APPENDIX 6

BASELINE DATA, SURFACE WATER AND GROUNDWATER

PITEAU ENGINEERING LTD.

1994

PITEAU ENGINEERING LTD.
HYDROGEOLOGICAL AND GEOTECHNICAL CONSULTANTS

SUITE 100, 4500 - 16th AVENUE N.W.
CALGARY, ALBERTA
CANADA T3B 0M6
TELEPHONE (403) 286-2522
TELEX 03-821172
FAX (403) 247-4811

TADEUSZ L. DABROWSKI
FREDERIC B. CLARIDGE
DENNIS C. MARTIN

BASELINE DATA
SURFACE WATER AND GROUNDWATER
TELKWA COAL PROJECT

PREPARED FOR:

MANALTA COAL LTD

KI93-3773-1

JUNE, 1994

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS (cont'd)

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

°C	degrees Celsius
CWQG	Canadian water quality guidelines
EC	electrical conductivity
ID	inside diameter (piezometer)
i	hydraulic gradient
K	hydraulic conductivity (metres per second)
level B_{DW}	human consumption criteria for drinking water
level B_{DS}	de minimus criteria for water based discharges to protect aquatic life
mL	millilitre
m	metre
mm	millimetre
MOELP	Ministry of Environment, Lands and Parks (British Columbia)
n_e	effective porosity of soil or rock
P	elemental phosphorus
pH	logarithm of hydrogen ion concentration
PP Alkalinity	phenolphthalein alkalinity
PVC	polyvinylchloride plastic
Q_A/Q_C	quality assurance / quality control
TDS	total dissolved solids
TFR	total filterable residue (= total dissolved solids)
µg/g	chemical concentration expressed as micrograms of solute per gram of liquid
v	groundwater velocity (metres per second)

1. INTRODUCTION

1.1 GENERAL

Manalta Coal Limited (Manalta) proposes to develop a coal mining operation near Telkwa, British Columbia (Figure 1). Piteau Engineering Ltd. (PEL) was retained to obtain additional information needed to complete the Mine Development Certificate (MDC) submission to the Government of British Columbia for the coal licence area north of the Telkwa River, including Pits #7 and #8.

1.2 TERMS OF REFERENCE

1.2.1 Surface Water

The surface water quality monitoring program was designed to supplement the extensive baseline studies conducted previously as part of the proposed Telkwa Project Pits #1 to #6 on the south side of the Telkwa River. Samples were collected for the first time from a watercourse on the proposed project site on the north side of the Telkwa, and from sites on the Telkwa River and Goathorn Creek which were previously sampled in 1988. Samples were also collected from the Bulkley River. The objectives of the program were as follows:

- to provide more recent data on water chemistry in the Telkwa River and Goathorn Creek (these were sampled as part of the initial program in 1984, and infrequently by the BC Ministry of Environment, Lands and Parks (MOELP), until early 1988);
- sample any significant watercourses flowing from the project site on the north side of the river;
- sample the Bulkley River in the vicinity of the proposed project; and,
- if feasible, collect fish tissue from the Telkwa River for metals analysis.

Sampling and water quality testing was performed in September, 1993 and again in April, 1994.

1.2.2 Groundwater

The objectives of the groundwater program were to establish patterns of groundwater movement and groundwater quality in the vicinity of Pit #7 and Pit #8. The program conducted for the two pits comprised the following components:

- install and develop two double piezometer nests and 2 single piezometers. The installations were placed in pre-drilled coal exploration holes;
- conduct hydraulic conductivity tests and measure groundwater levels;
- define the local groundwater circulation regime, including flow directions, velocities and hydraulic gradients;
- obtain groundwater samples from the newly installed piezometers and from the piezometers installed during the 1989 field program to define groundwater chemistry; and,
- measure electrical conductivity, pH and temperature of groundwater samples in the field.

This report describes the methods used in the field programs, presents the results of the field and analytical studies and gives conclusions.

1.3 PREVIOUS WORK

KLOHN LEONOFF LTD. (1985) conducted a Stage II geotechnical, hydrogeological and hydrological investigation for the development of Pits #1 to #6. PEL conducted geotechnical, hydrological, and hydrogeological studies related to the development of Pits #7 and #8 in 1989-90, as described by PEL (1990a and 1990b). Five piezometers were installed by PEL in Pits #7 and #8 in the 1989-90 field program. Depths to groundwater from these and other open boreholes were measured and groundwater samples collected and chemically analyzed in the 1989-90 program.

In 1974, MOELP established a water quality monitoring station on the Telkwa River at the town of Telkwa. Additional data from MOELP for the period 1982-1988 are available for the Bulkley River at Quick. The data are summarized for comparison purposes in the surface water quality section (Section 3.6.1). MACLAREN PLANSEARCH (1985) conducted an extensive water quality investigation involving 12 sites sampled monthly for over a year. Data from three of these sites have been included for comparison purposes with data collected in this program.

DAVID BUSTARD AND ASSOCIATES (1985) conducted an extensive benthic, periphyton, and fish habitat study. While fish habitat studies were undertaken on the Telkwa River, no fish tissue was collected from the river.

2. PHYSIOGRAPHY AND CLIMATE

The project area is located in the Coast Mountains of the Cordilleran Region (CANADIAN OXFORD ATLAS, 1977). Local topographic elevations range from about 1,060 m (Tertiary intrusive), to about 570 m at the Telkwa River (Figure 1). The Telkwa River flows northeast and drains into the Bulkley River (Figure 1). The proposed mine is situated on the south facing hillside.

The region's climate is described as a transitional zone between wet maritime air masses from the Pacific and cold dry arctic air masses from the interior. The mean annual precipitation is about 510 mm. The mean annual temperature in the area (Smithers Airport) is in the order of 3.8°C (ENVIRONMENT CANADA, 1993).

The dominant drainage feature in the project area is the Telkwa River. The Telkwa River has a drainage area of 368 km^2 (ENVIRONMENT CANADA, 1991). A gauge station #08EE020 is located 25 km upstream of the investigation area, where the mean annual flow rate has been calculated to be 14.0 m^3/sec over a 14 year period. Maximum flows occur in June, with a mean monthly discharge of 39.7 m^3/sec. Flow is at a minimum in the winter, with the lowest recorded mean monthly discharge of 2.01 m^3/sec occurring in February.

3. SURFACE WATER

3.1 INTRODUCTION

Locations of the surface water and fish tissue sampling locations are presented in Figure 1, and their coordinates in Table 1. The locations of the flow monitoring station and the temperature and precipitation monitoring station are also indicated.

The water quality sampling locations were chosen to supplement the existing baseline database of water quality information. The Fall 1993 sampling locations were as follows:

- **MCL1 (Tailings Pond Creek):** is situated just downstream from the proposed tailings pond location on the only known continually-flowing watercourse in the project area. The stream currently flows to the Bulkley River. Once mine activities have commenced, it is intended that all surface water flows from the project area be diverted to discharge to the Telkwa River, either directly or through the tailings pond (PEL, 1994). The monitoring site, therefore, does not give any indication of future loadings to the Bulkley, but merely provides background water quality data.

- **MCL2 (Telkwa River upstream of Goathorn Creek):** this site is slightly upstream of the proposed project area.

- **MCL3 (Telkwa River downstream of Goathorn Creek):** this site is located at the upstream edge of the town of Telkwa but well below the proposed tailings pond discharge point.

- **MCL4 (Goathorn Creek downstream of Tenas Creek):** Goathorn Creek is the only significant watercourse entering the Telkwa River between the upstream and downstream Telkwa River sites.

- **MCL5 (Reclamation Plot):** this site is a seep from a reclaimed test pit area on the south side of the Telkwa River. This site was added at the request of MOELP personnel. This location may be representative of the future water chemistry at the project site following reclamation.

In April 1994, sampling was performed at the following sites:

- **MCL1 (Tailings Pond Creek):** as above.
- **MCL3 (Telkwa River downstream of Goathorn):** as above.
- **MCL8 (Bulkley R. downstream of confluence with Telkwa River):** this site lies just downstream of the confluence of the Bulkley and Telkwa Rivers.
- **MCL9 (Bulkley R. downstream of confluence with Tailings Pond Creek):** this site lies just downstream of the confluence of the Bulkley River and the Tailings Pond Creek. Any impacts of the project on the Bulkley River should occur between MCL8 and MCL9.
- **MCL10 (Tailings Pond Creek near the Bulkley):** this is the closest point to the Bulkley on the Tailings Pond Creek which is easily accessible. This site incorporates flows from the project area and adjacent drainage basins.

Water Survey of Canada operates streamflow gauging stations at Goathorn Creek (Station 8EE8, 1961 to present), the Telkwa River below Tsai Creek (Station 8EE20, 1976 to present), and the Bulkley River at Quick (Station 8EE4, 1930 to present). The Bulkley River was also gauged for a short period of time at Smithers (1946-1952 and 1971).

3.2 SURFACE WATER SAMPLING AND TESTING

Surface water samples were collected from September 22-25, 1993 and April 5, 1994. The parameter suite and sample handling procedures are described in detail in Section 4.3.4 "Groundwater Sampling and Testing". In brief, the suite consists of routine potability and major ion constituents, and total metals. This parameter suite was developed following consultation with Smithers MOELP personnel. The decision to analyze for total (rather than dissolved phase) metals was made in order to assess the "worst-case" scenario, and in some instances will overestimate true metals concentrations, as mineral particles (containing metals) may be dissolved. Analytical results are summarized in Table 2.

3.3 QUALITY CONTROL

The laboratory used for the analytical work (Chemex Labs (Alberta) Ltd.) has a comprehensive internal quality control program. Quality control listings are included with the chemistry results in Appendix I.

For the Fall 1993 program, one replicate and one distilled water blank were taken to provide information on laboratory precision and accuracy. The duplicates were taken at the Telkwa River downstream site, as this was felt to be the most important of the sites. In the Spring 1994 program, a single distilled water blank was taken. A summary of the quality assurance and quality control (Q_A/Q_C) analyses is provided in Table 3.

A review of the analytical results shows generally good agreement between the duplicates, with a few obvious exceptions. Total dissolved solids (TDS) were reported at <1 mg/L in one sample and 50 mg/L in the other. Given the concentration levels of cationic and anionic constituents in the samples (Ca, Mg, Na, etc.), the reported value of <1 mg/L is clearly impossible. The reported value of 30 mg/L TDS in the 1993 distilled water blank also appears to be an error, particularly given the low reported concentrations of the major ionic constituents. The reported zinc values for both the 1993 and 1994 distilled water blanks are clearly too high and likely in error. However, the quality control samples do not indicate any serious analytical errors which would alter the interpretation of the chemistry results.

3.4 FISH TISSUE ANALYSIS

Fish habitat analysis of the Telkwa River was previously carried out by DAVID BUSTARD AND ASSOCIATES (1985) as part of an extensive aquatic resource assessment. However, no tissue chemistry analysis was undertaken of the Telkwa River fish (some analyses of Goathorn Creek fish were performed).

To complement the water chemistry analyses, fish sampling of the Telkwa River was carried out on September 29, 1993 at the site indicated in Figure 1 (MCL6). A backpack electrofisher was used to stun the fish, which were then captured with a dip net. It was hoped that fish from a variety of age classes would be captured, but the depth and velocity of the main channel required that fishing be done only in the shallows. Consequently, only fingerlings were captured. A

composite sample of Steelhead, Chum Salmon, and Dolly Varden muscle tissue was submitted to Chemex Labs for analysis.

3.5 INSTALLATION OF A WEATHER STATION AND FLOW MONITORING STATION

A weather station for recording precipitation and temperature was installed at the proposed mine site in the plant site area (Figure 1, MCL7). The temperatures recorded on site are compared to Smithers Airport in Figure 2. Although the record was short (October and November 1993, and recently reinstalled), a correlation was evident between rainfall events at the site and Smithers airport as shown on Figure 3. A longer record is required to draw any significant relationship between the site and Smithers precipitation. The Smithers data were used to characterize the rainfall at the mine site. A complete precipitation record at Smithers Airport is provided in Appendix II.

A flow monitoring station (MCL1, Figure 1) was installed on the Tailings Pond Creek at the same time as the weather station, and hence has the same period of record. The installation consists of a weir and a water level recording station (stilling well, float, and datalogger recording every 30 minutes). This station is designed to provide information on site hydrology which will be used for sizing of hydraulic structures. As with the precipitation data, the period of record at this point is too short to draw conclusions about the hydrologic characteristics of the site.

3.6 RESULTS

3.6.1 Surface Water Chemistry

Results of the water chemistry analyses are presented in Table 2, and detailed laboratory listings are compiled in Appendix I. Summaries of previously collected data are also presented for comparison purposes in Table 2. These data are:

Sampling locations near MCL3: Telkwa River at Telkwa (Fall 1993 and Spring 1994):

- Site 0400187 at Telkwa (1974-1988). These data were provided in digital form by MOELP (Smithers). For each parameter the mean, maximum, minimum, and number of data values are presented. As can be seen from the table, for many parameters a great deal of data has been collected (up to 87 values), though the average number of analyses is lower.

- Site WQS9, Telkwa River downstream of Goathorn Creek (Crows Nest Resources, 1984). Monthly samples were collected over one year. The maximum, minimum and mean values are presented in Table 2.

Sampling locations near MCL2: Telkwa River - upstream of Goathorn Creek (Fall 1993):

- Site WQS8 (Crows Nest Resources, 1984). Monthly samples taken over one year. Maximum, minimum and mean presented.

Sampling locations near MCL4: Goathorn Creek downstream of Tenas Creek (Fall 1993):

- Site WQS4 (Crows Nest Resources, 1984) was situated upstream of Tenas Creek, rather than at the PEL location below Tenas Creek. Given the relatively small flow in Tenas Creek, general water quality at the two locations is expected to be similar.

Sampling locations near MCL8 and MCL9: Bulkley River sites (Spring 1994):

- A MOELP trend monitoring site was established at Quick (approximately 15 km upstream of the project site) for the period May 1982 to March 1988. Frequent monitoring was conducted during this time for a broad range of parameters. More recent data are available for Smithers as part of the water quality objectives monitoring program. However, analyses are conducted only for a very limited suite of parameters: fecal coliforms, turbidity, suspended solids, chlorophyll, ammonia, nitrite, and dissolved oxygen. The trend monitoring site data were therefore used for comparison purposes. It should be noted that Quick is upstream of the Telkwa confluence and MCL8 and MCL9 are downstream, resulting in some problems in inter-site comparison. However, it is believed that the Quick monitoring station provides the best available data for comparison purposes.

Based on an analysis of the water chemistry given in Table 2, it can be seen that the most of the samples have chemistry typical of fresh, clean surface waters. The Reclamation Plot, however, appears to have markedly different water chemistry from the other sites. There is a substitution of sodium for calcium ions in the Reclamation Plot water, typically an indication of groundwaters with a significant residence time.

Chemical constituents which are measured at values higher than the recommended criteria (as given in the MOELP criteria table in Appendix III) are bolded on Table 2. For the Telkwa River, Bulkley River, and Goathom Creek sites, the data have also been examined for consistency with previously measured data. General results are as follows:

MCL1 (Tailings Pond Creek at flow monitoring site): slightly exceeded the iron and total dissolved phosphorous criteria in the Fall 1993 sample. In the Spring 1994, levels of a number of parameters were higher than in the fall, including iron and phorphorous. Water quality criteria were exceeded for aluminum, chromium, copper, nickel, silver, and zinc.

MCL10 (Tailings Pond Creek near confluence with Bulkley): elevated levels of aluminum, chromium, iron, manganese, and zinc.

MCL2 (Telkwa River upstream of Goathorn): slightly exceeded the total iron criterion, but were at the low end of the range of the Maclaren data (WQS8).

MCL3 (Telkwa River at Telkwa): marginally exceeded water quality criteria for total iron in Fall 1993, and was substantially higher in Spring 1994. Copper was slightly above the criterion in the Fall, but at the detection limit in the Spring. Nonetheless, the data were within the ranges of the MOELP (0400187) and Maclaren (WQS9) data.

MCL4 (Goathorn Creek): slightly exceeded the total iron criterion, but were at the low end of the range of the Maclaren data (WQS4).

MCL5 (Reclamation Plot): higher levels of many parameters than the other sites, exceeding MOELP criteria for total ammonia nitrogen, total iron, manganese, nitrite, and sulphate.

MCL8 (Bulkley River downstream of confluence with Telkwa): elevated levels of aluminum, chromium, iron, manganese, and zinc.

MCL9 (Bulkley River downstream of Tailings Pond Creek): elevated levels of aluminum, copper, iron, manganese, and zinc.

The pH was close to neutral at all sites. The pH for the Telkwa River sites was slightly acidic (6.76) in both the fall samples. However, the spring Telkwa River at Telkwa sample (MCL3) proved to be alkaline (7.59). All the other sites were slightly basic with pH from 7.2 to approximately 7.5.

Metals concentrations were generally low to not detectable in the Fall samples, despite the use of a total rather than dissolved analysis. The Reclamation Plot results were slightly higher than the other sites, but still below MOELP standards except in the case of manganese. It is not clear why the manganese levels are high, though it is quite possible that this is due to the measurement of total rather than dissolved manganese. "*...Total Mn is often high due to Mn content of suspended sediment, and thus not important.*" (Nagpal and Pommen, 1993).

At the two sites where Fall 1993 and Spring 1994 samples were taken, most of the Spring samples tended to have higher concentrations of a number of parameters including aluminum, copper, chromium, iron, manganese, and zinc. The source of these constituents is not known. However, by analyzing for total rather than dissolved-phase metals, the available metals concentrations are likely over-estimated (suspended particles containing metals are also analyzed). In both sets of samples, the concentration of total suspended solids was significantly higher in the spring than in the fall.

The two Bulkley River samples (Spring 1994) showed comparable results for most parameters. Most of the variability between the sites is likely the result of analytical precision (results near the detection limit) or natural variability in water chemistry rather than an indication of a long-term difference in water quality between the two sites. A number of parameters were found at levels outside the range reported at the Quick monitoring site. Most of these differences (eg. total iron) are likely attributable to the influence of the Telkwa River, which (for some parameters) exhibits water chemistry distinct from the Bulkley.

In general, the chemistry of the samples collected appears consistent with previous data.

The only exceptional site appears to be the Reclamation Plot. As noted previously, the Reclamation Plot seeps seems to be of groundwater origin. The sulphate levels in this water are quite high. However, the water is slightly alkaline, and metals concentrations were generally low.

3.6.2 Fish Tissue Analysis

The results of the analysis are presented in Table 4. None of the eight trace elements was detected for the fingerling fish tissue analyses which were performed: arsenic, antimony, cadmium, chromium, mercury, nickel, lead and selenium. Chemex was unable to analyze for cadmium at the detection limit recommended under MOELP criteria (0.02 µg/g wet). However, the level of cadmium in the tissue (<0.1 µg/g) was found to be less than the MOELP criterion.

4. GROUNDWATER

4.1 HYDROGEOLOGIC SETTING

4.1.1 Geology

Bedrock

The project area is situated within the Skeena Arch which trends northeast-southwest and separates the Jurassic age sedimentary rocks of the Bowser Basin in the north and the Nechako Basin to the south. Geological observations indicate that major valleys such as the Bulkley River valley lie along fault zones.

The project area is underlain by a coal-bearing sedimentary sequence comprising siltstone, sandstone, mudstone and shale strata known as the Skeena Group of Lower Cretaceous age. The sedimentary rocks have been recognized as the same as those identified in previous site investigations (KLOHN LEONOFF, 1985). The sedimentary deposits are underlain by an undifferentiated group of volcanic rocks known as the Hazelton Group. The volcanic rocks include andesite, trachyte, and basalt with associated tuffs and breccias. Both the Hazelton and Skeena Groups have been intruded by granodioritic rocks of late Cretaceous and Tertiary age. The Tertiary intrusive forms the northern boundary of the hydrogeological investigation area.

Quaternary Deposits

The most prevalent surficial (Quaternary) deposit throughout the region is unstratified glacial drift (moraine deposits comprised of silt and clay till). Drift thicknesses in the area based upon drilling records are reported to be fairly thin - averaging approximately 15 metres.

4.1.2 Hydrogeology

Published hydrogeological information in the form of hydrogeological maps or reports in the area is scarce. Within the sedimentary sequence, sandstone units were intercepted which may have good yield potential. The best developed aquifers in the project area are glacial sand and gravel deposits. These are strip aquifers which are shallow and usually unconfined and found in the Bulkley River, Telkwa River and Goathorn Creek valleys.

Bedrock groundwater quality, based upon previous work conducted by KLOHN LEONOFF (1985), is a sodium bicarbonate type with minor sulphate and chloride and secondary calcium, magnesium and potassium. The water is very hard with total dissolved solids (TDS) ranging from 312 to 1 700 mg/L. Water collected from springs during the 1989 field program by PEL were found to be either a calcium-bicarbonate or sodium-magnesium-bicarbonate in hydrochemical character. Samples of spring water ranged from about 500 to 1 100 mg/L in TDS. Locations of the springs are shown in Figure 1.

4.2 PRESENT GROUNDWATER USE

A water well and spring survey was conducted in March-April, 1994 by reviewing available open files of MOELP and confirming locations in the field. A summary of the survey is present in Table 5. The positions of the water supply wells can be found on Figure 1. The well record system in British Columbia is voluntary and often incomplete. The well inventory is based solely upon the published well records. Typically this information consisted of:

- A driller's report in standardized format on the original drilling and well construction work. When fully completed, it would contain information on lithology encountered, well design and estimated yield; and/or,

- Chemical analyses results. Owners occasionally submit well water samples to a local health unit for a routine potability analysis. This information will commonly contain readings of main ions, total dissolved solids (TDS), iron, fluoride, and nitrate.

Some water supply wells are located more than 3 km northeast of the investigation area on the north side of the Tertiary intrusive. Several wells are also present on the south side of the Telkwa

River and the east side of Goathorn Creek. Most of these wells are completed in the alluvial plain which intercepts water from the sands and gravels. These wells are more than 100 m below the bottom of Pit #7, and therefore should not be adversely affected by the pit development.

4.3 FIELD EXPLORATION PROGRAM

4.3.1 Drilling

Drilling was carried out using a TH60 Ingersol Rand owned by Cora Lynn Drilling Ltd. from Strathmore, Alberta and by a Failing F1500 operated by M°Auley Drilling Co. Ltd. from Spruce Grove, Alberta. Both rigs accommodate drilling in hard materials by using a downhole air-driven hammer. Drill cuttings are brought to surface by a combination of an air-water-foam mixture. Water is needed to cool the downhole hammer and provides a medium for drill cuttings to return to the ground surface. Lithologic classification of the drill cuttings was conducted by the driller who described the geologic samples based upon Manalta's cutting description form. The drillers' cutting description forms are presented in Appendix IV. Manalta staff described the cuttings during the drilling of the boreholes. To aid in lithologic classification, each borehole was geophysically logged using a natural gamma and density sonde.

A total of six piezometers were installed from September 22 to 25, 1993. Two double (T93R-28A, T93R-28B, T93R-29A and T93R-29B) and two single piezometers (T93R-30 and T93R-32) were constructed at the locations shown on Figure 4.

4.3.2 Piezometer Installation

Piezometers were completed using 52 mm (ID), schedule 40 PVC pipe supplied by Rice Engineering Ltd. of Edmonton. All pipe sections were machined with buttress threaded flush-joints to avoid the need to use glue for pipe connections. Each individual pipe and screen length was prewashed with potable water and individually wrapped in a plastic sheath. The screen sections of PVC pipe were machined with three rows of slots, 0.508 mm wide. The base of each screen was sealed with a heat-welded plug. These

precautions reduced the potential for introducing foreign materials to the piezometer, thus helping to minimize the risk of obtaining inaccurate water chemistry data.

All piezometers were constructed by placing a screen section of PVC pipe across the potential water-bearing interval. Plain sections of pipe were threaded onto the screen sections, and the entire string lowered to the desired depth of completion. High silica content frac sand of 10/20 grade was then added to the annulus to approximately 0.5 m above the screen interval. Construction details are in Appendix IV and are summarized in Table 6.

A primary water-tight seal of approximately 1.0 m was then placed above the sand pack using high quality 6 mm peltonite tablets (pure bentonite). Typically, this seal is adequate to prevent direct leakage between the sand pack and upper intervals. To further ensure hydraulic isolation between the ground surface, other potential water-bearing horizons and the screen interval, the remaining annular space was backfilled with bentonite chips.

4.3.3 Piezometer Development and Hydraulic Conductivity Tests

Each piezometer was thoroughly bailed following completion. Bailing imposes a surging action which results in the production and removal of fine materials from the formation immediately surrounding the screen interval. Where possible, bailing was continued until clean groundwater was produced, or until field measurements of pH and electrical conductivity (EC) had stabilized. More than two borehole volumes was produced for these wells. However, drilling fluids and fines were still being generated by bailing. EC values were measured, but within the time available did not stabilize and therefore all of the filterable material could not be removed during the development period.

Following development, the piezometers were tested to establish local hydraulic conductivity values. Static groundwater level readings were measured at each location by hand using a standard electric water level sounder prior to beginning the test. Standing water was then removed from the wellbore with a bailer and recovery groundwater levels measured at selected time intervals.

Groundwater level measurements recorded during field testing are provided in Appendix IV. These are tabulated according to the time of measurement. These piezometers recovered very slowly due to the low hydraulic conductivity conditions present.

Results of hydraulic conductivity tests for all piezometers are provided in Appendix V and summarized in Table 6. The Cooper et al. (1967) method was used to calculate estimated hydraulic conductivity values for all the piezometers.

Hydraulic conductivity values obtained using this method are approximate due to the relatively small volume of water removed from the wellbore, and are only representative of the zone within the immediate vicinity of the screened interval. Small variations in material grain size, texture and the presence of fractures can greatly affect hydraulic conductivity values within zones of similar lithology. This method of testing provides an indication of the order of magnitude of the hydraulic conductivity for the rock materials tested in the investigation area.

4.3.4 Groundwater Sampling and Testing

Groundwater samples were collected on September 28 and 29, 1993. Piezometer sampling was performed using a dedicated bailer. Groundwater samples were taken from each piezometer after at least two volumes of standing water had been removed. Two borehole volumes were removed from each piezometer prior to sample collection. All the sample bottles were new and were rinsed with formation water at each location prior to sample collection. Upon completion of the required sampling schedule at each location, all equipment was thoroughly rinsed with distilled water to reduce the potential of sample cross-contamination.

At each monitoring point, the following sub-samples were collected:

Potability: 2 x 500 mL and 250 mL unpreserved aliquot for major ions/routine potability constituents (including calcium, magnesium, sodium, potassium, chloride, sulphate, carbonate, bicarbonate, nitrate-nitrite nitrogen as N, iron, manganese, PP alkalinity, total alkalinity, pH, hydroxide, total dissolved solids, turbidity, total filterable residue

(TDS), non-filterable residue, and specific conductance) and stored at 4°C;

Total Metals: 250 mL aliquot preserved with 1.25 mL of 50% nitric acid for total metal (including silicon, sulphur, aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, nickel, phosphorus, selenium, silver, strontium, titanium, uranium, vanadium, zinc) and stored at 4°C;

Dissolved Metals: 250 mL aliquot filtered and preserved with 1.25 mL of 50% nitric acid for dissolved metals (including silicon, sulphur, aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, nickel, phosphorus, selenium, silver, strontium, titanium, uranium, vanadium, zinc) and stored at 4°C;

Phosphorus and Nitrogen: 250 mL aliquot preserved with 5 mL of 12.5% sulphuric acid and 250 mL aliquot filtered and preserved with 5 mL of 12.5% sulphuric acid (total ammonia nitrogen, total dissolved phosphorus as P, total phosphorus as P) and stored at 4°C; and

Mercury: 125 mL aliquot unfiltered preserved with 2 mL of 12.5% potassium dichromate and nitric acid and 125 mL aliquot filtered and preserved with 2 mL of 12.5% potassium dichromate and nitric acid (total mercury and dissolved mercury) and stored at 4°C;

All analytical work was performed by Chemex Labs Alberta Ltd. in Calgary.

4.3.5 Survey Information

All piezometers were surveyed for their respective location and elevation following installation, testing, and sampling. Manalta Coal Ltd. retained a local surveying company to conduct this portion of the field program.

4.4 SITE GEOLOGY AND GROUNDWATER CONDITIONS

Hydrogeologic cross-sections are presented in Figures 5 and 6. The section alignments are shown in Figure 4.

Geologic conditions at the proposed mine are variable. Thicknesses of the glacial material vary from non-existent to 43 m or more. At one location, T93R-29A, a piezometer was placed at the bedrock-overburden (33.5 m below ground level) contact and was found to be dry at the time of monitoring.

Below the overburden is a sequence of sedimentary units. Coal occurrences are found within these units. Two coal packages have been identified by Manalta. A lower seam #1 package is separated from the seam #2 sequence by approximately 140 m of sediments. Each of these coal packages has several layers of coal. The coal units in Pit #7 strike 180° and dip 15° to the east. In Pit #8 the coal units strike at approximately 130° and dip 20° to the northeast. The project area is dominated by a series of sub-parallel, near vertical normal faults, many of which strike either from northwest/southeast to northeast/southwest. As a result of faulting, the area has been subdivided into various discrete blocks.

Piezometers were installed in coal seams 1, 2 and 6. All of these coal seams are saturated and under pressure (i.e. the groundwater levels are above the top of the installed coal seam). Hydraulic conductivity values of these coal seams were estimated from rising head tests; the results are summarized in Table 6. The hydraulic conductivity values obtained range from 2.7 x 10^{-9} m/sec to 3.5 x 10^{-7} m/sec.

At the double piezometers, the groundwater levels in the shallow wells (T93R-28A and TW905A) are at a lower elevation than in the deeper wells (T93R-28B and TW905B). A potential for an upward flow component is thus indicated, assuming that the levels in the wells have stabilized.

4.5 GROUNDWATER CIRCULATION

4.5.1 Groundwater Flow Direction

The distribution of groundwater surface elevations in the all of the monitored coal seams (1, 2, and 6) is shown on Figure 7. As expected, the groundwater movement appears to be controlled by topography, thus flow is south, toward the Telkwa River.

4.5.2 Groundwater Flow Velocities

By determining the hydraulic conductivity (K), effective porosity (n_e) and horizontal hydraulic gradient (i) of a saturated medium, the average linear flow velocity (v) of groundwater can be calculated as follows:

$$v = \frac{Ki}{n_e}$$

A conservative estimate (worst-case solute transport scenario) of "v" can be made by using maximum values of "K" and "i" observed at the site, and selecting a conservative value for "n_e". Using the difference in groundwater elevations (h), across the site (perpendicular to the groundwater elevation contours) in conjunction with the horizontal distance along this line (l), the hydraulic gradient (i = h/l) can be calculated.

To calculate the magnitude and direction of the hydraulic gradient, three piezometers must be located in the same hydrostratigraphic unit. It is preferable that these piezometers be placed in a triangular pattern to better ascertain the direction of the hydraulic gradient. At the investigation area, three piezometers are not present in the same unit and therefore an accurate hydraulic gradient can not be calculated. This is mainly due to faulting which has caused vertical movement between units. For example, more than three piezometers

were completed in seam #2, however; faulting has caused vertical separation resulting in the units being discontinuous.

A rough calculation can be approximated by assuming that all piezometers in Pit #8 are within the same hydrostratigraphic unit. The groundwater surface elevation is shown on Figure 7. The effective hydraulic gradient observed is in the order of 0.18. Assuming that the effective porosity is in the order of n_e=0.01, and taking the maximum hydraulic conductivity recorded (3.5 x 10^{-7} m/sec), the average linear flow velocity for the approximated water-bearing unit, using the previous equation, is estimated to be 19 m/year.

4.6 GROUNDWATER QUALITY

4.6.1 Field Measured Parameters

Measurements of water quality parameters were conducted during the field sampling program. These measurements comprised the following:

Temperature: liquid in-glass thermometer;

pH: measured with a Fisher Scientific Model 119 pH meter, calibrated using buffer solutions of pH 4 and 7; and,

EC: electrical conductivity measured with a Hanna Instruments HI8733 conductivity meter, calibrated with standard KCl solution (1 409 µmhos/cm at 25°C).

Field measurements are summarized on Table 7. The electrical conductivity (EC) values listed have been corrected to 25°C for the groundwater samples collected in September 1993. Groundwater EC's for the November 1989 field program are at the temperatures measured. EC values display a marked increase in relation to increases in ambient temperature. Therefore, measurements taken in the field at various low temperatures characteristically have lower readings than laboratory tests performed at room temperature (and normalized to 25°C). For future comparison purposes all EC readings will be standardized to 25°C.

Comments on the field measurements are as follows:

pH: Groundwater pH readings are near neutral (6.0<pH<8.0) at all piezometers, except TW913 and T93R-30 which are slightly elevated. The pH of the 1989 piezometers has generally decreased between the 1989 and 1993 sampling programs;

Temperature: Groundwater temperatures (8.0 to 10.0°C) are within a range expected in late summer (September); and

EC: Groundwater EC readings show a wide range (308 to 5 875 µmhos/cm). ECs for the 1989 series piezometers have generally decreased, with the exception of TW913 which has remained relatively constant. This is an indication that zones of highly variable mineralization are present. Groundwater contamination with drilling fluids may be one of the reasons for such variability.

Since the pH and the EC of groundwater from the 1989 series piezometers has decreased, in some cases dramatically, from the 1989 to the 1993 sampling programs, it is concluded that these piezometers were not completely developed in 1989. The construction of the boreholes would introduce drilling materials such as cuttings, water and drill fluids into the formation. Piezometer development immediately after installation would not be sufficient to remove all of the contaminants introduced by drilling. Drill contaminants have been removed by the combination of piezometer development and the natural flow of groundwater flushing contaminants down-gradient. Therefore, the 1993 set of field measured parameters from the 1989 series piezometers is likely to represent the actual groundwater conditions.

4.6.2 Laboratory Analyses

The groundwater samples collected from the piezometers were analyzed by Chemex Labs Alberta Inc. of Calgary for routine potability total and dissolved metals. Key results from these analyses are summarized on Tables 8 and 9. Original laboratory listings are provided in Appendix VI.

The hydrochemical nature of the water samples has been characterized on an expanded Durov diagram (Figure 8). This diagram allows a simple, concise graphical presentation of a large number of water analyses. Analytical data are plotted according to the relative proportions of individual major cations (calcium, magnesium, sodium + potassium) and anions (bicarbonate + carbonate, sulphate, chloride) expressed as milliequivalents per litre (meq/L).

Recently recharged water in an aquifer is usually a calcium-bicarbonate hydrochemical type, plotting in the upper lefthand square of the Durov diagram. Natural softening by cation exchange (sodium for calcium) to a sodium-bicarbonate hydrochemical type can occur with increased residence time. This type of groundwater plots in the upper righthand square of the Durov diagram. Groundwaters characterized by relatively long residence times are commonly of a sodium-chloride type, which plot in the lower righthand square (FREEZE AND CHERRY, 1979). In the event that two distinct water types become mixed, the resulting blend may plot between the two end members. Local mixing due to natural phenomena can thus be identified.

Groundwater analyses from the site plot on the Durov diagram (Figure 8) in three main hydrochemical groups:

PIEZOMETER	HYDROCHEMICAL TYPE	MINERALIZATION (mg/L,TFR)
TW604A (1989)	Na-Ca-HCO_3	235
TW905B (1989)		185
TW906A (1989)	Na-HCO_3	175
TW913 (1989)		755
T93R-28A		3 500
TW93R-28B		3 790
T93R-30	Na-HCO_3	1 560
T93R-32		2 010
T93R-29B	Na-Cl-HCO_3	1 750

The groups described above are generally similar to those identified in the previous phase of investigation (PEL, 1990). Very little variation in groundwater character, as shown by the Durov plot, has occurred between December, 1989 (refer to PEL 1990 report) and September, 1993. The most evident exception to this generalization is:

- TW905B and TW604A, which exhibited a proportionate increase in sodium, and a decrease in TFR from 789 to 185 mg/L and 397 to 235 respectively.

