PRELIMINARY REPORT

ON

GEOLOGICAL FIELD WORK

CHESTER MINERALS LIMITED

CHESTER TWP, SUDBURY MINING DIVISION

ONTARIO

-by-

W. WALKER, F.G.A.C.

Chew-Walker Associates,
164 Nipigon Avenue,
Willowdale, Ontario.

21st. December, 1965.

PRELIMINARY REPORT ON GEOLOGICAL FIELD WORK

CHESTER MINERALS LTD. CHESTER TWP. ONTARIO

by

W. WALKER

INTRODUCTION

Chester Minerals Ltd. owns 14 claims, totalling about 700 acres, in the northwest part of Chester Township, numbered as follows:

Patented (6) S.16304, S.31999, S.19977, S.19998, S.20000
Unpatented (8) S.12804 to S.12807, S.125067 to S.125070.

The purpose of this report and accompanying map is to record the observations made during field mapping in October and November. The greater amount of data were recorded in my report of June 1st, 1965, and will not be repeated here: these include location and access, economic facilities, previous work, history of the property, general and economic geology as then considered, and conclusions and recommendations as to further work.

The geological field work is part of a programme of regional appraisal of this and adjacent properties which is to include magnetic and electromagnetic surveys and topographic mapping. To date only the e.m. survey is complete. Assessment of these various

data will be deferred until completion of the phase. The present work is regarded as fact gathering.

In the course of mapping, the writer traversed all lines in the land part of the property. Larger swamp areas were omitted.

GENERAL GEOLOGY

Outcrop is scattered throughout the property, so indicating for the most part shallow overburden. There is no pattern to outcrop distribution on the shoreline in contrast with higher ground for example.

Almost all the rocks are medium grained, averaging 1/mm grain size. South of the north part of Three Duck Lakes, massive, medium grained, gray granodiorite (which may be regarded as a microgranodiorite) predominates, with white felspar, pale blue to clear quartz, biotite, and occasionally muscovite. Between Cote and Clam lakes there is a greater variety: in addition to granodiorite is the fine grained equivalent, dacite, in places porphyrite with small blue quartz eyes, and gradations to the more rhyolite and more basic dacite. East of the south end of Clam Lake, diorite, with a dark green amphibole crops out in several places.

The fine-grain of the rocks indicate near-surface intrusion or extrusion: both phenomena are likely to have occurred, and even with the help of the magnetic

data it may prove difficult to differentiate between Keewatin volcanics and the Algoman (?) intrusive.

Fracture measurements were taken at most localities observed but have yet to be analysed.

ECONOMIC GEOLOGY

The prospects known from earlier records were located. Pits and trenches are to be examined in more detail in the next phase of work.

Respectfully submitted,

CHEW-WALKER ASSOCIATES

WW:S

W. WALKER, F.G.A.C.

GEOLOGY

CHESTER MINERALS LIMITED

Clam Lake, Chester Township,
Sudbury Mining Division

Ontario

by

W. Walker, F.G.A.C.

Chew-Walker Associates
164 Nipigon Avenue
Willowdale, Ontario

June 1st, 1965

GEOLOGY

CHESTER MINERALS LIMITED

Clam Lake, Chester Township,
Sudbury Mining Division

Ontario

by

W. Walker, F.G.A.C.

SUMMARY

Your Company owns 14 claims, totalling about 700 acres, in the northwest part of Chester Township. The six claims which are patented were acquired from Young-Shannon Gold Mines Limited.

In his report to the Ontario Department of Mines, H.C. Laird wrote (p. 34): "The (Three Duck Lakes) area as a whole possesses certain geological conditions that have long been known to be associated with the great gold belts of Ontario and Quebec. They consist of a long belt of structurally disturbed Timiskaming sediments (the Ridout series), which are deeply infolded in Keewatin greenstones with which are associated granite and porphyry intrusives of Algoman age. The widespread occurrence of gold in Chester and Yeo townships under these very favourable conditions at once marks this field as one deserving of most careful exploration."

Your property is largely underlain by younger granite. A roof pendant remnant of Keewatin volcanics is mapped on the north boundary; in the southwest is the older granite - diorite complex; and several dykes are known.

The gold occurs in veins, which outcrop in at least fifteen places on the property. Of these, the most work has been done at Shannon Island in Clam Lake where a two compartment vertical shaft was sunk to a depth of 125 feet, and 110 feet of lateral work done at that depth.

In the shaft, the "average of ore from 15 ft. deep pit, 3 ft. vein" is typical: 1.82 oz. gold; ($63.70 @ $35/oz.) 1.18 oz. silver; ($1.65@ $1.40/oz); 6.63% copper ($46.41 @ 35¢/1 lb.) (Mar. 5/34 assay) and the Northern Miner reported (Mar. 8/34) "Low values on surface to $14 at six feet, $27 at nine feet; $37.50 at twelve feet depth (averaged across six feet) and $41 at eighteen feet). These are presumably for gold, silver and copper when gold was at $20 per oz. For comparison the average recovery of gold per ton of ore milled in Ontario in September 1964 was $10.22.

On large scale aerial photographs the terrain can be seen to be fracture controlled. The form of Clam Lake indicates many fractures: several gold veins in fractures are known on the shores, on islands, and on the lake bottom, and the existence of more veins is to be anticipated under the overburden and water which covers more than 90% of the property.

It is recommended that this masked, near surface potential of the property be appraised prior to further depth investigations. The recommended programme is therefore one of thorough exploration, to be followed by development.

It is recommended that underground development be continued as part of the phase of development of the entire property, which will follow an extensive program of surface drilling. The

initial recommendations for drilling will depend on the outcome of the geophysical surveys, etc.

Costs of rehabilitating housing and the road and bridges are estimated to total $1500.00. Line cutting and an electromagnetic survey are estimated to cost $3,225.00 for a phase I total of $4,725.00. In phase II one may allow $2,000 for local access, $2,000 stripping and trenching, and assaying, $400. for a topographic map, and $750. for geological mapping, for a phase II total of $5150.00.

Exploratory drilling, phase III may be better estimated when data from phases I and II are available. As an approximation, the figure of $15,000 for 2500 ft. may be regarded as a basis for exploratory drilling requirements.

It is recommended that the sum of $4,725 be made available to undertake phase I. The exploration programme, in its three phases, may therefore be expected to cost a total of about $25,000.

The present knowledge of the property indicates that the directors should foresee sizeable but as yet unknown expenditures for development, drilling and underground development.

INTRODUCTION

The Three Duck Lake gold-copper area is undergoing a revival of activity. Prior to the war, Young-Shannon's interest moved from Clam Lake, to Three Duck Lake, 1 mile east, and then to what was to become the Lake Dufault property. In each case, attention appears prematurely to have been drawn elsewhere, whereas Corporate records demonstrate that more exploration and development were merited. Later, under wartime conditions, labour for development was not forthcoming. After the war the company considered it best to wait for the completion of the highway from Westree to Gogama.

The present revival is under the aegis of Mr. B.M. Young, the son of the previous president of Young-Shannon, the late Cyril T. Young. The now commonplace availability of photogeology and geophysics to aid exploration through overburden (in contrast to their rarity 30 years ago) and the presence of the highway make the present time appropriate for a continuation of work. Several neighbouring companies are also commencing work in a concerted effort to bring potential mines to production.

Purpose of Study:

The purpose of the present report is to make recommendations as to work requirements for exploration in order that greater lengths of gold bearing veins may be opened up. The chalcopyrite association makes copper of interest also. A review of previous work forms a major part of the study.

The Property:

The property comprises fourteen mining claims in Chester Township, Sudbury Mining Division, as follows:

Patented (6) S.16,304; S.31,999; S.19,977; S.19,997; S.19,998; S.20,000

Unpatented (8) S.12,304 to S.12,307; S.125,067 to S.125,070.

Location and Access:

Clam Lake in Chester Township lies 86 air miles northwest of Sudbury and 70 air miles south-southwest of Timmins. By road it lies 75 miles west of Gowganda, via highway 560, on the Mining Access Road (to Gogama) at mileage 25 at the narrows of Mesomikenda (Beaver) Lake, then 4 miles by a road requiring rehabilitation, improved and extended by the Ontario Department of Northern Development in 1931. Gogama station on the C.N.R. is 15 miles to the northeast.

Economic Facilities:

The area lies at the hub of Timmins, Kirkland Lake, Cobalt, Sudbury, and Elliott Lake mining towns, all within 100 miles, and no difficulty is foreseen in drawing on skilled labour. There is ample water for all purposes on the property. The hydro right-of-way to the Jerome mine passes 1/4 mile north of the property, to join the power line at the highway 4 miles to the east. Some stands of virgin bush, including red and white pin, remain on the property but most of the trees are spruce, pine, balsam, birch and poplar, with cedar and alder in the swamps. The house on the mainland opposite Young Island requires minor repairs.

Previous work:

The standard reference is the "Geology of the Three Duck Lakes Area", by H.G. Laird, in Part 3 of the 41st Annual Report of the Ontario Department of Mines, 1932.

Laird later extended his work eastward, and in his report on the Makwa-Churchill area (O.D.M. vol. 43, part 3, 1934, p. 73 et seq.) makes further notes on the Three Duck Lakes area. Notes on the Young Shannon property also appeared in part 1, the statistical section, of O.D.M. annual reports 44, 45, 46 and 47 for 1934 to 1937.

The Timiskaming-Keewatin belt within which the area falls appears on Geological Survey of Canada Map 155A, Lake Huron Sheet; G.S.C. Map 1063A, Sudbury Sheet, and O.D.M. Map 1933A, Kamiskotia-Ridout area, and O.D.M. Map 2046, Timmins-Kirkland Lake Sheet.

There are several unpublished reports and maps in the company files of Young-Shannon Gold Mines Ltd. Of particular interest are:

1. Map of claims S.16,304 and S.20,647
2. Map of Shannon Island at a scale of 1 inch = 10 ft.
3. Claim Map, Three Ducks Syndicate, scale 1 inch = 8 chains
4. Report by Cyril T. Young on Young-Shannon properties dated 9 Jan. 1934.
5. Report on the Young-Shannon property by M.C.H. Little dated 17 Oct. 1934.
6. Assay sheets Oct. 24/33, to Jan. 28/35 and Aug. 28/39 and May 30/58.
7. Copies of Northern Miner clippings on the Young-Shannon company.
8. Claim survey plans for patents.

History of the property:

Patented claim S.31,999 and claims to the east and west formed the original 8 claim group of C.T. Young (see O.D.M. map 41d) which, with the optioned Chester Shannon Group formed part of the holdings of Young-Shannon Gold Mines Limited when it was formed in January 1932. Patented claim S.16,304 was part of the Chester Shannon group, and when in October 1933 Milton Jessup (oral communication) made the find on a small island, it became known as Shannon Island. The adjacent small island on S.20,646 was first known as Our Island and later as Young Island.

The four patented claims in the east of the property, S.19,977; S.19,998; S.19,997 and S.20,000 based on the 1930 Gosselin find on claim S.20,095 belonged to the Three Duck Syndicate. Vein No. 3 on the line between claims S.19,977 and S.19,998 is described by Laird (1932 p. 29). In his 1934 report (p. 78) Laird wrote under the heading Martin Syndicate: "Robert Martin of Sudbury, maintains a majority interest in the Gosselin group of claims formerly held by the Three Ducks Syndicate. In 1932 a diamond drilling campaign was

carried on in what is known as the Coté Lake Section of the property. The results of this work are not known to the writer, but an engineers report is said to have been highly favourable." This would be before the discovery of vein No. 20, and appears to refer to the vein on the southwest shore of Coté Lake.

The south part of the 6 claim Cote group of 1932 (M.S. Beal Group of 1934) falls in the present property.

The Jan. 18, 1934, Northern Miner notes the intention to sink a shaft on the mainland, 100 ft. from the water's edge (southwest of Young Island). By March 8, the telephone line to Gogama was in. In the May 31 Northern Miner, Mr. Young advised that the 25 ft. test pit (on Shannon Island) was to be used as the shaft site after break up and so save expenses of crosscutting. By July 5th the collar was on the shaft and 50 ft. long plant erected and housing machinery. By Aug. 2, the head frame was completed and in use for hoisting. A company plan shows a 3' 8" manway and 4'6" hoistway. The shaft was taken to 125 ft. (Northern Miner, Mar. 31, 1935) a 10 ft. station made to the west, 40'6" cut to the southwest, 30' drift west along the vein, and 29'4" cut southwest. The saving was an immediate rather than long-term one, for crosscutting to the mainland is anticipated in future work.

Prospecting and drilling is noted in most 1934 reports from the property. In February, 1935, however (N.M.) the Young-Shannon company had taken over the Three Duck Syndicate (later the Martin Syndicate) property, apparently as a result of the finding of No. 20 vein and no further work on the Clam Lake property is recorded (O.D.M. vol. 45 pt. 1, 1936, p. 172).

