1998 CASSIAR EXPLORATION REPORT: SOUTHERN BLOCK

Part 1 of 2

CASSIAR, BRITISH COLUMBIA

March 19, 1999

SUBMITTED TO
EVEREADY RESOURCES CORP.

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SOUTHERN BLOCK
PART 1 OF 2
CASSIAR, LAIRD MINING DISTRICT,
BRITISH COLUMBIA

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF MAPS AND CROSS-SECTIONS

LIST OF TABLES

PART 2 OF 2
APPENDICES

EXECUTIVE SUMMARY

The Southern Block of the Cassiar Property is located in north-central British Columbia, immediately south of the Cassiar townsite. It is 100% owned (subject to NSRs) by Eveready Resources Corp. (Eveready) of Calgary, and covers an area of 60 units (1 unit is approximately 25 hectares).

The Cassiar area is serviced primarily from Dease Lake, B.C. and Watson Lake, Y.T., about 125 km and 145 km to the south and north, respectively. Cassiar has long history of asbestos and gold mining, and the area has good infrastructure, including an airstrip and a good network of roads and trails. Much of the Cassiar townsite was dismantled and reclaimed after the closure of the asbestos operations in 1992, but the area is currently the scene of renewed activity. An asbestos recovery project successfully completed pilot-scale testing in the summer of 1998, and there are two lode-gold operations (Cusac and Taurus) near Cassiar.

Geologically, the Southern Block claims cover part of the Cassiar Terrane, a body of metasedimentary rocks that range in age from late Precambrian to late Paleozoic. The dominant rock types are phyllite, slate, quartzite and carbonate rocks (primarily marble and dolomitic marble). Carbonate-replacement "manto and chimney" deposits and associated skarn deposits occur in the Cambrian Rosella Formation, a thick sequence of carbonate rocks. Mineralization is probably related to the granitic plutons and/or basaltic dykes that occur on the claims.

Between the 1940's and 1997 previous claim owners conducted programs of mapping, trenching, drilling, adit drivage and sampling in the Southern Block area. They identified two major zones of interest: the McMullen (or Magno) Zone, and the D-Zone, both of which were found to host deposits of lead-zinc-silver and magnetite mineralization.

In 1997 Eveready purchased the claims and retained LAS Energy Associates Ltd. of Calgary to review the existing information. LAS concluded that the lead-zinc-silver and magnetite deposits of the Southern Block may have the potential to be mined economically, and they recommended additional exploration work to generate data for a thorough economic evaluation.

Eveready retained Retread Resources Ltd. (Retread) to plan and conduct an exploration program during the summer and fall of 1998. The work consisted of geological mapping, trenching and sampling, followed by diamond drilling. Eight fully cored holes totalling 1817 m were completed. The Lower Adit was mapped and sampled, but the Upper Adit is partially collapsed. In total, more than 150 samples from trenches, outcrops and the Lower Adit, and more than 450 samples from drill core, were submitted for analysis.

Most of the 1998 work focused on the McMullen Zone, a structurally controlled alteration zone that includes discrete bodies of metallic sulfide minerals and magnetite hosted in dolomitized, rhodochrositic marble. The McMullen Zone dips almost vertically, and strikes roughly east-west, perpendicular to the strike of the marble. It has been traced over a strike length of about 1.3 km, but may be discontinuous in the central section.

In the western part of the McMullen Zone, two bodies of lead-zinc-silver minerals, termed Body A and Body B, have been partially defined by previous drilling and adit drivage. Both bodies appear to be irregular "shoots" or "chimneys" that are elongate vertically. They include masses of silver-bearing galena and sphalerite, with minor amounts of pyrite, pyrrhotite and arsenopyrite, and a variety of iron oxide minerals, especially magnetite. Lead, zinc and silver oxides and carbonates are sometimes also present. The Lower Adit crosses both bodies. Channel samples taken in the Lower Adit during the 1998 exploration program gave the following weighted average grade for the ore bodies, excluding layers of low-grade, poorly mineralized rock material:

Sample	Pb %	Zn %	Ag g/t	Magnetite %
Body A	20.76	2.88	608.56	32.78
Body B	9.66	2.47	199.88	36.51

The eastern and central sections of the McMullen Zone have not been as well explored, but also host significant lead-zinc-silver and magnetite resources.

Prior to the 1998 field program, LAS calculated resource estimates for the McMullen Zone based on the drilling data of previous claim owners. Their results are summarized as follows:

ZONE	WIDTH (m)	INDICATED RESOURCE (tonnes)	INFERRED RESOURCE (tonnes)	WEIGHTED AVERAGE GRADE		
				Ag g/t	Pb %	Zn %
East	3.50	75,774	169,138	69.6	2.18	3.92
Central	1.99	64,381	0	335.5	11.92	7.73
West	2.58	28,350	109,040	80.6	2.64	3.19

The second major zone of interest, the D-Zone, appears to be similar to the McMullen Zone. It strikes roughly east-west, like the McMullen Zone, but is covered by unconsolidated sediment along most of its length and is therefore not as well known. Drilling and trenching projects in the past have showed that significant lead-zinc-silver and magnetite mineralization is present along the D-Zone, particularly in the Middle D-Zone area, where previous owners estimated drill-indicated resources of 90,000 tonnes grading 3.3% Pb, 6.3% Zn and 75 g/t Ag. During the 1998 program, attempts were made to reopen the old trenches, but the available equipment could not reach bedrock.

The bodies of lead-zinc-silver minerals and magnetite in the McMullen Zone and D-Zone areas demonstrate that the Southern Block claims have significant economic potential, and additional exploration work is warranted to establish an increased resource base.

Additional mineralized showings on the Southern Block claims include:

- the Granite Creek Showing, which lies between the McMullen Zone and the D-Zone and appears to host the same type of replacement mineralization;

- the M-Zone near the contact with the Cassiar Stock, which is a body of garnet-diopside-actinolite skarn, associated with banded magnetite and pyrrhotite skarn and showings of molybdenum; and

- the Pant Zone, the G-Zone and the Tremolite Zone, which are associated with the Marble Creek Fault and includes tremolite, actinolite, chlorite, quartz veins and a variety of sulfide minerals, as well as tin showings.

The cost-effectiveness of future exploration programs can be increased by the use of improved geophysical techniques. Prior to the field season, work should start with reprocessing and interpretation of government digital aeromagnetic data from surveys flown in 1995 and 1996. In the field, recommended techniques include horizontal-loop EM (HLEM or max-min) and magnetometer/gradiometer surveys in the Marble Basin area and D-Zone areas. After interpretation of the geophysical data, the drilling and trenching program should be designed to test significant geophysical anomalies that are likely to represent ore.

Ground-penetrating radar (GPR) and mise-a-la-masse (MALM) electrical surveys should be done in and around the Lower Adit The Lower Adit area provides an unusual opportunity for both surface and underground access to the mineralized zone, so that 3-dimensional modelling of the ore bodies can be done.

A legal survey of all claim boundaries is recommended, and a surveyed property baseline and grid system should be established at the same time. The surveying should be done prior to or concurrently with the geophysical surveys, so that the geophysical results can be tied directly to the grid.

Metallurgical testing indicates that oxidized ore (oxide and carbonate phases of lead, zinc and silver) are present with the sulfide phases in near-surface ore. If oxidized ore persists to depth in significant quantities, it will necessitate the use of hydro-metallurgical approaches to mineral separation and recovery, rather than conventional gravity techniques. During future drilling programs, samples of ore material from drill cores should be submitted for microscopic examination and possibly other types of analysis (X-ray, microprobe and/or scanning electron microscopy) to determine the level of oxidation.

CERTIFICATE OF QUALIFICATIONS

I, Dennis Nikols , Professional Geologist, of Retread Resources Ltd., 215 Cedarwood Rd. S.W., Calgary, Alberta, do hereby certify that:

1. I have been a registered member of the Association of Professional Engineers and Geoscientists of British Columbia since 1993 (Registration Number 20616);

2. I received a Bachelor's degree in geology from the University of Wisconsin in 1969;

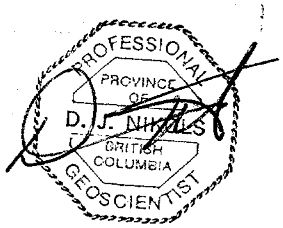
3. I have practiced as an mining geologist for more than 30 years in Canada and the United States;

4. The present report is based upon work I have personally undertaken or supervised, and on reviews of company reports covering the area;

5. I am curently a director of Eveready Resources Corp.;

6. I have no other interest in any mineral properties in British Columbia at present; and

7. I consent to the use of this report by Eveready Resources Corp. in submissions to regulatory bodies, and to distribute all or parts of this report to shareholders and other parties, provided that the meaning and/or spirit is not altered by partial quotes.



Dennis J. Nikols, P. Geo.

5 April 1999

CERTIFICATE OF QUALIFICATIONS

I, Georgia Lynne Hoffman, Professional Geologist, of Retread Resources Ltd., 215 Cedarwood Rd. S.W., Calgary, Alberta, do hereby certify that:

1. I have been a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta since 1977 (Membership Number 24011);

2. I received a Bachelor's degree in Geology from the University of Pennsylvania in 1970 and a Master's degree in Biological Sciences from the University of Alberta in 1995;

3. I have practiced as a geologist for more than 25 years in Canada and the United States;

4. The present report is based upon work I have personally undertaken, and on reviews of company reports covering the area;

5. I have no interest, direct or indirect, in Eveready Resources Corp., or in any of the properties discussed in this report, nor do I expect to acquire any;

6. I have no interest in any mineral properties in British Columbia at present; and

7. I consent to the use of this report by Eveready Resources Corporation in submissions to regulatory bodies, and to distribute all or parts of this report to shareholders and other parties, provided that the meaning and/or spirit is not altered by partial quotes.

PROFESSIONAL GEOLOGIST ALBERTA
GEORGIA L. HOFFMAN

Georgia L. Hoffman, P. Geol.

5 April 1999

1. INTRODUCTION

The Cassiar Project Areas are located in north-central British Columbia near the site of the former town of Cassiar (Fig. 1). They consist of the Northern and Southern Blocks, which flank the townsite to the north and south (Fig. 2). The Southern Block, which is the subject of this report, covers 60 units (1 unit is approximately 25 ha). Both claim blocks are 100% owned by Eveready Resources Corp. (Eveready), subject to Net Smelter Returns (NSRs).

Eveready retained Retread Resources Ltd. (Retread) to plan and conduct exploration work on the Southern Block during the summer and fall of 1998. This report describes the results of that work, and summarizes older work conducted by previous claim-holders.

1.1 Background

The Cassiar area has been a focus for mining and exploration since gold was discovered along McDame Creek in 1874. Developments have included numerous placer and lode gold mines, a major open-pit asbestos mine and a small underground asbestos mine. Lode gold mines are still operating in the area, and a project to recover asbestos fibres from stockpiles completed pilot-scale testing in 1998, with commercial production planned to start in the summer of 1999. The Southern Block lies about 1 km south of the asbestos stockpile.

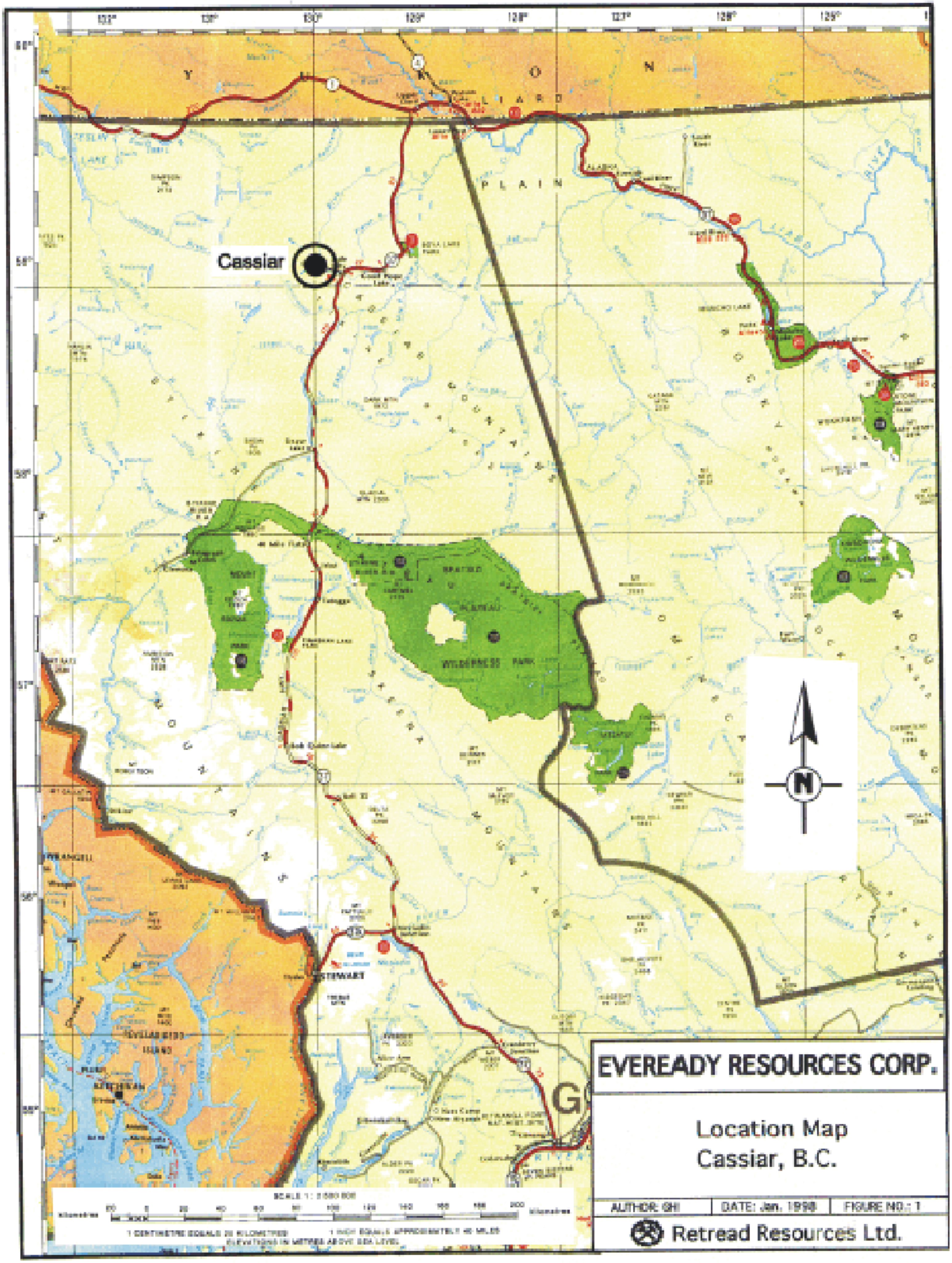
Lead-zinc-silver mineralization was discovered on what is now the Southern Block during the 1940's, and between that time and the present a variety of companies conducted exploration programs, including surface mapping, geophysical and geochemical surveys, adit drivage, core drilling and trenching. Data from those projects and government mapping programs showed that significant lead-zinc-silver and magnetite deposits, in the form of carbonate-replacement "manto and chimney" deposits (Megay, 1998), exist on the Southern Block. Skarn deposits also occur on the claims.

Allen and Iliffe (1998) completed a pre-feasibility study for the Cassiar Project Areas and calculated reserves for the Southern Block. They determined that the zones of Indicated and Inferred Resources on the Southern Block have the potential to contain more than 400,000 tonnes of ore, and concluded that those zones may have the potential to be mined profitably by underground methods. They felt that additional exploration work, including drilling and sampling, was warranted on the Southern Block claims to acquire the data needed for a more detailed evaluation.

1.2 Scope of Work

The 1998 exploration program was planned in accordance with the recommendations of Allen and Iliffe (1998). It included detailed and reconnaissance geological mapping, trenching and sampling, followed by diamond drilling. Eight fully cored holes totalling 1817m were completed. The Lower Adit was mapped and sampled, but the Upper Adit was partially collapsed and could not be entered. In total, more than 150 samples from trenches, outcrops and the Lower Adit, and more than 450 samples from drill core, were submitted for various types of analysis and testing.

This report describes the 1998 Southern Block exploration program and presents its results. It also describes previous work done by other parties, and compares those results with the 1998 findings.


