GOVERNMENT OF BRITISH COLUMBIA

MEMORANDUM

TO: Mr. A. [illegible] Kohut
Sr. Ge[illegible]gical Engineer
Groundw[illegible]r Section
Hydrology Division
Water Investigations Branch

FROM: W.S. Hodge
Engineering Assistant
Groundwater Section

July 15 1976

SUBJECT: Preliminary Geohydrological Study of the South Lakeside Area of Williams Lake

OUR FILE: 0239014-B

YOUR FILE:

1. PURPOSE OF THIS STUDY

The purpose of this study was (1) to compile and summarize all available hydrogeological and hydrochemical data in the south lakeside area of Williams Lake, including areas intended for future development (shaded area, Figure 1); (2) to make a preliminary assessment on groundwater potential for future residential and light industrial use in the outlined (shaded) area; and (3) to discuss the alternatives of siting large production wells in the general lakeside area, the specific shaded area, or utilizing the groundwater supply on Scout Island; and (4) to estimate future population settlement and distribution based on domestic wells in the specified area capable of safely yielding 1-2 gallons per minute.

2. METHODS OF INVESTIGATION

Information was obtained from well cards on file and reviewed in conjunction with existing groundwater mapping. Unfortunately, well location plotting has not been initiated on new mapping in the Williams Lake area and wells drilled in 1974 and 1975 have not been plotted. Pertinent information from data recently received has, however, been reviewed and taken into consideration in this report. All available bedrock and surficial mapping, aerial photographs, reports, and general information on the area have been examined in depth. A hydrogeological table has been completed, summarizing pertinent groundwater information on wells drilled in the vicinity of the area to be developed. Maps showing general geology and wells showing capacities of 5 gpm and over have been prepared for inclusion in this report.

3. GEOLOGY

3.1 Glacial History

A brief discussion of the glacial history of the area after Callan (1968) is given here to facilitate an understanding of the distribution of glacial deposits in the area.

Mapped and Table filed in NTS 93 B/1

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Two active periods of glaciation have formed the Williams Lake valley as it exists today. The initial period of glaciation eroded the valley to an elevation of at least 1500 feet, depositing ice contact materials, including till at the mouth of the valley. The ice front then retreated up Williams Lake valley leaving a plug of interlobate moraine at the mouth of Missioner valley. Blockage in the Frazer valley downstream permitted a buildup of recessional outwash materials, filling Williams Lake valley to an elevation of at least 1800 feet. Towards the end of this period, a change in climate or meltwater flow pattern renewed deposition of coarser materials below Missioner Creek. A glacial lake was formed in the valley behind this morainal plug, at this point, depositing up to 200 feet of clays. Coarse, clean gravels, which form the aquifer beneath Scout Island, were also deposited, while fines were washed out through quiet water winnowing of the eastern side of this plug. Ice reappeared in a second, less severe stage of glaciation and did not erode the valley below an elevation of 1800 feet. The ice front retreated up Williams Lake valley and stagnated at Missioner Creek. This stagnation permitted accumulation of contact deposits along its margins. Melting of the stagnant ice resulted in soft, poorly compacted till, possibly around ice frags, slumping across the valley at the town of Williams Lake, temporarily raising the lake level by 70 to 80 feet and permitting deposition of lake clays and local delta deposits.

3.2 Surficial Deposits

A generalized map showing areas of post-glacial and glacial deposits (Figure 2) has been prepared to supplement well card information available on the area in which regions have been outlined, numbered and geology summarized. A brief description of the deposits within each region is as follows:

3.2.1 Region A

Silty clays, tan, olive gray, chocolate brown, thinly laminated and varved with thin sandy interbeds are present in this area. Well logs indicate thick sections of bluish clay overlying layers of sand and gravel, while maximum thickness of clays recorded as 300 feet.

3.2.2 Region B

Soft, brown, poorly compacted till, with occasional gravel seam revealed in well logs. Maximum thickness of clays recorded as 180 feet.

3.2.3 Region c

Gravels, coarse gravels, sands, clays with lenses of till, olive gray revealed, exhibiting discontinuous and chaotic bedding. Thick sections of till and clay featured. Thin gravels underlying till present. Maximum thickness of this feature recorded as greater than 200 feet.

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3.2.4 Regions D and E

Well logs surrounding areas D and E reveal discontinuous bedding, layers of clay, boulders, and shattered rock overlying solid bedrock. Average depth to shattered rock and shales west of regions D and E recorded as approximately 22 feet. Thick sections of clay and boulders revealed northwest of region E. Discontinuous bedding again revealed southeast of region D with some thick sections of clay and gravel overlying shattered and solid rock. Surface gravels revealed from well cards.

4. REGION A

4.1 Hydrogeology

A study of well yield, water quality, and depth and yield relationship has been limited here to the immediate south lakeside area.

The Groundwater Section has on file and has plotted approximately 64 drilled wells, 9 dug wells and one spring in this region (Figure 2) up to and including the last half of 1973. Well depths range from 20 to 372 feet, the average depth being 159 feet. Total recorded drilling footage has been calculated as 12,107 feet. The average depth to water has been calculated as 25 feet. This figure could be misleading, however, as water levels range from above ground (flowing-artesian) to a static level of 96 feet below ground level. Well yields range from "poor" to 30 gpm, with 24 wells reporting yields of 5 gpm and over (Figure 1). Many wells in the area have been reported as supplying "good" yields. The westerly portion of region A reveals thick sections of gravel as the major aquifer, while wells in the eastern portion, showing similar depths and elevation, report the major aquifer as shattered rock, underlying thick confining clays, resulting in numerous artesian wells recorded in this area.

An exceptionally thick sand and gravel aquifer occurs under Scout Island within the Williams Lake valley. At present three production wells located in this aquifer are capable of supplying a total of 3,900 USgpm.

4.2 Hydrochemical Data

Information regarding water quality in this region was based on Hach Kit chemical analysis. A more detailed study of water quality and depth and quality relationships is desirable before any definite conclusions can be reached. The Williams Lake area has, however, been known for its "hard water". The Starlite Drive Inn on the lake's northeastern shore has reported an exceptionally high hardness (1,020 ppm) and dissolved solids content (1,567 ppm). Areas of considerable development have shown relatively low hardness with

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high pH values, indicating perhaps a sodium bicarbonate type water. This may be directly related both to the relatively high aquifer development, as well as abundance of clays and shales.

5. REGION B

5.1 Hydrogeology

The study here has been limited to the outlined area of region B. The Groundwater Section has 53 drilled wells, 23 dug wells, and one spring recorded and plotted up to the end of 1973, with total footage calculated as 8,329 feet, the average depth being 116 feet with minimum and maximum depths as 5 feet and 372 feet. Water levels again range widely from above ground (flowing-artesian) to 175 feet below ground level. The average thickness of clay and till has been approximated as 24 feet. Well logs indicate interbedding of clays and sand with gravels overlying shattered rock. Volcanic rock has been reported in numerous wells. The westerly portion of this region has recorded a great proportion of wells as "poor" quantity or "pumps dry easily". This may possibly be attributed to relatively shallow drilled and dug wells in the area. Wells of greater depth in the area have indicated higher yields. Wells to the northeast of this region have many reported "good" yields, the maximum being 20 gpm. Sands and gravel seams at varying depths and fractured shales in numerous cases have been reported as the major contributing aquifer. From existing knowledge on this area the prospect of obtaining satisfactory yields at depths of over 300 feet appear to be poor to negative.

5.2 Hydrochemical Data

As noted in region A, a lack of water quality data in this region restricts this report to values obtained from Hach Kit analysis. No conclusive evidence relating to depths, aquifer materials and water quality is available. Results from Hach Kit analysis have indicated water to be a calcium and magnesium bicarbonate type water as values of 1,700 ppm and 833 ppm hardness, with moderately high pH values of 7.5 and 7.8. If these values are indicative of water quality in the area, water softeners would have to be installed.

