1981

GEOLOGICAL and GEOCHEMICAL REPORT

on the

FIL CLAIM GROUP

WHITEHORSE MINING DISTRICT

by

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and

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Dated: November 4th, 1981

N.T.S. Sheets: 115I-6 & 7
Latitude: 62° 25' N
Longitude: 136° 58'W
Dates: May 18 to September 3, 1981

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This report has been examined by the Geological Exploration Unit under Section 42 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 10,000.

Regional Mining Recorder and Geologist for the Commissioner of Yukon Territory.

TABLE of CONTENTS

FIGURES:-

MAPS in POCKET:-

SUMMARY and CONCLUSIONS:-

The FIL Claim Group consists of 241 (1 - 239, 247 & 248) Claims. It covers the area between United Keno's STU, MOON and HI Claims northwest of Carmacks.

Between May 18th and September 3rd a six to ten man crew completed geological and goechemical surveys over the whole property. During late May and early June, airborne Dighem[II] and magnetometer surveys were flown over the FIL Claims and adjacent areas.

Medium to coarse-grained granodioritic intrusives of the Klotassin batholith underlie the central and western part of the property. These intrusives are cut by aplite, pegmatite, and microgranite dykes. Strongly foliated granodiorite was observed in the southeast corner of the property near the FIL-MOON boundary. Although no copper mineralization was encountered during the mapping, a small area of quartzofeldspathic gneiss was observed in Big Creek.

The granodiorite is overlain on the eastern portion of the property by agglomerate and basaltic to andesitic flows and tuffs of the Carmacks (eTcv) or Mount Nansen (KTmn) Groups. Further east, massive green volcanics (Trvb) are present. These are believed to be in fault contact with the granodiorite.

A total of 17,046 soil samples were collected and analysed for copper. For the most part, this survey outlined numerous northwest-trending, low-order, single or several value anomalies. Several significant (greater than 100 ppm) anomalies were encountered. The most important of these lies to the southwest of the property on the west side of Big Creek (Area "A" on geochem plot). This anomaly covers an area about 300 m by 350 m and is open along the southeast side. Six samples yielded values greater than 100 ppm (peak value 156 ppm) copper with the remainder in the 50 to 100 ppm range. Several other northwestly elongate anomalies were outlined in the vicinity.

This anomalous area appears to be a southward continuation of a belt of copper enrichment that begins on the southwest portion of the HI group, crosses the FIL, and continues along the west side of Big Creek. It can be correlated in this area with a resistivity low. Further work is required along this belt to evaluate its potential for a porphyry copper deposit.

Other anomalous areas may reflect weak copper mineralization in foliated zones within the granodiorite.

There is generally poor correlation between the electromagmetic conductors and the geochemical anomalies. Conductors are much more numerous in the volcanic units than the intrusive. Resistivity data may be used as an indicator of underlying rock types. The intrusives have high (greater than 1000 ohm-m) resistivities whereas the volcanics are generally less resistive.

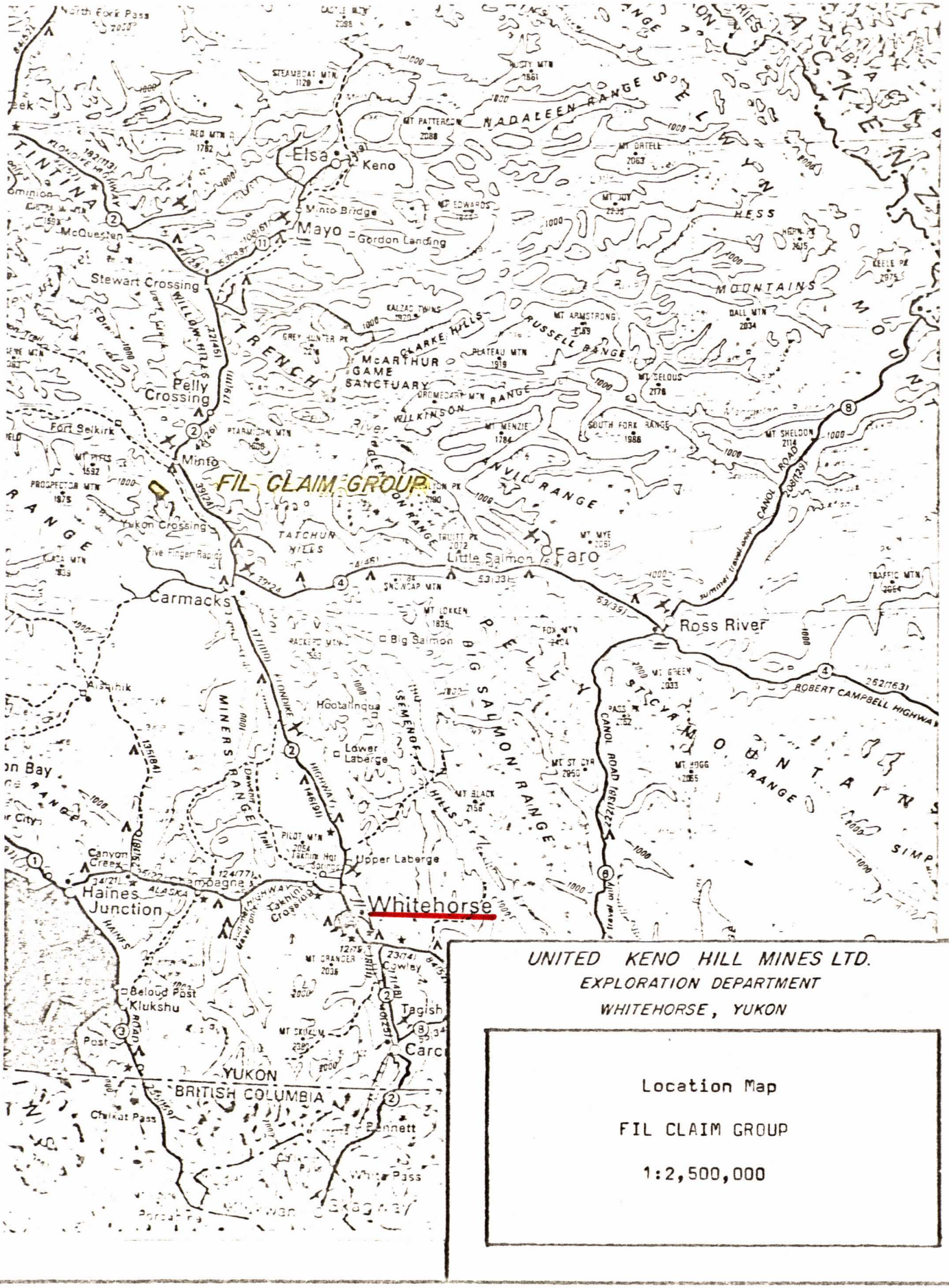
The strong electromagnetic conductors along the northeast side of the property probably reflect the presumed fault contact between the granodiorite and Triassic volcanics.

RECOMMENDATIONS:-

It is recommended that further sampling and mapping be carried out along the west side of Big Creek (Area 'A') and the low resistivity to the northwest. More claims should be staked in this area.

It is also recommended that copper anomalies in areas of shallow overburden be examined by bulldozer trenching.

It is further recommended that claims underlain by volcanics on the east side of the property be allowed to lapse when assessment credits have been used up.



UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT

WHITEHORSE, YUKON

Location Map

FIL CLAIM GROUP

1:2,500,000

FIG. 1

INTRODUCTION:-

The FIL Claim Group was staked in June, 1980 to cover an area of intrusive granitic rock occurring along strike from the DEF-Minto and Williams Creek copper deposits. Copper mineralization has been identified directly to the southeast on the STU property, where it was present in diamond drill core and at surface. The location and geology of the FIL Poperty suggests that this was a favourable area for potential copper occurrences.

