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Geological Report On  
GRAND UNION PROPERTY  
Erie Creek, Salmo Area, B.C.  
HOMESTEAD RESOURCES INC.

by

J.S. Kermeen, M.Sc., P.Eng.  
Consulting Geological Engineer  
Report C81-6

Saskatoon, Sask.

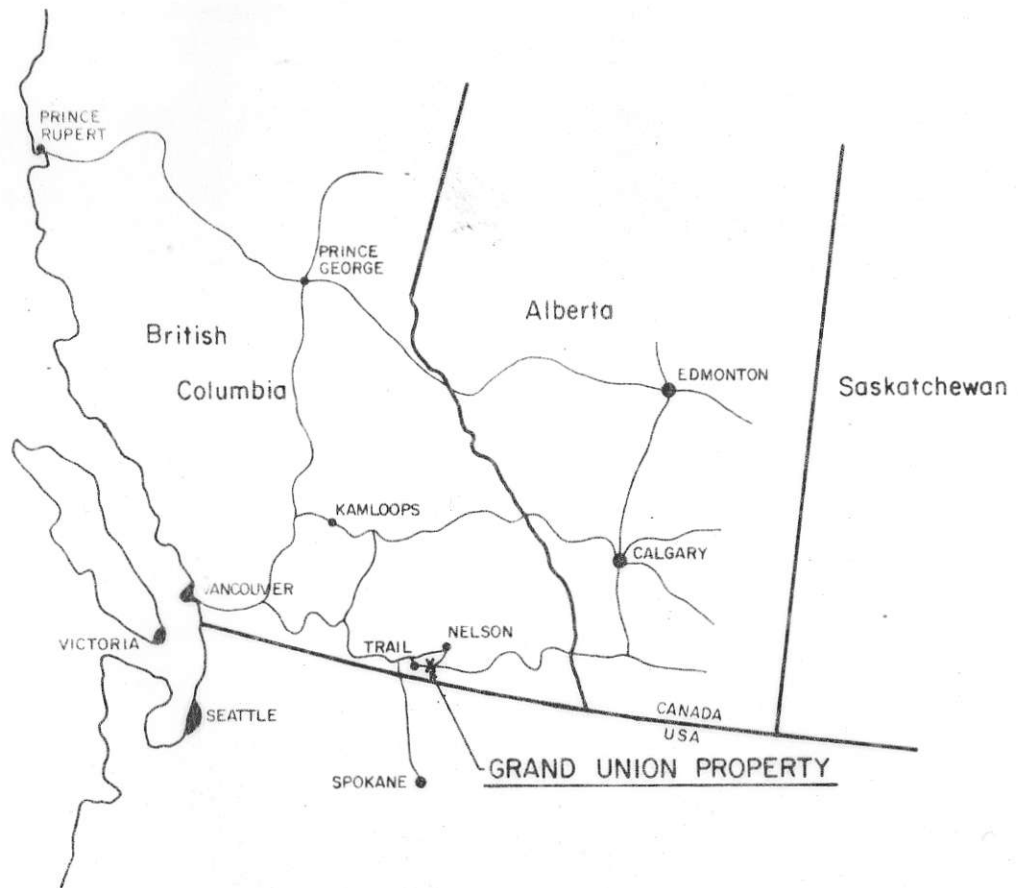
June 19, 1981

## TABLE OF CONTENTS

	<u>Page</u>
Summary and Conclusions	1
Recommendations	2
Introduction	3
Mineral Dispositions and Ownership	4
Location, Access and Transportation	5
History of Previous Work	6
Physiography	7
Mining, Milling & Smelting Aspects	8
General Geology and Mineralization	10
Geology & Mineralization - Grand Union Property	13
Proposed Program	15
List of References	16
List of Drawing's	
C81-6-1 Location Map	
C81-6-2 Regional Geology and Access - 1 inch = 4 miles	
C81-6-3 Claim Map - 1 inch = $\frac{1}{2}$ mile	
C81-6-4 Plan Showing Geology, Mineralization & Claims Grand Union Property, 1:4000	
C81-6-5 Plan of Grand Union Property Showing Proposed Work, 1:4000	
C81-6-6 Vertical Cross Section A-A, 1:4000	
C81-6-7 Vertical Cross Section B-B, 1:4000	

## LIST OF DRAWINGS

- C81-6-1 Location Map.
- 2 Regional Geology and Road Access.
- 3 Claim Map showing present claims controlled by Homestead and staking in progress -  $\frac{1}{2}$  mile = 1 inch.
- 4 Plan showing Geology, Mineralization and Claims Grand Union Property. 1:4000.
- 5 Plan Showing Proposed Geochemical Survey and Possible Diamond Drilling 1:4000.
- 6 Vertical Cross Section A-A 1:4000.
- 7 Vertical Cross Section B-B 1:4000.



