SQ- SUQUASH 51(1)A

NAME

DEPARTMENT OF MINES

VICTORIA, B.C.

SM-859-9549 (2)

SUBJECT SUQUASH COLLIERIES LIMITED (NPL) FILE No. LIBRARY

Copy of Report by Hope Engineering, Limited November 28, 1951

SQ-SUQUASH 51(1)A

(8)

We, H. C. KETCHESON and E. E. OANA, President and Secretary, respectively, of Suquash Collieries Limited (Non-Personal Liability) HEREBY CERTIFY that the attached is a true and correct copy of report of Hope Engineering, Limited dated November 28th, 1951.

DATED at Vancouver, B. C. this 29th day of January, A. D. 1952.

H. C. Ketcheson

President

Edward E.

Secretary

HARRY M. HOPE ENGINEERING COMPANY
ESTABLISHED 1919
ENGINEERS - MANAGERS
LLOYD BUILDING
SEATTLE 1

Nov. 28, 1951.

S U S Q U A S H
C O L L I E R I E S,
L T D.

PROPOSED STAGES OF MINE DEVELOPMENT.

STAGE ONE:-

Procure Leases 7000 acres plus..... COMPLETED.

Additional Leases _____ acres.

STAGE TWO:-

SURFACE RECONNAISSANCE:..... COMPLETED. (7/20/51)

Consisting of preliminary studies of

Camp Sites available.
Surface Equipment as salvage.
Plumb Shaft.(to determine if open.)
Study Foreshore. (Geologically & dock-site)
Study Surface for Subsidence if any.
Study possible harbor facilities.
(From Port Hardy to Port McNeill.)
Study road and trail locations.
Photograph surface and foreshore.
Timber. (Rough cruise.)
Preliminary study present available data.
(Past reports, government, etc.)

STAGE THREE:

UNWATERING OLD WORKINGS AND UNDERGROUND RECONNAISSANCE.
Estimate 4 to 5 weeks.

Sub. Sec. A.

Provide temporary transportation, shelter and food for preliminary personnel - not to exceed 6 men including supervision.

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Sub. Sec. B_2

3B1 Provide pumping unit. Air driven pumps diesel driven of capacity per day to dewater in approximately 10 days.

3B2 Unwater and repair shaft. The removal of the water now filling the underground workings should not prove difficult. The repair of the shaft - if needed - will be done immediately the water is down.

3B3 Check and survey galleries and drifts. This means remapping of the development work performed by the old company. Testing of the workings for safety is included.

3B4 Check coal seams preparatory to sampling. This will be well mapped so that sampling program will be well coordinated.

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SEE FOLLOWING SHEET FOR
ESTIMATE OF COAST ON
STAGE THREE.

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ESTIMATE OF COST STAGE 3. -
Approximately 45 days.

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SEC. 3A

TRANSPORTATION.....Receive material at Sointulla, purchase foods at best market. Hire small boat for possibly 6 trips @ $25.00 per.....	$ 150.00
SHELTER:.....Rent cat for one month to sleak and grade around camp.....	$ 500.00
FOOD SUPPLIES.....Sufficient for 6 men @ $4 per diem each for 45 days.....	$ 1080.00
REPAIR HOUSE.....Repair old house to make it livable. Materials, labor, and equipment.....	$ 1730.00

SEC. 3B.

PUMPING AND SHAFT RENEWAL:-

Rental of compressor unit and Cameron Pump. Lumber and framing with head blocks, cable, rope, small tools, etc.....	$ 4500.00

LABOR:

Supervision for 45 days @ $20.....	$ 900.00
3 men @ $12 for 45 days.....	$ 1620.00
ESTIMATED TOTAL.....	$ 9980.00

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STAG 4:-

PREPARATION AND SAMPLING OF UNDERGROUND DEVELOPMENT ROCK AND PROGRAM LAYOUT FOR FURTHER DEVELOPENT OPERATION.

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Sec. 4A.

4A1 Sampling - Standard methods of longwall faces and pillars.

4A2 Map coal series and tie in geology of area.

4A3 Check timbering and roofs and renew where necessary.

4A4 Set up pumping schedule to keep mine dry.

4A5 Run laboratory tests on samples.

