LAKE

SITE# 27

MINFILE# 105M001ac

1. LOCATION AND ACCESS

The Lake exploration mine site is located mid-way down the northwestern slope of Keno Hill at an elevation of 1190m. The site is located approximately 250m west of Gambler Gulch. Access to site is via the Lower Faro Gulch Trail, which follows an overgrown mine road east from the Wernecke Camp. The lake site is located roughly 140m north of a point 650m east from the Wernecke Camp along the Lower Faro gulch Trail. UTM co-ordinates for the site are 7092 700m N and 487 300m E.

2. SITE PHYSIOGRAPHY

The site is on a gentle northeast slope in the Gambler Gulch. Given the site aspect, elevation, and presence of ice in some of the mine workings, the site is likely underlain by permafrost. The surface runoff from the mine site flows northward into Gambler Gulch, a tributary of Keno Ladue River. The area is well vegetated with willows, alders, balsam fir and young spruce trees.

3. GEOLOGY AND MINERALIZATION

Bedrock geology includes schists and phyllites with greenstone lenses. Two parallel quartz-siderite veins, 1 to 2.5m wide, contain galena (PbS), sphalerite ((Zn,Fe)S), freibergite ($(Cu, Fe)_{12}Sb_4S_{13}$), chalcopyrite ($CuFeS_2$) and pyrite (FeS_2).

4. SITE HISTORY

Little is known about the history of the site. Given the age of the second-growth vegetation, the property is believed to have been worked in the 1950s or 1960s. Most of the work on the site centred around a small pit with an inclined shaft. Waste dumps associated with the shaft suggest 50 to 100 metres of underground development. The surrounding area was extensively cleared, with numerous bladed roads and level pads developed.

5. MINE DEVELOPMENT

Mine development encountered at Lake includes two shafts, a collapsed adit and three trenches. The mine workings are referred to as the upper shaft, the main shaft and the lower adit. A possible forth, collapsed mine opening (either a raise or an adit) was also identified near the main shaft. There are four waste rock piles associated with these workings. Site details can be found in Figure 1; site photos can be found in Attachment 1. The main shaft is located at the southwest end of a trench cut more than 3m into bedrock.

5.1 Mine Openings and Excavations

Upper Shaft (photo 27-5)

Developed probably for exploration, the upper shaft was hand-dug 3m into the overburden. The vertical shaft is filled with 2m of water.

Location: Roughly 100m at azimuth 180° from the main shaft, and 70m below Lower Faro Gulch Trail.

Dimensions (L x W x H): 1.5m x 1.0m x 3m

Supports: None.

Condition: Fair; no visible signs of collapse.

Accessibility: The shaft is filled with water and is no longer accessible. The shaft is situated in thick willows and alder with no perimeter barrier protection. Florescent, plastic flagging tape was hung around the opening to mark its location.

Main Shaft (photos 27-1, 27-2)

A series of ladders connects the top of the main shaft headframe to a deck located 3m below ground. The shaft is blocked by ice 4m below ground level. The shaft was excavated at an incline of 80°. Less than 20m of metal air and water lines extend from the shaft to surface.

Location: 105m north from the road.

Dimensions (L x W x H): 3.5m x 2.5m x 8.5m

Supports: The frame is constructed of heavy sawn timbers and planking. A retaining wall constructed out of 2"x 4" timbers supports the walls at the entrance to the shaft.

Condition: The headframe and the retaining walls are weathered but are still in fair condition.

Accessibility: The shaft is filled with ice and is no longer accessible below 4m. The manway opening was nailed shut with available planking.

Main Shaft Area

This collapsed opening likely connected to the underground workings below the main inclined shaft. It is difficult to determine whether it was originally an adit, another shaft or a raise to surface. If it was an adit, it may have provided a track mounted haulway extending from the main shaft to the waste rock dumps.

Location: 10m northeast of the inclined shaft.

Dimensions (L x W x H): The original dimensions could not be determined.

Supports: Some rough wooden timbers protrude from the site.

Condition: Collapsed.

Accessibility: Inaccessible.

Lower Adit (photo 27-3)

The portal to the lower adit is completely collapsed and covered by rock.

