

860125

1990 DIAMOND DRILLING PROGRAM

of the

HEARNE HILL BRECCIA PIPE

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January 1991

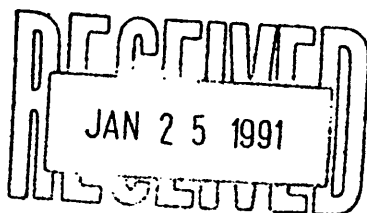


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APPENDIX I : MAP AND SECTIONS

HEARNE HILL - DIAMOND DRILL PLAN

SECTION 29200 N
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SECTION "297" (TGS grid)

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1. SUMMARY

Diamond drilling on the Hearne Hill property during the 1990 field season did not appreciably extend the high grade breccia mineralization. Post mineral intrusives were intersected that appear to have invaded and replaced the zone of mineralization below the 3300 foot (1000 meter) elevation. Reserves are not sufficient to support an underground operation.

The property nonetheless contains a significant concentration of copper mineralization. The stage of development at Hearne Hill places it second in importance to the Morrison Lake property among the undeveloped properties in the Babine region.

Generation of more drill targets on Hearne Hill will require a return to "grass-roots" exploration. Geological mapping, supported by geochemical and geophysical surveying will be required. This should be preceded by analysis of the present database. The expenditure of several hundred thousand dollars over a period of two to three years may be anticipated in the development of another target.

The option agreement dated July 21, 1989 between Noranda Minerals Inc. (Bell Mine) and the optionors Peter F. Bland and David J. Chapman expired on January 1, 1991. Any future option agreement must reflect the time and expenditure necessary to generate further targets.

No further diamond drilling is recommended at this time.

2.0 INTRODUCTION

Diamond drilling during the 1989 field season intersected a small but relatively high grade copper deposit on Hearne Hill. Although the deposit is related to porphyry copper mineralization, it represents a style of mineralization that is new to the Babine region. Six NQ diamond drill holes were bored for a total of 1537 feet (468 meters). The first four holes intersected the mineralized breccia. Hole H89-1 was particularly well mineralized, with an intersection of 75 feet (22.9 meters) with an average grade of 2.75% Cu. The hole was lost in material grading > 5% Cu.

During the 1990 field season a diamond drill program was undertaken to test the vertical extent of the deposit.

2.1 WORK DONE:

A program of diamond drilling to test the vertical extension to the breccia was outlined in a memorandum dated January 8, 1990. The recommendation proposed the drilling of 10 holes for a total of 5380 feet (1640 meters). Estimated expenditures were \$179,500.00. Ron MacArthur of Noranda Exploration requested a more limited program of 1350 to 1500 feet (411 to 460 meters). Budgetary constraints of \$53,750.00 were set for the project, including \$36,000.00 for diamond drilling.

During the period August 4, 1990 to August 12, 1990, 5 holes were drilled for a total of 2807 feet (856 meters). The additional holes were added at the recommendation of P. Ogryzlo following encouraging results from Hole H90-3. Total expenditures for the program in 1990 were approximately \$60,000.00. Work was severely hampered by a lack of water to service the diamond drill. The water supply dried up during exceptionally hot weather at the beginning of August. It was necessary to make further expenditures on bulldozer work to develop a new water supply, and to request helicopter support for moving the pump.

All of the work was performed on the Hearne 2 two post mineral claim.

3.0 PROPERTY DESCRIPTION

3.1 PROPERTY NAME: Hearne Hill

3.2 LOCATION: NTS 93M 1W
 Lat. 55° 11'
 Long. 126° 16'
 Elevation: 3600 feet (1100 meters)

The discovery showing is approximately 2.2 km southeast of the center of the sub-economic Morrison Lake porphyry copper deposit controlled by Noranda Exploration.

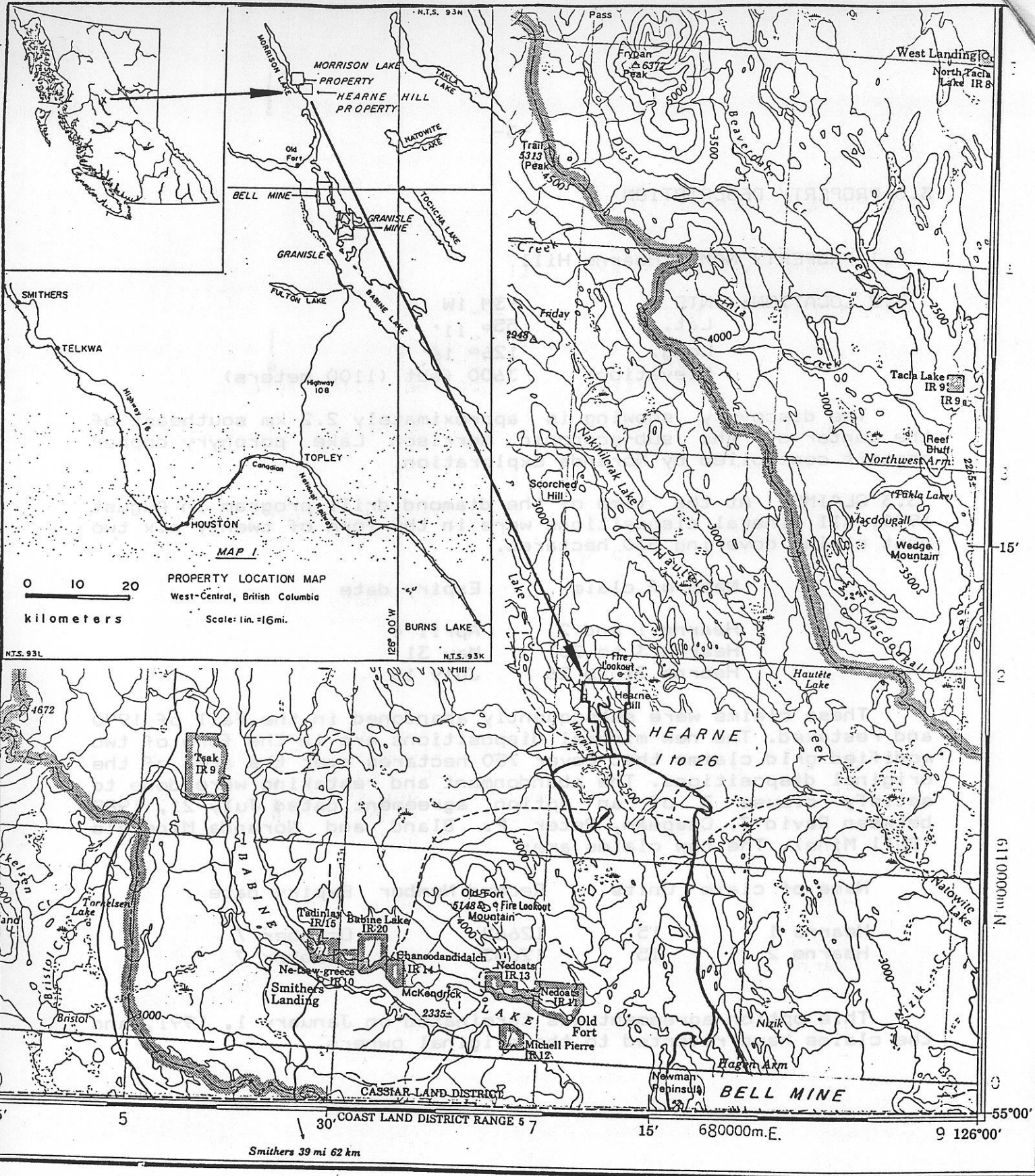
3.3 CLAIMS: At the time of the diamond drill program in August 1990, all mineral dispositions were in the form of twenty six two post claims covering 530 hectares.