6. REGION C

6.1 Hydrogeology

Investigations here have been limited to the outlined area of region C. The Groundwater Section has 53 drilled wells and 13 dug wells recorded and plotted in this region up to the end of 1973, with total footage calculated as 7,848 feet. The average depth of wells is 113 feet, with minimum and maximum depths

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recorded as 12 feet and 300 feet. The average depth to static water is 37 feet, ranging from flowing artesian to 85 feet below ground level. Three flowing wells have been noted in the area. Many wells reporting yields of 5 gpm and over have been noted with a large majority reporting yields of between 1 and 4 gpm. One well noted as producing an exceptional yield (estimated) of 100 gpm (#20-Z2-X14-Y5). This well is 106 feet deep with the major aquifer reported as being a thick gravel formation overlying stony clay. It is located north of Denny Road, and although yields of 5 gpm and over are plentiful, a yield of 100 gpm should be investigated further, and considered with some reservation, until verification can be made. The major aquifer along Dog Creek Road in this region appears to be sand and gravel, at relatively shallow depths and interbedded between layers of fractured rock. Arrangement of these sand and gravel layers is less chaotic than that to the west. Indications are recharge is supplied through hydraulic drainage from higher elevations to the south. A large majority of wells to the west of Dog Creek Road in this region record shattered rock as the major water-bearing formation with depths to rock varying widely, exhibiting chaotic distribution.

6.2 Hydrochemical Data

Hach Kit analysis has been performed on water samples on three wells in this region along Dog Creek Road. Results from these analyses have shown the water in two cases to be very hard with values of 527 and 425 ppm recorded for hardness, and corresponding pH values of 7.5 and 8.3 indicating the presence of primarily a calcium-magnesium, bicarbonate type water. Both wells are dug, relatively shallow, and bottomed in clay and rock. It has also been noted that one well, bottomed in volcanics, had a relatively low hardness of 102 ppm. This could be significant in any search for softer water.

7. REGIONS D AND E

7.1 Hydrogeology

Groundwater information on these areas is somewhat limited at this stage. Any assumptions regarding groundwater potential, water quality, fault zones, etc., are based on well card information on wells in proximity to the area to be developed and supplemented by information obtained from soils maps and aerial photographs.

A realistic average depth of wells, northwest and southwest of the specified area, situated at similar elevations, has been calculated as a relatively shallow 114 feet. Of the well cards examined to the west along Esler Road, and to the north, a large majority report yields of 10 gpm with the remaining wells reporting yields of 3 to 8 gpm. One well, bottomed at 90 feet, reported an estimated yield of 12 gpm. It must also be noted that one well to the

north and located at a similar elevation recorded no water encountered throughout, to a depth of 400 feet, solid rock situated from 65 to 400 feet. Wells to the southwest have reported yields of between 1 and 10 gpm with one reporting an estimated yield of 20 gpm from a drilled depth of 175 feet. Wells to the northeast and east report yields from "poor" to 3 gpm with one reporting an estimated yield of 18 gpm.

The average thickness of morainal deposits or drift overlying bedrock is approximated as 22 feet. Scattered bedrock outcrops prevail along the northern margin of region E, with medium textured morainal deposits surrounding these outcrops. Gravelly and sandy glaciofluvial deposits are noted along the northern extremity of region D, and also surrounding Bond Lake to the south, extending northward. These deposits to the north appear to have low moisture holding capacity, and are susceptible to rapid drainage, possibly supplying significant recharge to areas downslope to the north, through gravels overlying shales, and contributing to the considerably good yielding non-artesian and artesian wells in this area. Areas to the west and northwest along Esler Road exhibit a more organized bedding of clays and shattered rock than that shown to the northeast and have reported shattered rock to be the major contributing aquifer. Occasional fine sands and gravels can be seen, but appear to be dry and well-drained in most cases. Volcanic rock, underlying clays, appears to be more prevalent in this area than others. Areas to the southeast have shown sands and gravels of glacial origin to be the major aquifer, with some thick layers of gravel overlying clay noted. Occasional surface gravels have also been noted in this area.

7.2 Hydrochemical Data

Water chemistry data on wells in proximity to these areas is limited to 4 wells and analysis of Bond Lake water. Water samples from only one well and Bond Lake have, however, been submitted for complete chemical analysis. Examination of the well water analysis (#38-Z2-X14-Y4) has shown the water to be extremely soft, but highly mineralized, with mineralization present primarily as sodium bicarbonate. This well is 258 feet deep and bottomed in sandstone, which may account for the high mineralization present. The location of this well indicates that the low hardness value recorded may have resulted through groundwater movement downslope and naturally softening the water over clay layers. The water is within the standards set for domestic water supplies. Hach Kit chemical analysis has been performed on samples from three wells, with hardness values recorded as 289, 272, and 527 mg/ℓ, and all with moderately high pH values. Water from Bond Lake has previously been submitted for complete chemical analysis. Results from this analysis have shown the lake water to be extremely hard (502.7 ppm) and highly mineralized. The dissolved mineralization is composed primarily as sodium, calcium, magnesium, bicarbonates and sulphates. Although no individual component is over the health standard, total dissolved solids of all the constituents is slightly over

the maximum allowed. The use of this water for domestic water supplies would probably result in salt deposits occurring in hot water heaters, etc. The water also contained 2.95 ppm dissolved zinc, which is somewhat unusual. This component should be rechecked to verify its authenticity.

8. FURTHER GROUNDWATER DEVELOPMENT

8.1 Scout Island

The Scout Island aquifer at its present stage of development is capable of supplying 3,900 USgpm of water to the town of Williams Lake from three production wells now situated on Scout Island. As this aquifer has proven to be favourable, it should be possible that an additional production well, capable of supplying the needed requirements of this development, could be installed on Scout Island. The alternative of supplying water from the existing supply could also be considered.

Cost of this undertaking would, however, be the deciding factor here, and attempts to locate water in the immediate development area appears to be more realistic at this time. As the approximate distance to the area to be developed from Scout Island is over 2 miles, with a rise in elevation over this distance of approximately 1200 feet, the cost of piping water would be significantly great. (Pers. comm., K.N. Pleasance, Sr. Hydraulic Engineer, Water Supply Section.)

Cost estimates for this operation are listed below:

10,000 ft. of 6-inch dia. pipe at $6.00/ft. (installed)	$ 60,000.00
100 horsepower pump at $500.00/h.p. (singular pump or in stages)	50,000.00
50,000 gallon reservoir at $0.50/gallon	25,000.00
Total estimated cost =	$ 135,000.00

The figures above are only approximate at this time and allowance for future rising costs has not been included.

An installation such as above would be capable of supplying 200 gpm to the development area. This amount, for example, would be sufficient to supply the requirements of both domestic and light industrial use, including fire protection for 500 resident units, based on usage of 350 gallons per day per household. Total development area (shaded area, Figure 1) has been calcu-

lated by planimeter as slightly over 2,400 acres. If irrigation use were considered, or lot size greatly reduced, costs of this system would rise significantly.

8.2 General South Lakeside Area

In comparison to utilizing wells on Scout Island, the alternative of siting local production wells in the development areas could prove more realistic and economical. Specific localities of this area should prove to have moderate groundwater potential. Good producing, relatively shallow wells, bottomed in clay and shattered rock, have been noted to the west of this area. Areas around Bond Lake and to the north may hold a potential groundwater source as soils developed on fluvial outwash have been mapped (Reid, 1976) in that area. Thickness of this outwash material is unknown at this time and requires further exploration. A test drilling program would have to be initiated and all phases of drilling and pump testing observed closely.

An example of drilling costs involved is given below for one test hole:

Drill and case an 8-inch hole to 150 ft. at $23.00/ft.	$ 3,000.00
One 8-inch drive shoe	75.00
45 hours of hourly work at $26.00/hr. (including installation of 5 ft. of screen)	1,420.00
Total	$ 4,495.00

Estimates on pump test costs using a submersible pump:

Installation of pump (flat rate)	$ 110.00
25 hours of pumping at $28.00/hr.	700.00
24 hours of standby for recovery at $24.00/hr.	576.00
Rental of 500 ft. of discharge pipe at $0.50/hr.	250.00
Total	$ 1,636.00

Costs would be increased for a test production well due largely to a more efficient well screen and the consequent more lengthy development and testing involved.

9. ADDITIONAL NOTES

An additional 51 wells drilled between 1974 and October, 1975, although unlocated and unplotted, have been reviewed. These wells are located along the south lakeside area and along Dog Creek Road. A total of 20 wells along Dog Creek Road have reported yields of 5 gpm and over, with 4 wells recording yields of 5 gpm and over in the south lakeside area.

10. CONCLUSIONS AND RECOMMENDATIONS

(1) This report presents a detailed compilation and summary of the hydrogeological and hydrochemical information collected on the general south lakeside area of Williams Lake.

(2) Well card information has been limited to information collected and plotted up to, and including, the last half of 1973, and supplemented by additional information reviewed on wells drilled in 1974 and 1975.