Portions of the FIL Property had been previously examined by Hart River Mining Ltd. and other individuals in the early 1970's. This season's field work represents a comprehensive geological and geochemical investigation of the prospect.

The FIL Property was extensively soil sampled between May 18th and September 3rd by two four-man crews. Geological mapping on a 1:5,000 scale was conducted by a two-man crew.

An airborne geophysical survey using the Dighem^{II} system and a magnetometer was flown over the FIL Property and surrounding claim groups in May and June, 1981.

LOCATION and ACCESS:-

The FIL Claim Group lies approximately 220 km north-northwest of Whitehorse and 15 km south-southwest of Minto(Figure 1). It is one of several United Keno Hill properties that join up to form an extensive southeast-northwest holding. It is bounded on the northwest by the HI Property, on the southeast by the STU Property and on the south-southwest by the MOON Property. The FIL Property is on N.T.S. Map Sheets 115I- 6 & 7, at latitude 62° 25' N, and longitude 136° 58' W.

PROPERTY:-

The FIL Claim Group consists of 241 contiguous full claims (Figure 2). The Table below gives the status of the claims.

CLAIMS	GRANT NO.	*EXPIRES	LOCATION	N. T. SHEET
FIL 1	YA49219	18 June 83	Big Creek	115I-7
FIL 2	YA49220	"	"	"
FIL 3	YA49221	"	"	115I-6
FIL 4	YA49222	"	"	"
FIL 5	YA49223	"	"	"
FIL 6	YA49224	"	"	"
FIL 7	YA49225	"	"	"
FIL 8	YA49226	"	"	"
FIL 9	YA49227	"	"	"
FIL 10	YA49228	"	"	"
FIL 11	YA49229	"	"	"
FIL 12	YA49230	"	"	"
FIL 13	YA49231	"	"	"
FIL 14	YA49232	"	"	"
FIL 15	YA49233	"	"	"
FIL 16	YA49234	"	"	"
FIL 17	YA49235	"	"	"
FIL 18	YA49236	"	"	"
FIL 19	YA49237	"	"	"
FIL 20	YA49238	"	"	"
FIL 21	YA49239	"	"	"
FIL 22	YA49240	"	"	"
FIL 23	YA49241	18 June 84	"	115I-7
FIL 24	YA49242	"	"	"
FIL 25	YA49243	"	"	"
FIL 26	YA49244	"	"	"
FIL 27	YA49245	"	"	"
FIL 28	YA49246	"	"	"
FIL 29	YA49247	"	"	115I-6
FIL 30	YA49248	"	"	"
FIL 31	YA49249	"	"	"
FIL 32	YA49250	"	"	"
FIL 33	YA49251	"	"	"
FIL 34	YA49252	"	"	"
FIL 35	YA49253	"	"	"
FIL 36	YA49254	"	"	"
FIL 37	YA49255	"	"	"
FIL 38	YA49256	"	"	"
FIL 39	YA49257	"	"	"
FIL 40	YA49258	"	"	"
FIL 41	YA49259	"	"	"
FIL 42	YA49260	"	"	"
FIL 43	YA49261	"	"	"
FIL 44	YA49262	"	"	"
FIL 45	YA49263	"	"	115I-7
FIL 46	YA49264	"	"	"
FIL 47	YA49265	"	"	"
FIL 48	YA49266	"	"	"
FIL 49	YA49267	"	"	"
FIL 50	YA49268	"	"	"

CLAIMS	GRANT NO.	EXPIRES	LOCATION	N. T. SHEET
FIL 51	YA49269	18 June 84	Big Creek	115I-7
FIL 52	YA49270	"	"	"
FIL 53	YA49271	"	"	"
FIL 54	YA49272	"	"	"
FIL 55	YA49273	"	"	115I-6
FIL 56	YA49274	"	"	"
FIL 57	YA49275	"	"	"
FIL 58	YA49276	"	"	"
FIL 59	YA49277	"	"	"
FIL 60	YA49278	"	"	"
FIL 61	YA49279	"	"	"
FIL 62	YA49280	"	"	"
FIL 63	YA49281	"	"	"
FIL 64	YA49282	"	"	"
FIL 65	YA49283	"	"	"
FIL 66	YA49284	"	"	"
FIL 67	YA49285	"	"	115I-7
FIL 68	YA49286	"	"	"
FIL 69	YA49287	"	"	"
FIL 70	YA49288	"	"	"
FIL 71	YA49289	"	"	"
FIL 72	YA49290	"	"	"
FIL 73	YA49291	"	"	"
FIL 74	YA49292	"	"	"
FIL 75	YA49293	"	"	"
FIL 76	YA49294	"	"	"
FIL 77	YA49295	"	"	"
FIL 78	YA49296	"	"	"
FIL 79	YA49297	"	"	115I-6
FIL 80	YA49298	"	"	"
FIL 81	YA49299	"	"	"
FIL 82	YA49300	"	"	"
FIL 83	YA49301	"	"	"
FIL 84	YA49302	"	"	"
FIL 85	YA49303	"	"	"
FIL 86	YA49304	18 June 83	"	"
FIL 87	YA49305	"	"	"
FIL 88	YA49306	"	"	"
FIL 89	YA49307	"	"	"
FIL 90	YA49308	"	"	"
FIL 91	YA49309	"	"	"
FIL 92	YA49310	"	"	115I-7
FIL 93	YA49311	"	"	"
FIL 94	YA49312	"	"	"
FIL 95	YA49313	"	"	"
FIL 96	YA49314	"	"	"
FIL 97	YA49315	"	"	"
FIL 98	YA49316	"	"	"
FIL 99	YA49317	"	"	"

CLAIMS	GRANT NO.	EXPIRES	LOCATION	N.T. SHEET
FIL 100	YA49318	18 June 83	Big Creek	115I-7
FIL 101	YA49319	"	"	"
FIL 102	YA49320	"	"	"
FIL 103	YA49321	"	"	"
FIL 104	YA49322	"	"	"
FIL 105	YA49323	"	"	"
FIL 106	YA49324	"	"	"
FIL 107	YA49325	"	"	"
FIL 108	YA49326	"	"	"
FIL 109	YA49327	"	"	"
FIL 110	YA49328	"	"	"
FIL 111	YA49329	"	"	"
FIL 112	YA49330	"	"	"
FIL 113	YA49331	"	"	"
FIL 114	YA49332	"	"	"
FIL 115	YA49333	"	"	"
FIL 116	YA49334	"	"	"
FIL 117	YA49335	"	"	"
FIL 118	YA49336	"	"	"
FIL 119	YA49337	"	"	"
FIL 120	YA49338	"	"	"
FIL 121	YA49339	"	"	"
FIL 122	YA49340	"	"	"
FIL 123	YA49341	"	"	"
FIL 124	YA49342	"	"	"
FIL 125	YA49343	"	"	"
FIL 126	YA49344	"	"	115I-6
FIL 127	YA49345	"	"	"
FIL 128	YA49346	"	"	"
FIL 129	YA51008	24 July 83	"	"
FIL 130	YA51009	"	"	"
FIL 131	YA51010	"	"	"
FIL 132	YA51011	"	"	"
FIL 133	YA51012	"	"	"
FIL 134	YA51013	"	"	"
FIL 135	YA51014	"	"	"
FIL 136	YA51015	"	"	"
FIL 137	YA49355	18 June 83	"	"
FIL 138	YA49356	"	"	115I-7
FIL 139	YA49357	"	"	"
FIL 140	YA49358	"	"	"
FIL 141	YA49359	"	"	"
FIL 142	YA49360	"	"	"
FIL 143	YA49361	"	"	"
FIL 144	YA49362	"	"	"
FIL 145	YA49363	"	"	"
FIL 146	YA49364	"	"	"
FIL 147	YA49365	"	"	"
FIL 148	YA49366	"	"	"
FIL 149	YA49367	"	"	"
FIL 150	YA49368	"	"	"

