



Elsa Reclamation and Development Company
Keno Hill Mine
Keno Hill Silver District
Site Investigation and Improvements, Special Projects
Fisheries Assessment Project
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TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	FISHERY INVESTIGATIONS	3
2.1	SOUTH MCQUESTEN RIVER WATERSHED.....	3
3.0	METHODS	5
4.0	SPECIFIC SITE INVESTIGATIONS	6
4.1	CHRISTAL LAKE.....	6
4.2	CHRISTAL CREEK	6
4.3	LIGHTNING CREEK.....	6
4.4	FLAT CREEK	7
5.0	RESULTS.....	8
5.1	CHRISTAL LAKE.....	8
5.2	CHRISTAL CREEK	8
5.3	LIGHTNING CREEK.....	9
5.4	FLAT CREEK	9
6.0	WATER QUALITY	10
7.0	METAL ANALYSES	11
7.1	FISH	11
7.1.1	2008/2006 Fish Tissue Metal Analyses Specific Comparison Data	11
7.1.2	2008 - Total Fish Tissue Metal Analyses Data	13
8.0	FISH BARRIER INVESTIGATIONS	17
8.1	BARRIER REMOVAL GUIDELINES	19
8.2	TIMING OF REMOVAL	20
8.3	EXTENT OF REMOVAL	20
8.4	METHOD OF REMOVAL.....	21
8.5	REGULATORY REQUIREMENTS.....	22
8.6	FISH BARRIER SEDIMENT ANALYSES COMPARISONS	23
8.7	SEDIMENT	28
8.7.3	Total Sediment Metal Analyses Data.....	28
9.0	REFERENCES.....	31
10.0	REPORT Limitations	32

LIST OF FIGURES

Figure 1 – General Project Location	2
Figure 2 – Fish Sampling Sites	4

LIST OF TABLES

Table 1 – Minnow Trapping Results.....	8
Table 2 - Electrofishing Results	8
Table 3 - Water Quality Results	10
Table 4 - Comparison of Selected Metals Analyses (Slimy Sculpin) - Christal Lake	11
Table 5 - Comparison of Selected Metals Analyses (Slimy Sculpin) from Lightning Creek	12
Table 6 - Minnow Trapping Results 5: Comparison of Selected Metals Analyses (Arctic Grayling) - Lightning Creek.	12
Table 7 - Comparison of Selected Metals Analyses (Slimy Sculpin Vs. Northern Pike) from Flat Creek	13
Table 8 - Results of Metal Concentrations from Fish Tissue Analyses from Various Sites	14
Table 9 - Benchmarks for Allowable Intake of Metals in Fish Tissue – Adults.....	16
Table 10 - 2008 Metals Analyses Results of Sediment Samples – Barriers Associated with Site C4 (Christal Creek).	24
Table 11 - 2007 Metals Data From Sediment Samples Collected at Christal Creek and South McQuesten River Sample Sites	25
Table 12 - Barrier Metals Values as a Percentage of Various Sites Sampled in and Around the Christal Creek Drainage – 2008/2007.....	27
Table 13 - Results of Metal Concentrations from Sediment Analyses from Christal Lake Outlet Sites.....	29

LIST OF PLATES

Plate 1 Upstream Barriers #2 & #3 – Christal Creek associated with Site C4. (Photo was taken during a high water event - 2008.).....	18
Plate 2 Downstream Barrier #1 – Christal Creek associated with Site C4.	19

LIST OF APPENDICES

Appendix I	Data from Analyses of Fish Tissue
Appendix II	Data from Metal Analyses of Sediment Samples
	– Christal Lake Outlet & Christal Creek in the vicinity of Site C4
Appendix III	Data from Metal Analyses of Sediment Samples
	– Keno/Elsa Area

1.0 INTRODUCTION

An investigation into fish presence, fish habitat and metal uptake in fish tissue, in the vicinity of Elsa/Keno, Yukon (Figure 1), was conducted in September of 2008. This investigation was part of a project being conducted as part of overall closure planning activities in the mining district. Documentation of previous fisheries investigations includes reports prepared by White Mountain Environmental Consulting in 2006 (White Mountain Environmental Consulting, 2006) and 1995 (White Mountain Environmental Consulting, 1995). The current study investigated fish and fish habitat at numerous sites including Christal Lake, Christal Creek, Lightning Creek and Flat Creek. Analyses of fish tissue for metal uptake was conducted on fish captured in this study. Results were compared to fish tissue analyses conducted in previous studies (identified above). Barriers to fish movement, previously identified on Christal Creek, were investigated further in this assessment, and recommendations regarding their removal are included in this report.

Sediment samples from seven sites were collected for analyses of metals accumulation. Three of the sites were associated with the barriers to fish movement on Christal Creek, while the other four sites were associated with the outlet vicinity of Christal Lake.

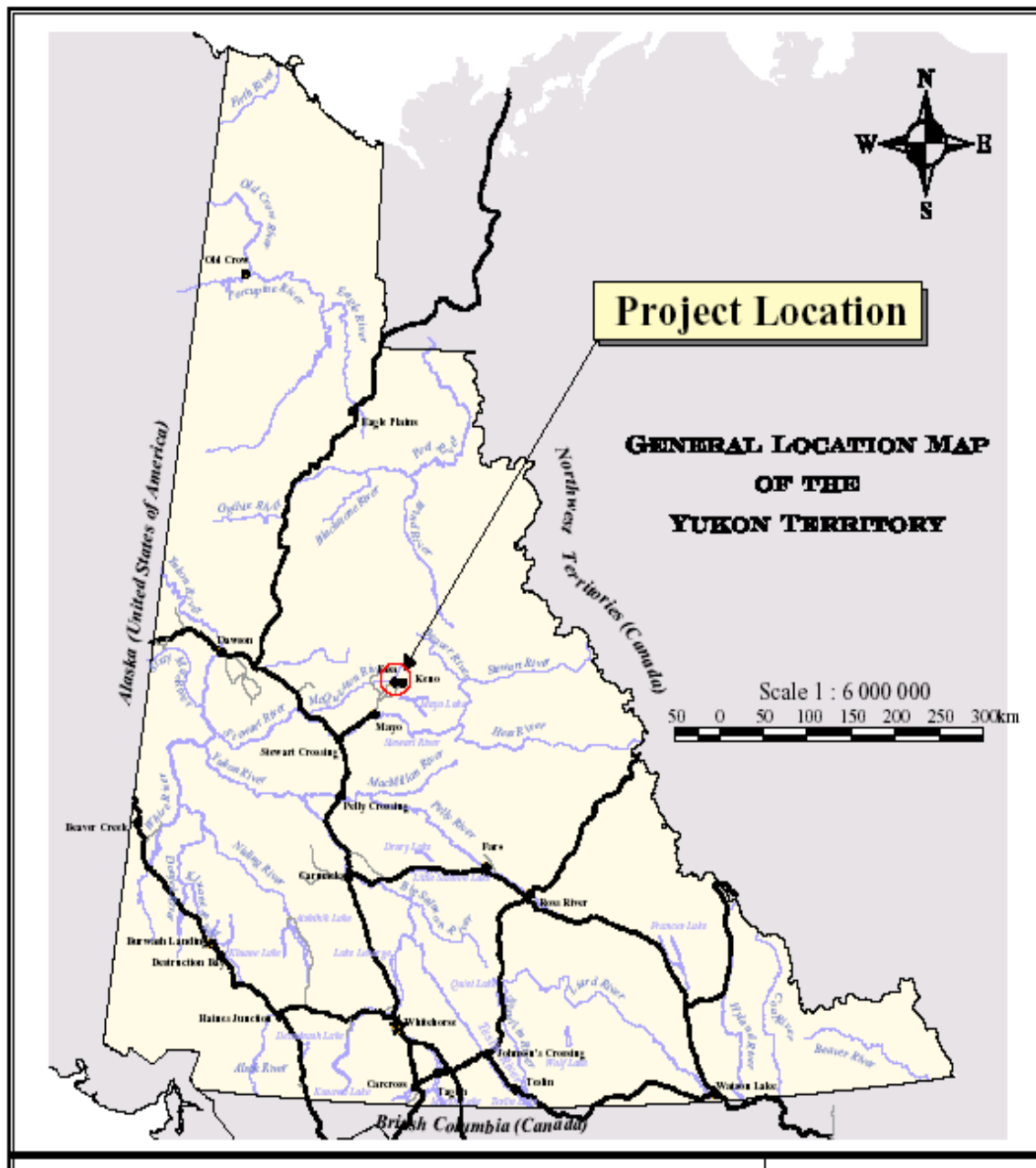
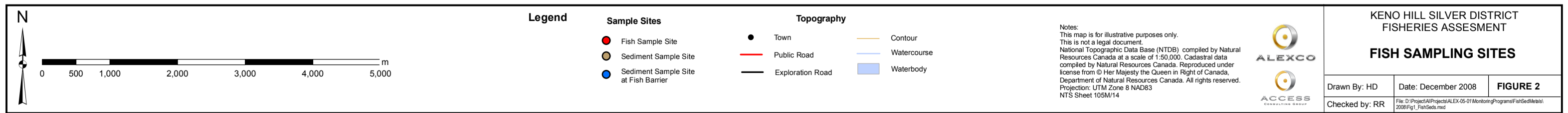
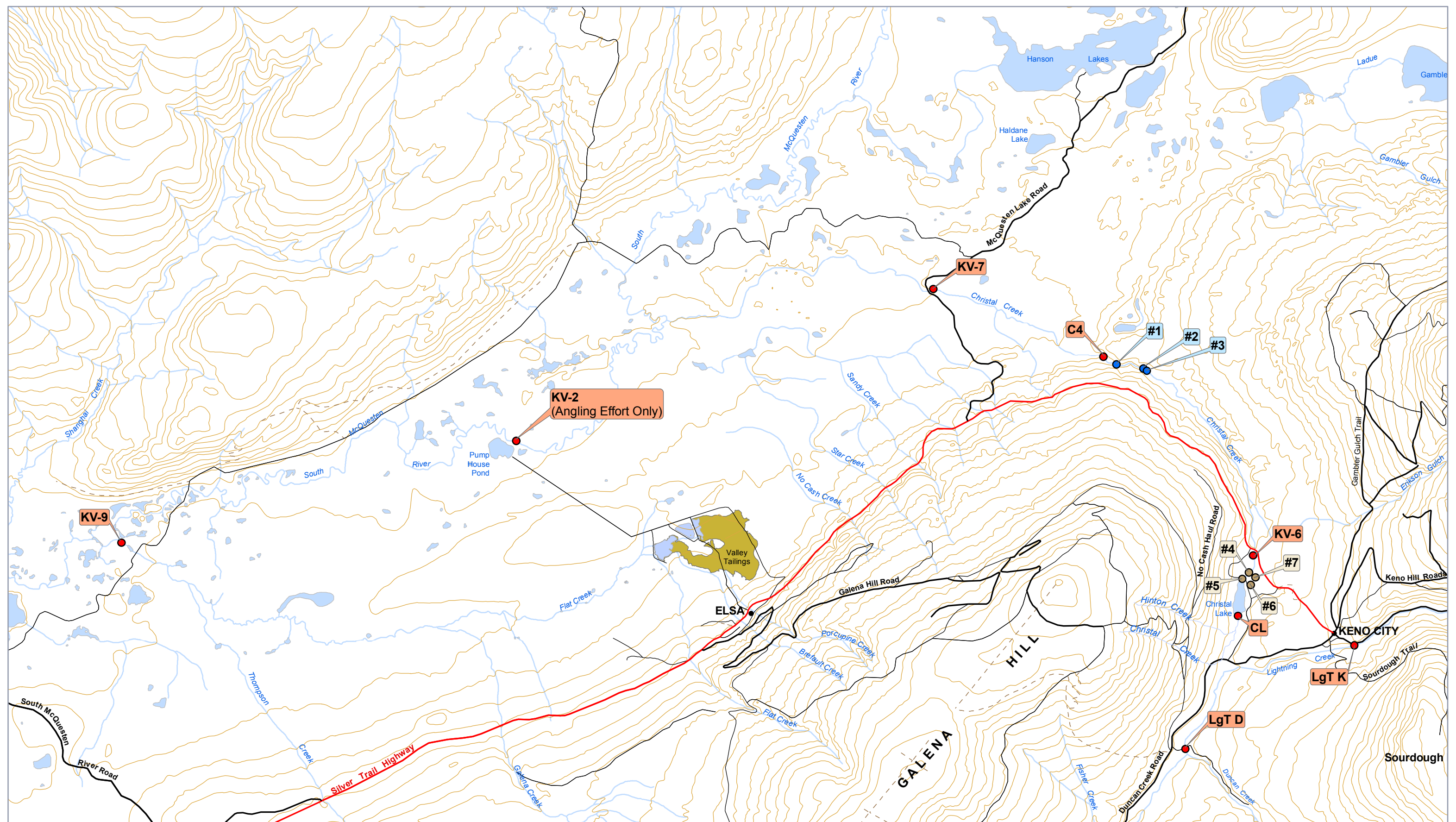


