10.1**
	QUR-1(12:00)	2014 08 18	20.1	< 0.1	0.13	5.34	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	0.68	< 30	< 0.05	0.8	1,930	1.25	-	0.304	< 0.5	487	< 0.5	1,610	< 0.01	871	< 0.01	< 0.1	< 10	0.139	< 1	4.7
	QUR-1(20:00)	2014 08 18	16.7	< 0.1	0.14	5.52	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	0.7	< 30	< 0.05	0.82	2,000	1.26	-	0.32	< 0.5	493	< 0.5	1,650	< 0.01	895	< 0.01	< 0.1	< 10	0.141	< 1	4.4
	QUR-1(04:00)	2014 08 19	22.5	< 0.1	0.13	5.48	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	0.77	< 30	< 0.05	0.85	1,970	1.62	-	0.311	< 0.5	489	< 0.5	1,640	< 0.01	892	< 0.01	< 0.1	< 10	0.137	< 1	4.1
	QUR-1(12:00)	2014 08 19	21.6	< 0.1	0.16	5.39	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.76	< 30	< 0.05	0.83	1,920	1.56	-	0.308	< 0.5	477	< 0.5	1,600	< 0.01	866	< 0.01	< 0.1	< 10	0.138	< 1	5
	QUR-1(13:27)	2014 08 19	30.4	< 0.1	0.18	5.39	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	0.87	< 30	< 0.05	0.82	1,950	1.61	-	0.318	< 0.5	495	< 0.5	1,620	< 0.01	874	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUR-1(20:00)	2014 08 19	16.1	< 0.1	0.13	5.15	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	0.71	< 30	< 0.05	0.74	1,980	1.29	-	0.29	< 0.5	463	< 0.5	1,590	< 0.01	823	< 0.01	< 0.1	< 10	0.129	< 1	4.4
	QUR-1(04:00)	2014 08 20	17.5	< 0.1	0.14	5.23	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.76	< 30	< 0.05	0.76	1,970	1.28	-	0.283	0.52	445	< 0.5	1,590	< 0.01	822	< 0.01	< 0.1	< 10	0.129	< 1	3.6
	QUR-1(12:00)	2014 08 20	24.4	< 0.1	0.13	5.29	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	0.89	< 30	< 0.05	0.86	1,990	1.67	-	0.28	< 0.5	454	< 0.5	1,600	< 0.01	828	< 0.01	< 0.1	< 10	0.132	< 1	3.7
	QUR-1(16:40)	2014 08 20	30.9	< 0.1	0.13	5.53	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	< 0.1	1.17	< 30	< 0.05	0.69	2,010	1.71	-	0.29	< 0.5	473	< 0.5	1,620	< 0.01	846	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUR-1(20:00)	2014 08 20	23	< 0.1	0.16	5.43	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	1.13	< 30	< 0.05	0.52	1,960	1.38	-	0.331	< 0.5	473	< 0.5	1,610	< 0.01	871	0.013	< 0.1	< 10	0.141	< 1	4.6
	QUR-1(04:00)	2014 08 21	35.3	< 0.1	0.15	5.84	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	1.41	< 30	< 0.05	< 0.5	1,960	1.58	-	0.303	< 0.5	481	< 0.5	1,640	< 0.01	876	< 0.01	< 0.1	< 10	0.142	< 1	3.7
	QUR-1(12:00)	2014 08 21	42.7	< 0.1	0.15	5.87	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	1.62	59	< 0.05	< 0.5	1,950	1.79	-	0.309	< 0.5	480	< 0.5	1,630	< 0.01	867	< 0.01	< 0.1	< 10	0.145	< 1	3.9
	QUR-1(16:28)	2014 08 21	53.7	< 0.1	0.15	6.14	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	1.89	43	< 0.05	0.54	1,970	2.52	-	0.298	< 0.5	497	< 0.5	1,670	< 0.01	879	< 0.01	< 0.1	< 10	0.146	< 1	< 3
	QUR-1(20:00)	2014 08 21	39.7	< 0.1	0.14	5.9	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	1.66	< 30	< 0.05	0.52	1,970	1.81	-	0.309	< 0.5	495	< 0.5	1,640	< 0.01	883	< 0.01	< 0.1	< 10	0.144	< 1	4.5
	QUR-1(04:00)	2014 08 22	39.7	0.1	0.13	6.11	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	1.69	32	< 0.05	0.52	1,980	1.82	-	0.322	< 0.5	480	< 0.5	1,650	< 0.01	867	< 0.01	< 0.1	< 10	0.142	< 1	3.5
	QUR-1(10:40)	2014 08 22	69.5	< 0.1	0.17	6.25	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	2.02	70	< 0.05	< 0.5	1,980	3.22	-	0.314	< 0.5	490	< 0.5	1,710	< 0.01	874	< 0.01	< 0.1	< 10	0.152	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Microbiological Tests: Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Inorganics: Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[i]	n/a[i]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUR-1	QUR-1	2014 08 23	51.2	8.08	7.94	14.7	1.05	99.7	70	< 3	2.03	-	-	-	0.151	< 5	80.7	< 1	-	< 0.5	34	5.86	45.5	-	< 0.001	< 0.002[a]
	QUR-1	2014 08 24	52.6	7.73	7.89	14.4	0.67	102	61	< 3	< 0.5	-	-	-	0.176	< 5	85.1	< 1	-	< 0.5	36	5.82	45.7	-	< 0.001	< 0.002[a]
	QUR-1-4:00	2014 08 24	52	-	7.9	-	0.66	102	-	< 3	-	-	-	-	-	-	77	< 1	-	< 0.5	35	5.85	-	-	-	-
	QUR-1-12:00	2014 08 24	50.9	-	7.93	-	0.81	103	-	< 3	-	-	-	-	-	-	83.4	< 1	-	< 0.5	35	5.87	-	-	-	-
	QUR-1-16:00	2014 08 24	51.1	-	7.96	-	1.1	103	-	< 3	-	-	-	-	-	-	90.7	< 1	-	< 0.5	35	6.02	-	-	-	-
	QUR-1-20:00	2014 08 24	51.3	-	7.86	-	0.66	102	-	< 3	-	-	-	-	-	-	86.7	< 1	-	< 0.5	33	5.85	-	-	-	-
	QUR-1	2014 08 25	51.3	-	7.98	-	1.06	104	-	< 3	-	-	-	-	-	-	97.8	< 1	-	< 0.5	35	6.04	-	-	-	-
	QUR-1-08:00	2014 08 25	51.7	-	7.99	-	1.14	103	-	< 3	-	-	-	-	-	-	85.4	< 1	-	< 0.5	35	6.02	-	-	-	-
	QUR-1(11:21)	2014 08 25	51	-	7.94	-	1.28	102	72	< 3	2.14	-	-	-	0.153	< 5	81.7	< 1	-	< 0.5	35	5.94	46	-	< 0.001	< 0.002[a]
	QUR-1-16:00	2014 08 25	52.2	8.08	8.01	14.6	1.03	103	-	< 3	-	-	-	-	-	-	79.8	< 1	-	< 0.5	35	6	-	< 0.05	-	-
	QUR-1	2014 08 26	51.1	8.17	8	16.4	0.84	102	63	< 3	2.14	-	-	-	0.143	< 5	64.6	< 1	-	< 0.5	35	5.91	45.9	-	< 0.001	< 0.002[a]
	QUR-1X	2014 08 26	51.5	8.17	7.98	16.4	0.75	102	63	< 3	2.17	-	-	-	0.148	< 5	65.1	< 1	-	< 0.5	35	5.91	45.7	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	11	0	0	*	*	-	-	-	*	*	< 1	*	-	*	*	0	< 1	-	*	*
	QUR-1-00:00	2014 08 26	51.6	-	7.97	-	0.87	103	-	< 3	-	-	-	-	-	-	74.5	< 1	-	< 0.5	35	5.99	-	< 0.05	-	-
	QUR-1-8:00	2014 08 26	50.6	-	8.02	-	0.82	103	-	< 3	-	-	-	-	-	-	67.2	< 1	-	< 0.5	35	5.94	-	< 0.05	-	-
	QUR-1-16:00	2014 08 26	49	-	7.99	-	0.76	102	-	< 3	-	-	-	-	-	-	64.9	< 1	-	< 0.5	33	5.97	-	-	-	-
	QUR-1	2014 08 27	50.9	8.19	8	17.2	0.8	102	73	< 3	2.02	-	-	-	0.132	< 5	60	< 1	-	< 0.5	34	5.93	45.4	-	< 0.001	< 0.002[a]
	QUR-1-00:00	2014 08 27	47.4	-	7.97	-	1.23	102	-	< 3	-	-	-	-	-	-	62.9	< 1	-	< 0.5	35	5.95	-	-	-	-
	QUR-1-08:00	2014 08 27	50.1	-	8	-	0.76	101	-	< 3	-	-	-	-	-	-	60.7	< 1	-	< 0.5	34	5.92	-	-	-	-
	QUR-1-16:00	2014 08 27	-	-	7.97	-	0.55	97.8	-	< 3	-	-	-	-	-	-	56.9	< 1	-	< 0.5	33	5.72	-	-	-	-
	QUR-1	2014 08 28	49	-	7.93	-	0.66	100	67	< 3	2.02	-	-	-	0.131	< 5	54.8	< 1	-	< 0.5	35	5.86	44.4	-	< 0.001	**0.0021**
	QUR-1-00:00	2014 08 28	-	-	7.96	-	0.55	101	-	< 3	-	-	-	-	-	-	57.6	< 1	-	< 0.5	35	5.93	-	-	-	-
	QUR-1-08:00	2014 08 28	-	-	7.97	-	0.89	101	-	< 3	-	-	-	-	-	-	55.6	1.1	-	< 0.5	35	5.91	-	-	-	-
QUL-1	QUL-1	2014 08 06	48	8.13	7.97	20.4	0.35	94.6	59	< 3	2.16	-	-	-	0.146	< 5	50.3	< 1	-	< 0.5	31	5.6	43.8	-	< 0.001	< 0.002[a]
QUL-2	QUL-2	2014 08 06	48.3	8.13	7.98	20.6	0.33	94.4	58	< 3	2.06	-	-	-	0.152	< 5	48.3	< 1	-	< 0.5	31	5.59	43.7	-	< 0.001	< 0.002[a]
	QUL-2	2014 08 09	48.8	7.79	7.85	18.0	0.49	96.4	64	< 3	2.38	-	-	-	0.136	< 5	54.8	< 1	-	< 0.5	35	5.54	43.5	-	< 0.001	< 0.002[a]
	QUL-2	2014 08 11	47.7	7.69	7.93	20.2	0.27	97.8	67	< 3	2.39	-	-	-	0.139	< 5	52.3	< 1	-	< 0.5	34	5.62	43.7	-	< 0.001	< 0.002[a]
	QUL-2-0M	2014 08 16	48.8	8.07	7.97	20.2	0.4	95	54	< 3	2.08	-	-	-	0.111	< 5	42.5	< 1	-	< 0.5	36	5.64	43.2	-	< 0.001	< 0.002[a]
	QUL-2-10M	2014 08 16	50.6	7.89	7.93	12.1	0.3	97.7	60	< 3	1.97	-	-	-	0.14	< 5	86	< 1	-	< 0.5	36	5.75	44.4	-	< 0.001	< 0.002[a]
	QUL-2-30M	2014 08 16	53.3	7.62	7.84	4.7	1.94	107	68	< 3	1.81	-	-	-	0.181	< 5	141	< 1	-	< 0.5	38	6.34	48.1	-	< 0.001	< 0.002[a]
	QUL-2-47M	2014 08 21	62.8	7.94	7.88	5.5	48.2	133	90	22.9	1.99	-	-	-	0.328	28.3	195	< 1	-	< 0.5	55	12	55.4	-	0.0407	**0.21**
	QUL-2-0M	2014 08 25	49.5	7.93	7.97	18.4	0.27	98.4	64	< 3	2.03	-	-	-	0.131	< 5	47.9	< 1	-	< 0.5	35	5.76	43.8	-	< 0.001	< 0.002[a]
	QUL-2X-0M	2014 08 25	49.6	7.93	7.97	18.4	0.24	98.3	67	< 3	1.97	-	-	-	0.132	< 5	48	< 1	-	< 0.5	34	5.76	44.3	-	< 0.001	**0.0158**
	QA/QC RPD %		< 1	0	0	0	*	< 1	5	*	*	-	-	-	*	*	< 1	*	-	*	*	0	1	-	*	*
	QUL-2-8M	2014 08 25	50	7.94	7.95	18.1	0.27	99.9	69	< 3	1.8	-	-	-	0.145	< 5	74.7	< 1	-	< 0.5	34	5.85	45	-	0.013	**0.0156**
	QUL-2-40M	2014 08 25	58.6	7.56	7.91	5.9	17.9	119	79	11.7	1.71	-	-	-	0.246	11	166	< 1	-	< 0.5	44	8.92	51.1	-	0.0069	**0.0214**
	QUL-2-0M	2014 08 27	49.5	7.97	7.98	18.9	0.25	98.2	63	< 3	2.1	-	-	-	0.12	< 5	43.6	< 1	-	< 0.5	34	5.76	44.6	-	0.001	< 0.002[a]
	QUL-2-15M	2014 08 27	50.7	-	7.97	-	3.55	102	65	< 3	2.06	-	-	-	0.15	< 5	81.8	< 1	-	< 0.5	35	6.11	45.5	-	< 0.001	< 0.002[a]
	QUL-2-42M	2014 08 27	63	-	7.97	-	49	135	107	11.3	1.92	-	-	-	0.29	33.1	189	< 1	-	< 0.5	56	12.8	54.1	-	0.0019	**0.0034**

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (mg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Dissolved Metals																											
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUR-1	QUR-1	2014 08 23	10	17.3	< 30	1.95	0.597	0.47	0.866	< 0.1	0.12	5.5	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.88	< 0.05	0.82	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUR-1	2014 08 24	9	17.7	< 30	2	0.638	0.474	0.86	< 0.1	0.12	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.95	< 0.05	0.87	-	0.274	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUR-1-4:00	2014 08 24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-12:00	2014 08 24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-16:00	2014 08 24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-20:00	2014 08 24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1	2014 08 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-08:00	2014 08 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1	2014 08 25	9	17.2	< 30	1.93	0.845	0.458	0.844	< 0.1	0.1	5.8	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.06	< 0.05	< 0.5	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUR-1-16:00	2014 08 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1	2014 08 26	10.6	17.2	< 30	1.95	0.702	0.459	0.832	< 0.1	0.1	5.49	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.97	< 0.05	0.62	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUR-1X	2014 08 26	9.9	17.4	< 30	1.97	0.753	0.471	0.858	< 0.1	0.11	5.59	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.98	< 0.05	0.58	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QA/QC RPD %		*	1	*	1	7	3	3	*	*	2	*	*	*	*	*	*	*	*	-	< 1	*	*	*	*	*	< 1	*	*
	QUR-1-00:00	2014 08 26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-8:00	2014 08 26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-16:00	2014 08 26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1	2014 08 27	10.3	17.2	< 30	1.96	0.662	0.464	0.881	< 0.1	0.13	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.93	< 0.05	0.67	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUR-1-00:00	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-08:00	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-16:00	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1	2014 08 28	9.7	16.5	< 30	1.88	0.504	0.471	0.875	< 0.1	0.11	5.45	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.74	< 0.05	0.55	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUR-1-00:00	2014 08 28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUR-1-08:00	2014 08 28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QUL-1	QUL-1	2014 08 06	11.7	16.1	< 30	1.9	0.422	0.461	1.04	< 0.1	< 0.1	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.56	< 0.05	< 0.5	< 0.05	0.356	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
QUL-2	QUL-2	2014 08 06	11.4	16.2	< 30	1.92	0.443	0.479	1.09	< 0.1	0.1	5.18	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.58	< 0.05	< 0.5	< 0.05	0.368	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
	QUL-2	2014 08 09	10.3	16.4	< 30	1.89	0.804	0.48	0.841	< 0.1	< 0.1	5.39	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.61	-	0.298	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-2	2014 08 11	11.4	16	< 30	1.87	0.77	0.496	0.846	< 0.1	0.11	5.23	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.97	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.12	< 1	< 3
	QUL-2-0M	2014 08 16	10.3	16.4	< 30	1.9	0.527	0.468	0.808	< 0.1	0.12	5.45	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.54	< 0.05	0.64	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
	QUL-2-10M	2014 08 16	9.6	17.1	< 30	1.9	0.288	0.453	0.791	< 0.1	< 0.1	5.1	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.72	-	0.254	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.144	< 1	< 3
	QUL-2-30M	2014 08 16	5.7	18	< 30	2.02	3.26	0.475	0.924	< 0.1	0.1	5.5	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.71	< 0.05	0.84	-	0.336	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.164	< 1	< 3
	QUL-2-47M	2014 08 21	11.7	21.2	< 30	2.37	53.9	0.732	3.23	0.15	0.46	13.2	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.06	< 0.05	0.99	-	2.92	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.438	< 1	< 3
	QUL-2-0M	2014 08 25	10	16.7	< 30	1.91	0.377	0.456	0.799	< 0.1	< 0.1	5.18	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.279	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-2X-0M	2014 08 25	9.6	16.7	< 30	1.91	0.384	0.444	0.796	< 0.1	0.12	5.16	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.265	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.126	< 1	< 3
	QA/QC RPD %		*	0	*	0	2	3	< 1	*	*	< 1	*	*	*	*	*	*	*	*	-	5	*	*	*	*	*	5	*	*
	QUL-2-8M	2014 08 25	9.9	16.9	< 30	1.91	0.343	0.462	0.863	< 0.1	0.1	5.22	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	< 0.5	-	0.263	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-2-40M	2014 08 25	8.3	19.8	< 30	2.21	21.8	0.594	1.53	< 0.1	0.24	8.95	< 0.1	< 10	< 0.01	< 0.5	< 0.1	2.46	< 0.05	0.63	-	1.47	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.27	< 1	< 3
	QUL-2-0M	2014 08 27	9.9	16.6	< 30	1.93	0.331	0.449	0.835	< 0.1	< 0.1	5.1	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.67	-	0.274	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-2-15M	2014 08 27	9.3	17.2	< 30	1.92	1.83	0.449	0.862	< 0.1	< 0.1	5.59	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.13	< 0.05	0.75	-	0.284	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.145	< 1	< 3
	QUL-2-42M	2014 08 27	10.9	21.3	< 30	2.39	44	0.811	2.49	0.16	0.48	13.1	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.15	< 0.05	0.83	-	3.4	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.434	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Total Metals																														
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUR-1	QUR-1	2014 08 23	63.2	< 0.1	0.16	6.16	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	**2.06**	63	< 0.05	0.78	2,010	3.12	< 0.05	0.294	< 0.5	487	< 0.5	1,680	< 0.01	873	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUR-1	2014 08 24	49	< 0.1	0.13	6.16	< 0.1	< 0.5	< 10	< 0.01	17,500	< 0.5	< 0.1	1.98	41	< 0.05	0.87	1,980	2.31	-	0.311	< 0.5	488	< 0.5	1,680	< 0.01	867	< 0.01	< 0.1	< 10	0.151	< 1	< 3
	QUR-1-4:00	2014 08 24	27.3	< 0.1	0.13	5.73	< 0.1	< 0.5	< 10	< 0.01	17,600	< 0.5	< 0.1	1.55	< 30	< 0.05	0.85	1,980	1.59	-	0.308	< 0.5	477	< 0.5	1,650	< 0.01	872	< 0.01	< 0.1	< 10	0.146	< 1	3
	QUR-1-12:00	2014 08 24	35.6	< 0.1	0.13	5.68	< 0.1	< 0.5	< 10	< 0.01	17,200	0.6	< 0.1	1.78	35	< 0.05	0.71	1,930	1.99	-	0.331	< 0.5	471	< 0.5	1,640	< 0.01	866	< 0.01	< 0.1	< 10	0.143	< 1	3.2
	QUR-1-16:00	2014 08 24	54.8	< 0.1	0.17	6.17	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	1.93	50	< 0.05	< 0.5	1,960	2.5	-	0.299	< 0.5	470	< 0.5	1,680	< 0.01	855	< 0.01	< 0.1	< 10	0.148	< 1	3.1
	QUR-1-20:00	2014 08 24	39.5	< 0.1	0.13	6	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	1.85	34	< 0.05	0.82	1,970	2.37	-	0.301	< 0.5	485	< 0.5	1,660	< 0.01	882	< 0.01	< 0.1	< 10	0.143	< 1	**10.3**
	QUR-1	2014 08 25	63.9	< 0.1	0.17	6.31	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	**2.31**	53	< 0.05	< 0.5	1,960	2.88	-	0.284	< 0.5	469	< 0.5	1,690	< 0.01	848	< 0.01	< 0.1	< 10	0.147	< 1	3.4
	QUR-1-08:00	2014 08 25	65.2	< 0.1	0.19	6.47	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	**2.16**	63	< 0.05	< 0.5	1,980	3.07	-	0.315	< 0.5	479	< 0.5	1,680	< 0.01	863	< 0.01	< 0.1	< 10	0.149	< 1	< 3
	QUR-1	2014 08 25	68.4	< 0.1	0.17	6.47	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	**2.41**	62	< 0.05	< 0.5	1,940	2.86	-	0.296	< 0.5	478	< 0.5	1,660	< 0.01	854	< 0.01	< 0.1	< 10	0.144	< 1	< 3
	QUR-1-16:00	2014 08 25	47.6	< 0.1	0.16	6	< 0.1	< 0.5	< 10	< 0.01	17,600	< 0.5	< 0.1	**4.8**	36	0.117	0.57	1,990	2.32	-	0.33	< 0.5	478	< 0.5	1,640	< 0.01	891	< 0.01	< 0.1	< 10	0.144	< 1	4.6
	QUR-1	2014 08 26	47.1	< 0.1	0.13	6.24	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	< 0.1	1.91	40	< 0.05	0.51	1,970	2.29	< 0.01	0.303	< 0.5	480	< 0.5	1,610	< 0.01	868	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUR-1X	2014 08 26	46.5	< 0.1	0.13	6.05	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	1.89	39	< 0.05	0.6	1,950	2.26	< 0.01	0.32	< 0.5	468	< 0.5	1,590	< 0.01	860	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QA/QC RPD %		1	*	*	3	*	*	*	*	< 1	*	*	*	*	*	*	1	*	*	6	*	3	*	1	*	< 1	*	*	*	4	*	*
	QUR-1-00:00	2014 08 26	52.4	< 0.1	0.13	6.17	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	**2.12**	38	< 0.05	0.55	1,970	2.23	-	0.343	< 0.5	475	< 0.5	1,640	< 0.01	893	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUR-1-8:00	2014 08 26	41.2	< 0.1	0.15	5.85	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	1.86	31	< 0.05	0.57	1,940	2.08	-	0.396	< 0.5	469	< 0.5	1,610	< 0.01	873	< 0.01	< 0.1	< 10	0.145	< 1	< 3
	QUR-1-16:00	2014 08 26	27.8	< 0.1	0.14	5.83	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.47	< 30	< 0.05	0.67	1,900	1.7	-	0.316	< 0.5	479	< 0.5	1,520	< 0.01	904	< 0.01	< 0.1	< 10	0.146	< 1	4.2
	QUR-1	2014 08 27	38.9	< 0.1	0.14	6.03	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	1.84	32	< 0.05	0.64	1,940	2.29	< 0.01	0.318	< 0.5	483	< 0.5	1,560	< 0.01	902	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUR-1-00:00	2014 08 27	29.6	< 0.1	0.13	5.8	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	1.53	< 30	< 0.05	0.65	1,840	1.66	-	0.314	< 0.5	461	< 0.5	1,480	< 0.01	886	< 0.01	< 0.1	< 10	0.142	< 1	3.1
	QUR-1-08:00	2014 08 27	32.7	< 0.1	0.15	6	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	1.63	< 30	< 0.05	0.65	1,940	1.73	-	0.304	< 0.5	465	< 0.5	1,570	< 0.01	900	< 0.01	< 0.1	< 10	0.143	< 1	3
	QUR-1-16:00	2014 08 27	42.5	< 0.1	0.14	5.84	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	1.47	34	< 0.05	0.62	1,930	2.11	-	0.305	< 0.5	478	< 0.5	1,580	< 0.01	880	< 0.01	< 0.1	< 10	0.136	< 1	3.2
	QUR-1	2014 08 28	40.5	< 0.1	0.16	5.91	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	1.37	42	< 0.05	0.62	1,960	2.1	< 0.01	0.286	< 0.5	487	< 0.5	1,580	< 0.01	890	< 0.01	< 0.1	< 10	0.144	< 1	< 3
	QUR-1-00:00	2014 08 28	41.7	< 0.1	0.14	5.94	< 0.1	< 0.5	< 10	**0.154**	17,000	< 0.5	< 0.1	1.58	40	< 0.05	0.6	1,970	2.35	-	0.303	< 0.5	490	< 0.5	1,590	< 0.01	896	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUR-1-08:00	2014 08 28	29.1	< 0.1	0.14	5.81	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	1.24	< 30	< 0.05	0.59	1,980	1.48	-	0.303	< 0.5	483	< 0.5	1,590	< 0.01	891	< 0.01	< 0.1	< 10	0.141	< 1	< 3
QUL-1	QUL-1	2014 08 06	21.7	< 0.1	0.1	5.28	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.71	< 30	< 0.05	< 0.5	1,920	1.36	< 0.05	0.295	< 0.5	475	< 0.5	1,610	< 0.01	857	< 0.01	< 0.1	< 10	0.14	< 1	< 3
QUL-2	QUL-2	2014 08 06	17.6	< 0.1	0.11	5.34	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.62	< 30	< 0.05	< 0.5	1,910	1.4	< 0.05	0.302	< 0.5	473	< 0.5	1,590	< 0.01	822	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QUL-2	2014 08 09	21.4	< 0.1	0.12	5.57	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.67	< 30	< 0.05	0.61	1,900	1.93	< 0.05	0.303	< 0.5	484	< 0.5	1,580	< 0.01	828	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-2	2014 08 11	17.5	< 0.1	0.16	5.36	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.72	< 30	< 0.05	0.83	1,880	1.23	< 0.05	0.317	< 0.5	496	< 0.5	1,530	< 0.01	849	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QUL-2-0M	2014 08 16	18.9	< 0.1	0.14	5.52	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.66	< 30	< 0.05	0.51	1,870	1.45	-	0.315	< 0.5	477	< 0.5	1,560	< 0.01	836	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-2-10M	2014 08 16	21	< 0.1	0.11	5.31	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.95	< 30	< 0.05	0.52	1,840	1.07	-	0.268	< 0.5	467	< 0.5	1,520	< 0.01	810	< 0.01	< 0.1	< 10	0.151	< 1	< 3
	QUL-2-30M	2014 08 16	***126***	< 0.1	0.15	7.32	< 0.1	< 0.5	< 10	< 0.01	18,300	< 0.5	< 0.1	**2.8**	97	< 0.05	< 0.5	2,120	7.03	-	0.358	< 0.5	522	< 0.5	1,980	< 0.01	987	< 0.01	< 0.1	< 10	0.198	< 1	< 3
	QUL-2-47M	2014 08 21	***2,810***	0.17	1.2	61.6	< 0.1	< 0.5	< 10	0.02	21,100	**1.68**	1.25	**51.7**	***1,800***	1.03	2.26	3,160	***109***	-	3.02	1.8	1,740	< 0.5	7,730	0.023	3,290	0.012	0.15	113	0.526	5.4	7.3
	QUL-2-0M	2014 08 25	16.8	< 0.1	0.11	5.42	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.67	< 30	< 0.05	< 0.5	1,930	1.15	-	0.308	< 0.5	477	< 0.5	1,560	< 0.01	837	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-2X-0M	2014 08 25	16	< 0.1	0.13	5.36	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.63	< 30	< 0.05	< 0.5	1,880	1.08	-	0.293	< 0.5	465	< 0.5	1,520	< 0.01	831	< 0.01	< 0.1	< 10	0.134	< 1	< 3
	QA/QC RPD %		5	*	*	1	*	*	*	*	1	*	*	*	*	*	*	3	*	-	5	*	3	*	3	*	< 1	*	*	*	7	*	*
	QUL-2-8M	2014 08 25	18.2	< 0.1	0.11	5.18	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	0.61	< 30	< 0.05	< 0.5	1,940	1.16	-	0.292	< 0.5	466	< 0.5	1,570	< 0.01	874	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-2-40M	2014 08 25	***1,050***	< 0.1	0.55	28	< 0.1	< 0.5	< 10	< 0.01	19,400	0.65	0.42	**22**	***630***	0.384	1.1	2,420	43.1	< 0.05	1.56	0.85	986	< 0.5	4,070	< 0.01	1,710	< 0.01	< 0.1	43	0.309	2.1	< 3
	QUL-2-0M	2014 08 27	13.2	< 0.1	0.11	5.21	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	< 0.5	< 30	< 0.05	0.63	1,930	0.891	< 0.01	0.291	< 0.5	454	< 0.5	1,510	< 0.01	845	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QUL-2-15M	2014 08 27	***138***	< 0.1	0.17	6.98	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	0.11	**3.18**	160	0.081	0.83	2,010	5.62	< 0.01	0.306	< 0.5	487	< 0.5	1,790	< 0.01	876	< 0.01	< 0.1	11	0.155	< 1	< 3
	QUL-2-42M	2014 08 27	***2,440***	0.17	1.11	63.9	< 0.1	< 0.5	< 10	0.016	21,200	**1.15**	0.87	**47.1**	***1,250***	0.826	1.85	2,930	***84.7***	< 0.01	3.52	1.24	1,870	< 0.5	7,590	0.017	2,950	0.011	< 0.1	92	0.506	4.4	4.6

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Physical Parameters									Microbiological Tests		Total Inorganics												
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0	+/-1 Degree change from ambient	Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a		Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUL-3	QUL-3	2014 08 06	47.6	8.08	7.96	20.9	0.34	93.8	57	< 3	2.32	-	-	-	0.17	< 5	46.8	< 1	-	< 0.5	33	5.57	44.1	-	< 0.001	< 0.002[a]
	QUL-3	2014 08 09	48.3	7.94	7.89	18.7	0.4	95.8	67	< 3	2.27	-	-	-	0.13	< 5	55.4	< 1	-	< 0.5	34	5.52	42.8	-	< 0.001	< 0.002[a]
	QUL-3	2014 08 10	48.2	7.94	7.94	21.7	0.32	95.8	68	< 3	2.28	-	-	-	0.121	< 5	53.7	1.1	-	< 0.5	36	5.55	44.4	-	< 0.001	< 0.002[a]
	QUL-3X	2014 08 10	48.7	7.94	7.94	21.7	0.37	96	60	< 3	2.19	-	-	-	0.12	< 5	54.4	< 1	-	< 0.5	35	5.56	44.8	-	< 0.001	< 0.002[a]
	QA/QC RPD %		1	0	0	0	*	< 1	13	*	*	-	-	-	*	*	1	*	-	*	*	< 1	< 1	-	*	*
	QUL-3	2014 08 11	48	7.80	7.91	20.5	0.54	97.2	66	< 3	2.15	-	-	-	0.136	< 5	51.1	< 1	-	< 0.5	33	5.61	43.3	-	< 0.001	**0.0033**
	QUL-3	2014 08 12	47.4	8.02	7.97	21.0	0.28	95.3	67	< 3	1.9	-	-	-	0.128	< 5	45.7	< 1	-	< 0.5	36	5.65	44	-	0.0012	< 0.002[a]
	QUL-3	2014 08 13	47.2	-	7.99	20.6	0.25	97.8	60	< 3	2.18	-	-	-	0.132	< 5	44.1	< 1	-	< 0.5	33	5.63	44.7	-	< 0.001	< 0.002[a]
	QUL-3	2014 08 14	49	8.05	7.96	21.6	0.21	98.5	68	< 3	2	-	-	-	0.114	< 5	48.8	< 1	-	< 0.5	35	5.66	44.1	-	< 0.001	< 0.002[a]
	QUL-3	2014 08 15	48.6	8.07	7.98	21.2	0.32	96.9	62	< 3	1.8	-	-	-	0.105	< 5	45.4	< 1	-	< 0.5	35	5.66	44.2	-	< 0.001	**0.0027**
	QUL-3	2014 08 16	47.9	8.08	7.96	20.1	0.33	95.3	65	< 3	2.18	-	-	-	0.109	< 5	43.4	< 1	-	< 0.5	36	5.62	51.4	-	< 0.001	< 0.002[a]
	QUL-3X	2014 08 16	48.3	8.08	7.98	20.1	0.41	95.1	59	< 3	1.92	-	-	-	0.117	< 5	43.8	< 1	-	< 0.5	37	5.63	43.8	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	*	< 1	10	*	*	-	-	-	*	*	< 1	*	-	*	*	< 1	16	-	*	*
	QUL-3	2014 08 17	48.3	7.94	7.98	20.8	0.3	96.7	60	< 3	2.36	-	-	-	0.125	< 5	42.2	< 1	-	< 0.5	34	5.64	43.9	-	< 0.001	< 0.002[a]
	QUL-3	2014 08 19	48.7	7.62	7.94	19.7	0.28	96.6	75	< 3	1.94	-	-	-	0.115	< 5	44.6	< 1	-	< 0.5	32	5.55	44	-	< 0.001	< 0.002[a]
	QUL-3	2014 08 22	49.5	-	7.94	19.1	0.34	96.6	71	< 3	2.06	-	-	-	0.136	< 5	46.2	< 1	-	< 0.5	34	5.65	44.1	-	< 0.001	< 0.002[a]
	QUL-3-37M	2014 08 22	69.7	-	8.02	19.0	75.1	150	115	9.5	1.93	-	-	-	0.371	45.3	225	1.3	-	0.56	66	16.5	58.9	-	0.0069	0.0084
QUL-4	QUL-4	2014 08 06	48.6	8.03	7.95	21.4	0.81	94.9	61	< 3	2.17	-	-	-	0.146	< 5	43.4	< 1	-	< 0.5	33	5.62	43.9	-	< 0.001	< 0.002[a]
QUL-5	QUL-5	2014 08 06	48.1	8.01	7.94	21.1	0.76	95.9	57	< 3	2.16	-	-	-	0.237	< 5	43.8	< 1	-	< 0.5	33	5.66	43.6	-	< 0.001	< 0.002[a]
QUL-6	QUL-6	2014 08 06	48	8.05	7.96	21.3	0.83	95.8	57	< 3	2.23	-	-	-	0.168	< 5	44	< 1	-	< 0.5	33	5.76	44	-	< 0.001	< 0.002[a]
QUL-7	QUL-7	2014 08 06	48	7.91	7.92	21.2	0.83	95	59	< 3	2.19	-	-	-	0.178	< 5	40.8	< 1	-	< 0.5	34	5.62	44.1	-	< 0.001	< 0.002[a]
QUL-8	QUL-8	2014 08 06	47.8	7.96	7.9	21.6	1.4	95.8	60	< 3	2.21	-	-	-	0.149	< 5	36.4	1.8	-	< 0.5	34	5.67	44.5	-	< 0.001	< 0.002[a]
QUL-9	QUL-9	2014 08 06	48.3	8.01	7.93	21.5	1.14	94.6	58	< 3	2.15	-	-	-	0.15	< 5	42.4	1.1	-	< 0.5	34	5.62	44.2	-	< 0.001	< 0.002[a]
	QUL-9	2014 08 09	49	7.84	7.84	16.8	0.78	96.7	70	< 3	2.42	-	-	-	0.141	< 5	57.6	< 1	-	< 0.5	35	5.61	43.5	-	< 0.001	< 0.002[a]
	QUL-9	2014 08 10	49.2	7.81	7.94	20.7	0.56	96.5	68	< 3	2.33	-	-	-	0.13	< 5	54.4	< 1	-	< 0.5	35	5.62	45.4	-	< 0.001	< 0.002[a]
	QUL-9	2014 08 12	47.1	7.95	7.96	20.5	0.32	96	64	< 3	1.99	-	-	-	0.151	< 5	49.2	< 1	-	< 0.5	36	5.66	44.5	-	0.0011	< 0.002[a]
	QUL-9	2014 08 13	47.7	-	7.88	20.5	0.65	98.9	61	< 3	2.69	-	-	-	0.115	< 5	12.8	1.1	-	< 0.5	34	5.6	45.1	-	< 0.001	< 0.002[a]
	QUL-9X	2014 08 13	48.1	-	7.92	-	0.54	98.7	60	< 3	2.68	-	-	-	0.125	< 5	11.9	1.2	-	< 0.5	33	5.59	44.9	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	-	< 1	*	18	< 1	2	*	< 1	-	-	-	*	*	*	*	-	*	*	< 1	< 1	-	*	*
	QUL-9	2014 08 14	49	8.02	7.95	20.4	0.25	97.7	67	< 3	2.15	-	-	-	0.128	< 5	41.9	< 1	-	< 0.5	36	5.65	43.8	-	< 0.001	**0.0026**
	QUL-9	2014 08 15	49.2	-	7.92	-	0.74	96.6	66	< 3	1.97	-	-	-	0.102	< 5	27.6	1.3	-	< 0.5	36	5.64	43.6	-	0.0012	**0.0023**
	QUL-9	2014 08 16	48.3	8.07	7.96	20.4	0.31	95.6	60	< 3	2	-	-	-	0.116	< 5	42.9	< 1	-	< 0.5	36	5.64	43.4	-	< 0.001	< 0.002[a]
	QUL-9	2014 08 17	48.4	7.82	7.94	21.2	0.35	96.7	62	< 3	2.5	-	-	-	0.136	< 5	36.7	< 1	-	< 0.5	34	5.63	43.8	-	< 0.001	< 0.002[a]
	QUL-9	2014 08 19	47.7	7.84	7.92	20.0	0.24	96.7	68	< 3	2.17	-	-	-	0.111	< 5	42.6	< 1	-	< 0.5	32	5.54	44.2	-	< 0.001	< 0.002[a]
	QUL-9X	2014 08 19	49	7.84	7.85	20.0	0.24	95.8	65	< 3	2.03	-	-	-	0.113	< 5	42	< 1	-	< 0.5	37	5.55	43.7	-	0.0026	< 0.002[a]
	QA/QC RPD %		3	0	< 1	0	*	< 1	5	*	*	-	-	-	*	*	1	*	-	*	*	< 1	1	-	*	*
	QUL9	2014 08 22	50.3	7.74	7.88	19.8	1.73	98.3	69	< 3	2.3	-	-	-	0.136	< 5	42.4	< 1	-	< 0.5	34	5.76	44.9	-	< 0.001	**0.0025**
QUL-10	QUL-10	2014 08 06	47.7	8.08	7.95	21.4	0.41	94.9	55	< 3	2.1	-	-	-	0.195	< 5	45	< 1	-	< 0.5	33	5.58	44.2	-	< 0.001	< 0.002[a]
QUL-11	QUL-11-0M	2014 08 07	49.2	-	7.79	-	2.43	95.4	74	3.6	2.5	-	-	-	0.122	< 5	35	< 1	-	< 0.5	36	5.79	44.7	-	< 0.001	< 0.002[a]
	QUL-11-5M	2014 08 07	48.1	-	7.93	-	0.85	93	71	< 3	2.08	-	-	-	0.135	< 5	66.7	< 1	-	< 0.5	34	5.52	44.4	-	< 0.001	< 0.002[a]
	QUL-11-5MX	2014 08 07	48.5	-	7.95	-	0.58	93.4	73	< 3	2.12	-	-	-	0.137	< 5	68	< 1	-	< 0.5	34	5.51	44.7	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	-	< 1	-	38	< 1	3	*	*	-	-	-	*	*	2	*	-	*	*	< 1	< 1	-	*	*
	QUL-11-10M	2014 08 07	50.8	-	7.9	-	1.3	98.9	76	< 3	2.02	-	-	-	0.171	< 5	112	< 1	-	< 0.5	35	5.76	46.7	-	< 0.001	< 0.002[a]
	QUL-11-15M	2014 08 07	53.4	-	7.91	-	0.59	103	84	< 3	1.85	-	-	-	0.181	< 5	136	< 1	-	< 0.5	36	6.05	48.8	-	< 0.001	< 0.002[a]
	QUL-11-20M	2014 08 07	53.7	-	7.91	-	0.9	105	75	< 3	1.78	-	-	-	0.186	< 5	141	< 1	-	< 0.5	36	6.08	49.1	-	< 0.001	< 0.002[a]
	QUL-11-24M	2014 08 07	53.8	-	7.91	-	0.98	105	76	< 3	1.84	-	-	-	0.191	< 5	140	< 1	-	< 0.5	36	6.14	49.5	-	< 0.001	< 0.002[a]
QUL-12	QUL-12-0M	2014 08 07	49.8	-	7.89	-	13.1	97.9	73	13.8	2.53	-	-	-	0.106	< 5	38.7	< 1	-	< 0.5	36	5.85	45.9	-	< 0.001	< 0.002[a]
	QUL-12-5M	2014 08 07	48.6	-	7.97	-	0.47	94.8	68	< 3	2	-	-	-	0.135	< 5	71.2	< 1	-	< 0.5	35	5.51	44.3	-	< 0.001	< 0.002[a]
	QUL-12-10M	2014 08 07	50.7	-	7.91	-	1.08	99.7	77	< 3	2	-	-	-	0.164	< 5	112	< 1	-	< 0.5	35	5.77	47	-	< 0.001	< 0.002[a]
	QUL-12-15M	2014 08 07	52.7	-	7.92	-	1.09	104	74	< 3	1.88	-	-	-	0.181	< 5	139	< 1	-	< 0.5	37	6.04	48.7	-	< 0.001	< 0.002[a]
	QUL-12-20M	2014 08 07	53.5	-	7.91	-	0.7	105	74	< 3	1.85	-	-	-	0.18	< 5	140	< 1	-	< 0.5	36	6.07	49	-	< 0.001	< 0.002[a]

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Dissolved Metals																											
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-3	QUL-3	2014 08 06	10.6	15.9	< 30	1.9	0.608	0.5	1.1	< 0.1	< 0.1	5.36	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.56	< 0.05	0.54	< 0.05	0.421	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
	QUL-3	2014 08 09	10.6	16.2	< 30	1.88	0.599	0.473	0.831	< 0.1	< 0.1	5.38	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.67	-	0.339	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.147	< 1	< 3
	QUL-3	2014 08 10	10.9	16.2	< 30	1.86	0.639	0.483	0.85	< 0.1	0.11	5.24	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	< 0.5	-	0.291	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
	QUL-3X	2014 08 10	11	16.4	< 30	1.88	0.667	0.478	0.847	< 0.1	0.11	5.14	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	< 0.5	-	0.291	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QA/QC RPD %		*	1	*	1	4	1	< 1	*	*	2	*	*	*	*	*	*	*	*	-	0	*	*	*	*	*	6	*	*
	QUL-3	2014 08 11	11.6	16.1	< 30	1.88	0.734	0.496	0.857	< 0.1	< 0.1	5.39	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.02	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.121	< 1	< 3
	QUL-3	2014 08 12	10.6	15.9	< 30	1.9	0.368	0.477	0.878	< 0.1	0.12	5.58	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.68	-	0.341	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-3	2014 08 13	10	15.8	< 30	1.88	0.18	0.458	0.826	< 0.1	0.11	5.26	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.04	-	0.324	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-3	2014 08 14	11	16.5	< 30	1.88	0.516	0.457	0.798	< 0.1	0.1	5.06	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.64	-	0.274	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-3	2014 08 15	10.2	16.4	< 30	1.87	0.482	0.462	0.8	< 0.1	< 0.1	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.301	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-3	2014 08 16	10.7	16.1	< 30	1.85	0.466	0.475	0.815	< 0.1	0.11	5.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.79	-	0.298	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-3X	2014 08 16	10.8	16.2	< 30	1.88	0.509	0.475	0.821	< 0.1	0.12	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.7	-	0.299	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QA/QC RPD %		*	< 1	*	2	9	0	< 1	*	*	1	*	*	*	*	*	*	*	*	-	< 1	*	*	*	*	*	4	*	*
	QUL-3	2014 08 17	10.6	16.2	< 30	1.91	0.558	0.468	0.825	< 0.1	< 0.1	5.27	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.66	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-3	2014 08 19	10.7	16.4	< 30	1.89	0.308	0.472	0.833	< 0.1	< 0.1	5.08	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.74	-	0.275	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-3	2014 08 22	10.4	16.6	< 30	1.93	0.6	0.467	0.822	< 0.1	0.1	5.3	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.66	< 0.05	0.74	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
	QUL-3-37M	2014 08 22	14.3	23.6	< 30	2.62	81.1	0.971	3.25	0.24	0.7	17.8	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.9	< 0.05	1.05	-	5.04	< 0.5	0.55	< 0.01	< 0.01	< 10	0.607	< 1	< 3
QUL-4	QUL-4	2014 08 06	10.3	16.3	< 30	1.94	1.43	0.504	1.09	< 0.1	0.11	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.66	< 0.05	< 0.5	< 0.05	0.494	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.128	< 1	< 3
QUL-5	QUL-5	2014 08 06	11.6	16.1	< 30	1.92	1.5	0.532	1.09	< 0.1	0.1	5.65	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.95	< 0.05	< 0.5	< 0.05	0.365	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
QUL-6	QUL-6	2014 08 06	11.3	16.1	< 30	1.91	1.31	0.517	1.06	< 0.1	0.1	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.87	< 0.05	< 0.5	< 0.05	0.407	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
QUL-7	QUL-7	2014 08 06	10.9	16.1	< 30	1.92	1.79	0.508	1.09	< 0.1	0.11	5.6	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.67	< 0.05	0.55	< 0.05	0.369	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
QUL-8	QUL-8	2014 08 06	11.3	16	< 30	1.92	2.29	0.524	1.1	< 0.1	0.11	5.84	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.81	< 0.05	< 0.5	< 0.05	0.358	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
QUL-9	QUL-9	2014 08 06	11.8	16.2	< 30	1.92	2.43	0.525	1.07	< 0.1	0.12	5.71	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.84	< 0.05	0.52	< 0.05	0.347	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.126	< 1	< 3
	QUL-9	2014 08 09	10.1	16.5	< 30	1.89	1.2	0.478	0.838	< 0.1	< 0.1	5.43	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.52	< 0.05	0.59	-	0.302	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-9	2014 08 10	10.8	16.6	< 30	1.89	1.53	0.491	0.835	< 0.1	0.11	5.44	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.54	< 0.05	0.52	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-9	2014 08 12	10.5	15.8	< 30	1.85	0.408	0.488	0.83	< 0.1	< 0.1	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	0.73	-	0.308	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
	QUL-9	2014 08 13	9.4	16	< 30	1.88	3.09	0.544	0.848	< 0.1	0.12	6.14	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.55	< 0.05	1.06	-	0.313	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.122	< 1	< 3
	QUL-9X	2014 08 13	9.5	16.1	< 30	1.91	3.89	0.57	0.864	< 0.1	0.1	6.34	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.67	< 0.05	1.07	-	0.314	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.123	< 1	< 3
	QA/QC RPD %		*	< 1	*	2	23	5	2	*	*	3	*	*	*	*	*	*	*	*	-	< 1	*	*	*	*	*	< 1	*	*
	QUL-9	2014 08 14	10.4	16.5	< 30	1.91	1.18	0.471	0.821	< 0.1	0.11	5.45	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.72	-	0.301	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.128	< 1	< 3
	QUL-9	2014 08 15	10.2	16.6	< 30	1.9	2.82	0.511	0.85	< 0.1	0.12	6.12	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.58	< 0.05	< 0.5	-	0.322	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-9	2014 08 16	10.1	16.2	< 30	1.88	0.489	0.464	0.799	< 0.1	0.11	5.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.69	-	0.289	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-9	2014 08 17	9.8	16.2	< 30	1.91	2.31	0.474	0.8	< 0.1	0.13	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.59	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-9	2014 08 19	10.2	16	< 30	1.87	0.465	0.465	0.815	< 0.1	0.11	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.65	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-9X	2014 08 19	9.9	16.5	< 30	1.9	0.432	0.442	0.766	< 0.1	< 0.1	4.88	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.73	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QA/QC RPD %		*	3	*	2	7	5	6	*	*	6	*	*	*	*	*	*	*	*	-	0	*	*	*	*	*	4	*	*
	QUL9	2014 08 22	11	16.9	< 30	1.94	0.958	0.481	0.843	< 0.1	0.1	5.43	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.65	< 0.05	0.87	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
QUL-10	QUL-10	2014 08 06	11.4	16	< 30	1.91	0.813	0.506	1.06	< 0.1	0.1	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.69	< 0.05	< 0.5	< 0.05	0.328	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
QUL-11	QUL-11-0M	2014 08 07	9.8	16.5	< 30	1.95	4.34	0.558	0.975	< 0.1	0.13	6.44	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.88	< 0.05	< 0.5	-	0.412	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-11-5M	2014 08 07	9.6	16.1	< 30	1.89	0.239	0.455	0.956	< 0.1	< 0.1	5.24	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	< 0.5	-	0.291	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL-11-5MX	2014 08 07	9.6	16.3	< 30	1.9	0.279	0.455	0.913	< 0.1	0.11	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.76	< 0.05	< 0.5	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QA/QC RPD %		*	1	*	< 1	*	0	5	*	*	< 1	*	*	*	*	*	*	*	*	-	4	*	*	*	*	*	3	*	*
	QUL-11-10M	2014 08 07	7.4	17.1	< 30	1.99	0.602	0.47	0.989	< 0.1	0.12	5.39	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	0.56	-	0.276	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.144	< 1	< 3
	QUL-11-15M	2014 08 07	6.3	18	< 30	2.07	0.214	0.467	0.988	< 0.1	< 0.1	5.08	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.66	-	0.256	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.151	< 1	< 3
	QUL-11-20M	2014 08 07	5.2	18.1	< 30	2.08	0.71	0.46	0.964	< 0.1	< 0.1	5.17	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.79	-	0.264	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.153	< 1	< 3
	QUL-11-24M	2014 08 07	5.1	18.1	< 30	2.08	1.18	0.468	1.03	< 0.1	< 0.1	5.31	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	0.97	-	0.283	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.156	< 1	< 3
QUL-12	QUL-12-0M	2014 08 07	12.4	16.7	< 30	1.94	6.45	0.556	1.02	< 0.1	0.13	7.42	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.7	< 0.05	0.74	-	0.413	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-12-5M	2014 08 07	10.2	16.3	< 30	1.9	0.174	0.453	0.912	< 0.1	< 0.1	5.15	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.81	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-12-10M	2014 08 07	8	17.1	< 30	1.98	0.459	0.459	0.927	< 0.1	0.1	5.44	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.84	-	0.274	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.142	< 1	< 3
	QUL-12-15M	2014 08 07	6.7	17.8	< 30	2.04	0.522	0.466	1.03	< 0.1	0.11	5.34	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.67	< 0.05	0.72	-	0.275	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.149	< 1	< 3
	QUL-12-20M	2014 08 07	5.5	18	< 30	2.05	0.496	0.471	0.997	< 0.1	< 0.1	5.13	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.79	-	0.266	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.152	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Total Metals																														
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-3	QUL-3	2014 08 06	18.9	< 0.1	0.12	5.47	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.7	< 30	< 0.05	< 0.5	1,940	1.47	< 0.05	0.327	< 0.5	489	< 0.5	1,620	< 0.01	835	< 0.01	< 0.1	< 10	0.13	< 1	< 3
	QUL-3	2014 08 09	23.7	< 0.1	0.13	5.53	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.74	< 30	< 0.05	0.69	1,910	1.45	< 0.05	0.322	< 0.5	485	< 0.5	1,590	< 0.01	853	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-3	2014 08 10	16.3	< 0.1	0.13	5.52	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.58	< 30	< 0.05	< 0.5	1,910	1.18	< 0.05	0.303	< 0.5	484	< 0.5	1,600	< 0.01	873	< 0.01	< 0.1	< 10	0.13	< 1	< 3
	QUL-3X	2014 08 10	14.4	< 0.1	0.13	5.24	< 0.1	< 0.5	< 10	< 0.01	15,600	< 0.5	< 0.1	0.56	< 30	< 0.05	< 0.5	1,830	1.08	< 0.05	0.304	< 0.5	474	< 0.5	1,530	< 0.01	856	< 0.01	< 0.1	< 10	0.13	< 1	< 3
	QA/QC RPD %		*	*	*	5	*	*	*	*	4	*	*	*	*	*	*	4	*	*	< 1	*	2	*	4	*	2	*	*	*	0	*	*
	QUL-3	2014 08 11	17.1	< 0.1	0.13	5.39	< 0.1	< 0.5	< 10	< 0.01	15,700	< 0.5	< 0.1	0.57	< 30	< 0.05	0.82	1,870	1.41	< 0.05	0.322	< 0.5	484	< 0.5	1,540	< 0.01	839	< 0.01	< 0.1	< 10	0.129	< 1	< 3
	QUL-3	2014 08 12	14.4	< 0.1	0.13	5.57	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.57	< 30	< 0.05	0.79	1,920	1.53	< 0.05	0.352	< 0.5	475	< 0.5	1,640	< 0.01	878	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-3	2014 08 13	13.6	< 0.1	0.14	5.63	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.53	< 30	< 0.05	0.89	1,950	1.31	< 0.05	0.341	< 0.5	478	< 0.5	1,620	< 0.01	867	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-3	2014 08 14	14.4	< 0.1	0.11	5.24	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.57	< 30	< 0.05	0.68	1,870	1.02	-	0.304	< 0.5	481	< 0.5	1,540	< 0.01	855	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-3	2014 08 15	15	< 0.1	0.12	5.14	< 0.1	< 0.5	< 10	< 0.01	16,400	0.74	< 0.1	0.59	< 30	< 0.05	< 0.5	1,880	1.1	-	0.99	< 0.5	461	< 0.5	1,580	< 0.01	813	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-3	2014 08 16	16	< 0.1	0.14	5.42	< 0.1	< 0.5	< 10	**0.018**	16,200	< 0.5	< 0.1	0.6	< 30	< 0.05	< 0.5	1,870	1.33	-	0.294	< 0.5	468	< 0.5	1,540	< 0.01	815	0.013	< 0.1	< 10	0.126	< 1	< 3
	QUL-3X	2014 08 16	18.2	< 0.1	0.12	5.51	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.8	< 30	< 0.05	< 0.5	1,860	1.44	-	0.321	< 0.5	486	< 0.5	1,530	< 0.01	842	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QA/QC RPD %		13	*	*	2	*	*	*	*	2	*	*	*	*	*	*	< 1	*	-	9	*	4	*	< 1	*	3	*	*	*	10	*	*
	QUL-3	2014 08 17	20.3	< 0.1	0.12	5.36	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	< 1	< 30	< 0.05	0.78	1,880	1.43	-	0.305	< 0.5	487	< 0.5	1,530	< 0.01	858	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-3	2014 08 19	15.2	< 0.1	0.13	5.46	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.55	< 30	< 0.05	0.92	1,940	1.2	-	0.309	< 0.5	495	< 0.5	1,570	< 0.01	881	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-3	2014 08 22	28.2	< 0.1	0.11	5.52	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.02	< 30	< 0.05	0.72	1,940	1.56	-	0.324	< 0.5	468	< 0.5	1,570	< 0.01	838	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-3-37M	2014 08 22	**3,830**	0.3	1.84	94.5	< 0.1	< 0.5	< 10	0.021	24,100	**1.89**	1.54	**76.8**	**2,230**	1.34	2.79	3,670	**151**	-	5.35	2.01	2,550	0.64	10,100	0.032	3,840	0.014	0.12	156	0.726	**7.4**	**7.6**
QUL-4	QUL-4	2014 08 06	47.2	< 0.1	0.13	6.03	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	1.25	45	< 0.05	< 0.5	1,960	3.05	< 0.05	0.332	< 0.5	503	< 0.5	1,690	< 0.01	839	< 0.01	< 0.1	< 10	0.133	< 1	< 3
QUL-5	QUL-5	2014 08 06	49.4	< 0.1	0.11	5.96	< 0.1	< 0.5	< 10	< 0.01	15,700	< 0.5	< 0.1	1.5	44	< 0.05	< 0.5	1,920	2.92	< 0.05	0.332	< 0.5	492	< 0.5	1,660	< 0.01	840	< 0.01	< 0.1	< 10	0.129	< 1	< 3
QUL-6	QUL-6	2014 08 06	53.9	< 0.1	0.13	6.22	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	1.63	46	< 0.05	< 0.5	1,970	2.94	< 0.05	0.337	< 0.5	507	< 0.5	1,710	< 0.01	898	< 0.01	< 0.1	< 10	0.132	< 1	< 3
QUL-7	QUL-7	2014 08 06	57.1	< 0.1	0.13	6.13	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	1.72	42	< 0.05	0.53	1,970	3.31	< 0.05	0.332	< 0.5	522	< 0.5	1,700	< 0.01	869	< 0.01	< 0.1	< 10	0.132	< 1	< 3
QUL-8	QUL-8	2014 08 06	**101**	< 0.1	0.15	7.04	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	**2.78**	82	< 0.05	< 0.5	2,000	4.79	< 0.05	0.354	< 0.5	557	< 0.5	1,820	< 0.01	887	< 0.01	< 0.1	< 10	0.138	< 1	< 3
QUL-9	QUL-9	2014 08 06	93.8	< 0.1	0.15	6.48	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	**2.38**	80	< 0.05	0.59	1,980	4.3	< 0.05	0.333	< 0.5	534	< 0.5	1,770	< 0.01	893	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUL-9	2014 08 09	31.4	< 0.1	0.13	5.75	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	1.09	< 30	< 0.05	0.63	1,910	2.59	< 0.05	0.33	< 0.5	496	< 0.5	1,600	< 0.01	841	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-9	2014 08 10	22.7	< 0.1	0.12	5.35	< 0.1	< 0.5	< 10	< 0.01	15,600	< 0.5	< 0.1	0.78	< 30	< 0.05	< 0.5	1,790	1.84	< 0.05	0.31	< 0.5	491	< 0.5	1,530	< 0.01	851	< 0.01	< 0.1	< 10	0.132	< 1	< 3
	QUL-9	2014 08 12	17.2	< 0.1	0.13	5.28	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.73	< 30	< 0.05	0.77	1,900	1.61	< 0.05	0.323	< 0.5	488	< 0.5	1,600	< 0.01	849	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-9	2014 08 13	20.8	< 0.1	0.16	6.28	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.93	30	< 0.05	0.76	1,950	5.69	< 0.05	0.325	< 0.5	560	< 0.5	1,640	< 0.01	861	< 0.01	< 0.1	< 10	0.13	< 1	< 3
	QUL-9X	2014 08 13	28.9	< 0.1	0.15	6.52	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	1.1	38	< 0.05	0.85	1,990	6.04	< 0.05	0.332	< 0.5	579	< 0.5	1,690	< 0.01	880	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QA/QC RPD %		33	*	*	4	*	*	*	*	2	*	*	*	*	*	*	2	*	*	2	*	3	*	3	*	2	*	*	*	< 1	*	*
	QUL-9	2014 08 14	17.1	< 0.1	0.12	5.52	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.7	< 30	< 0.05	0.62	1,910	2.2	-	0.33	< 0.5	489	< 0.5	1,620	< 0.01	844	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-9	2014 08 15	43.1	< 0.1	0.17	6.35	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.61	44	< 0.05	< 0.5	1,940	4.36	-	0.339	< 0.5	539	< 0.5	1,700	< 0.01	883	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-9	2014 08 16	15.8	< 0.1	0.13	5.48	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.6	< 30	< 0.05	< 0.5	1,900	1.34	-	0.321	< 0.5	467	< 0.5	1,560	< 0.01	814	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-9	2014 08 17	19.1	< 0.1	0.14	5.69	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	< 3[a]	< 30	0.065	0.69	1,900	2.59	-	0.32	< 0.5	496	< 0.5	1,560	< 0.01	843	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-9	2014 08 19	14	< 0.1	0.12	4.96	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.65	< 30	< 0.05	0.99	1,930	1.06	-	0.304	< 0.5	448	< 0.5	1,560	< 0.01	783	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-9X	2014 08 19	15.2	< 0.1	0.12	5.36	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.54	< 30	< 0.05	0.8	1,930	1.14	-	0.305	< 0.5	479	< 0.5	1,570	< 0.01	851	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QA/QC RPD %		*	*	*	8	*	*	*	*	< 1	*	*	*	*	*	*	0	*	-	< 1	*	7	*	< 1	*	8	*	*	*	0	*	*
	QUL9	2014 08 22	79.5	< 0.1	0.15	7.13	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	**3.17**	75	< 0.05	0.77	1,940	5.01	-	0.33	< 0.5	523	< 0.5	1,660	< 0.01	872	< 0.01	< 0.1	< 10	0.145	< 1	< 3
QUL-10	QUL-10	2014 08 06	26.6	< 0.1	0.13	5.44	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.73	< 30	< 0.05	< 0.5	1,980	1.79	< 0.05	0.326	< 0.5	501	< 0.5	1,650	< 0.01	896	< 0.01	< 0.1	< 10	0.136	< 1	< 3
QUL-11	QUL-11-0M	2014 08 07	**142**	< 0.1	0.21	8.11	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	0.1	**4.03**	111	0.057	< 0.5	2,000	7.75	< 0.05	0.399	0.59	601	< 0.5	1,840	< 0.01	912	< 0.01	< 0.1	< 10	0.134	< 1	< 3
	QUL-11-5M	2014 08 07	30.9	< 0.1	0.14	5.44	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.84	< 30	< 0.05	< 0.5	1,920	1.46	< 0.05	0.291	< 0.5	477	< 0.5	1,590	< 0.01	824	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-11-5MX	2014 08 07	28.2	< 0.1	0.14	5.56	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	1.23	< 30	< 0.05	< 0.5	1,910	1.52	< 0.05	0.284	< 0.5	475	< 0.5	1,580	< 0.01	816	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QA/QC RPD %		9	*	*	2	*	*	*	*	0	*	*	*	*	*	*	< 1	*	*	2	*	< 1	*	< 1	*	< 1	*	*	*	< 1	*	*
	QUL-11-10M	2014 08 07	79.5	< 0.1	0.15	6.37	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	1.96	73	< 0.05	< 0.5	2,050	3.49	< 0.05	0.298	< 0.5	503	< 0.5	1,810	< 0.01	886	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-11-15M	2014 08 07	26	< 0.1	0.12	5.26	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	0.85	< 30	< 0.05	0.58	2,040	1.4	< 0.05	0.266	< 0.5	471	< 0.5	1,680	< 0.01	885	< 0.01	< 0.1	< 10	0.154	< 1	< 3
	QUL-11-20M	2014 08 07	48	< 0.1	0.15	5.77	< 0.1	< 0.5	< 10	< 0.01	18,000	< 0.5	< 0.1	1.28	52	< 0.05	0.68	2,110	2.48	< 0.05	0.281	< 0.5	499	< 0.5	1,790	< 0.01	925	< 0.01	< 0.1	< 10	0.161	< 1	< 3
	QUL-11-24M	2014 08 07	59.9	< 0.1	0.14	6.13	< 0.1	< 0.5	< 10	< 0.01	18,200	< 0.5	< 0.1	1.38	62	< 0.05	0.72	2,140	3.3	< 0.05	0.302	< 0.5	501	< 0.5	1,830	< 0.01	935	< 0.01	< 0.1	< 10	0.167	< 1	< 3
QUL-12	QUL-12-0M	2014 08 07	**783**	< 0.1	0.41	17.7	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	0.55	**19.9**	**595**	0.234	1.23	2,390	23.4	< 0.05	0.483	0.77	842	< 0.5	3,320	< 0.01	1,110	< 0.01	< 0.1	38	0.163	2	3.6
	QUL-12-5M	2014 08 07	23.3	< 0.1	0.13	5.48	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.8	< 30	< 0.05	0.61	1,930	1.27	< 0.05	0.281	< 0.5	473	< 0.5	1,600	< 0.01	824	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-12-10M	2014 08 07	58.2	< 0.1	0.16	6.13	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	< 0.1	1.44	55	< 0.05	0.71	2,020	2.63	< 0.05	0.287	< 0.5	496	< 0.5	1,760	< 0.01	893	< 0.01	< 0.1	< 10	0.152	< 1	< 3
	QUL-12-15M	2014 08 07	56.1	< 0.1	0.14	5.95	< 0.1	< 0.5	< 10	< 0.01	17,800	< 0.5	< 0.1	1.57	50	< 0.05	0.63	2,100	2.28	< 0.05	0.286	< 0.5	501	< 0.5	1,800	< 0.01	903	< 0.01	< 0.1	< 10	0.156	< 1	< 3
	QUL-12-20M	2014 08 07	42.2	< 0.1	0.14	5.81	< 0.1	< 0.5	< 10	< 0.01	18,200	< 0.5	< 0.1	1.21	43	< 0.05	0.58	2,120	2.08	< 0.05	0.275	< 0.5	492	< 0.5	1,800	< 0.01	921	< 0.01	< 0.1	< 10	0.159	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Physical Parameters									Microbiological Tests		Total Inorganics												
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUL-13	QUL-13-0M	2014 08 07	47.9	-	7.94	-	3.01	94.6	68	3.2	2.21	-	-	-	0.113	< 5	54.8	< 1	-	< 0.5	35	5.55	44.6	-	< 0.001	< 0.002[a]
	QUL-13-5M	2014 08 07	48.2	-	7.96	-	0.49	94.5	66	< 3	2.08	-	-	-	0.176	< 5	72.8	< 1	-	< 0.5	34	5.5	44.5	-	< 0.001	< 0.002[a]
	QUL-13-10M	2014 08 07	49.8	-	7.93	-	0.87	99.2	70	< 3	1.94	-	-	-	0.164	< 5	111	< 1	-	< 0.5	35	5.72	46.3	-	< 0.001	< 0.002[a]
	QUL-13-15M	2014 08 07	52.5	-	7.92	-	1.18	104	75	< 3	1.84	-	-	-	0.174	< 5	136	< 1	-	< 0.5	36	6.02	48.3	-	< 0.001	< 0.002[a]
	QUL-13-20M	2014 08 07	50.2	-	7.94	-	0.61	106	68	< 3	1.79	-	-	-	0.185	< 5	141	< 1	-	< 0.5	36	6.08	49.2	-	< 0.001	< 0.002[a]
QUL-14	QUL-14-0M	2014 08 07	48.6	-	7.87	-	7.45	98.8	69	9.4	2.69	> 2,420	**236**	-	0.124	< 5	27.5	< 1	-	< 0.5	36	5.84	45.7	-	< 0.001	< 0.002[a]
	QUL-14-3M	2014 08 07	47.9	-	7.94	-	1.25	95.9	66	< 3	2.05	-	-	-	0.137	< 5	66.5	< 1	-	< 0.5	34	5.56	44.5	-	< 0.001	< 0.002[a]
QUL-15	QUL-15-0M	2014 08 07	48.9	-	7.91	-	2.26	97.5	69	< 3	2.58	> 2,420	**461**	-	0.127	< 5	34.8	< 1	-	< 0.5	35	5.78	52.2	-	< 0.001	< 0.002[a]
	QUL-15-4.5M	2014 08 07	48.1	-	7.92	-	1.15	95.6	67	< 3	2.1	-	-	-	0.131	< 5	70	< 1	-	< 0.5	34	5.54	50	-	< 0.001	< 0.002[a]
QUL-16	QUL-16-0M	2014 08 07	48.3	-	7.93	-	0.97	95	64	< 3	2.21	-	-	-	0.144	< 5	56.7	< 1	-	< 0.5	34	5.53	44.3	-	< 0.001	< 0.002[a]
	QUL-16-4.5M	2014 08 07	48	-	7.96	-	0.5	95.3	61	< 3	2.07	-	-	-	0.13	< 5	68	< 1	-	< 0.5	33	5.5	44.3	-	< 0.001	< 0.002[a]
QUL-17	QUL-17	2014 08 08	48.7	8.01	7.97	17.3	1.31	95.5	60	< 3	2.45	46	**2**	-	0.122	< 5	65.1	< 1	-	< 0.5	34	5.51	44.2	-	< 0.001	< 0.002[a]
	QUL-17	2014 08 09	48.6	7.86	7.88	18.2	0.44	96.3	66	< 3	2.31	-	-	-	0.135	< 5	63	< 1	-	< 0.5	34	5.49	42.9	-	< 0.001	< 0.002[a]
	QUL-17	2014 08 11	48	7.97	7.91	20.2	0.41	97.5	64	< 3	2.36	-	-	-	0.133	< 5	52.4	< 1	-	< 0.5	34	5.68	43.3	-	< 0.001	**0.0024**
	QUL-17	2014 08 12	47	8.01	7.97	20.6	0.44	95.6	64	< 3	1.91	-	-	-	0.135	< 5	49.5	< 1	-	< 0.5	36	5.65	44	-	0.0013	< 0.002[a]
	QUL-17	2014 08 13	47.5	-	7.99	20.6	0.39	97.8	58	< 3	2.15	-	-	-	0.12	< 5	42.7	< 1	-	< 0.5	33	5.63	44.5	-	< 0.001	< 0.002[a]
	QUL-17	2014 08 14	49.4	7.95	7.95	20.9	0.29	97.5	63	< 3	2.11	-	-	-	0.107	< 5	43	< 1	-	< 0.5	36	5.63	44.2	-	< 0.001	**0.0024**
	QUL-17X	2014 08 14	48.5	7.95	7.95	20.9	0.26	97.8	66	< 3	2.15	-	-	-	0.111	< 5	43	< 1	-	< 0.5	36	5.65	44.3	-	< 0.001	< 0.002[a]
	QA/QC RPD %		2	0	0	0	*	< 1	5	*	*	-	-	-	*	*	0	*	-	*	*	< 1	< 1	-	*	*
	QUL-17	2014 08 15	48.4	8.13	7.98	21.0	0.25	96.2	66	< 3	1.92	-	-	-	0.103	< 5	41.1	< 1	-	< 0.5	36	5.63	43.7	-	< 0.001	< 0.002[a]
	QUL-17	2014 08 16	48.6	8.12	7.95	20.6	0.52	95.6	56	< 3	2.04	-	-	-	0.117	< 5	46	< 1	-	< 0.5	36	5.62	42.5	-	< 0.001	< 0.002[a]
	QUL-17	2014 08 17	47.9	7.78	7.97	21.1	0.36	96.5	62	< 3	2.32	-	-	-	0.122	< 5	40.8	< 1	-	< 0.5	34	5.64	43.6	-	< 0.001	< 0.002[a]
QUL-18	QUL-18-0M	2014 08 08	48.6	8.03	7.95	16.9	0.38	95.4	64	< 3	2.07	27	**1**	-	0.129	< 5	68.9	< 1	-	< 0.5	34	5.5	44	-	< 0.001	< 0.002[a]
	QUL-18-8M	2014 08 08	50.7	7.92	7.97	8.8	0.58	98.9	68	< 3	1.92	-	-	-	0.153	< 5	99.3	< 1	-	< 0.5	35	5.66	46.1	-	< 0.001	< 0.002[a]
	QUL-18-30M	2014 08 08	54.6	7.65	7.95	4.5	0.96	107	69	< 3	1.89	-	-	-	0.185	< 5	143	< 1	-	< 0.5	36	6.11	49.3	-	< 0.001	< 0.002[a]
	QUL-18-0M	2014 08 09	48.6	7.93	7.81	16.6	0.64	94.4	68	< 3	2.03	-	-	-	0.143	< 5	64.4	< 1	-	< 0.5	35	5.53	42.8	-	< 0.001	< 0.002[a]
	QUL-18-8M	2014 08 09	49.8	7.85	7.87	11.8	0.37	97.1	73	< 3	2.01	-	-	-	0.158	< 5	87.7	< 1	-	< 0.5	34	5.6	43.8	-	< 0.001	< 0.002[a]
	QUL-18-30M	2014 08 09	54.5	7.59	7.87	4.5	3.4	106	75	< 3	1.91	-	-	-	0.186	< 5	138	< 1	-	< 0.5	37	6.15	48	-	< 0.001	< 0.002[a]
	QUL-18	2014 08 10	48.8	7.77	7.91	20.5	0.39	96.2	63	< 3	2.25	-	-	-	0.136	< 5	56.3	< 1	-	< 0.5	34	5.59	45	-	< 0.001	< 0.002[a]
	QUL-18	2014 08 11	47.8	7.73	7.91	20.2	0.38	97.7	67	< 3	2.22	-	-	-	0.203	< 5	53.6	< 1	-	< 0.5	34	5.63	44.3	-	< 0.001	**0.0022**
	QUL-18	2014 08 12	47.4	7.92	7.94	21.0	0.51	95.6	64	< 3	1.96	-	-	-	0.126	< 5	51.1	< 1	-	< 0.5	36	5.67	44.1	-	< 0.001	**0.002**
	QUL-18-0M	2014 08 13	47.2	-	7.98	20.3	0.34	98.2	57	< 3	2.1	-	-	-	0.12	< 5	44.8	< 1	-	< 0.5	33	5.63	44.7	-	< 0.001	< 0.002[a]
	QUL-18-16M	2014 08 13	50.2	-	7.97	10.1	0.27	103	70	< 3	1.95	-	-	-	0.173	< 5	111	< 1	-	< 0.5	34	5.85	46.2	-	0.001	< 0.002[a]
	QUL-18-30M	2014 08 13	52.3	-	7.97	-	0.49	109	69	< 3	1.91	-	-	-	0.188	< 5	139	< 1	-	< 0.5	35	6.21	48.9	-	< 0.001	< 0.002[a]
	QUL-18	2014 08 14	49.2	8.04	7.97	21.2	0.22	97.9	67	< 3	1.98	-	-	-	0.105	< 5	46	< 1	-	< 0.5	35	5.65	44.1	-	< 0.001	< 0.002[a]
	QUL-18	2014 08 15	48.9	8.09	7.93	21.0	0.28	94.7	66	< 3	1.86	-	-	-	0.102	< 5	42.1	< 1	-	< 0.5	36	5.62	43.3	-	< 0.001	**0.0025**
	QUL-18-0M	2014 08 16	48.3	8.08	7.95	20.4	0.62	94.7	64	< 3	2.02	-	-	-	0.106	< 5	41	< 1	-	< 0.5	36	5.6	43.9	-	< 0.001	< 0.002[a]
	QUL-18-10M	2014 08 16	50	7.82	7.94	13.9	1.4	97.4	64	< 3	2.06	-	-	-	0.136	< 5	87.9	< 1	-	< 0.5	36	5.82	44.6	-	< 0.001	< 0.002[a]
	QUL-18-30M	2014 08 16	54.6	7.60	7.91	4.7	3.17	106	68	< 3	1.7	-	-	-	0.173	< 5	141	< 1	-	< 0.5	38	6.37	49.1	-	< 0.001	< 0.002[a]
	QUL-18	2014 08 19	48.6	7.80	7.93	20.0	0.35	96.5	63	< 3	2.07	-	-	-	0.112	< 5	40.3	< 1	-	< 0.5	32	5.54	43.6	-	< 0.001	< 0.002[a]
	QUL18	2014 08 25	49.7	7.94	7.95	17.3	0.66	99.2	66	< 3	1.81	-	-	-	0.151	< 5	55.3	< 1	-	< 0.5	34	5.8	44.5	-	< 0.001	< 0.002[a]
	QUL-18	2014 08 26	50.6	7.79	8	18.5	0.45	97.8	74	< 3	2.2	-	-	-	0.143	< 5	50.7	< 1	-	< 0.5	35	5.75	44.8	-	< 0.001	< 0.002[a]
	QUL-18X	2014 08 26	50.9	7.79	7.99	18.5	0.38	97.4	78	< 3	2.11	-	-	-	0.12	< 5	50.9	< 1	-	< 0.5	35	5.75	42.1	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	*	< 1	5	*	*	-	-	-	*	*	< 1	*	-	*	*	0	6	-	*	*
	QUL-18	2014 08 27	49.6	7.95	7.99	18.7	0.32	98.4	69	< 3	2.11	-	-	-	0.122	< 5	46.2	< 1	-	< 0.5	34	5.75	44.6	-	< 0.001	**0.0021**

