

**Geological Assessment Report  
for**

**Claim Group:**

**HAT 1-20, YB57537-YB57556  
HAT 21-26, YB58021-YB58026  
HAT 27-32, YB58049-YB58054  
HAT 33-34, YB58055-YB58056  
HAT 35-36, YB58139-YB58140  
HAT 37-40, YB66395-YB66398**

**NTS:**

**105 D/11, 105 D/14**

**Located at:**

**N 60 47', W 135 10'**

**Registered Owner:**

**Rob Hamel**

**Norwest Enterprises Inc.**

**Whitehorse Mining District**

**Prepared by:**

**Owen Peer, Geologist**

**Cordilleran Resource Company, Ltd.**

**August 8-9, 1997.**

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## **Summary:**

**At the requested of Jim Coyne of H. Coyne and Sons Ltd., Whitehorse, Yukon the author visited the HAT group of claims owned by Rob Hamel of Norwest Enterprises Ltd. The purpose of the visit was to inspect, map, and sample trenching work already completed. The trenching was undertaken to explore significant gold and copper mineralization discovered in 1995 and outlined in an October 1995 property visit report by C. Schulze.**


**Mr Hamel worked in three areas. HAT 31, located approximately 300 meters NNW (343°) of the War Eagle Pit. HAT 28 and 30, the Swamp Showing, located approximately 1.2 km NNE (15°) of the War Eagle Pit. HAT 1, the Landfill showing located 1.5 km NE (43°) of the War Eagle Pit.**

**The HAT 31 trenches reveal two mineralized limestone exoskarns surrounded by a mineralized granodioritic endoskarn. HAT 28 and 30 trenches reveal altered and mineralized granodiorite dykes intruding Lewes River Group greywacke. The HAT 1 trenching reveals mineralized and altered porphyritic Whitehorse biotite granodiorite batholith. Geochemical sampling was focused on the HAT 31 trenches.**

## **Methodology and Equipment:**

List of  
Claims  
Being  
Renewed:

Claim Name	Grant Number	Registered Owner	For Whom Work Performed	Expiry Date
HAT 1	YB 57537	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 2	YB 57538	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 3	YB 57539	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 4	YB 57540	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 5	YB 57541	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 6	YB 57542	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 7	YB 57543	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 8	YB 57544	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 9	YB 57545	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 10	YB 57546	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 11	YB 57547	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 12	YB 57548	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 13	YB 57549	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 14	YB 57550	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 15	YB 57551	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 16	YB 57552	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 17	YB 57553	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 18	YB 57554	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 19	YB 57555	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 20	YB 57556	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 21	YB 58021	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 22	YB 58022	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 23	YB 58023	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 24	YB 58024	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 25	YB 58025	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 26	YB 58026	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-97
HAT 27	YB 58049	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 28	YB 58050	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 29	YB 58051	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 30	YB 58052	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 31	YB 58053	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 32	YB 58054	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 33	YB 58055	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 34	YB 58056	Norwest Ent. Inc.	H. Coyne & Sons	11-Nov-98
HAT 35	YB 58139	Norwest Ent. Inc.	H. Coyne & Sons	16-Nov-97



HAT	36	YB 58140	Norwest Ent. Inc.	H. Coyne & Sons	16-Nov-97
HAT	37	YB 66395	Norwest Ent. Inc.	H. Coyne & Sons	16-Nov-97
HAT	38	YB 66396	Norwest Ent. Inc.	H. Coyne & Sons	16-Nov-97
HAT	39	YB 66397	Norwest Ent. Inc.	H. Coyne & Sons	16-Nov-97
HAT	40	YB 66398	Norwest Ent. Inc.	H. Coyne & Sons	16-Nov-97



**The Landfill showing trenches where excavated using a D-8 Caterpillar tractor. The remainder of the trenches where excavated using a 235 Caterpillar excavator. The trenches in all cases were excavated to and into bedrock using the mechanical equipment. The trenches were then cleaned by hand to expose the bedrock. Surface rock was then removed to expose fresh rock for sampling. All samples taken were channel samples with a minimum length of 2 meters. Samples were taken using hammer and chisels.**

#### **Data Collected:**

**Geochemical sampling was undertaken to determine elemental indicators of mineralization and to reveal grades for the different rock units. The samples were used to assess the combination of elements that are indicative of alteration, mineralization, and mineralization types on the property. Samples were collected from bedrock in exposed trenches. Sampling was focused on HAT 31 as this claim had exposed skarn mineralization showing retrograde alteration. The different rock units were identified, then channel sampled. The channels were first cleaned to expose fresh rock (no localized surface weathering or enrichments). The samples were collected and delivered to Northern Analytical Laboratory the same day by the author.**

**The assay results from the material sampled indicate that the skarns are similar in nature to known and classified precious metal enriched skarns (PME). The HAT 31 skarns, based on limited sampling fall within the gold skarn class.**

#### **Geology:**

**The focus of the geological investigation was to determine gold and copper distribution within the exposed mineralized zones on the HAT claims.**

**The skarns examined were formed from a limestone protolith as characterized by the wollastonite, and the green pyroxenes and garnets. Epidote and amphibole retrograde mineralization was also observed. Retrograde mineralization is consistent with gold occurrences in other skarn deposits. Tenney (1981) indicates that there is no correlation between gold and copper grades from producing pits in the Whitehorse**

**Copper Belt. The Little Chief pit produced the majority of the ore for the belt. According to Tenney (1981) the Little Chief pit graded 1.29 % Cu, and 496 ppb Au. The Whitehorse Copper Belt skarns were collectively considered as copper class skarns. The War Eagle pit formed the northern most producing pit of the Belt. According to Hart (1995) the pit produced approximately 900 000 tonnes of 1.25% Cu, 0.22 g/t Au, 8.6 g/t Ag, and 0.005% Mo. These grades places it within the gold skarn (PME) field. There is a definite increase in gold mineralization with proximity to the Whitehorse batholith. Sample TR-97-02-11 a two meter channel sample was taken from the western most exoskarn. The copper/silver and copper/gold ratios place this sample within the gold skarn class. Gold skarns show a spacial and temporal relationship to porphyry copper deposits. The nature of the dykes in the Swamp showing and the alteration present in the Landfill showing would suggest exploration for a porphyry style deposit.**

**Mineralization within the HAT 31 trenches is both banded and disseminated. The majority of mineralization present is in the form of chalcopyrite. However bornite, azurite, pyrrhotite, arsenopyrite, pyrite, and sphalerite are observed. Assay results suggest that gold mineralization is related to sulphide content. A correlation between gold and bismuth, silver, zinc, stibnite, and copper has been observed.**

#### **Assay Methods:**

**Samples where sent to Northern Analytical Laboratory where they were dried, crushed to -10 mesh, split, and a 250 gram sample pulverized to -150 mesh. A portion of the pulp, (60 g) was fire assayed and then measured using atomic-absorbtion spectrophotometry in Whitehorse for copper and gold. The remainder of the pulp was assayed in Vancouver by International Plasma Laboratories by 30 element inductively coupled-plasma atomic emission spectrometry (ICP). The pulps were initially aqua-regia acid dissolved (HCl-HNO<sub>3</sub>). This acid dissolution of samples method does result in a partial determination of some elements.**

#### **Plans and Maps:**

**The following plans and maps are attached to this report: Map A showing the location of the claims with respect to the Alaska Highway, Porter Creek subdivision, and the Whitehorse city limits. The map**

initially prepared by C. Schulze also indicates gross geological features and 1995 sample locations. Supper imposed on Map A are the locations of Plan B, C, and D. Plan B is a sketch of the trenches from HAT 31. Plan C is a sketch of the trenches from HAT 28 and 30. Plan D is a sketch of the trenches from HAT 1.

