

Vancouver, B. C.,

June 24th, 1913.

TO THE
MAYOR AND ALDERMEN OF THE CITY COUNCIL.
Gentlemen:-

I have the honour to report as follows, concerning my inspection of the proposed impounding reservoir site on Seymour Creek, four miles above the present intake.

In accordance with your instructions, I left Vancouver Tuesday, May 27th, accompanied by Mr. Montizambert, engineer of the firm of Messrs. Hermon & Burwell, and Mr. Vance, the City Analyst, we drove as far as the Seymour Creek Intake and proceeded on foot to the waterfall, the site of the proposed dam, the same afternoon, where we went into camp - tents having been pitched a day or two previous.

At the present time there is a good wagon road between the Ferry Wharf at North Vancouver and the intake, which is situated seven miles up from the mouth of the Creek. Beyond this there is a good trail of about four miles to the falls, the site of the proposed dam. From the falls on the West side of the Creek to the head of the proposed Impounding Reservoir, a distance of five miles, you follow the old Lillooet trail which is in very bad condition and almost obliterated by fallen timber and underbrush. On the East side of the river the travelling is very difficult on account of the dense growth of underbrush, devil's clubs and fallen timber.

The proposed Impounding Reservoir extends from the waterfall (formed by a reef of granite rock, the crest of which is about 632 feet above the sea level) for a distance of about five miles, covering an area of 484 acres, Seymour Creek running somewhat to the Easterly side of the proposed flooded area.

SOURCE

The Creek is supplied from high timbered mountains about five or six thousand feet in height, the total catchment area being about 80 square miles with a mean annual run-off about 500 sec. feet. The low water flow is about 80 cubic feet per second, and its maximum about the same as Capilano. At its source is a Lake of from 400 to 500 acres, at an elevation of about 3,000 feet above sea level. In this neighbourhood there are also snow-fields which help to maintain the supply of water during the summer months.

FLOODED
AREA

Parts of the area to be flooded are low and swampy - other portions are covered with underbrush, devil's club and some fallen timber, and on both sides are the slopes of the mountains, which here rise precipitously to a height of about 5,000 ft., which at the time of my inspection were well covered with snow.

TIMBER

The standing timber consists of spruce, hemlock, balsam and a few cedars, and is no where excessively dense. The greatest area of swampy land is about 113 acres on the West side of the Creek a short distance above the waterfall. There are two other portions of swampy land situated on the East side of the river - in extent of 42 and 91 acres respectively - in addition to these there is some flat land at the head of the proposed area, a portion only of which would be flooded.

SWAMPY
LAND

GEOLOGICAL
FORMATION

The geological formation of the mountains on both sides of the Creek is similar in character. We found here the older or archaean rocks, granite, schists, diorites, felsites and gray limestone. In places one finds out-croppings of iron and copper pyrites, also heavy cappings of magnetite or magnetic iron ore, but these will in no way effect or contaminate the water supply.

BASIN

The basin of the proposed flooded area consists, in addition to the vegetable matter, of loam, clay loam with boulder and disintegrated granite, and at a distance of two feet on the sides of the mountains to be flooded, we found a cement gravel. In places, especially in the larger swampy area before mentioned, we came across rock flour at a depth of about two feet below the vegetable loam - this was continued down to a depth of four feet six inches - as far as we were able to dig on account of water coming in. This flour rock was not found in any of the other 23 holes that we dug.

ROCK

FLOUR

ANALYSES

SOIL, etc.

Analyses of the soil and water were made in 33 different points throughout the proposed flooded area and in the majority of these holes, to a depth of four or five feet, vegetable contamination was present, but in the case of the holes that were carried to a greater depth, the water seeping through from below was found to be relatively free from albuminoid matter. No animal contamination of any kind was discovered. The presence of dissolved minerals in the soil was not greater than that usually found in the analysis of Seymour Creek water.

The attached detailed report of the various samples of the earth and water taken will show exactly what was found in each test hole and proves conclusively that this area could be safely used for a storage reservoir if the recommendations which I have the honour to submit, are carried into effect.

RECOMMENDATIONS

REMOVAL
OF
BRUSH

BASIN

I am of the opinion that all brush, decaying logs and vegetable matter should be burnt and that the timber should be cut down as low as is practicable, not only in the proposed flooded area, but for some distance on either side. The burning should take place on the swampy land to destroy as far as possible all vegetable matter. It may even be necessary

GROUND
SLUICE

to ground sluice or to strip the swampy portions, to insure as far as possible the removal of all organic material, for it is this organic material that produces the food for various micro-organisms found in water. It is proved that many micro-organisms (the algae and others which grow in the sunlight near the surface of the water and for which a degree of quiet and repose is necessary) grow in impounded reservoirs and although possibly not injurious and are not particularly harmful, they are still very troublesome, principally on account of the odor they cause and the taste they give to the water. They are not found in rivers or flowing water and the effect of temperature has a great bearing in prohibiting their growth.

MICRO-
ORGANISMS

TEMPERATURE

I am inclined to think little or no trouble will arise at this proposed site owing to the low temperature of the water, though at present we have insufficient data to determine what the maximum temperature is. The fact that the catchment area is fed principally by melting snow would I presume keep the temperature always low. On my visit in June the temperature of the water registered 40 degrees Fahrenheit or almost a temperature at which water is at its greatest density.

TEMPORARY
WATER
SUPPLY

During the period of clearing and burning it would be necessary to provide for the water supply of Vancouver, and I would suggest that the permanent pipe be carried up from the present Intake to the proposed dam site and from thence a temporary pipe for possibly three or four miles.

It might be practicable to make use during construction, of the streams flowing into the Creek, such as Boulder Creek and others. This, of course, only the Engineer in charge can decide.

CAMPS

Great care must be exercised in the situations of the camps, to prevent the contamination of the water, and there are one or two admirable sites which suggested themselves.

In conclusion I might state that I have never seen a better natural site for an impounding reservoir. There are no residences or other sources of contamination above the proposed dam, which as suggested, is to be built at the waterfall, of cement on a rock foundation.

I would take this opportunity to thank Mr. Burwell for much of the data and maps supplied showing the contour of the ground, the height of the mountains and other useful information. Also Mr. Montizambert for his courtesy and assistance in directing me over the proposed flooded area.

A very thorough inspection was made and nothing left undone from which we could gather any useful information.

Mr. Vance, the City Analyst, made tests on the ground and in addition brought samples to the City for further and more complete analysis.

INCREASE
DEPTH OF
DAM.

The advisability of increasing the depth of the dam might be worthy of consideration, as it would not only give us greater storage of water but would allow a better settling, as the proposed maximum depth is only 45 feet.

I would like to make a further inspection during the dry season of the year of the swampy portions, that the test holes might be taken to a greater depth through the flour rock, this being impracticable at the time of our inspection owing to the test holes filling with water.

Your obedient servant,

Medical Health Officer.