**J.S. KERMEEN** M. Sc., P. Eng. CONSULTING GEOLOGICAL ENGINEER

**CLIENT: Homestead Resources Inc.**

**PROJ./PROPERTY: Grand Union, Salmo, B.C.**

**TITLE:**

**LOCATION MAP**

PREPARED BY: JSK

NTS No.:

DATE DWN.: 81/6/19

DRAWN BY: CDD




AREA:

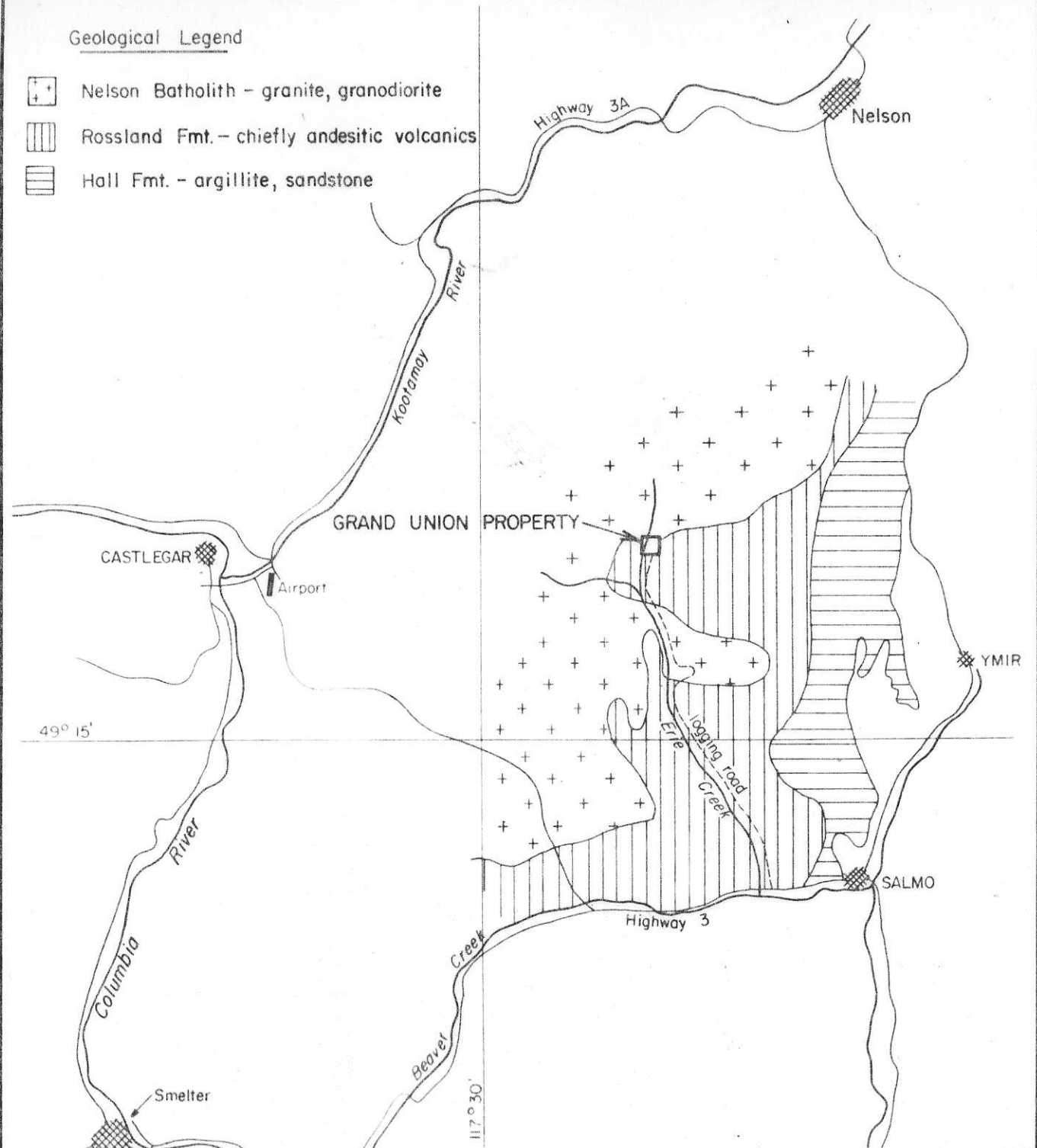
DATE REV.:

