

## 9. Conversions

Multiply	by	To Obtain
<b>Length/Area</b>		
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
inches	25.400 000	millimetres
miles	1.609 344	kilometres
kilometer	0.621 370	miles (statute)
square feet (ft <sup>2</sup> )	0.092 903	square metres (m <sup>2</sup> )
square metres (m <sup>2</sup> )	10.763 910	square feet (ft <sup>2</sup> )
square metres (m <sup>2</sup> )	0.000 001	square kilometres (km <sup>2</sup> )
<b>Concentration</b>		
grains/gallon (UK)	14.270 050	parts per million (ppm)
ppm	0.998 859	mg/L
mg/L	1.001 142	ppm
<b>Volume (capacity)</b>		
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
<b>Rate</b>		
litres per minute (lpm)	0.219 974	UK gallons per minute (igpm)
litres per minute	1.440 000	cubic metres/day (m <sup>3</sup> /day)
igpm	6.546 300	cubic metres/day (m <sup>3</sup> /day)
cubic metres/day	0.152 759	igpm

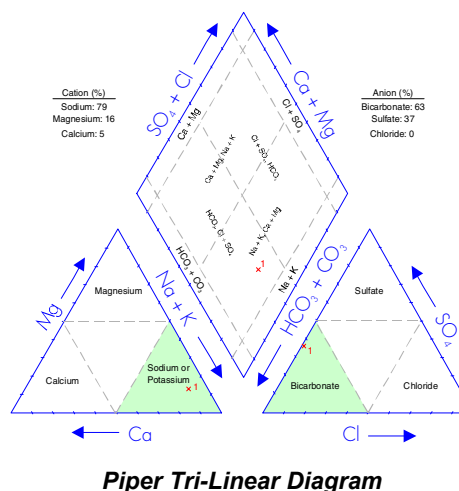
## 10. Glossary

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
Bsk	a climate classification that is characterized by its moisture deficiency, where mean annual potential evapotranspiration exceeds the mean annual precipitation (Thornthwaite and Mather, 1957)
Dewatering	the removal of groundwater from an aquifer for purposes other than use
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
Kame	a steep-sided alluvial cone deposited against an ice front
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 <sup>2</sup> /day	metres squared per day
m <sup>3</sup>	cubic metres
m <sup>3</sup> /day	cubic metres per day
mg/L	milligrams per litre
Median	the value at the center of an ordered range of numbers

**Montane Region** is the most diverse of all the ecozones, ranging from alpine tundra to dense conifer forests to dry sagebrush and grasslands.

**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



**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; *longitudinal profile*

**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

**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
NPWL	non-pumping water level
PFRA	Prairie Farm Rehabilitation Administration
TDS	Total Dissolved Solids
WSW	Water Source Well or Water Supply Well

**CYPRESS COUNTY**

**Appendix B**

**Maps and Figures on CD-ROM**

## 1) General

- Index Map/Surface Topography
- Location of Water Wells and Springs
- Total Dissolved Solids from Springs
- Location of Water Well Type
- Surface Casing Types used in Drilled Water Wells
- Licensed Water Wells
- Depth to Base of Groundwater Protection
- Generalized Cross-Section (for terminology only)
- Geologic Column
- Depth of Existing Water Wells
- Hydrogeological Map
- Cross-Section A - A'
- Cross-Section B - B'
- Cross-Section C - C'
- Cross-Section D - D'
- Cross-Section E - E'
- Cross-Section F - F'
- Cross-Section G - G'
- Cross-Section H - H'
- Bedrock Topography
- Bedrock Geology
- E-Log Showing Base of Foremost Formation
- Relative Permeability
- Estimated Water Well Use Per Section
- Water Wells Recommended for Field Verification

## 2) Surficial Aquifers

### a) Surficial Deposits

- Thickness of Surficial Deposits
- Non-Pumping Water-Level Surface in Surficial Deposits Based on Water Wells Less than 20 Metres Deep
- Total Dissolved Solids in Groundwater from Surficial Deposits
- Sulfate in Groundwater from Surficial Deposits
- Nitrate + Nitrite (as N) in Groundwater from Surficial Deposits
- Chloride in Groundwater from Surficial Deposits
- Total Hardness in Groundwater from Surficial Deposits
- Piper Diagram - Surficial Deposits
- Thickness of Sand and Gravel Deposits
- Amount of Sand and Gravel in Surficial Deposits
- Thickness of Sand and Gravel Aquifer(s)
- Water Wells Completed in Surficial Deposits
- Apparent Yield for Water Wells Completed in Sand and Gravel Aquifer(s)
- Changes in Water Levels in Sand and Gravel Aquifer(s) Based on Water Wells Less than 20 Metres Deep

