Diamond Drilling Report

Stoney Creek Property

Fort Steele Mining Division
British Columbia

NTS 82G/4
49° 10' N Latitude
115° 55' W Longitude

Minnova Inc.
Vancouver, B.C.

Paul Baxter
February 26, 1990

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1. INTRODUCTION

1.1 General

The Stoney Creek property consists of 301 claim units in 18 contiguous claims located in the Yahk area of southeastern British Columbia. The claims were staked in 1987 for Minnova following 1986 reconnaissance work in the area. The area is underlain by sediments and intrusions of the Proterozoic Aldridge Formation which hosts the large Sullivan Pb-Zn massive sulphide deposit 65 km to the north.

1.2 Location and Access

The property is located approximately 40 km south of Cranbrook between the towns of Moyie and Yahk. The Moyie River, Highway 3 and the Crowsnest railway line all pass through the northwest corner of the claims (see Figure 1).

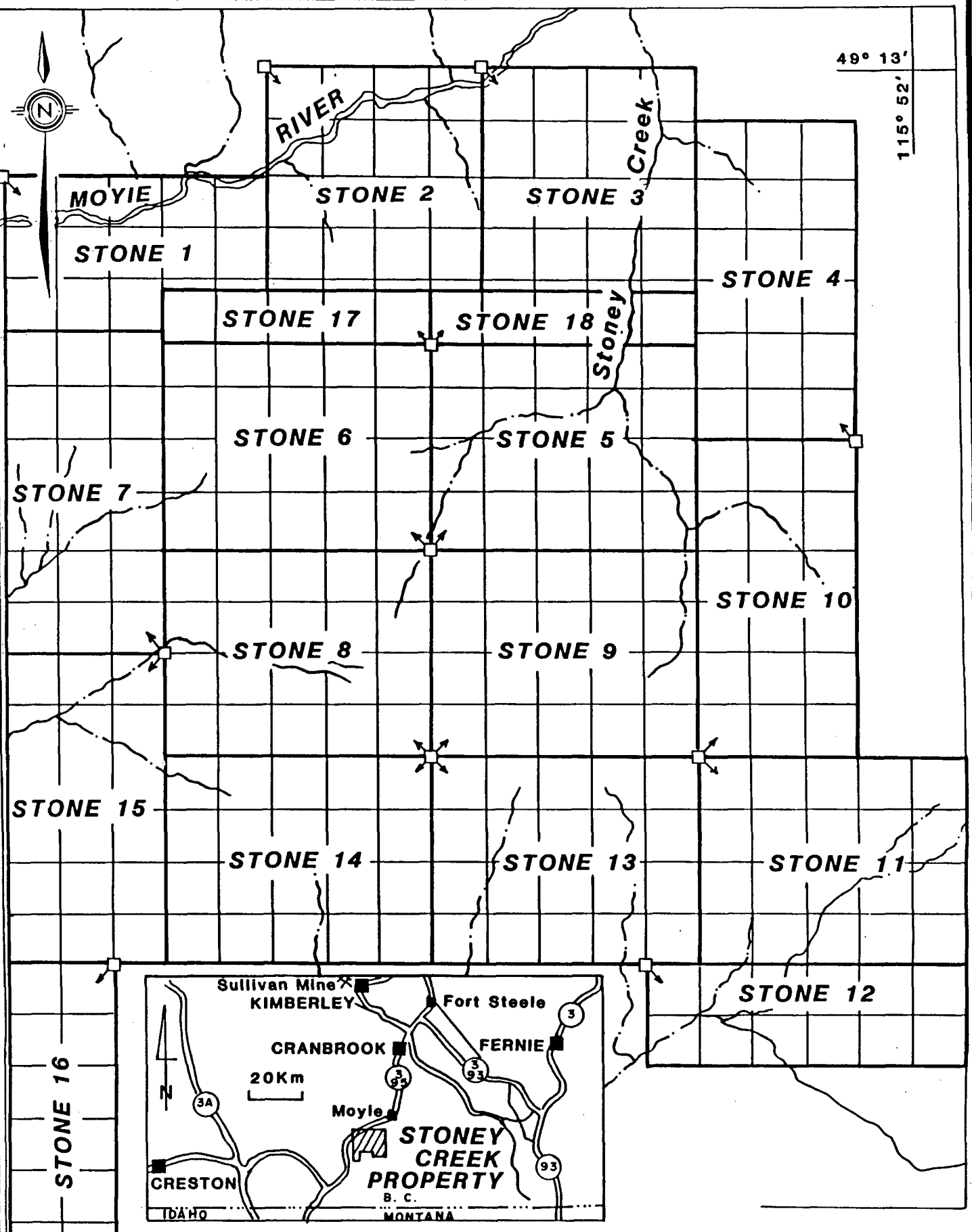
Access is available from the south end of the property by way of the Hawkins Creek logging road from Yahk to the Cold Creek road and from the north end by way of the Sundown Creek road from Moyie Lake.

1.3 Physiography

The property lies within the Yahk Range of the Purcell Mountains. Elevations range from 900 m in the Moyie River valley to over 1900 m in the middle of the property. Relief is generally subdued except for the Moyie River valley itself which is locally very steep.

Fairly dense forest cover common to the area has largely been removed by logging operations over the years. Very little of the logging appears to be recent and many of the roads on the property show ten years of scrub growth and water erosion.

The climate is classified as cool and damp with a snow free period on the upper reaches lasting only from June till November.



STONEY CREEK PROPERTY

CLAIM CONFIGURATION

NTS 82G/4

FIGURE 1

MINNOVA INC.

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1.4 Property and Ownership

The Stoney Creek Property consists of 18 contiguous claims totalling 301 claim units. All are 100% owned and operated by Minnova Inc. Please see Table 1 for a listing of claim data.

1.5 History

Prior to Minnova's staking of the Stone Claims in 1987, the only previous recorded exploration on the property involved a soil survey carried out for Kennco Exploration in 1966 in the Stoney Creek valley. There is no evidence of any follow up work being done.

Chevron Resources Ltd. has been exploring the Mt. Mahon property immediately southwest of Stoney for a number of years. They report bedded tourmalinite at or close to the Sullivan-hosting Lower Aldridge/Middle Aldridge contact. Refer to AR #14240 and others for details.

Minnova has carried out 1:10000 semi-recce property mapping, lithogeochemical sampling, line cutting and have conducted a Controlled Source Audio Magnetic Telluric (CSAMT) survey and a follow up gravity survey (AR 17633, AR 18152). The target of this exploration is a Sullivan type sedimentary exhalitive massive sulphide deposit.