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

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< Denotes concentration less than indicated detection limit or RPD less than indicated value.

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* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
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[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (mg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Dissolved Metals																											
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-13	QUL-13-0M	2014 08 07	11	16.1	< 30	1.88	2.03	0.49	1	< 0.1	0.11	5.94	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.79	< 0.05	0.8	-	0.32	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-13-5M	2014 08 07	10.4	16.2	< 30	1.87	0.158	0.461	0.904	< 0.1	< 0.1	5.21	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.81	-	0.272	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-13-10M	2014 08 07	8.2	16.7	< 30	1.95	0.275	0.469	0.953	< 0.1	0.11	5.27	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.89	-	0.273	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.14	< 1	< 3
	QUL-13-15M	2014 08 07	6.1	17.7	< 30	2.03	0.287	0.47	0.986	< 0.1	0.1	5.08	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	0.87	-	0.273	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.15	< 1	< 3
	QUL-13-20M	2014 08 07	6.1	16.9	< 30	1.95	0.342	0.478	1	< 0.1	< 0.1	5.11	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	0.8	-	0.269	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.15	< 1	< 3
QUL-14	QUL-14-0M	2014 08 07	11.1	16.3	< 30	1.92	6.63	0.576	0.991	< 0.1	0.14	6.99	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.38	< 0.05	0.65	-	0.386	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUL-14-3M	2014 08 07	12.3	16.1	< 30	1.87	0.934	0.478	0.937	< 0.1	< 0.1	5.42	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.59	< 0.05	0.65	-	0.299	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
QUL-15	QUL-15-0M	2014 08 07	28.6	16.4	< 30	1.95	6.24	0.59	1	< 0.1	0.3	6.82	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.33	< 0.05	0.75	-	0.374	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-15-4.5M	2014 08 07	10.3	16.2	< 30	1.89	0.405	0.47	0.901	< 0.1	0.1	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.75	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
QUL-16	QUL-16-0M	2014 08 07	11.1	16.2	< 30	1.9	2.18	0.505	0.92	< 0.1	0.13	5.71	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.64	< 0.05	0.8	-	0.315	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-16-4.5M	2014 08 07	10.4	16.1	< 30	1.89	0.864	0.49	0.919	< 0.1	0.13	5.36	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.58	< 0.05	0.78	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
QUL-17	QUL-17	2014 08 08	12.2	16.4	< 30	1.91	0.754	0.464	0.838	< 0.1	0.1	5.49	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.66	< 0.05	0.55	-	0.279	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUL-17	2014 08 09	9.9	16.4	< 30	1.88	0.656	0.483	0.839	< 0.1	< 0.1	5.35	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.56	-	0.296	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-17	2014 08 11	11	16.1	< 30	1.89	1.76	0.503	0.847	< 0.1	0.12	5.46	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.04	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
	QUL-17	2014 08 12	10	15.8	< 30	1.83	0.222	0.466	0.85	< 0.1	< 0.1	5.41	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.77	-	0.311	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-17	2014 08 13	9.4	15.9	< 30	1.9	0.284	0.471	0.833	< 0.1	0.1	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.89	-	0.332	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-17	2014 08 14	12.6	16.6	< 30	1.93	0.843	0.475	0.815	< 0.1	0.1	5.39	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.63	-	0.298	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUL-17X	2014 08 14	10	16.3	< 30	1.88	0.802	0.461	0.829	< 0.1	0.12	5.33	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.64	-	0.299	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
	QA/QC RPD %		*	2	*	3	5	3	2	*	*	1	*	*	*	*	*	*	*	*	-	< 1	*	*	*	*	*	< 1	*	*
	QUL-17	2014 08 15	9.6	16.3	< 30	1.88	0.574	0.473	0.836	< 0.1	0.12	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.301	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUL-17	2014 08 16	10.3	16.3	< 30	1.89	0.484	0.469	0.797	< 0.1	0.1	5.43	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.64	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-17	2014 08 17	10	16.1	< 30	1.88	0.894	0.47	0.82	< 0.1	0.1	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.59	-	0.292	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
QUL-18	QUL-18-0M	2014 08 08	10.9	16.3	< 30	1.91	0.294	0.468	0.824	< 0.1	0.11	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.57	-	0.301	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.128	< 1	< 3
	QUL-18-8M	2014 08 08	11.1	17	< 30	1.97	0.188	0.46	0.856	< 0.1	< 0.1	5.32	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.62	-	0.282	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-18-30M	2014 08 08	5.9	18.4	< 30	2.11	1.73	0.462	0.911	< 0.1	0.1	5.25	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.71	-	0.265	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	< 3
	QUL-18-0M	2014 08 09	10.3	16.4	< 30	1.89	0.959	0.474	0.839	< 0.1	< 0.1	5.42	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.58	< 0.05	< 0.5	-	0.312	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-18-8M	2014 08 09	9.4	16.8	< 30	1.9	0.149	0.469	0.833	< 0.1	< 0.1	5.02	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.261	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.142	< 1	< 3
	QUL-18-30M	2014 08 09	5.6	18.4	< 30	2.08	9.54	0.469	0.925	< 0.1	0.11	5.9	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.82	< 0.05	0.64	-	0.297	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.157	< 1	< 3
	QUL-18	2014 08 10	11.4	16.4	< 30	1.89	1.18	0.493	0.854	< 0.1	0.1	5.53	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.54	< 0.05	0.54	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-18	2014 08 11	12.3	16.1	< 30	1.86	1.07	0.495	0.829	< 0.1	0.11	5.38	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.03	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-18	2014 08 12	10.1	16	< 30	1.84	0.438	0.484	0.827	< 0.1	0.1	5.22	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.53	< 0.05	0.76	-	0.3	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-18-0M	2014 08 13	9.2	15.8	< 30	1.87	0.224	0.463	0.834	< 0.1	0.1	5.43	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.93	-	0.315	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-18-16M	2014 08 13	10.5	17	< 30	1.91	0.094	0.449	0.834	< 0.1	< 0.1	4.96	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.98	-	0.257	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.145	< 1	< 3
	QUL-18-30M	2014 08 13	5.8	17.7	< 30	2	0.639	0.466	0.922	< 0.1	< 0.1	4.96	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.62	< 0.05	0.87	-	0.289	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.157	< 1	< 3
	QUL-18	2014 08 14	10	16.6	< 30	1.9	0.493	0.459	0.808	< 0.1	< 0.1	5.13	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.68	-	0.291	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
	QUL-18	2014 08 15	10.1	16.5	< 30	1.9	0.508	0.469	0.826	< 0.1	0.11	5.45	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.305	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-18-0M	2014 08 16	10.2	16.2	< 30	1.89	0.584	0.473	0.808	< 0.1	0.11	5.53	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.62	-	0.306	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-18-10M	2014 08 16	10.5	16.9	< 30	1.87	0.544	0.479	0.83	< 0.1	< 0.1	6.38	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.64	< 0.05	0.63	-	0.282	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.146	< 1	< 3
	QUL-18-30M	2014 08 16	6.1	18.5	< 30	2.06	4.41	0.497	0.986	< 0.1	0.12	6.1	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.07	< 0.05	0.59	-	0.335	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.169	< 1	< 3
	QUL-18	2014 08 19	9.1	16.3	< 30	1.9	0.466	0.415	0.74	< 0.1	< 0.1	4.75	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.64	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.122	< 1	< 3
	QUL18	2014 08 25	10.6	16.8	< 30	1.9	0.806	0.465	0.831	< 0.1	0.1	5.5	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.98	< 0.05	< 0.5	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-18	2014 08 26	8.8	17.1	< 30	1.93	0.625	0.431	0.784	< 0.1	< 0.1	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.65	< 0.05	0.62	-	0.271	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
	QUL-18X	2014 08 26	9.7	17.2	< 30	1.95	0.673	0.45	0.799	< 0.1	0.1	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.71	< 0.05	0.55	-	0.272	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QA/QC RPD %		*	< 1	*	1	7	4	2	*	*	2	*	*	*	*	*	*	*	*	-	< 1	*	*	*	*	*	5	*	*
	QUL-18	2014 08 27	10.4	16.7	< 30	1.93	0.408	0.463	0.857	< 0.1	0.11	5.24	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.68	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Total Metals																														
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-13	QUL-13-0M	2014 08 07	***164***	< 0.1	0.19	7.74	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	0.11	**4.34**	125	0.056	0.73	1,960	5.88	< 0.05	0.339	< 0.5	544	< 0.5	1,860	< 0.01	872	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-13-5M	2014 08 07	22.4	< 0.1	0.12	5.42	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.71	< 30	< 0.05	0.69	1,870	1.16	< 0.05	0.277	< 0.5	465	< 0.5	1,550	< 0.01	803	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-13-10M	2014 08 07	39.2	< 0.1	0.13	5.62	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	1.09	37	< 0.05	0.5	1,930	1.77	< 0.05	0.286	< 0.5	473	< 0.5	1,650	< 0.01	836	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QUL-13-15M	2014 08 07	66.2	< 0.1	0.14	6.1	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	< 0.1	1.84	58	< 0.05	0.77	2,050	2.5	< 0.05	0.276	< 0.5	482	< 0.5	1,780	< 0.01	884	< 0.01	< 0.1	< 10	0.16	< 1	< 3
	QUL-13-20M	2014 08 07	36.2	< 0.1	0.12	5.43	< 0.1	< 0.5	< 10	< 0.01	17,800	< 0.5	< 0.1	1.04	36	< 0.05	0.59	2,070	1.81	< 0.05	0.278	< 0.5	488	< 0.5	1,750	< 0.01	909	< 0.01	< 0.1	< 10	0.156	< 1	< 3
QUL-14	QUL-14-0M	2014 08 07	***449***	< 0.1	0.3	12.6	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	0.31	**11.8**	***348***	0.134	0.8	2,160	16.2	< 0.05	0.42	0.67	717	< 0.5	2,520	< 0.01	963	< 0.01	< 0.1	23	0.148	1.2	< 3
	QUL-14-3M	2014 08 07	55.9	< 0.1	0.13	5.89	< 0.1	< 0.5	< 10	< 0.01	15,600	< 0.5	< 0.1	1.72	46	< 0.05	0.55	1,850	2.76	< 0.05	0.295	< 0.5	499	< 0.5	1,600	< 0.01	814	< 0.01	< 0.1	< 10	0.137	< 1	< 3
QUL-15	QUL-15-0M	2014 08 07	***139***	< 0.1	0.19	8.57	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	**4.22**	108	< 0.05	0.6	1,980	9.05	< 0.05	0.373	< 0.5	620	< 0.5	1,850	< 0.01	901	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-15-4.5M	2014 08 07	54.3	< 0.1	0.14	5.87	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	1.34	53	< 0.05	0.59	1,910	2.21	< 0.05	0.303	< 0.5	483	< 0.5	1,640	< 0.01	813	< 0.01	< 0.1	< 10	0.143	< 1	< 3
QUL-16	QUL-16-0M	2014 08 07	47.3	< 0.1	0.15	6.18	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	1.84	41	0.07	0.57	1,930	3.31	< 0.05	0.322	< 0.5	668	< 0.5	1,640	< 0.01	998	< 0.01	0.16	< 10	0.138	< 1	3.2
	QUL-16-4.5M	2014 08 07	30.2	< 0.1	0.14	5.71	< 0.1	< 0.5	< 10	< 0.01	15,800	< 0.5	< 0.1	0.86	< 30	< 0.05	0.57	1,880	1.86	< 0.05	0.283	< 0.5	487	< 0.5	1,570	< 0.01	825	< 0.01	< 0.1	< 10	0.137	< 1	< 3
QUL-17	QUL-17	2014 08 08	90.5	< 0.1	0.15	6.6	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	**2.21**	73	< 0.05	0.55	1,970	3.18	< 0.05	0.291	< 0.5	511	< 0.5	1,760	< 0.01	876	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-17	2014 08 09	23.9	< 0.1	0.12	5.52	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.8	< 30	< 0.05	0.63	1,910	1.36	< 0.05	0.298	< 0.5	482	< 0.5	1,590	< 0.01	835	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-17	2014 08 11	22.7	< 0.1	0.13	5.55	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.8	< 30	< 0.05	0.9	1,890	2.15	< 0.05	0.322	< 0.5	515	< 0.5	1,540	< 0.01	848	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-17	2014 08 12	15.6	< 0.1	0.12	5.48	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.6	< 30	< 0.05	0.86	1,910	1.37	< 0.05	0.325	< 0.5	473	< 0.5	1,600	< 0.01	859	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-17	2014 08 13	13.9	< 0.1	0.13	5.32	< 0.1	< 0.5	< 10	< 0.01	15,500	< 0.5	< 0.1	0.64	< 30	< 0.05	0.72	1,870	1.63	< 0.05	0.32	< 0.5	452	< 0.5	1,560	< 0.01	824	< 0.01	< 0.1	< 10	0.127	< 1	< 3
	QUL-17	2014 08 14	17.1	< 0.1	0.13	5.47	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.61	< 30	< 0.05	0.62	1,920	1.74	-	0.323	< 0.5	491	< 0.5	1,630	< 0.01	873	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-17X	2014 08 14	16.1	< 0.1	0.13	5.53	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.68	< 30	< 0.05	0.62	1,900	1.78	-	0.323	< 0.5	491	< 0.5	1,610	< 0.01	860	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QA/QC RPD %		6	*	*	1	*	*	*	*	1	*	*	*	*	*	*	1	*	-	0	*	0	*	1	*	2	*	*	*	0	*	*
	QUL-17	2014 08 15	19.6	< 0.1	0.12	5.75	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.7	< 30	< 0.05	< 0.5	1,860	1.5	-	0.335	< 0.5	475	< 0.5	1,590	< 0.01	841	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-17	2014 08 16	17.4	< 0.1	0.13	5.43	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.69	< 30	< 0.05	< 0.5	1,880	1.27	-	0.279	< 0.5	469	< 0.5	1,540	< 0.01	825	< 0.01	< 0.1	< 10	0.129	< 1	< 3
	QUL-17	2014 08 17	18.9	< 0.1	0.14	5.43	< 0.1	< 0.5	< 10	< 0.01	15,700	< 0.5	< 0.1	< 1	< 30	< 0.05	0.7	1,860	1.64	-	0.306	< 0.5	485	< 0.5	1,520	< 0.01	848	< 0.01	< 0.1	< 10	0.144	< 1	< 3
QUL-18	QUL-18-0M	2014 08 08	24.2	< 0.1	0.13	5.36	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.68	< 30	< 0.05	0.52	1,900	1.17	< 0.05	0.286	< 0.5	468	< 0.5	1,580	< 0.01	825	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUL-18-8M	2014 08 08	28.3	< 0.1	0.13	5.47	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.94	< 30	< 0.05	0.56	1,930	1.36	< 0.05	0.279	< 0.5	464	< 0.5	1,620	< 0.01	847	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-18-30M	2014 08 08	57.8	< 0.1	0.13	5.86	< 0.1	< 0.5	< 10	< 0.01	18,100	< 0.5	< 0.1	1.42	57	< 0.05	0.68	2,110	3.61	< 0.05	0.365	< 0.5	491	< 0.5	1,830	< 0.01	943	< 0.01	< 0.1	< 10	0.155	< 1	< 3
	QUL-18-0M	2014 08 09	33.1	< 0.1	0.13	5.64	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	1.1	< 30	< 0.05	< 0.5	1,890	1.91	< 0.05	0.307	< 0.5	475	< 0.5	1,600	< 0.01	830	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-18-8M	2014 08 09	18.7	< 0.1	0.11	5.11	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.63	< 30	< 0.05	0.51	1,880	1.02	< 0.05	0.274	< 0.5	455	< 0.5	1,560	< 0.01	811	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-18-30M	2014 08 09	***206***	< 0.1	0.19	8.54	< 0.1	< 0.5	< 10	< 0.01	18,200	< 0.5	0.13	**4.29**	183	0.06	0.67	2,180	13.7	< 0.05	0.293	< 0.5	541	< 0.5	2,170	< 0.01	959	< 0.01	< 0.1	12	0.157	< 1	< 3
	QUL-18	2014 08 10	24	< 0.1	0.12	5.65	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.81	< 30	< 0.05	< 0.5	1,900	1.89	< 0.05	0.302	< 0.5	500	< 0.5	1,620	< 0.01	869	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-18	2014 08 11	22.3	< 0.1	0.13	5.55	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.78	< 30	< 0.05	0.84	1,890	1.74	< 0.05	0.319	< 0.5	494	< 0.5	1,540	< 0.01	840	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-18	2014 08 12	17.9	< 0.1	0.11	5.25	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.74	< 30	< 0.05	0.89	1,890	1.83	< 0.05	0.327	< 0.5	480	< 0.5	1,570	< 0.01	839	< 0.01	< 0.1	< 10	0.145	< 1	< 3
	QUL-18-0M	2014 08 13	13.7	< 0.1	0.13	5.47	< 0.1	< 0.5	< 10	< 0.01	15,800	< 0.5	< 0.1	0.6	< 30	< 0.05	0.77	1,890	1.52	< 0.05	0.335	< 0.5	465	< 0.5	1,580	< 0.01	843	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUL-18-16M	2014 08 13	13.8	< 0.1	0.11	4.99	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	0.53	< 30	< 0.05	0.81	1,920	0.882	< 0.05	0.25	< 0.5	446	< 0.5	1,570	< 0.01	838	< 0.01	< 0.1	< 10	0.146	< 1	< 3
	QUL-18-30M	2014 08 13	28.5	< 0.1	0.13	5.54	< 0.1	< 0.5	< 10	< 0.01	17,800	< 0.5	< 0.1	0.92	< 30	< 0.05	0.96	2,030	1.85	< 0.05	0.287	< 0.5	487	< 0.5	1,720	< 0.01	933	< 0.01	< 0.1	< 10	0.163	< 1	< 3
	QUL-18	2014 08 14	15.5	< 0.1	0.11	5.23	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.56	< 30	< 0.05	0.63	1,890	1.04	-	0.307	< 0.5	473	< 0.5	1,590	< 0.01	823	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUL-18	2014 08 15	15.7	< 0.1	0.15	5.42	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.58	< 30	< 0.05	< 0.5	1,850	1.28	-	0.347	< 0.5	469	< 0.5	1,590	< 0.01	829	< 0.01	< 0.1	< 10	0.133	< 1	< 3
	QUL-18-0M	2014 08 16	19.6	< 0.1	0.13	5.6	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.74	< 30	< 0.05	< 0.5	1,900	1.66	-	0.34	< 0.5	485	< 0.5	1,570	< 0.01	839	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-18-10M	2014 08 16	68.7	< 0.1	0.12	6	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	**2.14**	48	< 0.05	< 0.5	1,860	2.5	-	0.291	< 0.5	484	< 0.5	1,600	< 0.01	855	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QUL-18-30M	2014 08 16	***171***	0.11	0.16	8.06	< 0.1	< 0.5	< 10	< 0.01	18,300	< 0.5	0.11	**5**	149	0.087	< 0.5	2,130	9.05	-	0.358	< 0.5	524	< 0.5	2,040	< 0.01	977	< 0.01	< 0.1	11	0.161	< 1	< 3
	QUL-18	2014 08 19	15.3	< 0.1	0.13	5.53	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.64	< 30	< 0.05	1.05	1,920	1.29	-	0.323	< 0.5	488	< 0.5	1,570	< 0.01	849	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL18	2014 08 25	49	< 0.1	0.12	6.06	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	1.96	38	< 0.05	< 0.5	1,910	2.25	-	0.311	< 0.5	481	< 0.5	1,600	< 0.01	858	< 0.01	< 0.1	< 10	0.146	< 1	< 3
	QUL-18	2014 08 26	30.4	< 0.1	0.12	5.49	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	1.24	< 30	< 0.05	0.5	1,900	1.92	< 0.01	0.325	< 0.5	458	< 0.5	1,560	< 0.01	812	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-18X	2014 08 26	28.3	< 0.1	0.12	5.56	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	1.23	< 30	< 0.05	< 0.5	1,940	1.74	< 0.01	0.287	< 0.5	464	< 0.5	1,580	< 0.01	827	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QA/QC RPD %		7	*	*	1	*	*	*	*	2	*	*	*	*	*	*	2	*	*	12	*	1	*	1	*	2	*	*	*	2	*	*
	QUL-18	2014 08 27	16.2	< 0.1	0.12	5.46	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.61	< 30	< 0.05	0.7	1,910	1.21	< 0.01	0.295	< 0.5	467	< 0.5	1,510	< 0.01	868	< 0.01	< 0.1	< 10	0.143	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

a Laboratory detection limit out of range.

b British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.

c A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.

d Guideline varies with pH, and/or either Temperature or Hardness.

e Health Canada Drinking Water Guidelines, 2012.

f Guideline for Nitrate applied.

g The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.

h Calculated based on an individual sample basis, not average result basis.

i Secondary chronic value, not 30 day mean.

j Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Physical Parameters									Microbiological Tests		Total Inorganics												
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUL-19	QUL-19	2014 08 08	48.4	8.10	7.99	18.7	0.37	95.3	61	< 3	2.08	236	**1**	-	0.122	< 5	49.6	< 1	-	< 0.5	34	5.51	43.8	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 09	48.5	7.93	7.9	17.9	0.34	95.5	67	< 3	2.25	-	-	-	0.126	< 5	57.1	< 1	-	< 0.5	35	5.5	42.6	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 10	48.2	7.87	7.92	20.7	0.42	95.7	65	< 3	2.3	-	-	-	0.126	< 5	43.4	< 1	-	< 0.5	35	5.63	45.3	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 11	46.3	7.99	7.93	19.5	0.34	97.1	68	< 3	2.2	-	-	-	0.13	< 5	45.6	< 1	-	< 0.5	34	5.63	43.8	-	< 0.001	**0.0026**
	QUL-19X	2014 08 11	46.1	7.99	7.93	19.5	0.38	97	67	< 3	2.35	-	-	-	0.126	< 5	47.5	< 1	-	< 0.5	33	5.62	44	-	< 0.001	**0.0025**
	QA/QC RPD %		< 1	0	0	0	*	< 1	1	*	*	-	-	-	*	*	4	*	-	*	*	< 1	< 1	-	*	*
	QUL-19	2014 08 12	47.8	8.01	7.97	21.4	0.35	96	59	< 3	1.66	-	-	-	0.112	< 5	54.6	< 1	-	< 0.5	35	5.72	44.4	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 13	47.5	-	7.99	20.9	0.38	98.5	54	< 3	2.03	-	-	-	0.117	< 5	49.1	< 1	-	< 0.5	32	5.6	44.5	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 14	49.4	8.15	7.96	22.0	0.25	98.3	67	< 3	1.87	-	-	-	0.116	< 5	48.9	< 1	-	< 0.5	35	5.69	44.4	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 15	48.8	8.12	7.99	21.1	0.21	97.1	62	< 3	1.84	-	-	-	0.102	< 5	47.7	< 1	-	< 0.5	35	5.65	43.8	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 16	48.8	8.10	7.95	20.5	0.28	93.4	63	< 3	2.07	-	-	-	0.105	< 5	42.4	< 1	-	< 0.5	35	5.67	43.5	-	< 0.001	< 0.002[a]
	QUL-19	2014 08 17	49.1	7.79	7.97	20.6	0.38	98.8	62	< 3	2.48	-	-	-	0.117	< 5	31.5	< 1	-	< 0.5	35	5.79	45	-	< 0.001	< 0.002[a]
	QUL-19X	2014 08 17	48.7	7.79	7.99	20.6	0.39	98.6	67	< 3	2.47	-	-	-	0.12	< 5	31.2	< 1	-	< 0.5	35	5.81	44.2	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	*	< 1	8	*	*	-	-	-	*	*	< 1	*	-	*	*	< 1	2	-	*	*
	QUL-19	2014 08 19	48.6	7.08	7.85	19.8	0.3	96.4	67	< 3	2.01	-	-	-	0.112	< 5	41.6	< 1	-	< 0.5	33	5.59	50.4	-	0.0011	**0.0024**
	QUL-19	2014 08 21	49.7	8.35	7.9	18.8	0.39	96	62	< 3	2.04	-	-	-	0.12	< 5	45.9	< 1	-	< 0.5	35	5.64	43.7	-	< 0.001	< 0.002[a]
	QUL-19-0M	2014 08 27	49.8	7.96	7.9	19.0	0.27	97.6	70	< 3	1.91	-	-	-	0.172	< 5	45.9	< 1	-	< 0.5	33	5.78	44.1	-	0.0011	< 0.002[a]
	QUL-19-35M	2014 08 27	53.9	7.46	7.95	5.1	3.23	106	68	< 3	1.94	-	-	-	0.184	< 5	124	< 1	-	< 0.5	36	6.44	48.2	-	0.0011	< 0.002[a]
	QUL-19-55M	2014 08 27	53.9	7.35	7.93	4.0	0.49	108	67	< 3	1.9	-	-	-	0.174	< 5	145	< 1	-	< 0.5	36	6.31	48.9	-	0.0015	**0.0021**
QUL-20	QUL-20	2014 08 08	52.5	7.76	7.95	8.1	0.43	104	68	< 3	2.04	15	< 1	-	0.164	< 5	123	< 1	-	< 0.5	35	5.88	47.7	-	< 0.001	< 0.002[a]
	QUL-20X	2014 08 08	52.7	7.76	7.96	-	0.45	104	69	< 3	1.89	15	< 1	-	0.174	< 5	123	< 1	-	< 0.5	35	5.9	48.5	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	*	*	0	1	*	*	0	*	-	*	*	0	*	-	*	*	< 1	2	-	*	*
	QUL-20	2014 08 09	50.8	7.73	7.84	11.0	0.46	100	69	< 3	2.14	-	-	-	0.174	< 5	104	< 1	-	< 0.5	34	5.77	45	-	< 0.001	< 0.002[a]
	QUL-20	2014 08 11	47.5	7.89	7.93	16.2	0.41	98.9	71	< 3	2.28	-	-	-	0.183	< 5	73	< 1	-	< 0.5	34	5.67	44.7	-	< 0.001	**0.0023**
	QUL-20	2014 08 12	47.6	8.00	7.9	17.0	0.26	97.2	68	< 3	1.83	-	-	-	0.144	< 5	65.7	< 1	-	< 0.5	33	5.64	44.2	-	< 0.001	< 0.002[a]
	QUL-20	2014 08 13	47.8	-	7.98	19.2	0.53	98.2	59	< 3	2.16	-	-	-	0.13	< 5	51.5	< 1	-	< 0.5	33	5.62	44.6	-	< 0.001	< 0.002[a]
	QUL-20	2014 08 14	49.3	8.06	7.96	19.3	0.26	99.1	70	< 3	2.17	-	-	-	0.139	< 5	49.4	< 1	-	< 0.5	36	5.63	44.4	-	< 0.001	< 0.002[a]
	QUL-20	2014 08 15	49.4	8.05	7.99	17.6	0.4	97.6	62	< 3	1.86	-	-	-	0.123	< 5	62	< 1	-	< 0.5	36	5.65	43.7	-	< 0.001	< 0.002[a]
	QUL-20X	2014 08 15	49.6	8.05	7.98	17.6	0.28	97.6	65	< 3	1.79	-	-	-	0.123	< 5	59.5	< 1	-	< 0.5	36	5.65	43.8	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	*	0	5	*	*	-	-	-	*	*	4	*	-	*	*	0	< 1	-	*	*
	QUL-20	2014 08 16	49	7.94	7.97	17.7	0.31	95.6	66	< 3	1.95	-	-	-	0.114	< 5	57.5	< 1	-	< 0.5	35	5.64	43.6	-	< 0.001	< 0.002[a]
	QUL-20	2014 08 17	47.5	7.79	7.97	17.9	0.37	97.2	63	< 3	2.5	-	-	-	0.144	< 5	58.6	< 1	-	< 0.5	34	5.65	44	-	< 0.001	< 0.002[a]
	QUL20	2014 08 22	50.4	7.80	7.86	13.6	1	98.2	69	< 3	2.51	-	-	-	0.162	< 5	81.4	< 1	-	< 0.5	34	5.78	44.4	-	< 0.001	< 0.002[a]
	QUL-20-0M	2014 08 23	50.5	7.73	7.8	14.3	0.84	99.6	62	< 3	2.18	-	-	-	0.184	5.6	84.3	< 1	-	< 0.5	35	5.75	44.8	-	< 0.001	< 0.002[a]
	QUL-20-10M	2014 08 23	50.6	7.48	7.88	13.7	1	102	65	< 3	2.13	-	-	-	0.162	< 5	86.5	< 1	-	< 0.5	35	5.76	45.6	-	0.0025	**0.0036**
	QUL-20-20M	2014 08 23	53.8	7.43	7.86	13.1	1.06	101	67	< 3	2.1	-	-	-	0.15	< 5	91.1	< 1	-	< 0.5	35	5.76	45.8	-	< 0.001	**0.0024**
	QUL-20	2014 08 26	50.5	7.57	7.98	16.7	0.63	97.1	71	< 3	2.2	-	-	-	0.17	< 5	63.5	< 1	-	< 0.5	37	5.82	44.8	-	< 0.001	**0.0021**
	QUL-20	2014 08 27	50.3	7.90	7.98	17.5	0.76	99.2	70	< 3	2.21	-	-	-	0.126	< 5	55.6	< 1	-	< 0.5	34	5.8	44.1	-	< 0.001	**0.0022**
	QUL-20	2014 08 27	50	7.90	7.93	17.5	0.87	101	69	< 3	1.94	-	-	-	0.145	< 5	64.2	< 1	-	< 0.5	35	5.84	45.2	-	0.0011	**0.0023**

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Dissolved Metals																											
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-19	QUL-19	2014 08 08	10.7	16.1	< 30	1.98	0.819	0.488	0.877	< 0.1	0.13	5.89	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.346	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.116	< 1	< 3
	QUL-19	2014 08 09	10.1	16.3	< 30	1.88	0.443	0.472	0.828	< 0.1	< 0.1	5.26	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.54	-	0.318	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-19	2014 08 10	11.2	16	< 30	2	1.66	0.524	0.944	< 0.1	0.17	6.17	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.55	< 0.05	< 0.5	-	0.394	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.122	< 1	< 3
	QUL-19	2014 08 11	12	15.4	< 30	1.87	0.745	0.496	0.871	< 0.1	0.12	5.69	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.96	-	0.328	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.123	< 1	< 3
	QUL-19X	2014 08 11	10.7	15.4	< 30	1.89	0.938	0.516	0.906	< 0.1	0.12	5.83	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	1.02	-	0.353	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.123	< 1	< 3
	QA/QC RPD %		*	0	*	1	23	4	4	*	*	2	*	*	*	*	*	*	*	*	-	7	*	*	*	*	*	0	*	*
	QUL-19	2014 08 12	9.7	16.2	< 30	1.8	0.17	0.439	0.783	< 0.1	< 0.1	4.85	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.86	-	0.243	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.145	< 1	< 3
	QUL-19	2014 08 13	9.6	16	< 30	1.83	0.098	0.436	0.789	< 0.1	< 0.1	4.79	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.01	-	0.282	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.142	< 1	< 3
	QUL-19	2014 08 14	12	16.7	< 30	1.86	0.381	0.445	0.783	< 0.1	< 0.1	4.98	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.73	-	0.259	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-19	2014 08 15	10	16.5	< 30	1.86	0.367	0.463	0.798	< 0.1	< 0.1	5.31	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.285	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-19	2014 08 16	9.9	16.3	< 30	1.94	0.442	0.464	0.826	< 0.1	0.11	5.54	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.76	-	0.318	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-19	2014 08 17	8.9	16.2	< 30	2.12	0.987	0.507	0.945	< 0.1	0.15	6.33	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.55	-	0.43	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.121	< 1	< 3
	QUL-19X	2014 08 17	9.6	16	< 30	2.09	0.977	0.522	0.955	< 0.1	0.17	6.45	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.441	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QA/QC RPD %		*	1	*	1	1	3	1	*	*	2	*	*	*	*	*	*	*	*	-	3	*	*	*	*	*	3	*	*
	QUL-19	2014 08 19	10.2	16.3	< 30	1.92	0.322	0.477	0.843	< 0.1	0.11	5.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.52	< 0.05	0.71	-	0.308	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-19	2014 08 21	9.3	16.7	< 30	1.92	0.344	0.454	0.814	< 0.1	0.11	5.2	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.83	-	0.292	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-19-0M	2014 08 27	9.7	16.8	< 30	1.89	0.218	0.437	0.811	< 0.1	< 0.1	4.92	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.75	-	0.244	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-19-35M	2014 08 27	6.1	18.2	< 30	2.05	3.23	0.479	0.988	< 0.1	0.1	5.55	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.91	< 0.05	0.84	-	0.389	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.167	< 1	< 3
	QUL-19-55M	2014 08 27	4.8	18.2	< 30	2.06	0.342	0.459	0.924	< 0.1	< 0.1	5.04	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.91	-	0.254	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.156	< 1	< 3
QUL-20	QUL-20	2014 08 08	7.4	17.7	< 30	2.04	0.365	0.463	0.892	< 0.1	0.11	5.25	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.73	-	0.276	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
	QUL-20X	2014 08 08	7.5	17.7	< 30	2.04	0.339	0.466	0.892	< 0.1	< 0.1	5.14	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.68	-	0.263	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QA/QC RPD %		*	0	*	0	7	< 1	0	*	*	2	*	*	*	*	*	*	*	*	-	5	*	*	*	*	*	< 1	*	*
	QUL-20	2014 08 09	8.1	17.1	< 30	1.95	0.355	0.459	0.847	< 0.1	< 0.1	5.12	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.61	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-20	2014 08 11	12.1	16	< 30	1.85	0.301	0.489	0.847	< 0.1	0.11	5.22	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	1.07	-	0.26	0.53	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-20	2014 08 12	9.9	16.1	< 30	1.82	0.127	0.463	0.823	< 0.1	< 0.1	5.51	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.75	-	0.299	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL-20	2014 08 13	9.6	16.1	< 30	1.88	0.163	0.476	0.847	< 0.1	< 0.1	5.3	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.04	-	0.312	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-20	2014 08 14	10.6	16.6	< 30	1.89	0.392	0.471	0.825	< 0.1	0.11	5.26	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.7	-	0.299	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-20	2014 08 15	9.9	16.7	< 30	1.9	0.354	0.469	0.826	< 0.1	0.12	5.73	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.3	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-20X	2014 08 15	10.1	16.7	< 30	1.89	0.35	0.472	0.826	< 0.1	0.11	5.65	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.299	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QA/QC RPD %		*	0	*	< 1	1	< 1	0	*	*	1	*	*	*	*	*	*	*	*	-	< 1	*	*	*	*	*	< 1	*	*
	QUL-20	2014 08 16	9.9	16.4	< 30	1.93	0.333	0.45	0.791	< 0.1	0.11	5.18	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.281	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-20	2014 08 17	9.9	16	< 30	1.86	0.423	0.471	0.832	< 0.1	0.11	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.57	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL20	2014 08 22	10.2	17	< 30	1.91	0.767	0.461	0.837	< 0.1	0.1	5.51	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.85	< 0.05	0.89	-	0.267	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL-20-0M	2014 08 23	10.7	17.1	< 30	1.92	0.946	0.512	0.872	< 0.1	< 0.1	5.45	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.34	0.134	0.93	-	0.282	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-20-10M	2014 08 23	8.5	17.1	< 30	1.91	0.781	0.468	0.829	< 0.1	< 0.1	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.09	< 0.05	1.03	-	0.274	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-20-20M	2014 08 23	11.8	18.2	< 30	2.06	0.749	0.476	0.831	< 0.1	< 0.1	5.46	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.01	< 0.05	1	-	0.275	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.14	< 1	< 3
	QUL-20	2014 08 26	8.9	17	< 30	1.94	0.694	0.451	0.805	< 0.1	0.11	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.99	< 0.05	0.62	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-20	2014 08 27	10.1	17	< 30	1.93	0.67	0.465	0.874	< 0.1	0.11	5.6	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.93	< 0.05	0.75	-	0.278	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-20	2014 08 27	10.1	16.9	< 30	1.93	0.917	0.491	0.897	< 0.1	0.12	5.49	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.94	< 0.05	0.62	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Total Metals

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-19	QUL-19	2014 08 08	19.9	< 0.1	0.15	5.79	< 0.1	< 0.5	< 10	< 0.01	15,600	< 0.5	< 0.1	0.6	33	< 0.05	< 0.5	1,950	2.49	< 0.05	0.373	< 0.5	479	< 0.5	1,680	< 0.01	867	< 0.01	< 0.1	< 10	0.121	< 1	< 3
	QUL-19	2014 08 09	20	< 0.1	0.11	5.48	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.66	< 30	< 0.05	< 0.5	1,910	1.27	< 0.05	0.307	< 0.5	481	< 0.5	1,580	< 0.01	834	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-19	2014 08 10	18.7	< 0.1	0.16	6.21	< 0.1	< 0.5	< 10	< 0.01	15,800	< 0.5	< 0.1	0.63	31	< 0.05	< 0.5	1,980	2.84	< 0.05	0.426	< 0.5	519	< 0.5	1,770	< 0.01	948	< 0.01	< 0.1	< 10	0.125	< 1	< 3
	QUL-19	2014 08 11	17.9	< 0.1	0.15	5.85	< 0.1	< 0.5	< 10	< 0.01	15,800	< 0.5	< 0.1	0.6	< 30	< 0.05	0.82	1,940	1.79	< 0.05	0.36	< 0.5	504	< 0.5	1,630	< 0.01	885	< 0.01	< 0.1	< 10	0.133	< 1	< 3
	QUL-19X	2014 08 11	19	< 0.1	0.17	6.1	< 0.1	< 0.5	< 10	< 0.01	15,600	< 0.5	< 0.1	0.76	< 30	< 0.05	0.83	1,960	2.2	< 0.05	0.419	< 0.5	543	< 0.5	1,670	< 0.01	934	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QA/QC RPD %		6	*	*	4	*	*	*	*	1	*	*	*	*	*	*	1	*	*	15	*	7	*	2	*	5	*	*	*	2	*	*
	QUL-19	2014 08 12	15.2	< 0.1	< 0.1	4.9	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	< 0.5	< 30	< 0.05	0.82	1,870	0.81	< 0.05	0.253	< 0.5	437	< 0.5	1,460	< 0.01	787	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QUL-19	2014 08 13	13.5	< 0.1	0.11	5.14	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	< 0.5	< 30	< 0.05	0.9	1,930	0.823	< 0.05	0.287	< 0.5	455	< 0.5	1,530	< 0.01	824	< 0.01	< 0.1	< 10	0.153	< 1	< 3
	QUL-19	2014 08 14	13.6	< 0.1	< 0.1	4.96	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	< 0.5	< 30	< 0.05	0.68	1,850	0.81	-	0.282	< 0.5	447	< 0.5	1,510	< 0.01	807	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-19	2014 08 15	13.5	< 0.1	0.12	5.28	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	1,870	1.03	-	0.296	< 0.5	451	< 0.5	1,540	< 0.01	796	< 0.01	< 0.1	< 10	0.144	< 1	< 3
	QUL-19	2014 08 16	15.3	< 0.1	0.13	5.58	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.59	< 30	< 0.05	< 0.5	1,930	1.68	-	0.345	< 0.5	476	< 0.5	1,590	< 0.01	840	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-19	2014 08 17	17.5	< 0.1	0.18	6.58	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	< 1	34	< 0.05	0.67	2,120	3.97	-	0.458	< 0.5	529	< 0.5	1,790	< 0.01	977	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QUL-19X	2014 08 17	18.5	< 0.1	0.2	6.59	< 0.1	< 0.5	< 10	< 0.01	15,800	< 0.5	< 0.1	< 1	35	< 0.05	< 0.5	2,060	4.02	-	0.47	< 0.5	532	< 0.5	1,760	< 0.01	978	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QA/QC RPD %		6	*	*	< 1	*	*	*	*	1	*	*	*	*	*	*	3	*	-	3	*	< 1	*	2	*	< 1	*	*	*	4	*	*
	QUL-19	2014 08 19	14	< 0.1	0.13	5.54	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.57	< 30	< 0.05	1	1,930	1.44	-	0.333	< 0.5	486	< 0.5	1,570	< 0.01	875	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-19	2014 08 21	22.1	< 0.1	0.12	5.26	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.73	< 30	< 0.05	0.67	1,880	1.34	-	0.299	< 0.5	467	< 0.5	1,500	< 0.01	826	< 0.01	< 0.1	< 10	0.146	< 1	< 3
	QUL-19-0M	2014 08 27	13.5	< 0.1	< 0.1	4.85	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.51	< 30	< 0.05	0.68	1,810	0.754	< 0.01	0.261	< 0.5	435	< 0.5	1,400	< 0.01	820	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-19-35M	2014 08 27	***160***	< 0.1	0.16	8.07	< 0.1	< 0.5	< 10	< 0.01	17,800	< 0.5	< 0.1	**4.83**	102	0.06	0.83	2,060	7.5	< 0.01	0.411	< 0.5	521	< 0.5	1,970	< 0.01	1,010	< 0.01	< 0.1	< 10	0.178	< 1	< 3
	QUL-19-55M	2014 08 27	30.6	< 0.1	0.1	5.22	< 0.1	< 0.5	< 10	< 0.01	18,100	< 0.5	< 0.1	0.78	< 30	< 0.05	0.85	2,060	1.47	< 0.01	0.267	< 0.5	471	< 0.5	1,690	< 0.01	936	< 0.01	< 0.1	< 10	0.165	< 1	< 3
QUL-20	QUL-20	2014 08 08	22.4	< 0.1	0.13	5.42	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	0.66	< 30	< 0.05	0.58	2,040	1.48	< 0.05	0.288	< 0.5	483	< 0.5	1,720	< 0.01	901	< 0.01	< 0.1	< 10	0.145	< 1	< 3
	QUL-20X	2014 08 08	26.2	< 0.1	0.12	5.45	< 0.1	< 0.5	< 10	< 0.01	17,600	< 0.5	< 0.1	0.7	< 30	< 0.05	0.59	2,070	1.49	< 0.05	0.285	< 0.5	487	< 0.5	1,740	< 0.01	928	< 0.01	< 0.1	< 10	0.15	< 1	< 3
	QA/QC RPD %		16	*	*	< 1	*	*	*	*	1	*	*	*	*	*	*	2	*	*	1	*	< 1	*	1	*	3	*	*	*	3	*	*
	QUL-20	2014 08 09	20	< 0.1	0.11	5.21	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	0.69	< 30	< 0.05	0.59	1,980	1.24	< 0.05	0.281	< 0.5	475	< 0.5	1,670	< 0.01	867	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-20	2014 08 11	23.4	< 0.1	0.14	5.25	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.71	< 30	< 0.05	0.9	1,860	1.16	< 0.05	0.3	< 0.5	487	< 0.5	1,530	< 0.01	843	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-20	2014 08 12	19.9	< 0.1	0.12	5.12	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.69	< 30	< 0.05	0.82	1,850	1.18	< 0.05	0.293	< 0.5	471	< 0.5	1,560	< 0.01	836	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-20	2014 08 13	15.6	< 0.1	0.16	5.44	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.74	< 30	< 0.05	0.65	1,940	1.26	< 0.05	0.31	< 0.5	489	< 0.5	1,600	< 0.01	871	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-20	2014 08 14	17.1	< 0.1	0.12	5.41	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.66	< 30	< 0.05	0.69	1,880	1.35	-	0.306	< 0.5	472	< 0.5	1,610	< 0.01	833	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-20	2014 08 15	20.3	< 0.1	0.13	5.84	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.64	< 30	< 0.05	< 0.5	1,890	1.31	-	0.323	< 0.5	472	< 0.5	1,590	< 0.01	833	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-20X	2014 08 15	17.4	< 0.1	0.13	5.93	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.61	< 30	< 0.05	< 0.5	1,890	1.38	-	0.292	< 0.5	476	< 0.5	1,610	< 0.01	848	< 0.01	< 0.1	< 10	0.134	< 1	< 3
	QA/QC RPD %		15	*	*	2	*	*	*	*	0	*	*	*	*	*	*	0	*	-	10	*	< 1	*	1	*	2	*	*	*	4	*	*
	QUL-20	2014 08 16	17.6	< 0.1	1.06	5.28	< 0.1	< 0.5	< 10	**0.034**	16,000	< 0.5	< 0.1	0.59	< 30	< 0.05	0.56	1,870	1.26	-	0.303	< 0.5	465	< 0.5	1,540	< 0.01	821	< 0.01	< 0.1	< 10	0.145	< 1	< 3
	QUL-20	2014 08 17	19	< 0.1	0.13	5.3	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	< 1	< 30	< 0.05	0.63	1,880	1.46	-	0.294	< 0.5	471	< 0.5	1,560	< 0.01	850	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QUL20	2014 08 22	50.8	< 0.1	0.13	5.92	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	**2.03**	41	< 0.05	0.76	1,930	2.45	-	0.287	< 0.5	479	< 0.5	1,600	< 0.01	855	< 0.01	< 0.1	< 10	0.145	< 1	< 3
	QUL-20-0M	2014 08 23	59.8	< 0.1	0.14	5.87	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	**2.35**	47	< 0.05	0.99	1,930	2.79	< 0.05	0.275	< 0.5	511	< 0.5	1,650	< 0.01	851	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-20-10M	2014 08 23	56.9	< 0.1	0.13	6	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	**2.16**	47	< 0.05	0.93	1,930	2.56	< 0.05	0.303	< 0.5	477	< 0.5	1,660	< 0.01	840	< 0.01	< 0.1	< 10	0.146	< 1	< 3
	QUL-20-20M	2014 08 23	57.9	< 0.1	0.13	6.04	< 0.1	< 0.5	< 10	< 0.01	18,100	< 0.5	< 0.1	**2.3**	51	< 0.05	0.98	2,070	2.87	< 0.05	0.294	< 0.5	498	< 0.5	1,770	< 0.01	875	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-20	2014 08 26	48.5	< 0.1	0.13	6.15	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	**2.05**	40	< 0.05	0.69	1,930	2.3	< 0.01	0.308	< 0.5	470	< 0.5	1,610	< 0.01	848	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-20	2014 08 27	39.4	< 0.1	0.12	5.95	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.69	< 30	< 0.05	0.69	1,900	1.95	< 0.01	0.319	< 0.5	479	< 0.5	1,550	< 0.01	892	< 0.01	< 0.1	< 10	0.152	< 1	< 3
	QUL-20	2014 08 27	38.1	< 0.1	0.15	5.9	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	1.6	31	< 0.05	0.67	1,970	2.04	< 0.01	0.314	< 0.5	484	< 0.5	1,630	< 0.01	929	< 0.01	< 0.1	< 10	0.141	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Physical Parameters									Microbiological Tests		Total Inorganics												
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0	+/-1 Degree change from ambient	Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a		Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUL-21	QUL-21-0M	2014 08 08	49.5	7.90	7.91	14.7	0.29	97.6	72	< 3	2.51	-	-	-	0.159	< 5	85.6	< 1	-	< 0.5	34	5.57	43.6	-	< 0.001	< 0.002[a]
	QUL-21-7M	2014 08 08	50.7	7.85	7.91	8.9	0.25	99.5	72	< 3	2.11	-	-	-	0.174	< 5	100	< 1	-	< 0.5	35	5.66	44.5	-	< 0.001	< 0.002[a]
	QUL-21-30M	2014 08 08	54.3	7.67	7.9	4.4	0.78	108	77	< 3	2.16	-	-	-	0.193	< 5	141	< 1	-	< 0.5	36	6.12	48	-	< 0.001	< 0.002[a]
	QUL-21	2014 08 09	49.3	7.81	7.88	16.1	0.36	96.7	68	< 3	2.33	-	-	-	0.137	< 5	73.9	< 1	-	< 0.5	34	5.52	43.2	-	< 0.001	< 0.002[a]
	QUL-21	2014 08 11	47.8	7.90	7.92	19.7	0.77	97.8	65	< 3	2.27	-	-	-	0.132	< 5	57.3	< 1	-	< 0.5	33	5.64	44	-	< 0.001	< 0.002[a]
	QUL-21-0M	2014 08 12	48.1	7.98	7.96	-	0.4	95.9	65	< 3	1.97	-	-	-	0.13	< 5	55.1	< 1	-	< 0.5	36	5.66	43.8	-	< 0.001	< 0.002[a]
	QUL-21X	2014 08 12	48.9	7.98	7.95	-	0.49	96.3	65	< 3	1.95	-	-	-	0.126	< 5	54.1	< 1	-	< 0.5	36	5.64	44.3	-	< 0.001	< 0.002[a]
	QA/QC RPD %		2	0	< 1	-	*	< 1	0	*	*	-	-	-	*	*	2	*	-	*	*	< 1	1	-	*	*
	QUL-21-12M	2014 08 12	48.2	8.15	7.94	12.9	0.55	98.7	68	< 3	1.87	-	-	-	0.171	< 5	88.2	< 1	-	< 0.5	36	5.77	44.6	-	< 0.001	< 0.002[a]
	QUL-21-30M	2014 08 12	54.3	7.57	7.96	4.6	0.39	107	72	< 3	1.74	-	-	-	0.191	< 5	139	< 1	-	< 0.5	38	6.19	49.6	-	< 0.001	< 0.002[a]
	QUL-21	2014 08 13	47.6	-	8	20.9	0.29	98.2	59	< 3	2.09	-	-	-	0.135	< 5	44.2	< 1	-	< 0.5	32	5.62	44.4	-	< 0.001	< 0.002[a]
	QUL-21	2014 08 14	49.6	7.85	7.96	21.3	0.22	97.2	65	< 3	2.11	-	-	-	0.106	< 5	41.5	< 1	-	< 0.5	35	5.62	43.4	-	< 0.001	**0.0027**
	QUL-21-0M	2014 08 15	48.7	8.12	7.98	20.7	0.22	95.4	66	< 3	1.96	-	-	-	0.102	< 5	39.7	< 1	-	< 0.5	36	5.64	43.1	-	< 0.001	**0.0022**
	QUL-21-10M	2014 08 15	50.3	7.82	7.94	13.1	0.3	98.3	67	< 3	1.73	-	-	-	0.138	< 5	89.9	< 1	-	< 0.5	35	5.76	44.6	-	< 0.001	**0.002**
	QUL-21-30M	2014 08 15	53.5	7.65	7.9	4.6	0.35	106	71	< 3	1.65	-	-	-	0.175	< 5	140	< 1	-	< 0.5	38	6.17	48	-	< 0.001	**0.0028**
	QUL-21	2014 08 16	48.2	8.21	7.97	20.4	0.24	95.1	75	< 3	1.81	-	-	-	0.108	< 5	42	< 1	-	< 0.5	36	5.58	43.6	-	< 0.001	< 0.002[a]
	QUL-21	2014 08 17	48	7.78	7.97	20.9	0.3	96.3	61	< 3	2.4	-	-	-	0.128	< 5	40.8	< 1	-	< 0.5	34	5.63	43.9	-	< 0.001	< 0.002[a]
	QUL-21-0M	2014 08 23	50.3	7.77	7.87	16.8	0.55	99.4	61	< 3	2.37	-	-	-	0.133	< 5	63.4	< 1	-	< 0.5	36	5.68	44	-	< 0.001	< 0.002[a]
	QUL-21-20M	2014 08 23	54	7.39	7.84	5.2	0.84	107	69	< 3	2.11	-	-	-	0.189	< 5	136	< 1	-	< 0.5	37	6.05	48.2	-	0.0016	**0.0027**
	QUL-21-46M	2014 08 23	74	7.63	7.95	6.0	85.1	156	104	42.4	2.19	-	-	-	0.397	53.9	237	1.8	-	0.55	75	16.8	60.3	-	< 0.001	**0.0036**
	QUL-21-0M	2014 08 25	50	7.76	7.96	17.5	0.62	98.3	66	< 3	1.82	-	-	-	0.137	< 5	62.8	< 1	-	< 0.5	34	5.81	44.4	-	< 0.001	< 0.002[a]
	QUL-21-9M	2014 08 25	50.7	7.85	7.95	14.2	1.11	99.6	67	< 3	1.87	-	-	-	0.164	< 5	75.9	< 1	-	< 0.5	34	5.95	44.5	-	0.0133	***0.0183***
	QUL-21-45M	2014 08 25	70.3	7.53	8	6.2	72	153	107	16.6	1.76	-	-	-	0.389	45.8	235	2	-	0.54	80	16.7	55.6	-	0.0031	0.0069
	QUL-21-0M	2014 08 26	49.8	7.83	7.99	17.5	0.53	97.9	69	< 3	2.11	-	-	-	0.12	< 5	57.2	< 1	-	< 0.5	35	5.77	44.7	-	< 0.001	< 0.002[a]
	QUL-21-21M	2014 08 26	50.9	7.43	7.99	5.7	1.3	99.3	69	< 3	2.21	-	-	-	0.226	< 5	75.9	< 1	-	< 0.5	35	6	44.9	-	< 0.001	< 0.002[a]
	QUL-21-47M	2014 08 26	70.1	7.59	8.01	6.0	61.9	153	113	17.5	2.15	-	-	-	0.396	49.2	237	2.7	-	0.54	66	17	59.8	-	0.0024	0.0059
QUL-22	QUL-22	2014 08 08	49.6	7.85	7.91	13.8	0.34	99.5	70	< 3	2.21	-	-	-	0.162	< 5	95.5	< 1	-	< 0.5	34	5.62	44.2	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 09	49.5	7.77	7.87	16.8	0.4	97.1	69	< 3	2.26	-	-	-	0.148	< 5	78.6	< 1	-	< 0.5	35	5.6	43	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 10	48.7	7.90	7.92	18.4	0.35	96.3	64	< 3	2.26	-	-	-	0.135	< 5	67.4	< 1	-	< 0.5	35	5.59	45.4	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 11	47.3	7.81	7.94	19.9	0.51	98.5	67	< 3	2.23	-	-	-	0.144	< 5	60.1	< 1	-	< 0.5	34	5.64	44.3	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 12	47.3	8.01	7.97	20.4	0.51	95.3	64	< 3	1.94	-	-	-	0.132	< 5	58.2	< 1	-	< 0.5	34	5.69	44.3	-	0.0014	< 0.002[a]
	QUL-22	2014 08 13	47.4	-	7.98	20.6	0.32	98.1	60	< 3	2.2	-	-	-	0.123	< 5	44.8	< 1	-	< 0.5	32	5.63	44.5	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 14	49.6	7.84	7.91	21.1	0.31	97.2	65	< 3	2.1	-	-	-	0.108	< 5	41.2	< 1	-	< 0.5	36	5.62	43.3	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 15	45.2	8.11	7.99	20.7	0.21	95.9	70	< 3	1.89	-	-	-	0.101	< 5	40.1	< 1	-	< 0.5	35	5.61	43.7	-	< 0.001	**0.0024**
	QUL-22	2014 08 16	47.9	8.19	7.91	20.7	0.29	94.2	63	< 3	2.09	-	-	-	0.106	< 5	40.6	< 1	-	< 0.5	36	5.59	43.4	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 17	47.4	7.88	7.98	21.1	0.29	96.6	63	< 3	2.4	-	-	-	0.123	< 5	41.3	< 1	-	< 0.5	34	5.61	44.2	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 19	48.5	7.90	7.92	20.1	0.44	96.7	64	< 3	2.1	-	-	-	0.111	< 5	39	< 1	-	< 0.5	32	5.53	44.3	-	< 0.001	< 0.002[a]
	QUL-22	2014 08 21	49.5	8.25	7.76	17.4	0.65	96.6	63	< 3	1.95	-	-	-	0.131	< 5	60.7	< 1	-	< 0.5	35	5.67	43	-	< 0.001	< 0.002[a]
	QUL22	2014 08 22	49.9	7.98	7.92	17.3	0.54	96.9	66	< 3	2.41	-	-	-	0.138	< 5	64.5	< 1	-	< 0.5	34	5.71	51.2	-	< 0.001	0.0051
	QUL-22	2014 08 23	49.8	7.85	7.86	17.1	0.55	99.2	62	< 3	2.2	-	-	-	0.132	< 5	69	< 1	-	< 0.5	32	5.69	44.7	-	< 0.001	< 0.002[a]
	QUL-22-0M	2014 08 26	49.6	7.78	7.98	17.3	0.52	96.9	68	< 3	2.16	-	-	-	0.124	< 5	55.8	< 1	-	< 0.5	35	5.77	44	-	< 0.001	**0.0021**
	QUL-22-4M	2014 08 26	50.1	7.75	8	17.2	0.64	97.4	67	< 3	2.1	-	-	-	0.133	< 5	57.8	< 1	-	< 0.5	36	5.79	44.7	-	0.0023	**0.0038**
	QUL-22-9M	2014 08 26	50.5	7.73	8.01	16.1	0.7	97.8	67	< 3	2.1	-	-	-	0.139	< 5	61.4	< 1	-	< 0.5	35	5.8	44.7	-	< 0.001	**0.0023**
QUL-23	QUL23	2014 08 25	49.9	7.95	7.97	17.4	3.25	99	67	< 3	1.86	-	-	-	0.145	< 5	54.7	< 1	-	< 0.5	34	5.81	44.4	-	< 0.001	< 0.002[a]
	QUL23X	2014 08 25	49.7	7.95	7.94	17.4	0.71	98.9	64	< 3	1.92	-	-	-	0.151	< 5	54.7	< 1	-	< 0.5	35	5.8	44.5	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	128	< 1	5	*	*	-	-	-	*	*	0	*	-	*	*	< 1	< 1	-	*	*
	QUL-23	2014 08 27	49.1	8.03	7.99	19.0	2.06	98.9	72	3.7	2.09	-	-	-	0.121	< 5	42.4	< 1	-	< 0.5	35	5.77	45	-	0.001	< 0.002[a]
	QUL-23	2014 08 26	50.1	7.69	7.94	18.2	0.31	98	68	< 3	2.29	-	-	-	0.138	< 5	43.8	1	-	< 0.5	35	5.77	44.9	-	< 0.001	**0.0029**

