HOGAN (#54)
(MINFILE#105M 015)

1. LOCATION AND ACCESS

The Hogan site lies right on Lightening Creek Road about 2 km out of Keno City. The approximate UTM coordinates for the site are 7085440 m N 487140 m E. The elevation of the site is approximately 1000 m.

2. SITE PHYSIOGRAPHY

The Hogan site lies of the south slope of Keno Hill. It is on the north side of Lightening Creek. Lightening Creek Road runs along the base of the waste rock pile. Another road runs along the top of the waste rock pile between the pile and the Hogan adit. The adit is concealed by dense secondary forest. Surface water drainage from the site runs into Lightening Creek.

3. GEOLOGY AND MINERALIZATION

The major rock type observed at the Hogan site was grey quartzite with some disseminated fine grained pyrite. Minor rock types observed included black phyllite, greenstone and brecciated quartzite. The mineralization observed included siderite veining with some massive sphalerite, galena and pyrite. The sulphides found include sphalerite, galena and pyrite. The only carbonate found was siderite. The minfile reports that a narrow vein at the Hogan site has erratic lenses of galena and tetrahedrite mineralization. Much of the coarse siderite is now partly oxidized to limonite and manganese oxides. Massive pyrite lenses and a little sphalerite also occur at the site. Other minor veins and faults are reported to be present nearby.

4. SITE HISTORY

The minfile reports that the work conducted at the Hogan site took place in 1952 and 1953. The developments consisted of a 213.4 m adit with crosscuts and drifts on the Fox claim.

5. MINE DEVELOPMENT

5.1 Mine Openings And Excavations

Adit 1 (photo 54-2)

Collapsed and overgrown adit

Location: in the hillside above and near the center of the waste rock dump

Dimensions (L x W x H): unknown – reported to be 213.4 m deep

Supports: unknown
Condition: adit is collapsed
Accessibility: adit site can be accessed from Lightening Creek Road

Shaft 1 (photo 54-3)

Timbered raise filled to surface

Location: on top of the dump at the east end
Dimensions (L x W): 0.8 m x 0.6 m
Condition: filled in
Accessibility: raise location can be accessed from Lightening Creek Road

5.2 Waste Rock Disposal Areas

A large waste rock pile about 75 m long, 9 m wide and 7 m high is located at the side of Lightening Creek Road (photo 54-1). It lies directly below Adit 1. The rock in the pile consists mainly of grey quartzite with minor disseminated pyrite. Some sections of the dump are moderately limonitic. The pile can be divided into 4 zones based on the colouration.

Zone 1 (photo 54-4)

The most western section of the pile was grey in colour with moderate rust occurring on the surface. Waste rock sample 99-HO-1-1 was taken from this section. The field paste pH of this sample was 3.1. The field conductivity of this sample 1.19 mS/cm.

Zone 2

The section just west of center was medium grey on the surface with a pale orange subsurface. Waste rock sample 99-HO-1-5 was taken from this section. The field paste pH of this sample was 2.1. The field conductivity was not measured.

Zone 3 (photo 54-6)

Field samples from a 12 m wide zone of dark grey quartzite just east of the center of the waste rock pile had paste pH measurements that were highly acidic. The field paste pH measurement for waste rock sample 99-HO-1-2, taken from the center of the dark grey zone, was 1.2. The field conductivity of this sample was 18.38 mS/cm. Paste pH measurements taken from 4 other field samples in this section ranged from 1.4 to 2.6. Acidic field samples were obtained from the surface of this section and at a depth of 0.5 m. The origin of the acid is unknown. Evidence of water seeping from this section of the waste rock pile was observed (photo 54-7).

Zone 4 (photo 54-5)

The most eastern section of the waste rock pile had characteristics similar to the westernmost section. It was grey in colour with moderate rusting on the surface. Waste rock sample 99-HO-1-3 was taken from this section. The field paste pH of this sample was 3.6. The field conductivity of this sample was 2.68 mS/cm.

