GEOLOGICAL ASSESSMENT REPORT

on the

MONTEITH BAY PYROPHYLLITE PROJECT

Kyuquot Sound Area, Vancouver Island

N.T.S. 92L/3W Lat. 50° 08' Long. 120° 18' Alberni M.D.

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May 1, 2000

TOLOCICAL SURVEY BRANCH

Fieldwork completed July 5, 1999 to October 9, 1999

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SUMMARY

- 1) The Monteith Pyrophyllite deposit was in limited production in 1910. The remains of a dock dating from this period are still visible on the shores of Monteith Bay.
- Pyrophyllite is a layered silicate with a general composition of 38% Al₂O₃, 67% SiO₂ and 5% H₂O.
- 3) The old quarry operated in 1910 has sloughed in considerably but general geological parameters can be deduced and were mapped in 1999.
- 4) The pyrophyllite zone appears to be a crudely layered or blanket deposit intercalated with very siliceous zones. The original geological environment was likely a rhyodacitic tuff breccia or flow breccia that has undergone intense acid-sulphate-advanced argillic alteration. The pyrophyllite may have developed from a pre-existing kaolinite.
- 5) As previously documented (Shearer, 1994) the surface exposures of pyrophyllite in the Monteith, Sockeye and Deertrail deposits suggest a global potential in the order of 1.5 million tonnes.
- 6) Since no diamond drilling of any consequence has been completed to date on any of the 3 major zones, the average grade can only be roughly approximated by limited surface samples which range 15% 22% Al₂O₃ and 65% 80% SiO₂.
- 7) Production has been realized in 1999 and 2000 from the adjacent Monteith geyserite (high-grade silica). A deep water loadout system of mobile radial stacking conveyor has been used. This loadout location could possibly be used by the pyrophyllite deposit by the construction of a 620m tote road.
- 8) A program of diamond drilling, bulk sampling and possible product testing is recommended to define a market for the Monteith Pyrophyllite.

Respectfully submitted, J. T. (Jo) Shearer, M.Sc., P.Geo. Quarry Supervisor #98-3550 Consulting Geologist

INTRODUCTION

Homegold Resources Ltd. is a registered British Columbia company, engaged in the supply of raw materials to the Portland cement manufacturing industry for sales and delivery in British Columbia and the Western United States. Homegold Resources Ltd. is entirely owned by lifelong BC residents. (A preliminary report was prepared in 1994, 233 Shearer, 1994, that outlines.) Since 1986, the company has focused on the search for and development of base and precious metal and industrial mineral properties throughout British Columbia and Yukon. Pyrophyllite product from the Monteith Bay Quarry may in part be for the modern "dry" process cement business, of which the best example in the Pacific Northwest is the cement plant at Tilbury in Delta. This assessment document describes geological and trail construction work by Homegold Resources Ltd. to develop the Monteith Bay Pyrophyllite Project as a quarry and to ultimately supply pyrophyllite to the ceramics, filler, cement industries and high tech environmental applications.

Preliminary exploration on the pyrophyllite deposits has resulted in the definition of a suitable source theoretically needed for the cement plant requirements and this source is located around the Easy Three and Easy Eight mineral claims at Monteith Bay, Kyuquot Sound.

Portland cement manufacturing is a process of bringing together materials rich in lime (Ca), silica (Si), alumina (Al), iron (Fe), and gypsum (CaSo4). These raw materials; limestone (CaO3), shale and sand (silica), shale (alumina) and iron ore or industry mill scale (iron), are ground to extreme fineness for intimate mixing to meet precise chemistry. The pyrophyllite could replace both the current source of silica and alumina. The powder produced by grinding is then heated or "burned" in a rotary kiln to a temperature of 3,000 degrees, liquefying part of the powder and binding it together in what is called "clinker". Clinker consists of new components called hydraulic compounds. Hydraulic compounds enter into solution when water is added, forming a gel that binds to other minerals when set. Clinker and added gypsum is then ground to extreme fineness. The resulting Portland cement becomes the "glue" to bond sand and aggregates together to form concrete.

Silica and alumina, the relatively minor constituents of Portland cement could be supplied form the Monteith Bay Pyrophyllite property. The entire claim holdings cover about 60 hectares and are owned 100% or under option to Homegold Resources Ltd. The company is committed to develop the déposit in a manner that does not cause significant environmental impact during operation or after mine closure.

The international market for pyrophyllite is relatively small (\$US 130 million) compared with other mineral commodities. As a medium value (\$55/tonne) (current prices listed in the January 2000 Industrial Mineral Magazine) industrial mineral commodity, freight distances are limited and markets have regionalized and developed where mines and consumers are within three to four thousand kilometres.

