675803
93N/9
Boulder Creek

MOUNT GILLES MINING & EXPLORATION LTD.

BOX 99, FRASER LAKE, BRITISH COLUMBIA, CANADA, VOJ 1SO

TEL. (604) 699-6994
256 STELLAKO AVE.

March 31, 1984

Geological Survey of Canada,
100 West Pender Street,
Vancouver, B.C.

Dear Sir or Madam,

Our company is interested in obtaining data about a property which is believed to have been visited by a GSC Field Geologist named Mr. Bob Mulligan, in the early 1970's. It is not known whether Mr. Mulligan was from the Ottawa office or Vancouver's, or whether he is even still with the GSC.

Apparantly, Mr. Mulligan was involved with a Tungsten evaluation programme of some description, and had in his travels, visited a property south of Manson Creek that was owned or operated by Northern Tungsten Mines Ltd. Mr. Mulligan, during the course of the property's examination, became acquainted with a Mr. Lorrin (Dick) Bater, formerly of Prince George, B.C. . Mr Bater was running a placer operation on nearby Boulder Creek, from which samples of the concentrate were taken by Mr. Mulligan for analysis. The samples proved to contain scheelite and cassiterite, the abundance of which prompted Mr. Mulligan to return to the property the following year.

We are very interested in any information Mr. Mulligan may have gathered concerning the placer concentrate which was examined. Copies of any and all reports, assays, correspondance and field notes are of the utmost importance to us.

Should Mr. Mulligan continue to work with the GSC somewhere in Canada, we would appreciate in making contact with him.

Thank you for your co-operation and assistance.

Sincerely,
Mount Gilles Mining & Exploration Ltd.

W.R. Bulmer

W. R. Bulmer,
President

cc. GSC Ottawa

00262

Energy, Mines and Resources Canada
Earth Sciences
Geological Survey of Canada
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Ottawa, Ontario
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Sciences de la Terre
Commission géologique du Canada
601, rue Booth
Ottawa (Ontario)
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Your file Votre référence

Our file Notre référence

27 April, 1984

Wayne

Mr. W.R. Bulmer
President
Mount Gilles Mining & Exploration Ltd.
Box 99
Fraser Lake, British Columbia
V0J 1S0

Enable
exp'n Sediments
1980-82

Dear Sir:

In reply to your letter of March 31, 1984, Dr. Robert Mulligan was a valued member of the Ottawa staff of the Geological Survey for many years. He retired in 1976 and has moved to British Columbia, where his address is: 8432-12 Avenue, Burnaby, British Columbia, V3N 2L6; Phone (604) 521-5481.

Robert Mulligan visited Boulder Creek, Manson Creek Area, on August 11, 1973 in company with Dick Bater and collected 5 samples which were later submitted for partial analyses and subsequently discarded.

Dr. Mulligan's description of this locality has recently been published in GSC Economic Geology Report 32. Enclosed are photo copies of selected pages (48 and 106-107) from this report, and a data sheet on Boulder Creek that briefly describes the history of a placer gold operation on it.

Copies of Dr. Mulligan's field notes and the partial analyses of the samples are being sent to K.M. Dawson in our Vancouver office, 100 West Pender Street, Vancouver, Phone 666-1260, where arrangements could be made to see them on the condition that proof of ownership of the property or permission by the current property owner is provided. This is normal procedure we follow with respect to the release of unpublished information pertaining to mineral deposits on property held by an individual or a company.

I trust this information will be helpful.