Laboratory and Field analysis data is provided in Attachment B.

5.3 Tailings Impoundments

No tailings were observed at the Hogan site.

5.4 Minesite Water Treatment

No water treatment occurs at the Hogan site.

6. MINE SITE INFRASTRUCTURE

Evidence of a rail system running along the top of the waste rock pile was found at the Hogan site. Discarded rails and wooden ties were found at various locations along the top of the waste rock pile and a rusted 1 ton side dump car was found in the bushes above the dump.

7. SOLID WASTE DUMPS

No solid waste dumps were observed at the Hogan site.

8. POTENTIAL CONTAMINANTS OF CONCERN

No evidence of potential contamination was found at the Hogan site.

9. WATER QUALITY

The Hogan site lies right next to Lightening Creek. Water quality sample 99-HO-ST-2 was taken from Lightening Creek upstream from the Hogan site. Sample 99-HO-ST-4 was taken downstream. Laboratory and Field analysis data is provided in Attachment B.

Significant runoff was observed running down Lightening Creek Road during a heavy period of rain. The runoff traveled from east to west past the Hogan site. The flow and volume of the runoff was

not sufficient to obtain samples for laboratory analysis, however the pH of the water was measured using a handheld pH meter. The runoff water east (upstream) of the Hogan site was found to have a pH of 6.5. The runoff water west (downstream) of the Hogan site was found to have a pH of 3.4. Water seeping from Zone 3 of the Hogan waste rock pile was found to have a pH of 2.6.

10. RECLAMATION

The Hogan site has been mostly overgrown with trees and bushes. The waste rock pile, however, remains largely unvegetated. Vegetation that does occur on other zones of the waste rock pile does not occur on zone 3. There have been no known reclamation measures carried out by past or present operators of the site.

Sample Number		Detection Limit	Units	99-HO-ST-2 - Hogan - 16/09/99	99-HO-ST-4 - Hogan - 16/09/99
Site Desciption				Upstream water quality sample from Lightening Creek	Downstream water quality sample from Lightening Creek
pH (field)		N/A	pH	not measured	not measured
Conductivity (field)		N/A	µS/cm	not measured	not measured
pH (Lab)		0.01	pH	7.51	7.49
Conductivity (Lab)		0.01	µS/cm	180	180
Total Alkalinity		5	mg $CaCO_3$/L	37	43
Chloride		0.25	mg/L	<0.25	<0.25
Hardness (CaCO3 equiv)		5	mg/L	82.3	84.3
Nitrate-N		0.05	mg/L	<0.05	0.05
Nitrite-N		0.003	mg/L	<0.003	<0.003
Sulphate		1	mg/L	39.8	40.3
Total Dissolved Solids		5	mg/L	112	112
Analysis by ICP-USN					
	Aluminum	0.0008	mg/L	0.0354	0.05
	Antimony	0.005	mg/L	<0.005	<0.005
	Arsenic	0.01	mg/L	<0.01	<0.01
	Barium	0.00004	mg/L	0.0509	0.052
	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	0.00017	0.00021
	Calcium	0.002	mg/L	24.7	25
	Chromium	0.00006	mg/L	0.00013	0.00014
	Cobalt	0.00003	mg/L	<0.00003	<0.00003
	Copper	0.00003	mg/L	0.0008	0.00078
	Iron	0.00001	mg/L	0.091	0.12
	Lead	0.0003	mg/L	0.0005	0.0012
	Lithium	0.001	mg/L	0.002	0.002
	Magnesium	0.0005	mg/L	4.6	4.61
	Manganese	0.00002	mg/L	0.0117	0.0192
	Mercury	0.0001	mg/L	<0.0001	<0.0001
	Molybdenum	0.00007	mg/L	0.00016	0.00011
	Nickel	0.00001	mg/L	0.0004	0.0005
	Phosphorus	0.03	mg/L	<0.03	<0.03
	Potassium	0.4	mg/L	<0.4	<0.4
	Selenium	0.004	mg/L	<0.004	<0.004
	Silicon	0.004	mg/L	2.42	2.41
	Silver	0.00005	mg/L	<0.00005	<0.00005
	Sodium	0.004	mg/L	0.7	0.9
	Strontium	0.00002	mg/L	0.0746	0.0746
	Sulphur	0.008	mg/L	13.3	13.3
	Thallium	0.001	mg/L	<0.001	<0.001
	Titanium	0.00002	mg/L	0.00092	0.00154
	Vanadium	0.00003	mg/L	<0.00003	<0.00003
	Zinc	0.0002	mg/L	0.0159	0.0186
Analysis by Hydride AA					
	Arsenic	0.0002	mg/L	0.0003	0.0004
	Selenium	0.0001	mg/L	<0.0001	0.0002