SCALE:

DWN. No.: C81-6-1

Geological Legend

-  Nelson Batholith - granite, granodiorite
-  Rossland Fmt. - chiefly andesitic volcanics
-  Hall Fmt. - argillite, sandstone



**J.S. KERMEEN** M.Sc., P. Eng. CONSULTING GEOLOGICAL ENGINEER

CLIENT: Homestead Resources Inc.

PROJ./PROPERTY: Grand Union, Salmo, B.C.

TITLE:

**MAP SHOWING ACCESS  
AND REGIONAL GEOLOGY**

PREPARED BY: JSK

NTS No.: 84-F

DATE DWN.: 81/6/19

DRAWN BY: CDD

AREA:

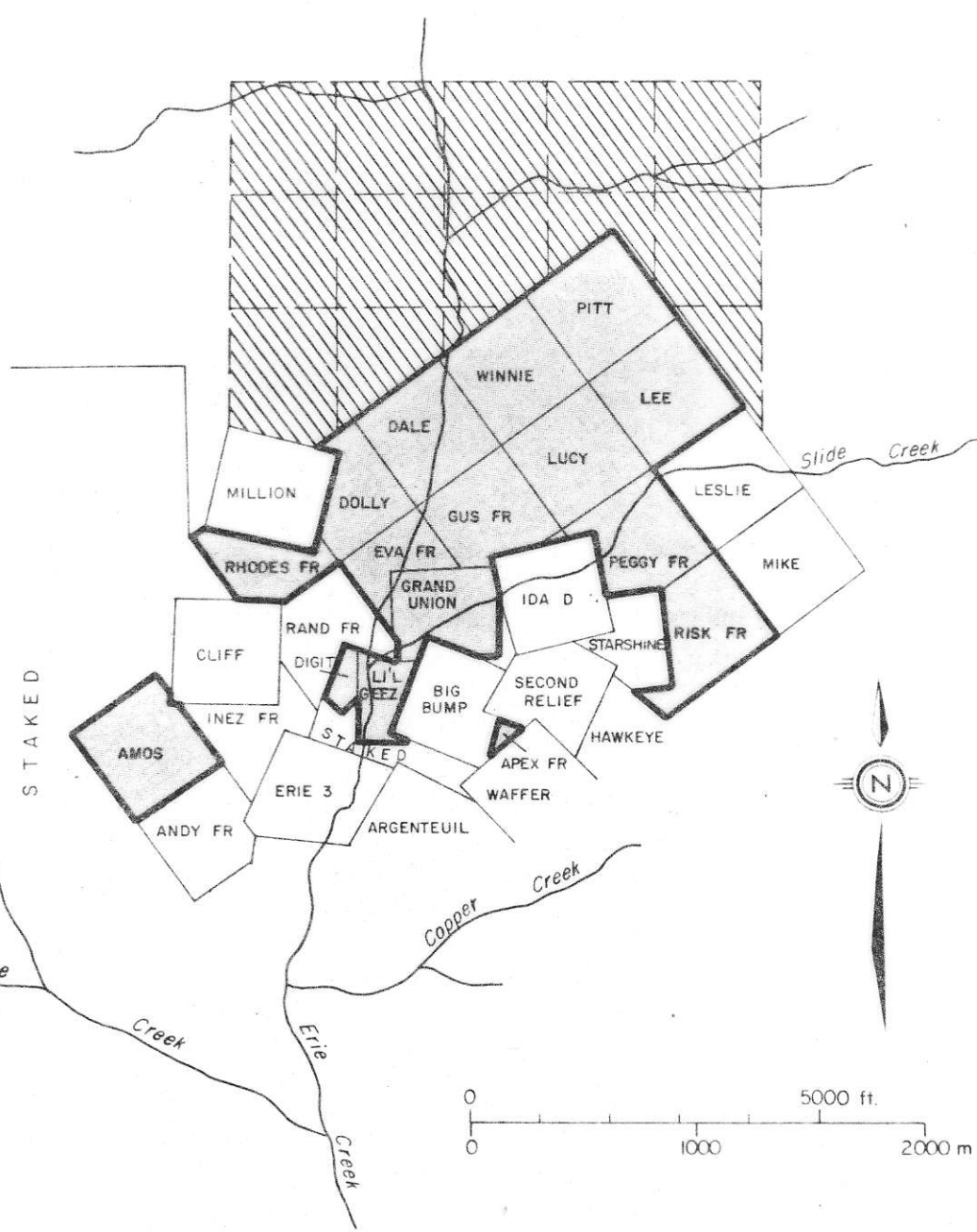
DATE REV.:

