ELSA MINE

SITE #3

MINFILE #105M OO1a

1. LOCATION AND ACCESS

The main production level (400) portal is within the Elsa town site, about 100m from the mill, at an elevation of 940m. UTM co-ordinates for this location are 7 087 000m N and 476 000m E (Latitude 63 54 36°N and Longitude 135 29 06°W)

2. SITE PHYSIOGRAPHY

The site is on the north-facing slope of Galena Hill. Three creeks flow over the mine area; Porcupine Creek, Brefalt Creek and Flat Creek. The entire area drains into the Flat Creek drainage system. The sites of development are overgrown with thick second growth dominated by alder and willow. The area is likely underlain by permafrost.

3. GEOLOGY AND MINERALIZATION

Two principal veins are hosted by massive, thick-bedded quartzite with minor greenstone lenses. The veins form a Y-junction, and are cut by several post-ore faults. The veins are very highly oxidized from surface down to the 400 level. Near surface the mineralization consists of highly altered siderite, galena, pyrite, freibergite, cerrusite, anglesite, native silver, pyrargyrite, argentite, beudantite, bindhemite, silver-bearing jarosites, quartz, limonite and manganese oxides. At depth the primary sulphide ore is dominated by quartz, pyrite and galena, with relatively little sphalerite, and minor chalcopyrite.

4. SITE HISTORY

The Elsa mine has operated during three periods: 1928 to 1941, 1948 to 1951 and 1955 to 1988. Site development began in 1928 at the upper levels of the mine. The 200 and 400 levels were the main production levels. Adits were driven at +50, 50, 100, 200 and 400 levels, and the Gravel adit. The Elsa town site and mill were built to service the Elsa mine. The 1948 to 1951 era saw minor production and development, including raises driven to surface. In the 1955 to 1988 era an internal shaft was sunk 375 feet below the 400 level. There are a total of 8 levels developed and stoped. Backfill was used to stabilize the mine in the later years of production. Pebble-sized screened fill was sent underground by pipes from a site west of the 200 portal. A small open pit was excavated in the 50 portal area. Total mine production was 445,440 tonnes averaging 2105 g/t silver, 4.9% lead and 1.4% zinc, the second largest producer of silver in the Keno Hill district.

5. MINE DEVELOPMENT

5.1 Mine Openings and Excavations

Adits/Shafts/Portals

400 Level Portal (Photo 3-1)

Description: The portal is covered with an insulated, asbestos-clad building. Tracks from underground lead across the road to a dump chute and to the mill.

Location: The portal is in the Elsa town site, near the crusherhouse and mill (Building #20).

Dimensions (L x W x H): Adit is about 6' by 7'.

Supports: Portal building is of wood-frame construction. The mine was not inspected underground.

Condition: Appears to be very stable.

Accessibility: The portal door was left open for inspection, but can be locked. This site is inspected by mine employees several times per day, as it is in the town.

200 Level Portal (Photo 3-4)

Description: This portal was the major production level during the early years of the mine. The portal is in good condition, with a locked steel door. Tracks from underground lead to an ore dump station. Two ore cars are present on the tracks. Virtually all of the ore has been removed from the ore dumpsite.

Location: Located on the west side of Porcupine Creek, just above lower Calumet Drive and the Elsa town site.

Dimensions (L x W x H): Portal is about 6' by 7'.

Condition: The portal appears to be very stable, but the ore dump structure is perched on a steep bank that has been undermined

Accessibility: Access underground is blocked by a locked steel door.

Note: This mine level is reported by local residents to have high radon levels.

100 Level Portal

Description: Portal is collapsed, level part of waste dump is overgrown by alders. The waste rock appears to be almost entirely barren country rock. Ore from this level was delivered to the mill from the 200 or 400 levels.

Location: Located on west side of Porcupine Creek, below the 50 Level.

Dimensions (L x W x H): Unknown.

Supports: Unknown.

Condition: Portal is completely collapsed.

Accessibility: No access to underground.

50 Level Portal/ Open Pit Site (Photo 3-7)

Description: A small open pit was mined in the 50 portal area to remove a crown pillar of ore in the late 1980's. A small shed is present. The portal was not located, and has likely been destroyed by the open pit.

Location: Below Calumet Drive, west of Porcupine Creek.

Dimensions (L x W x H): Main disturbed area is about 50 by 50m.

Supports: None observed.

Condition: Site appears to be fairly stable.

Accessibility: Easy access from Calumet Drive. No access to underground observed.

Gravel Portal

Description: A collapsed adit, site totally overgrown. Waste dump appears to consist of overburden only.

Location: Just above Porcupine Creek on the east side, opposite the 100 level portal.

