

# Metadata: Provincial Groundwater Monitoring Network (PGMN)

Title	Provincial Groundwater Monitoring Network (PGMN) Program: Groundwater Level Data, Groundwater Chemistry Data, and Precipitation Data
	<p>1) Program Description and Data Sets:</p> <p>The PGMN program began in 2000 and is designed to monitor ambient groundwater level and chemistry conditions across Ontario.</p> <p>The PGMN Program is implemented through a partnership arrangement made between the Ministry of Environment, the 36 Conservation Authorities, and 7 participating Municipalities.</p> <p>There are currently 490 wells in the PGMN program that actively monitor groundwater levels on an hourly basis. These wells are not used to supply water and are used for monitoring groundwater conditions only.</p> <p>PGMN wells are initially sampled following program protocols that are designed to obtain aquifer pore and fracture fluids, and initially chemically analyzed for a comprehensive set of chemical parameters including: general chemistry, metals, major ions, a suite of volatile organic parameters, and a suite of pesticides and herbicides at the Ministry of Environment laboratory. Approximately 409 of the PGMN wells have been selected for long-term annual water chemistry monitoring. The long-term water monitoring parameters include: general chemistry, metals and major ions. The on-going chemical analyses of samples collected for the period 2003-2007 have been undertaken at a number of private laboratories including: TESTMARK Laboratory Ltd., ACCUTEST Laboratory Ltd., Caduceon Environmental Laboratory, City of Ottawa Laboratory Service, Maxxam Analytics Inc., Near North Laboratories Inc., SGS Lakefield Research Ltd., and York-Durham Laboratories. Samples collected from 2008 onward have been chemically analyzed at the Ministry of Environment laboratory.</p> <p>Rain gauges are currently established at 63 selected PGMN well sites and are monitoring precipitation approximately every 15 minutes during the early Spring to late Fall seasons.</p> <p>2) Monitoring Well Location Information:</p> <p>The latitude and longitude information for each PGMN well location have been determined using a handheld Global Positioning System (GPS) device or from survey results where available.</p> <p>The elevation information has been determined using the latitude and longitude data and applying it to the Provincial Digital Elevation Model (DEM).</p> <p>For PGMN wells that are located on privately owned land the location information is limited to Lot, Concession, Township, County, and Conservation Authority at this time.</p> <p>3) Aquifer Type, Lithology, and Stratigraphy:</p> <p>The type of aquifer being monitored by a given PGMN well is designated as being overburden, bedrock, or the interface between the overburden and the bedrock.</p> <p>Ministry of Environment Water Well Record numbers are provided for the PGMN monitoring wells where available.</p> <p>The lithology of the aquifer being monitored is based on the Ministry of Environment Water Well Record for the PGMN well or nearby wells, or on bore-log descriptions taken from hydrogeological reports.</p> <p>Stratigraphic information can also be obtained from the Ministry of Environment Water Well record. Where a Record is not available, and information on the stratigraphy is known from a hydrogeological report; a simplified stratigraphy is provided as a text description. In cases where a Well Record or hydrogeological report is not available, water well record numbers of nearby wells are provided for further reference.</p> <p>4) Well Construction Details:</p> <p>Information on the PGMN monitoring wells are based on information provided on the Ministry of Environment Water Well Record or well construction descriptions provided in hydrogeological reports.</p> <p>5) Groundwater Level Monitoring Devices</p> <p>Groundwater levels are measured once per hour in PGMN wells using level loggers. The data is stored in the logger and then transmitted via telemetry for about 140 of the program wells, to a program information</p>

## Abstract

system. For non-telemetry PGMN sites the data is up-loaded manually from the levellogger.

Please note that a line graph has been used to display groundwater level patterns. Although convenient, this approach may not provide a true picture of the water level pattern, particularly where there are significant gaps in the dataset.

### 6) Chemical Analyses and Analytical Qualifiers and Remarks:

Groundwater samples collected under the PGMN program have been chemically analyzed at the Ministry of Environment laboratory and at a number of private laboratories.

Qualifiers and remarks pertaining to the analyses often accompany the result. A description of the qualifiers and remarks used by the Ministry of Environment laboratory can be found at the following web-site:

[http://www.ontario.ca/sites/default/files/moe\\_mapping/downloads/metadata/PGMN\\_Value\\_Qualifier\\_List.htm](http://www.ontario.ca/sites/default/files/moe_mapping/downloads/metadata/PGMN_Value_Qualifier_List.htm)

The description is also provided on the Environmental Monitoring and Reporting Branch's OPEN Portal site.