Name of claim	Expiry date
Hearne 1 and 2	April 4
Hearne 3 to 20	May 31
Hearne 21 to 26	July 10

These claims were subsequently abandoned in the fall of 1990 and restaked. The new mineral dispositions are in the form of two modified grid claims that cover 750 hectares over the area of the original dispositions. The abandonment and restaking were done to satisfy clause 3 of an option agreement dated July 21, 1989 between David J. Chapman, Peter F. Bland and Noranda Minerals (Bell Mine). The new claims are:

Name of claim	Units	Record Number	Expiry date
Hearne 1	15	12662	October 7
Hearne 2	15	12663	October 7

This option agreement was terminated on January 1, 1991, and the claims have reverted to the original owners.



LOCATION MAP
HEARNE HILL PROPERTY
NTS 93 M
SCALE 1:250,000

4. ACCESS

Road access is available from the Bell Mine. The Northwood Pulp and Timber logging road on the eastern side of Babine Lake provides year round access to within 4 km of the property. A four wheel drive exploration road intersects the Northwood road at Km 40, a distance of 21 km north from the minesite. The intersection is approximately one km east of the Morrison bridge. Access is then by four wheel drive for an additional distance of 4 km north to the 3600 foot elevation on Hearne Hill.

The Bell Mine and concentrator is accessible from Smithers, B.C. by 150 kilometers of paved road to the Village of Granisle. Access is then a further 14 km by gravel road to the Noranda Minerals ferry slip on the western shore of Babine Lake. Year round access to the Bell minesite is by a further 3.5 kilometer ferry crossing of Babine Lake.

5. PREVIOUS WORK

The Babine Lake region has been actively explored since the 1920's. Commercial production began with the commissioning of the Granisle Mine in 1966, followed by the commissioning of the Bell Mine in 1972. The Granisle Mine is currently dormant, and removal of the concentrator was well underway in late 1989. The Bell Mine produces ore at a rate of some 17,000 tons per day from an open pit mine. Some 180 tons per day of copper-gold concentrate are extracted from the mine production.

The presence of copper mineralization has been known for some time on Hearne Hill. Previous work on the property has been extensive. A geochemical survey was done in the late 1960's (Diron, 1967). The geochemical survey was followed up by bulldozer trenching that unearthed the breccia boulders still visible in the trench at the 3600 foot (1100 meter) elevation. These boulders are identified as the "discovery showing" on previous and current maps. Further exploration consisted of induced polarization and magnetic surveys, which culminated in diamond drilling. The operator at the time was the Texasgulf Sulphur Company. Twelve diamond drill holes totalling some 6000 feet were completed. The results of the diamond drilling revealed the probable occurrence of a Babine style porphyry copper deposit similar to the Bell, Morrison, and Granisle deposits. The copper grades revealed by the program suggested the grade for the deposit would be in the order of 0.20% Cu. The drilling failed to intersect the mineralized breccia, although the lower portion of HH-1 (1967) now appears to be in the dolomite cemented footwall portion of the pipe. Copper grades were not considered to be sufficiently high to support exploitation of the deposit.

The property essentially lay dormant until the present, although Canadian Superior Exploration briefly pursued a program of percussion drilling. Results of this program are not known. The deposit was acquired by the present owner Mr. Dave Chapman in 1989. A limited program of trenching on the old showings with a skidder mounted backhoe rekindled interest in the property.

The property was acquired by Noranda Minerals Inc. (Bell Mine) subject to an option agreement dated July 21, 1989. Exploration was undertaken immediately. The original Texasgulf baseline was scrubbed out, and grid lines were laid out at 200 foot spacings tied to the original Texasgulf 300N by 300E hub.

Soil sample results relocated the original anomaly, and revealed that the anomaly was essentially in place over the mineralization. Diamond drilling was therefore recommended without further field reconnaissance.

Six diamond drill holes were bored in the fall of 1989 for a total of 1537 feet (468 meters). The objective in choosing locations was primarily to see if the mineralization exposed at surface had any vertical continuity, and secondly to establish the attitude of the mineralization.

Four holes intersected the mineralization. Intersections on the hangingwall and footwall provided sufficient information for the solution of three point problems. Additional points were available from the mapped positions of the hangingwall and footwall at surface. Hole H89-1 was lost in mineralization at 270 feet (82 meters) when the rods stuck in a mud seam. The last core run was recovered, including the mud seam which graded 3.32% Cu. Holes H89-1 and H89-2 were plotted on Section "297" for comparison with hole HH-1 (TGS, 1967). Intersections of interest are tabulated as follows:

H89-1 drilled parallel to mineralization.

SUMMARY OF RESULTS - 1989 PROGRAM

HOLE NUMBER	FROM feet(meters)	TO feet(meters)	WIDTH feet(meters)	% Cu
H89-1	190.0(57.9)	227.5(82.3)	37.5(11.4)	1.34
	227.5(69.3)	270.0(82.3)	42.5(12.9)	3.61
H89-2	45.0(13.7)	65.0(19.8)	20.0(6.1)	1.84
	65.0(19.8)	85.0(25.9)	20.0(6.1)	2.68
	85.0(25.9)	130.0(39.6)	45.0(13.7)	1.10
H89-3	60.0(18.3)	77.5(23.6)	17.5(5.1)	2.11?
H89-4	97.5(29.7)	160.0(48.8)	62.5(19.1)	0.78

Section shows $\leq 1.73\%$ Cu.

The overall trend of the breccia deposit is N 10°E. The geometry of the deposit indicates that the hangingwall dips approximately 70° to the east and the footwall dips approximately 80° to the east.

6.0 1990 DIAMOND DRILL PROGRAM

The object of the program was to test the vertical extension of the mineralized breccia. Five NQ size holes were bored for a total of 2807 feet (856 meters). Total drill cost was \$50,721.10, of which Noranda Exploration contributed \$16,088.95 and the Bell Mine contributed \$34,632.15. Total project cost was in the order of \$60,000.00.

Hole H90-3 was the only hole to intersect the full width of the breccia. Mineralization was intersected over a width of 80 feet (24.4 meters) with an average grade of 0.67% Cu, 0.05% Mo and 0.005 OPT Au. Holes H90-1 and H90-5 also intersected sections of the mineralized breccia. The target area, however, was largely occupied by post mineral intrusions of biotite feldspar porphyry, including a massive unit of bleached white BFP similar to the post mineral QFP body that has replaced approximately one-third of the Bell orebody. Holes H90-2 and H90-4 also intersected post mineral intrusions. It is possible that hole H89-6 intersected the same unit.