Table 1. Claim Data

Claim Name	Record No.	Units	Expiry Date
Stone 1	2880	15	May 1, 1990
Stone 2	2881	20	May 1, 1990
Stone 3	2882	20	May 1, 1990
Stone 4	2883	18	May 1, 1991
Stone 5	2884	20	May 1, 1990
Stone 6	2885	20	May 1, 1990
Stone 7	2886	18	May 1, 1990
Stone 8	2887	20	May 1, 1990
Stone 9	2888	20	May 1, 1991
Stone 10	2889	18	May 1, 1991
Stone 11	2890	20	May 1, 1990
Stone 12	2891	12	May 1, 1991
Stone 13	2892	20	May 1, 1991
Stone 14	2893	20	May 1, 1991
Stone 15	2894	18	May 1, 1990
Stone 16	2895	12	May 1, 1990
Stone 17	2985	5	Sept 16, 1991
Stone 18	2986	5	Sept 16, 1991

2. Work Program

This report summarizes a two hole diamond drill program which tested two CSAMT anomalies (AR 17633). The drill program and associated road building and reclamation was carried out from September 12, 1989 to October 1, 1989 and included the following:

Road Building	-	3.1 km
Diamond Drilling	-	Two NQ holes totalling 519.4 m
Geochem	-	25 lithogeochemical samples 6 geochemical samples
Reclamation	-	Drill road, drill pad reseeding, water bar drill road, bucking fallen trees

All work occurred on the Stone 13 claim (Map 1a). Drilling was performed by Lone Ranger Diamond Drilling. Core storage is on site at the respective drill pads.

3. Geology

3.1 Regional

The southeastern corner of British Columbia in the Cranbrook area is underlain by rocks of the Purcell Anticlinorium, a wide north-plunging antiform in Helikian and Hadrynian aged rocks. The area is underlain by siltstone and quartzite of the Lower Aldridge Formation overlain by 3000 m of interbedded quartzite/siltstone turbidites of the Middle Aldridge and 300-400 m of argillite and siltstone of the Upper Aldridge Formation (Hoy, 1982). This deep water Turbidite sequence is overlain by shallow water clastics and carbonates of the Creston, Kitchener, Siyeh, Dutch Creek and Mount Nelson Formations.

The Purcell rocks are cut by syndepositional faults associated with a southwest trending Proterozoic rift which extends from Alberta into southeastern British Columbia. During Aldridge

time these faults have controlled the formation of intraformational conglomerate and are the locus of tourmalinization and the formation of stratiform lead-zinc occurences (Hoy, 1982). Of the known mineralized areas the most significant is the Sullivan where over 150,000,000 tonnes of Pb-Zn-Ag sulphide ore have been mined.

In the Moyie-Yahk area the Aldridge forms a broad shallow NE plunging anticline overlainn by the Creston Formation, is cut by numerous faults in various directions and cut by gabbroic intusions known as Moyie sills.

3.2 Property

Turbidites of the Middle Aldridge Formation cut by Moyie sills underlie the property. They are folded into a broad NE plunging anticline cut to the north by the WSW-ENE trending Moyie River fault.

4. Results

4.1 Diamond Drilling

Hole 89-ST1 was drilled to test a possible CSAMT anomaly on line 31+00N between stations 97+00E and 102+00E (Map 1a) and estimated to lie 230 m subsurface (AR17633). The hole intersected an interbedded sequence of poorly bedded biotitic wackes and quartz wackes and thinly bedded biotitic siltstones and mudstones of the Middle Aldridge Formation. Mineralizationn is limited to <1 - 1% disseminated and 1 mm laminations of pyrrhotite and pyrite which occurs predominantly within the thin bedded siltstone/mudstone

units. Of interest though is a 5.45 m zone from 138.5-143.95 m which contains 2-3% pyrrhotite over 10 cm widths. This zone may explain the weak CSAMT anomaly. No economic metal contents are associated with this zone.

Hole 89-ST2 was drilled to test a strong CSAMT anomaly on line 31+00N from 111+00E to 127+00E (Map 1a). The anomaly was interpreted to be a gentle west dipping conductive zone 170 m subsurface which is terminated by a major northeasterly striking fault on its western boundary (AR 17633). As with 89-ST1, 89-ST2 intersected Middle Aldridge wackes and well bedded siltstones/mudstones. The Turbidite sequence is intruded by a 16.25 m wide conformable Moyie Sill. Below the sill a heavily fractured zone occurs from 130.0 to 141.0 m which forms an aquifer encountered during drilling. This acquifer would explain the CSAMT anomaly. No significant mineralization was found in hole 89-ST2.

Detailed logs for holes 89-ST1 and 89-ST2 are included in Appendix I.

4.2 Lithogeochemistry

Twenty-five lithogeochemical andd six geochemical samples were taken from the core. All were analyzed at Min-En Labs, North Vancouver. Litho samples were analyzed for SiO_2, TiO_2, CaO, MgO, Na_2O, K_2O, MnO_2, Fe_2O_3, (total iron), Al_2O_3, Sr, Zr, and Ba by ICP analysis of a crushed and digested bead formed by fusion with lithium borate. Ag, Cu, Pb, Zn, B, Sb and As were analyzed by standard ICP techniques using an aqua-regia digestion. F and B-Tot were analyzed by fusion methods with their respective specific ion electrode and ICP finish. Geochem samples were analyzed for Cu, Pb, Zn, Ag, Au by standard ICP techniques.

Lithogeochemical samples were taken routinely approximately every 20 m down the hole. The purpose of the

sampling was to identify zones of possible alteration and associated enrichment in base metals. No anomalous zones were detected within the two holes drilled.

4.3 Petrographics

To aid the description of core lithology and mineralogy, two samples of core from 89-ST1 were sent to Vancouver Petrographics for thin section preparation and description. Complete thin section descriptions are included in Appendix 3.

5. Road Construction

To drill test the two CSAMT anomalies, 3.1 km of access road was constructed (Map 1a). The road begins on Ryan Creek road approximately 4.7 km from the Cold Ck. road - Ryan Ck. road junction. The first 900 m is an upgraded, overgrown and eroded skidder trail. The remaining 2200 m is newly constructed. Road construction was carried out by an International tractor cat and 892 John Deere excavator.

6. Reclamation

As per B.C. Forestry regulations, trees felled during road construction were bucked and laid flat. When drilling was completed the road was water barred to limit erosion and as requested by Fish and Wildlife, the road was blocked by earthen mounds 90 m from its beginning. The access road and drill pads were reseeded by hand spreader with a seed mixture of 30% clover, 70% pasture mix at a rate of 15 lbs/acre.

7. Conclusions and Recommendations

Two diamond drill holes totalling 519.4 meters tested CSAMT anomalies in the Middle Aldridge Formation. Very weak pyrite-pyrrhotite mineralization was encountered in fine pelitic sediments but no economic mineralization was discovered. The weak mineralization may explain the weak CSAMT tested by hole 89-ST1 and an aquifer may explain the CSAMT anomaly tested by hole 89-ST2.

