

BERMINGHAM (# 6)
(MINFILE# 105M 001,d,e)

1. LOCATION AND ACCESS

The Bermingham mine site is located near the summit of Galena Hill, approximately 1.5 km southwest of the Calumet town site at an elevation of approximately 1100m. Access to the mine is by gravel road from Calumet. The site is at latitude 63° 54' 35"N and longitude 135° 25' 53". UTM co ordinates are 7 086 77m N 474 740m E.

2. SITE PHYSIOGRAPHY

The Bermingham mine site is located facing east over the McQuesten Valley. The site consists of two areas of mining, Bermingham pit and the Bermingham adit. There are two large pits located at the Bermingham pit as well as 6 smaller trenches that have been excavated. The Ruby shaft is located just below the Bermingham pit and is part of this report. The Ruby adit site is documented in another report.

Vegetation in the area consists of black spruce, a variety of willow, scrub brush and a variety of mosses and lichens. The pit is uphill from the adit site. Some revegetation has occurred and the site slopes steeply from the waste rock dump towards the adit site.

3. GEOLOGY AND MINERALIZATION

The site is located in a sequence of thick and thin bedded quartzites and graphitic schist. The vein mineralization is reported to be a heavily weathered mix of brecciated quartzite and schists, serisite, galena, quartz and a variety of oxides and carbonates of iron, lead, manganese and copper.

4. SITE HISTORY

From 1925 to 1941 there were approximately 2720 tonnes of ore mined from several shafts, drifts and crosscuts. Between 1948 and 1951 The Bermingham 200 level crosscut adit was constructed measuring approximately 300m in length and has a portal dump of 6350 tonnes. From 1977 to 1979 the Bermingham and the Bermingham Southwest pits were mined and produced a 1,360,000 tonne waste dump. The Bermingham mine site has the largest open pit in the study area.

5. MINE DEVELOPMENT

Mine development at the Bermingham site includes several trenches, two large pits, shafts (both collapsed and open) and an adit. The Ruby shaft house has collapsed at the shaft opening and is

unsafe in its present condition. A raise is located approximately 5m from the shaft building. The raise is open and is considered a safety hazard.

5.1 Mine Openings and Excavations

Bleiler Shaft (backfilled)

The Bleiler Shaft has been backfilled.

Birmingham 200 Level Adit

Portal is collapsed and partially filled with water.

Location: 300m NW of the Birmingham Pit entrance.

Dimensions (L x W x H): 700m long by 2m wide x 2m deep

Supports: Rough timber supports, caved at portal.

Condition: Unstable

Accessibility: Open

Open Pits

Birmingham Open Pit

Location: 300m SE of the 200 level adit.

Dimensions (L x W x H): 200m long x 100m wide by 50m deep

Condition: Walls are quite steep (pre-sheared) but appear stable.

Accessibility: Open; easily accessible.

Trenches (photo 6-1)

Stripped area (100 m x 250 m) located ~150 m southwest of the Birmingham SW pit, contains 6 backhoe trenches with exposed veins.

5.2 Waste Rock Disposal Areas

Birmingham and Birmingham SW Open Pit Dumps

Composed of thick and thin bedded barren quartzites and graphitic schists with a remnant skim of ore remaining in stockpile areas. (~ 1,500,000 tonnes). The Birmingham Pit drains to the underground workings and reports at the Birmingham 200 level adit. The Birmingham SW Pit retains water and the overflow likely drains through the dumps, although no seepage areas were observed at the toe of the dumps. The vegetation below the toe of the dumps did not appear to be stressed.

Birmingham 200 Level Adit Dump

Composed of stained quartzite, schist and fault gouge. (70 m long x 25 m wide x 3 m deep approximately 12,000 tonnes).

Rock sample

Previous environmental sampling was conducted on the waste rock disposal areas in 1995. Results are presented in the following table.

Sample	Paste pH	S(T) %	S(SO4) %	AP	NP	Net NP	NP/A P
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Birmingham Pit Wall

95UKHBP01	7.05	0.09	0.09	0.00	1.50	1.5	-
95UKHBP02	7.09	0.07	0.07	0.00	1.75	1.8	-
95UKHBP03	6.94	0.21	0.20	0.31	0.00	-0.3	<0.1
95UKHBP04	6.89	0.04	0.03	0.31	0.25	-0.1	0.8
95UKHBP05	6.87	0.07	0.06	0.31	1.56	1.3	5.0
95UKHBP06	8.03	0.95	0.27	21.3	70.1	48.9	3.3
95UKHBP07	8.68	0.19	0.16	0.94	9.63	8.7	10.3

Birmingham Pit Dump

95UKHBD01	7.34	0.03	0.03	0.00	6.00	6.0	-
95UKHBD02	7.20	0.32	0.31	0.31	7.19	6.9	23.0
95UKHBD03	6.62	1.94	0.69	39.1	155.6	116.6	4.0
95UKHBD04	7.24	0.49	0.21	8.75	14.13	5.4	1.6
95UKHBD05	7.56	2.50	0.54	61.3	144.4	83.1	2.4
95UKHBD06	7.32	0.07	0.07	0.00	0.00	0.0	-

5.3 Tailings Impoundments

There are no tailings impoundments at the site.

5.4 Tailings Dams

There are no tailings dams at the site.

5.5 Tailings Ponds

There are no tailings ponds at the site.

5.6 Minesite Water Treatment

There are no water treatment facilities or operations conducted at the site.

6. MINE SITE INFRASTRUCTURE

6.1 Buildings

There are two separate sites that are included under the Birmingham report. The first site is the Birmingham pit and includes two large pits, 6 trenches and the Ruby shafthouse with one raise. The second site is the Birmingham adit that accommodates 6 buildings, including an adit and an explosives magazine. The explosives magazine consisted of two adjoining separate entrance buildings, the other being the detonator house. A wooden utilidor runs between buildings 6B,C and D.

Building 6A – Ruby Shafthouse (photo 6-2)

The building is a shafthouse that has partially collapsed over the shaft.

Location:

Dimensions (L x W x H): 15m x 6m x 12m

Construction: The structure is of wood frame construction with metal sheathing on exterior walls and roof. The floor and walls are constructed of wood planks and the shaft area is reinforced with timber.

Paint: No paint was noted on exterior or interior of shafthouse.

Asbestos: No asbestos was noted at the structure

Foundation: Timber above grade.

Non-Hazardous Contents: No non-hazardous contents were found.

Hazardous Contents: There were two barrels with lubricant labels, however, it is not known if the barrels contained any product as the building has become a safety hazard and was not entered during the site investigation. Some rags stored in pails appeared to be stained with hydrocarbon product.

Building 6B – Explosives Magazine and Detonator House (photo 6-3)

This structure served as the explosives magazine and the detonator house. The detonator house appeared to be of newer construction than the adjoining explosives magazine. The timber plank walls had been partially removed in both buildings.

Location: Listed as building 6B on the Birmingham site map.