(3) Generally, good groundwater yields have been reported in various locations throughout the lakeside area. The hydraulic performance of these wells and yields reported may not be indicative of continuous pumping. Definite geologic and hydraulic boundaries may severely limit extent of aquifers, especially in glaciated regions such as this.

(4) One well north of Denny Road in the lakeside district has reported an excellent estimated yield of 100 gpm, with the major contributing aquifer reported as a "thick gravel formation" between 50 and 105 feet, overlying stony clay. This yield has, however, been estimated and a standardized pump test has not been conducted. The hydraulic performance of this well is unknown and further investigations in this area are therefore warranted.

(5) Of the two options available, either piping water from Scout Island or the general lakeside area, or searching for adequate groundwater supplies in the immediate area to be developed, the latter appears more economical at this time, providing a sensible groundwater test drilling program is initiated with monitoring wells established to observe well efficiency, and thus derive all vital characteristics of the aquifer.

(6) Good estimated yields have been reported to the west of this area along Esler Road. These wells are relatively shallow and bottomed in clays and shattered rock. Fluvial outwash materials surrounding Bond Lake and extending northward may suggest groundwater potential in this area. Extent and thickness of this outwash material is unknown and requires further exploration.

(7) Water quality information is very limited in all areas in the vicinity of Williams Lake and extensive investigations are required in this direction. A definite relationship may exist between quality and depth, aquifer material and extent of development. Investigations may result in locating softer water in certain areas. Complete chemical analysis, including bacterial quality, is desired. Investigations should especially be concentrated in the vicinity of Esler Road where good yields have been noted from fractured rock aquifers.

11. REFERENCES

Callan, D.M. 1968. Notes on Surficial Geology of the Williams Lake Area, File 0239014-B. Water Investigations Branch, B.C. Water Resources Service.

Reid, A.L. 1976. South Side, Williams Lake Soils and Landforms. B.C. Department of Agriculture.

W. S. Hodge

W.S. Hodge
Engineering Assistant
Groundwater Section
Hydrology Division
Water Investigations Branch

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Attachs.

Williams Lake Area Well Inventory

Hydrogeological Data

Well No.	Location					Description of Well								Approx. Groundwater Level	Principal Aquifers		Water Quantity		Water Quality				Well Use	Completion Date	* Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia.	Casing length	Depth	Well Completion * a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			a.- slotted b.- open hole c.- screened d.- dug.
1	CARIBOO	1	13	36	DR.	2900-3000	4½"	56	56'	✓				—	SHATTERED ROCK. HARD GREEN	34'-56'	estimated	≈1 gpm					DOM.	MAY 21/69	OPEN HOLE Φ = 6¼" ROCK @ 34'
2	"	1	13	36	DR	≈2900	4½"	165'	195'		✓			22'	GREEN BLACK ROCK	165-195'	bail test	4 gpm					DOM.	SEPT./73	ROCK @ 17'
3	"	1	13	36	DR.	≈2900	5"	20'	110'		✓			8'	SAND & GRAVEL	11-20'	estimated	50 gph					DOM.	AUG./73	ROCK @ 21'
4	"	1	13	36	DR.	2800-2900	5"	42'	42'		✓			12'	SAND & GRAVEL	39-42'	estimated	10 gpm					DOM.	JULY/73	
5	"	1	13	36	DR.	2800-2900	4½"	60'	60'	✓				10'	CLAY & ROCKS	54'	bail test	1½ gpm					DOM	NOV/72	ROCK @ 8'
6	"	1	13	36	DR.	2900-3000	5"	175'	175'	✓				0	BROKEN ROCK	116-175	estimated	20 gpm					DOM.	AUG/73	2 OTHER HOLES IN THIS PROP. 1-75' DEEP (HARD ROCK) N.G. 1-100' DEEP (" ") 60 GPH.
1	"	2	13	1	DR.	3000-3100	6"	?	100'		?			45'	HARD BLACK ROCK	92'		3 gpm					DOM.	AUG./71	ROCK @ 40'
2	"	2	13	1	DR	3000-3100	4½"	?	99'		?			70'	BROKEN VOLCANIC ROCK	70'		10 gpm					DOM.	AUG./71	ROCK @ 38'
3	"	2	13	1	DR.	3000-3100	4"	90'	190		✓			73'	FRAC. ROCK	165-190		3 gpm					DOM.	June/71	ROCK @ 20'
4	"	2	13	1	DR.	3000-3100	5"	?	60					31'	FRAC. ROCK	41-60	estimated	3 gpm					DOM.	JULY/73	ROCK @ 41'
1	"	2	13	12	DR.	2400-2500	?	?	63'					35'	GRAVEL IN SOFTER CLAY	63'	bail test	5 gpm					DOM.	DEC/64	20' drawdon @ 300 gpm ROCK @ 48'
2	"	2	13	12	DUG	2400-2500	—	?	42'				✓	34'	SAND GRAVEL			GOOD QUANTITY ?					DOM.	1964	
3	"	2	13	12	DUG	2400-2500	—	?	30'				✓	?	GRAVEL	30'		?					DOM.	1957	WATER VERY HARD
4	"	2	13	12	DUG.	2500	—	?	60'				✓	58'	GRAVEL	60'		SUPPLIES 2 HOMES					DOM	1963	ADNESS = 935 Fe < .6 CL. = <25 PH = 7.5
5	"	2	13	12	DUG	2500	—	?	12'				✓	6'	CLAY ?	12'		?					DOM.	1958	
6	"	2	13	12	DUG	2500-2600	—	?	30'				✓	—	—	—		—					DOM.	1965	DRY HOLE
7	"	2	13	12	DR.	2500-2600	?	?	91'					85'	CLAY SILT ?		—	POOR QUANTITY					DOM.	1962	

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Well No.	Location				Description of Well								Approx. Groundwater Level	Principal Aquifers		Water Quantity		Water Quality				Well Use	Completion Date	Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. solids	Temp. C°			
8	CARIBOO	2	13	12	DUG	2700	-	-	32'				✓	—		—		—					DOM.	?	DRY HOLE
9	"	2	13	12	DUG	2500	-	-	35'				✓	30'		35'		POOR QUANTITY					DOM.	1966	SWEET TASTE - APPAR. GOOD QUALITY
10		2	13	12	DUG	2400-2500	-	-	41'				✓	≈32'		32'		GOOD SUPPLY					DOM.	1966	SUPPLIES TRAILER ALS
11		2	13	12	DUG	2500	-	-	52'				✓	—		—		—					DOM.	?	DRY HOLE 20-30 LOOSE GRAVEL (DAMP)
12		2	13	12	DUG	2500-2600	-	-	46'				✓	?		?		?					DOM.	?	WATER VERY HARD SUPPLIES HOUSE + GARDEN
13		2	13	12	DUG		-	-	14'				✓	10'	SANDY GRAVEL	?		POOR QUANTITY					DOM.	1966	WATER VERY HARD
14		2	13	12	DUG	2600	-	-	42'				✓	?	RED SHALEY	?		GOOD SUPPLY					DOM.	1962	WATER TASTES POOR, LEAVES BLACK DEPOSIT, POOR QUALITY SUPPLYS TRAILOR NEXTDOOR ALSO.
15		2	13	12	DUG	2600	-	-	45'				✓	42	FINE SAND	30' ALSO 40-45'		INADEQUATE SUPPLY					DOM.	1966	
16		2	13	12	DUG	2500-2600	-	-	92'				✓	87'	SHALE	90-92'		2½ gph.					DOM.	1967	VERY HARD WATER
17		2	13	12	DUG	2500-2600	-	-	23'				✓	≈18'	SHALE LAYERS	23'		GOOD SUPPLY					DOM.	1964	ROCK @ 90'
18		2	13	12	DR.	2500-2600	-	-	85'					≈50'	FINE SAND	?		SUPPLIES 3 HOUSES + GARDENS					DOM.	1961	HARD WATER, HIGH IN IRON
19		2	13	12	DR.	2500-2600	-	110'	110'	✓				= 40'	BLACK SHALE	102'		100 gph					DOM.	MAY/67	ROCK @ 25'
20		2	13	12	DR	?	5"	65	65'	✓				26'	GRAVEL	?	estimated	200 gph					DOM.	NOV./69	SAND + GRAV. THROUT.
21.		2	13	12	DR.	2400-2500	5"	46'	46'	✓				13½'	GRAVEL	?	estimated	500 gph					DOM.	MAY/69	SAND + GRAV. THROUT
22		2	13	12	DR.	2400-2500	5"	54	54	✓				16'	GRAVEL	?	estimated	≈ 70 gph					DOM.	MAY/69	
23		2	13	12	DR.	2400-2500	4½"	115'	115'	✓				16'	SAND & GRAVEL	92'-115'		6 gpm					DOM.	June/71	30' OF PERFORATED CASING
24		2	13	12	DR.	2600	4"	?	120'	?				?	?	?		good SUPPLY					DOM.	MAY/69	ROCK @ 100'