Pyrophyllite is consumed in numerous markets such as ceramics, refractories and insecticides. Since the latter two industry uses are declining and ceramics, mineral fillers and cement are growing, it is recommended that marketing efforts be focused on these as of increasing demand.



Industrial consumption in the short term is relatively static. This is indicated by the following somewhat dated USBM figures:

World Pyrophyllite Production ('000 tonnes)

<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
2,190	2,333	2.440	2,228	2,168

(These figures are approximate since some pyrophyllite production is reported under tale.)

While known internationally, Pyrophyllite is supplied and consumed in a few key regional markets in Asia (87.0%), North America (6.6%), and South America (5.8%). This "regionalized nature" is a function of:

- 1) The relatively low price of this commodity compared to high freight cost.
- 2) The need for deposits to be located near shipping facilities and/or manufacturers in order to develop a viable market share and
- 3) The global availability of many substitute products. For example, pyrophyllite, talc, steatite and soapstone all have common physical characteristics (layered structure, softness, whitish colour, soapy feel pearly lustre), which in turn gives them common end, uses.

In addition, unlike elemental metals each pyrophyllite deposit generally develops it own spectrum of products. One deposit may produce multiple products for multiple end uses, which are totally exclusive from those products derived from a second pyrophyllite deposit. Generally there is not a clear definition of what is a pyrophyllite product. Producers are more inclined to think of themselves in terms of the markets they supply (e.g., refractory or ceramic raw material supplier) rather than calling themselves pyrophyllite producers.

High-grade deposits of pyrophyllite are relatively rare compared with talc. Even where high-grade pyrophyllite exists, it rarely attains its theoretical composition (38.3% A1203, 66.7% SiO2, 5% H2O) but contains impurities such as, sericite, quartz, pyrite, chlorite, feldspar, haematite and magnetite.

Just as complex as the variable nature of pyrophyllite's chemistry is the number of products and markets of this commodity. Below is a list of the key pyrophyllite market sectors.

1) CERAMICS

and

- Used in the manufacture of floor and wall tile, sanitary ware, crockery and electrical porcelain. In the USA more than 80% is used in the manufacture of ceramic floor and wall tile. The major portion of the remaining 20% is used in electrical porcelain, whiteware and masonry.
- Pyrophyllite lowers the firing temperature, suppresses the deformation and cracking, increases whiteness, lowers firing shrinkage and improves thermal shock resistance.



2) REFRACTORIES

- Used in the manufacture of insulating firebrick, stiff plastic refractory compositions, castables, gunning mixes, kiln car refractories, kiln furniture and refractory mortars.
- Pyrophyllite gives permanent expansion on firing temperature, excellent thermal stability, minimal deformation under load at high temperatures, low bulk density, low thermal conductivity and good resistance to corrosion by molten metals and basic slags.

3) INSECTICIDES

- Used as a carrier for insecticides.
- Consumption has greatly decreased due to the banning of DDT.
- Chemical composition is not critical. The presence of sericite is preferred to more abrasive quartz and the occurrence of platy pyrophyllite is preferred to more massive varieties.

4) MINERAL FILLERS

- Used when finely ground and quartz free as a substitute for talc in certain filler applications including paint, plastics, rubber, cosmetics and jointing compounds.
- Paint is currently the largest filler market for pyrophyllite.

5) CEMENT

- Used in the manufacture of white cement.
- Pyrophyllite with low iron content assists in maintaining high whiteness levels.

6) MISCELLANEOUS

• Other uses of pyrophyllite include roofing material, stucco products, paper coatings, fibreglass, road markings, high pressure seals in synthetic diamond manufacture, wallboard, floor coverings, asphalt filler, anti-skid aggregates, auto body patch and more.

7) HIGH TECH

• Pyrophyllite has recently been used to make catalysts for the removal of nitrogen oxides (No_x) from power plants and other large industrial installations burning coal or natural gas.

The following table indicates the relative size of these market sectors in the two largest markets namely, the USA and Japan and shows the percent increase/decrease of each market sector in Japan over a three year period.

