

Northland Sales Company

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**SUMMARY OF REPORT ON
TROY GROUP OF MINERAL CLAIMS
SALMON RIVER SECTION OF PORTLAND CANAL
MINING DIVISION
BRITISH COLUMBIA**

by

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Northland Mining Company, Limited, Vancouver, B. C.
Dominion Bank Building, September 15, 1925.
Vancouver, B. C.
Gentlemen:—

In accordance with your instructions, I have to report having made an examination of the Troy Group of mineral claims under development by your Company. The examination occupied five days.

AREA

The Troy Group consists of the following named Lode Claims:—

Troy	Welcome
Troy No. 2	Bech
Troy No. 3	Bute
Deadwood	L. K.
Terry	Reward

As these claims have not yet been surveyed by a Provincial Land Surveyor, the exact area covered by the Group cannot be stated, but it is probably around 450 acres.

LOCATION

The Troy Group is Located immediately north of the Forty-nine Divide in the Salmon River section of the Portland Canal Mining Division. The Group covers the area between the eastern border of the Salmon River Glacier and the western margin of the Mount Dilsworth Glacier, as shown on the accompanying plan. The northwestern boundary of the Group fronts on Daisy Lake. This lake occupies a portion of the basin of Summit Lake, which drains the northern arm of the Salmon River Glacier, and forms the headwaters of a tributary of the Nass River. Climatic conditions are here ameliorated by the warmer breezes from the Nass Valley, resulting in a forest growth which is entirely absent for some miles south of the Forty-nine Divide.

Immediately south of the Troy Group is the Forty-nine Mine, where the Premier Gold Mining Company is expending a large sum of money on development, three diamond drilling plants being at work, and three tunnels being driven under what may fittingly be described as spectacular showings of pyrrargyrite or ruby silver—one of the richest silver ores of the field. To the southeast is the Silver Crest Mine, where a tunnel is being driven on a north-south course to develop ore shoots from which high silver values have been obtained in open cuts made for several hundred feet along the outcrops. The elevation of the Troy Group varies from 2,900 ft. above sea level at Daisy Lake, to about 3,800 ft. on the western slope of Mt. Dilsworth. The company's permanent camp near Daisy Lake is at an elevation of about 2,925 ft., and the Summer Camp is at an elevation of about 3,375 ft.

TRANSPORTATION

The Troy Group is located about 22 miles from Hyder, Alaska, and 24 miles from the town and seaport of Stewart, British Columbia. Both towns have well stocked stores, banks, postal and express services, telegraph and wireless communication. Several auto stage lines make several trips daily to the Premier Mine. Pack and saddle horses are obtainable at both towns, and at stables maintained at the International Boundary at Eleven-Mile, where the Dominion of Canada also maintains a custom-house.

The Union Steamship Company of British Columbia maintains a first-class weekly steamship service by the S. S. Cardena, connecting Stewart with the southern ports of Prince Rupert and Vancouver, as well as intermediate points. The Canadian Government Steamship lines have a service to Stewart twice a week in summer and once a week in winter.

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Seattle and Hyder, and between Ketchikan and Hyder.

A good auto road connects Stewart and Hyder with the Premier Mine. From this road, branch roads have been constructed to within a quarter of a mile of the Woodbine Mine on the west side of Cascade Creek, and to within two miles of the Big Missouri Mine on the eastern side of the same creek. Neither road has yet been completed, but with the active development now going on at the Woodbine, Big Missouri, Silver Tip, Silver Crest, Forty-nine, Troy and Spider mines it is reasonable to expect that the Big Missouri road will be completed at an early date so as to be available to motor traffic, and that it will be extended at least as far as the Troy Group.

At present mine supplies are transported by pack trains or go-devils from the Premier wagon road at Eleven Mile over a bridge trail which provides transportation to the country as far as Tide Lake, some miles north of the Troy Group.

In the event of the Premier Gold Mining Company's development at the Forty-nine Mine being attended with the success that is confidently expected, the most modern means of transportation will be provided to that mine, either by aerial tramway or railway, and it will no doubt be available to the Troy and neighboring mines on equitable terms.

An alternative means of transportation for the Troy Group is over the Salmon River Glacier in winter, when sleighs, caterpillar tractors or snow motors of the Armstead type may be safely used. Snow transportation in winter has long been found an efficient and economical means of freighting in machinery and mine supplies, or shipping out ore, in these northern latitudes. It is extensively and successfully applied today in both the Yukon and Alaska for the transportation of ore and concentrates consigned to southern smelters. When the Troy Mine is sufficiently developed to become a steady producer of ore and concentrates, the problem of transportation can be satisfactorily solved for this as well as for the other mines of that section.

