TITAN PROJECT

Reconnaissance Stream Sediment Sampling Programme

Introduction:

The pioneer in the use of geochemistry as a possible prospecting tool in the Keno Hill - Galena Hill area of the Yukon was undoubtedly R. W. Boyle of the G.S.C. In 1954 and 1955, Boyle and his associates carried out a geochemical investigation of the heavy metal contents of streams and springs in this area. The results of their investigation appear in G.S.C. Bulletin 36. The limitations of this geochemical prospecting method are now more fully appreciated and, as a result, exploration companies tend to favour stream sediment sampling over water sampling. G.S.C. Bulletin 39, "Soil Analyses as a method of Geochemical Prospecting in the Keno Hill - Galena Hill Area, Yukon Territory" by Boyle and Cragg deals with the detection of total copper, zinc and lead anomalies. No mention was made regarding the detection of cold extractable heavy metal anomalies. Boyle did point out the high mobility of zinc in contrast to the low mobility of lead, and draws attention to the tendency of zinc to accumulate to anomalous values in boggy, muskeg-type areas.

As far as is known, the only company-financed programme of stream sediment sampling in the South McQuesten River valley area was carried out in the summer of 1962 by Dualco. Their survey covered the drainage system on the south flank of the McQuesten Valley, southwest of Mount Haldane. It seems that they did not achieve any outstanding successes.

Reasons for the Present Investigations:

The fact that stream sediment sampling as a geochemical prospecting method for silver - lead - zinc bodies has never been given a fair trial in this district was thought sufficient reason to undertake a reconnaissance programme over areas in which Keno Hill-type quartzites were known or thought to exist. Aerial photograph interpretation had also revealed some strong northeast-trending lineaments, and it was hoped that stream sediment samples in the nearby drainage systems might indicate the presence of some mineralization in these breaks.

Field and Laboratory Techniques Employed:

A total of 307 stream sediment samples were collected from an area encompassing roughly 120 square miles. Most of these samples were collected at an interval of 1,000 feet, each stream being followed to a point at or near its source. In certain areas, however, spot samples were collected by the prospector as he crossed a creek in the course of his travels. Fine-grained sediment or silt was always searched for and often was only available from the

silt-saturated moss covering stream boulders. A length of red or orange plastic flagging with the sample number written upon it was tied to a branch of a tree by each sample location. The wet sediment was collected in a numbered plastic bag and sealed with a short wire tie. Excess water was later poured off and, after reaching a state of semi-dryness, the sample was transferred to the regular paper sample bag in which the drying process was completed. Each sample was then sieved to -80 mesh fineness.

The analytical method supplied for this programme was the simple dithizone method of detecting cold extractable heavy metals. This method is primarily a semi-quantitative test designed for use in field kits. In order to make the method more quantitative certain measures were taken, such as, standardizing the weight of sediment analysed, and the amount of buffer, toluene and dithizone used in each determination. The range of dithizone colouration from emerald green to pale grey was given an arbitrary numerical range of from 0 to 4, and these five shades of green to grey were used as colour standards. Samples resulting in a higher degree of colouration were reduced to the 0 - 4 range by using one-half the normal aliquot of supernatent liquid from the buffer-sediment reaction. Highly anomalous samples were rated as >10 or $>>10$, depending upon the strength of the pink colour. All high samples were rerun to rule out the possibility of contamination in the test-tube.

Results:

Poli Creek-

This creek produced the most highly anomalous sample collected during the survey and was taken from the silt accumulation below a spring issuing from the centre of the creek channel. The creek carries moderately high values in its sediment from its confluence with the South McQuesten River up to the very high spring sediment sample before the values drop off suddenly immediately upstream. The location of the spring, if controlled by a structure such as a fault zone, suggests the possibility that it may be related to an extension of the fault zone passing through claim No's 3 - 8, although the spring is not exactly on strike. Small exposures of massive Keno Hill-type quartzites in the immediate vicinity tend to heighten the interest.

Shanghai Creek-

Tributary No. 2 flows rather weakly from a large boggy area, and there seems to be little doubt the anomaly arises from an accumulation of zinc.

Tributary No. 5 is a fast-flowing tributary with a large unsampled catchment area. Although the lone moderately high sample with a "no reaction" sample 1,000 feet downstream looks somewhat suspicious, it may be pointing to an interesting area.