NELSON, B.C.

SCALE: 1" = 4 miles

DWN. No.: C81-6-2

*J.S. Kermeen*



Ground held by Homestead   
 Ground being staked by Homestead

Note: For Lot Nos. and details of property boundaries see Map C81-6-4 and report.

*J.S. Kermeen*

<b>J.S. KERMEEN</b> M.Sc., P. Eng. CONSULTING GEOLOGICAL ENGINEER		
CLIENT: Homestead Resources Inc.		
PROJ./PROPERTY: Grand Union, Salmo, B.C.		
TITLE: Map Showing Existing Claims and Additional Area Being Staked		
PREPARED BY: JSK	NTS No.: 84-F-6	DATE DWN.: 81/6/19
DRAWN BY: CDD	AREA: SALMO, B.C.	DATE REV:
SCALE: 1" = 1/2 mile		DWN. No.: C81-6-3

## SUMMARY AND CONCLUSIONS

The Grand Union Property of Homestead Resources Inc. comprises seventeen claims covering 664 acres on Erie Creek near Salmo, B.C.

The property straddles an intrusive contact between granodiorite of the Nelson batholith and Jurassic andesite, slates and argillites.

It adjoins property from which some 250,000 tons grading 0.39 ounces per short ton gold was mined in earlier operations. The formerly productive quartz veins project onto the Grand Union Property and there is a good potential for the discovery of new veins; much of the property is overburden-covered and previous techniques used are not considered to have been effective to detect gold mineralization beneath the overburden. In addition to a potential for high grade gold in narrow quartz veins, there is also evidence of large low-grade disseminated gold and basemetal mineralization in the general area.

A program of exploration directed mainly toward discovery of high grade gold-bearing quartz veins is warranted; concurrently the possibility of disseminated mineralization and/or associated alteration should be investigated.

## RECOMMENDATIONS

A recommended program of exploration is briefly summarized below; for details of this program the reader is referred to a later section of this report entitled "Proposed Exploration Program".

### Phase I

Rehabilitate the existing grid of picket lines and conduct a biogeochemical survey of forest litter on these lines and on intervening lines controlled by chain and compass; re-map outcrop areas paying particular attention to alteration; follow-up biogeochemical anomalies with detailed biogeochemical sampling and trenching where applicable.

Estimated cost           \$60,000  
Time Frame 40 days

### Phase II

Conduct 1000 metres of diamond drilling to  
(a) Test biogeochemical anomalies and/or  
(b) Test for projection formerly productive quartz veins onto the Grand Union Property and for possible new parallel veins.

Estimated cost           \$100,000  
Time Frame 50 days

### Total Phase I and Phase II

Estimated cost           \$160,000  
Time Frame 90 days



## INTRODUCTION

This report pertains to the geology and economic mineral potential of a group of mineral claims designated the Grand Union Property in the Nelson Mining District of south central British Columbia.

The claims are either owned or held under option by:

Homestead Resources Inc.  
2526 Government Street  
Victoria, B.C.

The property comprises fifteen crown-granted, surveyed mineral claims and two staked claims which cover a total area of approximately 664 acres (269 hectares).

It adjoins property from which substantial tonnages of good grade gold ore were removed in earlier periods; renewed interest in the area stems primarily from the current high price of gold together with the availability of more effective techniques for exploring overburden-covered areas.

This report was commissioned by Mr. R.P. Richmond, President and Managing Director, Homestead Resources Inc.

The writer visited the property and examined outcrops of rock and vein material on May 25, 1981, accompanied by Mr. Dale W. Vieweger of Homestead Resources Inc.

