

URMISCA/130-136

MISCELLANEOUS

130

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March 18th 1915/91

W. H. Wallace Esq.

Secretary for Mines,

HOBART, TASMANIA,

Dear Sir,

POWER SCHEME, ANCHOR TIN MINE,

In obedience to your instructions I visited the St. Columba Falls and again examined the country in its neighbourhood. I also secured at the Anchor Mine the data previously compiled by myself in connection with this and other power schemes. Though called upon only to report on the St. Columba Falls scheme, I have thought it advisable to refer briefly to the others.

EXISTING POWER SCHEME:- This consists of a long, fairly high level race from the North George and Gorge Creeks and costing between £20,000 and £30,000. This has been a complete failure. I became aware of this shortly after my appointment as Manager, but as it had cost the Company so much, I endeavoured to make the best of it, and took much trouble and spent much money in endeavours to improve it and to keep it in repair. In addition I went into many schemes, made many surveys of such, and inspected all the surrounding country for reservoir sites. The most important alternative schemes were:-

- (1) Extension of the present race to the South George.
- (2) Mr Rahbeck's scheme.
- (3) Dam site on Tier with race to bring water to the head of the

Broom river.

(2)

(4) Dam in Groom for dressing water with an extension of race from below the battery to Gould's Country to power station in the Ransom adjacent to the intake of the Royal Ruby (now Pioneer) race.

(5) Low level race from the George rivers in place of the above dam and extension of race to Gould's Country as above.

(1) With regard to this scheme, I found that an extension of race of over 13 miles, some of it in very difficult country would be required. That in Summer time little more than 10 sluice heads could be counted on at intake, that the gulleys intercepted would have, in summer, no effect on the supply, that most of the water carried would be lost by seepage and evaporation before it reached the North George intake, and consequently that when most required this supply would be of no value.

(2) With regard to Mr Rahbeck's scheme, his estimated cost was nearly £120,000, and he had made no provision for getting the power water to the mines. As to get it to the Anchor Mine either a long race or an expensive tunnel would be required, this cost would be much increased.

(3) Dam site on Tier. This dam could be constructed, I believe, at considerably less than Mr Rahbeck's estimate but at the same time it was not available during the greater part of my time as manager, but according to Mr Rahbeck's observations, an average supply of 18 sluice heads only would be available. As we have had a series of much worse seasons since his report, this average would be much reduced. A long race, extending nearly to Meldborough and back again, would be required, and in which we would lose most of our water. So that with a very large expenditure we should have been little better off than at present.

(4) Dam in Groom &c. This scheme would have very limited applic-

(3)

tion. For it I made pretty complete surveys and estimates. The dam would be of comparatively small capacity ( for a 40 feet bank, containing 37,000 cubic yards the dam would only hold 3,000,000 cub. ft. water, and equivalent to dressing water for the battery for about 10 days) The high pressure water, after providing power to drive 50 heads of stamps, together with dressing water, was to be conveyed to Gould's Country by race, and there utilized to generate sufficient power by means of water motors and an electric generating set to drive the other 50 heads. This required large settling or sludge tanks, a race 400 chains long (partly through private property) a pipe column 54.88 chains long ( nearly all through private property) giving a pressure of 350 feet at the proposed power station. It would also have provided water and power for working the Anchor Alluvial blocks held at that time by the Anchor Company. It was proposed to construct the dam bank with soft granite, ground sluiced from the hill sides. This could probably be put into the bank for 2d per yard, but the preparation of the dam site and the provision for flood waters &c. would add considerably to the cost. This could only be carried out when water was plentiful. It was expected that the tin saved from seams in the soft granite would contribute considerably to the cost of the work. This scheme would have cost at least £5,000 without compensation to private owners as I hoped to get their permission for nothing. Under present conditions I expect that it would cost considerably more. Also, as soon as the high pressure water fell below sufficient for 50 stamps, and the dressing water dam became empty, we should have been in as bad a condition as ever.

(5) Low level race from the George &c. As this would have to take its start at points in the George rivers at about 300 feet above

(4)

the level of the river flats, in order to cross the saddle and reach the mine at the level of the battery, it would have to follow the spurs and gulleys in the hill sides, and would probably be longer than the existing race (over 30 miles to the North George and 43 to the South George) and would possibly be no more efficient.