Key Market Sector	1986 USA (000 T.)	1986 USA (%)	(000 T.)	1984 Japan (000 T.)	1988 Japar (%) '8	7 1987 n Japan 34-'87	% Change Japan
CERAMICS	`64 <i>′</i>	` 54	. ,	`275´	242	29	-12
REFRACTORIES	20	17		357	244	29	-32
INSECTICIDES	13	11		145	140	17	-3
MINERAL FILLER6							
CEMENT				60	91	11	52
OTHER	15	13		110	127	15	15
TOTAL	118	100		947	844	100	-11

In both countries, ceramic, refractory and insecticide uses dominate consumption (over 75%). There is a decreasing trend in the consumption of refractories and insecticides (300,000 and 85,000 tonnes of refractories and insecticides respectively, were consumed by Japan in 1992) and an increasing trend in the consumption of cement and products in the other miscellaneous sectors. The decrease is partially due to lower demand for high steel quality and the reduction of insecticide carriers.

Considering the future outlook, industry experts feel that there will be a further decline in refractories and insecticides and that expansion will occur in the ceramic, cement and filler markets. Increase consumption of pyrophyllite will be related to increases in economic activity and the building industry, the development of new products (e.g., ceramics, extender-filler applications, etc.) and possible changes in environmental compliance (e.g., substitution by pyrophyllite away from tremolitic talc).

Pyrophyllite is a medium priced industrial mineral commodity ranging from \$US 40 to \$US 80/tonne FOB. The following are current price references:

- R.T. Vanderbuilt: \$40 - \$50/tonne and \$50 - \$70/tonne bagged in 50lb. bags in 2,000 lb. pallets for minus 200 - 325 mesh product.

- USBM: \$17/ton crude and \$41/ton processed (1988).

- Vancouver Agent: Landed in Vancouver \$US 100/tonne with 85 GE brightness and 99.9% less than 400 mesh.

- Korea Export Prices:	Refractory grade	\$US 58/ton.
	Tile grade	\$US 28/ton.
	Pottery grade	\$US 72/ton.

Brightness, fineness and packaging have maximum impact on adding value notwithstanding freight, which may account for 2/3 of the delivered cost to a consumer.

In summary, the medium price level of pyrophyllite (compared to other minerals) is a disadvantage in developing international markets. However, this same price level may be an advantage when competing for customers in the Pacific Northwest and California, against Eastern USA producers.



PROJECT SETTING AND MINERAL TITLE 3.0

The Monteith Bay pyrophyllite property is located on Vancouver Island, a large island off the southwest coast of British Columbia, having a length of 480 km and width of up to 140 km. The Kyuquot Sound area is approximately 150 km northwest of Campbell River and 380 km northwest of Vancouver. Monteith Bay is a small sheltered bay located about halfway up the west side of Kashutl inlet, which is the northernmost inlet of Kyuquot Sound.

The main nearby centre is the village of Kyuguot located about 16 km south of Monteith Bay. Kyuguot is a mainly Native people's community with an area population of about 240 persons, with nearby non-Native residents totalling about 60. Fishing and small-scale logging are the main work activities.

Topography of the area varies from a flat coastal plain along Rugged Point and Brooks Peninsula to the high peaks immediately east of Kyuquot. Monteith Bay is one of the small bays resulting from erosion controlled by major geological structures of the area.

As shown in Table 1 within the Alberni Mining Division, N.T.S. 92L/3W. The remaining claims are owned by J.T. Shearer and M. McClaren. A foreshore lease is in place to cover the barge-loading facility area at the Monteith geyserite deposit.

Claim Name	Tenure Number	Numbe r of Units	Owner	Location Date	Current Expiry Date
Easy Three	314878	1	J.T. Shearer* 50% M. McClaren 50%	Nov. 28/92	Nov. 28/2003
Easy Four	315369	1	J.T. Shearer*	Jan. 23/93	Jan. 23/2004
Easy Five	315370	1	J.T. Shearer*	Jan. 23/93	Jan. 23/2004
Easy Six	379661	1	J.T. Shearer*	Aug. 9/00	Aug. 9/2001
Easy Seven	326041	1	J.T. Shearer*	June 2/94	June 2/2000
Easy Eight	326042	1	J.T. Shearer*	June 2/94	June 2/2000
Easy Nine	379662	4	J.T. Shearer*	Aug. 9/00	Aug. 9/2001
Easy Ten	379663	2	J.T. Shearer*	Aug. 9/00	Aug. 9/2001
	Total Unite	10			

TABLE 2 CLAIM STATUS

Total Units 12

with application of Assessment documented in this report.

The project will extend from a barge dock at tide water on the east side of Monteith Bay along a 50-meter conveyor-crushing system to geyserite stockpiles and small quarry, a total distance of about 300 meters, with connecting roads to the Deertrail and Monteith pyrophyllite quarries.