HISTORY OF THE CAMP

Salmon River was first prospected by the Lindeberg Bros. in 1905. They had followed the life of the prospector for many years, gradually working north from the boundary section of British Columbia to Hyder, Alaska, where they determined to settle. They were particularly reliable and successful prospectors, locating the Fish Creek Mine and the Riverside Mine, each about seven miles from Hyder, in Alaska territory, and the Big Missouri and Forty-nine mines in British Columbia, all these properties being subsequently sold to mining investors at high prices. Salmon River came into world-wide repute as a mining camp with the discovery of the rich ore under development of the Premier Mine by Messrs. A. B. Trites, W. R. Wilson, R. W. Wood, and R. K. Neill in 1918. Their first shipment gave a return of \$146 a ton in that year. In 1919 their shipments averaged \$277 per ton.

The American Smelting and Refining Company, one of the world's largest mine operators, attracted by such phenomenal values, with the adequate tonnage being developed, entered the field, acquired control of the Premier Mine, financed, developed, and equipped it to the point of steady and profitable production, with such satisfactory results that the Premier Mine is today ranked among the world's outstanding mines, with a production in about five years of 543,754 oz. gold and 14,156,437 oz. silver, of a value of \$16,928,417, and a distribution in dividends of \$7,879,125. There is enough ore in sight to maintain the present dividend rate of 32% for another six years at least, and the value of the ore in reserve may be conservatively placed at \$14,000,000.

Four other mines in the Salmon River District have proved up ore of Premier Type, although their development has not yet reached the stage where estimates of tonnage are warranted.

The phenomenal development of the Premier Mine put new life into the prospectors engaged in the exploration of the Salmon River field. Among them was Neil McDonald, who had been formerly engaged in the prospecting of the Slocan and other mining fields of British Columbia. Becoming acquainted with Mr. Dan Lindeberg, that gentleman strongly advised Mr. McDonald to prospect the country beyond the Forty-Nine Mine. Acting on the suggestion he did so and found such encouraging indications that, in 1919, he located and recorded the Troy Group of Mineral Claims. Year after year he spent the summer months in prospecting his new locations with satisfactory results. In 1923 Mr. Charles Lake, one of the best prospectors of the field, and an old friend of Mr. McDonald, went over to the Troy to see what the latter was doing. Looking over the Troy he was so favorably impressed with it that he proposed to Mr. McDonald to purchase an interest, and a deal was arrived at by which Mr. Lake acquired a third interest.

In the fall of last year Mr. McDonald took steps to interest in the development of the Troy Group and succeeded

in securing the co-operation of Mr. E. O. Weston, of Victoria, B. C. He in turn sought and obtained the co-operation of Mr. R. L. Forrest, of Minneapolis, the result that the Northland Mining Company, Ltd., was organized under the laws of British Columbia with a capitalization of \$1,500,000 in \$1 shares, to take over and develop the Troy Group.

The writer was agreeably pleased to find, on his examination of the property, sampling and assaying of the ores on it, that the values corresponded to within a few cents of the values given by Messrs. McDonald and Lake at the time of the promotion of the company. This is too seldom the experience of the mining engineer and the incident is not only a credit to the gentlemen referred to, but conveys an inspiration of confidence in the integrity and bona fides of the vendors which is deserving of the highest recognition.

ECONOMIC GEOLOGY

There are over 20 known veins comprised within the limits of the Troy Group. Others will probably be discovered. Of the veins referred to twelve are exposed on the southern portion of the Group; and about eight veins on the northern or Goat Creek portion. The veins are of unusual persistence, strength and dimensions, most of them ranging from 20 to 50 ft. in width. While it is not to be expected that all of these veins will prove of economic value it is notable that almost all of those prospected have been found to be mineralized.

The principal vein, and that in which the highest values and strongest mineralization have been found, is that described as the No. 1 or "Contact" Vein. There is good reason for these conditions, as this vein occupies the contact between the Bear River and Nass River formations. The Bear River formation is the same as that in which the Premier, B. C., Silver, National Silver, Big Missouri, Woodbine, Hercules, and Forty-nine Mines occur, and it extends into the Troy Group as far as Mineral Gulch, a deeply eroded canyon occupied in its upper portion by an arm of the Mt. Dilsworth Glacier.

The Bear River Series is represented on the Troy Group by andesitic greenstone, feldspar and quartz porphyries, and dioritic dykes. The Nass Series is represented by slates, schists, some limestone, and dioritic and diabasic dykes intrusive into them. West of the No. 1 or Contact Vein are two others with parallel strike in the north-south course entirely within the Bear River Series. Intersecting these are a number of crosscourses of varying dip and strike. All other veins are in the area covered by the Nass Series of argillites and their accompanying intrusives.