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Hydrogeological Data

Well No.	Location					Description of Well								Approx. Groundwater Level	Principal Aquifers		Water Quantity		Water Quality				Well Use	Completion Date	Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia.	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
25	CARIBOO	2	13	12	DR.	2500	4½"	174'	174'	✓				Flowing	SHAT. ROCK	162-172'		15 gpm					DOM.	–	28' length perforated casing
26	"	2	13	12	DR.	2500 -2600	4"	?	114'		?			40'	ROCK			GOOD SUPPLY					DOM.	FEB./68	ROCK @ 110'
27	"	2	13	12	DR.	3000	5"	?	400'		?			–	—	—		FAILURE NO. WATER					–	JUNE/72	ROCK @ 65'
28	"	2	13	12	DR.	3000	?	?	90'		?			35'	ROCK	75-90	estimated	12 gpm					DOM.	APR./72	ROCK @ 40'
29	"	2	13	12	DR.	3000	4½"	?	128	✓				46'	SHAT. ROCK	114-128'		10 gpm					DOM.	OCT/71	PERFORATIONS @ 41'6"
30	"	2	13	12	DR.	3000	4½"	110'	110'	✓				72'	FRACT. ROCK	101-110'	bail test	3 gpm					DOM.	MAY/72	PERFORATIONS 75-110'
31	"	2	13	12	DR.	3000	4½"	122'	145'	✓				56'	ROCK	129-145'	bail test	3 gph.					DOM.	MAY/72	PERFORATIONS 125-145'
32	"	2	13	12	DR.	3000	5⅛"	114'	114'	✓				56'	SHAT. ROCK	64-78'? 92-107'?	bail test	4 gpm					DOM.	JUNE/71	PERFORATED 16' length ROCK @ 64-78' and 107-114'
33		2	13	12	DR.	3000	4¾"	?	103'	✓				?	FRACT. ROCK	82'-103'	bail test	≈10 gpm					DOM.	OCT/70	PERFORATED CASING @ 82' 21' length ROCK @ 96' (82-103')
34		2	13	12	DR	3000	6"	24'	75'		✓			45'	FRACT. ROCK	38-75'?		4 gpm					DOM.	AUG./71	ROCK @ 38'
35		2	13	12	DR	3000		104	104	✓				58'	FRACT ROCK	68-104	bail test	10 gpm					DOM.	MAY/72	Perforations @ 64-[illegible] ROCK @ 60'
36		2	13	12	DR	3000	4½"	124	124	✓				64'	FRACT. ROCK	103-121'	bail test	10 gpm					DOM.	JULY/71	Perforations @ 103-121 ROCK @ 11'
37		2	13	12	DR	3000	4½"	108	133	✓				62'	SANDY BLACK CLAY	112-133	bail test	4 gpm					DOM.	JULY/71	Perforations @ 112-133 SHAT. ROCK THRUOUT.
38		2	13	12	DR	3000	5⅛	121	130	✓				68	SHAT. ROCK	114-130	bail test	10 gpm					DOM.	June/71	perforations 114-130' SHAT. ROCK STARTS @ 48'
39		2	13	12	DR.	3000	6"	?	88		?			?	ROCK	?	estimated	≈5 gpm					DOM.	Sept/70	ROCK @ 30' WATER SWEET.
40		2	13	12	DR.	3000	5"	?	215		?			40'	BROK. ROCK	116-125	estimated	10 gpm					DOM.	AUG/72	ROCK @ 61'?
41		2	13	12	DR.	3000	4½"	?	135	✓				76'	SHAT. ROCK	120?		8 gpm					DOM.	MAY/71	20' OF PERFORATED CASING SHAT. ROCK @ 120'

Williams Lake Area Well Inventory

Hydrogeological Data

Well No.	Location					Description of Well								Approx. Groundwater Level	Principal Aquifers		Water Quantity		Water Quality				Well Use	Completion Date	Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
42	CARIBOO	2	13	12	DR.		4½"	123'	123	✓				73'	BLACK & BROWN ROCK	80-123'?	bail test	240 gph					DOM.	SEPT./73	ROCK @ 75'
(43)	"	2	13	12	DR.	3000	4½"	86'	86'	✓				40'	FRACT. RED ROCK	70-86	pump test	8 gpm 480 gph					DOM.	JULY/73	ROCK @ 53'
(44)	"	2	13	12	DR.	2900-3000	4½"	166'	205		✓			10'	ROCK SHAT.	154'	bail test	150 gph					DOM.	NOV./72	PERFORATED CASING FROM 15-20', 147'-166', 60-81'
45	"	2	13	12	DR.		4½"	144'	144'	✓				52'	FRACT. ROCK	118-144'	bail test	480 gph					DOM.	OCT/72	LAYERED ROCK @ 40-102 FRACT. ROCK 102-144 PERF. 104-144'
46	"	2	13	12	DR.	2600	5"	?	135		✓			38'	BROK ROCK	61-135'	estimated	900 gph					DOM.	JUNE/73	ROCK @ 29'
1	"	2	13	13	DUG	2700	?	?	36				✓	=20'	SAND GRAVEL STONES	3-36'		GOOD QUANTITY					DOM	1954	VERY HARD WATER
2	"	2	13	13	DUG	2900	?	?	15				✓	1'	SILTY SANDY	15'		?					DOM	1960	VERY HARD WATER
3	"	2	13	13	DR	2500-2600	4½"	108	136	✓				19'	SHAT. ROCK	115-136'	bail test	5 gpm					DOM.	1971	PERFORATED CASING SHAT. ROCK THROUT FROM 24'-
4	"	2	13	13	DR.	2600-2700	4½"	?	60'	✓				20'	LAYERED SHAT. ROCK	36-60?		2 gpm					DOM.	MAY/71	PERFORATED CASING 20' length
5	"	2	13	13	DR.	2600-2700	4½"	115'	115'	✓				40'	SHAT. ROCK	96-115?		2 gpm					DOM.	MAY/71	
6	"	2	13	13	DR.	2400-2500	?	38'	45'	✓				14'	SAND ROCK?	~~30-32'~~ 32-45'?	estimated	≈ 5 gpm					DOM.	APR./72	
7	"	2	13	13	DR.	2800-2900	?	?	160'		?			45'	HARD SHALE	?	estimated	= 6 gpm					DOM.	SEPT/72	
8	"	2	13	13	DR.	2800-2900	6"	78'	111'		✓			?	BLUE SHALE	80'		?					DOM.	DEC./69	
9.	"	2	13	13	DR.	2800-2900	2"	?	330'		?			250'	FRACT. ROCK	327-330'	estimated	1000 gph					DOM.	MAY/73	
10		2	13	13	DR	2600	5"	?	200'		?			8'	SHALE?	?	estimated	180 gph					DOM.	MAY/73	
1		2	14	7	DUG	2600-2700	—	—	57'	✓			✓	47'	SAND COARSE	56-57		?					DOM.	1960	
2		2	14	7	DR.	2300	?	?	43	✓				20'	SAND	43?		POOR QUANTITY					DOM	1960	