The immediate Monteith Bay area has no previous residential developments nor are any planned. There are no surface facilities on the site at present. The general area is a very sparsely settled fjord land-mountainous region. Much of the upland area has been clear-cut logged in the recent past. Minor amounts of coastal 'A' frame logging was done in the late 1940s. The Monteith Bay area was logged from the shoreline between 1945 and 1948. The northwestern part of Monteith Bay was logged by a local hand logger about eight years ago.



Access to the property is by boat, barge and float-equipped aircraft. The nearest road head is at Fair Harbour or the mouth of the Artlish River. Fair Harbour is 32 km by road from Zeballos and a further 45 km to the Island Highway. The Artlish road is about 50 km shorter than the Zeballos route. A large self-propelled ferry is available at Fair Harbour under contract with Intercan Resources Ltd, an aquaculture operation in the southern Kyuquot Sound. Major logging camps are located in nearby Chamiss Bay (INTERFOR).

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4.0 HISTORY AND FIELD PROCEDURES

The claims covering the pyrophyllite were staked in 1908. These pyrophyllite deposits provided material for fire clay, pipe and other industrial uses for the B.C. Pottery Company and the San Juan Mining and Manufacturing Company from 1910 onward. The pilings of the pyrophyllite dock can still be seen on the south shore of Monteith Bay.

Ries and Keele (1912) tested samples taken from the stockpiles at the Victoria plant, and found "it burns steel hard at cone 1, and shows good refractiveness; in fact, there are few more refractory clays thus far known in the western provinces."

Comprehensive mapping of the deposits was completed in 1913 by C.H. Clapp of the Geological Survey of Canada, who suggested that the alunite and pyrophyllite may have been formed by hydrothermal replacement of volcanic rocks by ascending sulphuric solutions.

The deposit was examined late in World War II as a possible source of paper filler, and testing determined it to be a 'highly satisfactory ingredient of whiteware batches for both slip-cast and dry process tiles, electric insulators and tableware' (Minister of Mines, B.C., Annual Report 1947, page 223).

In 1952, the Crown-granted claims on the north end of the peninsula were purchased by St. Eugene Mining Corporation, who subsequently optioned the property to Westport Chemical Inc. during 1959-60. Drill testing was completed on the alunitepyrophyllite zone, but these results are presently not available.

Two packsack holes were drilled to a depth of 25 feet in the alunite area by Falconbridge Nickel Mines, who acquired the property from St. Eugene in 1962. No sample data are available, but drill logs note the presence of quartz, which was colloform-banded and crustified, containing disseminated pyrite in altered volcanics.

The Kyuquot syndicate was formed in 1970 as a joint venture between Falconbridge and MacDonald Consultants Inc. to explore the area for Porphyry copper deposits. Mapping and soil sampling were completed near Easy inlet.

Kennco Exploration staked claims over the Kayouk Peninsula-Jansen lake area in 1972 and completed geological mapping and a rock geochemical survey. Analyses were completed for Mo, Cu, Zn, Pb, Ag, Au, Ni and Co with anomalous results being attributed to sulfides in quartz veins. C.S. Ney, in describing a siliceous bluff on the northwest side of Monteith Bay, suggested a similarity with 'geyserite' or siliceous sinter typical of hot springs activity.

The B.C. Gold Syndicate, supervised by J.T. Shearer explored the Easy claims in 1980 by prospecting, soil-sampling and geological mapping to better evaluate the intense alteration zones as defined by the areas of pyrophyllization-alunite. No geochemically anomalous response was reported from the rock or soil sampling. The Too Easy claim was located at this time.

Semco completed an examination of the Sockeye property for a large US based industrial mineral company in 1980 as part of a program on three pyrophyllite occurrences in the area. Some drilling apparently took place on the Sockeye showings but the results of this work is not presently available.



A preliminary report for Falconbridge Nickel Mines Ltd. was completed by Mr. G. Albino in June 1982 covering historical, exploratory and geological data from past examinations and including geological mapping and geochemical sampling as completed by Mr. Albino and Mr. C. Niles. Falconbridge optioned the Too Easy Claim at this time from the BC Gold Syndicate.

In 1983, 1,066 meters of diamond drilling in seven holes was completed by Falconbridge, in joint venture with Cal Denver Resources Ltd., on the northern tip of the peninsula. Detailed mineralogical and petrographic studies on the drill core delineated two recognizable alteration zones: (1) a quartz, alunite, pyrophyllite, kaolinite zone to a depth of approximately 140 meters below sea level (low pH zone) and (2) a gypsum with lesser anhydride zone below. An airborne geophysical survey of 128 line kilometres (3-frequency electromagnetics, magnetometer and VLF-EM) was carried out by Aerodat Ltd. in May 1985. The general magnetic trend appears to be east-northeasterly with several north-south orientations suggesting later structural overprinting.