CLAIMS	GRANT NO.	EXPIRES	LOCATION	N. T. SHEET
FIL 151	YA49369	18 June 83	Big Creek	115I-7
FIL 152	YA49370	"	"	"
FIL 153	YA49371	"	"	"
FIL 154	YA49372	"	"	"
FIL 155	YA49373	"	"	"
FIL 156	YA49374	"	"	"
FIL 157	YA49375	"	"	"
FIL 158	YA49376	"	"	"
FIL 159	YA49377	"	"	"
FIL 160	YA49378	"	"	"
FIL 161	YA49379	"	"	"
FIL 162	YA49380	"	"	"
FIL 163	YA49381	"	"	"
FIL 164	YA49382	"	"	"
FIL 165	YA49383	"	"	"
FIL 166	YA49384	"	"	"
FIL 167	YA49385	"	"	"
FIL 168	YA49386	"	"	"
FIL 169	YA49387	"	"	"
FIL 170	YA49388	"	"	"
FIL 171	YA49389	"	"	"
FIL 172	YA49390	"	"	"
FIL 173	YA49391	"	"	"
FIL 174	YA49392	"	"	"
FIL 175	YA49393	"	"	115I-6
FIL 176	YA49394	"	"	"
FIL 177	YA49395	"	"	"
FIL 178	YA49396	"	"	"
FIL 179	YA49397	"	"	"
FIL 180	YA49398	"	"	"
FIL 181	YA49399	"	"	"
FIL 182	YA49400	"	"	"
FIL 183	YA50601	"	"	"
FIL 184	YA50602	"	"	"
FIL 185	YA50603	"	"	"
FIL 186	YA50604	"	"	115I-7
FIL 187	YA50605	"	"	"
FIL 188	YA50606	"	"	"
FIL 189	YA50607	"	"	"
FIL 190	YA50608	"	"	"
FIL 191	YA50609	"	"	"
FIL 192	YA50610	"	"	"
FIL 193	YA50611	"	"	"
FIL 194	YA50612	"	"	"
FIL 195	YA50613	"	"	"
FIL 196	YA50614	"	"	"
FIL 197	YA50615	"	"	"
FIL 198	YA50616	"	"	"
FIL 199	YA50617	"	"	"
FIL 200	YA50618	"	"	"

CLAIM	GRANT NO.	EXPIRES	LOCATION	N. T. SHEET
FIL 201	YA50619	18 June 83	Big Creek	115I-7
FIL 202	YA50620	"	"	"
FIL 203	YA50621	"	"	"
FIL 204	YA50622	"	"	"
FIL 205	YA50623	"	"	"
FIL 206	YA50624	"	"	"
FIL 207	YA50625	"	"	"
FIL 208	YA50626	"	"	"
FIL 209	YA50627	"	"	"
FIL 210	YA50628	"	"	"
FIL 211	YA50629	"	"	"
FIL 212	YA50630	"	"	"
FIL 213	YA50631	"	"	"
FIL 214	YA50632	"	"	"
FIL 215	YA50633	"	"	"
FIL 216	YA50634	"	"	"
FIL 217	YA50635	"	"	"
FIL 218	YA50636	"	"	"
FIL 219	YA50637	"	"	"
FIL 220	YA50638	"	"	"
FIL 221	YA50639	"	"	"
FIL 222	YA50640	"	"	"
FIL 223	YA50641	"	"	"
FIL 224	YA50642	"	"	"
FIL 225	YA50643	"	"	"
FIL 226	YA50644	"	"	115I-6
FIL 227	YA50645	"	"	"
FIL 228	YA50646	"	"	115I-11
FIL 229	YA50647	"	"	115I-6
FIL 230	YA50648	"	"	115I-11
FIL 231	YA50649	"	"	"
FIL 232	YA50650	"	"	"
FIL 233	YA50651	"	"	"
FIL 234	YA50652	"	"	115I-6
FIL 235	YA50653	"	"	"
FIL 236	YA50654	"	"	"
FIL 237	YA50655	"	"	"
FIL 238	YA50656	"	"	"
FIL 239	YA50657	"	"	"
FIL 247	YA50658	"	"	"
FIL 248	YA50659	"	"	"

*Expiry date reflects assessment credits recorded in June, 1981.

PHYSIOGRAPHY:-

The FIL Property is in a semimountainous area with a well developed dendritic drainage pattern. Elevations range from 1700 ft. on Big Creek to a maximum of 3500 ft. At the northwestern edge of the property Big Creek has cut a deep stream valley with several canyons. It exposes a considerable amount of outcrop and talus along the steeper banks where erosion has been active.

Hills and ridges on the FIL Claim Group are well rounded. Outcrop is generally restricted to ridge tops and steep slopes. The distribution of float is more widespread at 1-2% coverage. Glaciofluvial or fluvial material is common in low-lying areas. South-facing and southwesterly facing slopes are grass covered with sparse to dense poplar growth. Northerly and easterly facing slopes are covered with thick moss and black spruce. Ground frost remains throughout the year within several feet of the surface on northerly slopes. Ridge tops are open with sparce moderately large pine trees. In such areas, volcanic ash is commonly exposed at surface. Wide areas of swamp with grass and alder are found in low-lying ground on the eastern portion of the FIL property.

GEOLOGY

REGIONAL:-

The FIL Property lies within an area of granitic and volcanic rocks of Mesozoic and Cenozoic age which intrude and overlie the Yukon Crystalline Terrane (Templeman-Kluit, 1976). Along the eastern margin of FIL, intrusive rocks of the Klotassin suite, a large elongate northwest trending batholith, are in fault contact with massive, green volcanic rocks of the Whitehorse Trough. The Klotassin suite contains a variety of granodiorities in which screens and lenses of foliated rocks are present. Younger rocks consist mainly of andesites, basalts and their tuffaceous equivalents with a basal layer of conglomerate occurring in several areas.

Structurally, the northwest trend of the rocks in the FIL area is parallel to the axis of the Whitehorse Trough.

LOCAL:-

The FIL Claim Group covers an area of mainly unfoliated granodiorite in the west, strongly foliated to unfoliated granodiorite in the southeast, and Tertiary Carmack's volcanics with a narrow band of Triassic volcanics in the east. The granodiorites and associated aplite, pegmatite and microgranite are an intrusive phase of the Klotassin Batholith. The granodiorites are generally medium-grained and slightly porphyritic.

Along Big Creek, several outcrops of fine-grained quartz-feldspar gneiss occur within the granodiorite. Zones of biotite-rich rock or mafic screens are also exposed on the river banks.

Triassic basalts and andesites lie to the east of a major fault trending northwest through the eastern part of the FIL Property. Carmack's volcanics (eTcv) overlie the granitic intrusive rocks. They outcrop as a conglomerate containing well rounded cobble sized fragments in a fine-grained matrix.

