MINNOVA

Mt. Mahon - Grid proof VLF Stake Stave - Mahon

MEMORANDUM

DATE: July 24, 1992

A TO: A. Davidson

COPIES A COPIES TO: I. Pirie, G. Wells

822676

DE FROM: C. Burge

SUJET SUBJECT: **1992 Horn Diamond Drill Proposal**

INTRODUCTION

A **2400 meter** drill program is proposed to explore the Lower - Middle Aldridge contact for a large tonnage massive sulphide deposit. This contact hosts the giant Sullivan Pb-Zn deposit (160 Mt; 7% Pb, 6% Zn and 80 gpt Ag) located 12 km north of the Horn property. The deposit forms a gently dipping massive sulphide sheet and is one of the largest base metal deposits in the world. The Horn property has seen very limited exploration and drilling will focus on a 1.2 km Pb-Zn-Sn soil anomaly.

GEOLOGY

Regional Geology

The Horn property is underlain by Lower and Middle Aldridge formation sediments which form a syncline on the eastern portion of the property and dip moderately west on the western part. The Aldridge formation is Proterozoic in age and consists of deep water turbidite beds that have been intruded by gabbroic bodies which form dikes and semi-conformable sills.

The regional attitude of the Aldridge formation in the area of the Horn property gives the impression that the Hellroaring Creek stock, a Proterozoic age felsic intrusive, may have pushed the stratigraphy up at the south end of the property. The Hellroaring Creek stock is a highly fractionated pegmatite stock containing tourmaline. This stock may be the engine driving hydrothermal activity in the area.

A zone of higher metamorphic grade has been recognized during reconnaissance mapping trending from Sullivan south to the eastern sector of the Horn property. Muscovite +/- sillimanite schists are common along this trend which is normal to the bedding. A clean 20° structural trend occurs when lining up existing stratabound occurrences in the area (Sullivan, Northstar, Stemwinder). The Horn East anomalies lie on this important trend. Could this be a "rift master fault"??!

Property Geology

The Horn property is divided into two areas. The Horn East area lies on the important Sullivan mineralization/alteration trend and units trend NW-SE and dip moderately beneath a gabbro bluff ("B sill"). The sedimentary units consist of quartzites, wackes and argillites interbedded with semi-conformable gabbro sills. Numerous pegmatite sills of a similar composition to the Hellroaring Creek stock also occur.

Distinctive argillite/quartzite couplets were recognized on the adjacent Darlin property. This sequence is observed in the upper portion of the Lower Aldridge at the Sullivan. A regional extrapolation suggests that the Horn stratigraphy is correlative with Sullivan time and lies on the south limb of a broad north-south trending antiform.

On the western portion of the Horn claims sedimentary units dip moderately to steeply west and do not exhibit a schistose texture. An important sulphide bearing conglomerate known as the Clair fragmental occurs here. Conglomerates are rare in the Aldridge formation and are highly significant as they are evidence of basinal infill material marking graben margins.

TARGETS

Horn Grid

P1 will begin testing an extensive 1.2 km soil anomaly delineated on the Horn grid 700 m east of the Darlin property boundary. The soil anomaly shows elevated Pb-Zn-Sn-Cd-Ag values. At the eastern end of the soil anomaly a VLF crossover and mag high was detected. Soil values here are up to 656 ppm Zn. Hand trenching revealed altered sediments with only trace amounts of Pb-Zn. The base metals appear bedded but are not present in sufficient quantities to explain the geophysical anomalies. P3 will test a VLF anomaly associated with the postulated position of Sullivan time in the hanging wall of the Horn soil anomalies. P3 will complete the geologic section and may be extended 200 meters to test the P1 intercept 500 meters downdip.

P2 will test the Darlin zinc exhalite 300 m east. The Darlin horizon assayed .7% Zn/.3 m and is interpreted to be a significant zinc exhalitive horizon. Unfortunately this hole will be the only one possible to test the Darlin horizon due to access difficulties.

P4 will test the Horn soil anomaly 250 meters east where the horizon coincides with a footwall tin anomaly.

P5 will test a coincident VLF/Mag anomaly that represents the east strike extent of strongly mineralized (cp, sph) and altered boulders of gabbro sill. This horizon probably correlates with the pyrrhotite rich zones encountered in the Darlin drill holes.

P6 will test an airborne mag feature represented on the NE corner of the Horn grid by a irregular 500 m by 250 m mag anomaly and a weak VLF conductor. Albitite boulders were observed as float in the field.

P7 located 600 meters east of P3 and 600 m west of P1, P3 is a deep hole testing a surface showing returning values of 1.1% Zn and the Horn soil anomaly downdip. A 750 meter hole is required due to difficulties accessing individual targets.

Clair Grid

P8 will test a PEM anomaly detected in the footwall of fragmental rocks known as the Clair fragmental. Cominco hole 79-1 tested the main fragmental occurrence, however a footwall conglomerate provided a stronger geophysical response and remains untested. This is an expected response given an orebody situated stratigraphically below the fragmental rocks. The conglomerates, therefore, could be interpreted as basin infill material deposited on top of an orebody located in a 2nd order basin.

CONCLUSIONS

The proposed drill holes will require approximately 2.5 km of roadbuilding to access drill stations. Roadbuilding will not be difficult, however, water may have to trucked to some of the drill sites.