Other power schemes were considered, the construction of the dam near A. V. Smith's referred to in the St Columba Falls scheme to regulate the supply in the George races. Auxiliary steam power, Gas engines with producer gas &c. but the most satisfactory power scheme of all is that which I now propose to describe more fully, namely the St Columba Falls scheme.

**ST. COLUMBA FALLS SCHEME:-** This would consist of a storage dam, small concrete weir, short race, long pipe column, water motors and generator transmission line, transformers and <sup>electric</sup> motors.

**DAM:-** Near A. V. Smith's and Le Fevre's selections on the head waters of the main stream of the South George I surveyed a very good dam site, where a dam bank containing 21,000 cu. yds. would hold 20,422,000 cu. ft. water this would give 10 sluice heads for 59 days.

With the aid of this dam we should have no difficulty in getting sufficient power at the St Columba Falls for all purposes and allowing for two to three abnormally dry months together.

Nearly 20 years since, Mr David, City surveyor, Launceston, reported on a proposed electric power scheme at the St Columba Falls and condemned it. I think that he was quite wrong and subsequent improvements have further reduced the possible objections to such a scheme. It would have been infinitely more efficient than the scheme adopted and would have cost less

(5)

than half what that scheme cost, and would have also cost less in maintenance.

By going back from three quarters of a mile to a mile above the falls, putting a weir across and cutting a short race (possibly a mile and a half long) we should be able to get a least 300 ft. pressure with a pipe column probably about 2000 ft long.

At one time the Anchor Company kept a gauge on the river at the proposed intake of that Company's race and it was visited occasionally during dry weather. The lowest gauging that I have record of gave about 12½ sluice heads, but during my recent visit the quantity of water would not be more than 10 sluice heads, though it is hardly likely to have ever been materially below this. However, as the country is taken up and cleared, timber and undergrowth destroyed, the supply is likely to fall off in dry weather so that this is not likely to be the minimum in future. The proposed dam mentioned before would contribute 10 sluice heads for over two months of working days, and with the ordinary drainage water should provide 20 sluice heads for between two and three months of the driest weather.

With an 300 feet pressure 20 sluice heads would generate 700 horse power. Allowing for the usual losses in generating, transit and applying this power, there should be about 388 horse power available at the mine. During the day shift about 375 would be the minimum required but for the two other shifts only 270 would be required. Or if the generating sets were properly arranged 20½ sluice heads would give sufficient power for one third of the time and 15 for two thirds, or an average of 17 sluice heads. Of course, for the greater part of this time there would be some

(3)

power still available from the present sources, and the peltons &c. should be kept in order for emergencies. It might be possible also with the aid of the dam to allow a certain quantity of water to pass over the falls so as not to seriously damage it from a scenic point of view.

**DRESSING WATER:-** This would still be the difficulty as in nearly all the schemes proposed, for in dry seasons the supply has fallen below 5 heads from all local sources, while the supply required for the full battery is at least 10 heads. We may get over this by the dam suggested in scheme 4 which might eke out the supply for nearly a month, or we might dump the tailings and collect the water in settlement dams to be pumped back to the battery for use in the battery boxes, keeping the clear water for the table and tin dressing appliances.

**COST OF SCHEME:-** The following estimate is for work carried out on the most economical lines in favourable circumstances and with careful supervision. It must also be considered as very approximate on account of the scarcity of electrical appliances due to the war, Not only are German and Austrian supplies cut off, but there is an abnormal demand on British supplies <sup>for war purposes</sup> and the import has practically ceased. In spite also of there being so many unemployed, the cost of labour has greatly increased and skilled workmen are exceedingly scarce. Materials also have greatly increased in cost. This, I find, applies to work carried out at a distance from the main cities where I find it almost impossible to secure competent men for special work.

For maintenance, at least two men would be required in charge of the generating station, one in charge of the dam and races, and one in charge of the transmission line. This would however be about the same as

(7)

or little more than now required for the existing races. Two men are always employed on these and frequently many more and quantities of timber and other material.