GENERAL GEOLOGY

Chester Township lies on one of the east-west trending Early Precambrian sedimentary volcanic belts common to the Lake Superior Province. In the west the belt is terminated by the Grenville rifts marked by the Chapleau-Kapuskasing gravity high and clearly evident on the G.S.C./O.D.M. aeromagnetic sheets; in the east it is overlaid by Late Precambrian formations. Algoman batholithic granite flanks the belt to the north and south.

Dips in the sediments and pillows in the volcanics indicate that the belt is synclinal (Laird p. 22). The Timiskaming sediments form the core and Keewatin volcanics the flanks (see G.S.C. Map 1063A). Laird writes (p. 7): "Toward the central part of the area the three older belts of rock are cut off in part by an extensive batholithic intrusion of granite, which occupies the greater part of Benneweiss and a large part of central Chester and juts into central Yeo as far west as Ash Lake. This granite is thought to be a late phase of the Algoman intrusion and largely responsible for the important mineralisation in this area. Caught up in this intrusive are small areas of diorite and quartz diorite, which are pre-Algoman but post-Timiskaming in age ... Diabase dikes of the Matachewan period have intruded all the older rocks in greater profusion than has been observed (by Laird) in any other locality. The latest phase of igneous activity was that of the Keweenawan period." G.S.C. - O.D.M. aeromagnetic sheets are not yet available for the area east of $82^{\circ}00'$, which includes Chester Twp., but to the west, sheets 2260G and 2261G show many Northeast and Northwest Keweenawan diabase dykes and parallel faults.

Lithology:

On the property, Laird's map (41d) shows younger granite granite except for southwest of Clam Lake and in a few lakeshore outcrops in the south half of the lake where the granite-diorite complex is found; on the north boundary, west of Clam Creek where Keewatin greenstone is presumably a roof pendant; and a couple of NNE trending Matachewan diabase dykes intruding the complex.

From Laird's report (1932 p.10 et seq.) one may describe the rocks. The remnant of Keewatin volcanics belongs to the southern belt, which is for the most part composed of highly altered basalt lavas which strike east-west and except for a few dips at high angles to the north, are vertical.

"Granite diorite complex: a contact zone between the "older" granite and older rocks is represented ... by a broad zone of transition rocks. In most places the granitic material appears to have literally soaked into the older diorite. The question as to whether the diorite is post-Keewatin or a dioritic phase of the southern Keewatin belt has not been answered satisfactorily."

The property lies near the change in varieties of Younger Granite from the more normal types to the south to alaskite, which is well exposed at the north end of Clam Lake. Laird notes (1934 p. 20) "Field observations seem to indicate that the granodiorite, granite, and alaskite are contemporaneous and that they represent differentiation phases of the same granite magma. Furthermore it is the opinion of the writer that a suite of specimens carefully selected at intervals between the south end of and the north end of Three Duck Lake would show a gradual transition from the basic to the acid type that is, through diorite, granodiorite, biotite granite, to alaskite. Everywhere the granite types are

characterized by a great excess of blue quartz in the form of blobs.

"The end of the Algoman was marked by the intrusion of both acid and basic dikes. Two kinds of acid dikes were noted, namely reddish quartz syenite and grey felsite." An 8 ft. wide quartz porphyry dyke strikes NW across the middle of Shannon Island. "Among the basic dikes, trap and lamprophyre are most common. The former is a very dark, fine-grained rock about the composition of a basalt, the latter is a black, coarse textured, shiny rock, rich in biotite and hornblende, the presence of which allows it to be called more precisely a hornblende minette. These dikes seem to be confined largely to the 'Younger' granite area."

"Matachewan: Diabase dikes occur abundantly in all parts of the area, intruding all the older rocks. As a rule they are not more than a few feet wide. They show a considerable variation in direction between north-south and east-west, but the majority seem to have a northerly trend."

The property was in an area where glacial erosion predominated over deposition, and though some of the lower areas are filled with debris, the higher areas have only a thin cover of overburden.

Structure:

Laird notes the regional NNW fault lines "now represented by the linear basins of Minisinakwa lake, Mesomikenda lake, and Moore lake and Chester lake", (P.23, 1932), and that in such case "the beds on the east shore have moved northward relative to the beds on the opposite shore".

These faults were probably initiated by the same Early Precambrian N-S pressures as the folds, and at that time would have right hand movement on them, east side south. (see also the plan on P.12 of O.D.M. vol. 43, Part 3). In Grenville times they would

be utilised again, but this time, under NW-SE pressures, they would have left hand movement, and this east side north movement must have been greater than the earlier one. The parallel Lake Timiskaming fault is known to have moved Lower Paleozoic rocks also.

Within the Three Duck lakes granite area, the line of lakes and of the Mollie River between Clam and Three Duck indicate important parallel (NNW) faulting. The Mollie River system trends across the eastern claims of the property.

Other fractures, though abundant, largely belong to two sets, NW and ENE. The important known veins are in the NW set. These would be initiated as 2nd order right hand wrenches in the Early Precambrian and utilized as tension fractures in the Grenvillean orogeny.

ECONOMIC GEOLOGY

"Gold is the most important mineral in the area; in some places it is accompanied by appreciable quantities of copper. There are no other minerals of economic importance."(Laird 1932, p.23)

However, 26 years later, Department of Mines Assay Certificate B2585 dated May 30, 1958 reads:

	Silver ozs per ton	Copper	Nickel
Sample Clam Lake #1	Trace	Trace	2.96%
" " " #2	Trace	Trace	2.68%
" " " #3	2.20	14.78	Trace

The precise origin and type of sample are undocumented.

General from 1932/34 -

Extract from p. 79, 1934

"No. 3 vein (Laird 1932, p. 29), which is located on the west shore of Cote lake on the line between claims S.19,977 and S.19,998 is a quartz vein and occurs along the contact between pink granite and a 2-foot lamprophyre dike. On the south side of the dike, that is, on the side opposite the granite, coarse hornblendite occurs. Quartz stringers extend into the granite but not into the dike. The vein averages about 12 inches in width and has been traced for about 125 feet from the lake shore into low ground. Coarse gold occurs here in notable quantities, not only in the quartz but in the adjacent wall rocks. Vugs in the vein are commonly lined with tremolite crystals on which specks of native gold were observed. Some telluride occurs. A chip sample assayed $27.40 in gold (at $20) per ton and 0.53 ounces silver per ton."

Assay Results:

In some cases the precise location of assayed samples is not noted. Those well described are:

1. The Sheppard and Beal discoveries, claim S.20,643, which was the south eastern claim of the C.T. Young Group (see map 41d) lying on the north arm of the U-bend in the Mollie River.
2. Young Island.
3. Shannon Island.
   a) Vein
      (i) surface
      (ii) in shaft
      (iii) in drift?
   b) Main break
4. No. 3 vein Mainland
5. No. 4 vein Mainland

1. Claim S.20,643.

No location map showing the claim is known to exist. A map of claims S.16,304 and S.20,647 lists it as the most easterly claim on the south of the old Young group; Map 41d shows the property to terminate just east of the U-bend in the Mollie River; and a map by C.T. Young to accompany his report dated Jan. 22nd, 1934 notes the values a mile east of the south end of Clam Lake. This may or may not be on the property.

Assays of grab samples on company files are for 1.84 oz. 3.66 oz. 8.74 oz. gold and Mr. Young noted another, for $31.20 (at $20 - $1.56 oz) (at $35 - $54.60). The 3.66 oz. gold assay also ran 4.97% copper.

2. Young Island

Assays from Young Island run 0.52 oz; 0.23 oz; 0.58 oz; 0.44 oz; 0.38 oz; 0.64 oz. gold per ton.

3. Shannon Island.

a) vein (i) Surface assays ran 0.13 oz. at the discovery to 5.94 oz.; 1.34 oz.; 0.30 oz.; 1.38 oz.; 0.36 oz., and 0.20 oz. with a 6' wide channel sample near water level showing 0.24 oz. A sample taken by Little at the water's edge ran 1.36 oz. across 20 inches.

(ii) in the shaft

	oz./ton Au.	Cu. %
at surface	1.26	2.80
at 15 ft.	1.82	6.63
at 18 ft.	1.60	5.74
at 22 ft. av. ore	0.80	3.34
at 22 ft. E. Side channel	0.32	1.61
at 22 ft. W. Side across 5½ ft.	0.34	3.47
at 22 ft. W. Side (#2 sample)	0.50	

(iii) in drift

No dip is shown on the vein in the drift on the 100 ft. level but it appears to be the same one.

Unidentified assays which appear to fit the circumstances and dated Jan. 11, 1935 are as follows:

			oz/ton
#1	18"		0.40
#2	18"		0.20
#4	20"		1.32
#5	16"		0.16
#5½	8"	Inside	0.24
		Metallics	0.025
			0.265
#6	18"		1.76
		Metallics	0.042
			1.802
#7	30"		0.60
#7	24"		0.08
#8	2'		0.08
#9	30"		0.48
#10	30"		0.32

b) main break. 0.22 oz. and 2.24 oz. (float)

4. No. 3 vein mainland.

Assays known to be from this vein, apparently the one 50' north of the camp house, are for 6.92 and 0.16 oz./ton.

5. No. 4 vein, mainland.

The position of this vein is not known. It may be the one on the north shore of the camp headland. The best assay is 0.13 oz/ton.

CONCLUSIONS AND RECOMMENDATIONS

The vein and "main break" on Shannon Island both gave good assays. The vein was sampled at surface, at 18 to 22 ft. in the shaft, and apparently, at 100 ft. in the drift. In 1934, Little recommended drilling off the ice on the hanging wall side of the vein, and also making a short cross-cut east, through the porphyry dike at the bottom of the shaft, and then drill holes north and south roughly parallel to the dyke to locate the extension of the vein to the east. Neither recommendation was followed, both are valid, therefore after the surface programme, dewatering of the shaft is programmed together with necessary drifting. Further sinking will depend on the examination of the vein at 100 ft. and drilling to prove the vein at deeper horizons.

Photogeolcgical studies have located structural controls of gold/copper deposition and fractures parallel to known veins. Sulphide mineralization commonly accompanies the gold, and the property should therefore be surveyed with an electromagnetometer. A magnetometer survey is to be conducted on the adjacent property to the east to see how known lamprophyre dykes and lenses of volcanics show up. Recommendations for a magnetometer survey on the present property will depend on the results of the test.

From these surveys, it is anticipated that veins will be located from which soil must be stripped and the rock opened up by trenching at which time a geologist should map the property and have samples taken for assay. In his report, one may anticipate recommendations will be made for drilling to test the veins at depth.

COSTS

Phase I,			
a)	Road rehabilitation	$1,000.00	
b)	Camp	500.00	$ 1,500.00
c)	Line cutting 20 miles at $60 & 5 miles at $30	1,350.00	
d)	E-M survey 25 line miles at $75	1,875.00	3,225.00
			$ 4,725.00
Phase II,			
a)	Local Access - allow		$ 2,000.00
b)	Soil stripping - allow		1,000.00
c)	Rock trenching - allow		1,000.00
d)	Topographic map - allow		400.00
e)	Geological mapping, report		750.00
			$ 5,150.00
Phase III,			
Diamond drilling - cost to be estimated on completion of phase II. Sizeable expenditures should be anticipated - allow			$15,000.00
Phase IV,			
Dewatering Shannon Island shaft			$ 7,500.00
Phase V,			
Development drilling -			
Phase VI,			
Underground development			

It is recommended that initially the sum of $4,725.00 be made available, with further expenditures anticipated as indicated.

Respectfully submitted,

W. Walker, F.G.A.C.

PRELIMINARY REPORT

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GEOLOGICAL FIELD WORK

SHANNON MINERALS LIMITED

CHESTER TWP. SUDBURY MINING DIVISION

ONTARIO

-by-

W. WALKER, F.G.A.C.

Chew-Walker Associates,
164 Nipigon Avenue,
Willowdale, Ontario.

21st. December, 1965

PRELIMINARY REPORT ON GEOLOGICAL FIELD WORK

SHANNON MINERALS LTD. CHESTER TWP. ONTARIO

-by-

W. WALKER

INTRODUCTION

Shannon Minerals Ltd., a proposed new company, is to acquire 10 claims, totalling about 400 acres, in the northwest part of Chester Township, numbered as follows:

Patented (4) S.8995, S.8996, S.8997, S.19995
Unpatented (6) S.120300 to S.120303
S.125066 and S.127455

The purpose of this report and accompanying map is to record the observations made during field mapping in October and November. The greater amount of data were recorded in my report of January 31st, 1965, and will not be repeated here: these include location and access, economic facilities, previous work, history of the property, general and economic geology as then considered, and conclusions and recommendations as to further work.

The geological field work is part of a programme of regional appraisal of this and adjacent properties which is to include magnetic and electromagnetic sur-

veys and topographic mapping. To date only the e.m. survey is complete. Assessment of these various data will be deferred until completion of the phase. The present work is regarded as fact gathering.

