

Aquifer Name: Pouce Coupe Overburden Aquifer

Aquifer Number: 0903

Date of Mapping: February 10, 2023

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A. AQUIFER DESCRIPTION FOR AQUIFER 0903

A.1 CONCEPTUAL UNDERSTANDING OF HYDROSTRATIGRAPHY

A.1.1 AQUIFER EXTENTS

The aquifer is located east of the Pouce Coupé River. It was delineated based on well log records (Lowen Hydrogeology Consulting Ltd. [LHC 2011]) between the Pouce Coupé River in the west and the provincial boundary in the east. The boundaries are not well defined and were adjusted to include all unconsolidated wells (LHC 2011). The aquifer is likely to extend further to the east.

A.1.2 GEOLOGIC FORMATION (OVERLYING MATERIALS)

The aquifer is overlain by till, glaciolacustrine sediment and, at places, coarse-grained alluvial deposits (Reimchen 1980). All wells associated with the aquifer reported fine-grained material (clay, till) on the surface. The thickness of the overlying material ranges from less than 3 meters to more than 30 meters.

A.1.3 GEOLOGIC FORMATION (AQUIFER) –4B CONFINED GLACIOFLUVIAL

The overburden aquifer is comprised of glaciolacustrine sand and gravel. The aquifer is considered semi-confined (LHC 2011). Based on the review of the conceptual model (Lengyel et al. 2023) the aquifer is interpreted to consist of localized, discontinuous sediments that may locally support groundwater production from low yield wells.

A.1.4 VULNERABILITY

Depth to groundwater varies from shallow to moderately deep. The permeability of the aquifer has not been tested, but it is expected to be high based on the type of the dominant aquifer material (sand and gravel). Surficial mapping by Reimchen (1980) and borehole logs indicate that the aquifer material is covered by fine-grained material (clay, till) and by coarser-grained alluvial sediments. The overall vulnerability of the aquifer to surface contamination has been qualitatively assessed to be moderate.

A.2 CONCEPTUAL UNDERSTANDING OF FLOW DYNAMICS

A.2.1 GROUNDWATER LEVELS AND FLOW DIRECTION

Static water levels recorded in the provincial groundwater wells database (GWELLS) range from shallow (3.0 m) to moderately deep (30.5 m). No active provincial monitoring wells or wells with artesian conditions exist in the aquifer.

The groundwater surface is interpreted to be a subdued representation of the topography based on regional interpolation of groundwater surface elevations. Groundwater is interpreted to flow primarily towards the Pouce Coupé River.

A.2.2 RECHARGE

Recharge to the aquifer could occur via distributed infiltration of precipitation and snowmelt through the thin overburden (Baye et al. 2016). Much of the recharge is expected to occur in the spring associated with snowmelt. The aquifer may also be recharged by the overlying minor tributaries of the Pouce Coupé River; however, the spatial and temporal understanding of these recharge pathways are uncertain and further investigation is required to evaluate these hydraulic connections.

A.2.3 POTENTIAL FOR HYDRAULIC CONNECTION

Groundwater may be hydraulically connected with minor tributaries of the Pouce Coupé River; however, further investigation is required to evaluate the magnitude and level of hydraulic connectivity.

A.3 WATER MANAGEMENT

A.3.1 ADDITIONAL INFORMATION ON WATER USE AND MANAGEMENT

Baye et al. (2016) reported exceedances for iron, sulphate, and hardness in some of the overburden wells within the area of aquifer 0903. Yields were not reported for the wells associated with the aquifer; in the absence of data, it was interpreted to be of low productivity (LHC 2011). Groundwater is used primarily for domestic purposes, where the well purpose is recorded in GWELLS.

A.3.2 ADDITIONAL ASSESSMENTS OR MANAGEMENT ACTIONS

No water availability or water budget studies have been completed in the area.

A.4 AQUIFER REFERENCES

Baye, A., Rathfelder, K., Wei, M., and Yin, J., 2016. Hydrostratigraphic, hydraulic and hydrogeochemical descriptions of Dawson Creek-Groundbirch areas, Northeast BC. Victoria, Prov of B.C. Water Science Series 2016-04.

Geographic datasets from the BC Data Catalogue, accessed November 2022 <https://data.gov.bc.ca/>.

Lengyel, T., Deri-Takacs, J., Hinnell, A. C, & Clague, J. J. 2023. Kiskatinaw-Peace Aquifer Mapping and Hydrostratigraphic Characterization. Victoria, B.C.

LHC (Lowen Hydrogeology Consulting Ltd.) 2011. Aquifer Classification Mapping in the Peace River Region for the Montney Water Project. File No. 1026. June 2011.

Reimchen, T.H.F, 1980. Surficial Geology Dawson Creek; Geological Survey of Canada, Map 1467A, 1:250000 scale map.

A.5 REVISION HISTORY

Date	Version	Revision Class	Comments	Author
2011	1	Major	Initial mapping of aquifer	Lowen Hydrogeology Consulting Ltd. 2011
20230210	2	Major	Update to the conceptual understanding of the aquifer	Tibor Lengyel, M.Sc., P.Geo., Judit Deri-Takacs, Ph.D., Andrew Hinnell, Ph.D., P.Geo.