SUMMARY OF RESULTS - 1990 PROGRAM

HOLE NUMBER	FROM feet(meters)	TO feet(meters)	WIDTH feet(meters)	% Cu
H90-1	340.0(103.6)	400.0(121.9)	60.0(18.3)	0.39
	(includes)372.5(113.5)	395.0(120.4)	17.5(5.3)	0.59
H98-2	380.0(115.8)	691.0(210.6)	311.0(94.7)	0.18
H90-3	80.0(24.4)	390.0(118.9)	310.0(94.5)	0.31
	(includes)305.0(93.0)	385.0(117.3)	80.0(24.4)	0.67
H90-4	110.0(33.5)	465.0(141.7)	355.0(108.2)	0.22
H90-5	Weakly mineralized over		557.0(169.8)	0.11
	(includes)Minor breccia		5.0(1.5)	0.56

All core was photographed, split, and crushed at the Bell minesite. Analyses were performed at the Bell Mine laboratory. Analysis was performed by standard acid digestion followed by atomic absorption spectrophotometry. The split core and crushed rejects are currently under covered storage at the Bell plantsite, but will be returned to the optionors early in 1991.

Survey control was established by transit and stadia survey beginning from the 300N by 300E hub on the Texasgulf baseline. Azimuth was established by backsighting the 300N by 298E hub. Elevation of the 300N by 300E hub was established at 3600 feet (1097 meters) by Gishard altimeter, using the Morrison Creek bridge at 2400 feet (731.5 meters) as base elevation. All holes were surveyed.

All diamond drill records have been recorded in a database using the NORMIN series of programs. These programs were used to generate the maps, sections, and drill logs included in Appendices I and II. Lithology was coded into units that are consistent with coding used at the Bell Mine.

7.0 GEOLOGY, MINERALIZATION, and ALTERATION

7.1 GEOLOGICAL SETTING:

Hearne Hill is underlain by volcanic rocks of the lower to middle Jurassic Hazelton Group (Richards, 1973). The volcanic rocks on the property have been tentatively associated with the submarine Kotsine facies of the Sinemurian Telkwa formation (Tipper and Richards, 1976). The volcanic rocks are characterized by waterlain grey lapilli-crystal tuffs and grey andesite. Associated sedimentary rocks are gritty greywackes, green siltstones and buff felsic tuff.

These rocks have been intruded by porphyritic intrusions of the 50 my Eocene Babine igneous suite. Mapping by Texas Gulf geologists indicates the Eocene biotite-feldspar porphyry (BFP) intrusives are in the form of a series of northeasterly trending dykes. The intrusives are compositionally equivalent to a diorite or a quartz diorite. The BFP that is exposed on the 300N baseline near 300E is a dark, hard, biotitized BFP similar to rocks observed in the Morrison Lake deposit. There is no well defined intrusive center of the BFP similar to the centers noted at the Bell Mine (Carson et al 1976) and at the Morrison deposit (Carson and Jambor, 1976). Porphyry copper related mineralization consists of chalcopyrite and minor bornite filling fractures, minor disseminations of chalcopyrite, and traces of molybdenite. The style of mineralization suggests a relatively deep setting for the environment of emplacement.

Notes: chalcocopy @ 387' in H90-5, f reported by Newell (1962).

A distinctive phase of the BFP intrusions appears to be either very late or post mineral in age. The rock is a massive white BFP with intense sericite-pyrite alteration. Plagioclase is soft, white, and completely altered to sericite. Biotite is bleached pale brown to white and is sericitized as well. The massive unbroken structure suggest that the rock was emplaced after the structural events that are evident in most of the other units observed. The rock is similar in appearance to the QBFP (QFP) post mineral phase that occupies the southeastern portion of the Bell orebody, but lacks the quartz phenocrysts.

It is now apparent that the intrusions on Hearne Hill are multiphase, with more than one intermineral or post mineral intrusion of BFP.

7.2 MINERALIZATION

Two styles of mineralization are present. These are:

1. Porphyry Copper Mineralization.

Chalcopyrite, bornite and molybdenite occur as fracture fillings and disseminations in the biotite feldspar porphyry and the adjacent volcanics. This mineralization is due to a large but weakly developed porphyry copper system of the Cu-Mo type.

During the 1990 program, it became evident that many of the biotite feldspar porphyry units observed in the drill core were intermineral or post mineral in age. The erratic nature of the copper distribution is caused by these late stage intrusions. It was realized that volcanic rocks in contact with late stage BFP were invariably higher in grade. The volcanics obviously were deposited long before any mineralizing event, and have been subjected to all stages of mineralization. When the distribution of copper in the volcanics alone is examined, there is a strong suggestion that grades are increasing to the south and west of the breccia pipe.

Mineralization trends in the volcanics deserve far more attention. Grades are within the range of grades found within the volcanics adjacent to the Bell and Granisle deposits, namely from 0.15% to 0.40% Cu. Although the distribution of mineralization is greatly complicated by the post mineral intrusions, there is still potential for the development of a porphyry copper style of deposit. Pursuit of grade trends in the volcanics may indicate a center of mineralization.

2. Breccia Mineralization.

Chalcopyrite may be seen filling open spaces between rock fragments in a clast supported breccia. Open space in the breccia prior to mineralization comprised 5% to 20 % of the volume of the rock. Interclast porosity remains at 2% to 8% of the volume of the rock. Pyrite may also be seen as breccia cement, but is subordinate to chalcopyrite. Pyrite disappears as breccia cement at depth, with chalcopyrite along with lesser chalcocite being the only sulphide species present.

Chalcopyrite and pyrite plug the porosity between angular clasts of biotite feldspar porphyry. Chalcocite may be seen as rims on chalcopyrite in each cavity. The largest observed cavity filled with chalcopyrite is in the order of two feet (60 centimeters) and grades 16% Cu. Copper grades are highest adjacent to the hangingwall, which may have acted as a trap for the mineralization. Grades drop dramatically towards the footwall, where the porosity is plugged with dolomite and rock flour.

There appears to have been little movement or milling of the clasts. The breccia fragments appear to have simply accumulated as a subterranean talus that caved from the roof in a large cavern or steeply dipping pipe. The formation of the pipe is uncertain. It is possible that the void resulted from solution of the rock by circulating corrosive fluids related to the porphyry copper mineralization seen elsewhere on Hearne Hill.

Supergene processes have redistributed the copper grades. The oxidized breccias in the surface trenches reveal limonite cement replacing sulphide open space filling. Malachite and azurite may also be seen as breccia cement. Chalcocite may be seen as rims on chalcopyrite in most breccia cavities, and rarely may be seen almost completely replacing masses of pyrite. Total sulphide content in the breccia is 10% to 15%, of which up to 1% may be comprised of chalcocite.

There is compelling evidence that the mineralization has been derived by solution and redistribution of the porphyry copper mineralization found in the carbonate cemented clasts that collected against the footwall. Although these clasts are lithologically identical to the wallrocks, copper grades in the footwall breccia are in the order of 0.01 % Cu to 0.3 % Cu as compared to 0.10 % Cu to 0.20 % in the adjacent rocks from which they were apparently derived. The carbonate open space filling appears to post date the sulphide open space filling.

Rock flour in talus?!
Rock flour in
Why not Late models?
i.e. fault controlled by dykes.

H90-3 - 306 - 352' - clasts ROUNDED to lower. • Rock flour

FAULT MODEL

Gouge + BFP & vol. frag H90-4 @ 310'
BFP gouge marks FN of Rv in " @ 386'

KBAR MODEL
 • Rounded cobble in angular populat. in Boulder.

