



Province of  
British Columbia

Ministry of  
Energy, Mines and  
Petroleum Resources  
GEOLOGICAL SURVEY BRANCH

ASSESSMENT REPORT  
TITLE PAGE AND SUMMARY

|   |                             |
|---|-----------------------------|
| TITLE OF REPORT [type of survey(s)]<br><b>REPORT ON GEOLOGICAL SURVEY OF PAR CLAIMS</b> | TOTAL COST<br><b>\$1825</b> |
|---|-----------------------------|

AUTHOR(S) W.R. Bergey, P.Eng. SIGNATURE(S) \_\_\_\_\_

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) \_\_\_\_\_ YEAR OF WORK \_\_\_\_\_

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) 3134056 May 12/89

PROPERTY NAME PAR

CLAIM NAME(S) (on which work was done) PAR 1 to PAR 8, inclusive

COMMODITIES SOUGHT Cu, Ag, Au

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN 092H15E169

MINING DIVISION Nicola NTS 92H/15E

LATITUDE 49 ° 50 ' 00 " LONGITUDE 120 ° 38 ' 30 " (at centre of work)

OWNER(S)

1) Kenneth Richard Graham 2) \_\_\_\_\_

MAILING ADDRESS

1752 Houston St.

Merritt, B.C.

VIK 1A9

OPERATOR(S) [who paid for the work]

1) same 2) \_\_\_\_\_

MAILING ADDRESS

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Nicola Group, Western facies, volcanogenic massive sulphides

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS 05405, 05750

(OVER)

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GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT

25,965

**REPORT ON GEOLOGICAL SURVEY  
PAR CLAIMS**  
NICOLA MINING DIVISION, BRITISH COLUMBIA

**INTRODUCTION**

Exploration work has been carried out on intermittently in the area covered by the PAR Claims since 1962. This work included a magnetometer survey followed by more than 2800 metres of diamond drilling but the results of the work were not released to the public domain in Assessment Reports or otherwise. Moreover, it appears that no surface geological mapping was carried out to assist in the evaluation of the drilling results. Accordingly, my principal recommendation to the property owners was for a geological survey.

The present report describes geological mapping covering the area of the previous diamond drilling and the projected extension of the mineralized zone to the north and south. The assessment work was carried out on May 1 and May 2, 1999; the present report also includes data based on prior observations.

**PROPERTY**

The PAR property comprises eight 2-post claims numbered PAR 1 to PAR 8, inclusive. The recorded owner is Kenneth Richard Graham of Merritt, B.C.

The claims were staked on deeded land belonging to the Quilchena Cattle Company.

**LOCATION, ACCESS, CHARACTER OF THE REGION**

The PAR claims are located in the south-central portion of the Interior Plateau of British Columbia. They lie about 30 kilometres south of the town of Merritt, and 180 kilometres east of Vancouver.

Access to the property from Merritt is via Highway 5A (Merritt-Princeton Hwy.) as far as a road junction 6 kilometres south of Aspen Grove, thence along Highway 223 (Coalmont Road) to Km. 6, where a ranch road provides access to the west boundary.

Rolling till-covered hills occupy the western and central parts of the claims. East of the narrow fault-controlled valley of Otter Creek the land slopes abruptly toward the hills beyond Highway 5A..

The vegetation is a mixture of pasture and open forest, with the former dominating in the central part of the claims. Most of the rock exposures are found along the ridge in the south-central part of the property and along the west bank of Otter Creek.



LOCATION MAP  
PAR CLAIM GROUP  
BRITISH COLUMBIA

## **PREVIOUS WORK**

The only published geological maps of the general area are reconnaissance in scope. The most recent of these is a 1:250,000 sheet published by the Geological Survey of Canada in 1989 (Monger, 1989). This map is mainly a synthesis of older published data along with some new information from theses and localized mapping. It is evident that little field work was carried out within the area under review. [The area on the property that contains most of the outcrops is shown as overburden covered.] A more detailed study of the volcanic belt that underlies the PAR claims was carried out by B.C. government geologists (Preto, 1979). Unfortunately the property falls outside of their map, although some of the geological units project into the area covered by the present report.