In the course of mapping, the writer traversed all lines in the land part of the property. Larger swamp areas were omitted.

GENERAL GEOLOGY

Outcrop is scattered throughout the property, so indicating for the most part shallow overburden. There is no pattern to outcrop distribution on the shoreline in contrast with higher ground, for example, other than that it is more abundant in the Temiskaming sediments north of Little Clam Lake.

The sediments are almost wholly well bedded siltstones, striking east-west and more or less vertical. In one place only, 300 feet north of Little Clam Lake, they appear to be thermally metamorphosed.

Fine-grained acid rocks underlie most of the property. In the north they are mapped as dacite and dacite quartz porphyry. In the south, medium grained gray granodiorite (average grain size 1 mm) is more common, with a few outcrops of rhyolite and andesite. Most of the rock is massive, though some tuffs are mapped.

The fine-grain of the rocks indicate near-surface intrusion or extrusion; both phenomena are likely to

have occurred, and even with the help of the magnetic data it may prove difficult to differentiate between Keewatin volcanics and the Algoman (?) intrusive.

Fracture measurements were taken at most localities observed but have yet to be analysed.

ECONOMIC GEOLOGY

The prospects known from earlier records were located. Pits and trenches are to be examined in more detail in the next phase of work.

Respectfully submitted,

CHEW-WALKER ASSOCIATES

WW:S

W. WALKER, F.G.A.C.

GEOLOGY

SHANNON MINERALS LIMITED (Proposed New Company)

CHESTER TOWNSHIP

DISTRICT OF SUDBURY, ONTARIO

by

W. WALKER, F.G.A.C.

Chew-Walker Associates,
164 Nipigon Avenue
Willowdale, Ont.

January 31, 1965.

GEOLOGY

SHANNON MINERALS LIMITED

CHESTER TOWNSHIP, DISTRICT OF SUDBURY, ONTARIO

by

W. WALKER, F.G.A.C.

SUMMARY

Your Company is to acquire 10 claims totalling about 500 acres in the northwest part of Chester Township. The four claims that are patented are to be acquired from Young-Shannon Gold Mines Limited.

In his report to the Ontario Department of Mines, H.C. Laird wrote (p. 34): "The (Three Duck Lakes) area as a whole possesses certain geological conditions that have long been known to be associated with the great gold belts of Ontario & Quebec. They consist of a long belt of structurally disturbed Timiskaming sediments (the Ridout series), which are deeply infolded in Keewatin greenstones with which are associated granite and porphyry intrusives of Algoman age. The widespread occurrence of gold in Chester and Yeo Townships under these very favourable conditions at once marks this field as one deserving of most careful exploration".

Your property straddles the contact between Timiskaming sediments and younger Algoman granite.

The gold occurs in veins which outcrop in at least six places on the property and are commonly associated with quartz, frequently with pyrite and some chalcopyrite. A 19,740 lbs. bulk sample shipment from the most developed vein returned gold 3.40 oz/ton, silver 3.40 oz/ton and copper 4.68 per cent. On the same

belt, for comparison, 12 miles to the west Jerome Gold Mines Ltd. produced $2,145,661.00 of gold from 335,060 tons of ore for an average of $6.55 per ton, equivalent to 0.187 ozs. gold per ton, and the average recovery of gold per ton of ore milled in Ontario in December 1964 was $10.27.

Although the terrain indicates a relatively thin cover of overburden, outcrops visible to the prospector are rare, away from the shoreline. More than 90% of the bedrock has yet to be observed, and the form of the lakes indicates faulting, including the type in which mineralisation has been found.

Several sets of faults can be seen on large scale aerial photographs. Some coincide with known veins and so give evidence of the need for a broad exploration programme aimed at increasing the tonnage of ore grade material.

The recommended programme is therefore one of exploration, to be followed by development of veins now known together with those newly found.

In Phase 1, rehabilitation of the road and bridges and camp set-up costs are estimated at $1,500.00. Line cutting, base map and an electromagnetic survey are estimated to cost $3,480.00 for a phase 1 total of $4,580.00.

In phase 2, a total of $6,650.00 may be allowed, $2,000. for local access, $2,500 for stripping, trenching and assaying, $400 for topographic mapping and $1,750 for geological mapping; and $15,000.00 is a reasonable allowance for phase 3, 2,500' of exploratory drilling at $6.00 per foot.

It is recommended that the sum of $4,580.00 be made available to undertake Phase 1.

Eventually, monies of the order of $25,000 may be

required to take the programme to the end of the exploratory drilling phase.

Present knowledge of the property indicates that the directors should foresee sizeable but as yet unknown additional expenditures for development drilling and underground development.

INTRODUCTION

The Three Duck Lakes gold-copper area is undergoing a revival of activity. Prior to the war, Young-Shannon's interest moved from Clam Lake to Three Duck Lakes one mile east, and then to what was to become the Lake Dufault property. In each case, attention appears prematurely to have been drawn elsewhere, whereas corporate records demonstrate that exploration and development were merited. Later, under wartime conditions, labour for development was not forthcoming. After the war, the Company considered it best to wait for the completion of the highway from Westree to Gogama.

The present revival is under the aegis of Mr. B.M. Young, the son of the previous president of Young-Shannon, the late Cyril T. Young. The now commonplace availability of photogeology and geophysics to aid exploration through overburden, and the presence of the highway, make the present time appropriate for a continuation of work. Several neighbouring property owners are also commencing work in a concerted effort to bring potential mines to production.

PURPOSE OF STUDY

The purpose of the present report is to make recommendations as to work requirements for exploration, and to review previous work, in order that greater lengths of gold-bearing veins may be opened up. The chalcopyrite makes copper of more than passing interest.

THE PROPERTY

Ten mining claims in Chester Township, Sudbury Mining Division comprise the property as follows:

Patented	(4)	S.6995, S.6996, S.6997, S.19995.
Unpatented	(6)	S.120300 to S.120303 S.125066 and S.127455

LOCATION AND ACCESS

Clam Lake in Chester Township lies 86 air miles northwest of Sudbury and 70 air miles south-southwest of Timmins. By road, it lies 75 miles west of Gowganda, via highway 560, on the Mining Access Road to Gogama at mileage 25 at the narrows of Mesomikenda (Beaver) Lake, then 4 miles to the property by a road, requiring rehabilitation, improved and extended by the Ontario Department of Northern Development in 1931. Gogama station on the C.N.R. is 15 miles to the northeast.

ECONOMIC FACILITIES

This area lies at the hub of the Timmins, Kirkland Lake, Cobalt, Sudbury, and Elliott Lake mining towns, all within 100 miles, and no difficulty is foreseen in drawing on skilled labour. There is ample water for all purposes on the property. The hydro right of way (to the Jerome mine), crosses the property. It joins the power line at the highway, four miles to the east. Some stands of red and white pine remain on the property in addition to the usual spruce, pine, balsam, birch and poplar, with cedar and alder in the swamps. The building remaining on the property needs maintenance.

PREVIOUS WORK

The earliest published data on the area appears to be that of H.M. Bannerman in G.S.C. Summary Report 1929 part C. The

standard reference is the "Geology of the Three Duck Lakes Area" by H. C. Laird, in part 3 of the 41st Annual Report of the Ontario Department of Mines, 1932. Laird later extended his work eastward, and in his report on the Makwa-Churchill area (Ontario Department of Mines vol. 43, part 3, 1934, p. 73 et seq) made further notes on the Three Duck Lakes area. Notes on the Young-Shannon property also appeared in part 1, the statistical section of O.D.M. annual reports 44, 45, 46 and 47 for 1934 to 1937.

The Timiskaming-Keewatin belt within which the area falls appears on Geological Survey of Canada Map 155A, Lake Huron Sheet; G.S.C. Map 1063A, Sudbury Sheet; and O.D.M. Map 1933A, Kamiskotia-Ridout area, and O.D.M. Map 2046 Timmins-Kirkland Lake sheet.

There are several unpublished reports and maps in the company files of Young-Shannon Gold Mines Limited. Those of particular interest are:

1. A prospectus of the Chester-Shannon Syndicate dated March 5, 1931.
2. Copies of a map drawn by P.E. Hopkins, June 13, 1932, showing drill hole localities.
3. Undated unsigned map of the point and adjacent areas showing drill hole localities.
4. Copy of intersections of a later phase of "drilling, done by Archie Burton for Clam Lake Gold Mines", undated.
5. Sketch map of proposed diamond drilling, Clam Lake Gold Mines.
6. Report on the Chester Twp. properties of Young-Shannon G.M.L. by E.J. Gauvreau, Dec. 1960.
7. Copies of clippings from the Northern Miner library on Young-Shannon Gold Mines Ltd. and Clam Lake Gold Mines Ltd.

HISTORY OF THE PROPERTY

Laird (1932, P.31) notes "The holdings of the Chester Shannon Syndicate consist of 15 claims situated in the vicinity of Clam Lake near the western boundary of Chester Township. The claims were staked in 1927 by J.A. Shannon"...

On January 7th, 1932, the Northern Miner reported shipments of 400 lb. samples to the Ontario Refinery and to the Mines Branch at Ottawa, and "another lot" to Niagara Falls, New York. Also, that "a shaft has now been started by hand steel". This work was apparently done under an option held by Mr. Young (N.M. Feb. 4, 1932).

"In January, 1932, the Young-Shannon Gold Mines Limited, was incorporated for the purpose of developing the Chester-Shannon option, together with 8 adjoining claims held by C.T. Young." (Laird 1932, p. 32).

A copy of a map by P.E. Hopkins dated April 14th, 1932, shows the first five holes, and his map of June 13th, 1932 shows all eleven that were completed during this phase. The May 5, 1932 Northern Miner notes that Percy Hopkins was president of the company at this time. The assay sheet for the ten ton bulk sample is dated 5/12/32.

The Dec. 7th, 1933 Northern Miner notes "The Chester Shannon property on which the Young-Shannon company had an option over a year ago and in which property the latter still has an interest". Mr. C.T. Young was then president of Young-Shannon. In 1933, Laird noted (1934, P.77) work on the property was resumed under the direction of J.A. Shannon and M.S. Beal, and the west shore discovery made. In 1934, (p.76), Laird noted sufficient work had been completed to bring to patent the 14 claims held by the

Chester Shannon Syndicate, and that Young-Shannon then held a 15% interest.

Clam Lake Gold Mines was incorporated on the 14th Nov. 1938, and in 1939 the Northern Miner noted: - "The property consists of ten claims and was acquired from Chester Shannon Gold Syndicate. An option on the group was held in 1932 by Young-Shannon Gold Mines and is reported to have been dropped because of the inconclusiveness of the drilling, partly because the time limit prevented following the vein out into the lake by drilling from the lake, and the terms of the option called for substantial cash payments and expenditures. Also, the price of gold had not been increased at that time." H.O. Symmes was president, J.A. Shannon a director, and T. Gledhill consulting geologist.

The March 2nd, 1939, Northern Miner noted the drilling which company records show was done by Archie Burton at the point and on the west side of the lake. There is no further record of the company until Nov. 24, 1960, when, the Northern Miner notes, Clam Lake G.M.L. lost its charter for default in filing annual returns. In a letter to shareholders of Young-Shannon, dated Dec.28, 1945, however, Mr. C.T. Young wrote "we now own outright the further optioned properties and have so consolidated our holdings between the two shafts."

It is concluded, therefore, that in 1932 unsatisfactory option arrangements, and in 1939 war conditions hindered development of known veins.

The Chester-Shannon group forms the core of the present property. In the southeast, however, the north part of the former C. Cote group is taken in. Laird (1932, P.33) refers to a $132.80 chip sample (at $20. per oz. or $232.40 at $35/oz gold) on claim

S.10375 now S.120304. By 1934 (Laird 1924, P.79) M.S. Beal had taken over the group, and a 25' quartz sulphide vein with visible gold had been discovered near the west line of S.14598 (now S.120302) a few chains north of Clam creek.

GENERAL GEOLOGY

Chester Township lies on one of the east-west trending, Early Precambrian sedimentary-volcanic belts common to the Lake Superior province. In the West the belt is terminated by the Grenville rifts marked by the Chapleau-Kapuskasing gravity high and clearly evident on the GSC/ODM aeromagnetic sheets. In the east, it is overlaid by Late Precambrian formations. Algoman batholithic granite flanks the belt to the north and south.

Dips in the sediments and pillows in the volcanics indicate that the belt is synclinal, (Laird P.22). The Timiskaming sediments form the core and Keewatin volcanics the flanks (see G.S.C. Map 1063A). Laird writes (P.7): "Toward the central part of the area the three older belts of rock are cut off in part by an extensive batholithic intrusion of granite, which occupies the greater part of Benneweiss and a large part of central Chester, and juts into central Yeo as far west as Ash lake. This granite is thought to be a late phase of the Algoman intrusion and largely responsible for the important mineralisation in this area. Caught up in this intrusive are small areas of diorite and quartz diorite, which are pre-Algoman but post-Timiskaming in age. Diabase dikes of the Matachewan period have intruded all the older rocks in greater profusion than has been observed by (Laird) in any other locality. The latest phase of igneous activity was that of the Keweenawan period". G.A.C. - O.D.M. aeromagnetic sheets are not yet available

for the area east of 82°00', which includes Chester Twp., but, to the west, sheets 2260G and 2261G show many NE & NW Keweenawan diabase dykes and parallel faults.