Each of these drill holes has an excellent chance of success and the program constitutes the most aggressive exploration program carried out in the Sullivan camp for many years.

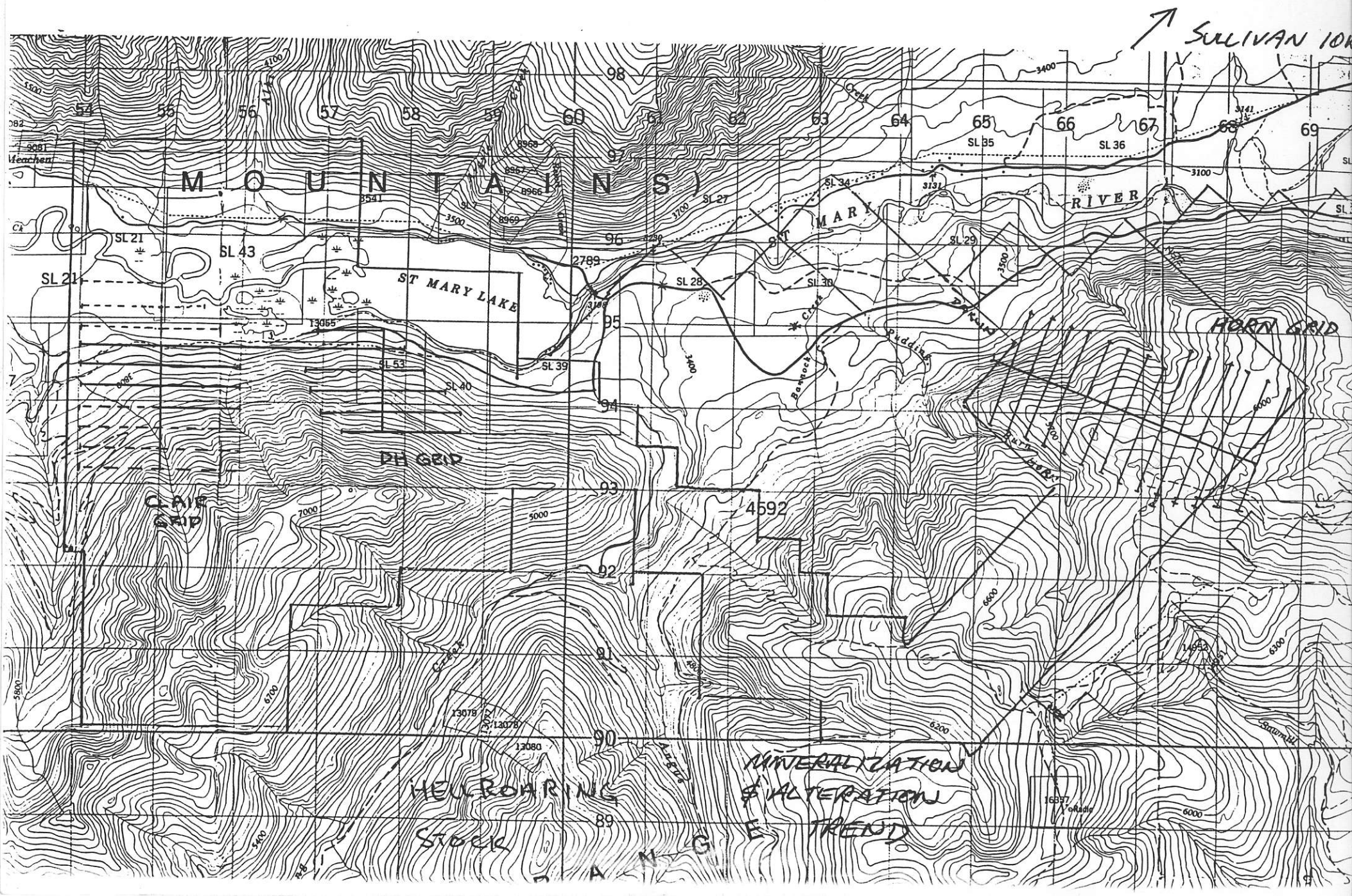
Reno, Thunder Bay, Noranda and Chapais buy your champagne now!!