Figure 1 – General Project Location

2.0 FISHERY INVESTIGATIONS

2.1 SOUTH MCQUESTEN RIVER WATERSHED

Fish and fish habitat investigations were conducted during September 17 - 19, 2008 at seven sites which included Christal Lake, Christal Creek, Flat Creek and Lightning Creek (Figure 2). The primary method of assessment was via Gee's minnow trapping. Electrofishing was conducted at only three sites due to the lack of suitable electrofishing habitat and conditions. Electrofishing sites were limited to two locations on Lightning Creek and one on Christal Creek.



Sites sampled during this assessment included LgT K & LgT D (Lightning Creek sites), Christal Lake (CL - north and south ends), KV6 (Christal Creek), C4 (Christal Creek), KV7 (Christal Creek) and KV9 (Flat Creek). The sample area had just undergone a considerable period of above normal precipitation and, as a result, most sample locations were experiencing elevated flow rates, above normal discharge and increased turbidity. These three factors limited the extent of electrofishing attempted during this investigation, and to some extent, limited effective minnow trap placement.

3.0 METHODS

All sites were accessible via vehicle or foot. Sites visited that were deemed to be potential fish habitat were sampled for fish presence using Gee's minnow traps and electrofishing (if suitable). When minnow traps were used, up to three traps were placed in suitable habitat in the immediate proximity of the designated site. Yukon River origin Chinook salmon roe was used as an attractant.

Where stream/river conditions allowed, certain sites were electrofished using a Smith/Root® backpack electrofishing unit. Conductivity, pH, temperature and dissolved oxygen values were determined at each site. Angling effort was applied only at the South McQuesten River, just north of and adjacent to the Pumphouse Pond in the vicinity of KV2. Angling was attempted for approximately 30 minutes. No fish were captured during this effort.

All fish captured were identified by species and enumerated. Fork length was measured before release.

4.0 SPECIFIC SITE INVESTIGATIONS

4.1 CHRISTAL LAKE

Minnow trapping was conducted in Christal Lake at two locations, one at the northern extent of the lake adjacent to the outflow (CLN), and one about two thirds up the lake to the south (CLS). Christal Lake is a relatively small, shallow lake with a very soft bottom. The lake had been gillnetted in 2006 with no results (White Mountain Environmental Consulting, 2006). Minnow trapping conducted in 1995 and 2006 indicated the presence of slimy sculpins only. No other species of fish have been documented in Christal Lake.

Electrofishing was not attempted at Christal Lake due to the very soft consistency of the lake bottom.

4.2 CHRISTAL CREEK

Minnow trapping was conducted at three sites on Christal Creek, including the Keno Road Crossing (KV6), the Hansen Lake Road Crossing (KV7), and a walk-in site via a gravel pit off the Hansen Lake Road (C4). Christal Creek was also investigated for potential fish barriers upstream of the site at C4 (see FISH BARRIER INVESTIGATIONS – 8.0).

Electrofishing was conducted on Christal Creek only at site KV7.

4.3 LIGHTNING CREEK

Two sites were investigated on Lightning Creek during this investigation. One site was adjacent to the Keno City campground located in the heart of Keno City (LgT K), immediately upstream of the old wooden bridge, and the other was located downstream of that site, just prior to its confluence with Duncan Creek (LgT D).

Both of the Lightning Creek sites were electrofished.

4.4 FLAT CREEK

The flat creek site (KV9) was accessible via the McQuesten River Road, then via 4-wheeler several kilometres down an old mining trail directly into the site, just upstream of its confluence with the South McQuesten River.

Electrofishing was not attempted at this site due primarily to the remoteness and uncertainty regarding the potential for electrofishing. It was discovered during this investigation that there was reasonable electrofishing potential at this site, and this sampling method may be attempted during future investigations.

5.0 RESULTS

Tales 1 and 2 following summarize trapping and electrofishing results for all sites. All minnow trapping results are presented in Table 1. All electrofishing results are presented in Table 2.

Table 1 – Minnow Trapping Results

- from the Keno Hill Silver District Fisheries Assessment, September, 2008, Access Consulting Group

Date	Location	Minnow Traps 1/4" mesh	Soak (hours)	Species Captured	Number Captured
18/09/2008	LgT K	2	24	nil	0
18/09/2008	LgT D	3	24	SS	4
18/09/2008	Christal Lake South (CLS)	2	25.5	SS	5
18/09/2008	Christal Lake North (CLN)	2	24	SS	2
18/09/2008	KV6	2	24	Nil	0
18/09/2008	C4	2	22	Nil	0
18/09/2008	KV7	2	21	Nil	0
18/09/2008	KV9	5	14	NP	1 juvenile

AG = Arctic grayling; SS = Slimy Sculpin; NP = northern pike

Table 2 - Electrofishing Results

- from the Keno Hill Silver District Fisheries Assessment , September, 2008. Access Consulting Group

Date	Location	Effort (s)	Species Captured	Number Captured
18/09/2008	LgT D	402	AG; SS	4 juv. AG; 2 SS
18/09/2008	LgT K	100	Nil	0
18/09/2008	KV7	108	nil	0

AG = Arctic grayling; SS = Slimy Sculpin; NP = northern pike

5.1 CHRISTAL LAKE

Christal Lake Sites (CLN & CLS) - Seven slimy sculpins (*Cottus cognatus*) were captured via minnow trapping in Christal Lake in overnight sets.

5.2 CHRISTAL CREEK

KV6 – No fish captured via minnow trapping. Electrofishing was not attempted.

KV7 – No fish captured via minnow trapping. Electrofishing was conducted despite a high flow rate and relatively turbid water conditions. The conductivity of the water at this site was high ($> 530 \mu\text{S/cm}$). Past experience has demonstrated that elevated conductivity of this magnitude can reduce the success of electrofishing.

C4 - No fish captured via minnow trapping. Electrofishing was not attempted.

5.3 LIGHTNING CREEK

LgT K – (adjacent to the Campground) - no fish captured via minnow trapping. Electrofishing was conducted (100 s) but no fish were captured or observed.

LgT D – (near the confluence with Duncan Creek) - four (4) slimy sculpins (*Cottus cognatus*) were captured via minnow trapping. Electrofishing was conducted (402 s) resulting in the capture of four juvenile Arctic grayling (*Thymallus arcticus*) and two slimy sculpins.

5.4 FLAT CREEK

KV9 – five (5) minnow traps were left for a 14 hour soak, which resulted in the capture of a single juvenile northern pike (*Esox lucius*).

Electrofishing was not attempted.

6.0 WATER QUALITY

In situ water quality measurement results are noted in Table 3 below. Temperatures within the sample area ranged from 4 to 9 °C.

Table 3 - Water Quality Results

- from the Keno Hill Silver District Fisheries Assessment, September, 2008. Access Consulting Group

Date	Location	Water Temperature (°C)	Conductivity (µS/cm)	pH	D. O. (% sat.)
17/09/2008	LgT K	4	180	7.9	12.4 (94)
17/09/2008	KV7	4	530	7.42	-
18/09/2008	KV9	9	533	7.63	-
15/09/2008	KV6	6	511	6.82	-

7.0 METAL ANALYSES

7.1 FISH

Metal analyses were performed on fish captured from three sites. Those sites included Christal Lake, Lightning Creek (two samples) and Flat Creek.

Specific tissue metals data from 2008 are presented in the following tables (Tables 4 – Christal Lake, 5 & 6 – Lightning Creek, & 7 – Flat Creek). The seven metals represented here are compared to the seven metals presented in the White Mountain Report (2006). All metals data obtained from the 2008 investigation are appended to this report, as well as being noted in Table 8.

7.1.1 2008/2006 Fish Tissue Metal Analyses Specific Comparison Data

The following Tables demonstrate a comparison of selected metals that were presented in the 2006 report by White Mountain Environmental Consulting.

Table 4 - Comparison of Selected Metals Analyses (Slimy Sculpin) - Christal Lake
- Keno Hill Silver District Fisheries Assessment, September 2008, as Compared to 2006 Results.
Access Consulting Group

<i>Slimy Sculpin</i>	<i>mg/kg</i>						
Site	Arsenic	Cadmium	Copper	Lead	Manganese	Nickel	Zinc
Christal Lake 2006 (average)	1.39	0.226	1.037	1.07	32.26	0.137	39.66
Christal Lake 2008 (composite)	2.27	0.139	0.668	1.67	17.3	0.87	36.1

The above data are based on averages of individual samples, or composite samples. In the above table, most values were within reasonable range variations when compared to each of the other values within the same water body, with the following notable exception:

The value for manganese at Christal Lake was approximately half the value in 2008 as compared to 2006.

Table 5 - Comparison of Selected Metals Analyses (Slimy Sculpin) - Lightning Creek
 - Keno Hill Silver District Fisheries Assessment, September 2008, as Compared to 2006 Results.
 Access Consulting Group.

<i>Slimy Sculpin</i>	<i>mg/kg</i>						
Site	Arsenic	Cadmium	Copper	Lead	Manganese	Nickel	Zinc
Lightning Creek 2006 (average)	0.935	0.279	1.07	0.481	12.8	0.232	42.25
Lightning Creek 2008 (composite)	0.663	0.203	1.44	0.834	11.2	5.29	39.3

The above data are based on averages of individual samples, or composite samples.

In the above table, most values were within reasonable range variations when compared to each of the other values within the same water body, with the following notable exception:

Table 6 - Minnow Trapping Results 1: Comparison of Selected Metals Analyses (Arctic Grayling) - Lightning Creek.

- Keno Hill Silver District Fisheries Assessment, September 2008, as Compared to 2006 Results.
 Access Consulting Group.

<i>Arctic Grayling</i>	<i>mg/kg</i>						
Site	Arsenic	Cadmium	Copper	Lead	Manganese	Nickel	Zinc
Lightning Creek 2006 (average)	0.164	0.0442	0.687	0.134	3.594	<0.010	18.51
Lightning Creek 2008 (composite)	0.318	0.201	0.791	0.408	5.19	0.93	30.6

The above data are based on averages of individual samples, or composite samples.

In the above table, most values were within reasonable range variations when compared to each of the other values within the same water body, with the following notable exception:

The 2008 value for Nickel was 0.93 as compared to a non-detectable finding in 2006.