Monteith Bay Resources Ltd. initiated the purchase of the Too Easy claim in 1992 and completed detail geological mapping and sampling in November 1992 to January 1993. Accurate topographic surveying, hydrographic survey of Monteith Bay, biological study of the area and detail diamond-drilling were done between January and March 1993. A 9,000-tonne bulk sample and further diamond drilling were done between March and July 1993. The Tilbury cement plant processed the geyserite during August and September 1993. A large volume of information is now available on the characteristics of the geyserite with respect to an industrial size trial on grindability, power consumption of the roller mills, abrasion, feed handling, burnability, consistent chemistry and ultimately the strength of cement and customer satisfaction.

Geological mapping was on a remeasured baseline and grid lines established in 1984. The 1,050-meter baseline trends 320 from the south boundary of the Too Easy Claim to the tip of the peninsula about 500 meters north of the northern claim line. The cross-lines trend at 230° at 75-m intervals with stations at 25 meters. Accurate topographic contours were measured with a transit and EDM unit and compiled at a scale of 1:500 by Wright Parry Taylor & Fuller, B.C. Land Surveyors and Consulting Engineers.

A geological program in 1994 (Shearer, 1994) consisted of sample collection, geological mapping and prospecting on the known pyrophyllite deposits in conjunction with a search of literature regarding the uses of pyrophyllite.

The samples were sent for multi-element analysis at the internal laboratory at the Tilbury Cement Plant in Delta, which is an X-ray unit, which is mainly used for internal quality control, clinker consistency and special batch orders.





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CG L830	790 81-1	135	0.3	2.5	0.7	
	35-5	14.0	0.2	0.7	0.2	
	71.0	17.6	3.1	0.4	0.4	
in the second	81.3	17.5	0.3	0.2	0.5	
Not and the second s	75.6	16.3	1.9	1.2	0.6	
	31.9 32.9	14.5	0.3	0.2	0.2 0.2	
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MONTEITH BHY PYROPHYLLITE						

5.0 GEOLOGY

5.1 Introduction

The pyrophyllite deposits consist mainly of replacement silica and pyrophyllite with a chemical composition of approximately 50% to 80% Pyrophyllite and 20% to 50% extra SiO₂. They appear to be in part paleohotspring deposit of considerable thickness, originally of gently dipping bedding, now somewhat faulted, bent and dipping to the south about forty to fifty degrees. Surface samples were taken systematically over the area. The correlation and analysis was done by the Tilbury Cement laboratory and Chemex Labs Ltd.

Triassic to early Jurassic volcanic-sedimentary sequences underlie the northwest of Vancouver Island. The Triassic Karmutsen Formation consists of a very thick basaltic succession of pillow lavas and breccias, amygdaloidal and massive flows with infrequent interbedded tuffaceous sediments forming the lower part of the sequence.

Conformably overlaying the Karmutsen formation are the Quatsino and Parson Bay Formations which are mainly calcareous and shaly sedimentary sequences. These sediments are in turn overlain by the Bonanza Group of early Jurassic age, consisting of flows and pyroclastics ranging in composition from rhyolite to basalt. The pyrophyllite deposits are hosted by Bonanza Group volcanics.

Muller et al (1974) have measured the stratigraphic sections of the Bonanza volcanics, indicating an average thickness of 2,500 m. Rhyodacite and siliceous units in the Kyuquot Sound area appear often as welded tuffs.

The Bonanza volcanics in the Monteith Bay area consist of porphyritic andesite with hornblende and plagioclase phenocrysts in an often siliceous, aphanitic groundmass. Frequently amygdaloidal flows occur and flow breccias are observed commonly in more mafic units. Felsic rocks located on the west shore of Kayouk Peninsula are generally limited in occurrence, appear to be banded, containing quartz phenocrysts and possibly fragments of pumice.

The Kashutl Inlet intrusive suite is one of a small linear set of plutons, which have been emplaced near surface, within related volcanics and pyroclastics. Epithermal precious metal mineralization is found to the north of Easy Inlet within these intrusions.

Late intrusive rocks occur as fine-grained porphyritic andesite to dykes and sills with a dark grey-green groundmass. These dikes are discordant to the bedding.