Williams Lake Area Well Inventory

Hydrogeological Data

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
3	CARIBOO	2	14	7	DUG.	2400 -2500	—	—	16'				✓	6-13'	SAND FINE	15-16'		GOES DRY PERIODICALLY					DOM.	1953	
4	"	2	14	7	DR.	2300	?	?	65'					?	?	?		?					DOM.	1958	
5	"	2	14	7	DUG	2400	—	—	18'				✓	1'	CLAY?			GOOD QUANTITY					DOM.	1958	
6	"	2	14	7	DUG	2400	—	—	30'				✓	17'	HARDAN?	17'?		?					DOM.	1961	
7	"	2	14	7	DUG	2400 -2500	—	—	35'				✓	28'	GRAVEL	35'		GOOD QUANTITY					DOM.	1959	
8	"	2	14	7	DUG	2400 -2500	—	—	16'				✓	9'	?	?		GOOD QUANTITY					DOM.	1956	VERY HARD WATER
9	"	2	14	7	DR.	2500 -2600	?	?	83'		?			?	?	69' & 83'	estimated	50 gph					DOM.	JAN/67.	ROCK @ 69'?
10	"	2	14	7	DR	2600'	?	?	67'		?			15'	BROWN SHALE	55' & 67'		20 gph					DOM.	MAY/67	ROCK @ 18' CL < 12.5 HARDNESS +1700 ph 7.5 Fe 5.0
11	"	2	14	7	DUG	2500'	—	—	60'				✓	50'	SAND	50'?		PUMPS DRY EASILY					DOM.	1965	WATER VERY HARD
12	"	2	14	7	DUG	2500	—	—	40'				✓	36'	GRAVEL	39'?		POOR QUANTITY					DOM.	1965	WATER HARD
13	"	2	14	7	DUG	2200 -2300	—	—	20'				✓	—	—	—		—					DOM.	—	DRY HOLE
14	"	2	14	7	DR.	2600	6"	?	60'		?			25'	SHALE	28-60'		5gpm					DOM.	NOV./71	ROCK @ 28'
15	"	2	14	7	DR.	2600	5"	?	127'		?			37'	HARD BROK. SHALE	106'		4 gpm					DOM.	JULY/71	ROCK @ 106'
16.	"	2	14	7	DR.	2500 -2600	5"	?	130'	✓	?			55'	SAND + GRAV.	96'	estimated	350 gph					DOM.	MAY/72	ROCK @ 90' and 130'
17	"	2	14	7	DR.	2500 -2600	5"	?	130'		?			55'	gravel	130'	estimated	300 gph					DOM.	MAY/72	ROCK @ 120'-130'
18		2	14	7	DR.	2500 -2600	5"	?	89'		?			32'	BROK. SHALE	72-89'?		5gpm					DOM.	JUNE/71	ROCK @ 58'
19		2	14	7	DR.	2600	5"	?	140		?			44'	SHALE	?		5gpm					DOM.	JULY/71	ROCK @ 76'

Williams Lake Area Well Inventory

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
20	CARIBOO	2	14	7	DR.	2600	5"	?	135'					80'	HARD SHALE	?	estimated	450 gph					DOM.	APR./72	ROCK @ 89'
21	"	2	14	7	DR.	2600	5"	?	166'					46'	BROK SHALE	128-166'		5gpm					DOM.	JULY 26/71	ROCK @ 54'
22	"	2	14	7	DR.	2600	5"	?	107'					12'	SHALE?	?	estimated	600 gph					DOM.	APR./72	ROCK @ 45'
23	"	2	14	7	DR.	2600-2700	5"	?	116'					17'	?	?		3gpm					DOM.	JULY/71	ROCK @ 49'
24	"	2	14	7	DR.	2200 ? 2300	4½"	154'	160'	✓				46'	SHAT. ROCK GRAVEL	120-160'		4gpm					DOM.	AUG/71	PERFORATED CASING = 40' length SHAT. ROCK THRUOUT
25	"	2	14	7	DR.	2200 -2300	5"	?	155'					38'	SOFT SHALE GRAVEL	?	?	980 gph					DOM.	MAY/69	ROCK @ 136'
26	"	2	14	7	DR.	2200 -2300	4½"	80'	80'	✓				42'	SAND & GRAVEL	60'		5gpm					DOM.	SEPT./71	PERFORATIONS 60-80'
28		2	14	7	DR.	2200	6¼"	?	63'	✓				8'	SHAT. ROCK SAND.	48'	estimated	5gpm					DOM.	APR./70	PERFORATIONS 48-63'
29		2	14	7	DR.	2200	4½"	64'	64'	✓				23'	SAND & GRAVEL	42'	estimated	10 gpm					DOM.	MAY/69	Perforations 22' length 42-64. ROCK @ 58'
30		2	14	7	DR.	2200 -2300	?	?	100'	✓				50'	GRAVEL	55'?	estimated	GOOD SUPPLY REPORTED					DOM.	OCT./65	
31		2	14	7	DR.		5⅛	222	222	✓				15'	SHAT. ROCK	?		2gpm					DOM.	SEPT./71	59' OF PERFORATIONS ROCK @ 56'
32		2	14	7	DR.	2400 -2500	5"	?	110'				?	42'	SHAT. ROCK	78-82' 93-98'	estimated	250 gph					DOM.	MAR./70	ROCK @ 38'
33.		2	14	7	DR.	2400 -2500	5"	89'	105	✓				44'	GRAVEL LAYERS	65-89'		60 gph					DOM.	MAR/68	
34		2	14	7	DR.	2200 -2300	5"	?	140'				?	16'.	SHALE	?	estimated	120 gph					DOM.	AUG/69	Rock @ 6'
35		2	14	7	DR.	2400 -2500	4½"	194'	194'	✓				flowing	SHAT. ROCK	Flowing	bail test	5gpm					DOM.	APR./72	Perforations 169-190' 64-86'
36		2	14	7	DR.	2500	4½"	191	192'	✓				8'	SHAT. ROCK	46' ? 161 ?	bail test	8gpm					DOM.	APR./72	40' perforated casing

Williams Lake Area Well Inventory

Hydrogeological Data

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia.	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
37	CARIBOO	2	14	7	DR.	2200	4½	150'	151'	✓				5'	SHAT. ROCK			12 gpm					DOM.	?	perforated 80' length.
38	"	2	14	7	DR.	2600	?	?	86'		?			51'	SHALE	52-68	estimated	600 gph					DOM.	JUNE/70	ROCK @ 25'
39	"	2	14	7	DR.	2300-2400	4½'	270'	270'	✓				?	SHAT. ROCK	220-270		300 gph					DOM	DEC./73	220-270 perforated ROCK @ 32'
40	"	2	14	7	DR.	2400	5"	68'	68'	✓				25'	SAND & GRAVEL	46-68'	estimated	360 gph					DOM.	JULY/73	
1	"	2	14	8	DUG	2300-2400	—	—	12'				✓	4'	GRAVEL	12'?	estimated	GOOD QUANTITY					DOM.	1963	
2	"	2	14	8	DUG	2300-2400	—	—	30'				✓	4'	HARDPAN?	30'?	estimated	GOOD QUANTITY					DOM.	?	
3	"	2	14	8	DUG	2300-2400	—	—	12'				✓	11'	GRAVEL	12'	?	?					DOM.	1965	
4	"	2	14	8	DUG	2300-2400	—	—	14'				✓	3'	SANDY CLAY	14'	—	?					DOM.	1954	HARDNESS 833 CO_2 30 Fe < .6 ALK 850 Cl < 25 PH 7.8
5	"	2	14	8	DUG	2400-2500	-	—	22'				✓	18'	SAND STONE	11-22'?	estimated	GOOD Quantity					DOM.	1965	
6	"	2	14	8	DUG	2400-2500	—	—	28'				✓	13'	CLAY?	1-28'?	—	?					DOM.	1958	VERY HARD WATER, LEAVES WHITE DEPOSIT
7	"	2	14	8	DUG	2400-2500	—	—	20'				✓	16'	CLAY,	?	—	?					DOM.	1957	UNDRINKABLE, HIGH IRON HARD WATER
8	"	2	14	8	DUG	2500	-	—	52'				✓	46'?	gravel?	46'?	—	?					DOM.	?	POOR TASTE - TURNS CAST IRON YELLOW
9	"	2	14	8	DUG	2400-2500	-	—	49'				✓	47'	CLAY?	?	—	?					DOM	1960	
10	"	2	14	8	DUG		—	—	16'				✓	13'	CLAY?			POOR QUANTITY					DOM.	1964	WATER SMELLS & SCALEY
11	"	2	14	8	DUG	2300-2400	—	—	15'				✓	?	SAND	15'		?					DOM.	1966	
12	"	2	14	8	DUG	2400	?	?	140'				✓	DRY HOLE	—	—		—					DOM.	1967	
13	"	2	14	8	DUG	2400-2500	—	—	5'				✓	3'	GRAVEL	5'		GOOD SUPPLY					DOM.	1958	