8. Cost Statement

Drilling	
Contractor Costs (Lone Ranger Drilling Ltd., Lumby) 519.4 m @ $60.61/m	$31,481.17
P. Baxter 12 days @ $300/day	3600.00
I. Pirie 2 days @ $400/day	800.00
Road Construction	
Contractor Costs (R. Anderson, Kimberly)	9650.00
P. Baxter 5 days @ $300/day	1500.00
Reclamation	
Contractor Costs (Lone Ranger Drilling Ltd.)	2625.00
P. Baxter 2 days @ $300/day	600.00
Geochemistry	
25 lithos @ 33.50 each	837.50
6 geochem @ 17.25 each	103.50
Petrographics	
Two thin sections @ $8	16.00
Petrographic report	150.00
Field Expenses	
Room and Board	821.11
Truck Rental 19 days @ $50/day	950.00
Field Equipment	614.93
Report Preparation	
P. Baxter 4 days @ $300/day	1200.00
I. Pirie 1 day @ $400/day	400.00
Typing, copying drafting, etc.	350.00
Total	$55.699.21

9. References

Dekker, L., Schizrizza, P., 1985, Geology, Gravity, EM-37 and Geochemical Soil Survey, MEL Claim Group, Assessment Report No. 14,240.

Hoy, T., 1982, Stratigraphic and Structural Setting of Stratabound Lead-Zinc Deposits in Southeastern B.C., CIM Bulletin, Vol 75, No. 8409, pp. 114-134.

Pirie, I. D., 1988, Report on the 1987 Geological, Geochemical and Geophysical Exploration Program - Stoney Creek Property, Assessment Report No. 17633.

1988, Report on the 1988 Exploration Program - Stoney Creek Property, Assessment Report No. 18152.

10. Statements of Qualifications

I, Paul Baxter certify that:

1. I hold an Honours Bachelor of Science degree in geology from the University of Alberta.

2. I am a Member-in-Training with the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

3. I have worked as a geologist for three years full-time and two years part-time since 1985.

Date: April 2, 1990

Paul Baxter
Vancouver, B.C.

CERTIFICATE OF QUALIFICATIONS

I, Ian D. Pirie certify that:

1. I am an Exploration Geologist residing at 4580 - 44B Avenue, Delta, BC.

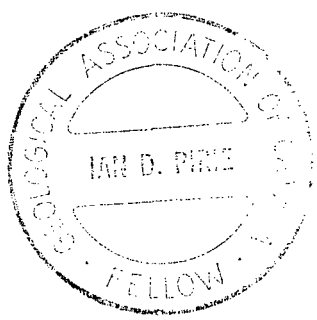
2. I have a BSc (Hons) in Applied Geology from the University of Strathclyde, Glasgow, Scotland (1977) and a MSc (Geology/Geochemistry) from Queen's University at Kingston, Ontario (1980).

3. I have practised my profession since 1977.

4. I personally carried out or supervised the work reported herein.

Date

Ian D. Pirie



Appendix I

Drill Logs

HOLE NUMBER: 89-ST-1

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: STONEY
PROJECT NUMBER: 623
CLAIM NUMBER: STONE 13
LOCATION: NTS 82G/4

PLOTTING COORDS GRID: Stoney
NORTH: 3100.00N
EAST: 9900.00E
ELEV:

ALTERNATE COORDS GRID: Stoney
NORTH: 31+ 0N
EAST: 99+ 0E
ELEV: 0.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 270.36m
START DEPTH: 0.00m
FINAL DEPTH: 270.36m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: ° ' "

DATE STARTED: September 20, 1989
DATE COMPLETED: September 24, 1989
DATE LOGGED: 0, 0

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: Lone Ranger Drilling
CASING: 7.62
CORE STORAGE: at drill site

PURPOSE: To test a possible CSAMT anomaly 230 m subsurface for Sed Ex massive sulfide mineralizaton.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
69.20	-	-87° 0'	ACID	OK		-	-	-	-	-	
206.30	-	-86° 0'	ACID	OK		-	-	-	-	-	
252.10	-	-84° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 7.60	OVERBURDEN	Casing				
7.60 TO 50.30	QTZ WACKES WACKES, SILTSTONES	Colour: medium to dark grey Grain Size: fine grained Monotonous sequence of grey siltstones, wackes and quartz wackes. Bed thickness varies from 1 cm to 30-40 cm. In areas of thin bedding, there is up to 1 m of thin beds in the order of 1-3 cm. Bedding marked by color changes and grain size changes. Colour changes from medium to dark grey reflect variation in composition. Lighter grey siltstones and wackes richer in quartz and containing 5-10% fine biotite. Darker grey rock with up to 20-30% biotite reflecting a dirtier siltstone or wacke. Patchy zones with disseminated muscovite. Patchy < 1m zones with a weak silificied hornfels appearance. Some soft sediment features and erosional contacts Rare white mm laths, possible amphiboles 7.6-13.0 -dirty siltstone -fine brown colored muds with diss. biotite 13.9-16.7 -fine white speckled appearance with 3-5% <1 mm white specks, possible fsp? -same interval hornfels looking 18.1-18.3 -Fault Zone -crushed, rubbly rock -carbonate veinlets in footwall to fault -occasional 10 cm zones with 1-2% 1-2 mm poorly developed irregular pinkish garnets			- <1% disseminated pyrite, rarely occuring along fracture planes 9.54-9.60 -3-4% dissem. pyrite Altered pyrite gives a fine dark spotted appearance 23.2-23.25	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
					-pyrrhotite witin and rimming < 1 cm wacke fragments 26.05-26.15 -1-2% py/po diss and as < 1 mm single laminations	
		42.8-43.2 -Fault -broken core, blocky, minor fault gouge along fracture surfaces Bedding Measurements: 8.1 m 8.6 m 26.1 m 34.8 m 41.1 m	 79 80 72 78 80			
50.30 TO 68.20	INTERBEDDED SILSTONE & MUDSTONE	Colour: pinkish brown, dark grey Grain Size: fine grained Thinly bedded pinkish brown silstone with 10-15% very fine biotite and dark grey mudstone with fine disseminated biotite and black << 1 mm wispy laminations. Individual siltstone or mudstone beds 1.5-4 cm. Some beds as thin as 0.5 cm with rare 2 mm laminations. Bedding measurements: 50.6 m 56.5 m 63.3 m 65.4 m 67.9 m	 78 80 82 80 80		-<1% combined pyrite/pyrrhotite Of interest though py, po more common within dark grey mudstones (diss) and at the top of mudstone beds as 1mm laminations or more concentrated disseminations. -possible very fine chalcopyrite with pyrite and pyrrhotite	
68.20 TO 125.00	QTZ WACKES, WACKES, SILTSTONES	Colour: light to dark grey Grain Size: fine grained Clean, light grey, fine grained quartz wackes with				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		muscovite and locally <1% chlorite interbedded with med grey and brown grey dirty wackes/siltstone with abundant disseminated biotite and thinner beds and laminations of dark grey biotite mudstone. Light grey quartz wackes vary from 10-50 cm averaging 20-30 cm. Grey and brown wackes and siltstone beds vary from 1-2 cm to 10 cm with accumulated thickness of up to 1-2 m between pulses of quartz wackes. Siltstone/mudstone intervals towards base of unit contain moderately abundant fine muscovite flakes. Rare < 1 cm rounded quartz wacke and wacke frags. 89.0 -4 cm rounded quartz wacke fragments 90.8-91.3 -dark grey to black mudstone with 2-3% very fine disseminated pyrite 97.3-97.35 -black silificied/cherty? mudstone with 2-3% diss pyrite 108.9-110.25 -light-med grey quartz wacke and wacke with 2% < 1mm black felted mineral, possible amphibole type mineral -occasional zones towards base of unit with 3-4% poorly developed garnets			84.75-84.9 -1-2% pyrite trace galena?, disseminated and within fractures at 5 deg to c.a. -dark metallic mineral associated with pyrite within fractures	Thin section at 110.0 m
125.00 TO 196.30	PELITIC METASEDIMENTS, DIRTY, SILTSTONE, MUD	Colour: pinkish brown, dark grey Grain Size: fine grained Similar rocks as described, for earlier siltstone/			-<1-1% diss. pyrite and pyrrhotite	Greater pelitic content of this unit