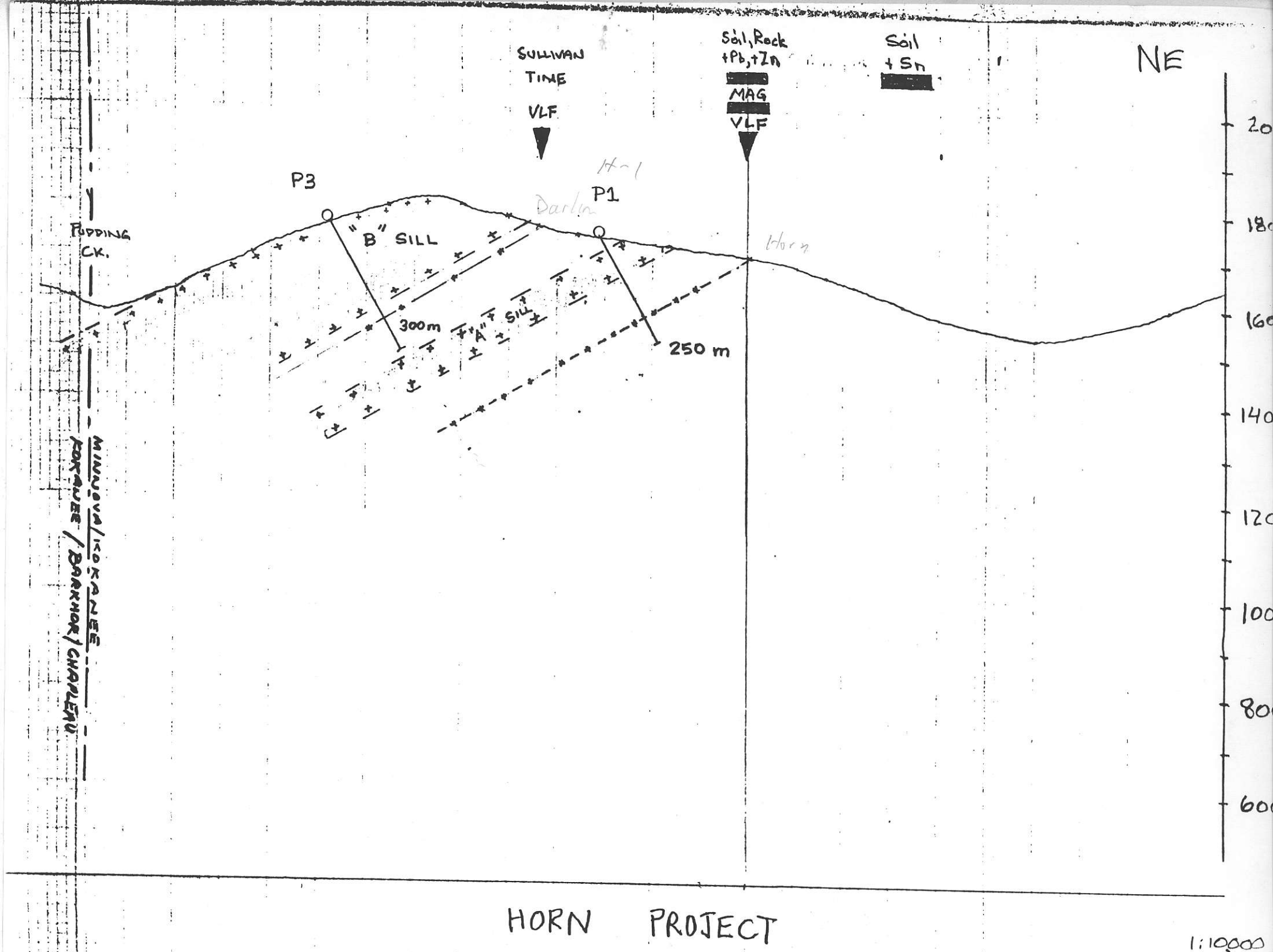
Table 1. Proposed 1992 Drilling – Horn Property

Hole	Location	Collar Azim.	Collar Dip	Length	Cost*	Target
P1	H-92-01 Horn Grid 84+10W; 1+30S	050	−60	273.1 ~~250 m~~	$16,250	P1 will test coincident Pb, Zn, Ag soil and rock anomaly with VLF and Mag anomaly
P2	99+60W; 2+60S	050	−65	300 m	$19,500	P2 will test the Darlin Zinc Exhalite horizon 300 m east and 250 m downdip (D-91-2: 0.7% Zn/.3 m)
P3	H-92-03 87+35W; 6+20S	060 ~~050~~ 060	−65 −60	343.2 ~~300 m~~	$19,500	P3 will test a VLF anomaly located at the base of the "B" sill. This anomaly occurs at the postulated Sullivan Time horizon. P3 may be extended to 500 m to test P1 horizon at 700 m contingent on results of P1.
	H-92-04	060°	−70	323.1		
P4	H-92-02 81+30W; 1+65S	060 ~~050~~	−60	312.7 ~~250 m~~	$16,250	P4 will test the P1 horizon 250 m east. P4 is contingent on results of P1.
P5	97+50W; 2+10N	050	−60	200 m	$13,000	P5 will test a coincident VLF-Mag anomaly east on strike of mineralized rock prospected near the property boundary.
P6	70+60W; 7+00N	050	−60	150 m	$9,750	P6 will test a broad magnetic anomaly with a weak VLF conductor axis. Albitite float occurs in an area of poor exposure. and a manganese soil anomaly
P7	93+90W; 4+90S	050	−70	750 m	$48,750	P7 will test the entire Horn package including the Zn + Pb soil anomaly 600 m east and 600 m west of P3 and P1/P2.
P8	Clair Grid	082	−50	200 m	$13,000	P8 will test a Pulse EM anomaly coincident with the Clair fragmental
P9	Clair Grid					will test Pulse EM conductor at 5+00S
	Total			**2400 m**	**$156,000**	