4A6 Run Float and sink, and/or other beneficiation tests to determine how coal should be finally treated.

4A7 Determine type of coal breaker or washer needed.

4A8 Make market study, transportation study, all synchronized with development.

4A9 Prepare operational program or tentative lay-out if it is found desirable to pull coal in old workings prior to future development program. It may pay to hold this for major financing.

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STAGE 4 : - ESTIMATED COST DETAIL.
(Time 3 months including time of Stage 3.)

Sec. 4A1 to 4A8	Sampling.....	
	Surveying.....	
	Test runs of coal.....	
	Operational lay-outs....	
	Field Office expense, etc.....,	$ 3500.00
	Supervision in field.....	$ 2500.00
	Increased housing and other equipment.....	$ 4000.00
	Engineering expense.....	$ 8255.00
	Backlog for labor, etc.....	$ 1765.00
	Total est.....	$ 20,020.00
	Plus estimate Stage 3.....	$ 9,980.00
	Total Stages 3 & 4.....	$ 30,000.00

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STAGE 5.

DRILLING PROGRAM AND FULL SCALE OPERATION LAY-OUT. Practically all work on this section will be surface and underground examination, drilling exploration and the lay-out of proposed major mining program on paper and an estimate of total costs. This stage will also be able to determine the type of financing best suited to this major program.

Sec. 5A1... Drilling program. 4 holes minimum to average 500 ft. in depth.
Sec. 5A2... Drilling to determine thickness of the number 3 seam reported previously.
Sec. 5A3... Select site for double compartment working shaft, slope or any air and man-ways required.
Sec. 5A4... Prepare a program for developing No. 2 seam by long-wall methods (if feasible) tying into the present long-wall and perhaps extending to an entry near McNeill Harbor.
Sec. 5A5... Develope for consideration slips for stockpiling and loading to barges and ships other than Port McNeill.
Sec. 5A6... Develope possible barge loading grids at Port McNeill.
Sec. 5A7... Develope possibility of a gravel roadway and/or narrow gauge railway -- mine to Port Rupert and/or Port Hardy.
Sec. 5A8... Select site for proposed washer plant.
Sec. 5A9... Complete plan for developing under salt water slopes to Malcolm Island. Tie into long-wall development.
Sec. 5A10.. Complete mechanization program under and above ground. Surface plant for power and such facilities necessary for modern coal mining town.
Sec. 5A11.. Lay-out bunkering and conveying systems if such are necessary.
Sec. 5A12.. Determine proper dump sites for tailings.
Sec. 5A13.. Road program Port McNeill to Port Hardy to be worked out with B.C.Government.

Extracts from Report
by

A.E. Thomson

Seattle, Washington.

May 15th. 1934.

The Suquash Coal Field lies in the northern part of Vancouver Island and extends from the main Island across underneath an arm of Queen Charlotte's Sound on to Malcolm Island. There are two known seams, an upper and a lower vein.

The existence of these coal beds has been known for many years and the quality of the coal has always been spoken of most highly. In fact, in times past the Admiralty, when in need of superior fuel, has, from time to time, taken the matter in hand and caused mining to be carried on on the upper seam so as to satisfy some of their particular demands.

Whilst it has been well known that the beds have extended from the west coast of Vancouver's Island across the island to the east shore and then across that arm of Queen Charlotte's Sound known as Broughton Strait on to Malcolm Island, it was not until the year 1908 that a sufficient amount of diamond drilling had been done to develop the particular field in the vicinity of Suquash Harbor and to determine the propriety of making large expenditures there for the purpose of mining and marketing that coal.

Reference to: Report by the Provincial Mineralogist for British Columbia for the year 1908 under the heading of "Prospective Coal Mines".

The location of this property fulfills all the demands required to be commercially successful, and the remark in the last paragraph above quoted, stating that these results (boring operations) are understood to have been very satisfactory was mildly stating the true results of the diamond drilling as they revealed this Suquash field to the Pacific Coast Coal Mines,Ltd.