ATTACHMENT B: HOGAN WASTE ROCK SAMPLES LABORATORY RESULTS						
Site Number	**Detection Limit**	**Units**	**99-HO-1-1 - Hogan - 18/9 - Rock**	**99-HO-1-2 - Hogan - 18/9 - Rock**	**99-HO-1-3 - Hogan - 18/9 - Rock**	**99-HO-1-5 - Hogan - 18/9 - Rock**
Sample Desciption			Waste rock sample from Zone 1	Waste rock sample from Zone 3	Waste rock sample from Zone 4	Waste rock sample from Zone 2
Paste pH (field)	N/A	pH	3.1	1.2	3.6	2.1
Conductivity (field)	N/A	µS/cm	1190	18380	2680	not measured
pH in Saturated Paste						
pH	0.1	pH	4.1	0.7	3.5	2
pH in Soil (1:2 water)						
pH	0.01	pH	3.79	1.6	3.6	2
ICP Semi-Trace Scan						
Aluminum	5	µg/g	13900	9970	17200	8230
Antimony	2	µg/g	<2	130	<2	4
Arsenic	2	µg/g	128	31	37	26
Barium	0.05	µg/g	195	138	167	96.8
Beryllium	0.1	µg/g	0.4	<0.1	0.6	0.2
Bismuth	5	µg/g	<5	<5	<5	<5
Cadmium	0.1	µg/g	4.2	1	2.3	0.7
Calcium	5	µg/g	303	24	318	79
Chromium	0.5	µg/g	20.5	14.1	24.6	21.1
Cobalt	0.1	µg/g	3.1	0.4	1.6	0.3
Copper	0.5	µg/g	39.2	2.9	109	8.6
Iron	1	µg/g	28000	85000	31000	19000
Lead	1	µg/g	173	62	126	120
Lithium	0.5	µg/g	9.4	3.5	5.4	8.9
Magnesium	1	µg/g	719	222	596	391
Manganese	0.5	µg/g	1450	12	2900	74
Mercury	0.01	µg/g	<0.01	<0.01	<0.01	<0.01
Molybdenum	1	µg/g	1	2	1	<1
Nickel	1	µg/g	16.1	4	13.8	3.1
Phosphorus	5	µg/g	452	<5	429	224
Potassium	20	µg/g	3810	3950	5010	2720
Selenium	2	µg/g	<2	<2	<2	<2
Silicon	5	µg/g	8350	560	5630	11
Silver	0.5	µg/g	2.7	1.9	1.2	1.6
Sodium	5	µg/g	404	208	242	197
Strontium	1	µg/g	16	10	21	8
Sulphur	10	µg/g	1370	101000	3620	3400
Thorium	1	µg/g	5	<1	6	2
Tin	1	µg/g	11	18	11	2
Titanium	0.2	µg/g	27.2	22.4	31.9	25.6
Uranium	5	µg/g	<5	<5	<5	<5
Vanadium	1	µg/g	23	15	24	21
Zinc	0.5	µg/g	363	58.9	384	71.7
Zirconium	0.1	µg/g	8.3	5.7	12.2	5.8