**Table 7 - Comparison of Selected Metals Analyses (Slimy Sculpin Vs. Northern Pike)
 from Flat Creek**

- Keno Hill Silver District Fisheries Assessment, September 2008, as Compared to 2006 Results.
 Access Consulting Group

Northern Pike (2008) vs. Slimy Sculpin (2006)	mg/kg						
Site	Arsenic	Cadmium	Copper	Lead	Manganese	Nickel	Zinc
Flat Creek 2006 (average)	1.031	0.434	1.092	9.734	57.9	0.12	47.86
Flat Creek 1995	1.43	0.34	1.61	11.17	51.74	0.19	56.01
Flat Creek 2008 (composite)	0.187	0.318	0.501	0.676	10.8	1.69	51.8

The above data are based on averages of individual samples, or composite samples.

In the above table, most values were within reasonable range variations when compared to each of the other values within the same water body, with the following notable exceptions:

Flat Creek KV9 (2008) values for Arsenic, Lead, and Manganese were notably low as compared to the other Flat Creek values from previous evaluations. This may have been due to the species variation and the sample size.

7.1.2 2008 - Total Fish Tissue Metal Analyses Data

The original laboratory data are appended as Appendix I.

Results of all fish tissue metal analyses associated with the 2008 investigation are presented in Table 8.

Table 8 - Results of Metal Concentrations from Fish Tissue Analyses from Various Sites

- Keno Hill Silver District Fisheries Assessment, September 2008. Access Consulting Group.

2008 – ALS LABORATORIES Fisheries Metal Analyses					
RESULTS OF ANALYSES (mg/kg)					
Sample Site ➔	Lightning Creek <i>Arctic Grayling</i>	Lightning Creek <i>Slimy Sculpin</i>	Christal Lake	Flat Creek	Detectio n Limits
Date Sampled ➔	18-Sep-08	18-Sep-08	18-Sep-08	19-Sep-08	
Metals ↓	ug/g (mg/kg)				
Aluminium (Al)-Total	42.3	109	22.4	3.1	2
Antimony (Sb)-Total	<0.010	0.021	0.045	0.012	0.01
Arsenic (As)-Total	0.318	0.663	2.27	0.187	0.01
Barium (Ba)-Total	1.57	3.33	1.20	0.406	0.01
Beryllium (Be)-Total	<0.10	<0.10	<0.10	<0.10	0.1
Bismuth (Bi)-Total	<0.030	<0.030	<0.030	<0.030	0.03
Cadmium (Cd)-Total	0.201	0.203	0.139	0.318	0.005
Calcium (Ca)-Total	6000	8600	7900	4570	2
Chromium (Cr)-Total	1.38	7.82	1.29	2.50	0.1
Cobalt (Co)-Total	0.153	0.239	0.049	0.088	0.02
Copper (Cu)-Total	0.791	1.44	0.668	0.501	0.01
Iron (Fe)-Total	81.5	239	69.2	21.7	0.2
Lead (Pb)-Total	0.408	0.834	1.67	0.676	0.02
Lithium (Li)-Total	<0.10	0.14	<0.10	<0.10	0.1
Magnesium (Mg)-Total	284	286	277	259	1
Manganese (Mn)-Total	5.19	11.2	17.3	10.8	0.01
Molybdenum (Mo)-Total	0.171	1.03	0.156	0.319	0.01
Nickel (Ni)-Total	0.93	5.29	0.87	1.69	0.1
Phosphorus (P)-Total	5300	6340	5400	4010	5
Potassium (K)-Total	3230	2460	2470	2900	20
Selenium (Se)-Total	2.98	1.79	0.75	0.44	0.2
Silver (Ag)-Total	0.012	0.018	0.027	0.014	0.01
Sodium (Na)-Total	818	1020	1130	1040	20
Strontium (Sr)-Total	5.03	6.22	3.19	3.52	0.01
Thallium (Tl)-Total	<0.010	<0.010	<0.010	0.019	0.01
Tin (Sn)-Total	<0.050	<0.050	<0.050	<0.050	0.05
Titanium (Ti)-Total	1.88	4.16	0.78	0.10	0.1
Uranium (U)-Total	0.0062	0.0172	0.0070	<0.0020	0.002
Vanadium (V)-Total	0.14	0.44	<0.10	<0.10	0.1
Zinc (Zn)-Total	30.6	39.3	35.1	51.8	0.1

Arctic grayling and slimy sculpins were by far the predominant species captured during the 2008 investigation, and in the previous investigations. As sculpins are not considered game fish, grayling have been singled out as a primary potential fish-based source of heavy metals consumption by humans in this geographic area.

Human consumption guideline benchmarks (“not to exceed” levels of human consumption) for certain metals have been established (IRIS, 2006).

For the seven metals identified and previously discussed in this report, the fish tissue metal concentration consumption benchmarks (mg/kg) for adult humans (SENES, 2006) are tabled below in Table 9, and are compared to actual tissue metals values from Lightning Creek Arctic grayling.

The benchmark levels were determined based on a standardized adult weight (70.7 kg), a standardized serving size of fish (21.6 g) and an allowable daily intake of individual metals (TDI - expressed as milligrams of metal per kilograms of human body weight per day).

Table 9 - Benchmarks for Allowable Intake of Metals in Fish Tissue – Adults

METAL	TOLERABLE DAILY INTAKE (TDI) mg/kg human body wt/day	BENCHMARK (Adult – mg/kg fish/day) <i>Based on standardized portion size</i>	METAL CONCENTRATION LIGHTNING CR. GRAYLING (mg/kg fish)
Arsenic	0.0003	1	0.318
Cadmium	0.0008	2.6	0.201
Copper	0.03	98	0.791
Lead	0.0036	11.8	0.408
Manganese	0.1402	459	5.19
Nickel	0.0013	4.3	0.93
Zinc	0.3	982	30.6

It should be noted that the Arctic grayling collected as part of this 2008 investigation were all juvenile fish. It may be reasonable to expect that the concentration of certain metals in the fish tissue would increase with age and size. Additional sampling is planned for this area, and adult Arctic grayling will be targeted.

Based on the information presented in Table 9 above, the metals levels in the Lightning Creek grayling tissue were all well below acceptable human consumption benchmark levels for adult humans. Benchmarks for children and toddlers are roughly 50% and 20% of the adult levels, respectively. With the exception of arsenic, these benchmarks are also well above the metal levels found in the grayling tissue.

8.0 FISH BARRIER INVESTIGATIONS

As part of the Keno Hill closure project, fisheries investigations were conducted during 2006 (White Mountain Environmental Consulting, 2006) and in 2008 as part of this study, in order to determine the nature and extent of fisheries usage in several of the local creeks, including Christal Creek. During those investigations, remnants of old wooden bridges found upstream of the trail crossing (site C4) on Christal Creek were re-evaluated for their potential to present partial or complete obstructions to upstream fish movement.

The 2006 White Mountain report, referring to the potential fish barriers upstream of site C4, states the following:

“Bridges across the creek, built in the 1960’s, and since collapsed, created a series of barriers to fish movement. At the site of the lower barrier observed in 1995, the creek has cut a new channel around the barrier causing the infilling of several deep pools downstream and the removal of the barrier. The in-filled downstream pools were suspected as having provided over-wintering habitat for a small group of Arctic grayling in 1995.

A series of three other barriers, all upstream of the washed out barrier, remain in place. The first, approximately 230 meters upstream from the original barrier, a small stick jam created over old bridge timbers has created a partial barrier that restricts fish passage during low water. Arctic grayling were recorded above this barrier in 2006. No fish were captured upstream of the second and third extant barriers located 600 meters upstream of the washed out barrier and separated by 30 meters. Both of these barriers likely limit fish migration during all seasons (photo 5). Arctic grayling were the only fish found in this reach below the barriers during the 2006 investigations (Tables 2 and 3) and although moderately common they appeared less commonly and were more widely dispersed than in 1995.”

The 2008 ACG fisheries investigation substantiated the findings of the 2006 report regarding the location and condition of the barriers. Christal Creek, in the vicinity and upstream of sample site C4, was investigated for the presence of potential fish barriers in the form of wooden bridges, as had been previously reported. Four potential barriers had been

indicated in previous reports from 1995 and 2006. Of these, the first (downstream extent) encountered precisely at the C4 site was no longer considered to be a potential barrier. Apparently it had been washed out since first identified in 1995. Accordingly only three barriers will be referred to relating to the C4 site.

Approximately 250 metres upstream of the C4 site (non-barrier) was a debris barrier apparently formed around the remnants of an old bridge. It formed a blockage that was likely complete for most fish species, with an approximate one metre differential in water elevation.

Approximately 300 metres upstream of the first barrier, a double barrier set was encountered. Two barriers, approximately 12 metres apart, are present. The downstream aspect barrier was estimated to constitute a drop of one metre while the upstream barrier was estimated to have a drop of 0.4 metres. Taken in conjunction, the two obstacles provided a formidable barrier to upstream fish movement."

According to the 2006 report, reference to the previous report in 1996, and substantiated by the current investigation, three barriers were present and are believed to provide a formidable, if not complete, obstacle to fish movement. Plates 1 and 2 following show the three barriers referred to in all reports. In Plate 1, both terminal upstream barriers (#3 & #2) can be seen.



Plate 1 Upstream Barriers #2 & #3 – Christal Creek associated with Site C4. (Photo was taken during a high water event - 2008.)



Plate 2 Downstream Barrier #1 – Christal Creek associated with Site C4.

(Photo was taken during a high water event - 2008.)

In order to restore this portion of Christal Creek to a natural unobstructed state, there is the option to have these barriers removed. In order to perform this task in such a manner that minimal disturbance to the creek habitat is produced, available procedural guidelines have been referenced and will be adhered to. Of particular concern is the possible release of accumulated sedimentation that has been deposited upstream of each barrier. Analyses for stream sediment metals were conducted from these three barrier sites in 2008. The results for these analyses and four additional sites associated with the outlet of Christal lake are included in this document in Appendix II.

8.1 BARRIER REMOVAL GUIDELINES

The following basic guidelines, taken from a document produced by the Department of Fisheries and Oceans (DFO) Canada, will be adhered to whenever possible (Guidelines for the Management of Beaver in Fish-Bearing Streams in the Yukon). As well, a more substantial document produced by the Government of British Columbia was referenced (A Users Guide to Working in and Around Water: Understand the Regulation Under British Columbia's Water Act). While these guidelines were specifically formulated for the removal of beaver dams, the basic principles should apply to the removal of any stream blockage/barrier of an organic nature.

8.2 TIMING OF REMOVAL

The timing of removal of the barriers will be in the very early spring, as soon after ice out as practical. Water levels will be at their lowest, allowing for good access to the

structures, minimal water depth and flow, and diminished distribution of any disturbed sediment. Although the presence of slimy sculpins has been documented upstream and downstream of the barrier sites, the only species of fish actually documented in this area of Christal Creek is Arctic grayling (White Mountain Environmental Consulting, 2006). As they are late spring/early summer spawners, all in-stream work will be completed prior to any potential reproductive activity. It is also anticipated that the water temperature at this time of the year will be such that fish will not be attracted that far upstream from the farther downstream reaches near or at the confluence with the South McQuesten River.

The three barriers in question all span the entire width of the creek. At the time of the most recent evaluation in 2008, the entire area had been experiencing significant and frequent rainfall events, and Christal Creek was considered to be at maximum flow. Even at that time, the average width of the creek was no more than about three metres. At the proposed time of barrier removal, the width and depth of the creek (discharge) are expected to be substantially less. This would make the work easier by allowing better access to the structures overall. It is anticipated that the top portions of the barriers will be well above the water line, allowing for a significant portion of the in-stream work to actually be done out of the water.

8.3 EXTENT OF REMOVAL

Only one side of each barrier will be removed, allowing adequate migratory access during virtually any time of the year. Only up to a meter of width or less should be removed in order to allow for fish movement. This will reduce the amount of sediment/materials flushed downstream over a contracted period. Once a section of the barrier is removed, it will begin to degrade naturally over time, minimizing downstream loading of suspended solids.

The two uppermost barriers are several metres apart. Opposing sides will be removed, in hopes that a resting pool will form naturally in between the two barriers, similar to that found in a vertical alternating-slot fish ladder.