Rv PIPE/dykes Model

Rock flour H90-5 @ 456'
Mixed BFP/vol clasts, contact error.
Rounded clasts + rock flour H90-3 @ 306'
Rv flour + int. cts (?) H90-1 @ 258'

The breccia clasts may be lithologically identical to the enclosing wallrocks, making the breccia virtually monolithologic. Heterolithic breccias were observed in holes H90-3 and H90-1. Sericitized and bleached biotite feldspar porphyry clasts with grey andesite and tuffaceous felsic clasts form the bulk of the pipe. The only control on the location of the pipe appears to be the contact between the biotite feldspar porphyry and the volcanics. The greater proportions of volcanic clasts occur closer to the contact. Many clasts reveal pre-breccia mineralization consisting of sulphide and quartz sulphide veinlets. It should be noted that the volcanics have been mapped as "hybrid diorite" in earlier assessment reports.

The breccia pipe has been limited in its vertical extent by the intrusion of a body of white massive QBFP. This unit actually may fill the area previously occupied by the breccia pipe, essentially occupying the dilatant zone. Drill indicated and inferred mineralized reserves are in the order of 200,000 short tons at a grade of 1.70 % Cu.

8.0 CONCLUSIONS and RECOMMENDATIONS

8.1 The Hearne Hill deposit hosts a breccia pipe with a significant concentration of high grade copper mineralization. Reserves, however, are limited by the presence of a post mineral intrusion. Reserves are not sufficient to support a mining operation. No further drilling is recommended for this target at this time.

8.2 The Hearne Hill deposit nevertheless continues to host significant mineralization of the porphyry copper Cu-Mo type. There is still the possibility that this type of deposit may yet be developed on this property. The distribution of grades is complicated by the presence of numerous poorly mineralized intrusives bodies. A detailed study of the grade distribution in the mineralized sections may reveal directions in which to pursue further mineralization. This study particularly applies to the volcanic rocks, which show levels of copper similar to the levels seen peripheral to the Bell and Granisle deposits.

8.3 The generation of further drill targets on Hearne Hill would require a return to more basic methods of geological and geophysical surveying. Induced polarization and magnetometer surveys would be appropriate considering the intended target. These surveys would initially be of a reconnaissance nature, and would require several tens of kilometers of linecutting and surveying. Reconnaissance geochemical coverage of the property is adequate, but considering the success of earlier geochemical surveys, more closely spaced sampling is recommended. The only adequate geological maps are the Texasgulf maps dating from 1967. The property should be remapped with consideration given to experience gained from the Bell and Granisle mines.

A program of this nature would require the expenditure of several hundred thousand dollars over a two to three year period. Diamond drilling and development would require another two years and a similar expenditure. Any option agreement made for the property must reflect the time and expenditures necessary to develop the property.

8.4 The possible presence of another breccia pipe cannot be discounted. In other porphyry mining districts these features have been commonly found in swarms or rings. These deposits represent elusive targets in the Babine region considering the topography and glaciation. Generation of this type of target would require a considerable commitment of time and expenditure.

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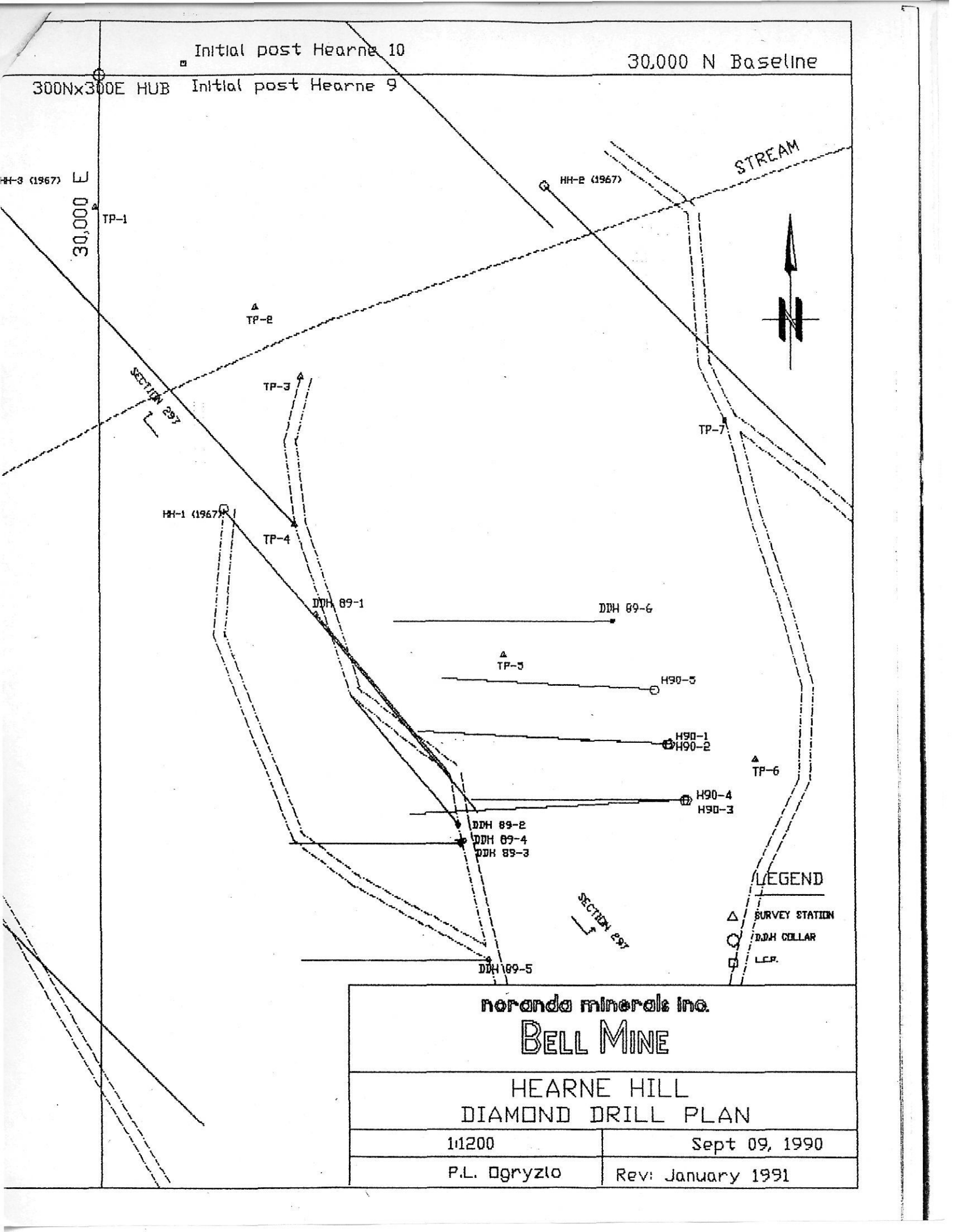
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Initial post Hearne 10

30,000 N Baseline

300N x 300E HUB Initial post Hearne 9

HH-3 (1967)

30,000 E

TP-1

HH-2 (1967)

STREAM

△ TP-2

SECTION 237

TP-3

TP-7

HH-1 (1967)

TP-4

DDH 89-1

DDH 89-6

△ TP-5

H90-5

H90-1
H90-2

△ TP-6

H90-4
H90-3

DDH 89-2
DDH 89-4
DDH 89-3

LEGEND

- △ SURVEY STATION
- DDH COLLAR
- L.C.P.

SECTION 237

noranda minerals inc.