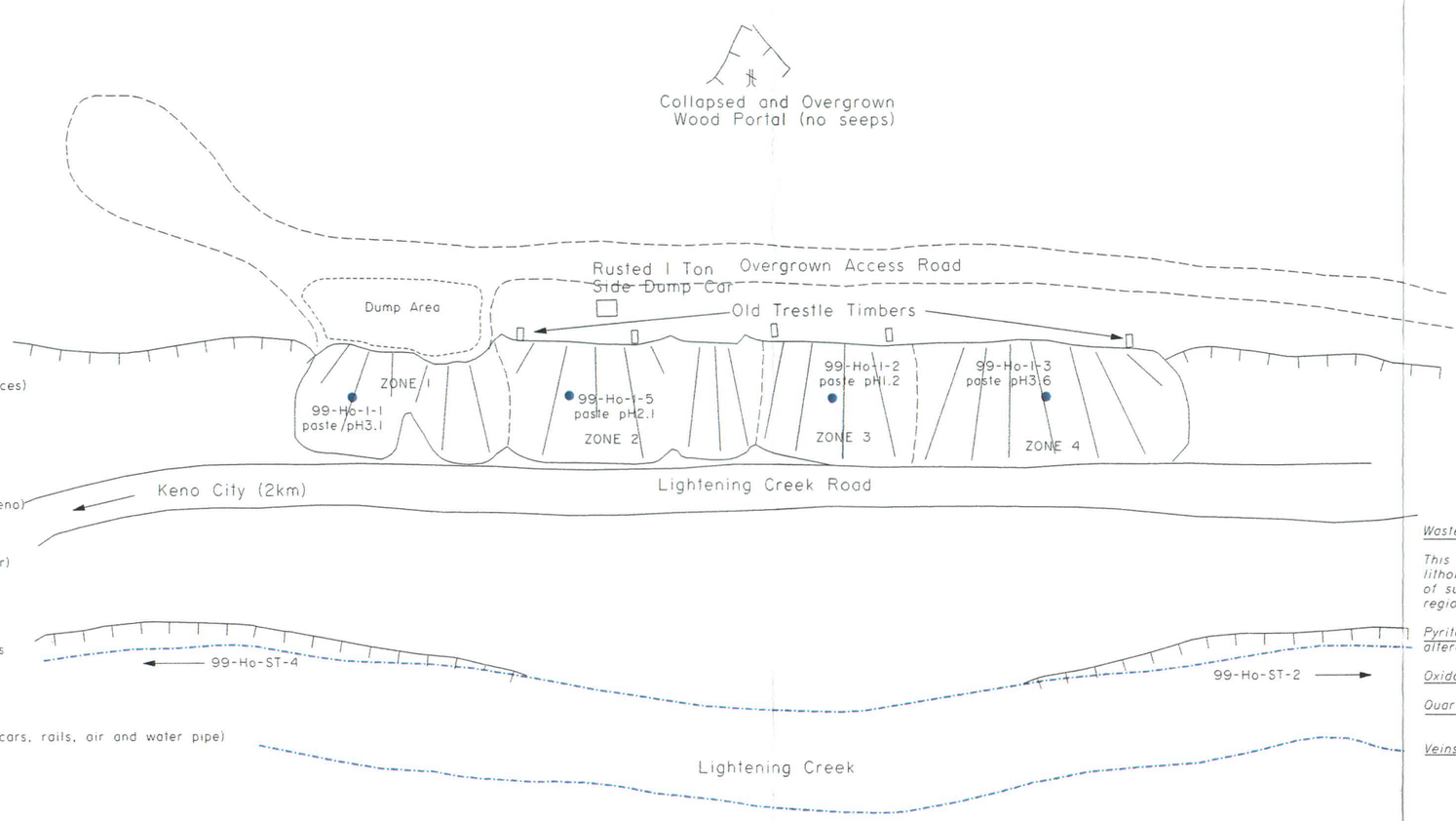
ATTACHMENT B: 1999 HOGAN WASTE ROCK SAMPLES LABORATORY RESULTS
MODIFIED SOBEK METHOD ACID-BASE ACCOUNTING TEST