* based on direct drilling + Minnova costs of $65/m

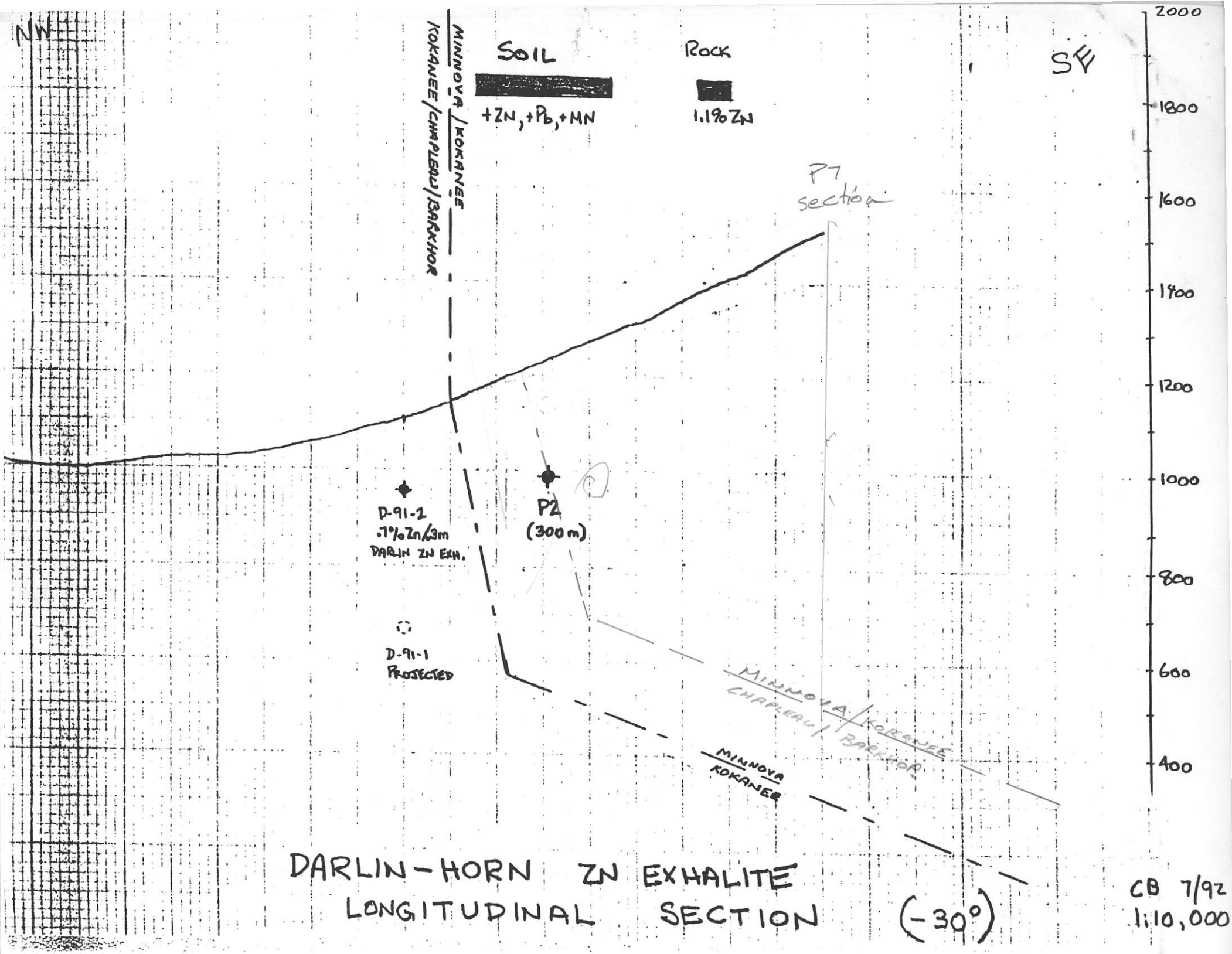
P10 79+20W 7+50S will test stratabound sulphides at LMC(?)


SULLIVAN
MOUNTAINS
ST MARY LAKE
ST MARY RIVER
SL 21
SL 43
SL 53
SL 40
SL 39
SL 28
SL 30
SL 29
SL 27
SL 34
SL 35
SL 36
DH GRID
CLAIM GRID
HORN GRID
4592
HEL ROARING
STOCK
MINERALIZATION
& ALTERATION
TREND