Dimensions (L x W x H): Unknown.

Supports: Unknown.

Condition: Totally collapsed.

Accessibility: No access to underground. Site accessed by walking along creek.

+50 Portal (Photos 3-8, 3-9)

Description: Portal is collapsed. Level part of site is totally overgrown. Steep bank of waste dump is not vegetated, shows some slumping. Two small, collapsed raises were found uphill from the adit.

Location: Above Porcupine Creek on east side, below Calumet Drive.

Dimensions (L x W x H): Unknown.

Supports: Some rotten timbers present.

Condition: Portal is collapsed.

Accessibility: No access to underground.

Powderhouse Corner Vent Raise (Photo 3-6)

Description: A vent raise that has been backfilled is subsiding. A hole is present, with minor pipe and timber indicating mine association.

Location: The raise is about 5m from Calumet Drive, at a switchback corner known as powderhouse corner.

Dimensions (L x W x H): A pit about 10m by 10m wide and 5m deep is present.

Supports: Unknown.

Condition: Appears to be unstable.

Accessibility: Easy access from Calumet Drive.

Note: There is a northeast-trending linear depression evident about 100m uphill from this site. The depression crosses Calumet Drive, and is thought to be due to stope subsidence.

Shaft Northwest of Ball Field

Description: A shallow, overgrown depression was found that may have been a test pit. Note that this "shaft" is not connected to the main Elsa mine, and appears to be only a shallow pit.

Location: Downhill from the Ball Field, near the ski hill.

Dimensions (L x W x H): 1.5m by 1.5m by 0.5m deep.

Supports: Unknown.

Condition: Stable.

Accessibility: Not a significant site, easy access.

Shaft South of Aurora Heights

Description: A depression is present at the side of a minor road. Some pipe and timber suggest that this is a backfilled vent raise. Water was observed draining into the depression from a ditch.

Location: A minor road leads from powderhouse corner to the southwest.

Dimensions (L x W x H): The depression is about 2m by 2m by 0.5m deep.

Supports: Unknown.

Condition: May be unstable.

Accessibility: No access to underground. There is easy access to the site from minor road.

Tick Shaft (photo 3-10)

Description: A small, collapsed inclined shaft with small timber hoist frame mounted above. Note that this shaft is not connected to the main Elsa mine.

Location: In dense alder woods west of Elsa town, above Silver Trail highway.

Dimensions (L x W x H): Unknown, appears to have been about 1.5m by 1.5m.

Supports: Some rotten timbers present.

Condition: Collapsed.

Accessibility: No access to underground.

Backfill Site (photo 3-5)

Description: A large-diameter pipe leads underground from surface. Gravel sized rock was delivered underground for use as backfill. Piles of gravel are present, and minor timbers, pipe, and other materials.

Location: Located west of the 200 portal, just above lower Calumet Drive.

Dimensions (L x W x H): Unknown.

Supports: Unknown.

Condition: Site appears to be stable.

Accessibility No access to underground except through pipe, diameter approximately 20 cm.

Open Pits

A small pit was excavated around the 50 adit – see description above.

Trenches

No significant trenches were identified at the site, except near the 50 portal pit. The thick growth present on older disturbed areas may obscure trenching. It is likely that the surface trace of the main veins was trenched at some time past.

5.2 Waste Rock Disposal Areas

Each of the adits above the 400 level has a small (1 to 5 thousand tonnes) waste dump at the portal. These waste dumps were commonly totally revegetated except on oversteepened slopes. The waste rock was either barren waste rock or very low-sulphide mineralized rock. There is very little low-grade ore in the dumps due to the close proximity to the mill.

The waste from the 400 level adit has been used for construction in the Elsa village, and is not deposited in a typical waste dump.

There are a few piles of low-grade open pit material (distinguished by larger rock size than from underground) near the 400 portal. This material is highly oxidized, and siderite-rich. The dark boulder pile in photo 3-1 is typical of this material.

400 Portal Area Waste Rock Pile (Photo 3-2)

General Description: The waste rock sampled is from underground development. It is quartzite and phyllite with quartz-siderite-pyrite vein material. Limonite and manganese oxide staining is very common. The area is quite well drained by ditches and culverts, and the material is quite coarse, with little water-retention capacity. There is minor, local vegetation in the area.

Location: Across the road from the 400 portal, adjacent to the rails, near the grizzly.

Dimensions: Dimensions of the waste rock in this area are unknown, as they have been incorporated into the site landscaping and roadbeds. The site sampled was adjacent to the rails from underground, and was obviously mineralized underground material.