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	STONE	unit. Predominantly pinkish brown biotitic siltstone with thinner beds and laminations of dark grey mudstone/argillite with minor biotite. Brown biotitic siltstone also contain moderately abundant fine muscovite flakes. This unit differs slightly from previous unit by containing moderately abundant creamy white/grey soft clay/sericite mud beds <1-10 cm. Some beds contain 3-4% 1-2 mm white laths = amphiboles? Brown siltstone very biotite rich. Rare x-bedding and soft sed. deformation. 130.7-130.9 -subvertical fault x-cutting beds -displacement unknown 136.2-138.3 -Moyie Sill -speckeled white medium green, fine to med grained 60-70% green hornblende, 20-25% white fsp/ carbonate? and 10% biotite -conformable lower contact 138.5-143.95 -greater abundance of blakc mudstone/argillite beds 167.0-196.3 -occasional 10-40 cm thick fine quartz arenites, wackes with 1-2% and up to 10% biotite 177.6-180.0 -weak biot/silica hornfels appearance as halo around quartz vein		146.1-146.15 -qtz-carb vein, conformable 178.4-179.1 -4-5 cm wide subvertical quartz-carb vein with 1-2% po and minor py 193.05-193.7 -thin carbonate? veinlets x-cutting	Pyrrhotite also concentrated within mudstone beds as <1 mm laminations 136.2-138.3 -minor po within subvertical 1 mm quartz veinlet 138.5-143.95 -2-3% pyrrhotite and locally 5-7% po mainly disseminated within mudstone/ argillite beds and as mm laminations 138.55-138.6 -5% po 138.75 -4 x 1 cm massive pyrrhotite fragment	reflected in increase biotite content and fine grain size then wackes and quartz wackes Thin section at 157.8 m

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				and conformable to distorted sediments		
		Bedding measurements:				
		128 m	79			
		132.7 m	78			
		141.3 m	78			
		147.3 m	70			
		151.5 m	70			
		160.7 m	68			
		166.4 m	68			
		174.6 m	68			
		186.3 m	68			
		195.2 m	67			
196.30 TO 217.50	SILTSTONE, WACKES, MINOR QTZ WACKE	Colour: medium grey, brown grey, lt green grey Grain Size: fine grained Predominantly med grey, fine grained dirty wackes/ siltstones with 20-35% fine diss. biotite and patchey 2-3% 2-4 mm biotite blades. Occasional light grey grey quartz wackes with 2-4% biotite. Bedding poorly developed, 10-40 cm scale. Rare 2-mm rounded garnets			-trace py, po	
217.50 TO 258.90	DIRTY SILT-STONE, MUD-STONE, PELITIC METASEDS	Colour: brown, dark grey Grain Size: fine grained Similar to previous siltstone/mudstone units. Brown biotitic siltstone and dark grey mudstone/ argillite. Well bedded on a scale of <10 cm. Occasional light grey wackes/quartz wackes with 5-10% fine biotite. 218.2 -10 cm layered concretion 225.7 -10 cm brecciated zone, fault breccia within quartz wacke 237.8-237.95 -elongate flattened med grey siltstone fragments			-<1-1% pyrrhotite as f. disseminations and occasional 1 mm single laminations concentrated within mudstone beds where po may reach 5% over <0.5 cm - 1cm -trace chalcopyrite intergrown with pyrrhotite	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		2 x <0.5 cm within mudstone Bedding measurements: 224.9 m 233.6 m 243.4 m 252.3 m	 67 67 69 69		252.95 -5 cm frament with 25% diss po 243.05 -2 mm lamination with trace galena, may be remobilization from above fragment 255.8 -3 cm fragment of mudstone with 20% po	
258.90 TO 270.36	CLEANER WACKES, QTZ WACKES	Colour: med grey Grain Size: fine grained Poorly bedded f.g. grey wackes and quartz wackes with <10% fine diss. biotite and muscovite. Thin laminations of dark grey mudstone with abundant biotite 259.9-261.7 Moyie Sill Amphibolite -90% fine grained green hornblende with up to 10% biotite. -Coarser grained hornblende near upper and lower margins with 20% quartz over a width of 20 cm 262.5-263.2 -well laminated zone of biotitic mudstone -may be a Cominco marker horizon? bedding 262.8 m 263.9-264.1 -1-1.5 cm rounded wacke fragments 267.0 -2 cm fragment	 69		-trace py, po, cpy -pyrite fracture coatings	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	E.O.H.					

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	COMMENTS
BCD17427	138.30	138.75	0.45	105	80	111	1.6	2	
BCD17428	138.75	139.80	1.05	143	56	48	1.8	1	
BCD17429	139.80	140.80	1.00	44	37	24	0.8	4	
BCD17430	140.80	141.80	1.00	48	65	23	0.7	1	
BCD17431	141.80	142.80	1.00	40	84	19	0.8	1	
BCD17432	142.80	143.80	1.00	41	87	21	1.0	2	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	BaT %	Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	B tot. ppm	F ppm
BCD17401	20.10	23.10	3.00	67.14	15.97	.84	1.17	1.85	4.07	4.53	.06	.64	.07	22	64	9	0.4	10	2	490
BCD17402	41.80	44.80	3.00	65.13	17.37	.44	1.39	1.57	4.73	4.86	.05	.65	.075	21	53	12	0.4	10	15	425
BCD17403	54.00	57.00	3.00	63.28	16.70	2.5	3.07	1.92	4.03	4.99	.05	.58	.06	25	110	41	1.3	5	18	760
BCD17404	75.30	78.30	3.00	71.86	13.94	.63	.98	2.14	3.36	3.59	.04	.55	.055	11	52	10	0.2	5	1	265
BCD17405	99.70	102.70	3.00	70.87	14.48	.72	.99	2.5	3.24	3.6	.04	.64	.055	9	57	9	0.6	5	1	255
BCD17406	118.00	121.00	3.00	65.43	17.57	.43	1.49	1.9	4.6	4.83	.04	.46	.06	18	71	11	0.6	5	13	450
BCD17407	130.10	133.10	3.00	63.33	14.11	4.55	3.62	1.08	4.14	4.86	.12	.57	.055	29	108	43	1.4	5	12	800
BCD17409	157.60	160.60	3.00	62.72	14.95	4.14	3.69	2.01	3.88	4.43	.07	.49	.06	23	104	40	1.5	10	19	700
BCD17410	182.00	185.00	3.00	66.29	13.70	2.7	2.92	1.52	3.9	4.13	.06	.59	.065	27	82	45	0.9	5	13	590
BCD17411	206.30	209.30	3.00	64.53	16.81	1.47	1.9	1.63	4.43	4.66	.06	.58	.065	28	87	30	1	5	1	525
BCD17412	227.70	230.70	3.00	64.39	15.38	2.52	3.34	1.77	4.36	3.89	.07	.58	.07	19	99	40	1.2	5	8	600
BCD17413	249.00	252.00	3.00	64.65	14.39	1.62	3.32	2.64	3.59	6.1	.08	.56	.065	56	113	50	1.2	5	1	670
BCD17414	264.30	267.30	3.00	72.18	12.48	2.19	0.82	1.91	3.22	3.2	.06	.53	.07	16	33	7	6.8	5	1	285