Once the partial removal of each barrier is complete, the creek will slowly rise over the course of the spring and will naturally achieve equilibrium with the barriers. Additional components of the barriers may be altered and/or washed out, allowing for a natural reconfiguration of the barriers in conjunction with the normal flow patterns of the creek.

8.4 METHOD OF REMOVAL

All in-stream work should be done by hand to the extent possible, using chainsaws, buck saws, axes and hand winches (come-alongs) as required. It is not anticipated that the labor required will be formidable enough to warrant the use of heavy mechanized equipment.

If heavy equipment must be used, it will be used in conjunction with hand labor. Workers will be positioned out of harms' way during the use of any mechanized equipment. Only experienced personnel will be used for all aspects of this project. Any heavy mechanized equipment used would remain above the ordinary high water mark (OHWM) at all times. A spill plan and kit would be on-hand when heavy equipment is used within 50 metres of the OHWM.

Regardless of the method used, any freed woody material will be removed from the creek and will be placed well upslope of the ordinary high water mark to prevent them from re-entering the creek and forming new barriers during a high water event.

Whenever possible, final touches will be applied manually to leave a natural looking, functional passage that will allow for fish migration at all water levels. Following removal, the barriers should be inspected on an annual basis for several years to monitor for degradation of the remaining portion of the barrier, and to check for blockages resulting from debris entering the barrier opening from upstream.

8.5 REGULATORY REQUIREMENTS

A final decision and subsequent plan to remove the barriers on the system would require review and approval/authorization by DFO. If approved, it is likely that the work could be conducted under a *“Letter of Advice”*. However, if DFO determines that there are issues with respect to HADD (Harmful Alteration, Disruption or Destruction of Fish Habitat), an authorization will be required before proceeding. A requirement for an authorization would in turn trigger a requirement for an assessment under the Yukon Environmental and Socio-economic Assessment Act (YESAA).

8.6 FISH BARRIER SEDIMENT ANALYSES COMPARISONS

During the summer of 2008, sediment samples collected immediately upstream of each of the three barriers were analyzed for metals accumulation. The results are summarized in Table 10 below, and an average value for all three sites is provided.

Table 10 - 2008 Metals Analyses Results of Sediment Samples

– Barriers Associated with Site C4 (Christal Creek).

		Christal Cr. Barriers (C4)	d/s barrier #1	middle barrier #2	u/s barrier #3	Barriers (Average)
Sample Date			06/10/08	06/10/08	06/10/08	
Parameter	Unit	Detection Limit	Result	Result	Result	Average Result
Aluminum	ug/g	1	6,440	6,440	7,660	6,847
Antimony	ug/g	0.5	1.4	3.0	20.4	8.3
Arsenic	ug/g	0.2	40.1	72.1	241.0	117.7
Barium	ug/g	0.03	328.00	342.00	210.00	293.00
Beryllium	ug/g	0.01	0.17	0.18	0.23	0.19
Bismuth	ug/g	0.5	<0.5	<0.5	<0.5	<.05
Cadmium	ug/g	0.05	3.40	7.46	95.20	35.35
Calcium	ug/g	2	13,500	13,000	14,400	13,633
Chromium	ug/g	0.04	13.70	13.80	16.10	14.50
Cobalt	ug/g	0.05	7.00	7.07	9.07	7.71
Copper	ug/g	0.05	21.30	23.60	42.60	29.20
Iron	ug/g	1	20,300	21,500	27,100	22,967
Lead	ug/g	0.3	87.5	221.0	1,580.0	630.0
Lithium	ug/g	0.1	12.8	12.3	14.8	13.3
Magnesium	ug/g	1	6,000	5,960	6,180	6,047
Manganese	ug/g	0.3	919.0	988.0	2,020.0	1,309.0
Mercury	ug/g	0.003	0.050	0.040	0.120	0.069
Molybdenum	ug/g	0.05	0.84	0.87	1.20	0.97
Nickel	ug/g	0.1	20.9	20.7	26.8	22.8
Phosphorus	ug/g	0.5	1,130.0	1,190.0	1,000.0	1,107.0
Potassium	ug/g	5	380	400	490	423
Selenium	ug/g	0.3	0.5	0.8	1.5	0.9
Silicon	ug/g	1	360	273	175	269
Silver	ug/g	0.2	1.20	2.50	14.10	5.9
Sodium	ug/g	1	99	103	113	105
Strontium	ug/g	0.02	39.10	38.50	41.70	39.77
Thallium	ug/g	0.3	0.80	0.80	2.00	1.2
Tin	ug/g	0.2	0.20	0.30	1.30	0.6
Titanium	ug/g	0.05	221.00	244.00	207.00	224.00
Vanadium	ug/g	0.1	22.5	24.2	25.4	24.0
Zinc	ug/g	0.1	453.0	575.0	3,790.0	1606
Zirconium	ug/g	0.05	2.10	2.00	2.00	2.00

A cursory analysis of the preceding values indicates a general consistency among the three sites sampled. Notable exceptions are demonstrated in the tendency for the sample from site #3, the extreme upstream barrier, to indicate elevated values for certain metals over the other two sites, including antimony, arsenic, cadmium, lead, manganese, silver and zinc.

In 2007, sediment samples were collected from various sampling sites on Christal Creek and the South McQuesten River. Other than site KV-6, all samples sites are downstream of the three barriers associated with site C4. It is customary to collect three replicates (grabs) from each sample site. Table 11 presents the average of the three grabs taken at each of the sites sampled in 2007.

Table 11 - 2007 Metals Data From Sediment Samples Collected at Christal Creek and South McQuesten River Sample Sites

Parameter	Unit	KV-6 ^A Christal Cr. @ Keno Rd.	KV-7 ^B Christal Cr. @ Hanson Rd.	KV-8 ^B Christal Cr. @ S. McQ.	KV-1 ^C S. McQ. u/s of Christal Cr.	KV-2 ^C S. McQ. d/s of Christal Cr.
Aluminum	ug/g	9,410	7,253	11,200	8,050	8,770
Antimony	ug/g	14.8	<0.5	5.8	<0.5	15.3
Arsenic	ug/g	284.0	34.7	190.0	18.8	235.0
Barium	ug/g	251.33	226.33	301.00	133.33	155.33
Beryllium	ug/g	0.26	0.20	0.38	0.24	0.29
Bismuth	ug/g	2.9	1.9	3.4	1.4	2.6
Cadmium	ug/g	28.17	3.67	24.77	3.27	17.97
Calcium	ug/g	5760	15500	14433	7217	8910
Chromium	ug/g	16.73	13.20	20.57	12.53	18.10
Cobalt	ug/g	10.47	7.49	13.77	19.50	24.03
Copper	ug/g	41.27	26.57	62.97	25.40	49.50
Iron	ug/g	27,133	20,367	34,600	17,533	28,267
Lead	ug/g	954.33	56.43	497.67	13.90	707.00
Lithium	ug/g	15.13	13.47	20.13	13.07	14.13
Magnesium	ug/g	4,167	6,910	6,650	4,467	5,180
Manganese	ug/g	3,276.7	758.0	3,140.0	753.7	3,600.0
Mercury	ug/g	0.102	0.068	0.145	0.054	0.109
Molybdenum	ug/g	0.70	0.95	1.63	0.63	1.50
Nickel	ug/g	27.9	22.6	44.1	74.0	92.2
Phosphorus	ug/g	1,053.3	988.0	1,006.7	1,020.0	1,093.3
Potassium	ug/g	397	387	567	410	464
Selenium	ug/g	2.5	1.2	3.6	1.2	3.0
Silicon	ug/g	312	263	265	139	175
Silver	ug/g	12.233	0.800	7.100	0.300	11.800
Sodium	ug/g	67	83	80	73	84
Strontium	ug/g	23.53	39.97	42.00	29.73	39.27
Thallium	ug/g	5.6	0.4	4.9	1.0	6.4
Tin	ug/g	0.9	0.3	0.6	0.3	1.6
Titanium	ug/g	72.13	107.33	72.67	105.13	105.07
Vanadium	ug/g	26.2	22.0	31.3	20.4	21.5
Zinc	ug/g	1,483.3	403.7	2,066.7	512.0	1,410.0
Zirconium	ug/g	2.20	2.77	3.50	2.23	2.57

^A Site KV-6 is located on Christal Creek, upstream of the Site C4 barriers.

^B Sites KV-7 & KV-8 are located on Christal Creek, downstream of the Site C4 barriers.

^C Sites KV-1 & KV-2 are located on the S. McQuesten River, upstream & downstream (respectively) of the Christal Creek confluence

The actual laboratory data for 2007 sediment sample metals analyses are appended as Appendix III.

For ease of comparison and as a quick reference, Table 12 expresses the average of the three barrier site samples (Table 9; Column 7 - Barriers Average) collected in 2008, as a percentage of the values from the sites sampled in 2007 (Table 10).

Table 12 - Barrier Metals Values as a Percentage of Various Sites Sampled in and Around the Christal Creek Drainage – 2008/2007.

5Average Barrier Sediment Metal Values Expressed as a Percentage of 2007 Sediment Metal Values from Various Sites						
Parameter	Unit	KV-6 (u/s*) Christal Cr. @ Keno Rd.	KV-7 (d/s*) Christal Cr. @ Hanson Rd.	KV-8 (d/s*) Christal Cr. @ S. McQ.	KV-1 S. McQ. u/s of Christal Cr.	KV-2 S. McQ. d/s of Christal Cr.
Aluminum	ug/g	73%	94%	61%	85%	78%
Antimony	ug/g	56%	Too low for comparison	142%	Too low for comparison	54%
Arsenic	ug/g	41%	339%	62%	625%	50%
Barium	ug/g	117%	130%	97%	220%	189%
Beryllium	ug/g	74%	95%	51%	79%	67%
Bismuth	ug/g	Too low for comparison	Too low for comparison	Too low for comparison	Too low for comparison	Too low for comparison
Cadmium	ug/g	126%	964%	143%	1082%	197%
Calcium	ug/g	237%	88%	94%	189%	153%
Chromium	ug/g	87%	110%	71%	116%	80%
Cobalt	ug/g	74%	103%	56%	40%	32%
Copper	ug/g	71%	110%	46%	115%	59%
Iron	ug/g	85%	113%	66%	131%	81%
Lead	ug/g	66%	1115%	126%	4529%	89%
Lithium	ug/g	88%	99%	66%	102%	94%
Magnesium	ug/g	145%	88%	91%	135%	117%
Manganese	ug/g	40%	173%	42%	174%	36%
Mercury	ug/g	67%	101%	48%	127%	63%
Molybdenum	ug/g	138%	102%	59%	154%	65%
Nickel	ug/g	82%	101%	52%	31%	25%
Phosphorus	ug/g	105%	112%	110%	108%	101%
Potassium	ug/g	107%	109%	75%	103%	91%
Selenium	ug/g	37%	76%	26%	76%	31%
Silicon	ug/g	86%	103%	102%	193%	154%
Silver	ug/g	49%	742%	84%	1978%	50%
Sodium	ug/g	158%	126%	131%	144%	125%
Strontium	ug/g	169%	99%	95%	134%	101%
Thallium	ug/g	22%	277%	25%	124%	19%
Tin	ug/g	67%	200%	100%	200%	38%
Titanium	ug/g	311%	209%	308%	213%	213%
Vanadium	ug/g	92%	109%	77%	118%	112%
Zinc	ug/g	108%	398%	78%	314%	114%
Zirconium	ug/g	92%	73%	58%	91%	79%

* - location of site relative to barriers at C4.

While the above data do not necessarily demonstrate a specific trend or allow for precise conclusions, it is of interest to note that, in general, the sediment metal levels for the seven metals compared earlier in this report (arsenic, cadmium, copper, lead, manganese, nickel and zinc) and many others as well, tend to indicate substantially higher values (with the exception of nickel) at the Christal Creek (C4) barrier sites (average) as compared to the Christal Creek site sampled downstream (KV-7).