MINERAL DISPOSITIONS & OWNERSHIP

Crown granted and staked mineral claims reported to be either owned outright or held under option by Homestead Resources Inc. are listed below.

Name	Status	Record No.	Lot No.	Registered Owner	Acreage	Expiry Date
Grand Union	Crown Grant	590	2457	Dale W. Vieweger	42.92	Apr. 14/82
Lil Geez	Staked	592		Dale W. Vieweger	23.50*	Apr. 14/82
Star Shine	Crown Grant	1147	2466	Phyllis L. Vieweger	29.24	Aug. 8/81
Risk Fr.	Crown Grant	1148	14655	Phyllis L. Vieweger	51.03	Aug. 8/81
Peggy Fr.	Crown Grant	1149	14656	Phyllis L. Vieweger	47.33	Aug. 8/81
Lucy	Crown Grant	1150	14661	Phyllis L. Vieweger	51.44	Aug. 8/81
Gus Fr.	Crown Grant	1151	14662	Phyllis L. Vieweger	46.22	Aug. 8/81
Eva Fr.	Crown Grant	1152	14665	Phyllis L. Vieweger	28.96	Aug. 8/81
Digit	Staked	1181		Dale W. Vieweger	14.36*	Aug. 8/81
Dolly	Crown Grant	1314	14664	Dale W. Vieweger	40.13	Oct. 26/81
Rhodes Fr.	Crown Grant	1315	14667	Dale W. Vieweger	30.80	Oct. 26/81
Amos	Crown Grant	1316	14670	Dale W. Vieweger	51.48	Oct. 26/81
Apex Fr.	Crown Grant	1597	14675	Dale W. Vieweger	0.40	Apr. 11/82
Lee	Crown Grant	1831	14658	Dale W. Vieweger	51.48	July 22/81
Pitt	Crown Grant	1832	14659	Dale W. Vieweger	51.65	July 22/81
Winnie	Crown Grant	1833	14660	Dale W. Vieweger	51.58	July 22/81
Dale	Crown Grant	1834	14663	Dale W. Vieweger	51.53	July 22/81
					Total	664.05

\*Approximate (268.70 hectares)

Note: In addition to the above claims staking of an additional block of claims adjoining to the north and northwest of the above block and totalling some 661 acres ( 268 hectares) was reportedly in progress.

### LOCATION ACCESS AND TRANSPORTATION

The Grand Union property of Homestead Resources Inc. is located in the Nelson Mining District of south central British Columbia, 418 kilometres east of Vancouver and 40 kilometres northwest of Trail, B.C., respectively. It is readily accessible by means of a logging road which runs north along Erie Creek from a point on B.C. Highway No. 3 some 35 kilometres east of Trail.

The logging road is passable for wheeled vehicles at present and could easily be improved for truck haulage in the event that mineable ore deposits were to be proved on the property.

## HISTORY OF PREVIOUS WORK

Gold bearing quartz veins have been known to exist in the immediate vicinity of the property at least since 1899.

The Second Relief vein on claims adjoining immediately south of the Grand Union claim was the source of most of the production from the area. B.C. Minister of Mines reports indicate that this vein was mined sporadically prior to 1933 and then continuously from 1933 to 1941. Production figures listed in the Minister of Mines report suggest that a total mine production of approximately 250,000 tons grading 0.39 ounces per short ton gold and 0.13 ounces per short ton of silver was achieved. Mill recovery figures are only available for one year when 85% of the gold was recovered in a cyanide mill. The mine was closed in 1941 for undisclosed reasons; probably both depleting reserves and sharply rising costs contributed.

The Premier Gold Mining Company Limited controlled and operated the property throughout its most productive period.

Subsequent to 1941 small shipments of high grade gold ore were made by lessees.

The most recent work on the property was done in 1969 when geochemical, geophysical and geological surveys were carried out for Calmark Explorations Limited on an area which includes the present Grand Union Property. The geological mapping appears to have been done well and the map produced is a useful basis for future work. The mercury in soil gas survey produced anomalies which were apparently not followed up by further testing. A ground magnetometer survey was run, apparently for the purpose of detecting magnetite-bearing quartz veins; it is the writers opinion that veins are unlikely to produce detectable magnetic response; magnetic trends probably indicate the trends of andesitic volcanic flows.