Sampling: One sample of underground waste rock was collected from an excavation beside the rails near the grizzly at the 400 level.

Waste Rock Samples:

Sample #	Location	Paste pH	Conductivity	Lab Results
3-WR-TPBM-01	400 portal	2.62	2.75 µS/cm	See Table – Attach. 2

5.3 Tailings Impoundments

Tailings are located north of Elsa Village, 500m north of Hwy #2. For further details, see separate report on Elsa tailings (site #79).

5.4 Mine Site Water Treatment

None of the adits examined were noted to produce water, and no water treatment facilities were observed. Water is reported to be collected at the 400 level and pumped down the internal shaft. This water is thought to flow through permeable fault zones to the Husky mine.

6. MINE SITE INFRASTRUCTURE

Most of the buildings and infrastructure for this mine is included in a separate report on the Elsa Village (site #78).

6.1 Buildings

Building 3A: 50 Level Shack

Dimensions (L x W x H): approximately 4m by 4m by 2.5m high.

Location: Above 50 level open pit.

Construction: Wood frame and siding. No windows, door locked.

Paint: Blue paint.

Asbestos: None observed.

Foundation: Wood – portable?

Non-Hazardous Contents: Unknown.

Hazardous Contents: Unknown.

Several small wooden shacks, some partially collapsed were observed at various sites in this area. None were considered to be of environmental significance (no asbestos, hazardous contents).

There is a covered barbecue area at the Ball Field, of wood frame construction with a metal roof. This structure is in good condition, and appears to be stable.

The 400 level portal building is an insulated wood frame structure with asbestos siding (photo 3-1).

6.2 Fuel Storage

Location: Backfill site.

Description: Two drums, one empty, one approximately 1/3 full, labeled Automatic Transmission Fluid.

6.3 Rail and Trestle

200 Level Portal

Fabrication: Steel rails on wooden ties, wooden ore dump trestle.

Amount of materials: Approximately 50m of installed rails, more rails and pipes in bushes southwest of portal.

Condition: Good condition, except ore dump trestle has been undermined and may be unstable.

400 Level Portal (Photos 3-1, 3-2, 3-3)

Fabrication: Steel rails on wooden ties, wooden ore dump trestle, steel grizzly, wooden dump chute.

Amount of materials: Approximately 150m of installed rails.

Condition: :Mostly in good condition. The ore dump/ grizzly section is perched at the top of a steep bank, and supporting timbers may be rotting. The ore chute timbers are badly rotted.

6.4 Milling and Processing Infrastructure

Elsa mill is reported separately as part of the Elsa Village report (site #78).

6.5 Electrical Equipment

The electrical equipment associated with mine workings is discussed in the Elsa Village report (site #78).

7. SOLID WASTE DUMPS

See Elsa town site report (site #78).

8. POTENTIAL CONTAMINANTS OF CONCERN

No Potential Contaminants of Concern (PCCs) were observed in association with the Elsa mine itself. There are a number of PCCs associated with the Elsa Village and are reported separately (site #78).

9. WATER QUALITY

At the time of the site visit, there was no water observed at any of the mine workings or waste disposal sites. No water samples were collected.

10. RECLAMATION

There is extensive natural revegetation at all of the older disturbed sites. The vegetation is dominated by deciduous shrubs and trees such as alder and willow. There were no known reclamation measures carried out at this site by past or present operators.

11. OTHER INFORMATION AND DATA

There are high radon gas levels reported from the Elsa mine (alone out of all the mines in the area) by local residents who worked at the mine. The 200 level is specifically noted to have high radon levels.

12. REFERENCES AND PERSONAL COMMUNICATIONS

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.

Boyle, R.W., 1965. Geology, Geochemistry and Origin of the Lead-Zinc-Silver Deposits of the Keno Hill – Galena Hill Area, Yukon Territory. Geological Survey of Canada Bulletin 111.