This may be an indication that the barrier sites are points of enhanced precipitation of certain metals out of solution or suspension.

8.7 SEDIMENT

Metal analyses were performed on sediment samples collected from seven sites. In addition to the three samples collected from the fish barrier investigation on Christal Creek (C4) as previously explained in this report, four additional sites were sampled. These sites were located at the tailings deposition adjacent to the outlet of Christal Lake (CLN), and the Christal Lake outlet itself. These data are presented in Table 13.

8.7.3 Total Sediment Metal Analyses Data

The original laboratory data are appended as Appendix II.

Table 13 - Results of Metal Concentrations from Sediment Analyses from Christal Lake Outlet Sites

- (Stream Bank & Deposition Site Tailings). Keno Hill Silver District Fisheries Assessment, September 2008. Access Consulting Group.

Metal	Unit	Detection Limit	#4	#5	#6	#7
Aluminum	ug/g	1	728	598	1200	908
Antimony	ug/g	0.5	654	745	913	1430
Arsenic	ug/g	0.2	14100	13800	8250	14000
Barium	ug/g	0.03	<0.03	1.26	7.49	5.82
Beryllium	ug/g	0.01	0.07	0.08	0.15	0.13
Bismuth	ug/g	0.5	1	1	<0.5	<0.5
Cadmium	ug/g	0.05	4740	4180	1720	1760
Calcium	ug/g	2	1630	1640	1010	894
Chromium	ug/g	0.04	1.95	<0.04	<0.04	5.68
Cobalt	ug/g	0.05	24.7	15.7	9.44	17
Copper	ug/g	0.05	415	426	373	504
Iron	ug/g	1	226000	236000	189000	219000
Lead	ug/g	0.3	11500	23800	18500	23900
Lithium	ug/g	0.1	1.4	1.4	2.2	1.3
Magnesium	ug/g	1	1910	2080	1030	936
Manganese	ug/g	0.3	41200	46300	38800	36400
Mercury	ug/g	0.003	3.4	3.83	3.68	3.94
Molybdenum	ug/g	0.05	<0.05	<0.05	0.2	1.1
Nickel	ug/g	0.1	37.1	29.2	28.2	30.6
Phosphorus	ug/g	0.5	112	115	278	260
Potassium	ug/g	5	110	99	130	130
Selenium	ug/g	0.3	6.7	8.3	8.1	5.7
Silicon	ug/g	1	110	101	163	180
Silver	ug/g	0.2	60.8	67.8	78.8	60.6
Sodium	ug/g	1	50	36	32	33
Strontium	ug/g	0.02	5.2	5.36	3.3	3.47
Thallium	ug/g	0.3	32.8	37	33.6	29.9
Tin	ug/g	0.2	24.1	24.9	28.6	33.8
Titanium	ug/g	0.05	3.5	2.7	5.41	3.2
Vanadium	ug/g	0.1	2.9	3.2	4.3	4.2
Zinc	ug/g	0.1	195000	180000	144000	142000
Zirconium	ug/g	0.05	2.4	2.5	3.1	3.3
pH	pH	0.5	6.3	6	5.8	5.8

ug/g = mg/kg

#4 = adjacent to Christal Creek approximately 20 m downstream of the Christal Lake outlet

#5 = adjacent to Christal Creek immediately downstream of the Christal Lake outlet

#6 = southern aspect of the tailings upper bench area adjacent to the Christal Lake outlet

#7 = northern aspect of the tailings upper bench area adjacent to the Christal Lake outlet

A brief analysis of the preceding values does not identify any noticeable differential between the stream bank sediments (#4 & #5) as compared to the sediment samples taken directly from the sediment deposition area adjacent to Christal Lake outlet (#6 & #7).

In a 2007 investigation of sediment metal values from various sites on Christal Creek, the Christal Creek site at the Hansen Lake Road crossing (KV7) demonstrated noticeably lower values of certain metals than two other Christal Creek sites, KV6 (at the Keno Highway) and KV8 (Christal Lake outlet). Examples of this include arsenic, manganese, silver, thallium, tin, zinc and lead.

When the sediment values indicated in this report (2008) from Christal Creek are compared with values from the 2007 sediment analyses of various Christal Creek sites, the values do not appear to vary significantly among the corresponding sites from each year's sampling. A notable exception is lead (pb) which was in the 400 – 600 ppm range at the outlet of Christal Lake (KV8) in 2007, and in the 11,000 – 24,000 ppm range in the same general area in 2008.

The original laboratory data from 2007 are appended as Appendix III.

9.0 REFERENCES

White Mountain Environmental Consulting, 2006. *Fisheries Assessments Conducted in the Keno Hill Mining Area, Including Metals Analysis of Fish Tissue Samples*

White Mountain Environmental Consulting. Sparling P. and Connor M, December, 1995. *Fish and Fish Habitat Assessment Conducted Near Elsa, Yukon*

Department of Fisheries and Oceans (DFO), Habitat and Enhancement Branch, Whitehorse, Yukon. May, 1998 (Draft). *Guidelines for the Management of Beaver in Fish-Bearing Streams in the Yukon*

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2006. U.S. Environmental Protection Agency. <http://www.epa.gov/iris>. Accessed March 27, 2006. *IRIS (Integrated Risk Information System)*..

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10.0 REPORT LIMITATIONS

This report was prepared for the exclusive use of Elsa Reclamation and Development Company, and is based on data and information collected during the environmental site assessment (ESA) sampling events completed in August and September/October 2008. Access Consulting Group has followed standard professional procedures in conducting the assessment and in preparing the contents of this report. The material in this report reflects Access Consulting Group's best judgment in light of the information available at the time of the preparation of this report. Any use that a third party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of the third parties. Access Consulting Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. Access Consulting Group believes that the contents of this report are substantively correct.

The information and data contained in this report, including without limitation, the results of any sampling and analyses conducted by Access Consulting Group, are based solely on the conditions observed at the time of the field assessment and have been developed or obtained through the exercise of Access Consulting Group's professional judgment and are set to the best of Access Consulting Group's knowledge, information, and belief. Although every effort has been made to confirm that all such information and data is factual, complete and accurate, Access Consulting Group offers no guarantees or warranties, either expressed or implied, with respect to such information or data.

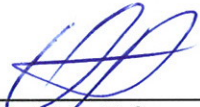
Access Consulting Group shall not by the act of issuing this report be deemed to have represented that any sampling and analyses conducted by it have been exhaustive or will identify all contaminants or contamination of the site, and persons relying on the results thereof do so at their own risk.

Should you have any questions regarding this report, or require further information, please contact the undersigned at Access Consulting Group in Whitehorse, Yukon.

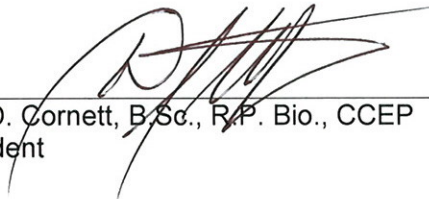
Respectfully submitted,

ACCESS CONSULTING GROUP

A registered trade name for Access Mining Consultants Ltd.



David Petkovich, B.Sc.
Senior Environmental Manager



Dan D. Cornett, B.Sc., R.P. Bio., CCEP
President

APPENDIX I

DATA FROM METAL ANALYSES OF FISH TISSUE

ELSA/KENO FISHERIES INVESTIGATION

SEPTEMBER, 2008

ALS FILE #L693215



Environmental Division

Certificate of Analysis

ACCESS CONSULTING GROUP LTD.

ATTN: DAVID PETKOVICH

#3 CALCITE BUSINESS CENTRE
151 INDUSTRIAL ROAD
WHITEHORSE YT Y1A 2V3

Reported On: 10-NOV-08 05:24 PM

Lab Work Order #: L693215

Date Received: 07-OCT-08

Project P.O. #:

Job Reference: ALEX-08-ESP-01-

Legal Site Desc: KENO PROJECT

CofC Numbers:

Other Information:

Comments:

Selam Worku
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU
REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

		Sample ID	L693215-1	L693215-2	L693215-3	L693215-4	
		Description					
		Sampled Date	18-SEP-08	18-SEP-08	18-SEP-08	19-SEP-08	
		Sampled Time					
		Client ID	LGT D AG	LGT D SS	CHRISTAL LAKE	KV9	
Grouping	Analyte						
TISSUE							
Metals	Aluminum (Al)-Total (mg/kg ww)	42.3	109	22.4	3.1		
	Antimony (Sb)-Total (mg/kg ww)	<0.010	0.021	0.045	0.012		
	Arsenic (As)-Total (mg/kg ww)	0.318	0.663	2.27	0.187		
	Barium (Ba)-Total (mg/kg ww)	1.57	3.33	1.20	0.406		
	Beryllium (Be)-Total (mg/kg ww)	<0.10	<0.10	<0.10	<0.10		
	Bismuth (Bi)-Total (mg/kg ww)	<0.030	<0.030	<0.030	<0.030		
	Cadmium (Cd)-Total (mg/kg ww)	0.201	0.203	0.139	0.318		
	Calcium (Ca)-Total (mg/kg ww)	6000	8600	7900	4570		
	Chromium (Cr)-Total (mg/kg ww)	1.38	7.82	1.29	2.50		
	Cobalt (Co)-Total (mg/kg ww)	0.153	0.239	0.049	0.088		
	Copper (Cu)-Total (mg/kg ww)	0.791	1.44	0.668	0.501		
	Iron (Fe)-Total (mg/kg ww)	81.5	239	69.2	21.7		
	Lead (Pb)-Total (mg/kg ww)	0.408	0.834	1.67	0.676		
	Lithium (Li)-Total (mg/kg ww)	<0.10	0.14	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg ww)	284	286	277	259		
	Manganese (Mn)-Total (mg/kg ww)	5.19	11.2	17.3	10.8		
	Molybdenum (Mo)-Total (mg/kg ww)	0.171	1.03	0.156	0.319		
	Nickel (Ni)-Total (mg/kg ww)	0.93	5.29	0.87	1.69		
	Phosphorus (P)-Total (mg/kg ww)	5300	6340	5400	4010		
	Potassium (K)-Total (mg/kg ww)	3230	2460	2470	2900		
	Selenium (Se)-Total (mg/kg ww)	2.98	1.79	0.75	0.44		
	Silver (Ag)-Total (mg/kg ww)	0.012	0.018	0.027	0.014		
	Sodium (Na)-Total (mg/kg ww)	818	1020	1130	1040		
	Strontium (Sr)-Total (mg/kg ww)	5.03	6.22	3.19	3.52		
	Thallium (Tl)-Total (mg/kg ww)	<0.010	<0.010	<0.010	0.019		
	Tin (Sn)-Total (mg/kg ww)	<0.050	<0.050	<0.050	<0.050		
	Titanium (Ti)-Total (mg/kg ww)	1.88	4.16	0.78	0.10		
	Uranium (U)-Total (mg/kg ww)	0.0062	0.0172	0.0070	<0.0020		
	Vanadium (V)-Total (mg/kg ww)	0.14	0.44	<0.10	<0.10		
	Zinc (Zn)-Total (mg/kg ww)	30.6	39.3	35.1	51.8		

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments
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Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
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AG-WET-MS-VA Tissue Silver in Tissue by ICPMS PUGET SOUND PROTOCOLS, EPA 6020A

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995. Tissue samples are homogenized either mechanically or manually prior to digestion. The hotplate or block digestion involves the use of nitric acid followed by repeated additions of hydrogen peroxide. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-WET-ICP-VA Tissue Metals in Tissue by ICPOES PUGET SOUND PROTOCOLS, EPA 6010B

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995. Tissue samples are homogenized either mechanically or manually prior to digestion. The hotplate or block digestion involves the use of nitric acid followed by repeated additions of hydrogen peroxide. Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-WET-MS-VA Tissue Metals in Tissue by ICPMS PUGET SOUND PROTOCOLS, EPA 6020A

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995. Tissue samples are homogenized either mechanically or manually prior to digestion. The hotplate or block digestion involves the use of nitric acid followed by repeated additions of hydrogen peroxide. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

**** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.**

The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

GLOSSARY OF REPORT TERMS

Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.