Dimensions (L x W x H): 6m x 4m x 4m

Construction: The building is wood frame construction and the interior walls are fortified with sand (photo 6- 4).

Paint: There was no paint evident on either the exterior or interior of the building.

Asbestos: No asbestos was noted.

Foundation: The foundation consisted of concrete pad in some areas and soil floor in others. There were also two built up concrete pads that supported diesel generators.

Non-Hazardous Contents: The building had no contents stored inside.

Hazardous Contents: There were no hazardous contents stored inside the building or around the exterior.

Building 6C – Residential (photo 6-5)

The structure appears to have been residential.

Location: Listed as 6C on the Bermingham Adit site plan.

Dimensions (L x W x H): The building has collapsed.

Construction: The structure appears to have been wood frame, board and batten construction from the debris that was scattered.

Paint: No paint was noted.

Asbestos: No asbestos was noted.

Foundation: Foundation was wood.

Non-Hazardous Contents: There were no contents stored in or around the building.

Hazardous Contents: No hazardous contents were noted in or around the collapsed building.

Building 6D – Water Shack (photo 6-6)

The function of the building was to heat water and pipe it down gradient to avoid ice build up.

Location: The building is listed as 6D on the Bermingham Adit site map.

Dimensions (L x W x H): 4m x 2m x 3m

Construction: The structure is of wood frame construction with tar paper exterior and tar shingles on roof and rear.

Paint: No paint was noted at the building.

Asbestos: No asbestos was noted at the building.

Foundation: The foundation consists of raised timber slats with metal sheathing along some of the length.

Non-Hazardous Contents: There were two barrels inside the shack. One of the barrels was utilized for heating the water and the other barrel was empty (photo 6-7).

Hazardous Contents: There were no hazardous contents inside the building or around the exterior.

Building 6E – Residential (photo 6-8)

The building appears to be residential.

Location: The structure is listed as 6E on the Birmingham Adit site map.

Dimensions (L x W x H): 6m x 4m x 4m

Construction: The building consists of wood frame with asphalt shingles.

Paint: The building was unpainted.

Asbestos: No asbestos was noted.

Foundation: The foundation consisted of a raised wood platform.

Non-Hazardous Contents: No contents were noted in the building.

Hazardous Contents: No hazardous contents were noted either in the building or the surrounding area.

Building 6F – Residential

The building appears to be residential

Location: The structure is listed as building 6F on the Birmingham Adit site map.

Dimensions (L x W x H): 6m x 4m x 4m

Construction: The structure is of timber frame construction with asphalt shingles.

Paint: No paint was noted on either the exterior or interior of the building.

Asbestos: No asbestos was noted.

Foundation: The foundation consisted of a raised wooden platform.

Non-Hazardous Contents: No contents were noted inside the structure.

Hazardous Contents: There were no hazardous contents noted in the building nor were there any in the surrounding area of the structure.

Note: Both building 6E and 6F have deteriorated and were unsafe to enter during the site investigation.

Building 6G – Adit (photo 6-9)

Portal structure.

Location: Listed as building 6G on the Birmingham Adit site map.

Dimensions (L x W x H):

Construction: Timber and wood structure.

Paint: There was no paint noted on the exterior.

Asbestos: There was no asbestos noted on the exterior.

Foundation: No foundation.

Non-Hazardous Contents: There were no non-hazardous contents noted.

Hazardous Contents: There were no hazardous contents noted in or around the structure.

Note: The structure has deteriorated to the point that it has become a safety hazard. It appears that the shaft has collapsed into itself and there are danger signs posted on the wooden doors.

6.2 Fuel Storage

There was no fuel storage noted at the site, and no above ground storage tanks were evident.

6.3 Rail and Trestle

There were no rail or trestle structures at the site. There were metal tracks and associated debris piled at the site near building 6C (photo 6-10). The tramway structure is directly below the site, however, there is no indication that it was used by the Birmingham mine site.

6.4 Milling and Processing Infrastructure

No milling or processing infrastructure was noted at the site.

6.5 Electrical Equipment

A power line extends from Ruby 400 to Birmingham and Ruby Shaft areas and is still in existence (photo 6-11).

7. SOLID WASTE DUMPS

No solid waste dumps were noted at the mine site.

8. POTENTIAL CONTAMINANTS OF CONCERN

8.1 Out-of-Service Transformers

No transformers were noted at the site.

8.2 Metals and Hydrocarbons in Soil

No staining was evident on the soils at the site.

8.3 Liquid Hazardous Materials

No liquid hazardous waste materials were noted at the site.

8.4 Solid Hazardous Materials

No solid hazardous materials were noted at the site.

9. WATER QUALITY

One water sample (06-01-water) was collected at the Bermingham pit from the eastern pit surface water. The second sample (06-02-water) was taken at the Bermingham adit site of discharge water from the adit (photo 6-12). The sample results can be found in Attachment B.

10. RECLAMATION

There has been some natural revegetation of the site in the form of small shrubs and grasses. There does not appear to be any reclamation measures being carried out either historically or presently at the site.

11. OTHER SOURCES OF INFORMATION AND DATA

No other sources of information and data were available.

12. REFERENCES

United Keno Hill Mines Limited. 1996. *United Keno Hill Mines Limited – Site Characterization*. Report No. UKH/96/01, prepared by Access Mining Consultants Limited.

United Keno Hill Mines Limited. 1996. *United Keno Hill Mines Limited – Site Characterization, Technical Appendices I-VI*. Report No. UKH/96/01, prepared by Access Mining Consultants Limited.

