

Mr. J.R. Simpson
Sr. Structural Engineer

E. Livingston, Chief
Groundwater Division
Water Investigations Branch

Department of Public Works

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66

Proposed Fish Hatchery near Abbotsford

0239016

Reference is made to your memorandum of September 12th, 1966, concerning a request for information on the above site.

Obviously from information on hand we cannot give you specific answers to the four points you bring up in your memorandum. In fact, only a thorough and expensive investigation would provide all the answers. At this time, we can speculate about some of these questions from existing well data and a brief field examination of the area and offer a few suggestions for the next step in the investigation.

General

The proposed site on Lot "H", S.E. $\frac{1}{4}$, Sec.10, Twp.16, Plan 20894, is situated at the foot of a terrace about 150 feet in height. This terrace is composed to a great extent of till, glacial outwash, and sand and gravels, and forms part of the Langley Upland. To the east is the relatively flat-bottomed Sumas Valley. Lot "H" appears to be situated on swamp deposits containing peat, clays and silts up to 30 feet thick, which are underlain to varying depths of up to 70 feet by sands and gravels. These sands and gravels may contain enough fine material to restrict the permeability of the formation. The Municipality of Sumas has a well immediately east of the site area. This well is fifty feet deep in fine sands and has been pump tested at 180 gallons per minute with 22 feet of drawdown.

The source of water for the present Fraser Valley Trout Hatchery comes from springs situated near the base of the terrace about 40-50 feet below the abandoned railway. This spring water flows out into warming ponds for the hatchery. The flow of water out of these ponds is very roughly estimated at 2-3 cubic feet per second, however, no measurements were made to verify this figure. Mr. Morton, Supervisor at the Hatchery, has kept a careful record of water temperatures both from these springs and the warming ponds. The average water temperature is in the order of 50°F. The source of the creek water which flows along the roadside adjacent to the property, probably originates to a large extent, in the springs issuing near the base of the terrace. Springs extend both north and south of the proposed site.

Geology

Exposures of the materials composing the terrace immediately to the west of the site can be seen in the gravel pits on either side of Vye Road immediately West of Lot "H". On the south side of the road, a two-foot thickness of soil and loamy silt overlies a variable thickness, of up to 20 feet of a silty hard

till containing stones up to boulder size. This till appears to thin considerably in the pit on the north side of the road. In exposures on both pits, there is some evidence of a dirtier outwash sand and gravel layer lying immediately beneath the till, and this bed in turn overlies beds of fine sands, sand and gravel containing stones to cobble size.

To the west up on the terrace, immediately west of McKenzie Road and northwest of the hatchery site, there is an old gravel pit which exposes 6-8 feet of till overlying sands and gravels.

The Water Resources Service has an observation well, No. WR 13-62 located immediately north of Vye Road between 336th Street and 340th Street. The log of this well shows 34 feet of outwash sands and gravels lying above a 30-foot thickness of till which, in turn, overlies 40 feet of sands and gravels - the limit of the log record. The terrace to the west of the site therefore is apparently composed to a large extent, of till over sands and gravels with outwash overlying till further to the west.

Ground-water Movement

The springs at the edge of the terrace may be caused either by ground water moving out along an impervious layer, for example, a glacio-marine stony silt and clay underlying the gravels near the base of the terrace, or alternatively if the gravels extend deeper, the springs may be due to ground-water movement flowing upwards from greater depths to the surface at the edge of the terrace, where contact with impermeable valley fill is located.

Drilling Recommendations

One or two test holes could be drilled at convenient locations on the abandoned railway, located on the terrace face, east and behind the hatchery, uphill from the springs. This drilling should supply the necessary information on the feasibility of constructing wells, or whether it would be preferable, to further develop the springs in the case of impervious materials lying beneath the terrace gravels at shallow depth.

These test holes should be drilled by the cable-tool method, and careful sampling should be made at 5-10 foot intervals. In any potential aquifer zone, the sampling should be at two-foot intervals.

The Water Resources Service would be prepared to discuss the drilling program with the driller or contractor if it is decided to proceed with this program and also to interpret logs and pump test results. However, we feel that any contract with drillers should be made by the Department of Public Works.

It would be advisable to complete the preparations of the site and the drilling program prior to the commencement of the wet season. Site clearing and access for a truck-mounted drilling rig would have to be made up onto the abandoned railway grade.

Drilling costs may be approximately as follows:

Mobilization \$ 100

Cost of cased hole at \$9.00 a foot. It may be necessary to drill
two holes to a depth between 150 and 200 feet, so cost of two
cased holes to 150 feet is \$ 2,700

If an aquifer is found, then additional costs for a test well may be as follows:

10-foot length of eight-inch screen \$ 530

Well development, 36 hours at \$14.00 per hour \$ 504

Pump test, 24 hours at \$10.00 per hour \$ 240

E. Livingston, Chief
Ground-water Division

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