DESCRIPTION of UNITS

Granodiorite (gdm, Pgdm):-

The composition of this medium-grained rock is generally highly variable over ten's of metres. It contains 10-40% mafics, 50-75% felspar, 5-30% quartz and minor epidote, magnetite, carbonate and limonite. Biotite is generally more common than hornblende, however occasionally hornblende may be the only mafic mineral present. Biotite forms aggregates of medium sized flakes up to 5 mm across. Hornblende is generally medium-grained but it may also form elongated phenocrysts up to 3 cm. in length. There is an enrichment of mafic minerals in the granodiorite adjacent to intrusive pegmatite, aplite and microgranite dykes and veins.

Granodiorite may contain feldspar phenocrysts up to 3 cm. long. The phenocrysts are pink in color and occur in a matrix of granular quartz and feldspar. Granodiorite is usually slightly magnetic and, in several samples, the magnetite makes up 1% of the rock.

Epidote and chlorite occur as minor but common alteration products in the granodiorite. Epidote forms veinlets up to 1 cm. wide. These veinlets stand out as narrow resistant ridges in the granodiorite. Epidote is also present as an alteration mineral of hornblende and biotite. Chlorite rims are present on some biotite flakes and may totally replace occasional flakes or aggregates.

Strongly Foliated Granodiorite (sFgdm):-

Strongly foliated granitic rocks outcrop along a steep slope in the southeastern section of FIL, where it borders on the MOON Property. Discontinuous bands of biotite occur in a homogeneous matrix of granular quartz and feldspar. The rock is composed of 10-25% biotite and 75-90% feldspar and quartz with minor limonite, hematite and magnetite. The general attitude of the foliation is from 300° to 320° with a steep dip.

Several small areas of non to strongly foliated diorite were mapped within the foliated granodiorite. The diorite contains up to 80% mafic minerals and is fractured by aplite bands. Limonite and magnetite are accessory minerals in the diorite.

Quartz-feldspar gneiss (qfgn):-

Quartz-feldspar gneiss is exposed on the bluffs over Big Creek. It is in sharp contact with medium grained granodiorite. The gneiss exhibits a strong foliation with continuous bands of biotite in the fine-grained quartz and feldspar-rich rock. The gneiss is composed of less than 15% biotite and 85% quartz and feldspar. Mica bands are planar to wavy in appearance. The foliation strikes at approximately 300°, has a shallow dip, and is parallel to the orientation of biotite schlieren in the adjacent granodiorite. Magnetite and epidote occur as minor components of the geniss.

Aplite, pegmatite and microgranite (ap peg mgr):-

Late stage intrusive rocks occur as dykes, plugs and veins in the granodiorite suite. They have variable width (1 cm. to 1½ metres) and are present in most outcrops. The larger dykes trend between 295° and 320° with dips (only available at a few outcrops) ranging from vertical to 35° west. The larger pegmatite dykes were traced for about 100 metres along strike.

Aplite and pegmatite are more common than microgranite and are often present in the same dyke. Aplite is a pink to white phaneritic rock with a sugary texture. It generally contains less than 2% biotite and minor magnetite. Hematite which forms red and yellow bands through the aplite is an occasional accessory mineral.

Pegmatite dykes and veins are very coarse grained. They are composed mainly of feldspar but may also be quartz-rich. Biotite (less than 2%) forms large flakes up to 2 cm. in length between coarse feldspar crystals. Magnetite is a common constituent of the pegmatite, occurring as isolated grains or as lenses up to 1 cm. in width.

Microgranite is common only on the southwestern edge of FIL where is forms much of the float and outcrop on open south-facing slopes. Microgranite contains from 2 - 10% fine-grained biotite with minor hornblende and magnetite in a quartz and feldspar groundmass.

Triassic volcanics (Trvb):-

Andesitic and basaltic volcanic rocks are grey-green to black in color and are basic to felsic in composition. In texture, they are aphanitic to slightly porphyritic containing feldspar, pyroxene and biotite phenocrysts. Clusters of epidote crystals as lenses up to 3 cm. in length and crystalline magnetite were observed in the darker basalts. Carbonate veins with minor hematite and limonite are present in the andesites.

The fault contact between Triassic volcanics and the younger Klotassin granitic rocks is not exposed and its specific nature is not known.

Carmacks volcanics (eTcv):-

The reddish brown Carmacks (possibly Mount Nansen, KTmn) volcanics consisting mainly of andesite, basalt, tuffs and conglomerate unconformably overlie the granodiorite. In profile they are fairly flat-lying with dips of less than 10°. On Big Creek an exposed section shows beds of conglomerate up to 2 metres wide between layers of fine-grained sandy material and tuffaceous andesite.

The conglomerate contains well-rounded to angular fragments up to 16" in diameter. The fragments consist of grey-green andesite and andesite tuff with the occasional clast of granitic gneiss. Volcanic fragments contain minor magnetite, carbonate and limonite. Matrix material is aphanitic and green in color.

In the Big Creek area several dykes or pods of volcanic rock cut the granodiorite. Basalt shows crude columar jointing while the andesites are well fractured and contain carbonate veinlets. At the contact there is a narrow alteration zone (4") within which the mafic minerals in the granodiorite are altered to epidote.

STRUCTURE:-

On FIL the extent of foliated rock is limited and the majority of the foliation attitudes were measured in the southeastern part of the property. The stronger foliations trend between 300° and 320° and have near vertical dips. Gneissic rocks along Big Creek have parallel foliation attitudes and are slightly folded. Also, the orientation of mafic minerals in biotite schlierens is coincident with a northwestern foliation trend.

Contacts on the property have a northwest orientation parallel to the regional structural trend.

Three shear zones, trending northwest and dipping steeply to the west, are exposed on Big Creek. They are 1 to 2 metres wide and contain heavily stained, moderately to well-foliated granodiorite. Mafic minerals are partially altered to epidote and feldspar disintegrates on touch to a white powder. A wider shear near the end of B/L 4 on Big Creek contains hematite and epidote bands and is stained reddish-brown.

Joint attitudes in the granodiorite are reflected by the topographic features. Primary jointing trends northwest and northeast with variable and steep dips, respectively. In the Traissic volcanics there is a dominant northwest trending, vertical fracture system.

ALTERATION:-

Epidote is the main alteration mineral present. It generally occurs in minor amounts in granitic and volcanic rocks as an alteration product of hornblende or in small veinlets up to 1 cm. in width.

Chlorite is a minor component in biotite-rich granodiorite. It was observed to rim biotite flakes and to occasionally replace complete aggregates of grains.

Feldspar is moderately to strongly altered to clay minerals in shear zones. Hematite, carbonate and limonite are also present in these zones.

MINERALIZATION:-

Primary copper mineralization was not observed in the volcanic and granitic rocks on the FIL Claim Group. Traces of malachite occur in the gneissic fragments found within the volcanic conglomerate. Also, the matrix material in the conglomerate has a malachite-green color, however no favourable assay values (Appendix C) were returned.

GEOCHEMICAL SURVEY

GENERAL:-

A claim reconnaissance type soil sample survey was carried out by two four-man geochem crews. This survey involved the collection of samples at 30m intervals along lines approximately 100m apart. These lines were run orthogonal to the claim location lines (310°). The smaller sample interval parallels the interpreted short axis of deposits likely to be discovered in this area.

Mattocks were used to collect the samples in most areas. The use of augers was attempted in a few areas but frozen ground and dry soil conditions made their use impractical. A total of 17,046 samples were collected over the 241 FIL Claims. These samples were analysed for copper by Bondar Clegg and Company Ltd. of Whitehorse using standard analytical techniques.

PEDOLOGY:-

The ubiquitous volcanic ash layer varies in thickness with relief. It varies from less than several centimeters on some ridge tops and south-facing slopes to 25 cm or more in shallow depressions. A thin (several centimeters) brown-black humus horizon commonly underlies the ash. A sandy-clayey, red-brown B-horizon generally underlies this humus layer.