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

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BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
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[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Dissolved Metals																											
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-21	QUL-21-0M	2014 08 08	9.3	16.7	< 30	1.93	0.368	0.462	0.832	< 0.1	< 0.1	5.21	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.273	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.158	< 1	< 3
	QUL-21-7M	2014 08 08	8.8	17.1	< 30	1.94	0.2	0.476	0.863	< 0.1	< 0.1	5.2	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.269	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.163	< 1	< 3
	QUL-21-30M	2014 08 08	4.9	18.3	< 30	2.08	2.29	0.474	0.919	< 0.1	< 0.1	5.26	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.53	< 0.05	0.51	-	0.269	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.176	< 1	< 3
	QUL-21	2014 08 09	10	16.6	< 30	1.9	0.49	0.465	0.83	< 0.1	0.11	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.56	-	0.298	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-21	2014 08 11	10.3	16.1	< 30	1.84	0.673	0.487	0.832	< 0.1	0.11	5.27	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	1.02	-	0.283	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUL-21-0M	2014 08 12	8	16.1	< 30	1.94	0.275	0.488	0.855	< 0.1	0.1	5	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.81	-	0.324	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.08	< 1	< 3
	QUL-21X	2014 08 12	11	16.4	< 30	1.92	0.653	0.458	0.823	< 0.1	0.11	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.54	-	0.276	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QA/QC RPD %		*	2	*	1	81	6	4	*	*	7	*	*	*	*	*	*	*	*	-	16	*	*	*	*	*	48	*	*
	QUL-21-12M	2014 08 12	10.5	16.3	< 30	1.82	0.212	0.46	0.815	< 0.1	< 0.1	5.06	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	0.77	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.146	< 1	< 3
	QUL-21-30M	2014 08 12	6	18.3	< 30	2.09	0.407	0.468	0.919	< 0.1	0.1	4.99	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.66	-	0.258	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.149	< 1	< 3
	QUL-21	2014 08 13	9.5	16	< 30	1.88	0.222	0.473	0.833	< 0.1	0.11	5.34	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.89	-	0.314	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUL-21	2014 08 14	10.3	16.7	< 30	1.94	0.721	0.463	0.812	< 0.1	0.1	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.58	-	0.294	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.126	< 1	< 3
	QUL-21-0M	2014 08 15	10.4	16.4	< 30	1.89	0.496	0.48	0.837	< 0.1	0.12	5.54	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.289	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.119	< 1	< 3
	QUL-21-10M	2014 08 15	10	17.1	< 30	1.87	0.143	0.468	0.832	< 0.1	< 0.1	5.12	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.52	-	0.262	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.164	< 1	< 3
	QUL-21-30M	2014 08 15	6	18.1	< 30	2.03	0.345	0.479	0.92	< 0.1	< 0.1	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.66	-	0.272	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.177	< 1	< 3
	QUL-21	2014 08 16	9.7	16.2	< 30	1.9	0.415	0.479	0.822	< 0.1	0.12	5.41	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.58	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.12	< 1	< 3
	QUL-21	2014 08 17	9.8	16.1	< 30	1.9	0.545	0.464	0.823	< 0.1	0.12	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	0.54	-	0.295	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL-21-0M	2014 08 23	10.5	16.9	< 30	1.94	0.886	0.466	0.815	< 0.1	< 0.1	5.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.87	< 0.05	0.96	-	0.283	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-21-20M	2014 08 23	6.4	18.2	< 30	2.08	0.629	0.49	0.902	< 0.1	< 0.1	5.09	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.71	< 0.05	0.99	-	0.255	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.146	< 1	< 3
	QUL-21-46M	2014 08 23	13.2	25	< 30	2.8	108	0.952	3.2	0.23	0.72	17.9	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.5	< 0.05	1.17	-	4.98	< 0.5	0.59	< 0.01	< 0.01	< 10	0.643	< 1	< 3
	QUL-21-0M	2014 08 25	10	16.9	< 30	1.92	0.724	0.461	0.805	< 0.1	< 0.1	5.49	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.93	< 0.05	< 0.5	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-21-9M	2014 08 25	9.9	17.2	< 30	1.91	1.24	0.443	0.851	< 0.1	< 0.1	5.88	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.37	< 0.05	< 0.5	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.14	< 1	< 3
	QUL-21-45M	2014 08 25	12.9	23.8	< 30	2.63	94.7	0.95	3.09	0.22	0.66	17.5	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.65	< 0.05	0.61	-	4.68	< 0.5	0.53	< 0.01	< 0.01	< 10	0.58	< 1	< 3
	QUL-21-0M	2014 08 26	9.3	16.8	< 30	1.92	0.699	0.448	0.793	< 0.1	0.12	5.5	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.96	< 0.05	0.64	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUL-21-21M	2014 08 26	9.9	17.2	< 30	1.94	1.01	0.452	0.82	< 0.1	< 0.1	5.62	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.21	< 0.05	0.57	-	0.284	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.128	< 1	< 3
	QUL-21-47M	2014 08 26	11.7	23.7	< 30	2.64	95.8	0.907	2.99	0.21	0.66	17.3	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.54	< 0.05	0.75	-	4.63	< 0.5	0.54	< 0.01	< 0.01	< 10	0.591	< 1	< 3
QUL-22	QUL-22	2014 08 08	9	16.7	< 30	1.92	0.518	0.466	0.839	< 0.1	< 0.1	5.15	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.281	0.52	< 0.5	< 0.01	< 0.01	< 10	0.15	< 1	< 3
	QUL-22	2014 08 09	9.8	16.7	< 30	1.9	0.467	0.462	0.827	< 0.1	< 0.1	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.6	-	0.263	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-22	2014 08 10	10.8	16.4	< 30	1.88	0.53	0.478	0.845	< 0.1	0.11	5.16	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	< 0.5	-	0.281	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-22	2014 08 11	11.7	15.9	< 30	1.84	0.692	0.488	0.833	< 0.1	0.11	5.23	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.02	-	0.271	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUL-22	2014 08 12	10.4	15.9	< 30	1.85	0.38	0.471	0.831	< 0.1	0.11	5.09	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.71	-	0.308	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.141	< 1	< 3
	QUL-22	2014 08 13	10.6	15.9	< 30	1.86	0.185	0.467	0.825	< 0.1	0.1	5.31	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	1	-	0.289	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-22	2014 08 14	10.2	16.7	< 30	1.94	0.579	0.487	0.83	< 0.1	0.11	5.42	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.62	-	0.312	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.12	< 1	< 3
	QUL-22	2014 08 15	10.5	15.2	< 30	1.76	0.481	0.483	0.851	< 0.1	0.12	5.56	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.5	< 0.05	< 0.5	-	0.315	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-22	2014 08 16	10.1	16.1	< 30	1.88	0.511	0.496	0.838	< 0.1	0.11	6.23	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.54	< 0.05	0.52	-	0.335	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL-22	2014 08 17	10.7	15.9	< 30	1.88	0.517	0.475	0.847	< 0.1	0.12	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.51	-	0.3	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-22	2014 08 19	9.7	16.3	< 30	1.91	0.449	0.467	0.819	< 0.1	0.11	5.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.74	-	0.31	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-22	2014 08 21	10.6	16.7	< 30	1.9	0.7	0.455	0.822	< 0.1	< 0.1	5.39	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.74	< 0.05	0.86	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL22	2014 08 22	11.6	16.8	< 30	1.9	0.771	0.472	0.85	< 0.1	< 0.1	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.82	< 0.05	0.9	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.142	< 1	< 3
	QUL-22	2014 08 23	10.1	16.8	< 30	1.9	0.894	0.466	0.81	< 0.1	0.11	5.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.88	< 0.05	0.99	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-22-0M	2014 08 26	9.7	16.7	< 30	1.91	0.73	0.459	0.812	< 0.1	< 0.1	5.49	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.01	< 0.05	0.59	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
	QUL-22-4M	2014 08 26	10.4	16.9	< 30	1.93	0.713	0.449	0.816	< 0.1	< 0.1	5.54	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.01	< 0.05	0.59	-	0.283	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-22-9M	2014 08 26	10	17	< 30	1.94	0.673	0.452	0.809	< 0.1	0.1	5.43	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.03	< 0.05	0.63	-	0.298	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.127	< 1	< 3
QUL-23	QUL23	2014 08 25	11.5	16.8	< 30	1.91	1.07	0.468	0.831	< 0.1	0.11	5.7	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1	< 0.05	< 0.5	-	0.283	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
	QUL23X	2014 08 25	10.1	16.8	< 30	1.9	0.939	0.464	0.832	< 0.1	0.1	5.59	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.96	< 0.05	< 0.5	-	0.268	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QA/QC RPD %		*	0	*	< 1	13	< 1	< 1	*	*	2	*	*	*	*	*	*	*	*	-	5	*	*	*	*	*	< 1	*	*
	QUL-23	2014 08 27	10.7	16.5	< 30	1.92	1.05	0.453	0.861	< 0.1	0.11	5.33	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	0.7	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL-23	2014 08 26	9.6	16.9	< 30	1.91	3.57	0.49	0.83	< 0.1	< 0.1	5.94	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.88	< 0.05	0.62	-	0.296	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.128	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Total Metals																														
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-21	QUL-21-0M	2014 08 08	17.4	< 0.1	0.12	5.43	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.6	< 30	< 0.05	0.63	1,960	1.04	< 0.05	0.305	< 0.5	473	< 0.5	1,650	< 0.01	847	< 0.01	< 0.1	< 10	0.167	< 1	< 3
	QUL-21-7M	2014 08 08	18.7	< 0.1	0.11	5.24	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	0.58	< 30	< 0.05	< 0.5	1,970	1.03	< 0.05	0.296	< 0.5	470	< 0.5	1,640	< 0.01	854	< 0.01	< 0.1	< 10	0.167	< 1	< 3
	QUL-21-30M	2014 08 08	70.4	< 0.1	0.13	6.05	< 0.1	< 0.5	< 10	< 0.01	18,600	< 0.5	< 0.1	1.64	67	< 0.05	0.74	2,170	4.07	< 0.05	0.283	< 0.5	484	< 0.5	1,870	< 0.01	913	< 0.01	< 0.1	< 10	0.18	< 1	< 3
	QUL-21	2014 08 09	17.8	< 0.1	0.11	5.42	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.66	< 30	< 0.05	0.63	1,910	0.924	< 0.05	0.311	< 0.5	471	< 0.5	1,590	< 0.01	840	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-21	2014 08 11	22.5	< 0.1	0.14	5.51	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.79	< 30	< 0.05	0.82	1,880	1.28	< 0.05	0.291	< 0.5	493	< 0.5	1,520	< 0.01	845	< 0.01	< 0.1	< 10	0.133	< 1	< 3
	QUL-21-0M	2014 08 12	16.4	< 0.1	0.12	5.38	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.71	< 30	< 0.05	0.75	1,880	1.24	< 0.05	0.322	< 0.5	478	< 0.5	1,580	< 0.01	849	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-21X	2014 08 12	18	< 0.1	0.12	5.45	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.73	< 30	< 0.05	0.58	1,940	1.25	< 0.05	0.299	< 0.5	467	< 0.5	1,570	< 0.01	835	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QA/QC RPD %		9	*	*	1	*	*	*	*	2	*	*	*	*	*	*	3	*	*	7	*	2	*	< 1	*	2	*	*	*	4	*	*
	QUL-21-12M	2014 08 12	20.6	< 0.1	0.1	5.15	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.84	< 30	< 0.05	0.8	1,900	1.09	< 0.05	0.289	< 0.5	475	< 0.5	1,600	< 0.01	854	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-21-30M	2014 08 12	17.6	< 0.1	0.12	5.3	< 0.1	< 0.5	< 10	< 0.01	18,000	< 0.5	< 0.1	0.71	< 30	< 0.05	0.77	2,110	1.02	< 0.05	0.292	< 0.5	480	< 0.5	1,730	< 0.01	931	< 0.01	< 0.1	< 10	0.163	< 1	< 3
	QUL-21	2014 08 13	15.4	< 0.1	0.14	5.54	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.67	< 30	< 0.05	0.66	1,960	1.6	< 0.05	0.332	< 0.5	488	< 0.5	1,640	< 0.01	872	< 0.01	< 0.1	< 10	0.134	< 1	< 3
	QUL-21	2014 08 14	17	< 0.1	0.13	5.42	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.61	< 30	< 0.05	0.59	1,940	1.58	-	0.34	< 0.5	496	< 0.5	1,650	< 0.01	860	< 0.01	< 0.1	< 10	0.133	< 1	3.4
	QUL-21-0M	2014 08 15	14.8	< 0.1	0.13	5.49	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.58	< 30	< 0.05	< 0.5	1,880	1.37	-	0.334	< 0.5	479	< 0.5	1,610	< 0.01	842	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-21-10M	2014 08 15	17	< 0.1	0.1	5.01	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.57	< 30	< 0.05	< 0.5	1,840	0.908	-	0.271	< 0.5	459	< 0.5	1,550	< 0.01	817	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-21-30M	2014 08 15	19.3	< 0.1	0.1	5.28	< 0.1	< 0.5	< 10	< 0.01	18,100	< 0.5	< 0.1	0.79	< 30	< 0.05	< 0.5	2,040	1.43	-	0.296	< 0.5	488	< 0.5	1,760	< 0.01	938	< 0.01	< 0.1	< 10	0.159	< 1	< 3
	QUL-21	2014 08 16	14.5	< 0.1	0.13	5.48	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.54	< 30	< 0.05	< 0.5	1,870	1.22	-	0.324	< 0.5	467	< 0.5	1,550	< 0.01	821	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-21	2014 08 17	18.7	< 0.1	0.13	5.49	< 0.1	< 0.5	< 10	< 0.01	15,700	< 0.5	< 0.1	< 1	< 30	< 0.05	0.66	1,870	1.38	-	0.319	< 0.5	479	< 0.5	1,540	< 0.01	852	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-21-0M	2014 08 23	35.1	< 0.1	0.1	6.13	< 0.1	< 0.5	< 10	< 0.01	15,700	< 0.5	< 0.1	1.66	30	< 0.05	0.88	1,800	1.77	< 0.05	0.32	< 0.5	448	< 0.5	1,530	< 0.01	783	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-21-20M	2014 08 23	50.6	< 0.1	0.13	5.56	< 0.1	< 0.5	< 10	< 0.01	17,800	< 0.5	< 0.1	1.53	48	< 0.05	1.03	2,070	3.13	< 0.05	0.278	< 0.5	494	< 0.5	1,830	< 0.01	916	< 0.01	< 0.1	< 10	0.157	< 1	< 3
	QUL-21-46M	2014 08 23	***3,910***	0.3	1.89	90.2	< 0.1	< 0.5	< 10	0.023	25,400	**2.11**	1.65	**75.1**	***2,600***	1.36	2.94	3,950	***179***	< 0.05	5.03	2.29	2,420	0.67	11,100	0.031	3,700	0.013	0.12	159	0.732	**7.6**	**7.7**
	QUL-21-0M	2014 08 25	31.1	< 0.1	0.1	5.65	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	1.63	< 30	< 0.05	< 0.5	1,830	1.5	< 0.05	0.297	< 0.5	474	< 0.5	1,530	< 0.01	836	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-21-9M	2014 08 25	70.9	< 0.1	0.14	6.78	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	< 0.1	**3.08**	63	< 0.05	< 0.5	1,930	3.56	< 0.05	0.334	< 0.5	486	< 0.5	1,660	< 0.01	872	< 0.01	< 0.1	< 10	0.153	< 1	< 3
	QUL-21-45M	2014 08 25	***3,510***	0.28	1.76	85.4	< 0.1	< 0.5	< 10	0.02	24,800	**1.97**	1.45	**70.1**	***2,170***	1.28	2.24	3,630	***167***	< 0.05	5.08	2.01	2,330	0.61	10,300	0.026	3,890	0.012	0.11	140	0.733	**7**	7
	QUL-21-0M	2014 08 26	36	< 0.1	0.12	5.85	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	1.69	< 30	< 0.05	0.54	1,930	1.77	< 0.01	0.301	< 0.5	464	< 0.5	1,570	< 0.01	823	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-21-21M	2014 08 26	61.9	< 0.1	0.12	6.44	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	**2.9**	53	< 0.05	0.54	1,860	3.07	< 0.01	0.321	< 0.5	459	< 0.5	1,560	< 0.01	825	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-21-47M	2014 08 26	***3,560***	0.28	1.76	86.1	< 0.1	< 0.5	< 10	0.022	23,600	**2.01**	1.44	**69.3**	***2,080***	1.22	2.44	3,510	***169***	< 0.01	4.94	2.02	2,350	0.63	9,740	0.029	3,760	0.013	0.11	133	0.694	**6.8**	6.9
QUL-22	QUL-22	2014 08 08	18	< 0.1	0.12	5.4	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.62	< 30	< 0.05	0.54	1,940	1.14	< 0.05	0.291	< 0.5	471	< 0.5	1,630	< 0.01	849	< 0.01	< 0.1	< 10	0.154	< 1	< 3
	QUL-22	2014 08 09	22.3	< 0.1	0.11	5.26	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.63	< 30	< 0.05	0.56	1,920	0.947	< 0.05	0.306	< 0.5	457	< 0.5	1,610	< 0.01	825	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-22	2014 08 10	21.8	< 0.1	0.13	5.58	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.8	< 30	< 0.05	< 0.5	1,890	1.12	< 0.05	0.288	< 0.5	496	< 0.5	1,610	< 0.01	877	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QUL-22	2014 08 11	23	< 0.1	0.14	5.31	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.76	< 30	< 0.05	0.89	1,910	1.26	< 0.05	0.307	< 0.5	488	< 0.5	1,570	< 0.01	848	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-22	2014 08 12	17.1	< 0.1	0.11	5.14	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.65	< 30	< 0.05	0.81	1,870	1.29	< 0.05	0.304	< 0.5	469	< 0.5	1,570	< 0.01	837	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-22	2014 08 13	15.8	< 0.1	0.14	5.43	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.59	< 30	< 0.05	0.78	1,950	1.17	< 0.05	0.319	< 0.5	477	< 0.5	1,610	< 0.01	852	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-22	2014 08 14	15.4	< 0.1	0.11	5.48	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.83	< 30	< 0.05	1.08	1,910	1.41	-	0.324	< 0.5	476	< 0.5	1,640	< 0.01	893	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-22	2014 08 15	15	< 0.1	0.14	5.56	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	0.63	< 30	< 0.05	< 0.5	1,870	1.37	-	0.324	< 0.5	472	< 0.5	1,610	< 0.01	843	< 0.01	< 0.1	< 10	0.135	< 1	< 3
	QUL-22	2014 08 16	13.8	< 0.1	0.12	5.45	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	0.63	< 30	< 0.05	< 0.5	1,880	1.29	-	0.296	< 0.5	469	< 0.5	1,570	< 0.01	827	< 0.01	< 0.1	< 10	0.129	< 1	< 3
	QUL-22	2014 08 17	14.8	< 0.1	0.14	5.36	< 0.1	< 0.5	< 10	< 0.01	15,700	< 0.5	< 0.1	< 1	< 30	< 0.05	0.64	1,860	1.18	-	0.32	< 0.5	481	< 0.5	1,550	< 0.01	866	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-22	2014 08 19	16.1	< 0.1	0.12	5.46	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.64	< 30	< 0.05	0.86	1,920	1.17	-	0.324	< 0.5	478	< 0.5	1,580	< 0.01	843	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-22	2014 08 21	48.4	< 0.1	0.15	5.88	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.65	41	< 0.05	0.75	1,940	2.04	-	0.325	< 0.5	466	< 0.5	1,600	< 0.01	823	< 0.01	< 0.1	< 10	0.146	< 1	< 3
	QUL22	2014 08 22	36.4	< 0.1	0.12	5.83	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	1.58	< 30	< 0.05	0.78	1,940	1.58	-	0.293	< 0.5	494	< 0.5	1,580	< 0.01	873	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-22	2014 08 23	37.4	< 0.1	0.12	5.81	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	1.8	< 30	< 0.05	1	1,930	1.9	< 0.05	0.31	< 0.5	508	< 0.5	1,620	< 0.01	857	< 0.01	< 0.1	< 10	0.152	< 1	< 3
	QUL-22-0M	2014 08 26	39.1	< 0.1	0.13	5.79	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	1.74	31	< 0.05	0.65	1,910	1.96	< 0.01	0.322	< 0.5	466	< 0.5	1,580	< 0.01	826	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-22-4M	2014 08 26	42	< 0.1	0.14	6.03	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.79	32	< 0.05	0.64	1,900	1.88	< 0.01	0.331	< 0.5	461	< 0.5	1,580	< 0.01	849	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-22-9M	2014 08 26	37.6	< 0.1	0.11	5.82	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	1.92	32	< 0.05	0.55	1,870	1.9	< 0.01	0.303	< 0.5	428	< 0.5	1,530	< 0.01	787	< 0.01	< 0.1	< 10	0.132	< 1	< 3
QUL-23	QUL23	2014 08 25	54.7	< 0.1	0.13	6.24	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	**2.18**	47	< 0.05	< 0.5	1,910	3.02	-	0.357	< 0.5	487	< 0.5	1,630	< 0.01	848	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QUL23X	2014 08 25	47.5	< 0.1	0.14	6.28	< 0.1	< 0.5	< 10	< 0.01	16,900	< 0.5	< 0.1	1.9	38	< 0.05	< 0.5	1,930	2.44	-	0.336	< 0.5	476	< 0.5	1,630	< 0.01	850	< 0.01	< 0.1	< 10	0.147	< 1	< 3
	QA/QC RPD %		14	*	*	< 1	*	*	*	*	1	*	*	*	*	*	*	1	*	-	6	*	2	*	0	*	< 1	*	*	*	0	*	*
	QUL-23	2014 08 27	***130***	< 0.1	0.15	6.54	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	1.76	135	0.051	0.77	1,970	5.5	< 0.01	0.336	< 0.5	487	< 0.5	1,760	< 0.01	895	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-23	2014 08 26	66.4	< 0.1	0.14	6.49	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	**2.47**	70	< 0.05	0.57	1,860	4.33	< 0.01	0.311	< 0.5	467	< 0.5	1,570	< 0.01	803	< 0.01	< 0.1	< 10	0.133	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Microbiological Tests: Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Inorganics: Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUL-26	QUL-26-0M	2014 08 11	49	7.37	7.9	18.4	0.82	98.2	68	< 3	2.67	-	-	-	0.132	< 5	41	< 1	-	< 0.5	34	5.71	44.7	-	< 0.001	**0.0021**
	QUL-26-13M	2014 08 11	50.3	7.74	7.92	9.5	0.7	102	66	< 3	2.15	-	-	-	0.179	< 5	106	< 1	-	< 0.5	34	5.85	45.9	-	< 0.001	< 0.002[a]
	QUL-26-24M	2014 08 11	53.2	7.56	7.92	5.0	0.89	109	69	< 3	1.94	-	-	-	0.189	< 5	137	< 1	-	< 0.5	36	6.19	48.2	-	< 0.001	< 0.002[a]
	QUL-26	2014 08 12	47.8	7.87	7.93	20.2	0.4	96.1	66	< 3	2.21	-	-	-	0.141	< 5	45.3	< 1	-	< 0.5	36	5.68	44.7	-	< 0.001	< 0.002[a]
	QUL-26	2014 08 13	48.5	-	7.87	20.5	0.77	101	66	< 3	3.22	-	-	-	0.138	< 5	< 5	< 1	-	< 0.5	35	5.55	46.2	-	< 0.001	< 0.002[a]
	QUL-26-0M	2014 08 14	49.3	7.85	7.95	20.7	0.34	97.7	64	< 3	2.25	-	-	-	0.116	< 5	32.1	1	-	< 0.5	36	5.61	43.9	-	< 0.001	**0.0021**
	QUL-26-12M	2014 08 14	52.3	7.83	7.97	12.1	7.07	103	73	12.5	1.9	-	-	-	0.134	< 5	93.3	< 1	-	< 0.5	37	6.19	46.2	-	< 0.001	< 0.002[a]
	QUL-26-27M	2014 08 14	56	7.66	7.98	4.7	4.14	110	74	5.7	2.02	-	-	-	0.174	< 5	143	< 1	-	< 0.5	38	6.48	49.6	-	< 0.001	0.0022
	QUL-26	2014 08 15	49.1	7.97	7.97	22.0	0.34	97	62	< 3	1.95	-	-	-	0.109	< 5	39.5	< 1	-	< 0.5	36	5.63	43.2	-	< 0.001	< 0.002[a]
	QUL-26	2014 08 16	48.8	8.06	7.96	20.4	0.25	95	58	< 3	2.13	-	-	-	0.114	< 5	42.2	< 1	-	< 0.5	36	5.62	43.8	-	< 0.001	**0.0023**
	QUL-26-0M	2014 08 17	47.9	6.75	7.9	20.3	0.43	96.6	70	< 3	2.47	-	-	-	0.146	< 5	29.9	< 1	-	< 0.5	35	5.61	44.2	-	< 0.001	< 0.002[a]
	QUL-26-12M	2014 08 17	51.6	7.65	7.95	8.8	4.85	103	60	9.7	2.1	-	-	-	0.179	< 5	111	< 1	-	< 0.5	35	5.96	46.4	-	< 0.001	< 0.002[a]
	QUL-26-26M	2014 08 17	54.4	7.40	7.94	4.7	3.31	108	67	4.6	2.09	-	-	-	0.2	< 5	146	< 1	-	< 0.5	37	6.38	49.2	-	< 0.001	< 0.002[a]
	QUL-26-0M	2014 08 19	48.8	7.78	7.93	19.8	0.33	96.5	69	< 3	2	-	-	-	0.118	< 5	42.7	< 1	-	< 0.5	32	5.55	43.9	-	< 0.001	< 0.002[a]
	QUL-26-10M	2014 08 19	50.4	7.77	7.92	14.4	8.47	100	69	6.5	1.93	-	-	-	0.15	5.7	75.2	< 1	-	< 0.5	33	5.97	45.6	-	< 0.001	< 0.002[a]
	QUL-26-20M	2014 08 19	52.5	-	7.93	-	6.66	107	69	9.2	1.92	-	-	-	0.179	< 5	131	< 1	-	< 0.5	34	6.08	48.7	-	< 0.001	< 0.002[a]
	QUL-26-0M	2014 08 21	49.2	8.27	7.87	18.9	1.07	95.1	62	< 3	2.16	-	-	-	0.114	< 5	48.9	< 1	-	< 0.5	36	5.71	44.3	-	< 0.001	< 0.002[a]
QUL-28	QUL-28-OM	2014 08 11	49.3	7.52	7.82	17.5	0.53	101	69	< 3	2.32	-	-	-	0.134	< 5	34.5	< 1	-	< 0.5	35	5.71	45.5	-	< 0.001	**0.0029**
	QUL-28	2014 08 12	48.1	7.73	7.93	20.9	0.77	96.6	62	< 3	2.06	-	-	-	0.121	< 5	45.9	< 1	-	< 0.5	37	5.68	44.6	-	< 0.001	< 0.002[a]
	QUL-28	2014 08 13	47.6	-	7.93	21.1	0.45	98.7	62	< 3	2.61	-	-	-	0.125	< 5	33.2	1	-	< 0.5	34	5.63	44.8	-	< 0.001	< 0.002[a]
QUL-30	QUL-30	2014 08 07	49	7.24	7.99	20.4	1.07	98.4	63	< 3	1.85	201	< 1	0.086	0.141	< 5	54.9	< 1	-	< 0.5	33	5.62	46.7	-	< 0.001	< 0.002[a]
QUL-31	QUL-31	2014 08 07	47.5	8.20	7.97	21.0	0.6	95.8	55	< 3	2.08	130	***1***	0.117	0.144	< 5	67.3	< 1	-	< 0.5	33	5.61	44.9	-	< 0.001	< 0.002[a]
QUL-32	QUL-32	2014 08 06	48.7	-	7.96	-	0.38	101	81	< 3	1.89	-	-	-	0.162	< 5	77.9	1.5	79.4	< 0.5	34	5.6	46	-	< 0.001	< 0.002[a]
QUL-33	QUL-33	2014 08 06	49	-	7.95	20.0	0.32	99	63	< 3	1.9	-	-	-	0.129	< 5	63.8	< 1	63.8	< 0.5	34	5.63	45.6	-	< 0.001	< 0.002[a]
QUL-34	QUL-34-6M	2014 08 13	47.2	-	7.97	20.2	0.31	97.8	62	< 3	2.03	-	-	-	0.118	< 5	50.5	< 1	-	< 0.5	32	5.62	44.1	-	< 0.001	< 0.002[a]
QUL-35	QUL-35-3M	2014 08 14	48.8	8.16	7.9	21.1	0.34	97.5	63	< 3	2.1	-	-	-	0.102	< 5	40.6	< 1	-	< 0.5	36	5.62	43.7	-	< 0.001	< 0.002[a]
QUL-36	QUL-36-8M	2014 08 14	48.4	8.08	7.95	18.0	0.29	97.3	66	< 3	2.05	-	-	-	0.12	< 5	52.1	< 1	-	< 0.5	36	5.62	43.7	-	< 0.001	< 0.002[a]
QUL-37	QUL-37-0M	2014 08 15	49.1	8.13	7.98	20.1	0.27	96.9	66	< 3	1.77	-	-	-	0.103	< 5	48.7	< 1	-	< 0.5	35	5.66	44.3	-	0.0011	**0.0027**
	QUL-37-7M	2014 08 15	49	8.13	7.97	18.6	0.28	97	63	< 3	1.72	-	-	-	0.113	< 5	58.9	< 1	-	< 0.5	36	5.64	43.6	-	< 0.001	**0.0021**
	QUL-37-TAP	2014 08 15	49.4	-	-	-	0.32	-	63	3.9	1.68	-	-	-	0.111	< 5	50.6	< 1	-	< 0.5	35	5.67	43.7	-	< 0.001	**0.0021**
QUL-38	QUL-38	2014 08 18	48.4	7.11	7.97	18.3	0.35	97.5	59	< 3	2.44	48	< 1	-	0.155	5.3	48.9	< 1	-	< 0.5	34	5.64	43.9	-	< 0.001	< 0.002[a]
	QUL-38-2M	2014 08 26	50.2	7.93	7.98	17.6	0.71	100	62	< 3	2.1	-	-	-	0.128	< 5	55	< 1	-	< 0.5	35	5.78	45.1	-	< 0.001	< 0.002[a]
QUL-39	QUL-39	2014 08 18	49.8	7.64	7.9	16.1	0.46	98	71	< 3	2.3	24	< 1	-	0.163	5.9	86.3	< 1	-	< 0.5	34	5.75	44	-	< 0.001	< 0.002[a]
QUL-60	QUL-60	2014 08 18	49.4	7.70	7.97	15.3	0.64	97.8	69	< 3	2.43	27	< 1	-	0.149	5.6	72.4	< 1	-	< 0.5	34	5.71	44.2	-	< 0.001	< 0.002[a]
	QUL-60-3M	2014 08 26	49.8	7.91	7.94	17.4	0.78	100	69	< 3	2.23	-	-	-	0.131	< 5	56.5	< 1	-	< 0.5	34	5.79	45	-	< 0.001	< 0.002[a]
QUL-61	QUL-61	2014 08 18	49.2	7.76	7.97	13.9	0.54	97.9	66	< 3	2.25	15	< 1	-	0.154	5.8	79.3	< 1	-	< 0.5	34	5.73	44.6	-	< 0.001	< 0.002[a]
	QUL-61-2M	2014 08 26	50.2	7.93	7.99	17.8	0.67	100	62	< 3	2.2	-	-	-	0.13	< 5	56.2	< 1	-	< 0.5	34	5.78	44.7	-	< 0.001	< 0.002[a]
QUL-62	QUL-62	2014 08 18	48.5	7.83	7.97	17.7	0.36	96.9	67	< 3	2.4	31	***1***	-	0.252	5.2	57.5	< 1	-	< 0.5	34	5.66	44	-	< 0.001	< 0.002[a]
QUL-63	QUL-63	2014 08 18	48.9	7.81	7.96	17.4	0.45	97.4	67	< 3	2.31	53	***2***	-	0.137	6.2	60.5	< 1	-	< 0.5	34	5.68	44	-	< 0.001	< 0.002[a]
QUL-64	QUL-64	2014 08 18	48.1	7.88	7.97	18.3	0.29	96.9	70	< 3	2.37	36	***2***	-	0.135	5.7	48.2	< 1	-	< 0.5	34	5.65	44.1	-	< 0.001	< 0.002[a]
	QUL-64-2M	2014 08 27	49.7	8.03	7.99	17.7	0.78	99	71	< 3	2.14	-	-	-	0.122	< 5	52.9	< 1	-	< 0.5	34	5.79	44.4	-	< 0.001	**0.0021**
QUL-65	QUL65-45M	2014 08 19	72.7	7.83	7.97	6.4	104	160	112	28.2	1.9	-	-	-	0.486	53.9	243	1.9	-	0.62	70	18.3	60.3	-	< 0.001	< 0.002[a]
QUL-66	QUL66-40M	2014 08 19	72.5	7.81	8	6.8	122	159	113	32.9	1.9	-	-	-	0.375	46.9	232	1.7	-	0.63	73	18.2	60.8	-	< 0.001	< 0.002[a]
	QUL66-40MX	2014 08 19	72.9	7.81	7.99	6.8	127	159	117	40.9	1.93	-	-	-	0.375	50.6	230	1.6	-	0.61	72	18.1	60.4	-	< 0.001	< 0.002[a]
	QA/QC RPD %		< 1	0	< 1	0	4	0	3	22	*	-	-	-	0	*	< 1	*	-	*	*	< 1	< 1	-	*	*
	QUL66-40M	2014 08 21	69.4	8.09	7.9	6.8	111	146	106	20.9	1.86	-	-	-	0.339	40.1	209	1.4	-	0.56	69	16.5	58.5	-	< 0.001	< 0.002[a]
	QUL-66-0M	2014 08 26	50.5	7.70	7.97	18.6	1.85	98.5	69	< 3	2.26	-	-	-	0.132	< 5	49.1	< 1	-	< 0.5	35	5.88	44.4	-	< 0.001	**0.002**
	QUL-66-10M	2014 08 26	53	7.70	8	13.0	6.63	105	73	4.8	2.14	-	-	-	0.184	5.4	83.2	< 1	-	< 0.5	36	6.73	51.6	-	< 0.001	**0.0025**
	QUL-66-58M	2014 08 26	74.6	7.78	8.04	6.5	71.3	160	123	39.2	2.18	-	-	-	0.427	56	250	2.3	-	0.62	71	18.8	61.5	-	0.0016	0.0052

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Dissolved Metals																											
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-26	QUL-26-0M	2014 08 11	11.3	16.5	< 30	1.89	4.79	0.541	0.846	< 0.1	0.12	6.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.54	< 0.05	1.02	-	0.303	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.12	< 1	< 3
	QUL-26-13M	2014 08 11	9.6	17	< 30	1.93	0.228	0.486	0.856	< 0.1	< 0.1	5.18	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.01	-	0.262	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-26-24M	2014 08 11	5.7	17.9	< 30	2.03	0.677	0.481	0.911	< 0.1	0.11	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	1.08	-	0.264	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	< 3
	QUL-26	2014 08 12	10.6	16.1	< 30	1.87	0.554	0.499	0.856	< 0.1	0.11	5.42	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.71	-	0.309	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-26	2014 08 13	11	16.3	< 30	1.92	10.4	0.598	0.842	< 0.1	0.15	7.06	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.6	< 0.05	1.07	-	0.33	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.12	< 1	< 3
	QUL-26-0M	2014 08 14	11.2	16.6	< 30	1.91	2.64	0.509	0.837	< 0.1	0.1	5.61	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.67	-	0.294	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
	QUL-26-12M	2014 08 14	11.7	17.8	< 30	1.93	5.07	0.483	0.878	< 0.1	0.11	8.11	< 0.1	< 10	< 0.01	< 0.5	< 0.1	2.62	< 0.05	0.71	-	0.404	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.145	< 1	< 3
	QUL-26-27M	2014 08 14	5.3	19	< 30	2.1	8.77	0.476	0.952	< 0.1	0.13	6.14	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.03	< 0.05	0.86	-	0.375	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.158	< 1	< 3
	QUL-26	2014 08 15	10.2	16.5	< 30	1.92	1	0.476	0.824	< 0.1	0.12	5.94	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.294	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
	QUL-26	2014 08 16	10.2	16.4	< 30	1.9	0.643	0.476	0.816	< 0.1	0.12	5.48	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.72	-	0.339	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-26-0M	2014 08 17	9.6	16.1	< 30	1.88	3.09	0.518	0.828	< 0.1	0.11	5.83	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.52	< 0.05	0.55	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.118	< 1	< 3
	QUL-26-12M	2014 08 17	8.7	17.4	< 30	1.96	1.5	0.459	0.84	< 0.1	< 0.1	6.02	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.33	< 0.05	0.72	-	0.28	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.139	< 1	< 3
	QUL-26-26M	2014 08 17	5.1	18.3	< 30	2.09	4.49	0.482	0.939	< 0.1	0.11	5.72	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.01	< 0.05	0.75	-	0.348	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.161	< 1	< 3
	QUL-26-0M	2014 08 19	10.3	16.4	< 30	1.89	0.417	0.464	0.818	< 0.1	< 0.1	5.16	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.71	-	0.291	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-26-10M	2014 08 19	10.9	17.1	< 30	1.9	3.66	0.475	0.879	< 0.1	0.11	7.32	< 0.1	< 10	< 0.01	< 0.5	< 0.1	2.21	< 0.05	0.85	-	0.402	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	< 3
	QUL-26-20M	2014 08 19	5.6	17.6	< 30	2.04	3.03	0.488	0.923	< 0.1	0.1	6.14	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.27	< 0.05	0.86	-	0.324	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.142	< 1	< 3
	QUL-26-0M	2014 08 21	10.7	16.6	< 30	1.91	1.47	0.467	0.83	< 0.1	0.12	5.59	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.79	< 0.05	0.81	-	0.312	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.138	< 1	< 3
QUL-28	QUL-28-OM	2014 08 11	11.4	16.6	< 30	1.91	7.17	0.531	0.843	< 0.1	0.11	6.08	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.56	< 0.05	< 0.5	-	0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
	QUL-28	2014 08 12	11.1	16.2	< 30	1.86	2.58	0.485	0.86	< 0.1	0.11	5.73	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.56	< 0.05	0.78	-	0.312	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
	QUL-28	2014 08 13	11.2	15.9	< 30	1.9	2.4	0.508	0.846	< 0.1	0.14	5.83	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.52	< 0.05	0.97	-	0.306	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.123	< 1	< 3
QUL-30	QUL-30	2014 08 07	11.5	16.6	< 30	1.84	0.412	0.46	0.781	< 0.1	< 0.1	4.74	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.74	< 0.05	0.252	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.147	< 1	< 3
QUL-31	QUL-31	2014 08 07	11.4	15.9	< 30	1.89	0.789	0.485	0.837	< 0.1	0.12	5.19	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.56	< 0.05	0.311	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
QUL-32	QUL-32	2014 08 06	10.9	16.4	< 30	1.85	0.355	0.454	0.853	< 0.1	< 0.1	4.86	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.7	< 0.05	0.253	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.142	< 1	< 3
QUL-33	QUL-33	2014 08 06	10.9	16.6	< 30	1.84	0.237	0.434	0.767	< 0.1	< 0.1	4.61	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.83	< 0.05	0.225	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.14	< 1	< 3
QUL-34	QUL-34-6M	2014 08 13	10.8	15.9	< 30	1.84	0.13	0.456	0.826	< 0.1	< 0.1	5.23	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.74	-	0.31	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.141	< 1	< 3
QUL-35	QUL-35-3M	2014 08 14	11.1	16.4	< 30	1.91	0.547	0.488	0.858	< 0.1	0.11	5.37	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.54	< 0.05	0.71	-	0.314	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.124	< 1	< 3
QUL-36	QUL-36-8M	2014 08 14	11.4	16.3	< 30	1.86	0.203	0.472	0.818	< 0.1	0.11	5.2	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.66	-	0.288	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.126	< 1	< 3
QUL-37	QUL-37-0M	2014 08 15	10.3	16.6	< 30	1.86	0.37	0.456	0.808	< 0.1	< 0.1	5.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.29	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
	QUL-37-7M	2014 08 15	10.2	16.5	< 30	1.86	0.233	0.459	0.805	< 0.1	0.1	5.01	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.27	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
	QUL-37-TAP	2014 08 15	10.7	16.7	< 30	1.87	0.145	0.451	0.799	< 0.1	0.11	5.33	< 0.1	< 10	< 0.01	< 0.5	< 0.1	2.36	0.321	< 0.5	-	0.302	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	4
QUL-38	QUL-38	2014 08 18	9.8	16.2	< 30	1.9	0.386	0.462	0.822	< 0.1	0.11	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.55	< 0.05	0.72	-	0.292	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-38-2M	2014 08 26	9.6	16.9	< 30	1.92	0.786	0.453	0.825	< 0.1	0.12	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.98	< 0.05	0.58	-	0.301	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.129	< 1	< 3
QUL-39	QUL-39	2014 08 18	9.9	16.8	< 30	1.91	0.271	0.446	0.83	< 0.1	< 0.1	4.96	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.79	-	0.262	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
QUL-60	QUL-60	2014 08 18	10.7	16.6	< 30	1.91	0.529	0.459	0.815	< 0.1	0.1	5.27	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.63	< 0.05	0.7	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-60-3M	2014 08 26	10	16.8	< 30	1.91	0.847	0.452	0.808	< 0.1	0.1	5.52	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.07	< 0.05	0.55	-	0.296	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
QUL-61	QUL-61	2014 08 18	10	16.6	< 30	1.89	0.412	0.456	0.818	< 0.1	0.1	5.22	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.57	< 0.05	0.84	-	0.269	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
	QUL-61-2M	2014 08 26	10.5	17	< 30	1.92	0.866	0.463	0.83	< 0.1	0.11	5.47	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.01	< 0.05	0.59	-	0.293	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.133	< 1	< 3
QUL-62	QUL-62	2014 08 18	9.4	16.3	< 30	1.88	0.328	0.466	0.816	< 0.1	0.11	5.23	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.74	-	0.287	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
QUL-63	QUL-63	2014 08 18	12.6	16.4	< 30	1.9	0.503	0.45	0.82	< 0.1	0.11	5.39	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.53	< 0.05	0.72	-	0.285	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.135	< 1	< 3
QUL-64	QUL-64	2014 08 18	10.5	16.2	< 30	1.89	0.444	0.47	0.83	< 0.1	0.11	5.28	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.56	< 0.05	0.72	-	0.292	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-64-2M	2014 08 27	9.5	16.8	< 30	1.92	0.903	0.453	0.839	< 0.1	< 0.1	5.55	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.96	< 0.05	0.65	-	0.304	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
QUL-65	QUL65-45M	2014 08 19	14.8	24.6	< 30	2.75	113	1.07	3.71	0.29	0.84	20.2	< 0.1	< 10	0.014	< 0.5	< 0.1	4.89	< 0.05	0.96	-	6.12	< 0.5	0.65	< 0.01	< 0.01	< 10	0.718	< 1	5.9
QUL-66	QUL66-40M	2014 08 19	15.9	24.5	< 30	2.73	100	1.12	3.83	0.29	0.84	19.7	< 0.1	< 10	< 0.01	< 0.5	< 0.1	5.58	< 0.05	1.2	-	6.36	< 0.5	0.62	< 0.01	< 0.01	< 10	0.728	1	< 3
	QUL66-40MX	2014 08 19	16.8	24.7	< 30	2.75	100	1.12	3.87	0.29	0.85	19.8	< 0.1	< 10	< 0.01	< 0.5	< 0.1	5.46	< 0.05	1.11	-	6.31	< 0.5	0.64	< 0.01	< 0.01	< 10	0.723	1	< 3
	QA/QC RPD %		6	< 1	*	< 1	0	0	1	*	1	< 1	*	*	*	*	*	2	*	*	-	< 1	*	*	*	*	*	< 1	*	*
	QUL66-40M	2014 08 21	13.7	23.5	< 30	2.59	77.3	1.05	3.51	0.25	0.7	18.9	< 0.1	< 10	< 0.01	< 0.5	< 0.1	5.52	< 0.05	0.55	< 0.05	5.66	< 0.5	0.55	< 0.01	< 0.01	< 10	0.656	< 1	< 3
	QUL-66-0M	2014 08 26	9.9	17.1	< 30	1.93	2.31	0.46	0.819	< 0.1	< 0.1	5.74	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.96	< 0.05	0.61	-	0.298	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.132	< 1	< 3
	QUL-66-10M	2014 08 26	9.9	17.9	< 30	2.01	6.44	0.49	0.974	< 0.1	0.14	7.36	< 0.1	< 10	< 0.01	< 0.5	< 0.1	2.93	< 0.05	0.6	-	0.448	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.147	< 1	< 3
	QUL-66-58M	2014 08 26	15.3	25.3	< 30	2.77	108	1.02	3.56	0.28	0.81	19.1	< 0.1	< 10	< 0.01	< 0.5	< 0.1	5.26	< 0.05	0.94	-	5.83	< 0.5	0.66	< 0.01	< 0.01	< 10	0.673	< 1	< 3