Williams Lake Area Well Inventory

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
14	CARIBOO	2	14	8	DUG	2400-2500	—	—	20'				✓	DRYHOLE	—	—		—					DOM.	?	DRYHOLE
15	"	2	14	8	DUG.	2400-2500	—	—	20'				✓	"	—	—		—					"	?	DRYHOLE
16	"	2	14	8	DUG	2400-2500	—	—	45'				✓	"	—	—		—					"	1967	DRYHOLE
(17)	"	2	14	8	DUG	2400-2500	—	—	21'				✓	5' SPRING 18' FALL	ROCK	19'-21'		?					DOM.	1960	—
(18)		2	14	8	DUG.	2400-2500	—	—	14'				✓	11'	CLAY?	14'?		SUPPLIES 2 HOUSES					DOM.	1962	—
19		2	14	8	DR.	2600	5"	?	103'	✓				6'	GRAVEL	86-103'		600 gph					DOM.	MAY/72	ROCK@62'
(20)		2	14	8	DR.	2500-2600	5"	?	99'		?			31'	BROK. SHALE	?		10 gpm					DOM.	JUNE/71	ROCK@39'
(21)		2	14	8	DR.	2500-2600	4½"	?	140'		?			32'	SHALE	?		4 gpm					DOM.	MAY/71	ROCK@8'
(22)		2	14	8	DR.	2500-2600	5"		285'		?			3'	SHALE SAND?	?		600 gph					DOM.	AUG/72	ROCK@60'
(23)		2	14	8	DR	2500-2600	5"	?	167'		?			71'	SHALE?	?		4 gpm					DOM.	JUNE/71	ROCK@64'
(24)		2	14	8	DR.	2500	5"	?	240'		?			4'	SHALE	?		3 gpm					DOM.	MAY/71	ROCK@160
(25)		2	14	8	DR.	2500-2600	4½"	145	151'	✓				14'	SHAT. ROCK	40-60 125-145		3 gpm					DOM.	AUG./71	Perforations 40-60' 125-145'
(26)		2	14	8	DR.	2500-2600	5"		130'		?			8'	SHALE	?		3 gpm					DOM.	JUNE/71	ROCK@48'
27.		2	14	8	DR.	2300-2400	4½	83'	85'	✓				4'	SHAT. ROCK	63-83' 21'-42'	Bail test	4 gpm					DOM.	APR./72	ROCK@35'
(28)		2	14	8	DR.	2500-2600	4½"	214	214'	✓				51'	SHALE	?	Bail test	1½ gpm					DOM.	JUNE/69	48' OF PERFORATIONS ROCK@36'
29.		2	14	8	DR.	2500	6"	57'	68'		?			7'	SHALE	?		8 gpm					DOM.	APR./71	ROCK@45'
30		2	14	8	DR.		6"	?	130'		?			87'	SHALE.	?	estimated	12 gpm					DOM.	MAY/70	ROCK@42'

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia.	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	well yield (gpm)	T. value	Spec. Cond.	Diss. solids	Temp. C°			
31.	CARIBOO	2	14	8	DR.	?	4½"	?	136'					74'	SAND LAYER	124-136'	BAILTEST	8 gpm					DOM.	JULY/71	
32	"	2	14	8	DR.	2600	5'	?	125		?			Flowing	HARD SHALE	108-125'	estimated	180 gph					DOM.	JUNE/70	ROCK@ 108'
33		2	14	8	DR.	2500 -2600	5"	?	107'		?			10'	HARD SHALE	70-107'	estimated	120 gph					DOM.	MAY/70	ROCK@ 40'
34		2	14	8	DR.	2500 -2600	5"	?	75'		?			10'	HARD SHALE	62-75'	estimated	300 gph					DOM.	JUNE/70	ROCK@ 40'
35		2	14	8	DR.	2500 -2600	5"	?	80'		?			10'	HARD SHALE	69-80'	estimated	250 gph					DOM.	JUNE/70	ROCK@ 58'
36		2	14	8	DR	2500 -2600	5'	?	83'		?			8'	HARD SHALE	72-83'	estimated	250 gph					DOM.	JUNE/70	ROCK@ 62'
37		2	14	8	DR.		4½"	77'	82'		?			40'	SHAT. ROCK	60-82	BAILTEST estimated	7 gpm 20 gpm					DOM.	JUNE/69	ROCK@ 60'
38		2	14	8	DR.	2600	5'	?	71'					4'	SAND GRAVEL	38-65 71?	estimated	600 gph					DOM.	MAY/72	
39		2	14	8	DR.	2400 -2500	6"	89'	145'		?			49'	GREY ROCK	78-145?	estimated	6 gpm					DOM	SEPT/70	ROCK@ 78'
40		2	14	8	DR.	2400	5"	?	125'		?			12'	SHALE	92-125?	estimated	6 gpm.					DOM	SEPT./71	ROCK @ 69'
41		2	14	8	DR.		5"	?	98'		?			Flowing	BROK. SHALE	66-98'	estimated	500 gph					DOM.	AUG./72	ROCK @ 19'
42		2	14	8	DR.	2500 -2600	5"	?	200'		?			Flowing	SHALE	196'	estimated	250 gph					DOM.	June/70	ROCK@ 32'
43.		2	14	8	DR.		4½"	92'	116'	✓				6'	SANDSTONE	10-30 70-90	bail test	5gpm					DOM.	JULY/71	Perforations 10-30' 70-90'
44		2	14	8	DR.	2500 -2600	4½"	104'	145'	✓				2'	SANDSTONE	40-60' 84-104'	bail test	3gpm.					DOM.	AUG./72	Perforations 40-60' ROCK@104' 84'-104'
45		2	14	8	DR.	2500	5"	?	105'		?			18'	HARD SHALE			6 gpm					DOM.	SEPT./71	ROCK@67
46		2	14	8	DR.	2400 -2500	?	?	180'					110'	GRAVEL	168-180'?	estimated	10 gph.					DOM.	OCT./65	

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia.	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
47	CARIBOO	2	14	8	DR.	2400 -2500	4½"	90'	90'	✓				40'	FINE SAND	85-90'		1gpm					DOM.	MAY/65	ROCK@ 30'
48	"	2	14	8	DR.	2500	4"	?	306'					106'	SHALE	?	estimated	POOR WELL 15 gph.					DOM.	SEPT./69.	ROCK@ 3'
49	"	2	14	8	DR.	2500	6"	207	310'		✓			?	SHALE	?	estimated	2gpm					DOM.	OCT/70	ROCK@ 28'
50	"	2	14	8	DR.	2500	6"	?	87'		?			50'	SHALE	70-160'	estimated	5gpm					DOM	JUNE/70	ROCK @55'
51	"	2	14	8	DR	2500	4½"	126'	134'	✓				28'	SHALE	104-126'	estimated	1gpm					DOM.	MAY/69	perforations 104-126'
52	"	2	14	8	DR	2500 -2600	6"	137'	160'		?			10'	SHALE	137-160		1gpm					DOM.	AUG./71	ROCK@ 11'
53	"	2	14	8	DR.	2200	5"	?	135'		?			4'	CHALE	?		2gpm					DOM.	SEPT./71	ROCK@ 60'
54	"	2	14	8	DR.	2500	5"	?	105'		?			6'	BROK. SHALE	95-105'	estimated	500 gph.					DOM.	SEPT./23	ROCK@ 30'
55	"	2	14	8	DR.	2400	4½	87	87'	✓				10'	SANDY CLAY	?	bail test	60 gph.					DOM.	SEPT./72	CASING PERFORATED 57-87'
56	"	2	14	8	DR.	2400 -2500	4½"	126'	126'	✓				12'	ROCK		bail test	2 gpm					DOM	AUG./73	Perforations 106-126'
57	"	2	14	8	DR.		4½"	147'	147'	✓				15'	SANDSTONE	86-106' 127'-147'	bail test	10 gpm					DOM.	MAR./73	Perforations 85'-100' 127'-147'
58	"	2	14	8	DR.	2400 -2500	4½	135'	135'	✓				?			bail test	90 gph.					DOM	SEPT./72	PERFORATIONS 85-100' 122'-135'
60	"	2	14	8	DR.	2200 -2300	4½	102'	102'	✓				30'	GRAVEL	86-102	pumptest	10 gpm					DOM	JUNE/73	PERFORATIONS 40'-61 84-102'
1 ✓	"	2	14	5	DUG		—	—	14'				✓	12'	SAND	?	—	poor quantity					DOM	1960	
2 ✓	"	2	14	5	DUG	2500 -2600	—	—	14'				✓	10'	CLAY?		—	good quantity					DOM.	1957	
3 ✓	"	2	14	5	DUG	2500 -2600	-	—	14'				✓	2'	ROCKS?			?					DOM.	1958	HARD. 527 CO_2 35 Fe. 2.6 ALK. 680 cl. 50 PH 7.5
4 ✓	"	2	14	5	DUG	2500 -2600	—	—	16'				✓	8'	CLAY			?					DOM.	1964	SULPHUR SMELL

