



To: J. C. Foweraker, Head
Groundwater Section
Hydrology Division

Date: April 21, 1978

Our File: 92B 13

Re: Groundwater Supplies at Cowichan Bay -
Cowichan Estuary Task Force

Following the April 11, 1978 request of Mr. B. Gates, the May 1977 report prepared by Duncan Kondra Engineering Limited on water supply, for the Cowichan Valley Regional District was reviewed with regards to groundwater considerations. In a brief to the Cowichan Estuary Task Force, Mrs. I. MacAdams of Duncan made reference to aquifer flow being 42.4 cfs, a figure taken from the above report. Some general comments have been prepared on the significance of this figure in the context of Mrs. MacAdam's brief. A detailed analysis of the consultant's report apart from this reference has not been made.

The figure of 42.4 cfs in the above report refers to a forecasted (to year 2001) rate of groundwater withdrawal from the aquifer based on projected demand. It is assumed that this flow will be maintained by recharge from the Cowichan River. The figure does not refer to natural groundwater flow (presently unknown) within the aquifer or available groundwater storage within the aquifer. The quantity of groundwater in storage in the estuary area alone, for example, has been estimated (Zubel, 1978) at 40,000 acre-feet (equivalent to a sustained flow of 55 cfs for one year). The figure of 42.4 cfs, therefore, does not characterize the ability or maximum potential of the aquifer to yield water. For example, a flow of 42.4 cfs would only be equivalent to ten wells pumping 2,000 USgpm each. As pointed out in the consultant's report, the rate of groundwater extraction ultimately depends upon flows in the Cowichan River. Similarly the figure of 42.4 cfs does not constitute the only sustained quantity of water available within the watershed of the Cowichan Valley apart from Cowichan Lake as suggested by Mrs. MacAdams, since groundwater in storage has not been taken into consideration in her calculations. Groundwater withdrawals from storage, for example, during the summer months may be replenished annually during winter periods when the Cowichan River flow normally exceeds several hundred cfs.

To summarize, no detailed studies on the potential of the aquifers within the Cowichan Valley have been completed at this time. The natural groundwater flow through the aquifer is not known, although groundwater in storage is known to be significant. Management of the aquifers ultimately depends upon recharge considerations from the Cowichan River. The extent to which the aquifers may be developed before affecting low river flows is presently not known and would depend upon the location, density and withdrawal rates of proposed production wells.

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April 21, 1978

Reference:

Zubel, M. (1978) Cowichan Estuary Task Force (1978) - Preliminary Groundwater Study, (memorandum report), Water Investigations Branch File 92 B 13, March 16.