BELL MINE

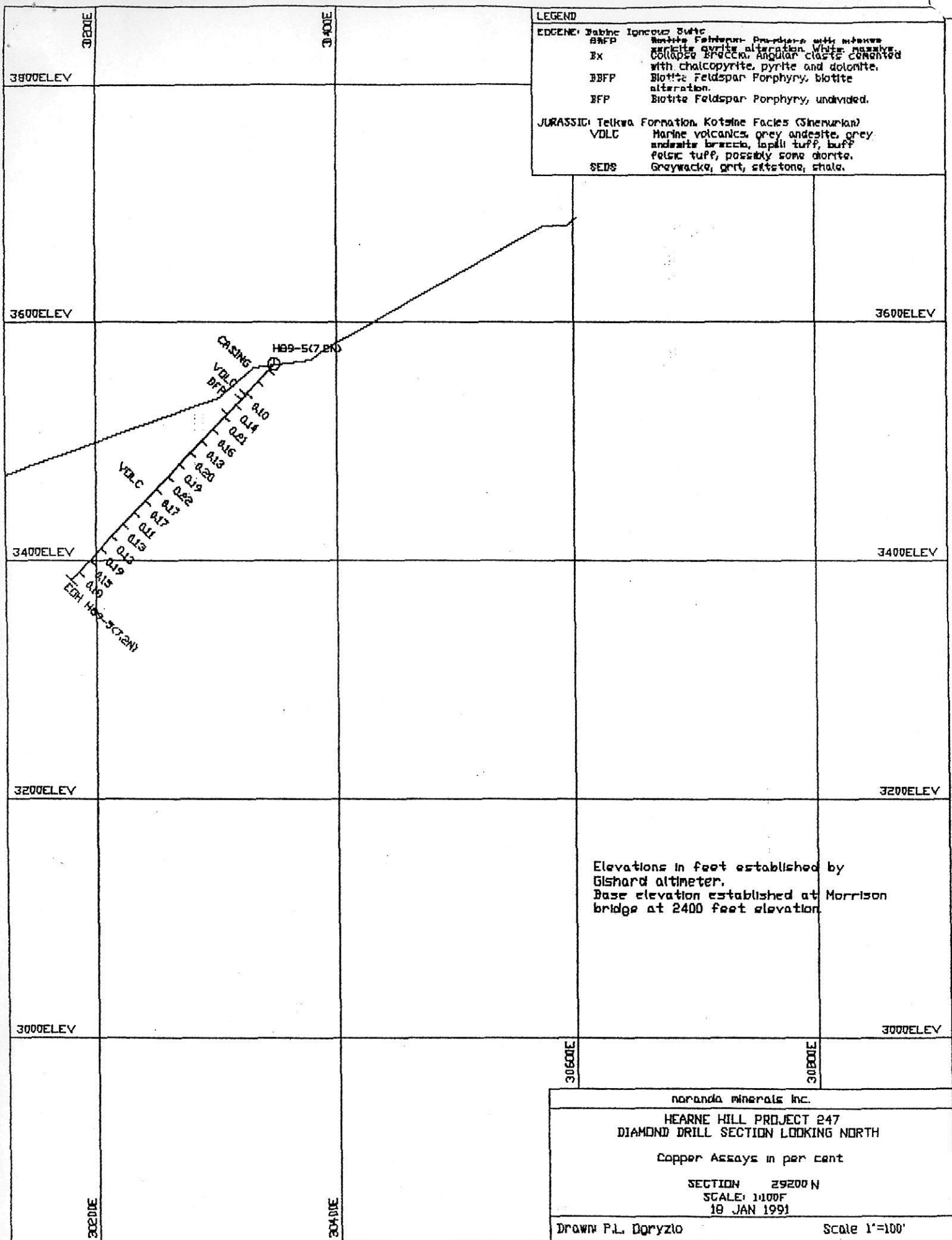
HEARNE HILL
DIAMOND DRILL PLAN

11200

Sept 09, 1990

P.L. Ogryzlo

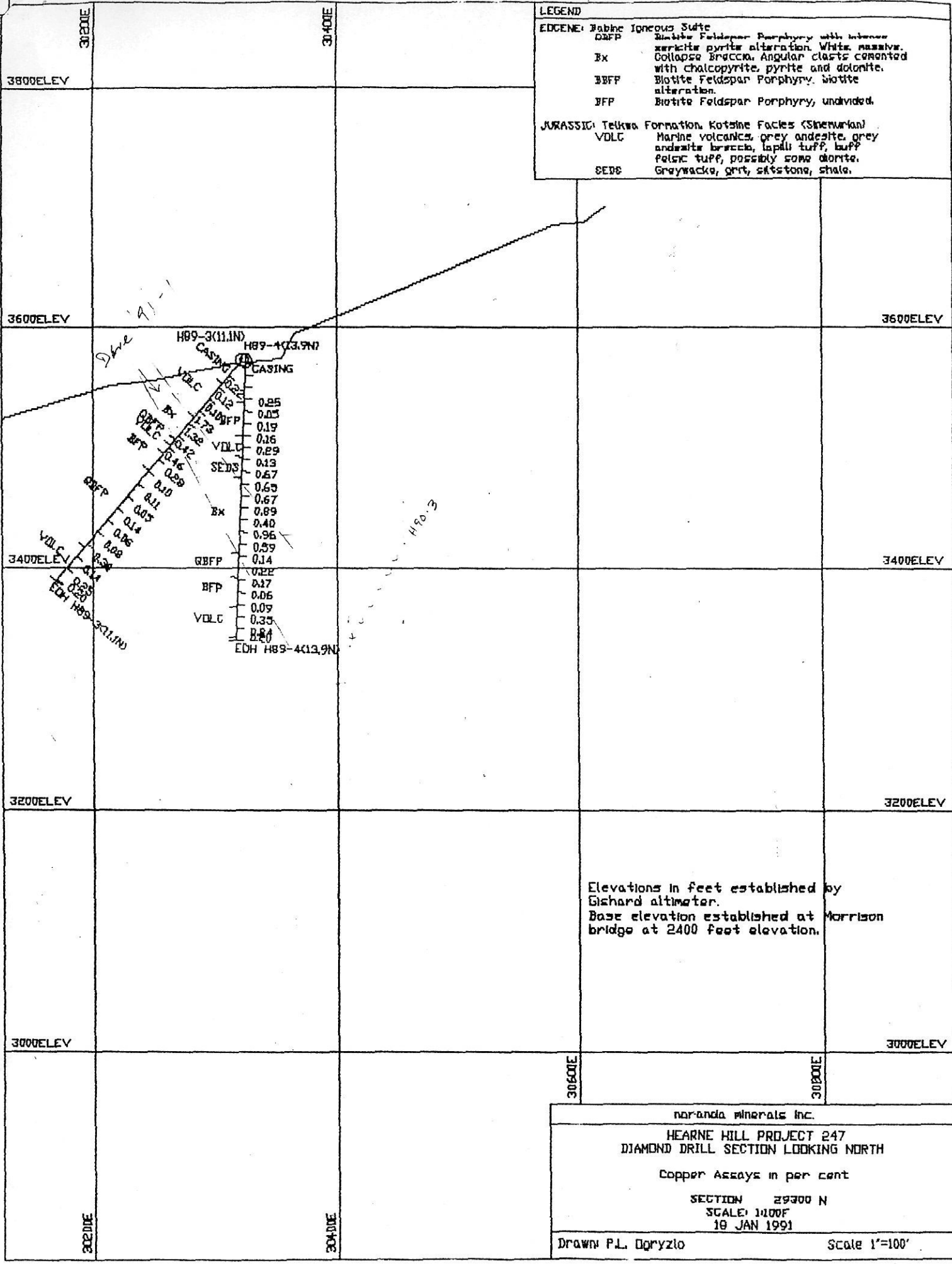
Rev: January 1991



LEGEND	
EDCENE: Babine Igneous Suite	
BBFP	Biotite Feldspar Porphyry with minor sericite quartz alteration. White massive collapse breccia. Angular clasts cemented with chalcocopyrite, pyrite and dolomite.
Ex	Biotite Feldspar Porphyry, biotite alteration.
BBFP	Biotite Feldspar Porphyry, biotite alteration.
BFP	Biotite Feldspar Porphyry, unaltered.
JURASSIC: Telkwa Formation, Kootenai Facies (Sinuorian)	
VDLC	Marine volcanics, grey andesite, grey andesite breccia, lapilli tuff, buff felsic tuff, possibly some diorite.
SEDS	Greywacke, grit, siltstone, shale.

Elevations in feet established by Gishard altimeter.
 Base elevation established at Morrison bridge at 2400 feet elevation.

noranda minerals inc.	
HEARNE HILL PROJECT 247	
DIAMOND DRILL SECTION LOOKING NORTH	
Copper Assays in per cent	
SECTION	Z9200 N
SCALE:	1:1000
	10 JAN 1991
Drawn P.L. Doryzio	Scale 1"=100'



LEGEND	
EDCENE: Babine Igneous Suite	
BDFP	Biotite Feldspar Porphyry with intense sericite pyrite alteration. White massive collapse breccia. Angular clasts cemented with chalcocopyrite, pyrite and dolomite.