HOLE NUMBER: 89-ST-2

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: STONEY
PROJECT NUMBER: 623
CLAIM NUMBER: STONE 13
LOCATION: NTS 82G/4

PLOTTING COORDS GRID: Stoney
NORTH: 3100.00N
EAST: 11150.00E
ELEV:

ALTERNATE COORDS GRID: Stoney
NORTH: 31+ ON
EAST: 111+50E
ELEV: 0.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 249.00m
START DEPTH: 0.00m
FINAL DEPTH: 249.00m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: ° ' "

DATE STARTED: September 24, 1989
DATE COMPLETED: September 27, 1989
DATE LOGGED: 0, 0

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: Lone Ranger
CASING: 16.76 m
CORE STORAGE: At drill site

PURPOSE: To test a definite CSAMT anomaly 170 m subsurface for Sed Ex massive sulfide mineralization

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
96.30	-	-87° 0'	ACID	OK		-	-	-	-	-	
142.30	-	-86° 0'	ACID	OK		-	-	-	-	-	
178.30	-	-86° 0'	ACID	OK		-	-	-	-	-	
227.70	-	-85° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 16.76	CASING					
16.76 TO 25.30	WACKE, QTZ WACKE	Colour: light to medium grey Grain Size: silty to f. grained -poorly bedded fine grained wackes and quartz wackes with 5-7% very fine disseminated biotite, 1-2% chlorite and trace poorly developed garnets 24.2-24.4 -flattened elongate wacke and minor mudstone fragments 1 cm x 0.2 cm		-1-2% bladed chlorite	-trace disseminated pyrite/pyrrhotite	
25.30 TO 88.00	MUDSTONE, DIRTY SILTSTONE, PELITIC METASEDS	Colour: dark grey, brown, med grey Grain Size: silt, mud Dark grey biotitic mudstone interbedded and interlaminated with brown dirty biotitic siltstone and med grey biotitic siltstone. Bedding thickness varies from <0.3 cm laminations to 20 cm thick beds. Average beds 2-5 cm thick. Rare x-bedding Occasional 1-2 mm white laths, possible altered amphiboles Bedding measurements: 28.7 m 72 39.1 m 72 50.6 m 72 60.7 m 70 69.2 m 70 77.9 m 71 86.1 m 73		-<1-1% diss and laminations of pyrrhotite mainly within dark grey mudstone -<1% py intergrown with pyrrhotite and as fracture coatings.		
88.00 TO 95.65	QTZ WACKE, SILTY WACKES	Colour: medium grey Grain Size: silt to fine sand Poorly bedded quartz wackes and silty wackes with 2-7% very fine biotite and minor muscovite			-trace pyrite	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		93.9-95.1 Fault Breccia -brecciated angular wacke fragments in a milled fine groundmass -sharp upper and lower boundaries to zones -minor gouge along lower contact -Fault zone cutting core at 5-10 deg to c.a.				
95.65 TO 111.90	MOYIE SILL	Colour: med to dark green Grain Size: m. to c. grained -massive -60-75% green amphibole (hornblende) and 25-30% quartz/feldspar and minor biotite -occasional subvertical and x-cutting calcite veinlets				
111.90 TO 154.50	QTZ WACKE, WACKE, MINOR, DIRTY SILT-STONE	Colour: light to med grey Grain Size: silt to fine sand -poorly bedded clean quartz wackes (3-7% biotite) and dirtier wackes with up to 25% biotite -occasional thin beds and laminations of biotite rich siltstones -rare < 1 cm rounded wacke and mudstone fragments -rare < 10 cm zones with 1-2% garnet -hornfels appearance near upper contact -moderately abundant subvertical fracturing, some with pyrite fracture coatings 112.9 -subvertical fracture with pink clay mineral on fracture plane 113-141 -moderately fractured with pyrite and limonitic iron stained fracture surfaces -strongest fracturing and iron staining from 130-141.0 m				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		129.9-133.4 -heavily fractured rock, rubbly core, slickensides along fracture planes 139.3-140.2 -vertical fracturing with white clay (Kaolinite?) along fracture planes Bedding measurements: 119.5 m 124.8 m 127.8 m 140.8 m	 75 76 80 70		140.6-145.0 -<1% py/po finely disseminated in fine grained biotitic siltstone laminations	130.0-141.0 -possible source of aquifer -hole making 10-15 gal/min
154.50 TO 224.40	PELITIC METASEDS, SILTSTONE, MUDSTONE	Colour: dark grey brown, light grey Grain Size: mud, silt and fine sand -well bedded brown biotitic siltstone and dark grey, brown grey biotitic mudstone -bedding generally < 10 cm -abundant 10 cm zones of interlaminated light grey quartz arenite, biotitic quartz wacke and dark grey muds -2-3% <1-2 mm muscovite flakes -occasional <1-2 mm white laths rare x-bedding, truncations indicating tops up-hole -graded bedding = tops up hole 184.6-198.3 -biotite wackes, minor quartz wackes -med grey, patchy light grey, poorly bedded 197.8-198.3 -weakly brecciated, minor carbonate veinlets, -1-2% combined py/po blebs Many of the light grey beds contain up to 10% 0.5 mm dark spots. Some look like quartz grains while others are unknown			<1-1% combined pyrrhotite and pyrite, diss and weak laminations	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Bedding measurements: 155.9 m 157.2 m 163.7 m 170.8 m 181.8 m 195.1 m 209.6 m 219.4 m	 75 77 77 77 75 75 78 77			
224.40 TO 249.00	QTZ WACKES, WACKES, QTZ ARENITE E.O.H.	Colour: med grey, light grey Grain Size: silt to fine sand -medium grey weak to moderately biotitic quartz wackes and wackes with occasional light grey sericite quartz arenites -weakly developed bedding, not as evident as above unit -bedding marked by biotite rich beds -bedding on a scale of 10-40 cm with 3-5 cm biotite rich beds -occasional zones with a silicified biotitic hornfels appearance			-trace - <1% diss pyrrhotite/pyrite	