5.2 Alteration

Rocks in the general Easy Inlet area are altered to various degrees, with pyrophyllite, silicic and advanced argillic zones present. The lack of structural control, of associated large intrusions and overall distribution of the alteration assemblages suggest that the silicification took place contemporaneously with volcanism before significant structural dislocation. The sericite-rich alteration in Monteith Bay appears to correlate directly with the emplacement and shearing of the later andesite dykes. The presence of chalcedonic silica, alunite and pyrophyllite indicate a probable near surface origin for part of the main phase of alteration.



A typical analysis of pyrophyllite from Monteith Bay is shown below.

18.42 0.43 0.02 2.08 0.79 0.13	A1203 %	CaO %	CR203 %	Fe203 %	K20 %	MgO %	MnO %
	18.42	0.43	0.02	2.08	0.79	0.13	

Na20 %	P205 %	Si102 %	Ti02 %	Loss on	S %	S %	FeO %
				Ignition	Total	Total	
0.57	0.28	70.54	1.23	5.85	100.35	0.061	1.02

5.3 1999 Geology Discussion

Between March and July 24, 1993 approximately 9,000 tonnes of geyserite were produced from an excavation prior to the present program and shipped by barge to the Tilbury cement plant in Delta, B.C. Considerable geological information was obtained from the new exposures. The cement plant processed the geyserite during August and September 1993. The geyserite was crushed on-site to I inch minus and the resulting product proved to be very uniform in its chemical composition. Detailed data are now available on the characteristics of the geyserite with respect to an industrial-size trial in respect to grindability, power consumption of the roller mills, abrasion, feed handling, burnability, ultimate strength of the resulting cement and customer satisfaction on the end-use construction site. **Commercial** production was begun in 1999 with regular shipments to the cement plant. Mining is continuing in 2000.

In early 1994 the adjacent pyrophyllite zones were examined and sampled in detail to define the consistency and grade of the aluminum content. There are three main pyrophyllite zones as follows:

- 1) Monteith Bay old quarry area
- 2) Deertrail on northeast side of Easy Inlet
- 3) Sockeye on southwest side of Easy Inlet (North and South deposits)

The pyrophyllite zones are compact, dense and range from cream, white, pink or light grey to dark bluish grey when pyrite is present. Minor limonite imparts a yellow to reddish brown stain on the weathered surface. In thin section, the pyrophyllite flakes are about 0.01 millimetres in diameter; the material is readily crushed to a fine smooth powder.

On the Monteith showing the pyrophyllite zone is pinkish white and contains about 62 per cent pyrophyllite and 30 per cent quartz. On the Deertrail showing, the zone is white to grey and contains 71 per cent pyrophyllite and 20 per cent quartz. Chemical analyses of these two showings are as follows (in per cent) per Spence 1940:

	1	2	
Silica	81.94	71.88	
Alumin	\mathbf{um}	15.29	23.56
Ferric (Oxide	0.11	0.14
Soda	0.40	0.36	
Potash	0.50	0.43	
H2O >1	.05 ° C	2.40	3.24

(Spence, 1940)

A' A 30 m 20m Area Be Excurvated OLD QUARRY AREA TO BE EXCAVATED 1998 10 m -SEA LEVEL-CROSS SECTION ALA 20 METERS (0 MONTEITH PYROPHYLLITE 1:500 DRAWN BY : V.T. SHEARER, M.SL., P.GCO N.T.S. 92 L/3W EASY THREE MINERAL CLAIM LOOKING NORTH FIGURE

The detailed mapping conducted during the present program within the old Monteith quarry is shown on Figure 6 & 7. The old quarry floor is now overgrown with moss but mapping clearly demonstrates the flat floor with sidewalls up to 15 metres high. A large outcrop of pyrophyllite occurs 60 metres to the northeast closer to tidewater and appears to be a continuation of the main quarry zone. Typically the higher content of pyrophyllite (greater than 13% Al2O3) has fragmental appearance with dark brown fragments in a light greenish matrix. Analytical results suggest that more quartz-rich layers having a white to light grey ground mass occur intercalated with pyrophyllite-rich zones. The highest Al2O3 content is sample #40 collected in 1994 at 18.8% Al2O3 and 79% SiO2. Diamond drilling along the south wall of the quarry and to the east and west is recommended to establish the size of the zone.

On Easy Six claim a large white weathering alteration zone (samples #52 and 53) have very high SiO2 content with Al2O3 below 6% and negligible alkali and sulfur. This zone outcrops along the beach for over 60 metres and could be similar in size to the Monteith Bay geyserite (SiO2) deposit presently under development.