Some of the cross veins are almost as large as the main north-south veins. For instance the Forrest Vein, discovered by Mr. R. L. Forrest, President of your Company, was found on being measured, to have a width of 22 ft.; while another cross-vein, known as the Mary Vein is from 40 to 50 ft. in width.

The northern, or Goat Creek vein system is notable for its association with two belts of dykes, differing in strike and intersecting one another.

It is probable that the best mineral values will be found in the veins associated with the Bear River Series on the southwest side of Mineral Gulch. The reason is that on the divide between the Forty-nine and Troy groups there is a strong development of the greenstone, porphyry and diorite with which the principal ore occurrences of the district are associated. Where examined on the Troy Group intensive mineralization was found to be indicated, and I have to recommend the careful prospecting of this area.

In the Goat Creek series of veins, while a large area of mineralization is indicated on the north side of Goat Creek at point where there appears to be an intersection of several veins, the ore changes from the high-grade silver minerals characteristic of No. 1 or Contact Vein to galena.

THE VEINS

The most striking physical feature of the Troy Group is Mineral Gulch, occupied by No. 1 Vein, which is properly described as the main Contact Vein. This vein is traceable for 3000 ft., and definitely occupies the contact between the Bear River and Nass geological series. It has a strike of N. 38 deg. W. and dips northeasterly at an angle of 50 to 60 deg. It has a width varying from 30 to 50 ft. The vein is exposed in the bed of the stream flowing down the gulch and in the steep walls of the canyon. The north wall of this canyon rises in an elevation of about 100 ft. to the slope of the ridge, while the south wall attains an elevation of about 300 ft.

A large and rapid stream flows through Mineral Gulch from the main Glacier. The accessible portions of the vein have been developed by open cuts over a length of 2000 ft. Where opened by such cuts the vein is strongly mineralized, and especially so at points of intersection with cross veins. Where examined it was found to carry a paystreak of high-

grade ore about 4 ft. in width. It is probable that this vein will prove to carry the most valuable ore deposits on the property, and its exploration by diamond drilling or other development should be one of the first undertakings of your Company. The average value of the samples of ore from this vein on which assays have been obtained is \$181.30 per ton, mainly in silver, but the ore also carries appreciable quantities of lead and zinc. The minerals are tetrahedrite, argentite, galena and blende.

No. 2 Vein closely parallels No. 1 at the southern end, but toward the north it veers easterly. It is traceable for 2,500 ft., and has an average width of 30 ft. It is distinctly a brecciated vein. The vein is mineralized for a width of 8 ft. in the centre, the minerals being arsenopyrite, chalcopyrite and steel galena. Development consists of several open cuts over a length of 300 ft., all showing similar ore. Assays of samples average \$63.73 in all values, silver being better than 9 oz. per ton and lead around 30%.

No. 3 Vein is well exposed in the creek east of the Summer Camp, where a waterfall has cut out a small canyon along its strike. An open cut shows ore over its full width. The value is around \$45 per ton in silver and lead.

On the south side of Mineral Gulch an anticlinal fold is exposed. This should be prospected as it is geologically favorable for ore deposition.

On the same side of Mineral Gulch a large vein is exposed. It is traceable for a length of about 1,500 ft.

There is an immense mineralization of pyrites in the dykes at Mineral Gulch. Ore shoots may be expected at points where these dykes intersect, or are intersected by veins.

The Forrest Vein had not been prospected at the time of my examination. It shows ore in a canyon on the Terry Claim, and Mr. Neil McDonald informs me that he has since prospected its outcrop on the south side of Mineral Gulch where he found galena at its intersection with a vein of the north-south series in the Bear River formation.

The Mary Vein is heavily mineralized where developed, with iron pyrites carrying small values in gold and silver. This is one of the most promising veins on the property. Mr. Neil McDonald examined its intersection with No. 1 Vein since my visit and has furnished me with a fine sample of tetrahedrite which he obtained at that point.

Near the Salmon Glacier there are strong evidences of mineralization along a north-south strike. Though no vein is in evidence it is practically certain that further prospecting will reveal such, and perhaps something of interest, as this appears to be a northerly extension of a mineral zone on the Forty-nine Mine.