Bore-holes sunk by them showed such enormous [illegible] deposits of superior coal that they immediately took steps to acquire a large area of upland together with a large area of foreshore lands extending along the shore of Vancouver Island, the property covering a length of four miles on the upland and some seven miles of foreshore. Before making known the very favorable results of these borings, the Company proceeded to purchase certain lands for the purpose of holding a suitable waterfront property for use when the G.N.R. Railway should be built to the northern end of the Island. The following 25-acre tract was purchased: East half of Section 33, Township 6, in the Rupert District, in the Province of British Columbia, per Deed dated June 9th. 1914 from Kenneth Gordon Mackenzie to the Pacific Coast Coal Mines Ltd. and number I999-I.

For coal mining purposes the following tracts were purchased:
(a) Sections 12 and 13 containing 1280 acres.
(b) East fractional half of Section 14 containing 295 acres.
(c) Sections 16 and 17 containing 642 acres: all in Township Three (3).
(d) Sections 2 and 3 in Township 5 containing 631 acres as uplands; said uplands aggregating 2848 acres.

They also secured by licenses from the British Columbia Government under Section Five of the Coal Mines Act for the right to remove coal from the following coal licensed tracts as held by the said Company under lease dated September 1st. 1911:

LICENSES: Licenses numbered 2944, 2942, 2938, 2937, 2640, 2639, 2638, 2643, 2642 and 2641; Lot numbers respectively: 142 to 151 inclusive, aggregating 357.7 acres; annual rental aggregating $886.15.

The upland area of above granted lands aggregating 2,818 acres and the foreshore lands 4,574.2 acres, making a total adjoining area of 7,392 acres, which are in excess of eleven and one-half square miles, all of which lies well connected together, furnishing good waterfront and all necessary facilities in the matter of land area for plant operations.

Immediately after completing the borings and before securing the licenses listed, the Company started operations and began the sinking of a shaft, expecting to strike coal at 160 feet, when, if the coal in the shaft was found to be similar to that revealed by the boreholes, it was determined that the development of a real mine would be vigorously prosecuted.

Reference: Minister of Mines report for the year 1909, as to mine development, also as to previous report, citing as follows per extracts:

In a previous report a shaft was said/down 120 feet, and that coal was expected at 160 feet. The seam was struck at 270 feet, and was found to be six (6) feet in thickness. From 4 feet 8 inches to 5 feet 6 inches is good, almost smokeless coal, the partings consisting of small bands of rock.

The shaft now down is 6 by 10 feet in the clear, and is intended for the air-shaft. A new hoisting shaft will be sunk this summer. An up-to-date plant to handle 1,500 tons a day of nine hours will be put in. Development work is being pushed from the present shaft and about 6,000 feet of tunnelling has been done. The method of work will be a combination of long-wall and pillar-and-stall. All the available area under the land will be long-wall, while pillar- and-stall will be used under the sea. A large shaft pillar of 400 by 700 feet has been left. The main shaft levels are driven 12 feet wide and with a 66-foot pillar between the parallel ~~rooms~~. The long-wall places are turned away from the parallel level, so that the main road will be solid and have ample protection. The main shaft No.1 levels are now in 450 feet on each side of the shaft, and are in directions of North 45° West and South 45° East, respectively. On the Southeast side of the shaft a pair of slopes are turned away to the full dip of the seam, North 45° East. They are in about 250 feet. At 400 feet down another pair of levels, known as No.2 Levels, are turned away South 45° East. They are in about 150 feet at present and are being pushed as rapidly as possible. Pillar-and-stall work will be used, with pillars 40 feet and stalls 20 feet wide. In the long-wall work pillars are turned with 36 foot centers.

Extensive clearing has been done on the surface, and twenty houses, including a store carrying a full stock and a post office have been built.

A preliminary railway survey has been run from McNeil Bay to Saguenay, and in all probability a railway, wharves and bunkers will be built this year.

Reference: per report of Mr. George Wilkinson, Superintendent at Saguenay mine is quoted as to coal production for the year 1909 as aggregating 2,010 tons; number of employees 28, also as to confirming thickness of seam to be about 6 feet of good coal.

Operations were suspended in 1914 owing to litigation and war-time conditions. See Minister of Mines Report, 1914; quoting per extracts as follows:

EXTRACTS: During [illegible] considerable progress has been made along lines leading to the permanent development of the property. A large area of land was kept busy clearing ground for the plant and erection of same.