## PHYSIOGRAPHY

The property lies in a mountainous region. Local topography is dominated by the V-shaped valley of Erie Creek which flows from north to south through the property. The valley walls slope fairly consistently at from 10 to 30 degrees and are modified by the steep valleys of tributary streams entering Erie Creek from both east and west. Elevations above sea level on the property (excluding claims currently being staked) vary from 3600 feet (1097 metres) to 5500 feet (1676 metres).

Most of the property is thickly covered by merchantable timber and moderately thick undergrowth.

## MINING MILLING & SMELTING ASPECTS

No serious problems are anticipated for either underground or open pit mining in the area. The ground is relatively good and would probably be amenable to tightly-controlled narrow stope mining.

Sufficient water is available from Erie Creek for mining and milling purposes.

Judging from previous operations anticipated gold ore in the area would probably be amenable to satisfactory recovery by conventional gold milling practice.

The wider portions of Erie Creek valley could be adapted for tailings disposal if environmental requirements were not prohibitive.

Smelting facilities are available at the nearby Cominco smelter at Trail.

## GENERAL GEOLOGY AND MINERALIZATION

A belt of rocks extending from south of Trail toward Salmo and thence north to the vicinity of Nelson is comprised largely of tightly folded sediments and volcanics of Jurassic age. Little<sup>(5)</sup> has subdivided these rocks as follows:

<u>Middle-Upper Jurassic</u>	Hall Formation: argillite, sandstone and conglomerate
<u>Lower Jurassic</u>	Rosslund Formation: chiefly andesitic flows Sinemurian Beds: argillite, argillaceous quartzite.
<u>Permian</u>	Ymir Group: argillite, slate, argillaceous quartzite.

Fold axes in the above rocks trend northeast to north and dips are normally steep ( $30^{\circ}$  to  $90^{\circ}$ ).

Granitic rocks of the Lower Cretaceous Nelson Batholith intrude the above-described belt of stratified rocks and occupy a large area to the north of it.

Smaller masses representing two later major intrusive events are also present in the area: the lower Cretaceous Valhalla granites and Tertiary Coryell syenites.

A great variety of dike rocks, related to one or another of the above-described intrusive and extrusive events, abound in the area.

Numerous gold and/or silver bearing quartz veins occur in the area in both Jurassic stratified rocks and in plutonic granites; they show some affinity for the contacts between the two. Some veins show probable genetic relationships to later dike rocks. Many of these veins have been economically exploited in the past.

More recently the area has been subjected to exploration for prophyry-type disseminated deposits and at

least one molybdenum occurrence of this type is currently showing considerable economic promise.

Rocks described in this section thus far lie immediately west of the Kootenay Arc a NNE to NNW trending arcuate fold-belt involving sedimentary and some volcanic rocks ranging in age from Proterozoic to Permian; this belt is well-known for its numerous carbonate-hosted lead-zinc deposits and contact skarn tungsten deposits.



GEOLOGY AND MINERALIZATION - GRAND UNION PROPERTY

The property straddles a roughly east-west contact between Nelson granodiorite underlying the north half of the property and interbedded andesitic volcanics, slates and argillites underlying the southern half. The stratified rocks may include members of both the "Rossland Formation" and "Sinemurian Beds" according to Little's classification<sup>(5)</sup>.

Outcrop distribution and inferred contacts are shown on Map C81-6-4 which is based on picket-line-controlled mapping done by Wayland S. Read in 1969<sup>(6)</sup>.

The following is a condensation of rock descriptions by both Read<sup>(6)</sup> and Cockfield<sup>(3)</sup>.

Post Mineral Dikes: Biotite lamprophyre, andesitic and basaltic dikes, feldspar porphyry, granite porphyry, coarse grained quartz-eye porphyry.

Pre Mineral Dikes: Diorite porphyry.

Nelson Granodiorite: Medium to coarse-grained, greyish white. Andesite (main mass south and west of contact with slates and argillites): hard, dense greyish-green, in part porphyritic.

Andesite (interbedded with slates and argillites): fine grained and rarely porphyritic.

Argillite: soft, finely laminated, grey colored.

Slates: harder than argillite and darker grey.

There is insufficient outcrop to reliably work out fold structure in the layered rocks. However, outcrop information combined with magnetic trends suggests that the regional north-south formational trend pertains south of the property but swings east-west parallel to the granodiorite contact on the property; this may be a reflection of an anticlinal axis mapped by Little along Erie Creek several kilometres south of the property.

