

HOMESTAKE
SITE #50
MINFILE# 105M011

A thick blanket of snow covered the site at the time of the site visit.

1. LOCATION AND ACCESS

Homestake is on the north side of Bunker Hill at an elevation of roughly 1300m. Approximate UTM coordinates are 7086 600m N and 489 750m E. Access to the site is possible by foot via an unnamed overgrown road. This road is 2.5km in length and branches off Lightning Creek Road near the junction of Thunder Gulch and Lightning Creek. The site is located at the end of this road.

2. SITE PHYSIOGRAPHY

Homestake was developed on the steeper north side of Bunker Hill. The elevation difference between the top of the site and the bottom is roughly 150m. Since the site is north facing, it is presumed to be underlain by permafrost. Site drainage flows about 900m northward into Lightning Creek located at roughly 1070m elevation. The area around the lower section of the site is well vegetated with bushes and spruce trees, the higher region of the site is near the treeline and is vegetated by predominately grasses, and some dwarfed trees and bushes.

3. GEOLOGY AND MINERALIZATION

The host rock is the Keno Hill Quartzite. Two types of vein have been explored. One has erratic lenses of arsenopyrite (FeAsS) and galena (PbS) in a quartz-carbonate gangue and is exposed for more than 90m along strike. The other vein hosts tetrahedrite ($\text{Cu}_{12}\text{Sb}_4\text{S}_{13}$) and galena in a carbonate gangue and is exposed for 30m, with widths of 3 to 7.6m.

4. SITE HISTORY

Homestake was first worked between 1928 and 1931 during which time a 26.8m shaft was built and 38.4m of underground was explored. Extensive bulldozer trenching was completed from 1962 to 1964 and again in 1966 and 1974. Between 1967 and 1979, 107m of drifting was conducted on a single adit level.

5. MINE DEVELOPMENT

Workings at the Homestake site consist of four trenches, one adit and two waste rock piles. The shaft could not be located and is believed to have been destroyed by later trenching. Site details can be found on Figure 1: see Attachment 1 for site photos.

5.1 Mine Openings and Excavations

Homestake Adit (photo 50-1)

There is a level, cleared area outside of the portal. A 10m long wooden structure protects the entrance to the adit. Railway tracks are still in place within the wooden structure and along the level ground to the east. There was a small amount of fiberglass insulation and metal piping found within the wooden structure.

Location: The adit is at the bottom of the site, located downslope of the trenches, to the north.

Dimensions (L x W x H): The main adit is 107m x 2.0m x 2.0m (roughly), and there is another 143m of drifting off the main adit.

Supports: Timber and concrete support the portal.

Condition: The portal entrance and the wooden structure appear stable. The condition of the adit is unknown, however there is no evidence of subsidence of the adit from the surface.

Accessibility: The portal entrance is boarded up and cannot be accessed.

Trench 1 (photo 50-2)

This trench is oriented downslope northeast-southwest and is largest of the four trenches. Outcrop is exposed on both sides of the trench walls, however the southeastern wall is much higher. The walls are composed primarily of quartzite and small zones of quartz-carbonate veining. A pile of chlorite schist boulders is exposed near the top of the trench, on the west side.

Location: The trench begins near the top of Bunker Hill.

Dimensions (L x W x H): 330m x 75m (at the widest point) x 4.5m (at the highest point)

Condition: Some fragments have broken off the trench walls and been deposited on the trench floor, however the walls appear stable.

Accessibility: The trench is accessible.

Trench 2

Trench 2 is oriented northwest-southeast along the top of Bunker Hill. Grass and small bushes grow within the trench. Outcrop of quartzite is exposed along the trench walls.

Location: At the top of Bunker Hill, to the west of the top of trench 1.

Dimensions (L x W x H): 158m x 34m x 2.5m

Condition: The trench walls appear stable.

Accessibility: The trench is accessible.

Trench 3

Trench 3 is oriented downslope north-south, to the west of trench 1. Grass and small bushes grow within the trench. There are small outcroppings of quartzite along the trench walls.

Location: Trench 3 is roughly parallel to trench 1, to the west.