**Statement of Account:**

**Excavation of the Landfill cell by D-8 Caterpillar tractor:**

<b>20 hours at \$110/hr</b>	<b>\$2200</b>
<b>mobilization/demobilization</b>	<b>\$ 200</b>

**Excavation of the Landfill trenches by excavator:**

<b>10 hours @ \$75/hr</b>	<b>\$ 750</b>
<b>aproportion of mob/demob.</b>	<b>\$ 70</b>

**Excavation of Swamp showings by excavator:**

<b>25 hours @ \$75/hr</b>	<b>\$1875</b>
<b>aproportion of mob/demob.</b>	<b>\$ 70</b>

**Excavation of the HAT 31 trenches by excavator:**

<b>40 hours @ \$75/hr</b>	<b>\$ 3000</b>
<b>aproportion of mob/demob.</b>	<b>\$ 70</b>

**Geological services:**

<b>4 days @ \$350/day</b>	<b>\$1400</b>
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<b>Assay costs:</b>	<b>\$675.90</b>
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**References:**

**Hart, C., 1995, A visit to the HAT property of Rob Hamel, unpublished report; available from the Canada/Yukon Geoscience Office, 2 p.**

**Meinert, L.D., 1989, Gold Skarn Deposits: Geology and Exploration Criteria, Economic Geology, monograph 6, p 537-552.**

**Schulze, C., 1995, Results of October, 1995 Property Visit: HAT Claim Block, unpublished report; available from Hemlo Gold Mines Inc., 5 p.**

**Tenney, D., 1981, Whitehorse Copper Belt: Mining, Exploration, and  
Geology (1967-1980), Department of Indian and Northern Affairs  
Canada, Bulletin 1, 29 p.**

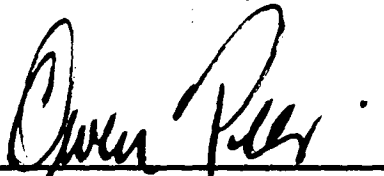
**Certificate:**

**I, Owen Peer do hereby certify that I am an independent Consulting Geologist with offices at Fox Farm Road, Whitehorse, Yukon Territory.**

**I further certify that:**

- 1. I am a Physics and Earth and Ocean Sciences graduate of the University Of Victoria.**
- 2. I have practiced in my profession for over 10 years both as an independent consultant and as a geologist for mining companies in Canada and overseas.**
- 3. I have no personal interest in the properties, nor do I expect to receive directly or indirectly any interest in such properties.**
- 4. I have based this report on field work carried out directly by myself during the period between August 8, 1997 and August 9, 1997.**

**Dated this 30 day of October, 1997 in La Paz, Bolivia.**



**Owen Peer, B.Sc.  
Consulting Geologist**

**Mailing address:  
P.O. Box 3866  
Whitehorse, Yukon Territory  
Canada  
Y1A-5M6  
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## **Appendix A:**

### **Certificates of Analyses:**

**Following are two pages of assay results. First a gold and copper certificate from NAL Ltd. Secondly a 30 element ICP certificate from IPL Ltd.**

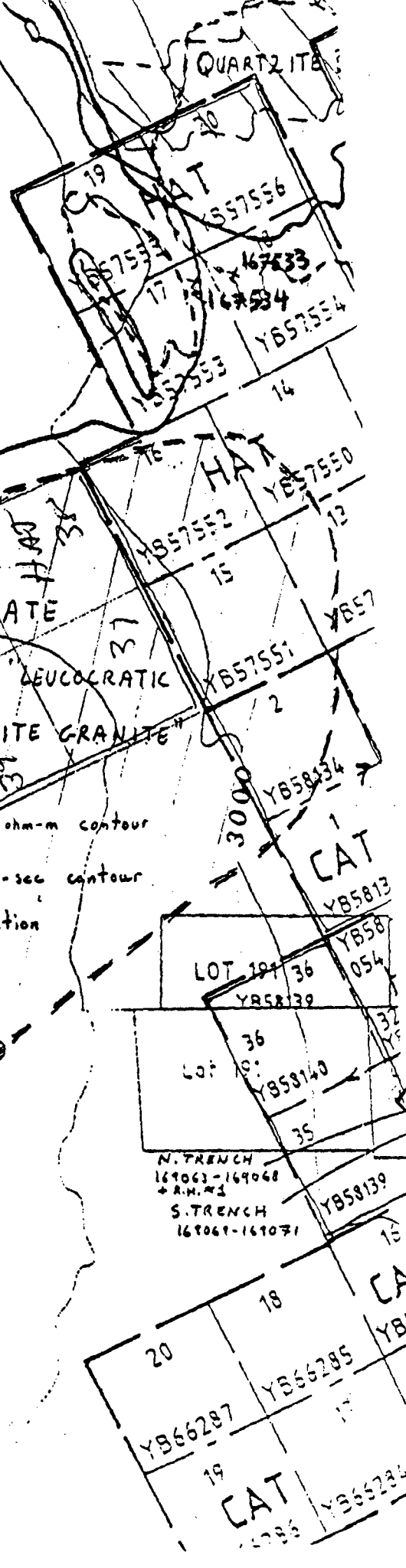
- TR-97-01-01** cross bedding secondary veinlette 1-2 cm wide, includes endoskarn wall rock, Py, Cpy, Pyrr, Bnt
- TR-97-01-02** eastern exoskarn, 10-15% interstitial and banded Py, Cpy, Aspy, Bnt
- TR-97-01-03** cross bedding oxidized vein 5-10 cm wide, no recognizable mineralization
- TR-97-01-04** same as -03
- TR-97-01-05** endoskarn, trace mineralization, Py, Cpy, Pyrr, Aspy, moderate retrograde alteration
- TR-97-01-06** heavily oxidized version of -05
- TR-97-01-07** endoskarn, trace mineralization, moderate to no alteration
- TR-97-01-08** endoskarn, chlorite, epidote, garnet, trace mineralization, Py, Cpy, Pyrr, Bnt.
- TR-97-01-09** western exoskarn, 4 m channel, 10 % mineralization, Py, Cpy, Pyrr, Bnt,
- TR-97-02-10** eastern exoskarn, 3.5 m channel, 10-15 % mineralization, Py, Cpy, Bnt, Aspy
- TR-97-02-11** western exoskarn, 3 m channel, 10 % mineralization, Cpy, Pyrr, Py, Aspy, Bnt
- TR-97-02-12** oxidized version of -11

**TR-97-03-13**      **endoskarn, trace mineralization, Py, Cpy, Aspy, Bnt**

**TR-97-03-14**      **eastern exoskarn, 5-8 % mineralization, Py, Cpy, Aspy**

**TR-97-03-15**      **endoskarn, trace mineralization, Aspy, Cpy, Bnt**

11	10	5	6
CBE		BEE	
YA82533	YA82532	Y91732	Y91733
13	12	3	4
CEE			
YA82535	YA82534	Y91730	Y91731
		1	2
		BEE	
		Y91728	Y91729



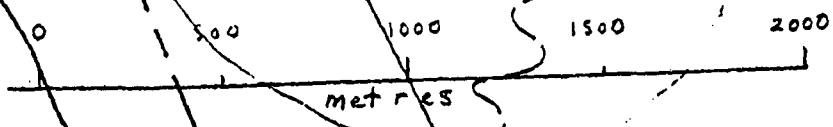
CITY LIMITS  
 REFER P.C. 1970-1448

APPROXIMATE  
 LOCATION OF LEUCOCRATIC  
 GRANITE, BIOTITE GRANITE

- Resistivity: 2000 ohm-m contour
- - - Chargeability: 20 m-sec contour
- x - Rock sample location