BBFP	Biotite Feldspar Porphyry, biotite alteration.
BFP	Biotite Feldspar Porphyry, undivided.
JURASSIC: Telkwa Formation, Kotsine Facies (Shewanian)	
VOLC	Marine volcanics, grey andesite, grey andesite breccia, lapilli tuff, buff felsic tuff, possibly some diorite.
SEDS	Greywacke, grit, siltstone, shale.

Elevations in feet established by Gishard altimeter.
 Base elevation established at Morrison bridge at 2400 feet elevation.

noranda minerals inc.

HEARNE HILL PROJECT 247
DIAMOND DRILL SECTION LOOKING NORTH

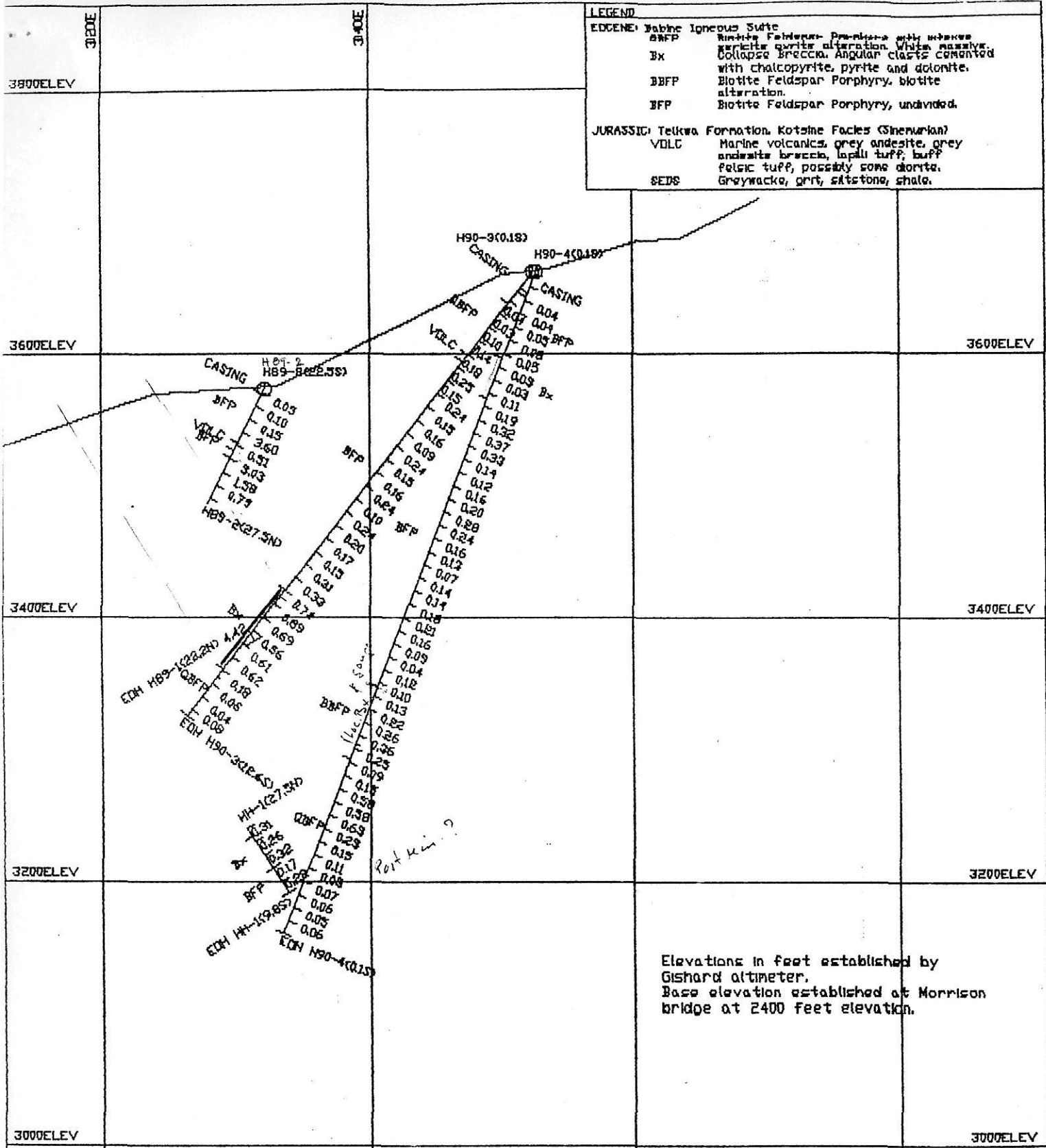
Copper Assays in per cent

SECTION 29300 N
 SCALE: 1:1000
 19 JAN 1991

Drawn P.L. Doryzlo Scale 1"=100'

3600ELEV

LEGEND	
EDCENE:	Basic Igneous Suite
BFP	Biotite Feldspar Porphyry with intense sericite quartz alteration. White massive.
Bx	Collapse Breccia. Angular clasts cemented with chalcopyrite, pyrite and dolomite.
BBFP	Biotite Feldspar Porphyry, biotite alteration.
BFP	Biotite Feldspar Porphyry, undivided.
JURASSIC:	Telkwa Formation, Kotsine Facies (Shenavian)
VOLC	Marine volcanics, grey andesite, grey andesite breccia, lapilli tuff, buff felsic tuff, possibly some diorite.
SEDS	Greywacke, grrt, siltstone, shale.



3060E

3000E

noranda minerals inc.