Dimensions (L x W x H): 140m x 30m x 2.0m

Condition: The trench walls appear stable.

Accessibility: The trench is accessible.

Trench 4 (photo 50-3)

Trench 4 is excavated across slope, downslope of the other 3 trenches. Quartzite outcrop is exposed on the southern side of the trench and a waste rock pile is on the northern side. Long grass grows in the bottom of the trench; no other vegetation grows within the trench.

Location: North of the other 3 trenches, upslope and south of the adit entrance.

Dimensions (L x W x H): 142m x 25m (at the rim) x 4.0m

Condition: Big blocks of rock have broken off the southern trench wall.

Accessibility: The trench is accessible.

5.2 Waste Rock Disposal Areas

There were two waste rock piles identified. One is associated with the excavation of Trench 1; the second is associated with the excavation of Trench 4. The large level clearing outside of the portal is likely waste rock from the adit. However, the snow cover at the time of the site visit made it difficult to characterize that area. Waste rock piles associated with Trenches 2 and 3 were likely deposited as low level piles at the side of the trenches, but were not observed due to the snow cover.

Waste rock pile #1

The source of the waste rock in this pile is from the excavation of Trench 1. Due to weather constraints, the overall geology of the waste rock could not be determined. The rock fragments found in the test pit were mostly quartzite and minor amounts of unmineralized quartz vein and schist fragments with roughly 20% overburden. There was minor iron (Fe) staining on the surface of the waste rock pile; there is no evidence of oxidation below the surface. The pile is bimodal ranging in grain size from silt to cobble sized.

Location: At the northern end of Trench 1.

Dimensions (L x W x H): 67m x 22m x 2.5m

Sampling: A 30cm test pit was dug and sample #Home-WR-01 was collected (photo 50-4).

Waste rock pile #2

The waste rock has been excavated from Trench 4 and is similar in characteristics as waste rock pile #1.

Location: Forms the northern side of Trench 4.

Dimensions (L x W x H): 75m x 15m x 3.0m

Sampling: A 30cm test pit was dug and sample #Home-WR-02 was collected (photo 50-5)

5.3 Tailings Impoundments

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

5.4 Minesite Water Treatment

There is no water treatment facility at this site.

6. MINE SITE INFRASTRUCTURE

There are two buildings and a small length of rails at this site. Roads were built to trenches 1 and 4, the two buildings and to the adit. Site details can be found on Figure 1; see Attachment 1 for site photos.

6.1 Buildings

There are two wooden buildings at this site.

Building 50A (photo 50-6)

Dimensions (L x W x H): 17m x 4m x 3m

Location: 40m west of trench 4

Construction: wood sheeting

Paint: none observed

Asbestos: none observed

Foundation: none

Non-Hazardous Contents: sink, toilet, table, metal bedframe, shelves, diesel stove

Hazardous Contents: none observed

Building 50B (photo 50-7)

Dimensions (L x W x H): 3.5m x 3.5m x 3.0m

Location: 10m west of building 50A

Construction: wood sheeting

Paint: none observed

Asbestos: none observed

Foundation: none

Non-Hazardous Contents: table, benches, and clothes

Hazardous Contents: none observed

6.2 Fuel Storage

No fuel storage tanks or drums were encountered.

6.3 Rail and Trestle (photo 50-8)

There were two small lengths of rail encountered. The first comes goes from the portal to the end of the wooden structure. The second section is to the east of the adit, in the level clearing. No trestle was encountered.

Fabrication: steel rail and wooden ties

Amount of materials: The total length of rail is approximately 35m.

Condition: The ties are in good condition, the rail has begun to rust.

6.4 Milling and Processing Infrastructure

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

6.5 Electrical Equipment

No electrical equipment was encountered at this site.

7. SOLID WASTE DUMPS

No solid waste dumps were encountered at this site.

8. POTENTIAL CONTAMINANTS OF CONCERN

No hazardous materials were encountered on this site. The only contaminants of concern would be the possibility of dissolved metals seeping or washing from the waste rock piles, the trench walls or out of the adit.