Yours sincerely,

R.A. Price
Director General

c.c. K.M. Dawson

Canada

)DUCT)DUIT	GOLD (PLACER)	PROVINCE OR TERRITORY *PROVINCE OU TERRITOIRE*	British Columbia	N.T.S. AREA *RÉGION DU S.N.R.C.*	93 N/9	REF. *RÉF.*	AU 3

AE OF PROPERTY
M DE LA PROPRIÉTÉ BOULDER CREEK

CT LOCATED
T LOCALISÉ

RTAINTY
EUR D'INCERTITUDE

Lat. 55°35'40" *Lat.*

Long. 124°22' *Long.*

Mining Division *Division minière* Omineca

District *District* Cassiar

County *Comté*

Township or Parish *Canton ou paroisse*

Lot *Lot*

Concession or Range *Concession ou rang*

Sec *Sect.* Tp. *Ct.* R. *R.*

NER OR OPERATOR/*PROPRIÉTAIRE OU EXPLOITANT*

CRIPTION OF DEPOSIT/*DESCRIPTION DU GISEMENT*

HISTORY OF EXPLORATION AND DEVELOPMENT
HISTORIQUE DE L'EXPLORATION ET DE LA MISE EN VALEUR

Boulder Creek flows easterly into the Manson Lakes, some 7 miles southeast of the Manson Creek settlement. Individual prospectors have worked intermittently on the creek for many years. In 1900, a total of 16 placer claims were held on the creek and the finding of coarse gold was reported. Further work was reported by A.E. Floyd in 1935 and by a number of individuals in 1941.

Mr. R.L. Bater & associates attempted, without success, to recover placer gold in the late 1960's. The discovery of scheelite in the placer concentrate shifted their interest to the search for tungsten. They incorporated Northern Tungsten Mines Ltd. in October 1970. (See 93 N/9, Ref. Pb 2).

ated minerals or products

HISTORY OF PRODUCTION/*HISTORIQUE DE LA PRODUCTION*

The recorded production from Boulder Creek for the period 936-1940 is 110 ounces of placer gold.

MAP REFERENCES/*RÉFÉRENCES CARTOGRAPHIQUES*

ap 971 A, Smithers-Fort St. James, (Geol.), Sc. 1":8 miles (1949).

ap 876 A, Manson Creek, (Geol.), Sc. 1":4 miles (1946).

ap 1586 G, Manson Lakes, (Aeromag.), Sc. 1":1 mile (1963).

ap 93 N, Manson River, (Topo.), Sc. 1:250,000.

REMARKS/*REMARQUES*

Comp./Rev. By Comp./rév. par							
Date	11-66	07-73					

REFERENCES/*BIBLIOGRAPHIE*

Reports of Minister of Mines, British Columbia: 1900, p. 750; 1935, p. C 39; 1941, p. 84.

Holland, Stuart S.; Placer Gold Production of British Columbia; Bulletin No. 28, pp. 43, 44, British Columbia Dept. of Mines, 1950.

Mineral Policy Sector; Corporation Files: "Northern Tungsten Mines Ltd."

ECONOMIC GEOLOGY REPORT 32

GEOLOGY OF CANADIAN TUNGSTEN OCCURRENCES

ROBERT MULLIGAN

1983

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Critical Readers

K.M. Dawson
G.B. Leech

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About 1.5 km east, these rocks are in fault contact with unmetamorphosed Lower Cambrian and earlier carbonate and shale of the typical Rocky Mountain sequence along the McLeod Lake Fault, which is the outstanding structural feature of the area. The deposits are unusual because they contain graphite. According to Stevenson (1943) graphite was observed only in veins that contain scheelite.

Manson Creek Area

The occurrences of the Manson Creek area (79) are in rocks mapped as Pennsylvanian-Permian Cache Creek Group, off the flanks of the Germansen Batholith. The bedded rocks farther north along the belt contain a section extending from Proterozoic to possible Mississippian (Monger, 1973), and are therefore typical East Tungsten Zone lithologies. The rocks in the area are in fault contact with metamorphic rocks of the Wolverine Complex to the east. The complex probably is derived from Proterozoic and lower Paleozoic rocks typical of the East Tungsten Zone. The Germansen Batholith is a foliated leucocratic biotite granodiorite, bearing muscovite locally and cut by aplite and pegmatite dykes. It is younger than other granitoid bodies of the region. The area, which has been a significant placer gold producer, is cut by major northwesterly trending faults.