LITHOLOGY

On the property, Laird's map (41d) shows that Timiskaming sub-vertical sediments occupy the north part of the north claims. Laird noted (P.14) "small lenses of conglomerate were seen on the Chester Shannon claims between the South arm of Bagsverd lake and Little Clam lake. The rock is massive and presents a characteristic rough weathered surface. At first glance, the pebbles can hardly be discerned from the enclosing rock, but on close examination, especially on freshly broken or exfoliated surfaces, granitic pebbles up to about 4 inches in diameter are seen. The matrix is dark-grey to black in colour on fresh surfaces and reddish brown on the weathered surface, due to the presence of limonitic materials, which were formed by the alteration of certain ferromagnesian minerals. The matrix represents a strongly recrystallised greywacke, which is now composed chiefly of quartz, feldspar, and hornblende. In some cases, this process has gone far in obliterating the outlines of the pebbles and in rendering the rock more homogeneous than before. The rock on which the Shannon camp stands is of this nature."

"Argillite conglomerate was noted in the argillites exposed on the south shore of the south arm of Bagsverd Lake" just north of the northeast claim; and sericite schist outcrops to the east of South arm.

Younger granite occupies most of the southern three-quarters of the property." It is well exposed at the north end of Clam Lake (op.cit.,P.20) In most cases, the rock is almost white on

on the weathered surface, and yellowish-grey on the fresh surfaces. The texture varies from granulose to porphyritic. In some places it bears a resemblance to a highly metamorphosed arkose, while in others it has the appearance of a quartz porphyry phase of the granite. For this reason some difficulty was experienced in the field in trying to decide whether this rock was of sedimentary or igneous origin. Even under the microscope this distinction is not always clear on account of the crushed and highly altered nature of the constituent minerals. The wide resorption area in certain quartz fragments, however, is one feature that strongly suggests an igneous origin. Some thin sections show little other than quartz and orthoclase, the latter of which is highly altered to sericite. In addition to these minerals other sections show minor quantities of plagioclase, hornblende, chlorite, ilmenite, leucoxene, and pyrite. In general, therefore, it may be said that this rock borders on a type of granite known as alaskite.

Field observations seem to indicate that the granodiorite, granite, and alaskite are contemporaneous, and that they represent differentiation phases of the same granite magma. Furthermore, it is the opinion (of Laird) that a suite of specimens carefully selected at intervals between the south end and north end of Three Duck lakes would show a gradual transition from the basic to the acid type, that is, through diorite, granodiorite, biotite granite, to alaskite.

Everywhere the granite types are characterized by a great excess of blue quartz in the form of blobs.

A couple of remnants of highly altered Keewatin basalt are known (op.cit.P.10) one on the eastern boundary, one on the southern.

"The end of the Algoman was marked by the intrusion of both acid and basic dikes. Two kinds of acid dikes were noted, namely reddish quartz syenite and grey felsite. Among the basic dikes, trap (diabase) and lamprophyre are most common. The former is a very dark, fine-grained rock about the composition of a basalt; the latter is a black, coarse textured shiny rock, rich in biotite and hornblende, the presence of which allows it to be called more precisely a hornblende minette. The dikes seem to be confined largely to the 'younger' granite area."

Four Matachewan diabase dykes are known to trend NNW in or at the borders of the northeastern claims.

Glaciation on the property appears to have been largely erosional rather than depositional, and overburden in most places is relatively light.

STRUCTURE

Laird notes the regional NNW fault lines "now represented by the linear basins of Minisinakwa lake, Mesomikenda lake, and Moore lake and Chester lake", (P.23 1932), and that in each case "the beds on the east shore have moved northward relative to the beds on the opposite shore".

These faults were probably initiated by the same Early Precambrian N-S pressures as the folds, and at that time could have right hand movement on them, i.e., east side south. (see also the plan on P.12 of O.D.M. vol. 43, Part 3). In Grenville times they would be utilised again, but this time, under NW-SE pressures, they would have left hand movement, and this east side north movement must have been greater than the earlier one. The parallel Lake Timiskaming fault is known to have moved Lower Paleozoic rocks also.

Within the Three Duck Lakes granite area, the line of the lakes and of the Mollie River between Clam and Three Duck indicate important parallel (NNW) faulting. The Mollie River system trends across the eastern claims of the property.

Other fractures, though abundant, largely belong to two sets, NW and ENE. The important known veins are in the NW set. These would be initiated as 2nd order right hand wrenches in the Early Precambrian and utilised as tension fractures in the Granvillean orogeny.

ECONOMIC GEOLOGY

Laird's remarks on the region are again pertinent. On page 23 of his Three Duck Lakes report he wrote: "Gold is the most important mineral in the area; in some places it is accompanied by appreciable quantities of copper. There are no other minerals of economic importance". However, 26 years later, Department of Mines Assay Certificate B2585 dated May 30th, 1958 reads:

Sample				Silver Oz. Per Ton	Copper	Nickel
	Clam	Lake	No. 1	Trace	Trace	2.96%
	"	"	2	Trace	Trace	2.98%
	"	"	3	2.20	14.78%	Trace

The precise origin and type of sample are undocumented.

Laird continues (P.24): "The main showings of gold occur within the area mapped as younger granite and close to the contact with the Ridout sediments. From this association it seems obvious that the gold is genetically associated with the more acid phases of this intrusive, the nature of which has been noted in a previous section. The gold occurs in narrow quartz veins occupying well-defined fractures or 'breaks' in the intrusive rock, or in quartz veins along the contact between the acid intrusive and a basic dike, commonly lamprophyre. The majority of the fractures strike in a

direction a few degrees south of east, and, in general, they show a regional parallelism. Although the fractures for the most part seem to be rather persistent in length, the vein material occupying them in any one place pinches out after having been traced for a short distance. This condition is not unexpected, since in fissure veins of this kind the vein material commonly occurs at intervals separated by barren stretches. Under these conditions the writer wishes to point out that work should not be abandoned because of the discontinuance of vein matter, but rather that the fracture should be followed as far as possible in the hope of locating other gold-bearing quartz lenses.

"The quartz veins, especially the very narrow ones, often show crustification and comb structure, and vugs with quartz comb structure are common .....

"Although gold commonly accompanies pyrite and chalcopyrite, it occurs in the native state and is seldom found in intimate association with these sulphides. Other minerals observed in the veins are as follows: sphalerite, galena, bornite, covellite, malachite, azurite, molybdenite and its yellow oxide molybdite, and tetradymite (bismuth telluride) (i.e. the ore minerals of zinc, lead, copper, molybdenum and bismuth). Closely associated with tetradymite on the property, Bannerman found a black mineral with a bluish-brown tarnish, which he believed to be a mixture of two or more tellurides (gold, silver, mercury) (G.S.C. Sum. Rept. 1929 Part C. P. 18). In addition to the quartz and silicate minerals already noted, the ordinary gangue minerals consist of calcite, ankerite, and sericite.

"An important feature of the veins here is the fact that both gold and sulphides commonly penetrate the wall rock for several

feet. Some samples have yielded as high as 1 oz. gold per ton (P.33.) The gold is in too fine a state of subdivision to be seen, but its presence has been determined by assays. The ore minerals were introduced into the wall rock by a replacement process associated with hot ascending ore solutions in the fractures. In addition to alteration by replacement, the wall rock in some places was extensively silicified; in other places sericitization was the dominant type of alteration.

"A noteworthy feature of several showings in this area is the close association of gold-bearing quartz veins with lamprophyre dikes. This fact at once leads to the presumption that the latter played not only an important chemical role in the precipitation of the gold, but also provided a suitable structure for the localisation of the deposit.

"That the veins belong to the deep-seated type and were formed under conditions of high temperature and high pressure is indicated by the presence of tourmaline, by the granular character of the quartz, and by the irregular, lenticular, and vuggy nature of some of the veins ...

"Rusty weathering quartz-ankerite veins carrying small quantities of pyrite occur in the Ridout series (sediments) but they seldom give any values in gold."

Under "Description of properties" in his 1932 report Laird noted "groups of claims on which development work was performed during the summer of 1931". The Chester Shannon Syndicate holdings covered roughly the same ground as the present property.

On page 31 et seq. Laird wrote: "The claims were staked in 1927 by J.A. Shannon, but (prior to 1931) very little develop-

ment work (was) done owing to certain restrictions that prohibited assessment work in this area. With the lifting of these restrictions in the spring of 1931, plans were made to test thoroughly a promising gold-copper showing exposed on a rocky point at the northeast corner of Clam Lake, on claim S.8995. During the summer the property was optioned by C.T. Young, of Toronto, and the results obtained from preliminary open-cut work are reported to be of such a nature as to encourage larger-scale operations. In January 1932, the Young-Shannon Gold Mines, Limited, was incorporated for the purpose of developing the Chester Shannon option together with 6 adjoining claims held by C.T. Young. The north claims of the group are underlain by greywacke, conglomerate, and argillite, the south claims, which lie within the 'younger' granite area show outcrops of diorite, pink to grey granite, and a quartz porphyry phase of this granite, which is similar in many respects to ... the alaskite phase already noted .... This rock is of considerable importance, since the mineralisation at the main showing on claim S.8995 is associated with this type.

"H.M. Bannerman (op.cit.P.17) describes this rock as follows:- 'The rock ... is a granulose, even-textured type, composed largely of quartz and light-coloured feldspar, with a little mica and chlorite. The fresh surface has a drab grey colour, and it weathers to a dusty brown or buff ... In part it looks like a sheared quartz porphyry, but in part it displays many of the characteristics of a highly metamorphosed arkose ...

"' In thin section, the rock is found to consist of over 40 per cent quartz, much of which is so crushed as to present a granulose texture between crossed nicols, and it is commonly found

to be surrounded by a mashwork of sericite and chlorite. The feldspars, which originally comprised more than 50 per cent of the rock, are apparently largely of the potash species, but they have been so altered by sericitization as to make positive identification difficult. Many of them are broken, and some are irregular in form".

"The main showing occurs on the south side of a narrow peninsula near the outlet of Clam Lake. Stripping has exposed for more than 200 feet a well-defined shear zone in the type of rock described in the previous paragraph. It lies parallel to the lake shore, striking E30°S. and dipping 45° to 60°N. Sulphides consisting chiefly of pyrite and chalcopyrite occur along this zone in quantities sufficient to produce a notable gossan. These minerals are not confined to the fractures alone, but are widely disseminated as a replacement deposit. Toward the east end of the outcrop a less prominent shear zone striking E58°S converges with the main one. At this point there is a considerable concentration of sulphides occurring over a width of 24 feet. Within this width one 9 foot channelled section is reported to have yielded $2.80 in gold per ton (at the pre-1935 price of $20.00 per oz. - $4.90 at $35.00) and 5.32 per cent copper; ($37.24 at 35¢/lb) a 46 inch channelled section yielded $22.40 (- $39.20 at $35.00) per ton. In the main shear zone toward the western end of the outcrop there is a 14 inch quartz vein which is exposed for about 30 feet before it disappears into the lake. Near the lake it is cut and offset by a 1 foot irregularly north-south trending diabase dyke. The vein matter scatters 25 feet east of this dike and disappears. The quartz carries visible gold, telluride (tetradymite), pyrite, chalcopyrite, azurite, malachite, bornite, covellite. Assays were made of two chip samples taken by the writer. The first sample

gave: gold, $36.60 ($64.05 at $35.00) per ton; copper, 12.85 per cent. The second sample assayed: gold, $70.60 ($123.55 at $35.00) per ton; silver, 1.97 ounces per ton; copper 4.68 per cent. The wall rock contains gold values; some samples having yielded as high as 1 oz. gold per ton ($35.00).

"A picket line across the ice has located on the west shore of Clam Lake what (is) thought to be the westward extension of the quarts vein. A few feet to the northwest of this point, another rusty shear zone parallel to that on the east shore has been stripped for several feet. What may be the eastward extension of the main shear zone on the peninsula has been located 20 claims along strike in the southwest corner of claim S.9221 (now S.120302). A test pit shows disseminated sulphides, chiefly pyrite and chalcopyrite, over a width of 7 feet. No native gold was observed but high gold values are said to have been obtained here". There are now two pits (and a remarkable absence of waste piles) about 20 feet from the road.