HOLE NUMBER: 89-ST-2 ASSAY SHEET DATE: 6-March-1990

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb		COMMENTS

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	BaT %	Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	B tot. ppm	F ppm
BCD17415	20.30	23.30	3.00	68.19	15.64	.19	1.51	1.75	4.1	4.79	.05	.6	.06	20	73	15	0.6	5	37	375
BCD17416	41.50	44.50	3.00	62.36	13.07	6.55	3.06	1.4	3.0	4.73	.16	.47	.04	32	87	40	1.3	5	1	540
BCD17417	60.00	63.00	3.00	62.42	17.27	1.93	2.49	1.39	4.82	5.06	.08	.62	.075	30	88	29	1.0	5	1	530
BCD17418	81.10	84.10	3.00	64.53	16.4	1.16	2.38	2.04	3.97	5.36	.07	.59	.05	32	96	31	0.8	5	2	5209
BCD17419	90.40	93.40	3.00	73.4	12.55	0.67	1.09	2.22	3.16	3.3	.06	.54	.055	14	50	15	0.8	5	1	240
BCD17420	102.60	105.60	3.00	50.04	13.85	10.63	6.27	1.94	0.37	11.8	.19	1.01	.005	27	50	18	1.5	5	1	115
BCD17421	127.00	130.00	3.00	68.91	14.66	1.23	1.08	1.75	3.8	4.13	.07	.58	.06	17	62	15	0.6	10	1	290
BCD17422	148.40	151.50	3.10	72.01	13.11	1.32	1.03	1.78	3.32	3.64	.06	.53	.045	17	54	13	0.7	5	1	285
BCD17423	169.80	172.80	3.00	63.65	13.95	4.86	3.89	1.36	3.57	3.84	.07	.53	.05	22	92	55	1.5	5	3	600
BCD17424	187.91	190.90	2.99	75.15	11.98	0.98	0.96	2.17	2.48	3.01	.04	.49	.045	10	54	17	0.5	5	1	655
BCD17425	212.40	215.40	3.00	66.26	14.42	2.96	2.97	1.41	3.49	4.65	.08	.55	.045	32	109	44	1.5	5	1	590
BCD17426	230.70	233.70	3.00	63.47	18.07	.43	1.72	1.42	5.01	5.61	.07	.65	.07	33	96	28	0.7	5	1	470

Appendix II

Lithogeochem and Geochem Analysis

MIN
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LABORATORIES

SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

VANCOUVER OFFICE:
705 WEST 15TH STREET
NORTH VANCOUVER, B.C. CANADA V7M 1T2
TELEPHONE (604) 980-5814 OR (604) 988-4524
TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Assay Certificate

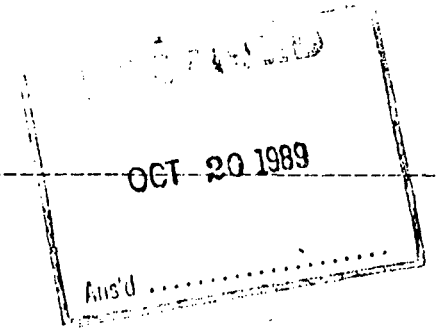
9V-1269-RA1

Company: MINNOVA INC.
Project: ~~STONEY 623~~-705
Attn: P.BAXTER/L.PIRIE

Date: OCT-14-89
Copy 1. MINNOVA INC., VANCOUVER, B.C.

We hereby certify the following Assay of 25 ROCK samples submitted OCT-03-89 by P.BAXTER.

Sample Number	LOI %
17401	2.50
17402	2.60
17403	2.05
17404	1.80
17405	1.90
17406	2.20
17407	2.60
17409	2.30
17410	3.20
17411	2.90
17412	2.45
17413	2.00
17414	2.20
17415	2.40
17416	3.90
17417	2.80
17418	2.70
17419	1.95
17420	2.80
17421	2.70
17422	2.30
17423	3.40
17424	1.90
17425	2.10
17426	2.40



Certified by _____

MIN-EN LABORATORIES

MIN
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LABORATORIES

SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

VANCOUVER OFFICE:
705 WEST 15TH STREET
NORTH VANCOUVER, B.C. CANADA V7M 1T2
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TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Geochemical Analysis Certificate

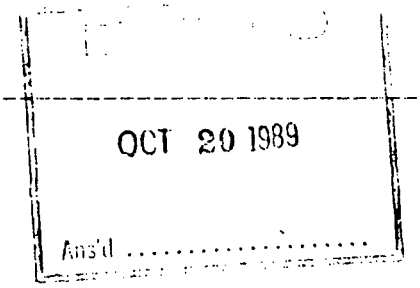
9V-1269-RG1

Company: MINNOVA INC.
Project: STONEY 623-705
Attn: P.BAXTER/I.PIRIE

Date: OCT-14-89
Copy 1. MINNOVA INC., VANCOUVER, B.C.

He hereby certify the following Geochemical Analysis of 25 ROCK samples submitted OCT-03-89 by P.BAXTER.

Sample Number	B TOTAL PPM	F PPM
17401	2	490
17402	15	425
17403	18	760
17404	1	265
17405	1	255
17406	13	450
17407	12	800
17409	19	700
17410	13	590
17411	1	525
17412	8	600
17413	1	670
17414	1	285
17415	37	375
17416	1	540
17417	1	530
17418	2	5209
17419	1	240
17420	1	115
17421	1	290
17422	1	285
17423	3	600
17424	1	655
17425	1	590
17426	1	470



Certified by _____

MIN-EN LABORATORIES

COMP: MINNOVA INC.
PROJ: STONEY 623-705
ATTN: P.BAXTER/I.PIRIE

MIN-EN LABS — ICP REPORT

705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

FILE NO: 9V-1269-RL1
DATE: OCT-14-89
• TYPE ROCK GEOCHEM • (ACT:FIRE)

SAMPLE NUMBER	AL2O3 %	BAT %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SIO2 %	TIO2 %	S %	TOT(%)
17401	15.97	.070	.84	4.53	4.07	1.17	.06	1.85	.07	67.14	.64	.16	96.58
17402	17.37	.075	.44	4.86	4.73	1.39	.05	1.57	.07	65.13	.65	.13	96.47
17403	16.70	.060	2.50	4.99	4.03	3.07	.05	1.92	.13	63.28	.58	.30	97.60
17404	13.94	.055	.63	3.59	3.36	.98	.04	2.14	.07	71.86	.55	.02	97.24
17405	14.48	.055	.72	3.60	3.24	.99	.04	2.50	.07	70.87	.58	.01	97.16
17406	17.57	.060	.43	4.83	4.60	1.49	.04	1.90	.08	65.43	.64	.12	97.19
17407	14.11	.055	4.55	4.86	4.14	3.62	.12	1.08	.17	63.33	.46	.53	97.01
17409	14.95	.060	4.14	4.43	3.88	3.69	.07	2.01	.17	62.72	.57	.46	97.15
17410	13.70	.065	2.70	4.13	3.90	2.92	.06	1.52	.13	66.29	.49	.49	96.39
17411	16.81	.065	1.47	4.66	4.43	1.90	.06	1.63	.11	64.53	.59	.21	96.45
17412	15.38	.070	2.52	3.89	4.36	3.34	.07	1.77	.14	64.39	.58	.47	96.97
17413	14.39	.065	1.62	6.10	3.59	3.32	.08	2.64	.13	64.65	.56	1.28	98.43
17414	12.48	.070	2.19	3.20	3.22	.82	.06	1.91	.09	72.18	.53	.03	96.77
17415	15.64	.060	.19	4.79	4.10	1.51	.05	1.75	.08	68.19	.60	.01	96.96
17416	13.07	.040	6.55	4.73	3.00	3.06	.16	1.40	.20	62.36	.47	.74	95.79
17417	17.27	.075	1.93	5.06	4.82	2.49	.08	1.39	.12	62.42	.62	.78	97.04
17418	16.40	.050	1.16	5.36	3.97	2.38	.07	2.04	.11	64.53	.59	.86	97.53
17419	12.55	.055	.67	3.30	3.16	1.09	.06	2.22	.08	73.40	.54	.03	97.16
17420	13.85	.005	10.63	11.80	.37	6.27	.19	1.94	.33	50.04	1.01	.01	96.45
17421	14.66	.060	1.23	4.13	3.80	1.08	.07	1.75	.09	68.91	.58	.04	96.40
17422	13.11	.045	1.32	3.64	3.32	1.03	.06	1.78	.09	72.01	.53	.04	96.99
17423	13.95	.050	4.86	3.84	3.57	3.89	.07	1.36	.18	63.65	.53	.45	96.39
17424	11.98	.045	.98	3.01	2.48	.96	.04	2.17	.07	75.15	.49	.04	97.42
17425	14.42	.045	2.96	4.65	3.49	2.97	.08	1.41	.14	66.26	.55	.62	97.59
17426	18.07	.070	.43	5.61	5.01	1.72	.07	1.42	.09	63.47	.65	.34	96.94