The upper portion of most ridges have a moderately developed residual soil on decomposed bedrock. On lower slopes and in the valley bottoms several 10's of metres of glaciofluvial material may be present.

In areas of poor drainage and on north-facing slopes, moss and other organic debris may reach 30 to 40 cm in thickness. This layer effectively insulates the frozen material below it and hampers sampling, especially in the early part of the season. An attempt was made to collect a B-horizon sample in all areas. When persistence failed, an organic sample was collected or the site was not sampled. Probably five (5) to ten (10) percent of the possible sites would fall into these categories.

RESULTS:-

From the histogram of copper values (Figure 3) it is readily apparent that 96.8% of the samples contained less than 50 ppm copper. This value was taken as the threshold and contour intervals were determined as a geometric progression. The highest value obtained was 192 ppm copper.

Generally, the anomalous values occur as single highs with few, if any, supportive values.

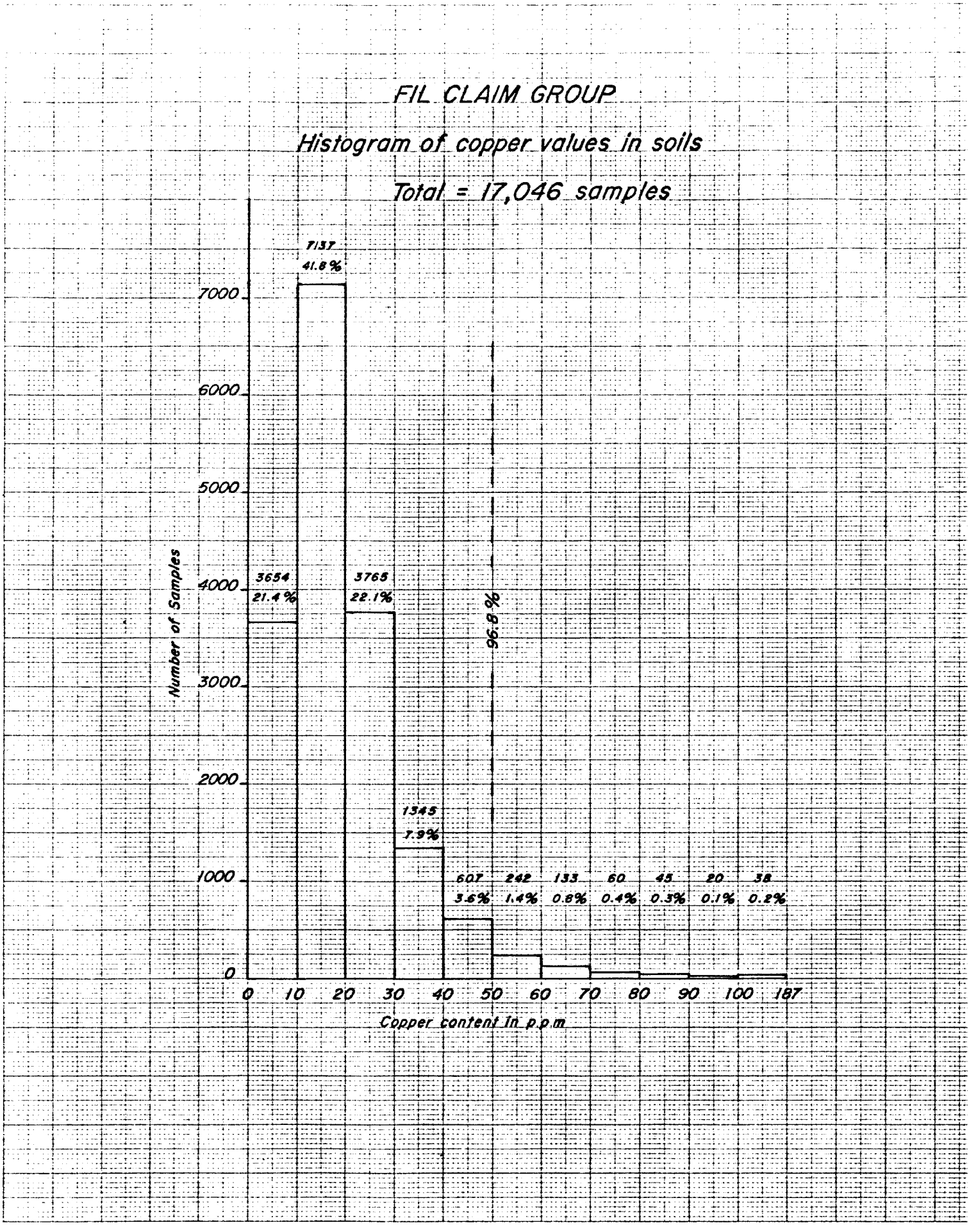

FIL CLAIM GROUP
Histogram of copper values in soils
Total = 17,046 samples
Number of Samples
7137
41.8%
3654
21.4%
3765
22.1%
1345
7.9%
607
3.6%
242
1.4%
133
0.8%
60
0.4%
45
0.3%
20
0.1%
38
0.2%
96.8%
0
1000
2000
3000
4000
5000
6000
7000
0
10
20
30
40
50
60
70
80
90
100
187
Copper content in p.p.m

Figure 3

Most anomalies are low order (50-100 ppm) and have northwest trends. These trends are exaggerated in this direction by the sample spacing.

Although the property is underlain by both intrusives and volcanics, no substantive difference is apparent on the geochem plot (in pocket). The most significant difference is the slight increase in the density of single and multi-value anomalies over the volcanics.

Several areas that contain anomalous values are discussed below.

Area 'A' -

This area lies to the south of the FIL Claims a short distance upslope from the northwest side of Big Creek. The main anomaly covers an area approximately 300m by 350m and is open along the southeast side. Six (6) samples from this area yielded copper values greater than 100 ppm (peak 156 ppm). Other narrow (50m), northwesterly elongate anomalies are present in this area.

Scattered anomalous copper values continue north along the west side of Big Creek across the FIL Property and onto the HI Claims (UKHM).

The sample grid was extended off the FIL Property to cover an airborne electromagnetic conductor. Although an extension of the conductor would cross the anomaly, the conductor terminates at the west boundary of the copper anomaly (see geochem plot in pocket). It is apparent from the airborne survey plots (Fraser, 1981) that this conductor terminates at the west edge of a north-trending resistivity low. For the most part, this copper anomaly is confined to this low resistivity area as well.

Area 'B' -

Three (3) samples from this area returned values greater than 100 ppm copper (peak 187 ppm). These are interesting in that they occur at about the same elevation (error on map relfects non correlation of government topographic sheets) on different sides of the same ridge. Low-order values occur intermittently around the northwest end of the ridge at this same elevation. Several supportive values occur downslope and along strike from the 187 ppm sample. Only one of the other samples has an adjacent supportive value. Several additional anomalous values were revealed by sampling downslope (and along strike) to the northwest. However, only two anomalous values were returned for samples collected within the next 700m along strike to the southeast.

Area 'C' -

This area contains several small but probably significant anomalies. A strong northwest trend is indicated by values 115 and 105 ppm. A single value anomaly (145 ppm) lies northwest along strike from this anomaly. Although weakly developed, foliation attitudes in this area parallel this trend and have steep dips to the east.

Area 'D' -

Five (5) scattered samples from this area returned values exceeding 100 ppm copper. One of these (175 ppm) had two (2) supportive values and may be related to an electromagnetic conductor. The anomaly lies adjacent to and at the northwest end of the conductor (map in pocket). Two (2) other parallel conductors were outlined in this area. One of these terminates at about the same location as a single value (124 ppm) copper anomaly.