Cassiar
EVEREADY RESOURCES CORP.
Location Map
Cassiar, B.C.
AUTHOR: GHI
DATE: Jan. 1998
FIGURE NO.: 1
Retread Resources Ltd.

2. LOCATION, ACCESS AND INFRASTRUCTURE

2.1 Property Location

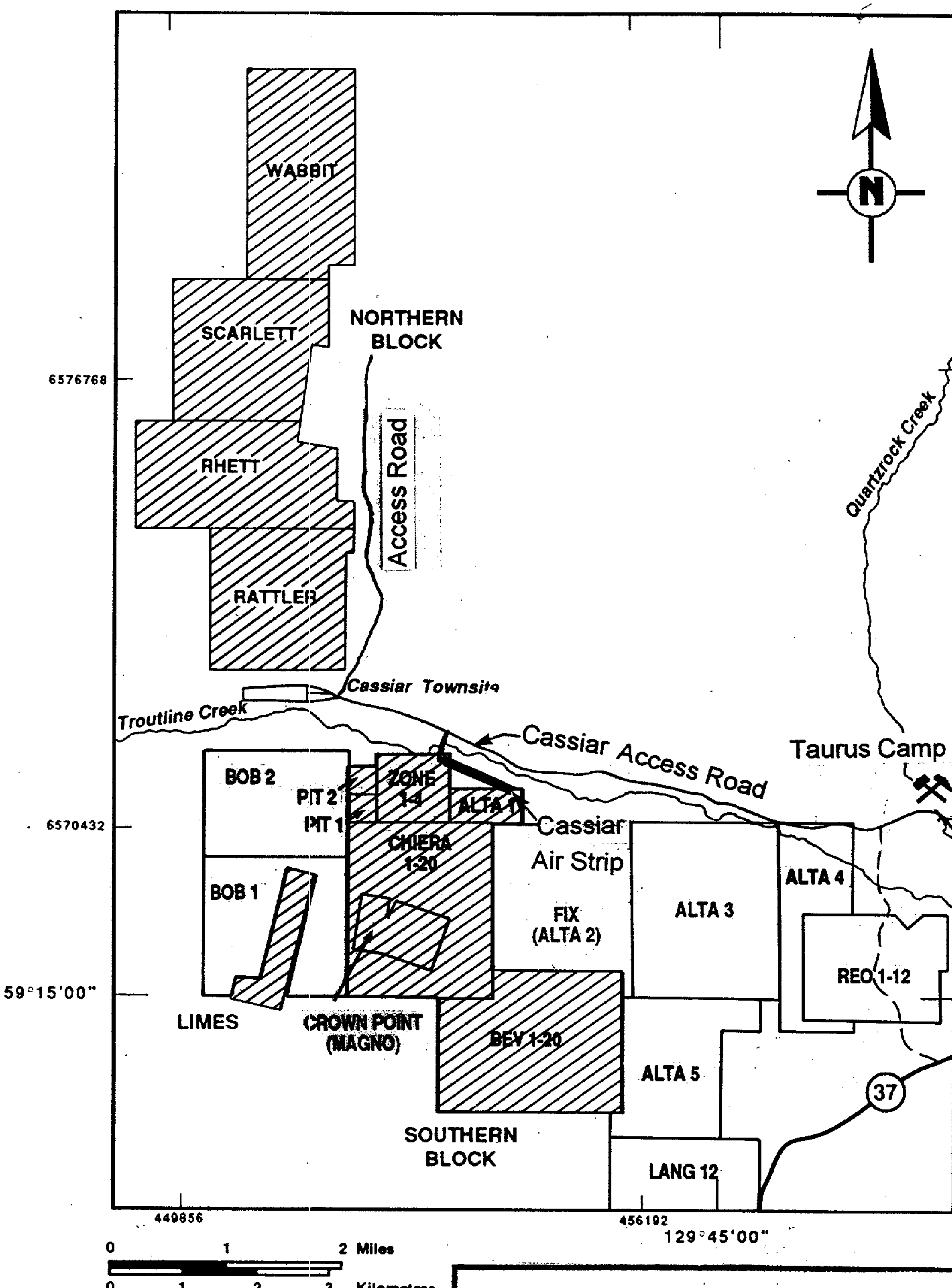
The Cassiar townsite lies within the Cassiar Mountains of north-central British Columbia, approximately 600 kilometres from Whitehorse, Yukon Territory, 480km from Stewart, British Columbia and 800km from Prince Rupert, British Columbia (Fig. 1). The Cassiar Project Areas flank the townsite to the north and to the south (Fig. 2), centered at latitude 59° 17' 10"N and longitude 129° 50' 33"E (UTM 6 572 000km N and 452 000 km E). The area is covered by 1:50 000-scale NTS maps 104P-4 (Needlepoint Mountain) and 104P-5 (Cassiar), and 1:250 000-scale NTS map 104-P (McDame).

2.2 Claim Description and Ownership History

The Southern Block claims (Table 1) lie south of the Cassiar townsite and cover a total area of 60 units (1 unit is approximately 25 ha). They are 100% owned by Eveready, subject to a 2.25% Net Smelter Return (NSR) to R.E. Fischer on the Lime Claims, and a 2.5% NSR to the Storie Estate on the remaining claims.

The Southern Block claims are based on claims held by Mr. W. Storie in the 1950's and 1960's. Mr. Storie leased the ground to a series of companies that conducted exploration programs described in Sec. 3.2. By 1979, the Storie holdings had grown to 83 claims, including the claims now known as Crown Point (Magno), Chiera, Pit, Zone, and Bev (Fig. 2 and Table 1), as well as additional claims to the east and south.

The claims eventually reverted to the Storie estate, along with the Alta-1 claim and other claims that had been staked under an agreement with Shell Canada Resources Ltd.



Claims held by Eveready Resource Corp.

Access Road

Air Strip

EVEREADY RESOURCES CORP.

Cassiar Project Areas Claim Location Map

AUTHOR: GH	DATE: Jan. 1998	FIGURE NO.: 2

Retread Resources Ltd.

TABLE 1: Land Tenure.

Claim Name	Units	Tenure No.	Expiration Date
Crown Point (Magno 1-4)	4	225733	99/09/13
Chiera	20	221627	00/03/31
Zone 1-4	4	221628	00/04/04
Pit 1 & 2	2	227706-7	00/04/09
Alta. 1	2	221819	00/05/31
Bev 1-20	20	221696	00/02/28
Lime 3-10	8	356010-356017	01/05/14

In 1998 Eveready Resources Corp. purchased the Crown Point, Chiera, Pit, Zone, Bev and Alta-1 claims from the Storie Estate, and also purchased the Lime Claims that R.E. Fischer had staked at Eveready's request in 1997. Together, those claims form the Southern Block (Table 1).

2.3 Access and Facilities

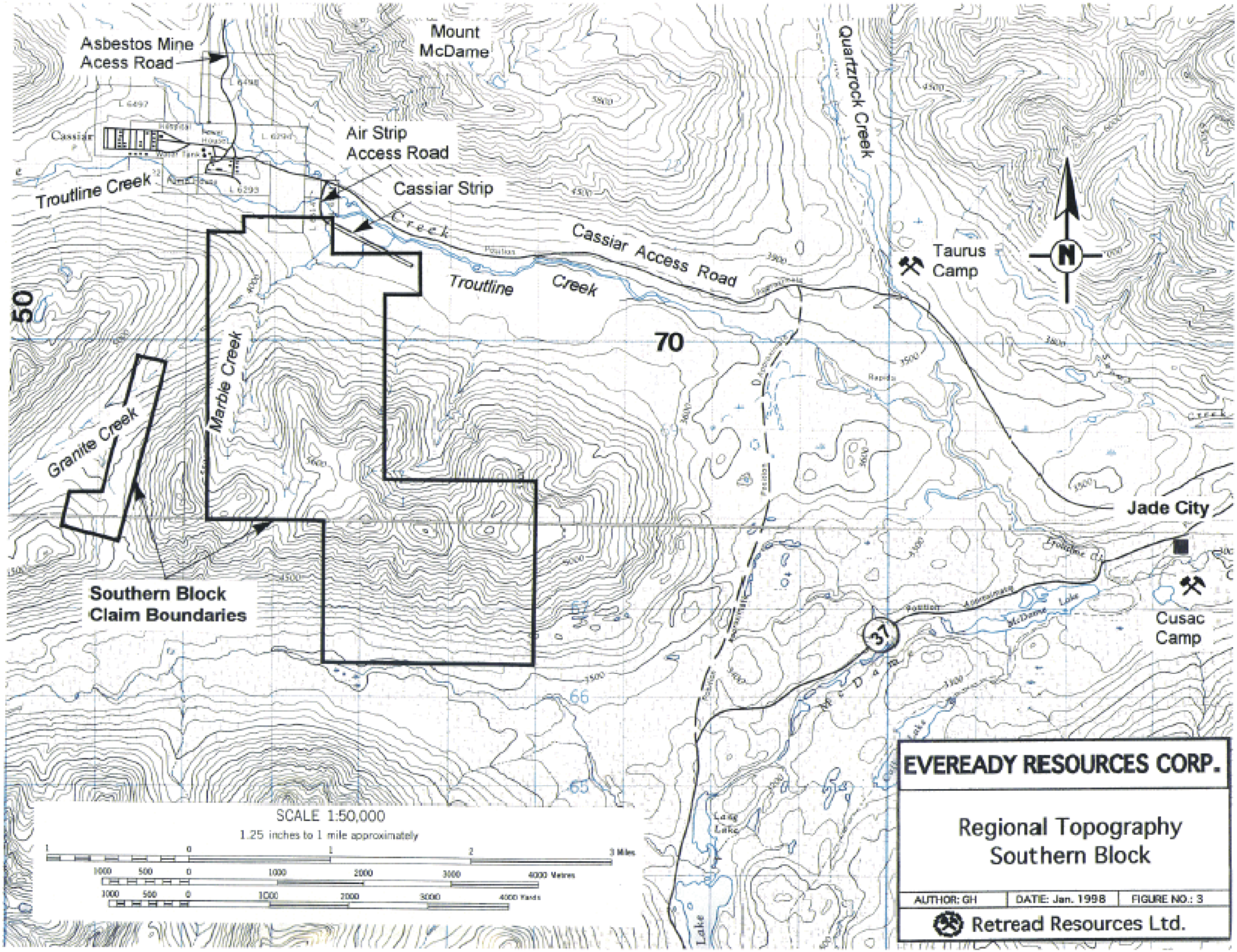
The Cassiar townsite is located in north-central British Columbia. Watson Lake, Y.T., and Dease Lake, B.C., are the closest towns, situated approximately 145 km north and 125 km south of the Cassiar townsite, respectively, via Highway 37. The Cassiar townsite is reached from Highway 37 by turning west on the Cassiar Access Road, an all-weather paved road, for a distance of about 15 km (Fig. 1). That road is currently in very good condition (Figs. 2, 3, 4).

Cassiar was the site of a major asbestos mining operation from the early 1950's until the early 1990's. Dismantling and reclamation of the townsite and some of the mine facilities have been completed since the mine closure, but there is still a moderate amount of activity in the area due to lode gold mining and a new asbestos recovery project at the Cassiar mill site (Fig. 5).

The Southern Block is easily accessible to four-wheel-drive vehicles via a network of gravel roads and trails that begin near the Cassiar airstrip (Fig. 4). Trucking services are available to Watson Lake Y.T., Dease Lake, B.C., the port of Stewart B.C., and other centers.

There is a paved 6000-foot airstrip at Dease Lake (CYDL) and a paved 5500-foot airstrip at Watson Lake (CYDL). The Cassiar airstrip, which is located near the northern boundary of the Southern Block, is not currently being maintained but appears to be in fairly good condition (Fig. 6). It reportedly handled aircraft up to the size of Twin Otters when the asbestos mine was in operation.

There are currently two lode-gold operations in the Cassiar area, Cusac Gold Mines Ltd. and Taurus Resources Inc. Cusac's gold mill and camp are located near Highway 37 at Jade City, east of the Cassiar townsite, and the Taurus mill and camp are located at Quartzrock Creek on the Cassiar access road (Fig. 3).


Asbestos Mine
Acess Road
Mount
McDame
Cassiar
Air Strip
Access Road
Troutline Creek
Cassiar Strip
Quartzrock Creek
Cassiar Access Road
Troutline
Creek
Taurus
Camp
N
50
70
Marble Creek
Granite Creek
Southern Block
Claim Boundaries
Jade City
Cusac
Camp
37
SCALE 1:50,000
1.25 inches to 1 mile approximately
3 Miles
4000 Metres
4000 Yards
EVEREADY RESOURCES CORP.
Regional Topography
Southern Block
AUTHOR: GH
DATE: Jan. 1998
FIGURE NO.: 3
Retread Resources Ltd.

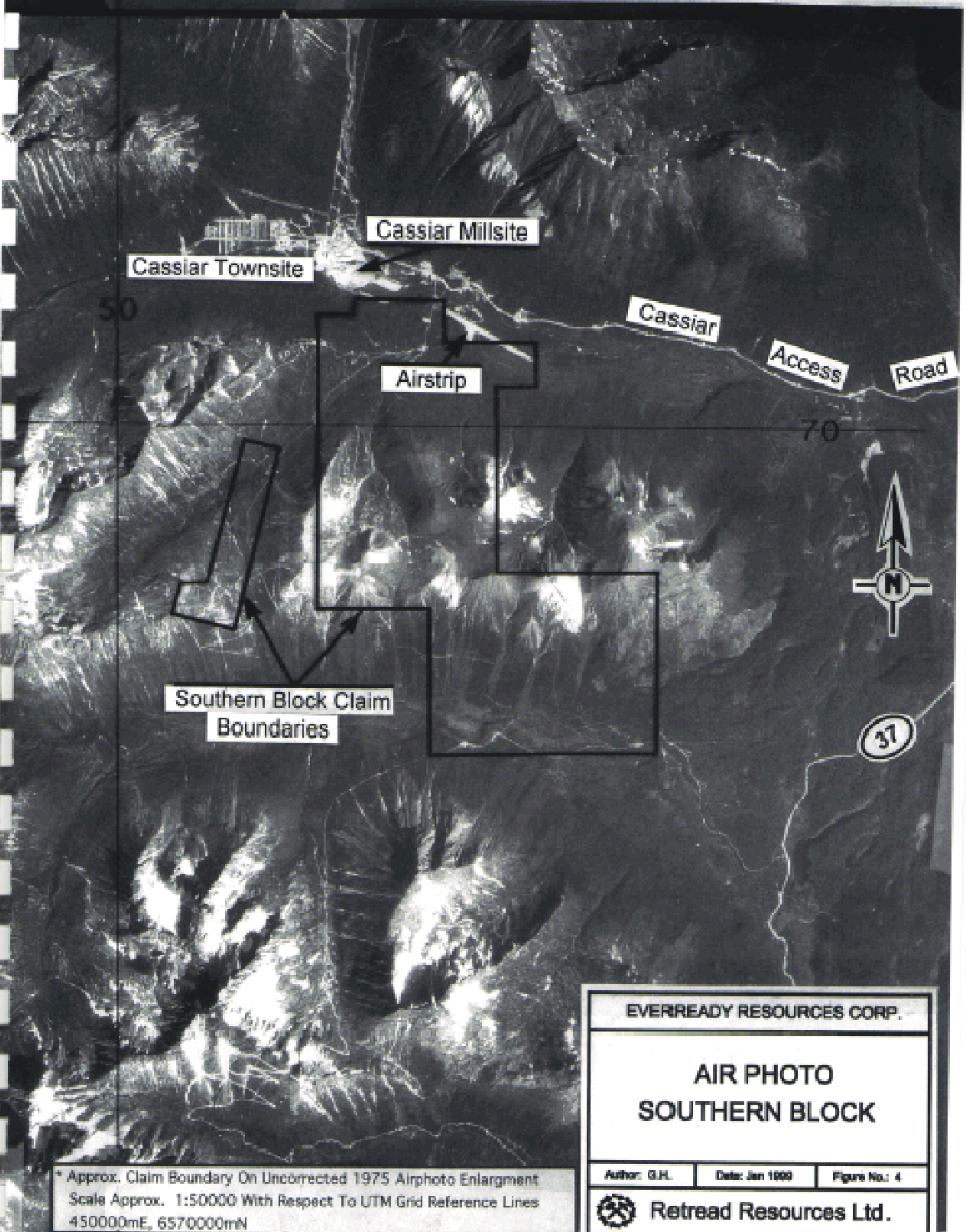

Cassiar Millsite
Cassiar Townsite
50
Cassiar Access Road
Airstrip
70
N
Southern Block Claim Boundaries
37
EVERREADY RESOURCES CORP.
AIR PHOTO
SOUTHERN BLOCK
Author: G.H.
Figure No.: 4
Retread Resources Ltd.
* Approx. Claim Boundary On Uncorrected 1975 Airphoto Enlargment
Scale Approx. 1:50000 With Respect To UTM Grid Reference Lines
450000mE, 6570000mN

FIGURE 5. The Cassiar asbestos mill site, looking north from the D-Zone area of the Southern Block.