ATTACHMENT 2: 1999 ELSA MINE WASTE ROCK LABORATORY RESULTS			
Site Number	**Detection Limit**	**Units**	**3_WR_TPBM_01**
Sample Desciption			400 portal area waste rock pile
Paste pH (field)	N/A	pH	
Conductivity (field)	N/A	µS/cm	
pH in Saturated Paste			
pH	0.1	pH	2.2
pH in Soil (1:2 water)			
pH	0.01	pH	2.3
ICP Semi-Trace Scan			
Aluminum	5	µg/g	38600
Antimony	2	µg/g	21
Arsenic	2	µg/g	478
Barium	0.05	µg/g	268
Beryllium	0.1	µg/g	0.3
Bismuth	5	µg/g	<5
Cadmium	0.1	µg/g	3.3
Calcium	5	µg/g	3020
Chromium	0.5	µg/g	47
Cobalt	0.1	µg/g	3
Copper	0.5	µg/g	156
Iron	1	µg/g	79000
Lead	1	µg/g	2880
Lithium	0.5	µg/g	13.8
Magnesium	1	µg/g	1330
Manganese	0.5	µg/g	646
Mercury	0.01	µg/g	0.24
Molybdenum	1	µg/g	4
Nickel	1	µg/g	12.2
Phosphorus	5	µg/g	644
Potassium	20	µg/g	12400
Selenium	2	µg/g	<2
Silicon	5	µg/g	43
Silver	0.5	µg/g	219
Sodium	5	µg/g	1470
Strontium	1	µg/g	47
Sulphur	10	µg/g	22700
Thorium	1	µg/g	<1
Tin	1	µg/g	24
Titanium	0.2	µg/g	135
Uranium	5	µg/g	<5
Vanadium	1	µg/g	66
Zinc	0.5	µg/g	477
Zirconium	0.1	µg/g	20.4

ATTACHMENT 2: 1999 ELSA MINE WASTE ROCK LABORATORY RESULTS
MODIFIED SOBEK METHOD ACID-BASE ACCOUNTING TEST

SAMPLE	SITE DESCRIPTION	PASTE pH	S(T) %	S(SO4) %	AP	NP	NET NP	NP/AP
3_WR_TPBM_01	400 portal area waste rock pile	3.5	2.05	0.43	50.6	-1.3	-51.9	<0.1

AP = ACID POTENTIAL IN TONNES CaCO3 EQUIVALENT PER 1000 TONNES OF MATERIAL.
NP = NEUTRALIZATION POTENTIAL IN TONNES CaCO3 EQUIVALENT PER 1000 TONNES OF MATERIAL.
NET NP = NET NEUTRALIZATION POTENTIAL = TONNES CaCO3 EQUIVALENT PER 1000 TONNES OF MATERIAL.
NOTE: WHEN S(T) AND/OR S(SO4) IS REPORTED AS <0.01, IT IS ASSUMED TO BE ZERO FOR THE AP CALCULATION.
N/D = NO DUPLICATE ASSAY. CALCULATIONS ARE BASED ON ASSAY RESULTS OF THE INITIAL SAMPLE.
RE = REPLICATE.

NOTE - A HIGH LEVEL OF SOLUBLE METALS (ESPECIALLY IRON) WERE OBSERVED IN MANY SAMPLES DURING THE ABA TITRATIONS.
SAMPLES WITH A NEGATIVE NET NP SHOULD BE TESTED FOR MOBILE METALS USING STANDARD SHAKE FLASK EXTRACTION TESTS.

Photo 3-1 : Elsa Mine. Elsa 400 Level Portal. Looking southeast. Low grade open pit ore pile to the right of the tracks.