Dam construction including short races to bring adjacent streams into the dam area,	2000	0	0
Weir and race to pipe head	350	0	0
Pipe column (half wood pipes and half spirally rivetted and hessian wound steel pipes)	1200	0	0
Generating station, water motors, dynamos &c. and the necessary buildings,	5500	0	0
Transmission line (7½ miles for 5000 volts)	1000	0	0
Transformers, motors &c. at battery	1200	0	0
Telephone lines and other sundries	500	0	0
	<u>£9750</u>	<u>0</u>	<u>0</u>

Or under favourable circumstances and with careful supervision say about £10,000.

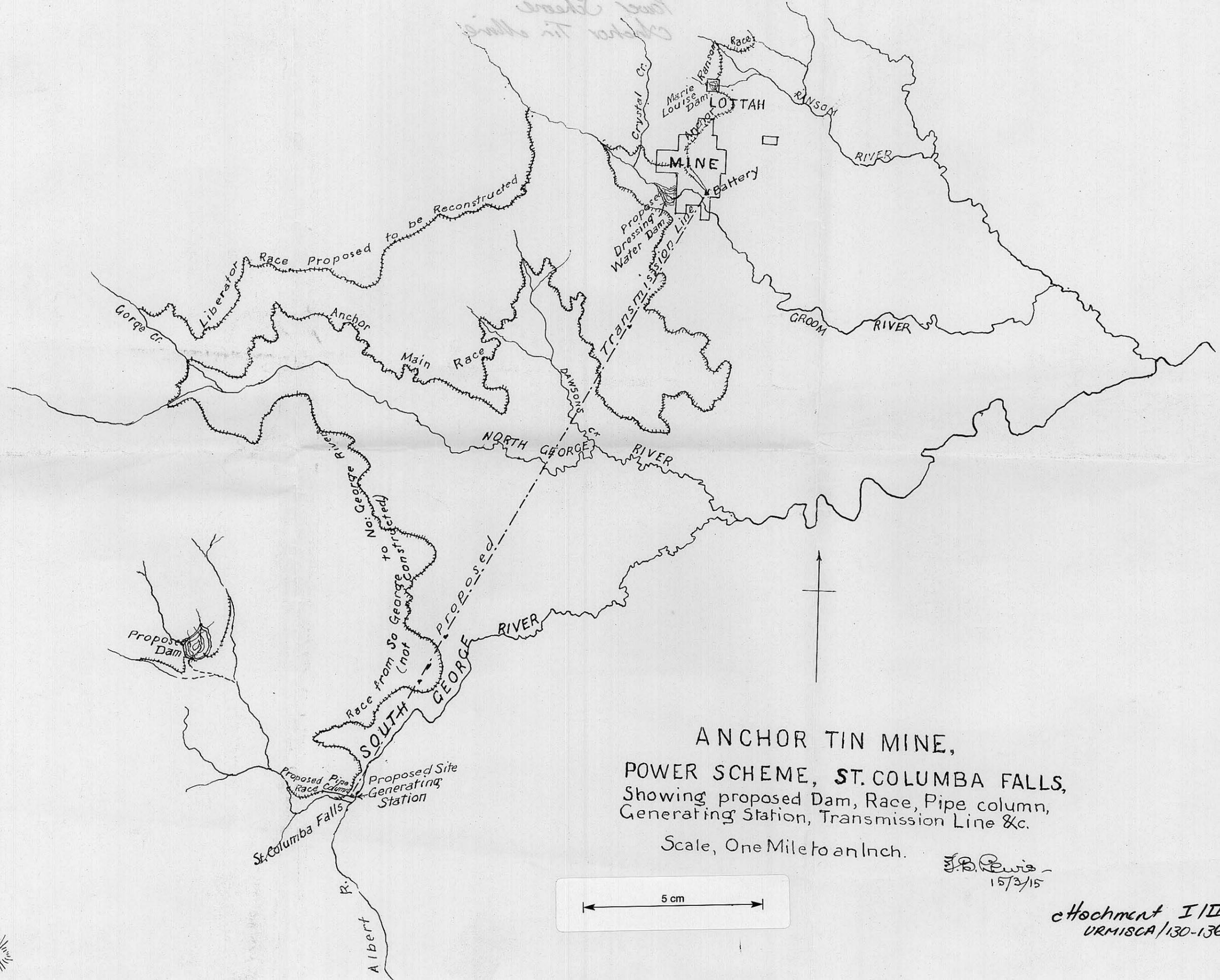
This can be taken as an indication of the power likely to be available, though a careful survey, necessary before construction was commenced, would probably show a greater pressure available and consequently less water for the same quantity of power would be required. A survey of the transmission line would also be necessary as it will cross private property, several roads, and high bush country heavily timbered, towards the mine. There is another dam site on a branch stream of the George between the above dam site and the falls that would be worth investigation in connection with the scheme.