Acid-activated pyrophyllite has an increased BET surface area and when combined with one of the metal oxides of either titanium, zirconium, vanadium, tungsten, molybdenum of cerium; the resultant compound has catalytic properties. These <u>catalytic</u> properties are being used to **decrease the content of nitrogen oxides in flue gases**. The compound can be shaped into conventional forms such as shaped boding, oblong or flat honeycomb plates, rods, tubes, rings, wagon wheels or saddles that can be utilized in existing scrubbing units at power plants.

The decrease in greenhouse emissions as determined by the environmental accords reached by the industrialized countries at the Kyoto summit indicate that increased limitations will be placed into effect on the amount of NOx emissions that will be allowed in the various industrial sectors of the industrialized nations.

Power plant emissions are point source emissions that have been targeted for NOx reductions in the United States and an agenda for the reduction of these emissions has been established. Similar agendas will take effect in Canada.

It is proposed that the unique ability of pyrophyllite to collect NOx in flue gas emissions makes it an attractive compound for further research in its use in scrubber units as a NOx collector.

6.0 CONCLUSIONS and RECOMMENDATIONS

The extensive pyrophyllite deposits in Kyuquot Sound were originally found in 1908. Small scale production occurred at the Monteith Bay Quarry between 1910 and 1914 for use in pipe and brick manufacture.

Four separate pyrophyllite deposits are currently know as follows:

	Average		Total	%	
	A1203	SiO2	Alkali	SO3	Fe2O3
Monteith Bay Quarry	11.6%	83.7	0.91	0.29	0.4
Deertrail Deposit	15.7%	18.59	0.4	0.32	0.9
Sockeye North	14.3%	80.5	2.3	0.42	1.6
Sockeye South	15,5%	87.3	0.75	0.35	0.2

No diamond drilling has been done at any of the four deposits however, the extent of the surface exposures suggest in the order of at least 1.5 million tonnes of pyrophyllite bearing material is near surface. The generally recessive nature of pyrophyllite also suggests that drilling could outline considerably more pyrophyllite bearing material.

Much more work is required to define the industrial mineral specifications of the deposits as each deposit has its own unique combination of pyrophyllite, quartz-sericite and alunite. Testing to date shows the following:

- 1) Bond Index of <u>13.4</u> on a composite sample of all deposits
- 2) Abrasion Index and Crushing Work Index of 0.1643
- 3) Brightness of <u>79.2%</u> Blue filter

84.4% Lightness

Acid-activated pyrophyllite has an increased BET surface area and when combined with one of the metal oxides of either titanium, zirconium, vanadium, tungsten, molybdenum of cerium; the resultant compound has catalytic properties. These <u>catalytic</u> properties are being used to **decrease the content of nitrogen oxides in flue gases**. The compound can be shaped into conventional forms such as shaped boding, oblong or flat honeycomb plates, rods, tubes, rings, wagon wheels or saddles that can be utilized in existing scrubbing units at power plants.

The decrease in greenhouse emissions as determined by the environmental accords reached by the industrialized countries at the Kyoto summit indicate that increased limitations will be placed into effect on the amount of NOx emissions that will be allowed in the various industrial sectors of the industrialized nations.

Power plant emissions are point source emissions that have been targeted for NOx reductions in the United States and an agenda for the reduction of these emissions has been established. Similar agendas will take effect in Canada.

It is proposed that the unique ability of pyrophyllite to collect NOx in flue gas emissions makes it an attractive compound for further research in its use in scrubber units as a NOx collector. Further detail geological mapping, sampling of fresh material for additional brightness tests, a 2000 foot diamond drill program is recommended using an average of 30m length of hole and if warranted by preliminary results proceed to a 10,000 tonne bulk sample from Monteith. This bulk sample could be shipped out using the geyserite loading facility.

Respectfully submitted héarer J.T. Shearer, M.Sc., P.Geo.