At Northern Tungsten (79a) scheelite occurs in placer concentrates and in quartz veins and is disseminated in what appears to be a bed of fine grained quartzite. The contacts are not exposed but the trend appears to parallel nearby dark phyllites. The rock consists of angular quartz grains, subparallel shreds and stringers of biotite, and a few patches of carbonate. It may be a member of the Wolverine Complex, a fault wedge of which was mapped near the locality (Armstrong, 1946).

At the Billy and Glo claims (79b), about 8 km northwest along the Manson Creek fault, scheelite with argentiferous galena and tetrahedrite is found in quartz veins cutting slates and is associated with felsitic dykes. The felsite is common around the Manson Creek area but is seen only locally as crosscutting dykes. It is a light, rusty-weathering, pyrite-impregnated rock. Thin sections show a mosaic of quartz grains and tabular areas of carbonate, sericite and other minerals which appear to be pseudomorphs of feldspar crystals. A composite sample was found to contain 4 ppm of tungsten and 0.09 per cent of fluorine.

The Mill Creek property (79c) is close to molybdenum mapped in the Germansen Batholith (E. Floyd, personal communication). Tourmaline crystals from somewhere in that area contain veinlets of scheelite.

Scheelite (and tin) is more abundant in heavy mineral concentrates from streams draining the north and east flanks of the Germansen Batholith than in the placer workings along the lower part of Germansen River. Samples of granodiorite from south of Germansen Lake are high in fluorine but not in tungsten or tin. The muscovitic granite farther east may be richer in lithophile elements.

The association of tungsten with antimony and gold (in tetrahedrite) and with felsitic dykes is similar to that in the Bridge River area (73a,b). Ultramafic rocks are not mapped in the area, but an asbestos occurrence on Germansen River, an abundance of green (chrome?) mica, and carbonaceous and talcose rocks in and along the Mansen Creek fault zone (B. Thurber, personal communication) suggest that they may be present, as they are along the Pinchi Creek fault to the west.

Central West British Columbia

The central west British Columbia group (81-90) includes the Red Rose mine and numerous other occurrences in the Smithers-Hazelton area, and along the east flank of the Coast intrusions from Whitesail Lake to the Stewart and Portland Canal area. Occurrences are especially concentrated around Terrace. Most are quartz-scheelite veins, and a few are feldspathic and contain a little wolframite. Skarns are rare and small. Host rocks are mainly Upper Triassic to Cretaceous volcanic and sedimentary rocks, and some limestone in the Triassic sequence. Some occurrences are in intrusive rocks, ranging from quartz diorite to granite and from Jurassic to Cretaceous in age as mapped. Probably most of the granite is in plutons east of the main intrusive belt, and at least some of these are Cretaceous.

Deer Horn Mine

Some scheelite occurs in a gold-quartz vein at Deer Horn mine (81) about 305 m east of the main showings. Some is in diorite but most in volcanic rocks. The rocks are contact-metamorphosed and skarn has developed locally but not near the showings. Of the two showings, about 150 m apart, only one contains much scheelite, in numerous small stringers and veins, (see Appendix). The large talus that covers most of the showings averaged about 0.34 per cent WO_3.

Whitewater

At Whitewater (84) a quartz vein up to 0.9 m wide is exposed intermittently for 107 m in talus at the base of a bluff, and carries varying amounts of scheelite. The short adit sampled by Stevenson (1943) was at the richest part of the vein, but he recommended the area for further prospecting.

Glacier Gulch

The Glacier Gulch property (85), on Hudson Bay Mountain near Smithers, is a major porphyry-molybdenum deposit with minor copper and appreciable amounts of tungsten as scheelite and wolframite. A complex series of granitic and rhyolitic intrusions ranging from 60 to 67 Ma cut Jurassic Hazelton Group volcanic rocks. Molybdenum-copper-tungsten mineralization is mainly in fractures and veinlets in a granodiorite sheet that is intruded and brecciated by a rhyolite porphyry plug. The plug is thought to be the source of the main mineralization but is itself mineralized, and is cut by a weakly mineralized quartz monzonite stock. This central mineralized area is surrounded in turn by intermediate zones of barren quartz veining and pyritization, and by outer zones of zinc, lead, copper, silver and arsenic mineralization.