FIGURE 6. The Cassiar airstrip, looking east from the D-Zone area of the Southern Block.

2.4 Physiography and Climate

The mountains of the Cassiar Range reach elevations of 1600 to 2200 metres. The intervening valleys are broad with subdued topography (Figs. 4, 5 and 6). The valley floors are generally covered by trees and thick deposits of unconsolidated sediments, but bedrock is well-exposed above the treeline. The area was affected by both continental and alpine glaciation and glacial features indicate that at ice-maximum, the regional flow was from southwest to northwest.

The climate is continental with short, warm summers and long, cold winters. Precipitation is moderate, averaging about 50cm per year. About half occurs as snow, resulting in a snow-base of about 3-4m. June, July and August are the warmest months, with average daily high temperatures of about 18-25° C. In January and February, the coldest months, temperatures can occationally reach lows of -60° C with very high wind chills. Summer is the best time for exploration, but some types of work can be performed during the winter season.

2.5 Flora and Fauna

The treeline occurs at an elevation of about 1400m. Below treeline, the forest is dominated by white spruce and cottonwood. Lowland forests include open jackpine stands in well drained areas, and dense stands of black spruce and larch on north-facing slopes. The gravel and sand terraces that flank the main streams support lodgepole pine, trembling aspen, and birch. On swampy substrates, willow, labrador tea, sedges, cotton grass, and sphagnum moss are common. A number of wild berry types grow in the area and are an important source of food for wildlife.

Large game in the region includes grizzly bears above treeline, and black and brown bears below treeline, as well as moose, mountain goats, mountain caribou, and wolves. Small animals include lynx, wolverine, fox, rabbit, porcupine, pika and mouse. A variety of bird species inhabit the area, depending on the elevation. The area is not located on a major flyway, but migratory waterfowl occasionally pass through.

3. HISTORY OF EXPLORATION AND MINING

3.1 Mining History of the Cassiar Region

The Cassiar region was a focus for exploration and mining activities for more than one hundred years, and has been experiencing a renewal of interest during the late 1990's. Activity began when placer gold deposits were discovered along the bottom of McDame Creek in 1874, triggering a gold rush to the McDame Valley. Bench deposits along the adjacent slopes were developed during the 1930's and, in 1934, the first gold-bearing quartz vein was discovered near Troutline Creek. Additional veins were soon discovered near Quartzrock Creek and in the Table Mountain area, and small-to medium-scale underground mines were developed. In 1978 Erickson Gold Mining Limited (later called Total Energold Corp.) consolidated several of the small underground mines near Table Mountain and launched a combined operation, the Erickson main mine, in 1979. Cusac Gold Mines Ltd., which exploited a nearby vein system, subsequently bought the Erickson operation. At about the same time, United Hearne Resources Ltd. and Taurus Resources Ltd. launched the Taurus operation near Quartzrock Creek (Diakow and Panteleyev, 1981; Panteleyev and Diakow, 1982).

Cusac and Taurus recently signed an option and joint-venture agreement that includes the right for Cusac to mine up to 250 000 tonnes per year from the Taurus property, subject to NSR's, to International Taurus Resources Inc. The ore will be milled at Cusac's Table Mountain facility. Previous work on the Taurus property, by Cyprus Amax Ltd. and International Taurus, developed a drill-indicated resource of 13.9 million tonnes grading 1.01 g/t Au (Schroeter, 1999).

Cassiar is also known for asbestos production. In 1953 Cassiar Chrysotile Ltd. (formerly Cassiar Asbestos Corp.) began asbestos production from a large open-pit a few kilometres north of the Cassiar townsite. The pit ceased production in 1990. The McDame asbestos body adjacent to the pit area was discovered in the 1980's and was mined by underground methods for a short time during 1991-1992. The asbestos mill shut down in 1992 after the closure of the underground operation.

The Cassiar townsite and some of the mine facilities have been dismantled and reclaimed, but Cassiar Mining Inc., a wholly owned subsidiary of Minroc Mines Inc., conducted a pilot operation at the Cassiar millsite during the summer and fall of 1998. Between August and late October, they recovered and shipped 20 tonnes of chrysotile fibre from the 17 000 000 tonne tailings stockpile across from Troutline Creek on the Southern Block (Fig. 6). Cassiar Mining hopes to expand to commercial production of 18 000 tonnes per year by mid-1999, with eventual expansion to 50 000 tonnes per year. The tailings recovery project is expected to continue for 13 years, employing up to 60 people on the site (Schroeter, 1999; Wojdak, 1999).

Small quantities of nephrite jade are also produced at Cassiar. Jedway Enterprises Ltd. recovers about 50 tonnes per year from the asbestos mine waste-rock dump, under contract with Cassiar Chrysotile Inc. The jade formed where argillite was faulted over serpentinite (Wojdak, 1999) due to locally high pressures that occurred during faulting.

The nearest lead-zinc-silver project is Silvertip (formerly Midway; MINFILE 104O-038), located in the Rancheria area near the Yukon border, about 120 km north of Cassiar. Operated by Silvertip Mining Corporation, a subsidiary of Imperial Metals Corporation, that project filed an Environmental Assessment Process application in April 1998 and is currently focusing on completing that process (Schroeter, 1999; Wojdak, 1999). Geologically, the mineralization at Silvertip/Midway consists of irregularly shaped manto and chimney deposits hosted within the McDame Group limestone (Sec. 4.3.8). Although it is hosted in a different formation, this is the same type of mineralization that is present on the Southern Block.

Silvertip Mining Corporation currently estimates a resource of 2,570,000 tonnes grading 325 g/t Ag, 6.4% Pb, 8.8% Zn and 0.63 g/t Au, and they consider that there is good potential for expansion of that resource. They propose to use a combination of open-pit and underground mining. A dense-media circuit is planned to upgrade run-of-mine material, followed by conventional milling at 1500 to 2000 tonnes/day (Schroeter, 1999).

3.2 History of the Southern Block

3.2.1 Pre-1998 Activities

In September of 1941, galena was discovered in Marble Creek Basin (Appendix G). In the early 1950's J. McMullen and W. Storie staked a group of claims called the Marble Creek Claims (McMullen 1998). In 1953 they hand-picked about 23 short tons of high-grade ore from surface exposures near the west fork of Marble Creek and, according to J. McMullen (1998), the gross smelter return was $85 000 (1953 Canadian dollars).

In 1955 Silver Standard Co. optioned six adjacent claims in Marble Basin, where they drilled 9 holes and did some trenching before their option lapsed (Lorimer 1968).

During the 1960's, W. Storie re-staked the Marble Creek Claims and adjacent areas, including the Granite Creek area, which he called the Silver Queen Claims. Consolidated Coast Silver Mines Ltd. (Coast) subsequently optioned the ground from Mr. Storie and undertook exploration work between 1968 and 1975. In 1968 and 1969 Coast completed airborne and ground magnetometer survey.

In the late 1960's and early 1970's, Coast completed 1714 feet of underground development, followed by 2039 feet of underground drilling and drilled fifty holes on the Southern Block. In 1975 they completed an additional 471 feet of underground drilling in the Lower Adit (Cukor 1976). Attempts to locate the original data from Coast's programs have not been successful, but some of the Coast information was reproduced by Cukor (1976).

In 1976, exploration was carried out by Balfour Mining Ltd. Their work included geophysical surveys; 5,374 feet of diamond drilling in the Marble Basin area (of which 740 feet were in the Upper Adit area); and construction of four bulldozer trenches above the Upper Adit (Cukor, 1975, 1976). Balfour's reserve estimates are discussed in Section 11 of this report.

In 1979, Shell Canada Resources Ltd. optioned 83 claims from W. Storie as described in Section 2.2. Along with the Marble Basin area, that ground included areas around Granite Creek and Lang Creek, most of which is now part of Eveready's Southern Block, as well as other areas to the east and south (Fig. 2). Shell, in agreement with Mr. Storie, also staked some additional claims, including the Alta-1 Claim that is now part of the Southern Block.

Shell's exploration, described by Bloomer (1980, 1981), and Bloomer and Saydam (1980), consisted of detailed geological mapping, geophysical and geochemical surveys and diamond drilling. Shell's work was directed toward evaluating the tin potential of the area (Bloomer 1980, 1981). Shortly afterward, Shell's corporate objectives changed and they allowed their option to lapse. The claims then reverted to the estate of W. Storie, represented by Patricia Borsato of Salmon Arm, B.C.

In 1995 Pacific Bay Minerals Ltd. optioned the western portion of the Storie Estate ground, as well as some nearby claims held by other parties. Pacific Bay's exploration consisted of geochemical surveys and one reverse-circulation drillhole (Moyle 1996).

In 1997 the ground that had been optioned by Pacific Bay reverted to the Storie Estate and was subsequently purchased by Eveready. Eveready also purchased the Lime Claims from R.E. Fischer, who staked them in 1997. Together, those claims, which encompass a number of mineralized showings (MINFILE 104P 006, Magno; 104P 044, 080, 088, D-Zone; 104P 082, Pant Zone), form the Southern Block (Table 1).

3.2.2 The 1998 Exploration Program

Field crews arrived in the Cassiar area in mid-June. Reconnaissance mapping was done in most areas of the Southern Block, but the majority of the work focused on Marble Basin. Mapping was followed by trenching, sampling and diamond drilling in the Marble Basin area. Limited trenching was also done at the D-Zone. Field activities were completed by late September.

Major geologic features such as the Marble Creek Fault were mapped and the McMullen Alteration Zone was traced for a distance of about 1.3km. Mineralized outcrops were identified along the length of the McMullen Zone and in several other areas of Marble Basin. Significant outcrops were trenched by hand, described and sampled. The Upper Adit was found to be partially collapsed, but the Lower Adit was open. Its walls were washed and mapped, and channel samples and larger bulk samples were taken. Locations of outcrop, trench and adit samples are shown on Map No. 1, sampling procedures are outlined in Appendix B and sample descriptions and analytical results are included in Appendix C.

At the D-Zone, a variety of geologic features, as well as old trenches and drillsites, were mapped in the Upper, Middle and Lower D-Zone. Attempts to reopen the old trenches were largely unsuccessful because the overburden depth was too great to be penetrated by the equipment that was available locally, but loose blocks of mineralized material that were found on the surface were sampled.

Mapping activities also included reconnaissance of the M-Zone, G-Zone and Tremolite Zone showings, and preliminary evaluation of access into the Lang Creek and Pant Zone areas. Trails along Lang Creek are passable, but trails to the Pant Zone have been disrupted by landslides.

At the end of the program, eight fully-cored diamond drillholes were completed along the McMullen Zone in Marble Basin, in order to test the continuity of the mineralization and alteration, and to evaluate its relationship to host rock lithology and structure. The core was described and sampled at a shed near the asbestos mill, and is currently being stored in Watson Lake by DJ Drilling Company Ltd..

4. GEOLOGY

The geological summary below is based on field work done by Retread personnel during the summers of 1997 and 1998, and on reports by:

- the British Columbia Geological Survey Branch (Nelson and Bradford, 1993);
- the Geological Survey of Canada (Gabrielse, 1963; Mansy and Gabrielse, 1978); and
- personnel of Shell Canada Resources Ltd., Balfour Mining Ltd, Coast Silver Mines Ltd., and Pacific Bay Minerals Ltd. (Bloomer, 1980, 1981; Bloomer and Saydam, 1980; Cukor, 1975, 1976; Lorimer, 1968; Moyle, 1996).

4.1 Regional Setting

The rocks of the Cassiar district range in age from Late Precambrian through Late Paleozoic. They can be divided into three major units:

- the Cassiar Terrane (a body of metasedimentary platformal rocks);
- the Sylvester Allochthon (a mass of eugeosynclinal rocks); and
- the Cassiar Batholith and younger intrusive rocks.

The Cassiar Terrane (Fig. 7) consists of mildly metamorphosed sedimentary rocks that range in age from late Precambrian to late Paleozoic (Fig. 8). They were deposited along the margin of the ancestral North American continent, and were subsequently moved northward at least 450km along the Tintina fault. The Cassiar Terrane includes the lead-zinc-silver and magnetite deposits of the Cassiar Project Areas.

The Sylvester Allochthon is an isolated klippe of the Slide Mountain Terrane that has been preserved within the core of the McDame Synclinorium (Fig. 7). It covers an area of about 150 by 20km and includes mildly metamorphosed marine sediments, volcanics and ultramafic rocks of late Paleozoic age. The rocks of the Sylvester Allochthon were deposited as island arcs and in eugeosynclinal settings west of the ancestral North American continent, and were subsequently moved hundreds of kilometres eastward by thrust-faulting to their present position on top of the Cassiar Terrane. The gold-bearing quartz veins worked at the Cusac and Taurus mines lie within the Sylvester Allochthon, as do the asbestos deposits near the Cassiar townsite.

The Cassiar Batholith is a large, northwest-trending body of granitic rocks exposed over an area about 25 by 350km in size (Fig. 7). It intruded the Cassiar Terrane and the overlying Sylvester Allochthon during mid-Cretaceous time, about 110 to 100 million years ago. The area was subsequently intruded by the Cassiar Stock, smaller granitic bodies and mafic and felsic dykes. One or more of the intrusive events was probably the source of the hydrothermal fluids that formed the lead-zinc-silver and magnetite deposits in Eveready's claims.

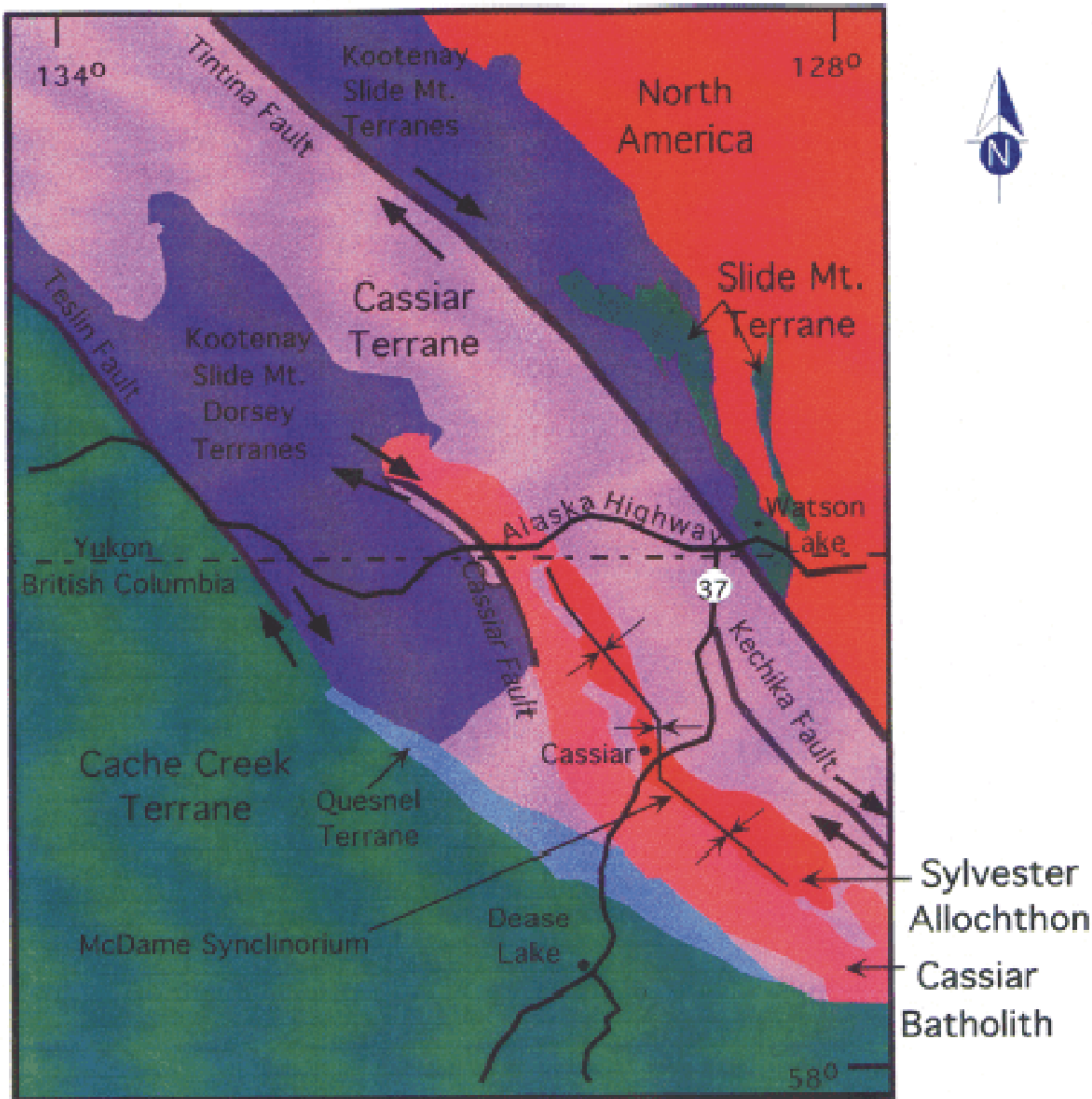
4.2 Geologic Structure

The Cassiar Project Areas lie along the western margin of the McDame Synclinorium (Fig. 7), a large-scale fold that formed in response to the intrusion of the Cassiar Batholith to the west. The strata strike consistently to the northwest and dip steeply to the southeast, with a few minor variations caused by local folding and faulting.