Area 'E' -

A number of low order anomalies are contained within this area. Although most are single value anomalies, one large anomaly is present. It is about 500m long and varies from 30 to 150m in width. This low order (peak value, 95 ppm) anomaly appears to cover a portion of the volcanic/ granodiorite contact. The exact location of the contact is not known because of the paucity of outcrop.

North-northwest of this area a number of multivalue northwest-trending, low-order anomalies were revealed. The four outcrops observed in this area consisted of basaltic to andesitic tuff and agglomerate.

GEOPHYSICS:-

An airborne electromagnetic (DIGHEM^{II}) and magnetometer survey was flown over the FIL Claims as part of a large survey of United Keno's properties in the Minto Area. This survey was flown during May and June, 1981.

Data from the survey were plotted on 1:15,000 scale maps. Maps were prepared for electromagnetic, resistivity, magnetics, and enhanced magnetics for each area. Those maps (Sheets C-1 & 2) are included in a separate report (Fraser, 1981).

REFERENCES:-

Fraser, D. C., 1981 - 1981 DIGHEM^{II} SURVEY of the FIL 1 - 239 and 247 and 248 Claim Group, for United Keno Hill Mines Ltd., N.T.S. Sheets 115I-6 & 7, Dighem Ltd., Toronto, U.K.H.M. Files.

Templeman-Kluit, D.J., 1974 - Compilation map of the Carmacks Area, G.S.C. Open File 200

, 1976 - The Yukon Crystalline Terrane: Enigma in the Canadian Cordillera, G.S.A. Bull V87, p. 1343-1357, September, 1976.

APPENDIX A

LOGISTICS

PROJECT: FIL Claim Group, Project No. 49

TERRAIN: Semi-mountainous

MAIN BASE: Whitehorse

OPERATING CAMPS: Eight (8) at strategic locations

CREW: Geologist, assistant, and two crews of four soil samplers

SUPPORT AIRCRAFT: Bell 206B Jet Ranger helicopter, Trans North Turbo Air, Carmacks, Y.T.

HELICOPTER UTILIZATION: Between May 18th and September 3rd, a total of 30.5 hours were flown to move and supply crews.

OPERATING MAN DAYS:

	May	June	July	August	Sept.	Total	%
Possible Days	129	300	310	232	16	989	100
Operating Days	110	238	142	167	4	661	67
Days Lost-							
Camp Moves	17	12	22	19	6	76	7.7
R & R	-	-	70	4	-	74	7.5
Weather and Other	2	50	76	42	6	176	17.8

PROJECT COSTS June 18th to September 30th, 1981

GENERAL:		
Salaries and Wages	$ 5,419.00	
Hiring Expenses	1,744.00	
Publications and Maps	45.00	
Travel - Staff	2,562.00	
	9,770.00	$ 9,770.00
GEOLOGICAL:-		
Company Labour	$11,760.00	
Equipment and supplies	3.00	
	11,763.00	11,763.00
GEOCHEMICAL:-		
Consulting fees and expenses	101.00	
Equipment and supplies	405.00	
Company labour	27,068.00	
Contract analyses	26,386.00	
	53,960.00	53,960.00
ASSAYING and RESEARCH:-		
Company assays	102.00	102.00
CAMP OPERATION:-		
Equipment and supplies	1,287.00	
Food	10,969.00	
Fuel	958.00	
Equipment repair	12.00	
	13,226.00	13,226.00
AIRCRAFT:-		
Helicopter Charter	12,477.00	12,477.00
VEHICLES:-		
Operation and Maintenance	488.00	488.00
	TOTAL	$101,786.00

Note:- June 18th corresponds to the anniversary date of the FIL Claims. Labor and other charges for June were calculated as 40 percent (12/30 ths) of the monthly total.

A F F I D A V I T

I, Robert E. Van Tassell, of Whitehorse, in the Yukon Territory, Exploration Superintendent, do solemnly declare:

1.

That I am duly appointed agent of United Keno Hill Mines Limited, and except where otherwise stated have a personal knowledge of the facts and matters herein, and swear to the value of work contained in Appendix A.

And I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act.

Declared before me at
Whitehorse, in
The Yukon Territory,
this 29th day of
December 1981.

Robert E. Van Tassell

Notary Public

APPENDIX B

PERSONNEL EMPLOYED

GEOLOGICAL MAPPING by:-

Graham Davidson Party Chief - Geologist, 73 Irma Court, Ancaster, Ontario L9G 1K6	May 18th - September 3rd, 1981

ASSISTED by:-

Ray Knowles, 27 Francis Street, Lindsay, Ontario K9V 3R7	May 18th - September 3rd, 1981

GEOCHEMICAL SAMPLING by:-

Bruce Kramarchuk P. O. Box 167, Carberry, Manitoba ROK OHO	May 18th - September 1st, 1981
Steven McGibbon 510 Frontenac Street, Apt. 1, Kingston, Ontario K7L 4M1	May 18th - September 1st, 1981
John Rancourt 538 Platts Lane, Apt. 32, London, Ontario N6G 3A8	May 18th - September 1st, 1981
Ian Spooner, 104 Cliff Crescent, Kingston, Ontario K7M 1A8	May 18th - September 1st, 1981
George Lane 22 The Ridgeway, At. No. 5, London, Ontario N6C 1A1	May 23rd - August 27th, 1981
Ian McKay 73 Lakeshore Drive, P. O. Box 399, Morrisburg, Ontario KOL 1XO	May 23rd - August 27th, 1981

Don Privett,
3884 West 13th Ave.,
Vancouver, B.C.
V6R 2S8

May 23rd - August 27th, 1981

Jeremy Rawlings,
5055 Bear Lane,
West Vancouver, B.C.
V7W 1L2

May 23rd - August 21st, 1981

CLAIM STAKING by:-

McCrory Holdings (Yukon) Ltd.,
307 Jarvis Street,
Whitehorse, Y.T.

HELICOPTER SUPPORT by:-

Dean Cameron,
Trans North Turbo Air,
Carmacks, Yukon

GEOPHYSICAL SURVEY by:-

Dighem Limited,
P. O. Box 178, Suite 7010,
1st Canadian Place,
Toronto, Ontario
M5X 1C7

GEOCHEMICAL ANALYSES and ASSAY DETERMINATIONS by:-

Bondar-Clegg and Company Ltd.,
136B Industrial Road,
Whitehorse, Yukon
Y1A 4X1

SUPERVISED by:-

R. J. Joy,
Senior Exploration Geologist,
United Keno Hill Mines Limited,
409 Black Street,
Whitehorse, Y.T.
Y1A 2N2

APPENDIX C

ASSAY DATA

UNITED KENO HILL MINES LIMITED

EXPLORATION DEPARTMENT — 409 BLACK — WHITEHORSE

ASSAY RESULT FORM

DATE			Tag No.	Location and Description	ASSAY RESULTS								
D	Mo	Yr.			Au oz/ton	Ag oz/ton	Pb %	Zn %	Cu %	Mo %	W %		
1	6	81	1452	F-81-7GD5- weakly foliated granodiorite	0.002	0.05			0.01				
29	5	81	1453	F-81-B.C.1 smoky quartz with epidote and limonite staining	0.002	0.05			0.01				
7	6	81	1454	F-81-10GD-4-weakly foliated granodiorite with some vugs	0.002	0.05			0.01				
25	6	81	1455	F-81-23GD1-aplite with hematite bands light green staining	0.002	0.05			0.01				
22	6	81	1456	F-81-22-GD4-aplite with hematite bands	0.002	0.05			0.01				
29	6	81	1457	F-81-25GD1-gneissic cobble from volcanic agglomerate-minor malachite	0.002	0.05			0.01				
16	7	81	1458	F-81-28GD2-gossan containing hematite and limonite		0.05			0.01				
0	7	81	1459	F-81-32GD1-foliated granodiorite from narrow shear zone					0.01				
0	7	81	1460	F-81-32GD2-fine grained green volcanic rock, matrix material					0.01				
4	7	81	1461	F-81-35GD2-andesite containing carbonate veinlets		0.05			0.01				
4	7	81	1462	F-81-35GD3-andesite containing hematite and carbonate veins		0.05			0.01				