Location: 105m northeast of the inclined shaft.

Dimensions (L x W x H):

Supports: Not determined.

Condition: Collapsed

Accessibility: Inaccessible

Trenches

The main shaft is located in an area that appears to have been first trenched by bulldozer. Bulldozer trenches are also located 35m southwest of the main shaft and 30 northwest of the lower adit.

Trench #1

The inclined shaft and the collapsed adit/raise are developed in the bottom of this large trench. Outcrop is exposed along the base of the trench and around the headwall. The walls of the trench have low profiles and are stable.

Location: The trench is oriented at azimuth 040°, 90m northeast of the Faro Gulch Trail.

Dimensions (L x W x H): 50m x 30m x 3m. The base of the trench is only 1.5m wide and 1m deep.

Condition: Stable

Trench #2

Cut by a bulldozer, this trench is wide and shallow with no bedrock exposed. Alder saplings have overgrown the entire trench. No evidence of surface water was observed.

Location: The trench is oriented at azimuth 330°, 35m southwest of trench #1 and the main shaft.

Dimensions (L x W x H): 20m x 4m x 1.0m

Condition: Stable.

Trench #3

Trench 3 is a moderately steep walled, 25m long, cut into bedrock. The trench is partially filled with loose rock and overgrown with alders along the edges and in the middle.

Location: The trench is oriented at azimuth 040°, located 140m northeast of the main shaft.

Dimensions (L x W x H): 25m x 5m x 3m

Condition: Stable.

5.2 Waste Rock Disposal Areas

There are five waste rock disposal areas associated with the underground workings and surface trenching. Waste rock piles #1 to #4 are all associated trench #1 and with the underground workings at the main shaft. Waste rock pile #5 is located outside of the entrance of adit #2. At the time of the site visit, there was no surface water encountered on any of the piles.

Waste rock pile #1

The surface of the waste rock pile is composed of thinly interbedded quartzite and graphitic phyllite with minor pyrite and minor quartz-galena vein material.

Location: The waste rock is deposited along the edges of trench #1, around the inclined shaft. It is likely is from the excavation of trench #1.

Dimensions (L x W x H): 35m x 4m x 1m

Sampling: Waste rock sample 27WR01-01 was collected from near the collapsed adit/raise and sent for Acid-Bas Accounting (ABA) and metals analysis.

Field Test Results: pH 8.2
Conductivity 920 µS/cm

Waste rock piles #2, #3 and #4 (photo 27-4)

This long dump area has been broken down based on shape into three waste rock piles. These piles were formed by end dumping from rail mounted ore cars that transported rock from the underground workings. Observed content of the waste rock piles was predominantly thinly banded quartzite with graphitic phyllite interbeds. There are 0.2-2% disseminated pyrite and trace galena stringers up to 2mm wide within the quartzite and phyllite. These stringers occur parallel and perpendicular to quartz and quartz-siderite-pyrite veins up to 2cm wide. Only 2-5% of the waste rock material is the quartz-siderite-pyrite veining. The waste rock is bi-modal, ranging in size from sand to gravel. No apparent oxidation was observed.

Location: The waste rock piles are oriented at azimuth 100° and are located to the east of trench #1.

Dimensions (L x W x H): Waste Pile #2: 20m x 10m x 1.5m
Waste Pile #3: 35m x 5m x 2m
Waste Pile #4: 12m x 3m x 1m

Sampling: No samples were collected.

Waste rock pile #5

Of similar composition to waste rock piles #2, #3 and #4. The waste rock pile was formed by end dumping from the lower adit opening.

Location: The pile is located outside the entrance to the lower adit.

Dimensions (L x W x H): 8m x 3m x 1m

Sampling: No samples were collected.

5.3 Tailings Impoundments

No ore was processed at this site. No tailings were encountered.

5.4 Minesite Water Treatment

There is no water treatment facility at this site.

6. MINE SITE INFRASTRUCTURE

There are the remains of one building to the southeast of the inclined shaft. Abandoned ore cars are scattered around the back of the building and the remnants of rail and trestle were encountered on waste rock piles #2, #3 and #4. Site details can be found in Figure 1; site photos are located in Attachment 1.

