Metadata for: Provincial Groundwater Monitoring Network Program<

This table provides essential information about the program data.

Title	Provincial (PGMN)Groundwater Monitoring Network Program (PGMN)
Abstract	The PGMN program began in 2000 and is designed to monitor ambient groundwater level and chemistry conditions across Ontario. The PGMN Program is implemented through a partnership arrangement made between the Ministry of the Environment, Conservation and Parks, the 36 conservation authorities, and the Severn Sound Environmental Association. There are 522 wells listed in the PGMN Wells file, this number includes active and formerly active wells. There are currently 480 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. 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 the Environment, Conservation and Parks laboratory. Approximately 390 of the PGMN wells are currently being sampled for long-term water chemistry monitoring, 80 in the spring and all 390 in the fall. 80 of the wells sampled in the fall are sampled every second year. Prior to 2021, up to 410 wells were sampled once annually in the fall. 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 analyzed at the Ministry of the Environment, Conservation and Parks laboratory. Rain gauges are currently established at 66 selected PGMN well sites and are monitoring precipitation approximately every 15 minutes during the early Spring to late Fall seasons.
Purpose	
Status	Ongoing
Contact	Name: Heather Brodie-Brown Voice: 416-994-5480 Email: heather.brodie-brown@ontario.ca Organisation: Ministry of the Environment, Conservation and Parks Position: Team Lead, Groundwater Monitoring Role: Point of contact
Cited Responsible Parties	Name: Vasily Rogojin, P.Geo. Voice: (416) 235-6172 Email: Vasily.Rogojin@ontario.ca Organisation: Ministry of the Environment, Conservation and Parks Position: Senior Hydrogeologist Role: Senior Hydrogeologist
Keywords	Aquifer, Groundwater, Water Level, Wells, Water Management, Water Quality, Precipitation
Use Limitations	Groundwater chemistry information from PGMN wells that are located on privately owned land is limited to Lot, Concession, Township, County, and Conservation Authority.
Legal Constraints	Shared under the Open Government Licence (https://www.ontario.ca/page/open-government-licence-ontario)

Geographic Bounds	Ontario, province-wide
	DATA AVAILABILITY: **********INTERACTIVE MAP********** https://www.ontario.ca/page/map-provincial-groundwater-monitoring-network • Monitoring Well Location Information: 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. The elevation information has been determined using the latitude and longitude data and applying it to the Provincial Digital Elevation Model (DEM). 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. • Aquifer Type, Lithology, and Stratigraphy: 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. Ministry of the Environment, Conservation and Parks Water Well Record numbers are provided for the PGMN monitoring wells where available. The lithology of the aquifer being monitored is based on the Ministry of the Environment, Conservation and Parks Water Well Record for the PGMN well or nearby wells, or on bore-log descriptions taken from hydrogeological reports. Stratigraphic information can also be obtained from the Ministry of the Environment, Conservation and Parks 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. • Well Construction Details: Information on the PGMN monitoring wells are based on information provided on the Ministry of the Environment, Conservation and Parks Water Well Record or well construction descriptions provided in hydrogeological reports. • Groundwater Level Monitoring Devices: Groundwater levels are measured once per hour in PGMN wells using leveloggers. The data is stored in the logger and then transmitted via telemetry for about 170 of the program wells, to a program information system. For non-telemetry PGMN sites the data is up-loaded manually from the levelogger. • Groundwater Level Data Corrections and Quality Assurance / Quality Control (QA/QC) All groundwater level data posted has been electronically corrected for barometric pressure and adjusted to match manually measured static water levels. Water level data posted to Open Data prior to 2025, has been QA/QC'd by a Ministry hydrogeologist and is marked with one of the following Confidence Levels: 1. Initial Posted Data - Corrected and QA/QC'd data 2. Filled Data Gaps - Corrected and QA/QC'd data added to fill gaps in Initial Posted Data 3. Updated Reviewed Data - Data that was re-reviewed and replaces Initial Posted Data Water level data, posted to Open Data in 2025 has not been QA/QC'd by a Ministry hydrogeologist and is marked with the Confidence Level: 8. Data which has been electronically corrected but not QA/QC'd Notes:

Supplemental Information	* The Confidence Level column in the posted water level data files reflects the QA/QC process undertaken not the quality of the data. Code 8. data is considered preliminary and will be replaced in Open Data in the next PGMN by water level data that has been electronically corrected and electronically QA/QC'd. • Chemical Analyses and Analytical Qualifiers and Remarks: Groundwater samples collected under the PGMN program have been chemically analyzed at the Ministry of the Environment, Conservation and Parks 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 the Environment, Conservation and Parks laboratory can be found at this page. Please exercise caution when interpreting the plotted groundwater 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. • Water Quality QA/QC, Confidence Level and General Comments: All water quality data posted to Open Data has been QA/QC'd by a Ministry hydrogeologist. For each PGMN groundwater sample, a general confidence level of 1 or 2 has been provided. o Level 1 indicates that upon a cursory review of the data, there is no obvious information to suggest that the chemical result is suspect. o 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. o 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. • Precipitation Measuring Devices Rainloggers are used to measure the precipitation accumulation from tipping buckets about every 15 minutes at 66 PGMN sites. This data is periodically uploaded manually from each site, emailed to the program staff for QA and uploaded to the WISKI information system. Some sites also transmit precipitation data directly to the WISKI information system, and this data is incorporated into a finalized quality assured dataset with the emailed data. 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 and precipitation data is also useful to the groundwater consulting industry, the water well drilling industry, the Conservation Authorities, and academia.

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