In his 1931 report, (P. 77) Laird noted: "Late in 1931 the main showing ..... on the point .... was diamond drilled, holes being put down to intersect the vein at various horizons down to 500 feet. The deepest hole showed continuity of vein width and gold values, but on the whole the results are said to have been inconclusive." A copy of a plan of drill holes drawn by P.E. Hopkins June 13th, 1932 is in the Young-Shannon files. No other drill hole data are known to exist. "The best ones were: No. 2 $24.80 over 9½ ins., $59.80 over 10 ins.; No. 3, $17.30 over 15 ins.; No. 5, $153. over 5½ ins., No. 7, $10.00 over seven inches; No. 8, $12.60 over seven inches plus several sections of lower grade; No. 10, $7.00 over 15 ins.; No. 11, $7.70 over 19 ins." (Northern Miner, March 26/39).

In the same review, Mr. H.O. Symmes gave his recommendation that a prospect shaft be sunk on the point vein, to a depth of 125 ft. It is interesting to note that under Mr. C.T. Young's direction a shaft was started late in 1931 (Northern Miner, Jan. 7, 1932). One may presume that sinking was suspended because of the burdensome financial agreement with the Chester-Shannon Syndicate at that time. (Beavers have altered the lake level since that time, and it is now up about 5 feet.)

"In 1933 work on the property was resumed, and a programme of surface exploration was energetically carried on under the direction of J.A. Shannon and M.S. Beal. A most unusual occurrence of gold was discovered on the west shore of Clam Lake, almost directly opposite the showing on the east show that created so much interest in 1931. The showing consists of irregular quartz lenses in a strongly sheared zone ranging in width from 6 to 10 feet, striking S78°E, and dipping 54°N. It occurs at the contact of quartz porphyry and a fine-grained micaceous schist or lamprophyre. The break has been exposed for a length of 440 feet, and 5 deep test pits have been sunk at intervals along the strike. The mineralization is heavy and consists of an intimate growth of siderite or ankerite, quartz, books of biotite, pyrite, chalcopyrite, and visible gold. In places the siderite is very massive, and books of biotite an inch in diameter are commonly observed. In some instances the gold is intimately associated with the biotite. The biotite, which occurs in rather unusually large volume, is a product of wall-rock alteration and owes its presence to the reaction of mineralising solutions on a type of country rock high in ferromagnesian minerals, which in this case is lamprophyre or hornblende-mica schist".

On P. 79 of his 1934 report, Laird notes "M.S. Beal: The M.S. Beal group of claims, formerly known as the Cote property, consists of 6 claims lying between Clam Lake & Cote Lake. A small quartz lens, striking at S80°W and dipping 40°W, has been uncovered near the west line of S.14598 (now S.512302) a few claims north of Clam creek. The lens, which occurs in a well-defined fracture in the granodiorite, ranges from 6 to 12 inches in width and has been traced for 25 feet. The quartz is heavily mineralised with pyrite and chalcopyrite and contains visible gold."

Two reports of the Ore Dressing and Metallurgical Laboratories are on company files. The first, by Alex K. Anderson is dated December 17th, 1931. The shipment, gross weight 400 lbs. "was said to come from a property in Chester Township" when the only work in process was on this peninsula in Clam Lake. The shipment contained "0.21 oz. gold, 4.12 oz. silver per ton, 3.82% copper and 0.05% arsenic". "The investigation included tests by amalgamation, followed by flotation concentration and cyanidation of the flotation tailing." "The tests show that 66 to 79% of the gold can be recovered by amalgamation and an additional saving made by flotation to bring the overall recovery of gold up to 96 to 99%.

"Cyanidation of the ore should be avoided as the copper acts as a strong cyanicide.

"96 to 98% of the copper can be recovered in a rougher concentrate containing 14% copper, 9 oz. gold and 7 oz. silver per ton with a ratio of concentration of approximately 4:1. A still higher grade of concentrate could be obtained by clearing this product, resulting in a cleaner tailing which would require further treatment.

"The process recommended for this class of ore is amalgamation followed by flotation. The gold recovered from the amalgam would be shipped as bullion and the copper concentrate shipped to a smelter.

"As a safeguard and indicator of recoveries, the tailing from flotation should be passed over concentrating tables to recover any coarse gold not caught in preceding circuits."

According to Laird (1934, P.79) the discovery at Shannon Island on the property to the south was made in October 1933. Ontario Refinery Co. Ltd. refiner weight statements dated December 22nd, 1931 and March 1st, 1932 appear, therefore, to refer to this peninsula in the north of Clam Lake. The first was a 400 lb. shipment which assayed 4.18% copper, 3.00 oz. silver and 5.20 ozs. gold. The second was a 19,813 wet shipment (the 10 ton surface shipment on the accompanying copy of P.E. Hopkins map), which assayed 4.68% copper, 3.40 oz. silver, and 3.40 ozs. gold.

CONCLUSIONS AND RECOMMENDATIONS

The prime requirement of the property is to extend the amount of ore grade material. Of the six mineralised localities only one vein on the property (if one includes the extensions to east and west) has been worked on to any extent. Others are to be expected in the overburden-covered 90% plus of the ground. The aerial photographs indicate, among other structural controls of ore deposition, a strong set of fractures parallel (ESE) to the known vein.

Exploration for new veins is warranted and recommended. An east-west base line should be cut, and lines turned at 200 ft. intervals. On them an electromagnetic survey should be conducted

at 100 ft. stations with checks at 50 ft. stations. A magnetometer test survey is to be conducted on the adjacent property to the east to see how known lamprophyre dykes and lenses of volcanics show up. Recommendations for a magnetometer survey on the present property will depend on the results of the test.

The geophysical data and photogeology should then be correlated on the topographic base map and requirements for stripping pitting, and trenching made known. Some 10,000 ft. of ESE fracturing is evident on the photographs, and an allowance of 10% of this to be opened up is not unreasonable. At this time, and prior to any destruction of the surface weathering features of the veins by blasting, etc. the property should be surveyed geologically.

Drilling requirements on both newly found veins and the known veins may be best visualized at this time.

COSTS

Phase 1

a)	Road construction	$1,000.00	
	Camp	500.00	$ 1,500.00
b)	Line cutting: allow 22 miles @ $65.00	$1,430.00	
	E.M. Survey 100 ft. stations 50' checks and interpretation @ $75. per mile	1,650.00	3,080.00
	Total		$ 4,580.00

Phase 2

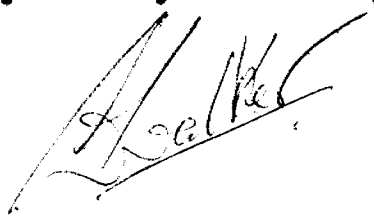
a)	Local access allow	$2,000.00	
b)	Stripping & trenching, 1,000 ft. @ $2.50 per foot	2,500.00	
c)	Topographic base map	400.00	
d)	Geological mapping, report	1,750.00	6,650.00

Phase 3

Diamond drilling ... cost to be estimated on the completion of Phase 2. Sizeable expenditures in the order of $15,000. may be anticipated.

It is recommended that initially the sum of $4,580.00 be made available, with further expenditures anticipated as indicated.

Respectfully submitted,



W. Walker, F.G.A.C.

CERTIFICATE

I, Wilfred Walker, of Willowdale, in the Province of Ontario, hereby certify:

1. That I am a geologist with offices at 164 Nipigon Ave. Willowdale, Ontario.

2. That I graduated from the University of Durham, England, (Department of Geology), with the degree of B.Sc. in 1950 and have practised as a geologist continuously since that time.

3. That I am a Fellow of the Geological Association of Canada, the Royal Geological Society of Cornwall, the Geological Societies of London, Yorkshire, and South Africa, and the Canadian Institute of Mining and Metallurgy (Toronto Branch).

4. That I have not, nor do I expect to receive any direct or indirect interest whatsoever in the Mining Properties or Securities of the proposed Shannon Minerals Limited.

5. That the accompanying report is based on traverses of this and adjacent properties on October 20th to 23rd, 1964, on a study of published and unpublished data, specified in the body of the report, and on a study of aerial photographs of the property.

Dated at Toronto this 31st day of January, 1965.

W. Walker
Fellow of the
Geological Association of Canada

PRELIMINARY REPORT

ON

GEOLOGICAL FIELD WORK

GOGAMA GOLD MINES LIMITED

CHESTER TWP. SUDBURY MINING DIVISION

by

W. WALKER, F.G.A.C.

Chew-Walker Associates
164 Nipigon Avenue,
Willowdale, Ontario.

21st. December, 1965

PRELIMINARY REPORT ON GEOLOGICAL FIELD WORK

GOGAMA GOLD MINES LTD. CHESTER TWP, ONTARIO

by

W. WALKER, F.G.A.C.

INTRODUCTION

Gogama Gold Mines Ltd., a proposed new company, is to acquire 16 claims, totalling about 800 acres in the northwest part of Chester Township, numbered as follows:

Patented (10)	S.19966, S.19970, S.19971, S.19972, S.19976, S.19999, S.20001, S.20094, S.20095, S.20096
Unpatented (6)	S.120299, S.125071, S.127451, S.127452, S.127453, S.127454.

The purpose of this report and accompanying map is to record the observations made during field mapping in October and November. The greater amount of data were recorded in my report of January 31st., 1965, and will not be repeated here; these include location and access, economic facilities, previous work, history of the property, general and economic geology as then considered, and conclusions and recommendations as to further work.

The geological field work is part of a programme of regional appraisal of this and adjacent properties

which is to include magnetic and electromagnetic surveys and topographic mapping. To date only the e.m. survey is complete. Assessment of these various data will be deferred until completion of the phase. The present work is regarded as fact gathering.

In the course of mapping, the writer traversed all lines in the land part of the property. Larger swamp areas were omitted.

GENERAL GEOLOGY

Outcrop is scattered throughout the property, so indicating for the most part shallow overburden. There is no pattern to outcrop distribution on the shoreline in contrast with higher ground, for example, other than that it is more abundant in the Temiskaming sediments in the northwest of the property, near Bagsverd Lake.

The sediments are well-bedded siltstones and argillites, trending east-northeast and more or less vertical. In one outcrop the small folds of wavy bedding have south dipping plunges and westward dips.

Most of the rocks are acid, and medium grained granodiorites, averaging 1 mm grain size prevail (and so may be regarded as microgranites). In the west and northwest of the property the fine grained chemical equivalents, dacite and dacite quartz porphyry are common. In most places they are massive, but some flows are mapped. Andesite was observed in several

parts of the property.

The fine-grain of the rocks indicate near-surface intrusion or extrusion; both phenomena are likely to have occurred, and even with the help of the magnetic data it may prove difficult to differentiate between Keewatin volcanics and the Algoman (?) intrusive.

Fracture measurements were taken at most localities observed but have yet to be analysed.

ECONOMIC GEOLOGY

The prospects known from earlier records were located. Pits and trenches are to be examined in more detail in the next phase or work.

Respectfully submitted,

CHEW-WALKER ASSOCIATES

WW:S

W. WALKER, F.G.A.C.

GEOLOGY

GOGAMA GOLD MINES LIMITED (Proposed New Company)

THREE DUCK LAKE

CHESTER TOWNSHIP, SUDBURY MINING DIVISION,

ONTARIO

by

W. WALKER, F.G.A.C.

Chew-Walker Associates
164 Nipigon Avenue
Willowdale, Ontario

January 31st, 1965

GEOLOGY

GOGAMA GOLD MINES LIMITED

THREE DUCK LAKE

CHESTER TOWNSHIP, SUDBURY MINING DIVISION,

ONTARIO

BY

W. WALKER, F.G.A.C.

SUMMARY

Your Company is to acquire 16 claims totalling about 800 acres, in the northwest part of Chester Township. The 10 claims that are patented are to be acquired from Young Shannon Gold Mines Limited.

In his report to the Ontario Department of Mines, H. C. Laird wrote (P. 34): "The (Three Duck Lakes) area as a whole possesses certain geological conditionsthat have long been known to be associated with the great gold belts of Ontario and Quebec. They consist of a long belt of structurally disturbed Timiskaming sediments (the Ridout series), which are deeply infolded in Keewatin greenstones with which are associated granite and porphyry intrusives of Algoman age. The widespread occurrence of gold in Chester and Yeo Townships under these very favourable conditions at once marks this field as one deserving of most careful exploration."

Your property lies on the south limb of the Early Precambrian regional syncline that extends from the Ivanhoe River near Chapleau to Shining Tree, about 100 miles. Hereabouts, in the best-defined, narrow part of the syncline, it has been intruded by Younger Algoman granite, which underlies most of the property.

Gold veins have been found on the property in fractures and associated with Keewatin roof pendants and dykes. At least eleven mineralized veins are now known on the property. Of these, the most work has been done on Vein No. 20, where a shaft was sunk and the vein system drifted on at two levels, 100 ft. and 200 ft. 160 ft. of drifting was done on the first level and 200 ft. on the second.