4702 LOT 511

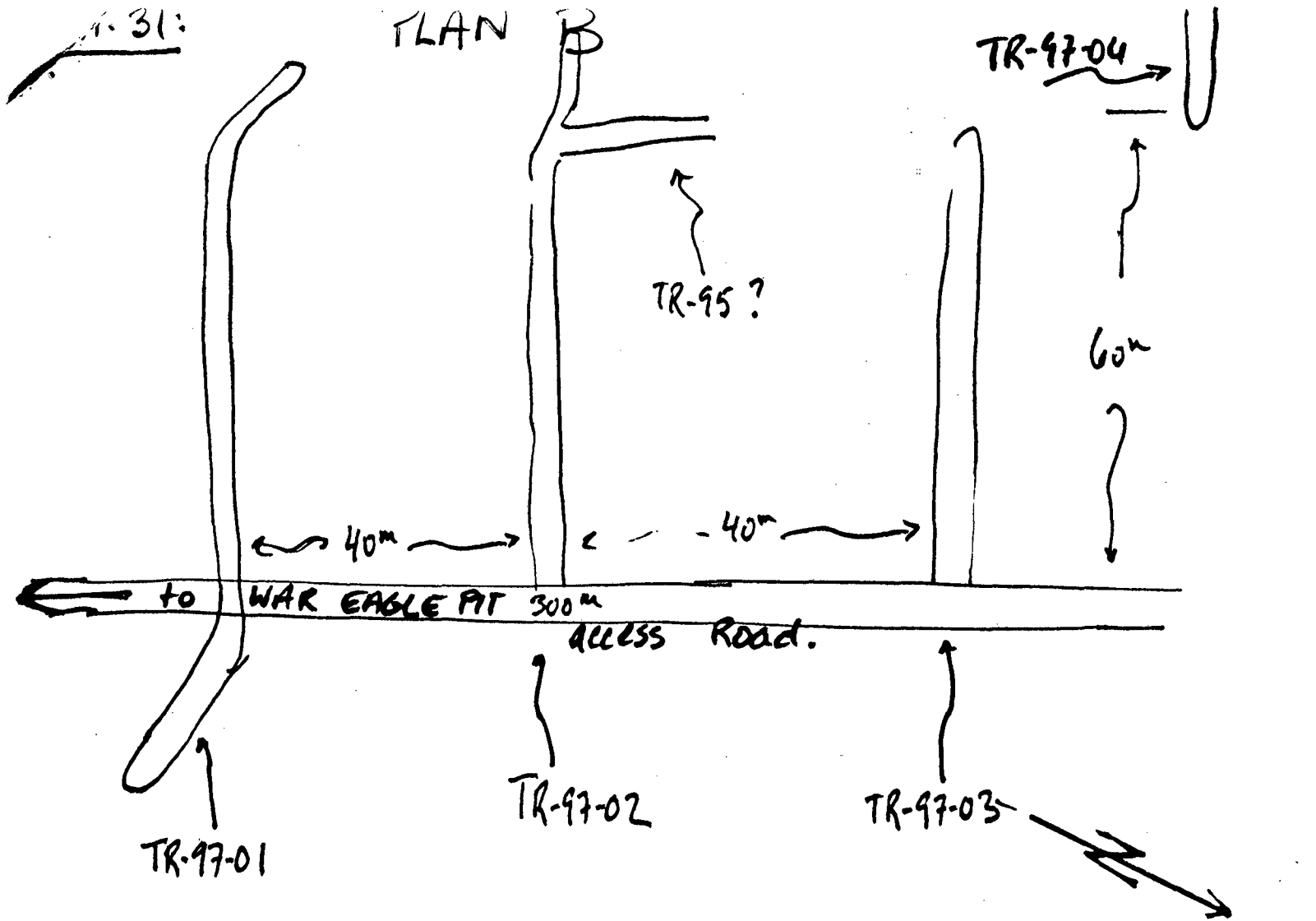
LOOKOUT RES 2899 TOWER



N. TRENCH  
 169063-169068  
 + A.M. #1  
 S. TRENCH  
 169069-169071

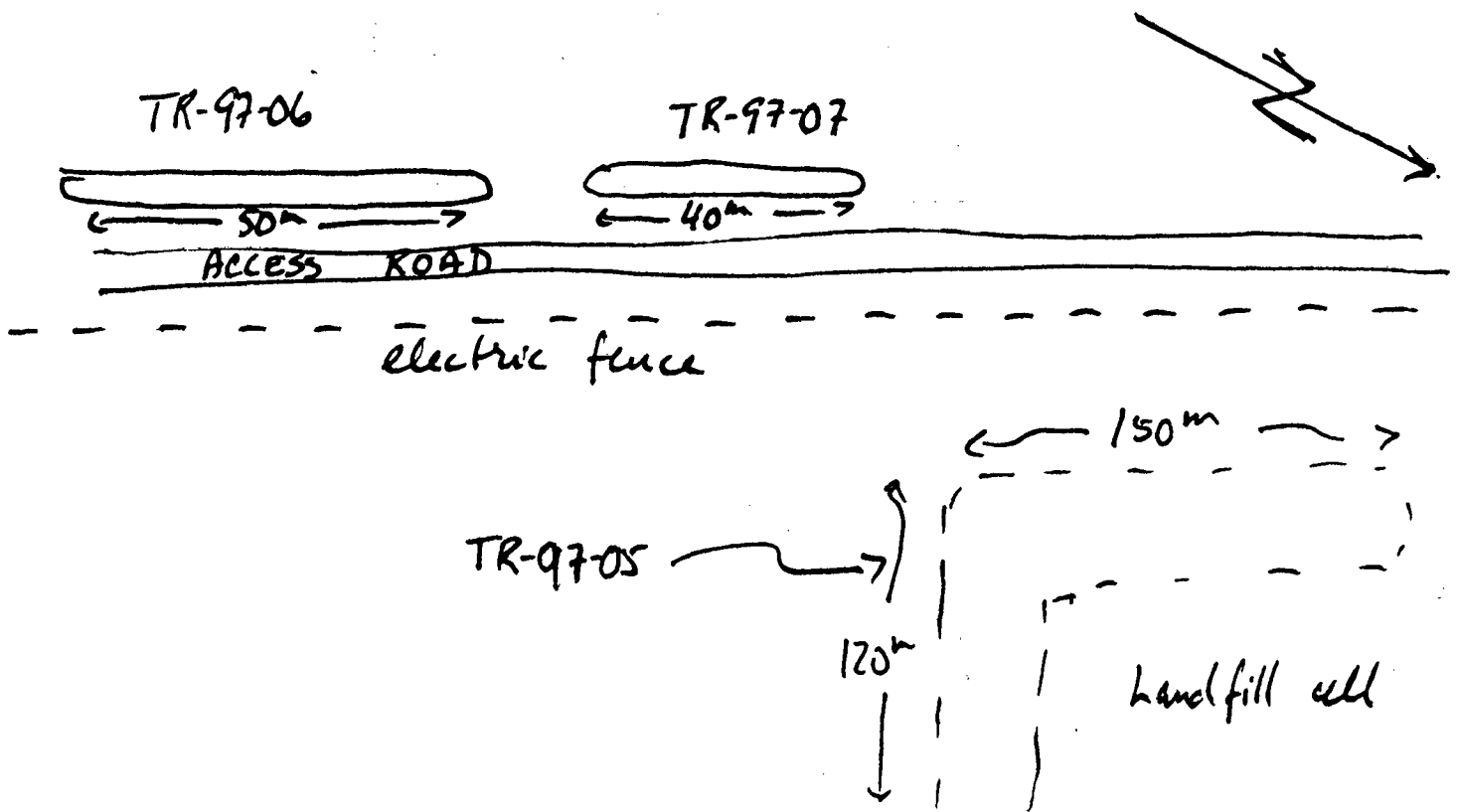






HAT 1:

PLAN D



08/09/97

Assay Certificate

Page 1

Coyne & Sons

WO# 07894

Certified by 

Sample #	Au ppb	Cu %
TR-97-01-1	86	3.69
TR-97-01-2	1006	9.58
TR-97-01-3	284	2.42
TR-97-01-4	820	1.84
TR-97-01-5	55	1.32
TR-97-01-6	301	1.63
TR-97-01-7	57	0.15
TR-97-01-8	188	0.36
TR-97-01-9	912	5.58
TR-97-02-10	1700	18.7
TR-97-02-11	>7000	8.91
TR-97-02-12	4035	8.43
TR-97-03-13	82	0.58
TR-97-01-14	458	1.58
TR-97-01-15	6	0.01

Note: Poor reproducibility of replicate Au analyses was noted, indicating probable nugget effects from coarse gold.



for

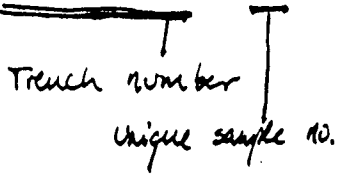
A

~~714 WCP~~

715-WCP

SAMPLE # : description.