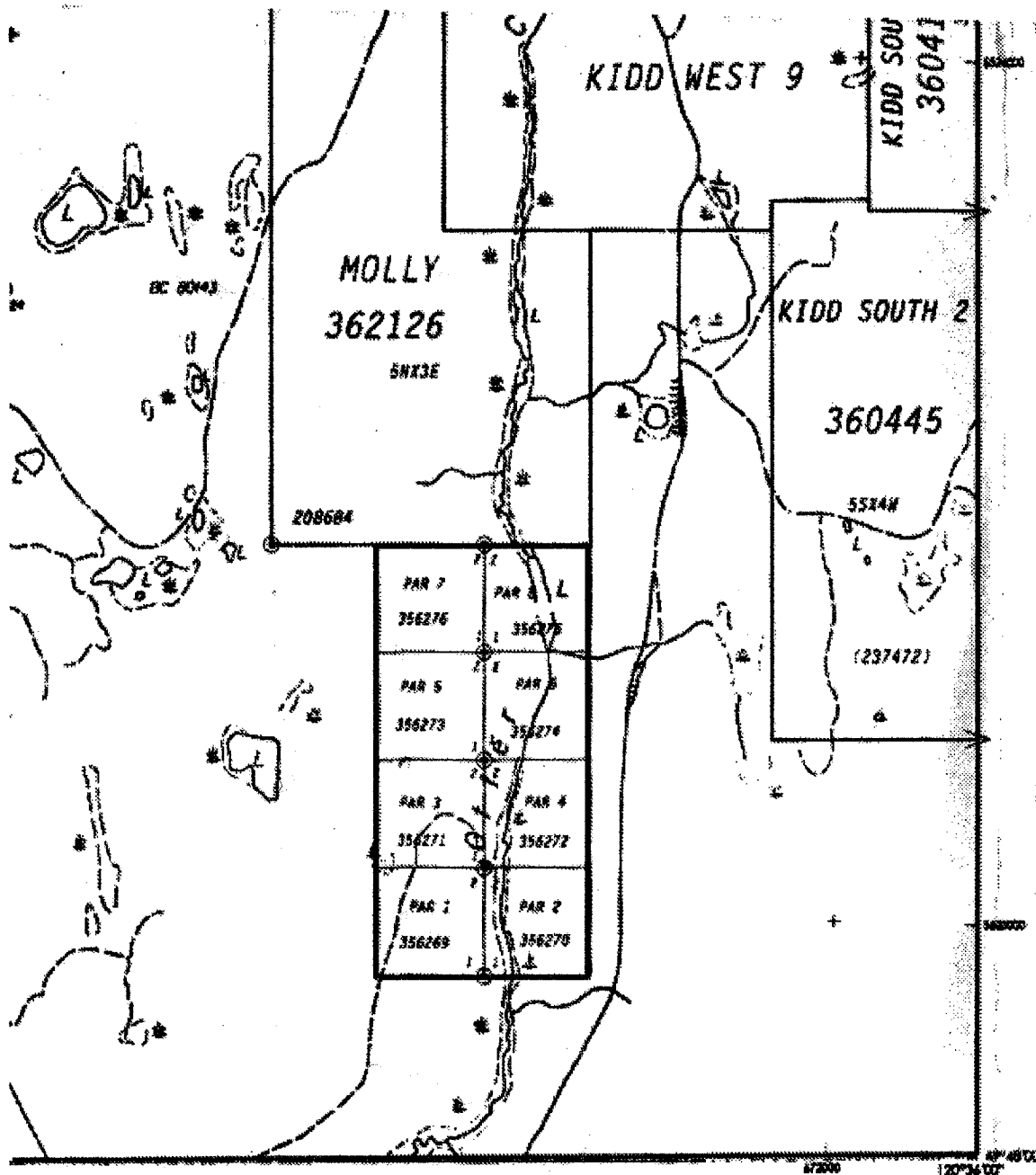
Tormont Mines Ltd. drilled 18 holes totalling 2759 metres between 1962 and 1965, following completion of a magnetometer survey in 1962. Andy Robertson drilled an additional hole 123 metres in length during 1975 and 1977. Although the area covering the main showings has been claimed almost continuously since that time, there is no record of any exploration work having been carried out. There are no assessment reports covering the property or its environs except for the Robertson drill hole, and no logs or other geological data are included. Fortunately, I was able to obtain copies of the Tormont logs along with a location map of the drill holes.

An aeromagnetic map published by the G.S.C. in 1973 at a scale of One Inch to One Mile (Aspen Grove Sheet 92H/15) has proven to be useful in interpreting certain geological features.

## **REGIONAL GEOLOGY**

The government mapping indicates that the region is underlain by a north-trending belt of Upper Triassic volcanic rocks assigned to the Nicola Group. The eastern margin of the Allison Lake granodiorite pluton (also Late Triassic in age) lies about 200 metres west of the property boundary. Small bodies of granitic intrusive rock, coeval in part with the volcanic rocks, are widely distributed within outcrop area of the Nicola group.