"Surface sampling outlined a gold shoot averaging $16.20 per ton across 31 inches for a length of 250 ft. First level sampling of this shoot gave $14.25 per ton across 36 inches for a length of 70 ft. Two shoots were developed on the 2nd level. The downward extension of the No. 1 zone yielded an average of $16.06 per ton across 24 inches for a length of 40 ft. The second ore shoot in the west drift is 27 inches wide by 30 ft. long with an average of $20.00 per ton". (E.J. Gauvreau, 1960). For comparison, the average recovery of gold per ton of ore milled in Ontario in September, 1964 was $10.22.

The veins uncovered previously, were first noted where rock outcrops. More than 90% of the property is covered by overburden or water; extensions of known veins and new, gold-carrying sulphide veins can best be located by electro-magnetic methods. It is recommended that this masked, near surface potential of the property, be appraised prior to further depth investigations. The recommended program is therefore one of thorough exploration, to be followed by development. An E.M. survey of the entire property is recommended. On Claim S.19,971, vein No. 20 is associated with a lamprophyre dyke and a greenstone-granite contact. It is proposed to survey this claim with a magnetometer to see whether minor rock types within the general granitic area can be located with this tool.

The reserves opened up underground are well documented: it is recommended that underground development be continued as part of the phase of development of the entire property, which will follow an extensive program of surface drilling.

Costs of housing, rehabilitating the road and bridges are estimated at $1,500. Line cutting, the Electro Magnetic survey and test magnetometer survey, are estimated to cost $5,250. The total cost of Phase I is thus estimated to be $6,750. In Phase II, $2,000 is estimated for local access, $2,000. for stripping trenching and assaying, $400 for a topographic map and $750.00 for geological mapping, making the total cost for this phase about $5,150. Exploratory drilling, Phase III, may be better estimated when Phases I and II data are available. As an approximation, the figure of $15,000.00 for 2,500 ft. may be regarded as a basis for exploratory drilling requirements.

It is recommended that the sum of $6,750. be made available to undertake Phase I. The exploration program in its three phases may therefore be expected to cost a total of about $27,500. The present knowledge of the property indicates that the directors should foresee sizeable, but as yet unknown expenditures for development, drilling and underground development.

INTRODUCTION

The Three Duck Lake gold-copper area is undergoing a revival of activity. Prior to the war, Young-Shannon's interest moved from Clam Lake to Three Duck Lake, 1 mile east, and then to what was to become the Lake Dufault property. In each case, attention appears prematurely to have been drawn elsewhere, whereas corporate records demonstrate that more exploration and development were merited. Later, under wartime conditions, labour for develop-

ment was not forthcoming. After the war the Company considered it best to wait for the completion of the highway from Westree to Gogama.

The present revival is under the aegis of Mr. B.M. Young, the son of the previous president of Young-Shannon, the late Cyril T. Young. The now commonplace availability of photogeology and geophysics to aid exploration through overburden and the presence of the highway make the present time appropriate for a continuation of work. Several neighbouring companies are also commencing work in a concerted effort to bring potential mines to production.

PURPOSE OF STUDY

The purpose of the present report is to make recommendations as to work requirements for exploration in order that greater lengths of gold bearing veins may be opened up. A review of previous work forms a major part of the study.

PROPERTY

The property comprises 16 mining claims in Chester Township, Sudbury Mining Division, as follows:

Patented (10) S.19,966; S.19,970; S.19,971; S.19,972; S.19,976; S.19,999; S.20,001; S.20,094; S.20,095; S.20,096.

Unpatented (6) S.120,299; S.125,071; S.127,451; S.127,452; S.127,453; S.127,454.

LOCATION AND ACCESS

Three Duck Lake in Chester Township lies 86 air miles northwest of Sudbury and 70 air miles south-southwest of Timmins. By road, it lies 75 miles west of Gowganda, via highway 560 on the mining access road to Gogama at mileage 25 at the narrows of Mesomikenda (Beaver) Lake, then 2 miles to the property by a road, requiring rehabilitation, improved and extended by the Ontario Depart-

ment of Northern Development in 1931. Gogama station on the C.N.R. is 15 miles to the northeast.

ECONOMIC FACILITIES'

The area lies at the hub of the Timmins, Kirkland Lake, Cobalt, Sudbury and Elliott Lake mining towns, all within 100 miles, and no difficulty is foreseen in drawing on skilled labour. There is ample water for all purposes on the property. The hydro right of way to the Jerome Mine crosses the property, to join the power line at the highway, 2 miles to the east. Some stands of virgin bush, including red and white pine, remain in the area, but most of the trees are spruce, balsam, pine, birch and poplar with cedar and alders in the swamp. Most of the timbers in the head frame, on the number 20 vein, appear to be sound; others require replacement.

PREVIOUS WORK

The standard reference is the "Geology of the Three Duck Lakes Area" by H.C. Laird in Part 3 of the 41st Annual Report of the Ontario Department of Mines, 1932. He up-dated his records on the Three Ducks Syndicate Property at the time of his work to the east (Makwa-Churchill, O.D.M. Vol. 43 Part 3, 1934) by a note on what by then had become the Martin Syndicate (p. 78). The statistical sections, Part 1 of O.D.M. Annual Reports 45, 46 and 47, for 1936, 1937 and 1938, also carry notes.

The Timiskaming-Keewatin belt, within which the area falls appears on Geological Survey of Canada Map 155A, Lake Huron sheet; G.S.C. Map 1063A, Sudbury Sheet; O.D.M. Map 1933A, Kamiskotia-Ridout area; and O.D.M. Map 2046, Timmins-Kirkland Lake sheet.

There are several unpublished reports and maps in the company files of Young-Shannon Gold Mines Ltd. Of particular interest are:

1. Claim Map, Three Ducks Syndicate, Scale 1" = 8 claims (showing veins)

2. Channel sampling #20 vein, scale 1" = 26 ft.

3. Diamond Drilling operations #20 vein showing DDH 9 to 14, scale 1/32" = 1 ft.

4. #20 vein, composite plan channel sampling and diamond drilling, scale 40 ft. to the inch.

5. Plan and section, DDH No. (?) 1 in. = 10 ft. Nov.11,1935.

6. "Map No. 9". Map along plane of view showing D.D. hole intersections and assays. 1 in. = 30 ft.

7. Section through D.D.H. 19 and 20, 1" = 20 ft., Nov.7,1936 J.C.M.

8. D.D.H. 24. 1' = 1/16".

9. Plan of channel sample assays, first level, 15' to the inch

10. " " " " " & DDH 2nd level, 1/8" = 1'

11. " " " " " " extended S.W., 1/8"=1'

12. Section through shaft and vein showing two proposed drill holes to 400 and 500 ft. and shaft projected to 400 ft., Jan. 28/46.

13. Assays Nov. 14/35 to Jan.21/37.

14. Diamond drill records.

15. D.D. Core logs.

16. Ore dressing and Metallurgical Report 702.

17. Memoranda on blocked out ore.

18. Report by Cyril T. Young

19. Report by A.W. Jeckell on Gomak M.L. and Young-Shannon M.L. 7 December, 1936.

20. Report by E.J. Gauvreau on Young-Shannon properties, 15 December, 1960.

HISTORY

Laird (1932 p.3) noted the history of prospecting in the area. "In 1927 (John A. Shannon) discovered native gold on the north-east shore of Clam Lake (one mile west). In 1928, there was a mild

influx of prospectors, who covered the area between Opeepeesway Lake and Minisinakwa Lake, but no discoveries were made until 1930 when Alfred Gosselin found a spectacular showing of native gold on the east shore of Three Duck Lakes; it was this discovery that led to further activity throughout the whole area". At the time of Laird's report, in 1932, the property belonged to the Three Ducks Syndicate. "In 1931, the Consolidated Mining & Smelting Company optioned the property, but after sampling two of the veins, they dropped the option". (Laird 1932 p. 29) not knowing of the existence of the #20 vein.

In 1934, Laird noted (p. 78) "Robert Martin of Sudbury maintains a majority interest in the group of claims formerly held by the Three Ducks Syndicate."

Young-Shannon suspended work at Claim Lake in February, 1935 and transferred operations one mile east to the property of the Martin Syndicate. (O.D.M. Vol. 44, p.171, p.172) under an arrangement by which the Young-Shannon Company was to equip and develop the Three Duck Lake property and to secure 80% of the income from operations (Northern Miner, Mar. 28, 1935). The arrangement appears to have been made as a result of the discovery of the #20 vein, for work is reported on it in the same announcement.

The first assay, dated March 5, 1935, was marked "Martin's sample No. 20 vein -- 16.64 oz. gold"($582.40 at $35) and has a pencilled annotation by C.T. Young: "I never got as high in my more careful sampling".

Channel samples by Mr. Young are plotted on a company map from July 1935 assay data. They show 32" average $12.42 (weighted $12.23) over 260 feet.

Assays from drilling also began to appear in July 1935 and, in the year to July 31/36, fourteen holes had been drilled. In the fall of 1935, #20 vein was developed as an open cut, and a bulk sample sent to be assayed returned 0.88 ozs. gold. Hoist, compressor, and equipment were set up and the powerhouse erected in the spring (N.M. Apr. 30, 1936) and the shaft sunk to the first level by the end of August (N.M. Sept. 10/36). Following completion of 150 ft. of drifting, a Nov. 12 report (N.M.) noted sinking proceeding to the second level, which was reported as reached in the Northern Miner of Jan. 7/37. In the February 11 issue, Mr. Young reported that the property was now owned outright.

D.D.H. No. 32, a lateral hole 105 ft. west of the station on the second level, is the last work noted in the Northern Miner (Mar. 25/37) and in the same report acquisition of Quebec holdings is noted. 30 ft. of drifting southwest of D.D.H. No. 32 appears on a map of the second level, with D.D.H. No. 33. The note by assay values and widths for this 30 ft. reads 27" x 30 ft. $20.00 ore. Other pre-war reports on the company are largely concerned with its participation in the formation of Lake Dufault Mines Ltd. "No outstanding liabilities -- and a small cash balance" were noted in 1938 (N.M. Sept. 29).

In 1944, a geophysical survey was reported (N.M. Sept. 28) but no record of it has been traced; Mr. B.M. Young has no recollection of the survey. At February 21, 1946 (N.M.) a new diamond drill programme had commenced; the August 7th N.Miner noted this was mostly for assessment purposes. In 1952, the road from Westree to Gogama was awaited and in 1957 and 1960 further work was contemplated, but not proceeded with.

GENERAL GEOLOGY

Chester Township lies on one of the east-west trending, Early Precambrian sedimentary-volcanic belts common to the Lake Superior province. In the West the belt is terminated by the Grenville rifts marked by the Chapleau-Kapuskasing gravity high and clearly evident on the G.S.C./O.D.M. aeromagnetic sheets. In the East, it is overlaid by Late Precambrian formations. Algoman batholithic granite, flanks the belt to the North and South.

Dips in the sediments and pillows in the volcanics indicate that the belt is synclinal. (Laird P.22). The Timiskaming sediments form the core and Keewatin volcanics the flanks (see G.S.C. Map 1063A). Laird write (p. 7): "Toward the central part of the area the three older belts of rock are cut off in part by an extensive batholithic intrusion of granite, which occupies the greater part of Benneweiss and a large part of central Chester, and juts into central Yeo as far west as Ash lake. This granite is thought to be a late phase of the Algoman intrusion and largely responsible for the important mineralisation in this area. Caught up in this intrusive are small areas of diorite and quartz diorite, which are pre-Algoman but post-Timiskaming in age. Diabase dikes of the Matachewan period have intruded all the older rocks in greater profusion than has been observed (by Laird) in any other locality. The latest phase of igneous activity was that of the Keweenawan period". G.S.C.-O.D.M. aeromagnetic sheets are not yet available for the area east of 82°00', which includes Chester Twp., but, to the west, sheets 2260G and 2261G show many NE & NW Keweenawan diabase dykes and parallel faults.

LITHOLOGY

The Timiskaming sediments south of Bagsverd Lake, include argillite conglomerate associated with greywacke and arkose and strike E.W. across the property.

At the narrows separating the South Arm from the main part of the Lake, they are intruded by diorite. Laird (1932 p. 18) regarded the diorite as Haileyburian (?) because elsewhere it is invaded by tongues of 'younger' granite. "The diorite is a greyish-green, highly altered rock, which, under the microscope, is seen to consist chiefly of hornblende, much altered plagioclase, chlorite, epidote, and some pyrite. In a few instances, a diabasic texture was noted. In general, the highly altered nature of this rock is sufficient to distinguish it from the fresher diorite phases of the later granite; on the other hand, it is often hard to distinguish between it and the Keewatin amphibolite".

Writing on the Three Ducks Syndicate property, which closely coincides with the present one, Laird continued (p. 29): Most of "the claims lie within the area mapped as 'younger' granite. Only on those claims adjoining the Shannon group and on the west shore of Cote lake, however, was typical pink to grey granite observed. For the most part, the claims are underlain by a light-weathering rock having the appearance of quartz porphyry in some places and resembling arkose in other places. The microscopic examination of several thin sections, however, indicates that this rock is igneous in origin and that it varies somewhat from a porphyritic to a granitic texture. Furthermore, thin sections show a preponderance of quartz and alkali feldspar, the latter of which is strongly altered to sericite. This composition would suggest a type of granite approaching alaskite. In this connection, it should be pointed out that

the presence of alaskite may be considered to be as favourable to gold deposition as quartz porphyry; indeed, the difference between them is largely a matter of texture, not composition."