A new shaft has been started, size 11 by 22 feet in the clear. Formation stopped thereafter was declared. At the present time the shaft is down 18 feet into solid rock. A concrete collar was put in and all surface work was completely cut off. The leading "keps" or "frame" are set in the concrete and in the permanent positions.

The Company has installed the permanent engines for this shaft, which are as follows:

A pair of 24 x 36 inch engines made by the Vulcan Iron Works, of Wilkes-Barrie, Pa., and a 9-foot conical drum geared for a one and one-half inch rope. These engines are equipped with steam brake, reverse, and Nicholson Safety over-winding device.

Two Goldie-McCulloch high-pressure boilers 150 horsepower each, have been installed, and the foundations are in place for the installation of two more. A Norwalk compressor and complete mining plant have been installed, and everything is in readiness to proceed with the sinking.

Permanent buildings covering all machinery installed have been erected. The superintendent's residence and a model bunkhouse [illegible] of eighteen rooms have been erected.

Considerable work has been done in the mine from the old shaft. The permanent plan of working calls for the use of the old shaft as an air-shaft, and with this end in view the Company has been driving a pair of slopes down to intersect the main level from the new shaft, in order to have the ventilation established and considerable development finished ahead as soon as the new shaft cuts the seam.

These slopes have been driven a distance of 790 feet from the old shaft level, and still have approximately 510 feet to go to reach the main level from the new shaft. Levels have been [illegible] from these slopes and the plan will be to lower this coal to the new shaft. The vein is dipping about three degrees to the new shaft. The slopes are in a very fine coal, about 7 feet 6 inches and 8 feet in thickness.

The main level in the old shaft has been driven about 800 feet, and on this level a long-wall face about 1,200 feet in length has been in operation. There was 8 feet 6 inches of coal in the face of this entry.

I have quoted freely from the official reports because the most essential points in reference to this coal field have been accurately but briefly told therein. I know the value of this field because I was Director of the Company when the plans of operation were determined upon after the returns from the diamond drilling had been received, and had it not been for the stopping of work as demanded by the war, this mine would have become one of the heavy producers of the Province. War demands for machinery prevented the full delivery of parts on order, and thus restricted further development work inevitably.

To ascertain the condition of the buildings and property at Squamish, I made an inspection trip in early September of 1920, and can report the conditions of things as they then [illegible] as follows:

Surface: Summary of mine development and buildings, etc. as being in general good condition, buildings requiring minimal repairs. Some machinery in fair condition but mostly beyond use due to rusting. Boilers in fair condition, the two larger 150 H.P. Goldie-McCulloch boilers being in good condition.

I cannot see how the materials and buildings which now in good condition at this time can be replaced upon the ground in equal condition for a sum less than $54,618. These things (as itemized) are on hand ready to begin work as needed.

Concrete foundations to machinery and buildings will require to be excavated.

The main shaft is down 18 feet and according to bore-holes, will have to go down to a total depth of 285 feet.

The existing shaft 6' x 10' heretofore referred to struck coal at 170 feet.

The head-house and tipple of this original shaft are so decayed as to be useless, and probably the whole shaft will have to be relined and a new hoisting engine acquired and installed. I have had various estimates on this work, and based upon the ideals in mind of the proposed contractors, the cost for rehabilitating this shaft with machinery suitable for use for a long time, is varied from $15,000 to $30,000. In my mind, $25,000 will be ample sum for rehabilitating this shaft and all of necessary machinery so as to put the same in operation and to begin mining therefrom.

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The large shaft 11 by 22 feet which is already down but 18 feet leaves 267 feet. For excavation and lining the cost will be about $12,000. The investment to be put in for permanent tipple and screen is something that will depend entirely upon the determination of those who purchase the plant, based upon the idea as to particular uses to be made of the coal. We well know that these costs can be made to run anywhere from $50,000. to $150,000. In fact the book accounts covering the original work done on Squaash show that the machinery brought in, work done, overhead, diamond drilling, and all equipment, that an absolute expenditure of $237,000 had been made.