TR-97-01-01 : channel sample, of secondary veinlet 1-2 cm perpendicular to starn bedding in diorite (altered, ~~endostarn~~) with chlorite and epidote sample includes wall rock (~80%), mineralization interstitial + banded: py., cpy., pyr., bnt.



TR-97-01-02 : channel sample, of starn 1.5 m long. (exostarn mineralization interstitial + banded ~10-15% py., cpy., bnt.)

TR-97-01-03 : channel sample, of oxidized vein 5-10 cm wide perpendicular to starn bedding (only vein material)

TR-97-01-04 : same as -03

TR-97-01-05 : channel sample, endostarn, trace interstitial mineralization py., cpy., pyr.,

TR-97-01-06 : oxidized version of -05

TR-97-01-07 : channel sample, granodiorite - diorite (little) moderate to no alteration

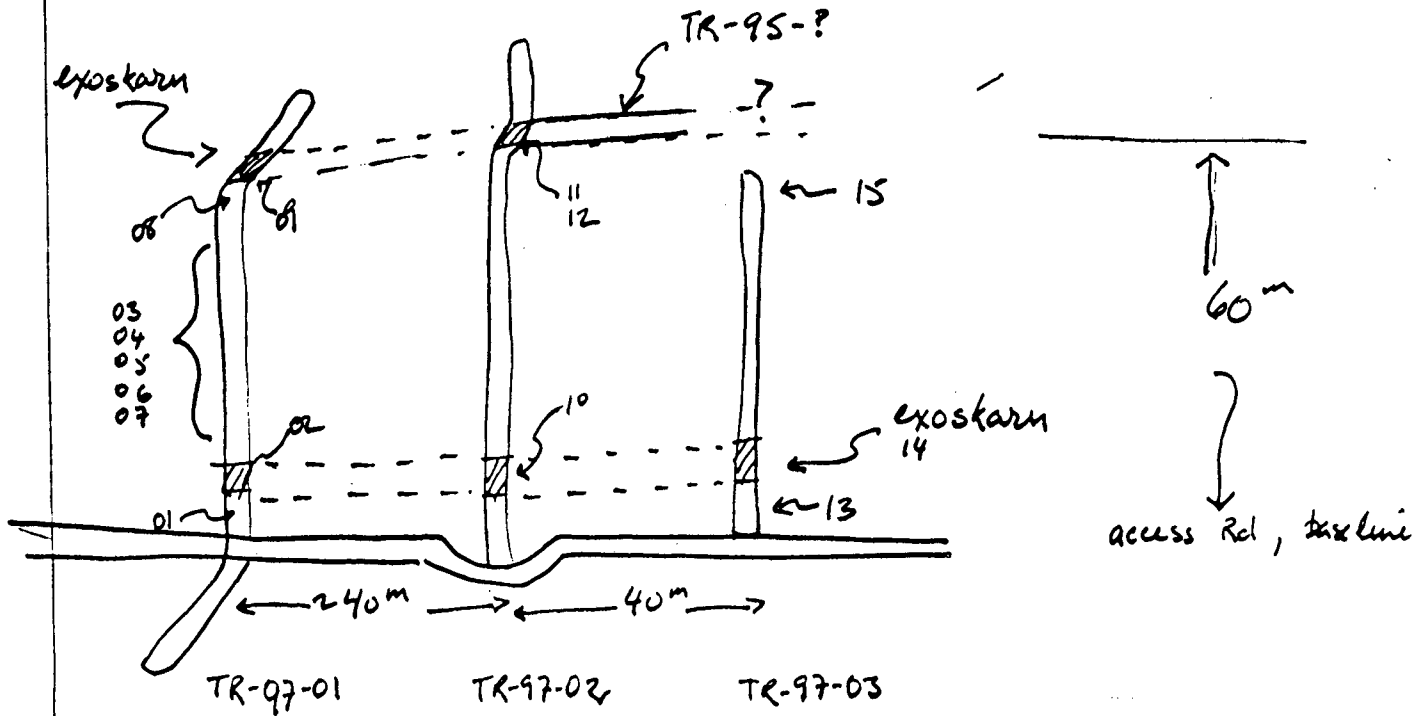
TR-97-01-08 : channel sample, endostarn - chlorite, epidote garnet, tr. Mineralization interstitial py., cpy., pyr., bnt.

TR-97-01-09 : channel sample, exostarn, 4 m long.

TR-97-02-10 : channel sample, exostarn, 3.5 m long. (same starn + mineralization as -02)

~~74WCP~~ (cont)  
71SWCP

- TR-97-02-11 : channel sample, exostern, 3<sup>m</sup> long  
same starn + mineralization as -09
- TR-97-02-12 : channel sample, Oxidized version of -11
- TR-97-03-13 : channel sample, endostern, tr. mineralization  
interstitial
- TR-97-03-14 : channel sample, exostern.  
(same starn as -02)
- TR-97-03-15 : channel sample, endostern



Aug 29/97 Owen Peet.



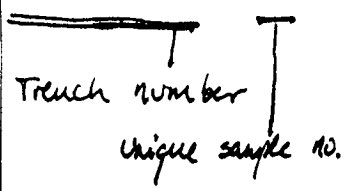
for

A

~~714 WCP~~

715-WCP

- SAMPLE # : description. - 87
- TR-97-01-01 : channel sample, of secondary veinlet 1-2 cm perpendicular to starn bedding in diorite (altered, ~~endostarn~~) with chlorite and epidote sample includes wall rock (~80%), mineralization interstitial + banded: py., cpy., pyr., bnt.
- TR-97-01-02 : channel sample, of starn 1.5 m long. (exostarn) mineralization interstitial + banded ~10-15% py., cpy., bnt.
- TR-97-01-03 : channel sample, of oxidized vein 5-10 cm wide perpendicular to starn bedding (only vein material)
- TR-97-01-04 : same as -03
- TR-97-01-05 : channel sample, endostarn, trace interstitial mineralization py., cpy., pyr.,
- TR-97-01-06 : oxidized version of -05
- TR-97-01-07 : channel sample, granodiorite - diorite (little) moderate to no alteration
- TR-97-01-08 : channel sample, endostarn - chlorite, epidote garnet, tr. Mineralization interstitial py., cpy., pyr., bnt.
- TR-97-01-09 : channel sample, exostarn, 4 m long.
- TR-97-02-10 : channel sample, exostarn, 3.5 m long. (same starn + mineralization as -02)





1596112 CERTIFICATE OF ANALYSIS  
iPL 97H0837

ATTN: Owen

2036 Columbia Street  
Vancouver, B.C.  
Canada V5Y 3E1  
Phone (604) 879-7878  
Fax (604) 879-7888

Client: Northern Analytical Laboratories  
Project: F01332330 M077894

15 Samples  
15-Pulp

[083712:15:53:79082897]