9. WATER QUALITY

There were two small streams encountered at this site. The beginning of one stream seeps out of the top of Trench 1, following the base of the trench before seeping back into the ground 30m later (photo 50-9). A water sample (Home-WQ-US-01) was collected at the top of the stream. The water had no visible particulates and did not appear to be depositing any sediment. The flow rate was less than 1 L/s (visual estimation). The second stream exits the Homestake portal flowing at a rate of less than 1 L/s (visual estimation). A sample was collected (Home-WQ-02) from just outside the portal. The water has no visible particulates and does not appear to be depositing sediment. The stream continued downhill.

10. RECLAMATION

Natural revegetation is occurring in the trenches and on the roads. The waste rock piles have very little vegetation growing on them.

11. REFERENCES

Minfile #105M001

**ATTACHMENT 2: 1999 HOMESTAKE WATER SAMPLES
LABORATORY RESULTS**

Sample Number	Detection Limit	Units	Home-WQ-A01-02 - Homestake - Sept. 22/99	Home-WQ-US-2 - Homestake - Sept. 22/99
			Adit drainage	Seep at the top of Trench #1
Site Description				
pH (field)	na	pH	N/A	N/A
Conductivity (field)	na	µS/cm	N/A	N/A
pH (Lab)	0.01	pH	7.81	7.2
Conductivity (Lab)	0.01	µS/cm	640	56
Total Alkalinity	5	mg CaCO3/L	178	59
Chloride	0.25	mg/L	<0.25	<0.25
Hardness (CaCO3 equiv)	5	mg/L	327	27.2
Nitrate-N	0.05	mg/L	0.08	<0.05
Nitrite-N	0.003	mg/L	<0.003	<0.003
Sulphate	1	mg/L	164	1.3
Total Dissolved Solids	5	mg/L	430	37
Analysis by ICP-USN				
Aluminum	0.0008	mg/L	0.0074	0.0269
Antimony	0.005	mg/L	<0.005	<0.005
Arsenic	0.01	mg/L	<0.01	<0.01
Barium	0.00004	mg/L	0.00232	0.00419
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	0.00018	0.00002
Calcium	0.002	mg/L	103	9.48
Chromium	0.00006	mg/L	0.00014	<0.00006
Cobalt	0.00003	mg/L	<0.00003	<0.00003
Copper	0.00003	mg/L	0.00056	0.00052
Iron	0.00001	mg/L	0.038	0.063
Lead	0.0003	mg/L	<0.0003	<0.0003
Lithium	0.001	mg/L	0.006	0.002
Magnesium	0.0005	mg/L	24.2	0.405
Manganese	0.00002	mg/L	0.0059	0.00402
Mercury	0.0001	mg/L	<0.0001	<0.0001
Molybdenum	0.00007	mg/L	0.00029	<0.00007
Nickel	0.00001	mg/L	0.0043	0.0001
Phosphorus	0.03	mg/L	<0.03	<0.03
Potassium	0.4	mg/L	<0.4	<0.4
Selenium	0.004	mg/L	0.007	<0.004
Silicon	0.004	mg/L	2.29	1.78
Silver	0.00005	mg/L	<0.00005	<0.00005
Sodium	0.004	mg/L	0.6	<0.4
Strontium	0.00002	mg/L	0.203	0.0197
Sulphur	0.008	mg/L	52.6	0.482
Thallium	0.001	mg/L	<0.001	<0.001
Titanium	0.00002	mg/L	0.0001	0.00066
Vanadium	0.00003	mg/L	<0.00003	<0.00003
Zinc	0.0002	mg/L	0.0465	<0.0002
Analysis by Hydride AA				
Arsenic	0.0002	mg/L	0.0103	0.0002
Selenium	0.0001	mg/L	<0.0001	<0.0001