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

a Laboratory detection limit out of range.
b British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
c A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
d Guideline varies with pH, and/or either Temperature or Hardness.
e Health Canada Drinking Water Guidelines, 2012.
f Guideline for Nitrate applied.
g The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
h Calculated based on an individual sample basis, not average of 30 day results.
i Secondary chronic or chronic value, not 30 day mean.
j Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Total Metals Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-26	QUL-26-0M	2014 08 11	29.1	< 0.1	0.14	5.87	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	1	< 30	< 0.05	0.91	1,910	4.27	< 0.05	0.332	< 0.5	536	< 0.5	1,570	< 0.01	861	< 0.01	< 0.1	< 10	0.132	< 1	< 3
	QUL-26-13M	2014 08 11	30.9	< 0.1	0.11	5.48	< 0.1	< 0.5	< 10	< 0.01	17,600	< 0.5	< 0.1	1	< 30	< 0.05	0.89	2,000	1.41	< 0.05	0.301	< 0.5	492	< 0.5	1,670	< 0.01	871	0.014	< 0.1	< 10	0.151	< 1	< 3
	QUL-26-24M	2014 08 11	41.7	< 0.1	0.14	5.7	< 0.1	< 0.5	< 10	< 0.01	18,100	< 0.5	< 0.1	1.2	38	< 0.05	0.97	2,080	2.31	< 0.05	0.286	< 0.5	502	< 0.5	1,740	< 0.01	923	< 0.01	< 0.1	< 10	0.154	< 1	< 3
	QUL-26	2014 08 12	20.4	< 0.1	0.14	5.63	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.89	< 30	< 0.05	0.76	1,930	2.32	< 0.05	0.339	< 0.5	515	< 0.5	1,620	< 0.01	886	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-26	2014 08 13	20.2	< 0.1	0.17	7.19	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.95	46	< 0.05	0.94	1,980	11.1	< 0.05	0.349	< 0.5	616	< 0.5	1,650	< 0.01	888	< 0.01	< 0.1	< 10	0.123	< 1	< 3
	QUL-26-0M	2014 08 14	16.9	< 0.1	0.12	5.72	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.67	< 30	< 0.05	0.75	1,900	3.2	< 0.05	0.329	< 0.5	509	< 0.5	1,610	< 0.01	854	< 0.01	< 0.1	< 10	0.132	< 1	< 3
	QUL-26-12M	2014 08 14	***653***	< 0.1	0.37	16.6	< 0.1	< 0.5	< 10	< 0.01	17,900	< 0.5	0.42	**21.9**	***530***	0.349	1.16	2,250	21.5	< 0.05	0.462	0.68	697	< 0.5	3,170	< 0.01	989	< 0.01	< 0.1	43	0.171	1.9	3.6
	QUL-26-27M	2014 08 14	***342***	< 0.1	0.24	11.2	< 0.1	< 0.5	< 10	< 0.01	18,800	< 0.5	0.19	**7.7**	288	0.148	0.98	2,220	17.1	< 0.05	0.406	0.51	601	< 0.5	2,470	< 0.01	1,030	< 0.01	< 0.1	18	0.181	< 1	< 3
	QUL-26	2014 08 15	19.8	< 0.1	0.13	6.42	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.75	< 30	< 0.05	< 0.5	1,900	2.02	-	0.325	< 0.5	489	< 0.5	1,610	< 0.01	852	< 0.01	< 0.1	< 10	0.136	< 1	< 3
	QUL-26	2014 08 16	16.3	< 0.1	0.12	5.52	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.64	< 30	< 0.05	< 0.5	1,880	1.56	< 0.05	0.313	< 0.5	470	< 0.5	1,540	< 0.01	811	< 0.01	< 0.1	< 10	0.137	< 1	< 3
	QUL-26-0M	2014 08 17	20.1	< 0.1	0.13	5.79	< 0.1	< 0.5	< 10	< 0.01	15,900	< 0.5	< 0.1	< 1	< 30	< 0.05	0.73	1,860	3.46	< 0.05	0.303	< 0.5	518	< 0.5	1,540	< 0.01	830	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QUL-26-12M	2014 08 17	***317***	< 0.1	0.25	10.4	< 0.1	< 0.5	< 10	< 0.01	17,300	< 0.5	0.18	**9.16**	252	0.142	1	2,090	9.72	< 0.05	0.304	0.54	574	< 0.5	2,280	< 0.01	899	< 0.01	< 0.1	20	0.16	1.1	< 3
	QUL-26-26M	2014 08 17	***211***	< 0.1	0.2	8.49	< 0.1	< 0.5	< 10	< 0.01	18,300	< 0.5	0.12	**5.2**	170	0.084	1.01	2,180	9.41	< 0.05	0.355	< 0.5	562	< 0.5	2,160	< 0.01	985	< 0.01	< 0.1	13	0.173	< 1	< 3
	QUL-26-0M	2014 08 19	15	< 0.1	0.13	5.47	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.58	< 30	< 0.05	0.86	1,900	1.07	-	0.318	< 0.5	483	< 0.5	1,540	< 0.01	860	< 0.01	< 0.1	< 10	0.133	< 1	< 3
	QUL-26-10M	2014 08 19	***245***	< 0.1	0.23	10.3	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	0.17	**10**	213	0.161	1.05	2,010	9.39	-	0.394	0.53	565	< 0.5	2,040	< 0.01	935	< 0.01	< 0.1	14	0.155	< 1	< 3
	QUL-26-20M	2014 08 19	***365***	< 0.1	0.29	11.5	< 0.1	< 0.5	< 10	< 0.01	18,300	< 0.5	0.25	**10.7**	***339***	0.179	1.23	2,240	12.5	< 0.05	0.325	0.6	600	< 0.5	2,470	< 0.01	982	< 0.01	< 0.1	26	0.162	1.2	< 3
	QUL-26-0M	2014 08 21	79.7	< 0.1	0.17	6.44	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	**2.41**	65	< 0.05	0.77	1,970	3.69	-	0.327	1.01	495	< 0.5	1,700	< 0.01	865	< 0.01	< 0.1	< 10	0.143	< 1	< 3
QUL-28	QUL-28-OM	2014 08 11	28.2	< 0.1	0.15	6.41	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	1.03	< 30	< 0.05	0.58	1,910	9.7	< 0.05	0.305	0.52	542	< 0.5	1,560	< 0.01	863	< 0.01	< 0.1	< 10	0.131	< 1	< 3
	QUL-28	2014 08 12	51.3	< 0.1	0.14	6.32	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.68	44	< 0.05	0.84	1,900	4.5	< 0.05	0.33	< 0.5	507	< 0.5	1,660	< 0.01	874	< 0.01	< 0.1	< 10	0.139	< 1	< 3
	QUL-28	2014 08 13	22.2	< 0.1	0.15	6.18	< 0.1	< 0.5	< 10	0.013	16,400	< 0.5	< 0.1	0.86	< 30	< 0.05	0.88	1,950	4.82	< 0.05	0.358	< 0.5	536	< 0.5	1,640	< 0.01	888	< 0.01	< 0.1	< 10	0.132	< 1	< 3
QUL-30	QUL-30	2014 08 07	45.4	< 0.1	0.12	5.08	< 0.1	< 0.5	< 10	< 0.01	17,200	< 0.5	< 0.1	< 0.5	65	< 0.05	0.77	1,940	2.32	< 0.05	0.246	< 0.5	476	< 0.5	1,550	< 0.01	807	< 0.01	< 0.1	< 10	0.15	< 1	< 3
QUL-31	QUL-31	2014 08 07	28.8	< 0.1	0.14	5.52	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.66	40	< 0.05	0.61	1,970	2.77	< 0.05	0.326	< 0.5	491	< 0.5	1,660	< 0.01	867	< 0.01	< 0.1	< 10	0.135	< 1	< 3
QUL-32	QUL-32	2014 08 06	61	< 0.1	0.12	5.57	< 0.1	< 0.5	< 10	< 0.01	17,400	< 0.5	< 0.1	0.68	87	< 0.05	0.83	2,010	2.8	< 0.05	0.256	< 0.5	512	< 0.5	1,660	< 0.01	1,000	< 0.01	< 0.1	< 10	0.155	< 1	< 3
QUL-33	QUL-33	2014 08 06	15.2	< 0.1	0.1	4.81	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	< 0.1	< 0.5	< 30	< 0.05	0.66	1,930	0.875	< 0.05	0.238	< 0.5	444	< 0.5	1,500	< 0.01	799	< 0.01	< 0.1	< 10	0.147	< 1	< 3
QUL-34	QUL-34-6M	2014 08 13	15.5	< 0.1	0.14	5.33	< 0.1	< 0.5	< 10	< 0.01	15,800	< 0.5	< 0.1	0.67	< 30	< 0.05	< 0.5	1,830	1.22	< 0.05	0.292	< 0.5	458	< 0.5	1,530	< 0.01	851	< 0.01	< 0.1	< 10	0.13	< 1	< 3
QUL-35	QUL-35-3M	2014 08 14	17.2	< 0.1	0.14	5.53	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.62	< 30	< 0.05	0.68	1,910	1.55	-	0.371	< 0.5	489	< 0.5	1,640	< 0.01	876	< 0.01	< 0.1	< 10	0.137	< 1	< 3
QUL-36	QUL-36-8M	2014 08 14	15.5	< 0.1	0.12	5.2	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	0.58	< 30	< 0.05	0.69	1,860	1.24	-	0.312	< 0.5	461	< 0.5	1,570	< 0.01	811	< 0.01	< 0.1	< 10	0.132	< 1	< 3
QUL-37	QUL-37-0M	2014 08 15	15	< 0.1	0.11	5.01	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	1,850	1.08	-	0.298	< 0.5	458	< 0.5	1,530	< 0.01	810	< 0.01	< 0.1	< 10	0.143	< 1	< 3
	QUL-37-7M	2014 08 15	17.7	< 0.1	0.12	4.97	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	0.5	< 30	< 0.05	< 0.5	1,840	1.19	-	0.306	< 0.5	455	< 0.5	1,530	< 0.01	795	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-37-TAP	2014 08 15	18	< 0.1	0.13	5.43	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	**2.5**	< 30	0.356	< 0.5	1,870	0.786	-	0.309	< 0.5	472	< 0.5	1,550	< 0.01	815	< 0.01	< 0.1	< 10	0.14	< 1	5.4
QUL-38	QUL-38	2014 08 18	17.7	< 0.1	0.12	5.32	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	< 2	< 30	< 0.05	0.76	1,930	1.22	-	0.302	< 0.5	480	< 0.5	1,560	< 0.01	854	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-38-2M	2014 08 26	43.5	< 0.1	0.13	5.99	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	1.72	32	< 0.05	0.51	1,930	2.02	< 0.01	0.319	< 0.5	473	< 0.5	1,580	< 0.01	859	< 0.01	< 0.1	< 10	0.141	< 1	< 3
QUL-39	QUL-39	2014 08 18	23.4	< 0.1	0.11	5.28	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	< 1	< 30	< 0.05	0.72	1,870	1.14	-	0.265	< 0.5	461	< 0.5	1,540	< 0.01	832	< 0.01	< 0.1	< 10	0.147	< 1	< 3
QUL-60	QUL-60	2014 08 18	34.6	< 0.1	0.12	5.57	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	< 1.5	< 30	< 0.05	0.76	1,900	1.76	-	0.299	< 0.5	473	< 0.5	1,590	< 0.01	848	< 0.01	< 0.1	< 10	0.148	< 1	< 3
	QUL-60-3M	2014 08 26	44	< 0.1	0.12	5.96	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	1.93	34	< 0.05	< 0.5	1,900	2.15	< 0.01	0.324	< 0.5	473	< 0.5	1,560	< 0.01	850	< 0.01	< 0.1	< 10	0.136	< 1	< 3
QUL-61	QUL-61	2014 08 18	33.6	< 0.1	0.12	5.31	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	< 2.5[a]	< 30	< 0.05	0.78	1,880	1.52	-	0.289	< 0.5	468	< 0.5	1,570	< 0.01	832	< 0.01	< 0.1	< 10	0.141	< 1	< 3
	QUL-61-2M	2014 08 26	40.3	< 0.1	0.14	5.91	< 0.1	< 0.5	< 10	< 0.01	17,100	< 0.5	< 0.1	1.83	33	< 0.05	0.53	1,960	2.14	< 0.01	0.329	< 0.5	472	< 0.5	1,610	< 0.01	853	< 0.01	< 0.1	< 10	0.143	< 1	< 3
QUL-62	QUL-62	2014 08 18	19.5	< 0.1	0.13	5.39	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	< 1	< 30	< 0.05	0.67	1,880	1.32	-	0.297	< 0.5	463	< 0.5	1,540	< 0.01	834	< 0.01	< 0.1	< 10	0.143	< 1	< 3
QUL-63	QUL-63	2014 08 18	21.8	< 0.1	0.12	5.54	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	< 1	< 30	< 0.05	0.68	1,880	1.55	-	0.287	< 0.5	459	< 0.5	1,560	< 0.01	824	< 0.01	< 0.1	< 10	0.145	< 1	< 3
QUL-64	QUL-64	2014 08 18	19.4	< 0.1	0.12	5.41	< 0.1	< 0.5	< 10	< 0.01	16,100	< 0.5	< 0.1	< 1	< 30	< 0.05	0.63	1,890	1.21	-	0.305	< 0.5	461	< 0.5	1,570	< 0.01	849	< 0.01	< 0.1	< 10	0.14	< 1	< 3
	QUL-64-2M	2014 08 27	36.7	< 0.1	0.14	5.9	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	1.71	< 30	< 0.05	0.62	1,910	2.07	< 0.01	0.315	< 0.5	467	< 0.5	1,550	< 0.01	879	< 0.01	< 0.1	< 10	0.142	< 1	< 3
QUL-65	QUL65-45M	2014 08 19	***4,710***	0.36	2.21	115	0.12	< 0.5	< 10	**0.027**	25,100	**2.39**	1.97	**96.5**	***2,760***	1.99	2.97	4,120	***196***	-	6.19	2.44	2,940	0.73	11,700	0.041	4,480	0.015	0.17	191	0.885	**9.1**	**15.1**
QUL-66	QUL66-40M	2014 08 19	***5,490***	0.34	2.41	126	0.14	< 0.5	10	**0.03**	25,500	**2.4**	2.21	**111**	***3,090***	2.03	3.72	4,340	***192***	-	6.29	2.54	3,360	0.64	13,300	0.042	4,640	0.018	< 0.1	229	0.849	**10.4**	**11.2**
	QUL66-40MX	2014 08 19	***5,590***	0.34	2.41	129	0.14	< 0.5	10	**0.029**	25,500	**2.51**	2.17	**114**	***3,090***	2.03	3.62	4,370	***193***	-	6.18	2.54	3,420	0.64	13,500	0.041	4,770	0.019	< 0.1	230	0.857	**10.4**	**11.4**
	QA/QC RPD %		2	*	0	2	*	*	*	*	0	*	2	*	0	*	3	< 1	*	-	2	0	2	*	1	*	3	*	*	< 1	< 1	0	*
	QUL66-40M	2014 08 21	***4,940***	0.34	2.27	119	0.13	< 0.5	< 10	**0.032**	24,800	**2.46**	2.06	**106**	***2,880***	1.8	3.04	4,110	***168***	< 0.05	5.89	2.53	3,090	0.63	12,900	0.043	4,500	0.016	0.15	216	0.821	**9.8**	**9.8**
	QUL-66-0M	2014 08 26	***128***	< 0.1	0.17	7.29	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	**3.32**	138	0.068	0.62	1,940	6.19	< 0.01	0.314	< 0.5	495	< 0.5	1,710	< 0.01	849	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-66-10M	2014 08 26	***257***	< 0.1	0.21	9.62	< 0.1	< 0.5	< 10	< 0.01	17,000	< 0.5	0.2	**8.49**	288	0.171	0.64	2,020	11.7	< 0.01	0.438	0.71	518	< 0.5	2,020	< 0.01	929	< 0.01	< 0.1	15	0.155	< 1	< 3
	QUL-66-58M	2014 08 26	***3,690***	0.32	1.84	92.4	< 0.1	< 0.5	< 10	0.021	25,100	**1.97**	1.51	**76.5**	***2,150***	1.25	2.53	3,670	***176***	< 0.01	5.89	1.95	2,500	0.71	9,850	0.026	4,160	0.013	0.12	145	0.762	**7.3**	7.1

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Physical Parameters									Microbiological Tests		Total Inorganics												
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Kjeldahl Nitrogen (N) (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Bromide (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Guidelines																										
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0	+/-1 Degree change from ambient	Change of 8	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a		Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	n/a	n/a	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a	n/a
QUL-67	QUL-67-34M	2014 08 20	64.6	7.74	7.9	5.8	49.5	136	91	10	1.91	-	-	-	0.324	32.1	195	< 1	-	< 0.5	52	12.4	55.5	-	< 0.001	< 0.002[a]
QUL-68	QUL-68-40M	2014 08 21	68.9	7.85	7.85	5.5	70.6	146	100	28.7	2	-	-	-	0.384	42.2	225	1.5	-	< 0.5	65	15.3	57.2	-	0.008	***0.0108***
QUL-69	QUL-69-32M	2014 08 21	58.8	7.72	7.84	5.1	26.5	119	77	13.9	2.03	-	-	-	0.254	14.3	169	< 1	-	< 0.5	48	8.97	51.9	-	0.0093	***0.0143***
QUL-74	QUL-74-46M	2014 08 21	60.9	7.90	7.85	4.9	37.5	124	83	7.9	1.79	-	-	-	0.286	23	183	< 1	-	< 0.5	50	10.5	52.4	-	0.0188	***0.0413***
QUL-75	QUL-75-40M	2014 08 21	62	7.97	7.85	5.4	42.3	127	90	4.7	1.84	-	-	-	0.301	27.2	191	< 1	-	< 0.5	53	11.3	53.9	-	0.017	***0.0276***
QUL-77	QUL-77	2014 08 22	50.4	7.66	7.95	16.9	0.67	98.4	68	< 3	2.2	-	-	-	0.154	< 5	65.2	< 1	-	< 0.5	34	5.77	45	-	< 0.001	< 0.002[a]
QUL-79	QUL-79-0M	2014 08 25	42.3	7.99	7.89	18.3	0.26	97.2	68	< 3	1.91	-	-	-	0.127	< 5	44.4	< 1	-	< 0.5	35	5.76	43.6	-	< 0.001	< 0.002[a]
	QUL-79-27M	2014 08 25	54.7	7.19	7.9	5.3	4.87	110	63	3.5	1.64	-	-	-	0.213	< 5	147	< 1	-	< 0.5	38	6.85	49.6	-	0.0223	***0.134***
	QUL-79-79M	2014 08 25	56	7.35	7.9	4.8	10.4	113	76	3.7	1.64	-	-	-	0.217	5.5	153	< 1	-	< 0.5	40	7.56	50.4	-	0.0158	***0.138***
	QUL-79-0M	2014 08 27	49.4	7.95	7.99	19.0	0.23	98.5	62	< 3	1.99	-	-	-	0.112	< 5	43.6	< 1	-	< 0.5	34	5.75	44	-	< 0.001	< 0.002[a]
	QUL-79-55M	2014 08 27	54.7	-	7.93	-	0.69	108	66	< 3	1.9	-	-	-	0.195	< 5	145	< 1	-	< 0.5	36	6.35	48.9	-	0.0019	**0.0027**
QUL-82	QUL-82-2M	2014 08 25	49.7	8.11	7.95	18.1	0.33	99.4	70	< 3	2.27	-	-	-	0.133	< 5	47.8	< 1	-	< 0.5	34	5.73	44.4	-	0.0213	***0.0254***
	QUL-82-TAP	2014 08 25	49.6	-	7.94	-	0.24	99.5	67	< 3	2.27	-	-	-	0.141	< 5	62.1	< 1	-	< 0.5	34	5.78	44.6	-	< 0.001	< 0.002[a]
QUL-83	QUL-83-2M	2014 08 25	49.6	7.94	7.94	18.3	0.25	98.8	65	< 3	2.33	-	-	-	0.122	< 5	46.9	< 1	-	< 0.5	34	5.71	44.1	-	< 0.001	< 0.002[a]
QUL-84	QUL-84-1M	2014 08 25	50.2	7.91	7.93	18.3	0.3	98.3	66	< 3	2.2	-	-	-	0.126	< 5	47.7	< 1	-	< 0.5	36	5.71	44.2	-	< 0.001	< 0.002[a]
QUL-85	QUL-85-1M	2014 08 25	49.6	7.93	7.96	18.4	0.4	99.3	67	< 3	2.15	-	-	-	0.128	< 5	47.4	< 1	-	< 0.5	34	5.76	44.6	-	< 0.001	**0.0023**
QUL-86	QUL-86-1M	2014 08 25	50.4	7.96	7.99	18.5	0.27	99.9	68	< 3	2.02	-	-	-	0.121	< 5	47.2	< 1	-	< 0.5	34	5.76	45.3	-	< 0.001	< 0.002[a]
QUL-87	QUL-87-0M	2014 08 25	48.8	8.02	7.98	19.4	0.26	97.3	71	< 3	1.96	-	-	-	0.132	< 5	42.6	< 1	-	< 0.5	34	5.69	44.1	-	< 0.001	< 0.002[a]
	QUL-87-13M	2014 08 25	51.2	7.79	7.91	11.5	0.5	103	69	< 3	1.68	-	-	-	0.209	< 5	121	< 1	-	< 0.5	35	6.01	46.4	-	0.0221	***0.025***
	QUL-87-55M	2014 08 25	53.6	7.29	7.85	5.1	0.28	107	75	< 3	1.76	-	-	-	0.207	< 5	144	1.4	-	< 0.5	36	6.14	48	-	0.0072	***0.0436***
QUL-88	QUL88-2M	2014 08 26	50.5	7.83	7.98	19.0	0.27	100	62	< 3	2.19	-	-	-	0.114	< 5	41	< 1	-	< 0.5	35	5.7	44.6	-	< 0.001	< 0.002[a]
QUL-89	QUL-89-1M	2014 08 27	49.5	8.00	7.9	17.8	0.85	98.2	67	< 3	2.21	-	-	-	0.12	< 5	52.8	< 1	-	< 0.5	34	5.79	44.5	-	0.0011	< 0.002[a]
QUL-90	QUL-90	2014 08 27	49.8	***8.54***	8.01	19.0	0.76	99.7	68	< 3	2.21	-	-	-	0.133	< 5	40.1	< 1	-	< 0.5	35	5.73	45.1	-	< 0.001	**0.0023**
	QUL-90-TAP	2014 08 27	76.1	-	7.71	-	0.3	148	99	< 3	3.46	-	-	-	0.119	8.7	21.2	< 1	-	< 0.5	57	3.9	73.2	-	0.0017	**0.0029**

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

			Dissolved Metals																											
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-67	QUL-67-34M	2014 08 20	11.9	21.8	< 30	2.47	79.9	0.78	2.37	0.15	0.52	15.6	< 0.1	< 10	< 0.01	< 0.5	< 0.1	3.97	< 0.05	0.53	-	3.14	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.466	< 1	< 3
QUL-68	QUL-68-40M	2014 08 21	11.7	23.3	< 30	2.62	106	0.889	3.46	0.2	0.67	17.3	< 0.1	< 10	< 0.01	< 0.5	< 0.1	4.2	< 0.05	1.08	-	4.45	< 0.5	0.51	< 0.01	< 0.01	< 10	0.593	< 1	< 3
QUL-69	QUL-69-32M	2014 08 21	10.1	19.8	< 30	2.26	47.4	0.597	1.72	< 0.1	0.31	10.3	< 0.1	< 10	< 0.01	< 0.5	< 0.1	2.53	< 0.05	0.99	-	1.49	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.287	< 1	< 3
QUL-74	QUL-74-46M	2014 08 21	11.4	20.6	< 30	2.29	42.8	0.652	2.11	0.11	0.38	11.4	< 0.1	< 10	< 0.01	< 0.5	< 0.1	3.33	< 0.05	0.95		2.09	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.362	< 1	< 3
QUL-75	QUL-75-40M	2014 08 21	10.5	21	< 30	2.35	46.1	0.685	2.08	0.12	0.42	12	< 0.1	< 10	< 0.01	< 0.5	< 0.1	3.29	< 0.05	1		2.51	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.408	< 1	< 3
QUL-77	QUL-77	2014 08 22	10.2	17	< 30	1.93	0.945	0.458	0.829	< 0.1	< 0.1	5.56	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.06	< 0.05	0.85		0.272	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.137	< 1	< 3
QUL-79	QUL-79-0M	2014 08 25	8.1	14.2	< 30	1.66	0.269	0.382	0.689	< 0.1	< 0.1	4.43	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.229	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.111	< 1	< 3
	QUL-79-27M	2014 08 25	6.8	18.5	< 30	2.08	5.6	0.491	1.74	< 0.1	0.12	6.1	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.62	< 0.05	0.5	-	0.528	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.177	< 1	< 3
	QUL-79-79M	2014 08 25	6.3	19	< 30	2.11	8.68	0.517	1.32	< 0.1	0.17	6.65	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.4	< 0.05	0.59	-	0.741	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.203	< 1	< 3
	QUL-79-0M	2014 08 27	10.2	16.7	< 30	1.91	0.304	0.44	0.818	< 0.1	< 0.1	4.91	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.74		0.254	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
	QUL-79-55M	2014 08 27	4.9	18.5	< 30	2.08	0.562	0.46	0.923	< 0.1	< 0.1	5.16	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	0.8		0.27	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.152	< 1	< 3
QUL-82	QUL-82-2M	2014 08 25	9	16.7	< 30	1.93	0.499	0.465	1.01	< 0.1	0.11	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.279	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.131	< 1	< 3
	QUL-82-TAP	2014 08 25	9	16.7	< 30	1.91	0.149	0.45	0.806	< 0.1	0.1	5.29	< 0.1	< 10	< 0.01	< 0.5	< 0.1	17.6	0.085	< 0.5	-	0.273	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	4.4
QUL-83	QUL-83-2M	2014 08 25	9.1	16.7	< 30	1.92	0.368	0.468	0.831	< 0.1	0.11	5.33	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.268	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.125	< 1	< 3
QUL-84	QUL-84-1M	2014 08 25	9.8	16.9	< 30	1.95	0.406	0.467	0.824	< 0.1	< 0.1	5.36	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	0.51	-	0.269	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.126	< 1	< 3
QUL-85	QUL-85-1M	2014 08 25	8.8	16.7	< 30	1.92	0.416	0.46	0.822	< 0.1	0.13	5.34	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.277	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.136	< 1	< 3
QUL-86	QUL-86-1M	2014 08 25	9.8	17	< 30	1.95	0.467	0.459	0.827	< 0.1	0.16	5.34	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.295	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.14	< 1	< 3
QUL-87	QUL-87-0M	2014 08 25	10.3	16.4	< 30	1.89	0.41	0.465	0.807	< 0.1	< 0.1	5.07	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	-	0.273	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-87-13M	2014 08 25	8.1	17.3	< 30	1.93	0.271	0.455	1.04	< 0.1	< 0.1	4.98	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.53	< 0.05	0.5	-	0.248	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.143	< 1	< 3
	QUL-87-55M	2014 08 25	5.5	18.1	< 30	2.06	0.142	0.468	0.965	< 0.1	< 0.1	4.91	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.51	< 0.05	< 0.5	-	0.235	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.141	< 1	< 3
QUL-88	QUL88-2M	2014 08 26	9.6	17	< 30	1.97	0.622	0.459	0.809	< 0.1	0.11	5.01	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5		0.286	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
QUL-89	QUL-89-1M	2014 08 27	10.3	16.7	< 30	1.91	0.781	0.474	0.871	< 0.1	0.12	5.56	< 0.1	< 10	0.013	< 0.5	< 0.1	1.02	< 0.05	0.5		0.295	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.134	< 1	< 3
QUL-90	QUL-90	2014 08 27	10	16.7	< 30	1.95	3.63	0.431	0.872	< 0.1	0.39	5.46	< 0.1	< 10	< 0.01	< 0.5	< 0.1	0.93	< 0.05	0.68		0.289	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.13	< 1	< 3
	QUL-90-TAP	2014 08 27	4.8	22.9	67	4.61	3.43	0.365	2.16	0.16	0.81	4.77	< 0.1	< 10	< 0.01	< 0.5	< 0.1	1.85	< 0.05	< 0.5		0.273	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.022	< 1	4.2

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.

[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.

[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.

[d] Guideline varies with pH, and/or either Temperature or Hardness.

[e] Health Canada Drinking Water Guidelines, 2012.

[f] Guideline for Nitrate applied.

[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.

[h] Calculated based on an individual sample basis, not average of 30 day results.

[i] Secondary chronic or chronic value, not 30 day mean.

[j] Guideline not applicable for site situation.

TABLE 1a: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Total Metals: Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-67	QUL-67-34M	2014 08 20	***2,510***	0.21	1.44	60.8	< 0.1	< 0.5	< 10	0.019	22,100	**1.69**	1.29	**59.1**	***1,820***	1.03	1.89	3,320	***143***	-	3.68	1.85	1,690	< 0.5	6,780	0.025	2,900	< 0.01	< 0.1	108	0.56	5.6	6.4
QUL-68	QUL-68-40M	2014 08 21	***4,060***	0.27	1.9	86.9	0.11	< 0.5	< 10	0.024	23,700	**2.51**	1.81	**75.9**	***2,650***	1.55	3.04	3,800	***187***	-	4.67	2.51	2,370	0.57	10,500	0.038	3,540	0.018	0.13	164	0.706	**8.1**	**9.2**
QUL-69	QUL-69-32M	2014 08 21	***1,940***	0.11	0.87	39.4	< 0.1	< 0.5	< 10	0.013	20,400	**1.4**	0.81	**31.1**	***1,290***	0.653	1.91	2,930	***89.1***	-	1.71	1.34	1,270	< 0.5	6,580	0.015	1,880	< 0.01	< 0.1	84	0.362	3.9	4.6
QUL-74	QUL-74-46M	2014 08 21	***2,080***	0.15	1.03	45.7	< 0.1	< 0.5	< 10	0.015	20,500	**1.38**	0.98	**40.3**	***1,480***	0.78	2.13	2,930	***89***	-	2.32	1.51	1,360	< 0.5	6,000	0.018	2,110	< 0.01	< 0.1	90	0.421	4.4	5.4
QUL-75	QUL-75-40M	2014 08 21	***2,570***	0.16	1.16	56.1	< 0.1	< 0.5	< 10	0.021	21,400	**1.56**	1.14	**49.8**	***1,690***	1.01	2.2	3,170	***102***	-	2.92	1.58	1,640	< 0.5	7,160	0.021	2,580	0.011	< 0.1	108	0.504	5.1	7.3
QUL-77	QUL-77	2014 08 22	84.3	< 0.1	0.14	6.08	< 0.1	< 0.5	< 10	< 0.01	16,200	< 0.5	< 0.1	**2.48**	98	< 0.05	0.87	1,900	3.67	-	0.3	0.51	466	< 0.5	1,600	< 0.01	838	< 0.01	< 0.1	< 10	0.146	< 1	< 3
QUL-79	QUL-79-0M	2014 08 25	12.9	< 0.1	0.12	5.35	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.53	< 30	< 0.05	< 0.5	1,920	1.22	-	0.296	< 0.5	469	< 0.5	1,560	< 0.01	829	< 0.01	< 0.1	< 10	0.138	< 1	< 3
	QUL-79-27M	2014 08 25	***246***	< 0.1	0.21	10.2	< 0.1	< 0.5	< 10	< 0.01	18,000	< 0.5	0.11	**5.91**	167	0.119	0.68	2,100	12.4	< 0.05	0.581	< 0.5	573	< 0.5	2,170	< 0.01	1,370	< 0.01	< 0.1	< 10	0.19	< 1	< 3
	QUL-79-79M	2014 08 25	***515***	< 0.1	0.3	16.4	< 0.1	< 0.5	< 10	< 0.01	18,800	< 0.5	0.19	**10.4**	***308***	0.192	0.83	2,240	19.7	< 0.05	0.857	0.59	720	< 0.5	2,810	< 0.01	1,420	< 0.01	< 0.1	20	0.227	1.1	< 3
	QUL-79-0M	2014 08 27	13.3	< 0.1	0.1	5.04	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.51	< 30	< 0.05	0.72	1,920	0.888	< 0.01	0.27	< 0.5	448	< 0.5	1,480	< 0.01	841	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-79-55M	2014 08 27	38	< 0.1	0.1	5.74	< 0.1	< 0.5	< 10	**0.024**	18,200	< 0.5	< 0.1	1.06	< 30	< 0.05	0.81	2,080	1.9	< 0.01	0.273	< 0.5	487	< 0.5	1,720	< 0.01	960	< 0.01	< 0.1	< 10	0.168	< 1	< 3
QUL-82	QUL-82-2M	2014 08 25	17.8	< 0.1	0.13	5.43	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	0.56	< 30	< 0.05	< 0.5	1,890	1.35	-	0.298	< 0.5	468	< 0.5	1,540	< 0.01	864	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-82-TAP	2014 08 25	13.8	< 0.1	0.14	5.28	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	**18.7**	< 30	0.127	< 0.5	1,910	0.589	-	0.293	< 0.5	456	< 0.5	1,550	< 0.01	818	< 0.01	< 0.1	< 10	0.137	< 1	5.3
QUL-83	QUL-83-2M	2014 08 25	18.4	< 0.1	0.14	5.43	< 0.1	< 0.5	< 10	< 0.01	16,500	< 0.5	< 0.1	0.61	< 30	< 0.05	< 0.5	1,890	1.26	-	0.292	< 0.5	466	< 0.5	1,540	< 0.01	823	< 0.01	< 0.1	< 10	0.142	< 1	< 3
QUL-84	QUL-84-1M	2014 08 25	15.3	< 0.1	0.15	5.38	< 0.1	< 0.5	< 10	< 0.01	16,600	< 0.5	< 0.1	0.53	< 30	< 0.05	< 0.5	1,900	1.19	-	0.285	< 0.5	466	< 0.5	1,540	< 0.01	823	< 0.01	< 0.1	< 10	0.14	< 1	< 3
QUL-85	QUL-85-1M	2014 08 25	15.2	< 0.1	0.13	5.25	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	1,880	1.15	-	0.292	< 0.5	453	< 0.5	1,510	< 0.01	810	< 0.01	< 0.1	< 10	0.142	< 1	< 3
QUL-86	QUL-86-1M	2014 08 25	14.9	< 0.1	0.19	5.47	< 0.1	< 0.5	< 10	< 0.01	16,800	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	1,940	1.15	-	0.298	< 0.5	462	< 0.5	1,570	< 0.01	826	< 0.01	< 0.1	< 10	0.141	< 1	< 3
QUL-87	QUL-87-0M	2014 08 25	13.1	< 0.1	0.14	5.26	< 0.1	< 0.5	< 10	< 0.01	16,300	< 0.5	< 0.1	0.52	< 30	< 0.05	< 0.5	1,880	1.17	-	0.287	< 0.5	452	< 0.5	1,530	< 0.01	819	< 0.01	< 0.1	< 10	0.142	< 1	< 3
	QUL-87-13M	2014 08 25	24.6	< 0.1	0.11	5.36	< 0.1	< 0.5	< 10	< 0.01	17,600	< 0.5	< 0.1	0.8	< 30	< 0.05	< 0.5	1,950	1.42	-	0.265	< 0.5	471	< 0.5	1,650	< 0.01	1,180	< 0.01	< 0.1	< 10	0.151	< 1	< 3
	QUL-87-55M	2014 08 25	16.1	< 0.1	0.11	5.19	< 0.1	< 0.5	< 10	< 0.01	18,100	< 0.5	< 0.1	0.6	< 30	< 0.05	0.51	2,080	1.09	-	0.283	< 0.5	475	< 0.5	1,800	< 0.01	1,060	< 0.01	< 0.1	< 10	0.151	< 1	< 3
QUL-88	QUL88-2M	2014 08 26	16.5	< 0.1	0.13	5.24	< 0.1	< 0.5	< 10	< 0.01	16,700	< 0.5	< 0.1	0.53	< 30	< 0.05	0.52	1,950	1.45	< 0.01	0.308	< 0.5	461	< 0.5	1,560	< 0.01	834	< 0.01	< 0.1	< 10	0.139	< 1	< 3
QUL-89	QUL-89-1M	2014 08 27	36.4	< 0.1	0.13	5.72	< 0.1	< 0.5	< 10	< 0.01	16,000	< 0.5	< 0.1	1.73	31	< 0.05	0.52	1,860	1.99	< 0.01	0.298	< 0.5	457	< 0.5	1,510	< 0.01	849	< 0.01	< 0.1	< 10	0.142	< 1	< 3
QUL-90	QUL-90	2014 08 27	38.4	< 0.1	0.56	5.84	< 0.1	< 0.5	< 10	< 0.01	16,400	< 0.5	< 0.1	1.55	71	< 0.05	0.63	1,950	6.3	< 0.01	0.316	< 0.5	440	< 0.5	1,560	< 0.01	884	< 0.01	< 0.1	< 10	0.134	< 1	< 3
	QUL-90-TAP	2014 08 27	10.4	0.17	0.72	4.86	< 0.1	< 0.5	< 10	< 0.01	22,400	< 0.5	< 0.1	2.23	74	< 0.05	< 0.5	4,580	3.74	< 0.01	0.287	< 0.5	369	< 0.5	4,460	< 0.01	2,220	< 0.01	< 0.1	< 10	0.024	< 1	4.8

Associated ALS files: L1498519, L1498533, L1499166, L1499203, L1499703, L1499707, L1499710, L1499926, L1499947, L1500619, L1501501, L1501518, L1502349, L1502364, L1502370, L1502388, L1503057, L1503061, L1503079, L1503910, L1503913, L1503928, L1503932, L1503933, L1503934, L1504180, L1504213, L1504220, L1504251, L1504261, L1504997, L1505918, L1506551, L1506571, L1506577, L1506586, L1500164, L1502370, L1506989, L1506996, L1507001, L1507291, L1507298, L1506992, L1507259, L1507347, L1507948, L1507972, L1507977, L1508637, L1508673, L1509507, L1508649, L1509597, L1510231, L1510268, L1510289.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1b: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water (BLANKS) DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness (mg/L)	pH (pH)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
			Physical Parameters																	
BC Guidelines																				
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	Change of 8	n/a	n/a	Change of 25	n/a	n/a	5,680-18,400[d]	32,800	60 (Cl<2)	32,800[f]	600	988.2-1,224.3[d]	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	1,090-1,770[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	Change of 1	n/a	n/a	n/a	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	n/a[j]	n/a	500	n/a	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a
QUL-EQUIPMENT BLANK	QUL-EQUIPMENT BLANK	2014 08 12	< 0.5	**5.51**	< 0.1	< 2	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002
	QUL-EQUIPMENT BLANK	2014 08 14	< 0.5	-	< 0.1	-	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002
	QUL-EQUIPMENT BLANK	2014 08 15	< 0.5	-	< 0.1	-	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002
	QUL-EQUIPMENT BLANK	2014 08 16	< 0.5	-	< 0.1	-	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	EQUIPMENT BLANK	2014 08 19	< 0.5	**5.85**	0.26	< 2	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	QUL-EQUIPMENTBLANK	2014 08 19	< 0.5	**5.42**	< 0.1	< 2	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	EQUIPMENT BLANK	2014 08 21	< 0.5	**6.13**	< 0.1	< 2	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1		< 0.5	< 20	< 0.5	< 1	< 0.001	**0.0223**
QUL-FIELD BLANK	FIELD BLANK	2014 08 06	-	**5.58**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELD BLANK DI	2014 08 08	< 0.5	**5.48**	< 0.1	< 2	< 10	< 3	< 0.5	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELD BLANK	2014 08 10	-	**5.87**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	QUL-FIELD BLANK	2014 08 15	-	-	< 0.1	-	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELDBLANK	2014 08 12	< 0.5	**5.49**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELDBLANK	2014 08 17	< 0.5	**5.64**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	ALS FIELD BLANK	2014 08 12	< 0.5	**5.61**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	< 5.1	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELD BLANK	2014 08 12	< 0.5	**5.49**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELD BLANK	2014 08 17	< 0.5	**5.64**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	QUL-FIELDBLANK	2014 08 19	< 0.5	**5.89**	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	FIELD BLANK	2014 08 21	< 0.5	-	< 0.1	-	< 10	< 3	-	< 0.05	< 5	< 5	< 1		< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
	QUL-19-FB	2014 08 27	< 0.5	-	0.15	-	< 10	< 3	-	< 0.05	< 5	< 5	< 1		< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
QUL-ISCO-BLANK	ISCO-BLANK	2014 08 27	6.88	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
QUL-TRIP BLANK	TRIP-BLANK	2014 08 27	< 0.5	-	< 0.1	-	< 10	< 3	-	< 0.05	< 5	< 5	< 1		< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.
(yellow)	Concentration greater than 5xDL

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and/or either Temperature or Hardness.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.

TABLE 1b: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water (BLANKS) DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Metals																										
			Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																													
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
QUL-EQUIPMENT BLANK	QUL-EQUIPMENT BLANK	2014 08 12	< 3	< 0.05	< 30	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENT BLANK	2014 08 14	< 3	< 0.05	< 30	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENT BLANK	2014 08 15	< 3	< 0.05	< 30	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENT BLANK	2014 08 16	< 3	< 0.05	< 30	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	EQUIPMENT BLANK	2014 08 19	< 3	0.129	< 30	< 0.1	0.449	< 0.05	< 0.05	< 0.1	< 0.1	0.114	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENTBLANK	2014 08 19	< 3	< 0.05	< 30	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	EQUIPMENT BLANK	2014 08 21	< 3	0.121	< 30	< 0.1	0.186	< 0.05	0.574	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	0.14	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
QUL-FIELD BLANK	FIELD BLANK	2014 08 06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FIELD BLANK DI	2014 08 08	< 3	< 0.05	< 30	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.1	< 10	< 0.01	< 0.5	< 0.1	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.01	< 0.01	< 10	< 0.01	< 1	< 3
	FIELD BLANK	2014 08 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUL-FIELD BLANK	2014 08 15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FIELDBLANK	2014 08 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FIELDBLANK	2014 08 17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	ALS FIELD BLANK	2014 08 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FIELD BLANK	2014 08 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FIELD BLANK	2014 08 17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUL-FIELDBLANK	2014 08 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FIELD BLANK	2014 08 21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QUL-19-FB	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QUL-ISCO-BLANK	ISCO-BLANK	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QUL-TRIP BLANK	TRIP-BLANK	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.
	Concentration greater than 5xDL

[a] Laboratory detection limit out of range.

[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.

[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.

[d] Guideline varies with pH, and/or either Temperature or Hardness.

[d] Guideline varies with pH, and or Temperature or Hardness.

[e] Health Canada Drinking Water Guidelines, 2012.

[f] Guideline for Nitrate applied.

[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.

[h] Calculated based on an individual sample basis, not average of 30 day results.

[i] Secondary chronic or chronic value, not 30 day mean.

[j] Guideline not applicable for site situation.

TABLE 1b: Summary of Analytical Results for Mount Polley, Quesnel Lake and River - Surface Water (BLANKS) DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Total Metals Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silicon (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Guidelines																																	
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.016-0.026[d]	n/a	1 (Cr(+6))	110	6.0-9.2[d]	1,000	27.3-57.7[d]	870	n/a	1,000.6-1,379[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	n/a	0.1[d]	n/a	0.3	n/a	2,000	300	6	33[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	2-3[d]	n/a	4.4-5.6[d]	14[i]	n/a	791.1-940[d]		1,000	n/a	n/a	n/a	n/a	0.05[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
QUL-EQUIPMENT BLANK	QUL-EQUIPMENT BLANK	2014 08 12	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.05	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENT BLANK	2014 08 14	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENT BLANK	2014 08 15	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENT BLANK	2014 08 16	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	EQUIPMENT BLANK	2014 08 19	11.4	< 0.1	< 0.1	0.272	< 0.1	< 0.5	< 10	< 0.01[a]	84	< 0.5	< 0.1	< 0.5	< 30	**0.11**	< 0.5	< 100	0.314	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-EQUIPMENTBLANK	2014 08 19	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	EQUIPMENT BLANK	2014 08 21	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	108	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	0.09	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	428	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
QUL-FIELD BLANK	FIELD BLANK	2014 08 06	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.05	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELD BLANK DI	2014 08 08	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.05	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELD BLANK	2014 08 10	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.05	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-FIELD BLANK	2014 08 15	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELDBLANK	2014 08 12	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELDBLANK	2014 08 17	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	ALS FIELD BLANK	2014 08 12	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.05	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELD BLANK	2014 08 12	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELD BLANK	2014 08 17	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-FIELDBLANK	2014 08 19	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	FIELD BLANK	2014 08 21	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
	QUL-19-FB	2014 08 27	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.01	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
QUL-ISCO-BLANK	ISCO-BLANK	2014 08 27	40.6	< 0.1	< 0.1	1.25	< 0.1	< 0.5	< 10	< 0.01[a]	2,290	< 0.5	< 0.1	0.76	50	< 0.05	< 0.5	280	2.64	-	0.061	< 0.5	75	< 0.5	302	< 0.01	132	< 0.01	< 0.1	< 10	0.015	< 1	4.4
QUL-TRIP BLANK	TRIP-BLANK	2014 08 27	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.01	< 0.05	< 0.5	< 50	< 0.5	< 50	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
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	Concentration greater than 5xDL

[a] Laboratory detection limit out of range.

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[d] Guideline varies with pH, and/or either Temperature or Hardness.

[d] Guideline varies with pH, and or Temperature or Hardness.

[e] Health Canada Drinking Water Guidelines, 2012.

[f] Guideline for Nitrate applied.

[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.

[h] Calculated based on an individual sample basis, not average of 30 day results.

[i] Secondary chronic or chronic value, not 30 day mean.

[j] Guideline not applicable for site situation.

TABLE 2a: Summary of Analytical Results for Mount Polley, Hazeltine Creek - Surface Water DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Inorganics: Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus (mg/L)
BC Standards																						
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	700-24,500[d]	32,800	60 (Cl<2)	32,800[f]	600	1324-1538[d]	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient[g]	Change of 2[k]	n/a	n/a	Change of 5[k]	+20% of median background	n/a	135-17,700[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a
HAD-1	HAD-1	2014 08 10	99	**8.96**	**8.68**	19.8	5.24	198	140	10.7	6.82	0.378	< 5	< 5	< 1	-	< 0.5	64	27.5	71.8	< 0.001	0.0056
	HAD-1	2014 08 10	100	**9.08**	**8.86**	21.3	2.75	193	138	< 3	6.58	0.361	< 5	< 5	< 1	-	< 0.5	65	27.4	74.7	< 0.001	0.0075
	HAD-1	2014 08 11	102	**8.94**	8.50	21.1	2.16	199	139	< 3	6.77	0.366	< 5	< 5	< 1	-	< 0.5	62	27.4	74.4	< 0.001	0.0056
	HAD-1	2014 08 12	99.9	**8.99**	**8.65**	20.5	2.64	198	148	< 3	6.12	0.348	< 5	< 5	< 1	-	< 0.5	63	27.2	74.7	< 0.001	0.0061
	HAD-1	2014 08 13	97.4	**9.11**	**8.80**	21.2	1.5	194	135	< 3	6.32	0.386	6.7	< 5	< 1	-	< 0.5	65	27.3	73.9	0.0011	0.0053
	HAD-1	2014 08 14	99	**9.00**	**8.59**	21.5	1.24	200	131	< 3	6.45	0.341	< 5	< 5	< 1	-	< 0.5	63	27.4	76.2	< 0.001	0.0048
	HAD-1	2014 08 15	99.1	**8.79**	8.43	22.3	1.25	201	136	< 3	6.39	0.37	< 5	< 5	< 1	< 5.1	< 0.5	81	27.3	75	< 0.001	0.0057
	HAD-1	2014 08 16	101	**8.67**	8.26	20.4	3.21	203	141	4.5	6.71	0.363	< 5	< 5	< 1	< 5.1	< 0.5	67	27.6	75.2	< 0.001	0.0058
	HAD-1X	2014 08 16	102	**8.67**	8.21	20.4	3.04	203	138	3.4	6.73	0.371	< 5	< 5	< 1	< 5.1	< 0.5	69	27.5	74.8	< 0.001	0.0061
	QA/QC RPD %		< 1	0	< 1	0	5	0	2	*	< 1	2	*	*	*	*	*	*	< 1	< 1	*	*
	HAD-1	2014 08 17	97.9	**8.79**	8.21	20.5	2.95	201	141	< 3	6.57	0.352	< 5	< 5	< 1	-	< 0.5	69	27.5	75	< 0.001	0.0068
	HAD-1	2014 08 18	100	**8.65**	8.37	21	1.51	201	135	< 3	7.37	0.425	5.7	< 5	< 1	-	< 0.5	67	27.4	76.1	< 0.001	0.0064
	HAD-1	2014 08 19	98	**8.72**	8.28	20.7	1.52	200	105	< 3	7.02	0.372	< 5	< 5	< 1	-	< 0.5	75	26.8	76.3	< 0.001	0.0059
	HAD-1	2014 08 20	102	**8.72**	8.21	20.7	7.79	201	139	8.5	6.45	0.364	< 5	< 5	< 1	-	< 0.5	63	26.8	76	< 0.001	0.0062
	HAD-1	2014 08 21	101	-	8.32	-	5.14	200	141	4	6.29	0.34	< 5	< 5	< 1	-	< 0.5	65	27.5	74.8	< 0.001	0.0046
	HAD-1	2014 08 22	103	**8.58**	8.29	-	4.33	200	131	4.2	6.61	0.349	< 5	< 5	< 1	-	< 0.5	66	27.5	75.2	< 0.001	0.0069
	HAD-1	2014 08 24	104	8.22	8.11	18.2	7.44	207	140	7.8	6.95	0.354	< 5	< 5	< 1		< 0.5	69	27.2	77.7	0.0012	0.0036
	HAD-1	2014 08 26	106	**8.66**	8.47	17.6	1.14	204	130	< 3	6.2	0.364	7.6	10.4	< 1	-	< 0.5	67	29.5	77	< 0.001	0.0044
	HAD-1	2014 08 28	108	**8.78**	8.33	18.2	1.08	209	132	< 3	6.88	0.335	5	< 5	< 1	-	< 0.5	67	28.9	76.8	0.001	0.0075
HAC01	HAC01	2014 08 24	161	8.22	8.17	18.19	**> 4000**	343	243	**3,350**	6.04	0.902	62.2	453	6.1	-	1.56	120	75.9	93.4	0.0056	0.009
	HAC01-24HRS	2014 08 24	159	-	8.24	-	**52.1**	345	255	**38.7**	5.71	0.691	72.9	461	6.4	-	1.58	119	77.7	95.5	0.0061	0.0077
	HAC01	2014 08 25	155	**8.62**	8.23	18.6	**4,090**	320	140	**4,040**	5.73	1.81	63.2	408	4.4		1.3	111	69	92.1	0.0032	0.0082
	HAC01	2014 08 26	151	**8.76**	8.3	18.0	**> 4000**	317	219	**3,930**	6.16	0.73	67.3	418	4.8	-	1.01	120	65.1	94.7	0.0066	0.0099
	HAC01	2014 08 27	166	**8.83**	8.17	18.8	**> 4000**	396	280	**35,000**	5.43	2.7	183	356	20.9	-	3.45	226	101	90.6	0.0024	0.0068

Associated ALS files: L1500203, L1500608, L1501501, L1501554, L1502400, L1503098, L1503928, L1503934, L1503943, L1504261, L1504997, L1505933, L1506592, L1506998, L1507958, L1507977, L1508649, L1509589, L1509671, L1510298, L1510307.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.

[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.

[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.

[d] Guideline varies with pH, and or Temperature or Hardness.

[e] Health Canada Drinking Water Guidelines, 2012.

[f] Guideline for Nitrate applied.

[g] Stream criteria applies to deviation from optimum fish species temperature range. In this case, a reference to ambient is made since the background range (Minnow, 2014) is ~0-20.8°C (upper Hazeltine Creek).

[h] Calculated based on an individual sample basis, not average result basis.

[i] Secondary chronic or chronic value, not 30 day mean.

[j] Guideline not applicable for site situation.

[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.34-6.99 NTU and <3-18 mg/L TSS.

TABLE 2a: Summary of Analytical Results for Mount Polley, Hazeltine Creek - Surface Water DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Metals: Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																													
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HAD-1	HAD-1	2014 08 10	14.8	31.6	< 30	4.85	5.48	0.458	4.4	< 0.1	0.61	10.9	< 0.1	19	< 0.01	< 0.5	< 0.1	3.4	< 0.05	< 0.5	2.84	< 0.5	0.56	< 0.01	< 0.01	< 10	0.11	1.1	< 3
	HAD-1	2014 08 10	13.9	32.3	< 30	4.81	4.56	0.444	4.52	< 0.1	0.6	11	< 0.1	19	< 0.01	< 0.5	< 0.1	3.19	< 0.05	< 0.5	2.77	< 0.5	0.55	< 0.01	< 0.01	< 10	0.099	1.2	< 3
	HAD-1	2014 08 11	10.4	32.5	< 30	4.97	2.44	0.407	4.25	< 0.1	0.53	8.45	< 0.1	21	< 0.01	< 0.5	< 0.1	2.49	< 0.05	< 0.5	2.68	< 0.5	0.58	< 0.01	< 0.01	< 10	0.106	1.1	< 3
	HAD-1	2014 08 12	9.5	32	< 30	4.85	1.4	0.356	4.14	< 0.1	0.53	7.48	< 0.1	22	< 0.01	< 0.5	< 0.1	2.15	< 0.05	< 0.5	2.62	< 0.5	0.59	< 0.01	< 0.01	< 10	0.107	1.1	< 3
	HAD-1	2014 08 13	10	31.2	< 30	4.73	0.282	0.397	4.43	< 0.1	0.58	7.67	< 0.1	20	< 0.01	< 0.5	< 0.1	2.41	< 0.05	< 0.5	2.41	< 0.5	0.53	< 0.01	< 0.01	< 10	0.098	1.2	< 3
	HAD-1	2014 08 14	8.9	31.9	< 30	4.67	0.224	0.388	4.48	< 0.1	0.6	7.51	< 0.1	22	< 0.01	< 0.5	< 0.1	2.19	< 0.05	< 0.5	2.63	< 0.5	0.57	< 0.01	< 0.01	< 10	0.113	1.1	< 3
	HAD-1	2014 08 15	10.1	31.7	< 30	4.86	3.31	0.434	4.59	< 0.1	0.61	7.72	< 0.1	19	< 0.01	< 0.5	< 0.1	2.51	< 0.05	< 0.5	2.51	< 0.5	0.58	< 0.01	< 0.01	< 10	0.118	1.1	< 3
	HAD-1	2014 08 16	11.1	32.4	< 30	4.9	7.12	0.463	4.43	< 0.1	0.62	8.52	< 0.1	18	< 0.01	< 0.5	< 0.1	2.77	< 0.05	< 0.5	2.59	< 0.5	0.59	< 0.01	< 0.01	< 10	0.101	1.1	< 3
	HAD-1X	2014 08 16	10.9	32.6	< 30	4.92	7.97	0.477	4.47	< 0.1	0.6	8.45	< 0.1	18	< 0.01	< 0.5	< 0.1	2.67	< 0.05	< 0.5	2.52	< 0.5	0.57	< 0.01	< 0.01	< 10	0.102	1.1	< 3
	QA/QC RPD %		*	< 1	*	< 1	11	3	< 1	*	3	< 1	*	*	*	*	*	4	*	*	3	*	*	*	*	*	< 1	*	*
	HAD-1	2014 08 17	10.4	31.5	< 30	4.7	0.578	0.467	4.56	< 0.1	0.57	8.05	< 0.1	21	< 0.01	< 0.5	< 0.1	2.65	< 0.05	< 0.5	2.66	< 0.5	0.54	< 0.01	< 0.01	< 10	0.106	1.1	< 3
	HAD-1	2014 08 18	10	32.2	< 30	4.78	4.26	0.463	4.43	< 0.1	0.57	8.29	< 0.1	20	< 0.01	< 0.5	< 0.1	2.41	< 0.05	< 0.5	2.62	< 0.5	0.52	< 0.01	< 0.01	< 10	0.108	1.1	< 3
	HAD-1	2014 08 19	10.8	31.5	< 30	4.71	7.21	0.465	4.44	< 0.1	0.61	8.15	< 0.1	20	< 0.01	< 0.5	< 0.1	2.44	< 0.05	< 0.5	2.6	< 0.5	0.57	< 0.01	< 0.01	< 10	0.1	1.2	< 3
	HAD-1	2014 08 20	15.1	32.7	< 30	4.85	4.9	0.478	4.52	< 0.1	0.61	9.04	< 0.1	19	< 0.01	< 0.5	< 0.1	3.31	< 0.05	< 0.5	2.62	< 0.5	0.58	< 0.01	< 0.01	< 10	0.105	1.1	< 3
	HAD-1	2014 08 21	13.5	32.3	< 30	4.9	0.453	0.467	4.57	< 0.1	0.59	8.23	< 0.1	20	< 0.01	< 0.5	< 0.1	2.99	< 0.05	< 0.5	2.61	< 0.5	0.55	< 0.01	< 0.01	< 10	0.103	1	< 3
	HAD-1	2014 08 22	10.7	33.1	< 30	4.91	3.02	0.48	4.66	< 0.1	0.63	8.69	< 0.1	20	< 0.01	< 0.5	< 0.1	2.92	< 0.05	< 0.5	2.66	< 0.5	0.57	< 0.01	< 0.01	< 10	0.104	1.1	< 3
	HAD-1	2014 08 24	15.1	33.5	< 30	4.92	3.04	0.532	4.69	< 0.1	0.67	9.76	< 0.1	18	< 0.01	< 0.5	< 0.1	3.71	< 0.05	< 0.5	2.79	< 0.5	0.56	< 0.01	< 0.01	< 10	0.107	1.1	< 3
	HAD-1	2014 08 26	31.5	34.4	< 30	4.98	4.05	0.675	5	< 0.1	0.63	9.06	< 0.1	19	0.014	< 0.5	< 0.1	3.59	0.078	< 0.5	4.53	< 0.5	0.63	< 0.01	< 0.01	< 10	0.117	1.1	56.5
	HAD-1	2014 08 28	10.9	34.7	< 30	5.07	2.33	0.495	4.96	< 0.1	0.65	8.74	< 0.1	21	< 0.01	< 0.5	< 0.1	2.82	< 0.05	< 0.5	2.98	< 0.5	0.69	< 0.01	< 0.01	< 10	0.116	1.1	< 3
HAC01	HAC01-140824	2014 08 24	11.6	50	< 30	8.79	52.7	2.08	9.63	< 0.5	1.72	35.2	< 0.5	< 50	< 0.05	< 0.5	< 0.5	17.5	< 0.25	3.2	12.3	< 2.5	3.44	< 0.05	< 0.05	< 10	0.986	< 5	< 5
	HAC01-24HRS	2014 08 24	10.3	49.2	< 30	8.83	53.9	2.16	9.82	0.27	1.93	37.9	< 0.1	29	0.013	< 0.5	0.12	17.8	< 0.05	1.11	12.2	0.74	3.77	< 0.01	< 0.01	< 10	0.984	3.2	< 3
	HAC01	2014 08 25	9.6	48	< 30	8.45	51.6	1.78	8.23	0.23	1.65	38.6	< 0.2	24	< 0.02	< 0.5	< 0.2	15.8	< 0.1	< 1	10.1	< 1	3.35	< 0.02	< 0.02	< 10	0.66	2.5	< 3
	HAC01	2014 08 26	12.1	46.4	< 30	8.44	52.8	1.7	7.95	< 0.5	1.67	38.4	< 0.5	< 50	< 0.05	< 0.5	< 0.5	16	< 0.25	< 2.5	10.4	< 2.5	3.43	< 0.05	< 0.05	< 10	0.746	< 5	< 5
	HAC01	2014 08 27	27	53	< 30	8.28	49.2	4.2	18.5	< 2	2.5	44.6	< 2	< 200	< 0.2	< 2	< 2	19.6	< 1	< 10	35.9	< 10	3	< 0.2	< 0.2	< 10	1.51	< 20	< 20

Associated ALS files: L1500203, L1500608, L1501501, L1501554, L1502400, L1503098, L1503928, L1503934, L1503943, L1504261, L1504997, L1505933, L1506592, L1506998, L1507958, L1507977, L1508649, L1509589, L1509671, L1510298, L1510307.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] Stream criteria applies to deviation from optimum fish species temperature range. In this case, a reference to ambient is made since the background range (Minnow, 2014) is ~0-20.8°C (upper Hazeltine Creek).
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.34-6.99 NTU and <3-18 mg/L TSS.

TABLE 2a: Summary of Analytical Results for Mount Polley, Hazeltine Creek - Surface Water DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Total Metals Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																															
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.0325-0.512[d]	n/a	1 (Cr(+6))	110	11.2-17.6[d]	1,000	79.5-155.6[d]	870	n/a	1619-2369[d]	Methyl mercury analysis in progress	2,000	25-150[d]	373,000-432,000	2	0.1-3.0[d]	n/a	0.3	2,000	300	6	38.9-90[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	3.9-6.6[d]	n/a	6.4-9.4[d]	14[i]	n/a	1036-13335[d]		1,000	n/a	n/a	n/a	0.05-1.5[d]	n/a	n/a	n/a	n/a	n/a	13.1-64.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	2	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	200,000	n/a	n/a	20	n/a	5,000
HAD-1	HAD-1	2014 08 10	***356***	< 0.1	1.07	17	< 0.1	< 0.5	20	< 0.01	31,900	< 0.5	0.24	**21.5**	247	0.162	< 0.5	5,030	28.9	< 0.05	3.01	< 0.5	559	0.59	< 0.01	4,690	< 0.01	19	0.131	2.1	< 3
	HAD-1	2014 08 10	***121***	< 0.1	0.68	12.9	< 0.1	< 0.5	20	< 0.01	31,700	< 0.5	< 0.1	**6.69**	86	0.061	< 0.5	4,860	13.1	< 0.05	2.94	< 0.5	489	0.61	< 0.01	4,720	< 0.01	< 10	0.106	1.6	< 3
	HAD-1	2014 08 11	76.8	< 0.1	0.56	8.68	< 0.1	< 0.5	23	< 0.01	32,300	< 0.5	< 0.1	**4.11**	49	< 0.05	< 0.5	4,960	9.59	< 0.05	2.93	< 0.5	401	0.66	< 0.01	4,100	< 0.01	< 10	0.122	1.2	< 3
	HAD-1	2014 08 12	36.8	< 0.1	0.54	7.25	< 0.1	< 0.5	22	< 0.01	31,400	< 0.5	< 0.1	2.82	< 30	< 0.05	< 0.5	4,950	5.57	< 0.05	2.72	< 0.5	346	0.62	< 0.01	3,970	< 0.01	< 10	0.122	1.1	< 3
	HAD-1	2014 08 13	26.7	0.1	0.66	7.91	< 0.1	< 0.5	22	< 0.01	31,400	< 0.5	< 0.1	3.21	< 30	< 0.05	< 0.5	4,800	4.8	< 0.05	2.51	< 0.5	420	0.57	< 0.01	4,630	< 0.01	< 10	0.103	1.2	< 3
	HAD-1	2014 08 14	30.9	< 0.1	0.68	8.08	< 0.1	< 0.5	23	< 0.01	32,800	< 0.5	< 0.1	3.29	< 30	< 0.05	< 0.5	4,840	6.54	< 0.05	2.76	< 0.5	418	0.58	< 0.01	4,620	< 0.01	< 10	0.115	1.3	< 3
	HAD-1	2014 08 15	44.2	< 0.1	0.64	8.34	< 0.1	< 0.5	20	< 0.01	31,800	< 0.5	< 0.1	3.51	< 30	< 0.05	< 0.5	4,790	8.96	< 0.05	2.6	< 0.5	439	0.6	< 0.01	4,530	< 0.01	< 10	0.107	1.2	< 3
	HAD-1	2014 08 16	***164***	< 0.1	0.64	10.6	< 0.1	< 0.5	21	< 0.01	32,000	< 0.5	0.14	**6.79**	110	0.051	< 0.5	4,910	16.8	< 0.05	2.71	< 0.5	511	0.58	< 0.01	4,530	< 0.01	< 10	0.112	1.4	< 3
	HAD-1X	2014 08 16	***128***	< 0.1	0.63	9.87	< 0.1	< 0.5	21	< 0.01	32,300	< 0.5	0.11	**6.15**	99	< 0.05	< 0.5	4,900	16.7	< 0.05	2.68	< 0.5	516	0.57	< 0.01	4,450	< 0.01	< 10	0.108	1.4	< 3
	QA/QC RPD %		25	*	2	7	*	*	*	*	< 1	*	*	*	*	*	*	< 1	*	*	1	*	< 1	*	*	2	*	*	4	*	*
	HAD-1	2014 08 17	***121***	< 0.1	0.64	9.62	< 0.1	< 0.5	21	< 0.01	32,800	< 0.5	0.11	**6.51**	93	< 0.05	< 0.5	4,910	12.5	< 0.05	2.67	< 0.5	510	0.57	< 0.01	4,750	< 0.01	< 10	0.107	1.4	< 3
	HAD-1	2014 08 18	64.7	< 0.1	0.65	9.22	< 0.1	< 0.5	22	< 0.01	32,100	< 0.5	< 0.1	**4.34**	59	< 0.05	< 0.5	4,800	14.2	< 0.01	2.63	< 0.5	495	0.58	< 0.01	4,500	< 0.01	< 10	0.107	1.3	< 3
	HAD-1	2014 08 19	52.8	< 0.1	0.65	9.03	< 0.1	< 0.5	23	< 0.01	32,300	< 0.5	< 0.1	3.8	49	< 0.05	< 0.5	4,910	10.9	< 0.05	2.78	< 0.5	482	0.6	< 0.01	4,680	< 0.01	< 10	0.108	1.2	< 3
	HAD-1	2014 08 20	***382***	< 0.1	0.75	13.8	< 0.1	< 0.5	22	< 0.01	32,500	< 0.5	0.28	**13.9**	273	0.103	0.57	4,990	19.2	< 0.05	2.87	< 0.5	596	< 0.5	< 0.01	4,710	< 0.01	19	0.118	2	< 3
	HAD-1	2014 08 21	***288***	< 0.1	0.72	12.3	< 0.1	< 0.5	21	< 0.01	33,600	< 0.5	0.21	**11.8**	206	0.069	0.51	5,290	13.7	< 0.05	2.75	< 0.5	572	0.59	< 0.01	4,860	< 0.01	17	0.119	1.8	< 3
	HAD-1	2014 08 22	***227***	< 0.1	0.72	11.9	< 0.1	< 0.5	21	< 0.01	33,500	< 0.5	0.17	**9.07**	159	0.058	< 0.5	5,040	12.5	< 0.05	2.92	< 0.5	566	0.61	< 0.01	4,700	< 0.01	13	0.121	1.8	< 3
	HAD-1	2014 08 24	***392***	< 0.1	0.79	15.3	< 0.1	< 0.5	21	< 0.01	34,400	< 0.5	0.3	**15.1**	285	0.107	0.6	5,260	15.8	< 0.05	3	< 0.5	652	0.6	< 0.01	4,820	< 0.01	16	0.124	2	< 3
	HAD-1	2014 08 26	62.3	< 0.1	0.66	9.05	< 0.1	< 0.5	19	< 0.01	32,700	< 0.5	< 0.1	4.1	40	< 0.05	< 0.5	4,950	7.67	< 0.05	3.34	< 0.5	511	0.65	< 0.01	4,880	< 0.01	< 10	0.123	1.2	< 3
	HAD-1	2014 08 28	46.9	< 0.1	0.63	9	< 0.1	< 0.5	23	< 0.01	33,100	< 0.5	< 0.1	3.87	< 30	< 0.05	< 0.5	4,890	5.53	< 0.01	3.13	< 0.5	504	0.65	< 0.01	4,940	< 0.01	< 10	0.12	1.3	< 3
HAC01	HAC01-140824	2014 08 24	***75,200***	0.67	***47.4***	795	2.4	< 2.5	54	**1.02**	178,000	***114***	**66.2**	***1,860***	***111,000***	***42.4***	**80.5**	55,400	***2,990***	0.183	13.3	**126**	10,900	**5.8**	1.02	12,800	**0.363**	**4,290**	4.91	**265**	**285**
	HAC01-24HRS	2014 08 24	***14,400***	0.18	***16.4***	311	1.01	< 0.5	38	**0.825**	156,000	**19.3**	**20.9**	***1,360***	***20,200***	***25.3***	12.1	19,200	***1,540***	0.193	2.91	42.3	4,210	**3.25**	0.023	11,300	0.055	52	2.8	**53.9**	**84.2**
	HAC01	2014 08 25	***63,400***	0.6	***35.1***	660	2.03	< 1	43	**1.05**	146,000	***119***	**60.1**	***1,200***	***113,000***	***40.1***	**77.9**	51,500	***2,590***	0.312	8.46	**131**	9,200	**4.88**	0.865	10,500	**0.391**	**3,220**	3.82	**223**	**266**
	HAC01	2014 08 26	***73,300***	0.72	***42.1***	736	2.25	< 2.5	53	**1.04**	145,000	***132***	**67.8**	***1,490***	***118,000***	***43.5***	**81**	57,500	***2,870***	0.265	9.16	**146**	9,710	**5.31**	0.954	10,700	**0.426**	**3,910**	4.41	**266**	**300**
	HAC01	2014 08 27	***360,000***	< 2	***245***	***4,970***	***15.3***	< 10	270	**4.78**	757,000	***309***	**378**	***19,000***	***413,000***	***254***	**432**	232,000	***16,600***	***2.89***	49.8	**355**	42,100	***18.4***	**8.17**	41,300	**1.02**	**10,600**	***20.6***	**1,250**	**1,490**

Associated ALS files: L1500203, L1500608, L1501501, L1501554, L1502400, L1503098, L1503928, L1503934, L1503943, L1504261, L1504997, L1505933, L1506592, L1506998, L1507958, L1507977, L1508649, L1509589, L1509671, L1510298, L1510307.