All of the hydrochemical types are dominated by the sodium cation which generally indicates groundwater with a long residence time.

Water quality standards, such as those specified in the Canadian Water Quality Guidelines (CWQG) (CANADIAN COUNCIL OF RESOURCE AND ENVIRONMENT MINISTERS, 1987), and Criteria for Managing Contaminated Sites in British Columbia (MINISTRY OF ENVIRONMENT WASTE MANAGEMENT PROGRAM, 1989), serve as one basis for appraisal of the results of the chemical analyses of groundwater.

A set of water quality parameters and recommended concentration limits for surface water discharge and drinking water was identified by MOELP, Environmental Protection Branch and is included in Appendix III. These working criteria are recommended in the Canadian Water Quality Guidelines. These guidelines are used to assess water quality. Water-based discharges to protect aquatic life (level B_{DS}) and drinking water limits (level B_{DW}) were the two criteria were used to measure the groundwater quality.

Concentrations of total dissolved solids (TDS), chloride, and sulphate are often used as indicator parameters of water quality and are summarized in Table 8. The concentration of sulphate in the groundwater in all piezometers is below the recommended drinking water limit of 500 mg/L (CWQG, 1987). All sulphate levels were higher in the groundwater from the recently installed piezometers than for the 1989 series. Chloride concentrations in the 1989 series piezometers ranged from 0.6 mg/L (TW604A) to 2.8 mg/L (TW906A), whereas chloride concentrations are much higher in the 1993 series piezometers, ranging from 15.3 mg/L (T93R-32) to 638.0 mg/L (T93R-29B). The concentrations of ammonia nitrogen in the groundwater were above the level B_{DS} criteria in all piezometers sampled, except TW905.

Laboratory metal analyses are summarized in Table 9. For convenience and comparison the maximum concentration limits for surface water discharge and drinking water for the various chemical constituents have been included in Tables 8 and 9.

The chemical constituents which are measured to be higher than the recommended criteria (either surface water discharge or drinking standards) have been highlighted in Tables 8 and 9. The following is a summary of the piezometers that have baseline-constituent concentrations higher than the level B_{DS} and B_{DW} recommended criteria:

Piezometer	Chemical Constituent
TW604A	aluminum, arsenic, barium, chromium, iron, lead, ammonia nitrogen, total phosphorus, and zinc
TW905B	aluminum, copper, iron, total phosphorus, and zinc
TW906A	aluminum, iron, total phosphorus, and zinc
TW913	aluminum, copper, iron, ammonia nitrogen, total phosphorus, and zinc
T93R-28A	aluminum, chromium, copper, iron, ammonia nitrogen, total phosphorus, and zinc
T93R-28B	aluminum, arsenic, barium, chromium, cobalt, copper, iron, nickel, ammonia nitrogen, total phosphorus, vanadium, and zinc
T93R-29B	aluminum, barium, beryllium, chromium, cobalt, copper, iron, nickel, nitrogen, total phosphorus, selenium, vanadium, and zinc
T93R-30	aluminum, barium, beryllium, copper, iron, lead, ammonia nitrogen, total phosphorus, silver, and zinc
T93R-32	aluminum, barium, chromium, copper, iron, lead, ammonia nitrogen, total phosphorus, zinc

In comparison with CWQG, the newly installed piezometers have more total chemical constituents exceeding the recommended concentration criteria than the piezometers installed in 1989. Thus, it is concluded that the elevated total metal concentrations are a temporary situation and will drop off after all the total suspended solids have been flushed from the sand pack.

The laboratory results from the first sampling visit after drilling are probably not representative of the geochemical nature of the dissolved nature of the groundwater as these piezometers were installed in boreholes that were drilled with a combination of air-water-foam injection. The injection, under pressure, of this mixture into the borehole would cause the solution to migrate some distance into the geologic formation thus biasing the chemical results of the sampled groundwater.

4.7 POTENTIAL IMPACT OF GROUNDWATER ON MINING

Groundwater inflows to the open pits will originate from two sources:

- infiltration precipitation water (recharge) that is intercepted by the pit; and
- water released due to depressurization and drainage of the rock mass.

PEL (1990a) estimated an inflow rate of 30 L/s. This value was based upon several assumptions and should be treated as indicative of the order of magnitude of inflow, rather than a precise number. Data collected in the 1993 field program do not contradict the assumptions used in the calculation of the rate of 30 L/s. It should be noted, however, that the calculated inflow rate does not take into account the existence and nature of fault or shear zones. These structural features may conduct additional groundwater flows above the previously estimated value.

4.8 POTENTIAL IMPACT OF MINING ON GROUNDWATER RESOURCES

Hydrogeological conditions in the Telkwa Coal project area were described in Section 4 of this report. The results of the 1993 program confirm the previous interpretation of the site groundwater conditions.

Continuous hydrogeological exploration is planned through all stages of the project development and operations to better define project interactions with the groundwater regime. This is essential for mine planning, safe mine operation and assessment of groundwater conditions after project termination.

Development of a drawdown cone around the mine pits will be controlled by local geology and topography. To the north of the pits, a low hydraulic conductivity intrusive rock mass will act as a barrier limiting drawdown cone development in this direction, assuming that the intrusive rock has a low hydraulic conductivity and is not faulted or intensely fractured. The deeply incised (over 100 m below pit bottom) Telkwa River valley will restrict development of a drawdown cone in a southerly and southeasterly direction.

The results of the Manalta water well survey conducted in March-April, 1994 documented an absence of other groundwater users on the north side of the Telkwa River within a 3 km radius of the proposed pits. Two wells are located about 3 km northeast of the pits (Figure 1, wells 25 and 26). The Tertiary intrusive may protect these wells from the mining activities by acting as a hydraulic barrier to groundwater flow. The next closest documented water supply well (17) located on the north side of the Telkwa River is more than 6 km from the mine area. The majority of the water supply wells are located within the alluvial plain, drawing water from alluvial sand and gravel. These wells are located more than 100 m below the bottom of Pit #7, and therefore cannot be adversely affected by the pit development.

The following factors will combine to minimize the impact of pit development on groundwater:

a) groundwater inflows to both pits from the bedrock and surficial deposits are expected to be low;
b) geological and topographic conditions will limit drawdown; and,
c) there are no groundwater users in the area adjacent to the pits.

As a result, it is concluded that the impact of mine development on groundwater resources will be short to medium term (probably less than 15 years) and is unlikely to affect other groundwater users.

5. CONCLUSIONS

5.1 SURFACE WATER

The surface water investigation program conducted for the MDC has lead to the following conclusions:

1. The water chemistry of the Telkwa River, the Bulkley River and Goathorn Creek is generally consistent with data collected previously by MOELP and MACLAREN PLANSEARCH.

2. The chemistry of the Telkwa River, Bulkley River, Goathorn Creek, and the creek flowing from the proposed tailings pond area (flow monitoring site) is representative of clean surface waters, with low generally low concentrations of metals and near-neutral pH.

3. A number of BC MOELP water quality criteria for metals were exceeded by the samples. In general, however, the exceedances were small. Iron levels, however, were well above MOELP criteria in many samples.

4. The chemistry of the Reclamation Plot indicates its origin as groundwater. Sulphate levels in the water are relatively high, but the water is slightly alkaline and metals concentrations are generally low. Manganese concentrations were quite high, however, though this may be due to the analysis of total rather than dissolved manganese.

5. The tissue analyses of fingerlings captured in the Telkwa River all showed levels below laboratory detection limits.

5.2 GROUNDWATER

The hydrogeological investigation program conducted for the MDC has resulted in the following conclusions:

1. The hydrogeological investigation area is underlain by a coal-bearing sedimentary sequence comprising low hydraulic conductivity rocks, including sandstone, siltstone and mudstone. Hydraulic conductivity values range from 2.7×10^{-9} m/sec to 3.5×10^{-7} m/sec.

2. The sedimentary sequence is underlain by undifferentiated volcanic rocks and overlain by glacial and post-glacial surficial deposits.

3. Groundwater flow directions within the study area are in a southerly direction.

4. Groundwater samples collected from the bedrock piezometers were found to be Na-HCO_3, Na-Ca-HCO_3, or a Na-Cl-HCO_3 hydrochemical types.

5. All of the piezometers sampled had concentrations of some chemical constituents greater than what is recommended by MOELP. However, the laboratory results from the first sampling visit after drilling may not be representative of the geochemical nature of the groundwater. Future sampling should be conducted to observe groundwater chemical trends when the water chemistry stabilizes.

6. Total groundwater inflow into Pits #7 and #8 is predicted to be in the order of 30 L/s. This value is preliminary and should be verified as additional information becomes available.

7. The nearest groundwater users are more than 3 km to the northeast of Pits #7 and #8. These wells are located on the north side of the Tertiary Intrusive and probably will not be adversely affected by mining activities. The majority of the groundwater is extracted from the alluvial sands and gravels. These wells are more than 100 m below the proposed bottom of Pit #7, where they are beyond any anticipated impacts from mining.

Report prepared by:

PITEAU ENGINEERING LTD.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA F. B. CLARIDGE

Frederic B. Claridge, M.S., P.Eng.

Stephen D. Ross, M.Sc.

Murray A. Fitch, M.A.Sc.

Dr. Tadeusz L. Dabrowski, P.Eng.

6. REFERENCES

BC MINISTRY OF ENVIRONMENT, 1986. Skeena-Nass Area, Bulkley River Basin Water Quality Assessment and Objectives, Technical Appendix. Prepared by R. Nijman, Water Management Branch, Victoria, BC.

CANADIAN COUNCIL OF RESOURCE AND ENVIRONMENT MINISTERS, 1987. Canadian Water Quality Guidelines, Prepared by Task Force on Water Quality Guidelines, March, 1987.

CANADIAN OXFORD ATLAS, 1977. Physiographic Regions of Canada. Scale 1:24 000 000.

COOPER, H.H., BREDEHOEFT, J.D. AND POPADOPULOS, S.S., 1967. Response of a Finite Diameter Well to an Instantaneous Charge of Water. Water Resource, Vol. 3, No. 1, pp. 263-269.

DAVID BUSTARD AND ASSOCIATES, 1985. Telkwa Coal Project Aquatic Resource Assessment. Smithers, BC.

ENVIRONMENT CANADA, 1991. Historical Streamflow Summary-British Columbia, to 1990. Ct. No. En. 36-418 1990-7, ISBN 0-662-58804-5. Government Printer.

ENVIRONMENT CANADA, 1993. Atmospheric Environment Service for Smithers, British Columbia.

FREEZE, R.A. AND CHERRY, J.A., 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 p.

KLOHN LEONOFF LTD., 1985. Telkwa Coal Project Stage II Geotechnical, Hydrogeological and Hydrological Design. Report to Crows Nest Resources Ltd., March 1985.

MACLAREN PLANSEARCH, March 1985. Water Quality Investigation, Telkwa Coal Project. Prepared for Crows Nest Resources Ltd.

MINISTRY OF ENVIRONMENT, 1989. Criteria For Managing Contaminated Sites In British Columbia. Draft 6.

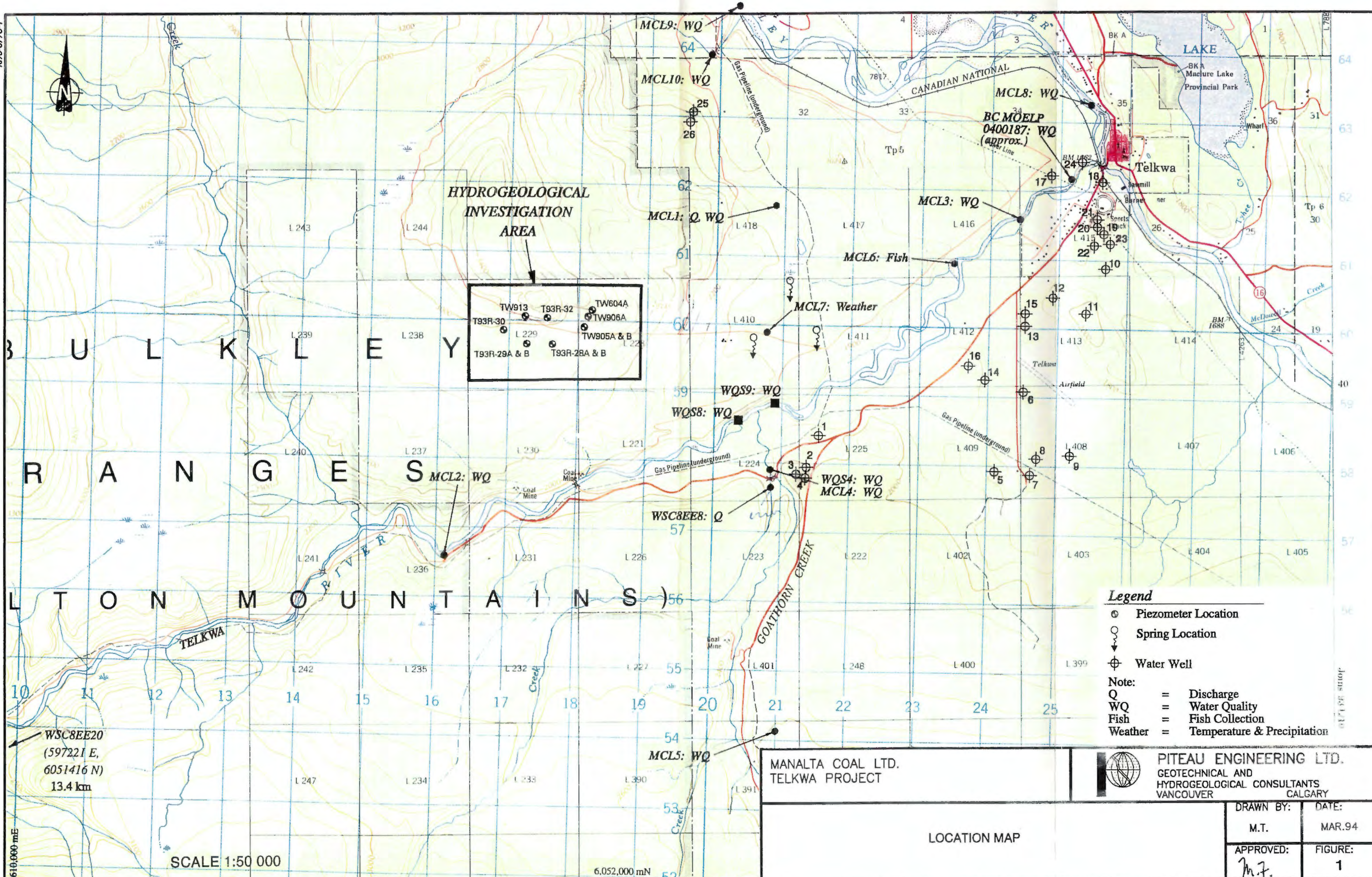
NAGPAL, N.K. AND L.W. POMMEN, May 1993. Approved and Working Criteria for Water Quality (Version 2). B.C. Ministry of Environment, Lands and Parks Water Quality Branch.

PITEAU ENGINEERING LTD., 1990a. Preliminary Hydrogeological Assessment of the Telkwa Coal Project. Files No. A89-2361.

PITEAU ENGINEERING LTD., 1990b. Preliminary Geotechnical Assessment of Proposed Waste Dumps, Tailings Impoundment and Plant Foundations, Telkwa Coal Project. File No. 1139.

PITEAU ENGINEERING LTD., 1994. Baseline Data - Surface Water and Groundwater, Telkwa Coal Project. Report prepared for Manalta Coal Ltd.

FIGURES

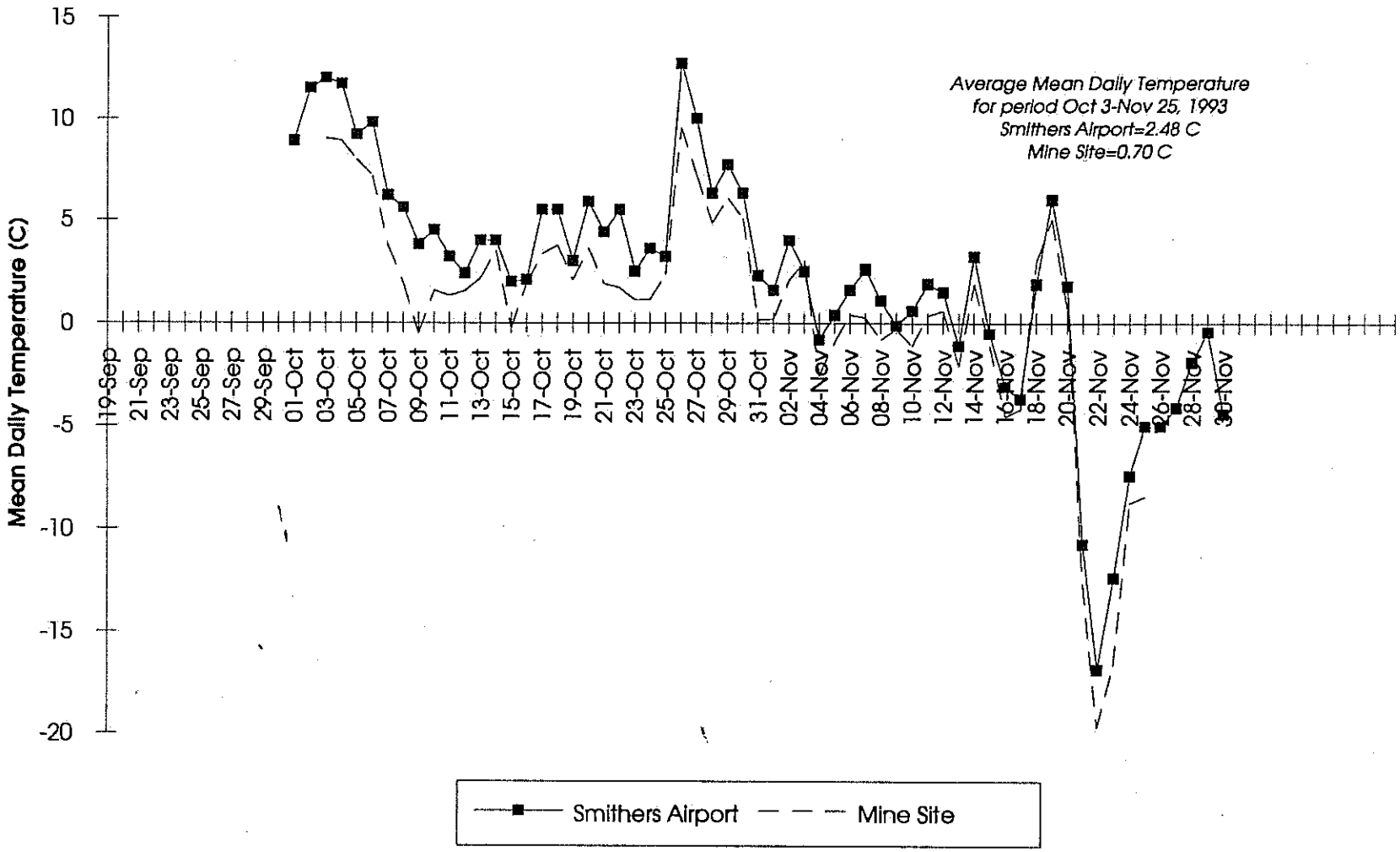

K93-3773-1
HYDROGEOLOGICAL INVESTIGATION AREA
TW913
T93R-32
TW604A
TW906A
T93R-30
L 229
TW905A & B
T93R-29A & B
T93R-28A & B
BULKLEY
RANGES
TON MOUNTAINS)
MCL9: WQ
MCL10: WQ
MCL1: Q, WQ
MCL8: WQ
BC MOELP 0400187: WQ (approx.)
MCL3: WQ
MCL6: Fish
MCL7: Weather
WQS9: WQ
WQS8: WQ
MCL2: WQ
WQS4: WQ
MCL4: WQ
WSC8EE8: Q
MCL5: WQ
WSC8EE20 (597221 E, 6051416 N) 13.4 km
Telkwa
LAKE
Maclure Lake Provincial Park
CANADIAN NATIONAL
Gas Pipeline (underground)
TELKWA RIVER
GOATHORN CREEK
Telkwa Airfield
Legend
Piezometer Location
Spring Location
Water Well
Note:
Q = Discharge
WQ = Water Quality
Fish = Fish Collection
Weather = Temperature & Precipitation
610,000 mE
6,052,000 mN
SCALE 1:50 000

MANALTA COAL LTD.
TELKWA PROJECT

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

LOCATION MAP

DRAWN BY:	DATE:
M.T.	MAR.94
APPROVED:	FIGURE:
M.T.	1



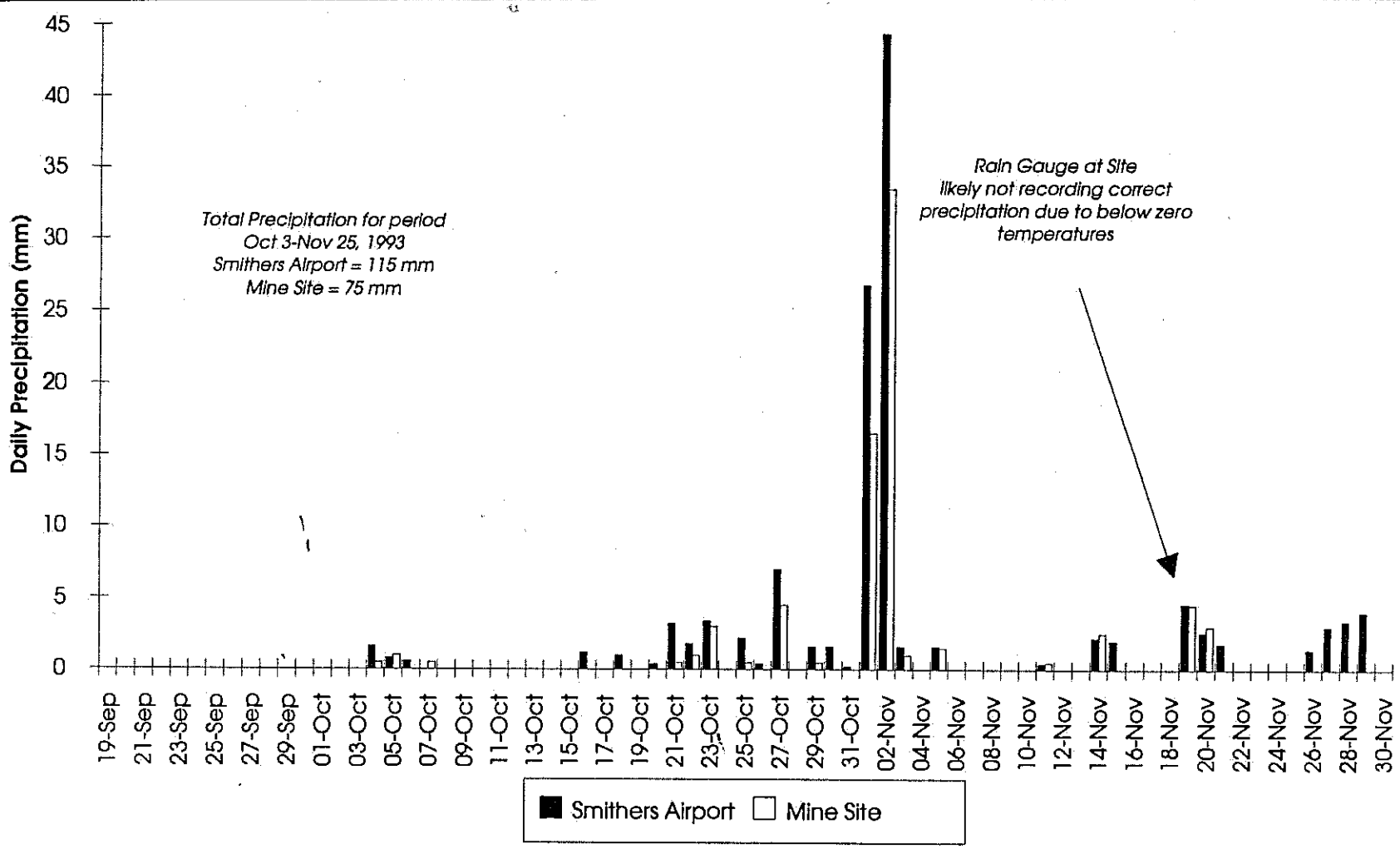
MANALTA COAL LTD.
TELKWA PROJECT

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND
HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

COMPARISON OF MEAN DAILY TEMPERATURES AT SITE AND SMITHERS AIRPORT

DRAWN BY:	DATE:
M.H.	JAN.94
APPROVED:	FIGURE:
M.F.	2

JOB NO. KI93-3773-2



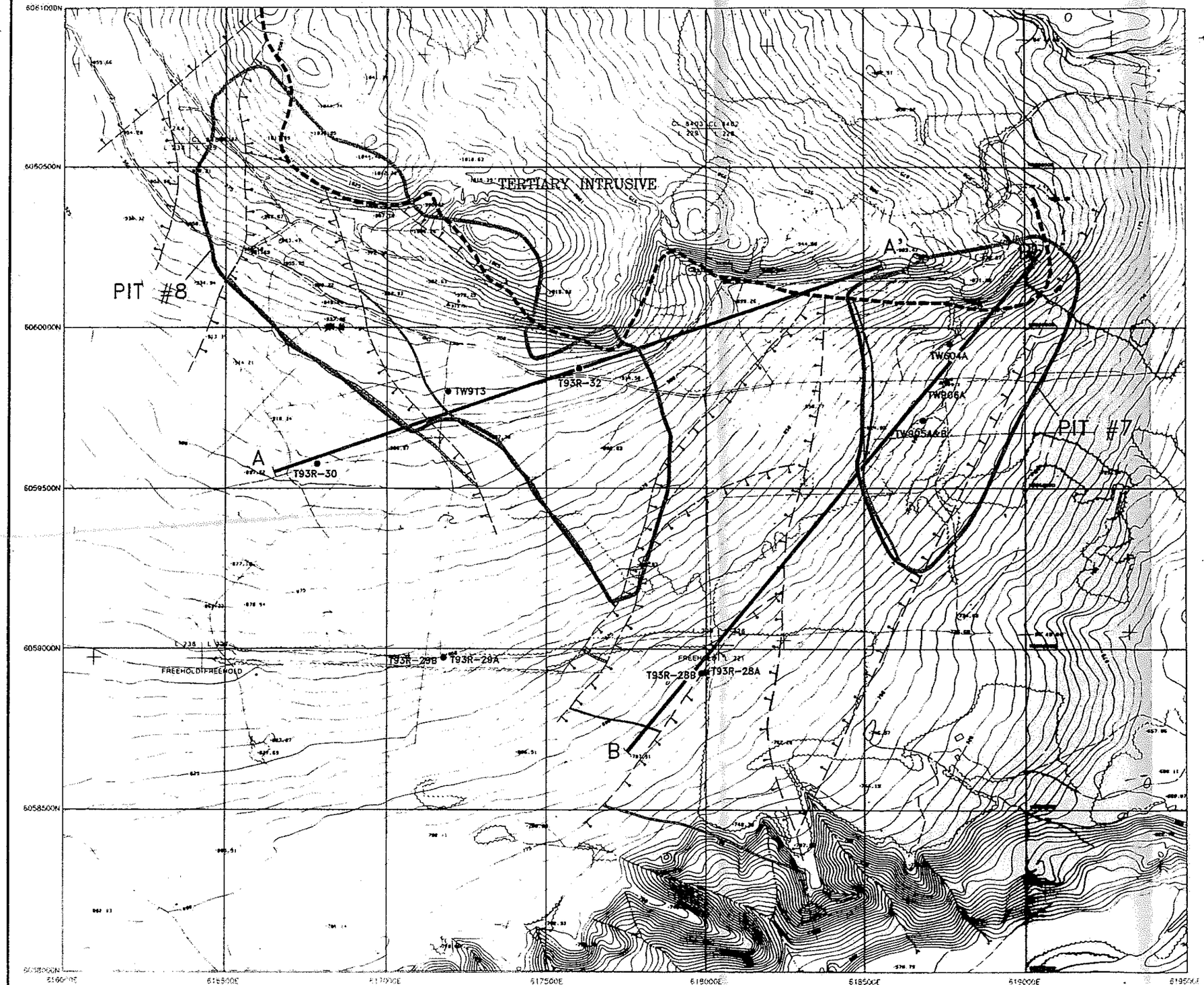
MANALTA COAL LTD.
TELKWA PROJECT

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND
HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

COMPARISON OF TOTAL DAILY PRECIPITATION AT SITE AND SMITHERS AIRPORT

DRAWN BY:	DATE:
M.H.	JAN.94
APPROVED:	FIGURE:
M.F.	3

JOB NO. KI93-3773-2



LEGEND:

- PIEZOMETER NAME & LOCATION
- GEOLOGICAL CONTACT (APPROXIMATE)
- VOLCANICS
- NORMAL FAULT (TEETH ON DOWNTHROWN SIDE)
- THRUST FAULT (TEETH ON UPTHROWN SIDE)
- APPROXIMATE PIT LOCATION
- A—A' CROSS SECTION LOCATION
- #2 SEAM SUBCROP

250 0 250 500
METRES

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

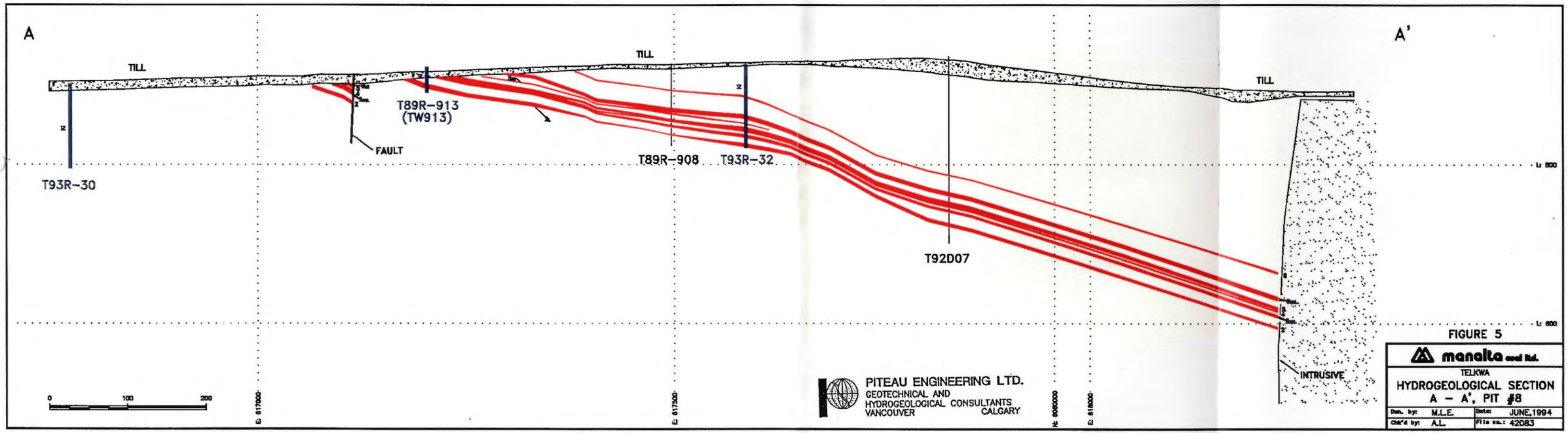
FIGURE 4

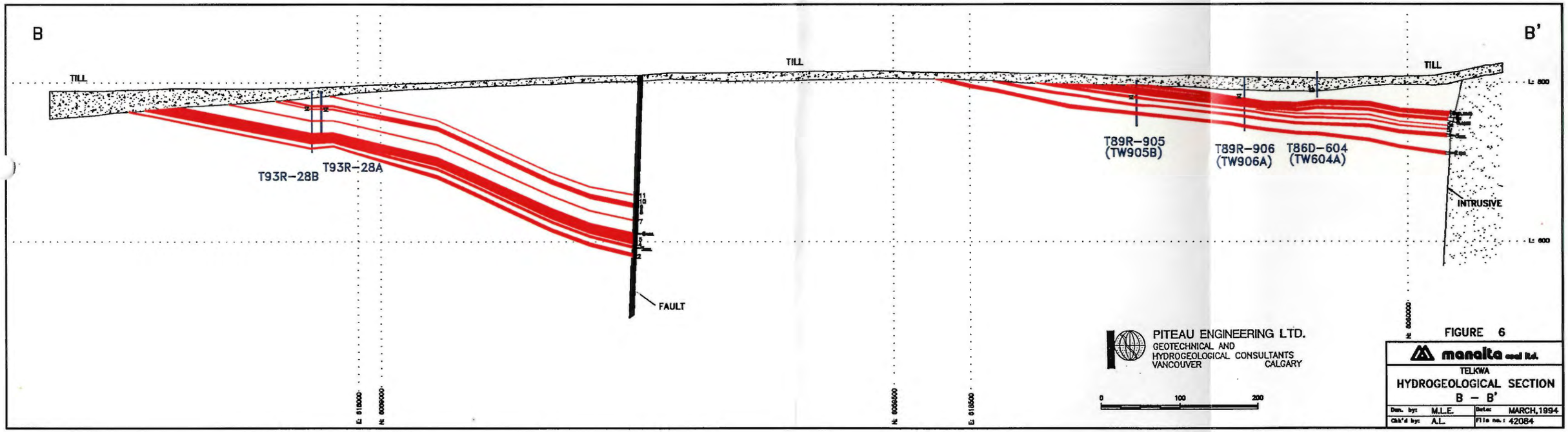
manalta coal ltd.