There were at least two periods of faulting. Thin-skinned, duplex-style thrust-faults like the Sylvester Fault developed during a period of compression and crustal shortening in early Mesozoic time. Block-faults, like the Marble Creek Fault, developed during a tensional regime in the late Mesozoic to early Cenozoic (Nelson and Bradford 1993).

The Marble Creek Fault runs along the east fork of Marble Creek. It is a northerly striking normal fault with the west side upthrown. It appears to have developed at about the same time as the emplacement of the Cassiar Stock (Nelson and Bradford, 1993). It is cut by a younger cross-fault (the X-Fault) between Marble Basin and the Lang Creek valley.

The most economically significant structural features are the east-west trending tensional fracture systems that host the lead-zinc-silver and magnetite mineralization. They are described in Sec. 10 of this report.



Modified after Nelson and Bradford 1993

EVEREADY RESOURCES CORP.

Geological Terranes
Cassiar Region

AUTHOR: ZN	DATE: Jan. 1998	FIGURE NO.: 7

Retread Resources Ltd.

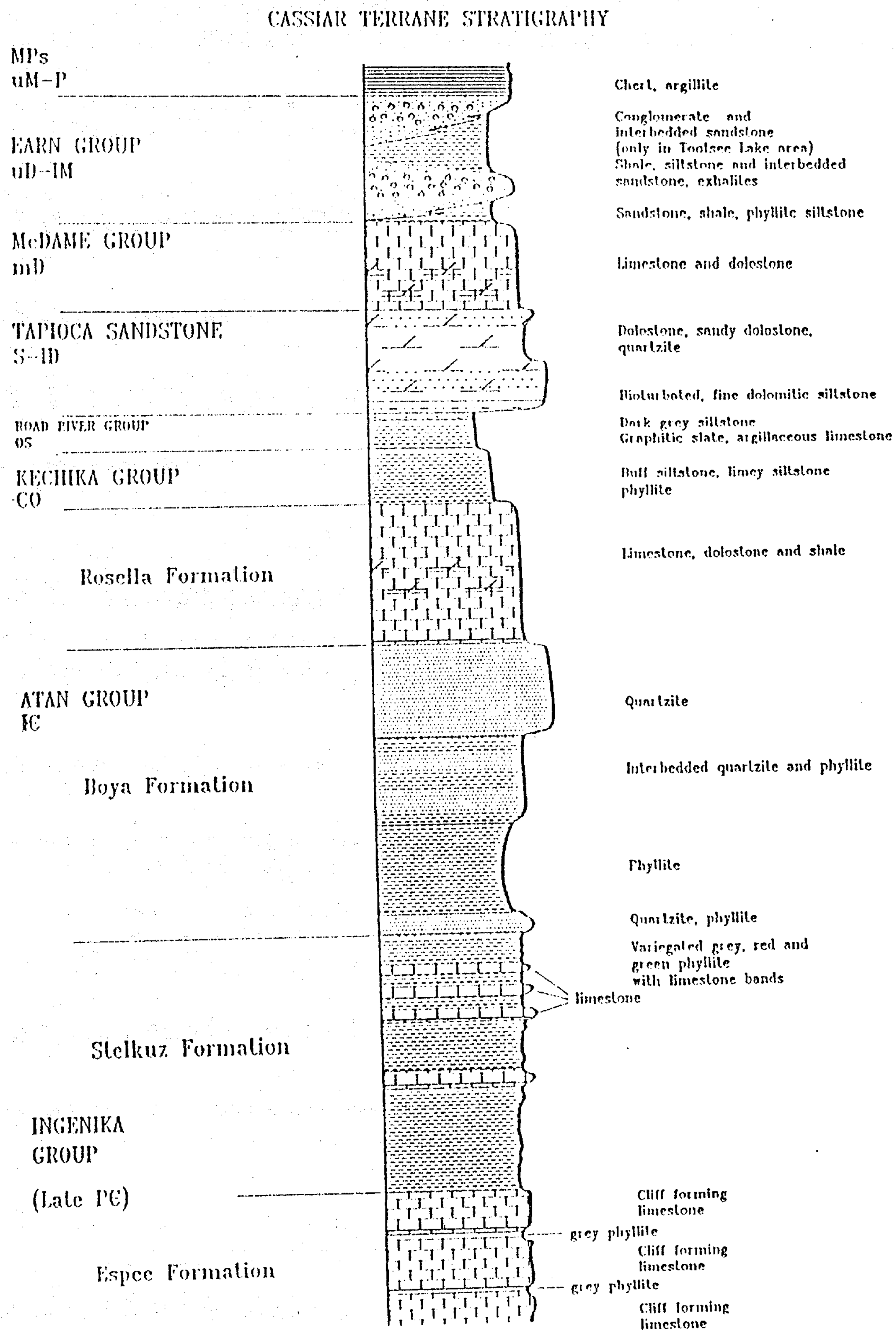


Figure #7 Stratigraphy of the Cassiar Terrane. Thrust faulting has placed the Sylvester Allochthon on top of the uppermost unit.

EVEREADY RESOURCES CORP.

Stratigraphic Column, Cassiar Terrane

modified after Bradford and Nelson 1993

AUTHOR: GH	DATE: Jan. 1998	FIGURE NO.: 8

Retread Resources Ltd.

4.3 Stratigraphy

The stratigraphic terminology of Nelson and Bradford (1993) is used in this report (Fig. 8), and descriptions of formations that are not present on the Eveready's claims are based primarily on their work. Descriptions of the Rosella and Boya Formations and other units that outcrop on the claims are based on observations made during the recent programs and the reports of previous claim holders cited at the beginning of Sec. 4. Lithologic names for some of the rock types are defined in Appendix A.

1. Espee Formation (Upper Proterozoic)

The Espee Formation is the oldest stratigraphic unit exposed within the Cassiar district. It consists of thick-bedded limestone and dolomite with olive-green to gray phyllitic partings and intervals of thinner bedded carbonate with a greater percentage of phyllite. It is not exposed on the Southern Block claims.

2. Stelkuz Formation (Upper Proterozoic)

The Stelkuz Formation is a thick sequence of phyllite, with minor beds of quartzite, argillite, dolomitic sandstone and limestone. The contact with the overlying quartzites of the Boya Formation is gradational. The Stelkuz Formation may be exposed near the northwest corner of the Southern Block claims.

3. Boya Formation (Lower Cambrian)

The Boya Formation consists primarily of quartzite, interbedded with lesser amounts of slate, siltstone and conglomerate, and is considered to be a prograding marine fan deposit. It is about 400m thick at its type section near Good Hope Lake (Fritz 1980), and is exposed around the Granite Creek valley on Southern Block. Known mineralization is limited to disseminated sulfides (Sec. 6.6).

The contact between the Boya Formation and the overlying Rosella Formation is exposed in Granite Creek on the Southern Block. The contact occurs gradually over a 10m interval, with interbedded argillaceous quartzite and blue-grey to light grey siliceous limestone grading upward into massive, banded limestone. In other areas where the contact is exposed, it appears to be faulted.

4. Rosella Formation (Lower Cambrian)

The Rosella Formation hosts the lead-zinc-silver and magnetite deposits of interest, and most of the Southern Block claims were staked to encompass exposures of Rosella strata. The Rosella Formation was known as the Carbonate Member of the Atan Group prior to the work of Fritz (1980), who gave it its present name. It consists of carbonate rocks that were probably deposited in lagoonal and forereef environments. They have been recrystallized to marble, and in places partially dolomitized. Lithologic names for types of marble are defined in Appendix A.

The Rosella Formation is typically about 70m thick on the Northern Block claims, but on the Southern Block the thickness increases to about 800m, probably due to structural thickening by thrust-faults. The basal section, which is exposed along Granite Creek, consists primarily of thin-bedded marbles, interbedded with lesser amounts of argillaceous quartzite. The remainder of the formation, which is well-exposed in Marble Basin, is dominated by thick-bedded marble, some of which is dolomitic. Interbeds of brown-weathering slate or phyllite are not common, except in the basal part of the formation.

Deposits of potentially economic mineralization are hosted within the Rosella marble on the Southern Block. They are discussed in detail in Sections 6, 7 and 10 of this report.

5. Kechika Group (Cambrian - Ordovician)

The Kechika Group is a thick sequence of golden to olive green and grey calcareous slate with minor thin pods and lenses of limestone or marble. Their pale colour distinguishes them from the black slates of the overlying Road River Group. Kechika Group strata are not exposed on the Southern Block claims.

6. Road River Group (Ordovician - Silurian)

The Road River Group consists primarily of black, graphitic calcareous and noncalcareous slates, with lesser amounts of thin-bedded black limestone. On the Southern Block, the black slates of the Road River Group are exposed east of Marble Creek, where they are in fault-contact with the Rosella Formation along the Marble Creek Fault. Those exposures were originally mapped as Kechika Group (e.g., Bloomer 1980, 1981), but have been recognized as Road River Group since the work of Nelson and Bradford (1993).

7. Tapioca Sandstone (Silurian - Lower Devonian)

The Tapioca Sandstone is generally massive and consists of mixtures of light coloured dolostone and quartzite. Near the Cassiar townsite and at the asbestos pit, the Tapioca Sandstone is locally absent due to erosion, but fault-imbricated exposures of Tapioca Sandstone can be seen east of the Southern Block, along the southern edge Troutline Creek valley.

8. McDame Group (Middle Devonian)

The McDame Group, which consists of reefal and lagoonal carbonate rocks, is not present on the Southern Block claims, but the grey McDame rocks are well exposed on the slopes above the Cassiar townsite. In that area pre-McDame erosion removed the Tapioca Sandstone, and the McDame Formation rests directly on the Road River slates.

A period of uplift and erosion occurred after McDame deposition, resulting in dissolution and karsting of the McDame carbonates in most areas, although the surface of the McDame Group remained essentially planar near Cassiar (Nelson and Bradford, 1993). Farther north near the Yukon border, where the McDame Group reaches thicknesses of up to 350m and is strongly brecciated by karsting, it hosts the Silvertip (Midway) deposit, a group of lead-zinc-silver bodies that were discovered in 1983.

9. Earn Group (Late Devonian - Early Mississippian)

The Earn Group includes turbidite deposits and marine slates. In the Cassiar area, the Earn Group is about 50 to 100m thick and consists primarily of black to dark grey slates and cherts. The Earn Group is not present on the Southern Block claims, but its black slates are clearly visible on top of the grey McDame Group on the slopes above the Cassiar townsite.

10. Chert & Argillite (Late Mississippian-Early Permian)

The unnamed chert and argillite unit rests on top the Earn Group slates and consists primarily of black, buff, red, green, olive and pink cherts. It also includes thinner beds of argillite, chert conglomerates and, in a few areas, vesicular basalts. It is discontinuous near Cassiar and is not present on any of the claims.

11. Sylvester Group (Early Mississippian - Late Triassic)

The Sylvester Group consists of three structurally stacked facies packages, designated Divisions I, II and III by Nelson and Bradford (1993). A major thrust fault with an estimated displacement on the order of hundreds of kilometres separates the entire Sylvester sequence from the underlying formations of the Cassiar Terrane.

In the Cassiar area, the Sylvester strata rest directly on the Earn Group or, in some places, on the chert and argillite unit. They belong to the central package, Division II, an ophiolite suite that includes basalt-diabase-sedimentary sequences and ultramafic and gabbroic bodies. The Division II assemblage is believed to represent a volcanic-dominated marginal basin floored by oceanic lower crust and upper mantle (Nelson and Bradford, 1993).

Division II strata range in age from Early Mississippian to Late Triassic, and are exposed in the core of the McDame Synclinorium, east of the Cassiar townsite (Fig. 7). The veins of chrysotile asbestos that were mined at Cassiar occur as stockworks in serpentinized ultramafic rock at the base of the sequence.

The remainder of Division II consists of basaltic rocks (flows, breccias, tuffs and sills) intercalated with a variety of sedimentary rock types (primarily argillites, cherts, cherty sandstones and siltstones) and slivers of ultramafics. The gold-bearing mesothermal quartz veins worked by the Cusac and Taurus mines are hosted in Division II strata, as are minor pods of massive sulfide mineralization.

12. Cassiar Batholith (Mid-Cretaceous) and Younger Granitic Intrusive Rocks

The lead-zinc-silver and magnetite deposits in the region usually occur near granitic plutons and the ore-forming hydrothermal fluids that formed them are believed to have originated with the granites (Nelson and Bradford, 1993). Radiometric dating indicates that there were three periods of intrusive events. The first occurred 110-100 million years (Ma) ago, followed by successively smaller events at 70 Ma and 50 Ma.

The Cassiar Batholith, dated at 110-100 Ma (mid-Cretaceous), is by far the largest intrusive body in the area (Fig. 7). It consists of a series of large plutons of granite, granodiorite, quartz monzonite and pegmatite. The granites typically consist of plagioclase feldspar, with microcline (sometimes as megacrysts), quartz, hornblende and, usually, muscovite. Weathered exposures of these rocks are generally pink to grey in colour.

Smaller granitic plutons dated at 70 Ma (Late Cretaceous) occur along the eastern margin of the Cassiar Batholith. They include the Cassiar Stock, a pluton of medium- to coarse-grained quartz monzonite at the headwaters of Granite Creek on the Southern Block claims, as well as the Contact Stock and the Kuhn Stock on the Northern Block claims.

There are also a few small stocks in the area that have been dated at 50 Ma (Eocene), but none of them occur near Eveready's claims.

13. Dykes

On the Southern Block, east-west striking, discontinuous mafic dykes cut across the Boya, Rosella and Road River strata. They are typically about 0.5-2.0m thick and dark green to light grey in colour. They are fine-grained and sometimes porphyritic, with phenocrysts of plagioclase in a plagioclase-pyroxene matrix (Sec. 8) and they appear to be typical basalts. Abbott (1983) suggested that lead-zinc-silver mineralization in the Cassiar region may be related to dykes, rather than to the granitic plutons. In many outcrops, the dykes appear unmineralized except for minor disseminated pyrite, but they occur in alteration zones near bodies of sulfide minerals on both the Northern and Southern Blocks.

One of the largest dykes, which reaches thicknesses of up to about 2.0 m, occurs the Western Section of the McMullen Alteration Zone in Marble Basin (Sec. 6.1). It outcrops immediately south of the Lower Adit and has been traced westward from there to the summit of the ridge. That dyke, and/or offshoots from it, were intersected in the Lower Adit and several of the 1998 and older drillholes. Strongly brecciated and altered basalt, with elevated levels of Pb, Zn and Ag, occurs on both sides of Ore Body B in the Lower Adit (Sec. 8, 10). Basalts with elevated levels of Pb, Zn and Ag were also encountered adjacent to mineralized veins in trenches in the Eastern Section of the McMullen Zone (Sec. 6.1).