The three main auriferous quartz veins (Second Relief, Inez and Rand) in the area lie mainly on adjoining property but since they have a bearing on possible mineralization on the Grand Union Property and do, in fact, project onto it, they are described below:

Second Relief Vein: strikes 058° and dips 76° NW; it lies along the NW contact of a 10 metre-wide diorite porphyry dike within altered andesitic volcanics (greenstone); the vein varies from a few centimetres to a maximum of four metres in width but is normally less than one metre in width. It was stoped almost continuously over a maximum horizontal length of 800 metres and down dip for a maximum distance of 480 metres (See stoped area in plan view on drawing C81-6-4); sketchy information in a various reports suggests it may have been terminated by a fault at the SW end and by pinching out of the vein on entering slates at the NE end. There is no specific information on the down dip extension. Most of the 250,000 short tons grading 0.39 ounces per short ton gold was recovered from this vein. Gold values are apparently associated with pyrite, pyrrhotite, chalcopyrite and minor molybdenite.

Inez and Rand Veins: These veins have a similar attitude to the Second Relief and occur within andesitic volcanics; they are generally narrower than the Second Relief varying from 20 to 90 cm in width. Some stoping was done from adits on these veins. Samples taken by the writer on the portion of the Inez vein which cuts across the northwest corner of the Digit Claim assayed as follows:

Sample No.	Width	Assay			
		Oz./s. ton		Gms./tonne	
		Gold	Silver	Gold	Silver
659	Selected Grab	1.96	10.28	67.2	353
660	37 cm.	0.70	4.14	24.0	142
661	30 cm.	0.60	3.60	20.6	123
662	Selected Grab	0.24	4.02	8.2	138

It may be possible to recover some good grade ore from an open cut or a cross cut adit on this vein. However, due to the limited strike length on the Grand Union Property, the northerly dip which will carry the vein off the property at depth and evidence the vein was previously stoped through to surface, the tonnage will be limited. Prior to embarking on any mining here the boundary should be accurately established by a surveyor.

Read (6) reports that the Inez and Rand Veins merge and are cut off by a fault near the No. 2 Adit portal; it is conceivable that the offset segment of the merged vein continues northeasterly onto the Grand Union Property; there is also a possibility it will be wider than either of the two individual veins and if it follows the pattern of the Second Relief vein it may improve as it approaches the andesite - slate contact.

A narrow, mineralized quartz vein, parallel to, and some 40 metres southeast of the Inez vein was recently exposed by bulldozing on the Digit claim.

Other mineralized quartz veins are reported in previous work on the Rhodes Fraction.

A portion of the mill tailings derived from former operations lies within the Grand Union Property. Assays on grab samples taken by the writer are as follows:

<u>Sample No.</u>	<u>Oz./s. ton</u>		<u>Assay</u>	
	<u>Gold</u>	<u>Silver</u>	<u>Gms./tonne</u> <u>Gold</u>	<u>Silver</u>
663	0.020	2.40	0.69	82.3
664	0.040	3.74	1.37	128

A sample of what appears to be pyritized wall rock in the rock fill tailings dam assayed as follows:

665	0.030	1.78	1.03	61.1
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## PROPOSED EXPLORATION PROGRAM

Although the andesites appear to be the most favorable hosts for gold mineralization in this area to date, both granite and sediments host gold deposits in other parts of the district. It is therefore proposed that a biogeochemical survey be conducted over the entire property, followed by trenching and/or diamond drilling to investigate any prominent gold anomalies established by the survey.

Samples of forest litter (leaves, needles and rotted vegetation to be collected at intervals of 50 metres along lines spaced 200 feet (61 metres) apart. The existing grid (with lines at intervals of 400 feet) should be cleaned out and re-chained and picketed at 50 metre intervals. Intervening lines may be run by chaining and flagging with frequent tie-ins to the picketed lines. Samples to be analysed for gold by neutron activation.

Geological mapping by Read <sup>(6)</sup> appears to have been adequate. However, some re-checking of outcrops, in particular to note alteration patterns is advisable.


Good anomalies established by the biogeochemical should be given priority for drill testing. However, in the event that such anomalies are not established the potential for an extension of the Inez-Rand vein system northeasterly onto Eva Fraction and Grand Union claims and/or the possibility for other veins parallel to those presently known is sufficiently good to warrant diamond drilling as outlined on drawings C81-6-5, 6 and 7.