Williams Lake Area Well Inventory

Hydrogeological Data

Well No.	Location					Description of Well								Approx. Groundwater Level	Principal Aquifers		Water Quantity		Water Quality				Well Use	Completion Date	Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
5 ✓	CARIBOO	2	14	5	DUG	2600 -2700	?	?	90'					85'	SAND GRAV.	90'?		SUPPLIES 4 CASING 10 gpm					DOM.	1960	no drawdown @ 10 gpm
6 ✓	"	2	14	5	DUG		–	–	16'				✓	12'	CLEAN GRAV.	16'?		GOOD SUPPLY					DOM.	1966	VERY HARD WATER
7	"	2	14	5	DUG	2600	–	–	16'				✓	8'-12'	GRAVEL	?		" "					DOM.	1965	VERY HARD WATER
8 ✓	"	2	14	5	DUG	2600	–	–	16'				✓	?	GRAVEL	?							DOM.	1966	" " "
9 ✓	"	2	14	5	DUG	2500 -2600	–	–	12'				✓	?	SHALE?	?		NOT TO BAD QUANTITY					DOM	1962	WATER VERY HARD.
10 ✓	"	2	14	5	DR.	2500 -2600	—	–	115'					= 40'	?	?		VERY GOOD SUPPLY					DOM.	1962	HARD. 425 PH: 8.3 Fe. .6 Cl < 375
11 ✓	"	2	14	5	DR.	2500 -2600	?	?	110'					54'		100'	estimated	1 gpm					DOM.	1972	
12 ✓	"	2	14	5	DR.	2500 -2600	6 1/4	–	85'	✓				54'		26-83'?	estimated	10 gpm					DOM.	1970/MAY	20' perf. casing.
13 ✓	"	2	14	5	DR	2500 -2600	6"	69'	75'		✓			40'	SHALE SEAMS	38-75?	estimated	3gpm					DOM.	APR./70	—
14 ✓	"	2	14	5	DR.	2500 -2600	4"	?	116'	✓				?	GRAVEL	100-116?	estimated	3gpm					DOM.	AUG./69	—
15	"	2	14	5	DR.	2700 -2800	?	?	100'		?			38'	SHALE		estimated	3 gpm					DOM.	JULY/72	ROCK @ 20'
16	"	2	14	5	DR.	2700 -2800	6"	120	136'		✓			25'	SANDSTONE SHALE	115-136?	estimated	1 gpm					DOM.	DEC./70	ROCK @ 65'
17	"	2	14	5	DR.	2500 -2600	4 1/2"	130'	135'	✓				10'	SHALE ROCK	108-130	estimated	7 gpm					DOM.	June/69	Perforated casing 22' length ROCK @ 99'
18 ✓	"	2	14	5	DR.	2500 -2600	6"	60'	70'	✓				30'	FRACT. ROCK	20'-54'?	estimated	10 gpm					DOM.	MAR/70	ROCK @ 20'
19 ✓	"	2	14	5	DR.	2500 -2600	6"	96'	105'		?			40'	SHALE	53-105?		1 gpm					DOM.	Sept/71	ROCK @ 53'
20	"	2	14	5	DR.	2500 -2600	6 5/8"	?	106'					75'	GRAVEL	50-105'	estimated	100 gpm					School well	Aug./70	

Williams Lake Area Well Inventory

Hydrogeological Data

Well No.	Location.					Description of Well.								Approx. Groundwater Level	Principal Aquifers.		Water Quantity		Water Quality				Well Use	Completion Date	Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
21 ✓	CARIBOO	2	14	5	DR.	2600	6"	70'	70'	✓				?	SAND GRAV.	30-70'		8 gpm					DOM.	Sept./71	
22 ✓	"	2	14	5	DR	2600 -2700	6"		82'	✓				41'	FRACT ROCK	?		2 gpm.					DOM	APR/70	ROCK @ 60'?
23	"	2	14	5	DR.	2700	4½"	165'	165'	✓				65'	? ROCK		PUMP TEST	420 gph.					DOM.	NOV./73	ROCK @ 68' PERF. 125-165'
24	"	2	14	5	DR	2600 -2700	4½"	159'	159'	✓					SAND-STONE	130-159	bail test	5 gpm.					DOM.	NOV./72	PERF. 130-159' ROCK @ 25'
25		2	14	5	DR	2600 -2700	4½"	165'	165'	✓				16'	WHITE ROCK	125-165'	bail test	10 gpm.					DOM.	AUG./73	PERF 125'-165' ROCK @ 26'?
26		2	14	5	DR.	2700	4½"	168'	168'	✓				10'	FRACT. SHALE	128-168'	bail test	6 gpm.					DOM.	JUNE/73	PERF. 128-168' ROCK @ 32'

Williams Lake Area Well Inventory

Hydrogeological Data

Well No.	Location					Description of Well								Approx. Groundwater Level	Principal Aquifers		Water Quantity		Water Quality				Well Use	Completion Date	Remarks
	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
1	CARIBOO	2	14	4	DR.	2600 -2700	?	?	63'	✓				37'	VOLCANIC ROCK	53-63'?	?	?					DOM.	1961	ROCK @ 53' Cl. 25 HARD. 102' CO_2 5-10' Ph 7.8 Fe. < .6 AIK. 238
2	"	2	14	4	DR.	2700 -2800	?	?	63'					40'-50'	CLAY?	?	—	POOR QUANTITY					DOM.	1960	—
3	"	2	14	4	DR.	2700	?	?	117'	✓				1?60'?	SAND	112-117	—	?					DOM.	1964	HARD. 272 PH. = 8. Fe. < .6 Cl < 25
4	"	2	14	4	DR.	2800	?	?	150'	✓				1?92'?	SAND GRAVEL	103'-111	—	?					DOM	July/59	HARD. 289 CO_2 = 20 Fe < .6 AIK. 357 Cl < 25 Ph 7.8
5		2	14	4	DR	2700	6"	?	56	✓				?	SAND.	46-56'	—	3 gpm					DOM.	July/67	
(6)		2	14	4	DR.	2600	6"	?	262					DRY HOLE	—	—	—	—					DOM.	Feb./59.	
7		2	14	4	SP.		—	—	—					SPRING	—	—	—	SUPPLYS SCHOOL & 3 HOUSE					DOM.	—	
(8)		2	14	4	DR.	2600 -2700	?	?	122'	✓				21'	SAND	160-177	—	?					DOM	MAR/67	ROCK @ 112-122'
9		2	14	4	DUG		÷	—	43'				✓	39'	GRAVEL SANDSTONE	?	—	?					DOM.	1963	WATER VERY HARD
(10)		2	14	4	DUG	2600 -2700	—	—	418"				✓	36'	TILL?	?	—	NOT GOOD SUPPLY					DOM.	1963	QUALITY GOOD NOT HARD.
11		2	14	4	DUG	2700 -2800	—	—	48'				✓	44'	SAND SEAM	32'	—	ENOUGH FOR HOUSE & GARDEN					DOM.	1964	
12		2	14	4	DUG	2600 -2700	—	—	43'				✓	38'	HARDPAN HARD.	38'		JUST ENOUGH FOR HOUSE					DOM.	NOV./65	
13.		2	14	4	DUG	2700 -2800	—	—	52'				✓	36'	LOOSE GRAVEL	36-52'		GOOD SUPPLY					DOM.	1967	
14		2	14	4	DUG	2700 -2800	-	-	52				✓	50'	GRAVEL LAYER	52'		SUPPLY NOT GOOD.					DOM.	1958	MED. HARD WATER.
15.		2	14	4	DUG	2800	48"	—	12'				✓	4'	SAND GRAV.	10-12'		GOOD SUPPLY					DOM.	?	
(16)		2	14	4	DR.	2600 -2700	4½"	?	200'	✓				68'	FRACT. ROCK.	65'-110'?		3 gpm					DOM.	Feb./70.	