Basaltic dykes have also been exposed by trenching in the Upper D-Zone area (Sec. 6.2) north of Granite Creek.

5. THE ANALYTICAL PROGRAM

Samples were taken from outcrops, trenches, the Lower Adit and drill core as discussed in Sections 6 and 7. Sampling procedures are outlined in Appendix B. Trench sample and drillhole locations are shown by Map No. 2.

Most of the samples were submitted to Loring Laboratories Ltd. (Loring) in Calgary. ICP (Induced Coupling Plasma) 32-element analysis was done on more than 330 samples. Fire assay was done on more than 170 samples. The results and copies of the laboratory reports are included in Appendices C and D. Laboratory procedures are outlined in Appendix B.

To determine mineralogy, a series of samples were submitted to Earthworks Geoscience Corp. in Edmonton for petrographic examination and X-ray analysis (Sec. 8).

To determine the recoverability of the economic minerals, three bulk samples taken in and near the Lower Adit were shipped by Loring to International Metallurgical and Environmental Incorporated in Kelowna B.C. for metallurgical testing (Sec. 9).

6. 1998 MAPPING PROGRAM

Reconnaissance mapping during 1998 confirmed the existence of two major alteration zones on the Southern Block claims: the McMullen Zone in Marble Basin (Sec. 6.1) and the D-Zone north of Granite Creek (Sec. 6.2). Similar mineralization was also confirmed at the Granite Creek Showing (Sec. 6.3) and a geochemically different type of alteration was noted in the area of the Marble Creek Fault (Sec. 6.4). Maps No. 1 and 2 show the locations of the alteration zones, mineralized showings, adits, trenches and drillholes. Detailed descriptions of the trench and adit samples, including analytical results, are included in Appendix C.

Mapping focused primarily on the McMullen Zone because it is well exposed in the Lower Adit (Fig. 9) and on the surface, above the treeline (Figs. 10, 11). Observations from the McMullen Zone were used to develop preliminary hypotheses about ore deposition to guide efforts in other areas of the property.

The mapping program was followed by a program of diamond drilling along the McMullen Zone at the end of the 1998 field season (Sec. 7). Conclusions based on the combined results of the mapping, drilling and analytical work are discussed in detail in Sec. 10.

6.1 The McMullen Zone

The McMullen (or Magno) Alteration Zone is a roughly tabular-shaped body of altered dolomitic and rhodochrositic marble, contained within the unaltered grey marble of the Rosella Formation. It dips almost vertically and strikes roughly east-west, perpendicular to the strike of the host rocks. The thickness of altered marble ranges from a few centimetres to as much as 20m. Bodies of sulfide minerals (primarily argentiferous galena, sphalerite, pyrite and pyrrhotite) and magnetite occur within the altered marble and are the primary exploration targets. They range from veins a few centimetres thick to irregularly shaped bodies that reach thicknesses of at least 7m in some areas. The nature and origin of the potentially economic mineralization are discussed in detail in Sec. 10.

FIGURE 9. Map of the Lower Adit. See Map No. 3 in the map pocket for a 1:2,500 scale version of this map.

FIGURE 10. Western Section of the McMullen Alteration Zone, looking west across Marble Basin. Arrows show portals of Upper and Lower Adits.

FIGURE 11. Rhodochrositic alteration around the portal of the Lower Adit. Arrow shows basaltic dyke.

The mapping program showed that the McMullen Alteration Zone extends from the basal contact of the Rosella Formation on the western slopes of the Granite Creek valley, to the Marble Creek Fault west of Marble Creek (Map No. 1). Although this represents a total length of about 1.3km, the zone may be discontinuous in the Central Section.

6.1.1 Western Section

The Western Section is the best known part of the McMullen Zone because the bedrock is very well exposed (Fig. 10), and because it was a major focus for previous trenching, aditing and drilling programs (Sec. 3.2).

The 1998 mapping program confirmed that the Western Section has a strike length of about 700m. It extends westward from exposures along the west fork of Marble Creek, through the Lower and Upper adits and over the crest of the ridge to the base of the Rosella Formation in Granite Creek valley, below which it is covered by talus. Trench and grab samples were taken from surface exposures near the west fork of Marble Creek, near the portal of the Lower Adit and above the Lower Adit. Results from ore-grade material (excluding low-grade partings and altered wall-rock) are summarized below. Magnetite content ranged from trace to 58.7%. Details are included in Appendix C. Trench locations are shown on Map No. 2.

TABLE 2: Results from Trench Samples, Western Section.

Sample No.	Trench	Length	Pb %	Zn %	Ag g/t
98/07/06-2	#6	60 cm	1.19	2.96	34.63
98/07/06-13,14	#7	250 cm	10.21	6.62	273.60
98/06/20-3	#8	100 cm	2.10	1.15	57.26
98/06/19-6	#9	150 cm	7.42	4.50	252.34
98/08/02-2	#10	470 cm	2.74	1.09	74.74

The walls of the Lower Adit were washed, mapped and sampled. Two ore bodies, Body A and Body B, are exposed in the adit (Map No. 3; Figs. 9, 12 and 13). The Upper Adit is partially collapsed and cannot be entered.

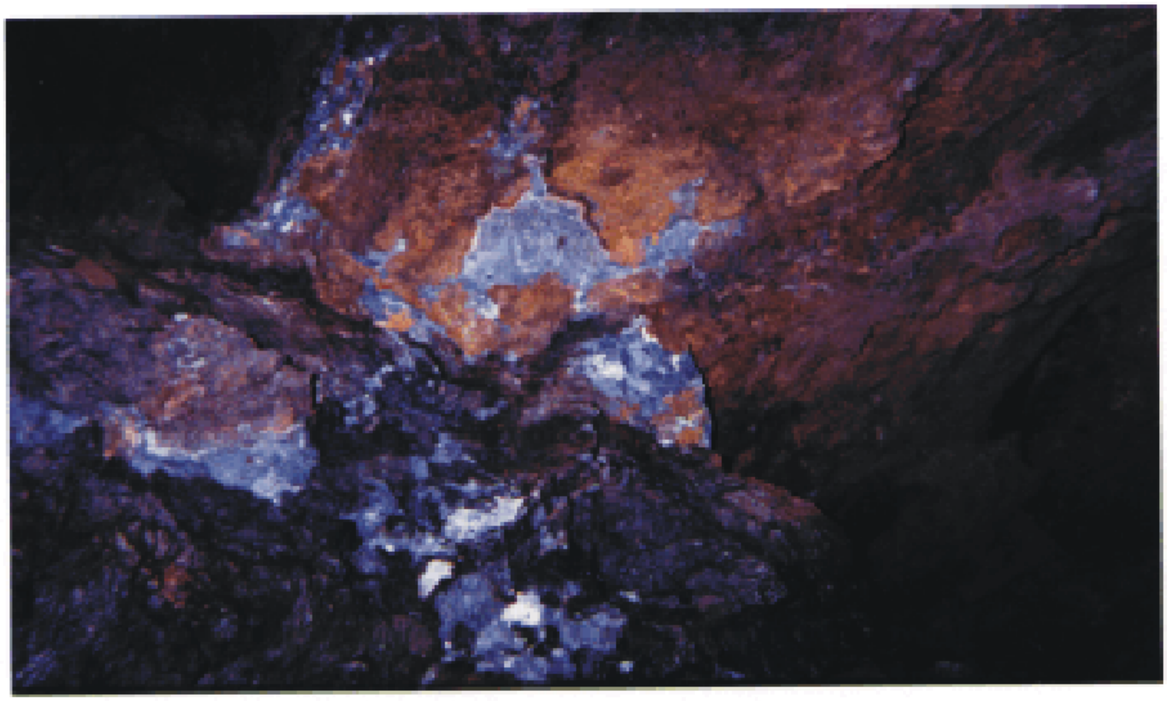


FIGURE 12. Galena and other mineralization in Ore Body A along the south wall of the Lower Adit, 57m west of portal.

FIGURE 13. Mineralization in Ore Body B at the western end of the Lower Adit, 182m west of portal.

Highlights of ore intersections from the Lower Adit channel samples (excluding low-grade partings and altered wall-rock) are shown in Tables 3 and 4, and weighted average grades based on length for each ore body are shown in Table 5. Complete results are included in Appendix C. Sample locations are shown on Fig. 9 and Map No. 3.

TABLE 3: Results from Channel Samples, Body A, Lower Adit.

Sample No.	Trench	Length	Pb %	Zn %	Ag g/t
98/07/13-2a	#4	17 cm	5.35	4.80	63.08
98/07/13-3a	#4	400 cm	7.30	5.52	161.83
98/07/13-2b	#5	75 cm	4.84	1.84	87.77
98/07/13-3b	#5	200 cm	0.92	3.95	10.97
98/07/13-4b	#5	570 cm	27.72	2.51	818.38
98/07/15-2c	#6	900 cm	17.8	4.22	499.89
98/07/13-3c	#6	70 cm	0.71	2.95	13.03
98/07/13-4c	#6	180 cm	25.22	22.20	676.10

TABLE 4: Results from Channel Samples, Body B, Lower Adit.

Sample No.	Trench	Length	Pb %	Zn %	Ag g/t
98/07/12-3a	#8	38 cm	1.58	4.60	21.26
98/07/12-4a	#8	190 cm	14.11	2.75	297.56
98/07/12-6a	#8	19 cm	1.22	0.29	18.51

TABLE 5: Weighted Average Grades, Bodies A & B, Lower Adit.

Sample	Trenches	Pb %	Zn %	Ag g/t	Magnetite %
Body A	#4,5,6	20.76	2.88	608.56	32.78
Body B	#8	9.66	2.47	199.88	36.51

Two showing over the summit of the ridge 30-40m north of the McMullen Zone probably represent splays of the zone. Grab samples taken from very weathered material at the summit showings (Fig. 14) gave the following results:

TABLE 6: Results from Grab Samples, Summit of Ridge.

Sample No.	Pb %	Zn %	Ag g/t
98/08/05-17	18.70	0.13	2855.94
98/08/02-02	2.74	1.09	74.74

An additional showing lies approximately 300m to the south of the McMullen Zone in Marble Basin. Given its distance from the McMullen Zone, that showing may represent a separate alteration zone. A grab sample taken at that showing gave the following results:

TABLE 7: Results from Grab Sample, Southern Marble Basin.

Sample No.	Pb %	Zn %	Ag g/t
98/08/05-23	9.5	2.60	339.42

6.1.2 Central Section

The Central Section of the McMullen Alteration Zone lies between the Western Section and the Eastern Section and is about 250m long. It is the most poorly known section of the McMullen Zone because the bedrock is not well exposed. An area of unmineralized argillaceous strata outcrops on its eastern margin, but most other areas are covered by coarse talus.

According to magnetometer surveys done by Balfour (Cukor 1976), the Central Section includes a number of post-mineralization faults that caused offsets in the alteration zone. Additional geophysical surveys and/or drilling will be needed to improve the definition of the McMullen Zone in the Central Section.

FIGURE 15. Westernmost part of the McMullen Alteration Zone. Showing the summit of the ridge between Marble Basin and Granite Creek, view looking south/southwest.

6.1.3 Eastern Section

The Eastern Section of the McMullen Alteration Zone lies between the Central Section and the Marble Creek Fault, and is about 350m long. Bedrock is well exposed along much of its length and exposures of altered marble containing veins of sulfide minerals were trenched and sampled. Results from ore-grade material (excluding low-grade partings and altered wall-rock) are summarized below. Complete results are included in Appendix C and trench locations are shown on Map No. 2.

TABLE 8: Results from Trench Samples, Eastern Zone.

Sample No.	Trench	Length	Pb %	Zn %	Ag g/t
98/07/02-10-13	#1	220 cm	1.38	2.51	27.43
98/06/30-2	#2	99 cm	67.60	0.32	2025.56
98/07/03-5-11	#3	220 cm	7.72	2.02	250.62
98/07/03-8r	#4	80 cm	0.97	0.44	49.37
98/07/04-7, 8	#5	200 cm	0.82	3.65	24.18

6.2 The D-Zone

The D-Zone lies north of Granite Creek in the northern part of the claim block (Maps No. 1 and 2). It strikes roughly east-west, subparallel to the McMullen Zone and more or less perpendicular to the strike of the Rosella Formation. The D-Zone is concealed beneath unconsolidated sediment over most of its length, but drilling by previous claim owners (Sec. 3.2) showed that it hosts bodies of sulfide minerals in the Upper and Middle D-Zone areas.

The D-Zone appears to have a number of similarities to the McMullen Zone: east-west strike, steep dip, tabular shape, rhodochrositic alteration of dolomitic marble and included sulfide/magnetite deposits. Apparent differences in the mineralogy of the sulfides may or may not be significant. However, based on the available grade and tonnage data the D-Zone appears to have significant economic potential.

6.2.1 Upper D-Zone

The Upper D-Zone is the best exposed of the three D-Zone areas. It was drilled and trenched by previous claim owners (Sec. 3.2). According to Bloomer and Saydam (1980, p. 22), "Five holes were drilled by Coast Silver with two hitting mineralization. The best intersection ran 7.6 m of 4.73% lead, 4.74% zinc, 240 g/t silver and 0.069 g/t gold." Loose material generated during those efforts obscures the bedrock in most of the Upper D-Zone area. Grab samples from the trenching debris taken in 1997 (Hoffman, 1997) gave the following results:

TABLE 9: Results from Grab Samples, Upper D-Zone.

Sample No.	Pb %	Zn %	Ag g/t	Au g/t
CS-97-02	0.26	0.37	6.86	0.07
CS-97-03	2.42	0.36	63.41	0.34

Where it is exposed or was uncovered by trenching, the Rosella Formation bedrock in the Upper D-Zone area is medium-grained grey to white marble, with calcite veining, dolomitization and rhodochrosite alteration in some areas. A small basaltic dyke with weathered chlorite was seen in two trenches. Boya quartzite is also exposed in the Upper D-Zone area (Sec. 6.5).

6.2.2 Middle D-Zone

No bedrock is exposed in the immediate area of the Middle D-Zone, but outcrops along Granite Creek indicate that the area is underlain by Rosella Formation marble. Mineralized float in the old trenching debris is rich in pyrite and pyrrhotite rather than galena. Results from the grab sample of that material showed a significant gold anomaly:

TABLE 10: Results from Grab Sample, Middle D-Zone.

Sample No.	Pb %	Zn %	Ag g/t	Au g/t
98/08/05/ZN	0.08	0.01	N/A	2925.00

During the 1998 program attempts were made to re-open the old trenches in the Middle D-Zone area, but bedrock was not reached. Very wet deposits of unconsolidated gravel and clay are at least 6 m thick, and better trenching equipment, geophysical surveys and/or drilling will be needed to penetrate them.

Despite the lack of outcrop, further work is clearly warranted in the Middle D-Zone. According to Bloomer and Saydam (1980, p. 22), "Coast Silver drilled 15 holes in the Middle D-Zone and outlined 90,000 tonnes grading 3.3% lead, 6.3% zinc and 70 g/t silver. According to Coast Silver's reports, the Middle D-Zone has been delimited in its strike length but has only been tested to a vertical depth of 90 metres."

6.2.3. Lower D-Zone

The Lower D-Zone extends westward from the Middle D-Zone to the area around the confluence of Granite and Marble Creeks. No relevant outcrops were found in that area. According to Bloomer and Saydam (1980, p. 21), "The Lower D-Zone is a chargeability high coincident with magnetic anomalies. Five holes were drilled by Coast Silver, none of which hit mineralization. The chargeability highs were due to disseminated pyrite in argillite and the magnetic anomalies were due to barren pyrrhotite lenses". Pacific Bay Minerals also attempted a 270 m reverse circulation hole over the reported magnetic anomaly on the Lower D-zone, however they intersected no significant values of mineralization. That work was not conclusive, however, and modern geophysical surveys may be able to locate economic mineralization in the Lower D-Zone area.

6.3 The Granite Creek Showing

The Granite Creek Showing outcrops along Granite Creek between the McMullen Zone and the D-Zone. It is hosted in grey Rosella Formation marble and its approximate strike appears to be subparallel to that of the McMullen Zone and the D-Zone.

