

REPORT ON
FREE GOLD GROUP
CLEVELAND PENINSULA
ALASKA

by George Corcoran
Feb. 1935

PROPERTY & LOCATION:

The above property consists of the following ten unpatented adjoining mining claims: The Free Gold and Free Gold Nos. 1-2-3-4-5-6-7-8 and 9. The Group covers an area along the west shore of Helm Bay, approximately 26 miles northwesterly from Ketchikan, Alaska and 700 miles from Seattle, Washington.

The steamship time from Seattle to Ketchikan varies with different ships from 46 to 50 hours. From Ketchikan to the property requires about $2\frac{1}{2}$ hours by motor boat.

TOPOGRAPHY & CLIMATE:

Elevations within the boundaries of the property extend from sea level to 250 feet above. Slopes are gradual and covered with timber and brush. Some small flat surfaces are covered with shallow muskeg.

There are no extremes of temperature. In summer the thermometer seldom registers above 80° F. or below zero in winter. Precipitation is high, averaging 160 inches annually. Snow does not ordinarily remain long below the 500 foot line.

GEOLOGY:

Within the property lines, the formations consist of greenstone volcanics underlying slates. The volcanics are made up of massive greenstone and greenstone schist showing considerable local deformation. Approximately 2 miles South there is exposed a small area of diorite that has intruded the schist. Float pebbles and small boulders indicate the presence of intrusive diorite on the Helm Bay water shed a short distance west.

Ore mineralization occurs within both the greenstone and schist; The schist-greenstone contacts in places are sharply defined, in others the formations blend with no distinct line of demarcation. The ore generally occurs within the schist or in the greenstone near the contact.

The ore bodies consist of quartz veins within the greenstone near contact zones and more or less lenticular shaped bodies occupying pitching folds and shear zones in the schist. The predominant minerals are quartz, impure carbonates (ankerite), coarsely crystallized pyrite and free gold. A minute amount of copper as chalcopyrite is seen as a sparsely distributed mineral.

ORE DEPOSITS:

The two larger ore exposures, designated as the north and south ore bodies, lie within the schist and consist of interbedded and intersecting quartz and carbonate stringers and veinlets with fragmentary masses of altered pyrite-bearing schist. The gold is present as free specks and grains associated with the pyrite in the schist. Where pyrite occurs within the quartz or between distinct layers of quartz, it is generally gold bearing if fractured or crushed by subsequent movement. The north and south outcrops are approximately 700 feet apart and dip from 35° to 45° easterly under the overlying states. The drift on ore under the south ore body in the direction of the north ore body warrants the assumption that these two deposits are connected below the alluvium covered surface.

Running parallel with the above major outcrops along the foot wall side, there is a small higher grade vein of quartz and pyrite varying from a mere fissure to three feet in width. This vein has been traced on the surface for approximately 700 feet and is designated as the Bugge Vein.

The Rodgers Vein is an east and west vein and lies within the boundaries of the claim indicated on the attached map as Free Gold #6. This vein has been traced for approximately 1000 feet and consists of white quartz of ribbon structure. The width varies from two to four feet. A minute amount of fine crystalline pyrite lies along the contact planes between the quartz ribbons. A quartz vein carrying a little pyrite comes in from the north and joins the Rodgers Vein at the east end. The wall rock here contains some pyrite crystals which are gold bearing and measure up to 3/4 inch. It is probable some of the wall rock may be profitably mined.

It is evident the fractured pyrite, whether in quartz or schist, is the host for the greater part of the gold which is present in minute free grains. If grinding a sample of a few ounces of even low grade ore to pass a 60 mesh screen does not show a "point" in panning, the sample will not assay more than a few cents.

DEVELOPMENT:

In addition to numerous surface cuts in all outcrops, there is a total of 1600 feet of tunneling.