Of that $237,000 spent, greatly more values than are indicated in the $50,000. which I have indicated , remain. For instance diamond drilling has been done, a small shaft has been completed, and much work opened out in the mine, so that many of the items for which charges have been made are there as completed provings of the field and parts of construction and installation. When the new shaft has been completed, it had been intended to spend something in the neighborhood of $60,000 on tipple and screens and general yard work. I think that for several years to come that will be ample expenditure.

When work closed in 1914, about twenty acres had been cleared in fair shape, but many logs were yet unburned. This area has all regrown with a fairly dense growth of alder and young fir and will require an expenditure of probably $100 an acre to reclear the green growth and to complete the burning of logs and trash left on the ground at the end of the former clearing, this will be an expense of $2,000 for improvement of grounds.

To pump the mine out will not be a serious task, but will require an expenditure for labor, machinery and power of $3,000.

Retimbering in the mine is very difficult to estimate. Originally, very little timber was required. The mine had one of the finest roofs of any mine in the country, but whether the presence of air and water shall have started any caving or not, we do not know, but to be on the safe side, I propose to estimate the cost of retimbering the mine so as to begin work and of relaying track, etc., at $10,000.

For miners buildings, there will be required an investment of not less than $6,000, and for a waterworks system and sanitary conveniences to supply the community, there will be required about the same amount, $6,000.

For a landing wharf at Suquash for landing of small steamers and the anchorage of scows, it will be wise to prepare for an investment of from five to ten thousand dollars, and for safety's sake we will say $10,000.

Now, without any facilities for conveying coal to where large ships can be loaded or large scows can lay in safety, if we take a recapitulation of things which must be done to the small shaft out of which many tons of coal can be brought, we have as follows:

Relining shaft, and hoisting machinery	$25,000
For clearing land	2,000
For pumping	5,000
Timbering and track laying	10,000
Housing	6,000
Water supply and sanitary conveniences	6,000
Trackage to wharf and anchorage	10,000
This makes a total of	$64,000
To which we should add 15% for incidentals, or	9,600
making a grand total of	$73,600

or in round numbers, considering necessary travelling expenses, $75,000, as necessary to be spent to begin mining long-wall from the old shaft.

For economical handling of the coal for shipping, however, the railroad must be built to the bay near Ellen Point. This railroad to Ellen Point of single track will be about six and one-half miles long. For yard tracks at the terminals there will be required about two and one-half miles additional trackage, making a total trackage of nine miles. Using hewed timber for ties and not being required to pay anything for right of way, at present cost, this trackage can be built and ballasted in good shape for $108,000.

A wharf at this point can be very complex or very simple in its construction, and may range anywhere in cost from $15,000 to $150,000. In my judgement, a satisfactory wharf for shipping, until expensive coal handling machinery may be required, can be put up for $20,000, and I so estimate.

Locomotives and cars to serve this road, even for a modest equipment, will cost about $65,000.

That shows the necessity of using the sum of about $268,000 to put this plant in shape for actual operation for coal mining and shipping.

This sum, of course, as expediency and necessity demand, can at the option of the superintendent be sharply reduced or very considerably increased, but a careful miner will begin shipping in fair condition with an investment of $268,000.

To complete the large shaft with tipple and screens and yard, you add to this at once $72,000, bringing the sum up to $340,000.

To this there should be added another $10,000 as invested capital in cars and track and dead work on the first slope run from the bottom of this shaft, making a sum of $350,000 as the necessary amount of money to have in hand to rehabilitate the mine, to complete the sinking of the second shaft, and to carry the works to a connection with the slopes from the old shaft.

Until about 25 years ago, in speaking of the Suquash vein, reference was made to a small upper vein from 16 to 24 inches in thickness, which outcrops along the bank of the creek which flows northwesterly through Lot 15. This 16 to 24 inch vein is

the one which was worked in the early days by the Hudson Bay Company, and which has also been worked so as to produce some 15,000 tons of superior coal for the Admiralty, but since date of the sinking of the drill holes by the Pacific Coast Coal Mines, Ltd., reference has been made almost entirely to the thicker vein which lies about 150 feet below this 16 to 24 inch vein.

We think, however, that this 16 to 24 inch vein should not be forgotten as it also is remarkable coal.