Geological Survey of Canada. Bulletin 111 R.W.Boyle

Table B1. 1999 Water Quality Results, Birmingham Site

		Detection Limit	Units	Site 6-01-Water - Ruby - 14/09/99	Site 6-02-Water - Ruby - 14/09/99
pH (field)					
Conductivity (field)					
pH (Lab)		0.01	pH	6.76	7.11
Conductivity (Lab)		0.01	µS/cm	85	300
Total Alkalinity		5	mg CaCO3/L	18	113
Chloride		0.1	mg/L	0.17	<0.25
Hardness (CaCO3 equiv)		5	mg/L	42.3	170
Nitrate-N		0.01	mg/L	0.03	<0.05
Nitrite-N		0.003	mg/L	<0.003	<0.003
Sulphate		1	mg/L	19.7	63
Total Dissolved Solids		5	mg/L	58	216
ICP-USN Total Metals Scan in Water					
	Aluminum	0.0008	mg/L	0.113	0.0128
	Antimony	0.005	mg/L	<0.005	<0.005
	Arsenic	0.01	mg/L	<0.01	0.06
	Barium	0.00004	mg/L	0.0167	0.0035
	Beryllium	0.00001	mg/L	<0.00001	<0.00001
	Bismuth	0.0004	mg/L	<0.0004	<0.0004
	Boron	0.002	mg/L	<0.002	<0.002
	Cadmium	0.00001	mg/L	0.00586	0.148
	Calcium	0.002	mg/L	8.66	50
	Chromium	0.00006	mg/L	0.00012	<0.00006
	Cobalt	0.00003	mg/L	0.00011	0.00026
	Copper	0.00003	mg/L	0.00177	0.00168
	Iron	0.00001	mg/L	0.16	0.107
	Lead	0.0003	mg/L	0.0168	0.0034
	Lithium	0.001	mg/L	<0.001	0.013
	Magnesium	0.0005	mg/L	3.07	9.69
	Manganese	0.00002	mg/L	0.133	1.19
	Mercury	0.0001	mg/L	<0.0001	<0.0001
	Molybdenum	0.00007	mg/L	<0.00007	0.00089
	Nickel	0.00001	mg/L	0.0004	0.0017
	Phosphorus	0.03	mg/L	<0.03	0.1
	Potassium	0.4	mg/L	<0.4	<0.4
	Selenium	0.004	mg/L	<0.004	<0.004
	Silicon	0.004	mg/L	1.03	4.06
	Silver	0.00005	mg/L	0.00043	0.00029
	Sodium	0.4	mg/L	<0.4	0.9
	Strontium	0.00002	mg/L	0.0439	0.0988
	Sulphur	0.008	mg/L	6.98	21.9
	Thallium	0.001	mg/L	<0.001	0.002
	Titanium	0.00002	mg/L	0.00207	<0.00002
	Vanadium	0.00003	mg/L	0.00011	<0.00003
	Zinc	0.0002	mg/L	0.0806	4.44
Total Arsenic by Hydride AA					
	Arsenic	0.0002	mg/L	0.0037	0.0588
Total Selenium by Hydride AA					
	Selenium	0.0001	mg/L	<0.0001	<0.0001

RUBY 400 #6
(MINFILE # 105M 001 d,e)

1. LOCATION AND ACCESS

Access to the site is by way of the townsite of Elsa up the Galena summit on Calumet Road and taking the switchback at Hector Calumet mine site along the Bermingham Road. The Ruby 400 mine site is situated on a road to the right just before the Bermingham mine site at approximately 1125m at Latitude 63° 54' 35"N, Longitude 135°25' 53"W. UTM co ordinates are 7 080 025m N 478 831m E.

2. SITE PHYSIOGRAPHY

The site is located on the northwest slope overlooking the McQuesten Valley. It is downgradient of the Bermingham mine site. The site consists of cleared areas where all soils have been stripped off and pushed downslope. The surrounding vegetation consists of stunted black spruce, willows, and alder with a floor covering of mosses, indicative of a permafrost environment.

3. GEOLOGY AND MINERALIZATION

The site is located in a sequence of thick and thin bedded quartzites and graphitic schist. The vein material is reported to be a heavily weathered mix of brecciated quartzite and schists, quartz, serisite, galena and pyrite.

4. SITE HISTORY

Historical Ruby 400 production is estimated at 36,879 tonnes @ 864 g/t Ag, 3% Pb, and 1.3% Zn. Information gathered from previous reports indicates that there is planned future underground mining for the Ruby 400.

5. MINE DEVELOPMENT

5.1 Mine Openings and Excavations

Portals

Level 400 adit entrance

Location: Portal is located at the Ruby 400 site adjacent to the garage.

Dimensions: 20m x 4m x 4m

Supports: The entrance is timber frame construction.

Condition: Structure appeared stable at the time of inspection.

Accessibility: Portal is open and accessible up to ice plug.

5.2 Waste Rock Disposal Areas

Ruby Shaft

There appears to be no underground waste dumps associated with the Ruby shaft area.

Ruby 400 Level Portal Dump

The dump and load out cover an area of 100 m x 50 m (~ 28,000 tonnes).

The dump is composed of quartzite, quartz and schist; minor staining is present.

There is a kill zone between the toe of the dump and Calumet Drive (~100 m x 10 m). Few sulphides were observed in the dump and the rock samples data shown in the UKHM reports indicate low acid potential, so the kill zone is likely caused by the portal drainage seeping through the dump area.

Waste rock pile

(Identify which waste rock pile(s) is (are) related to which development; geology, vegetation, presence/absence of surface or subsurface drainage over/through waste rock; oxidation/staining; water content/retention capacity. State whether waste rock piles are derived from mine development, open pits etc. and those which are overburden)

Location: (map/describe)

Dimensions: (L x W x H)

Sampling: Waste rock samples were collected during a 1995 assessment of the site. The results are presented in the following table.

Sample ID	Paste pH	S(tot) %	S(SO ₄) %	AP	NP	NET NP	NP/AP
				Kg CaCO ₃ /t			
95UKHRD01	7.82	1.06	0.43	19.69	36.25	16.6	1.8
95UKHRD02	7.83	0.72	0.28	13.75	51.13	37.4	3.7
95UKHRD03	7.02	0.66	0.32	10.63	15.00	4.4	1.4

5.3 Tailings Impoundments

Tailings Dams

There were no tailing dams at the site.

Tailings Ponds

There were no tailing ponds at the site.

5.4 Minesite Water Treatment

There are no water treatment facilities or operations at this site.

6. MINE SITE INFRASTRUCTURE

6.1 Buildings

There are two structures at the Ruby 400 mine site, the adit to the underground mine works, and a structure that served as workshop, garage and boiler house. A utilidor extends from the portal to the workshop (photo 6-14).

Building 6G – Adit (photo 6-15)

The structure is a portal with the above dimensions exposed.

Location: The building is located on the Ruby 400 location map and is labeled as 6G.

Dimensions (L x W x H): 20m x 4m x 4m.

Construction: The structure is constructed of wood frame with tar paper lining the exterior. The interior consists of wood plank sheathing (photo 6-16).

Paint: No paint was visible on either exterior or interior of the structure.

Asbestos: No asbestos was visible at the building site.

Foundation: No foundation.

Non-Hazardous Contents: There were wooden boxes situated just inside the entrance to the adit, however, there were no contents visible. Steel piping was located inside the entrance wrapped with fibreglass insulation.

Hazardous Contents: No hazardous contents were noted either inside the building or around the outside perimeter.

Samples: Water sample 06-03-water was taken 12m inside the adit from a pipe (photo 6-17). The sample analyses can be found in this report under Section 9. Water Quality.

Building 6H - Garage (photo 6-18)

This structure functions as a garage, workshop and boiler house.

Location: The building can be found on the Ruby 400 site map labeled as building 6H.

Dimensions (L x W x H): 12m x 10m x 8m

Construction: The building is wood frame construction with metal clad sheathing and a metal roof.

Paint: No painted surfaces are present in this building.

Asbestos: There was no asbestos noted in the building.

Foundation: The foundation was above grade with dirt/gravel floors in the two bays and a wood plank floor in the workshop.

Non-Hazardous Contents: A furnace was located in the workshop with some staining evident around the base. Wood shelving with metal debris was located on two walls (photo 6-19).

Hazardous Contents: No hazardous contents were noted in the building.

Samples: Sample 06-01-soils was taken at the north west corner of the receiving tank (photo 6-20). Sample analyses results can be found in the table listed in *6.2 Fuel Storage*.