The lower tunnel consists of 1470 feet of work intersecting the north ore body 190 feet below the outcrop on its dip and the south ore body from 100 to 150 feet on its dip. The north ore body was reached at a point 250 feet in from the portal of the entering crosscut. On the plane of the tunnel the ore is 50 ft. in width; at a right angle to the dip it should be 30 ft. thick. 74 feet in from the foot wall there is 8 feet of ore which strikes S. 7° E. and dips 35° W. The apparent strike of the north ore body is northeast and southwest and the dip E. 40°. At a point 450 feet in from the portal, the north end of the Bugge Vein shows as a few inches gouge and quartz containing finely crushed high gold pyrite.

The Bugge Vein was followed for 55 ft. to a point where it passes into the west wall. At this point the drift was turned east for some distance following a converging quartz stringer. The downward extension of

the Bugge Vein is not evident in tunnel 290 feet further in although it is shown by survey to have crossed 15 feet west of a point vertically below the outcrop which is approximately 160 feet above.

At this point the tunnel was turned east to prospect the area 85 feet below the Mahoney cut in the south ore body. At a point 37 feet east of the station in the Mahoney cut the downward extension of the south ore body was intersected and drifted on for 60 feet. The general dip of the ore bearing schist in the Mahoney cut is about 35° NE. and the known thickness 30 or more feet. The ore bearing schist and quartz in the workings below varies from 2 ft. to 4 ft. in width and stands nearly vertical between greenstone walls. The finely crushed pyrite in short ribbons and the physical appearance of the schist indicate pressure and the movement of the hanging wall and the probability of a partial wedging off of the south ore body at or near this horizon.

Ore occurrences of this type may be expected to extend downward for a considerable distance but in a series of pinches and swells.

There is approximately 108 feet of old workings in the upper part of the north ore body. The long entering cut is in ore but the tunnels are in low grade or barren foot wall material.

Except where exposed in the entering crosscut of the lower tunnel and 55 feet of drifting, the Bugge Vein is exposed only by open cuts on the surfaces.

The Rodgers Vein on Free Gold #6 is developed by opencuts for 150 feet of its eastern outcrop. There is one open cut exposing the vein approximately 1000 feet west.

SAMPLING RESULTS:

Since the gold content is practically all free, hand sampling results are erratic. The following are submitted as indicating the probable gold content of the ore.

North Ore Body, Entering Cuts, Old Workings

11 ft.	- 0.86 oz. gold	- \$30.10
2½ "	- 0.14 " "	- 4.95
4 "	- 0.03 " "	- 1.05
6 "	- 0.06 " "	- 2.10
25 "	- 0.07 " "	- 2.45 Surface cut.

An equated average of the above - 0.25 oz. gold - \$8.75.

North Ore Body, Lower Tunnel

8 ft.	- 0.16 oz. gold	- \$5.60
8 "	- 0.11 " "	- 3.85
4 "	- 0.38 " "	- 13.30
4 "	- 0.70 " "	- 24.50

An equated average of the above - \$9.45

An average of the car samples from the 50 ft. of the crosscut passing through the ore body - 0.14 oz. gold - \$4.90.

Dump samples from the 50 ft. of crosscut averaged 0.16 oz. gold - \$5.60.

Mahoney Cut in South Ore Body

5½ ft.	- 0.08 oz. gold	- \$ 2.80
4 "	- 0.26 " "	- 9.10
4 "	- 0.23 " "	- 8.05
5 "	- 0.06 " "	- 2.10

An equated average for 17½ ft. - 0.148 oz. gold - \$5.17.

Two samples from the drift under the Mahoney cut assayed 0.80 oz. - \$28.00 and 0.09 oz. gold - \$3.15 respectively.

BUGGE VEIN:

But little sampling has been done on this vein as it is small and the greater part strikes across a flat covered with muskeg. Holes contacting the apex of the vein in the muskeg remain full of water. However, some of such holes exposed vein matter showing visible gold and short ribbons of high grade pyrite.

A sample across 3 ft. of exposed outcrop assayed 1.14 oz. - \$39.90.

A specimen containing a section of a ribbon of fine grained pyrite assayed 11.54 oz. gold - \$403.90.

