

## AQUIFER CLASSIFICATION WORKSHEET

**DATE:** 21/03/2002 – Rev. 17/04/2016 (Lowen Hydrogeology Consulting Ltd.)

**AQUIFER REFERENCE NUMBER:** 0514

**DESCRIPTIVE LOCATION OF AQUIFER:** South Slocan, Crescent Valley, Passmore, East of Slocan River

**NTS MAP SHEET:** 82 F 05 / 12

**BCGS MAP SHEETS:** 82F.043 / 82F.052 / 82F.053

**CLASSIFICATION:** II B **RANKING:** 12

**Aquifer Size:** 15 km<sup>2</sup>

**Aquifer Boundaries:** The western boundary follows the Slocan River. The remainder of the boundary is defined by quaternary deposits mapping.

**Aquifer Sub-type:** 4b

*Type* – Glaciofluvial sand and gravel aquifers at surface, as well as, sand and gravel aquifers identified occurring underneath till or glaciolacustrine deposits.

*Subtype* – Confined sand and gravel aquifers underneath till, in-between till layers, or underlying glaciolacustrine deposits.

**Aquifer Priority Rating for Observation Wells:** 41.6

**Geologic Formation (overlying materials):** The aquifer materials are overlain by a mix of clay, silt, sand and gravel. Surficial soils are three separate types; Kinert, Gillis and Glenlily. These are glaciofluvial and glaciofluvial ice contact soils.

**Geologic Formation (aquifer):** The aquifer formation is glaciofluvial sand, gravel or sand and gravel.

**Partially confined:** The confining layer contains many windows. Of 79 wells displaying a full record, 22 show no confining layer. In areas where the confining layer is present, it ranges in thickness from 3 to 317 ft (0.9 to 96.6 m), with a median of 43 ft (13.1 m), an average of 68 ft (20.7 m) and a geometric mean of 42 ft (12.8 m).

**Vulnerability:** Moderate. The confining layer contains many windows of permeable materials.

**Productivity:** Moderate. Yields range from 2 to 105 USgpm (0.13 to 6.62 L/s), with a median of 20 USgpm (1.26 L/s), an average of 24 USgpm (1.51 L/s), and a geometric mean of 17 USgpm (1.07 L/s).

**Depth to Water:** Moderately shallow. Minimum and maximum depths to water are 4 and 234 ft (1.2 m and 71.3), the median is 57 ft (17.4 m), the average 73 ft (22.3 m) and the geometric mean 53 ft (16.2 m).

**Direction of Groundwater Flow:** The flow along the eastern boundary likely follows the direction of recharge coming from the uplands. It may be therefore to the west. The western portion of the aquifer along the river is possibly connected to it, with flow following its course to the south.

**Recharge:** Recharge is generally occurring in the upslope bedrock outcrop areas from direct precipitation. The runoff water percolates through the unconsolidated layer, replenishing the aquifer.

**Domestic Well Density:** Moderate (approximately 9.6 wells / km<sup>2</sup>).

**Type of Water Use:** Most of the wells are used for domestic purposes. Two however are used for commercial / industrial uses.

**Reliance on Source:** Conjunctive. Groundwater supplies the majority of domestic needs. A few water licenses are reported along local creeks and on springs.

**Conflicts between Users:** None reported

**Quantity Concerns:** Two holes were dry and 2 other wells abandoned.

**Quality Concerns:** The quality is generally reported as good, with fresh water. High levels of iron are noted in some wells.

**Comments:** The well depths range from 6 ft (1.8 m) to 536 ft (163.4 m). The median depth is 115 ft (35.1 m), the average 130 ft (39.6 m) and the geometric mean 104 ft (31.7 m).

**References:**

- Berardinucci J. and K. Ronneseth, 2002. *Guide to Using the BC Aquifer Classification Maps for the Protection and Management of Groundwater*. BC Ministry of Water, Land and Air Protection, Water Air and Climate Change Branch, Water Protection Section.
- IMapBC: <http://maps.gov.bc.ca/ess/sv/imapbc/>
- Wittneben U., 1980, *Castlegar Soils and Surficial Geology*, MOE

## AQUIFER CLASSIFICATION AND RANKING

**AQUIFER LOCATION:** South Slocan, Crescent Valley, Passmore, East of Slocan River

**AQUIFER REFERENCE NUMBER:** 0514

**AQUIFER SUB-TYPE:** 4b

**AQUIFER PRIORITY RATING FOR OBSERVATION WELLS:** 41.6

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**CLASSIFICATION:** II B **RANKING VALUE:** 12

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### *Classification Component:*

<b>Level of Development</b>	II (Moderate demand / moderate productivity)
<b>Level of Vulnerability</b>	B (Moderate)

### *Ranking Component:*

<b>Productivity</b>	2
<b>Vulnerability</b>	2
<b>Size</b>	2
<b>Demand</b>	2
<b>Type of Use</b>	3
<b>Quality Concerns</b>	0
<b>Quantity Concerns</b>	1
<b>Total</b>	<b>12</b>

### Statistical Summary of Well Data for Aquifer # 0514

Total number of wells available for statistical analysis: **144**

	<b>Well Depth</b> [ft] ([m])	<b>Water Depth</b> [ft] ([m])	<b>Bedrock Depth</b> [ft] ([m])	<b>Yield [USgpm]</b> ( [L/s] )	<b>Confining Thickness</b> [ft] ([m])
<b>N</b>	144	74	6	128	79
<b>Minimum</b>	6 (1.8)	4 (1.2)	72 (21.9)	2 (0.13)	3 (0.9)
<b>Maximum</b>	536 (163.4)	234 (71.3)	248 (75.6)	105 (6.62)	317 (96.6)
<b>Median</b>	115 (35.1)	57 (17.4)	162 (49.4)	20 (1.26)	43 (13.1)
<b>Arithmetic mean</b>	130 (39.6)	73 (22.3)	161 (49.1)	24 (1.51)	68 (20.7)
<b>Geometric mean</b>	104 (31.7)	53 (16.2)	148 (45.1)	17 (1.07)	42 (12.8)

Note: The "zero" values were replaced by "0.1" to allow the calculation of the geometric mean.



