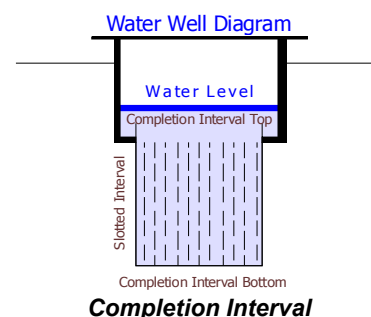


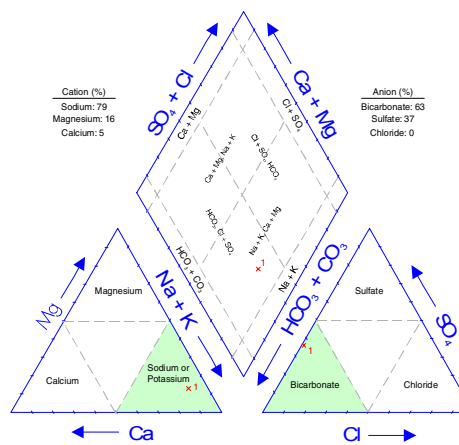
10 GLOSSARY

Anion	negatively charged ion
Aquifer	a formation, group of formations, or part of a formation that contains saturated permeable rocks capable of transmitting groundwater to water wells or springs in economical quantities
Aquitard	a confining bed that retards but does not prevent the flow of water to or from an adjacent aquifer
Available Drawdown	in a confined aquifer, the distance between the non-pumping water level and the top of the aquifer in an unconfined aquifer (water table aquifer), two thirds of the saturated thickness of the aquifer
Borehole	includes all “work types” except springs
Completion Interval	see diagram
Deltaic	a depositional environment in standing water near the mouth of a river
Dewatering	the removal of groundwater from an aquifer for purposes other than use
Dfb	one of the Köppen climate classifications; a Dfb climate consists of warm to cool summers, severe winters, and no dry season. The mean monthly temperature drops below -3° C in the coolest month, and exceeds 10° C in the warmest month.
Evapotranspiration	a combination of evaporation from open bodies of water, evaporation from soil surfaces, and transpiration from the soil by plants (Freeze and Cherry, 1979)
Facies	the aspect or character of the sediment within beds of one and the same age (Pettijohn, 1957)
Fluvial	produced by the action of a stream or river
Friable	poorly cemented
Hydraulic Conductivity	the rate of flow of water through a unit cross-section under a unit hydraulic gradient; units are length/time
km	kilometre
Kriging	a geo-statistical method for gridding irregularly-spaced data (Cressie, 1990)
Lacustrine	fine-grained sedimentary deposits associated with a lake environment and not including shore-line deposits
Lithology	description of rock material
Lsd	Legal Subdivision
m	metres



mm	millimetres
m ² /day	metres squared per day
m ³	cubic metres
m ³ /day	cubic metres per day
mg/L	milligrams per litre
Median	the value at the centre of an ordered range of numbers
Obs WW	Observation Water Well

Piper tri-linear diagram a method that permits the major cation and anion compositions of single or multiple samples to be represented on a single graph. This presentation allows groupings or trends in the data to be identified. From the Piper tri-linear diagram, it can be seen that the groundwater from this sample water well is a sodium-bicarbonate-type. The chemical type has been determined by graphically calculating the dominant cation and anion. For a more detailed explanation, please refer to Freeze and Cherry, 1979



Piper Tri-Linear Diagram

Rock	earth material below the root zone
Surficial Deposits	includes all sediments above the bedrock
Thalweg	the line connecting the lowest points along a stream bed or valley; <i>longitudinal profile</i>
Till	a sediment deposited directly by a glacier that is unsorted and consisting of any grain size ranging from clay to boulders
Transmissivity	the rate at which water is transmitted through a unit width of an aquifer under a unit hydraulic gradient: a measure of the ease with which groundwater can move through the aquifer
	Apparent Transmissivity: the value determined from a summary of aquifer test data, usually involving only two water-level readings
	Effective Transmissivity: the value determined from late pumping and/or late recovery water-level data from an aquifer test
	Aquifer Transmissivity: the value determined by multiplying the hydraulic conductivity of an aquifer by the thickness of the aquifer