The reported surrogate recovery value provides a measure of method efficiency.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

[illegible]

~~_____~~ Oct 7/08

APPENDIX II

**DATA FROM METAL ANALYSES OF SEDIMENT SAMPLES
CHRISTAL LAKE OUTLET AND CHRISTAL CREEK
IN THE VICINITY OF SITE C4**

**ELSA/KENO FISHERIES INVESTIGATION
JUNE AND SEPTEMBER, 2008
ALS LOT ID # 649606**



**NORWEST
LABS**

Environmental Sample Information Sheet

NOTE Proper completion of this form is required in order to proceed with analysis
See reverse for contacting your nearest Norwest location and proper sampling protocol

Control Number

64 # 649606

Billing Address		Report To:	Copy of Report To:	Copy of invoice:
Company: Access Consulting Group			Company: Access Consulting Group	Mail invoice to this
Address: #3 Calcite Business Centre-151 Industrial Road		QA/QC Report ☒	Address: #3 Calcite Business Centre-151 Industrial Road	address for approval ☐
Whitehorse, YT Y1A 2V3			Whitehorse, YT Y1A 2V3	
Attention: David Petkovich		Report Result:	Attention: David Petkovich; Rem Ricks	Report Result:
Phone: 867-668-6364		Fax ☐	Phone: 867-668-6364	Fax ☐
Fax: 867-667-6680		Mail ☐	Fax: 867-667-6680	Mail ☐
Cell:		Courier ☐	Cell: rem@accessconsulting.ca	Courier ☐
Email: david@accessconsulting.ca		Email ☒	Email: david@accessconsulting.ca	Email ☒

Information to be included on Report and Invoice Project ID: ALEX-08-ESP-01-J Project Name: Keno Project Location: Elsa; Keno Christal Lake/Creek Legal Location: PO#: 4699-ACG Proj. Acct. Code: Agreement ID:	RUSH Please contact the laboratory to confirm rush dates and times before submitting samples. Upon filling out this section, client accepts that surcharges will be attached to this analysis Required on: all analyses ☐ or ☐ Date required: Signature: Norwest Authorization:	Sample Custody (Please Print) Sampled by: Petkovich; Inglis Date: September/08 Company: ACG Signature: <i>[Signature]</i> Relinquished by: R. Ricks Company: ACG Date: Oct. 16/08 Waybill number: Air North Received by: Company: Date: Processed by: Norwest Labs Date:
---	---	--

Special Instructions/Comments

G5 SED 230 mesh (standard)

RECEIVED
 OCT 17 2008
BM 10°C Novex
1:30

Sample Identification							Number of Containers	Enter tests above (check off relevant samples below)											
		Location	Depth	Date/Time Sampled	Matrix	Sampling Method													
1	Barrier #1 d/s	Christal Cr	-	Oct 6/08	sed	trowel	1												
2	Barrier #2 mid	Christal Cr	-	Oct 6/08	sed	trowel	1												
3	Barrier #3 u/s	Christal Cr	-	Oct 6/08	sed	trowel	1												
4	CL Outlet d/s lower	Christal Lake	-	Sep 18/08	sed	trowel	1												
5	CL Outlet u/s lower	Christal Lake	-	Sep 18/08	sed	trowel	1												
6	CL Outlet upper bench south	Christal Lake	-	Sep 18/08	sed	trowel	1												
7	CL Outlet upper bench north	Christal Lake	-	Sep 18/08	sed	trowel	1												
8																			
9																			
10																			
11																			
12																			
13																			
14																			

NOTE: All hazardous samples must be labeled according to WHMIS guidelines.

Accredited by the Standards Council of Canada for specific tests

Page 1 of 1
##

Bill To:	Access Mining Consultants Ltd.	Project:		Lot ID:	649606
Report To:	Access Mining Consultants Ltd.	ID:	ALEX-08-ESP-01-J	Approval Status:	Approved
	# 3 Calcite Business Centre	Name:	Keno	Invoice Frequency:	by Lot
	151 Industrial Road	Location:	Elsa; Keno Christal Lake/Creek	COD Status:	
	Whitehorse, YT, Canada	LSD:		Control Number:	
	Y1A 2V3	P.O.:	4699-ACG	Date Received:	Oct 17, 2008
Attn:	David Petkovich	Acct code:		Date Reported:	Oct 27, 2008
Sampled By:	Rem Ricks			Report Number:	1163081
Company:	ACG				

Contact	Company	Address
David Petkovich	Access Mining Consultants Ltd.	# 3 Calcite Business Centre, 151 Industrial Road Whitehorse, YT Y1A 2V3 Phone: (867) 668-6463 Fax: (867) 667-6680 Email: david@accessconsulting.ca

Copies	Delivery	Format
1	Email - Single Report	PDF
1	Email - Single Report	Standard Crosstab

Contact	Company	Address
Rem Ricks	Access Mining Consultants Ltd.	# 3 Calcite Business Centre, 151 Industrial Road Whitehorse, YT Y1A 2V3 Phone: (867) 668-6463 Fax: (867) 667-6680 Email: rem@accessconsulting.ca

Copies	Delivery	Format
1	Email - Single Report	PDF
1	Email - Single Report	Standard Crosstab

_____ PAGES IN THIS TRANSMISSION

Notes To Clients:**Reports associated with this Lot**

<u>Id/Format/Report Date</u>	<u>Id/Format/Report Date</u>	<u>Id/Format/Report Date</u>
------------------------------	------------------------------	------------------------------

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Sample Custody

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: 649606
Report To: Access Mining Consultants Ltd.	ID: ALEX-08-ESP-01-J	Control Number:
# 3 Calcite Business Centre	Name: Keno	Date Received: Oct 17, 2008
151 Industrial Road	Location: Elsa; Keno Christal Lake/Creek	Date Reported: Oct 27, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1163081
Y1A 2V3	P.O.: 4699-ACG	
Attn: David Petkovich	Acct code:	
Sampled By: Rem Ricks		
Company: ACG		

Sample Disposal Date: November 26, 2008

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the bottom of this page.

☐ Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for 1 to 5 samples per month	\$ 10.00
Storage for 6 to 20 samples per month	\$ 15.00
Storage for 21 to 50 samples per month	\$ 30.00
Storage for 51 to 200 samples per month	\$ 60.00
Storage for more than 200 samples per month	\$ 110.00

☐ Return Sample, collect, to the address below via:

☐ Greyhound

☐ Loomis

☐ Purolator

☐ Other (specify) _____

Name _____

Company _____

Address _____

Phone _____

Fax _____

Signature _____

Analytical Report

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: 649606
Report To: Access Mining Consultants Ltd.	ID: ALEX-08-ESP-01-J	Control Number:
# 3 Calcite Business Centre	Name: Keno	Date Received: Oct 17, 2008
151 Industrial Road	Location: Elsa; Keno Christal Lake/Creek	Date Reported: Oct 27, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1163081
Y1A 2V3	P.O.: 4699-ACG	
Attn: David Petkovich	Acct code:	
Sampled By: Rem Ricks		
Company: ACG		

		Reference Number	649606-1	649606-2	649606-3	
		Sample Date	Oct 06, 2008	Oct 06, 2008	Oct 06, 2008	
		Sample Location	Christal Cr	Christal Cr	Christal Cr	
		Sample Description	Barrier #1 d/s	Barrier #2 mid	Barrier #3 u/s	
		Matrix	Solids	Solids	Solids	
Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Strong Acid Digestion						
Aluminum	Strong Acid Extractable	ug/g	6440	6440	7660	1
Antimony	Strong Acid Extractable	ug/g	1.4	3.0	20.4	0.5
Arsenic	Strong Acid Extractable	ug/g	40.1	72.1	241	0.2
Barium	Strong Acid Extractable	ug/g	328	342	210	0.03
Beryllium	Strong Acid Extractable	ug/g	0.17	0.18	0.23	0.01
Bismuth	Strong Acid Extractable	ug/g	<0.5	<0.5	<0.5	0.5
Cadmium	Strong Acid Extractable	ug/g	3.4	7.46	95.2	0.05
Calcium	Strong Acid Extractable	ug/g	13500	13000	14400	2
Chromium	Strong Acid Extractable	ug/g	13.7	13.8	16.1	0.04
Cobalt	Strong Acid Extractable	ug/g	7.00	7.07	9.07	0.05
Copper	Strong Acid Extractable	ug/g	21.3	23.6	42.6	0.05
Iron	Strong Acid Extractable	ug/g	20300	21500	27100	1
Lead	Strong Acid Extractable	ug/g	87.5	221	1580	0.3
Lithium	Strong Acid Extractable	ug/g	12.8	12.3	14.8	0.1
Magnesium	Strong Acid Extractable	ug/g	6000	5960	6180	1
Manganese	Strong Acid Extractable	ug/g	919	988	2020	0.3
Mercury	Strong Acid Extractable	ug/g	0.045	0.042	0.120	0.003
Molybdenum	Strong Acid Extractable	ug/g	0.84	0.87	1.2	0.05
Nickel	Strong Acid Extractable	ug/g	20.9	20.7	26.8	0.1
Phosphorus	Strong Acid Extractable	ug/g	1130	1190	1000	0.5
Potassium	Strong Acid Extractable	ug/g	380	400	490	5
Selenium	Strong Acid Extractable	ug/g	0.5	0.8	1.5	0.3
Silicon	Strong Acid Extractable	ug/g	360	273	175	1
Silver	Strong Acid Extractable	ug/g	1.2	2.5	14.1	0.2
Sodium	Strong Acid Extractable	ug/g	99	103	113	1
Strontium	Strong Acid Extractable	ug/g	39.1	38.5	41.7	0.02
Thallium	Strong Acid Extractable	ug/g	0.8	0.8	2.0	0.3
Tin	Strong Acid Extractable	ug/g	0.2	0.3	1.3	0.2
Titanium	Strong Acid Extractable	ug/g	221	244	207	0.05
Vanadium	Strong Acid Extractable	ug/g	22.5	24.2	25.4	0.1
Zinc	Strong Acid Extractable	ug/g	453	575	3790	0.1
Zirconium	Strong Acid Extractable	ug/g	2.1	2.0	2.0	0.05
Soil Acidity						
pH	1:2 sample to water	pH	7.8	7.5	7.6	0.5

Analytical Report

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: 649606
Report To: Access Mining Consultants Ltd.	ID: ALEX-08-ESP-01-J	Control Number:
# 3 Calcite Business Centre	Name: Keno	Date Received: Oct 17, 2008
151 Industrial Road	Location: Elsa; Keno Christal Lake/Creek	Date Reported: Oct 27, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1163081
Y1A 2V3	P.O.: 4699-ACG	
Attn: David Petkovich	Acct code:	
Sampled By: Rem Ricks		
Company: ACG		

