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Improvement Districts Division

E. Livingston, Chief, Groundwater Division

Water Rights Branch

June 26th

67

Ground water, Southey Point, Saltspring Island

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In a memo to Mr. V. Raudsepp, Chief Engineer, Water Investigations Branch, dated May 30th, Mr. H. DeBeck, Comptroller of Water Rights requested that the Groundwater Division carry out a brief investigation of the possibility of obtaining a small source of ground water to supply the Southey Point area at the northwest tip of Saltspring Island.

An examination of our water well map which we made from a pencil manuscript obtained from Mapping and Surveys Branch, Lands Service, along with air photographs, indicated several closed depressions in the area. I thought that these might be kettles which often indicate the presence of permeable outwash gravels.

On June 23rd, I visited the area and viewed each one of these possible kettles and carried out a rather brief reconnaissance of the area. The "depressions" are clearly not kettles and as far as I can discover, do not really exist. Two of the larger ones are swamps in areas of very dense second growth bush. The bush which is second growth Douglas fir, red cedar and some true firs, is quite high and does not cover the swamps which are covered with very dense red alder and willow with several other shrubs. I think these swampy areas look like depressions because of the much lower height of the bush. A similar depression on an old run-down farm in the southeast part of Lot 18, northeast of "Stonecutter Lake" is also non-existent.

In this area, it is not easy to determine the surficial geology because of a lack of road cuts, borrow pits, and other excavations. I examined all the road cuts, borrow pits and ditches that I could find and all except a shallow ditch in "Stonecutter Lake" showed sandy silty gravelly till over rock. The rock which in this area is gently folded sandstone and shale of the Nanaimo Group (?), is usually close to surface. In many places, the rock outcrops in the roads and many of the low road cuts are in weathered rock (often shale). Uprooted trees often expose weathered rock.


In most of the coastal area, at least the south coast, there is a veneer or thin layer of sand and gravel over the till. This originated by marine erosion of the till during emergence following the most recent glaciation when the land was lower relative to the sea by the amount of several hundred feet. For some reason in this area this veneer does not seem to be present.

Stonecutter Lake is not a lake but is a hay meadow. It is definitely not of the shape shown on the map which was sent with Mr. DeBeck's memo. The outlet, which is at the northeast end of the "lake" has been lowered by perhaps as much as six feet by means of a ditch dug in till. Previous to this drainage, it may in fact have been a large slough. I thought that the low area here might possibly contain some gravel either under or over till so I tried to examine this area in some detail. A shallow drainage

ditch in the centre shows about two feet of black silt which probably represents recent alluvial material. Other than that, there is no definite indication of subsurface conditions. The sloping sides of the "lake" are underlain by weathered rock as shown by loose angular sandstone close to surface. The chances of finding any gravel in this vicinity seem rather remote.

I think rock wells are probably the only source of ground water in this area. Our records show that most of the rock wells in this area are successful and relatively shallow with estimated capacities up to about five gallons per minute. There is every reason to believe that deeper rock wells up to about 250 feet deep would have higher capacities. I think it is reasonable to expect as much as ten gallons per minute per well. As far as the location is concerned, I think it is not possible with the information on hand to pick a preferred location and I suggest that sites be chosen close to the proposed mains shown on your map but not toward the north end of the system where the land is surrounded on three sides by water. Drilling in areas of low elevation may save some drilling although I suspect the water table tends to follow the topography to some extent. Initially, perhaps a site east of the junction of Arbutus and Southey Point Roads would be suitable.

Either cable-tool or rotary methods may be chosen. The former produces a six-inch diameter hole at about ten dollars per foot, the latter a hole about four inches in diameter at about six dollars per foot. I suggest a depth of 250 feet as an initial try. If the well seems to have significantly increasing capacity with depth down to 250 feet deeper drilling should certainly be considered. It is unlikely that one hole can produce 20 gallons per minute so at least two holes should be considered initially. The spacing should probably be at least 250 feet apart. In rock holes, the total cost of the wells is pretty well limited to the drilling cost as development, casings, screens, etc., are not required.



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