Williams Lake Area Well Inventory

Hydrogeological Data

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
(17)	CARIBOO	2	14	4	DR.	2500 -2600	6"	105'	105'	✓				94	SAND	80-105'		20 gpm					DOM.	MAY/71	
(18)	CARIBOO	2	14	4	DR.	2500 -2600	6"	194	245'		✓			74	SHALE	105'		1 gpm					DOM.	?	
19	"	2	14	4	DR.	2700	4½	"	205	✓				26	SHAT. ROCK	104'		10 gpm.					DOM.	DEC/71	perf. casing 104-205'
(20)	"	2	14	4	DR	2600 -2700	6"	200	218'	✓				50'	SHALE	140-218	estimated	8 gpm					DOM.	SEPT/70	ROCK @ 40'
(21)	"	2	14	4	DR.	2600 -2700	4½"	120	120	✓				36'	SHALE	20-101		2.5 gpm					DOM	JULY/71	ROCK @ 114 PERF. 20-101'
(22)	"	2	14	4	DR	2600 -2700	6"	34'	80		✓			30'	FRACT SHALE	30'-80'?		6 gpm					DOM.	DEC./71	ROCK @ 30'
(23)		2	14	4	DR.	2600 -2700	4½"	122	122'	✓				39'	GRAVEL	101-122'		2 gpm					DOM.	MAY/72	PERF. 101-122'
24		2	14	4	DR	2700 -2800	6"	162	177'		✓			80'	SHALE	162-177?		3 gpm					DOM.	JULY/71	ROCK @ 47'
25		2	14	4	DR.	2700 -2800	6"	63'	90		✓			50'	FRACT. ROCK	50-90'?		18 gpm					DOM.	MAR./71	ROCK @ SURFACE
26		2	14	4	DR.	2800	?	?	79'	?				40'	FRACT. ROCK	47-79'	estimated	3 gpm					DOM.	NOV./72	ROCK @ 47'
(27)		2	14	4	DR.	2600 -2700	5⅝"	131'	140	✓				48'	GRAVEL	72-92 111-131		?					DOM.	OCT./73	PERF. 72-92 111-131 ROCK @ 104'
(28)		2	14	4	DR.	2600 -2700	5⅝ 4½	98 157'	240	✓				46'	SHAT. ROCK	230.'		2 gpm					DOM.	OCT./73	
(29)		2	14	4	DR.	2600 -2700	5⅝"	120'	120'	✓				50'	SHAT. ROCK	93-105'? 114-120'?		?					DOM	OCT./73	ROCK @ 114'
(30)		2	14	4	DR.	2600 -2700	5⅝"	143	150'	✓				24'	SHALE	82-102' 124'-143'		10 gpm					DOM.	OCT./73	PERF. 82-102' 124'-143'
(31)		2	14	4	DR.	2600 -2700	4½"	270'	270'	✓				26'	SHAT. ROCK	80-101' 124-145, 260-271		1½ gpm					DOM.	MAY/73	PERF. AS SHOWN. ROCK THRUOUT.
(32)		2	14	4	DR	2600 -2700	4½	105'	105'	✓				18'	SHAT. ROCK	65'-105'		?							PERF. 65-105'

Williams Lake Area Well Inventory

Hydrogeological Data

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	District	Z	X	Y	Type	Approx. Elev.	Casing Dia	Casing length	Depth	Well Completion a	b	c	d		Descrip. of Materials	Depth to water bearing zone.	Reliability of well yield	Well yield (gpm)	T. value	Spec. Cond.	Diss. Solids	Temp. C°			
(33)	CARIBOO	2	14	4	DR.	2600 -2700	4½"	250'	300'	✓				66'	ROCK	210-250'	—	?					DOM.	AUG./73	PERF. 210-250' LAYERS OF ROCK THROUT
(34)	"	2	14	4	DR.	2600	4½"	130'	135'	✓				67'	GRAVEL ROCK ?	?	bail test	60 gph					DOM.	JULY/73	PERF.
(35)	"	2	14	4	DR.	2600 -2700	5⅝"	131'	136'	✓				47'	SHAT. ROCK SAND	116-136'	—	5gpm.					DOM	OCT/73	PERF 20' length 116-136'
(36)	"	2	14	4	DR.	2600 -2700	5⅝	127'	134'	✓				60'	SHAT. ROCK	92-134'	—	3gpm.					DOM.	OCT./73	OPEN HOLE 127'-134' PERF. 92-134'
(37)		2	14	4	DR.		5⅝"	132'	132'	✓				51'	SAND COARSE	88-132'	—	4gpm					DOM.	SEPT./73	PERF. 88-132'
38		2	14	4	DR.		6"	98	258		✓			+2'-15'	SANDSTONE	250'-258'		1½gpm					Trailer Park	MAR./72	ROCK @ 98' *COMP. CHEM. ON THIS WELL
(39)		2	14	4	DR.	2600 -2700	4½"	126'	126'	✓				50'	STONEY CLAY ?	86-126	bail test	3gpm					DOM.	JULY/73	PERF. 86-126
(40)		2	14	4	DR.		4½"	88'	88'	✓				20'	LAYERS SAND			6gpm					DOM.	OCT./72	PERF.
41		2	14	4	DR.	2600 -2700	4½"	63'	63'	✓				40'	FRACT ROCK GRAVEL ?	42-63	bail test	7gpm					DOM.	DEC./73	PERF 42'-63'
(42)		2	14	4	DR.	2600 -2700	4½"	128'	128'	✓				46'	SHAT. SAND STONE	108-128'		6gpm					DOM.	MAR./73	PERF. 108-128' ROCK @ 78'
(43)		2	14	4	DR.	2600	5⅝	110'	110'	✓				54'	SHAT. ROCK	88-110'		4gpm					DOM.	SEPT./73	PERF. 88-110' ROCK @ 102' ?
(44)		2	14	4	DR.	2600 -2700	4½"	127'	127'	✓				38'	SHAT. ROCK	118'-127' ?		2.5gpm					DOM.	MAY/73	PERF. 64-85' 105'-127'
(45)		2	14	4	DR	2600 -2700	4½"	129	129	✓				34	SHAT. ROCK	108-129		8 gpm					DOM.	MAY/73	PERF. 108-129'
1		2	14	34	DR.	2900	5"	38' ?	300'		✓			160'	SOLID ROCK ?	?		60 gph					DOM.	JULY/70	ROCK @ 38'
1.		2	14	33	DR.	2900	6⅝, 4½	84'	84'	✓				31'	gravel	68'-84'	bail test	16 gpm @ 31' 20 gpm					DOM.	MAY/72	PERF. 63'-84'
2		2	14	33	DR.	2800 -2900	4½"	120'	120'	✓				60'	SHAT. ROCK.	100-120'	PUMP TEST	15gpm					DOM.	MAY/72	PERF. 100'-120' ROCK @ 120' ?

WELL LOCATION MAP

Fig. 1

LEGEND

- 5gpm > (bottomed in rock)
- 5gpm > (bottomed in sands & gravels)
- Dug Well
- Spring
- Dry Hole (dug)
- Dry Hole (drilled)

Scale 1"=1320'

DEVELOPMENT AREA

Road

Stockyard

Aband.

MUNICIPAL

HODGSON RD.

CHURCH RD.

DOG CREEK RD.

GIBBON RD.

LAKESIDE RD.

June 1977 50 Usgpm

WR-8547169

8840 7046 10286 10287 11589 7047 7729 8835 8834 8836 8837 7024 8839 9849 9970 11590 9399 9710 9634

Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 Y10 Y11 Y12 Y13 Y14 Y16 Y17 Y18 Y31 Y32 Y33 Y34 Y35 Y36

Z1 Z2

X 13 14

LEGEND

Fig. 2.

A - clays, deltaic deposits, fluvial terrace
B - till, soft
C - ice contact deposits
D & E - mostly thin drift over bedrock.

A

B

C

D

E

W

Abond.

10286
WR-854-69

10287

7046

Stockyard

2000

8840

HODGSON AD.

CHELOTHIN RD.

11589

7047

Y11 Y12 Y7 Y8

8839

8836

8835

8834

LAKESIDE

2000

2500

GREEN RD.

8837

7024

GIBBON RD.

3000

Road

9849

9970

Y2 Y1 Y6 Y5 Y4 Y3

11590

9399

Jeep

NEW LONGVIEW HWY

9710

3000

3000

3000

Y35 Y36 Y31 Y32 Y33

GENERALIZED SURFICIAL GEOLOGY.

(From Callan, 1968)

Scale 1" = 1320'