Out: Aug 28, 1997 Page 1 of 1  
In: Aug 25, 1997 Section 1 of 1

Sample Name	Ag	Cu	Pb	Zn	As	Sb	Hg	Mo	Tl	Bi	Cd	Co	Ni	Ba	W	Cr	V	Mn	La	Sr	Zr	Sc	Ti	Al	Ca	Fe	Mg	K	Na	P
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	%	%	%
TR-97-01-01	P 3.2	3.5%	7	59	<	<	<	4	<	<	0.2	6	6	12	14	59	20	369	2	46	7	1	0.02	0.64	0.43	4.80	0.03	0.01	0.02	0.10
TR-97-01-02	P 0.1m	9.2%	84	163	8	<	<	2	<	233	2.3	6	6	12	24	45	7	834	2	18	3	1	<	0.27	1.3%	2.86	0.27	0.02	0.02	0.23
TR-97-01-03	P 3.4	2.3%	13	85	53	<	<	14	<	<	<	15	13	25	219	65	23	688	11	276	8	2	0.02	1.55	1.2%	4.65	1.44	0.04	0.02	0.10
TR-97-01-04	P 4.2	17472	6	45	83	<	<	7	<	<	<	13	7	30	119	72	17	210	<	22	8	1	0.03	0.78	2.5%	5.80	0.27	0.02	0.02	0.09
TR-97-01-05	P 5.6	12133	3	35	12	<	<	13	<	<	0.6	10	5	16	9	36	5	807	3	58	4	1	0.01	0.30	1.4%	2.70	0.23	0.01	0.02	0.08
TR-97-01-06	P 6.2	14666	3	45	28	<	<	18	<	<	<	26	7	21	60	65	16	97	<	16	6	<	<	0.26	0.64	1720.17	<	0.01	0.06	
TR-97-01-07	P 0.8	1503	<	13	<	<	<	3	<	<	<	11	4	14	13	79	12	370	<	18	11	<	0.03	0.77	4.92	4.35	0.11	0.04	0.02	0.03
TR-97-01-08	P 3.5	3410	7	37	<	<	<	13	<	<	<	128	13	20	33	62	32	216	4	26	40	3	0.08	0.95	1.6%	1420.46	0.04	0.02	0.02	0.08
TR-97-01-09	P 19.6	4.5%	<	126	<	<	<	175	<	<	<	38	33	12	21	55	7	250	7	22	20	1	0.04	0.37	3.4%	7.61	0.15	0.02	0.02	0.23
TR-97-02-10	P 0.2m	16%	50	252	13	10	<	4	<	729	2.6	5	4	14	35	23	4	925	3	25	2	2	<	0.11	1.4%	2.77	0.18	0.01	0.02	0.40
TR-97-02-11	P 0.1m	7.2%	28	130	19	49	<	7	<	508	0.9	6	7	12	24	37	9	346	2	50	4	1	0.01	0.29	8.2%	3.04	0.13	0.02	0.02	0.23
TR-97-02-12	P 0.1m	6.9%	17	120	8	6	<	3	<	338	1.2	3	3	12	25	37	3	907	3	57	2	1	<	0.19	1.4%	2.32	0.28	0.02	0.02	0.23
TR-97-03-13	P 2.6	5675	29	22	13	<	<	3	<	50	0.1	3	6	27	<	48	8	241	2	56	3	1	0.02	0.51	4.7%	1.05	0.16	0.06	0.04	0.08
TR-97-03-14	P 14.8	13126	13	49	13	78	<	11	<	<	0.3	10	13	99	<	95	51	144	12	50	4	6	0.11	0.92	1.3%	1.43	1.10	0.33	0.06	0.15
TR-97-03-15	P 0.2	470	8	42	28	<	<	11	<	<	0.3	16	24	191	<	100	104	224	10	83	2	10	0.14	1.88	1.3%	2.99	2.49	0.56	0.06	0.12

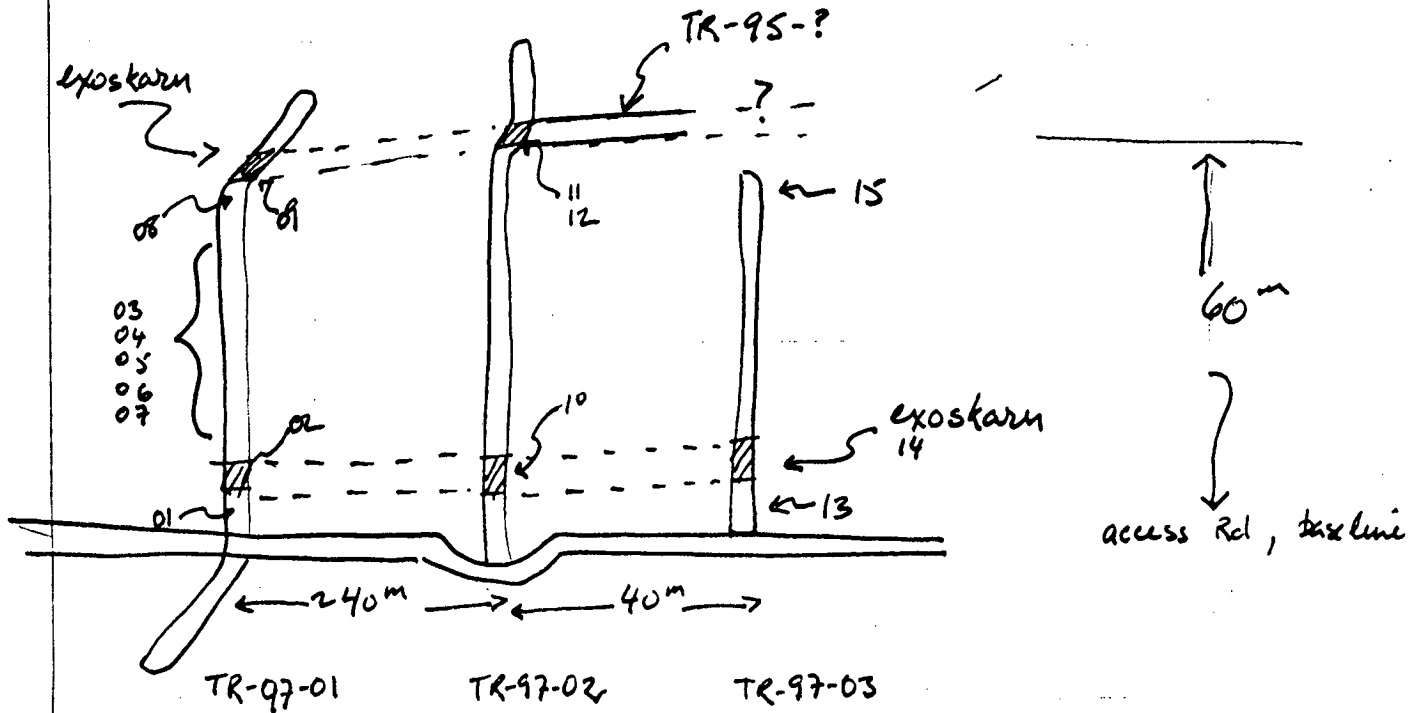
Min Limit 0.1 1 2 1 5 3 1 10 0.1 1 1 2 1 2 1 2 1 1 1 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

400-866-4128 229 P01



~~715WCP~~ (cont)  
715WCP

- TR-97-02-11 : channel sample, exostern, 3<sup>m</sup> long  
same skarn + mineralization as -09
- TR-97-02-12 : channel sample, oxidized version of -11
- TR-97-03-13 : channel sample, endostern, tr. mineralization  
interstitial
- TR-97-03-14 : channel sample, exostern.  
(same skarn as -02)
- TR-97-03-15 : channel sample, endostern



Aug 29/97 Owen Peier.

## A visit to the HAT property of Rob Hamill

03 August 1995  
Craig Hart  
Project Geologist  
Canada/Yukon Geoscience Office

### Location

The property is located north of the dump and south of Crestview and the Bee property. Much of the property is below 3000' asl and within regions covered with boulder-armoured swamps and plateaus of glacial till. Outcrops are rare and typically occur at small breaks in slope or moss-covered rocky knobs. The claims were staked after locating a very rich float boulder that contained a silicate skarn assemblage with chalcopyrite and bornite with significant amounts of amorphous and crystalline azurite and malachite. The rock probably contained 15% Cu.

### Geology

The property is underlain by a sequence of Upper Triassic Lewes River Group greywackes and limestones that are variably intruded by the northern extension of the mid-Cretaceous Whitehorse batholith, and smaller plugs of the Paleocene.

The sedimentary sequence is dominated by a sequence of well bedded, locally limy greywacke, shale and sandstone that is variably hornfelsed by the local intrusive rocks. This has left the sediments variably recrystallized and very well indurated. Hornfelsed sediments typically contain disseminated blebs of silvery pyrrhotite. Weathered surfaces are typically rusty or have a bleached white appearance. Fresh surfaces have maroon and green hues or are mottled. Some beds are composed of calc-silicate hornfels due to a more limy protolith. Rocks near the Kulan subdivision are black and shaley and are likely less altered than others on the property. The sedimentary package has a general east-strike across the claims and dips are moderate and to the north towards the dump and towards the south near the Kulan subdivision.