The only other regional geological feature shown on the government maps for the area covered by the present report is the northern extension of the Allison Creek fault. Preto (1979) considered this fault to have been of fundamental importance during the Late Triassic in that it formed the boundary between the Central and Western volcanic facies of the Nicola Group. Monger (1989) interpreted the fault extension [his Allison fault] to be a northwest-trending structure; his map denies the existence of a major fault along Otter Creek.



# CLAIM LOCATION MAP

## PAR CLAIM GROUP

### NICOLA MINING DIVISION



[COPIED FROM M.T.R. MAP 092H087]

FIGURE 2

Aside from the obvious linearity of Otter Creek for a number of kilometres, several lines of reasoning suggest a major fault zone, based in part on my work on adjoining properties:

- 1) A pronounced aeromagnetic "low" extends north from Allison Creek, follows Otter Creek, and continues north beyond Aspen Grove -- more than 40 kilometres in total;
- 2) A very distinct, narrow magnetic "low" is centred on the creek on the adjoining claims to the north;
- 3) Volcanic rocks along the creek to the north are highly shattered, altered and veined.

## **GEOLOGICAL MAPPING**

All of the diamond drilling on the property covered in the present report was concentrated in an area of about 15 hectares in the south-central part of the claims. All of the holes were drilled at a bearing of N56°W, ostensibly to test a zone of mineralization partially exposed along a NNE-trending ridge. The intent in planning my recent geological work was to map the drilling area and the projected extensions of the targeted zone. Fortunately, most of the outcrops on the property lie within this area. Little mapping was done east of Otter Creek since my previous work in the region strongly suggested that the package of volcanic rocks that hosts the mineralization does not extend beyond the Otter Creek fault.

Almost all of the exposures within the map area are composed of felsic volcanic rock. Lapilli tuff and coarse-grained ash tuff predominate. Most samples contain crowded pale-gray fragments with only small amounts of quartz distributed in the clasts and as crystals in the groundmass. Andesitic fragments are not uncommon in some samples. Within the drilling area quartz is much more abundant and the commonest material is quartz-rich crystal-lithic tuff. The limits of this rock type were not defined due to the limited scope of the project.

The low northeast-trending ridge in the south-central part of the claims is cored mainly by andesitic tuff. This rock tends to be highly fractured and limonitized at surface. There are local patches of magnetite, along with seams and disseminations of hematite. My mapping indicates that the andesite has a thickness of about 70 metres. [The drilling results suggest that the andesitic unit contains intercalations of felsic volcanic rocks, and that there are thin andesite layers within the felsic volcanic rocks.] The main andesite unit is exposed for a length of about 200 metres along the ridge. The logs of holes 35 and 24 indicate that the unit extends for at least another 100 metres to the northeast.

Quartz porphyry crops out on both sides of Otter Creek within the drilling area. This is a highly siliceous rock containing abundant rounded quartz crystals in a very fine-grained pale-gray matrix. The composition of the porphyry, but not the texture, appears to be very similar to the adjacent felsic volcanic rocks. It should have been possible to resolve the relationship from the drilling. However, only one drill hole (H-30 @ -77.5°) penetrated a substantial section of rock that was logged as porphyry. Hole H-27, drilled from the same site at -60°, was logged almost entirely as "sandstone." [Presumably the term "sandstone" refers to the felsic ash and lapilli

tuffs. In earlier logs the term “underdeveloped skarn” was used for similar rocks.] The porphyry body crosses the Otter Creek fault without apparent offset, suggesting that it is younger than the felsic volcanic rocks, which appear to be confined to the west side of the fault.

Exposures of granitic intrusive rock designated in the field as quartz diorite are fairly common on the properties immediately to the north of PAR. However, only a single outcrop of this material was noted in the present investigation. This lies close to the north boundary of the claims and is part of a discontinuous body of similar rock that appears to follow the Otter Creek fault.

A surficial breccia composed of felsic volcanic fragments in a ferruginous matrix locally overlies felsic bedrock west of Otter Creek in the central part of the property.

The volcanic rocks in the area commonly are sheared and foliated, but I was unable to identify any dominant orientations. No bedding was observed. The drill logs describe bedding indications close to the contact between the felsic rocks and andesite; these observations suggest that the volcanic rocks dip to the east at 50° to 60°.

No direct field evidence confirmed the validity of the Otter Creek fault on the property. The information contained in the drill logs suggests that dissimilar rocks are juxtaposed at Otter Creek but the evidence is somewhat equivocal due to the uneven quality of the logging.