I have the honour to be,

Yours faithfully,

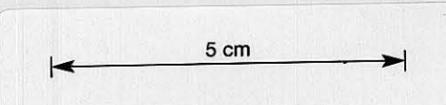
*James B. Lewis*

ATTACHMENT I/II  
URMISCA/130-136  
Anchor Tin Mine  
Crystal Cr.



ANCHOR TIN MINE,  
 POWER SCHEME, ST. COLUMBA FALLS,  
 Showing proposed Dam, Race, Pipe column,  
 Generating Station, Transmission Line &c.

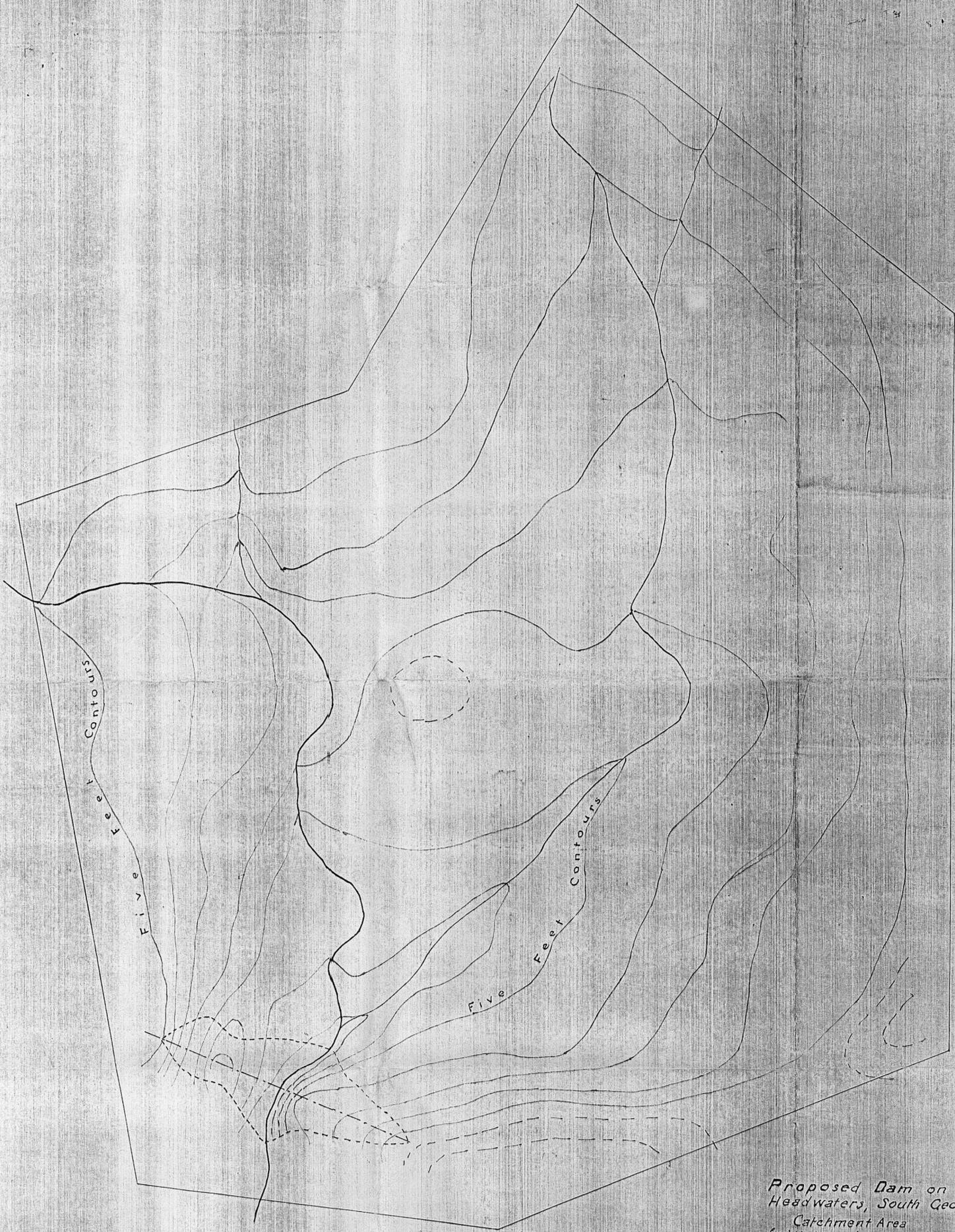
Scale, One Mile to an Inch.