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6.1 COST OF FUTURE WORK

Program:	 A) Shallow diamond drilling to obtain fresh material for B) Detailed geological mapping of each deposit. C) Preliminary Diamond drilling on Monteith and Socket - 2000 foot program. D) Bulk Sample, 10,000 tonnes E) Research Program 	· brightness tests. eye deposits
Program A	10 day Program	
Flogram A	Wages and Benefits - 3 man crew	\$6,500
	Transportation, including boat	1,800
	Board and Meals	1,700
	Drill rental	500
	Analytical	3,000
	Report Preparation	1,500
	Subtotal Cost A -	\$15,000
Brogram B	05 day Program	, .
Flogram D	Wages and Benefits - 4 man crew	\$30,000
	Transportation including hoat	3,400
	Reard and Meals	5.000
	Board and means	6.000
	Analytical	5,000
	Analytical Demost Preparation	2.000
	Subtotal Cost B -	\$51,400
Program C	35 day Program with Gopher Drill, 2000 ft.	···,
Figram	Wages and Benefits -	
	2 map supervision & core splitting	\$21,000
	Transportation including hoat	4,400
	Paard and Meals	3.800
	Duil and means D_{mill} Contract 2000 @ \$23 per foot	45,000
	Analytical	12,000
	Mah & Demah	5.000
	Report Bronzetion	3.000
	Subtotal Cost C -	\$95.200
	Bullt Somple	····
Program D	Wages and Benefits -	
	6 man crew	\$42,000
	Transportation including host	15.000
	Barge mab & demab	12.000
	Executor Pentol	15.000
	Excavator Remai	10.000
	Drill and blact	20,000
	Analytical	6.000
	Analytical Transport Sample Barge	65,000
	Mah & Demah	28,000
	Mod & Demon.	48.000
	Crushing Depart Preparation	8,000
	Subtotal Cost D -	\$269,000
Program E	University Reasearch Program	\$30,000
	GRAND TOTAL	\$460,000

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APPENDIX I

STATEMENT OF QUALIFICATIONS

J.T. SHEARER, M.Sc., P.Geo.

May 1, 2000

Appendix I

STATEMENT OF QUALIFICATIONS

I, JOHAN T. SHEARER, of 1817 Greenmount Avenue, in the City of Port Coquitlam, in the Province of British Columbia, do hereby certify:

- 1. I am a graduate of the University of British Columbia (B.Sc., 1973) in Honours Geology, and the University of London, Imperial College (M.Sc., 1977).
- 2. I have over 20 years experience in exploration for base and precious metals and industrial mineral commodities in the Cordillera of Western North America with such companies as McIntyre Mines Ltd., J.C. Stephen Explorations Ltd., Carolin Mines Ltd. and TRM Engineering Ltd.
- 3. I am a fellow in good standing of the Geological Association of Canada (Fellow No. F439) and I am a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia (Member No. 19,279).
- 4. I am an independent consulting geologist employed since December 1986 by Homegold Resources Ltd. at #5-2330 Tyner St., Port Coquitlam, B.C.
- 5. I am the author of a report entitled "Geological Assessment Report on the Monteith Bay Pyrophyllite Project, Kyuquot Sound Area, Vancouver Island, B.C. Alberni M.D.", dated May 1, 2000.
- 6. I have visited the property on June 15-18 and October 8 & 9, 1999. I have examined the surface exposures of the Pyrophyllite and collected systematic surface samples. I am familiar with the regional geology and geology of nearby properties. I have become familiar with previous work conducted in the Monteith Bay area by examining in detail the available reports, plans and sections and have discussed previous work with persons knowledgeable of the area.
- 7. 1 own a direct interest in the property described.
- 8. I consent to authorize the use of the attached report and my name in the company's Statement of Material Facts or other public document.

Dated at Vancouver, British Columbia, this 1st day of May, 1999,

 $\mathbf{J}[\mathbf{T}]$ Shearer, M.Sc., F.G.A.C., P.Geo.

APPENDIX II

STATEMENT OF COSTS on the MONTEITH PYROPHYLLITE PROJECT

May 1, 2000

Appendix II

STATEMENT of COSTS MONTEITH PYROPHYLLITE Trail Construction and Geology

Wages and Benefits						
J.T. Shearer, M.Sc., P.Geo., Quarry Supervisor 98-3550						
6 days @ \$350		* ~				
Including travel, June 15, July 16,	17, 18, Oct. 8 & 9	\$ 2,100.00				
D. Lobdell, B.Sc., Prospector, Trail Construction						
July 16, 17, 18, 1999, 3 days@\$2	00	600.00				
		\$ 2,700.00				
	GST	189.00				
	Subtotal Wages	\$ 2,889.00				
	0	·				
Transportation						
Truck Rental, Fully equipped 4x4		267 50				
5 days @ 53.50		300.00				
Boat, 4 days @ \$75.00		360.00				
Motel, Camp, Food		76.00				
Tenty Testing for Posselanic Strength						
minding coment cube strength		200.00				
Penort Preparation		700.00				
Drafting		350.00				
Word Processing and Reproduction		400.00				
Word Trocobing and hop-outloand	Total	\$ 5,542.50				
		WW.				
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