In speaking of the new, or lower vein, it is generally spoken of as being from 7'6" to 8' in thickness. This measurement, however, runs from the sandstone roof to the sandstone floor, but because of the existence of a bed of shale some 18 inches in thickness over-lying a lower or 6 inch seam of coal, mining has not been carried to a point below the top of this shale, or only about 70 inches from the roof.

The coal is distributed in this 70 inches in some five or six strata, varying in depth from six to 18 inches and aggregating from 54 to 56 inches, or four feet six to four feet eight inches of coal, thus leaving a total thickness of partings running from 14 to 18 inches. In some instances these partings are found to be shale, but they are generally a sandstone, separating from the coal very freely. In order to most economically dispose of these partings, it has been planned to mine the major part of the coal by the long-wall system, using the gob to make the divisions between runways, airways, etc., and to support the mine roof.

Analysis of this coal is ordinarily given as follows in the reports:

Volatile Combustible	34.0%
Moisture	6.2%
Fixed Carbon	54.8%
Ash	5.0%
Total	100.0%

The late Mr. Sam Hart, a most excellent mining engineer, was held at this mine for several years, studying its characteristics and planning for its full development; and in speaking of this property, on the 20th. day of August, 1924, says:

"There is no limit to the amount of coal that can be taken from this property. My idea is to equip the first plant for daily tonnage of 1500 tons and add further plant as market conditions demand. Saquash is most unquestionably the most valuable coal property on Vancouver Island. The seam is regular; the full dip of the seam is only about 3 degrees; and this will be strictly a machine mine proposition, as conditions are ideal for this method of mining. The coal is very strong, and should give not less than 80% lump coal. In the opinion of resident engineers, Saquash coal could be mined at a cost not to exceed $1.50 a ton f.o.b. boats. The coal burns freely, is smokeless, and is a very hot steam coal."

If this estimate was correct for 1924, it is certainly more correct for today.

Mr. A. T. MacVittie, D.L.S. Surveyor, in reporting upon this coal field, says:

"The advantages of this property as they appear to me are briefly:

1. The quality of the coal is better than that of the Nanaimo District, both for domestic and steam purposes.

2. The flat dip, the regularity of the strata and strong roof and comparatively even floor, combined with the shallow depths, should provide a low producing cost.

3. The position geographically makes Port McNeil (the choice of land just east of Nilen Head had not been made at the time Mr. McVittie wrote) a desirable port for sealing both north and south coasting vessels, and any railway to Port Hardy where trans-Pacific steamers would go, would have to pass through the property.

4. The title is clear Crown Grant, including all rights except- silver and gold, and excepting a fixed royalty of five (5) cents per ton on all coal mined. There is ample timber for all building and mining purposes, and, in fact, a valuable stand of cedar in addition, which can be sold for good prices. The climate is mild throughout the year. The workmen will find desirable living conditions. Supplies of all kinds can be landed by sea right on the property at all times of the year.

In a report prepared by Mr. W. Watsmore, and filed in the Court in the case of the Pacific Coast Mines Ltd. vs. Armstrong, et al., under the date of November 11th. 1913, there is a brief statement concerning the Saquash Mine as follows:

"Quantity of Coal: In estimating the probable quantity of workable coal in this property, I have to be guided by the result of the exploration work shown upon the Mine plan accompanying the report:

"On that plan a fault will be noticed some 200 feet south of the shaft. All the exploring headings beyond this fault - which is a downthrow to the south of about 18 feet - disclose a coal of much greater thickness than the workings on the north side, the average thickness of coal being four feet six inches (4' 6"), while on the north side it does not exceed three feet. If the coal continues of the same thickness on the south side as I found it in the workings on the occasion of my visit, a very valuable area is disclosed."

"The sections effected by this condition, should it continue, would embrace an area of 3,000 acres, which, at an average thickness of four feet six inches would yield 18,900,000 tons gross, and 13,500,000 tons nett"

"On the north side of the fault with a basis of three feet average thickness, there are 6,000 acres; which on the same computation, would yield 29,200,000 tons gross, and 18,000,000 tons net; a total for the whole property of 44,100,000 tons gross, and 31,500,000 tons net. This does not include any estimate for the four areas adjoining Malcolm Island, and about which sufficient data is not available to enable me to make a close estimate".