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\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

a Laboratory detection limit out of range.

b British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.

c A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.

d Guideline varies with pH, and or Temperature or Hardness.

e Health Canada Drinking Water Guidelines, 2012.

f Guideline for Nitrate applied.

g Stream criteria applies to deviation from optimum fish species temperature range. In this case, a reference to ambient is made since the background range (Minnow, 2014) is ~0-20.8°C (upper Hazeltine Creek).

h Calculated based on an individual sample basis, not average result basis.

i Secondary chronic or chronic value, not 30 day mean.

j Guideline not applicable for site situation.

k Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.34-6.99 NTU and <3-18 mg/L TSS.

TABLE 2b: Summary of Analytical Results for Mount Polley, Hazeltine Creek - Blanks DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Total Inorganics: Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Standards																						
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8	n/a	n/a	Change of 25	n/a	n/a	700-24,500[d]	32,800	60 (Cl<2)	32,800[f]	600	1324-1538[d]	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2	n/a	n/a	Change of 5	+20% of median background	n/a	135-17,700[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	128-309[d]	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	n/a	10,000	1,000	10,000[f]	250	1,000	500	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a
HAD-FIELD BLANK	FIELD BLANK	2014 08 22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HAC01-FB	2014 08 27	< 0.5	-	***5.99***	-	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
HAD-TRAVEL BLANK	TRIP BLANK	2014 08 27	< 0.5	-	***5.65***	-	< 0.1	< 2	< 10	< 3	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]

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n/a Denotes no applicable standard.
* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED	Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD	Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED	Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD	Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.
(yellow)	Concentration greater than 5xDL

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] Stream criteria applies to deviation from optimum fish species temperature range. In this case, a reference to ambient is made since the background range (Minnow, 2014) is ~0-20.8°C (upper Hazeltine Creek).
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.34-6.99 NTU and <3-18 mg/L TSS.

TABLE 2b: Summary of Analytical Results for Mount Polley, Hazeltine Creek - Blanks DRAFT

			Dissolved Metals																											
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c,h]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)[e]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HAD-FIELD BLANK	FIELD BLANK	2014 08 22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HAC01-FB	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAD-TRAVEL BLANK	TRIP BLANK	2014 08 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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[a] Laboratory detection limit out of range.
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[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.34-6.99 NTU and <3-18 mg/L TSS.

TABLE 2b: Summary of Analytical Results for Mount Polley, Hazeltine Creek - Blanks DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Total Metals: Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																															
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.0325-0.512[d]	n/a	1 (Cr(+6))	110	11.2-17.6[d]	1,000	79.5-155.6[d]	870	n/a	1619-2369[d]	Methyl mercury analysis in progress	2,000	25-150[d]	373,000-432,000	2	0.1-3.0[d]	n/a	0.3	2,000	300	6	38.9-90[d]
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	1,000	5.3	n/a	n/a	n/a	n/a	n/a	4	3.9-6.6[d]	n/a	6.4-9.4[d]	14[i]	n/a	1036-13335[d]		1,000	n/a	n/a	n/a	0.05-1.5[d]	n/a	n/a	n/a	n/a	n/a	13.1-64.5[d]
BCWQG Drinking Water (DW)[b,c]			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	2	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)[e]			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	n/a	50	1	n/a	n/a	n/a	10	n/a	200,000	n/a	n/a	20	n/a	5,000
HAD-FIELD BLANK	FIELD BLANK	2014 08 22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-
	HAC01-FB	2014 08 27	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.01	< 0.05	< 0.5	< 50	< 0.5	< 0.01	< 50	< 0.01	< 10	< 0.01	< 1	< 3
HAD-TRAVEL BLANK	TRIP BLANK	2014 08 27	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05	< 0.5	< 100	< 0.05	< 0.01	< 0.05	< 0.5	< 50	< 0.5	< 0.01	< 50	< 0.01	< 10	< 0.01	< 1	< 3

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SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

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SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

Concentration greater than 5xDL

[a] Laboratory detection limit out of range.
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[g] Stream criteria applies to deviation from optimum fish species temperature range. In this case, a reference to ambient is made since the background range (Minnow, 2014) is ~0-20.8°C (upper Hazeltine Creek).
[h] Calculated based on an individual sample basis, not average result basis.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.34-6.99 NTU and <3-18 mg/L TSS.

TABLE 3a: Summary of Analytical Results for Mount Polley, Polley Lake - Surface Water DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Microbiological Tests: Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Standards																								
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8[k]	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	700-5,680[d]	32,800	60 (Cl<2)	32,800[f]	600	1264-1361[d]	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2[k]	n/a	n/a	Change of 5[k]	+20% of median background	n/a	n/a	n/a	135-1,090[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	309[d]	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	10,000	1,000	10,000[f]	250	1,500	500	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a
POL-1	POL-1	2014 08 07	97.1	-	**9.06**	-	2.52	187	127	< 3	6.09	-	-	0.389	< 5	6.6	< 1	-	< 0.5	60	26.3	75.4	< 0.001	**0.0044**
POL-2	POL-2	2014 08 07	95.2	-	**9.01**	-	3.96	184	126	< 3	6.81	> 201	**> 201**	0.402	< 5	< 5	< 1	-	< 0.5	61	27.6	70.8	< 0.001	0.005
	POL-2(13:18)	2014 08 08	96.7	**9.02**	**8.86**	20.4	4.04	192	139	6	6.86	> 2,420	**365**	0.376	5.8	< 5	< 1	-	< 0.5	61	27.2	72.8	0.0011	0.0056
	POL-2(16:54)	2014 08 08	98.1	**8.87**	**8.68**	21	3.4	193	142	< 3	7.44	-	-	0.45	< 5	< 5	< 1	-	< 0.5	64	27.2	70.5	0.0017	0.0077
	POL-2	2014 08 09	96.7	-	**8.87**	-	4.82	194	145	4.3	7.01	-	-	0.381	< 5	< 5	< 1	-	< 0.5	61	27.8	71.2	< 0.001	0.0057
	POL-2X	2014 08 09	97.2	-	**8.88**	-	4.13	195	144	5.9	6.97	-	-	0.372	< 5	< 5	< 1	-	< 0.5	64	28	71.6	< 0.001	0.0053
	QA/QC RPD %		< 1	-	< 1	-	15	< 1	< 1	*	< 1	-	-	2	*	*	*	-	*	*	< 1	< 1	*	*
	POL-2	2014 08 11	99.6	**8.55**	8.16	23.0	3.59	203	143	< 3	7.57	-	-	0.56	< 5	< 5	< 1	-	< 0.5	68	27.6	75.3	0.0011	0.0079
	POL-2	2014 08 12	94.8	**8.99**	**8.58**	20.6	1.58	198	135	< 3	6.29	-	-	0.355	< 5	< 5	< 1	-	< 0.5	69	27.1	73.4	< 0.001	0.0061
	POL-2	2014 08 13	96.4	**8.98**	**8.65**	21.4	1.18	194	132	< 3	6.3	-	-	0.512	7.6	< 5	< 1	-	< 0.5	68	27.2	73.7	< 0.001	0.0053
	POL-2	2014 08 14	99.8	**8.87**	**8.53**	22.5	1.66	200	130	< 3	6.69	-	-	0.373	5	< 5	< 1	-	< 0.5	63	27.4	75.7	< 0.001	**0.0049**
	POL-2	2014 08 15	99.9	**8.76**	8.26	21.8	1.07	202	137	< 3	6.6	-	-	0.345	< 5	< 5	< 1	< 5.1	< 0.5	81	27.4	75.5	< 0.001	0.0064
	POL-2	2014 08 16	100	-	8.28	-	1.7	203	142	< 3	6.57	-	-	0.339	< 5	< 5	< 1	< 5.1	< 0.5	68	27.3	76	< 0.001	0.0058
	POL-2	2014 08 17	95.9	**8.83**	8.18	20.1	3.05	203	93	4.8	6.48	-	-	0.328	< 5	< 5	< 1	-	< 0.5	68	27.5	74.9	< 0.001	0.0061
	POL-2	2014 08 18	97.5	**8.66**	8.33	20.7	1.38	200	139	< 3	7.38	-	-	0.389	6.1	< 5	< 1	-	< 0.5	67	27.4	75.7	< 0.001	0.006
	POL-2	2014 08 19	102	8.24	8.09	20.4	3.02	198	133	5.2	6.84	-	-	0.505	5.4	< 5	< 1	-	< 0.5	74	26.7	74.9	< 0.001	0.0066
	POL-2	2014 08 20	102	8.39	8.17	20.4	4.8	201	110	5.6	6.43	-	-	0.345	< 5	< 5	< 1	-	< 0.5	67	27	75.7	0.0011	0.0063
	POL-2	2014 08 21	100	-	8.17	-	7.9	200	141	5.6	6.39	-	-	0.333	< 5	< 5	< 1	-	< 0.5	67	27.3	74	< 0.001	0.0052
POL-3	POL-3(12:15)	2014 08 08	99.8	**9.02**	**8.93**	19	1.66	194	134	3.1	6	> 2,420	**10**	0.362	5.2	< 5	< 1	-	< 0.5	61	26.5	75.5	0.0011	**0.0048**
	POL-3(12:34)	2014 08 08	100	**8.85**	**8.79**	18.8	3.03	196	131	7.5	6.06	-	-	0.333	< 5	< 5	< 1	-	< 0.5	60	26.3	77.1	0.001	0.0064
	POL-3	2014 08 09	97.8	-	**8.7**	-	2.98	198	139	5.5	6.49	-	-	0.404	< 5	< 5	< 1	-	< 0.5	60	26.5	73.8	0.0058	**0.0117**
	POL-3	2014 08 11	107	-	7.89	-	2.91	224	162	5.9	8.27	-	-	0.835	15	< 5	< 1	-	< 0.5	64	25.8	87.6	0.0476	**0.08**
	POL-3	2014 08 12	96.3	**8.85**	8.39	21.7	1.15	200	142	< 3	6.3	-	-	0.406	6.4	< 5	< 1	-	< 0.5	65	27.2	73.7	< 0.001	0.0068
	POL-3	2014 08 13	97.9	**8.94**	**8.56**	21.7	1.69	197	136	3.5	6.65	-	-	0.402	10.7	< 5	< 1	-	< 0.5	66	27	75.2	0.0021	0.0069
	POL-3	2014 08 14	98.3	**8.89**	**8.57**	22.5	3.36	200	130	< 3	6.77	-	-	0.363	7.2	5.5	< 1	-	< 0.5	64	27.2	74.9	< 0.001	0.005
	POL-3	2014 08 15	98.5	8.12	8.38	21.7	3.68	199	133	< 3	6.31	-	-	0.359	< 5	< 5	< 1	< 5.1	< 0.5	80	27.1	74.1	< 0.001	0.0056
	POL-3	2014 08 16	99.7	-	**5.64**	-	0.62	200	139	3.7	6.25	-	-	0.333	< 5	< 5	< 1	< 5.1	< 0.5	68	27.1	73.3	< 0.001	0.006
	POL-3	2014 08 17	99.6	**8.93**	8.27	19.7	1.04	202	135	3.5	6.38	-	-	0.365	< 5	< 5	< 1	-	< 0.5	68	27.4	74.7	< 0.001	0.0052
	POL-3	2014 08 18	99.6	**8.84**	**8.52**	19.8	0.89	200	117	< 3	7.15	-	-	0.386	7.3	< 5	< 1	-	< 0.5	76	27.5	74.5	< 0.001	0.0051
	POL-3X	2014 08 18	99.1	**8.84**	8.49	19.8	0.85	201	96	< 3	7.06	-	-	0.381	7	< 5	< 1	-	< 0.5	67	27.5	75.3	< 0.001	0.006
	QA/QC RPD %		< 1	0	< 1	0	5	< 1	20	*	1	-	-	1	*	*	*	-	*	*	0	1	*	*
	POL-3	2014 08 19	101	**8.53**	8.32	20.4	0.82	199	138	< 3	6.4	-	-	0.42	6.3	< 5	< 1	-	< 0.5	77	26.9	74.7	< 0.001	0.006
	POL-3	2014 08 20	102	**8.53**	8.23	20.5	0.75	201	110	< 3	6.38	-	-	0.351	8.3	< 5	< 1	-	< 0.5	66	27.3	75.9	0.0012	0.0067
	POL-3X	2014 08 20	100	**8.53**	8.23	20.5	0.66	204	145	< 3	6.28	-	-	0.347	9	< 5	< 1	-	< 0.5	64	27.1	77.2	0.0011	0.0069
	QA/QC RPD %		2	0	0	0	13	2	28	*	2	-	-	1	*	*	*	-	*	*	< 1	2	*	*
	POL-3	2014 08 21	100	-	8.43	-	0.85	202	135	< 3	5.99	-	-	0.384	8.2	< 5	< 1	-	< 0.5	66	27.9	76	< 0.001	**0.0045**
	POL-3	2014 08 27	105	**8.74**	8.3	19.4	0.93	209	135	< 3	6.92	-	-	0.376	< 5	< 5	< 1	-	< 0.5	70	28.5	77.2	0.0013	0.0059
POL-4	POL-4(11:03)	2014 08 08	100	**9.09**	**8.91**	18.2	2.39	194	136	4.6	6.58	-	-	0.337	< 5	< 5	< 1	-	< 0.5	61	26.4	75.6	0.001	0.0053
	POL-4(11:23)	2014 08 08	100	**9.06**	**8.89**	18.2	2.53	192	132	5.5	6.14	> 2,420	**28**	0.33	< 5	< 5	< 1	-	< 0.5	60	26.3	75.9	0.0021	0.0054
	POL-4	2014 08 09	99.2	-	**8.78**	-	2.7	199	139	3.1	7.29	-	-	0.44	< 5	< 5	< 1	-	< 0.5	60	26.6	75	< 0.001	0.0054
	POL-4	2014 08 11	83.9	-	**8.56**	-	2.25	198	116	< 3	6.48	-	-	0.404	< 5	6.1	< 1	-	< 0.5	72	26.9	73.6	< 0.001	0.0063
	POL-4	2014 08 12	94.6	**8.90**	**8.52**	22.0	1.4	199	140	< 3	6.24	-	-	0.397	< 5	< 5	< 1	-	< 0.5	67	27.1	73.4	< 0.001	0.0056
	POL-4X	2014 08 12	96.7	**8.90**	**8.52**	22.0	1.08	200	141	< 3	6.17	-	-	0.393	< 5	< 5	< 1	-	< 0.5	64	27.2	74.8	< 0.001	0.0056
	QA/QC RPD %		2	*	0	*	26	< 1	< 1	*	1	-	-	1	*	*	*	-	*	*	< 1	2	*	*
	POL-4	2014 08 13	98.1	**8.83**	**8.62**	21.1	1.09	196	137	< 3	6.4	-	-	0.373	5.4	6	< 1	-	< 0.5	72	27.2	75.5	< 0.001	0.006
	POL-4	2014 08 14	97.9	**8.99**	**8.69**	22.4	1.09	199	134	< 3	6.53	-	-	0.34	6	< 5	< 1	-	< 0.5	64	27.2	75	< 0.001	**0.0048**
	POL-4	2014 08 15	97.8	7.72	8.41	20.7	3.37	200	122	< 3	6.26	-	-	0.468	< 5	< 5	< 1	< 5.1	< 0.5	85	27.2	75.4	< 0.001	0.0059
	POL-4	2014 08 16	99.5	-	8.28	-	0.66	201	137	< 3	6.44	-	-	0.345	8.6	< 5	< 1	< 5.1	< 0.5	65	26.9	75.2	< 0.001	0.0058
	POL-4	2014 08 17	101	**8.84**	8.26	19.4	0.87	204	90	< 3	6.5	-	-	0.342	6.1	< 5	< 1	-	< 0.5	68	27.4	76.5	< 0.001	0.006
	POL-4	2014 08 18	99.5	**8.82**	**8.52**	19.5	1.02	200	139	< 3	6.77	-	-	0.404	< 5	15.4	< 1	-	< 0.5	76	27.6	76	< 0.001	**0.0049**
	POL-4	2014 08 19	103	8.40	8.23	20	1.11	201	134	< 3	6.83	-	-	0.472	10.3	5.9	< 1	-	< 0.5	76	27.1	78.1	< 0.001	0.0063
	POL-4	2014 08 20	103	**8.59**	8.26	20.4	0.66	204	140	< 3	6.44	-	-	0.339	5.2	< 5	< 1	-	< 0.5	67	27.3	77.5	0.0012	0.006
	POL-4	2014 08 21	101	-	8.5	-	0.71	204	161	< 3	6.05	-	-	0.335	6	7.8	< 1	-	< 0.5	67	28	76	< 0.001	**0.0041**
	POL-4	2014 08 27	106	**8.67**	8.21	19.2	1.01	209	131	< 3	6.94	-	-	0.349	< 5	< 5	< 1	-	< 0.5	73	28.4	76.4	0.0022	0.0071

Associated ALS files: L1499194, L1499709, L1499935, L1499939, L1501501, L1501541, L1502406, L1503046, L1503928, L1503934, L1503943, L1504261, L1504997, L1505933, L1506592, L1509578.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.54-2.73 NTU and <3-5.5 mg/L TSS.

TABLE 3a: Summary of Analytical Results for Mount Polley, Polley Lake - Surface Water DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Metals: Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
POL-1	POL-1	2014 08 07	6.3	31.1	< 30	4.72	0.377	0.341	4.24	< 0.1	0.55	6.36	< 0.1	19	< 0.01	< 0.5	< 0.1	1.67	< 0.05	< 0.5	< 0.05	2.2	< 0.5	0.56	< 0.01	< 0.01	< 10	0.102	1.1	< 3
POL-2	POL-2	2014 08 07	12.5	30.2	< 30	4.78	3.86	0.483	4.44	< 0.1	0.61	7.72	< 0.1	20	< 0.01	< 0.5	< 0.1	2.77	< 0.05	< 0.5	< 0.05	2.58	< 0.5	0.55	< 0.01	< 0.01	< 10	0.101	1.1	< 3
	POL-2(13:18)	2014 08 08	13.9	30.7	< 30	4.87	11.7	0.527	4.77	< 0.1	0.65	9.11	< 0.1	20	< 0.01	< 0.5	< 0.1	3.06	< 0.05	< 0.5	-	2.45	< 0.5	0.59	< 0.01	< 0.01	< 10	0.1	1.1	< 3
	POL-2(16:54)	2014 08 08	11.4	31.3	< 30	4.83	7.95	0.531	4.63	< 0.1	0.63	9.28	< 0.1	18	< 0.01	< 0.5	< 0.1	2.86	< 0.05	< 0.5	-	2.46	< 0.5	0.57	< 0.01	< 0.01	< 10	0.115	1.2	< 3
	POL-2	2014 08 09	14.8	30.9	< 30	4.76	0.815	0.466	4.52	< 0.1	0.61	8.3	< 0.1	20	< 0.01	< 0.5	< 0.1	3.19	< 0.05	< 0.5	-	2.67	< 0.5	0.55	< 0.01	< 0.01	< 10	0.143	1.2	< 3
	POL-2X	2014 08 09	15.2	31	< 30	4.8	0.728	0.474	4.63	< 0.1	0.6	8.25	< 0.1	20	< 0.01	< 0.5	< 0.1	3.21	< 0.05	< 0.5	-	2.77	< 0.5	0.56	< 0.01	< 0.01	< 10	0.144	1.2	< 3
	QA/QC RPD %		*	< 1	*	< 1	11	2	2	*	2	< 1	*	*	*	*	*	< 1	*	*	-	4	*	*	*	*	*	< 1	*	*
	POL-2	2014 08 11	12.1	31.9	< 30	4.85	22.4	0.708	4.66	< 0.1	0.66	9.62	< 0.1	20	< 0.01	< 0.5	< 0.1	3.16	< 0.05	0.58	-	2.49	< 0.5	0.57	< 0.01	< 0.01	< 10	0.091	1.1	< 3
	POL-2	2014 08 12	10.5	30.4	< 30	4.61	0.361	0.422	4.54	< 0.1	0.58	7.3	< 0.1	19	< 0.01	< 0.5	< 0.1	2.18	< 0.05	< 0.5	-	2.38	< 0.5	0.55	< 0.01	< 0.01	< 10	0.096	1.2	< 3
	POL-2	2014 08 13	10.3	30.7	< 30	4.8	0.487	0.422	4.43	< 0.1	0.54	8.04	< 0.1	21	< 0.01	< 0.5	< 0.1	2.3	< 0.05	< 0.5	-	2.53	< 0.5	0.55	< 0.01	< 0.01	< 10	0.102	1.1	< 3
	POL-2	2014 08 14	9.5	32.1	< 30	4.8	0.501	0.41	4.48	< 0.1	0.61	7.48	< 0.1	21	< 0.01	< 0.5	< 0.1	2.25	< 0.05	< 0.5	-	2.57	< 0.5	0.53	< 0.01	< 0.01	< 10	0.109	1.1	< 3
	POL-2	2014 08 15	10.2	32	< 30	4.87	3.41	0.435	4.47	< 0.1	0.58	7.58	< 0.1	19	< 0.01	< 0.5	< 0.1	2.34	< 0.05	< 0.5	-	2.53	< 0.5	0.57	< 0.01	< 0.01	< 10	0.099	1.1	< 3
	POL-2	2014 08 16	9	32.2	< 30	4.8	2.87	0.45	4.51	< 0.1	0.61	7.66	< 0.1	18	< 0.01	< 0.5	< 0.1	2.3	< 0.05	< 0.5	-	2.51	< 0.5	0.6	< 0.01	< 0.01	< 10	0.097	1.1	< 3
	POL-2	2014 08 17	11.9	30.8	< 30	4.63	0.815	0.468	4.68	< 0.1	0.61	7.75	< 0.1	20	< 0.01	< 0.5	< 0.1	2.53	< 0.05	< 0.5	-	2.65	< 0.5	0.55	< 0.01	< 0.01	< 10	0.118	1.2	< 3
	POL-2	2014 08 18	11.7	31.3	< 30	4.69	4.93	0.46	4.46	< 0.1	0.55	8.1	< 0.1	19	< 0.01	< 0.5	< 0.1	2.33	< 0.05	< 0.5	-	2.56	< 0.5	0.54	< 0.01	< 0.01	< 10	0.105	1.1	< 3
	POL-2	2014 08 19	10	32.8	< 30	4.86	31.2	0.529	4.38	< 0.1	0.61	9.63	< 0.1	20	< 0.01	< 0.5	< 0.1	2.34	< 0.05	< 0.5	-	2.56	< 0.5	0.57	< 0.01	< 0.01	< 10	0.1	1.1	< 3
	POL-2	2014 08 20	12.5	32.7	< 30	4.92	8.18	0.502	4.6	< 0.1	0.62	8.88	< 0.1	21	< 0.01	< 0.5	< 0.1	2.99	< 0.05	< 0.5	-	2.72	< 0.5	0.62	< 0.01	< 0.01	< 10	0.105	1.1	< 3
	POL-2	2014 08 21	16.6	32.1	< 30	4.88	1.44	0.482	4.61	< 0.1	0.59	8.59	< 0.1	19	< 0.01	< 0.5	< 0.1	3.41	< 0.05	< 0.5	-	2.64	< 0.5	< 0.5	< 0.01	< 0.01	< 10	0.105	1.1	< 3
POL-3	POL-3(12:15)	2014 08 08	7.5	32	< 30	4.82	3.02	0.404	4.53	< 0.1	0.6	6.96	< 0.1	16	< 0.01	< 0.5	< 0.1	2.12	< 0.05	< 0.5	-	2.23	< 0.5	0.59	< 0.01	< 0.01	< 10	0.095	1.1	< 3
	POL-3(12:34)	2014 08 08	7.1	32.2	< 30	4.82	6.39	0.505	4.51	< 0.1	0.61	7.12	< 0.1	19	< 0.01	< 0.5	< 0.1	2.17	< 0.05	< 0.5	-	2.19	< 0.5	0.52	< 0.01	< 0.01	< 10	0.094	1.1	< 3
	POL-3	2014 08 09	7.4	31.4	< 30	4.71	0.583	0.419	4.37	< 0.1	0.65	6.84	< 0.1	20	< 0.01	< 0.5	< 0.1	1.82	< 0.05	< 0.5	-	2.36	< 0.5	0.51	< 0.01	< 0.01	< 10	0.097	1.1	< 3
	POL-3	2014 08 11	5.9	34.6	< 30	5.04	73	1.46	4.61	< 0.1	0.78	10.7	< 0.1	21	0.015	< 0.5	< 0.1	2.74	< 0.05	0.52	-	2.13	< 0.5	0.52	< 0.01	< 0.01	< 10	0.033	< 1	< 3
	POL-3	2014 08 12	8.8	30.9	< 30	4.67	0.327	0.481	4.59	< 0.1	0.63	7.03	< 0.1	19	< 0.01	< 0.5	< 0.1	2.15	< 0.05	0.51	-	2.4	< 0.5	0.53	< 0.01	< 0.01	< 10	0.096	1.1	< 3
	POL-3	2014 08 13	10.3	31.3	< 30	4.79	0.408	0.451	4.48	< 0.1	0.58	7.42	< 0.1	20	< 0.01	< 0.5	< 0.1	2.25	< 0.05	< 0.5	-	2.48	< 0.5	0.55	< 0.01	< 0.01	< 10	0.104	1.1	< 3
	POL-3	2014 08 14	9.3	31.5	< 30	4.78	0.448	0.428	4.45	< 0.1	0.65	7.2	< 0.1	21	< 0.01	< 0.5	< 0.1	2.16	< 0.05	< 0.5	-	2.5	< 0.5	0.57	< 0.01	< 0.01	< 10	0.107	1.2	< 3
	POL-3	2014 08 15	9.8	31.5	< 30	4.83	2.06	0.415	4.52	< 0.1	0.59	7.21	< 0.1	19	< 0.01	< 0.5	< 0.1	2.21	< 0.05	< 0.5	-	2.6	< 0.5	0.56	< 0.01	< 0.01	< 10	0.093	1.1	< 3
	POL-3	2014 08 16	8.4	31.9	< 30	4.85	1.77	0.419	4.27	< 0.1	0.61	7.08	< 0.1	18	< 0.01	< 0.5	< 0.1	2.15	< 0.05	< 0.5	-	2.44	< 0.5	0.57	< 0.01	< 0.01	< 10	0.094	1.1	< 3
	POL-3	2014 08 17	8.9	31.9	< 30	4.82	0.345	0.447	4.73	< 0.1	0.6	7.21	< 0.1	20	< 0.01	< 0.5	< 0.1	2.12	< 0.05	< 0.5	-	2.65	< 0.5	0.57	< 0.01	< 0.01	< 10	0.109	1.1	< 3
	POL-3	2014 08 18	9.2	32	< 30	4.79	0.527	0.443	4.52	< 0.1	0.61	7.46	< 0.1	20	< 0.01	< 0.5	< 0.1	2.06	< 0.05	< 0.5	-	2.65	< 0.5	0.55	< 0.01	< 0.01	< 10	0.111	1.1	< 3
	POL-3X	2014 08 18	9	31.9	< 30	4.71	0.79	0.441	4.44	< 0.1	0.57	7.37	< 0.1	21	< 0.01	< 0.5	< 0.1	2.06	< 0.05	< 0.5	-	2.6	< 0.5	0.57	< 0.01	< 0.01	< 10	0.107	1.1	< 3
	QA/QC RPD %		*	< 1	*	2	40	< 1	2	*	7	1	*	*	*	*	*	*	*	*	-	2	*	*	*	*	*	4	*	*
	POL-3	2014 08 19	10.6	32.4	< 30	4.83	2.62	0.452	4.43	< 0.1	0.58	7.49	< 0.1	21	< 0.01	< 0.5	< 0.1	2.25	< 0.05	< 0.5	-	2.57	< 0.5	0.61	< 0.01	< 0.01	< 10	0.099	1.1	< 3
	POL-3	2014 08 20	9.4	32.9	< 30	4.82	3.96	0.53	4.59	< 0.1	0.65	7.81	< 0.1	20	< 0.01	< 0.5	< 0.1	2.32	< 0.05	< 0.5	-	2.82	< 0.5	0.64	< 0.01	< 0.01	< 10	0.109	1.1	< 3
	POL-3X	2014 08 20	8.7	32.2	< 30	4.81	3.71	0.506	4.47	< 0.1	0.61	7.84	< 0.1	19	< 0.01	< 0.5	< 0.1	2.17	< 0.05	< 0.5	-	2.76	< 0.5	0.63	< 0.01	< 0.01	< 10	0.11	1.1	< 3
	QA/QC RPD %		*	2	*	< 1	7	5	3	*	6	< 1	*	*	*	*	*	*	*	*	-	2	*	*	*	*	*	< 1	*	*
	POL-3	2014 08 21	8.7	32.1	< 30	4.83	2.35	0.497	4.66	< 0.1	0.59	7.88	< 0.1	23	< 0.01	< 0.5	< 0.1	2.21	< 0.05	< 0.5	-	2.92	< 0.5	0.57	< 0.01	< 0.01	< 10	0.096	1.1	< 3
	POL-3	2014 08 27	9.6	33.8	< 30	5.02	8.29	0.567	4.64	< 0.1	0.59	8.35	< 0.1	18	< 0.01	< 0.5	< 0.1	2.49	< 0.05	< 0.5	-	2.98	< 0.5	0.61	< 0.01	< 0.01	< 10	0.112	1.1	< 3
POL-4	POL-4(11:03)	2014 08 08	7.9	32.2	< 30	4.84	2.3	0.398	4.52	< 0.1	0.6	6.85	< 0.1	19	< 0.01	< 0.5	< 0.1	2.19	< 0.05	< 0.5	-	2.27	< 0.5	0.58	< 0.01	< 0.01	< 10	0.101	1.1	< 3
	POL-4(11:23)	2014 08 08	8.5	32.2	< 30	4.85	3.36	0.404	4.48	< 0.1	0.6	6.58	< 0.1	19	< 0.01	< 0.5	< 0.1	2.24	< 0.05	< 0.5	-	2.25	< 0.5	0.58	< 0.01	< 0.01	< 10	0.098	1.1	< 3
	POL-4	2014 08 09	6.4	31.9	< 30	4.72	0.481	0.413	4.31	< 0.1	0.57	6.88	< 0.1	20	< 0.01	< 0.5	< 0.1	1.77	< 0.05	< 0.5	-	2.34	< 0.5	0.54	< 0.01	< 0.01	< 10	0.112	1.1	< 3
	POL-4	2014 08 11	10.1	26.9	< 30	4.06	2.74	0.429	4.74	< 0.1	0.59	7.41	< 0.1	19	< 0.01	< 0.5	< 0.1	2.55	< 0.05	0.56	-	2.35	< 0.5	0.61	< 0.01	< 0.01	< 10	0.092	1.2	< 3
	POL-4	2014 08 12	10.2	30.3	< 30	4.58	0.324	0.448	4.78	< 0.1	0.7	7.54	< 0.1	19	< 0.01	< 0.5	< 0.1	2.28	< 0.05	0.51	-	2.34	< 0.5	0.55	< 0.01	< 0.01	< 10	0.099	1.3	< 3
	POL-4X	2014 08 12	9.7	30.9	< 30	4.71	0.329	0.383	4.54	< 0.1	0.58	7.06	< 0.1	21	< 0.01	< 0.5	< 0.1	2.27	< 0.05	< 0.5	-	2.52	< 0.5	0.57	< 0.01	< 0.01	< 10	0.106	1.1	< 3
	QA/QC RPD %		*	2	*	3	2	16	5	*	19	7	*	*	*	*	*	*	*	*	-	7	*	*	*	*	*	7	*	*
	POL-4	2014 08 13	12.4	31	< 30	4.99	2.76	0.44	4.41	< 0.1	0.6	7.56	< 0.1	22	< 0.01	< 0.5	< 0.1	2.19	< 0.05	< 0.5	-	2.51	< 0.5	0.59	< 0.01	< 0.01	< 10	0.105	1.1	< 3
	POL-4	2014 08 14	11	31.4	< 30	4.74	0.853	0.393	4.49	< 0.1	0.62	7.11	< 0.1	22	< 0.01	< 0.5	< 0.1	2.19	< 0.05	< 0.5	-	2.52	< 0.5	0.53	< 0.01	< 0.01	< 10	0.109	1.2	< 3
	POL-4	2014 08 15	8.8	31.3	< 30	4.77	2.03	0.413	4.48	< 0.1	0.6	6.85	< 0.1	19	< 0.01	< 0.5	< 0.1	2.2	< 0.05	< 0.5	-	2.53	< 0.5	0.62	< 0.01	< 0.01	< 10	0.097	1.1	< 3
	POL-4	2014 08 16	8.5	31.9	< 30	4.85	2.94	0.435	4.32	< 0.1	0.58	7.13	< 0.1	17	< 0.01	< 0.5	< 0.1	2.13	< 0.05	< 0.5	-	2.4	< 0.5	0.58	< 0.01	< 0.01	< 10	0.094	1.1	< 3
	POL-4	2014 08 17	8.9	32.5	< 30	4.84	2.59	0.453	4.58	< 0.1	0.61	7.2	< 0.1	21	< 0.01	< 0.5	< 0.1	2.76	< 0.05	< 0.5	-	2.67	< 0.5	0.57	< 0.01	< 0.01	< 10	0.102	1.1	< 3
	POL-4	2014 08 18	10.3	32	< 30	4.74	0.493	0.441	4.59	< 0.1	0.61	7.45	< 0.1	20	< 0.01	< 0.5	< 0.1	2.12	< 0.05	< 0.5	-	2.64	< 0.5	0.58	< 0.01	< 0.01	< 10	0.107	1.2	< 3
	POL-4	2014 08 19	8.7	33.2	< 30	4.94	22.4	0.576	4.57	< 0.1	0.63	7.76	< 0.1	21	< 0.01	< 0.5	< 0.1	2.19	< 0.05	< 0.5	-	2.87	< 0.5	0.62	< 0.01	< 0.01	< 10	0.104	1.1	< 3
	POL-4	2014 08 20	8.7	33.3	< 30	4.89	6.36	0.53	4.67	< 0.1	0.66	7.88	< 0.1	18	< 0.01	< 0.5	< 0.1	2.3	< 0.05	< 0.5	-	2.76	< 0.5	0.63	< 0.01	< 0.01	< 10	0.105	1.1	< 3
	POL-4	2014 08 21	8.8	32.4	< 30	4.82	1.64	0.439	4.67	< 0.1	0.62	7.38	< 0.1	20	< 0.01	< 0.5	< 0.1	2.16	< 0.05	< 0.5	-	2.87	< 0.5	0.56	< 0.01	< 0.01	< 10	0.098	1.1	< 3
	POL-4	2014 08 27	9.3	34	< 30	5.01	7.65	0.528	4.74	< 0.1	0.62	7.96	< 0.1	18	< 0.01	< 0.5	< 0.1	2.51	< 0.05	< 0.5	-	2.93	< 0.5	0.62	0.013	< 0.01	< 10	0.111	1.1	< 3

Associated ALS files: L1499194, L1499709, L1499935, L1499939, L1501501, L1501541, L1502406, L1503046, L1503928, L1503934, L1503943, L1504261, L1504997, L1505933, L1506592, L1509578.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.54-2.73 NTU and <3-5.5 mg/L TSS.

TABLE 3a: Summary of Analytical Results for Mount Polley, Polley Lake - Surface Water DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
			Total Metals																												
BC Standards																															
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.0285-0.0351[d]	n/a	1 (Cr(+6))	110	9.9-12.1[d]	1,000	65.3-89[d]	870	1465-1719[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	0.1-3.0[d]	n/a	0.3	n/a	2,000	300	6	33-45.8[d]
BCWQG Aquatic Life (30day) (AW)[b,c]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	3.4-4.3[d]	n/a	5.9-6.8[d]	14[i]	974-1076[d]		1,000	n/a	n/a	n/a	0.05-1.5[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5-20.3[d]
BCWQG Drinking Water (DW)			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50	n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10	n/a	50	1	n/a	n/a	n/a	10	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
POL-1	POL-1	2014 08 07	53.7	< 0.1	0.57	6.91	< 0.1	< 0.5	19	< 0.01	30,900	< 0.5	< 0.1	3.16	34	< 0.05	< 0.5	8.21	< 0.05	2.17	< 0.5	355	0.53	< 0.01	4,060	< 0.01	< 0.1	< 10	0.098	1.2	< 3
POL-2	POL-2	2014 08 07	***139***	< 0.1	0.63	9.62	< 0.1	< 0.5	19	< 0.01	29,900	< 0.5	0.1	**6.31**	86	0.054	< 0.5	11.7	< 0.05	2.51	< 0.5	519	0.56	< 0.01	4,360	< 0.01	< 0.1	< 10	0.107	1.5	< 3
	POL-2(13:18)	2014 08 08	***176***	< 0.1	0.72	11.5	< 0.1	< 0.5	23	< 0.01	31,500	< 0.5	0.14	**6.88**	127	0.063	< 0.5	19.6	< 0.05	2.69	< 0.5	570	0.64	< 0.01	4,770	< 0.01	< 0.1	11	0.114	1.6	< 3
	POL-2(16:54)	2014 08 08	***114***	< 0.1	0.65	11	< 0.1	< 0.5	20	< 0.01	29,600	< 0.5	< 0.1	**5.29**	89	< 0.05	< 0.5	15.3	< 0.05	2.5	< 0.5	582	0.55	< 0.01	4,350	< 0.01	< 0.1	< 10	0.124	1.4	< 3
	POL-2	2014 08 09	***237***	< 0.1	0.72	11.4	< 0.1	< 0.5	21	< 0.01	31,800	< 0.5	0.18	**9.6**	160	0.068	< 0.5	13.7	< 0.05	2.91	< 0.5	551	0.56	< 0.01	4,730	< 0.01	< 0.1	13	0.163	1.9	< 3
	POL-2X	2014 08 09	***241***	< 0.1	0.72	11.7	< 0.1	< 0.5	21	< 0.01	31,700	< 0.5	0.18	**9.24**	175	0.083	< 0.5	14.5	< 0.05	2.78	< 0.5	557	0.59	< 0.01	4,650	< 0.01	< 0.1	13	0.157	1.8	< 3
	QA/QC RPD %		2	*	0	3	*	*	*	*	< 1	*	*	*	9	*	*	*	*	5	*	1	*	*	2	*	*	*	4	*	*
	POL-2	2014 08 11	67.5	< 0.1	0.66	10	< 0.1	< 0.5	19	< 0.01	30,400	< 0.5	< 0.1	**4.8**	47	< 0.05	< 0.5	24.3	< 0.05	2.64	< 0.5	696	0.52	< 0.01	4,550	< 0.01	< 0.1	< 10	0.1	1.3	< 3
	POL-2	2014 08 12	38.7	< 0.1	0.69	7.73	< 0.1	< 0.5	19	< 0.01	31,000	< 0.5	< 0.1	3.15	< 30	< 0.05	< 0.5	7.98	< 0.05	2.57	< 0.5	440	0.56	< 0.01	4,610	< 0.01	< 0.1	< 10	0.104	1.3	< 3
	POL-2	2014 08 13	35.3	< 0.1	0.62	7.68	< 0.1	< 0.5	21	< 0.01	31,100	< 0.5	< 0.1	3.36	< 30	< 0.05	< 0.5	6.64	< 0.05	2.48	< 0.5	446	0.6	< 0.01	4,430	< 0.01	< 0.1	< 10	0.107	1.3	3.1
	POL-2	2014 08 14	35.4	< 0.1	0.66	7.97	< 0.1	< 0.5	22	< 0.01	32,400	< 0.5	< 0.1	3.26	< 30	< 0.05	< 0.5	6.84	< 0.05	2.6	< 0.5	458	0.56	< 0.01	4,590	< 0.01	< 0.1	< 10	0.112	1.4	< 3
	POL-2	2014 08 15	57.9	< 0.1	0.64	7.98	< 0.1	< 0.5	20	< 0.01	31,600	< 0.5	< 0.1	3.73	38	< 0.05	< 0.5	7.94	-	2.64	< 0.5	453	0.59	< 0.01	4,580	< 0.01	< 0.1	< 10	0.104	1.3	< 3
	POL-2	2014 08 16	50.8	< 0.1	0.63	8.32	< 0.1	< 0.5	21	< 0.01	32,000	< 0.5	< 0.1	3.57	37	< 0.05	< 0.5	9.47	-	2.57	< 0.5	470	0.57	< 0.01	4,550	< 0.01	< 0.1	< 10	0.106	1.2	< 3
	POL-2	2014 08 17	99.7	< 0.1	0.65	9.09	< 0.1	< 0.5	21	< 0.01	31,600	< 0.5	< 0.1	**5.28**	83	< 0.05	< 0.5	9.39	-	2.79	< 0.5	496	0.58	< 0.01	4,700	< 0.01	< 0.1	< 10	0.127	1.4	< 3
	POL-2	2014 08 18	58.3	< 0.1	0.61	8.97	< 0.1	< 0.5	20	< 0.01	31,700	< 0.5	< 0.1	3.87	54	< 0.05	< 0.5	11.8	-	2.63	< 0.5	482	0.58	< 0.01	4,560	< 0.01	< 0.1	< 10	0.108	1.2	< 3
	POL-2	2014 08 19	***168***	< 0.1	0.71	12.1	< 0.1	< 0.5	23	< 0.01	33,600	< 0.5	0.16	**5.99**	148	0.074	< 0.5	***50***	-	2.74	< 0.5	599	0.6	0.022	4,770	< 0.01	< 0.1	11	0.108	1.5	< 3
	POL-2	2014 08 20	***286***	< 0.1	0.72	13.3	< 0.1	< 0.5	21	< 0.01	33,800	< 0.5	0.2	**10.3**	187	0.079	< 0.5	18.2	-	2.88	< 0.5	615	0.57	< 0.01	4,930	< 0.01	< 0.1	15	0.122	1.8	< 3
	POL-2	2014 08 21	***435***	< 0.1	0.74	14.6	< 0.1	< 0.5	20	< 0.01	32,500	< 0.5	0.31	**15.5**	***302***	0.102	0.62	16.5	-	2.71	< 0.5	612	0.58	< 0.01	4,730	< 0.01	< 0.1	24	0.12	2.1	< 3
POL-3	POL-3(12:15)	2014 08 08	45.6	< 0.1	0.64	7.41	< 0.1	< 0.5	22	< 0.01	31,300	< 0.5	< 0.1	2.94	< 30	< 0.05	< 0.5	7.69	< 0.05	2.29	< 0.5	390	0.58	< 0.01	4,450	< 0.01	< 0.1	< 10	0.1	1.2	< 3
	POL-3(12:34)	2014 08 08	***120***	< 0.1	0.69	8.6	< 0.1	< 0.5	22	< 0.01	31,900	< 0.5	< 0.1	**5.01**	97	0.059	< 0.5	18.1	< 0.05	2.31	< 0.5	561	0.57	< 0.01	4,390	< 0.01	< 0.1	< 10	0.102	1.5	< 3
	POL-3	2014 08 09	49	< 0.1	0.71	7.57	< 0.1	< 0.5	20	< 0.01	31,200	< 0.5	< 0.1	3.18	30	< 0.05	< 0.5	11.3	< 0.05	2.31	< 0.5	437	0.52	< 0.01	4,280	0.01	< 0.1	< 10	0.098	1.3	< 3
	POL-3	2014 08 11	37	< 0.1	0.81	10.7	< 0.1	< 0.5	20	0.022	33,400	< 0.5	< 0.1	**4.5**	< 30	< 0.05	< 0.5	***82.5***	< 0.05	2.46	< 0.5	1,380	< 0.5	< 0.01	4,370	< 0.01	< 0.1	< 10	0.041	< 1	< 3
	POL-3	2014 08 12	41.9	< 0.1	0.67	8.02	< 0.1	< 0.5	18	< 0.01	31,100	< 0.5	< 0.1	3.35	< 30	< 0.05	0.58	8.03	< 0.05	2.25	< 0.5	507	0.59	< 0.01	4,650	< 0.01	< 0.1	< 10	0.095	1.3	< 3
	POL-3	2014 08 13	38	< 0.1	0.63	7.6	< 0.1	< 0.5	21	< 0.01	30,500	< 0.5	< 0.1	3.37	< 30	< 0.05	< 0.5	10.6	< 0.05	2.49	< 0.5	450	0.57	< 0.01	4,390	< 0.01	< 0.1	< 10	0.101	1.3	< 3
	POL-3	2014 08 14	34.6	< 0.1	0.67	7.95	< 0.1	< 0.5	23	< 0.01	32,700	< 0.5	< 0.1	3.23	< 30	< 0.05	< 0.5	8.58	< 0.05	2.63	< 0.5	485	0.58	< 0.01	4,740	< 0.01	< 0.1	< 10	0.109	1.5	< 3
	POL-3	2014 08 15	22.8	< 0.1	0.62	7.35	< 0.1	< 0.5	20	< 0.01	31,400	< 0.5	< 0.1	2.74	< 30	< 0.05	< 0.5	6.09	-	2.62	< 0.5	439	0.57	< 0.01	4,600	< 0.01	< 0.1	< 10	0.105	1.2	< 3
	POL-3	2014 08 16	20.3	< 0.1	0.59	7.35	< 0.1	< 0.5	20	< 0.01	31,700	< 0.5	< 0.1	2.59	< 30	< 0.05	< 0.5	7.47	-	2.55	< 0.5	426	0.56	< 0.01	4,340	< 0.01	< 0.1	< 10	0.105	1.2	< 3
	POL-3	2014 08 17	27.3	< 0.1	0.63	7.52	< 0.1	< 0.5	20	< 0.01	31,800	< 0.5	< 0.1	2.88	< 30	< 0.05	< 0.5	7.67	-	2.69	< 0.5	458	0.6	< 0.01	4,720	< 0.01	< 0.1	< 10	0.111	1.2	3
	POL-3	2014 08 18	22.8	< 0.1	0.59	7.44	< 0.1	< 0.5	20	< 0.01	31,000	< 0.5	< 0.1	2.61	< 30	< 0.05	< 0.5	8.86	-	2.56	< 0.5	435	0.59	< 0.01	4,360	< 0.01	< 0.1	< 10	0.109	1.1	< 3
	POL-3X	2014 08 18	22.9	< 0.1	0.6	7.54	< 0.1	< 0.5	21	< 0.01	31,400	< 0.5	< 0.1	2.61	< 30	< 0.05	< 0.5	9.46	-	2.61	< 0.5	440	0.58	< 0.01	4,440	< 0.01	< 0.1	< 10	0.106	1.1	< 3
	QA/QC RPD %		< 1	*	2	1	*	*	*	*	1	*	*	*	*	*	*	*	-	2	*	1	*	*	2	*	*	*	3	*	*
	POL-3	2014 08 19	22.2	< 0.1	0.63	7.96	< 0.1	< 0.5	23	< 0.01	32,800	< 0.5	< 0.1	2.81	< 30	< 0.05	< 0.5	6.23	-	2.79	< 0.5	482	0.62	< 0.01	4,670	< 0.01	< 0.1	< 10	0.106	1.2	< 3
	POL-3	2014 08 20	20.4	< 0.1	0.66	8.15	< 0.1	< 0.5	23	< 0.01	32,700	< 0.5	< 0.1	2.73	< 30	< 0.05	< 0.5	7.26	-	2.99	< 0.5	533	0.51	< 0.01	4,650	< 0.01	< 0.1	< 10	0.111	1.2	< 3
	POL-3X	2014 08 20	18.3	< 0.1	0.67	8.32	< 0.1	< 0.5	23	< 0.01	33,800	< 0.5	< 0.1	2.76	< 30	< 0.05	< 0.5	7.69	-	3.07	< 0.5	546	< 0.5	< 0.01	4,840	< 0.01	< 0.1	< 10	0.119	1.3	< 3
	QA/QC RPD %		11	*	2	2	*	*	*	*	3	*	*	*	*	*	*	*	-	3	*	2	*	*	4	*	*	*	7	*	*
	POL-3	2014 08 21	25.9	< 0.1	0.64	7.81	< 0.1	< 0.5	21	< 0.01	33,000	< 0.5	< 0.1	2.88	< 30	< 0.05	< 0.5	7.39	-	3	< 0.5	489	0.59	< 0.01	4,910	< 0.01	< 0.1	< 10	0.114	1.2	< 3
	POL-3	2014 08 27	32.8	< 0.1	0.66	8.76	< 0.1	< 0.5	20	< 0.01	33,900	< 0.5	< 0.1	3.45	< 30	< 0.05	< 0.5	9.5	-	3.24	< 0.5	561	0.62	< 0.01	4,880	< 0.01	< 0.1	< 10	0.118	1.3	< 3
POL-4	POL-4(11:03)	2014 08 08	71.9	< 0.1	0.65	7.83	< 0.1	< 0.5	20	< 0.01	31,700	< 0.5	< 0.1	3.48	39	< 0.05	< 0.5	9.6	< 0.05	2.37	< 0.5	404	0.56	< 0.01	4,390	< 0.01	< 0.1	< 10	0.108	1.3	< 3
	POL-4(11:23)	2014 08 08	***267***	< 0.1	0.71	9.47	< 0.1	< 0.5	21	< 0.01	31,900	< 0.5	0.18	**4.54**	228	0.126	< 0.5	16.2	< 0.05	2.34	< 0.5	482	0.59	< 0.01	4,520	< 0.01	< 0.1	16	0.106	1.9	< 3
	POL-4	2014 08 09	59.7	< 0.1	0.62	7.86	< 0.1	< 0.5	20	< 0.01	31,800	< 0.5	< 0.1	3.21	37	< 0.05	< 0.5	15.1	< 0.05	2.37	< 0.5	434	0.55	< 0.01	4,300	< 0.01	< 0.1	< 10	0.112	1.2	< 3
	POL-4	2014 08 11	43.1	< 0.1	0.66	7.44	< 0.1	< 0.5	18	< 0.01	29,900	< 0.5	< 0.1	3.23	< 30	< 0.05	< 0.5	8.43	< 0.05	2.47	< 0.5	470	0.51	< 0.01	4,450	< 0.01	< 0.1	< 10	0.1	1.3	< 3
	POL-4	2014 08 12	35.8	< 0.1	0.68	7.59	< 0.1	< 0.5	19	< 0.01	30,800	< 0.5	< 0.1	3.06	< 30	< 0.05	< 0.5	6.52	< 0.05	2.43	< 0.5	453	0.54	< 0.01	4,650	< 0.01	< 0.1	< 10	0.101	1.3	< 3
	POL-4X	2014 08 12	41.8	< 0.1	0.67	7.63	< 0.1	< 0.5	19	< 0.01	31,300	< 0.5	< 0.1	3.02	< 30	< 0.05	< 0.5	6.02	< 0.05	2.52	< 0.5	450	0.54	< 0.01	4,520	< 0.01	< 0.1	< 10	0.105	1.3	< 3
	QA/QC RPD %		15	*	1	< 1	*	*	*	*	2	*	*	*	*	*	*	*	*	4	*	< 1	*	*	3	*	*	*	4	*	*
	POL-4	2014 08 13	30.3	< 0.1	0.62	7.73	< 0.1	< 0.5	21	< 0.01	31,000	< 0.5	< 0.1	2.88	< 30	< 0.05	< 0.5	17.8	< 0.05	2.51	< 0.5	458	0.59	< 0.01	4,540	< 0.01	< 0.1	< 10	0.109	1.3	< 3
	POL-4	2014 08 14	31.5	< 0.1	0.63	7.62	< 0.1	< 0.5	22	< 0.01	32,000	< 0.5	< 0.1	2.87	< 30	< 0.05	< 0.5	5.81	< 0.05	2.58	< 0.5	407	0.61	< 0.01	4,480	< 0.01	< 0.1	< 10	0.119	1.4	< 3
	POL-4	2014 08 15	22.3	< 0.1	0.65	7.22	< 0.1	< 0.5	20	< 0.01	31,100	< 0.5	< 0.1	2.63	< 30	< 0.05	< 0.5	6.56	-	2.62	< 0.5	439	0.57	< 0.01	4,550	< 0.01	< 0.1	< 10	0.101	1.3	< 3
	POL-4	2014 08 16	20.5	< 0.1	0.6	7.35	< 0.1	< 0.5	21	< 0.01	32,000	< 0.5	< 0.1	2.49	< 30	< 0.05	< 0.5	8.78	-	2.49	< 0.5	449	0.58	< 0.01	4,370	< 0.01	< 0.1	< 10	0.106	1.2	< 3
	POL-4	2014 08 17	23.2	< 0.1	0.62	7.56	< 0.1	< 0.5	21	< 0.01	32,900	< 0.5	< 0.1	2.62	< 30	< 0.05	< 0.5	13	-	2.65	< 0.5	468	0.58	< 0.01	4,620	< 0.01	< 0.1	< 10	0.111	1.1	< 3
	POL-4	2014 08 18	24.7	< 0.1	0.61	7.51	< 0.1	< 0.5	21	< 0.01	32,100	< 0.5	< 0.1	2.66	< 30	< 0.05	< 0.5	9.33	-	2.69	< 0.5	444	0.58	< 0.01	4,570	< 0.01	< 0.1	< 10	0.117	1.2	< 3
	POL-4	2014 08 19	81.4	< 0.1	0.65	8.89	< 0.1	< 0.5	24	< 0.01	33,300	< 0.5	< 0.1	3.19	72	< 0.05	< 0.5	26.7	-	3.09	< 0.5	599	0.62	< 0.01	4,760	< 0.01	< 0.1	< 10	0.117	1.3	< 3
	POL-4	2014 08 20	22.3	< 0.1	0.68	8.08	< 0.1	< 0.5	23	< 0.01	32,900	< 0.5	< 0.1	2.68	< 30	< 0.05	< 0.5	9.37	-	3.16	< 0.5	532	0.65	< 0.01	4,810	< 0.01	< 0.1	< 10	0.119	1.2	< 3
	POL-4	2014 08 21	26	< 0.1	0.64	8.1	< 0.1	< 0.5	22	< 0.01	33,700	< 0.5	< 0.1	2.95	< 30	< 0.05	< 0.5	7.27	-	3.17	< 0.5	471	0.67	< 0.01	4,810	< 0.01	< 0.1	< 10	0.115	1.3	< 3
	POL-4	2014 08 27	25.2	< 0.1	0.69	8.25	< 0.1	< 0.5	23	< 0.01	33,300	< 0.5	< 0.1	3.02	< 30	< 0.05	< 0.5	10.8	-	3.16	< 0.5	562	0.62	0.03	4,720	< 0.01	< 0.1	< 10	0.12	1.3	< 3

Associated ALS files: L1499194, L1499709, L1499935, L1499939, L1501501, L1501541, L1502406, L1503046, L1503928, L1503934, L1503943, L1504261, L1504997, L1505933, L1506592, L1509578.
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- Denotes analysis not conducted.
n/a Denotes no applicable standard.
* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.54-2.73 NTU and <3-5.5 mg/L TSS.

TABLE 3b: Summary of Analytical Results for Mount Polley, Polley Lake - Blanks DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Hardness (mg/L)	pH (field) (pH)	pH (pH)	Temperature (field) (C)	Turbidity (NTU)	Conductivity (µS/cm)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	Microbiological Tests: Total Coliform (MPN/0.1L)	E. Coli (MPN/0.1L)	Total Nitrogen (N) (mg/L)	Ammonia Nitrogen (µg/L)	Nitrate Nitrogen (µg/L)	Nitrite Nitrogen (µg/L)	Nitrate+Nitrite Nitrogen (µg/L)	Chloride (mg/L)	Fluoride (µg/L)	Sulphate (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus[g] (mg/L)
BC Standards																								
BCWQG Aquatic Life (AW)[b,c]			n/a	6.5-9.0	6.5-9.0		Change of 8[k]	n/a	n/a	Change of 25	n/a	n/a	n/a	n/a	700-5,680[d]	32,800	60 (Cl<2)	32,800[f]	600	1264-1361[d]	n/a	n/a	n/a	0.005-0.015
BCWQG Aquatic Life (30day) (AW)[b,c,h]			n/a	n/a	n/a	+/-1 Degree change from ambient	Change of 2[k]	n/a	n/a	Change of 5[k]	+20% of median background	n/a	n/a	n/a	135-1,090[d]	3,000	20 (Cl<2)	3,000[f]	150	n/a	309[d]	n/a	n/a	n/a
BCWQG Drinking Water (DW)[b,c]			n/a	6.5-8.5	6.5-8.5	n/a[j]	Change of 1	n/a	n/a	n/a	n/a	n/a	0/100ml	n/a	n/a	10,000	1,000	10,000[f]	250	1,500	500	n/a	n/a	0.01
Canadian Drinking Water Quality (DW)[e]			n/a	6.5-8.5	6.5-8.5	n/a[j]	n/a[j]	n/a	500	n/a	n/a	n/a[j]	0/100ml	n/a	n/a	10,000	1,000	n/a	250	1,500	500	n/a	n/a	n/a
POL-FIELD BLANK	FIELD BLANK (OPENED AT POL-4)	2014 08 20	< 0.5	-	***5.96***	-	< 0.1	< 2	< 10	< 3	-	-	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]
TRIP BLANK	TRIP BLANK	2014 08 13	-	-	***5.60***	-	< 0.1	< 2	< 10	< 3	-	-	-	< 0.05	< 5	< 5	< 1	-	< 0.5	< 20	< 0.5	< 1	< 0.001	< 0.002[a]

All terms defined within the body of SNC-Lavalin's report (available upon request).

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

Concentration greater than 5xDL

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.54-2.73 NTU and <3-5.5 mg/L TSS.

TABLE 3b: Summary of Analytical Results for Mount Polley, Polley Lake - Blanks DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Dissolved Metals: Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																														
BCWQG Aquatic Life (AW)[b,c]			100[d]	n/a	350	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Aquatic Life (30day) (AW)[b,c]			50[d]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BCWQG Drinking Water (DW)			200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Canadian Drinking Water Quality (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
POL-FIELD BLANK	FIELD BLANK (OPENED AT POL-4)	2014 08 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP BLANK	TRIP BLANK	2014 08 13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

All terms defined within the body of SNC-Lavalin's report (available upon request).
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- Denotes analysis not conducted.
n/a Denotes no applicable standard.
* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.
BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.
SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.
BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.
(yellow) Concentration greater than 5xDL

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.54-2.73 NTU and <3-5.5 mg/L TSS.

TABLE 3b: Summary of Analytical Results for Mount Polley, Polley Lake - Blanks DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Total Metals Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Bismuth (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)
BC Standards																
BCWQG Aquatic Life (AW)[b,c]			n/a	20	5	5,000	n/a	n/a	1,200	0.0285-0.0351[d]	n/a	1 (Cr(+6))	110	9.9-12.1[d]	1,000	65.3-89[d]
BCWQG Aquatic Life (30day) (AW)[b,c]			n/a	n/a	n/a	1,000	5.3[i]	n/a	n/a	n/a	n/a	n/a	4	3.4-4.3[d]	n/a	5.9-6.8[d]
BCWQG Drinking Water (DW)			n/a	14	25	n/a	4	n/a	5,000	n/a	n/a	n/a	n/a	500	n/a	50
Canadian Drinking Water Quality (DW)			100	6	10	1,000	n/a	n/a	5,000	5	n/a	50	n/a	1,000	300	10
POL-FIELD BLANK	FIELD BLANK (OPENED AT POL-4)	2014 08 20	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05
TRIP BLANK	TRIP BLANK	2014 08 13	< 3	< 0.1	< 0.1	< 0.05	< 0.1	< 0.5	< 10	< 0.01[a]	< 50	< 0.5	< 0.1	< 0.5	< 30	< 0.05

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Lithium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)	Sodium (µg/L)	Thallium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BC Standards																	
BCWQG Aquatic Life (AW)[b,c]			870	1465-1719[d]	Methyl mercury analysis in progress	2,000	25-65[d]	373,000-432,000	2	0.1-3.0[d]	n/a	0.3	n/a	2,000	300	6	33-45.8[d]
BCWQG Aquatic Life (30day) (AW)[b,c]			14[i]	974-1076[d]		1,000	n/a	n/a	n/a	0.05-1.5[d]	n/a	n/a	n/a	n/a	n/a	n/a	7.5-20.3[d]
BCWQG Drinking Water (DW)			n/a	n/a	1	250	n/a	n/a	10	n/a	n/a	2	n/a	n/a	n/a	n/a	5,000
Canadian Drinking Water Quality (DW)			n/a	50	1	n/a	n/a	n/a	10	n/a	200,000	n/a	n/a	n/a	20	n/a	5,000
POL-FIELD BLANK	FIELD BLANK (OPENED AT POL-4)	2014 08 20	< 0.5	< 0.05	-	< 0.05	< 0.5	< 50	< 0.5	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3
TRIP BLANK	TRIP BLANK	2014 08 13	< 0.5	< 0.05	< 0.05	< 0.05	< 0.5	< 50	< 0.5	< 0.01	< 50	< 0.01	< 0.1	< 10	< 0.01	< 1	< 3

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than BCWQG Aquatic Life (AW) guideline.

BOLD Concentration greater than BCWQG Drinking Water (DW) guideline.

SHADED Concentration greater than BCWQG Aquatic Life (30day) (AW) guideline.

BOLD Concentration greater than or equal to Canadian Drinking Water Quality (DW) guideline.

Concentration greater than 5xDL

[a] Laboratory detection limit out of range.
[b] British Columbia Approved Water Quality Guidelines 2006 Edition, updated 2014.
[c] A Compendium of Working Water Quality Guidelines for British Columbia, updated August 2006.
[d] Guideline varies with pH, and or Temperature or Hardness.
[e] Health Canada Drinking Water Guidelines, 2012.
[f] Guideline for Nitrate applied.
[g] The total phosphorus guideline is a measure of lake productivity and is based on spring overturn or an average of summer samples and is not applicable to single sample results at this point in time.
[h] Calculated based on an individual sample basis, not average of 30 day results.
[i] Secondary chronic or chronic value, not 30 day mean.
[j] Guideline not applicable for site situation.
[k] Based on a change from background at any one time. Prebreach range (Minnow, 2014) 0.54-2.73 NTU and <3-5.5 mg/L TSS.

