



Mapping Aquifer Yield and Drawdown from the Enhanced Wellogic Dataset

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Research Report**

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The Groundwater Inventory and Mapping (GWIM) Project (MDEQ, 2005) estimated groundwater availability (i.e., yield) from local areas in the commonly-used portion of the glacial deposits as the estimated pumping rate (gallons per minute) that would be required to cause a fifty-percent decline in the water level in the pumping well. This estimated yield was calculated using a simple analytical equation to combine transmissivity, the saturated thickness of the aquifer and a storativity value of 0.0016 (typical of a leaky-confined aquifer).

The June 2004 version of the MDEQ Wellogic water well database was used in the GWIM Project. This database contained 291,130 usable water well records throughout Michigan. In the top six irrigated counties in the state (St. Joseph, Montcalm, Cass, Branch, Kalamazoo and Gratiot), the 2004 version of Wellogic contained 25,747 usable well records.

This project has downloaded and is processing the newly available, Enhanced Wellogic data set in order to compile updated yield and drawdown maps for the glacial and bedrock aquifer systems of Michigan. The current Enhanced Wellogic data set contains about 66% more usable data statewide than the 2004 Wellogic data set used in the GWIM Project (currently, 484,386 usable well records statewide). Within the top six irrigated counties in the state, the current Enhanced Wellogic database contains 45,722 usable well records (77% more than the 2004 version!).

To date, the group has worked with an external advisory group to finalize the data processing protocol to be used and discussed the best approach to determine the aquifer thicknesses at various locations. The data will ultimately be used to show the transmissivities for glacial wells based on the thicknesses of the various aquifer materials from the bottom of the deepest aquifer up to the static water level multiplied by their respective hydraulic conductivities. The next phase of this project will look at bedrock wells. Ultimately, these methods will be used to interpolate the glacial yield and drawdown data statewide. These GIS map layers will be delivered to the MDEQ who will transfer them to the State of Michigan Center for Shared Solutions who will make them publically accessible on the newly released GIS data Portal.

[Click here](#) to access the full research report for this project.