Within the granitic area are several remnants of the southern volcanic belt, presumably roof pendants. The largest remnant on the property trends E-W and is followed by the No. 20 vein, and may join smaller areas west of Cote Lake and to the north across the narrows of Three Duck. For the most part, the lava of the southern belt is composed of highly altered basalt (Laird 1932, p.10).

"The end of the Algoman was marked by the intrusion of both acid and basic dykes. Two kinds of acid dykes were noted, namely reddish quartz syenite and grey felsite. Among the basic dykes, trap and lamprophyre are most common. The former is a very dark, fine-grained rock about the composition of a basalt; the latter is a black, coarse textured shiny rock, rich in biotite and hornblende, the presence of which allows it to be called more precisely a hornblende minette. The dykes seem to be confined largely to the 'younger' granite area".

Three north trending Matachewan diabase dykes outcrop in the northwestern claims.

The property was in an area where glacial erosion of the and deposition in the low land were more or less equally balanced.

STRUCTURE

Laird notes the regional NNW fault lines "now represented by the linear basins of Minisinakwa lake, Mesomikenda lake, and Moore lake and Chester Lake" (1932 p. 23) and that in each case "the beds on the east shore have moved northward relative to the beds on the opposite shore".

These faults were probably initiated by the same Early Precambrian N-S pressures as the folds, and at that time would have right hand movement on them, i.e. east side south (see also the plan on p.72 of Laird 1934). In Grenville times, they would be utilized again, but this time, under NW-SE pressures, they would have left hand movement and this east side north movement must have been the greater. The parallel Lake Timiskaming fault is known to have moved Lower Paleozoic rocks also.

Within the Three Ducks lakes granite area, the line of lakes indicates important parallel (NNW) faulting. To the west of the property, a lesser zone is followed by the Mollie River.

Other sets of fractures are not as evident on the aerial photographs as at Clam Lake, where there is less overburden. The principal one trends ENE, and, as has been indicated by C.T. Young (undated report p.5) may be considered one zone from the shaft area on Clam Lake, to the Nos. 2 and 3 veins on Cote Lake, then (strongly) via the low land between Three Duck and Mill Lakes to the Gomak Mine. Mr. Young included Vein No. 20 in this system, but to the writer, it appears more as a parallel structure, a few hundred feet to the north.

ECONOMIC GEOLOGY

"In the summer of 1930, a spectacular discovery of native gold on the east shore of Three Duck Lakes" is Laird's start to his 1932 report. On page 28, he described the Three Ducks Syndicate property, which had a similar outline to the present property, as follows:

"The original discovery, known as No. 1 vein, occurs on claim S.20,095 on the shore of the lake a few chains north of the camp. The vein is a lenticular body following an east-west fracture

zone and exposed by stripping for a distance of about 100 feet. The lens consists of mineralized quartz and highly altered country rock, in which sulphide replacement has been extensive. The quartz carries spectacular quantities of visible gold. No gold was observed in the wall rock, but assays show that it does occur. A chip sample of the quartz gave the following values: gold, $8.30 per ton; silver, none; copper, 0.25 per cent. A channel sample is reported to have assayed $16.60 in gold per ton over a width of 10 feet..... .....Further occurrences of gold are reported in two prospect pits on the north shore of Three Duck lakes, but little work has been done on these showings. Another vein occurs in the southeast corner of claim S.20,136, about 4 chains from the South arm of Bagsverd lake, and is composed largely of rusty quartz showing strong mineralization across 7 feet. No gold is reported from here.

"It must be admittdd that the veins exposed to date are narrow, but the wide distribution of the gold and the high values obtained seem to be factors that warrant further intensive examination of the property."

Since that time, little further work has been done on these veins, as vein No. 20 was discovered, apparently late in 1934 or early in 1935, and almost all work since has been concentrated on it.

According to a Young-Shannon map, Vein 20 is on the north contact of a lamprophyre dyke which itself is at the contact of granodiorite to the south and porphyry to the north. Laird, mapping before the vein was found, showed Keewatin volcanics in a narrow belt immediately north of the vein. Jeckell (p. 3) notes that vein 20 follows a fracture in the diorite paralleling an E-W porphyry dyke. The writer would equate diorite and Keewatin volcanics, but a need for detailed mapping is evident.

The writer would not extend vein 20 to include the and Gosselin deposits unless continuity is proved, because of the strong topographic evidence of NNW cross-faulting, interpreted as initiated in post-Timiskaming, pre-Algoman (i.e. pre-ore) times.

It is considered that fractures parallel to Vein 20 in the vicinity of the NNW cross fault are equally likely to have been channelways for gold deposition.

REVIEW OF NO. 20 VEIN BASED ON ASSAY DATA

Assays in Young-Shannon files from samples from the property date from Nov. 8/35 to April 2/37. They can be subdivided into

1. No. 1 vein (part of No. 20 system)
2. Odd samples - not further discussed
3. No. 20 vein

a) Surface grabs
b) Surface channel samples
c) Open cut
d) Shaft
e) 1st level
f) 2nd level
g) Surface drilling: holes 1-20.
h) Underground drilling, 1st level holes 24 and
i) Underground drilling, 2nd level; holes 29 to 33.

Many of these assays can be related to maps on file at the Young-Shannon office. A few are impossible to locate on the ground.

1. No. 1 vein (which C.T. Young included as part of No. 20 system)

Two assay sheets with the same data are dated Nov. 8th and 14th, 1935. The average result of five assays made on a 700 lb. bulk sample was 0.138 ozs. ($4.85 at $35).

3. No. 20 vein.

(a) surface grabs: Three important grab sample assays are noted: "Oct.26/35 2-1/2' quartz between small isle and mainland. Three Duck Lake 0.67⅞ oz. gold, $23.45."

"Aug.4/36 Grab sample, No. 20 vein at island on Three Duck L. 1950 ft. east of shaft. 3.02 oz. gold, $105.70"

"June 12/36 Grab sample from 3' width, No. 20 vein, 100' east of power house. 3.84 oz. gold, $134.40"

(b) Surface channel samples: The Northern Miner of May 9, 1935 notes "the average of 11 channel samples, over an average width of two feet and a length of 260 feet, yielded $17.85 per ton".

Sixteen assays of July 17 and 24, 1935 average 32' of $12.42 ore ($12.23 weighted) over 260 ft., according to a Young-Shannon map on file.

There is a 75 ft. gap between channel samples to the west of the shaft marked "Too deep to trench" because of overburden. August 15/26 assays about 200' east of the shaft extend the zone to 250 ft. giving $16.20 ore across 31'.

(c) Opencut: A bulk sample from the open cut, No. 20 vein is noted on Mines Branch (Ottawa) Report 9880 of Feb. 3, 1936 as "weight 15 lbs. 4 ozs. Found on assay to contain

Silver (Ag) .05 ozs. Troy - per ton of 2000 lbs.

Gold (Au) .68 " " " " " " "

Sample carried 'specks of free gold'".

(d) Shaft: The shaft is 20 ft. north of the vein at surface, 22 ft. on the 100 ft. level and 40 ft. on the 200 ft. level, according to the Jan. 28, 1946 map. Samples from the shaft, therefore, should not be considered as mineable material. Nevertheless, further investigation is warranted because of character sample from W side of shaft, 20 ft. deep, assaying 0.44 oz. ($15.40) June 12/36.

(e) 1st level: From the shaft a 22 ft. crosscut goes south to the vein. The east drift is 100 ft., the west one 60 ft. Most of the assays on the plan of the 1st level appear in the Young-Shannon

assay file, dated from Sept. 4 to Nov. 22/36. The distances from the shaft noted on the assays do not always accord with the map, but the overall statement is reasonable 36" x 70' Av. 14.25 ore. Gauvreau accepted this figure. To the east, assays (up to 99' from the shaft centre) are low and drifting did not go as far as the $21.00 ore noted on surface, 200 ft. east of the shaft. Jeckell (p. 4) computed as an alternative, 130 ft. grading $9.94 over 33" and noted "On inspection, this level showed a strong vein of quartz containing massive sulphides, pyrite, with very little chalcopyrite, the full length of the workings with the East face in vein material. It was impossible to see the west face as a dam had been constructed and the heading was full of water".

(f) 2nd level: The plan of the second level shows a crosscut going 40 ft. south from the shaft, 36 ft. of drifting to the east, 120 ft. to the west, near the end of which is a 40 ft. drift. Two areas of back channel sampling are shown. In the zone on either side of the crosscut from the shaft, assay records accord with the plan except at 16 ft. west. The average is 24" x 40 ft. $16.06. Diamond drilling indicated a new ore lens 124 ft. east of the heading. A hundred feet west of the cross-cut the vein appears to turn or split, for a WSW drift was computed from 7 back channel samples to average 27" x 30 ft. $20.00. Re-examination of one assay at 13' from the west drift on the 2nd level indicates the overall average is about $1 too high.

(g) Surface drilling:- Dril log records are incomplete. Mr. Jeckell (p.4) reckoned drilling to shallow depths (above the 100 ft. horizon) indicated 250 ft. length 46" average width at $12.28. Holes 1 - 20 appear from the records to have been from surface. Assays are available for holes 21 and 22, but their location is not

known. These holes were sufficiently encouraging for management to commence shaft sinking and drifting. In taking the average, an assay of 31.80 ozs (valued at $1113.00 per ton) over 4 ins. in hole 6, 450 ft. east of the shaft, was eliminated (June 3/36 assay).

Most of the surface holes were in the shaft area but Nos. 15 and 16 were 2000 - 3000' to the east, though it is not precisely clear where they were collared. References as to location are given on the Aug. 15/36 assay sheet, distances eastward from No. 14 hole, noted on the composite plan of No. 20 vein, and N. Miner of Aug. 13, 20 and 27, 1936.

The N. Miner of Aug. 20, 1936, notes sampling of the vein at the site of hole 16 yielded $3.15, $9.80, and $212.80 in gold per ton and that Nos. 15 and 16 holes cut the vein under the lake being put down from a small island.

The assay sheets note these samples were marked "Grab samples""No. 1 pit, No. 20 vein, back of camp, 40', 22' and 12' from water's edge" and would thus appear to be from the old No. 1 vein behind the Gosselin camp on claim S.20,095 (east shore of lake). Mr. C.T. Young regarded the old No. 1 as part of No. 20 system on p. 5 of his report.

The map and N.M., Aug. 27, note No. 15 hole as 1,350 ft. east of No. 14 hole (i.e. 1870 ft. east of the shaft or 2000 ft. - N.M. Aug. 13) and all references are that Hole 16 (in places mis-annotated 15) is 1000 ft. further east.

If the two holes were put down from the same island, it must be the large one in the centre of the lake, even though it is only 800 ft. across.

Alternatively, Hole 16 may be on the large island, and 15 on the islet of the headland on the west shore (the distance 1800 ft. and 1000 ft. shaft-islet-island are about right) or hole 15 may be on the large island and 16 on the old No. 1 vein, relabelled No. 1 pit.

In any case, the $212.80 grab (or $21.45 over 18" (assay sheets Aug. 15/36) and 2-1/2 ft. of $13.00 core in hole 15 (N.M. Aug. 27/36 and map) make thorough investigation warranted.

(h) Underground drilling on the first level: Hole 24, the only one on record from this level was directed northwest, away from the vein. A 3 inch quartz vein was cut and 1 ft. of core at 45-1/2 - 46-1/2 ft. gave $70 gold. A memo by Mr. C.T. Young to get core each side for assay does not appear to have been carried out. The vein is at a contact between diorite to the north and porphyry to the south. This appears to be the hole noted by Jeckell (p. 4) as being drilled on the expectation of finding a parallel occurrence on the north limb of the porphyry.

(i) Underground drilling on the second level: D.D.H.28, north from the shaft, appears to have been unsuccessful in picking up the vein located from the 1st level on the north side of the porphyry. Holes 29, 30, and 31, North & South from the west drift were unfruitful. Holes 32 and 33 encountered gold and 32 was followed by drifting, which terminated in ore grade assays - $30.10 over 30" at 33 ft. from the west drift and $9.80 over 24 inches at 37 ft.

No further work is known to have been done underground since April, 1937. Blocked out ore calculations dated April 8, 1957 and based on a price of $35. per ounce, are as follows:

First level	100' deep x 70' long x 3' / 12'	1,750 tons average $14.25 per ton	$24,937.00
Second level	100' deep x 40' long x 3' / 12'	1,000 tons average $16.00 per ton	16,000.00
	150' deep x 30' long x 2-1/2' / 12'	937 tons average $20.00 per ton	18,740.00
		Total	$59,677.00

No. 20 vein, bulk sample - The second or dressing and metallurgical report on Young-Shannon files is numbered 702, and dated December 19, 1936, with initials at the end WRMcC:PES. Its origin is undocumented but from the date it probably came from vein No. 20. The shipment had a total weight of 4,000 lbs.