Shell drilled two holes at the Granite Creek Showing, one of which (DDH 80-02) intersected "3.02 metres of massive sphalerite, pyrrhotite, pyrite, and trace galena" assaying as shown in Table 11 (Bloomer and Saydam, 1980, p. 15). The other (DDH 80-01) intersected "massive recrystallized limestone" and was considered "to have penetrated the unmineralized flank of the showing and to have defined the northern limit of the mineralization" (Bloomer and Saydam, 1980, p. 15).

TABLE 11: Results from Shell Drillhole, Granite Creek Showing.

Sample No.	Length	Pb %	Zn %	Ag g/t	Sn %
DDH 80-01	3.02 m	0.10	14.0	11.66	0.03

A grab sample from the Granite Creek Showing was submitted for petrographic examination in 1997 and showed major sphalerite, quartz and magnetite, with minor galena, chalcopyrite (a copper mineral that has not been reported from the McMullen Zone or D-Zone) and calcite (Hardy, 1998). Assay and ICP analysis of a grab sample gave the following results:

TABLE 12: Results from Grab Sample, Granite Creek Showing.

Sample No.	Pb %	Zn %	Ag g/t	Au g/t
CS-97-01	0.12	0.86	19.20	0.27

6.4 The Marble Creek Fault Showings

The Marble Creek Fault, which strikes approximately north-south, runs along the eastern edge of Marble Basin and over the summit of the Basin into the Lang Creek valley. It is a normal fault that brings the Rosella Formation on its west side into contact with the younger Road River Group on its east side. It was probably active during the intrusion of the granite (Nelson and Bradford, 1993). It is cut by an east-west trending cross-fault (the X-Fault) near the summit of Marble Basin, on the divide between the Marble Creek drainage and Lang Creek.

Mineralization in areas near the Marble Creek Fault is distinct from the type of mineralization that is seen along the McMullen Alteration Zone and appears to have occurred at a later time. Characteristic minerals associated with the Marble Creek Fault include greenish chlorite, blue-grey to white tremolite, green actinolite and quartz veins.

6.4.1 Eastern Marble Basin

In Marble Basin, the easternmost part of the McMullen Alteration Zone (Sec. 6.1.3) terminates against the Marble Creek Fault. The Rosella Formation strata in that area show evidence of tremolite, pyrite and quartz, in addition to lead-zinc-silver minerals and magnetite.

Several large veins of bull quartz up to 1.5m thick outcrop along the Marble Creek Fault in that area. Their sulfide content has been mostly destroyed by weathering, but the quartz outcrops still show evidence of pyrite and possibly other sulfide minerals.

6.4.2 G-Zone and Tremolite Zone

The G-Zone and the Tremolite Zone are located near the summit of Marble Basin, along the Lang Divide (the divide between Marble Basin and the Lang Creek valley). They occur in Rosella Formation marble near the intersections between the Marble Creek Fault and the X-Fault. Geophysical surveys by previous claim owners identified a major magnetic anomaly in that area (Bloomer and Saydam, 1980).

The G-Zone lies near the headwaters of the east fork of Marble Creek, where the X-Fault offsets the Marble Creek Fault. Coast reportedly conducted a geochemical survey there and found anomalous values of lead, zinc and molybdenum. Coast drilled one hole (Hole H-1), which included a 2.0m intersection that assayed 0.20% tin, according to assays done by Shell (Bloomer and Saydam, 1980, p. 23, 30).

The Tremolite Zone lies along the Marble Creek Fault about 350m southeast of the G-Zone. In that area, a large volume of marble has been almost completely altered to tremolite, with minor quartz veins and traces of sphalerite (Bloomer and Saydam, 1980). Pyrite, limonite and tin showings have also been noted in the area. Shell drilled DDH 81-4 through the Marble Creek Fault near the Tremolite Zone, and Bloomer (1981, p. 25) reported that: "The hole was completed to a depth of 286 metres, and no mineralization was encountered in the hole except minor disseminated sulphides within dolomitic sections. The hole bottomed within the gradational contact zone between the carbonate and the quartzite. DDH 81-4 was also drilled to test a tremolite skarn zone thought to be caused by a shallow cusp of the Cassiar Stock. No sign of an intrusive body was encountered in the hole."

6.4.3 Pant Zone

The Pant Zone is located along the Marble Creek Fault in the Lang Creek valley. Because of its comparatively remote location and because the access trails in that area have been destroyed by landslides, the Pant Zone was not visited during the 1998 program. According to Bloomer and Saydam (1980, p. 26), mineralization at the Pant Zone "is mainly arsenopyrite, pyrite, pyrrhotite, with trace sphalerite and galena," and gangue minerals are "quartz, carbonate [and] siderite." Bloomer and Saydam (1980, p. 17, 18) reported that Shell drilled one hole at the Pant Zone (DDH 80-06), and core samples gave the following assay results:

TABLE 13: Results from Shell Drillhole DDH 80-06, Pant Zone.

Length m	Pb %	Zn %	Ag g/t	Sn %
0.9 m	N/A	N/A	N/A	0.94
0.2 m	<0.01	N/A	16.5	0.61
0.6 m	0.22	0.74	49.0	0.10
0.4 m	2.28	N/A	296.5	N/A

6.5 Skarn Showings

The M-Zone is a body of skarn located at the south end of the ridge between Marble Basin and Granite Creek, where the ridge meets the Lang Divide. Geologically, it is situated along the X-Fault near the northern edge of the Cassiar Stock, about 1400m west of the G-Zone. It is a body of garnet-diopside-actinolite skarn that includes bodies of banded magnetite and pyrrhotite, as well as showings of molybdenum.

6.6 Boya Formation

The Boya Formation is exposed at various locations in around the Granite Creek valley, including the Upper D-Zone area. Where the Boya is in contact with the Cassiar Stock, it has been altered to hornfels, marked primarily by recrystallization of quartz in quartzitic beds, and development of andalusite, chlorite and biotite schists in argillaceous zones. Disseminated sulfide content tends to increase with the degree of hornfelsing, and a few pods of pyrite have been found near granite contact, but no economically significant mineralization has been found in the Boya Formation to date. During the 1998 trenching program two old trenches in Boya strata near the Upper D-Zone were reopened and sampled. Minor disseminated pyrite was found, but assay results showed no economically significant mineralization (Appendix C). A small basaltic dyke was noted in one of the in the Boya trenches.

7. 1998 DRILLING PROGRAM

Eight fully cored diamond drillholes, totalling 1817m, were completed from four sites constructed along the McMullen Zone, from the portal of the Lower Adit to eastern branch of Marble Creek (Map No. 2). Several holes were drilled from each site to reduce the need for construction.

The drill core was split and sampled as described in Appendix B. For any zones with visible sulfide and/or magnetite mineralization, half of the split core was sent for fire assay (Sec. 5). Considerable lengths of split core from other altered and unaltered rock were sent for ICP analysis (Sec. 5). Core descriptions and assays are included in Appendices D and E.

7.1 DDH 9801 and DDH 9802

DDH 9801 and 9802 were drilled in the Western Section of the McMullen Alteration Zone, from a pad located 30 m north of the portal of the Lower Adit (Map No. 2). Both holes were oriented perpendicular to the McMullen Alteration Zone (parallel to the strike of the Rosella Formation), at an azimuth of 180° and inclinations of -45° and -65° respectively. They intersected only minor magnetite and sulfide mineralization, but the results demonstrate several points:

1. A number of breccia zones and apparent dip-slip faults were encountered. Rhodochrosite was common along fractures, joints and bedding, indicating alteration by hydrothermal fluids. Minor calcite-filled fractures and veins were likely of relatively late origin.

2. A magnetite-rich zone (slightly more than 40% magnetite) 4.5m thick (40.0-44.5m depth) was encountered in DDH 9801. Its thickness is consistent with that of mineralization visible near the adit portal. The mineralization was surrounded by a halo of Zn enrichment between depths of 27-60m. Enrichment in Mn was evident throughout the entire length of the hole.

3. Dolomitic marble was the dominant rock type in DDH 9801. The increased permeability of the dolomite allowed the Mn- and Zn-rich fluids to penetrate into the marble, while the magnetite/sulfide minerals deposited along the fracture system.

4. In these and other drillholes, as well as in surface samples, when the magnetite content exceeds about 25%, the Pb and Ag content decreases and the Zn content tends to increase.

DDH 9802 was drilled beneath DDH 9801. The upper portion, from surface to 202m, was a sequence of marble, dolomitic marble and Mn-altered dolomitic marble, which gave way to a siliceous or quartzitic phase of the Rosella Formation at depth. A fracture system intersected within the siliceous material at about 143m depth is believed to be the same fracture system that carried the magnetite/sulfide mineralization in DDH 9801. Deposition of magnetite/sulfide minerals is probably restricted to the carbonate horizons.

7.2 DDH 9803, DDH 9804, DDH 9805

DDH 9803, 9804 and 9805 were drilled at the eastern end of the Western Section of the McMullen Zone, from a pad approximately 30m east of the West Fork of Marble Creek (Map No. 2). The holes were collared in a small outcrop of argillaceous marble. DDH 9803 was drilled at an azimuth of 180° and inclination of -45°. DDH's 9804 and 9805 were drilled from the same pad at an azimuth of 220° and inclinations of -45° and -65°.

DDH 9803 did not intersect significant sulfide/magnetite mineralization. The argillaceous marble at surface gave way to Mn-altered marble at 22m depth. A zone of altered marble from 25-66m depth exhibited enhanced jointing and possible faulting, and may represent the east-west fracture zone that hosts the sulfide/magnetite mineralization in DDH's 9801 and 9802. It included geochemically anomalous metal values, but no economically significant mineralization.

The upper portion of DDH 9804 intersected marble and Mn-altered magnesian marble. Increased (but not economically significant) values of Zn and Pb were present around 55m, but no significant magnetite was encountered. A major change from Mn alteration to dolomitic marble at 75m depth appears to coincide with a dip-slip fault that may be present along the West Fork of Marble Creek. It would appear that the major east-west trending fracture system has been offset in the vicinity of this drillhole.

In DDH 9804, the zone of increased Zn and Pb occurs south of a basalt dyke, whereas the ore zones in the Lower Adit lie north of a dyke. The basalt is unmineralized in this hole.

DDH 9805 was drilled beneath DDH 9804. The upper portion intersected the same lithology and alteration pattern, but the alteration had better continuity. Basaltic material was intercalated with the marble, but the rock types were discrete and alteration was confined to the marble. At 214m depth the carbonate rocks gave way to the siliceous zone that was intersected by DDH 9802.

7.3 DDH 9806 and DDH 9807

DDH's 9806 and 9807 were drilled in the Central Section of the McMullen Zone (Map No. 2). They were collared in a small outcrop of argillaceous marble located approximately 25m north of Trench 4 and drilled at an azimuth of 180° and inclinations of -45° and -75°, respectively.

The upper portion of DDH 9806 was Mn-altered argillaceous marble. The material was strongly altered, and the more carbonate-rich rocks toward the bottom of the hole had elevated (but not economic) metal values. This hole may not have been drilled deep enough, and more favorable conditions may be found further south along strike.

DDH 9807 was drilled at a much steeper angle (-75°) than DDH 9806 to test zones at greater depth. Overall, it encountered only weakly altered material. The uppermost portion (1.5-57m), which consisted of marble, magnesian marble and argillaceous marble, gave the strongest geochemical anomalies. The marble toward the bottom of the hole showed minor brecciation and some faulting. The position of the main McMullen Alteration Zone in the Central Area remains uncertain.

7.4 DDH 9808

DDH 9808 was drilled in the Eastern Section of the McMullen Zone (Map No. 2). It was collared on the east side of the East Fork of Marble Creek, and drilled at an azimuth of 180° and an inclination of -45°. Outcrop in that area is sparse and the hole was drilled to test the continuity of the McMullen Zone between the East Fork of Marble Creek and the Marble Creek Fault.

Results were encouraging. Mn-altered dolomitic marble was encountered throughout the entire length of the hole. A narrow (0.3m) vein of galena and broad zones of elevated Zn, Mn and Pb values indicate that strong mineralization should be expected in this area, although DDH 9808 did not encounter any major magnetite/sulfide bodies. Mapping in the bed of the East Fork of Marble Creek during a period of low water levels indicated that the main part of the McMullen Zone probably lies south of DDH 9808. That area warrants attention during future exploration projects.

8. PETROGRAPHIC STUDY

After the 1998 exploration program, petrographic thin-sections, polished thin-sections and polished mounts were prepared and submitted to Earthworks Geoscience Corp. in Edmonton for microscopic examination and photography. The samples came from the Lower Adit (Table 14) and drill-core (Table 15). Most of the thin-sections represented altered host-rock material. Most ore minerals are optically opaque, so they were studied by reflected light in polished mounts and polished thin-sections (Table 14). The ore samples (Table 14: WZ-06,-07,-09) proved to be strongly weathered, which made optical examination difficult, and more work on polished thin-sections, or by microprobe, scanning electron microscopy or X-ray analysis, is recommended to determine the details of mineralogy, weathering and oxidation for the ore bodies.

In the carbonate host-rocks, alteration and economic mineralization appear to have occurred in several stages.

1. Dolomitization of calcitic marble appears to have been the first stage. The dolomitic marble was later brecciated and invaded by rhodochrosite, calcite veins and a variety of ore minerals. Ore mineralization also appears to have occurred in several stages.

2. In altered carbonate host-rock, the sulfide minerals occur as fine-grained disseminations. They include pyrite, sphalerite and probable As-Ag-Fe-Zn sulfides (possibly including freibergite and argentite). Two phases of sphalerite mineralization could be discerned in some slides.

3. In samples from Ore Bodies A and B, the sulfide minerals were at least partially oxidized, probably by weathering. Oxide minerals were present, as were cerussite and anglesite (lead carbonate and sulfate minerals).

3. Metallic oxide minerals are present both as primary mineralization that crystallized during reactions between the host-rocks and hydrothermal fluids, and as secondary minerals that formed during weathering of sulfide minerals. Oxide minerals include magnetite, psilomelane, manganite, and a variety of Fe oxide minerals. Psilomelane

(a manganese oxide mineral) occurs as both anhedral and amorphous late mineralization, and as stellar-acicular and radiating needles with magnetite.

4. Siliceous rocks examined included altered basalt from the adit samples and siltstones, mudstones and calcarenties from the drill core samples.

5. The basalt samples came from the edges of Ore Body B in the Lower Adit and showed elevated levels of Pb, Zn and Ag in assay results (Table 4). Both basalts were porphrytic, with plagioclase phenocrysts in a matrix of plagioclase and pyroxene. One (WZ-05) was very strongly brecciated and altered, and consisted of rounded fragments in a matrix of sericite, clays, phyllitic materials and Fe oxide minerals. The second (WZ-08) was not brecciated and was not as strongly altered.

6. The siltstones and other siliceous rocks included recrystallized quartz and a variety of micas (biotite, muscovite, sericite, fuchsite, chlorite), as well as calcite and dolomite. Metallic minerals included pyrite, pyrrhotite, sphalerite and Fe oxide minerals.

Table 14: Petrographic Results from Adit Samples.

Trench No.,	Lithology	Mineralogy
WZ-01; 98/07/13-3b	Coarse-grained dolomitic marble.	Dolomite, calcite, chlorite psilomelane, manganite, minor sphalerite and probable As-Ag-Fe-Zn sulfides.
WZ-02; 98/07/12-2b	Crypotcrystalline dolomitic marble.	Dolomite, calcite, calcite veins, disseminated pyrite, minor sphalerite and rare galena.
WZ-03; 98/07/12-1a	Coarse-grained calcitic marble, fine laminae of dolomitic marble.	Calcite and dolomite. Fracture-related alteration with minor pyrite along laminae.
WZ-04; 98/07/12-2a	Coarse-grained calcitic marble.	Calcite with intragranular psilomelane, and later calcite-psilomelane veins.
WZ-05; 98/07/12-3a	Strongly altered, brecciated, prophrytic basalt.	Sausseritized plagioclase with sericite-clay matrix, clays with FeO alteration, phyllitic material.
WZ-06; 98/07/12-4a (polished mount)	Magnetite and psilomelane (?).	Altered ore material in polished mount (polished thin-section, X-ray or microprobe studies recommended).
WZ-07; 98/07/12-5a (polished mount)	Magnetite and psilomelane (?).	Comments as above for WZ-06.
WZ-08; 98/07/12-6a	Altered porphyritic basalt.	Relatively unaltered plagioclase phenocrysts in very fine-grained altered plagioclase-pyroxene matrix.
WZ-09; 98/07/15-2c (polished mount with polished thin-section)	Massive galena with sphalerite-gangue breccia.	Galena optically pure, no included sulfides. Gangue includes cerussite, late anglesite and brecciated psilomelane, with rhythmic magnetite encrustations as cleavage and rim deposition or replacement. (Microprobe and X-ray work recommended.)