The limestone unit was not observed in outcrop however, due to the proximity of the granitic rocks, it is likely marble or skarn. Large boulders of wollastonite skarn were observed on Claim 2. Much of the clastic sedimentary sequence is limy and has a skarny look to it.

The Whitehorse batholith is the dominant intrusive rock on the property. It is a medium to coarse-grained biotite-hornblende granodiorite. The grain size is variable even on the hand sample scale. Dykes and some phases of this unit contain less mafic minerals (10%) and may have a pink hue. The Heackel Hill

pluton is typically coarser grained, more leucocratic, and contains more quartz than the Whitehorse pluton.

### **Mineralization**

There are two types of potential mineralization on the property -- skarn and porphyry.

Skarns are likely formed in the limestone and limy sedimentary rocks on the property. Large boulders of wollastonite-bornite float (5.6% Cu, 51 g/t Ag) were observed in the southern part of the property and may be locally derived. This rock also yielded an extremely high Bi value (700 ppm). Although Au was not determined for this sample, gold-rich skarns in British Columbia are typically enriched in Bi and hosted in wollastonite (Ettlinger 1990). The copper-rich float cobble from near the Kulan reservoir may be far-travelled. Skarn deposits in the Whitehorse Copper Belt are formed in pendants of limy sedimentary rocks on the top of the pluton. In the area underlain by the HAT claims, the Whitehorse pluton plunges shallowly to the north, providing a large area immediately on top of the pluton. The most proximal deposit is the War Eagle which contained approximately 900,000 tonnes of 1.25% Cu, 0.22 g/t Au, 8.6 g/t Ag and 0.005% Mo. The skarn there was dominated by silicate skarn minerals and it does not have a high magnetic signature.

The possibility of a porphyry style deposit is likely. Float containing disseminated chalcopyrite and veinlets of bornite were found in slightly altered Whitehorse pluton granodiorite. Although intrusive-hosted deposits are not typical of the Whitehorse Copper Belt, the nature of mineralization in the float boulder suggests that it may be similar to the Reservoir Lake showing or the Keewenaw deposit (360,000 tonnes of 1% Cu).

### **Reference**

Ettlinger, A. D., 1990. A geological analysis of gold skarns and precious metal enriched iron skarns in British Columbia. PhD thesis, Washington State University, Pullman, Washington, 246 p.

**RESULTS OF OCTOBER, 1995 PROPERTY VISIT**

**HAT CLAIM BLOCK: R. HAMEL**

**105 D/11, 105 D/14**

Prepared by:

C. Schulze, Geologist

Hemlo Gold Mines Inc.

November 7, 1995

## RESULTS OF OCTOBER, 1995 PROPERTY VISIT

A contiguous block of 36 claims, called the "Hat" Claims, are held by R. Hamel as of November, 1995. A two day property visit was conducted by the author, concentrating on the southern portion of the claim block NNE of the past producing WAR EAGLE copper-gallium-gold deposit. Topography varies from rolling hills to locally semi-flat expanses near the Whitehorse landfill site. Overburden across areas visited by the author appears to be relatively shallow, although outcrop expanse is limited.

The HAT Claims cover part of an area excavated by the City of Whitehorse for use as a future landfill site. Mr. Hamel staked this portion of the property in good faith; the land was available for staking according to claim maps furnished by the Department of Indian and Northern Affairs (DIAND). This portion, which overlies abundant bornite mineralization seen in proximal float, is currently under dispute. Some other areas are very close to residential and industrial developments; the entire claim block is within Whitehorse city limits. However, no other disputed areas, including all areas visited by the author, are known to exist.

The landfill site attracts a considerable grizzly bear population. The city may soon erect fences around the site to discourage further marauding by animals.

The southern portion of the property is underlain by stratigraphy comprising the northern boundary of the Whitehorse Batholith, and thus the boundary of the known extent of the Whitehorse Copper Belt. The batholith consists of equigranular, medium to coarse grained biotite-hornblende quartz monzonite to granodiorite. It has intruded upper Triassic Lewes River Group sandstones, siltstones, interbedded carbonaceous sandstones, and limestone and dolomitic horizons. The bulk of historic mineral extraction has been from skarn deposits found along the margin of the Whitehorse Batholith and adjacent dolomite and limestone horizons. Lower to middle Jurassic Laberge Group greywacke and sandstone overlie the Lewes River Group strata within a synclinal setting extending as a narrow formation north from the War Eagle deposit.

The stratigraphy underlying the northern portion of the property is not well understood. However, it is likely that it is underlain by Lewes River Group greywackes, argillites, and similar clastic sediments, lesser felsic to intermediate pyroclastics, and limestone and limestone breccias. A late Cretaceous to Tertiary biotite granite to quartz syenite pluton has intruded this sequence near the northwest corner of the claim block; this may have caused a hornfelsed and silicified aureole within the interbedded volcano-sedimentary strata.

Recent trenching roughly 200m NNW of the War Eagle Pit has uncovered both strongly developed granodiorite endoskarn and limestone exoskarn. This occurs roughly 300m west of the western boundary of the Whitehorse Batholith. Strong diopside development, as well as lesser olive-green garnet development, occurs within the

granodiorite; coarse grained wollastonite occurs in the surrounding calcareous rocks, indicating a limestone protolith. Some "retrograde" skarn mineralization consisting of epidote, serpentine and minor actinolite, is present. Mineralized zones contain up to 3-4% disseminated chalcopyrite, and up to 12% banded chalcopyrite locally. Disseminated and patchy interstitial bornite is locally abundant, comprising up to 40% of the rock mass, and averaging 2-3% within mineralized areas of the trenches. Banded to disseminated bornite and chalcopyrite occurs within weakly foliated silicified and shear altered greywacke. Strong azurite and malachite staining occurs throughout the trenches.

Two parallel east-west trenches, each exposing roughly 20m of bedrock, spaced roughly 18-20m apart, were excavated. Approximately 50-60% of exposed bedrock is significantly mineralized (greater than 1% bornite and chalcopyrite, often much more); mineralization extends beyond known limits in both ends of both trenches. Also, the granodiorite intrusives appear to be small apophyses of the main Whitehorse Batholith to the east, these trenches do not occur along the main western granodiorite contact. Thus the potential exists for a sizable copper deposit.

Roughly 900m northeast of the new trenches, in the Swamp Showing, an old blast pit within fractured greywacke intruded by small granodiorite dykes. Up to 3% vein and fracture related chalcopyrite, minor molybdenite and bornite occur within both the diorite and greywacke; minor disseminated chalcopyrite also occurs, particularly within granodiorite. The host intrusive rock is fairly pristine; only moderate contact metamorphism occurred within the sedimentary rock, with little skarn mineralization. This may represent a distal "outlier" zone related to more significant proximal skarn mineralization.

Several old pits revealing fracture related chalcopyrite with minor bornite and moderate malachite staining were blasted along a granodiorite contact with calcareous greywacke extending at 340 degrees from the Swamp Showing. Roughly 230m NNW of the showing along this inferred contact occurs a felsenmeer exposure containing moderately developed exoskarn mineralization and fracture related chalcopyrite within greywacke and moderate to strongly developed "retrograde" endoskarn mineralization within granodiorite. Much of the intrusive rock is moderately banded and calcareous, suggesting proximity to a carbonate protolith. Moderate epidote, minor chlorite alteration indicates "retrograde" mineral development; brown garnet development also is quite extensive. Economic mineralization consists of up to 3% fracture related and disseminated chalcopyrite, minor bornite, and up to 5% disseminated cuprite (?) within retrograde granodiorite endoskarn. Roughly 25m northwest of this rubblecrop there is an old trench, circa 1910, within "marbled" dolomite with some brown garnet development. Nearly massive bornite occurs along fractures with malachite and epidote staining, and localized disseminated bornite occurs near these narrow zones. A very quick inspection further along this trend revealed frequent malachite staining, moderately developed granodiorite endoskarn, and several small old workings.