TELKWA PROJECT

TOPOGRAPHY, PIEZOMETER, PITS 7&8 AND SECTION LOCATIONS

Dwn by: M.L.E.	Date: MARCH, 1994
Chk'd by: A.L.	File no.: 42081 A


A
A'
TILL
TILL
TILL
T89R-913
(TW913)
FAULT
T93R-30
T89R-908
T93R-32
T92D07
INTRUSIVE
0
100
200
E: 617000
E: 617500
N: 6000000
E: 618000
PITEAU ENGINEERING LTD.
GEOTECHNICAL AND
HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY
FIGURE 5
manalta coal ltd.
TELKWA
HYDROGEOLOGICAL SECTION
A – A', PIT #8
Dwn. by: M.L.E.
Date: JUNE,1994
Chk'd by: A.L.
File no.: 42083



PITEAU ENGINEERING LTD.
GEOTECHNICAL AND
HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

0 100 200

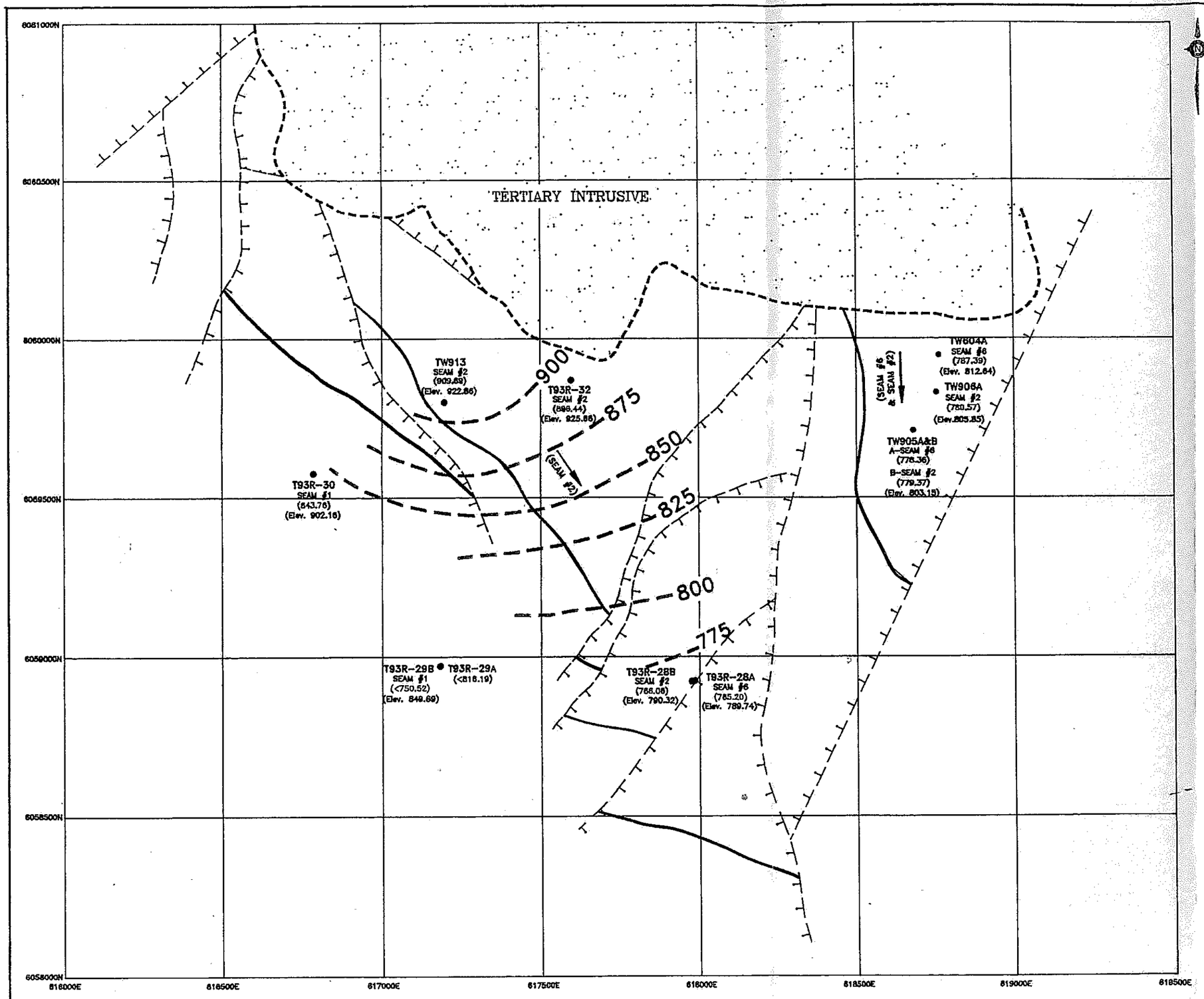
FIGURE 6

manalta coal ltd.

TELKWA

HYDROGEOLOGICAL SECTION
B – B'

Dwn. by:	M.L.E.	Date:	MARCH, 1994
Chk'd by:	A.L.	File no.:	42084



LEGEND:

- PIEZOMETER NAME & LOCATION (TW906A)
- GEOLOGICAL CONTACT (APPROXIMATE)
- VOLCANICS
- NORMAL FAULT (TEETH ON DOWNTHROWN SIDE)
- THRUST FAULT (TEETH ON UPTHROWN SIDE)
- APPROX. GROUNDWATER FLOW DIRECTION
- (<746.82) GROUNDWATER SURFACE ELEVATION (metres)
- GROUNDWATER SURFACE ELEVATION CONTOUR LINE
- #2 SEAM SUBCROP

250 0 250 500
METRES

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

FIGURE 7

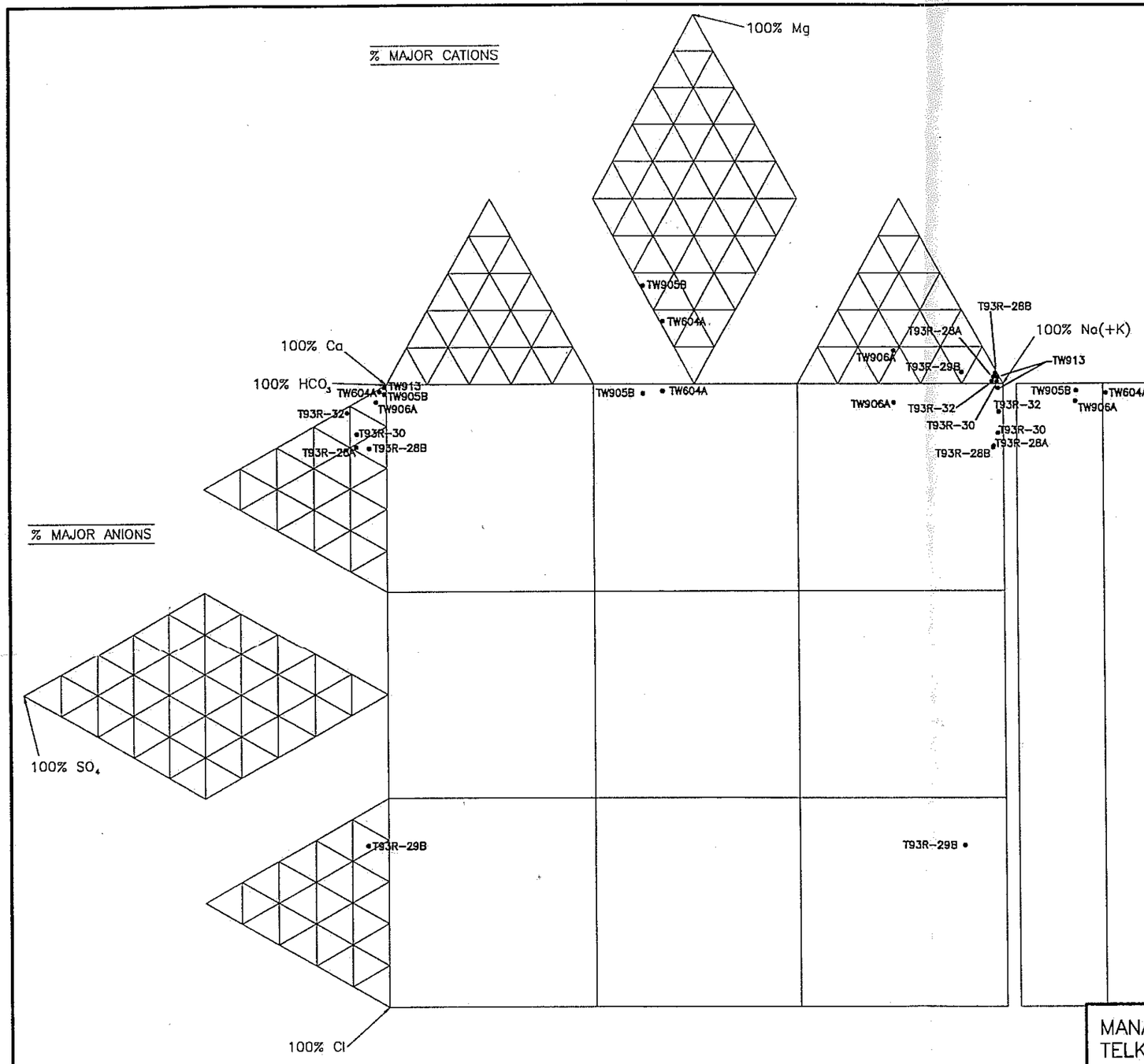
manalta coal ltd.

TELKWA PROJECT

GROUNDWATER ELEVATIONS AND APPROXIMATE FLOW DIRECTIONS

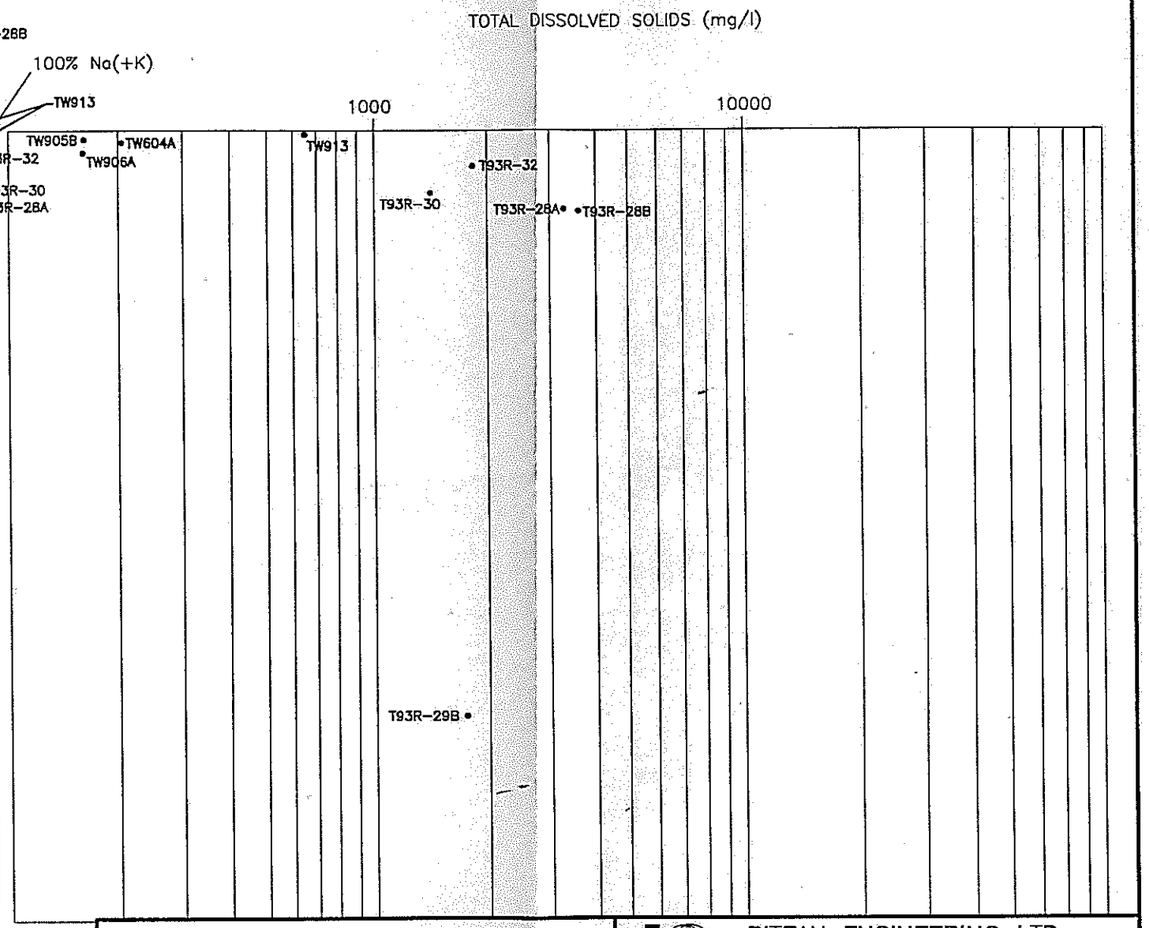
Dwn. by: M.L.E.	Date: MARCH, 1994
Chk'd by: A.L.	File no.: 42062

% MAJOR CATIONS



% MAJOR ANIONS

TOTAL DISSOLVED SOLIDS (mg/l)



MANALTA COAL LTD.
TELKWA PROJECT

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND
HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

GROUNDWATER CHEMISTRY: MAIN ION CHARACTERIZATION
(EXPANDED DUROV DIAGRAM)

DRAWN BY:	DATE:
M.T.	MAR.94
APPROVED:	FIGURE:
M.T.	8

FILE: J:\3773-2\GWDUROV.dwg

TABLES

TABLE 1

SURFACE WATER SAMPLING AND METEOROLOGICAL SITES

LOCATOR ID	NAME	SAMPLE DESCRIPTION ON LAB SHEETS	DATA COLLECTED	UTM COORDS N	UTM COORDS E	COMMENTS
Manalta Monitoring Stations (1993)						
MCL1	Flow Measurement Site	Flow Monitoring	Q, WQ	6061660	620870	Near tailings pond site
MCL2	Telkwa River (Upstream)	TRUS	WQ	6058550	616140	D/S Pine Creek
MCL3	Telkwa River (Downstream)	TRDS-11, TRDS-2 (Dup)	WQ	6061560	624430	At U/S end of town of Telkwa
MCL4	Goathorn Creek d/s Tenas Ck	G	WQ	6057680	620780	D/S of confluence with Tenas Creek
MCL5	Reclamation Plots	RPS	WQ	6054143	621003	Seep from hill
MCL6	Fish Sampling		Fish	6060870	623460	Sampled shallow pools along ~500 m stretch of river
MCL7	Weather Station		Precip, Temp	6059836	620674	On proposed plant site
MCL8	Bulkley R. d/s of confluence with Telkwa R.	MCL8	WQ	6063550	625170	location approx.
MCL9	Bulkley R. d/s of confluence with Tailings Pond Creek	MCL8	WQ	6064610	620240	location approx.
MCL10	Tailings Pond Creek u/s of confluence with Bulkley R.	MCL10	WQ	6063950	619880	Immediately d/s of culvert under road (location approx.)
Crows Nest Resources Monitoring Stations (1984)						
WQS4	Goathorn Creek u/s Tenas Ck		WQ			location approx., see Figure 1
WQS8	Telkwa River u/s of Goathorn Ck		WQ			location approx., see Figure 2
WQS9	Telkwa River d/s of Goathorn Ck		WQ			location approx., see Figure 3
BC MOELP Monitoring Station (1974-1988)						
0400187	Telkwa River at Telkwa		WQ			location approx., see Figure 1. No more recent data than 1988 on CEAMS
Water Survey of Canada Monitoring Stations				Latitude	Longitude	
WSC8EE20	Telkwa River below Tsai Creek		Q	54-36-10 N	127-29-42 W	Data available 1976 to present
WSC8EE4	Bulkley River at Quick		Q	54-37-05 N	126-53-55 W	Data available 1930 to present
WSC8EE8	Goathorn Creek near Telkwa		Q	54-36-10 N	127-29-42 W	Data available 1961 to present

NOTES: Q = discharge

WQ = water quality

TABLE 2: SURFACE WATER CHEMISTRY (mg/L)

Parameter	MCL 3		BC MOE Site 0400187 at Telkwa (1974 - 1988)				WQS 9			MCL 2	WQS 8			MCL 4	WQS 4			MCL 1		MCL 10	MCL 5	MCL 8	MCL 9	BC MOE SITE 0920088: BULKLEY R. AT QUICK (1982-1988)				BC MOELP Criteria
	(Fall 1993)	(Spring 1994)	N	Max	Min	Mean	Max	Min	Mean	(Fall 1993)	Max	Min	Mean	(Fall 1993)	Max	Min	Mean	(Fall 1993)	(Spring 1994)	(Spring 1994)	(Fall 1993)	(Spring 1994)	(Spring 1994)	N	Max	Min	Mean	(see Notes at bottom of table)
Alkalinity-Total	21.2	41.6	64	64.5	20.2	41.3	86.3	26.5	54.1	25.5	64.1	6.5	43.9	56.7	97.7	38.2	65.5	102	34.6	27.7	367.0	34.7	34.7	55	46.7	20.0	24.1	n/a
Ammonia Nitrogen-Total	< 0.01	0.010	1	0.010	0.020	0.010	0.350	0.010	0.055	< 0.01	0.330	0.010	0.033	< 0.01	0.093	0.010	0.027	< 0.01	0.010	0.010	0.79	< 0.01	0.020	56	0.063	0.005	0.014	..1 increase over background
Bicarbonate	26	51								31.0				69.1				124.	42	34	447.	42	42					
Boron-Dissolved			60	< 0.01	< 0.01	< 0.01																		54	< 0.05	< 0.01	< 0.01	
Boron-Total	< 0.01	< 0.01								0.03				0.05				0.07	0.06	< 0.01	0.14	0.02	0.01					0.5
Calcium-Dissolved			66	20.3	6.7	12.7																		54	15.0	4.7	8.7	
Calcium-Total	10.0	16.2	62	21.9	7.4	12.3	24.7	8.7	14.6	9.30	16.7	8.0	12.0	23.7	26.7	12.2	18.9	24.1	12.8	10.6	76.6	15.1	14.6	54	15.0	6.7	9.1	
Carbonate	< 0.5	< 0.5								< 0.5				< 0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	21	11.0	1.0	3.4	
Chloride-Dissolved	< 0.5	0.5	19	0.8	< 0.5	< 0.54				< 0.5				< 0.5				1.1	0.9	0.8	0.7	2.6	1.0	18	1.2	0.5	0.8	
Color-TAC			7	32	5	10																						
Color-True			22	60.	5	16																						
Hardness-Dissolved							137	24	73		144	23	45		89	39	62											
Hardness-Total			8	56	24	39																						
Hydroxide	< 0.5	< 0.5								< 0.5				< 0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5					
Ion Balance	1.06	1.28								1.72				1.04				1.13	1.36	1.56	0.93	1.49	1.62					
Iron-Dissolved			67	0.94	0.03	0.14	0.27	0.03	0.09		0.29	0.03	0.13		0.12	0.03	0.04							58	0.22	0.01	0.07	
Iron-Total	0.34	2.11	63	18.40	0.11	1.38	3.89	0.03	0.78	0.48	2.84	0.22	0.76	0.05	7.33	0.03	0.73	0.47	1.42	3.16	0.93	3.12	5.34	54	3.48	0.03	0.53	0.3
Nitrate Nitrogen as N	0.009	0.114	5	0.090	0.020	0.036	0.410	0.010	0.087	0.013	0.310	0.010	0.050	0.041	0.460	0.010	0.104	0.040	0.142	0.142	0.018	0.132	0.126	56	0.090	0.020	0.044	to prevent algal growth
Nitrite Nitrogen as N	< 0.003	< 0.003	5	< 0.005	< 0.005	< 0.005				< 0.003				< 0.003				0.006	0.003	0.004	0.843	0.003	0.003					0.020 - 0.200
Oxygen-Dissolved			2	10.2	7.2	8.7																						
PP Alkalinity	< 0.1	< 0.1								< 0.1				< 0.1				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1					
Phosphorus-Dissolved			39	0.011	< 0.003	< 0.005																		56	0.037	0.003	0.007	
Phosphorus-Ortho	< 0.003	0.006	57	0.005	< 0.003	< 0.003	0.017	0.003	0.004	< 0.003	0.014	0.003	0.005	< 0.003	0.017	0.003	0.003	0.010	0.044	0.031	0.003	0.014	0.029	51	0.018	0.003	0.005	
Phosphorus-Total	0.012	0.062	65	0.585	< 0.003	< 0.034	0.220	0.020	0.042	0.014	0.140	0.019	0.036	< 0.003	0.160	0.020	0.032	0.018	0.041	0.232	0.025	0.180	0.248	56	0.138	0.003	0.023	+10 (increase over background)
Phosphorus-Total Diss	< 0.003	0.012					0.097	0.001	0.021	< 0.003	0.048	0.001	0.011	< 0.003	0.148	0.001	0.028	0.010	0.016	0.017	0.004	0.013	0.028					0.005 - 0.015
Potassium-Dissolved			18	0.40	0.20	0.29	0.39	0.16	0.30		0.37	0.17	0.28		0.58	0.23	0.36								12	0.60	0.30	0.37	
Potassium-Total	0.34	0.50								0.34				0.40				1.57	1.70	1.20	5.36	1.40	1.50					
Silica-Reactive							9.18	1.94	5.36		9.09	1.92	5.45		8.16	2.27	5.08											
Silicon-Dissolved							7.6	3.2	5.4		7.7	2.7	5.5		3.9	1.9	4.5											
Silicon-Total	0.32	3.6					26.9	4.5	9.7	0.03	18.9	4.5	9.0	2.50	45.3	2.9	8.6	0.41	2.2	5.7	4.73	3.3	7.1					
Sodium-Total	1.44	2.4	18	3.1	0.9	1.9	3.7	1.1	2.0	0.80	2.2	0.9	1.5	2.75	4.7	1.1	2.5	9.00	6.0	3.5	96.8	3.5	4.1					
Specific Conductivity			68	139	46	89	167	53	98		115	30	79		185	83	133							56	112	47	63	
Sulphate-Dissolved	4.1	4.1	18	6.2	2.2	4.6	18.0	1.0	8.3	3.5	10.0	1.0	5.2	21.7	27.0	1.0	17.0	0.6	10.1	3.2	234.	3.4	5.3	14	3.9	2.2	2.9	100
Sulphur-Total	1.6	1.3								2.3				7.5				0.7	3.8	1.2	78.8	1.2	2.2					
Temperature			4	7	0	5																						
Total Dissolved Solids	30.	134					143	43	87	18.	113	44.	73	100.	161	69	113	480	102	98	95.	95	132					500 (drinking water aesthetics)
Total Hardness	30.9	54.1								28.4				76.3				93.2	48.9	42.1	347.	53.8	57.5					
Total Suspended Solids	5.0	44.0					830	0.5	77.4	< 0.4	101.0	0.5	29.3	< 0.4	124.0	0.5	15.0	< 0.4	7.0	88.0	3.0	78.0	105.0					+10 (background <= 100), + 10% (background > 100)
Turbidity	1.8	39.0	62	180.0	0.7	14.7	63.0	1.0	9.3	2.1	55.0	0.2	12.1	0.1	95.0	0.4	9.2	0.2	13.8	60.0	4.5	65.5	105.0	51	37.0	0.6	5.2	+ 1 - 5 NTU
pH	6.8	7.6	65	7.9	6.9	7.5	8.1	7.4	7.6	6.8	7.9	7.3	7.5	7.5	8.1	7.5	7.8	7.2	7.2	7.2	7.5	7.4	7.3	55	7.7	6.6	7.3	6.5 - 8.5
Aluminum-Dissolved	< 0.01	0.300	59	0.220	< 0.01	< 05	0.178	0.005	0.055	0.03	0.148	0.005	0.051	0.03	0.148	0.005	0.033	0.05	0.910	0.660	0.03	0.230	0.790	53	0.268	0.010	0.048	0.05 (pH >=6.5)
Aluminum-Total			58	14.700	< 0.01	< 0.84	4.310	0.054	0.935		2.540	0.034	0.807		10.200	0.005	0.934							50	2.900	0.020	0.426	
Antimony-Total	< 0.0002	< 0.0002								< 0.0002				0.0002				< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	0.0002					0.05
Arsenic-Dissolv			84	< 005	< 0.01	< 0.072																		71	< 0.01	< 0.01	< 0.01	

TABLE 2: SURFACE WATER CHEMISTRY (mg/L)

Parameter	MCL 3		BC MOE Site 0400187 at Telkwa (1974 - 1988)				WQS 9			MCL 2	WQS 8			MCL 4	WQS 4			MCL 1		MCL 10	MCL 5	MCL 8	MCL 9	BC MOE SITE 0920088: BULKLEY R. AT QUICK (1982-1988)				BC MOELP Criteria
	(Fall 1993)	(Spring 1994)	N	Max	Min	Mean	Max	Min	Mean	(Fall 1993)	Max	Min	Mean	(Fall 1993)	Max	Min	Mean	(Fall 1993)	(Spring 1994)	(Spring 1994)	(Fall 1993)	(Spring 1994)	(Spring 1994)	N	Max	Min	Mean	(see Notes at bottom of table)
Arsenic-Total	< 0.0002	0.0004	84	<.005	<0.001	<0.076				< 0.0002				< 0.0002				0.0005	0.0002	0.0003	0.0026	0.0008	0.0007	73	0.0250	0.0010	0.0072	0.025 (D) - 0.050 (AL)
Barium-Total	0.04	0.0500	60	0.0700	0.0100	0.0310	0.0710	0.0360	0.0468	0.04	0.0480	0.0320	0.0400	0.06	0.1600	0.0420	0.0670	0.04	0.0300	0.0500	0.03	0.0500	0.0700					1
Beryllium-Total	< 0.001	0.0020								< 0.001				< 0.001				< 0.001	0.0060	0.0030	0.001	0.0010	0.0020					0.011
Cadmium-Dissolved			83	<0.01	<0.0005	<0.0032																		72	< 0.0005	< 0.0005	< 0.0005	
Cadmium-Total	< 0.001	< 0.001	85	<0.01	<0.0005	<0.0033				< 0.001				< 0.001				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	73	< 0.0005	< 0.0005	< 0.0005	0.0002 - 0.0018 (couldn't reach detection limit)
Chromium-Dissolved			62	<0.01	<0.005	<0.01																		54	< 0.01	< 0.01	< 0.01	
Chromium-Total	< 0.002	< 0.002	63	0.020	<0.005	<0.01				< 0.002				< 0.002				< 0.002	0.016	0.007	< 0.002	0.004	< 0.002	54	<0.01	<0.01	<0.01	0.002 - 0.020
Cobalt-Dissolved			60	0.120	<0.1	<0.1																		54	< 0.1	< 0.1	< 0.1	
Cobalt-Total	< 0.003	< 0.003	60	0.130	<0.1	<0.1				< 0.003				< 0.003				< 0.003	0.005	< 0.003	< 0.003	< 0.003	< 0.003	54	0.150	0.100	0.115	0.05
Copper-Dissolved			85	<0.01	<0.001	0.004																		72	0.003	0.001	0.001	
Copper-Total	0.004	0.001	86	0.040	<0.001	0.005				0.002				0.002				0.002	0.003	0.001	0.002	0.002	0.010	53	0.009	0.001	0.005	0.002 - 0.010
Lead-Dissolved			86	0.100	<0.001	<0.03																		72	0.002	0.001	0.002	
Lead-Total	< 0.002	< 0.002	87	0.100	<0.001	<0.03				< 0.002				< 0.002				< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	53	0.011	0.001	0.003	0.001
Lithium-Total	< 0.001	< 0.001								< 0.001				0.001				< 0.001	< 0.001	< 0.001	0.032	< 0.001	< 0.001					
Magnesium-Dissolved			66	3.4	0.9	2.1																		54	2.8	0.7	1.5	
Magnesium-Total	1.4	3.3	62	4.8	0.9	2.5	5.3	1.4	2.7	1.25	2.9	1.2	2.0	4.15	7.5	2.0	4.0	8.50	4.1	3.8	37.9	3.9	5.1	54	2.9	0.8	1.5	
Manganese-Dissolved			62	0.02	<0.01	<0.013																		54	0.04	0.01	0.0214	
Manganese-Total	0.021	0.079	62	0.548	0.010	0.053	0.270	0.001	0.050	0.028	0.094	0.011	0.040	0.003	0.168	0.003	0.019	0.019	0.019	0.131	0.491	0.151	0.185	54	0.150	0.010	0.039	0.05
Mercury-Dissolved			2	<0.00005	<0.00005	<0.00005																						
Mercury-Total	< 0.00005	< 0.05	2	<0.00005	<0.00005	<0.00005				< 0.00005				< 0.00005				< 0.00005	< 0.05	< 0.05	< 0.00005	< 0.05	< 0.05					0.000026 (couldn't reach AL)
Molybdenum-Dissolved			60	0.020	<0.01	<0.01																		54	< 0.01	< 0.01	< 0.01	
Molybdenum-Total	< 0.003	< 0.003	61	0.030	<0.0005	<.011				< 0.003				< 0.003				< 0.003	0.004	< 0.003	0.005	< 0.003	< 0.003	54	0.050	0.010	0.026	0.019 - 0.038
Nickel-Dissolved			60	<0.05	<0.05	<0.05																		54	< 0.05	< 0.05	< 0.05	
Nickel-Total	< 0.005	< 0.005	61	<0.05	<0.01	<0.05				< 0.005				< 0.005				< 0.005	0.025	0.014	0.006	0.005	0.006	54	0.064	0.040	0.048	0.025 - 0.150
Selenium-Total	< 0.0002	< 0.0002								< 0.0002				< 0.0002				< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002					0.001
Silver-Total	< 0.001	< 0.001								< 0.001				< 0.001				< 0.001	0.004	< 0.001	< 0.001	< 0.001	< 0.001					0.0001 (couldn't reach AL)
Strontium-Total	0.048	0.067					0.110	0.046	0.069	0.045	0.080	0.044	0.062	0.084	0.110	0.046	0.072	0.175	0.080	0.066	1.88	0.070	0.080					
Titanium-Total	0.006	0.020					0.210	-0.006	0.046	0.006	0.100	0.006	0.026	< 0.003	0.400	0.006	0.045	< 0.003	0.011	0.034	< 0.003	0.037	0.067					
Uranium-Total	< 0.005	< 0.005								< 0.005				< 0.005				< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005					0.01
Vanadium-Dissolved			60	<0.01	<0.01	<0.01																		54	< 0.01	< 0.01	< 0.01	
Vanadium-Total	< 0.002	< 0.002	60	0.030	<0.01	<0.01				< 0.002				< 0.002				< 0.002	< 0.002	< 0.002	< 0.002	0.006	0.013	54	0.010	0.010	0.010	0.1
Zinc-Dissolved			82	<0.01	<0.005	<0.006																		75	0.005	0.005	0.005	
Zinc-Total	0.007	0.019	82	0.090	<0.005	<0.008				0.006				0.005				0.009	0.023	0.021	0.003	0.051	0.030	53	0.030	0.005	0.010	0.010 - 0.030

NOTES: *see Appendix III for complete list of MOE parameters, water quality criteria, and detection limits*
Items in bold exceed MOELP Criteria (Appendix III)
(D) refers to Drinking Water criteria
(AL) refers to Aquatic Life criteria

TABLE 3

SURFACE WATER MONITORING QA/QC (mg/L)

Parameter	Distilled Water Blank		Telkwa River at Telkwa	Telkwa River at Telkwa (dup)
	(Fall 1993)	*(Spring 1994)*	*(Fall 1993)*	*(Fall 1993)*
Alkalinity-Total	2.7	1.4	21.2	28.3
Ammonia Nitrogen-Total	< 0.01	<0.010	< 0.01	< 0.01
Bicarbonate	3.2	1.7	25.8	34.5
Boron-Total	< 0.01	<0.010	< 0.01	0.01
Calcium-Total	0.30	<0.100	10.0	10.2
Carbonate	< 0.5	<0.500	< 0.5	< 0.5
Chloride-Dissolved	< 0.5	<0.500	< 0.5	< 0.5
Hydroxide	< 0.5	<0.500	< 0.5	< 0.5
Iron-Total	< 0.01	0.01	0.34	0.41
Nitrate Nitrogen as N	0.008	0.01	0.009	<0.003
Nitrite Nitrogen as N	<0.003	<0.003	<0.003	<0.003
PP Alkalinity	<0.1	<0.100	<0.1	<0.1
Phosphorus-Ortho	<0.003	<0.003	<0.003	<0.003
Phosphorus-Total	<0.003	0.018	0.012	0.012
Phosphorus-Total Diss	<0.003	0.008	<0.003	<0.003
Potassium-Total	0.03	<0.020	0.34	0.34
Silicon-Total	<0.02	0.09	0.32	1.22
Sodium-Total	0.19	<0.100	1.44	1.20
Sulphate-Dissolved	<0.1	1	4.1	4.0
Sulphur-Total	<0.2	<0.200	1.6	1.5
Total Dissolved Solids	30.	5	50.	<1
Total Hardness	1.1	<0.500	30.9	31.5
Total Suspended Solids	<0.4	<0.400	5.0	3.0
Turbidity	0.1	0.1	1.8	1.3
pH	5.63	5.52	6.76	6.90
Aluminum-Dissolved	0.02	<0.010	<0.01	0.08
Antimony-Total	<0.0002	<0.000	<0.0002	<0.0002
Arsenic-Total	<0.0002	<0.000	<0.0002	0.0007
Barium-Total	<0.01	<0.010	0.04	0.04
Beryllium-Total	<0.001	<0.001	<0.001	<0.001
Cadmium-Total	<0.001	<0.001	<0.001	<0.001
Chromium-Total	<0.002	<0.002	<0.002	0.002
Cobalt-Total	<0.003	<0.003	<0.003	<0.003
Copper-Total	0.001	<0.001	0.004	0.002
Lead-Total	<0.002	<0.002	<0.002	<0.002
Lithium-Total	<0.001	<0.001	<0.001	<0.001
Magnesium-Total	0.08	<0.100	1.44	1.46
Manganese-Total	0.001	<0.001	0.021	0.024
Mercury-Total	<0.05	<0.050	<0.05	<0.05
Molybdenum-Total	<0.003	<0.003	<0.003	<0.003
Nickel-Total	<0.005	<0.005	<0.005	<0.005
Selenium-Total	<0.0002	<0.000	<0.0002	<0.0002
Silver-Total	<0.001	<0.001	<0.001	<0.001
Strontium-Total	<0.002	<0.002	0.048	0.047
Titanium-Total	<0.003	<0.003	0.006	0.009
Uranium-Total	<0.005	<0.005	<0.005	<0.005
Vanadium-Total	<0.002	<0.002	<0.002	<0.002
Zinc-Total	0.008	0.083	0.007	0.006

NOTE: QA/QC denotes Quality Assurance / Quality Control

TABLE 4

FISH TISSUE ANALYSIS

Parameter	Units	Results		BC MOE Criterion		Detection Limit	Comments
		Wet wt.	Dry wt.	Wet wt.	Dry wt.		
Moisture Content	%	76.5	-	implicit 20% in wet to dry conversion			
Arsenic	µg/g	<0.2	<0.9	3.5	none	0.35 wet	
Selenium	µg/g	<0.2	<0.9	3.0	15	0.3 wet	
Antimony	µg/g	<0.2	<0.9	none	none	1 dry	
Lead	µg/g	<0.2	<0.9	0.8	4	0.08 wet	
Cadmium	µg/g	<0.1	<.4	0.2	none	0.02 wet	Couldn't reach detection limit
Total Mercury	µg/g	<0.02	<0.09	0.1-0.5	none	0.01-0.05 wet	
Chromium	µg/g	<0.2	<0.9	none	none	1 dry	
Nickel	µg/g	<0.2	<0.9	none	none	5 dry	

NOTES:

1. ***Fish tissue results are analyzed by the laboratory and presented as "wet weight", concentration in hydrated fish tissue***
2. ***Wet wt = (1-Moisture content) * Dry weight***
3. ***In some cases, criteria are given by both "wet weight" and "dry weight", the latter referring to the concentration in dried tissue. Dry weight concentrations are higher.***

TABLE 5

SUMMARY OF WATER WELL SURVEY

WELL NO.	OWNER	ADDRESS OR LOCATION	DATE OF INFORMATION (m/y)	TOTAL DEPTH OF WELL (m)	OPEN INTERVAL (m)	LITHOLOGY
1	Pacific Western Gas	Unknown	Unknown	26.2	Unknown	gravel
2	Don Zimmer	Corner of Coal Mine Rd & Cotten Rd, Telkwa	07/74	12.5	Unknown	gravel
3	Greg Silveira	Unknown	06/86	43.3	Unknown	gravel and sand
4	Theodore Campbell	Unknown	??/84	13.4	Unknown	gravel (?)
5	Paine	Box 454 Telkwa	06/86	13.7	Unknown	sand and gravel
6	Obie Helps	Jackpine Rd off Skilhorn Rd, Telkwa	11/82	12.2	Unknown	gravel
7	NO RECORDS AVAILABLE					
8	NO RECORDS AVAILABLE					
9	Weavers	Jackpine Rd, Telkwa	06/84	15.2	Unknown	sand and gravel
10	NO RECORDS AVAILABLE					
11	Robert Morris	Morris Rd, Telkwa	09/82	24.4	Unknown	bedrock
12	NO RECORDS AVAILABLE					
13	Telkwa Enterprises	Skilhorn Rd, Telkwa	?/81	73.8	Unknown	sand and gravel
14	Don Doover	Coal Mine Rd & Spruce Rd, Telkwa	07/77	23.5	Unknown	sand and gravel
15	Mel Morris	Skilhorn Rd & Morris Rd, Telkwa	10/82	45.7	Unknown	sand and gravel