UNITED KENO HILL MINES LIMITED

EXPLORATION DEPARTMENT — 409 BLACK — WHITEHORSE

ASSAY RESULT FORM

DATE			Tag No.	Location and Description	ASSAY RESULTS								
	Mo	Yr.			Au oz/ton	Ag oz/ton	Pb %	Zn %	Cu %	Mo %	W %		
30	7	81	1463	F-81-39GD1 - gray green tuffaceous volcanic rock					0.01				
15	8	81	1464	F-81-50GD4 - strongly foliated granodiorite containing limonite		0.05			0.01				
16	8	81	1465	F-81-51GD1 - banded, granitic rock (gneissic)		0.05			0.01				
24	7	81	1466	F-81-35GD4 - high mafic basalt containing crystaline magnetite		0.05			0.01				
15	8	81	1467	F-81-50GD1- strongly foliated granodiorite		0.05			0.01				
15	8	81	1468	F-81-50GD2 - strongly foliated granodiorite containing limonite		0.05			0.01	0.01	0.01		
15	8	81	1469	F-81-50GD5 - strongly foliated diorite containing epidote and limonite		0.05			0.01	0.01	0.01		
15	8	81	1470	F-81-50GD7 - recrystalized granodiorite containing 1-2% magnetite		0.05			0.01	0.01	0.01		

UNITED KENO HILL MINES LIMITED

EXPLORATION DEPARTMENT — 409 BLACK — WHITEHORSE

ASSAY RESULT FORM

DATE			Tag No.	Location and Description	ASSAY RESULTS								
D	Mo	Yr.			Au oz/ton	Ag oz/ton	Pb %	Zn %	Cu %	Mo %	W %		
29	8	81	2701	F-81-55GD1 - foliated granodiorite from small shear zone		0.05			0.01				
29	8	81	2702	F-81-55GD1 - foliated granodirite from shear zone		0.05			0.01				
29	8	81	2703	F-81-55GD1 - fine grained gneiss adjacent to shear zone		0.05			0.01				
29	8	81	2704	F-81-55GD3 - granodiorite from contact zone with basalt		0.05			0.01				
30	8	81	2705	F-81-56GD3 - foliated granodiorite talus containing pyrite		0.05			0.01				
31	8	81	2706	F-81-57GD2 - granodiorite containing limonite		0.05	0.01	0.01	0.01				
3	9	81	2707	F-81-58GD1 - granodiorite from contact with andesite		0.05	0.01	0.01	0.01				
3	9	81	2708	F-81-58GD1- andesite containing limonite and mt.		0.05	0.01	0.01	0.01				

SOIL SAMPLE STATISTICS

Project: 49 - FIL Claims Dates of Program: May 18 to Sept. 3

Number of Samples Collected: 17046

Metals Analyzed: Cu

Samplers: See Appendix B

Man days: 704 Possible, 472 operating

Samples collected / man-day: 36 per operating day
24 average for season

Pb

Values in ppm	No. in Range	% of Total
0 - 9	3654	21.4
10 - 19	7137	41.8
20 - 29	3765	22.1
30 - 39	1345	7.9
40 - 49	607	3.6
50 - 99	500	3.0
100+	38	0.2
	17046	100.0

Zn

Values in ppm	No. in Range	% of Total

Values in ppm	No. in Range	% of Total

Ag

Values in ppm	No. in Range	% of Total

Values in ppm	No. in Range	% of Total

APPENDIX E

STATEMENT OF QUALIFICATIONS

I, Richard J. Joy, of the City of Whitehorse, Yukon Territory, do hereby certify that:

1. I am a geologist, residing at 20 Stewart Road, Whitehorse, Yukon Territory.

2. I have received a B. Sc.(honours) in Geology from Memorial University of Newfoundland.

3. I have attained the status of Fellow in the Geological Association of Canada.

4. I have been actively engaged in the mineral exploration field since 1968.

5. I am presently employed as Senior Exploration Geologist with United Keno Hill Mines Limited.

6. I have supervised the work described in this report.

Dated at WHITEHORSE this 22nd day of DECEMBER, 1981

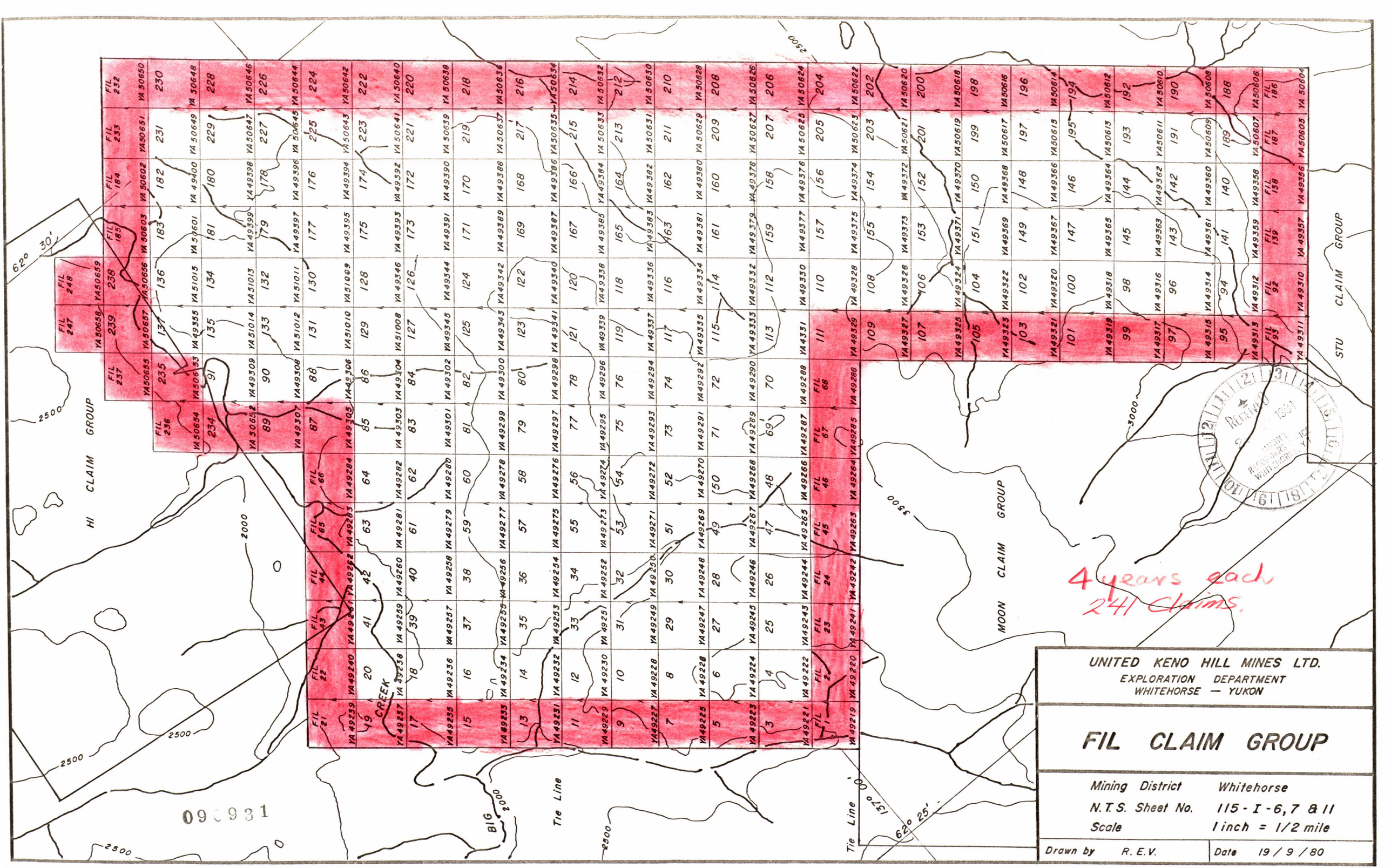
UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT
WHITEHORSE — YUKON