TABLE 4a: Summary of Analytical Results for Mount Polley, Quesnel Lake - Sediment DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Grain Size			
			Gravel (%)	Sand (%)	Silt (%)	Clay (%)
QUL-14	QUL-14-S	2014 08 07	3.19	50.2	39.3	7.27
QUL-15	QUL-15-S	2014 08 07	1.43	68.7	28.4	1.52
QUL-16	QUL-16-S	2014 08 07	< 0.1	68.7	30.1	1.23
QUL-23	QUL23	2014 08 10	< 0.1	52.7	44.5	2.85
QUL-24	QUL24	2014 08 10	0.61	52	37.8	9.64
QUL-25	QUL25	2014 08 10	2.09	52.7	38.2	7.05
QUL-27	QUL27	2014 08 13	< 0.1	66.5	31.6	1.89
QUL-30-01	QUL30-01	2014 08 12	7.12	57.9	33.8	1.13
QUL-30-02	QUL30-02	2014 08 12	0.64	81.5	17.2	0.66
QUL-30-03	QUL30-03	2014 08 12	2.86	89.3	7.32	0.49
QUL-43	QUL43	2014 08 13	5.54	45.9	39.3	9.31
QUL-44-01	QUL44-01	2014 08 12	< 0.1	26	70	3.92
QUL-44-02	QUL44-02	2014 08 12	8.81	74.9	15.1	1.25
QUL-44-03	QUL44-03	2014 08 12	8.23	56.9	32.3	2.56
QUL-45-01	QUL-45-01	2014 08 13	< 0.1	50.2	41.7	8.07
QUL-45-02	QUL-45-02	2014 08 13	5.34	45.7	38.2	10.8

Associated ALS files: L1499703, L1500632, L1502319, L1503198, L1503207.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

RPD Denotes relative percent difference.

TABLE 4b: Summary of Analytical Results for Mount Polley, Quesnel Lake - Sediment DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	pH (pH)	Aluminum (µg/g)	Antimony (µg/g)	Arsenic (µg/g)	Barium (µg/g)	Beryllium (µg/g)	Cadmium (µg/g)	Calcium (µg/g)	Chromium (µg/g)	Cobalt (µg/g)	Copper (µg/g)	Iron (µg/g)	Lead (µg/g)	Lithium (µg/g)	Magnesium (µg/g)	Manganese (µg/g)	Mercury (µg/g)	Molybdenum (µg/g)	Nickel (µg/g)	Phosphorus (µg/g)	Potassium (µg/g)	Selenium (µg/g)	Silver (µg/g)	Sodium (µg/g)	Strontium (µg/g)	Tin (µg/g)	Thallium (µg/g)	Titanium (µg/g)	Uranium (µg/g)	Vanadium (µg/g)	Zinc (µg/g)
				Total Metals																													
BC Standards																																	
CSR Fresh Water Sediment (FW Sediment)			n/a	n/a	n/a	11	n/a	n/a	2.2	n/a	56	n/a	120	21,200[a]	57	n/a	n/a	460[a]	0.3	n/a	16[a]	n/a	n/a	2[a]	0.5[a]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	200
QUL-14	QUL-14-S-1	2014 08 07	8.82	19,000	0.48	**14.4**	205	0.74	0.165	32,200	16.2	21.6	**721**	**71,200**	5.99	20	11,700	**755**	0.0793	4.31	12.5	1,840	1,670	1.16	0.375	1,050	192	2.05	< 0.05	2,040	1.35	268	70.3
	QUL-14-S-1<2MM	2014 08 07	-	15,800	0.39	**11.9**	160	0.6	0.136	25,500	11.7	16.4	**863**	**49,700**	4.74	15.4	9,450	**640**	0.082	4.41	9.25	1,270	1,340	0.98	0.37	980	158	< 2	< 0.05	1,370	1.02	192	59.2
	QUL-14-S-2	2014 08 07	8.5	18,400	0.45	**14**	199	0.71	0.149	31,200	15.2	20.6	**711**	**69,600**	5.69	18.8	11,400	**740**	0.0761	3.95	11.8	1,770	1,620	1.11	0.333	1,030	182	1.88	< 0.05	1,930	1.26	260	67.8
	QUL-14-S-2<2MM	2014 08 07	-	14,900	0.35	**12.1**	153	0.57	0.144	24,000	12	18.1	**820**	**49,100**	5.05	15	8,980	**691**	0.109	4.07	9.36	1,250	1,240	0.95	0.35	880	142	< 2	< 0.05	1,190	0.949	181	55.3
	QUL-14-S-3	2014 08 07	8.78	18,900	0.44	**14.5**	205	0.74	0.178	31,600	15.6	21.5	**736**	**71,100**	5.6	19.9	11,900	**760**	0.0764	4.07	12.4	1,840	1,660	1.17	0.329	1,040	184	1.88	< 0.05	1,850	1.24	266	70.5
	QUL-14-S-3<2MM	2014 08 07	-	14,800	0.38	**11.3**	154	0.58	0.156	24,400	11.5	16.2	**828**	**47,700**	4.78	14.9	9,340	**669**	0.0878	4.39	11.1	1,210	1,250	1	0.37	890	147	< 2	< 0.05	1,200	0.898	178	58
QUL-15	QUL-15-S-1	2014 08 07	8.82	11,800	0.35	**12.2**	125	0.51	0.129	23,800	21.7	18.1	**526**	**89,600**	5.06	12.6	7,200	**528**	0.0633	2.9	12.8	1,840	1,020	0.9	0.266	620	118	1.03	< 0.05	1,040	0.892	330	54.3
	QUL-15-S-1<2MM	2014 08 07	-	10,800	0.31	9.17	120	0.44	0.121	18,800	13.6	13.2	**620**	**48,700**	3.94	11.2	6,500	**467**	0.0771	3.27	9.66	1,190	980	0.76	0.25	700	112	< 2	< 0.05	866	0.673	183	44.1
	QUL-15-S-2	2014 08 07	8.75	11,800	0.36	**12.9**	118	0.49	0.136	24,600	21.3	18.8	**533**	**94,600**	4.87	11.5	6,690	**551**	0.0636	3.11	12.2	1,950	930	0.96	0.26	600	117	1.27	< 0.05	1,290	0.979	353	54.4
	QUL-15-S-2<2MM	2014 08 07	-	11,500	0.35	10.1	121	0.49	0.126	20,500	13.6	13.4	**641**	**53,300**	4.07	11	6,470	**485**	0.0719	3.25	8.97	1,240	960	0.83	0.28	740	119	< 2	< 0.05	1,000	0.769	202	44.9
	QUL-15-S-3	2014 08 07	8.74	11,600	0.4	**13.5**	116	0.48	0.366	22,600	29.8	21.7	**539**	**119,000**	5.86	12.1	6,510	**567**	0.0653	2.99	15.7	1,770	930	1.07	0.284	540	106	1.26	< 0.05	1,300	1.01	440	62.1
	QUL-15-S-3<2MM	2014 08 07	-	10,200	0.32	9.4	76.3	0.39	0.108	15,000	17.2	11.2	**528**	**37,700**	5.9	10.3	6,260	**483**	0.0791	2.06	11.4	909	730	0.57	0.27	550	83.7	< 2	< 0.05	870	0.597	134	44.2
QUL-16	QUL-16-S-1	2014 08 07	8.8	12,200	0.38	**11.6**	124	0.5	0.146	25,000	20.8	18	**504**	**95,200**	4.7	11.8	6,530	**545**	0.0562	2.78	12.1	1,740	990	0.86	0.266	640	127	1.42	< 0.05	1,450	0.994	355	55.6
	QUL-16-S-1<2MM	2014 08 07	-	12,000	0.31	9.28	129	0.47	0.193	20,700	13	12.6	**626**	**49,200**	3.94	11.1	6,370	**472**	0.0626	3.88	8.67	1,000	980	0.8	0.28	810	132	< 2	< 0.05	1,120	0.733	184	44
	QUL-16-S-2	2014 08 07	8.79	11,600	0.4	**11.5**	118	0.49	0.155	24,200	22	17.9	**496**	**92,100**	4.73	11.1	6,260	**537**	0.0551	3.56	11.8	1,700	910	0.94	0.266	630	121	1.27	< 0.05	1,390	0.958	343	55.9
	QUL-16-S-2<2MM	2014 08 07	-	11,500	0.33	9.11	116	0.47	0.122	20,500	14	12.5	**604**	**50,500**	4.1	10.7	6,120	**475**	0.0819	3.22	8.78	1,050	940	0.79	0.3	730	127	< 2	< 0.05	1,110	0.769	188	44
	QUL-16-S-3	2014 08 07	8.64	11,700	0.38	**11.6**	121	0.46	0.249	23,800	24.3	19.1	**532**	**102,000**	11.7	11.6	6,470	**547**	0.0619	3.22	13.4	1,760	920	0.96	0.263	630	118	1.77	< 0.05	1,340	0.974	378	63.3
	QUL-16-S-3<2MM	2014 08 07	-	11,800	0.32	8.53	125	0.44	0.112	19,400	11.7	11.4	**678**	**39,800**	3.77	10.8	6,220	**452**	0.0766	3.47	8.19	905	950	0.78	0.31	830	134	< 2	< 0.05	1,090	0.681	151	41.7
QUL-23	QUL23<2MM	2014 08 10	-	12,600	0.36	9.63	138	0.52	0.145	20,400	15.4	13.6	**577**	**53,200**	4.46	12.2	6,950	**513**	0.0766	3.48	10.3	1,080	1,120	0.76	0.28	810	137	< 2	< 0.05	1,130	0.781	197	46.7
	QUL23	2014 08 10	8.24	13,100	0.39	**11.6**	139	0.51	0.142	23,200	23.5	19	**518**	**93,400**	5.41	13.2	7,600	**578**	0.0822	3.02	13.5	1,770	1,160	0.87	0.273	720	125	1.29	< 0.05	1,260	0.948	348	55.5
QUL-24	QUL24<2MM	2014 08 10	-	15,600	0.37	**11.6**	144	0.59	0.126	24,600	12.5	16	**733**	**43,800**	4.57	15.3	9,620	**601**	0.0842	3.49	9.6	1,150	1,340	0.95	0.35	960	160	< 2	< 0.05	1,260	0.898	168	54.4
	QUL24	2014 08 10	8.67	19,600	0.47	**13.8**	195	0.74	0.129	29,300	15.2	21	**628**	**59,900**	5.44	18.6	12,400	**706**	0.0908	3.4	11.6	1,780	1,930	1.04	0.309	1,210	208	1.87	< 0.05	1,690	1.28	229	62.6
QUL-25	QUL25<2MM	2014 08 10	-	13,400	0.32	10.6	146	0.54	0.128	21,800	12	14.8	**732**	**44,900**	4.31	14.2	8,620	**532**	0.0849	3.58	9.97	1,110	1,170	0.94	0.33	890	143	< 2	< 0.05	966	0.765	167	51.6
	QUL25	2014 08 10	8.76	17,400	0.43	**13.3**	181	0.68	0.137	27,600	16.1	19.9	**627**	**68,900**	5	16.7	10,600	**662**	0.0801	3.72	11.6	1,750	1,580	0.99	0.298	1,030	177	1.8	< 0.05	1,570	1.13	262	60.6
QUL-27	QUL27	2014 08 13	8.46	12,400	0.44	**12.4**	142	0.58	0.149	21,700	20.2	20.2	**604**	**92,300**	5.01	13	7,680	**572**	0.0704	3.56	12.4	1,820	1,150	0.95	0.414	780	118	1.03	0.136	1,080	0.976	349	58.5
	QUL27<2MM	2014 08 13	-	12,100	0.36	10.2	124	0.5	0.134	20,000	12.6	13.3	**725**	**47,000**	4.15	11.8	6,970	**484**	0.117	5.25	8.93	1,010	1,040	0.87	0.32	840	127	< 2	< 0.05	1,060	0.725	179	46.2
QUL-30-01	QUL30-01	2014 08 12	8.28	7,490	0.1	3.74	19	0.19	0.054	59,300	14.5	7.61	10.7	19,200	6.88	17.9	6,220	355	< 0.005	0.26	**18.7**	1,120	530	< 0.1	< 0.05	< 100	350	< 0.2	< 0.05	302	0.877	12.5	34.9
	QUL30-01<2MM	2014 08 12	-	8,990	0.12	3.82	25.3	< 0.2	< 0.05	41,800	19.1	10.7	12.2	**22,800**	6.85	22.1	6,940	377	< 0.005	< 0.5	**24.6**	458	1,160	< 0.2	< 0.1	< 100	234	< 2	0.081	415	0.49	16.5	42.2
QUL-30-02	QUL30-02	2014 08 12	8.44	7,680	0.11	3.86	21.1	0.22	0.077	45,400	16.2	8.27	11.5	20,300	7.42	17.5	5,860	369	0.0065	0.46	**20.3**	1,450	540	0.11	< 0.05	< 100	263	0.28	< 0.05	335	1.11	14.9	36.8
	QUL30-02<2MM	2014 08 12	-	6,920	< 0.1	3.04	18.4	< 0.2	< 0.05	28,500	14.4	7.66	9.12	17,600	5.24	15.8	5,020	347	< 0.005	< 0.5	**19.5**	724	730	< 0.2	< 0.1	< 100	157	< 2	0.052	321	0.605	13.4	30.3
QUL-30-03	QUL30-03	2014 08 12	8.47	8,050	0.21	4.4	24.7	0.22	0.129	38,400	19	9.05	13	**21,700**	7.84	17.5	5,930	429	0.0119	0.87	**24.4**	1,360	600	0.2	0.061	< 100	221	0.68	< 0.05	371	1.08	16.8	41
	QUL30-03<2MM	2014 08 12	-	5,300	< 0.1	1.93	14.5	< 0.2	0.056	17,100	10.3	5.13	6.63	12,800	3.89	11.8	3,600	231	0.0134	0.61	**16.1**	353	550	< 0.2	< 0.1	< 100	101	< 2	< 0.05	220	0.388	9.62	24.1
QUL-43	QUL43 <2MM	2014 08 13	-	15,900	0.39	**11.9**	149	0.6	0.154	23,800	13.3	16.5	**760**	**43,900**	5.62	15.3	9,950	**613**	-	3.58	11	1,220	1,370	0.99	0.33	950	159	< 2	< 0.05	1,370	0.911	165	56.9
	QUL43	2014 08 13	8.64	20,000	0.44	**13.7**	206	0.73	0.136	29,100	14.8	21.5	**662**	**60,000**	5.84	19.5	12,300	**735**	0.0754	3.83	12.6	1,660	2,230	1.02	0.331	1,340	214	1.62	< 0.05	1,820	1.27	224	64.6
QUL-44-01	QUL44-01	2014 08 12	6.1	16,500	0.8	10.6	49.8	0.34	0.353	8,500	53.9	15.5	66.9	**28,600**	8.93	15.3	11,200	328	0.058	0.64	**32.1**	851	850	0.55	0.181	270	49.6	0.66	0.067	1,200	0.559	81.8	80.7
	QUL44-01<2MM	2014 08 12	-	17,100	0.95	**13.1**	50.9	0.41	0.398	8,140	**56.8**	17.4	74.6	**31,600**	9.94	17.5	11,900	353	0.069	0.81	**34.3**	778	900	0.61	0.2	240	46.8	< 2	0.09	1,100	0.556	83.3	83.3
QUL-44-02	QUL44-02	2014 08 12	7.41	18,000	1.66	**22.6**	64.8	0.38	0.508	9,310	**65.1**	20.7	80.8	**34,300**	8.61	16.7	12,100	**760**	0.072	1.24	**39**	802	830	0.54	0.237	210	52.3	0.52	0.075	1,300	0.601	95.4	83.4
	QUL44-02<2MM	2014 08 12	-	18,000	1.36	**35.5**	41.1	0.35	0.339	7,620	55.5	18.3	59.2	**39,200**	6.89	18	14,300	**790**	0.0483	1.08	**33**	871	520	0.41	0.2	110	31.1	< 2	0.055	1,020	0.489	105	70.9
QUL-44-03	QUL44-03	2014 08 12	7.58	17,700	1.44	**27.1**	60.2	0.36	0.379	9,560	**57.9**	15.2	74.2	**30,000**	7.48	14.7	10,700	**712**	0.0641	0.79	**32.2**	802	740	0.55	0.328	200	52	0.62	0.061	1,210	0.627	85.6	65.4
	QUL44-03<2MM	2014 08 12	-	16,800	1.04	**23.1**	189	0.31	0.198	7,280	50.3	14.1	48.9	**33,100**	5.49	16	12,400	**558**	0.0299	0.91	**30.1**	555	440	0.29	0.12	130	30	< 2	< 0.05	1,160	0.392	92.6	55.8
QUL-45-01	QUL-45-01	2014 08 13	8.72	17,600	0.4	**13.3**	186	0.65	0.135	27,100	16.7	20.9	**630**	**66,600**	6.09	16.8	10,900	**676**	0.0747	4	12.7	1,740	1,720	0.99	0.312	1,150	190	1.55	< 0.05	1,610	1.13	253	60.2
	QUL-45-01<2MM	2014 08 13	-	15,100	0.38	10.9	144	0.64	0.128	23,300	15.7	15.3	**677**	**44,500**	4.71	15.3	9,190	**574**	0.0844	4.01	10.7	1,180	1,340	0.84	0.32	920	157	< 2	< 0.05	1,270	0.924	169	52.8
QUL-45-02	QUL-45-02	2014 08 13	8.65	18,600	0.41	**12.4**	199	0.68	0.119	26,800	13	20.3	**707**	**51,000**	5.68	18.5	11,900	**691**	0.0745	3.6	11.7	1,430	1,860	1	0.321	1,220	206	1.52	< 0.05	1,640	1.14	193	60.3
	QUL-45-02<2MM	2014 08 13	-	15,800	0.41	**12**	147	0.64	0.145	23,400	20.6	16.4	**719**	**43,000**	4.98	16	9,790	**633**	0.0851	3.53	10.3	1,240	1,370	1.03	0.34	920	160	< 2	< 0.05	1,280	0.934	160	56.4

Associated ALS files: L1499703, L1500632, L1502319, L1503198, L1503207.
All terms defined within the body of SNC-Lavalin's report (available upon request).
< Denotes concentration less than indicated detection limit or RPD less than indicated value.
- Denotes analysis not conducted.
n/a Denotes no applicable standard.
RPD Denotes relative percent difference.

BOLD Concentration greater than CSR Fresh Water Sediment (FW Sediment) standard or BCWQG guideline.

[a] No CSR Sediment Criteria, BCWQG guideline shown.

TABLE 4c: Summary of Analytical Results for Mount Polley, Quesnel Lake - Sediment DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	TOC (%)
QUL-14	QUL-14-S-1	2014 08 07	0.18
	QUL-14-S-2	2014 08 07	0.12
	QUL-14-S-263UM	2014 08 07	0.16
	QUL-14-S-3	2014 08 07	0.1
	QUL-14-S-363UM	2014 08 07	0.12
QUL-15	QUL-15-S-1	2014 08 07	< 0.1
	QUL-15-S-163UM	2014 08 07	0.1
	QUL-15-S-2	2014 08 07	0.11
	QUL-15-S-3	2014 08 07	0.12
	QUL-15-S-363UM	2014 08 07	0.15
QUL-16	QUL-16-S-1	2014 08 07	0.11
	QUL-16-S-163UM	2014 08 07	< 0.1
	QUL-16-S-2	2014 08 07	0.11
	QUL-16-S-263UM	2014 08 07	0.12
	QUL-16-S-3	2014 08 07	0.1
	QUL-16-S-363UM	2014 08 07	0.13
QUL-23	QUL23	2014 08 10	0.27
	QUL2363UM	2014 08 10	0.22
QUL-24	QUL24	2014 08 10	0.25
	QUL2463UM	2014 08 10	0.28
QUL-25	QUL25	2014 08 10	0.22
	QUL2563UM	2014 08 10	0.18
QUL-27	QUL27	2014 08 13	0.17
	QUL2763UMTOC	2014 08 13	0.15
QUL-30-01	QUL30-01	2014 08 12	0.51
	QUL30-0163UMTOC	2014 08 12	0.61
QUL-30-02	QUL30-02	2014 08 12	0.37
	QUL30-0263UMTOC	2014 08 12	0.58
QUL-30-03	QUL30-03	2014 08 12	0.25
	QUL30-0363UMTOC	2014 08 12	0.63
QUL-43	QUL43	2014 08 13	0.24
	QUL4363UMTOC	2014 08 13	0.12
QUL-44-01	QUL44-01	2014 08 12	3.59
	QUL44-0163UMTOC	2014 08 12	2.69
QUL-44-02	QUL44-02	2014 08 12	0.69
	QUL44-0263UMTOC	2014 08 12	1.39
QUL-44-03	QUL44-03	2014 08 12	1.79
	QUL44-0363UMTOC	2014 08 12	1.97
QUL-45-01	QUL-45-01	2014 08 13	0.25
	QUL-45-0163UMTOC	2014 08 13	0.23
QUL-45-02	QUL-45-02	2014 08 13	0.3
	QUL-45-0263UMTOC	2014 08 13	0.26

Associated ALS files: L1499703, L1500632, L1502319, L1503198, L1503207.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

\- Denotes analysis not conducted.

n/a Denotes no applicable standard.

RPD Denotes relative percent difference.

TABLE 4d: Summary of Analytical Results for Mount Polley, Quesnel Lake - Sediment Leachate DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	pH (pH)	Leachate Metals: Aluminum Leachable (µg/L)	Antimony Leachable (µg/L)	Arsenic Leachable (µg/L)	Barium Leachable (µg/L)	Beryllium Leachable (µg/L)	Bismuth Leachable (µg/L)	Cadmium Leachable (µg/L)	Calcium Leachable (µg/L)	Chromium Leachable (µg/L)	Cobalt Leachable (µg/L)	Copper Leachable (µg/L)	Iron Leachable (µg/L)	Lead Leachable (µg/L)	Magnesium Leachable (µg/L)	Manganese Leachable (µg/L)	Mercury Leachable (µg/L)	Molybdenum Leachable (µg/L)	Nickel Leachable (µg/L)	Phosphorus Leachable (µg/L)	Potassium Leachable (µg/L)	Selenium Leachable (µg/L)	Silicon Leachable (µg/L)	Silver Leachable (µg/L)	Sodium Leachable (µg/L)	Strontium Leachable (µg/L)	Thallium Leachable (µg/L)	Tin Leachable (µg/L)	Titanium Leachable (µg/L)	Uranium Leachable (µg/L)	Vanadium Leachable (µg/L)	Zinc Leachable (µg/L)
BC Standards																																		
HWR Leachate Quality (HWLQ)			n/a	n/a	n/a	2,500	100,000	n/a	n/a	500	n/a	5,000	n/a	100,000	n/a	5,000	n/a	n/a	100	n/a	n/a	n/a	n/a	1,000	n/a	5,000	n/a	n/a	n/a	n/a	n/a	10,000	n/a	500,000
QUL-45-01	QUL-45-01	2014 08 13	8.47	270	< 50	< 50	27	< 5	< 100	< 10	20,100	< 10	< 10	25	167	< 50	2,860	38	< 0.05	44	< 50	< 300	3,500	< 50	4,920	< 10	14,400	225	< 200	< 30	11	< 500	< 30	< 20
QUL-45-02	QUL-45-02	2014 08 13	8.46	270	< 50	< 50	31	< 5	< 100	< 10	23,900	< 10	< 10	14	189	< 50	3,470	37.7	< 0.05	51	< 50	< 300	4,500	< 50	5,670	< 10	20,800	269	< 200	< 30	11	< 500	< 30	< 20

Associated ALS file: L1503198.
All terms defined within the body of SNC-Lavalin's report (available upon request).
< Denotes concentration less than indicated detection limit or RPD less than indicated value.
\- Denotes analysis not conducted.
n/a Denotes no applicable standard.
RPD Denotes relative percent difference.

BOLD Concentration greater than HWR Leachate Quality (HWLQ) standard.

TABLE 5a: Summary of Analytical Results for Mount Polley Hazeltine Creek - Sediment (DRAFT)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Grain Size: Gravel (%)	Sand (%)	Silt (%)	Clay (%)
HAC-REF SOIL-1	HAC-REF SOIL-1A	2014 08 19	21.4	7.88	54.7	16
	HAC-REF SOIL-1B	2014 08 19	0.56	10.2	68.3	21
	HAC-REF SOIL-1C	2014 08 19	4	23.9	47.2	24.9
HAC-REF SOIL-2	HAC-REF SOIL-2A	2014 08 19	1.07	12.3	71.3	15.4
	HAC-REF SOIL-2B	2014 08 19	4.83	15.6	62.4	17.2
	HAC-REF SOIL-2C	2014 08 19	12.4	23	43.2	21.4
HAC-REF SOIL-3	HAC-REF SOIL-3A	2014 08 19	4.64	16.2	65.6	13.6
	HAC-REF SOIL-3B	2014 08 19	38.3	23	29.5	9.22
	HAC-REF SOIL-3C	2014 08 19	13	36.8	40.4	9.83

Associated ALS file: L1507380.
All terms defined within the body of SNC-Lavalin's report (available upon request).

TABLE 5b: Summary of Analytical Results for Mt.Polley Hazeltine Creek - Sediment DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	pH (pH)	Total Metals Aluminum (µg/g)	Antimony (µg/g)	Arsenic (µg/g)	Barium (µg/g)	Beryllium (µg/g)	Cadmium (µg/g)	Calcium (µg/g)	Chromium (µg/g)	Cobalt (µg/g)	Copper (µg/g)	Iron (µg/g)	Lead (µg/g)	Lithium (µg/g)	Magnesium (µg/g)	Manganese (µg/g)	Mercury (µg/g)	Molybdenum (µg/g)	Nickel (µg/g)	Phosphorus (µg/g)	Potassium (µg/g)	Selenium (µg/g)	Silver (µg/g)	Sodium (µg/g)	Strontium (µg/g)	Tin (µg/g)	Thallium (µg/g)	Titanium (µg/g)	Uranium (µg/g)	Vanadium (µg/g)	Zinc (µg/g)
BC Standards																																	
CSR Fresh Water Sediment (FW Sediment)				n/a	n/a	11	n/a	n/a	2.2	n/a	56	n/a	120	21,200[a]	57	n/a	n/a	460[a]	0.3	n/a	16[a]	n/a	n/a	2[a]	0.5[a]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	200
HAC-REF SOIL-1	HAC-REF SOIL-1A	2014 08 19	5.54	15,200	0.29	3.48	186	0.38	0.362	4,870	34.3	21.5	35.3	**26,100**	12.3	17.5	5,200	**2,180**	0.0824	0.68	**19.5**	673	1,280	< 0.2	0.47	150	42.7	< 2	0.116	511	0.451	56.7	90.5
	HAC-REF SOIL-1B	2014 08 19	5.29	15,700	0.34	4.65	86.1	0.36	0.219	3,390	37.5	11.5	22.6	**28,500**	7.81	20.9	6,330	**591**	0.0382	< 0.5	**23.1**	701	1,070	< 0.2	0.17	120	32.8	< 2	0.088	665	0.52	60	67.8
	HAC-REF SOIL-1C	2014 08 19	5.9	18,500	0.42	6.42	108	0.47	0.151	3,800	45	14.1	35.8	**32,500**	8.84	21.1	7,400	**730**	0.0533	0.52	**29.7**	593	1,600	< 0.2	< 0.1	140	41.8	< 2	0.112	871	0.6	67.5	66
HAC-REF SOIL-2	HAC-REF SOIL-2A	2014 08 19	7.74	5,870	0.16	1.84	572	< 0.2	**7.74**	42,800	12	14	68.4	10,700	4.02	6	3,210	**5,950**	0.0953	0.79	**18.3**	831	720	0.31	**1.25**	200	251	< 2	0.087	240	0.172	24.2	**771**
	HAC-REF SOIL-2B	2014 08 19	6.49	18,300	0.32	5.7	77.5	0.44	0.429	5,770	41.5	11.2	29.1	**29,800**	6.72	20.2	6,520	**509**	0.0316	< 0.5	**27.8**	1,410	1,290	< 0.2	0.3	140	51.7	< 2	0.073	693	0.517	62.9	95.3
	HAC-REF SOIL-2C	2014 08 19	6.7	19,200	0.39	6.15	109	0.47	0.299	5,630	43.9	13.5	34.8	**31,900**	8.38	20.9	7,290	**638**	0.0509	0.52	**31**	987	1,780	0.21	0.21	160	50.6	< 2	0.106	784	0.572	67.4	96.9
HAC-REF SOIL-3	HAC-REF SOIL-3A	2014 08 19	7.03	16,900	0.38	5.02	145	0.55	0.387	16,100	34.4	14.3	**137**	**25,900**	8.39	14.1	6,240	**948**	0.13	1.79	**23.6**	827	1,560	0.41	0.5	340	103	< 2	0.13	669	0.729	68.3	78.3
	HAC-REF SOIL-3B	2014 08 19	5.15	17,300	0.46	4.75	70.6	0.44	0.242	3,950	**59.2**	10.5	28.9	**26,800**	6.26	19.1	7,840	**482**	0.0309	0.96	**28.8**	576	1,260	0.26	0.26	170	27.7	< 2	0.099	1,030	0.643	76.7	62
	HAC-REF SOIL-3C	2014 08 19	5.34	13,000	0.25	3.77	46.4	0.29	0.091	3,040	44.8	7.79	16.7	**21,700**	4.93	18.1	6,760	313	0.0258	0.59	**23.2**	570	970	0.21	< 0.1	120	18.1	< 2	0.083	778	0.533	54	43.8

Associated ALS file: L1507380.
All terms defined within the body of SNC-Lavalin's report (available upon request).
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- Denotes analysis not conducted.
n/a Denotes no applicable standard.
RPD Denotes relative percent difference.

BOLD Concentration greater than CSR Fresh Water Sediment (FW Sediment) standard or BCWQG guideline.

[a] No CSR Sediment Criteria, BCWQG guideline shown.

TABLE 5c: Summary of Analytical Results for Mount Polley Hazeltine Creek - Sediment DRAFT

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Parameters: Moisture (%)	TOC (%)	Total Carbon (µg/g)	Available Nitrate (µg/g)	Total Nitrogen % (%)	Available Phosphate (µg/g)	Available Sulphate (µg/g)	Soil Salinity: % Saturation (%)	Conductivity (µS/cm)	Sodium Adsorption Ratio	Saturated Paste Sodium (µg/g)	Saturated Paste Chloride (µg/g)
HAC-REF SOIL-1	HAC-REF SOIL-1A	2014 08 19	29.1	6.65	6.7	< 4	0.312	7	38.1	66.8	349	< 0.4	< 7	11.4
	HAC-REF SOIL-1B	2014 08 19	16.6	1.35	1.4	< 4	0.097	27.3	9.5	41.5	98	< 0.7	< 4	2.2
	HAC-REF SOIL-1C	2014 08 19	15.7	0.78	0.8	< 4	0.055	6.2	< 6	32.9	57	< 1	< 3	< 2
HAC-REF SOIL-2	HAC-REF SOIL-2A	2014 08 19	44.7	21.8	22.1	< 6	1.04	14.1	112	112	605	0.43	20	16.7
	HAC-REF SOIL-2B	2014 08 19	20.6	1.4	1.5	< 4	0.083	137	22.4	49	235	< 0.4	< 5	5.7
	HAC-REF SOIL-2C	2014 08 19	16.6	1	1	< 4	0.063	53.8	12.2	34.7	180	< 0.5	< 3	2.6
HAC-REF SOIL-3	HAC-REF SOIL-3A	2014 08 19	34.2	10.9	11	< 6	0.501	14.7	91.2	104	598	0.67	28	15.9
	HAC-REF SOIL-3B	2014 08 19	15.5	1.94	2	< 4	0.122	5.3	15.4	49.7	206	< 0.5	< 5	3.1
	HAC-REF SOIL-3C	2014 08 19	12.5	0.63	0.7	< 4	0.051	2.7	7.5	29.7	268	0.44	< 3	23.2

Associated ALS file: L1507380.

All terms defined within the body of SNC-Lavalin's report (available upon request).

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

APPENDIX C

Resumes

JAMES LIGHT

SNC·LAVALIN

Mr. James Light, MA, is an Archaeologist with 40 years of experience. Since participating in his first archaeological survey of the Churchill River in Saskatchewan in 1973, Mr. Light has expanded his experience to include all of western Canada, the Northwest Territories, Nunavut, and the American southwest. He founded Historical Resources Management Ltd. in 1986 and directed it until 2011. He has conducted archaeological impact assessment programs in British Columbia, Alberta and Saskatchewan as well as traditional ecological knowledge (TEK) studies in Alberta. Mr. Light has experience in project management, personnel management, and financial management as well as an in-depth knowledge of Aboriginal Relations, and of the regulatory environments in a number of jurisdictions.

SECTORS OF EXPERTISE

Environment	• Environmental impact study • Pipelines
Infrastructure & Buildings	• Historical buildings • Urban development (various networks, road system, lighting)
Power	• Water Resources Projects
Transportation	• Roads/Highways

EDUCATION

1983	Master of Arts, University of Manitoba, Winnipeg, Manitoba, Canada
1976	Bachelor of Arts, University of Regina, Regina, Saskatchewan, Canada

EXPERIENCE

SINCE 2011

SNC-LAVALIN INC., CALGARY, ALBERTA, CANADA
Environment & Water
Senior Archaeologist

- Conduct archaeological impact assessment programs in British Columbia, Alberta and Saskatchewan as well as traditional ecological knowledge (TEK) studies in Alberta
- Build a comprehensive heritage resource management section capable of completing all phases heritage studies including prehistoric and historic archaeological projects, traditional land use studies (TLU) and TEK studies
- Responsibilities include: proposal preparation, project management, and managing heritage resource management staff

Archaeological Inventory Assessment & Permitting, BC Hydro Groundbirch Substations, Canada (2013)

- Conduct archaeological inventory assessment and permit application 2013-0344.

Traditional Ecological Knowledge Study, Cumulative Environmental Management Association, Alberta, Canada (2013)

Years of Experience

- 41 years

Years with SNC-Lavalin

- 3 years

Key Positions

- Anthropologist
- Archaeologist

Languages

- English

Site Experience

- Canada
- United States

Computer Applications

- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- Microsoft Access
- Corel Draw
- Quantum GIS
- Mapsource

- Conduct TEK of surface water/groundwater interactions in the Lower Athabasca Region

Heritage Resources Impact Assessment & Permitting, PCS Potash Corp Rocanville, Canada (2012)

- Conduct impact assessment on revised bring line #5 corridor
- Permit application 12-262

Historical Resources Impact Assessment & Permitting, Blue Rapids Pipeline Project, TAQA Energy Ltd., Canada (2012)

- Conduct and author report for historical resrouces impact assessment
- Approval of Permit 12-109

Historical Resources Impact Assessment & Permitting, Lindbergh 12-A Geophysical Program, Canadian Natural Resources Limited, Alberta, Canada (2012)

- Conduct and author reports for historical resources impact assessment
- Approval of Permit 12-045

Historical Resources Impact Assessment, Jenner 12-B Geophysical Project, Canadian Natural Resources Limited, Canada (2012)

- Conduct and author reports for historical resources impact assessment
- Approval of Permit 12-012

Historical Resources Impact Assessment & Permitting, Baytex Pelican, Canada (2012)

- Conduct and author reports for historical resources impact assessment
- Approval of Permit (3-31-79-24) 12-005

Historical Resources Impact Assessment & Permitting, Mosaic HZ Redwater, Mosaic Energy Ltd., Canada (2011)

- Conduct and author reports for historical resources impact assessment
- Approval of Permit (1-20-56-21) 11-053

Historical Resources Impact Assessment, Princess 11-IV-3D Geophysical Program: 11-059, Canadian Natural Resources Limited, Canada (2011)

Historical Resources Impact Assessment, Angle Energy Lonepine Area Sales Line Extension: 11-098, Angle Energy Inc., Canada (2011)

Historical Resources Impact Assessment Hillside, Cemetery future expansion: 11-141, City of Medicine Hat, Canada (2011)

Historical Resources Impact Assessment, Proposed Subdivision in LSD 12-S26-T25-R4-W5:11-230, Tirion Properties, Canada (2011)

Historical Resources Impact Assessment, Brazeau County Tourism Development Node: 11-285, Brazeau County, Canada (2011)

1986 - 2011	HISTORICAL RESOURCE MANAGEMENT LTD. , CALGARY, ALBERTA, CANADA President/Founder

Archaeological consultancy that operated for 25 years throughout western Canada, the Northwest Territories, Nunavut, and the American southwest. Some ofthe Project work included:

Flowline Construction Monitoring, 6A4-18-9-6 to 3-18-9-6, Well, Permit ARMS 08-032, Talisman Energy Inc., Canada (2008)

Historical Resources Impact Assessment, permit ASA 07-320, Synenco Energy Inc., Canada (2007)

- Authored OSL 900 final report

Historical Resources Impact Assessment, Phase II, Addendum to Permit 05-327, Northern Lights Oil Sands Project, permit ASA 07-321, Synenco Energy Inc., Canada (2007)

- Authored reports and addendum to Permit 05-327

Historical Resources Impact Assessment, Matziwin 06-A Geophysical Program & Permitting, Canadian Natural Resources Limited, Canada (2006)

- Conducted reporting and requirements needed to obtain Permit ASA 06-060

Heritage Resources Impact Assessment, Talisman Handsworth 2HZ 3B2-29-3S4-28-10-6 & Permitting, Talisman Energy Inc., Canada (2006)

- Conducted reporting and requirements needed to obtain Permit ARMS 06-018

Historical Resources Impact Assessment & Permit ASA 05-525, Oldman River Wind Power Project, Canada (2005)

Historical Resources Impact Assessment, Northern Lights Oil Sands Project & Permit ASA 05-327, Synenco Energy Inc., Canada (2005)

Heritage Resources Impact Assessment, Talisman et al Moose 2HZ 4C10-16-4B12-16-10-2 & Permit ARMS 05-156, Talisman Energy Inc., Canada (2005)

Historical Resources Impact Assessment, Manyberries Wellsites & Permitting, Cansearch Resources Ltd., Canada (2005)

- Conducted reporting and requirements needed to obtain Permit ASA 04-441

Historical Resources Impact Assessment & Permitting, TransAlta Utilities, Alberta, Canada (2004)

- Conducted reporting and requirements to obtain Permit ASA 04-424

Historical Resources Reconnaissance, Northern Lights Oil Sands Project & Permitting, Synenco Energy Inc., Canada (2004)

- Conducted reporting and requirements needed to obtain Permit ASA 04-416

Historical Resources Impact Assessment, Reservoir Rehabilitation Projects & Permitting, Alberta Transportation, Canada

(2004)

- Conducted reporting and requirements needed to obtain Permit ASA 04-260

Historical Resources Impact Assessment & Permitting, North Nordegg Subdivision Development, Canada (2004)

- Conducted reporting and requirements needed to obtain Permit ASA 04-171

Heritage Resources Impact Assessment & Permitting, Agriculture and Agri-Food Canada Prairie Farm Rehabilitation Administration Junction Dam Spillway Expansion Project, Canada (2004)

- Conducted reporting and requirements needed to obtain Permit ARMS 04-088

Heritage Resources Impact Assessment & Permitting, City of Swift Current Water Treatment Plant, Canada (2004)

- Conducted report and requirements needed to obtain Permit ARMS 04-078

Heritage Resources Impact Assessment & Permitting, Cypress Health Region Swift Current Hospital, Canada (2004)

- Conducted reporting and requirements needed to obtain Permit ARMS 04-073

Historical Resources Impact Assessment, Twining 12-19-30-25-W4M Gas Well Tie-In Project & Permitting, Transglobe Energy Corporation, Canada (2004)

- Conducted reporting and requirements needed to obtain Permit ASA 04-64

Heritage Resources Impact Assessment, SPI Rushlake Creek Windpower Project & Permitting, final report, Saskpower International Inc./ATCO Power, Canada (2004)

- Conducted reporting and requirements to obtain Permit ARMS 04-060

Historical Resources Impact Assessment & Permitting, Cypress Hills Park Visitor Centre, Canada (2003)

- Conducted reporting and requirements needed to obtain Permit ASA 03-330

Historical Resources Impact Assessment, Talisman 103 TV 15-12-20-3-W5M & Permitting, Talisman Energy Inc., Canada (2003)

- Conducted reporting and requirements needed to obtain Permit ASA 03-308

Historical Resources Impact Assessment, Wintering Hills 03-A Geophysical Program & Permitting, Canadian Natural Resources Limited, Canada (2003)

- Conducted reporting and requirements needed to obtain Permit ASA 03-286

Heritage Resources Impact Assessment, Flowline 6-18-9-6-W2 to 11-12-9-6-W2 & Permitting, Talisman Energy Inc., Canada (2003)

- Conducted reporting and requirements needed to obtain Permit ARMS 03-135

Historical Resources Impact Assessment, Lovett River Pipeline & Permitting, Talisman Energy Inc., Canada

- Conducted reporting and permit requirements to obtain Permit ASA 03-161

Historical Resources Impact Assessment & Permitting, Bare Creek Dam Rehabilitation, Canada

- Conducted reporting and requirements needed to obtain Permit ASA 03-183

Historical Resources Impact Assessment, Portions of Section 17-T36-R7-W5M, Teske-Karasek Subdivision, Canada

- Conducted report and requirements needed to obtain Permit ASA 03-218

Historical Resources Impact Assessment, Well Site Gentry Tiverton Prin 11-10-20-10 & Permitting, Gentry Resource Ltd., Canada

- Conducted reporting and requirements needed to obtain Permit ASA 03-219

Historical Resources Impact Assessment, Portions of Sec. 4 and Sec. 9-T22-R1-W5M & Permitting, Coyote Golf Course, Canada

- Conducted reporting and requirements needed to obtain Permit ASA 03-114

Historical Resources Impact Assessment (HRIA) Meadows Subdivision Edmonton & Permitting, Dundee Developments Ltd., Canada

- Conducted reporting and requirements needed to obtain Permit ASA 02-291

HRIA, Wolf Creek North Pipeline Loop, Burlington Resources Canada Ltd., Canada

- Conducted report and completed Permit ASA 02-220

HRIA, Wellsite 4-18-9-6-W2, Talisman Energy Inc., Canada

- Conducted reporting and completed Permit ARMS 02-149

HRIA, Flowline 5-24 to 5-13-9-6-W2, Grimes Energy Inc., Canada

- Conducted reporting and completed Permit ARMS 02-128

Historical Resources Impact Assessment, Proposed Sewer line, Country Hills Boulevard to 144 Avenue NE, Balzac Power Plant, Canada

- Conducted reporting and completed Permit ASA 01-017

Heritage Resources Impact Assessment, Talisman Oilfield Developments, Saskatchewan, Canada

- Conducted reporting and completed Permit ARMS 01-26

Historical Resources Impact Assessment, Cessford 01-I-3D Seismic Program, Canadian Natural Resources Limited, Canada

- Conductedd reporting and completed Permit ASA 01-266

Historical Resources Impact Assessment, near Waterton National Park, Belly River Subdivision, Alberta, Canada

- Conducted reporting and completed Permit ASA 01-100

Historical Resources Impact Assessment, Phase I & Permitting, Castle Rock Ridge Wind Power Project , Canada

- Conducted Phase I, reporting and completed Permit ASA 01-007

Historical Resources Impact Assessment & Permitting, Nordegg-Chungo-Foothills 3D Seismic Program, Canada

- Conducted reporting and completed Permit ASA 00-110

Historical Resources Impact Assessment for the Wildwood Extension & Permitting, ATCO Gas & Pipelines Ltd., Canada

- Conducted reporting and completed Permit ASA 00-156

Historical Resource Impact Mitigation & Phase 1, Little Bow River Dam Project, Alberta Infrastructure, Alberta, Canada

- Conducted impact mitigation and Phase 1 requirements

A Cultural Resource Survey and Inventory of the Talastima Wetlands Rehabilitation Demonstration Project Study Area, Hopi Indian Reservation, Arizona, United States

Historical Resources Impact Assessment & Permitting, Ferrier Pipeline and Gathering System,, Amoco Canada Petroleum Co. Ltd., Canada

- Conducted reporting and completed Permit ASA 98-154

Heritage Resources Impact Monitoring & Permitting, Midale landfill, Shell Canada Ltd., Canada

- Conducted reporting and completed Permit ARMS 98-102

1981 - 1986 | ARESCO LTD., CALGARY, ALBERTA, CANADA
1984 - 1986 | Research Officer

- Conducted impact assessments and mitigation projects in western Canada

1981 - 1982 | Archaeologist

- Completed thorough archaeological analyses for projects in western Canada

1978 - 1980 | PARKS CANADA, WINNIPEG, ALBERTA, CANADA
Archaeological Researcher

- Survey of Kluane National Park, Yukon Territory
- Survey and excavation of historic period sites in the Arctic

1977 - 1979 | SASKATCHEWAN RESEARCH COUNCIL, SASKATOON, SASKATCHEWAN, CANADA
1978 - 1979 | Project Supervisor

- Conducted the archaeological survey of Nipawin and Lac La Ronge Provincial Parks in northern Saskatchewan

1977 - 1978 | **Field Supervisor**

- Excavated at sites on the Saskatchewan River and surveyed areas north of Lake Athabasca

LEIF BURGE

SNC·LAVALIN

Dr. Leif Burge, PhD, is a nationally recognized Fluvial Geomorphologist and Senior Scientist with over 16 years of experience solving applied river problems and conducting river research. Dr. Burge's experience includes river hazard assessment, hydraulic modelling, channel assessment, sediment management, sediment transport, river stability, fluvial habitat, and river restoration. He has worked on river systems throughout Canada, from New Brunswick to British Columbia. Feature projects include inundation and scour potential mapping using Hydrologic Engineering Centre's River Analysis System (HEC-RAS) modelling, detailed mapping and channel change detection for an environmental impact assessments, support of river restoration projects through hydraulic modelling and analysis of the sediment dynamics, investigation of the effects of urbanization on stream channel erosion, investigation of the frequency of bedforms in headwater step-pool systems using wavelet analysis, determination of the causes and characteristics of anabranching rivers, and determination of the sedimentology of confined sand bedded meandering rivers. Dr. Burge is an Adjunct Professor at the University of British Columbia Okanagan campus, Associate Faculty at Royal Roads University, and a Science Director of the Canadian Rivers Institute.

SECTORS OF EXPERTISE

Environment
- Habitat restoration
- Mining projects
- Power Projects
- Scientific or environmental studies
- Sedimentology

Oil & Gas
- River crossings

Power
- Dambreak and Inundation Studies
- Flood Control
- Hydrology
- River Basin Studies and Planning

EDUCATION

2003	Doctor of Philosophy (PhD), Physical Geography, Fluvial Geomorphology, McGill University, Montreal, Quebec, Canada
1997	Master of Science (MSc), Physical Geography, Fluvial Geomorphology, University of Calgary, Calgary, Alberta, Canada
1995	Bachelor of Science (BSc), Physical Geography, University of Victoria, Victoria, British Columbia, Canada

EXPERIENCE

SINCE 2013 — SNC-LAVALIN INC., KELOWNA, BRITISH COLUMBIA, CANADA
Environment & Water
Senior Scientist, Fluvial Geomorphology

Expanded Fluvial Geomorphology Services

Years of Experience
- 17 years

Years with SNC-Lavalin
- 2 years

Key Positions
- Environmental Specialist
- Geoscientist

Languages
- English

North America Onshore High Priority Water Crossing Baseline Inspections, Hydrological studies, Suncor Energy Inc., Alberta, Canada, CA $300 000 (10/2013 - present)

Suncor Energy contracted SNC-Lavalin Inc. to conduct assessments of high priority water crossings in British Columbia and Alberta

- Assessments of channel crossings include documenting the river pattern, sediment pattern, bank material, bank slopes, bankfull depth, grain size, etc
  - Depth of cover surveys of each pipeline was conducted
  - A final report for each crossing is produced

South Foothills Transmission Project (SFTP) – Oldman River Crossing Assessment, Hydrological Studies, SNC-Lavalin Inc., Transmission and Distribution (T&D), British Columbia, Canada, CA $175 000 (01/2013 - 06/2013)

SNC-Lavalin Inc. was contracted to assess the hydrology, geomorphology and foundation design at a proposed transmission line river crossing for the SFTP

- Analyzed hydrometeorological variables, generated flood frequency curves, conducted open water field investigations, performed hydraulic analysis of the river segment, developed a hydraulic model and generated peak flood inundation maps
- Conducted time series analysis of the channel using aerial photographs from 1979-2007 in a heads up 3-D environment to characterize stream type, determine channel migration rates and direction, identify potential avulsion sites and characterize site morphodynamics
- Floodplain scour potential was modelled and foundation design underwent a geotechnical review with consideration of the local geoenvironmental setting

Fidler – Oldman River Crossing Assessment, Hydrological Studies, SNC-Lavalin Inc., Transmission and Distribution (T&D), British Columbia, Canada, CA $155 000 (02/2013 - 06/2013)

SNC-Lavalin Inc. was contracted to assess the hydrology, geomorphology and foundation design at a proposed transmission line river crossing at Fidler

- Analyzed hydrometeorological variables, generated flood frequency curves, investigated open water field, conducted hydraulic analysis of the river segment, developed a hydraulic model and generated peak flood inundation maps
- Conducted time series analysis of the channel using aerial photographs from 1949-2009 in a heads up 3D environment to characterize stream type, determine channel migration rates and direction, identify potential avulsion sites and characterize site morphodynamicsFloodplain scour potential was modelled and foundation design underwent a geotechnical review with consideration of the local geoenvironmental setting.
- A high pressure gas pipeline crossed the floodplain at Fidler, a depth of cover survey was performed and a risk assessment completed with consideration of modelled floodplain potential scour.
- T&D was provided with robust recommendations for foundation design with understanding of local hydraulics, morphodynamics and potential floodplain scour.

Fluvial Geomorphology Assessment, Hydrological Studies, Cardero Coal, British

Site Experience

- Canada

Computer Applications

- ArcInfo
- Hydrologic Engineering Center's River Analysis System (HEC RAS)
- Hydrologic Engineering Center's GeoRAS (HEC-GeoRAS)
- SPSS
- SAS

Columbia, Canada, CA $45 000 (01/2013 - 03/2013)

SNC-Lavalin Inc. conducted detailed fluvial geomorphology assessment using time series analysis including the identification of historical areas of river erosion and deposition, and rates of change over the period of record

- Determined vulnerability to channel change and provided assessment of channel change for environmental impact assessment

Little Smokey River and Joachim Creek Scour Assessment, Hydrological studies, Tourmaline Oil Corporation, Alberta, Canada, CA $26 000 (09/2013 - 12/2013)

SNC-Lavalin Inc. was contracted to assess the scour potential of two pipeline crossings for Tourmaline Oil Corporation

- Analyzed long profile for potential degradation of the bed and pool depth and migration
- Channel cross-sections and long profiles surveyed using RTK-GPS
- Bed grain size measured
- Regional flood frequency analysis conducted from Water Survey of Canada discharge data and drainage basin area
- Areas above each crossing determined using a digital terrain model in ArcGIS
- Hydraulic modelling performed using HEC-RAS to estimate hydraulic variables
- Potential 1:100 year scour depth was calculated
- Tourmaline Oil Corporation provided with a recommendation for depth of cover for each crossing

Saddle River Crossing and Stream Bank Restoration, Hydrological studies, Devon Canada Corporation, Alberta, Canada, CA $18 000 (05/2013 - 08/2013)

SNC-Lavalin Inc. was retained by Devon Canada to provide crossing recommendations for a pipeline repair following a line break on the Saddle River, Alberta

- A regional frequency analysis conducted using Water Survey of Canada discharge data and drainage area
- The catchment area calculated using a regional digital elevation model analyzed using ArcGIS
- HydroCalc V3.0 software used to estimate the depth of flow through the channel at the 1:2 and 1:100 year predicted flood flows
- Data from hydrologic analysis as well as the mean grain size of the channel were used to predict the 1:100 year scour depth for the Saddle River at the crossing
- Devon Canada Corporation was provided with a recommendation for depth of cover for the crossing

SINCE 2008

UNIVERSITY OF BRITISH COLUMBIA OKANAGAN, KELOWNA, BRITISH COLUMBIA, CANADA

Adjunct Professor

Supervised Honours students

Masters thesis committee member

Taught Applied Fluvial Geomorphology

Monitoring-Okanagan River Restoration Initiative, Okanagan Nation Alliance Fisheries Department, British Columbia, Canada (08/2009 - 04/2013)

Project was conducted in collaboration with the Okanagan Nation Alliance (ONA) to monitor the effects of the Okanagan River Restoration on bed sedimentology, channel morphology and spawning locations

- Supervised four honours students who conducted the work in collaboration with the ONA and produced theses
- Collected monitoring data at river restoration
- Analyzed sediment, spawning location and channel changes at river restoration site

The Impacts of Wildfire and Mountain Pine Beetle Disturbance on Wood Budgets, Stability and Related Sediment Storage *in Low-Sediment Supply Streams of the Okanagan Basin, British Columbia Forest Science Program, British Columbia, Canada (09/2008 - 04/2011)*

Served as Committee Member and Co-Author investigating the impacts of wildfire and mountain pine beetle disturbance on wood budgets, stability and related sediment storage in low-sediment supply streams of the Okanagan basin

- Research was conducted by Leonora King who successfully defended her Master of Science thesis at the University of BC, Okanagan
- The outcome of this research was increased knowledge of woody debris processes, a Master of Science thesis and one manuscript for publication

2005 - 2013 | OKANAGAN COLLEGE, KELOWNA, BRITISH COLUMBIA, CANADA

2010 - 2013 | College Professor

- Taught Geography and Earth and Environmental Science courses
- Conducted research on rivers in the Okanagan-Similkameen region

2006 - 2010 | Chair, Department of Geography & Earth and Environmental Science

- Conducted research on rivers in the Okanagan-Similkameen region
- Acquired funding to grow department from three to six members
- Oversaw the merging of the Geography Department and the Earth and Environmental Science Department
- Developed a new Environmental Studies diploma program
- Conducted research on rivers in the Okanagan-Similkameen region
- Developed environmental programming for Aboriginal students and hired local first nations people to contribute
- Chaired a number of hiring committees

Development of Environmental Programming for Aboriginal Learners, British Columbia Ministry of Advanced Education, British Columbia, Canada, CA $135 000 (09/2007 - 09/2009)

- Two year project to develop environmental programming for aboriginal learners at Okanagan College.
- Hired four local aboriginal people for the project
- Surveyed the interest of students in environmental programs, including aboriginal students, as well as environmental businesses in regard to hiring students from the programs
- Developed the Environmental Studies Diploma at Okanagan College
- Presented to the First Nations Land Management Advisory Board at the Tsleil-Waututh First Nation

2005 - 2006 | Assistant Professor

- Conducted research on rivers in the Okanagan-Similkameen region
- Taught Geography and Earth and Environmental Science Courses

2008 - 2012 | GREYSTOKES ENVIRONMENTAL (BURGE ECOHYDRAULICS), KELOWNA, BRITISH COLUMBIA, CANADA

President/Fluvial Geomorphologist

- Completed several sediment management and hydraulics studies

Analysis of Sedimentation and Sediment Mitigation Strategies for Shuttleworth Creek, Hydrological studies, Okanagan Nation Alliance Fisheries Department, British Columbia, Canada, CA $38 900 (04/2010 - 12/2011)

Investigated sedimentation and sediment mitigation strategies for Shuttleworth Creek in the southern Okanagan, British Columbia

- Project involved surveying 6 km of channel, reconstructing the downstream hydraulic conditions in Shuttleworth Creek and the Okanagan River, analyzing discharge patterns on Shuttleworth Creek and the Okanagan River, determining downstream sediment grain size, a temporal analysis of sedimentation patterns, and a conceptual design to restore salmon passage upstream
- Generated a comprehensive report containing recommendations to manage sediment and restore fish passage to Shuttleworth Creek

Mission Creek Channel and Streamway Width Assessment, Hydrological studies, City of Kelowna Environment Division, British Columbia, Canada, CA $10 000 (08/2009 - 05/2010)

Project assessed Mission Creek channel and streamway width

- Entailed a detailed analysis of Mission Creek's channel and streamway widths using empirical relationships from previous literature, a historical analysis of the channel using aerial photographs and mapping the proposed locations of the setback dyke
- Hydrologic Engineering Center's River Analysis System (HEC-RAS) was used to model the hydraulic conditions within channel and the proposed restored floodplain to estimate erosion potential
- Generated maps of potential dyke setback locations and a comprehensive report containing recommendations for the restoration priorities on Mission Creek

Analysis of Sedimentation and Sediment Mitigation Strategies for Mission Creek, Hydrological studies, City of Kelowna Environment Division, British Columbia, Canada, CA $10 000 (08/2008 - 04/2009)

Conducted an analysis of sedimentation and sediment mitigation strategies for Mission Creek in Kelowna

- Analyzed sedimentation and sediment mitigation strategies for Mission Creek
- Analyzed 15 km of river profile, cross-section and channel bed grain size data to determine areas of stability and instability within Mission Creek
- Conducted historical discharge and sedimentation patterns analysis
- Generated a comprehensive report containing recommendations for the management of sediment within the lower section of Mission Creek

2003 - 2005 | UNIVERSITY OF TORONTO, TORONTO, CANADA
Postdoctoral Fellow

- Increased knowledge of the impact of urbanization on rivers
- Produced several internal reports and conference presentations, a workshop, and one published manuscript

Urban Impacts on Stream Erosion in the Greater Toronto Area, National Science and Engineering Research Council (NSERC), British Columbia, Canada (10/2003 - 07/2005)

Served as a Scientist, investigated stream channel erosion due to urbanization in the greater Toronto area funded through NSERC Strategic Grant to three universities and public and private partners

- Results from this research were applied to the management of urban rivers to decrease river channel erosion and the loss of infrastructure
- Project involved the analysis of temporal channel changes and the Holocene evolution of the floodplain using geographic information systems (GIS)
- Conducted extensive field investigations of floodplain sedimentology, channel condition, and the use of ground penetrating radar (GPR)
- Developed a greater understanding of stream channel erosion due to urbanization

PROFESSIONAL ASSOCIATIONS

SINCE 08 / 2013	British Columbia Institute of Agrologists
SINCE 12 / 2011	Eco Canada

PROFESSIONAL DEVELOPMENT

2011	CRI Stream Restoration Design Course, Canadian Rivers Institute, Fredericton, New Brunswick, Canada

ADDITIONAL TRAINING

2013	WHMIS, SNC-Lavalin Inc., Canada
2013	First Aid, Okanagan College, Canada
2013	H_2S Alive, Alberta Health and Safety Training Institute, Canada
2013	Swiftwater Safety Training, Rocky Mountain Adventure Medicine, Canada

PUBLICATIONS AND PRESENTATIONS

King L., Hassan M., Wei A., Burge L.M. Wood Budgets of Headwater Streams in the Interior of British Columbia and their Response to Fire and Mountain Pine Beetle in Riparian Zones. *Earth Surface Processes and Landforms*, Article first published online: 28 Jan, Canada, 2013

Burge L.M., Guthrie R.H., River assessment. In: Guthrie R.H. and Cuervo V.A. (Eds). Understanding Geohazards: Slopes, Rivers and Coastlines. SNC-Lavalin Inc., 63-79, Calgary, Alberta, Canada, 2013

Burge L.M. Channel Bed Stability. In: Guthrie R.H. and Cuervo V.A. (Eds). Understanding Geohazards: Slopes, Rivers and Coastlines. SNC-Lavalin Inc., 80-88, Calgary, Alberta, Canada, 2013

Burge L.M., Guthrie R.H. Inland Flood Hazards. In: Guthrie R.H. and Cuervo V.A. (Eds). Understanding Geohazards: Slopes, Rivers and Coastlines. SNC-Lavalin Inc., 89-105, Calgary, Alberta, Canada, 2013

Guthrie R.H., Beaugrand H., Burge L.M. Detection, Monitoring, Instrumentation and Mitigation. In: Guthrie R.H. and Cuervo V.A. (Eds). Understanding Geohazards: Slopes, Rivers and Coastlines. SNC-Lavalin Inc., 142-164, Calgary, Alberta, Canada, 2013

Chaput-Desrochers, L., Burge, L.M., Little Smokey River/Joachim Creek Pipeline Crossing 100-year Scour estimation. Prepared for Tourmaline Oil Corp. 35 pp., Canada, 2013

Agboma, C., Burge, L.M., Karim, M., Beaugrand, H., Fidler Proposed Tower Crossing Assessment: Flood Hazard Study. Prepared for SNC-Lavalin Inc. Transmission & Distribution. 87 pp., Canada, 2013

Agboma, C., Burge, L.M., Karim, M., Beaugrand, H., South Foothills Transmission Project: Flood Hazard Study. Prepared for SNC-Lavalin Inc. Transmission and Distribution. 78 pp., Canada, 2013

Mitchell, A., Burge, L.M., Saddle River Crossing and Stream Bank Restoration. Prepared for Devon Canada Corporation. 65 pp., Canada, 2013

Burge L.M. Channel Condition of a Small Okanagan Stream Following Three Historical Dam Break Floods. Canadian Water Resources Association/Canadian Geophysical Union Annual Meeting, June 5-8, Banff, Alberta, Canada, 2012

Burge L.M. Characteristics and History of a Small Okanagan Stream. Western Division Canadian Association of Geographers Annual Meeting, March 8-10, Kelowna, British Columbia, Canada, 2012

King L., Hassan M., Wei A., and Burge L.M. Wood Budgets of Upland Streams in the Southern Interior of British Columbia. Western Division Canadian Association of Geographers Annual Meeting, March 8-10, Kelowna, British Columbia, Canada, 2012

Burge L.M. Analysis of Sedimentation and Sediment Mitigation Strategies for Shuttleworth Creek. Prepared for the Okanagan Nation Alliance Fisheries Department. 100 pp, Canada, 2011

Burge L.M. Mission Creek Channel and Streamway Width Assessment. Prepared for City of Kelowna Environment Division. 69 pp, Kelowna, Alberta, Canada, 2010

Burge L.M. Locating Setback Dykes in Channelized Rivers: a case study, Mission Creek, Western Division Canadian Association of Geographers Annual Meeting, March 25-27, Edmonton, Alberta, Canada, 2010

Burge L.M. Sediment, Energy and Long Profile Patterns of a Channelized River. Geological Society of America Cordilleran Section Meeting - 105th Annual Meeting, May 7-9, Mission Creek, British Columbia, Canada, 2009

Corbett N., and Burge L.M. River Long Profile Analysis with the Continuous Wavelet Transform. Geological Society of America Cordilleran Section Meeting - 105th Annual Meeting, May 7-9, Mission Creek, British Columbia, Canada, 2009

Young R.R., Sjogren D.B., Burge L.M., and Thomson S. Bedrock Glacial Landforms in the Okanagan Valley, British Columbia, Canada, Geological Society of America Cordilleran Section Meeting - 105th Annual Meeting, May 7-9, Mission Creek, British Columbia, Canada, 2009

Burge L.M. Analysis of Sedimentation and Sediment Mitigation Strategies for Mission Creek. Prepared for City of Kelowna Environment Division. 97 pp, Kelowna, British Columbia, Canada, 2009

Shugar D.H., Kostaschuk R., Ashmore P., Desloges J., and Burge L. In-situ Jet Testing of the Erosional Resistance of Cohesive Sreambeds. *Canadian Journal of Civil Engineering*. 34: 1192-1195, Canada, 2007

Burge L.M. Wandering River Island Head Diffluences (Bifurcations): Morphology and Surface Grain Size Patterns. *Earth Surface Processes and Landforms*. 31(10): 1211-1226, Canada, 2006

Burge L.M. Wandering Miramichi Rivers, New Brunswick, Canada. *Geomorphology*. 69: 253-274, Canada, 2005

Burge L.M., and Lapointe M.F. Understanding the Temporal Dynamics of the Wandering Renous River, New Brunswick, Canada. *Earth Surface Processes and Landforms*. 30(10): 1227-1250, Canada, 2005

Burge L.M. Testing Links Between River Patterns and In-Channel Characteristics Using MRPP and ANOVA. *Geomorphology*. 63(3-4):115-130, Canada, 2004

Henry K.A., Burge L.M., and Nguyen D. Testing Differences Between Point Patterns using GIS and Bootstrapping. In: Lecture Notes in Computer Science. 669. Springer-Verlag Heidelberg: 33-42, Canada, 2003

Burge L.M. Assessment of Side-Channel Habitat and Fish Community Structure, Little Southwest Miramichi River, New Brunswick. A progress report for the Atlantic Salmon Federation. 13 pp., Canada, 2000

Burge L.M., and Smith D.G. Confined Meandering River Eddy Accretions: Sedimentology, Channel Geometry and Depositional Processes. In: N.D. Smith and J. Rogers (Eds), Fluvial Sedimentology VI, Special Publication of the International Association of Sedimentologists. 28. Blackwell Science: 113-130, Canada, 1999

Burge L.M., and Smith D.G. Confined Meandering River Eddy Accretion Deposits: New Insights for Hydrocarbon Sedimentologists, CSPG-SEPM Joint Convention, June 1-6, Calgary, Alberta, Canada, 1997

Burge L.M. Confined Meandering River Eddy Accretion Deposits: Morphology, Sedimentology, Architecture and Significance, Presented to the Department of Geography at the 34th Annual Conference, University of Calgary, March, Calgary, Alberta, Canada, 1997

Burge L.M., and Smith D.G. Confined Meandering River Eddy Accretion Deposits: Morphology, Sedimentology, Architecture and Significance, Western Division Canadian Association of Geographers Annual Meeting, March 7-8, Prince George, British Columbia, Canada, 1997

Burge L.M., and Smith D.G. Eddy Accretion Deposits in Confined Meandering River Valleys: Morphology, Sedimentology, Depositional Processes and Implications, Geological Society of America Annual Meeting, October 28-31, Denver, Colorado, United States, 1996

COMMITTEES

SINCE 2012	Member, Okanagan Basin Waterboard Stewardship Committee, Kelowna, British Columbia, Canada
SINCE 2011	Mission Creek Restoration Initiative, Kelowna, British Columbia, Canada

DIRECTORSHIPS

SINCE 2012	Science Director, Canadian Rivers Institute, Fredericton, New Brunswick, Canada
SINCE 2011	Director, Friends of Mission Creek, Kelowna, British Columbia, Canada

AWARDS AND SCHOLARSHIPS

2003	Postdoctoral Fellowship, University of Toronto, Toronto, Ontario, Canada
1999	National Science and Engineering Research Council (NSERC), PGS-B, National Science and Engineering Research Council, Ottawa, Ontario, Canada

1999	Olin Fellowship, Atlantic Salmon Federation, Saint Andrews, New Brunswick, Canada
1996	Graduate Research Grant, University of Calgary, Calgary, Alberta, Canada

ACADEMIC POSTS

SINCE 2012	Associate Faculty, Royal Roads University, Victoria, British Columbia, Canada
SINCE 2005	Adjunct Professor, University of British Columbia - Okanagan, Kelowna, British Columbia, Canada
2005 - 2013	College Professor, Okanagan College, Kelowna, British Columbia, Canada
2003 - 2005	Postdoctoral Research Fellow, University of Toronto, Toronto, Ontario, Canada

CLIFF ROBINSON

Dr. Cliff Robinson has about 25 years of experience in the assessment, analysis and modelling of coastal marine habitats and environmental quality in Pacific Rim countries. He has published more than 30 primary papers and 40 technical reports in 6 key areas: 1) Oceanographic assessments and modelling of primary and secondary production, 2) Coastal benthic habitat mapping and risk assessments, 3) Marine forage fish habitat and population assessments, 4) Coastal marine biodiversity inventory and monitoring program development, 5) risk assessment of sensitive and vulnerable species such as sea-grasses, and 6) GIS-based habitat suitability and species distribution modelling. Dr. Robinson worked for Parks Canada for 13 years as a senior marine scientist responsible for establishing and operating coastal marine science programs to meet Pacific and Arctic National Park client objectives of ecological integrity and biodiversity conservation. Dr. Robinson has also worked in the environmental consulting industry for more than 6 years working closely with clients to provide sound and cost-effective solutions and methods for achieving business objectives while maintaining environmental integrity and sustainability. Dr. Robinson is currently working on a marine water quality and habitat management plan for the Prince Rupert Port Authority, and modelling habitat suitability and distribution of important forage species for government and industry clients.