Extracts are as follows:

"Character of the ore: The gangue consists largely of fine-textured white quartz. It contains small patches of light-brown dolomitic carbonate.

"The metallic minerals present are, in order of their abundance: pyrrhotite, pyrite, arsenopyrite, chalcopyrite, sphalerite and native gold. Pyrrhotite and pyrite are abundant and occur as coarse textured masses, irregular stringers and grains in the quartz. Rather rare small crystals of arsenopyrite are associated with the pyrite. A small quantity of chalcopyrite occurs as irregular grains and patches, usually associated with pyrrhotite and very rare small grains of sphalerite occur with the chalcopyrite. One grain of native gold is visible in the sections. It is somewhat rounded in form and approximately 200 mesh in size. It occurs in the quartz.

"The ore was sampled and assayed by standard methods and the assay of the heads was as follows:

Gold 0.30 oz/ton

Silver 0.09 oz/ton

Copper 0.10 per cent.

"A number of tests were carried out, comprising plate amalgamation, blanket concentration, flotation and cyanidation. Three mill runs were also made.

"Conclusions: The results of the tests indicate that for every 100 tons of ore milled, there would be around 0.32 ton jig and blanket concentrate and 8.30 tons flotation concentrate, based on a concentration of 12:1, after barrel amalgamating the jig and blanket concentrates, the tailings would be added to the flotation concentrate, giving a total shipping product of around 8.62 tons.

"The grade of the flotation concentrate taken as 1.17 ounce gold per ton (average of assays on three mill runs) would be raised after the addition of the amalgamation tailing to have the grade of the shipping concentrate in the vicinity of 1.34 ounce gold per ton.

"As previously referred to, plate amalgamation proved unsatisfactory due to fouling action of pyrrhotite on the plate.

"Cyanidation tests gave a gold recovery of around 90%, but the presence of pyrrhotite in the ore would necessitate grinding in the waterline pulp with either pre-aeration or filtration to overcome the fouling action of the pyrrhotite on the solution."

CONCLUSIONS AND RECOMMENDATIONS

Development on No. 20 vein proceeded sufficiently far in the late 1930's to indicate that ore-grade gold is present if sufficient volume can be found. This can be done in several ways:

a) Laterally extending the drifts on Vein 20, on the reasonable assumption that the vein will follow the usual pattern of pinching and reappearance, so long as the fracture can be

traced. The vein follows a narrow belt of greenstone, which appears to be offset, east side - 750' north, by the Three Duck Lakes fault.

b) Shaft deepening and opening up new levels, probably preceded by deep drilling. One target zone may be where the south-dipping No. 20 vein and north dipping No. 2 vein meet, as noted by Gauvreau.

c) Surface exploration, initially by geophysics, to locate additional mineralized veins.

The simplest way to prove the overall merit of the property is to commence with item C and, as work progresses from exploration to development of ore, further opening up vein 20 will be incorporated in the programme. It will then be possible to plan for mining on the basis of total potential reserves, rather than those at one vein alone.

A photogeological study has been made to locate structural controls of ore deposition on the property. The next logical step is to rehabilitate the road and bridges and set up camp facilities prior to line cutting and geophysical surveying. An electromagnetic survey of the entire property is recommended to detect sulphides, because most of the gold veins carry sulphides. A test magnetometer survey of claim S.19,971 is proposed in order that the possibility of locating the dykes, greenstone, etc. in the granite can be investigated.

From these surveys, it is anticipated that veins will be located from which the soil must be stripped and the rock opened up by trenching, at which time a geologist should map the property and have samples taken for assay (including a cross-section sampling of the granite for spectroscopic analysis for unusual concentrations of such metals as molybdenum), and in his report make recommendations for drilling to test the veins at depth. It should be anticipated that the drilling programme will be large.

COSTS

Phase I -

A)	Road rehabilitation	$ 1,000.
B)	Camp	500.
C)	Line cutting - 36 line miles @ $65	2,350.
D)	E-M survey - 36 line miles @ $75	2,700.
E)	Test magnetometer survey	200.
		$ 6,750

Phase II -

A)	Local access - allow	$ 2,000.
B)	Soil stripping - allow	1,000.
C)	Rock trenching - allow	1,000.
D)	Topographic map	400.
E)	Geological mapping	1,750
		$ 6,150

Phase III -

Exploratory diamond drilling - allow minimum $ 15,000.

Phase IV -

Development drilling

Phase V -

Underground development.

It is recommended that, initially, the sum of $6,750. be made available with further expenditures anticipated as indicated.

Respectfully submitted,

W. Walker, F.G.A.C.

TIMISKAMING SEDIMENTS

BAGSVERD LAKE

S-127452

S-127451

S-125071

S-127453

WEEDUCK LAKE

DIABASE DYKE

HYDRO RIGHT OF WAY

GRANODIORITE & DACITE

S-19972

S-19966

S-19976

S-19970

S-19971

S-20095

S-20096

S-20000

S-20001

S-19997

S-19998

THREE DUCK LAKES FAULT ZONE

THREE DUCK LAKE

COTÉ LAKE

Bedrock controlled high ground with fault controlled swamps

Remnants of basic volcanics

Base Line

Sheared dacite

Andesite tuff intruded by granodiorite

Quartz diorite

Sheared quartz diorite

Diorite or andesite

Dacite & granite

Granodiorite & diorite

Granodiorite + andesite

Granite + granodiorite

Compressor House

Trail

Pit

D.D.H.

Quartz vein

Bedrock controlled high ground

Pits

PROPERTY LOCATION MAP
SCALE: 1" TO 3/8 MI.

KEY MAP

Timmins
TIMISKAMING
Kirkland Lake
Matachewan
SUDBURY
ONTARIO
Elk Lake
Gogama
PROPERTY
Scale: 1in to 20miles.

LEGEND

8 DIABASE DYKES
7 GRANITE (MICRO)
6 GRANODIORITE (MICRO)
5 DIORITE
4 RHYOLITE
3 DACITE
2 ANDESITE
1. SEDIMENTS

NB. For Tree Types see West Sheet.

THREE DUCK L
GOLD-COPPER PR

GEOLOGI

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200

WEST SHEET

THREE DUCK LAKES - CLAM LAKE SHOWINGS
GOLD - COPPER PROPERTIES, CHESTER TOWNSHIP, ONT.

GEOLOGICAL FIELD WORK
by
W. WALKER
OCT 1ST TO NOV. 10th 1965

200 0 200 400 600 800
FEET

SYMBOLS
- CONTACT
- BEDDING OR FLOW, DIP UNKNOWN
- " KNOWN
- " VERTICAL
- FOLIATION, TYPE UNKNOWN
- FAULT
- x OUTCROP
- TRENCH
- PIT
- SHAFT
- PROSPECT
- V VEIN
- G GEOLOGICAL FIELD MAPPING
- M MAGNETIC
- T TOPOGRAPHIC
- CLAIM POST & LINES LOCATED
- " " " NOT LOCATED

n

TREE TYPES
- OB OLD BURN
- Sb SPRUCE, Black
- Sw SPRUCE, White
- Ss SPRUCE, Black & White
- Bi BIRCH
- Po POPLAR
- Pj PINE, Jack
- Pr PINE, Red
- Ce CEDAR
- MUSKEG
- MUSKEG, Treed

TIMISKAMING SEDIMENTS

GRANODIORITE AND DACITE

S-127455 · S-125066 · S-120301 · S-120300 · S-8996 · S-8997 · S-8995 · S-120302 · S-120303 · S-120305 · S-120304 · S-120306 · S-16304 · S-20646 · S-125070 · S-125069 · S-125068

LITTLE CLAM LAKE · CLAM LAKE

DIABASE DYKE · DIABASE DYKES · HYDRO RIGHT OF WAY · MOLLIE RIVER FAULT ZONE · ROAD

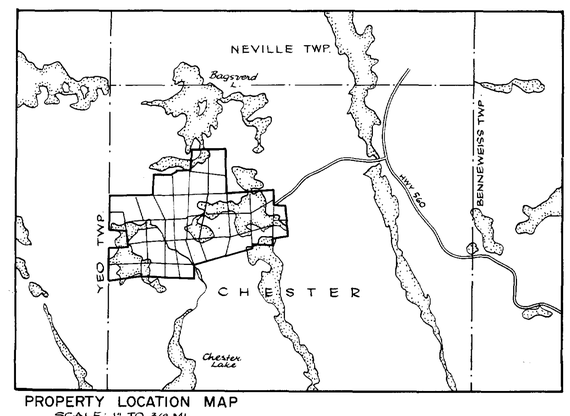
Large outcrops of sediments. · Rocky hills · Bedrock controlled high ground · South facing outcrop ridges and fault valleys. · OPEN PARKLAND · GRANITIC ROCKS

Base Line · 0 2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E 24E 26E 28E 30E 32E 34E 36E 38E 40E 42E 44E 46E 48E 50E 52E 54E 56E

YEO TOWNSHIP
CHESTER TOWNSHIP

41P12SW8459 63A.470 CHESTER

210



PROPERTY LOCATION MAP
SCALE: 1" TO 3/8 MI.

TIMISKAMING SEDIMENTS

WEEDUCK LAKE

DIABASE DYKE

HYDRO RIGHT OF WAY

GRANODIORITE & DACITE

THREE DUCK LAKES FAULT ZONE

THREE DUCK LAKE

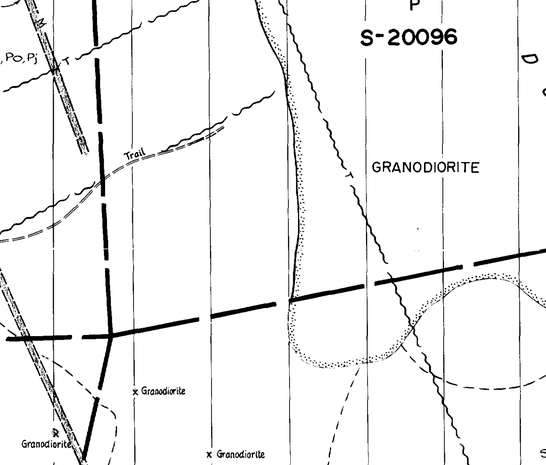
GRANODIORITE

DIABASE

Bedrock controlled high ground

Base Line

S-125071
S-127451
S-19966
S-19970
S-19971
S-19972
S-19997
S-20000
S-20001
S-20094
S-20095
S-20096
S-19999



LEGEND

8 DIABASE DYKES
7 GRANITE (MICRO)
6 GRANODIORITE (MICRO)
5 DIORITE
4 RHYOLITE
3 DACITE
2 ANDESITE
1. SEDIMENTS

NB. For Tree Types see West Sheet.

SYMBOLS

- BEDDING OR FLOW, DIP UNKNOWN / DIP KNOWN / DIP VERTICAL
- CONTACT
- FOLIATION, TYPE UNKNOWN
- FAULT
- OUTCROP
- TRENCH
- PIT
- SHAFT
- PROSPECT
- V VEIN
- G GEOLOGICAL FIELD MAPPING
- M MAGNETIC
- T TOPOGRAPHICAL
- CLAIM POSTS & LINES LOCATED
- " " " " NOT LOCATED

EAST SHEET

THREE DUCK LAKES - CLAM LAKE SHOWINGS
GOLD-COPPER PROPERTIES, CHESTER TOWNSHIP, ONT.

GEOLOGICAL FIELD WORK

by
W. WALKER
OCT. 1ST TO NOV. 10, 1965.

200 0 200 400 600 800
FEET

Sept 7th/66

63A.470

ST SHEET

S - CLAM LAKE SHOWINGS
TIES, CHESTER TOWNSHIP, ONT.

L FIELD WORK
by
WALKER
NOV 10th 1965

00 400 600 800
FEET

YMBOLS
ONTACT
EDDING OR FLOW, DIP UNKNOWN
" KNOWN
" VERTICAL
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OB OLD BURN
Sb SPRUCE, Black
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Ss SPRUCE, Black & White
Bi BIRCH
Po POPLAR
Pj PINE, Jack
Pr PINE, Red
Ce CEDAR
MUSKEG
MUSKEG, Treed

TIMISKAMING SEDIMENTS

S-127452
S-127453
S-127454
S-127455
S-120299
S-120300
S-120301
S-120302
S-120303
S-120304
S-120305
S-120306
S-120307
S-8995
S-8996
S-19976
S-19977
S-19995
S-19998
S-20646
S-125067
S-125068
S-125069
S-125070
P 16304

DIABASE DYKE
DIABASE DYKES
DIABASE
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HYDRO RIGHT OF WAY
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Rocky hills
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