Water Well	a hole in the ground for the purpose of obtaining groundwater; “work type” as defined by AENV includes test hole, chemistry, deepened, well inventory, federal well survey, reconditioned, reconstructed, new, old well-test
Yield	a regional analysis term referring to the rate a properly completed water well could be pumped, if fully penetrating the aquifer Apparent Yield: based mainly on apparent transmissivity Long-Term Yield: based on effective transmissivity
AAFC-PFRA	Prairie Farm Rehabilitation Administration Branch of Agriculture and Agri-Food Canada
AENV	Alberta Environment
AMSL	above mean sea level
BGP	Base of Groundwater Protection
DEM	Digital Elevation Model
DST	drill stem test
EUB	Alberta Energy and Utilities Board
GCDWQ	Guidelines for Canadian Drinking Water Quality
IAAM	<i>Infinite Aquifer Artesian Model</i> . The mathematical model is used to calculate water levels at a given location. The model has been used for more than 17 years by HCL for several hundred groundwater monitoring projects. The model aquifer is based on a solution of the well function equation. The simulation calculates drawdown by solving the well function equation using standard approximation methods. The drawdown at any given point at any given time uses the method of superposition.
NPWL	non-pumping water level
TDS	Total Dissolved Solids
WSW	Water Source Well or Water Supply Well

11 CONVERSIONS

Multiply	by	To Obtain
Length/Area		
feet	0.304 785	metres
metres	3.281 000	feet
hectares	2.471 054	acres
centimetre	0.032 808	feet
centimetre	0.393 701	inches
acres	0.404 686	hectares
inchs	25.400 000	millimetres
miles	1.609 344	kilometres
kilometer	0.621 370	miles (statute)
square feet (ft ²)	0.092 903	metres (m ²)
metres (m ²)	10.763 910	square feet (ft ²)
metres (m ²)	0.000 001	kilometres (km ²)
Concentration		
grains/gallon (UK)	14.270 050	ppm
ppm	0.998 859	mg/L
mg/L	1.001 142	ppm
Volume (capacity)		
acre feet	1233.481 838	cubic metres
cubic feet	0.028 317	cubic metres
cubic metres	35.314 667	cubic feet
cubic metres	219.969 248	gallons (UK)
cubic metres	264.172 050	gallons (US liquid)
cubic metres	1000.000 000	litres
gallons (UK)	0.004 546	cubic metres
imperial gallons	4.546 000	litres
Rate		
litres per minute	0.219 974	igpm
litres per minute	1.440 000	cubic metres/day (m ³ /day)
igpm	6.546 300	cubic metres/day (m ³ /day)
cubic metres/day (m ³ /day)	0.152 759	igpm
Pressure		
psi	6.894 757	kpa
kpa	0.145 038	psi
Miscellaneous		
Celsius	$F^{\circ} = 9/5 (C^{\circ} + 32)$	Fahrenheit
Fahrenheit	$C^{\circ} = (F^{\circ} - 32) * 5/9$	Celsius
degrees	0.017 453	radians

YELLOWHEAD COUNTY

Appendix B

Maps and Figures on CD-ROM

PROPOSED MAPS AND FIGURES ON CD-ROM

1) General

A01	Index Map
A02	Surface Topography
A03	Surface Casing Types used in Drilled Water Wells
A04	Location of Water Wells and Springs
A05	Minimum Depth of Existing Water Wells
A06	Maximum Depth of Existing Water Wells
A07	Difference Between the Maximum and Minimum Depth of Existing Water Wells
A08	Depth to Base of Groundwater Protection
A09	Hydrogeological Maps
A10	Generalized Cross-Section (for terminology only)
A11	Geologic Column
A12	Cross-Section A - A'
A13	Cross-Section B - B'
A14	Cross-Section C - C'
A15	Cross-Section D - D'
A16	Cross-Section E - E'
A17	Cross-Section F - F'
A18	Bedrock Topography
A19	Bedrock Geology
A20	Relative Permeability
A21	Risk of Groundwater Contamination
A22	Authorized Non-Exempt Groundwater Water Wells
A23	Estimated Water Well Use per Section
A24	Water Wells Recommended for Field Verification