## **MINERALIZATION**

The original discoveries on the property evidently were made in the andesite unit that follows the ridge in the south-central part of the present property. Several trenches were excavated, and the four initial diamond drill holes were dedicated to testing this zone. Mineralization in the trenched areas consists of minor amounts of chalcopyrite associated with heavily disseminated pyrite and patches of magnetite. Vertical drill hole 75-1 tested this zone to a depth of 123 metres. The core contained weak copper mineralization throughout. The best section of 24.4 metres reportedly assayed 0.2% Cu and 2.14 grams/tonne Ag (Assessment Report 5750).. Earlier holes drilled toward the northwest encountered similar mineralization, with the best section grading 0.33% Cu and 15 grams/tonne Ag over 5 metres.

The felsic volcanic rocks are limonite stained in most outcrops and I observed very minor amounts of chalcopyrite along with weakly disseminated pyrite in a number of cases, but there is no evidence of significant copper mineralization at the surface. However, a drilling cross-section encountered good copper values in two drill holes southeast of the showings on the ridge:

H-26 – 5.8 metres @ 1.4% Cu, 4.3 grams/tonne Ag;

H-27 – 6.7 metres @ 1.9% Cu, 72 grams/tonne Ag.

Lower grade mineralization was encountered to the north and south of these holes



The rock in the vicinity of the intersections is logged as "sandstone" with heavy to massive impregnations of "marcasite mixed up with hematite " and "weak disseminations of chalcopyrite." The intersections in H-26 and H-27 suggest that the mineralization dips about 45° to the southeast, conformable with the bedding indications in previous holes.

## CONCLUSIONS AND RECOMMENDATIONS

Prior to carrying out the 1999 field work I had concluded that the mineralization in the felsic rocks was volcanogenic in origin, based on an examination of the drill logs and some of the remaining (unlabeled ) core. The apparently conformable relationship of the copper zone to the stratification and the description of the massive sulphides in the logs would seem to indicate such an origin. However, the identification of a porphyry intrusion along a major fault structure close to the mineralized zones suggests the possibility that the mineralization could be epigenetic.

It is recommended that geological mapping be carried out in greater detail within the drilling area. A detailed magnetometer survey of this area also would be useful in geological interpretation.

## REFERENCES

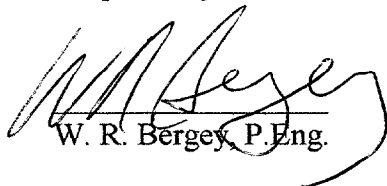
EMPR Assessment Reports 5760 and 6405

Geol. Surv., Canada: *Aspen Grove , British Columbia*; Geophysical Series (Aeromagnetic), Map 8532G

Monger, J.W.H., 1989: *Hope, British Columbia*; Geol. Surv., Canada, Map 41-1989

Preto, V.A., 1979: *Geology of the Nicola Group Between Merritt and Princeton*; B.C. Ministry of Energy, Mines and Pet. Resources, Bull.69