6.2 Fuel Storage

Location: Northwest corner of the receiving tank behind the garage.

Above Ground Storage Tanks: The tank appears to be empty, however, there may be some residue inside the tank. The tank appears to be in good condition, however, there is no secondary containment associated with the AST. There is some leakage that has occurred and the soils surrounding the tank have been stained. Sample 06-01-soils was taken to the northwest of the AST and consisted of a soil sample taken at a depth of 5 cm. Soils in the area consisted of dense, compacted fines and gravel materials. Table 1 in Attachment B indicates the sample analyses results.

6.3 Rail and Trestle

Location: The track extends from the adit to the loading area.

Fabrication: The track consists of both metal rails and wood ties.

Amount of materials: There are approximately 40 metres of steel rail and associated wood ties.

Condition: The tracks do not pose a safety hazard and the loading area cribwork appears to be sound.

6.4 Milling and Processing Infrastructure

Grizzly: There were 3 grizzlies located at the loading area that each measured approximately 1.5m x 3m.

6.5 Electrical Equipment

There are intact power lines at the site and it was not know if they were still in service (photo 6- 14). An old electricity-driven compressor was located at the site near the northwest corner of the dump (photo 6- 21). There is some surficial staining under the machine, possibly from remaining product residues left in the engine at the time of abandonment. Information listed on the equipment is as follows.

Electrical Compressor
Vertical Air Compressor
Model # BJ4001
Serial # 140040
RPM 870 Pressure: 100 PSI
GARDNER DENVER CO

A pressure vessel was also found at the site and was labeled with the following information.

Pressure Vessel
Approx. 3 m. long x 1.5 m. diam.
Steel Weld . 1965 . Ltd.
Algoma A285C
MAX. W. I. 124
Serial 7675
T. S. 55,000
Y 1324

7. SOLID WASTE DUMPS

There were no solid waste dumps noted at the site.

8. POTENTIAL CONTAMINANTS OF CONCERN

8.1 Out-of-Service Transformers

The following transformers and associated electrical panels were located in a collapsed wood fence enclosure (photo 6-22). There were no signs of any leakage from the transformers.

Westinghouse Single Phase Transformers

50 KVA

135 L Oil

SERIAL # 246241

Westinghouse Single Phase Transformers

50 KVA

135 L Oil

SERIAL # 246234

Westinghouse Single Phase Transformers

50 KVA
135 L Oil
SERIAL # 246236

8.2 Metals and Hydrocarbons in Soil

The interior of the adit was stained with hydrocarbons, however, it was difficult to determine where the staining was situated as an ice plug, located to the back of the adit, was draining melt water and the entire soil floor was encased in 5cm of mud (photo 6-17). Some precipitation was noted and listed as bright orange. No samples were taken in the adit structure.

8.3 Liquid Hazardous Materials

No liquid hazardous materials were noted at the site.

8.4 Solid Hazardous Materials

No solid hazardous materials were noted at the site.

9. WATER QUALITY

Water sample 06-03-water was taken approximately 12m horizontally inside the portal. There was a discharge pipe at the sample location. Water flow at the sample location was 1.5L/s. The pH levels were 7.6 and conductivity was 43 μ S. The soils in the portal were generally silts and were stained with bright orange by precipitate. Approximately 5 cm of mud was located on the floor of the portal partially due to the melt water from an ice plug.

Water sample 06-04-water was taken at piezometer 95 UKHRD-2, located on the north side of the center of the dump. pH levels were tested at 4.9 and the conductivity was 490 μ S.

Water sample 06-05-water was collected from a ditch located at the toe of the Ruby 400 on the corner of the south bank (photo 6-23). Drainage is from both groundwater and seepage from the dump. The ditch was dry at the north corner and down gradient for 50m. Field test results for pH levels were 3.3 and conductivity at 228 μ S.

Water sample 06-06-water was taken below the Ruby 400 at piezometer 95UKN1/1. Field testing indicated a pH of 6.1 with conductivity at 11 μ S. Sample collection was also attempted at piezometers 95UKN1/2 and 95UKN1/3, however, both locations were dry and no sample was obtained.

Sample analyses for all water samples taken at the site can be found in Attachment B.

Previous Environmental Studies/Sampling

The Ruby 400 adit has been documented as having an ice plug present throughout the year inside the portal. The water quality monitoring data shows more variability than the other adits on Galena Hill due to this ice formation. The freezing and thawing of the ice affects the water chemistry throughout most of the year.

There has been a consistent decrease in the peak and average zinc concentrations over the course of the past five years of the site water quality monitoring program. Copper, lead, cadmium and arsenic are occasionally present in the drainage water, however, these metals and conductivity do not indicate a decreasing trend in concentrations and have been consistent for the past five years.

10. RECLAMATION

Describe the nature and approx. extent of any natural revegetation that has occurred on disturbed ground. Describe any reclamation measures carried out by past or present site operators.

11. OTHER SOURCES OF INFORMATION AND DATA

No other sources of information and data were available.

12. REFERENCES

United Keno Hill Mines Limited. 1996. *United Keno Hill Mines Limited – Site Characterization*. Report No. UKH/96/01, prepared by Access Mining Consultants Limited.

United Keno Hill Mines Limited. 1996. *United Keno Hill Mines Limited – Site Characterization, Technical Appendices I-VI*. Report No. UKH/96/01, prepared by Access Mining Consultants Limited.