TABLE 5

SUMMARY OF WATER WELL SURVEY

WELL NO.	OWNER	ADDRESS OR LOCATION	DATE OF INFORMATION (m/y)	TOTAL DEPTH OF WELL (m)	OPEN INTERVAL (m)	LITHOLOGY
16	Nick Brother	Coal Mine Rd & Spruce Rd, Telkwa	09/73	22.9	Unknown	silty clay gravel
17	Judy Bradley	Telkwa Rd, Telkwa	08/84	17.7	Unknown	sand and gravel
18	Karl Holenstein	Woodland Subdivision, Telkwa	11/82	121.9	Unknown	bedrock
19	NO RECORDS AVAILABLE					
20	Leonard Penny	Woodland Subdivision, Telkwa	06/84	85.3	Unknown	sand and gravel
21	Brian Edmison	Woodland Subdivision, Telkwa	04/79	108.2	Unknown	bedrock
22	Dewit Nicholaas	Woodland Subdivision, Telkwa	06/81	111.3	Unknown	bedrock
23	John Geertsma	Spruce Dr, Telkwa	09/84	89.2	Unknown	bedrock
24	H. Sacfkow	Tatlow Rd, Telkwa	03/79	30.5	Unknown	gravel
25	John Sandner	Tatlow Rd, Telkwa	08/82	30.5	Unknown	bedrock
26	John Sandner	Tatlow Rd, Telkwa	08/79	100.5	Unknown	bedrock

NOTE: ***Well numbers are located on Figure 1.***

TABLE 6

PIEZOMETER INSTALLATION DETAILS, DATUM / GROUNDWATER SURFACE ELEVATIONS AND HYDRAULIC CONDUCTIVITIES

PIEZO. NO.	GROUND ELEVATION (m)	STICK-UP PVC PIPE (above ground) (m)	DATUM ELEVATION (top of PVC casing) (m)	TOTAL DEPTH OF PIEZO. (below ground) (m)	DEPTH INTERVAL OF SAND (below ground) (m)	MEASUREMENT DATE (y/m/d)	DEPTH TO WATER BELOW DATUM (m)	GROUNDWATER SURFACE ELEVATION (m)	HYDRAULIC CONDUCTIVITY (m/s)	LITHOLOGY
TW604A	812.64	0.68	813.32	32.58	24.78 - 32.58	89/11/12 93/09/29	23.45 25.93	789.87 787.39	2.4×10^{-7}	Coal (seam #6 middle) mudstone
TW905A	803.15	0.25	803.40	26.05	17.85 - 26.05	89/11/12 93/09/29	25.63 25.04	777.77 778.36	N/M	Siltstone, coal (seam #6 upper)
TW905B	803.15	0.28	803.43	58.28	48.88 - 58.28	89/11/12 93/09/29	24.40 24.06	779.03 779.37	3.5×10^{-7}	Sandstone, mudstone & coal (seam #2)
TW906A	805.85	0.65	806.50	67.65	55.15 - 67.65	89/11/12 93/09/29	26.53 25.93	779.97 780.57	2.2×10^{-7}	Silty mudstone & coal (seam #2)
TW913	922.86	0.77	923.63	32.47	24.87 - 32.47	89/11/12 93/09/28	14.24 13.94	909.39 909.69	1.3×10^{-7}	Siltstone, coal (seam #2)
T93R-28A	789.74	0.95	790.69	54.20	51.0 - 55.3	93/09/28	25.49	765.20	2.7×10^{-9}	Coal (seam #6)

TABLE 6

PIEZOMETER INSTALLATION DETAILS, DATUM / GROUNDWATER SURFACE ELEVATIONS AND HYDRAULIC CONDUCTIVITIES

PIEZO. NO.	GROUND ELEVATION (m)	STICK-UP PVC PIPE (above ground) (m)	DATUM ELEVATION (top of PVC casing) (m)	TOTAL DEPTH OF PIEZO. (below ground) (m)	DEPTH INTERVAL OF SAND (below ground) (m)	MEASUREMENT DATE (y/m/d)	DEPTH TO WATER BELOW DATUM (m)	GROUNDWATER SURFACE ELEVATION (m)	HYDRAULIC CONDUCTIVITY (m/s)	LITHOLOGY
T93R-28B	790.32	0.52	790.84	77.80	72.5 - 78.1	93/09/28	24.78	766.06	1.0×10^{-8}	Coal (seam #2)
T93R-29A	849.69	0.76	850.45	33.50	26.5 - 33.5	93/09/28	DRY	< 816.19	---	Till
T93R-29B	849.82	0.70	850.52	113.70	109.1 - 114.3	93/09/28	100 *	> 750.52	---	Coal (seam #1)
T93R-30	902.16	0.48	902.64	105.50	100.6 - 106.7	93/09/28	58.88	843.76	5.4×10^{-9}	Coal (seam #1)
T93R-32	925.66	0.79	926.45	104.50	98.7 - 104.8	93/09/28	30.01	896.44	7.3×10^{-9}	Coal (seam #2)

NOTES:
1. *N/M denotes not measured.*
2. ** - Water level in T93R-29B had not stabilized.*

TABLE 7

FIELD MEASURED PARAMETERS

PIEZOMETER NO.	MEASUREMENT DATE (y/m/d)	TEMPERATURE (°C)	ELECTRICAL CONDUCTIVITY (µmhos/cm)	pH	COMMENTS
TW604A	89/11/12	5.0	356	8.66	
	93/09/29	9.0	308	6.38	*Groundwater rusty colour*
TW905A	89/11/12	5.0	337	9.50	
	93/09/29	---	---	---	*Insufficient water to sample*
TW905B	89/11/12	5.5	789	8.40	
	93/09/29	8.0	340	6.73	*Groundwater clear*
TW906A	89/11/12	5.5	1,031	8.39	
	93/09/29	9.0	308	6.38	*Groundwater clear*
TW913	89/11/12	5.0	902	8.20	
	93/09/28	9.0	1,188	8.23	*Groundwater clear*
T93R-28A	93/09/28	8.0	5,122	7.48	*Groundwater slightly cloudy*
T93R-28B	93/09/28	8.0	5,875	7.48	*Groundwater slightly cloudy*
T93R-29A	93/09/28	---	---	---	*Dry*
T93R-29B	93/09/28	10.0	3,174	7.59	*Groundwater very cloudy*
T93R-30	93/09/28	8.0	2,716	8.02	*Groundwater cloudy*
T93R-32	93/09/28	8.0	3,505	7.60	*Groundwater clear*

NOTES:

1. *Electrical Conductivities from the 1993 sampling have been corrected to 25 degrees Celcius.*
2. *Electrical conductivities for the 1989 program are at temperatures measured.*

TABLE 8

GROUNDWATER QUALITY, INDICATOR PARAMETERS

PIEZOMETER NO.	DATE	SULPHATE	CHLORIDE	TDS	NITROGEN		
					Ammonia	Nitrate	Nitrite
	(y/m/d)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)
TW604A	89/11/12	28.2	0.8	397			
	90/11/05				190	< 3	< 3
	93/09/29	2.7	0.6	235	230	176	18
TW905A	89/11/12	100.0	2.4	624			
	90/11/05				20	< 3	< 3
	93/09/29	Insufficient water to sample			< 10	< 3	5
TW905B	89/11/12	43.6	7.7	789			
	93/09/29	1.6	1.6	185			
TW906A	89/11/12	14.5	23.9	1,045			
	90/11/05				320	< 3	< 3
	93/09/29	3.8	2.8	175	< 10	< 3	5
TW913	89/11/12	48.0	5.8	976			
	90/11/05				160	< 3	< 3
	93/09/28	14.8	1.6	755	220	< 3	5
T93R-28A	93/09/28	248.0	238.0	3,500	500	1,940	41
T93R-28B	93/09/28	144.0	292.0	3,790	730	1,280	56
T93R-29A	93/09/28	Insufficient water to sample					
T93R-29B	93/09/28	68.6	638.0	1,750	770	214	68
T93R-30	93/09/28	107.0	78.2	1,560	220	1,130	9
T93R-32	93/09/28	184.0	15.3	2,010	680	2,040	11
CWQG, 1987	—	*500*	*250*	*500*	*NC*	*NC*	*NC*
LEVEL B DS					*100*	*NC*	*20-200*

NOTES:

1. - *Above Recommended Criteria.*
2. *NC - No Criteria*
3. *Laboratory results from the 1993 sampling program of the T93R series piezometers probably do not represent actual groundwater conditions since natural groundwater chemistry has been temporarily affected due to drilling.*

TABLE 9
LABORATORY ANALYSIS RESULTS FOR METALS

TOTAL AND DISSOLVED METAL CONCENTRATIONS (ppb)

PIEZOMETER	DATE	ALUMINUM		ANTIMONY		ARSENIC		BARIUM		BERYLLIUM		BORON		CADMIUM	
	(y/m/d)	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.
TW904A	90/11/05	NA	< 10	NA	< 0.2	NA	2	NA	60	NA	< 1.0	NA	130	NA	2
	93/09/29	16,200	■	2	5	81	< 2	1,050	150	2	1	50	50	1	< 0.2
TW905B	90/11/05	NA	< 10	NA	< 0.2	NA	< 2	NA	70	NA	1	NA	110	NA	2
	93/09/29	980	■	3	11	< 2	< 2	12	60	1	< 0.2	< 10	< 2	< 1	< 0.2
TW906A	90/11/05	NA	< 10	NA	< 0.2	NA	< 0.2	NA	170	NA	< 1.0	NA	170	NA	< 1.0
	93/09/29	1,170	■	< 2	3	< 2	< 2	50	30	< 1	< 0.2	10	6	< 1	< 0.2
TW913	90/11/05	NA	< 10	NA	< 0.2	NA	2	NA	40	NA	< 1.0	NA	140	NA	< 1.0
	93/09/28	520	■	< 2	23	2	< 2	90	30	< 1	< 0.2	140	130	< 1	< 0.2
T93R-28A	93/09/28	28,700	■	3	10	15	4	■	190	18	< 0.2	130	130	< 1	< 0.2
T93R-28B	93/09/28	87,600	■	3	20	■	< 2	■	32	9	< 0.2	760	220	< 1	< 0.2
T93R-29B	93/09/28	480,000	■	6	9	47	< 2	■	560	■	1	90	80	■	1
T93R-30	93/09/28	58,400	■	< 2	14	29	4	■	60	11	< 0.2	100	90	1	< 0.2
T93R-32	93/09/28	51,300	■	2	19	36	3	■	190	10	< 0.2	120	150	< 1	< 0.2
LEVEL B aw		*NC*	*20*	*50*	*NC*	*50*	*NC*	*1,000*	*NC*	*11*	*NC*	*NC*	*NC*	*1.8*	*NC*
LEVEL B cw												*5,000*			
LABORATORY DETECTION LIMIT FOR 1990 SAMPLES		—	*10*	—	*0.2*	—	*0.2*	—	*2*	—	*1*	—	*10*	—	*1*
LABORATORY DETECTION LIMIT FOR 1993 SAMPLES		*10*	*2*	*2*	*0.2*	*2*	*2*	*10*	*2*	*1*	*0.2*	*10*	*2*	*1*	*2*

PIEZOMETER	DATE	CHROMIUM		COBALT		COPPER		IRON		LEAD		MANGANESE		MERCURY		MOLYBDENUM	
	(y/m/d)	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.
TW904A	90/11/05	NA	< 1	NA	5	NA	< 1	NA	10	NA	10	NA	370	NA	< 0.05	NA	10
	93/09/29	25	3	4	1	2	2	■	3,710	■	< 0.2	■	2,540	< 0.05	< 0.02	21	1
TW905B	90/11/05	NA	< 1.0	NA	3	NA	< 1.0	NA	10	NA	< 2.0	NA	29	NA	< 0.05	NA	10
	93/09/29	< 2	< 0.2	14	< 1	■	< 0.2	■	220	< 2	< 0.2	■	119	< 0.05	< 0.02	5	1
TW906A	90/11/05	NA	< 1.0	NA	3	NA	< 1	NA	10	NA	< 2.0	NA	15	NA	< 0.05	NA	< 1
	93/09/29	14	2	< 3	1	■	3	■	210	4	< 0.2	■	78	< 0.05	< 0.02	< 3	2
TW913	90/11/05	NA	< 1.0	NA	2	NA	< 1	NA	< 10	NA	< 2.0	NA	15	NA	< 0.05	NA	1
	93/09/28	4	3	< 3	< 1	■	16	■	90	7	< 0.2	40	15	< 0.05	< 0.02	6	2
T93R-28A	93/09/28	■	< 0.2	14	< 1	■	4	■	110	18	3	■	48	< 0.05	< 0.02	18	18
T93R-28B	93/09/28	■	3	■	< 1	■	2	■	30	29	3	■	40	< 0.05	< 0.02	27	27
T93R-29B	93/09/28	■	2	■	< 1	■	5	■	70	48	3	■	101	< 0.05	< 0.02	99	18
T93R-30	93/09/28	19	3	20	< 1	■	17	■	110	■	< 0.2	■	9	< 0.05	< 0.02	9	8
T93R-32	93/09/28	■	1	29	< 1	■	30	■	220	■	< 0.2	■	35	< 0.05	< 0.02	23	22
LEVEL B aw		*20*	*NC*	*50*	*NC*	*10*	*NC*	*3*	*NC*	*50*	*NC*	*NC*	*NC*	*0.02*	*NC*	*500*	*NC*
LEVEL B cw												*50*					
LABORATORY DETECTION LIMIT FOR 1990 SAMPLES		—	*1*	—	*1*	—	*1*	—	*2*	—	*2*	*1*	*0.2*	—	*0.05*	—	*1*
LABORATORY DETECTION LIMIT FOR 1993 SAMPLES		*2*	*0.2*	*3*	*1*	*1*	*0.2*	*10*	*2*	*2*	*0.2*	*1*	*0.2*	*0.05*	*0*	*3*	*1*

PIEZOMETER	DATE	NICKEL		PHOSPHORUS			SELENIUM		SILVER		URANIUM		VANADIUM		ZINC	
	(y/m/d)	Total	Diss.	Total	Tot.Dis.	Diss.Ortho	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.
TW904A	90/11/05	NA	< 1	NA	326	NA	NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	9
	93/09/29	56	24	■	14	13	< 2	< 0.1	< 1	< 0.1	< 5	< 1	46	2	■	19
TW905B	90/11/05	NA	8	NA	141		NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	9
	93/09/29	< 5	< 1	■	21	20	< 2	< 0.1	< 1	< 0.1	< 5	< 1	9	2	■	12
TW906A	90/11/05	NA	< 1	NA	87		NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	2
	93/09/29	< 5	< 1	■	46	18	< 2	< 0.1	< 1	< 0.1	< 5	< 1	8	< 2	■	19
TW913	90/11/05	NA	< 1	NA	530		NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	7
	93/09/28	< 5	< 1	■	600	30	< 2	< 0.1	< 1	< 0.1	< 5	< 1	7	2	■	14
T93R-28A	93/09/28	27	1	■	178	25	< 2	< 0.1	< 1	< 0.1	< 5	34	39	2	■	40
T93R-28B	93/09/28	■	< 1	■	55	15	< 2	< 0.1	< 1	< 0.1	15	34	■	2	■	1
T93R-29B	93/09/28	■	3	■	32	30	■	< 0.1	< 1	< 0.1	11	7	■	< 2	■	153
T93R-30	93/09/28	47	< 1	■	160	105	< 2	< 0.1	■	< 0.1	22	17	56	3	■	37
T93R-32	93/09/28	97	2	■	150	115	< 2	< 0.1	< 1	< 0.1	28	14	73	3	■	42
LEVEL B aw		*150*	*NC*	*5 - 15*	*NC*	*NC*	*1*	*NC*	*0.1*	*NC*	*NC*	*NC*	*NC*	*NC*	*30*	*NC*
LEVEL B cw											*100*		*100*			
LABORATORY DETECTION LIMIT FOR 1990 SAMPLES		—	*1*	—	—	—	—	*0.2*	—	*1*	—	—	—	*1*	—	*1*
LABORATORY DETECTION LIMIT FOR 1993 SAMPLES		*5*	*1*	*3*	*3*	*1*	*2*	*0.1*		*0.1*	*5*	*1*	*2*	*2*	*1*	*1*

NOTES:

1. *Level B aw is the de minimus for water-based discharges to protect aquatic life.*
2. *Level B cw is the human consumption criteria for drinking water. Where Level B aw are absent the drinking water standard has been used.*
3. *NA - Not Analysed.*
4. *NC - No Criteria.*
5. *■ - Above Recommended Criteria.*
6. *Laboratory results from the 1993 sampling program of the T93R series piezometers probably do not represent actual groundwater conditions since natural groundwater chemistry has been temporarily affected due to drilling.*

TABLE 9
LABORATORY ANALYSIS RESULTS FOR METALS

PIEZOMETER	DATE	TOTAL AND DISSOLVED METAL CONCENTRATIONS (ppb)																																							
		ALUMINUM		ANTIMONY		ARSENIC		BARIUM		BERYLLIUM		BORON		CADMIUM		CHROMIUM		COBALT		COPPER		IRON		LEAD		MANGANESE		MERCURY		MOLYBDENUM		NICKEL		PHOSPHORUS			SELENIUM		SILVER		URANIUM		VANADIUM		ZINC	
	(y/m/d)	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Tot.Dis.	Diss.Ortho	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.	Total	Diss.
TW604A	90/11/05	NA	< 10	NA	< 0.2	NA	2	NA	60	NA	< 1.0	NA	130	NA	2	NA	< 1	NA	5	NA	< 1	NA	10	NA	10	NA	370	NA	< 0.05	NA	10	NA	< 1	NA	326	NA	NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	9
	93/09/29	16,200	80	2	5	81	< 2	1,050	150	2	1	50	50	1	< 0.2	25	3	4	1	2	2	258,000	3,710	70	< 0.2	5,010	2,540	< 0.05	< 0.02	21	1	56	24	1,330	14	13	< 2	< 0.1	< 1	< 0.1	< 5	< 1	46	2	103	19
TW905B	90/11/05	NA	< 10	NA	< 0.2	NA	< 2	NA	70	NA	1	NA	110	NA	2	NA	< 1.0	NA	3	NA	< 1.0	NA	10	NA	< 2.0	NA	29	NA	< 0.05	NA	10	NA	8	NA	141		NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	9
	93/09/29	980	30	3	11	< 2	< 2	12	80	1	< 0.2	< 10	< 2	< 1	< 0.2	< 2	< 0.2	14	< 1	17	< 0.2	1,750	220	< 2	< 0.2	163	119	< 0.05	< 0.02	5	1	< 5	< 1	63	21	20	< 2	< 0.1	< 1	< 0.1	< 5	< 1	9	2	83	12
TW906A	90/11/05	NA	< 10	NA	< 0.2	NA	< 0.2	NA	170	NA	< 1.0	NA	170	NA	< 1.0	NA	< 1.0	NA	3	NA	< 1	NA	10	NA	< 2.0	NA	15	NA	< 0.05	NA	< 1	NA	< 1	NA	87		NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	2
	93/09/29	1,170	60	< 2	3	< 2	< 2	50	30	< 1	< 0.2	10	8	< 1	< 0.2	14	2	< 3	1	7	3	2,070	210	4	< 0.2	95	78	< 0.05	< 0.02	< 3	2	< 5	< 1	61	48	18	< 2	< 0.1	< 1	< 0.1	< 5	< 1	8	< 2	40	19
TW913	90/11/05	NA	< 10	NA	< 0.2	NA	2	NA	40	NA	< 1.0	NA	140	NA	< 1.0	NA	< 1.0	NA	2	NA	< 1	NA	< 10	NA	< 2.0	NA	15	NA	< 0.05	NA	1	NA	< 1	NA	530		NA	< 0.2	NA	< 1.0	NA	NA	NA	< 1	NA	7
	93/09/28	520	50	< 2	23	2	< 2	90	30	< 1	< 0.2	140	130	< 1	< 0.2	4	3	< 3	< 1	15	15	1,030	90	7	< 0.2	40	15	< 0.05	< 0.02	6	2	< 5	< 1	840	600	30	< 2	< 0.1	< 1	< 0.1	< 5	< 1	7	2	82	14
T93R-28A	93/09/28	28,700	100	3	10	15	4	1,840	190	8	< 0.2	130	130	< 1	< 0.2	24	< 0.2	14	< 1	21	4	20,800	110	18	3	416	48	< 0.05	< 0.02	18	18	27	1	950	178	25	< 2	< 0.1	< 1	< 0.1	< 5	34	39	2	209	40
T93R-28B	93/09/28	87,600	60	3	20	67	< 2	3,640	32	9	< 0.2	760	220	< 1	< 0.2	113	3	61	< 1	159	2	145,000	30	29	3	2,730	40	< 0.05	< 0.02	27	27	158	< 1	1,680	55	15	< 2	< 0.1	< 1	< 0.1	15	34	209	2	505	1
T93R-29B	93/09/28	480,000	50	6	9	47	< 2	12,200	580	22	1	90	80	5	1	845	2	468	< 1	1,120	5	1,080,000	70	48	3	17,500	101	< 0.05	< 0.02	99	18	883	3	4,750	32	30	6	< 0.1	< 1	< 0.1	11	7	1,280	< 2	2,780	153
T93R-30	93/09/28	58,400	250	< 2	14	29	4	3,340	60	11	< 0.2	100	90	1	< 0.2	19	3	20	< 1	80	17	44,100	110	150	< 0.2	1,280	9	< 0.05	< 0.02	9	8	47	< 1	1,200	180	105	< 2	< 0.1	2	< 0.1	22	17	56	3	808	37
T93R-32	93/09/28	51,300	230	2	19	38	3	3,280	190	10	< 0.2	120	150	< 1	< 0.2	39	1	29	< 1	76	30	57,700	220	130	< 0.2	1,510	35	< 0.05	< 0.02	23	22	97	2	5,880	150	115	< 2	< 0.1	< 1	< 0.1	28	14	73	3	386	42
LEVEL B $_{DS}$		*NC*	*20*	*50*	*NC*	*50*	*NC*	*1,000*	*NC*	*11*	*NC*	*NC*	*NC*	*1.8*	*NC*	*20*	*NC*	*50*	*NC*	*10*	*NC*	*3*	*NC*	*50*	*NC*	*NC*	*NC*	*0.02*	*NC*	*500*	*NC*	*150*	*NC*	*5 - 15*	*NC*	*NC*	*1*	*NC*	*0.1*	*NC*	*NC*	*NC*	*NC*	*NC*	*30*	*NC*
LEVEL B $_{DW}$												*5,000*														*50*															*100*		*100*			
LABORATORY DETECTION LIMIT FOR 1990 SAMPLES		*—*	*10*	*—*	*0.2*	*—*	*0.2*	*—*	*2*	*—*	*1*	*—*	*10*	*—*	*1*	*—*	*1*	*—*	*1*	*—*	*1*	*—*	*2*	*—*	*2*	*1*	*0.2*	*—*	*0.05*	*—*	*1*	*—*	*1*	*—*	*—*	*—*	*—*	*0.2*	*—*	*1*	*—*	*—*	*—*	*1*	*—*	*1*
LABORATORY DETECTION LIMIT FOR 1993 SAMPLES		*10*	*2*	*2*	*0.2*	*2*	*2*	*10*	*2*	*1*	*0.2*	*10*	*2*	*1*	*2*	*2*	*0.2*	*3*	*1*	*1*	*0.2*	*10*	*2*	*2*	*0.2*	*1*	*0.2*	*0.05*	*0*	*3*	*1*	*5*	*1*	*3*	*3*	*1*	*2*	*0.1*		*0.1*	*5*	*1*	*2*	*2*	*1*	*1*

NOTES:

1. *Level B_{DS} is the de minimus for water-based discharges to protect aquatic life.*
2. *Level B_{DW} is the human consumption criteria for drinking water. Where Level B_{DS} are absent the drinking water standard has been used.*
3. *NA - Not Analysed.*
4. *NC - No Criteria.*
5. *[ ] - Above Recommended Criteria.*
6. *Laboratory results from the 1993 sampling program of the T93R series piezometers probably do not represent actual groundwater conditions since natural groundwater chemistry has been temporarily affected due to drilling.*

APPENDIX I

SURFACE WATER AND FISH TISSUE ANALYSES

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077 FAX (403) 291-9468
Edmonton 9331 - 48th Street. T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : B-1 Blank spr
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-2
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	0.30	0.01	0.015
Magnesium - (ICP) Total	12005L	mg/L	0.08	0.01	0.007
Sodium - (ICP) Total	11005L	mg/L	0.19	0.01	0.008
Potassium -(ICP) Total		mg/L	0.03	0.02	0.001
Chloride - Dissolved	17206L	mg/L	< 0.5	0.5	
Sulphate - (IC)	16309L	mg/L	< 0.1	0.1	
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	2.7	0.1	
pH	10301L	Units	5.63	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	3.2	0.5	0.053
Total Hardness	10602L	mg/L	1.1	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	< 0.02	0.02	
Turbidity	02074L	NTU	0.1	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.008	0.003	0.001
Total Dissolved Phosphorus as P	15423L	mg/L	< 0.003	0.003	
Ortho Phosphorus as P	15256L	mg/L	< 0.003	0.003	
Total Phosphorus as P	15406L	mg/L	< 0.003	0.003	
Sulphur - (ICP) - Total		mg/L	< 0.2	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	30.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	< 0.4	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.02	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	< 0.0002	0.0002	
Barium - Total (ICP)	56011L	mg/L	< 0.01	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	< 0.01	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~B-T~~ Blank SD2
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-2
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L		0.001	0.001	
Iron - Total (ICP)	26009L	mg/L	<	0.01	0.01	
Lead - Total (GFAA)	82004L	mg/L	<	0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	<	0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L		0.001	0.001	
Mercury - Total (CVAA)	80011L	ug/L	<	0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	<	0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	<	0.005	0.005	
Phosphorus - Total (ICP)		mg/L	<	0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	<	0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	<	0.002	0.002	
Titanium - Total (ICP)	22011L	mg/L	<	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	<	0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	<	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		0.008	0.001	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-I

Sample Description : ~~B-1~~ BLANK SDR
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-2
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium -(ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	2	1.0	100.0	88.7	107.9	100.5	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~B-1~~ Blank SPR
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-2
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077 FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : FLOW MONITORING MCL1 M.T.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-1
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	24.1	0.01	1.203
Magnesium - (ICP) Total	12D05L	mg/L	8.50	0.01	0.70D
Sodium - (ICP) Total	11005L	mg/L	9.00	0.01	0.392
Potassium -(ICP) Total		mg/L	1.57	0.02	0.040
Chloride - Dissolved	17206L	mg/L	1.1	0.5	0.031
Sulphate - (IC)	16309L	mg/L	0.6	0.1	0.012
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	102.	0.1	
pH	10301L	Units	7.20	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	124.	0.5	2.039
Total Hardness	10602L	mg/L	95.2	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	0.42	0.02	
Turbidity	02074L	NTU	0.2	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	0.006	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.040	0.003	0.003
Total Dissolved Phosphorus as P	15423L	mg/L	0.010	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.010	0.003	
Total Phosphorus as P	15406L	mg/L	0.018	0.003	
Sulphur - (ICP) - Total		mg/L	0.7	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	480.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	< 0.4	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.05	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0005	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.04	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	0.02	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2 Telephone (403) 291-3077 FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877 FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : FLOW ~~MONITORING~~ MCL 1 M.F.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-1
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	0.47	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.019	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Phosphorus - Total (ICP)		mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.175	0.002	
Titanium - Total (ICP)	22011L	mg/L	< 0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.009	0.001	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2 Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : FLOW ~~MONITORING~~ MCL 7n.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-1
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium -(ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : FLOW ~~MONITORING~~ MCL1 M.F.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-1
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2
Zinc - Total (ICP)	13-10-93	10	2.7	102.4	89.3	117.8	105.0	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : TDS MCL 2 m.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-3
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	9.30	0.01	0.464
Magnesium - (ICP) Total	12005L	mg/L	1.25	0.01	0.103
Sodium - (ICP) Total	11005L	mg/L	9.80	0.01	0.426
Potassium -(ICP) Total		mg/L	0.34	0.02	0.009
Chloride - Dissolved	17206L	mg/L	< 0.5	0.5	
Sulphate - (IC)	16309L	mg/L	3.5	0.1	0.073
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	25.5	0.1	
pH	10301L	Units	6.76	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	31.0	0.5	0.509
Total Hardness	10602L	mg/L	28.4	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	0.05	0.02	
Turbidity	02074L	NTU	2.1	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.013	0.003	0.001
Total Dissolved Phosphorus as P	15423L	mg/L	< 0.003	0.003	
Ortho Phosphorus as P	15256L	mg/L	< 0.003	0.003	
Total Phosphorus as P	15406L	mg/L	0.014	0.003	
Sulphur - (ICP) - Total		mg/L	2.3	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	10.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	< 0.4	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.03	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	< 0.0002	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.04	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	0.03	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~TRUS~~ MCLZ M.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-3
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	0.40	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.028	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Phosphorus - Total (ICP)		mg/L	2.9	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.045	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.006	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.006	0.001	

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~IRON~~ MCL2 7m.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-3
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium -(ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	2	1.0	100.0	88.7	107.9	100.5	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2 Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~TADS~~ MCL2 M.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-3
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Phosphorus - Total (ICP)	13-10-93	10	0.3	99.2	80.0	120.0	104.8	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2
Zinc - Total (ICP)	13-10-93	10	2.7	102.4	89.3	117.8	105.0	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~TROT~~ MCL3 7M.7
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-6
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	10.0	0.01	0.499
Magnesium - (ICP) Total	12005L	mg/L	1.44	0.01	0.119
Sodium - (ICP) Total	11005L	mg/L	1.44	0.01	0.063
Potassium -(ICP) Total		mg/L	0.34	0.02	0.009
Chloride - Dissolved	17206L	mg/L	< 0.5	0.5	
Sulphate - (IC)	16309L	mg/L	4.1	0.1	0.085
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	21.2	0.1	
pH	10301L	Units	6.76	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	25.8	0.5	0.423
Total Hardness	10602L	mg/L	30.9	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	0.32	0.02	
Turbidity	02074L	NTU	1.8	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.009	0.003	0.001
Total Dissolved Phosphorus as P	15423L	mg/L	< 0.003	0.003	
Ortho Phosphorus as P	15256L	mg/L	< 0.003	0.003	
Total Phosphorus as P	15406L	mg/L	0.012	0.003	
Sulphur - (ICP) - Total		mg/L	1.6	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	50.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	5.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	< 0.01	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	< 0.0002	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.04	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	< 0.01	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~TB05-1~~ MCL3 7m.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-6
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.004	0.001	
Iron - Total (ICP)	26009L	mg/L	0.34	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.021	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Phosphorus - Total (ICP)		mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.048	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.006	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.007	0.001	

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-I

MCL3

Sample Description : ~~TP93-1~~ MW40 m.F.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-6
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium -(ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	2	1.0	100.0	88.7	107.9	100.5	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-I

Sample Description : ~~IR05-1~~ MCL3 m.7-
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-6
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Phosphorus - Total (ICP)	13-10-93	10	0.3	99.2	80.0	120.0	104.8	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2
Zinc - Total (ICP)	13-10-93	10	2.7	102.4	89.3	117.8	105.0	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~IR05-2~~ MCL3 M.F. (duplicate)
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-7
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	10.2	0.01	0.509
Magnesium - (ICP) Total	12005L	mg/L	1.46	0.01	0.120
Sodium - (ICP) Total	11005L	mg/L	1.20	0.01	0.052
Potassium -(ICP) Total		mg/L	0.34	0.02	0.009
Chloride - Dissolved	17206L	mg/L	< 0.5	0.5	
Sulphate - (IC)	16309L	mg/L	4.0	0.1	0.083
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	28.3	0.1	
pH	10301L	Units	6.90	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	34.5	0.5	0.565
Total Hardness	10602L	mg/L	31.5	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	1.22	0.02	
Turbidity	02074L	NTU	1.3	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	< 0.003	0.003	
Total Dissolved Phosphorus as P	15423L	mg/L	< 0.003	0.003	
Ortho Phosphorus as P	15256L	mg/L	< 0.003	0.003	
Total Phosphorus as P	15406L	mg/L	0.012	0.003	
Sulphur - (ICP) - Total		mg/L	1.5	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	< 1	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	3.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.08	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0007	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.04	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	0.01	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~IRON~~ MCL3 M.T. (duplicate)
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-7
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	0.41	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.024	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Phosphorus - Total (ICP)		mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.047	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.009	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.006	0.001	
Ion Balance		Balance	1.06	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9031 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~IR05-2~~ MCL3 M.F. (duplicate)
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-7
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium - (ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	2	1.0	100.0	88.7	107.9	100.5	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~TB08-2~~ MCL3 M.F. (duplicate)
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-7
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2
Zinc - Total (ICP)	13-10-93	10	2.7	102.4	89.3	117.8	105.0	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077 FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : 8 MCL4 M.T.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-4
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	23.7	0.01	1.183
Magnesium - (ICP) Total	12005L	mg/L	4.15	0.01	0.342
Sodium - (ICP) Total	11005L	mg/L	2.75	0.01	0.120
Potassium -(ICP) Total		mg/L	0.40	0.02	0.010
Chloride - Dissolved	17206L	mg/L	< 0.5	0.5	
Sulphate - Dissolved	16306L	mg/L	21.7	0.5	0.451
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	56.7	0.1	
pH	10301L	Units	7.52	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	69.1	0.5	1.133
Total Hardness	10602L	mg/L	76.3	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	2.50	0.02	
Turbidity	02074L	NTU	0.1	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.041	0.003	0.003
Total Dissolved Phosphorus as P	15423L	mg/L	< 0.003	0.003	
Ortho Phosphorus as P	15256L	mg/L	< 0.003	0.003	
Total Phosphorus as P	15406L	mg/L	< 0.003	0.003	
Sulphur - (ICP) - Total		mg/L	7.5	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	100.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	< 0.4	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.03	0.01	
Antimony - Total (AA)	51003L	mg/L	0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	< 0.0002	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.06	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	0.05	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : S MCL4 Jn.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-4
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	0.05	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.003	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Phosphorus - Total (ICP)		mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.084	0.002	
Titanium - Total (ICP)	22011L	mg/L	< 0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.005	0.001	
Ion Balance		Balance	1.04	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077 FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : 8 MCL4 m.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-4
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium -(ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	2	1.0	100.0	88.7	107.9	100.5	85.2	115.4
Sulphate - Dissolved	13-10-93	2	1.3	99.3	91.5	108.3	104.8	91.1	107.8
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2 Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877 FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : @ MCL4
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-A
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2
Zinc - Total (ICP)	13-10-93	10	2.7	102.4	89.3	117.8	105.0	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~RPS~~ MCLS M.T.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-5
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	76.6	0.01	3.822
Magnesium - (ICP) Total	12005L	mg/L	37.9	0.01	3.119
Sodium - (ICP) Total	11005L	mg/L	96.8	0.01	4.211
Potassium -(ICP) Total		mg/L	5.36	0.02	0.137
Chloride - Dissolved	17206L	mg/L	0.7	0.5	0.020
Sulphate - Dissolved	16306L	mg/L	234.	0.5	4.867
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	367.	0.1	
pH	10301L	Units	7.46	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	447.	0.5	7.337
Total Hardness	10602L	mg/L	347.	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	4.73	0.02	
Turbidity	02D74L	NTU	4.5	0.1	
Total Ammonia Nitrogen	07505L	mg/L	0.79	0.01	0.056
Nitrite Nitrogen as N	07206L	mg/L	0.043	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.018	0.003	0.001
Total Dissolved Phosphorus as P	15423L	mg/L	0.004	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.003	0.003	
Total Phosphorus as P	15406L	mg/L	0.025	0.003	
Sulphur - (ICP) - Total		mg/L	78.8	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	95.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	3.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.03	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0026	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.05	0.01	
Beryllium - Total (ICP)	04009L	mg/L	0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	0.14	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2 Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4 Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