Table 15: Petrograghic Results from Drill Core Samples.

Sample No., DDH No.	Lithology	Mineralogy
Cs-1; 9802-89 (221.35 m)	Calcarenite to calcareous mudstone, with calcitic marble.	Calcite, quartz-sericite, chlorite, minor disseminated opaques (possibly sphalerite), possible minor amphibole, in contact with altered pyroxene-quartz-plagioclase-amphibole rock with minor disseminated pyrrhotite. Pyroxenes may indicate skarn effects.
Cs-2; 9804-22 (85.6 m)	Dolomitic marble.	Quartz and granular calcite, dolomite, rhodochrosite, sericite, minor disseminated psilomelane.
Cs-3; 9805-20 (82.4 m)	Brecciated dolomitic marble and arenaceous marble.	Dolomite xenolith rimmed by calcite, in contact with sericite, muscovite, quartz and disseminated red/red-honey sphalerite.
Cs-4; 9805-DM-2 (424.6 m)	Siltstone (argillaceous quartzite).	Recrystallized quartz grains, biotite, minor late sericite, minor calcite, minor chloritization of muscovite-sericite, disseminated euhedral pyrite.
Cs-5; 9805-01-DN (~ 7 m)	Dolomitic marble with calcite veining.	Dolomite brecciated and partly replaced by calcite. Minor fine-grained cryptocrystalline sphalerite.
Cs-6; 9805-DM-1 (450.3 m)	Siltstone (argillaceous quartzite).	Quartz, muscovite, biotite, disseminated opaques (pyrite?).
Cs-7; 9805-DM-3 (48.6 m)	Dolomitic marble with calcite veining.	Dolomite, recrystallized granular dolomite, late calcite veining and minor disseminated calcite.
Cs-8; 9804-DM-4 (78.5 m)	Dolomitic marble (slightly arenaceous).	Dolomite with intragranular calcite and calcite-fuchsite-hematite veining.

9. METALLURGICAL TESTING

Three bulk samples weighing about 40kg each were submitted to International Metallurgical and Environmental Incorporated (International) in Kelowna B.C. for metallurgical testing. Adit Bulk #1 came from the Ore Body B at the site of channel sample #8, Adit Bulk #2 came from Body A at the site of channel sample #5 and Adit Bulk #3 came from Mn-altered host-rock on the south side of the adit portal (Map No. 3). The objective was to test metal recoveries from near-surface material, where metals occur as oxides and carbonates, as well as sulfides. International's full report is available for examination. Their results are summarized below.

Table 16: Analytical Results from Adit Bulk Samples.

Composition (Weight %)	Adit Bulk #1 Ore Body B	Adit Bulk #2 Ore Body A	Adit Bulk #3 Host Rock
Cu %	0.016	0.006	<0.001
Pb %	10.6	12.2	0.025
Pb oxide %	7.1	7.7	N/A
Zn %	3.48	3.83	0.14
Zn oxide %	1.45	1.45	N/A
Ag g/t	510	870	11
Au g/t	0.14	.055	<0.05
Fe %	43.4	32.1	0.57
S %	0.67	0.70	0.02
Mn %	N/A	N/A	16.8

A standard approach for poly-metallic ores was used, with sample crushing and grinding, followed by floatation separation. Grinding times were varied to find optimal liberation sizing and the D50 values varied between 40 and 106 microns (400 and 150 mesh). The metal distribution in the tails portion indicates that liberation is not achieved at 106 microns, a conclusion that was borne out by polished section work, where grain size was observed to range between 2 and 80 microns.

Floatation testing utilized a standard lead-zinc separation method. The grind product was initially conditioned with xanthate followed by lead floatation. The floatation tails were then conditioned with copper sulfate to activate the zinc. It became evident in the initial stages that the response was poor. Sodium cyanide was then added to the primary conditioning step to activate the lead and while recovery was not great (32.2%), a saleable product with 79.8% Pb was produced. There was little success in producing a zinc concentrate.

Given the non-effectiveness of the floatation testing, a gravity separation was attempted on lead tailings. A super-panner was not available, so the testing was done by hand panning the tailings. There was no significant increase in lead grade, probably due to interference from the high magnetite content of the product. In a second test, magnetite was removed by a Davis Tube prior to gravity separation. In that test, the majority of the lead (83.2%) reported to the non-magnetic fraction, but gravity concentration of that product was not effective.

Given the difficulty in separating the various minerals, a tailings sample was sent to Dr. J. F. Harris for microscopic analysis. His conclusions were that the majority of the lead occurred as cerussite (lead carbonate) rather than as galena. He noted that the cerussite was well liberated from the iron minerals, so separation should be achievable by magnetic separation and gravity concentration.

It is clear that the material exposed in the Lower Adit is partially oxidized, but it possible that the oxidation does not persist to depth. Further drilling should be done to establish whether the oxidation is a near-surface phenomenon. If so, a conventional approach of floatation will likely work. If the oxidation persists to depth, a hydro-metallurgical approach will be required to concentrate the metal values.

The samples from Ore Bodies A and B contained large amounts of iron and both the Davis Tube testing and Dr. Harris's observations indicate that a good portion of the iron occurs as magnetite. Magnetite has commercial potential in the metallurgical coal industry, where it is used as a heavy medium for gravity separation. The most likely customers for a magnetite product would be the coal producers in north eastern British Columbia.

They consume about 6 000 tonnes per year at a price of about $C 80.00 per tonne delivered (total value of about $C 480,000 per year). The coal mines currently obtain magnetite from Craigmont Mines, but the grain size and consistency of that product are not optimal. Initial petrographic studies suggest that McMullen Zone magnetite may be more suitable product, and further study of that possibility is warranted.

Although the initial tests indicate that there are difficulties in separating and concentrating the metallic minerals by conventional means, the gross metal content of the ore samples (Table 16) demonstrates that more work is warranted. Metal prices as of 22 January 1999, combined with the analytical results from Table 14 give values of about $US 176.00 per tonne for Body B and $US 250 per tonne for Body A, as shown in Table 17:

TABLE 17: Potential Value Calculated from Analytical Results.

Metal	Value*	Adit Bulk #1 Ore Body B	Adit Bulk #2 Ore Body A
Pb	$US 0.223/lb	$US 52.18/tonne	$US 59.99/tonne
Zn	$US 0.420/lb	$US 32.34/tonne	$US 35.28/tonne
Ag	$US 5.10/oz	$US 91.70/tonne	$US 156.47/tonne
	TOTAL	$US 176.22/tonne	$US 251.74/tonne

* Price as of 22 January 1999.

It is recommended that, during future drilling projects, intersected ore zones should be examined microscopically to determine whether oxidation persists to depth or is restricted to near-surface material. That information will allow metallurgical testing to be designed accordingly.

Magnetite could be a valuable by-product and further examination and testing of magnetite should be conducted to determine the quality and marketability of a magnetite product.

Manganese minerals should also be examined to see if a saleable product is possible.

10. DESCRIPTION OF MINERALIZATION

The discussion below is based primarily on the McMullen Alteration Zone (Sec. 6.1), particularly the area around the Lower Adit, and the results of the 1998 and earlier drilling projects. Mineralization in the D-Zone and Granite Creek areas is similar to that seen in the McMullen Zone. Different types of mineralization occur along the Marble Creek Fault and near the edge of the Cassiar Stock, however (Sections 6.4, 6.5).

10.1 Replacement and Manto Mineralization

The bodies of sulfide minerals and magnetite that occur in the Marble Basin area are examples of carbonate replacement or "manto and chimney" deposits (Megaw, 1998). They are hosted within the McMullen Alteration Zone, a roughly tabular-shaped body of altered dolomitic and rhodochrositic marble that ranges in thickness from a few centimetres to about 20m.

In replacement deposits, metallic minerals generally replace calcite and dolomite in the host rocks. On the Southern Block, these deposits are typified by Body A and Body B, which are exposed within the Lower Adit. They consist of masses of bluish grey argentiferous galena, with sphalerite, minor pyrite, pyrrhotite and arsenopyrite. Oxide minerals include psilomelane, magnetite and other iron oxide minerals. Lead, zinc and silver can also be present as both oxides and carbonates. The mineralized masses appear to have formed as irregular "shoots" or "chimneys" that are elongated vertically and can change thickness from a few centimetres to several metres over very short distances.

10.1.1. Alteration

The nature of the altered host-rock can best be seen in the the Lower Adit area. There, the normally grey calcitic marble has been partially or completely dolomitized (altered from $CaCO_3$ to $CaMg(CO_3)_2$). In strongly altered areas, rhodochrosite ($MnCO_3$) has partially replaced calcite and dolomite along joint fractures and little evidence of the original bedding remains (Figs. 15, 16). Rhodochrosite-alteration of dolomitic marble is very common in the McMullen Zone.

Altered wall-rock close to sulfide/magnetite bodies tends to include:

- psilomelane both as anhedral and amorphous late mineralization and as stellar-acicular and radiating needles with magnetite;
- euhedral microcrystalline sphalerite;
- probable As-Ag-Fe-Zn sulfide mineralization (possibly including freibergite-argentite);
- disseminated pyrite, galena and sphalerite; and
- secondary calcite.

The wall-rock more distant from the bodies tends to be fairly coarse-grained rhodochrosite-altered dolomitic marble, with minor calcite, psilomelane, hematite, pyrite, fuchsite and sphalerite.

The level of rhodochrosite alteration (as indicated by Mn content) appears to decrease with distance, perpendicular to the axis of the McMullen Zone. Adjacent to the sulfide/magnetite bodies, the Mn content can rise to about 5-6%. In those areas rhodochrosite has filled voids and replaced some or all of the carbonate minerals, with trace amounts of manganese occurring as psilomelane (a manganese oxide mineral). The overall Mn content away from the sulfide/magnetite areas has not been fully evaluated, but probably averages about 1-2 %.

Farther from the axis of the alteration zone, along the formation strike, manganese occurs mostly in the form of rhodochrosite, filling fractures and pores, with little replacement of other carbonate minerals. The concentrations of rhodochrosite on a volumetric basis are low, and the total Mn content drops from anomalously high values (>500 ppm) to moderately anomalous values (100-500 ppm). Total Mn content less than 100 ppm is not considered anomalous.

Anomalous amounts of zinc (>50 ppm) occur in the Mn-rich zones. Zinc content within several metres of sulfide/magnetite bodies ranges from 0.5-4.0%. Away from the sulfide/magnetite bodies, Zn content drops from a few hundred ppm to 50 ppm or less.

Figure 16. Rhodochrosite replacement of grey marble on back (roof) of the third cross cut (oriented south) in the Lower Adit, 139m west of portal. Note bedding in marble and fracture control of replacement.

Figure 15. Rhodochrosite replacement of grey marble on south wall of the Lower Adit, 24m west of the portal. Note white calcite rim around rhodochrosite.

Lead appears to be much less mobile than zinc. Lead alteration surrounding the sulfide/magnetite bodies is much more restricted and anomalous lead values (>50 ppm) seldom persist more than a few metres from the bodies.

10.1.2 Host Rock Lithology

In the McMullen Zone, the thickness of the alteration zone, the intensity of the alteration and the location of the sulfide/magnetite bodies, appear to be controlled primarily by two factors: lithology and fracturing. The sulfide/magnetite bodies seem to occur only where both the fracture frequency and host-rock lithology were suitable for deposition of metallic minerals to occur.

Three general types of rock occur in the McMullen Alteration Zone:

- relatively unaltered, grey, well-bedded marble, with minor rhodochrosite and chlorite along thin joints and fractures;
- dolomitic marble, often with rhodochrosite; and
- siliceous and argillaceous lithologies.

Dolomitic marble was the most suitable host-rock for sulfide/magnetite mineralization, as seen at the D-Zone and the Granite Creek Showing, as well as at the McMullen Zone. Petrographic examination indicates that dolomitization probably preceded the other types of alteration. Dolomitization increases the permeability of the marble. Hydrothermal fluids can then more easily penetrate and react with the marble, increasing the potential for deposition of metallic sulfide minerals.

Siliceous and argillaceous lithologies do not appear to be suitable host rocks for this type of sulfide/magnetite mineralization. Where relatively siliceous or argillaceous rocks have been observed in outcrop or intersected in drillholes, they contain minor amounts muscovite, biotite, pyrrhotite, chlorite and pyrite, but no significant sulfide/magnetite mineralization. Only traces of red to red-honey sphalerite were encountered in a few of the drillholes at the contact with dolomitic/arenaceous marble.

10.1.3 Hydrothermal Fluids

The available evidence suggests that two or three distinct phases of hydrothermal fluids that carried the metallic ions invaded the marble via the fracture zones. The general chemistry of the fluids is indicated by the minerals that were deposited. Mineralization did not affect the metamorphic grade of the host rocks and the lack of contact metamorphic minerals indicates that the fluids were characterized by relatively low temperatures (250 to 300°C) and pressures.

Phase One fluids produced rhodochrosite alteration and were rich in Mn, with minor Zn and Pb. Mn is the most mobile of those elements and therefore penetrates farthest into the host rocks. Zinc is less mobile and penetrates only relatively short distances, while Pb is least mobile and tends to be confined to larger fractures (Park and MacDiarmid, 1964).

Phase Two fluids were responsible for the sulfide mineralization, and were rich in Pb, Zn, Ag, Mn and S, with minor Fe and As, and possibly minor Au. Masses of metallic sulfide minerals replaced the carbonate minerals along fractures. Equations for the chemical reactions are shown by Park and MacDiarmid (1964).

Petrographic examination showed that some of the sphalerite grains are broken and disrupted by later deposition of galena and more sphalerite. This suggests that some of the sphalerite, represented by the broken grains, was already in place when the second phase of mineralization occurred. The lack of rhodonite (a Mn silicate mineral) suggests that the altering fluids were silica-poor. They were also unlikely to have been oxidizing. Mn oxide minerals in the vein deposits probably formed due to later alteration of rhodochrosite and other primary Mn minerals.

Phase Three fluids introduced magnetite and other oxide minerals. They were rich in Fe and Mn, and may have included minor Au. The oxide mineralization must have occurred as a separate phase characterized by sulfur depletion, because oxide minerals (magnetite and psilomelane) sometimes surround sulfide minerals (galena and sphalerite), and the occurrence of Fe-sulfide minerals (pyrite and pyrrhotite) is limited.

10.1.4 Fracturing

The location of the McMullen Alteration Zone is coincident with a fracture system that trends east-west across Marble Basin. That system, and the joints that cross it at a variety of orientations, appear to have acted as conduits for the hydrothermal fluids.

The fracture systems probably developed as tensional or pull-apart fractures due to tensional forces that prevailed during the upward movement of the granitic plutons and the folding of the McDame Synclinorium. There seems to be little evidence of movement either laterally or vertically along the fracture zones, so they are not major faults.

The fracture zones have not been tested to depths greater than 100 m, but if the tensional hypothesis is correct, they are likely to persist through the Rosella Formation and into the underlying Boya Formation. The fracturing in the McMullen Zone has been traced part way through siliceous (carbonate-poor) horizons in the Rosella Formation, where only minor alteration and little sulfide/magnetite mineralization were found. The hydrothermal fluids probably passed through the siliceous horizons but were not reactive with them.

If the McMullen Zone formed as a tensional fracture system, there would be potential for additional subparallel fracture zones to have developed across the area. The D-Zone (Sec. 6.2), the Granite Creek Showing (Sec. 6.3) and possibly the M-Zone (Sec. 6.5), appear to represent subparallel fracture systems of this type, in which case the fracture systems occur at roughly 500m intervals across the the Southern Block area. Wherever those zones cut suitable host rocks (i.e., the Rosella Formation), they could have the potential to host economic mineralization and should be targets for future exploration.

Dip-slip faults may also have played a role in the mineralization. In the Lower Adit, Body A is in contact with a breccia zone adjacent to a north-south striking fault that is probably a dip-slip fault. Body A strikes at about 315°, which coincides with one of the major joint orientations. Dip-slip fault surfaces and associated breccia intersected in some of the

1998 diamond drillholes showed rhodochrosite mineralization and minor zinc anomalies, although they did not host sulfide or magnetite mineralization.