Tungsten, a potential byproduct, occurs mainly as scheelite in the granodiorite sheet, and as minor wolframite in downdip parts. The tungsten zone "straddles the upper 0.2 per cent molybdenum boundary" (Bright and Jonson, 1976).

Hazelton Area

In the Hazelton area (86, 87) the Red Rose mine (86b) was the only major nonskarn tungsten producer in the Canadian Cordillera. The tungsten-bearing deposits are feldspathic ('pegmatitic') quartz veins with various amounts of scheelite and wolframite, copper minerals, and a little gold and silver. Deposits in the area, including to some extent the tungsten deposits, contain a remarkable diversity of minor elements, including cobalt and uranium. The area is towards the west end of the Skeena Arch, a northeasterly trending structural belt that was folded and intruded by granitic plutons in Jurassic to Tertiary times. In some respects this structure forms a link between the area and the East Tungsten Zone.

APPENDIX (cont.)

No.	Latitude Longitude NTS area	Identification, Location	Type	Tungsten Mineral	Concentration, Size	Assoc. Metals/Minerals
77c	54°16' 122°22' 93 J/8	Ada Group; north point Fraser River 45 km NE of Prince George, Cariboo	qz vein	sh	to 4% WO_3 across 0.6 m	py + Pb, Ag, graphite
77c	54°16' 122°20' 93 J/8	Silver Group; 1.6 km up Averil Creek from Fraser R., 45 km NE of Prince George, Cariboo	qz vein	sh	Pr in outcrop only	py + Pb, Zn, graphite
78	55°04' 124°49' 93 N/2	Chuchi; head Jean Marie Creek, Chuchi Lake, Fort St. James-Manson Cr., Omineca	qz vein?	sh	.075% WO_3 in grab sample	cp, pt, MoS_2
79a	55°36' 124°22' 93 N/9	Northern Tungsten; Boulder Creek, Manson Creek area, Omineca	qz vein, dissem. black sands	sh		Cu, minor Mo, qz veins, Pb-Zn-Ag veins near; Au
79b	55°40' 124°28' 93 N/9	Billy and Glo claims, Lost Creek, 2.4 km SE Manson Creek Post Office, Omineca	qz vein	sh		Pb, Zn, Ag
79c	55°37' 124°34' 93 N/10	Mill Creek; SW of Manson Creek Post Office, Omineca	qz vein	sh		near Mo occurrences
80	54°35' 126°14' 93 L/9	Silver Cup, Friday Creek, 11 km NNE (?) of Topley	qz vein	sh		
Central West British Columbia – Coast Range, Terrace, Smithers, Hazelton, Alice Arm, Portland Canal						
81	53°22' 127°16' 93 E/6	Deer Horn mine, W end Whitesail L.	qz vein	sh	0.84% WO_3 across 18 m 1.55% WO_3 across, 21 m large sh-bearing talus	Au in separate deposits
82	53°35' 127°39' 93 E/12	Sandifer L., 33.5 km NW of W end Whitesail L.	skarn	sh?		cp; Bi
83	53°10' 128°42' 103 H	"Butedale area", Princess Royal Island				
84	54°30.5' 127°41.5' 93 L/12	Whitewater; near head Telkwa River, 45 km SW Smithers	qz vein	sh	to 20% WO_3 in adit, shoot 1.2 m x 1.2 m exposure, elsewhere low	Zn, Pb, Ag, Au
85	54°49' 127°18' 93 L/14W	Glacier Gulch (Climax), Hudson Bay Mt., Smithers	qz vein	sh, pt, minor wo	"recoverable as by-product"	py, asp; Mo, Cu, Bi, K-fel., mu
86a	55°10' 127°33' 93 M/4	Black Prince, Mudflat Creek, 9.2 km SSE New Hazelton	qz vein dissem.	sh, wo	to 1-2% WO_3 across 15 cm	py, cp; Mo, Sn, U, vein, tl
86a	55°10' 127°34' 93 M/4	Blue Lake, 9.2 km SSE New Hazelton	qz vein dissem.	sh	0.25-2% sh across 15-35 cm	cp, Mo, tet
86b	55°08' 127°36' 93 M/4	Red Rose mine, E of Juniper Creek, 11.6 km S of New Hazelton	qz vein "pegmatitic"	sh, minor wo	1 002 847 kg WO_3 produced 1941-42 and 1951-54	py, mag, cp, tl, ap; local orthoclase
86b	55°09' 127°39' 93 M/4	Rocher Déboulé mine, Juniper Creek, 10.4 km SSW New Hazelton	qz vein part pegmatitic	sh	to 3% sh in shoots to 15 m by 0.6 m	Cu, Au, Ag + Pb, Zn, Co, U, Mo; fel, ap, tl, etc.