PROJ.#KI-3773-1

Sample Description : ~~RPS~~ MCLS M.F.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-5
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	0.93	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	0.032	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.491	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	0.006	0.005	
Phosphorus - Total (ICP)		mg/L	0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	1.88	0.002	
Titanium - Total (ICP)	22011L	mg/L	< 0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.005	0.001	
Ion Balance		Balance	0.93	0.01	

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~RPS~~ MCLS 1n.7.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-5
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	13-10-93	10	0.3	101.1	92.6	110.9	106.0	92.5	108.9
Magnesium - (ICP) Total	13-10-93	10	0.1	101.8	87.3	113.4	104.3	90.2	107.4
Sodium - (ICP) Total	13-10-93	10	0.6	102.1	87.7	113.0	101.0	87.8	110.1
Potassium -(ICP) Total	13-10-93	10	0.2	100.7	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	08-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	08-10-93	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	13-10-93	10	0.3	105.3	78.0	125.7	112.5	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	07-10-93	1	1.0	89.7	93.2	106.7	103.8	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	13-10-93	10	0.2	104.7	87.3	112.8	108.3	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	13-10-93	10	0.0	101.9	90.5	106.8	103.9	94.6	110.3
Beryllium - Total (ICP)	13-10-93	10	0.0	104.6	89.7	109.8	100.6	93.7	107.9
Boron - Total (ICP)	13-10-93	10	0.0	96.4	83.0	121.3	98.9	85.5	110.4
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	13-10-93	10	1.3	100.9	83.3	116.6	105.1	86.6	114.0
Cobalt - Total (ICP)	13-10-93	10	0.0	102.2	81.7	113.1	105.2	82.5	115.0
Copper - Total (ICP)	13-10-93	10	1.0	98.3	85.2	111.5	99.5	90.5	107.6
Iron - Total (ICP)	13-10-93	10	0.3	101.9	89.4	114.9	108.7	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	13-10-93	10	0.0	92.4	81.7	111.8	91.3	83.0	109.4
Manganese - Total (ICP)	13-10-93	10	0.7	105.1	89.3	110.9	109.4	82.7	118.0
Mercury - Total (CVAA)	12-10-93	2	0.0	103.4	77.1	121.6	96.0	80.1	121.0

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#KI-3773-1

Sample Description : ~~BPS~~ MCLS M.F.
Sample Date & Time : October 04, 1993
Sampled By : MF
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 93-02754-5
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	13-10-93	10	3.0	103.7	79.8	118.8	107.3	78.0	117.0
Nickel - Total (ICP)	13-10-93	10	0.5	102.5	79.0	123.4	107.7	76.0	129.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	13-10-93	10	0.1	101.7	92.3	107.2	104.5	88.0	110.0
Titanium - Total (ICP)	13-10-93	10	0.0	95.0	79.9	114.1	97.0	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Vanadium - Total (ICP)	13-10-93	10	3.2	102.7	86.9	113.4	105.9	93.5	109.2
Zinc - Total (ICP)	13-10-93	10	2.7	102.4	89.3	117.8	105.0	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 466-9877. FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCLO Blank 7.7.
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-2
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	< 0.1	0.1	
Magnesium - (ICP) Total	12005L	mg/L	< 0.1	0.1	
Sodium - (ICP) Total	11005L	mg/L	< 0.1	0.1	
Potassium -(ICP) Total		mg/L	< 0.02	0.02	
Chloride - Dissolved	17206L	mg/L	< 0.5	0.5	
Sulphate - (IC)	16309L	mg/L	1.0	0.1	0.021
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	1.4	0.1	
pH	10301L	Units	5.52	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	1.7	0.5	0.028
Total Hardness	10602L	mg/L	< 0.5	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	0.09	0.02	
Turbidity	02074L	NTU	0.1	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.010	0.003	0.001
Total Dissolved Phosphorus as P	15423L	mg/L	0.008	0.003	
Ortho Phosphorus as P	15256L	mg/L	< 0.003	0.003	
Total Phosphorus as P	15406L	mg/L	0.018	0.003	
Sulphur - (ICP) - Total		mg/L	< 0.2	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	5.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	< 0.4	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	< 0.01	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	< 0.0002	0.0002	
Barium - Total (ICP)	56011L	mg/L	< 0.01	0.01	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	< 0.01	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

NOTES : Anion/cation balance is low at 0.00, probably due to very low level major ions.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL0 Blank T.F.
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-2
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	<	0.001	0.001	
Iron - Total (ICP)	26009L	mg/L		0.01	0.01	
Lead - Total (GFAA)	82004L	mg/L	<	0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	<	0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	<	0.001	0.001	
Mercury - Total (CVAA)	80011L	ug/L	<	0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	<	0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	<	0.005	0.005	
Phosphorus - Total (ICP)		mg/L	<	0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	<	0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	<	0.002	0.002	
Titanium - Total (ICP)	22011L	mg/L	<	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	<	0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	<	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		0.083	0.001	

NOTES : Anion/cation balance is low at 0.00, probably due to very low level major ions.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCLO Blank M.T.
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-2
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	08-04-94	10	1.1	104.8	92.6	110.9	106.5	92.5	108.9
Magnesium - (ICP) Total	08-04-94	10	0.3	101.6	87.3	113.4	102.4	90.2	107.4
Sodium - (ICP) Total	08-04-94	10	0.2	100.4	87.7	113.0	99.9	87.8	110.1
Potassium -(ICP) Total	08-04-94	10	0.0	100.8	86.0	110.4	100.4	84.8	109.7
Chloride - Dissolved	07-04-94	1	1.0	104.4	88.7	107.9	102.2	85.2	115.4
Sulphate - (IC)	08-04-94	10	1.7	100.0	94.1	105.5	100.8	93.0	102.4
Total Alkalinity	08-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
pH	08-04-94	1	0.1	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	08-04-94	10	0.4	102.6	78.0	125.7	111.5	80.2	150.1
Total Ammonia Nitrogen	08-04-94	1	0.0	98.9	86.8	108.2	98.8	90.2	105.8
Nitrite Nitrogen as N	08-04-94	1	1.0	100.0	92.0	108.2	102.7	91.8	105.1
Nitrate Nitrogen as N	07-04-94	1	2.0	100.0	93.2	106.7	97.8	90.7	113.0
Total Dissolved Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Ortho Phosphorus as P	13-04-94	1	0.0	83.0	87.9	112.8	90.9	87.8	108.5
Total Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Total Filterable Residue (TDS)	08-04-94	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	11-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	08-04-94	10	0.3	101.0	87.3	112.8	104.9	81.2	126.0
Antimony - Total (AA)	08-04-94	1	0.0	122.0	78.7	114.9	125.0	78.7	126.6
Arsenic - Total (AA)	08-04-94	1	0.0	98.0	88.5	108.7	95.0	90.7	133.3
Barium - Total (ICP)	08-04-94	10	0.5	97.6	90.5	106.8	100.4	94.6	110.3
Beryllium - Total (ICP)	08-04-94	10	1.0	97.6	89.7	109.8	107.1	93.7	107.9
Boron - Total (ICP)	08-04-94	10	0.0	97.8	83.0	121.3	103.2	85.5	110.4
Cadmium - Total (GFAA)	08-04-94	1	0.0	93.3	0.0	0.0	100.0	0.0	0.0
Chromium - Total (ICP)	08-04-94	10	3.2	96.9	83.3	116.6	104.6	86.6	114.0
Cobalt - Total (ICP)	08-04-94	10	3.2	95.9	81.7	113.1	102.3	82.5	115.0
Copper - Total (ICP)	08-04-94	10	0.0	95.3	85.2	111.5	97.2	90.5	107.6
Iron - Total (ICP)	08-04-94	10	0.0	97.0	89.4	114.9	108.2	89.7	127.0
Lead - Total (GFAA)	08-04-94	1	0.0	96.4	0.0	0.0	98.2	36.7	124.9
Lithium - Total (ICP)	08-04-94	10	0.0	96.1	81.7	111.8	93.9	83.0	109.4
Manganese - Total (ICP)	08-04-94	10	0.3	97.2	89.3	110.9	103.7	82.7	118.0
Mercury - Total (CVAA)	07-04-94	1	0.0	114.9	77.1	121.6	119.0	80.1	121.0

Note : Anion/cation balance is low at 0.00, probably due to very low level major ions.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCLO Blank M.F.
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-2
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	08-04-94	10	0.0	96.5	79.8	118.8	104.8	78.0	117.0
Nickel - Total (ICP)	08-04-94	10	3.2	95.1	79.0	123.4	101.3	76.0	129.0
Phosphorus - Total (ICP)	08-04-94	10	0.0	96.8	80.0	120.0	104.0	80.0	120.0
Selenium - Total (AA)	08-04-94	1	0.0	98.0	86.2	108.8	104.0	88.4	126.1
Silver - Total (GFAA)	08-04-94	1	0.0	97.2	0.0	0.0	106.2	82.0	107.6
Strontium - Total (ICP)	08-04-94	10	0.0	97.8	92.3	107.2	101.0	88.0	110.0
Titanium - Total (ICP)	08-04-94	10	2.3	101.6	79.9	114.1	106.8	82.3	114.5
Uranium - Total (IC)	14-04-94	10	0.0	100.0	85.7	109.8	102.3	86.1	113.7
Vanadium - Total (ICP)	08-04-94	10	0.0	97.5	86.9	113.4	105.1	93.5	109.2
Zinc - Total (ICP)	08-04-94	10	0.7	97.1	89.3	117.8	104.5	96.1	121.0

Note : Anion/cation balance is low at 0.00, probably due to very low level major ions.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 466-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL1
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-6
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	12.8	0.01	0.639
Magnesium - (ICP) Total	12005L	mg/L	4.10	0.01	0.337
Sodium - (ICP) Total	11005L	mg/L	6.00	0.01	0.261
Potassium -(ICP) Total		mg/L	1.70	0.02	0.044
Chloride - Dissolved	17206L	mg/L	0.9	0.5	0.025
Sulphate - (IC)	16309L	mg/L	10.1	0.1	0.210
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	34.6	0.1	
pH	10301L	Units	7.20	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	42.2	0.5	0.692
Total Hardness	10602L	mg/L	48.9	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	2.19	0.02	
Turbidity	02074L	NTU	13.8	0.1	
Total Ammonia Nitrogen	07505L	mg/L	0.01	0.01	0.001
Nitrite Nitrogen as N	07206L	mg/L	0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.142	0.003	0.010
Total Dissolved Phosphorus as P	15423L	mg/L	0.016	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.044	0.003	
Total Phosphorus as P	15406L	mg/L	0.041	0.003	
Sulphur - (ICP) - Total		mg/L	3.8	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	102.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	7.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.91	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0002	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.03	0.01	
Beryllium - Total (ICP)	04009L	mg/L	0.006	0.001	
Boron - Total (ICP)	05009L	mg/L	0.06	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.016	0.002	
Cobalt - Total (ICP)	27360L	mg/L	0.005	0.003	

NOTES : Anion/caiton balance is high at 1.36, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9677, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL1
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-6
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.003	0.001	
Iron - Total (ICP)	26009L	mg/L	1.02	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.019	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	0.004	0.003	
Nickel - Total (ICP)	28350L	mg/L	0.026	0.005	
Phosphorus - Total (ICP)		mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	0.004	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.080	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.011	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.023	0.001	

NOTES : Anion/caiton balance is high at 1.36, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL1
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-6
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	08-04-94	10	1.1	104.8	92.6	110.9	106.5	92.5	108.9
Magnesium - (ICP) Total	08-04-94	10	0.3	101.6	87.3	113.4	102.4	90.2	107.4
Sodium - (ICP) Total	08-04-94	10	0.2	100.4	87.7	113.0	99.9	87.8	110.1
Potassium -(ICP) Total	08-04-94	10	0.0	100.8	86.0	110.4	100.4	84.8	109.7
Chloride - Dissolved	07-04-94	1	1.0	104.4	88.7	107.9	102.2	85.2	115.4
Sulphate - (IC)	08-04-94	10	1.7	100.0	94.1	105.5	100.8	93.0	102.4
Total Alkalinity	08-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
pH	08-04-94	1	0.1	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	08-04-94	10	0.4	102.6	78.0	125.7	111.5	80.2	150.1
Total Ammonia Nitrogen	08-04-94	1	0.0	98.9	86.8	108.2	98.8	90.2	105.8
Nitrite Nitrogen as N	08-04-94	2	0.0	100.0	92.0	108.2	100.0	91.8	105.1
Nitrate Nitrogen as N	07-04-94	1	2.0	100.0	93.2	106.7	97.8	90.7	113.0
Total Dissolved Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Ortho Phosphorus as P	13-04-94	1	0.0	83.0	87.9	112.8	90.9	87.8	108.5
Total Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Total Filterable Residue (TDS)	08-04-94	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	11-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	08-04-94	10	0.3	101.0	87.3	112.8	104.9	81.2	126.0
Antimony - Total (AA)	08-04-94	1	0.0	122.0	78.7	114.9	125.0	78.7	126.6
Arsenic - Total (AA)	08-04-94	1	0.0	98.0	88.5	108.7	95.0	90.7	133.3
Barium - Total (ICP)	08-04-94	10	0.5	97.6	90.5	106.8	100.4	94.6	110.3
Beryllium - Total (ICP)	08-04-94	10	1.0	97.6	89.7	109.8	107.1	93.7	107.9
Boron - Total (ICP)	08-04-94	10	0.0	97.8	83.0	121.3	103.2	85.5	110.4
Cadmium - Total (GFAA)	08-04-94	1	0.0	93.3	0.0	0.0	100.0	0.0	0.0
Chromium - Total (ICP)	08-04-94	10	3.2	96.9	83.3	116.6	104.6	86.6	114.0
Cobalt - Total (ICP)	08-04-94	10	3.2	95.9	81.7	113.1	102.3	82.5	115.0
Copper - Total (ICP)	08-04-94	10	0.0	95.3	85.2	111.5	97.2	90.5	107.6
Iron - Total (ICP)	08-04-94	10	0.0	97.0	89.4	114.9	108.2	89.7	127.0
Lead - Total (GFAA)	08-04-94	1	0.0	96.4	0.0	0.0	98.2	36.7	124.9
Lithium - Total (ICP)	08-04-94	10	0.0	96.1	81.7	111.8	93.9	83.0	109.4
Manganese - Total (ICP)	08-04-94	10	0.3	97.2	89.3	110.9	103.7	82.7	118.0
Mercury - Total (CVAA)	07-04-94	1	0.0	114.9	77.1	121.6	119.0	80.1	121.0

Note : Anion/caiton balance is high at 1.36, probably due to higher level of
NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL1
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-G
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	08-04-94	10	0.0	96.5	79.8	118.8	104.8	78.0	117.0
Nickel - Total (ICP)	08-04-94	10	3.2	95.1	79.0	123.4	101.3	76.0	129.0
Phosphorus - Total (ICP)	08-04-94	10	0.0	96.8	80.0	120.0	104.0	80.0	120.0
Selenium - Total (AA)	08-04-94	1	0.0	98.0	86.2	108.8	104.0	88.4	126.1
Silver - Total (GFAA)	08-04-94	1	0.0	97.2	0.0	0.0	106.2	82.0	107.6
Strontium - Total (ICP)	08-04-94	10	0.0	97.8	92.3	107.2	101.0	88.0	110.0
Titanium - Total (ICP)	08-04-94	10	2.3	101.6	79.9	114.1	106.8	82.3	114.5
Uranium - Total (IC)	14-04-94	10	0.0	100.0	85.7	109.8	102.3	86.1	113.7
Vanadium - Total (ICP)	08-04-94	10	0.0	97.5	86.9	113.4	105.1	93.5	109.2
Zinc - Total (ICP)	08-04-94	10	0.7	97.1	89.3	117.8	104.5	96.1	121.0

Note : Anion/caiton balance is high at 1.36, probably due to higher level of
NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL3
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-03341-3
Chemex Project Number : PIT3192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	16.2	0.01	0.808
Magnesium - (ICP) Total	12005L	mg/L	3.30	0.01	0.272
Sodium - (ICP) Total	11005L	mg/L	2.40	0.01	0.104
Potassium -(ICP) Total		mg/L	0.50	0.02	0.013
Chloride - Dissolved	17206L	mg/L	0.5	0.5	0.014
Sulphate - (IC)	16309L	mg/L	4.1	0.1	0.084
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	41.6	0.1	
pH	10301L	Units	7.59	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	50.7	0.5	0.832
Total Hardness	10602L	mg/L	54.1	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	3.64	0.02	
Turbidity	02074L	NTU	59.0	0.1	
Total Ammonia Nitrogen	07505L	mg/L	0.01	0.01	0.001
Nitrite Nitrogen as N	07206L	mg/L	< 0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.114	0.003	0.008
Total Dissolved Phosphorus as P	15423L	mg/L	0.012	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.008	0.003	
Total Phosphorus as P	15406L	mg/L	0.062	0.003	
Sulphur - (ICP) - Total		mg/L	1.3	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	124.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	44.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.30	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0004	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.05	0.01	
Beryllium - Total (ICP)	04009L	mg/L	0.002	0.001	
Boron - Total (ICP)	05009L	mg/L	< 0.01	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

NOTES : Anion/cation balance is high at 1.28, probably due to higher level of NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL3
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-3
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.001	0.001	
Iron - Total (ICP)	26009L	mg/L	2.11	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.079	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Phosphorus - Total (ICP)		mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.067	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.020	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	< 0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.019	0.001	

NOTES : Anion/cation balance is high at 1.28, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL3
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-3
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	08-04-94	10	1.1	104.8	92.6	110.9	106.5	92.5	108.9
Magnesium - (ICP) Total	08-04-94	10	0.3	101.6	87.3	113.4	102.4	90.2	107.4
Sodium - (ICP) Total	08-04-94	10	0.2	100.4	87.7	113.0	99.9	87.8	110.1
Potassium -(ICP) Total	08-04-94	10	0.0	100.8	86.0	110.4	100.4	84.8	109.7
Chloride - Dissolved	07-04-94	1	1.0	104.4	88.7	107.9	102.2	85.2	115.4
Sulphate - (IC)	08-04-94	10	1.7	100.0	94.1	105.5	100.8	93.0	102.4
Total Alkalinity	08-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
pH	08-04-94	1	0.1	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	08-04-94	10	0.4	102.6	78.0	125.7	111.5	80.2	150.1
Total Ammonia Nitrogen	08-04-94	1	0.0	98.9	86.8	108.2	98.8	90.2	105.8
Nitrite Nitrogen as N	08-04-94	1	1.0	100.0	92.0	108.2	102.7	91.8	105.1
Nitrate Nitrogen as N	07-04-94	1	2.0	100.0	93.2	106.7	97.8	90.7	113.0
Total Dissolved Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Ortho Phosphorus as P	13-04-94	1	0.0	83.0	87.9	112.8	90.9	87.8	108.5
Total Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Total Filterable Residue (TDS)	08-04-94	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	11-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	08-04-94	10	0.3	101.0	87.3	112.8	104.9	81.2	126.0
Antimony - Total (AA)	08-04-94	1	0.0	122.0	78.7	114.9	125.0	78.7	126.6
Arsenic - Total (AA)	08-04-94	1	0.0	98.0	88.5	108.7	95.0	90.7	133.3
Barium - Total (ICP)	08-04-94	10	0.5	97.6	90.5	106.8	100.4	94.6	110.3
Beryllium - Total (ICP)	08-04-94	10	1.0	97.6	89.7	109.8	107.1	93.7	107.9
Boron - Total (ICP)	08-04-94	10	0.0	97.8	83.0	121.3	103.2	85.5	110.4
Cadmium - Total (GFAA)	08-04-94	1	0.0	93.3	0.0	0.0	100.0	0.0	0.0
Chromium - Total (ICP)	08-04-94	10	3.2	96.9	83.3	116.6	104.6	86.6	114.0
Cobalt - Total (ICP)	08-04-94	10	3.2	95.9	81.7	113.1	102.3	82.5	115.0
Copper - Total (ICP)	08-04-94	10	0.0	95.3	85.2	111.5	97.2	90.5	107.6
Iron - Total (ICP)	08-04-94	10	0.0	97.0	89.4	114.9	108.2	89.7	127.0
Lead - Total (GFAA)	08-04-94	1	0.0	96.4	0.0	0.0	98.2	36.7	124.9
Lithium - Total (ICP)	08-04-94	10	0.0	96.1	81.7	111.8	93.9	83.0	109.4
Manganese - Total (ICP)	08-04-94	10	0.3	97.2	89.3	110.9	103.7	82.7	118.0
Mercury - Total (CVAA)	07-04-94	1	0.0	114.9	77.1	121.6	119.0	80.1	121.0

Note : Anion/cation balance is high at 1.28, probably due to higher level of
NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL3
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-3
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	08-04-94	10	0.0	96.5	79.8	118.8	104.8	78.0	117.0
Nickel - Total (ICP)	08-04-94	10	3.2	95.1	79.0	123.4	101.3	76.0	129.0
Phosphorus - Total (ICP)	08-04-94	10	0.0	96.8	80.0	120.0	104.0	80.0	120.0
Selenium - Total (AA)	08-04-94	1	0.0	98.0	86.2	108.8	104.0	88.4	126.1
Silver - Total (GFAA)	08-04-94	1	0.0	97.2	0.0	0.0	106.2	82.0	107.6
Strontium - Total (ICP)	08-04-94	10	0.0	97.8	92.3	107.2	101.0	88.0	110.0
Titanium - Total (ICP)	08-04-94	10	2.3	101.6	79.9	114.1	106.8	82.3	114.5
Uranium - Total (IC)	14-04-94	10	0.0	100.0	85.7	109.8	102.3	86.1	113.7
Vanadium - Total (ICP)	08-04-94	10	0.0	97.5	86.9	113.4	105.1	93.5	109.2
Zinc - Total (ICP)	08-04-94	10	0.7	97.1	89.3	117.8	104.5	96.1	121.0

Note : Anion/cation balance is high at 1.28, probably due to higher level of NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL8
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-1
Chemex Project Number : PITE94-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	15.1	0.01	0.753
Magnesium - (ICP) Total	12005L	mg/L	3.90	0.01	0.321
Sodium - (ICP) Total	11005L	mg/L	3.50	0.01	0.152
Potassium -(ICP) Total		mg/L	1.40	0.02	0.036
Chloride - Dissolved	17206L	mg/L	2.6	0.5	0.073
Sulphate - (IC)	16309L	mg/L	3.4	0.1	0.072
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	34.7	0.1	
pH	10301L	Units	7.39	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	42.3	0.5	0.694
Total Hardness	10602L	mg/L	53.8	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	5.25	0.02	
Turbidity	02074L	NTU	65.5	0.1	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.132	0.003	0.009
Total Dissolved Phosphorus as P	15423L	mg/L	0.013	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.014	0.003	
Total Phosphorus as P	15406L	mg/L	0.180	0.003	
Sulphur - (ICP) - Total		mg/L	1.2	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	95.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	78.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.23	0.01	
Antimony - Total (AA)	51003L	mg/L	< 0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0008	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.05	0.01	
Beryllium - Total (ICP)	04009L	mg/L	0.001	0.001	
Boron - Total (ICP)	05009L	mg/L	0.02	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.004	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

NOTES : Anion/cation balance is high at 1.49, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3292

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL8
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-1
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	3.12	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.151	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	0.005	0.005	
Phosphorus - Total (ICP)		mg/L	0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.070	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.037	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	0.006	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.051	0.001	

NOTES : Anion/cation balance is high at 1.49, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL8
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-1
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	08-04-94	10	1.1	104.8	92.6	110.9	106.5	92.5	108.9
Magnesium - (ICP) Total	08-04-94	10	0.3	101.6	87.3	113.4	102.4	90.2	107.4
Sodium - (ICP) Total	08-04-94	10	0.2	100.4	87.7	113.0	99.9	87.8	110.1
Potassium -(ICP) Total	08-04-94	10	0.0	100.8	86.0	110.4	100.4	84.8	109.7
Chloride - Dissolved	07-04-94	1	1.0	104.4	88.7	107.9	102.2	85.2	115.4
Sulphate - (IC)	08-04-94	10	1.7	100.0	94.1	105.5	100.8	93.0	102.4
Total Alkalinity	08-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
pH	08-04-94	1	0.1	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	08-04-94	10	0.4	102.6	78.0	125.7	111.5	80.2	150.1
Total Ammonia Nitrogen	08-04-94	1	0.0	98.9	86.8	108.2	98.8	90.2	105.8
Nitrite Nitrogen as N	08-04-94	1	1.0	100.0	92.0	108.2	102.7	91.8	105.1
Nitrate Nitrogen as N	07-04-94	1	2.0	100.0	93.2	106.7	97.8	90.7	113.0
Total Dissolved Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Ortho Phosphorus as P	13-04-94	1	0.0	83.0	87.9	112.8	90.9	87.8	108.5
Total Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Total Filterable Residue (TDS)	08-04-94	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	11-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	08-04-94	10	0.3	101.0	87.3	112.8	104.9	81.2	126.0
Antimony - Total (AA)	08-04-94	1	0.0	122.0	78.7	114.9	125.0	78.7	126.6
Arsenic - Total (AA)	08-04-94	1	0.0	98.0	88.5	108.7	95.0	90.7	133.3
Barium - Total (ICP)	08-04-94	10	0.5	97.6	90.5	106.8	100.4	94.6	110.3
Beryllium - Total (ICP)	08-04-94	10	1.0	97.6	89.7	109.8	107.1	93.7	107.9
Boron - Total (ICP)	08-04-94	10	0.0	97.8	83.0	121.3	103.2	85.5	110.4
Cadmium - Total (GFAA)	08-04-94	1	0.0	93.3	0.0	0.0	100.0	0.0	0.0
Chromium - Total (ICP)	08-04-94	10	3.2	96.9	83.3	116.6	104.6	86.6	114.0
Cobalt - Total (ICP)	08-04-94	10	3.2	95.9	81.7	113.1	102.3	82.5	115.0
Copper - Total (ICP)	08-04-94	10	0.0	95.3	85.2	111.5	97.2	90.5	107.6
Iron - Total (ICP)	08-04-94	10	0.0	97.0	89.4	114.9	108.2	89.7	127.0
Lead - Total (GFAA)	08-04-94	1	0.0	96.4	0.0	0.0	98.2	36.7	124.9
Lithium - Total (ICP)	08-04-94	10	0.0	96.1	81.7	111.8	93.9	83.0	109.4
Manganese - Total (ICP)	08-04-94	10	0.3	97.2	89.3	110.9	103.7	82.7	118.0
Mercury - Total (CVAA)	07-04-94	1	0.0	114.9	77.1	121.6	119.0	80.1	121.0

Note : Anion/cation balance is high at 1.49, probably due to higher level of
NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL8
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-1
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	08-04-94	10	0.0	96.5	79.8	118.8	104.8	78.0	117.0
Nickel - Total (ICP)	08-04-94	10	3.2	95.1	79.0	123.4	101.3	76.0	129.0
Phosphorus - Total (ICP)	08-04-94	10	0.0	96.8	80.0	120.0	104.0	80.0	120.0
Selenium - Total (AA)	08-04-94	1	0.0	98.0	86.2	108.8	104.0	88.4	126.1
Silver - Total (GFAA)	08-04-94	1	0.0	97.2	0.0	0.0	106.2	82.0	107.6
Strontium - Total (ICP)	08-04-94	10	0.0	97.8	92.3	107.2	101.0	88.0	110.0
Titanium - Total (ICP)	08-04-94	10	2.3	101.6	79.9	114.1	106.8	82.3	114.5
Uranium - Total (IC)	14-04-94	10	0.0	100.0	85.7	109.8	102.3	86.1	113.7
Vanadium - Total (ICP)	08-04-94	10	0.0	97.5	86.9	113.4	105.1	93.5	109.2
Zinc - Total (ICP)	08-04-94	10	0.7	97.1	89.3	117.8	104.5	96.1	121.0

Note : Anion/cation balance is high at 1.49, probably due to higher level of
NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL9
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-4
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	14.6	0.01	0.729
Magnesium - (ICP) Total	12005L	mg/L	5.10	0.01	0.420
Sodium - (ICP) Total	11005L	mg/L	4.10	0.01	0.178
Potassium -(ICP) Total		mg/L	1.50	0.02	0.038
Chloride - Dissolved	17206L	mg/L	1.0	0.5	0.028
Sulphate - (IC)	16309L	mg/L	5.3	0.1	0.110
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	34.7	0.1	
pH	10301L	Units	7.25	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	42.3	0.5	0.694
Total Hardness	10602L	mg/L	57.5	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	7.11	0.02	
Turbidity	02074L	NTU	105.	0.1	
Total Ammonia Nitrogen	07505L	mg/L	0.02	0.01	0.001
Nitrite Nitrogen as N	07206L	mg/L	0.003	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.126	0.003	0.009
Total Dissolved Phosphorus as P	15423L	mg/L	0.020	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.029	0.003	
Total Phosphorus as P	15406L	mg/L	0.248	0.003	
Sulphur - (ICP) - Total		mg/L	2.2	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	132.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	105.	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.79	0.01	
Antimony - Total (AA)	51003L	mg/L	0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0007	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.07	0.01	
Beryllium - Total (ICP)	04009L	mg/L	0.002	0.001	
Boron - Total (ICP)	05009L	mg/L	0.02	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

NOTES : Anion/cation balance is high at 1.62, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-8332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL9
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-4
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L	0.010	0.001	
Iron - Total (ICP)	26009L	mg/L	5.34	0.01	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	< 0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.185	0.001	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	< 0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L	0.006	0.005	
Phosphorus - Total (ICP)		mg/L	0.2	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L	0.086	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.067	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	0.013	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.030	0.001	

NOTES : Anion/cation balance is high at 1.62, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR : PITEAU ENGINEERING LIMITED

ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL9
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-4
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DO-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	08-04-94	10	1.1	104.8	92.6	110.9	106.5	92.5	108.9
Magnesium - (ICP) Total	08-04-94	10	0.3	101.6	87.3	113.4	102.4	90.2	107.4
Sodium - (ICP) Total	08-04-94	10	0.2	100.4	87.7	113.0	99.9	87.8	110.1
Potassium -(ICP) Total	08-04-94	10	0.0	100.8	86.0	110.4	100.4	84.8	109.7
Chloride - Dissolved	07-04-94	1	1.0	104.4	88.7	107.9	102.2	85.2	115.4
Sulphate - (IC)	08-04-94	10	1.7	100.0	94.1	105.5	100.8	93.0	102.4
Total Alkalinity	08-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
pH	08-04-94	1	0.1	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	08-04-94	10	0.4	102.6	78.0	125.7	111.5	80.2	150.1
Total Ammonia Nitrogen	08-04-94	1	0.0	98.9	86.8	108.2	98.8	90.2	105.8
Nitrite Nitrogen as N	08-04-94	1	1.0	100.0	92.0	108.2	102.7	91.8	105.1
Nitrate Nitrogen as N	07-04-94	1	2.0	100.0	93.2	106.7	97.8	90.7	113.0
Total Dissolved Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Ortho Phosphorus as P	13-04-94	1	0.0	83.0	87.9	112.8	90.9	87.8	108.5
Total Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Total Filterable Residue (TDS)	08-04-94	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	11-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	08-04-94	10	0.3	101.0	87.3	112.8	104.9	81.2	126.0
Antimony - Total (AA)	08-04-94	1	0.0	122.0	78.7	114.9	125.0	78.7	126.6
Arsenic - Total (AA)	08-04-94	1	0.0	98.0	88.5	108.7	95.0	90.7	133.3
Barium - Total (ICP)	08-04-94	10	0.5	97.6	90.5	106.8	100.4	94.6	110.3
Beryllium - Total (ICP)	08-04-94	10	1.0	97.6	89.7	109.8	107.1	93.7	107.9
Boron - Total (ICP)	08-04-94	10	0.0	97.8	83.0	121.3	103.2	85.5	110.4
Cadmium - Total (GFAA)	08-04-94	1	0.0	93.3	0.0	0.0	100.0	0.0	0.0
Chromium - Total (ICP)	08-04-94	10	3.2	96.9	83.3	116.6	104.6	86.6	114.0
Cobalt - Total (ICP)	08-04-94	10	3.2	95.9	81.7	113.1	102.3	82.5	115.0
Copper - Total (ICP)	08-04-94	10	0.0	95.3	85.2	111.5	97.2	90.5	107.6
Iron - Total (ICP)	08-04-94	10	0.0	97.0	89.4	114.9	108.2	89.7	127.0
Lead - Total (GFAA)	08-04-94	1	0.0	96.4	0.0	0.0	98.2	36.7	124.9
Lithium - Total (ICP)	08-04-94	10	0.0	96.1	81.7	111.8	93.9	83.0	109.4
Manganese - Total (ICP)	08-04-94	10	0.3	97.2	89.3	110.9	103.7	82.7	118.0
Mercury - Total (CVAA)	07-04-94	1	0.0	114.9	77.1	121.6	119.0	80.1	121.0

Note : Anion/cation balance is high at 1.62, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL9
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-4
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	08-04-94	10	0.0	96.5	79.8	118.8	104.8	78.0	117.0
Nickel - Total (ICP)	08-04-94	10	3.2	95.1	79.0	123.4	101.3	76.0	129.0
Phosphorus - Total (ICP)	08-04-94	10	0.0	96.8	80.0	120.0	104.0	80.0	120.0
Selenium - Total (AA)	08-04-94	1	0.0	98.0	86.2	108.8	104.0	88.4	126.1
Silver - Total (GFAA)	08-04-94	1	0.0	97.2	0.0	0.0	106.2	82.0	107.6
Strontium - Total (ICP)	08-04-94	10	0.0	97.8	92.3	107.2	101.0	88.0	110.0
Titanium - Total (ICP)	08-04-94	10	2.3	101.6	79.9	114.1	106.8	82.3	114.5
Uranium - Total (IC)	14-04-94	10	0.0	100.0	85.7	109.8	102.3	86.1	113.7
Vanadium - Total (ICP)	08-04-94	10	0.0	97.5	86.9	113.4	105.1	93.5	109.2
Zinc - Total (ICP)	08-04-94	10	0.7	97.1	89.3	117.8	104.5	96.1	121.0

Note : Anion/cation balance is high at 1.62, probably due to higher level of NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL10
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-5
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	10.6	0.01	0.529
Magnesium - (ICP) Total	12005L	mg/L	3.80	0.01	0.313
Sodium - (ICP) Total	11005L	mg/L	3.50	0.01	0.152
Potassium -(ICP) Total		mg/L	1.20	0.02	0.031
Chloride - Dissolved	17206L	mg/L	0.8	0.5	0.023
Sulphate - (IC)	16309L	mg/L	3.2	0.1	0.066
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	27.7	0.1	
pH	10301L	Units	7.23	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	33.8	0.5	0.554
Total Hardness	10602L	mg/L	42.1	0.5	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	5.71	0.02	
Turbidity	02074L	NTU	60.0	0.1	
Total Ammonia Nitrogen	07505L	mg/L	0.01	0.01	0.001
Nitrite Nitrogen as N	07206L	mg/L	0.004	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.142	0.003	0.010
Total Dissolved Phosphorus as P	15423L	mg/L	0.017	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.031	0.003	
Total Phosphorus as P	15406L	mg/L	0.212	0.003	
Sulphur - (ICP) - Total		mg/L	1.2	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	98.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	88.0	0.4	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.66	0.01	
Antimony - Total (AA)	51003L	mg/L	0.0002	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0003	0.0002	
Barium - Total (ICP)	56011L	mg/L	0.05	0.01	
Beryllium - Total (ICP)	04009L	mg/L	0.003	0.001	
Boron - Total (ICP)	05009L	mg/L	< 0.01	0.01	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.007	0.002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	