ASSAYS

The following are assays of samples taken from the various open cuts and veins as described:—

No. 1 Vein					
Assay No.	Gold, oz.	Silver, oz.	Lead, %	Zinc, %	Total Value
1	0.04	255.5	5.6	\$190.75
2	0.04	35.56	43.5	112.70
3	Trace	163.30	17.2	23.1	178.53
No. 2 Vein					
4	Trace	9.1	28.9	52.46

While a certain amount of crude ore of high grade can be sorted for shipment, for testing purposes, the future of ore production of this mine, as with all others in that district, will lie in concentration by milling and flotation, and the shipment of a concentrate of high value.

MINING FACILITIES

Camp Accommodation—A new camp has been constructed on the lower portion of the property near Daisy Lake. The building is constructed of logs with iron roof and cement floor. It is a substantial piece of work. The building is 36 ft. long by 16 ft. wide. One end is fitted up for kitchen and dining room, and the other end as bunkhouse. The centre space is available as washroom, the storage of fuel and supplies. The site is well selected, being on an elevated piece of ground affording first-class drainage, while the location in the timbered area is convenient for obtaining a supply of fuel. A gravitation water supply can be laid on to the camp from Troy Falls on the creek immediately south of the camp.

There is abundance of timber on the property to afford the necessary supplies for fuel and mine purposes for some years to come.

Camp Supplies—These can be purchased at wholesale prices at Vancouver or Prince Rupert. Specially urgent requirements can generally be filled by the stores at Hyder or Stewart.

Labor—Mine labor is plentiful at current wages.

Power—Troy Group possesses exceptionally good facilities

for the economic development of hydro-electric power for mine and mill operation, and electric lighting or heating of the camp and out-buildings. On Goat Creek, where it crosses the Company's property, a head of from 250 to 500 ft. can be obtained. In the canyon through which the creek flows there is a long series of cascades, each from ten to twenty feet in height, extending up the creek for a distance equivalent to a head of 250 ft. With a power-house located near the lower camp the water supply for power generation could be brought in by a comparatively short length of wooden stave pipe. Such material can be conveniently delivered at the site and fitted together there, while a generator and the other necessary equipment can be taken in over the snow by go-devils or sleighs prior to the spring thaws.

FUTURE DEVELOPMENTS

No. 1 Vein is, so far as at present known, the most promising portion of your property. It is pretty well eroded away to the floor of the canyon and must be developed below that depth. This work can only be done by means of a shaft or a long adit driven from a point near the level of Daisy Lake. The sinking of a shaft means the provision of power, air compressor and drills, hoisting machinery and housing accommodation. The driving of an adit tunnel will require power, compressor, air drills, cars and track. The cost of either plan, with the necessary equipment, will be \$80,000 to \$75,000. My suggestion is that no such large expenditures be undertaken until more preliminary development is done. This should consist in the thorough prospecting of your property to ascertain as far as possible what veins may be expected to carry the best ore, and the nature of such ore. Supplementing this work on which economical and speedy method of obtaining information on which to plan your future work is by diamond drilling. I suggest that say three holes be drilled along the south wall of Mineral Gulch at the most likely points to develop ore, and that the two veins there be tested to the greenstone contact.

Then a series of at least three holes should be drilled from the north side of Mineral Gulch, intersecting Nos. 3 and 2 Veins in order and extending the holes through No. 1 Vein at a depth of say 200 ft. below the floor of the Gulch. This work will aggregate about 2,000 ft. of diamond drilling, and will cost around \$3.50 per foot, or a total of \$7,000. Allowing for cost of moving and incidentals a sum of say \$8,000, should be appropriated for this work, and a further \$2,000 for surface prospecting.

You would then be in a position to determine an efficient, effective and economical plan of opening up your mine so as to avoid future waste of money, time and labor. If, for instance, No. 3 Vein should prove on diamond drilling to carry the same or approximate values to those of the ore in the Cut east of the Summer Camp, your main level could be run practically from the Daisy Lake Camp and the ore encountered might go a long way towards covering the cost of the work; while neighboring veins could be cross cut from this level and the entire southern portion of your property made available for economic mining. The shaft to develop the deeper portions of No. 1 and other veins could be sunk from this main adit, enabling you to have all your workings and machinery underground and making you independent of climatic conditions for the prosecution of your operations. In a country so far north, with heavy snow and severe frost during the winter months this is a decided advantage.

CONCLUSION

As you will see from the accompanying plan, the Troy Group has an extraordinary development of mineral veins of exceptional size and strength, suggesting the possibility of developing large bodies of ore. This is the class of mine in favor with the experienced mining investor as it ensures permanence and stability of operation and income over a long period of time.