J.B. Lewis  
 15/3/15

Attachment I/II  
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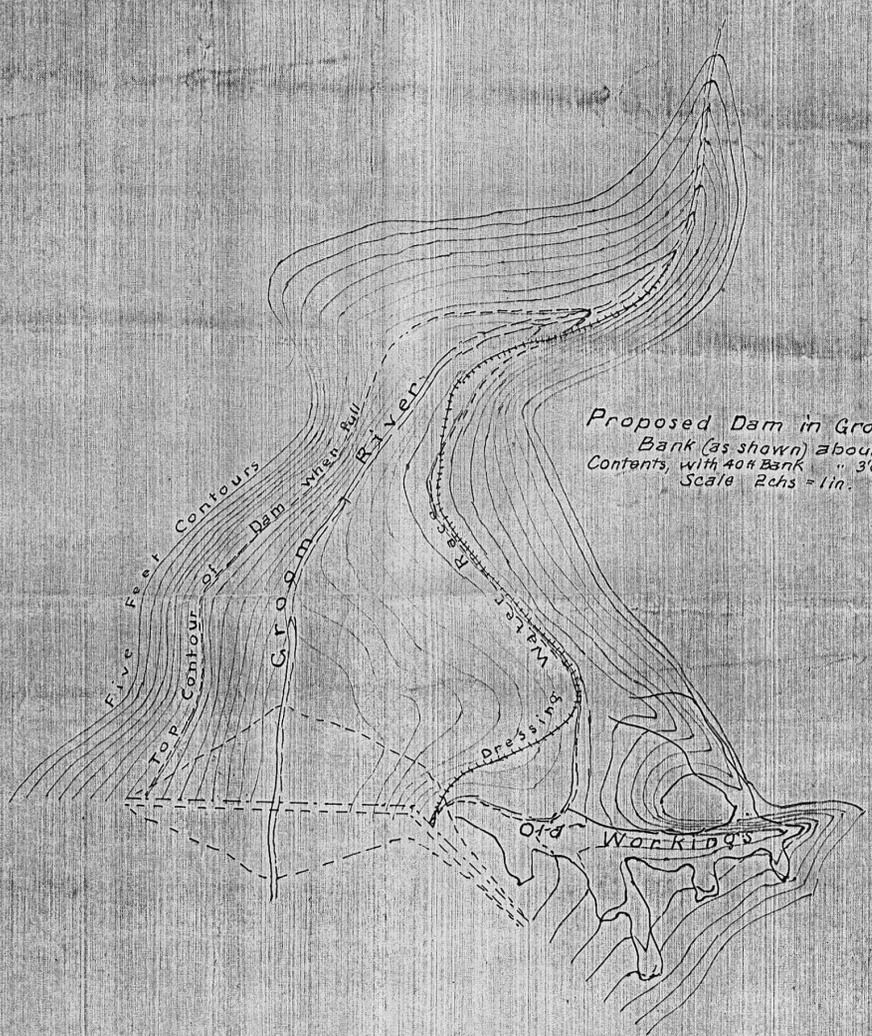
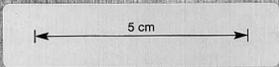
Proposed Dam on the  
Headwaters, South George R.

Catchment Area  
(with two side streams) about 8 sq. mls.

Bank (as shown) " 22,000 cu yds.

Contents " " 20,422,000 cu. ft.

Scale 2chs = 1in.



Proposed Dam in Groom  
Bank (as shown) about 37,000 cu yds.  
Contents, with 40% Bank " 3,063,000 cu. ft.  
Scale 2chs = 1in.

Kamaljit Singh  
15/3/15