SECTORS OF EXPERTISE

Environment

- Aquatic biology
- Coastal management
- Environmental Management
- Habitat restoration
- Other impact studies
- Physical oceanography and marine geophysics
- Remote sensing to support environmental studies
- Scientific or environmental studies
- Sedimentology
- Water Quality

EDUCATION

1994	Ph.D. (Biological and Fisheries Oceanography), University of British Columbia, Vancouver, British Columbia, Canada
1988	M.Sc. (Zoology), University of Alberta, Edmonton, Alberta, Canada
1985	B.Sc. (Marine Biology), University of Victoria, Victoria, British Columbia, Canada

EXPERIENCE

SINCE 2013

SNC-LAVALIN INC., NANAIMO, BRITISH COLUMBIA, CANADA
Environment & Water
Senior Marine Biologist

- To provide marine ecology and oceanography subject expertise and support to marine environmental assessments and management of seaports and other marine related projects.

Years of Experience

- 24 years

Years with SNC-Lavalin

- 2 years

Key Positions

- Biologist
- Environmental Specialist
- Project Scientist

Languages

- English

1999 - 2012 PARKS CANADA, VANCOUVER, BRITISH COLUMBIA, CANADA
Service Centre
Senior Marine Scientist

- Provided expert science advice to managers on marine ecological and environmental issues.
- Developed classification systems and optimization models (e.g., Marxan) to assess coastal marine biodiversity in relation to anthropogenic stressors.
- Conducted field studies and developed GIS-based modelling tools for identifying suitable habitats (e.g., benthic burying habitats and pelagic feeding areas) important to a key forage species, such as the Pacific sand lance (*Ammodytes hexapterus*).
- As part of an ecosystem-based framework, I developed a long-term reference condition monitoring program (8-y) for assessing fish assemblage and environmental quality in eelgrass meadows along the BC coast.
- Worked with DFO, NOAA and PCA colleagues to develop and apply a risk assessment framework for use in ecosystem based management.
- Trained and mentored many operational staff in marine ecological and oceanographic processes and principles.
- Liaised with senior government managers, First Nations, stakeholders, and the general public with regard to marine issues.

1995 - 1999 MARLIM RESEARCH, CANADA
Principal and Consulting Marine Biologist

- Consultant to Canadian and Japanese federal fisheries departments:
  - Developed resource inventory committee standard methods for sampling vegetation, invertebrates, and fishes found in shallow near-shore coastal habitats of BC
  - Developed an electronic catalogue summarizing data for Pacific herring spawning areas
  - Developed a geographic information system-ecological modelling approach to evaluate and predict productive capacity of foreshore fish habitats in the Strait of Georgia
  - Critically reviewed published ecological models, habitat classification systems and geographic information system relevant to juvenile fish production in shallow marine zones
  - Developed a plankton-fish production model for the National Japanese Fishery Agency for the Oyashio Current region off Hokkaido, Japan.

1996 - 1998 NORTHWEST ECOSYSTEM INSTITUTE, CANADA
Marine Biologist

- Developed a GIS-based modelling system to integrate forest, Pacific salmon, and water resource information for the Kennedy watershed on Vancouver Island, as part of a Forest Renewal funded project.

Site Experience

- Australia
- Canada
- Japan
- Mexico

Computer Applications

- MS Office
- ArcGIS/Arcview
- PRIMER-PERMANOVA 6
- NCSS
- IDRISI
- QTC VIew/impact
- Stella modelling software

1994 - 1996 | TRITON ENVIRONMENTAL CONSULTANTS, NANAIMO, BRITISH COLUMBIA, CANADA
Aquatic Biologist

- Project consultant to MacMillan Bloedel (pulp and paper mill) evaluating anthropogenic impacts on water quality in Alberni Inlet, and its influence on migrations/survival of returning Pacific sockeye salmon. Also, considered the impacts of climate change on the movement of sockeye salmon from Alberni Inlet and entry into the Somass River.

1990 - 1994 | OCEANOGRAPHY DEPARTMENT, UNIVERSITY OF BRITISH COLUMBIA, CANADA
Research Assistant

- Synthesized available plankton and fisheries information for this region, and constructed a ecosystem-level simulation model. The ecosystem-based model was used to investigate linkages between variability in the coastal ocean climate and the production dynamics of the pelagic ecosystem. Output from the model was used to create a new index of plankton production that provides an indicator of ecosystem condition from 1967-1998. Index output has recently been compared to survival and growth indices of several commercially important pelagic fish (Robinson and Ware 1999). The La Perouse trophodynamics model also served as a basis for the development of a plankton-fish production model for the Oyashio Current region off Hokkaido, Japan.

1986 - 1989 | ZOOLOGY DEPARTMENT, UNIVERSITY OF ALBERTA, CANADA
Research Associate

- Responsible for the establishment and maintenance of a liquid oxygen injection system for deep waters of oxygen depleted Amisk Lake in central Alberta. Field manager responsible for water quality field sampling, crew supervision, laboratory analysis, statistical analysis, interpretation and report writing. Also led the development of an acoustics and field sampling program for Lake Whitefish to assess response to changing environmental quality in deep waters of the lake.

PUBLICATIONS AND PRESENTATIONS

Robinson, C.L.K. and J. Yakimishyn. 2013. Short-term persistence and stability of fish assemblages within eelgrass meadows on the Pacific coast of Canada. Journal Fisheries and Aquatic Sciences, Canada, 2013

Robinson, C.L.K., D. Hyrnyk, V. Barrie, and J. Schweigert. 2013. Identifying suitable burying habitat for Pacific sand lance (Ammodytes hexapterus) in the Strait of Georgia, British Columbia, Canada. Progress in Oceanography, Canada, 2013

Cabaço, S., E.T. Apostolaki, P. García-Marín, R. Gruber, I. Hernández, B. Martínez-Crego, O. Mascaró, M. Pérez, A. Prathe, C.L.K. Robinson, J. Romero, A.L. Schmidt, F. T. Short, B.I. Van Tussenbroek and R. Santos. 2013. Effects of nutrient enrichment on seagrass population dynamics: evidence and synthesis from the biomass-density relationships, Spain, 2013

Siegel, M.R., C.L.K. Robinson, and J. Yakimishyn. 2013. The effect of region, fish size, and sample size on weight-length relationships for small-bodied fishes found in eelgrass meadows (Zostera marina) along the Pacific coast of Canada. Northwest Science, United States, 2013

Oates, S., C.L.K. Robinson. 2012. Preliminary assessment of subtidal habitat at thirteen anchorages in Gulf Islands National Park Reserve of Canada. Ecosystems Services Technical Report, Vancouver, British Columbia, Parks Canada Agency. 34 p, Canada, 2012

Robinson, C.L.K., J. Yakimishyn and P. Dearden. 2011. Habitat heterogeneity and eelgrass fish assemblage diversity and turnover. Aquatic Conservation: Marine and Freshwater Ecosystems. 21(7): 625-635, British Columbia, Canada, 2011

H. G.Greene, T. Wyllie-Echeverria, D. Gunderson, J. Bizzarro, V. Barrie, K. Fresh, C.L.K. Robinson, D. Cacchione, D. Penttila, M. Hampton, A. Summers. 2011. Deep-Water Pacific Sand Lance (Ammodytes hexapterus) habitat evaluation and prediction for the Northwest Straits region. Northwest Straits Commission Final Report, Canada, 2011

Haynes, T. C.L.K. Robinson, and P. Dearden. 2008. Modelling nearshore intertidal habitat use of young-of-the- year Pacific sand lance (Ammodytes hexapterus) in Barkley Sound, British Columbia, Canada. Environmental Biology of Fishes 83(4):473-484, Canada, 2008

Robinson, C.L.K. and K. Royal. 2008. An Analysis of habitat representation for the proposed Southern Strait of Georgia National Marine Conservation Area. Ecosystems Services Technical Report, Vancouver, BC, Parks Canada Agency. 47 pp, Canada, 2008

Peterson, T.D., H.N.J. Toews, C.L.K. Robinson, and P.J. Harrison . 2007. Nutrient and phytoplankton dynamics in nearshore waters of the Queen Charlotte Islands, British Columbia, Canada, during the summer upwelling seasons of 2001-2002. J. Plankton Research. 29:219-239, Canada, 2007

Martel, G., C.L.K. Robinson, R. Markel. 2007. An assessment of methods for inventorying young-of-the-year of the special concern Bocaccio (Sebastes paucispinis) in nearshore waters of National Parks along the Pacific coast of Canada. Ecosystems Services Technical Report. Parks Canada. 22 p, Canada, 2007

Robinson, C.L.K., G. Martel, J. Yakimishyn. 2006. Monitoring for the ecological integrity of eelgrass beds (Zostera marina) in Canada's coastal National Parks. Ecosystems Services Technical Report. Parks Canada. 95 p, Canada, 2006

Robinson, C.L.K., J. Morrison, and M.G.G. Foreman. 2005. Oceanographic connectivity among marine protected areas on the north coast of British Columbia, Canada. Canadian Journal of Fisheries and Aquatic Sciences 62:1350-62, Canada, 2005

Robinson, C.L.K., J.F.R. Gower, and G.A. Borstad. 2004. Twenty years of satellite observations describing phytoplankton blooms in seas adjacent to Gwaii Haanas National Park Reserve, Canada. Canadian Journal of Remote Sensing 30:36-43, Canada, 2004

Robinson, C.L.K. and J. Yakimishyn. 2004. Modeling the cumulative effects of land and marine activities on Zostera marina production in Grice Bay, Pacific Rim National Park Reserve of Canada. Ecosystem Services Technical Report. Parks Canada. 39 pp, Canada, 2004

Robinson, C.L.K., T. Haynes, P. Shepherd, B. Hansen, and M. Collyer. 2004. Analysis of critical marine foraging habitats of Marbled Murrelets in Pacific Rim National Park Reserve of Canada. Interdepartmental Recovery Fund Final Report, Canada, 2004

Robinson, C.L.K. 2004. An evaluation of satellite imagery for monitoring marine phytoplankton in regions of interest to Parks Canada on the Pacific coast of Canada. Ecosystems Services Technical Report, Vancouver, British Columbia, Parks Canada Agency. 47 p, Canada, 2004

Jamieson, G., E. Gregr, and C.L.K. Robinson. 2004. Northern abalone case study for the determination of critical habitat. Canadian Science Advisory Secretariat Research document 2004/117. 63p, Canada, 2004

Robinson, C.L.K. 2000. The consumption of euphausiids by the pelagic fish community off southwestern Vancouver Island. J. Plankton Research 22: 649-1662, Canada, 2000

Wada, T, D.M. Ware, M. Kashiwai, and C.L.K. Robinson. 1998. Response of plankton and fish production dynamics to sardine abundance regimes shifts in the Oyashio Current region. Memoirs of the Faculty of Fisheries, Hokkaido University 45(1):123-130, Japan, 1998

COMMITTEES

2005 - 2012	Senior scientist, National Marine Conservation Areas program biodiversity representation assessment committee and senior scientist on the monitoring framework development committee.

2005 - 2012	Science advisor, Fisheries and Oceans Canada marine species at risk committees (Leatherback turtle recovery team, Humpback whale recovery team, Sea otter recovery team and management plan team, Rougheye and Longspine rockfish management team).
2004 - 2012	Senior scientist, BC-Canada Oceans MOU marine indicator committee and the marine protected area committee
1999 - 2012	National Chair, Marine Monitoring working group for ecological integrity in National Parks.
1999 - 2012	Science Member, Fisheries and Oceans Canada Pacific Science Advice Review Committee on Marine Habitat
2006 - 2010	Senior scientist on the tri-national (Canada, US, Mexico) Bering to Baja Marine Conservation Initiative
2006 - 2010	National Chair, Parks Canada Marine Monitoring committee for ecological integrity in National Parks

ACADEMIC POSTS

SINCE 1999	Associate Adjunct Professor, Geography Department, University of Victoria, Victoria, British Columbia, Canada

TREVOR MCCONKEY

SNC·LAVALIN

Mr. Trevor McConkey has over 14 years of experience in environmental consulting and has managed projects from a wide range of industries including upstream and downstream oil and gas, mining, forestry, and transportation. He has a successful track record of applying the principles of phytoremediation and bioremediation in the remediation of contaminated soils and drilling wastes on remote and northern sites. Since 2006, Mr. McConkey has served as a senior technical resource for a variety of upstream oil and gas client groups in meeting the objectives of the British Columbia Oil and Gas Commission Certificate of Restoration process for the assessment, remediation, and reclamation of oil and gas sites. He is currently a key account manager for a major oil and gas producer in northeast BC. Mr. McConkey also has extensive experience in the assessment and remediation of both operational and abandoned mine sites in northern British Columbia. Since 2009, Mr. McConkey has successfully facilitated and managed various mine site assessment and reclamation projects involving multi-disciplinary technical teams and extensive First Nation consultation. In 2008, Mr. McConkey completed a M.Sc. (Forestry) degree related to his research on soil reclamation and reforestation at abandoned oil and gas well sites.

SECTORS OF EXPERTISE

Environment

- Contaminated sites
- Ground Water / Hydrogeology
- Mining sites
- Pipelines
- Surface Water Resources
- Terrestrial Environment
- Waste management

Mining & Metallurgy

- Mine rehabilitation

EDUCATION

2008	M.Sc., Natural Resources and Environmental Studies, University of Northern British Columbia (UNBC), Prince George, British Columbia, Canada
2000	B.Sc., Environmental Science, University of Northern British Columbia (UNBC), Prince George, British Columbia, Canada

EXPERIENCE

SINCE 2005

SNC-LAVALIN INC., PRINCE GEORGE, BRITISH COLUMBIA, CANADA
Environment & Water
Project Manager

- Management and training of technical and scientific staff
- Regulatory and client liaising
- First Nations engagement and facilitation
- Design, management, and reporting for environmental soil and groundwater investigations and remediation at a variety of industrial/commercial sites including mine sites, oil and gas pipelines and wellsites, refineries, sawmills, airports, and manufacturing/processing facilities

Years of Experience

- 15 years

Years with SNC-Lavalin

- 15 years

Key Positions

- Project Manager
- Agrologist
- Environmental Specialist

Languages

- English

Site Experience

- Canada

Computer Applications

- SPSS 15.0 (statistical package)
- Microsoft Office

- Reclamation and related inspections under the BC Oil and Gas Commission Certificate of Restoration (CoR) process for the closure of upstream oil and gas wellsites
- Mine site assessment, remediation, and reclamation.

1999 - 2005 | MORROW ENVIRONMENTAL CONSULTANTS INC., PRINCE GEORGE, BRITISH COLUMBIA, CANADA
Project Scientist

- Responsibilities included management and review of the projects listed above. These projects were in progress when the company was purchased by SNC-Lavalin in 2005.

1998 - 1999 | ALPINE ENVIRONMENTAL LTD., GRANDE PRAIRIE, ALBERTA, CANADA
Field Foreman

- Upstream oil and gas environmental services
  - Drilling waste management
  - Spill response
  - Soil and groundwater assessments
  - Wellsite Reclamation.

1997 - 1998 | SHAW PIPE PROTECTION LTD., CALGARY, ALBERTA, CANADA
Quality Control Technician

- Implementation of QA/QC program for pipe coating plant
  - Materials and final product testing
  - Instrument calibration and maintenance.

PROFESSIONAL ASSOCIATIONS

SINCE 2006 | British Columbia Institute of Agrologists, Membership no. 1666

PROFESSIONAL DEVELOPMENT

2006 | Sediment and Erosion Control, Continuing Studies, University of Northern British Columbia (UNBC), Prince George, British Columbia, Canada

ADDITIONAL TRAINING

2009 | Workplace Hazardous Materials Information System, SNC-Lavalin Inc., Environment Division, Prince George, British Columbia, Canada

2009 | Standard First Aid, St. John Ambulance, Canada

1999 | Certificate of Training, Transportation of Dangerous Goods, SNC-Lavalin Inc., Environment Division, Prince George, Canada

PUBLICATIONS AND PRESENTATIONS

McConkey, T, C.E. Bulmer, and P. Sanborn. 2012. Effectiveness of five soil reclamation and reforestation techniques on oil and gas well sites in northeastern British Columbia. Canadian Journal of Soil Science. Volume 92: 165-177, Canada, 2012

McConkey, T, C.E. Bulmer, and P. Sanborn. 2010. Soil reclamation and reforestation at oil and gas well sites in Northeastern BC. Powerpoint presentation at Canadian Land Reclamation Association Annual Conference, Red Deer, AB (February 22, 2010), Red Deer, Canada, 2010

McConkey, T. 2008. Soil reclamation and reforestation at oil and gas well sites in Northeastern BC. M.Sc. Thesis (Forestry). Natural Resources and Environmental Studies, University of Northern British Columbia, Prince George, BC, Canada, 2008

McConkey, T., C.E. Bulmer, and P. Sanborn, "Soil Rehabilitation at Abandoned Wellsites in Northeastern BC" (Poster), BC Mine Reclamation Symposium, Abbotsford, BC (2005), Abbotsford, Canada, 2005

DIRECTORSHIPS

2004 - 2012	TD Canada Trust, Friends of the Environment, Member of the Board of Directors (Regional), Canada

AWARDS AND SCHOLARSHIPS

2005	Technical & Research Committee on Reclamation, Jake McDonald Memorial Scholarship - Mine Reclamat, Canada

PIERRE STECKO, M.Sc., EP, RPBio
Senior Aquatic Scientist / Principal

Education: M.Sc., Ecotoxicology/Sediment Geochemistry, Simon Fraser University, 1997
B.Sc., Biology/Ecology, University of British Columbia, 1992

Affiliations: Certified Environmental Professional (EP), 2002 - present

- Water Quality
- Fisheries and Wildlife
- Mining

Registered Professional Biologist (RPBio) British Columbia, 2005 - present

Canadian Aquatic Biomonitoring Network (CABIN) - Project Manager, 2013

Member - Society of Environmental Toxicology and Chemistry (SETAC), 1993 - present

Expertise: Mr. Stecko is an aquatic ecotoxicologist who works with clients, primarily in the mining industry, to understand, mitigate and manage potential aquatic environmental effects through the application of good science. His areas of scientific expertise are: aquatic ecotoxicology, aquatic environmental assessment, aquatic biology, aquatic ecology, aquatic chemistry, sediment geochemistry, environmental behaviour and fate of contaminants. Within these areas of expertise, Mr. Stecko has focussed predominantly on metals and metalloids. In addition to his solid expertise, Mr. Stecko brings and high level of professionalism, dedication and interest to the projects he is involved in.

Experience: Mr. Stecko has been applying his expertise in projects implemented for the mining industry across Canada for more than 15 years and has gained substantial perspective on environmental issues in the mining industry. Mr. Stecko's involvement has often been strategic and he is very familiar with all aspects of mining operations and the manner in which they interact with the environment. He is also familiar with regulatory regimes and requirements across Canada. Specific applications that he has been engaged in over the last 15 years include environmental permitting, aquatic environmental assessment, environmental monitoring program design and implementation, environmental effects monitoring, development of site-specific objectives, and studies of metal/metalloid dynamics and ecotoxicity in aquatic environments. A brief summary of selected projects he has been engaged in over the last five years is provided (Table 1).

History: Mr. Stecko is a founding partner of Minnow Environmental Inc. (October 2000). Prior to that he was employed at Phoenix Environmental Inc. (1999/2000), Beak International Inc. (1998/1999), Environment Canada (1997, contract), Simon Fraser University (1994-1997), and EVS Environment Consultants (1992/1993).

Training: Mr. Stecko has received training in many areas required for the effective implementation of environmental projects in Canada: including Association of Professional Biology Ethics Training, Electrofishing Certification, Wilderness First Aid, Standard First Aid, Joint Health and Safety Committee Training, BOAT Accreditation, Workplace Hazardous Materials Information System, Transportation of Dangerous Goods, and Mine Surface Induction Training.

Publications: Mr. Stecko has authored or co-authored more than 100 reports to clients and a number of journal articles published in peer-reviewed journals. He has also prepared and presented numerous technical presentations for public and specialist audiences.

Table 1: Summary of Mining Environmental Project Experience - Pierre Stecko, 2009-2014 only

Year	Project	Client	Role	Description
2014	Investigation of Cause Study under the Metal Mining Effluent Regulations	Glencore Xstrata plc Raglan Mine	Project Principal	Investigate the cause of lower growth in arctic charr in a mine exposed area relative to a reference area. Interesting attributes of the study include the complex life history of arctic charr, a provincial monitoring program that historically pressured the exposed area population, and the application of genetic tools to sex fish in order to allow a non-lethal study.
2014	Cycle 4 Environmental Effects Monitoring	Goldcorp Musselwhite Mine	Project Principal	Cycle 4 EEM at the Musselwhite Mine includes a benthic invertebrate community survey and a fish population survey in a lake receiving mine effluent and comparison to reference lakes.
2014	Investigation of Cause Study under the Metal Mining Effluent Regulations	Capstone Mining Corp. Minto Mine	Project Manager	Investigate the cause of higher benthic invertebrate density and differences in benthic invertebrate community structure in a mine exposed area relative to a reference area. Interesting attributes of the investigation include high temporal variability in benthic invertebrate communities that will potentially require incorporation of more reference areas.
2013	Technical Assessment of a Proposed Mine Discharge under the *BC Environmental Management Act*	Imperial Metals Mount Polley Mine	Project Manager	Technical Assessment of a proposed effluent discharge under the Waste Discharge Regulation of British Columbia's *Environmental Management Act* . This project involved evaluation and presentation of detailed scientific information supporting Technical Assessment. Specific elements of the project included: characterization of the environmental setting, water quality impact assessment, aquatic life impact assessment and reporting/presentation of the technical assessment.
2013	Quantification of a loss of Fish Habitat due to Waste Rock Disposal and Offsetting	Imperial Metals Mount Polley Mine	Project Manager	Quantification of fish habitat loss due to the planned construction of a waste rock disposal site over a small creek. The quantification included all physical, chemical and biological data required to support assessment under the Navigable Water Protection Act, the Fisheries Act and the British Columbia Water Act. Quantification was used as a basis for identifying offsetting needs and options.
2013	Quantitative Monitoring of Bull Trout in Babcock Creek and Monitoring Program Design	Teck Coal Ltd. Quintette Coal Operations	Project Principal	Quantitative monitoring of the bull trout population of Babcock and Gordon creeks, principally by hoop netting and backpack electrofishing, to optimally quantify population size. Development of a long-term monitoring program using the most effective and quantitative techniques in order to monitor the potential influence of water volume reductions associated with mine activity.
2013	Biological Monitoring Program	Goldcorp Cochenour Mine	Project Principal	Monitoring of water quality, sediment quality, benthic invertebrate communities and fish populations in order to evaluate the influence of a mine effluent discharge on near-field areas of a large lake.
2013	Water Use Licence Monitoring	Capstone Mining Corp. - Minto Mine	Project Principal	Implementation of monitoring of sediment, periphyton and benthic invertebrate communities to meet Water Use Licence requirements.
2013	Effects Assessment for Proposed Mine Expansion	Capstone Mining Corp. - Minto Mine	Project Manager	Conducted an evaluation of projected copper concentrations in a creek environment to determine if concentrations would be predicted to cause adverse effects under site-specific conditions. Included application of Biotic Ligand Models (BLM), both acute and chronic, that account for co-occurring determinants of copper bioavailability.
2013	Sediment Quality Evaluation and Spatial Interpretation	Teck Coal Ltd. Elk Valley Operations	Project Manager	Evaluation of the sediment quality of a lake located downstream of several mining operations. Objectives included the characterization of metal and metalloid concentrations relative to guidelines for the protection of aquatic life and an assessment of the spatial distribution of metal/metalloid concentrations relative to sources.
2013	Provincial Environmental Effects Monitoring (Fish Habitat, Aquatic Life Tissue Chemistry)	Teck Coal Ltd. Quintette Coal Operations	Project Principal	As part of staged Environmental Effects Monitoring required by the provincial government, initiated monitoring with a comprehensive characterization of fish habitat within areas potentially influenced by mining activity and suitable reference areas. Completed tissue quality monitoring of benthic invertebrates, amphibians, fish and eggs of aquatic birds.
2013	Cycle 2 Environmental Effects Monitoring Study	Taseko Mines Gibraltar Mine	Project Manager	Environmental Effects Monitoring under the MMER in a major, fast-flowing river (the Fraser River). Monitoring included water, sediment, benthic invertebrate communities and fish. Notable successes included the application of fast-water artificial substrates to sample benthic invertebrates and the first successful capture of fish (leopard dace and peamouth) in sufficient number to effectively address questions of potential effect upon fish populations.
2013	Evaluation of Permit Conditions and Development of a Reporting Template and Annual Report	Teck Coal Ltd. Quintette Coal Operations	Project Principal	Reviewed two *Environmental Management Act* permits and previous reporting deficiencies in order to develop a template to ensure complete annual report. In the process, also assisted in the preparation of an annual report for 2012.
2013	Cycle 4 Environmental Effects Monitoring Study	Cleveland Cliffs Wabush Mine	Project Principal	Environmental Effects Monitoring under the MMER. Prescriptive monitoring included water, benthic invertebrate communities and fish. Study was of a northern river receiving mine effluent that included a high turbidity load.
2013	Selenium Monitoring Program - 2013	Imperial Metals Mount Polley Mine	Project Manager	Monitoring selenium concentrations in water, sediment, algae, benthic invertebrates, fish muscle tissue and fish ovary tissue in erosional and depositional habitats of creeks. Objectives: 1) to determine if selenium concentrations have increased in areas adjacent to the mine relative to pre-mining concentrations; and 2) to provide good pre-discharge baseline data against which future results (post-discharge).
2012	Balmer Lake Fish Community Characterization	Goldcorp Red Lake Gold Mines	Project Principal	Characterized the current status of the fish community and fish populations in Balmer Lake. Due to mining activities starting the late 1940s, fish had been eliminated in Balmer Lake, but improved conditions starting in the 1990s led to a start of recolonization which has been proceeding since. This study documented the most diverse fish community yet recorded and continued improvement of fish populations.
2012	Technical Observation of an Environment Canada Investigation and Supporting Sampling	Confidential Client	Project Manager	Retained by client to provide technical oversight of an investigation conducted by Environment Canada. This include observing Environment Canada data collections to evaluate technical approach, as well as collecting additional data.
2012	No Net Loss Survey of a Northern Watershed	Agnico-Eagle Meliadine Project	Project Principal	Identification and evaluation of opportunities to achieve no net loss of the productive capacity of fish habitat in a northern watershed subject to a proposed mine development. Project includes an evaluation of fish occupancy and potential opportunities to open up habitat to produce fish.
2012	Water Use Licence Monitoring	Capstone Mining Corp. - Minto Mine	Project Principal	Implementation of monitoring of sediment, periphyton and benthic invertebrate communities to meet Water Use Licence requirements.
2012	Cycle 1 Environmental Effects Monitoring Study	Alexco Bellekeno Mine	Project Principal	Environmental Effects Monitoring under the MMER in a fast-flowing northern river. Monitoring including water, benthic invertebrate communities and fish. Interesting attributes of the study include the influence of current and historical placer mining activity on the receiving environment and complex seasonal movement patterns of arctic grayling.

Table 1: Summary of Mining Environmental Project Experience - Pierre Stecko, 2009-2014 only

Year	Project	Client	Role	Description
2012	Development of a Non-lethal Fish Tissue Contaminant Monitoring Program	Xstrata Nickel Raglan Mine	Project Principal	In conducting EEM, Minnow noticed a temporal decrease in arctic charr catchability within an arctic river. Minnow recommended that the decrease be further investigated (verified) and evidence suggested that provincial tissue quality monitoring was the likely cause. In recognition of the sensitivity of arctic charr in an arctic river, Minnow was engaged to design and implement a non-lethal fish tissue monitoring program.
2012	Technical Assistance with Water and Sediment Quality Data Interpretation	Knight-Piesold Ltd. and Baffinland	Project Manager	Provided technical assistance and advice on the interpretation of water and sediment quality data collected at a project site on Baffin Island. This included assistance in identifying suitable methodologies for the development of site-specific water quality objectives and for interpretation of sediment quality data accounting for geochemical properties.
2012	Selenium Monitoring Program Design and Implementation	Imperial Metals - Mount Polley Mining Corporation	Project Principal	Monitoring selenium concentrations in water, sediment, algae benthic invertebrates, fish muscle tissue and fish ovary tissue in creeks and lakes. Objectives: 1) to determine if selenium concentrations have increased in areas adjacent to the mine relative to pre-mining concentrations; and 2) to provide good pre-discharge baseline data against which future results (post-discharge).
2012	Chemical and Biological Monitoring of Closed Gold Mines	Goldcorp Porcupine Gold Mines	Project Principal	Chemical and biological monitoring including water quality, sediment quality, benthic invertebrate community, and fish in small creeks influenced by approximately 100 years of mining activity. Results were compared to reference. Data used to assist in the identification of priorities for remediation/reclamation.
2012	Review of the Aquatic Toxicity of Cyanide in a Northern Climate	Knight-Piesold Ltd. and Tyhee NWT Corp.	Project Manager	To assist with a response to the Mackenzie Valley Environmental Review Board, conducted a review of cyanide toxicity within a northern environment.
2012	Surface Water Monitoring Report	Goldcorp Musselwhite Mine	Project Principal	Assisted the mine with the preparation of an interpretative surface water monitoring report.
2012	Cycle 3 Environmental Effects Monitoring Study	North American Palladium Lac des Iles Mine	Project Principal	Cycle 3 EEM included a water quality, sediment quality, benthic invertebrate community fish monitoring within a system of small lakes receiving mine effluent and comparison to reference lakes.
2012	Aquatic Assessment of a Sewage Treatment Plant Upgrade	Goldcorp Red Lake Gold Mines	Project Principal	Assessment of a volume upgrade to the Balmer Complex sewage treatment plant. Included a evaluation of achieved performance relative to performance targets and water quality guidelines for the protection of aquatic life. Key issues were concentrations of nutrients and their potential influence on the trophic status of Balmer Creek.
2012	Review of Mercury Concentrations in Sportfish Tissue	Goldcorp Musselwhite Mine	Project Principal	Evaluation of mercury concentrations in walleye relative to sportfish consumption guidelines and fish age/size to determine whether observations of temporal increase were real or an artifact of temporal differences in the size of captured fish.
2012	Technical Assessment of a Proposed Discharge under the *BC Environmental Management Act*	Confidential	Project Manager	Assist the mine in assessing environmental aspects of the proposed discharge, including detailed analysis of the Project, preparation of several technical reports (Existing Water Quality, Environmental Description and Scope for Technical Assessment). Provide technical expertise at pre-application meeting.
2012	Technical support for Water Use Licence Amendment and Phase IV-V Permitting	Capstone Mining Corp. - Minto Mine	Project Manager	Provide technical support on issues of water quality and aquatic receiving environment protection for Water Use Licence Amendment and Mine development permitting.
2012	Selenium Monitoring and Benthic Invertebrate Community Monitoring	Teck Coal Ltd.	Project Principal	The Elk Valley has been the focus of considerable ongoing research into the mechanisms and consequences of elevated selenium concentrations. Studies in 2012 include selenium monitoring in aquatic food chains and evaluation of benthic invertebrate communities.
2012	Baseline Research and Aquatic Environmental Monitoring Studies	Faro Mine Closure Office / CH2M Hill	Project Principal	The Faro Mine is one of Canada's most significant legacy sites. Implementation of aquatic assessment programs including field studies of sediment, benthic invertebrate communities, periphyton and fish.
2012	Investigation of Cause Monitoring under the Metal Mining Effluent Regulations (MMER)	Goldcorp Red Lake Gold Mines and Xstrata Zinc Brunswick Mine	Project Principal	Investigation of the cause of effects to benthic invertebrate communities and/or fish populations identified in Environmental Effects Monitoring (EEM). Studies involve the application of innovative approaches to assessment of water chemistry, sediment geochemistry and biological effects assessment to identify the cause of effects.
2011	Research on the Modulation of Copper Olfactory Inhibition by Dissolved Organic Carbon	Yukon Mining and Petroleum Environmental Research Group and Capstone Mining Corp.	Project Manager	In collaboration with Simon Fraser University, managed original research on the influence of dissolved organic carbon (DOC) on modulating the inhibitory effect of copper on fish olfaction.
2011	Summary of 15 Years of Environmental Monitoring at the Raglan Mine	Xstrata Nickel - Raglan Mine	Project Principal	Integrated interpretation of all environmental monitoring data collected by the mine to form concise conclusions on the mine's influence on its local and regional environment over ten years of operation. Environmental monitoring data included: water, sediment, benthic invertebrates, fish, mussels, snow and air.
2011	Water Use Licence Monitoring	Capstone Mining Corp. - Minto Mine	Project Principal	Design and implementation of monitoring of sediment, periphyton and benthic invertebrate communities to meet Water Use Licence requirements.
2011	Evaluation of Creek Habitat Condition in the Vicinity of a Proposed Mine Discharge	Mount Polley Mining Corporation	Project Principal	Complete characterization of a creek to indentify physical and biological conditions in order to: 1) characterize potential for physical effects (erosion) and 2) to identify the most appropriate chemical and biological monitors for baseline data collections and future assessment of potential effects.
2011	Biological Monitoring Program	Barkerville Gold	Project Principal	Designed and implemented in Biological Monitoring Program in accordance with provincial Permit requirements.
2011	Annual Fish Monitoring	Goldcorp Musselwhite Mine	Project Principal	Fish tissue chemistry program implemented annually since 2002 with the objective of monitoring for a potential influence of the mine on fish tissue chemistry.
2011	Environmental Effects Monitoring under the Metal Mining Effluent Regulations (MMER)	Gibraltar Mine, Raglan Mine, Musselwhite Mine, Minto Mine	Project Principal	Environmental Effects Monitoring under the MMER. Prescriptive monitoring including water, sediment, benthic invertebrate communities and fish.
2011	Technical Assessment Review	Mount Polley Mining Corporation	Project Manager	Represented the client in addressing questions and comments on a Technical Assessment conducted in support of an application for a permit to discharge effluent under the *BC Environmental Management Act.*
2010	Expert Panel Member	Capstone Mining Corp.	Project Manager	Expert Panel Member for the Minto Mine Water Use Licence Amendment Public Hearing. Participation in the hearing included presentation of work conducted on the assessment of water quality and development of site-specific water quality objectives, including evaluation of the influence of copper on fish olfaction. This included addressing questions from interveners as an expert panel member and the provision of assistance in the questioning of interveners.
2010	Literature Review of the Effects of Copper on Fish Olfaction	Capstone Mining Corp.	Project Manager	Comprehensive literature review of the effects of copper on fish olfaction (sense of smell). The review included olfactory physiology, olfactory responses measured using neuro-electrical, behavioural and histopathological techniques, response concentrations, response modifiers, recovery and ecological relevance.
2010	Mine Expansion Water Quality Evaluation	Capstone Mining Corp. - Minto Mine	Project Principal	Evaluation of water quality data to describe the influence of the mine on water quality of a creek receiving mine effluent as well as the baseline characterization of the water quality of a creek that will potentially be influenced by future mine expansion.

Table 1: Summary of Mining Environmental Project Experience - Pierre Stecko, 2009-2014 only

Year	Project	Client	Role	Description
2010	Magnitude and Extent of Biological Effects	Goldcorp Red Lake Gold Mines and Xstrata Zinc Brunswick Mine	Project Principal	Design and implementation of a study to assess the magnitude and geographic extent of potential effects of mine activities as part of Environmental Effects Monitoring (EEM) under the Metal Mining Effluent Regulations of the federal *Fisheries Act* .
2010	Environmental Effects Monitoring under the Metal Mining Effluent Regulations (MMER)	Wabush Mines	Project Principal	Environmental Effects Monitoring under the MMER. Prescriptive monitoring including water, sediment, benthic invertebrate communities and fish.
2010	Expert Panel Member	Western Copper - Carmacks Project	Project Manager	Expert Panel Member for the Carmacks Project Water Use Licencing Public Hearing. Participation in the hearing included presentation of work conducted on the assessment of water quality and development of site-specific water quality objectives and general support in the technical areas of water quality and aquatic ecotoxicology. This included addressing questions from interveners as an expert panel member and the provision of assistance in the questioning of interveners.
2010	Surface Water Annual Monitoring Report	Goldcorp Inc. - Musselwhite Mine	Project Principal	Preparation of the first Surface Water Annual Monitoring Report under the Musselwhite Mine's newly amended Certificate of Approval for Industrial Sewage Works under the *Ontario Water Resources Act* .
2010	Annual Fish Monitoring	Goldcorp Musselwhite Mine	Project Principal	Fish tissue chemistry program implemented annually since 2002 with the objective of monitoring for a potential influence of the mine on fish tissue chemistry (walleye and lake whitefish).
2010	Cycle 2 Environmental Effects Monitoring Study	Capstone Mining Corp. - Minto Mine	Project Manager	Cycle 2 EEM included a water quality, benthic invertebrate community, and fish monitoring within a small creek and comparison to reference creeks. The fish survey was implemented at a fish hatchery and involved the exposure of juvenile chinook salmon to a mixture of effluent and creek water and comparison to fish reared in reference water.
2010	Lake Water Quality and Limnological Assessment	Imperial Metals - Mount Polley Mining Corporation	Project Principal	Compilation and evaluation of water quality monitoring data from two lakes (Polley Lake and Bootjack Lake) located adjacent to the Mount Polley Mine. The goal of the project was to characterize lake water quality over time, identify any changes in water quality relative to baseline and identify temporal trends in water quality relative to mine operations.
2009	Mine Effluent Treatment Plant Plume Delineation and Evaluation Study	Goldcorp Cochenour-Wilanour Gold Mine	Project Principal	This project involved the use of in-situ specific conductance to verify effluent mixing patterns in a large lake. In addition, effects of effluent discharge on chemical conditions within the mixing area were characterized.
2009	Technical Assessment of a Proposed Mine Discharge under the *BC Environmental Management Act*	Imperial Metals - Mount Polley Mining Corporation	Project Manager	"Technical Assessment" for a proposed effluent discharge under the Waste Discharge Regulation of British Columbia's *Environmental Management Act* . This project involved extensive consultation with regulators, the general public and first nations and the presentation of detailed scientific information supporting the assessment. Specific elements of the project included: baseline physical, chemical and biological characterization; development of Site-Specific Water Quality Objectives (SSWQOs) for priority parameters; evaluation of projected water quality with effluent mixing; evaluation of potential physical implications; development of a physical mitigation plan (to avoid a Harmful Alteration, Disruption or Destruction [HADD] of fish habitat); development of a chemical mitigation plan (to avoid chemical effects to any beneficial use); and reporting/presentation of the technical assessment.
2009	Investigation of Cause Monitoring under the Metal Mining Effluent Regulations (MMER)	Cameco McArthur River Operations	Project Manager	Design and implementation of an Investigation of Cause study (IOC) as part of Environmental Effects Monitoring (EEM) under the Metal Mining Effluent Regulations of the federal *Fisheries Act* . The objective was to determine the cause of previously observed significant differences in effluent-exposed versus reference benthic invertebrate communities (density, taxon richness and community composition). Hypotheses of cause were developed (poor habitat comparability/reference area selection, nutrient enrichment, metals/radionuclide inputs) and a comprehensive study was implemented which included a total of nine study lakes. Provided an invited presentation on the project at the Federal EEM IOC Workshop for metal mining, December 8,9th, 2009.
2009	Selenium Monitoring Program Design and Implementation	Mount Polley Mining Corporation	Project Manager	This project involved the characterization of selenium concentrations in water, sediment, algae benthic invertebrates, fish muscle tissue and fish ovary tissue in creeks and lakes adjacent to the Mount Polley Mine. The objectives of the project were: 1) to determine if selenium concentrations had increased in areas adjacent to the mine relative to pre-mining concentrations; and 2) to provide good pre-discharge baseline data against which future results (post-discharge). This monitoring was conducted voluntarily to ensure that future assessment of potential impact is optimized.
2009	Second Six-Year (2003-2008) Summary of Environmental Monitoring	Goldcorp Inc. - Musselwhite Mine	Project Principal	The project involved summarizing and interpreting all environmental data collected in 2003-2008 monitoring in compliance with a Memorandum of Intent signed by the mine and the Department of Fisheries and Oceans (DFO). A wide variety of data were included in the review, including water balance, effluent quality, drinking water quality, mine water flow, hydrogeology, air quality, climate, noise, acid rock drainage, geotechnical, reclamation, environmental management, First Nations agreements, contingency plans, hydrology, surface water quality, effluent mixing, fish spawning, metal levels in fish, benthic invertebrates, sediment quality, wildlife and metal bioaccumulation.
2009	Metal Mining Effluent Regulations Implementation Facilitation	Taseko Mines - Gibraltar Mine	Project Manager	Assisted the mine with the implementation of monitoring and reporting associated with a newly permitted discharge under the Metal Mining Effluent Regulations (MMER).
2009	Technical Support for Licencing	Capstone Mining Corp.	Project Manager	Provided support in the areas of water quality, sediment quality, aquatic ecotoxicology, effects of copper on fish olfaction, copper speciation and toxicity, site-specific water quality objectives, environmental monitoring, sublethal toxicity testing, ammonia toxicity, manganese toxicity, and aquatic habitat/resource conditions.
2009	Environmental Effects Monitoring under the Metal Mining Effluent Regulations (MMER)	Brunswick Mine, Raglan Mine, Musselwhite Mine, Red Lake Gold Mines	Project Principal	Environmental Effects Monitoring under the MMER. Prescriptive monitoring including water, sediment, benthic invertebrate communities and fish.
2009	Aquatic Baseline Studies	Xstrata Nickel - Raglan Mine	Project Manager	Design and implementation of aquatic baseline data collection for the Zone 5-8 underground mine, projected to more than double the mine's rate of production (to approximately 2 million tonnes of nickel concentrate per year). The aquatic data collections included the characterization of water quality, sediment quality, physical (habitat) conditions, aquatic and riparian plant life, benthic invertebrate communities and arctic charr populations. Sampling designs for the collection of aquatic baseline data were optimized for consistency with existing monitoring at the Raglan Mine, including federally-mandated Environmental Effects Monitoring (EEM).
2009	Regional Chemical and Biological Investigations	Goldcorp Inc. - Red Lake Gold Mines	Project Manager	This included several different projects, including a shallow lake habitat benthic survey (to complement Environmental Effects Monitoring), a benthic survey of Balmer Creek and a fish community/population assessment of Balmer Lake.
2009	Assessment of Groundwater Seepage Influence on a Boreal Lake	Goldcorp Inc. - Musselwhite Mine	Project Manager	Assessment of potential impact of groundwater-influenced seepage from a tailings impoundment area. The project involved the characterization of water quality, sediment quality and benthic invertebrate community condition of potential affected areas of a boreal lake.
2009	Evaluation of Treatment System Performance and Water Quality Impact	Goldcorp Inc. - Red Lake Gold Mines	Project Manager	Use of water quality data (treatment system input, treatment system output and receiving environment) to evaluate both the effectiveness of water treatment as well as effects to receiving environment water quality under an increased discharge volume scenario.

SHAWN HILTON

Mr. Shawn Hilton joined SNC-Lavalin Inc. in 2014 and is the Practice Lead for terrestrial biology in BC. Mr. Hilton is very familiar with the requirements to complete impact assessments and address wildlife and vegetation resource management concerns, both provincially and federally. He has completed numerous projects of varying scope for government, crown corporations, and independent development and resource extraction companies - involved in the provincial (BCEAA) and federal (CEAA) processes. Mr. Hilton has been the lead biologist when meeting with regulators, First Nations and the public. Mr. Hilton has worked extensively with a number of high profile Species at Risk, completing lengthy field programs, habitat management recommendations, survey standard recommendations, and technical support with recovery planning.

SECTORS OF EXPERTISE

Environment

- Corridors and route selection
- Environmental audits
- Environmental impact study
- Environmental Management
- Mining sites
- Permitting
- Risk analysis
- Scientific or environmental studies
- Sustainable Development
- Terrestrial Environment

EDUCATION

1993 | B.Sc., University of British Columbia, British Columbia, Canada

EXPERIENCE

SINCE 2014

SNC-LAVALIN INC., VANCOUVER, BRITISH COLUMBIA, CANADA

Environment & Water

Practice Lead, Terrestrial

- BC Hydro; 2014 - . Lead for the Wildlife and Vegetation component for the proposed $400 Million Revelstoke Generating Station Unit 6 project. The project would add another 500 MW of dependable capacity to the existing Revelstoke Dam. Responsible for overall review, direction, and delivery of the work program for this discipline.
- Alterra Power; 2014 - . Technical support for wildlife and vegetation during the construction of the 60 MW Jimmie Creek run-of-river hydroelectric project. Providing technical guidance for adaptive management and mitigation for disturbance during construction and reclamation of suitable wildlife habitats.

Years of Experience

- 18 years

Years with SNC-Lavalin

- 0 year

Key Positions

- Biologist

Languages

- English

Site Experience

- Canada

Computer Applications

- MS Office

2004 - 2014

KEYSTONE WILDLIFE RESEARCH LTD., SURREY, BRITISH COLUMBIA, CANADA

General Manager

- BC Hydro; 2010 - 2014. Lead for the Wildlife and Vegetation component for the proposed 1100 MW Site C dam near Fort St. John. This $8 Billion project would create a new 80 km reservoir within the Peace River valley. Responsible for putting together the comprehensive technical baseline report and effects assessment. Participated during panel hearings.
- BC Hydro (formerly BC Transmission Corporation); 2006 - 2014. Lead for the Wildlife and Vegetation component for a 500 kV transmission line (ILM). The $725 Million project is 250 km in length, between Merritt and Coquitlam, British Columbia. Had responsibility for overall review, direction, and delivery of the work program for this discipline. Participated in Technical Working Groups, meetings with numerous First Nation communities, and Public open houses. Submitted responses to Information Requests as part of the BC Utility Commission process and was provided preparation for an oral hearing. Was the technical advisor for Spotted Owl issues and part of the Environmental Project Management team during construction. The project removed "critical habitat" as defined by the federal *Species at Risk Act* and a lengthy negotiation for offsets was required.
- KGHM Ajax Mining Inc.; 2008 - 2014. Lead for Wildlife and Vegetation component of the proposed 60,000 tonne-per-day Ajax open-pit mine near Kamloops, BC. Responsible for overall review and delivery of preliminary effects assessment reports in preparation of an environmental assessment.
- Yellowhead Mining Inc.; 2011 - 2013. Lead for Wildlife and Vegetation component of the proposed 70,000 tonne-per-day Harper Creek open-pit mine near Clearwater, BC. Responsible for overall review and delivery of preliminary effects assessment reports in preparation of an environmental assessment.
- Alterra Power (formerly Plutonic Power Corporation); 2005 - 2014. Lead for the Wildlife and Vegetation component of the East Toba Montrose Hydroelectric Project and Bute Hydroelectric Project. Provided technical support for the Upper Toba Valley Hydroelectric Project. The 235 MW East Toba Montrose run-of-river project became operational in 2010 and included a 150 km 230 kV transmission line. The 120 MW Upper Toba Valley project received its Environmental Assessment Certificate in 2009 and on of the generating sites started construction in 2013. The proposed 900 MW Bute project was in the Pre-application phase for a panel review under CEAA. Participated in public open house sessions, regulatory meetings and discussions with First Nations. Have also completed impact assessments for additional projects in the Fraser Canyon, Powell River and Howe Sound areas. During project operations assisted with regulatory needs and monitoring.
- Innergex Renewable Energy (formerly Cloudworks Energy Inc.); 2003 - 2014. Lead for Wildlife and Vegetation component of the 150 MW Kwalsa and Upper Stave hydroelectric project, 40 MW Big Silver Creek run-of-river project, and 23 MW Tretheway Creek run-of-river project. Participated in Working Group meetings with regulatory agencies and First Nations. During project operations assisted with regulatory needs and monitoring.
- Regional Power Inc.; 2008 - 2011. Lead for Wildlife and Vegetation component of the proposed 150 MW Ryan River Power Project near Pemberton, BC. Participating in Pre-application Working Group meetings with regulatory agencies and First Nations, and public open house sessions.
- BC Hydro; 2006. Provided technical advice to the wildlife component of the Revelstoke 5 Generation Unit project that included the addition of a 5th generating unit to the existing Revelstoke Dam. Participated in Working Group meetings with regulatory and First Nations.
- Western Canadian Coal Corp; 2004 - 2006. Project Coordinator overseeing management and delivery of technical assessments for the Brule open-pit coal mine near Chetwynd, BC. Participated in Working Group meetings for the Wolverine open-pit coal mine near Tumbler Ridge, BC.

2001 - 2004	PANORAMA WILDLIFE RESEARCH, SURREY, BRITISH COLUMBIA, CANADA Wildlife Biologist

Independent Contractor. Completed technical field studies for a number of Species at Risk including, Northern Spotted Owl, Barn Owl, Pacific water shrew, and Oregon spotted frog.

1996 - 2001	BC CONSERVATION FOUNDATION, SURREY, BRITISH COLUMBIA, CANADA Spotted Owl Biologist

Northern Spotted Owl biologist responsible for variety of projects that included the design and implementation of spotted owl inventory surveys in the Vancouver Forest Region; captured owls by hand, performed measurements, and fitted leg bands and tail-mounted radio-transmitters; relocated owls by triangulation from a truck, snowmobile, while hiking, or spot location from helicopter; assessed habitat suitability; conducted vegetation surveys around roost and nest sites.

PROFESSIONAL ASSOCIATIONS

SINCE 2001	College of Applied Biology British Columbia, Membership no. 1479

PUBLIC HEARINGS

2014	Site C Dam environmental assessment panel hearing, BCEAO and CEA Agency, British Columbia, Canada

CORY BETTLES

Mr. Cory Bettles is a professional biologist and internationally certified fisheries professional with over 15 years experience in sensible management of fisheries & aquatic resources using sound science and ecological principles. Mr. Bettles is an authority in fisheries biodiversity and impact assessment with expertise as a fish population biologist specializing in population structure and understanding the link between and importance of inter-locality dispersal (migration & connectivity) among identified populations in the maintenance of population persistence and stability. Mr. Bettles has worked on 15 run-of-river and four (4) large hydroelectric projects in varying technical and management roles. He has worked as the Owner overseeing a hydroelectric company's environmental programs (EA, construction, commissioning, operations) for nine run-of-river hydropower facilities. He has acted in the role of EA Project Manager and Fisheries Technical Expert, leading a multidisciplinary team of engineers, scientists, and fisheries team through the harmonized environmental assessment, which successfully received project EA Certificate and authorization from DFO (Letter of Advice). He has also been retained as a fish population expert to assess the structure and interrelationship(s) of bull trout collections in the Upper Lillooet River basin as part of a proposed cluster of hydroelectric facilities undergoing a provincial environmental assessment. He has also worked on behalf of BC Hydro assessing for potential fisheries impacts based on alternative operating schemes (derating, abandonment with/without dam removal) for three existing large hydropower facilities on Vancouver Island. Finally, Mr. Bettles was retained by BC Hydro's Energy Planning Division to deliver the provincial-wide fisheries attribute program as part of the 2010 Resource Options Portfolios for Long-Term Acquisition Planning. Having worked for government, as a consultant, and industry, Mr. Bettles has developed a diverse, well-rounded technical, business-minded, and managerial skill set to compliment his strong communication abilities, which has proven to be a valuable and successful combination on numerous projects. He understands the balance between client business objectives, stakeholder needs, and scientific/regulatory requirements.

SECTORS OF EXPERTISE

Environment	• Aquatic Environment • Compliance • Environmental impact study • Permitting
Mining & Metallurgy	• Mine rehabilitation
Power	• Large-scale Hydro Projects (300 MW and +) • Medium-scale Hydro Projects (50 MW to 300 MW) • River Basin Studies and Planning • Small Hydro Projects (less than 15 MW) • Small-scale Hydro projects (15 MW to 50 MW)

EDUCATION

2004	M.Sc., Fisheries Biology, Great Lakes Institute for Environmental Research, Windsor, Ontario, Canada
2000	B.Sc., Biology (Fish and Wildlife) / Minor Biochemistry, University of Northern British Columbia, Prince George, British Columbia, Canada

Years of Experience

- 16 years

Years with SNC-Lavalin

- 3 years

Key Positions

- Project Lead
- Project Manager
- Biologist

Languages

- English
- French

EXPERIENCE

SINCE 2012

SNC-LAVALIN INC., BURNABY, BRITISH COLUMBIA, CANADA
Environment & Water
Practice Lead, Aquatic Biodiversity

- As the technical leader of SNC-Lavalin's Aquatic Biodiversity practice, core responsibilities include:
  - To build and direct a western Canada marine and freshwater aquatics practice with the objective to create a team structured through the use of sound technical, ecological, and scientific principles and become a recognized leader in fisheries and aquatic science locally, regionally, and nationally.
  - Lead and perform complex technical work assignments focusing on, and ensuring, client satisfaction, with the quality of its work and delivery.
  - Provide leadership and direction in the mentoring, training, and professional development of fisheries staff and promote technical discipline development and quality standards/guidelines.
- Lemon Creek Long-Term Aquatic Monitoring, Executive Flight Centre, Castlegar, BC (2013-Present):
  - Led the development of, and recently implemented the, long-term aquatic monitoring plan in response to the results of the Spill Response Environmental Impact Assessment Report. The programs that comprise the long term plan include:
    - Lemon Creek & Slocan River Benthic Invertebrate Recovery Monitoring (CABIN), Lemon Creek Bull Trout Spawning Surveys, Lemon Creek Fish & Community Abundance Monitoring, Slocan River Mountain Whitefish Mark-Recapture Study, Fish Tissue Analysis and Tainting Assessment, as well as surface, poer water, and sediment quality monitoring.
  - The full monitoring plan was submitted to, and approved by provincial regulators (MOE, MFLNRO).
- Similkameen River Storage & Hydroelectric Dam, FortisBC, Okanagan, BC (2013-Present):
  - Technical Advisor role as part of the EA project team. Key responsibilities include providing guidance and peer review on the fish and aquatic baseline studies, evaluation of instream flow modeling options, and the primary interface between the environmental and engineering teams.
- Lemon Creek Emergency Spill Response, Executive Flight Centre, Castlegar, BC (2013):
  - Lead technical responder that pulled together a qualified team of fish/aquatic/terrestrial biologisats, contaminated sites experts, hydrogeologists, water quality scientists, human health and ecological risk assessors, air quality scientists, GIS, and data management specialists to handle a complex array of adverse outcomes resulting from the jet fuel spill that occurred on Lemon Creek on July 26, 2013.

Site Experience

- Canada
- United States

Computer Applications

- Microsoft Office Suite
- ArcGIS V.8.1 (ArcCatalogue, ArcMap, ArcToolbox, ArcScene, ArcInfo Workstation, ArcObjects Developer)
- SlideWrite 5.0 (Graphical Software)
- SYSTAT V.7.0, STATISTICA, SIGMAPLOT, SPSS, R Software (Statistical Software)
- GENEPOP 3.4, ARLEQUIN 3.0, STRUCTURE, GENETIX (Population Genetic Structure Data Analysis Software)
- MesoHABSIM (Instream Flow Modeling)

- Numerous field programs were implemented during the emergency response including deceased fish/wildlife salvage including cause of death necropsies and fish tissue screening, surface water quality monitoring, sediment monitoring, hydrogeological modeling, air quality and evaporation assessment, agriculture tissue screening.
- Collaborated closely with, and provided technical adivce to, emergency clean-up crews from Quantum Murray and Polaris Applied Science as part of the Shoreline Clean-up and Assessment Technique (SCAT).
- Completed a Spill Response Environmental Impact Assessment report, which currently sits in draft and under review by provincial and federal regulators.