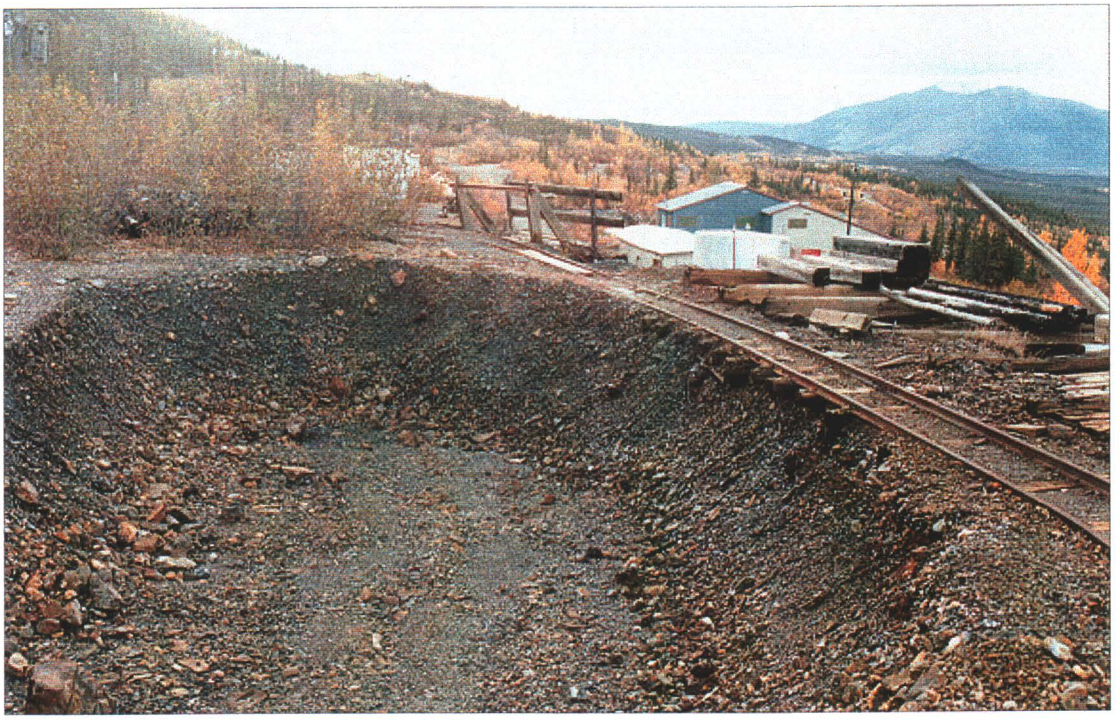

Photo 3-2 : Elsa Mine. Elsa 400 level tracks and grizzly. Looking southwest. Waste rock sample site 3_WR_TPBM_01.

Photo 3-3 : Elsa Mine. Elsa 400 ore chute and grizzly from below. Looking southeast. Note steep banks of waste rock.

Photo 3-4 : Elsa Mine. Elsa 200 Level Portal. Looking south.

Photo 3-5 : Elsa Mine. Elsa mine backfill pipe. Looking west.

Photo 3-6 : Elsa Mine. Collapsed ventilation raise, Powderhouse Corner on Calumet Drive. Sink hole is about 10m by 10m by 5m deep. Looking north.

Photo 3-7 : Elsa Mine. Elsa 50 Level open pit and mine shack.
Looking southeast.

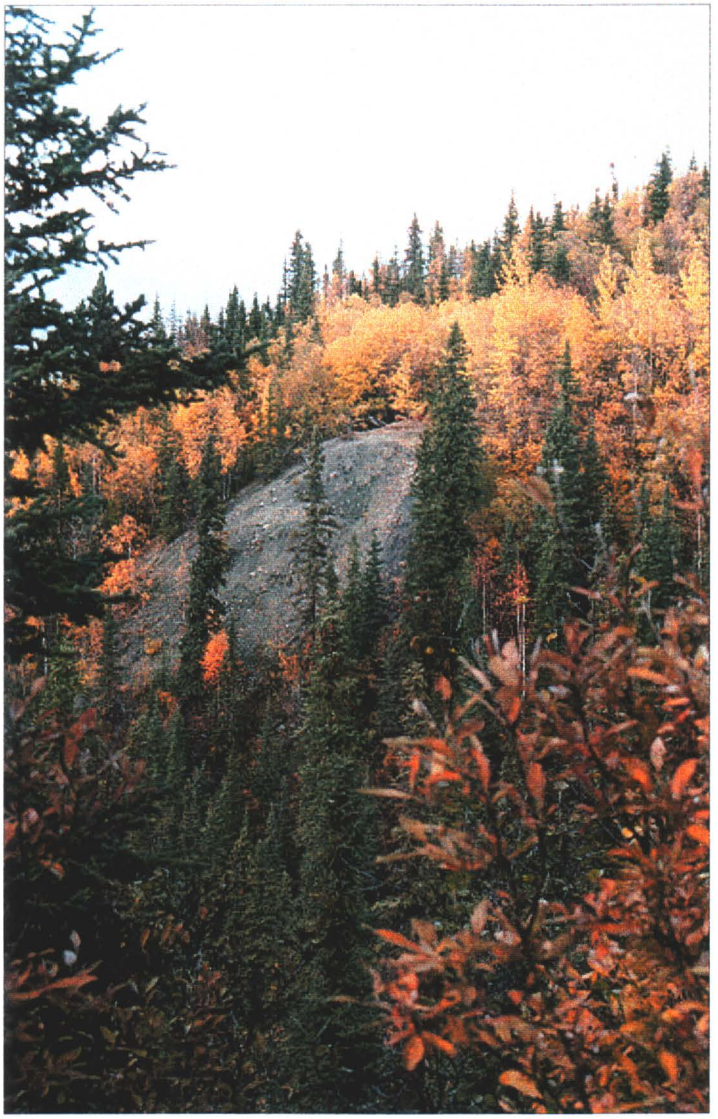

Photo 3-8 : Elsa Mine. Elsa +50 adit waste dump. Photo taken from Calumet Drive, across Porcupine Creek, looking northeast.

Photo 3-9 : Elsa Mine. Elsa +50 adit dump, showing dense natural revegetation and some slump features. Looking northwest.

Photo 3-10 : Elsa Mine. Tick shaft. Rotting timberframe, collapsed adit. Looking south.