Gerlitzki Creek-

This is one creek in which Boyle detected a water anomaly and it is comforting to note that the present survey confirmed his findings. High grade galena float has been found along the banks of this creek (Dr. Aho can relate the complete story of its discovery by two Indians), but French failed in three days to find any mineralization except very minor chalcopyrite in small scattered limestone lenses in float from the Upper Schist. The Argent group of claims with its favourable quartzite horizons lies just to the east of the strongly anomalous sample. The contamination effects of the McQuesten silts are reflected by the moderately high samples at the mouths of Argent and Gerlitzki Creeks.

H-3 and H-4-

Several moderately high samples appeared towards the mouths of these two creeks. Zinc accumulation in this relatively flat and slow-flowing section is suspected but not confirmed.

First-Order Lineament above H-9-

This lineament, while very clearly defined on the aerial photographs, is somewhat difficult to locate on the ground. A clue to some possible mineral content in this northeast-trending break is found in H-9, the topmost sample of which is slightly anomalous. Slight confirmation is also found in East Laysier Creek, in the spring to the west and in Gerlitzki Creek. French spent several days scouting this lineament without finding any trace of mineralization other than a little manganese staining towards its southwest end.

Conclusions and Recommendations:

A certain degree of success has been achieved with this reconnaissance programme, but it is felt that to derive the maximum amount of information from this work suites of samples from selected creeks should be given a thorough analytical investigation under laboratory conditions. This investigation would be directed towards the selection of one or more analytical methods as being the most reliable for the detection of the type of mineralization found in this district. The selection should be left to an expert in this field, such as, Dr. Clews.

The following are further recommendations:

(1) A soil sample grid should be run over an area extending north-northeast and south-southwest of the spring on Poli Creek. In point of fact, this grid has already been cut out and the sampling will be completed shortly. The results should be forthcoming in about one week's time.

(2) On investigation of Shanghai Creek's No. 2 tributary should be carried out to confirm the suspected zinc accumulation. Tributary No. 5 should be sampled further upstream to trace the source of the lone moderately anomalous sample.

(3) Follow-up stream sediment sampling in Gerlitzki Creek should be carried out to pinpoint the cut-off point of the anomalous sediments. Follow-up grid sampling might then be called for.

(4) The possibility of some mineralization associated with the strong lineament across the head of H-9 has been indicated. A grid of soil samples is recommended and planned for the near future.

David L. Seymour:d
Vancouver, B.C.
October 9, 1963.


EXPLANATION
stream sediment samples analyzed for cold extractable heavy metals by dithizone method.
Key to Colours
Dithizone Colouration
N.R.-emerald green (unchanged - No Reaction)
1 - greyish-green
2 - greenish-grey
3 - pale greenish-grey
4 - pale grey
6 - 3 with 1/2 normal aliquot
8 - 4 with 1/2 normal aliquot
>10 - strongly anomalous - greyish-pink
>>10 - very strongly anomalous - pink
Sample location
Spring sediment sample
1st order airphoto lineament
2nd order " "
3rd order " "
Basecamp
Mine
Road
SCALE
1 : 50,000
1 0 1 2 3 miles
inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
Yukon Geological Survey
T N
34°
To Peso Silver Mines
To Dublin Gulch
Skate Creek
Lynx Creek
Red Creek
Haggart Creek
Goodman Creek
E. Goodman Ck.
W. Goodman Ck.
E. Rodin Ck.
Rodin Creek
McQUESTEN RIVER
SOUTH McQUESTEN
SOUTH
Shanghai Creek
Ross Creek
Seattle Creek
Flat Creek
Thompson Ck.
Galena Ck.
Proctor's Road (position approximate)
Mayo-Keno Road
Haggart Ck. Road
Silver Titan Basecamp
MOUNT HALDANE △ 6032
To Mayo (21 mi.)
Spring
SILVER TITAN PROJECT
MAYO YUKON
McQuesten River Valley and Area
RESULTS
OF
RECONNAISSANCE STREAM SEDIMENT
SAMPLING PROGRAM
Sampled by J.S. Brock, M.O. Hampton, J. French, D.L. Seymour.
Analysed by D.L. Seymour
Compiled by D.L. Seymour
Drafted by D.L. Seymour
Date 30th September, 1963