SAMPLE	SITE DESCRIPTION	PASTE pH	S(T) %	S(SO4) %	AP	NP	NET NP	NP/AP
99-HO-1-1 - Hogan - 18/9 - Rock	Waste rock sample from Zone 1	4.6	0.11	0.09	0.6	12.0	11.4	19.2
99-HO-1-2 - Hogan - 18/9 - Rock	Waste rock sample from Zone 3	2.0	6.10	0.37	179.1	-11.8	-190.8	<0.1
99-HO-1-3 - Hogan - 18/9 - Rock	Waste rock sample from Zone 4	4.2	0.27	0.23	1.3	0.6	-0.6	0.5
99-HO-1-3 - Hogan - 18/9 - Rock RE	Waste rock sample from Zone 4	-	0.27	0.23	1.3	-	-	-
99-HO-1-5 - Hogan - 18/9 - Rock	Waste rock sample from Zone 2	2.5	0.28	0.24	1.3	-7.4	-8.6	<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.

- Building (22A; building site present reference#) / 22A* 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)
- WO-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 Loaction (number of transformer in brackets)
- Power Line
- Power Line Collapsed
- Arial 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).

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;
(4e) Suphide (galena-sphalerite) •quartz•siderite 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 5 10 15 20

Scale 1:500

CAD FILE: KEY.DGN

Public Works And Government Services Canada
Travaux publics et Services gouvernementaux Canada
Architectural & Engineering Services Western Region

Drawing title: / Titre du dessin:
Hogan Site #54
Site Assessment
Yukon Territory

designed by: / conçu par:	
drawn by: / dessiné par:	I.B. Nov. '99
approved by: / approuvé par:	
revisions:	
project no. / no. du projet:	125-12.01
dwg. no. / dessin no.	1 of 1

Photo 54-1: View along the top of waste rock piles at Hogan site. (AZ 275)

Photo 54-2: Obscured view of collapsed adit (Adit 1) at Hogan site.

Photo54-3: View of Shaft 1 at Hogan site. 6 inch ruler appears for scale.

Photo54-4: Weathering of west side of waste rock dump at Hogan site.

Photo 54-5: View of east side of Hogan waste rock dump. Highly acidic material appears in a zone that is light grey in color.