RODGERS VEIN:

3 ft. west cut on outcrop - 0.20 oz. gold - \$7.00
2 ft. both sides deep cut east end - 0.39 - \$13.65
Average sampling of outcrop for 150 feet in length, east end -
0.40 oz. gold - \$14.00.

In my opinion, a mill feed averaging \$5.00 in gold @ \$35.00 per ounce may reasonably be expected from the North and South ore bodies and \$11.00 from the Rodgers Vein. Further development work will be required to warrant any estimate on the Bugge Vein but am confident it will yield a material tonnage of payable ore.

POSSIBLE TONNAGES:

Assuming the North ore body to extend on strike 50 ft. south of the crosscut and 100 ft. north there is a possible $\frac{150 \times 30 \times 190}{13} = 65,000$ tons above the lower tunnel.

On account of the pinch showing in the drift below the Mahoney cut, if we assume an average width of 15 ft., depth of 100 ft. and length of 200 ft., the ground above the lower tunnel should yield $\frac{200 \times 15 \times 100}{13} = 22,000$ tons.

The Rodgers Vein may yield from 2000 to 5000 tons per 100 feet in depth if we assume half its length to be of payable grade.

The property as a whole, in my opinion, may reasonably be expected to yield 50,000 tons or more of payable ore per 100 feet in depth.

OPERATING CONDITIONS:

Are generally favorable for the mining and milling of a low grade ore.

There is an abundance of good spruce and hemlock timber on the ground if needed but development indicates the ground stands well and but little, if any, timber will be required in stoping.

Climate, transportation and supply conditions are such that mining and milling may be continuous throughout the year.

Ample hydro-electric power may be cheaply developed within 2 miles of the property. If diesel power be used, diesel oil may be delivered at the property for 5¹/₂¢ per gallon.

Lumber may be delivered at the mine for \$20.00 per M.

Powder (40%) may be delivered for \$300.00 per ton.

Seattle is a source of major supplies which can be delivered within a few days after receipt of order. Ketchikan is a source of labor and minor supplies.

There are no Territorial or local taxes on property or equipment. Employees Liability Insurance amounts to approximately 7¹/₂% of the pay roll.

There are no complications involving tailing or waste disposal.

Ore treatment will be simple and gold the only product to market.

ESTIMATED COSTS: (Based on Mining & Milling 100 tons daily)

<u>Mining</u>	<u>Per Ton</u>	<u>Per Ton</u>
Labor	\$0.65	
Power - Diesel	0.08	
Explosives	0.22	
Steel - Coal - Carbide,)		
Pipe - Rails, Lub. Oil,)	0.15	\$1.10
Drill parts, Lumber, etc.)		
<u>Milling</u>		
Labor	0.30	
Power - Diesel	0.10	
Steel Consumption	0.10	
Lub. Oil & Misc. Supplies	0.05	
		<u>.55</u>
	Mining & Milling	\$1.65

Overhead & General Expense	\$0.25
Amortization	0.30
Total -	<u>\$2.20</u>

ESTIMATED COST OF PUTTING MINE ON PRODUCTION:

Raise on North ore body - 190 ft.	\$2,000.00
Drifting on " " " - 150 ft.	1,500.00
Raise on South ore body - 100 ft.	1,000.00
Additional mining equipment	3,000.00
New buildings & equipment	1,000.00
Piping & water supply	500.00
Explosives, Rods, balls, etc.	1,000.00
Power equipment	5,000.00
Milling equipment	5,500.00
Mill building, freight & installation of equipment	4,500.00
Fund ahead of starting up	<u>5,000.00</u>

Estimated total requirements - \$30,000.00

If we assume a mill head of \$5.00 and a tailing loss of \$0.80, the total deduction would be \$5.80 and the probable profit would be \$2.00 per ton.

Respectfully submitted,

(Sgd) GEORGE CRERAR,
Mining Engineer.

San Francisco, California
January 15, 1935.