**ATTACHMENT 2: 1999 HOMESTAKE WASTE ROCK SAMPLES
LABORATORY RESULTS**

Site Number	Detection Limit	Units	Home-Wr-01 - Homestake - 5- 20cm - Sept. 22/99	Home-Wr-02 - Homestake - 5- 20cm - Sept. 22/99
Sample Description			East side of Waste Rock Pile #1	North side of Waste Rock Pile #2
Paste pH (field)	N/A	pH	N/A	N/A
Conductivity (field)	N/A	µS/cm	N/A	N/A
pH in Saturated Paste				
pH	0.1	pH	6.9	7.3
pH in Soil (1:2 water)				
pH	0.01	pH	7.4	7.6
ICP Semi-Trace Scan				
Aluminum	5	µg/g	30300	29600
Antimony	2	µg/g	61	54
Arsenic	2	µg/g	1540	470
Barium	0.05	µg/g	591	385
Beryllium	0.1	µg/g	0.6	0.7
Bismuth	5	µg/g	<5	<5
Cadmium	0.1	µg/g	4.4	34
Calcium	5	µg/g	1040	2120
Chromium	0.5	µg/g	51.9	48.1
Cobalt	0.1	µg/g	1.9	9.9
Copper	0.5	µg/g	30.5	97.4
Iron	1	µg/g	20000	38000
Lead	1	µg/g	365	1780
Lithium	0.5	µg/g	6.6	14.9
Magnesium	1	µg/g	535	749
Manganese	0.5	µg/g	172	6610
Mercury	0.01	µg/g	<0.01	0.12
Molybdenum	1	µg/g	4	3
Nickel	1	µg/g	4.4	30.2
Phosphorus	5	µg/g	492	709
Potassium	20	µg/g	10900	9000
Selenium	2	µg/g	<2	<2
Silicon	5	µg/g	849	426
Silver	0.5	µg/g	8	74.5
Sodium	5	µg/g	894	1600
Strontium	1	µg/g	109	68
Sulphur	10	µg/g	2740	3760
Thorium	1	µg/g	7	4
Tin	1	µg/g	2	5
Titanium	0.2	µg/g	71.6	104
Uranium	5	µg/g	<5	<5
Vanadium	1	µg/g	61	52
Zinc	0.5	µg/g	287	2510
Zirconium	0.1	µg/g	51.3	19.5

**ATTACHMENT 2: 1999 HOMESTAKE 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
Home-Wr-01 - Homestake -5- 20cm - 22/9/99 - Waste	East side of Waste Rock Pile #1	7.3	0.14	0.14	0.0	0.4	0.4	---
Home-Wr-02 - Homestake -5- 20cm - 22/9/99 - Waste	North side of Waste Rock Pile #2	7.7	0.15	0.03	3.8	6.8	3.0	1.8

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.

