GOVERNMENT OF BRITISH COLUMBIA

MEMORANDUM

TO: Comptroller of Water Rights,
Buildings.

FROM: E. Livingston,
Geologist,
Water Rights Branch, Buildings.

June 27th, 19 62.

SUBJECT: Groundwater as a water supply source, Prince George Area.

OUR FILE: 0239014/0162179

YOUR FILE:

A geologic investigation in the Prince George area during June 1962 indicates that the Pleistocene geology is quite complex but that aquifers are present in certain areas. The investigation was carried out with the idea of finding sources for a water system or systems to supply the ribbon development along the Hart Highway extending north from the Nechako for about 6 miles and also for the Air Port Hill Improvement District. It appears that the most economical way to supply the Hart Highway area would be to design three separate systems each with a separate source to supply the three areas marked Upper, Middle and Lower on the map.

The Lower area on the Nechako River Bench, which would have about 55 connections presents no problem as far as a ground water source is concerned. This area is underlain by river bench gravel to a depth well below the water table. Existing wells here have a high yield of good quality water. A ten-inch diameter well about 50 feet deep in this area should not cost more than $2,000. By locating in the vicinity of the Tartan Brewery which has an excellent well it would probably be safe to drill a production well without a preliminary test hole.

The Middle area which would have about 240 connections, is underlain by sand over intermittent till over more sand. Existing wells in this area vary in depth from about 25 feet to about 160 feet. The water table varies in depth from surface at McMillan Creek to a depth of about 50 feet further north. The main problem here is well construction. A well here in the sand must be carefully constructed in order to yield an estimated requirement of 100 gallons per minute without pumping sand. One or more test holes should certainly be put down in the area before drilling a production well. 8-inch diameter test holes, 100 feet deep including pump tests could probably be put in for about $1200 each. A production well might cost as much as $3,000. In this area a well inventory of existing wells should be carried out before proceeding with any drilling.

The Upper Area which would have about 230 connections, now obtains water from a number of dug wells which obtain water in sand perched on top of a southerly sloping sheet of till. These wells vary from about 10 feet to about 110 feet depending on the distance to the till. The water is of excellent quality. Available information indicates that the small ponds (marked K on the map) which occupy

..2

old glacial kettles are below the water table. The one marked K, which is close to the developed area and the highway could probably be used as a source or a well could be drilled in this area to tap the same water. A well is probably preferable as far as polution hazard, freezing troubles etc. are concerned. There is the possibility that drilling close to the kettle might encounter gravel which would cut down the cost of well construction. Test drilling of at least one 8" hole should be carried out before drilling a production well. The cost of a production well in this area should not be more than $2,500.00. It is possible that an 8" test hole encountering gravel could be used as a production well to yield the required 100 gallons per minute. Here as in the Middle area well construction is an important part of the problem.

The geologic conditions near the Air Port Hill Improvement District, which would have about 50 connections, are quite complex and are not well known from available information. The gently rolling plateau area including the airport and the farming area east and south is underlain by silty clay and clay silt lake beds apparently over till, over silty sand and silt. Wells in this plateau area have generally been poor. However from the west side of the Provincial Govt. Gaol property to and probably beyond the garbage dumps north of Haggith Lake along the north facing slope conditions are quite different. Here there is a zone of ice contact deposits consisting of till, sand, gravel, silts etc. probably deposited by ice from the north resting against the south side of the pre-glacial Fraser Valley. There are numerous springs from this area which have been a cause of the land slide activity on the highway on the hill from the P.G.E. yards eastward. It should be possible to develop a ground water source in this area but it would probably be necessary to drill a number of test holes to find a favourable location for a production well. It is difficult to estimate depths etc. so the cost is uncertain. Two test holes would perhaps cost a total of $3,000. Quality of a spring near the Government Gaol showed good quality hard water (120 ppm) free of iron. Further geologic investigation and a well inventory should proceed drilling in this area.

In summary, the economies of the domestic water projects presently under investigation could not be determined before a test drilling program at an estimated cost of $9,000 has been carried out. Test drilling should be preceded by further geologic study and well inventories which could be done within 6 weeks.

In passing it is noted that there are two other areas close to Prince George which have inadequate groundwater supplies. These areas will probably ask for help in finding more adequate sources in the near future.

E. Livingston.

EL/pd

Ferguson Lake
John Hart Highway
Upper Area
Middle Area
Lower Area
Otway
Garden Creek
McMillan Creek
Eastern Creek
Great Northern Pacific
Canadian National
Neghako River
Fraser River
Prince George
Prince George Airport
Air Port Hill Improvement Dist.
South Fort George
Foreman
Miller
Seaplane Base
Golf Course
Race Track
Drive-in Theatre
Rifle Range
Radio Towers
Gas Pipeline
Cut Line
Reservoir
Dam
Hosp