- Jimmie Creek Hydroelectric Project, Alterra Power Corp., Vancouver, BC (2012-present):
  - Environmental Manager representing the Owner working in collaboration with the engineer design team as part of the development of a 30 MW hydroelectric facility located at Toba Inlet up the Sunshine Coast, BC.
  - Key responsibilities include the technical oversight developing the Construction Environmental Management Plan (CEMP) and specific Environmental Protection Plans, environmental evaluation and constraints assessment of component engineer design options, formulation of environmental conditions to insert into EPCM contract, management of other senior and intermediate technical personnel, communication with the proponent and regulatory agencies (including the Independent Engineer, Independent Environmental Monitor), and overall responsibility with site environmental monitoring during construction and commissioning phases.
- Development of Water Quality Management Plan, Prince Rupert Port Authority, Prince Rupert, BC (2012):
  - Responsible for the development of a Water Quality Management Plan with the objective to address data gaps within the Port's jurisdictional boundary. This has included identifying number and location of sample sites, identification of water quality parameters, evaluation thresholds, sample methodology including statistical design and analysis, and recommended action items to implement an effective Plan.
- Bridge River and Marmot Cluster Hydroelectric Projects Environmental Assessments, BluEarth Renewables, Lillooet and Stewart, BC (2012-Present):
  - Environmental Assessment Project Manager (Bridge River Project) and Fisheries Technical Advisor (Marmot Cluster of Projects) for proposed run-of-river hydroelectric facilities.
  - Continuous engagement with the proponent and design engineers providing environmental constraints feedback to design components (e.g., type and use of turbines, ramping concerns, minimum instream flows.)
  - Direct engagement and relationship building with the St'at'imc First Nations community on behalf of the proponent.
- Due Diligence and Rick Analysis of Private Water Licence Acquisitions for proposed Hydroelectric Development, BluEarth Renewables, east Kootenays, BC (2012):
  - Senior Biologist and hydroelectric environmental expert retained to conduct an independent due diligence and risk analysis of two water licences under consideration for acquisition.
  - Key objectives were to identify significant environmental and/or stakeholder constraints that would deem potential power project development not feasible.

2010 - 2012

HEMMERA, VANCOUVER, BRITISH COLUMBIA, CANADA

Technical Leader/Team Manager, Fisheries

- As the fisheries Technical Leader, Cory was responsible for building the fisheries practice within the organization. He built the fisheries team from one to six individuals, while increasingly securing non-EA fisheries projects with key industry and government sectors. He also provided overall leadership and direction to the mentoring, training, and professional development of fisheries staff as well as set and promoted the development of quality standards for the fisheries practice.

- Roberts Bank Terminal 2 Project (Container Capacity Improvement Program), Port Metro Vancouver, Lower Mainland, BC (2011-2012):
  - Marine Fish Lead tasked at identifying data gaps and directing study design for fisheries baseline surveys and assessment including flat fish species, forage fish species, juvenile and adult salmonids, rock fish, and ling cod.
  - Close collaboration with marine mammal and benthic specialists to ensure study designs appropriately linked through an ecosystem assessment approach.
- McLymont Creek Hydroelectric Project Environmental Assessment, AltaGas Renewable Energy Inc., NW BC (2010 – 2012):
  - Project lead (on behalf of the client) managing a team of biologists, scientists, and engineers through the harmonized federal and provincial (BC) environmental assessment for a proposed 70 MW run-of-river hydroelectric facility in northwestern, British Columbia. Included full engagement with the client including provincial and federal agencies as well as First Nations.
  - Fisheries discipline lead responsible for: developing and managing the scope of the fisheries baseline program & impact assessment, senior review and sign-off of the fisheries section of the EA, and engagement with provincial and federal agency personnel.
- Field Verification of Fish Habitat Created in the Shell Compensation Lake, Fisheries and Oceans Canada (DFO) / Public Works and Government Services Canada (PWGSC), Fort McMurray, Alberta, Canada (2011):
  - Overall Project Lead responsible for scope, schedule, budget, study design, and senior technical review and sign-off of the scientific report, which aimed at verifying Fisheries Act Authorization compliance using hydroacoustic technology.
- Hydroacoustic survey – Muskeg River Fish Fence, Fisheries and Oceans Canada (DFO) / Public Works and Government Services Canada (PWGSC), Fort McMurray, Alberta, Canada (2012):
  - Project Lead with overall responsibility for the Project, which analyzed hydroacoustic data obtained at the Muskeg River fish fence used to establish a relationship between fish fence counts and hydroacoustic fish counts.
  - Provided overall budget management, client oversight as well as strategic technical guidance, direction, and senior review of results and the report.
- Mill Creek Emergency Spill Response, Stream Assessment & Aquatic Health Monitoring, Univar Canada, Kelowna, BC, (2010-2012):
  - Lead fisheries biologist and initial site investigator during the emergency response on the Mill Creek chemical spill (Aug 2010).
  - Led the initial salvage program (removal of deceased fish), fish species ID and abundance estimates, assessment of causation of fish kill, as well as designed the study program to investigate the aquatic health status of Mill Creek post-chemical spill.
  - Led a fish and aquatic health monitoring program, with the key objective to identify any potential short- and longer-term affects post-spill. Ongoing studies included: kokanee survivorship (through kokanee spawning and juvenile outmigration surveys), resident fish [control-impact] community structure, fish egg development (toxicity) tests, benthic invertebrate abundance, diversity, and productivity (CABIN protocol), and water/sediment quality.
- Development of an Approach to Assessing Cumulative Impacts on Fish and Fish Habitat in the Oil Sands Region. Fisheries and Oceans Canada (DFO) / Public Works and Government Services Canada (PWGSC), Fort McMurray, Alberta, Canada (2012):
  - Lead biologist responsible for devising an approach to assess cumulative impacts on fish and fish habitat as a result from the elimination of first-order tributary streams to the Athabasca River.
- Scientific Review of the Shell No Net Loss Plan for a new Mine Project in the Oil Sands Region, Fisheries and Oceans Canada (DFO) / Public Works and Government Services Canada (PWGSC), Fort McMurray, Alberta, Canada (2011):

  - Overall Project Lead responsible for scope, schedule, budget, approval of study design, and senior technical review and sign-off of the scientific report.
  - Provided technical oversight to lead Sr biologist tasked by DFO to conduct a scientific technical review of an oil sands No Net Loss Plan for the a new mine project in Alberta.
- Development of Aquatic Monitoring Report Standards for Fisheries Act Authorizations in the Oil Sands Region, Fisheries and Oceans Canada (DFO) / Public Works and Government Services Canada (PWGSC), Fort McMurray, Alberta, Canada (2012):
  - Lead biologist tasked with developing a standardized approach to reporting on Fisheries Act monitoring requirements in the oil sands region in Alberta.
- Audit of Oil Sands Region Fisheries Act Authorization Monitoring Reports, Fisheries and Oceans Canada (DFO) / Public Works and Government Services Canada (PWGSC), Alberta, Canada (2011):
  - Lead Auditor tasked at developing and conducting a comprehensive compliance and effectiveness audit of environmental reports prepared by oil companies in Northern Alberta issued Fisheries Act Authorizations (HA's) by DFO. Included evaluating reports against conditions outlined in HA's, comparing reports across multiple years, and identify areas for improvements and potential data/monitoring/assessment gaps.
- South Fraser Perimeter Road Project (SFPR), BC Ministry of Transportation and Infrastructure, (2010-2012):
  - Provided senior fisheries support to the Environmental Manager, with a focus on fish habitat compensation (field scoping & site feasibility, conceptual design specifications, habitat quantification) and fish ladder design specifications & fisheries requirements.
- Upper Lillooet Bull Trout Population Structure Assessment, Ecofish Research Ltd. (for Innergex Renewable Energy Inc.), Vancouver, BC (2011-present):
  - Retained by Ecofish Research (on behalf of Innergex Renewable Energy) as a population genetic expert to investigate population structure of bull trout in the Upper Lillooet River system. Data generated from this assessment ultimately fed into the Environmental Assessment of three proposed run-of-river hydroelectric facilities.
  - Data analysis included and interpretation, as well as technical report preparation were completed.
  - Currently providing ongoing expert advice during the environmental assessment process.
- Britannia Creek Hydroelectric Project – Preliminary Fish Surveys, Flash Power Ltd., Squamish, BC (2011):
  - Senior biologist tasked at: developing the field study design, manage intermediate biologists ensuring efficient and productive fish abundance & distribution and habitat field surveys, conducting senior review of data/results/interpretation and the technical report, as well as manage project scope, schedule, and budget to meet contract and client objectives.
  - Initial engagement with regulatory agencies, on behalf of the client, with respect to the proposed layout of the run-of-river hydroelectric facility.
- Expert Witness, BC Attorney General, Victoria, BC (2011):
  - Retained by the BC Attorney General's office as an expert fisheries professional specific to the areas of fish and fish habitat and regulatory process (provincial and federal).
  - Provided expert opinion (file confidential), including preparation of an expert opinion letter as well as expert testimony as required.
- Baseline Fisheries Assessment – Three Bluffs Mine Project, North Country Gold, Nunavut, Canada (2011):
  - Fisheries Discipline Lead with overall responsibility for study design, budget management, technical oversight, and senior sign-off for the fish and aquatics field program aimed at assessing existing baseline fisheries resources for a proposed gold mine.

- Watercourse Crossing Assessment Project, Golden Predator Corp., Gold (Scheelite) Dome Mayo, Yukon Territory (2010):
  - Senior biologist responsible for study scope, technical oversight, budget, and client management for a fish and aquatics field program aimed at assessing existing biophysical conditions watercourse crossings.
  - Field survey and assessment program included: characterization and quality assessment of fish habitat, fish distribution, composition, and abundance surveys, riparian quality surveys, as well as collection of fish muscle tissue for metals analysis.
- Update to Environmental and Social Attributes for Long-Term Acquisition Planning, BC Hydro, Vancouver, BC (2010):
  - Fisheries Lead part of an inter-disciplinary team of scientists and engineers, responsible for improving/enhancing BC Hydro's internal freshwater indicators for assessing high-level risk associated with new Resource Option portfolios.
- Socio-Economic and Environmental Assessment of Alternatives for the John Hart, Strathcona, and Ladore Dam Facilities, BC Hydro, Campbell River, BC (2010):
  - Lead fisheries biologist that assessed the potential fisheries/aquatic impacts based on alternatives to operating the three existing hydroelectric facilities in various capacities (i.e., derating, abandonment of facilities with and/or without dam removal). This was part of BC Hydro's requirement to demonstrate to the BCUC that it has examined a full range of alternative means of achieving operational and facility objectives and that proposed project investments are in the public interest.
- John Hart Dam Replacement Project, BC Hydro, Campbell River, BC (2010):
  - Provided strategic advice and peer review on the aquatic baseline and habitat impact assessment methodology as part of the environmental assessment.
  - Conducted a gap analysis identifying outstanding data requirements in the fish and fish habitat assessment program specific to downstream flow manipulations and the relationship with salmonid habitat suitability and potential impacts (i.e., habitat suitability criteria, ramping etc.) on the Lower Campbell River system.
- Various Geoexchange Projects, Terasen Energy, 2010 – 2011:
  - Provided technical fisheries/biophysical and regulatory guidance/recommendations to Hemmera's renewable energy group on a number of proposed freshwater and marine geoexchange projects throughout BC.

2007 - 2012 | CLOUDWORKS ENERGY INC., VANCOUVER, BRITISH COLUMBIA, CANADA
Environmental Manager/Corporate Biologist

- Upper Harrison & Lower Lillooet Hydroelectric Projects, (2007 – 2010):
  - Successfully implemented and directed the Company's Environmental Programs through the construction, commissioning, and transition into operations of six run-of-river hydroelectric infrastructure projects near Upper Harrison Lake (Fire Creek, Tipella Creek, Douglas Creek, Stokke Creek, Lamont Creek, and Upper Stave River projects).
  - Key management responsibilities included: consultant/contract management, regulatory permitting, regulatory compliance and due diligence environmental auditing, and regulatory agency communications and facilitation.
  - Key technical responsibilities included: fish and fish habitat assessments as per Hatfield et al. (2007) and Lewis et al. (2004) provincial guidelines, project design review, review of environmental consultant reports, development and implementation of interim ramping protocols, development and coordination of ramping rate studies, development of commissioning (headpond filling, penstock filling and flushing) and operations plans (Operations Environmental Management Plan, Standard Operating Procedures), assessment and monitoring of tailrace effectiveness and fish stranding.

- Big Silver Creek, Shovel Creek, and Tretheway Creek Hydroelectric Projects, Lower Mainland, BC (2008 – 2009):
  - Company's Fisheries Lead through the harmonized provincial/federal Environmental Assessment process for three proposed run-of-river hydroelectric projects.
  - Key responsibilities included overall management of the fish and aquatics field programs, data gathering and data analysis, consultant and budget management, review of consultant baseline and impact assessment reports, development of fish/aquatic sections of the Project Description, Application Information Requirement, the draft Environmental Impact Assessment application, as well as the Company representative on the fisheries Technical Working Group.
- Big Silver Creek and Statlu Creek Habitat Compensation (2009):
  - Field Scope and Conceptual Design
- Upper Stave River Compensation Plan (2007-2009):
  - Technical Specifications, Design, and Construction
- Tipella Creek Compensation Plan (2007-2009):
  - Technical Specifications, Design, and Construction
- Douglas Creek Compensation Plan (2007-2009):
  - Technical Specifications, Design and Construction

2006 - 2007 | JACQUES WHITFORD AXYS (NOW STANTEC), BURNABY, BRITISH COLUMBIA, CANADA
Senior Fisheries Biologist

- General responsibilities in Senior role included: leading fisheries baseline studies (Recon 1:20,000, FHAP) and impact assessments, analyze data an interpret results, prepare and review written reports, coach/mentor junior and intermediate fisheries staff.
- Kitimat LNG Terminal Project EA and Comprehensive Study, Kitimat LNG Inc. (2006-2007):
  - fisheries biologist with main responsibility to drive the scope and implementation of the fisheries baseline and impact assessment for the project, reporting findings to the lead environmental assessment manager
- Sakinaw Lake Water Balance Study, Kerr Wood Leidal (on behalf of the Sunshine Coast Regional District), Sunshine Coast, BC (2006 – 2007):
  - Lead fisheries biologist representing the Regional District during the review, assessment, and agency liaison/facilitation of the proposed re-licencing of water use on Sakinaw Lake.
  - Conducted an assessment of the potential effects to a publicly and biologically sensitive fisheries resource on Sakinaw Lake (sockeye and coho salmon) as a result of proposed additional lake drawdown.
  - Additional responsibilities included liaison with provincial and federal regulatory agencies, which included the oral and written presentation of results to a multi-stakeholder group responsible for managing water use of Sakinaw Lake.
- Biological Review of Garden Bay Lake Water Licence Application: Potential Effects on Fisheries Resources, Kerr Wood Leidal (on behalf of the Sunshine Coast Regional District, Sunshine Coast, BC (2006-2007):
  - Conducted an assessment of the potential effects to fish and fish habitat as a result of additional lake drawdown on Garden Bay Lake (including outlet tributaries).

2005 - 2006 | RESCAN ENGINEERS & SCIENTISTS, VANCOUVER, BRITISH COLUMBIA, CANADA
Fisheries Biologist

- Quatse Dam Upgrade Project, BHP Billiton, Northern Vancouver Island, BC (2006):
  - Lead biologist responsible for scope, schedule, and budget management, permitting and licencing coordination, aquatic monitoring, as well as engineering, regulatory and stakeholder facilitation.

- Successfully obtained all permits and managed the Project from inception to completion. Project details entailed the re-opening and upgrade of a four-kilometre access road to the dam as well as fish salvage surveys and fish population monitoring during dam de-commissioning, re-construction, and re-commissioning.
- Addendum to Twin Lakes Diversion Project, Conceptual "No Net Loss" Fish Habitat Compensation Plan, BHP Billiton, Northern Vancouver Island, BC (2005-2006):
  - Lead biologist and author of a revised "no net loss" compensation plan aimed to off-set fish habitat impacts associated with the decommissioning of the Island Copper Mine site. Development of this plan included the quantification of habitat impacts as well as the identification, design, and habitat quantification of several compensation projects.

2003 - 2005 | WASHINGTON DEPT. FISH & WILDLIFE, OLYMPIA, WASHINGTON, UNITED STATES
Fisheries Biologist

- Lead biologist on molecular ecology-based studies to identify and define stocks, determine population interrelationships, infer parentage, and analyze mixtures for priority species of Washington State salmonids and marine fish.
- Cross Border Bull Trout Conservation Committee (2004):
  - State of Washington representative that included universities from British Columbia and Montana, as well as the U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, and Oregon Department of Fish and Wildlife.
- Assessment of Chinook Salmon Population Structure in Lake Washington Basin, King County Department of Natural Resources, Seattle, Washington (2005):
  - Lead biologist that utilized field, genetic, and statistical techniques to identify the overall genetic structure of Chinook Salmon (Oncorhynchus tshawytscha) populations within Watershed Resource Inventory Area 8 (WRIA 8) in the Lake Washington basin (Washington State).
  - Statistical and modeling results compiled from the study were used subsequently used by State and Federal government Chief Scientists to formulate appropriate conservation management strategies with the goal to ensure population persistence.
- Assessment of Bull Trout Population Structure, Kalispel Tribe of Indians and Washington Department of Fish & Wildlife, Olympia, Washington (2005):
  - Lead biologist that used field, genetic, and statistical techniques to assess population structure of bull trout (Salvelinus confluentus) in the Pend Oreille Basin, which covered watercourses within Washington State, Idaho, and British Columbia and has been heavily fragmented by large dams.
- Redband Rainbow Trout Conservation Study, United States Bureau of Land Management, Olympia, Washington (2004):
  - Lead biologist that used field and genetic techniques to identify the structure of redband rainbow trout populations in the Crab Creek sub-basin located in Eastern Washington State. Results from this study were used to develop a basin-wide conservation strategy to efficiently and effectively manage the sub-species of rainbow trout.

1999 - 2002 | OIL AND GAS COMMISSION, FORT ST. JOHN, BRITISH COLUMBIA, CANADA
Habitat Protection Officer

- Reviewed and assessed geophysical, well site, pipeline, road, facility, and quarry development projects and their potential impacts on aquatic ecosystems. Provided advice at pre-construction meetings on how to protect aquatic habitat.
- Performed assessments and issued permits for projects requesting pipeline and road crossings of aquatic habitat under Section 9 of the BC Water Act (Changes in and About a Stream) as well as issued permits for instream restoration.

- Conducted assessments, issued permits (when applicable), and determined the fees required for water usage under Section 8 of the BC Water Act (Short term use of Water).
- Liaised with provincial/federal government ministries (i.e., Ministry of Environment, DFO) regarding habitat management directives.

PROFESSIONAL ASSOCIATIONS

SINCE 2012	American Fisheries Society
SINCE 2003	College of Applied Biology British Columbia
SINCE 2003	Association of Professional Biology (APB)

ADDITIONAL TRAINING

2010	MesoHABSIM Instream Data Collection and Modeling, Rushing Rivers Institute, Massachusetts, United States
2009	Small Vessel Operator, Transport Canada, Canada
2009	Small Non-Pleasure Vessel Basic Safety (MED A3), Transport Canada, Canada
2007	Environmental Techniques for Construction Projects, Vancouver Island University, Canada
2005	Pleasure Craft Operator (Canadian Coast Guard), Canadian Coast Guard, Canada
2005	H_2S Alive, ENFORM, Canada
2002	Crew Supervisor - Backpack Electrofishing (Vancouver Island University), Vancouver Island University, Canada
2001	Environmental Planning for Linear Development certification, Petroleum Industry Training Service, Petroleum Industry Training Service, Canada
2001	Environmental Pipeline Inspection, Petroleum Industry Training Service, Petroleum Industry Training Service, Canada
2000	ATV Safe Driver Certification, Canada Safety Council, Canada

PUBLICATIONS AND PRESENTATIONS

Fisheries Studies beyond the Guidelines for Hydroelectric and Mining Projects. Invited Speaker to the Environmental Managers Association of BC 2013 Workshop: Major Project Challenges in BC, Vancouver, British Columbia, Canada, 2013

Genetic Analysis of Bull Trout in the Upper Lillooet River Basin, BC: Enhancing our understanding of the effects of Hydropower on Fish Populations. Invited Speaker to NSERC HydroNet 2013 Conference, Montreal, Quebec, Canada, 2013

Genetic Diversity of Fish: Its function as an Indicator of Ecological Condition and its Value in Environmental Assessment. Invited Speaker to GENERATE 2012 Conference as part of Innovations in Clean Energy Science & Environmental Impact Assessment, Vancouver, British Columbia, Canada, 2012

Bettles, C.M. and I.L. Girard. 2012. A Framework for Assessing Potential Cumulative Effects to Fisheries Resources Through the Elimination of First-Order Tributaries to the Athabasca River. Report prepared for Public Works Government Services and Fisheries and Oceans Canada. 32 p., Canada, 2012

Bettles, C.M. and I.L. Girard. 2012. Development of Reporting Standards for Fisheries Act Monitoring. Report prepared for Public Works Government Services and Fisheries and Oceans Canada. 22 p. + Appendices, Canada, 2012

Girard, I.L. and C.M. Bettles. 2012. Hydroacoustic Survey – Muskeg River Fish Fence. Report prepared for Public Works Government Services and Fisheries and Oceans Canada. 39 p. + Appendices, Canada, 2012

Girard, I.L. and C.M. Bettles. 2011. Assessment of Habitat Compensation at Shell. Report prepared for Public Works Government Services and Fisheries and Oceans Canada. 65 p. + Appendices, Canada, 2011

Bettles, C.M. and E.B. Taylor. Microsatellite DNA Analysis of Bull Trout (Salvelinus confluentus) from three localities in the Upper Lillooet River basin, British Columbia. Submitted to and accepted by Ecofish Research Ltd., Courtenay, BC, August 30, 2011, Canada, 2011

Miller, S., Girard, I.L., and C.M. Bettles. 2011. Shell Jackpine Creek Ex-Filtration Gallery Monitoring. Report prepared for Public Works Government Services and Fisheries and Oceans Canada. 11 p. + Appendices, Canada, 2011

Girard, I.L., Baird, J. and C.M. Bettles. 2011. Preliminary Fisheries Baseline Monitoring Program – Three Bluffs Project, Nunavut. Report prepared for North Country Gold Ltd. 40 p. + Appendices, Canada, 2011

Girard, I.L. and C.M. Bettles. 2011. Fisheries and Aquatic Habitat Assessment for the McLymont Cr Hydroelectric Project. Section prepared for the EA presented by AltaGas. 227 p., Canada, 2011

Girard, I. and C.M. Bettles. 2011. Audit of Canadian Natural Resources Ltd. - Horizon Mine Project. Prepared for: Public Works and Government Services Canada and Fisheries and Oceans Canada. 26 p., Canada, 2011

Girard, I.L. and C.M. Bettles. 2011. Audit of Imperial Oil Resources- Kearl Mine Project. Prepared for: Public Works and Government Services Canada and Fisheries and Oceans Canada. 26 p., Canada, 2011

Girard, I.L. and C.M. Bettles. 2011. Audit of Petro Canada – Fort Hills Mine Project. Prepared for: Public Works and Government Services Canada and Fisheries and Oceans Canada. 26 p., Canada, 2011

Girard, I.L. and C.M. Bettles. 2011. Audit of Shell Canada Ltd. – Jackpine Mine Project. Prepared for: Public Works and Government Services Canada and Fisheries and Oceans Canada. 25 p., Canada, 2011

Girard, I.L. and C.M. Bettles. 2011. Audit of Suncor Energy Inc. – Millennium Mine Project. Prepared for: Public Works and Government Services Canada and Fisheries and Oceans Canada. 26 p., Canada, 2011

Bettles, C.M. Expert Opinion Letter regarding fish habitat and the legislative regime applicable to the hypothetical removal of coarse woody debris from Trout Lake, Sunshine Coast, BC. Submitted to and accepted by the Office of the BC Attorney General, Victoria, BC, July 4, 2011, Canada, 2011

Finch, R., Taylor, J., Cameron, M., and C.M. Bettles. 2011. Stewart Centre Fire Environmental Monitoring Report - Aquatic Effects on Mill Creek. Submitted and accepted by Univar Canada, August 31, 2011, Canada, 2011

Heath, D.D, Bettles, C.M., and D. Roff. 2010. Environmental Factors Associated with Reproductive Barrier Breakdown in Sympatric Trout Populations on Vancouver Island, British Columbia. Evolutionary Applications 3 (1): 77-90, British Columbia, Canada, 2010

Heath, D.D., Bettles, C.M., Jamieson, S., Stasiak, I., and M.F. Docker. 2008. Genetic Differentiation among Migratory and Resident Life-History Forms of Oncorhynchus mykiss in British Columbia. Transactions of the American Fisheries Society 137: 1268-1277, British Columbia, Canada, 2008

C.M. Bettles. “Overview of Cloudworks Energy Run-of-River Hydroelectric Environmental Program". Dinner Speaker at Peter Kiewit Sons Co. Western North American Environmental Conference, Vancouver, BC, September 19, 2008, Vancouver, British Columbia, Canada, 2008

C.M. Bettles. "Biological Review of Sakinaw Lake Water Balance Study: Potential Effects to Fisheries Resources". Sakinaw Lake Stakeholder Meeting & Review of Sunshine Coast Regional District Water Management Plan, May 31, 2007, British Columbia, Canada, 2007

Bettles, C.M. Biological Review of Sakinaw Lake Water Licence Application: Potential Effects on Fisheries Resources. Submitted to and accepted by Sunshine Coast Regional District, Sechelt, BC, March 27, 2007. Jacques Whitford AXYS, Canada, 2007

Bettles, C.M. Biological Review of Garden Bay Lake Water Licence Application: Potential Effects on Fisheries Resources. Submitted to and accepted by Sunshine Coast Regional District, Sechelt, BC, March 27, 2007. Jacques Whitford AXYS, Canada, 2007

Bettles, C.M. Addendum to Twin Lakes Diversion Project, Conceptual No Net Loss Fish Habitat Compensation Plan. Submitted to and accepted by Fisheries and Oceans Canada for Fisheries Act Authorization, October 2005, Canada, 2005

Warheit, K. and C.M. Bettles. Genetic Characterization of Washington State Chinook Salmon (Oncorhynchus tshawytscha) populations within Watershed Resource Inventory Area 8 (WRIA 8). Submitted to and accepted by King County District, Seattle, Washington, April, 2005. Washington Department of Fish & Wildlife, Conservation Unit Report, Olympia, Washington, Washington, United States, 2005

Bettles, C.M., Von Bargen, J., and S.F. Young. Genetic Characterization of Select Bull Trout (Salvelinus confluentus) Populations in the Pend Oreille River Basin: Evidence of Demographic Independence. Submitted to and accepted by Kalispel Tribe of Indians, Usk, Washington July, 2005. Washington Department of Fish and Wildlife, Conservation Unit Report, Olympia, Washington, Washington, United States, 2005

C.M. Bettles. "Genetic Characterization of Washington State Chinook Salmon (Oncorhynchus tshawytscha) Populations within Watershed Resource Inventory Area 8 (WRIA 8)". WRIA 8 Technical Committee Presentation, Seattle, Washington, February 15, 2005, Washington, United States, 2005

Bettles, C.M., Docker, M.F., Dufour, B., and D.D. Heath. 2005. Interspecific Hybridization between Sympatric Species of Trout: Loss of Reproductive Isolation. Journal of Evolutionary Biology 19: 1220-1233, Canada, 2005

C.M. Bettles. "Preliminary Assessment of Population Structure of Oncorhynchus mykiss within the Crab Creek Subbasin". Washington Department of Fish & Wildlife Presentation, Olympia, Washington, August 12, 2004, Washington, United States, 2004

Bettles, C.M. Preliminary Assessment of Population Structure of Oncorhynchus mykiss within the Crab Creek Subbasin. Submitted to and accepted by the United States Bureau of Land Management, Spokane, Washington, October, 2004. Washington Department of Fish & Wildlife, Conservation Unit Report, Olympia, Washington, Washington, United States, 2004

C.M. Bettles. "Evidence of Reciprocal Hybridization and Unique Mating Bias among Trout Hybrids". University of Windsor, Department of Biological Sciences Seminar Series, Windsor, Ontario. November 21, 2003, Ontario, Canada, 2003

C.M. Bettles and D.D. Heath. "Investigating Selection among Coastal Cutthroat (Oncorhynchus clarki clarki) and Rainbow/Steelhead (Oncorhynchus mykiss) Hybrids". University of Windsor, Department of Biological Sciences Seminar Series, Windsor, Ontario. March 25, 2003, Ontario, Canada, 2003

C.M. Bettles, M.F. Docker, B. Dufour, and D.D Heath. "Extinction by Introgression? An Investigation of Hybridization between Coastal Cutthroat (Oncorhynchus clarki clarki) and Rainbow Trout (Oncorhynchus mykiss)". Canadian Conference for Fisheries Research, Ottawa, Ontario. January 2-4, 2003, Ontario, Canada, 2003

COMMITTEES

2010 - 2011	Professional Committee Member on the Village of Anmore Environment Standing Committee. The Committee provides advice and recommendations to Council on environmental issues and identifies opportunities for environmental protection and enhancement within the Village, British Columbia, Canada
2004	Interjurisdictional Bull Trout Conservation Committee. Represented the State of Washington on an international bull trout working group tasked with standardizing cross border population assessments and monitoring to more effectively manage and conserve the fish species, severely in decline throughout it native range. The Committee was comprised of scientists from universities in British Columbia and Montana, as well as the U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, and Oregon D, Washington, United States

PUBLIC HEARINGS

2011	Expert witness (confidential case) for BC Attorney General's Office specific to the areas of fish and fish habitat and regulatory process (provincial and federal), British Columbia, Canada, 2011, BC Attorney General's Office, British Columbia, Canada

JANICE PASLAWSKI

Dr Janice Paslawski, PhD, P.Eng., has over 25 years of experience in conducting and managing environmental specialists in the delivery of protective risk management strategies for complex impacted sites. She has been working in the environmental field since 1990, including three years of research. Dr Paslawski's experience includes development of quantitative risk assessment approaches for the evaluation of contaminants of concern in sediment, soil and groundwater with respect to human and ecological health risk, as well as development of risk management plans and assessment tools for multiple-site portfolios. She has managed teams for the development of regulatory guidelines in Canada. She currently directs the Centre of Excellence for Risk Assessment for her business unit. She is experienced in the management of diverse project teams and technical experts. Dr Paslawski has conducted national projects on the development of risk-based criteria for environmental protection and application of remediation guidelines in Canada.

SECTORS OF EXPERTISE

Environment

- Air quality
- Contaminated sites
- Environmental impact study
- Environmental Management
- Industrial pollution management
- Mining sites
- Risk analysis
- Scientific or environmental studies
- Terrestrial Environment
- Water Quality

EDUCATION

2008	PhD Environmental Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
1993	Master of Science, Civil Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
1986	Bachelor of Science, Civil Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

EXPERIENCE

SINCE 2010 — SNC-LAVALIN INC., SASKATOON, SASKATCHEWAN, CANADA

Environment & Water

Since 2012 — Director Risk Assessment Centre of Excellence

- Director and Leader of a team of environmental risk assessment specialists providing technical support and regulatory advocacy for clients
- Developed Guidance Manual for developing Site-specific Soil, Groundwater, and Soil Vapour Remediation Objectives for Contaminated Sites in Canada (Canadian Council of Ministers of the Environment)

Years of Experience

- 27 years

Years with SNC-Lavalin

- 4 years

Key Positions

- Director
- Engineering Specialist - Environment
- Environmental Specialist

Languages

- English

Site Experience

- Canada
- Mexico
- United States

Computer Applications

- MS Office
- MS Visio
- MS Access

- Senior Technical Specialist in support of risk based assessment for over 30 Fisheries and Oceans Canada coastal sites under the management of Public Works and Government Services Canada (PWGSC)
- Oversight of risk-based closure and management strategy for a portfolio of over 700 downstream petroleum facilities in Canada
- Oversees risk-based corrective actions for a large portfolio of over 100 petroleum hydrocarbon impacted sites for a key Client in western Canada for issues related to the Ministry of Environment
- Senior Technical Support for risk assessment of a chemical plant in South America
- Conducted human health risk assessments for impacts related to residual metal impacts including evaluation in areas where background conditions exceed applicable regulatory guidelines
- Led risk-based closure for environmental impacts associated with exploration drilling in northern Saskatchewan

2010 - 2012

Risk Assessment Centre of Excellence
Senior Risk Assessment Specialist

- Provided senior risk assessment leadership in western Canada involved with the Risk Assessment Centre of Excellence for risk management and assessment of multiple site portfolios and mining impacts in Saskatchewan
- Managed and provided senior review for all risk assessment projects in Canada; reviewed site-specific risk assessment strategies, together with overall risk management of environmental portfolios
- Developed risk management evaluation strategies
- Developed risk based evaluation strategies for the management and evaluation of environmental operations and contaminated sites; typical projects would include those where evaluation of uncertainty associated with site-specific risk-based remediation guidelines, development of risk management programs and quantification of financial risks and liabilities were required
- Involved in risk assessments that included potash mine sites, small craft harbour and lightstation sites for the Department of Fisheries and Oceans (DFO) Canada and PWGSC, mine sites in western Canada and abroad, metallurgical sites, petroleum refining and distribution facilities, petrochemical plants and other industrial and commercial sites

2008 - 2010

POS BIO-SCIENCES, SASKATOON, SASKATCHEWAN, CANADA
Technology Development Engineer

- Served as the primary Internal Counsel to the CEO/president and senior management for identifying extraction technologies, technology trends and business opportunities including transitional collaborations
- Directed strategic alliances, partnerships and collaborations
- Served in a project management role for clients pursuing new technologies, new biological sources or innovative bio-based added value products

2005 - 2008

UNIVERSITY OF SASKATCHEWAN, SASKATOON, SASKATCHEWAN, CANADA
Department of Environmental Engineering
PhD Candidate

- Doctorate research on the biodegradation of naphthenic acids on oil sands waste water tailings

2003 - 2004 | ALPINE ENVIRONMENTAL LTD., CALGARY, ALBERTA, CANADA
Technical Support
Senior Engineer

- Reviewed and finalized environmental engineering projects primarily related to upstream oil & gas reclamation and decommissioning activities
- Reviewed and provided input into pipeline spill response and land reclamation

1999 - 2003 | CONTRACT EMPLOYMENT, CALGARY, ALBERTA, CANADA
Meridian Environmental Inc.
Environmental Engineering Consultant

- Selected project work including the delivery of risk assessment probabilistic evaluation courses for Health Canada and selected regulatory agencies in the United States of America (USA)
- Conducted human health exposure assessment for contaminants of concern for the American Chemical Society

1990 - 1998 | O'CONNOR ASSOCIATES ENVIRONMENTAL INC., CALGARY, ALBERTA, CANADA
Project Manager

- Served as Project Manager for site investigations, remediation, and risk management of contaminated sites (petroleum, chemical and mining) across Canada and selected US sites
- Developed and delivered short courses on probabilistic health risk assessment (Health Canada, Carleton University, AEHS, Louisiana Department of Environment 1994 through 1997)
- Evaluated and ranked Potential Contaminants of Concern (Health Canada)
- Developed a database for ranking of Waste Treatment Facility applications (Alberta Energy and Utility board)
- Developed a probabilistic method of assessing risks as applied to the management and remediation of contaminated sites (including remediation guidelines for Alberta Environment; Alberta's orphaned wood preserving sites risk management strategy)
- Developed a database for ranking of Waste Treatment Facility application (Alberta Energy and Utility board)

1986 - 1989 | CITY OF SASKATOON PUBLIC WORKS, SASKATOON, SASKATCHEWAN, CANADA
Engineering Department
Water and Sewer Maintenance Engineer

- Managed operations and maintenance of the City municipal water and sewer systems
- Coordinated and managed schedules as well as maintenance programs
- Involved with constructions schedules

PROFESSIONAL ASSOCIATIONS

SINCE 2014	Professional Engineers Ontario (PEO), Membership no. 100211459
2012	Association of Professional Engineers & Geoscientists of British Columbia (APEGBC) , Membership no. 37130
2011 - 2012	Association of Professional Engineers and Geoscientists of Manitoba (APEGM), Membership no. 34265
1990 - 09 / 2012	Association of Professional Engineers and Geoscientists of Alberta (APEGA), Membership no. 51722
2004 - 12 / 2011	Association of Professional Engineers and Geoscientists of Saskatchewan, Membership no. 12874

1988 - 12 / 2011	Association of Professional Engineers and Geoscientists of Saskatchewan, Membership no. 12874

PUBLICATIONS AND PRESENTATIONS

Implications of Risk Assessment Methodology Changes on Contaminated Site Remediation Management Strategy, Toronto, Ontario, Canada, 2012

Opportunities in Development of Higher Value Products in Biomass, Grand Forks, North Dakota, United States, 2010

The Effect of Method on Oil Quality from Micro Algae Sources, Washington, District of Columbia, United States, 2010

A Plug Flow Model for Biodegradation of a Naphthenic Acid in an Immobilized Cell Reactor, Saskatoon, Saskatchewan, Canada, 2009

Biodegradation Kinetics of trans 4-Methyl-1-Cyclohexane Carboxylic Acid in Continuously Stirred Tank and Immobilized Cell Bioreactors, Saskatoon, Saskatchewan, Canada, 2009

Biodegradation Kinetics of Trans 4-Methyl-1-Cyclohexane Carboxylic Acid, Saskatoon, Saskatchewan, Canada, 2009

Extraction and Downstream Processing of Bioproducts and Biofuel from Marine Biomass, Montreal, Quebec, Canada, 2008

Enhanced Degradation of a Model Naphthenic Acid Compound in Bioreactors, Banff, Alberta, Canada, 2007

Kinetics of Biodegradation of a Model Naphthenic Acid Compound, Edmonton, Alberta, Canada, 2007

Biodegradation of Naphthenic Acids in Reactors, Sherbrooke, Quebec, Canada, 2006

Biodegradation of Naphthenic Acids in Tailings Pond Water, Banff, Alberta, Canada, 2005

Integration of Environmental and Business Risk Assessment for the Management of Contaminated Sites: Two Case Studies, Calgary, Alberta, Canada, 1996

Development of a Screening Relationship to Describe Migration of Contaminant Vapours into Buildings, Calgary, Alberta, Canada, 1996

Environmental and Health Risk Assessment as a Regulatory and Management Tool, Kuala Lumpur, Malaysia, 1992

COMMITTEES

2012	Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) Academic Review Committee, Saskatoon, Saskatchewan, Canada
2011 - 2012	Academic Review Committee - Academic Reviewer, Saskatoon, Saskatchewan, Canada
2010	Saskatchewan Environment - Air Code Content Committee, Saskatoon, Saskatchewan, Canada
2004 - 2009	Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) Permit to Practice Committee, Saskatoon, Saskatchewan, Canada

DIRECTORSHIPS

2008 - 2012	BioEnterprise - Technical Advisory Board, Guelph, Ontario, Canada

AWARDS AND SCHOLARSHIPS

2008	Natural Sciences and Engineering Research Council of Canada (NSERC) Scholarship - PGD3, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
2005	Manulife Financial Scholarship, Canadian Council of Professional Engineers, Saskatoon, Saskatchewan, Canada
1992	Natural Sciences and Engineering Research Council of Canada (NSERC) Scholarship - PGM, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
1986	Natural Sciences and Engineering Research Council of Canada (NSERC) Scholarship - PGM, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
1982	Governor General's Medal For Highest Academic Achievement, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

ACADEMIC POSTS

SINCE 2008	Adjunct Professor, University of Saskatchewan College of Engineering, Saskatoon, Saskatchewan, Canada

PUBLIC HEARINGS

1989	Expert Witness, City of Saskatoon, Saskatoon, Saskatchewan, Canada

TARA KENNEDY

SNC·LAVALIN

Ms. Siemens Kennedy is a Senior Environmental Toxicologist with over 15 years of experience in contaminated sites, and more than 13 years of experience conducting human health and ecological risk assessments. She joined SNC-Lavalin in September 2011 and is a member of the Roster of Contaminated Sites Approved Professionals (CSAP) in the Province of British Columbia and is a rostered Risk Assessment Approved Professional. Ms. Siemens Kennedy has designed and conducted more than 100 human health and ecological risk assessments. The BC Ministry of Environment (BC MoE) has issued a number of Certificates of Compliance and Approvals in Principle for risk assessments conducted by Ms. Siemens Kennedy. Her experience also includes fate and transport modelling, project management, liaising with provincial and federal regulators, and investigation and remediation of numerous contaminated sites.

SECTORS OF EXPERTISE

Environment

- Aquatic Environment
- Contaminated sites
- Risk analysis
- Risk assessment
- Scientific or environmental studies
- Terrestrial Environment

EDUCATION

2003 | Master of Environmental Toxicology, Simon Fraser University, Burnaby, British Columbia, Canada

1996 | B.Sc., Chemistry, University of British Columbia, Vancouver, British Columbia, Canada

EXPERIENCE

SINCE 2011 | Senior Project Specialist, Environmental Toxicology and Risk Assessment
Environment & Water
SNC-LAVALIN INC., BURNABY, BRITISH COLUMBIA, CANADA

- Risk Assessor, Service Station, Vancouver, BC. Completed a human health and ecological risk assessment (HHERA) for a large off-site plume; off-site affected properties includes multiple residential and commercial properties. The HHERA was conducted to support the application for Certificates of Compliance for the Private Properties and an Approval in Principal for the City owned (i.e., roadways, etc) areas. The HHERA has been submitted to the BC MoE for review.
- Risk Assessor, former landfill, Port Moody, BC. Provided senior review for a Problem Formulation conducted to characterize the site setting, identify chemicals of potential concern (COPCs), identify human and ecological receptors of concern, and to develop conceptual site models for future quantitative HHERA.
- Risk Assessor, Smithers' Airport, Smithers, BC. Provided senior review of a quantitative ecological risk assessment conducted to evaluate the potential for surface soil contamination to adversely impact terrestrial ecological receptors.

Years of Experience

- 16 years

Years with SNC-Lavalin

- 3 years

Key Position

- Environmental Specialist

Languages

- English

Site Experience

- Canada
- United States

Computer Applications

- Microsoft Office Suite

- Risk Assessor, Former Bulk Plant Facility, Trail, BC (Ongoing since 2011). Provided senior technical support and advice regarding data collection to support a human health and ecological risk assessment. Contamination at the site includes widespread surface metals contamination associated with the nearby smelter. Conducted review of existing data, conducted a preliminary Problem Formulation including the identification of receptors of concern and chemicals of potential concern (COPC). An application for pre-approval for modification of a toxicity reference value (TRV) for lead has been submitted to the BC Ministry of Environment (MoE). Quantitative human health and ecological risk assessment (HHERA) to be conducted in 2012.
- Risk Assessor, CSAP AP Reviewer. Former Road Salt Storage Facility, Langley, BC. Conducted a BC MoE Protocol 6 review of a HHRA prepared for a former road salt storage facility. The report has been submitted in application for a BC MoE Certificate of Compliance (CofC) for the site and adjacent management area.
- Toxicologist. Conducted a comprehensive literature review (primary literature, agency databases) for toxicological data on the behavior and effects of perfluoroalkyl carboxylates in humans and mammalian species.

1997 - 2011 | Senior Environmental Toxicologist

SLR CONSULTING (CANADA) LTD. (FORMERLY SEACOR ENVIRONMENTAL INC.), VANCOUVER, BRITISH COLUMBIA, CANADA

- Conducted a comprehensive literature review to identify environmental occurrence and toxicological information for perfluorinated chemicals (PFCs) (other than PFOS and PFOA) including, short and long-chain perfluorocarboxylic acids, precursors to perfluorocarboxylates (i.e., fluorotelomer alcohols), long and short chain perfluoroalkylsulfonates and precursors to perfluoroalkylsulfonates. The work was conducted for Health Canada. The information will be reviewed by Health Canada and considered in the development of environmental quality guidelines for PFCs.
- Derived Risk-Based Remedial Targets for Perfluorooctane Sulfonate (PFOS) for Two Former Fire Fighting Training Areas (FFTA). On behalf of DND and PWGSC, designed and conducted a hazard assessment for PFOS in 2005, including a review and interpretation of available epidemiological data and animal toxicity data, with subsequent derivation of an oral reference dose (RfDo). The RfDo was used to derive soil and groundwater remedial targets protective of human health exposures (based on soil ingestion, dermal contact with soil and inhalation of soil particulate, groundwater ingestion (as drinking water) and dermal contact with groundwater) at a former fire-fighting training area located in Greater Victoria, BC. In 2007, on behalf of PWGSC and Transport Canada, a more comprehensive hazard assessment was conducted; the initial hazard assessment was updated based on the available literature, and an extensive review of ecological toxicity data was conducted. The RfDo was revised and used to derive human health risk-based remedial targets for two former fire-fighting training areas located in the BC Interior. Ecological risk-based remedial targets were also derived (for soil invertebrates, plants, terrestrial wildlife and aquatic life). The 2008 DRAFT report was reviewed by Health Canada and Environment Canada. To supplement the investigation, designed a tissue sampling program (vegetation, soil invertebrate and small mammal). The hazard assessment was updated and finalized in 2010.
- On behalf of a potential purchaser of the site, conducted a review of a HHERA completed by Golder and Associates. The site included widespread metals contamination associated within the infilling of the area. A critical review of the HHERA was conducted, with the results presented and discussed in various meetings with the property owner and their consultant(s).

- Assisted in the completion of an Aquatic Ecological Risk Assessment evaluating the potential for contamination associated with a former pulp and paper mill to impact an adjacent river. Contaminants of potential concern included various metals (arsenic, chromium, iron, manganese and vanadium), ammonia, nitrite and chlorinated phenols. Risks were assessed based on chemistry, benthic community structure and the results of a toxicity testing program. A risk-management plan was developed and includes further toxicity testing, as well as on-going groundwater and surface water monitoring.
- Conducted or completed senior review of more than 15 Preliminary Quantitative Risk Assessments (PQRA's) and Ecological Risk Evaluations (ERE 1) for PWGSC or INAC sites. Contaminants included metals, PAHs, petroleum hydrocarbons, PCBs and dioxins/furans for contaminated sites near commercial and institutional buildings, residences, and drinking water supplies. Complete exposure pathways for human receptors of concern included soil and groundwater ingestion, dermal contact with soil and groundwater, intake of contaminated food stuffs (i.e. vegetation growing at landfill sites) and inhalation of soil particulate. The federal agencies responsible submitted the reports to Health Canada/Environment Canada for review. Site-Specific Risk Assessments have been recommended for 3 recent (2010) INAC funded sites; workplans for supplemental investigations to support the SSRAs (including biosurveys, bioassays and additional site characterization) have been submitted to the clients.
- Conducted a human health risk assessment of oil contamination resulting from an oil spill in a residential neighbourhood, Greater Vancouver, BC. The HHRA was conducted to determine the potential for residual soil contamination, as well as associated contamination present in groundwater and soil vapour, to pose a risk to human health. A site-wide approach was used to ensure the protection of all individuals with the potential to be exposed to residual contamination; this involved using highly conservative assumptions including the worst-case (maximum) concentrations of contaminants measured across the site (all affected properties). Exposures and risks to residents living at the site, as well as construction workers and utility workers working at the site, were quantified. Potentially complete soil (yard and garden) exposure pathways for the resident receptor included incidental ingestion, dermal contact and inhalation of soil particulate. Other potentially complete exposure pathways included inhalation of soil vapour, dermal contact with groundwater and ingestion of garden produce. The results of the risk assessment indicated that health risk estimates were in compliance with CSR risk-based standards.
- Assisted in conducting a probabilistic human health risk assessment evaluating the shellfish consumption (emphasis on First Nations) for a military harbour in Greater Victoria, BC. Contaminants of concern included several metals, organometals, PAHs, total PCBs and PCB congeners, and dioxins/furans. Both carcinogenic and non-carcinogenic effects were evaluated.
- Risk Assessment of Petroleum Hydrocarbon Sites: Designed and completed human health risk assessments for more than 30 petroleum hydrocarbon sites. The human health assessments have typically included fate and transport modeling, estimation of exposures and associated risks to commercial workers exposed to volatiles emitted from subsurface impacts (generally evaluated via collection of soil gas samples with application of attenuation factors), to construction workers directly exposed to the contamination during subsurface works, as well as exposures to off-site commercial/residential receptors (i.e. via vapour intrusion into adjacent buildings or groundwater used as drinking water). Certificates of Compliance have been issued by the BC MOE for several of the sites.
- Risk Assessment of Road Salt Contamination: Designed and conducted human health and ecological risk assessments of 4 sites with sodium and chloride impacts related to road salt storage, including two former highways yards. Additional chemicals of potential concern at the sites have included iron, manganese and sulphate. Complete exposure pathways for human receptors have included soil and groundwater ingestion and dermal contact with soil and groundwater. The BC Ministry of Environment has issued Certificates of Compliance for 2 of the sites.

- Risk Assessment of Iron and Manganese Groundwater Contamination: Designed and conducted human health and ecological risk assessments for more than 10 sites with elevated concentrations of iron and manganese in groundwater. The presence of iron and manganese in groundwater was typically related to reducing conditions presented by organics (i.e., hydrocarbons, wood waste). The primary complete exposure pathway for human receptors was ingestion of groundwater as drinking water. Evaluated toxicological data for humans exposed to iron and manganese and characterized risks associated with complete exposure pathways. Evaluated ecological risks, primarily to aquatic life in downgradient surface water bodies. Certificates of Compliance have been issued by the BC MOE for several of the sites.
- Risk Assessment of Arsenic Contamination: Designed and completed human health and ecological risk assessments for fifteen hydro distribution stations contaminated with arsenic trioxide in Ontario, BC. The stations were predominantly located in residential areas. Receptors of concern included the hydro employees, nearby residential receptors (adults and children) and ecological receptors. Risks to receptors at several of the sites were in excess of Ontario Environment's acceptable risk levels and risk management plans were developed and implemented. For residential properties evaluated potential uptake of arsenic in vegetable gardens, as well as soil and groundwater ingestion, dermal contact and particulate inhalation.
- Updated a human health and ecological risk assessment conducted by others for a parcel of land that is part of a former Weyerhauser Sawmill located on the foreshore of the Fraser River. The former sawmill is being developed as residential/commercial land. An AIP was issued by the BC MOE based on the results of the initial risk assessment. Reviewed and updated the risk assessment to ensure 1.) that the assessment conformed with current BC MOE requirements and guidance; 2.) that the assessment was up to date with respect to the investigation and remediation work completed at the site subsequent to the completion of the original risk assessment; and, 3.) that recommendations made by BC MOE in the AIP were complied with. The update included revisiting the COPC (petroleum hydrocarbons, metals and PAHs) and receptor screening, an extensive site vapour assessment, re-assessing human health and ecological exposures and risks, and recommendations for a toxicity testing program to derive risk-based remedial targets for aquatic receptors. The risk assessment was reviewed by the BC MOE and a Certificate of Compliance has been issued for the site.
- Waste Coal Pile, Union Bay, British Columbia: Participated in development of an investigation plan for a large waste coal pile on Vancouver Island, British Columbia. The plan was reviewed and approved by the BC MOE. A preliminary human health and ecological risk assessment was conducted under current site conditions to evaluate the potential for immediate impacts to human and ecological health. Recreational receptors and construction workers were of concern and complete exposure pathways included ingestion and dermal contact with soil, sediment, groundwater (and seep water from pile) and surface water, as well as inhalation of soil particulate. Investigations and toxicity testing conducted to date indicate unacceptable risks to adjacent freshwater and marine aquatic receptors associated with elevated metals related to acid rock drainage. Risk-based remedial targets have been developed to allow risk management of the contamination in place while mitigating unacceptable risks to receptors. An Approval in Principle was issued by the Province of BC based on the risk assessment.
- Conoco Refinery, Commerce City, Colorado: Participated in the design and completion of a probabilistic human health risk assessment for a large petroleum refinery located in Commerce City, Colorado. The assessment included the division of the site into nine study areas and the estimation of exposures and risks to receptors in each of the nine areas. More than twenty petroleum-related chemicals of potential concern were evaluated in the assessment. Receptors of concern included on-site indoor and outdoor workers, utility workers, off-site residents and recreators using a nearby surface water body. Complete exposure pathways included vapour inhalation (exposures estimated using Johnson and Ettinger Vapour Intrusion Model), soil, sediment, groundwater and surface water ingestion and dermal contact and particulate inhalation. Current and future exposure scenarios were evaluated. Where applicable, risk-based remedial targets were established.

- Risk Assessment of Fertilizer Manufacturing Facility. Conducted and designed human health and ecological risk assessment of a fertilizer manufacturing and mixing facility contaminated with ammonia, heavy metals and pesticides. Human receptors included commercial workers at the site/on adjacent properties, as well as nearby residents using groundwater as drinking water. Fate and transport modeling of ammonia vapours, heavy metals, and pesticides in groundwater was conducted. Risks in excess of risk-based standards were identified for residential receptors using groundwater used as drinking water.
- Department of National Defence Ammunition Depot, Rocky Point, British Columbia: Participated in the design and completion of human health and ecological risk assessments of four former landfill sites at a Department of National Defence Ammunition Depot. Several metals (Cd, Cu, Pb, Zn, etc.) were identified as chemicals of potential concern at the sites in soil, groundwater, surface water and/or sediments. Human receptors identified to be of concern at the site included on-site workers and contract workers. Exposure intakes and associated risks to human receptors were quantified and were determined to be below the risk-based standards. Risks to terrestrial ecological receptors were quantified through ingestion modeling and comparison of intakes to literature toxicity reference values.
- Royal Roads University, Colwood, British Columbia: Designed and conducted a human health and ecological risk assessment for a former coal ash dump located on a Department of National Defense property on Vancouver Island, British Columbia. The ash dump is located in an ornamental garden, between two lakes. Chemicals of potential concern included metals and polycyclic aromatic hydrocarbons. Exposures and risks to human receptors (gardeners) were estimated and were below acceptable risk levels. Based on the limited mobility of the chemicals of potential concern and the localized nature of the contamination, it was concluded that impacts to ecological receptors are not anticipated.
- Designed and conducted a DQRA for a historical landfill berm located adjacent to Esquimalt Lagoon, a designated waterfowl sanctuary, at Royal Roads University, Vancouver Island, British Columbia. PAH and metals contamination associated with the debris in the berm was identified in sediment and surface water adjacent to the berm. Human receptors of concern included recreational site users and maintenance workers; ecological receptors included marine aquatic receptors (benthic and pelagic), migratory birds and terrestrial wildlife. Unacceptable risks to both human and ecological receptors were identified and a risk management plan that included removing a portion of the berm and re-construction of the intertidal salt water marsh was recommended.Designed and conducted a human health and ecological risk assessment of a former poultry processing facility. Chemicals of potential concern at the site included manganese and iron. Fate and transport modeling to evaluate contaminant migration from a storage lagoon to a nearby creek was conducted. Receptors of concern included residents in the area and construction workers. Ecological and agricultural receptors were also evaluated. The risk assessment was reviewed by BC Ministry of Environment and a Certificate of Compliance was issued for the site.

PROFESSIONAL ASSOCIATIONS

SINCE 2011 | Association of the Chemical Profession of British Columbia

PROFESSIONAL DEVELOPMENT

2013 | 8th Annual Geoenvirologic Risk Assessment Symposium, Geoenvirologic, Vancouver, British Columbia, Canada

2013 | CSAP Spring Professional Development Workshop, CSAP, Vancouver, British Columbia, Canada

2012 | 7th Annual Geoenvirologic Risk Assessment Syposium, Geoenvirologic, Vancouver, British Columbia, Canada

2012 | Spring and Fall CSAP Professional Development Workshops, CSAP, Vancouver, British Columbia, Canada

2011	|	6th Annual Geoenvirologic Risk Assessment Symposium, NAME OF INSTITUTION, Vancouver, British Columbia, Canada
2011	|	CSAP Spring and Fall Professional Development Session, BC CSAP, Vancouver, British Columbia, Canada
2011	|	BCIA Practice of Agrology Workshop, BCIA, Langley, British Columbia, Canada
2010	|	BCIA Ethics Course, BCIA, Ft. St. John, British Columbia, Canada
2010	|	Spring and Fall Professional Development Workshops, BC CSAP, Vancouver, British Columbia, Canada

ADDITIONAL TRAINING

2010	|	Preliminary Quantitative Risk Assessment Short Course, Health Canada, Vancouver, British Columbia, Canada
2008	|	Environment Canada Federal Contaminated Sites Risk Assessment Short Course, Health Canada, Vancouver, British Columbia, Canada
2004	|	Short Course on the Applications of the Director's Criteria for Managing Contaminated Sediments in British Columbia, Convened by The Sustainable Fisheries Foundation, Victoria, British Columbia, Canada
2003	|	Atlantic RBCA (Risk Based Corrective Action) Training Seminar, The Atlantic PIRI (Partnership in RBCA Implementat, Halifax, Nova Scotia, Canada
2003	|	Analyzing and Interpreting Contaminated Harbour and River Sediment, Sponsored by The University of Wisconsin-MadisonSp, Victoria, British Columbia, Canada

PUBLICATIONS AND PRESENTATIONS

T. Siemens Kennedy, R. Wilson, D. Longpre, B. Langlet, "Toxicity Review of Perfluoroalkyl Carboxylates." Federal Contaminated Sites National Workshop, Toronto, Ontario, Canada, 2012

T. Siemens Kennedy, L. Paterson, I. Chatwell, "Environmental Partitioning of Perfluorinated Chemicals: Co-Located Sampling of Multiple Media." Dioxin 2011 Symposium, Brussels, Region of Bruxelles-Capital, Belgium, 2011

T. Siemens Kennedy, "Hazard Assessment and Derivation of Risk-Based Remedial Targets for PFOS." Federal Contaminated Sites National Workshop., Vancouver, British Columbia, Canada, 2008

T. Siemens Kennedy, "Human Health Risk Assessment of PFOS – What? Why? and How?" 3rd Annual Geoenvirologic Risk Assessment Symposium., Vancouver, British Columbia, Canada, 2008

COMMITTEES

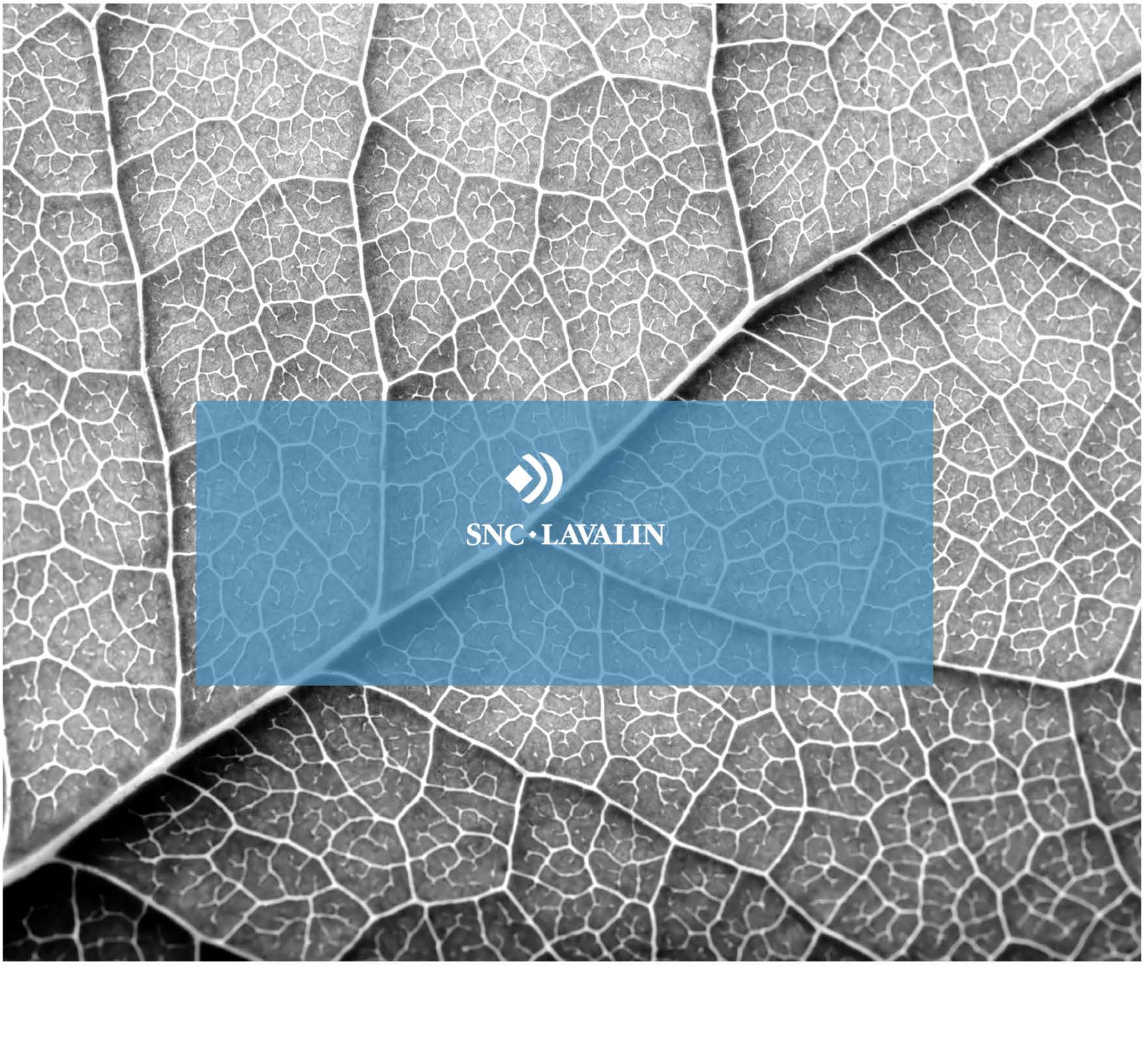
SINCE 2013	|	CSAP Performance Assessment Committee, Vancouver, British Columbia, Canada

DIRECTORSHIPS

SINCE 2012	|	Association of the Chemical Profession of BC

ACADEMIC POSTS

2012 | Sessional Instructor, BISC 650 - Environmental Risk Assessment, Simon Fraser University, Burnaby, British Columbia, Canada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