Cost Estimate

<u>Phase I</u>	(21 field days plus 19 days for analysis and review = 40 days)	
(1)	Clean out, chain and picket old lines 17.7 km @ \$200 per km.	\$3540
(2)	Cut new cross-lines and tie-lines 7.2 km @ \$300 per line km.	\$2160
(3)	Biogeochemical sampling picketed lines 22 km. X 40 samples/km. X \$4 per sample	\$3420
(4)	Chain, flag and sample intervening lines 23.2 km. X 40 samples/km. X \$7 per sample	\$6496
(5)	Shipping and analysis of samples 1808 samples @ \$6.00	\$10848
(6)	Geological mapping and prospecting	\$6000
(7)	Provision for biogeochemical detailing	\$6000
(8)	Provision for possible bulldozer trenching and sampling	\$17436
(9)	Consulting & Supervision	<u>\$4000</u>
	Total Phase I	\$60,000
<u>Phase II</u>	(35 field days plus 15 days for analysis and review = 50 days)	
(1)	Provision for diamond drilling 1000 metres @ \$90 per metre	\$90,000
(2)	Sampling, assaying and logging	\$ 4,000
(3)	Consulting and Supervision	\$ 4,000
(4)	Miscellaneous	<u>\$ 2,000</u>
	Total Phase II	\$100,000
<u>Total Phase I &amp; II</u>	(90 days)	\$160,000

LIST OF REFERENCES

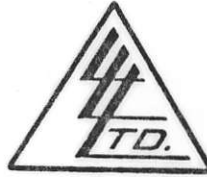
- (1) B.C. Minister of Mines Reports: 1896 to 1941.
- (2) Boyle, R.W. The Geochemistry of Gold and Its Deposits, Geological Survey of Canada Bulletin 280, 1976.
- (3) Cockfield, W.E. Lode Gold Deposits of the Ymir-Nelson Area, British Columbia, Geological Survey of Canada Memoir 191, 1936.
- (4) Dunn, C.E. Gold Biogeochemistry Investigations, Flin Flon Area, Saskatchewan Geological Survey, Summary of Investigations, 1980.
- (5) Little, H.W. Geological Survey of Canada Memoir 308, Nelson Map-Area, West Half, British Columbia, 1960.
- (6) Read, Wayland S. Geological-Geochemical-Geophysical Report on Rand Group, Erie Creek, Nelson Mining Division, B.C. 1969 (Unpublished report available from B.C. Ministry of Mines and Petroleum Resources files).
- (7) White M.V.W., Brooker E.J., Hoffman E.L. Geological and Geochemical Criteria Useful In Prospecting For Gold, Unpublished paper presented in 1980.

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J.S. Kermeen, M.Sc. P.Eng.

To: Mr. J.S. Kermeen,  
318, 333 - 25th Street East,  
Saskatoon, Sask. S7K 0L4



File No. 21706  
Date June 11, 1981  
Samples Rock

Certificate of  
ASSAY of  
LORING LABORATORIES LTD.

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER
"Rock Samples"		
659	1.960	10.28
660	.700	4.14
661	.600	3.60
662	.240	4.02
663	.020	2.40
664	.040	3.74
665	.030	1.78

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements  
made in advance.

*D. Enders*

Assayer

CERTIFICATE

I, JAMES SEATON KERMEEN, do hereby certify:

- (1) That I am a Consulting Geological Engineer with offices at 318-333 25th Street East, Saskatoon, Saskatchewan.
- (2) That I am a member in good standing of the Associations of Professional Engineers of British Columbia and Saskatchewan and am licensed to practice in Saskatchewan.
- (3) That I am a graduate of the University of Saskatchewan with the degrees of Bachelor of Science in Geological Engineering (1951) and Master of Science, Geology (1955).
- (4) That I have practiced my profession continuously for 29 years.
- (5) That I have personally visited the mineral property designated the Grand Union Property of Homestead Resources Inc., covered by the attached report and have reviewed all available technical data relating to the property.
- (6) That I have no interest, either directly or indirectly, in the property or securities relating to the attached report; nor do I expect to receive such interest.
- (7) That the attached report may be used as part of a statement of material facts related to the raising of funds for further exploration of property covered by this report.

J.S. Kermeen, M.Sc., P. Eng.  
Consulting Geological Engineer