6.1 Building 27A (photo 27-6)

A collapsed steel building frame is located on the site. The steel and wood roof frame structure is intact, however the steel wall supports have collapsed.

Dimensions (L x W x H): 15m x 8m x 3m

Location: 25m southeast of the inclined shaft.

Construction: Steel frame for the roof with wood construction for the walls and roof.

Paint: None observed.

Asbestos: None observed.

Foundation: None.

Non-Hazardous Contents: None

Hazardous Contents: none

6.2 Fuel Storage

No fuel storage areas were encountered. A total of eight empty drums were observed scattered in Trench #2, beside the building 27A and on the south side of waste rock pile #3.

6.3 Rail and Trestle

Location: Collapsed trestle, rails and wood debris were encountered on the south side of waste rock pile #2 and on the east end of waste rock pile #3.

Fabrication: Wooden ties and trestle, steel rail.

Amount of materials: Minor: less than 30 linear metres total of rail total.

Condition: The trestle is completely collapsed and does not pose any risks.

6.4 Milling and Processing Infrastructure

There was no milling or processing done at the Lake site.

6.5 Electrical Equipment

No electrical equipment was encountered at this site.

7. SOLID WASTE DUMPS (photo 27-7)

Waste material found on the site is comprised of old abandoned metal mine equipment.

Location: There is a small waste dump behind the southeast side of Building 27A.

Dimensions (L x W x H): Waste is spread out over a 10m by 7m area.

Drainage: Gambler Gulch.

General composition: 3 ore cars, some old fuel drums and some scrap metal.

Impacted vegetation: Healthy alders grow around the metal debris.

8. POTENTIAL CONTAMINANTS OF CONCERN

No hazardous products were encountered. Potential contaminants of concern include dissolved metals from the waste rock piles.

9. WATER QUALITY

Two water samples were collected from the Lake site. The sample sources had no visible particulates and did not appear to be depositing any sediment.

Sample 27WQ-S01-01/02 was collected from a small stream flowing down slope from the site at a rate of 1L/4sec (visual estimation). The sample was collected from 15m north of the lower adit (adit #2). A water sample was also collected from.

Sample 27WQ-S02-01/02 was collected up-slope of the site from a seep along the Lower Faro Gulch Trail.

10. RECLAMATION

Natural reclamation is well advanced with alders, willows, spruce and balsam fir in most areas around most of the property. Small spruce seedlings have taken hold on waste rock piles #2 and #4 and trench #1.

11. REFERENCES

Minfile #105M001ae

ATTACHMENT 2: 1999 LAKE WATER SAMPLES LABORATORY RESULTS				
Sample Number	**Detection Limit**	**Units**	**27WQS01-02 - Sept 21/99**	**27WQS02-02 - Sept 21/99**
Site Description			Tributary of Gambler Gulch, near Adit #2	Triburary of Gambler Gulch, upstream of mine site
pH (field)	N/A	pH	N/A	N/A
Conductivity (field)	N/A	µS/cm	N/A	N/A
pH (Lab)	0.01	pH	7.65	6.46
Conductivity (Lab)	0.01	µS/cm	335	225
Total Alkalinity	5	mg CaCO3/L	90	10
Chloride	0.25	mg/L	<0.25	<0.25
Hardness (CaCO3 equiv)	5	mg/L	175	100
Nitrate-N	0.05	mg/L	<0.05	<0.05
Nitrite-N	0.003	mg/L	0.007	<0.003
Sulphate	1	mg/L	66.4	86.7
Total Dissolved Solids	5	mg/L	327	153
Analysis by ICP-USN				
Aluminum	0.0008	mg/L	0.0041	1.22
Antimony	0.005	mg/L	<0.005	<0.005
Arsenic	0.01	mg/L	<0.01	<0.01
Barium	0.00004	mg/L	0.0341	0.0709
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	0.00006	mg/L	0.00005	0.00014
Calcium	0.002	mg/L	42.7	31.6
Chromium	0.00006	mg/L	<0.00006	0.00241
Cobalt	0.00003	mg/L	<0.00003	0.00127
Copper	0.00003	mg/L	0.00071	0.0108
Iron	0.00001	mg/L	0.009	2.29
Lead	0.0003	mg/L	<0.0003	0.0067
Lithium	0.001	mg/L	0.002	0.002
Magnesium	0.0005	mg/L	13.2	5.39
Manganese	0.00002	mg/L	0.00054	0.0665
Mercury	0.0001	mg/L	<0.0001	<0.0001
Molybdenum	0.00007	mg/L	0.00034	0.00021
Nickel	0.00001	mg/L	0.0002	0.003
Phosphorus	0.03	mg/L	<0.03	0.13
Potassium	0.4	mg/L	<0.4	0.4
Selenium	0.004	mg/L	<0.004	<0.004
Silicon	0.004	mg/L	2.17	3.23
Silver	0.00005	mg/L	<0.00005	<0.00005
Sodium	0.004	mg/L	0.9	0.7
Strontium	0.00002	mg/L	0.104	0.0599
Sulphur	0.008	mg/L	21.9	28.8
Thallium	0.001	mg/L	<0.001	<0.001
Titanium	0.00002	mg/L	<0.00002	0.0403
Vanadium	0.00003	mg/L	<0.00003	0.0035
Zinc	0.0002	mg/L	0.0009	0.0106
Analysis by Hydride AA				
Arsenic	0.0002	mg/L	<0.0002	0.0013
Selenium	0.0001	mg/L	0.0008	0.0008