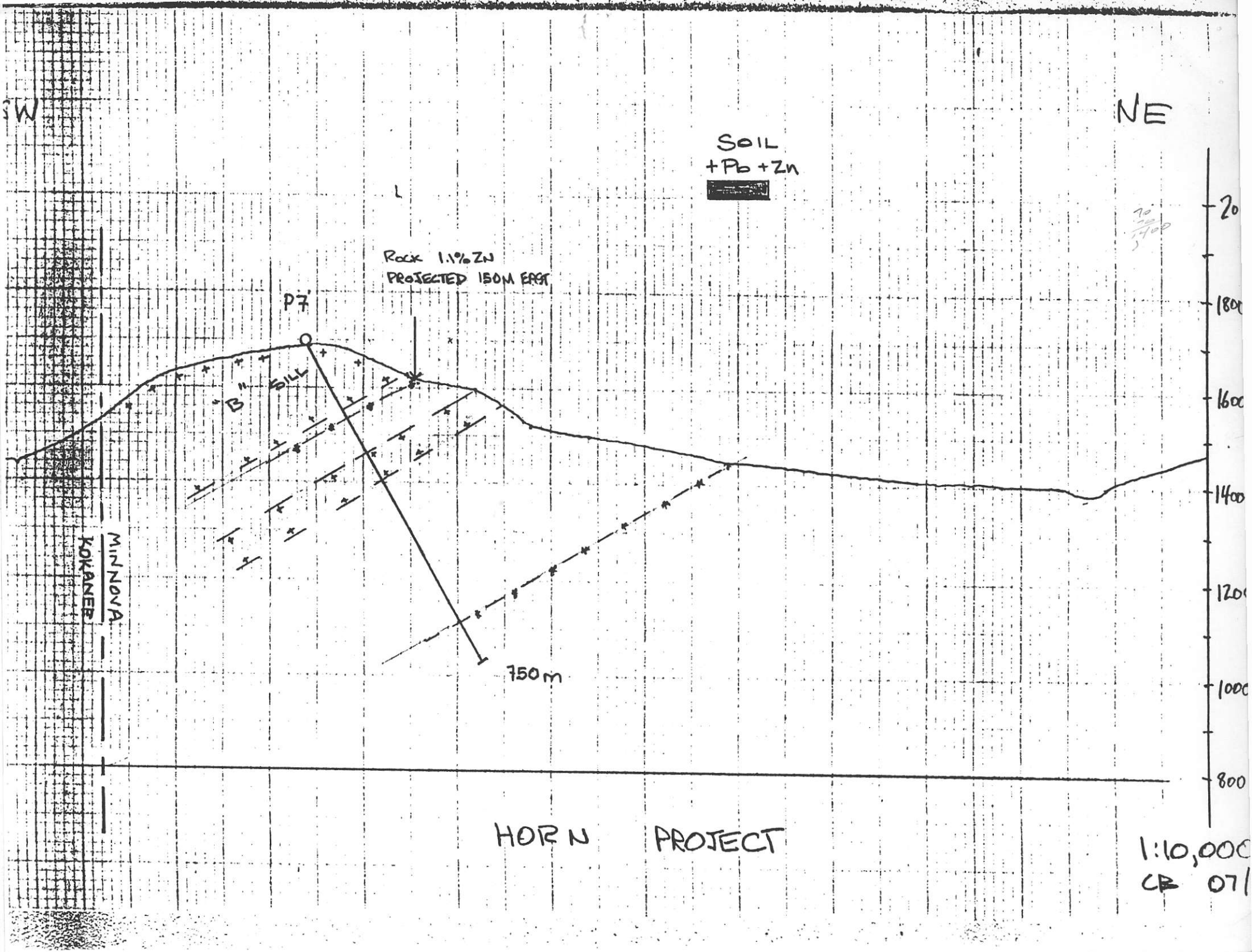
HORN PROJECT

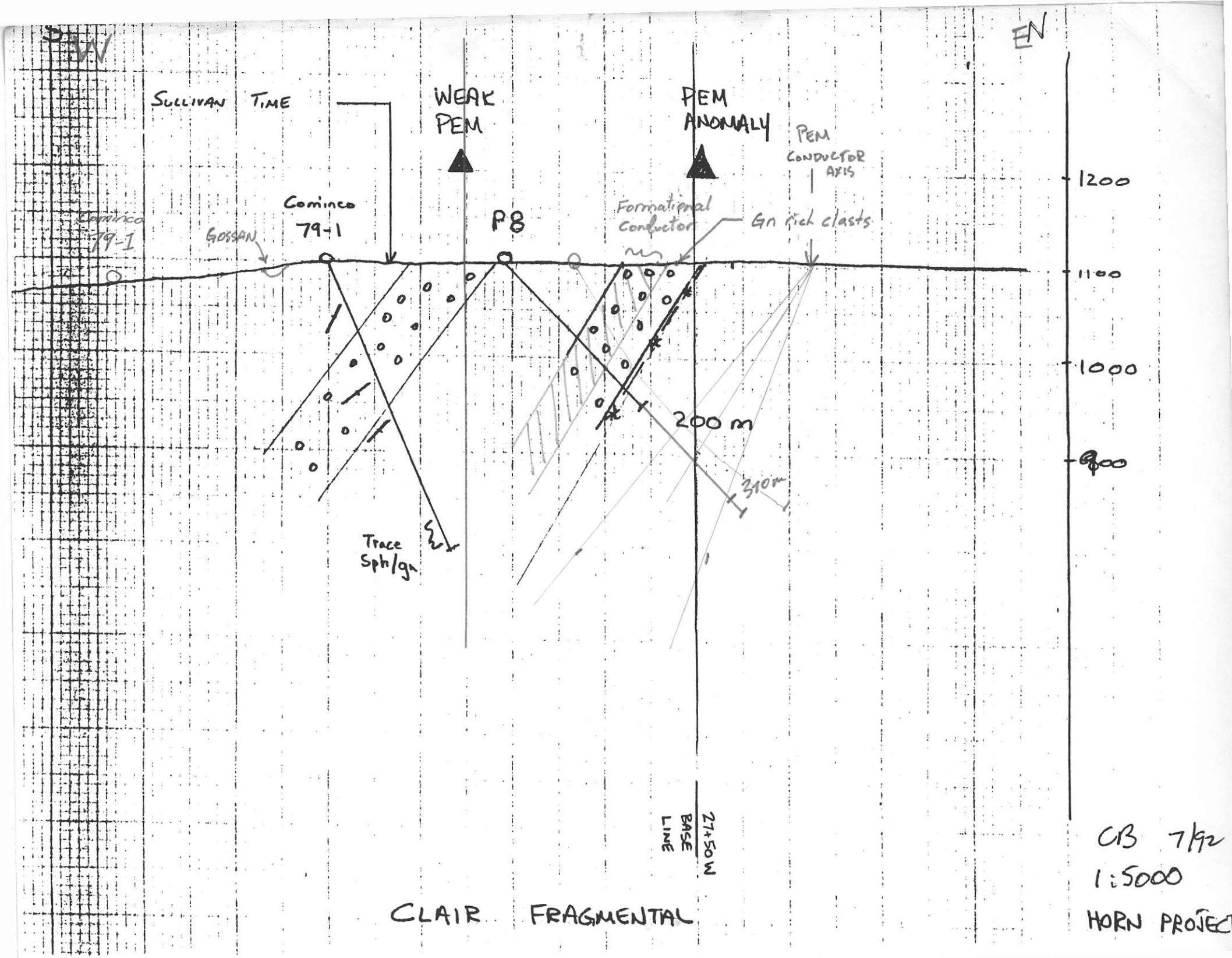