"Quality of Coal: There is no doubt that the Saquash coal is the highest grade bituminous coal yet discovered on Vancouver Island. It is freer-burning than any of the Nanaimo coals, makes little smoke, and will always be in demand for steaming at sea."

"An average analysis is as follows:

Moisture	6.0%
Volatile Combustible Matter	34.0%
Fixed Carbon	54.4%
Ash	5.6%
Total	100.0%

It will be noted that this report and analysis varies a little from that before given, but so little that the difference is immaterial; the difference being that the fixed carbon is fixed at 54.4% instead of 54.8% and the ash at 5.4% instead of 5%.

The tonnage to be derived from this mine by this report is very modest as compared with that estimated by others, and only about one-third of the amount estimated by Mr. Mark.

This coal mines coarse. Through years of careful measurements we find the following percentage of size produced:

Lump	50%
Nut	17%
Pea	18%
Steam	15%
Waste	2%
	100%

The coal can be put f.o.b. ships as follows:

Per labor and overhead	$ 1.75 per ton
Royalty to Government	.10 " "
Supplies	.35 " "
Insurance, etc.	.15 " "
Total Cost	$ 2.25 per ton f.o.b. mine.

Royalty 2.5%

For incidentals and developments and further exploration for the first year or two we should set aside 75¢ for every ton mined. This would make a gross cost of mining, delivery, etc., of $3.00 per ton.

Until March 1st., 1940, we have a contract for 100,000 tons per annum f.o.b. barge at the following prices net:

Lump	$6.85
Nut	6.35
Pea	5.85
Steam	5.35

On The average of the run of mine sizes that will produce the following results:-

50% Lump at	$6.85	...	$3.425
17% Nut "	$6.35	...	0.762
18% Pea "	$5.85	...	1.053
15% Steam "	$5.35	...	0.8225

This gives a total sale price of $6.04 per ton, minus $3.00 equals $3.04 clean profit per ton.

The market 100,000 tons per year to one customer means that after this mine is in good working order that approximately 400 tons per day must be removed. Some of it will be sold at more advantageous prices than that above setout, but allowing that none of it brings a net profit of more than $3.00 per ton we would have a profit of $1,200 per day for about 310 days per year, or a net annual return of $372,000 which is interest on $6,200,000, earned on a small output, based on a present contract. Such a return should be had well before the end of the second year's operations.

My mining costs are considered by good men to be high. They may be, and certainly would be if the mine was operating in full force, but under re-opening conditions I prefer to put them at safe figures.

Mr. Wark spent several years in his study of this mine, and he affirms that there can be removed from these lands, including upland and foreshore, 111,000,000 tons. Having great faith in Mr. Wark, I cannot but believe that Mr. Matsmore overlooked some important feature.

Even at Mr. Matsmore's 11,500,000 tons, if mined at 1,500 tons per day with 300 fwdi days per year, the mine would work for seventy years.

I am just in receipt of information to the effect that you have added claims aggregating seven thousand acres, and that they combine with and in some respects tend to enclose parts of the original Squash coal field. This addition brings this field forward as unquestionably the best coal area in British Columbia, and that is something I would not dare to say except for my many years of intimate acquaintance.

I have also lately obtained the letter written by the late Samuel Wark to Mr. [illegible] Esq. of Vancouver, B.C., and after studying the same, I have concluded to attach it to my report as Exhibit "A". I do this for three reasons -

First: He agrees with me that the harbor should be at Allen Point. I made surveys to that point in the spring of 1919, and made my recommendation then.

Second: He soundly argues that taking everything into consideration, the main mine opening should be made in tract 17, which will put it some three miles nearer the shipping point, place the works in suitable contact with an ample water supply, and put the workmen's homes on good soil where gardens can be grown; and

Third: He gives an inventory of the machinery and other matters at the plant at the time of his writing.

Without going on the ground and carefully studying his argument, I cannot at the instant say that I give it my full endorsement; but I can say that I could never refuse to give full consideration to Mr. Wark's suggestions, and one would nearly always find himself justified in following his, if not compelled to follow him.