Structure	Host Rocks	Associated Intrusions	Selected References	Remarks
2 veins conformable	siliceous? qz muscovite schist (Wolverine)	granitic gneiss	Stevenson, 1943, p. 74; Little, 1959, p. 61	Graphite only in sh-bearing veins, workings incl. adit, 210 m
conformable shear zone, near major fault	qz sericite, biotite schist		Little, 1959, p. 61	Adit, 62 m
fracture zone 12 ft. wide at contact	andesite	granite stock	Rice, 1949; Little, 1959, p. 60	
dissem. conformable? in quartzite	argillite, quartzite, limestone	granite (Germansen Bath.)	GEMBC 1972, p. 450, 1973, p. 367; Armstrong, 1946	
zone of narrow veins	argillite	felsite dykes (Germansen Bath.)	GEMBC 1970, p. 182	
		granite (Germansen Bath.)	E. Floyd, Manson Cr., pers. comm.	
			Little, 1959, p. 60	Reported "in underground workings"
stockwork stringer embayment in granite	sediments & volcanics (+ skarn) Hazelton Group	granite, qz diorite, diorite (Coast Intrus.)	Little, 1959, p. 57	
			GEMBC 1969, p. 76	
			Little, 1959, p. 42	"Reported from area"
2 lenses 20 to 35 cm thick branch main vein	granite		Stevenson, 1943, p. 72; Little, 1959, p. 58	
dome, faults	granodiorite volcanics + sediments (Hazelton)	porphyry qz monzonite (Tert.) stock & dykes, rhyolite	BCAR 1966, p. 86; Bright and Jonson, 1976	Adit 1830 m 1965; intra-mineral dykes
shear zone	granodiorite (Rocher Déboulé stock)		Kindle, 1954; Little, 1959, p. 54	Several adits on different veins
	granodiorite (Rocher Déboulé stock)		Little, 1959, p. 56	Several veins
shear zone	diorite, sediments	granodiorite (Rocher Déboulé stock) fel, porphyry dykes	Kindle, 1954; Stevenson, 1947; BCAR 1954, p. A86; Sutherland Brown, 1960; Little, 1959, p. 51	sh abundant only in diorite, some Au, Ag, Cu produced
subparallel veins from contact sediments	granodiorite (Rocher Déboulé stock)	qz monzonite, diorite, etc., dykes	Little, 1959, p. 46; Kindle, 1954; Stevenson, 1943; Sutherland Brown, 1960	Cu, Au, Ag + Zn, Pb produced 1915-1952, no record W production; sh also at Highland Boy, 2 km

Met with the Bulmer + Mullyan May 23/84
Returned same copy of field notes

CANADA

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Geological Survey of Canada

NOTE BOOK

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OTTAWA, Ontario.

G.S.C.
145-S

* Re Pinchi Hg (contin)

George Warning.

U52 spec cinnabar & cinnabar in X Kermesite & changed.

2nd any Sb mineral (& a yellow fade) not quite same as cinnabar bas

Some stibnite & Cu (stain only)

Luny Bante X H.