This NNW trend loosely coincides with the inferred contact of the Whitehorse Batholith with Lewes River Group greywacke and lesser interbedded limestone. Retrograde skarn mineralization becomes more pronounced to the north; a 1986 report by L.D. Meinart suggests that sulphide-rich retrograde mineralization is preferential to gold mineralization.

Several pieces of proximal float of granodiorite endoskarn with strongly developed chlorite and epidote as well as coarse grained garnet occur within the northwest corner of the Hat Claims. A piece containing 15% magnetite within granodiorite and coarse grained calcite was found on HAT #18. Also, a piece of limestone showing strongly developed retrograde skarn mineralization was found within HAT #17. These were obtained close to the northeast contact of a biotite granite pluton with Lewes River Group clastic sediments and limestone, according to a 1951 mapping survey by J.O. Wheeler. Coincident chargeability and resistivity "highs" revealed by a 1973 induced polarization survey by Kenting Exploration Services Ltd over the War Eagle Claims occur close to these float samples. This would indicate the possibility of a considerable northward extension of the Whitehorse Copper Belt, or perhaps a second smaller copper belt surrounding the northern granitic intrusive.

The Bee and Cee Claims, located almost adjacent to the northwest of the Hat Claims, are underlain by a complex package of Lewes River Group intercalated metaclastic sedimentary rocks, limestone, and felsic pyroclastics intruded by a granitic pluton (this may be part of the same pluton mapped by Wheeler). The country rock was thermally metamorphosed, with pervasive silicification, moderate fracturing, and pyrite, with lesser pyrrhotite mineralization. It is reasonable to assume similar alteration of sedimentary rocks underlying the northwest part of the Hat Claims. The possibility of fracture or structurally controlled gold mineralization and even of a Carlin-style epithermal mineralization within limestone protoliths cannot be discounted. A "quartzite" horizon inferred from the Kenting survey results along the north boundary of the Hat Claims may be a silicified horizon.

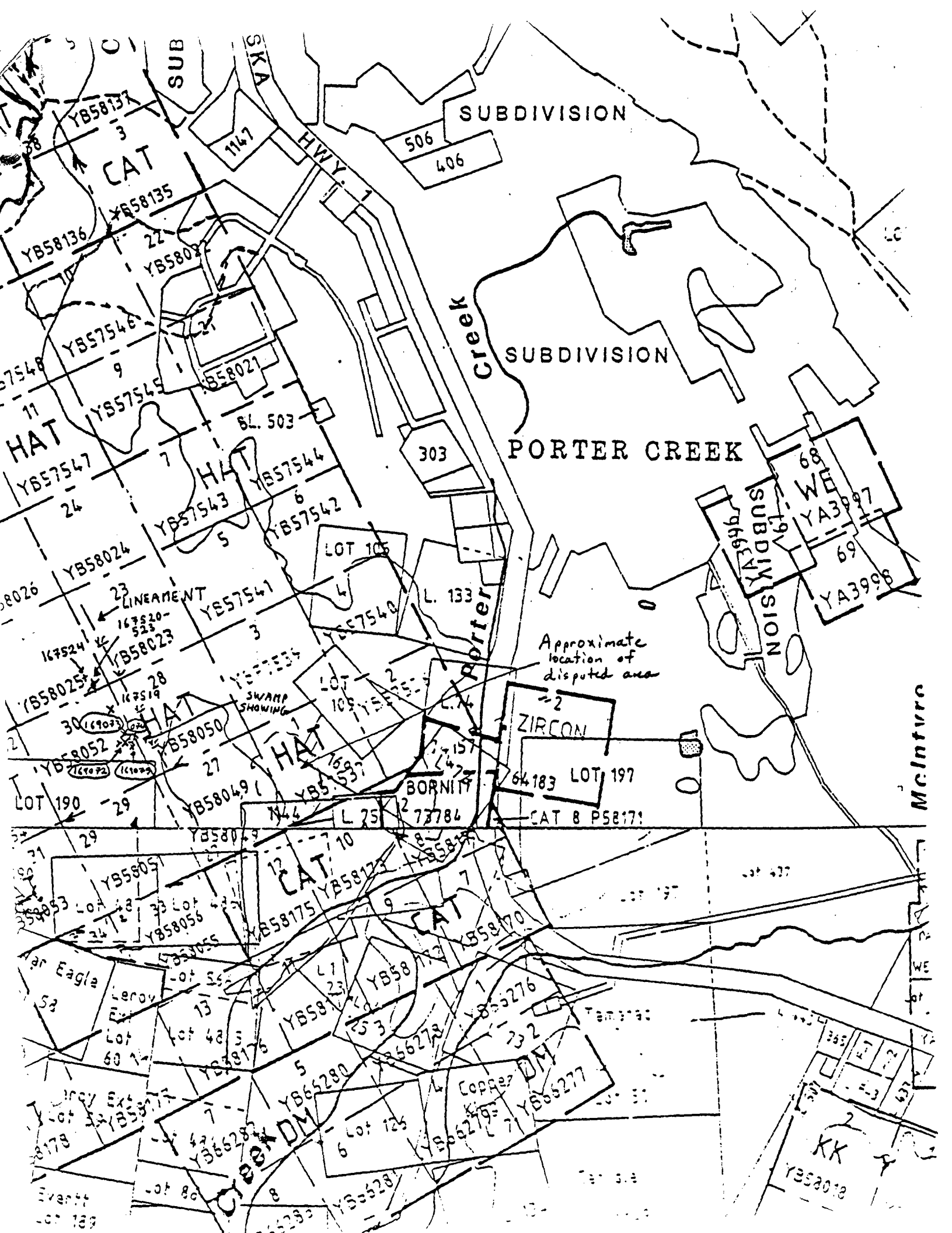
Limited previous sampling by Mr. Hamel, as well as considerable historical sampling has shown that copper skarn mineralization carries appreciable gold and silver. Assay results include 2198 ppb gold with 24.7% copper; 4679 ppb gold with 10.03% copper and 153.0 gpt Ag, and 1019 ppb gold with 3.6% copper and 68.5 gpt silver. A sample taken from the north trench by Mr. Hamel returned 0.042 opt gold, 7.93 opt silver and 15.1% copper. There may be a correlation between gold and bornite, which is abundant within parts of the property.

The entire Whitehorse Copper Belt contains an above average gold content compared with similar copper skarn camps. The average gold content is 700 ppb within ore grade mineralization. Historical recovery from the War Eagle Pit averaged only 0.22 gpt gold.

The Hat Claims may overlie several trends of significant copper-gold skarn mineralization. Gold grades may be expected to range from 0.5 to 2.0 gpt within a copper skarn deposit. The mineralization exposed by trenching near the War Eagle Pit may be part of a significant showing separate from the main contact of the Whitehorse Batholith with surrounding sedimentary country rock. Also, the potential exists for epithermal replacement or structurally hosted gold occurances underlying the northwest portion of the claims.