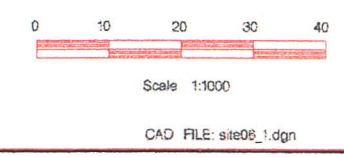
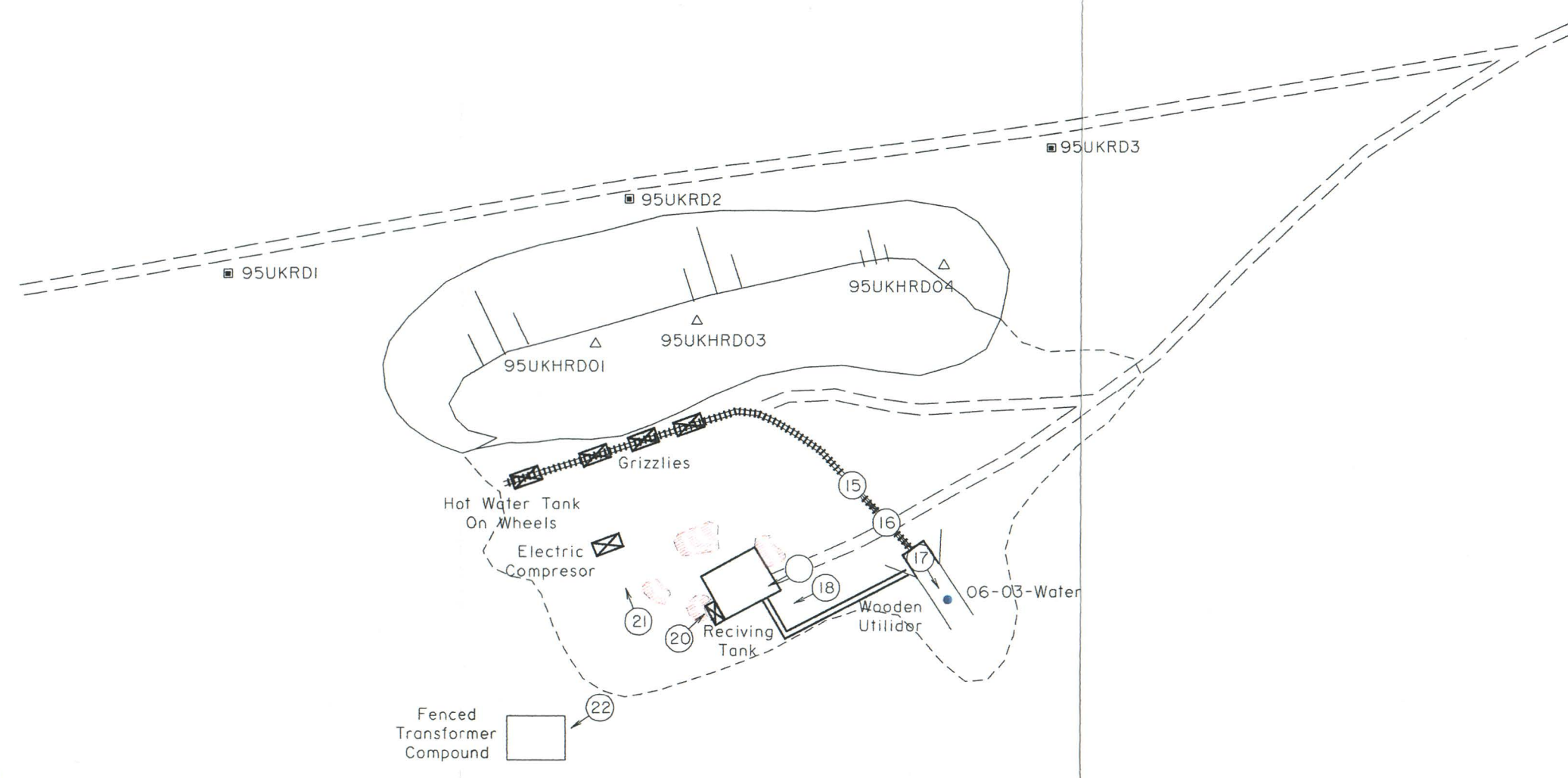
Table B1. 1999 Water Quality Results, Ruby 400 Site

	Detection Limit	Units	06-03 - Water - 99/09/14	06-04-Water - Bermington - 14/09/99	Ruby 400 06-05-Water - Ruby 400 - 99/09/15	06-06 - Water - 99/09/17
pH (field)						
Conductivity (field)						
pH (Lab)	0.01	pH	7.56	5.06	3.43	5.89
Conductivity (Lab)	0.01	µS/cm	520	3000	2700	820
Total Alkalinity	5	mg CaCO3/L	119	<5	<5	25
Chloride	0.25	mg/L	<0.25	na	na	0.37
Chloride	0.5	mg/L	na	4.3	1.4	
Hardness (CaCO3 equ)	5	mg/L	253	1280	774	468
Nitrate-N	0.05	mg/L	<0.05	3.9	0.9	0.06
Nitrite-N	0.003	mg/L	<0.003	0.004	0.012	0.004
Sulphate	1	mg/L	138	2300	1860	410
Total Dissolved Solids	5	mg/L	341	3730	2950	650
ICP-USN Total Metals Scan in Water						
Aluminum	0.0008	mg/L	0.118	55.9	12.5	12.8
Antimony	0.005	mg/L	<0.005	0.025	<0.005	0.013
Arsenic	0.01	mg/L	0.03	0.14	<0.01	0.1
Barium	0.00004	mg/L	0.00866	1.49	0.0079	0.466
Beryllium	0.00001	mg/L	<0.00001	0.00339	0.00289	0.00044
Bismuth	0.0004	mg/L	<0.0004	0.0028	<0.0004	0.0022
Boron	0.002	mg/L	<0.002	0.166	0.067	0.057
Cadmium	0.00001	mg/L	0.00833	1.81	1.63	0.193
Calcium	0.002	mg/L	80.2	272	171	117
Chromium	0.00006	mg/L	<0.00006	0.098	0.0259	0.0231
Cobalt	0.00003	mg/L	0.00518	0.173	0.185	0.0146
Copper	0.00003	mg/L	0.00196	0.455	0.336	0.0423
Iron	0.00001	mg/L	1.95	124	7.83	84.6
Lead	0.0003	mg/L	0.001	0.917	0.329	0.14
Lithium	0.001	mg/L	0.014	0.106	0.019	0.025
Magnesium	0.0005	mg/L	11.9	169	94.1	32.9
Manganese	0.00002	mg/L	2.69	5.2	6.57	4.87
Mercury	0.0001	mg/L	<0.0001	0.0003	<0.0001	<0.0001
Molybdenum	0.00007	mg/L	0.00049	0.00421	<0.00007	0.00268
Nickel	0.00001	mg/L	0.0299	1.39	0.802	0.0868
Phosphorus	0.03	mg/L	0.05	5.53	<0.03	1.64
Potassium	0.4	mg/L	<0.4	6.1	0.9	1.8
Selenium	0.004	mg/L	<0.004	0.144	0.11	<0.004
Silicon	0.004	mg/L	3.66	82.9	9.27	24.8
Silver	0.00005	mg/L	0.0003	0.0583	0.0366	0.00337
Sodium	0.4	mg/L	0.9	4.5	2.2	2.2
Strontium	0.00002	mg/L	0.0915	0.305	0.197	0.15
Sulphur	0.008	mg/L	47.5	750	594	136
Thallium	0.001	mg/L	0.004	0.405	0.344	<0.001
Titanium	0.00002	mg/L	0.00013	1.74	0.00033	0.563
Vanadium	0.00003	mg/L	<0.00003	0.141	<0.00003	0.0406
Zinc	0.0002	mg/L	1.2	21.1	27.7	7.91
Total Arsenic by Hydride AA						
Arsenic	0.0002	mg/L	0.0269	0.23	0.0005	0.0435
Total Selenium by Hydride AA						
Selenium	0.0001	mg/L	0.0002	0.0008	<0.0001	0.0016

