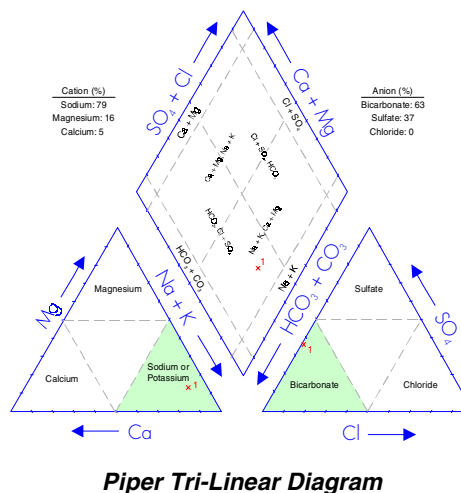


Obs WW                      Observation Water Well  
 PFRA                        Prairie Farm Rehabilitation Administration

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



Surficial Deposits        includes all sediments above the bedrock

TDS                         Total Dissolved Solids

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

WSW                        Water Source Well or Water Supply Well

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

## 11 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
inchs	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

**COUNTY OF VERMILION RIVER NO. 24**

**Appendix B**

**MAPS AND FIGURES ON CD-ROM**

**A) Database**  
**B) ArcView Files**  
**C) Query**  
**D) Maps and Figures**

**1) General**

Index Map  
Surface Casing Types used in Drilled Water Wells  
Location of Water Wells  
Depth of Existing Water Wells  
Depth to Base of Groundwater Protection  
Generalized Cross-Section (for terminology only)  
Geologic Column  
Cross-Section A - A'  
Cross-Section B - B'  
Bedrock Topography  
Cross-Section C - C'  
Bedrock Geology  
E-Log showing Base of Foremost Formation  
Hydrographs Cited in Text  
Water-Level Comparison  
Hydrographs - All in Study Area  
Risk of Groundwater Contamination  
Relative Permeability  
Water Wells Recommended for Field Verification

**2) Surficial Aquifers**

**a) Surficial Deposits**

Thickness of Surficial Deposits  
Non-Pumping Water-Level Surface in Surficial Deposits  
Total Dissolved Solids in Groundwater from Surficial Deposits  
Sulfate in Groundwater from Surficial Deposits  
Chloride in Groundwater from Surficial Deposits  
Fluoride in Groundwater from Surficial Deposits  
Total Hardness of Groundwater from Surficial Deposits  
Piper Diagram - Surficial 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)

**b) First Sand and Gravel**

Thickness of First Sand and Gravel  
First Sand and Gravel - Saturation

**c) 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

**d) 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 Surficial Deposits

**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 Aquifers  
Recharge/Discharge Areas between Surficial Deposits and Upper Bedrock Aquifer(s)  
Non-Pumping Water-Level Surface in Upper Bedrock Aquifer(s)

**b) Oldman Aquifer**

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

**b) Birch Lake Aquifer**

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

**b) Ribstone Creek Aquifer**

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

**c) Victoria Aquifer**

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

**c) Brosseau Aquifer**

Depth to Top of Brosseau Member  
Structure-Contour Map - Top of Brosseau Member

**d) Lea Park Aquifer**

Depth to Top of Lea Park Formation  
Structure-Contour Map - Top of Lea Park Formation

**d) Milk River Formation**

Depth to Top of Milk River Formation  
Structure-Contour Map - Top of Milk River Formation