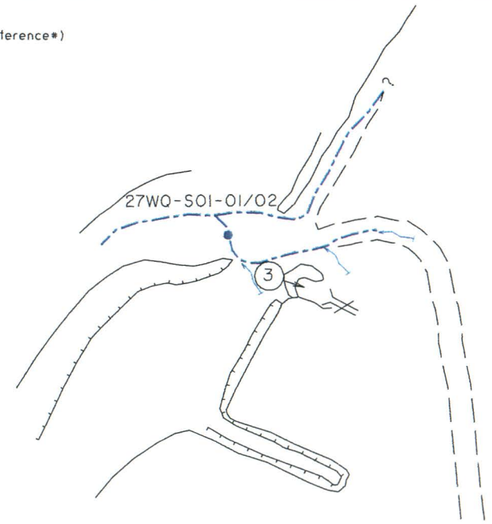
ATTACHMENT 2: 1999 LAKE WASTE ROCK SAMPLES LABORATORY RESULTS			
Sample Number	**Detection Limit**	**Units**	**27WR01-01 - Sept 21/99**
Site Description			Northwest side ofWaste Rock Pile #1
Paste pH (field)	N/A	pH	8.2
Conductivity (field)	N/A	µS/cm	920
pH in Saturated Paste			
pH	0.1	pH	7.5
pH in Soil (1:2 water)			
pH	0.01	pH	7.8
ICP Semi-Trace Scan			
Aluminum	5	µg/g	24900
Antimony	2	µg/g	42
Arsenic	2	µg/g	136
Barium	0.05	µg/g	218
Beryllium	0.1	µg/g	0.3
Bismuth	5	µg/g	<5
Cadmium	0.1	µg/g	46
Calcium	5	µg/g	28900
Chromium	0.5	µg/g	25.2
Cobalt	0.1	µg/g	18.2
Copper	0.5	µg/g	200
Iron	1	µg/g	66000
Lead	1	µg/g	15100
Lithium	0.5	µg/g	4.6
Magnesium	1	µg/g	10700
Manganese	0.5	µg/g	10300
Mercury	0.01	µg/g	0.55
Molybdenum	1	µg/g	5
Nickel	1	µg/g	54.4
Phosphorus	5	µg/g	1100
Potassium	20	µg/g	10400
Selenium	2	µg/g	<2
Silicon	5	µg/g	249
Silver	0.5	µg/g	162
Sodium	5	µg/g	464
Strontium	1	µg/g	26
Sulphur	10	µg/g	17200
Thorium	1	µg/g	<1
Tin	1	µg/g	5
Titanium	0.2	µg/g	85.7
Uranium	5	µg/g	<5
Vanadium	1	µg/g	39
Zinc	0.5	µg/g	4260
Zirconium	0.1	µg/g	18.2