FIL CLAIM GROUP

Mining District	Whitehorse
N.T.S. Sheet No.	115 - I - 6, 7 & 11
Scale	1 inch = 1/2 mile
Drawn by R. E. V.	Date 19 / 9 / 80

BCIL - 3043 - U.K.H.M.


HI CLAIM GROUP
MOON CLAIM GROUP
STU CLAIM GROUP
BIG CREEK
Tie Line
Tie Line
137° 00'
62° 25'
620 30'
2500
2000
3000
3500
4 years each
241 Claims.
UNITED KENO HILL MINES LTD.
EXPLORATION DEPARTMENT
WHITEHORSE — YUKON
FIL CLAIM GROUP
Mining District Whitehorse
N.T.S. Sheet No. 115-I-6,7 & 11
Scale 1 inch = 1/2 mile
Drawn by R. E. V.
Date 19/9/80
09 931
BCIL - 3043 - U.K.H.M.

GEOLOGY

TERTIARY

eTCV	**CARMACKS GROUP Volcanics** (P = porphyritic, and = andesite, bas = basalt)	

MESOZOIC

KTMN	**MOUNT NANSEN Volcanics** generally andesite and andesite breccia	
gdm,gd	medium to coarse-grained hornblende-biotite granodiorite, Pgdm = porphyritic variety.	
sfgdm	strongly foliated granodiorite; (m = moderate, w = weakly)	
mgr,gr	micrograite)	
ap	aplite) -as narrow dykes and stringers	
peg	pegmatite)	

PALEOZOIC or EARLIER

qfgn	Quartz-feldspar gneiss or Quartz-feldspar-biotite gneiss

LEGEND

	Joints (vertical, inclined)
	Foliation attitude (vertical, inclined)
	Geological Contact (defined, approximate, assumed)
	Fault
54 GDI ⊙ 50 GD7S ⊙	Information Point, with sample
△ 1470	Assay Sample location with number
	Area of Float, Outcrop
	Electromagnetic Conductors
mt, mg	magnetite
hem	hematite
py	pyrite

TOPOGRAPHY

	1000m UTM Grid system from 1:50,000 Scale Map. NOTE: Grid NORTH is actually 358° 30'
	Creeks
3000	Elevation contours in feet
	Lakes, Ponds, Sloughs
	Claim posts; 2,4 Claim location line, 310°
	Claim Group boundary
	Camp site Heliport

UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

FIL CLAIM GROUP east

N. T. S. SHEETS 115 - I - 6/7/11

GEOLOGY

Meters

100 0 100 200 300 400 500m

Scale 1: 5000

090931

NO	Revision Date	by	NO	Revision Date	by	NO	Revision Date	by	Drawn by: J.H.P.	DWG
									Date: 06/15/81	NO.

"A"

"B"

"C"

BIG CREEK

GEOLOGY

TERTIARY

eTCV — CARMACKS GROUP Volcanics (P = porphyritic, and = andesite, bas = basalt)

MESOZOIC

KTMN — MOUNT NANSEN Volcanics, generally andesite and andesite breccia

gdm — medium to coarse-grained hornblende-biotite granodiorite, Pgdm = porphyritic variety.

sfgdm — strongly foliated granodiorite; (m = moderate, w = weakly)

mgr — microgranite
op — opalite
peg — pegmatite
(as narrow dykes and stringers)

PALEOZOIC or EARLIER

qfgn — Quartz-feldspar gneiss or Quartz-feldspar-biotite gneiss

LEGEND

- Joints (vertical, inclined)
- Foliation attitude (vertical, inclined)
- Geological Contact (defined, approximate, assumed)
- Fault
- 19406 / 22604S — Information Point, with sample
- 1456 — Assay Sample location with number
- Area of Float, Outcrop
- Electromagnetic Conductors
- mt — magnetite
- hem — hematite
- py — pyrite

TOPOGRAPHY

- 1000m UTM Grid system from 1:50,000 Scale Map. NOTE: Grid NORTH is actually 356°30'
- Creeks
- 3000 — Elevation contours in feet
- Lakes, Ponds, Sloughs
- 0+00W, 10+00W — Claim location line, 2,4 Claim posts, 310°
- Campsite, Heliport

UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

FIL CLAIM GROUP west

N. T. S. Sheets 115 - I - 6&7

GEOLOGY

Meters 100 0 100 200 300 400 500m

Scale 1:5000

090931

NO	Revision Date	by	NO.	Revision Date	by	NO.	Revision Date	by

Drawn by: R.J.J. DWG

Date: 06/11/81 NO.

LEGEND

CONTOUR INTERVALS

- 50 - 99 p.p.m.
- 100 - 199 p.p.m.
- 200 + p.p.m.

GEOCHEMISTRY

- 20 Sample Location with results
- N Sample Location No sample taken
- Electromagnetic Conductors

TOPOGRAPHY

- 1000m UTM Grid system from 1:50,000 Scale Map. NOTE: Grid NORTH is actually 358° 30'
- Creeks
- 3000 Elevation contours in feet
- Lakes, Ponds, Sloughs
- Claim posts; 2,4 Claim location line 310°
- Claim Group boundary
- Camp site, Heliport

UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

FIL CLAIM GROUP east

N. T. S. SHEETS 115 - I - 6/7/11

GEOCHEMISTRY

COPPER PLOT in p.p.m.

Meters

100 0 100 200 300 400 500 m

Scale 1: 5000

090931

NO	Revision Date	by	NO	Revision Date	by	NO	Revision Date	by	Drawn by: J.H.P.	DWG
									Date: 06/15/81	NO.


"A"
"B"
"C"
BIG CREEK
BIG CREEK
Control Line 300°
Longitude 135°00' W
LEGEND
CONTOUR INTERVALS
50 - 99 p.p.m.
100 - 199 p.p.m.
200 + p.p.m.
GEOCHEMISTRY
Sample Location with results
Sample Location No sample taken
Sample Location with results from Hf Claim Group (1977)
Electromagnetic Conductors
TOPOGRAPHY.
1000m UTM Grid system from 1:50,000 Scale Map.
NOTE: Grid NORTH is actually 358° 30'
Creeks
3000 Elevation contours in feet
Lakes, Ponds, Sloughs
Claim location line, 2,4 Claim posts, 310°
UNITED KENO HILL MINES LTD.
EXPLORATION DEPARTMENT WHITEHORSE, Y. T.
FIL CLAIM GROUP west
N. T. S. Sheets 115 - I - 6&7
GEOCHEMISTRY
COPPER PLOT in p.p.m.
Meters
Scale 1:5000
090931
Drawn by: R. J. J.
Date: 06/11/81
DWG NO.