Says Cinnabar in cgl. at base of Takla? - like alt. serp & chromite (Armstrong)

→ Also mention Mrs Tait, Manson Cr. re Blk Sands Cinnabar Co. & Dick Baker - Landing 6 mi N. Northern Tungsten & Ernie Floyd - Nb etc occur & Placer Ten? Wolverine Lake area (see GSC map).

Go to Landing from Sec to 394.1 or head of Lower Manson L.

Dick Baker & Peninsula Ruin Croselle? own in boat - drive around & Stay Chirk & next day.

Northern Tungsten

NB Moly in Pb Zn ore-zone.

With Dick Bates - go up to strip -
Finches Pb show - mostly galena
U53-1 + pyrite, arsenopy? + a little chalco??
Au not obvious but probably in
the very fine dissem. stuff at least.
Rock is a very fine hard quartzite
looking (H.5) but is quite strongly
effervescent in 10% HCl - dolomite?
but pretty white.
Some bright green in schist
mariposite?
This stuff is in what is mapped
as Cache Creek greenstone unit but
see no grst. at all.

U53-2 Pm. Walk up cat trail < 2 mi
to Scheelite area This is a
laminated greenish rock on
cross between greenish schist &
fine micaceous sheen on very
flat surfaces. no dissem. sulph. &
on some cross-cutting & veins
of the last & some with dk
3 HS. streaks with sulphide dissem in
looks like fine grey qtz could
be mylonite? no reaction to 10% acid
This is mostly lt grey & white streaked
& mashed & this not a speck of
Scheelite but good glows in 1 pc.
HS. of qtz noticeably brownish grey
(marked).

The rock below this point along rd. was a brownish phyllite or schist, some quite slaty, seems to be derived from blk slate but may be in a shear zone. Quite abrupt transition to the lt. colored schists a/m. but no particular sign of fault. This is the Whatcome complex slivers acc. to Baker but I'm dubious about the lithostratigraphy here. The locality also must be much farther north than I have it on map, certainly N of the little creek shown.

U53.3 select a sample of mostly small [illegible] with schist. from cabin + a couple of H.S. The brownish color is noticeable in these.

U53.4 [illegible] up'd rd. to "silver" [illegible] (?) property acc. B.C. AR - dissem pyrite in [illegible] schists + some gray [illegible] sulphide? - supposed to carry ca 13 oz. Ag.

U53.5 [illegible] [illegible] Boulder Cr. placer operation - [illegible] schists

150 BC 144

[illegible] U54 last number)

Aug 12 (Sun) Boulder Co. – Caribou ldg.
Lv Boulder (Northern Tungsten)
Co. Floyd Afflucks coff rd. call
1 mi E Mansen Co. (Duffs bridge)
Not there but Bisk. Thinks
Says tin none schiel. Lost Creek
Mansen Creek area (see
Mrs Tant – owns it)

Re Tin & Formation – Q mine
of creek coming in from left
to Swift's i.e. creek from west
S of Lower Mansen Lake.
Cassiterite said to be in
acc. a C.M.S. man from Sketch.

C55 .07 Sn in Nb
.5 Nb. big sample
Track Creek into W. lower L
from east.

Re Sn ".137 % Sn
& .60 % in Hard Rock
from E into Findlay"

[illegible] Mansen
Mrs. Tant's [illegible]

little bridge – old assay
Caribou office in L side – old
(Rosemont Holding) blk sand [illegible]

SAMPLE NO.	LOCATION				Material	Be	Sn	Zn	Pb	Cu	Ag	Mo	W
						ppm				per cent			
U53.1	Boulder Creek			55°37.5' 124°55.5'	Side		–	20	50	.0010	NF		
.2	"	"	(Northern Tungsten)	55°35' 124°21'	Quartz schist -W	–	<1					30	NF
.3	"	"	"	55°35' 124°21'	Quartz schist +W	–	1					1.5	.14
.4	"	"	"	55°35' 124°21'	Side		–		5	<.0010			
.5	"	"	block sand	55°36' 124°22'	Pan		130		4.9				.27