1:10,000

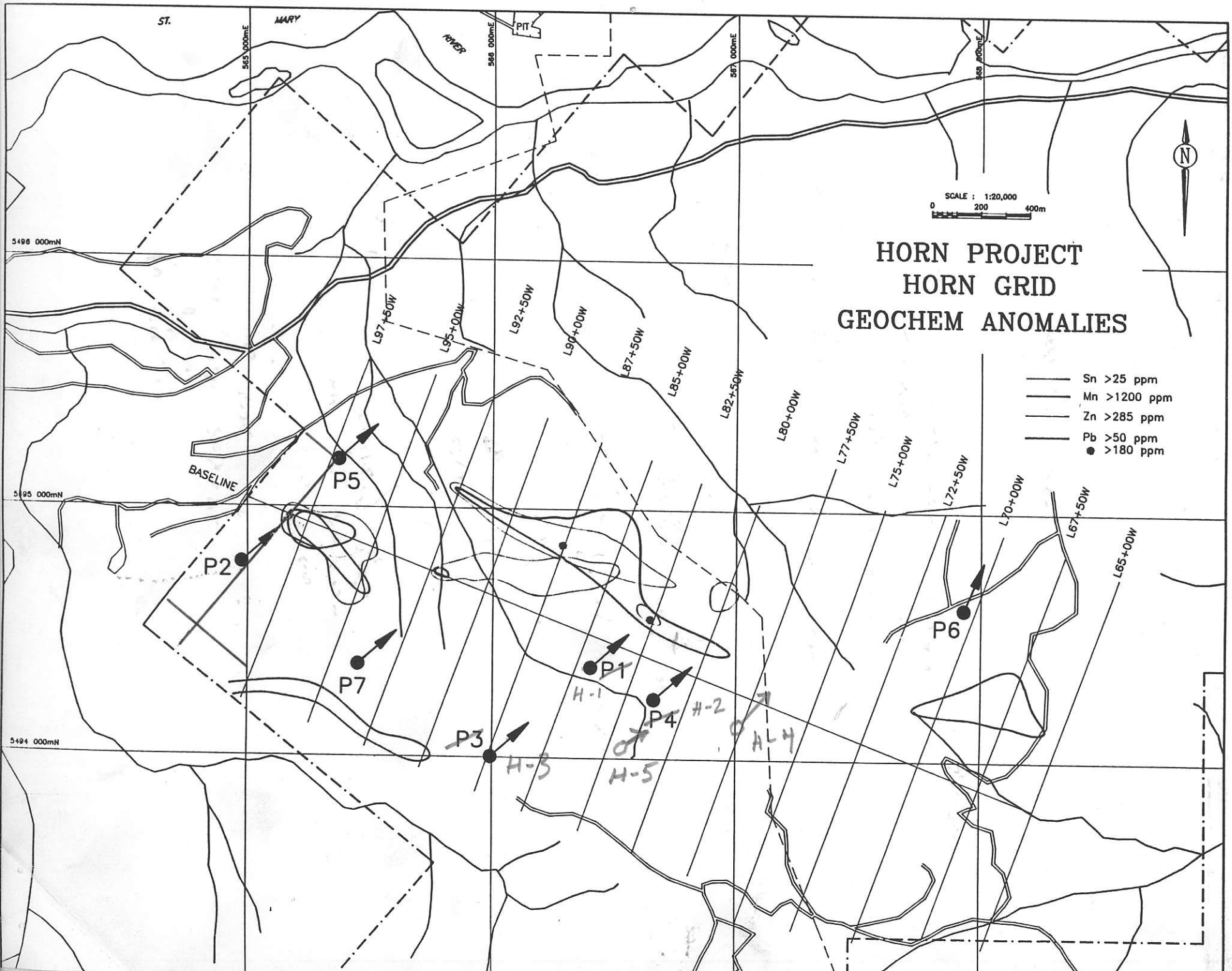