Table B1. 1999 Soil Quality Results, Ruby 400 Site

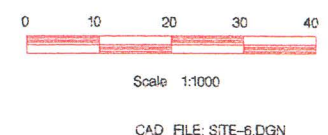
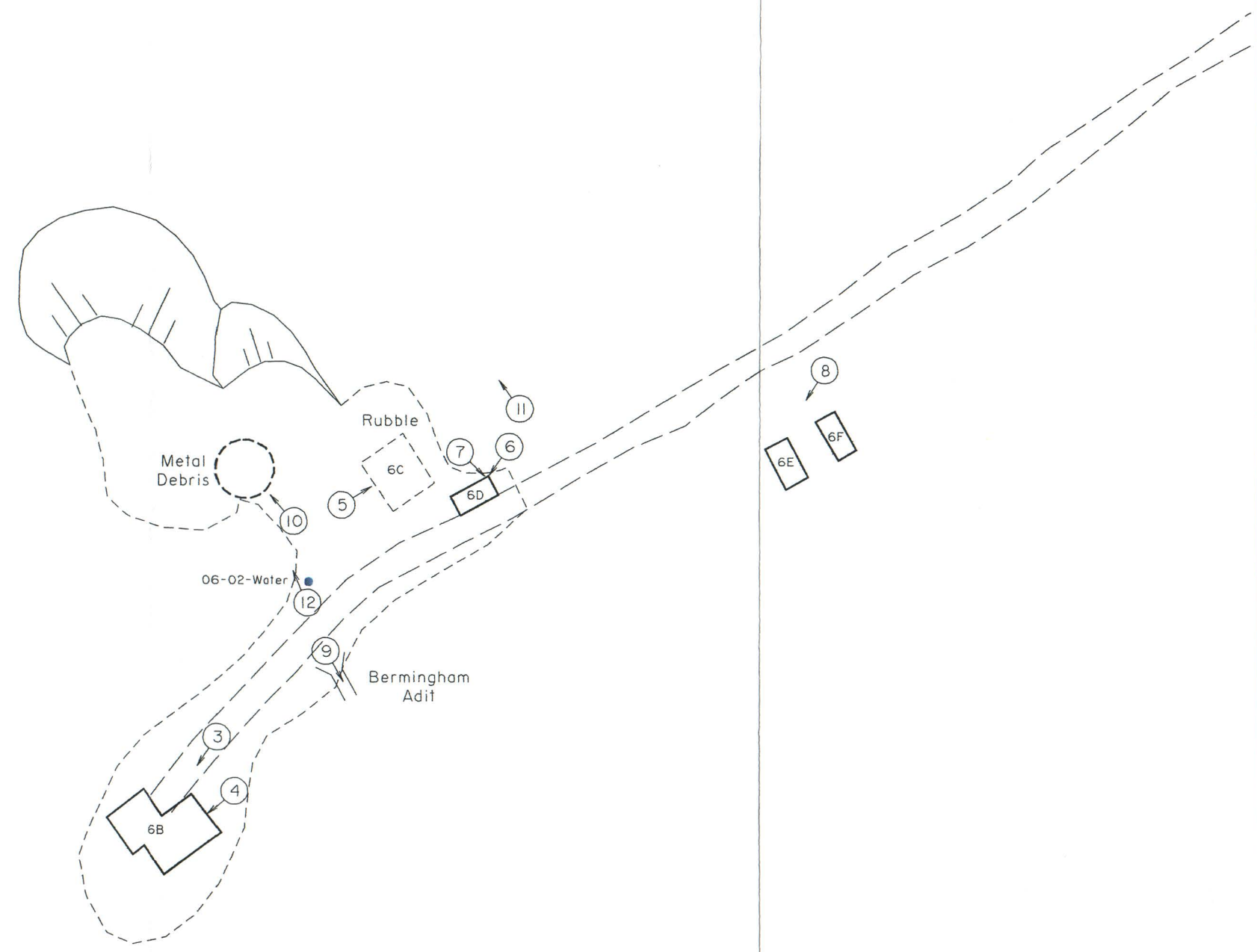
	Detection Limit	Units	06-01-Soils - Ruby 400
PCBs in Soil			
Total PCBs	0.1	mg/kg	<0.1
pH in Saturated Paste			
pH	0.1	pH	6.8
pH in Soil (1:2 water)			
pH	0.01	pH	6.9
ICP Semi-Trace Scan - Metals in Soil			
Aluminum	5	µg/g	22500
Antimony	2	µg/g	210
Arsenic	2	µg/g	269
Barium	0.05	µg/g	399
Beryllium	0.1	µg/g	0.4
Bismuth	5	µg/g	<5
Cadmium	0.1	µg/g	158
Calcium	5	µg/g	1760
Chromium	0.5	µg/g	28.1
Cobalt	0.1	µg/g	7.2
Copper	0.5	µg/g	184
Iron	1	µg/g	51000
Lead	1	µg/g	4500
Lithium	0.5	µg/g	9.6
Magnesium	1	µg/g	2400
Manganese	0.5	µg/g	8230
Mercury	0.01	µg/g	0.808
Molybdenum	1	µg/g	3
Nickel	1	µg/g	19.2
Phosphorus	5	µg/g	447
Potassium	20	µg/g	7400
Selenium	2	µg/g	<2
Silicon	5	µg/g	3870
Silver	0.5	µg/g	357
Sodium	5	µg/g	741
Strontium	1	µg/g	20
Sulphur	10	µg/g	17900
Thorium	1	µg/g	<1
Tin	1	µg/g	9
Titanium	0.2	µg/g	87.6
Uranium	5	µg/g	<5
Vanadium	1	µg/g	45
Zinc	0.5	µg/g	9890
Zirconium	0.1	µg/g	10.6

- Building (22A: building site present reference*)
Indicates Asbestos Material
- 22A Collapsed Building
- Adit
- Collapsed Adit
- Shaft
- Collapsed/Backfilled Shaft
- Mine Rock Dump
- Bedrock Open Pit
- Trench
- Stripped Overburden Stockpile
- Stripped / Disturbed Area
- Outcrop Boundary
- Highway
- Road (gravel, 2 wheel drive)
- Road (gravel, 4X4 accessible)
- Road (inaccessible)
- Trail
- Culvert
- 24501-01 1999 Soil Sample (this study)
- Pre 1999 Soil Sample (other sources)
- 25WR04-01 1999 Waste Rock Sample (this study)
- Pre 1999 Waste Rock Sample (other sources)
- 06-03-06 1999 Water Sample
- Pre 1999 Water Sample
- Tension Cracks
- Mass Movement (note: for Forms; BelleKeno)
- Groundwater Seep
- Surface Water Flow (Stream, Creek, River)
- Lake
- Settling Pond / Water Treatment Pond
- Tailings Dam / Tailings Pond / Mill Tails
- Ponded Water / Trench
- Barrels
- Abandoned Equipment (compressors, ore cars, rails, air and water pipe)
- Mine Rails / Trestle
- Collapsed Trestle
- Solid Waste Disposal Site
- Area of Soil Contamination
- *(6) Transformer Location (number of transformer in brackets)
- Power Line
- Power Line Collapsed
- Aerial Transmission Towers
- 5 Photo Site (arrow shows view direction)
- GPS Survey Location
- Former Building Site (Elsa)
- Pre 1999 Piezometer Sample



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Drawing title:	Titre du dessin:	project no. no. du projet:	diag. no. dessin no.:
Ruby 400 Site #6 Site Assessment Yukon Territory		125-12.01	1 of 2