COMP: MINNOVA INC.
PROJ: STONEY 623-705
ATTN: P.BAXTER/I.PIRIE

MIN-EN LABS — ICP REPORT

705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

FILE NO: 9V-1269-RJ1
DATE: OCT-14-89
• TYPE ROCK GEOCHEM • (ACT:F31)

SAMPLE NUMBER	AG PPM	AS PPM	B PPM	BA PPM	CU PPM	PB PPM	SB PPM	ZN PPM	AU PPB
17401	.4	1	1	91	22	9	1	64	10
17402	.4	1	1	94	21	12	1	53	10
17403	1.3	1	1	130	25	41	1	110	5
17404	.2	8	1	84	11	10	1	52	5
17405	.6	10	1	86	9	9	1	57	5
17406	.6	1	1	87	18	11	1	71	5
17407	1.4	1	1	117	29	43	2	108	5
17409	1.5	1	1	130	23	40	1	104	10
17410	.9	1	1	123	27	45	1	82	5
17411	1.0	1	1	146	28	30	1	87	5
17412	1.2	1	1	104	19	40	2	99	5
17413	1.2	1	1	196	56	50	3	113	5
17414	.8	1	1	145	16	7	1	33	5
17415	.6	1	1	99	20	15	1	73	5
17416	1.3	1	1	126	32	40	1	87	5
17417	1.0	1	1	137	30	29	1	88	5
17418	.8	1	1	94	32	31	1	96	5
17419	.8	1	1	102	14	15	1	50	5
17420	1.5	1	1	13	127	18	1	50	5
17421	.6	1	1	100	17	15	1	62	10
17422	.7	5	1	70	17	13	1	54	5
17423	1.5	1	1	91	22	55	2	92	5
17424	.5	1	1	86	10	17	1	54	5
17425	1.5	1	1	107	32	44	3	109	5
17426	.7	1	1	110	33	28	1	96	5

MIN
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SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

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TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Geochemical Analysis Certificate

9V-1338-RG1

Company: MINNOVA INC.
Project: 623 STONEY PROJECT
Attn: I.PIRIE/P.BAXTER

Date: OCT-19-89
Copy 1. MINNOVA INC., VANCOUVER, B.C.

He hereby certify the following Geochemical Analysis of 6 ROCK samples submitted OCT-16-89 by P.BAXTER.

Sample Number	CU PPM	PB PPM	ZN PPM	AG PPM	AU-FIRE PPB
17427	105	41	80	1.6	2
17428	143	48	56	1.8	1
17429	44	24	37	0.8	4
17430	48	23	65	0.7	1
17431	40	19	84	0.8	1
17432	41	21	87	1.0	2

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MIN-EN LABORATORIES

Appendix III

Thin Section Report

Vancouver Petrographics Ltd.

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Invoice 8811
February 1990

Samples: 89-ST1-110.0, 89-ST1-157.8

Summary:

Sample 89-ST1-110.0 contains the contact between a finer grained sericite-plagioclase-biotite-chlorite schist and a coarser grained plagioclase-sericite-biotite-quartz-(chlorite) schist. Foliation is weak to absent. The dark green grains (in hand sample) are chlorite porphyroblasts, formed during retrograde metamorphism in the greenschist facies. Most probably they are primary rather than being secondary after hornblende.

Sample 89-ST1-157.8 is an extremely fine grained, weakly foliated schist dominated by sericite and plagioclase, with less disseminated biotite flakes and porphyroblasts of dolomite, quartz-microcline (after plagioclase?), and ilmenite. The prominent white crystals seen in the hand sample are the dolomite porphyroblasts. Some porphyroblasts are oriented parallel to the foliation, which is defined mainly by orientation of sericite flakes. Early veinlets of K-feldspar-dolomite are cut by later veinlets of fluorite-(gypsum?)

Both rocks were metamorphosed in the upper greenschist facies of regional metamorphism, and the chlorite and dolomite porphyroblasts were formed during later, possibly retrograde metamorphism in the lower greenschist facies.

The identification and distinction of groundmass plagioclase and quartz are indefinite because of the extremely fine grain size.

John G. Payne
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Sample 89-ST1-157.8 **Sericite-Plagioclase-Biotite Schist with Porphyroblasts of Dolomite, Quartz-(Microcline) [after Plagioclase?] and Ilmenite; Veinlets of K-feldspar-Dolomite and of Fluorite-Gypsum(?)**

The rock is an extremely fine grained, weakly foliated schist dominated by sericite and plagioclase, with less disseminated biotite flakes and porphyroblasts of dolomite, quartz-microcline (after plagioclase?), and ilmenite. The prominent white crystals seen in the hand sample are the dolomite porphyroblasts. Some porphyroblasts are oriented parallel to the foliation, which is defined mainly by orientation of sericite flakes. Early veinlets of K-feldspar-dolomite are cut by later veinlets of fluorite-(gypsum?)

porphyroblasts	
dolomite	3- 4%
quartz-(microcline)	2- 3
ilmenite	1- 2
chlorite	one (= trace)
groundmass	
sericite	50-55
plagioclase	25-30
biotite	7- 8
K-feldspar	1- 2
Ti-oxide	0.1
tourmaline	trace
veins	
K-feldspar-(dolomite)	1- 2
fluorite-(gypsum?)	1- 2

Dolomite forms anhedral to euhedral, prismatic porphyroblasts averaging 1-1.5 mm in length. Most contain moderately abundant inclusions of sericite as in the groundmass. Several consist of parallel twins.