		Reference Number	649606-4	649606-5	649606-6	
		Sample Date	Sep 18, 2008	Sep 18, 2008	Sep 18, 2008	
		Sample Location	Christal Lake	Christal Lake	Christal Lake	
		Sample Description	CL Outlet d/s lower	CL Outlet u/s lower	CL Outlet upper bench south	
		Matrix	Solids	Solids	Solids	
Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Strong Acid Digestion						
Aluminum	Strong Acid Extractable	ug/g	728	598	1200	1
Antimony	Strong Acid Extractable	ug/g	654	745	913	0.5
Arsenic	Strong Acid Extractable	ug/g	14100	13800	8250	0.2
Barium	Strong Acid Extractable	ug/g	<0.03	1.26	7.49	0.03
Beryllium	Strong Acid Extractable	ug/g	0.07	0.08	0.15	0.01
Bismuth	Strong Acid Extractable	ug/g	1.0	1.0	<0.5	0.5
Cadmium	Strong Acid Extractable	ug/g	4740	4180	1720	0.05
Calcium	Strong Acid Extractable	ug/g	1630	1640	1010	2
Chromium	Strong Acid Extractable	ug/g	1.95	<0.04	<0.04	0.04
Cobalt	Strong Acid Extractable	ug/g	24.7	15.7	9.44	0.05
Copper	Strong Acid Extractable	ug/g	415	426	373	0.05
Iron	Strong Acid Extractable	ug/g	226000	236000	189000	1
Lead	Strong Acid Extractable	ug/g	11500	23800	18500	0.3
Lithium	Strong Acid Extractable	ug/g	1.4	1.4	2.2	0.1
Magnesium	Strong Acid Extractable	ug/g	1910	2080	1030	1
Manganese	Strong Acid Extractable	ug/g	41200	46300	38800	0.3
Mercury	Strong Acid Extractable	ug/g	3.40	3.83	3.68	0.003
Molybdenum	Strong Acid Extractable	ug/g	<0.05	<0.05	0.2	0.05
Nickel	Strong Acid Extractable	ug/g	37.1	29.2	28.2	0.1
Phosphorus	Strong Acid Extractable	ug/g	112	115	278	0.5
Potassium	Strong Acid Extractable	ug/g	110	99	130	5
Selenium	Strong Acid Extractable	ug/g	6.7	8.3	8.1	0.3
Silicon	Strong Acid Extractable	ug/g	110	101	163	1
Silver	Strong Acid Extractable	ug/g	60.8	67.8	78.8	0.2
Sodium	Strong Acid Extractable	ug/g	50	36	32	1
Strontium	Strong Acid Extractable	ug/g	5.20	5.36	3.30	0.02
Thallium	Strong Acid Extractable	ug/g	32.8	37.0	33.6	0.3
Tin	Strong Acid Extractable	ug/g	24.1	24.9	28.6	0.2
Titanium	Strong Acid Extractable	ug/g	3.5	2.7	5.41	0.05
Vanadium	Strong Acid Extractable	ug/g	2.9	3.2	4.3	0.1
Zinc	Strong Acid Extractable	ug/g	195000	180000	144000	0.1
Zirconium	Strong Acid Extractable	ug/g	2.4	2.5	3.1	0.05
Soil Acidity						
pH	1:2 sample to water	pH	6.3	6.0	5.8	0.5

Analytical Report

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: 649606
Report To: Access Mining Consultants Ltd.	ID: ALEX-08-ESP-01-J	Control Number:
# 3 Calcite Business Centre	Name: Keno	Date Received: Oct 17, 2008
151 Industrial Road	Location: Elsa; Keno Christal Lake/Creek	Date Reported: Oct 27, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1163081
Y1A 2V3	P.O.: 4699-ACG	
Attn: David Petkovich	Acct code:	
Sampled By: Rem Ricks		
Company: ACG		

Reference Number	649606-7
Sample Date	Sep 18, 2008
Sample Location	Christal Lake
Sample Description	CL Outlet upper bench north Solids
Matrix	

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Metals Strong Acid Digestion					
Aluminum	Strong Acid Extractable ug/g	908			1
Antimony	Strong Acid Extractable ug/g	1430			0.5
Arsenic	Strong Acid Extractable ug/g	14000			0.2
Barium	Strong Acid Extractable ug/g	5.82			0.03
Beryllium	Strong Acid Extractable ug/g	0.13			0.01
Bismuth	Strong Acid Extractable ug/g	<0.5			0.5
Cadmium	Strong Acid Extractable ug/g	1760			0.05
Calcium	Strong Acid Extractable ug/g	894			2
Chromium	Strong Acid Extractable ug/g	5.68			0.04
Cobalt	Strong Acid Extractable ug/g	17.0			0.05
Copper	Strong Acid Extractable ug/g	504			0.05
Iron	Strong Acid Extractable ug/g	219000			1
Lead	Strong Acid Extractable ug/g	23900			0.3
Lithium	Strong Acid Extractable ug/g	1.3			0.1
Magnesium	Strong Acid Extractable ug/g	936			1
Manganese	Strong Acid Extractable ug/g	36400			0.3
Mercury	Strong Acid Extractable ug/g	3.94			0.003
Molybdenum	Strong Acid Extractable ug/g	1.1			0.05
Nickel	Strong Acid Extractable ug/g	30.6			0.1
Phosphorus	Strong Acid Extractable ug/g	260			0.5
Potassium	Strong Acid Extractable ug/g	130			5
Selenium	Strong Acid Extractable ug/g	5.7			0.3
Silicon	Strong Acid Extractable ug/g	180			1
Silver	Strong Acid Extractable ug/g	60.6			0.2
Sodium	Strong Acid Extractable ug/g	33			1
Strontium	Strong Acid Extractable ug/g	3.47			0.02
Thallium	Strong Acid Extractable ug/g	29.9			0.3
Tin	Strong Acid Extractable ug/g	33.8			0.2
Titanium	Strong Acid Extractable ug/g	3.2			0.05
Vanadium	Strong Acid Extractable ug/g	4.2			0.1
Zinc	Strong Acid Extractable ug/g	142000			0.1
Zirconium	Strong Acid Extractable ug/g	3.3			0.05
Soil Acidity					
pH	1:2 sample to water pH	5.8			0.5

Analytical Report

Bill To:	Access Mining Consultants Ltd.	Project:		Lot ID:	649606
Report To:	Access Mining Consultants Ltd.	ID:	ALEX-08-ESP-01-J	Control Number:	
	# 3 Calcite Business Centre	Name:	Keno	Date Received:	Oct 17, 2008
	151 Industrial Road	Location:	Elsa; Keno Christal Lake/Creek	Date Reported:	Oct 27, 2008
	Whitehorse, YT, Canada	LSD:		Report Number:	1163081
	Y1A 2V3	P.O.:	4699-ACG		
Attn:	David Petkovich	Acct code:			
Sampled By:	Rem Ricks				
Company:	ACG				

Approved by:

Andrew Garrard, BSc
Operations Manager

Quality Control

Bill To: Access Mining Consultants Ltd. Project:
 Report To: Access Mining Consultants Ltd. ID: ALEX-08-ESP-01-J
 # 3 Calcite Business Centre Name: Keno
 151 Industrial Road Location: Elsa; Keno Christal Lake/Creek
 Whitehorse, YT, Canada LSD:
 Y1A 2V3 P.O.: 4699-ACG
 Attn: David Petkovich Acct code:
 Sampled By: Rem Ricks
 Company: ACG

Lot ID: **649606**
 Control Number:
 Date Received: Oct 17, 2008
 Date Reported: Oct 27, 2008
 Report Number: 1163081

Metals Strong Acid Digestion

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/g	<1	-0	0	yes
Antimony	ug/g	<0.5	-0.0	0.0	yes
Arsenic	ug/g	0.9	-0.0	0.0	yes
Barium	ug/g	<0.03	-0.03	0.03	yes
Beryllium	ug/g	<0.01	-0.00	0.00	yes
Bismuth	ug/g	<0.5	-0.0	0.0	yes
Cadmium	ug/g	<0.05	-0.00	0.00	yes
Calcium	ug/g	<2	-6	6	yes
Chromium	ug/g	<0.04	-0.00	0.00	yes
Cobalt	ug/g	<0.05	-0.00	0.00	yes
Copper	ug/g	<0.05	-0.00	0.00	yes
Iron	ug/g	<1	-0	0	yes
Lead	ug/g	0.5	-0.0	0.0	yes
Lithium	ug/g	0.2	-0.0	0.0	yes
Magnesium	ug/g	<1	-0	0	yes
Manganese	ug/g	<0.3	-0.0	0.0	yes
Mercury	ug/g	<0.003	-0.061	0.041	yes
Molybdenum	ug/g	<0.05	-0.00	0.00	yes
Nickel	ug/g	<0.1	-0.0	0.0	yes
Phosphorus	ug/g	<0.5	-0.1	0.1	yes
Potassium	ug/g	<5	-1	1	yes
Selenium	ug/g	<0.3	-0.0	0.0	yes
Silicon	ug/g	<1	-0	0	yes
Silver	ug/g	<0.2	-0.0	0.0	yes
Sodium	ug/g	<1	-0	0	yes
Strontium	ug/g	<0.02	-0.00	0.00	yes
Thallium	ug/g	<0.3	-0.0	0.0	yes
Tin	ug/g	<0.2	-0.0	0.0	yes
Titanium	ug/g	<0.05	-0.05	0.05	yes
Vanadium	ug/g	<0.1	-0.0	0.0	yes
Zinc	ug/g	3.4	-0.0	0.0	yes
Zirconium	ug/g	<0.05	-0.00	0.00	yes

Date Acquired: October 21, 2008

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	ug/g	6440	6610	30	10	yes
Antimony	ug/g	1.4	1.5	30	3.0	yes
Arsenic	ug/g	40.1	40.0	30	1.0	yes
Barium	ug/g	328	322	30	1.00	yes
Beryllium	ug/g	0.17	0.18	30	0.50	yes
Cadmium	ug/g	3.4	3.4	30	0.50	yes
Calcium	ug/g	8860	9120	30	10	yes
Chromium	ug/g	24.4	24.6	30	1.00	yes

Quality Control

Bill To: Access Mining Consultants Ltd. Project:
 Report To: Access Mining Consultants Ltd. ID: ALEX-08-ESP-01-J
 # 3 Calcite Business Centre Name: Keno
 151 Industrial Road Location: Elsa; Keno Christal Lake/Creek
 Whitehorse, YT, Canada LSD:
 Y1A 2V3 P.O.: 4699-ACG
 Attn: David Petkovich Acct code:
 Sampled By: Rem Ricks
 Company: ACG

Lot ID: **649606**
 Control Number:
 Date Received: Oct 17, 2008
 Date Reported: Oct 27, 2008
 Report Number: 1163081

Metals Strong Acid Digestion - Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Cobalt	ug/g	7.00	6.97	30	0.50	yes
Copper	ug/g	50.6	57.6	30	1.00	yes
Iron	ug/g	4030	4140	30	10	yes
Lead	ug/g	87.5	82.1	30	0.5	yes
Magnesium	ug/g	6000	6050	30	10	yes
Manganese	ug/g	919	934	30	1.0	yes
Mercury	ug/g	0.642	0.696	30	0.500	yes
Molybdenum	ug/g	4.9	5.0	30	0.50	yes
Nickel	ug/g	21.5	22.9	30	0.5	yes
Phosphorus	ug/g	6060	6020	30	10.0	yes
Potassium	ug/g	380	410	30	10	yes
Selenium	ug/g	2.2	2.4	30	0.5	yes
Silver	ug/g	5.0	7.1	30	0.5	yes
Sodium	ug/g	99	105	30	1	yes
Strontium	ug/g	47.4	47.1	30	1.00	yes
Thallium	ug/g	1.6	1.7	30	1.0	yes
Tin	ug/g	11.8	12.0	30	1.0	yes
Vanadium	ug/g	64.5	60.2	30	1.0	yes
Zinc	ug/g	51.6	48.1	30	1.0	yes
Zirconium	ug/g	2.1	2.0	30	0.50	yes