- 22A* Building (22A: building site present reference*)
Indicates Asbestos Material
- 22A Collapsed Building
- Adit
- Collapsed Adit
- Shaft
- Collapsed/Backfilled Shaft
- Mine Rock Dump
- Bedrock Open Pit
- Trench
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- 24501-01 1999 Soil Sample (this study)
- Pre 1999 Soil Sample (other sources)
- 25WR04-01 1999 Waste Rock Sample (this study)
- Pre 1999 Waste Rock Sample (other sources)
- W0-12-06 1999 Water Sample
- Pre 1999 Water Sample
- Tension Cracks
- Mass Movement (note: for Forms: BelleKeno)
- Groundwater Seep
- Surface Water Flow (Stream, Creek, River)
- Lake
- Settling Pond / Water Treatment Pond
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- Collapsed Trestle
- Solid Waste Disposal Site
- Area of Soil Contamination
- *(6) Transformer Location (number of transformer in brackets)
- Power Line
- Power Line Collapsed
- Aerial Transmission Towers
- (5) Photo Site (arrow shows view direction)
- GPS Survey Location
- Former Building Site (Eiso)



CAD FILE: SITE-6.DGN

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	approved by: approuvé par:	revisions:	project no. no. du projet:
Drawing title: Birmingham & Ruby (Arctic & Mastiff) Site #6 Site Assessment Yukon Territory	Titre du dessin:	125-12.01	dwg. no. dessin no. 2 of 2



Photo 6-1 : Panoramic view of trenching at Bermingham Pit. (Azimuth 210^o)



Photo 6-2 : Ruby Shaft. South portion of shaft house over opening has collapsed.



Photo 6-3 : Bermingham Pit. Building 1. Explosives magazine. (Azimuth 235°)



Photo 6-4 : Bermingham Pit. Building 1. Interior of explosives magazine. (Azimuth 225°)

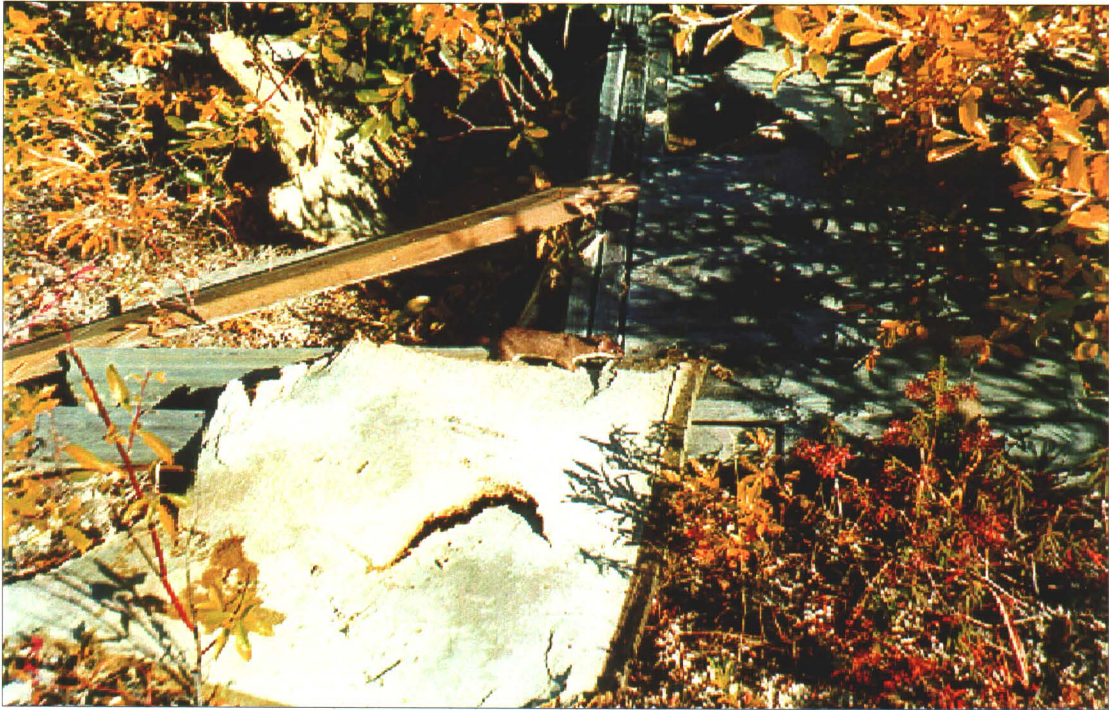


Photo 6-5 : Bermingham Adit.



Photo 6-6 : Bermingham Adit. Wooden pipe extending from Building #3. (Azimuth 160°)

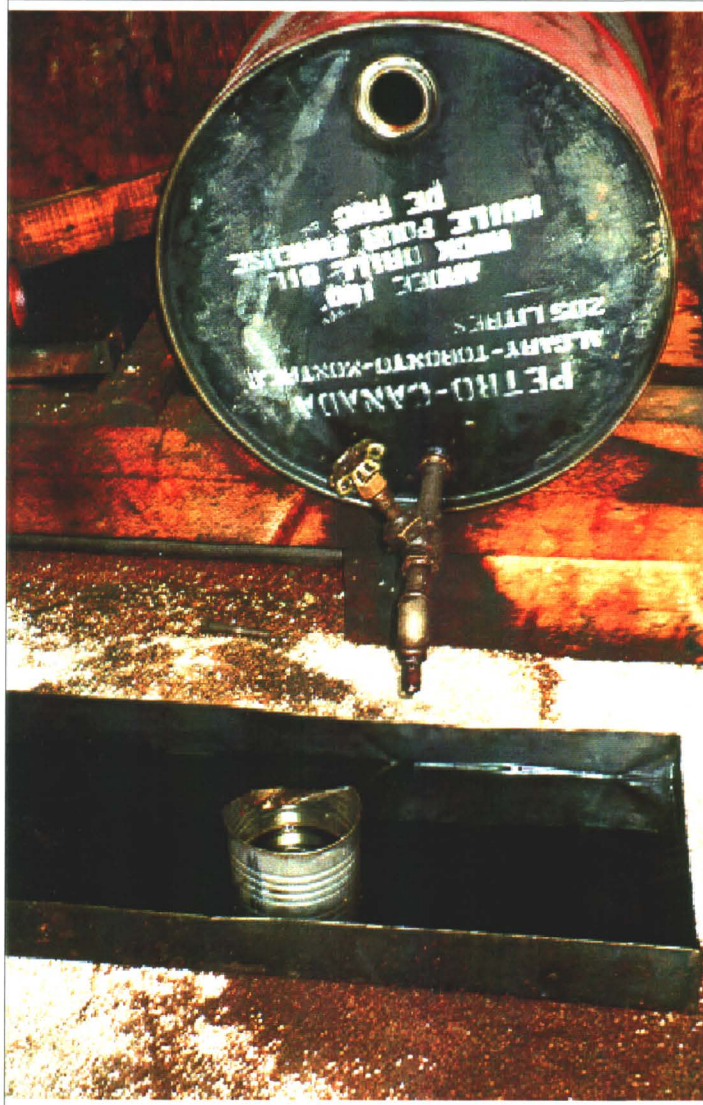


Photo 6-7 : Bermingham Adit. Interior of Building #3.