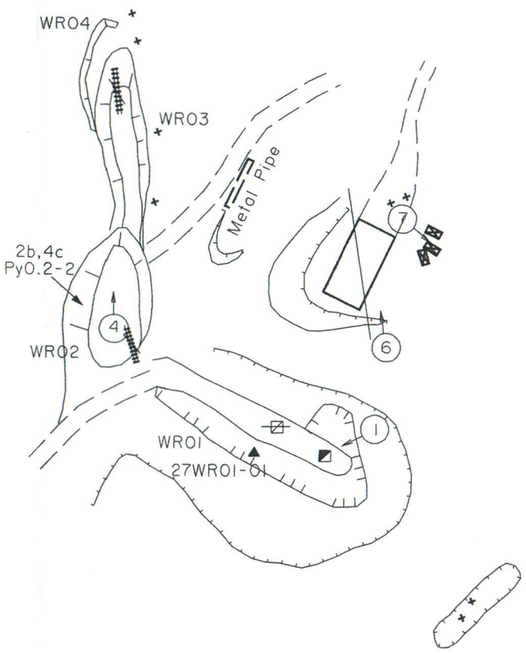
ATTACHMENT 2: 1999 LAKE WASTE ROCK SAMPLES LABORATORY RESULTS MODIFIED SOBEK METHOD ACID-BASE ACCOUNTING TEST								
SAMPLE	**SITE DESCRIPTION**	**PASTE pH**	**S(T) %**	**S(SO4) %**	**AP**	**NP**	**NET NP**	**NP/AP**
27WR01-01 - Sept./99 - Soil	North side of Waste Rock Pile #1	8.5	1.71	<0.01	53.4	145.0	91.6	2.7

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.

- 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
- 24SOI-OI — 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)
- WQ-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
- 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)





27WQ-SO2-OI/02

Waste Rock Geological Legend

This legend intended for use as a key to the observed lithological content of the mine dumps and stockpiles of surficial materials investigated. It does not represent regional stratigraphy and no stratigraphic sequence is implied.

Pyrite content as percent: eg. Py 2%. Occurs as an alteration halo adjacent To vein fault structure.

Oxidation: Weak (wOx), moderate (mOx) and intense (iOx).

Quarternary: (5) Undifferentiated, unconsolidated colluvium, glacial till.

Veins: (4a) Quartz veins;
(4b) Quartz-pyrite veins;
(4c) Quartz-siderite ±trace galena-sphalerite veins;
(4d) Siderite-quartz ±trace galena-sphalerite veins;

Greenstone: (3) Amphibole-chlorite-plagioclase metadiorite or metagabbro.

Quartzite: (2a) Thick beded, blocky gray quartzite;
(2b) Thin banded, broken, quartzite with carbonaceous phyllite interbeds;
(2c) Calcareous quartzite.

Phyllite: (1a) Broken sericite-chlorite phyllite;
(1b) Carbonaceous phyllite.

0 10 20 30 40

Scale 1:1000

CAD FILE: SITE27.DGN

Public Works And Government Services Canada / Travaux publics et Services gouvernementaux Canada

Architectural & Engineering Services
Western Region

Drawing title: / Titre du dessin:

Lake Site #27
Site Assessment
Yukon Territory

designed by: / conçu par:
drawn by: / dessiné par: C.S. Nov./99
approved by: / approuvé par:
revisions:
date:

project no. / no. du projet: 125-12.01

dwg. no. / dessin no. 1 of 1

Photo 27-1: Shaft headframe (Bldg. 27-1). (Azimuth 340°)

Photo 27-2: Interior of shaft A01 headframe (Bldg. 27-1).

Photo 27-3: Collapsed adit portal (A02). (Azimuth 220^0)

Photo 27-4: Waste rock dump below shaft A01. (Azimuth 110^0)

Photo 27-5: Upper shaft hole to left of clipboard (A03). Note leaves covering the surface of standing water.(Azimuth 070°)

Photo 27-6: Collapsed steel building frame (Bldg. 27-2). (Azimuth 120°)

Photo 27-7: Abandoned ore cars. (Azimuth 240^0)