Please exercise caution when interpreting the plotted groundwater chemistry results. It is advised to use the provided tables for the Value Qualifier Codes, Remark Codes, and Analytical Methods. Note that some laboratory methods have changed over time; users should apply judgment and caution when comparing various laboratory analytical methods when exploring the data.

For codes used by other laboratories, it is recommended that the user of the data consult with the laboratory in which the analysis was performed.

### 7) Confidence Level and General Comments:

For each PGMN groundwater sample, a general confidence level of 1 or 2 has been provided. Level 1 indicates that upon a cursory review of the data, there is no obvious information to suggest that the chemical result is suspect. Level 2 indicates that either there is insufficient information to assign a Level 1 or there is some obvious suspicious aspect to the result and the user should review the comments and use the data with caution. Level 2 has also been applied to all chemical analyses generated at private laboratories as a precautionary step, given that all of the details regarding each chemical analysis may not be posted at this web-site.

### 8) Precipitation Measuring Devices

Rainloggers are used to measure the precipitation accumulation about every 15 minutes at 67 PGMN sites. This data is periodically uploaded manually from each site and sent to the program information system.

The Intended Use and Purpose for Collecting the Data Set or Information Holding: The scope and scale of the PGMN program allow for multiple uses of the three data sets collected under the program. The groundwater level data along with the precipitation data is used to identify groundwater level trends over time, understanding the impacts of changing weather patterns (climate change) on groundwater levels, providing information for water allocation, interference complaints, and for drought response decisions, and for the implementation of the Ontario Low Water Response Program (OLWRP).

The groundwater chemistry data is used to understand groundwater quality conditions, to identify correlations between the geology and groundwater chemistry, to provide information to Local Health Units who in turn provide information to private well owners on what chemical parameters to test for and what treatment options are available.

The PGMN program data provides groundwater information for policy and standard development and provides a framework for which special studies can be implemented as issues arise.

The PGMN groundwater level and chemistry data is also useful to the groundwater consulting industry, the water well drilling industry, the Conservation Authorities, and academia.

Restrictions and Legal Prerequisites for Accessing the Data Set (Data Privacy/Security): Groundwater chemistry information from PGMN wells that are located on privately owned land is limited to Lot, Concession, Township, County, and Conservation Authority.

Constraints for Using the Data Set: No constraints

Legislated or Legal Authority for Collecting the Data Set: None

Time Coverage: from, January 1, 2001 to December 31, 2018

Time Coverage Comments:

Data Range:

	<p>- Groundwater Level Data (hourly readings): 2001 - 2018 for 510 program wells  - Groundwater Chemistry Data (initial comprehensive chemical analyses for 502 wells and on-going monitoring, annually, for about 409 selected wells): 2002-2018  - Precipitation (every 15 minutes): 2005-2018 from 67 program well sites</p> <p>Frequency with which Changes or Additions are Made to the Data Set: Annually</p>
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<b>Keywords</b>	AQUIFER, GROUNDWATER, MINISTRY OF THE ENVIRONMENT, WATER, WATER LEVELS, WATER QUALITY, WATER MANAGEMENT, WELLS, MONITORING, EMRB
<b>Geographic Bounds</b>	West bound: <b>-95.15699</b> East bound: <b>-74.30798</b> South bound: <b>41.6723</b> North bound: <b>56.850117</b>
<b>Supplemental Information</b>	<p>DATA AVAILABILITY:</p> <p>*****OPEN DATA CATALOGUE*****</p> <p>Time Period Overall: 2001 - 2018  Groundwater Level Data: 2001 - 2018  Groundwater Chemistry Data: 2002 - 2018  Precipitation: 2002 - 2018</p> <p>*****INTERACTIVE MAP*****</p> <p>Time Period Overall: 2001 - 2018  Groundwater Level Data: 2001 - 2018  Groundwater Chemistry Data: 2002 - 2018  Precipitation: 2002 - 2018</p> <p><a href="http://www.ontario.ca/environment-and-energy/provincial-groundwater-monitoring-network">http://www.ontario.ca/environment-and-energy/provincial-groundwater-monitoring-network</a></p> <p>*****ENVIRONMENT ATLAS*****</p> <p>Time Period Overall: 2001 - 2018  Groundwater Level Data: 2001 - 2018  Groundwater Chemistry Data: 2002 - 2018  Precipitation: 2002 - 2018</p>

**Date Stamp**

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