Respectfully submitted,



W. R. Bergey, P.Eng.

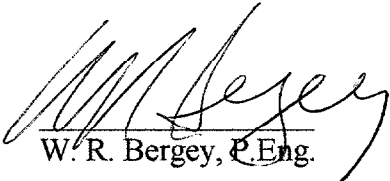
## STATEMENT OF COSTS

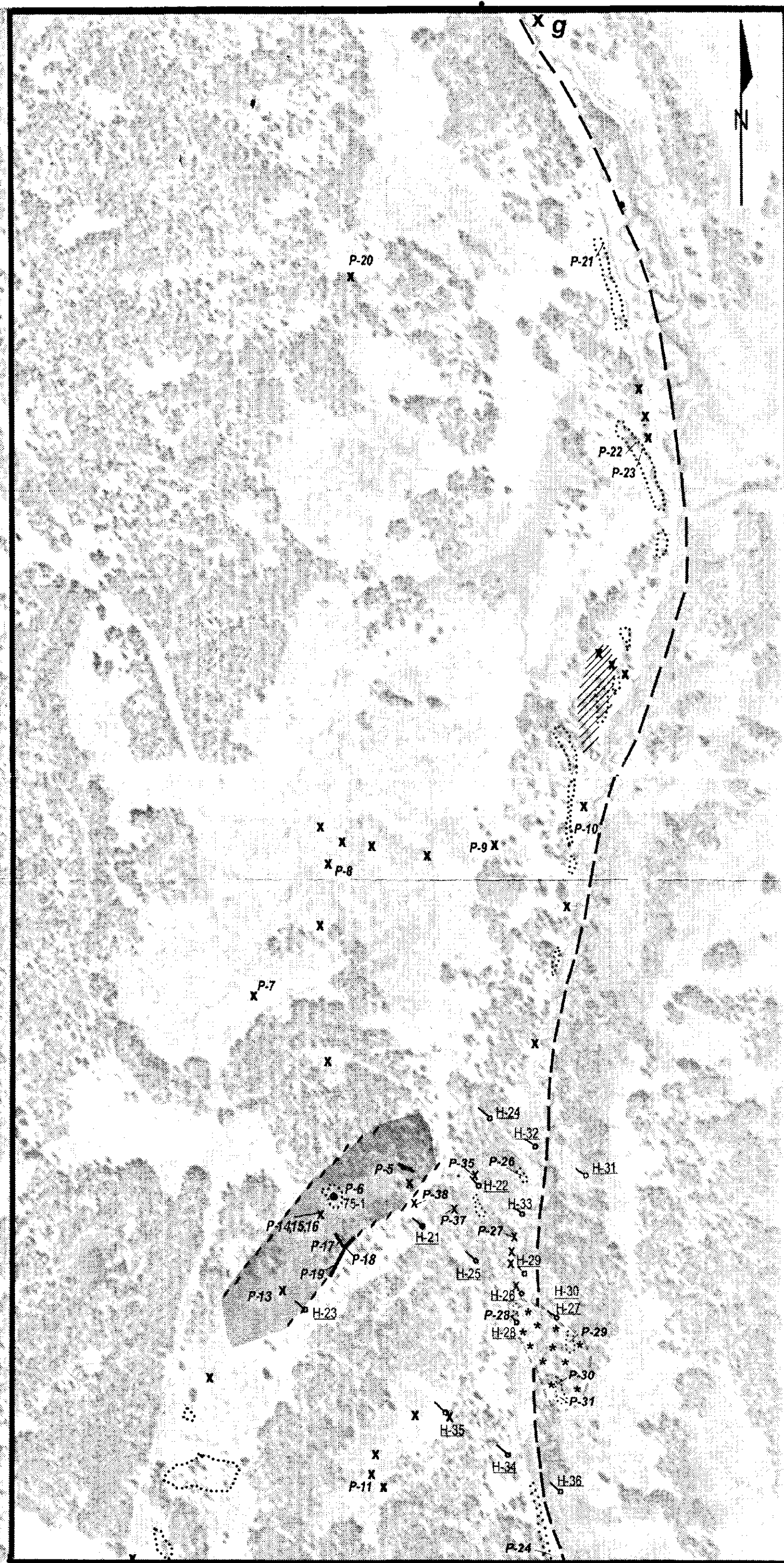
| <u>Type of Work</u>      | <u>Dates</u> | <u>Days</u> | <u>Cost/day</u> | <u>Cost</u> |
|--------------------------|--------------|-------------|-----------------|-------------|
| Geological mapping       | May 1- 2     | 2           | \$400           | \$800       |
| Map & report preparation |              | 2           | 400             | 800         |
| Accommodation & meals    |              |             |                 | 150         |
| Vehicle expenses         |              |             |                 | 75          |
|                          |              |             | TOTAL COST      | \$1825      |

## STATEMENT OF QUALIFICATIONS

I, William Richard Bergey of 25789 - 8<sup>th</sup> Avenue, Aldergrove, British Columbia do hereby certify that:

1. I am a Professional Engineer in the Province of British Columbia (Geological).
2. I have been employed in mining and mineral exploration for the past 52 years..
4. I personally conducted all of the work on the PAR Claim Group during 1999.

  
W. R. Bergey, P. Eng.

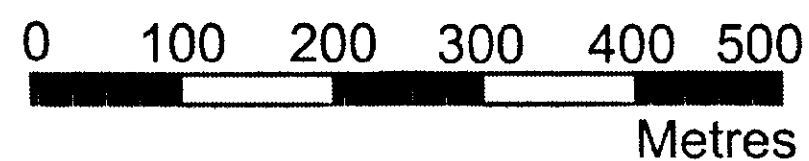


## GEOLOGICAL MAP

## PAR CLAIMS

NICOLA MINING DIVISION, B.C.

SCALE 1 : 5000



## EXPLANATION

- /// Ferruginous breccia present
- g** Granitic intrusive rock
- \* \* Quartz porphyry
- Andesitic volcanic rocks
- [Remainder of exposures are felsic pyroclastic rocks]
- - - Interpreted fault zone
- x Small outcrop
- Outcrop area
- Trench
- 75-1 ● Diamond drill hole (located)
- H-29 ○ Diamond drill hole (approximate)
- P-6 Rock specimen

[To accompany "Report on PAR Claims" by W.R. Bergey]

FIGURE 3