Date Acquired: October 21, 2008

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/g	11600	9307	11893	yes
Antimony	ug/g	<0.5	-0.5	4.7	yes
Arsenic	ug/g	89.4	71.2	95.4	yes
Barium	ug/g	40.8	32.68	43.12	yes
Beryllium	ug/g	0.37	0.28	0.42	yes
Cadmium	ug/g	0.4	-0.26	1.06	yes
Calcium	ug/g	5380	3978	5502	yes
Chromium	ug/g	68.4	52.58	72.02	yes
Cobalt	ug/g	11.0	8.94	10.70	yes
Copper	ug/g	21.9	18.05	23.75	yes
Iron	ug/g	23300	20883	25917	yes
Lead	ug/g	16.4	12.5	17.5	yes
Magnesium	ug/g	6180	5421	6757	yes
Manganese	ug/g	341	301.7	342.3	yes
Mercury	ug/g	0.094	0.096	0.124	yes
Molybdenum	ug/g	0.4	0.32	0.58	yes
Nickel	ug/g	34.0	26.0	37.0	yes
Phosphorus	ug/g	434	374.0	464.0	yes
Potassium	ug/g	954	588	950	yes
Selenium	ug/g	<0.3	0.0	0.6	yes

Quality Control

Bill To:	Access Mining Consultants Ltd.	Project:		Lot ID:	649606
Report To:	Access Mining Consultants Ltd.	ID:	ALEX-08-ESP-01-J	Control Number:	
	# 3 Calcite Business Centre	Name:	Keno	Date Received:	Oct 17, 2008
	151 Industrial Road	Location:	Elsa; Keno Christal Lake/Creek	Date Reported:	Oct 27, 2008
	Whitehorse, YT, Canada	LSD:		Report Number:	1163081
	Y1A 2V3	P.O.:	4699-ACG		
Attn:	David Petkovich	Acct code:			
Sampled By:	Rem Ricks				
Company:	ACG				

Metals Strong Acid Digestion - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Silver	ug/g	1.4	1.0	2.5	yes
Sodium	ug/g	264	168	344	yes
Strontium	ug/g	19.5	9.80	21.80	yes
Thallium	ug/g	<0.3	-0.2	1.0	yes
Tin	ug/g	1.0	0.6	1.9	yes
Titanium	ug/g	639	211.00	769.00	yes
Vanadium	ug/g	36.0	25.4	39.0	yes
Zinc	ug/g	43.8	32.6	41.6	yes

Date Acquired: October 21, 2008

Soil Acidity

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
pH	pH	99.25	97	103	yes

Date Acquired: October 21, 2008

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
pH	pH	6.8	6.7	0	0.1	yes

Date Acquired: October 21, 2008

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH	pH	6.0	5.7	6.3	yes

Date Acquired: October 21, 2008

Methodology and Notes

Bill To:	Access Mining Consultants Ltd.	Project:		Lot ID:	649606
Report To:	Access Mining Consultants Ltd.	ID:	ALEX-08-ESP-01-J	Control Number:	
	# 3 Calcite Business Centre	Name:	Keno	Date Received:	Oct 17, 2008
	151 Industrial Road	Location:	Elsa; Keno Christal Lake/Creek	Date Reported:	Oct 27, 2008
	Whitehorse, YT, Canada	LSD:		Report Number:	1163081
	Y1A 2V3	P.O.:	4699-ACG		
Attn:	David Petkovich	Acct code:			
Sampled By:	Rem Ricks				
Company:	ACG				

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Metals (Strong Acid Leachable) in soils	B.C.M.O.E	* Strong Acid Leachable Metals (SALM) in Soil, V 1.0, SALM	21-Oct-08	BTG Surrey
pH and EC - 1:2 (Surrey)	Carter	* Soil pH (1:2 Water), 16.2	21-Oct-08	BTG Surrey

** Bodycote method(s) based on reference method*

References

B.C.M.O.E	B.C. Ministry of Environment
Carter	Soil Sampling and Methods of Analysis

Comments:

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

APPENDIX III

**DATA FROM METAL ANALYSES OF SEDIMENT SAMPLES
KENO/ELSA AREA
JULY, 2007
KHM_SEDIMENT_DATA_2007.XLS**

Summary of Sediment Metals Concentrations Keno Hill Mine																																								
Sample Site ID: Sample Date: Replicate: Parameter	KV1 31-Jul-07			KV2 31-Jul-07			KV3 31-Jul-07			KV4 31-Jul-07			KV5 31-Jul-07			KV6 31-Jul-07			KV7 31-Jul-07			KV8 31-Jul-07			KV9 31-Jul-07			KV37 31-Jul-07			KV38 31-Jul-07			KV41 31-Jul-07			Detection Limit	CCME Guideline Freshwater Sediment Quality		Proactive Effect Levels (µg/g)
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C							
pH	7	7	7	7.5	7.3	7.4	7.4	7.4	7.3	7.1	7.2	7	7.4	7.4	7.5	6.7	6.8	7	7.5	7.4	7.5	7.3	7.2	7.3	7.3	7.4	7.2	6	5.9	6.6	7.1	7	7	7	7.2	7.1	0.5			
Dissolved Metals (ug/g)																																								
Aluminum	8770	8130	7250	8450	7660	10200	8960	7500	7960	10000	8830	9840	10200	15800	12200	9040	8990	10200	6890	7570	7300	11700	10900	11000	8610	7640	5720	13700	11600	12300	8890	8980	9200	8040	10100	7940	1			
Antimony	<0.5	<0.5	<0.5	14.2	17.5	14.3	13.6	13.6	19.5	34.6	36.8	25.6	7	5.8	5.9	15.2	14.1	15.2	<0.5	<0.5	<0.5	7	4	6.5	159	134	156	<0.5	0.7	<0.5	15	13.6	13.2	<0.5	1.1	<0.5	0.5			
Arsenic	21.7	18.9	15.9	208	287	210	114	119	157	186	204	149	87.7	161	122	292	272	288	36.3	34.9	33	225	161	184	616	515	628	192	86.7	67.6	372	525	403	44.4	93.1	50	0.2	5.9	17.0	
Barium	138	135	127	155	121	190	171	147	172	203	187	196	198	308	236	224	233	297	224	234	221	318	293	292	397	407	221	271	202	223	143	162	176	173	217	168	0.03			
Beryllium	0.27	0.25	0.21	0.27	0.27	0.33	0.29	0.24	0.25	0.33	0.29	0.33	0.33	0.57	0.43	0.24	0.24	0.3	0.19	0.22	0.2	0.39	0.38	0.37	0.37	0.32	0.26	0.37	0.3	0.32	0.23	0.23	0.24	0.23	0.3	0.23	0.01			
Bismuth	1.6	1.4	1.3	2.4	2.9	2.5	2.7	2.1	2.9	2.7	3.1	3.1	2	3.4	2.5	2.6	2.8	3.2	1.8	2.2	1.7	3.7	3.3	3.2	8.9	7.2	9.4	3.2	2.7	2.2	4.5	3.8	3.8	1.7	3.1	1.9	0.5			
Cadmium	4.2	3	2.6	17	18.9	18	13.4	11	16.1	18.5	17.4	15.2	8.74	17	10.5	23.3	24.8	36.4	3.4	4.1	3.5	30.8	21.3	22.2	63.4	62.7	45.1	3.9	2.3	1.8	31.1	34.1	28.5	2.3	5.27	2.6	0.05	0.6	3.5	
Calcium	7530	7300	6820	8600	7830	10300	11400	11600	10300	9370	9160	9020	9450	13600	14200	5160	5330	6790	15300	16100	15100	14400	15200	13700	9050	8670	6990	3300	3190	4190	4980	5170	5190	3500	4390	3620	2			
Chromium	13	12.7	11.9	17	15.3	22	14.4	13.8	14.6	15.9	15.1	16.3	14.9	26.8	17.2	15.8	15.8	18.6	12.5	13.8	13.3	21.3	20.4	20	18.1	17.5	11.7	23.7	20.5	21.7	51.4	31.6	30.5	16	35.6	18.4	0.04	37.3	90	
Cobalt	22.9	19.1	16.5	26	12.2	33.9	20.1	18.6	15.9	23.8	16.3	20.1	20.4	58.4	27	9.37	9.74	12.3	7.17	7.89	7.42	14.6	13.4	13.3	11.6	11.7	6.95	13.7	9.21	9.96	14.6	13.2	12.4	9.19	13.2	8.77	0.05			
Copper	31.3	24.7	20.2	43.7	49.7	55.1	42.8	43.2	38.6	63.4	58.4	55.2	38.1	73.7	51.2	36.9	37.5	49.4	24.6	29.4	25.7	66.6	62.6	59.7	191	240	150	47.4	38.3	39	59.2	55.8	53	28.6	44.2	28.6	0.05	35.7	197	
Iron	19100	17900	15600	24600	31800	28400	25300	23200	27900	32500	33100	29800	24800	36000	29200	25300	25700	30400	19600	21300	20200	36800	33200	33800	76600	67800	82200	34400	24600	23900	36400	35100	33000	22600	32700	22700	1			
Lead	24.4	7.6	9.7	713	711	697	393	378	497	1070	1130	755	234	347	231	953	916	994	62.2	55.8	51.3	629	387	477	7550	6140	5180	41.1	44.3	34.5	610	740	576	54.3	126	66.4	0.3	35	91.3	
Lithium	14.1	13.2	11.9	13.8	11.9	16.7	14.9	12.7	13.2	15.5	14.2	15.8	16.5	24	19.4	14.4	14.4	16.6	12.7	14	13.7	21	19.7	19.7	13.8	12.1	9.2	20.9	17.7	19.4	14.4	13.6	13.8	11.9	15.3	11.9	0.1			
Magnesium	4640	4530	4230	5020	4640	5880	5390	5300	5250	5770	5860	5550	5660	7260	8190	4020	4000	4480	6730	7020	6980	6900	6510	6540	5250	5120	5080	4260	3770	3950	5780	4660	4600	3630	4510	3600	1			
Manganese	926	684	651	3590	2670	4540	2880	3110	3360	4660	4920	3330	2500	7500	2870	2880	3030	3920	730	786	758	4160	2440	2820	<0.3	<0.3	<0.3	1210	498	416	2600	2050	1850	526	903	520	0.3			
Mercury	0.058	0.06	0.045	0.102	0.127	0.097	0.089	0.084	0.09	0.183	0.174	0.162	0.074	0.151	0.097	0.103	0.114	0.09	0.072	0.071	0.062	0.14	0.145	0.149	0.596	0.552	0.619	0.097	0.076	0.08	0.22	0.244	0.219	0.046	0.074	0.046	0.003	0.17	0.486	
Molybdenum	0.65	0.64	0.6	1.5	1.2	1.8	0.72	0.7	0.67	0.7	0.63	0.7	0.64	1.9	0.88	0.6	0.65	0.86	0.91	1	0.95	1.7	1.6	1.6	0.2	0.2	<0.05	1.7	1.2	1.2	7	3.7	3.4	1.1	2.9	1.2	0.05			
Nickel	88.7	70.8	62.5	94.5	60.2	122	78.3	68.2	61.6	75.2	52.8	72.5	86	204	110	24.9	25.5	33.3	21.4	24.1	22.3	46.1	45.4	40.8	35	36.6	23.3	34	26.6	28.6	51.9	38.7	36.2	24.1	42.4	24.6	0.1			
Phosphorus	1010	1010	1040	1020	1120	1140	1040	1020	1060	1070	1080	990	978	1040	1070	1060	1060	1040	1020	980	964	1040	980	1000	833	788	644	1190	1060	1050	1100	1070	1040	906	1110	958	0.5			
Potassium	440	410	380	450	400	541	470	400	440	552	500	529	553	852	673	390	370	430	360	410	390	615	546	541	565	509	350	380	320	350	270	260	280	340	410	330	5			
Selenium	1.2	1.4	1.1	3	2.4	3.6	2.6	2.3	2.6	3.5	4.1	2.8	2.4	4.9	2.8	2.2	2.3	3.1	1.4	1	1.3	4.6	3.1	3.2	10.6	10.3	12.1	1.8	1.2	1.2	2.5	2	1.6	0.4	1.3	0.8	0.3			
Silicon	82	79	257	114	148	264	131																																	