I am submitting photostat showing the vicinity of the mine with the property very slightly colored so that it can be seen just exactly where it lies with reference to Malcolm Island, Broughton Strait, Queen Charlotte Sound, etc.,

In Section 33 of Township [illegible], I have colored a spot in the south-west corner. That indicates the position of a 25 acre water-front tract acquired for the purpose of controlling shipping in case the Esquimalt and Nanaimo Railway extension was made to Port Hardy, and as a possible site for the erection of storage facilities in connection with certain shipping contracts.

I am also submitting herewith blue print prepared by Mr. Wark showing the position of all the buildings on the ground, the shaft, etc., also, some blue prints showing the face of the coal as measured at a number of points in the mine, indicating the average thickness; also, several photographs showing some of the structures now standing; and also a map of Vancouver Island.

Respectfully submitted,

(Signed) R.E. Thomson

Consulting Mining Engineer

Seattle, Washington,

May 15, 1934.

EXHIBIT "A"

Squaash Mine, Vancouver Island, B.C.

July 3, 1925.

A.B.Buckworth, Esq.
Vancouver, B.C.

Dear Sir:

In compliance with your request I am appending herewith list of surveys and plans made and forwarded to various parties in connection with the Squaash properties.

1. Plan showing submarine contours from soundings taken opposite the Squaash Mine.

2. Plan showing general arrangement of mine plant including Head Frame, Tipple, Washery, Trestle and Bunkers at Squaash, proposed by completing the upper plant and building trestle from the high ground to deep water.

Both these were forwarded to Mr.Geo. Wilkinson and acknowledged by him Sept. 7,1920.

3. Plan showing contours in the vicinity of the proposed new slope at Squaash, acknowledged by Mr.Wilkinson, June 20, 1921.

4. Plan showing contours in the vicinity of Allen Point, also submarine contours from soundings taken between the North point of Sec.[illegible] and North point of Sec.22 Dav't Reserve in Twp. [illegible]

Acknowledged by Mr.Wilkinson, May 15, 1922.

5. Preliminary railway survey including Topography from Squaash to Allen Point, with an estimate of the cost of construction.

This information was asked for about May, 1922, and was forwarded to the Victoria office about August, 1922. I never received acknowledgement of this plan, only in a round about way, that it had gone East and had been approved by the Syndicate. It was a hard paper plan and in so far as I know it was not traced or blue printed.

6. Reconnoissance Survey of lake and territory south of Squaash for water supply purposes.

7. Survey of the Kluck-[illegible]ht River for permanent water supply purposes, sent June 8, 1921.

This comprises all the plans and surveys I made whilst here except sections of the coal which I made and forwarded at various times to parties interested.

The above plans comprise all the detail and information necessary for the installation of mining plant and coal loading and handling facilities in this district, and I would be pleased if it is at all possible for you to obtain and forward to me such blue prints as have been made of these plans.

HD.Wark

INVENTORY

MATERIALS and SUPPLIES - SUQUASH COLLIERY

SUMMARY OF THE FOREGOING.

	Value	Replacement Value - Vancouver
Machinery	$ 25,900.00	$ 29,800.00
Boiler Fittings - Lower Plant	471.50	543.00
Boiler Fittings - Upper Plant	2,505.00	2,860.00
Material and Supplies - both plants ..	5,107.10	6,417.70
Recoverable Materials - Hoist-house ..	570.00	750.00
" " - Boilerplant ..	570.10	820.00
" " - Water-tank ..	686.90	1,089.00
	$ 36,310.60	$ 42,279.70

Please note:

Material in the bungalow and other buildings is left out of this calculation. In the case of the bungalow, a good half of the value of the building is concrete and stone work, which in the case of moving the building, is of no value.

The remainder of the material, except fittings, would be largely wasted in dismantling.

If an estimate is asked for as to recoverable portion it will be furnished.

With respect to other buildings; the material salvaged would not pay for the cost of the labor in doing so.

Sam D. Buck

NOTATION: (May 25th.1945)

No copy of the lengthy detailed inventory of mine machinery, equipment, material and supplies, etc., has been made covering the above "Summary" since it is of little value as of this date beyond affirming a general idea as to what was placed upon the property at the time of operation - hence the above "Summary" will afford a general idea as to capital expenditures as was made in connection with the property. It is understood however, that the three or four boilers as now on the property along with certain other machinery are in good or fair condition - so that an up-to-date inventory of such machinery and equipment, etc., should be taken.