10.1.5 Dykes

Basaltic dykes occur in and near the alteration zones and sulfide bodies, and Abbott (1983) suggested that lead-zinc-silver mineralization in the Cassiar region may be related to such dykes, rather than to the granitic plutons. The dykes on the Southern Block often appear unmineralized except for minor disseminated pyrite. However, altered basalt with elevated levels of Pb, Zn and Ag is associated with Ore Body B in the Lower Adit and with some of the trench samples from the Eastern Section of the McMullen Zone. The basalt in the Lower Adit occurs on both sides of Ore Body B and is strongly altered and brecciated (Sec. 8), suggesting that basalt emplacement occurred during or prior to the ore-forming event. The basalts may represent the "last gasp" of igneous activity in the area, occurring with the mineralization because they exploited the same fracture systems (Nelson, 1999).

10.2 Skarn Mineralization

Skarnification occurs where fluids from granitic plutons react with the surrounding rocks (especially carbonate rocks) to deposit characteristic suites of silicate and metallic minerals. Endoskarns form within the pluton itself, while exoskarns form in the surrounding rocks. Ores of Fe, Cu, Mo and/or W tend to form closer to the pluton; ores of Au, Sn and/or Pb-Zn-Ag tend to develop in the outer parts of the exoskarn envelope.

The M-Zone on the southwest corner of the property includes garnet-diopside skarn, magnetite-pyrite-pyrrhotite skarn and showings of molybdenum (Sec. 6.5). The skarns lie within a few metres of the contact between the Rosella Formation and the Cassiar Stock. Significant skarns also occur near plutons on the Northern Block claims.

Fluids that migrate long distances beyond the main exoskarn halo tend to produce sulfide veins, replacement bodies and mantos that are rich in

Pb-Zn-Ag and sometimes contain significant quantities of Au or Cu. (Ray and Webster, 1997; Park and MacDiarmid, 1964). The McMullen and D-Zones may have originated in this manner.

The almost complete lack of typical skarn minerals associated with the McMullen and D-Zones suggests that either the mineralization resulted from fluids that traveled a moderate distance from their source, or that they were the remnants of fluids that already reacted elsewhere. In either case, there is a good possibility that the sulfide/magnetite mineralization could persist to depth.

10.3 Summary of Mineralization History

1. **Deposition of Rosella Formation:** The Rosella Formation was deposited as limestone during Cambrian time, and subsequently recrystallized to marble in response to pressure and possibly heat.

2. **Dolomitization:** The marble was partially altered by Mg-bearing fluids, primarily along bedding planes, joints and fractures, changing some of the calcite to dolomite. The process probably began during Cambrian time, shortly after limestone deposition, and would have continued during the Cretaceous intrusive activity. Dolomitization increased the permeability of the marble, thereby increasing the potential for penetration by ore-forming fluids.

3. **Granite Emplacement:** The main pulses of granitic intrusion occurred during Cretaceous time and resulted in the emplacement of the Cassiar Batholith and the Cassiar Stock. Granitic plutons were probably the source of the ore-forming fluids. They also reacted to form skarn deposits near their contact with the marble.

4. **Tensional Fracture Systems:** Fracture systems developed due to tensional forces that prevailed during the upward movement of the granitic plutons and the folding of the McDame Synclinorium. They subsequently served as conduits for ore-forming fluids.

5. **Faulting:** The Marble Creek Fault and the X-Fault developed during or shortly after the emplacement of the Cassiar Stock (Nelson

and Bradford, 1993). They also served as conduits for hydrothermal fluids, but alteration that occurred along the faults differed chemically from that which occurred along the tensional fractures.

6. **Skarnification:** Skarns such as the M-Zone formed at or near the contact with the Cassiar Stock, and hydrothermal fluids characterized by iron and silica penetrated along the Marble Creek Fault and the X-Fault. Metallic mineralization included magnetite, pyrite and pyrrhotite. Gangue minerals included tremolite, actinolite, diopside, chlorite and quartz.

7. **Hydrothermal Fluids:** Hydrothermal fluids carrying metallic ions were driven away from the granitic plutons by convection, and invaded the surrounding rocks via the fracture systems. As the fluids moved away from the pluton, temperatures and pressures decreased. The cooling fluids were unreactive with silicate rocks such as the Boya Formation, but reacted with the porous carbonate rocks when they reached the Rosella Formation, where the mineral assemblages suggest that temperatures were lower than 350^{o}.

8. **Phase One Hydrothermal Fluids:** The mineral assemblages indicate that several pulses of geochemically distinct fluids affected the McMullen Zone. The first phase was rich in Mn, with minor Zn and Pb, and produced a halo of rhodochrosite alteration around the fracture system.

9. **Phase Two Hydrothermal Fluids:** Phase Two fluids were responsible for the metallic sulfide minerals, and were rich in S, Pb, Zn, Ag and Mn, with minor Fe and As, and possibly minor Au. Sulfide minerals replaced carbonate minerals in the host rocks, forming replacement bodies of bluish-grey argentiferous galena, with lesser amounts of sphalerite, and minor pyrite, pyrrhotite and arsenopyrite.

10. **Phase Three Hydrothermal Fluids:** Phase Three fluids produced the last economically significant mineralization. They are rich in Fe and Mn, and may have included minor Au. They formed magnetite, psilomelane and other oxide minerals.

11. **Basaltic Dykes:** Basaltic and other dykes intruded along the same fracture systems that provided conduits for the hydrothermal fluids, probably prior to or during ore formation.

10.4 Analogous Deposits

Analogous skarn, replacement and manto deposits occur throughout North America. They include the Silvertip (Midway) deposit north of Cassiar, the Pinoche district in Nevada (Park and MacDiarmid, 1964), the La Negra and Zimapan districts in central Mexico (Lang et al.,1999) and other deposits in Mexico (Megaw, 1998). Ore emplacement, host rock lithology and mineralogy at those deposits appear to be very similar to that seen in the McMullen Zone. They are manto/replacement deposits located distal to known or suspected skarns. They are hosted primarily in carbonate rocks that have enhanced porosity and permeability due to dolomitization and/or fracturing, and the mineralization appears to occurred at fairly low temperatures and pressures.

At Pinoche, the ore-forming fluids passed through channels in a siliceous zone underlying the host formation, but only minor amounts of ore minerals were deposited there, primarily as thin veins along fractures. The majority of the Mn-Pb-Zn-Ag mineralization formed at the first carbonate horizon that was encountered by the fluids. Ore minerals also occur in stratigraphically higher carbonate horizons at Pinoche, but are usually limited to the main fracture system.

10.5 Speculative Deposits

On the Southern Block claims, there is good potential for additional replacement-type deposits. There appears to be a series of subparallel fracture zones that acted as conduits for ore-forming fluids. They include the McMullem Zone, the D-Zone, the Granite Creek Showing and, possibly the M-Zone. They are spaced about 500m apart, with overall strike lengths comparable to that of the McMullen Zone (1.3km). They are probably open at depth.

The McMullen Zone mineralization appears to be similar to that at Pinoche. In that case, the "first" carbonate horizon encountered by the ore-forming fluids could lie near the base of the Rosella Formation, between the known mineralization exposed near the surface and the top of the Boya quartzite.

On a more speculative note, significant endo- and exoskarn deposits could be present at depth, between the replacement mineralization seen at surface and the granite pluton. Those skarns would have formed closer to the granite pluton, before the deposition of the replacement deposits, and they could therefore contain higher concentrations of Au, Cu, Mo and W.

Au and As values in some of the 1998 samples reach values of about 7.4 g/t for Au and greater than 2000 ppm for As, and relatively high values of W, Mo and Cu have been reported at surrounding showings. Those values indicate that the ore-forming fluids were depleted in those elements, either because they precipitated earlier, closer to the pluton, or because they were absent from the original fluids. If the first case is true, there would be potential for deposits of those elements closer to the pluton, probably at depth. Some of the anomalies shown on the 1969 aeromagnetic map may be a reflection of that type of deposit.

11. RESERVES AND RESOURCES

Resource and reserve estimates calculated from the 1998 drilling and trenching data will be covered by a separate report. Past estimates are summarized below.

Consolidated Coast Silver Mines Ltd. (Coast) conducted extensive exploration work in the area during the late 1960's and 1970's (Sec. 3.2). Coast's resource estimates for the Marble Basin area (Magno claims), as quoted by Bloomer and Saydam (1980), are shown in Table 18. Coast's East, Middle West and West Zones are roughly equivalent to the Eastern Central and Western Sections of the McMullen Zone, respectively.

TABLE 18. Consolidated Coast Silver's Resource Estimate for the Marble Basin Area (After Bloomer and Saydam 1980, p. 23).

ZONE	WIDTH (m)	RESOURCE (tonnes)*	Pb %	Zn %	Ag g/t	Au g/t
East	5.76	128,820	4.06	4.40	131.0	0.69
Middle West	3.4	97,110	9.43	5.34	258.5	-
West	2.8	200,478	5.4	3.4	198.8	-

* All resources were assigned to the Drill-Indicated Category

Coast considered that area to have an additional geologically inferred potential of 349,265 tonnes (Bloomer and Saydam 1980, p. 23).

Coast's estimate for the Middle D-Zone area, as quoted by Bloomer and Saydam (1980, p. 22), is shown in Table 19:

TABLE 19. Consolidated Coast Silver's Resource Estimate for the Middle D-Zone (After Bloomer and Saydam 1980, p. 22).

ZONE	RESOURCE (tonnes)*	Pb %	Zn %	Ag g/t
Middle D-Zone	90,000	3.3	6.3	75

* All resources were assigned to the Drill-Indicated Category.

Balfour Mining Ltd. (Cukor, 1976) estimated resources for the Marble Basin area (Crown Point Claims). Their results are shown in Table 20:

TABLE 20: Balfour Mining Ltd.'s Resource Estimate for the Marble Basin Area (After Cukor 1976, Tables I, II, III; p. 24, 26, 31).

ZONE	WIDTH (m)	SHORT TONS	METRIC TONNES	RESOURCE CATEGORY	Pb %	Zn %	Ag g/t
East	5.76	142,500	129,000	Drill-Indicated	4.06	4.40	131.3
Middle West	3.35	85,000	77,130	Drill-Indicated	9.43	5.84	258.5
West	2.13	87,000	78,945	Probable	10.00	4.44	292.8
West	2.13	16,700	15,155	Possible			

The Balfour figures were echoed by Bloomer (1980, 1981) and Bloomer and Saydam (1980), who maintained Balfour's tonnage figures for the East and Middle West Zones, but reported them as metric tonnes rather than short tons (Table 21). Bloomer and Saydam (1980) quoted increased tonnages and decreased grades for the West Zone:

TABLE 21. Shell Canada Resources' Resource Estimate for the Marble Basin Area (After Bloomer and Saydam 1980, p. v).

ZONE	WIDTH (m)	RESOURCE (tonnes)	Pb %	Zn %	Ag g/t	Au g/t
East	5.5	142,500	4.06	4.40	110	1.0
Middle West	3.0	85,000	9.43	5.34	250	-
West	2.5	221,000	5.4	3.4	200	-

* All resources were assigned to the Drill-Indicated Category.

Shell estimated an additional 349,265 tonnes in the geologically inferred category (Bloomer and Saydam, 1980, p. 23).

In 1998, prior to the completion of the 1998 program, resources of the McMullen Zone were reviewed by LAS Energy Associates Ltd. They prepared the resource estimate in Table 22 based on drilling reported by Cukor (1976), and observations made during a site visit.

TABLE 22: LAS Energy Associates' Resource Estimate for the Marble Basin Area (Allen and Iliffe, 1998, Tables 4.1, 4.2; p. 25, 26).

ZONE	WIDTH (m)	INDICATED RESOURCE (tonnes)	INFERRED RESOURCE (tonnes)	WEIGHTED AVERAGE GRADE		
				Ag g/t	Pb %	Zn %
East	3.50	75,774	169,138	69.6	2.18	3.92
Central	1.99	64,381	0	335.5	11.92	7.73
West	2.58	28,350	109,040	80.6	2.64	3.19

12. CONCLUSIONS

1. Deposits of lead, zinc and silver minerals with significant economic potential are present on the Southern Block claims, and the claims should be retained.

2. The major deposits are carbonate-replacement manto and chimney deposits. They occur within east-west striking, fracture-controlled alteration zones called the McMullen Zone and the D-Zone. The Western, Central and Eastern Section of the McMullen Zone have been shown to include significant resources of lead-zinc-silver minerals and magnetite. The Middle D-Zone appears to include a mass of similar mineralization, and the Upper and Lower D-Zone also have potential.

4. Additional exploration is warranted to prove an increased resource base for the property, and should focus on the McMullen and D-Zone areas.

3. Other showings on the claims include the Granite Creek Showing, areas along the Marble Creek Fault (the G-Zone, Tremolite Zone and Pant Zone) and skarns near the Cassiar Stock (the M-Zone).

4. The cost-effectiveness of future exploration can be increased by the use of improved geophysical techniques. After interpretation of the geophysical data, the drilling and trenching program can be designed to sample significant geophysical anomalies that are likely to represent ore.

5. Metallurgical testing indicates that oxidized ore (oxides and carbonates of lead, zinc and silver) are present with the sulfides in near-surface ore. If oxidized ore persists to depth in significant quantities, it will necessitate the use of hydro-metallurgical approaches to mineral separation and recovery, rather than conventional gravity techniques.

6. Magnetite constitutes significant percentages of the deposits, and could represent a valuable by-product. Manganese minerals may also have some potential.

13. RECOMMENDATIONS

1. Significant deposits of lead, zinc and silver minerals and magnetite are present on the Southern Block claims, and additional exploration work is recommended to prove an increased resource base.

2. The first priority should be definition of additional resources (tonnages and grades) in the Western Section of the McMullen Zone and the Middle D-Zone. Other parts of the McMullen Zone and the D-Zone should have secondary priority.

3. The Granite Creek area should have third priority, and other showings (the M-Zone, G-Zone, Tremolite Zone and Pant Zone) should have fourth priority.

4. Office-based geophysical work should start prior to the field season. Modern digital aeromagnetic data are available from government surveys flown in 1995 and 1996. Flight lines were oriented east-west, at a spacing of 800 m. Reprocessing and interpretation of that data should be the first step in designing future exploration work.

5. New surface geophysical surveys should be the first priority for future field work, so that the geophysical results can be used to select drillhole locations. Recommended techniques include horizontal-loop EM (HLEM or max-min) and magnetometer/gradiometer surveys. Priority should be given to the Marble Basin and D-Zone areas.

6. Ground-penetrating radar (GPR) and mise-a-la-masse (MALM) electrical surveys should be done in the Lower Adit and on the ground surface above and below it. This setting offers an unusual opportunity for both surface and underground access to the zone of interest, so that 3-dimensional modelling of the ore bodies can be done. This will improve the level of confidence for ore tonnages in the Western Section of the McMullen Zone, and will provide technical and geological insights that are likely to be applicable in other areas of the property.

7. A legal survey of all claim boundaries is recommended, and a surveyed property baseline and grid system should be established at the same time. The surveying should be done prior to or concurrently with the geophysical surveys, so that geophysical results can be tied directly to the grid.

9. Detailed geological mapping should be done along the grid lines, concurrently with the geophysical surveys. Detailed geological information is necessary for optimal interpretation of the geophysical data, and the mapping results should be made available to the geophysicists during the data processing and interpretation phase.

10. Drillhole and trench locations should be planned after the geophysical data have been processed and interpreted, so that significant geophysical anomalies can be tested and sampled.

11. Both the Lower and Upper Adits are in need of rehabilitation work. This would include a new portal structure and scaling work in the Lower Adit, and an engineering evaluation of the condition of the Upper Adit.

12. In order to design metal-recovery processes, the extent and nature of ore oxidation must be determined. To determine whether oxidized ore persists at depth, samples of ore material from drill cores should be submitted for microscopic examination and possibly other types of analysis (X-ray, microprobe and/or scanning electron microscopy).

13. Further work should be done to evaluate the quality and marketability of a magnetite by-product. Material remaining from the adit bulk samples could be used for a preliminary evaluation. Manganese minerals should also be examined to see if a marketable product is possible.

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