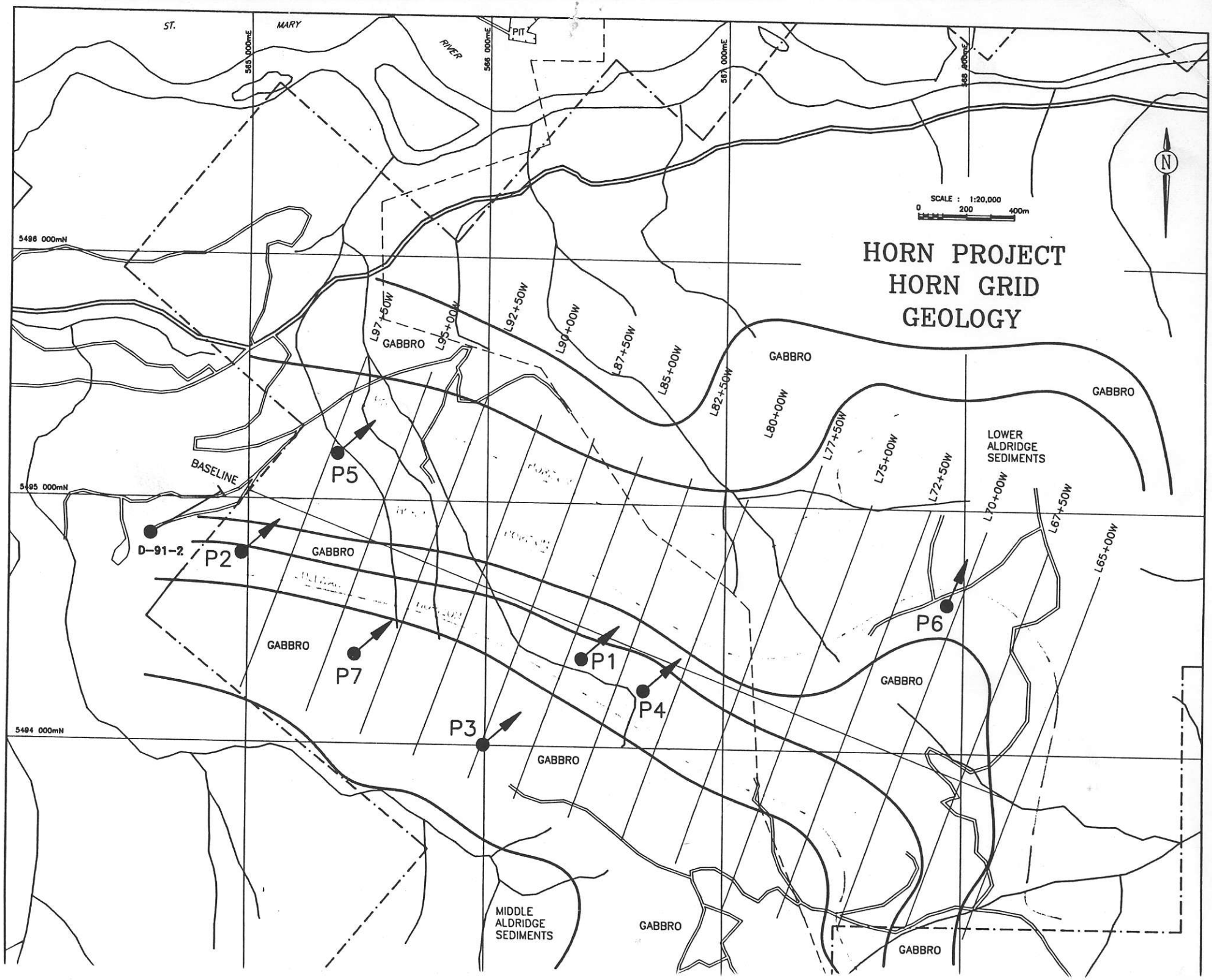
DARLIN-HORN ZN EXHALITE
LONGITUDINAL SECTION (-30°)