### b) Upper Sand and Gravel

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

### c) Lower Sand and Gravel

- Structure-Contour Map - Top of Lower Surficial Deposits
- Depth to Top of Lower Surficial Deposits
- Thickness of Lower Surficial Deposits
- Thickness of Lower Sand and Gravel (not all drill holes fully penetrate surficial deposits)
- Apparent Yield for Water Wells Completed through Lower Sand and Gravel Aquifer
- Non-Pumping Water-Level Surface in Lower Sand and Gravel Aquifer

### 3) Bedrock Aquifers

#### a) General

- Apparent Yield for Water Wells Completed in Upper Bedrock Aquifer(s)
- Total Dissolved Solids in Groundwater from Upper Bedrock Aquifer(s)
- Sulfate in Groundwater from Upper Bedrock Aquifer(s)
- Chloride in Groundwater from Upper Bedrock Aquifer(s)
- Fluoride in Groundwater from Upper Bedrock Aquifer(s)
- Total Hardness of Groundwater from Upper Bedrock Aquifer(s)
- Piper Diagram - Bedrock Aquifer(s)
- Recharge/Discharge Areas between Surficial Deposits and Upper Bedrock Aquifer(s)
- Non-Pumping Water-Level Surface in Upper Bedrock Aquifer(s)
- Changes in Water Levels in Upper Bedrock Aquifer(s)

#### b) Cypress Hills Formation

- Depth to Top of Cypress Hills Formation
- Structure-Contour Map - Cypress Hills Formation

#### c) Paskapoo Formation (Ravenscrag)

- Depth to Top of Paskapoo (Ravenscrag) Formation
- Structure-Contour Map - Paskapoo (Ravenscrag) Formation

#### d) Scollard Formation (Frenchman)

- Depth to Top of Scollard (Frenchman) Formation
- Structure-Contour Map - Scollard (Frenchman) Formation
- Non-Pumping Water-Level Surface - Scollard (Frenchman) Aquifer
- Piper Diagram - Scollard (Frenchman) Aquifer
- Recharge/Discharge Areas between Surficial Deposits and Scollard (Frenchman) Aquifer

#### e) Horseshoe Canyon Formation (Eastend)

- Depth to Top of Horseshoe Canyon (Eastend) Formation
- Structure-Contour Map - Horseshoe Canyon (Eastend) Formation
- Non-Pumping Water-Level Surface - Horseshoe Canyon (Eastend) Aquifer
- Apparent Yield for Water Wells Completed through Horseshoe Canyon (Eastend) Aquifer
- Total Dissolved Solids in Groundwater from Horseshoe Canyon (Eastend) Aquifer
- Sulfate in Groundwater from Horseshoe Canyon (Eastend) Aquifer
- Chloride in Groundwater from Horseshoe Canyon (Eastend) Aquifer
- Fluoride in Groundwater from Horseshoe Canyon (Eastend) Aquifer
- Piper Diagram - Horseshoe Canyon (Eastend) Aquifer
- Recharge/Discharge Areas between Surficial Deposits and Horseshoe Canyon (Eastend) Aquifer

#### f) Bearpaw Formation

- Depth to Top of Bearpaw Formation
- Structure-Contour Map - Bearpaw Formation
- Non-Pumping Water-Level Surface - Bearpaw Aquifer
- Apparent Yield for Water Wells Completed through Bearpaw Aquifer
- Total Dissolved Solids in Groundwater from Bearpaw Aquifer
- Sulfate in Groundwater from Bearpaw Aquifer
- Chloride in Groundwater from Bearpaw Aquifer
- Fluoride in Groundwater from Bearpaw Aquifer
- Piper Diagram - Bearpaw Aquifer
- Recharge/Discharge Areas between Surficial Deposits and Bearpaw Aquifer