NOTES : Anion/cation balance is high at 1.56, probably due to higher level of NFR & the cations being totals.
Total Acidity as $CaCO_3$ < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI

TELKWA(PITEAU JOB)
PROJ.#3773-7

Sample Description : MCL10
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-5
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Copper - Total (ICP)	29501L	mg/L		0.001	0.001	
Iron - Total (ICP)	26009L	mg/L		3.16	0.01	
Lead - Total (GFAA)	82004L	mg/L	<	0.002	0.002	
Lithium - Total (ICP)	03009L	mg/L	<	0.001	0.001	
Manganese - Total (ICP)	25360L	mg/L		0.111	0.001	
Mercury - Total (CVAA)	80011L	ug/L	<	0.05	0.05	
Molybdenum - Total (ICP)	42330L	mg/L	<	0.003	0.003	
Nickel - Total (ICP)	28350L	mg/L		0.014	0.005	
Phosphorus - Total (ICP)		mg/L		0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	<	0.0002	0.0002	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Strontium - Total (ICP)	38011L	mg/L		0.066	0.002	
Titanium - Total (ICP)	22011L	mg/L		0.034	0.003	
Uranium - Total (IC)	92115L	mg/L	<	0.005	0.005	
Vanadium - Total (ICP)	23330L	mg/L	<	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		0.031	0.001	

NOTES : Anion/cation balance is high at 1.56, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR : PITEAU ENGINEERING LIMITED

ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL10
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-5
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	08-04-94	10	1.1	104.8	92.6	110.9	106.5	92.5	108.9
Magnesium - (ICP) Total	08-04-94	10	0.3	101.6	87.3	113.4	102.4	90.2	107.4
Sodium - (ICP) Total	08-04-94	10	0.2	100.4	87.7	113.0	99.9	87.8	110.1
Potassium -(ICP) Total	08-04-94	10	0.0	100.8	86.0	110.4	100.4	84.8	109.7
Chloride - Dissolved	07-04-94	1	1.0	104.4	88.7	107.9	102.2	85.2	115.4
Sulphate - (IC)	08-04-94	10	1.7	100.0	94.1	105.5	100.8	93.0	102.4
Total Alkalinity	08-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
pH	08-04-94	1	0.1	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	08-04-94	10	0.4	102.6	78.0	125.7	111.5	80.2	150.1
Total Ammonia Nitrogen	08-04-94	1	0.0	98.9	86.8	108.2	98.8	90.2	105.8
Nitrite Nitrogen as N	08-04-94	1	1.0	100.0	92.0	108.2	102.7	91.8	105.1
Nitrate Nitrogen as N	07-04-94	1	2.0	100.0	93.2	106.7	97.8	90.7	113.0
Total Dissolved Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Ortho Phosphorus as P	13-04-94	1	0.0	83.0	87.9	112.8	90.9	87.8	108.5
Total Phosphorus as P	12-04-94	1	0.0	88.5	89.6	112.5	94.7	90.0	113.2
Total Filterable Residue (TDS)	08-04-94	3	0.6	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	11-04-94	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Dissolved (ICP)	08-04-94	10	0.3	101.0	87.3	112.8	104.9	81.2	126.0
Antimony - Total (AA)	08-04-94	1	0.0	122.0	78.7	114.9	125.0	78.7	126.6
Arsenic - Total (AA)	08-04-94	1	0.0	98.0	88.5	108.7	95.0	90.7	133.3
Barium - Total (ICP)	08-04-94	10	0.5	97.6	90.5	106.8	100.4	94.6	110.3
Beryllium - Total (ICP)	08-04-94	10	1.0	97.6	89.7	109.8	107.1	93.7	107.9
Boron - Total (ICP)	08-04-94	10	0.0	97.8	83.0	121.3	103.2	85.5	110.4
Cadmium - Total (GFAA)	08-04-94	1	0.0	93.3	0.0	0.0	100.0	0.0	0.0
Chromium - Total (ICP)	08-04-94	10	3.2	96.9	83.3	116.6	104.6	86.6	114.0
Cobalt - Total (ICP)	08-04-94	10	3.2	95.9	81.7	113.1	102.3	82.5	115.0
Copper - Total (ICP)	08-04-94	10	0.0	95.3	85.2	111.5	97.2	90.5	107.6
Iron - Total (ICP)	08-04-94	10	0.0	97.0	89.4	114.9	108.2	89.7	127.0
Lead - Total (GFAA)	08-04-94	1	0.0	96.4	0.0	0.0	98.2	36.7	124.9
Lithium - Total (ICP)	08-04-94	10	0.0	96.1	81.7	111.8	93.9	83.0	109.4
Manganese - Total (ICP)	08-04-94	10	0.3	97.2	89.3	110.9	103.7	82.7	118.0
Mercury - Total (CVAA)	07-04-94	1	0.0	114.9	77.1	121.6	119.0	80.1	121.0

Note : Anion/cation balance is high at 1.56, probably due to higher level of NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : T DABROWSKI
PROJ.#3773-7

Sample Description : MCL10
Sample Date & Time : 05-04-94
Sampled By : MK
Sample Type : GRAB
Sample Station Code :

Chemex Worksheet Number : 94-00341-5
Chemex Project Number : PITE192-0501
Sample Access :
Sample Matrix : WATER
Report Date : April 19, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Molybdenum - Total (ICP)	08-04-94	10	0.0	96.5	79.8	118.8	104.8	78.0	117.0
Nickel - Total (ICP)	08-04-94	10	3.2	95.1	79.0	123.4	101.3	76.0	129.0
Phosphorus - Total (ICP)	08-04-94	10	0.0	96.8	80.0	120.0	104.0	80.0	120.0
Selenium - Total (AA)	08-04-94	1	0.0	98.0	86.2	108.8	104.0	88.4	126.1
Silver - Total (GFAA)	08-04-94	1	0.0	97.2	0.0	0.0	106.2	82.0	107.6
Strontium - Total (ICP)	08-04-94	10	0.0	97.8	92.3	107.2	101.0	88.0	110.0
Titanium - Total (ICP)	08-04-94	10	2.3	101.6	79.9	114.1	106.8	82.3	114.5
Uranium - Total (IC)	14-04-94	10	0.0	100.0	85.7	109.8	102.3	86.1	113.7
Vanadium - Total (ICP)	08-04-94	10	0.0	97.5	86.9	113.4	105.1	93.5	109.2
Zinc - Total (ICP)	08-04-94	10	0.7	97.1	89.3	117.8	104.5	96.1	121.0

Note : Anion/cation balance is high at 1.56, probably due to higher level of
NFR & the cations being totals.
Total Acidity as CaCO3 < 0.1 mg/L

CHEMEX Labs Alberta Inc.

Calgary: 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton: 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LIMITED
ATTENTION : MURRAY FITCH

PROJ.#3773-1

Fish M.7.

Sample Description : STEELHEAD,CHUM SALMON,DOLLY VARDEN
Sample Date & Time : December 14, 1993
Sampled By : MF
Sample Type : COMPOSITE
Sample Station Code :

Chemex Worksheet Number : 93-03754-1C
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : FISH
Report Date : March 18, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Moisture Content		%	76.5	0.1	
Arsenic (AA)		ug/g	< 0.2	0.2	
Selenium (AA)		ug/g	< 0.2	0.2	
Antimony (AA)		ug/g	< 0.2	0.2	
Lead (GFAA)		ug/g	< 0.2	0.2	
Cadmium (GFAA)		ug/g	< 0.1	0.1	
Total Mercury- (CVAA)		ug/kg	< 20	20	
Chromium (ICP)		ug/g	< 1	1.	
Nickel (ICP)		ug/g	< 1	1.	

CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LIMITED
ATTENTION : MURRAY FITCH
PROJ.#3773-1

Fish 7-

Sample Description : STEELHEAD,CHUM SALMON,DOLLY VARDEN
Sample Date & Time : December 14, 1993
Sampled By : MF
Sample Type : COMPOSITE
Sample Station Code :

Chemex Worksheet Number : 93-03754-1C
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : FISH
Report Date : March 18, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	RELATIVE PERCENT DIFFERENCE	REFERENCE VALUE	WARN LOWER	LIMIT UPPER	% RECOV	CHECK WARN LOWER	LIMIT UPPER
Arsenic (AA)	30-12-93	2	1.90	NOT APPLICABLE			110.7	90.7	133.3
Selenium (AA)	30-12-93	2	0.00	NOT APPLICABLE			114.6	88.4	126.1
Antimony (AA)	30-12-93	1	0.00	NOT APPLICABLE			87.5	78.7	126.6
Lead (GFAA)	30-12-93	1	0.00	15.90	22.96	31.30	105.8	86.0	110.6
Cadmium (GFAA)	24-12-93	1	0.00	NOT APPLICABLE			NOT APPLICABLE		
Total Mercury- (CVAA)	11-01-94	1	0.00	NOT APPLICABLE			NOT APPLICABLE		
Chromium (ICP)	23-12-93	11	2.51	47.80	45.50	57.20	95.7	86.6	114.0
Nickel (ICP)	23-12-93	11	3.76	44.00	44.70	53.60	93.1	76.0	129.0

APPENDIX II

SMITHERS RAINFALL DATA

Smithers Airport

Weather Data

YEAR	ANNUAL TOTAL	TOTAL MONTHLY PRECIPITATION (mm)												RANK	ANNUAL RANK
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
1943	311	26.4	14.0	10.2	37.1	22.1	21.8	53.3	21.3	21.1	26.4	22.4	35.1	1	311.2
1944	543	39.1	29.7	38.1	44.5	32.5	27.9	64.3	51.3	103.9	47.2	35.6	29.0	2	342.3
1945	459	39.4	18.5	19.3	14.7	52.8	32.0	52.1	5.8	0.0	79.2	112.3	32.5	3	342.5
1946	521	66.5	10.7	24.1	25.4	8.6	113.5	79.5	4.8	48.0	29.7	35.8	74.7	4	420.2
1947	759	199.9	38.6	19.1	44.5	30.7	93.2	62.2	41.1	41.7	82.8	35.3	69.9	5	422.4
1948	471	35.1	17.8	6.4	10.9	121.7	9.7	77.7	45.5	45.5	25.7	35.3	39.6	6	428.9
1949	463	51.8	32.0	9.7	33.5	22.9	16.5	44.7	32.0	36.3	72.4	52.3	58.4	7	437.3
1950	343	14.5	33.0	13.0	23.9	22.9	16.8	19.6	49.0	7.9	28.4	72.9	40.6	8	441.0
1951	482	16.3	29.7	31.0	6.6	53.3	15.2	51.1	42.2	24.9	128.0	54.6	28.7	9	443.4
1952	506	73.2	23.1	43.2	34.3	1.5	64.5	38.4	28.2	59.4	21.8	48.0	70.4	10	458.8
1953	605	55.9	16.0	13.5	49.0	26.4	75.4	81.5	31.2	44.7	74.9	72.4	64.3	11	462.5
1954	490	28.7	52.1	13.7	8.1	52.8	38.6	55.4	48.3	41.1	41.4	69.1	41.1	12	470.1
1955	437	45.0	21.1	41.1	6.6	9.9	27.9	71.6	21.3	31.2	52.8	57.7	51.1	13	470.9
1956	625	63.2	47.8	26.9	9.1	1.0	41.9	17.8	28.4	44.5	75.2	89.2	179.8	14	473.3
1957	633	23.1	24.9	23.4	8.9	57.7	70.4	52.3	91.7	28.2	49.5	107.4	95.0	15	475.3
1958	495	42.9	53.1	56.6	12.2	3.3	39.1	8.1	38.6	111.3	34.3	24.9	70.4	16	481.6
1959	683	83.1	55.4	22.9	19.8	43.4	72.1	30.0	40.9	56.6	62.0	111.0	85.9	17	484.8
1960	503	23.6	22.1	45.5	23.6	42.2	34.5	19.1	67.6	16.3	104.6	53.1	50.3	18	485.3
1961	620	52.3	47.5	18.0	10.4	70.9	54.9	36.8	27.2	65.5	99.6	71.4	65.3	19	488.5
1962	578	136.4	8.4	7.6	17.8	23.1	42.7	34.0	57.7	18.5	71.9	91.9	68.1	20	490.4
1963	473	25.9	44.2	17.3	21.3	8.9	38.9	74.7	25.4	48.8	26.7	81.0	60.2	21	494.8
1964	592	34.5	34.0	39.6	20.3	29.7	71.1	115.3	45.5	62.5	53.1	46.7	39.4	22	498.2
1965	515	88.4	31.8	8.6	36.6	29.2	20.6	37.8	29.0	52.6	100.3	29.2	50.5	23	502.1
1966	586	93.5	25.9	33.5	11.4	10.2	28.2	41.9	91.4	42.4	109.0	46.7	51.6	24	502.5
1967	429	42.9	54.4	18.5	6.6	40.1	7.1	40.1	8.1	43.2	69.6	24.6	73.7	25	503.8
1968	548	101.1	29.7	23.4	34.0	33.3	25.1	47.5	66.3	72.1	62.7	29.5	23.4	26	505.7
1969	422	19.8	24.4	21.1	32.0	7.1	23.4	15.2	66.8	82.6	43.9	59.4	26.7	27	506.0
1970	342	27.7	9.9	19.6	8.6	36.3	10.4	78.0	18.5	49.0	23.6	34.3	26.4	28	514.8
1971	548	103.6	20.6	17.0	18.8	18.0	63.2	34.0	79.5	38.6	42.2	55.6	56.4	29	519.0
1972	639	51.8	55.1	58.2	19.1	6.1	72.9	69.1	20.8	59.9	72.4	86.6	67.3	30	519.1
1973	441	86.1	21.1	13.0	4.6	25.9	43.7	22.6	21.8	68.6	57.7	30.2	45.7	31	521.3
1974	502	86.6	29.7	35.6	12.7	30.7	36.3	49.3	1.3	53.8	86.9	21.3	57.9	32	528.7
1975	506	49.0	26.7	14.0	9.1	39.6	27.2	20.3	64.8	30.0	58.7	97.5	68.8	33	532.8
1976	541	78.0	27.4	33.0	3.6	48.8	58.9	62.0	41.1	28.7	64.3	30.2	64.5	34	536.4
1977	504	47.1	25.6	31.7	21.9	33.1	30.2	66.0	47.7	64.2	48.5	53.3	34.5	35	540.5
1978	485	14.0	21.4	11.7	25.5	24.6	25.0	20.0	94.2	48.6	78.9	87.2	34.2	36	543.1
1979	420	35.0	41.5	11.3	10.7	56.7	23.0	45.8	32.8	57.9	55.0	7.0	43.5	37	543.8
1980	519	38.6	24.4	16.0	26.1	35.4	18.8	42.7	33.4	63.4	43.4	76.6	100.2	38	547.5
1981	498	14.3	23.1	40.9	38.9	54.7	59.9	10.4	49.2	61.0	72.5	48.0	27.3	39	548.1
1982	443	106.6	43.8	7.1	12.6	23.3	27.3	53.8	21.6	44.9	53.4	23.4	25.6	40	578.1
1983	470	57.1	18.6	10.3	13.9	35.4	82.7	81.7	35.3	40.0	40.6	39.4	15.1	41	578.6
1984	533	47.5	37.1	20.5	13.5	67.5	18.4	31.3	70.8	71.4	74.2	38.1	42.5	42	585.7
1985	475	18.3	46.7	24.0	26.3	37.0	80.0	28.7	33.0	83.1	75.3	16.9	6.0	43	591.7
1986	489	39.2	24.0	29.7	19.8	39.1	87.8	17.6	18.5	63.7	56.7	67.8	24.8	44	605.2
1987	485	40.0	19.6	28.1	6.0	22.0	24.5	77.4	43.1	70.3	60.2	68.4	25.2	45	619.8
1988	544	46.3	30.8	7.8	16.6	68.3	74.7	37.3	41.8	82.5	46.9	44.3	46.5	46	624.8
1989	536	79.8	5.5	20.0	29.1	9.6	12.7	51.1	45.2	33.6	32.1	119.9	97.8	47	632.5
1990	529	71.6	25.6	31.3	13.2	39.3	75.0	29.0	30.4	6.9	78.5	59.1	68.8	48	639.3
1991	579	19.3	29.8	16.0	15.2	16.8	27.5	33.6	37.1	14.1	189.2	84.6	93.4	49	683.1
1992	519	43.7	50.6	6.2	22.6	18.8	21.7	7.0	24.2	121.2	73.0	51.7	78.4	50	759.0
AVERAGE:	513	54	30	23	20	33	42	48	40	50	63	56	55		513

	CLIMATE NORMALS (1942 - 1990)											
Daily Mean (C)	-9	-4.8	-0.4	4.4	9	12.5	14.9	14.4	9.8	4.7	-2.5	-8
Daily Minimum (C)	-13	-9.8	-5.7	-1.5	2.8	5.9	8.3	7.8	4	0.3	-5.7	-11.7
Daily Maximum (C)	-5.2	-0.1	4.8	10.3	15.3	19	21.4	21	15.7	9	0.6	-4.4
Extreme Daily Rainfall (mm)	26.7	13.2	15.5	24.6	52.3	42.6	40.1	30.4	46.6	41.7	59.7	23.6
Extreme Daily Precipitation (mm)	61	18	22.6	24.8	52.3	42.8	40.1	30.4	46.6	42.7	59.7	29
Precipitation (mm)	57.6	29.3	22.3	18	33.5	42.2	45.7	42.1	53.7	62.3	54.5	46

NOTE: *October 1993 precipitation (29.5 days measured)=12 mm, November (26.5 days measured) = 63 mm*

APPENDIX III

RECOMMENDED VARIABLES FOR WATER QUALITY MONITORING

PROVINCE OF
BRITISH COLUMBIA

B.C. ENVIRONMENT, LANDS & PARKS
ENVIRONMENTAL PROTECTION
BRANCH
Skeena Region
Bag 5000
Smithers, B.C. V0J 2N0
FAX # (604) 847-7591

To: Name: Andy Holmes

FAX # (604)985-7286

Ministry
or Company: Piteau & Associates

Branch/Section: _____

Location: Vancouver Phone # (604)986-8551

Message:

Andy, as requested here is a copy of the recommended MDL's for water quality monitoring. Please call if you have any questions.

With regards to your question concerning receiving environment studies in the Telkwa Coal Project watershed, to my knowledge there has not been any site specific studies carried out on the Telkwa River or its tributaries. A study on the Bulkley River has been completed by our water quality branch. Some of the information in this report may be applicable to the Telkwa Coal Project.

From: Name: Craig Stewart

Phone: 847-7417

Date: May 28, 1993 Time: 10:00 am

Pages sent including this one. . . 4

R:\mining\telkwa\mindatac.fax

TABLE 1
RECOMMENDED VARIABLES AND DETECTION LIMITS
FOR WATER QUALITY MONITORING

Variable[a]	Rationale	Water Quality Criterion[b,c,d]	Detection Limit [b]
Alkalinity,total	buffering	not applicable	0.5 mg/L
Aluminum,diss.	mine drainage	20(AL, pH 6)	2
		50(AL, pH≥6.5)	5
Antimony-water	mine drainage	50(D,AL)	5
-sediment		2 µg/g dry	0.2 µg/g dry
-fish		-	1 µg/g dry
Arsenic-water	mine drainage	25(D), 50(AL)	2
-sediment		33 µg/g dry	3 µg/g dry
-fish		3.5 µg/g wet	0.35 µg/g wet
Barium	coal drainage	1000(D,AL)	100
Beryllium	mine drainage	11(AL)	1
Boron	mine drainage	500(I),5000(D)	50
Cadmium-water	mine drainage	0.2-1.8(AL)	0.02-0.2
-sediment		5 µg/g dry	0.5 µg/g dry
-fish		0.2 µg/g wet	0.02 µg/g wet
Chloride	nitrite toxicity	not applicable	0.5 mg/L
Chlorophyll a	algal growth	1-3.5(D,AL,R)	0.1
		50-100 mg/m^2	5 mg/m^2
Chromium	mine drainage		
-water		2-20(AL)	0.2-2
-sediment		80 µg/g dry	8 µg/g dry
-fish		-	1 µg/g dry
Cobalt	mine drainage	50(AL,I)	5
Complexing capacity	metal toxicity	not applicable	same as metals involved
Copper-water	mine drainage	2-10(AL)	0.2-1
-sediment		70 µg/g dry	7 µg/g dry
Cyanide, weak-acid dissociable	mill reagent	1(M),5(AL)	0.1-0.5
Fluoride	mine drainage	200-300(AL)	20-30

Variable(a)	Rationale	Water Quality Criterion(b,c,d)	Detection Limit (b)
Hardness	metal toxicity	not applicable	0.1 mg/L
Iron	mine drainage	300(D,AL)	30
Lead-water	mine drainage	3(AL)	0.3
-sediment		35 µg/g dry	3 µg/g dry
-fish		0.8 µg/g wet	0.08 µg/g wet
		(~4 µg/g dry)	(~0.4 µg/g dry)
Manganese	mine drainage	50(D)	5
Mercury-water	mine drainage	20 ng/L(AL)	2 ng/L(e)
-sediment		0.15 µg/g dry	0.015 µg/g dry
-fish		0.1-0.5 µg/g wet	0.01-0.05 µg/g wet
Molybdenum	mine drainage	10-30(I)	1
Nickel-water	mine drainage	25-150(AL)	2
		8(M)	1
-sediment		30 µg/g dry	3 µg/g dry
-fish		-	5 µg/g dry
Nitrogen	explosives use		
-ammonia		100+(AL)	10
-nitrate		algal growth	20
-nitrite		20-200(AL)	2-20
Oxygen,diss.	lake discharges	6-11 mg/L(AL)	1 mg/L
pH	acid drainage	6.5-8.5 or 9	not applicable
Phosphorus	mine drainage,		
-total	land disturbance	5-15(D,AL,R)	1
-total diss.	sewage disposal	(lakes)	1
-diss. orthophosphate			1
Selenium-water	mine drainage	1(AL)	0.1
-sediment		5 µg/g dry	0.5 µg/g dry
-fish		3 µg/g wet	0.3 µg/g wet
		(~15 µg/g dry)	(~1.5 µg/g dry)

Variable[a]	Rationale	Water Quality Criterion[b,c,d]	Detection Limit [b]
Silver-water	mine drainage	0.1(AL)	0.01
-sediment		1 µg/g dry	0.1 µg/g dry
Sulphate	acid drainage	100 mg/L(AL)	1 mg/L
Suspended solids &	land disturbance mine drainage	+10 mg/L	1 mg/L
Turbidity		+1-5 NTU(D,AL)	0.1 NTU
Temperature	NH_3 toxicity	not applicable	0.5 °C
Uranium	mine drainage	10(I),100(D)	1
Vanadium	mine drainage	100(D,I,L)	10
Zinc-water	mine drainage	10-30(AL)	1
-sediment		120 µg/g dry	10 µg/g dry

(a) Total metals/trace elements should be measured in water unless indicated otherwise, and dissolved (filtered) forms should be measured when suspended sediment is present. Total and ionic mercury should be measured.

(b) Units are µg/L unless specified otherwise.

(c) Criteria are from Pommen, 1991, and Long and Morgan, 1990.

(d) Water uses in brackets: D=Drinking water, AL=Aquatic life, M=Marine aquatic life, I=Irrigation, R=Recreation, L=Livestock water.

(e) Recent low-level analyses show that uncontaminated waters typically contain ~1 ng/L mercury, and thus <0.1 ng/L is preferred.

APPENDIX IV

CONSTRUCTION DETAILS AND BOREHOLE LOGS

PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 1 OF 1

CONTRACT NO.:	KI93-3773-2	COMPILED BY:	S. Ross	BORING DATE:	September 20, 1993
BORING NO.:	T93R-28A	LOCATION:		CONTRACTOR:	Cora Lynn Drilling
NORTHING:	6058924.63	EASTING:	617989.11 m	ELEVATION:	789.79 m (Ground)

DRILLING NOTES:

TYPE OF RIG:

SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

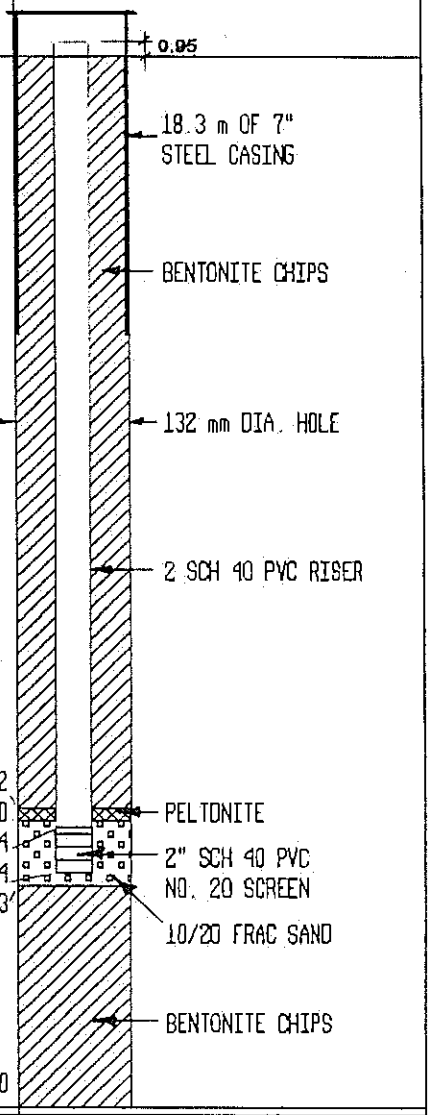
▽ STATIC WATER LEVEL

▼ DYNAMIC WATER LEVEL

WELL INFORMATION

DRILLING AND INSTRUMENTATION

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	AIR-LIFT TEST	JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY
0.0						
51.0		Coal: Seam #6	25.49 ▽ 93/09/29			
54.0						
70.0		TOTAL DEPTH = 70.0 m NOTE: See Manalta Cuttings Description Form for borehole lithology.				



PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 1 OF 2

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 20, 1993
BORING NO.: T93R-28B LOCATION: CONTRACTOR: Core Lynn Drilling
NORTHING: 6058922.25 EASTING: 617974.32 ELEVATION: 790.32 m (Ground)

DRILLING NOTES:

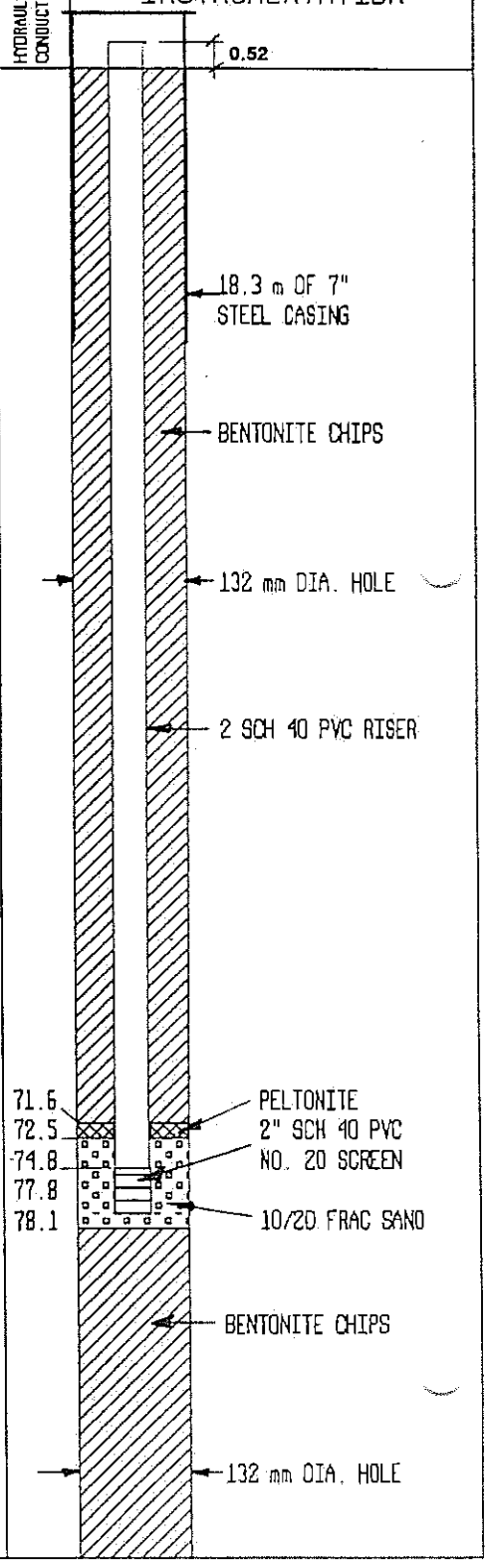
TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	HYDROGEOLOGIC INFORMATION: AIR-LIFT TEST	HYDROGEOLOGIC INFORMATION: JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY
0.0						
10						
20			24.78 ▽ 93/09/27			
30						
40						
50						
60						
70		74.5 Coal: Seam #2 75.0				
80						
90						
100						

WELL INFORMATION

DRILLING AND INSTRUMENTATION



PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 2 OF 2

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 20, 1993
BORING NO.: T93R-28B LOCATION: CONTRACTOR: Coro Lynn Drilling
NORTHING: 6058922.25 EASTING: 617974.32 ELEVATION: 790.32 m (Ground)

DRILLING NOTES:

WELL INFORMATION

TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	AIR-LIFT TEST	JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY	DRILLING AND INSTRUMENTATION
10.0							BACKFILLED WITH BENTONITE CHIPS; 132 mm DIA. HOLE
11.0							
12.0							
13.0							
14.0							
15.0		TOTAL DEPTH = 146.9 m					146.9 m
16.0		NOTE: See Manalta Cuttings Description Form for borehole lithology.					
17.0							
18.0							
19.0							
20.0							

PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 1 OF 1

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 22, 1993
BORING NO.: T93R-29A LOCATION: CONTRACTOR: McAuley Drilling
NORTHING: 6058969.81 EASTING: 617172.80 ELEVATION: 849.69 m (Ground)

DRILLING NOTES:

TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 75 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	AIR-LIFT TEST	JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY	WELL INFORMATION: DRILLING AND INSTRUMENTATION
0.0							0.76
19							2 SCH 40 PVC RISER
20							BENTONITE CHIPS
							120 mm DIA. HOLE
						25.8	PELTONITE
						26.5	2" SCH 40 PVC
30						27.5	NO. 20 SCREEN
							10/20 FRAC SAND
						33.5	BACKFILLED WITH
						37.2	BENTONITE CHIPS
40		TOTAL DEPTH = 37.2 m					
		NOTE: See Manalta Cuttings Description Form for borehole lithology.					
50							
60							
70							
80							
90							
100							

PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 1 OF 2

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 21, 1993
BORING NO.: T93R-29B LOCATION: CONTRACTOR: McAuley Drilling
NORTHING: 6058965.79 m EASTING: 617170.61 m ELEVATION: 849.82 m (Ground)

DRILLING NOTES:

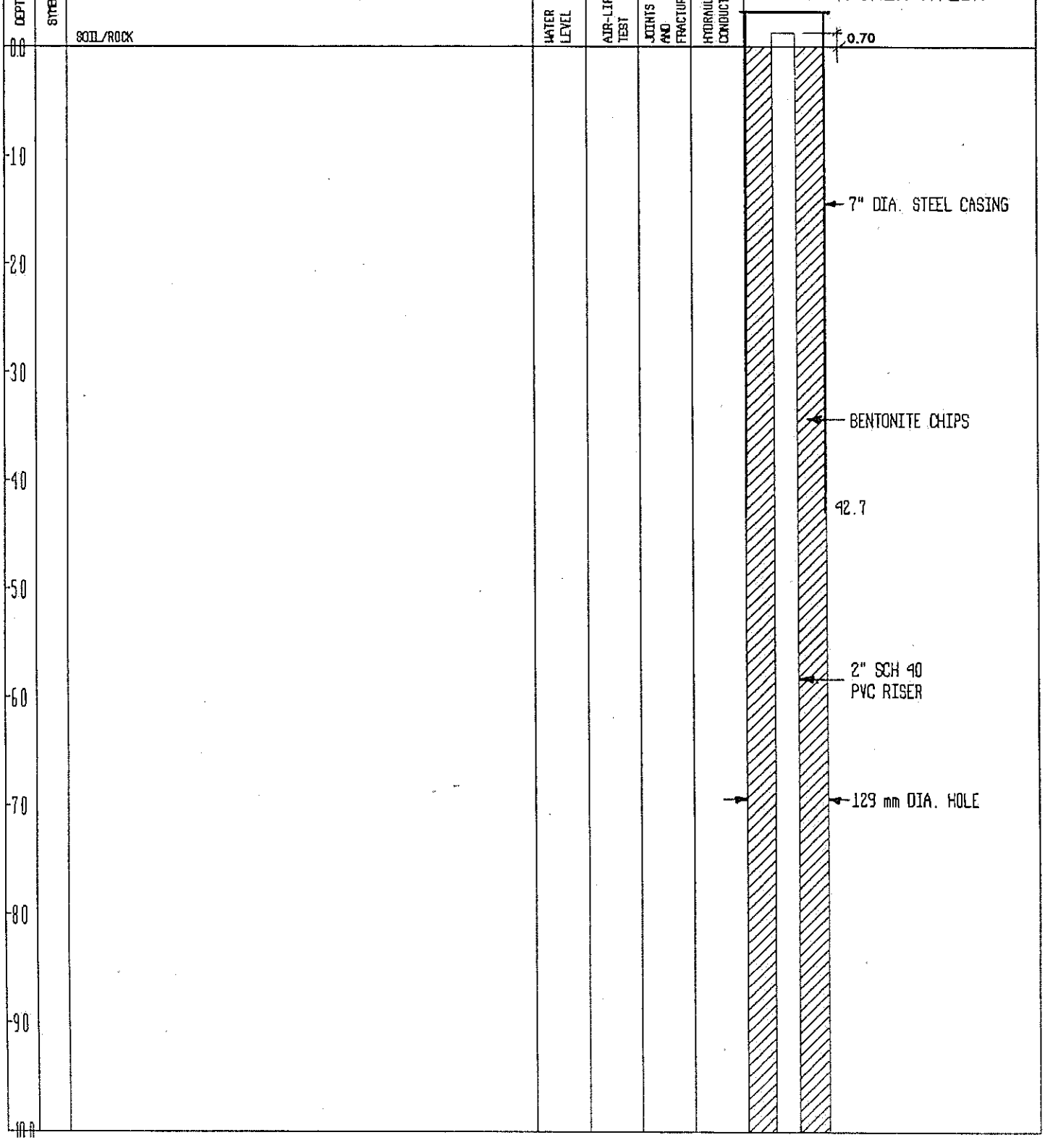
TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 75 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	AIR-LIFT TEST	JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY

WELL INFORMATION

DRILLING AND INSTRUMENTATION



PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 2 OF 2

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 21, 1993
BORING NO.: T93R-29B LOCATION: CONTRACTOR: McAuley Drilling
NORTHING: 6058965.74 m EASTING: 617170.61 m ELEVATION: 849.82 m (Ground)

DRILLING NOTES:

TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	HYDROGEOLOGIC INFORMATION: AIR-LIFT TEST	HYDROGEOLOGIC INFORMATION: JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY	WELL INFORMATION: DRILLING AND INSTRUMENTATION
10.0							
11.0		111.0 Coal: Seam #1 112.5				107.3 109.1 110.7 113.7 114.3	BENTONITE CHIPS PELTONITE 2" SCH 40 PVC NO. 20 SCREEN 10/20 FRAC SAND 129 mm DIA. HOLE BACKFILLED WITH BENTONITE CHIPS 134.1
12.0							
13.0							
14.0		TOTAL DEPTH = 134.1 m					
15.0		NOTE: See Manalta Cuttings Description Form for borehole lithology.					
16.0		93/09/25 Groundwater depth > 100 m below datum. Groundwater had not stabilized.					
17.0							
18.0							
19.0							
20.0							

PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 1 OF 2

CONTRACT NO.: KI93-3773-2
BORING NO.: T93R-30
NORTHING: 6059570.85
COMPILED BY: S. Ross
LOCATION:
EASTING: 616781.37
BORING DATE: September 25, 1993
CONTRACTOR: McAuley Drilling
ELEVATION: 902.16 m (Ground)

DRILLING NOTES:

TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

WELL INFORMATION

DRILLING AND INSTRUMENTATION

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	AIR-LIFT TEST	JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY
0.0						
10						
20						
30						
40						
50						
60			58.88 ▽ 93/09/28			
70						
80						
90						
100						

0.48

2" SCH 40 PVC RISER

7" DIA. STEEL CASING, 24.9 m

129 mm DIA. HOLE

BENTONITE CHIPS

99.0 PELTONITE

PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 2 OF 2

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 25, 1993
BORING NO.: T93R-30 LOCATION: CONTRACTOR: McAuley Drilling
NORTHING: 6059570.85 EASTING: 616781.37 ELEVATION: 902.16 m (Ground)

DRILLING NOTES:

WELL INFORMATION

TYPE OF RIG: ☒ STATIC WATER LEVEL
SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm ☒ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION (SOIL/ROCK)	HYDROGEOLOGIC INFORMATION: WATER LEVEL	HYDROGEOLOGIC INFORMATION: AIR-LIFT TEST	HYDROGEOLOGIC INFORMATION: JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY	DRILLING AND INSTRUMENTATION
10.0		102.5 Coal: Seam #1				100.6 102.4 105.5 106.7	PELTONITE 2" SCH 40 PVC NO. 20 SCREEN 10/20 FRAC SAND 129 mm DIA. HOLE
11.0							
12.0							BACKFILLED WITH BENTONITE CHIPS
13.0		105.0					134.1
14.0		TOTAL DEPTH = 134.1 m					
15.0		NOTE: See Manalta Cuttings Description Form for borehole lithology.					
16.0							
17.0							
18.0							
19.0							
20.0							

PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 1 OF 2

CONTRACT NO.:	KI93-3773-2	COMPILED BY:	S. Ross	BORING DATE:	September 26, 1993
BORING NO.:	T93R-32	LOCATION:		CONTRACTOR:	Cora Lynn Drilling
NORTHING:	6059863.04	EASTING:	617589.84	ELEVATION:	925.66 m (Ground)

DRILLING NOTES:

TYPE OF RIG:

SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

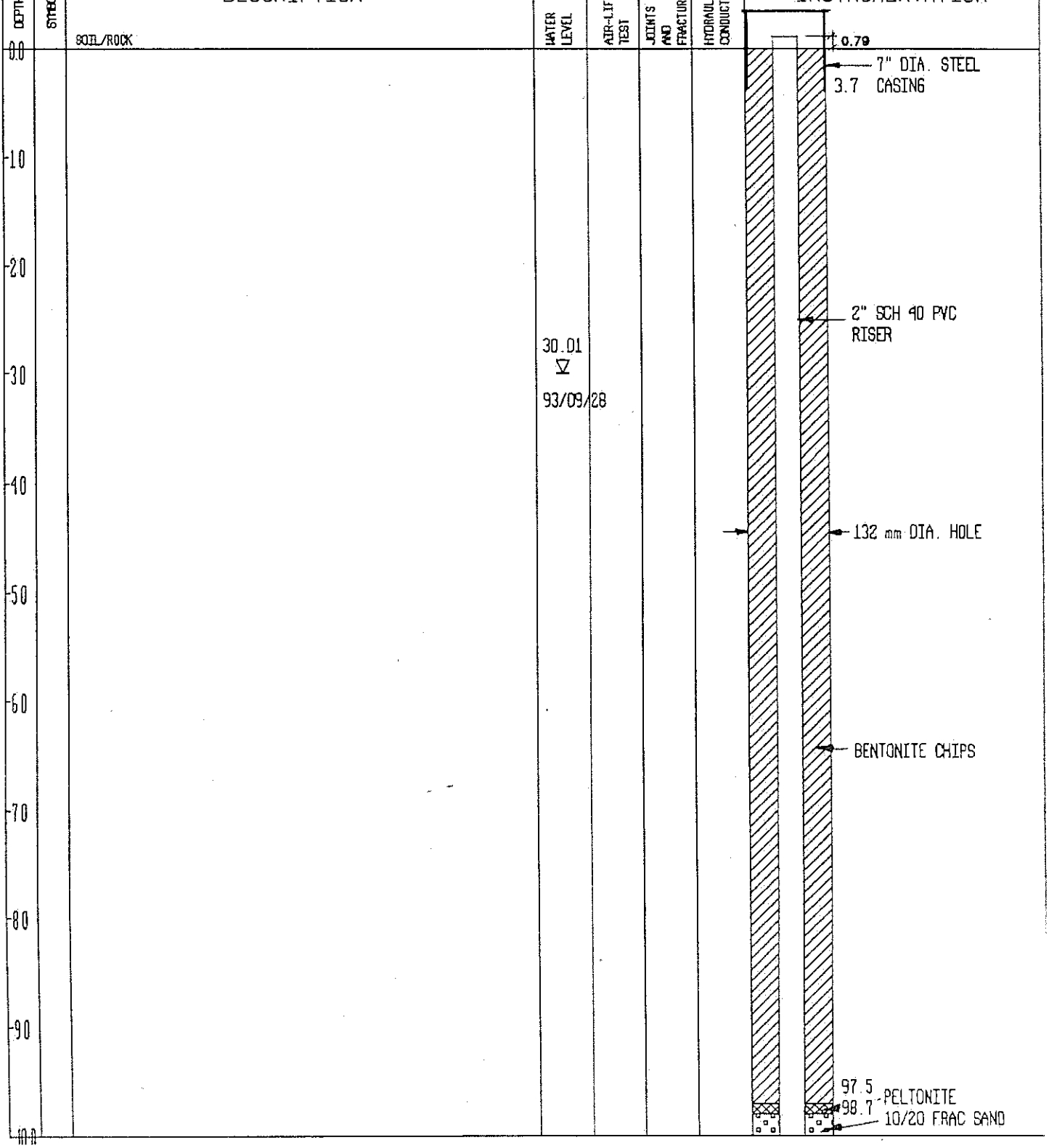
▽ STATIC WATER LEVEL

▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION	HYDROGEOLOGIC INFORMATION: WATER LEVEL	HYDROGEOLOGIC INFORMATION: AIR-LIFT TEST	HYDROGEOLOGIC INFORMATION: JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY
0.0		SOIL/ROCK				

WELL INFORMATION

DRILLING AND INSTRUMENTATION



PITEAU ENGINEERING LTD. OFFICE REPORT ON SITE INVESTIGATION SHEET 2 OF 2

CONTRACT NO.: KI93-3773-2 COMPILED BY: S. Ross BORING DATE: September 26, 1993
BORING NO.: T93R-32 LOCATION: CONTRACTOR: Coro Lynn Drilling
NORTHING: 6059863.09 EASTING: 617589.89 ELEVATION: 925.66 m (Ground)

DRILLING NOTES:

TYPE OF RIG:
SAMPLE HAMMER: wt.: 63.6 kg drop: 76 cm

▽ STATIC WATER LEVEL
▼ DYNAMIC WATER LEVEL

DEPTH m	SYMBOL	DESCRIPTION SOIL/ROCK	HYDROGEOLOGIC INFORMATION: WATER LEVEL	AIR-LIFT TEST	JOINTS AND FRACTURES	HYDRAULIC CONDUCTIVITY	WELL INFORMATION: DRILLING AND INSTRUMENTATION
10.0		103.5 COAL: Seam #2				101.3 104.5 104.8	2" SCH 40 PVC NO. 20 SCREEN 10/20 FRAC SAND
11.0		TOTAL DEPTH = 110.5 m					BACKFILLED WITH BENTONITE CHIPS
12.0							
13.0							
14.0							
15.0		NOTE: See Manalta Cuttings Description Form for borehole lithology.					
16.0							
17.0							
18.0							
19.0							
20.0							

Hole: T93R-28 Project: TELKWA 1993
Site: 22 Date Finished: 09/21/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 6058922.0 Geoph. Comp: BPB Wireline
E: 617974.0
EL: 790.3 Logs: x gamma sonic
x density neutron
Casing: 18.3 Meters x caliper electric
Case Type: x verticality dipmeter
Downhole Units: Feet other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
43.0	13.12	gravel	clay/gravel
55.0	16.78	mudstone, dark gray, soft	
57.0	17.39	carbonaeous mudstone	
72.0	21.96	mudstone, black, soft	
110.0	33.55	mudstone, dark gray, soft	
117.0	35.69	COAL (dirty)	Carby, Possible carby layer w/coal
133.0	40.57	mudstone, dark gray, soft	
141.0	43.01	mudstone, dark brown, medium soft	
158.0	48.19	mudstone, black, soft	
164.0	50.02	mudstone, light gray, soft	
180.0	54.90	mudstone, black, soft	
211.0	64.36	COAL (dirty)	31'
217.0	66.19	silty mudstone, dark gray, medium soft	
224.0	68.32	COAL (dirty)	7'
235.0	71.68	mudstone, light gray, soft	
247.0	75.33	sandstone (fine), black, hard	
252.0	76.86	COAL (dirty)	Carby and coal stringers mixed
274.0	83.57	silty mudstone, dark gray, soft	
296.0	90.28	silt, dark gray, medium soft	
319.0	97.30	sandstone (fine), light green, hard	
325.0	99.13	silty mudstone, black, medium soft	
340.0	103.70	sandstone (fine), light green, hard	Twisted off
392.0	119.56	sandy siltstone, black, soft	
431.0	131.46	silt, dark gray, medium soft	
453.0	138.17	silt, dark gray, soft	
482.0	147.01	sandstone (fine), light green, hard	

Hole: T93R-29 Project: TELKWA 1993
Site: 18 Date Finished: 09/21/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: T.R.
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 6058971.0 Geoph. Comp: BPB Wireline
E: 617173.0
EL: 849.7 Logs: x gamma sonic
x density neutron
Casing: 42.7 Meters x caliper electric
Case Type: x verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
127.0	38.74	till, light gray, soft	Clay/sand/gravel/till (l,d/br/gr/wh)
235.0	71.68	sandstone (medium), light gray, medium soft	
286.0	87.23	- silty mudstone, light gray, medium soft	-
292.0	89.06	COAL (clean), black, medium soft	
296.0	90.28	COAL (dirty), dark gray, soft	Calcite/pyrite
298.0	90.89	- sandy siltstone, light gray, medium soft	-
307.0	93.63	carbonaeous mudstone, dark brown, soft	Carb br/blk shales - coal traces
319.0	97.30	silty mudstone, dark gray, medium soft	Calcite - light grey mudstone bands
336.0	102.48	- silty mudstone, dark brown, soft	- Carb & br. shale - coal bands
344.0	104.92	silty mudstone, light gray, medium soft	
346.0	105.53	COAL (clean), black, medium soft	
363.0	110.72	- COAL (dirty), black, medium soft	- Coal and shale interbedded
368.0	112.24	COAL (clean), black, medium soft	
389.0	118.65	silty mudstone, light brown, soft	
392.0	119.56	- COAL (clean), black, medium soft	-
398.0	121.39	sandy siltstone, light gray, medium soft	
402.0	122.61	COAL (clean), black, medium soft	
415.0	126.58	- sandy siltstone, light gray, medium soft	-
440.0	134.20	silty mudstone, light green, medium soft	

Hole: T93R-30 Project: TELKWA 1993
Site: 17 Date Finished: 09/23/93 (Month/Day/Year)

Torrens Location:
Grid sect twp rg W Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 6059572.0 Geoph. Comp: BPB Wireline
E: 616781.0
EL: 902.2 Logs: x gamma sonic
x density neutron
Casing: 24.4 Meters x caliper electric
Case Type: x verticality dipmeter
Downhole Units: Feet other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
20.0	6.10	till, brown	Cobbles
29.0	8.85	till	(Sand/gravel/till) 22' H20
63.0	19.22	till	
100.0	30.50	sandy siltstone, light gray, soft	
294.0	89.67	sandstone (medium), light gray	120' H20
298.0	90.89	COAL (clean), black, soft	
304.0	92.72	carbonaeous mudstone, dark gray, medium soft	
307.0	93.63	COAL (clean), black, soft	
309.0	94.25	carbonaeous mudstone, light gray, medium soft	
311.0	94.86	COAL (clean), black, soft	
314.0	95.77	silty mudstone, light gray, medium soft	
317.0	96.69	COAL (dirty), black, soft	Carb, shale - coal
318.0	96.99	silty mudstone, light gray, medium soft	
320.0	97.60	COAL (clean), black, medium soft	
329.0	100.35	silty mudstone, light gray, medium soft	
337.0	102.79	COAL (clean), black, medium soft	
339.0	103.40	sandy siltstone, dark gray, medium soft	
349.0	106.45	COAL (clean), black, medium soft	
369.0	112.55	silty mudstone, gray	
373.0	113.77	COAL (dirty), black, medium soft	Clean/dirty coal
383.0	116.82	COAL (dirty)	Interbedded coal/shale
387.0	118.04	COAL (clean), black, medium soft	
395.0	120.48	sandy siltstone, light gray, medium soft	
398.0	121.39	COAL (clean), black, medium soft	Interbedded
419.0	127.80	sandstone (fine), brown, medium soft	
424.0	129.32	COAL (clean), black, medium soft	
440.0	134.20	sandstone (medium), gray, medium soft	

ole: T93R-32 Project: TELKWA 1993
ite: Date Finished: 09/25/93 (Month/Day/Year)

orrens Location:
sd sect twp rg W Lithology by: Rick
Drill Contr: Cora Lynn Drilling
urveyed Location: Driller: Rick
N: 6059863.0 Geoph. Comp: BPB Wireline
E: 617590.0
EL: 925.7 Logs: x gamma sonic
x density neutron
asing: 3.5 Meters x caliper electric
ase Type: x verticality dipmeter
ownhole Units: Feet
other:
omments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
6.0	1.83	clay	
44.0	13.42	mudstone, dark gray, soft	
76.0	23.18	mudstone, black, medium soft	
81.0	24.71	mudstone, dark gray, medium soft	
93.0	28.37	sandstone (fine), light green, medium soft	
97.0	29.59	carbonaeous mudstone, soft	
103.0	31.42	mudstone, light gray, soft	
112.0	34.16	mudstone, black, soft	
116.0	35.38	COAL (clean)	
129.0	39.35	mudstone, light gray, soft	
137.0	41.79	COAL (dirty)	Carby
144.0	43.92	silty mudstone, light gray, soft	H20 - 2 GPM
156.0	47.58	mudstone, light gray, soft	
174.0	53.07	silty mudstone, light gray, soft	
181.0	55.21	mudstone, dark brown, medium soft	
185.0	56.43	mudstone, black, medium soft	
190.0	57.95	sandstone (fine), light green, medium soft	
195.0	59.48	mudstone, black, soft	
200.0	61.00	mudstone	Coal stringers
212.0	64.66	mudstone, black, medium soft	
218.0	66.49	carbonaeous mudstone	Dirty coal
220.0	67.10	mudstone, light gray, medium soft	
224.0	68.32	COAL (dirty)	
227.0	69.24	mudstone, dark gray, soft	
248.0	75.64	mudstone, black, soft	
255.0	77.77	mudstone, black, hard	
259.0	79.00	sandstone (fine), light green, medium soft	
262.0	79.91	mudstone, black, soft	
276.0	84.18	COAL (dirty)	
282.0	86.01	carbonaeous mudstone	
300.0	91.50	mudstone, black, soft	
303.0	92.41	carbonaeous mudstone	Dirty coal
321.0	97.91	mudstone, black, hard	

327.0	99.74	sandstone (coarse), light gray, hard	
338.0	103.09	COAL (dirty)	
347.0	105.84	mudstone, black, hard	
[illegible]0	107.67	sandstone (fine), dark gray, medium soft	
363.0	110.72	mudstone, black, hard	

APPENDIX V

HYDRAULIC CONDUCTIVITY TEST DATA AND ANALYSES

MANALTA COAL LTD. - HYDRAULIC CONDUCTIVITY TEST

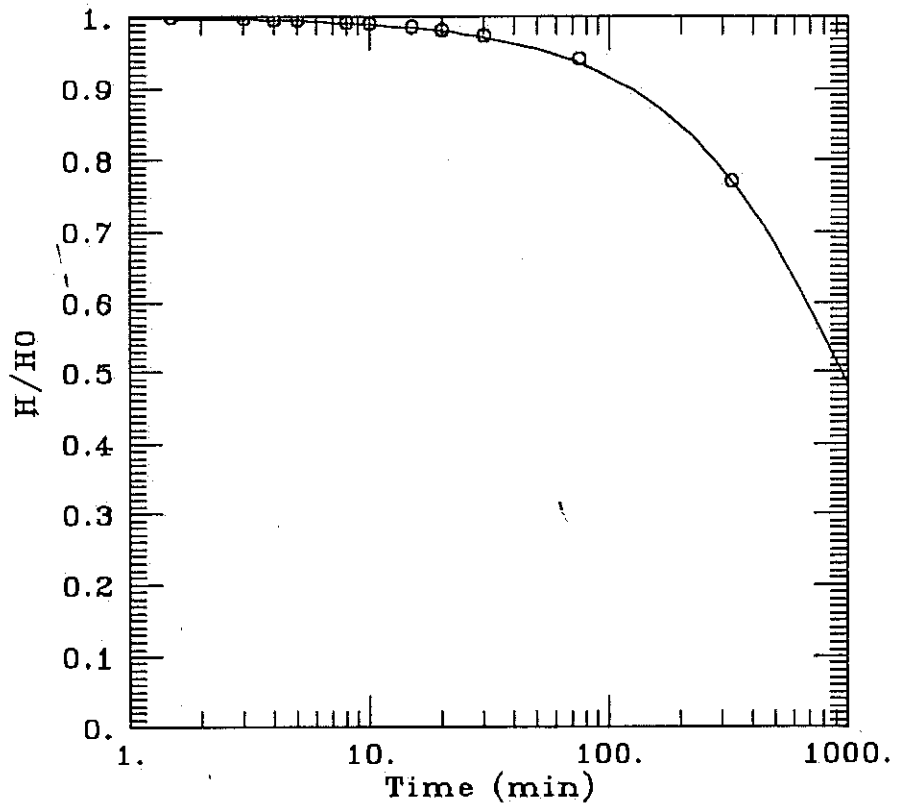
Piezometer:	T93R-28A
Date:	29/09/93
Hydraulic Conductivity (m/s)	2.70E-9
Piezometer Stick-up (m)	0.95
Screen Length (m)	3.05
Total depth below top of PVC (mbtoc)	55.12
Static water level below top of PVC (mbtoc)	25.49

Observations:

Time elapsed (min)	Water level (mbtoc)	Drawdown (m)
1.5	34.260	8.770
3	34.240	8.750
4	34.225	8.735
5	34.220	8.730
8	34.195	8.705
10	34.180	8.690
15	34.140	8.650
20	34.105	8.615
30	34.035	8.545
75	33.75	8.260
328	32.25	6.760

	Client: MANALTA COAL LTD.
Project No.: 3773-2	Location: TELKWA, B.C.

MANALTA COAL LTD. T93R-28A



DATA SET:
aq93-28a.dat
11/25/93

AQUIFER TYPE:
Confined

SOLUTION METHOD:
Cooper et al.

TEST DATE:
29/09/93

TEST WELL:
T93R-28A

ESTIMATED PARAMETERS:
T = 4.8605E-07 m^2/min
S = 1.E-08

TEST DATA:
H0 = 8.77 m
rc = 0.0127 m
rw = 0.066 m

MANALTA COAL LTD. - HYDRAULIC CONDUCTIVITY TEST

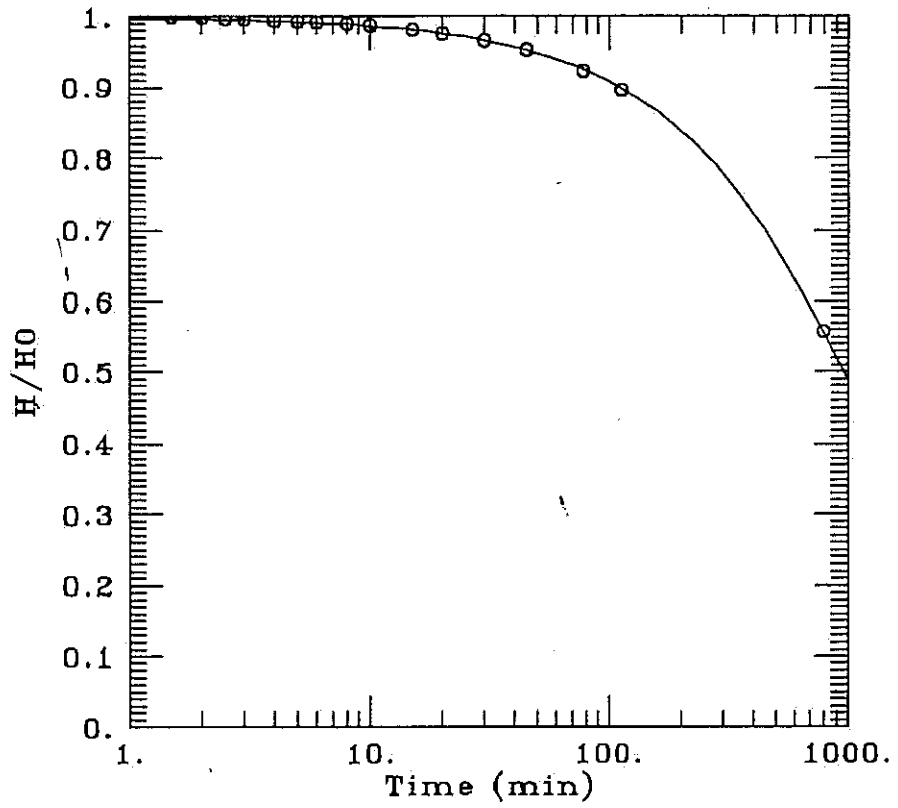
Piezometer:	T93R-28B
Date:	28/09/93
Hydraulic Conductivity (m/s)	1.00E-8
Piezometer Stick-up (m)	0.52
Screen Length (m)	3.05
Total depth below top of PVC (mbtoc)	78.32
Static water level below top of PVC (mbtoc)	34.32

Observations:

Time elapsed (min)	Water level (mbtoc)	Drawdown (m)
1.5	50.630	16.310
2	50.610	16.290
2.5	50.580	16.260
3	50.570	16.250
4	50.540	16.220
5	50.520	16.200
6	50.505	16.185
8	50.470	16.150
10	50.430	16.110
15	50.330	16.010
20	50.245	15.925
30	50.085	15.765
45	49.870	15.550
78	49.390	15.070
113	48.940	14.620
791	43.410	9.090

	Client: MANALTA COAL LTD.
Project No.: 3773-2	Location: TELKWA, B.C.

MANALTA COAL LTD. T93R-28B



DATA SET:
AQ93-28B.DAT
11/25/93

AQUIFER TYPE:
Confined
SOLUTION METHOD:
Cooper et al.
TEST DATE:
28/09/93
TEST WELL:
T93R-28B

ESTIMATED PARAMETERS:
T = 3.0648E-07 m^2/min
S = 2.4655E-06

TEST DATA:
H0 = 16.31 m
rc = 0.0127 m
rw = 0.066 m

MANALTA COAL LTD. - HYDRAULIC CONDUCTIVITY TEST

Piezometer:	T93R-29A
Date:	28/09/93
Hydraulic Conductivity (m/s)	
Piezometer Stick-up (m)	0.76
Screen Length (m)	6.10
Total depth below top of PVC (mbtoc)	33.50
Static water level below top of PVC (mbtoc)	DRY

Observations:

Time elapsed (min)	Water level (mbtoc)	Drawdown (m)

MANALTA COAL LTD. - HYDRAULIC CONDUCTIVITY TEST

Piezometer:	T93R-29B
Date:	28/09/93
Hydraulic Conductivity (m/s)	
Piezometer Stick-up (m)	0.7
Screen Length (m)	3.05
Total depth below top of PVC (mbtoc)	113.70
Static water level below top of PVC (mbtoc)	> 100

Observations:

Time elapsed (min)	Water level (mbtoc)	Drawdown (m)

MANALTA COAL LTD. - HYDRAULIC CONDUCTIVITY TEST

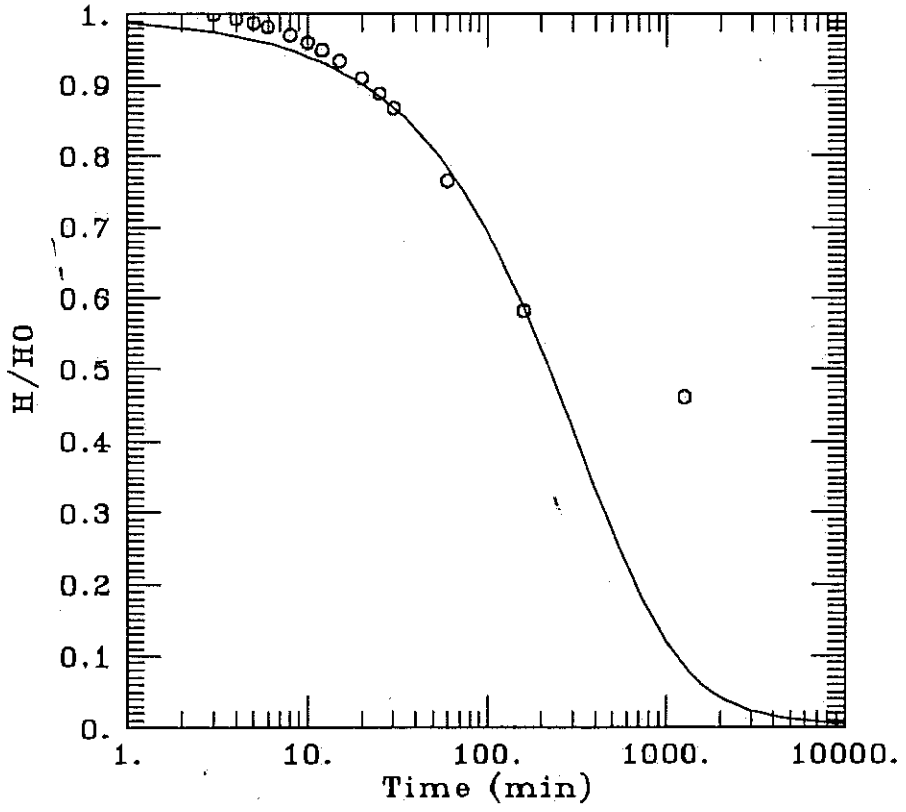
Piezometer:	T93R-30
Date:	27/09/93
Hydraulic Conductivity (m/s)	5.42E-9
Piezometer Stick-up (m)	0.48
Screen Length (m)	3.05
Total depth below top of PVC (mbtoc)	105.98
Static water level below top of PVC (mbtoc)	54.32

Observations:

Time elapsed (min)	Water level (mbtoc)	Drawdown (m)
3	64.220	9.900
4	64.155	9.835
5	64.095	9.775
6	64.040	9.720
8	63.925	9.605
10	63.820	9.500
12	63.715	9.395
15	63.565	9.245
20	63.325	9.005
25	63.105	8.785
30	62.900	8.580
60	61.890	7.570
160	60.080	5.760
1265	58.880	4.560

	Client: MANALTA COAL LTD.
Project No.: 3773-2	Location: TELKWA, B.C.

MANALTA COAL LTD. T93R-30



DATA SET:
AQ93-30.DAT
11/25/93

AQUIFER TYPE:
Confined
SOLUTION METHOD:
Cooper et al.
TEST DATE:
27/09/93
TEST WELL:
T93R-30

ESTIMATED PARAMETERS:
T = 8.1324E-07 m^2/min
S = 0.0001

TEST DATA:
H0 = 9.9 m
rc = 0.0127 m
rw = 0.0645 m

MANALTA COAL LTD. - HYDRAULIC CONDUCTIVITY TEST

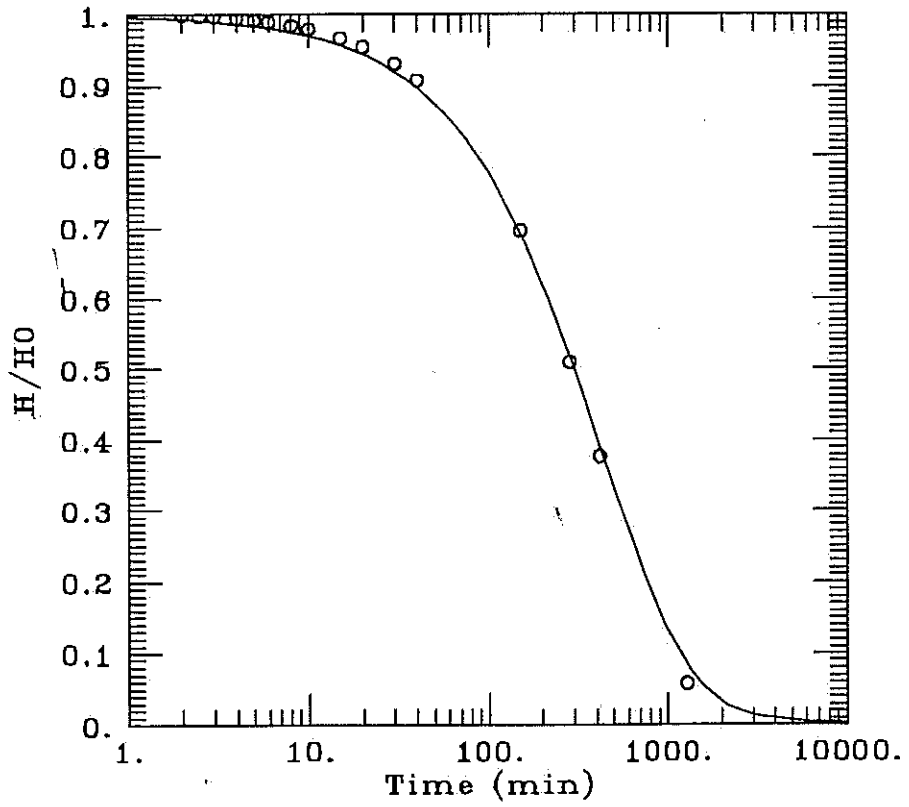
Piezometer:	T93R-32
Date:	27/09/93
Hydraulic Conductivity (m/s)	7.34E-9
Piezometer Stick-up (m)	0.79
Screen Length (m)	3.05
Total depth below top of PVC (mbtoc)	104.50
Static water level below top of PVC (mbtoc)	29.05

Observations:

Time elapsed (min)	Water level (mbtoc)	Drawdown (m)
2	45.610	16.560
2.5	45.580	16.530
3	45.565	16.515
4	45.525	16.475
5	45.485	16.435
6	45.440	16.390
8	45.355	16.305
10	45.280	16.230
15	45.070	16.020
20	44.860	15.810
30	44.470	15.420
40	44.085	15.035
150	40.570	11.520
282	37.490	8.440
414	35.31	6.260
1279	30.01	0.960

	Client: MANALTA COAL LTD.
Project No.: 3773-2	Location: TELKWA, B.C.

MANALTA COAL LTD. T93R-32



DATA SET:
AQ93-32.DAT
11/25/93

AQUIFER TYPE:
Confined
SOLUTION METHOD:
Cooper et al.
TEST DATE:
27/09/93
TEST WELL:
T93R-32

ESTIMATED PARAMETERS:
T = 1.5408E-06 m^2/min
S = 1.E-08

TEST DATA:
H0 = 16.56 m
rc = 0.0127 m
rw = 0.066 m

APPENDIX VI

GROUNDWATER CHEMICAL ANALYSES, CHEMEX, SEPTEMBER 1993

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T604A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-22
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	63.8	0.01	3.184
Calcium - (ICP) Dissolved	20111L	mg/L	39.4	0.01	1.966
Magnesium - (ICP) Total	12005L	mg/L	13.9	0.01	1.144
Magnesium - (ICP) Dissolved	12111L	mg/L	7.69	0.01	0.633
Sodium - (ICP) Total	11005L	mg/L	35.5	0.01	1.544
Sodium - (ICP) Dissolved	11111L	mg/L	30.0	0.01	1.305
Potassium -(ICP) Total		mg/L	4.15	0.02	0.106
Potassium -(ICP) Dissolved		mg/L	2.86	0.02	0.073
Chloride - Dissolved	17206L	mg/L	0.6	0.1	0.017
Sulphate - (IC)	16309L	mg/L	2.7	0.1	0.056
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	194.	0.1	
pH	10301L	Units	6.91	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	236.	0.5	3.878
Total Hardness	10602L	mg/L	130.	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	41.3	0.02	
Silicon - Dissolved (ICP)		mg/L	7.99	0.02	
Turbidity	02074L	NTU	2815.	0.1	
Total Dissolved Solids	00201L	mg/L	202.	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.23	0.01	0.016
Nitrite Nitrogen as N	07206L	mg/L	0.018	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.176	0.003	0.013
Total Dissolved Phosphorus as P	15423L	mg/L	0.014	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.013	0.001	
Total Phosphorus as P	15406L	mg/L	1.33	0.003	
Sulphur - (ICP) - Dissolved		mg/L	1.4	0.2	
Sulphur - (ICP) - Total		mg/L	2.1	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	235.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	2580.	0.1	
Aluminum - Total (ICP)	13009L	mg/L	16.2	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.08	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T604A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-22
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	0.0020	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0050	0.002	
Arsenic - Total (AA)	33005L	mg/L	0.0810	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	< 0.002	0.002	
Barium - Total (ICP)	56011L	mg/L	1.05	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.15	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.002	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	0.001	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.05	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.05	0.01	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.025	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	0.003	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.004	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.002	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.002	0.001	
Iron - Total (ICP)	26009L	mg/L	258.	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	3.71	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.070	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	< 0.0002	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.015	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.006	0.001	
Manganese - Total (ICP)	25360L	mg/L	5.01	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	2.54	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.021	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.001	0.001	
Nickel - Total (ICP)	28350L	mg/L	0.056	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	0.024	0.005	
Phosphorus - Total (ICP)		mg/L	1.5	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 465-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T604A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-22
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L		0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	<	0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	<	0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	<	0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L		0.639	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L		0.335	0.002	
Titanium - Total (ICP)	22011L	mg/L		0.021	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	<	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	<	0.005	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	<	0.001	0.001	
Vanadium - Total (ICP)	23330L	mg/L		0.046	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L		0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		0.103	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L		0.019	0.001	
Ion Balance		Balance		1.01	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9469
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T604A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-22
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	05-10-93	1	2.0	97.6	93.2	106.7	98.1	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street. T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T604A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-22
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Oate : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T604A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-22
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T9D5B
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-20
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	35.0	0.01	1.747
Calcium - (ICP) Dissolved	20111L	mg/L	30.0	0.01	1.497
Magnesium - (ICP) Total	12005L	mg/L	10.6	0.01	0.872
Magnesium - (ICP) Dissolved	12111L	mg/L	9.47	0.01	0.779
Sodium - (ICP) Total	11005L	mg/L	19.3	0.01	0.840
Sodium - (ICP) Dissolved	11111L	mg/L	15.8	0.01	0.687
Potassium -(ICP) Total		mg/L	3.95	0.02	0.101
Potassium -(ICP) Dissolved		mg/L	3.36	0.02	0.086
Chloride - Dissolved	17206L	mg/L	1.6	0.1	0.045
Sulphate - (IC)	16309L	mg/L	1.6	0.1	0.033
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	149.	0.1	
pH	10301L	Units	6.84	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	182.	0.5	2.979
Total Hardness	10602L	mg/L	114.	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	5.55	0.02	
Silicon - Dissolved (ICP)		mg/L	3.97	0.02	
Turbidity	02074L	NTU	72.4	0.1	
Total Dissolved Solids	00201L	mg/L	153.	1.	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	0.005	0.003	
Nitrate Nitrogen as N	07301L	mg/L	< 0.003	0.003	
Total Dissolved Phosphorus as P	15423L	mg/L	0.021	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.020	0.001	
Total Phosphorus as P	15406L	mg/L	0.063	0.003	
Sulphur - (ICP) - Dissolved		mg/L	0.7	0.2	
Sulphur - (ICP) - Total		mg/L	0.97	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	185.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	76.0	0.1	
Aluminum - Total (ICP)	13009L	mg/L	0.98	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.03	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T905B
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-20
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	0.0030	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0110	0.002	
Arsenic - Total (AA)	33005L	mg/L	< 0.002	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	< 0.002	0.002	
Barium - Total (ICP)	56011L	mg/L	0.12	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.08	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.001	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	< 0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L	< 0.01	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	< 0.002	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	< 0.002	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	< 0.0002	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.014	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.017	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	< 0.0002	0.0002	
Iron - Total (ICP)	26009L	mg/L	1.75	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.22	0.002	
Lead - Total (GFAA)	82004L	mg/L	< 0.002	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	< 0.0002	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.002	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.002	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.163	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.119	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.005	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.001	0.001	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	< 0.001	0.001	
Phosphorus - Total (ICP)		mg/L	0.2	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T905B
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-20
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	R E S U L T S	DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	< 0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	< 0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L	0.189	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L	0.168	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.010	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	< 0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	< 0.001	0.001	
Vanadium - Total (ICP)	23330L	mg/L	0.009	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.063	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L	0.012	0.001	
Ion Balance		Balance	1.00	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T905B
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-20
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	06-10-93	1	1.0	97.3	93.2	106.7	101.9	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR : PITEAU ENGINEERING LTD.

ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T905B
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-20
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T905B
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-20
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T906A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-21
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	12.4	0.01	0.619
Calcium - (ICP) Dissolved	20111L	mg/L	12.4	0.01	0.619
Magnesium - (ICP) Total	12005L	mg/L	3.51	0.01	0.289
Magnesium - (ICP) Dissolved	12111L	mg/L	3.08	0.01	0.253
Sodium - (ICP) Total	11005L	mg/L	47.6	0.01	2.071
Sodium - (ICP) Dissolved	11111L	mg/L	43.2	0.01	1.879
Potassium -(ICP) Total		mg/L	1.49	0.02	0.038
Potassium -(ICP) Dissolved		mg/L	1.46	0.02	0.037
Chloride - Dissolved	17206L	mg/L	2.8	0.1	0.079
Sulphate - (IC)	16309L	mg/L	3.8	0.1	0.079
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	142.	0.1	
pH	10301L	Units	6.91	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	173.	0.5	2.839
Total Hardness	10602L	mg/L	43.7	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	4.79	0.02	
Silicon - Dissolved (ICP)		mg/L	2.88	0.02	
Turbidity	02074L	NTU	19.9	0.1	
Total Dissolved Solids	00201L	mg/L	153.	1.	
Total Ammonia Nitrogen	07505L	mg/L	< 0.01	0.01	
Nitrite Nitrogen as N	07206L	mg/L	0.005	0.003	
Nitrate Nitrogen as N	07301L	mg/L	< 0.003	0.003	
Total Dissolved Phosphorus as P	15423L	mg/L	0.048	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.018	0.001	
Total Phosphorus as P	15406L	mg/L	0.061	0.003	
Sulphur - (ICP) - Dissolved		mg/L	1.4	0.2	
Sulphur - (ICP) - Total		mg/L	1.4	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	175.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	34.0	0.1	
Aluminum - Total (ICP)	13009L	mg/L	1.17	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.05	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T906A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-21
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUAOAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	<	0.002	0.002	
Antimony - Dissolved (AA)	51003L	mg/L		0.0030	0.002	
Arsenic - Total (AA)	33005L	mg/L		0.0020	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	<	0.002	0.002	
Barium - Total (ICP)	56011L	mg/L		0.05	0.01	
Barium - Dissolved (ICP)	56109L	mg/L		0.03	0.002	
Beryllium - Total (ICP)	04009L	mg/L	<	0.001	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	<	0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L		0.01	0.01	
Boron - Dissolved (ICP)	05111L	mg/L		0.008	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	<	0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	<	0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L		0.014	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L		0.002	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	<	0.003	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L		0.001	0.001	
Copper - Total (ICP)	29501L	mg/L		0.007	0.001	
Copper - Dissolved (ICP)	29111L	mg/L		0.003	0.0002	
Iron - Total (ICP)	26009L	mg/L		2.07	0.01	
Iron - Dissolved (ICP)	26109L	mg/L		0.21	0.002	
Lead - Total (GFAA)	82004L	mg/L		0.004	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	<	0.0002	0.0002	
Lithium - Total (ICP)	03009L	mg/L		0.007	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L		0.006	0.001	
Manganese - Total (ICP)	25360L	mg/L		0.095	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L		0.078	0.001	
Mercury - Total (CVAA)	80011L	ug/L	<	0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	<	0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	<	0.003	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L		0.002	0.001	
Nickel - Total (ICP)	28350L	mg/L	<	0.005	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	<	0.001	0.001	
Phosphorus - Total (ICP)		mg/L	<	0.1	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T906A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-21
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	<	0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	<	0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	<	0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	<	0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L		0.126	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L		0.120	0.002	
Titanium - Total (ICP)	22011L	mg/L		0.008	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	<	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	<	0.005	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	<	0.001	0.001	
Vanadium - Total (ICP)	23330L	mg/L		0.008	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	<	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		0.040	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L		0.019	0.001	
Ion Balance		Balance		0.93	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T906A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-21
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - (IC)	14-10-93	10	0.0	96.4	94.1	105.5	96.5	93.0	102.4
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	06-10-93	1	1.0	97.3	93.2	106.7	101.9	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T906A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-D2740-21
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T906A
Sample Date & Time : 29-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-21
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA CDAL
PROJ.#3773-2

Sample Description : 913
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-14
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	3.27	0.01	0.163
Calcium - (ICP) Dissolved	20111L	mg/L	2.56	0.01	0.128
Magnesium - (ICP) Total	12005L	mg/L	0.95	0.01	0.078
Magnesium - (ICP) Dissolved	12111L	mg/L	0.72	0.01	0.059
Sodium - (ICP) Total	11005L	mg/L	278.	0.01	12.093
Sodium - (ICP) Dissolved	11111L	mg/L	247.	0.01	10.745
Potassium -(ICP) Total		mg/L	2.36	0.02	0.060
Potassium -(ICP) Dissolved		mg/L	1.53	0.02	0.039
Chloride - Dissolved	17206L	mg/L	1.6	0.1	0.045
Sulphate - Dissolved	16306L	mg/L	14.8	0.1	0.308
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	645.	0.1	
pH	10301L	Units	8.26	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	786.	0.5	12.895
Total Hardness	10602L	mg/L	9.4	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	6.44	0.02	
Silicon - Dissolved (ICP)		mg/L	6.30	0.02	
Turbidity	02074L	NTU	33.1	0.1	
Total Dissolved Solids	00201L	mg/L	661.	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.22	0.01	0.016
Nitrite Nitrogen as N	07206L	mg/L	0.005	0.003	
Nitrate Nitrogen as N	07301L	mg/L	< 0.003	0.003	
Total Dissolved Phosphorus as P	15423L	mg/L	0.600	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.030	0.001	
Total Phosphorus as P	15406L	mg/L	0.640	0.003	
Sulphur - (ICP) - Dissolved		mg/L	3.6	0.2	
Sulphur - (ICP) - Total		mg/L	3.6	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	755.	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	48.0	0.1	
Aluminum - Total (ICP)	13009L	mg/L	0.52	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.05	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : 913
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-14
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	< 0.002	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0230	0.002	
Arsenic - Total (AA)	33005L	mg/L	0.0020	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	< 0.002	0.002	
Barium - Total (ICP)	56011L	mg/L	0.09	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.03	0.002	
Beryllium - Total (ICP)	04009L	mg/L	< 0.001	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	< 0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.14	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.13	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.004	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	0.003	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	< 0.003	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.015	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.015	0.0002	
Iron - Total (ICP)	26009L	mg/L	1.03	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.09	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.007	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	< 0.0002	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.044	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.040	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.040	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.015	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.006	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.002	0.001	
Nickel - Total (ICP)	28350L	mg/L	< 0.005	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	0.001	0.001	
Phosphorus - Total (ICP)		mg/L	0.6	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : 913
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-14
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L		0.5	0.1	
Selenium - Total (AA)	34005L	mg/L	<	0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	<	0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	<	0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L		0.146	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L		0.114	0.002	
Titanium - Total (ICP)	22011L	mg/L		0.006	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	<	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	<	0.005	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	<	0.001	0.001	
Vanadium - Total (ICP)	23330L	mg/L		0.007	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L		0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		0.082	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L		0.014	0.001	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : 913
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-14
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	20-10-93	10	0.0	97.7	86.0	110.4	98.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	15-10-93	2	1.0	99.2	93.2	106.7	96.1	90.7	113.0
Total Dissolved Phosphorus as P	15-10-93	1	0.0	99.0	89.6	112.5	103.2	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	2	1.0	100.8	89.6	112.5	100.0	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : 913
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-14
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : 913
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-14
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-28A
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-18
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	R E S U L T S	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	40.8	0.01	2.036
Calcium - (ICP) Dissolved	20111L	mg/L	22.8	0.01	1.138
Magnesium - (ICP) Total	12005L	mg/L	21.4	0.01	1.761
Magnesium - (ICP) Dissolved	12111L	mg/L	11.3	0.01	0.930
Sodium - (ICP) Total	11005L	mg/L	1200.	0.01	52.200
Sodium - (ICP) Dissolved	11111L	mg/L	1170.	0.01	50.895
Potassium -(ICP) Total		mg/L	7.80	0.02	0.200
Potassium -(ICP) Dissolved		mg/L	1.80	0.02	0.046
Chloride - Dissolved	17206L	mg/L	238.	0.1	6.712
Sulphate - Dissolved	16306L	mg/L	248.	0.1	5.158
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	2554.	0.1	
pH	10301L	Units	7.75	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	3113.	0.5	51.059
Total Hardness	10602L	mg/L	104.	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	50.0	0.02	
Silicon - Dissolved (ICP)		mg/L	6.83	0.02	
Turbidity	02074L	NTU	1442.	0.1	
Total Dissolved Solids	00201L	mg/L	3250	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.50	0.01	0.036
Nitrite Nitrogen as N	07206L	mg/L	0.041	0.003	
Nitrate Nitrogen as N	07301L	mg/L	1.94	0.003	0.138
Total Dissolved Phosphorus as P	15423L	mg/L	0.178	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.025	0.001	
Total Phosphorus as P	15406L	mg/L	0.950	0.003	
Sulphur - (ICP) - Dissolved		mg/L	76.0	0.2	
Sulphur - (ICP) - Total		mg/L	76.0	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	3500	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	3220.	0.1	
Aluminum - Total (ICP)	13009L	mg/L	28.7	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.10	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street. T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-28A
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-0274D-18
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	0.0030	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.010	0.002	
Arsenic - Total (AA)	33005L	mg/L	0.0150	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	0.0040	0.002	
Barium - Total (ICP)	56011L	mg/L	1.84	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.19	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.008	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	< 0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.13	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.13	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.024	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	< 0.0002	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.014	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.021	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.004	0.0002	
Iron - Total (ICP)	26009L	mg/L	20.8	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.11	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.018	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	0.003	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.283	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.278	0.001	
Manganese - Total (ICP)	25360L	mg/L	0.416	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.048	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.018	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.018	0.001	
Nickel - Total (ICP)	28350L	mg/L	0.027	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	0.001	0.001	
Phosphorus - Total (ICP)		mg/L	1.2	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-28A
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-18
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	0.2	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	< 0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	< 0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L	2.12	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L	1.29	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.027	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	< 0.005	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	0.034	0.001	
Vanadium - Total (ICP)	23330L	mg/L	0.039	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.209	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L	0.040	0.001	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-28A
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-18
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	06-10-93	1	1.0	97.3	93.2	106.7	101.9	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-28A
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-18
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-28A
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-18
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-28B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-17
Chemex Project Number : KOMED10-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	72.2	0.01	3.603
Calcium - (ICP) Dissolved	20111L	mg/L	15.0	0.01	0.749
Magnesium - (ICP) Total	12005L	mg/L	47.1	0.01	3.876
Magnesium - (ICP) Dissolved	12111L	mg/L	8.59	0.01	0.707
Sodium - (ICP) Total	11005L	mg/L	1280.	0.01	55.680
Sodium - (ICP) Dissolved	11111L	mg/L	1270.	0.01	55.245
Potassium -(ICP) Total		mg/L	14.2	0.02	0.364
Potassium -(ICP) Dissolved		mg/L	6.40	0.02	0.164
Chloride - Dissolved	17206L	mg/L	292.	0.1	8.234
Sulphate - Dissolved	16306L	mg/L	144.	0.1	2.995
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	2860.	0.1	
pH	10301L	Units	7.80	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	3486.	0.5	57.176
Total Hardness	10602L	mg/L	72.9	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	58.1	0.02	
Silicon - Dissolved (ICP)		mg/L	6.83	0.02	
Turbidity	02074L	NTU	4350.	0.1	
Total Dissolved Solids	00201L	mg/L	3480	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.73	0.01	0.052
Nitrite Nitrogen as N	07206L	mg/L	0.056	0.003	
Nitrate Nitrogen as N	07301L	mg/L	1.28	0.003	0.092
Total Dissolved Phosphorus as P	15423L	mg/L	0.055	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.015	0.001	
Total Phosphorus as P	15406L	mg/L	1.68	0.003	
Sulphur - (ICP) - Dissolved		mg/L	42.1	0.2	
Sulphur - (ICP) - Total		mg/L	48.6	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	3790	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	3960.	0.1	
Aluminum - Total (ICP)	13009L	mg/L	87.8	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.06	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-2BB
Sample Date & Time : 2B-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-17
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	0.0030	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0200	0.002	
Arsenic - Total (AA)	33005L	mg/L	0.0670	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	< 0.002	0.002	
Barium - Total (ICP)	56011L	mg/L	3.64	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.32	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.009	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	< 0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.76	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.22	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.113	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	0.003	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.061	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.159	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.002	0.0002	
Iron - Total (ICP)	26009L	mg/L	145.	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.03	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.029	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	0.003	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.383	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.300	0.001	
Manganese - Total (ICP)	25360L	mg/L	2.73	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.040	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.027	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.027	0.001	
Nickel - Total (ICP)	28350L	mg/L	0.156	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	< 0.001	0.001	
Phosphorus - Total (ICP)		mg/L	2.4	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-28B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-17
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	R E S U L T S	DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	0.2	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	< 0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	< 0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L	3.18	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L	1.22	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.087	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	< 0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	0.015	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	0.034	0.001	
Vanadium - Total (ICP)	23330L	mg/L	0.209	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.505	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L	0.001	0.001	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-28B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-17
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	2	1.0	100.0	88.7	107.9	100.5	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	06-10-93	1	1.0	97.3	93.2	106.7	101.9	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR : PITEAU ENGINEERING LTD.

ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-288
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-17
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-28B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-17
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-29B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-16
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	283.	0.01	14.122
Calcium - (ICP) Dissolved	20111L	mg/L	43.2	0.01	2.156
Magnesium - (ICP) Total	12005L	mg/L	236.	0.01	19.423
Magnesium - (ICP) Dissolved	12111L	mg/L	13.4	0.01	1.103
Sodium - (ICP) Total	11005L	mg/L	600.	0.01	26.100
Sodium - (ICP) Dissolved	11111L	mg/L	590.	0.01	25.665
Potassium -(ICP) Total		mg/L	38.2	0.02	0.978
Potassium -(ICP) Dissolved		mg/L	4.59	0.02	0.118
Chloride - Dissolved	17206L	mg/L	638.	0.1	17.992
Sulphate - Dissolved	16306L	mg/L	68.6	0.1	1.427
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	539.	0.1	
pH	10301L	Units	7.90	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	657.	0.5	10.775
Total Hardness	10602L	mg/L	163.	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	108.	0.02	
Silicon - Dissolved (ICP)		mg/L	2.98	0.02	
Turbidity	02074L	NTU	43550	0.1	
Total Dissolved Solids	00201L	mg/L	1690	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.77	0.01	0.055
Nitrite Nitrogen as N	07206L	mg/L	0.068	0.003	
Nitrate Nitrogen as N	07301L	mg/L	0.214	0.003	0.015
Total Dissolved Phosphorus as P	15423L	mg/L	0.032	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.030	0.001	
Total Phosphorus as P	15406L	mg/L	4.75	0.003	
Sulphur - (ICP) - Dissolved		mg/L	24.9	0.2	
Sulphur - (ICP) - Total		mg/L	80.6	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	1750	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	27300	0.1	
Aluminum - Total (ICP)	13009L	mg/L	480.	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.05	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-29B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-16
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	0.0060	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0090	0.002	
Arsenic - Total (AA)	33005L	mg/L	0.470	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	< 0.002	0.002	
Barium - Total (ICP)	56011L	mg/L	12.2	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.58	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.022	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	0.001	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.09	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.08	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	0.005	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.645	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	0.002	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.468	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	1.12	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.005	0.0002	
Iron - Total (ICP)	26009L	mg/L	1080.	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.07	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.048	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	0.003	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.711	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.047	0.001	
Manganese - Total (ICP)	25360L	mg/L	17.5	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.101	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.099	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.018	0.001	
Nickel - Total (ICP)	28350L	mg/L	0.883	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	0.003	0.001	
Phosphorus - Total (ICP)		mg/L	14.9	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-29B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-16
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS		DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	<	0.1	0.1	
Selenium - Total (AA)	34005L	mg/L		0.0060	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	<	0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	<	0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	<	0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L		7.14	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L		1.80	0.002	
Titanium - Total (ICP)	22011L	mg/L		0.241	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	<	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L		0.011	0.005	
Uranium - Dissolved (IC)	92111L	mg/L		0.007	0.001	
Vanadium - Total (ICP)	23330L	mg/L		1.28	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	<	0.002	0.002	
Zinc - Total (ICP)	30501L	mg/L		2.78	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L		0.153	0.001	
Ion Balance		Balance		0.96	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-29B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-16
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	05-10-93	1	2.0	97.6	93.2	106.7	98.1	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-29B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-16
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-29B
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-16
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-30
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-15
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	R E S U L T S	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	43.7	0.01	2.181
Calcium - (ICP) Dissolved	20111L	mg/L	7.50	0.01	0.374
Magnesium - (ICP) Total	12005L	mg/L	18.2	0.01	1.498
Magnesium - (ICP) Dissolved	12111L	mg/L	2.30	0.01	0.189
Sodium - (ICP) Total	11005L	mg/L	595.	0.01	25.883
Sodium - (ICP) Dissolved	11111L	mg/L	573.	0.01	24.926
Potassium -(ICP) Total		mg/L	9.10	0.02	0.233
Potassium -(ICP) Dissolved		mg/L	2.02	0.02	0.052
Chloride - Dissolved	17206L	mg/L	78.2	0.1	2.205
Sulphate - Dissolved	16306L	mg/L	107.	0.1	2.226
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	1156.	0.1	
pH	10301L	Units	8.23	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	1409.	0.5	23.110
Total Hardness	10602L	mg/L	28.2	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	56.6	0.02	
Silicon - Dissolved (ICP)		mg/L	4.69	0.02	
Turbidity	02074L	NTU	2650.	0.1	
Total Dissolved Solids	00201L	mg/L	1480	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.22	0.01	0.016
Nitrite Nitrogen as N	07206L	mg/L	0.009	0.003	
Nitrate Nitrogen as N	07301L	mg/L	1.13	0.003	0.080
Total Dissolved Phosphorus as P	15423L	mg/L	0.180	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.105	0.001	
Total Phosphorus as P	15406L	mg/L	1.20	0.003	
Sulphur - (ICP) - Dissolved		mg/L	37.0	0.2	
Sulphur - (ICP) - Total		mg/L	37.0	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	1560	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	4420.	0.1	
Aluminum - Total (ICP)	13009L	mg/L	56.4	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.26	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877. FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-30
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-15
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	< 0.002	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0140	0.002	
Arsenic - Total (AA)	33005L	mg/L	0.0290	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	0.0040	0.002	
Barium - Total (ICP)	56011L	mg/L	3.34	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.06	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.011	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	< 0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.10	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.09	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.019	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	0.003	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.020	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.080	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.017	0.0002	
Iron - Total (ICP)	26009L	mg/L	44.1	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.11	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.160	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	< 0.0002	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.160	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.107	0.001	
Manganese - Total (ICP)	25360L	mg/L	1.29	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.009	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.009	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.008	0.001	
Nickel - Total (ICP)	28350L	mg/L	0.047	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	< 0.001	0.001	
Phosphorus - Total (ICP)		mg/L	1.5	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-30
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-D2740-15
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	12-10-93	1	1.0	103.1	92.0	108.2	114.3	91.8	105.1
Nitrate Nitrogen as N	06-10-93	1	1.0	97.3	93.2	106.7	101.9	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	15-10-93	1	0.7	99.0	89.6	112.5	103.2	90.0	113.2
Sulphur - (ICP) - Dissolved	15-10-93	10	N.A.	NOT APPLICABLE			NOT APPLICABLE		
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077. FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 465-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-30
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-15
Chemex Project Number : KOME010-0S01
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	< 0.1	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	< 0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	0.002	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	< 0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L	1.97	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L	0.386	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.017	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	< 0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	0.022	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	0.017	0.001	
Vanadium - Total (ICP)	23330L	mg/L	0.056	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	0.003	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.808	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L	0.037	0.001	
Ion Balance		Balance	0.93	0.01	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-30
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-15
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-30
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-15
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	20-10-93	10	1.7	94.5	91.7	104.3	95.7	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-32
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-13
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Calcium - (ICP) Total	20005L	mg/L	43.2	0.01	2.156
Calcium - (ICP) Dissolved	20111L	mg/L	9.97	0.01	0.498
Magnesium - (ICP) Total	12005L	mg/L	20.8	0.01	1.712
Magnesium - (ICP) Dissolved	12111L	mg/L	3.42	0.01	0.281
Sodium - (ICP) Total	11005L	mg/L	720.	0.01	31.320
Sodium - (ICP) Dissolved	11111L	mg/L	700.	0.01	30.450
Potassium -(ICP) Total		mg/L	11.1	0.02	0.284
Potassium -(ICP) Dissolved		mg/L	2.66	0.02	0.068
Chloride - Dissolved	17206L	mg/L	15.3	0.1	0.431
Sulphate - Dissolved	16306L	mg/L	184.	0.1	3.827
PP Alkalinity	10151L	mg/L	< 0.1	0.1	
Total Alkalinity	10111L	mg/L	1534.	0.1	
pH	10301L	Units	7.04	0.01	
Carbonate	06301L	mg/L	< 0.5	0.5	
Bicarbonate	06201L	mg/L	1870.	0.5	30.667
Total Hardness	10602L	mg/L	39.0	0.1	
Hydroxide	08501L	mg/L	< 0.5	0.5	
Silicon - Total (ICP)		mg/L	68.2	0.02	
Silicon - Dissolved (ICP)		mg/L	5.96	0.02	
Turbidity	02074L	NTU	4205.	0.1	
Total Dissolved Solids	00201L	mg/L	1850	1.	
Total Ammonia Nitrogen	07505L	mg/L	0.68	0.01	0.049
Nitrite Nitrogen as N	07206L	mg/L	0.011	0.003	
Nitrate Nitrogen as N	07301L	mg/L	2.04	0.003	0.146
Total Dissolved Phosphorus as P	15423L	mg/L	0.150	0.003	
Ortho Phosphorus as P	15256L	mg/L	0.115	0.001	
Total Phosphorus as P	15406L	mg/L	5.88	0.003	
Sulphur - (ICP) - Dissolved		mg/L	53.1	0.2	
Sulphur - (ICP) - Total		mg/L	56.0	0.2	
Total Filterable Residue (TDS)	10451L	mg/L	2010	1.	
Non-Filterable Residue (TSS)	10401L	mg/L	5140.	0.1	
Aluminum - Total (ICP)	13009L	mg/L	51.3	0.01	
Aluminum - Dissolved (ICP)	13109L	mg/L	0.23	0.002	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-32
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-13
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Antimony - Total (AA)	51003L	mg/L	0.0020	0.002	
Antimony - Dissolved (AA)	51003L	mg/L	0.0190	0.0002	
Arsenic - Total (AA)	33005L	mg/L	0.0360	0.002	
Arsenic - Dissolved (AA)	33109L	mg/L	0.0030	0.0002	
Barium - Total (ICP)	56011L	mg/L	3.28	0.01	
Barium - Dissolved (ICP)	56109L	mg/L	0.19	0.002	
Beryllium - Total (ICP)	04009L	mg/L	0.010	0.001	
Beryllium - Dissolved (ICP)	04103L	mg/L	< 0.0002	0.0002	
Boron - Total (ICP)	05009L	mg/L	0.12	0.01	
Boron - Dissolved (ICP)	05111L	mg/L	0.15	0.002	
Cadmium - Dissolved (GFAA)	48003L	mg/L	< 0.0002	0.0002	
Cadmium - Total (GFAA)	48003L	mg/L	< 0.001	0.001	
Chromium - Total (ICP)	24009L	mg/L	0.039	0.002	
Chromium - Dissolved (ICP)	24360L	mg/L	0.001	0.0002	
Cobalt - Total (ICP)	27360L	mg/L	0.029	0.003	
Cobalt - Dissolved (ICP)	27360L	mg/L	< 0.001	0.001	
Copper - Total (ICP)	29501L	mg/L	0.076	0.001	
Copper - Dissolved (ICP)	29111L	mg/L	0.030	0.0002	
Iron - Total (ICP)	26009L	mg/L	57.7	0.01	
Iron - Dissolved (ICP)	26109L	mg/L	0.22	0.002	
Lead - Total (GFAA)	82004L	mg/L	0.130	0.002	
Lead - Dissolved (GFAA)	82104L	mg/L	< 0.0002	0.0002	
Lithium - Total (ICP)	03009L	mg/L	0.190	0.001	
Lithium - Dissolved (ICP)	03109L	mg/L	0.146	0.001	
Manganese - Total (ICP)	25360L	mg/L	1.51	0.001	
Manganese - Dissolved (ICP)	25109L	mg/L	0.035	0.0002	
Mercury - Total (CVAA)	80011L	ug/L	< 0.05	0.05	
Mercury - Dissolved (CVAA)	80101L	ug/L	< 0.002	0.002	
Molybdenum - Total (ICP)	42330L	mg/L	0.023	0.003	
Molybdenum - Dissolved (ICP)	42330L	mg/L	0.022	0.001	
Nickel - Total (ICP)	28350L	mg/L	0.097	0.005	
Nickel - Dissolved (ICP)	28350L	mg/L	0.002	0.001	
Phosphorus - Total (ICP)		mg/L	1.6	0.1	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-32
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-13
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Calcium - (ICP) Total	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Calcium - (ICP) Dissolved	15-10-93	10	1.3	104.3	92.6	110.9	110.0	92.5	108.9
Magnesium - (ICP) Total	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Magnesium - (ICP) Dissolved	15-10-93	10	0.2	100.9	87.3	113.4	104.0	90.2	107.4
Sodium - (ICP) Total	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Sodium - (ICP) Dissolved	15-10-93	10	0.2	100.3	87.7	113.0	100.7	87.8	110.1
Potassium -(ICP) Total	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Potassium -(ICP) Dissolved	15-10-93	10	0.1	98.4	86.0	110.4	99.0	84.8	109.7
Chloride - Dissolved	13-10-93	3	1.0	92.6	88.7	107.9	97.4	85.2	115.4
Sulphate - Dissolved	13-10-93	3	1.0	96.4	91.5	108.3	94.5	91.1	107.8
Total Alkalinity	05-10-93	3	0.2	NOT APPLICABLE			NOT APPLICABLE		
pH	05-10-93	3	0.7	NOT APPLICABLE			NOT APPLICABLE		
Silicon - Total (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Silicon - Dissolved (ICP)	15-10-93	10	0.5	99.9	78.0	125.7	93.8	80.2	150.1
Total Ammonia Nitrogen	07-10-93	10	0.2	98.9	86.8	108.2	94.0	90.2	105.8
Nitrite Nitrogen as N	07-10-93	1	1.0	101.3	92.0	108.2	109.5	91.8	105.1
Nitrate Nitrogen as N	06-10-93	1	1.0	97.3	93.2	106.7	101.9	90.7	113.0
Total Dissolved Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Ortho Phosphorus as P	12-10-93	1	2.0	98.0	87.9	112.8	100.0	87.8	108.5
Total Phosphorus as P	14-10-93	1	0.0	101.6	89.6	112.5	104.3	90.0	113.2
Total Filterable Residue (TDS)	13-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Non-Filterable Residue (TSS)	12-10-93	1	2.0	NOT APPLICABLE			NOT APPLICABLE		
Aluminum - Total (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Aluminum - Dissolved (ICP)	15-10-93	10	0.9	102.3	87.3	112.8	106.8	81.2	126.0
Antimony - Total (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Antimony - Dissolved (AA)	14-10-93	1	0.0	110.0	78.7	114.9	106.7	78.7	126.6
Arsenic - Total (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Arsenic - Dissolved (AA)	14-10-93	1	0.0	106.2	88.5	108.7	92.0	90.7	133.3
Barium - Total (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Barium - Dissolved (ICP)	15-10-93	10	0.0	97.3	90.5	106.8	100.3	94.6	110.3
Beryllium - Total (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9
Beryllium - Dissolved (ICP)	15-10-93	10	0.0	97.9	89.7	109.8	102.8	93.7	107.9

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI

MANALTA COAL
PROJ.#3773-2

Sample Description : T93R-32
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-13
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	RESULTS	DETECTION LIMIT	MILLI EQUIVALENTS
Phosphorus - Dissolved (ICP)	15450L	mg/L	0.3	0.1	
Selenium - Total (AA)	34005L	mg/L	< 0.002	0.002	
Selenium - Dissolved (AA)	34105L	mg/L	< 0.0001	0.0001	
Silver - Total (GFAA)	47005L	mg/L	< 0.001	0.001	
Silver - Dissolved (GFAA)	47005D	mg/L	< 0.0001	0.0001	
Strontium - Total (ICP)	38011L	mg/L	2.14	0.002	
Strontium - Dissolved (ICP)	38111L	mg/L	0.603	0.002	
Titanium - Total (ICP)	22011L	mg/L	0.025	0.003	
Titanium - Dissolved (ICP)	22111D	mg/L	0.003	0.003	
Uranium - Total (IC)	92115L	mg/L	0.028	0.005	
Uranium - Dissolved (IC)	92111L	mg/L	0.014	0.001	
Vanadium - Total (ICP)	23330L	mg/L	0.073	0.002	
Vanadium - Dissolved (ICP)	23330D	mg/L	0.003	0.002	
Zinc - Total (ICP)	30501L	mg/L	0.365	0.001	
Zinc - Dissolved (ICP)	30501D	mg/L	0.042	0.001	

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-32
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-13
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Boron - Total (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Boron - Dissolved (ICP)	15-10-93	10	0.4	89.2	83.0	121.3	88.3	85.5	110.4
Cadmium - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Cadmium - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			NOT APPLICABLE		
Chromium - Total (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Chromium - Dissolved (ICP)	15-10-93	10	0.7	94.8	83.3	116.6	99.8	86.6	114.0
Cobalt - Total (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Cobalt - Dissolved (ICP)	15-10-93	10	0.0	94.8	81.7	113.1	100.1	82.5	115.0
Copper - Total (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Copper - Dissolved (ICP)	15-10-93	10	1.0	95.1	85.2	111.5	98.1	90.5	107.6
Iron - Total (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Iron - Dissolved (ICP)	15-10-93	10	0.1	103.4	89.4	114.9	106.8	89.7	127.0
Lead - Total (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lead - Dissolved (GFAA)	15-10-93	1	0.0	40.0	36.7	124.9	100.0	86.0	110.6
Lithium - Total (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Lithium - Dissolved (ICP)	15-10-93	10	0.4	93.9	81.7	111.8	92.2	83.0	109.4
Manganese - Total (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Manganese - Dissolved (ICP)	15-10-93	10	0.0	102.5	89.3	110.9	105.7	82.7	118.0
Mercury - Total (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Mercury - Dissolved (CVAA)	04-10-93	3	0.2	97.8	77.1	121.6	87.5	80.1	121.0
Molybdenum - Total (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Molybdenum - Dissolved (ICP)	15-10-93	10	3.2	101.4	79.8	118.8	104.1	78.0	117.0
Nickel - Total (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Nickel - Dissolved (ICP)	15-10-93	10	2.0	96.7	79.0	123.4	102.0	76.0	129.0
Phosphorus - Total (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Phosphorus - Dissolved (ICP)	15-10-93	10	0.4	100.9	80.0	120.0	105.5	80.0	120.0
Selenium - Total (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Selenium - Dissolved (AA)	13-10-93	1	0.0	108.0	86.2	108.8	97.5	88.4	126.1
Silver - Total (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Silver - Dissolved (GFAA)	20-10-93	1	0.0	NOT APPLICABLE			100.0	82.0	107.6
Strontium - Total (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0
Strontium - Dissolved (ICP)	15-10-93	10	1.1	101.1	92.3	107.2	101.3	88.0	110.0

CHEMEX Labs Alberta Inc.

Calgary : 2021 - 41st Avenue N.E., T2E 6P2. Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton : 9331 - 48th Street, T6B 2R4. Telephone (403) 465-9877, FAX (403) 466-3332

BATCH SPECIFIC QUALITY ASSURANCE REPORT FOR :
PITEAU ENGINEERING LTD.
ATTENTION : TAD DABROWSKI
PROJ.#3773-2

Sample Description : T93R-32
Sample Date & Time : 28-09-93
Sampled By : SR
Sample Type : BAILER
Sample Station Code :

Chemex Worksheet Number : 93-02740-13
Chemex Project Number : KOME010-0501
Sample Access :
Sample Matrix : WATER
Report Date : March 21, 1994

PARAMETER	DATE ANALYZED (DD-MM-YY)	QA/QC BATCH NUMBER	DUP Rr	SPIKES % RECOV	SPIKES WARN LOWER	SPIKES LIMIT UPPER	CHECK % RECOV	CHECK WARN LOWER	CHECK LIMIT UPPER
Titanium - Total (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Titanium - Dissolved (ICP)	15-10-93	10	1.0	91.4	79.9	114.1	94.7	82.3	114.5
Uranium - Total (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Uranium - Dissolved (IC)	19-10-93	10	0.7	103.0	91.7	104.3	103.0	90.0	106.6
Vanadium - Total (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Vanadium - Dissolved (ICP)	15-10-93	10	2.0	99.3	86.9	113.4	103.0	93.5	109.2
Zinc - Total (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0
Zinc - Dissolved (ICP)	15-10-93	10	1.0	98.7	89.3	117.8	102.4	96.1	121.0