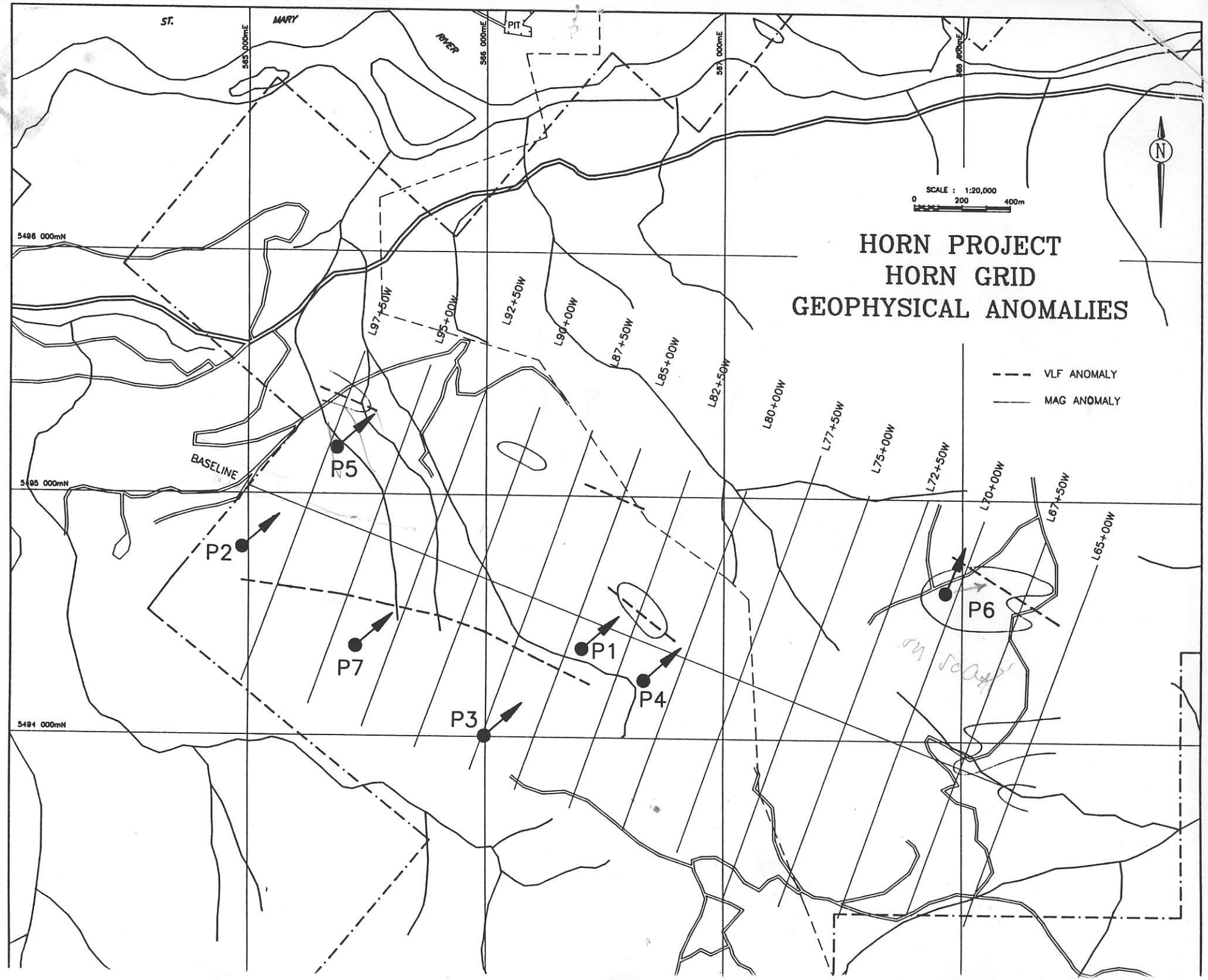
CB 7/92
1:10,000


W
NE
SOIL
+Pb +Zn
Rock 1.1% Zn
PROJECTED 150M EAST
P7
B
SOIL
MINNOVA
KOKANEE
750m
2000
1800
1600
1400
1200
1000
800
HORN PROJECT
1:10,000
CB 07


SW
EN
SULLIVAN TIME
WEAK PEM
PEM ANOMALY
PEM CONDUCTOR AXIS
Cominco 79-1
GOSSAN
P8
Formational Conductor
Gn rich clasts
1200
1100
1000
900
200 m
310m
Trace Sph/gn
27+50 N BASE LINE
CLAIR FRAGMENTAL
CB 7/92
1:5000
HORN PROJECT


ST.
MARY
RIVER
PIT
565 000mE
566 000mE
567 000mE
568 000mE
5496 000mN
5495 000mN
5494 000mN
N
SCALE : 1:20,000
0 200 400m
HORN PROJECT
HORN GRID
GEOCHEM ANOMALIES
Sn >25 ppm
Mn >1200 ppm
Zn >285 ppm
Pb >50 ppm
>180 ppm
BASELINE
L97+50W
L95+00W
L92+50W
L90+00W
L87+50W
L85+00W
L82+50W
L80+00W
L77+50W
L75+00W
L72+50W
L70+00W
L67+50W
L65+00W
P1
P2
P3
P4
P5
P6
P7
H-1
H-2
H-3
H-4
H-5


ST. MARY RIVER
PIT
565 000mE
566 000mE
567 000mE
568 000mE
5496 000mN
5495 000mN
5494 000mN
SCALE : 1:20,000
0 200 400m
N
HORN PROJECT
HORN GRID
GEOLOGY
L97+50W
L95+00W
L92+50W
L90+00W
L87+50W
L85+00W
L82+50W
L80+00W
L77+50W
L75+00W
L72+50W
L70+00W
L67+50W
L65+00W
GABBRO
LOWER ALDRIDGE SEDIMENTS
MIDDLE ALDRIDGE SEDIMENTS
BASELINE
D-91-2
P1
P2
P3
P4
P5
P6
P7


ST.
MARY
RIVER
PIT
565 000mE
566 000mE
567 000mE
568 000mE
5496 000mN
5495 000mN
5494 000mN
SCALE : 1:20,000
0 200 400m
N
HORN PROJECT
HORN GRID
GEOPHYSICAL ANOMALIES
VLF ANOMALY
MAG ANOMALY
BASELINE
L97+50W
L95+00W
L92+50W
L90+00W
L87+50W
L85+00W
L82+50W
L80+00W
L77+50W
L75+00W
L72+50W
L70+00W
L67+50W
L65+00W
P1
P2
P3
P4
P5
P6
P7