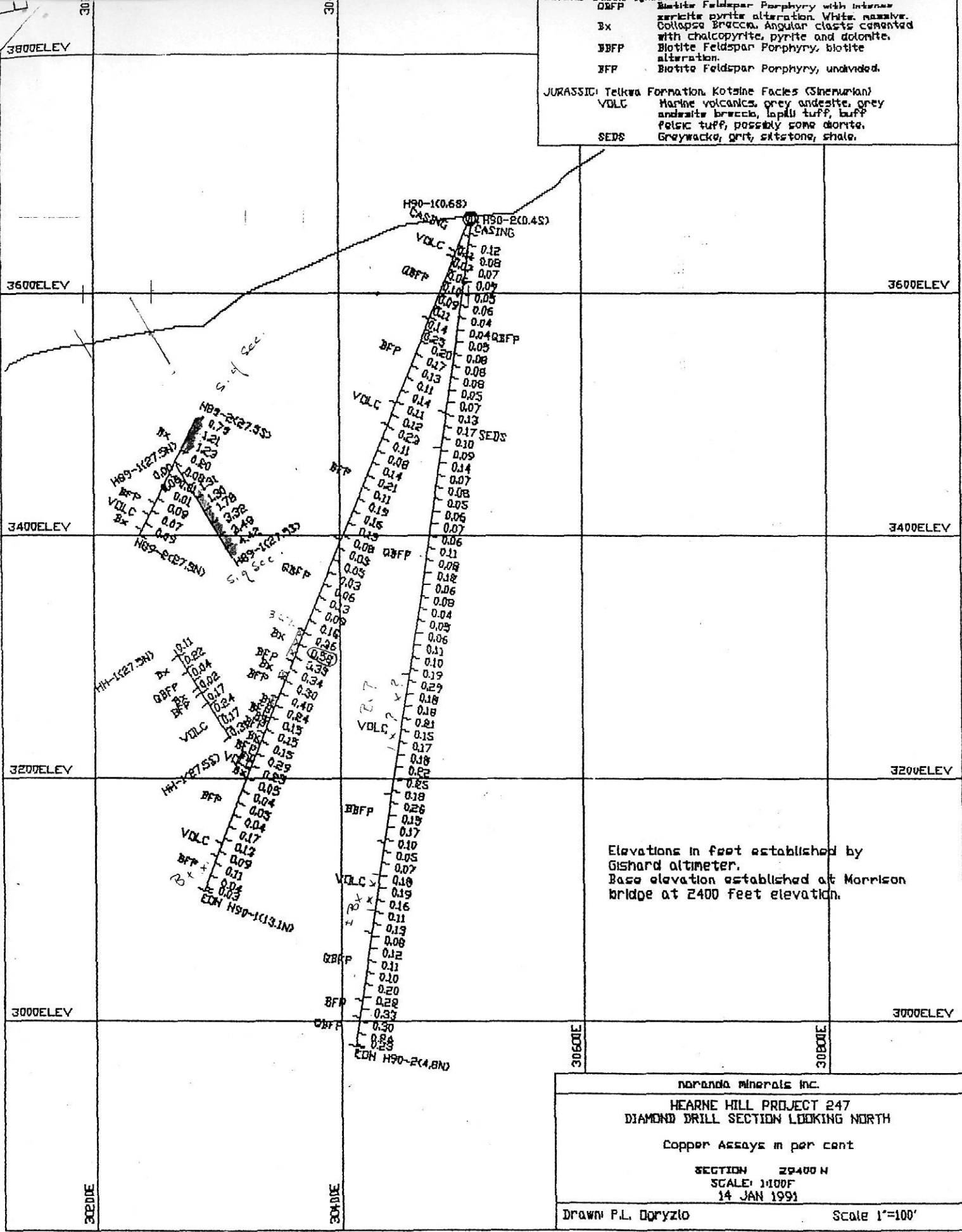
HEARNE HILL PROJECT 247
DIAMOND DRILL SECTION LOOKING NORTH

Copper Assays in per cent

SECTION 29350 N
SCALE: 1:1000
16 JAN 1991

Drawn P.L. Dpryzlo

Scale 1"=100'



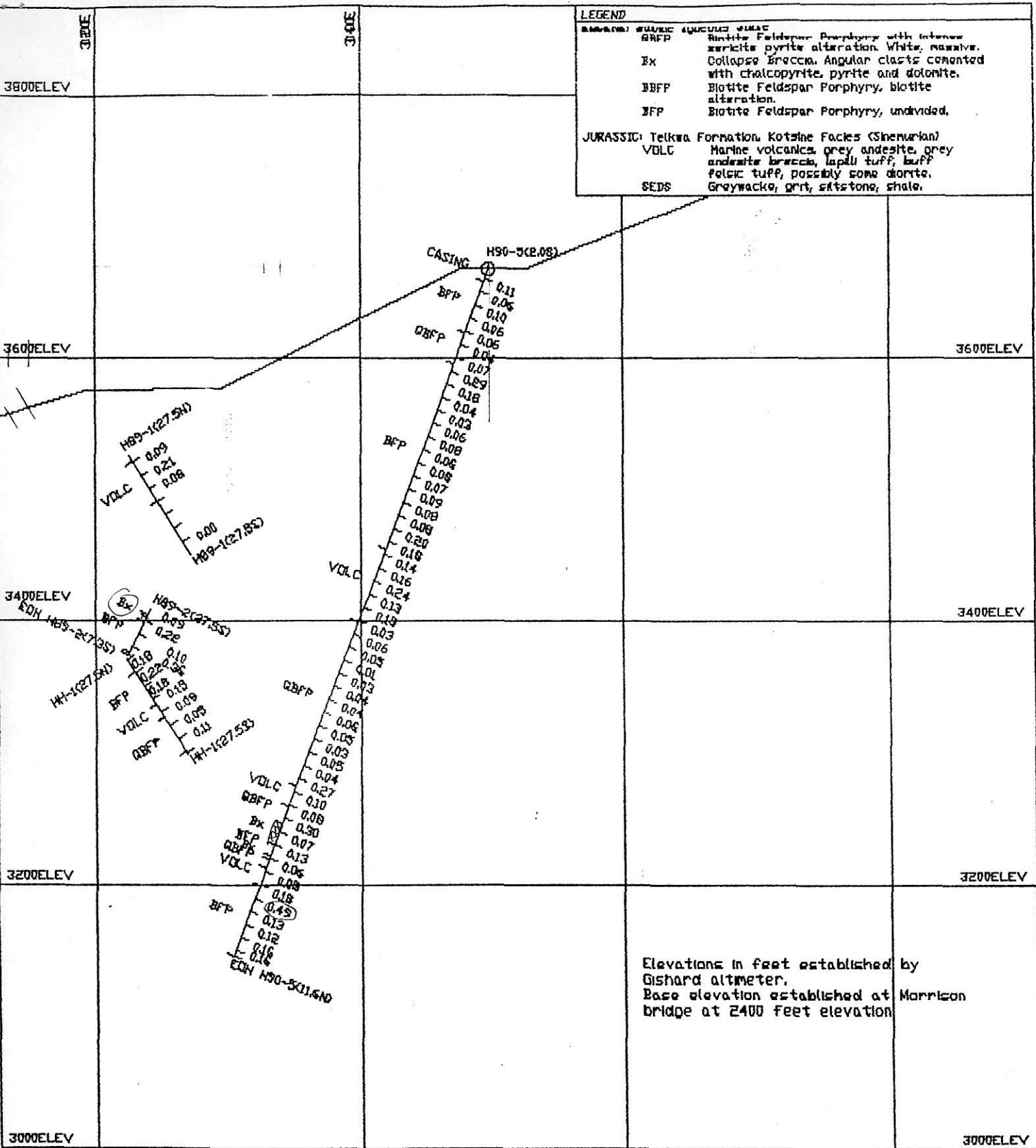
QBFP	Biotite Feldspar Porphyry with intense sericite pyrite alteration. White massive. Collapse Breccia. Angular clasts cemented with chalcopyrite, pyrite and dolomite.
BFP	Biotite Feldspar Porphyry, biotite alteration.
BFP	Biotite Feldspar Porphyry, unaltered.
JURASSIC: Telwa Formation, Kotsine Facies (Sinemurian)	
VDLC	Marine volcanics, grey andesite, grey andesite breccia, lapilli tuff, buff felsic tuff, possibly some diorite.
SEDS	Greywacke, grit, siltstone, shale.