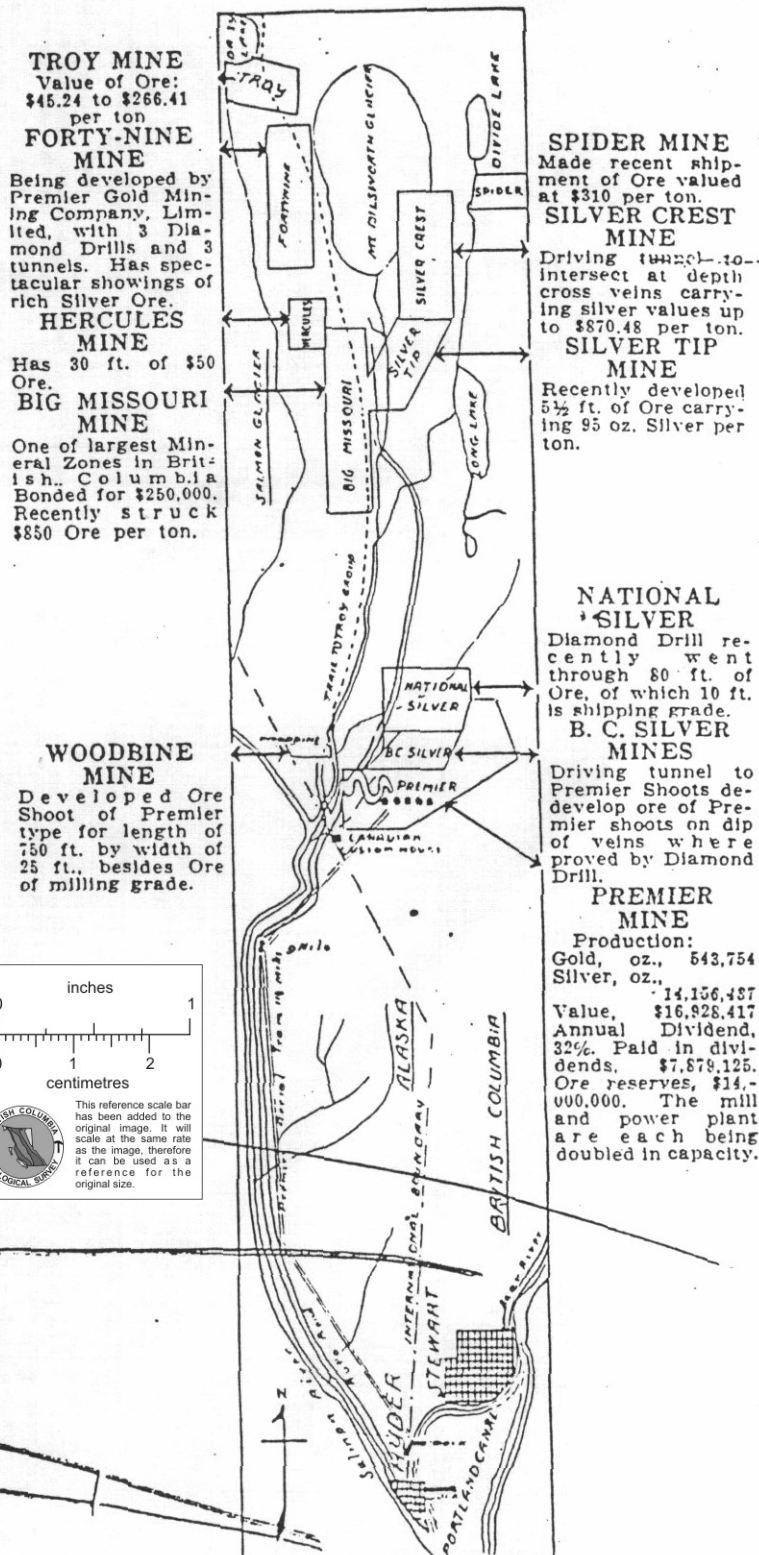
The geological conditions on your property are those which have been found favorable for the development of ore-bodies of commercial value on the Premier and neighboring properties. They are similar to those which have developed the spectacularly high silver values on the Forty-nine, the next operating mine immediately to the south of your property. The values found on the Troy Group in the course of my examination are encouraging. If they are maintained—and there is no reason why they should not be—the Troy Group will make a large and valuable mine which should, under good management, return handsome dividends to the shareholders for a long time to come.

LOCALITY PLAN

of Salmon River Mining Camp, Portland Canal Mining Division, Province of British Columbia

Showing situation of Troy Group of Mineral Claims in relation to other mining properties in that district, with notes on recent developments, production and dividends.

E. A. HAGGEN,
Mining Engineer,
Vancouver, B. C.



Survey Plan of Troy Group of Mineral Claims

Note the Phenomenal System of Veins

And Study Carefully the Engineer's Covering Report