Patches up to 1 mm long have rectangular outlines suggesting that they are secondary after plagioclase phenocrysts. They are dominated by aggregates of anhedral grains averaging 0.07-0.2 mm in size of quartz and minor to moderately abundant microcline. Patches commonly contain minor inclusions of biotite and opaque, and less abundant ones of carbonate, averaging 0.01-0.03 mm in size.

Ilmenite forms equant to elongate patches averaging 0.2-0.4 mm in size, with a few up to 1 mm long. Many have thin partial rims of Ti-oxide.

Chlorite forms one tabular porphyroblast 0.3 mm long. It is pale to light green in color and contains moderately abundant, tiny inclusions of groundmass minerals, probably mainly plagioclase.

In the groundmass, sericite forms slightly oriented flakes averaging 0.015-0.025 mm in length. Plagioclase forms equant grains averaging 0.01-0.03 mm in size. Associated with plagioclase is much less microcline (not identified in thin section; its presence is indicated by weak yellow color of stained offcut block). Biotite forms equant flakes averaging 0.03-0.07 mm across. Pleochroism is from light to medium brown.

Ti-oxide forms a few patches up to 0.15 mm in size of cryptocrystalline aggregates, similar to those rimming ilmenite grains.

Tourmaline forms a very few euhedral, slender prismatic grains averaging 0.08-0.12 mm long. Pleochroism is from colorless to light olive green.

A diffuse veinlet averaging 0.15-0.2 mm wide is dominated by extremely fine, interlocking grains of K-feldspar. These zones contain minor disseminated grains of dolomite and minor to moderately abundant groundmass sericite/biotite. Less commonly, and mainly in its narrower parts, the veinlet consists of dolomite. A narrower, subparallel veinlet 0.05-0.1 mm wide is dominated by K-feldspar.

A contorted veinlet averaging 0.1-0.2 mm wide is dominated by very fine grained fluorite with minor subhedral flakes averaging 0.1-0.15 mm long of gypsum(?). This veinlet cuts the K-feldspar-rich veinlets.

Sample 89-ST1-110.0 Contact:
Sericite-Plagioclase-Biotite-Chlorite Schist and
Plagioclase-Sericite-Biotite-Quartz-(Chlorite) Schist

The sample contains a finer grained, weakly foliated schist dominated by sericite and a slightly coarser grained, weakly foliated schist dominated by plagioclase. The dark green grains (in hand sample) in both rock types are chlorite porphyroblasts.

	finer grained rock	coarser grained rock
sericite	65-70%	20-25%
plagioclase	15-17	55-60
biotite	8-10	8-10
quartz	minor(?)	5- 7
chlorite porphyroblasts	4- 5	1- 2
muscovite	0.5	1- 2
opaque	0.5	0.7-1
sphene	0.3	trace
tourmaline	minor	trace
carbonaceous(?) opaque	-	trace

finer grained rock

Sericite forms a dense mass of interlocking, equant to slightly elongate flakes averaging 0.01 mm in size.

Plagioclase forms minor grains averaging 0.01-0.02 mm in size interstitial to sericite. It is concentrated in patches and lenses up to 1 mm long as grains averaging 0.05-0.08 mm in size. In these it generally is intergrown with minor to abundant biotite flakes averaging 0.1-0.5 mm in size. These biotite flakes commonly are poikilitic, with moderately abundant inclusions of plagioclase/quartz(?) averaging 0.01-0.015 mm in size.

Biotite also forms disseminated, mainly equant flakes averaging 0.07-0.15 mm in size. Pleochroism of biotite is from light straw to medium to dark brown.

Chlorite forms ragged to euhedral porphyroblasts averaging 0.2-0.5 mm in length. Pleochroism is from pale to light green. Most grains are poikilitic, and contain minor to abundant inclusions of plagioclase-quartz(?) as in the coarser biotite grains.

Opaque forms disseminated, equant, anhedral grains averaging 0.05-0.07 mm in size. A few elongate patches are up to 0.2 mm long.

Sphene forms subhedral to euhedral, diamond-shaped grains averaging 0.1-0.2 mm in size. It is altered completely to cryptocrystalline Ti-oxide.

Muscovite forms flakes up to 0.1 mm in size associated with coarser grained patches of plagioclase-biotite. Some patches contain minor muscovite flakes and a few, which are relatively free of biotite, contain abundant muscovite flakes.

Tourmaline forms subhedral to euhedral, prismatic grains up to 0.15 mm long. Pleochroism is from nearly colorless to medium olive green.

coarser grained rock

Plagioclase forms equant grains averaging 0.02-0.07 mm in size, with a few up to 0.15 mm across. Albite twinning is rare, making difficult the distinction of plagioclase from quartz.

Sericite forms disseminated flakes and interstitial clusters of flakes between plagioclase grains. Grain size of sericite averages 0.01-0.03 mm. Muscovite forms slender flakes averaging 0.1-0.15 mm in length, with a few from 0.2-0.6 mm long.

Quartz forms equant grains averaging 0.05-0.1 mm in size.

Biotite forms equant, anhedral flakes averaging 0.05-0.08 mm in size. Pleochroism is as in the finer grained rock.

Chlorite forms ragged porphyroblasts averaging 0.2-0.3 mm in length. Pleochroism is as in the finer grained rock.

Opaque forms equant grains averaging 0.05-0.07 mm in size, and thin tabular grains averaging 0.07-0.1 mm long. A few equant grains are up to 0.2 mm across.

Tourmaline forms euhedral prismatic grains up to 0.15 mm long as in the finer grained rock.

A few wispy seams up to 0.7 mm long contain moderately abundant dusty carbonaceous(?) opaque and/or Ti-oxide intergrown with extremely fine grained plagioclase/quartz. These are parallel to the contact between the two rock types, and probably represent sedimentary concentrations.

STONE 7
STONE 15
STONE 8
STONE 9
STONE 14
STONE 13
STONE 10
STONE 11
STONE 16
STONE 12

89-ST1
89-ST2
L 31 + 00N

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,957

LEGEND

1 Turbidite: siltstone and mudstone
2 Gabbro
bedding
jointing
geological contact (assumed)

200 X
sample location (lithogeochemistry)
BCS 4058 ⊕
sample number (assay)

drill hole
CSAMT ANOMALY
definite
possible

MINNOVA Inc.
STONEY CREEK PROPERTY

GEOLOGY &
DRILL HOLE LOCATIONS

DATE JAN. 1990

1a

STONE 7

STONE 15

STONE 8

STONE 9

STONE 14

STONE 13

STONE 10

STONE 11

STONE 16

STONE 12

89-ST1

89-ST2

L 31 + 00N

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,957

LEGEND

1 Turbidite: siltstone and mudstone

2 Gabbro

bedding

jointing

geological contact (assumed)

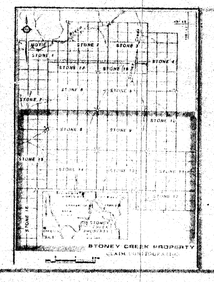
200 X
sample location (lithogeochemistry)
BCS 4958 ●
sample location (assay)

drill hole

CBAMT ANOMALY

definite

possible



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GEOLOGY & DRILL HOLE LOCATIONS

DATE JAN. 1990 NTS 92G/4

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