Elevations in feet established by Gishard altimeter.
 Base elevation established at Morrison bridge at 2400 feet elevation.

noranda minerals inc.
HEARNE HILL PROJECT 247
DIAMOND DRILL SECTION LOOKING NORTH
 Copper Assays in per cent
 SECTION 29400 N
 SCALE: 1:1000
 14 JAN 1991

Drawn P.L. Doryzlo Scale 1"=100'

LEGEND	
BRFP	Biotite Feldspar Porphyry with intense sericite pyrite alteration. White, massive.
Bx	Collapse Breccia. Angular clasts cemented with chalcopyrite, pyrite and dolomite.
BBFP	Biotite Feldspar Porphyry, biotite alteration.
BFP	Biotite Feldspar Porphyry, undivided.
JURASSIC: Telkwa Formation, Kotsine Facies (Sideruritan)	
VDLC	Marine volcanics, grey andesite, grey andesite breccia, lapilli tuff, buff felsic tuff, possibly some diorite.
SEDS	Greywacke, grit, siltstone, shale.



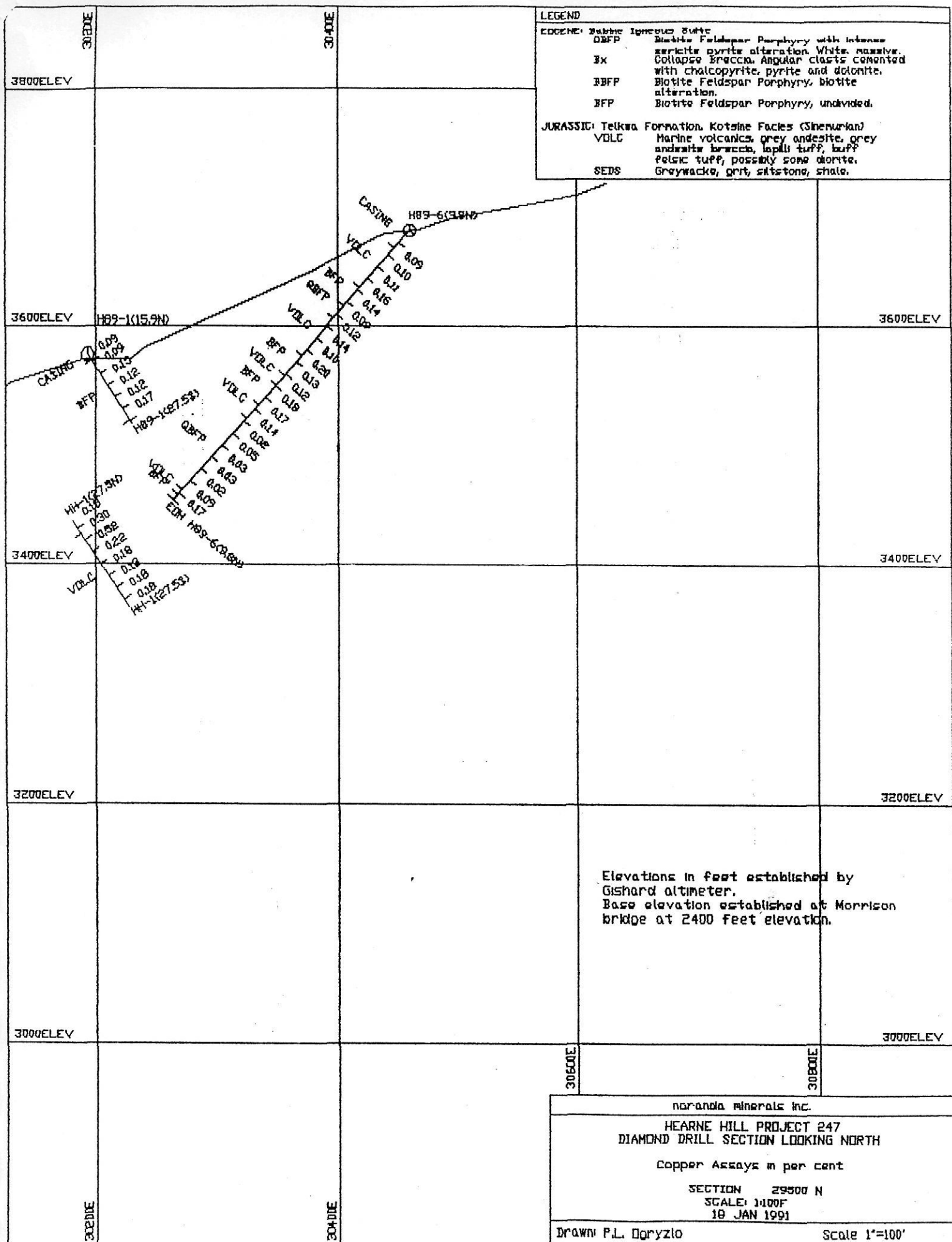
noranda minerals inc.

HEARNE HILL PROJECT 247
DIAMOND DRILL SECTION LOOKING NORTH

Copper Assays in per cent

SECTION 29450 N
SCALE: 1:100F
17 JAN 1991

Drawn P.L. Doryzlo Scale 1"=100'



LEGEND	
COCENE: Subvolcanic Igneous Suite	
QBFP	Biotite Feldspar Porphyry with intense sericite pyrite alteration. White massive. Collapse Breccia. Angular clasts cemented with chalcocopyrite, pyrite and dolomite.
Bx	Biotite Feldspar Porphyry, biotite alteration.
BBFP	Biotite Feldspar Porphyry, undivided.
BFP	Biotite Feldspar Porphyry, undivided.
JURASSIC: Telkwa Formation, Kootenai Facies (Shewanian)	
VOLC	Marine volcanics, grey andesite, grey andesite breccia, lapilli tuff, buff felsic tuff, possibly some diorite.
SEDS	Greywacke, gnt, siltstone, shale.

Elevations in feet established by Gishard altimeter.
 Base elevation established at Morrison bridge at 2400 feet elevation.

30600E	30800E
noranda minerals inc.	
HEARNE HILL PROJECT 247 DIAMOND DRILL SECTION LOOKING NORTH	
Copper Assays in per cent	
SECTION 29500 N SCALE: 1:100F 18 JAN 1991	
Drawn P.L. Doryzlo	Scale 1"=100'