SUBDIVISION

SUBDIVISION

PORTER CREEK

SUBDIVISION

McIntyre

Approximate location of disputed area

ZIRCON

BORNIT

CAT

HAT

HAT

HAT

CAT

CAT

CREEK DM

DM

KK

506

406

303

LOT 105

L. 133

64.183 LOT 197

CAT 8 P5817

SUB

SKA

HWY

YB58136

YB58021

YB57546

YB57545

YB58021

BL. 503

YB57544

YB57547

YB57543

YB57542

YB58024

LINEAMENT

YB57541

YB58026

YB58025

YB58052

YB58050

YB58049

LOT 190

YB58051

YB58053

YB58056

YB58055

YB58054

YB58057

YB58058

YB58059

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YB58061

YB58062

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167509

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SWAMP SHOWING

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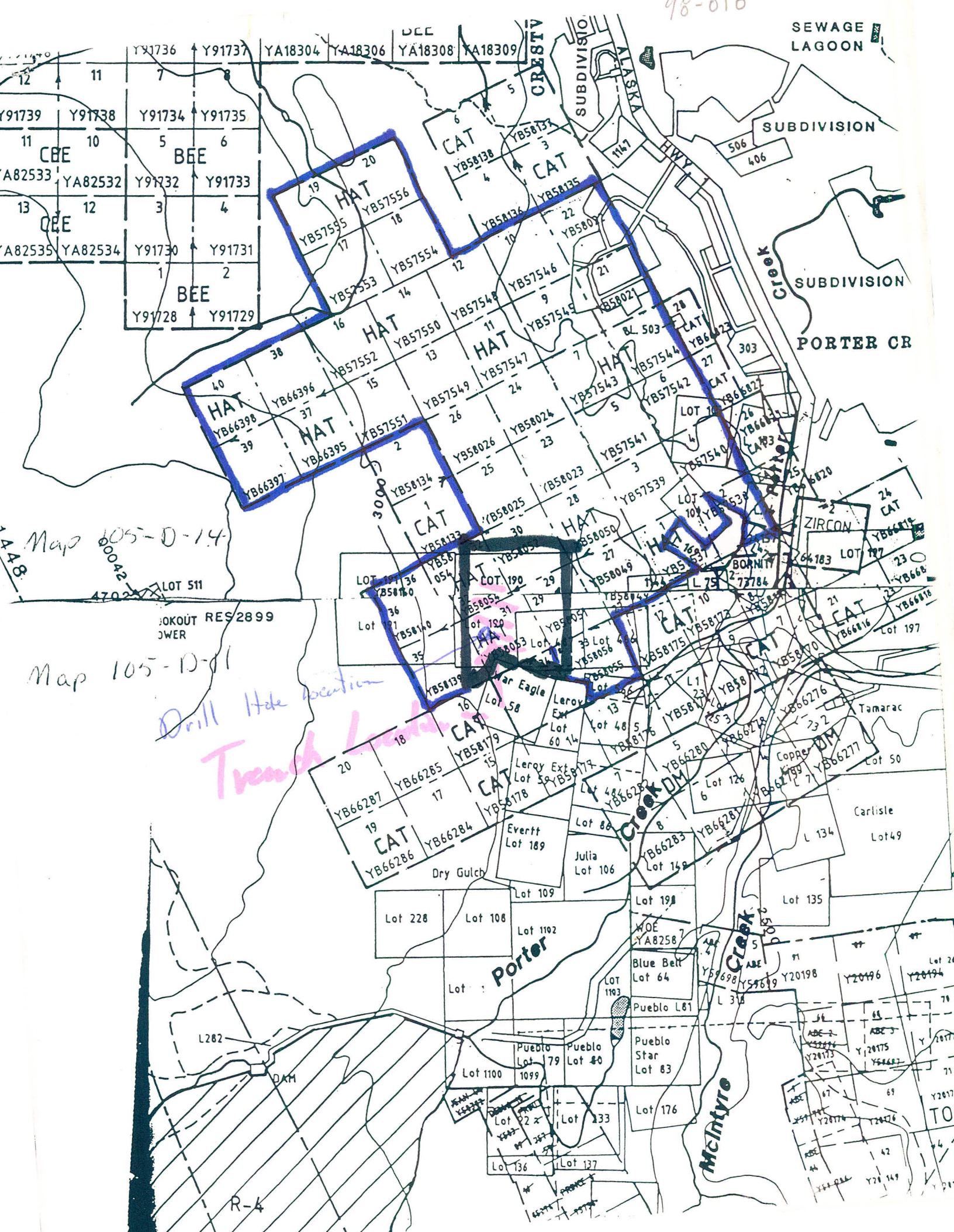
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YB58389

98-010



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Y91739	Y91738	Y91734	Y91735		
11	10	5	6		
A82533	YA82532	Y91732	Y91733		
13	12	3	4		
A82535	YA82534	Y91730	Y91731		
		1	2		
Y91728	Y91729				

Map 105-D-14  
 4448  
 4702  
 40042  
 LOT 511

OKOUT RES 2899  
 DWER

Map 105-D-11

Drill Hole location  
 Trench Location

R-4

SEWAGE LAGOON

SUBDIVISION

SUBDIVISION

PORTER CR

Creek

3000

ZIRCON

BORNITY

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

LOT 197

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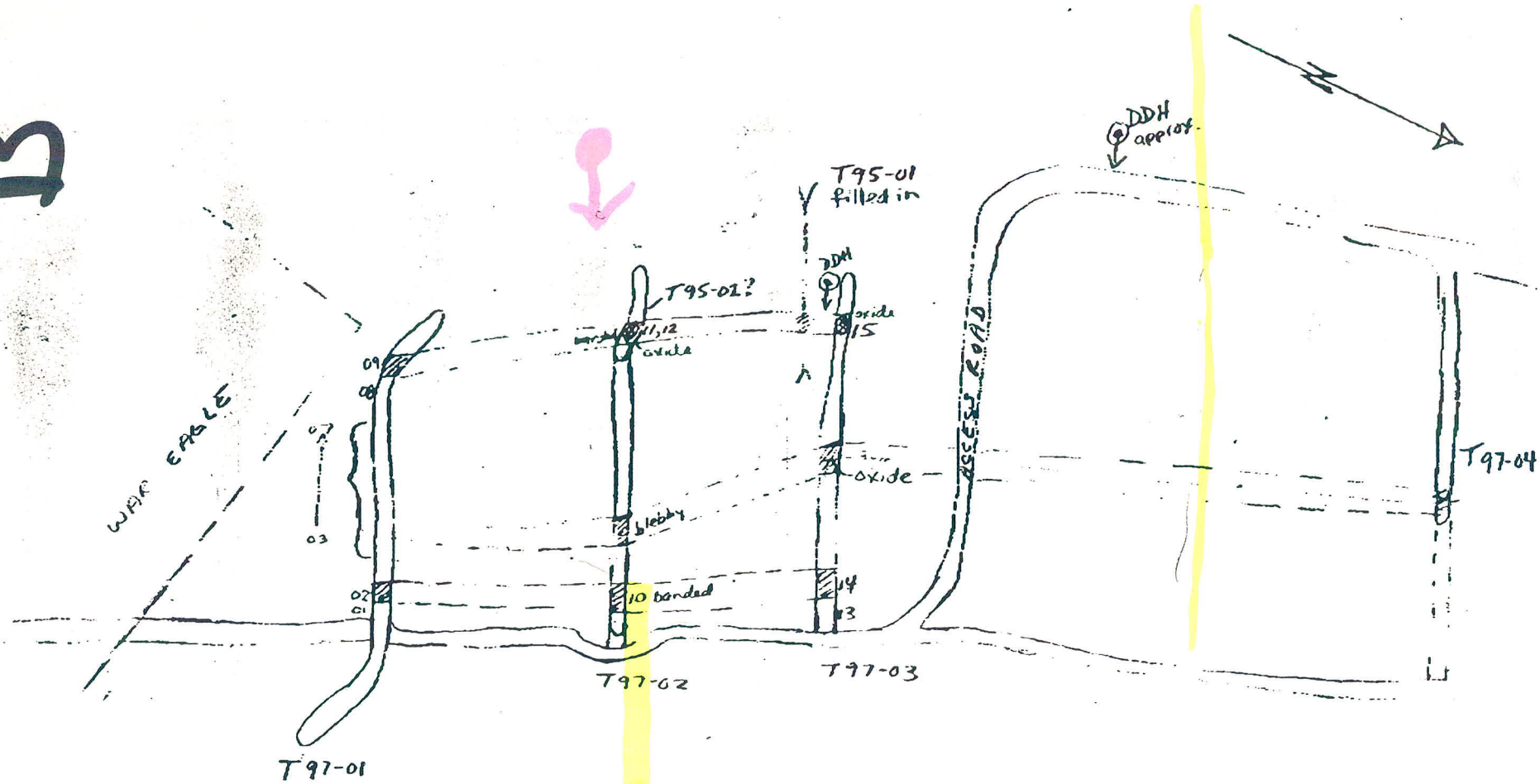
LOT 197

LOT 197

LOT 197



B



Scale 1:1,000

Sketch #B

 Trenching.

 Drill Hole.