Photo 6-8 : Bermingham Adit. Buildings 4 & 5. Wood frame asphalt shingles - tar paper exterior. (Azimuth 195°)



Photo 6-9 : Bermingham Adit. Portal at Bermingham Adit. (Azimuth 170°)



Photo 6-10 : Bermingham Adit. Metal debris on dump. (Azimuth 325°)



Photo 6-11 : Bermingham Adit. Powerlines from Adit.
Also note wooden pipe extends down
along powerline.



Photo 6-12 : Bermingham Adit. Water sample location. (Azimuth 348^o)



Photo 6-14 : Ruby 400. Utildor from adit structure to garage. Transformer compound is in the background.



Photo 6-15 : Ruby 400. Adit structure with rail tracks extending from the structure and utilidor on right..



Photo 6-16 : Ruby 400. Interior photo of the adit structure.



Photo 6-17 : Ruby 400. 12 metres into the interior of adit at sampling location.

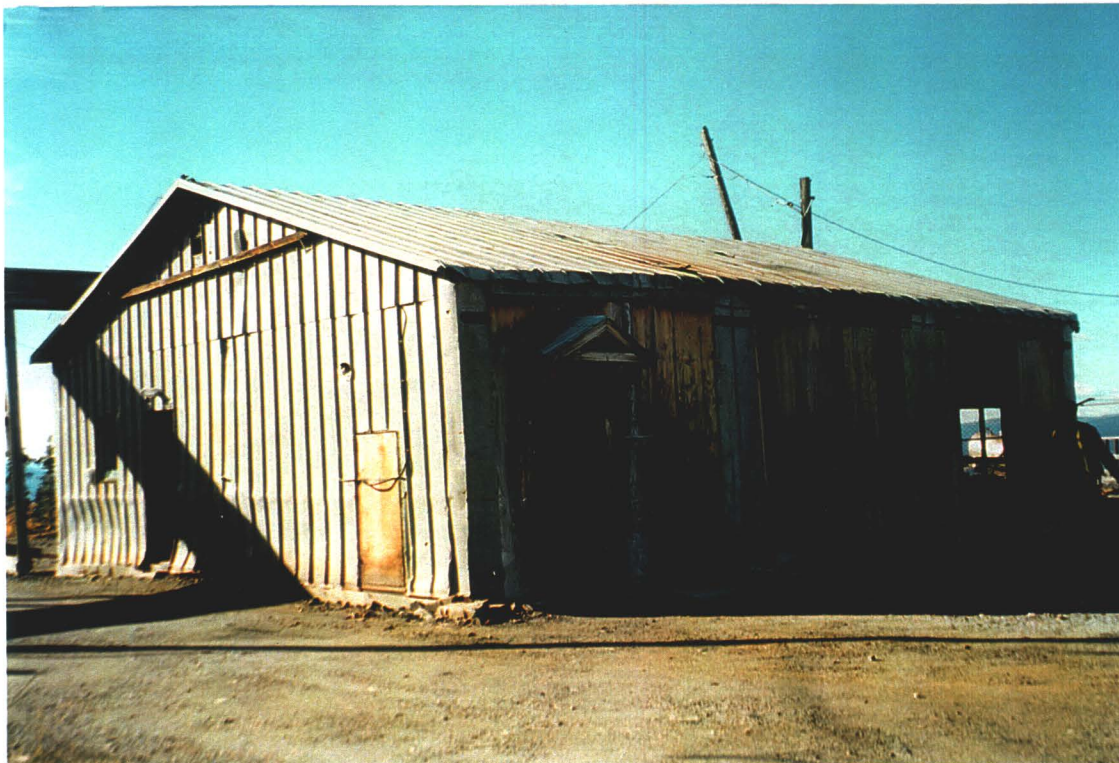


Photo 6-18 : Boiler house and garage structure.



Photo 6-19 : Ruby 400. Interior of the shop area of the garage.



Photo 6-20 : Ruby 400. Receiving tank located on the exterior wall of the boiler house.



Photo 6-21 : Ruby 400. Abandoned compressor and some miscellaneous debris.

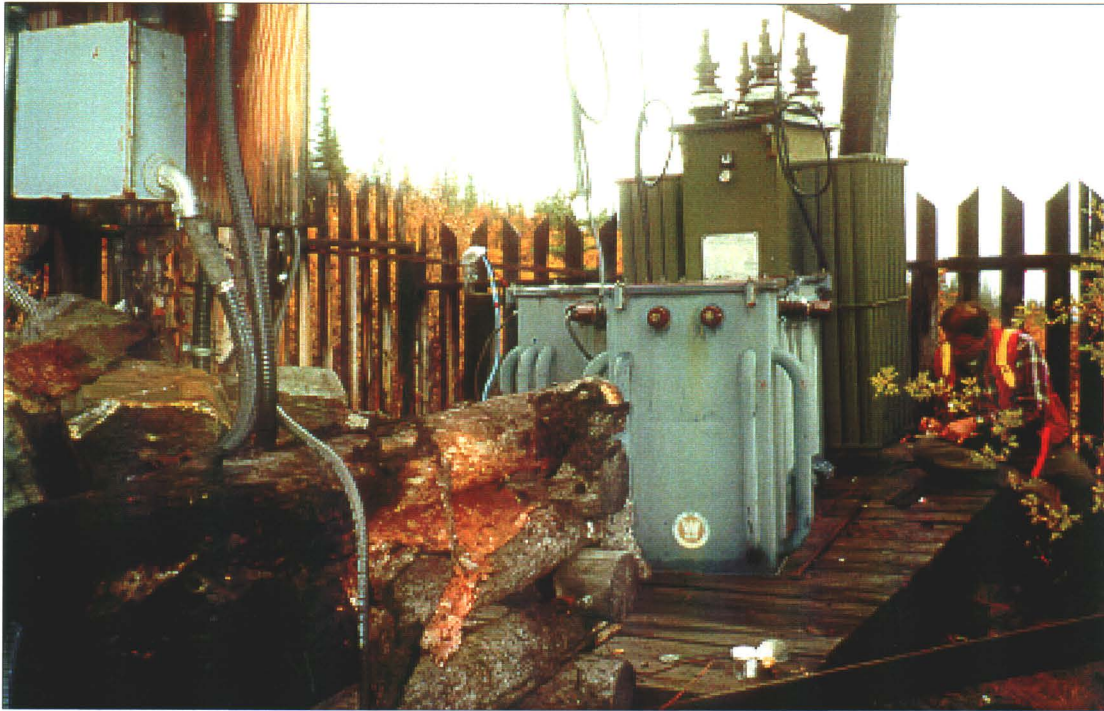


Photo 6-22 : Ruby 400. Transformer compound located at the mine site.



Photo 6-23 : Ruby 400. Sample location 06-05
-water collected below the Ruby 400 dump..