2) Surficial Aquifers

a) Surficial Deposits

B01	Thickness of Surficial Deposits
B02	Non-Pumping Water-Level Surface in Surficial Deposits Based on Water Wells Less than 20 Metres Deep
B03	Total Dissolved Solids in Groundwater from Surficial Deposits
B04	Sulfate in Groundwater from Surficial Deposits
B05	Nitrate + Nitrite (as N) in Groundwater from Surficial Deposits
B06	Chloride in Groundwater from Surficial Deposits
B07	Total Hardness in Groundwater from Surficial Deposits
B08	Piper Diagram - Surficial Deposits
B09	Thickness of Sand and Gravel Deposits
B10	Amount of Sand and Gravel in Surficial Deposits
B11	Thickness of Sand and Gravel Aquifer(s)
B12	Water Wells Completed in Surficial Deposits
B13	Apparent Yield for Water Wells Completed in Sand and Gravel Aquifer(s)
B14	Changes in Water Levels in Surficial Deposits

b) First Sand and Gravel

B15	Thickness of First Sand and Gravel
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c) Upper Sand and Gravel

B16	Thickness of Upper Surficial Deposits
B17	Thickness of Upper Sand and Gravel (not all drill holes fully penetrate surficial deposits)
B18	Apparent Yield for Water Wells Completed through Upper Sand and Gravel Aquifer

d) Lower Sand and Gravel

B19	Structure-Contour Map - Top of Lower Sand and Gravel Deposits
B20	Depth to Top of Lower Sand and Gravel Deposits
B21	Thickness of Lower Sand and Gravel Deposits
B22	Apparent Yield for Water Wells Completed through Lower Sand and Gravel Aquifer
B23	Non-Pumping Water-Level Surface in Lower Sand and Gravel Aquifer

3) Bedrock Aquifers

a) General

- C01 Apparent Yield for Water Wells Completed in Upper Bedrock Aquifer(s)
- C02 Total Dissolved Solids in Groundwater from Upper Bedrock Aquifer(s)
- C03 Sulfate in Groundwater from Upper Bedrock Aquifer(s)
- C04 Distance from Top of Upper Lacombe Member vs Sulfate in Groundwater from Upper Bedrock Aquifer(s)
- C05 Chloride in Groundwater from Upper Bedrock Aquifer(s)
- C06 Fluoride in Groundwater from Upper Bedrock Aquifer(s)
- C07 Total Hardness of Groundwater from Upper Bedrock Aquifer(s)
- C08 Piper Diagram - Upper Bedrock Aquifer(s)
- C09 Bedrock Recharge/Discharge Areas
- C10 Non-Pumping Water-Level Surface in Upper Bedrock Aquifer(s)
- C11 Areas of Potential Groundwater Depletion - Upper Bedrock Aquifer(s)

b) Disturbed Belt

- C12 Depth to Top of Disturbed Belt
- C13 Structure-Contour Map - Disturbed Belt
- C14 Non-Pumping Water-Level Surface - Disturbed Belt Aquifer
- C15 Apparent Yield for Water Wells Completed through Disturbed Belt Aquifer
- C16 Total Dissolved Solids in Groundwater from Disturbed Belt Aquifer
- C17 Sulfate in Groundwater from Disturbed Belt Aquifer
- C18 Chloride in Groundwater from Disturbed Belt Aquifer
- C19 Fluoride in Groundwater from Disturbed Belt Aquifer
- C20 Piper Diagram - Disturbed Belt Aquifer

c) Dalehurst Member

- C21 Depth to Top of Dalehurst Member
- C22 Structure-Contour Map - Dalehurst Member
- C23 Non-Pumping Water-Level Surface - Dalehurst Aquifer
- C24 Apparent Yield for Water Wells Completed through Dalehurst Aquifer
- C25 Total Dissolved Solids in Groundwater from Dalehurst Aquifer
- C26 Sulfate in Groundwater from Dalehurst Aquifer
- C27 Chloride in Groundwater from Dalehurst Aquifer
- C28 Fluoride in Groundwater from Dalehurst Aquifer
- C29 Piper Diagram - Dalehurst Aquifer

d) Upper Lacombe Member

- C30 Depth to Top of Upper Lacombe Member
- C31 Structure-Contour Map - Upper Lacombe Member
- C32 Non-Pumping Water-Level Surface - Upper Lacombe Aquifer
- C33 Apparent Yield for Water Wells Completed through Upper Lacombe Aquifer
- C34 Total Dissolved Solids in Groundwater from Upper Lacombe Aquifer
- C35 Sulfate in Groundwater from Upper Lacombe Aquifer
- C36 Chloride in Groundwater from Upper Lacombe Aquifer
- C37 Fluoride in Groundwater from Upper Lacombe Aquifer
- C38 Piper Diagram - Upper Lacombe Aquifer