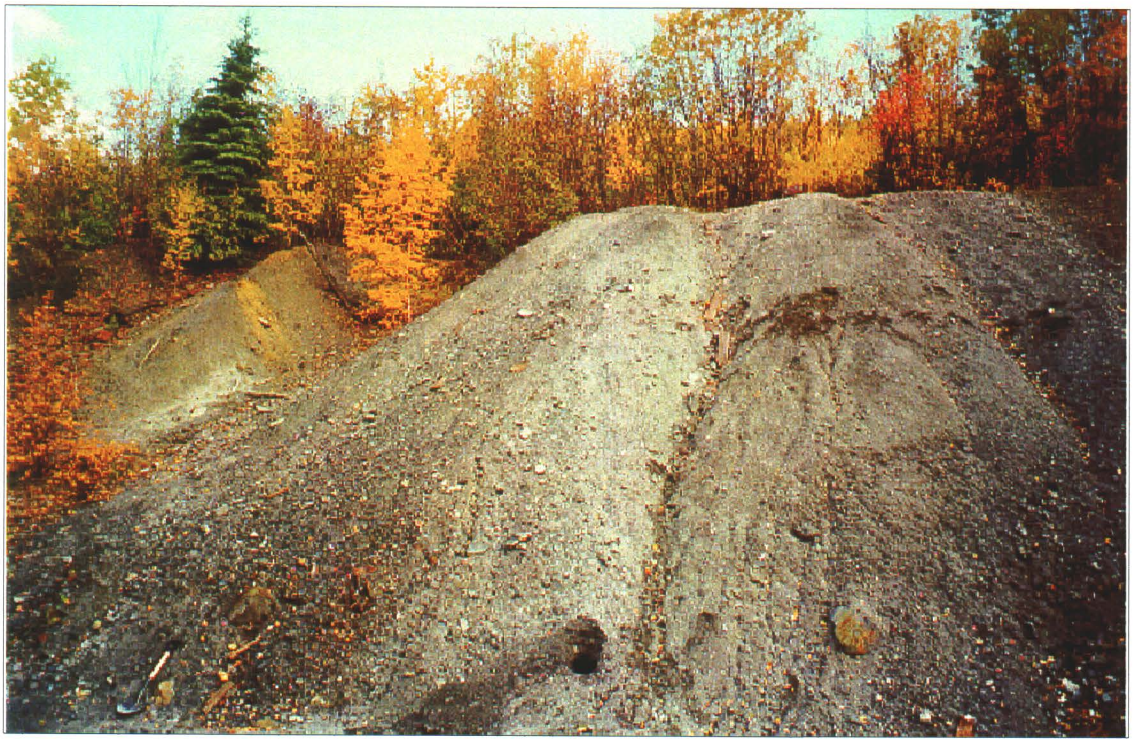


Photo54-6: View of light grey zone of waste rock at Hogan waste rock pile.

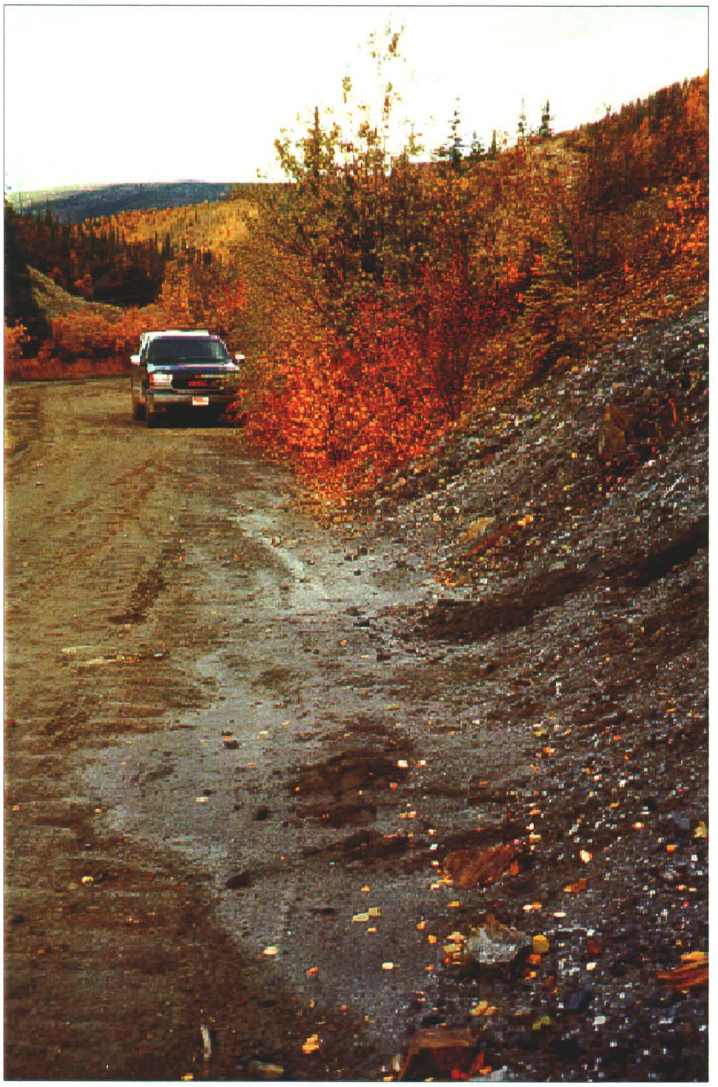


Photo54-7: Seep from light grey zone of waste rock at Hogan site.