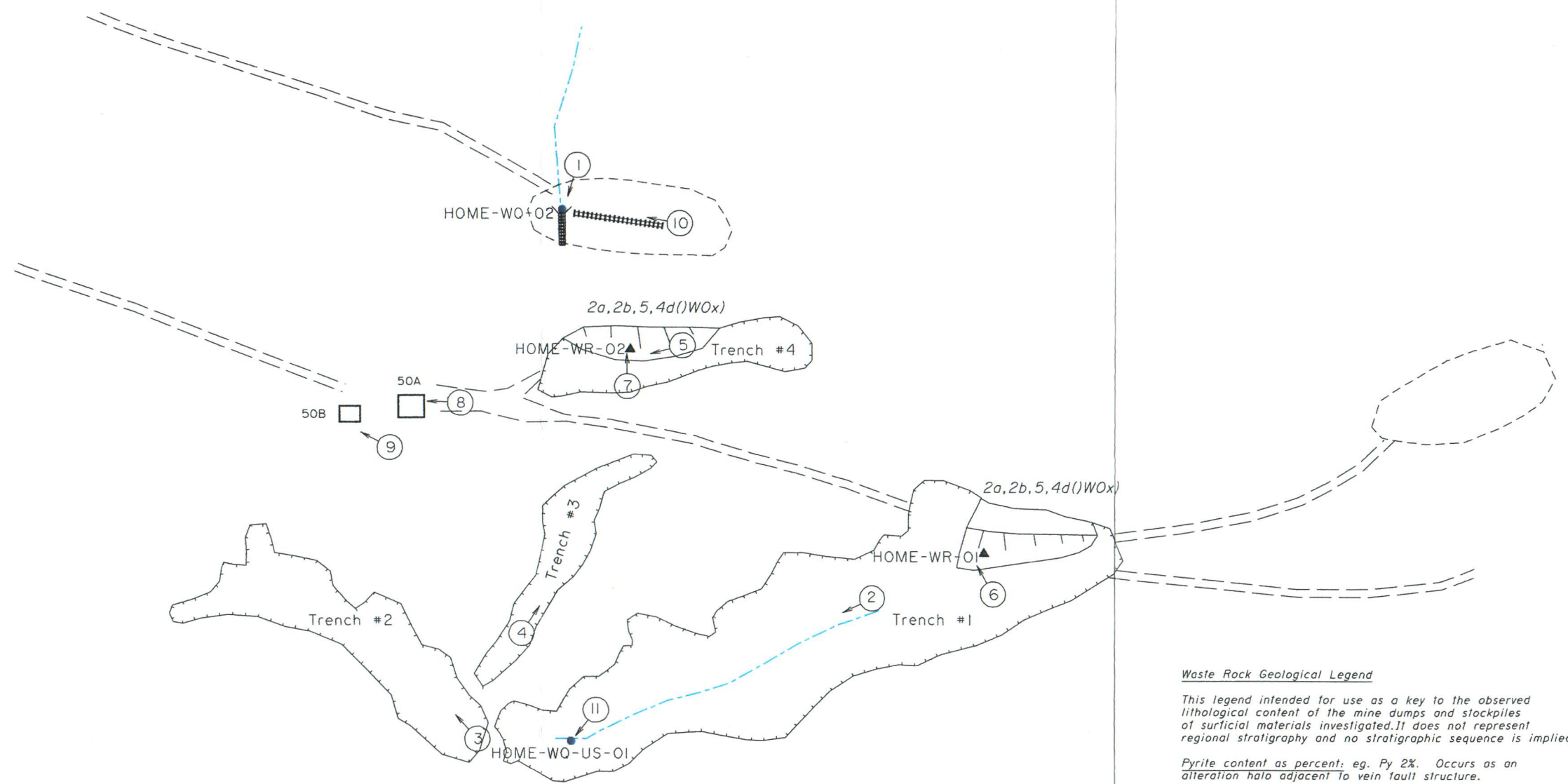
N/D = NO DUPLICATE ASSAY. CALCULATIONS ARE BASED ON ASSAY RESULTS OF THE INITIAL SAMPLE.

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.

- 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
- ▭ 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)
- 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
- ⚡ 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)



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).

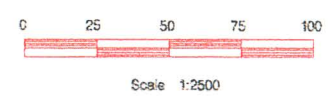
Quaternary: (5) Undifferentiated, unconsolidated colluvium, glacial till.

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 bedded, blocky gray quartzite;
(2b) Thin banded, broken, quartzite with carbonaceous phyllite interbeds;
(2c) Calcareous quartzite.

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



CAD FILE: SITE50.DGN

Public Works And Government Services Canada Travaux publics et Services gouvernementaux Canada Architectural & Engineering Services Western Region	designed by: _____ date: _____ concu par: _____ drawn by: C.S. Nov. / 99 dessiné par: _____ approved by: _____ approuvé par: _____ revisions: _____
	Drawing title: Homestake Site #50 Site Assessment Yukon Territory



Photo 50-1: The large wooden structure is the portal to the Homestake adit. (Azimuth 225°)



Photo 50-2: Trench 1, the largest trench at the site. (Azimuth 235°)



Photo 50-3: Trench 4. Note the high trench walls on the left and waste rock pile #2 on the right. (Azimuth 260°)



Photo 50-4: Test pit 1, waste rock pile #1. Note there is no oxidized horizon, only minor Fe-staining at the surface. (Azimuth 350°)



Photo 50-5: Test pit 2, waste rock pile #2, minor Fe-staining at the surface. (Azimuth 000°)



Photo 50-6: Building 50A with a small pile of wood debris out front (Azimuth 270°)



Photo 50-7: Building 50B, the table is visible through the doorway. (Azimuth 270°)



Photo 50-8: Rail and ties, old poles on right and portal to adit in the background. (Azimuth 270°)



Photo 50-9: Water sample site for HOME-WQ-US-01 (Azimuth 240°)